# City Council - Transportation, Energy and Utilities Committee

## Tuesday, January 28, 2025, 5:30 PM,

**Join in Person: Front Conference Room, 645 Pine St. Burlington, VT 05401**

**Join via Zoom: https://zoom.us/j/84603122855**
**To call into the meeting, including to speak during public comment:**
**Phone: 312-626-6799, Webinar ID: 846 0312 2855**

## 1. Agenda

**1.1. Motion to adopt/amend**

## 2. Adopt Minutes

**2.1. Minutes of 12/17/24**

## 3. Public Forum

## 4. Deliberative Agenda

**4.1. GMT FY 26 Assessment & Special Assessment - 40 min**

**4.2. Battery Street Scoping Study Preferred Alternative Presentation - 40 min**

**4.3.**
**Parking Services License Plate Reader Briefing - 10 min**

## 5. Director's Report

## 6. Councilor Items

## 7. Next Meeting

## 8. Adjournment

**CITY OF BURLINGTON, VERMONT**

# CITY COUNCIL TRANSPORTATION, ENERGY & UTILITIES COMMITTEE

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**Councilor Mark Barlow**, **Chair,** *North District*
**Councilor Gene Bergman,** *Ward 2*
**Councilor Evan Litwin,** *Ward 7*
**Councilor Marek Broderick,** *Ward 8*

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## Transportation, Energy and Utilities Committee of the City Council
## Tuesday December 17, 2024 – 4:00PM
## --DRAFT MINUTES—

**Councilors absent: Councilor Litwin until 5:05 pm**

**Chair Barlow** calls meeting to order at 4:02 PM

**1. Agenda**
**Councilor Bergman** moves to adopt the agenda.
**Councilor Broderick** seconds.
**All in favor, passes unanimously**.

**2. Minutes of 11/19/24**
**Councilor Bergman** moves to adopt the minutes as presented.
**Councilor Broderick** seconds.
**All in favor. Unanimous approval.**

**3. Public Forum**
**Rick Sharp –**. Runs Burlington Segway's with wife Ruth which is locally owned and based in Burlington. Very concerned about complaints about Bird Bikes. Feels City should not continue contract next year but if we do he is asking that we protect his summer business by keeping Bird bikes off from the Waterfront, and College St. and make it part if the agreement.

**04. Deliberative Agenda**

- **4.1 Bird Bikeshare Contract Work Session**
  **DPW Director Chapin Spencer** summarized that in conversation with other regional partners and CATMA there is interest in continuing the existing bike share event. Staff will support conversations to our direction.

Councilors asked questions about how contract dates, and when decision would be needed.

> **City Attorney Ramakrishnan** – First MOTION by Councilor Bergman, SECOND by Councilor Broderick, to find that premature general public knowledge of contract negotiations and discussions with legal counsel would clearly place the City at a substantial disadvantage because the City risks disclosing confidential information about negotiating strategies and confidential attorney-client communications in public.

Second MOTION by Councilor Bergman, SECOND by Councilor Broderick, that based on the finding of substantial disadvantage, the Committee enter into executive session to discuss contract negotiations involving the CAMA regional Bird BikeShare program under the provisions of 1 V.S.A. 313(a)(1)(A) and (F), to include the Committee, the Public Works Director, DPW Engineer Julia Ursaki, DPW Public Information Manager Robert Goulding, and legal counsel.

**All in Favor – Unanimous**

Above parties went into Executive Session.

- **4.2 Water Resources Affordability Discussion**

**Division Director Megan Moir** – Updated staff on information that was discussed at City Council meeting. People support the need and outcome of having working wastewater treatment plants. People are concerned about number being too big and being voted down. The City is always doing infrastructure upgrades.

**City Attorney Ramakrishnan** - Asked if there was any merit having the item that goes to the voter stagger so that the City has authority in 2027 to sell so much now and so much then?

**Councilors** stated bonding should say for phase 1 in order to make sense to public and be consistent. Confused about potential plan to stager bond. Worried about future council's decisions. Not just Water bond, also education, municipal revenue increase but being able to deliver on what was told to the voters last town meeting. If you can demonstrate the need and articulate Burlington voters are very generous with infrastructure spending.

**4.3 GMT Special Assessment & College St Shuttle Fare Policy Review**

**Clayton Clark** from GMT – spoke about the variety of options of physical year 26 assessment and if Burlington continues to pay the fare for route 11 – Free College St Shuttle and what happens if the special assessment passes. Needs all municipalities to vote affirmative. CCRPC on board and wants to help with assessment reform so no consultant needed which will reduce costs.

**Councilors** asked that GMT work with staff to put a tax increase on the numbers provided. San Remo Drive Route is it a net loss? If we subsidize route then Howard Center should become a partner to offer micro transit on request. What type of conversations are you having with them? College St Shuttle shouldn't be free.

.

**5. Director's Report**

**None**

**6. Councilor Items**

**None**

**7. Next Meeting**

January 28, 2025 at 645 Pine St at 5:30 pm

**8. Adjournment**

Chair Barlow adjourns meeting at 5:33 pm.



# DRAFT

# Battery Street Scoping Study

## Executive Summary

Burlington, Vermont

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Communities Planning Together

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**JANUARY 2025**

# Executive Summary

The Battery Street Scoping Study examined the Battery Street corridor from Maple Street to Sherman Street to identify and prioritize a suite of short- and long-term transportation improvements that provide equitable, safe, low-stress, accessible transportation for all road users along this important north-south route that doubles as a gateway between the downtown and waterfront districts. Recognized in planBTV's Walk Bike Master Plan as a priority location for transportation improvements, Battery Street was previously reported as one of the top five streets in the city that survey respondents felt the least safe to walk or bike on. The recommendations identified in this study were arrived at through an extensive public and stakeholder engagement process, combined with an in-depth evaluation of relevant planning and design considerations of Battery Street.

## Project Purpose

The purpose of the Battery Street Scoping Study is to identify and prioritize short- and long-term improvements that provide equitable, safe, low-stress, and accessible transportation for all along and across Battery Street, regardless of age, ability, or mode of travel.

## Project Needs

The needs for this project are driven by deficiencies in Battery Street's current transportation infrastructure and by a need for comprehensive corridor planning. These requirements are further articulated below:

- **Improve corridor and intersection safety for all users:** Over the five-year period from 2018 to 2022, there were 216 crashes along the Battery Street corridor, with over 80% of these crashes occurring at intersections. Along Battery Street's four-lane section, the most common crash type was rear-ending incidents. There were nine injury-related crashes involving vulnerable users, with five involving pedestrians and four involving bicyclists. Among several factors, Battery Street's wide cross-section leads to high speeds, and its variable lane configurations lead to driver confusion at the areas of highest consequence – intersections.
- **Enhance comfort and accessibility for pedestrians along Battery Street:** Battery Street represents the downtown core's western boundary and functions as a barrier between the waterfront and downtown for pedestrians traveling between these popular destinations. The street's four-lane cross-section creates lengthy crossings for people on foot and/or using mobility-aid devices. Published in 2016, Burlington's Great Streets Standards establish a Modal Hierarchy to guide the design of downtown's streets, with pedestrian travel taking priority over all other modes.
- **Provide end-to-end bicycle facilities and connections:** Currently, Battery Street contains one two-block-long striped bike lane between Pearl Street and Sherman Street northbound only. In Burlington's Walk Bike Master Plan, "planBTV Walk Bike", Battery Street was identified by City residents as a top 5 "worst" street for walking and biking. In addition, planBTV Walk Bike identified Battery Street as a corridor in need of protected (separated) bike lanes. Moreover, there are several designs ongoing or completed designs that include bicycle facilities that will connect into or across Battery Street. These efforts include a shared-

use path proposed by the Railyard Enterprise Project and separated bike lanes designed for Main Street and North Champlain Street.

- **Integrate street ecology into Battery Street's overall design:** Battery Street's proximity to Lake Champlain and steep topography emphasize the need for critical street ecology improvements. Additionally, like most of the downtown core, Battery Street is in Burlington's Combined Sewer Area. In its current condition, Battery Street lacks any stormwater management practices. Additionally, it has large areas of impervious surfaces within the right-of-way, but outside of the motor vehicle travel way, like the wide sidewalks that abut building fronts. In line with the City's goals of easing the burden on the combined system, and to be in line with Burlington's Great Streets standards, Battery Street needs to better integrate sustainable street ecology and stormwater management practices.
- **Provide acceptable mobility for all modes of transportation along Battery Street:** While Battery Street represents a critical north-south commuter route for motorists, the use of its transportation right-of-way disproportionately favors the driving population. Along the full length of the project corridor, over one-half of this right-of-way – and in some cases more than two-thirds – is occupied by paved surfaces that exclusively serve drivers and motor vehicle use. While the existing sidewalks stretch the full length of the corridor, they are, for the most part, designed to the minimum standard, and in some locations share lengths of spaces with motor vehicles. Additionally, there is only one short stretch of striped bike lane along the full corridor. There is a need to provide a more equitable use of space for walkers and bikers, while not significantly compromising Battery Street as a commuter route.

# Stakeholder and Public Engagement

## Project Advisory Committee

The Project Advisory Committee served as a key stakeholder group throughout the project, offering input at every stage of the study. Comprising representatives from city departments (Public Works; Parks, Recreation & Waterfront; City Planning; Racial Equity, Inclusion & Belonging), Burlington City Council, Green Mountain Transit, the Burlington Walk Bike Council, the Burlington Business Association, DPW Commission, and NPA representatives, the committee provided valuable insights to be sure the study reflected community priorities.

### Visioning and Needs Identification

Early meetings focused on identifying challenges along Battery Street and establishing the Purpose and Need Statement. Discussions emphasized speeding, safety concerns at intersections, and the lack of multimodal infrastructure. Committee members highlighted the corridor's potential to become a safer, more vibrant public space.

### Alternatives Development

The committee played an active role in reviewing and refining the alternatives. Members provided feedback on the design and layout of bicycle and pedestrian facilities, parking configurations, and connections to adjacent projects like the Railyard Enterprise Project.

### Consensus Building

During later meetings, the committee reviewed the detailed alternatives analysis, which included metrics such as safety, connectivity, and traffic operations. Although opinions were initially divided, the committee eventually supported Alternative 2 as their recommended preferred alternative, citing its balance of multimodal benefits, reduced parking impacts, and improved traffic flow.

The committee's iterative feedback was instrumental in shaping the study's final recommendations, ensuring that the project aligned with Burlington's transportation and community goals.

### Recommended Preferred Alternative Presentation

The fourth Advisory Committee meeting in September 2024 presented Alternative 3 (a hybrid option) alongside refinements to Alternatives 1 and 2. Committee input emphasized the importance of connectivity to adjacent projects, such as the Railyard Enterprise Project, and maintaining parking availability.

## Public Engagement

The public engagement process was robust, inclusive, and designed to ensure diverse community representation. Engagement activities included public meetings, surveys, tabling events, and targeted outreach. The feedback gathered informed every stage of the study, from identifying challenges to recommending the preferred alternative.

### Local Concerns Meeting

Held in May 2023, this meeting introduced the project to the public and solicited input on existing conditions and desired improvements. Attendees participated in an open house, where they reviewed corridor data and provided feedback on challenges such as unsafe crossings, speeding, and the lack of bicycle facilities. Key themes included:

- The need for safer pedestrian crossings, particularly at College and Main Streets.
- A desire for protected bike lanes along the entire corridor.
- Concerns about maintaining parking for businesses and residents.

### Draft Alternatives Meeting

In March 2024, the Draft Alternatives Presentation showcased two initial design concepts (Alternatives 1 and 2) and gathered public input through interactive sessions. Attendees placed comments on large maps of the alternatives, highlighting preferences and concerns. Key feedback included:

- Strong support for separated bike lanes, with mixed opinions on one-way versus two-way configurations.
- Concerns about the loss of parking spaces, particularly between Maple and Main Streets.
- General support for traffic calming measures, including the proposed road diet.
- Via a straw poll of those in attendance, Alternative 2 received the most support, particularly for its balance of multimodal benefits and reduced parking impacts.

### Targeted Outreach

To ensure an equitable process, the project team conducted targeted outreach to traditionally underserved groups and stakeholders unable to attend public meetings. Efforts included tabling events at local businesses, a radio interview, engagement with students, meetings with the CCRPC Equity Advisory Committee, Burlington's Trusted Community Voices, and presentations to community organizations. This outreach reinforced the importance of safety, accessibility, and connectivity in the corridor's redesign.

### Public Surveys

In April 2023, a public survey was shared to gather input on potential improvements to the Battery Street corridor. Participants identified specific locations along the corridor where they observed issues or opportunities for improvement and their related mode of travel.

Feedback from this survey, along with input from the Local Concerns Meeting, was reviewed and synthesized into common themes. Respondents frequently emphasized the need for safety and accessibility improvements along the corridor. The distribution of comments by travel mode was as follows: 33% related to walking, 8% to crossing points, 31% to biking, 19% to driving, and 10% to other modes.

Following the Draft Alternatives presentation in March 2024, the city shared a survey to poll the general public on their preference for an alternative. The survey asked respondents to determine if they prefer Alternative 1, Alternative 2, both equally, or neither. 166 people responded and the results are listed below.

- Alternative 1: 50
- Alternative 2: 75
- Both Equally: 31
- Neither: 10

### Transportation, Energy, and Utilities Committee (TEUC) Presentation

*The project team is scheduled to present the findings of the scoping study as well as the recommended preferred alternative to the TEUC on Tuesday, January 28, 2025. This executive summary will be updated with the outcome of that meeting following its completion.*

## Alternatives Analysis

Following the preliminary public engagement process and existing conditions analysis, conceptual alternatives were developed for Battery Street. Each alternative was developed to meet the project's needs: enhancing safety, accessibility, and connectivity for all users, while supporting a vibrant and cohesive urban corridor linking Burlington's downtown with its waterfront. The alternatives consider various approaches to address the needs identified in the study, including improved pedestrian and bicycle infrastructure, adjustments to traffic flow, and integration of green stormwater practices.

The alternatives were compared based on several key metrics, including safety improvements, impacts on mobility, environmental considerations, and alignment with the project's Purpose & Need(s) statement. This analysis aimed to recommend a preferred alternative that balances user

needs, aligns with city planning objectives, and ensures long-term viability of the Battery Street corridor as a multimodal transportation route.

## Corridor Alternatives: Considerations

The development of conceptual alternatives for the Battery Street corridor centered on five key considerations to address the project's Purpose and Need:

- Road Diet: Public input and technical analysis highlighted the feasibility of reducing the corridor's lane configuration to calm traffic and create space for multimodal infrastructure.
- Bicycle Facilities: The study determined that separated bike lanes are essential for user safety and meeting needs. The selected designs align with national guidance, including the FHWA Bikeway Selection Guide.
- Pedestrian Accommodations: Alternatives incorporated measures such as curb extensions, consistent curb radii, and extended leading pedestrian intervals (advanced walk time for pedestrians) to improve crossing safety and reduce pedestrian wait times.
- Parking: Maintaining on-street parking, particularly between Maple and Main Streets, was a critical priority identified through public and stakeholder input.
- Traffic: Each alternative was evaluated using traffic simulations to balance multimodal safety with acceptable levels of service for vehicles.

These considerations shaped the three alternatives described below that reflect distinct approaches to achieving the project's goals.

### Alternative 1: One-Way Separated Bike Lanes

Alternative 1 includes one-way separated bike lanes on both sides of Battery Street, offering high levels of safety and comfort for cyclists by physically separating them from vehicular traffic. This design aligns with the road diet and incorporates pedestrian-focused improvements to intersections. However, this alternative results in significant tradeoffs, including the loss of 29 parking spaces between Maple and Main Streets and the highest levels of traffic congestion among the alternatives. End-to-end there is a 98% increase in travel time delay for northbound and a 94% increase for southbound traffic.

While Alternative 1 increases cyclist safety, its impacts on parking and traffic delay generated mixed reactions from the public and stakeholders. The design requires careful consideration to balance the needs of all users while ensuring community support for the corridor's transformation.

### Alternative 2: Two-Way Separated Bike Lanes

Alternative 2 proposes two-way separated bike lanes along the west side of Battery Street, enhancing connectivity to key destinations such as Battery Park and the Waterfront. This design minimizes crossing conflicts for cyclists and reduces parking impacts compared to Alternative 1, preserving 27 of 42 spaces in the southern segment (with the ability to maintain 39 of the spaces, similar to Alternative 3, discussed in the next section).

Traffic operations under Alternative 2 are more favorable, with lower congestion levels and shorter travel times than Alternative 1. End-to-end there is a 19% increase in travel time delay for northbound and a 40% increase for southbound traffic. The west-side alignment simplifies signal

phasing, allowing more efficient traffic flow while maintaining safety. As a result, Alternative 2 offers a balanced approach that prioritizes multimodal connectivity while addressing parking and traffic concerns.

### Alternative 3: Hybrid of Alternatives 1 & 2

Alternative 3 combines elements of the first two alternatives, featuring two-way separated bike lanes south of Main Street and one-way bike lanes north of Main Street. This design aligns the southern segment with the proposed shared-use path from the Railyard Enterprise Project while preserving up to 39 parking spaces in the southern segment through width reductions and the removal of green space.

Although Alternative 3 maintains greater parking than Alternative 1 and improved connectivity in the southern blocks, it introduces complexity at intersections and requires additional signal adjustments to manage turning conflicts effectively. End-to-end there is a 61% increase in travel time delay for northbound and a 15% increase for southbound traffic. This hybrid solution offers a flexible approach, addressing multiple priorities while balancing tradeoffs in connectivity, parking, and traffic performance.

## Preferred Alternative

Alternative 2 was recommended as the preferred alternative for the Battery Street corridor after an extensive evaluation process incorporating public input, technical analysis, and stakeholder collaboration. This design provides enhanced connectivity to critical destinations, including Battery Park and the Waterfront, while minimizing conflicts and improving safety for all users.

Key advantages of Alternative 2 include:

- Safety and Accessibility: The two-way separated bike lane provides a low-stress environment for cyclists while maintaining consistent pedestrian accommodations and enhancing crossing safety with extended leading pedestrian intervals (advanced walk time for pedestrians).
- Traffic Operations: The design balances multimodal improvements with efficient traffic flow, resulting in lower congestion levels and shorter travel times compared to other alternatives.
- Parking Preservation: Alternative 2 retains more on-street parking than Alternative 1, reducing impacts to residents, businesses, and visitors by maintaining 27 of 42 spaces in the southern segment.

The recommended preferred alternative was refined based on Advisory Committee and public feedback, including adjustments to bike lane buffers, intersection configurations, and green space to further enhance safety and functionality. Specific refinements included:

- Adding more separation the two-way bike lanes near Battery Park to address concerns about varying cyclist speeds on grades.
- Removing the southbound right-turn lane at College Street to shorten pedestrian crossing distances.
- Modifying the cross-section near businesses, such as the April Cornell building, to increase frontage while maintaining minimum bike lane requirements.

Alternative 2 represents a balanced solution that addresses the corridor's safety, accessibility, and connectivity challenges while aligning with Burlington's long-term vision for sustainable transportation.

The following page includes a layout plan of the recommended preferred alternative.

# Implementation

The recommended improvements for the Battery Street corridor could be implemented in phases, depending on the availability of funding. The following represents a potential short-term and long-term implementation plan for the corridor.

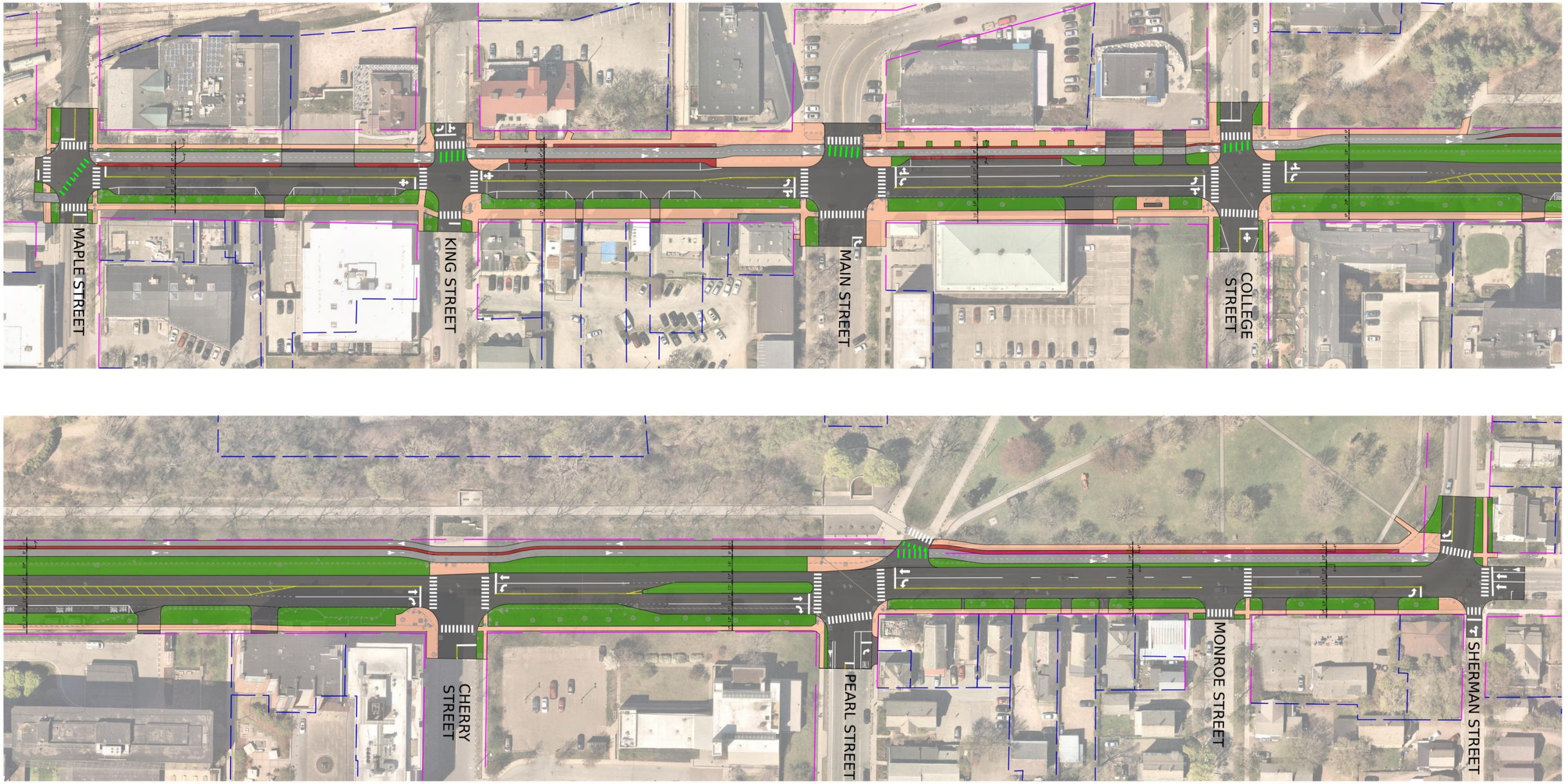
## Short-Term Recommendations – Within 5-Years:

- **Initiate preliminary design**
  - Develop the three-dimensional engineering design to better anticipate grade differentials between the roadway, sidewalk, and separated bike lanes and their implications on construction phasing.
- **Implement the road diet and two-way separated bike lanes with signing, pavement markings and signal modifications between Main Street and Pearl Street**
  - Incorporate the road diet and separated bike lanes into planned updates to pavement markings or repaving, providing an opportunity to initiate improvements while design work continues.
  - Leverage the City's Quick Build Design + Materials Standard Guide
- **Finalize engineering design**

## Long-Term Recommendations – Within 10-Years:

- **Secure funding**
- **Begin construction**

This phased approach provides a framework for advancing the Battery Street improvements in a way that aligns with funding availability, minimizes community disruption, and ensures a cohesive connection to broader transportation initiatives.




# Battery Street Scoping Study

## Preferred Alternative (Refined Alternative 2)



# DRAFT

# Battery Street Scoping Study

## Burlington, Vermont

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**JANUARY 2025**

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# 1

# Introduction

The Battery Street Scoping Study examined the Battery Street corridor from Maple Street to Sherman Street to identify and prioritize a suite of short- and long-term transportation improvements that provide equitable, safe, low-stress, accessible transportation for all road users along this important north-south route that doubles as a gateway between the downtown and waterfront districts. Recognized in planBTV's Walk Bike Master Plan as a priority location for transportation improvements, Battery Street was previously reported as one of the top five streets in the city that survey respondents felt the least safe to walk or bike on. The recommendations identified in this study were arrived at through an extensive public and stakeholder engagement process, combined with an in-depth evaluation of relevant planning and design considerations of Battery Street.

## 1.1 Project Overview

The Battery Street Scoping Study was conducted by VHB and the Chittenden County Regional Planning Commission (CCRPC) in coordination with the City of Burlington Department of Public Works (City). The primary objective of the study was to identify and prioritize improvements along the Battery Street corridor to better and more safely accommodate all roadway users. Key goals included, improving safety and accessibility for all users and strengthening connections to adjacent parks and businesses. To achieve these goals, the project team conducted a thorough review of existing conditions, solicited and incorporated public and stakeholder input, performed a comprehensive alternatives analysis, and ultimately developed a preferred concept plan.

The study area runs approximately 3,100 feet (0.58 miles) along Battery Street from Maple Street to Sherman Street. If brought forward into preliminary engineering design and eventual construction, the outcomes of this study are anticipated to significantly enhance the corridor's functionality and aesthetic appeal, transforming it into a truly multimodal corridor.

**Figure 1 Battery Street Looking North Toward the College Street Intersection**




Source: VHB

## 1.2 Project Purpose and Need

In line with the scope of work, the project team developed the following Purpose and Need Statement. This statement functions as the guiding principle for the work completed in the study.

### 1.2.1 Project Purpose

The purpose of the Battery Street Scoping Study is to identify and prioritize short- and long-term improvements that provide equitable, safe, low-stress, and accessible transportation for all along and across Battery Street, regardless of age, ability, or mode of travel.

### 1.2.2 Project Needs

The needs for this project are driven by deficiencies in Battery Street's current transportation infrastructure and by a need for comprehensive corridor planning. These requirements are further articulated below:

- **Improve corridor and intersection safety for all users:** Over the five-year period from 2018 to 2022, there were 216 crashes along the Battery Street corridor, with over 80% of these crashes occurring at intersections. Along Battery Street's four-lane section, the most common crash type was rear-ending incidents. There were nine injury-related crashes involving vulnerable users, with five involving pedestrians and four involving bicyclists. Among several factors, Battery Street's wide cross-section leads to high speeds, and its variable lane configurations lead to driver confusion at the areas of highest consequence – intersections.
- **Enhance comfort and accessibility for pedestrians along Battery Street:** Battery Street represents the downtown core's western boundary and functions as a barrier between the waterfront and downtown for pedestrians traveling between these popular destinations. The street's four-lane cross-section creates lengthy crossings for people on foot and/or using mobility-aid devices. Published in 2016, Burlington's Great Streets Standards establish a Modal Hierarchy to guide the design of downtown's streets, with pedestrian travel taking priority over all other modes.
- **Provide end-to-end bicycle facilities and connections:** Currently, Battery Street contains one two-block-long striped bike lane between Pearl Street and Sherman Street northbound only. In Burlington's Walk Bike Master Plan, "planBTV Walk Bike", Battery Street was identified by City residents as a top 5 "worst" street for walking and biking. In addition, planBTV Walk Bike identified Battery Street as a corridor in need of protected (separated) bike lanes. Moreover, there are several designs ongoing or completed designs that include bicycle facilities that will connect into or across Battery Street. These efforts include a shared-use path proposed by the Railyard Enterprise Project and separated bike lanes designed for Main Street and North Champlain Street.
- **Integrate street ecology into Battery Street's overall design:** Battery Street's proximity to Lake Champlain and steep topography emphasize the need for critical street ecology improvements. Additionally, like most of the downtown core, Battery Street is in Burlington's Combined Sewer Area. In its current condition, Battery Street lacks any stormwater management practices. Additionally, it has large areas of impervious surfaces within the right-of-way, but outside of the motor vehicle travel way, like the wide sidewalks that abut

building fronts. In line with the City's goals of easing the burden on the combined system, and to be in line with Burlington's Great Streets standards, Battery Street needs to better integrate sustainable street ecology and stormwater management practices.

› **Provide acceptable mobility for all modes of transportation along Battery Street:** While Battery Street represents a critical north-south commuter route for motorists, the use of its transportation right-of-way disproportionately favors the driving population. Along the full length of the project corridor, over one-half of this right-of-way – and in some cases more than two-thirds – is occupied by paved surfaces that exclusively serve drivers and motor vehicle use. While the existing sidewalks stretch the full length of the corridor, they are, for the most part, designed to the minimum standard, and in some locations share lengths of spaces with motor vehicles. Additionally, there is only one short stretch of striped bike lane along the full corridor. There is a need to provide a more equitable use of space for walkers and bikers, while not significantly compromising Battery Street as a commuter route.

# 2

# Existing Conditions

The first step of the Battery Street Scoping Study was to identify the existing transportation and land use conditions along the project corridor to identify issues and opportunities to be addressed through the Study. This section includes an evaluation of the corridor's existing and future land use characteristics, existing transportation infrastructure, existing and projected traffic flows, historic safety data, and a review of relevant studies and projects within or proximate to the study area.

## 2.1 Study Corridor Description

The 0.58-mile study corridor is located along Battery Street with a northern terminus at Sherman Street and a southern terminus at Maple Street. Battery Street is classified as a Principal Arterial and serves as a key north-south route connecting Burlington's residents to destinations and neighborhoods within the city while also transporting commuters into and out of the city. The corridor is used by approximately 15,500 vehicles per day and is a major corridor for Tri-Valley Transit, Vermont Translines, and four Green Mountain Transit (GMT) routes: the City Loop, Shelburne, Pine Street, and Williston.

The full project study corridor is shown in **Figure 2** below.

**Figure 2 Project Study Area**




Source: VHB.

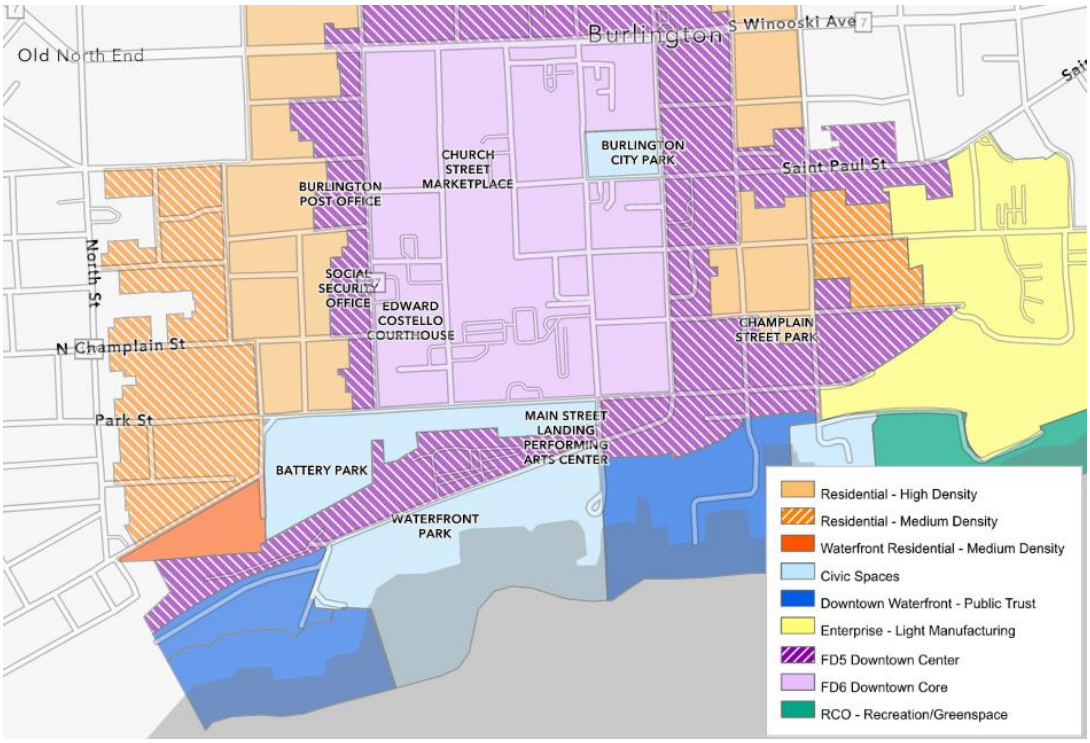
## 2.2 Land Use & Zoning Characteristics

The land use along the corridor varies significantly from north to south. To the north, development density is lower with a prevalence of single-family homes and duplex-style apartment buildings. Moving south, the terrain slopes downward and development transitions to 5 to 7-story mixed-use residential and office buildings lining the east side of the corridor. On the west side, there is ample public space, notably Battery Park. The southern segment features 3-story residential buildings.

The northern terminus of the corridor is in a medium or high density residential zoning district. Further south, the east side of the corridor is in a FD5 Downtown Center, transitioning into the FD6 Downtown Core, before reverting back to FD5 Downtown Center near the southern terminus. The west side of the corridor is public space, and then transitions into FD5 Downtown Center.

Future growth and developments along Battery Street are dictated by Burlington's Comprehensive Development Ordinance (CDO), administered by the Zoning Division of the Department of Permitting & Inspections, ensuring that changes align with the city's planning framework.

**Figure 3 Zoning Surrounding Project Extents**

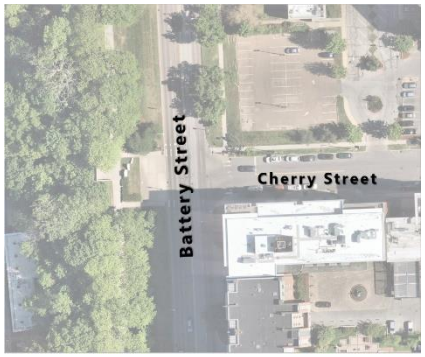



Source: CCRPC.

## 2.3 Transportation System Characteristics

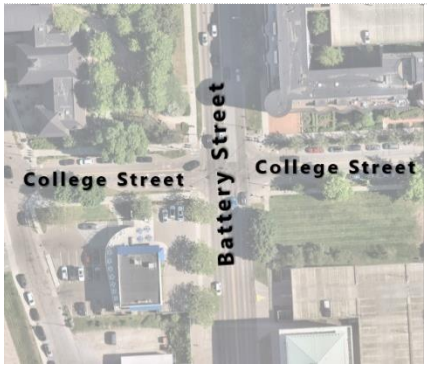
The following section summarizes the relevant transportation system characteristics of Battery Street through the project area. Existing conditions identified as part of this study include daily traffic volumes, roadway geometry, multimodal facilities, and other roadway elements.

| | |
|---|---|
| Functional Classification: | Principal Arterial |
| Right of Way (ROW): | 6-ROD (100 feet) |
| 2022 Annual Average Daily Traffic (AADT): | 15,500 vehicles per day |
| Study Intersection Geometry: | |
|  | **Park Street & Sherman Street**<br>Four-way signalized intersection with Park Street having two southbound travel lanes and Sherman Street having one westbound travel lane on the east leg of the intersection and one lane in each direction on its west leg. Park Street has one northbound travel lane that is left-only onto Sherman Street that shortly thereafter melds into North Avenue. An eastbound slip lane allows for vehicles turning right onto Battery Street from Sherman Street. There are signalized pedestrian crosswalks across Park Street to the north and the west leg of Sherman Street. There is also a short crosswalk across the east leg of Sherman Street that is currently lacking a pedestrian signal head. |
|  | **Park Street/Battery Street & Pearl Street**<br>Three-way signalized intersection with Park Street's southbound approach having one left turn lane and one through lane, while Battery Street's northbound approach has one through lane and one right turn lane. Pearl Street has one left and one right turn lane approaching Battery & Park Streets. There are signalized pedestrian crosswalks across all three sides of the intersection. |



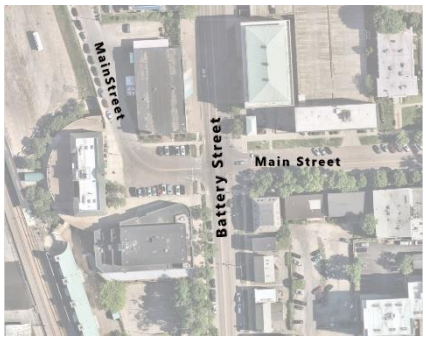

**Battery Street & Cherry Street**

Three-way signalized intersection with Battery Street's southbound approach having one shared left and through lane and one through lane, while its northbound approach has one shared through and right lane and one through lane. Cherry Street has one lane in each direction. Each leg of the intersection has signalized pedestrian crosswalks.




**Battery Street & College Street**

Four-way signalized intersection with Battery Street's southbound approach having one shared left and through lane and one shared through right lane, while its northbound approach has one shared through and right lane and one shared through and left lane. College Street's westbound approach has one lane in each direction, while its eastbound approach has an exclusive left turn lane and one shared lane for through and right turning traffic. Each leg of the intersection has signalized pedestrian crosswalks.




**Battery Street & Main Street**

Four-way signalized intersection with Battery Street's southbound approach having an exclusive left lane and one shared through and right lane, while its northbound approach has two lanes, one for through and left turning traffic and another for through and right turning traffic. Main Street's eastbound and westbound approaches have one lane for through and left traffic and another for right turning traffic. All legs of the intersection have signalized pedestrian crosswalks.




**Battery Street & King Street**

Four-way signalized intersection with the eastbound King Street approach having a shared left and through lane and exclusive right turn lane. All remaining legs have one lane in each direction. All sides of the intersection have signalized pedestrian crosswalks.




**Battery Street & Maple Street**

Four-way signalized intersection with all legs having one lane in each direction except Maple Street's westbound approach which has one lane for right turning traffic and one lane for through and left turning traffic. All legs of the intersection have signalized pedestrian crosswalks.

| | |
|---|---|
| Pedestrian Facilities: | › Five-foot concrete sidewalks on both sides of the street from Sherman Street to Pearl Street. Continues on east side on from Pearl Street to Maple Street. Street trees are placed on road edges separating the sidewalks from roadway<br>› Eight-foot concrete shared use path on the west side of Battery Street along Battery Park from Pearl Street to College Street.<br>› Five-foot concrete sidewalks continue from College Street to Maple Street (**Figure 6**).<br>› Crosswalks exist at all legs of every signalized intersection. Additionally, there is a marked crosswalk at the Park Street & Monroe Street intersection. |
| Bicycle Facilities: | › Northbound bike lane from Pearl Street to Sherman Street (**Figure 7**), which then continues down Sherman Street to North Avenue.<br>› *It is also worth noting that during reconstruction of the Burlington Greenway, two-way separated bike lanes were installed in a temporary condition between Maple Street and Main Street in place of on-street parking. Feedback from nearby businesses indicated that this configuration was challenging, especially for customers with ADA needs.* |

**Figure 4 Two-Lane Configuration between Maple and King Street**



Source: VHB

**Figure 5 Eastern and Northern Crosswalks at the College Street Intersection**



Source: VHB

**Figure 6 Pedestrian Facilities**



Source: VHB

**Figure 7 Bike Lane between Pearl and Sherman Street**



Source: VHB

## 2.4 Existing Traffic Conditions

Traffic was simulated using existing lane counts and types, traffic signal timing and phasing, and pedestrian handling to determine existing operations. At Design Hour Volumes, all intersections currently operate at LOS B or C. The average network speed, which includes time waiting at red lights, is 15 mph.

**Table 1 Existing Conditions Traffic Analysis**

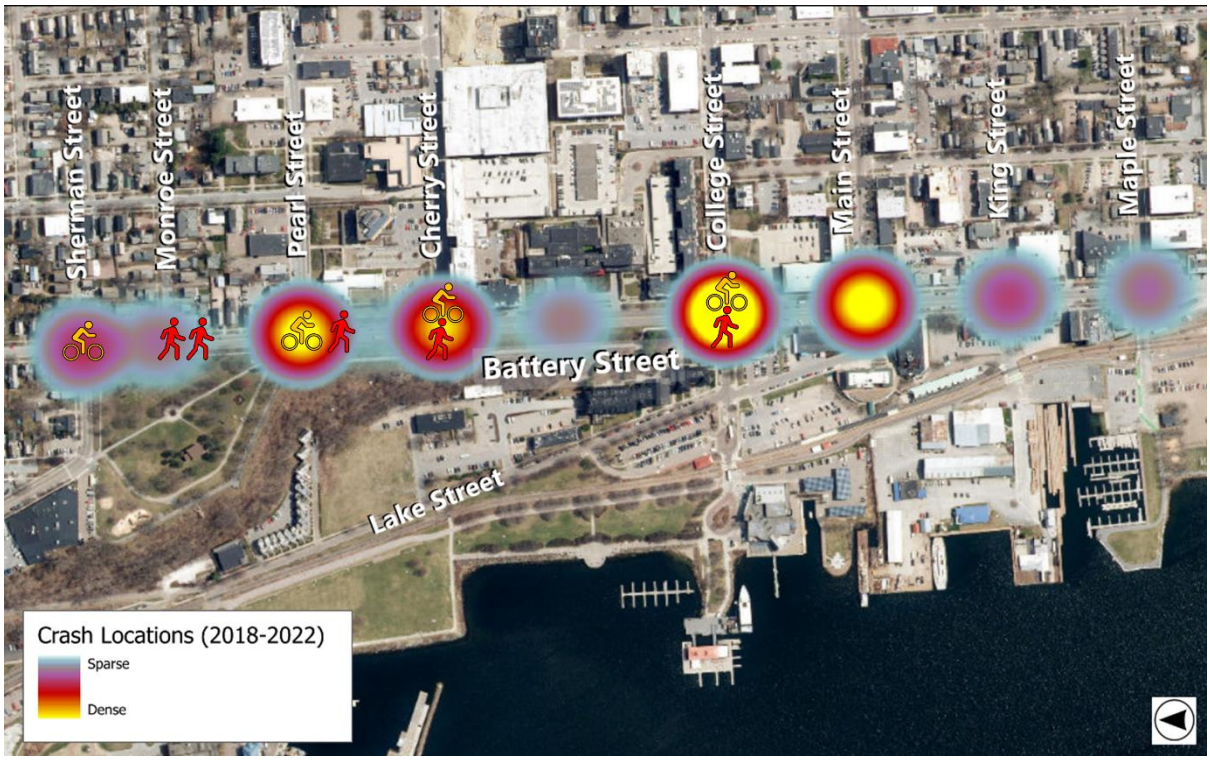
| | |
|---|---|
| **Average Delay (s) per Entering Vehicle** | |
| Park St & North Ave & Sherman St..... | 15.3 |
| Battery St & Pearl St..... | 23.0 |
| Battery St & Cherry St..... | 11.2 |
| Battery St & College St..... | 22.9 |
| Battery St & Main St..... | 17.5 |
| Battery St & King St..... | 12.4 |
| Battery St & Maple St..... | 15.2 |
| **Corridor End to End** | |
| Network Delay (s) | 67.3 |
| Average Network Speed (mph) | 15 |
| End-to-End Travel Time, NB (mins, s) | 2:52 |
| End-to-End Travel Time, SB (mins, s) | 2:24 |

## 2.5 Crash Data Inventory

A review of reported crashes along the study corridor was conducted for the most recent five-year period that data was available (2018-2022). During this time, there were 216 reported crashes, with five of them involving pedestrians and four of them involving cyclists. 80% of the crashes along this corridor are concentrated at intersections. The intersections with the most frequent crashes are at College Street and at Main Street. Among several factors, Battery Street's wide cross-section leads to high speeds, and its variable lane configurations lead to driver confusion at the areas of highest consequence – intersections.

The distribution of reported crashes along the corridor is shown in **Figure 8** below in a heat map that displays the density of the crashes. Additionally, the crashes involving a pedestrian or cyclist are shown in red and orange symbols.

**Figure 8 Reported Crash Location Heat Map (2018 -2022 Crash Data)**




Source: VHB.

# 2.6 Key Destinations

## 2.6.1 Destinations

The Battery Street corridor includes a variety of destinations that serve residents and visitors:

- **Sherman Street to Cherry Street:** The east side of Battery Street in this segment is primarily residential, aside from Simon's Gas Station and the Cathedral Church of St. Paul. On the west, Battery Park is a sizeable public park with placemaking features across from Pearl Street. The Battery Park Extension provides a tree-lined linear park with a wide sidewalk running south from Battery Park along the corridor, offering a viewpoint of Lake Champlain across from Cherry Street.
- **Cherry Street to College Street:** This segment includes hotels such as Courtyard Marriott, Hotel Champlain, and Hotel Vermont. There is also an access drive to the Downtown Parking Garage on the east side of Battery Street. Battery Park Extension continues along the west side, and an informal trail across from Hotel Champlain connects down to the southeast corner of the 112 Lake Street parking lot.
- **South of College Street:** This area hosts a range of businesses, including Burlington Bay, April Cornell and Shanty on the Shore. The College Street and Main Street intersections with Battery Street provide the primary pedestrian access to the Burlington Waterfront, a key destination featuring Waterfront Park, the ECHO Museum, the Moran Frame, A_Dog Skatepark, Foam Brewers, Skinny Pancake, and other attractions.

**Figure 9 Battery Park Paved Path**



Source: VHB.

**Figure 10 Sidewalk by April Cornell**



Source: VHB.

# 2.7 Review of Previous Studies

## 2.7.1 2024 Northern Waterfront Connections

In 2024, the CCRPC, the City of Burlington Community & Economic Development Office (CEDO), Office of Planning, and DPW conducted the Northern Waterfront Connections Study (NWCS): An alternatives analysis for a new pedestrian route to better connect the downtown core and to the northern waterfront. The study emphasized that Battery Street would greatly benefit from enhanced pedestrian connections between the downtown core and the waterfront. The proposal included a direct staircase, which would significantly shorten the current 2,200-foot route from Battery Street to Waterfront Park.

## 2.7.2 2023 Amtrak Connections

In 2023, a review of Amtrak's Connections to and from Union Station was performed culminating in a series of recommendations to help create more seamless multimodal connections for the Amtrak users it serves. The following improvements were identified in the report which are relevant to the Battery Street Scoping Study:

- Pedestrian level lighting enhancements along Battery Street, and specifically at bus shelters.
- A parking wayfinding sign at the Battery Street entrance to the Downtown Garage.
- Audible/vibrotactile push buttons and detectable warning surfaces at all crossings/corners of Battery Street.
- Dedicated bike infrastructure and improved pedestrian facilities, connecting Union Station to other destinations in the city.
- The shortening of crossing distances along and across Battery Street.

## 2.7.3 2022 Chittenden County Active Transportation Plan Update

In 2022, the Chittenden County Active Transportation Plan was updated to provide a region-wide plan for existing and future bicycle and pedestrian facilities and programs which served as the active transportation element of the CCRPC's long-range Metropolitan Transportation Plan (MTP). As a higher-level review of active transportation, Battery Street was not explicitly mentioned though the City of Burlington was largely shown as a hot spot for active transportation. The update culminated in the following program and policy recommendations:

- **Equity:** Increase equitable access to transportation networks.
- **Encouragement:** Promote a culture of walking and bicycling.
- **Connectivity and Economic Development:** Provide safe and comfortable active transportation routes to support access to jobs, training, education, and childcare.
- **Mode Shift:** Make it easier for people to choose low-carbon transportation modes.
- **Maintenance:** Maintain a safe active transportation network throughout the winter by proactively managing walking and bicycling facilities before, during, and after winter precipitation.

### 2.7.4 2020 Railyard Enterprise Project (REP) Supplemental Scoping

In 2020, the Railyard Enterprise Project was developed to address multimodal safety, mobility, and operational transportation issues and also to advance economic development opportunities in the Southern Waterfront area of Burlington by improving access and mobility through new urban streets. The study focused on connecting Pine Street and Battery Street. The Burlington City Council voted to accept the REP Supplemental Scoping report, and to direct the Department of Public Works to seek State and Federal funds to advance the preliminary engineering for the REP Phase 2 Alternatives 1B, 2, and 5B on June 29th, 2020.

### 2.7.5 2017 planBTV Walk Bike Master Plan

In 2017, planBTV's Walk Bike Master Plan was developed to provide background on the planning process, examine existing conditions, and make recommendations for ways Burlington can improve its pedestrian and bicycle conditions. In the report, Battery Street is identified as a priority location after it was reported to be one of the five streets that feel most unsafe for walking and biking by a pool of 500 residents of all ages. In another survey distributed by Local Motion, Battery Street was identified as one of the five priority locations for the addition of protected bike lanes. The report suggested Battery Street Complete Streets upgrades be considered for federal funding to improve its pedestrian and bicycle conditions.

### 2.7.6 2016 Great Streets Initiative

The Great Streets initiative was developed in 2016 to support the City's "great streets" goals. The initiative states that to have a great streets system, the City's transportation infrastructure will strive to merge seamlessly with public parks, plazas, the built environment, pathways, and open spaces. As a primary street running north to south in Burlington, Battery Street received its own set of design considerations including studying the potential expansion of Battery Street south through the rail yard to Pine Street and supported the addition of important bike and pedestrian connections from the terminus of Main Street at Union Station to the Waterfront. Any reconstruction of Battery Street will use the Great Street Standards to provide a cohesive character to Burlington's Downtown.

### 2.7.7 2013 planBTV Downtown and Waterfront Plan

The 2013 planBTV Downtown and Waterfront Plan provided a summary of the studies done to inventory and assess existing conditions and identify primary needs in Burlington. The following improvements were identified in the report which are relevant to the Battery Street Scoping Study:

- Explore possibility of constructing parking garage below Battery Street.
- Improved facilities along Battery Street to support transit, bicycles, and pedestrians.
- Planned conversion of Battery Street into a shared street where pedestrians and cyclists have legal priority over motorists.
- Improved stormwater management to capture runoff from Battery Street prior to traveling over the slope to Lake Champlain.
- To sink the Pearl Street Overlook to open views to the lake and mountains beyond.

### 2.7.8 2011 Transportation Plan for the City of Burlington

The 2011 Transportation Plan for the City of Burlington conveyed Burlington's long-term transportation vision and described intermediate-term strategies for attaining its vision. The plan mentions Battery Street briefly to advise that improvements on this street be done consistently with the Complete Streets model and that a waterfront parking pricing pilot project help provide matching funds for the improvements.

## 2.8 Review of Ongoing Projects and Studies

### 2.8.1 Railyard Enterprise Project (REP)

The REP as discussed in the REP Supplemental Scoping review has proposed a new railway connecting Pine Street and Battery Street in support of the Complete Streets principles to:

- Support economic development in the area.
- Improve the livability of the surrounding neighborhoods
- Enhance the multimodal travel connectivity between the Pine Street corridor and Battery Street in the Burlington Waterfront South area
- Improve the intermodal connections to the Burlington Railyard, a National Highway System (NHS) designated intermodal facility.

Since the Supplemental Scoping study, the City Council has approved the selection of Alternative 1B as the Preferred Alternative for the REP. The Federal Highway Administration approved the project's Environmental Assessment (EA) and Individual Section 4(f) Evaluation on February 2nd, 2024. Construction is expected to start in late 2027 or 2028, depending on the amount of time needed for right-of-way acquisition, and the project's ability to gain funding.

### 2.8.2 Main Street Great Streets Project

The Main Street Great Streets Project is an ongoing project designed to balance all the road uses for long-term sustainability, ensuring that renovations and improvements can be responsibly maintained for decades to come.

The project includes the following elements on Main Street:

- **Improved sidewalks and implementation of bike facilities:** Separate sidewalks from road with 8-foot tree belt, and protected bike lanes.
- **Re-allocation of City ROW:** Change 50-75% of space between buildings from vehicular access to 60% for non-vehicular purposes.
- **Converting diagonal pull-in parking to parallel:** Convert parking to parallel.
- **Increased and flexible frontage zones:** For bike parking, outdoor café seating, public art.
- **Green infrastructure / low impact development design:** Stormwater improvements.
- **Road Diet and intersection safety improvements:** Roadway space and lane configurations were reduced in the interest of designing the roadway to encourage slower driver speeds. Consistent pedestrian phasing was designed at the signalized intersections.

### 2.8.3 CityPlace Burlington

CityPlace is a development project in Burlington designed to provide new apartments and hotel rooms contained in two hotel buildings in the city. The development will replace the Burlington Town Center Mall and re-establish Pine and St. Paul Street as north-south streets. In addition to restoring the city gird, the development has promised to add wider sidewalks, and advanced stormwater management.

### 2.8.4 Champlain Parkway

The Champlain Parkway project is the creation of a two-lane, 25 mph road for pedestrians, cyclists, visitors, and residents. It is designed to connect the South End with downtown to alleviate traffic on neighborhood streets. The streetscape will feature stormwater improvements, buried utility lines, and pedestrian actuated signalization. Construction is currently ongoing and expected to be completed by 2026.

### 2.8.5 Great Streets Project - Bank and Cherry Street

Rebuilding Bank Street and Cherry Street to the Great Streets Standards, including improved sidewalks and crosswalks, incorporating street ecology principles and providing more streetscape amenities. This project will reconstruct he Battery and Cherry Street intersection. Construction is anticipated to start in 2027.

# 3

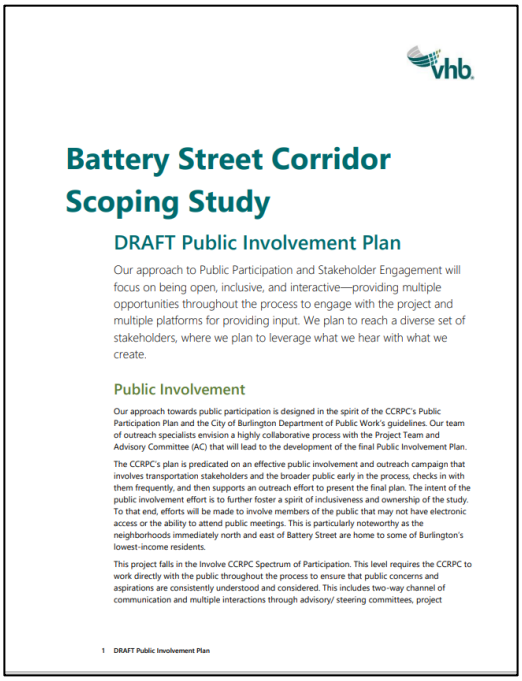
# Public Outreach

A robust public outreach process was conducted by engaging a diverse group of stakeholders on the project Advisory Committee and providing ample opportunities for public input over the course of the study's development. A Public Involvement Plan (PIP) was created prior to engagement to guide the project through outreach and ensure the project stayed on track. Three public meetings were held for this project, including an initial Local Concerns Meeting, the Draft Alternatives Presentation, and a Final Public Meeting. Before bringing materials to the public, the Advisory Committee was convened to ensure all necessary components were considered and that the Purpose and Needs of the project were being met. In addition to the public and Advisory Committee meetings, the project team solicited input through a survey and at tabling events

## 3.1 Public Involvement Plan

The Public Involvement Plan (PIP) for the Battery Street project prioritized an open, inclusive, and interactive approach to public participation and stakeholder engagement. It emphasized providing multiple opportunities and platforms for community involvement, aligning with the guidelines of the CCRPC and the City of Burlington's Department of Public Works. The PIP was a dynamic document that adapted to the needs of the project and provided an overview of what the project outreach would include. Key aspects included frequent engagement with transportation stakeholders and the broader public, using various tools such as online surveys, pop-up events, and targeted outreach to traditionally underserved groups. Public meetings were scheduled at critical project milestones to gather and incorporate community feedback, fostering a sense of ownership and inclusiveness. Advisory Committee meetings corresponded to major project phases, ensuring continuous collaboration and input from diverse community representatives. The plan aimed to reach a wide range of residents, including newcomers, immigrants, seniors, young people, and business owners, ensuring that public concerns and aspirations were consistently understood and considered throughout the project's development.

**Figure 11 Public Involvement Plan**


vhb

Battery Street Corridor Scoping Study

DRAFT Public Involvement Plan

Our approach to Public Participation and Stakeholder Engagement will focus on being open, inclusive, and interactive—providing multiple opportunities throughout the process to engage with the project and multiple platforms for providing input. We plan to reach a diverse set of stakeholders, where we plan to leverage what we hear with what we create.

Public Involvement

Our approach towards public participation is designed in the spirit of the CCRPC's Public Participation Plan and the City of Burlington Department of Public Work's guidelines. Our team of outreach specialists envision a highly collaborative process with the Project Team and Advisory Committee (AC) that will lead to the development of the final Public Involvement Plan.

The CCRPC's plan is predicated on an effective public involvement and outreach campaign that involves transportation stakeholders and the broader public early in the process, checks in with them frequently, and then supports an outreach effort to present the final plan. The intent of the public involvement effort is to further foster a spirit of inclusiveness and ownership of the study. To that end, efforts will be made to involve members of the public that may not have electronic access or the ability to attend public meetings. This is particularly noteworthy as the neighborhoods immediately north and east of Battery Street are home to some of Burlington's lowest-income residents.

This project falls in the Involve CCRPC Spectrum of Participation. This level requires the CCRPC to work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered. This includes two-way channel of communication and multiple interactions through advisory/ steering committees, project

1 DRAFT Public Involvement Plan

Source: VHB.

## 3.2 Project Advisory Committee

The Project Advisory Committee was composed of a diverse group of stakeholders, including representatives from the following organizations and groups:

- **Burlington Department of Public Works (DPW)** | Laura Wheelock, Norm Baldwin
- **Burlington Parks, Recreation & Waterfront** | Sophie Sauvé
- **Burlington City Councilor Ward 2** | Gene Bergman
- **Burlington City Councilor Ward 6** | Karen Paul
- **Burlington Office of Racial Equity, Inclusion, and Belonging** | Phet Keomanyvanh
- **Burlington Office of City Planning** | Charles Dillard
- **Burlington Walk Bike Council** | Jonathon Weber
- **Burlington Ward 3 NPA** | Barbara Alsop and Ali Hamedani
- **Burlington Ward 5 NPA** | Terry Rivers
- **Burlington Business Association** | Kelly Devine
- **Green Mountain Transit** | Chris Damiani, Jamie Smith
- **Burlington DPW Commission** | Brendan Hogan

This committee served as an advisory body throughout the project, responsible for reviewing materials and concepts prior to their presentation to the public for review and comment. The Advisory Committee provided input and ultimately finalized the Purpose and Need statement, which formed the basis for all alternative concepts and evaluations. Additionally, the Advisory Committee contributed to the creation of a new alternative and recommended a preferred alternative for the corridor.

All meeting materials for the Advisory Committee meetings is provided in Appendix C.

### 3.2.1 Advisory Committee Meeting #1

The first Advisory Committee meeting was held on March 8, 2023. This meeting focused on introducing the project to the committee, explaining the role and responsibilities of the committee, providing an overview of the project scope, and offering an opportunity for a visioning exercise.

During the vision and goals portion of the meeting, participants discussed aspirations and challenges for the Battery Street corridor. The key concerns included speeding and unsafe conditions for pedestrians, particularly at the Main Street intersection, and the need for a more pedestrian and bike-friendly environment. Interest was expressed in rebalancing traffic space with pedestrians and bicyclists and enhancing public transit interfaces. There was also a vision of transforming the corridor into a boulevard-like street with safe green spaces and addressing neighborhood impacts, environmental justice, and connectivity to future developments. The goal was to create a safer, more inviting corridor that integrates various community uses and accommodates future growth.

### 3.2.2 Advisory Committee Meeting #2

The second Advisory Committee meeting was held on July 27, 2023. This meeting focused on an update of the Public Involvement Plan, an overview of the project StoryMap, a review of the draft Purpose and Need Statement, a discussion about the public input received, and a design charrette.

The team reviewed the public input received through various platforms, identifying key themes such as improved safety, enhanced pedestrian and bicycle facilities, and better community connectivity. These insights are shaping the project's direction, emphasizing the need for diverse user-friendly streetscape and transit accommodations.

A discussion on the draft Purpose and Need Statement involved making sure the statement supports safe, equitable, and accessible transportation, enhancing resilience and connectivity between downtown Burlington and the waterfront. This statement guides the development of alternatives for corridor improvements.

The meeting concluded with a mini design charrette where attendees brainstormed and conceptualized potential designs for the corridor. Key considerations included the incorporation of separated bike lanes, pedestrian-focused elements like median islands and diagonal crossings, and addressing accessibility features. The meeting underscored the importance of balancing transportation modes and integrating user-friendly, sustainable infrastructure while maintaining engagement with the community through ongoing public meetings and feedback sessions.

### 3.2.3 Advisory Committee Meeting #3

The third Advisory Committee meeting was held on April 24th, 2024. This meeting focused on draft alternatives and an overview of the public input received to date. It provided the opportunity to present the two alternatives to the committee to understand which would be more desirable to the community and meet the project's purpose and needs.

Following an overview of the alternatives, several refinements to each alternative were discussed. The committee shared their opinions on favorable and unfavorable elements of each alternative. The project team noted these items and shared that each alternative was open for refinement in pursuit of consensus around a preferred alternative.

At the conclusion of the meeting, the Advisory Committee was polled on which alternative they preferred. The poll resulted in a split vote and no clear consensus on a preferred alternative.

Through discussion, it was determined that a third alternative should be considered, which combines elements of both previous alternatives and transitions south of Main Street. The intention of the development of a third alternative was to explore whether a hybrid of the two developed alternatives would result in consensus around a single alternative.

### 3.2.4 Advisory Committee Meeting #4

The fourth and final Advisory Committee meeting was held on September 26th, 2024. This was an additional meeting to present the new alternative option and expand upon the refinements made to alternatives 1 and 2. The meeting sentiments reflected a mix of concerns mainly around bike facilities, safety, and parking options. Discussions leaned toward maintaining parallel parking on both sides of the street (Alternatives 2 and 3), with safety and traffic flow considerations. Safety enhancements at intersections, especially for bikers and pedestrians turning, were emphasized. Pedestrian-exclusive phases and their impact on congestion were discussed, with support for no right turn on red at signals noted. Speed limit enforcement and future growth capacity favored Alternative 2 over Alternative 1.

Following an overview of the newly developed Alternative 3 and the refinements made the Alternatives 1 and 2, the Advisory Committee voted in support of Alternative 2, with one vote being cast for Alternative 1. Overall, the Committee favored prioritizing safety, connectivity, and future-proofing the designs.

All Alternatives (also referred to as “Options”) can be found on the project website, linked here: https://www.ccrpcvt.org/our-work/transportation/current-projects/corridors-circulation/battery-street-corridor-scoping-study/

## 3.3 Local Concerns Meeting

A Local Concerns Meeting was held on May 2nd, 2023, to engage with the public at the onset of the project, introduce the project's objectives, and understand the corridor from the perspective of all users. The meeting began with a two-hour open house, during which members of the project team were available to answer questions and collect input from the community. Several informational boards displayed data and posed questions about the Battery Street corridor. Following the open house, the project team gave a brief presentation that provided an overview of the existing conditions along the corridor and concluded with questions aimed at gathering input from the community on desired improvements and how they would like to use the corridor. The meeting concluded with an hour-long public input session, during which attendees had the opportunity to ask the project team questions and provide feedback on the boards.

This input included:

- Desire for reduced traffic speeds
- Desire for the reduction of travel lanes
- Retaining existing parking to the best degree possible
- Feeling unsafe crossing Battery Street (as a pedestrian)
- Desire for protected bike facilities

The meeting agenda, presentations, and minutes can be found in Appendix C.

**Figure 12 Engagement at the Local Concerns Meeting**



Source: VHB.

## 3.4 Draft Alternatives Meeting

The Draft Alternatives Presentation was held on March 13, 2024. This meeting reviewed the project's progress to date, the project Purpose and Need statement, and provided an overview of Alternative 1 and Alternative 2. The attendees were provided with a brief presentation and the opportunity to engage with the project team and discuss the two different alternatives. Large prints of the two alternatives were placed on tables, allowing attendees to place post-it notes detailing what they liked or disliked about each alternative.

**Figure 13 Engagement at the Draft Alternatives Meeting**



Source: VHB.

This input included:

- General: Concerns about loss of parking
- General: Concerns about lane reduction
- General: Questions about bus stops and turning radii
- Alternative 1: Concerns of bicyclists going in the wrong direction
- Alternative 2: Concerns of the difference in speeds of bicyclists traveling downhill

The meeting agenda, presentations, and minutes can be found in Appendix C.

## 3.5 Burlington Transportation, Energy and Utilities Committee (TEUC), and City Council Meetings

*This section will be populated following the conclusion of the TEUC and City Council meetings.*

## 3.6 ArcGIS StoryMap and Public Surveys

In addition to in person engagement, a StoryMap was created to aid this study as public-facing tool to enhance community engagement and transparency throughout the planning process. The StoryMap provided a platform for stakeholders to explore project objectives and scope, review mapped data, including traffic, crash statistics, and zoning information. It also featured an interactive dashboard that provided users the opportunity to explore the results from the survey and input from the local concerns meeting summarizing public input and highlighting key takeaways.

The primary purpose of this tool was to inform and engage the public during the initial stages of project development, fostering early awareness and input before the release of this public-facing report.

**Figure 14 StoryMap Cover Page**




Source: VHB

In April 2023, a public survey was shared to gather input on potential improvements to the Battery Street corridor. Participants identified specific locations along the corridor where they observed issues or opportunities for improvement and their related mode of travel.

Feedback from this survey, along with input from the Local Concerns Meeting, was reviewed and synthesized into common themes. Respondents frequently emphasized the need for safety and accessibility improvements along the corridor. The distribution of comments by travel mode was as follows: 33% related to walking, 8% to crossing points, 31% to biking, 19% to driving, and 10% to other modes.

Key recurring themes included:

- Improved safety throughout the corridor and intersections
- Enhanced pedestrian accommodations
- Dedicated bicycle facilities

Additional survey data was provided by the City of Burlington, which included 125 responses to three open-ended questions on the topic of Battery Street issues and opportunities, echoed similar sentiments. These responses aligned with input gathered through the other engagement efforts.

The identified themes, combined with a detailed review of individual responses, informed the development of study recommendations.

Following the Draft Alternatives presentation, the City of Burlington published a survey to poll the general public on their preference for an alternative. The survey asked respondents to determine if they prefer Alternative 1, Alternative 2, both equally, or neither. 166 people responded and the results are listed below.

- Alternative 1: 50
- Alternative 2: 75
- Both Equally: 31
- Neither: 10

Additionally, there was a section to provide a short response to explain the reasoning behind their answer. Many respondents favored the two-way separated bike lanes on the west side of Battery Street for its safety and predictability for both cyclists and motorists, integration with the existing bike path, and simpler traffic flow. Cyclists preferred a straightforward route that avoids frequent stops and intersections, while drivers would appreciate knowing where to expect cyclists. This option was seen as a more efficient use of space and would potentially preserve green areas and on-street parking. However, some respondents favored bike lanes on both sides for better access to businesses, easier right turns, and this alternative being more “typical” (in terms of bike lane placement). Despite differing opinions, the consensus of the project team leaned toward Alternative 2 for increased safety and better traffic management.

It should be noted that this survey was released prior to the addition of Alternative 3.

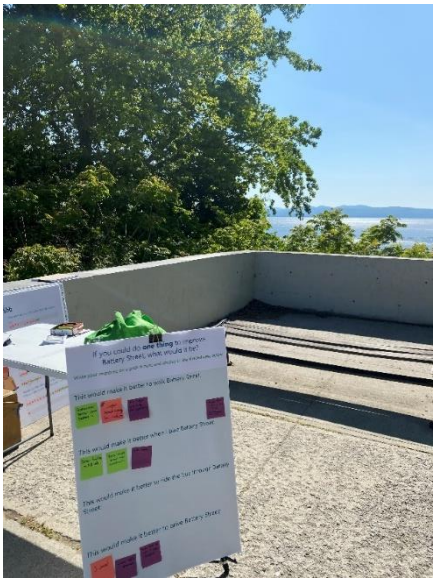
## 3.7 Targeted Outreach

To ensure an inclusive and comprehensive approach to community engagement, the project team implemented targeted outreach strategies specifically designed to engage people who did not attend the public meetings and/or groups that may not typically participate in public meetings or complete surveys. In addition, there was outreach to particularly affected parcels. The events below detail the additional efforts made to connect with a diverse range of stakeholders. These outreach activities were aimed at maximizing community involvement and fostering an equitable engagement process:

- King Street Laundry Tabling – May 21, 2023
- Battery Street & Cherry Street Tabling – May 26, 2023
- Burlington Business Association Annual Meeting – May 31, 2023
- WVMT Radio Interview – June 8, 2023
- Trusted Voices Community Group – July 25, 2023
- Study Options Review with April Cornell – January 23, 2024
- Study Options Review with Burlington Bay – January 26, 2024
- Burlington City & Lake Semester Students – February 20, 2024
- Burlington Business Association's Waterfront Action Group – March 14, 2024
- CCRPC Equity Advisory Committee presentation of alternatives – March 27, 2024

The input from community members during the tabling events reflected similar sentiments as the public meetings. There was a desire for separated bicycle facilities and reduction of vehicular lanes. The Burlington Business Association shared concerns around the loss of parking along the corridor which was heard during the public meetings as well as during the advisory committee meetings.

**Figure 15 Tabling Pop Up at Western side of Cherry Street Intersection**



Source: VHB

# 4

# Alternatives Analysis

Following the preliminary public engagement process and existing conditions analysis, Conceptual Alternatives were developed for Battery Street. Each alternative was developed to meet the project's goals: enhancing safety, accessibility, and connectivity for all users, while supporting a vibrant and cohesive urban corridor linking Burlington's downtown with its waterfront. The alternatives considered various approaches to address the needs identified in the study, including improved pedestrian and bicycle infrastructure, adjustments to traffic flow, and integration of green stormwater practices.

The alternatives were compared based on several key metrics, including safety improvements, impacts on mobility, environmental considerations, and alignment with the project's Purpose & Need statement. This analysis aimed to identify a recommended preferred alternative that balances user needs, aligns with city planning objectives, and ensures long-term viability of the Battery Street corridor as a multimodal transportation route.

## 4.1 Conceptual Alternatives: Considerations

The following planning and design considerations were consistent throughout all the conceptual alternatives and are reflected in the Project Purpose and Need (please see Section 1.2.2 for more detail). The desire for a road diet (lane reduction), the need for bicycle facilities, safely accommodating pedestrians at intersections, on-street parking, and increasing green space all required consideration.

### 4.1.1 Road Diet

At the kickoff of the project – and extensively emphasized throughout early public engagement – it was clear that a road diet, i.e. reduction in motor vehicle lanes, was desired along Battery Street. While the southern end of the corridor, between Maple Street and Main Street, has a two-lane cross-section, the remainder includes a minimum of three-lanes, with four lanes from Main Street north to Pearl Street.

**Figure 16 Four-Lane Cross-Section between College and Cherry Street**



Source: VHB

The project team completed a phased analysis of traffic conditions along the project corridor, beginning with the existing conditions (summarized in Chapter 2.4), followed by evaluating the road diet inclusive of other corridor improvements proposed within each alternative, summarized in further detail in the following sections.

### 4.1.2 Bicycle Facilities

In its current state, Battery Street has one two-block segment of a conventional bike lane northbound between Pearl Street and Sherman Street. The corridor otherwise lacks bicycle facilities even though it functions as a key north-south route for daily users and visitors alike. In line with the goal of evolving Battery Street into a more complete and multimodal street, it was determined early on that end-to-end bicycle facilities were needed.

The project team reviewed the existing traffic conditions of the corridor and utilized the FHWA Bikeway Selection Guide (2020) to determine the appropriate bicycle facility type. Referencing Figure 9 of the Guide (included below), Battery Street meets the criteria for "Separated Bike Lanes or Shared Use Path" as the appropriate facility type given it's AADT is well in excess of 6,000, and speeds are at or above 30mph, on average.

