Conceptual Design Report

Agassiz Road
Back Bay Fens  Boston, Massachusetts

March 2012

Massachusetts Department of Conservation and Recreation
Bureau of Planning and Resource Protection

In partnership with
Fenway Civic Association

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Introduction
Agassiz Road is a short but historically-significant roadway under the jurisdiction of the Department of Conservation and Recreation (DCR). The road serves as an important multi-modal corridor and connector within the Back Bay Fens and the Fenway neighborhood of Boston, but the current configuration has proven inadequate for pedestrians, bicyclists, and other non-vehicular users. The wide roadway encourages vehicular speeds that are higher than the speed limit and may affect the safety of other users. In addition, there is a current movement to seek new uses for historic “Duck House,” a former restroom building located along the road.

With a need to address these issues, the DCR and Fenway Civic Association (FCA) started the Agassiz Road Conceptual Design project in Spring 2011 with the main goal of enhancing the use, safety, and functionality of the Agassiz Road roadway, pathways, and landscape for all users. With Pressley Associates, Inc. and VHB, Inc. serving as the project design consultants, this report briefly describes the site’s history and existing conditions and fully details the conceptual design process. This serves as a companion piece to the Agassiz Road Site History and Existing Conditions Report, November 2011, which describes the site’s important history and current settings in more detail. The conceptual design described herein builds upon the Emerald Necklace Crosswalk and Pathway Treatment Guidelines currently being prepared by Pressley Associates for the DCR and Emerald Necklace Conservancy.

Along with the main project goal, the following objectives were established in preparing the conceptual design:

- Enhance facilities for multiple modes of use
- Maximize safety and minimize conflicts for all users
- Integrate parkway into parkland
- Improve neighborhood connections
- Improve landscape aesthetics
- Incorporate pathway and crosswalk treatment guidelines

Project Context
Agassiz Road is located in the northern part of the Back Bay Fens, roughly between Boylston Street and Charlesgate to the north and the Museum of Fine Arts and Clemente Field to the south. Other nearby park elements include the Victory Gardens and Fire Alarm Building, north of the road, and the Rose Garden and War Memorials, south of the road. As one of the few pedestrian and bicycle corridors over the Muddy River in the Back Bay Fens, Agassiz Road connects many residential, institutional, commercial, and cultural areas of the Back Bay and the East and West Fenway neighborhoods.

Figure 1 Bing Maps aerial photograph of Agassiz Road and surrounding areas
Whereas the majority of the Back Bay Fens is under the jurisdiction of the Boston Parks and Recreation Department (BPRD), the DCR maintains jurisdiction over the historic parkways and parkway right of ways, including Agassiz Road. The Back Bay Fens (a.k.a. the “Fens”) is part of a much larger system of parklands in Boston and Brookline known as the Emerald Necklace, stretching from the Boston Common and Public Garden to the Arnold Arboretum and Franklin Park. The central element within the Fens is the Muddy River that spills into the Charles River at Charlesgate. The Muddy River, originally a fluctuating tidal estuary, is now fresh water stream that begins downstream of Jamaica Pond. On its way to the Charles River, the Muddy River flows under a portion of Agassiz Road via the historic Agassiz Road Bridge. The outer boundary of the Fens is defined by two parkways, the Fenway and Park Drive. Agassiz Road serves as a connector road between these parkways and the west and east sides of the Fens. DCR jurisdictional limits are defined in the Fens as the back edge of the immediate sidewalks and pathways along Agassiz Road, Park Drive, and Fenway. As such, the width of this jurisdictional right of way can vary based on the location of the sidewalk/pathway. Along Agassiz Road, this jurisdictional limit is approximately 50 to 55 feet wide based on the current sidewalk/pathway locations.
History of Agassiz Road
Based on known, published plans, Agassiz Road was always a part of the original Frederick Law Olmsted plan for the Fens. Agassiz Road, the Agassiz Road Bridge, and Duck House were constructed in the late 1800’s at the same time as the construction of the Back Bay Fens and have been features within the park that remain to the present day. The Olmsted firm put much thought into the alignment and topographical relationship of Agassiz Road to the remainder of the park. But as evidenced in historic plans and photographs, the design and flow of Agassiz Road and the intersections with Fenway and Park Drive have been altered in the course of the past 125 years, although not nearly as much as other parts of the Back Bay Fens. The major change to Agassiz Road occurred in the 1970’s with a narrowing of the roadway and the conversion from a two-way to one-way vehicular system, along with Park Drive and Fenway, and the resulting reconfiguration of the intersections.

Figure 4 Map of the Back Bay Fens (Frederick Law Olmsted for the City of Boston Park Department, 1887)

Figure 5 Close-up of Figure 4
Figures 6 and 7 serve as a record of the as-built condition reflective of the original Olmsted design. Drawing from the November 1921 survey (Figure 6), Figure 8 is a representative cross-sectional view of the historic Agassiz Road, showing an approximately 35-feet wide, two-way roadway with 10-feet wide pathways on the immediate sides of the roadway. The historic roadway profile is therefore 55-feet wide, matching the width between the upper walls of the Agassiz Road Bridge. This reinforces the idea that the roadway and bridge were designed much in tandem with one another.

Figure 7 Circa early 1900’s photograph at the intersection of Agassiz Road with Park Drive, looking east down Agassiz Road. (Boston Public Library Print Room)
For the better part of the 1900s, the Back Bay Fens parkways became a more important part of the regional transportation system and with this, growing amounts of vehicular traffic. With the completion of the Bowker Overpass at the Charlesgate area of the park in 1964, traffic volumes dramatically increased on the Fens parkways, providing a high speed connection to Storrow Drive and other parts of the city.

