

**Town of Windsor
Bicycle & Pedestrian Scoping Study
Final Report**



Submitted by:

Broadreach Planning & Design

In conjunction with

Lamoureux & Dickinson Consulting Engineers

Heritage Landscapes, LLC

University of Vermont Consulting Archeology Program

December 5, 2014

A table of contents will be added to the final version of this report.

I. INTRODUCTION

A. OVERVIEW

This Windsor Bicycling and Pedestrian Scoping Study is examining the most appropriate ways to improve bicycling and walking conditions at various locations within the Town of Windsor, Vermont. **Figure 1** shows the various specific study areas within the Town. The most northerly study area along Route 5 extends in to the Town of Hartland so that the potential bicycling improvements can extend to the Park & Ride site close to Interstate 91.

The Town has been steadily upgrading the sidewalks in the downtown area of the Town. The current study examines how to upgrade some of these areas even further with better crosswalks, bicycling conditions and alternate routes around the downtown. It also considers how to upgrade bicycling conditions on Route 5 north of the downtown area to the Park & Ride lot and Interstate interchange.

The Town organized a Steering Committee of local officials, citizens, and Town staff. After circulating a Request for Proposals, the Town selected a consulting team led by Broadreach Planning & Design, with assistance from Lamoureux & Dickinson, Heritage Landscapes LLC and the University of Vermont Consulting Archeology Program (the BRPD Team).

B. PURPOSE AND NEED

The purpose of the extension of bicycle and pedestrian improvements is to provide better pedestrian connections between existing bicycling and walking facilities and to create safer conditions for walkers along the railroad and to provide better mobility for walkers of all ages and abilities in and around Windsor downtown.

Needs for the improvements include:

- The existing use of the railroad tracks as a pedestrian trail by local residents as a way to reach regular shopping destinations at Price Chopper and Cumberland Farms;
- The number of people observed walking across Route 5 between Eddies Place (Paradise Park) and the Price Chopper;
- The tendency of motorists to continue to drive at 40 MPH into the downtown area;
- The number of walkers on the sidewalks in the downtown area; and

- The lack of continuous paved shoulders on Route 5 between the downtown area and the Park & Ride lot near the Interstate 91 interchange.

C. WALKERS & BICYCLISTS

The Town would like to improve bicycling and walking conditions for people of all ages and abilities. This means that as much as possible, the improvements should be usable by school children, elderly citizens and those with disabilities, as well as experienced bicyclists and walkers. They should also enhance conditions for skilled bicyclists. The *Existing Conditions* summary in **Appendix A** includes more information on the projected users of the improvements.

D. REPORT DEVELOPMENT & ORGANIZATION

This Scoping Report is the product of the Steering Committee with assistance from the BRPD Team. It describes the existing conditions in the Study Area, the recommendations for improvements, and the alternatives and analysis that went into developing them. The BRPD Team formatted the report for double-sided printing; blank pages are intentional. This report includes earlier reports on existing conditions in **Appendix A** and alternative analysis in **Appendix B**.

II. EXISTING CONDITIONS

A. TRANSPORTATION FACILITIES

Main Street runs through the center of the Windsor downtown. It is a Class 1 Town Highway from just south of the Price Chopper at the northern end to the southern side of the intersection with Lowell Street on the south side of the American Precision Museum on the southern end.

Main Street is 40 feet wide in the downtown between the intersection with Bridge Street and the intersection with State Street. It consists of two 12-foot wide travel lanes and eight-foot wide parking lanes. At the intersection with State Street, the road widens to about 50 feet to allow the introduction of a northbound left turn lane. It continues at 50-foot wide north of the State Street intersection to just a bit north of the Peoples Bank. In this section, the travel lanes are about 13 feet wide with the rest of the roadway on either side of the travel lanes used for parking. North of Peoples Bank, Main Street gradually narrows back to 40 feet wide.

At the northern end of the Class 1 Town Highway, close to the Constitution House, Main Street widens to 44 feet. On the east side is a curb and a parking lane; the travel lanes are about 11.5 feet wide. A wide paved shoulder lies on the west side of the road with no curb. Further north past the Price Chopper, the road is again 40 feet wide, with 12-foot travel lanes and eight-foot wide paved shoulders. This cross

section continues to the base of the rise in elevation at the southern end of the curves near the golf course.

As the road rises, the pavement narrows to approximately 24 feet wide. The road consists of two travel lanes with six inches to no paved shoulder outside of the travel lanes. Near the top of the rise, the road again has a 40-foot wide cross section. The road is lined on both sides in this area by steep side slopes.

The 40-foot cross section continues along Route 5 to a point approximately 700 feet south of the Simon Pierce entrance. The cross section again shrinks to a 24-foot wide cross section with minimal paved shoulders until a little bit east of the Interstate 91 interchange. Other portions of the road are also lined by steep side slopes on one or both sides. Guard rails line the sides of the road for many of these areas.

Main Street is lined in the downtown area on both sides by sidewalks. The sidewalks are mostly four feet wide with wider sidewalks close to the State Street intersection. Crosswalks link the sidewalks at each roadway crossing and additional crosswalks cross Main Street at several mid-block locations. Most of the crosswalks are completed at each sidewalk by a truncated dome pad meeting ADA requirements. **Figure 2** shows the locations of the sidewalks and crosswalks.

Bridge Street intersects Main Street at the south end of the downtown area and heads east towards a covered bridge over the Connecticut River. It is 38 feet wide at the intersection but narrows to 24 feet about 70 feet east of the intersection. The railroad passes over Bridge Street via a metal beam bridge.

Four-foot wide concrete sidewalks line both sides of the street for portions of the road's length. The south side sidewalk stops about 170 feet east of the Main Street. Much of the sidewalk is old and vegetation, including poison ivy, encroaches on the edges, especially under the railroad bridge.

State Street runs west from Main Street. At the intersection with Main Street, State Street is approximately 58 feet wide, with a left and right turn lanes and a parking lane on the north side of the street. The pavement narrows to about 34 feet wide west of the intersection, with two travel lanes about ten feet wide and parking lanes on either side of the street. Sidewalks line both sides of the street, separated from the roadway by a curb close to the Main Street intersection.

Depot Street heads east from Main Street about 100 feet north of the State Street intersection. It is about 20 feet wide close to Main Street. It splits into two sections about 150 feet east of Main Street, with two-way traffic on both sections. New five-foot wide concrete sidewalks line both sides of the street. The northern section of Depot Street crosses the railroad tracks via an at-grade crossing. The southern section of Depot Street ends at Railroad Avenue, which completes the triangle created by the two sections of Depot Street. The south side sidewalk extends south on the west side of Railroad Avenue.

The New England Central Railroad's single track runs along the east side of the downtown area. The railroad right-of-way (ROW) varies from about 50 feet to 70 feet wide through the downtown area. There are three at-grade roadway crossings of the railroad on River Street, Depot Avenue and Everett Lane and one underpass on Bridge Street.

Amtrak service is provided to the Windsor Railroad Station by two daily trains, one in each direction.

Visual observations show that the railroad ROW is used by pedestrians heading to and from the Price Chopper on the north end of the downtown.

The Windsor downtown includes numerous trails, mostly in or near Paradise Park. The trails provide a complete pedestrian link on the west side of the downtown from State Street to Main Street as far north as the Price Chopper.

A new trail runs along the west side of the railroad track just outside of the right-of-way north of Depot Street.

Northwest of the downtown north of Juniper Hill Road, the Windsor Trail Project has been constructing mountain bike trails on a large parcel of land. They have plans to continue the trails north to link with Route 5 and south to link with Paradise Park, creating a continuous walking and mountain bicycling route north from the downtown to the Simone Pierce/Harpoon Brewery location.

D. NATURAL RESOURCES

Lake Runnemedede lies to the northwest of the downtown area; it covers over 62 acres.

The Connecticut River runs along the east side of the downtown area. Much of the eastern portions of the study area lie within the floodplain of the Connecticut River.

Hubbard Brook feeds into and flows out of Lake Runnemedede and passes under Route 5 just north of the Price Chopper store. It continues east under the railroad and then meanders in a southeasterly direction to join the Connecticut River.

There are wetlands east of Lake Runnemedede between the lake and Route 5.

In the areas north of the downtown area, Route 5 rises approximately 120 feet from the start of the curves south of the golf course to the entrance to the quarry just north of the golf course. The road loses most of the 120 feet more gradually as it heads down hill starting just north of the Country Vista driveway. As the road rises into the last curve south of the Interstate 91 interchange, it again gains about 80 feet in elevation.

Large street trees line portions of Main Street in the downtown. These trees add shade and a sense of enclosure to the sidewalks on Main Street and are an important aspect of creating inviting walking areas.

C. UTILITIES

Utility poles line Main Street and Route 5 with the exception of the area close to the intersection with State Street. **Figures 2** show the location of the utility poles along with the overhead utility lines they support. They shift locations several times from one side of the road to the other.

III. RECOMMENDATIONS

A. OVERVIEW

1. PRESENTATION OF RECOMMENDATIONS

The following text describes the different recommendations with a brief description. The figures at the end of the text pages and the illustrations included within the text help to clarify the descriptions. The comparison tables, also at the end of the text, provides more details about the recommendations and the potential impacts, benefits, maintenance implications, and other related aspects.

2. CATEGORIES

There are five different categories of recommendations:

- Main Street Bicycling Recommendation,
- Main Street Walking Recommendation,
- Downtown Connector path Recommendation,
- Northern Route 5 Gateway Recommendation, and
- Route 5 Corridor Bicycling Recommendation.

This report discusses each category of recommendation in a separate section.

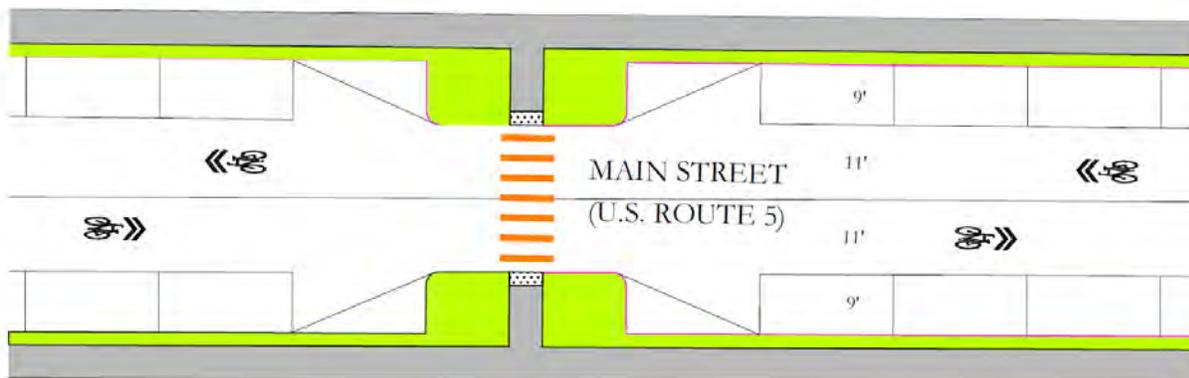
3. TYPES OF RECOMMENDATIONS

There are different types of recommendations in each categories, including the following.