**Figure 17 FHWA Bikeway Selection Guide**

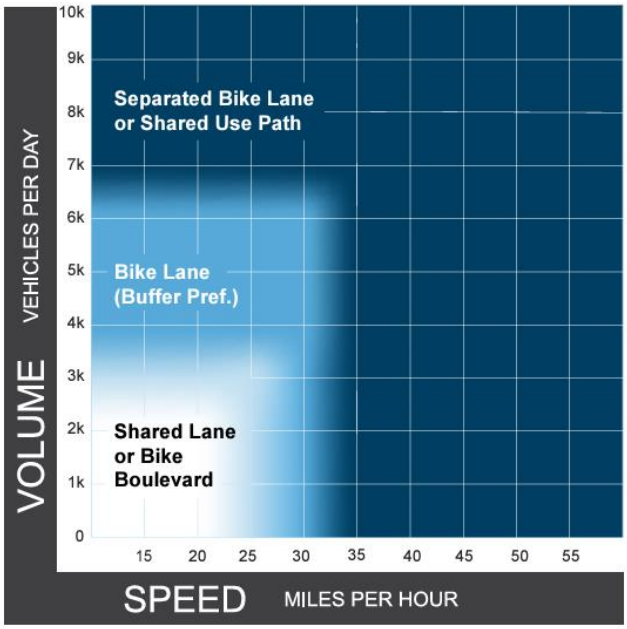



Figure 17 is from the FHWA Bikeway Selection Guide, providing facility type selection guidance.

**Figure 18 Two-Way Separated Bike Lane**



The two-way separated bike lanes that were installed temporarily along Battery Street between Maple and Main to serve as a detour route.

In addition to the team's review of existing conditions and guidance, there was overwhelming support from the general public and Advisory Committee for a separated bicycle facility along Battery Street. For this reason, this was the bicycle facility type considered across all conceptual alternatives.

### 4.1.3 Pedestrian Accommodations at Intersections

While there are end-to-end pedestrian facilities along Battery Street, the street's existing lane configuration, intersection geometries, and inconsistent signalization all pose challenges for pedestrians navigating its intersections.

The project team sought to evaluate and analyze mitigations to these challenges across all considered alternatives, while referencing guidance provide in the Great Streets standards, the Stop and Signalized Intersection Design Vehicle Guide, and national best practices.

**Figure 19 Maple Street Intersection**



Long wait times for pedestrians at intersections was a commonly shared issue by the public

**Figure 20 College Street Intersection**



Crossing length, traffic volumes, and approach grade all create uncomfortable conditions for pedestrians crossing at Battery & College

Lane reductions (in terms of both number and width), consistent curb radii (while being sensitive to the design vehicle), curb extensions that daylighted pedestrians where on-street parking was present, and a consistent approach to signalization for pedestrians (inclusive of an extended leading pedestrian interval) were all considered and evaluated.

### 4.1.4 On-Street Parking

On-Street parking is present along Battery Street in the two southernmost blocks; between Maple Street and Main Street. Additionally, there is off-street parking within the public ROW along the west side of Battery Street between Main Street and College Street in front of April Cornell.

**Figure 21 Number of Existing On-Street Parking Spaces between Maple and Main Street**




Given the presence of businesses and private residences along the street in these blocks, reducing impacts to this parking was a key element of the conceptual alternatives. The need for this parking was emphasized during the public engagement process, as well as by the Burlington Business Association (BBA) via their position on the Advisory Committee. As a result, each alternative was sensitive to any impacts on parking while considering the other critical elements of design.

### 4.1.5 Traffic

Traffic operations were evaluated for each alternative using a simulation method. For each alternative, the average delay for each intersection, the average delay across the whole network, and the end-to-end travel times between Sherman Street and Maple Street were determined.

Traffic volumes were based on counts collected on April 13, 2023, and were adjust to Design Hour Volume (DHV). DHV is defined as the 30th-highest hour in a year. Averaging the three nearest VTrans count stations, the DHV for 2023 was 8% higher than the peak hour on the count date. As a result, traffic volumes, including vehicles, bicycles, and pedestrian crossings, were increased 8% to establish volumes for simulation.

The study area overlaps with the Main Street Great Streets project at Battery and Main Streets. Traffic projections for Great Streets included detailed adjustments for new development, infrastructure projects, and background growth. At Battery and Main Streets, Great Streets projected a design hour entering volume of 1,961 in 2037. For comparison, the recently collected and adjusted volumes came out to 1,911 entering vehicles. After reviewing the assumptions and adjustments made, it was determined the 8% increase in 2023 count volumes for this study was conservative (overestimating traffic impacts). Therefore, a future analysis year for this study was not analyzed. As a result, no additional adjustments were made to the Battery Street volumes.

### 4.1.6 Traffic Analysis

The existing lane configuration ("No Build") has more lane capacity than any other alternative, and as a result has the best Level of Service (LOS). The remaining alternatives all have the same reduced lane configuration for motor vehicles; however, the differing bicycle facilities, and resulting traffic signal operations, result in varying traffic performance.

In Alternatives 1-3, the pedestrian cycles were adjusted to concurrent phasing, with a leading pedestrian interval (LPI) of 7+ seconds. This sets consistent pedestrian expectations and allows the cycle time to be used more efficiently. Pedestrian phases would operate on recall, meaning that the walk sign appears whether the pedestrian button is used or not.

Bicycle signals are proposed as part of each alternative wherever motor vehicle turning movements across the separated bike lane exceed these thresholds:

- **One-Way Separated Bike Lanes***
  - 100 conflicting left turns across one lane; 50 left turns across two lanes
  - 150 conflicting right turns
- **Two-Way Separated Bike Lanes***
  - 50 conflicting left turns across one lane; Any left turns across two lanes
  - 100 conflicting right turns

** These thresholds are provided by the AASHTO Bike Guide, 5th Edition (2024)*

### 4.1.7 Streetscape

Battery Street should be reconstructed as a gateway street in compliance with Great Street standards within the downtown area. This would include transition and/or gateway entering downtown at the intersection with Pearl Street.

## 4.2 Alternative 1: One-Way Separated Bike Lanes

### 4.2.1 Active Transportation & Parking

Alternative 1 for the Battery Street corridor incorporates several key elements aimed at enhancing safety, accessibility, and connectivity. This alternative includes the road diet described in Section 4.1.1, pedestrian-focused intersection improvements outlined in Section 4.1.3, and the on-street parking considerations detailed in Section 4.1.4. The defining feature of Alternative 1 is the incorporation of a pair of one-way separated bike lanes on each side of Battery Street, traveling parallel to the flow of motor vehicle traffic. These bike lanes are designed to provide dedicated and protected space for cyclists, significantly improving safety and comfort for bicyclists of all ages and abilities.

Separated bike lanes offer substantial safety benefits compared to standard bike lanes. By physically separating cyclists from motor vehicle traffic, these facilities minimize conflicts between modes. Research consistently shows that separated bike lanes reduce the likelihood of crashes involving cyclists by creating a more predictable and controlled environment. Additionally, this design enhances user comfort and encourages more people to choose bicycling as a viable mode of transportation, supporting Burlington's goals for active transportation and sustainability.

While Alternative 1 maximizes safety and accessibility benefits, it does so with notable impacts to on-street parking. Between Maple Street and Main Street, this alternative would result in reducing the number of parking spaces from 42 to 13. These changes reflect a tradeoff necessary to accommodate the separated bike lanes while maintaining green space and mature trees to the highest degree possible. Public feedback during the engagement process underscored mixed opinions on this impact, with some residents and stakeholders expressing concerns about parking availability for businesses and visitors. Mitigation strategies, such as enhancing wayfinding for nearby parking options or reallocating parking in adjacent areas, could help address these concerns.

### 4.2.2 Traffic Analysis

In Alternative 1, bicycle signals are used at all intersections except Sherman Street and Cherry Street, stopping motor vehicle traffic during an exclusive bicycle phase and increasing delay for all modes. As a result, Alternative 1 has the highest delay and end-to-end travel times of any alternative. Compared to existing conditions, the average end-to-end travel time nearly doubles, adding an additional 135 seconds (southbound) and 168 seconds (northbound). This is a 98% increase in travel time delay for northbound and a 94% increase for southbound end-to-end. Congestion is the worst in the southern half of the corridor, with two intersections (College Street and Main Street) at LOS E and King Street at LOS F.

Like all the alternatives, LPIs are proposed at all intersections except Sherman Street (where pedestrians have a conflict-free concurrent crossing). Except at Sherman Street and Cherry Street, the volume of right turn conflicts is high enough to demand separating bike and vehicle movements. Bike phasing overlaps with the north/south LPIs, which are extended to 15 seconds to allow bicycles to clear the intersection. Bikes may make left turns during their phase (yielding to oncoming bikes and pedestrians in crosswalk).

As a result of the above proposed changes, less cycle time is available for vehicle movements and Alternative 1 generates the most congestion of any alternative. With less lane capacity, storage length becomes an issue at peak times, with queues occasionally spilling back to the next block. In part, this is mitigated by new protected left-turns at Maple Street (for eastbound vehicles) and College Street (southbound and eastbound). For compatibility with LPIs, the protected left-turns must be lagging.

Signal coordination favors the northbound direction, which has higher traffic in the PM peak hour. On shorter blocks – such as between Pearl and Cherry – stopped vehicles can block upstream traffic from advancing on their green. This effect creates long queues on side streets including Pearl Street, Main Street, and King Street.

**Table 2 Alternative 1 Traffic Analysis**

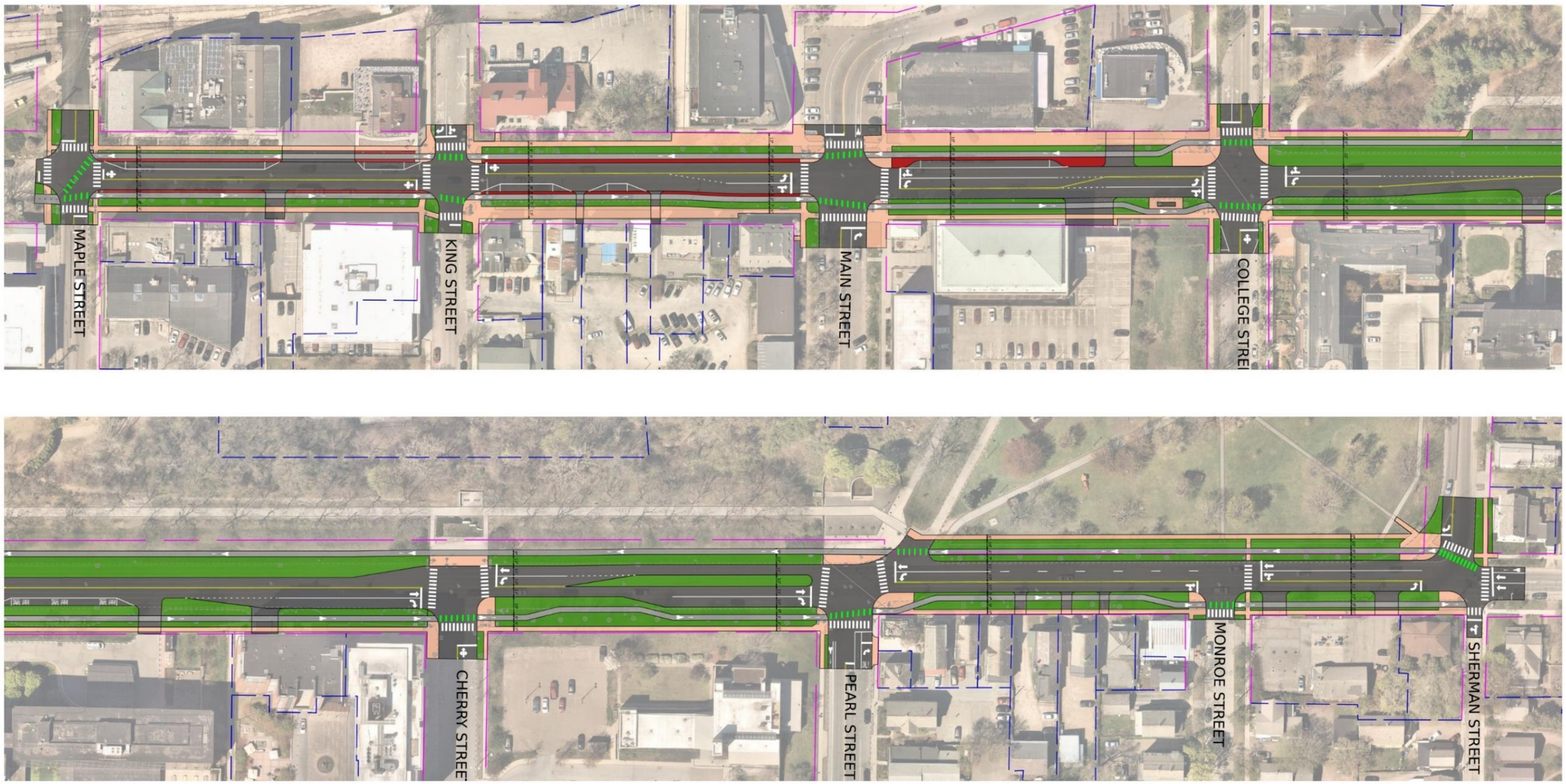
| | |
|---|---|
| **Average Delay (s) per Entering Vehicle** | |
| Park St & North Ave & Sherman St | 27.8 |
| Battery St & Pearl St | 41.7 |
| Battery St & Cherry St | 54.2 |
| Battery St & College St | 66.2 |
| Battery St & Main St | 78.3 |
| Battery St & King St | 89.3 |
| Battery St & Maple St | 27.8 |
| **Corridor End to End** | |
| Network Delay (min, s) | 3 min, 15.6 s |
| Average Network Speed (mph) | 7 |
| End-to-End Travel Time, NB (min:s) | 5:40 |
| End-to-End Travel Time, SB (min:s) | 4:39 |

### 4.2.3 Alternative 1 Summary

A full, 50-scale layout plan of Alternative 1 is provided on the next page.

In summary, Alternative 1 prioritizes safety and multimodal accessibility by introducing separated bike lanes and pedestrian enhancements, consistent with the project's Purpose and Need Statement. However, its significant impact on acceptable motor vehicle traffic operations and parking requires careful consideration to balance the needs of all corridor users and ensure community support.

**Figure 22 50-Scale Layout Plan of Alternative 1**




# Battery Street Scoping Study

## Alternative 1

# 4.3 Alternative 2: Two-Way Separated Bike Lanes

## 4.3.1 Active Transportation & Parking

Alternative 2 for the Battery Street corridor proposes a two-way separated bike lane along the west side of the corridor, creating a dedicated space for cyclists traveling in both directions. This approach consolidates bicycle activity on one side of the corridor, aligning with the road diet described in Section 4.1.1, pedestrian improvements outlined in Section 4.1.3, and on-street parking considerations detailed in Section 4.1.4.

The two-way separated bike lane enhances connectivity by aligning directly with destinations on the west side of Battery Street, such as Battery Park and the Waterfront. North of College Street, the design benefits from reduced motor vehicle conflicts, as Cherry Street, Pearl Street, and Monroe Street terminate at Battery Street from the east. This configuration offers a more comfortable and low-stress travel route for cyclists without impacting traffic operations. However, at intersections where the two-way bike lane crosses through traffic, careful design will be essential to address potential conflicts, particularly where cyclists traveling against the flow of adjacent motor vehicles may be unexpected.

Parking impacts are a key differentiator between Alternatives 1 and 2. Alternative 2's design retains sufficient width between King Street and Main Street to preserve parking on both sides of Battery Street within that segment. As a result, the space reallocation between Maple Street and Main Street ends up reducing the number of parking spaces from 42 to 27, a reduction of 15 spaces. This represents a smaller reduction than in Alternative 1 (which would reduce parking by 29 spaces). Maintaining more on-street parking aligns with feedback received during public outreach, particularly from residents and businesses concerned about parking availability in the area.

## 4.3.2 Traffic Analysis

In Alternative 2, two-way separated bike lanes run along the west side of Battery Street for the full corridor length. Because the two-way separated bike lanes run along the west side, turning conflicts are minimized and a dedicated bicycle phase is needed only at the College Street intersection. Alternative 2 has a LOS D at College Street, but a LOS C or better at all other intersections. Compared to existing conditions, the end-to-end travel time increases by less than a minute in each direction – only 57 seconds (southbound) and 32 seconds (northbound). This is a 19% increase in travel time delay for northbound and a 40% increase for southbound end-to-end.

Alternative 2 places bicycles on the west side of the corridor, where turning conflicts only reach the threshold for separated movements at College Street. With fewer phases to divide cycle time between, the signals operate more efficiently at the other intersections. Even at College Street, with all bicycle traffic on the west side of Battery Street, northbound traffic can advance during the bike phase. This special phasing would require new signal equipment to be installed. Northbound left-turns would be controlled by a red arrow (during the bike phase) and permissive flashing yellow arrow (after the bike phase is complete). The bike phase would begin

with the LPI (7 seconds) and extend an additional 8 seconds to allow for the 15 second exclusive bike phase. Southbound traffic would be held (red) during the bike phase.

Were the design to include a southbound right turn lane at College Street, that lane alone could be held while thru traffic advances. However, with those movements consolidated to a single lane, the entire southbound approach must be held. Along the corridor, thru bicyclists would experience less delay than in Alternative 1, with the disadvantage that bicycle turns across Battery St (northbound right or southbound left) would become two-stage movements. Overall, Alternative 2 is a moderate increase in delay over existing conditions of 5 to 13 seconds, with slightly more delay at College Street.

Simulation results are shown in Table 3.

**Table 3 Alternative 2 Traffic Analysis**

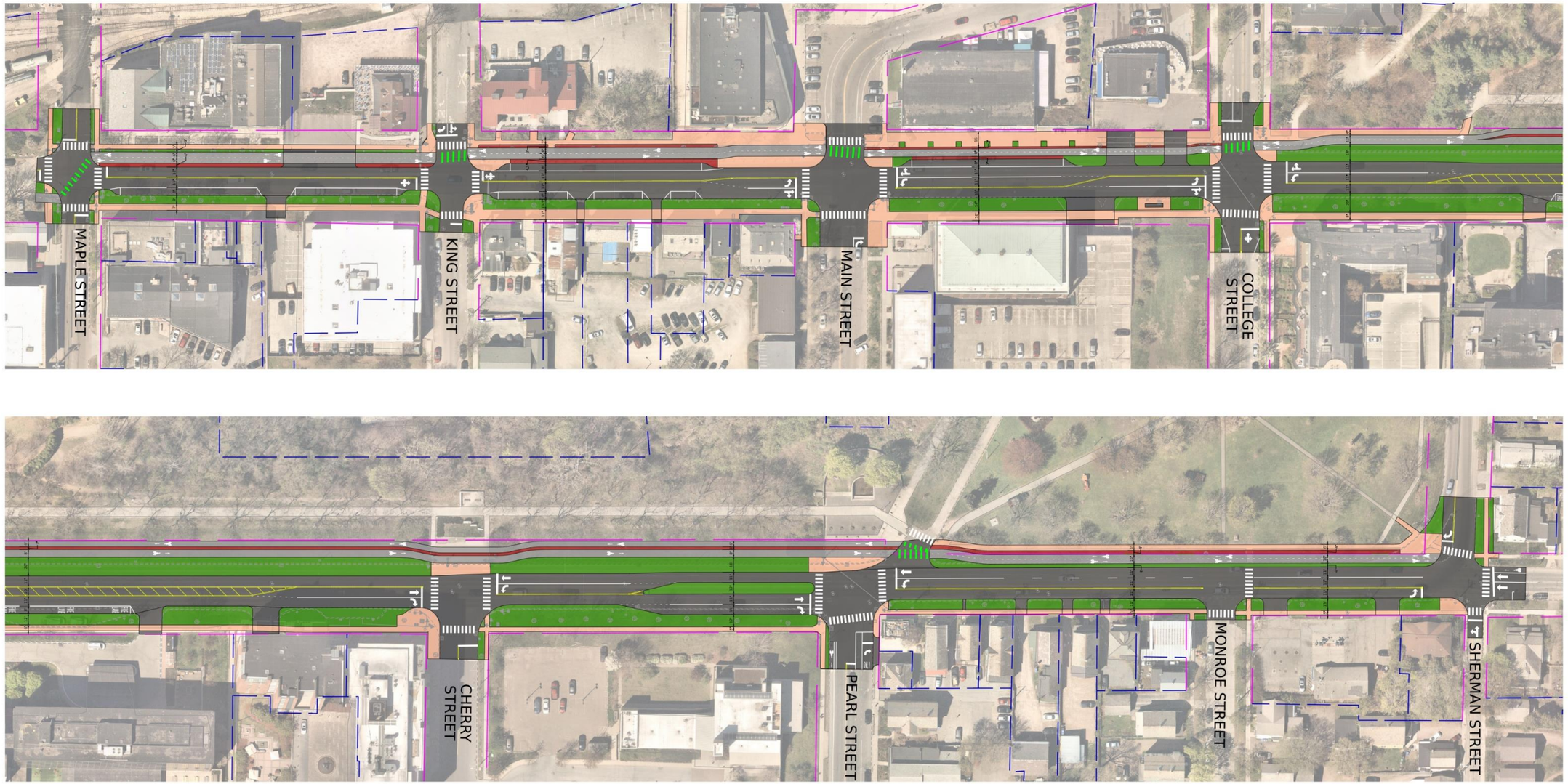
| Average Delay (s) per Entering Vehicle | |
|---|---|
| Park St & North Ave & Sherman St | 17.1 |
| Battery St & Pearl St | 20.1 |
| Battery St & Cherry St | 25.0 |
| Battery St & College St | 54.9 |
| Battery St & Main St | 27.0 |
| Battery St & King St | 17.4 |
| Battery St & Maple St | 11.8 |
| **Corridor End to End** | |
| Network Delay (s) | 99.7 |
| Average Network Speed (mph) | 12 |
| End-to-End Travel Time, NB (min:s) | 3:24 |
| End-to-End Travel Time, SB (min:s) | 3:21 |

### 4.3.3 Alternative 2 Summary

A full, 50-scale layout plan of Alternative 2 is provided on the next page.

In summary, Alternative 2 represents a balanced approach to enhancing safety, connectivity, and multimodal accessibility while minimizing impacts to on-street parking and providing more favorable traffic operations when compared to Alternative 1. Its design addresses critical gaps in the cycling network and strengthens links to key community destinations, advancing Burlington's vision for an equitable, multimodal, and sustainable transportation system.

**Figure 23 50-Scale Layout Plan of Alternative 2**




# Battery Street Scoping Study

## Alternative 2

# 4.4 Alternative 3: A Hybrid Option – Two-Way Separated Bike Lanes (Maple Street to Main Street) and One-Way Separated Bike Lanes (Main Street to Sherman Street)

## 4.4.1 Active Transportation & Parking

Summarized in Section 3.2.3, the Advisory Committee was not able to reach consensus on a Preferred Alternative during AC Meeting #3. As a result, the request was made to refine each alternative and create a third, hybrid alternative that sought to combine desirable elements of Alternatives 1 and 2. The project team developed and analyzed Alternative 3.

Alternative 3 includes two-way separated bike lanes for the two southernmost blocks of the corridor – Maple Street to Main Street – and then transitions to the one-way separated bike lanes cross-section north from Main Street to Sherman Street. For the most part, the considerations for Alternative 3 represents a balance of those explained for Alternatives 1 and 2 with a few nuanced differences.

The connectivity considerations for Alternative 3 are largely the same as the first two alternatives, however, the project team saw the creation of a new alternative as an opportunity to evaluate a few revisions to the original designs, particularly in the southern, two-way separated bike lanes section. For Alternative 3, the project team shifted the two-way separated bike lanes from the west side of the street to the east. The primary rationale here is to visualize the future connection to the Railyard Enterprise Project given the current concept plan for that effort includes a shared-use path along the east side of the roadway up to Maple Street. Consideration of the two-way separated bike lanes along the east side of Battery Street would allow for a seamless connection to that facility. The two-way separated bike lanes transition to the one-way paired separated bike lanes at Main Street so the side of the street they are on at the Main Street intersection does not have a measurable impact on the evaluation of the alternative.

In addition to the connectivity considerations, the project team used the development of Alternative 3 as an opportunity to evaluate maintaining more on-street parking between Maple Street and Main Street. To maintain as many on-street parking spaces as possible, the two-way separated bike lanes and its buffers would need to be design to absolute minimums. Additionally, all green space would need to be removed from the street scape to accommodate the necessary width. With these changes in place, Alternative 3 would maintain as many as 39 of the existing 42 on-street parking spaces in this segment. It's important to note that if the above modifications were considered for Alternative 2, that alternative could also maintain 39 spaces.

## 4.4.2 Traffic Analysis

As expanded upon above, Alternative 3 represents a hybrid alternative, inclusive of two-way separated bike lanes along the east side from Maple Street to Main Street, and one-way separated bike lanes on both sides of Battery Street north of Main Street to Sherman Street. At Main, southbound bicyclists make a two-stage crossing along the west and south legs to reach the two-way separated bike lanes. Special phasing – overlapping with the southbound left and

westbound right while other movements, including southbound thru, are held – allows this crossing to be completed at once. Alternative 3 has one intersection at LOS E (King), two at LOS D (College, Main), and the remainder at LOS C or better. Compared to existing conditions, the end-to-end travel time increases by 21 seconds (southbound) and 105 seconds (northbound). This is a 61% increase in travel time delay for northbound and a 15% increase for southbound end-to-end.

As a hybrid option, Alternative 3 has performance in between Alternatives 1 and 2. Congestion is greatest on the southern end of the corridor, particularly in the northbound direction. Cyclists experience more delay at the southern intersections due to the separation of bicycle and vehicle movements. Placing the cycle track on the east side means significant turning conflicts at King and at Maple. The bicycle phase must be brief to accommodate all necessary phases, meaning cyclists will usually arrive on red. Generally speaking, through bicycle movements that are compatible with concurrent motor vehicle movements (i.e. are at or below the thresholds identified in Section 4.1.6) allow for longer green times.

**Table 4 Alternative 3 Traffic Analysis**

| Average Delay (s) per Entering Vehicle | |
|---|---|
| Park St & North Ave & Sherman St | 17.0 |
| Battery St & Pearl St | 14.7 |
| Battery St & Cherry St | 15.6 |
| Battery St & College St | 36.6 |
| Battery St & Main St | 45.4 |
| Battery St & King St | 66.9 |
| Battery St & Maple St | 16.8 |

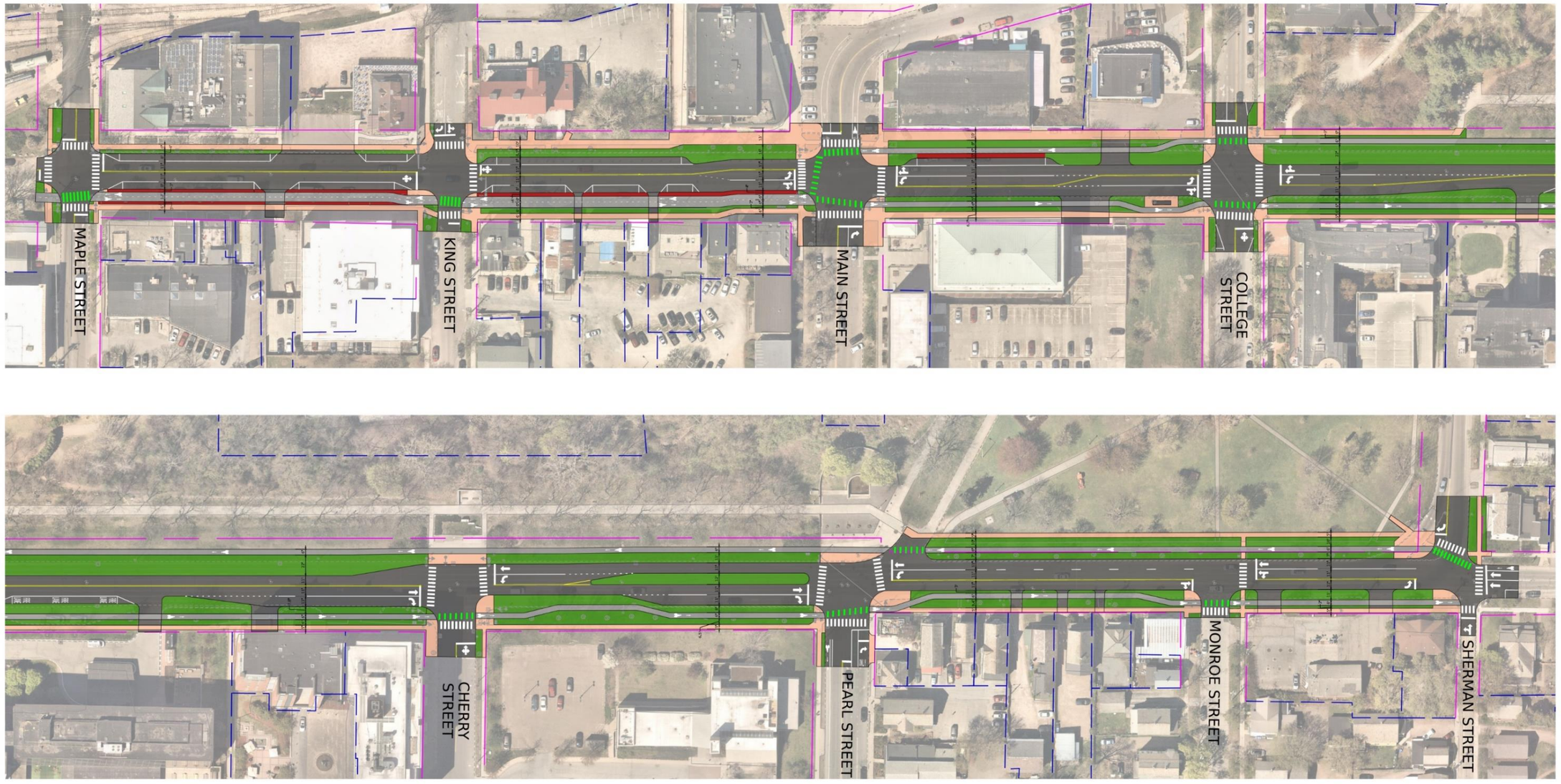
| Corridor End to End | |
|---|---|
| Network Delay (s) | 106.2 |
| Average Network Speed (mph) | 11 |
| End-to-End Travel Time, NB (min:s) | 4:37 |
| End-to-End Travel Time, SB (min:s) | 2:45 |

### 4.4.1 Alternative 3 Summary

A full, 50-scale layout plan of Alternative 3 is provided on the next page.

Alternative 3 combines elements of Alternatives 1 and 2 to create a hybrid approach aimed at balancing connectivity, safety, and accessibility with minimal impacts to parking and traffic operations. This alternative features two-way separated bike lanes along the east side of Battery Street between Maple Street and Main Street, transitioning to one-way separated bike lanes on both sides of the corridor north of Main Street. The east-side alignment of the two-way bike lanes is intended to create a seamless connection to the planned shared-use path associated with the Railyard Enterprise Project. While maintaining most of the existing parking spaces (up to 39 of 42 between Maple and Main Streets), the design requires reducing green space and configuring bike lane buffers to minimum widths. Overall, Alternative 3 offers a balanced solution that preserves more parking than Alternative 1 while providing greater connectivity than Alternative 2, though it introduces additional complexity at intersections requiring thoughtful design to manage turning conflicts and delays effectively.

Figure 24 50-Scale Layout Plan of Alternative 3




# Battery Street Scoping Study

## Alternative 3

## 4.5 Conceptual Cost Estimates

Conceptual Cost Estimates were developed for each alternative using bid history unit pricing, research of similar project, and order of magnitude quantity takeoffs. The conceptual cost estimates were then projected for a construction year of 2030 but taking the order of magnitude current year costs and compounding a 5% estimated annual increase in pricing. The provided cost estimates are inclusive of engineering and design, permitting, and construction.

The conceptual cost estimate for each alternative is as follows:

- Alternative 1: $31,700,000
- Alternative 2: $31,400,000
- Alternative 3: $31,000,000

The detailed cost estimate spreadsheets are provided in Appendix G.

## 4.6 Alternatives Evaluation Matrix

**Table 5 Alternatives Evaluation Matrix**

| | Corridor Alternatives** | | | |
|---|---|---|---|---|
| | **No Build** | **Alternative 1** | **Alternative 2** | **Alternative 3** |
| Projected 2030 Cost | $0 | $31.7M | $31.4M | $31.0M |
| Constructability | | Very Challenging | Challenging | Very Challenging |
| **Purpose & Need** | | | | |
| Improve corridor & intersection safety for all users | No | Yes | **Yes** | Yes |
| Enhance comfort and accessibility for pedestrians | No | **Yes** | **Yes** | **Yes** |
| Provide end-to-end bicycle facilities and connections | No | **Yes** | **Yes** | **Yes** |
| Integrate street ecology into Battery Street's overall design | No | **Yes** | **Yes** | **Yes** |
| Provide acceptable mobility for all modes of transportation | No | Yes/No* | **Yes** | Yes |

** While Alternative 1 dramatically improves mobility for bicyclists and pedestrians, the overall increased delay for motorists is not considered to meet this particular need.*

*** For a better understanding of the differences between each alternative, please review **Section 4.2 (Alternative 1)**, **Section 4.3 (Alternative 2)** and **Section 4.4 (Alternative 3).***

# 5

# Recommended Preferred Alternative & Implementation Plan

The selection of the Preferred Alternative for Battery Street integrated findings from extensive public engagement, input from the Project Advisory Committee, and a detailed alternatives analysis, all described in detail in the previous sections. Public engagement provided critical insights into community priorities, including safety, connectivity, and minimizing impacts to parking. Advisory group meetings allowed stakeholders to review and refine the alternatives, confirming they aligned with the project's Purpose and Need(s). Finally, the alternatives analysis evaluated each option based on metrics such as overall safety, traffic operations, multimodal accessibility, and parking impacts, enabling an objective comparison of tradeoffs. This collaborative and data-driven process led to the recommendation of an alternative that balances safety, mobility, and community priorities while addressing the long-term functionality of the corridor.

## 5.1 Recommended Preferred Alternative

At the conclusion of public engagement, stakeholder / advisory committee engagement, and the finalization of the alternatives analysis, Alternative 2 was recommended as the preferred alternative for the Battery Street corridor. Alternative 2 garnered the most support from the general public, as well as the advisory committee and project team. Moreover, it best met the needs of the project defined in the project's purpose and need(s) statement.

Following feedback provided by the Advisory Committee at their third meeting, the team refined Alternative 2 to improve the overall concept for Battery Street. These refinements included:

- More separation for the two-way bike travel along the "Battery Park Extension" section of Battery Street. This refinement was included based on a request to re-evaluate the safety of bike travel in opposite directions along a segment with significant grade that would result in measurably different bicyclist speeds.

  The project team also further considered the overall safety implications of each alternative relative to bicyclist safety. In addition to the above safety concern, the project team evaluated two other considerations, 1) the potential for the most common crash types involving bicyclists, i.e. "right hook" and "left cross" crashes for each alternative, and 2) the potential for non-compliance from bicyclists given long wait times for separate phases. Overall, the potential for the crash types between alternatives is fairly similar, but the concern over non-compliance given bicyclist wait times is greater for Alternative 1.
- On-street parking in the south end of the corridor. As described previously, the project team evaluated the feasibility of maintaining more parking between Maple Street and Main Street and determined that this is feasible if width reductions are made to several elements of the originally proposed cross-section.
- Removal of the southbound right-turn lane at College Street. In the original version of Alternative 2, a southbound right-turn lane was included at the College Street intersection. This was due to the high right-turn and left-turn volumes at this location and the need to phase-separate those movements from the two-way separated bike lanes. The advisory committee expressed concern over the fact that with the inclusion of the southbound right-turn lane, the pedestrian crossing – which is known to have some of the highest pedestrian volumes in the area – is not shortened from its existing length. Acknowledging this consideration, the project team revised the cross-section and signal operations at the intersection. While this resulted in poorer overall traffic operations, the results were well within the acceptable range, while enabling a shorter pedestrian crossing.
- Reducing impacts to Battery Park was another request made by the advisory committee. To accommodate this, the project team modified the cross-section of the two-way separated bike lanes and shifted it closer to Battery Street.
- The final refinement made to Battery Street was in the block between Main Street and College Street, along the west side. There was a request to increase the frontage space in front of the April Cornell building. Similar to other refinements, to accommodate this request, the project team revised the cross-section along the west side of the street to include a narrower two-way separated bike facility and narrower buffers. The refined widths still meet minimum requirements, while also accommodating the request to increase business frontage space.

A 50-scale layout plan of the Recommended Preferred Alternative is provided on Page 46.

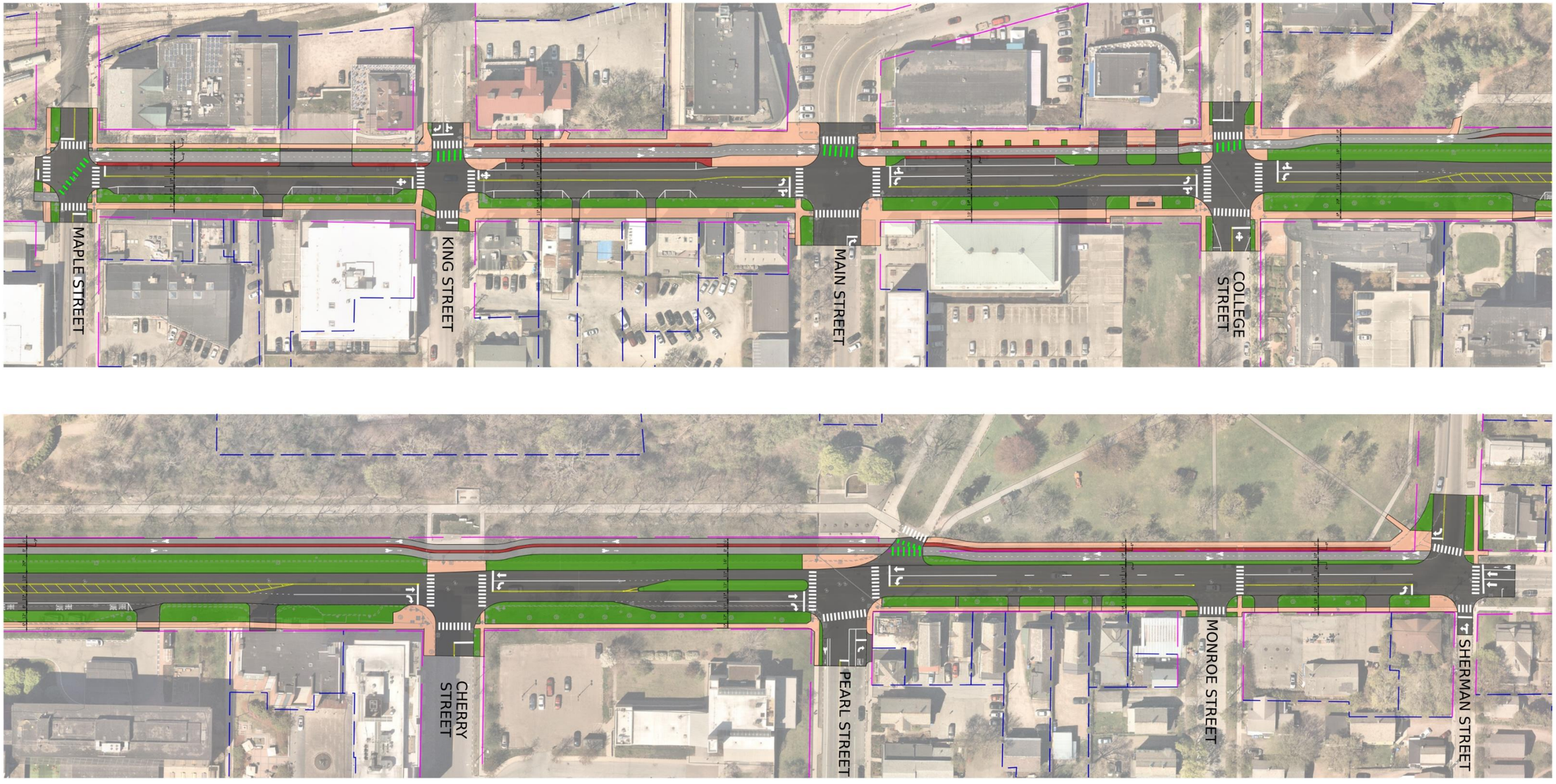
### 5.1.1 Additional Considerations

The following comments were received from two Advisory Committee members following the committee's vote on a recommended preferred alternative:

- **Traffic Analysis of Park Street/Sherman Street:** To examine the feasibility of reducing the number of southbound lanes between Pearl Street and Sherman Street, conduct a traffic study to evaluate the impact of a lane reduction on Park Street north of the Sherman Street intersection.
- **Midblock crossing at Monroe Street:** Consider installing a raised crosswalk at Monroe Street across Park Street. While this location already features a crosswalk and RRFB, a raised crosswalk could be evaluated as an additional measure to enhance pedestrian safety.

Please note that these recommended additional considerations were not reviewed by the entire Advisory Committee.

**Figure 25 50-Scale Layout Plan of the Recommended Preferred Alternative**




# Battery Street Scoping Study

## Preferred Alternative (Refined Alternative 2)

## 5.2 Implementation Plan & Funding Opportunities

The recommended improvements for the Battery Street corridor could be implemented in phases, depending on the availability of funding. The following section provides a potential implementation plan for the corridor, along with details about potential funding options.

Although there is potential to secure separate grants for bicycle and pedestrian infrastructure, the significant grade changes between the sidewalk and travel lanes pose challenges for separating these improvements from the broader vehicular roadway construction. While much of the planned bicycle infrastructure will be constructed outside the current travel lanes, these grade differentials could complicate phasing and require careful coordination.

In considering an opportunity for nearer term implementation of the recommended preferred alternative, the proposed road diet (i.e. reduction in travel lanes) between Main Street and Pearl Street could be implemented leveraging the City's Quick Build Design + Materials Standards. Through utilizing this guide, along with pavement markings, signing, and modifications to the traffic signals, the road diet could be implemented while other steps in the project development process are being taken to move the project toward engineering design.

Additionally, given the existing curb-to-curb width from Main Street to Pearl Street is approximately 48-feet, the recommended bicycle facility type – two-way separated bike lanes along the west side – could also be implemented using pavement markings and quick build materials. If a standard 11-foot width is used for the motor vehicle travel lanes, approximately 15-feet of width would be available to implement the two-way separated bike lanes.

Lastly, in the longer term, for the southern segment of the project – Maple Street to Main Street – the City should seek out opportunities for a joint implementation between these blocks and the construction of the Railyard Enterprise Project (REP), and eventual construction of the westernmost blocks of the Great Streets Main Street project. Timing, and potentially syncing, the construction of these three projects would maximize connectivity and minimize disruptions.

### 5.2.1 Proposed Implementation Timeline

**Short-Term Recommendations – Within 5-Years:**

- **Initiate preliminary design**
  - Develop the engineering design to anticipate grade differentials between the roadway, sidewalk, and separated bike lanes and their implications on construction phasing.
- **Implement the road diet and two-way separated bike lanes with signing, pavement markings and signal modifications between Main Street and Pearl Street**
  - Incorporate the road diet and separated bike lanes into planned updates to pavement markings or repaving, providing an opportunity to initiate improvements while design work continues.
  - Leverage the City's Quick Build Design + Materials Standard Guide
- **Finalize engineering design**

**Long-Term Recommendations – Within 10-Years:**

- **Secure funding & begin construction**

This phased approach provides a framework for advancing the Battery Street improvements in a way that aligns with funding availability, minimizes community disruption, and ensures a cohesive connection to broader transportation initiatives.

## 5.2.2 Funding Opportunities

The next step to realizing the infrastructure improvements outlined above is securing funding to support project design and construction. Given the opportunity to incrementally implement smaller scale projects through the recommended phasing outlined above, applying for funding opportunities through competitive grant programs is recommended.

### State or Local Grants

The VTrans Bicycle and Pedestrian Program is a grant program to provide funding for projects that implement safe and convenient facilities for Vermonters who desire alternative transportation opportunities. It is available for the scoping, design, and construction of bike and pedestrian facilities, sidewalks, bicycle lanes, crosswalks, and shared use paths. This is a competitive grant that requires a 50% local match for state-funded small-scale construction and a 20% match for construction that is federally funded.

The VTrans Transportation Alternative Program (TAP) provides a maximum grant award of $300,000 with a 20% match for construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation. This includes sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming, lighting, and other safety-related infrastructure.

Lastly, the Vermont Agency of Commerce and Community Development (ACCD) provides the Downtown Transportation Fund that provides up to $200,000 for projects that improve multi-modal and resilient transportation in designated downtown areas.

### Federal Grants

A potential funding source for implementing improvements is to apply for FHWA's Safe Streets for All (SS4A) Implementation Grants. If Battery Street is identified as part of the High-Injury Network in the planBTV Walk Bike Safety Action Plan, it would qualify for project-level design and development activities. By redesigning the High-Injury Network into a "Complete Street" that enhances safety, separates users, and manages speed, Battery Street would become eligible for these grants.

Additionally, FHWA’s Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant program would be another recommended grant to pursue. The City of Burlington was successfully awarded $22.3 million from the RAISE Grant to rebuild St. Paul and Pine Streets through the site of the former mall, and to revitalize eight existing City blocks on Cherry Street and Bank Street between the Church Street Marketplace and the Waterfront. Based on previous projects that have been awarded RAISE grants, Battery Street would be a strong candidate due to the significant local impact it would have.

It should be noted that both federal grants mentioned are currently only eligible until 2026 and it is uncertain if these grants will be available in the future.

# Appendices

A. Traffic Volume Data
B. Crash Data
C. Public Meeting Materials
D. Traffic Analysis
E. Conceptual Alternatives
F. Conceptual Cost Estimates
G. Recommended Preferred Alternative Layout Plan

# Appendix A

## Traffic Volume Data

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **1** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Park St & Sherman St** | | |

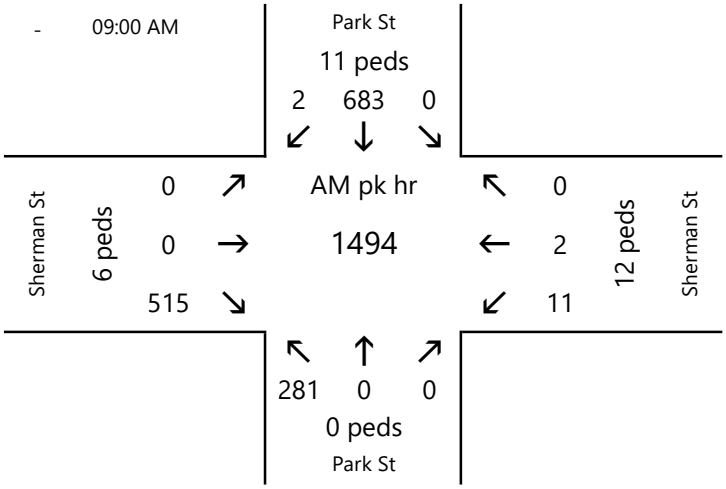
| | | | |
|---|---|---|---|
| Intersection: | Park St & Sherman St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Park St | | | | Sherman St | | | | Park St | | | | Sherman St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 2 | 683 | 0 | 11 | 0 | 2 | 11 | 12 | 0 | 0 | 281 | 0 | 515 | 0 | 0 | 6 | 1494 |
| PM pk hr | 3 | 334 | 0 | 37 | 0 | 2 | 5 | 30 | 0 | 0 | 685 | 0 | 558 | 0 | 0 | 25 | 1587 |

**AM Peak Hour**

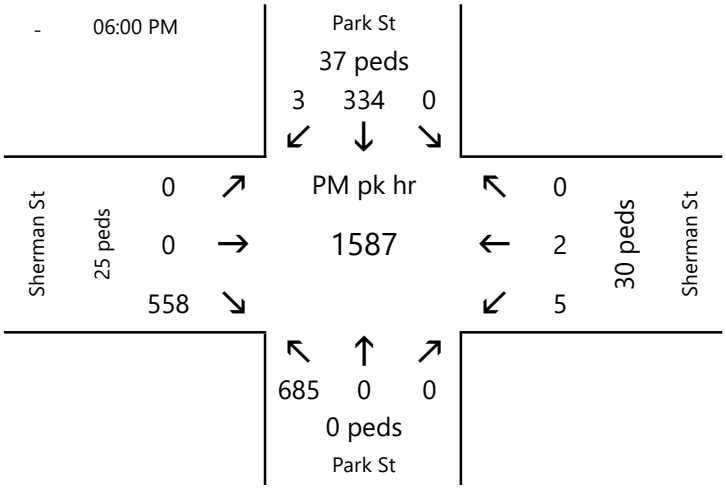
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 99% | 100% | 91% | 97% |
| heavy | 1% | 0% | 9% | 3% |
| % trucks | 3% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 97% | 100% | 99% | 98% |
| heavy | 3% | 0% | 1% | 2% |
| % trucks | 2% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **2** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Park St & Monroe St** | | |

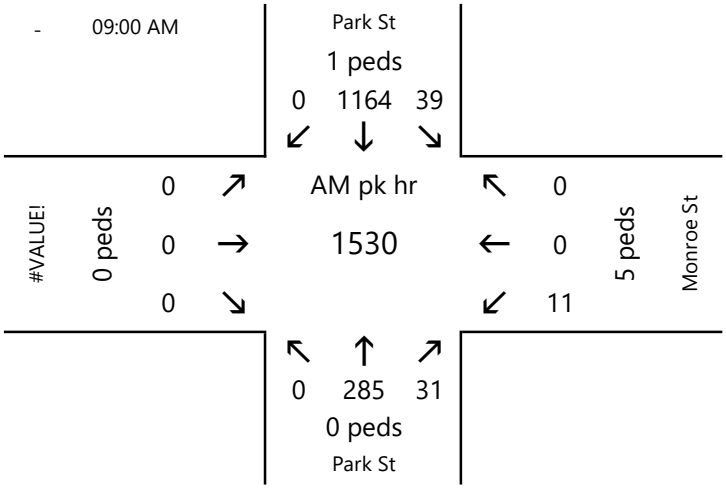
| | | | |
|---|---|---|---|
| Intersection: | Park St & Monroe St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Park St | | | | Monroe St | | | | Park St | | | | #VALUE! | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 0 | 1164 | 39 | 1 | 0 | 0 | 11 | 5 | 31 | 285 | 0 | 0 | 0 | 0 | 0 | 0 | 1530 |
| PM pk hr | 0 | 855 | 27 | 9 | 4 | 0 | 10 | 31 | 102 | 680 | 0 | 2 | 0 | 0 | 0 | 0 | 1678 |

**AM Peak Hour**

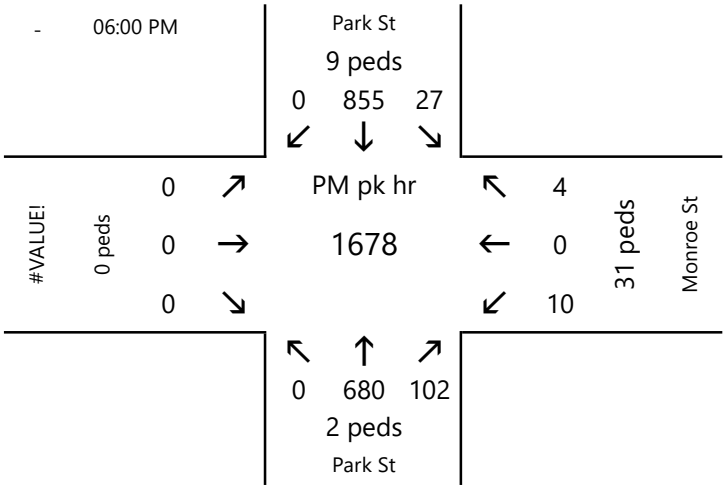
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 99% | 91% | 97% | ##### |
| heavy | 1% | 9% | 3% | ##### |
| % trucks | 2% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 98% | 93% | 99% | ##### |
| heavy | 2% | 7% | 1% | ##### |
| % trucks | 2% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **3** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & Pearl St** | | |

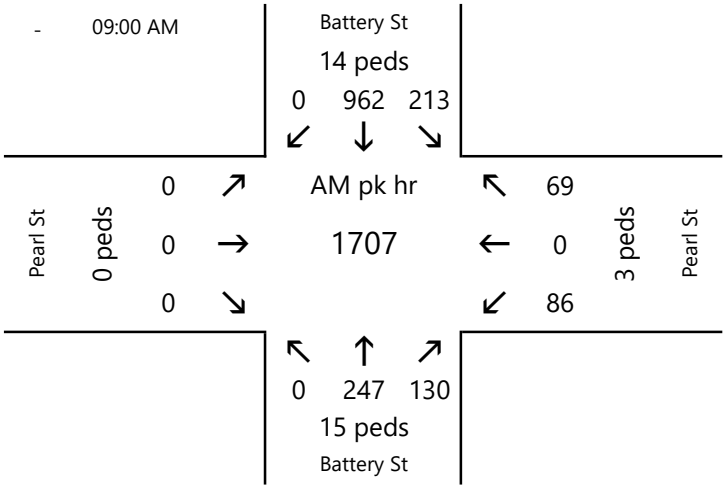
| | | | |
|---|---|---|---|
| Intersection: | Battery St & Pearl St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | Pearl St | | | | Battery St | | | | Pearl St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 0 | 962 | 213 | 14 | 69 | 0 | 86 | 3 | 130 | 247 | 0 | 15 | 0 | 0 | 0 | 0 | 1707 |
| PM pk hr | 0 | 679 | 186 | 50 | 193 | 0 | 127 | 11 | 378 | 587 | 0 | 49 | 0 | 0 | 0 | 0 | 2150 |

**AM Peak Hour**

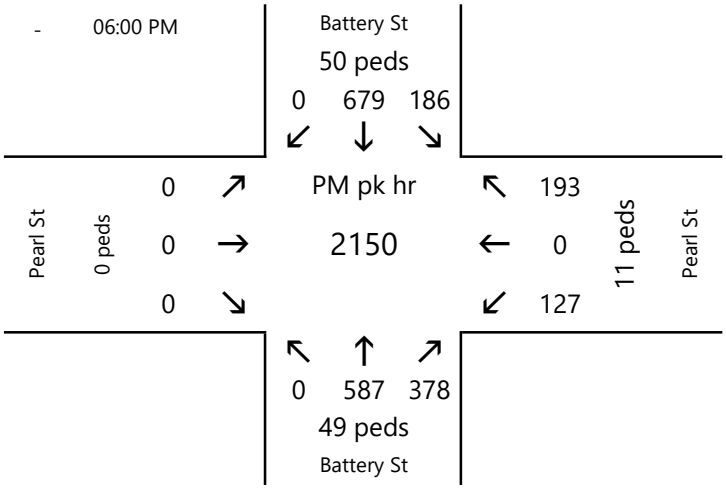
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 98% | 92% | 97% | ##### |
| heavy | 2% | 8% | 3% | ##### |
| % trucks | 3% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 98% | 97% | 98% | ##### |
| heavy | 2% | 3% | 2% | ##### |
| % trucks | 2% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **4** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & Cherry St** | | |

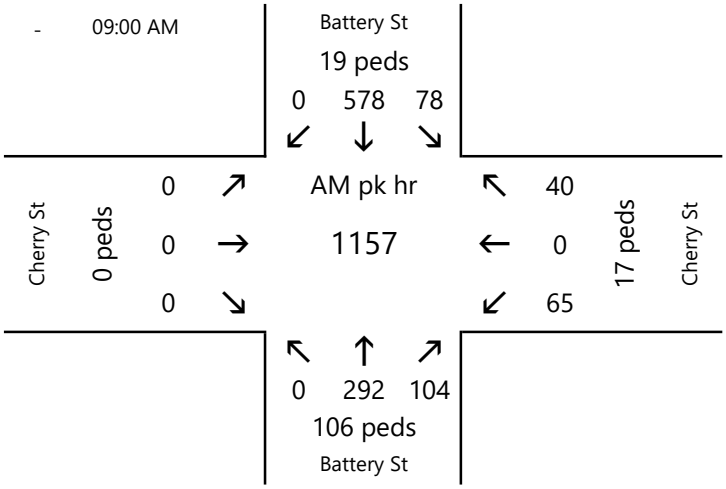
| | | | |
|---|---|---|---|
| Intersection: | Battery St & Cherry St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | Cherry St | | | | Battery St | | | | Cherry St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 0 | 578 | 78 | 19 | 40 | 0 | 65 | 17 | 104 | 292 | 0 | 106 | 0 | 0 | 0 | 0 | 1157 |
| PM pk hr | 0 | 744 | 48 | 37 | 55 | 0 | 78 | 24 | 80 | 913 | 0 | 52 | 0 | 0 | 0 | 0 | 1918 |

**AM Peak Hour**

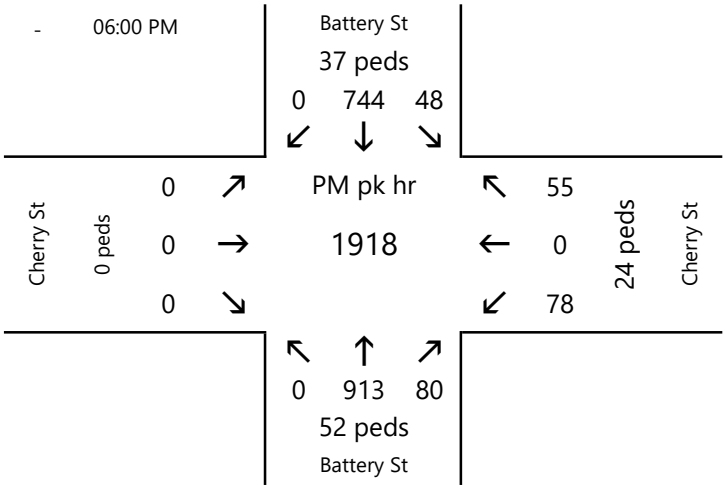
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 96% | 92% | 93% | ##### |
| heavy | 4% | 8% | 7% | ##### |
| % trucks | 5% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 97% | 93% | 97% | ##### |
| heavy | 3% | 7% | 3% | ##### |
| % trucks | 3% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **5** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & College St** | | |

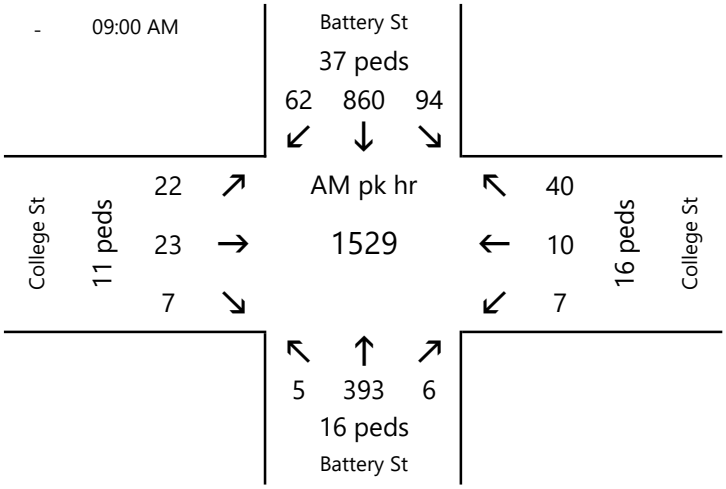
| | | | |
|---|---|---|---|
| Intersection: | Battery St & College St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | College St | | | | Battery St | | | | College St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 62 | 860 | 94 | 37 | 40 | 10 | 7 | 16 | 6 | 393 | 5 | 16 | 7 | 23 | 22 | 11 | 1529 |
| PM pk hr | 130 | 632 | 87 | 214 | 169 | 76 | 14 | 51 | 25 | 725 | 37 | 143 | 31 | 74 | 90 | 56 | 2090 |

**AM Peak Hour**

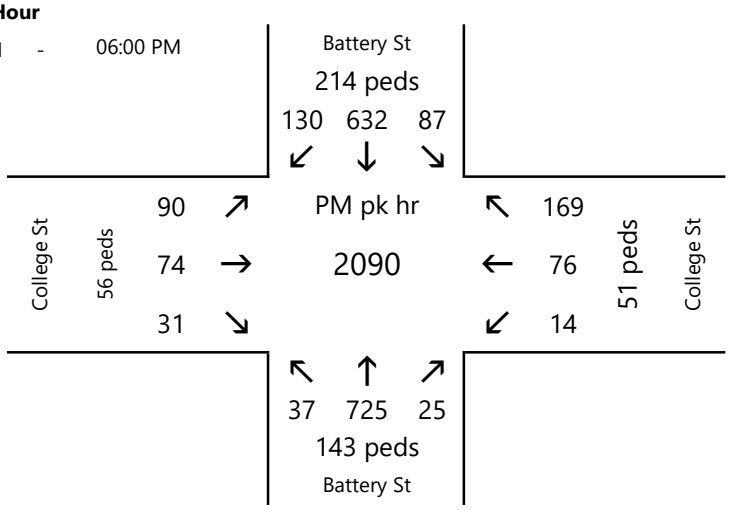
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 96% | 91% | 92% | 87% |
| heavy | 4% | 9% | 8% | 13% |
| % trucks | 6% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 98% | 100% | 97% | 98% |
| heavy | 2% | 0% | 3% | 2% |
| % trucks | 2% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **6** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & Main St** | | |

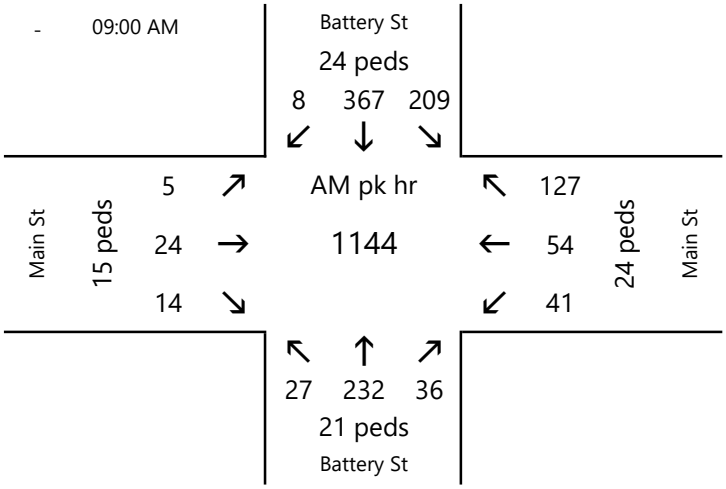
| | | | |
|---|---|---|---|
| Intersection: | Battery St & Main St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | Main St | | | | Battery St | | | | Main St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 8 | 367 | 209 | 24 | 127 | 54 | 41 | 24 | 36 | 232 | 27 | 21 | 14 | 24 | 5 | 15 | 1144 |
| PM pk hr | 18 | 418 | 245 | 62 | 301 | 79 | 21 | 16 | 27 | 473 | 41 | 53 | 49 | 81 | 18 | 49 | 1771 |

**AM Peak Hour**

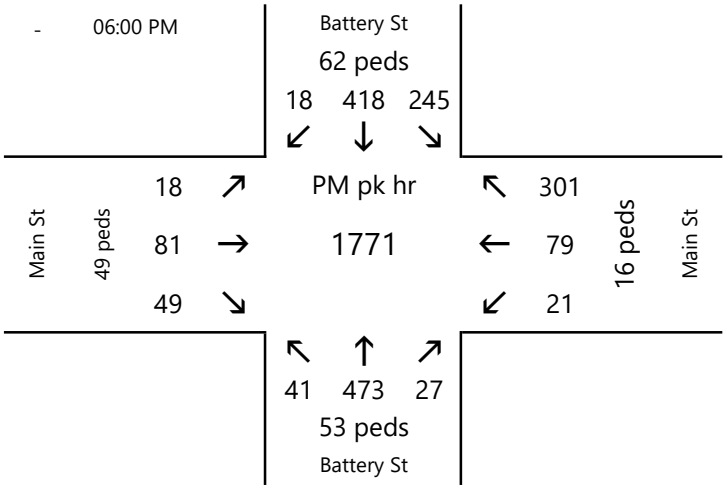
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 96% | 86% | 94% | 98% |
| heavy | 4% | 14% | 6% | 2% |
| % trucks | 6% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 97% | 95% | 99% | 99% |
| heavy | 3% | 5% | 1% | 1% |
| % trucks | 3% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **7** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & King St** | | |

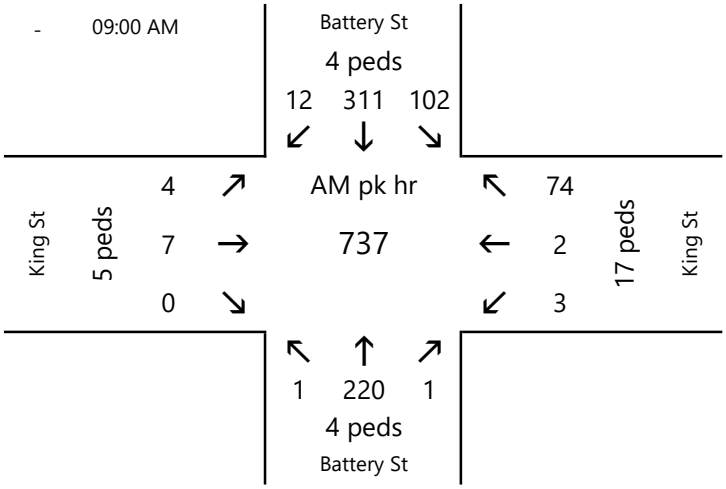
| | | | |
|---|---|---|---|
| Intersection: | Battery St & King St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | King St | | | | Battery St | | | | King St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 12 | 311 | 102 | 4 | 74 | 2 | 3 | 17 | 1 | 220 | 1 | 4 | 0 | 7 | 4 | 5 | 737 |
| PM pk hr | 18 | 330 | 156 | 19 | 292 | 13 | 17 | 15 | 9 | 236 | 3 | 9 | 8 | 16 | 17 | 36 | 1115 |

**AM Peak Hour**

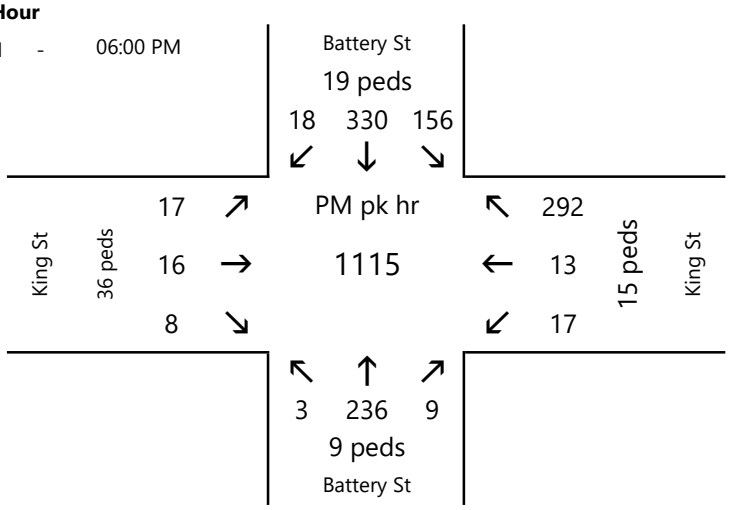
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 96% | 97% | 91% | 100% |
| heavy | 4% | 3% | 9% | 0% |
| % trucks | 5% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 99% | 100% | 97% | 98% |
| heavy | 1% | 0% | 3% | 2% |
| % trucks | 1% (Overall) | | | |

# Computations - Traffic Volumes

| | | | |
|---|---|---|---|
| **Project:** | **Battery Street Scoping** | **Project #:** | **58644.11** |
| **Location:** | **Burlington, VT** | **Sheet:** | **8** |
| **Calculated by:** | **EPH** | **Date:** | **5/30/24** |
| **Checked by:** | | **Date:** | |
| **Title:** | **Traffic Data Calculations** | | |
| **Intersection:** | **Battery St & Maple St** | | |

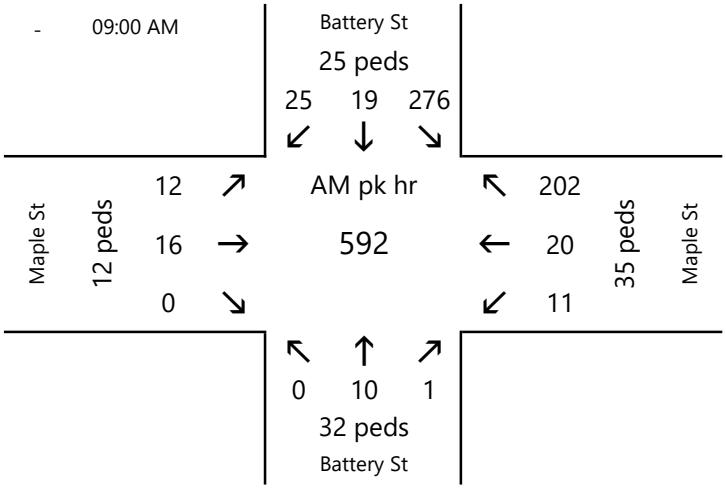
| | | | |
|---|---|---|---|
| Intersection: | Battery St & Maple St | Town: | Burlington, VT |
| Count Date(s): | 4/13/2023 | Counter: | Peak Periods, 7-10 am and 3-6 pm |

**Peak Hour Volumes**

| | SB | | | | WB | | | | NB | | | | EB | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Battery St | | | | Maple St | | | | Battery St | | | | Maple St | | | | |
| | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | RT | Thru | LT | Ped | |
| AM pk hr | 25 | 19 | 276 | 25 | 202 | 20 | 11 | 35 | 1 | 10 | 0 | 32 | 0 | 16 | 12 | 12 | 592 |
| PM pk hr | 22 | 3 | 285 | 41 | 358 | 42 | 10 | 6 | 9 | 11 | 2 | 72 | 1 | 55 | 26 | 20 | 824 |

**AM Peak Hour**

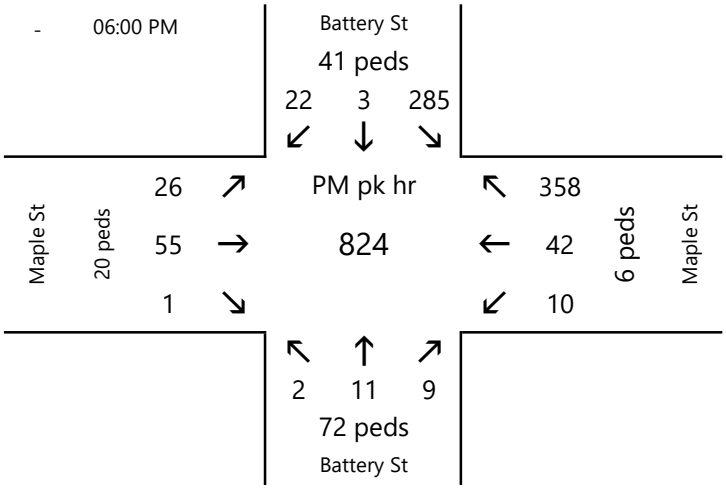
8:00 AM - 09:00 AM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 96% | 97% | 18% | 100% |
| heavy | 4% | 3% | 82% | 0% |
| % trucks | 5% (Overall) | | | |

**PM Peak Hour**

5:00 PM - 06:00 PM




| % | SB | WB | NB | EB |
|---|---|---|---|---|
| auto | 99% | 98% | 100% | 99% |
| heavy | 1% | 2% | 0% | 1% |
| % trucks | 2% (Overall) | | | |

