



Thomas M. Menino, Mayor
City of Boston

Thomas J. Tinlin, Commissioner
Boston Transportation Department

in partnership with:

Boston Redevelopment Authority
State Executive Office of Transportation

FENWAY - LONGWOOD - KENMORE

Transportation and Pedestrian Action Plan

February 2009



CITY OF BOSTON, MASSACHUSETTS
Office of the Mayor
Thomas M. Menino

Dear Friends,

I am pleased to present to you the Fenway-Longwood-Kenmore Area Transportation and Pedestrian Action Plan.

This document, which has concept designs for streetscape and traffic improvements as well as guidelines for future public and private infrastructure investment, is the product of a partnership between neighborhood residents, property owners, local businesses and institutions, and city staff. I would like to thank the many members of the Fenway, Longwood Medical Area and Kenmore Square communities who contributed so much time and effort throughout the community planning process.

With its mix of homes and businesses, the Fenway-Longwood-Kenmore area plays a critical role in the economy of the city and the region. The area hosts several of the nation's top universities and medical institutions; one of New England's most popular tourist attractions (Fenway Park); and a vibrant commercial district that serves the tourists as well as the neighborhood. It also hosts a segment of Boston's beloved Emerald Necklace park system. The goal of the Action Plan is to create quality streets and sidewalks that will sustain economic growth while balancing a variety of users and needs.

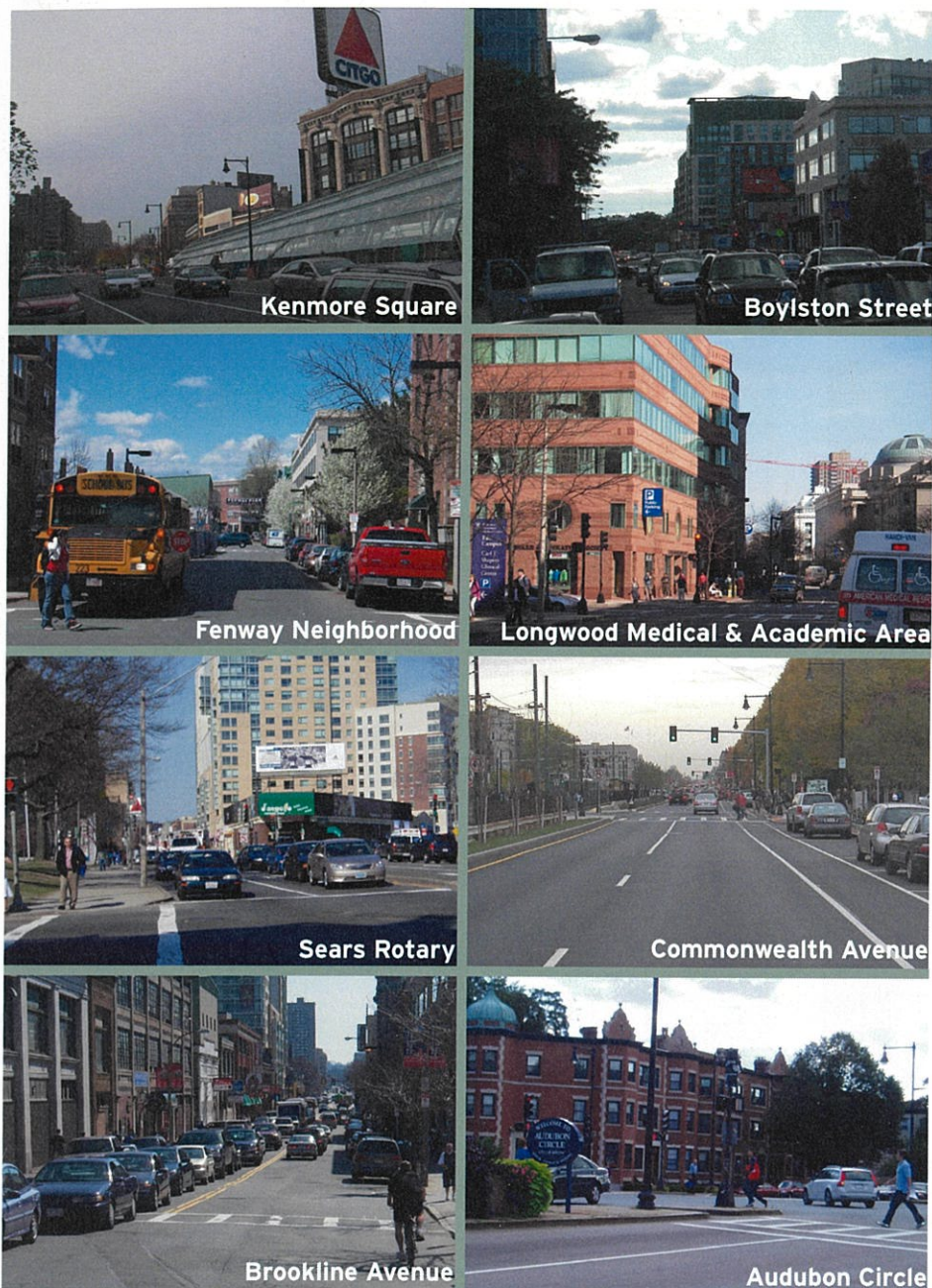
When implemented, the design and guidelines presented in this Action Plan will result in a safe and pleasant pedestrian environment with wider sidewalks and trees; improved bicycle circulation with dedicated bike lanes and a new multi-use path; reduced traffic congestion through intersection improvements and the creation of smaller blocks and a new road; and enhanced universal access.

As we take steps toward implementing the improvements presented in this Action Plan, I would like to congratulate all of those involved for a job well done, and ask that you continue to show your pride in our city by participating in the planning and design of your neighborhoods.

Thank you for all of your great work!

Sincerely,

Thomas M. Menino
Mayor of Boston



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Consultant Team:
 HNTB Corporation
 Fay, Spofford and Thorndike
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EXECUTIVE SUMMARY

The Fenway-Longwood-Kenmore area is one of the most important economic centers for the City of Boston with its diverse areas of growth for residents, businesses, employees, patients, students, and visitors. The area's growth has and will continue to strengthen the City's unique position in the region and nation. Over the next 5 to 10 years the Fenway, Longwood, and Kenmore areas will evolve, build on their strengths, and reinforce this area as one of Boston's greatest assets.

This Transportation and Pedestrian Action Plan (Action Plan) was built on previous work done in the area over the last 10 years, with a focus on fulfilling the intent and purpose of the 2006 Commonwealth Investment Act, which appropriated \$55 million toward transportation improvements in the area. The objectives that framed the analysis were: create a safe pedestrian environment and wider sidewalks; sustain economic growth; manage congestion; improve bicycle access and circulation; protect residential quality of life; and, enhance universal access.

The study began with an analysis of existing traffic and parking conditions in 2007 using the City's Synchro® and Traffic Modeling Interface (TMI) along with an analysis of historical crashes from MassHighway data. The result of the congestion and safety analysis was to identify hot spots for pedestrians, bicyclists, and vehicles under existing conditions.

The analysis then projected conditions for 2012 and 2020 using development pipeline data from the Boston Redevelopment Authority (BRA). Key findings include:

- Growth in traffic for this area is projected to increase by 12 to 13% by 2012.
- If all the development occurs as projected between 2007 and 2020 (assuming a mode share of 60% transit to 40% auto), traffic demands could increase up to 34% in priority project locations.
- Between 2007 and 2012, while overall traffic will increase by 12%, traffic demand in priority areas will increase by 19 percent.
- Between 2012 and 2020, traffic demand in priority project locations will increase another 12 percent.

The framework for developing design options was based on the objectives and the hot spot analyses. Through community and stakeholder review, three areas were identified for redesign.

Multi-Use Path

- Key off-street pedestrian and bicycle link between Fenway, Longwood, and Kenmore.
- Provide car-free connection from Muddy River and Park Drive to Fenway, Yawkey, and Kenmore MBTA stations.
- Provide opportunity for pedestrians and cyclists to travel between LMA and Fenway and avoid Sears Rotary.
- Part of City of Boston's advancement towards becoming a more bike-friendly city.
- Key link in progressing regional bike plan to provide uninterrupted facilities throughout Boston.

Boylston Street

- Reduce the curb cuts, widen sidewalks, and enhance landscaping.
- Develop appropriate bicycle connections along Boylston Street to both LMA and downtown Boston.
- Install pedestrian countdown signals at every intersection.
- Design all intersections with curb cuts and pavement treatment to support universal accessibility.
- Adjust signal timing along Boylston Street to allow for minimal congestion during peak hour travel times.
- Identify areas for public art to celebrate the gateway entrances to Boylston Street at Sears Rotary and Ipswich Street.
- Provide north-south connection with new road connecting Boylston Street to Van Ness Street and eventually to Beacon Street.

Audubon Circle

- Add 5' bike lanes on Beacon Street to connect with the Town of Brookline's lanes.
- Design all intersections with curb cuts and pavement treatment to support universal accessibility.
- Pedestrian crossing distances on both roads have been substantially shortened through wider sidewalks and travel lane adjustments.
- Work with the community to address landscaping, planters, placement of signal posts, artistic elements to be included in the circle, and crosswalk and intersection designs.
- The roadway that originally demarcated the original "circle" has been eliminated to maximize landscaping and eliminate safety problems.



Priority Projects for Right-of-Way Redesign

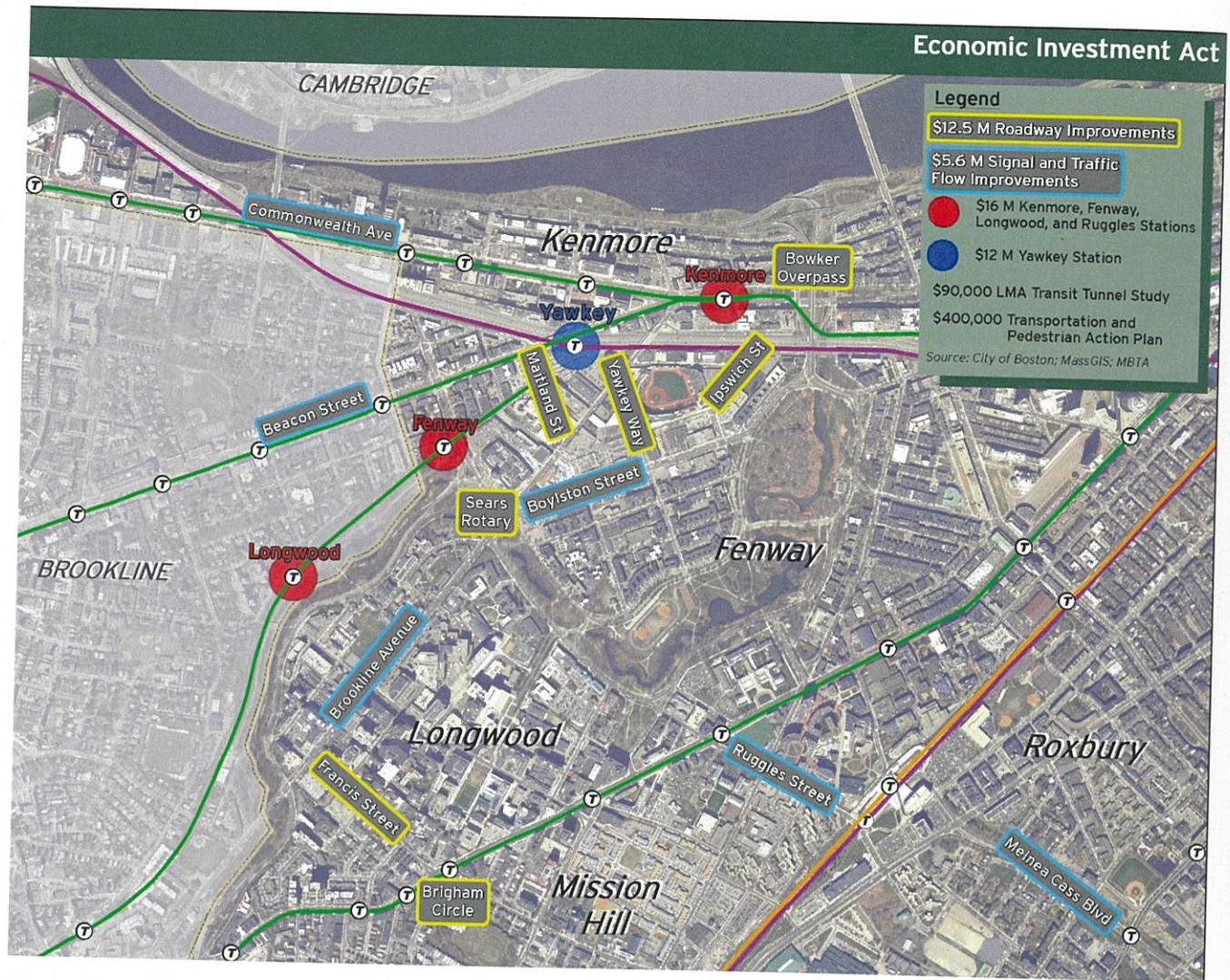


1. ECONOMIC INVESTMENT ACT

Investment in Infrastructure

The City and the Commonwealth, recognizing the need to support critical development in the Fenway-Longwood-Kenmore area, provided the framework for new investment with the passage of the Commonwealth Investment Act. Building on a multi-year City of Boston comprehensive planning and zoning process, the Commonwealth appropriated \$55 million in transportation funding to address critical infrastructure improvements necessary to support new growth and protect the local institutions, residents, and businesses.

The Bill targeted funding to meet the growing needs for transit, better the roadway network, improve the pedestrian environment, and enhance the quality of life for residents. Funding was allocated to improve Kenmore, Fenway, Longwood, and Ruggles Stations as well as to advance the full-time use of Yawkey Station and implement the findings of the Longwood Transit Tunnel Study. The Bill calls for an Action Plan to address the roadway and pathway network in order to set the course for implementation of necessary improvements.



The Fenway-Longwood-Kenmore Action Plan

The key features of the Action Plan are three-fold:

1. Analyze current conditions for multi-modal access, circulation, and safety;
2. Prioritize reconstruction projects to improve conditions for all users; and,
3. Develop preliminary designs to utilize both the \$12.5 million for reconstruction projects and the \$5.6 million for immediate operational and regulatory improvements.

2. CREATING A MULTIMODAL NETWORK

The Fenway-Longwood-Kenmore Transportation and Pedestrian Action Plan is the latest example of the City's commitment to creating a multimodal transportation network that serves the needs of all users. With bicycle ridership increasing and a growing interest in sustainable modes of transportation that promote public health, a reallocation of public space to accommodate a diversity of transportation modes is essential for creating livable, economically viable urban communities.

The proposed improvements to Boylston Street and Audubon Circle and the Fenway-Yawkey Multi-Use Path will provide important benefits to cyclists and pedestrians and were developed in the context of substantial ongoing public and private investment in the neighborhood, including major improvements to the existing transit facilities. The investment in these facilities is a testament to the fact that transit is, and always will be, a key component in the functioning and vitality of this neighborhood.

Ongoing Improvements in Public Transit

Kenmore Station: This new, fully accessible multimodal transit facility will replace the existing Green Line station in Kenmore Square and will have a street-level busway and an iconic new glass and stainless steel bus shelter. The project also includes streetscape improvements (new bike lanes, expanded sidewalks, upgraded paving, lighting and signage, and over 80 new street trees) that will facilitate access to the station and improve pedestrian and bicycle circulation through Kenmore Square.

2006 Economic Investment Act: In June 2006, the state passed an economic investment bill that included substantial funding for transit-related improvements in the Fenway-Longwood-Kenmore Area. In addition to providing support for planning, roadways, and traffic management, the bill allocates funding for improvements to Fenway, Longwood, and Ruggles stations and studies for an Urban Ring tunnel to Ruggles Station. It also includes \$12 million for the reconstruction of Yawkey Station.

Implementation of the projects funded under this bill will enhance Green Line service to the area and provide linkages to new transit alternatives

(such as the proposed rail service to Allston and the proposed Urban Ring) that will significantly expand the connectivity of this area with the region.

Yawkey Station: The MBTA has been working with the developer of the One Kenmore "Parcel 7" project to redevelop the existing Yawkey Station as a full-time commuter rail station, with extended platforms, improved pedestrian access, bicycle parking, and connections to bus and shuttle service. In partnership with the MBTA, the developer is using state economic investment funds to manage the design and construction of this new facility, which will be separate from but integrated with the design of the larger development project.



3. OBJECTIVES: Creating Streets for People

Building on the ongoing improvements, the Action Plan will:

Create Safe Pedestrian Environment and Wider Sidewalks



There is a need for wider sidewalks and enhanced crossings. The diverse character of this area creates tremendous opportunities to encourage active pedestrian circulation and activity centers along boulevards.

Sustain Economic Growth



Roadway and streetscape designs require accommodation of new development, space for service and loading vehicles, and sidewalk cafes to support small businesses.

Manage Congestion



Current conditions and anticipated development required careful consideration of circulation options and roadway and intersection designs to facilitate traffic-flow, protect local streets, and enhance safety.

Improve Bicycle Access and Circulation



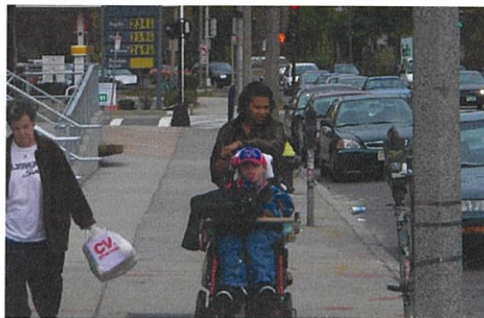
The presence of recreational areas, entertainment venues, and academic and employment centers create a high demand for bicycles. This study examined both dedicated pathways and on-street techniques to connect the local and regional resources.

Protect Residential Quality of Life



Protecting Fenway and Audubon residential streets from cut-through traffic, particularly trucks and buses, is key to preserving community character.

Enhance Universal Access



All design options incorporate critical elements to promote safe and enjoyable access for all.

Comprehensive Public Process

The Fenway-Longwood-Kenmore neighborhoods are blessed with energetic residents, businesses, and academic institutions who generously donated their time and thoughtful ideas to develop this Action Plan.

From 2002 to 2005, the BTS and the BRA engaged the community in extensive planning processes that led to numerous planning studies resulting in new zoning for the area. In 2006, under the leadership of Mayor Thomas Menino and the Legislature and with the support of the community and area stakeholders, the Economic Investment Act passed appropriating over \$55 million for transportation improvements in the area.

In March 2007 the BTS, in partnership with the BRA and State EOT held a community meeting to announce the details of the Economic Stimulus Bill and the Action Plan. A Request for Proposals was issued in to select a consultant to:

- Enhance the pedestrian environment, manage growing traffic congestion, and support new economic development in the area while preserving and enhancing the quality of residential life.
- Develop conceptual designs for transportation and pedestrian improvements that will lead to construction projects.

In October 2007, the BTS and a team headed by HNTB began working with the community, stakeholders, and city agencies to select priority areas for immediate improvements and redesign. BTS organized and led the public participation efforts with the support of the HNTB team who presented analyses of existing and future conditions, facilitated dynamic discussions, and defined projects to meet the needs of the stakeholders.

The public process included five public meetings, over 10 inter-agency meetings, and multiple stakeholder sessions. All community meetings were open to the public and were well attended with over 75 participants at each meeting. The team worked closely with all stakeholders and consultants to coordinate data, analyses, findings, and recommendations. The meeting topics were as follows:

- **Five Public Meetings:** On October 12, 2007, existing conditions traffic and parking analysis along with the U.S. Army Corps of Engineers presentation on the Muddy River Project. On February 28, 2008, future 2012 traffic conditions and preliminary design concepts for the multi-use path, along with a guest presentation on the Charlesgate Connector. On May 14, 2008, conceptual design for the multi-use path and circulation options for Boylston Street and Brookline Avenue. On September 17, 2008, conceptual designs for Boylston Street and Audubon Circle. On November 18, 2008 the team reviewed the Audubon Circle design with the Audubon Circle Neighborhood Association, held at the Ruggles Baptist Church.
- **Over 10 Inter-Agency Meetings with BTS** on traffic, ITS, and design options; the MBTA and Parks Department on the design of the multi-use path; and with EOT on coordination with the Urban Ring Study.
- **Multiple Stakeholder Meetings** were held with MASCO, Northeastern University, Boston University, advocacy groups, developers, and the Red Sox to coordinate findings and review designs to support on-going redevelopment efforts.

These meetings provided important and insightful commentary from those who live, work, and visit the area. This participation was instrumental in prioritizing the investment and identifying the best solutions to redesign critical corridors and paths.



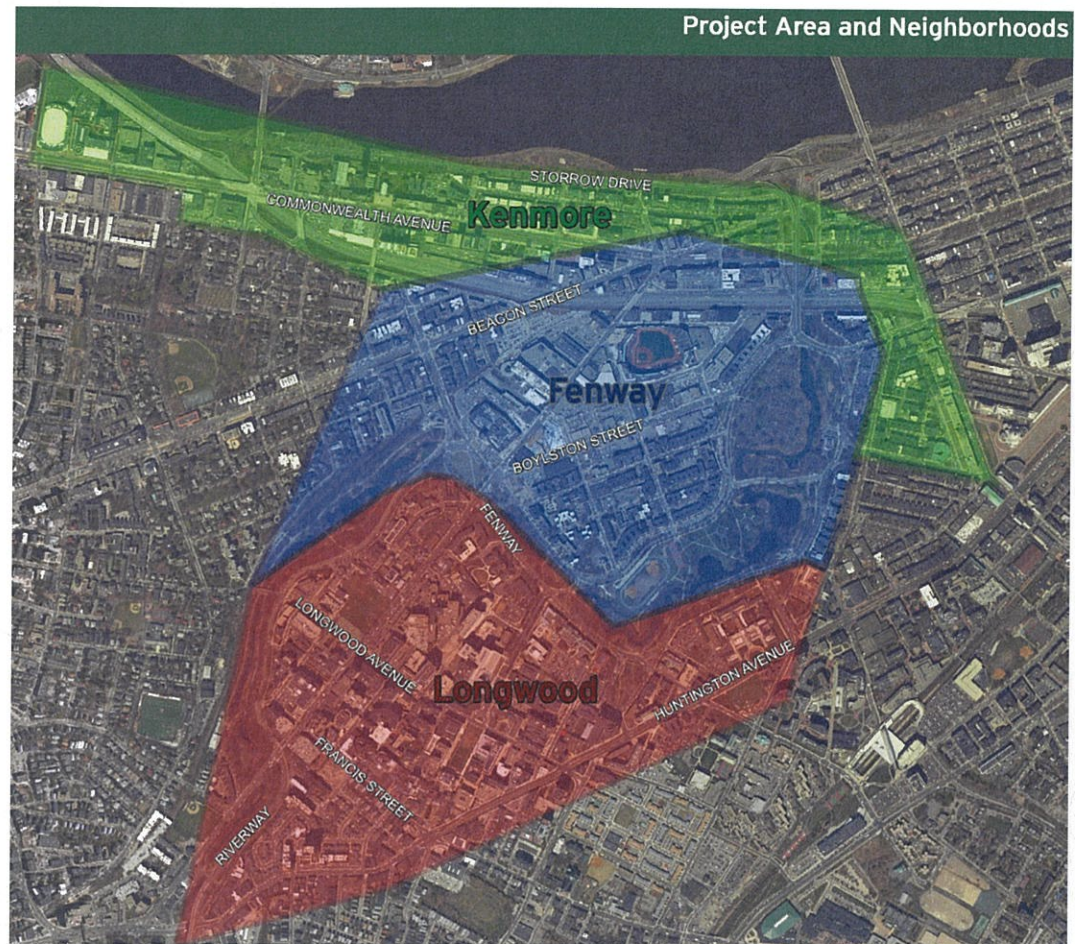
4. THE FENWAY-LONGWOOD-KENMORE AREA

The Fenway-Longwood-Kenmore area contains a concentration of major institutions that are critical to the City's economic base and position as a growth center for higher education, medical research, and tourism services. Integral to this economic fabric is the vibrant residential and business community that supports the area's diverse base and quality of life.