In 1975, the Metropolitan District Commission (MDC), predecessor to the DCR, and BPRD reviewed the “ParkPass” program that was initiated by the Fenway Project Area Committee. This bold program proposed the moving of through traffic and commuter traffic off of the parkways and onto nearby arterial roadways. The Boston Redevelopment Authority (BRA) expanded on the ParkPass program and undertook a “Fenway Circulation Study” in 1977. The BRA figured that by redirecting traffic onto Boylston Street through intersection modifications and signal changes, the parkway vehicle counts could be dramatically reduced. One option in the BRA plan even called for converting Agassiz Road into a pedestrian-only route. But when the plans were advanced to construction, Agassiz Road remained as a vehicular road with a modified circulation pattern. Agassiz Road, as well as portions of Park Drive and Fenway, were all narrowed in width and converted into one-way traffic systems. In addition to narrowing the roadways, parallel parking along Park Drive was also eliminated and the formerly paved areas were converted into parkland. At Park Drive and Fenway, parking was redirected to the outer border parkway access roads where it remains today, although a portion of parallel parking still exists on the east side of the Fenway.

Following the 1970’s reconstruction, the BRA’s analysis was confirmed and traffic counts were reduced by at least half, with significant drops along Park Drive and Agassiz Road. The configuration of Agassiz Road, connecting roadways, and surrounding paths and landscape has not dramatically changed since this major reconstruction. While traffic conditions may have improved, pathway widths along Agassiz Road were actually reduced to only six-feet wide.
**Existing Site Conditions**

Pressley Associates conducted an on-site field review on May 25, 2011 to document the existing crossing areas and pathway conditions. These existing conditions are more fully detailed in the *Agassiz Road Site History and Existing Conditions Report*, November 2011.

Agassiz Road is approximately 840 feet long running in a gently curving west-east alignment and connecting Park Drive to Fenway. The roadway accommodates one-way vehicular traffic in an eastbound direction and, therefore, is connected to the wider roadway network by only a left turn off Park Drive (one-way southbound) and a left-turn onto Fenway (one-way northbound) controlled by a stop sign. As the size and type of vehicles allowed to use Park Drive and Fenway are restricted (including prohibition of buses), Agassiz Road does not fulfill any function as a public transit route.

As noted previously, Agassiz Road was narrowed in the 1970’s to its current width of approximately 19 feet from curb to curb. The line striping on Agassiz Road is limited to worn, solid white lines offset 1 foot from the curblines. There are no designated bike lanes. The sloped granite curb along both sides of the road have a three-to-four-inch reveal. The Agassiz Road roadway and curbing are in generally good to fair condition, but the sloped curbing allows vehicles to easily jump the curb allowing vehicular parking along the sides of Agassiz Road, even though parking is not technically allowed. There is, however, residential, parallel parking on the frontage/service roads of both Park Drive and Fenway, with some parallel parking also allowed on the main Fenway roadway across from the Agassiz Road intersection.

Sidewalks along both sides of Agassiz Road are paved with concrete and are approximately 6 feet wide. They connect to existing concrete, bituminous concrete, and stonedust sidewalks and pathways at the Park Drive and Fenway intersections. The nine to ten feet wide landscape strips between the sidewalk and curb appear to be mostly composed of highly compacted mineral soil and small stones, with little to no good quality topsoil. The landscape strips are slightly wider at the bridge and the soil at the bridge appears to have higher concentration of larger stones. Based on field observations, the landscape strips are frequently used by pedestrians, runners, and bicyclists, and parked upon by vehicles, lending to its highly compacted condition. Based on observations, it is apparent the existing sidewalk width is too narrow for the amount of pedestrian and bicycle traffic occurring in this area.
Two designated, striped crosswalks cross Agassiz Road, one located at each of the parkway intersections. Both crosswalks are non-signalized, with the Fenway crosswalk protected by the stop sign. Pedestrians must be more cautious at the Park Drive intersection where vehicles sometimes turn quickly onto Agassiz Road due to the large curb radius off of Park Drive. 100 feet north of the Fenway intersection, an on-demand, traffic-signalized crosswalk crosses Fenway. This is primarily a pedestrian signal with push button actuation and a maximum 60-second vehicle phase, but it also provides an opportunity for vehicles exiting the parallel frontage/service road on the east side. Farther up Fenway at the Westland Avenue intersection, another traffic controlled signal with crosswalks crosses Fenway and Westland Avenue. Approximately 125 feet north of the Park Drive intersection at Queensbury Street, there is an on-demand, traffic-signalized crosswalk crossing Park Drive. 180 feet to the south of the Park Drive intersection is a non-signalized crosswalk, located mid-block between Jersey Street and Queensbury Street. Both Park Drive crosswalks also cross the parallel frontage/service road on its west side. All existing curb ramps are concrete and can be considered in fair to good condition and fully functional, although the Park Drive intersection ramps have some concrete structural cracking.
At the Queensberry Street intersection, there is a strong desire line in the landscape median between Park Drive and the service road (Figure 15). This suggests that most pedestrians coming to and from Queensberry Street area and Agassiz Road do not use the existing crosswalk, but rather follow the more direct line of travel and cross Park Drive in an undesignated area. At the Fenway intersection, there are several desire lines alongside Agassiz Road where the existing paved pathways and sidewalks do not follow the logical or desired flow of pedestrian travel. Crossing of Agassiz Road in the vicinity of the Duck House was observed by pedestrians following the diagonal stonedust path on the south side of the road. There are no existing, designated mid-block crosswalks on Agassiz Road.