# Appendix B

## Crash Data

**2018-2022 Crash Data**

| Crash_Date | City_Town | Address | AOT_Route | Crash_Type | Collision_Direction | Weather | Road_Group | Report_Number | Reporting_Agency | Road_Group_ID | AOT_Actual_Mileapoint | Animal | Time_of_Day | Intersection_With | Impairment | Involving | Non_Reportable_Address | Reporting_Agency_ID | Road_Characteristics | Road_Condition | Street_Address | Surface_Condition | AOT_Road_ID | Coordinates | Coordinates_X | Coordinates_Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4/18 3:10 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU001209 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 1/4/18 3:12 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | No Turns, Thru moves only, Broadside *< | Freezing Precipitation | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU000259 | Burlington PD | 2 | 0.23 | None/Other | Night | Main St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Snow | US008 | 44.47572614318551, -73.21867465508332 | -73.21867466 | 44.47572614318551 |
| 1/4/18 5:13 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction - Sideswipe | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU000628 | Burlington PD | 2 | 0.15 | None/Other | Day | King St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Slush | US008 | 44.47452105742256, -73.21859345655626 | -73.21859346 | 44.47452105742256 |
| 1/10/18 7:25 AM | Burlington | 125 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU000657 | Burlington PD | 2 | 0.29 | None/Other | Night | College St | None | None | | VT0040100 | | | 125 Battery St | | US008 | 44.47657641351034, -73.21874525540363 | -73.21874526 | 44.47657641351601 |
| 1/14/18 3:21 AM | Burlington | College St | COLLEGE ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 18BU000247 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | College St | | 0 | 44.47686902437642, -73.21877431035433 | -73.21877431 | 44.47686902437623 |
| 1/15/18 9:44 AM | Burlington | Sherman St | SHERMAN ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU001707 | Burlington PD | 2 | 0.01 | None/Other | Day | Park St | None | None | | VT0040100 | Not at a Junction | None | Sherman St | Dry | US048 | 44.48203053726083, -73.21933455102824 | -73.21933451 | 44.48203053726083 |
| 1/17/18 8:52 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU000155 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 1/19/18 4:07 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU000957 | Burlington PD | 2 | 0.31 | None/Other | Night | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 1/24/18 6:46 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU002416 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867466 | 44.47572614318551 |
| 2/2/18 7:11 AM | Burlington | Maple St | MAPLE ST. BURLINGTON | Injury | Rear End | Wind | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU001424 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | Maple St | Snow | US066 | 44.47549082535904, -73.21850781289815 | -73.21850781 | 44.47549082539043 |
| 2/9/18 8:57 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU009200 | Burlington PD | 2 | 0.55 | None/Other | Night | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 3/8/18 3:57 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU023823 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 3/21/18 11:41 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU004438 | Burlington PD | 2 | 0.4 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47613588997531, -73.21885966469268 | -73.21885964 | 44.47613588997513 |
| 3/30/18 5:30 AM | Burlington | Battery St | MAIN ST. | Property Damage Only | Single Vehicle Crash | Freezing Precipitation | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU026476 | Burlington PD | 2 | 0 | None/Other | Night | Main St | Alcohol | None | | VT0040100 | Four-way Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | Battery St | Snow | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 4/25/18 11:54 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU021446 | Burlington PD | 2 | 0.08 | None/Other | Night | Maple St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47546753128882, -73.21850505269346 | -73.21850505 | 44.47546753128819 |
| 5/4/18 8:39 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Freezing Precipitation | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU000248 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | Four-way Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | Battery St | Snow | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 5/29/18 12:17 PM | Burlington | Battery St | BATTERY ST | Property Damage Only | Other - Explain in Narrative | Clear | Other Public Roadway (Rest Areas, Shopping Center - anything open to public) | 18BU001007 | Burlington PD | 9 | 999.99000000000009 | None/Other | Day | Railyard Hypothecary Parking Lot | None | None | | VT0040100 | Not at a Junction | Road Surface Condition (wet, icy, snow, slush, etc) | Battery St | Snow | 0 | 44.47969347886331, -73.21897173173804 | -73.21897173 | 44.47969347886311 |
| 6/5/18 7:49 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU001412 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 6/8/18 2:32 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction - Sideswipe | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU017740 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 7/13/18 3:57 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU008465 | Burlington PD | 2 | 0.01 | None/Other | Day | Pearl St | None | None | | VT0040100 | | | Park St | | US036 | 44.48041052229963, -73.21903533211263 | -73.21903533 | 44.48041052229928 |
| 7/15/18 8:33 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU001051 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | T - Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | Pearl St | Ice | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 7/20/18 4:29 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU002978 | Burlington PD | 2 | 0 | None/Other | Night | Pearl St | None | None | | VT0040100 | | | Park St | | US036 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 7/31/18 3:14 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU003933 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 8/2/18 2:03 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Right Turn and Thru, Same Direction Sideswipe/Angle Crash ^^_ | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU018087 | Burlington PD | 2 | 0.07 | None/Other | Day | Maple St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47331751774036, -73.21848395248425 | -73.21848395 | 44.47331751774082 |
| 8/6/18 1:23 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU018184 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 8/10/18 9:08 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU015491 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | Heavy Truck | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 8/11/18 8:55 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU016993 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 8/12/18 8:30 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Freezing Precipitation | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU004931 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | Not at a Junction | Road Surface Condition (wet, icy, snow, slush, etc) | Battery St | Wet | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 8/13/18 4:07 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU006804 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 8/14/18 7:59 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019562 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 8/21/18 11:05 AM | Burlington | Maple St | MAPLE ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 18BU005868 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Maple St | | 0 | 44.47550445879102, -73.21850728254342 | -73.21850728 | 44.47550445879122 |
| 8/22/18 8:49 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU012276 | Burlington PD | 2 | 0.3 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47671816195556, -73.21879629693102 | -73.21876563 | 44.47671816195559 |
| 8/24/18 3:53 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU011320 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 8/24/18 8:29 AM | Burlington | Pearl St | PEARL ST. | Injury | Rear End | Cloudy | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU011970 | Burlington PD | 2 | 0.01 | None/Other | Day | Battery St | None | None | | VT0040100 | T - Intersection | None | Pearl St | Dry | US038 | 44.48026603659077, -73.21881391857113 | -73.21881392 | 44.48026603659077 |
| 8/25/18 5:27 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU000683 | Burlington PD | 2 | 0 | None/Other | Night | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 8/28/18 8:34 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU001362 | Burlington PD | 2 | 0.4 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47613588997531, -73.21885966469268 | -73.21885964 | 44.47613588997513 |
| 8/27/18 11:57 AM | Burlington | Sherman St | SHERMAN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU000465 | Burlington PD | 2 | 0 | None/Other | Night | Park St | None | None | | VT0040100 | | | Sherman St | | US048 | 44.48203543652725, -73.21916126696405 | -73.21916327 | 44.48203543652725 |
| 8/29/18 1:44 AM | Burlington | Main St | MAIN ST. | Property Damage Only | Opp Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU000229 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | Four-way Intersection | None | Main St | Dry | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318551 |
| 9/15/18 9:37 AM | Burlington | 73 King St | KING ST | Property Damage Only | Other - Explain in Narrative | Clear | Street or Town Highways in FA Urban Area | 18BU027741 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | Not at a Junction | None | 73 King St | Dry | 0 | 44.47452105742256, -73.21859345655626 | -73.21859501 | 44.47452684897499 |
| 9/18/18 12:27 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU026367 | Burlington PD | 2 | 0.15 | None/Other | Day | King St | None | Heavy Truck | | VT0040100 | | | Battery St | | US008 | 44.47452105742256, -73.21859345655626 | -73.21859346 | 44.47452105742256 |
| 9/25/18 10:15 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU022408 | Burlington PD | 2 | 0.55 | None/Other | Night | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 10/12/18 11:38 AM | Burlington | Park St | PARK ST. | Property Damage Only | Same Direction Sideswipe | Rain | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU024708 | Burlington PD | 2 | 0.07 | None/Other | Day | Monroe St | None | None | | VT0040100 | Not at a Junction | None | Park St | Wet | US036 | 44.48140250376609, -73.21909514142289 | -73.21909851 | 44.48140250376679 |
| 10/19/18 5:15 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU024401 | Burlington PD | 2 | 0 | None/Other | Day | Park St | None | None | | VT0040100 | | | Pearl St | | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 10/23/18 1:34 AM | Burlington | North Ave | SHERMAN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU023673 | Burlington PD | 2 | 0 | None/Other | Day | Park St | None | None | | VT0040100 | | | North Ave | | US048 | 44.48203543652725, -73.21916126696405 | -73.21916327 | 44.48203543652725 |
| 11/14/18 3:50 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU015656 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 11/16/18 1:03 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU027019 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 11/24/18 11:03 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019519 | Burlington PD | 2 | 0.55 | None/Other | Night | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 12/4/18 7:54 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019773 | Burlington PD | 2 | 0 | None/Other | Day | Pearl St | None | None | | VT0040100 | | | Park St | | US036 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 1/4/19 12:54 PM | Burlington | Battery St | BATTERY ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU019421 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 1/8/19 5:46 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Other - Explain in Narrative | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019000 | Burlington PD | 2 | 0.21 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47542471353517, -73.21866049330945 | -73.21866049 | 44.47542471353169 |
| 1/10/19 5:32 AM | Burlington | College St | COLLEGE ST. | Injury | Other - Explain in Narrative | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019335 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | Bicycle | | VT0040100 | Four-way Intersection | None | College St | Dry | US068 | 44.47687425729511, -73.21876564067715 | -73.21876641 | 44.47687425724610 |
| 1/14/19 6:01 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU018344 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 1/20/19 9:24 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU019291 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | | | Pearl St | | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 1/21/19 10:08 AM | Burlington | 45 Cherry St | CHERRY ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 18BU019105 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | 45 Cherry St | | 0 | 44.47912349899179, -73.21893451305309 | -73.21893451 | 44.47912349899196 |
| 1/22/19 1:00 AM | Burlington | 40 College St | COLLEGE ST | Property Damage Only | | | Other Public Roadway (Rest Areas, Shopping Center - anything open to public) | 18BU017506 | Burlington PD | 9 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | 40 College St | | 0 | 44.47686902437642, -73.21877431035433 | -73.21877431 | 44.47686902437623 |
| 2/2/19 12:43 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU018298 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 2/24/19 9:18 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction Sideswipe | Cloudy | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU018372 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 3/3/19 5:02 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | Right Turn and Thru, Angle Broadside --> ^ | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 18BU017169 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Not at a Junction | None | Pearl St | Dry | US038 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 3/4/19 2:16 AM | Burlington | 198 Battery St | BATTERY ST | Property Damage Only | Other Public Roadway (Rest Areas, Shopping Center - anything open to public) | | Other Public Roadway (Rest Areas, Shopping Center - anything open to public) | 19BU005486 | Burlington PD | 9 | 999.99000000000009 | None/Other | Day | King St | None | None | | VT0040100 | | | 198 Battery St | | 0 | 44.47458268897749, -73.21850509977766 | -73.21850501 | 44.47458268897499 |
| 3/8/19 8:04 AM | Burlington | 3 Main St | MAIN ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 19BU007183 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | 3 Main St | | 0 | 44.47572315361725, -73.21866760592272 | -73.21866761 | 44.47572315367125 |
| 3/15/19 3:17 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU005583 | Burlington PD | 2 | 0.55 | None/Other | Night | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 3/18/19 10:12 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU004732 | Burlington PD | 2 | 0.23 | None/Other | Night | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 3/19/19 1:31 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Single Vehicle Crash | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU004362 | Burlington PD | 2 | 0.55 | None/Other | Night | Pearl St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 3/20/19 6:07 AM | Burlington | Park St | PARK ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU006747 | Burlington PD | 2 | 0.08 | None/Other | Day | Monroe St | None | None | | VT0040100 | Not at a Junction | None | Park St | Dry | US036 | 44.48123948758555, -73.21909883069979 | -73.21909838 | 44.48123948758455 |
| 3/28/19 3:31 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU005389 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 4/5/19 7:38 AM | Burlington | Cherry St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU005205 | Burlington PD | 2 | 0.47 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 4/6/19 8:52 AM | Burlington | Sherman St | SHERMAN ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU001514 | Burlington PD | 2 | 0 | None/Other | Day | Park St | None | None | | VT0040100 | T - Intersection | None | Sherman St | Wet | US048 | 44.48203543652725, -73.21916126696405 | -73.21916327 | 44.48203543652725 |
| 4/12/19 11:06 AM | Burlington | 45 Cherry St | CHERRY ST | Property Damage Only | Other - Explain in Narrative | Cloudy | Street or Town Highways in FA Urban Area | 19BU002333 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | T - Intersection | None | 45 Cherry St | Dry | 0 | 44.47912349899179, -73.21893451305309 | -73.21893451 | 44.47912349899196 |
| 5/2/19 1:13 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU008611 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912460513302, -73.21893280613341 | -73.21893281 | 44.47912460513019 |
| 5/3/19 5:01 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU008899 | Burlington PD | 2 | 0.08 | None/Other | Day | Maple St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47546753128882, -73.21850505269346 | -73.21850505 | 44.47546753128819 |
| 5/17/19 5:12 AM | Burlington | College St | COLLEGE ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU009827 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Dry | US068 | 44.47687425729511, -73.21876564067715 | -73.21876641 | 44.47687425724610 |
| 5/22/19 7:50 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction - Sideswipe | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU010174 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.488262366915966, -73.21901082725766 | -73.21901083 | 44.488262366915966 |
| 5/28/19 12:55 PM | Burlington | Maple St | MAPLE ST. BURLINGTON | Property Damage Only | Other - Explain in Narrative | Rain | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU010693 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | Maple St | Wet | US066 | 44.47549082535904, -73.21850781289815 | -73.21850781 | 44.47549082539043 |
| 6/7/19 1:55 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU012912 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 6/17/19 7:45 AM | Burlington | King St | KING ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 19BU014712 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | King St | | 0 | 44.47452684897749, -73.21859500997766 | -73.21859501 | 44.47452684897499 |
| 6/23/19 5:31 AM | Burlington | College St | COLLEGE ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU011534 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | College St | | US068 | 44.47687425729511, -73.21876564067715 | -73.21876641 | 44.47687425724610 |
| 6/24/19 12:34 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | No Turns, Thru moves only, Broadside *< | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU012943 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 7/3/19 12:13 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU015413 | Burlington PD | 2 | 0.45 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47864452753314, -73.21891868671701 | -73.21891881 | 44.47864452753314 |
| 7/12/19 1:24 AM | Burlington | College St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -->v | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU014886 | Burlington PD | 2 | 0.31 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Dry | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |
| 7/14/19 5:30 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU012433 | Burlington PD | 2 | 0.23 | None/Other | Night | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 7/20/19 4:23 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU013852 | Burlington PD | 2 | 0.08 | None/Other | Day | Maple St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47546753128882, -73.21850505269346 | -73.21850505 | 44.47546753128819 |
| 7/29/19 4:17 AM | Burlington | Park St | PARK ST. | Property Damage Only | Other - Explain in Narrative | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU016234 | Burlington PD | 2 | 0.11 | None/Other | Day | Sherman St | None | Bicycle | | VT0040100 | Four-way Intersection | None | Park St | Dry | US036 | 44.48203543652725, -73.21916126696405 | -73.21916327 | 44.48203543652725 |
| 7/30/19 1:30 AM | Burlington | Battery St | BATTERY ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU016431 | Burlington PD | 2 | 0.3 | None/Other | Day | College St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47671816195556, -73.21879629693102 | -73.21876563 | 44.47671816195559 |
| 8/1/19 12:00 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Other - Explain in Narrative | Clear | Federal Aid Urban System (Class 2 TFHA and 3 TH's only) | 19BU016162 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47685997277584, -73.21876553420681 | -73.21876553 | 44.47685997277584 |

2018-2022 Crash Data

| Crash_Date | City_Town | Address | AOT_Route | Crash_Type | Collision_Direction | Weather | Road_Group | Report_Number | Reporting_Agency | Road_Group_ID | AOT_Actual_Milepoint | Animal | Time_of_Day | Intersection_With | Impairment | Involving | Non_Reportable_Address | Reporting_Agency_ID | Road_Characteristics | Road_Condition | Street_Address | Surface_Condition | AOT_Road_ID | Coordinates | Coordinates_X | Coordinates_Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/14/19 1:24 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU017629 | Burlington PD | 2 | 0 | None/Other | Day | Battery St - South Side Of April Cornell | None | None | | VT0040100 | | | | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 8/18/19 11:41 AM | Burlington | King St | KING ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 19BU018311 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | King St | | 0 | 44.47658264897499, -73.21859501 | -73.21859501 | 44.47658264897490 |
| 8/19/19 2:02 AM | Burlington | College St | COLLEGE ST. | Injury | Opp Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU017842 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Dry | US068 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 8/20/19 4:18 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU018016 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | Dry | US008 | 44.47655907327584, -73.21876553426881 | -73.21876553 | 44.47655907327584 |
| 8/25/19 2:37 AM | Burlington | Battery St | BATTERY ST. | Injury | No Turns, Thru moves only, Broadside */+ | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU018582 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | Bicycle | | VT0040100 | Driveway | None | Battery St | Dry | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 8/28/19 6:48 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU018817 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 8/28/19 11:33 AM | Burlington | 42 Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU018892 | Burlington PD | 2 | 0.08 | None/Other | Day | North St | None | None | | VT0040100 | | | 42 Park St | | US036 | 44.48156550059711, -73.21911004709892 | -73.21911005 | 44.48156550059711 |
| 8/29/19 7:03 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU018867 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | Alcohol | Heavy Truck | | VT0040100 | T - Intersection | None | Pearl St | Dry | US038 | 44.48026236601066, -73.21901082725766 | -73.21901083 | 44.48026236691966 |
| 9/6/19 8:56 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU019646 | Burlington PD | 2 | 0.39 | None/Other | Day | Hilton | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47799414574003, -73.21884868852032 | -73.21884868 | 44.47799414574027 |
| 10/10/19 8:24 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU022550 | Burlington PD | 2 | 0 | None/Other | Night | Battery St | None | None | | VT0040100 | | | Pearl St | | US038 | 44.48026236691966, -73.21901082725766 | -73.21901083 | 44.48026236691966 |
| 10/17/19 6:06 AM | Burlington | Park St | PARK ST. | Injury | Left Turn and Thru, Angle Broadside -/+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU023118 | Burlington PD | 2 | 0 | None/Other | Night | Pearl St | None | Bicycle | | VT0040100 | T - Intersection | None | Park St | Dry | US036 | 44.48026236691966, -73.21901082725766 | -73.21901083 | 44.48026236691966 |
| 10/18/19 7:44 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU023043 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 10/30/19 3:20 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Other - Explain in Narrative | Rain | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU024143 | Burlington PD | 2 | 0.31 | None/Other | Night | College St | None | Pedestrian | | VT0040100 | Four-way Intersection | None | Battery St | Wet | US008 | 44.47685997327584, -73.21876553426881 | -73.21876553 | 44.47685997327584 |
| 10/31/19 6:18 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU024041 | Burlington PD | 2 | 0.02 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Park St | | US036 | 44.48058749505323, -73.21904868815761 | -73.219047 | 44.48058749505328 |
| 11/6/19 11:25 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Other - Explain in Narrative | Freezing Precipitation | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU024769 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | Not at a Junction | Road Surface Condition (wet, icy, snow, slush, etc) | Battery St | Snow | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 11/8/19 5:57 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU024617 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 11/20/19 9:16 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU025612 | Burlington PD | 2 | 0.4 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47913588997511, -73.21885964692918 | -73.21885964 | 44.47813588997513 |
| 11/20/19 9:16 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU025612 | Burlington PD | 2 | 0.4 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47913588997511, -73.21885964692918 | -73.21885964 | 44.47813588997513 |
| 12/14/19 12:29 PM | Burlington | 49 Cherry St | CHERRY ST | Property Damage Only | | | Street or Town Highways in FA Urban Area | 19BU027354 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | 49 Cherry St | | 0 | 44.47912349899179, -73.21893451305309 | -73.21893451 | 44.47912349891799 |
| 12/22/19 2:43 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Right Turn and Thru, Same Direction Sideswipe/Angle Crash */+/- | Cloudy | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 19BU027870 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47685997327584, -73.21876553426881 | -73.21876553 | 44.47685997327584 |
| 1/8/20 8:25 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU000692 | Burlington PD | 2 | 0.23 | None/Other | Night | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 1/10/20 7:10 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU000547 | Burlington PD | 2 | 0 | None/Other | Night | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 1/22/20 1:26 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU001604 | Burlington PD | 2 | 0.158 | None/Other | Day | King St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47645153187443 | -73.21860269 | 44.47645153187443 |
| 1/23/20 4:28 AM | Burlington | Pearl St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU001517 | Burlington PD | 2 | 0.265 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US008 | 44.48222946032746, -73.21871786588652 | -73.21871787 | 44.47622046802746 |
| 1/26/20 11:59 AM | Burlington | 125 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU001827 | Burlington PD | 2 | 0.316 | None/Other | Day | College St | None | None | | VT0040100 | | | 125 Battery St | | US008 | 44.47694560415752, -73.21877185342597 | -73.21877185 | 44.47694560415718 |
| 1/27/20 8:48 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU001879 | Burlington PD | 2 | 0.01 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572640515266, -73.21849829276611 | -73.21849083 | 44.47572640515266 |
| 1/31/20 10:20 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU002202 | Burlington PD | 2 | 0.229 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47571186273865, -73.21867430268805 | -73.2186743 | 44.47571186273858 |
| 2/6/20 11:40 AM | Burlington | Main St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Same Direction Sideswipe/Angle Crash */+/- | Freezing Precipitation | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU002642 | Burlington PD | 2 | 0.233 | None/Other | Day | Battery St | Alcohol | Heavy Truck | | VT0040100 | Four-way Intersection | None | Main St | Snow | US008 | 44.47576862036914, -73.21867894292384 | -73.21867894 | 44.47576862036914 |
| 2/14/20 4:13 AM | Burlington | 45 Cherry St | CHERRY ST | Property Damage Only | Other - Explain in Narrative | Clear | Street or Town Highways in FA Urban Area | 20BU003221 | Burlington PD | 5 | 999.99000000000009 | None/Other | Night | Battery St | None | None | | VT0040100 | Parking Lot | None | 45 Cherry St | Dry | 0 | 44.47912349899179, -73.21893451305309 | -73.21893451 | 44.47912349891790 |
| 2/14/20 8:27 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -/+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU003206 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 2/23/20 11:30 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU003843 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 3/3/20 9:47 AM | Burlington | College St | COLLEGE ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -/+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU004450 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | T - Intersection | None | College St | Dry | US068 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 3/5/20 2:18 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU004643 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 3/15/20 8:03 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU008827 | Burlington PD | 2 | 0.311 | None/Other | Night | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 3/16/20 7:02 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -/+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU008781 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 3/27/20 4:12 AM | Burlington | Main St | MAIN ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU009690 | Burlington PD | 2 | 0.004 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | Main St | Dry | US022 | 44.47572640719061, -73.21865103412388 | -73.21866103 | 44.47572647719088 |
| 6/6/20 5:28 AM | Burlington | Lake St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU010400 | Burlington PD | 2 | 0.315 | None/Other | Day | College St | None | None | | VT0040100 | | | Lake St | | US008 | 44.47693086417065, -73.21877980348301 | -73.2187706 | 44.47693086474065 |
| 6/22/20 8:06 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU011893 | Burlington PD | 2 | 0.112 | None/Other | Day | Sherman st | None | None | | VT0040100 | | | Park St | | US036 | 44.48208204769872, -73.21916537221768 | -73.21916537 | 44.48208204769729 |
| 6/27/20 3:47 AM | Burlington | King St | KING ST | Property Damage Only | Opp Direction Sideswipe | Clear | Street or Town Highways in FA Urban Area | 20BU011475 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | Work zone (construction / maintenance / utility) | King St | Dry | 0 | 44.47658264897499, -73.21859500977 | -73.21859501 | 44.47658264897490 |
| 7/12/20 6:34 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU013002 | Burlington PD | 2 | 0.231 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 7/15/20 1:49 AM | Burlington | Battery St | BATTERY ST. | Injury | Other - Explain in Narrative | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU013178 | Burlington PD | 2 | 0.534 | None/Other | Night | Pearl St | None | Pedestrian | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.48003526270888, -73.21900458132738 | -73.21900459 | 44.48003526270881 |
| 7/16/20 12:03 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Same Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU013295 | Burlington PD | 2 | 0.321 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47701592284797, -73.21877693917512 | -73.21877691 | 44.47701592284797 |
| 7/27/20 5:05 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -/+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU014091 | Burlington PD | 2 | 0.311 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 8/10/20 12:50 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU015065 | Burlington PD | 2 | 0.472 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47915654716445, -73.21893577914514 | -73.21893578 | 44.47915654716445 |
| 9/16/20 3:53 AM | Burlington | Park St | PARK ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU017789 | Burlington PD | 2 | 0.009 | None/Other | Day | Pearl St | None | None | | VT0040100 | | | Park St | Dry | US036 | 44.48041052729963, -73.21903533213393 | -73.21903533 | 44.48041052729628 |
| 9/19/20 6:11 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU017935 | Burlington PD | 2 | 0.304 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47677487522912, -73.21876034594431 | -73.21876035 | 44.47677487522925 |
| 10/6/20 2:01 AM | Burlington | College | COLLEGE ST. | Property Damage Only | Same Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU019048 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College | Dry | US068 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 10/13/20 3:09 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU022231 | Burlington PD | 2 | 0.326 | None/Other | Day | Battery St | None | None | | VT0040100 | | | College St | | US008 | 44.47708805549681, -73.21876216297424 | -73.21876218 | 44.47708805549803 |
| 10/16/20 8:01 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU000586 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867466 | 44.47572614318511 |
| 11/2/20 7:18 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU000312 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47685997327584, -73.21876553426881 | -73.21876553 | 44.47685997327584 |
| 11/9/20 12:58 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU020908 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 11/7/20 1:51 AM | Burlington | College St | COLLEGE ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU020693 | Burlington PD | 2 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | College St | | 0 | 44.47688924247842, -73.21877431635433 | -73.21877431 | 44.47688924378423 |
| 11/14/20 9:58 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside -/+/- | Cloudy | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU019531 | Burlington PD | 2 | 0.311 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47687425726811, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 12/1/20 12:09 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU002428 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 12/21/20 2:08 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU010023 | Burlington PD | 2 | 0.01 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572640515266, -73.21849829276611 | -73.21849083 | 44.47572640515266 |
| 12/23/20 10:40 AM | Burlington | College St | COLLEGE ST | Property Damage Only | Street or Town Highways in FA Urban Area | | 21BU009035 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | | | College St | | 0 | 44.47688924247842, -73.21877431635433 | -73.21877431 | 44.47688924378423 |
| 1/8/21 3:59 AM | Burlington | Sherman St | SHERMAN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU004678 | Burlington PD | 2 | 0 | None/Other | Day | Park St | None | None | | VT0040100 | | | Sherman St | | US048 | 44.48205534505275, -73.21916528698495 | -73.21916527 | 44.48205534505229 |
| 2/26/21 3:58 AM | Burlington | College St | COLLEGE ST. | Property Damage Only | No Turns, Thru moves only, Broadside */+ | Rain | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU022249 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Wet | US068 | 44.47687425724611, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 3/1/21 4:04 AM | Burlington | Maple St | MAPLE ST. BURLINGTON | Property Damage Only | Single Vehicle Crash | Rain | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU005981 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | Four-way Intersection | None | Maple St | Wet | US066 | 44.47549825359004, -73.21859781129815 | -73.21859781 | 44.47549825359043 |
| 3/15/21 8:11 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU020852 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | Not at a Junction | None | Battery St | Dry | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 3/18/21 3:00 AM | Burlington | Battery St | BATTERY ST. | Injury | No Turns, Thru moves only, Broadside */+ | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU014154 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.47912465513302, -73.21893280613341 | -73.21893281 | 44.47912465139319 |
| 3/22/21 4:39 AM | Burlington | 42 Park St | PARK ST. | Injury | Other - Explain in Narrative | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU019727 | Burlington PD | 2 | 0.071 | None/Other | Night | Sherman St | None | Pedestrian | | VT0040100 | Other - Explain in Narrative | None | 42 Park St | Wet | US036 | 44.48141880302842, -73.21910957737873 | -73.21910957 | 44.48141880302849 |
| 3/30/21 8:08 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU007393 | Burlington PD | 2 | 0.4 | None/Other | Day | 60 Battery St | None | None | | VT0040100 | | | 60 Battery St | | US008 | 44.47913588997511, -73.21885964692918 | -73.21885964 | 44.47813588997513 |
| 4/1/21 12:45 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU008810 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.47685997327584, -73.21876553426881 | -73.21876553 | 44.47685997327584 |
| 5/5/21 3:12 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU021395 | Burlington PD | 2 | 0.326 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47708805549681, -73.21876216297424 | -73.21876218 | 44.47708805549803 |
| 6/10/21 3:30 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU021550 | Burlington PD | 2 | 0.478 | None/Other | Day | Lake St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.47924153945514, -73.21894369931553 | -73.21894369 | 44.47924153945414 |
| 6/12/21 4:54 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20BU020683 | Burlington PD | 2 | 0.214 | None/Other | Day | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47548496970935, -73.21866465393188 | -73.21866465 | 44.47548496970949 |
| 6/17/21 2:33 AM | Burlington | 125 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU011935 | Burlington PD | 2 | 0.29 | None/Other | Day | 125 Battery St | None | None | | VT0040100 | | | 125 Battery St | | US008 | 44.47657641391104, -73.21874525540363 | -73.21874526 | 44.47657641391604 |
| 6/19/21 2:37 AM | Burlington | College St | COLLEGE ST. | Property Damage Only | Single Vehicle Crash | Freezing Precipitation | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU002793 | Burlington PD | 2 | 0 | None/Other | Night | Battery St | None | None | | VT0040100 | Four-way Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | College St | Ice | US068 | 44.47685997327584, -73.21876540772 | -73.21876641 | 44.47687425726109 |
| 6/29/21 2:55 AM | Burlington | Park St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU003550 | Burlington PD | 2 | 0.51 | None/Other | Day | Sherman St | None | None | | VT0040100 | | | Park St | | US008 | 44.47959491644383, -73.21898328395795 | -73.21898329 | 44.47959491644382 |
| 7/23/21 8:46 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU009710 | Burlington PD | 2 | 0.15 | None/Other | Day | King St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47452105742256, -73.21855945095528 | -73.21855946 | 44.47452105742256 |
| 7/27/21 12:51 PM | Burlington | 42 Park St | PARK ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU015453 | Burlington PD | 2 | 0.09 | None/Other | Day | Monroe St | None | None | | VT0040100 | Other - Explain in Narrative | None | 42 Park St | Dry | US036 | 44.48172845754784, -73.21912154157125 | -73.21912154 | 44.48172845754784 |
| 7/28/21 11:54 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU017047 | Burlington PD | 2 | 0.49 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47941152938839, -73.21895513285 | -73.21895513 | 44.47941152938839 |
| 7/31/21 12:41 PM | Burlington | Park St | PARK ST. | Property Damage Only | Same Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU013065 | Burlington PD | 2 | 0.07 | None/Other | Day | Monroe St | None | None | | VT0040100 | Not at a Junction | None | Park St | Dry | US036 | 44.48140250376888, -73.21909991149239 | -73.21909951 | 44.48140250376879 |
| 8/16/21 12:40 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU014000 | Burlington PD | 2 | 0.15 | None/Other | Day | King St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47452105742256, -73.21855945095528 | -73.21855946 | 44.47452105742256 |
| 8/17/21 12:00 PM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU020538 | Burlington PD | 2 | 0.23 | None/Other | Main St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 8/19/21 10:26 AM | Burlington | Main St | MAIN ST. | Property Damage Only | Right Turn and Thru, Broadside */+/- | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU011352 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | Four-way Intersection | Obstruction in roadway | Main St | Dry | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318511 |
| 8/30/21 11:06 AM | Burlington | Main St | MAIN ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU017703 | Burlington PD | 2 | 0 | None/Other | Night | Battery St | None | None | | VT0040100 | | | Main St | | US022 | 44.47572614318551, -73.21867465508332 | -73.21867464 | 44.47572614318513 |
| 9/1/21 7:42 AM | Burlington | Park st | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU010763 | Burlington PD | 2 | 0.11 | None/Other | Day | Sherman st | None | None | | VT0040100 | | | Park st | | US036 | 44.48205534505275, -73.21916528698495 | -73.21916527 | 44.48205534505229 |
| 9/7/21 2:42 AM | Burlington | Cherry St | CHERRY ST | Injury | Single Vehicle Crash | Clear | Street or Town Highways in FA Urban Area | 21BU011706 | Burlington PD | 5 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | Not at a Junction | None | Cherry St | Dry | 0 | 44.47912349899179, -73.21893451305309 | -73.21893451 | 44.47912349891799 |
| 9/17/21 6:51 AM | Burlington | Park St | PARK ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU015704 | Burlington PD | 2 | 0.11 | None/Other | Day | Sherman St | None | None | | VT0040100 | Four-way Intersection | None | Park St | Dry | US036 | 44.48205534505275, -73.21916528698495 | -73.21916527 | 44.48205534505229 |
| 9/21/21 8:08 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU013098 | Burlington PD | 2 | 0.3 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.47673181619556, -73.21875629683102 | -73.2187563 | 44.47673181905559 |
| 9/25/21 4:23 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU008933 | Burlington PD | 2 | 0.11 | None/Other | Day | Sherman St | None | None | | VT0040100 | | | Park St | | US036 | 44.48205534505275, -73.21916528698495 | -73.21916527 | 44.48205534505229 |
| 10/10/21 2:47 AM | Burlington | Battery St | BATTERY ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU004027 | Burlington PD | 2 | 0.15 | None/Other | Night | King St | None | None | | VT0040100 | Not at a Junction | Non-highway work | Battery St | Dry | US008 | 44.47452105742256, -73.21855945095528 | -73.21855946 | 44.47452105742256 |
| 10/19/21 6:14 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU003377 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | | | Battery St | | US008 | 44.48026236691966, -73.21901082725766 | -73.21901083 | 44.48026236691966 |
| 10/29/21 11:57 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU011656 | Burlington P

**2018-2022 Crash Data**

| Crash_Date | City_Town | Address | AOT_Route | Crash_Type | Collision_Direction | Weather | Road_Group | Report_Number | Reporting_Agency | Road_Group_ID | AOT_Actual_Milepoint | Animal | Time_of_Day | Intersection_With | Impairment | Involving | Non_Reportable_Address | Reporting_Agency_ID | Road_Characteristics | Road_Condition | Street_Address | Surface_Condition | AOT_Road_ID | Coordinates | Coordinates_X | Coordinates_Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/1/22 6:06 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU001484 | Burlington PD | 2 | 0.11 | None/Other | Night | Sherman St | None | None | | VT0040100 | | | Park St | | US036 | 44.482053436529725, -73.21916327 | -73.21916327 | 44.482053436529725 |
| 2/3/22 8:34 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Left Turn and Thru, Angle Broadside --> | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU001494 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | None | Battery St | Wet | US008 | 44.479124605513202, -73.21893281 | -73.21893281 | 44.479124605139319 |
| 2/5/22 3:44 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU004096 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.476859973277584, -73.21876553 | -73.21876553 | 44.476859973277584 |
| 2/16/22 3:48 AM | Burlington | Pearl St | PEARL ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU002689 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US036 | 44.480262366915966, -73.21901083 | -73.21901083 | 44.480262366915966 |
| 2/19/22 8:00 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU001699 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.476859973277584, -73.21876553 | -73.21876553 | 44.476859973277584 |
| 2/25/22 12:14 PM | Burlington | College St | COLLEGE ST. | Property Damage Only | Rear End | Freezing Precipitation | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU020365 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | Road Surface Condition (wet, icy, snow, slush, etc) | College St | Snow | US068 | 44.476874257246511, -73.21876641 | -73.21876641 | 44.476874257246109 |
| 2/27/22 8:02 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU002434 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.479124605513202, -73.21893281 | -73.21893281 | 44.479124605139319 |
| 3/15/22 8:40 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU016644 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.476859973277584, -73.21876553 | -73.21876553 | 44.476859973277584 |
| 3/22/22 8:42 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU014632 | Burlington PD | 2 | 0.31 | None/Other | Day | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.476859973277584, -73.21876553 | -73.21876553 | 44.476859973277584 |
| 3/25/22 12:52 PM | Burlington | College St | COLLEGE ST. | Property Damage Only | Left Turn and Thru, Angle Broadside --> | Rain | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU013268 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Wet | US068 | 44.476874257246511, -73.21876641 | -73.21876641 | 44.476874257246109 |
| 4/29/22 2:27 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU018275 | Burlington PD | 2 | 0.07 | None/Other | Day | Maple St | None | None | | VT0040100 | | | Battery St | | US008 | 44.473317517740362 | -73.21848395 | 44.473317517740362 |
| 5/18/22 4:40 AM | Burlington | Skin Bliss | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 20228U013876 | Burlington PD | 2 | 0.17 | None/Other | Day | Battery St | None | None | | VT0040100 | Not at a Junction | | Skin Bliss | | 0 | 44.47482225829913304, -73.21861626 | -73.21861626 | 44.47482225829913304 |
| 6/2/22 2:56 AM | Burlington | 117-149 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU018427 | Burlington PD | 2 | 0.234 | None/Other | Day | Battery St | None | None | | VT0040100 | Not at a Junction | | 117-149 Battery St | | 0 | 44.475782779773922, -73.21868038 | -73.21868038 | 44.475782779773922 |
| 6/7/22 6:45 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU017687 | Burlington PD | 2 | 0.107 | None/Other | Day | Sherman St | None | None | | VT0040100 | T - Intersection | | Park St | | 0 | 44.48200476308267, -73.21915879 | -73.21915879 | 44.48200476308267 |
| 6/20/22 3:40 AM | Burlington | Park St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU011422 | Burlington PD | 2 | 0.11 | None/Other | Day | Sherman St | None | None | | VT0040100 | | | Park St | | US036 | 44.482053436529725, -73.21916327 | -73.21916327 | 44.482053436529725 |
| 6/29/22 10:59 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU011756 | Burlington PD | 2 | 0.31 | None/Other | Night | College St | None | None | | VT0040100 | | | Battery St | | US008 | 44.476859973277584, -73.21876553 | -73.21876553 | 44.476859973277584 |
| 7/6/22 3:32 AM | Burlington | Battery St | BATTERY ST. | Injury | Left Turn and Thru, Angle Broadside --> | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU008878 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | US008 | 44.479124605513202, -73.21893281 | -73.21893281 | 44.479124605139319 |
| 7/10/22 7:52 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU008478 | Burlington PD | 2 | 0.47 | None/Other | Day | Cherry St | None | None | | VT0040100 | | | Battery St | | US008 | 44.479124605513202, -73.21893281 | -73.21893281 | 44.479124605139319 |
| 8/8/22 10:39 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | Same Direction Sideswipe | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU003839 | Burlington PD | 2 | 0.4 | None/Other | Day | Battery St | None | Heavy Truck | | VT0040100 | Not at a Junction | | 60 Battery St | Dry | US008 | 44.478135869975213, -73.21885864 | -73.21885864 | 44.478135869975213 |
| 8/10/22 1:47 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU006101 | Burlington PD | 2 | 0.23 | None/Other | Day | Main St | None | None | | VT0040100 | Four-way Intersection | None | Battery St | Dry | US008 | 44.475726143185511, -73.21867456 | -73.21867456 | 44.475726143185511 |
| 8/10/22 7:26 AM | Burlington | Park St | PARK ST. | Injury | Single Vehicle Crash | Rain | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU018414 | Burlington PD | 2 | 0.06 | None/Other | Night | Monroe St | None | Pedestrian | | VT0040100 | Not at a Junction | Other - Explain in Narrative | Park St | Wet | US036 | 44.481239487585455, -73.21908938 | -73.21908938 | 44.481239487585455 |
| 8/11/22 11:58 AM | Burlington | 36-44 Park St | PARK ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU020061 | Burlington PD | 2 | 0.072 | None/Other | Day | Park St | None | None | | VT0040100 | Not at a Junction | | 36-44 Park St | | 0 | 44.48143510228801, -73.21910162 | -73.21910162 | 44.48143510228801 |
| 8/16/22 5:50 AM | Burlington | 117-149 Battery St | BATTERY ST. | Injury | Left Turn and Thru, Angle Broadside --> | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU019463 | Burlington PD | 2 | 0.309 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | 117-149 Battery St | Dry | 0 | 44.476845790495723, -73.21876467 | -73.21876467 | 44.476845790495723 |
| 8/22/22 8:52 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU015541 | Burlington PD | 2 | 0.47 | None/Other | Night | Cherry St | None | None | | VT0040100 | T - Intersection | None | Battery St | Dry | 0 | 44.479124605513202, -73.21893281 | -73.21893281 | 44.479124605139319 |
| 8/26/22 1:51 AM | Burlington | 2-34 Park St | PARK ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU014527 | Burlington PD | 2 | 0 | None/Other | Night | Battery St/Pearl St | None | None | | VT0040100 | T - Intersection | | 2-34 Park St | | 0 | 44.480262366915966, -73.21901083 | -73.21901083 | 44.480262366915966 |
| 8/26/22 6:54 AM | Burlington | College St | COLLEGE ST. | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU014489 | Burlington PD | 2 | 0 | None/Other | Day | Battery St | None | None | | VT0040100 | Four-way Intersection | None | College St | Dry | US068 | 44.476874257246511, -73.21876641 | -73.21876641 | 44.476874257246109 |
| 9/15/22 2:11 AM | Burlington | Pearl St | PARK ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU014266 | Burlington PD | 2 | 0.001 | None/Other | Day | Battery St | None | None | | VT0040100 | | | Pearl St | | US036 | 44.480262366915966, -73.21901083 | -73.21901083 | 44.480262366915966 |
| 9/23/22 1:17 AM | Burlington | 180 Battery St / Nu Chocolat | BATTERY ST | Property Damage Only | Single Vehicle Crash | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU023301 | Burlington PD | 2 | 0.139 | None/Other | Night | King St | None | None | | VT0040100 | Four-way Intersection | None | 180 Battery St / Nu Chocolat | Dry | 0 | 44.474355414889892, -73.21858054 | -73.21858054 | 44.474355414889921 |
| 9/24/22 4:58 AM | Burlington | 1-31 Park St | PARK ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU015015 | Burlington PD | 2 | 0.55 | None/Other | Day | Pearl St | None | None | | VT0040100 | Not at a Junction | | 1-31 Park St | | 0 | 44.48026830942102, -73.21903874 | -73.21903874 | 44.48026830942102 |
| 10/8/22 1:33 AM | Burlington | 34-58 Battery St | BATTERY ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU014588 | Burlington PD | 2 | 999.99000000000009 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | | 34-58 Battery St | | 0 | 44.479207069288785, -73.21893771 | -73.21893771 | 44.479207069288785 |
| 10/17/22 5:02 AM | Burlington | Battery St | BATTERY ST. | Injury | Left Turn and Thru, Angle Broadside --> | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU023634 | Burlington PD | 2 | 0.465 | None/Other | Day | Cherry St | None | Pedestrian | | VT0040100 | T - Intersection | None | Battery St | Dry | 0 | 44.479057297919305, -73.21892696 | -73.21892696 | 44.479057297919047 |
| 10/20/22 3:32 AM | Burlington | 42 Park St | PARK ST | Injury | Rear End | Cloudy | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU020640 | Burlington PD | 2 | 0.085 | None/Other | Day | Sherman St | None | None | | VT0040100 | Y - Intersection | None | 42 Park St | Dry | 0 | 44.481646999656050, -73.21911531 | -73.21911531 | 44.481646999656050 |
| 10/21/22 6:39 AM | Burlington | 34-58 Battery St | BATTERY ST | Injury | Left Turn and Thru, Angle Broadside --> | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU015903 | Burlington PD | 2 | 999.99000000000009 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | None | 34-58 Battery St | Dry | 0 | 44.479180012997645, -73.21893738 | -73.21893738 | 44.479180012997645 |
| 10/21/22 5:29 AM | Burlington | Park St | PARK ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU023868 | Burlington PD | 2 | 0 | None/Other | Day | Sherman st | None | None | | VT0040100 | Four-way Intersection | | Park St | | 0 | 44.480262366915966, -73.21901083 | -73.21901083 | 44.480262366915966 |
| 10/26/22 10:23 AM | Burlington | 1 North Ave | PARK ST | Property Damage Only | | | Other Public Roadway (Rest Areas, Shopping Center - anything open to public) | 22BU018334 | Burlington PD | 9 | 999.99000000000009 | None/Other | Day | South Parking Lot | None | None | | VT0040100 | Parking Lot | | 1 North Ave | | 0 | 44.48206711176428, -73.21921168 | -73.21921168 | 44.48206711176428 |
| 11/21/22 2:05 AM | Burlington | Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU022479 | Burlington PD | 2 | 0.231 | None/Other | Day | Main St | None | None | | VT0040100 | Not at a Junction | | Battery St | | 0 | 44.475726143185511, -73.21867456 | -73.21867456 | 44.475726143185511 |
| 11/26/22 8:33 AM | Burlington | 60 Battery St | BATTERY ST. | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 21BU022749 | Burlington PD | 2 | 0.422 | None/Other | Day | Hilton - Burlington Parking Garage | None | None | | VT0040100 | Parking Lot | | 60 Battery St | | US008 | 44.478447730888123, -73.21888404 | -73.21888404 | 44.478447730888123 |
| 12/3/22 9:44 AM | Burlington | 12-38 College St | COLLEGE ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU020266 | Burlington PD | 2 | 999.99000000000009 | None/Other | Day | Battery St | None | None | | VT0040100 | T - Intersection | | 12-38 College St | | 0 | 44.476894959394386, -73.21880877 | -73.21880877 | 44.476894959394386 |
| 12/9/22 8:00 AM | Burlington | 111-115 Battery St | BATTERY ST | Property Damage Only | | | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU020348 | Burlington PD | 2 | 999.99000000000009 | None/Other | Day | College St | None | None | | VT0040100 | Four-way Intersection | | 111-115 Battery St | | 0 | 44.476904116361197, -73.21878374 | -73.21878374 | 44.476904116361197 |
| 12/13/22 7:06 AM | Burlington | 34-58 Battery St | BATTERY ST | Property Damage Only | | | Unknown | 22BU020345 | Burlington PD | 0 | 999.99000000000009 | None/Other | Day | Cherry St | None | None | | VT0040100 | T - Intersection | | 34-58 Battery St | | 0 | 44.479135019178777, -73.21893683 | -73.21893683 | 44.479135019178777 |
| 12/22/22 7:16 AM | Burlington | Ridin' High | PARK ST | Injury | Rear End | Clear | Federal Aid Urban System (Class 2 TH's and 3 TH's only) | 22BU024460 | Burlington PD | 2 | 0.002 | None/Other | Night | Battery St | None | None | | VT0040100 | Not at a Junction | None | Ridin' High | Dry | 0 | 44.480204774803106, -73.21901618 | -73.21901618 | 44.480294774803106 |

# Appendix C

## Public Meeting Materials

# Battery Street Corridor Scoping Study

## Public Involvement Plan

Our approach to Public Participation and Stakeholder Engagement will focus on being open, inclusive, and interactive—providing multiple opportunities throughout the process to engage with the project and multiple platforms for providing input. We plan to reach a diverse set of stakeholders, where we plan to leverage what we hear with what we create.

### Public Involvement

Our approach towards public participation is designed in the spirit of the CCRPC's Public Participation Plan and the City of Burlington Department of Public Work's guidelines. Our team of outreach specialists envision a highly collaborative process with the Project Team and Advisory Committee (AC) that will lead to the development of the final Public Involvement Plan.

The CCRPC's plan is predicated on an effective public involvement and outreach campaign that involves transportation stakeholders and the broader public early in the process, checks in with them frequently, and then supports an outreach effort to present the final plan. The intent of the public involvement effort is to further foster a spirit of inclusiveness and ownership of the study. To that end, efforts will be made to involve members of the public that may not have electronic access, the ability to attend public meetings, or require other accommodations such as translation services. This is particularly noteworthy as the neighborhoods immediately north and east of Battery Street are home to some of Burlington's lowest-income residents.

This project falls in the Involve level of the CCRPC's Spectrum of Participation. This level requires the CCRPC to work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered. This includes two-way channel of communication and multiple interactions through advisory/ steering committees,

project meetings, workshops, etc. Additionally, at the Involve level, the staff will complete the Equity Impact Worksheet.

A variety of public engagement tools will be used to inform the community of public meetings and stakeholder interviews. Engagement needs to be sensitive to and accommodate the most common languages other than English along this corridor. Burlington's Racial Equity Toolkit shall be consulted. Potential public outreach ideas include:

- Consider multiple ways to alert the public that the project is starting and where to find additional information.
- Target businesses and business advocacy organizations, religious organizations, the public at large, traditionally underrepresented groups and their advocacy organizations.
- Engage the full range of residents, including newcomers, long-time residents, immigrants, people of color, seniors, young people, young families, people of all income levels, young leaders (teens and 20-somethings), business owners, and elected officials.
- Use both traditional and non-traditional outreach tools such as:
  - Online surveys
  - Wiki map
  - Vary meeting structure as appropriate (pop-up meeting, corridor tour, workshop, small groups, open house, etc.)
  - Project update newsletter/e-news
  - Interactive texting/keypad polling
  - Postcards, fliers, door hangers
  - Online calendars
  - Front Porch Forum
  - City's social media channels
  - Advisory Committee networks

VHB will engage the public and community stakeholders as outlined above and offers the following additional detail:

- To communicate to the public that the project is starting, we will spread the word through existing email listservs and networks—reaching people through existing community touchpoints. In addition, the City or CCRPC will attend community events, such as Neighborhood Planning Assemblies (NPA) Meetings for Ward 5 and Wards 2 and 3 to spread the word and find out more about best ways to reach community members in these specific neighborhoods. To reach more residents and visitors, VHB will consider a table in the park on a day when weather permits and/or gather input at bus stops or other areas along the corridor where folks congregate.
  - Ward 5 NPA meets on the third Thursday of every month at 6:45 PM on Zoom and in person at DPW
  - Wards 2 and 3 NPA meets on the second Thursday of every month at 6:30 PM on Zoom and in person at the Old North End Community Center
- Linguistically isolated communities constitute one of the traditionally underserved demographics that deserve consideration. For the purposes of this scope, VHB has assumed that CCRPC and the City will identify and interpret for these communities. The

City will leverage coordination with the REIB office to identify these communities and effective methods of engagement regarding the project within these communities. In addition, instructions for connecting with at the ready translation services will be made available at public meetings and engagement opportunities through the City of Burlington.

## Stakeholder Engagement or Focus Group Meetings

VHB understands targeted meetings with specific populations may be required if the public engagement is not reaching these groups. We have included an allotment of time to provide materials for these targeted stakeholder meetings (also referred to as "Focus Group Meetings") to reach these populations. VHB understands the CCRPC and City will organize and host these Focus Group Meetings.

## Advisory Committee

The Advisory Committee will be comprised of representatives of agencies and organizations identified by the City and the CCRPC. Advisory Committee meetings are expected to correspond to major project milestones. VHB will participate in four (4) working meetings with the project Advisory Committee which can be remote or in-person meetings. The Advisory Committee will include the following representatives:

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Norm Baldwin | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- Karen Paul | City Councilor
- Sophie Sauvé | Burlington Parks, Rec, & Waterfront
- Jamie Smith | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

Key stakeholder groups not serving on the Advisory Committee will be contacted via targeted outreach and project information will be shared with them throughout the project. Other stakeholder groups include: Emergency Services, CarShare Vermont, Vermont Department of Health, Chittenden Area Transportation Management Association (CATMA), CEDO, AARP, Cathedral Square, BBA, Walk Bike Council, Trusted Voices, and others as appropriate.

## Public Meetings

Public meetings will be held at key project milestones and in formats designed to efficiently convey project information and solicit public input. Standalone public meetings will include:

- Local Concerns meeting
- Draft Alternatives Presentation
- Presentation to City Council
- Up to 2 updates (total) to City bodies such as the Transportation, Energy, and Utilities Committee (TEUC) and Department of Public Works Commission
- VHB will prepare to present the final recommended alternative for the Battery Street corridor at either a TEUC or City Council meeting

We anticipate that at least one component of the Local Concerns Meeting and Draft Alternatives Presentation will include in-person engagement. VHB will prepare presentation materials for public meetings according to the pre-determined nature of the meeting – either in-person or remote.

# Schedule

### Advisory Committee Meeting #1 | March 8th, 2023

At this meeting, VHB reviewed the project scope of work, timeline, and deliverables. The preliminary project goals and objectives were discussed, as well as hearing from the committee about background information and data that is relevant to undertaking the Study. The role of the Advisory Committee will be defined.

- **Deliverables**: VHB to provide meeting materials
- **Target date**: March 2023
- **Approval of Meeting Materials:** One Week Prior
- **VHB Responsibilities:** Meeting materials including presentation
- **City Responsibilities:** Meeting notes and AC communications
- **CCRPC Responsibilities**: Zoom link

### Coordination with REIB | April - May 2023

The project team met with members from the REIB office to discuss the engagement plan with a specific focus on public meeting #1 and engagement beyond the public meeting event regarding local concerns for the project.

Adjustments to planned engagement as follows:

- One page translation instructions for accessing interpretive services
- Outreach to Richard Kemp Center, Trusted Community Voices, AALV, BSD, and VNAAC.

### Public Meeting #1 | May 2nd, 2023

VHB lead the local concerns meeting including discussion of a shared vision, corridor issues and opportunities, and high-level priorities, as well understanding existing corridor conditions. Emphasis for this early engagement is on collection of data from members of the community. The meeting was advertised on city platforms, flyers, front porch forum, with assistance from the advisory committee.

- **Target Audience:** General public with focus on attendance and participation from targeted stakeholder outreach groups
- **Outreach:** Advertise meeting broadly on FPF, advertise at NPA meetings, post on City Calendar, post flyers at City Hall, Church Street Marketplace, near Waterfront area, potential flyer distribution to adjacent neighborhoods.
- **Objectives:** Craft Community Driven Vision, Identify Issues and Opportunities, Identify High-Level Priorities
- **Format**: Open House with small, focused workshop tables around specific topic areas; brief presentation with Q&A session
- **Target date**: May
- **VHB Responsibilities:** VHB to provide meeting materials (summary meeting notes, interactive materials, maps, boards). VHB to provide up to two people for the public meeting.
- **City Responsibilities:** CCRPC and/or City Staff responsible for meeting notification
- **CCRPC Responsibilities**: CCRPC and/or City Staff responsible for meeting notification
- **Approval of Meeting Materials:** Two weeks prior
- **Final Meeting Materials:** One week prior
- **Review:** Did we reach intended audience? Are there perspectives or voices missing from initial discussions? Adjust stakeholder interviews accordingly.

#### Reflections on Public Meeting #1

- The meeting was well publicized. In addition to the planned outreach, members of the project team were also interviewed by local news outlets WCAX and WPTZ/NBC5.
    - https://www.wcax.com/2023/05/02/building-better-battery-st-bikers-pedestrians/
    - https://www.mynbc5.com/article/battery-street-improvements-discussed-at-open-house/43774158#
- The open house format worked well as some business owners were able to stop by towards the beginning, speak with the project team, and leave prior to the 6:00 presentation.
- The recording equipment for posting to the project website didn't work as well as intended and will be modified for the second public meeting.
- Do we have official attendance numbers? If not, let's be sure to keep better track of that next time around.Discussion with the REIB office about the limitations and barriers to a formal public meeting and particularly one hosted at City Hall helped to adapt and broaden the stakeholder engagement plan to reach a broader and more diverse representation of the community.

### Stakeholder Engagement | 2023

Stakeholder engagement will gather feedback regarding existing condition issues, perceptions of traveling along Battery Street, and desired needs for improved safety and connectivity. VHB supports CCRPC and City Staff in the Stakeholder engagement effort by providing materials.

- **Target Audience:** various targeted stakeholder groups, with emphasis on those historically underserved, overburdened, and/or underrepresented in transportation and

transportation decision making – may be groups of newcomers, long-time residents, immigrants, people of color, seniors, young people, young families, people of all income levels, young leaders (teens and 20-somethings), business owners, etc.

- **Target dates**: During the Local Concerns Engagement period and again during the Alternatives Evaluation Engagement period
- **VHB Responsibilities:** VHB to provide meeting materials
- **City Responsibilities:** City and/or CCRPC responsible for interview coordination and in person facilitation with stakeholder groups
- **CCRPC Responsibilities**: City and/or CCRPC responsible for interview coordination and in person facilitation with stakeholder groups
- **Review:** Did we reach the intended audience? Are there perspectives or voices missing from these discussions?

### Local Concerns Engagement | May- July

Engagement surrounding the Local Concerns meeting began in May 2023 and is ongoing through July 2023. The project team recognized the importance of engaging with a diverse range of community members, including those who may not typically participate in public meetings or events. To reach a wider audience, the project team met with the City's REIB office to better understand the communities to engage, the trusted community liaisons in those communities, and how to promote the project and encourage participation from a broader range of stakeholders.

Pop-up style tabling events were held in various locations throughout the community, such as King Street Laundry and on the corner of Battery Street and Cherry Street, to provide easy access for residents to learn about the project and provide feedback. The meetings with the Burlington Business Association and Trusted Voices allowed for targeted engagement with specific groups, such as local business owners and community leaders.

To ensure that language barriers did not prevent community members from participating, the project team made translation services available on demand through printed, translated instructions to connect with the City's at the ready translation services at each of the public engagement events. This provides the opportunity for non-English speaking residents to fully participate in the process and share valuable input.

Overall, the project team recognized the need to engage a broader and more diverse range of community members and worked to adapt this plan accordingly.  By utilizing various methods and resources, the team was able to successfully engage with a diverse group of residents and gather valuable feedback for the project.

Engagement Events included:

- King Street Laundry Tabling – May 21, 2023
- Battery Street & Cherry Street Tabling – May 26, 2023
- Burlington Business Association Annual Meeting – May 31, 2023
- WVMT Radio Interview – June 8, 2023

**Upcoming:**

- Trusted Voices Community Group – July 25
- Cathedral Square Assisted Living – TBD

### Reflection on Engagement Events and Targeted Communities

- Efforts were made to speak directly with AALV, Richard Kemp Center, King Street Center, and Burlington High School.
    - Burlington High School is transitioning to a new Principal and a new contact to engage students is needed.
    - CCRPC staff met with AALV and King Street Center to begin to establish a relationship, mentioning the Battery Street project to assess interest in involvement. King Street Center expressed a distrust in the process, a fear of Battery Street improvements leading to gentrification of the King Street neighborhood, and that they are overloaded with more pressing concerns. AALV shared that their communities rarely use the Battery Street space, and shared the sentiment of having more pressing concerns within their communities, such as housing, childcare, and employment. Despite their already full plate, organizational representatives were able to complete our online survey and offer some high level feedback on Battery Street.
    - CCRPC staff is in communication with the Richard Kemp Center around facilitating an event/focus group.

## Advisory Committee Meeting #2 | July 2023

The purpose of this meeting is to discuss the outcomes of the local concerns engagement period including the first public meeting and other engagement events and strategies, existing and future conditions, corridor issues, and present the draft Purpose and Need Statement. Additionally, the Advisory Committee will help promote the upcoming public meeting to their organizations.

- **Deliverables**: VHB to provide meeting materials
- **Target date**: July 2023
- **Approval of Meeting Materials:** One Week Prior
- **VHB Responsibilities:** Meeting materials including presentation
- **City Responsibilities:** Meeting notes and AC communications
- **CCRPC Responsibilities**: Zoom link

## Public Meeting #2 | September 2023

Public Meeting #2 will be a Draft Alternatives presentation. Advertise meeting on city platforms, flyers, front porch forum, advisory committee assistance.

- **Target Audience:** General public with focus on attendance and participation from targeted stakeholder outreach groups
- **Outreach:** Advertise meeting broadly on FPF, post flyers at City Hall, Church Street Marketplace, near Waterfront area.
- **Objectives:** Present draft alternatives for the corridor and gather community feedback
- **Format**: Presentation style meeting
- **Target date**: September 2023

- **VHB Responsibilities:** VHB to provide meeting materials (presentation, summary meeting notes, interactive materials, maps, boards). VHB to provide up to two people for the public meeting.
- **City Responsibilities:** CCRPC and/or City Staff responsible for meeting notification
- **CCRPC Responsibilities**: CCRPC and/or City Staff responsible for meeting notification
- **Approval of Meeting Materials:** Two weeks prior
- **Final Meeting Materials:** One week prior
- **Review:** Did we reach intended audience? Did we capture feedback and input from the advisory committee, public meeting #1, stakeholder interviews, other engagement touchpoints on alternatives?

### Advisory Committee Meeting #3 | September 2023

The purpose of this meeting is to discuss the draft alternatives, as well as discuss the feedback and comments from the second public meeting.

- **Deliverables**: VHB to provide meeting materials
- **Target date**: September 2023
- **Approval of Meeting Materials:** One Week Prior
- **VHB Responsibilities:** Meeting materials including presentation
- **City Responsibilities:** Meeting notes and AC communications
- **CCRPC Responsibilities**: Zoom link

### Advisory Committee Meeting #4 | November 2023

The purpose of this meeting is to discuss the draft preferred alternative with the Advisory Committee for their consideration.

- **Deliverables**: VHB to provide meeting materials (presentation, agenda, meeting summary notes, etc.)
- **Target date**: November 2023
- **Approval of Meeting Materials:** One Week Prior

### TEUC and/or DPW Meetings | 2024

- **Target Audience:** TEUC and DPW members, general public
- **Outreach:** Advertise on City website under normal channels
- **Objectives:** Present final preferred alternative
- **Format**: Presentation style meeting
- **Target date**: TBD 2024
- **VHB Responsibilities:** VHB to provide meeting materials (presentation, summary meeting notes). VHB to provide up to two people for the public meeting.
- **City Responsibilities:** CCRPC and/or City Staff responsible for meeting notification
- **CCRPC Responsibilities**: CCRPC and/or City Staff responsible for meeting notification
- **Approval of Meeting Materials:** Two weeks prior
- **Final Meeting Materials:** One week prior

### Public Meeting #3 | March/April 2024

Public meeting #3 will present final preferred alternative(s) to City Council to seek endorsement of the recommended alternative(s).

- **Target Audience:** City Council members, general public, and engaged entities
- **Outreach:** Advertise on City website under normal channels
- **Objectives:** Present final alternatives to seek endorsement
- **Format**: Presentation style meeting
- **Target date**: March/April 2024
- **VHB Responsibilities:** VHB to provide meeting materials (presentation, summary meeting notes). VHB to provide up to two people for the public meeting.
- **City Responsibilities:** CCRPC and/or City Staff responsible for meeting notification
- **CCRPC Responsibilities**: CCRPC and/or City Staff responsible for meeting notification
- **Approval of Meeting Materials:** Two weeks prior
- **Final Meeting Materials:** One week prior
- **Review:** Has the preferred alternative identified by the public, engaged entities, and the advisory committee gained endorsement from City Council? Did we reach the engaged entities from earlier in the process with messaging regarding the endorsed, preferred alternative and process next steps?  Is there other feedback and input on the process?



# Battery Street Corridor Scoping Study

## Advisory Committee Meeting #1
## March 8, 2023

CHITTENDEN COUNTY RPC
Communities Planning Together

BURLINGTON, VT PUBLIC WORKS

vhb

# Agenda

- Welcome + Introductions
- Public Comment Period
- Battery Street Corridor Scoping Study Overview
- Role of Advisory Committee
- Vision + Goals
- Next Steps



# 01|| Introductions

# Project Team

vhb

- Drew Gingras
- Jenn Conley
- Karen Sentoff

Chittenden County RPC
Communities Planning Together

- Jason Charest
- Eleni Churchill

Burlington, VT Public Works

- Dayton Crites
- Ravi Venkataraman

# Advisory Committee

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Norm Baldwin | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- Karen Paul | City Councilor
- Sophie Sauve | Burlington Parks, Rec, & Waterfront
- Jamie Smith | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

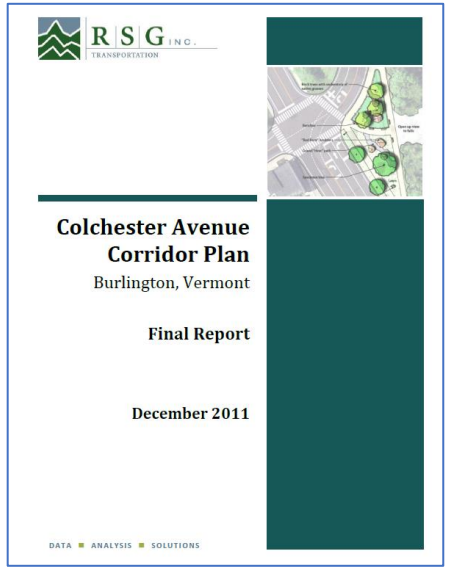
# 02|| Public Comment Period



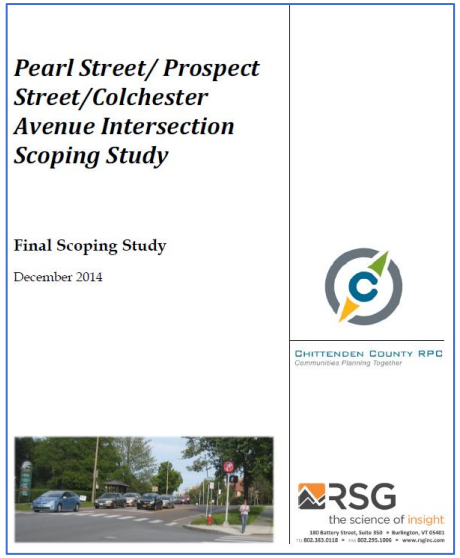
# 03|| Study Overview

# What is a "Corridor Scoping Study"?

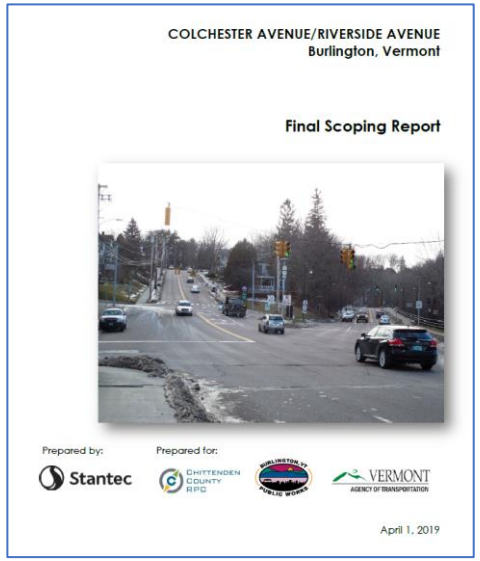
- Develops detailed alternatives for the corridor and key intersections
- Some intersections will require further study



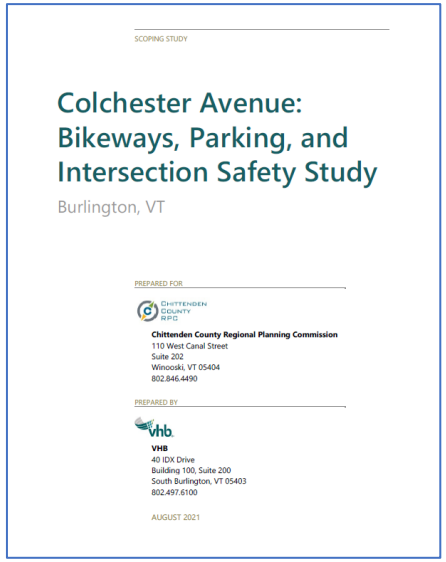

2011




2014

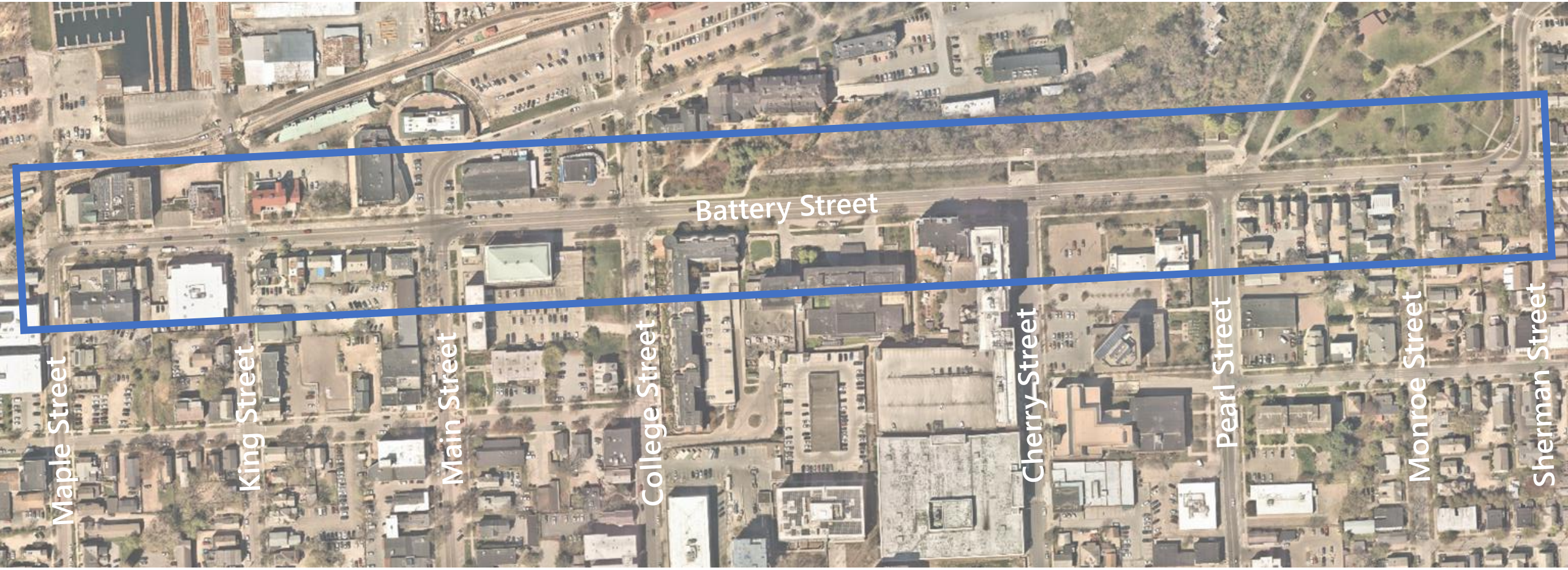



2019

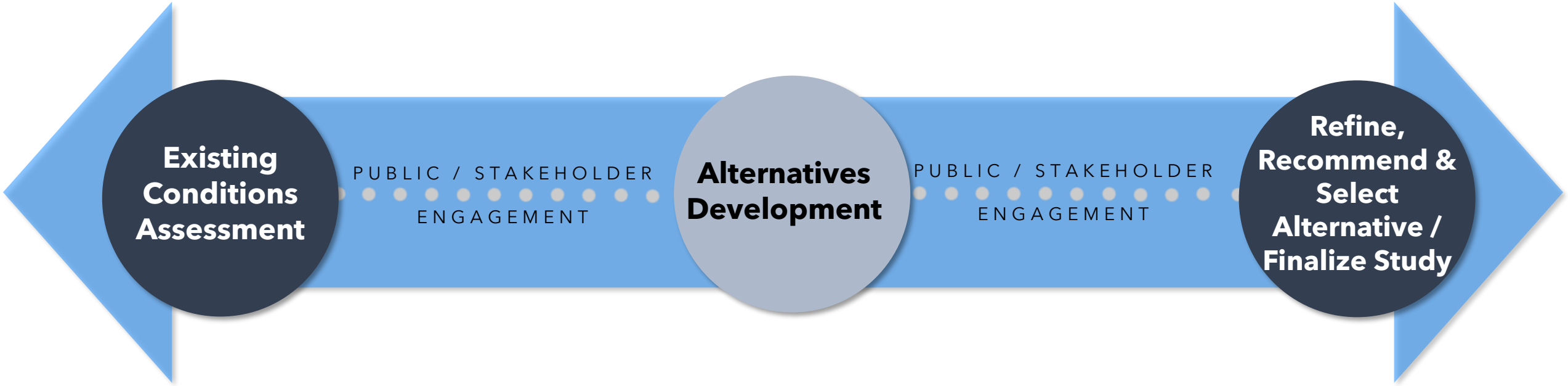



2021

# Project Area



# Scope of Work



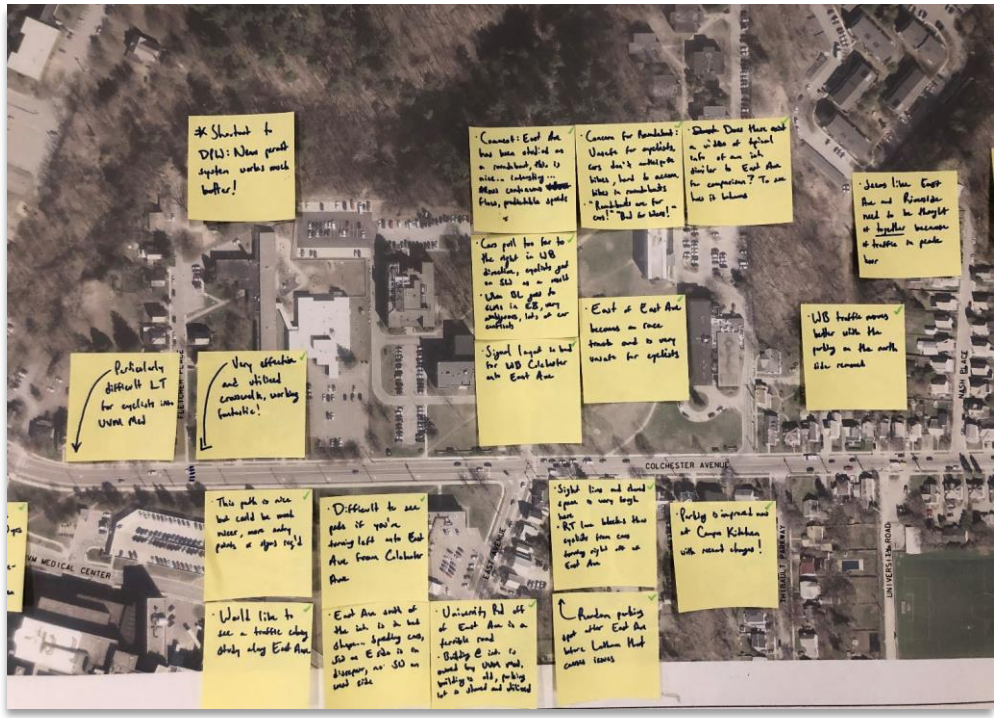

- Inventory of Roadway & Traffic Conditions
- Data Collection
- Traffic Analysis

- Develop Scoping & Feasibility Alternatives for Specific Project Locations
- Develop Full Corridor Alternatives
- Analyze / Assess Alternatives

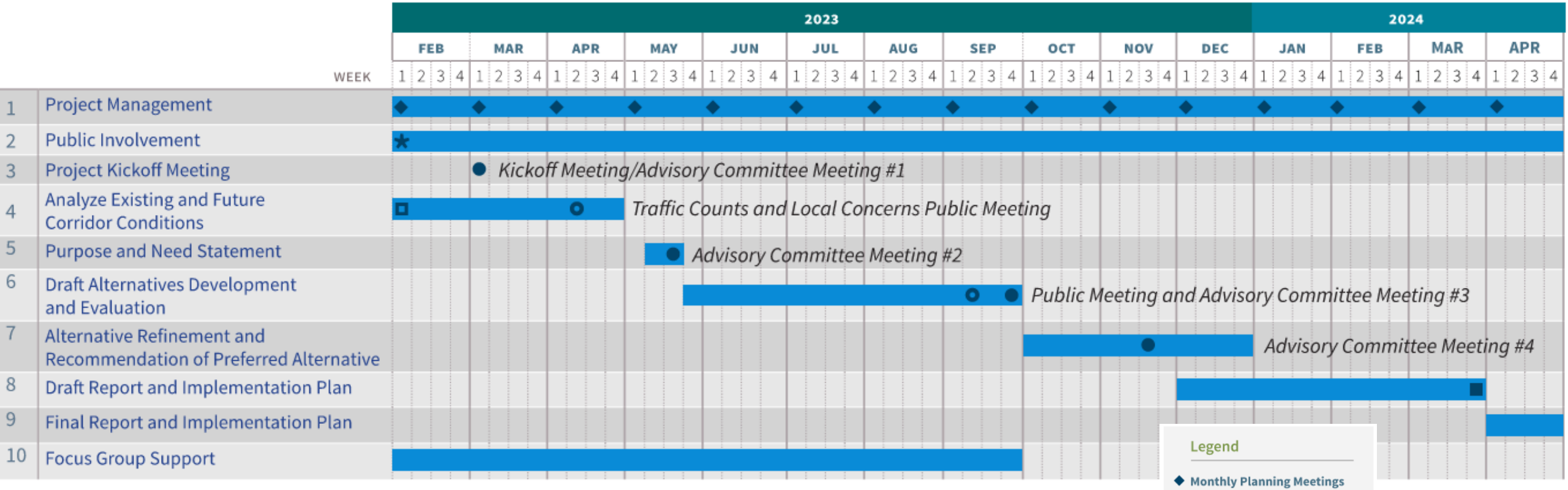
- Refine & Recommend Preferred Alternative
- Select Preferred Alternative
- Finalize Scoping Study

# Community Engagement

- Advisory Committee
- Stakeholder Interviews
- Public Meetings
- Online Survey and Mapping Tool



# Project Schedule





# 04|| Role of the Advisory Committee

# Role of the Advisory Committee

Attend & participate in 4 AC meetings

Extra credit: attend public meetings as well!

