

BENMONT AVENUE

ACTIVE TRANSPORTATION CORRIDOR STUDY

FUNDED BY A GRANT FROM THE VERMONT AGENCY OF COMMERCE AND COMMUNITY DEVELOPMENT

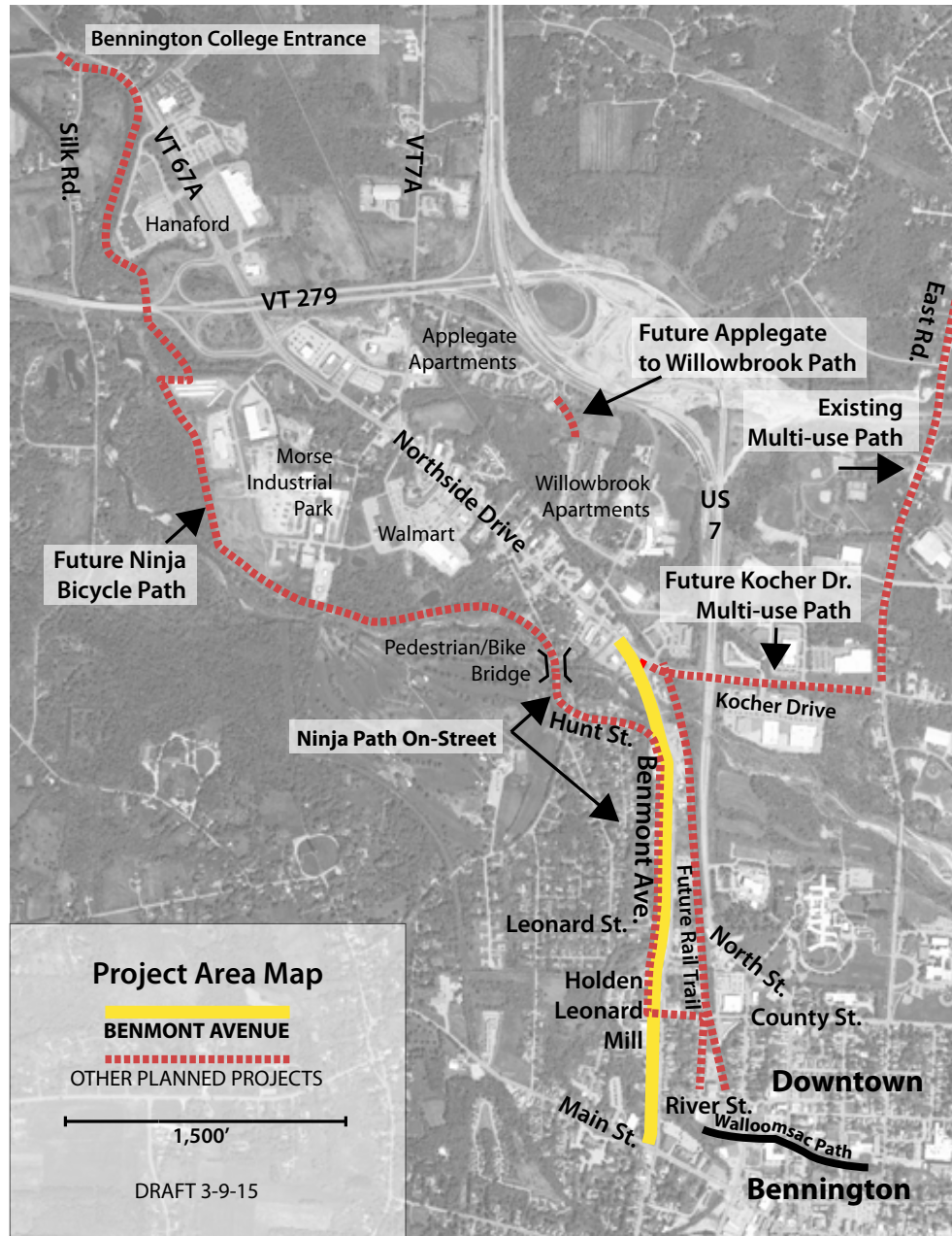
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PREPARED BY THE

BCRC

**BENNINGTON COUNTY
REGIONAL COMMISSION**

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ACTIVE TRANSPORTATION PROJECTS

The Benmont Avenue Active Transportation Corridor Study and Conceptual Design proposal is a significant component of a larger area-wide active transportation planning initiative in Bennington. The BCRC, the Town of Bennington, and various partner organizations are developing several projects to address bicycle and pedestrian facilities, streetscape improvement, and on- and off-road recreational trails/paths in Bennington.

The map to the left portrays a few examples of projects in the immediate vicinity of Benmont Avenue. These projects are being developed in connection with each other; and together, they will dramatically improve bicycle and pedestrian conditions in the area.

The Benmont facilities will directly link into this larger system, including connections to the Ninja Trail, the Kocher Drive Multi-use Path, and the already existing Walloomsac River Path.

EXECUTIVE SUMMARY

Background

The VT Agency of Commerce and Community Development awarded the Town of Bennington a Municipal Planning Grant for a plan to make Benmont Avenue safer and more inviting for pedestrians and cyclists.

Problem Statement

Benmont Avenue is a key north-south route in Bennington, but it does not safely or comfortably accommodate pedestrians and cyclists. It also has a high rate of motor vehicle crashes.

Key Problems

- There are no sidewalks between Hunt Street and the northern end of the Holden-Leonard Mill complex.
- There are no bike lanes or other facilities to separate bikes from motor vehicle traffic.
- Speeding is a problem on the northern half of Benmont. Our study found, between Leonard Street and the Hunt Street Bridge, 78% of drivers speed, 39% speed by more than 5 mph, and 5.2% speed by more than 10 mph.
- Benmont has a high crash rate. Between 2006 and 2012 there were 91 crashes resulting in 29 injuries.

Recommendations

1. Extend the planned Ninja Bicycle Path with an on-street segment along Benmont to give pedestrians, cyclists and runners a protected route from the Holden Leonard Mill Complex to the Bennington College entrance on Route 67A.

There are two conceptual design proposals for the on-street path design:
 - **The Full Conceptual Design** is a 9-foot wide path built to the edge of the public right of way and separated from traffic by a 5-foot wide green strip.
 - **The Alternative Design** is an 8-9 foot wide path marked on existing pavement separated from traffic by a 3-foot painted buffer and flexible plastic bollards.
2. Narrower, 11 foot travel lanes will help reduce speeding, better channelize traffic, and provide space for the path and bike lanes.
3. Where there are already sidewalks and not enough space for an on-street path (south of the mill complex and north of Hunt St.) striping bicycle lanes will give cyclists a protected space to ride. We also recommend narrowing and defining several excessively wide commercial driveway accesses to reduce the crash risk from vehicles entering and exiting the road.

Rationale

- The Vermont Transportation Board’s 2014 report cites a lack of good bike and pedestrian infrastructure as one reason the state has struggled to attract and retain young adults.
<http://tboard.vermont.gov>
- Vermont’s new Complete Street Law mandates that “all users of Vermont’s transportation system – including motorists, bicyclists, public transit users, and pedestrians of all ages and abilities are considered in all state and municipally managed transportation projects.”
- There is growing evidence that infrastructure that promotes driving over “active transportation” has contributed to the public health epidemics of obesity and type 2 diabetes. ” 11% of Bennington County residents have type 2 diabetes (16% for residents making less than \$25,000).

Study Goals

The goal of this study is to create a feasible plan to make Benmont Ave. safer and friendlier for pedestrians, bicycles, and motor vehicles. The study has four main components:

1. **Identify problems for pedestrians, cyclists, and drivers.**
2. **Identify feasible solutions (alternatives).**
3. **Create conceptual drawings of the alternatives.**
4. **Develop a cost estimate of the preferred alternatives.**

BENMONT AVENUE: **PURPOSE AND NEED**

Benmont Avenue is a major thoroughfare for many motor vehicles, cyclists, and pedestrians. However, its current layout is unsafe. And a few simple improvements would have a huge positive impact.

PROJECT PURPOSE & NEED STATEMENT

Project Purpose

The project's purpose is to make Benmont Avenue safe and comfortable for all road users including pedestrians, cyclists, and drivers.

Project Need

Benmont Ave. is a critical north/south corridor and the only direct walking and cycling route between downtown Bennington and the commercial and residential area along Northside Drive. Despite its importance to pedestrians and cyclists, Benmont has no sidewalks between the Holden-Leonard Mill Complex and Hunt Street forcing many pedestrians to walk in the shoulder. Also, there are no bicycle lanes, pavement markings, or other facilities to make cycling safe or appealing.

In the future, it is likely more pedestrians, cyclists, and runners will use Benmont to connect to three planned path projects, the Kocher Drive Multi-use Path, the Ninja Bicycle Path and the Bennington Rail Trail (see project area map).

Additional conditions enhance the need for this project, including:

- Benmont Ave. will link downtown Bennington to the planned Ninja Bicycle Path and the Kocher Drive Multi-use Path.
- A recent speed study showed that on the northern half of Benmont, 78% of vehicles speed, 39% of vehicles speed by more than 5 mph, and 5.2% exceed the speed limit by 10 mph or more.



- Benmont Ave. has a high rate of motor vehicle crashes. Between 2006 and 2012 there were 91 crashes resulting in 29 injuries.
- Several commercial properties along Benmont have excessively wide driveway accesses creating unnecessary hazards for all road users by confusing drivers, multiplying conflict points, increasing the speed vehicles enter and exit, and prolonging pedestrian exposure to turning vehicles.
- Pedestrian lighting is poor between the Hunt Street Bridge and the mill complex making it difficult to walk after dark and hard for vehicles to see pedestrians walking in the shoulder.



Left: People walking on Benmont Ave.

Above: Cyclists on Benmont Ave.



- During peak travel times, Benmont Ave. has infrequent breaks in traffic and is hard for pedestrians to cross.
- Crosswalks at some intersecting streets are faded or nonexistent.
- Between County Street and Kocher Drive, an abandoned rail corridor blocks pedestrian access between Benmont Ave. and North Street. Several improvised “paths of desire” show pedestrians’ need to walk between Benmont Ave. and North Street.



- The lack of street trees makes walking less appealing.
- The lack of pedestrian and bicycle facilities encourages driving, even for short trips, and limits mobility for children.
- There is growing evidence that infrastructure that promotes driving over “active transportation” has contributed to the public health epidemics of obesity and type 2 diabetes.



***Above:** Two adjacent gas stations have a continuous 618 foot driveway access. The recommended maximum for a two-way commercial access is 40 feet.*

***Left:** Pedestrians walking in the shoulder.*

***Far left:** The sidewalk ends just north of the Holden-Leonard Mill.*

KEY RECOMMENDATIONS

1. 11-foot travel lanes

We recommend narrowing Benmont’s travel lanes to 11 feet to channelize traffic, reduce speeding and to make space for pedestrians, cyclists and safety features. The VT Design Standards allow for 10-12 foot travel lanes on minor arterials, but newer engineering guidance recommends travel lanes no wider than 11 feet on urban arterials.

“Lanes greater than 11 feet should not be used as they may cause unintended speeding and assume valuable right of way at the expense of other modes.”

<http://nacto.org/usdg/street-design-elements/lane-width/>

2. Reasonable driveway entrances

Several commercial properties along Benmont Ave. have excessively wide driveway entrances. Wide driveway entrances increase the area pedestrians and vehicles are exposed to turning vehicles, and increase the speed vehicles enter and exit the road.

We recommend defining driveway accesses to the standards shown in the VTrans Standards for Residential and Commercial Drives, which sets a maximum width of 30-40 feet for a two-way commercial driveway entrance and a maximum 24-foot width for a one-way commercial driveway entrance.

3. Protected space for pedestrians and cyclists

Between the northern edge of the mill complex and Hunt Street there is space in the public right of way for an on-street multiuse path to accommodate pedestrians and two-way bicycle traffic. A path physically separated from traffic will give users security and will make it attractive to a wide spectrum of the public. The path could be “branded” as an on-street extension of the planned Ninja Bicycle Path.



Top: Navigating the Benmont/Hunt St. intersection.

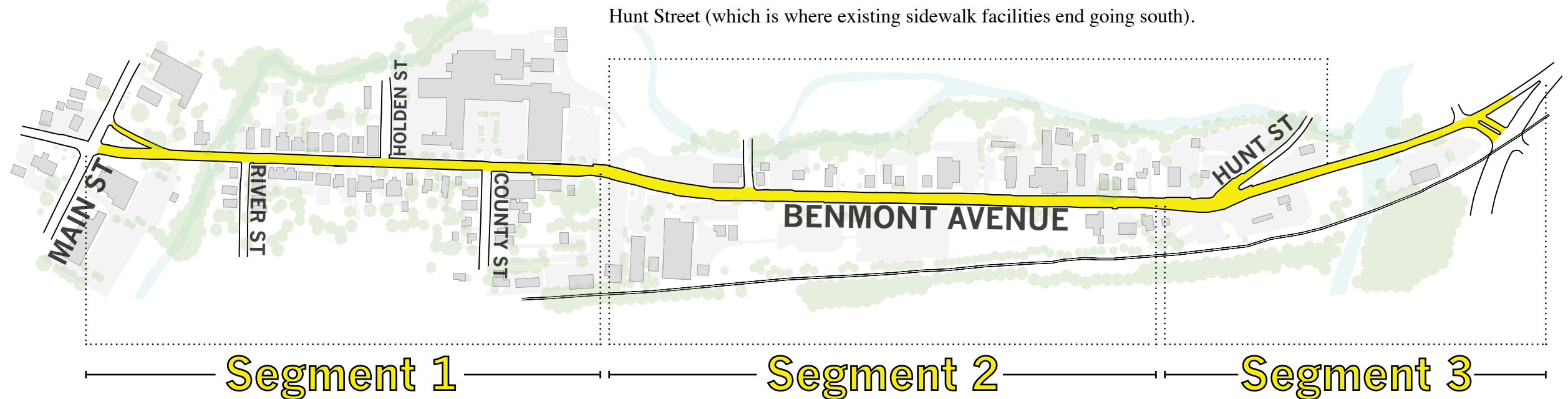
Left: Walking in front of a wide driveway access. The wide travel lanes create unsafe conditions which may contribute to Benmont’s speeding and high crash rate.

BENMONT AVENUE:
**CONCEPTUAL
DESIGN**



DESIGN: CONCEPTUAL PLAN

The Conceptual Design is composed of three segments, which are explained in more detail below. The follow pages explore the design in plan view at a closer scale for the entire length of the project, followed by plans for the section where the Alternative Design has been generated, shown to the right on this image.



ALTERNATIVE DESIGN

An Alternative Design has been generated for the portion of Benmont Avenue which spans from the slight curve immediately north of the Leonard-Holden Mill (which is where existing sidewalk facilities end going north) to the area just north of the intersection with Hunt Street (which is where existing sidewalk facilities end going south).

Segment 1

Beginning at the intersection of Main St., **Segment 1** of the Benmont Ave. Conceptual Plan includes the complex intersection with Main St., the bridge over the Walloomsac River, and the one-sided “T” intersections with River Street, Holden Street, and County Street. Sidewalks already exist along both sides of the street, and many sections contain on-street parallel parking. Proposed improvements in this segment are mostly limited to the repair of existing sidewalks and creation of painted on-road bike lanes and shared lane markers on the existing pavement.

Segment 2

Spanning from the end of the Holden-Leonard Mill on the south end, to the intersection with Hunt Street on the North, **Segment 2** is the portion of Benmont Ave. that is most in need of bicycle and pedestrian facility improvement. Currently, there are very wide travel lanes without clear boundaries, dangerously wide driveway entrances, and no sidewalks or bicycle facilities. Proposed improvement in Segment 2 include the relocation of the road’s centerline and the addition of a two-way path for cyclists and pedestrians (painted on the existing pavement) and separated from the vehicular traffic with a vegetated barrier.

Segment 3

Segment 3, the final portion of Benmont Ave., includes the dangerous intersection with Hunt St., the bridge over the Roaring Branch River, and the complex intersection with Northside Drive. Some sidewalks already exist in this area, but various pedestrian and bicycle infrastructure improvements are still needed. The area of highest need within segment 3 surrounds the Hunt St. intersection.

DESIGN ALTERNATIVES:

The following pages detail the conceptual design proposal for Benmont Avenue, which was created to address the three key recommendation listed in the previous section of this study. The proposed design contains three segments. Throughout Segment 2 and part of Segment three, a less costly alternative proposal has been created. The following paragraphs explains the distinctions between the preferred conceptual plan and the alternative.



This path, separated from the road with a green strip, is comfortable and safe enough for children.



Shared lane markings, or “sharrows”

PREFERRED CONCEPTUAL PLAN

The preferred conceptual design includes a **9-foot wide path*** separated from vehicle traffic with an uncurbed **5-foot wide green strip** that would double as a drainage swale for all of segment 2 and a small stretch of segment 3. To create room for the path, the road centerline will shift 2’4” to the east, and the unused right of way on the west side of the road will be reclaimed for the path.

South of the mill and north of Hunt Street there are already sidewalks and not enough space for a physically separated path. Along this section we recommend striping bike lanes to provide a space to ride and to visually define travel lanes. Where there is not enough space for bike lanes we recommend installing shared lane markings called “sharrows” (see example of sharrows in above right image).

**The minimum width for a multi-use path is 8 feet. Typically, multi-use paths that accommodate pedestrians and two-way bicycle traffic are 11-14 feet wide. Site constraints prevent the Benmont path from being the ideal width.*



A path separated from the street with paint and plastic bollards

ALTERNATIVE DESIGN

The path in the **Alternative Design** is separated not with a green strip but with a **3-foot wide buffer of painted diagonal pavement markings**, or “striping,” and **plastic bollards**. This alternative does not require any new pavement. The path will simply end at the edge of the existing pavement.

Many municipalities have installed similar paths as a short-term solution and as a way of testing road design concepts before building a more permanent path.

The Plans for the Alternative Design can be found starting on page 31.



PRECEDENT IMAGES

The images to the left demonstrate successful applications of many of the design elements entailed in both the preferred conceptual design and the alternative design for Benmont Avenue.

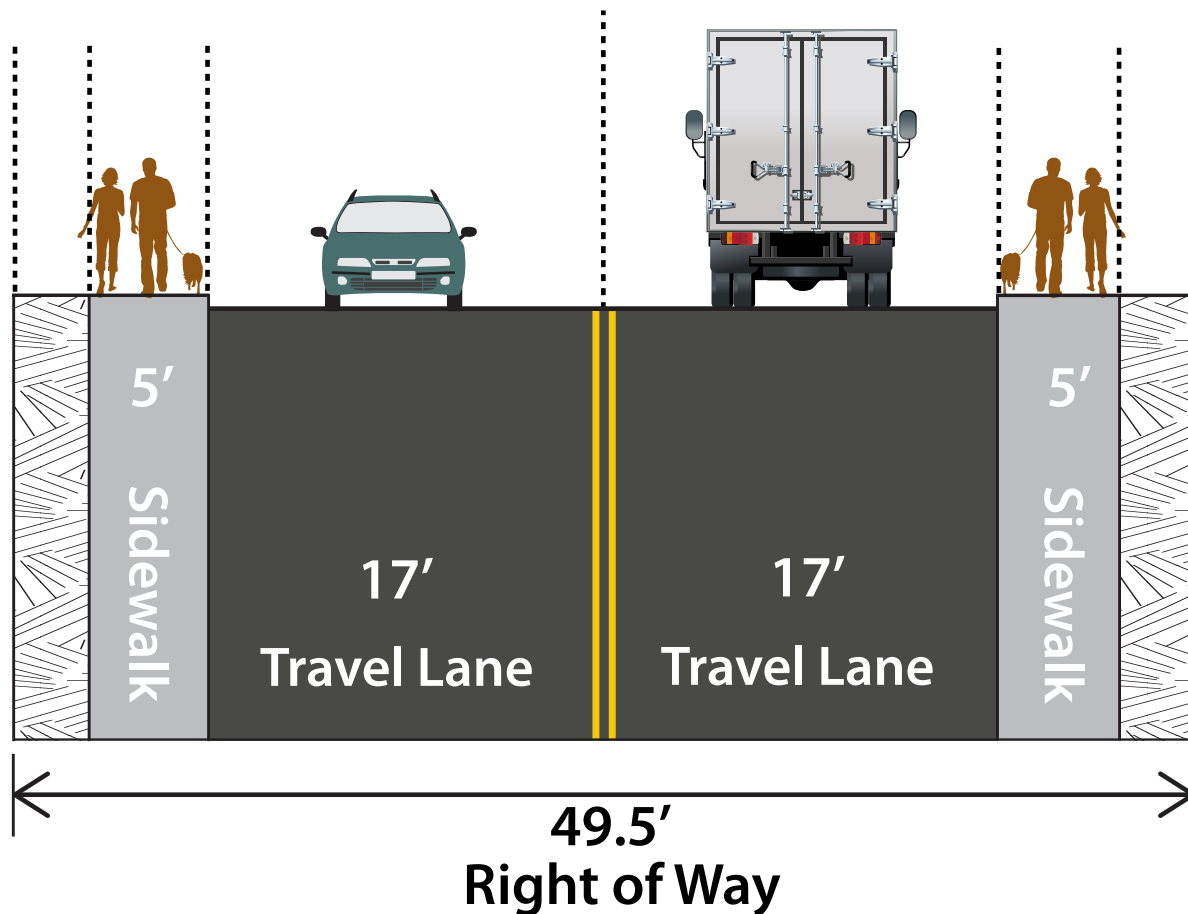
- A** This multi-use path uses bollards and painted striping to keep pedestrians and bicyclists safe when adjacent to traffic.
- B** Similar to image A, this two-way path uses painted striping and reflective bollards to protect cyclists from adjacent vehicles.
- C** Brightly colored paint is often used to make painted bike lanes more visible, improving safety.
- D** Adding painted bike lanes to existing pavement is an extremely low-cost way to improve public health.

