

# Long-Term Design Concept

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The long-term design concept for the project area was created with the help of the stakeholder group and the wider community through a process designed to solve existing problems and balance conflicting needs. The concept in this plan could not meet every community member's desire because some of those desires conflict with each other; but it strikes a balance and provides a way forward to creating more efficient, safe, and pleasant streets. Whether a person travels by foot, wheelchair, bike, bus, shuttle, car, or by all of the above, they will be able to find time-saving aspects and safety improvements in this design concept. In addition to reducing the delays for eastbound transit vehicles and automobiles on the Mount Auburn Street corridor (particularly in the a.m. peak travel hour), the design creates 4.5 acres of new parkland near the Charles River, providing a safer environment for pedestrians. It will also create a more vibrant, people-centered neighborhood by considering new outdoor plazas at Brattle and Belmont Streets.

Because this design is conceptual, it is only the beginning point of a wider conversation. This project includes streets under two different jurisdictions (DCR and the City of Cambridge); it will likely move forward as two or more separate design projects, providing more opportunity for community involvement and input. There is also an effort to complete both short- and long-term changes to Mount Auburn Street.

When it was laid out by Charles Eliot in the 19th century, Fresh Pond Parkway was not envisioned as a heavily trafficked highway, but as “the pleasantest possible route to a series of places of interest and resort.”<sup>1</sup> Eliot was a pioneer of regional planning in Massachusetts, and though it may never have been his intent, the system of parkways he designed to connect the many parks owned by the DCR (then the Metropolitan Parks Commission) became very useful for the cars that began to arrive in large numbers after the popularity of the Model T surged in 1908. By the

1950s and 1960s, his designs were often being expanded to accommodate more traffic, as was Fresh Pond Parkway and Gerrys Landing Road, along with the completion of the Eliot Bridge, and with a switch from a double-rotary design to the current pair of three-legged interchanges that today connect Gerrys Landing Road with Memorial Drive, Greenough Boulevard, and the Eliot Bridge. The design included here, in contrast, was not designed to meet the needs of traffic exclusively. Instead, the goals of this project were created by the community via public meetings and a stakeholder group comprised of local residents and representatives of local institutions. As such it is a design that shifts the balance of this roadway's design back toward accommodating pedestrians, bicyclists, school children, and local residents. One of those goals was also to move more people through the Mount Auburn Street corridor faster by improving transit delays.

With that new balance in mind, the long-term design narrows travel lanes to slow traffic, improves pedestrian and bicycle crossings, creates new parkland, proposes road diets to widen sidewalks, creates bus priority lanes and protected bicycle lanes, and proposes new streetscapes to support local businesses. In the process, the team was also able to significantly reduce traffic delays for all vehicles on Mount Auburn Street eastbound in the a.m. peak hours and to speed up eastbound buses as well. The analysis that follows shows that the proposed concept for Mount Auburn Street can move more people faster in the corridor because it more efficiently uses the space. The overall result is a design that better balances the needs and desires of the people who live, walk, ride, and drive here with the commuter traffic that passes through.

<sup>1</sup> Eliot, Charles W, “Charles Eliot: Landscape Architect,” (Boston and New York: Houghton Mifflin, 1902), 427

## Key Design Tactics

The project is large and is best understood through the eyes of its users, pedestrians, cyclists, transit users, and drivers. In the following sections, the project is described through these lenses. Three, large plans of the project are included at the end of this section (**Figures 22 through 24**). The descriptions that follow are intended to supplement these visual representations of the design.

### BUS LANES

A bus lane is a lane restricted to buses only, often at peak traffic times, to allow buses to bypass traffic congestion. In Massachusetts, there are bus lanes on Washington Street for Silver Line service in Boston, and also along Broadway for multiple MBTA bus routes in Everett. When Everett's bus lane was introduced, travel times were reduced for riders by four to eight minutes.<sup>2</sup>



*Everett's peak hour bus lane has gained national attention during its pilot in early 2017. Since then, BostonBRT, funded by the Barr Foundation, has sought ways to create faster and more reliable commutes for thousands of bus riders.*

### TRANSIT SIGNAL PRIORITY

Transit Signal Priority (TSP) involves TSP-capable signals detecting the presence of buses and optimizing signal timing to improve bus travel times dynamically. There are several techniques for detecting buses, and several ways signals can be adjusted to improve bus travel time, depending on the local context.