Review and comment on materials

Provide guidance, insight, and *respectful* feedback throughout

Update representing entities on study progress

Bring views/opinions back to AC

Indicate preferences for improvements

Strive to achieve consensus




# 05|| Vision + Goals

# Vision + Goals

What is your vision for the future of Battery Street?

What do you see as the biggest challenges facing Battery Street?

What do you hope this Study achieves?



# 06|| Next Steps

# Next Steps

- Existing Conditions Collection & Analysis
- Prepare Materials for (and host) Public Meeting #1, the Local Concerns Meeting
- **Schedule Next Advisory Committee Meeting**

# Contact Us


**Jason Charest**
Senior Transportation Planning Engineer

Chittenden County Regional Planning Commission
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**Drew Gingras, PE**
Project Manager

40 IDX Drive, Bldg 100, Ste 200
South Burlington, VT 05403

802-391-5569
dgingras@vhb.com

# Meeting Notes

| | | | |
|---|---|---|---|
| Date: | March 8, 2023 | Notes Taken By: | Elisabeth Sundberg |
| Place: | Teams/ CCRPC | Re: | Battery Street Scoping Study<br>Advisory Committee Meeting #1 |
| Project No.: | 58644.10 | | |

Drew Gingras, VHB
Karen Sentoff, VHB
Jenn Conley, VHB
Jason Charest, CCRPC
Ravi Venkataraman, Burlington DPW
Dayton Crites, Burlington DPW
Barbara Alsop, Ward 3
Ali Hamedani, Ward 3
Terry Rivers, Ward 5
Norm Baldwin, City Engineer
Gene Bergman, City Council
Phet Keomanyvanh, Office of Racial Equity, inclusion and belonging
Sophie Sauvé, Burlington Parks, Rec, and Waterfront

**Welcome and Introductions**

Drew welcomed the group and went over the agenda for the project. This included the scoping study overview, role of the advisory committee, vision and goals exercise and next steps

Drew Gingras from VHB introduced himself as the Project Manager.

Jenn Conley from VHB introduced herself as project advisor.

Karen Sentoff from VHB introduced herself as a transportation engineer and shared she will be providing the public engagement services throughout the project.

Jason Charset introduced himself as the project manager from CCRPC and shared that Eleni Churchill will be assisting with this project.

Ravi from the City of Burlington DPW introduced himself and shared that he will providing supporting assistance to Jason and Eleni.

Barbie Alsop introduced herself as a representative of Ward 3.

Terry Rivers introduced herself as a representative from Ward 5.

Norm Baldwin introduced himself as the City of Burlington Engineer.

Phet Keomanyvanh introduced herself as the REIB economic analyst for the City of Burlington.

Gene Bergman introduced himself as a City Council member.

Sophie Sauvé introduced herself as a planner with parks, rec, and waterfront department for the City of Burlington.

Phet shared that she recommends closed caption as a best practice for hybrid and virtual meetings.

Drew shared that they are in the process of scheduling the first public meeting, local concerns meeting, distributing a meeting notice for an April meeting.

Jason opened for general public comment

Gene asked if this was supposed to be publicized?

Jason shared that this was publicized on city calendar.

Gene added that if we wanted folks to join that we need to encourage them to join and make more effort to get the information out.

Jason shared that they are required to have notice that the general public to be able to share their input, but it is not the intent to invite the public to the meeting. We will be getting the website up and running for the meeting materials to be posted. It is not something that is geared for public input.

Jason provided an introduction of what a scoping study is, trying to combine a corridor and scoping study together. The project area includes Maple Street to Sherman Street, and the project will be working to develop corridor alternatives at key intersections. There will be scoping and feasibility level detail with the idea that we can get good consensus on those alternatives. The city could then proceed with implementing and fund those alternatives.

Jason added that higher level evaluation at some intersections and will require some future study. Subsequent efforts that will follow this study. Similar to the process that Colchester Avenue went through that will keep building upon previous work done. This project will lay the groundwork for a lot of future things and some that will be implemented out of this study.

Drew went over the study area, Battery Street from Maple Street to Sherman Street. He shared that there are a lot of projects going on along the corridor currently. Railyard Enterprise, Main Street, Amtrak connections study, recent bike/ped improvements at Sherman, two-way block facility on Champlain Street, Bank and Cherry Street are in design. It is a very active corridor, and it is a critical north - south corridor.

Sophie added as a reminder that Battery Park is along that corridor, and the city is slated to do a comprehensive plan and noted that those connections to use are very important.

**Scope of Work**

Drew went over the general scope of work that starts with an assessment of the corridor as it currently stands, are there data needs? The first public meeting will be a local concern meeting to understand the concerns and ideas that public has and use those to build alternatives to make sure that it is meeting the needs of the community. Drew shared the goal is to create a complete transportation system. Throughout the duration of the project, we will be meeting with the AC as well we will refine those alternative and recommend a future Battery Street. Hopefully can move to funding acquisition design.

It was asked if there was a way to connect to the Champlain Parkway Project?

Drew shared that with the forecasting done for the Champlain Parkway project will be implemented in traffic. Obtaining that study and will be factoring into future.

Karen went over the community engagement plan and shared they will be leaning on advisory committee to guide and shepherd this project. She added that the advisory committee is more connected to this area on a day-to-day basis than the project team. She added that targeted stakeholder outreach will be a tandem effort with VHB supporting to reach out to folks that haven't been engaged in the past and interact with Battery Street on a regular basis. Recognize that Battery Street can serve as a barrier and make sure people are at the table, and what is facing the corridor and what the envision for the future. She shared that there will be three public meetings and additional forums with TEUC and City Council and DPW commission. She added that spreading the message and ideas that have come up through the process to get collective buy in when finalizing alternatives is imperative. She shared that the project team will be casting the broader net to get input by utilizing an online survey and mapping tool to point out issues and opportunities throughout the corridor to comment on what is happening along the corridor. A lot of different issues and opportunities where folks can interact throughout the process.

Drew continued to share the project schedule and shared that the local concerns meeting happening in mid-April and the project team is currently working through the analysis of the future corridor conditions. After local concerns meeting, we will define the purpose and need. Nail down what we are working towards with this effort. As we get into the fall, we will meet with the public for a second time after we have our alternatives and then an implementation plan.

Sophie asked if there are plans for accommodations for translation services?

Drew shared that they will be working with the city to provide those services throughout the public engagement process.

Anne added that they have a couple translators that the RPC uses regularly.

Jenn asked if there are particular stakeholder groups to tap into because that information is always helpful.

Sophie shared she does not have any insights, but it is something they work on every comprehensive plan.

Norm added we need new ways to get at those groups that are underrepresented such as time of day and how often we offer touch points.

Jenn to follow up with Norm on the work they did for other nearby projects.

Phet added that outreach and interpreters doesn't mean we are going to get the people there. In past we have gone to the specific organizations, and she shared there are several different ambassadors who share out our meeting information. There is a lot of discussion around and she feels that the project is behind on where it needs to be for this level of engagement.

Jenn shared that there is outreach set aside from the public meetings and try to do a focused outreach.

Gene asked if an openness is there to have more than one meeting. It is insufficient to just have one meeting. Consider perhaps doing extra be able to reach that many people over extended and unable to attend a traditional meeting.

Kenn shared the idea of a multiple hour open house, and we are in place that we can engage in a rolling phase. Trying to create a different approach than a traditional public meeting.

It was shared that in April people are not yet into worrying about what is going on during the summertime.

Jenn shared that they think we understand tourism use and what we are getting at is to understand the people who are using it day to day because they must be and capturing those peoples. Some of that we know those answers between tourism and recreation connections.

**Role of the Advisory Committee**

Jenn asked if there are any community events in mind and if we can figure out how to get them? She added they are hoping to set up a table at the laundromat.

Norm shared he likes the idea having a project website for people to provide comments and give project updates. Some people don't like to come to meetings that can be available from that site.

Drew added that they can set up a constant open stream for public comment and mentioned that that is always available, so people know that is an open forum

Jenn added that we can create QR code to scan for information.

Phet shared that the social media campaign for the census was successful during the data collection. She said we should provide a number they can call for a question for interpreter,

Norm shared that they have that at public works website.

Jason went over the role of the advisory committee which includes attendance of these meetings, sending materials for you to review and provide comment on. Some of those would be bringing them to the meetings and ask that we be respectful of others' opinions and be welcoming of other perspectives. You represent different entities and prompting this project asked if you get feedback and questions that you bring it back to this group. At the end we hopefully get consensus on the final alternative

It was added that if you are not able to make a meeting you are allowed to have someone to sit in for you

Jenn added that your ongoing involvement and ability to share information about the project will improve the outcomes.

**Vision and Goals**

Drew shared as we do background data analysis and study, they want to understand the following:

What is your vision for the future of Battery?
What do you see as the biggest challenges facing Battery Street?
What do you hope this study achieves?

Barbie shared that she is here as a pedestrian I do not want to park, my problem with Battery Street is that is a racetrack people drive fast, run stoplights, unpleasant experience of the day. She shared that her friends view Battery Street as the most unsafe Street in Burlington

Terry added like Williston Road, how do we make it more walk or bike friendly.

Drew asked where along Battery Street do you feel unsafe?

Terry normally crosses at Main Street (lives on St. Paul and Main). Motorists coming up from Maple Street area aren't really a problem at the point, more that motorists coming down the hill are the problem.

Drew added that the lane configuration is confusing.

Terry shared that as a pedestrian you must stop and make sure people are stopping. Better chance going up to College or up to Sherman or Pearl Street.

Jenn asked if you are sharing south of Main is not as bad with speeding.

Terry agreed yes because most turns are left turns it creates more friction and it is not a comfortable place for pedestrian.
Maple to Main is not as bad given it's one lane in each direction. Coming down Maple and turning onto Battery and people are trying to turn right on red there, i.e. dangerous for pedestrians…

It was added that the crossing at Main Street feels unsafe.

Ali joined the meeting late and shared that he lives in Old North End, and he works in healthcare and drives for work to do home visits. He agrees with the speeds that people drive through Battery Street are too fast. He added that he bikes for enjoyment and commuting when he can, he also walks. He praised the temporary separated bike lanes that were along Battery during the Burlington Greenway detour. Hopefully something we can discuss. He added that he knows some teachers at Burlington High School, and shared that a student was recently hit by a car at Cherry Street on their way to the high school.

Phet added where the double lanes are, she has seen many times people turning when people are walking. Flashing signs should be added. In addition, it would be good to make things social for walkers. Something like rain gardens for people to sit and enjoy.

Norm added he is interested on others' opinions, effectively this treats four lanes of traffic. Would like to rebalance the space, figure out how this will interface with other streets and how this will be interfaced with public transit. Have heard for years for people using College Street to access the waterfront.

Sophie shared that Ali is the first time hearing positive feedback on bike lane change. She added that she is disheartened to hear someone was hit crossing. Connective part that is missing, that ability to safely cross a green space that is right there for all those students and people working downtown. Does feel like the corridor is so wide it is an opportunity to create a boulevard like Street. Really looking forward to the improvements we can envision for Battery Street.

Drew added that the crossing of Battery Street at the northern section is difficult. He added that the Burlington bike path in the tree canopy and how separated you can feel so close by. He asked if that is an inspiration we could pull from? Replicate that feeling to streetscape to make the whole Street feel more inviting.

Gene added the reason it is pleasant is because no one is walking there at night. You cross the berm and gravel area. Coming from the north you got the traffic coming and it merges with park Street, backs up a lot. Building of these lanes are out of line with the size of cars. The connections with the railroad district mean that turns off of Battery into the neighborhoods we have to figure that stuff out to avoid negative impacts to the King Street neighborhood. Challenges for the neighborhood for environmental racism and classism.

Gene added that as we develop Main Street there will be more development near Lake Champlain, more development around the ferry, the connections with the Marina and Perkins Pier and the use of that becomes important. Would love to be able to ride my bike up Battery Street. Planning for what will be infill and future development. Pay attention to the TIF districts.

Barbie shared she is concerned about more housing in the future.

Jenn added that they will look at what expect growth to look like, and how will that impact vehicle volumes.

Karen added that the TIF piece is important to pay attention to.

Gene added that Main Street TIF district those connections will be important.

Ali added to work around the Main Street project coordination and have it less segmented with closures.

Drew added that VHB is the consulting engineers on the Main Street project.

Drew shared the project team is looking at the existing condition, but both of those projects will be complete before this project would be done.

Barbie added that Main Street will be even more utilized in the future and she gave up biking in Burlington because she didn't feel safe along streets like Battery Street.

**Next steps**

Drew shared that next steps include finalizing the existing conditions and analysis and scheduled traffic counts. Build out a traffic model to assess the corridor. Prepare for the first public meeting, local concerns meeting. Follow up with scheduling our next check point which will be after the first public meeting.

# Meeting Agenda

Battery Street Corridor Scoping Study
First Public Meeting (Local Concerns Meeting)
May 2, 2023, 4:00 – 7:30 PM
Contois Auditorium, 149 Church Street, Burlington, VT 05401

- **4:00pm – 6:00pm: Open House**
  - *Informational boards will be on display in the meeting room, and members of the project team will be available to answer questions and solicit input from the community.*
- **6:00pm – 6:30pm: Project Presentation**
  - *The Project Team will give a brief presentation on the existing conditions along the Battery Street corridor. Topics will include traffic, safety, parking, and walking / biking facilities.*
- **6:30pm – 7:30pm: Q & A, and Closing Open House**
  - *The project team will answer questions at the conclusion of the presentation. The open house will then resume until close.*

**More Information:**

- **Web: https://ccrpcvt.org/battery-street**

**Questions/Comments:**


- **Jason Charest**, Project Manager, jcharest@ccrpcvt.org


In accordance with provisions of the Americans with Disabilities Act (ADA) of 1990, as amended, the CCRPC will ensure public meetings are accessible to all people. Requests for free interpretive or translation services, assistive devices, or other requested reasonable accommodations, should be made to Emma Vaughn, CCRPC Title VI Coordinator, at 802-846-4490 ext. 121 or evaughn@ccrpcvt.org at least 3 business days prior to the meeting for which services are requested.



# Battery Street Planning Study

## Local Concerns Meeting
## May 2nd, 2023

Chittenden County RPC
Communities Planning Together

Burlington, VT Public Works

vhb

# Agenda

- Welcome + Project Team Introductions
- Project Schedule
- What are the outcomes of this Study?
- Corridor Overview
- Next Steps
- Discussion of Issues & Opportunities



# 01|| Project Team

# Project Team

vhb

- Drew Gingras
- Karen Sentoff

Chittenden County RPC
Communities Planning Together

- Jason Charest
- Eleni Churchill

Burlington, VT Public Works

- Dayton Crites
- Ravi Venkataraman

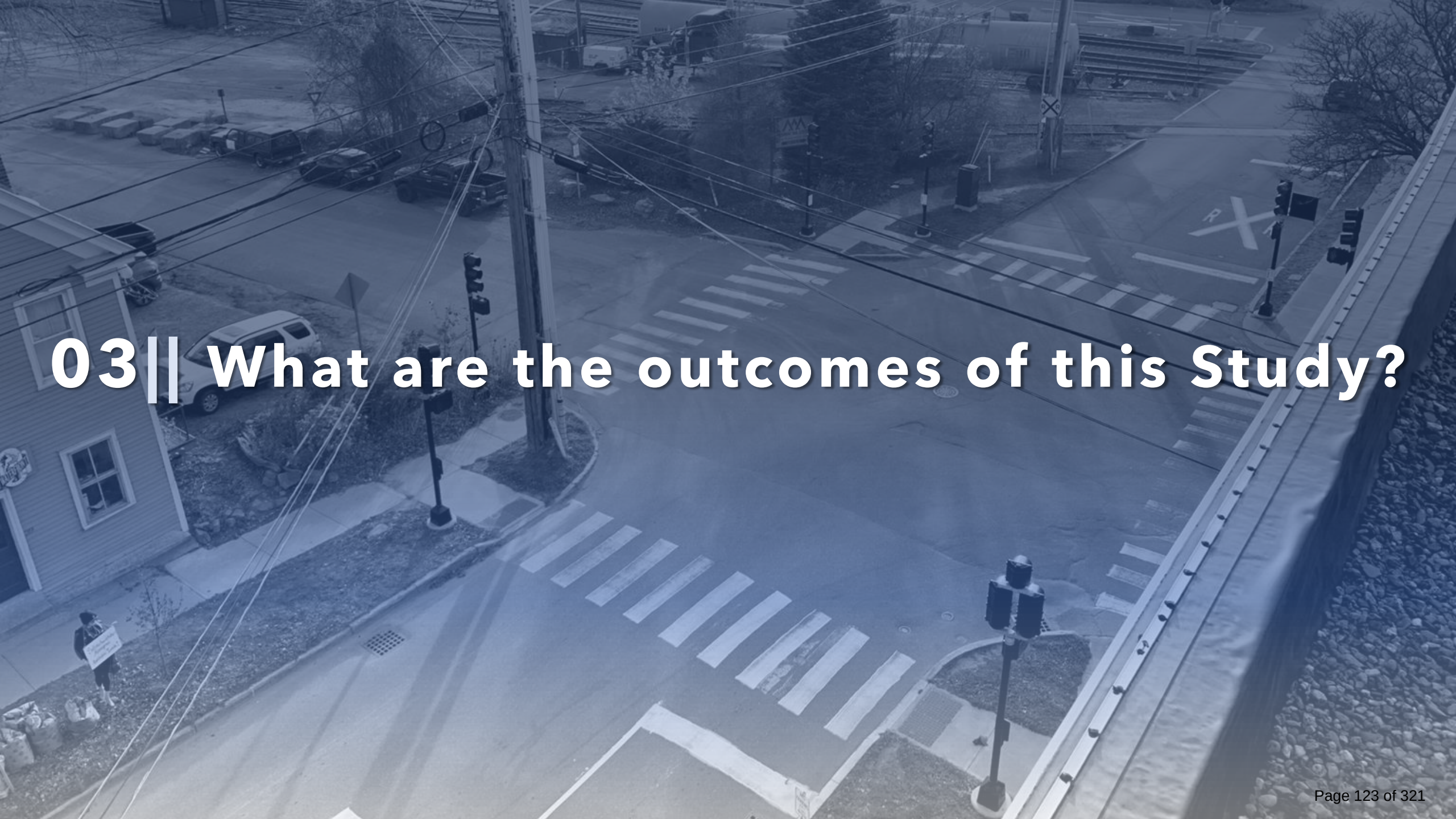
# Advisory Committee

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Norm Baldwin | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- Karen Paul | City Councilor
- Sophie Sauve | Burlington Parks, Rec, & Waterfront
- Jamie Smith | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

# 02|| Project Schedule

# Project Schedule

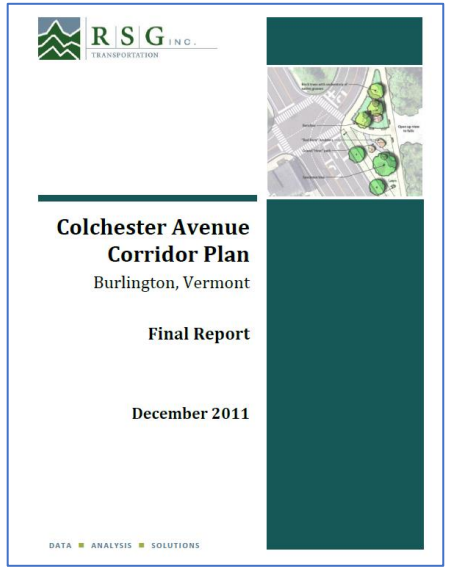
| | |
|---|---|
| **Local Concerns Meeting** | ***Today*** |
| **Focus Group Meetings** | *Throughout project* |
| **Existing Conditions Analysis** | *In progress* |
| **Alternative Development / Assessment** | May – September 2023 |
| **Alternatives Presentation Meeting** | September 2023 |
| **Advisory Committee Meetings** | May / September / November 2023 |
| **City Council Presentation** | March 2024 |
| **Final Scoping Report** | April 2024 |



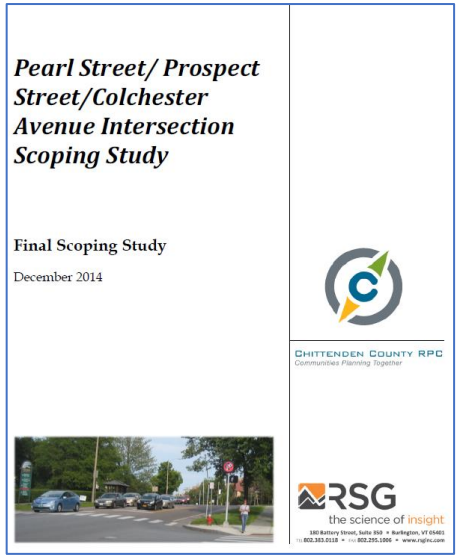
# 03|| What are the outcomes of this Study?

# What are the outcomes of this Study?

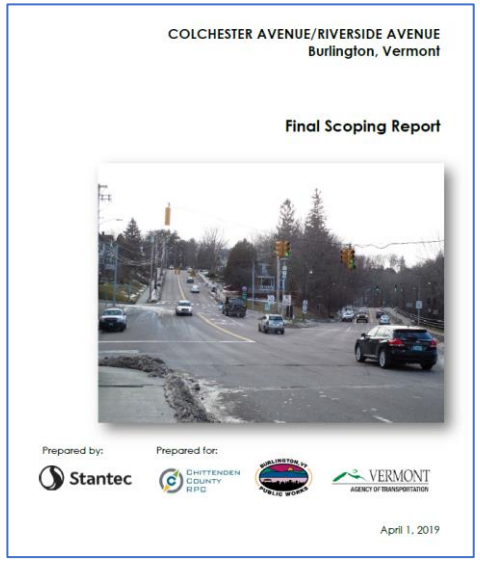
- Develops detailed alternatives for the corridor and key intersections
- Some intersections will require further study



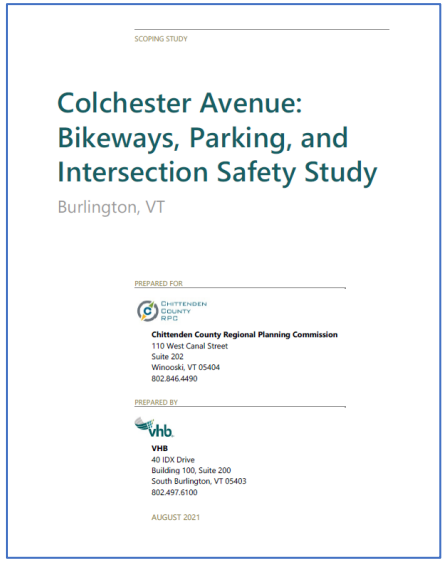

2011




2014

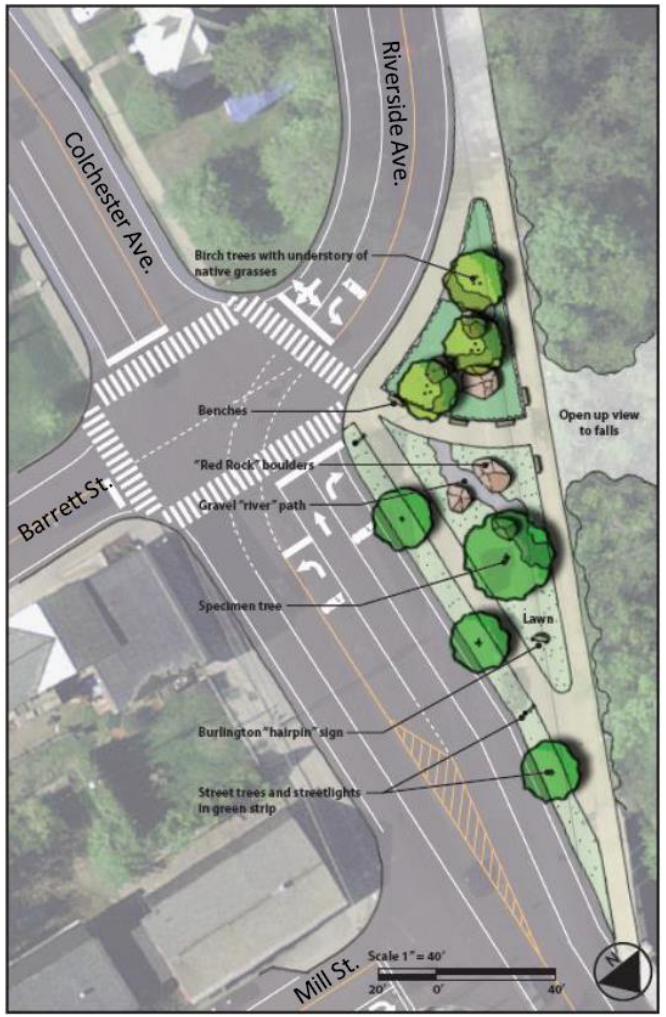


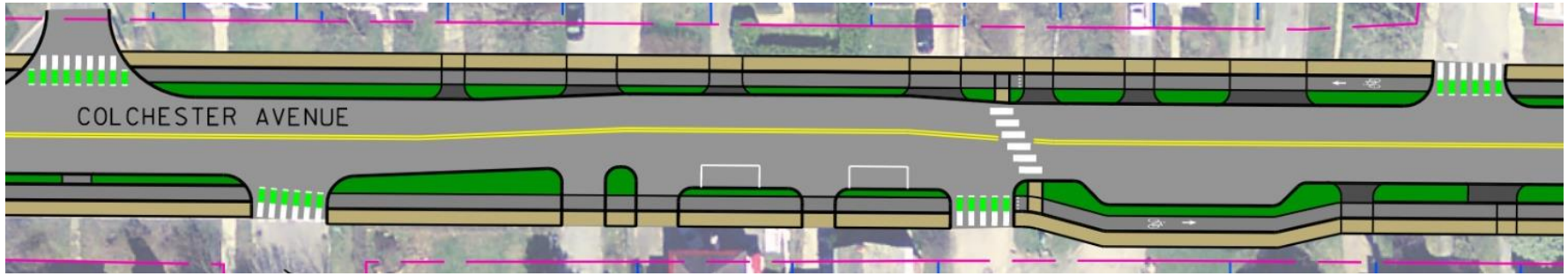

2019




2021

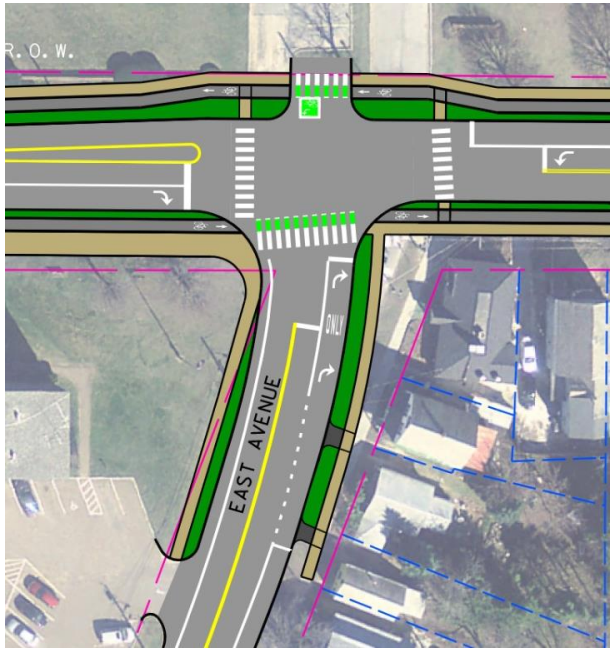
# What are the outcomes of this study?





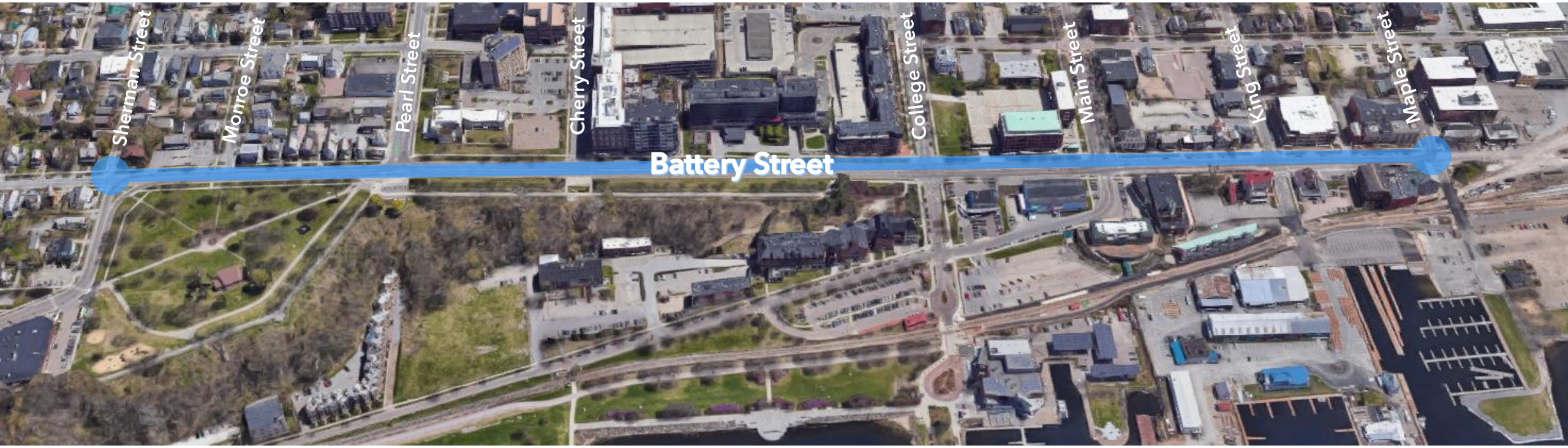




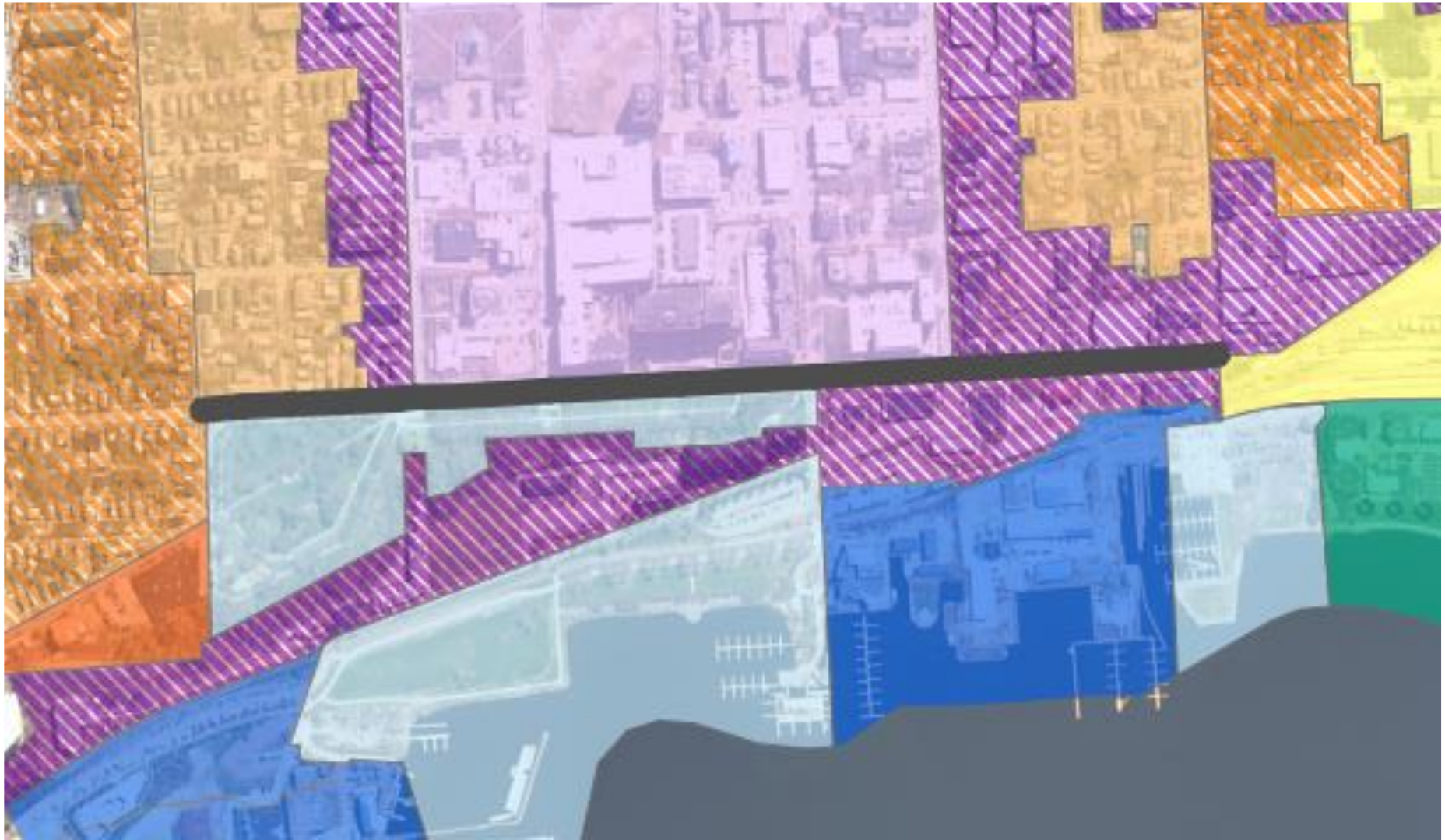


# 04|| Corridor Overview

# Corridor Overview - Project Area



# Corridor Overview - Land Uses



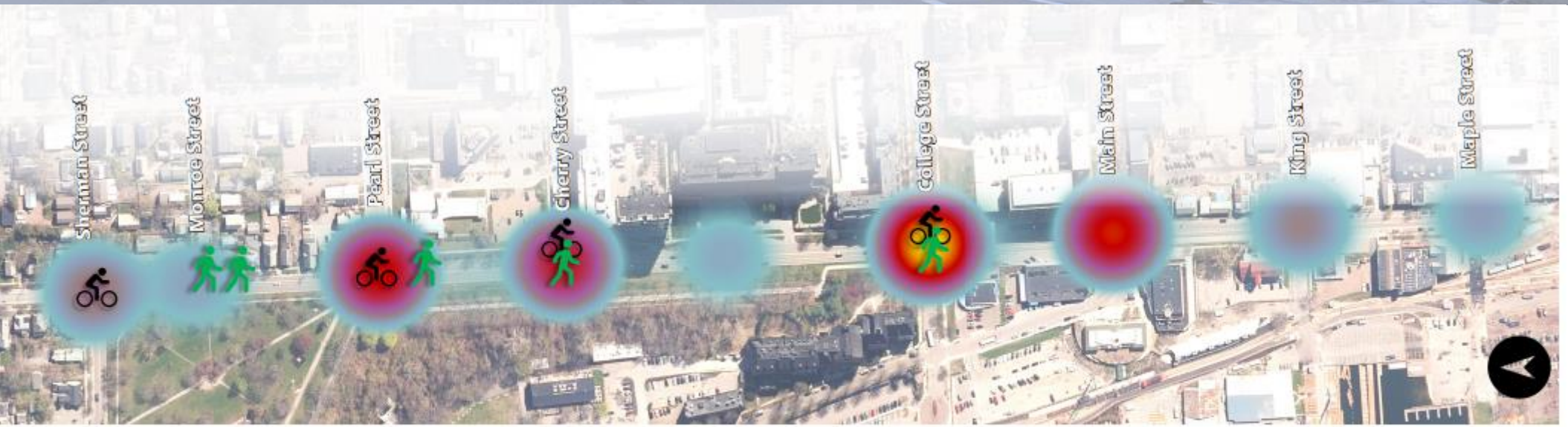
## Legend

- Battery Street

Burlington Zoning DISTRICT

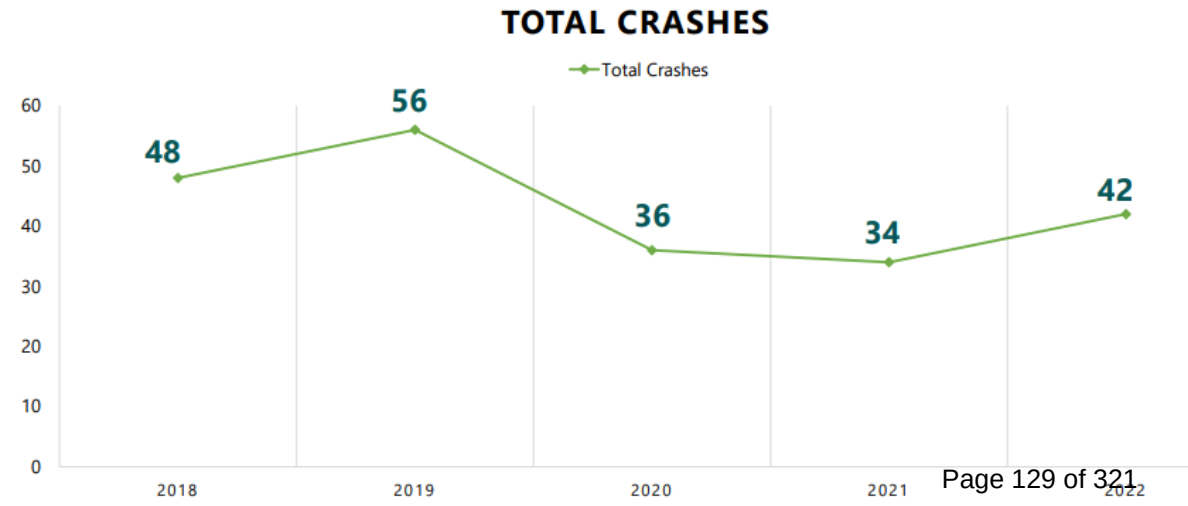
- Civic Spaces
- Downtown Waterfront - Public Trust
- FD5 Downtown Center
- FD6 Downtown Core
- Enterprise - Light Manufacturing
- RCO - Recreation/ Greenspace
- Residential - Medium Density
- Residential - High Density
- Waterfront Residential - Medium Density

# Corridor Overview - Crash Data




## 2018-2022 Crash Data

| Crash Involving: | Crashes from 2018-2022 |
|---|---|
| Vehicle Only | 197 |
| Heavy Truck | 10 |
| Pedestrian | 5 |
| Bicyclist | 4 |
| Total | 216 |

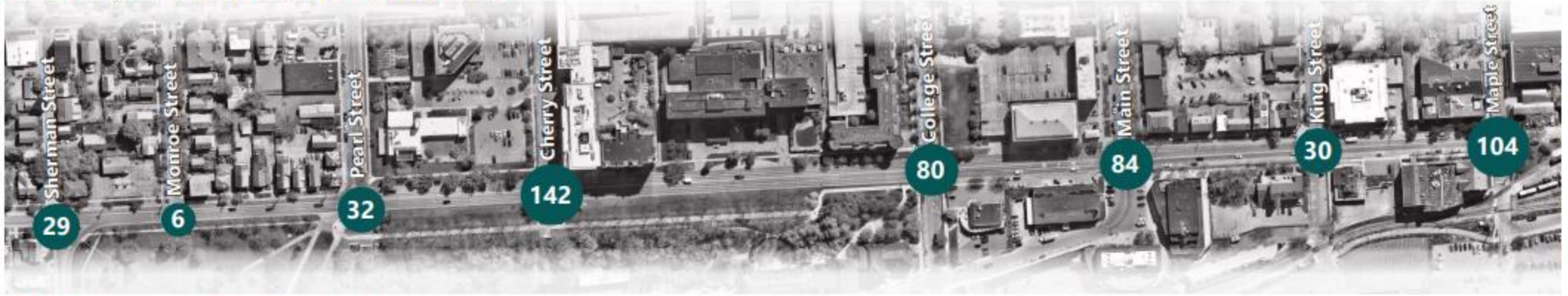


# 2023 AM Peak Count Data

## AM Vehicle Traffic Volumes




## AM Pedestrian Traffic Volumes




## AM Bicyclist Traffic Volumes



# 2023 AM Peak Count Data

## PM Vehicle Traffic Volumes




## PM Pedestrian Traffic Volumes

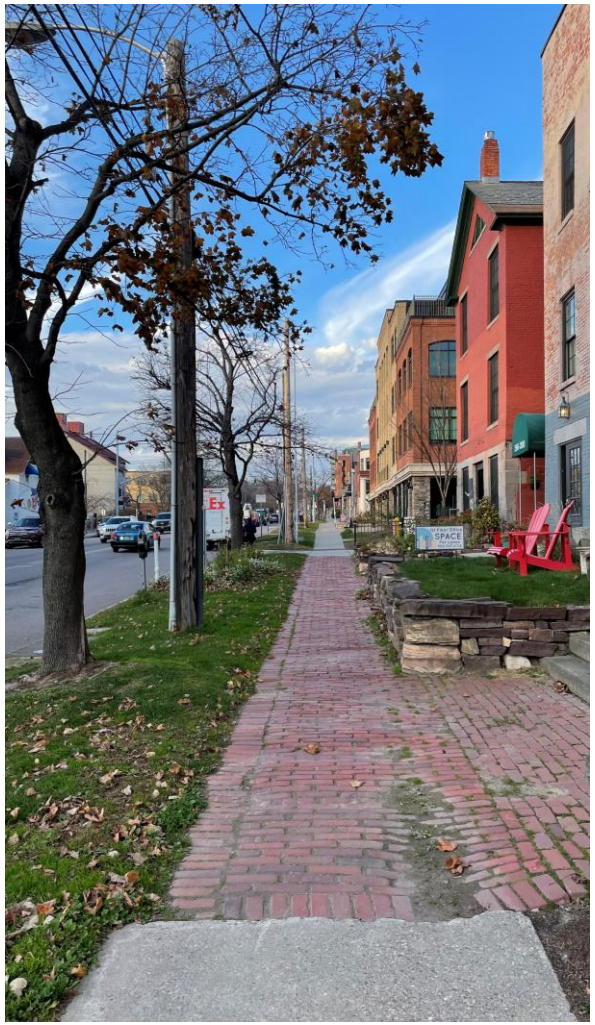



## PM Bicyclist Traffic Volumes



# Corridor Overview – Pedestrian Facilities







# Corridor Overview – Bicycle Facilities

- Battery Street a northbound bike lane between Pearl Street and Sherman Street
- Temporary two-way separated bike lanes were installed between Maple Street and Main Street in 2022
  - Feedback from bicyclists was



2011 Burlington Transportation Plan » "Battery Street needs to be upgraded to a **Complete Street**"




» Battery Street needs **Protected Bike Lanes**

# Corridor Overview – Parking and Transit




Bus Stop

Bus Shelter

On-Street Parking

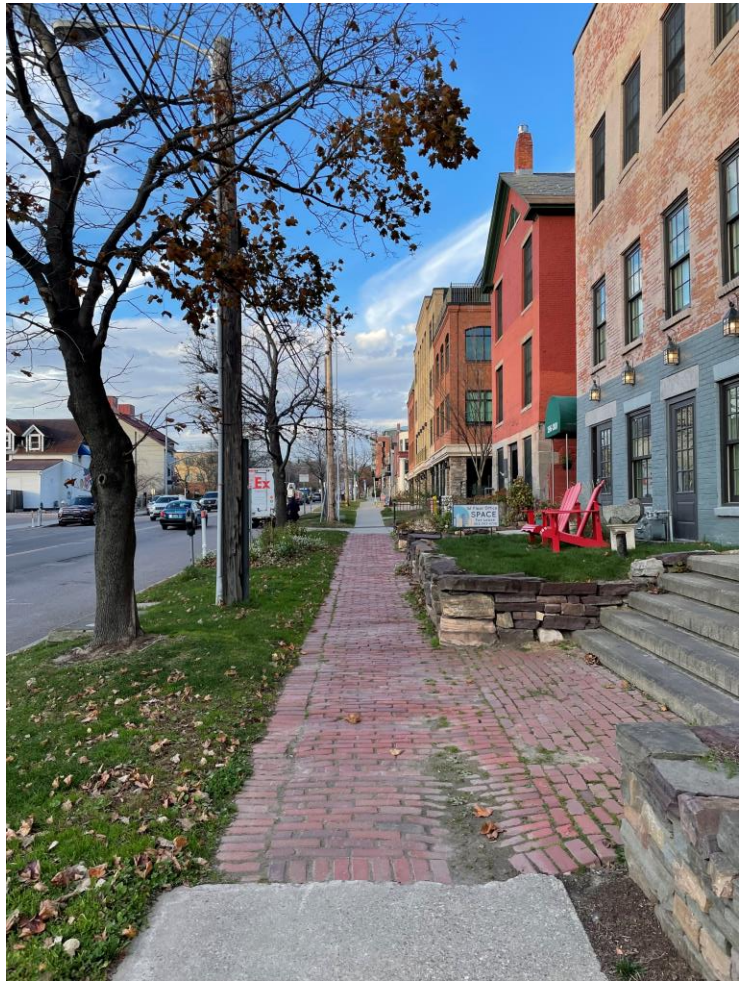


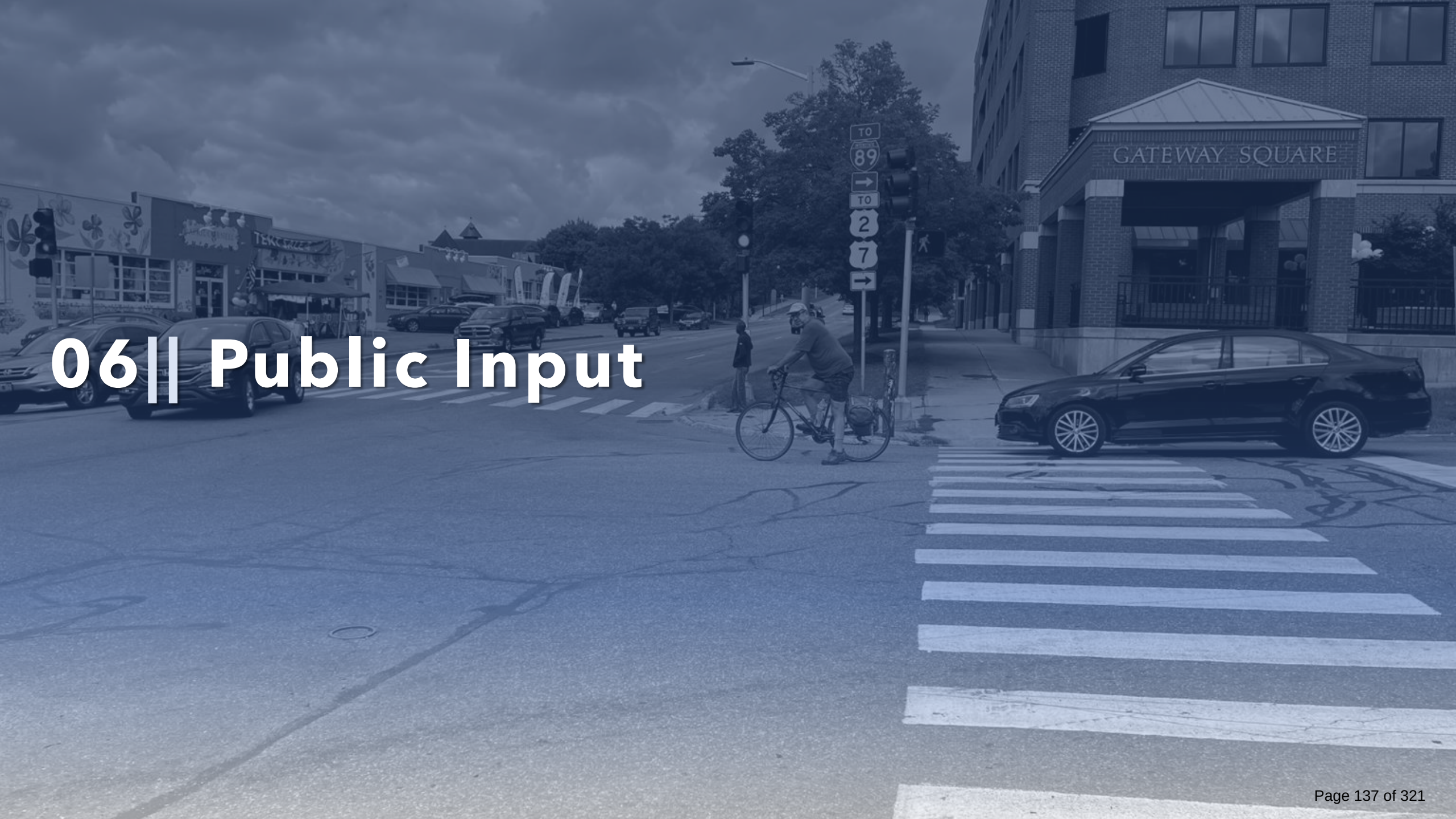
# 05|| Next Steps

# Next Steps

- Draft Purpose & Need Statement
- Future Conditions Analysis
- Advisory Committee Meeting #2
- Develop Conceptual Alternatives
- Public Meeting #2 – Alternatives Presentation



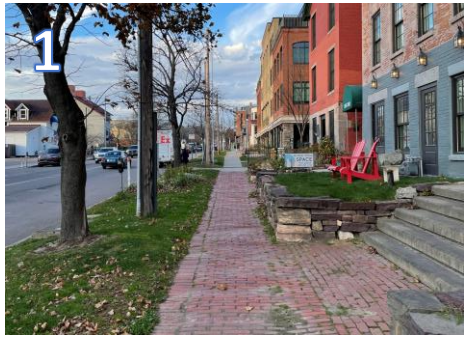


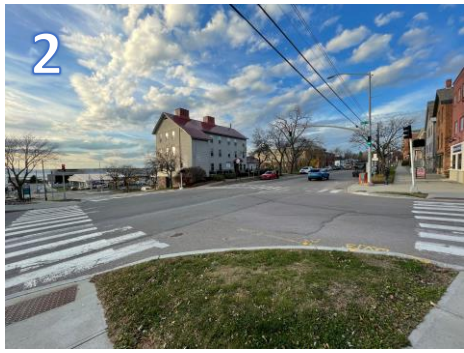



# 06|| Public Input

# Public Input – Southern Section






# Public Input - Hill Section











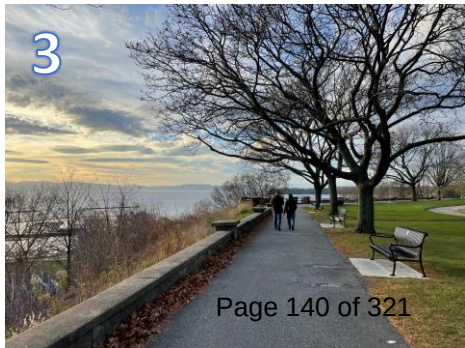

# Public Input – Northern Section









# Contact Us


**Jason Charest**
Senior Transportation Planning Engineer

802-861-0127
jcharest@ccrpcvt.org

**Drew Gingras, PE**
Project Manager

802-391-5569
dgingras@vhb.com

Thinking about your recent experiences on Battery Street, what are your one or two **biggest issues or concerns**?

**Write your response on a post-it note and display in the shaded area below**

## When Walking?

- Dangerous crosswalk (x3)
    - Cars going during pedestrian phase (x2).
    - Not enough time.
- Lack of curb at crossings makes it feel too close to the road.
- To much distance between crosswalks (x3).
- Vehicles speed (x2).

## When Biking?

- Speed of vehicles (x3).
- inconvenience of crossing or turning from or to Downtown (x2).
- Pearl/Battery intersection is scary traveling west on Pearl for both directions. (Cars have a right turn lane, the road is uneven and cars cut you off to turn right).
- Lack of dedicated bike infrastructure.
- Conflict with pedestrians using shared, limited space sidewalks.
- Vehicles too close (x3)
- Poor surface drainage makes it unstable.

## When Taking Transit?

- Do not repeat North Ave mistake. (Cars overtake bus when its stopped, bus has to wait to merge back into traffic.) Bus priority needed (x3).
- Lack of way-finding to destinations like Amtrak, Downtown (x2).
- Lack of shelters for weather (x2).
- Better transit routes for getting North to South.

## When Driving?

- People running red lights.
- Narrow travel lanes.
- Bottlenecks at southbound left turns (x2).
- High speeds (x2)
- Dangerous lane changes.
- Challenges turning left in either direction.
- Going straight when in left turn at Main Street.

# If you could do **one thing** to improve Battery Street, what would it be?

**Write your response on a post-it note and display in the shaded area below**

## This would make it better to walk Battery Street:

- More friendly crosswalks with no turning traffic on walk signal.
- Wider sidewalks, separation between curbs and roadway at pedestrian crossing (x3).
- Shorter crossing distances and reduce vehicle speeds.
- Trim/ clean bank to the west of shared use path to allow view of the Lake.
- More trees/ shade (less noise. Especially between College and Maple.
- Better access to waterfront/ bike path from Battery Park.

## This would make it better when I bike Battery Street:

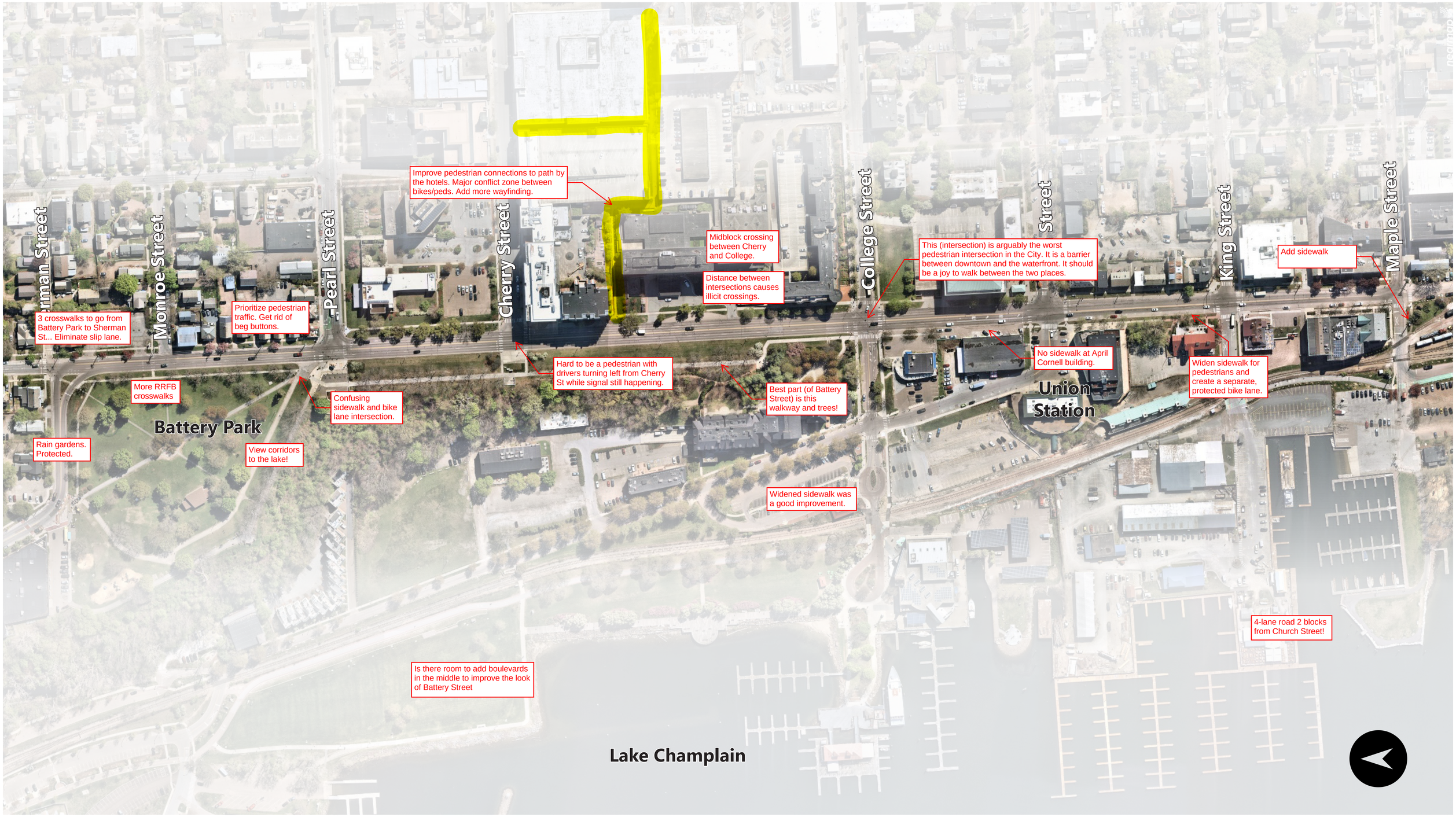
- Dedicated, protected, bike space (x5)
- Protected lanes (connected to existing network i.e. cut through by Hotels).
- Reduce number of car lanes.
- Bike boxes for intersections.

## This would make it better to ride the bus through Battery Street:

- Bus only travel lanes (x2).
- Bus shelters.
- Bus rapid transit.
- Better connections for North and South ends of town.
- Park and rides at North and South ends of town.
- Better routes (serve more people).

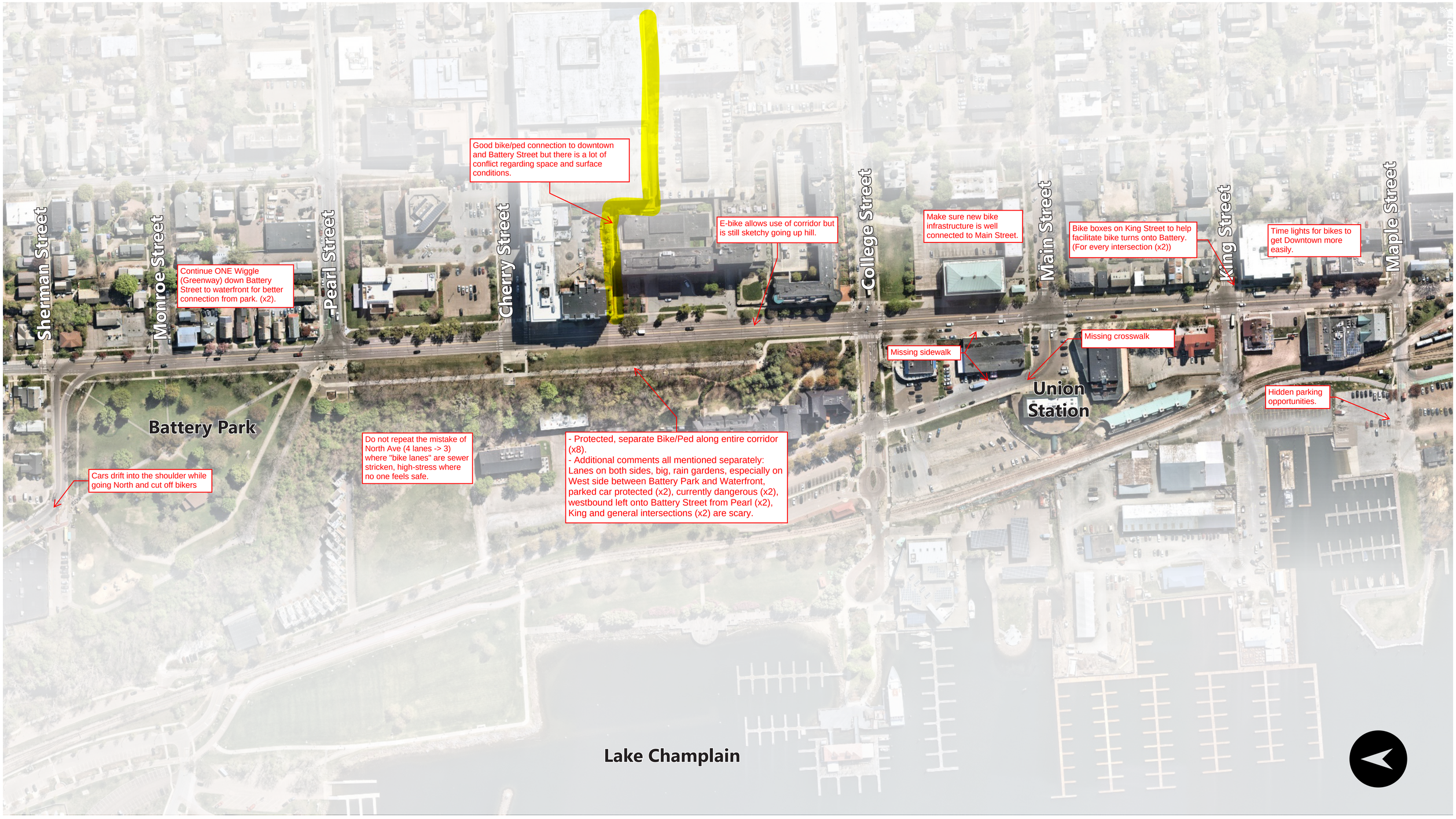
## This would make it better to drive Battery Street:

- Single lane each direction to prevent aggressive passing.
- Traffic calming (x2).
- 3 lanes (1 for turning).
- Its already designed for the cars...