For more information on Bike Lane Design, check out the National Association of City Transportation Officials' website: <http://nacto.org/cities-for-cycling/design-guide/bike-lanes>

SEGMENT 1: SECTION DIAGRAMS FOR AREAS *WITHOUT* ON-STREET PARKING

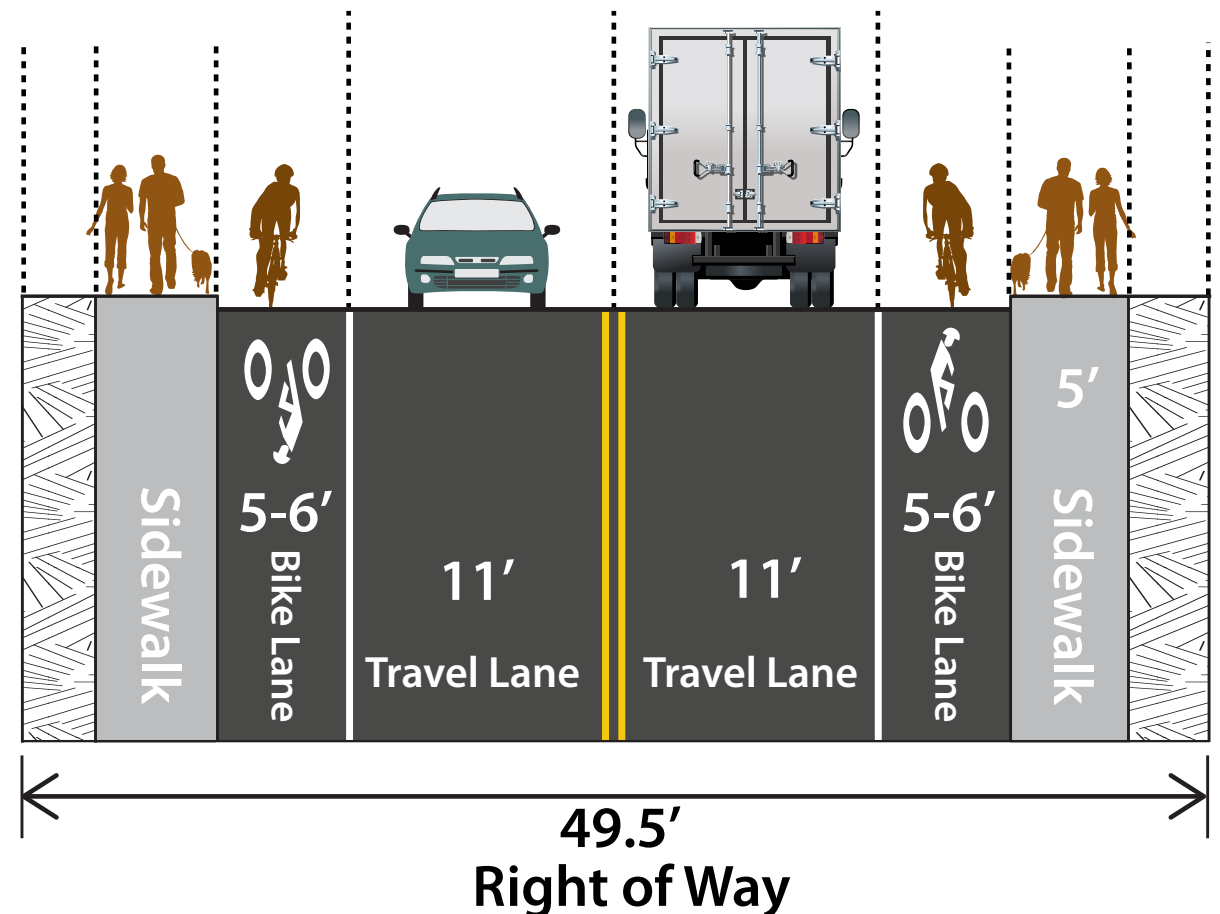
EXISTING CONDITIONS

Currently, Segment 1 has sidewalks but lacks facilities for cyclists. In areas without on-street parking, the travel lanes are unnecessarily wide. This presents a hazardous situation for both bicyclists and pedestrians.



CONCEPTUAL DESIGN

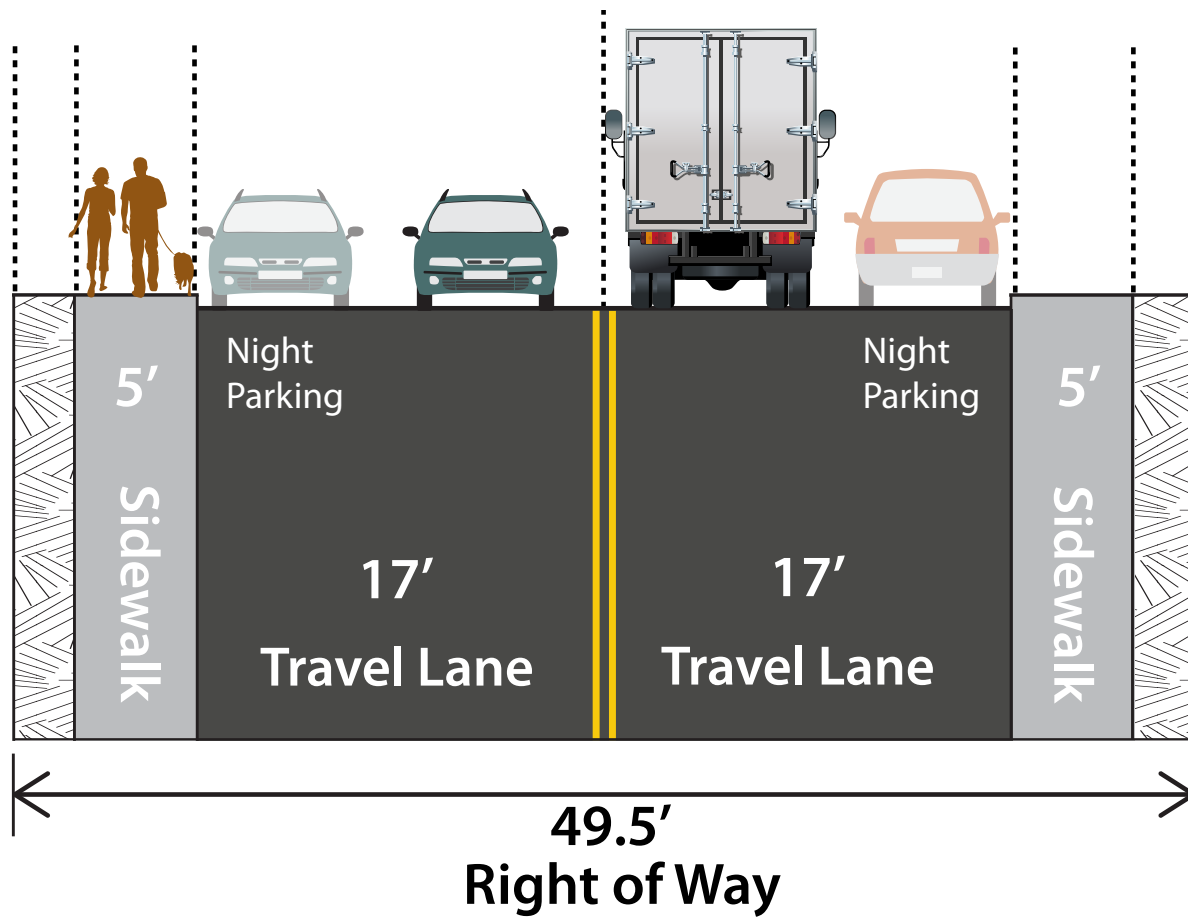
The proposed Conceptual Design would add painted bike lanes in both directions while still accommodating vehicular traffic. The more narrow vehicular travel lane would discourage speeding. The painted bike lane would encourage cycling on-road,



SEGMENT 1: SECTION DIAGRAMS FOR AREAS WITH ON-STREET PARKING

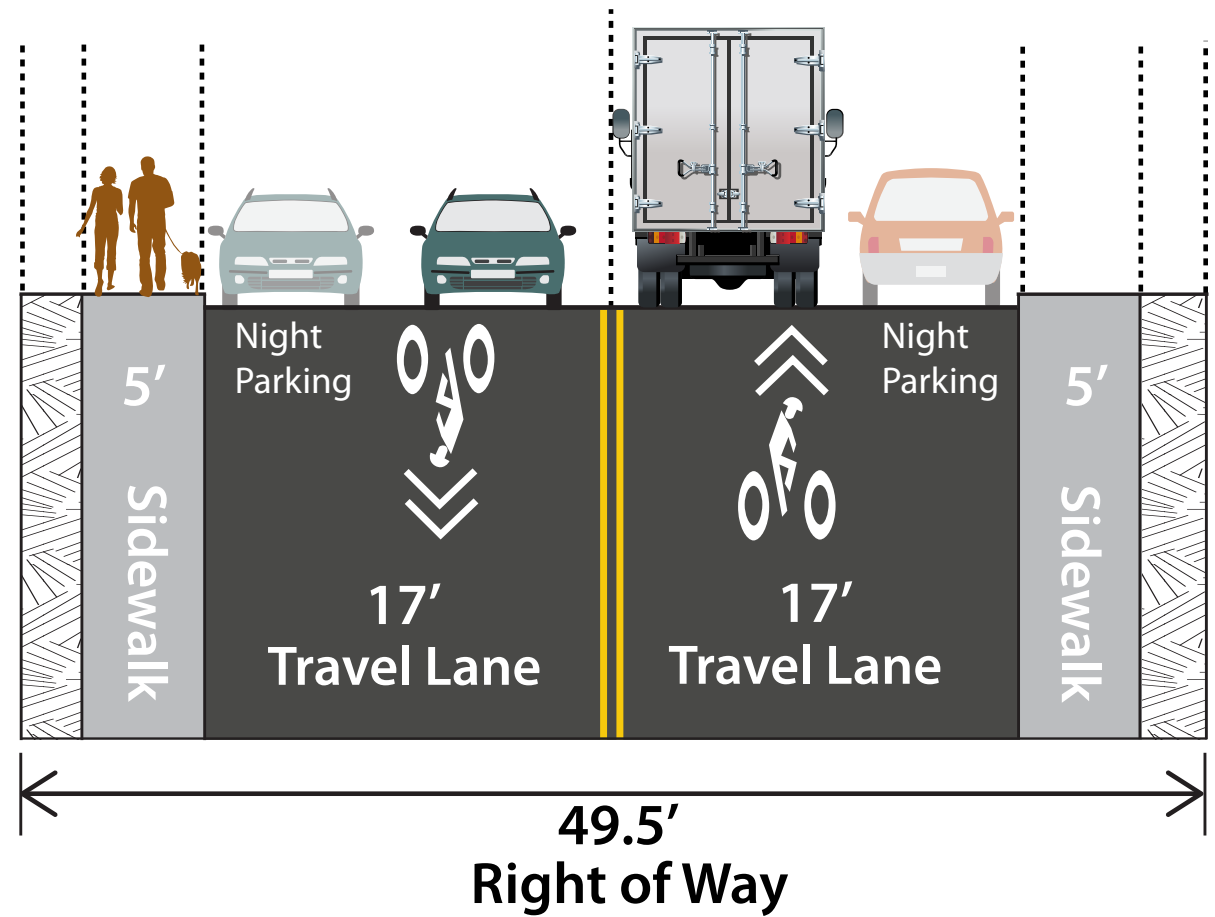
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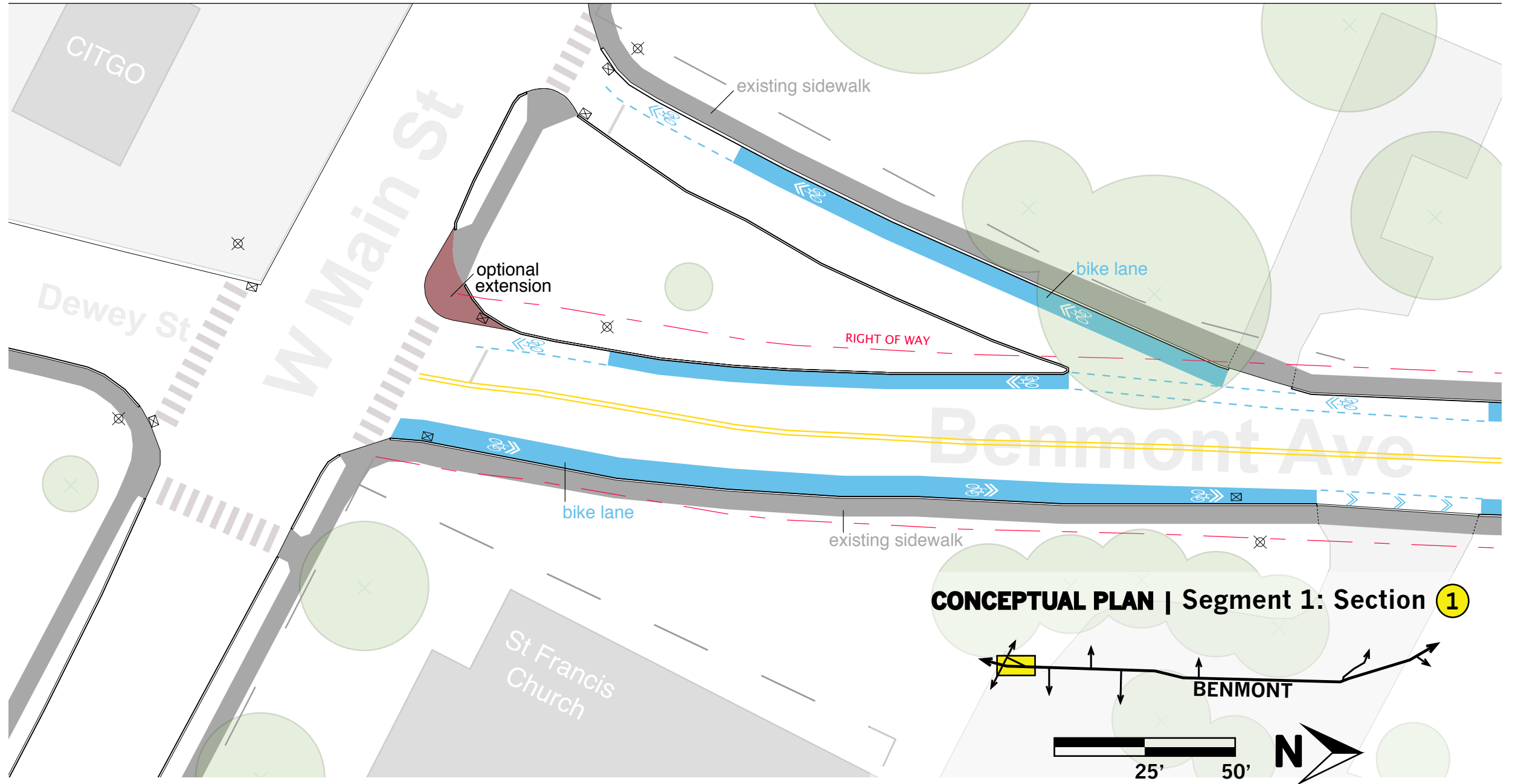
Currently, Segment 1 has several areas with on-street parallel parking (after 4pm). Although some roadway repair and re-painting is needed, no significant layout changes are required, as the width of both travel lanes and parking areas are sufficient.



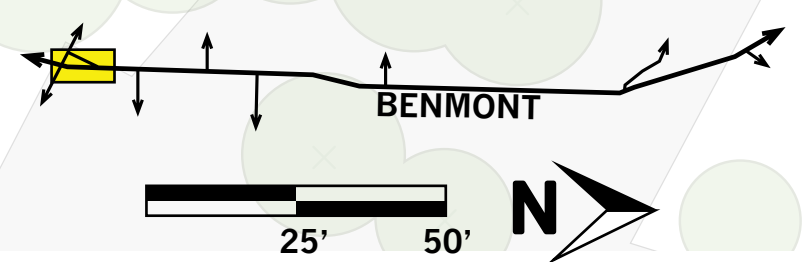
CONCEPTUAL DESIGN

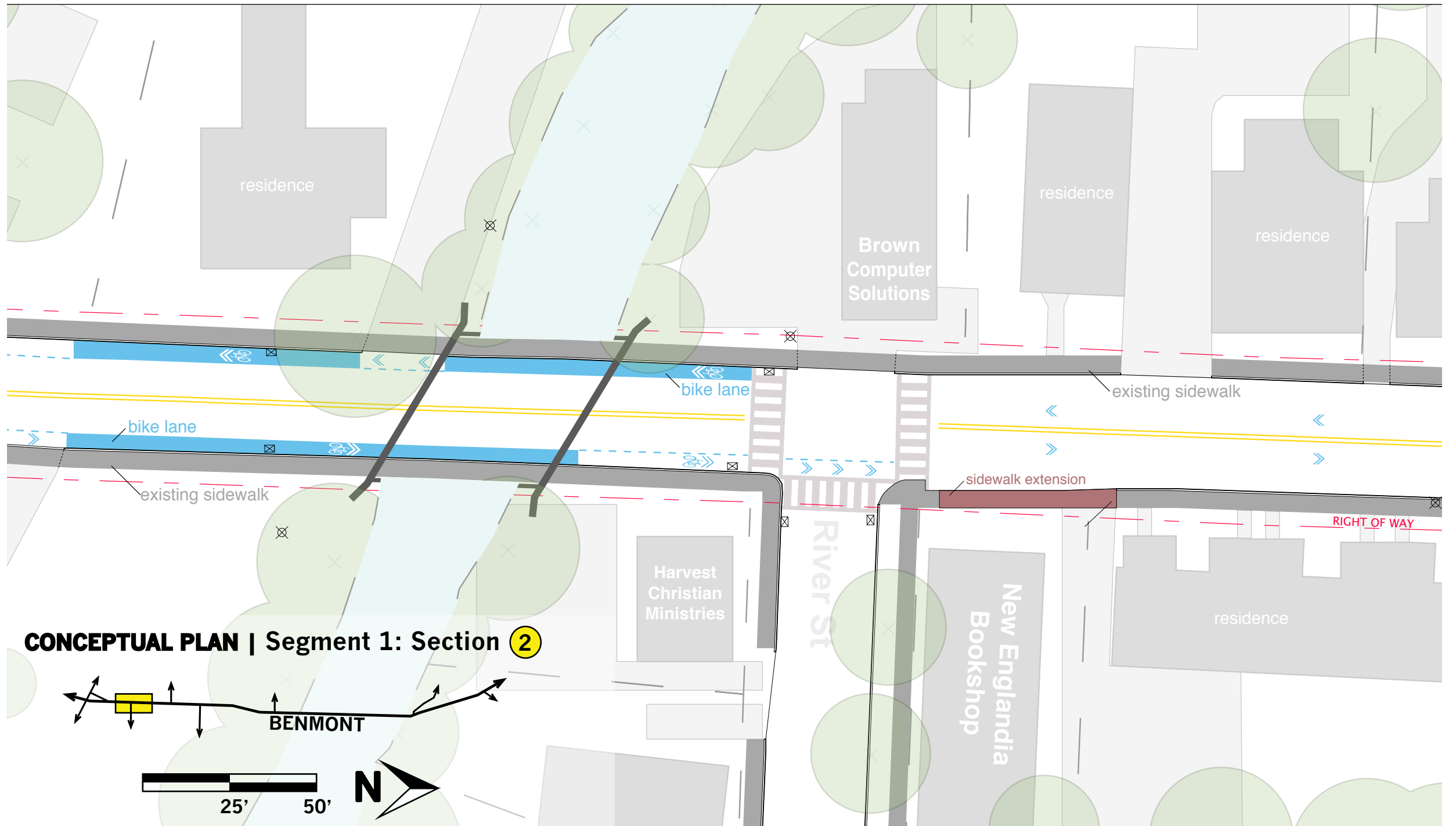
The only significant design change for the on-street parking areas within Segment 1, is the proposed addition of shared travel lane markings, or “sharrows,” to indicate to cyclists and vehicles that they are travelling in a shared lane.