Upgraded Crosswalks is the name used to identify the proposed locations for crosswalks on Route 5, including those that would be located in the same place that they are now, those that would be relocated from existing locations and those that would be new.

Curb Extensions are expansions of the existing curb further into the roadway at the ends of crosswalks to shorten the overall length of the crosswalk, place pedestrians in a more visible location as they approach the crosswalk, and to provide better sight visibility for pedestrians getting ready to use a crosswalk. The extensions in Windsor would typically reach to the end of the parking lane or wide shoulder, placing the pedestrian very close to the travel lane but still on the other side of the curb from motor vehicles. **Illustration 1** shows how curb extensions could look on Main Street. An more immediate, temporary solution could be to place planters in the street in the two spaces on either side of the perpendicular sidewalks leading to the crosswalk. The planters would protect walkers as they moved to the outside of the parking row in the summer, but could be removed in the winter to allow continuous plowing of the street.

Illustration 1: Curb Extension & Crosswalk with Parking



When the curb extension are placed at the corners of intersections, they could be gradually sloped, within ADA limits, to create a 90 degree fan that is at the same grade as the street.

Shared Use Paths are at least eight feet wide but more typically ten feet wide with two-foot gravel shoulders on either side. They would be accessible by the Americans with Disabilities Act (ADA) regulations in terms of grade and surface material. Shared Use Paths are usable by walkers and bicyclists of all ages and abilities.

Six-foot Wide Trails are facilities created primarily for walking. The surfaces would most likely be crushed stone but still ADA accessible, which means it is relatively stable and has a grade of five percent or less with only occasional slopes going up to eight percent.

Trails are facilities for pedestrians and possibly mountain bikers that have a natural mineral soil surface and are usually not more than three feet wide. They

would be primarily recreational in nature and would most likely not meet the requirements for ADA accessibility that apply to sidewalks.

Paved Shoulders are portions of the paved roadway that lie outside of the travel way for vehicles that would not be specifically designated for parking or bicycle travel. They could be as narrow as three feet and as wide as ten feet or even more.

Street Trees are trees planted or growing along the edge of the roadway. For these recommendations, they would be in or close to the ROW for the roadway depending on the location of existing street trees. They typically mature at 40 feet or more with a spread that is roughly equal, except under utility lines where the street trees would have lower mature heights.

B. MAIN BICYCLING RECOMMENDATIONS

This recommendation would mark Main Street as shared lanes in the downtown area by the addition of shared lane markings (sharrows) approximately every 250 feet on both sides of the road, with the parking remaining on both sides. The sharrows would notify motorists to expect bicyclists to be on the road. They would also alert bicyclists as to the ideal location to ride, which would be towards the center of the travel lane to avoid the dangers presented by a motorist in a parked car opening their car door directly in front of a moving bicyclist. **Illustration 2** shows what a sharrow looks like. The Town should also institute an educational campaign to inform citizens and business about the new symbol and what it means. The campaign could include temporary signs on Main Street explaining the sharrow along with information sent out in the Town Manager's Town updates.

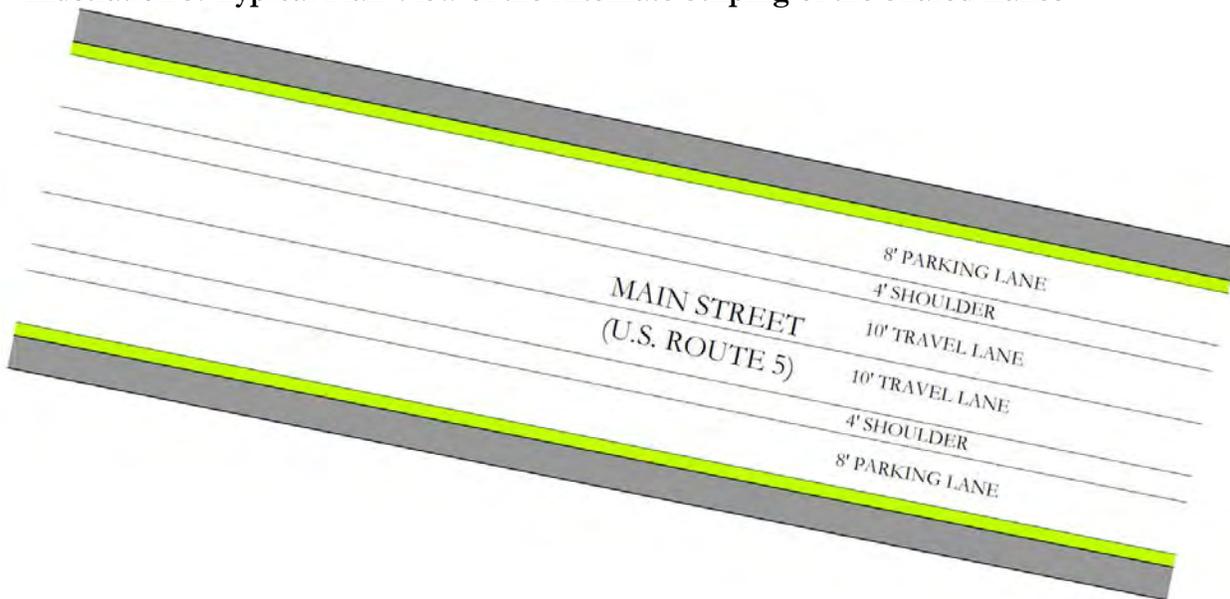
Figures 3 and **5** show the extent of the shared roadway. **Table 1** presents more detailed characteristics and potential impacts of this alternative. **Illustration 1** shows a typical plan of Main Street with the shared lanes and parking; the travel lane widths would vary from 11-feet to 13-feet wide.

Illustration 2: Photo of a Shared Lane Marking as Installed on Blacktop



As alternate, the road could be striped to add a buffer area between the travel lanes and the parking, where there is enough room. This layout would divide the space between the parking into two four-foot wide shoulders separating an eight-foot wide parking lane from two ten-foot side travel lanes. **Illustration 3** shows a simple layout of the lanes with this alternative. The travel lanes would also have sharrow markings approximately every 250 feet.

Illustration 3: Typical Plan View of the Alternate Striping of the Shared Lanes



C. MAIN STREET WALKING RECOMMENDATIONS

1. OVERVIEW

The walking improvements on Main Street in the Downtown area focus on the Main Street intersections with State Street and Bridge and Union Streets and the location and upgrading of crosswalks. **Figures 3** and **5** graphically depict the recommendations.

2. MAIN STREET INTERSECTION WITH BRIDGE & UNION STREET

The Bridge Street and Union Street intersection with Main Street is currently a non-symmetrical four-way intersection that creates several long crossings for pedestrians. The radii of the four corners vary and the approaching and departing lanes for Bridge and Union Streets do not align well, requiring motorists to drive at an angle across the intersection. There is a wide lane that doesn't have a real purpose on the northbound Main Street approach to the intersection.

The recommendations include Potential modifications to the intersection could be done individually or in combination with each other and include:

- Reduce the radius of northwest corner,
- Add curb extensions on the southeast corner,
- Extend the south side Bridge Street sidewalk east to reach the western end of the existing sidewalk,
- Upgrade the ADA ramps,
- Convert the northbound space east of the travel lane on Main Street into a marked left turn lane,
- Add green space and trees on the east side of Main Street north of the intersection with a possible gateway sign close to the corner,
- Add street trees on other approaches to intersection, and
- Upgrade the existing traffic signal to include pedestrian signals.

Figure 4 shows the various recommendations for the Bridge Street/Union Street/Main Street intersection as they would look if the Town implemented all of them. **Table 2** presents more detailed characteristics and potential issues associated with these recommendations.

3. MAIN STREET INTERSECTION WITH STATE STREET

State Street is over 50 feet wide where it intersects with Main Street. The crosswalks on Main Street do not align with the sidewalks on State Street forcing pedestrians to walk out of their way to use them. The one-way-out Point Shop Lane complicates the movement of both motorists and pedestrians. Point Shop Lane creates a potential hazard at the blind corner that pedestrians face heading south towards it. A redesign of the intersection would create shorter, more direct crossings for pedestrians and help to keep motorists traveling at the posted speed limit. The improvements would include:

- Closing Point Shop Lane in conjunction with a rearrangement of the rear parking lot to allow easy exits onto Depot Street for Mascoma Savings Bank customers;
- Closing the Main Street access to the private drive on the northeast side of the intersection (the rear access point for this driveway will remain open),
- Widening the sidewalk on the south side of State Street to narrow the width of the road;
- Adding a small curb extension on the north side of State Street ,
- Shifting the south side Main Street crosswalk north towards the middle of Point Shop Lane so that it aligns directly with the State Street south side sidewalk,
- Shifting the north side Main Street crosswalk south,
- Adding curb extensions to the two crosswalks on Main Street, and

- Widening the Main Street sidewalk on the east side of the intersection between the two crosswalks.

Figure 6 shows the potential improvements for the State Street/Main Street intersection. **Table 3** presents more detailed characteristics and potential issues associated with these recommendations.

As part of the closing of Point Shop Lane, the Depot/Main Streets intersection would ultimately be incorporated into the existing traffic signal for State Street, create an offset, signalized intersection. The expansion of the signal would allow an easier left turn out of Depot Street onto Main Street for motorists. The expanded control of the traffic signal in conjunction with the modifications to the State Street intersection could also allow refinements to the location or positioning of the traffic signals and supports to create more easily recognized signals for motorists and fewer obstructions for walkers.

4. CROSSWALKS

a. Overview

Most of the existing crosswalks on Main Street outside of the two intersections would remain in their current locations but would be shortened by the addition of curb extensions. **Figure 3** and **5** shows the location of the crosswalks that would remain in their current locations. **Table 4** presents more detailed characteristics and potential issues associated with the crosswalk recommendations.

b. Relocated Crosswalks

The two crosswalks on either side of the Old South Church would be combined to create one crosswalk directly in front of the entry to the Church. The new, single crosswalk would also have new curb extensions and ADA ramps. As part of the closing and rerouting of Etta Fraiser Drive, which the Town is currently planning, it would also be possible to create a small overlook and bench space on the east side of the street at the end of the crosswalk.

The existing crosswalk on Main Street on the south side of the intersection with River Street would be shifted to the north side of the intersection. It would also be upgraded with curb extensions and new ADA ramps. The relocation would put the crosswalk in a direct line with the existing sidewalk on River Street and would allow walkers heading west on River Street to cross Main Street without first crossing River Street.

The existing crosswalk on Main Street north of the Depot Street intersection would be straightened so that it is perpendicular to the road. The realigned crosswalk would also have new curb extensions and ADA Access Ramps. The realignment and

curb extensions would increase the visibility of walkers to motorists, providing walkers with better views up and down Main Street and shortening the distance they need to walk across the road.

The existing angled crosswalk at the south side of the Post Office would be straightened by shifting the east side south to create a shorter distance for pedestrians to cross. The east side would align with the existing south side entrance to the post office rear parking area. Due to the alignment of the crosswalk with the Post Office south side driveway, this crosswalk would only have a curb extensions on the west side north of G Company Road. It would have new ADA access ramps with warning strips on both sides.

