

THE FIRST CHURCH OF CHRIST, SCIENTIST PLAZA REVITALIZATION PROJECT

Submitted to:

Boston Redevelopment Authority
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November 2010



The Christian Science Board of Directors

July 2010

Dear Friends and Neighbors,

The First Church of Christ, Scientist, located at the center of the Christian Science Plaza, opened its doors in 1894. At the dedication service, its Pastor, Mary Baker Eddy, declared, “I love Boston, and especially the laws of the State whereof this city is the capital. Today, as of yore, her laws have befriended progress.”

Progressive vision as well as noble history have been good friends to many institutions in Boston. The Church is proud to be part of that history and to continue a tradition of contributing to this City’s beauty, inspiration, and progress.

We feel the plan outlined in these pages to revitalize the Plaza does just that. We wish to express our deep gratitude to the many citizens, public officials, and professionals who helped develop it. We look forward to working side by side with you to ensure that our Church home is a welcoming space for Boston residents and visitors alike for many years to come.

Warmly,

THE CHRISTIAN SCIENCE BOARD OF DIRECTORS



Mary Trammell
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ACKNOWLEDGMENTS

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PLAZA REVITALIZATION PROJECT

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EXECUTIVE SUMMARY



1. ENHANCE OPEN SPACE

**2. IMPROVE ENVIRONMENTAL
SUSTAINABILITY**

**3. IDENTIFY OPPORTUNITIES FOR
UNDERUTILIZED REAL ESTATE**

Public Participation Process

As a member of the community, the Church is working with its neighbors, public officials, and other interested parties to determine how to achieve its goals while also responding to potential community impacts.

As part of the planning process, Mayor Thomas M. Menino appointed a Citizens Advisory Committee (CAC) in January 2009. The CAC is responsible for assisting the City, through the Boston Redevelopment Authority (BRA), for the duration of the project, ensuring that community priorities

are addressed at all stages of project planning. The BRA's role involved staffing the CAC, creating a project website, advertising meetings, and providing notes and presentation materials to the CAC and community.

The CAC has met approximately once a month since February 2009—twenty times in total through October 2010. All meetings have been open to the public. At these meetings, the Church outlined its objectives, ideas, and plans. The CAC reviewed potential sites for development, considered various massing concepts and open space issues, and reviewed wind, shadow, and traffic impacts.



1. Location of the Christian Science Plaza.

Context

The Christian Science Plaza (the “Plaza”) is home to the world headquarters of The First Church of Christ, Scientist.

The Plaza is a favorite Boston destination for thousands of visitors, neighbors, tourists, and church members – attending worship services, visiting the exhibits and the world-famous Mapparium® in The Mary Baker Eddy Library, splashing in the much-loved Children’s Fountain, resting by the Reflecting Pool, or playing on the lawn.

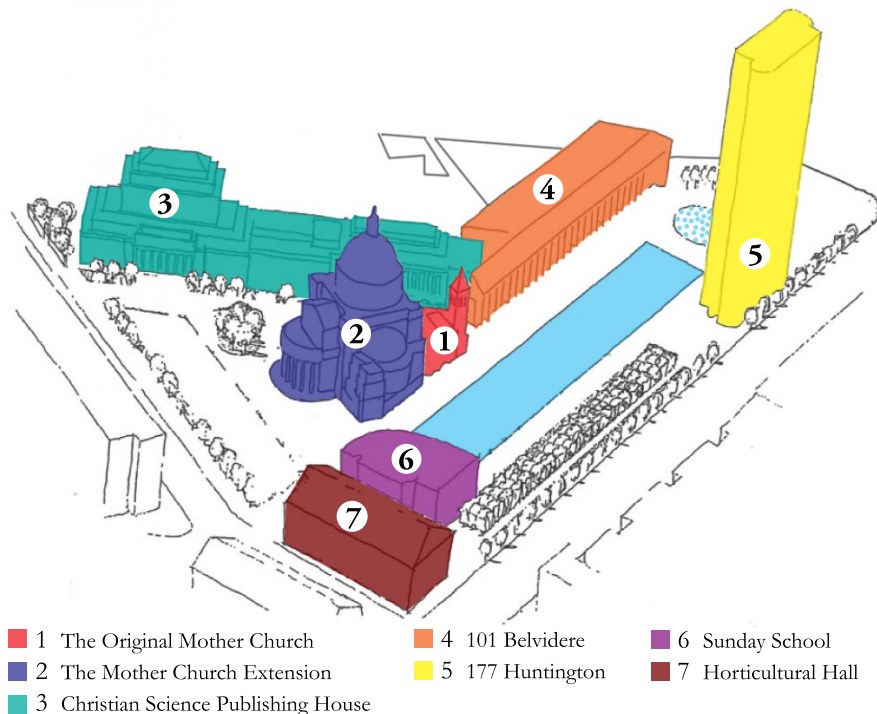
The Plaza is located at the intersection of several dynamic and diverse neighborhoods—Back Bay, Prudential, South End/St. Botolph, and Fenway. At the core of the Plaza are two architecturally distinct buildings, the smaller Church edifice, the “Original Mother Church,” completed in 1894, and the larger domed Church, the “Extension,” completed in 1906.

The Church of Christ, Scientist – which has branch churches all over the world – has had a presence in the local Boston community for over 130 years. The public is welcome to attend weekly church services, free organ recitals, chiming concerts, and activities on the Plaza hosted by the Church.

The 14.5-acre Plaza has seven buildings (all of which will remain) and about ten acres of open space—one of the largest privately-owned urban open spaces in Boston that is accessible to the public.

Purpose, Objectives, and Design Criteria

Nearly 40 years have passed since the development of the Christian Science Plaza. A review of the Plaza’s conditions concluded that improvements to the Plaza would be in keeping with the growth and vibrancy of the nearby neighborhoods and today’s emphasis on greater environmental sensitivity.



2. Sketch of the Christian Science Plaza.

In addition, the Church is seeking to have real estate expenses covered by real estate revenues, rather than by donations, which the Church would like to devote more directly to its mission activities.

The Plaza Revitalization Project is in response to the Church's review of the Plaza conditions, and has three objectives:

1. **Enhance the open space** on the Christian Science Plaza to make it a more usable and attractive year-round destination.
2. **Improve the environmental sustainability of the Plaza** with emphasis on better water and groundwater management.
3. **Identify opportunities for underutilized real estate**, including reuse of some existing buildings and the addition of new buildings, which would generate a revenue stream to help ensure that the Plaza remains a valuable asset to the Boston community.

These objectives, combined with design criteria related to open space, land use, historic resources, transportation, environmental sustainability and economic sustainability, provide a framework for the proposed Plaza Revitalization Project.

Objective 1: Enhance Open Space

The Church and its consultants studied a number of alternatives that included various changes and upgrades to the Plaza, including changing the size and shape of the Reflecting Pool and creating new landscaped areas. The main conclusion from these studies is that the existing open space is a high-quality design

that would benefit more from improvements than a redesign.

The major improvements include:

- ◆ Reducing water use.
- ◆ Making the Plaza, including the Reflecting Pool, more attractive year-round.
- ◆ Eliminating leakage from the Reflecting Pool to the garage below.
- ◆ Improving the pedestrian experience.
- ◆ Softening the landscape.
- ◆ Working with the City of Boston to relocate the idle bus area on Huntington Avenue.

To enhance the open space and address the above issues, the Church has created an open space plan. This plan includes:

- ◆ Rebuilding the Reflecting Pool, which can no longer be repaired, with one of similar size that retains its reflective nature, is shallower to reduce water usage, and has elements to enhance its winter-time beauty.
- ◆ Adding a welcoming pedestrian crossing through the Reflecting Pool between the Original Mother Church and Huntington Avenue, reestablishing an historic connection.
- ◆ Shortening the Pool slightly to allow a wider pedestrian passage near the Sunday School Building.
- ◆ Preserving the Children's Fountain and possibly adding winter activities such as ice skating.
- ◆ Creating new pathways across landscaped areas, such as along Massachusetts Avenue.
- ◆ Expanding lawn areas and adding more shade trees, benches, and tables.

Objective 2: Improve Environmental Sustainability

The Church has taken significant steps to become more environmentally responsible in its current operations. In 2009, the renovation of floors 5-9 in the Publishing House achieved a Leadership in Energy and Environmental Design for Commercial Interiors (LEED-CI) Gold rating from the U.S. Green Building Council. To improve environmental sustainability within its operations, the Church has taken a number of steps, including:

- ◆ Recycling paper and non-food cardboard.
- ◆ Taking steps to reduce energy use, including installing more energy-efficient lighting and lighting fixtures and using an automated temperature control system.
- ◆ Providing employees incentives to use public transportation and providing bicycle racks, lockers, and showers.

The Plaza Revitalization Project builds upon these efforts by:

- ◆ Reducing water use through changes to the Reflecting Pool.
- ◆ Improving groundwater management for the approximately 4,800 wood piles under the Original Mother Church and The Mother Church Extension.
- ◆ Reducing the urban heat island effect by planting trees and more grass areas.
- ◆ Repurposing buildings, which limits the need for new construction in the city.

Objective 3: Plan for Underutilized Real Estate

Rationale for Development

The Church has limited the amount of proposed new development to 950,000 square feet since any more density would impact the Plaza and its surrounding areas in undesirable ways, including reducing the amount of open space. The amount of new development was determined by analyzing the surrounding neighborhoods, the existing zoning as-of-right development potential on the Plaza, and five additional factors:

1. The Plaza's existing density, or floor area ratio (FAR), is below its zoned FAR and is also very low when compared to the FAR of surrounding areas.
2. The Plaza's open space in proportion to its built space is high—nearly two-thirds of the total acreage of the Plaza—and it is perhaps the largest privately owned, publicly accessible urban open space in the City of Boston.
3. The total cost of operating and maintaining the open space is very high.
4. The cost of the open space as a percentage of building square footage is also large, and far exceeds the norm for privately owned spaces in Boston.
5. The Church's real estate costs represent a disproportionate amount of its total spending, limiting the amount of donations that can be directed to mission activities.

Development Analysis

The Church, its consultants, and the CAC studied nine Sites for possible development potential on the Plaza. Five of the Sites were eliminated from consideration because of their urban design implications, their size, location, or existing features, such as the Reflecting Pool. Three Sites (two of which will be combined into one Site) were determined to be the best locations for development: Belvidere/Dalton Site and Huntington Site.

The Belvidere/Dalton Site consists of two parcels of land that can be connected through appropriate easements and/or arrangements with the City, creating one complete site and a new Belvidere Street/Dalton Street intersection. The preferred building configuration on the Belvidere/Dalton Site includes two buildings—a high-rise of approximately 512 feet and a mid-rise of approximately 251 feet (heights measured according to the Boston Zoning Code). In addition, a new open space will be created on the Site. Parking will be provided in an underground garage beneath the Site. The development of the Site also includes improvements to the adjacent Belvidere Street/Dalton Street intersection. Planned uses for the two buildings on the Belvidere/Dalton Site are residential and hotel, with ground-floor retail. Some limited office use is possible, depending on market demands.

The Huntington Site is adjacent to the Sunday School Building on Huntington Avenue. The Huntington Site was chosen because of its size and location, suitable for residential uses that would activate the “pedestrian-dormant” corner of the Plaza with new life and activity. The proposed building will be a slender structure, approximately 291 feet tall (shorter than 177 Huntington Avenue) and

will provide approximately 150,000 square feet of space.

Potential Impacts

The proposed developments are anticipated to have minimal impact on the surrounding environment. Preliminary analyses have been undertaken on the proposed development, including historic resources, transportation, wind, shadow, geotechnical conditions/groundwater, and water and sewer infrastructure. These analyses were shared with the CAC and updated over time to reflect CAC input to the proposals.

Historic Resources

Over the years, the Church has diligently maintained, protected, and preserved the seven buildings located on the Christian Science Plaza. Each of the buildings contributes in its own way to the historic and architectural significance of the site. Going forward, there are no plans to demolish any of the existing buildings. Proposed new construction would be executed in a manner that would be respectful of the existing buildings while reflecting contemporary designs to illustrate the continual architectural evolution of the site.

The siting of the proposed new development has been carefully selected in order to minimize impacts to the historic resources on the site and in the area, including the adjacent residential buildings on St. Germain Street.

Transportation

The proposed development plan is anticipated to have minimal transportation impacts on nearby intersections because of the proposed predominance of residential and hotel land uses (as opposed to more

vehicular-intense office and commercial uses). With the inclusion of the Symphony Streetscape Project transportation improvements and the improvements to the Belvidere/Dalton Street intersection as part of the Revitalization Project, all signalized and unsignalized study area intersections are expected to operate at an acceptable level of service (LOS) under the 2019 Build Conditions. These improvements will benefit both existing and new users of the site.

The proposed development is also anticipated to have minimal impact on parking. Because of the existing on-site parking supply and residential and hotel land-use development program, a minimal net increase in parking needs is anticipated. In addition, the area currently has a high use of transit, bicycling, and walking versus drive-alone commuting. This high use will continue to be encouraged as part of the development program.

Wind

It is projected that pedestrian-level wind conditions will generally remain similar to the existing conditions after the addition of the proposed buildings. Annual wind conditions will remain suitable for walking across the majority of the Plaza, similar to the existing conditions. Pedestrian-level wind conditions will be addressed during final design of the new buildings. Uncomfortable wind conditions can be mitigated by implementing design features such as trellises, canopies, wind screens, and landscape solutions.

Shadow

It is anticipated that the proposed development will have minimal net new shadow impacts on the surrounding area. The new shadow created by the Huntington building will be cast in the area between

Massachusetts Avenue and Huntington Avenue, including at times on portions of the Plaza open space, the Original Mother Church and The Mother Church Extension, and the Reflecting Pool. New shadow from the proposed Belvidere/Dalton buildings will generally be in the zone north of Belvidere Street and east of Huntington Avenue, including the pedestrian areas at the intersection of Dalton and Belvidere Streets and along Belvidere Street. Most of the new shadow from the Belvidere/Dalton buildings will be cast on rooftops. No new shadow is cast on the open space at the intersection of Clearway Street and Dalton Street. No new shadow is created on parks or open spaces in the vicinity of the Plaza, except for a small portion of Southwest Corridor Park in the evening during the summer.

Geotechnical Conditions/Groundwater

The planned redevelopment of the Plaza will involve construction of new buildings extending below the groundwater table on the Belvidere/Dalton site. Construction below the groundwater table will include installation of groundwater cutoffs extending into the marine clay layer and waterproofed below-grade structures. In addition, measures will be taken to minimize connections between the Upper and Lower Aquifers. Furthermore, the stormwater from the developed areas of the site will be recharged. These issues will be addressed during the Article 80 review process.

Water and Sewer Infrastructure

It is anticipated that the location and capacity of existing water and sewer infrastructure in the vicinity of the Plaza will be able to accommodate the proposed development.

The infrastructure systems serving the Plaza will be designed to meet or exceed applicable guidelines and regulations. At this early stage of the Revitalization Project, no significant infrastructure mitigation measures are anticipated, but the Church will undertake appropriate steps to ensure compliance with all regulations. For each development project, a Site Plan and a General Service Application will be prepared and submitted to the Boston Water and Sewer Commission (BWSC) for all new water, sewer, and storm drain connections to the new buildings. As required by BWSC, all new connections to the BWSC's systems will be constructed at the Church and/or future development partner's expense and are subject to approval by the Commission.

Many of the existing infrastructure systems that serve the Plaza are privately owned and maintained by the Church. At this time, it is anticipated that this arrangement will be continued.

Implementation

The implementation of the Project will require certain zoning relief. There has been no final determination as to the exact form this will take, but it will include one or more of the following alternatives:

- ◆ Establishment of a Planned Development Area.
- ◆ Establishment of an Urban Renewal Area District.
- ◆ Zoning map changes.
- ◆ Zoning variances.

All of these alternatives will require further public process in the form of formal submissions to the BRA and other City agencies,

with public hearings and the opportunity for additional community input.

In addition, regardless of the form of zoning relief, Article 80 Large Project Review will be required for each building that is developed as a part of the Project, which will require a formal submission to the BRA, a public hearing, and the opportunity for community input concerning the specific building.

Boston Landmarks Commission Petition

In January 2007, a petition was submitted by 15 Boston residents to the Boston Landmarks Commission (BLC) to designate the Christian Science Plaza as a Boston Landmark.

At its January 23, 2007, public hearing, the Boston Landmarks Commission voted to accept this petition for further study. The Church has been cooperating with the BLC and provided research material to them.

The BLC Study Report was made available for review on June 22, 2010, and a public hearing was held on July 13, 2010. The BLC will consider public comments and requested amendments before a vote is taken at a subsequent public hearing.

The Church is looking forward to working with the BLC to develop appropriate standards and criteria for the revitalization and redevelopment of the Plaza so improvements are integrated sensitively within the historic context.

Public Benefits

The Plaza Revitalization Project will have significant public benefits related to the

EXECUTIVE SUMMARY

physical space of the Plaza, sustainability efforts, and the new development. These benefits include:

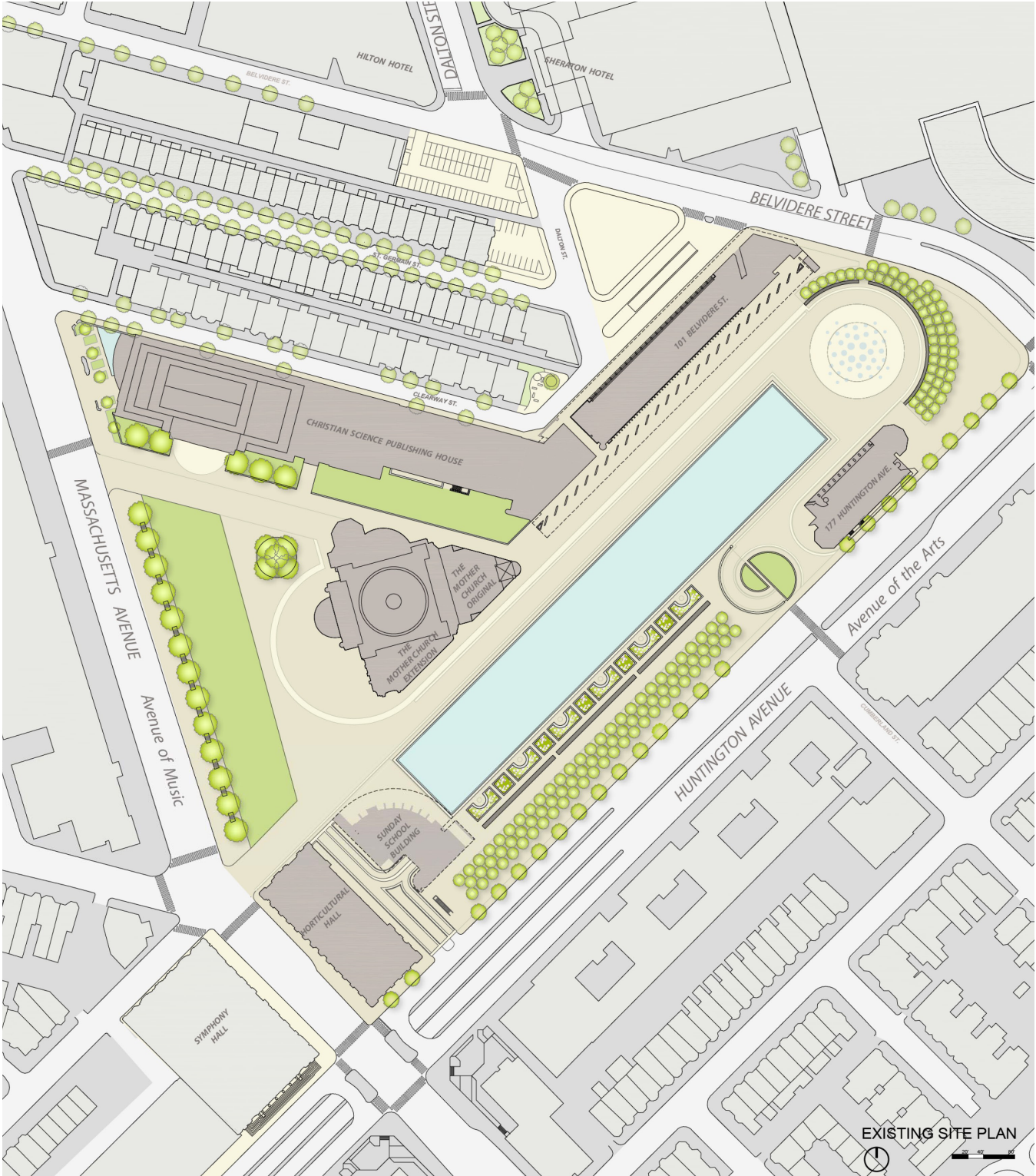
- ◆ Improved open space for the public's use year-round.
- ◆ Additional green space.
- ◆ Improved aesthetics year-round.
- ◆ Improved site circulation.
- ◆ Decreased water use.
- ◆ Less water from the Reflecting Pool and rainstorms discharged to the combined sewer system.
- ◆ Decreased urban heat island effect.
- ◆ Increased groundwater infiltration to support adequate groundwater levels.
- ◆ New vitality to the area.
- ◆ New retail spaces and increased street-level activity.
- ◆ New construction and permanent jobs.
- ◆ New affordable housing units that comply with Mayor Menino's Executive Order.
- ◆ Integrated improvements with the Symphony Streetscape upgrades.
- ◆ Increased tax revenues for the City.
- ◆ Statutory linkage from possible office or hotel use.