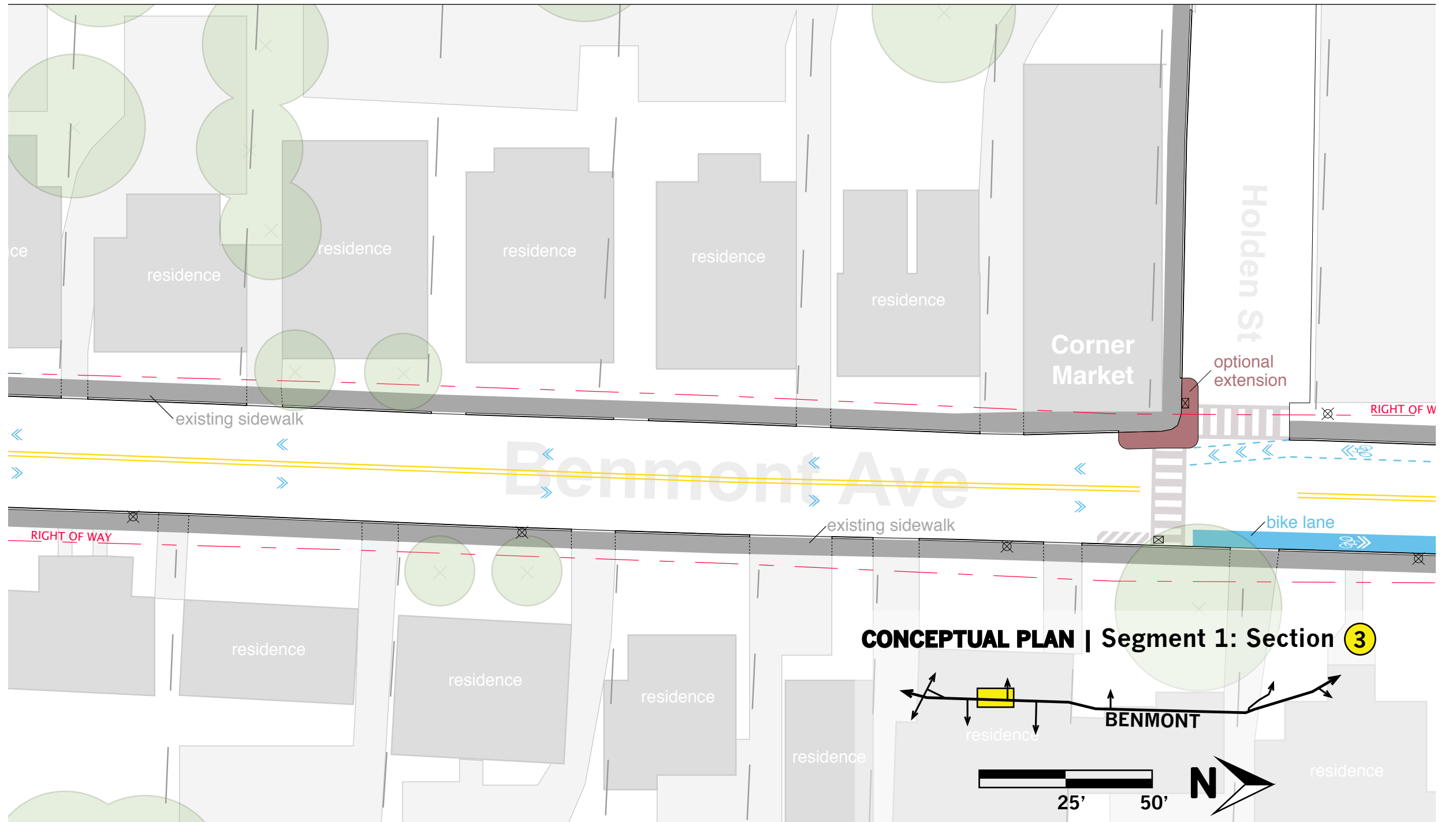


CONCEPTUAL PLAN | Segment 1: Section 1

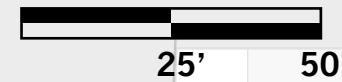


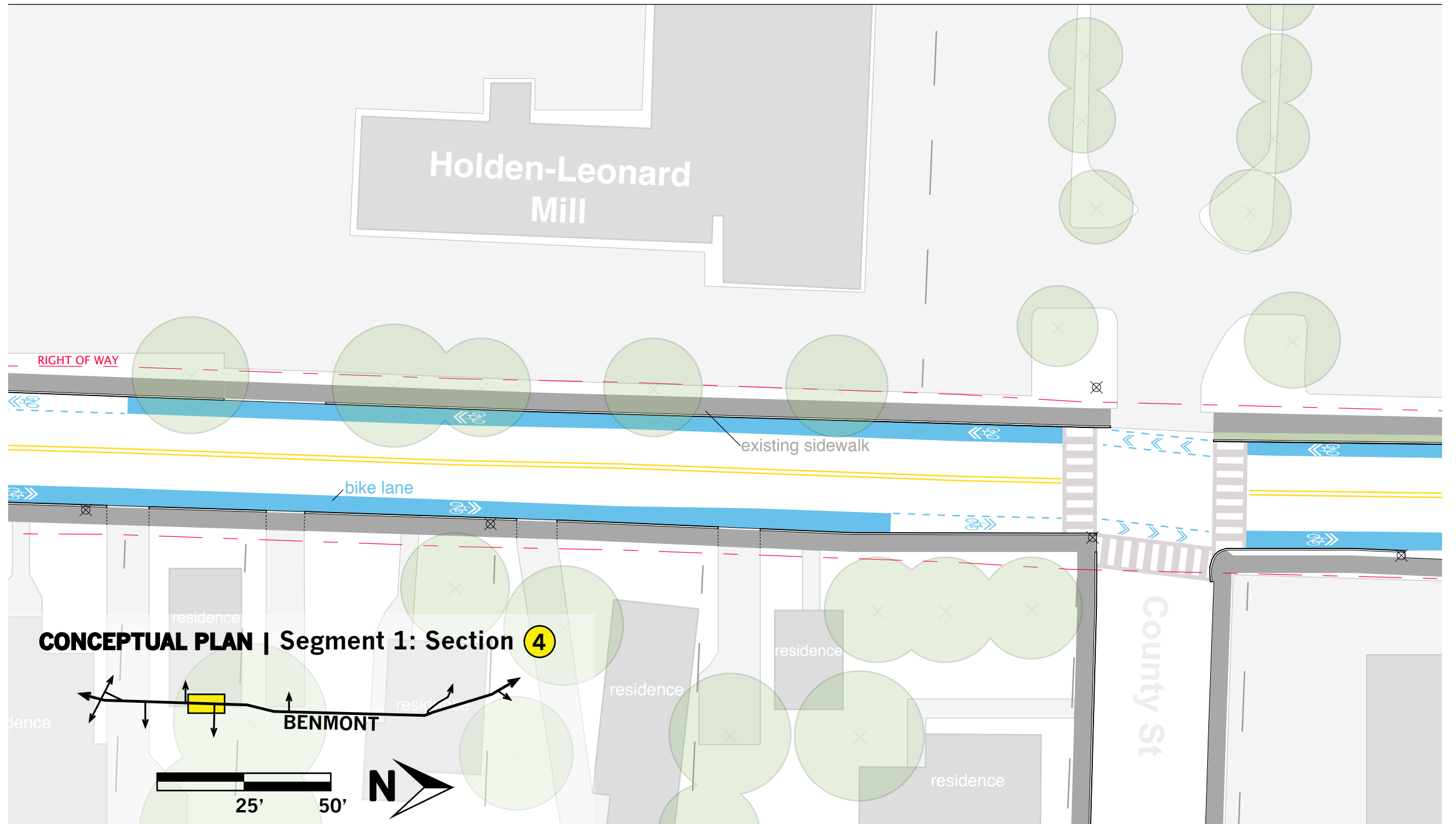


CONCEPTUAL PLAN | Segment 1: Section 2



CONCEPTUAL PLAN | Segment 1: Section 3



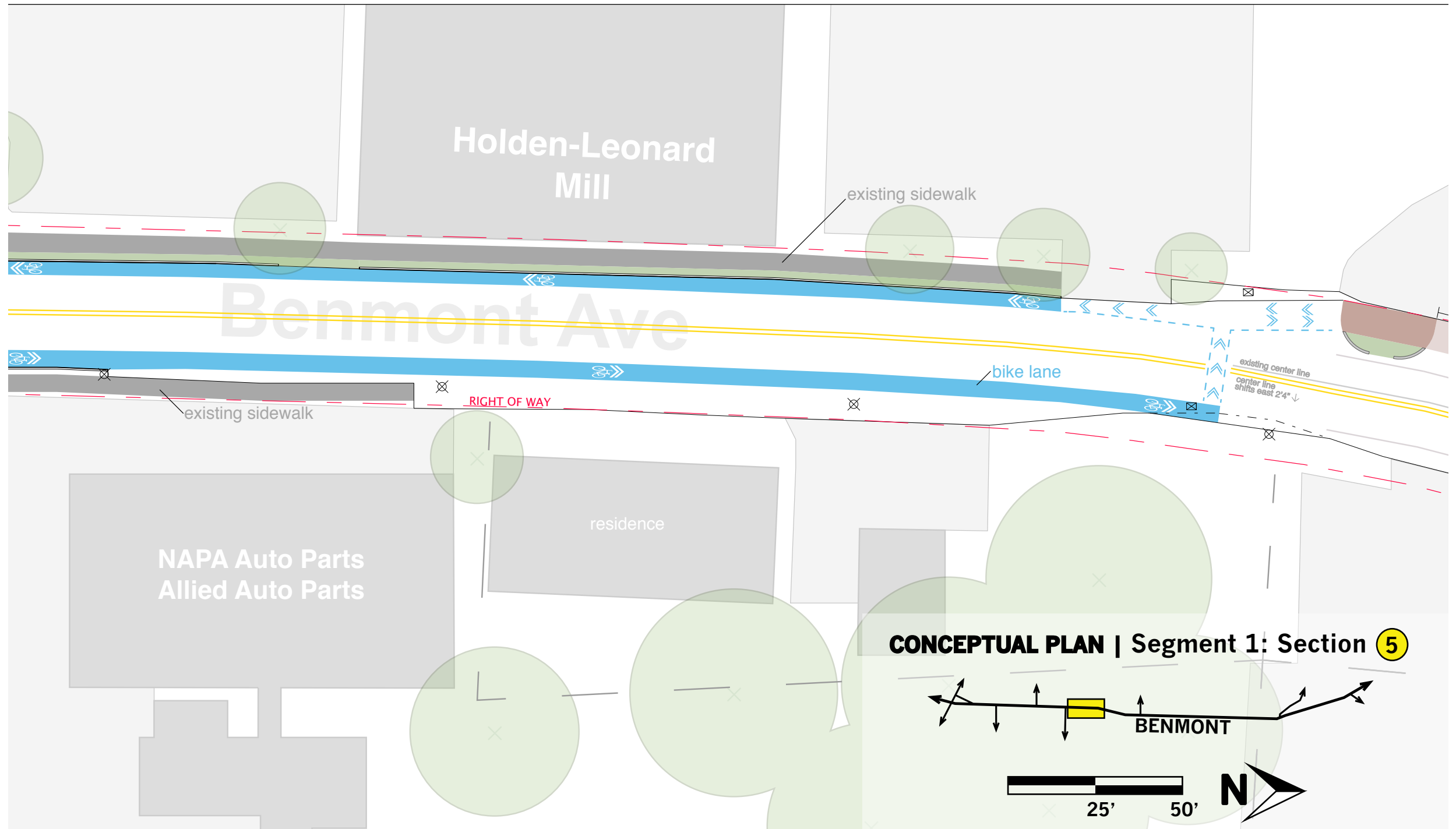


CONCEPTUAL PLAN | Segment 1: Section 4

BENMONT

25' 50'