The existing crosswalk in front of the Evangelical Church would be also relocated south to the north side of Maxwell Perkins Lane, the entrance to Runnemedede House. The relocated crosswalk would also be enhanced with curb extensions and ADA access ramps and warning strips on either side.

c. New Crosswalks

A new crosswalk could be added to the south side of the Rite Aid parking lot access drive. It would meet the east side sidewalk between the Post Office north side exit drive and the south access point to the former gas station property north of the post office. The sidewalk on the east side of the year would be reconstructed to provide a differentiation between the driveways with a curb extension. The west side of the sidewalk would also have a new curb extension and access ramp.

5. STREET TREES

Studies have shown that walkers tend to walk more and farther when the walking conditions are enjoyable. The presence of street trees is one of the factors that typically creates a more enjoyable walking experience. Motorists also tend to drive slower on streets that are enclosed by street trees than on those that aren't. For these reasons, this recommendation calls for adding more street trees in the downtown along Main Street and intersecting streets in those areas that currently lack them. **Figures 3 and 5** show the locations that could benefit from the addition of street trees.

New street trees would be added in the same location as the existing street trees for the Class 1 portions of Main Street, which is often between the sidewalk and the curb. The recommendations do not call for new street trees being added where buildings are close to the edge of the ROW.

6. ADDITIONAL RECOMMENDATIONS

There is an existing public staircase descending from Court Street on the publicly owned parcel to the west of the Peoples Bank parcel. A pedestrian easement across

the Peoples Bank parcel would create a continuous public walkway between Main Street and Court Street, although the existing historic stairway would not be accessible.

D. DOWNTOWN MIXED USE CONNECTOR PATH

The recommended mixed use connector path in the Windsor downtown area would provide an alternate means for walkers and eventually bicyclists to travel north and south without needing to use Main Street. In addition to providing a more secure, direct route for those walkers that are now using the railroad ROW for north south travel, the connector path would complement the existing trails on the west side of Main Street. They would also provide access to other existing or planned trails north and south of the downtown between Main Street and the Connecticut River.

The type of mixed use connector path to be developed is variable. Initially it might be a six-foot wide path. Ultimately, the ideal would be the creation of a full, ten-foot wide shared use path that could be used by walkers, bicyclists, and other non-motorized users. **Figures 3 and 5** show the location of the recommended mixed use connector path. **Table 5** presents the details and issues associated with the development of the connector path.

The northern portions of the recommended alignment of the connector path include the use of the existing New England Central Railroad (NECR) ROW. The Town initially approached the railroad informally about developing these trails. While not yet agreeing to the use of their ROW for a trail, the railroad representatives with whom the Town talked were at least willing to consider the idea. They saw the current use of their railroad ROW by walkers as a significant safety issue and were interested in finding a solution to the problem. They understand that one of the potential resolutions to the problems could be a designated path with proper protection within some portions of their ROW, to note where people should and should not walk. The Town is now looking to talk to the railroad to get a more definitive answer as to their willingness to consider some use of their ROW for a trail or shared use path.

Going from south to north, the connector path/path would start at Bridge Street and head up McCarty Street to the Goodyear property. The path would lie along the western property line with a small jog around an old oil tank close to the property line. It would follow the western property line up to the edge of River Street. The path would generally be below and outside of the NECR ROW along this section.

Between River Street and Everett Lane, the connector path alignment would continue on the east side railroad outside of the NECR ROW across River Street to Depot Street. The path would cross the railroad tracks using Depot Street and then head north along the new path recently installed on the parcel adjacent to the west

side of the NECR ROW. The existing path would be extended north to reach Everett Lane.

The mixed use connector path would continue north on the west side of the NECR ROW after crossing Everett Lane. At the rear of the Price Chopper parcel, the path would turn to the west and pass through the southern edge of the parking area, providing access to both the stores and Main Street. The connector path could also continue north within the railroad ROW to the Hubbard Brook Road ROW where it would turn west to reach Main Street. In the future, it could also use the Hubbard Brook Road crossing of the railroad to continue further north as part of the future Town trail system.

E NORTHERN GATEWAY RECOMMENDATIONS

1. OVERVIEW

The purpose of the modifications the northern entrance into the downtown area is to expand walking and bicycling opportunities, reduce the average speed of motorists traveling into the downtown, provide more parking spaces for Paradise Park, and create clearer motorist access to the adjacent retail businesses. The recommendations are grouped by their purpose. **Figures 5** and **7** show the location of the various alternatives for improvements of the northern gateway. **Table 6** presents more detailed characteristics and potential impacts of the recommendations.

2. WALKING IMPROVEMENTS

The northern end of the sidewalk on the west side of Main Street would be extended as far as the northern end of the Constitution House property, approximately 150 feet. The extension would provide access to the front of Constitution House as well as to the path that heads west across the property into Paradise Park.

The existing crosswalk on the south side of Constitution House would be shifted to the north to coincide with the end of the extension of the sidewalk on the west side of the street. New curb extensions and access ramps would be added on either side, as well as short sections of connecting sidewalks across the green space on the east side of the road to connect the crosswalk to the existing sidewalk.

The existing sidewalk on the east side of Main Street would be extended from its current northern end point adjacent to the northern entrance to the retail businesses to Eddies place. The sidewalk would be shifted west to use the outer edges of the existing paved area over the culvert. After the culvert, the sidewalk would move back east to be separated from the existing roadway by a five-foot wide green space.

If the connector path is not extended north to the east end of Hubbard Brook Road, the sidewalk could be extended to the west end of Hubbard Brook Road. This extension would provide a safe pedestrian connection to Eddies Place and the

Paradise Park trail system. It would also provide a link to Hubbard Brook Road and the southern end of the future Town trail system.

A new crosswalk at Eddies Place would provide a connection between the walking path network in Paradise Park and the east side sidewalk along Main Street and the entrance to Price Chopper and other stores.

The northern entrance of the Price Chopper parking lot would be narrowed to 24 feet wide and made an exit only to create an easier crossing for pedestrians heading north.

3. GATEWAY TREATMENT

A new gateway segment of roadway would be created on the portion of Main Street between Eddies Place and Hubbard Brook Road. The gateway could include:

- Special plantings of shrubs and perennials near the edges of the road within or close to the right-of-way,
- Street trees along both sides of the road,
- A welcome sign identifying "Town of Windsor Downtown" within or close to the right-of-way near Hubbard Brook Road,
- A narrowing of the travel lanes to 11 feet,
- Designated parking along the west side of the road to accommodate those driving to this area to use the trail system in Paradise Park,
- A sidewalk on the west side of the existing pavement to provide easy walking access from the new parking to Eddies Place,
- A Paradise Park welcome and information sign(s),
- The crosswalk at Eddies Place described above, and
- Art or other additions that would help delineate the beginning of the downtown area.

4. OTHER IMPROVEMENTS

To provide clearer travel locations for motorists near the Price chopper, a new left turn lane would be added at the south access drive to the Price Chopper parking lot, which would be converted to an entrance only driveway.

Street trees would be added along the west side of Main Street between Constitution House and Eddies Place. The trees would be located far enough away from the overhead utility lines or selected for smaller mature sizes to minimize future conflicts with the power line. They could be either inside or outside of the right-of-way.

Additional street trees would be plant on the east side of Main Street in front of the Price Chopper because the existing plantings will not create the same sense of enclosure that the existing mature trees to the south in the downtown area create.

The new species would be selected to create a more enclosed roadway when maturing. They would also be planted closer to the edge of the existing road to match the existing mature street trees along Main Street to the south towards the center of the downtown.

F. ROUTE 5 NORTH RECOMMENDATIONS

1. OVERVIEW

Route 5 heading north from downtown Windsor is initially very accessible to bicyclists with paved shoulders that are typically at least six feet wide. Further away from the downtown, the shoulders narrow to less than one foot wide and disappear altogether in some locations. The difficulty of riding with the narrow shoulders on this portion of Route 5 are compounded by a rise in the road elevation at the same time that the road has an "S" curve. Once north of the "S" curve, the shoulders are again at least six feet wide until just north of Ruth Carney Drive, where the shoulders are narrow for a second time to less than one foot wide on both sides. (**Appendix A** includes more detailed information.)

The recommendations are for alternate ways for bicyclists (and pedestrians) to make their way north from the downtown toward the park & ride and the destinations in between these two points without facing these difficult situations.

Figures 8 and 9 show the locations of the north Route 5 recommendations various alternatives under consideration. **Table 7** provides a more information about the recommendations and the issues to be addressed as they are implemented.

The Route 5 north recommendations Corridor Alternatives are organized into those that apply directly to Route 5 and those that are for the area on either side of Route 5.

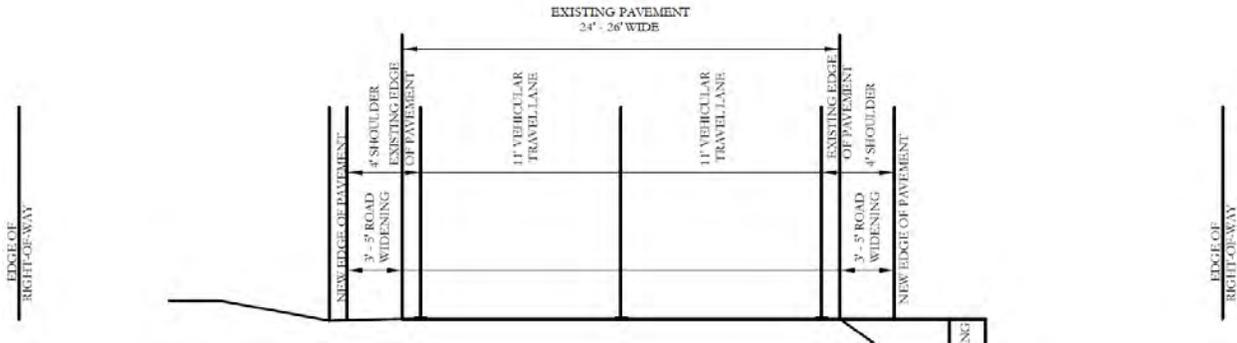
2. ROUTE 5 RECOMMENDATIONS

The southern portion of Route 5 with narrow shoulders near the S curve, close to the golf course on the east side of the road, would involve widening the roadway variably on either side to minimize the amount of cutting or filling needed on either side. The most significant cuts would be along the west side of the road into the high slope near the top or northern end of the S curve. To minimize the depth of the cut, a retaining wall could be added on the west side that would be approximately four feet high. No retaining walls would be needed on the east side. **Figure 9** shows the relationship between the new edge of pavement and the existing pavement, as well as the approximate location and length of the retaining wall.

The northern portion of Route 5 with narrow shoulders south of the park & ride would be widened by 3 to 5 feet on both sides of the centerline. The wider pavement would include two 11-foot travel lanes and paved shoulders that would be

from four to six feet wide, depending on how much widening is done. **Illustration 4** shows what a typical cross section of the widened roadway would look like.

Illustration 4: Typical Cross Section of Route 5 with Added Shoulders



3. CORRIDOR RECOMMENDATIONS

a. Neighborhood Connection

This recommendation would use Taylor Drive, Morningside Drive, Juniper Hill Road and other neighborhood roads to create an alternate route for bicyclists away from the Route 5 Golf Course Curve area. The route would turn away from Route 5 at Juniper Hill Road. There would be signage to warn motorists that bicyclists heading north could be turning left across Route 5; sight distances on Route 5 are adequate in both directions for this turning movement.