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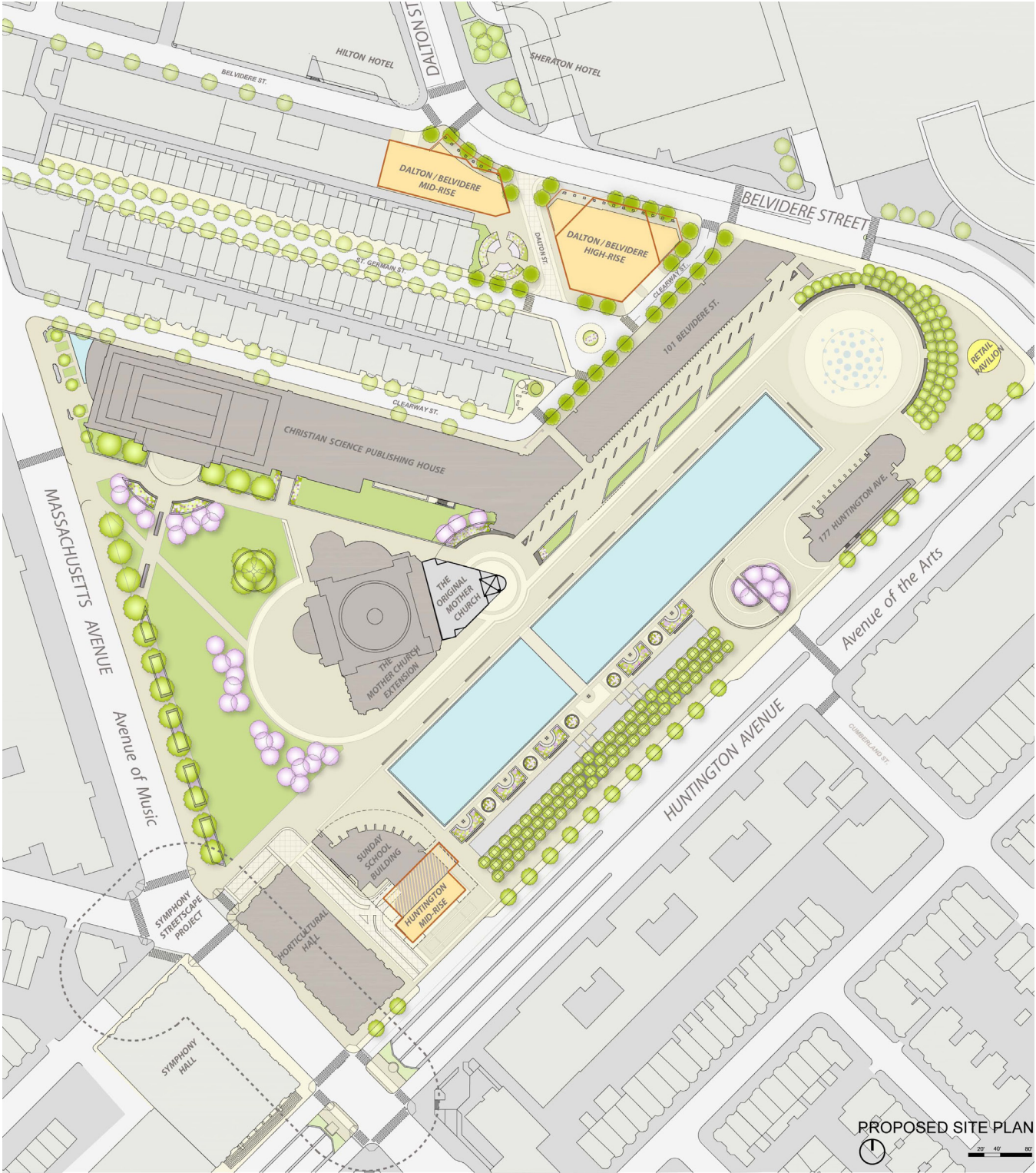


3. Aerial view of Christian Science Plaza and surrounding areas.

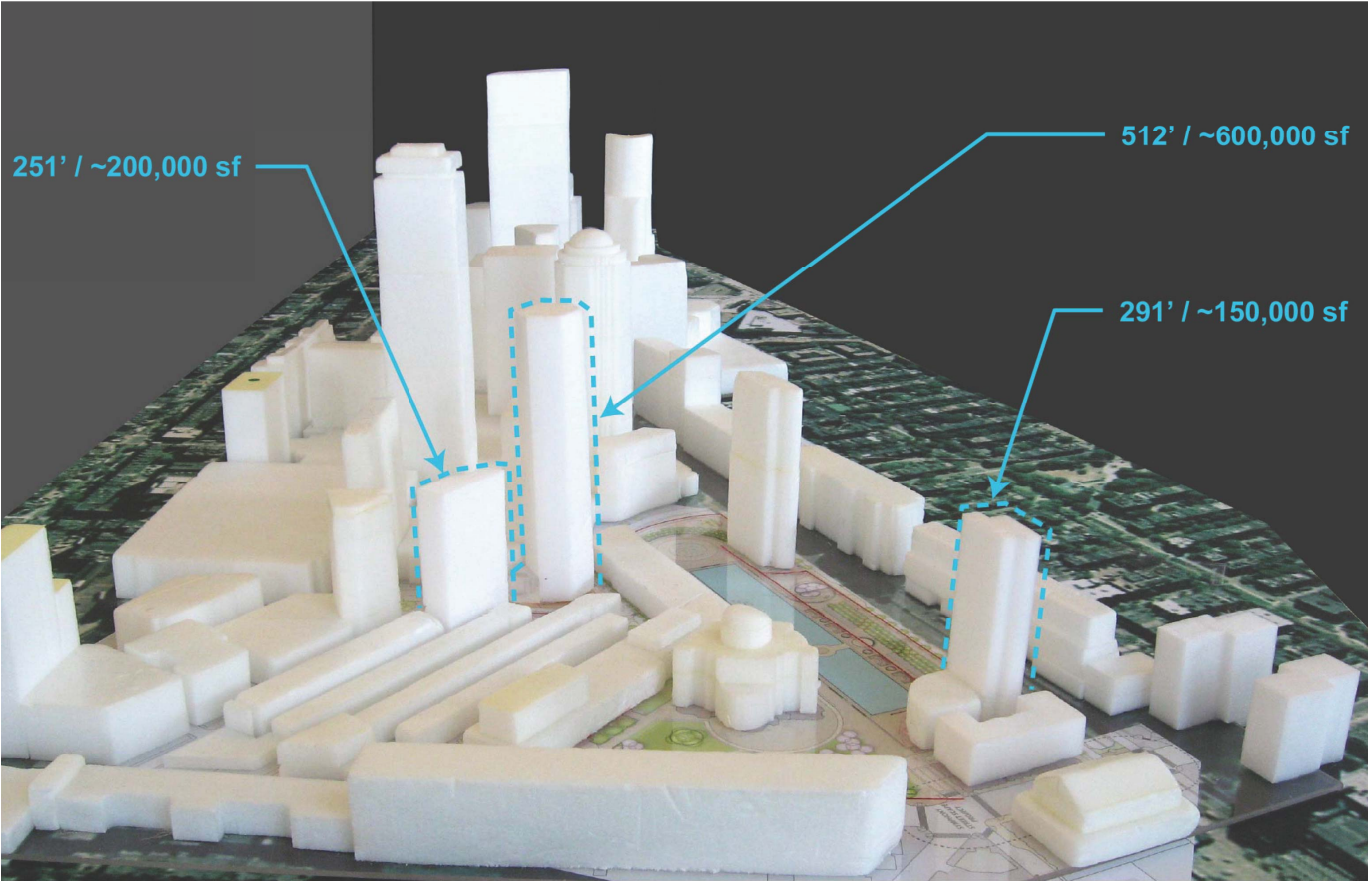
EXISTING: Aerial & Plan



4. Existing Site Plan



5. Plan showing proposed open space improvements and footprints of new buildings.



6. Model showing proposed new buildings.

PROPOSED: Plan & Model

CHAPTER 1

PUBLIC PARTICIPATION PROCESS



As a member of the community, the Church is working with its neighbors, public officials, and other interested parties to determine how to achieve its goals while also responding to potential community impacts.

As part of the planning process, Mayor Thomas M. Menino appointed a Citizens Advisory Committee (CAC) in January 2009. The CAC is responsible for assisting the City, through the Boston Redevelopment Authority (BRA), for the duration of the project, ensuring that community priorities are addressed at all stages of project planning. The Christian Science Plaza Revitalization Project CAC is made up of residents and representatives of neighborhood associations, business owners, community organizations, professionals, and elected government officials.

The CAC has met approximately once a month since February 2009—twenty times in total through October 2010. All meetings have been open to the public. At these meetings, the Church outlined its objectives, ideas, and plans. The CAC reviewed potential sites for development, considered various massing concepts and open space issues, and reviewed wind, shadow, and traffic impacts. They provided valuable input along the way. The Church and City were able to use this input to study additional alternatives and ideas for the Plaza Redevelopment Project. The proposals presented in this document incorporate input from the CAC meetings.

The BRA has been integral throughout the process by advertising the CAC meetings on their website, writing and providing copies of the meeting notes and PowerPoint presentations to the CAC members after each meeting, and keeping an email list to keep the CAC members and wider community



CHAPTER 1

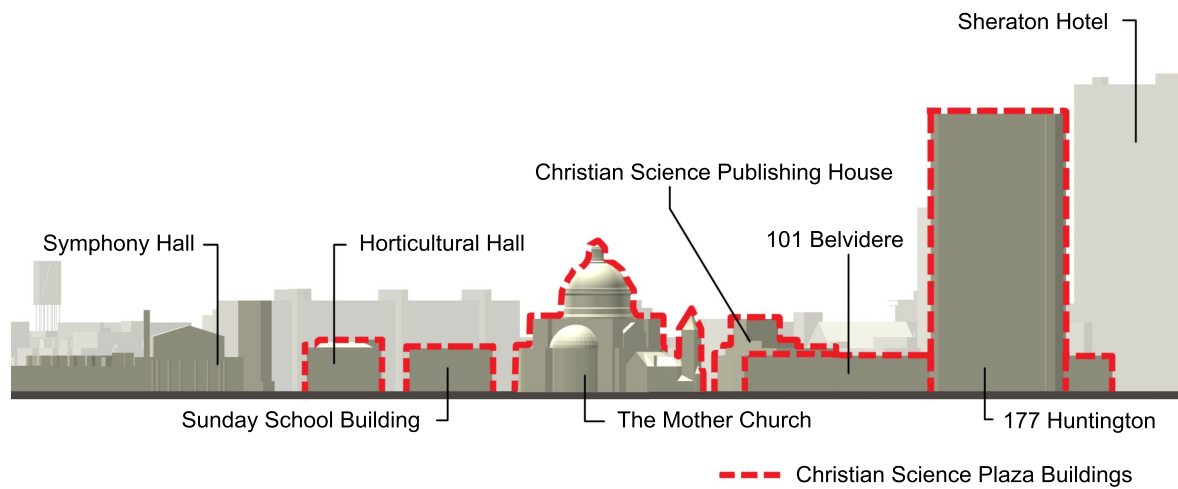
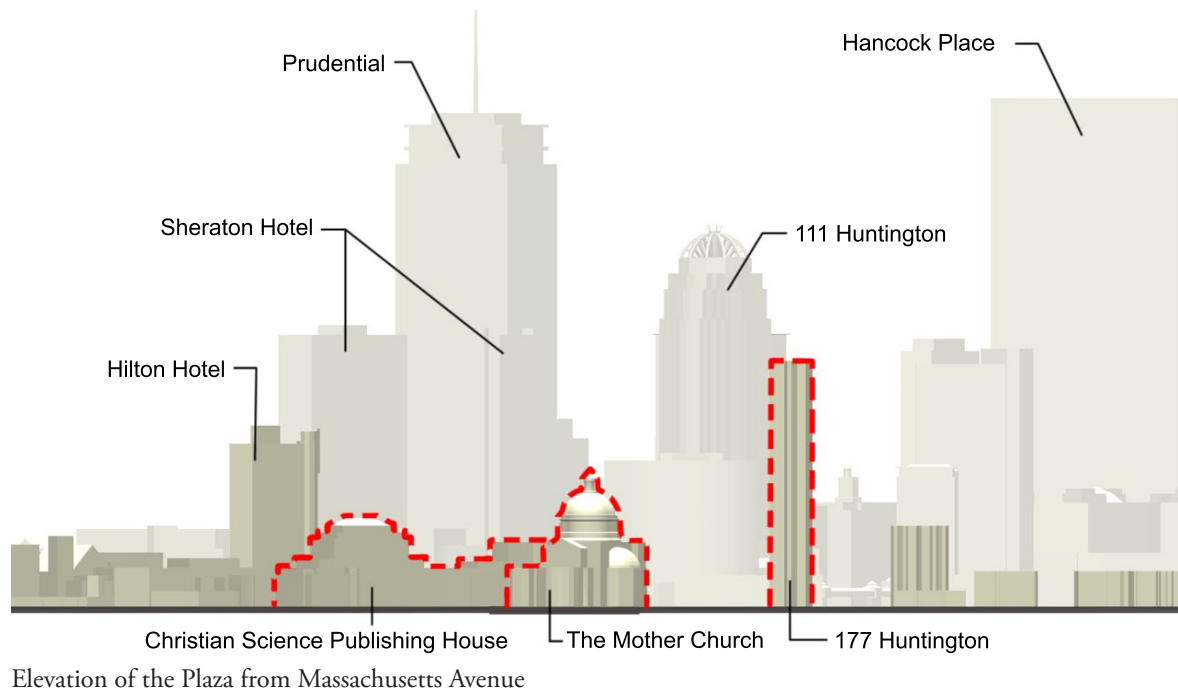
PUBLIC PARTICIPATION PROCESS

up-to-date on project activities. The BRA also created a project website (**<http://www.tinyurl.com/ChristianScienceCAC>**) that makes the notes and PowerPoint presentations from each meeting available. The following page presents a list of CAC meeting dates and topics.

Christian Science Plaza Revitalization Project Schedule of Citizens Advisory Committee (CAC) Working Sessions

2009	2/10/09	#1 – BRA & Church Introductions; Project Objectives
	3/4/09 & 3/11/09	#2 – Site Tours of Christian Science Plaza
	4/2/09	#3 – Plaza Development; Existing Conditions; Open Space/Sustainability Objectives
	4/27/09	#4 – Opportunities for Underutilized Real Estate
	5/18/09	#5 – Area Development Projects by BRA Staff; Potential Development Locations & Interactive Model Discussion
	6/10/09	#6 – Potential Development Locations & Interactive Model Discussion (continued)
	8/4/09	#7 – Site History by Kevin Morrison, BRA General Counsel; Ground Plane Alternative Concepts; Huntington Avenue Alternative Concepts
	9/17/09	#8 – BRA Review of Process; Zoning Review by Rick Shaklik, BRA Deputy Director of Zoning; Massing Discussion for Belvidere/Dalton and Huntington Sites
	10/14/09	#9 – Urban Design; Huntington Site Design Criteria and Massing; Shadow Studies
	10/28/09	#10 – CAC Members Open Discussion
	11/12/09	#11 – Process Review by Kairos Shen; BRA Director of Planning; Alternative Massing for Belvidere/Dalton Site
	12/9/09	#12 – Berklee Task Force Overview; Traffic, Transportation & Symphony Streetscape Project
2010	2/25/10	#13 – BLC Process by Ellen Lipsey, Executive Director, BLC; Belvidere/Dalton Street Discussion & Pedestrian Experience
	4/1/10	#14 – Huntington Site Building and Ground Plane; Reflecting Pool Crossing; Belvidere/Dalton Site Updated Ground Plane
	5/10/10	#15 – Project Economic Rationale; Sustainability Review; Wind Study; Plan Document Table of Contents
	6/15/10	#16 – CAC Members Open Discussion
	7/6/10	#17 – Boston Landmarks Commission Study Report
	8/3/10	#18 – Plaza Revitalization Project Plan Document Presentation
	9/13/10	#19 – CAC Members Open Discussion
	10/5/10	#20 – CAC Members Open Discussion

CONTEXT



The First Church of Christ, Scientist

For over 130 years, The First Church of Christ, Scientist (also known as the Christian Science Church), has been a part of the Boston community. Although it has branches worldwide, the Church has its roots in New England, and its world headquarters are on the Christian Science Plaza.

Mary Baker Eddy (see Figure 1) established the Church four years after her primary work, *Science and Health with Key to the Scriptures*, was published in 1875. Eddy was born and raised in Bow, New Hampshire, and was a member of the Congregational Church. She grew up with a deep reverence for the Bible and the teachings of Jesus. Through a growing understanding of the power and everpresence of God, she overcame poor health, personal hardships, and financial setbacks in her early years to live a healthy and productive life into her 90th year.

Spiritual healing for humanity is at the heart of the Church's mission. Founded in 1879, the Church was designed to commemorate the word and works of Jesus and restore the spiritual method of healing he practiced. Christian Scientists are free to choose the form of health care that best meets their needs, but many have found that Christian Science healing has provided excellent health care for generations of family members. (Note: While there is a similarity in the name, Christian Science and Scientology are not related.)

In her lifetime, Eddy broke societal and cultural barriers to become an author, lecturer, founder of a worldwide religion, president and founder of a teaching college, and book publisher. At age 87, she founded a Pulitzer Prize-winning newspaper, *The Christian Science Monitor*, which is still published today.



1. Mary Baker Eddy, founder of The First Church of Christ, Scientist, and *The Christian Science Monitor*.

Early Christian Science lectures and meetings in Boston were held at Chickering Hall, Copley Hall, and other venues around the Back Bay. It was in 1894 when church members built the “Original” Mother Church (see Figure 2). This first structure and the “Extension,” completed in 1906, would define the permanent home of the Church and are at the center of the Christian Science Plaza.

The public is always welcome at the Sunday services and the Wednesday testimony meetings. Services include hymns, the Lord's Prayer, readings from the Bible and *Science and Health with Key to the Scriptures*, and a warm sense of fellowship. At these services, the congregation can find spiritual ideas that heal and transform their lives.

The Church does not have priests or ministers; instead two lay readers conduct services based on weekly Bible Lessons published in

The Christian Science Quarterly. These lessons consist of passages from the Bible and *Science and Health with Key to the Scriptures* and address subjects such as the nature of God, the life of Jesus, and the spiritual sense of reality.

Sunday School classes welcome all children and teens up to the age of twenty. Classes focus on life-lessons drawn from the Bible, including the Ten Commandments, the Beatitudes, and the Golden Rule. Students learn how these teachings can heal situations in their own lives and be of service to others.

Testimony meetings are held every Wednesday for the congregation to listen to readings based on the Bible, and give thanks for the blessings and healings they have received through their prayers and study of Christian Science.

The Mother Church operates a Christian Science Reading Room at 194 Massachusetts Avenue. The Reading Room is a bookstore where the public can read, listen to, or purchase a wide variety of publications, CD's, Bibles and related resource materials, and all of Mary Baker Eddy's writings. The Reading Room also hosts special events and talks for the community.

Role in Community

Church members in Boston pray for healing in the community—for greater peace in their neighborhoods and in the world. Individual members volunteer throughout the city, helping with after-school and summer programs, volunteering as chaplains at correctional facilities, and serving in food kitchens. They also participate in numerous charitable events. Many members contribute to a variety of local causes as well as to civic and cultural organizations.



2. Special meeting being held in the Original Mother Church.



3. The Christian Science Reading Room at 194 Massachusetts Avenue.



4. Church members helping during the Christmas toy drive.



5. Opening Our Doors kick-off event taking place on the Massachusetts Avenue Lawn.



6. Children painting murals during a summer community program hosted by TMC Youth.

In addition to the weekly church services, the Sunday School, and the Reading Room, the Church hosts public talks that address personal, community, and global topics from a spiritual perspective.

Special events, such as First Night or a gathering of the American Guild of Organists, are occasions for free community organ recitals on the 13,265-pipe Aeolian-Skinner organ in The Mother Church Extension.

The Plaza is also host to special events for the community, such as the Fenway Alliance's Opening Our Doors kick-off event in the fall. Opening Our Doors is the largest free arts and music festival in the City of Boston. In 2009 thousands gathered on the lawn to watch performances by the Boston Children's Chorus and Zili Misik, as well as paint murals on the Plaza and join in chalk art with Sidewalk Sam.

"One World," a free summer arts program for children, and special school vacation sessions, are hosted by The Mary Baker Eddy Library, also located on the Plaza. These events offer opportunities for students from nearby Berklee College of Music, the New England Conservatory, and the Boston Symphony Orchestra's Project Step program to showcase their talents in front of enthusiastic young audiences.

The Church has donated furniture, books, office equipment, school and art supplies in recent years to after-school and summer programs, the YMCA of Greater Boston, United South End Settlements, Operation PEACE, Youth Workers Alliance, St. Stephens Church, Greenwood Memorial Church, The Home for Little Wanderers, and Peterborough Senior Center.



7. The world-renowned Mapparium®.



8. Children's Fountain on the Plaza.



9. Visitors on the Plaza.

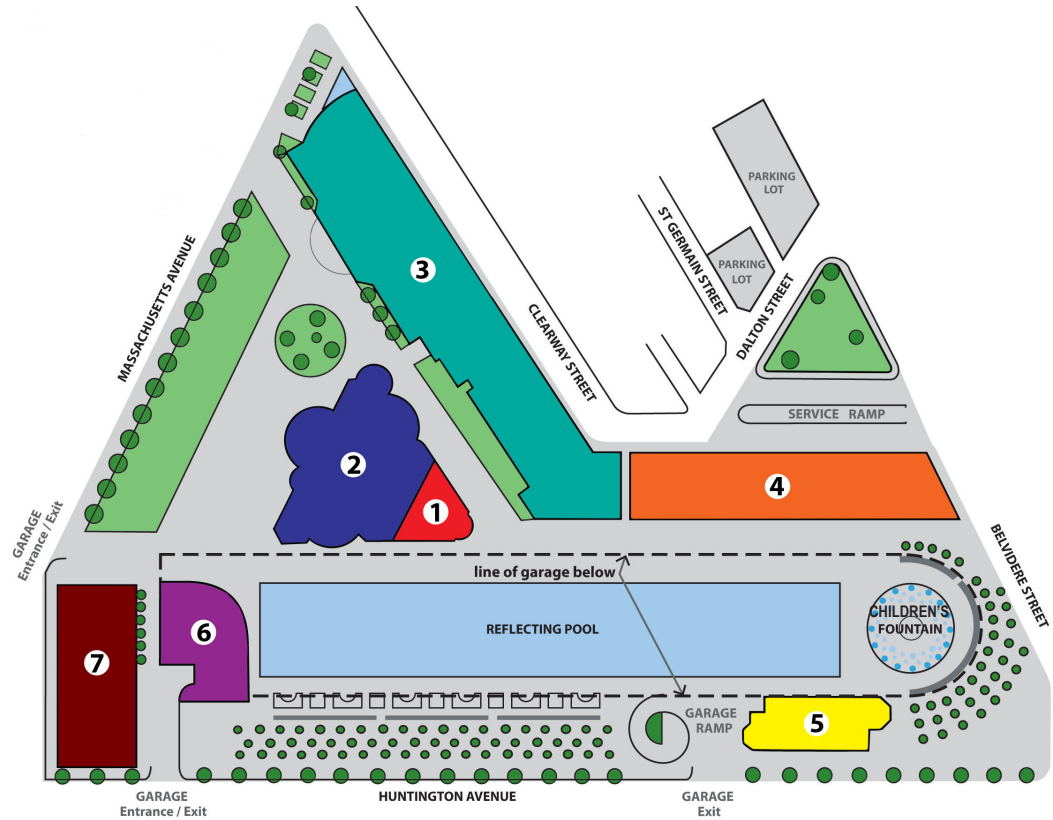
The Christian Science Plaza Today

The Plaza Revitalization Project focuses on the Christian Science Plaza, which includes the approximately 14.5-acre area generally bounded by Huntington Avenue to the east, Massachusetts Avenue to the west, and Clearway and Belvidere Streets to the north.

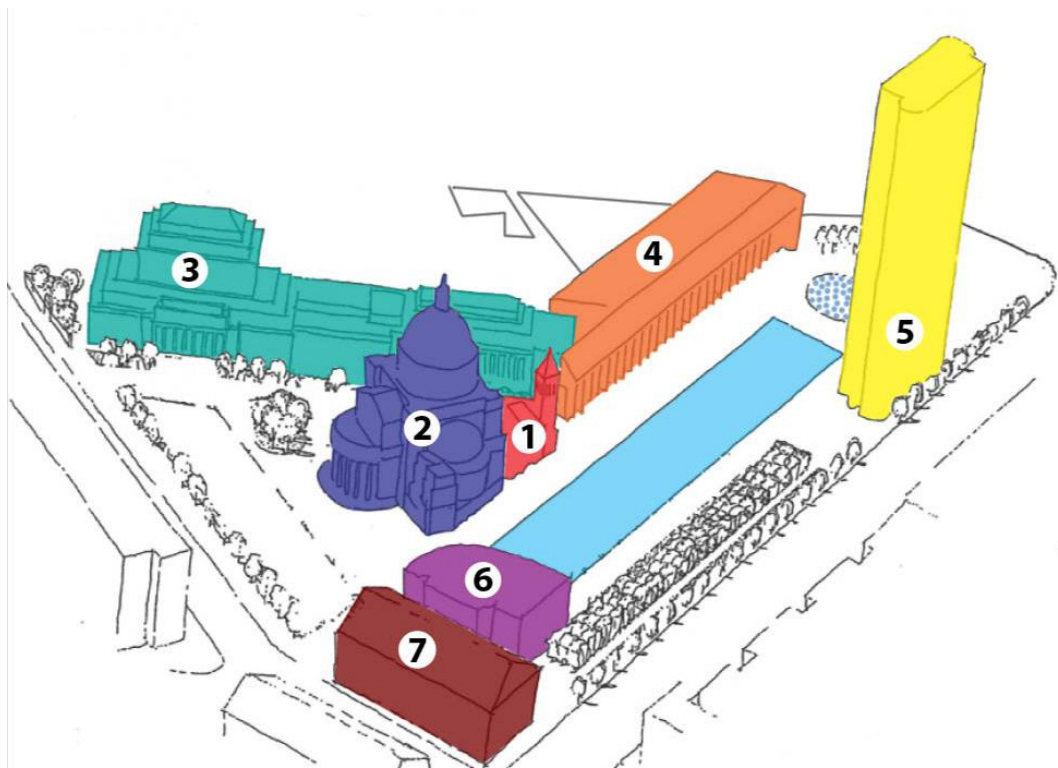
The Plaza includes seven buildings (see Figures 10 and 11):

- 1. The Original Mother Church
- 2. The Mother Church Extension
- 3. Christian Science Publishing House—with administrative and publishing offices at 210 Massachusetts Avenue and The Mary Baker Eddy Library and Mapparium at 200 Massachusetts Avenue
- 4. 101 Belvidere Street (former Church Colonnade Building)
- 5. 177 Huntington Avenue (former Administration Building)
- 6. Sunday School Building
- 7. Horticultural Hall at 300 Massachusetts Avenue

The Plaza has approximately ten acres of open space—equivalent in size to approximately three Fenway Park playing fields, or four-and-a-half Post Office Square Parks—available for the community's enjoyment, reflection, and recreation. Thousands of children cool off every summer in the Children's Fountain. Students from nearby colleges and neighbors use the lawn in front of the Church for relaxation and other activities. Strollers and joggers take laps around the Reflecting Pool, while others sit and enjoy the expanse of water as a place for quiet contemplation.