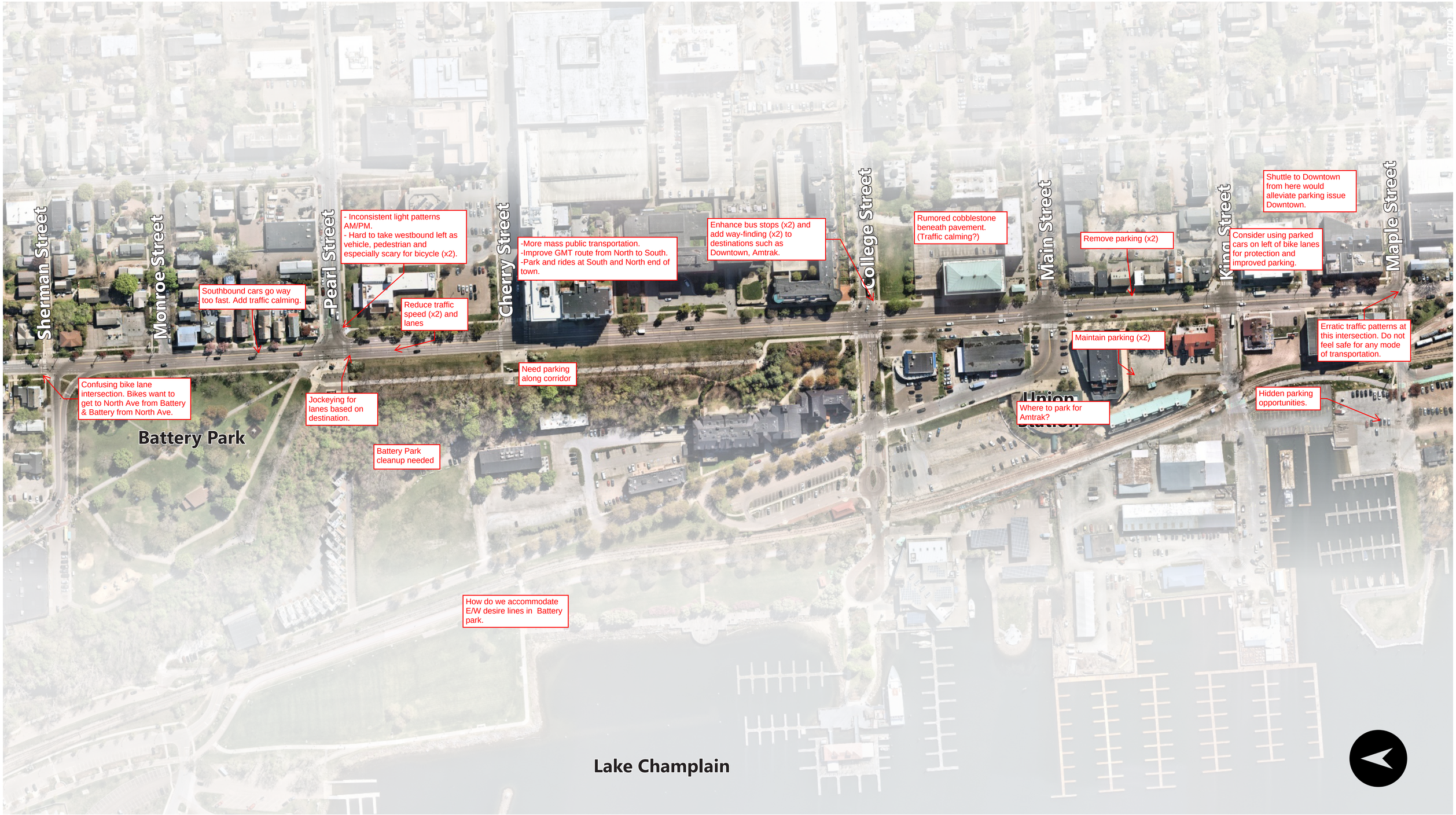

# Issues & Opportunities

## Walking



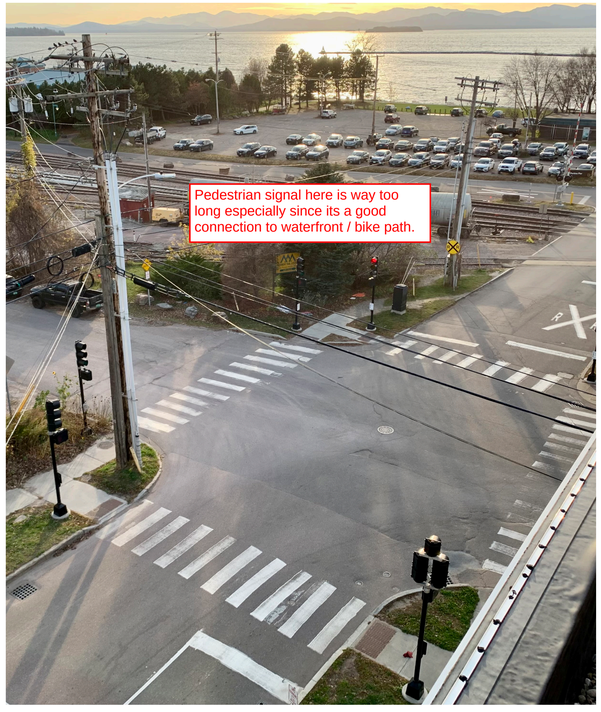

# Issues & Opportunities

## Biking

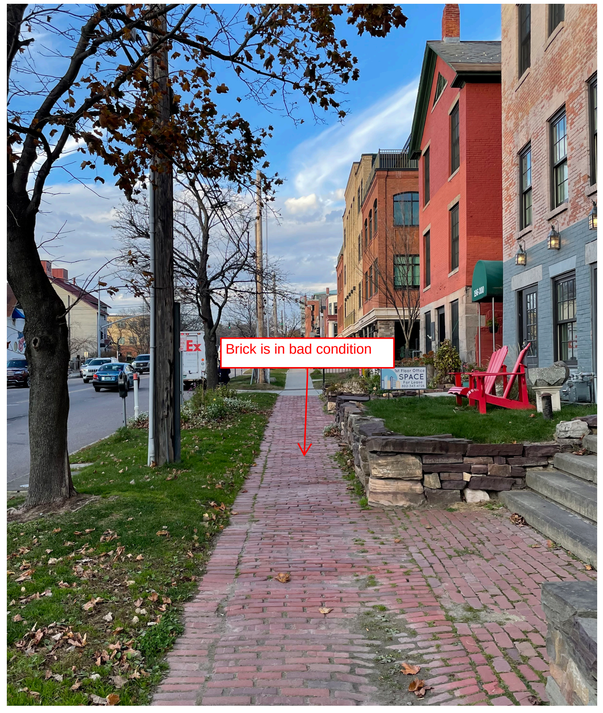



# Issues & Opportunities

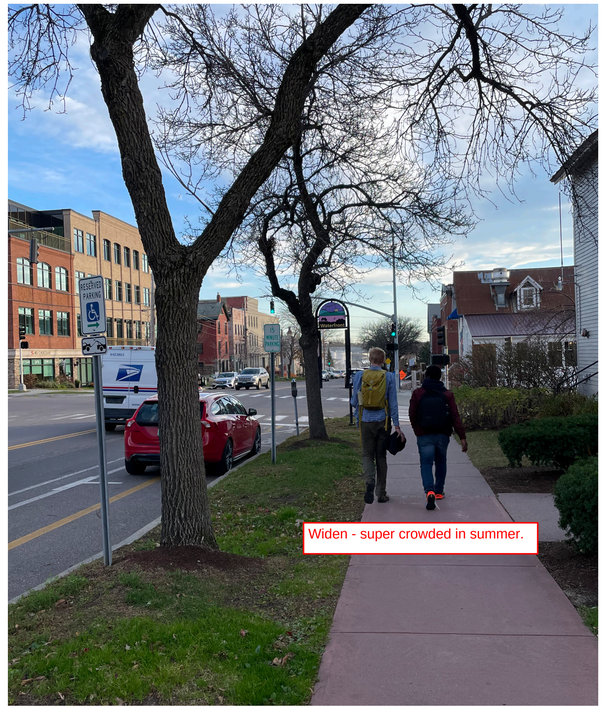
## Driving, Parking, & Transit




Maple Street and Battery Street



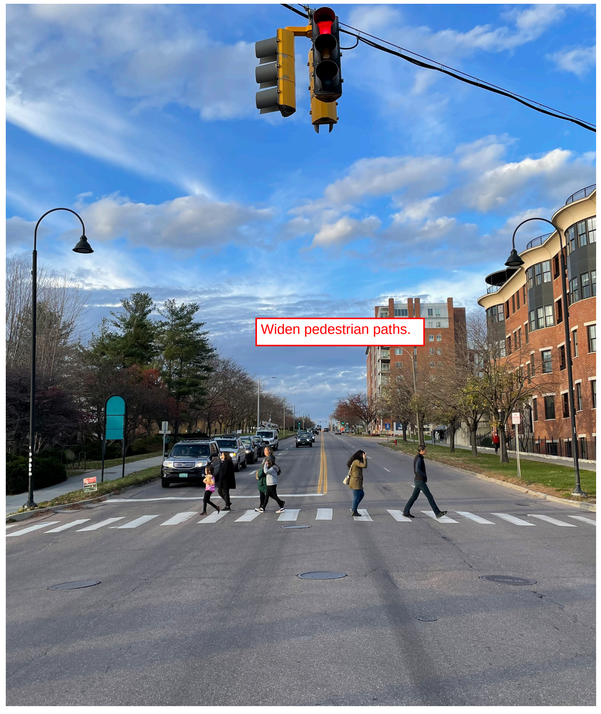

Sidewalk on eastern side between Maple and King Street



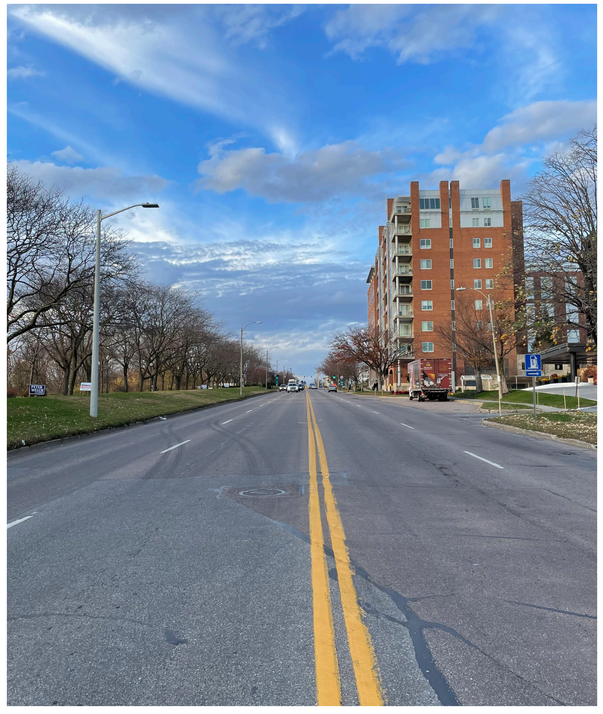

Sidewalk on western side between King and Main Street



Crossing Battery Street at King Street




Crossing Battery Street at College Street



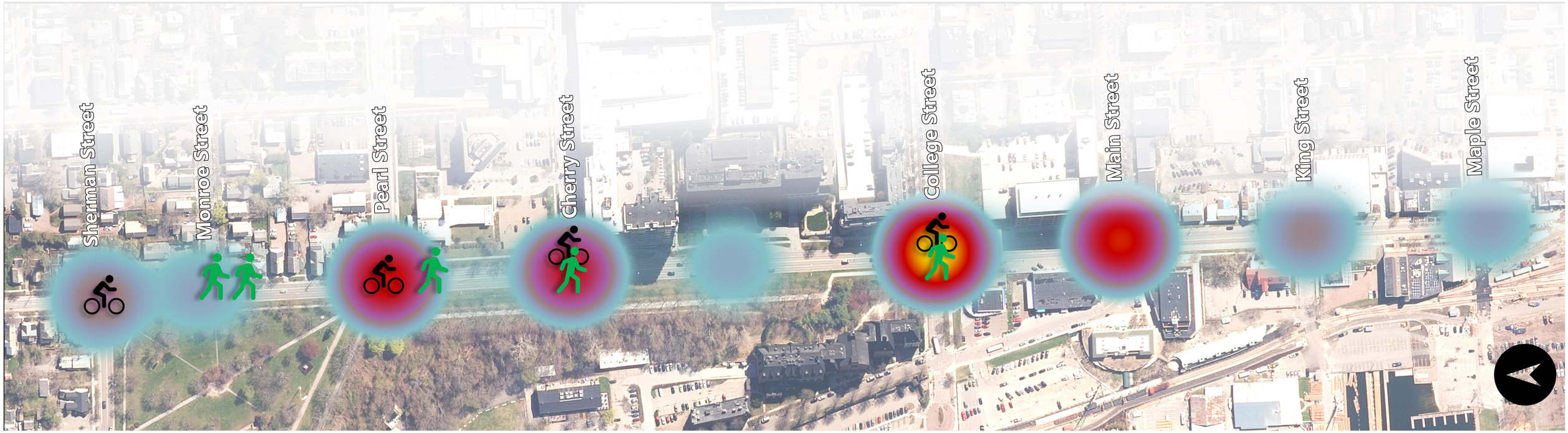
Battery Street south of the Hilton




Shared use path on western side



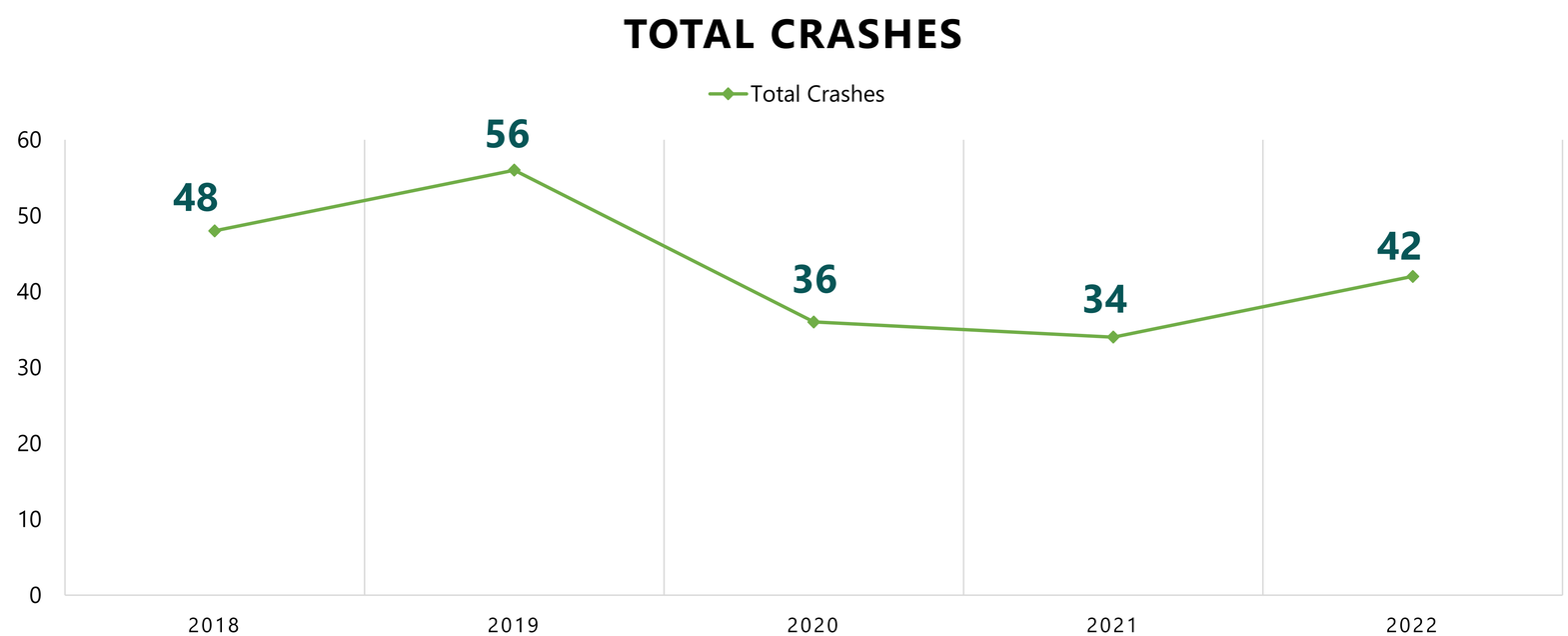

Corner of Battery and Pearl Street




# 2018-2022 Crash Data

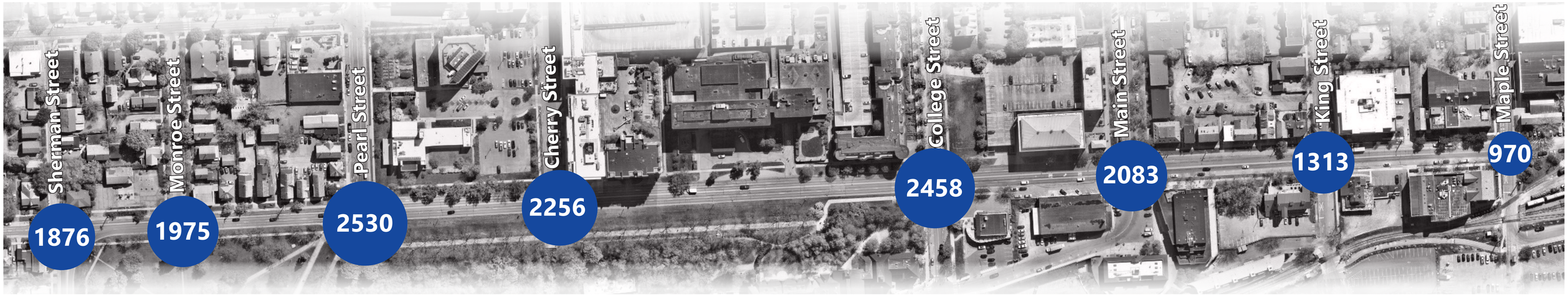
Bicyclist Pedestrian Vehicle Crashes Heat Map: Sparse — Dense

| Crash Involving: | Crashes from 2018-2022 |
|---|---|
| Vehicle Only | 197 |
| Heavy Truck | 10 |
| Pedestrian | 5 |
| Bicyclist | 4 |
| Total | 216 |



# 2023 PM Peak Count Data

## PM Vehicle Traffic Volumes




## PM Pedestrian Traffic Volumes

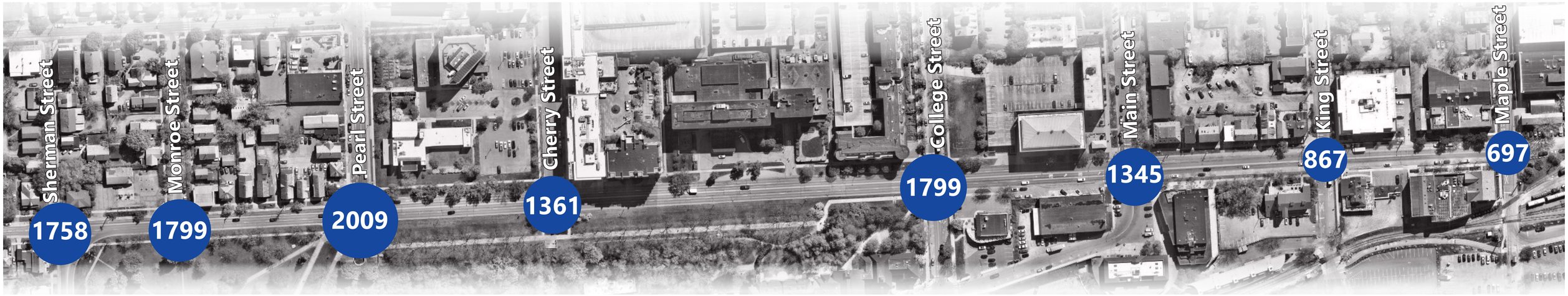



## PM Bicyclist Traffic Volumes

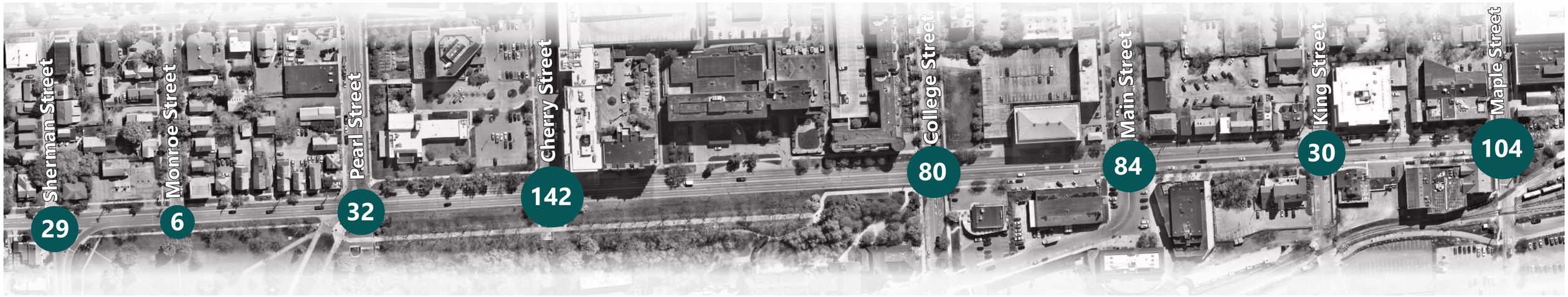


# 2023 AM Peak Count Data

## AM Vehicle Traffic Volumes




## AM Pedestrian Traffic Volumes




## AM Bicyclist Traffic Volumes



**Public Input Survey 1: Where do you see an issue or opportunity for improvement along Battery Street?**

| Timestamp | How are you moving when you encounter this issue or opportunity? | How would you describe the issue or opportunity? |
|---|---|---|
| 4/6/2023 21:23 | Walking | Remove this road into Battery Park? |
| 4/13/2023 12:11 | Biking | It is a challenge to bike anywhere on Battery Street. I avoid it when I can. |
| 4/13/2023 12:15 | Driving | The biggest issue is interest groups throttling one of the last North South corridors in town |
| 4/13/2023 12:16 | other | Leave Battery Street Alone!!!!! |
| 4/13/2023 13:55 | Walking | I feel so uncomfortable as a pedestrian here. Cars are blasting through red lights, rolling into the crosswalks during their red lights, cars seem offended when I'm simply walking during the designated pedestrian phase, right-turn on red makes me constantly check over my shoulder, and cars are using the Burlington Bay Market parking lot to turn around and idle - a single car is able to disrupt a couple dozen people while they wait in line for creemees. Burlington Bay Market isn't enjoyable because there's an onslaught of loud cars and motorcycles circling the building like a death spiral. College St from Battery to Lake St could close to cars instead of routing cars through heavy pedestrian traffic. Cars can still use Lake St to access the parking. At the very least we deserve raised crosswalks here to deter reckless driving. |
| 4/13/2023 14:00 | Walking | Raised crosswalks. Car drivers treat pedestrians like they are a pest. |
| 4/13/2023 14:58 | Walking | Drug dealing/use, individuals camping out, public urination/defecation, graffiti, heckling. Something needs to be done to maintain Battery Park and make this beautiful public area feel safe. |
| 4/13/2023 16:13 | Walking | Street crossing is too wide. Should be two travel lanes, with lower college st closed to cars so turn lanes are unnecessary |
| 4/13/2023 16:13 | Biking | There are no protected bike lanes. |
| 4/13/2023 17:06 | Walking | create a pathway to the waterfront in this area - either stairs or a funicular! |
| 4/13/2023 17:08 | Walking | not clean/safe place to cross as a pedestrian. kind of a no man's land. feels unkempt. |
| 4/13/2023 17:09 | Biking | sometimes nervous about speeding down hill on bike, moving traffic, dips in pavement. |
| 4/14/2023 13:56 | Biking | This transition from the one-way Park to the two-way two-lane Park st is very treacherous for bikers. Cars are moving fast and there are no shoulders. A left turn to Pearl is very nerve-wracking. This area could use a single lane with bike facilities on both sides. |
| 4/14/2023 13:57 | Walking | Cars can unexpectedly turn right on red here. Signage should be added so both pedestrians and vehicles know what to expect for this slip lane. |
| 4/15/2023 11:33 | Biking | The section of Battery Street between Pearl Street and College Street is particularly hazardous for |
| 4/18/2023 20:52 | Crossing | cars whip around this corner from battery street and do not take into account pedestrians |
| 4/18/2023 20:52 | Crossing | cars often turn onto this street quickly and without looking. especially cars coming from the north. |
| 4/18/2023 21:31 | Walking | How about a set of stairs or enhanced ramp access to get down to the Lake St. businesses and waterfront features more easily? |
| 4/18/2023 21:44 | Driving | Turn left is unsafe. |
| 4/19/2023 0:59 | Walking | The stretch of park land from Pearl St to College St has so much potential but is tremendously |
| 4/19/2023 1:23 | Walking | I feel unsafe when crossing here because of the nature of the driving conditions. Southbound drivers move through the sliplane often with their focus on oncoming traffic from the north (Park St) without always watching for pedestrians coming from the south. This corner often feels like an onramp in the sense that drivers are either starting to speed up (for their journey north) or starting to slow down (from their journey from the north). Instead of a large radius sliplane and crossing island, could the southbound radius be lessened and the island removed? The new bumpout just to the west near the Police Station / Front St deadend has helped slow southbound traffic a little and has made crossing there feel much safer. |
| 4/19/2023 1:27 | Biking | I don't know enough about the traffic volume, especially at commuter times, but I'm curious if a road diet would be possible to reduce the 4-lane section. This could allow for bike lanes, which would greatly improve the on-road biking experience heading both north and south. |
| 4/19/2023 1:29 | Biking | The drainage grates on the western side are incredibly dangerous for those biking south on Battery. |
| 4/19/2023 1:37 | Walking | The sloped sidewalk at the corner can get tricky to navigate at busy times of the day. Pedestrians and bikers who are trying to move down the hill, move up the hill, or are just waiting to cross all come together in a relatively small, uneven spot. Then add southbound drivers and northbound drivers turning west onto College and you get more danger. If possible, it would be great to have more sidewalk extending south a little to accommodate those modes and a smaller turning radius for southbound drivers heading west. |
| 4/19/2023 1:41 | Walking | Can planters or other types of small barriers be placed at the edge of the large sidewalk area here, parallel to the roadway? When approaching the two crosswalks, it feels very exposed, especially when I have my young kids with me. |
| 4/19/2023 1:42 | Walking | Can planters or other types of small barriers be placed at the edge of the large sidewalk area here, parallel to the roadway? When approaching the two crosswalks, it feels very exposed, especially when I have my young kids with me. |
| 4/19/2023 1:49 | Walking | This stretch in front of April Cornell feels very exposed for pedestrians and bikers because there isn't a proper sidewalk and instead you travel through a parking lot parallel to a busy street. Would it be possible to turn the parking from angled parking next to the building to instead parallel parking next to the roadway with a protected mixed use sidewalk/bikeway next to the building? |
| 4/19/2023 13:36 | Driving | Needs re-paving |
| 4/19/2023 14:45 | Biking | Fast moving cars and tall buildings create a wall of noise which worsens everyone's experience of the lakefront and effectively divides the city from the lake to pedestrians. |
| 4/19/2023 14:46 | Walking | High volume and fast moving traffic significantly reduces the quality of Battery Park. |
| 4/19/2023 18:02 | Biking | Nasty fountain. (Last I walked by there was a dead squirrel in it.) Could that space be turned into a garden/resting space? Offer a better entrance to the sidewalk corridor that goes from Battery Park to College Street? Be educational (via signage)? |
| 4/19/2023 18:43 | Biking | Two lanes each side - this looks like I-89! |
| 4/20/2023 10:58 | Walking | There is insufficient trash cans so hotel guests from the Marriott Courtyard, Hotel Vermont and Hilton |
| 4/21/2023 17:43 | Walking | Feel unsafe at crossing. Too long a wait to get the pedestrian crossing light. Cars on Pearl turning right |

**Public Input Survey 1: Where do you see an issue or opportunity for improvement along Battery Street?**

| Timestamp | How are you moving when you encounter this issue or opportunity? | How would you describe the issue or opportunity? |
|---|---|---|
| 4/22/2023 18:00 | Biking | Riding east on College from the waterfront on the painted bike lane, making a left onto the west side of Battery to ride the side walk/bike lane there is a risk of cars making a quick turn from Battery onto College heading to the waterfront. Always a bit scary at that intersection. |
| 4/23/2023 18:15 | Walking | Stairway and funicular down to lake level. Tunnel from east side of intersection that starts downslope to lake and allows crossing of Battery. Tunnel could also be at the walk path on South side of Westlake Condos between their and Hilton/Hotel Champlain to tie easier into that path and give another way to ease parking for lakefront event (use City garages) |
| 4/29/2023 23:53 | Walking | Drivers taking right-hand turns from Main St. to Battery St. while persons are crossing Battery St. |
| 4/29/2023 23:56 | Biking | Exposure to rear-end impact from drivers traveling south and straight through intersection with Pearl St. while one is on a bike taking a left-hand turn on Pearl St. |
| 4/30/2023 0:01 | Walking | Discontinuation of sidewalk and no marked crosswalk for the thousands of pedestrians drawn to the waterfront from Main St., not to mention this is now the location of an active rail passenger station and LocalMotion. |
| 4/30/2023 0:07 | other | Four lanes of traffic next to a linear park and premier hotels, effectively serving as a deterrent to crossing pedestrians and through-travelling bicyclists. Four lanes could only be justified as a means for managing vehicle queue lengths. Given the low intensity of traffic entering and leaving this short corridor, such a justification does not hold. |
| 5/2/2023 15:13 | Walking | Unsafe crossing College St. Northbound. Drivers making a right speed and cant see pedestrians. vehicles turning left from battery to college also speed and don't notice the pedestrians crossing here. |
| 5/2/2023 20:14 | Biking | There is an excessive amount of speeding and red light running at this intersection that is regularly used by people on bikes and walking to cross into the waterfront parks. |
| 5/2/2023 20:15 | Biking | This area is very confusing about how it should be used on a bicycle coming in to downtown from North Ave. Sherman St is marked as a bike corridor, but how are people supposed to access it? |
| 5/5/2023 13:20 | Walking | The Alleyway connecting Battery Street to the trellises and parking area behind the block between Main Street and King Street (in particular, this one being the one that bisects the block, almost directly in the middle), between 156 Battery Street and 166 Battery Street. |
| 5/5/2023 13:24 | Walking | The pedestrianized walkway between The Hilton Battery Street and the apartments next to it, leading to the parking lots behind it, could incorporate more Green Infrastructure/ a Green Alley, to reduce erosion and pollutants that runoff spill into Lake Champlain, while reducing the urban heat island effect and carbon emissions. |
| 5/5/2023 13:25 | Walking | The pathway between The Courtyard Marriott and the Hilton on Battery Street Lake Champlain could incorporate more Green Infrastructure or even be converted into a Green Alley that has grayscale permeable pavers that filter pollutants out of the water supply and recharge the city aquifer, while making the path a more pedestrian friendly and desirable pathway that connects between the hotels behind the parking lots to the main right of way on the sidewalk of Battery Street, and potentially beyond. |
| 6/4/2023 23:02 | other | I would love to have the maple/battery intersection be a stop sign instead of a traffic light. I often have to wait at this intersection as a driver, as a biker, and as a pedestrian. There was a brief moment when the new lights were put in that they were not programed yet and they operated as a stop sign and it was great. Every body moved through the intersection much more efficiently |
| 6/4/2023 23:04 | Walking | it would be super awesome to have a stair case here from cherry st down to the waterfront |
| 6/4/2023 23:08 | Walking | this staircase and the landing is a wonderful place but it doesn't feel activated and can be kind of creepy. |
| 6/4/2023 23:12 | Biking | So there was a great bike lane added to pearl st and there is kind of a bike lane situation coming from north ave and sherman. I think it would be awesome to link them together. I think a great way to do that is to widen the side walk that is on the perimeter of the park and make it into a mixed use path. That way you make the connections without impacting the park or the street all that much |
| 6/4/2023 23:14 | Driving | this is not a suggestion, I just wanted to say I love the new intersection at pearl. It makes so much more sense now coming up battery |
| 6/4/2023 23:21 | other | I don't drive battery during rush hour so I'm not sure how helpful it is but two lanes in either direction is just not ideal. It makes the road feel faster and more dangerous in all modes. It would be great to have 1 lane in each direction and then turning lanes at the intersections. We could then use the extra space for some on street parking and/or a mixed use path. I put the pin on the block where I think a change like that would have the most benefit. |
| 6/8/2023 22:27 | Walking | Crossing at Simon's to BatteryyyPark is very dangerous! |



# Battery Street Corridor Scoping Study

## Advisory Committee Meeting #2
## July 27, 2023

CHITTENDEN COUNTY RPC
Communities Planning Together

BURLINGTON, VT PUBLIC WORKS

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# Agenda

- Welcome + Re-Introductions
- Public Comment Period
- Public Involvement Plan Update
- Project StoryMap
  - Community Engagement Summary
  - Draft Purpose + Need Statement
- Mini Design Charrette
- Next Steps



# 01|| Re-Introductions

# Project Team

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- Drew Gingras
- Karen Sentoff

Chittenden County RPC
Communities Planning Together

- Jason Charest
- Eleni Churchill

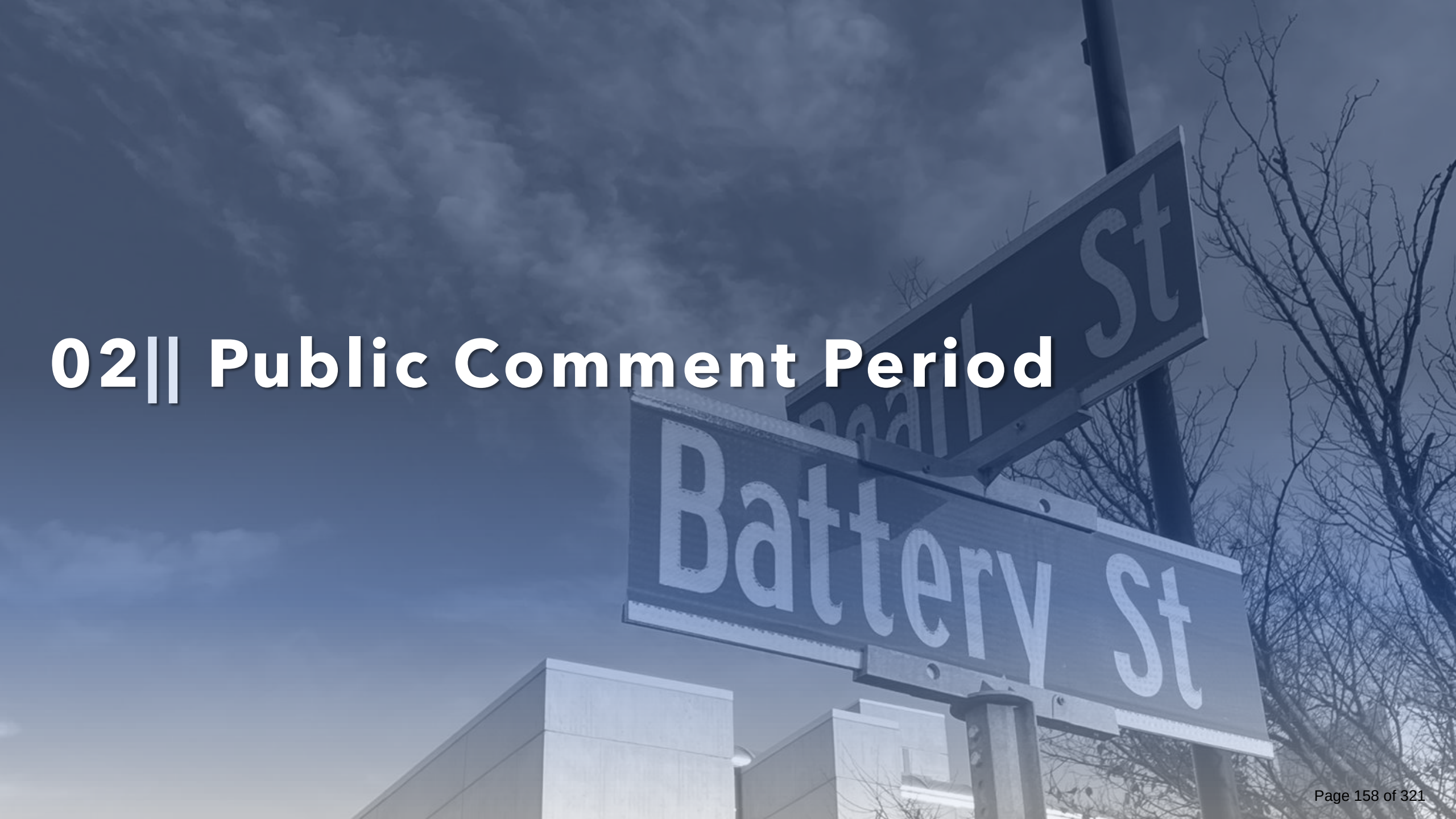
Burlington, VT Public Works

- Dayton Crites
- Ravi Venkataraman

# Advisory Committee

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Norm Baldwin | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- Karen Paul | City Councilor
- Sophie Sauve | Burlington Parks, Rec, & Waterfront
- Jamie Smith | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

# 02|| Public Comment Period

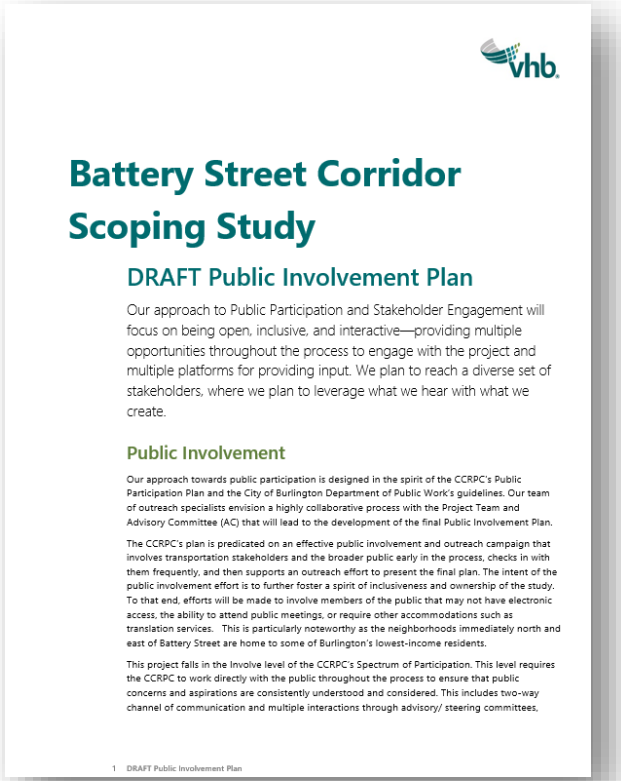




# 03|| Public Involvement Plan Update

# Public Involvement Plan Update

- **Public Involvement Plan is designed to be an evolving document as the project progresses**
- Updates that have been made:
  - Coordination with REIB
  - Reflections on Public Meeting #1
  - Summary of Local Concerns Engagement
    - Pop-Up Style and Targeted Engagement
    - Survey
    - Translation Services
  - Reflections on Engagement Events and Targeted Community Conversations



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Battery Street Corridor Scoping Study

DRAFT Public Involvement Plan

Our approach to Public Participation and Stakeholder Engagement will focus on being open, inclusive, and interactive—providing multiple opportunities throughout the process to engage with the project and multiple platforms for providing input. We plan to reach a diverse set of stakeholders, where we plan to leverage what we hear with what we create.

Public Involvement

Our approach towards public participation is designed in the spirit of the CCRPC's Public Participation Plan and the City of Burlington Department of Public Work's guidelines. Our team of outreach specialists envision a highly collaborative process with the Project Team and Advisory Committee (AC) that will lead to the development of the final Public Involvement Plan.

The CCRPC's plan is predicated on an effective public involvement and outreach campaign that involves transportation stakeholders and the broader public early in the process, checks in with them frequently, and then supports an outreach effort to present the final plan. The intent of the public involvement effort is to further foster a spirit of inclusiveness and ownership of the study. To that end, efforts will be made to involve members of the public that may not have electronic access, the ability to attend public meetings, or require other accommodations such as translation services. This is particularly noteworthy as the neighborhoods immediately north and east of Battery Street are home to some of Burlington's lowest-income residents.

This project falls in the Involve level of the CCRPC's Spectrum of Participation. This level requires the CCRPC to work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered. This includes two-way channel of communication and multiple interactions through advisory/ steering committees.

1 DRAFT Public Involvement Plan



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# 04|| Project StoryMap

# Story Map

## Project StoryMap

- Existing Conditions
- Community Engagement
- Draft Purpose + Need Statement



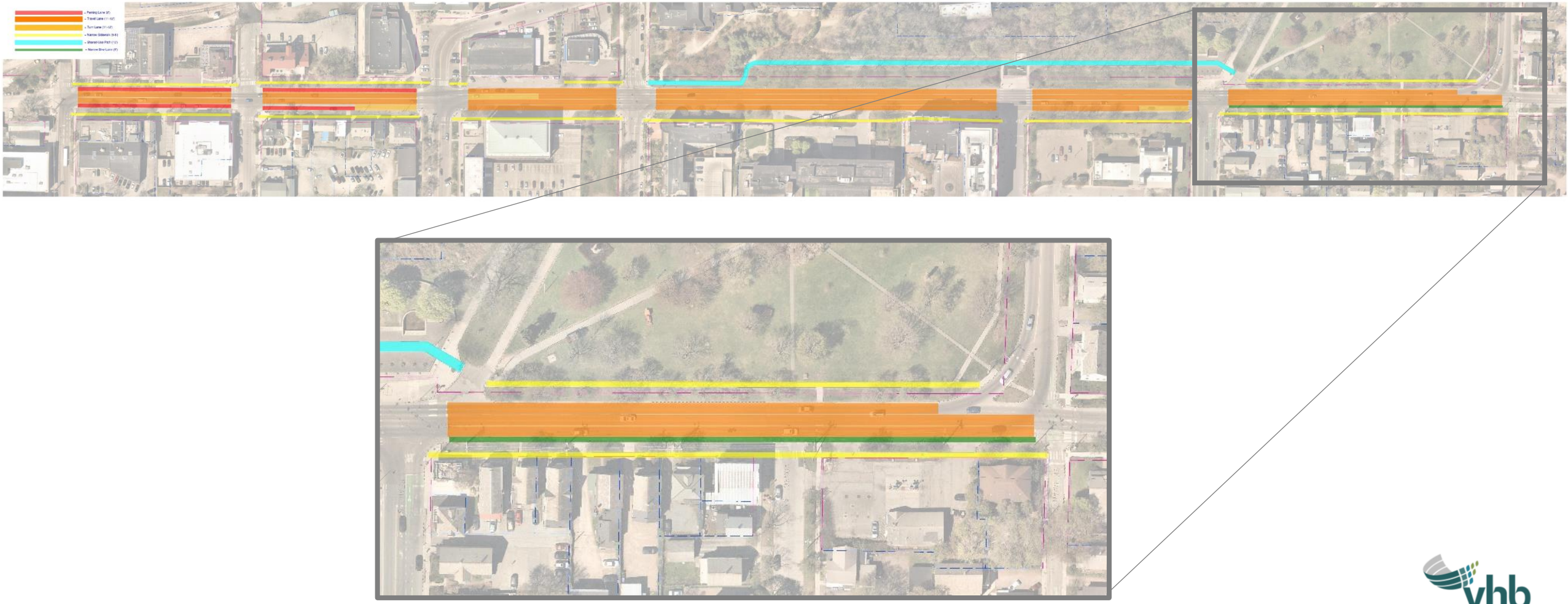
**Battery Street Corridor Scoping Study**

Chittenden County Regional Planning Commission (CCRPC)




# 05|| Mini Design Charrette

# Mini Design Charrette





# 06|| Next Steps

# Next Steps

- Finalize Purpose & Need Statement
- Develop & Evaluate Conceptual Alternatives
- Public Meeting #2 & Continued Engagement Re: Conceptual Alternatives
- Advisory Committee Meeting #3
- Alternative Refinement
- Advisory Committee Meeting #4
- Recommendation of Preferred Alternative
- Draft Report and Implementation Plan
- TEUC / City Council Meetings

# Contact Us


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Project Manager

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South Burlington, VT 05403

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dgingras@vhb.com

# Meeting Notes

| | | | |
|---|---|---|---|
| Date: | July 27, 2023 | Notes Taken By: | VHB |
| Place: | CCRPC Office | Re: | Battery Street Planning Study<br>Advisory Committee Meeting #2 |
| Project No.: | 58644.11 | | |

**ATTENDEES:**

VHB Staff: Drew Gingras, Karen Sentoff, Elisabeth Sundberg
CCRPC Staff: Jason Charest, Eleni Churchill
City of Burlington DPW Staff: Ravi Venkataraman
Advisory Committee Members: Phet Keomanyvanh (City of Burlington REIB), Peggy O'Neill (DPW Commission), Sophie Sauve (BPRW), Jonathon Weber (Local Motion)

**Meeting Notes:**

Jason Charest introduced the project and group.
Meeting Purpose: Summary of public input to date, discussion of key takeaways and Draft Purpose & Need Statement, mini design charrette to start answering the question – What do we want to conceptualize for the corridor?

**Introductions**

All present attendees introduced themselves and their affiliation.

**Public Comment Period**

No members of the general public were present.

**Public Involvement Plan (PIP) Update**

Karen Sentoff provided an update on the PIP –
We're continually building out an evolving document. Plan on paper on how to engage the public. Intended to be a document that is landing place for the collective thoughts from the team on how the public outreach is going as it progresses. Have updated the document with some of things that have happened since the last time we met. Coordination with REIB occurred, evolved into reaching out to other community entities (Trusted Community Voices). Incorporated REIB's comments to improve how we are engaging with the numerous communities that live near and engage with Battery Street.
Reflections on public meeting #1 –
Are we reaching the intended audience? Used reflection to guide some of other targeted engagement styles. Pop up events. Targeted engagement conversations with different community groups, survey during local concerns. Translation services. Reflections and review of how we are doing to inform the next phase of the project.

Sophie asked to see the document. VHB will make it sharable for the group.

**Project StoryMap**

Drew shared the story map. This is a tool to create a more accessible project information 'site'. It includes existing conditions, community engagement summary with key takeaways, and a draft purpose and needs statement. It is not currently publicly available but will be in the future. A working version was put together for this meeting.

**Public Input Summary Map**

The public input map was discussed. Online survey, online public map, focus group community engagement were discussed. The tool summarizes all the comments. Some comments were duplicates so they were combined into one comment (noted as multiple entries).

Key themes from public input to date:

- Improved corridor and intersection safety top to bottom
- Enhanced pedestrian accommodations
- Dedicated bicycle facilities
- And more… Better Community Connectivity

Jason added that the severe rutting northbound on Battery Street was recently fixed via repaving.

It was added that the sidewalks are very steep along Battery Street.

Enhanced pedestrian accommodations:

- Consider how to improve crossings and safety.
- People want better crossings.
- People do not feel safe in the crosswalks.

Pearl Street bump out to shorten crossing was installed four years ago.

Desire for better connections across Battery Street between Downtown and the Waterfront.

Better wayfinding, intersection geometry improvements.

Need to better prioritize pedestrians at signalized intersections:

- Unreasonable wait times
- Pedestrians are coming second to motorists

Dedicated bike facilities

- Temporary two-way bike lanes on Battery Street (for Bike Path detour) were popular among walkers and bikers
- Spoke to public input around that people want facilities like this along the corridor
- Connections to bike path, new north end, south end, etc.
- Safe bicycle accommodations at intersections
    - Bike boxes
    - Protected intersections
- Main St and Maple St intersections
    - Major projects happening at those intersections
    - Railyard enterprises
    - Main street great streets

Other takeaways from public engagement:

- Better community connectivity
    - Need to consider the neighborhoods that Battery Street connects
    - Not just an arterial for commuters, but it's a neighborhood connector
- Improved transit accommodations
    - Bus stop shelters
    - Need to continually engage with GMT and other transit agencies
- Improve streetscape elements of Battery Street
    - Character
    - Sustainable stormwater practices
    - Recommendations for sustainable and resilient practices

Jonathon – Consider other intersection types, not just improving signals/operations

Peggy shared that some of that outreach include more information to educate the general public about what possibilities could be. Recognizing that the public may not know what something like a bike box is.

Phet added that we need to be sure we're always considering accessibility features for all users – Mobility aid device access, accessible signing and infrastructure for hearing and visually impaired communities. Consider longer street crossing times.

Drew responded with APS signals, growing innovation for improving signalized. Mobility aid devices, those details in engineering. Ample standards. Includes making sure there are pedestrians considered in all aspects of design. Auditory, count down phases, detectable warning surfaces. Those elements engineering design mandated and required along the road.

Jason shared that the people from trusted community voices meeting, reminded how confusing the corridor can be for someone not local. Sherman Street intersection is confusing for most people. Island for pedestrians is difficult to navigate.

Phet shared that during Main Street planning focus group newer communities don't go downtown or waterfront.

Routing to local neighbor use and accessibility, discussion for battery street.

Sophie asked if there was a request for dedicated bicycle signalization. Advancing bikes before cars.

Drew shared no mentions of bicycle signalization, but it will be considered in alternatives development.

Peggy asked if there was any work at all with Burlington school district or semester program – Thinking about how they travel before they have driver's license. These (youth) perspectives are incredibly important. Net Zero Walk Bike Master Plan.

Jason shared that the project team directly tried to meet with BHS, but the principal was in transition. Engaged with some students during Battery St & Cherry St tabling event. Will continue to engage with BHS when school year resumes.

Drew added that during the alternatives process it would be great to show high school students something to react to.

**Draft Purpose and Need Statement**

Drew went over the draft purpose and needs statement and how it drives the development of alternatives and overall vision for the project. He added that we want to make sure we are creating alternatives that keep the purpose and needs in mind.

**Draft Project Purpose:** The purpose of the Battery Street Corridor Scoping Study is to identify and prioritize short- and long-term improvements that provide equitable, safe, and accessible transportation for all, regardless of age, ability, or mode of travel, while enhancing resilience and connection along Battery Street and between downtown Burlington and the Waterfront.

**Draft Project Need**

- Improve corridor & intersection safety for all users.
- Enhance comfort and accessibility for walkers along Battery Street.
- Provide end-to-end separated bicycle facilities and connections.
- Identify streetscape improvements that:
    - Establish Battery Street as an attractive gateway between the waterfront and downtown.
    - Focus on sustainability and resiliency to keep Battery Street functional for years to come.

Drew added that the team can circulate this for review after the meeting to think about it and respond.

Phet shared that the battery street corridor is a major throughfare for living/working on North Ave. Too much emphasis "downtown". Important to think about Battery Street as everyday connectivity.

Eleni added that across vs along in purpose needs should be looked at more closely since it is a major connector to the people that live on North Ave.

Drew added that it works for driving commuters currently but doesn't serve walkers and bikers.

Jason added that this isn't the full expanded version of the purpose and needs. Each bullets have more comments to bolster the need.

Sophie added that "separated bike lanes" sounds like a next step, rather than a need. Doesn't fit with the other "needs". Also noted that the word separated is too prescriptive.

**Mini Design Charrette**

Drew went over the intent of the design charette.

Karen shared that the graphics include the right-of-way (ROW) lines which are almost up to the building faces, in most cases. The other line work is existing sidewalk and is generally to scale.

Jonathon shared that space wise; bike facilities will likely be the widest feature. Also noted the new infrastructure coming as part of the Main Street and Railyard Enterprise (REP) projects. Noted that REP will include a shared-use path on the east side of the roadway and mentioned – We'll need to consider these facilities and how best to either continue them or transition them.

Eleni shared that Main Street will be constructed before REP.

Phet suggested diagonal crossings for pedestrians at intersections. Phet asked if cuts down time for pedestrians? And shared the idea of a median in middle of Battery Street.

Drew responded that a median island is an interesting thought with lane reduction. He explained that exclusive pedestrian crossing, all vehicular movements stop allows pedestrians to cross. College Street comes to mind as potential candidate for that.

Jason shared that currently the crossing Battery Street at College Street there is a 7 second to cross for just pedestrians then cars get green light.

Sophie added that the median in the in the middle would be positive from the climate perspective. Width of the road give break pedestrians if they needed it. Slows turning movements down.

Drew added that it could accommodate turn lane at intersections.

Peggy added that she loves the island median concept. Thinking about Latin America where there are a lot of wide avenues that have big shade trees. Need to be wide enough to be welcoming. Would hope it's not too wide to avoid pedestrians crossing getting stuck in the middle.

Sophie added that a scramble is often confusing for motorists.

Pearl Street and South Winooski Ave intersection is an example of this (exclusive pedestrian phase).

Jason agreed that exclusive pedestrian phasing (including possibly bike phasing) is something we'll consider in the alternatives.

Phet asked if we are going to prioritize pedestrian and bikers. Have hard time changing our model to not focus on cars. Other places have surpassed that and share the road more.

Karen prompted consideration of more/expanded alternatives – If we have a 12 ft median, then what?

Eleni noted that we could do pocket turn lanes.

Drew posed the question – Would the median option preclude acceptable bike facilities? If that's a compromise, will it be worth it?

Eleni asked about the parking need.

Sophie shared that businesses believe there needs to be parking. Accessible parking problem. Sophie shared background information regarding parking from the temporary bike lanes installation in the southern portion of Battery Street.

Jonathon shared that he believes having continuous bike infrastructure is key. Believe reallocation of space – even if parking – should be considered necessary.

Karen asked the group what sort of bike facility should be considered? Jonathon noted separated bike lanes on each side of the road would likely be preferred.

Drew noted that there are best design practices to transition from two-way travel on one side of the way to one way travel on both sides. Of the road.

Phet asked about one lane of parking (instead of both sides). Encourage transit stops and bike lanes on the other side. Different option of transportation modes is a positive.

Jonathon mentioned that accessible parking is important in those spots on the south end of Battery.

Peggy added accessible parking/parking on that street thinking more about prioritizing spots. Loading and unloading zones. Wayfinding for surface parking lots. A lot more movement with uber.

Drew added that it is viable use to implement flexible curbside spaces.

Peggy added what the real needs vs perceived needs are would need to be addressed.

Phet added those parking spaces are essential for business owners, loading and unloading for people and supplies. City should promote parking garages.

Drew pivoted the conversation to the northern end of the corridor (Cherry Street to Sherman Street). How to improve walking comfort and safety. Walking along corridor from key neighborhoods. Infrastructure sufficient?

Drew shared that sidewalk is higher than the road in some areas on the north end of the corridor.

Karen shared that it's the narrowest section of the corridor. Sidewalk is in the park ROW.

Phet added that oftentimes, residents "take ownership" of the greenbelt in front of their homes, and that the City may get push back if they seek to change it. She added she would like to see seating areas, rain gardens, from pearl south. More trees.

Jonathon added that volume of walking necessitates a wider sidewalk. Calming traffic, noise, shade. Get rid of Sherman Street intersection island.

Eleni added that we are not looking at the intersection too closely.

Peggy and Jonathon made a comment about the "need" for three lanes in this section.

Jason added that if the island was moved into corner, would help the comfort and safety for walkers. Look into the history of the island and why it is there.

The design charrette concluded, and the project team briefly summarized Next Steps:

- Finalize Purpose and Need Statement.
- Develop and evaluate conceptual alternatives.
- Public meeting #2 and continued engagement involving conceptual alternatives.



# Battery Street Scoping Study

## Draft Options Presentation
## March 13th, 2024

Chittenden County RPC
Communities Planning Together

Burlington, VT Public Works

vhb

# Meeting Agenda

- Welcome
- Project Schedule
- Project Recap
- Purpose and Need
- Draft Options Overview
- Draft Options Evaluation
- Next Steps





# 01|| Project Team

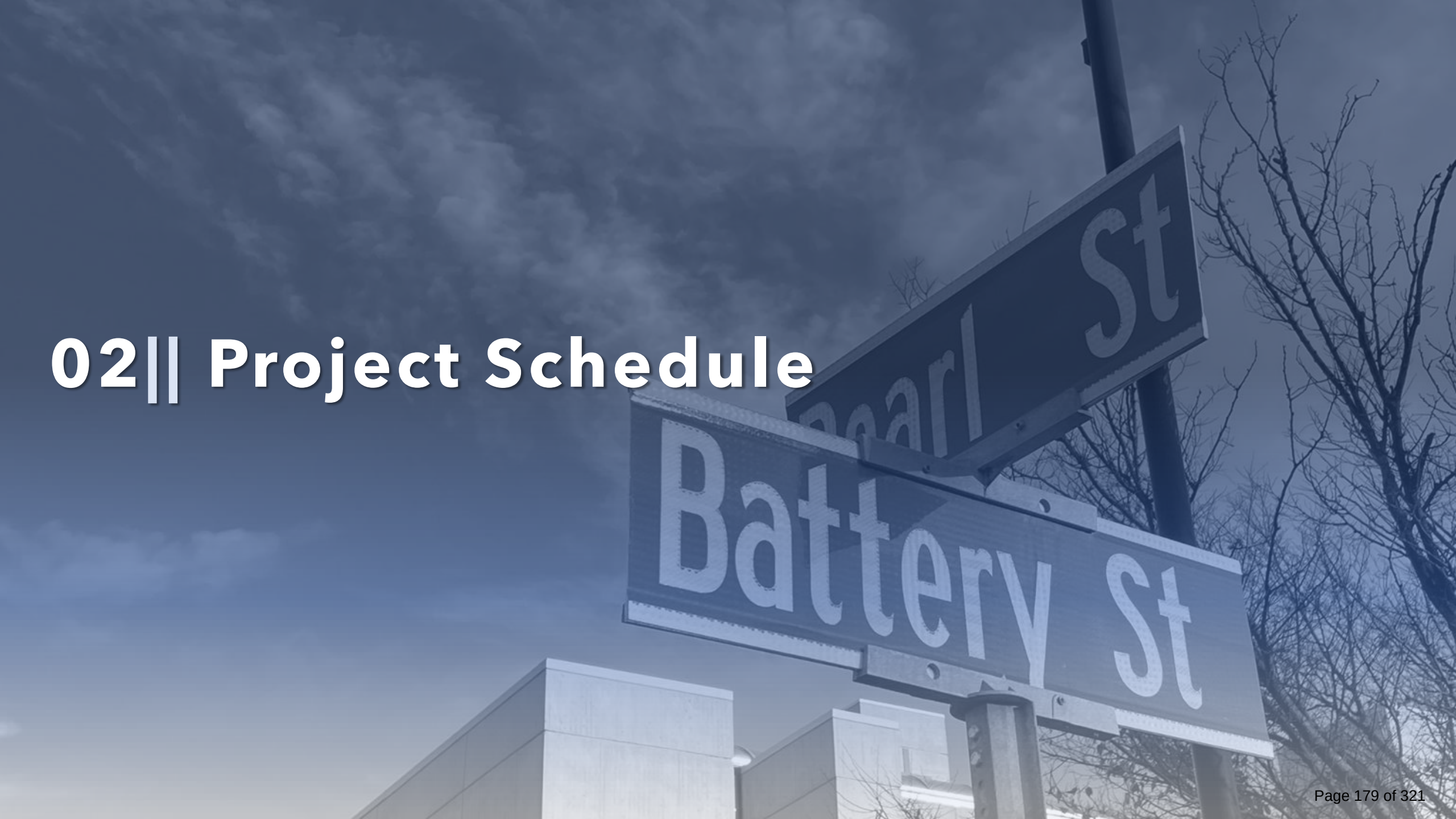
# Project Team

- Drew Gingras
- Elisabeth Sundberg

- Jason Charest
- Eleni Churchill

- Julia Ursaki
- Laura Wheelock

# 02|| Project Schedule



# Updated Project Schedule

| | |
|---|---|
| **Local Concerns Meeting** | Spring 2023 |
| **Focus Group Meetings** | *Ongoing* |
| **Existing Conditions Analysis** | Complete |
| **Options Development / Assessment** | Spring 2023 – Winter 2024 |
| **Options Presentation Meeting** | **Today** |
| **Preferred Option Selection & Advisory Committee Meetings** | Summer 2024 |
| **City Council Presentation** | Late Summer 2024 |
| **Final Scoping Report Submission** | Fall 2024 |



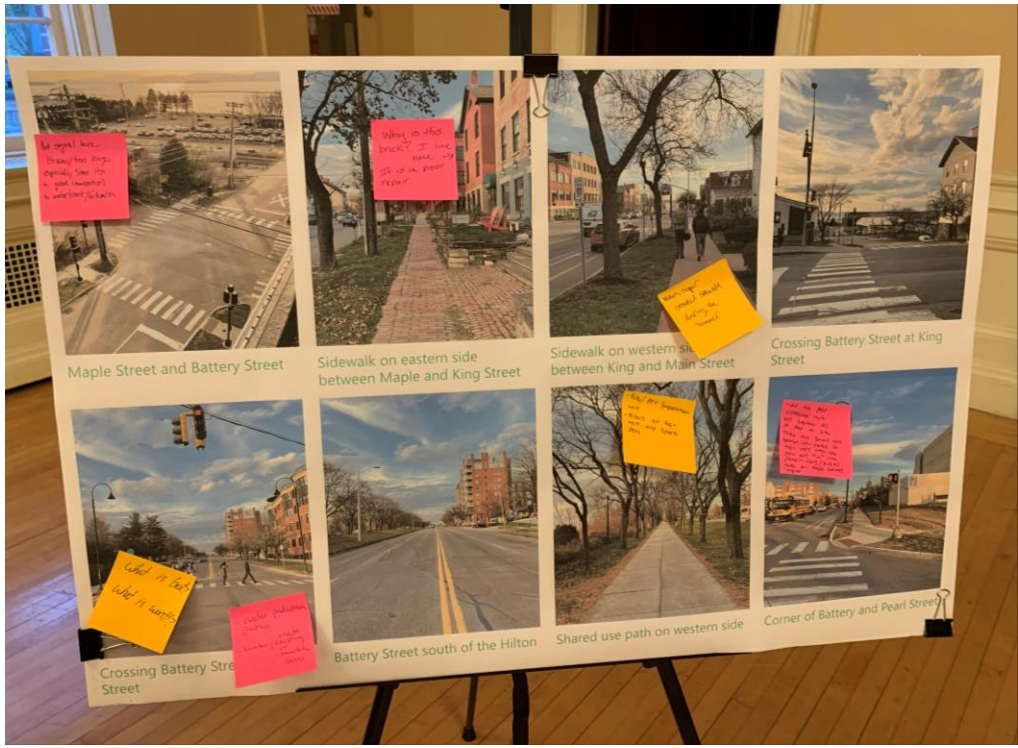
# 03|| Project Recap (to Date)

# Corridor Overview – Project Area



# Key Takeaways from Public Input (to Date)

- **Improved Corridor and Intersection Safety "Top to Bottom"**
- **Enhanced Pedestrian Accommodations**
- **Dedicated Bicycle Facilities**
- We also heard desires for…
  - Better community connectivity
  - Improved Transit Accommodations
  - Streetscape improvements





# 04|| Project Purpose and Need

# Project Purpose

The purpose of the Battery Street Scoping Study is to identify and prioritize short- and long-term improvements that provide **equitable, safe, low-stress, and accessible transportation for all** along and across Battery Street, regardless of age, ability, or mode of travel.



# Project Need(s)

The need for this project is driven by the deficiencies in the current transportation infrastructure and a need for comprehensive corridor planning. These needs are articulated below:

- **Improve corridor & intersection safety for all users.**
- **Enhance comfort and accessibility for pedestrians along Battery Street.**
- **Provide end-to-end bicycle facilities and connections.**
- **Integrate street ecology into Battery Street's overall design.**
- **Provide acceptable mobility for all modes of transportation along Battery Street.**



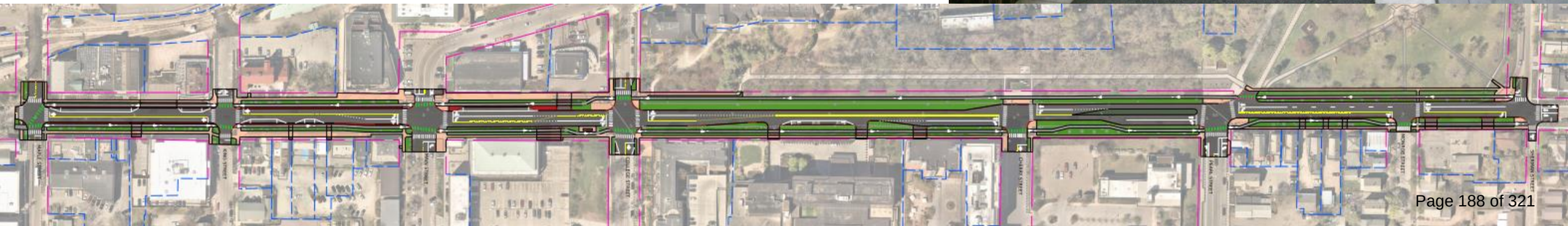


# 05|| Draft Options Overview

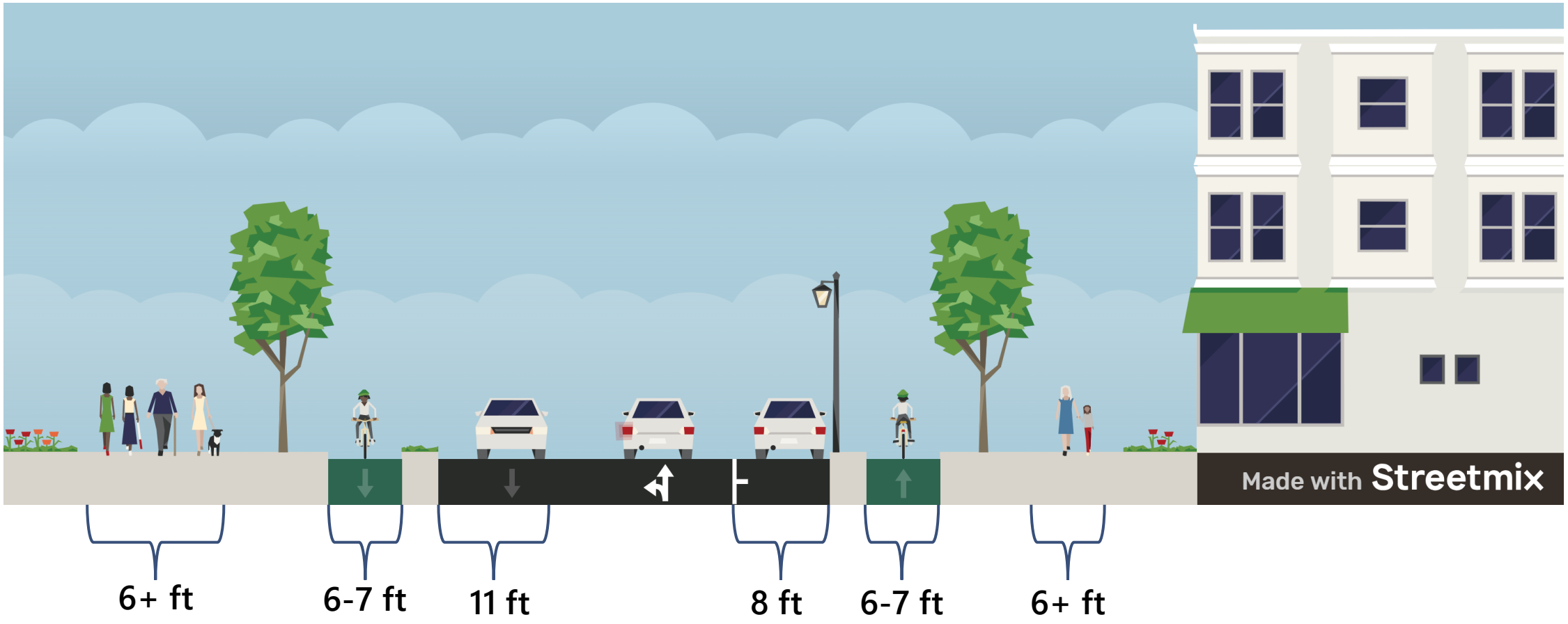
# Option 1 Overview

- 6- to 15-foot-wide sidewalks on both sides of Battery Street
- 6- to 7-foot-wide bike lanes on both sides of Battery Street
- 11-foot-wide travel lanes
- Raised Median Island between Cherry Street and Pearl Street

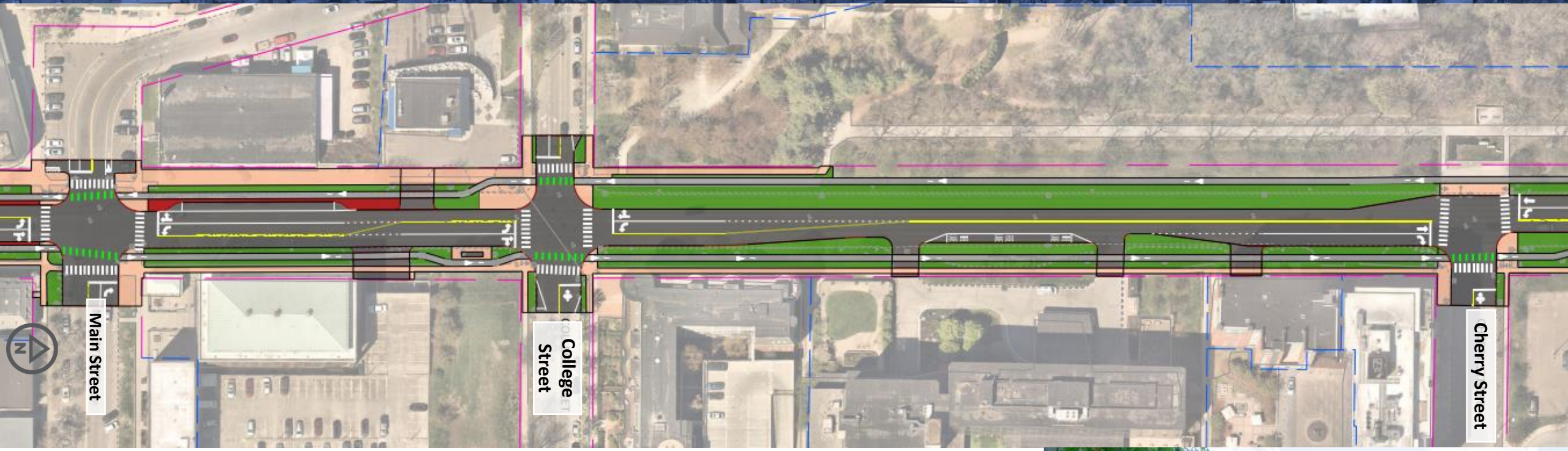




# Option 1: Typical Cross Section



# Option 1: Main Street to Cherry Street




## Option 1 Differentiators

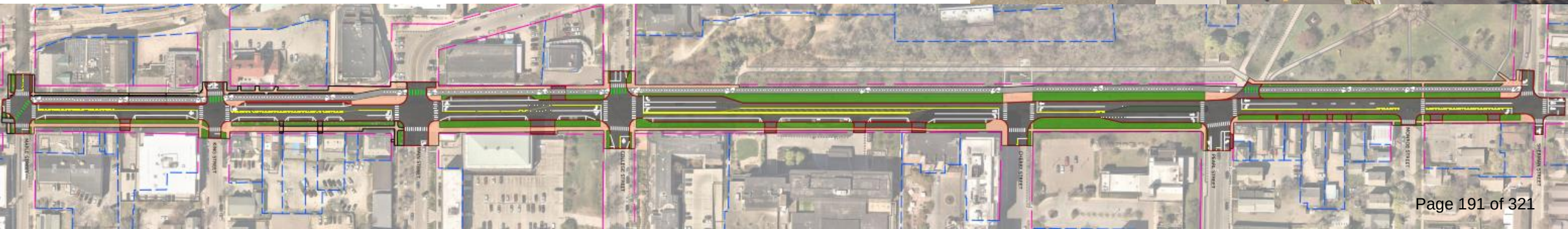
- Increased pedestrian space on the west side of Battery Street
- Similar concept is under construction on Main Street, i.e. one-way sidewalk level separated bike lanes on both sides
- Fewer on-street parking spaces than Option 2



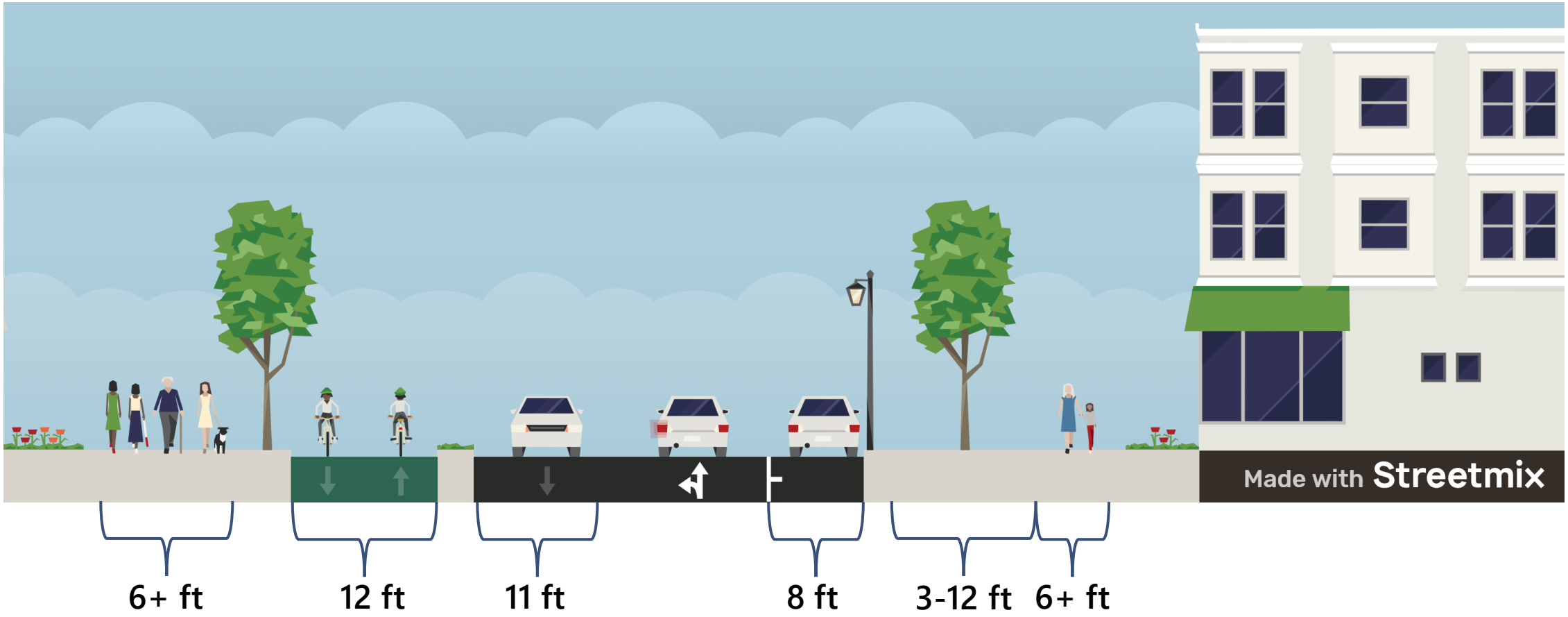
# Option 2 Overview

- 12-foot-wide two-way bike lane on western side of the corridor
- 5- to 10-foot-wide sidewalks
- 11-foot-wide travel lanes
- Island between Cherry Street and Pearl Street

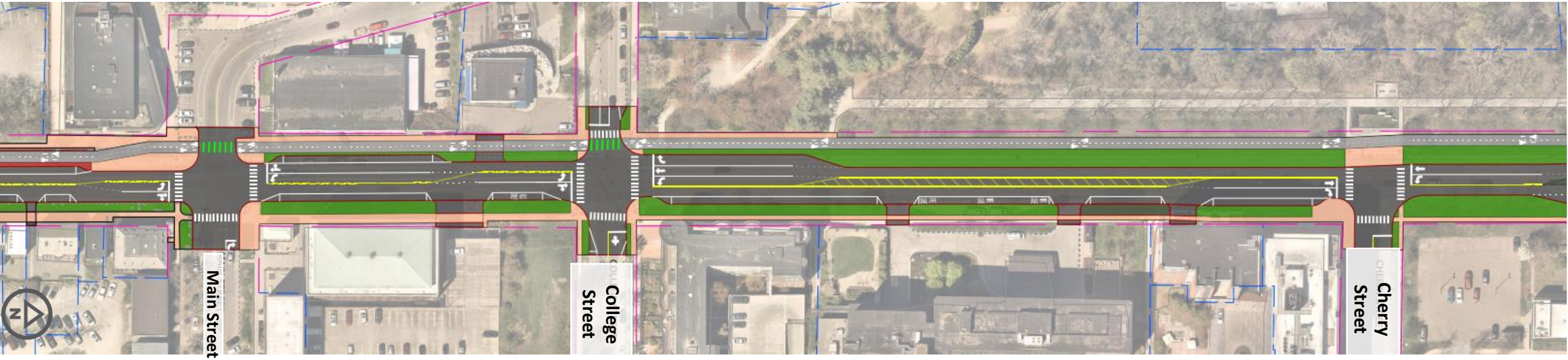


# Option 2: Typical Cross Section



# Option 2: Main Street to Cherry Street




## Option 2 Differentiators:

- Westside two-way bike travel eliminates several potential conflict points
- College Street crosswalk length
- On-Street parking included to Cherry St





# Features of Both Options

- Travel lane reduction – Road Diet
- Continuous separated bicycling facilities
- Wider sidewalks & pedestrian crossing “lead time”
- Sherman Street reconfiguration
- Traffic calming island between Cherry and Pearl
- Significant increase in green space





# 06|| Options Evaluation

# Evaluation Matrix Overview

| | Corridor Options | | |
|---|---|---|---|
| | **No Build** | **Option 1** | **Option 2** |
| **Project Cost** | $0 | $$$$ | $$$$ |
| **Purpose & Need** | | | |
| Improve corridor & intersection safety for all users | No | Yes | Yes |
| Enhance comfort and accessibility for pedestrians along Battery Street | No | Yes | Yes |
| Provide end-to-end bicycle facilities and connections | No | Yes (One-Way, Both Sides) | Yes (Two-Way, Westside) |
| Integrate street ecology into Battery Street's overall design | Somewhat | Yes | Yes |
| Provide acceptable mobility for all modes of transportation along Battery Street | No | Yes | Yes |

# Corridor & Intersection Safety for All Users

## Option 1

- Road Diet along full corridor
- Minimizes lane shifts at intersections
- Eliminates slip lane at Sherman Street
- More intuitive lane configurations

(Additional improvement covered in other topics on next slides)

## Option 2

- Road Diet along full corridor
  - Additional turn lane required at College Street
- Eliminates lane shifts at intersections
- Eliminates slip lane at Sherman Street
- More intuitive lane configurations

(Additional improvements covered in other topics on next slides)

# Pedestrian Safety & Accessibility

## Option 1

- All pedestrian crossings are shortened
- Sidewalk width is maintained, widened where feasible
- All pedestrian crossings now have 7 seconds of “lead time”
- Pedestrian queue space might be compromised by separated bike lanes on both sides