- **Residents:** It is critical to preserve the small-scale urban village feel that makes this area desirable, safe, and accessible for residents.
- **Local Businesses:** It is important to provide a broad base of services necessary to support the growth of the diverse land uses in the study area.
- **Red Sox:** Fenway Park is a major New England tourist attraction that generates revenue on a local and regional level. New developments adjacent to the park, along with special events at the park, are transforming this area into a four-season entertainment center.
- **The Longwood Medical and Academic Area (LMA):** This area contributes to the local, regional, and national life science industry, is a major employer and asset to the neighborhood, and is essential to the economic vitality of the City.
- **Boston University:** The evolution of a university campus in Kenmore Square provides a vital location to maintain the dynamic academic and commercial center that characterizes the area.

Economic Growth

The LMA's strength is rooted in its diverse services and institutions that form a cohesive partnership, providing a unique economy for research and medical services, anchored by a strong residential and business community. The LMA has the second largest concentration of jobs in Boston with over 37,000 employees in its medical and academic institutions. Additionally, the area supports over 2.1 million patient visits and admissions from all over the



region. Since 1990, the LMA has added approximately 15 million square feet of development in an area approximately 200 acres in size.

In order for the LMA to remain economically competitive and to continue to provide critical research and medical services, it must accommodate over four to five million square feet of new development. Data from the BRA indicates that over 60% of new growth in the pipeline is related to medical research and 23% to clinical facilities, both of which are fundamental to Boston's economic growth.

The Kenmore Square local business area is currently experiencing significant transformation including the redevelopment of the south block of Commonwealth Avenue and the rejuvenation of the Beacon Street block. Investments in Kenmore Square, combined with a significantly improved transit station and streetscape enhancements will create a vibrant place for students, visitors, and employees.

Finally, the Boylston Street and Brookline Avenue arterials contain a diverse mix of local businesses and are also experiencing significant redevelopment. Boylston Street, historically a muddle of automobile-related services, convenience stores, hotels, media outlets, and small retail facilities, is in transition. The renovation of the Sears Building into the Landmark Center and expansion of residential and retail uses continue the trend of intensifying the mix of land uses.

Residential Character

The Fenway neighborhood has maintained a strong residential community and a complementary mix of parks and schools. The neighborhood is connected by tree-lined Peterborough and Queensberry Streets that have local restaurants and retail services. The Fenway Community Health Center connects the Boylston Street area to the Fenway neighborhood. The area is bounded by Park Drive and The Fenway, parkways that prohibit commercial and transit vehicle use.



The Audubon Circle area has a mix of student and long-time residential communities with an evolving retail district that provides strong connections to Kenmore Square and the Fenway area via Sears Rotary. Beacon Street has a mix of residential and commercial uses, while Park Drive provides access to a residential community sheltered from the bustling arterial roadway. The roadway network and two Green Line corridors (Riverway and Cleveland Circle lines) generate significant pedestrian activity.

Fenway Park and the Emerging Entertainment District

Recent investment in Fenway Park and along Lansdowne Street supports the emergence of a four-season entertainment center in this community. With two world championships in three years, the Boston Red Sox will likely continue to sell out on game days. Furthermore, the 35,000+ seat park is now established as a year-round host to concerts, benefits, and other events. Lansdowne Street – connecting Ipswich Street and Boylston Street with Fenway Park – is emerging as a center for entertainment. This new growth trend supports the mixed-use development currently underway. Fenway Park also is adjacent to non-entertainment neighbors such as Boston Arts Academy and Fenway High School. The area has limited access and is primarily dependent on the Brookline Avenue and Boylston Street connections. New mixed-use development calls for creative solutions to address the needs of this growing area.



5. EXISTING AND FUTURE CONDITIONS

Conditions in 2007

Congestion and safety analyses were conducted to evaluate existing conditions in the Fenway-Longwood-Kenmore area. The analysis tools included the City's Synchro® and Traffic Modeling Interface (TMI) software, analysis of historical crashes from MassHighway data. The study identified congestion and safety hot spots for pedestrians, bicyclists, and vehicles under existing conditions, allowing for a more detailed examination of issues and opportunities for improvement.

Approach and Methodology

- The City's 2007 Synchro model area was expanded to include this study area, updated with BTM signal timing and phasing, and data collected by the Red Sox, Boston University, and several MASCO member institutions.
- The most recent statewide crash data (2003-2005) was used to rank total crashes, injury crashes, and intersection crash rates were compiled.
- The City's TMI tool was used to compile and aggregate operational levels of service for all intersections during the AM and PM peak hours.
- Both signalized and unsignalized intersections were identified and ranked by AM and PM peak hour congestion and by crash history.
- The crash and congestion data was merged to identify hot spots.

Findings

- Highest pedestrian volumes occurred at the most congested intersections in the area.
- Bicycle access is not specifically designed on streets; it functions on a share-the-road basis and uses existing paths along the Emerald Necklace.
- Approximately one quarter of the 74 modeled signalized intersections in the area were congested during the AM and PM peak hours.

- Of the 119 modeled unsignalized intersections, approximately one out of eight was congested during the AM peak hour and one out of six was congested during the PM peak hour.
- High volumes of transit, shuttle, and school buses are confined to City streets as DCR parkways like the Riverway and Park Drive are limited to autos/bikes only. Congestion on city streets is exacerbated during special events.
- Boylston Street and Brookline Avenue experience equally distributed peak hour traffic flow in both directions during the AM and PM peak periods facilitating access to major employment centers downtown and in the Longwood area.
- Access and circulation for vehicles and pedestrians are constrained along the Riverway, Sear's Rotary, Audubon Circle, and Brigham Circle, creating mobility challenges for those who live and work in the area, especially during Fenway Park special events.
- The implementation of universal design principles must be considered early in the design phase to ensure appropriate funding and construction.



The analysis identified issues and opportunities for each mode in the study area as detailed in the following illustrations.

Existing Conditions: Pedestrian Safety

Selected High Pedestrian Activity Locations



Key Findings

- High pedestrian flows and desire lines are strongly linked from transit stations to employment centers such as: in the Kenmore Square ; LMA; and between Sears Rotary and Audubon Circle.
- Highest areas for pedestrian crossings occur along major arterials, notably Commonwealth Avenue, Brookline Avenue, Beacon Street, Huntington Avenue, and along the Riverway.

Opportunities

- Develop well-defined paths along pedestrian desire lines.
- Provide safe and convenient pedestrian access to Fenway and Yawkey Stations.
- Reduce crosswalk lengths and widen sidewalks.
- Provide universally accessible sidewalks and crosswalks.
- Increase crossing signal times for pedestrians and install pedestrian countdown signals at major crossings.



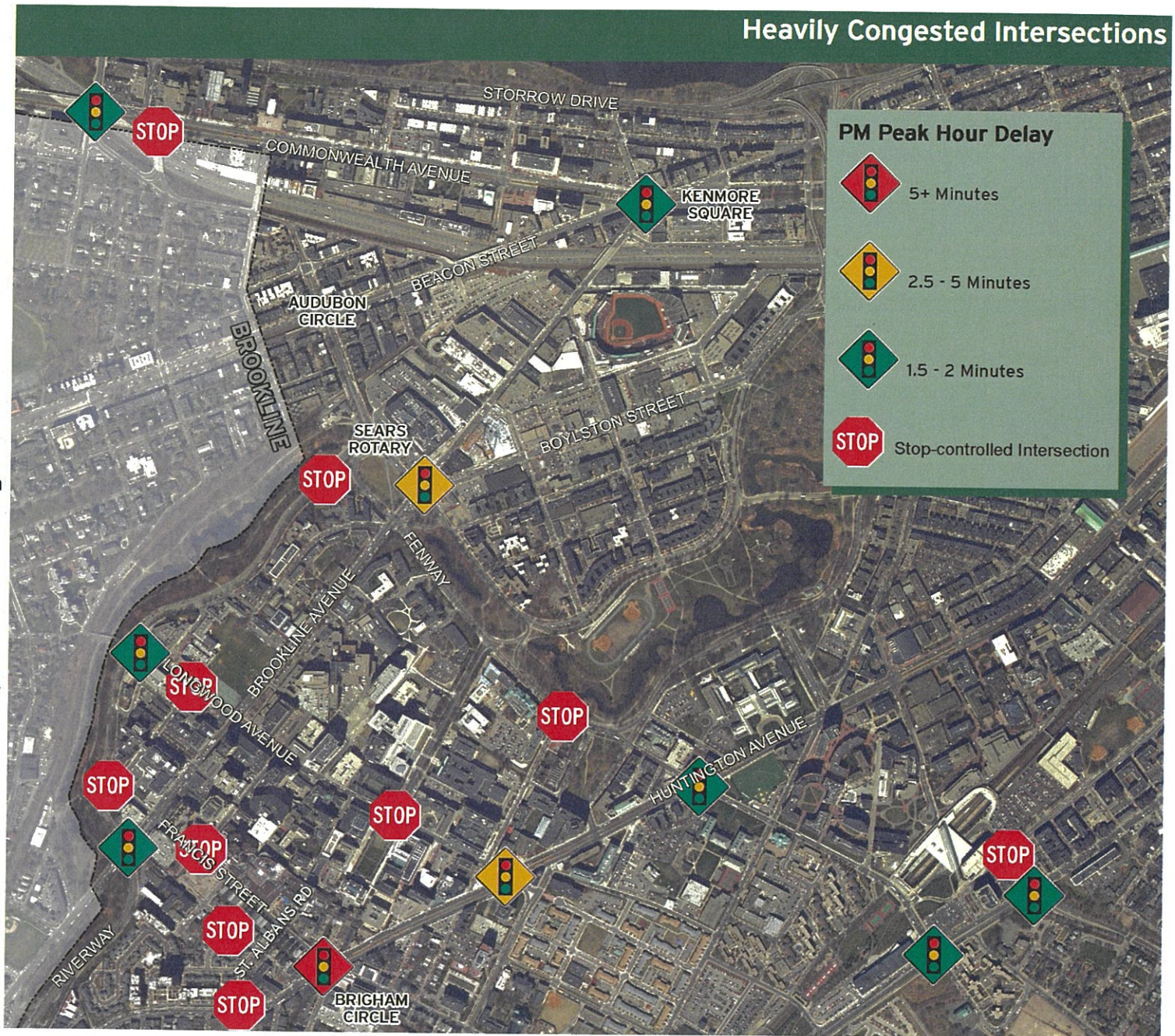
Existing Conditions: Traffic Congestion

Key Findings

- The most heavily congested signalized intersections are in the LMA, along the Riverway, at Sears Rotary, and in Kenmore Square.
- The most heavily congested unsignalized intersections are located in the LMA and along Commonwealth Avenue.

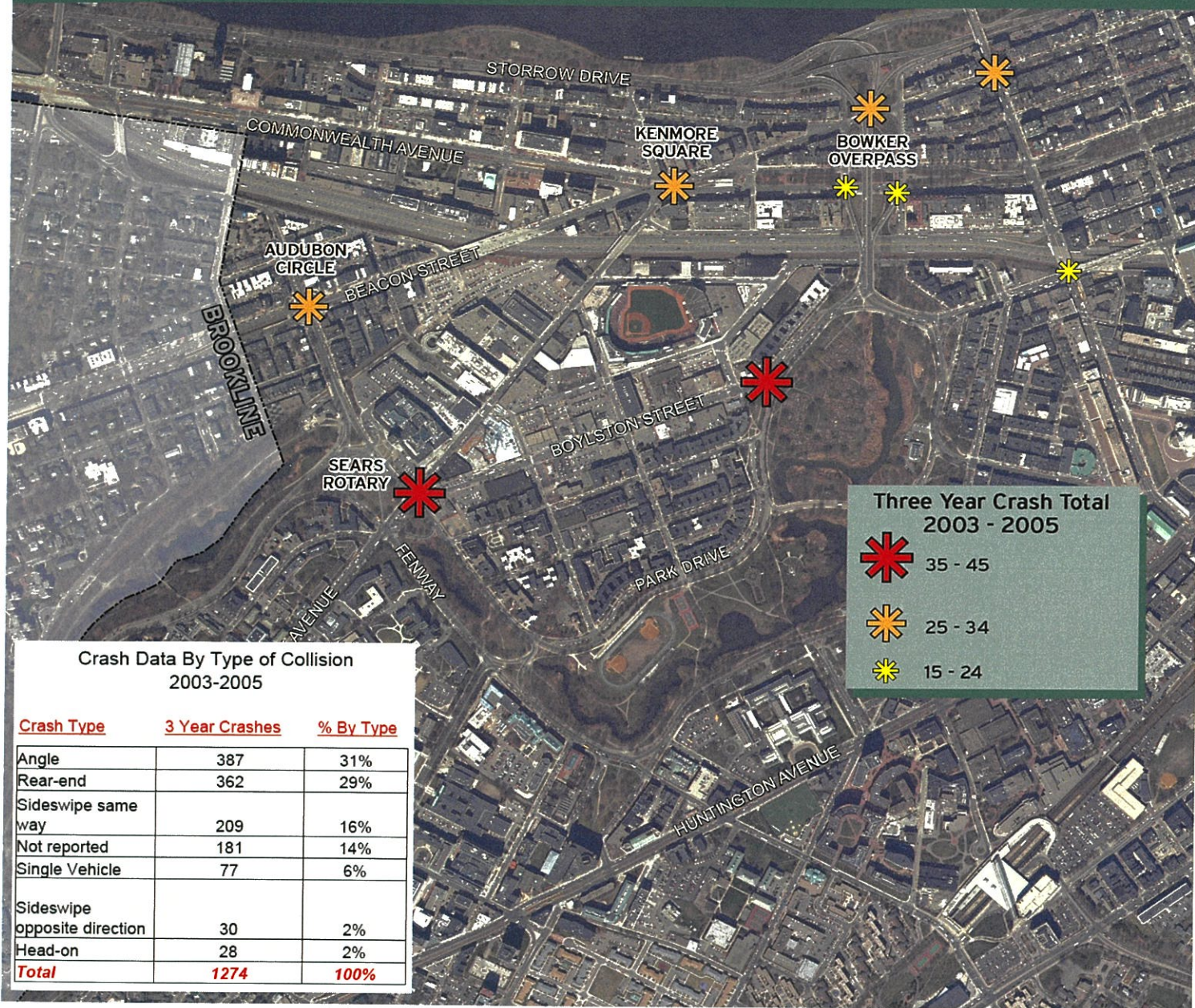
Opportunities

- Coordinate signals between the Brigham Circle area and St. Albans Road.
- Install new signals at Huntington Avenue and St. Albans Road.
- Improve circulation with the creation of smaller blocks and new roads.
- Restrict peak hour turns at intersections along the Riverway where such turns create undue congestion and where adequate alternatives for the restricted movements exist or will exist.



Existing Conditions: Crash Locations

High Crash Locations



Key Findings

Highest number of crashes are at:

- Sears Rotary
- Boylston St. /Park Dr.
- Audubon Circle
- Kenmore Square
- Bowker Overpass area

29% of reported crashes were rear-end and 31% were angle collisions.




Opportunities

- Identify opportunities to reduce driver confusion with improved signage.
- Improve intersection design to minimize conflicting movements.
- Review the designs of Sears Rotary, Audubon Circle, and Boylston Street and identify opportunities to improve safety.

**Crash Data By Type of Collision
2003-2005**

Crash Type	3 Year Crashes	% By Type
Angle	387	31%
Rear-end	362	29%
Sideswipe same way	209	16%
Not reported	181	14%
Single Vehicle	77	6%
Sideswipe opposite direction	30	2%
Head-on	28	2%
Total	1274	100%

**Three Year Crash Total
2003 - 2005**

-  35 - 45
-  25 - 34
-  15 - 24



Existing Conditions: Public Transportation

Key Findings

- Rail lines provide high quality service to much of the area, but the LMA is under-served.
- Pedestrian flows are linked between transit stations and employment centers.
- Major bus lines connect Kenmore Square and the LMA.
- LMA shuttles provide critical connections to MBTA stations and remote parking.
- Bus and shuttle service is limited to city streets due to parkway restrictions.

Opportunities

- Proposed improvements to Yawkey and Fenway Stations will increase ridership.
- Ongoing upgrades at Kenmore Square will improve access for pedestrians and transit.
- The Urban Ring will significantly improve transit access for LMA employees and visitors.
- Bicycle path links to and bicycle parking at transit stations will reduce auto dependency.



Existing and Future Bicycle Network

Based on observations and analysis of existing conditions, bicycle use is on the rise. Bicycles are increasingly becoming a preferred mode of transportation for work and recreation. The Fenway-Longwood-Kenmore area's mix of academic, research, medical, and residential uses supports a population favorably disposed to riding bikes. Increased promotion and facilities for bike travel will help relieve automobile congestion. At this time, the area has a limited infrastructure for bicyclists. Significant desire lines for bike access occur along Boylston Street, Beacon Street through Audubon Circle, and Huntington Avenue. No on-street bike lanes exist on any of these heavily trafficked corridors. Therefore, a main objective of this Action Plan was to take advantage of both existing roadways and multi-use paths and identify opportunities to improve bicycle access. Aggressive policies that promote the availability of bicycle storage facilities throughout the area are also recommended.

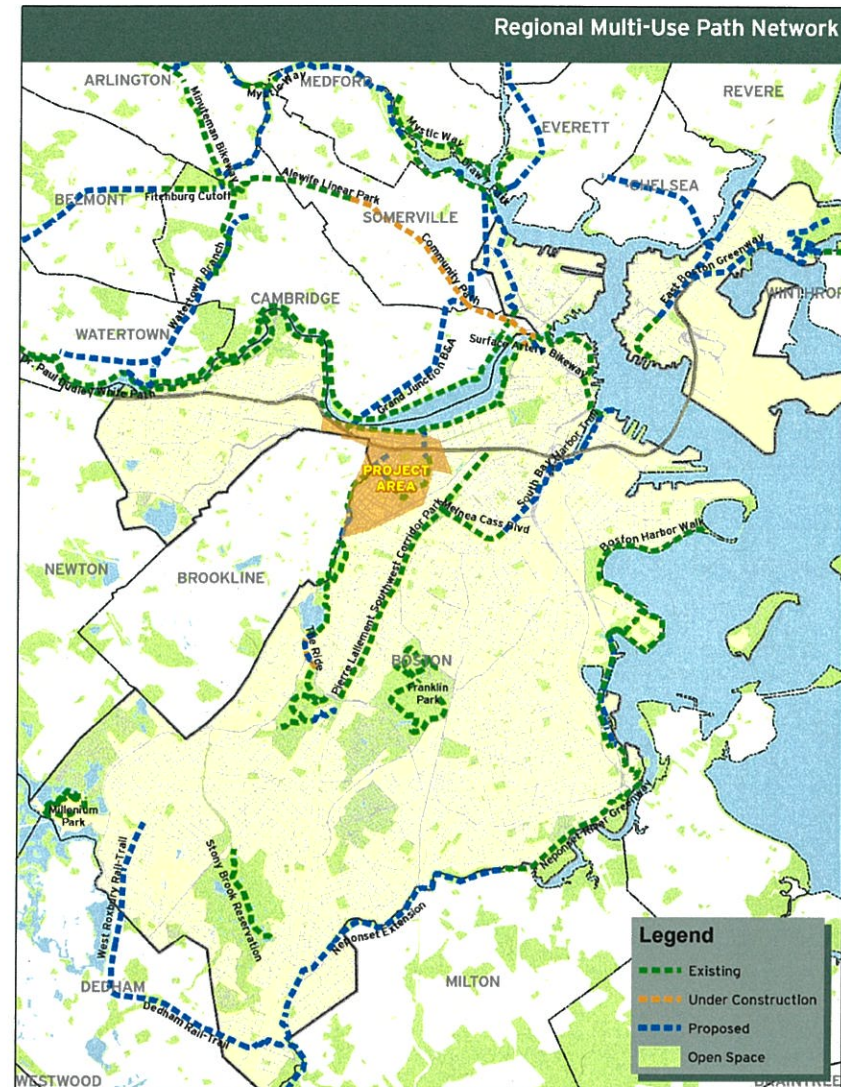
Access and circulation for bicycles has traditionally been accommodated on multi-use paths for recreational purposes and is located off major arterials, such as along the Esplanade and the Emerald Necklace. In recent years, significant progress has been made to examine desire lines and identify the missing links. In 1999, the City of Boston published a Bicycle Plan, in 2007 it hired a full-time bike coordinator, held many bike-friendly promotional events, and made bicycle access a priority. New pathways have been opened, such as the East Boston Greenway, and the South Bay Harbor Trail design is underway.

The City has identified and is focused on making critical connections by charting the missing links. Currently, there is at least one major new multi-use path connection proposed for the Study Area, and another two are under study:

- A new multi-use path between the Riverway and Maitland Street under Park Drive, for which a conceptual design is included in this study;
- The Fenway and Southwest Corridor Missing Link connection for which a preliminary concept was prepared by the Parks Department; and,
- Charles River multi-use path and the Fenway connection via the Bowker interchange area, proposed in a study by Northeastern University.

Another potentially less costly alternative may be to link the Riverway to the Maitland pathway via Beacon Street, then to Blandford/Sherborn Streets via an accessible route that crosses Commonwealth Avenue for access to the Charles River pathway.

This study evaluated opportunities to provide safe access, use, and circulation in the area for bikes, using on-street and dedicated multi-use pathways, furthering the City's goals to connect the Missing Links.

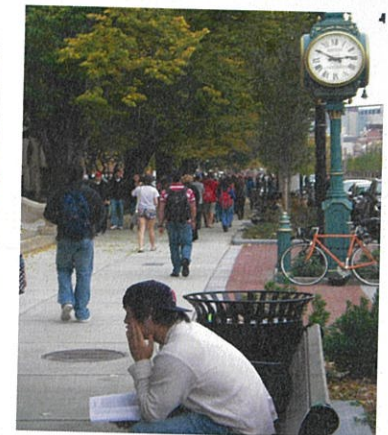
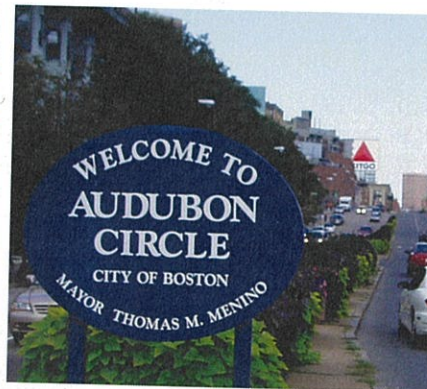
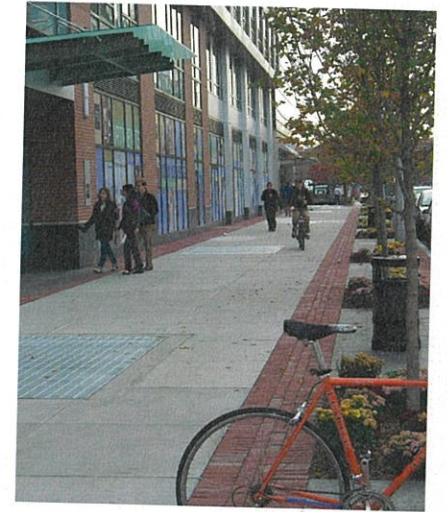


Universal Access

With a high concentration of hospitals, elderly housing, and parks the Fenway-Longwood-Kenmore area requires special sensitivity toward accommodating all users—the elderly, children, new immigrants, and those with mobility challenges. The development proposed in this area allows for more elements to be incorporated into both building and streetscape early in the design process. The construction process will require a fresh examination of sidewalk and intersection crossings with special attention to location, signage, and signal timing.