There are six drain inlets in Agassiz Road. According to Boston Water and Sewer Commission (BWSC) plans, most of these drain inlets seem to tie into a BWSC main drain located along the Fenway. Other drain inlets, remnants of the old, wider roadway in line with the old curbline, lie flush in the landscape area between the curbs and the pathways (Figure 11). For unknown reasons, these drain inlets were not capped but still have open drainage grates. Per the BWSC plans, most of these older drain inlets tie into the newer inlets. If the BWSC plans are accurate, then it can be assumed that the older drain inlets can be removed or abandoned if the roadway and pathway configurations are altered. All existing drain inlet grates are in a rectangular grid patterns and can be considered “bicycle friendly”.

Figure 14 Locations of existing designated crosswalks (indicated with red circle)

Figure 15 Intersection of Queensberry Street and Park Drive, showing existing desire line crossing area (Bing Maps)
Existing street lighting consists of cobra head fixtures attached to concrete poles (Figure 16). These lights are on both sides of Agassiz Road, variably spaced and alternating, for a total of 10 poles along the street frontage.

Most of the existing plants within or immediately adjacent to the DCR jurisdiction limits of Agassiz Road are large shade trees over lawn. With the exception of a lone basswood tree at the Park Drive intersection and a small red oak along the southern side of Agassiz Road, there are no other trees in the landscape areas between the road and sidewalk. Trees along the outside of the sidewalk include a mix of primarily pin oaks, red oaks, and basswoods. Other trees in the vicinity but outside of the project area include red and silver maples, ornamental crabapples, ashes, and weeping willows. At the Agassiz Road Bridge, there is a significant amount of unmaintained, mixed shrubby and invasive vegetation growing along the outside of the bridge wall and within the bridge planting shelves.
Transportation Analysis

As noted previously, Agassiz Road is an important corridor connecting the sections of the Fenway neighborhood to the west of Park Drive and east of Fenway, including the Symphony neighborhood. Owing to its location in relation to the surrounding area, it provides not only recreational access within the Emerald Necklace and the two abutting neighborhoods, but also as a pedestrian and bicycle route connecting a myriad of employment, educational, cultural, retail, recreational, and sports destinations in the Back Bay, Fenway, and Longwood neighborhoods.

During late Fall 2009, a program of pedestrian, bicycle and vehicle counts were performed in the area by a team of volunteer residents and students from the Center for Community & Learning Partnerships at Wentworth Institute of Technology. As part of this project and to quantify pedestrian and bicycle activity under fair-weather conditions along with updated vehicular counts, a new data collection program specific to Agassiz Road was executed in Spring 2011. The relevant data from 2009 and 2011 were combined and analyzed for pedestrians, bicycles and vehicles that are representative of good seasonal conditions for walking and cycling. For full transportation data and analysis, please see the Agassiz Road Site History and Existing Conditions Report. Below is a summary of the analysis.

Because of its one-way eastbound direction, and its connection with one-way roadways at either end, Agassiz Road does not have a regional role in the roadway network. Rather, it is a local/district level roadway which primarily serves traffic departing the Fenway neighborhood and the Boylston Street area. Because all traffic enters Agassiz Road from the north and must exit to the north, it has limited attraction as a cut-through route for traffic, as reflected in the volumes of traffic using the road.

There are no capacity issues at Park Drive, as there are no conflicting turning movements. At Fenway, traffic on Agassiz Road must stop and wait for a gap in the Fenway traffic flow. Capacity analysis indicates that there is no theoretical capacity issue for Agassiz Road traffic to exit onto Fenway. In practice, however, there is often a queue back from the nearby pedestrian signal and the signalized intersection on Fenway at the Westland Avenue resulting in some queuing on Agassiz Road while drivers wait for a gap to join the Fenway traffic flow. Occasionally, the stationary queue on Fenway presents an opportunity for Agassiz Road drivers to join Fenway at low speed through driver courtesy.

In addition to the data collection, several pedestrian and bicycle use patterns were observed. As noted previously at the Queensberry Street intersection, a large proportion of pedestrians using Agassiz Road simply jay-walk to cross Park Drive, due to the inconvenient location of the existing crosswalks. At Fenway, although the signalized crosswalk at the carriage lane exit is located north of Agassiz Road, observations indicate that it is well-used. It does provide a safe crossing for pedestrians across the higher traffic flow, but a limited extent of jay-walking is observed at Agassiz Road because the crosswalk is some distance away.

Although there are no specific bicycle accommodations, vehicular traffic is light and Agassiz Road provides an attractive alternative for cyclists to the heavily-trafficked Boylston Street and Huntington Avenue corridors to the north and south, respectively.

The existing transportation system at Agassiz Road can be summarized as follows:

- Important pedestrian and bicycle corridor, but limited vehicular function
- Connects the neighborhood with multiple destinations
- Used by over 2,000 pedestrians and 270 bicyclists (average daily) on weekdays
- Used by over 1,500 pedestrians and 130 bicyclists on a Saturday
- Average daily traffic volumes are approximately 1,070 on weekdays and approximately 870 and 770 vehicles on Saturday and Sunday, respectively
- Highest traffic flow is 70 vehicles on a weekday evening peak hour
- Weekday travel patterns reflect commuter peak characteristics
- Bicyclists ride in both directions, on both the roadway and the sidewalk
**Conceptual Design Options**
Based on analysis of existing conditions and in consultation with DCR, several design criteria were established to guide the creation of the conceptual design options. In no particular order, these criteria are:

- Park land should be enhanced.
- Safety is a design priority.
- Traffic calming features should be incorporated in the design.
- New roadway cross-section should focus on pedestrian and bicycle accommodations.
- Pathways should allow for shared-use accommodations.
- Opportunities for new and enhanced crosswalks should be explored.
- Consideration should be given for the redesign of the Park Drive and Agassiz Road intersection in order to calm traffic.
- Un-met pedestrian desire line needs across Park Drive, between Agassiz Road and Queensbury Street, should be addressed.