## Option 2

- All pedestrian crossing are shortened
  - Except the northern leg of College Street
- Option to increase width of sidewalks on eastside (maintain width on westside)
- All pedestrian crossings now have 7 seconds of “lead time”
- Pedestrian queue space compromised on westside, available on eastside

# Bicycle Facilities & Connections

## Option 1

- One-way separated bike lanes, both sides
- Intuitive / Expected travel patterns for bicyclists
- Higher conflict potential for bicyclists given travel on both sides of the street
- Fully separated from roadway and sidewalks
- Reasonable access to both sides of the road
- Requires more exclusive signal phasing
- Easy connections all along Battery Street

## Option 2

- Two-way separated bike lanes, west side
- No conflict potential with motorists north of College Street
- Side by side bicycle riding, fully separated from roadway and sidewalks
- Northbound (uphill) direction is counter-flow to driver direction, i.e. less intuitive
- Seamless connection to west side of street
- Difficult access into and out of the facility

# Street Ecology Potential

## Option 1

- Maintains most existing trees
- Less impact to Battery Park
- Significant reduction in total area of impervious surfaces
- Provides substantial opportunity for new pervious surfaces / green space / stormwater management practices

## Option 2

- Maintains some existing trees
- Increased impact to Battery Park
- Significant reduction in total area of impervious surfaces
- Provides substantial opportunity for new pervious surfaces / green space / stormwater management practices

# Acceptable Mobility for All Modes

## Option 1

- Removes on-street parking on one side of Battery Street between Maple and Main
- During the most congested hour of the day, the average motor vehicle trip on Battery St. would take 3 minutes longer
- Maintains in-lane bus stop
- Improves pedestrian facilities and conditions
- Provides separated bike facilities

## Option 2

- Removes on-street parking on one side of Battery Street between Maple and King
- Adds on-street parking on east side of street between Main and Cherry
- During the most congested hour of the day, the average motor vehicle trip on Battery St. would take 40 seconds longer
- Provides bus pull-off at bus stop
- Improves pedestrian facilities and conditions
- Provides separated bike facilities

# Evaluation Matrix Overview

| | Corridor Options | | |
|---|---|---|---|
| | **No Build** | **Option 1** | **Option 2** |
| **Project Cost** | $0 | $$$$ | $$$$ |
| **Purpose & Need** | | | |
| Improve corridor & intersection safety for all users | No | Yes | Yes |
| Enhance comfort and accessibility for pedestrians along Battery Street | No | Yes | Yes |
| Provide end-to-end bicycle facilities and connections | No | Yes (One-Way, Both Sides) | Yes (Two-Way, Westside) |
| Integrate street ecology into Battery Street's overall design | Somewhat | Yes | Yes |
| Provide acceptable mobility for all modes of transportation along Battery Street | No | Yes | Yes |



# 07|| Next Steps

# Next Steps

- Advisory Committee Meeting(s)
- Select & Refine Preferred Option
- Develop Draft Scoping Report
- City Council & TEUC Meetings / Presentations
- Final Scoping Report & Implementation Plan Submission



# Contact Us


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802-861-0127
jcharest@ccrpcvt.org

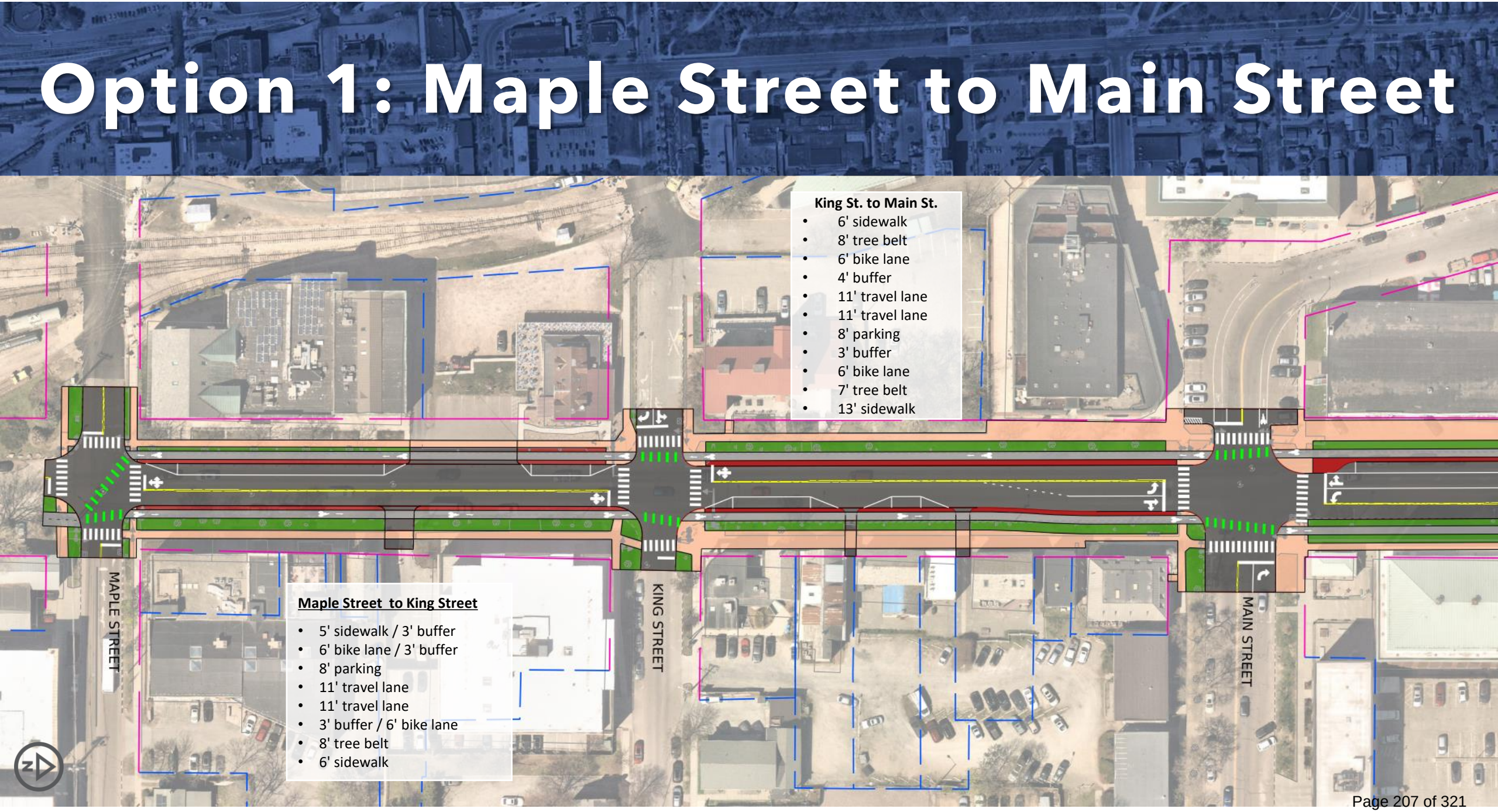
**Drew Gingras, PE**
Project Manager

802-391-5569
dgingras@vhb.com




# 08|| Open Discussion

# Option 1: Maple Street to Main Street



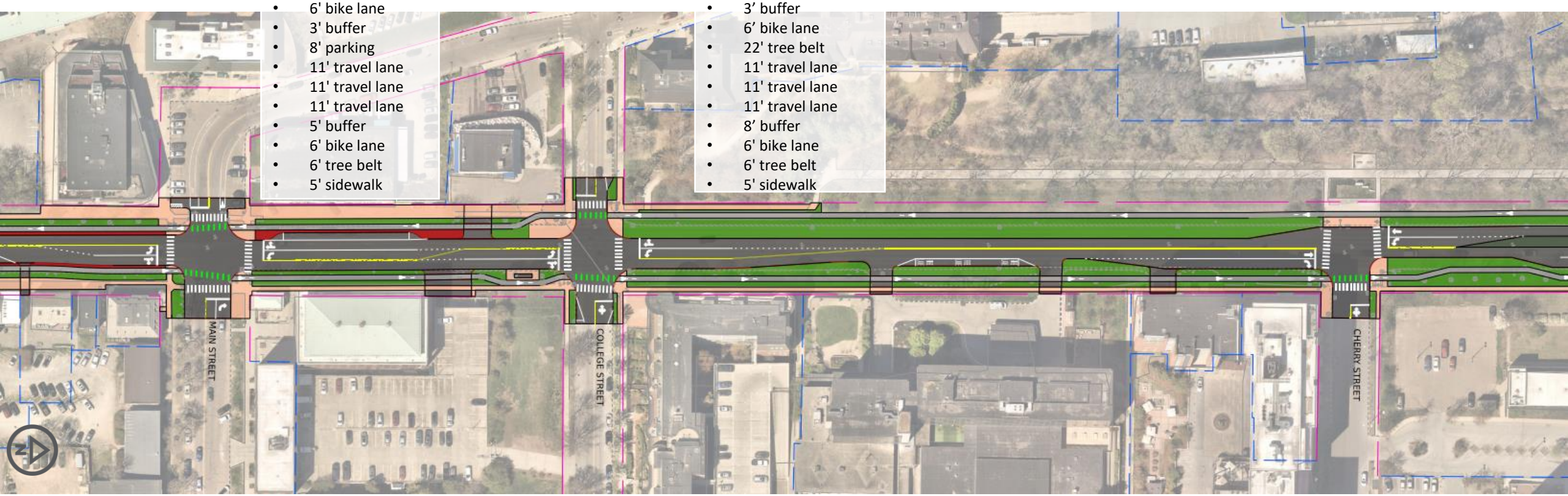
# Option 1: Main Street to Cherry Street

**Main St. to College St.**

- 15' sidewalk
- 6' tree belt
- 6' bike lane
- 3' buffer
- 8' parking
- 11' travel lane
- 11' travel lane
- 11' travel lane
- 5' buffer
- 6' bike lane
- 6' tree belt
- 5' sidewalk

**College St. to Cherry St.**

- 5’ sidewalk
- 6' bike lane
- 3’ buffer
- 6’ bike lane
- 22' tree belt
- 11' travel lane
- 11' travel lane
- 11' travel lane
- 8’ buffer
- 6' bike lane
- 6' tree belt
- 5' sidewalk



# Option 1: Cherry Street to Sherman Street

**Cherry St. to Pearl St.**

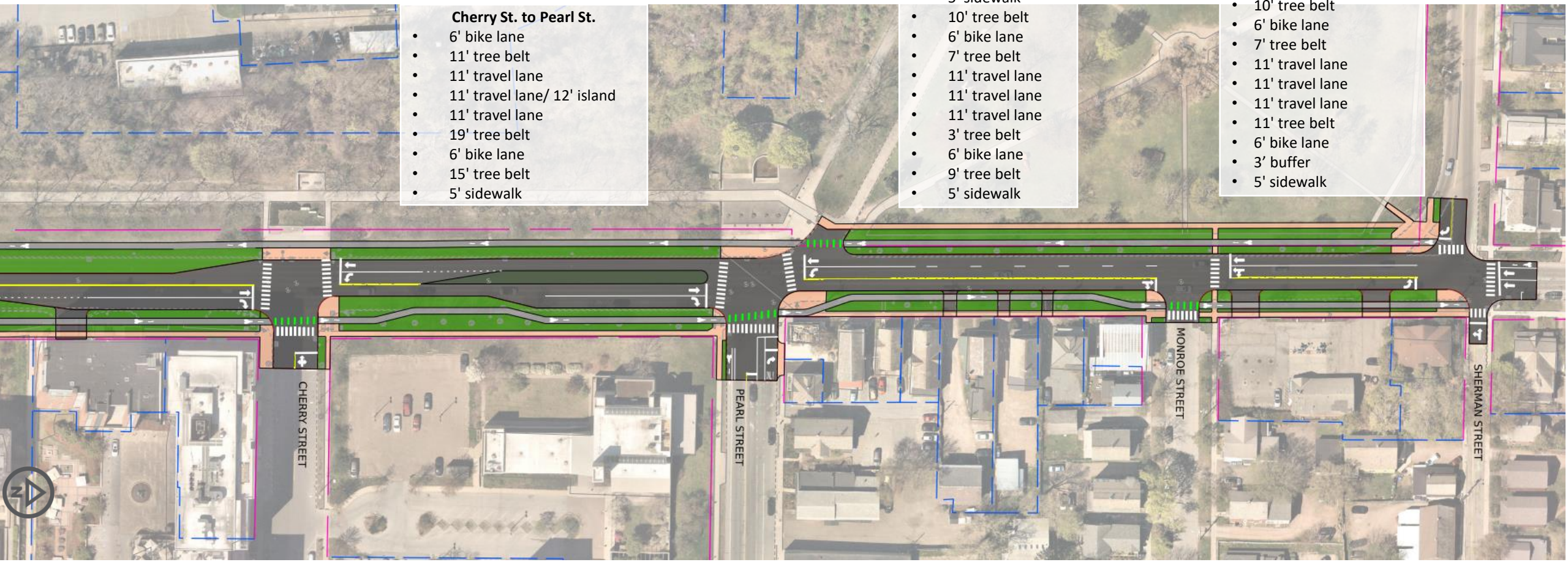
- 6' bike lane
- 11' tree belt
- 11' travel lane
- 11' travel lane/ 12' island
- 11' travel lane
- 19' tree belt
- 6' bike lane
- 15' tree belt
- 5' sidewalk

**Pearl St. to Monroe St.**

- 5' sidewalk
- 10' tree belt
- 6' bike lane
- 7' tree belt
- 11' travel lane
- 11' travel lane
- 11' travel lane
- 3' tree belt
- 6' bike lane
- 9' tree belt
- 5' sidewalk

**Monroe St. to Sherman St.**

- 5' sidewalk
- 10' tree belt
- 6' bike lane
- 7' tree belt
- 11' travel lane
- 11' travel lane
- 11' travel lane
- 11' tree belt
- 6' bike lane
- 3’ buffer
- 5' sidewalk



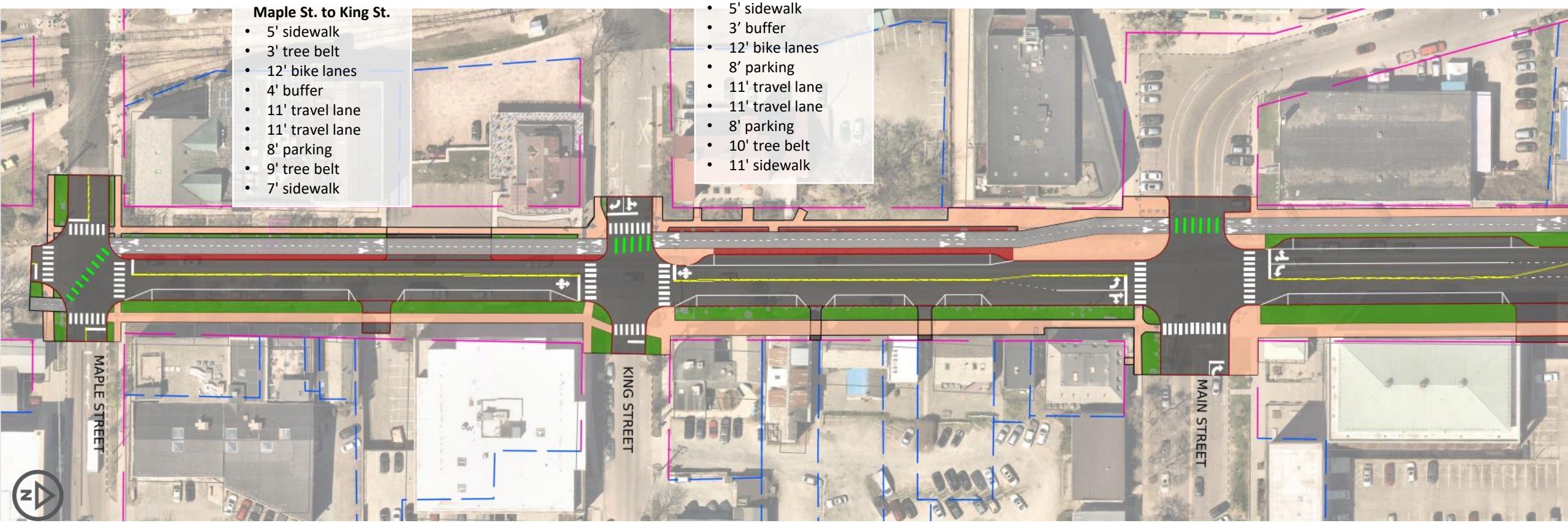
# Option 2: Maple Street to Main Street

**Maple St. to King St.**

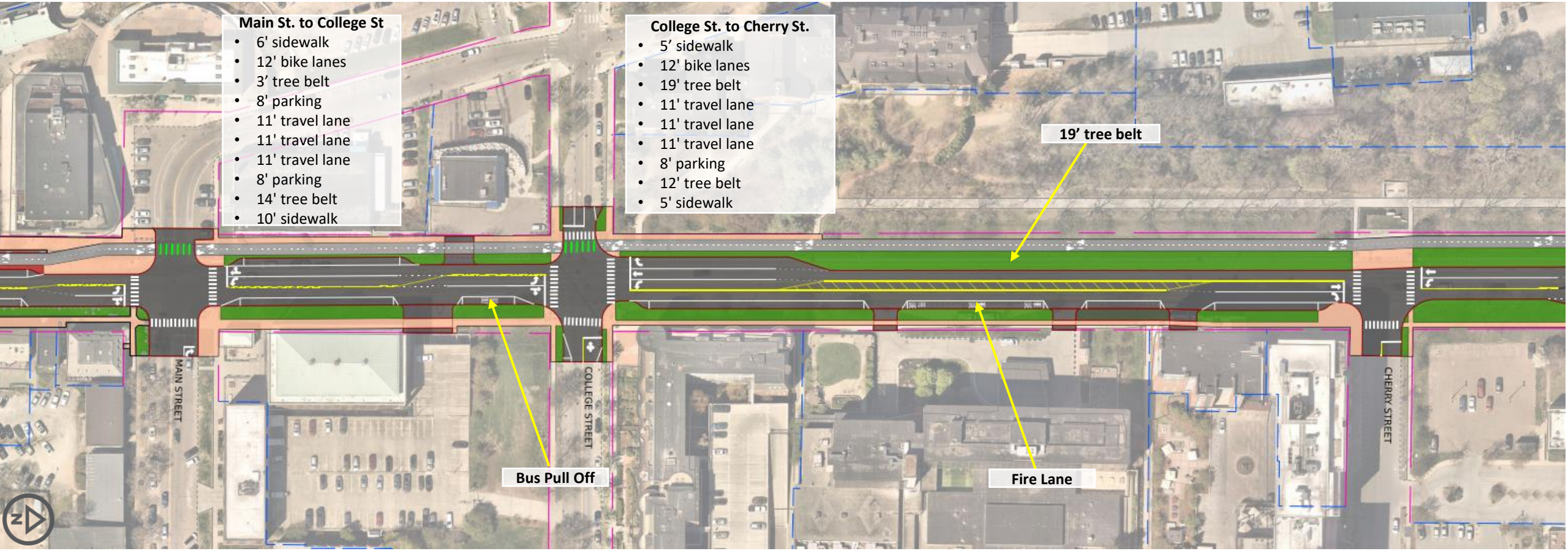
- 5' sidewalk
- 3' tree belt
- 12' bike lanes
- 4' buffer
- 11' travel lane
- 11' travel lane
- 8' parking
- 9' tree belt
- 7' sidewalk

**King St. to Main St.**

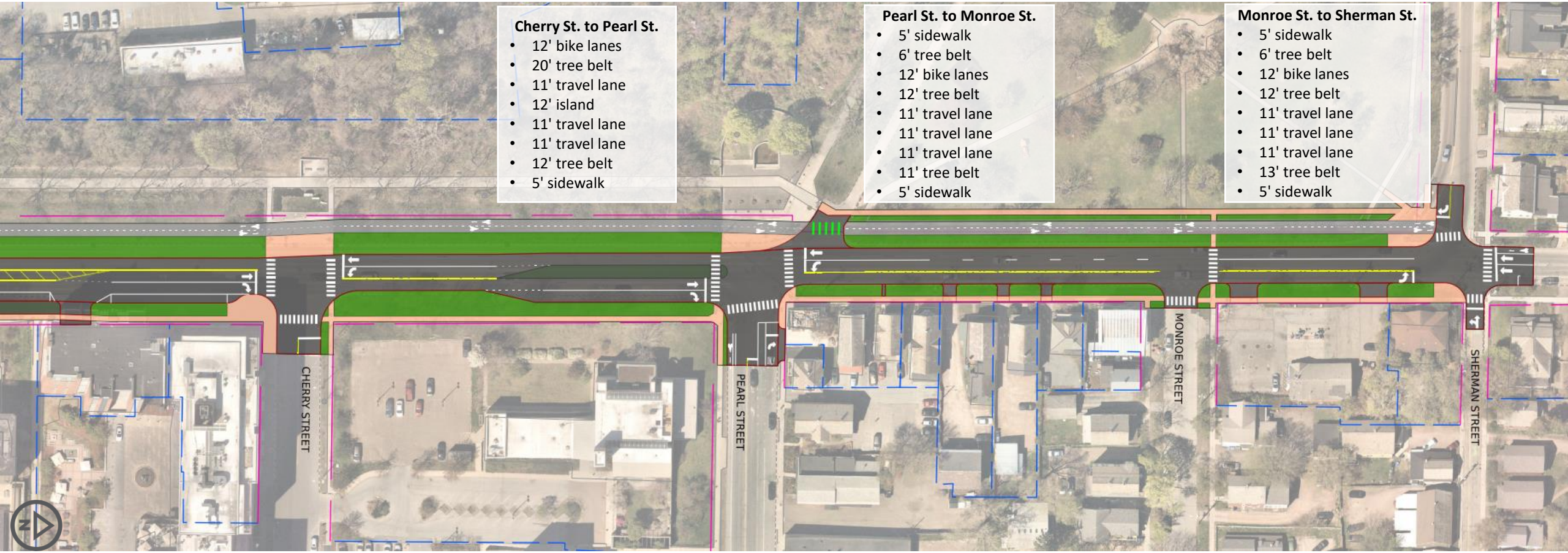
- 5' sidewalk
- 3’ buffer
- 12' bike lanes
- 8’ parking
- 11' travel lane
- 11' travel lane
- 8' parking
- 10' tree belt
- 11' sidewalk



# Option 2: Main Street to Cherry Street



# Option 2: Cherry Street to Sherman Street



# Tell us what you think!



Take our short Online Survey

Visit the Project Website for more information



Call the Project Team

802-863-9094

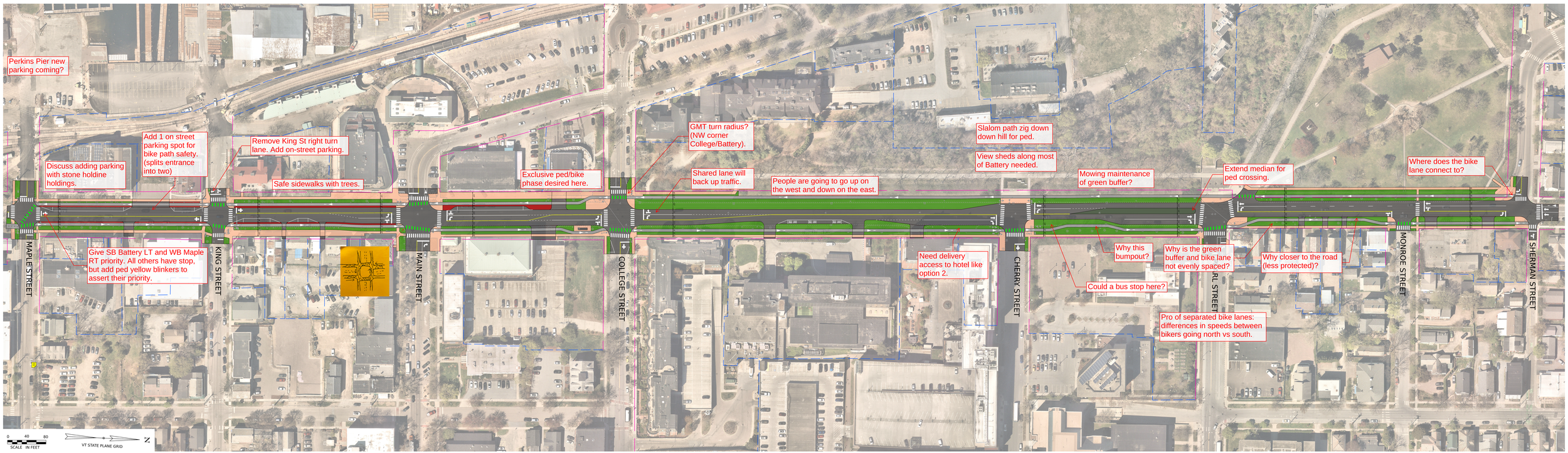
Language services are provided free of charge. **For translation and interpreter services please call 802-863-9094**



Email your thoughts

**dpwplanning@burlingtonvt.gov**

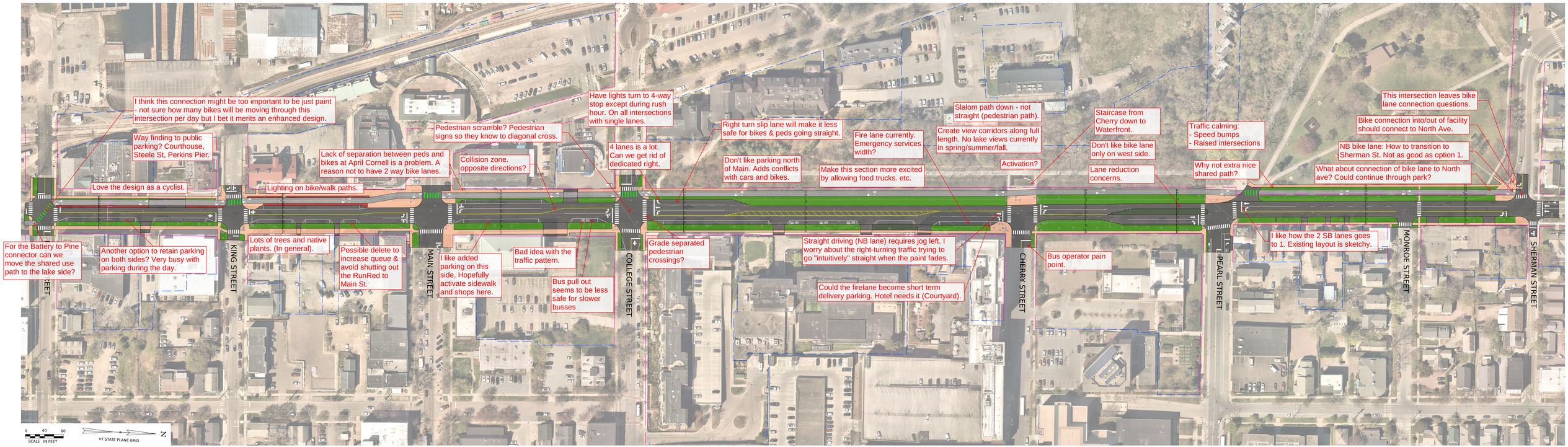
# Draft Alternatives Meeting - Public Input Summary
# March 13, 2024




# Battery Street Scoping Study

## Alternative 1

# Draft Alternatives Meeting - Public Input Summary
March 13, 2024




# Battery Street Scoping Study

## Alternative 2

**Draft Alternatives Preference Survey Responses**

| Timestamp | Do you prefer Option 1: one-way bike lanes or Option 2: two-way bike lane? | Briefly tell us why (optional). |
|---|---|---|
| 3/1/2024 16:49:50 | Neither | The street is wide enough. |
| 3/1/2024 16:52:13 | Option 1: one-way bike lanes on both sides | Safer for cyclists and cars |
| 3/1/2024 16:53:51 | Neither | With a lot more housing coming on line in the next few years, it doesn't seem appropriate to cut battery st to 3 lanes. Cars are being strangled in Burlington, and public transit is not at adequate. |
| 3/1/2024 16:54:19 | Option 1: one-way bike lanes on both sides | it is what cars are expecting so might be safer for bikes - but i'm not sure |
| 3/1/2024 16:56:41 | Neither | I think we have a bike path and do not need bikes with cars. The bikers are not following road signs and it is unsafe. |
| 3/1/2024 17:01:25 | Option 1: one-way bike lanes on both sides | Biggest reason: folks riding downhill (SB) will be traveling fast |
| 3/1/2024 17:03:40 | Option 2: two-way bike lane on west side | |
| 3/1/2024 17:04:41 | Option 2: two-way bike lane on west side | It seems to allow for parking |
| 3/1/2024 17:04:43 | Option 1: one-way bike lanes on both sides | This will be safer for bicyclists and easier for bicyclists to understand. Battery street is wide enough for this. |
| 3/1/2024 17:04:48 | Option 2: two-way bike lane on west side | |
| 3/1/2024 17:07:16 | Option 1: one-way bike lanes on both sides | Unless the bike lanes are physically separated from car traffic, it is a safer option for bikers. |
| 3/1/2024 17:07:36 | Option 1: one-way bike lanes on both sides | |
| 3/1/2024 17:09:16 | Option 2: two-way bike lane on west side | Separating bike lanes on opposite sides of the street will only cause confusion, wrong way biking and problems. Option 2 also give three lanes for traffics at College St, which is always a traffic problem area. |
| 3/1/2024 17:09:58 | Option 2: two-way bike lane on west side | |
| 3/1/2024 17:16:39 | Option 2: two-way bike lane on west side | |
| 3/1/2024 17:22:43 | Option 2: two-way bike lane on west side | Bikes together |
| 3/1/2024 17:23:11 | Option 2: two-way bike lane on west side | Consistent with greenway |
| 3/1/2024 17:23:12 | Neither | You are already hamstring auto traffic all over the city. Not all of us in the city are 20-30 year old bike riders when you get into your 50-80 you don't ride bikes as the falls at that age kills you |
| 3/1/2024 17:24:37 | Option 2: two-way bike lane on west side | I support option 2: As someone who regularly travels along this corridor by bike, car, and foot, I strongly support the two-way bike lane on the west side. I support it for the following reasons- as a biker I appreciate the more linear lane of travel achieved by the two-lane bike path, I feel that a two-lane bike path will mean less people traveling the wrong direction on the wrong side of the road, I appreciate how the two lanes allows for faster moving bike traffic to pass slower moving traffic in the other lane. I also feel that by keeping a singular two-lane bike path, the future upkeep will be cheaper and there will be less redundancy in infrastructure. As a car driver, I appreciate how the two-lane path will be better protect cyclists at intersections and along the length of the work area by keeping the infrastructure combined, separate and predictable. I know I'd feel better as a driver having the bulk of cyclists that I'm watching for primarily on one side of me rather than both. To re-emphasize the problems with one-way directional travel of singular bike lanes, I feel that option one would cause a lot of confusion and less predictability for both cyclists and drivers. |
| 3/1/2024 17:47:51 | Option 2: two-way bike lane on west side | Better lake view. But, I hope you have fully considered the increased traffic at rush hour from Cambrian Rise. Seems like you could just make a better connection from the existing bike path to North Ave. |
| 3/1/2024 17:56:29 | I like both equally | I like separating them because they will have very different speeds and it gives direct access to the addresses on the East side. But having them on the same side avoids people going the wrong way in one because they don't want to cross the street, and it has two fewer intersections than the East side. |
| 3/1/2024 18:00:22 | Option 2: two-way bike lane on west side | Actually neither. Bike lanes are too disruptive and dangerous to normal traffic flow especially on a street with so many turn offs |
| 3/1/2024 18:03:14 | Option 1: one-way bike lanes on both sides | |
| 3/1/2024 18:10:19 | Option 2: two-way bike lane on west side | |
| 3/1/2024 18:11:36 | Option 2: two-way bike lane on west side | |
| 3/1/2024 18:16:22 | Option 2: two-way bike lane on west side | Since the West side connects right to the bike path, I think it makes sense to have 2 way traffic on that side |
| 3/1/2024 18:18:28 | Neither | Roads are made for cars. NOT BIKES! |
| 3/1/2024 18:26:44 | Option 1: one-way bike lanes on both sides | Keep the disruption on both sides to a minimum. |
| 3/1/2024 18:27:38 | Option 1: one-way bike lanes on both sides | This is the expected alignment of bike lanes. For that reason I think it's safer for drivers and bikers. |
| 3/1/2024 18:28:21 | I like both equally | As someone who had commuted along Battery St both via car and bike, I never felt safe in the road and always preferred to bike along the sidewalk. Anything that gives bikes their own lane is preferred. |
| 3/1/2024 18:46:17 | Option 2: two-way bike lane on west side | |
| 3/1/2024 18:58:33 | Option 1: one-way bike lanes on both sides | |
| 3/1/2024 19:07:42 | Option 2: two-way bike lane on west side | |
| 3/1/2024 19:16:33 | Option 2: two-way bike lane on west side | Because when I am biking down battery I am probably going to the waterfront, and want to be able to turn easily. When I am going up the hill I need to keep my momentum so I dont want to have to stop at red lights at every block- I assume if the bike lanes are on the west side, there will be no light necessary, as there aren't left turns between college and pearl |
| 3/1/2024 19:21:16 | Option 2: two-way bike lane on west side | Neither does a great job, but option 2 separates the bikes more from cars. A bike lane which is just a painted line is not a bike lane. |
| 3/1/2024 19:36:58 | Option 1: one-way bike lanes on both sides | 2 lane bike lanes can be confusing to both cyclists and motorists |
| 3/1/2024 19:59:51 | Option 2: two-way bike lane on west side | It's safer and quicker to bike on the side where there are no side streets or driveways |
| 3/1/2024 20:15:00 | Option 2: two-way bike lane on west side | Option 2 seems to allow more space in total for pedestrians, while keeping the same amount of space for bicyclists in each direction. |
| 3/1/2024 20:26:40 | Option 2: two-way bike lane on west side | Less need to cross roads when on a bike. more like the bike path, I think it's just generally nicer to have a wider space to share with oncoming bikers, vs two one-lanes. better vibes. haha. |
| 3/1/2024 20:46:31 | Option 2: two-way bike lane on west side | I think it would be safer for all if drivers needed only to be aware of bicyclists on one side of the road versus both. |
| 3/1/2024 21:47:18 | I like both equally | They seem functional. I would want to know more about the advantages and disadvantages to both drivers and bikers |
| 3/1/2024 23:01:55 | Option 1: one-way bike lanes on both sides | It is normal for drivers to look for bike riders —esp at intersections flowing same side in direction of traffic. Option 2 is dangerous and no municipality has ever instituted it without inc in auto-bike crashes. With a 9 million dollar deficit, we need neither. Bike count must be 1 per week in the summer. |

**Draft Alternatives Preference Survey Responses**

| Timestamp | Do you prefer Option 1: one-way bike lanes or Option 2: two-way bike lane? | Briefly tell us why (optional). |
|---|---|---|
| 3/1/2024 23:40:33 | Neither | There is no information about widening the road for bike lanes. There is too much traffic to accommodate bike lanes as is. As you acknowledge this is a major corridor and there aren't other options to travel. This will not be safe for bike riders or those driving cars. |
| 3/2/2024 0:23:36 | Option 1: one-way bike lanes on both sides | |
| 3/2/2024 0:55:35 | Option 2: two-way bike lane on west side | Too busy of a street to bike down especially that it is parallel with the already existing bike path. Would hate to lose lanes of traffic to a bike path that may be under utilized. |
| 3/2/2024 1:30:23 | Option 2: two-way bike lane on west side | |
| 3/2/2024 6:39:14 | Option 1: one-way bike lanes on both sides | |
| 3/2/2024 6:52:44 | Option 1: one-way bike lanes on both sides | People should be able to bike on both sides of the street. It is the international standard to have bike lanes on both sides. |
| 3/2/2024 7:03:32 | Option 2: two-way bike lane on west side | I am more comfortable biking this way on busy streets. It worked fine when the bikepath construction was underway. |
| 3/2/2024 7:34:27 | Option 2: two-way bike lane on west side | |
| 3/2/2024 8:28:43 | Option 1: one-way bike lanes on both sides | |
| 3/2/2024 8:48:59 | Option 2: two-way bike lane on west side | |
| 3/2/2024 9:48:02 | Option 2: two-way bike lane on west side | It feels safer and more efficient to keep bikes together |
| 3/2/2024 9:57:16 | Option 2: two-way bike lane on west side | It clearly separates cars from people. I prefer safe, easily identified defined lanes. pedestrians seem safer with wide separate avenues; bikers are safe and have a good sense that they must be cognizant of the rules of the road/lane |
| 3/2/2024 10:24:45 | Option 2: two-way bike lane on west side | |
| 3/2/2024 11:07:50 | Neither | You can add more bike lanes when you start registering bikes so that they have to pay a fair share of road maintenance. |
| 3/2/2024 11:08:07 | Option 2: two-way bike lane on west side | It seems a simpler separation of cars and bikes with a wider area for the bike lane. Additional parking may also be an advantage. |
| 3/2/2024 11:11:58 | Option 1: one-way bike lanes on both sides | |
| 3/2/2024 11:27:34 | Option 2: two-way bike lane on west side | Fewer conflict points for bicyclists is good. But why do you propose 3 turn lanes at College St? With a 2-way bike lane, you should have a dedicated signal, so no need for a right turn lane on Battery St. |
| 3/2/2024 12:06:46 | I like both equally | Either configuration would work, but more important to me is that the bike lane(s) be separated by a safety median from motorized vehicles. Just painting a stripe on an existing roadway (like on North Ave), is not safe enough, IMHO. |
| 3/2/2024 12:17:10 | Option 2: two-way bike lane on west side | It's an ambiguous question because the priority is protecting bike lanes from automobile traffic. Whether bike lanes are separated by direction or together is secondary. Will the proposed lanes be protected? |
| 3/2/2024 12:19:19 | Option 2: two-way bike lane on west side | A two-way lane promotes a pedestrian culture, keeping dangerous car traffic more easily separated from pedestrians. The most important question is whether the lanes are protected from traffic. |
| 3/2/2024 12:29:35 | Option 2: two-way bike lane on west side | Bike riders will be traveling the same direction as vehicular traffic. |
| 3/2/2024 12:39:52 | Option 2: two-way bike lane on west side | Takes up less of the road |
| 3/2/2024 14:33:15 | Option 2: two-way bike lane on west side | Seems safer - fewer areas for cars to impede on bike lane when turning. |
| 3/2/2024 15:09:50 | Neither | There is no need for bike lanes on this stretch of roadway. |
| 3/2/2024 17:53:48 | Neither | Turning left on this street is already such a hassle and oftentimes causes traffic backups. Reducing the number of lanes to 3 will only exacerbate the issue. Bikes have the right to use the car lanes and I believe that norm should be maintained. |
| 3/2/2024 18:02:58 | Option 1: one-way bike lanes on both sides | Avoid bike collisions. Allow northbound bikes to avoid dealing with vehicle turns toward lakefront. |
| 3/2/2024 19:21:29 | Option 1: one-way bike lanes on both sides | Way easier to get to your actual destination as a biker. Plus there's already the wide path on the west side for part of it. But I would much prefer a two lane road with more greenspace rather than a three lane road. |
| 3/3/2024 7:56:59 | Neither | bad for environment, bad for traffic flow, just when CPwill dump more traffic. |
| 3/3/2024 8:01:42 | Neither | Bike path is below road. No need for a bike lane up on the streets. Not wide enough |
| 3/3/2024 8:26:31 | Neither | Which option best preserves more of the beautiful mature trees along Battery St? |
| 3/3/2024 9:37:41 | Neither | If I had to choose one it would be option 2. That said I think it is really important to maintain the circulation of traffic. There are current two lanes in each direction where battery street has its greatest slope. Maintaining these will allow cars to move through the space and decrease congestion in our growing city. I really like they additional green space and dedicated bike lane, but I would scarfice the on street parking to maintain more open lanes and left right turn lanes for cars. |
| 3/3/2024 10:56:51 | Option 1: one-way bike lanes on both sides | As a cyclist, this integrates better to connecting street bike lanes and due to the hill, it would feel safer to be in a slow climbing lane up one side or a speedier down lane on the other vs. both on the same path. Option 2 doesn't add that many parking spaces. |
| 3/3/2024 11:07:54 | Neither | Concerned about safety for either option on Battery Hill. Seems like a better option would be to direct bikes to the sidewalk in this area. |
| 3/3/2024 11:53:56 | Neither | Please stop spending our tax money on bike lanes. |
| 3/3/2024 11:56:33 | Neither | We have a bike path. Stop wasting money on more bike lanes. |
| 3/3/2024 13:50:57 | Option 1: one-way bike lanes on both sides | I could go either way. I prefer the easier access with north bound traffic staying on the east side, but also see the benefit of using the 2-way path to avoid more turning traffic and cross streets. Either way there's no need for a separate right turning lane southbound at College. Also while waiting for funding of this proejct please implement a road diet with standard bike lanes in 2025, at least N of Main St. if not the whole length. |
| 3/3/2024 16:05:23 | Option 2: two-way bike lane on west side | |
| 3/3/2024 18:06:08 | Option 2: two-way bike lane on west side | |
| 3/3/2024 19:09:36 | Option 1: one-way bike lanes on both sides | I think it would be harder for bikes to navigate both cars and other bikes in these various directions |
| 3/3/2024 19:16:07 | Option 1: one-way bike lanes on both sides | |
| 3/3/2024 19:16:27 | Neither | Stop spending money to fix things that aren't broken. Either don't spend money on this project or put the money for this project towards the high school which the community can't afford. |

**Draft Alternatives Preference Survey Responses**

| Timestamp | Do you prefer Option 1: one-way bike lanes or Option 2: two-way bike lane? | Briefly tell us why (optional). |
|---|---|---|
| 3/3/2024 19:20:30 | Option 2: two-way bike lane on west side | Reducing parking without providing adequate mass transit is discriminatory toward the old, the very young, tge ilk, the injured and the disabled. Unless the city is only interested in catering to the young and strong, who rude bikes up hills and through the snow, more people will mean more cars, at least for the foreseeable future. Option 2 is the least worst in this regard, but neither serves the real population of humans in the Burlington area. |
| 3/3/2024 19:44:21 | Option 2: two-way bike lane on west side | We like the two-way bike lane better because it offers more protection for bikers and better separates pedestrians from the cars. |
| 3/3/2024 20:20:14 | Neither | Spend the money more important things like shelter for the homeless. Fix sidewalks that are crumbling. |
| 3/3/2024 20:34:05 | Neither | As a new north end resident, Battery Street is my main artery and entry into downtown, let alone my main method to navigate for ANY trip east or south of Burlington. I struggle to see how these proposed options would reduce traffic and alleviate congestion. I am not fortunate to have a job within Burlington nor Chittenden County - a longer commute means more gas consumed, less time with my family, and a negative impact on my regular weekday time. I strongly support many of the decisions to add bike lanes but vehemently and respectfully oppose both options. I would like there to be clear and statistically significant data driving any decision to change the traffic already exists. |
| 3/3/2024 20:39:48 | Neither | There is a bike path FEET away from battery street so there is not a need for increasing bike lanes on Battery street. These projects are unneccesary and costly, and are making traffic more difficult. NO changes to Battery. |
| 3/3/2024 21:05:22 | Neither | I don't like losing MORE parking in Burlington at the end of Battery, near Maple street. It's already hard to find a place to park at that end of town and the city bus doesn't service that area. |
| 3/3/2024 21:25:22 | Neither | Too much money spent on biking & making our streets look nice instead of fixing them & putting money into what's really needed. instead |
| 3/3/2024 21:25:39 | Neither | |
| 3/3/2024 21:54:37 | Neither | We don't need this. We need to cut spending |
| 3/3/2024 21:55:48 | Neither | Waste of taxpayer money |
| 3/3/2024 22:18:57 | Option 2: two-way bike lane on west side | |
| 3/3/2024 22:45:14 | Option 2: two-way bike lane on west side | No one will use the one in the east side bc it crosses too many intersecting streets |
| 3/3/2024 23:02:41 | Option 2: two-way bike lane on west side | This creates a great bikeway, allows bus pullout, has a much needed turn late off battery at college southbound. The only bummer is removal of existing trees. |
| 3/4/2024 7:50:43 | Option 2: two-way bike lane on west side | to keep biking activity on one side of the street seems like it would use space more efficiently |
| 3/4/2024 8:02:53 | Option 2: two-way bike lane on west side | |
| 3/4/2024 8:04:58 | Option 2: two-way bike lane on west side | It seems easier and safer to keep bikes on one side of the street, especially since many will be accessing the bike path - so have the two lanes on the west side of the street. Having more parking options seems best too. |
| 3/4/2024 11:22:14 | Option 2: two-way bike lane on west side | Condenses bike traffic to one side of road - seems safer. More parking is welcome, but not the reason I prefer this. |
| 3/4/2024 12:30:40 | Neither | We need a "parkway" to move traffic. Leave it alone |
| 3/4/2024 15:27:59 | Option 1: one-way bike lanes on both sides | Having a bike lane each way means better access to right turns onto our other major thouroughfares, it generally feels calmer. There are a few pieces of feedback I do have though. I'd like to see dutch style continous sidewalks over the curb cuts. As someone who has been using the pine street multiuse path frequently it feels weird to constanly shift up and down. Continous Sidewalks are also just demonstrably safer, and not much of an increase in expense. Secondly the junctions seem like they would be high conflict. Maybe doing something like a dutch junction https://en.wikipedia.org/wiki/Protected_intersection would help make them feel safer. |
| 3/4/2024 15:28:46 | Option 2: two-way bike lane on west side | |
| 3/4/2024 15:33:25 | Option 2: two-way bike lane on west side | For drivers pulling out onto Battery Street, for example from the Hilton Hotel or other residences on the street, this arrangement would be much safer for everyone, since those pulling out may not always able to see an approaching bicyclist. From the west side this would not be nearly as much of a problem, since there are fewer driveways and the lines of visibility are clearer. |
| 3/4/2024 16:13:11 | Option 2: two-way bike lane on west side | Two way bike lanes feel safer to me - more protected. Thanks for putting together this survey! |
| 3/4/2024 16:17:01 | Option 2: two-way bike lane on west side | Hoping option 2 means a seperate protected path, much like the multi use path on Riverside |
| 3/4/2024 16:17:34 | Option 2: two-way bike lane on west side | It feels safer to have both bike lanes adjoining and separated from traffic together. |
| 3/4/2024 16:25:44 | Option 1: one-way bike lanes on both sides | |
| 3/4/2024 17:10:02 | Option 1: one-way bike lanes on both sides | It seems safer to have bike traffic going in the same direction as other traffic. |
| 3/4/2024 17:13:23 | Option 2: two-way bike lane on west side | Option 2 is safer for everyone! Protected bike lanes and parking to narrow the street and slow down cars! The pedestrian crossings at Main, College, and Pearl should be scrambles with no right on red during these times |
| 3/4/2024 17:19:59 | Option 1: one-way bike lanes on both sides | With the 2-lane bike lane, one direction will be heading directly into oncoming cars, which will be unpleasant and dangerous at night with blinding headlights. |
| 3/4/2024 17:40:16 | Option 2: two-way bike lane on west side | No traffic going in or out on west side, plenty of traffic on east side. |
| 3/4/2024 19:24:07 | Neither | This creates infrastructure the city cannot maintain. |
| 3/4/2024 19:24:49 | Neither | Burlington Bay Market and Cafe cannot lose one of its entrances |
| 3/4/2024 19:43:20 | Option 1: one-way bike lanes on both sides | |
| 3/4/2024 20:23:19 | Option 1: one-way bike lanes on both sides | It feels safer! Some people ride really fast and it could be hazardous if they aren't paying attention and are heading straight for you. |
| 3/4/2024 21:47:14 | I like both equally | The priority for me is a safe separate bike way. If both are separate from car traffic, they are both ideal! |
| 3/4/2024 22:10:36 | Option 2: two-way bike lane on west side | |
| 3/5/2024 0:59:13 | Option 2: two-way bike lane on west side | |
| 3/5/2024 5:10:35 | Neither | I would suggest one lane on the west side only. We need all of the car lanes that we currently have. |
| 3/5/2024 8:15:19 | Option 1: one-way bike lanes on both sides | I've watched folks ride their bikes on both sides. It's more convenient and if they're going to do it anyway, provide safely marked space for them. |
| 3/5/2024 8:33:06 | I like both equally | The important parts are good pedestrian and bike facilities |

**Draft Alternatives Preference Survey Responses**

| Timestamp | Do you prefer Option 1: one-way bike lanes or Option 2: two-way bike lane? | Briefly tell us why (optional). |
|---|---|---|
| 3/5/2024 8:47:29 | Option 1: one-way bike lanes on both sides | Lanes should be one way given the difference in speed between bikers going up battery st vs those going down. Plus, the one way lanes will be more intuitive and will integrate well into existing infrastructure (NB bike lane north of the pearl intersection and SB path through battery park) |
| 3/5/2024 8:48:31 | Option 1: one-way bike lanes on both sides | Would be less confusing for drivers |
| 3/5/2024 8:59:23 | Option 1: one-way bike lanes on both sides | I think bike lanes in both directions are more intuitive and will cause fewer conflicts with up hill and downhill riders |
| 3/5/2024 9:59:38 | Option 2: two-way bike lane on west side | I like the bike lanes to be separate from the road! |
| 3/5/2024 11:09:38 | I like both equally | This may already be considered, but please include traffic flow improvements to the College / Battery St intersection. I work on the waterfront & commute home to Winooski via pearl st. The high volume of pedestrian traffic at that intersection during the warmer months & traffic heading westbound on college makes turning northbound onto battery from the Lake St side difficult, and encourages turning while pedestrians are still in the crosswalk. A dedicated "left turn" signal, or green light that does not overlap with the crosswalk as much would discourage turning while pedestrians are in the walkway |
| 3/5/2024 12:19:07 | Option 2: two-way bike lane on west side | I believe it feels safer this way! |
| 3/5/2024 16:01:45 | Option 1: one-way bike lanes on both sides | Either works, but I would rather not have a bicyclist turning across my path. |
| 3/5/2024 18:31:17 | Neither | This will compromise our business by eliminating parking spaces. There is already a bike path by the railroad tracks. What can you do to support bringing my traffic to local businesses on Battery Street |
| 3/6/2024 11:44:04 | Option 1: one-way bike lanes on both sides | Ease of access without having to cross the road |
| 3/6/2024 13:01:24 | Option 1: one-way bike lanes on both sides | It's dangerous to have a 2 way bike path on succh a long, steep hil  Best solution is A PROTECTED one way lane on either side . Key words  PROTECTED by significant barrier! |
| 3/6/2024 15:56:40 | Option 2: two-way bike lane on west side | |
| 3/6/2024 15:58:07 | Option 1: one-way bike lanes on both sides | I believe it is safer for bikers to be on the same side of the street as cars, too many bikers ALREADY don't follow the rules of safety.  I can't imagine what would happen if they were trying to oppose each other.  Very reminiscent of the bike path which is now a Danger Zone  :/ |
| 3/6/2024 18:08:13 | Option 2: two-way bike lane on west side | Increased bike safety for both directions of travel |
| 3/7/2024 15:34:36 | Option 2: two-way bike lane on west side | Turn for hotel and building entrances on East side dangerous for bikes. |
| 3/7/2024 16:38:08 | Option 1: one-way bike lanes on both sides | I *think* I prefer option 1, but it really depends on what is happening on either end. How does this lane continue beyond Battery Street? |
| 3/8/2024 14:37:44 | Option 2: two-way bike lane on west side | This is a more streamlined option that improves safety for bikers. With this option, drivers know there should be bikers on only one side of the street. The next question is will there be a system for bikers to turn left onto pearl st safely or will they be expected to simply ride in the left lane and turn with cars? Not a bad option but should be considered as the project continues. Thank you. |
| 3/8/2024 21:40:39 | Option 2: two-way bike lane on west side | |
| 3/9/2024 16:57:57 | I like both equally | If option 1, I worry right-turning traffic poses risk for bikers, despite potential protective signaling. If option 2, concern is speedy downhill vs oncoming bikers. I would hope for physical barriers between adjacent bike lanes. |
| 3/10/2024 9:37:24 | Option 1: one-way bike lanes on both sides | |
| 3/11/2024 7:47:01 | Option 2: two-way bike lane on west side | better for pedestrians |
| 3/11/2024 10:09:08 | Option 1: one-way bike lanes on both sides | Two lanes next to each other will be confusing |
| 3/11/2024 10:12:48 | Option 1: one-way bike lanes on both sides | |
| 3/11/2024 10:12:59 | Option 1: one-way bike lanes on both sides | |
| 3/11/2024 10:18:29 | Neither | fast lane for mopeds / EV / motorized / even bus lane, one regular lane. So, two lanes, two-way, both sides. |
| 3/11/2024 11:16:18 | Option 2: two-way bike lane on west side | Bike lanes should be an extension of a much wider sidewalk (pathway for pedestrians), and not part of the street as has been done throughout the city. My friend recently lost his life due to, in part, a design flaw. I do not allow my girls to use the existing bike lanes in this city. They are unsafe, but there's a simple solution |
| 3/11/2024 16:05:18 | Option 1: one-way bike lanes on both sides | It can tie into safer intersection design. HOWEVER—we must actually make the intersections more forward thinking. Both proposals as-is still treat cycling as an afterthought for safety. Intersections are the primary conflict point for cyclists. For an (already dated) primer of what we should be talking about at a bare minimum for a new road scheduled to be constructed in 2032, please watch this video: https://www.youtube.com/watch?v=FlApbxLz6pA |
| 3/11/2024 16:31:35 | Option 2: two-way bike lane on west side | I like the idea of biking on the lake side of the street. I'm curious if one design is safer or not. I like the idea of passing by other bikers and the comradery and visibility of larger groups of bikers using the roadway together. |
| 3/11/2024 16:35:28 | Option 1: one-way bike lanes on both sides | Kelly from April Cornell - I worry that our store patrons and staff will be thrust into a high speed bike lane when they use our primary entrances, which we hope to activate even more in the future. I would hate to add an unsafe element to our customers and staff. Also, we have used and maintained and cared for the parking directly in front of our property on Battery street for 10+ years - I don't mention that to create any combative communication with the city but that context I think is important, since our business is part of what has reactivated this street and neighborhood. Are there ways to work together to build solutions that are mutually beneficial? With respect, Kelly |
| 3/12/2024 17:56:22 | Option 1: one-way bike lanes on both sides | Makes more sense to me than moving all bike traffic to west side. Also in favor of reducing parking on street. |
| 3/13/2024 8:35:41 | Option 2: two-way bike lane on west side | I like the two way bike lane because it provides more separation between bikes and cars. |
| 3/13/2024 11:15:30 | Option 1: one-way bike lanes on both sides | |
| 3/13/2024 15:10:59 | I like both equally | |
| 3/13/2024 22:25:05 | Option 2: two-way bike lane on west side | I like wider paths. Either way I will be overjoyed! Thank you for doing this work! |
| 3/13/2024 22:36:21 | Option 2: two-way bike lane on west side | This would hopefully include a form of barricades to provide more protection for cyclists. |
| 3/14/2024 6:16:23 | Option 2: two-way bike lane on west side | |
| 3/14/2024 7:42:34 | Option 1: one-way bike lanes on both sides | See your slide 26. I'm comparing "difficult access…" to "easy connections". If I want to enter the street from the east, bike north, and depart to the east, I would cross vehicle traffic twice under the two-way design and zero times under the one-way design. Thanks! |
| 3/14/2024 9:33:10 | Option 2: two-way bike lane on west side | More isolation from cars with the wider lane. Less points of conflict. |

**Draft Alternatives Preference Survey Responses**

| Timestamp | Do you prefer Option 1: one-way bike lanes or Option 2: two-way bike lane? | Briefly tell us why (optional). |
|---|---|---|
| 3/14/2024 9:43:45 | Option 1: one-way bike lanes on both sides | I like the idea of the bikes flowing with traffic, esp if I want to turn right as a biker going northbound |
| 3/14/2024 13:11:06 | Option 1: one-way bike lanes on both sides | My experience with two way bike lanes is that they are more confusing for both cyclists and drivers in cars, and can increase the likelihood that a driver will not see a cyclist and potentially hit them, because they are coming from an unexpected direction. Keeping the flow of bicycle traffic the same as other vehicular traffic keeps things predictable and uses established norms. |
| 3/14/2024 14:35:53 | Option 1: one-way bike lanes on both sides | I think that the two lanes on one side is essentially doubling up with the bike path from a tourism point of view. If you are a commuter though, having the uphill bike lane near the city would be easier. Additionally, having more uniform bike lane design throughout the city is easier for people when getting used to biking. |
| 3/16/2024 10:20:52 | I like both equally | |
| 3/19/2024 10:33:50 | Option 2: two-way bike lane on west side | |
| 3/21/2024 15:09:56 | Option 2: two-way bike lane on west side | |
| 3/22/2024 13:46:37 | Option 2: two-way bike lane on west side | |



# Battery Street Scoping Study

## Advisory Committee Meeting #3
April 29th, 2024

Chittenden County RPC
Communities Planning Together

Burlington, VT Public Works

vhb

# Meeting Agenda

- Welcome & Re-Introductions
- Public Comment Period
- Alternatives Overview
- Options Evaluation
- Public Input Summary
- Open Discussion
  - Preferred Alternative
  - Flexible Design Elements
- Next Steps





# 01|| Re-Introductions

# Project Team

vhb

- Drew Gingras
- Karen Sentoff
- Elisabeth Sundberg

Chittenden County RPC
Communities Planning Together

- Jason Charest
- Eleni Churchill

Burlington, VT Public Works

- Julia Ursaki
- Laura Wheelock

# Advisory Committee

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Norm Baldwin | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- Karen Paul | City Councilor
- Sophie Sauve | Burlington Parks, Rec, & Waterfront
- Jamie Smith | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

# 02|| Public Comment Period

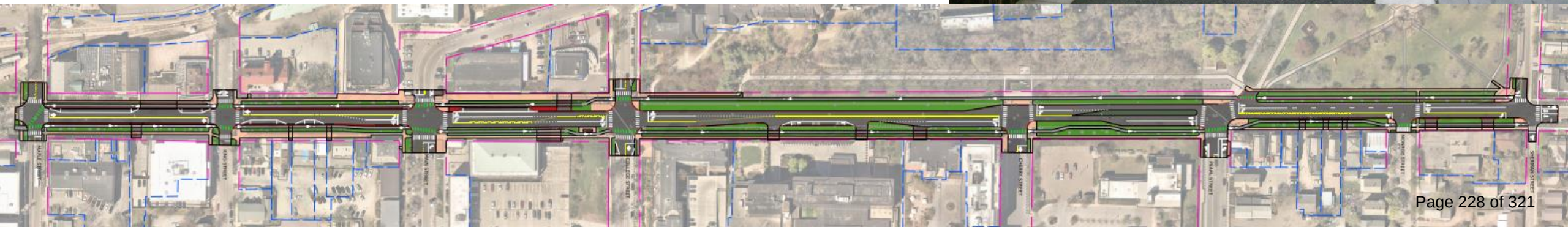


# 03|| Alternatives Overview

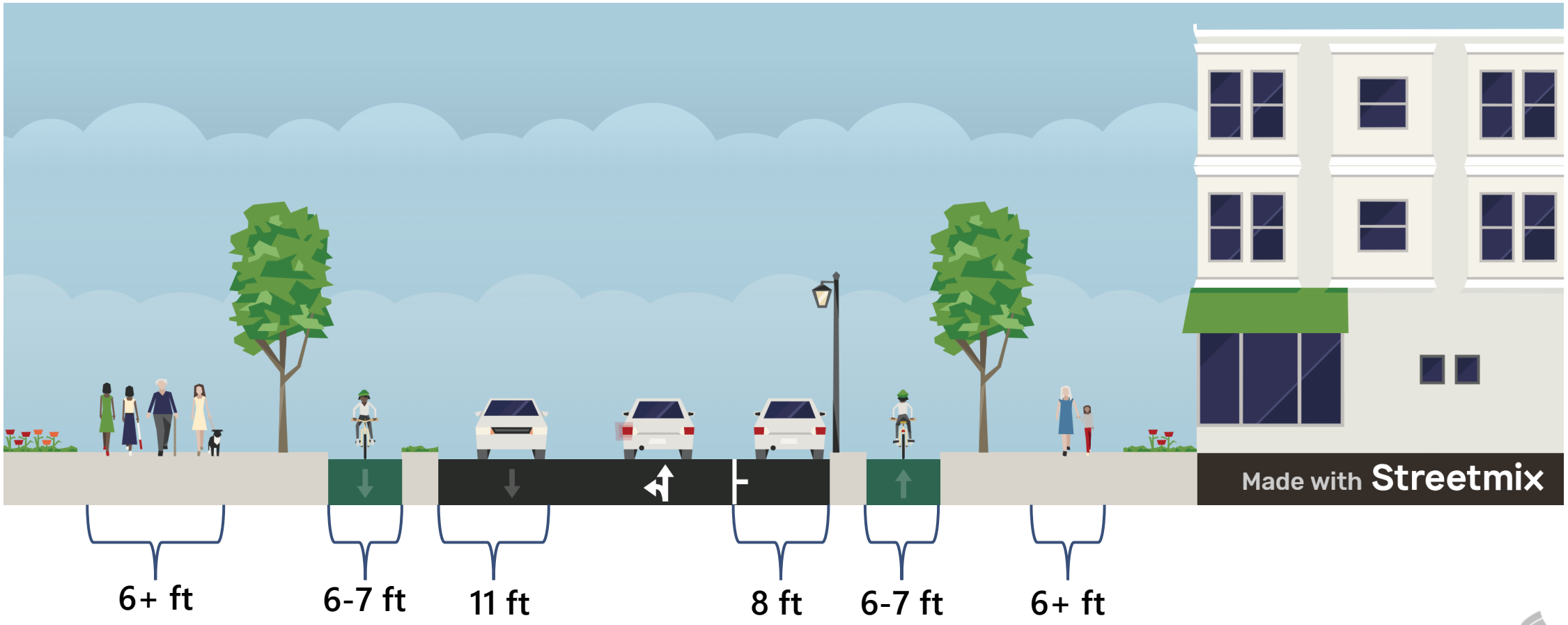
# Option 1 Overview

- 6- to 15-foot-wide sidewalks on both sides
- 6- to 7-foot-wide bike lanes on both sides
- Road Diet with 11-foot-wide travel lanes
- Pedestrian signal improvements
- Raised Median Island between Cherry Street and Pearl Street
- Some parking reallocation south of Main St

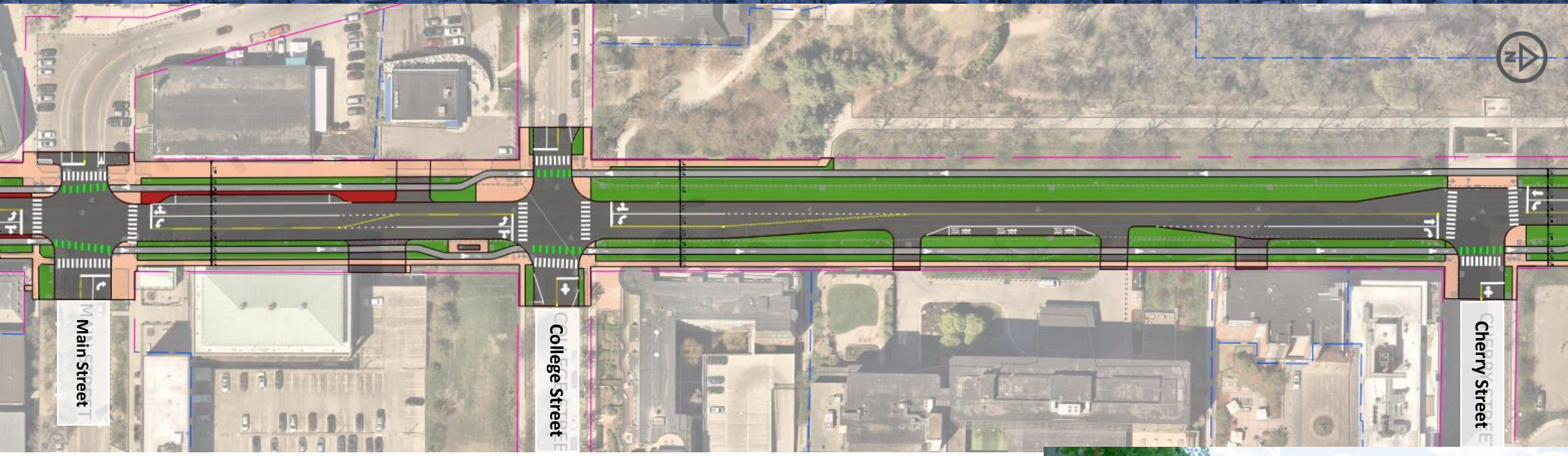




# Option 1: Typical Cross Section



# Option 1: Main Street to Cherry Street




## Option 1 Differentiators

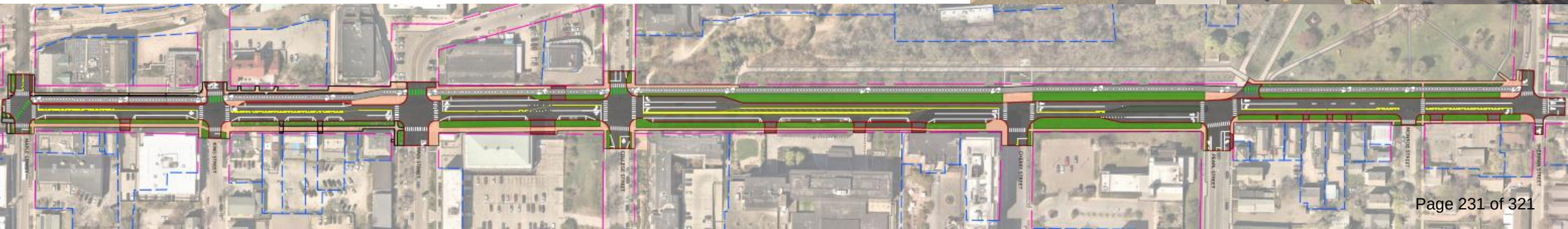
- Increased pedestrian space on the west side of Battery Street
- One-way bike lanes could be considered more intuitive (additionally, similar concept is under construction on Main Street)
- Fewer on-street parking spaces than Option 2



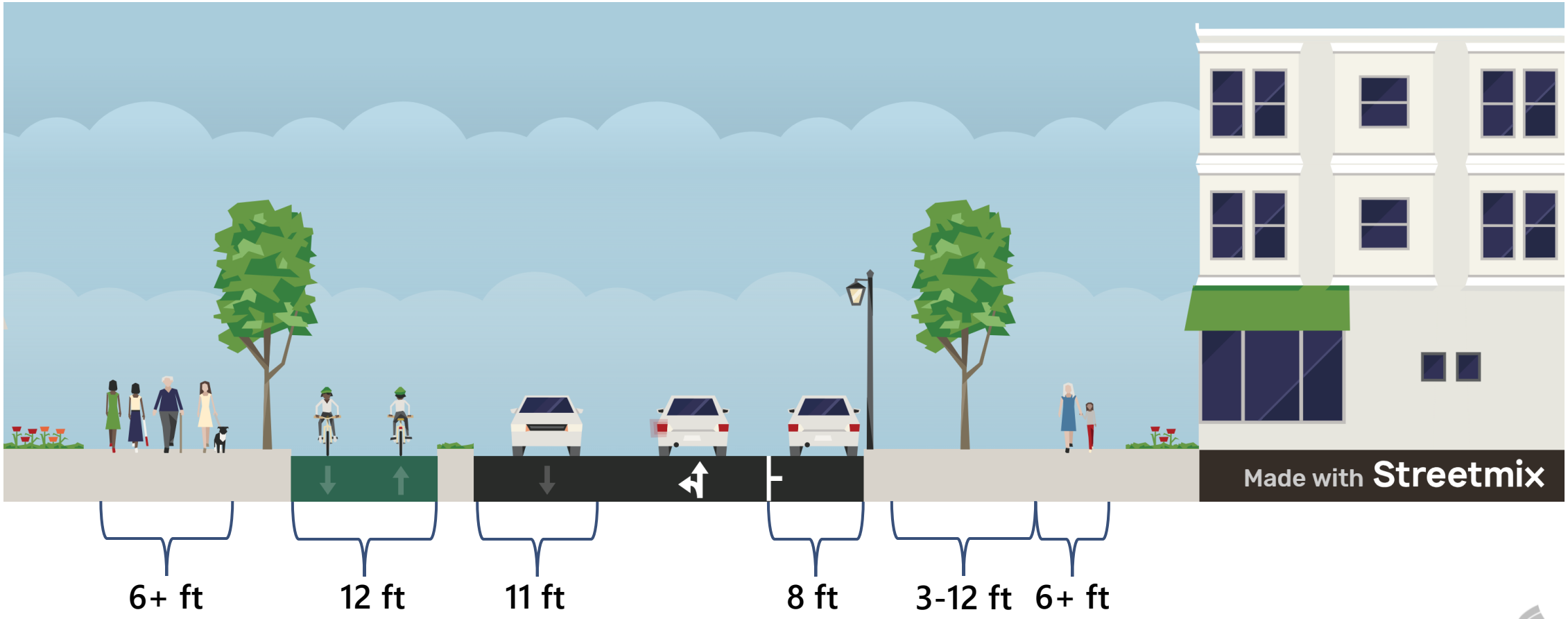
# Option 2 Overview

- 12-foot-wide two-way bike lanes on western side of the corridor
- 5- to 10-foot-wide sidewalks
- Road Diet with 11-foot-wide travel lanes
- Pedestrian signal improvements
- Parking included on east side up to Cherry St

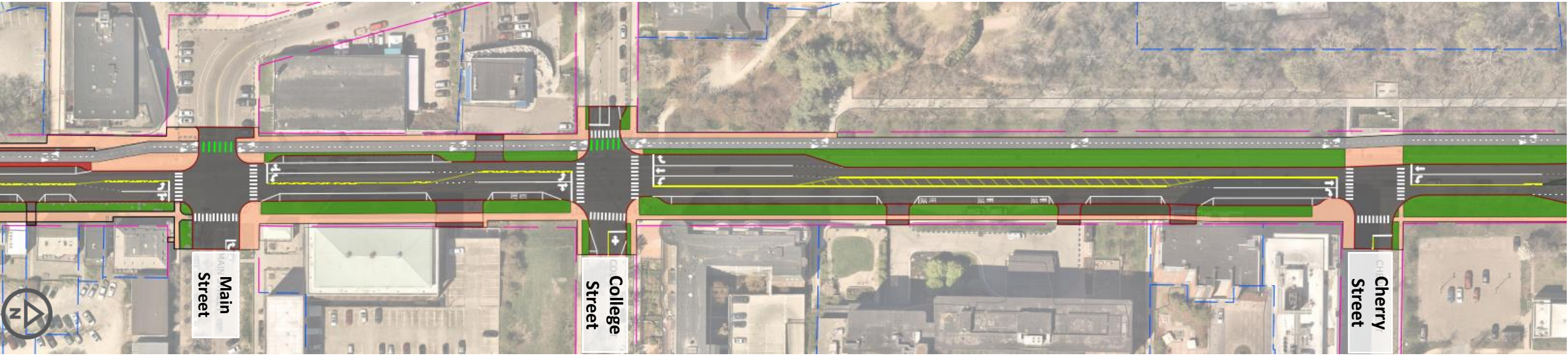


# Option 2: Typical Cross Section



# Option 2: Main Street to Cherry Street




## Option 2 Differentiators:

- Westside two-way bike travel eliminates several potential conflict points
- College Street crosswalk length
- On-Street parking included to Cherry St





# Features of Both Options

- Travel lane reduction – Road Diet
- Continuous separated bicycling facilities
- Wider sidewalks & pedestrian crossing “lead time”
- Sherman Street reconfiguration
- Traffic calming island between Cherry and Pearl
- Significant increase in green space





# 04|| Options Evaluation

# Corridor & Intersection Safety for All Users

## Option 1

- Road Diet along full corridor
- Minimizes lane shifts at intersections
- Eliminates slip lane at Sherman Street
- More intuitive lane configurations

(Additional improvement covered in other topics on next slides)

## Option 2

- Road Diet along full corridor
  - Additional turn lane required at College Street
- Eliminates lane shifts at intersections
- Eliminates slip lane at Sherman Street
- More intuitive lane configurations