Universal Access is all about accommodation. Sidewalks need to be wide enough to allow for multiple users and uses, from cafes to public art, to baby carriages and wheelchairs. Pavement and tree grates need to be smooth and attractive. Bike-friendly sewer grates need to be installed. Crosswalks and sidewalks need to accommodate the infirm, disabled, and wheelchairs while also calming traffic. Signage that uses international images for parking and hospitals is a necessity. Construction staging needs to accommodate access on both sides of the street and in the intersections, sufficiently protecting the public from traffic. The street network needs to address all modes including: vehicles, bicycles, shuttles, pedestrians, and particularly wheelchair users.

The designs developed in this Action Plan made special efforts to incorporate these elements.



Existing Conditions: Hot Spot Summary

All Criteria

Key Findings

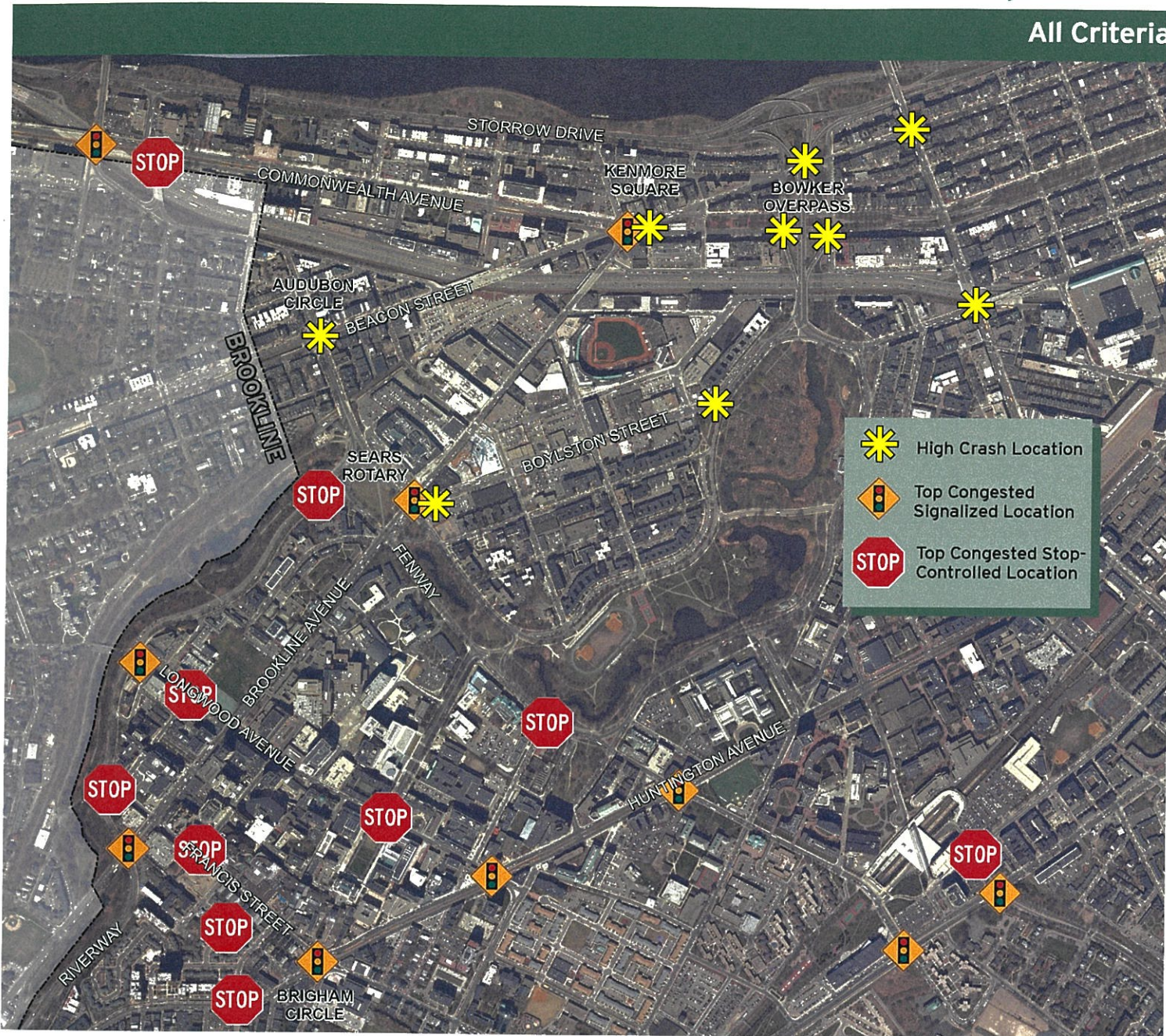
Major areas of conflict occur at access points into the study area, including:

- Kenmore Square
- Sears Rotary
- Brigham Circle
- Bowker Overpass

Circulation is constrained by roadway restrictions and limited access.

Opportunities

- The redevelopment of areas between Brookline Avenue and Boylston Street provide opportunities to enhance all modes while sustaining economic growth.
- Incorporate Army Corps drainage project at Sears Rotary into Boylston Street redevelopment.
- Extend existing Riverway multi-use path into areas of proposed redevelopment using the MBTA right-of-way.
- The proposed layout of Audubon Circle creates a much more pedestrian and bike friendly environment.



	High Crash Location
	Top Congested Signalized Location
	Top Congested Stop-Controlled Location



Future Conditions 2007-2012

Congestion and safety analyses of future conditions were based on a review of the City's development pipeline data in coordination with developers and stakeholders. The approach incorporated this data into the 2007 Synchro model and estimated congestion and safety for 2012 and 2020. "Hot spots" were then identified using the same criteria for the analysis of existing conditions.

Based on data provided by the BRA, roughly 7.6 million square feet of development is under construction, approved, or planned in the study area. The Longwood area anticipates adding several million square feet of development over the next 10 years. Boston University is expected to augment their campus concentrating growth along the Commonwealth Avenue corridor and in Kenmore Square. The most significant area for future development is along the Boylston Street corridor connecting Sears Rotary with Ipswich Street, as well as air rights over the Massachusetts Turnpike.

Findings

As a result of this anticipated growth, the major findings are:

- Growth in traffic for this area is projected to increase by 12% to 13% by 2012.
- Highly congested signalized intersections increase from 18 in 2007 to 25 locations in 2012.
- If all the development occurs as projected between 2007 and 2020 and assuming a mode share of 60% transit to 40% auto for the new land uses, traffic demand would increase by approximately 34%.

Project Name	BldgSqFt	Parking	Net New Parking	Category
Miner Street	65,000	34	34	Under Construction
NU IMP Amendment and West Village Building F	135,000	0	0	Under Construction
Simmons School of Management	70,000	715	380	Under Construction
Dana Farber Cancer Institute	275,000	217	217	Under Construction
B&W Center for Advanced Medicine	350,000	300	300	Under Construction
1330 Boylston Street	340,000	293	194	Under Construction
Merck Research Center	466,000	0	0	Under Construction
BU - New Science Building	187,000	0	0	Under Construction
Blackfan Research Center	575,000	300	251	Under Construction
	2,463,000	1,859	1,376	Under Construction Total
461 Park Drive	12,452	0	0	Board Approved
Stonewall Audubon Circle	74,044	26	26	Board Approved
Museum of Fine Arts Master Plan Project	551,000	410	410	Board Approved
Joslin Diabetes Center Expansion Project	483,440	357	357	Board Approved
Longwood North Research Center	440,000	330	330	Board Approved
Longwood Research Center at 121 Brookline	116,600	87	87	Board Approved
	1,677,536	1,210	1,210	Board Approved Total
316-320 Huntington Avenue	450,000	0	0	Under Review
	450,000	-	-	Under Review Total
93 Massachusetts Ave	65,000	0	0	Planned
Beth Israel West Clinical Center Building	25,000	0	0	Planned
Wheelock College Campus Center	65,000	0	0	Planned
Wheelock College East Wing	55,000	0	0	Planned
Wheelock College West Wing	75,000	0	0	Planned
Emmanuel College (St James Bldg)	50,000	0	0	Planned
Emmanuel College (Jean Yawkey Center)	90,000	14	14	Planned
Mass College of Pharmacy 662 Huntington	49,700	0	0	Planned
Isabella Stewart Gardner Museum	50,000	0	0	Planned
Children's Hospital Expansion Phase I	76,100	0	0	Planned
Turnpike Air Rights Parcels 7 & 8	793,040	1312	1069	Planned
Beth Israel 171 Pilgrim (Clinical Care Center)	304,000	300	300	Planned
Emanuel College Parcel A	166,000	0	0	Planned
Children's Hospital Expansion Phase IB	355,500	350	350	Planned
Merck II	300,000	0	0	Planned
Mass Mental Health	547,000	0	412	Planned
	3,066,340	1,976	2,145	Planned Total
Source: BRA(2007)	7,656,876	5,045	4,731	Grand Total

- Between 2007 and 2012, while overall traffic demand within the entire study area will increase by 12%, traffic demands on the priority project areas will increase by 19% (pre-economic downturn analysis).
- Between 2012 and 2020, traffic demand on the priority project corridors will increase another 12% over 2012 levels.

Development Trends

KENMORE SQUARE / COMM AVE

Trend: Expanding center for campus activity and 87% of undergrads to be on campus by 2010

FENWAY

Trend: Surface Parking lots being converted to large mixed use developments. Entertainment industry expanding facilities in the area.

- Increased visitation and year round attraction
- New mixed-use housing and supporting retail
- Retail and commercial development along arterials

LONGWOOD

Trend: Current 2.15 M patient visits and 40,000 employees will increase with additional 4.0 M sq ft of new development

Source: MassGIS

Summary

- Approximately 2.5 million s.f. of new development was under construction at the time of this study, primarily located in the academic and research areas.
- An additional 1.67 million s.f. of development was approved by the BRA in the same area.
- Approximately 3.1 million s.f. of development is in the planning stages in the area.
- Significant developments are planned for the Turnpike air-rights, Parcels 7 and 8.

Implications

Kenmore

- Increase in pedestrian, bicycle, and vehicular activity in Kenmore Square.

Fenway

- Increase in mixed-use development and recreational activity that increases competition for use of local streets and adds vehicles to residential areas.

Longwood

- Growth in medical and academic areas will increase demand for transit signal improvements while taxing the existing infrastructure.



Future Conditions: 2012 Hot Spots Summary

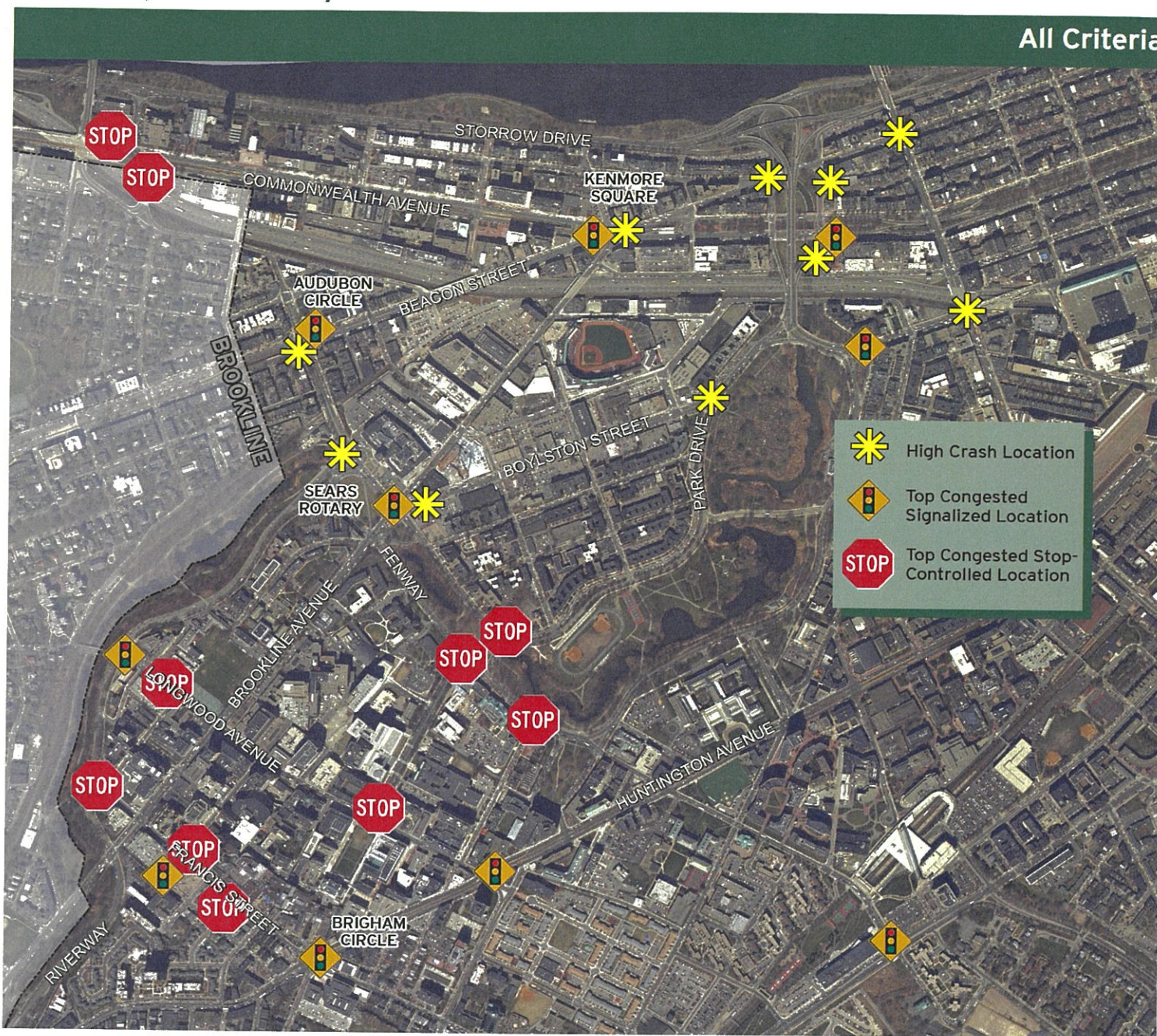
Key Findings

Without changes, transportation conditions will worsen and negatively impact quality of life for all users. In particular:

- Sears Rotary will continue to be a congestion hot spot in the future.
- The Boylston Street corridor in the Fenway is a critical connector that is undergoing dramatic redevelopment that will increase the need for an improved system.
- Audubon Circle will become more of a gateway into this limited access area, increasing conflicts between pedestrians, bicyclists, and vehicles.

Opportunities

- Examine circulation options to address hot spot locations.
- Implement operational and regulatory improvements to ease congestion.
- Redesign Boylston Street and Audubon Circle roadway networks to enhance universal access and safety.



6. SHORT-TERM IMPROVEMENTS

Potential Operational and Regulatory Improvements

Opportunities & Actions

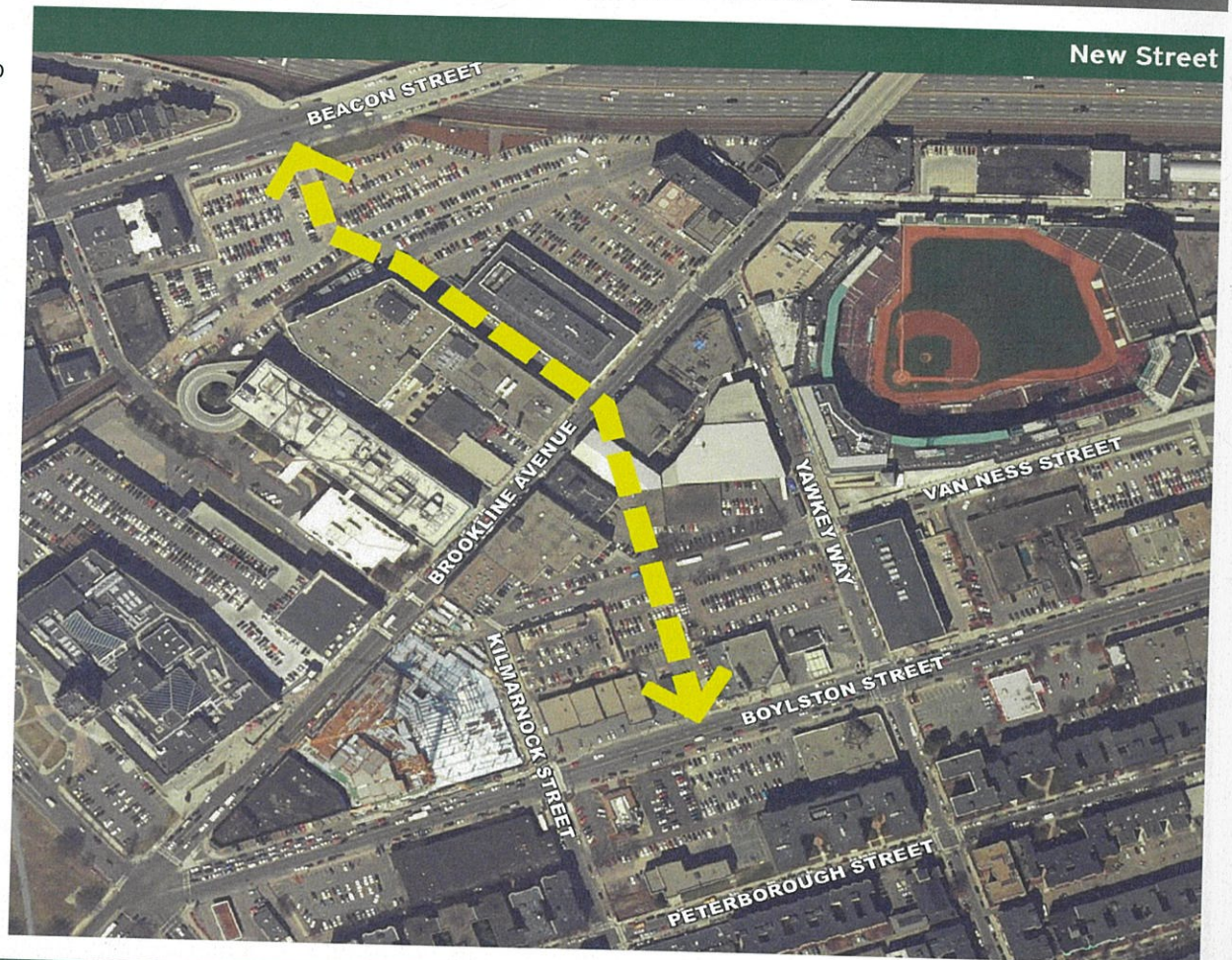
- Install pedestrian count-down signals at all key intersections (e.g., Longwood Ave/Riverway).
- Prioritize pedestrian movements in the signal timing and roadway configuration in key intersections (e.g., Audubon Circle/Sears Rotary).
- Implement turning restrictions along the Riverway during peak hours.
- Implement peak hour on-street loading restrictions along Boylston Street, Brookline Avenue, Longwood Avenue, and Francis Street.
- Prohibit on-street loading in any future design review and request off-street valet and taxi parking.
- Increase penalties associated with peak hour violations: double parking, loading, meter parking, and no-stopping no-parking zones.



7. NEW ROADWAY CONNECTIONS

With anticipated growth of 12% to 13% over the next four years in an area with limited access and constrained infrastructure, it is essential to identify opportunities for new roadway connections to decongest major arterials and discourage cut throughs. Future development should look for opportunities to break up large blocks into smaller blocks to distribute circulation and loading/parking. The proposed new road connecting Boylston Street, via Brookline Avenue will break up the large blocks between Kilbarnock Street and Yawkey Way and open up access to under-utilized parcels adjacent to the Turnpike. The new road will:

- Provide a north-south connection that was previously lacking thereby reducing pressure on Kenmore Square and Sears Rotary.
- Increase use of Van Ness Street to improve access to the area, decrease impact of new development on Boylston Street, and protect residential areas.
- Increase opportunity for loading and parking access away from Boylston Street.
- Create smaller blocks for increased retail activity and additional pedestrian crossings.



8. REVIEW OF AREA NEEDS

The congestion and safety analyses identified the top areas in the Study Area for improvements were: Kenmore Square, Audubon Circle, Sears Rotary, Boylston Street to Ipswich Street, Park Drive, along the Riverway, Longwood Avenue, and the Francis Street area. A number of circulation and design options were evaluated to allow for a more detailed focus on priority project areas for redesign and improvements.

Kenmore Improvements

In the Kenmore area, many improvements are underway including the reconstruction of Kenmore Station and associated roadways, intersections, and crossings. New development has provided for wider sidewalks, outdoor cafes, and landscaping. As such, the focus of analysis shifted to the LMA and the Fenway.

LMA Opportunities

In the LMA, many improvements are already being implemented, such as the new development on Francis Street, creating more capacity for access to Brigham and Women's Hospital. The extension of Blackfan Street will also relieve pressure on the network. One-way pairs were examined for Binney Street connecting to Francis Street and for Francis and Fenwood Streets. It was determined that the recent investments in Francis Street would improve the area and one-way pairs would adversely impact adjacent residential areas. Therefore, the Brigham Circle and Huntington Avenue intersection surfaced as an important area to examine signalization improvements.

Fenway Circulation and Design Options

In the Fenway area, a number of circulation and design options were considered based on the redesign of the Sears Rotary by the Army Corps, new development proposed on Parcel 7, and new development along Boylston Street. All options considered opportunities for new bicycle connections using both pathways and dedicated on-street lanes.

The first set of options evaluated one-way pairs, as follows:

- One-way Brookline Avenue west-bound and one-way Boylston Street east-bound;
- One-way Brookline Avenue west-bound;
- One-way Brookline Avenue east-bound to Kilmarnock Street; and
- Modified Boylston Street with wider sidewalks.

The evaluation examined the impacts of circulation alternatives for transit, on-street parking, and streetscape amenities. It was recommended after a detailed discussion with the community and stakeholders to retain the existing circulation network and examine the viability of a new road connecting Boylston Street to Brookline Avenue.

Once the decision to retain the existing circulation network was made, the design options focused on different alternatives for both Brookline Avenue and Boylston Street between Sears Rotary and Kenmore Square.

Brookline Avenue: Two design options explored eliminating on-street parking, widening sidewalks, and adding trees. Options to expand the corridor were limited given the location of the existing building line and limited right-of-way.

Boylston Street: Three design options were examined. Two linear options were identified, one with a bike lane and one without. A curvilinear option offered wider sidewalks and alternating on-street parking with no bike lanes.