The path would head west on Juniper Hill Road. At the first bend in the road, the route would begin up hill at approximately a 12 percent grade, to Morningside Drive. Once on Morningside Drive, the on-road alignment would remain level to the end of the Drive and onto Channing Drive. Near the northern end of Channing Drive, a short section of shared use path would link Channing Drive to Jewett Road. The trail would continue on Jewett Road to its northern end at Taylor Drive. The path would then continue north on Taylor Drive to its end at Route 5. Signs on Route 5 would notify motorists of the potential for bicyclists to be turning onto the road from Taylor Drive; sight distances on Route 5 are adequate in both directions for this turning movement.

b. Rail with Trail To The Art Park

This long-term recommendation would route a trail along the east side of the railroad, from the northern end of the downtown connector path at the eastern end of Hubbard Brook Road to the eastern portions of the Art Park close to the Harpoon Beer Brewery. The path would lie in the NECR ROW as possible. In the area where the railroad lies close to the Connecticut River, the path would use the existing service road on the east side of and several feet below the level of the railroad track.

c. Mountain Bike Crossing

To link the mountain bike trails on the west side of Route 5 to the destinations on the east side of Route 5, a new mountain bike crossing point would be created on Route 5 in the section of road south of Ruth Carney Drive. The specific location of the crossing would be set after the Windsor Trail Project secures the needed easements for the trail and the sight distances on this portion of Route 5 have been examined. The new mountain bike trails on either side of Route 5 as well as those south into Paradise Park along with the Route 5 road crossings would provide another active transportation route north from the downtown to the northern destinations.

IV. IMPLEMENTATION

A. PHASING

Almost each of the recommendations could be implemented independently and in any order. Only a few of them require or only make sense if other recommendations have been implemented; they include:

- The Constitution House crosswalk only needs to be moved when the west side sidewalk is extended;
- The east side sidewalk extension should be implemented at the same time that the new crosswalk at Eddies Place is installed;
- The extension of the east side sidewalk past Eddies Place or the continuation of the connector path to Hubbard Brook Road only needs to be implemented when there is progress on creating more the future Town Trail system north of the downtown;
- The mountain bike crossing on Route 5 south of Ruth Carney Drive only needs to be installed when the mountain bike trails west of Route 5 are connected to the Route 5 ROW;

B. INITIAL ESTIMATE OF PROBABLE CONSTRUCTION COSTS

The BRPD Consulting Team has prepared an initial estimate of probable construction costs for the various recommendations. **Table 8** provides basic cost information.

The BRPD Team based the initial estimate on the Illustrations and Figures contained in this report. The numbers should be considered as guides in how much funding might be needed to construct each of the recommendations. They are provided in 2014 dollars. The initial costs estimates are based on having the project completed

by an independent contractor. The Town might be able to realize savings by constructing the portions of the sidewalk or shared use path with its own road crews.

Table 8: Initial Opinion of Probable Construction Costs

(To be presented at the Public Work Session.)

C. PERMITS

The Mixed Use Connector Path and the recommendation near the Price Chopper would require a flood hazzard review but would most likely not require a permit. None of the recommendations should disturb a large enough area to require storm water permit. No Act 250 permits should be required as a result of these recommendations.

D. FUNDING

Funding for the various recommendations might be able to be secured from a variety of sources. Below is a list of various funding sources that could be used to help with the implementation of the recommendations, including:

- Transportation Alternatives Program (TA Funds): TA funds can be used to increase bicycle and pedestrian mobility. These funds will cover a maximum of 80 percent of the project with the remaining portions most likely coming from the project sponsoring organization. TA funds are distributed in Vermont through a competitive grant program.
- Bicycle and Pedestrian Program: These State funds cover specific bicycle and pedestrian improvement projects and are provided via a competitive grant program.
- Bonds: The City could opt to use bonds to generate funds to undertake one or all of the phases at once.
- State of Vermont Buildings and General Services (BGS) Grants: The Vermont Legislature established several grant programs to support local and regional efforts. Grants are usually offered once a year. Grant awards extend up to \$25,000.
- Vermont Community and Urban Forestry Council Grants: These grants are awarded to municipalities to aid in conducting a street tree inventory and plan, as well as funding of street tree plantings.
- Recreation Trail Program: These grants are administered by the Vermont Department of Forests, Parks and Recreation. It is usually offered once a year. Grant sizes vary from \$5,000 to a maximum of \$20,000, with most at the lower end.

A new online tool developed by a partnership between the Alliance for Biking and Walking and the League of American Bicyclists helps find potential federal funding sources for alternative transportation projects. The site can be reached at <http://bit.ly/11xbEtr>.

Other funding sources may be available for the construction of the path, including:

- Potential health grants promoting healthy living;
- The Robert Wood Johnson Foundation (see <http://www.rwjf.org/content/rwjf/en/grants/search.html?k=walking&d=&l=>);
- MCI/Worldcom Royalty Donation Program (For this and several subsequent ideas, see: <http://www.americantrails.org/resources/funding/TipsFund.html>); and
- Moon Brook crossing sponsorships (and possibly naming rights);

Even other potential sources exist. Some additional resources that may provide insight into additional funds include:

<http://www.americantrails.org/resources/funding/Funding.html>,
<http://rlch.org/>, and
<http://atfiles.org/files/pdf/bicentennialsourcebook.pdf>.

E. PROCEDURES

As a first step towards implementing the recommendations of this study, the Windsor Selectboard should accept and endorse the report. It will be difficult to proceed with securing other State or Federal grants without this endorsement. Once the report is endorsed by the Town, the Department of Public Works or other Town officials could undertake these steps:

- Consider applying for funding opportunities through grants, bonding or other sources the Town considers appropriate, including private and not-for-profit funding sources.
- Keep the Town residents informed on the process of implementing the recommendations.
- Work with the NECR to gain approval for the use of their ROW for trail use.
- Finalize with the Selectboard the Town's interest in extending the Class 1 highway on Main Street north to Hubbard Brook Road.
- Pursue the extension of the Class 1 highway on Main Street north to Hubbard Brook Road, if the Town decides to pursue this option.
- Hire a consultant if needed to assist with the specific design of the intersection improvements, the striping layout for the gateway area and Price Chopper turning lane and/or the layout of the mixed use connector trail.

TABLE 1: Main Street Recommendation
Town of Windsor
Bicycle & Pedestrian Improvements
December 2, 2014

	Shared Roadway
Project Description	
Additional ROW Needed	No
Parking Loss	No
Intersection Design	Possible "Bike Box" at signalized intersections (lets bicyclists come to the front of the queue)
Road Markings & Signs	Sharrows in the travel lanes and "Bicyclists can use full lane" signs added to the road
Significant Physical Constraints	None
Environmental/Cultural Constraints	
Tree Disturbance	No
Stormwater Impacts	No
Historic Resources Impacts	No
Utility Disturbance	No
Project Attributes	
Types of Users Served	Advanced and basic
Bicyclist Benefits/Impacts	Recognition of bicyclists' right to use full travel lane
Motorist Benefits/Impacts	Slows speed for motorists when bicyclists are on the road; Requires passing of bicyclists
ADA Issues	None
Order of Magnitude Cost	
Positive Considerations	
Negative Considerations	
Neutral	

TABLE 2: Bridge/Unions Main Streets Intersection Alternative Analysis

**Town of Windsor
Bicycle & Pedestrian Improvements
December 5, 2014**

	Reduced northwest corner radius	Southeast Corner bulbouts	Conversion of 2nd Main St. Northbound Lane to Turning Lane	Complete southside Bridge St. sidewalk	Upgraded Traffic Signal with Pedestrian Signals	Trees on Main St. at northeast corner
Project Description						
Additional ROW Needed	No	No	No	No	No	No
Private Property Construction Easements	No	No	No	No	No	No
Private Property Permanent Easements	No	No	No	No	No	No
Regrading/Retaining Walls	No	No	No	No	No	No
Significant Physical Constraints	Existing storm drains	Minimal width on Main St. for bulb out	Stacking Lane	None	None	Removal of asphalt and creation of adequate planting soil depth
Environmental/Cultural Constraints						
Tree Disturbance	No	No	No	No	No	No
Stormwater Impacts	Yes - Relocate stormwater inlets	No	No	No	No	No
Historic Resources Impacts	No	No	No	No	No	No
Utility Disturbance	Yes	No	No	No	No	Possibly - underground utilities need to be protected
Project Attributes						
Types of Users Served	Pedestrians & Bicyclists	Pedestrian	Motorists & Pedestrians	Pedestrians	Motorists & Pedestrians	Pedestrians & Motorists
Pedestrian Benefits/Impacts	Shortens crosswalk length; slows motorists making right turn onto Union St.	Shortens crosswalk length; Provides better pedestrian sight distance	Allows a small expansion of pedestrian space on the corner and creates green space	Provides designated walking space on south side of Bridge St.	Provides pedestrian signals to help pedestrians cross the streets	Creates better separation between motor vehicles and pedestrians; provides future shade
Bicyclist Benefits/Impacts	Slows motorists making right turn onto Union St.					
Motorist Benefits/Impacts	Slows speed for motorists making right turn onto Union St.	Slows speeds for motorists due to narrower roadway	Formalizes lane sometimes used for right turns or passing left turning vehicles		Provides better, more easily seen signal heads and opportunities for interactive signal	Creates more inviting intersection
ADA Issues	None	None	None	None		None
Order of Magnitude Cost						
Positive Considerations						
Negative Considerations						
Neutral						

TABLE 3: State/Main Streets Intersection Details

Town of Windsor

Bicycle & Pedestrian Improvements

December 5, 2014

	Relocated S. Main St. Crosswalk	Relocated N. Main St. Crosswalk	Point Shop Lane Closure	Gravel Access Road (Northeast Corner) Closure	Widened Main St. Sidewalk on East Side of Intersection	Curb Extensions on Main St. Crosswalks	Curb Extensions on State St. Crosswalk
Project Description							
Additional ROW Needed	No	No	No	No	No	No	No
Private Property Construction Easements	No	No	No	No	No	No	No
Private Property Permanent Easements	No	No	No	No	No	No	No
Regrading/Retaining Walls	No	No	No	No	No	No	No
Significant Physical Constraints	Point Shop Lane must be closed to accommodate shift north of crosswalk	Gravel access drive could create a conflict if left open	Current layout of interior parking areas discourages exits to Depot Street; Left turn exits from Depot Street onto Main St.	Reduces access potential to the north side of building	Three stormwater inlets adjacent to existing curb must be relocated or otherwise accommodated	Stormwater inlet adjacent to existing curb must be relocated or otherwise accommodated	Stormwater inlets along curb must be accommodated; Sewer manhole covers must be raised and made level with pedestrian surface
Environmental/Cultural Constraints							
Tree Disturbance	No	No	No	No	No	No	No
Stormwater Impacts	No	No	No	No	Yes - Relocate stormwater inlets	Yes - Relocate stormwater inlets	Yes - Relocate stormwater inlets
Historic Resources Impacts	No	No	No	No	No	No	No
Utility Disturbance	Yes	No	No	No	No	No	No
Project Attributes							
Types of Users Served	Pedestrian	Pedestrian	Pedestrian	Pedestrian	Pedestrians	Pedestrians & Motorists	Pedestrians & Motorists
Pedestrian Benefits/Impacts	Shortens crosswalk length; Aligns crosswalk with direction of pedestrian traffic flow	Shortens crosswalk length; Aligns crosswalk with direction of pedestrian traffic flow	Eliminates a conflict point between motor vehicles and pedestrians; Allows relocation of crosswalk	Eliminates a conflict point between motor vehicles and pedestrians; Allows relocation of crosswalk	Provides room for pedestrian space in the intersection; slows motorists with narrower travel area	Reduces crosswalk length; Increases pedestrian sight distances at edge of crosswalk	Reduces crosswalk length; Increases pedestrian sight distances at edge of crosswalk
Bicyclist Benefits/Impacts	None	None	None	None	None	Slows motorists making right turn onto State St.	Slows motorists making right turn onto Main St.
Motorist Benefits/Impacts	None	None	Eliminates direct access to State street and southbound Main St.	Reduces access to north side of building to one point, requiring back in or back out of drive rather than drive through	Slows speed for motorists traveling north on Main St.	Slows through and turning speeds for motorists.	Slows turning speeds for motorists.
ADA Issues	None	None	None	None	None	None	None
Order of Magnitude Cost							
Positive Considerations							
Negative Considerations							
Neutral							