### GEOMETRIC IMPROVEMENTS AT FRESH POND PARKWAY AND MOUNT AUBURN STREET

At the center of both corridors, improving the performance of the intersection of Mount Auburn Street at Fresh Pond Parkway is the key element that makes all other improvements possible. Many of its inefficiencies are related to its extravagant roadway width and extreme skew. By eliminating one southbound travel lane and narrowing the others, the team was able to slightly alter the path of Mount Auburn Street to mitigate the skew. It also significantly shortened pedestrian crossing distances and the amount of time pedestrians need to cross safely. This same technique nearly halved vehicle crossing distances, and thus the amount of time vehicles need to clear the intersection. These time savings allow for a traffic signal cycle that can process vehicle throughput faster and allow pedestrian crossings on three sides, instead of two sides in the existing condition.

### TRAFFIC CALMING

#### ROAD DIET

A road diet is a reduction in or reallocation of travel lanes to achieve systemic improvements. Road diets are carried out to improve safety or to provide space for other modes. Road diets have been recently completed on Greenough Boulevard and Nonantum Road.

#### LANE DIET/NARROWER TRAFFIC LANES

Narrowing traffic lanes has been shown to reduce vehicle speeds and can be used to provide space for other modes. Lanes as narrow as 10 – 10.5 feet have been used in Massachusetts roadway projects, but a design exception is required. Eleven-foot wide lanes are the most common in new designs for urban arterials.

### RAISED INTERSECTIONS

In a raised intersection, the center of the intersection is elevated with ramps on all approaches. They are

<sup>2</sup> Miller, Stephen. "When Street Parking Becomes a Pop-Up Bus Lane." CityLab. February 22, 2017. Accessed May 23, 2018. <https://www.citylab.com/transportation/2017/02/when-street-parking-becomes-a-pop-up-bus-lane/517404/>

often constructed out of brick, pavers, or other textured materials to denote a pedestrian context. They are typically installed on low traffic volume residential streets or in high pedestrian volume downtown areas. There are many raised intersections in Cambridge including at Windsor and Washington Streets.

### **SPEED HUMPS**

Speed humps are raised humps of pavement that are typically 12 – 14 feet long, and are often placed in a series 300 – 600 feet apart. They are effective in reducing speeds on residential streets, but also require special care by snow plow operators. There are speed hump examples on Day Street and on Paul Gore Street in Jamaica Plain, Boston.

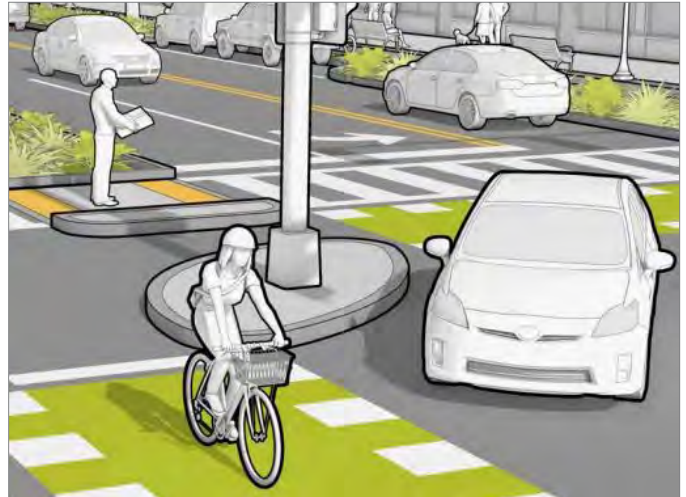
## **T INTERSECTIONS**

A T-intersection is a simple, three-way intersection where one of the legs is a minor road connecting perpendicularly to a major road. Typically, the minor road is under yield or stop control. T-intersections are ubiquitous in the City of Cambridge, and often have a greater level of safety and comfort for pedestrians and bicycles than do intersections that include merging traffic or complex interchanges.

## **PROTECTED INTERSECTIONS**

Protected intersections are an intersection design that ensures people on bicycles and in cars no longer have to look over their shoulders for each other. The design allows for more reaction time and awareness. Essentially, the bicycle crossings of the intersection are placed between 6 - 18 feet to the right of the vehicle crossings. When cars turn, cyclists are not riding next to them; instead they are riding well to the right, and, ideally, ahead of them. Bicycle stop bars in protected intersections are also much closer to the crossing than the vehicle stop bars. Pedestrians are also separated from bicycles. First, people walking through the intersection cross the bicycle lane. Then they have a protected place to wait to cross the motor vehicle lanes. Protected intersections are still relatively new to North America, but they have long existed in Europe. One of the first locations in the U.S. is in Salt Lake City, Utah, at 200 West and Broadway. More locally, these are being designed

for Commonwealth Avenue Phase 2A and Melnea Cass Boulevard, both in Boston.