	Regional Traffic Impacts	Urban Design Opportunities	On-street Parking Loss Potential	
1-way Boylston EB & 1-way Brookline WB	High	High	Low	
1-way Brookline WB	High	High	Moderate	
Small 1-way Brookline EB to Kilmarnock	Moderate	Moderate	Moderate	
Urban Design Only Brookline/Boylston	None	Moderate	Low	



9. PRIORITY PROJECTS

The goals and objectives established for this Study, in combination with the congestion and safety analysis and the extensive evaluation of circulation and design options, shaped the selection of three areas for redesign.

Multi-Use Path: The proposed multi-use path will connect DCR's Muddy River path to the Fenway Station and eventually terminate at the border of the Parcel 7 development. Today, bicyclists traveling along the Muddy River path heading toward Kenmore Square must exit the path at Park Drive and travel up Brookline Avenue. This new connection provides an important off the roadway link for bikes and pedestrians to Kenmore Square. The proposed development at Parcel 7 will add the final critical connection for those traveling for jobs or recreation. This new path holds great promise for making other local and regional bike connections, such as to Beacon Street, the Esplanade, and Cambridge.

Boylston Street: The proposed design of Boylston Street begins at Sears Rotary and terminates at Ipswich Street. This design was tailored to accommodate the community's requests to retain off-street parking, allow for 11' travel lanes in each direction, add a 5' bike lane in each direction, add new trees and landscaping, and to honor the City's requirement for a minimum of 15' sidewalks. This design requires that future development provide set-backs to allow for the sidewalk and other amenities.

The intersection of Brookline Avenue and Boylston Street holds great promise for a new gateway to the Fenway with attractive amenities for the public to gather and shorter crossing distances to accommodate high pedestrian volumes. The current land use is a mix of retail, restaurants, large blocks, and a non-inviting pedestrian environment. Recent development along the corridor have set a new tone for the corridor and provide an excellent opportunity to support the proposed design.

Audubon Circle: Audubon Circle is a gateway to Fenway, Kenmore Square, and the Town of Brookline with a proud neighborhood and a colorful history. The proposed design for Audubon Circle is focused on the intersection of Park Drive and Beacon Street. The design takes advantage of the opportunity to address long-standing pedestrian, bike, and vehicular conflicts at the intersection. It also provides an opportunity to promote the historic character of the Circle and support a more attractive pedestrian environment. This intersection supports all modes, including the Green Line, high volumes of pedestrian crossing, and heavy bicycle activity.

The following chapters will describe in detail the design improvements for each of the three selection priority areas.



Priority Projects for Right-of-Way Redesign



Priority Projects

Multi-Use Path: Connect the Muddy River path underneath Park Drive to Fenway Station and on to Maitland Street to link the proposed development at Yawkey Station.

Boylston Street:

Accommodate bikes, on-street parking, and wider sidewalks. Improve traffic conditions, and maximize landscaping.

Audubon Circle: Promote the historic character of the Circle, maintain traffic flow, and support pedestrian and bicycle activity.

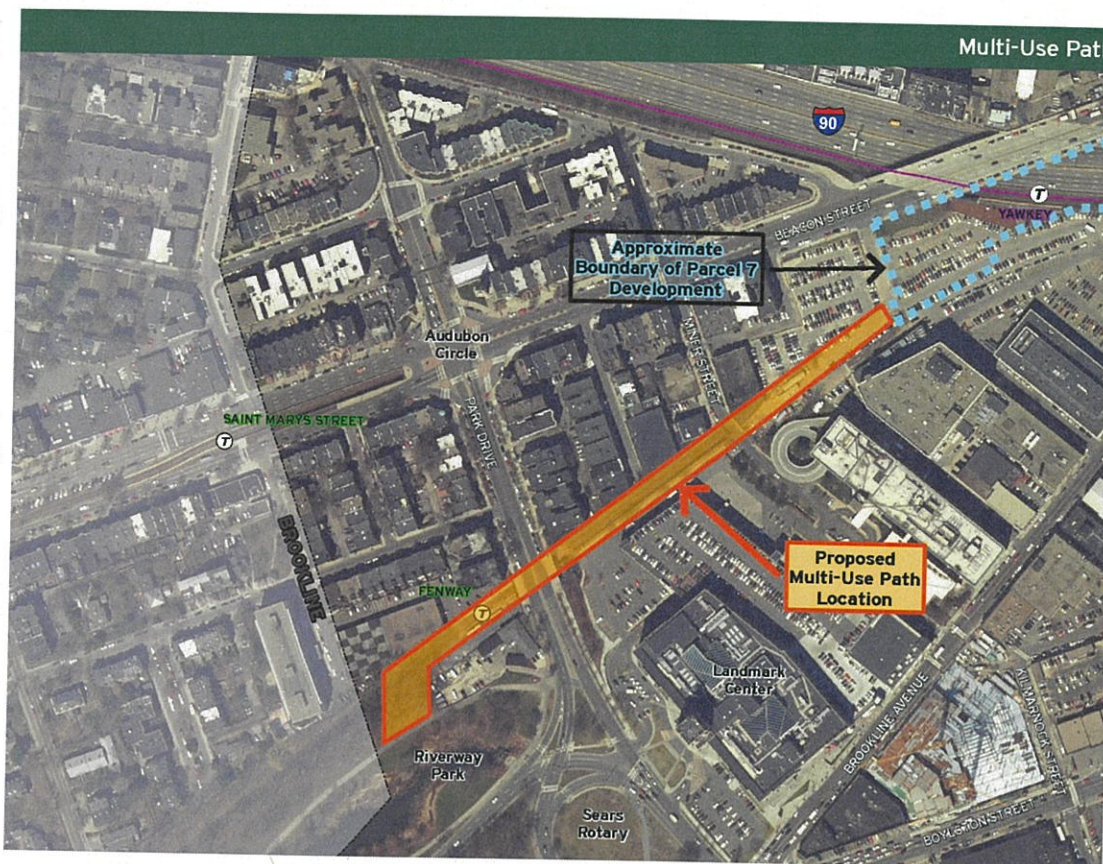


10. FENWAY-YAWKEY MULTI-USE PATH

Issues and Goals

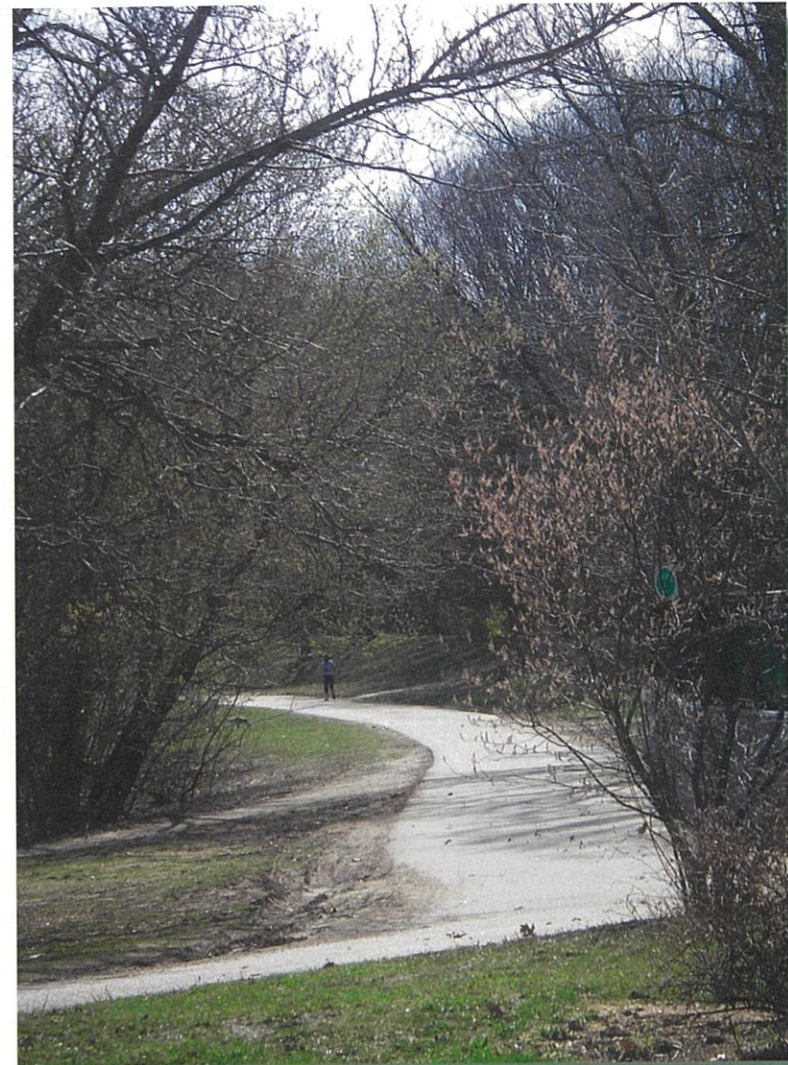
Bicycle access from the region into the Fenway-Longwood-Kenmore neighborhoods for work or pleasure is provided by the DCR pathways along the Emerald Necklace. However, safe and direct connections from the regional system to local facilities such as Fenway, Yawkey, and Kenmore Stations, the retail at Landmark Center, and neighborhood institutions are lacking. Currently, those who are traveling to Kenmore or the LMA encounter challenges crossing through Sears Rotary and Brookline Avenue as well as along Boylston Street. Furthermore, bicyclists are forced to use crowded city streets to connect to downtown. Bicyclists using the MBTA currently are constrained as there are few dedicated on street lanes providing designated access routes to transit stations.

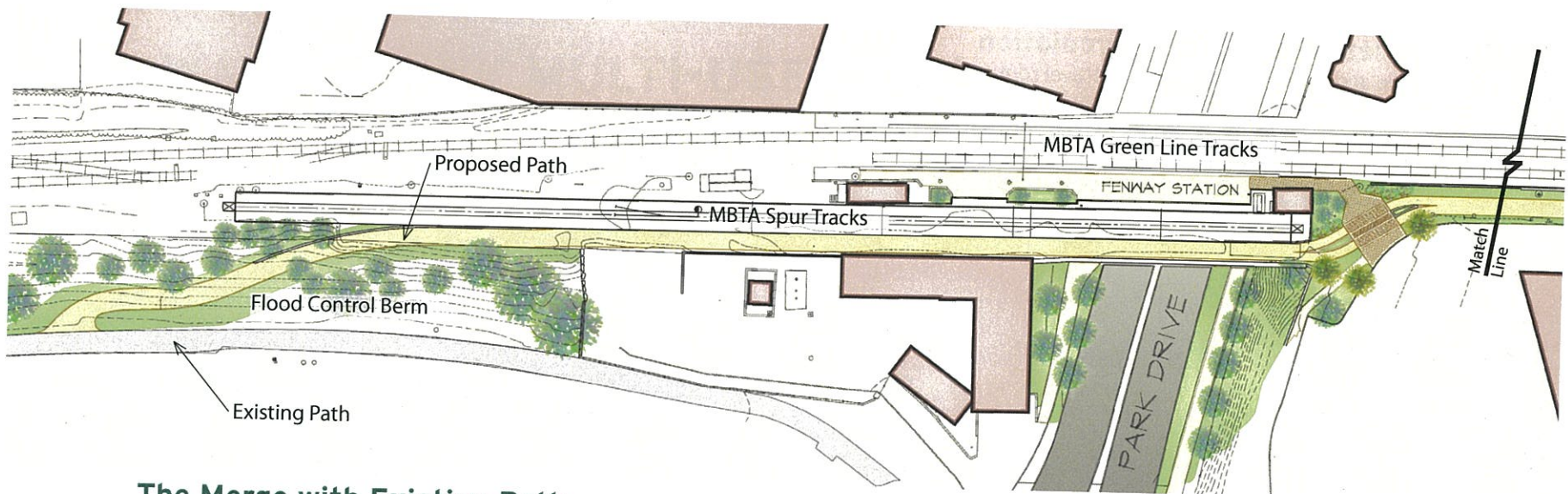
The main goal was to identify linkages for bicyclists that would build upon the existing resources of DCR pathways, bypass the Sears Rotary, and provide a car-free connection from the Muddy River to Kenmore Square. The design provides a direct link from Riverway Park to Yawkey Station and the future Parcel 7 development site at Maitland Street.



Improve Access, Safety, and Circulation

Safe and effective access for bicycles include: travel routes, making important MBTA connections, and having sufficient parking facilities. Given the constraints of crossing the Sears Rotary, the new path examined a direct, off-road connection from the DCR Muddy River pathway, over the flood-control berm, and adjacent to the MBTA Riverway Green Line at Fenway Station. This new pathway provides a safe route with direct connections to the MBTA and employment centers. The Landmark Center already has racks provided for bikes and Parcel 7 development has included the connecting pathway from Maitland Street with racks for bike parking in the preliminary design.





The Merge with Existing Path

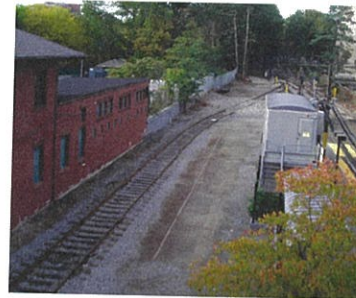
The Station



- The multi-use path begins after the bench shown above
- The path passes over the flood control berm and continues down into Fenway Station

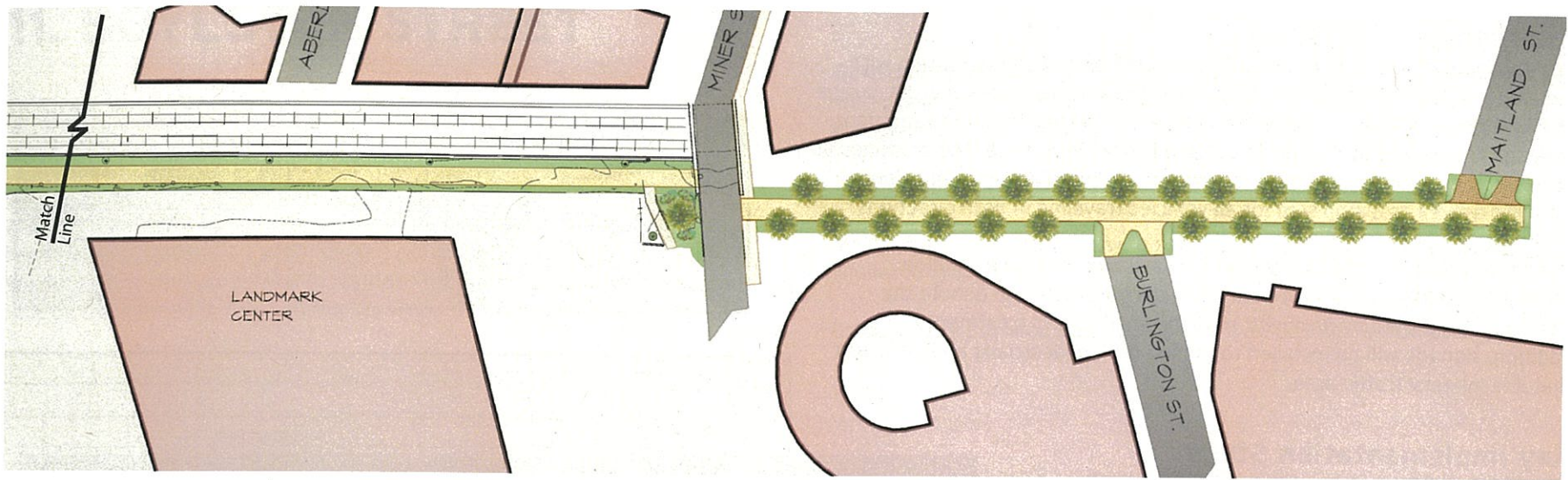


- Multi-use path slope is no greater than 5%, making it universally accessible



- Shift MBTA spur track toward station platform to make room for multi use path
- Relocate MBTA equipment under Park Drive to create an unobstructed route
- Separate the path from the MBTA tracks with a transparent fence



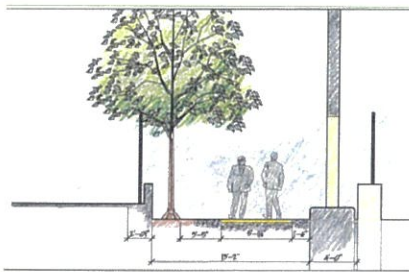


Landmark Center Area

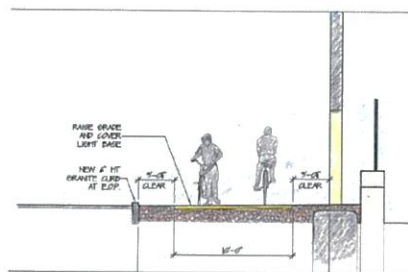
Connection with Parcel 7



The path continues behind Landmark Center toward Miner Street. Bicycle racks are provided for visitors to Landmark Center.



Existing Conditions

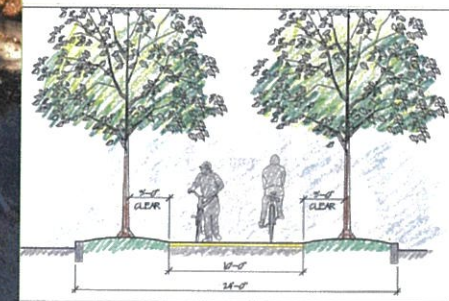


Proposed Conditions

These sections show the existing conditions and the changes needed to provide additional width for pedestrians and bicyclists



- Path crosses driveway, continues on to Yawkey Station, and connects to the proposed new roadway at Parcel 7.



Proposed Conditions



Intersection Crossings

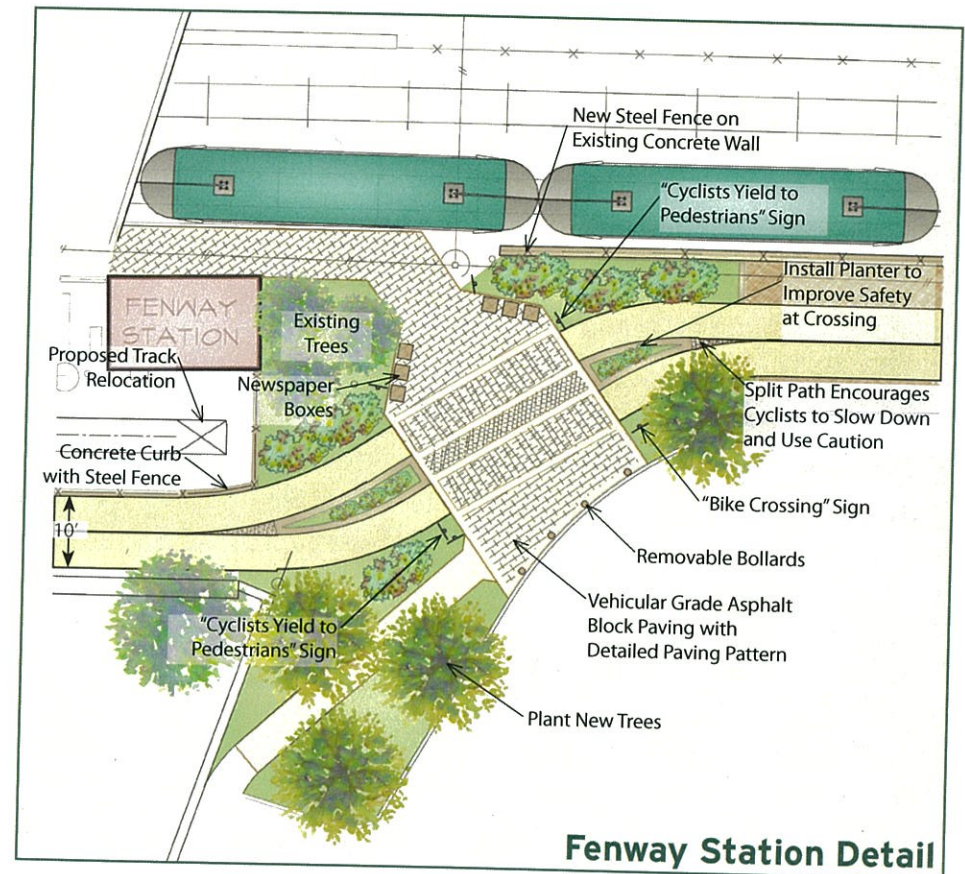
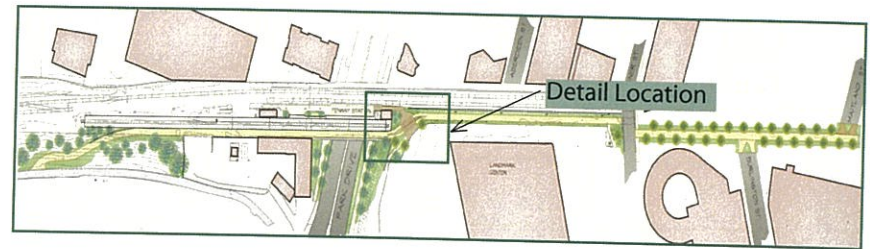
The new path connection requires three crossings at: Fenway Station with pedestrians; Miner Street with pedestrians and vehicles accessing the garage at Pilgrim Health Center; and Maitland Street with vehicles and pedestrians making connections to Beacon Street and Brookline Avenue. The crossings at both Miner and Maitland Streets will include well marked lanes and signage for bikes as well as a stop sign for all vehicles traveling in both directions.

The Fenway Station crossing is carefully designed to reduce conflicts between bicyclists and transit riders. Special pavement will denote the intersection that will be designed with universal access treatments. In addition, signage will be installed to remind both pedestrians and bicyclists that it is a heavy traffic area.

Key Implementation Steps

The MBTA worked closely with the City and HNTB design team to accommodate the pathway. In addition, the design team met with EOT/PW to review the path in context of the Urban Ring proposals for immediate and long-term designs. The following actions are required to bring this path to final design and construction.

- The MBTA revenue tracks will need to be relocated to allow for the path to be constructed.
- The Landmark Center will need to work with the City on the design of their parking spaces to afford enough space for access to the Station and crossing for a wider path to accommodate both pedestrian and bicycle activity.
- Parcel 7 Development will need to connect the multi-use path to Kenmore Square.
- Currently, the Urban Ring has concept plans that require passage adjacent to the Fenway Station crossing for a tunnel portal. However, given the extensive design and review process for this important study, this transit route will operate on city streets for the next 10 years and this current design does not preclude operations of the Urban Ring in the future.