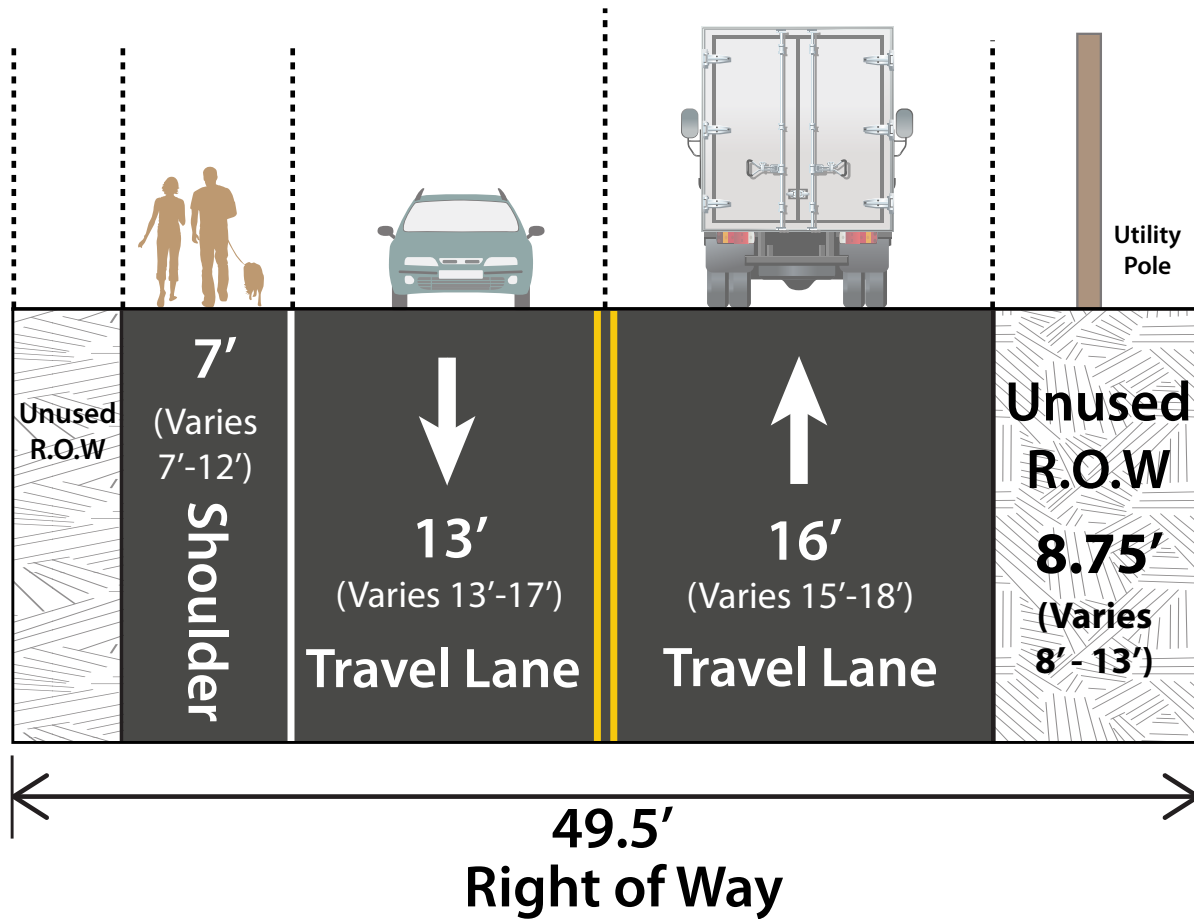


CONCEPTUAL PLAN | Segment 1: Section 5

SEGMENT 2: SECTION DIAGRAMS

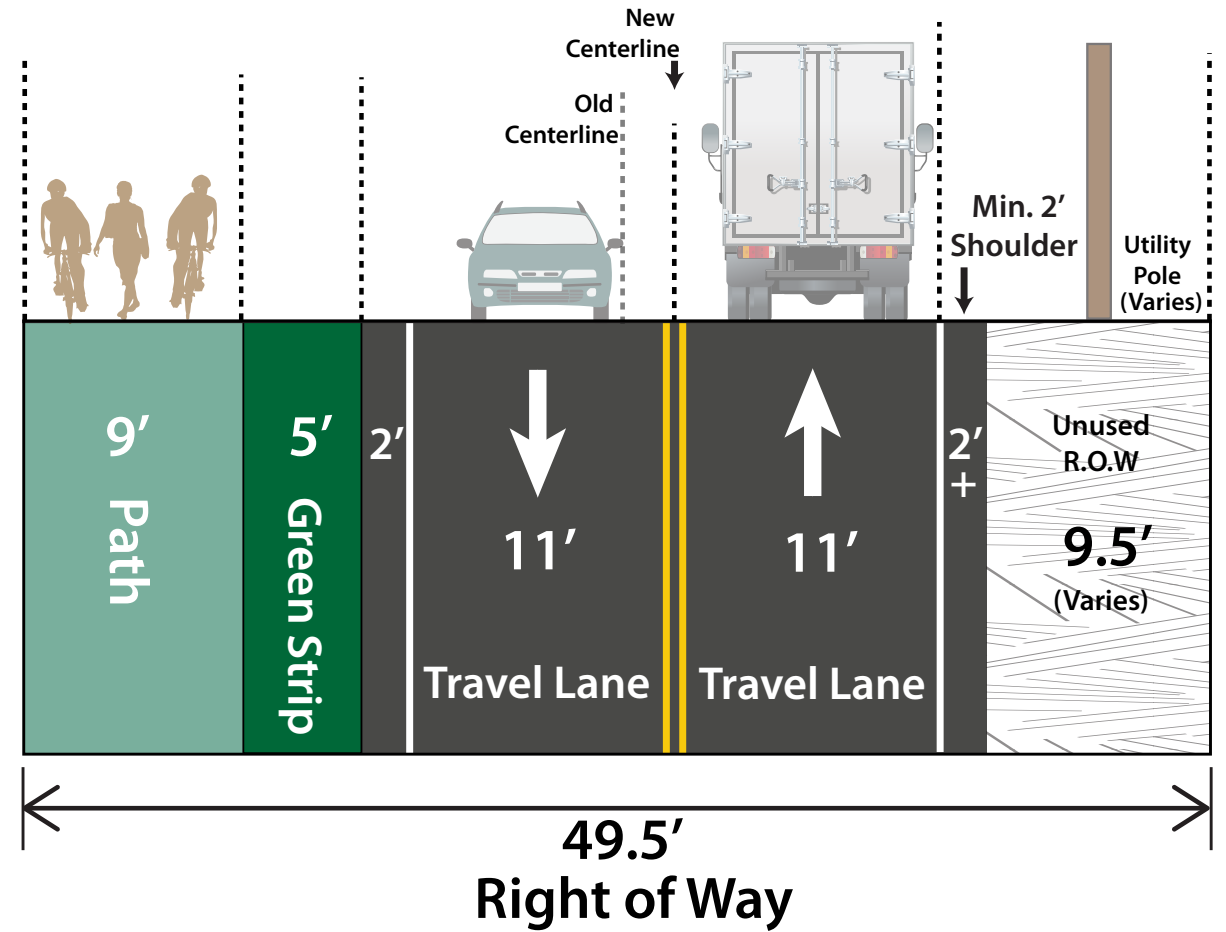
EXISTING CONDITIONS

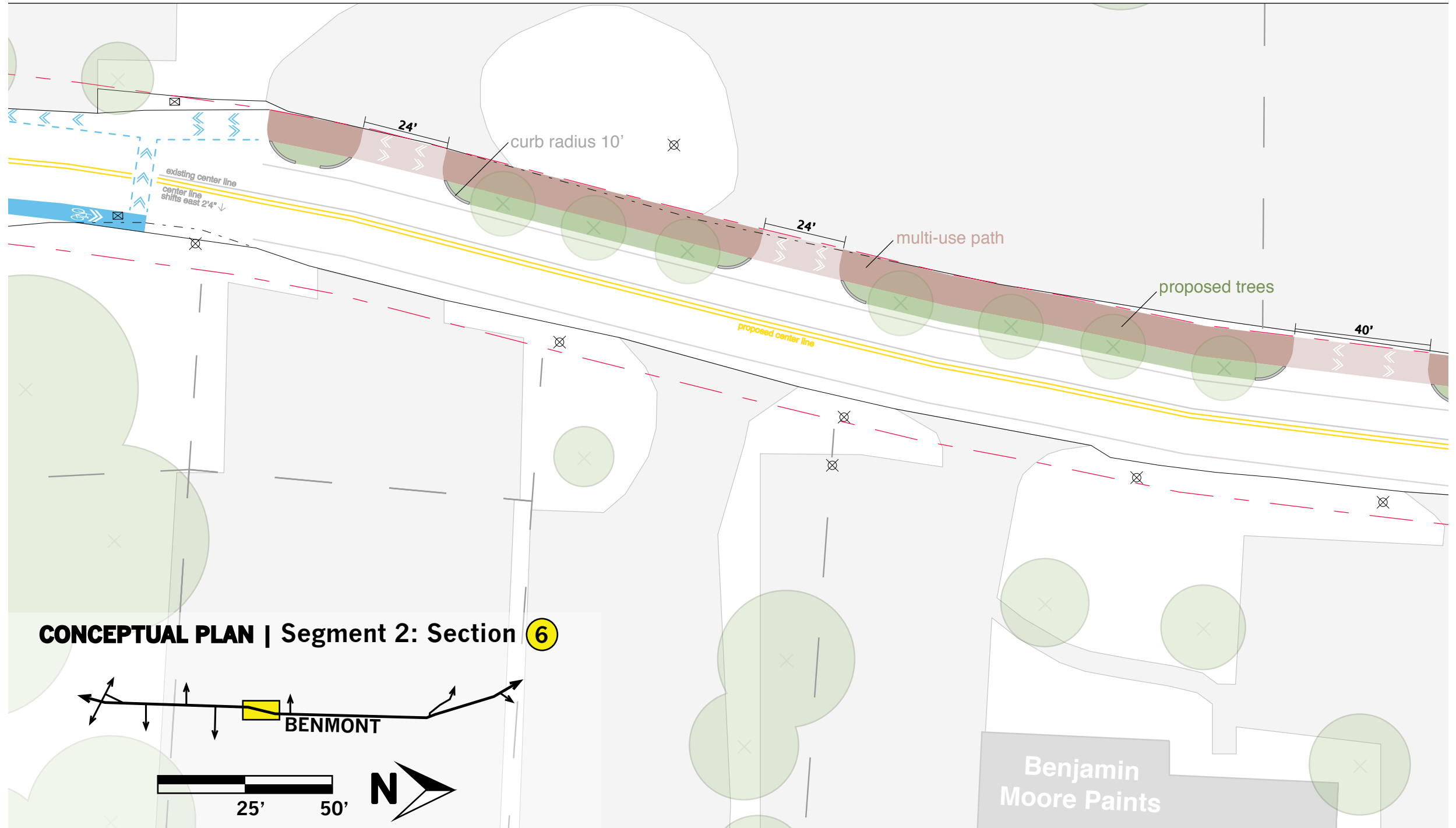
Currently, Segment 2 has almost no bicyclist or pedestrian facilities, the width of travel lanes and shoulders vary, and conditions are unsafe.



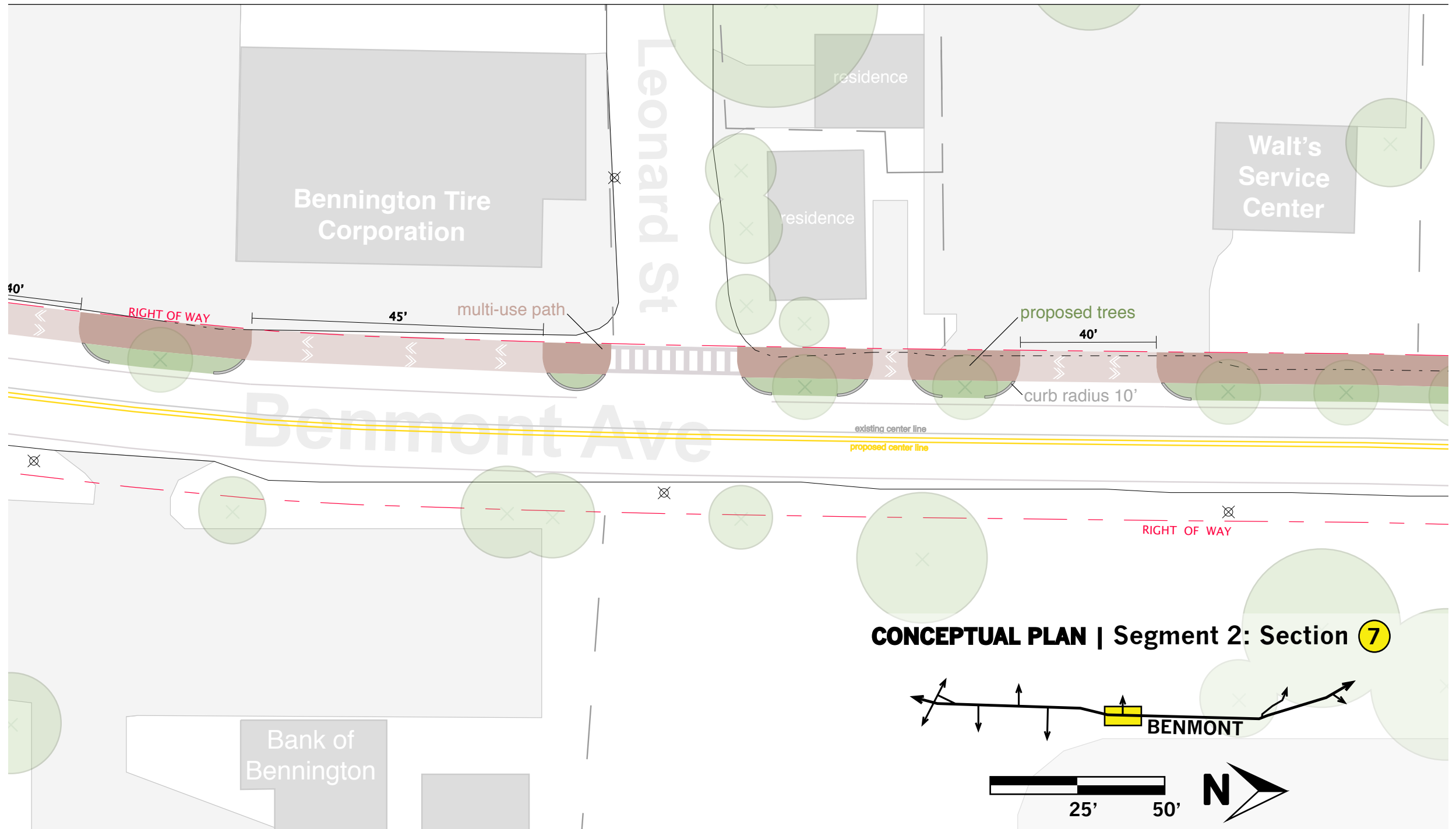
CONCEPTUAL DESIGN

The proposed Conceptual Design includes a slight relocation of the road's centerline, a paved, two-way path for pedestrians and cyclists, and an at-grade vegetated green strip (to buffer the path from vehicular traffic and allow for better drainage).

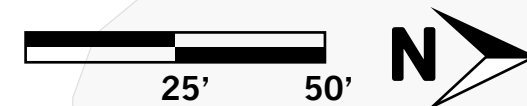
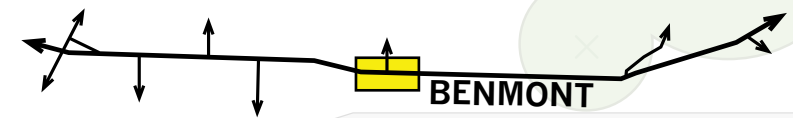


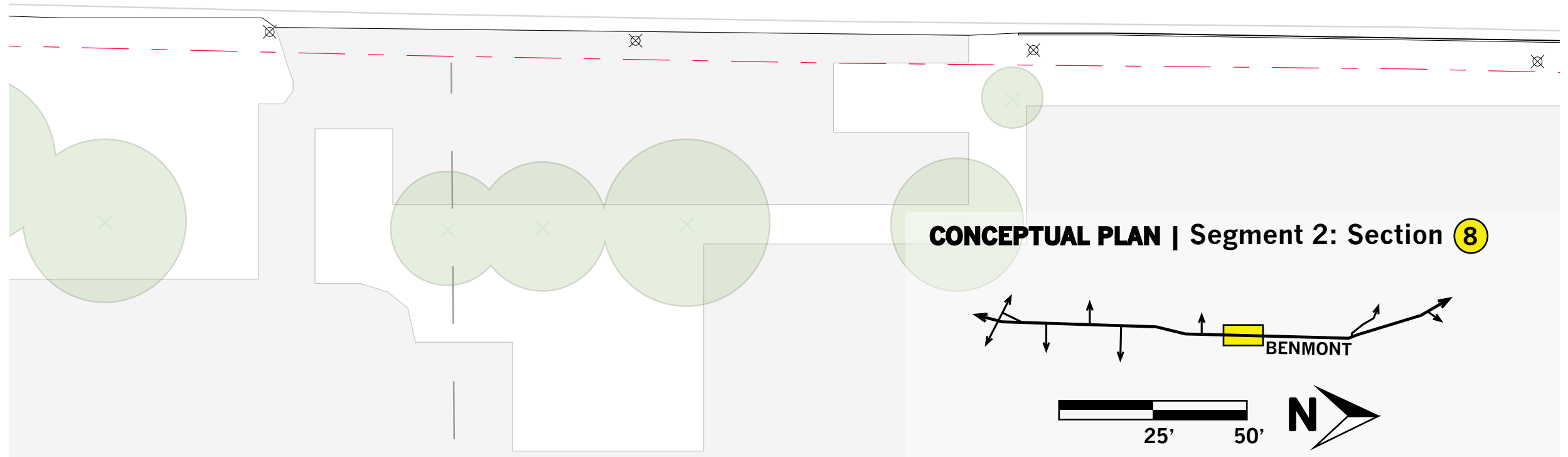
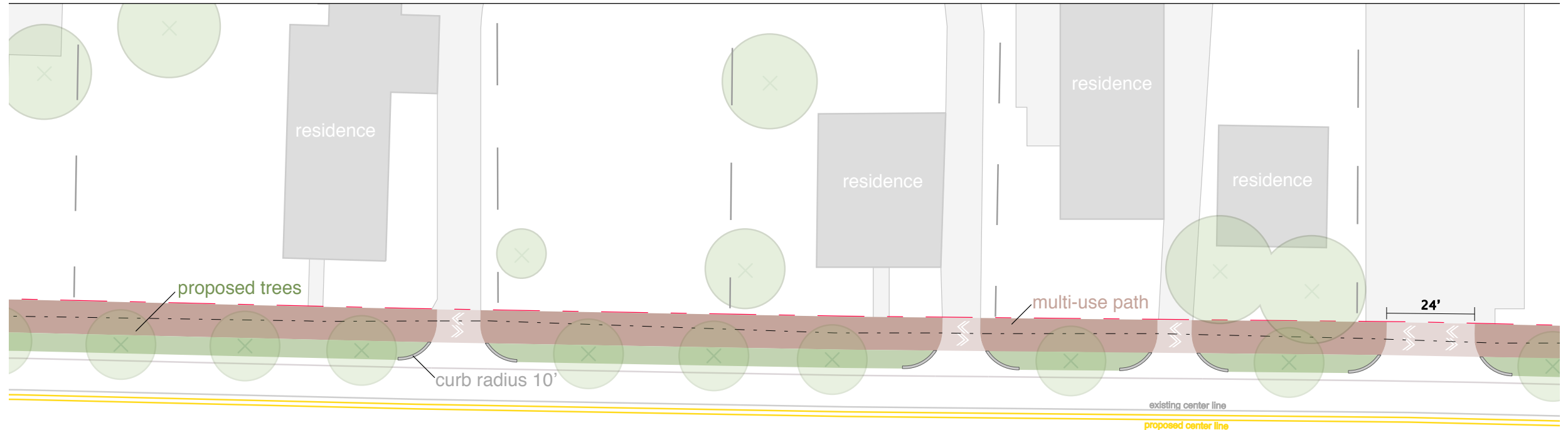


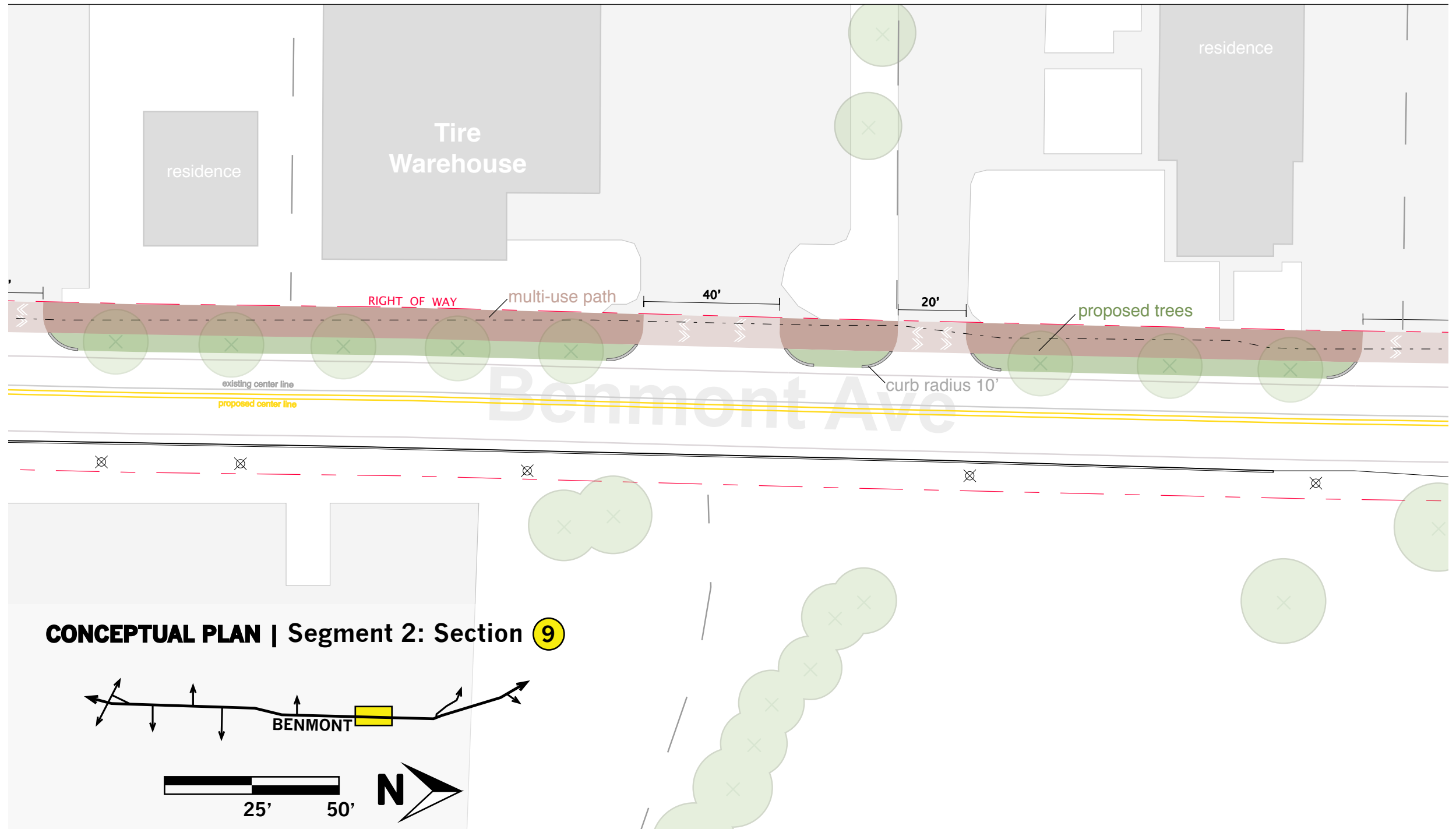
CONCEPTUAL PLAN | Segment 2: Section 6

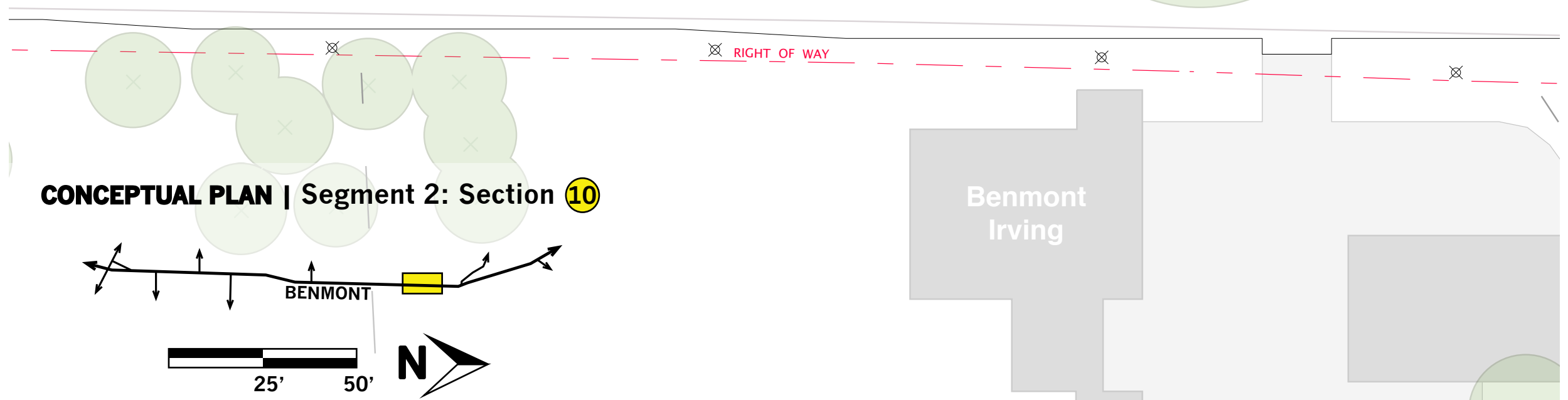
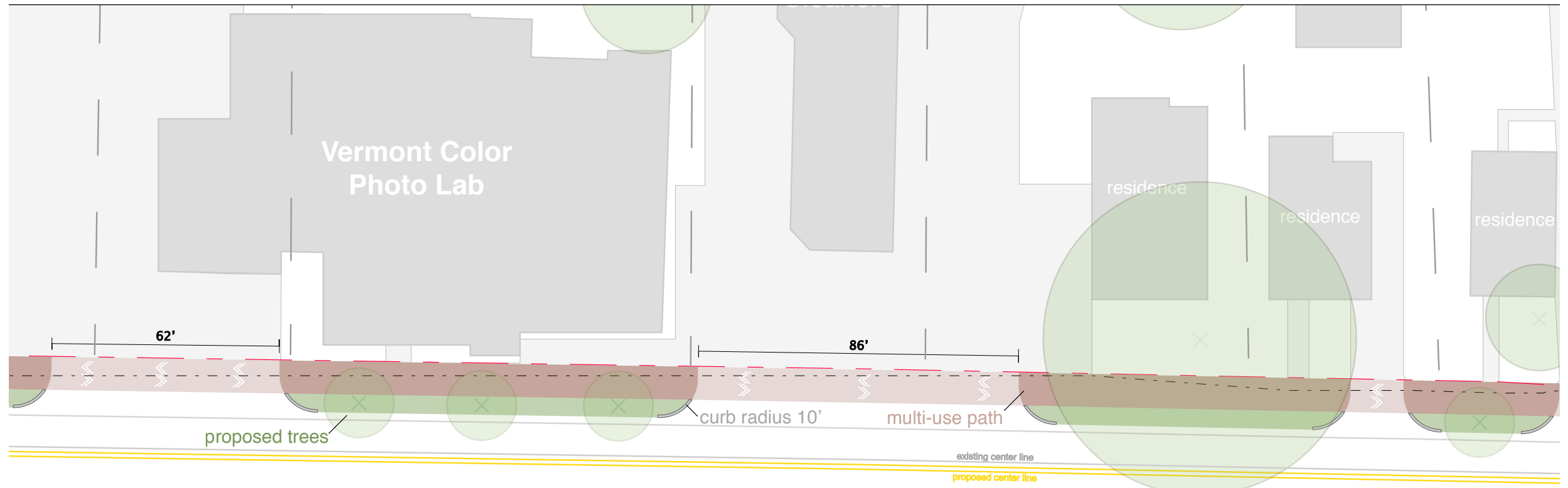