*In a protected intersection, the approaching driver, traveling at a lower speed, has an opportunity to see the cyclist crossing earlier.*

## **PROTECTED BIKE LANES**

Protected Bike Lanes, also known as Separated Bike Lanes or cycletracks, are bike lanes that are physically protected from motor vehicle traffic. This physical protection comes in many forms. It can be a plastic flexpost, a row of parked cars, or, in sunnier climates, small plastic speedbumps called “armadillos.” It can also be made of more permanent materials such as concrete curbing, or the bike lane can be separated by grade, such as putting the bike lane at sidewalk level rather than at street level.

## **INVITATIONS TO STAY**

Invitations to Stay is a concept for creating thriving local business districts by increasing the number of people who choose to stay and hang out at a given location on the sidewalk or on pedestrian plazas. For example, hundreds of local business districts have found that adding seating in attractive locations not only encourages people to pause to sip a coffee, read the paper, or eat something, it also increases the perception of vibrancy and attracts even more people to the district. People love to people watch and to be seen. The Downtown Boston Business Improvement District (BID) and local businesses around Coolidge Corner in Brookline are both using this tactic successfully to attract new commercial tenants.

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Figure 22. Fresh Pond Parkway, Huron Avenue to Mount Auburn Street





Figure 23. Mount Auburn Street Corridor

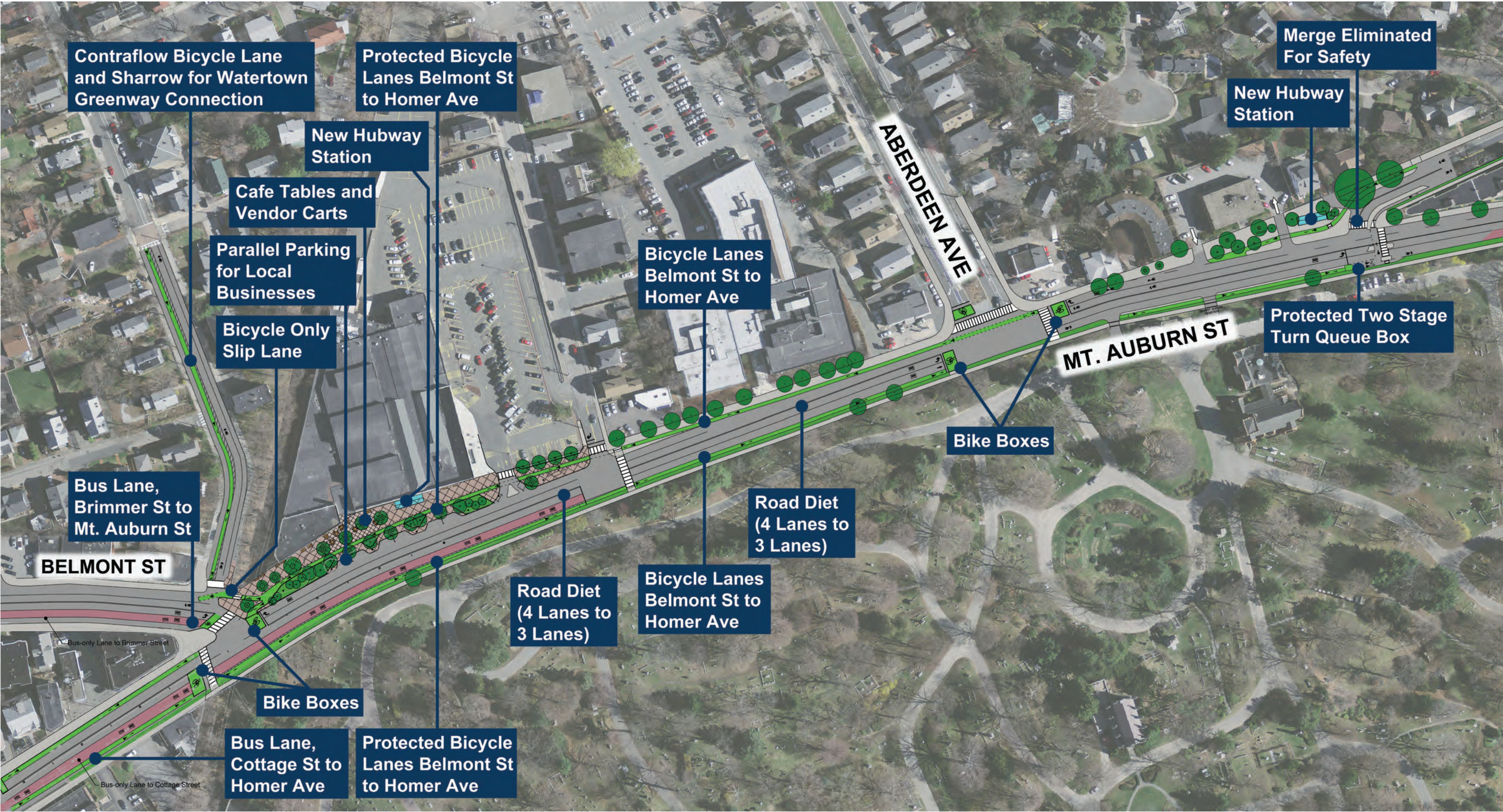




Figure 23. Mount Auburn Street Corridor (cont.)