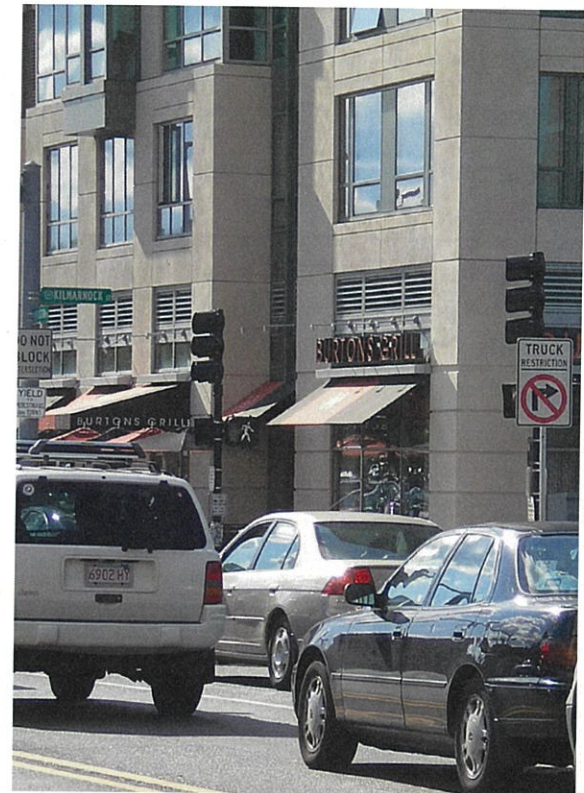
Fenway Station Detail

11. BOYLSTON STREET

Issues and Goals

Boylston Street is a critical connection to the LMA and downtown Boston for employees, students, patients, and visitors. It is also the main connector to the Back Bay and Storrow Drive. Boylston Street is the widest street in the area with on-street parking on both sides, shuttle stops, and loading areas. It also accommodates a variety of land uses in significant transition and supports Fenway Park activities. Traffic in the area is anticipated to exceed 12% by the year 2012. The community vision for Boylston Street is to:

- Develop Boylston Street into a tree-lined pedestrian friendly boulevard with place-making designs at the Yawkey Way and Kilmarnock Street intersections.
- Accommodate wide sidewalks and bicycle lanes on the street.
- Maintain effective traffic flow to minimize on-street parking turnover, similar to Trilogy.
- Establish the Boylston Street/Brookline Avenue intersection as a gateway.



Selection of Preferred Option for Re-Design

Three options were designed to achieve the goals identified on page 31:

- 1. Linear Corridor Option:** with two 5' bike lanes, two 11' travel lanes in each direction, and two 8' on-street parking lanes that would require setbacks to achieve the necessary sidewalk width of 15 feet;
- 2. Linear Corridor Without Bike Lanes Option:** same as above, but without bike lanes and more space for on-street parking; and
- 3. Curvilinear Corridor Option:** with no bike lanes, wider sidewalks, and alternating 8' on-street parking on different blocks along the corridor.

The consensus was to advance Option #1 to conceptual design including: the retention of on-street parking on both sides wherever possible, two 11' travel lanes in each direction, a minimum of 15' sidewalk widths, neckdowns to accommodate high pedestrian crossings at four major intersections, and two 5' bike lanes in each direction.

The approach taken during design was to work closely with abutters, stakeholders, and the community and incorporate a phased construction of New Road located between Kilmarnock and Ipswich Streets. Great attention was focused at the Gateway area located at the Sears Rotary where the conceptual design incorporated new design for the Sears Rotary and made adjustments for both Brookline Avenue and Boylston Street at this intersecting point. The following pages illustrate existing conditions and turning counts for Boylston Street block by block and then detail recommended redesign solutions.

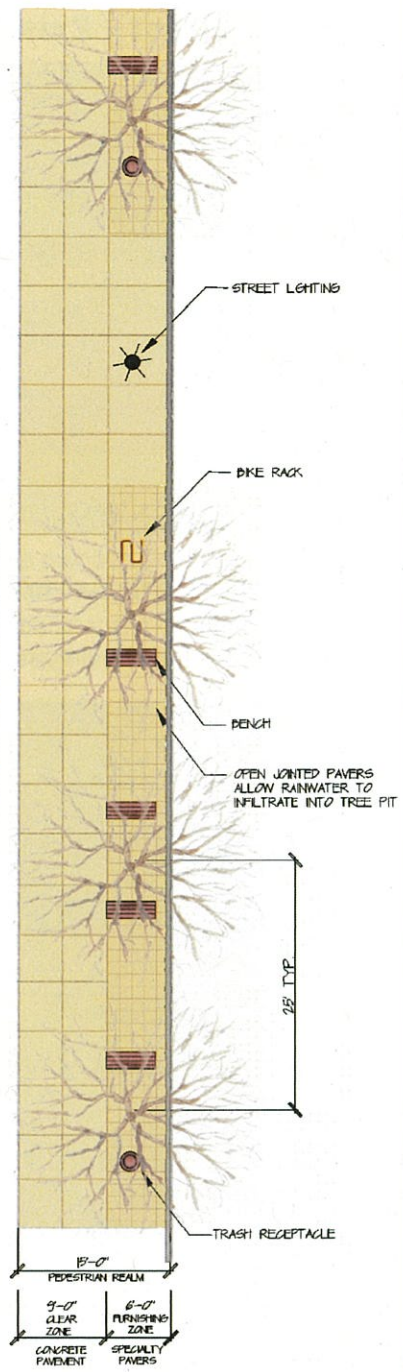
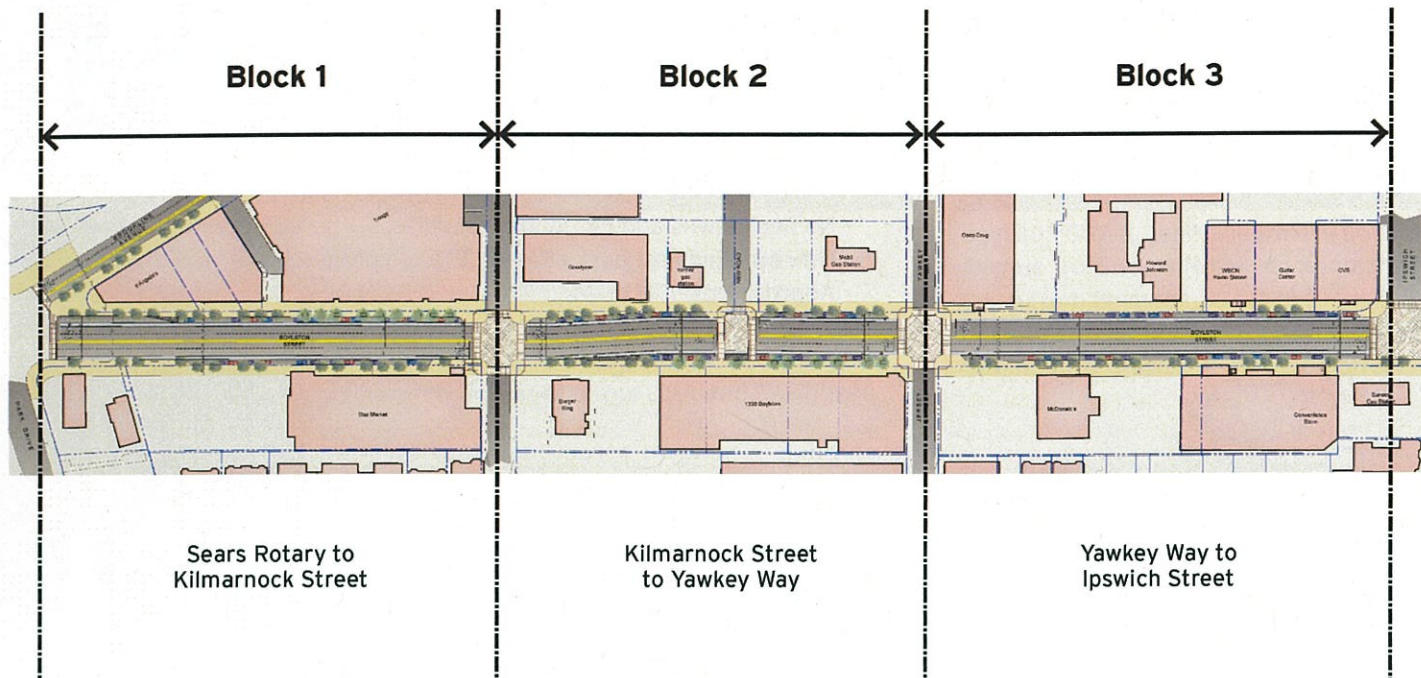
The redesign of Boylston Street was focused block by block (see page 37). Generally, Boylston Street is a linear corridor with two 12' travel lanes, 8' parking lanes in each direction, no bike lanes, and crosswalks that are typically 64' in distance. Sidewalk widths vary from 7'-22' with the larger areas located adjacent to new development, consistent with the City's 15' guidelines. Based on the selection of Option #1, maintaining two travel lanes, on-street parking, adding bike lanes and 15' (minimum) sidewalks, the design requires set backs for all new buildings along the corridor. Neckdowns are provided at each intersection that will reduce the crosswalk distance to 54 feet. Travel lanes were reduced to 11 feet. These changes allow for the possibility of over 60 new trees and other landscaping to be added to the area.

BOYLSTON STREET DESIGN FRAMEWORK

Existing Conditions: Two 12' lanes in each direction with 8' parking lanes on both sides, 3 lanes outbound at Sears Rotary
 No bicycle lanes
 Sidewalk widths vary, but are generally 7' and up to 22' at Trilogy, approximately 10 trees
 No neckdowns resulting in 64' long crosswalks

DESIGN ELEMENTS	#1: LINEAR CORRIDOR with Bike Lanes	#2: LINEAR CORRIDOR without Bike Lanes	#3: CURVILINEAR CORRIDOR	DESIGN DIRECTION
Travel Lanes	Two 11' lanes in each direction Dedicated left turn lane at Yawkey Way	Two 11' lanes in each direction Dedicated left turn lane at Yawkey Way	Two 11' lanes in each direction Dedicated left turn lane at Yawkey Way	
Bicycle Lanes	Two 5' bicycle lanes	No bicycle lanes	No bicycle lanes	
On-Street Parking	Two 8' parking lanes	Two 8' parking lanes	One 8' parking lane on alternating blocks	
Sidewalk Widths	Publicly owned sidewalks only 3' to 4', need private property	Expands sidewalks allowing for 10' minimums	Expands sidewalk widths to 18' on sides with no parking. Up to 30' using private property	
Trees	Potentially 40 trees assuming use of private property	Potentially 40 trees assuming use of private property	Potentially 55 trees on public property	
Neckdowns	Neckdowns at every intersection except one corner at Yawkey Way	Neckdowns at every intersection except one corner at Yawkey Way	Neckdowns at all blocks with on-street parking	
Typical Crosswalks	54' long crosswalks	44' long crosswalks	44' long crosswalks	

Summary of Proposed Design



Sidewalk Widths:	Existing = 7' - 22'	Proposed = 15' - 22'
Crosswalk Lengths:	Existing = 64'	Proposed = 54'
Typical Lane Width:	Existing = 12'	Proposed = 11' - accommodates left turn at New Road
Bike Lane:	Existing = none	Proposed = Two 5' lanes (one in each direction)
Trees:	Existing = +/- 15	Proposed = +/- 60

Preservation of on-street 8' parking lane on both sides
 Neckdowns accommodated at every intersection

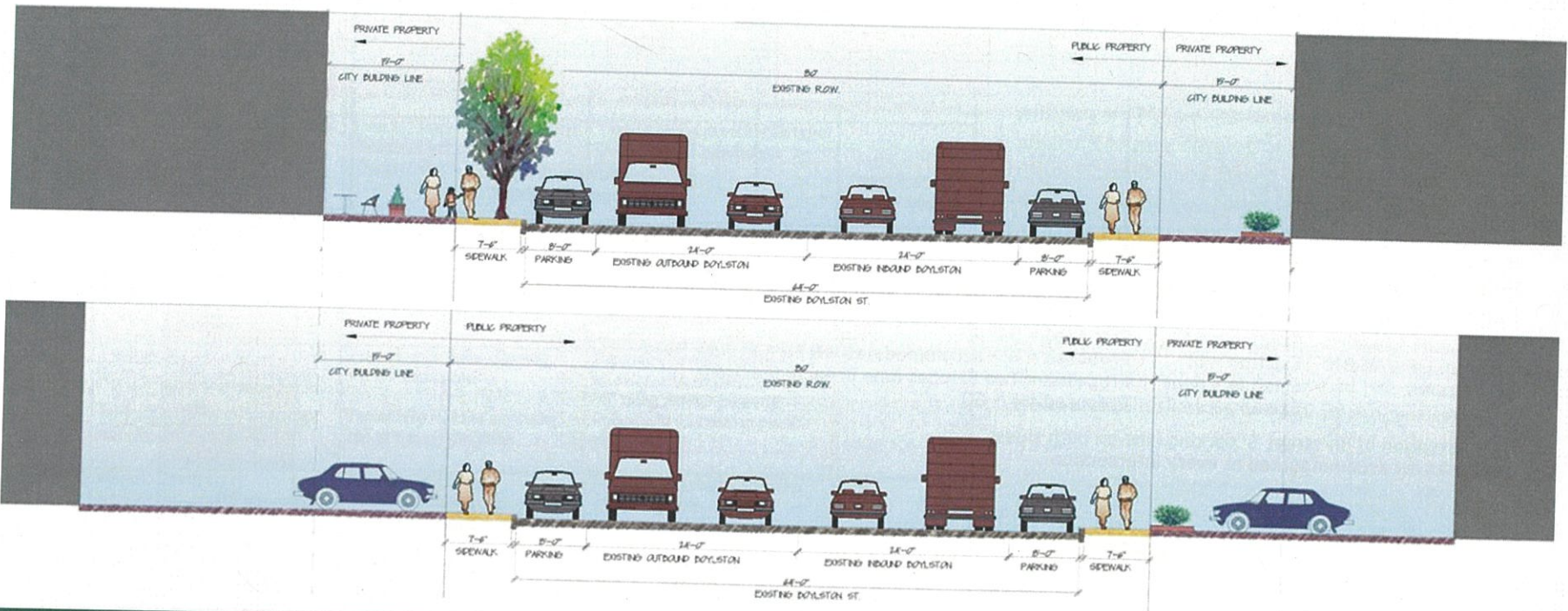


Boylston Street - Existing Conditions - Corridor Wide



The current configuration of Boylston Street, from Sears Rotary to Ipswich Street is:

- 64' pavement width curb to curb,
- No bike lanes,
- Two 12' lanes in each direction, three lanes outbound at Sears Rotary,
- 8' parking lanes on both sides, 8' - 22' wide sidewalks (with curb),
- No neckdowns and 64' long crosswalks,
- New buildings set back at least 15' from property line, and
- Approximately 10 trees.



Boylston Street - Existing Conditions - Sears Rotary to Kilmarnock Street

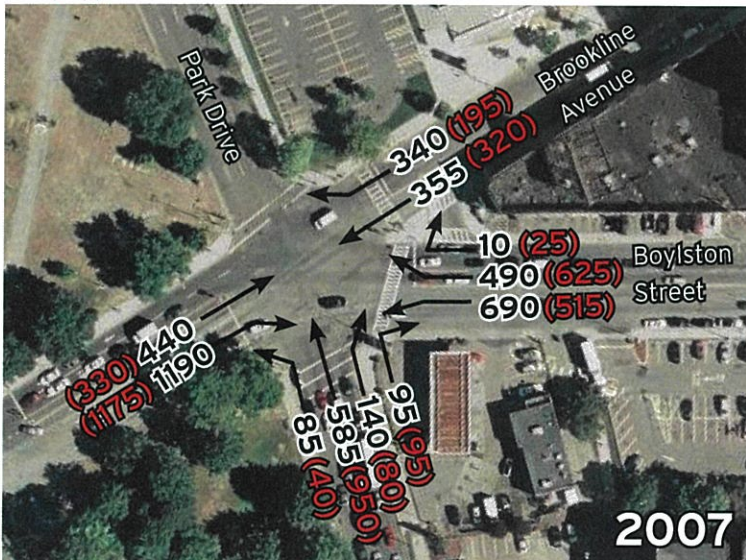
The streetscape along Boylston Street from Sears Rotary to Kilmarnock Street is dominated by parking lots and large retail operations. Pedestrian movements are challenged by large crossing distances. Bicycles emerge from the DCR Muddy River pathway into the roadway with no dedicated way and often are at odds with a large number of pedestrians.



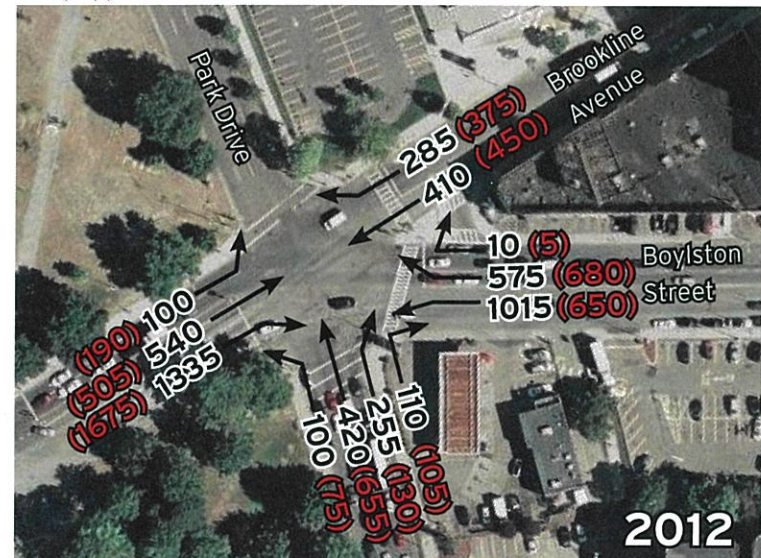
The analysis of this area utilized the Army Corps work on the Muddy River Daylighting Project. The recommended design suggests further modifications to improve the operations of the intersection. The turning counts for 2007 illustrate that peak hour traffic is high in both directions due to Boylston Street being the main channel between the employment centers of the LMA and Downtown.

Boylston Street generally carries double the number of vehicles as Brookline Avenue from Sears Rotary to Kenmore Square. Very few right U-turns are taken from Boylston Street to Brookline Avenue at the d'Angelos corner. In 2012, higher increases in traffic are expected all along Brookline Avenue, with modest growth on Boylston Street.

AM(PM) Peak Hour Vehicles Per Hour



AM(PM) Peak Hour Vehicles Per Hour



Proposed Design - Sears Rotary to Kilmarnock Street

The potential redevelopment of the d'Angelo's building offers new opportunities for a pedestrian plaza, shorter crossings, and public art. The design modifications for both Boylston Street and Brookline Avenue allow for the creation of a plaza (see page 42) and a new gateway to the Fenway. The recommendations are as follows:

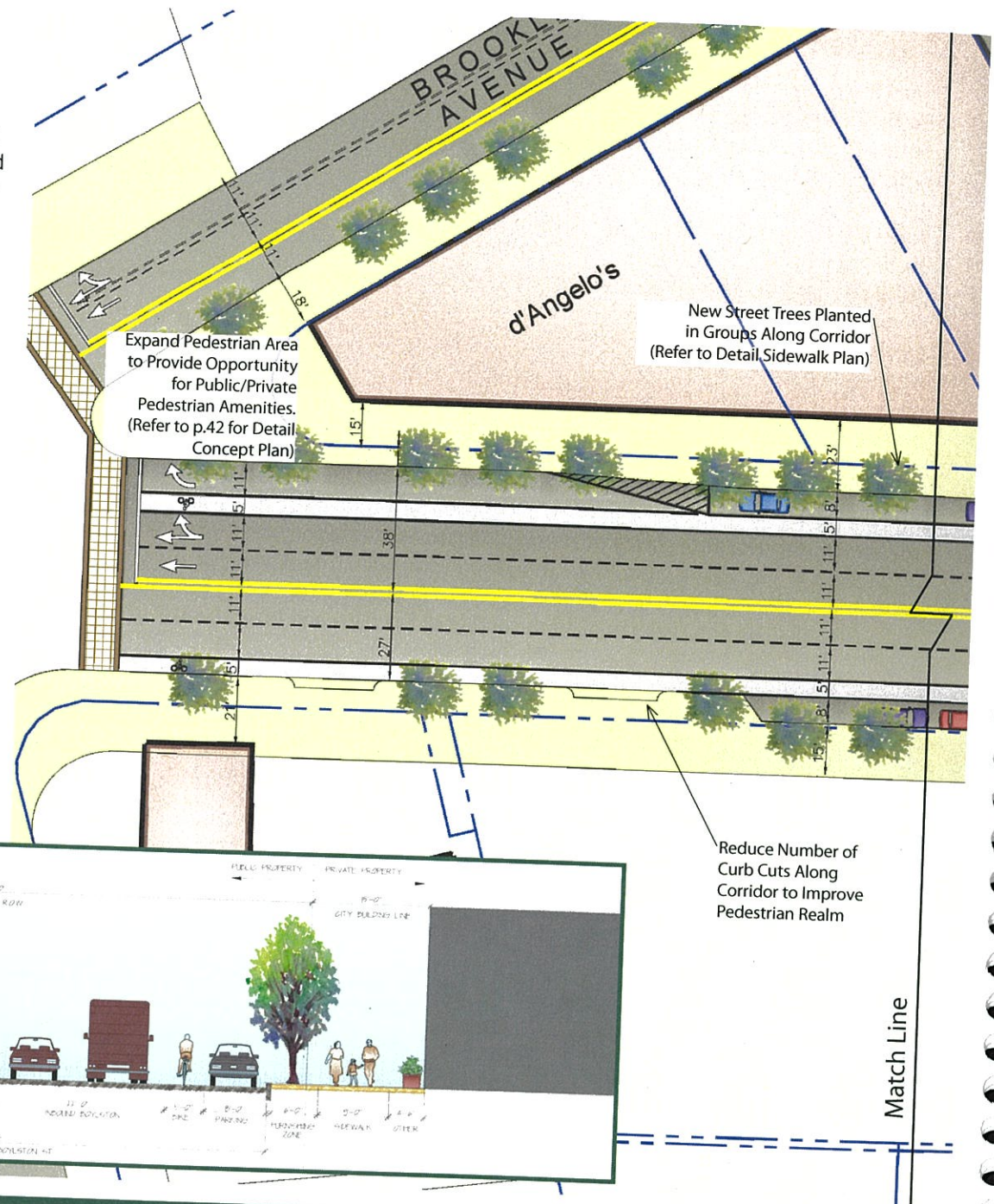
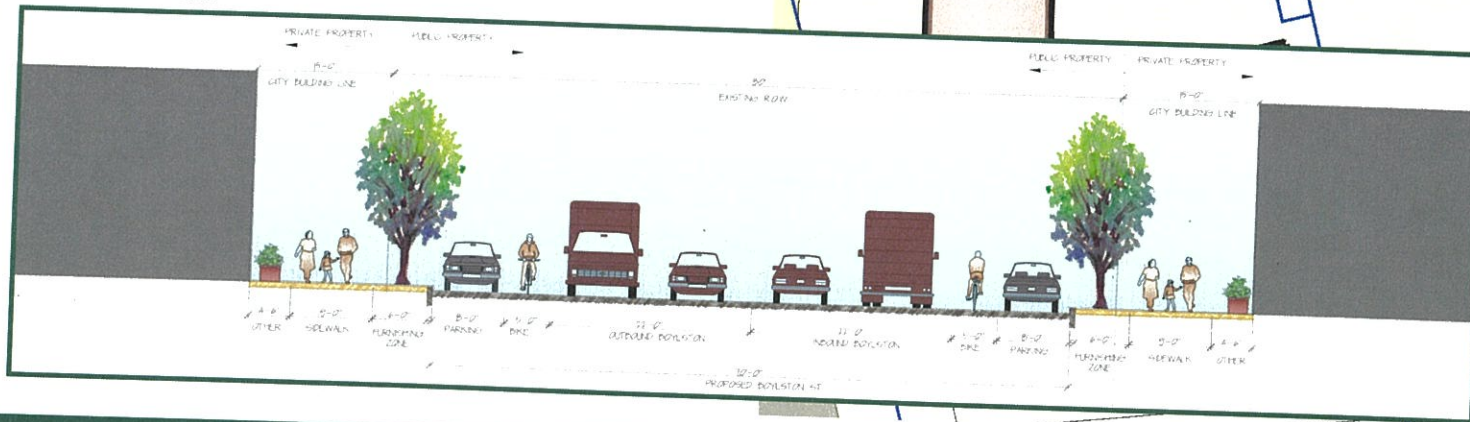
Brookline Avenue