CONCEPTUAL PLAN | Segment 2: Section 7

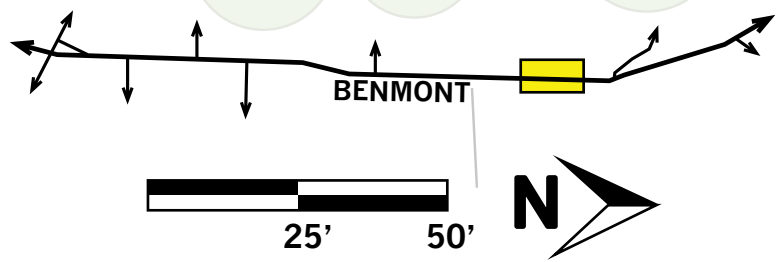


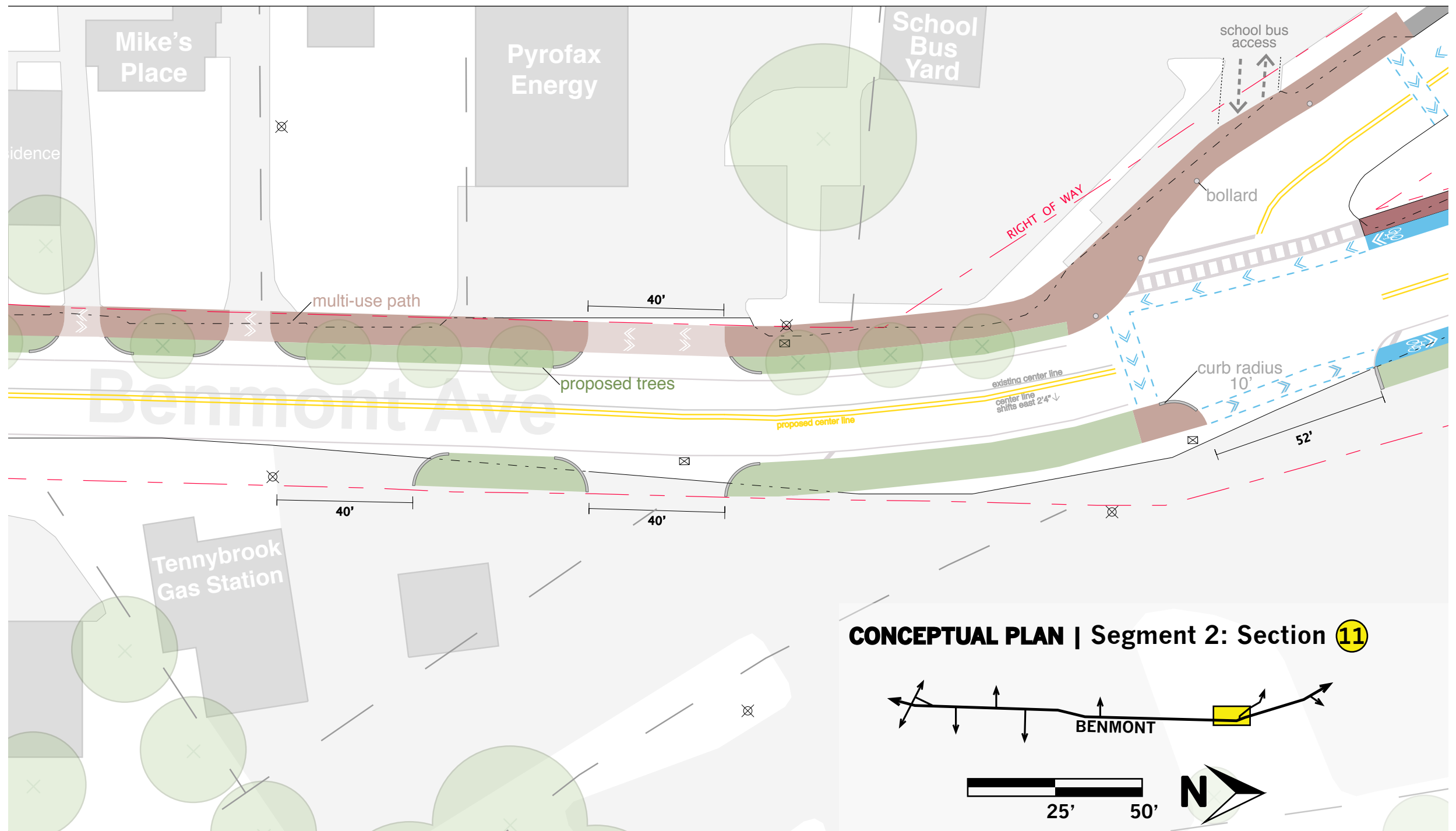




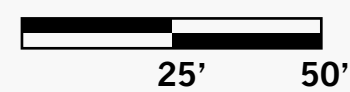
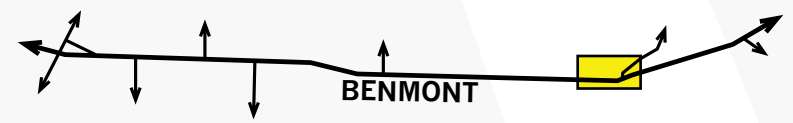


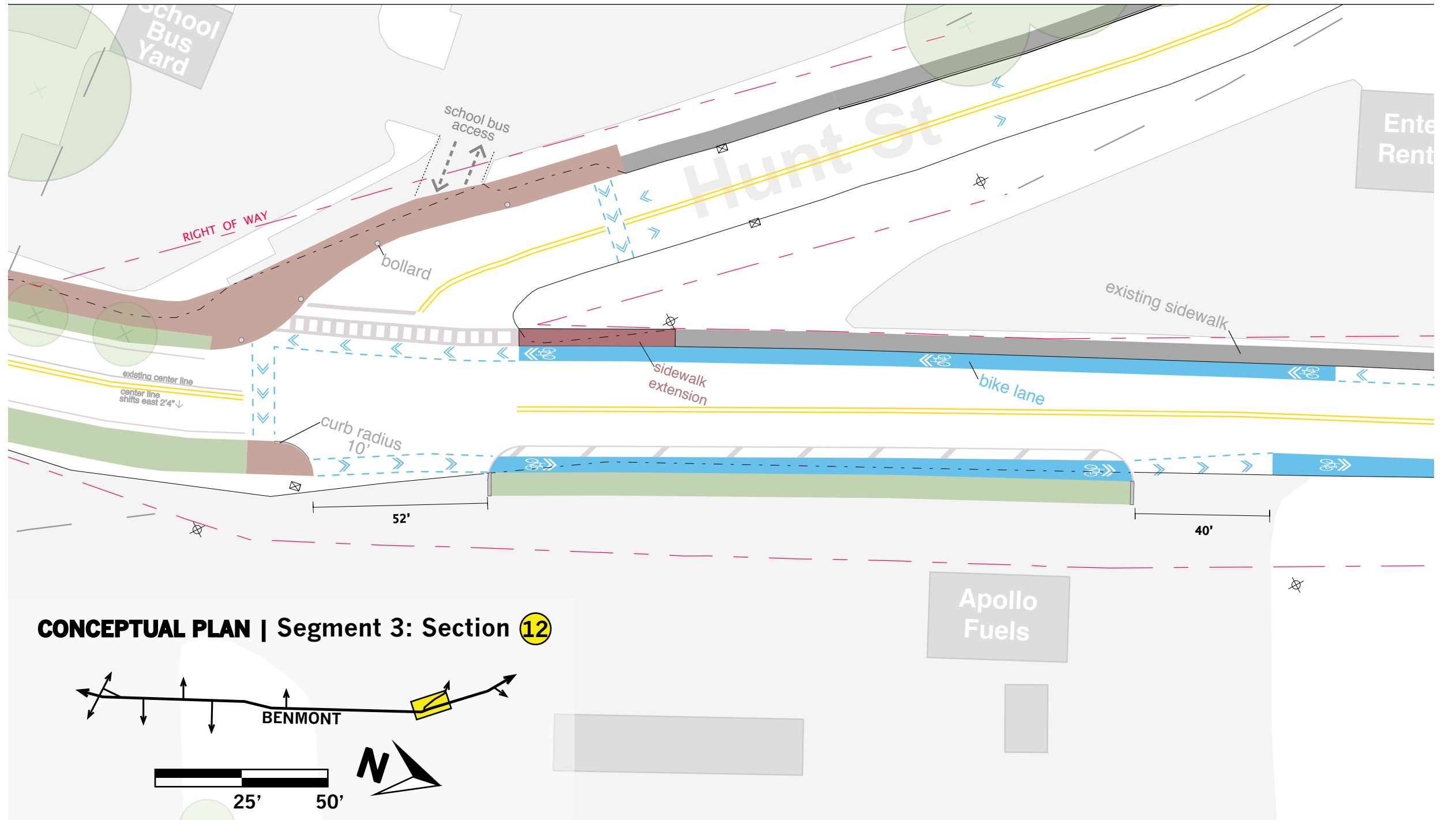
CONCEPTUAL PLAN | Segment 2: Section 10

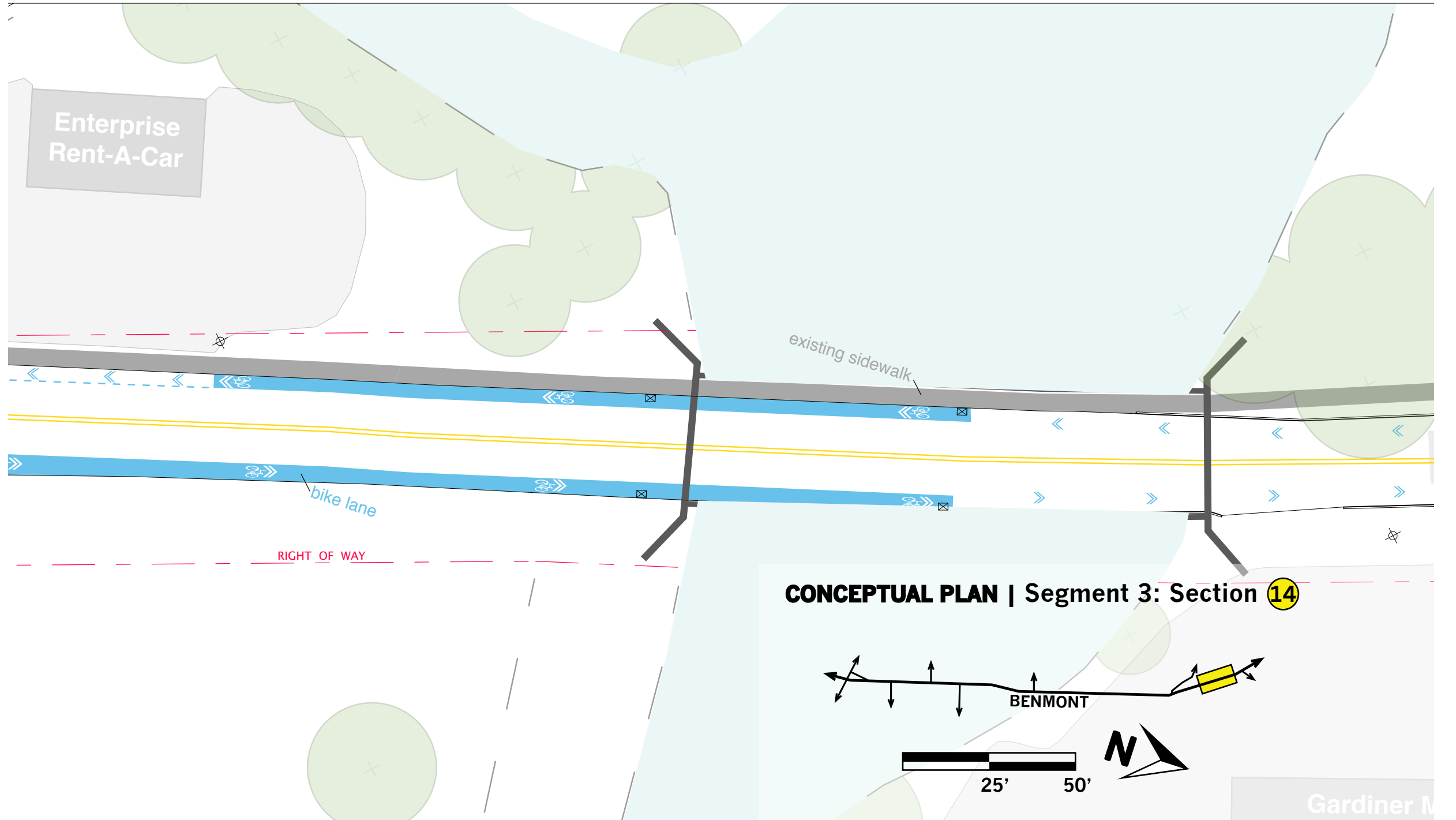




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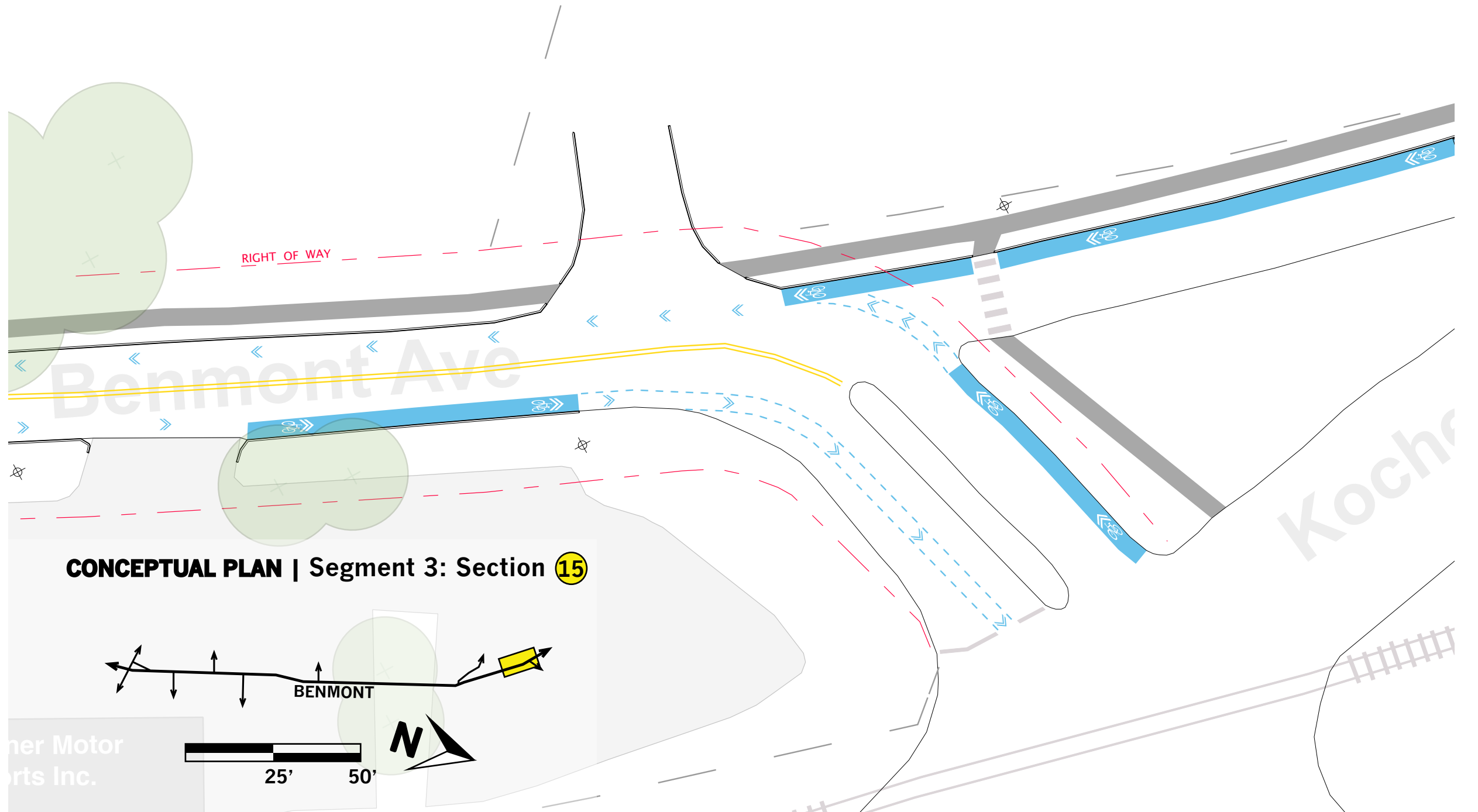






CONCEPTUAL PLAN | Segment 3: Section 14

Gardiner M
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CONCEPTUAL PLAN | Segment 3: Section 15

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rts Inc.