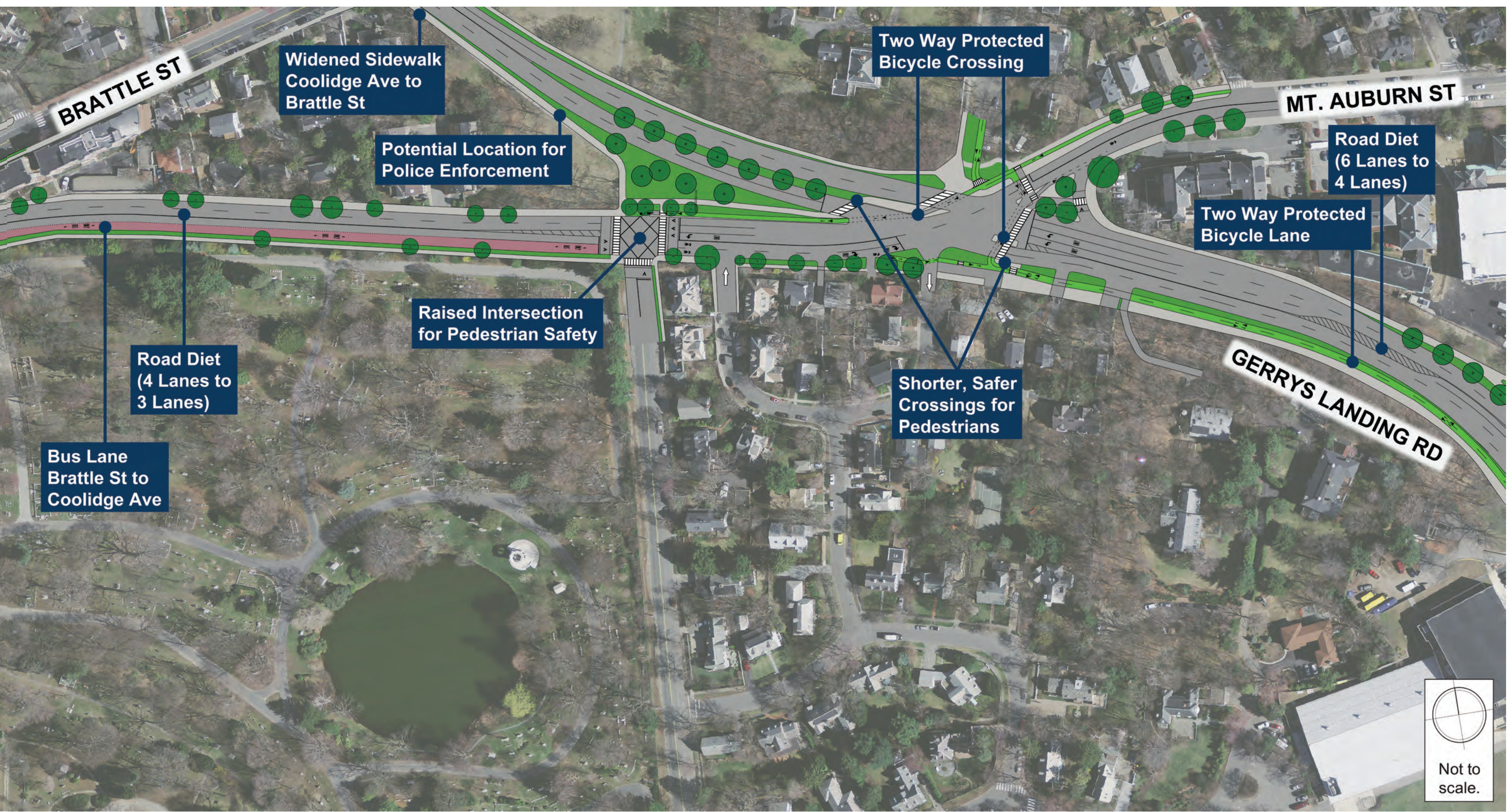




Figure 24. Gerrys Landing, Memorial Drive, and Greenough Boulevard