10. Christian Science Plaza Site Plan.



11. Christian Science Plaza Site Sketch.

Beneath the Reflecting Pool and Children's Fountain is an underground parking garage. In addition, two surface parking lots are located across the street from the triangular-shaped lot on Dalton Street.

Evolution of the Christian Science Plaza

The timeline on pages 13 and 14 depicts the evolution of the Plaza's development over the last 116 years since the Original Mother Church, located at the heart of the Plaza, was constructed in 1894. The last major development was the creation of the Christian Science Plaza in the 1970s with a design by I.M. Pei & Partners and Araldo A. Cossutta, Associated Architects. Please see Chapter 7 for details of the Plaza's historic buildings and open space.

Surrounding Area

The Plaza is located at the nexus of several neighborhoods (see Figure 12): The Fenway, Back Bay, the South End/St. Botolph, and the Prudential. These neighborhoods include a mix of residential, retail, office, institutional,

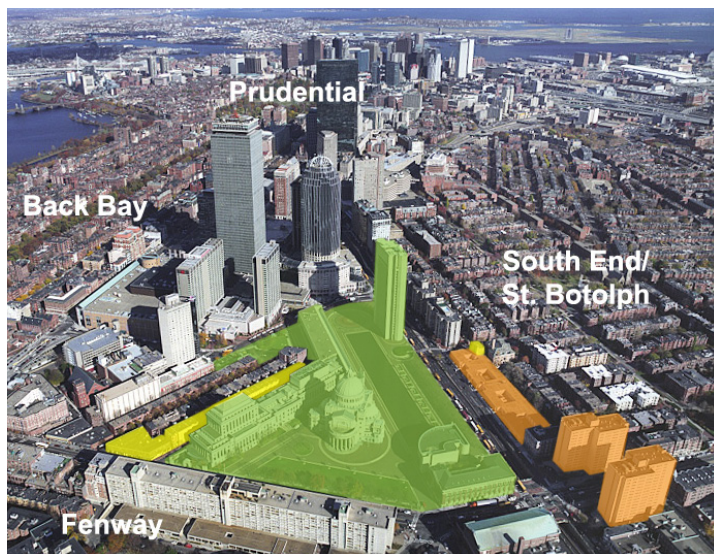
nonprofit, and cultural uses. Immediately adjacent to the Plaza are the St. Botolph and St. Germain residential areas, and Symphony Hall. Within some of these neighborhoods, the Church owns land and buildings. The Midtown Hotel and Symphony Tower residences are both built on land owned by the Church and leased to others. The Church also owns and leases properties along Massachusetts Avenue, Clearway Street, and Cumberland Street. These properties are not part of the Plaza Revitalization Project.

Looking to the Future

The Christian Science Plaza is the Church's permanent home, with the Original Mother Church and its Extension at the core.

In addition, the Church's worldwide administrative offices, the Christian Publishing Society, and The Mary Baker Eddy Library will continue to be housed on the Plaza, in the Christian Science Publishing House.

Other parts of the Plaza will transition to a mix of third-party office, residential, retail, and possible hotel use bringing new vibrancy



12. Aerial view of the Plaza and the surrounding Church properties.

SURROUNDING PROPERTIES

- Christian Science Plaza
- Church-owned Land – Long-term Lease to Others
- Church-owned Land/Building – Leased to Others

and activity to the Plaza and its neighborhoods, more jobs, and an increased tax base for the City.

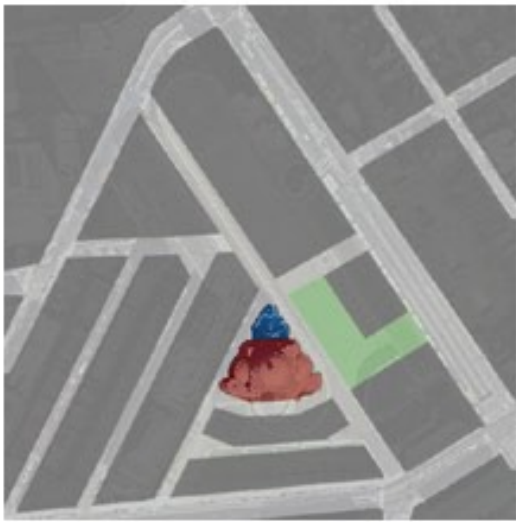
The open space enhancements and new development addressed in this Plaza Revitalization Project are designed to blend well with the existing ensemble of buildings and open space, work harmoniously with the surrounding areas, and support the Church in reaching the goal of its real estate being self-supporting. The next chapter provides an explanation of the Church's objectives.

HISTORICAL SITE DEVELOPMENT OF THE FIRST CHURCH OF CHRIST, SCIENTIST
BOSTON, MA

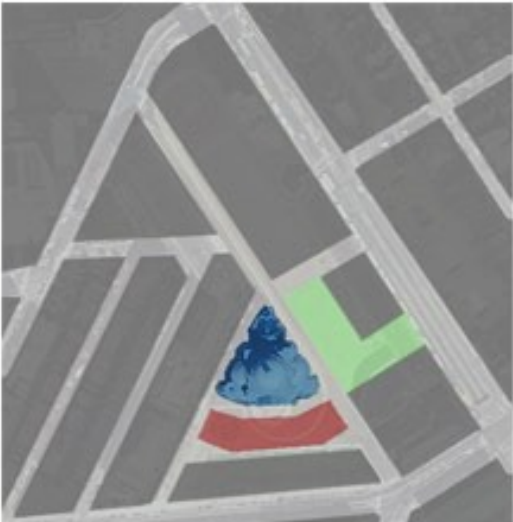
LEGEND: ■ New Construction/Acquisition
■ Existing From Previous Changes
■ Open Space/Ground Plane



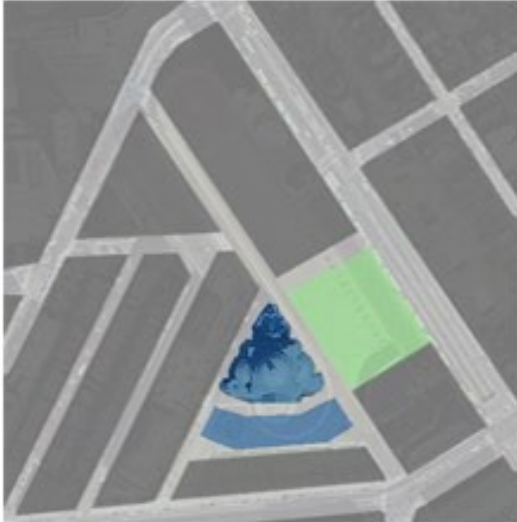
1894



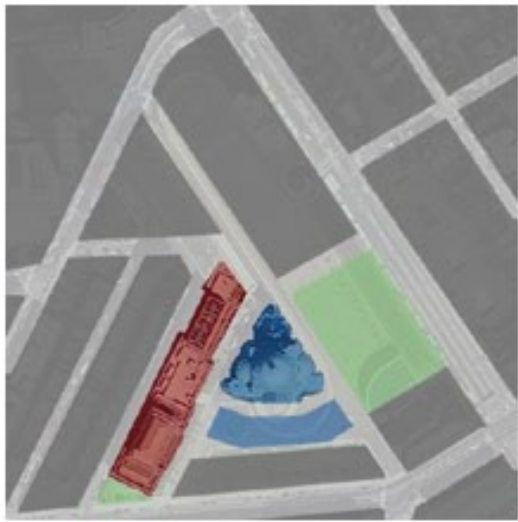
1906



1908



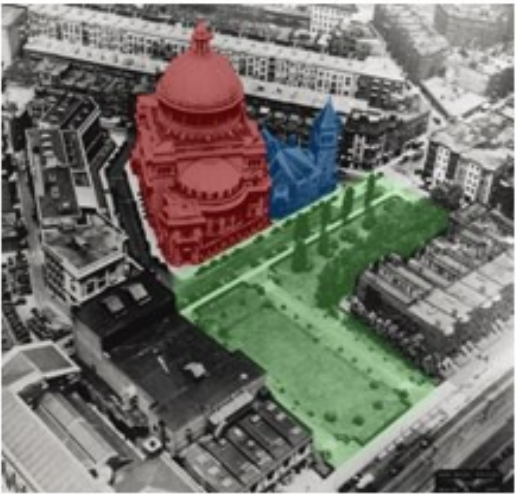
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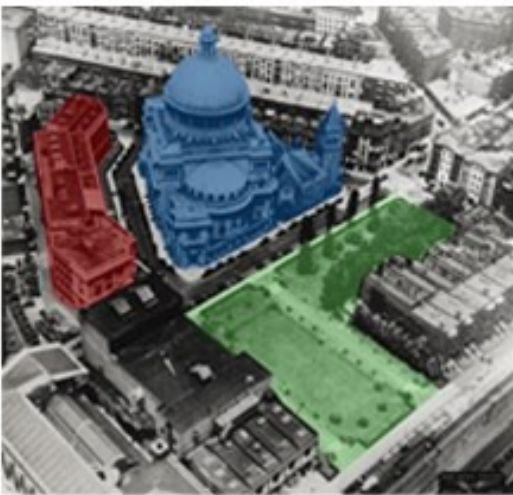
1934



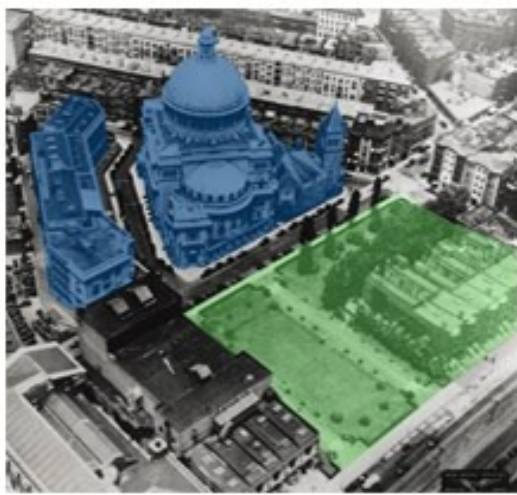
The Mother Church Original



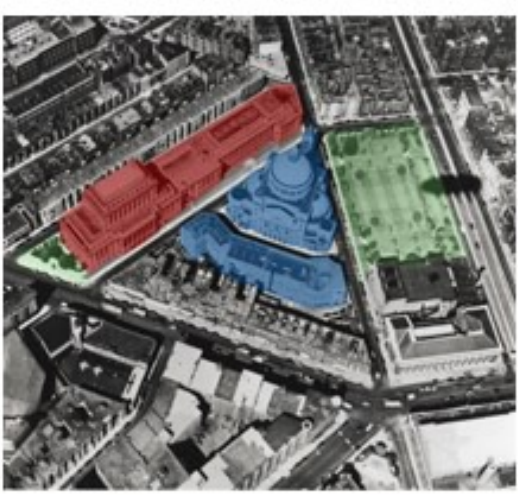
The Mother Church Extension



First Christian Science
Publishing House



Expanded Open Space



New Christian Science Publishing House
(First Publishing House converted to
Church Administration Building)

HISTORICAL SITE DEVELOPMENT OF THE FIRST CHURCH OF CHRIST, SCIENTIST BOSTON, MA

LEGEND: ■ New Construction/Acquisition
■ Existing From Previous Changes
■ Open Space/Ground Plane



1971-75



1992



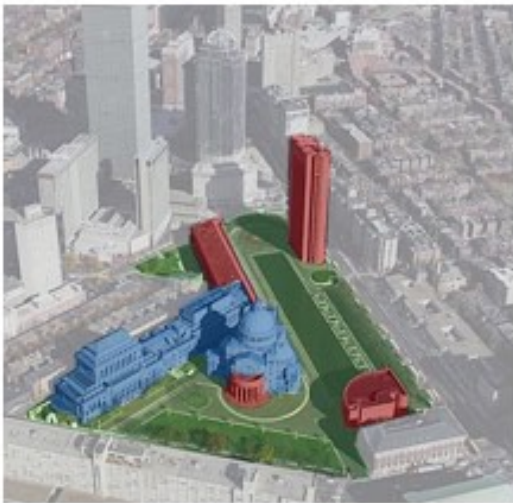
2001



2002



2008



Administration Building
Colonnade Building
Sunday School Building
Church Extension Portico
Plaza & Garage



Horticultural Hall Purchased



Children's Fountain
Redesigned/Rebuilt



Renovations to Publishing House
for the opening of
The Mary Baker Eddy Library



Completion of renovations
to Publishing House and
consolidation of Church
workspace into this building

THE FIRST CHURCH OF CHRIST, SCIENTIST
PLAZA REVITALIZATION PROJECT

CHAPTER 3

PURPOSE, OBJECTIVES, AND DESIGN CRITERIA



The “direct” pathway to the Original Mother Church, as seen in the 1950s.

Purpose

Nearly 40 years have passed since the development of the Christian Science Plaza. A review of the Plaza's conditions concluded that improvements to the Plaza would be in keeping with the growth and vibrancy of the nearby neighborhoods and today's emphasis on greater environmental sensitivity.

The Plaza Revitalization Project is in response to the Church's review of the Plaza conditions, and has three objectives: (1) Enhance the Open Space; (2) Improve the Environmental Sustainability of the Plaza; and (3) Identify Opportunities for Underutilized Real Estate. These objectives and the design criteria to meet them are described in this chapter.

In addition, the Church is seeking to have real estate expenses covered by real estate revenues, rather than by donations, which the Church would like to devote more directly to its mission activities. New development on the Plaza will play a significant role in meeting this goal.

Objectives

Three distinct objectives are leading the Plaza Revitalization effort:

1. **Enhance the open space** on the Christian Science Plaza to make it a more usable and attractive year-round destination for the community with places for both quiet contemplation and active enjoyment, as well as to improve pedestrian circulation through the site and to the adjacent neighborhoods.
2. **Improve the environmental sustainability of the Plaza** with emphasis on better water and groundwater management.

3. **Identify opportunities for underutilized real estate**, including reuse of some existing buildings and the addition of new buildings, which would generate a revenue stream to help ensure that the Plaza remains a valuable asset to the Boston community for decades to come.

Design Criteria

Fifteen design criteria are outlined below that will help meet the project's objectives. These criteria are grouped into six categories: Open Space, Land Use, Historic Resources, Transportation, Environmental Sustainability, and Economic Sustainability.

I. Open Space

1. *Open Space:* Revitalize the open space to make it more welcoming, softer, and a year-round amenity for the community and City.

Part of the welcoming spirit can come from making the open space appropriate for year-round use by individuals for active and passive recreation, rather than the current emphasis on the summer months when the Reflecting Pool is full and the Children's Fountain is running. In addition, the space needs more places to stop and sit, such as benches and tables.

2. *Reflecting Pool and Children's Fountain:* Maintain the benefits of the Reflecting Pool while making it more welcoming and more environmentally sustainable. Retain the Children's Fountain.

A pedestrian pathway across the Pool will improve Plaza circulation, and a redesigned floor surface of the Pool will add beauty when it is empty five to six months of the year.

II. Land Use

3. *Mix of Uses:* Create a mixed-use site that provides year-round vitality, is compatible with the ongoing Church-related functions, and is designed in concert with the existing ensemble of buildings.

A mix of uses is consistent with the surrounding neighborhood's varied office, residential, institutional, retail, and cultural uses. The mix would also provide a stimulus for individuals to use the Plaza area as they tend to their various activities throughout the day and year.

4. *Landscaping:* Incorporate new and rein-vigorated landscape design that is more inviting and ecologically sensitive.

New landscape design can maintain the reflective nature and historic essence of the Plaza, while also making the Plaza more

inviting to the community and passersby. New vegetation can highlight the ecological role played by trees and plants within the city for their ability to create shade, decrease stormwater runoff, reduce the urban heat island effect, and improve the aesthetics of an area.

5. *Density:* Create new density on the site without impacting the sense of place or diluting the benefits of the open space.

The creation of density on the site would allow for an increased mix of uses, expanded activation of the Plaza, greater tax benefits for the City, and private revenues for the Church.

III. Historic Resources

6. *The Original Mother Church:* Reestablish the importance, visibility, and access to the Original Mother Church.



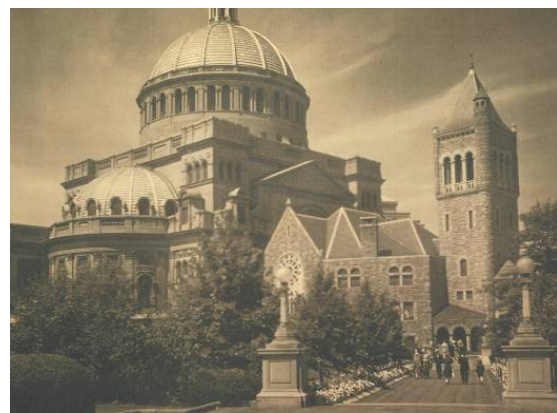
1. The Reflecting Pool.



2. Example of well-used open space (Jardin des Tuileries, Paris).



3. Example of well-used open space (Post Office Square, Boston).



4. The “direct” pathway to the Original Mother Church, as seen in the 1950s.

Changes should reestablish convenient pedestrian access between the Original Mother Church and Huntington Avenue, which existed prior to the creation of the Plaza.

7. *Architectural History:* Respect the site's architectural history and significance.

New development at the site must respect the site's architectural history, including the plan developed by I.M. Pei & Partners and Araldo A. Cossutta, Associated Architects, in the 1970s.

8. *Publishing House Entrance:* Make the entrance to the Christian Science Publishing House more visible now that the Church uses this building as its worldwide administrative headquarters.



5. The Christian Science Plaza in the early 1970s.

IV. Transportation

9. *Dalton Street/Belvidere Street Intersection:* Reconfigure the Dalton Street/Belvidere Street intersection (see Figure 7).

The narrowing of the streets and awkward alignment of intersections, as well as the minimal signage, create a confusing zone for pedestrians and vehicular traffic. Realignment of the existing public roadway and added signage will clarify street patterns and traffic controls. It is also important to design a recognizable entrance to the St. Germain neighborhood without increasing vehicular circulation.

10. *Circulation:* Improve circulation through the Plaza, as well as improve connections to the surrounding neighborhood.



6. Main entrance for the worldwide administrative offices of the Church and the offices of the Christian Science Publishing Society.



7. Dalton Street/Belvidere Street intersection.



8. Existing pedestrian circulation through the Christian Science Plaza.



9. Tour buses along Huntington Avenue.

Eliminating the tour bus parking zone along Huntington Avenue would also improve the pedestrian experience along that edge of the Plaza (Figure 9).

11. *Parking*: Meet new parking needs, including access and egress to the site.

Parking, as well as access and egress from the parking for the new development, must be included on the site, and should work in concert with the Church's existing parking.

V. Environmental Sustainability

12. *Water Management*: Reduce the usage of potable water on the Plaza and in the Church's buildings, and the amount discharged to the combined sewer.

The Church uses a significant amount of water for both the Reflecting Pool and the Children's Fountain. Reducing this water usage would make these features more environmentally sustainable, while also decreasing the costs associated with supplying the water and treating the water through the wastewater system.

13. *Sustainability*: Further the goals and actions that the Church has already demonstrated with the renovation of the Publishing House, which was awarded a Leadership in Energy and Environmental Design for Commercial Interiors (LEED-CI) Gold certification for floors 5-9 (see Chapter 5 for more information).

Sustainable development on the site will be encouraged, and new development will meet the requirements of Article 37 of the Boston Zoning Code, Green Buildings.

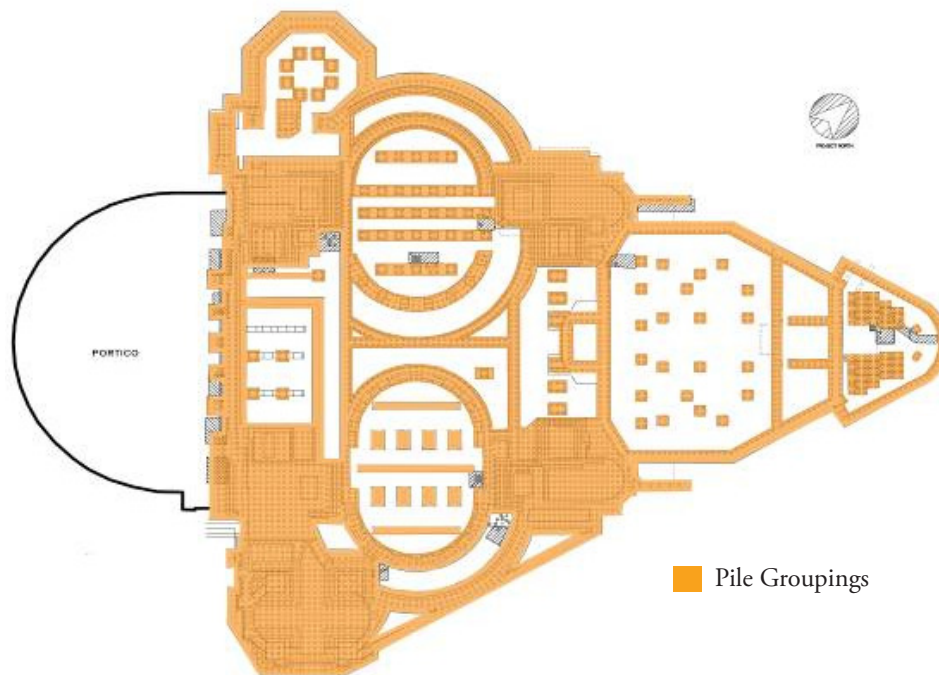
14. *Groundwater*: Protect the water table and improve water infiltration.

The Mother Church sits on approximately 4,800 wood piles, and therefore, the protection of groundwater on the site and in the surrounding area is of paramount concern for the Church and the neighborhood (see Figure 10). New development must be able to maintain the groundwater level so as to have no negative impacts on the Church Plaza and its surrounding neighborhoods.

The Church will seek to have new development on the site that is able to help the Church meet its goal of having its real estate be self-supporting.