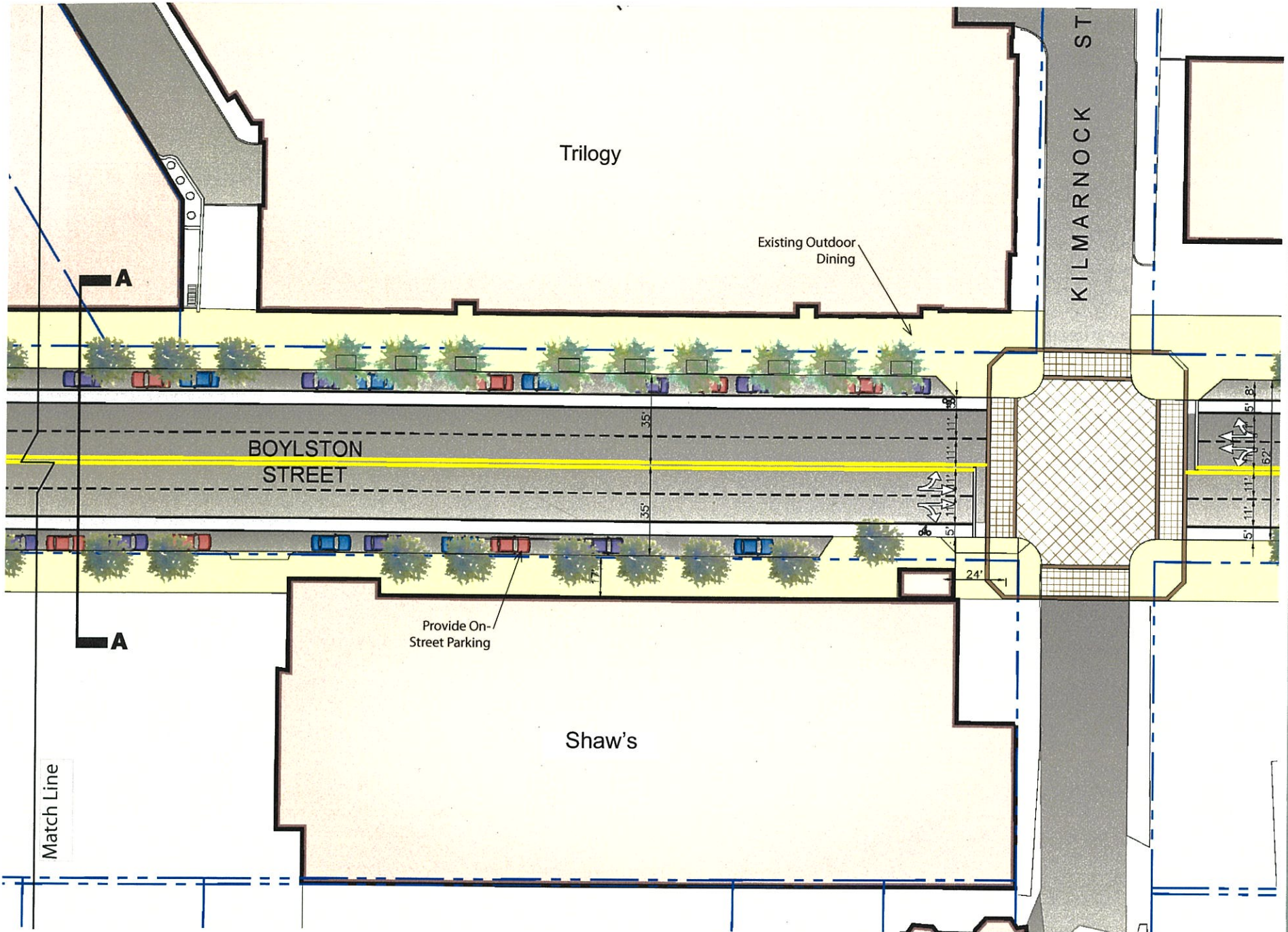
- Eliminate the right turn lane from Brookline Avenue to Park Drive.
- Reconfigure travel lanes to 11' width - two outbound and one inbound.
- Widen the sidewalk to 18' on the d'Angelo's side to reduce the crossing.

Boylston Street

- Maintain two 11' travel lanes in each direction.
- Allow for a dedicated right turn lane, with a 200' queue on Boylston Street.
- Expand sidewalk by 15' by d'Angelo's and remove parking to allow for right turn lane.
- Create two 5' bike lanes.
- Reduce the curb cuts at the Shaw's supermarket, retain some on-street parking.
- Set the Shaw's parking lot back to create a 15' sidewalk.
- Add new street trees where no hollow sidewalks exist.

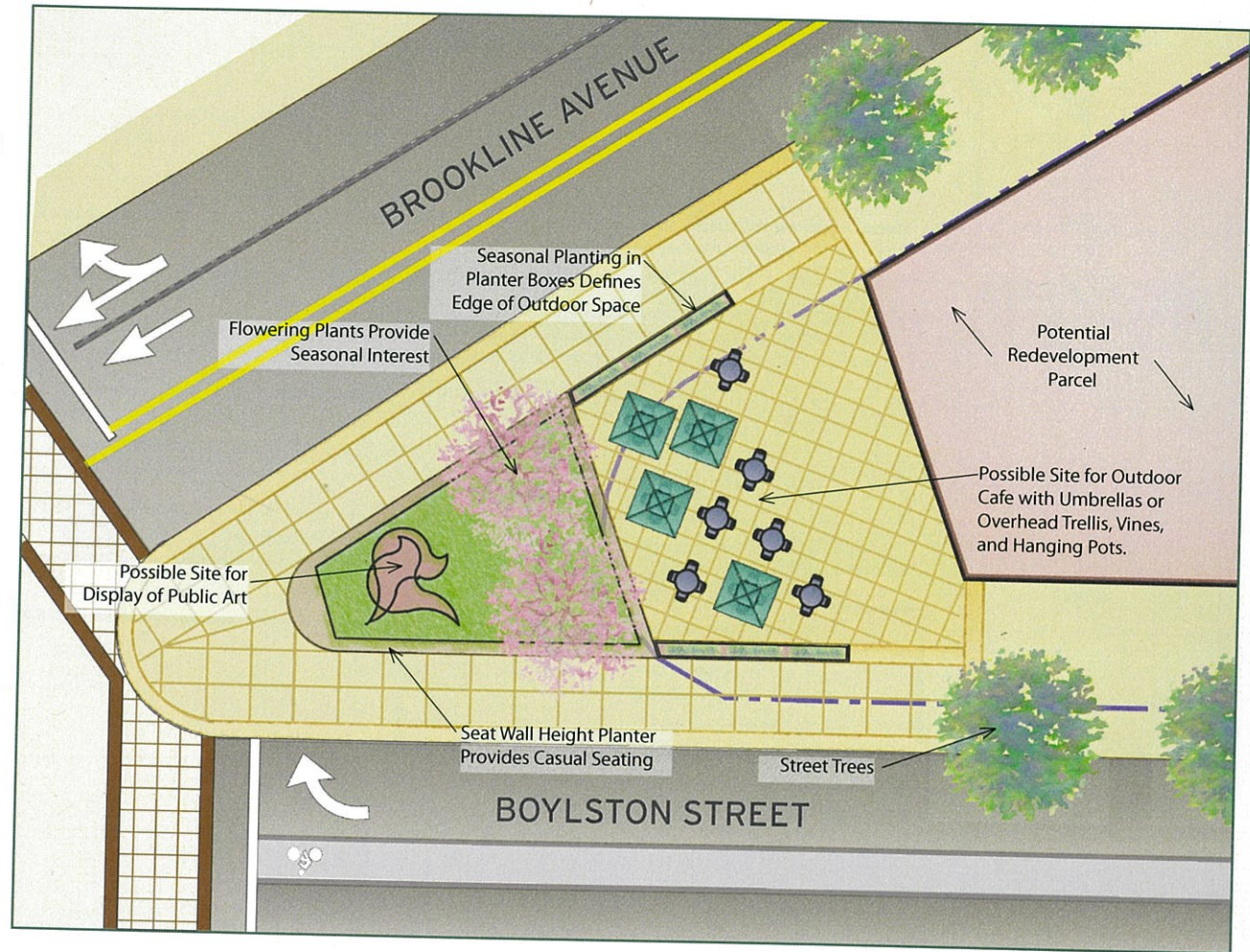
Section AA



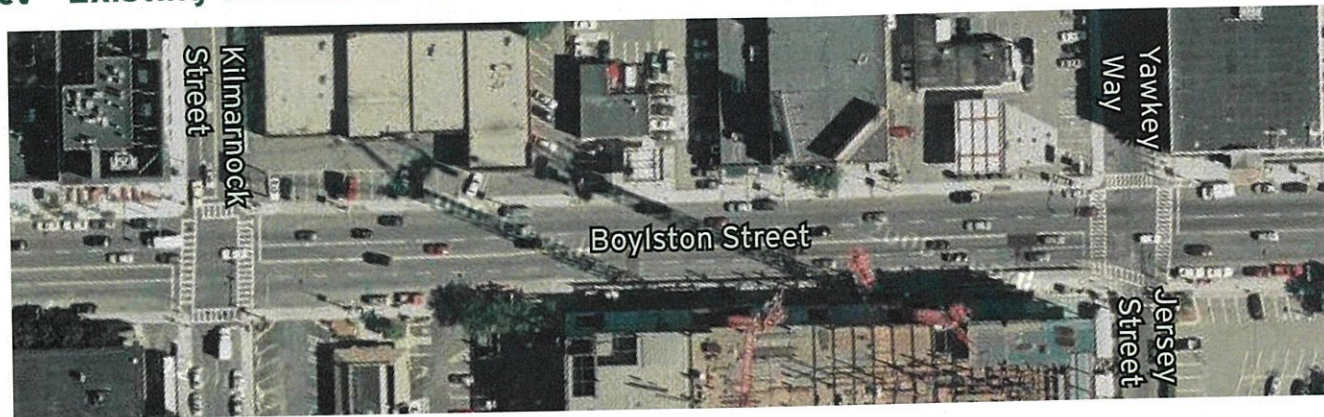


Proposed Design - Gateway Plaza at Brookline Avenue/Boylston Street Intersection

The plaza area is rendered as an illustration only to inspire new ideas in the next phase of design. The creation of a new plaza offers many opportunities to celebrate this gateway to Fenway. Space is available for public art, landscaping, and potentially outdoor seating for a venue associated with the new development. The goal is to provide ample space for pedestrian crossing and gathering areas while also adding attractive amenities to welcome all to the Fenway.



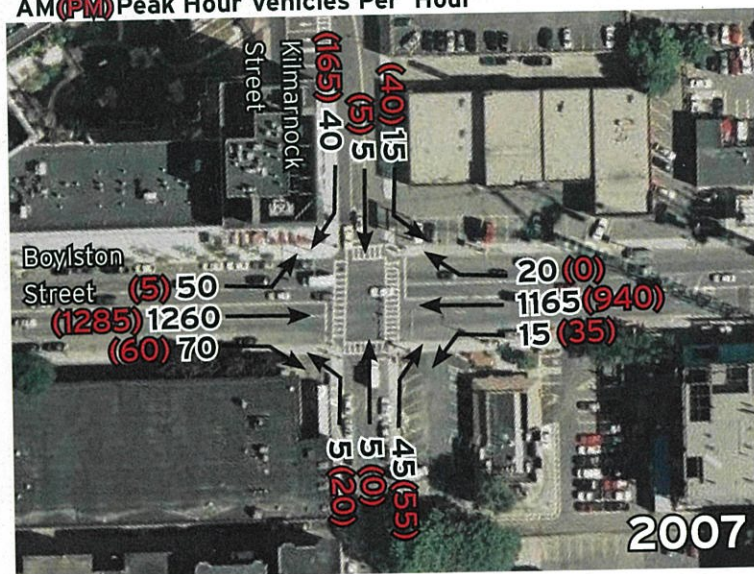
Boylston Street - Existing Conditions - Kilmarnock Street to Yawkey Way



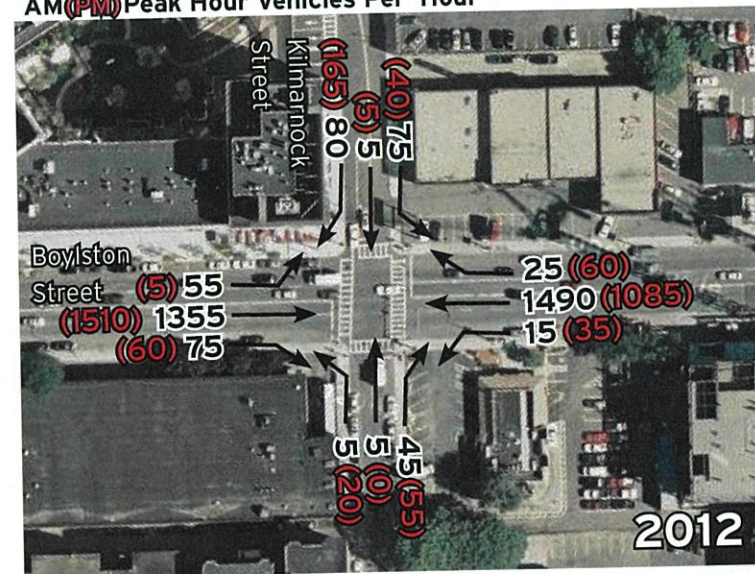
This block of Boylston Street is characterized by fast food restaurants, the Goodyear shop, and a mix of retail. Sidewalk widths are constrained and the streetscape is dominated by parking lots and numerous large curb-cuts with few trees dotting the area. The development of the Trilogy building has created opportunities for business and recreational activity along the perimeter. Burton's Restaurant, at the corner of Kilmarnock and Boylston Streets, opened a sidewalk cafe creating vibrant street activity.

Kilmarnock Street has become a major connector to Brookline Avenue and Van Ness Street. In 2007, the turning counts from Boylston Street onto Kilmarnock Street were higher in the AM and inbound. In 2012, with anticipated development, the volumes of traffic entering Kilmarnock Street from Boylston Street will increase dramatically.

AM (PM) Peak Hour Vehicles Per Hour



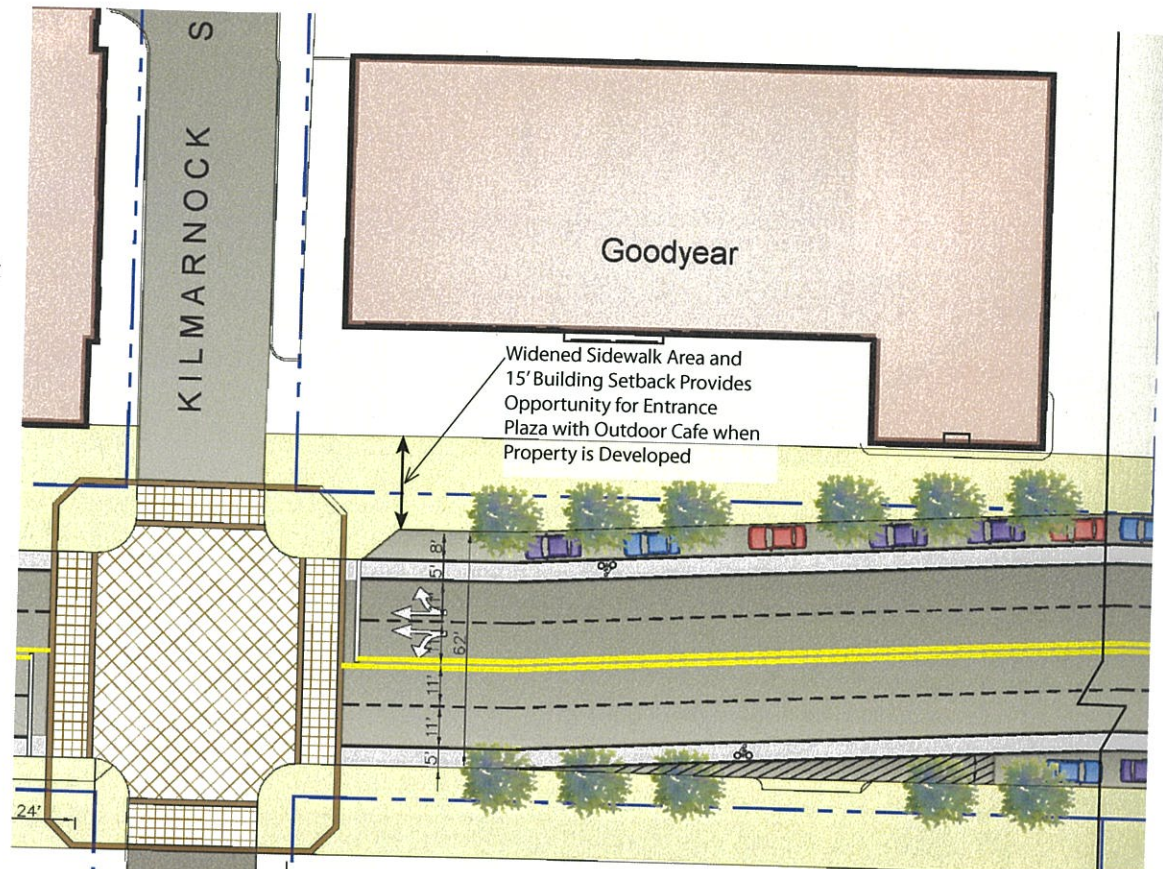
AM (PM) Peak Hour Vehicles Per Hour



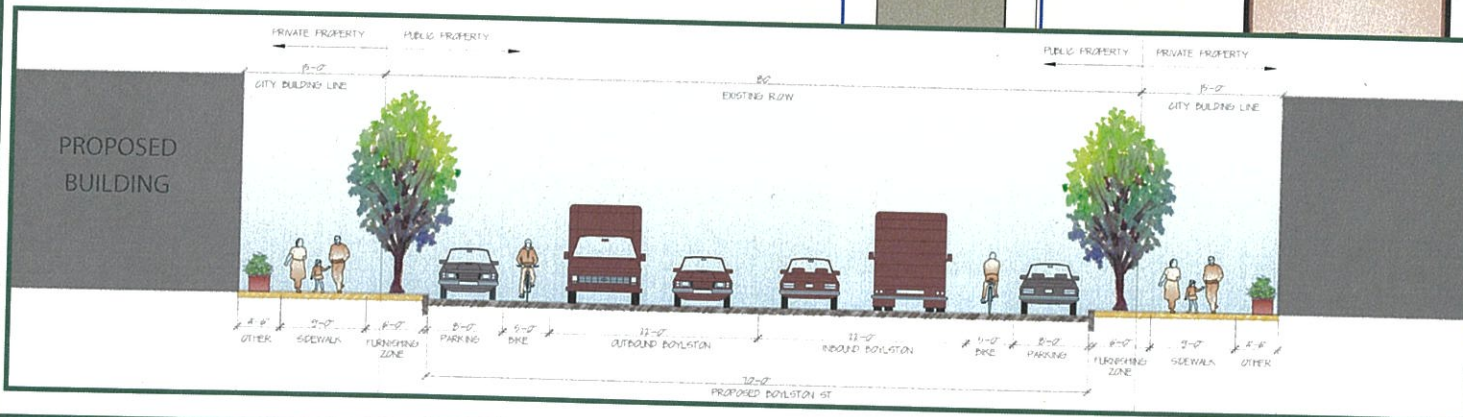
Proposed Design - Kilmarnock Street to Yawkey Way

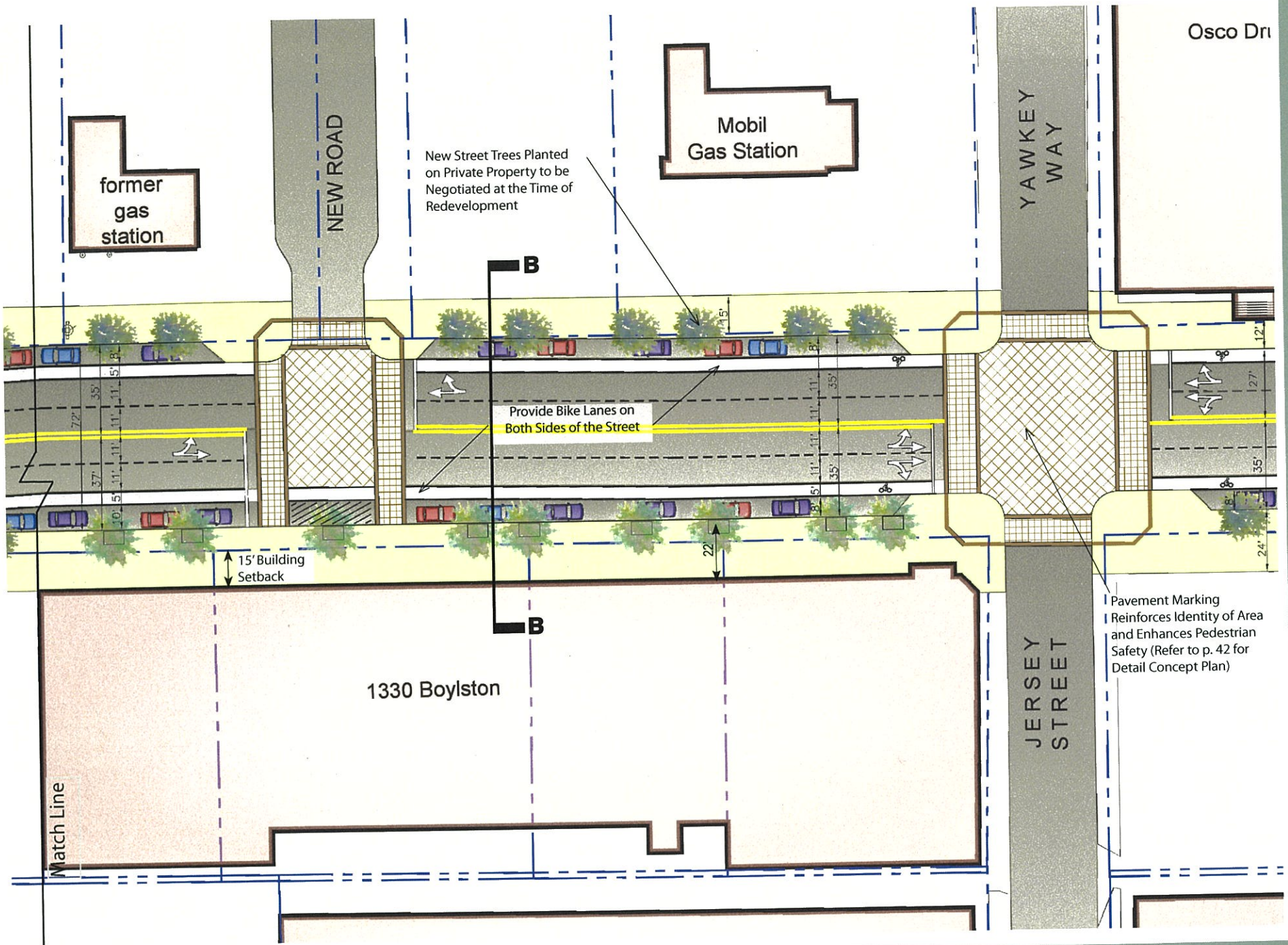
There will be more opportunities in this block to widen the sidewalks with anticipated development in the future. The recommendations are as follows:

- Intersection crossings are narrowed to 54' on Boylston Street and 44' on Kilmarnock Street.
- On-street parking is preserved on both sides where space allows.
- Neckdowns are proposed for all corners of Kilmarnock Street to decrease crossing distances.
- Add landscaping and trees where hollow sidewalks allow.
- The incorporation of a new road (see page 48), connecting Boylston Street to Van Ness Street to create a new intersection.
- Phase 1 of New Road will require a shared left turn and through lane heading toward downtown, and a shared right turn and through lane in the opposite direction.
- Consider design treatments for the intersections of Kilmarnock Street and New Road to slow traffic using new Duratherm pavement markings.