As revealed in the analysis of the existing transportation system, Agassiz Road carries a relatively low volume of motorized vehicles. It can be assumed that traffic capacity is not an issue, and thereby that additional roadway capacity is not necessary. But there is a relative high use of the corridor by pedestrians and bicyclists as one of the few routes across the Back Bay Fens section of the Muddy River. Thus the options for new roadway cross-sections should focus on improvements to the pedestrian and bicycle accommodations that are both safe and functional. Given the wide width of the one-way roadway and the propensity of a vehicle to speed as it merges off of Park Drive to Agassiz Road, consideration for traffic calming features should be incorporated in the designs.

The existing crosswalks at the Park Drive and Fenway intersections well serve the outer pathways, but crosswalk accommodations for the inner, park pathways are not present. There is opportunity to provide a new crosswalk to connect the existing inner, stonedust pathways, bridging an obvious connection. Less obvious is the future use of the Duck House. Based on the final use and design of the Duck House and its immediate landscape, there may be the need to have a crossing in the mid-section of Agassiz Road. The Queensberry/Park Drive crosswalk is less than ideally suited for the more used direction of pedestrian travel. As in use in other parts of the Emerald Necklace, a 10-feet wide, bituminous concrete shared use path can provide accommodations for all non-vehicular users.

With an understanding of the roadway’s history and current use and conditions, three conceptual design options for the roadway and adjacent walks were prepared in cross-section. These options, along with considerations for new and enhanced crosswalks, were presented in a public meeting on October 3, 2011.
Option A – Maintain Existing Roadway Width

Conceptual Design Option A maintains the existing roadways width of 18 to 19 feet. Line striping remains the same as currently exists with 1-foot wide shoulders on both sides (16 to 17-feet wide travel lane). To prevent parking alongside the road, new 9-inch high vertical granite curb lines both sides of the roadway. Per the historic design intent, the pathways are moved to be immediately adjacent to the curbline and are 10-feet wide to accommodate shared use. The existing cobra-head lights poles are replaced with “pendant”-style lights, now the DCR standard for parkways. The placement of the new light poles along the back edge of the pathways, rather than the edge of the roadway, allow for full illumination of both the pathways and roadway without restricting movement along the paths. As the roadway remains the same width, the existing drain inlets/catchbasins remain in place. Note that the functionality of the existing drain inlets is not known and further evaluation will be required to determine if these inlets are functional and successfully drain the roadway.

The total roadway corridor is reduced down to 39 to 40 feet from the existing 50 feet (approximately) and puts at least 10 feet of non-paved land back into the park side of the corridor. This new park land is more easily maintained as grass and provides opportunities for new “park” tree, rather than “street” trees.
Option B – Reduced Roadway Width with Bike Lane

Conceptual Design Option B reduces the existing roadways width to 16 feet curb to curb. The reduced roadway is striped for a new 5-feet wide bicycle lane with an 11-feet vehicle travel lane. Like Option A, there are new 9-inch high vertical granite curb lining and 10-feet wide shared-use paths along both sides of the roadway. DCR “pendant”-style lights line the back edge of the path. As the roadway is reduced in width, the existing drain inlets/catchbasins will have to be relocated on at least one side of the roadway to the relocated curbline.

The total corridor width is reduced to 37 feet, giving 13 feet of land back to the park side.

Option C – Reduced Roadway with Bike Lane and Landscape Strips

The roadway and bike lane configuration in Conceptual Design Option C matches the design shown in Option B including the use of 9-inch high granite curbs. But rather than having paths alongside the road, Option C incorporates landscape strips separating the paths from the roadway. With the limited width of the bridge, this means 9-feet wide landscape strips and 10 feet wide shared use paths on both sides. Unlike Options A and B, the landscape strips provide the opportunity to plant street trees and places new pendent light poles in amongst the row of trees. The result is more of a buffer to separate the pathways from the road. But, with the light pole placement, there is less light being cast on the pathways unless additional pedestrian scale fixtures are added. Like Option B, the drain inlets/catchbasins will have to be relocated along the new curbline(s).
**Crosswalks**

Concepts for several new and relocated crosswalks were presented at the October 3, 2011 meeting. Figure 21 shows locations for three proposed new crosswalks.

1. New crosswalk over Agassiz Road connecting the two inner stonedust paths on the Fenway side. Currently these paths are not served by a crosswalk and curb ramps although this is a significant pedestrian connection.
2. New crosswalk over Agassiz Road in the vicinity of the Duck House. The diagonal-running stonedust path on the south side of Agassiz Road creates the need for a mid-block crossing.
3. At Queensberry Street, the natural pedestrian flow for pedestrian coming and going from Agassiz Road and points south is to cross south of the intersection rather than use the less direct signalized crosswalk.

Figures 22 and 23 show a conceptual scheme for the layout for a new or relocated Queensberry Street crosswalk that is more in line with the desired flow of pedestrian travel. Also note a conceptual sketch for reducing the curb radius from Park Drive onto Agassiz Road, with the intention of slowing vehicle speeds during the turning movement.
Preferred Conceptual Design Option

Following the presentation of the conceptual design options, members of the public present discussed their issues and commented on the designs. At the conclusion of the meeting, the public was directed to vote on their preferred option. Figure 24 is a photograph of the voting board from that meeting, and, as evident, Option B was voted as the overwhelming favorite. Based public comments, they preferred to see bicycle lane striping and the placement of the pathways adjacent to the roadway.