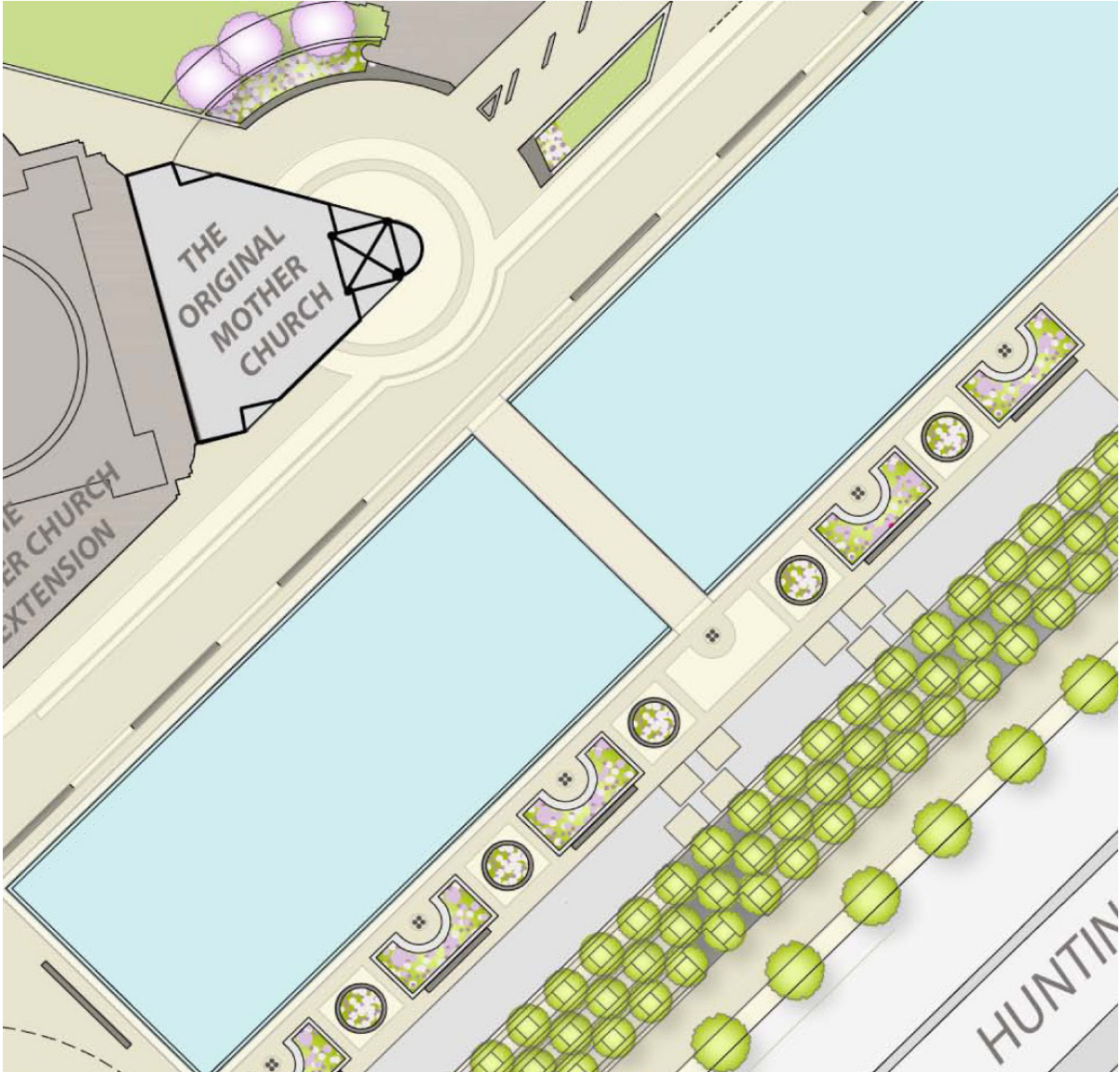
VI. Economic Sustainability

15. *Financial Support:* Promote development that will allow for the Church's buildings and Plaza grounds to be fiscally self-supporting.



10. Footprint plan of Church edifices, which are supported by approximately 4,800 wood piles.

OBJECTIVE 1: ENHANCE OPEN SPACE



Enlarged section of the proposed enhanced open space (see Figure 9).

Open Space Plan

The Church and its consultants studied a number of alternatives that included various changes and upgrades to the Plaza, including changing the size and shape of the Reflecting Pool and creating new landscaped areas. The main conclusion from these studies is that the existing open space is a high-quality design that would benefit more from improvements than a redesign. As seen through the reconstruction of the Children's Fountain in 2001, the opportunities to enhance the existing space while retaining its special characteristics are many. The following sections discuss specific improvements to the open space.

Reflecting Pool

Despite the Reflecting Pool's iconic beauty, there are many opportunities for improvement. The Reflecting Pool is past its useful life and needs to be replaced. The 26-inch deep Pool was constructed in the 1970s, holds roughly 1.3 million gallons of water, and uses approximately 5 million gallons of water per year for refilling because of backwashing, evaporation, and leaks. The Pool, which covers approximately 1.5 acres, dominates the open space and is empty half the year (approximately November to April). This limits its attractiveness, as well as its contemplative and reflective features. During the winter months, the empty Reflecting Pool can feel uninviting and inhospitable to the surrounding neighborhoods. In addition, the Pool acts as a barrier to pedestrian circulation through the Plaza.

The issues related to the Reflecting Pool that need to be addressed include:

- ◆ Reducing water use by 50 percent to 75 percent per year while retaining beauty and reflectivity.

- ◆ Making the Pool area more attractive 12 months of the year.
- ◆ Eliminating leaking into the parking garage below.
- ◆ Reestablishing a historic pedestrian pathway directly to the Original Mother Church, as well as providing a connection to Huntington Avenue.
- ◆ Facilitating pedestrian circulation at the Sunday School end.

The Church will address these issues by rebuilding the Reflecting Pool. The new Reflecting Pool will provide the same benefits of the existing Pool, while decreasing the need for water because of a shallower depth—approximately 6 to 12 inches, compared to 26 inches currently—and the elimination of leaks (see Figure 1). The Church will study the possibility of including an artistic treatment on the bottom surface of the Reflecting Pool, making it a year-round amenity, rather than a seasonal feature.

The redesign of the Reflecting Pool will address how it restricts pedestrian circulation. Introducing a new at-grade pedestrian crossing will provide a direct connection from Huntington Avenue to the Original Mother Church and Dalton Street (see Figure 2). The crossing will also create a view corridor from Huntington Avenue to the Original Mother Church, recalling the historical entry path to the Original Mother Church. The inclusion of a Reflecting Pool crossing will improve circulation, while also adding a new architectural feature to the site.

The existing Pool is 686 feet long. The Pool will be slightly shorter (by about 18 feet) at the end closest to the Sunday School Building to facilitate pedestrian circulation across the Plaza in that area, which is now constrained.

Pedestrian Experience

The Plaza is located at the nexus of several different neighborhoods, each with its own street grid: Back Bay, Prudential, South End/St. Botolph, and Fenway. The lines of the Plaza generally conform to this grid system (see Figure 3).

The revitalization of the Plaza will take into account urban grid systems in the surrounding neighborhoods, and improve the pedestrian experience as individuals travel to and from the surrounding neighborhoods. Long concrete benches and raised concrete flower boxes on the east side of the Reflecting Pool restrict circulation between Huntington Avenue and the Reflecting Pool. These barriers will be reconfigured to provide a more pedestrian-friendly experience, inviting individuals to walk through the site, whether they are visiting the site or just passing through. Some of the planters will be replaced with an open area that acts as the transition to the new pedestrian crossing across the Reflecting Pool.

New landscaping will include pathways directing pedestrians through the site and to important locations on its edges, including Symphony Hall, Prudential Center, and crosswalks to the surrounding neighborhoods. Additional pathways on the Massachusetts Avenue side of the site will improve pedestrian connections to the Reflecting Pool and other locations on the site. New pathways and landscaping will also create a new focus on the entrance to the Publishing House.

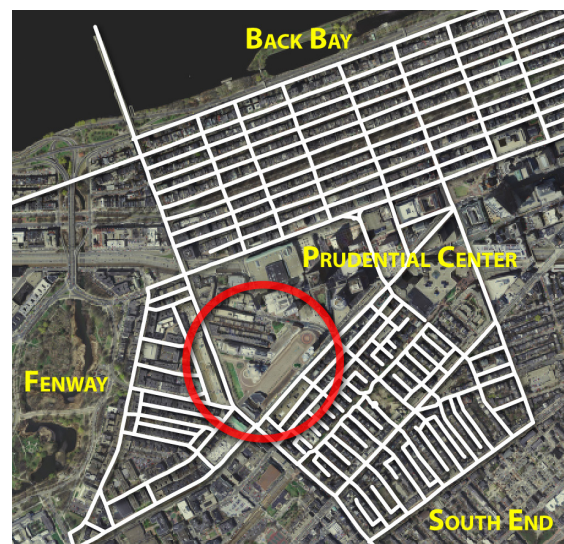
On the northern edge of the Plaza, both pedestrian and vehicular circulation is impacted by the Dalton Street/Belvidere Street intersection. The current lane markings and minimal signage make the



1. Current pool depth is 26 inches. New pool depth will be 6-12 inches.



2. Illustrative sketch of proposed Reflecting Pool pedestrian crossing.



3. Aerial view showing the grid systems in the vicinity of the Plaza.



4. View of the Massachusetts Avenue lawn as seen today.



5. View of the Huntington Avenue Bosque as seen today.



6. Areas on site for future improvements.

intersection dangerous for both pedestrians crossing the intersection and vehicles passing through.

Landscaping

Other significant changes related to the Plaza's open space will be in the form of improved landscaping. The site currently contains hardscape and planters, while a softer landscape of grass and trees would enhance the space.

The plan includes expanding the lawn along Massachusetts Avenue and adding new pathways. This area will continue to be an area suitable for a variety of recreational and contemplative opportunities.

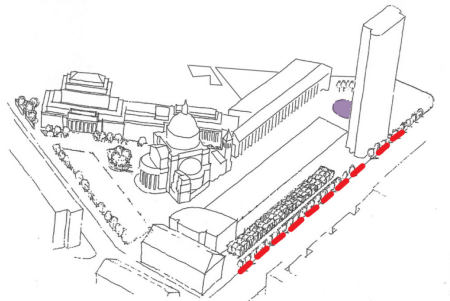
Improved landscaping between Huntington Avenue and the Reflecting Pool will create a welcoming feel on this face of the Plaza to the community. The improved landscaping will include benches and areas for passive recreation, especially areas for contemplation and relaxation.

Throughout the rest of the Plaza, a more welcoming experience will be included, with elements that are flexible and allow for maximum use of the space. These elements could include tables and chairs that are not fixed to their location, but can be moved to suit the seasons and the change in uses throughout the year.

Children's Fountain

Adjacent to the 177 Huntington Avenue building is the 80-foot-diameter Children's Fountain, which is currently enjoyed by children and adults during the summer months. This successful feature will remain in its

current form. During the colder months when the Fountain is not in operation, one possible use would be an ice skating rink. The adjacent area could also include associated uses, such as vendors that would cater to the users of this portion of the site.



■ Children's Fountain
■ Buses parked on Huntington Avenue.

Huntington Avenue Bus Area

Currently along Huntington Avenue, adjacent to the Plaza, is a parking area for layover tour and charter buses (Figure 8). The buses obstruct access to the Plaza and block views of the Plaza from Huntington Avenue. They also impact the aesthetics of the site and diminish the welcoming feeling on this portion of the site. The Church looks forward to working with the City of Boston to find a different location for the buses that would improve the aesthetics of the Plaza and improve view corridors and the pedestrian experience, as well as vehicular safety along this portion of Huntington Avenue.



7. The Children's Fountain during the summer months.

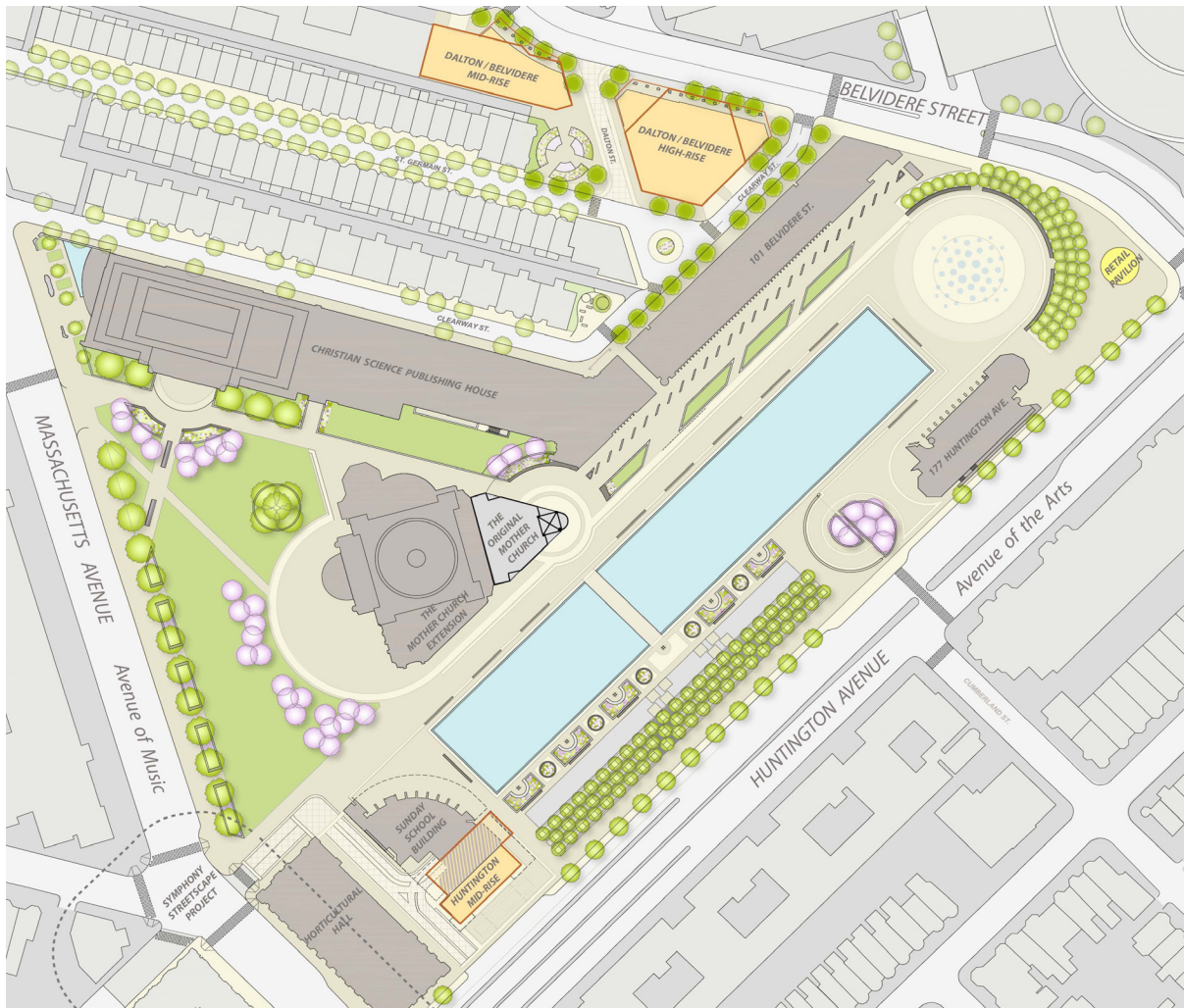


8. Layover buses parked on Huntington Avenue.

Public Benefits

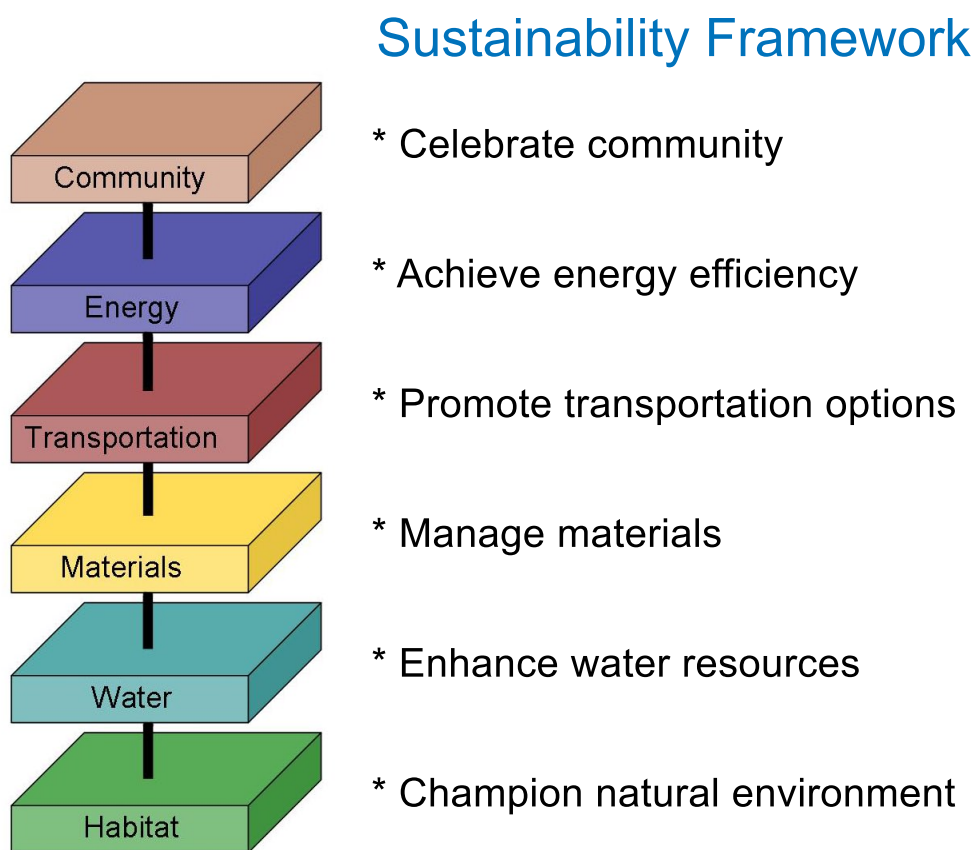
The improvements to the Plaza open space will have a number of benefits to the Church, the City, and the neighborhood. These benefits include:

- ◆ Improved open space for the public's use.
- ◆ New green space.
- ◆ Groundwater infiltration to sustain adequate groundwater levels.
- ◆ Improved aesthetics year-round.
- ◆ Enhanced public experience year-round.
- ◆ Improved site circulation.



9. Proposal of the enhanced open space.

OBJECTIVE 2: IMPROVE ENVIRONMENTAL SUSTAINABILITY



Introduction

The Church has taken significant steps to become more environmentally responsible in its current operations. These efforts include recycling and energy efficiency improvements, such as the installation of new light fixtures and the implementation of programs to decrease energy use in the Publishing House. Additional sustainability measures are being considered for implementation as part of the Plaza Revitalization Project.

Existing Efforts

LEED Certification

In 2009, the renovation of floors 5-9 in the Publishing House achieved a Leadership in Energy and Environmental Design for Commercial Interiors (LEED-CI) Gold rating from the U.S. Green Building Council. The renovation received credits for:

- ◆ Reducing water use by 30 percent—mainly through the use of low-flow and metered plumbing fixtures.
- ◆ Storing and collecting recyclables.
- ◆ Reusing, on or off the site, 23 tons of construction waste.
- ◆ Recycling 717 tons of demolition material and construction debris.
- ◆ Reusing workstations, file cabinets, and loose furniture.
- ◆ Incorporating finish material and furnishings that were manufactured within a 500-mile radius.
- ◆ Using low volatile organic compound (VOC) content adhesives, paints, and carpets.

Waste Management and Recycling

In 2007, the Church substantially increased its recycling efforts. Since then, the Church has recycled approximately 462,000 pounds of paper and 22,050 pounds of co-mingled recyclables (plastic, glass, and aluminum). Currently, all non-food paper and cardboard, and all plastic, glass, and aluminum are recycled.

The Church has also reduced the consumption of disposable materials, which in turn has reduced the need for recycling. These efforts include:

- ◆ Effective May 1, 2009, the Church stopped purchasing bottled water, reducing the amount of plastic to be recycled.
- ◆ Printer default options are set to print double-sided where possible, decreasing paper use.

On the Plaza, the Church has purchased and installed “Big Belly” solar-powered trash compactors. These containers help keep the Plaza clean, while minimizing the amount of time needed to empty trash bins around the site.

Energy Conservation

The Church has implemented a number of other measures to decrease energy use. These measures include:

- ◆ Initiating programs to encourage employees to turn off computer monitors, speakers, printers, copiers, and other powered devices at the end of each day, and unplugging certain electronics when not needed, such as cell phone chargers.

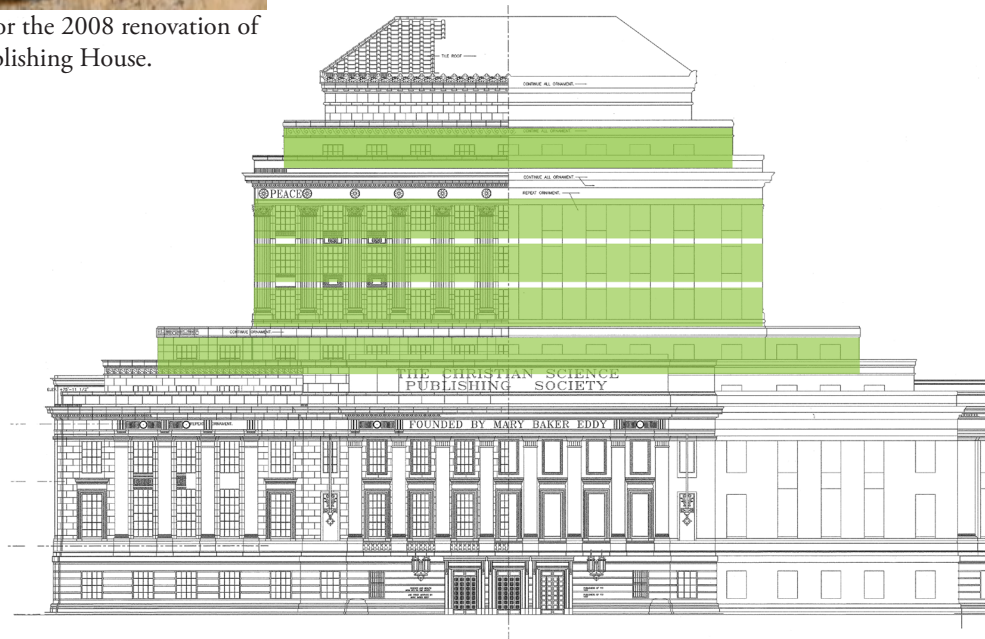


1. “Big Belly” Solar powered trash compactors set up on the Plaza.



2. Plaque awarded for the 2008 renovation of floors 5-9 of the Publishing House.

- ◆ Installing automatic light sensors throughout the Publishing House.
- ◆ Replacing lamps and fixtures with more energy-efficient models.
- ◆ Operating all fan and pump motors with variable frequency drives.
- ◆ Using an automated temperature control system.
- ◆ Shutting down the boiler if outdoor winter temperatures permit.
- ◆ Implementing a four-day summer work week.
- ◆ Operating boilers with natural gas more often than with oil.
- ◆ Providing employees with transportation incentives, such as commuter vouchers and pretax MBTA passes.
- ◆ Including MBTA directions to the Plaza on the Church’s website.
- ◆ Installing bike racks, cycling lockers, and showers, which support bicycle commuting (some employees now commute up to 40 miles round trip).



3. Publishing House floors that were renovated in 2008 (in green).

Future Actions

The Church's present actions in regard to sustainability demonstrate commitment to environmental conservation as part of internal operations and capital improvements. Going forward, the Church will investigate how future development on the site can incorporate sustainable features into building designs and practices.

The Plaza Revitalization Project seeks to implement improvements related to water conservation, rainwater management, and the urban heat island effect. The Project introduces a mix of uses and new users to the Plaza. Connections to the surrounding neighborhoods are improved, and the Plaza is more welcoming year-round.

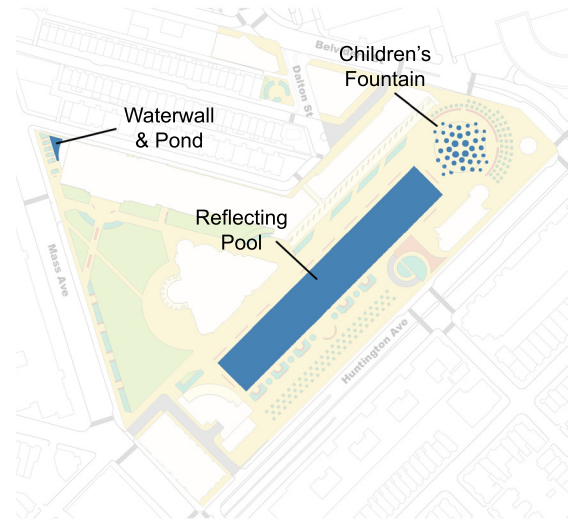
Water Conservation

As mentioned in Chapter 4, the Reflecting Pool uses approximately 5 million gallons per year. The Plaza Revitalization Project proposes to decrease the depth of the Reflecting Pool from approximately 26 inches to between 6 and 12 inches. Pool water use will be reduced between 50 to 75 percent because of this reduction in depth, as well as a slight reduction in length (only about 18 feet of the 686-foot length) around the Sunday School end of the Pool to allow better pedestrian circulation.

In addition to water savings from the rebuilt Reflecting Pool, new landscaping throughout the Plaza will include native or adapted plants that are appropriate for Boston's climate, reducing potable water use for irrigation.