Section BB





The intersection of Boylston Street and Yawkey Way receives significant pedestrian traffic, especially during Fenway Park events. The construction of 1330 Boylston Street has already created wider sidewalks and other amenities that will enhance pedestrian activity. In 2007, Yawkey Way received approximately 15% of the traffic off of Boylston Street in the AM but much less in the PM. In 2012, consistent with the rest of the corridor, traffic volumes along Boylston increase by 12 percent.

AM(PM) Peak Hour Vehicles Per Hour

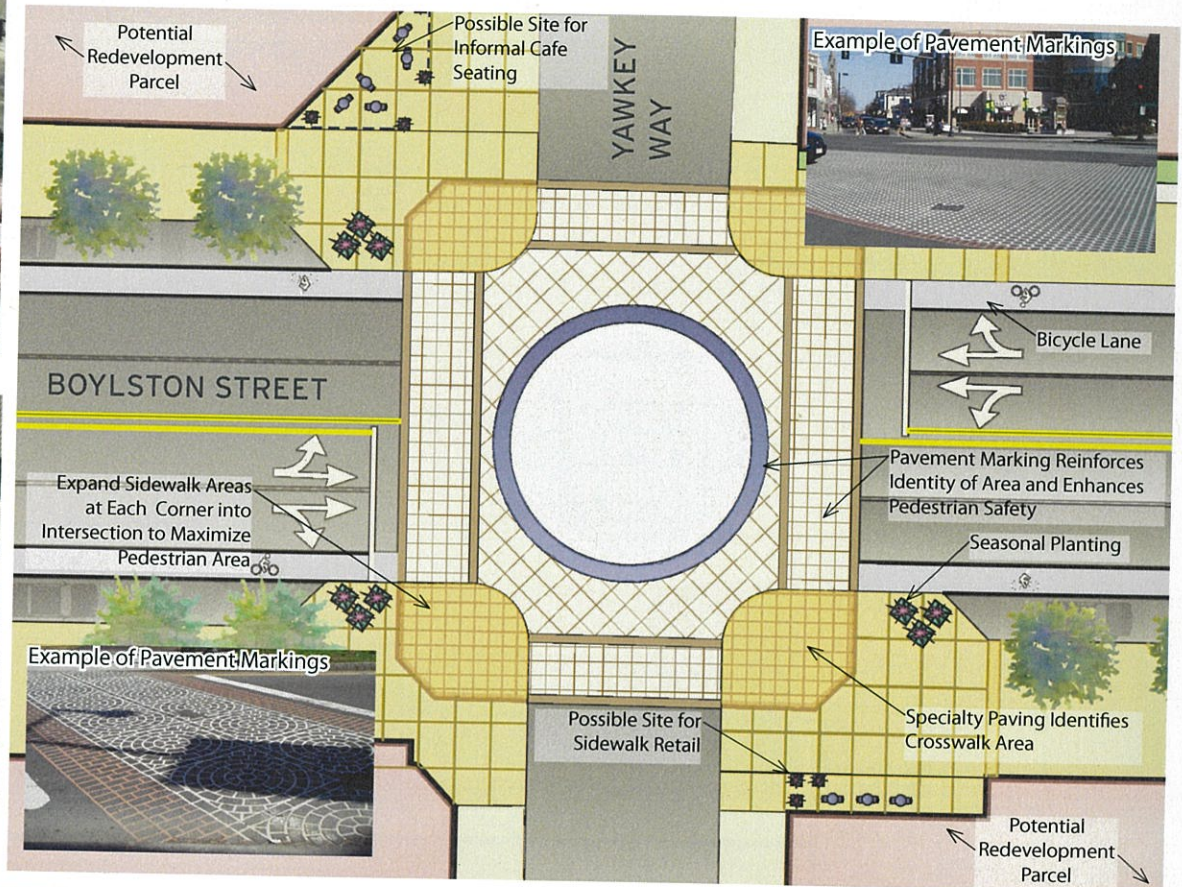


AM(PM) Peak Hour Vehicles Per Hour



Proposed Design - Yawkey Way Intersection

- Maintain two 11' travel lanes, two 5' bike lanes, on-street parking, and allow for left and right turns as well as through traffic at Yawkey Way.
- Neckdowns are added to Yawkey Way on both sides of Boylston Street.
- There is an opportunity to apply the new Duratherm pavement treatment for the crosswalks and in the intersection to slow traffic and celebrate the area's unique attractions. The white circle pictured in this intersection is only to inspire further dialogue with the community and abutters as to how these areas can be redesigned in the future.
- New trees and landscaping can be added to both sides of the street as new development provides set-backs to accommodate wider sidewalks. Landscaping elements will be designed with full consideration of hollow sidewalks.



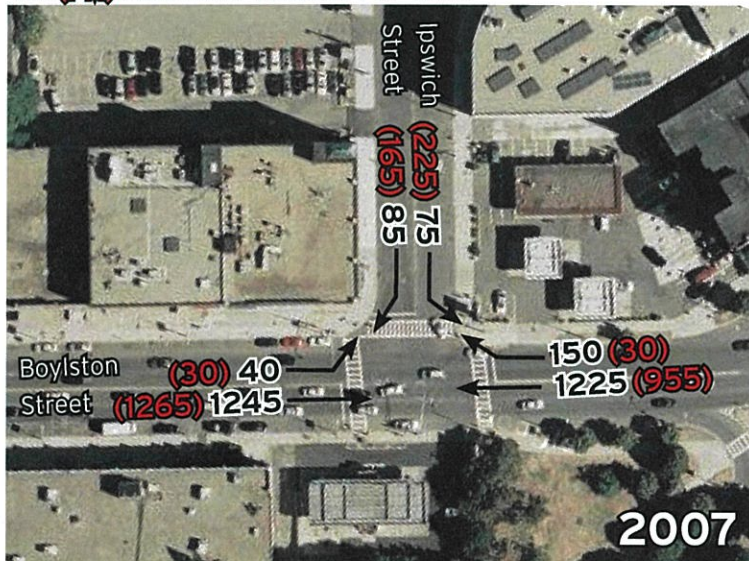
Boylston Street - Existing Conditions - Yawkey Way to Ipswich Street



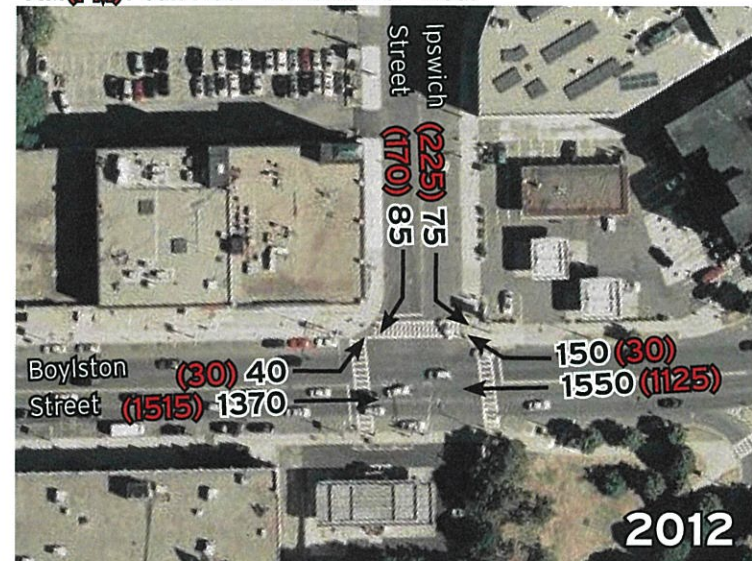
This block of Boylston Street is characterized by parking lots and a mix of retail and restaurants. The sidewalks are constrained and the landscape is void of trees. Two high schools are located off of Ipswich Street across from Fenway Park, resulting in significant pedestrian activity. Pedestrians must traverse six driveways to travel through this block. On-street parking is present on both sides of the street.

In 2007, the turning counts at Ipswich Street were the highest of any cross street on Boylston Street during the AM reflecting the use of this street as the main entrance to the schools. There is also significant traffic exiting Ipswich Street during the PM peak hours. In 2012, with anticipated development, the volumes of traffic will increase along Boylston Street by 12 percent.

AM(PM) Peak Hour Vehicles Per Hour



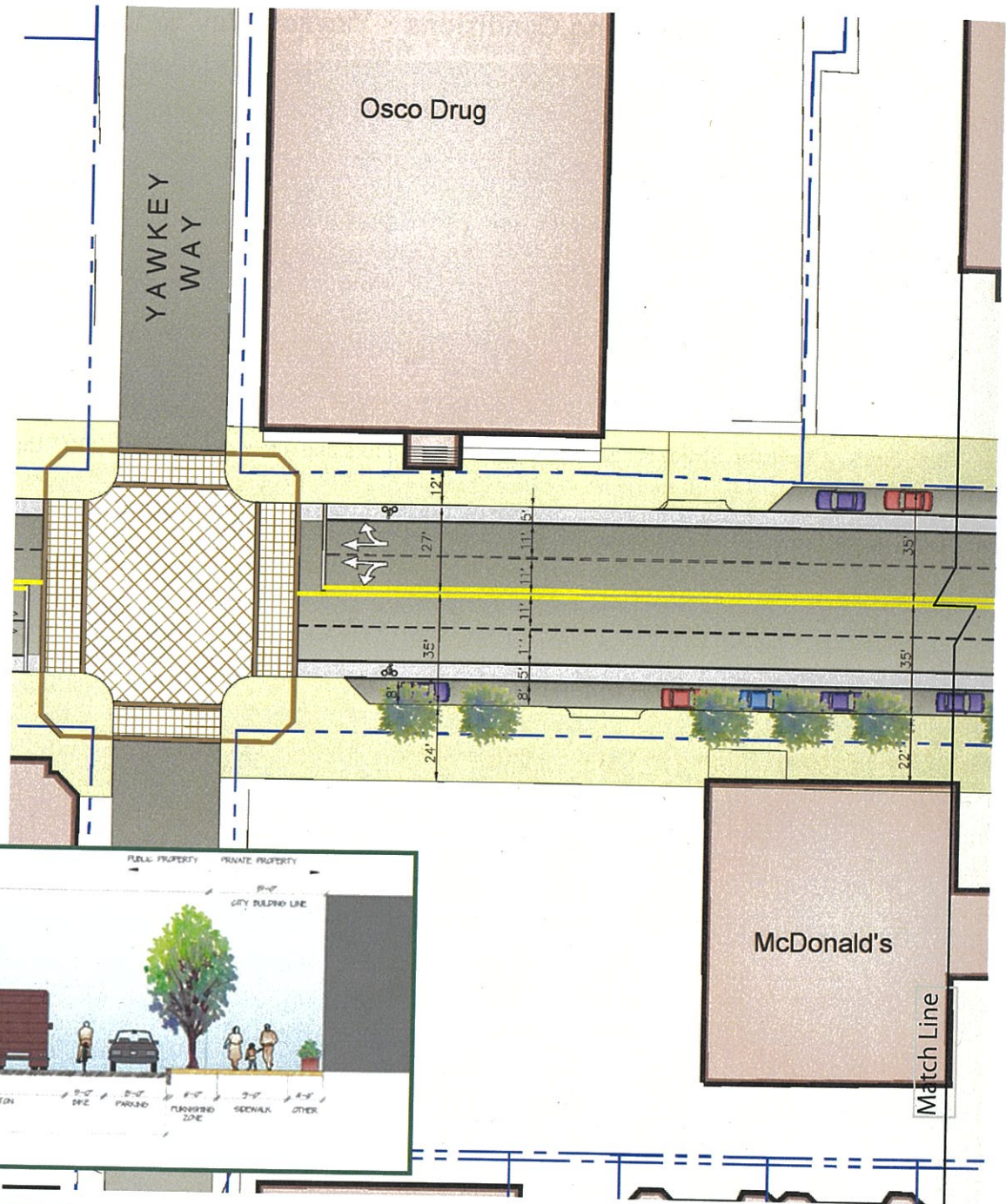
AM(PM) Peak Hour Vehicles Per Hour



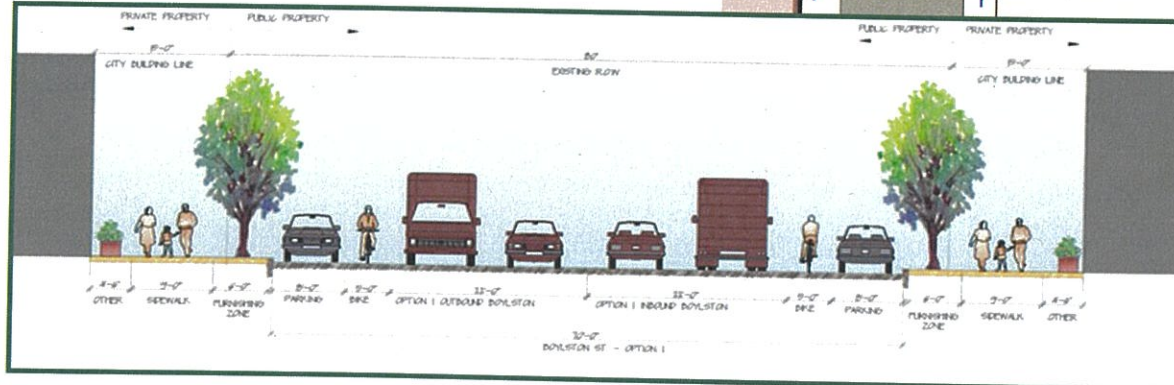
Proposed Design - Yawkey Way to Ipswich Street

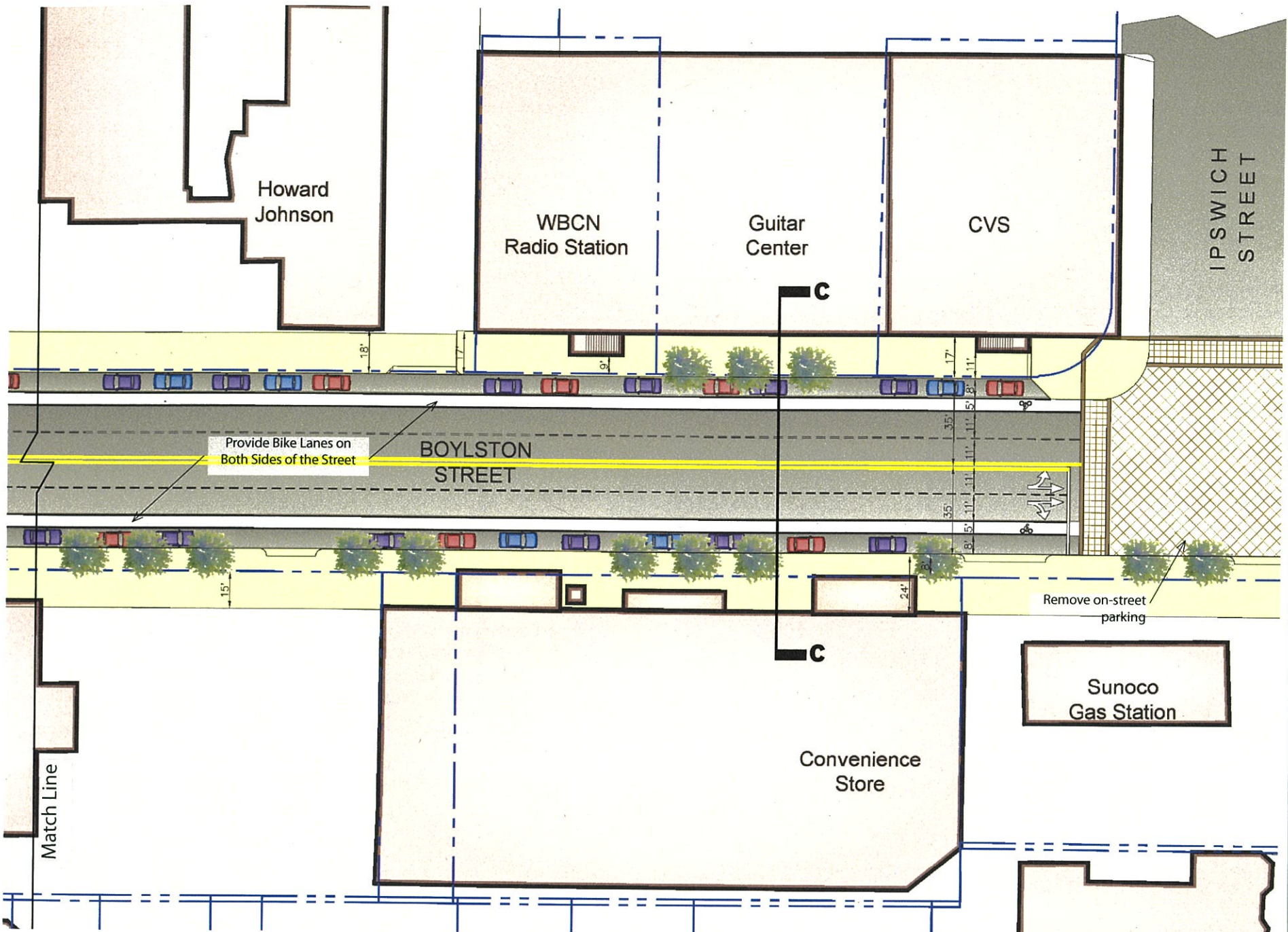
Given the future potential for redevelopment along this block combined with the opportunity for this area to be a gateway to the Fenway for downtown visitors, the suggestions for redesign are as follows:

- Maintain the 11' travel lanes, the 5' bike lanes, and the 8' parking lanes in each direction.
- Increase the sidewalk width from 12' to 24' with new development to allow for a more pedestrian friendly streetscape.
- Add landscaping and trees where hollow sidewalks allow.
- Provide neckdowns at Yawkey Way and Jersey Street to decrease the crossing distances.
- Allow for turns into Yawkey Way and Jersey Street for both approaches as shared lanes with through traffic.
- Remove parking at the intersection of Ipswich Street directly in front of the gas station.
- Maintain a left turn into Ipswich Street from Boylston Street heading inbound as a shared lane with through traffic.
- Consider a design for the intersection of Ipswich Street to slow traffic using new Duratherm pavement markings.



Section CC

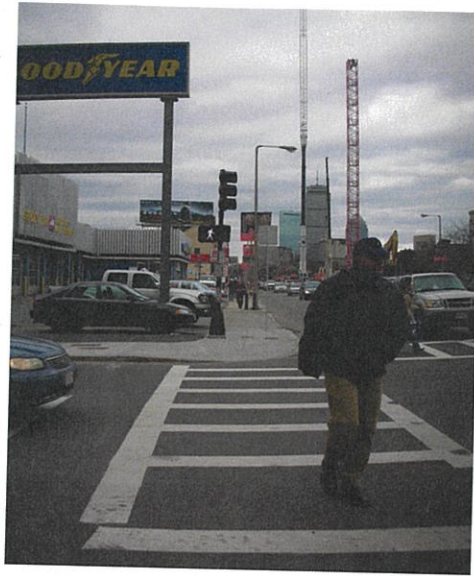




The Pedestrian Environment

Boylston Street is experiencing a period of dramatic transformation. Gas stations, car-oriented showrooms, odds and ends retail stores, and parking lots are being replaced by mixed-use developments providing street-level retail below multiple levels of housing.

To create a pedestrian friendly environment, future development will need to be set-back to allow for proper sidewalk treatment and maximum landscaping of the streetscape.



The following streetscape elements are recommended to harmonize the landscape and afford maximum opportunities for a safe, lively, and animated corridor:

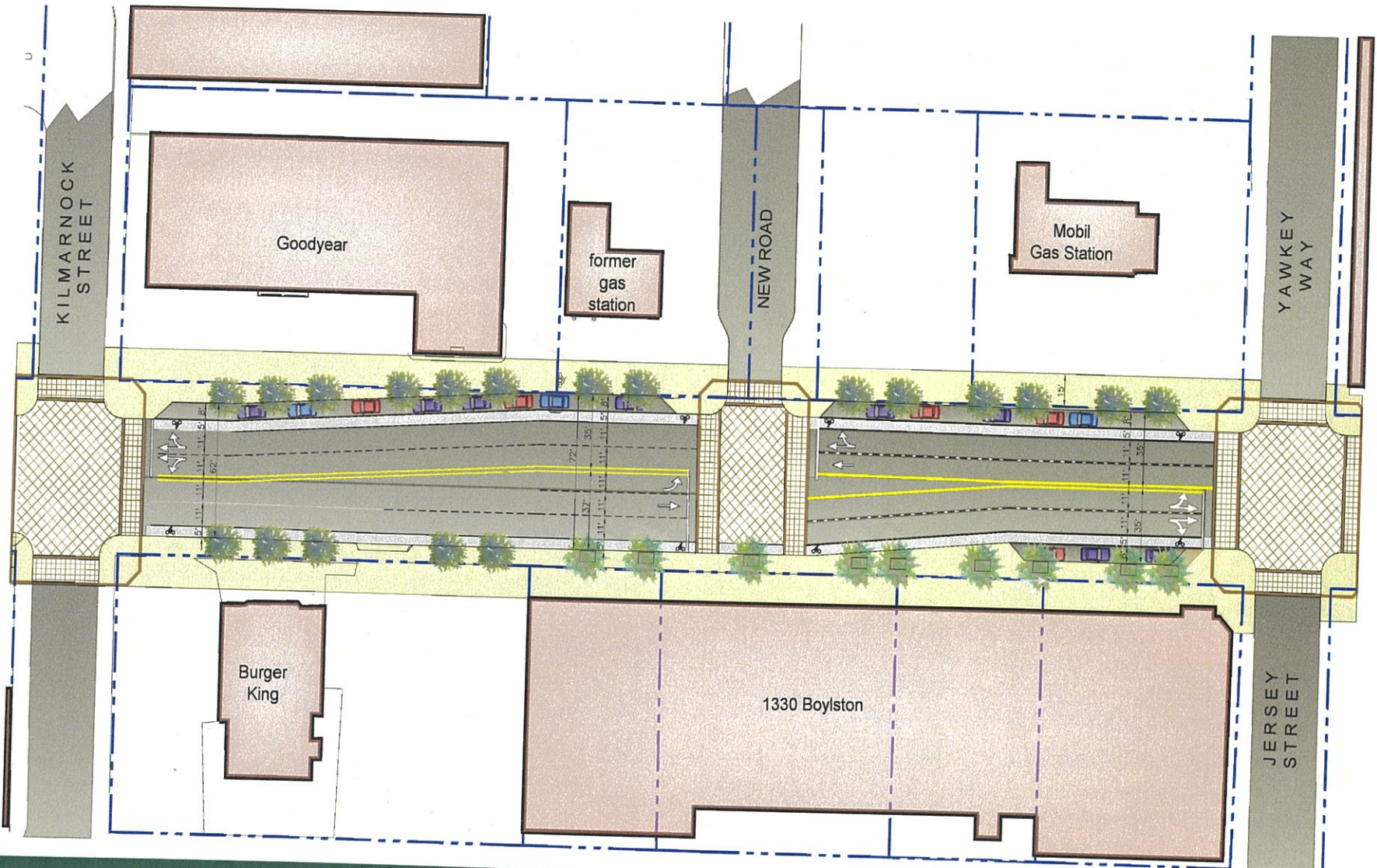
- **Streetlights:** will be similar to Trilogy and 1330 Boylston in the future redevelopment of the parcels along the corridor.
- **Sidewalks:** the City's guidelines for 15' sidewalks are preserved throughout the corridor to allow for universal access and the opportunity for sidewalk cafes and small plazas to add more activity in the area.
- **Sidewalk Pavement:** all pavement treatments, including pedestrian crossings and intersections, will be designed to the city's universal design standards.
- **Street Trees:** Boylston Street has sufficient light to allow for maximum planting of trees and other landscape elements to create a friendlier and calmer streetscape than currently exists. Accommodations will be made for areas where hollow sidewalks may not allow trees but will allow planters.
- **Street Furniture:** street furnishings such as benches, refuse containers, and bike racks will be placed according to city standards and will meet ADA requirements.
- **Pedestrian Lighting:** lighting will be placed in an effort to minimize ambient light pollution for abutting residents.
- **Public Art:** new development should activate the corridor's wide sidewalks with new art and motifs. Local artists in combination with support from the Boston Arts Academy provide a unique source of talent and ideas to explore. The redesigns offer another opportunity to add local art to the intersections which will assist in both calming traffic and celebrating the many historical aspects in this area from the Fenway Gardens to Fenway Park.
- **Parking Meters:** install multi-space meters along both sides of Boylston Street to reduce the clutter on the sidewalk while affording opportunities for the installation of more bike racks.
- **Wayfinding Signage:** extension of the Longwood Medical Area signage into the Fenway along with Mayor Menino's Welcome Signage (to the Fenway) will assist travelers while celebrating the areas resources.