In the weeks following the public meeting, Pressley Associates and VHB met separately with DCR traffic engineers and the Boston Transportation Department to discuss and refine the design of Option B. After refinement of the design and taking into consideration comments from the public agencies, Option B was refined into a Preferred Conceptual Design (Figures 25 and 26).

![Preferred Conceptual Design Option](image)

Figure 24 Photograph of conceptual design options voting board from October 3, 2011 meeting showing Option B as the option preferred by the public members in attendance
The Preferred Design Option keeps the roadway at consistently 19 feet width, similar to the existing width. By maintaining near the current width, no drain inlets will need to be relocated and saves on construction costs in this and other areas while allowing for a full bicycle lane and emergency vehicle access. As shown on the cross section in Figure 25, there is room to widen the bicycle lane to 6 feet width. This along with a one-foot wide shoulder on the opposite side of the road reduces the active vehicular travel lane to 12 feet. Ten-feet wide shared use paths are adjacent to the roadway curbs.

The cross-section for the preferred design option seeks to better allocate the curb-to-curb roadway width to accommodate bicycles in the one-way west-to-east direction of traffic flow, and also accomplish a traffic-calming influence on vehicle travel by reducing the travel lane width. The roadway must of course accommodate emergency vehicles, and, while a 16-foot roadway cross-section would likely be adequate in practice, it is anticipated that the Boston emergency service agencies will require an 18-foot minimum roadway width, particularly since the preferred option incorporates vertical granite curbs with a 9-inch reveals on both sides of Agassiz Road. The decision to maintain the wider width came about from discussions with the public agencies.

The emergency vehicle requirement is compatible with maintaining the existing curbline width on Agassiz Road, thereby yielding a lower construction cost as no drainage structures will need to be relocated. Within this cross-section, there is some flexibility in how the roadway width is allocated by pavement striping.
traffic speeds, the vehicle travel lane could be narrower than the traditional standard 12-foot lane. The 12-foot travel lane is shown in the Preferred Design Option cross section and plan, but in the final design, a 10-foot or 11-foot maximum width may be recommended to further calm traffic. The bicycle lane width should be a minimum of 5-foot, but there is room to easily increase the lane to at least 6-foot in the preferred design option. It is recommended that any available additional width should be allocated to edge striping (striped shoulder) or a striped buffer between the travel lane and the bicycle lane, therefore allowing for a minimal width of the vehicle travel lane.

**Bicycle Lanes**
The Preferred Design Option cross-section and plan (Figures 25 and 26) show the bicycle lane in the conventional position on the right-hand side of Agassiz Road in the direction of travel, with the vehicle travel lane to its left. This configuration is where both vehicle drivers and bicyclists normally expect to be located relative to each other. The position of the bicycle lane, however, could be considered in the context of the existing connecting one-way roadway circulation, and the possibility of bicycle lanes being introduced on Park Drive and Fenway in the future.

With Park Drive (southbound) connecting as a left-turn to Agassiz Road (eastbound), and in turn connecting to Fenway (northbound) as a left-turn, it would likely be easier and safer for bicyclists to maneuver if the bicycle lane on Agassiz Road was located on its left-hand side. While strictly this is not the conventional location for a bicycle lane, it is an acceptable, and possibly more desirable, location for a one-way roadway connecting other one-way roadways in this configuration. Left-side bicycle lanes have been implemented successfully on other one-way roadways in both Boston and Cambridge. As an example of this configuration, Option B prepared for the first public meeting showed that the bike lane on the left-hand side position (Figure 19).

It is recommended that, ultimately, the final location of the bicycle lane should be determined closer to the time of construction, taking into consideration what, if any, bicycle accommodations have been planned or constructed for Park Drive and Fenway at that time.

**Roadway Intersections**
There is no proposed major redesign of the Agassiz Road/Fenway intersection, aside from some slight tightening of the radius curb with a better delineated striped crosswalk and curb cuts conforming to the new pathway layout and per current accessibility standards (Figure 28). A stop line should be clearly delineated before the crosswalk.
In order to improve pedestrian and bicyclists safety at the Park Drive/Agassiz Road crosswalk and to better calm vehicular traffic, the Preferred Design Option proposes tightening the intersection by significantly reducing the curb radius. This should reduce the speed of vehicles coming off on Park Drive onto Agassiz Road. The design shown in Figure 30 is conceptual only and additional study and engineering design will be required to determine the best alignment and curb radius.

**Pathways and Crosswalks**

In the Preferred Design Option, ten-feet wide shared use paths line both sides of Agassiz Road, immediately adjacent to the curb. These two shared-use paths connect to paths at both the Fenway and Park Drive intersection. DCR standard pendant lights, along the back edge of the shared use paths, illuminate both roadway and pathways.

Along Fenway, the existing outer (DCR) paths are concrete, but there is opportunity to redesign the outer (DCR) Fenway paths to meet the standards of shared-use (ten-feet wide and bituminous concrete) as recognized in other parts of the Emerald Necklace. In the Preferred Conceptual Design, consideration is made to reconfigure the Fenway side pathways to better connect to the proposed shared use pathways on Agassiz Road. As shown in the existing aerial photo in Figure 27, the outer concrete pathway south of the intersection splits into two pathways as it approaches Agassiz Road from the south. The conceptual design (Figure 28) simplifies the arrangement into a single 10-feet wide path in the mode of the Agassiz Road shared use path design. The crosswalk at the end of Agassiz Road is realigned to be perpendicular to the flow of traffic with new fully accessible curb ramps. Consideration could also be given to a raised crosswalk treatment in this location to strengthen its traffic calming impact and improve the visibility of pedestrian and bicyclists crossing Agassiz Road.