Rainwater Management

Currently, approximately 87 percent of the Plaza is covered by impervious surfaces,



4. Existing water features.



5. Mary Baker Eddy Waterwall and Garden



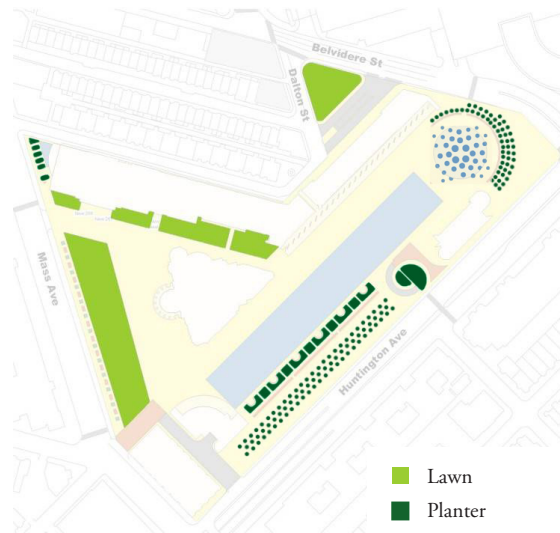
6. Existing features.

including roofs, pavement, and the Reflecting Pool. These areas prevent groundwater recharge while increasing runoff to the combined sewer system. The impervious surfaces also prevent infiltration of rainfall to recharge groundwater. Large amounts of potable water are currently used to irrigate the existing landscape and replenish water in the Reflecting Pool and fountains lost to leakage, evaporation, and backwashing of the Pool and Fountain filters.

The Revitalization Project will work to manage stormwater to minimize the amount of rainwater that is discharged to the combined sewer system and maximize groundwater recharge potential. The Church and future developers will capture and infiltrate runoff in accordance with Article 32 of the Boston Zoning Code, as the Plaza is within the Groundwater Conservation Overlay District. Improved landscaping will increase the amount of pervious surface on the Plaza, reducing stormwater runoff and increasing infiltration (see Figure 8). Additional measures are also being studied for feasibility that would reuse rainwater throughout the site and for the Reflecting Pool.

Urban Heat Island Effect

The urban heat island effect refers to the higher temperatures urban areas experience compared to rural areas because of the abundance of dark materials that absorb heat rather than deflect it. According to the US Environmental Protection Agency, this effect can be associated with a difference in temperature between urban and rural areas of between 1.8°F to 5.4°F during the day and a difference as high as 22°F in the evening. Urban heat islands negatively affect communities by increasing summertime peak energy demand, air pollution, greenhouse



7. Existing landscaped areas.



8. Proposed landscaped areas.

OBJECTIVE 2: IMPROVE ENVIRONMENTAL SUSTAINABILITY

gas emissions, stormwater temperature, and discomfort for residents.

Because so much of the Christian Science Plaza is hardscape, this adds to the urban heat island effect for the city. The Revitalization Project plans to increase the lawn area by around 20 percent and add more shade trees and landscaped areas (see Figures 8 and 9). By doing this, the heat island effect can be decreased. Other options that will be studied include incorporating green roofs, using light-colored materials for surfaces, or painting roofs and surfaces white.

Repurposing Buildings

All buildings on the Plaza will continue to be used (see Figure 10). These buildings represent a significant amount of energy that was expended to extract raw materials for their manufacture, transport, assembly, and construction. Continued use of these buildings lessens the need for new construction and the use of additional resources.

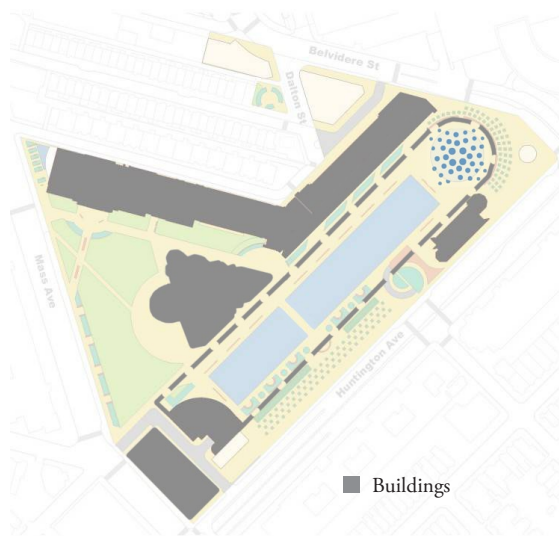
Public Benefits

The Plaza Revitalization Project will provide a number of public benefits in regard to environmental sustainability. These benefits include:

- ◆ Decreased water use.
- ◆ Less water from the Reflecting Pool and rainstorms discharged to the combined sewer system.
- ◆ Decreased urban heat island effect.
- ◆ Increased groundwater infiltration.
- ◆ A more welcoming site with increased use year-round.

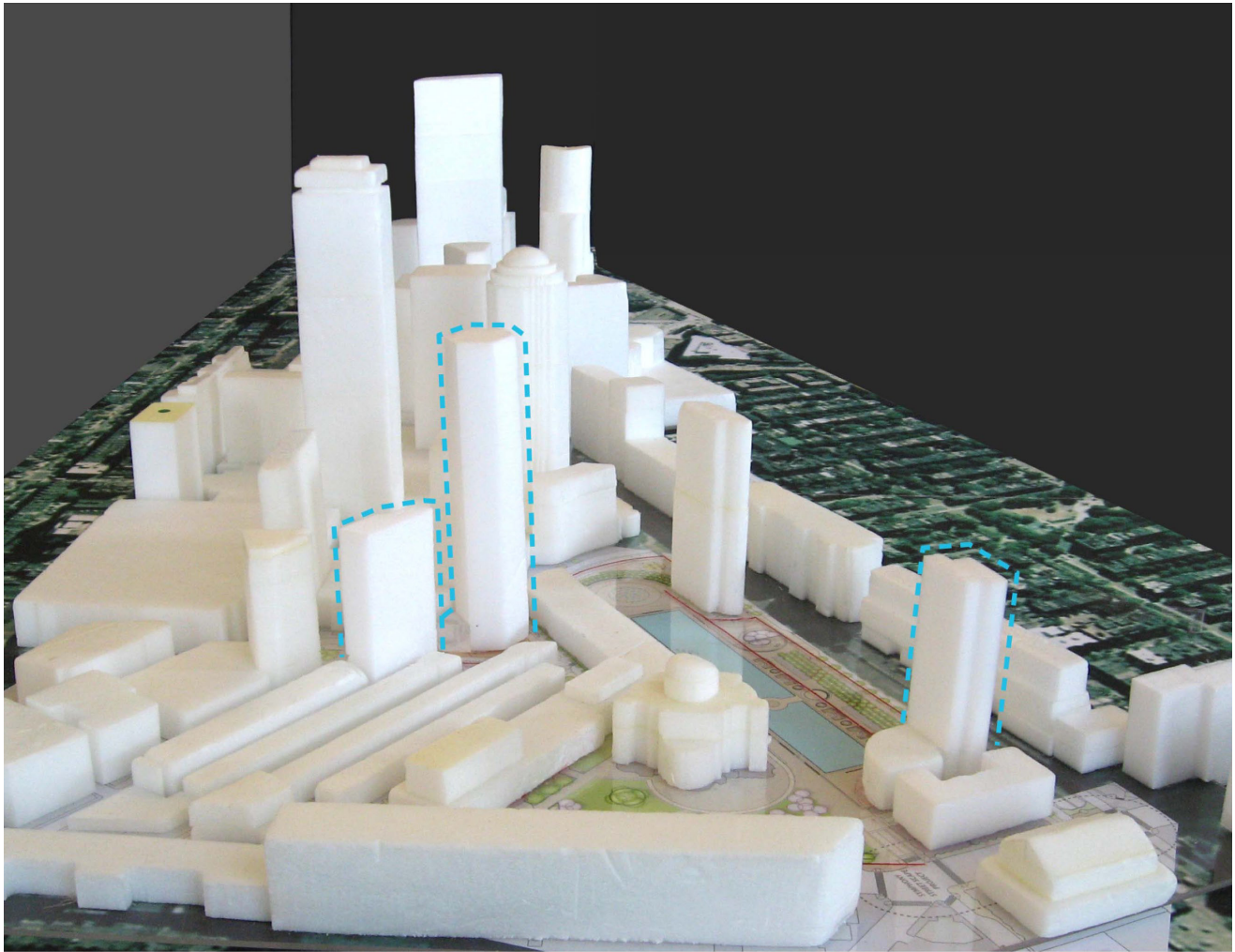


9. Proposed tree planting changes.



10. All buildings continued to be used. No demolition.

OBJECTIVE 3: PLAN FOR UNDERUTILIZED REAL ESTATE



Rationale for Development

New development on the Plaza will support the Church's continued stewardship of the Plaza and help it achieve the goal of balancing real estate expenses and revenues.

An analysis to determine how much new development would be appropriate considered the benefits of maintaining the large expanse of open space, the amount of existing excess Plaza zoning capacity, the need for the development to be concordant with the existing buildings on and near the Plaza, and financial factors. This analysis resulted in the proposal for 950,000 square feet on selected edges of the Plaza. Five contributing factors for this amount of new space are discussed below.

1. Density

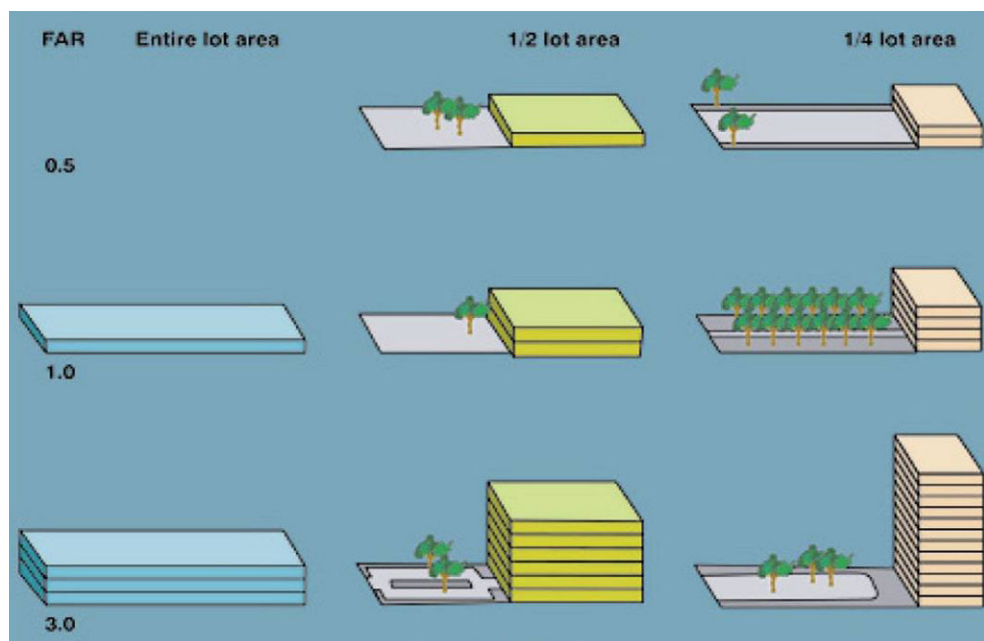
The Plaza's current density is very low. There is significant untapped zoning capacity on the Plaza—about 650,000 square feet “as-of-right” when comparing the built Floor Area Ratio (FAR) of 1.2 to the zoning FAR of 2.

Also, the density is quite low when compared to the FAR of the surrounding areas. The FAR of the nearby Prudential Center is 6, the FAR for across the street on Huntington Avenue is 8 and on Massachusetts Avenue 5, and FARs for nearby neighborhoods range from 2 to 4.

2. Open Space Size

The Plaza's open space in proportion to the building footprints is high. It is approximately two-thirds of the total Plaza acreage. The Church is not aware of any other privately held, publicly accessible urban open space of its size in the City of Boston. Even with the addition of 950,000 square feet, the Plaza would still have the highest ratio of open space to building square footage in the City.

For example, 60 State Street has privately held publicly-accessible space. The Plaza's ratio of open space to building square footage is approximately 13 times the ratio at 60 State Street. With 950,000 square feet of new development added to the Plaza, the



1. Graphical description of the floor area ratio (FAR).

ratio would still be high—about 6 times that of 60 State Street.

3. Total Cost of Open Space

The cost of maintaining the Plaza open space is very high, not only because of its size, but also because of its unique features.

Since 1906, the Church has provided some form of park or garden for the enjoyment of its members and neighbors. It has borne the full cost associated with upkeep and repairs. It is estimated that the cost over the last century is in excess of \$60 million.

Over the last 40 years, the cost of operation has increased, in part because of the Reflecting Pool and Children's Fountain. Annual operating costs have grown to approximately \$2 million. This covers costs such as maintenance and repairs, cleaning, landscaping, security, utilities, and insurance.

In addition to maintenance, the Church requires significant funds for capital projects to repair and improve the Plaza:

- ◆ The Reflecting Pool.
- ◆ Groundwater levels.
- ◆ The Plaza hardscape surface (see Figure 4).
- ◆ The facades of the 1970s concrete buildings (see Figure 5).
- ◆ Landscaping and outdoor seating.

The capital costs associated with the open space are anticipated to be in excess of \$30 to \$40 million. Proceeds from the new development would be used for the upfront capital costs and ongoing operating costs of the Plaza open space. More detail about these improvements can be found in Chapter 4.



2. Working on the Reflecting Pool membrane.



3. Working on wood piles beneath the Church edifices.



4. Site paving in need of repair.



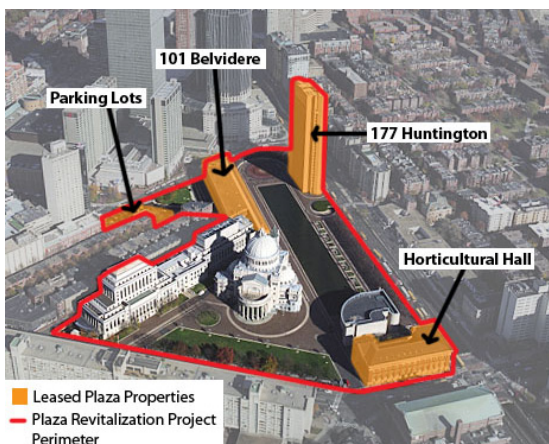
5. Example of deteriorating facades on the Plaza buildings.

4. Open Space Cost as Percentage of Building Square Footage

Not only is the cost to run the Plaza large in terms of total dollars, it is also large in terms of the square footage of development on the site.

Converting to the “cost per square foot of building space” is a way to compare the Church’s costs to the norm. This is an important concept because the open space is not leased and does not provide a revenue stream to support itself.

The cost for maintaining the open space is approximately \$2.60 per square foot on the Plaza. According to Leggat McCall Properties (the Church’s real estate consultant), based on discussions with representatives from leading property management firms in the city, the average cost of managing the open space associated with large-scale commercial properties in the City of Boston is 25 cents per square foot, with a range from a few cents up to 50 cents per square foot. The Church’s cost is approximately ten times more expensive than the norm. The proposed development would decrease these costs to approximately \$1.30 per square foot, lower than existing, but still significantly above the norm.



6. Leased Plaza properties.

To get the cost per building square foot to be similar to the norm, however, would require a significant infusion of new square footage, approximately three million square feet, but the Church believes that much development would alter the Plaza in an undesirable way. Instead, the Church prefers to maintain as much of the open space as feasible, limiting development to suitable locations, and increasing revenue to a level projected to allow the Church’s real estate to be self-supporting.

5. Real Estate Costs

According to the American Institute of Philanthropy, cost-effective charities spend approximately 25 percent of their budget on administration and overhead, which includes real estate. Donors want the highest percentage of their dollars used for the purpose of the nonprofit rather than its infrastructure.

The Church’s real estate costs represent a disproportionate amount of its total spending; the Church spends around 20 percent of its budget on real estate infrastructure alone. This cost is too high for the Church to continue to bear.

Site Analysis

Development Potential

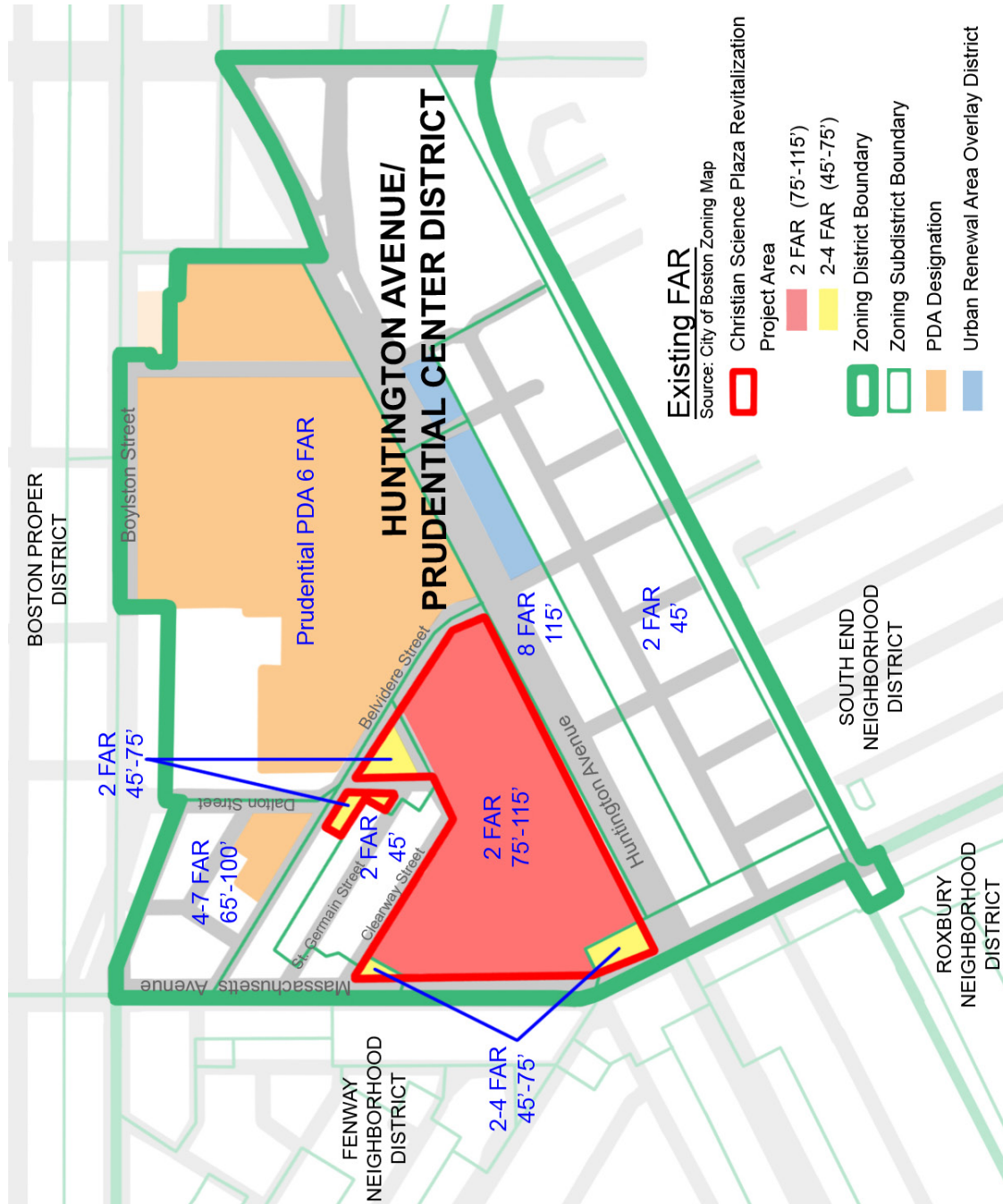
The existing density on the Plaza in relation to the surrounding area and the amount of open space per square foot of building space underscore that the Plaza can be considered underdeveloped.

A density analysis, in regard to the zoning of the Plaza, was conducted to determine the development potential of the Plaza.

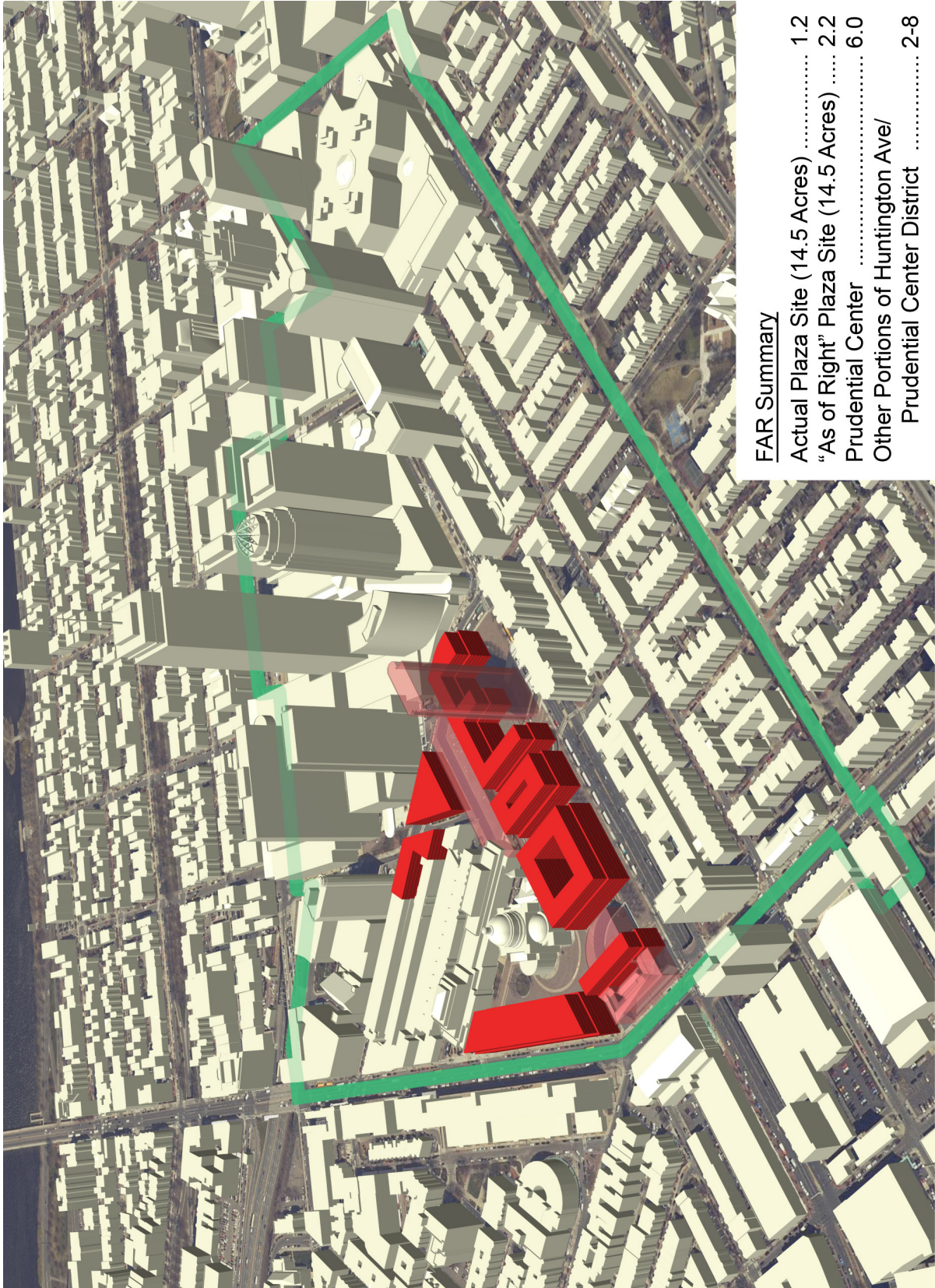
The first stage of the analysis determined the base amount of new space that could be created as-of-right. This stage of the analysis included two scenarios: one that was within the as-of-right FAR, and one that was not limited by the FAR. The first scenario included a build-out of structures across the Plaza at existing allowable heights (75 feet and 115 feet). This build-out would increase

density and have an urban nature similar to the surrounding neighborhoods. Overall, this scenario would create approximately 650,000 square feet of new space on the Plaza (see Figure 8).

The second scenario looked at potential build-out with 75-foot and 115-foot buildings, but without an FAR limit. This scenario



7. Plaza and surrounding area.



8. Current zoning as-of-right new build-out (shown in red) of the Plaza. For illustration purposes only.

results in approximately 1.15 million square feet of new development if all new buildings are 75 feet, or approximately 1.65 million square feet if the buildings are 115 feet. The FAR for each scenario is 3.04 and 3.84, respectively. These new dimensions would create similar or lower density than that in the surrounding area.

The above analyses provided the Church with a picture of the potential of the site within the limits of zoning, and what could be possible considering the characteristics of the surrounding area.