(Additional improvements covered in other topics on next slides)

# Pedestrian Safety & Accessibility

## Option 1

- All pedestrian crossings are shortened
- Sidewalk width is maintained, widened where feasible
- All pedestrian crossings now have 7 seconds of “lead time”
- Pedestrian queue space might be compromised by separated bike lanes on both sides

## Option 2

- All pedestrian crossings are shortened
  - Except the northern leg of College Street
- Option to increase width of sidewalks on eastside (maintain width on westside)
- All pedestrian crossings now have 7 seconds of “lead time”
- Pedestrian queue space compromised on westside, available on eastside

# Bicycle Facilities & Connections

## Option 1

- One-way separated bike lanes, both sides
- Intuitive / Expected travel patterns for bicyclists
- Fully separated from roadway and sidewalks
- Higher conflict potential for bicyclists given travel on both sides of the street
- Reasonable access to both sides of the road
- Requires more exclusive signal phasing
- Easy connections all along Battery Street

## Option 2

- Two-way separated bike lanes, west side
- No conflict potential with motorists north of College Street
- Side by side bicycle riding, fully separated from roadway and sidewalks
- Northbound (uphill) direction is counter-flow to driver direction, i.e. less intuitive
- Seamless connection to west side of street
- Difficult access into and out of the facility

# Street Ecology Potential

## Option 1

- Maintains most existing trees
- Less impact to Battery Park
- Significant reduction in total area of impervious surfaces
- Provides substantial opportunity for new pervious surfaces / green space / stormwater management practices

## Option 2

- Maintains some existing trees
- Increased impact to Battery Park
- Significant reduction in total area of impervious surfaces
- Provides substantial opportunity for new pervious surfaces / green space / stormwater management practices

# Acceptable Mobility for All Modes

## Option 1

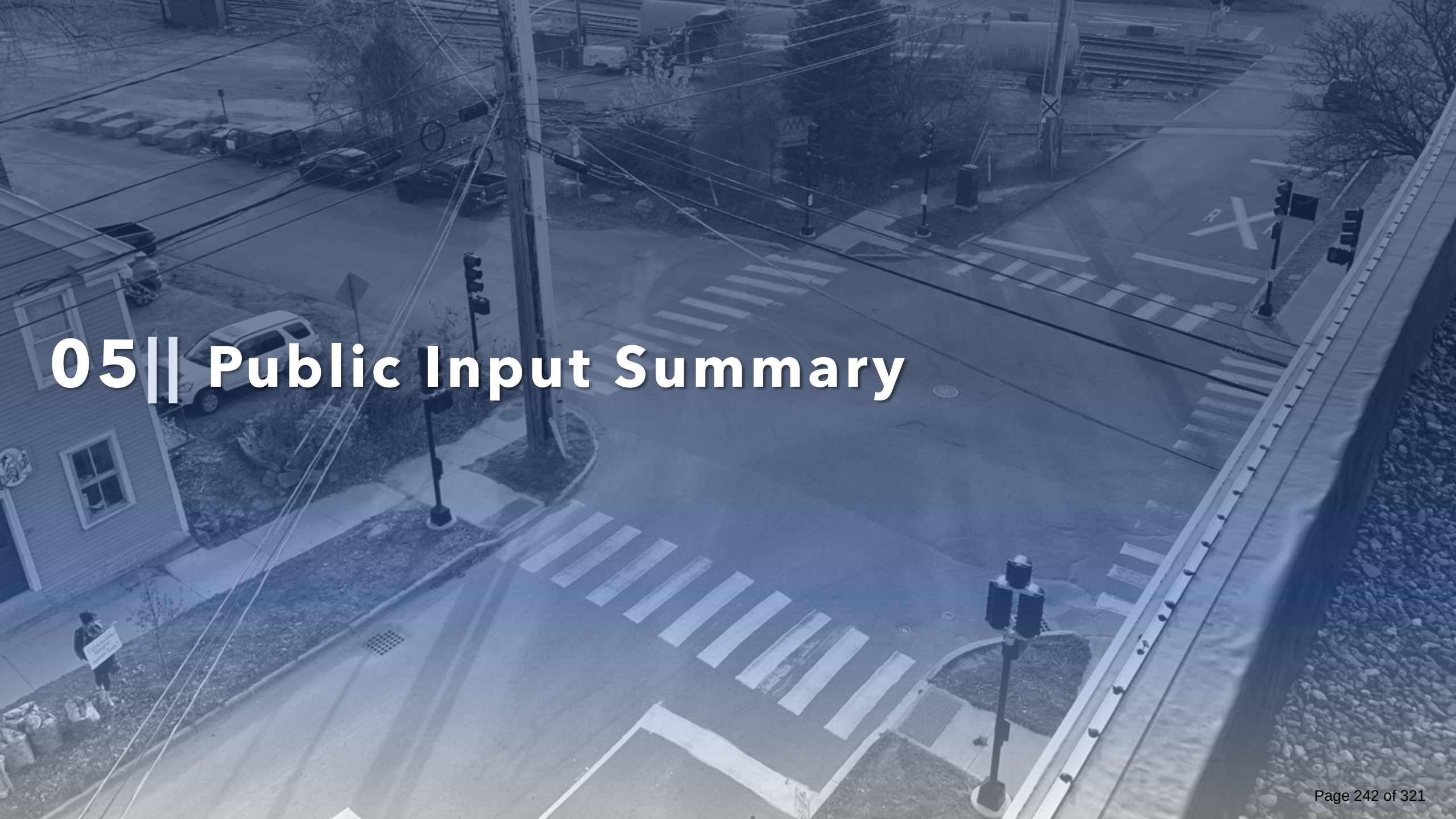
- Removes on-street parking on one side of Battery Street between Maple and Main
- During the most congested hour of the day, the average motor vehicle trip on Battery St. would take 3 minutes longer
- Maintains in-lane bus stop
- Improves pedestrian facilities and conditions
- Provides separated bike facilities

## Option 2

- Removes on-street parking on one side of Battery Street between Maple and King
- Adds on-street parking on east side of street between Main and Cherry
- During the most congested hour of the day, the average motor vehicle trip on Battery St. would take 40 seconds longer
- Provides bus pull-off at bus stop
- Improves pedestrian facilities and conditions
- Provides separated bike facilities

# Evaluation Matrix Overview

| | Corridor Options | | |
|---|---|---|---|
| | **No Build** | **Option 1** | **Option 2** |
| **Project Cost** | $0 | $$$$ | $$$$ |
| **Constructability** | - | Very Challenging | Challenging |
| **Purpose & Need** | | | |
| Improve corridor & intersection safety for all users | No | Yes | Yes |
| Enhance comfort and accessibility for pedestrians along Battery Street | No | Yes | Yes |
| Provide end-to-end bicycle facilities and connections | No | Yes (One-Way, Both Sides) | Yes (Two-Way, Westside) |
| Integrate street ecology into Battery Street's overall design | Somewhat | Yes | Yes |
| Provide acceptable mobility for all modes of transportation along Battery Street | No | Yes AT / Somewhat MV | Yes |



# 05|| Public Input Summary

# Public Meeting #2 – Options Presentation

## What we heard:

### Option 1:

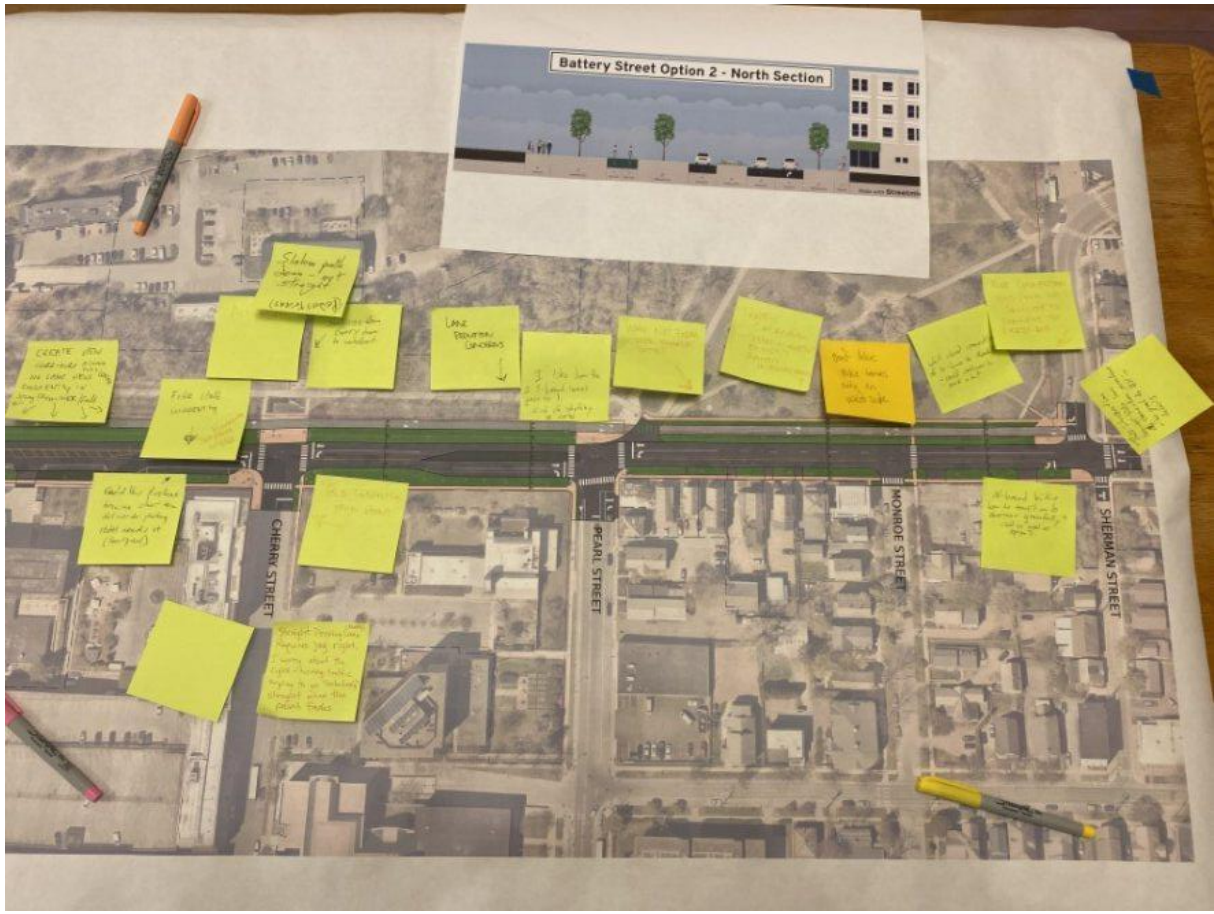
- Concerns people will “salmon” in bike lane
- Better for speed differentials
- Better access to both side of the street

### Option 2:

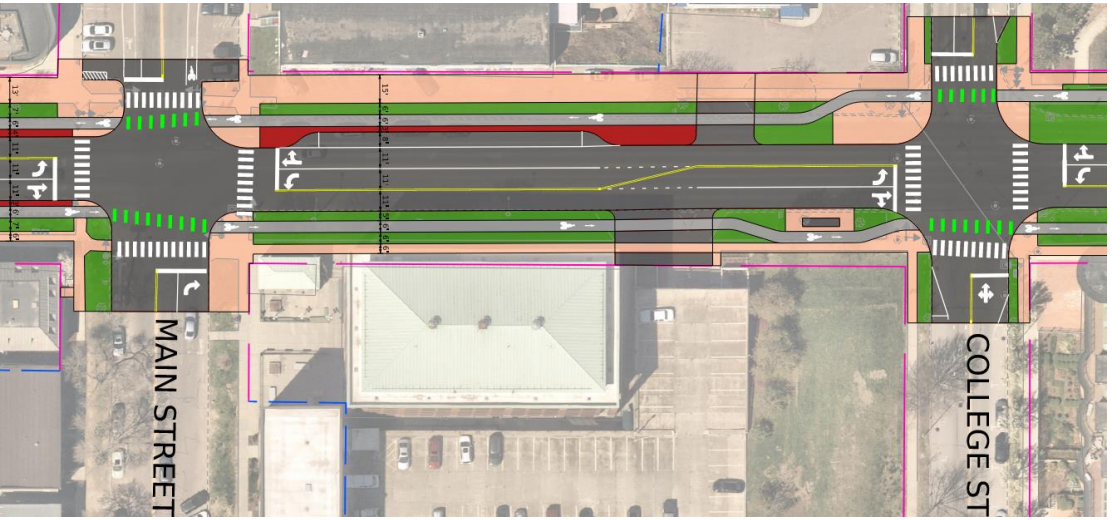
- Concerns about conflicts between up & downhill bicyclists
- Less conflicts with vehicles

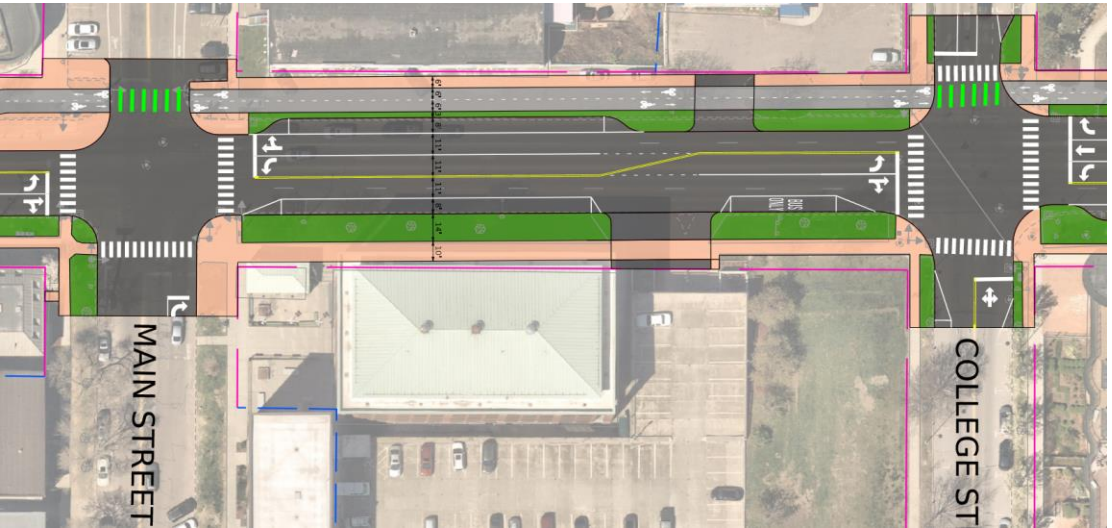
### General

- Concern over negative traffic impacts (namely with lane reductions)
- Concern over construction timelines



# Survey Results – What we Heard




- **Option 1 – Separated Bike Lanes Both Sides (50 Votes)**
  - Prefer separate uphill/downhill bicyclists
  - More "normal and expected" bike lane layout, feels safer
- **Option 2 – Two-Way Separated Bike Lanes West Side (75 Votes)**
  - Prefer to keep bikes together
  - Fewer conflict points
  - Provides better separation of users, feels safer
- **Preference for Neither Option (31 Votes)**
  - "Unnecessary project"
  - Concerns over traffic capacity and parking changes
- **Like Both Equally (10 Votes)**
  - Concerns over traffic capacity

# Focus Group Engagement

## Burlington City & Lake Semester

## CCRPC Equity Advisory Committee

## Burlington Walk Bike Council (BWBC)

- Prefer Option 1
- Feel it provides better intersection accommodations
- Bike lanes on both sides tie into the urban fabric more seamlessly
- If Option 2 was selected, they would like more separation in steep areas (i.e. College to Cherry)

## Burlington Business Association (BBA)

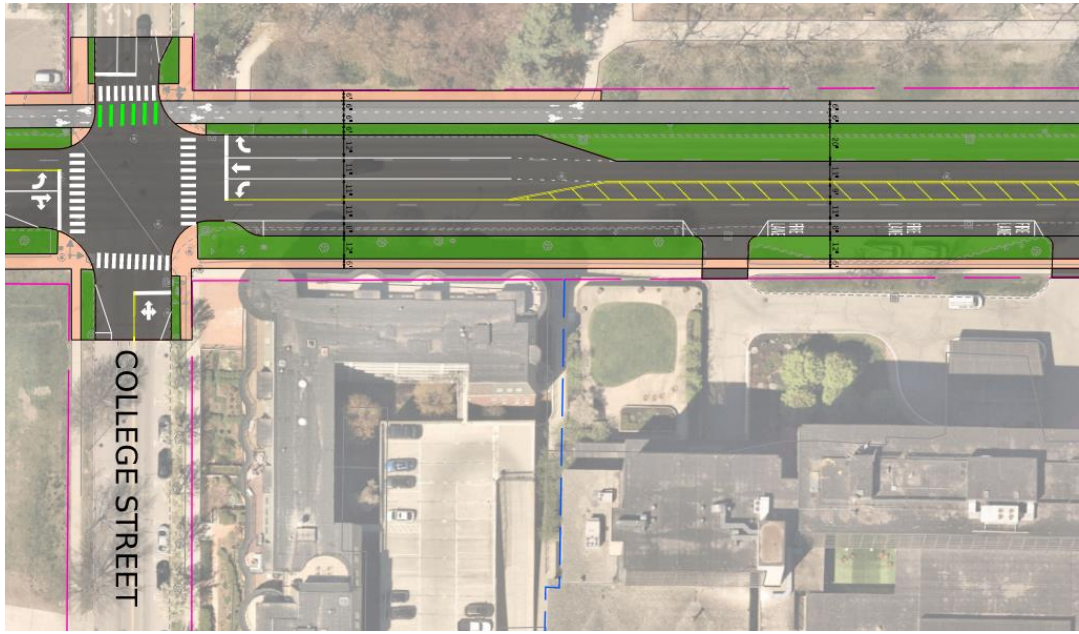
- Prefer Option 2
- Prefer more parking opportunities




# 06|| Open Discussion

# Flexible Elements

- Parking / Curbside Management
  - Number of Spaces / Locations
  - Other uses (Loading, transit, etc.)
- Bike Lane Width / Separation
- Medians
  - Type / Widths / Locations






# Recommended Preferred Option

- Do you have a Preferred Option?
- Are you leaning towards one, but an outstanding feature or element is giving you pause?
- Is there a flexible element you would like to see moved from one option to the other?





# 07|| Next Steps

# Next Steps

- Select & Refine Preferred Option
- Develop Draft Scoping Report
- City Council & TEUC Meetings / Presentations
- Final Scoping Report & Implementation Plan



# Contact Us


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Senior Transportation Planning Engineer

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**Drew Gingras, PE**
Project Manager

802-391-5569
dgingras@vhb.com

# Meeting Notes

| | | | |
|---|---|---|---|
| Date: | April 29, 2024 | Notes Taken By: | VHB |
| Place: | CCRPC / Virtual | Re: | Battery Street Scoping Study<br>Advisory Committee Meeting #3 |
| Project No.: | 58644.11 | | |

## Attendees:

**Advisory Committee**

Charles Dillard, Office of City Planning
Norm Baldwin, City Engineer
Sophie Sauve, Burlington Parks, Recreation, and Waterfront
Phet Keonmanyvahn, Office of Racial Equity, Inclusion and Belonging
Gene Bergman, City Councilor
Brendan Hogan, DPW Commissioner
Barbie Alsop, Ward 3
Ali Hamedani, Ward 3
Terry Rivers, Ward 5
Jonathon Weber, Walk Bike Council
Kelly Devine, Burlington Business Association
Jamie Smith, GMT

**VHB**

Drew Gingras, Project Manager
Karen Sentoff, Transportation Consultant
Elisabeth Sundberg, Transportation Planner

**CCRPC**

Jason Charest, Project Manager
Eleni Churchill, Transportation Program Manager
Eliana Fox, Transportation Planner

**City of Burlington**

Julia Ursaki, DPW Transportation Engineer
Phillip Peterson, Senior Transportation Planner

## Welcome + Introductions

- After a round of introductions, Jason and Drew introduced the project and provided a recap of what has happened since they last met with the group.
- Drew went over the meeting agenda and the goal of meeting, which is to gain consensus around one of the preferred options/ alternatives.

- Drew held a public comment period.

## Options Overview

- Drew went over the project area and the two options.
- Option 1: Off road bicycle facilities on both sides of the road. These would be raised and separated from the traveling public. High level typical cross section of option 1 including 11-foot lanes, 8-foot parking, 6-foot bike lanes on both sides, and 6-foot minimum sidewalk on both sides.
- Option 2: 12-foot-wide two-way bike lanes on western side of the corridor. 5-to-10-foot sidewalk on both sides, 11-foot travel lanes, 8-foot parking. Two-way bike travel on the west side.
- On street parking is a flexible element that could change based on preferred alternative.
- Drew went over the features of both options.
    - Travel lane reduction.
    - Continuous separated bicycling facilities
    - Wider sidewalks and pedestrian leading times
    - Sherman street reconfiguration – removal of slip lane
    - Traffic calming median island between Cherry and Pearl
    - Significant increase in green space
        - Stormwater benefits
- Flexible elements
    - Parking/ curbside management
        - Number of spaces / locations
        - Other uses (loading, transit, etc.)
- Drew shared that northern leg of college street doesn't change in option 2.
- Option 1 has more potential for conflicts with motor vehicles.
- Option 2 coming from downtown to get into facility you would have to cross battery street to get into the facility.
- There was a question about the impact to battery park.
- It was shared that there is going to be a master plan for the park.
- Acceptable mobility for all modes
    - Want to be sensitive to the impacts on traffic.
- Question about bus stop and how it will impact traffic?
    - Minimal impact would be expected.

- Eleni stated 3-minute delays is long time.
- Gene asked about the timing impacts at 15-minute increments.
- Jason – Safe to assume that option 1 would cause more changes to trip patterns compared to option 2.
- Norm – Concerned about public safety and want to promote active transportation.
    - Try to have options that don't have a lot of transitions.
    - Flip flop bike facilities in intersections that are heavily active – would prefer there would be consistency.
    - Railyard enterprise coming in, have to provide facilities that include active modes.
- Drew went over the evaluation matrix overview. In terms of constructability, Option 1 would be considered very challenging and option 2 would be challenging.
- Drew went over the feedback form public meeting #2 and the online survey.
- Jason went over the focus group engagement and what was heard from Burlington city and lake semester, CCRPC equity advisory committee, Burlington Walk Bike Council (BWBC), and Burlington Business Association (BBA).

## Open Discussion

- Jamie- GMT has preference for option 2, minimizes issues with bikes and buses. Option 2 existing shelter and shelter pad – popular drop off location, would be nice to have something that shows it.
- Drew- no intention to remove the shelter.
- Jamie- like the turn off for bus. Safety concern when cars go around the bus. Pull off would provide more safety. Three locations where to move the stop bar back – battery and maple headed southbound, eastbound stop bar and college and battery.
- Jonathon- consistent with main street – crossing distance college street is a downside of option 2, and Battery Park already has a two-way path.
- Terry- major question about time different for traffic – turning lane option in option 2?
- Drew- option 1 has more negative impact to traffic because of the turning volumes.
- Terry- good signage for option 2?
- Drew- that would be an engineering decision.
- Gene- speed limit be changed?
- Drew- not a consideration of the study- it is already 25mph.
- Jason- in downtown designated district you could go lower than 25mph.
- Gene- can't do 10 for lane width?
    - Major corridor with all class of vehicles, lanes have to be at least 11 feet.
- gene- asked about tree types.

- Barbie- prefer option 1. No longer ride bike but when she did, she liked going with the traffic. More children friendly. Less damage to battery park and things that are important to city members.
- Phet- delay would be concerned about behavior – people will find different pathways and think about other routes people will take. Be curious to know who filled out the survey because that would dictate how they would answer the survey. Project goal is to create access. Personally, likes option 2, bigger picture not finite details.
- Ali – option 1 concern if someone is in the bike lane going up the wrong way.
- Gene- like option 1- dislike two-way bike traffic on the hill- thinks it will be dangerous.
    - Concerned about option 2 shortened crossing time at college street. 7 seconds is really short.
    - Drew- that is the leading interval but there would be more time in addition to that. Crossing distance is a little different in option 2 since there is an extra turn lane.
- Kelly- heard concerns about both options from BBA. Concerns about width of sidewalks, what impacts that would have for local businesses, concern of loss of ability for traffic to flow. Every cross street is on a road diet. Concerned about loss of parking. Concerns about some times of the year- main access to the waterfront. Some people felt they did not want to pick either option.
- Option 2 would be an easier facility to maintain.
    - Main street great street will be on both sides- vehicle to maintain this facility would not be new.
- Norm- we are continuing to build facilities that didn't exist and the general operation budget to maintain these facilities. Does this merit that kind of long-term effort.
- Norms proposed a new option- combination of both options, with transition at Main Street.

**Vote on Preferred Alternative:**

1. Gene- option 1
2. Barbie- option 1
3. Ali – option 1
4. Norm- option 1- prefer mixed.
5. Sam- option 1 – like norm's idea
6. Jonathon- option 1
7. Brendan- Option 1
8. Jamie- option 2
9. Kelly- option 2
10. Terry – option 2
11. Phet- option 2
12. Charles- option 2 or a hybrid

The project team thanks the AC for their input and shared that they will further explore other alternatives given the feedback that was received.



# Battery Street Scoping Study

## Advisory Meeting #4

September 26th, 2024

Chittenden County RPC
Communities Planning Together

Burlington, VT Public Works

vhb

# Meeting Agenda

- Welcome
- Public Comment Period
- AC Meeting #3 Recap
- Since We Last Met…
  - Option 2 Refinements
  - Option 3 Development
  - Additional Analysis
  - Updated Evaluation Matrices
- Project Team Recommendation
- AC Recommendation
- Next Steps





# 01|| Project Team

# Project Team

vhb

- Drew Gingras
- Karen Sentoff
- Elisabeth Sundberg

Chittenden County RPC
Communities Planning Together

- Jason Charest
- Eleni Churchill

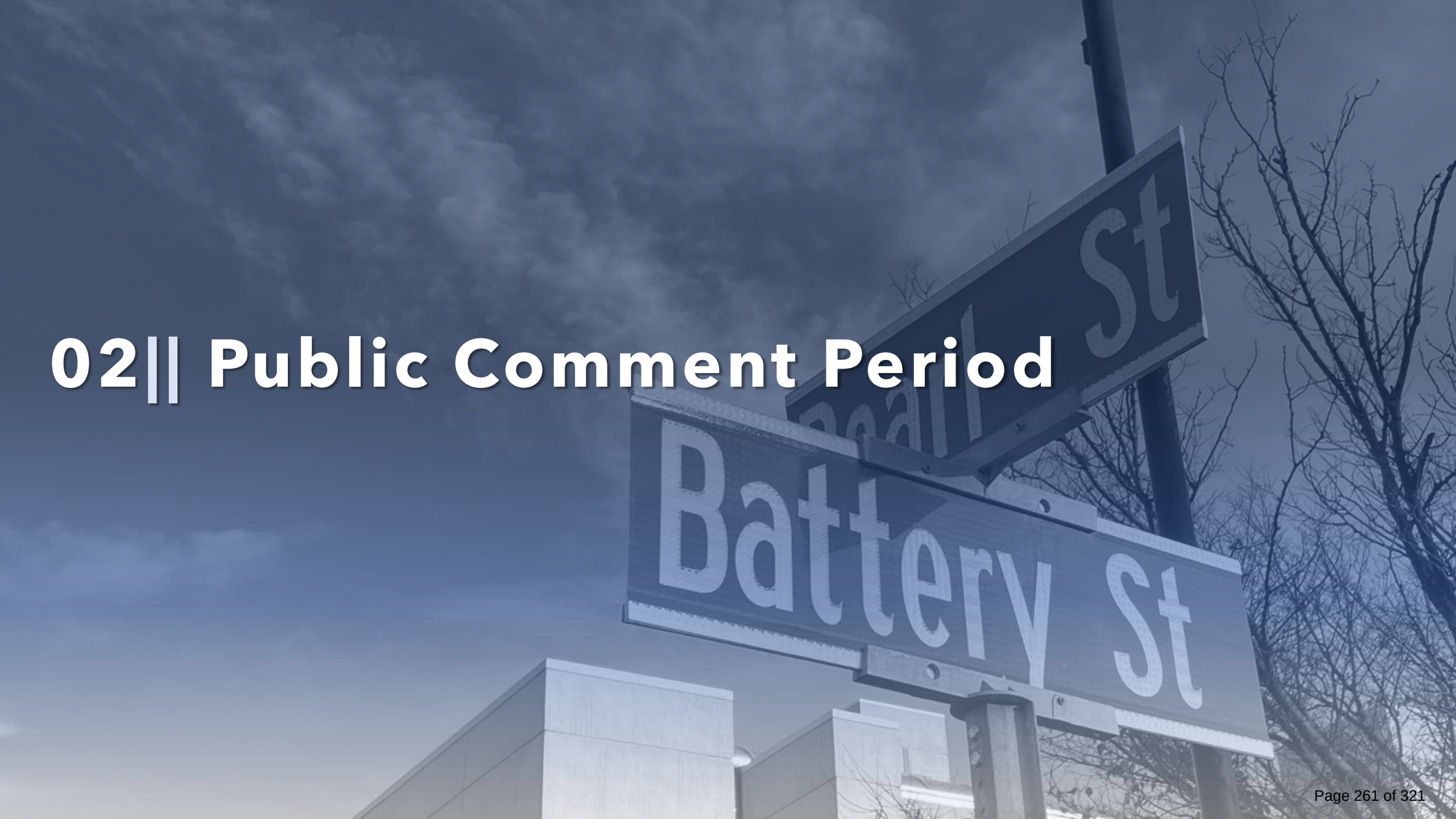
Burlington, VT Public Works

- Julia Ursaki
- Phillip Peterson

# Advisory Committee

- Barbara Alsop & Ali Hamedani | Ward 3 Representatives
- Terry Rivers | Ward 5 Representative
- Laura Wheelock | City Engineer
- Gene Bergman | City Councilor
- Phet Keomanyvanh | Office of Racial Equity, Inclusion & Belonging
- Kelly Devine | Burlington Business Association
- Charles Dillard | Office of City Planning
- Brendan Hogan | DPW Commissioner
- *Vacant* | *City Councilor*
- Sophie Sauvé | BPRW
- Chris Damiani | Green Mountain Transit
- Jonathon Weber | Walk / Bike Council

# 02|| Public Comment Period



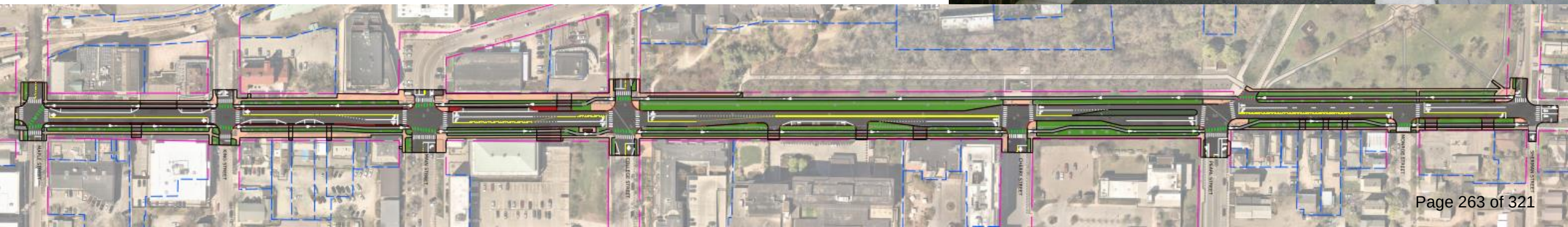


# 03|| AC Meeting #3 Recap

# Option 1 Overview

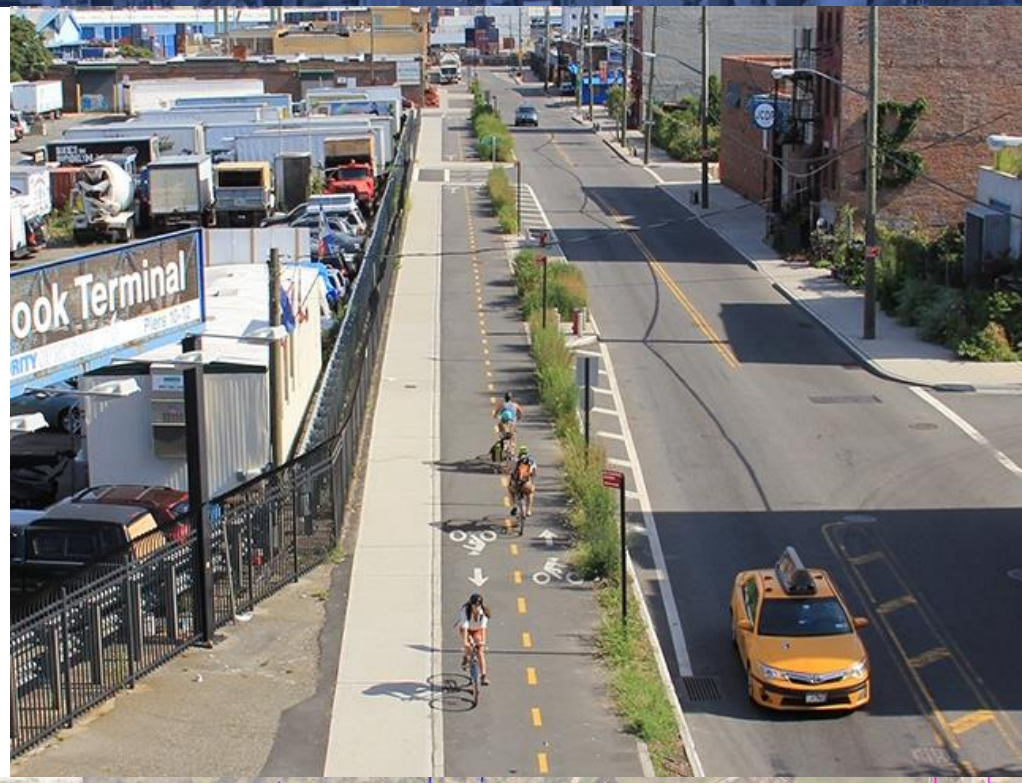
- 6- to 15-foot-wide sidewalks on both sides
- 6- to 7-foot-wide bike lanes on both sides
- Some parking reallocation south of Main St
- Road Diet with 11-foot-wide travel lanes
- Pedestrian signal improvements
- Raised Median Island between Cherry Street and Pearl Street

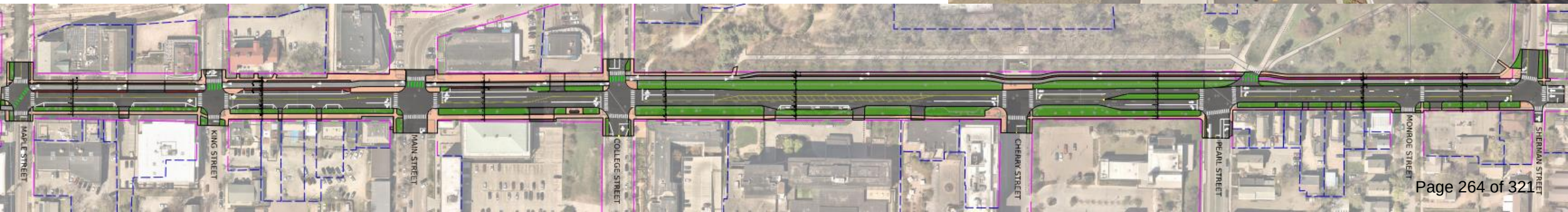




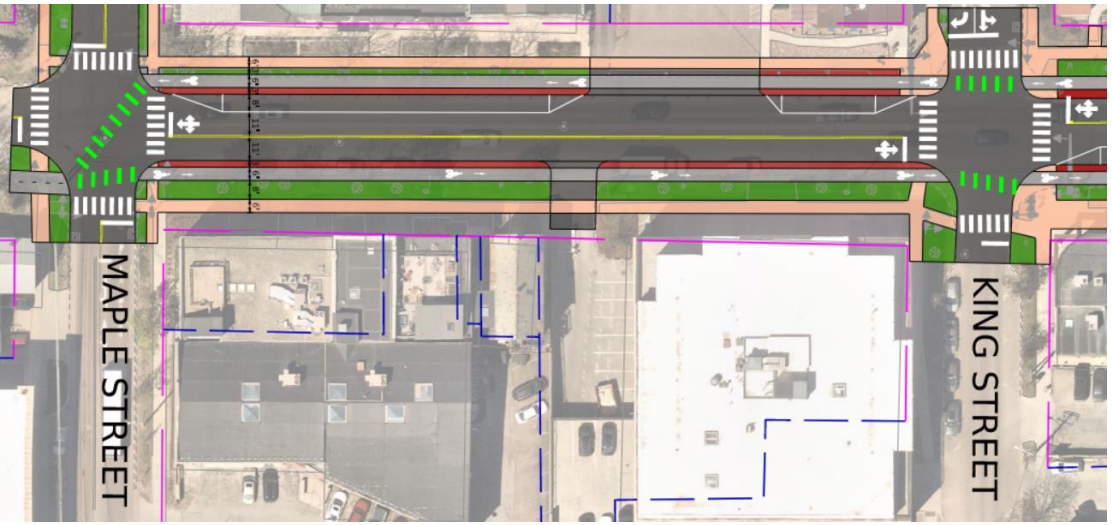
# Option 2 Overview

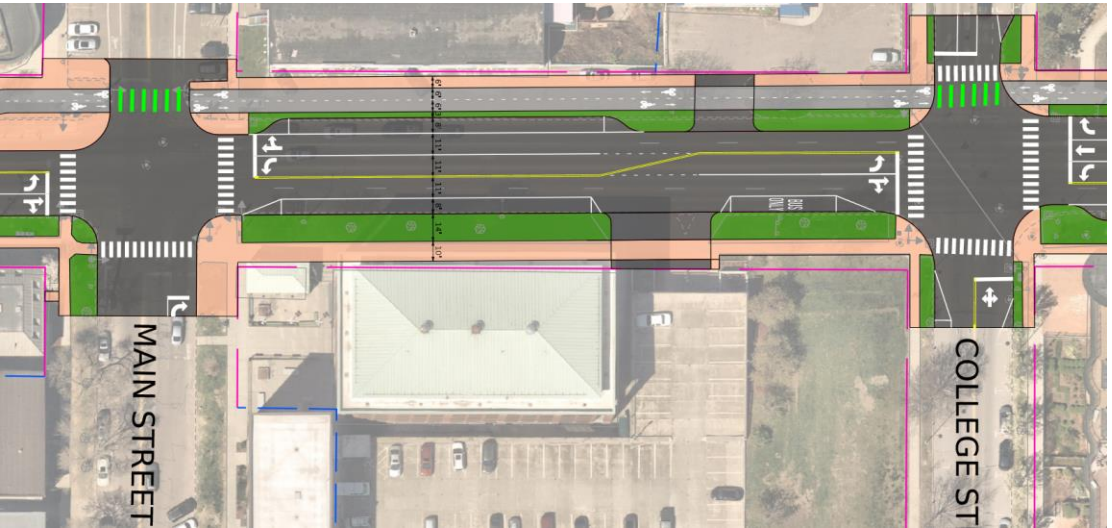
- 12-foot-wide two-way bike lanes on west side
- 5- to 10-foot-wide sidewalks
- Parking maintained both sides King to Main
- Road Diet with 11-foot-wide travel lanes
- Pedestrian signal improvements
- Raised Median Island between Cherry Street and Pearl Street



# What we Heard




## Key Takeaways

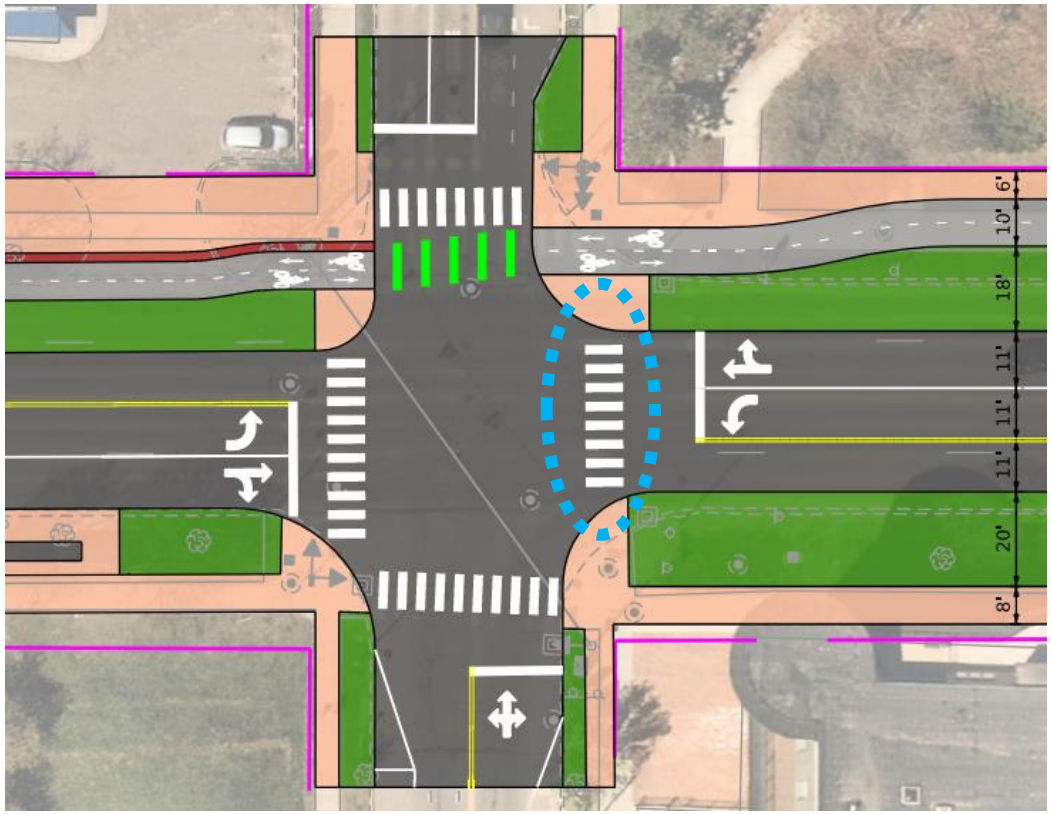
- Concern over impacts to traffic operations
- Concern over impacts to parking
- Concern over College Street ped crossing (Option 2)
- Safety concerns
  - Side by side bike riding (Option 2)
  - Higher conflict potential (Option 1)
- Impacts to Battery Park (Option 2)
- Maintenance
- Desire to consider an additional option (Option 3)



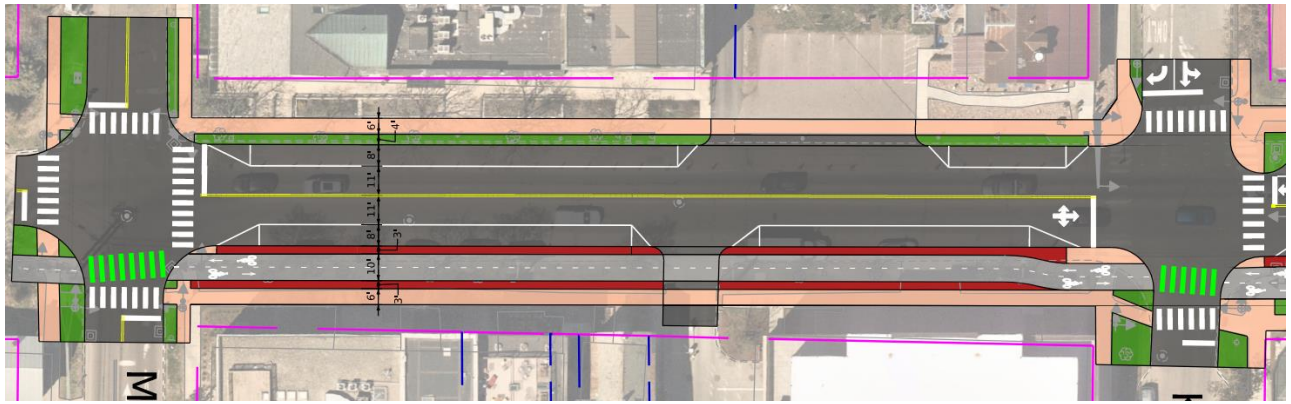
# 04|| Since We Last Met

# Option 2 Refinements / Additional Analysis

## Reduced College Street Crosswalk Length



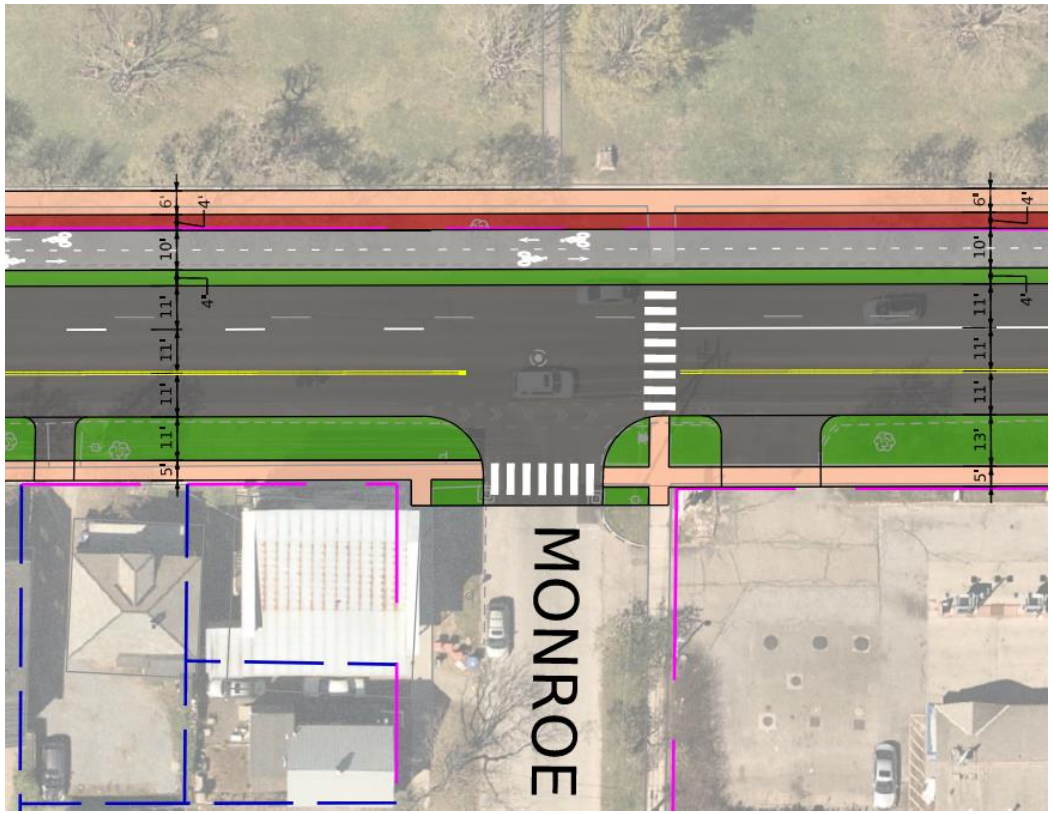

## Parking Opportunities*



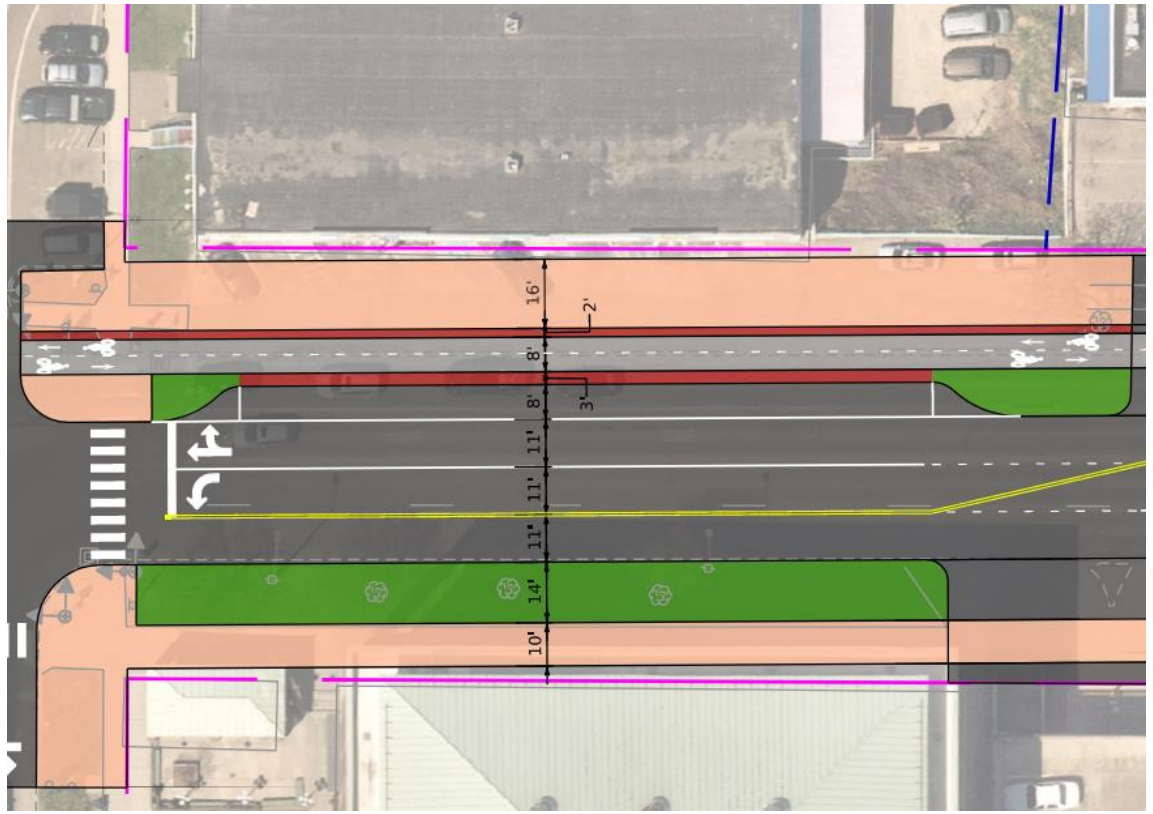
** Option 3 is shown, but parking along both sides of Battery Street from Maple to King is feasible in Option 2 as well*

# Option 2 Refinements / Additional Analysis

## Reduced Battery Park Impacts

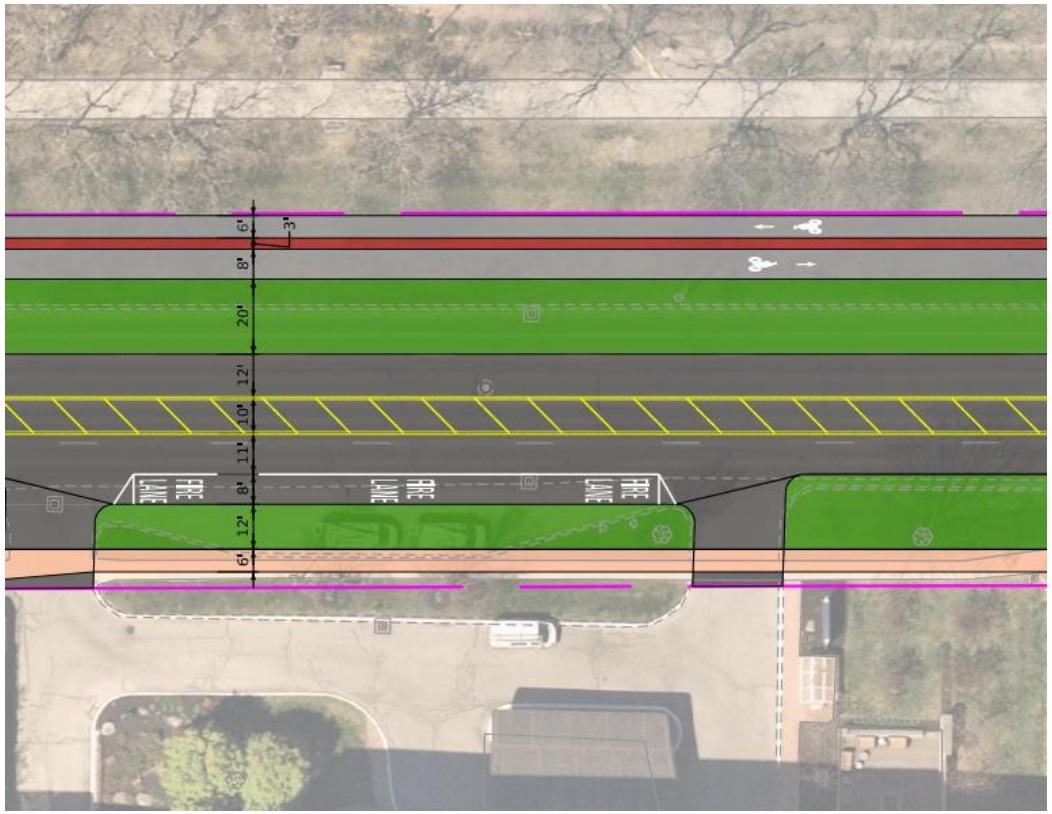



## Increased Business Frontage Space



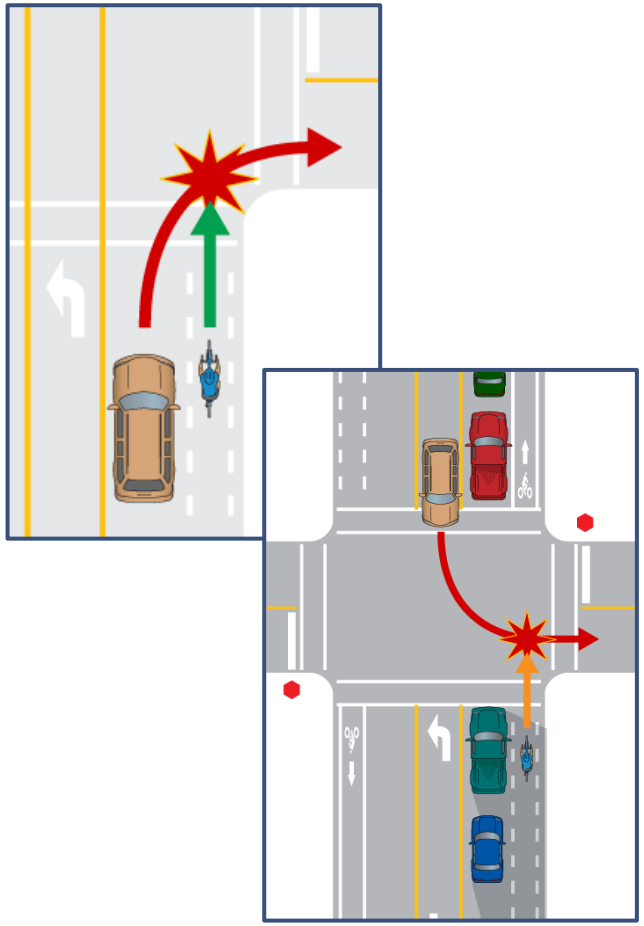
# Option 2 Refinements / Additional Analysis

## Side-by-Side Uphill/Downhill Riding

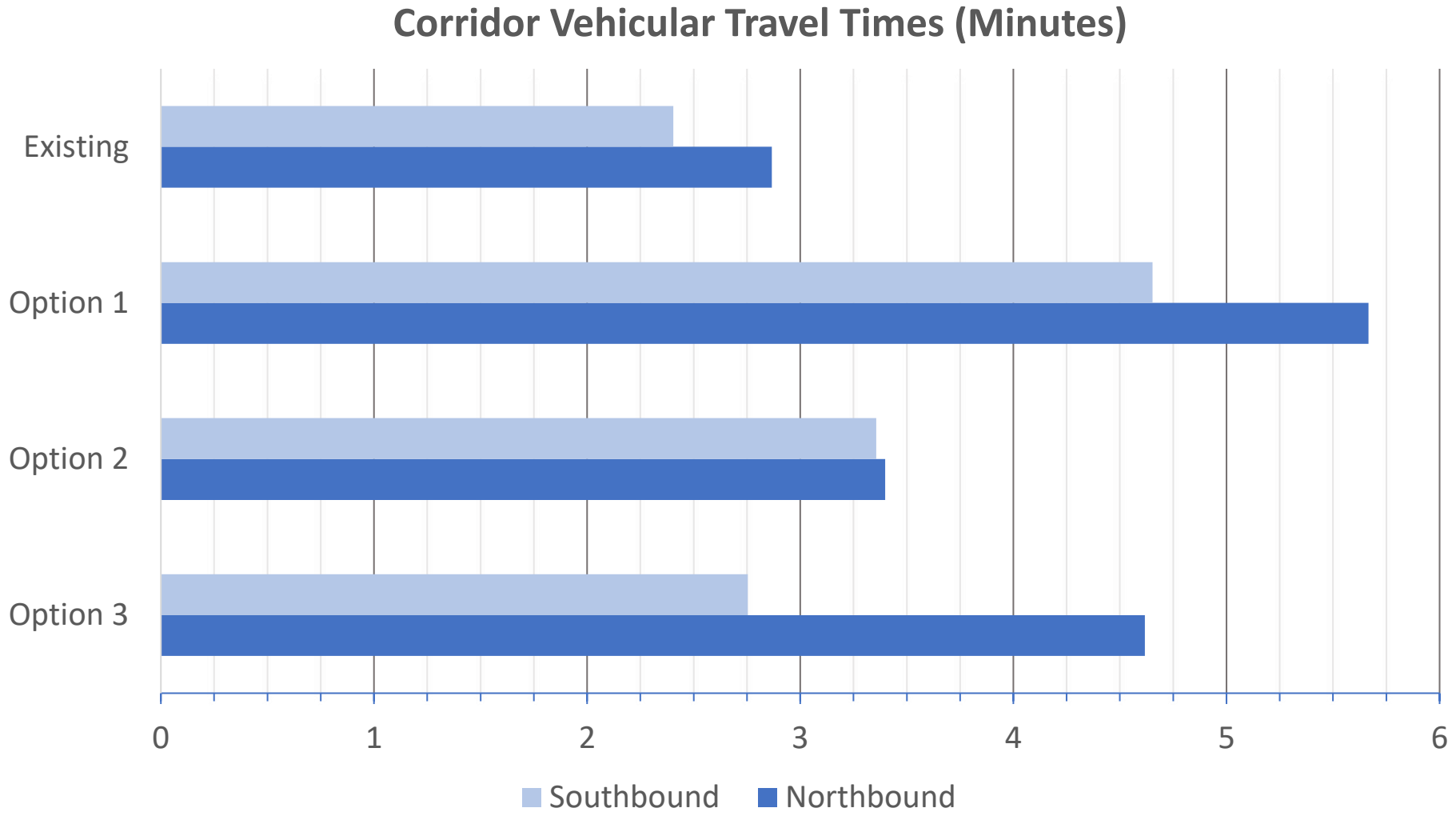



## Safety Considerations



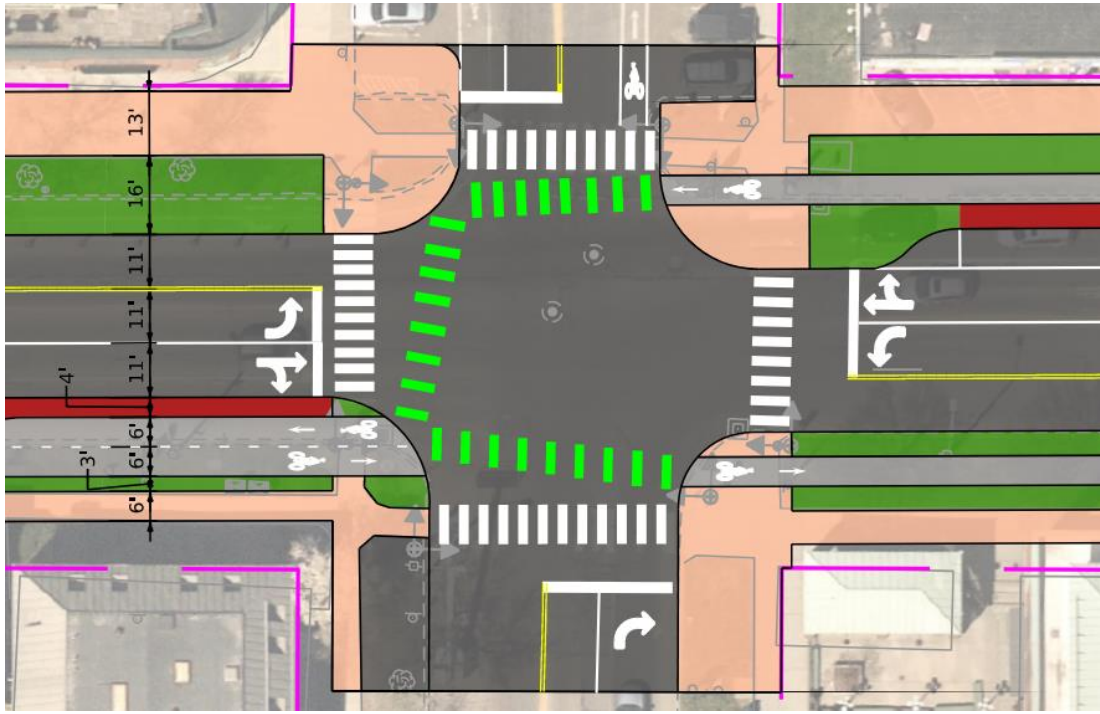


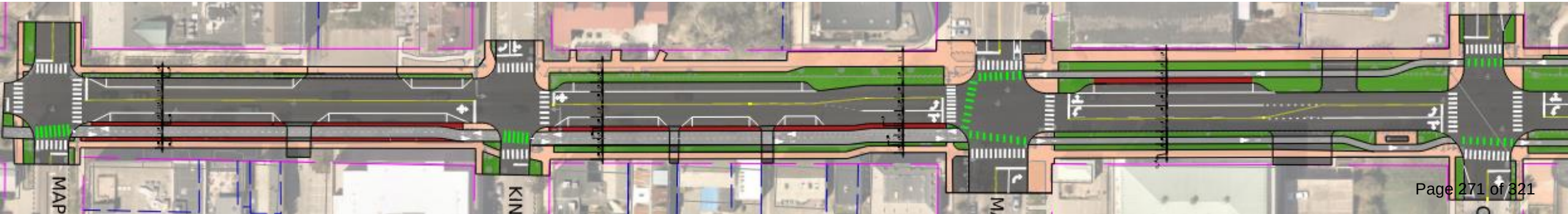
# Additional Analysis



# NEW - Option 3

- 10 to 12-foot-wide two-way bike lanes on east side (Maple to Main) transition to 6 to 7-foot wide bike lanes on both sides (Main to Sherman)
- "Two-stage crossover" at Main Street
- Parking maintained on both sides (Maple to Main)
- Road Diet & Pedestrian considerations same as  Options 1 & 2



# Updated Evaluation Matrix

| | Corridor Options | | | |
|---|---|---|---|---|
| | **No Build** | **Option 1** | **Option 2** | **Option 3** |
| **Project Cost** | $0 | $$$$$ | $$$$$ | $$$$$ |
| **Constructability** | - | Very Challenging | Challenging | Very Challenging |
| **Purpose & Need** | | | | |
| Improve corridor & intersection safety for all users | No | Yes | Yes | Yes |
| Enhance comfort and accessibility for pedestrians | No | Yes | Yes | Yes |
| Provide end-to-end bicycle facilities and connections | No | Yes | Yes | Yes |
| Integrate street ecology into Battery Street's overall design | Somewhat | Yes | Yes | Yes |
| Provide acceptable mobility for all modes of transportation | No | Yes (bikes/peds) / No (motor vehicles) | Yes | Yes |

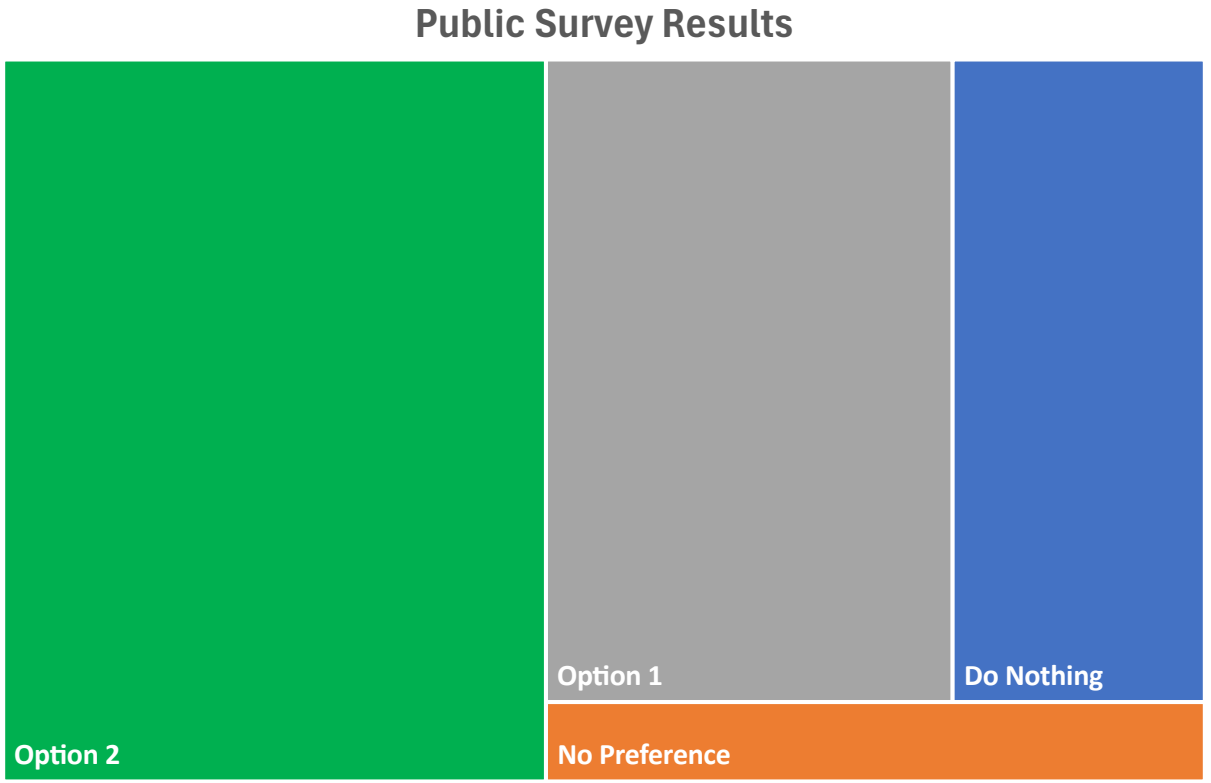



# 05|| Project Team Recommendation

# Project Team Recommendation – Option 2

## Why Option 2?

- Best meets the Purpose & Need
- Greatest public support
- Minimizes impacts to delay – for all modes – while maintaining safety for vulnerable users
- Fewest points for conflict potential
- Accommodates design modifications to address Advisory Committee concerns






# 06|| Advisory Committee Recommendation

# How is everyone feeling?

## Roundtable Discussion

- Questions?
- Comments?
- Preference?





# 07|| Next Steps

# Next Steps

- Develop Draft Scoping Report
- Presentation of Recommended Alternative to:
  - Transportation, Energy, & Utilities Committee (TEUC)
  - City Council
- Develop Final Scoping Report



# Contact Us


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Senior Transportation Planning Engineer

802-861-0127
jcharest@ccrpcvt.org

**Drew Gingras, PE**
Project Manager

802-391-5569
dgingras@vhb.com

# Meeting Notes

| | | | |
|---|---|---|---|
| Date: | September 26, 2024 | Notes Taken By: | E. Sundberg (VHB) |
| Place: | Burlington DPW and Zoom | Re: | Battery Street Scoping Study<br>Project Advisory Committee Meeting #4 |
| Project No.: | 58644.11 | | |

ATTENDEES:

Project Team:

Drew Gingras, VHB
Elisabeth Sundberg, VHB
Jason Charest, CCRPC
Eleni Churchill, CCRPC
Eliana Fox, CCRPC
Julia Ursaki, Burlington DPW

Advisory Group:

Laura Wheelock, Burlington DPW
Sophie Sauve, BPRW
Jonathon Weber, Local Motion
Chris Damiani, GMT
Gene Bergman, City Councilor
Barbie Alsop & Ali Hamedani, Ward 3
Terry Rivers, Ward 5
Kelly Devine, BBA

## Welcome + Introductions

- After a round of introductions, Jason and Drew introduced the project and provided a recap of what has happened since they last met with the group.
    - This update included the analysis of Option 3 which was a combination of Option 1 and Option 2.
- Drew went over the meeting agenda and the goal of meeting, which is to seek consensus for a preferred alternative.
- No public comments were made during the public comment period.

## Options Overview

- Drew went over the project area and the first two options.
- **Option 1**: Separated bicycle facilities on both sides of Battery Street. These would be raised and separated from motorists. High level typical cross section of option 1 including 11-foot lanes, 8-foot parking, 6-foot bike lanes on both sides, and 6-foot minimum sidewalk on both sides.
- **Option 2:** 12-foot-wide two-way bike lanes on western side of the corridor. 5-to-10-foot sidewalks on both sides, 11-foot travel lanes, 8-foot parking. Two-way bike travel on the west side. Additionally, Drew went over the adjustments that were made to Option 2 since the last Advisory Group meeting.
- On street parking is a flexible element that could change based on the preferred alternative.

## Key Differences

- The primary difference between the two alternatives is how bicycle facilities interact with the corridor.

## Key Takeaways from last meeting

- **Traffic Operations**: Concerns regarding traffic impacts.
- **Parking**: Concerns about parking availability.
- **Pedestrian Crossings**: Concern about pedestrian crossings at College Street in Option 2.
- **Safety**:
    - Side-by-side biking in Option 2 raises concerns.
    - Option 1 presents higher conflict potential.
- **Battery Park**: Impacts in Option 2 were noted.
- **Maintenance**: Considerations were discussed.
- **Additional Option**: Desire to explore Option 3 was noted.

## Option 2 Refinements / Additional Analysis

- **College Street Crosswalk**: Length reduced.
- **Southbound Right Turn Lane**: Removed in the interest of shortening the pedestrian crossing. Traffic phasing was modified to provide separate phasing for bicyclists and turning motorists.
- **Parking**:
    - Maintain parking from Maple to King.
    - Feasible in both Option 2 and Option 3.
- **Battery Park Impacts**: Reduced by minimizing buffer separation in Option 2.
- **Business Frontage**: Increased space in front of April Cornell & Burlington Bay.
    - 16-foot frontage zone for business staging and sidewalk.
    - Reduced width for bicycle lanes.
    - Parallel parking available.
- **Safety Considerations**:
    - Conflict potential and crash risks (e.g., right hook, left turn crashes).
    - Phase separations at intersections to hold movements.

### Additional Analysis

- **Corridor Vehicular Travel Times (minutes)**:
    - All options increase travel times, with Option 1 being the most significant.

### New Option 3

- **Bike Lanes**:
    - 10-12-foot-wide two-way bike lanes on the east side (Maple to Main).
    - Transition to 6-7-foot-wide lanes on both sides (Main to Sherman).
- **Parking**: Maintained on both sides (Maple to Main).
- **Road Diet and Pedestrian Considerations**: Similar to Options 1 and 2.

### Updated Evaluation Matrix

- Similar to Options 1 and 2, Option 3 met all elements of the purpose and need to a slightly higher degree than Option 1, and a slightly lower degree than Option 2.

### Project team recommendations

- **Recommended Option:**
    - **Option 2.**
        - Best meets the purpose and need.
        - Greatest public support.
            - Public input was from the survey that included Option 1 and Option 2.
        - Minimizes delays for all modes while maintaining safety for vulnerable users.
        - Fewest points of conflict.
        - Accommodates design modifications to meet advisory committee's input.

## Open Discussion

- Someone asked which side of the street are the bike facilities for Railyard Enterprise project on?
    - Laura added that in the ROW phase the City may be able to move it to west side of the road.
        - This does not require to go back to NEPA.
- Barbie asked what the difference between Option 1 and Option 2 for parking.

  - Currently, Option 1 would allow parking to be maintained on one side or the other from Maple Street to Main Street.
  - Option 2 and Option 3 would allow parking to be maintained on both sides of the street from Maple Street to Main Street.