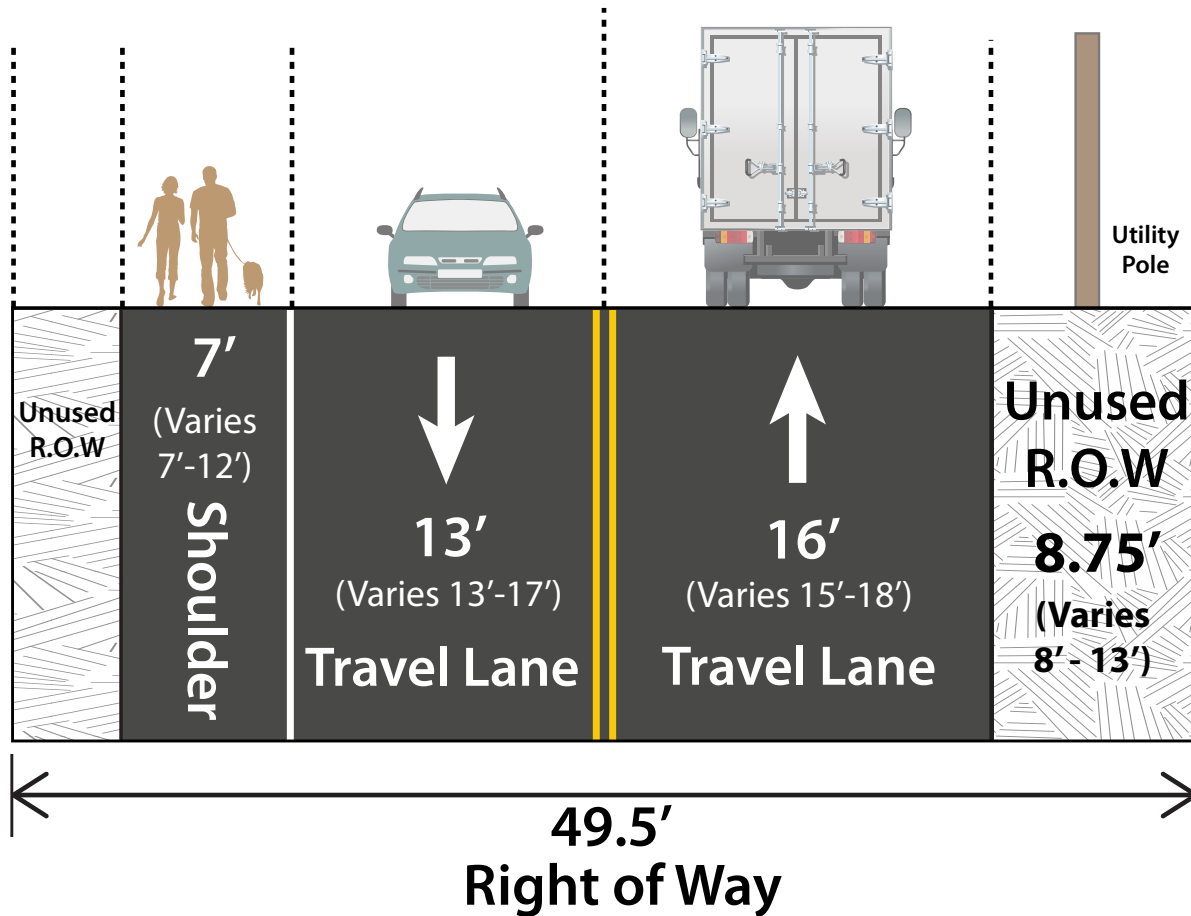
BENMONT AVENUE:

ALTERNATIVE DESIGN

SECTION DIAGRAMS FOR THE ALTERNATIVE DESIGN

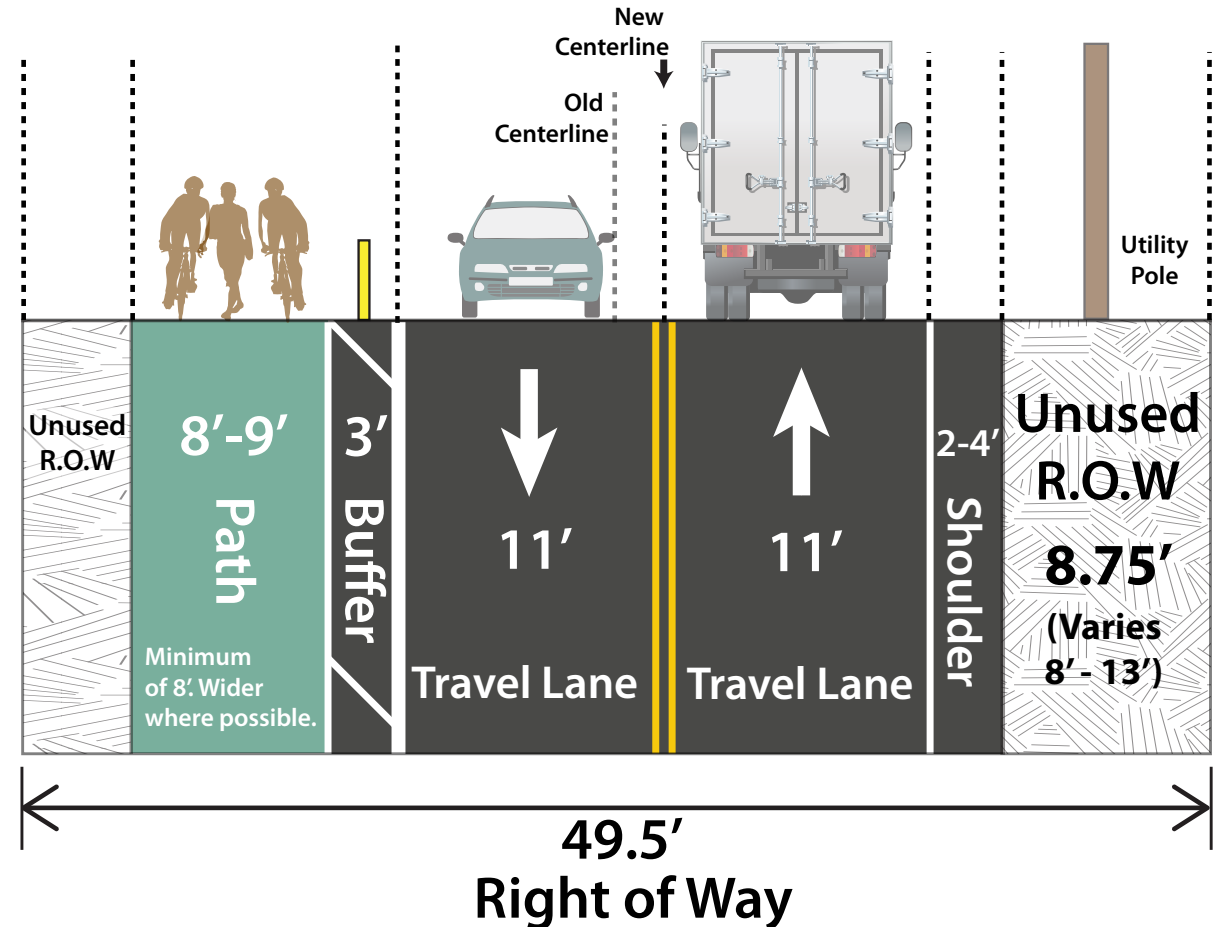
EXISTING CONDITIONS

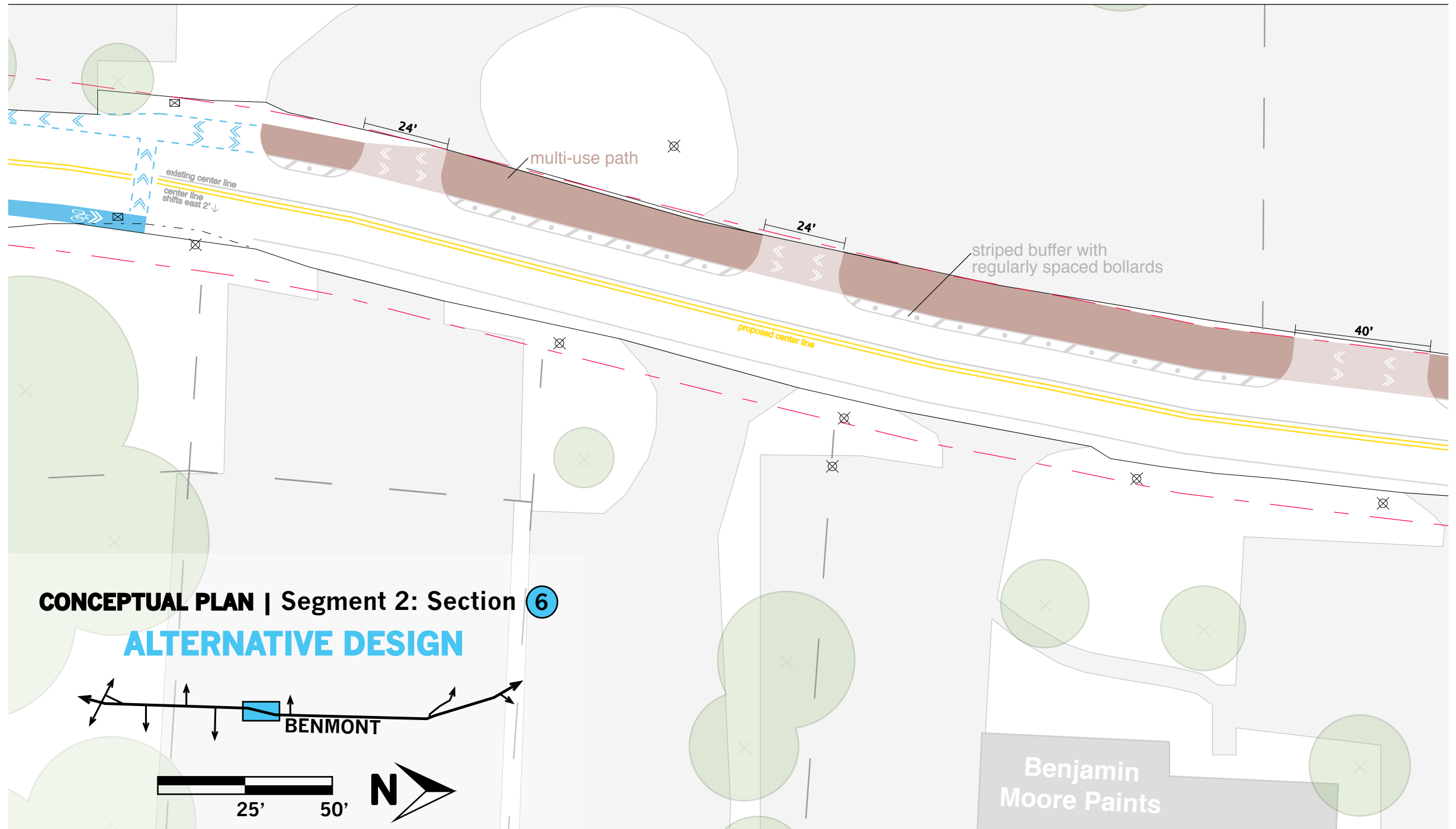
Currently, Segment 2 contains almost no bicyclist or pedestrian facilities, the width of travel lanes and shoulders vary, and the conditions are extremely unsafe.



ALTERNATIVE DESIGN

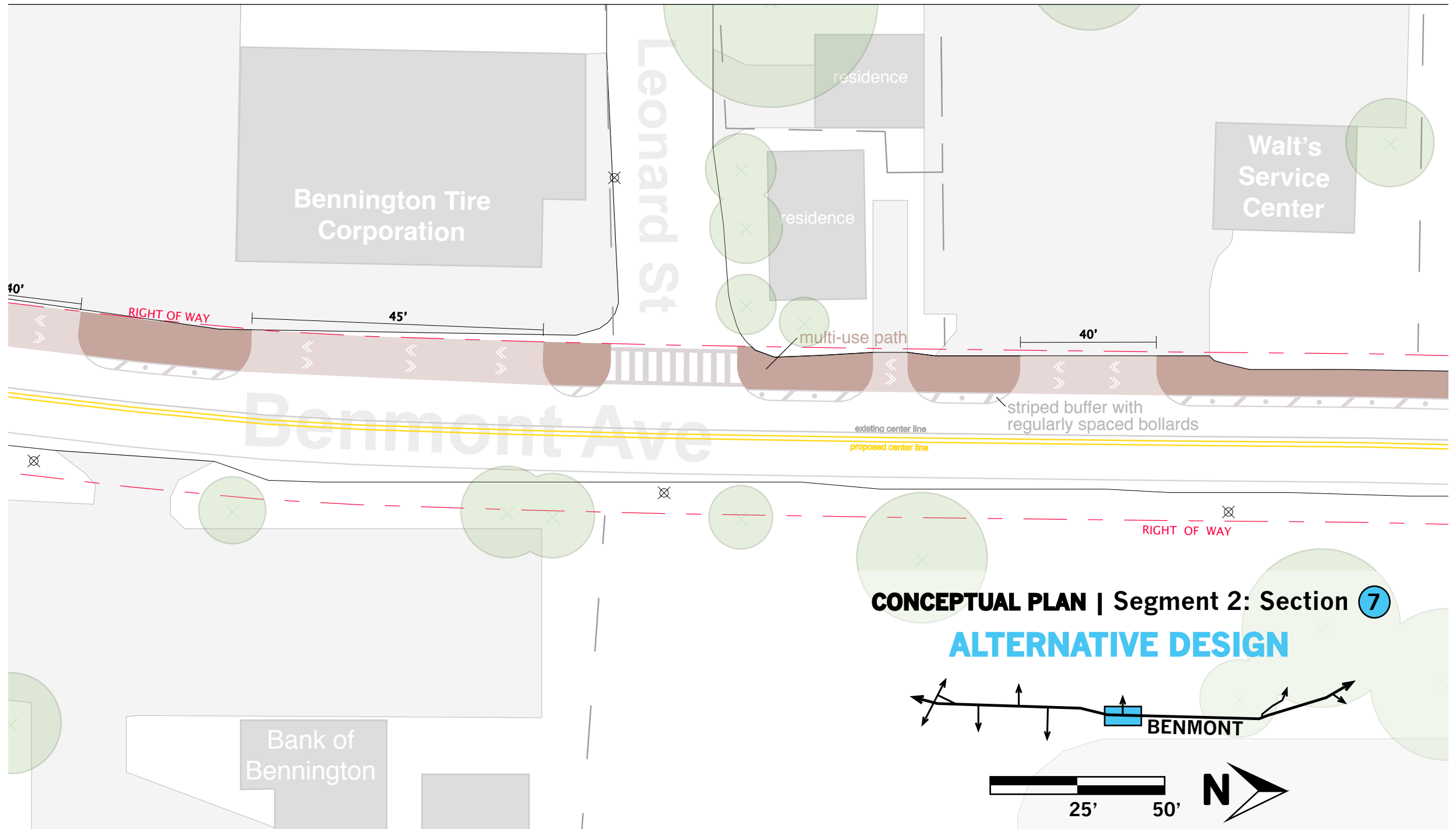
The proposed Alternative Design is similar in layout to the main Conceptual Design, but instead of a green strip, the Alternative Design uses painted buffers and reflective bollards to separate the path from vehicular travel lanes.

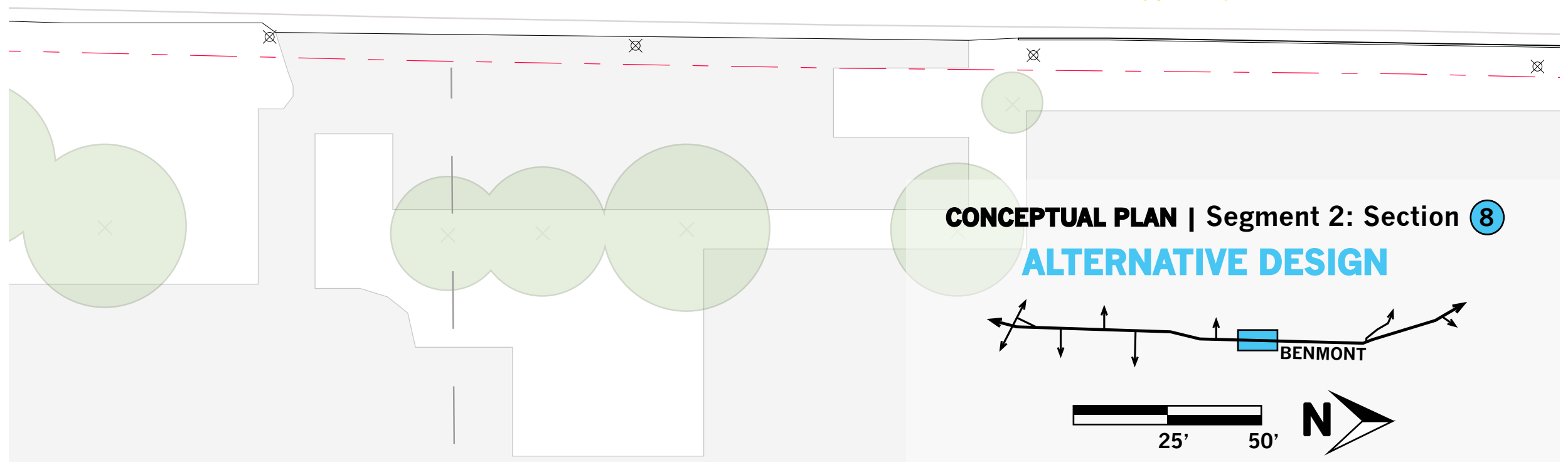
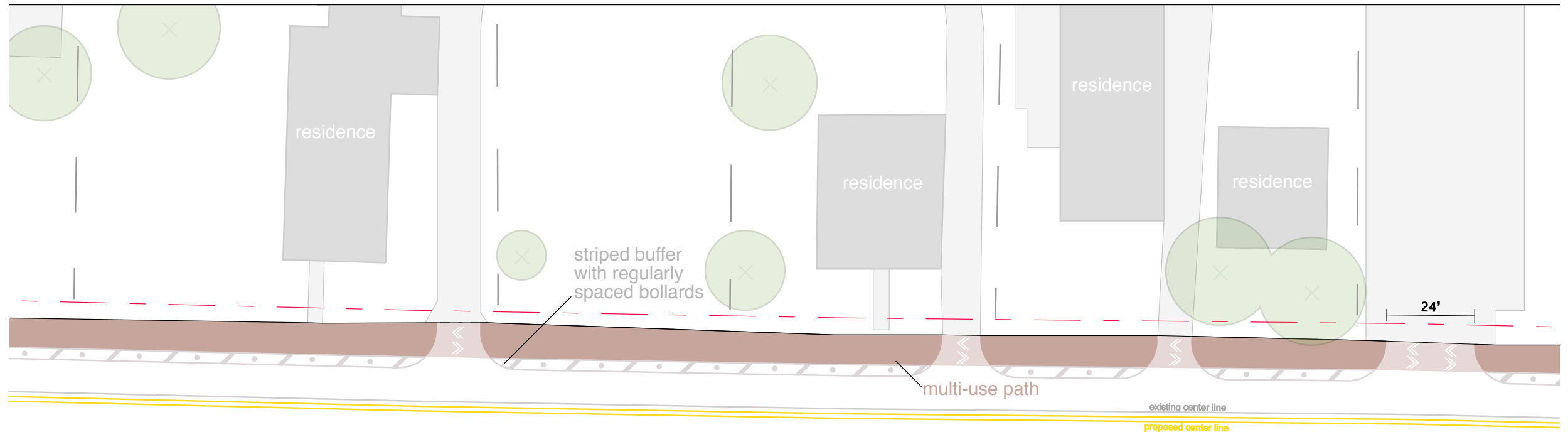


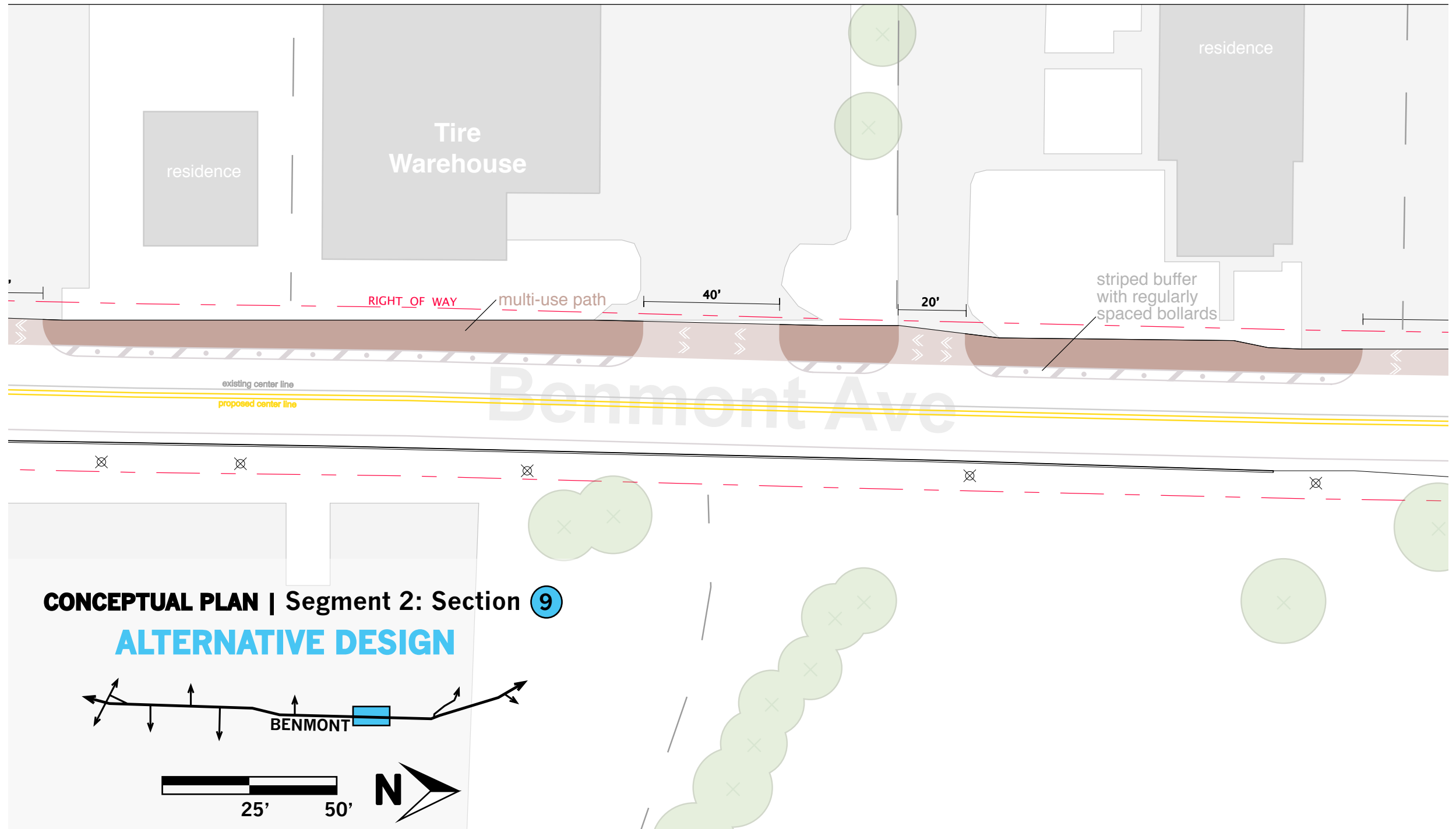


CONCEPTUAL PLAN | Segment 2: Section 6
ALTERNATIVE DESIGN

Benjamin
Moore Paints

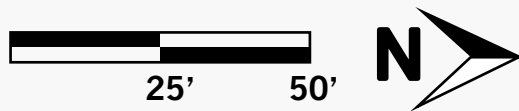
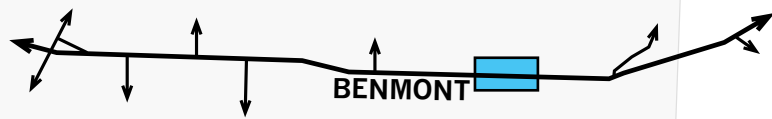