After consideration of noneconomic factors, it was concluded that more than one million square feet of development could negatively impact the Plaza by decreasing the amount of open space and impacting its historic significance. Therefore, it was concluded that 300,000 square feet more than what is allowed as-of-right, for a total of 950,000 square feet of development, would be an urban design solution that would meet the goals of the Church while still maintaining the character of the Plaza and the surrounding areas. This would result in a Plaza FAR of approximately 2.7.

The Plaza Revitalization Project addresses new development on the Plaza itself. The Midtown Hotel on Huntington Avenue is the only Church-owned property outside of the Plaza that is projected to have future development potential, but it is currently under a ground lease. Although it is not part of the Plaza Revitalization Project, its potential future redevelopment has been factored into the Church's financial projections for achieving self-supporting real estate.

Development Analysis

The above site analysis is based on development over the entire Plaza site. However, seeing that a key objective is to maintain open space, the Church found that future development would need to be concentrated on specific locations on the Plaza, and would need to be taller than what is currently allowed as-of-right.

To determine the potential locations for future development, nine areas (Sites) on the Plaza were identified (see Figure 9). As requested by the BRA planning staff, these Sites were analyzed to determine which locations were most suitable for development.

The number of Sites was narrowed based on respect for the historical context of the site and on the Church's goal of preserving as much open space as feasible. Three sites were eliminated from further consideration because of size, location, or existing amenities. **Sites 1 and 3** were eliminated because of their small size and limited development potential because of location. **Site 4** was eliminated in order to preserve the Children's



9. Development locations studied

OBJECTIVE 3: PLAN FOR UNDERUTILIZED REAL ESTATE

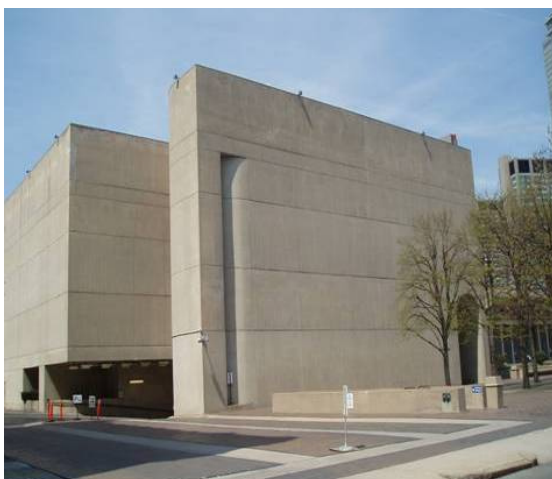


10. Site 2.

Fountain and the Reflecting Pool for both their aesthetic and social value.

The remaining Sites were presented to the BRA and CAC and analyzed by the Church and its consultants for their merits and deficiencies in regard to the Church's goals, objectives, and design criteria.

Site 2 (see Figure 10), the lawn area along Massachusetts Avenue, was studied as both a location for a new building, as well as a location for an underground parking garage. While the studies included various building alternatives, it was decided that this location was best retained as it currently exists. The lawn continues to be successful as a place for recreation and relaxation. The lawn provides a view toward The Mother Church Extension and serves as the primary entry to the Publishing House, the Church's headquarters building. The enhancement of the lawn would provide more benefit to the community and the Church than the development of a building at this location.



11. Site 5.

Site 5 (see Figure 11) is a small parcel of land along Huntington Avenue adjacent to the Sunday School Building (the Huntington Site). While this Site dictates a rather small building footprint, a number of alternatives were studied that included larger massing by building a portion of the structure over portions of the Sunday School. In response to comments made by the CAC, alternative boundaries for Site 5 that included portions of Site 6 were studied. However, upon further review, it was determined that the Site as originally studied was a good candidate for new development and could provide a positive urban design solution that activates a portion of Huntington Avenue.



12. Site 6.

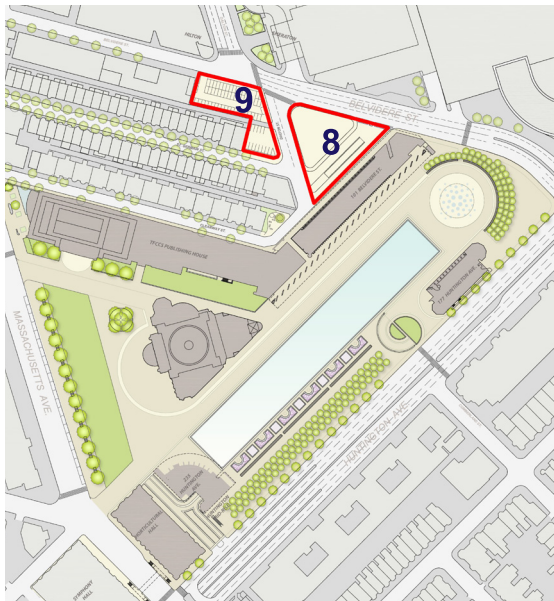
Site 6 (see Figure 12) was studied for the development of low-rise buildings in place

of the tree bosque. In addition, the CAC requested alternatives that used a portion of Site 6 combined with Site 5. However, after further study, it was determined that this Site would be financially undesirable for development and unattractive for retail purposes. Developing this location would result in a number of drawbacks, including blocked views of the Plaza and The Mother Church edifices, significant shadow impacts on the Plaza, an additional barrier to pedestrian circulation and access, and a compromise of the historic design of the Plaza. It was determined that this Site would be better suited as a tree bosque, or a blend between the existing tree bosque and new landscaping, providing welcoming entrances to the Plaza from Huntington Avenue.

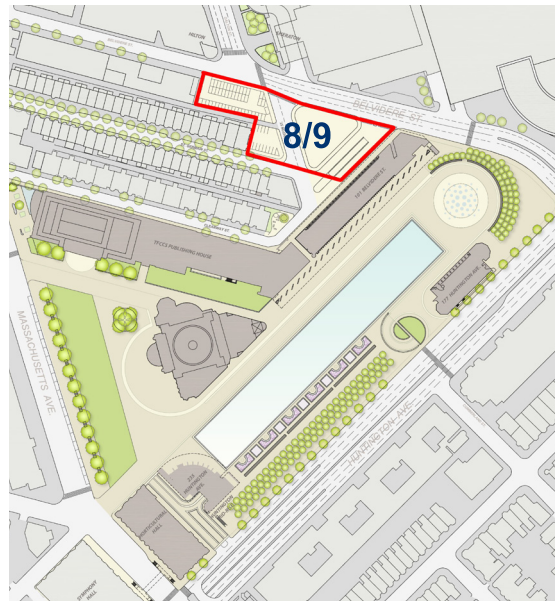
Site 7 is located at the corner of Huntington Avenue and Belvidere Street, and is an active pedestrian area between the Prudential Center, the South End, the Back Bay, and the

St. Botolph neighborhoods. A major new building is not viable at this location because of the proximity of the 177 Huntington Avenue building and the Children's Fountain. However, this location holds the potential to house a small retail structure that would cater to the users of the Children's Fountain and potential ice skating area. When this Site was discussed with the CAC, it was agreed that this location would not be a favorable location for major development.

Sites 8 and 9 (see Figure 13) were studied extensively because of their location away from the contiguous Plaza open space and the proximity to established hotel, retail, residential, and office density. Located on the rear side of 101 Belvidere Street and adjacent to the Prudential Center, these Sites are suitable for development, complementing existing uses and building massing. In addition, development on these sites will have minimal impacts on the Plaza, its open



13. Sites 8 and 9 as originally studied.



14. Sites 8 and 9 combined.

space, historic structures, and surrounding residential neighborhoods.

Building alternatives were initially studied on Sites 8 and 9 individually. Next, the two Sites were combined into one, creating the Belvidere/Dalton Site (see Figure 14). In an early combined Site scenario, consideration was given to Dalton Street south of Belvidere Street being relocated to run adjacent to the 101 Belvidere Street building. Additional alternatives considered a driveway in the location of the existing roadway between Sites 8 and 9.

Building alternatives in these early iterations generally created a streetwall along the entire combined Site along Belvidere Street. However, relocating a major six-foot sewer line under the existing Dalton Street would be problematic. In addition, there were concerns about the lack of open space in these alternatives and the overpowering massing of a combined building.

Recognizing the disadvantages of the larger proposed building on the Belvidere/Dalton Site, an additional alternative was studied. This alternative would continue to combine Sites 8 and 9, but would have new open space and an opening between the two buildings that would provide light and visibility for the neighborhood. The Site 8 portion would include a taller structure and a below-grade parking garage. Site 9 would include a mid-rise building, as well as a small parking garage below-grade. The combined Site would create an improved Belvidere Street/Dalton Street intersection. In addition, having two separated buildings would allow for a better transition between the Prudential Center and the adjacent neighborhoods.

Belvidere/Dalton Site (Site 8/9)

The Belvidere/Dalton Site consists of two parcels of land that can be connected through appropriate easements and/or arrangements with the City, creating one complete site and



15. Existing Belvidere/Dalton Site plan.



16. Proposed Belvidere/Dalton Site site plan showing footprints of two new buildings and new open space.

a new Belvidere Street/Dalton Street intersection (see Figures 15, 16, and 17).

The preferred building configuration on the Belvidere/Dalton Site includes two buildings—a high-rise of approximately 512 feet and a mid-rise of approximately 251 feet (heights measured according to the Boston Zoning Code). The proposed high-rise will be located on the existing triangle parcel and contain approximately 600,000 square feet. Together with the existing 111 Huntington Avenue, it will provide a step-down transition from the taller Prudential Building to lower buildings on the Plaza and adjacent neighborhoods.

The proposed mid-rise building will contain approximately 200,000 square feet and will be located on the existing parking lot adjacent to the existing Belvidere Street/Dalton Street

intersection. This building will continue the step-down in building height toward the surrounding neighborhoods.

Planned uses for the two buildings on the Belvidere/Dalton Site are residential and hotel, with ground-floor retail. Some limited office use is possible, depending on market demands.

Between the buildings will be a driveway that provides public access to the alleyway north of St. Germain Street, as well as a drop-off/pick-up area for the high-rise. Access to the parking garage and loading area for the high-rise will be located off the proposed extension of Clearway Street all the way to Belvidere Street. Access to the parking and loading area of the mid-rise building will be from Belvidere Street, west of the Belvidere Street/Dalton Street intersection. The



17. Proposed Belvidere/Dalton Site ground plan.

existing parking lot at the intersection of St. Germain and Clearway Streets will become an open space.

The portion of Dalton Street between Belvidere and St. Germain Streets would continue to be two-way. The plan is to make the Belvidere/Dalton intersection right turn only, both in and out. Left turns would be shifted to the intersection of Clearway and Belvidere Streets.

The benefits of the proposed development plan are related to urban design, transportation, parking, and historic resources.

Transportation

As described in Chapter 4, the intersection of Dalton Street and Belvidere Street (see Figure 18) can be confusing to motorists and challenging for pedestrians trying to cross the street. Driving west along Belvidere Street, there is no stop sign at Dalton Street, the road narrows, and it is unclear if one

should stop before continuing on Belvidere Street. Driving north on Clearway Street to Belvidere Street, there is no stop sign, and continuing along Dalton Street requires crossing Belvidere Street, which narrows at this point.

The Church will work with the Boston Transportation Department (BTD) during the design for the Belvidere/Dalton Site, which proposes a new alignment of the streets at the intersection. Street flow and clarity will be improved through the proposed changes by maintaining an equal distance between curb lines, and by a new curve on the southern side of the intersection that will lead traffic onto Dalton Street. New stop signs, street painting, and more turning lanes and through lanes will also improve vehicular and pedestrian circulation. The proposed new Clearway Street extension to Belvidere Street will be farther from the intersection, will be better placed for flowing traffic, and will eliminate the need for a three-way stop intersection.



18. Belvidere Street/Dalton Street intersection.



19. Parking lot on Belvidere Street.

Dalton Street between Belvidere Street and Clearway Street would remain a City-owned public street, and the surface treatment, proposed improvements, and maintenance issues will be reviewed and approved by the BRA, BTM, and the Public Improvement Commission. The proposed new Clearway Street extension to Belvidere Street will remain privately owned, but will be opened to the public upon approval by the BRA, BTM, and the Public Improvement Commission.

The construction of a below-grade parking garage at the Belvidere/Dalton Site offers the ability to connect the new garage under the high-rise building to the existing garage beneath the Plaza. A pedestrian connection between these two garages would offer greater flexibility for users.

The development of the Belvidere/Dalton Site will also improve the pedestrian experience. The Site is currently occupied by a surface parking lot and is in an area with little pedestrian activity. The redevelopment of the site will create a new open space that will provide a more aesthetically pleasing connection between St. Germain Street and the Prudential Center area. New lobbies and ground-floor entries at street level will also attract more pedestrians into this area and complement the adjacent existing retail.

Parking

The current 550-space parking garage below the Christian Science Plaza is insufficient for the new development. As part of the development of the Belvidere/Dalton Site, new parking garages will be constructed beneath the two new buildings. The size of the future development and the parking needs of new development will ultimately determine the size of the parking garages (i.e., the number

of spaces and the number of levels below grade). The Church will consult with BTM to determine the parking strategy for the new development.

Compared to other potential parking garage locations, such as the area along Massachusetts Avenue or an expansion of the existing Plaza garage, development of parking beneath the Belvidere/Dalton Site has the most advantages with the least impacts, and is the most economically feasible. Since the Belvidere/Dalton Site will be excavated to accommodate the new buildings, the addition of the parking garages would have little impact to the surrounding area and would be integrated with the construction schedule and methodology. Parking beneath each building would allow for tenants and visitors of the building to have convenient access from the parking garage.



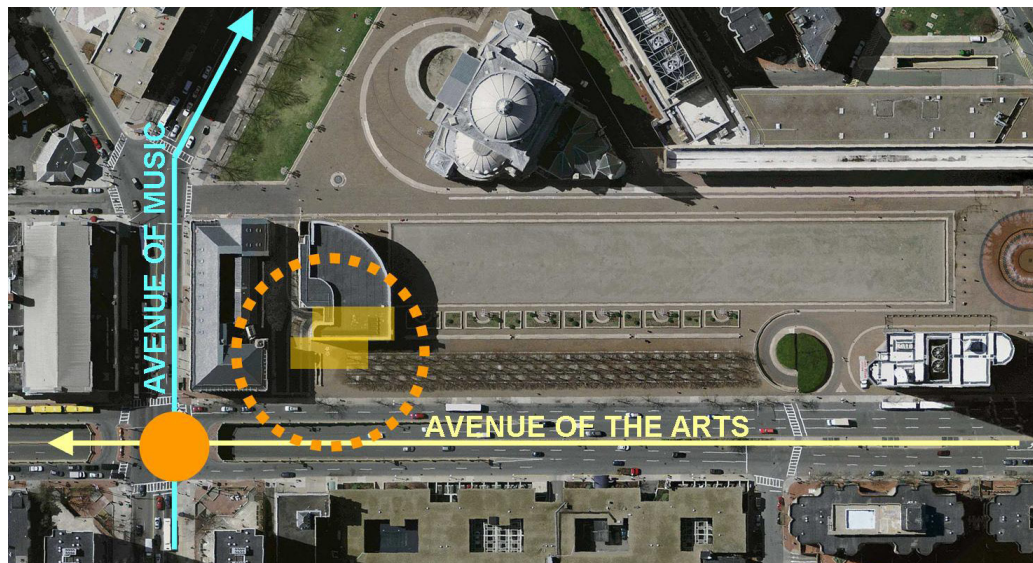
20. Residential buildings along St. Germain Street.

Historic Preservation

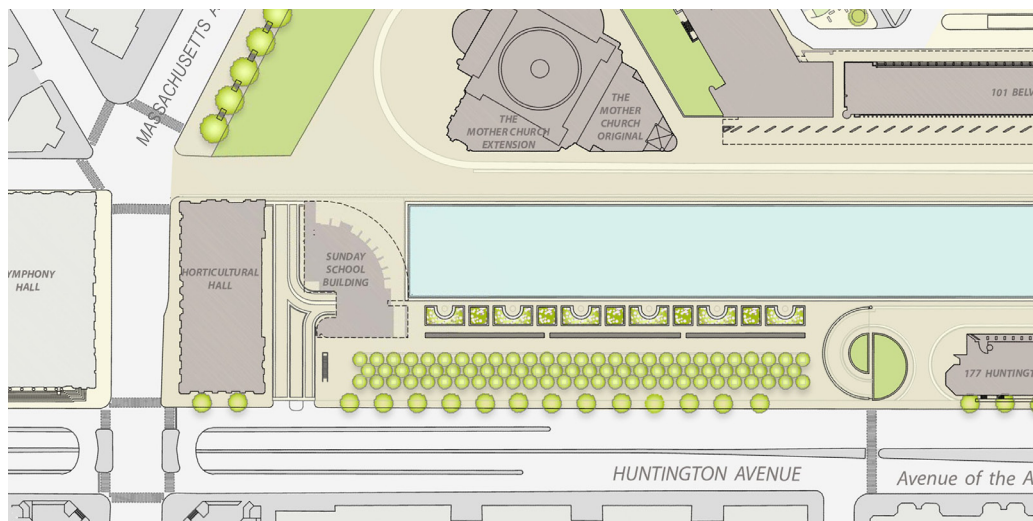
Minimizing impacts to the Plaza and its buildings is one of the design criteria of the Plaza Revitalization Project. The Belvidere/Dalton Site would allow for development of a building with minimal to no impact on the Plaza or its buildings, since development of this Site would place buildings at a distance from the Plaza and its buildings. In addition, it is important to respect the special environment of the adjacent residential St. Germain Street. A discussion of impacts to historic resources can be found in Chapter 7.

Huntington Site (Site 5)

The Huntington Site is adjacent to the Sunday School Building on Huntington Avenue (see Figure 21 and 22). The original analysis considered the Site between the Sunday School Building and the Huntington Avenue property line. Alternatives included constructing portions of the structure above the Sunday School, or between the Sunday School and Horticultural Hall. Subsequent analyses increased the size of the Huntington Site to include a small portion of the Huntington Avenue tree bosque. The increased size



21. The Huntington Site as the nexus of two prominent community connections.



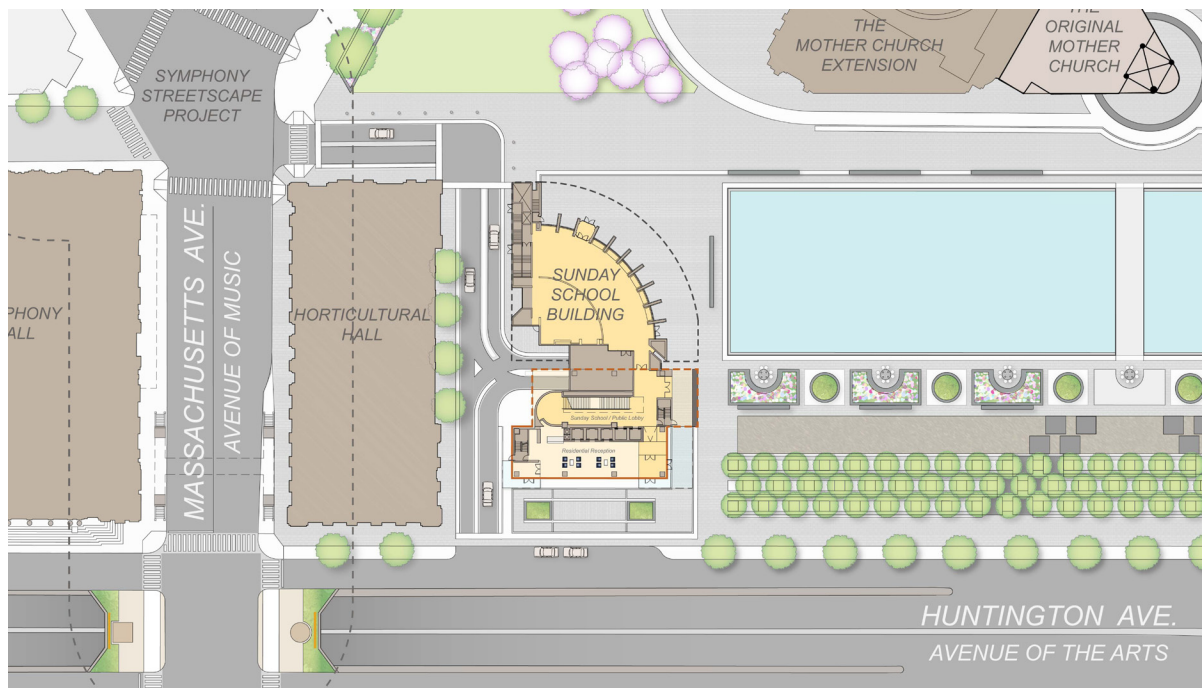
22. Existing Huntington Site plan.

would allow for a larger footprint, but would eliminate more of the tree bosque than would the other alternatives. The current plan (see Figure 23) reduces the building compared to what was originally studied and aligns the new construction with the facades of the Sunday School. A small portion of the massing would be constructed above the Sunday School, and a new lobby and entrance to the Sunday School would be integrated with the new building along Huntington Avenue. This alternative would best preserve the historic nature, original design, and vision of the Plaza.

The Huntington Site was chosen because of its size and location, suitable for residential uses that would activate the “pedestrian-dormant” corner of the Plaza with new life and activity. Together with the development on the Belvidere/Dalton Site, it helps meet design criteria by retaining most of the existing open space on the Plaza and all of the buildings, including the Sunday School

Building. The Huntington Site’s location at the intersection of Avenue of the Arts and Avenue of Music, adjacent to the Symphony Station on the MBTA Green Line, makes the Site appropriate for a number of uses, and ideal for its preferred residential use.

Compared to other Plaza locations, the Huntington Site showcases the natural evolution of the Plaza and allows for the development of a building with minimal impacts to the surrounding Plaza. As mentioned, alternative building massing schemes were studied, but most had drawbacks, such as poor access to the Plaza, adverse shadow impacts, and/or impacts to historic properties. The proposed building connects with, and includes, a portion of the Sunday School Building. This connection could potentially meet the accessibility needs of the Sunday School Building, without the need for major changes to the existing structure, as well as provide potential support areas, or a lobby, for future uses in the Sunday School Building.

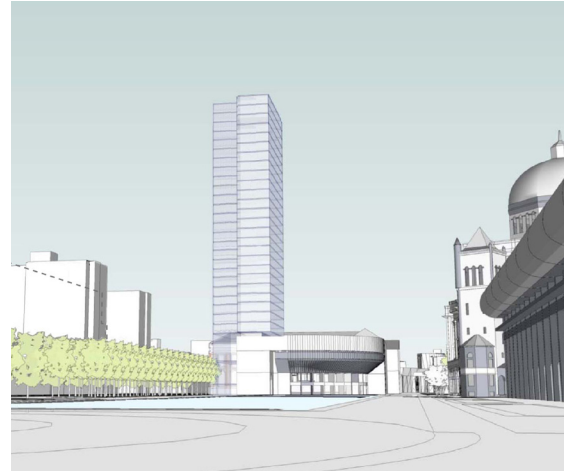


23. Proposed Huntington Site ground plan.

The proposed building (see Figures 24 and 25) will be a slender structure, approximately 291 feet tall (shorter than 177 Huntington Avenue) and will provide approximately 150,000 square feet of space. The slender form will be an integral part of the Plaza ensemble and will integrate with the Sunday School Building as a counterpoint, while maintaining the integrity of and preserving the arched welcoming passageway to the Plaza.

The new building would improve the view along Huntington Avenue and provide an animated street-level lobby adjacent to the existing blank wall of the Sunday School Building. The new building will serve as an architectural marker punctuating this corner of the Plaza. The building will mirror in height and massing the proportions of the 177 Huntington Avenue brise soleil zone. This will contribute to grounding the new building into the existing core and create a gateway from Huntington Avenue, where the neighborhood, its cultural identity, and the Church come together.