A new striped designated crosswalk is proposed to connect the existing inner (BPRD) stonedust paths. A realignment of the pathways may be required to better align to the new crosswalk and shared use paths. A new crosswalk will also mean new accessible curb cuts, features that do not currently exist.

At the Park Drive intersection with the proposed tightening of the intersection, the adjoining pathways are realigned to line up with a relocated crosswalk with curb cuts (see Figure 30). As with the intersection design, additional study and design will be needed to determine the best location for this crosswalk within the context of the tightened intersection.

The final location of the Agassiz Road mid-block crosswalk will be dependent on the final use of the Duck House and the design of the landscape and pathways around the building. Therefore this crosswalk is not shown on the Preferred Design Option plan but is a feature recommended to be planned and designed as plans for the Duck House advances.

**Queensberry Street Intersection**

During the evaluation of existing conditions, it was determined that a substantial portion of pedestrians cross Park Drive to and from Agassiz Road on a diagonal desire line evidenced by compacted soil areas in the grass median and shoulders, south of Queensberry Street. Because of its location, the existing signalized crosswalk to the north of Queensberry Street is not commonly used by those pedestrians, although that crosswalk does
provide an important and safe crossing for pedestrians between the neighborhoods and points north of Queensberry Street.

It should be noted that the existing signalized crosswalk is part of the overall traffic signal control of the Park Drive/Queensberry Street intersection. Based on traffic volumes and observations in the field, however, it is unlikely that the traffic signal control satisfies traffic signal warrants. Therefore the signal is likely not needed from a traffic-control perspective, albeit that it does provide a protected pedestrian phase on the north side of the intersection. A stop sign at the end of Queensberry Street should suffice, but further evaluation of the existing and future Queensberry Street traffic signal warrants is necessary before final decisions are made.

It is clear that a crosswalk should be provided on Park Drive to the south of Queensberry in a location and configuration that is more compatible with the Agassiz Road desire-line. There are several potential ways to accomplish this, including:

- Incorporation of a new crosswalk within the intersection signalization;
- Elimination if the traffic signal with modifications to introduce un-signalized crosswalks and stop control at the intersection;
- Or, possibly, some hybrid design which retains the existing signal as a flashing-yellow warning indicator only.

Additional crosswalk signage will be needed if the crosswalk is not protected with a red light traffic signal. Figure 32 shows a possible crosswalk configuration from a conceptual design point of view.

The evaluation and identification for a safe and convenient pedestrian crossing configuration at this location is beyond the scope of this Agassiz Road study. Further detailed traffic evaluation and design is necessary, and therefore it is recommended that additional study of this facility should be performed closer to the time of anticipated construction.
**Order of Magnitude Cost Estimate**

For the purposes of determining both design and construction order of magnitude cost estimates, the concept described in the Preferred Conceptual Design has been divided into two discrete projects, Agassiz Road and the Queensberry Street Intersection. The scope of design work for both projects will require additional civil and traffic engineering, surveying, and landscape architectural design above and beyond the conceptual planning detailed in this report.

**Agassiz Road Estimated Construction Cost**

The estimated construction cost below is solely based on the Proposed Conceptual Design for Agassiz Road and associate pathways and landscape areas between Park Drive and Fenway. This estimate does not include the Queensberry Street intersection conceptual design.

1. Site Preparation and Demolition $40,000  
2. Roadway Paving, Curbing, and Crosswalks $175,000  
3. Pathway Paving $135,000  
4. Lighting and Electrical $125,000  
5. Fine Grading, Lawn, and Trees $25,000  

**TOTAL** $500,000

**Agassiz Road Estimated Design Cost**

The full design cost for the $500,000 construction project described above is estimated at approximately $75,000. This design cost estimate assumes there will be no City of Boston review since all roadways are within DCR jurisdiction. Since this project is within DCR jurisdiction, three design submissions can be expected. The design cost estimate includes the following:

- Field Survey and updated Existing Conditions Plan  
- Preliminary Design  
- Environmental Permitting  
- DCR Permits and Meetings  
- Project Meetings  
- Final Design  
- Bid Phase Services

**Note:** The Agassiz Road area of the Back Bay Fens falls within the construction zone for Phase 2 of the Muddy River Restoration Project. This report recommends that any improvements to Agassiz Road should be coordinated with the U.S. Army Corps of Engineers and the implementation of the Phase 2 Muddy River Restoration Project.
Queensberry Street Intersection Estimated Construction Cost

The estimated construction cost below is solely based on the Proposed Conceptual Design. As this part of the proposed plan is subject to additional study, planning, and design above and beyond the additional design for just Agassiz Road, the cost shown below should be seen as a minimum construction cost and will most likely be higher if signalization significantly changes. Final, actual construction costs for each construction component described below may differ based on final design decisions for roadway configuration, crosswalk design and location, and changes to traffic signalization and signage.