New Connections in the Future

The opening of New Road will need to be phased over time. The first phase will connect Boylston Street to Van Ness Street, affording better circulation in the area. Future phases will extend the New Road to Brookline Avenue allowing for direct access to Maitland and Beacon Streets. The diagram below anticipates the benefits of the future access.

The design accommodates future demand for access to this new street with a dedicated left turn in the easterly direction with changes to pavement markings. On-street parking will need to be removed in order to preserve the curb line and pedestrian crossings at that intersection.



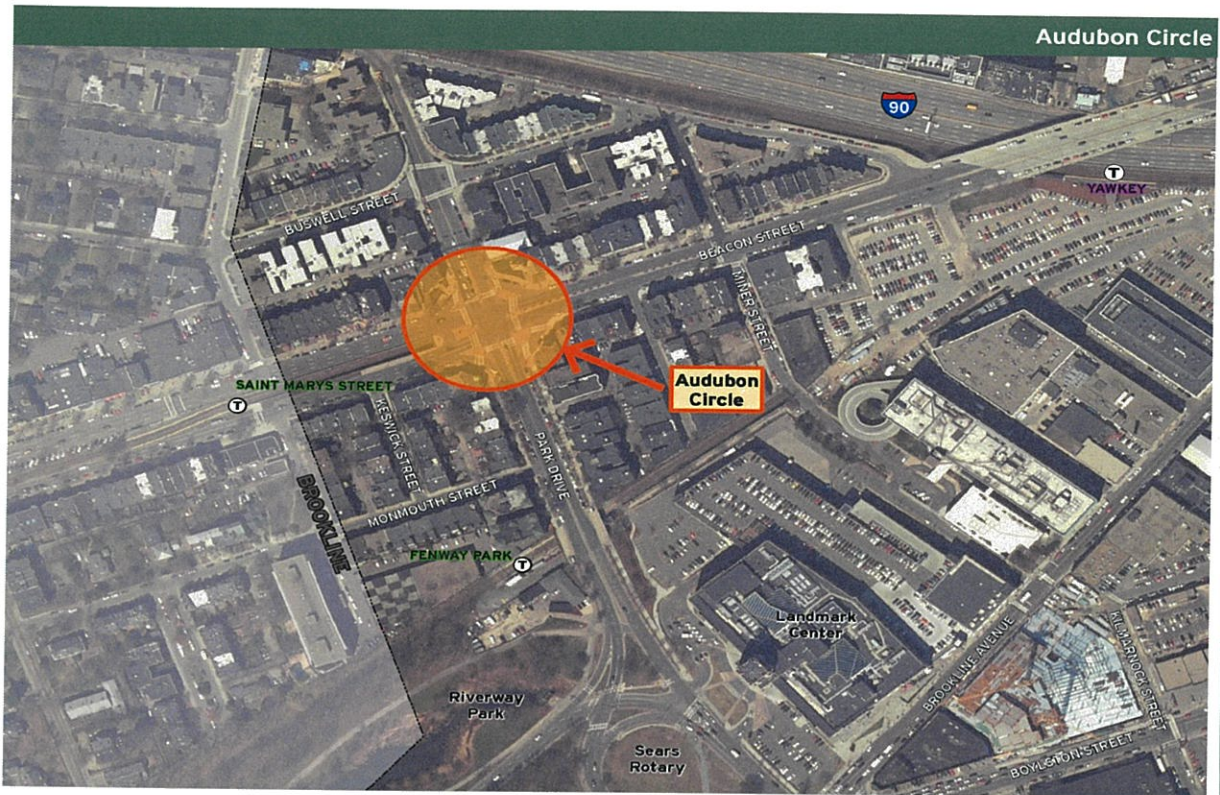
12. AUDUBON CIRCLE

Audubon Circle has a colorful history. In 1886, Frederick Law Olmsted, Sr. drew up plans which transformed Beacon Street from a 50' county road to a 160' avenue similar to the fashionable boulevards in Paris. At the intersection of Beacon Street and Park Drive -- a major crossroad -- Olmsted designed a 250' diameter circle which later became known as Audubon Circle.

Well-known social activists Harriet Lawrence Hemenway and her cousin Minna Hall, founders of the Massachusetts Audubon Society, lived near Audubon Circle. They were horrified by the millinery fashions of their day, where ladies wore hats topped either with feathers or with stuffed birds. Hall and Hemenway, active in the women's suffrage movement, succeeded in their efforts by lobbying sportsmen, socialites, and schoolchildren to ban the practice of using stuffed birds on hats.

Issues & Goals

Today, Audubon Circle functions less as a "circle" and more as a major arterial intersection connecting Brookline and Boston by Park Drive and Beacon Street. The MBTA green line has two major spurs in this area. Park Drive intersects with Beacon Street at Audubon Circle and connects this neighborhood to both Fenway and Kenmore Square. Beacon Street functions as an alternate route for vehicles avoiding Boylston Street in the Fenway with destinations in the LMA and beyond. The roadways dominate the environment leaving pedestrians and bicycles with overwhelming crossing conditions. Traffic creates daily conflicts with pedestrians and vehicles. The configuration of Audubon Circle needs to be redesigned in order to better support the supply and variety of users.



Recent Improvements

There have been many streetscape beautification initiatives completed in the area. The Audubon Circle Neighborhood Association (ACNA) who has worked hard to restore historic elements back into the Circle and maintain the plantings on the medians. In 2005, Mark Favermann's "Birds of Audubon Circle" public art installation of bird sculptures perched on new historic light poles surrounding the circle was unveiled. Other streetscape improvements followed including new plantings and a neighborhood sign.



The Town of Brookline has already installed on-street bike lanes on Beacon Street to the City of Boston line. Beacon Street has sufficient operating capacity today to enable narrower lanes and shorter crossings. The old rotary has sufficient space to afford new landscaping while preserving its historic character.

Improve Access, Safety, and Circulation

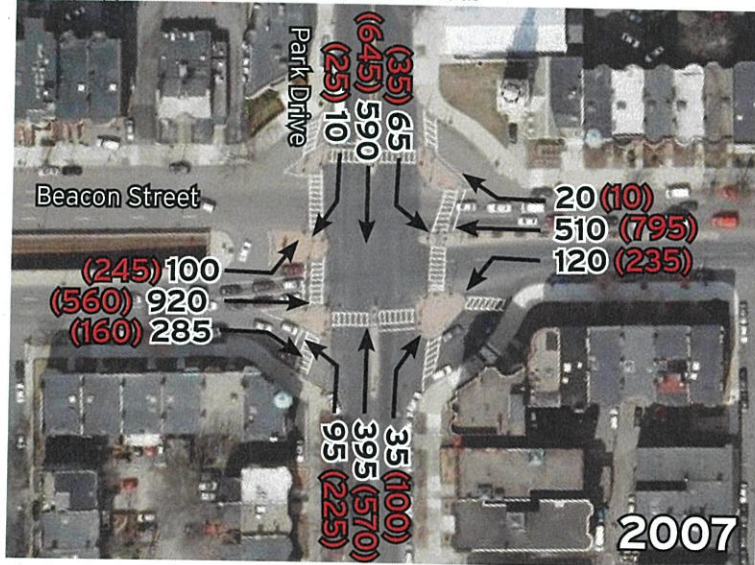
Based on the findings of the hot spot analysis, the right hand turning movements create conflicts and safety issues for pedestrians and vehicles in the circle. Furthermore, the analysis for the 2007 and 2012 peak hour traffic volumes indicate that right hand turn volumes are minimal at all approaches except one. Park Drive right hand turns today are under 35 turns/hour AM peak hour at all approaches except from Beacon Street (inbound to Kenmore Square) to Park Drive (Fenway) which is at 285 cars/hour, but lower during the PM peak hour period.

Based on these findings, the conceptual plan for Audubon Circle has the following roadway modifications:

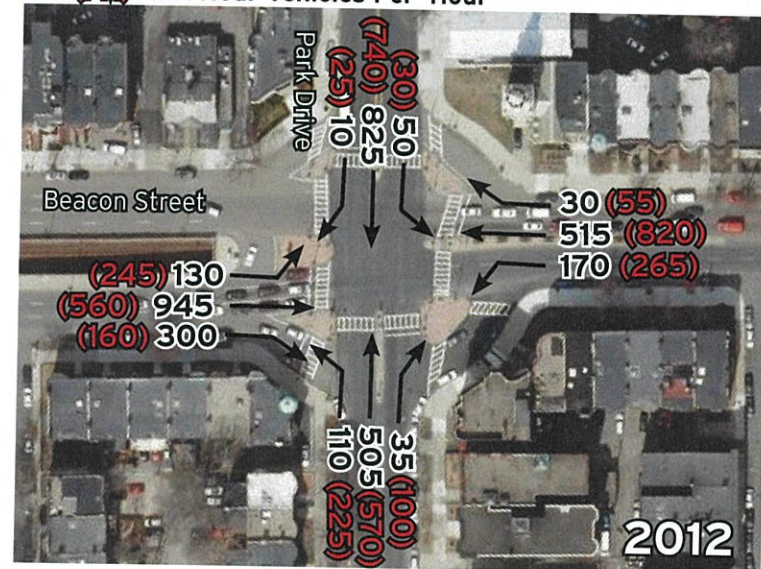
- Lane widths are modified for 11' travel and 10' turning movements.
- Bike lanes of 5' in each direction are proposed for all approaches and will connect with the existing Town of Brookline bike lanes on Beacon Street.

- Preserve the dedicated left turn signal from Beacon Street toward Brookline onto Park Drive while allowing for a dedicated left turn from Beacon Street toward Kenmore Square to Park Drive in the opposite direction.
- Preserve the U-turn on Beacon Street at the Green Line portal.
- On-street parking is preserved and will need to be accounted for in the final design stages.
- The medians on the Kenmore Square side of Beacon Street have been narrowed and reduced in length in order to accommodate for future bike lanes and to preserve on-street parking.
- The roadway that demarcated the original "circle" has been eliminated to maximize landscaping opportunities and eliminate safety problems noted in the "hot spot" analysis.
- Crossing distances on both roadways have been substantially shortened with adjustments in lane widths and elimination of the right hand turning movements in the circle.
- The next stage of design will need to work with all abutters to confirm and adjust all driveway entrances and to preserve on-street parking to the maximum extent possible.
- The signal poles will be replaced with mast arms to allow for better visibility. The location of the signal posts will be detailed in the next phase of design.

AM(PM) Peak Hour Vehicles Per Hour

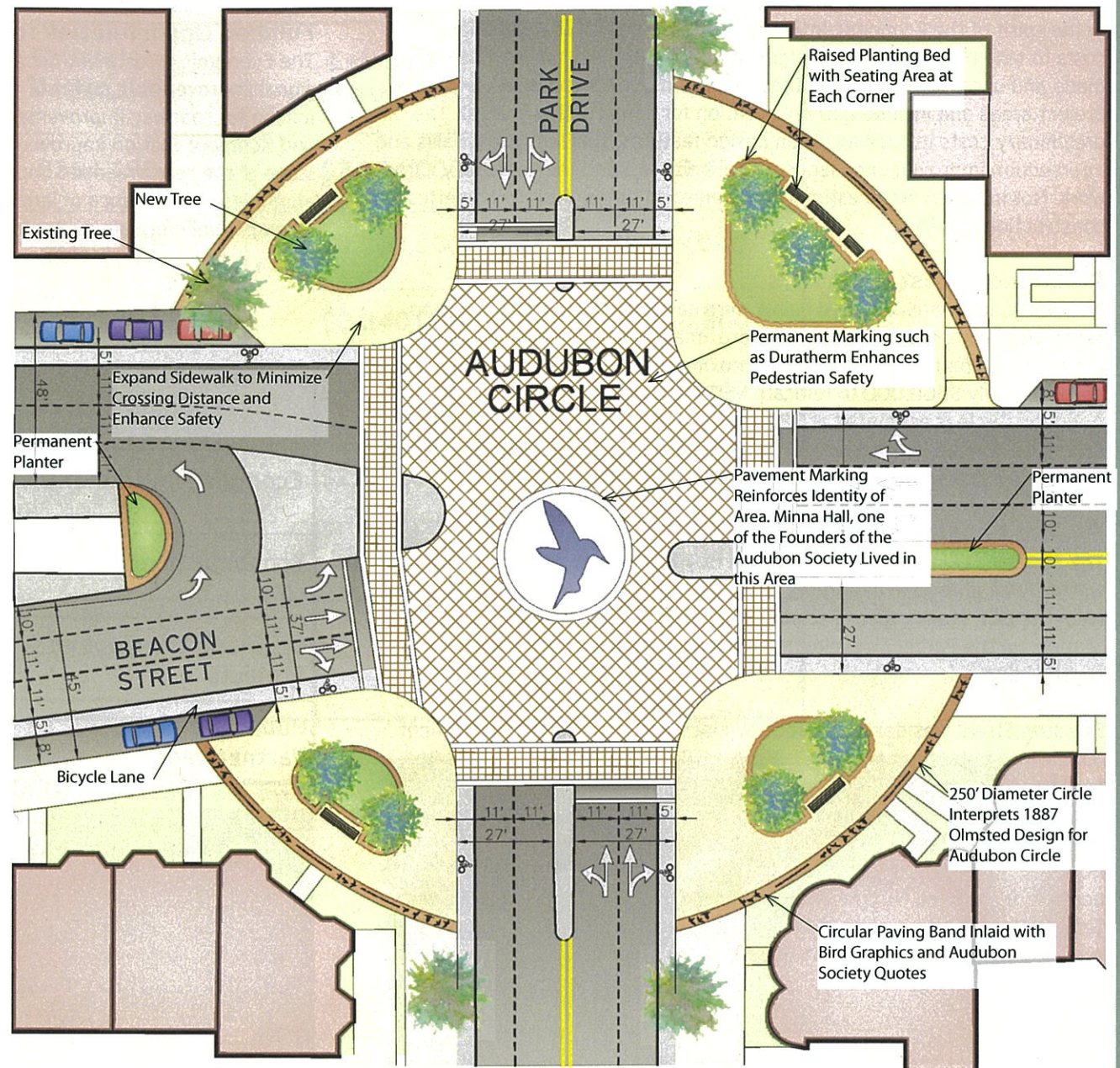


AM(PM) Peak Hour Vehicles Per Hour



The urban design enhancements are as follows:

- Preserve the historical elements with a 250' diameter inlay that interprets the Olmsted Design for the Circle.
- Replace old pavement and roadway area with permanent plantings that require significantly less maintenance.
- The design of the widened sidewalks will be in the next phase with direction from the ACNA.
- Utilize planters on all other medians to enhance traffic calming and direct pedestrian crossing at the crosswalks.
- All crosswalks and treatments will use a new permanent marking system which enhances pedestrian safety, calms traffic speeds, and is universally accessible.
- The bird rendered in the drawing for the intersection is suggested only as an idea for further design by the community. The area allows for more creative designs to be installed that calm traffic while allowing for a celebration of the circle. The ACNA design committee has agreed to further evaluate and take these ideas to the next level when the next phase of design proceeds.



13. IMPLEMENTATION STRATEGIES

In the spirit of the Economic Investment Act, estimates of preliminary costs to take the conceptual designs to final design and construction were made and updated regularly. Estimates were made for the three priority project areas and include a 10% escalation for construction in 2010. The preliminary costs include all urban design features, specialty crosswalks and intersection improvements, landscaping elements, and the necessary survey work. Not included in the estimates are meeting times, design charrettes, or construction services.

Preliminary Cost Estimates

The design estimates detailed below were calculated for final design and estimate of construction costs for approximately \$14.7 million. In general, the multi-use path is estimated at approximately \$2.5 million which includes approximately \$500,000 to relocate MBTA tracks to make way for the path. Audubon Circle is estimated at \$2.7 million and is only for improvements suggested for the intersection. Boylston Street from Sears Rotary to Ipswich Street is estimated at \$8.2 million.

Project Phasing

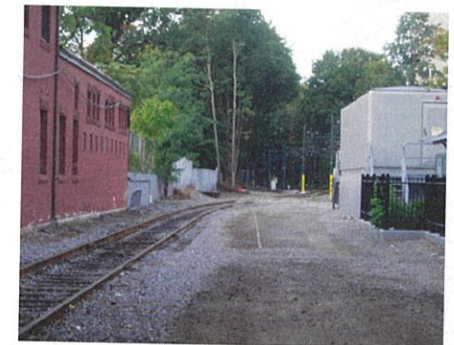
The Fenway-Yawkey Multi-Use Path and Boylston Street area improvements will likely be phased in over time. The multi-use path should be constructed from the DCR Muddy River Path to Maitland Street. Connections to Yawkey Station via the Parcel 7 development will occur at the time of that projects construction.

Boylston Street was designed block by block based on the redevelopment opportunities that are planned in the area. The design scheme presented here accounts for phased development of the corridor and can be constructed as redevelopment occurs. The design and reconstruction of New Road can also be accommodated in a phased approach integrated with the Boylston Street improvements. Slight modifications will need to be made to accommodate a full New Road connection to Brookline Avenue and Beacon Street, such as installation of a traffic signal and creation of a dedicated left turn land inbound on Boylston heading toward downtown.

Funding Opportunities for Final Design for 3 Areas

The Economic Investment Act appropriated \$5.6 million for traffic and signal improvements, many of which are recommended in this study; \$12.5 million for roadway improvements; and \$16 million for Fenway, Longwood, and Kenmore Station improvements. Future development will provide some of the recommended improvements for sidewalk designs and various amenities. Maintenance of landscaping and other amenities can be secured through public/private partnerships.

Funding Source	Area/Element
Economic Investment Act	\$5.6 Million - traffic improvements
Economic Investment Act	\$12.5 Million - right-of-way improvements
On-Going Development Projects	Sidewalks, cafes, etc. adjacent to buildings
Public/Private Partnerships	Maintenance of landscaping, special paving, street furniture, etc.



Preliminary Cost Estimates

Project Area	Estimate of Design Cost	Estimate of Construction Cost	Total Cost
Fenway-Yawkey Multi-Use Path	\$264,480	\$2,204,000	\$2,468,480
Audubon Circle	\$287,040	\$2,392,000	\$2,679,040
Boylston Street: Block 1 - to Kilmarnock	\$280,800	\$2,340,000	\$2,620,800
Boylston Street: Block 2 - to Yawkey Way	\$297,600	\$2,480,000	\$2,777,600
Boylston Street: Block 3 - to Ipswich St	\$271,560	\$2,263,000	\$2,534,560
Escalation for 2010 construction @ 10%	\$140,148	\$1,167,900	\$1,308,048
Grand Total	\$1,541,628	\$12,846,900	\$14,388,528

Schedule

This report represents the culmination of an extensive effort over a one-year period to develop preferred streetscape designs, pathways, and intersection improvements through an extensive evaluation of alternative circulation and streetscape enhancement options for design.

Final Design is expected to commence in the Spring of 2009 with construction in 2010.



REPORTS AND RESOURCES

Boston Transportation Department; *West Fenway/Longwood Transportation Management Strategies*, Final Report; March 1st, 1998

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Boston Redevelopment Authority; *Fenway Special Study Areas: Land Use and Urban Design Guidelines*; 2002

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ADDITIONAL MATERIALS

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A Better City's Urban Ring Institutional and Business Committee; *Making the Connection: The Urban Ring Corridor and The Future of Greater Boston*; December, 2006



ACKNOWLEDGEMENTS

The Action Plan was authored in large part by Fenway, Kenmore, and Longwood area residents and stake holders, and by others who attended the many community meetings. The recommendations and local knowledge generously offered by participants in community meetings shaped the contents of this report.

Community Organizations and Stake Holders

Fenway Civic Association
Fenway CDC
Audubon Circle Neighborhood Association
Mission Hill Main Streets
Mission Hill NHS
The Fenway Alliance
Kenmore Association
Emerald Necklace Conservancy
MASCO
Boston Red Sox
Boston University
Livable Streets Alliance
WalkBoston
MassBike

Boston Transportation Department

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James E. Gillooly, Deputy Commissioner
Vineet Gupta, Director of Policy & Planning, *Project Director*
Charlotte Fleetwood, Transportation Planner
John DeBenedictis, Director of Engineering
Don Burgess, Supervising Traffic Engineer

Mayor's Office of Neighborhood Services

Jay Walsh, Director
William Onuoha

Boston Bikes, City of Boston

Nicole Freedman, Director

Boston Redevelopment Authority

John Palmieri, Director
Kairos Shen, Chief Planner
Johnathan Greeley
James Fitzgerald
Randi Lathrop
Richard Garver

Boston Parks Department

Antonia Pollak, Commissioner
Margaret Dyson, Director of Historic Parks

Commonwealth of Massachusetts

David Mohler, EOTC
Ned Codd, EOTC
Joe Cosgrove, MBTA
Anna Barry, MBTA

Massachusetts Highway Department

Louisa Paiewonsky, Commissioner
Frank Tramontozzi, Chief Engineer

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State Representative Byron Rushing
State Representative Jeffrey Sanchez
City Council President Mike Ross

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Nina Brown, Lead Landscape Architect
Mary Baker, Landscape Architect

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