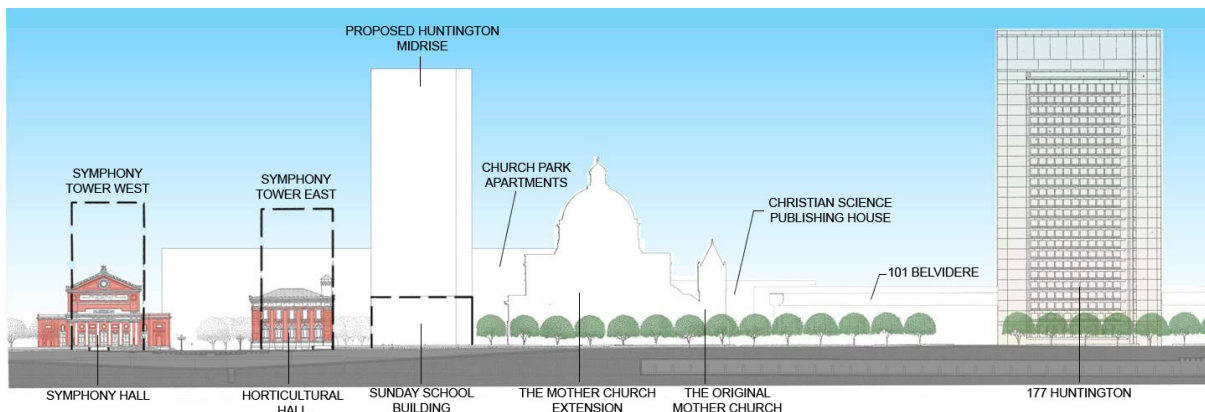
Parking for the new Huntington building will be accommodated in the Plaza's existing underground garage.



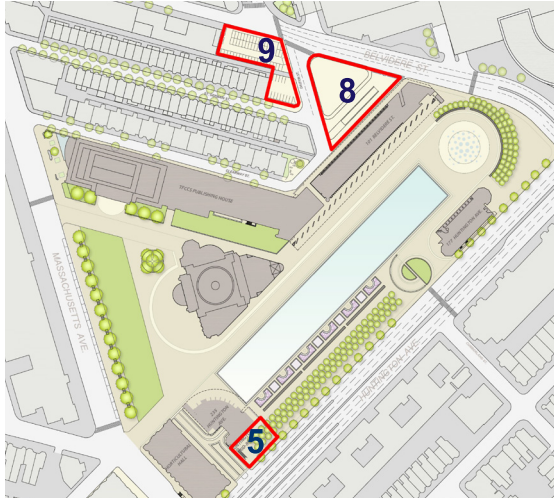
24. Rendering showing Huntington Site proposal from the Children's Fountain.



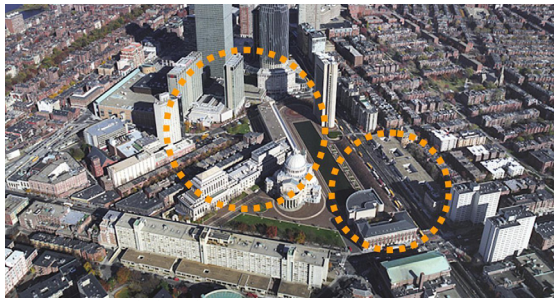
25. Rendering showing Huntington Site proposal with 177 Huntington Avenue in the foreground. (The design will be determined at a later date.)



26. Huntington Avenue elevation of the Plaza.



27. Proposed development sites.



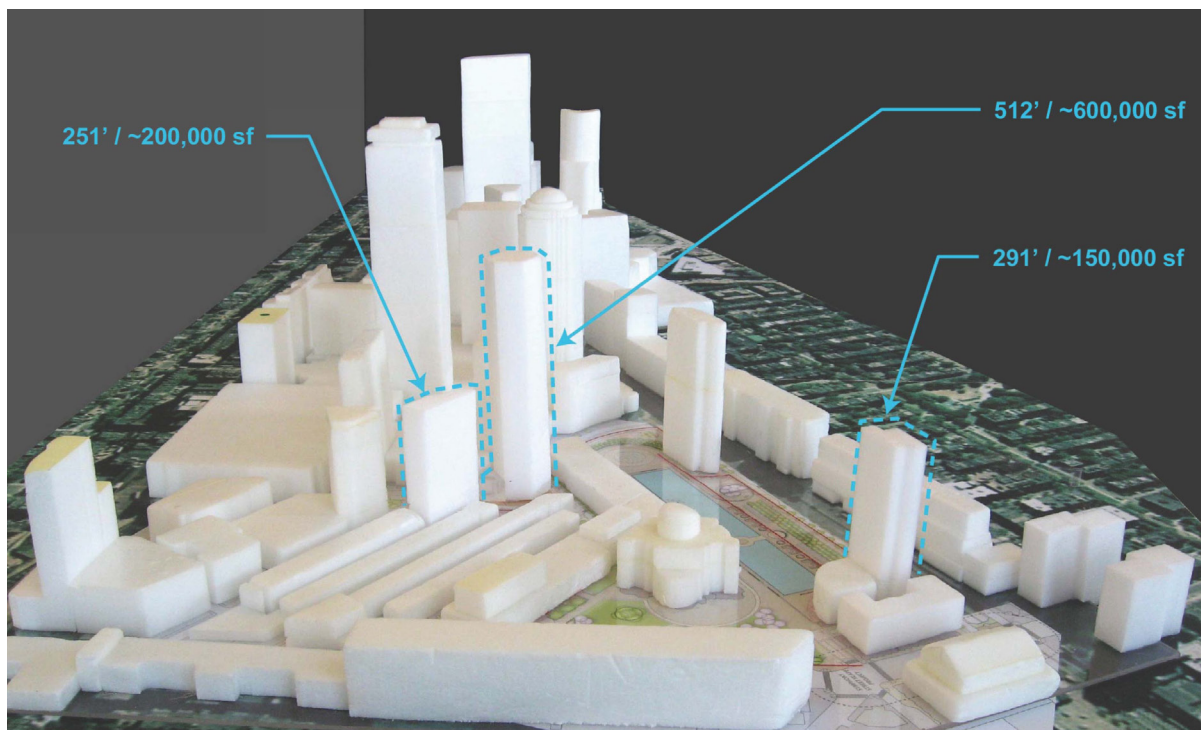
28. Proposed development sites.

The combination of the new development, Sunday School Building, and Horticultural Hall offers the opportunity for a complex with a number of potential uses, including arts and entertainment uses. Current plans will relocate Sunday School classes to the Church edifices in 2012 in order to keep the children and their parents within the same building. This will allow for the Sunday School Building to be repurposed.

Proposed Development Sites

In summary, in consultation with the CAC, it was determined that the most suitable locations on the Plaza for development were:

- ◆ the Huntington Site (Site 5) adjacent to the Sunday School Building, and
- ◆ the Belvidere/Dalton Site (Sites 8 and 9).



29. Model showing the proposed development.

ZONING HEIGHT & SQUARE FOOTAGE -----

* Massing Height is equal to Zoning Height plus ~20' of mechanical penthouse

Article 80 Large Project Review

The schemes described in this chapter show building footprints and describe massing, rather than final design possibilities. They are preliminary, and provide a vision of what is feasible at the development sites. After approval of zoning entitlements and selection of developer partners, the proposed development will undergo Article 80 Large Project Review and design review as required by the Boston Zoning Code.

Public Benefits

The proposed developments on the Belvidere/Dalton and Huntington Sites will create a number of benefits to the City. These benefits include:

- ◆ New vitality to the area.
- ◆ New retail spaces and increased street-level activity.
- ◆ New construction and permanent jobs.
- ◆ New affordable housing units that comply with Mayor Menino's Executive Order.
- ◆ Integrated improvements with the Symphony Streetscape upgrades.
- ◆ Increased tax revenues for the City.
- ◆ Statutory linkage from possible office or hotel use.
- ◆ An enhanced year-round experience for the public on the Plaza.

CHAPTER 7

HISTORIC RESOURCES



Over the years, the Church has diligently maintained, protected, and preserved the seven buildings located on the Christian Science Plaza (see Figure 1). Each of the buildings contributes in its own way to the historic and architectural significance of the site. Going forward, there are no plans to demolish any of the existing buildings. Any new construction would be executed in a manner that would be respectful of the existing buildings while reflecting contemporary designs to illustrate the continual architectural evolution of the site.

From its beginning, the Church has been a part of and evolved with its surrounding neighborhoods.

■ *The Original Mother Church*

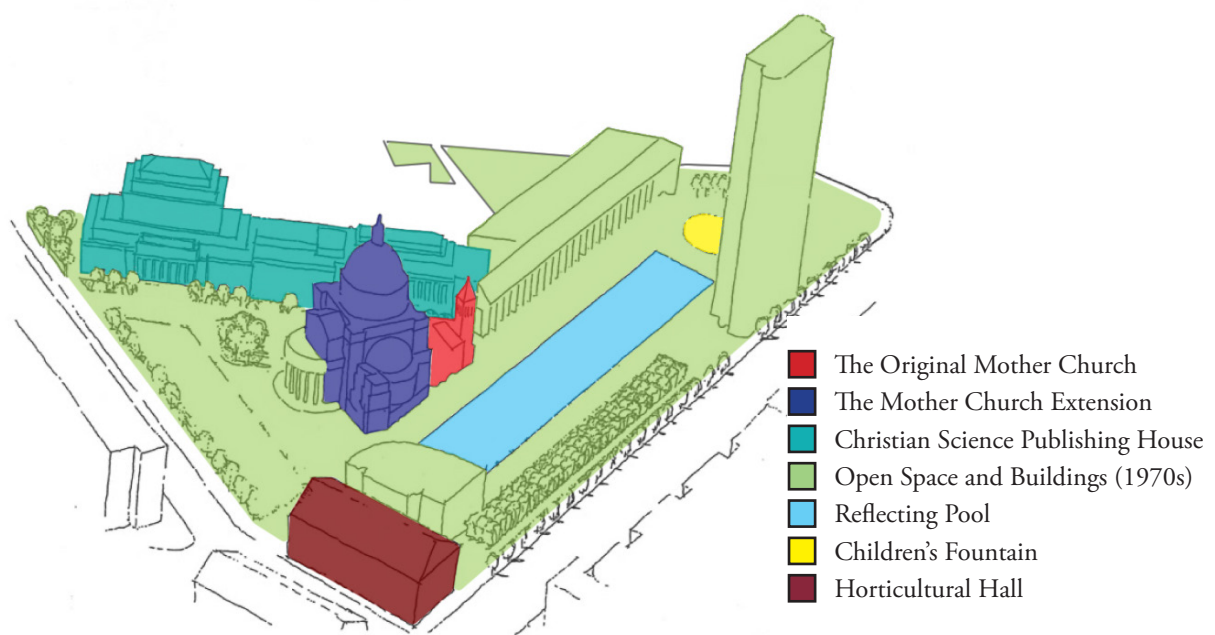
Constructed in 1894, the **Original Mother Church** was designed by architect Franklin I. Welch of Malden, MA. Built in only 13 months, the Original Mother Church was constructed in the Romanesque Revival style.

At the time of construction, the site of the Original Mother Church was an undeveloped parcel at the intersection of Norway (then Caledonia) and Falmouth Streets.

Welch's original recommended building material was brick; however, the Church Directors ultimately opted for New Hampshire granite in recognition of Mary Baker Eddy's birth state.

The Original Mother Church features a five-story, square apex tower. The base of the tower is connected to the remainder of the church with three bay entry arcades detailed with polished granite columns with foliage capitals. The Original Mother Church is further detailed with stained-glass rose windows and figured stained-glass auditorium windows, illustrating scenes from the life of Christ Jesus.

The organ, which has 2,825 pipes, was rebuilt in 1950 by the Aeolian-Skinner Organ Company to replace the original organ.



1. The Christian Science Plaza key.

■ *The Mother Church Extension*

Although the Original Mother Church could accommodate nearly 1,000 churchgoers, services were so well attended that in August 1901 Church Directors approved plans to purchase abutting properties for the purpose of an expansion. By April 1903, the Church had acquired the entire block enclosed by Falmouth, Norway, and St. Paul Streets, and site preparations began for the construction of **The Mother Church Extension** (see Figure 2). Completed in 1906, The Mother Church Extension was designed by noted Boston architect Charles Brigham. The outside of the building is Italian Renaissance to match the architecture in Boston at that time. The dome is in the Byzantine style. The building was constructed primarily of Indiana limestone, with some New Hampshire granite incorporated into the elevations. The Extension features arched windows trimmed in engaged Ionic columns with paired arched and columned openings forming an arcade at the base of the dome. The exterior is further detailed with two-story engaged Corinthian columns and pilasters at the second and third stories. The Extension seats approximately 3,000 people.

The organ, built by the Aeolian-Skinner Company of Boston, is one of the largest in the world: it covers eight divisions and has a total of 13,295 pipes ranging from one half inch high to 32 feet high (see Figure 3).

In 1975, a Neo-Classical semi-circular portico consisting of ten 42-foot-tall monumental columns was added to the Extension to provide an inviting entrance to the Church on the Massachusetts Avenue side of the Plaza. It was designed by I.M. Pei and Partners and Araldo A. Cossutta, Associated Architects.



2. The Mother Church Extension completed in 1906.



3. The organ by Aeolian-Skinner Company.

■ *Christian Science Publishing House*

The **Christian Science Publishing House** (see Figure 4) of 1934 was designed by Boston architect Chester Lindsay Churchill in the Neo-Classical style. Constructed of limestone, the Publishing House is a 42-bay-wide structure with a 19-bay main core featuring a slightly projecting seven-bay, double-story, columned portico. A double architrave is inscribed “*Founded by Mary Baker Eddy, The Christian Science Publishing Society.*” The building features elongated second-floor windows, double-story piers and pilasters, and ornamental metal spandrels between the second- and third-floor windows.

Originally, the 239,000-square-foot Publishing House accommodated all of the Church’s publishing-related activities, including large printing presses, bindery equipment, production space, and offices.

In 2002, renovations were completed on the lower floors of the Publishing House to house The Mary Baker Eddy Library. The new design by Ann Beha Architects features a 1,000-square-foot entrance lobby facing Massachusetts Avenue. Beha’s design carefully preserved many of the beautiful and historic elements of the building, including original mosaic floor tiles and wood paneling.

The Library provides public access and context to original materials and educational experiences about Mary Baker Eddy, her life, ideas, and achievements, including her Church. The Library promotes exploration and scholarship through its collections, exhibits, and programs.

Outside the entrance is a garden, complete with a water wall, shallow pool, trees, and seating areas. A portion of a 12-foot-high wall was removed to create an inviting



4. The Christian Science Publishing House, home to *The Christian Science Monitor*, completed in 1934.



5. The garden wall before the renovation in 2002.



6. The garden and new Massachusetts Avenue entrance after the renovation in 2002.



7. The Mapparium[®] as completed in 1935.

Library entrance and open this garden for public enjoyment.

Inside the main floor of the Library is the world famous Mapparium®. The Mapparium® is a three-story, stained-glass globe, where visitors can stand on a glass bridge and view the world as it was in 1935 from the inside out (see Figure 7).

In 2006, the Church announced that it would relocate its headquarters to the Publishing House where the newsroom of *The Christian Science Monitor* already resided. The relocation, uniting the Church's administrative offices and all the functions of the Christian Science Publishing Society under one roof, was completed in the spring of 2008 following renovation of the building.

■ ***Christian Science Plaza and Buildings***
(see Figure 9)

The eastern end of the Publishing House is connected to the **Colonnade Building** (currently known as 101 Belvidere Street). The

101 Belvidere Street building, together with the **Administration Building** (currently known as 177 Huntington Avenue) and the **Sunday School Building** represent the three buildings constructed on the site in the early 1970s on the newly created Christian Science Plaza. Led by the design partnership of architects I.M. Pei & Partners and Araldo A. Cossutta, Associated Architects, the new Plaza and its associated buildings and features dramatically transformed the site. The innovative use of concrete in the construction and design of these buildings, together with the development of the **Reflecting Pool** and **Children's Fountain**, are considered by many to be the most monumental and significant collection of mid-20th century modern architecture in the City of Boston.

The five-story 101 Belvidere Street building measures 525 feet in length and features recessed window openings and flat, solid concrete columns strategically angled to block summer sunlight while allowing the sun's rays during the winter months. Constructed parallel to the Reflecting Pool, 101 Belvidere



8. A view of the Church buildings and park prior to the creation of the Plaza in 1970.

Street is a concrete building which extends north to Belvidere Street, the northern limits of the Plaza.

Located across the Plaza from 101 Belvidere Street, opposite the Reflecting Pool, is the 26-story 177 Huntington Avenue building. The strong vertical nature of 177 Huntington Avenue provides a balance to the domed Extension and defines the northeast limits of the Plaza. The concrete building features a dramatic grid of recessed window openings on its east and west elevations.

101 Belvidere Street and 177 Huntington Avenue are currently leased by the Church to third-party office tenants.

Located at the southern end of the Reflecting Pool, the Sunday School Building was designed to direct one's view toward the Church edifices. The curved elevation of the building faces the Plaza and features recessed window openings and a columned ground level arcade. The Huntington Avenue elevation of the building is a blank wall with no

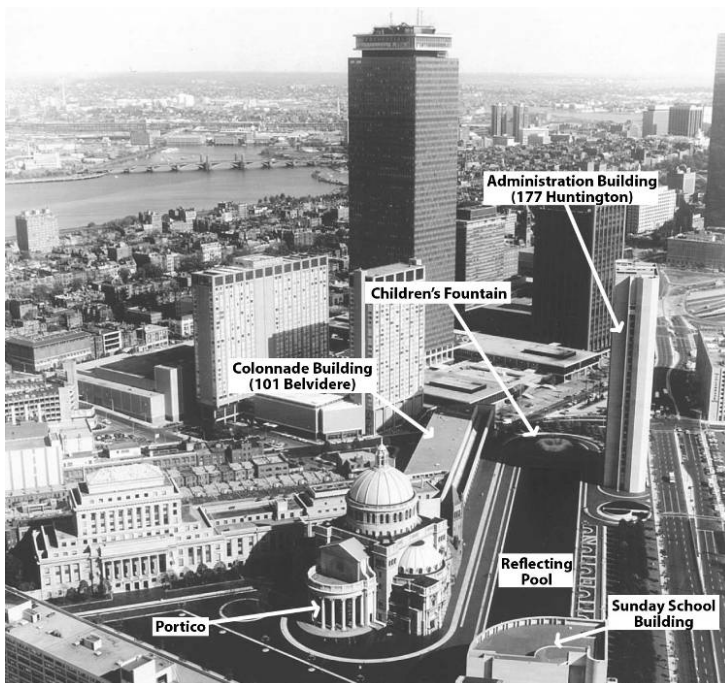
windows. The only opening on the elevation is a simple arch passageway providing access to the Plaza. The three-story building houses Sunday School classrooms and provides pedestrian access and egress to a parking garage below the Reflecting Pool.

Other elements created in the 1970s include the Reflecting Pool, Children's Fountain, and underground parking garage.

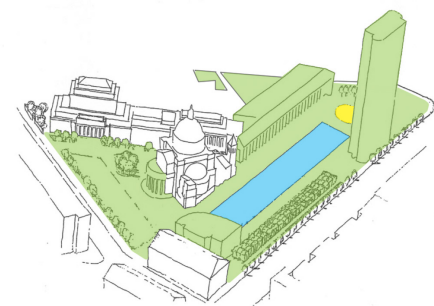
■ Measuring 98 feet by 686 feet, the rectangular Reflecting Pool is approximately 26 inches in depth.

■ The Children's Fountain, located at the northern end of the Reflecting Pool, is 80 feet in diameter and sprays water as high as 40 feet into the air.

The Fountain was redesigned and rebuilt in 2001, making it a safer play environment for the thousands of children (and adults) who enjoy splashing in it each year. A new fiber-optic lighting system was put in place, bringing color



9. A view of the Plaza after the creation of the Plaza in the 1970s.



Creation of the Christian Science Plaza in 1970s

- Open Space and Buildings
- Reflecting Pool
- Children's Fountain



10. The Children's Fountain in the 1970s before it was redesigned to be more kid-friendly.



11. The Children's Fountain as seen today.



12. Children playing in the Children's Fountain.



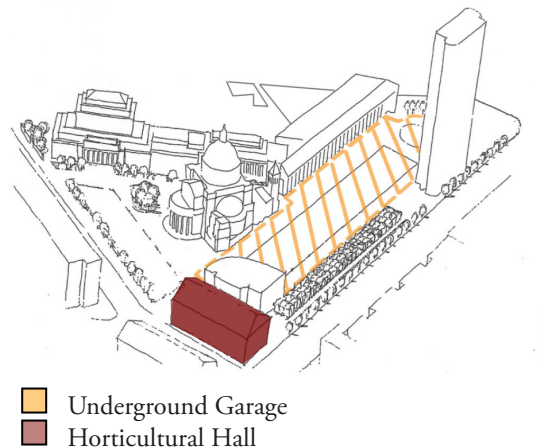
13. Horticultural Hall.

and beauty to the streams of water. In addition, wind sensors were installed to control the height of the water display.

- The 550-space below-grade parking garage, used for the Church's members, employees, and visitors, is located below the Plaza. It is also made available for events at Symphony Hall.

■ *Horticultural Hall*

Acquired by the Church in 1992, **Horticultural Hall** (see Figure 13) is located directly south of the Sunday School at the northwest corner of the intersection of Massachusetts and Huntington Avenues. Constructed in 1901, the Classical Revival-style building was designed by the noted Boston architecture firm of Wheelwright and Haven. The building was constructed to house exhibition space, lecture halls, meeting rooms, and offices for the Massachusetts Horticultural Society. Its Massachusetts Avenue façade is 13 bays wide and features brick pilasters with cast stone Ionic capitals set between the bays. The raised first floor features arched topped windows recessed between the pilasters. Second-floor windows feature decorative iron balcony grills. Entries are located in the three middle bays and feature cast stone pediments and surrounds



set beneath boldly relieved fruit and drapery wreathed rondels. Over the central entries, at the frieze level, is a marble plaque which reads “*Massachusetts Horticultural Society*” in bronze lettering. Horticultural Hall was individually listed in the National Register of Historic Places on May 30, 1975.

Potential Impacts to Historic Resources

As discussed in Chapter 3: Purpose, Objectives, and Design Criteria and in Chapter 6: Plan for Underutilized Real Estate, respecting and preserving the site’s significant historic and architectural resources is an important goal of the Plaza Revitalization Project. No demolition of any of the existing buildings on the site is being considered. The siting of the proposed new development has been carefully selected in order to minimize impacts to the historic resources on the site and in the area, including the adjacent residential buildings on St. Germain Street.

New development on the Belvidere/Dalton site would include two new buildings northwest of the Plaza and behind 101 Belvidere Street. As discussed in the Shadow section in Chapter 8, shadow impacts associated with new development envisioned on the Belvidere/Dalton site would be cast to the west, north, and east with minimal to no impact to the historic resources on the site or in the area. While the development will be taller than any existing building on the site, it will serve as a transition from the taller Prudential Center buildings to the shorter buildings on the Plaza and the adjacent neighborhoods.

The Huntington Avenue site is located adjacent to the Sunday School Building and near Horticultural Hall. As discussed in

Chapter 6, various siting and massing options were considered for the development on the Huntington Avenue site. As envisioned, the proposed development on the Huntington Avenue site will be connected to the Sunday School Building along its Huntington Avenue elevation, thereby providing a more welcoming and finished treatment to the otherwise blank elevation.

The new construction would rise above and extend over the smaller non-curved portion of the Sunday School Building. It would appear to “float” above in a manner that sensitively preserves the full identity of the original Sunday School Building with its familiar curved form. Also, the Sunday School Building’s distinctive arched passageway on the Huntington Avenue facade would be preserved.

The new slender addition would complement 177 Huntington Avenue, but would be shorter in height at approximately 291 feet tall. It is envisioned to be a contemporary building providing a sensitive contrast with the concrete Sunday School Building and the neighboring brick Horticultural Hall.

As discussed in the Shadow section in Chapter 8, there would be some shadow impacts to historic resources as a result of the new development envisioned for the Huntington Avenue site. Specifically, during the morning hours of the spring and fall months, these impacts would generally be limited to the rooftop of the Sunday School Building and the Plaza between Massachusetts Avenue and the Original Mother Church and The Mother Church Extension; whereas during the mid-day hours of the spring and fall months, there would be some impacts to the south elevation of the Original Mother Church and The Mother Church Extension.