1. Site Preparation and Demolition $5,000
2. Roadway Paving, Curbing, and Crosswalks $10,000
3. Pathway Paving $5,000
4. Lighting and Electrical $25,000
5. Allowance for Signalization Changes $12,000
6. Fine Grading and Lawn $2,000

TOTAL $60,000

Queensberry Street Intersection Estimated Design Cost

Due to the fact that further preliminary study is necessary for the Queensberry Street intersection and crosswalks, $30,000 is estimated for preliminary traffic and civil engineering. Preliminary engineering includes the following:

- Planning Study and Technical Memo
- Field Survey and updated Existing Conditions Plan (can be incorporated into Agassiz Road Field Survey described above, thereby reducing costs)
- 3 to 4 concept plans for intersection and crosswalk design
- Project Meetings (DCR, public, etc)

For Final Design, the design cost will depend on the selected concept design and the level of engineering design involved (curb line shifts, drainage modifications, changes in signalization, etc). Since this project is within DCR jurisdiction, three design submissions can be expected. Final design cost can range from $20,000 - $45,000 over and above the $30,000 needed for preliminary traffic engineering.
Appendices

1. Existing Conditions Plan (60 scale) – 11”x17”
2. Preferred Conceptual Design Option Plan (80 scale) – 11”x17”
3. Public Meeting Presentations
DCR Agassiz Road - Path and Parkway Improvements
Preferred Option Conceptual Design - Maintain Existing Roadway Width with Bike Lane
Emerald Necklace - Agassiz Road Conceptual Design
A DCR and Fenway Civic Association Partnership Project

DCR Public Meeting
October 3, 2011, 6:30 pm – 8:00 pm
Berklee College of Music
142 Massachusetts Ave., 2nd Floor Boston, MA

Agassiz Road Conceptual Design Project Team
• DCR
• Pressley Associates
• Fenway Civic Association
• VHB
Emerald Necklace - Agassiz Road Conceptual Design

Project Location

Project Objectives

- Enhance facilities for multiple modes of use
- Maximize safety and minimize conflicts for all users
- Integrate parkway into parkland
- Improve neighborhood connections
- Improve landscape aesthetics
- Incorporate pathway and crosswalk treatment guidelines
Scope of Work

- Existing Conditions Inventory and Assessment
  - Historic research
  - Landscape conditions
  - Pedestrian, bicycle, and traffic counts
  - Site History and Existing Conditions Report

- Conceptual Plan Alternatives
  - Roadway and pathway design
  - Landscape treatments
  - Crosswalk improvements
  - First Public Meeting

- Preferred Conceptual Design
  - Second Public Meeting
  - Final Conceptual Design Report

Pathway and Crosswalk Treatment Guidelines

Boylston Street at the Back Bay Fens to the Casey Overpass at the Arborway

Map showing extent of DCR Emerald Necklace Pathway and Crosswalk Treatment Guidelines
(Base Map courtesy of Emerald Necklace Conservancy)
DCR Jurisdictional Limits

Agassiz Road Historic Design
Emerald Necklace - Agassiz Road Conceptual Design

Circa 1900's – Intersection of Agassiz Road and Audubon Road (Park Drive)

Historic Roadway Profile

- 35' Roadway
- (2) 10' Pathways
- 55' Total Profile

Duck House Side
Conversion to One-Way Traffic

Emerald Necklace - Agassiz Road Conceptual Design

Agassiz Road Existing Site Conditions
Existing Site Conditions

Bing Maps

Emerald Necklace - Agassiz Road Conceptual Design
Emerald Necklace - Agassiz Road Conceptual Design

Existing Roadway Profile
• 18’ – 19’ Roadway
• Sloped Curbs
• 9-10’ Landscape Strips
• (2) 6’ Pathways
• 50’ Roadway Profile
• "Cobrahead" light poles

Existing Roadway Profile at Bridge
• 19’ Roadway
• Sloped Curbs
• 11-13’ Landscape Strips
• (2) 6’ Pathways
• 55’ Roadway Profile
• No lights on bridge
Emerald Necklace - Agassiz Road Conceptual Design

Existing Site Conditions

Agassiz Road Transportation Analysis
Transportation Context

Existing Roadway Layout
Agassiz Road Pedestrian Volumes

Friday

Saturday

12-Hour Totals
EB 1,085
WB 1,400
Total 2,485

12-Hour Totals
EB 811
WB 1,003
Total 1,814

Note: Based on counts performed on May 6 & 7, 2011

Emerald Necklace - Agassiz Road Conceptual Design

12-Hr Pedestrian Counts Directional Distribution

Red Weekday %
Green Weekend %

Note: Based on Friday and Sunday counts performed in November 2009

Emerald Necklace - Agassiz Road Conceptual Design
Agassiz Road
Friday & Saturday Hourly Traffic Volumes

Hour Commencing

Vehicles per Hour (VPH)

Saturday
Friday

Note: Based on counts performed on June 25 & 26, 2011

Vehicle Weekday Commuter
Peak Hour Traffic Counts

AM Peak Hour
PM Peak Hour

Note: Based on counts performed in November 2009 and June 2011
Agassiz Road Design Options

Design Considerations

- Enhancement of Park Land
- Roadway and Path Width
- Accommodations for Shared-Use
- New and Enhanced Crosswalks
- Park Drive and Fenway Intersections
Option A – Maintain Existing Roadway Width
- 18’-19’ Roadway (maintains existing road width)
- (2) 10’ Shared-Use Pathways adjacent to roadway (historic precedence)
- 39’ Total Profile with 9”-high vertical curbs
- DCR Pendant-style light poles
- Least expensive option (no change in curb alignment)

Option B – Reduced Roadway Width
- 16’ Roadway (reduced roadway width)
- 11’ Auto Lane; 5’ Bicycle Lane shown
- (2) 10’ Shared-Use Pathways adjacent to roadway (historic precedence)
- 37’ Total Profile with 9”-high vertical curbs
- DCR Pendant-style light poles
- Expense involved in re-aligning curbline
Option C – Reduced Roadway with Landscape Strips

- 16' Roadway (reduced roadway width)
- 11' Auto Lane; 5' Bicycle Lane shown
- (2) 10' Shared-Use Pathways separated from roadway
- 9' Landscape Strips (Trees optional)
- 55' Total Profile with 9"-high vertical curbs
- DCR Pendant-style light poles
- Expense involved in re-aligning curblines