TABLE 5: Downtown Off-Road Trail Recommendation Details

Town of Windsor

Bicycle & Pedestrian Improvements

December 5, 2014

	Bridge Street to River Street	River Street to Everett Lane	Everett Lane to Hubbard Brook Road
Project Description			
Length of Widening	0	0	0
Length of New Path	1,225 ft	1,275 ft	2,375 ft to Hubbard Brook Rd.; 1,100 ft to shopping parking area
Length of Shared Lane	365 ft	0	300 ft (in Parking lot)
Length of Sidewalk	0	0	0
Culvert Extensions/Bridges	1	0	1
Additional ROW Needed	No	No	No
Private Property Construction Easements	0	0	0
Private Property Permanent Easements	1	2	2 with one from the RR
Regrading/Retaining Walls	No	No	No
Significant Physical Constraints	Width of McCarty Ave.	Flood Plain; Proximity of building to RR	Flood Plain; Hubbard Brook crossing; Proximity to RR & RR crossing
Environmental/Cultural Constraints			
Tree Disturbance	No	No	Yes
Wetland Disturbance	No	No	No
Natural Area/RTE Species Disturbance	No	No	No
Agricultural Land Consumption	No	No	No
Steep Slope Disturbance	No	No	No
Historic Resources Impacts	Possible	No	No but allows views of historic culvert structures under RR
Utility Disturbance	No	No	No
Flood Plain Impacts	Yes	Yes	Yes
Drainage Ditch Disturbance	No	No	No
Hazardous Material Concerns	Yes - Alignment on parcel with known hazardous waste site - remediation plans in development	Yes - Possible hazardous waste site in RR ROW	Yes - Possible hazardous waste site in RR ROW
Project Attributes			
Meets Purpose and Need Statement by Itself	Yes	Yes	Yes
Types of Users Served	All bicyclists & walkers	All bicyclists & walkers	All bicyclists & walkers
Avoids High Crash Areas	Yes	Yes	Yes
Separates Motorized and Non-Motorized Users	Not completely	Yes	Yes
Provides Access to Destinations	Yes	Yes	Yes
ADA Issues	No	No	No
Order of Magnitude Cost			
Positive Considerations			
Negative Considerations			
Neutral			

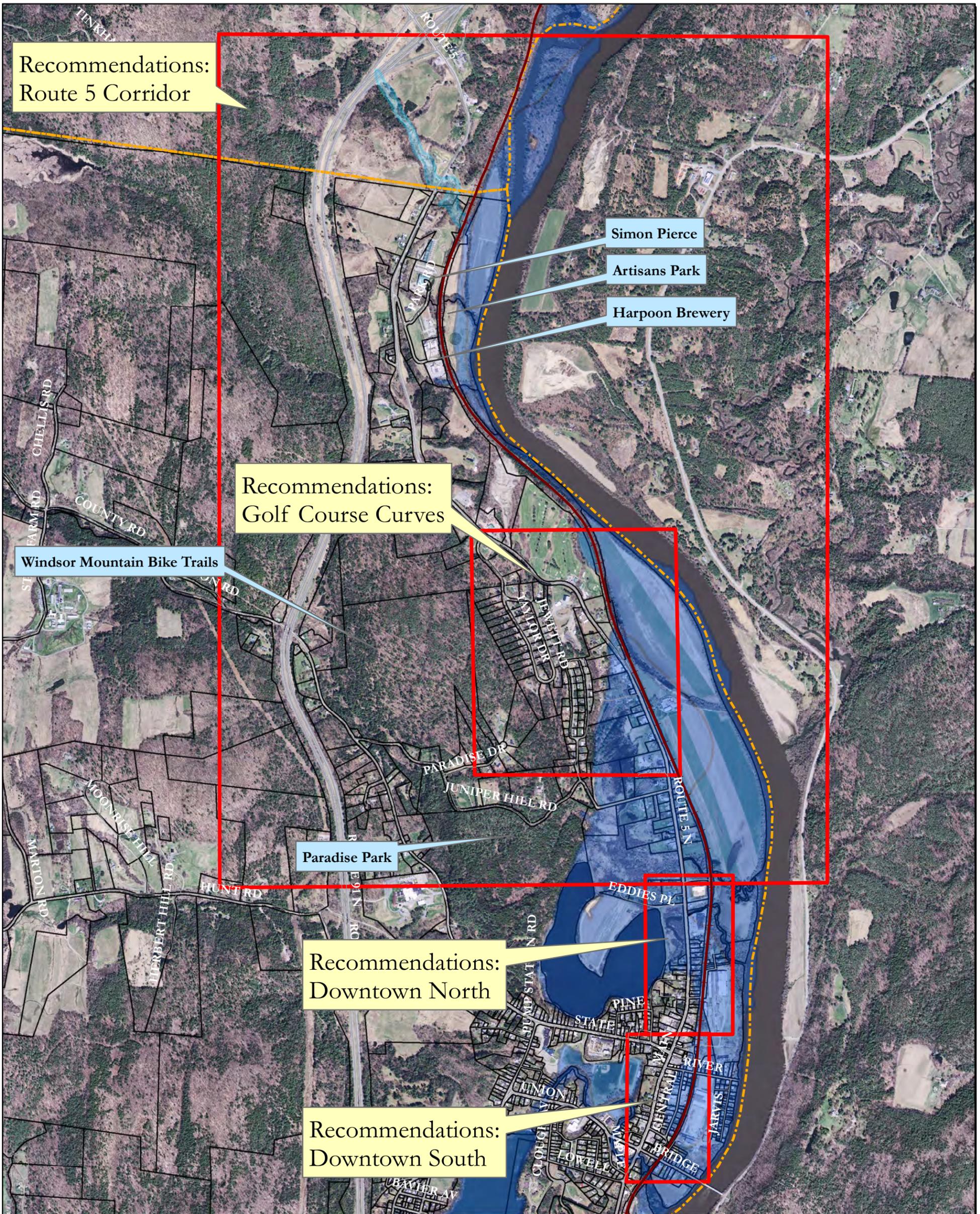
TABLE 7: Route 5 North Recommendation Details

Town of Windsor

Bicycle & Pedestrian Improvements

December 5, 2014

	Golf Course Curves	Northern Section	Non-Corridor Alternatives	
	Mixed Widening & Narrower Lanes	Road Widening on Centerline	Connecticut River Trail	Neighborhood Connection
Project Description				
Length of Widening	3,000 ft	1,625 ft in Windsor, 1,875 ft in Hartland; 3,500 ft total	0	0
Length of New Path	0	0	11,000	250 ft
Length of Shared Lane	0	0	0	6,500 ft
Culvert Extensions/Bridges	0	1	3	0
Additional ROW Needed	No	No	No	No
Private Property Construction Easements	Up to 4	0	4 including the railroad	2
Private Property Permanent Easements	Up to 4	0	4 including the railroad	2
Regrading/Retaining Walls	Yes on west side	Yes in several sections in Hartland	Possibly on northern portions	Possibly for shared use path
Significant Physical Constraints	Steep side slopes on both sides of the road - up on the west and down on the east; large trees close to edge of road & further up the hill on the west	Side slopes, drainage ditches and large trees	Steep slopes along railroad	Slope between Channing Dr. and Jewett Rd; slopes on Juniper Hill Road, crossing Route 5
Environmental/Cultural Constraints				
Tree Disturbance	Yes, close to road	Possible disturbance to trees near Simon Pierce entrance;	Yes, along much of the 11,000 feet to create a wider path	Yes, along 250 feet of off road connection
Wetland Disturbance	No	No	Yes	No
Natural Area/RTE Species Disturbance	No	No	No	No
Agricultural Land Consumption	No	No	Yes, along the outer edge of farm fields	No
Steep Slope Disturbance	Yes	Yes	Yes	Yes
Historic Resources Impacts	No	Yes	No	No
Utility Disturbance	Yes - Utility poles need to be relocated; Fire hydrants might need to be relocated. Widening might occur over water line.	Utility poles need to be relocated for entire length of widening	No	No
Flood Plain Impacts	No	No	Yes	No
Drainage Ditch Disturbance	Yes	Yes	No	No
Hazardous Material Concerns	No	No	No	No
Project Attributes				
Meets Purpose and Need Statement by Itself	Yes	Yes	Yes	Yes
Types of Users Served	Advanced bicyclists and some basic bicyclists; Active walkers	Advanced bicyclists and some basic bicyclists; Active walkers	Shared use path - All bicyclists and walkers	All bicyclists & walkers as long as basic bicyclists are accompanied by adults on the northern Route 5 sections
Avoids High Crash Areas	Yes	Yes	Yes	Yes
Separates Motorized and Non-Motorized Users	No	No	Yes	No
Provides Access to Destinations	Yes	Yes	Yes	Yes
ADA Issues	No	No	Possibly on northern portions	No
Order of Magnitude Cost				
Positive Considerations				
Negative Considerations				
Neutral				



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor

Vermont

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Preservation Landscape Architects & Planners