- Gene would like to see the safety changes at all the intersections for bikers and pedestrians turning left and crossing the opposite lanes of traffic as they cross over the intersection. Especially for Option 2 at the College Street intersection.
- It was mentioned that it would be difficult to cross over from east side over to the west side to have to cross back over to the east side of the roadway
- Someone asked what the delay would be for bikers for Option 1 and Option 2.
  - Drew shared that Option 1 and Option 2 are the same if you are traveling down into downtown.
  - However, Option 1 would have a longer wait time travelling northbound
- There were more questions around how you would cross the roadway from the two-way path.
  - Drew shared they would likely use a two stage turn box that would pull you out of the way of through traveling bicyclists, but this is a detail to be sorted out in engineering design.
  - When the signal turns green the cyclist would travel in front of the cars.
- Jonathon asked if protected intersections were considered.
  - Julia shared on Main Street it would be considered because it would tie into that bicycle network but not in other areas where there is no existing infrastructure to tie into.
  - Jonathon shared that it is a much better experience to be in a protected facility.
  - It was mentioned that a two stage turn box would be a difficult turn movement for users.
  - It was asked if the city can build entrances for protected turns.
    - Julia shared that this was not part of project scope to look at all intersections at this level of detail.
- Chris mentioned that we should be mindful of connecting to downtown from the south once Pine and Saint Paul get connected. Pine Street may be a more popular route for getting into downtown from the south.
- It was mentioned that protected intersections could be considered in other work going on in the City like the update to planBTV Walk Bike.
  - Pearl Street and Main Street could have intentional crossings into receiving facilities
  - College Street becomes challenging when it doesn't connect to the other side of the road.
- Jonathon asked what the delay for bikes northbound on a bike from Option 1
  - Drew shared they have not done a travel time for bikes

  - Regarding Option 1, it was discussed that in the northbound direction at King, Maple, College, Cherry, and Pearl as a bicyclist, you would likely be waiting for a light cycle and would experience delay similar to a driver.
  - Option 2 northbound wouldn't incur this same delay for bicyclists as there are no intersections between College Street and the northern end of the project.
- Jonathon asked about the southern four intersections for bikes for Option 2
  - Less of the demand for turning west into the waterfront vs east towards downtown.
  - Similar delay to that of drivers.
- Ali inquired about the potential for a pedestrian exclusive phase at the College Street intersection.
  - Drew added that exclusive pedestrian phase would be challenging given the phase changes required to protect bicyclists (at an already congested intersection).
  - Drew also noted that the Leading Pedestrian Intervals (LPIs) have all been extended to improve crossing conditions for pedestrians.
  - What would it mean for the delay of motor vehicle traffic?
    - It would likely get significantly worse across the board (if pedestrian exclusive phasing was added).
- Concerns were expressed that even with an advance of seven seconds, drivers turn right on red.
  - Julia noted that the City has had success with blankout no right turn on red signage, the City can include this along the Battery Street corridor.
  - The desire for no turn on red at major intersections was emphasized.
- Jonathon discussed Option 2 coming from railyard path to cross over and then having to cross back over to the north.
  - Jonathon shared the opinion that bicyclists will just not be using the path in that scenario and that it fails to meet that need.
  - Additionally, Jonathon shared the opinion that when on the north end from Cherry and Pearl, he does not think bicyclists are going to cross to then have to cross again.
- Laura added a lot of the movements are connecting streets that are slow streets. As a pedestrian or bicyclist there are a lot of opportunities and even more so when the Pine and St Paul Street grid connections are restored as part of the City Center development.
- Jonathon shared the opinion that Option 3 addressed the noted "crossover" concern well.
- The question was asked – Where does the study go from here?
  - VHB will draft a scoping report, then the project team will seek an endorsement of the preferred alternative from the TEUC and City Council.

- Drew added they could recommend or present a toolbox about safety design measures for two-way paths.
    - A lot of the questions are beyond scoping and will be addressed during design.
- The Project Team offered follow-up one-on-one meetings with AC members, if questions remain.
- Laura asked what room these designs have to accommodate the growth in the city given the State and City's ambitious goals to add new housing (particularly relative to the traffic analysis and capacity in the future).
    - Option 1 presents a condition that is at or above capacity at most intersections, while Option 2 presents the most room for future growth.
- It was asked if this analysis included the 20-mph speed limit change for downtown.
    - Yes, Battery Street will be designed for 20mph speeds.
- Someone asked if cameras could be used for speeding enforcement.
    - This is not currently allowed at the State-level.
- Laura requested that the City's Great Streets Standards be considered, particularly for the April Cornell frontage i.e. adding trees, plantings, and other streetscape amenities instead of just concrete sidewalk.
    - Jonathon noted that he doesn't think the 2-way bike lane should be narrowed in this area.
- Jonathon requested that the project team reconsider two southbound lanes at the Monroe Street crosswalk. It is a multiple threat crossing.
- Gene asked for clarity around the parallel parking in front of April Cornell and expressed concern about people coming down the roadway fast and it being very narrow.
    - Jason added that the narrowing of roadway and parallel parking activity is part of how compliance with a 20 mph speed limit will be achieved.. He acknowledged it's hard to envision this given current conditions.
- Julia added they were looking at peak hour volumes, so it won't always be that high of volumes and delay.
- Jonathon asked that if Option 2 is the preferred alternative, please consider adding a northbound painted bike lane from Pearl St to Park St so the route is more convenient for NB bikes.
- Sophie mentioned that she understands the importance of the ADA accessible parking in the southern portion of the corridor based on Parks' pop up during the bike path detour that took this parking away temporarily.
- Sophie mentioned a question/concern about bicyclists navigating between pedestrians and vehicles and the different speeds that they go.

## Straw Poll for a Preferred Option

- A straw poll was conducted with Option 2 receiving all votes from present AC members, with the exception of one vote being cast for Option 1.
- The AC was generally appreciative of the additional analysis undertaken by the Project Team.

## Next Steps

- Jason went over the next steps.
    - Will keep the group up to date on the TEUC meeting.
    - Beginning the scoping report.
    - Will seek endorsement from city council.
- The AC requested the TEUC and City Council presentation dates be shared.

# Appendix D

## Traffic Analysis

## 1: Park St & North Ave/Sherman St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.5 | 0.1 | 0.0 | 0.1 | 0.2 |
| Total Del/Veh (s) | 7.9 | 35.0 | 18.0 | 19.2 | 14.5 |
| Avg Speed (mph) | 21 | 7 | 7 | 15 | 15 |

## 2: Battery St/Park St & Monroe St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 21.3 | 9.0 | 4.6 | 6.8 |
| Avg Speed (mph) | 13 | 14 | 14 | 14 |

## 3: Battery St & Pearl St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 2.6 | 0.0 | 0.0 | 0.4 |
| Total Del/Veh (s) | 18.2 | 16.5 | 21.2 | 18.6 |
| Avg Speed (mph) | 13 | 10 | 8 | 10 |

## 4: Battery St & Cherry St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 32.6 | 11.0 | 8.9 | 11.9 |
| Avg Speed (mph) | 12 | 18 | 15 | 16 |

## 5: Battery St & College St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.6 | 0.3 | 0.0 | 0.0 | 0.2 |
| Total Del/Veh (s) | 27.2 | 25.3 | 11.3 | 24.2 | 20.0 |
| Avg Speed (mph) | 14 | 11 | 12 | 12 | 12 |

## 6: Battery St & Main St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.5 | 2.9 | 0.0 | 0.0 | 0.8 |
| Total Del/Veh (s) | 24.5 | 14.4 | 18.5 | 14.5 | 16.6 |
| Avg Speed (mph) | 11 | 15 | 9 | 11 | 11 |

## 7: Battery St & King St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.6 | 0.3 | 0.0 | 0.0 | 0.1 |
| Total Del/Veh (s) | 33.0 | 17.4 | 7.1 | 9.0 | 12.2 |
| Avg Speed (mph) | 12 | 13 | 13 | 14 | 14 |

## 8: Battery St & Maple St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.0 | 3.2 | 0.1 | 0.0 | 1.2 |
| Total Del/Veh (s) | 8.7 | 6.5 | 8.6 | 21.3 | 14.4 |
| Avg Speed (mph) | 9 | 20 | 18 | 8 | 13 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 1.2 |
| Total Del/Veh (s) | 54.8 |
| Avg Speed (mph) | 15 |

## Arterial Level of Service: NB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Maple St | 8 | 22.5 | 41.0 | 0.1 | 12 |
| King St | 7 | 1.7 | 4.9 | 0.1 | 56 |
| Main St | 6 | 15.6 | 23.7 | 0.1 | 12 |
| College St | 5 | 7.8 | 16.3 | 0.1 | 17 |
| Cherry St | 4 | 10.8 | 28.9 | 0.2 | 20 |
| Pearl St | 3 | 18.2 | 27.0 | 0.1 | 10 |
| Monroe St | 2 | 7.5 | 16.3 | 0.1 | 17 |
| Total | | 84.2 | 158.1 | 0.7 | 16 |

## Arterial Level of Service: SB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Pearl St | 3 | 14.9 | 23.5 | 0.1 | 12 |
| Cherry St | 4 | 8.0 | 17.3 | 0.1 | 16 |
| College St | 5 | 25.1 | 43.4 | 0.2 | 13 |
| Main St | 6 | 8.7 | 17.9 | 0.1 | 15 |
| King St | 7 | 8.3 | 17.7 | 0.1 | 16 |
| Maple St | 8 | 6.3 | 12.6 | 0.1 | 21 |
| Total | | 71.4 | 132.2 | 0.5 | 15 |

## Intersection: 1: Park St & North Ave/Sherman St

| Movement | EB | WB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | R | LT | L | T | TR |
| Maximum Queue (ft) | 210 | 18 | 229 | 151 | 114 |
| Average Queue (ft) | 120 | 6 | 193 | 95 | 58 |
| 95th Queue (ft) | 229 | 25 | 280 | 158 | 124 |
| Link Distance (ft) | 1094 | 619 | 220 | 931 | 931 |
| Upstream Blk Time (%) | | | 18 | | |
| Queuing Penalty (veh) | | | 132 | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

## Intersection: 2: Battery St/Park St & Monroe St

| Movement | WB | NB | SB | SB |
|---|---|---|---|---|
| Directions Served | LR | TR | LT | T |
| Maximum Queue (ft) | 31 | 198 | 113 | 62 |
| Average Queue (ft) | 12 | 120 | 32 | 12 |
| 95th Queue (ft) | 37 | 266 | 121 | 82 |
| Link Distance (ft) | 640 | 330 | 220 | 220 |
| Upstream Blk Time (%) | | 1 | 0 | |
| Queuing Penalty (veh) | | 7 | 0 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 3: Battery St & Pearl St

| Movement | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | R | T | R | LT | T |
| Maximum Queue (ft) | 103 | 81 | 324 | 254 | 262 | 251 |
| Average Queue (ft) | 70 | 54 | 227 | 122 | 195 | 165 |
| 95th Queue (ft) | 108 | 99 | 405 | 272 | 312 | 313 |
| Link Distance (ft) | 706 | | 346 | 346 | 330 | 330 |
| Upstream Blk Time (%) | | | 2 | 0 | 3 | 0 |
| Queuing Penalty (veh) | | | 8 | 1 | 12 | 2 |
| Storage Bay Dist (ft) | | 350 | | | | |
| Storage Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |

## Intersection: 4: Battery St & Cherry St

| Movement | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | LR | T | TR | LT | T |
| Maximum Queue (ft) | 164 | 265 | 226 | 159 | 147 |
| Average Queue (ft) | 103 | 153 | 110 | 92 | 85 |
| 95th Queue (ft) | 180 | 318 | 253 | 170 | 163 |
| Link Distance (ft) | 1094 | 778 | 778 | 346 | 346 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

## Intersection: 5: Battery St & College St

| Movement | EB | EB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | L | TR | LTR | LT | TR | LT | TR |
| Maximum Queue (ft) | 90 | 96 | 203 | 166 | 150 | 291 | 321 |
| Average Queue (ft) | 59 | 61 | 131 | 117 | 88 | 204 | 236 |
| 95th Queue (ft) | 100 | 109 | 218 | 183 | 163 | 337 | 382 |
| Link Distance (ft) | | 1138 | 791 | 335 | 335 | 778 | 778 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 75 | | | | | | |
| Storage Blk Time (%) | 15 | 5 | | | | | |
| Queuing Penalty (veh) | 17 | 5 | | | | | |

## Intersection: 6: Battery St & Main St

| Movement | EB | EB | WB | WB | NB | SB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | LT | R | LT | R | LTR | L | TR |
| Maximum Queue (ft) | 100 | 86 | 95 | 113 | 273 | 170 | 127 |
| Average Queue (ft) | 63 | 33 | 60 | 71 | 198 | 110 | 72 |
| 95th Queue (ft) | 110 | 90 | 108 | 124 | 339 | 195 | 152 |
| Link Distance (ft) | 764 | | 791 | | 358 | 335 | 335 |
| Upstream Blk Time (%) | | | | | 1 | | |
| Queuing Penalty (veh) | | | | | 4 | | |
| Storage Bay Dist (ft) | | 75 | | 115 | | | |
| Storage Blk Time (%) | 11 | 0 | 1 | 2 | | | |
| Queuing Penalty (veh) | 6 | 0 | 2 | 2 | | | |

## Intersection: 7: Battery St & King St

| Movement | EB | EB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LT | R | LTR | LTR | LTR |
| Maximum Queue (ft) | 47 | 19 | 192 | 74 | 152 |
| Average Queue (ft) | 28 | 7 | 126 | 49 | 95 |
| 95th Queue (ft) | 60 | 28 | 248 | 109 | 193 |
| Link Distance (ft) | 1114 | | 762 | 309 | 358 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 75 | | | |
| Storage Blk Time (%) | 0 | | | | |
| Queuing Penalty (veh) | 0 | | | | |

## Intersection: 8: Battery St & Maple St

| Movement | EB | WB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | LTR | LTR |
| Maximum Queue (ft) | 66 | 38 | 62 | 23 | 227 |
| Average Queue (ft) | 26 | 25 | 46 | 9 | 148 |
| 95th Queue (ft) | 70 | 55 | 76 | 31 | 257 |
| Link Distance (ft) | 149 | 852 | | 719 | 309 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 1 |
| Storage Bay Dist (ft) | | | 80 | | |
| Storage Blk Time (%) | | 1 | 0 | | |
| Queuing Penalty (veh) | | 1 | 0 | | |

## Network Summary

Network wide Queuing Penalty: 199

## 1: Park St & North Ave/Sherman St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.5 | 0.1 | 0.0 | 0.2 | 0.2 |
| Total Del/Veh (s) | 38.6 | 79.6 | 14.2 | 36.1 | 28.0 |
| Avg Speed (mph) | 11 | 4 | 9 | 11 | 11 |

## 2: Battery St/Park St & Monroe St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 174.1 | 5.3 | 13.5 | 10.9 |
| Avg Speed (mph) | 2 | 17 | 8 | 11 |

## 3: Battery St & Pearl St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 2.9 | 0.0 | 0.3 | 0.6 |
| Total Del/Veh (s) | 73.3 | 40.7 | 33.4 | 42.9 |
| Avg Speed (mph) | 5 | 5 | 6 | 6 |

## 4: Battery St & Cherry St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 5.2 | 0.0 | 2.6 |
| Total Del/Veh (s) | 86.3 | 62.8 | 27.7 | 49.3 |
| Avg Speed (mph) | 6 | 7 | 7 | 7 |

## 5: Battery St & College St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.8 | 2.6 | 0.6 | 11.8 | 5.5 |
| Total Del/Veh (s) | 57.3 | 82.4 | 36.5 | 89.0 | 66.2 |
| Avg Speed (mph) | 9 | 5 | 6 | 5 | 6 |

## 6: Battery St & Main St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 61.3 | 2.9 | 1.3 | 0.0 | 6.8 |
| Total Del/Veh (s) | 383.7 | 53.7 | 84.6 | 24.4 | 81.7 |
| Avg Speed (mph) | 1 | 7 | 3 | 8 | 4 |

## 7: Battery St & King St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.9 | 283.0 | 0.2 | 0.3 | 83.1 |
| Total Del/Veh (s) | 239.2 | 320.1 | 31.9 | 26.9 | 110.1 |
| Avg Speed (mph) | 3 | 1 | 5 | 8 | 3 |

## 8: Battery St & Maple St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.0 | 3.2 | 0.1 | 0.0 | 1.2 |
| Total Del/Veh (s) | 27.0 | 12.7 | 17.5 | 41.4 | 28.6 |
| Avg Speed (mph) | 4 | 17 | 14 | 5 | 9 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 37.9 |
| Total Del/Veh (s) | 199.8 |
| Avg Speed (mph) | 7 |

## Arterial Level of Service: NB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Maple St | 8 | 27.3 | 43.7 | 0.1 | 12 |
| King St | 7 | 25.8 | 33.4 | 0.1 | 8 |
| Main St | 6 | 86.2 | 96.2 | 0.1 | 3 |
| College St | 5 | 30.5 | 40.6 | 0.1 | 7 |
| Cherry St | 4 | 63.7 | 89.4 | 0.2 | 7 |
| Pearl St | 3 | 41.0 | 50.0 | 0.1 | 5 |
| Monroe St | 2 | 5.5 | 14.5 | 0.1 | 19 |
| Total | | 280.0 | 367.8 | 0.7 | 7 |

## Arterial Level of Service: SB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Pearl St | 3 | 30.4 | 39.5 | 0.1 | 7 |
| Cherry St | 4 | 25.8 | 35.1 | 0.1 | 8 |
| College St | 5 | 81.0 | 111.1 | 0.2 | 6 |
| Main St | 6 | 18.9 | 28.2 | 0.1 | 10 |
| King St | 7 | 25.2 | 35.2 | 0.1 | 8 |
| Maple St | 8 | 15.6 | 21.7 | 0.1 | 12 |
| Total | | 196.8 | 270.8 | 0.5 | 8 |

## Intersection: 1: Park St & North Ave/Sherman St

| Movement | EB | WB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | R | LT | L | T | TR |
| Maximum Queue (ft) | 624 | 41 | 230 | 260 | 283 |
| Average Queue (ft) | 307 | 8 | 162 | 85 | 129 |
| 95th Queue (ft) | 639 | 28 | 266 | 197 | 245 |
| Link Distance (ft) | 1094 | 619 | 220 | 931 | 931 |
| Upstream Blk Time (%) | | | 7 | | |
| Queuing Penalty (veh) | | | 54 | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

## Intersection: 2: Battery St/Park St & Monroe St

| Movement | WB | NB | SB | SB |
|---|---|---|---|---|
| Directions Served | LR | TR | LT | T |
| Maximum Queue (ft) | 73 | 336 | 242 | 250 |
| Average Queue (ft) | 20 | 57 | 69 | 104 |
| 95th Queue (ft) | 78 | 211 | 217 | 304 |
| Link Distance (ft) | 639 | 328 | 220 | 220 |
| Upstream Blk Time (%) | | 1 | 2 | 13 |
| Queuing Penalty (veh) | | 6 | 11 | 62 |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 3: Battery St & Pearl St

| Movement | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | R | T | R | L | T |
| Maximum Queue (ft) | 448 | 324 | 362 | 175 | 274 | 356 |
| Average Queue (ft) | 183 | 130 | 340 | 165 | 123 | 266 |
| 95th Queue (ft) | 454 | 294 | 404 | 209 | 214 | 419 |
| Link Distance (ft) | 700 | | 346 | | 328 | 328 |
| Upstream Blk Time (%) | 1 | | 16 | | 0 | 14 |
| Queuing Penalty (veh) | 0 | | 172 | | 1 | 67 |
| Storage Bay Dist (ft) | | 350 | | 150 | | |
| Storage Blk Time (%) | 8 | 0 | 41 | 16 | | |
| Queuing Penalty (veh) | 18 | 0 | 166 | 99 | | |

## Intersection: 4: Battery St & Cherry St

| Movement | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | LR | T | R | L | T |
| Maximum Queue (ft) | 284 | 783 | 175 | 174 | 346 |
| Average Queue (ft) | 117 | 658 | 85 | 57 | 242 |
| 95th Queue (ft) | 256 | 951 | 215 | 150 | 437 |
| Link Distance (ft) | 1086 | 767 | | | 346 |
| Upstream Blk Time (%) | | 6 | | | 12 |
| Queuing Penalty (veh) | | 67 | | | 104 |
| Storage Bay Dist (ft) | | | 150 | 150 | |
| Storage Blk Time (%) | | 45 | 0 | 0 | 32 |
| Queuing Penalty (veh) | | 38 | 1 | 0 | 17 |

## Intersection: 5: Battery St & College St

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|---|
| Directions Served | L | TR | LT | R | L | TR | L | TR |
| Maximum Queue (ft) | 100 | 420 | 493 | 100 | 125 | 356 | 350 | 794 |
| Average Queue (ft) | 69 | 113 | 205 | 86 | 50 | 294 | 203 | 686 |
| 95th Queue (ft) | 108 | 306 | 456 | 121 | 127 | 405 | 429 | 948 |
| Link Distance (ft) | | 1143 | 797 | | | 334 | | 767 |
| Upstream Blk Time (%) | | | | | | 13 | | 12 |
| Queuing Penalty (veh) | | | | | | 107 | | 107 |
| Storage Bay Dist (ft) | 75 | | | 75 | 100 | | 300 | |
| Storage Blk Time (%) | 29 | 12 | 21 | 42 | 1 | 52 | 5 | 47 |
| Queuing Penalty (veh) | 33 | 11 | 39 | 41 | 12 | 21 | 42 | 44 |

## Intersection: 6: Battery St & Main St

| Movement | EB | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | L | TR | L | TR |
| Maximum Queue (ft) | 683 | 473 | 170 | 85 | 389 | 215 | 300 |
| Average Queue (ft) | 456 | 197 | 133 | 42 | 371 | 123 | 127 |
| 95th Queue (ft) | 881 | 447 | 204 | 98 | 417 | 201 | 234 |
| Link Distance (ft) | 764 | 802 | | | 369 | | 334 |
| Upstream Blk Time (%) | 27 | 0 | | | 37 | | 0 |
| Queuing Penalty (veh) | 0 | 0 | | | 217 | | 1 |
| Storage Bay Dist (ft) | | | 115 | 60 | | 200 | |
| Storage Blk Time (%) | | 18 | 29 | 1 | 74 | 1 | 2 |
| Queuing Penalty (veh) | | 57 | 31 | 5 | 33 | 3 | 6 |

## Intersection: 7: Battery St & King St

| Movement | EB | EB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LT | R | LTR | LTR | LTR |
| Maximum Queue (ft) | 228 | 84 | 807 | 249 | 378 |
| Average Queue (ft) | 98 | 14 | 618 | 123 | 201 |
| 95th Queue (ft) | 236 | 61 | 981 | 224 | 355 |
| Link Distance (ft) | 1109 | | 757 | 310 | 369 |
| Upstream Blk Time (%) | | | 57 | 0 | 1 |
| Queuing Penalty (veh) | | | 0 | 1 | 6 |
| Storage Bay Dist (ft) | | 75 | | | |
| Storage Blk Time (%) | 45 | 0 | | | |
| Queuing Penalty (veh) | 4 | 0 | | | |

## Intersection: 8: Battery St & Maple St

| Movement | EB | WB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | LTR | LTR |
| Maximum Queue (ft) | 112 | 99 | 99 | 64 | 324 |
| Average Queue (ft) | 47 | 40 | 54 | 22 | 180 |
| 95th Queue (ft) | 93 | 83 | 90 | 53 | 298 |
| Link Distance (ft) | 149 | 852 | | 719 | 310 |
| Upstream Blk Time (%) | 0 | | | | 2 |
| Queuing Penalty (veh) | 0 | | | | 8 |
| Storage Bay Dist (ft) | | | 80 | | |
| Storage Blk Time (%) | | 2 | 1 | | |
| Queuing Penalty (veh) | | 4 | 0 | | |

## Network Summary

Network wide Queuing Penalty: 1711

## 1: Park St & North Ave/Sherman St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.4 | 0.1 | 0.0 | 0.2 | 0.2 |
| Total Del/Veh (s) | 17.7 | 52.4 | 13.9 | 21.6 | 17.1 |
| Avg Speed (mph) | 17 | 6 | 9 | 15 | 14 |

## 2: Battery St/Park St & Monroe St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 52.1 | 5.6 | 6.9 | 6.6 |
| Avg Speed (mph) | 7 | 17 | 12 | 14 |

## 3: Battery St & Pearl St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 2.5 | 0.0 | 0.0 | 0.4 |
| Total Del/Veh (s) | 43.5 | 15.2 | 17.1 | 20.1 |
| Avg Speed (mph) | 8 | 11 | 10 | 10 |

## 4: Battery St & Cherry St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 0.4 | 0.0 | 0.2 |
| Total Del/Veh (s) | 44.6 | 25.1 | 21.6 | 25.0 |
| Avg Speed (mph) | 10 | 12 | 9 | 11 |

## 5: Battery St & College St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.9 | 2.7 | 0.0 | 4.7 | 2.4 |
| Total Del/Veh (s) | 167.7 | 29.6 | 19.3 | 69.5 | 54.9 |
| Avg Speed (mph) | 4 | 11 | 9 | 6 | 6 |

## 6: Battery St & Main St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 2.9 | 0.0 | 0.0 | 0.7 |
| Total Del/Veh (s) | 38.8 | 22.4 | 34.3 | 21.2 | 27.0 |
| Avg Speed (mph) | 9 | 13 | 6 | 9 | 9 |

## 7: Battery St & King St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.8 | 0.3 | 0.1 | 0.1 | 0.2 |
| Total Del/Veh (s) | 32.9 | 25.1 | 14.1 | 12.8 | 17.4 |
| Avg Speed (mph) | 12 | 11 | 10 | 12 | 11 |

## 8: Battery St & Maple St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.0 | 3.3 | 0.1 | 0.0 | 1.1 |
| Total Del/Veh (s) | 7.5 | 5.9 | 9.1 | 16.9 | 11.8 |
| Avg Speed (mph) | 10 | 21 | 18 | 9 | 14 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 2.8 |
| Total Del/Veh (s) | 99.7 |
| Avg Speed (mph) | 12 |

## Arterial Level of Service: NB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Maple St | 8 | 13.2 | 30.6 | 0.1 | 17 |
| King St | 7 | 14.3 | 21.7 | 0.1 | 13 |
| Main St | 6 | 34.7 | 44.2 | 0.1 | 7 |
| College St | 5 | 13.1 | 22.2 | 0.1 | 13 |
| Cherry St | 4 | 26.2 | 45.6 | 0.2 | 13 |
| Pearl St | 3 | 14.9 | 24.0 | 0.1 | 11 |
| Monroe St | 2 | 6.7 | 15.7 | 0.1 | 17 |
| Total | | 123.1 | 203.9 | 0.7 | 12 |

## Arterial Level of Service: SB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Pearl St | 3 | 13.0 | 21.8 | 0.1 | 12 |
| Cherry St | 4 | 20.3 | 29.6 | 0.1 | 9 |
| College St | 5 | 64.8 | 88.0 | 0.2 | 7 |
| Main St | 6 | 17.3 | 26.7 | 0.1 | 10 |
| King St | 7 | 13.1 | 22.8 | 0.1 | 13 |
| Maple St | 8 | 6.7 | 12.6 | 0.1 | 21 |
| Total | | 135.2 | 201.4 | 0.5 | 10 |

## Intersection: 1: Park St & North Ave/Sherman St

| Movement | EB | WB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | R | LT | L | T | TR |
| Maximum Queue (ft) | 478 | 40 | 230 | 146 | 214 |
| Average Queue (ft) | 216 | 9 | 186 | 65 | 105 |
| 95th Queue (ft) | 380 | 31 | 271 | 122 | 177 |
| Link Distance (ft) | 1094 | 619 | 220 | 931 | 931 |
| Upstream Blk Time (%) | | | 6 | | |
| Queuing Penalty (veh) | | | 47 | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

## Intersection: 2: Battery St/Park St & Monroe St

| Movement | WB | NB | SB | SB |
|---|---|---|---|---|
| Directions Served | LR | TR | LT | T |
| Maximum Queue (ft) | 52 | 325 | 172 | 179 |
| Average Queue (ft) | 15 | 95 | 36 | 24 |
| 95th Queue (ft) | 43 | 265 | 113 | 130 |
| Link Distance (ft) | 639 | 328 | 220 | 220 |
| Upstream Blk Time (%) | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | 2 | 0 | 2 |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 3: Battery St & Pearl St

| Movement | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | R | T | R | L | T |
| Maximum Queue (ft) | 289 | 241 | 360 | 175 | 270 | 321 |
| Average Queue (ft) | 109 | 103 | 209 | 128 | 111 | 158 |
| 95th Queue (ft) | 265 | 202 | 403 | 214 | 202 | 324 |
| Link Distance (ft) | 700 | | 346 | | 328 | 328 |
| Upstream Blk Time (%) | | | 3 | | | 3 |
| Queuing Penalty (veh) | | | 33 | | | 12 |
| Storage Bay Dist (ft) | | 350 | | 150 | | |
| Storage Blk Time (%) | 1 | 0 | 10 | 4 | | |
| Queuing Penalty (veh) | 3 | 0 | 41 | 25 | | |

## Intersection: 4: Battery St & Cherry St

| Movement | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | LR | T | R | L | T |
| Maximum Queue (ft) | 218 | 722 | 175 | 174 | 350 |
| Average Queue (ft) | 93 | 349 | 63 | 63 | 226 |
| 95th Queue (ft) | 173 | 697 | 189 | 162 | 414 |
| Link Distance (ft) | 1086 | 767 | | | 346 |
| Upstream Blk Time (%) | | 0 | | | 6 |
| Queuing Penalty (veh) | | 5 | | | 56 |
| Storage Bay Dist (ft) | | | 150 | 150 | |
| Storage Blk Time (%) | | 21 | 0 | 0 | 24 |
| Queuing Penalty (veh) | | 18 | 1 | 0 | 13 |

## Intersection: 5: Battery St & College St

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|---|
| Directions Served | L | TR | LT | R | L | TR | L | TR |
| Maximum Queue (ft) | 100 | 631 | 212 | 100 | 125 | 347 | 350 | 746 |
| Average Queue (ft) | 84 | 272 | 86 | 81 | 49 | 218 | 190 | 586 |
| 95th Queue (ft) | 121 | 669 | 177 | 114 | 118 | 368 | 416 | 929 |
| Link Distance (ft) | | 1143 | 797 | | | 334 | | 767 |
| Upstream Blk Time (%) | | | | | | 3 | | 4 |
| Queuing Penalty (veh) | | | | | | 22 | | 36 |
| Storage Bay Dist (ft) | 75 | | | 75 | 100 | | 300 | |
| Storage Blk Time (%) | 57 | 19 | 11 | 20 | 0 | 28 | 0 | 39 |
| Queuing Penalty (veh) | 64 | 19 | 21 | 19 | 3 | 11 | 0 | 37 |

## Intersection: 6: Battery St & Main St

| Movement | EB | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | L | TR | L | TR |
| Maximum Queue (ft) | 206 | 260 | 170 | 85 | 372 | 205 | 260 |
| Average Queue (ft) | 98 | 83 | 112 | 35 | 265 | 117 | 142 |
| 95th Queue (ft) | 184 | 177 | 174 | 83 | 421 | 190 | 229 |
| Link Distance (ft) | 764 | 802 | | | 369 | | 334 |
| Upstream Blk Time (%) | | | | | 6 | | |
| Queuing Penalty (veh) | | | | | 35 | | |
| Storage Bay Dist (ft) | | | 115 | 60 | | 200 | |
| Storage Blk Time (%) | | 2 | 12 | 0 | 46 | 1 | 2 |
| Queuing Penalty (veh) | | 6 | 13 | 3 | 20 | 7 | 5 |

## Intersection: 7: Battery St & King St

| Movement | EB | EB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LT | R | LTR | LTR | LTR |
| Maximum Queue (ft) | 91 | 43 | 308 | 186 | 325 |
| Average Queue (ft) | 28 | 7 | 137 | 66 | 141 |
| 95th Queue (ft) | 69 | 30 | 287 | 160 | 262 |
| Link Distance (ft) | 1109 | | 757 | 310 | 369 |
| Upstream Blk Time (%) | | | | 0 | 0 |
| Queuing Penalty (veh) | | | | 0 | 0 |
| Storage Bay Dist (ft) | | 75 | | | |
| Storage Blk Time (%) | 2 | 0 | | | |
| Queuing Penalty (veh) | 0 | 0 | | | |

## Intersection: 8: Battery St & Maple St

| Movement | EB | WB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | LTR | LTR |
| Maximum Queue (ft) | 90 | 70 | 94 | 60 | 280 |
| Average Queue (ft) | 30 | 20 | 46 | 16 | 132 |
| 95th Queue (ft) | 66 | 54 | 77 | 45 | 231 |
| Link Distance (ft) | 149 | 852 | | 719 | 310 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 0 |
| Storage Bay Dist (ft) | | | 80 | | |
| Storage Blk Time (%) | | 0 | 1 | | |
| Queuing Penalty (veh) | | 0 | 0 | | |

## Network Summary

Network wide Queuing Penalty: 580

## 1: Park St & North Ave/Sherman St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.5 | 0.1 | 0.0 | 0.2 | 0.2 |
| Total Del/Veh (s) | 15.9 | 57.0 | 14.4 | 22.7 | 17.0 |
| Avg Speed (mph) | 17 | 7 | 8 | 14 | 14 |

## 2: Battery St/Park St & Monroe St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 32.4 | 4.9 | 5.8 | 5.6 |
| Avg Speed (mph) | 9 | 18 | 13 | 15 |

## 3: Battery St & Pearl St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 2.5 | 0.0 | 0.0 | 0.4 |
| Total Del/Veh (s) | 34.1 | 11.7 | 11.0 | 14.7 |
| Avg Speed (mph) | 9 | 12 | 13 | 12 |

## 4: Battery St & Cherry St Performance by approach

| Approach | WB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 0.1 | 0.0 | 0.1 |
| Total Del/Veh (s) | 37.5 | 15.3 | 12.5 | 15.6 |
| Avg Speed (mph) | 11 | 16 | 13 | 14 |

## 5: Battery St & College St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.7 | 2.7 | 0.0 | 1.1 | 1.0 |
| Total Del/Veh (s) | 35.9 | 35.9 | 33.1 | 40.2 | 36.6 |
| Avg Speed (mph) | 12 | 10 | 6 | 9 | 9 |

## 6: Battery St & Main St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.2 | 2.9 | 0.7 | 0.1 | 0.9 |
| Total Del/Veh (s) | 60.2 | 26.7 | 73.4 | 31.9 | 45.4 |
| Avg Speed (mph) | 7 | 12 | 3 | 7 | 6 |

## 7: Battery St & King St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 1.0 | 23.4 | 2.9 | 0.0 | 7.5 |
| Total Del/Veh (s) | 186.3 | 142.2 | 49.8 | 16.6 | 66.9 |
| Avg Speed (mph) | 4 | 3 | 4 | 10 | 4 |

## 8: Battery St & Maple St Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.0 | 3.2 | 0.1 | 0.0 | 1.1 |
| Total Del/Veh (s) | 25.4 | 18.0 | 8.9 | 15.0 | 16.8 |
| Avg Speed (mph) | 4 | 15 | 18 | 10 | 12 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 4.5 |
| Total Del/Veh (s) | 106.2 |
| Avg Speed (mph) | 11 |

## Arterial Level of Service: NB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Maple St | 8 | 13.8 | 30.6 | 0.1 | 17 |
| King St | 7 | 34.9 | 62.2 | 0.1 | 7 |
| Main St | 6 | 66.5 | 77.0 | 0.1 | 4 |
| College St | 5 | 27.7 | 36.7 | 0.1 | 8 |
| Cherry St | 4 | 16.0 | 35.1 | 0.2 | 16 |
| Pearl St | 3 | 11.4 | 20.5 | 0.1 | 13 |
| Monroe St | 2 | 5.9 | 14.9 | 0.1 | 18 |
| Total | | 176.2 | 277.0 | 0.7 | 10 |

## Arterial Level of Service: SB Battery St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|---|---|---|---|---|---|
| Pearl St | 3 | 5.9 | 14.7 | 0.1 | 18 |
| Cherry St | 4 | 10.8 | 20.2 | 0.1 | 14 |
| College St | 5 | 40.2 | 59.8 | 0.2 | 10 |
| Main St | 6 | 22.3 | 31.7 | 0.1 | 9 |
| King St | 7 | 17.5 | 27.1 | 0.1 | 11 |
| Maple St | 8 | 5.8 | 11.8 | 0.1 | 23 |
| Total | | 102.5 | 165.2 | 0.5 | 12 |

## Intersection: 1: Park St & North Ave/Sherman St

| Movement | EB | WB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | R | LT | L | T | TR |
| Maximum Queue (ft) | 393 | 40 | 230 | 170 | 203 |
| Average Queue (ft) | 207 | 8 | 192 | 65 | 110 |
| 95th Queue (ft) | 342 | 29 | 272 | 127 | 180 |
| Link Distance (ft) | 1094 | 619 | 220 | 931 | 931 |
| Upstream Blk Time (%) | | | 6 | | |
| Queuing Penalty (veh) | | | 44 | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

## Intersection: 2: Battery St/Park St & Monroe St

| Movement | WB | NB | SB | SB |
|---|---|---|---|---|
| Directions Served | LR | TR | LT | T |
| Maximum Queue (ft) | 52 | 298 | 147 | 93 |
| Average Queue (ft) | 14 | 81 | 31 | 5 |
| 95th Queue (ft) | 41 | 231 | 98 | 55 |
| Link Distance (ft) | 639 | 328 | 220 | 220 |
| Upstream Blk Time (%) | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | 1 | 0 | 0 |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 3: Battery St & Pearl St

| Movement | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | R | T | R | L | T |
| Maximum Queue (ft) | 177 | 192 | 352 | 175 | 222 | 250 |
| Average Queue (ft) | 82 | 99 | 162 | 108 | 105 | 115 |
| 95th Queue (ft) | 149 | 173 | 335 | 201 | 184 | 220 |
| Link Distance (ft) | 700 | | 346 | | 328 | 328 |
| Upstream Blk Time (%) | | | 1 | | | 0 |
| Queuing Penalty (veh) | | | 8 | | | 2 |
| Storage Bay Dist (ft) | | 350 | | 150 | | |
| Storage Blk Time (%) | | | 6 | 2 | | |
| Queuing Penalty (veh) | | | 26 | 13 | | |

## Intersection: 4: Battery St & Cherry St

| Movement | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|
| Directions Served | LR | T | R | L | T |
| Maximum Queue (ft) | 173 | 554 | 175 | 163 | 330 |
| Average Queue (ft) | 81 | 229 | 36 | 48 | 171 |
| 95th Queue (ft) | 145 | 470 | 134 | 120 | 328 |
| Link Distance (ft) | 1086 | 767 | | | 346 |
| Upstream Blk Time (%) | | | | | 1 |
| Queuing Penalty (veh) | | | | | 10 |
| Storage Bay Dist (ft) | | | 150 | 150 | |
| Storage Blk Time (%) | | 12 | 0 | 0 | 10 |
| Queuing Penalty (veh) | | 11 | 0 | 2 | 5 |

## Intersection: 5: Battery St & College St

| Movement | EB | EB | WB | WB | NB | NB | SB | SB | SB |
|---|---|---|---|---|---|---|---|---|---|
| Directions Served | L | TR | LT | R | L | TR | L | T | R |
| Maximum Queue (ft) | 99 | 166 | 289 | 100 | 125 | 355 | 350 | 752 | 125 |
| Average Queue (ft) | 62 | 67 | 106 | 83 | 42 | 323 | 124 | 425 | 70 |
| 95th Queue (ft) | 110 | 132 | 226 | 116 | 112 | 394 | 327 | 760 | 159 |
| Link Distance (ft) | | 1132 | 797 | | | 334 | | 767 | |
| Upstream Blk Time (%) | | | | | | 11 | | 1 | |
| Queuing Penalty (veh) | | | | | | 98 | | 8 | |
| Storage Bay Dist (ft) | 75 | | | 75 | 100 | | 300 | | 100 |
| Storage Blk Time (%) | 10 | 5 | 20 | 16 | 0 | 51 | | 36 | 0 |
| Queuing Penalty (veh) | 12 | 5 | 36 | 15 | 2 | 20 | | 85 | 1 |

## Intersection: 6: Battery St & Main St

| Movement | EB | WB | WB | NB | NB | SB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | LTR | LT | R | L | TR | L | TR |
| Maximum Queue (ft) | 362 | 311 | 170 | 85 | 391 | 216 | 305 |
| Average Queue (ft) | 120 | 112 | 124 | 43 | 370 | 149 | 159 |
| 95th Queue (ft) | 296 | 247 | 191 | 100 | 419 | 241 | 292 |
| Link Distance (ft) | 764 | 802 | | | 369 | | 334 |
| Upstream Blk Time (%) | | | | | 34 | | 1 |
| Queuing Penalty (veh) | | | | | 198 | | 4 |
| Storage Bay Dist (ft) | | | 115 | 60 | | 200 | |
| Storage Blk Time (%) | | 1 | 19 | 3 | 71 | 12 | 2 |
| Queuing Penalty (veh) | | 3 | 20 | 14 | 31 | 54 | 5 |

## Intersection: 7: Battery St & King St

| Movement | EB | EB | WB | NB | SB |
|---|---|---|---|---|---|
| Directions Served | LT | R | LTR | LTR | LTR |
| Maximum Queue (ft) | 219 | 100 | 732 | 301 | 341 |
| Average Queue (ft) | 78 | 14 | 410 | 145 | 162 |
| 95th Queue (ft) | 199 | 61 | 823 | 307 | 281 |
| Link Distance (ft) | 1109 | | 757 | 310 | 369 |
| Upstream Blk Time (%) | | | 16 | 6 | 0 |
| Queuing Penalty (veh) | | | 0 | 16 | 1 |
| Storage Bay Dist (ft) | | 75 | | | |
| Storage Blk Time (%) | 37 | 0 | | | |
| Queuing Penalty (veh) | 3 | 0 | | | |

## Intersection: 8: Battery St & Maple St

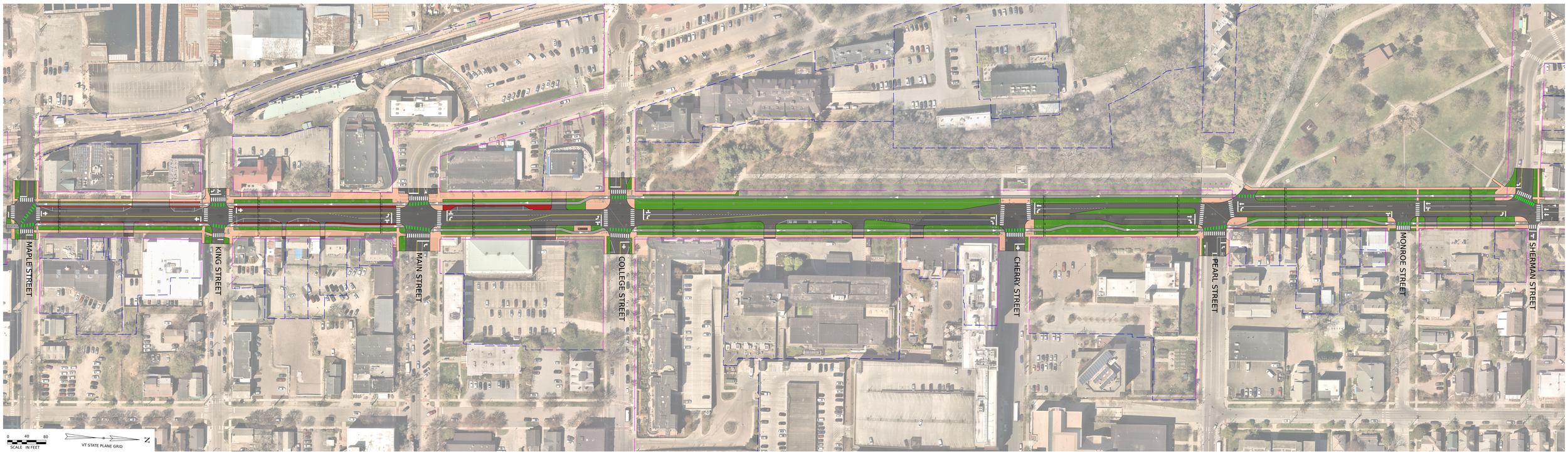
| Movement | EB | B11 | WB | WB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | LTR | T | LT | R | LTR | LTR |
| Maximum Queue (ft) | 111 | 22 | 220 | 100 | 52 | 259 |
| Average Queue (ft) | 39 | 2 | 50 | 53 | 18 | 120 |
| 95th Queue (ft) | 105 | 26 | 226 | 91 | 44 | 209 |
| Link Distance (ft) | 149 | 751 | 852 | | 719 | 310 |
| Upstream Blk Time (%) | 3 | | | | | |
| Queuing Penalty (veh) | 0 | | | | | |
| Storage Bay Dist (ft) | | | | 80 | | |
| Storage Blk Time (%) | | | 0 | 6 | | |
| Queuing Penalty (veh) | | | 1 | 3 | | |

## Network Summary

Network wide Queuing Penalty: 758

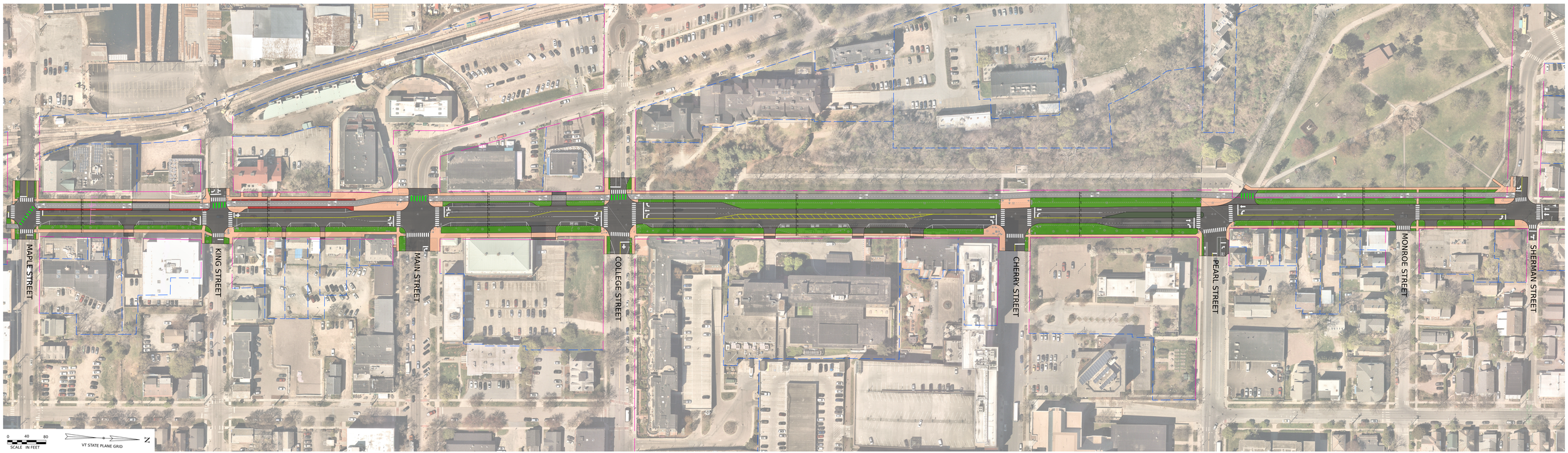
# Appendix E

## Conceptual Alternatives



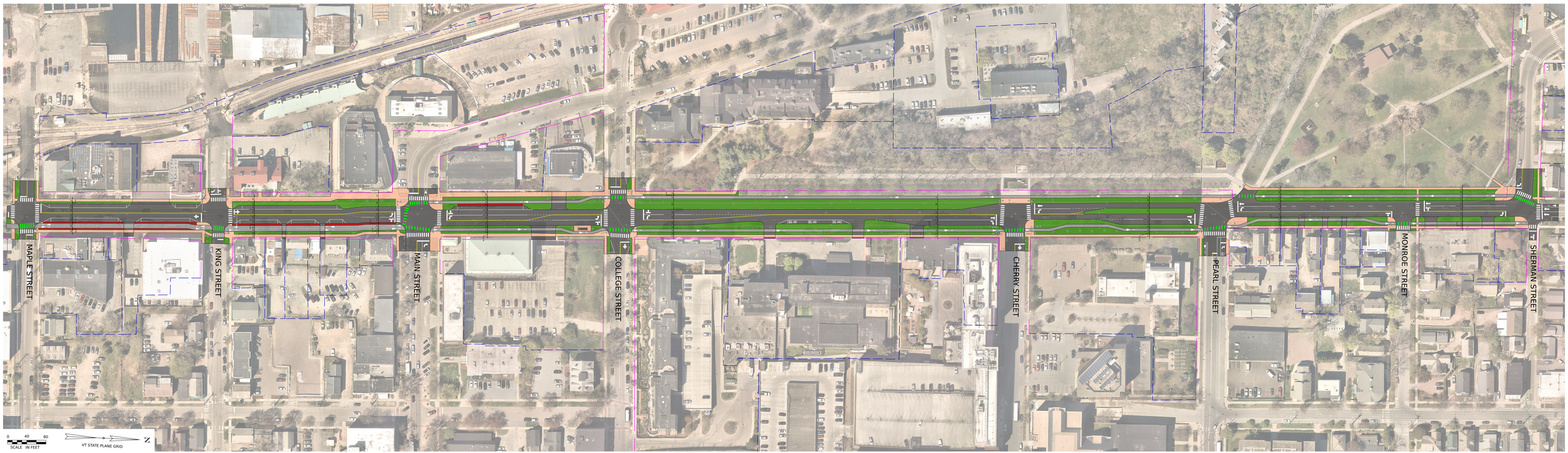

# Battery Street Scoping Study

## Option 1




# Battery Street Scoping Study

## Alternative 2




# Battery Street Scoping Study

## Option 3

# Appendix F

## Conceptual Cost Estimates

# VHB Computations

**BATTERY STREET RECONSTRUCTION**
**CONCEPTUAL CONSTRUCTION ESTIMATE**
**VHB PROJECT NUMBER: 58644.11**
**ALTERNATIVE 1**

**CALCULATED BY: JCE**
**CHECKED BY: DMP**
**DATE: 1/15/2025**

| ITEM # | MAJOR ITEMS DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | COST |
|---|---|---|---|---|---|
| **ROADWAY & UTILITY WORK** | | | | | |
| 201.1000 | CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS | LS | 1 | $ 30,000.00 | $ 30,000.00 |
| 203.1000 | COMMON EXCAVATION | CY | 22000 | $ 25.00 | $ 550,000.00 |
| 203.1600 | SOLID ROCK EXCAVATION | CY | 1100 | $ 100.00 | $ 110,000.00 |
| 301.2600 | CRUSHED GAVEL, FINE GRADED | CY | 7000 | $ 70.00 | $ 490,000.00 |
| 301.3500 | DENSE GRADED CRUSHED STONE | CY | 8700 | $ 70.00 | $ 609,000.00 |
| 406.3400 | BITUMINOUS CONCRETE PAVEMENT, NON-PAVER PLACED, TYPE IVS | SY | 520 | $ 40.00 | $ 20,800.00 |
| 406.0410 | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER I | TON | 5910 | $ 150.00 | $ 886,500.00 |
| 541.2200 | CONCRETE, CLASS B | CY | 90 | $ 1,500.00 | $ 135,000.00 |
| 601.0905 | 12 INCH CPEP | LF | 510 | $ 150.00 | $ 76,500.00 |
| 601.0915 | 18 INCH CPEP | LF | 510 | $ 200.00 | $ 102,000.00 |
| 604.1800 | PRECAST REINFORCED CONCRETE PIPE DI WITH CAST IRON GRATE | EA | 20 | $ 7,000.00 | $ 140,000.00 |
| 604.4102 | REHABILITATING DIS, CATCH BASINS, OR MANHOLES, CLASS II | EA | 19 | $ 2,000.00 | $ 38,000.00 |
| 616.2702 | CAST-IN-PLACE CONCRETE CURB, TYPE B | LF | 8300 | $ 80.00 | $ 664,000.00 |
| 618.1005 | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH | SY | 4900 | $ 150.00 | $ 735,000.00 |
| 618.1008 | PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH | SY | 230 | $ 180.00 | $ 41,400.00 |
| 651.1500 | TURF ESTABLISHLIMENT | SY | 7800 | $ 2.00 | $ 15,600.00 |
| 651.3500 | TOPSOIL | CY | 870 | $ 60.00 | $ 52,200.00 |
| 900.6750 | BRICK PAVERS | SF | 5500 | $ 40.00 | $ 220,000.00 |
| | | | | | |
| **#1** | | | | **ROADWAY & UTILITIES ITEMS SUBTOTAL:** | **$ 4,916,000.00** |
| #2 | | | | SIGNING & STRIPING (4% OF #1): | $ 196,640.00 |
| #3 | | | | INCIDENTAL ROADWAY ITEMS (25% OF #1): | $ 1,229,000.00 |
| #4 | | | | TRAFFIC SIGNAL UPDATES: | $ 750,000.00 |
| **#5** | | | | **ROADWAY & UTILITIES CONSTRUCTION SUBTOTAL (SUM OF #1 THRU #4):** | **$ 7,091,640.00** |
| | | | | | |
| **LIGHTING & LANDSCAPING** | | | | | |
| 625.6000 | WIRED CONDUIT | LF | 6000 | $ 30.00 | $ 180,000.00 |
| 625.7021 | PULL BOX, STANDARD | EA | 36 | $ 2,000.00 | $ 72,000.00 |
| 656.2002 | DECIDUOUS TREES, MEDIUM | EA | 25 | $ 750.00 | $ 18,750.00 |
| 679.7000 | STREET LIGHT ASSEMBLY (WHOLE UNIT) | EA | 36 | $ 12,000.00 | $ 432,000.00 |
| 656.8500 | TREE PROTECTION | LS | 1 | $ 10,000.00 | $ 10,000.00 |
| 900.6450 | SOIL CELL ALLOWANCE | LS | 1 | $ 200,000.00 | $ 200,000.00 |
| 900.6450 | STREETSCAPE AMENITIES (BENCHES, BIKE RACK, ETC.) | LS | 1 | $ 500,000.00 | $ 500,000.00 |
| 900.6450 | GREEN INFRASTRUCTURE & OTHER LANDSCAPING SOILS | LS | 1 | $ 1,000,000.00 | $ 1,000,000.00 |
| | | | | | |
| #6 | | | | LIGHTING & LANDSCAPING ITEMS SUBTOTAL: | $ 2,412,750.00 |
| #7 | | | | INCIDENTAL ROADWAY ITEMS (15% OF #6): | $ 361,912.50 |
| **#8** | | | | **LIGHTING & LANDSCAPING CONSTRUCTION SUBTOTAL (SUM OF #6 THRU #7):** | **$ 2,774,662.50** |
| | | | | | |
| #9 | | | | 635.1100 - MOBILIZATION / DEMOBILIZATION (16% OF #5 + #8): | $ 1,579,000.00 |
| #10 | | | | 641.1100 - TRAFFIC CONTROL, ALL-INCLUSIVE: | $ 2,000,000.00 |
| #11 | | | | OVERALL CONSTRUCTION SUBTOTAL (#5 + #8 + #10 + #11): | $ 13,445,302.50 |
| #12 | | | | CONTINGENCIES (25% OF #11) | $ 3,361,325.63 |
| | | | | | |
| **#13** | | | | **CONSTRUCTION ESTIMATE (#11 + #12):** | **$ 16,806,628.13** |
| #14 | | | | ENGINEERING & PERMITTING (20% OF #13): | $ 3,361,000.00 |
| #15 | | | | CONSTRUCTION ENGINEERING (20% OF #13): | $ 3,361,000.00 |
| | | | | | |
| | | | | **SUBTOTAL:** | **$ 23,528,628.13** |

| | |
|---|---|
| **2024 CONCEPTUAL ESTIMATE** | **$ 23,600,000** |
| *2030 CONCEPTUAL ESTIMATE (assuming 5% overall cost increase per year, compounded annually)* | *$ 31,700,000.00* |

# VHB Computations

**BATTERY STREET RECONSTRUCTION**
**CONCEPTUAL CONSTRUCTION ESTIMATE**
**VHB PROJECT NUMBER: 58644.11**
**ALTERNATIVE 2**

**CALCULATED BY: JCE**
**CHECKED BY: DMP**
**DATE: 1/15/2025**

| ITEM # | MAJOR ITEMS DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | COST |
|---|---|---|---|---|---|
| **ROADWAY & UTILITY WORK** | | | | | |
| 201.1000 | CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS | LS | 1 | $ 30,000.00 | $ 30,000.00 |
| 203.1000 | COMMON EXCAVATION | CY | 20000 | $ 25.00 | $ 500,000.00 |
| 203.1600 | SOLID ROCK EXCAVATION | CY | 1000 | $ 100.00 | $ 100,000.00 |
| 301.2600 | CRUSHED GAVEL, FINE GRADED | CY | 7800 | $ 70.00 | $ 546,000.00 |
| 301.3500 | DENSE GRADED CRUSHED STONE | CY | 8800 | $ 70.00 | $ 616,000.00 |
| 406.3400 | BITUMINOUS CONCRETE PAVEMENT, NON-PAVER PLACED, TYPE IVS | SY | 800 | $ 40.00 | $ 32,000.00 |
| 406.0410 | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER I | TON | 6200 | $ 150.00 | $ 930,000.00 |
| 541.2200 | CONCRETE, CLASS B | CY | 150 | $ 1,500.00 | $ 225,000.00 |
| 601.0905 | 12 INCH CPEP | LF | 510 | $ 150.00 | $ 76,500.00 |
| 601.0915 | 18 INCH CPEP | LF | 510 | $ 200.00 | $ 102,000.00 |
| 604.1800 | PRECAST REINFORCED CONCRETE PIPE DI WITH CAST IRON GRATE | EA | 18 | $ 7,000.00 | $ 126,000.00 |
| 604.4102 | REHABILITATING DIS, CATCH BASINS, OR MANHOLES, CLASS II | EA | 21 | $ 2,000.00 | $ 42,000.00 |
| 616.2702 | CAST-IN-PLACE CONCRETE CURB, TYPE B | LF | 8100 | $ 80.00 | $ 648,000.00 |
| 618.1005 | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH | SY | 3600 | $ 150.00 | $ 540,000.00 |
| 618.1008 | PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH | SY | 440 | $ 180.00 | $ 79,200.00 |
| 651.1500 | TURF ESTABLISHLIMENT | SY | 9750 | $ 2.00 | $ 19,500.00 |
| 651.3500 | TOPSOIL | CY | 1090 | $ 60.00 | $ 65,400.00 |
| 900.6750 | BRICK PAVERS | SF | 4200 | $ 40.00 | $ 168,000.00 |
| | | | | | |
| **#1** | | | | **ROADWAY & UTILITIES ITEMS SUBTOTAL:** | **$ 4,845,600.00** |
| #2 | | | | SIGNING & STRIPING (4% OF #1): | $ 193,824.00 |
| #3 | | | | INCIDENTAL ROADWAY ITEMS (25% OF #1): | $ 1,211,400.00 |
| #4 | | | | TRAFFIC SIGNAL UPDATES: | $ 750,000.00 |
| **#5** | | | | **ROADWAY & UTILITIES CONSTRUCTION SUBTOTAL (SUM OF #1 THRU #4):** | **$ 7,000,824.00** |
| | | | | | |
| **LIGHTING & LANDSCAPING** | | | | | |
| 625.6000 | WIRED CONDUIT | LF | 6000 | $ 30.00 | $ 180,000.00 |
| 625.7021 | PULL BOX, STANDARD | EA | 36 | $ 2,000.00 | $ 72,000.00 |
| 656.2002 | DECIDUOUS TREES, MEDIUM | EA | 23 | $ 750.00 | $ 17,250.00 |
| 679.7000 | STREET LIGHT ASSEMBLY (WHOLE UNIT) | EA | 36 | $ 12,000.00 | $ 432,000.00 |
| 656.8500 | TREE PROTECTION | LS | 1 | $ 10,000.00 | $ 10,000.00 |
| 900.6450 | SOIL CELL ALLOWANCE | LS | 1 | $ 200,000.00 | $ 200,000.00 |
| 900.6450 | STREETSCAPE AMENITIES (BENCHES, BIKE RACK, ETC.) | LS | 1 | $ 500,000.00 | $ 500,000.00 |
| 900.6450 | GREEN INFRASTRUCTURE & OTHER LANDSCAPING SOILS | LS | 1 | $ 1,000,000.00 | $ 1,000,000.00 |
| | | | | | |
| #6 | | | | LIGHTING & LANDSCAPING ITEMS SUBTOTAL: | $ 2,411,250.00 |
| #7 | | | | INCIDENTAL ROADWAY ITEMS (15% OF #6): | $ 361,687.50 |
| **#8** | | | | **LIGHTING & LANDSCAPING CONSTRUCTION SUBTOTAL (SUM OF #6 THRU #7):** | **$ 2,772,937.50** |
| | | | | | |
| #9 | | | | 635.1100 - MOBILIZATION / DEMOBILIZATION (16% OF #5 + #8): | $ 1,564,000.00 |
| #10 | | | | 641.1100 - TRAFFIC CONTROL, ALL-INCLUSIVE: | $ 2,000,000.00 |
| #11 | | | | OVERALL CONSTRUCTION SUBTOTAL (#5 + #8 + #10 + #11): | $ 13,337,761.50 |
| #12 | | | | CONTINGENCIES (25% OF #11) | $ 3,334,440.38 |
| | | | | | |
| **#13** | | | | **CONSTRUCTION ESTIMATE (#11 + #12):** | **$ 16,672,201.88** |
| #14 | | | | ENGINEERING & PERMITTING (20% OF #13): | $ 3,334,000.00 |
| #15 | | | | CONSTRUCTION ENGINEERING (20% OF #13): | $ 3,334,000.00 |
| | | | | | |
| | | | | **SUBTOTAL:** | **$ 23,340,201.88** |

**CONCEPTUAL ESTIMATE $ 23,400,000**

*2030 CONCEPTUAL ESTIMATE (assuming 5% overall cost increase per year, compounded annually) $ 31,400,000.00*

# VHB Computations

**BATTERY STREET RECONSTRUCTION**
**CONCEPTUAL CONSTRUCTION ESTIMATE**
**VHB PROJECT NUMBER: 58644.11**
**ALTERNATIVE 3**

**CALCULATED BY: JCE**
**CHECKED BY: DMP**
**DATE: 1/15/2025**

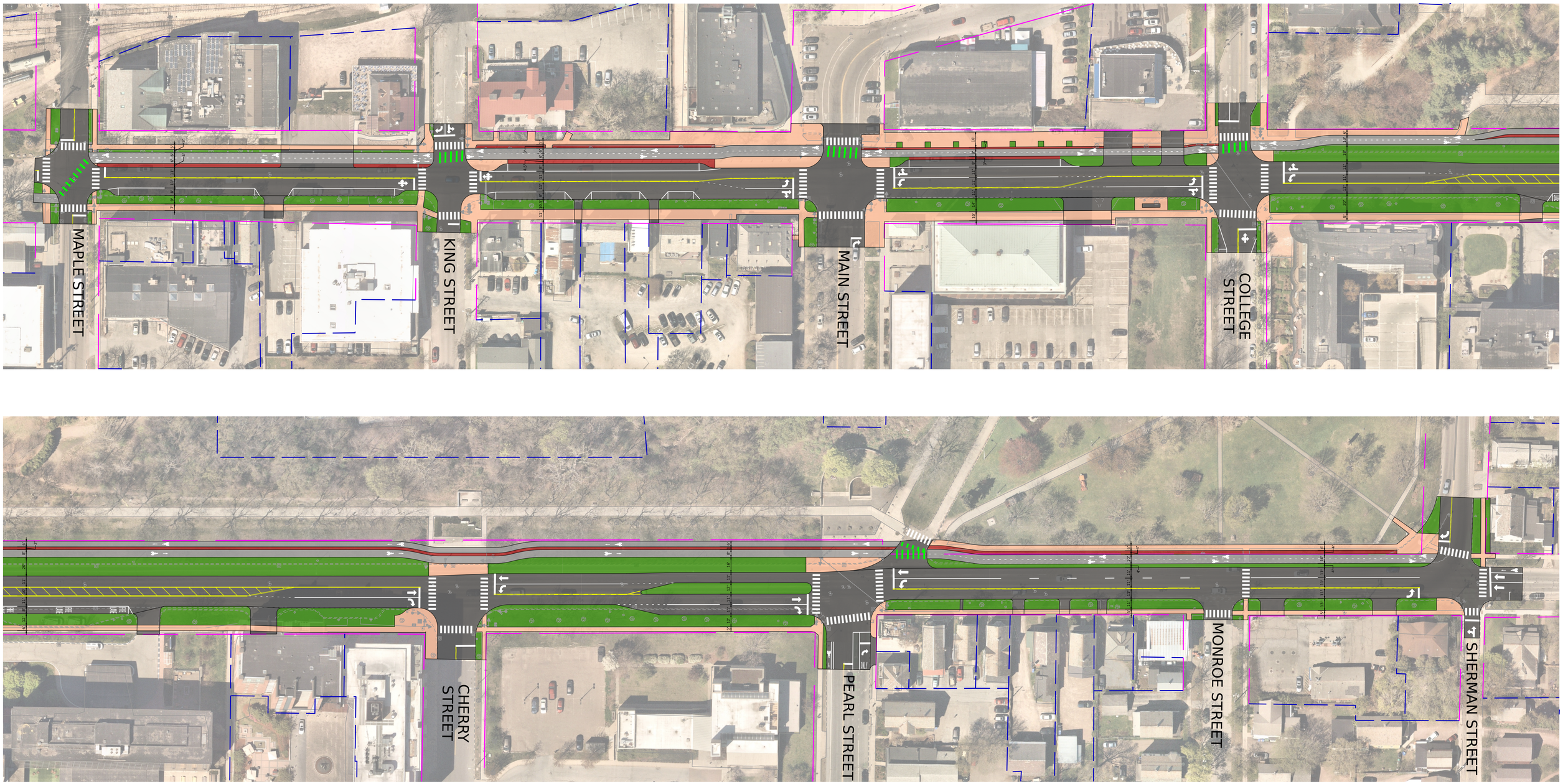
| ITEM # | MAJOR ITEMS DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | COST |
|---|---|---|---|---|---|
| **ROADWAY & UTILITY WORK** | | | | | |
| 201.1000 | CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS | LS | 1 | $ 30,000.00 | $ 30,000.00 |
| 203.1000 | COMMON EXCAVATION | CY | 22000 | $ 25.00 | $ 550,000.00 |
| 203.1600 | SOLID ROCK EXCAVATION | CY | 1100 | $ 100.00 | $ 110,000.00 |
| 301.2600 | CRUSHED GAVEL, FINE GRADED | CY | 7500 | $ 70.00 | $ 525,000.00 |
| 301.3500 | DENSE GRADED CRUSHED STONE | CY | 8700 | $ 70.00 | $ 609,000.00 |
| 406.3400 | BITUMINOUS CONCRETE PAVEMENT, NON-PAVER PLACED, TYPE IVS | SY | 600 | $ 40.00 | $ 24,000.00 |
| 406.0410 | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER I | TON | 6200 | $ 150.00 | $ 930,000.00 |
| 541.2200 | CONCRETE, CLASS B | CY | 70 | $ 1,500.00 | $ 105,000.00 |
| 601.0905 | 12 INCH CPEP | LF | 510 | $ 150.00 | $ 76,500.00 |
| 601.0915 | 18 INCH CPEP | LF | 510 | $ 200.00 | $ 102,000.00 |
| 604.1800 | PRECAST REINFORCED CONCRETE PIPE DI WITH CAST IRON GRATE | EA | 18 | $ 7,000.00 | $ 126,000.00 |
| 604.4102 | REHABILITATING DIS, CATCH BASINS, OR MANHOLES, CLASS II | EA | 21 | $ 2,000.00 | $ 42,000.00 |
| 616.2702 | CAST-IN-PLACE CONCRETE CURB, TYPE B | LF | 6400 | $ 80.00 | $ 512,000.00 |
| 618.1005 | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH | SY | 4900 | $ 150.00 | $ 735,000.00 |
| 618.1008 | PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH | SY | 390 | $ 180.00 | $ 70,200.00 |
| 651.1500 | TURF ESTABLISHLIMENT | SY | 7940 | $ 2.00 | $ 15,880.00 |
| 651.3500 | TOPSOIL | CY | 1000 | $ 60.00 | $ 60,000.00 |
| 900.6750 | BRICK PAVERS | SF | 4200 | $ 40.00 | $ 168,000.00 |
| | | | | | |
| **#1** | | | | **ROADWAY & UTILITIES ITEMS SUBTOTAL:** | **$ 4,790,580.00** |
| #2 | | | | SIGNING & STRIPING (4% OF #1): | $ 191,623.20 |
| #3 | | | | INCIDENTAL ROADWAY ITEMS (25% OF #1): | $ 1,197,645.00 |
| #4 | | | | TRAFFIC SIGNAL UPDATES: | $ 650,000.00 |
| **#5** | | | | **ROADWAY & UTILITIES CONSTRUCTION SUBTOTAL (SUM OF #1 THRU #4):** | **$ 6,829,848.20** |
| | | | | | |
| **LIGHTING & LANDSCAPING** | | | | | |
| 625.6000 | WIRED CONDUIT | LF | 6000 | $ 30.00 | $ 180,000.00 |
| 625.7021 | PULL BOX, STANDARD | EA | 36 | $ 2,000.00 | $ 72,000.00 |
| 656.2002 | DECIDUOUS TREES, MEDIUM | EA | 33 | $ 750.00 | $ 24,750.00 |
| 679.7000 | STREET LIGHT ASSEMBLY (WHOLE UNIT) | EA | 36 | $ 12,000.00 | $ 432,000.00 |
| 656.8500 | TREE PROTECTION | LS | 1 | $ 10,000.00 | $ 10,000.00 |
| 900.6450 | SOIL CELL ALLOWANCE | LS | 1 | $ 200,000.00 | $ 200,000.00 |
| 900.6450 | STREETSCAPE AMENITIES (BENCHES, BIKE RACK, ETC.) | LS | 1 | $ 500,000.00 | $ 500,000.00 |
| 900.6450 | GREEN INFRASTRUCTURE & OTHER LANDSCAPING SOILS | LS | 1 | $ 1,000,000.00 | $ 1,000,000.00 |
| | | | | | |
| #6 | | | | LIGHTING & LANDSCAPING ITEMS SUBTOTAL: | $ 2,418,750.00 |
| #7 | | | | INCIDENTAL ROADWAY ITEMS (15% OF #6): | $ 362,812.50 |
| **#8** | | | | **LIGHTING & LANDSCAPING CONSTRUCTION SUBTOTAL (SUM OF #6 THRU #7):** | **$ 2,781,562.50** |
| | | | | | |
| #9 | | | | 635.1100 - MOBILIZATION / DEMOBILIZATION (16% OF #5 + #8): | $ 1,538,000.00 |
| #10 | | | | 641.1100 - TRAFFIC CONTROL, ALL-INCLUSIVE: | $ 2,000,000.00 |
| #11 | | | | OVERALL CONSTRUCTION SUBTOTAL (#5 + #8 + #10 + #11): | $ 13,149,410.70 |
| #12 | | | | CONTINGENCIES (25% OF #11) | $ 3,287,352.68 |
| | | | | | |
| **#13** | | | | **CONSTRUCTION ESTIMATE (#11 + #12):** | **$ 16,436,763.38** |
| #14 | | | | ENGINEERING & PERMITTING (20% OF #13): | $ 3,287,000.00 |
| #15 | | | | CONSTRUCTION ENGINEERING (20% OF #13): | $ 3,287,000.00 |
| | | | | | |
| | | | | **SUBTOTAL:** | **$ 23,010,763.38** |

**CONCEPTUAL ESTIMATE $ 23,100,000**

*2030 CONCEPTUAL ESTIMATE (assuming 5% overall cost increase per year, compounded annually) $ 31,000,000.00*

# Appendix G

## Recommended Preferred Alternative Layout Plan




# Battery Street Scoping Study

## Recommended Preferred Alternative (Refined Alternative 2)