Existing Crosswalk Locations

-existing crosswalk locations (designated)
Proposed Crosswalk Locations – Fenway

Proposed Crosswalk Locations – Park Street
Proposed Crosswalk Locations – Park Street

Existing Crosswalk (designated)  Proposed New/Relocated Crosswalk (designated)

Next Steps

• Decision on Preferred Conceptual Design Option
• Refine Conceptual Design
• Mid – November Meeting to Present Preferred Conceptual Design Option
• Final Report
Emerald Necklace - Agassiz Road Conceptual Design
A DCR and Fenway Civic Association Partnership Project

DCR Public Meeting
November 21, 2011, 6:30 pm – 8:00 pm
Wheelock College Campus Multi-Purpose Room
1st Floor, Room 103  150 The Riverway

Agassiz Road Conceptual Design Project Team
• DCR
• Fenway Civic Association
• Pressley Associates
• VHB
**Project Location**

- **Emerald Necklace - Agassiz Road Conceptual Design**

**Project Objectives**

- Enhance facilities for multiple modes of use
- Maximize safety and minimize conflicts for all users
- Integrate parkway into parkland
- Improve neighborhood connections
- Improve landscape aesthetics
- Incorporate pathway and crosswalk treatment guidelines
Scope of Work

• Existing Conditions Inventory and Assessment
  o Historic research
  o Landscape conditions
  o Pedestrian, bicycle, and traffic counts
  o Site History and Existing Conditions Report

• Conceptual Plan Alternatives
  o Roadway and pathway design
  o Landscape treatments
  o Crosswalk improvements
  o First Public Meeting

• Preferred Conceptual Design
  o Second Public Meeting
  o Final Conceptual Design Report

DCR Jurisdictional Limits

Emerald Necklace - Agassiz Road Conceptual Design
Emerald Necklace - Agassiz Road Conceptual Design

Circa 1900’s – Intersection of Agassiz Road and Audubon Road (now Park Drive) looking east

Existing Roadway Layout

Existing Crosswalks indicated in green
Existing Paths indicated in brown
Emerald Necklace - Agassiz Road Conceptual Design

**Existing Roadway Profile**
- 18' - 19' Roadway
- Low, Sloped Curbs
- (2) 9-10' Landscape Strips
- (2) 6' Pathways
- 50' Total Roadway Profile (approx.)
- "Cobrahead" light poles

Duck House Side

**Transportation Analysis**

**Existing Conditions**
- Important pedestrian and bicycle corridor, but limited vehicular function
- Connects the neighborhood with multiple destinations
- Used by over 2,000 pedestrians and 270 bicyclists on weekdays
- Used by over 1,500 pedestrians and 130 bicyclists on a Saturday
- Highest traffic flow is 70 vehicles on a weekday evening peak hour
- Weekday travel patterns reflect commuter peak characteristics
- Bicyclists ride in both directions, on both the roadway and the sidewalks
Transportation Analysis
Design Needs

- New roadway cross-section should focus on pedestrian and bicycle accommodations
- Safety is a design priority
- Traffic capacity is not an issue
- Traffic calming features should be incorporated in the design
- Opportunity for new pedestrian crossing near Duck House
- Crosswalk improvements on Park Drive call for carefully designed accommodations including a new crosswalk

Design Considerations

- Enhancement of Park Land
- Roadway and Path Width
- Accommodations for Shared-Use
- New and Enhanced Crosswalks
- Park Drive and Fenway Intersections
Voting from October 3rd Meeting

Emerald Necklace - Agassiz Road Conceptual Design

Option B

- 16' Roadway (reduced roadway width)
- 11' Auto Lane; 5' Bicycle Lane shown
- (2) 10' Shared-Use Pathways adjacent to roadway (historic precedence)
- 37' Total Profile with 9"-high vertical curbs
- DCR Pendant-style light poles
- Expense involved in re-aligning curb line (new drain inlets)

Note that overall dimension of 37' includes 6" curbs on both sides of roadway
Proposed Crosswalk Locations

- Existing Crosswalk (designated)
- Proposed New Crosswalk (designated)

Emerald Necklace - Agassiz Road Conceptual Design

Conceptual Design

Preferred Option
- 19' Roadway (maintains existing roadway width)
- 12' Auto Lane plus 1' striped shoulder; 6' delineated Bicycle Lane
- 9”-high Vertical Granite Curbs
- (2) 10’ Shared-Use Pathways adjacent to roadway (paved with bit. concrete)
- 40’ Total Roadway Profile width (10’ back into park land)
- DCR Pendant-style light poles
- Maintain existing Drain Inlets

Duck House Side

Emerald Necklace - Agassiz Road Conceptual Design
Note that overall dimension of 40' includes 6" curb on both sides of roadway.
Preferred Option Conceptual Design

Emerald Necklace - Agassiz Road Conceptual Design

Conceptual Plan

Emerald Necklace - Agassiz Road Conceptual Design

Existing Condition

Emerald Necklace - Agassiz Road Conceptual Design
Emerald Necklace - Agassiz Road Conceptual Design

NEW CROSSWALK

REMOVED PATHWAY

Conceptual Plan
Emerald Necklace - Agassiz Road Conceptual Design

Queensberry Street
Agassiz Road
Park Drive
Existing Condition

Emerald Necklace - Agassiz Road Conceptual Design
Next Steps

- Final Report posted to DCR Website – Mid-December
- Design and Construction – Subject to available funding and in coordination with Army Corps Muddy River project