0 375 750 1,500 2,250 3,000 Feet

Recommendation Locations

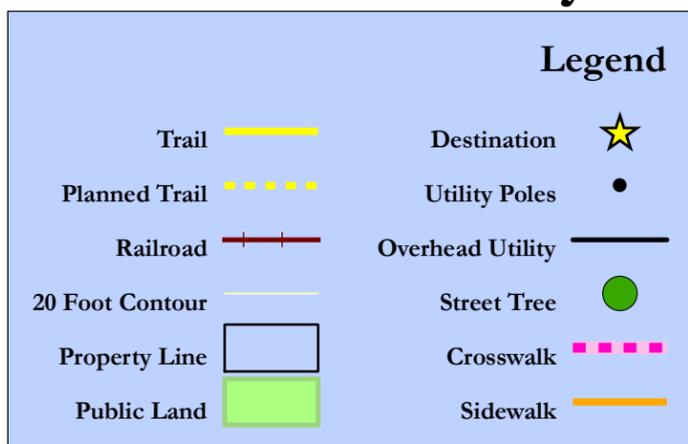
December 2, 2014

Figure 1



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont



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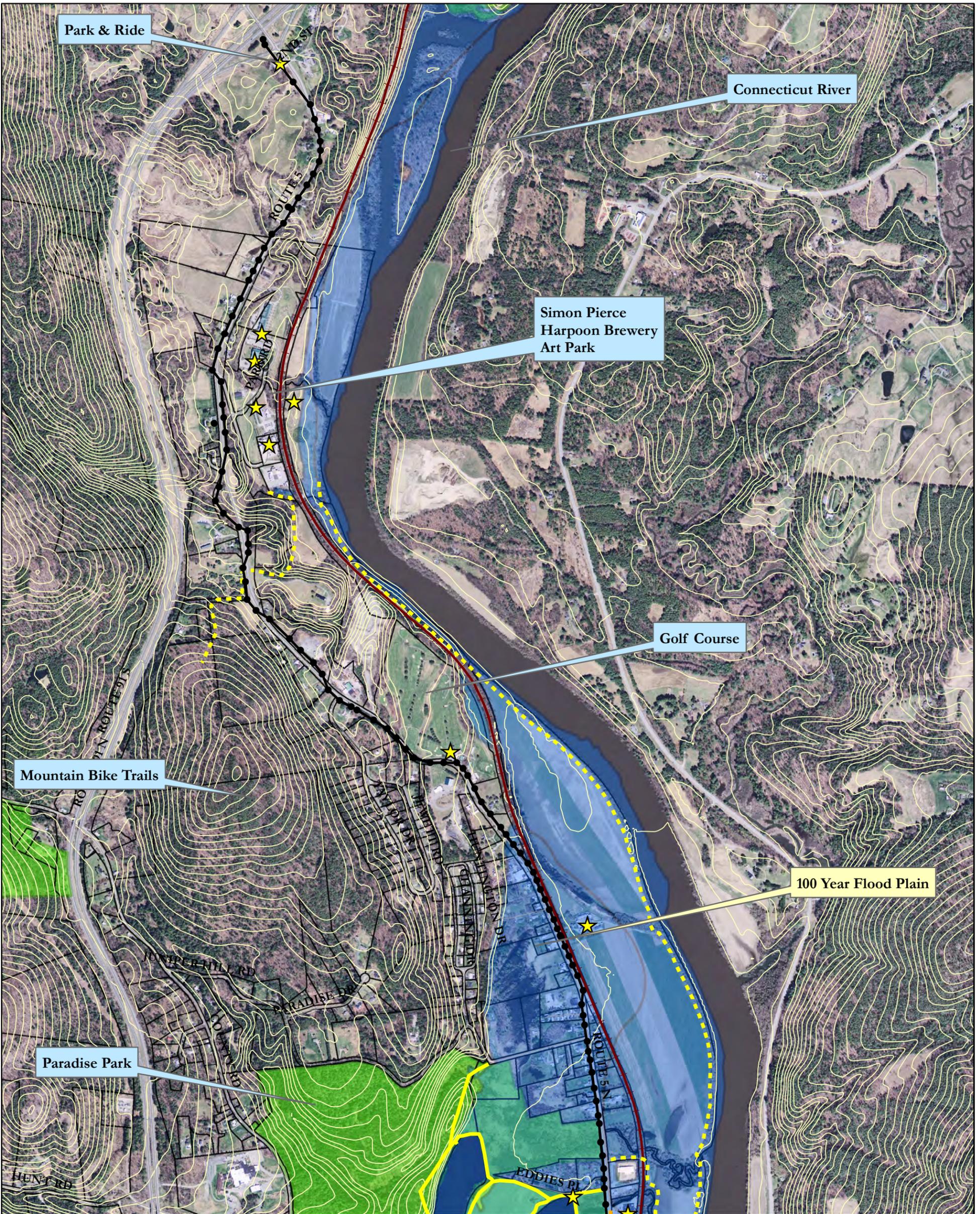
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Existing Conditions Route 5 North Corridor

December 5, 2014

Figure 2b



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont

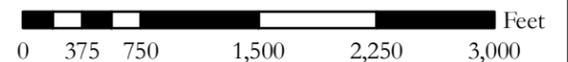
Legend			
Trail		Destination	
Planned Trail		Utility Poles	
Railroad		Overhead Utility	
20 Foot Contour		Street Tree	
Property Line		Crosswalk	
Public Land		Sidewalk	

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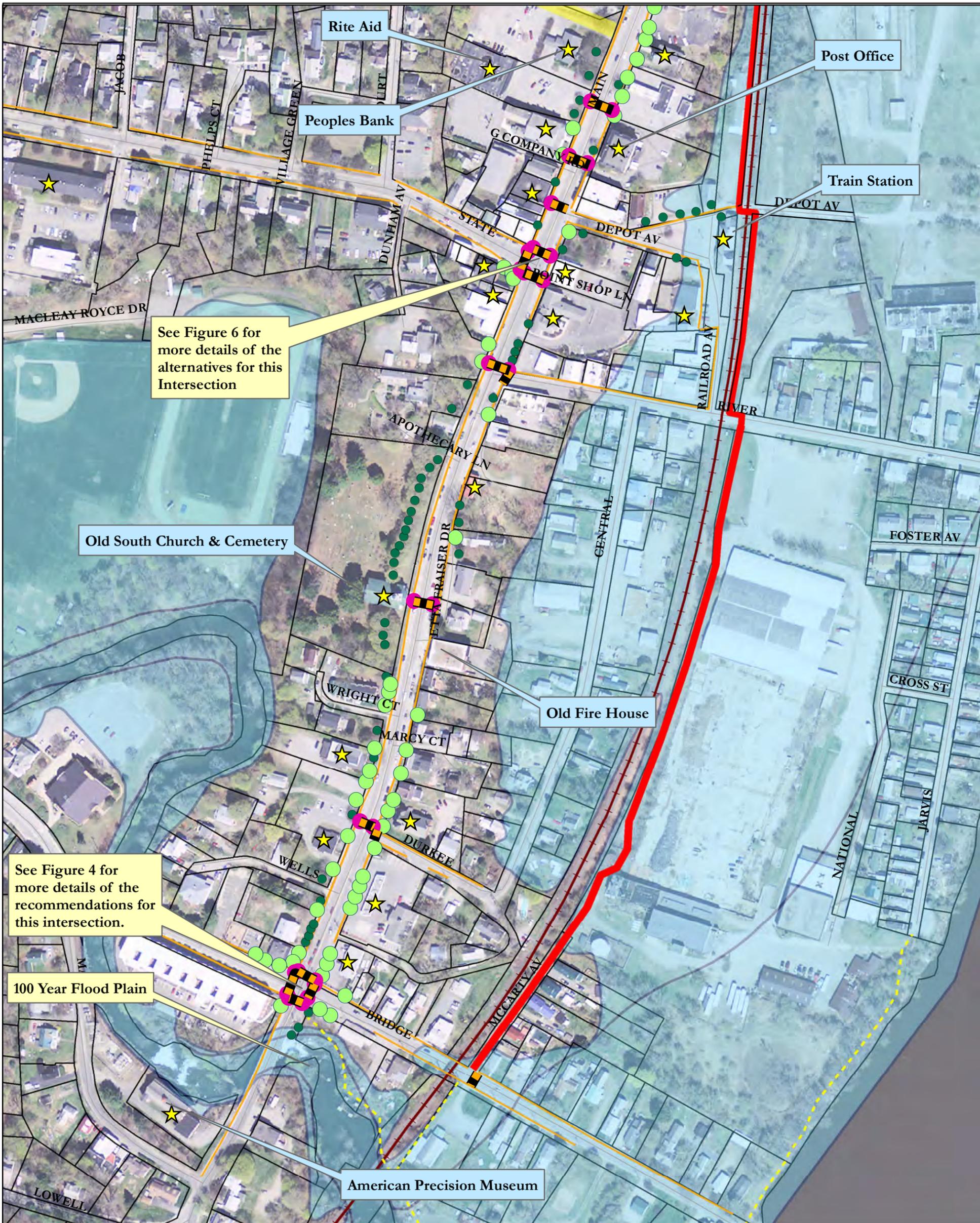
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Existing Conditions Route 5 North Corridor

December 2, 2014

Figure 2b



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont

Legend			
Sidewalk	Orange line	Crosswalk	Black and yellow striped rectangle
Trail	Yellow line	Curb Extension	Pink circle
Planned Trail	Dashed yellow line	Ped Easement	Yellow rectangle
Destination	Yellow star	New Street Tree	Light green circle
Railroad	Red line with cross-ticks	Connector Path	Red line
Property Line	Black outline	Street Tree	Dark green circle

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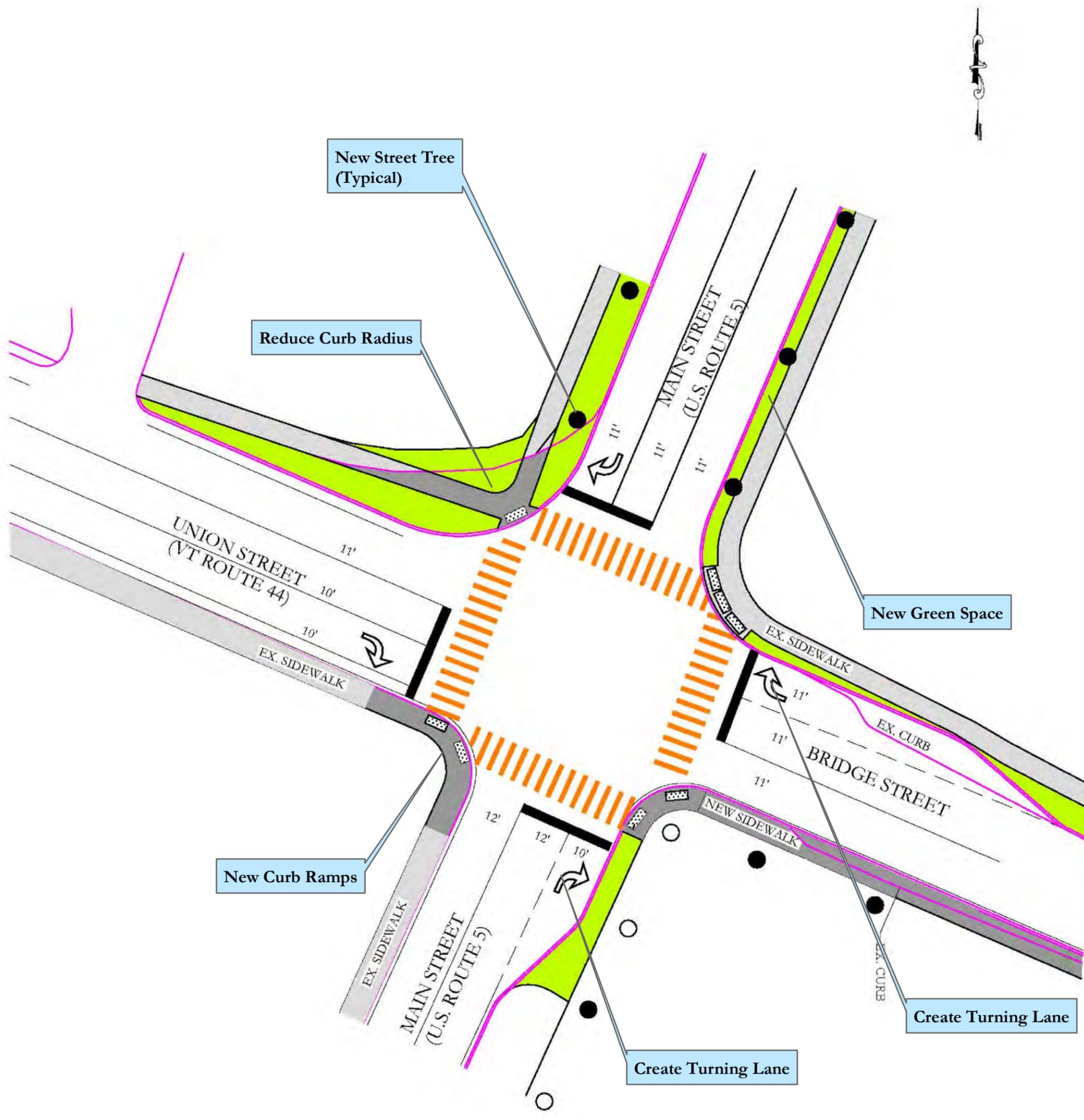