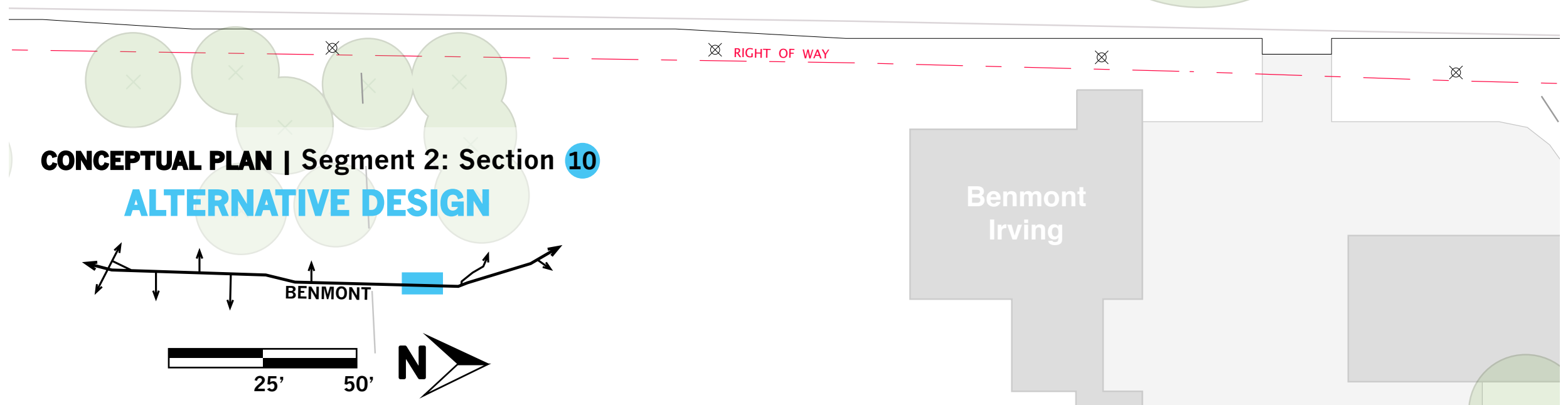
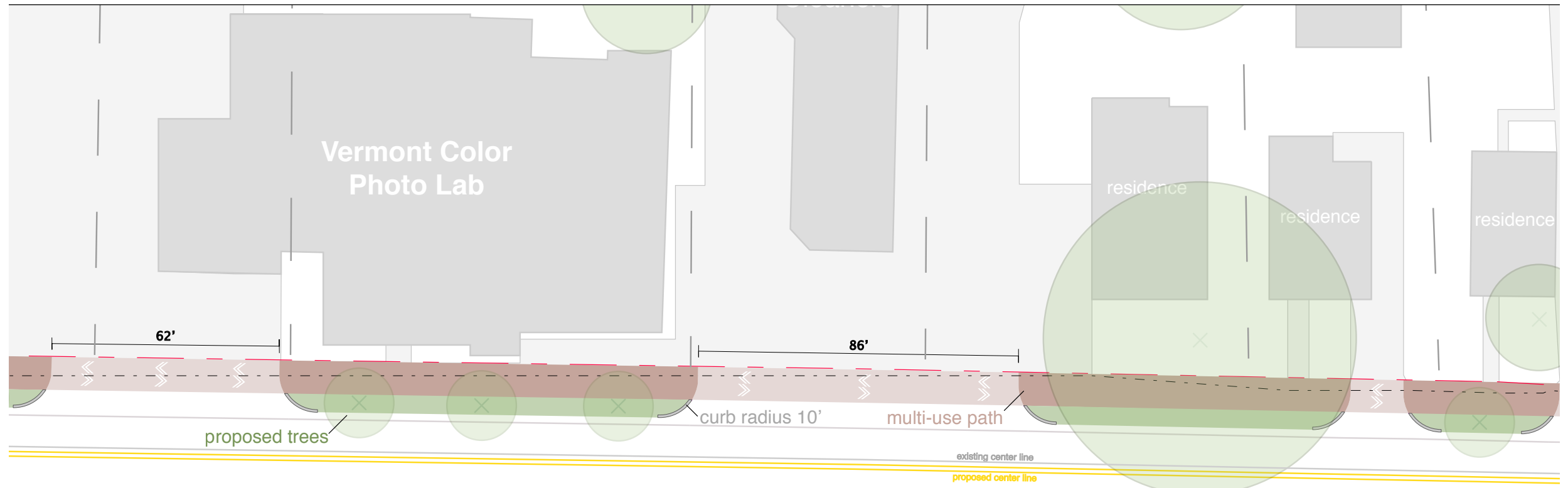




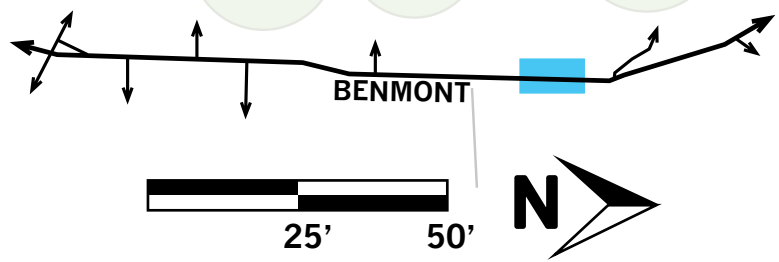
CONCEPTUAL PLAN | Segment 2: Section 9

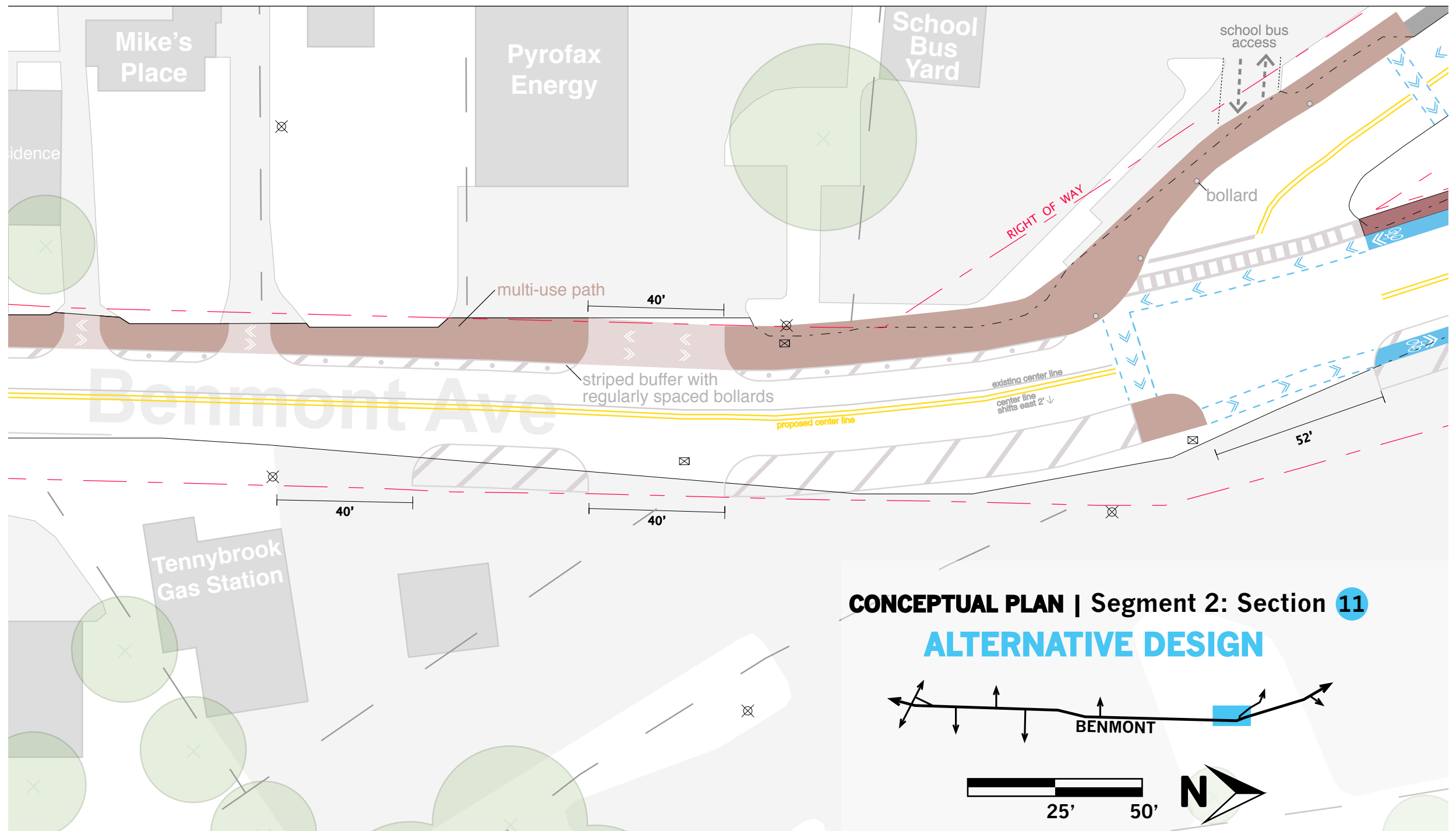
ALTERNATIVE DESIGN



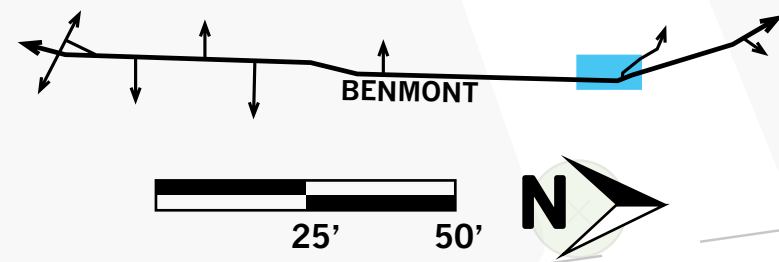


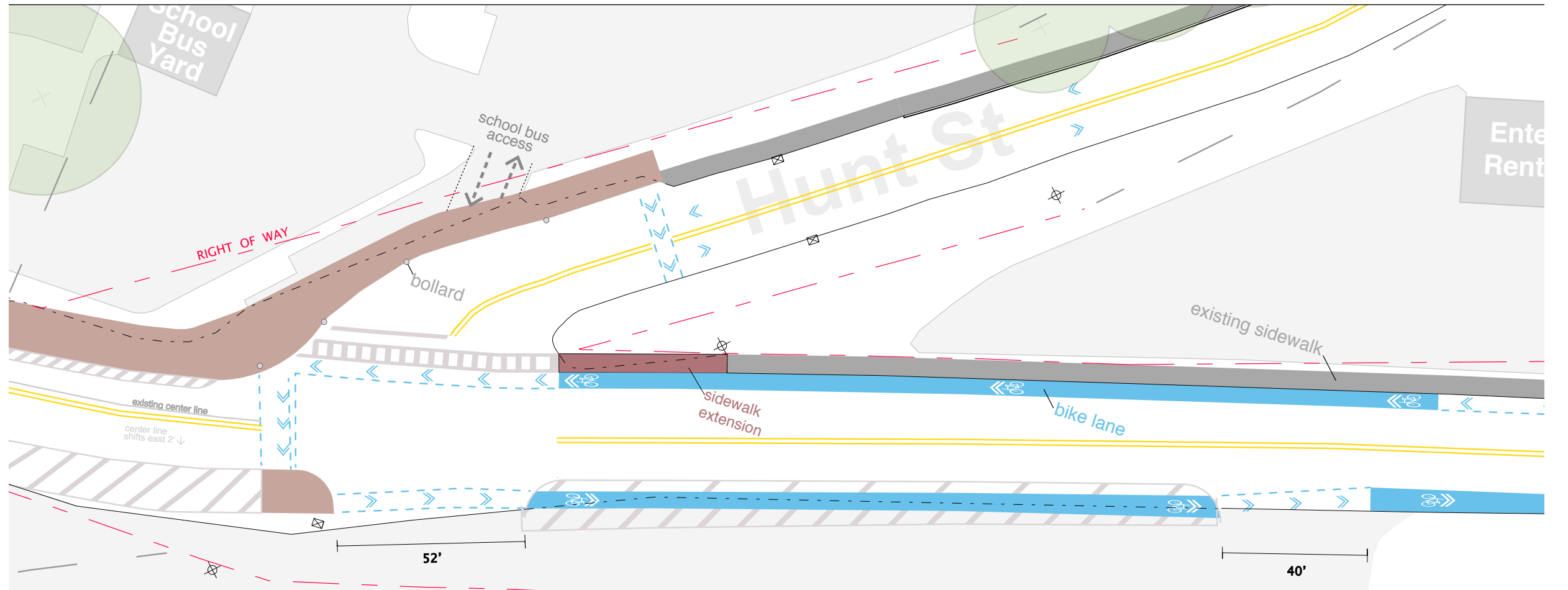
CONCEPTUAL PLAN | Segment 2: Section 10
ALTERNATIVE DESIGN





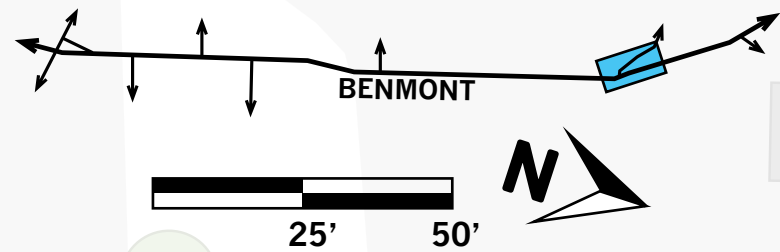
CONCEPTUAL PLAN | Segment 2: Section 11
ALTERNATIVE DESIGN





CONCEPTUAL PLAN | Segment 3: Section 12

ALTERNATIVE DESIGN



Apollo Fuels

Enter Rent

IMPACTS & FEASIBILITY

Cost Estimate

The BCRC conducted a full construction cost estimate for the conceptual design, according to figures sourced from the Vermont Agency of Transportation. Based on this cost estimate, the total cost of each of the two alternatives is listed below. This includes the cost of construction for Segment 1, which does not differ between the two alternatives, but does not include certain optional elements of the design, such as sidewalk extensions. A full, itemized estimate can be found in the appendix of this report.

Preferred Conceptual Plan:	\$203,874.77
Alternative Design:	\$148,832.09

Design Standards

1. Vehicle Lane Width

Vermont State Design Standards for Urban Minor Arterials:

- Lane Width = 10 to 12 feet. 11 feet is commonly used.
- Shoulder where no bicycles are to be accommodated = 2 feet to vertical curve and 1 foot to sloped curve.

National Association of City Transportation Officials (NACTO):

- “Lane widths of 10 feet are appropriate in urban areas and have a positive impact on a street’s safety without impacting traffic operations.”

- “Lanes greater than 11 feet should not be used as they may cause unintended speeding and assume valuable right of way at the expense of other modes.”

2. Shared Use Path

“The minimum width for a two-directional shared use path is 10 ft. Typically, widths range from 10 to 14 ft...In very rare circumstances, a reduced width of 8 ft may be used...” (AASHTO)

3. Bike Lane Width

“The desirable bike lane width adjacent to a curb face is 6 feet. The desirable rideable surface adjacent to a street edge or longitudinal joint is 4 feet, with a minimum width of 3 feet.” (NACTO)

<http://nacto.org/cities-for-cycling/design-guide/bike-lanes/conventional-bike-lanes/>

“On extremely constrained, low-speed roadways with curbs but no gutter, where the preferred bike lane width cannot be achieved despite narrowing all other travel lanes to their minimum widths, a 4-ft wide bike lane can be used.” (AASHTO)

Natural & Cultural Resources

The proposed project will not significantly impact any known natural or cultural resources.

Right-of-Way

The public right of way along Benmont Avenue is 3-rods

wide (49.5 feet wide). Alternatives A & B are both within the public right of way. Alternative A is built to the western edge of the ROW between the mill and Hunt Street. If the project is built using federal funds through the VTrans Municipal Assistance Bureau, construction easements will be required where construction comes within 10 feet of the edge of the right of way.

Public Involvement

A Local Concerns Meeting was held on November 18, 2014 at the Benmont Mill. All abutting residents, property owners, and businesses were notified. 17 people attended. (See Appendix for meeting notes.)

Maintenance

Pavement Markings

Common materials used for pavement markings are paint, thermoplastic, and epoxy. Paint is the least expensive and least durable option. Epoxy is a durable material that can last 3-5 years depending on traffic volume and snowplow use. Thermoplastic lasts 3-6 years but is more susceptible to snowplow damage.

Green Strips

Alternative A has sections of grass strips that will need routine maintenance.

Snow

The on-street multi-use path will be a year-round facility

and will need to be plowed, sanded and salted in the winter.

Utility Impacts

No utility poles will need to be moved to construct either alternative.

Several fire hydrants are close to the proposed path in Alternative A and may need to be relocated. [VERIFY]

Drain Inlets

There are drain inlets where the proposed path and bike lanes will go. The drain inlets will need to be relocated or fitted with grates that minimize risk to cyclists.

Feasibility

The project (both alternatives) is feasible to build and will create public benefits for a reasonable cost. The project will be constructed within the public right of way, although some temporary construction easements may be required if federal funds are used. The benefits of the project include improved safety for all road users, and the creation of a much-needed safe walking and cycling route between downtown Bennington and the commercial and residential neighborhoods to the north, as well as a connection to the planned Kocher Drive Multi-use Path and the Ninja Bicycle Path.

Compatibility with Town Plan and Regional Plans

Improving bicycle and pedestrian facilities along Benmont Avenue are consistent with town and regional plans. Bennington’s Town Plan Policies and Recommendations state “the safety of all users of the transportation system, including pedestrians, bicyclists... and motor vehicle drivers shall be accommodated and balanced in all transportation and developments projects.” Likewise, the Regional Plan’s Policies and Actions 9.7.10 recommend all “highway construction and reconstruction projects should be designed to accommodate bicycle use.” Most of Benmont Ave is zoned as urban mixed use with many businesses and residences, combining a high amount of vehicle traffic and pedestrian and bicyclist traffic. According to the Regional Plan, “In village and urban areas sidewalks should be sited and planned so as to offer convenient and pleasant travel routes between adjacent commercial areas while connecting to nearby residential neighborhoods.” Benmont Ave is one of the only direct routes between Northside Dr and downtown Bennington. Table 6.2 of the Town Plan has identified adding sidewalks and curbing, upgrading existing sidewalks, completing sidewalk connections and adding crosswalks on Benmont Ave as a project need. Pedestrian and bicycle improvements along Benmont Ave will help connect the commercial and residential areas of Northside Dr with downtown Bennington, extending the “Bennington Pathway” system. Improvements to roads such as Benmont Ave, according to the Town Plan’s Policies and Recommendations 6.7.20, will need “to identify and eliminate roadway hazards and provide... other facilities

to support bicycle use.” The Town Plan recommends the addition of designated pedestrian and bicycle lanes and narrower vehicle travel lanes where appropriate. The Regional Plan’s Policies and Actions 9.7.11 goes on to encourage “the development and maintenance of safe pedestrian pathways in villages, hamlets, neighborhoods, and all areas of concentrated residential or commercial development. Traffic calming techniques also should be used in these areas to reduce vehicle speeds and enhance safety.”

EXISTING CONDITIONS

Project Area

- Length = 0.937 miles
- Context Zone = Urban Mixed Use
- The project area is within the Federal Urban Area Boundary

Road Classification

- Minor Arterial
- Town Highway #7
- Class 2 Town Highway
- Federal Aid #FAU S1006

Benmont Avenue ends at the Hunt Street Bridge. North of the bridge its name changes to Northside Drive.



Existing Sidewalks: While there are some existing pedestrian facilities in Segments 1 and 3 of Benmont, they end abruptly in Segment 2.



No Sidewalks: The majority of Segment 2 has no sidewalks for pedestrians, who must walk along the edge of often-poorly-defined vehicular travel lane.



Cyclists: Many people already use Benmont Ave. for cycling, despite the unsafe conditions. A few simple improvements would create a much safer environment.



Pavement: There is enough existing pavement to accommodate nearly all of the needed improvements.



Entrances/Exits: For many lengthy sections, there are no clear entrances or exits to adjacent parking lots.



Dangerous Conditions: Sections of Benmont are unsafe for vehicles, pedestrians, and cyclists.

Crash Map 2006-2012

Speed

Speed limit = 30 mph

Speed Study

Northern Section

- Median Speed (northern section) = 34 mph
- 85th Percentile Speed = 37 mph
- 95th Percentile Speed = 40 mph
- Percent Speeding 1 mph or more = 78.7 %
- Percent Speeding 5 mph or more = 39.3%
- Percent Speeding 10 mph or more = 5.2%

Southern Section

- Median Speed (northern section) = 27 mph
- 85th Percentile Speed = 31.5 mph
- 95th Percentile Speed = 34 mph
- Percent Speeding 1 mph or more = 26.1 %
- Percent Speeding 5 mph or more = 39.3%
- Percent Speeding 10 mph or more = 0.03%

(See Appendix for details)

Source: BCRC

Traffic Volume

2013 AADT

- 6,400 (between Main & County Streets)
- 9,700 (between County and Hunt Street)

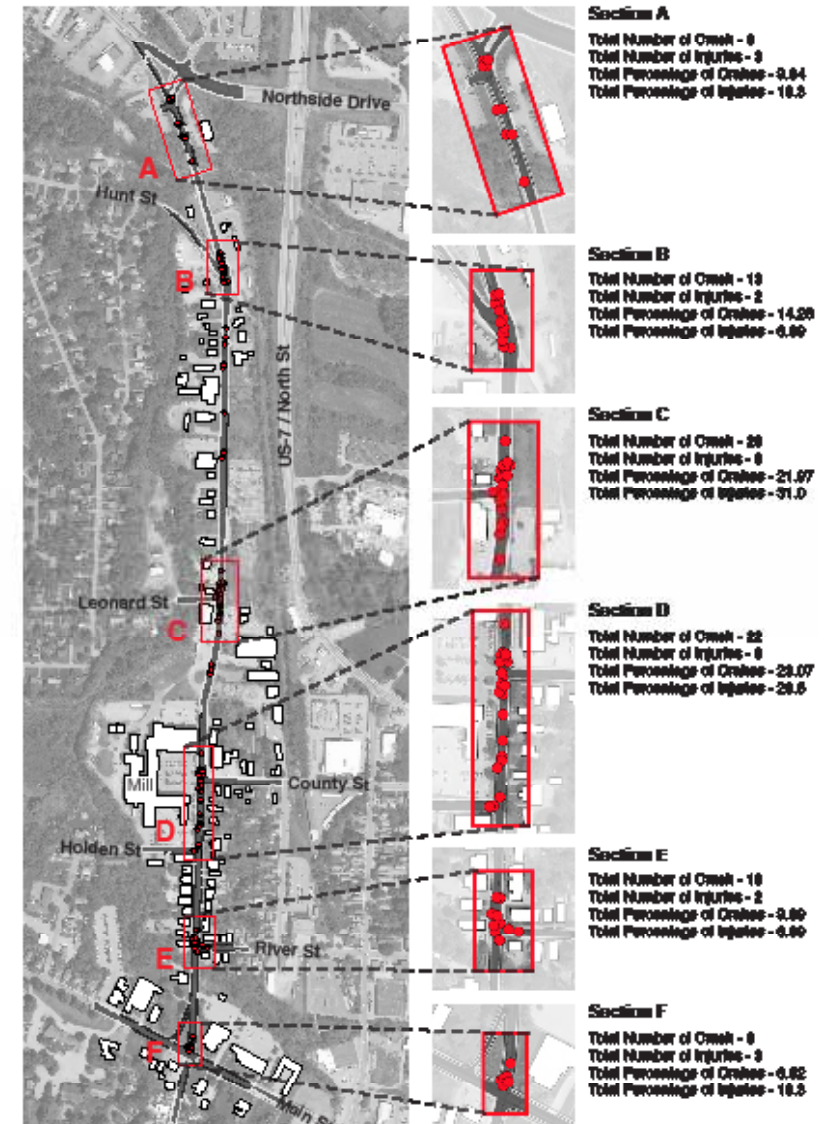
Source: VTrans

Bicycle/Pedestrian Counts (Peak Hour)

Date	Total Bike/ Ped	Pedestrians Only	Bikes Only
6/30/14 (midday)	17	10	7
7/2/14 (midday)	12	10	2
7/1/14 (AM)	14	7	7
7/3/14 (AM)	23	21	2
AVERAGE	16.5	12	4.5

Source: VTrans

Benmont Crash Data



BENMONT AVENUE ACTIVE TRANSPORTATION STUDY

Cost Estimate - Appendix

This cost estimate was prepared by BCRC staff. Construction cost estimates was primarily determined from the VTrans Estimating Resources (vtransestimating.vermont.gov). The Town of Bennington Highway Department provided supplementary consultation. This estimate is based on limited available site information. There may be additional costs due to unforeseen issues that would be identified either during the detailed design phase or during construction.

Estimated Total Cost Alternative A – \$203,874
 Estimated Total Cost Alternative B – \$148,832

\$55,042 (Difference)

Segment 1:

Features include:

- painted on-road bike lanes on the existing pavement
- shared travel lane markings (sharrows) to indicate to cyclists and vehicle that they are travelling in a shared lane

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
646.493	DURABLE LETTER OR SYMBOL, EPOXY PAINT	EACH	54	\$125.00	\$6,750.00
646.50	DURABLE CROSSWALK MARKING	LF	272	\$14.09	\$3,834.45
646.44	DURABLE 8 INCH WHITE BIKE LANE LINE	LF	2207	\$1.73	\$3,818.27
646.41	4 INCHES DASHED BIKE LANE LINE	LF	579	\$1.31	\$758.49

Construction Cost:	\$15,161.21
Contingency 25%:	\$3,790.30
Estimated Total Cost:	\$18,951.51

Optional feature of a painted bike lane

900.675	PAINTED BIKE LANE	SY	716	\$16.59	\$11,877.46
Segment 1 Total Est Cost:					\$30,828.97

Segment 2A

Features include:

- a 9' wide multiuse path (not painted) with partial pavement expansion in select areas*
- an at grade vegetative buffer separating the path from vehicular traffic
- cement curbing (10' radius) at each drive way access
- relocation of centerline to accommodate multiuse path

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
203.15	COMMON EXCAVATION	CY	800	\$12.00	\$9,600.00
203.28	EXCAVATION OF SURFACES AND PAVEMENTS	CY	1086	\$35.00	\$38,021.08
646.493	DURABLE LETTER OR SYMBOL, EPOXY PAINT	EACH	74	\$125.00	\$9,250.00
646.41	4 INCHES DASHED BIKE LANE LINE	LF	917	\$1.31	\$1,201.27
646.40	DURABLE 4 INCH WHITE LINE	LF	4423	\$1.31	\$5,794.13
646.41	DURABLE 4 INCH YELLOW LINE	LF	2118	\$1.36	\$2,880.81
618.30	DETECTABLE WARNING SURFACE	SF	36	\$44.08	\$1,586.88
619.14	BOLLARDS	EACH	4	\$348.64	\$1,394.56
406.25	BITUMINOUS CONCRETE PAVEMENT, TYPE II	TON	55	\$200.00	\$10,980.28
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	174	\$31.87	\$5,543.54
649.11	GEOTEXTILE FOR ROADBED SEPARATOR	SY	522	\$1.53	\$798.39

651.15	SEED	LB	2	\$8.23	\$20.30
651.18	FERTILIZER	LB	38	\$4.60	\$172.72
651.25	HAY MULCH (3")	TON	17	\$576.44	\$10,020.45
616.26	PRECAST REINFORCED CONCRETE CURB, TYPE B	LF	14	\$37.97	\$531.58
406.25	BITUMINOUS CONCRETE PAVEMENT, TYPE III	TON	1	\$200.00	\$113.68
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	0	\$31.87	\$6.11

Construction Cost: \$33,232.41
 Contingency 25%: \$8,308.10
Estimated Total Cost: \$41,540.51

Optional feature of a painted bike lane

900.675	PAINTED BIKE LANE	SY	709	\$16.59	\$11,762.31
Segment 3A Total Est Cost:					\$53,302.82

Segment 3B:

Features include:

- painted on-road bike lanes on the existing pavement
- shared travel lane markings (sharrows) to indicate to cyclists and vehicle that they are travelling in a shared lane

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
646.493	DURABLE LETTER OR SYMBOL, EPOXY PAINT	EACH	66	\$125.00	\$8,250.00
646.50	DURABLE CROSSWALK MARKING	LF	70	\$14.09	\$991.37
646.44	DURABLE 8 INCH WHITE BIKE LANE LINE	LF	1142	\$1.73	\$1,974.88
646.41	4 INCH DASHED BIKE LANE LINE	LF	454	\$1.31	\$594.74
619.14	BOLLARDS	EACH	8	\$348.64	\$2,789.12
646.40	DURABLE 4 INCH WHITE LINE	LF	470	\$1.31	\$615.44
646.44	DURABLE 8 INCH WHITE LINE	LF	370	\$1.73	\$640.10

Construction Cost: \$15,855.65
 Contingency 25%: \$3,963.91
Estimated Total Cost: \$19,819.56

Optional feature of a painted bike lane

900.675	PAINTED BIKE LANE	SY	709	\$16.59	\$11,759.99
Segment 3B Total Est Cost:					\$31,579.55

Optional Sidewalk Extension – West Main Street

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
203.28	EXCAVATION OF SURFACES AND PAVEMENTS	CY	3	\$35.00	\$120.46
203.15	COMMON EXCAVATION	CY	1	\$12.00	\$12.56
616.41	REMOVAL OF EXISTING CURB	LF	40	\$5.18	\$207.20
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5"	SY	25	\$59.63	\$1,477.50
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	1	\$2.35	\$2.46
616.26	PRECAST REINFORCED CONCRETE CURB, TYPE B	LF	54	\$37.97	\$2,061.77
618.30	DETECTABLE WARNING SURFACE	SF	17	\$44.08	\$749.36

Construction Cost: \$4,631.30
 Contingency 25%: \$1,157.83
Estimated Total Cost: \$5,789.13

Optional Sidewalk Extension – Holden Street

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
203.28	EXCAVATION OF SURFACES AND PAVEMENTS	CY	3	\$35.00	\$106.41

651.35	TOPSOIL	CY	102	\$50.00	\$5,077.56
651.15	SEED	LB	15	\$8.23	\$125.76
651.18	FERTILIZER	LB	233	\$4.60	\$1,070.17
651.25	HAY MULCH (3")	TON	0	\$576.44	\$219.90
616.26	PRECAST REINFORCED CONCRETE CURB, TYPE B	LF	452	\$37.97	\$17,170.41
406.25	BITUMINOUS CONCRETE PAVEMENT, TYPE III	TON	18	\$200.00	\$3,671.95
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	9	\$35.00	\$319.51
				Construction Cost:	\$114,706.20
				Contingency 25%:	\$28,676.55
				Estimated Total Cost:	\$143,382.75

*Note: The cost estimate of segment 2A does not include the painting of the multiuse path

Optional feature of a painted bike lane

900.675	PAINTED MIXED-USE PATH	SY	1241	\$16.59	\$20,592.30
				Segment 2A Total Est Cost:	\$163,975.75

Segment 2B

Features include:

- separation of the 9-foot wide multiuse path (painted) from vehicles with a striped buffer and reflective bollards spaced at six-foot increments
- relocation of centerline to accommodate multiuse path

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
646.85	REMOVAL OF EXISTING PAVEMENT MARKINGS	SF	2118	\$0.39	\$826.11
646.493	DURABLE LETTER OR SYMBOL, EPOXY PAINT	EACH	74	\$125.00	\$9,250.00
646.41	4 INCHES DASHED BIKE LANE LINE	LF	917	\$1.31	\$1,201.27
646.41	DURABLE 4 INCH YELLOW LINE	LF	2118	\$1.36	\$2,880.81

646.40	DURABLE 4 INCH WHITE LINE	LF	4497	\$1.31	\$5,891.40
646.44	DURABLE 8 INCH WHITE LINE	LF	2047	\$1.73	\$3,541.31
618.30	DETECTABLE WARNING SURFACE	SF	36	\$44.08	\$1,586.88
619.14	BOLLARDS	EACH	86	\$348.64	\$29,983.04
900.675	PAINTED MIXED-USE PATH	SY	1982	\$16.59	\$32,888.00
				Construction Cost:	\$88,048.82
				Contingency 25%:	\$22,012.20
				Estimated Total Cost:	\$110,061.02

Segment 3A:

Features include:

- brief section of vegetated buffer between cyclists and vehicular traffic
- shared travel lane markings (sharrows) to indicate to cyclists and vehicle that they are travelling in a shared lane

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
203.28	EXCAVATION OF SURFACES AND PAVEMENTS	CY	174	\$35.00	\$6,094.20
203.15	COMMON EXCAVATION	CY	0	\$12.00	\$5.59
646.493	DURABLE LETTER OR SYMBOL, EPOXY PAINT	EACH	66	\$125.00	\$8,250.00
646.50	DURABLE CROSSWALK MARKING	LF	70	\$14.09	\$991.37
646.41	4 INCHES DASHED BIKE LANE LINE	LF	454	\$1.31	\$594.74
646.44	DURABLE 8 INCH WHITE BIKE LANE LINE	LF	1142	\$1.73	\$1,974.88
619.14	BOLLARDS	EACH	8	\$348.64	\$2,789.12
646.40	DURABLE 4 INCH WHITE LINE	LF	235	\$1.31	\$307.72
646.44	DURABLE 8 INCH WHITE LINE	LF	185	\$1.73	\$320.05
618.30	DETECTABLE WARNING SURFACE	SF	5	\$44.08	\$220.40
651.35	TOPSOIL	CY	16	\$50.00	\$819.50

203.15	COMMON EXCAVATION	CY	1	\$12.00	\$11.09
616.41	REMOVAL OF EXISTING CURB	LF	32	\$5.18	\$165.76
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5"	SY	22	\$59.63	\$1,305.23
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	1	\$2.35	\$2.17
616.26	PRECAST REINFORCED CONCRETE CURB, TYPE B	LF	50	\$37.97	\$1,898.50
618.30	DETECTABLE WARNING SURFACE	SF	44	\$44.08	\$1,939.52

Construction Cost: \$5,428.69
 Contingency 25%: \$1,357.17
Estimated Total Cost: \$6,785.87

Optional Sidewalk Extension – Hunt Street

Item Numb.	Description	Unit	Est. QTY	Unit Price	Total
203.28	EXCAVATION OF SURFACES AND PAVEMENTS	CY	4	\$35.00	\$129.64
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5"	SY	27	\$59.63	\$1,590.13
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	CY	1	\$2.35	\$2.65
618.30	DETECTABLE WARNING SURFACE	SF	5	\$44.08	\$220.40

Construction Cost: \$1,942.82
 Contingency 25%: \$485.70
Estimated Total Cost: \$2,428.52

South Benmont Avenue

Speed Limit 30 mph	Both Directions	Northbound	Southbound
Vehicles	298	132	166
Mean Speed	26.9	26.6	27.1
Mode Speed	27	25	27
Median Speed (50 th Percentile)	27	26	27
85 th Percentile Speed	31.45	31	32
95 th Percentile Speed	34	33.45	34
Top Speed mph	36	36	36
% Speeding 5 mph or more	3.6%	3.7%	3.6%
% Speeding 10 mph or more	.03%	.07%	0%
% Speeding (31 mph or greater)	26.1%	22.7%	28.9%

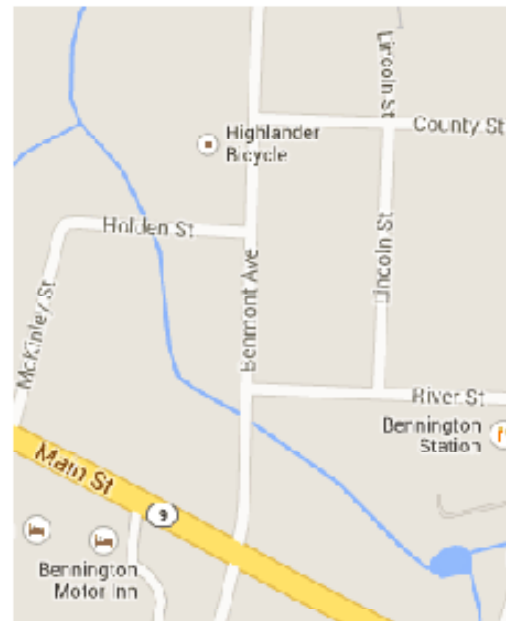
North Benmont Avenue

Speed Limit 30 mph	Both Directions	Northbound	Southbound
Vehicles	514	246	268
Mean Speed	33.7	33.3	34.1
Mode Speed	34	34	35
Median Speed (50 th Percentile)	34	33	34
85 th Percentile Speed	37.05	37	38
95 th Percentile Speed	40	39.75	40.65
Top Speed mph	45	44	45
% Speeding 5 mph or more	39.3%	33.3%	44.7%
% Speeding 10 mph or more	5.2%	5.2%	8.9%
% Speeding (31 mph or greater)	78.7%	77.2%	80.2%

Notes:

Speed data was collected three times between County St and River St on:

- Tuesday 4/29 from 8:30-9:30 am
- Monday 5/5 from 1:15-1:45 pm
- Thursday 5/5 from 4:30-5:30 pm



Notes:

Speed data was collected three times between Hunt St and Leonard St on:

- Thursday 4/24 from 7:30-8:30 am
- Thursday 4/24 from 4:30-5:30 pm
- Friday 4/24 from 12:00-1:00 pm



Public Meeting Comments

Public Comments: Benmont Avenue Public Interest Meeting
Tuesday November 18, 2014

Problems

General:

- Sidewalk conditions
- lack of crosswalks
- Accidents, especially in poor weather and at intersections
- Dark, not enough streetlights
- No place to bank snow during the winter
- No shade/ green strip in the summer

County Street intersection:

- County intersection, no opportunity to cross
- At the County Benmont intersection left turning cars are waiting and others try to pass when they shouldn't

Poor visibility

- On street parking reduces visibility
- Blind corners/ shoulder by off the wall
- Hunt street has poor visibility around the bus fence
- Corner deli and Laundromat is a blind corner

Other

- Street is well used by tractor trailer trucks, the width of the road would not support a bike lane
- Farm stand causing sudden stops
- Access for people with disabilities, for example Hunt Street bridge is too steep for a motorized wheelchair to climb
- Passing in areas where it is unsafe to pass
- Allied Auto needs to maintain its level of parking
- Number of pedestrians that walk Benmont each day?
- Bikes riding against traffic because of no bike lanes or no shoulder on the correct side of the street
- At gas stations people do not know where to pull in, increased risk for accidents because pedestrians are crossing there because they see the bridge sidewalk is on the other side
- Congestion at Taco Bell/ KFC intersection
- Pedestrian barrier so people make informal paths to get around it
- Emergency vehicle access

Solutions

- Benmont to Aldi's longer crossing time
- Street trees
- Increase neighborhood connectivity with pocket parks or playground
- Develop vacant properties (may have a problem with restrictive zoning)
- Better sidewalks all the way up the street and better signage
- Narrow lanes increase safety (dissemt to not take away lane width needed for large vehicles)
- Landscaping and beautification
- Traffic light at County Street with emergency access
- Highly visible crosswalks
- Improve turning lanes / roundabout
- Curb cuts that allow large vehicles to turn
- Bus shelter on the part closer to Kocher drive