0 50 100 200 300 400 Feet

Recommendations: Downtown South

December 5, 2014

Figure 3



Windsor Bicycle and Pedestrian Scoping Study
Town of Windsor
Vermont

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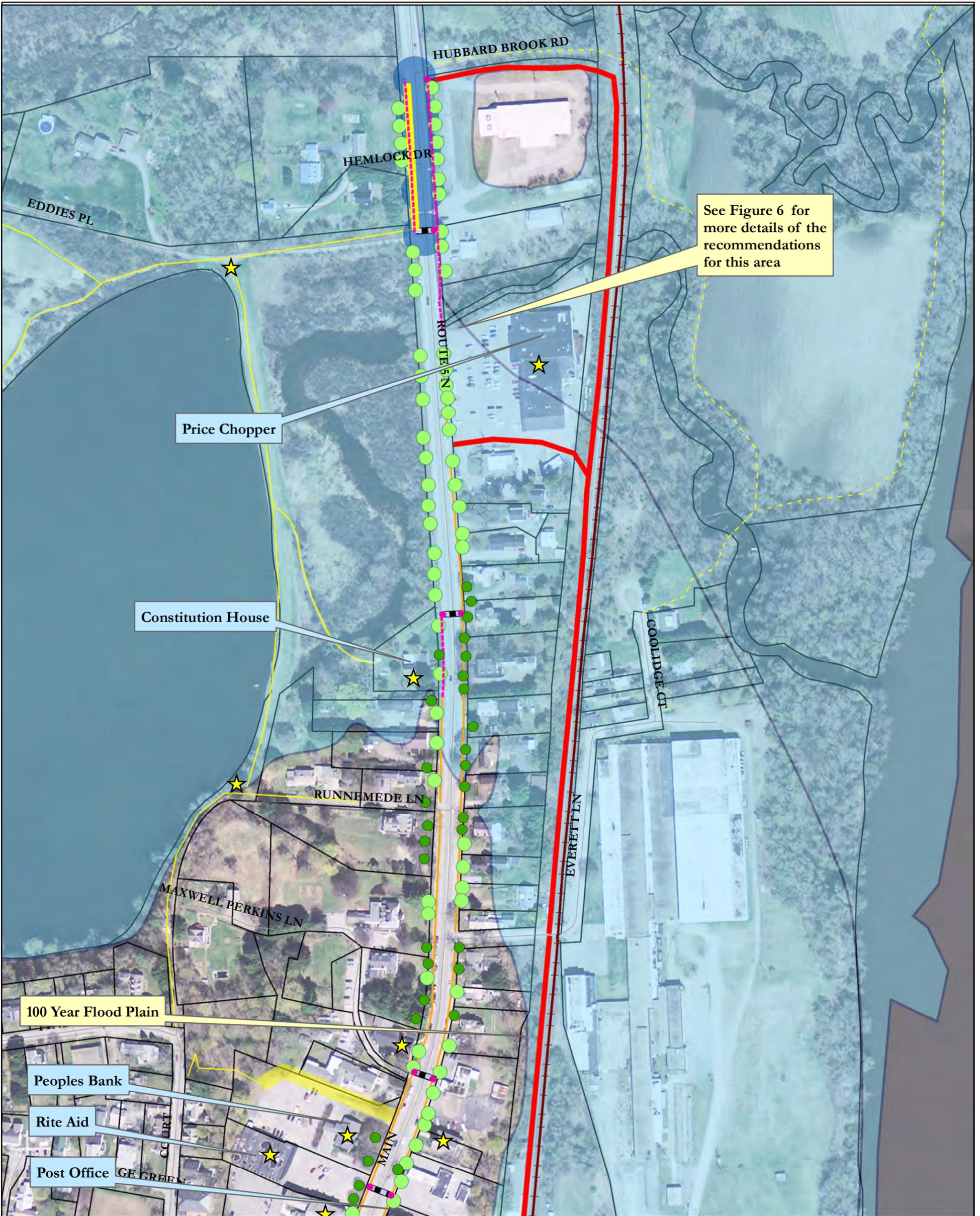


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Recommendations:
Union/Bridge/Main Streets

December 5, 2014

Figure 4



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont

Legend			
Trail 4c-i		New Sidewalk	
Sidewalk		Curb Extension	
Trail		Updated Crosswalk	
Planned Trail		Pedestrian Easement	
Destination		New Street Tree	
Street Tree		Gateway	

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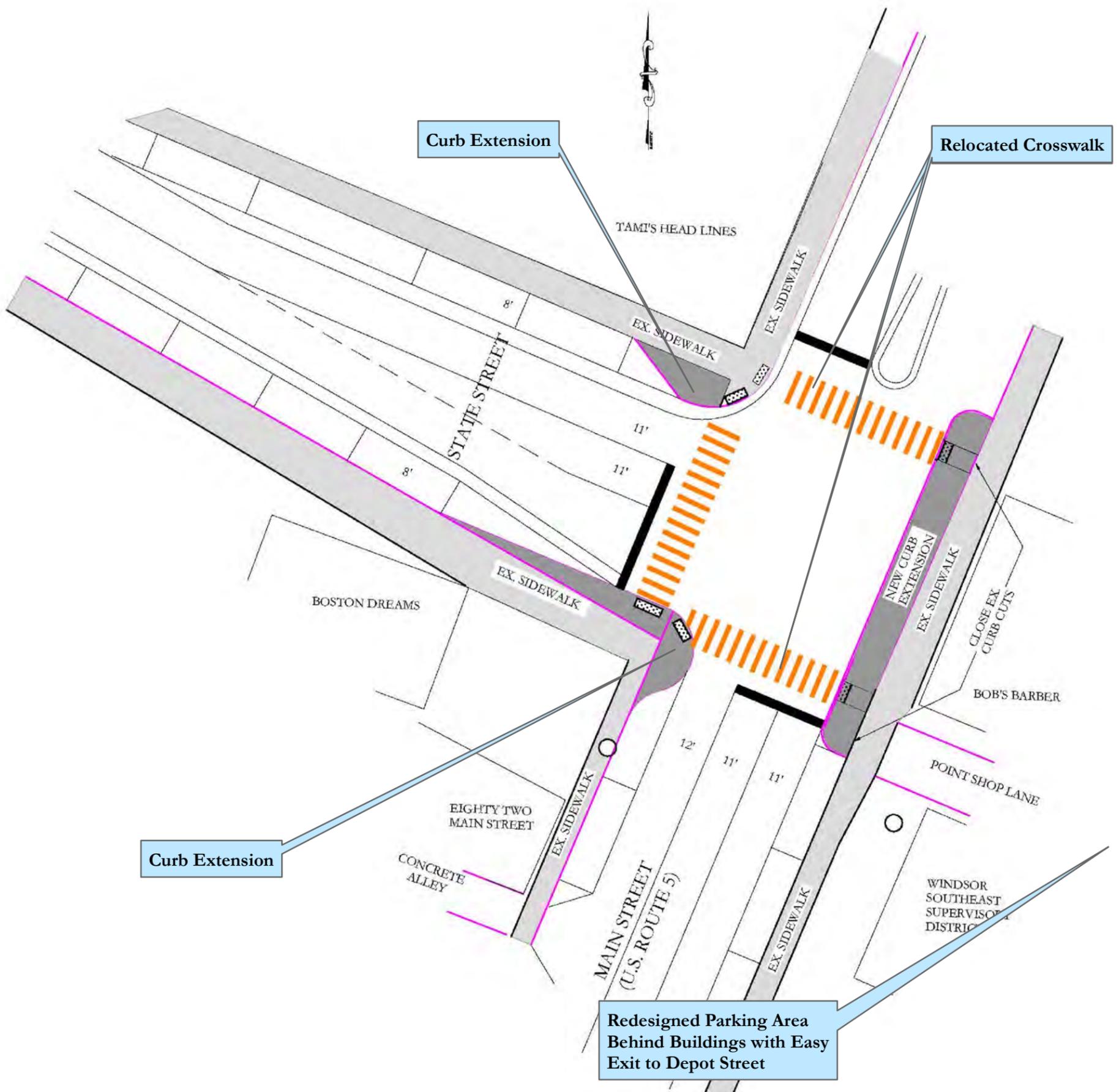


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0 50 100 200 300 400 Feet

Alternatives: Downtown North



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont

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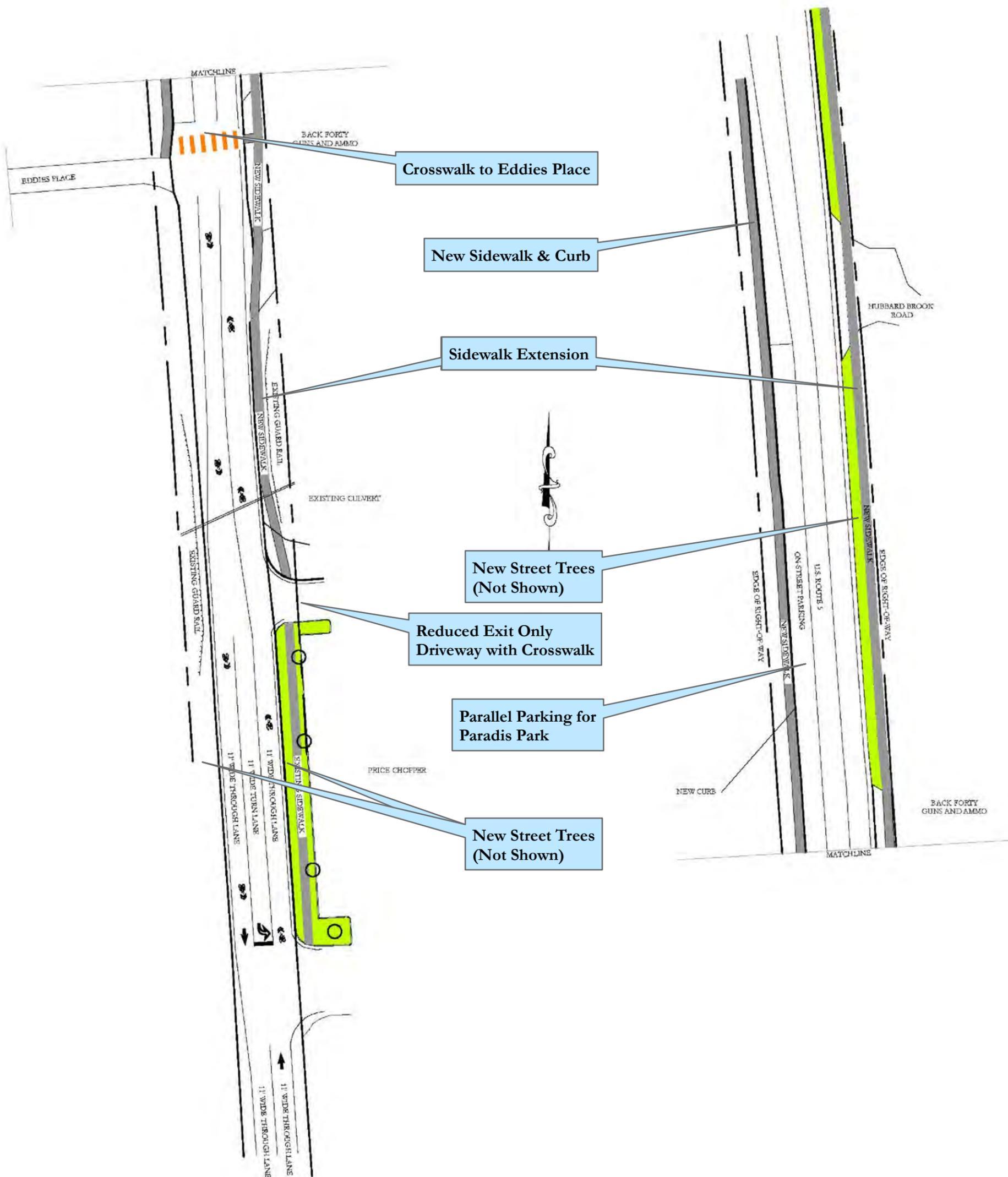


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Recommendations: State/Main Streets

December 5, 2014

Figure 6



Windsor Bicycle and Pedestrian Scoping Study

Town of Windsor Vermont

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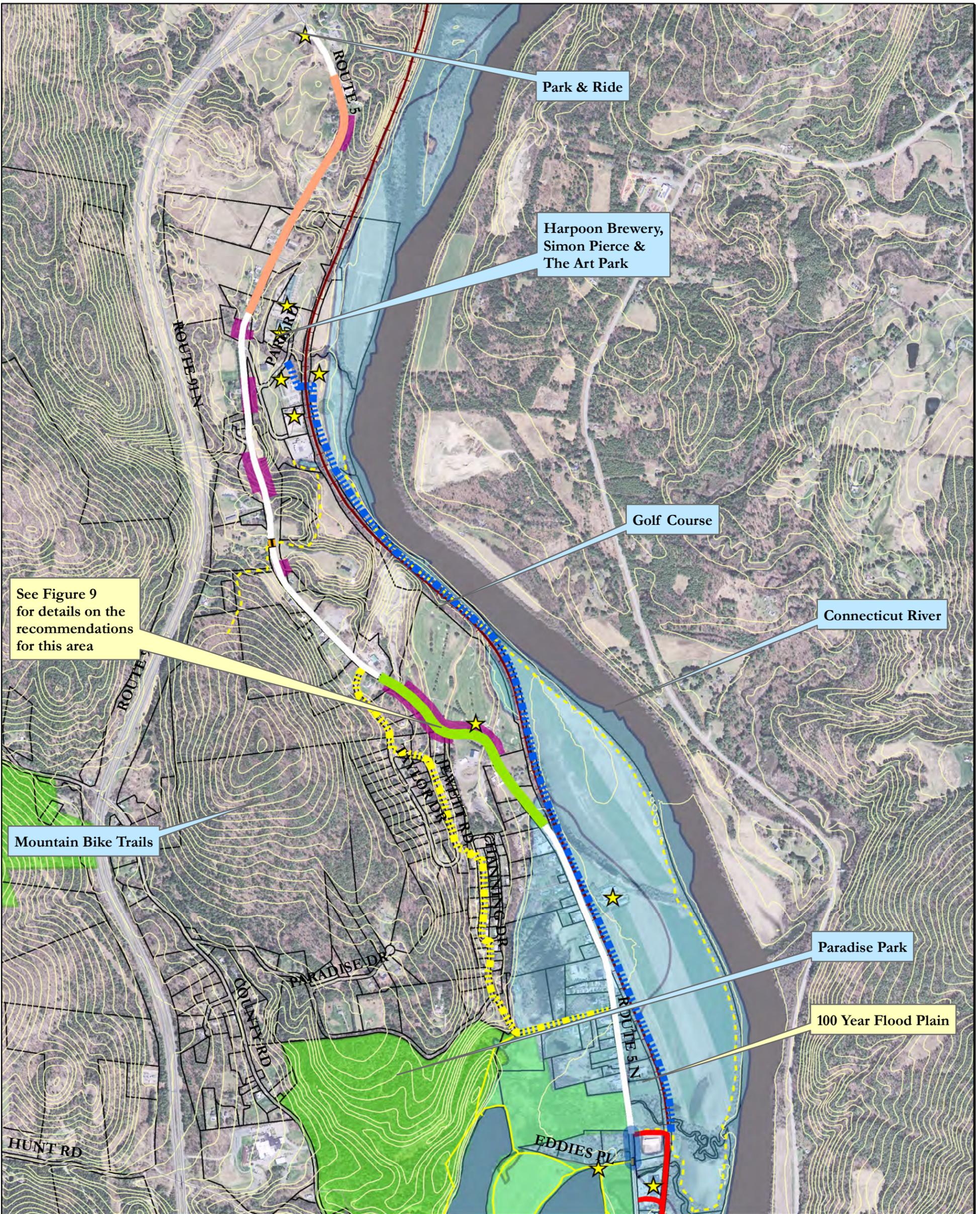


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Recommendations: Northern Gateway Details

December 5, 2014

Figure 7



Windsor Bicycle and Pedestrian Scoping Study Town of Windsor Vermont

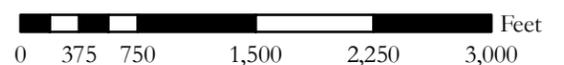
Legend		
Trail		
Planned Trail		
Railroad		
Property Line		
Public Land		
Gateway		
Existing Shoulders		
Destination		
Steep Side Slopes		
20 Foot Contour		
CT River Trail		
N'hood Route		
Variable Widening		
Widening on CL		
Connector Path		

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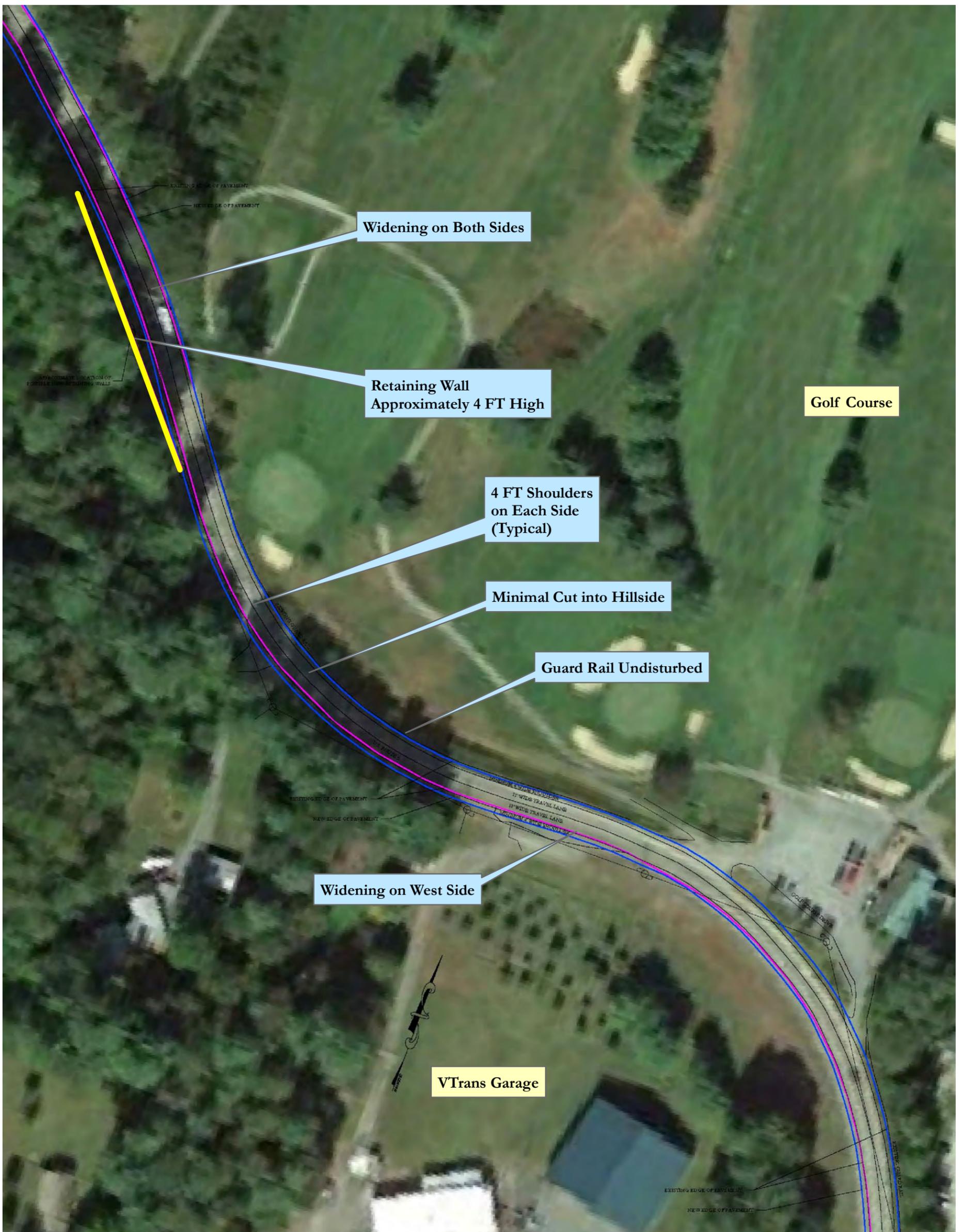
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Recommendations: Route 5 North Corridor

December 5, 2014

Figure 8



Windsor Bicycle and Pedestrian Scoping Study
Town of Windsor
Vermont

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Recommendations:
Golf Course Curves

December 5, 2014

Figure 9

Appendix A
EXISTING CONDITIONS REPORT

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Appendix B
ALTERNATIVES ANALYSIS

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