In the summer months, morning impacts would be limited to the roofs of the Sunday School Building and Horticultural Hall, but not the primary facades of these buildings. During the mid-day hours in the summer months, shadows would be at their shortest in length and would be limited to the roof of the Sunday School Building and a very small portion of the southern end of the Reflecting Pool.

In the morning hours during the winter months, impacts would generally be limited to the Plaza, the Original Mother Church and The Mother Church Extension, and the southern end of the Reflecting Pool; whereas during afternoon hours in the winter, impacts would extend to a portion of the side of 177 Huntington Avenue.

In summary, there would be shadow impacts to historic resources as a result of the new development envisioned for the Huntington Avenue site; however, the slender form of the new building would minimize these impacts. None of the shadow impacts would be significant enough to adversely impact the character-defining features of the historic resources on the Plaza or those in nearby neighborhoods. Chapter 8 includes a series of diagrams that document shadow impacts.

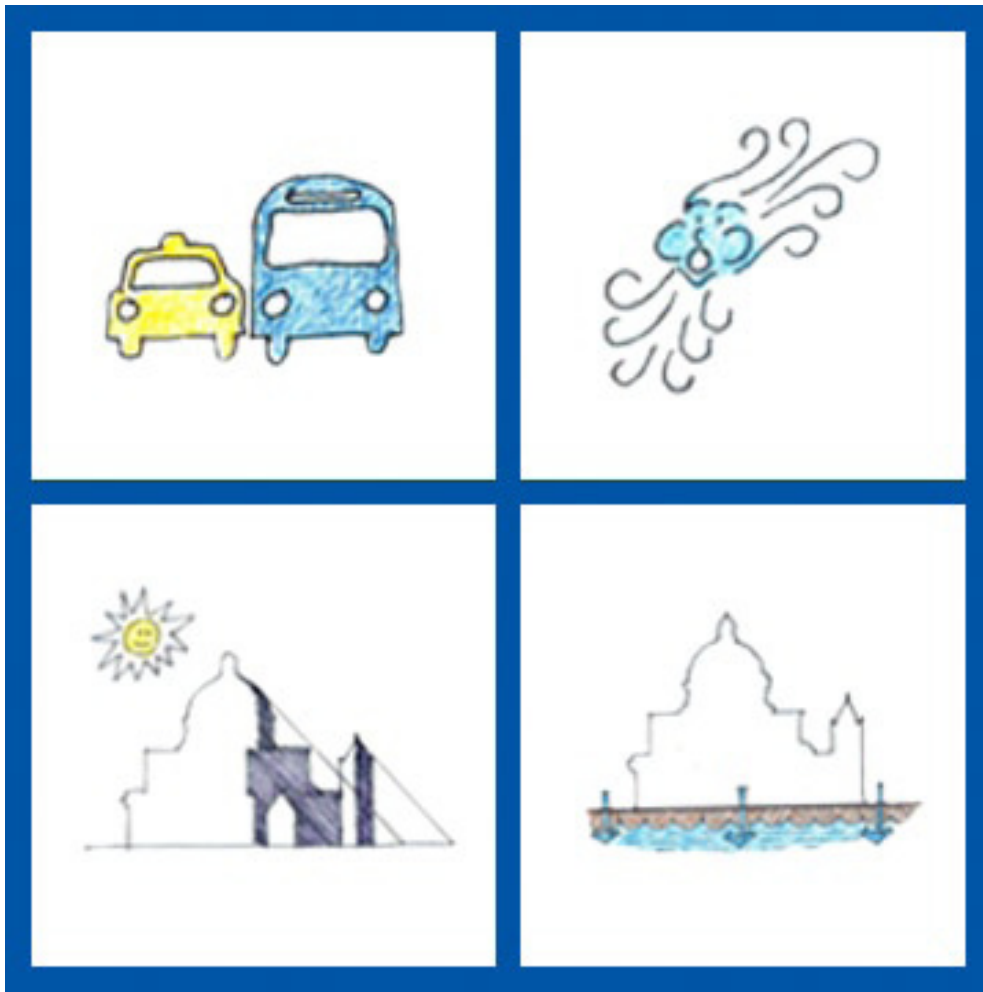
Church representatives have apprised staff of the Boston Landmarks Commission (BLC) of the development scenarios being considered for the Plaza Revitalization Project. While there would be shadow impacts to historic resources as a result of the development envisioned, these impacts are not anticipated to be adverse. None of the envisioned development scenarios would include demolition of any of the existing buildings.

As discussed in greater detail in Chapter 9, since January 2007 Church representatives have consulted with the BLC regarding the potential Landmark designation of the Christian Science Plaza. Church representatives have provided research materials to BLC staff and its consultant team in their development of a Boston Landmarks Study Report for the Christian Science Plaza.

Church representatives look forward to continuing to work with the BLC staff as the development scenarios considered as part of the Plaza Revitalization Project move forward.

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ENVIRONMENTAL STUDIES



Introduction

This section provides a discussion of some of the overall issues associated with revitalizing the Plaza and constructing new buildings. Potential solutions to some of the issues are also discussed; however, specific solutions are contingent upon final designs. The completed traffic and environmental studies will be refined during the Article 80 process.

Transportation

Overview

To assess the transportation impacts associated with the proposed development plan, a transportation impact analysis was conducted. The analysis examined vehicle traffic, parking conditions, public transportation services, and pedestrian and bicycle activity in the area surrounding the Plaza based on a scope developed in coordination with the Boston Transportation Department (BTD). A discussion of the study methodology, as well as existing conditions (year 2009) and expected future conditions (year 2019) both with and without the proposed development are included as part of this Transportation section.

Evaluation of transportation impacts associated with the proposed development plan is based upon an understanding of the existing transportation system in the project study area. The evaluation of existing transportation conditions in the study area includes roadway geometry, traffic controls, daily and peak-hour traffic volumes, traffic safety data, and pedestrian, bicycle, and public transportation information which have all been undertaken as part of the traffic analysis effort.

How people travel to and from the site, as well as pedestrian circulation within the site, is an important aspect of the overall revitalization of the Plaza and development program. Throughout the planning process, access to the site by transit, pedestrians, bicycles, and vehicles has been a planning criterion influencing the ultimate proposed land-uses of predominantly residential and hotel uses, with a smaller portion of office uses, which typically generates more peak-hour vehicle trips. Additionally, the development program minimizes the demand for increased parking.

Key Findings

- ◆ The proposed development plan has minimal transportation impacts on nearby intersections because of the proposed predominance of residential and hotel land uses, combined with the proposed roadway improvements.
- ◆ The proposed development has a minimal net increase in parking needs because of the existing on-site parking supply and residential and hotel land-use development program.
- ◆ The area currently has a high use of transit, bicycling, and walking versus drive-alone commuting which will be encouraged as part of the development program.

Methodology

The transportation analysis provides an evaluation of anticipated impacts of the Plaza Revitalization Project on the transportation environment. This analysis was conducted in three phases. The first phase (Evaluation of Existing Conditions) involved defining and quantifying the existing transportation

conditions in the project study area including transit services, pedestrian and bicycle accommodations, roadway and intersection geometrics, and traffic characteristics for the surrounding transportation infrastructure.

In the second stage of the study (Evaluation of Long-Term Transportation Impacts), transportation conditions were projected for future No-Build Conditions (i.e., without the proposed development) and Build Conditions (i.e., with the proposed development). Roadway, pedestrian, and transit capacity were evaluated; and intersection capacity analyses were conducted and summarized for the Existing, No-Build Conditions, and Build Conditions. Specific travel demand forecasts for the proposed development were assessed along with future transportation demands because of background traffic growth, and growth from other planned or approved projects. As directed by BTM, a ten-year time horizon was used to analyze the development, from year 2009 to year 2019 with a growth rate of 0.5 percent per year.

The number of trips generated by the proposed development was estimated using the Institute of Transportation Engineers (ITE) Manual. The first and second phases utilized SYNCHRO v.6.0 software to analyze year 2009 Existing Condition as well as year 2019 No-Build and Build Conditions.

The final phase of the study identified measures to address pedestrian, traffic, and public transportation impacts related to the development plan, as well as improve existing and future transportation. The transportation analysis was conducted in accordance with BTM methodology.

Existing Site Access

Current access to the site is provided via two driveways: one off Huntington Avenue and a second driveway off Massachusetts Avenue. Both driveways lead to the existing underground 550-space parking garage below the Reflecting Pool. The Huntington Avenue driveway is being used by approximately 40 percent of entering vehicles, mainly traffic from I-90, Downtown, Chinatown, and Back Bay, and local traffic. The remaining 60 percent use the driveway off of Massachusetts Avenue, with 20 percent coming from the north (Memorial Drive, Somerville, Cambridge, Storrow Drive East and West, I-93, Route 1, Route 1A, and local Boylston Street traffic) and 40 percent coming from the south (Huntington Avenue local traffic, I-93 North and South, Massachusetts Avenue local traffic).

When leaving the site, 43 percent of existing vehicles use the Massachusetts Avenue driveway to travel north and the remaining 57 percent of vehicles utilize the driveway on Huntington Avenue for points east and south. There is a third driveway available for site egress also off Huntington Avenue which is currently used during events when many cars are exiting the garage at the same time.

Transit Access

As shown in Figure 1, the Plaza is well served by Massachusetts Bay Transportation Authority (MBTA) services. MBTA transit services in the vicinity of the Plaza include multiple bus lines, the Green and Orange Lines, and four commuter rail lines. Five bus routes are available in the vicinity of the Plaza giving access to/from Somerville, Cambridge, Waltham, Hyde Park, and Watertown. The Plaza is centrally located

between the E Green Line and Orange Line to the south and southeast, and the B, C, and D Green Lines to the north. Four commuter rail lines are accessible in the vicinity of the Plaza. The Providence/Stoughton line, the Franklin/Forge Park line, and the Needham Heights line are accessible from Ruggles Station, just over a half-mile away from the site. In addition, Back Bay Station is located less than a mile away from the Plaza and provides access to the previously listed lines in addition to the Worcester/Framingham line.

The project area is well served by multiple bus, rapid transit, and commuter rail services, and the increase in peak-hour transit generated by the project is not anticipated to significantly impact the area's transit capacity.

Pedestrian/Bicycle Access

Pedestrian circulation occurs through the Plaza and on the sidewalks of streets around it, where there is a steady flow of pedestrians throughout the day. Heavily used pedestrian routes are ones that lead to/from train stations. The area is well served by a sidewalk network that connects it with the rest of the city. Pedestrian facilities in the study area include sidewalks that vary in width, crosswalks at major intersections, and accessible access ramps. A key improvement to pedestrian circulation on the Plaza is being addressed as part of the Revitalization Project's urban design and landscaping plan which creates a pedestrian pathway across the center of the Reflecting Pool (see Chapter 4 for more information). Improvements to crosswalks on Massachusetts Avenue near the Plaza are being undertaken by the City of Boston as part of the Symphony Streetscape Improvement Project.

The Southwest Corridor Park is a 4.7 mile linear park stretching from the Back Bay to

Forest Hills, which provides a roadway separated bicycle and walking path for its length. The corridor is approximately two blocks from the Plaza. In addition, the City is working to provide bicycle lanes on Massachusetts Avenue and bicycle accommodations on a network of city streets to make Boston a more bike-friendly environment. The Plaza has several bicycle rack locations, as well as bicycle racks in the existing garage. Enhancing bicycle accommodations is an element of the Revitalization Project, as well as a consideration in the design of the new buildings.

Curb Use

Information regarding curb use within a one-quarter mile walk of the Plaza was collected and is graphically shown in Figure 2. As noted in Chapter 3, layover bus parking along the Huntington Avenue curb has detrimental effects on pedestrian access to the Plaza, as well as adverse impacts on the pedestrian and Plaza user experience.

Study Area Intersections

As shown in Figure 3, the study area is located in the Back Bay, Prudential, South End/St. Botolph, and Fenway neighborhoods. It is generally outlined by Huntington Avenue to the east, Massachusetts Avenue to the south and west, and Belvidere Street and Clearway Street to the north and includes the following key intersections:

Signalized Intersections:

- ◆ Massachusetts Avenue at Huntington Avenue
- ◆ Massachusetts Avenue at Westland Avenue/St. Stephen Street
- ◆ Massachusetts Avenue at Belvidere Street

- ◆ Massachusetts Avenue at Boylston Street
- ◆ Huntington Avenue at Belvidere Street/W Newton Street
- ◆ Huntington Avenue at Cumberland Street

Un-signalized Intersection:

- ◆ Belvidere Street at Dalton Street

Trip Generation

The amount of new activity on the Plaza is reflective of the amount and types of land-uses in the development program. The project is planned to be comprised of approximately 950,000 square feet of new development composed of a mix of residential, hotel, and office uses. For purposes of the transportation analysis, 150,000 square feet of residential development was assumed for the Huntington Avenue mid-rise, 400,000 square feet of residential development and 200,000 square feet of office development in the Belvidere/Dalton high-rise, and 200,000 square feet of hotel development in the Belvidere/Dalton mid-rise. Currently, there are 72 existing surface parking spaces located on the future Belvidere/Dalton mid-rise parcel.

Within those land-uses, there is a range of activity that could be generated based on the size of the residential units and size of the hotel units reflective of the type of residential and hotel buildings developed. To conduct a conservative transportation impact analysis, the top of the range of potential activity generated by each of these land-use types was used in this analysis. The number of trips generated by the proposed development was estimated using the ITE Manual rates for each land-use type as is standard engineering practice and required by BTd.

The number of person trips estimated to be generated by the proposed development is then proportioned by the mode shares that are the percentage of persons who come to the Plaza by automobile, transit, walking, and cycling. These percentages reflect how people currently travel to this area of the Back Bay. The mode share percentages are shown in Figure 4 and were developed by BTd.

Based on the portion of mode share use shown in Figure 4, the number of vehicle, transit, and pedestrian/bicycle trips to the site was estimated for the morning peak hour, evening peak hour, and daily conditions.

Parking Supply and Demand Estimates

For the transportation analysis, based on the existing and future parking supply on the site, the vehicle trips associated with the proposed development have been distributed to garage entry and exit ramps. Figure 5 shows the addition of two new garage entry and exit ramps associated with the Belvidere/Dalton high-rise and mid-rise buildings. The overall parking demand for existing and new buildings is in the range of 800 to 950 parking spaces. This reflects BTd's low end and high end of parking space provision. The Plaza's existing and planned underground garages will contain approximately 870 parking spaces which are sufficient to accommodate the range of parking demand that may be required. Taking into account the existing 622 parking spaces today, this is a net new increase of approximately 248 parking spaces to be constructed under the Belvidere/Dalton high-rise and mid-rise buildings. A new pedestrian connection between the existing Huntington Avenue garage (550 parking spaces) and the Belvidere/Dalton high-rise will facilitate use of both garages by office and residential tenants. Off-site

parking for hotel users, a common practice by downtown Boston hotels, may be necessary for the mid-rise hotel.

Vehicular Traffic Analysis

Vehicle Level Of Service (LOS) is a qualitative measure of control delay at an intersection providing an index to the operational qualities of a roadway or intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A through D are considered acceptable, while LOS E indicates drivers experience notable delays, common in an urban area, and LOS F suggests a level of delay that exceeds the intended capacity of that respective intersection. The LOS threshold criteria are defined in the 2000 Highway Capacity Manual, and it is standard engineering practice to use it to measure transportation impacts.

Traffic Operations Analysis

Capacity analyses were conducted for the 2009 Existing, 2019 No-Build, and 2019 Build Conditions to determine how well the roadway facilities serve the existing and future traffic demands. These roadway operating conditions are classified by quantified levels of service.

Consistent with BTD's guidelines, SYNCHRO 6 software was used to model LOS operations at the study area intersections. Overall intersection LOS and delay are only provided for signalized intersections by SYNCHRO.

Capacity analyses were conducted for the six existing signalized intersections identified in the study area. A capacity analysis was conducted for 2009 Existing conditions and

the 2019 No-Build and Build conditions. A summary of the signalized capacity analysis is presented in Table 1 and Table 2.

Existing Conditions Analysis

Capacity analysis for the year 2009 Existing Conditions was conducted for each of the signalized and un-signalized intersections listed above to assess the existing quality of traffic flow. The study found that all intersections operate at LOS D or better under the 2009 Existing Conditions. The Church recognizes that events such as Red Sox games and Symphony concerts cause temporary congestion in the study area which is not reflected in this analysis of non-event day peak-hour street conditions.

Future Conditions Analysis

Capacity analysis for the year 2019 with background growth and other planned developments was conducted for each of the signalized and un-signalized intersections listed above to assess the future quality of traffic flow and intersection operations without the proposed development (No-Build Condition). A capacity analysis for the year 2019, including the proposed development buildings in addition to the No-Build Condition was then analyzed to assess the impact of the proposed development on the street system.

BTB is planning and designing streetscape and transportation improvements in the study area known as the Symphony Streetscape Improvement Project. The streetscape and transportation improvements are anticipated to be constructed in 2011. The preferred design includes proposed improvements along a portion of Massachusetts Avenue, from St. Botolph Street to Westland Avenue. Primary transportation improvements

include the incorporation of the Christian Science Plaza driveway on Massachusetts Avenue into the signal control at the intersection of Massachusetts Avenue/Westland Street/St. Stephen Street with new signal equipment. Signal phasing and timing upgrades as well as a new pedestrian crosswalk, enhancement of handicap accessibility features, and the relocation of bus stops will greatly improve the pedestrian and vehicular conditions at this key location. The City is also planning bicycle accommodations as part of the overall roadway improvement to this section of Massachusetts Avenue. Signal improvements and streetscape enhancements are also planned for Huntington Avenue at Massachusetts Avenue.

As part of the Plaza Revitalization Project, streets adjacent to the Belvidere/Dalton high-rise and mid-rise buildings will be redesigned to improve site access and neighborhood circulation in the area. The Belvidere Street/Dalton Street intersection will be redesigned resulting in a clearer definition of the lane geometry and stop controls to improve the overall safety and functioning of the intersection. Clearway Street will be extended to Belvidere Street providing access to the garage and loading area as well as a preferable location for vehicles from the Belvidere/Dalton high-rise garage to enter onto Belvidere Street.

With the inclusion of the Symphony Streetscape Improvement Project transportation improvements and the improvements to the Belvidere/Dalton Street intersection as described above, all signalized and unsignalized study area intersections are expected to operate at an acceptable LOS D or better under the 2019 Build Conditions. These improvements will benefit both existing and new users of the site.

Table 1
Morning Peak Hour Signalized Intersection Capacity Analysis Results

Approach	2009 Existing Condition			2019 No Build Condition			2019 Build Condition		
	v/c ¹	Delay ²	LOS ³	v/c ¹	Delay ²	LOS ³	v/c ¹	Delay ²	LOS ³
Boylston Street at Massachusetts Avenue									
Overall	0.53	21.1	C	0.61	23.4	C	0.66	24.8	C
Belvidere Street at Massachusetts Avenue									
Overall	0.46	9.5	A	0.52	9.8	A	0.57	12.0	B
Westland Street at Massachusetts Avenue									
Overall	0.84	18.1	B	0.83	29.9	C	0.85	31.0	C
Huntington Avenue at Massachusetts Avenue									
Overall	0.53	20.1	C	0.86	38.0	D	0.89	40.6	D
Huntington Avenue at Cumberland Street									
Overall	0.19	2.3	A	0.20	2.2	A	0.20	2.2	A
Huntington Avenue at Belvidere Street									
Overall	0.64	43.8	D	0.70	46.6	D	0.71	48.2	D

Source: VHB

¹ V/C = volume to capacity ratio

² Delay = Average delay in seconds per vehicle

³ LOS = Level of Service

Table 2
Evening Peak Hour Signalized Intersection Capacity Analysis Results

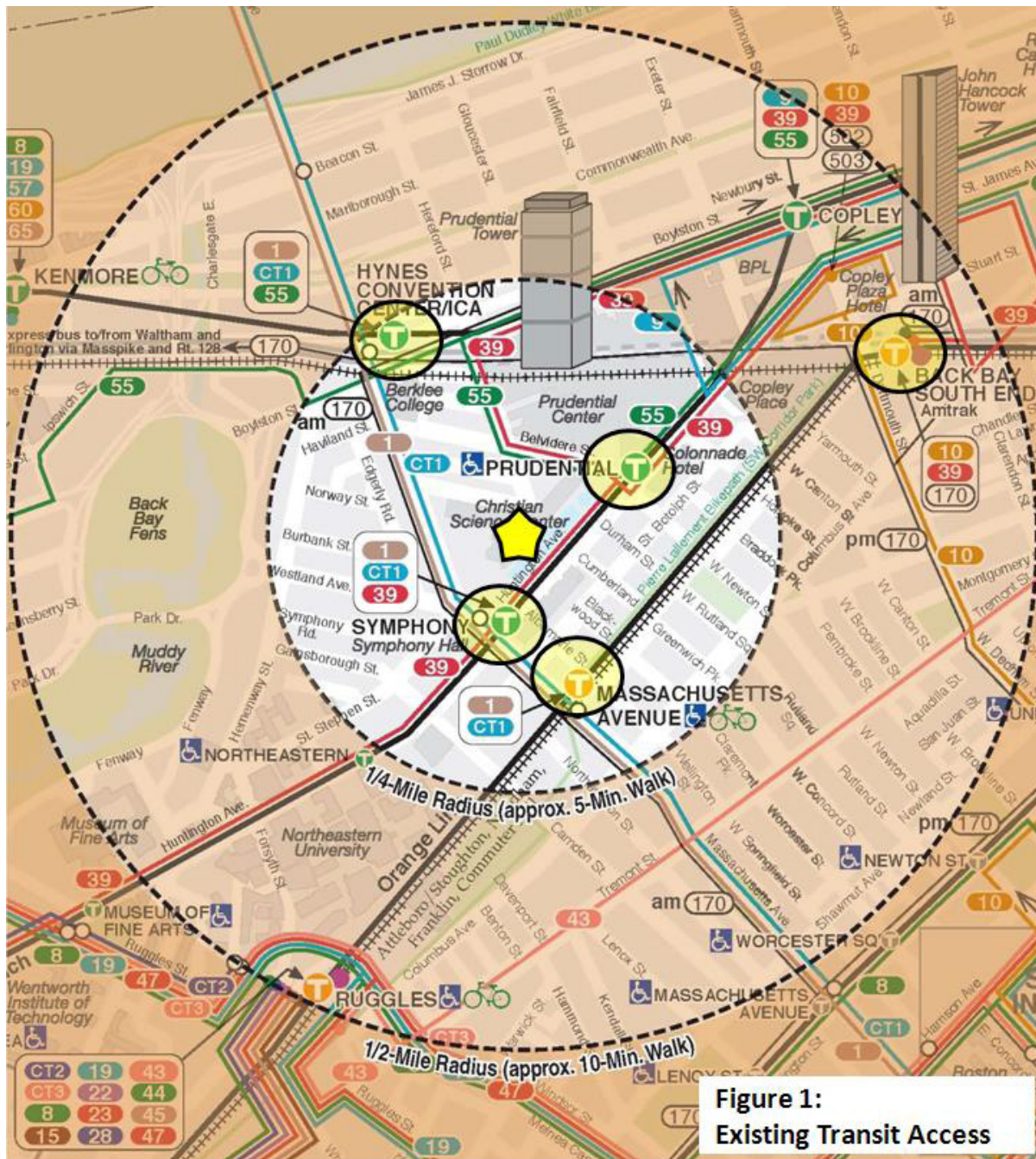
Approach	2009 Existing Condition			2019 No Build Condition			2019 Build Condition		
	v/c ¹	Delay ²	LOS ³	v/c ¹	Delay ²	LOS ³	v/c ¹	Delay ²	LOS ³
Boylston Street at Massachusetts Avenue									
Overall	0.53	23.0	C	0.58	24.0	C	0.63	25.3	C
Belvidere Street at Massachusetts Avenue									
Overall	0.50	7.4	A	0.47	8.2	A	0.54	11.7	B
Westland Street at Massachusetts Avenue									
Overall	0.71	19.4	B	0.66	28.4	C	0.70	31.7	C
Huntington Avenue at Massachusetts Avenue									
Overall	0.58	18.3	B	0.97	43.1	D	1.01	49.6	D
Huntington Avenue at Cumberland Street									
Overall	0.18	3.2	A	0.21	11.4	B	0.22	11.3	B
Huntington Avenue at Belvidere Street									
Overall	0.68	34.5	C	0.71	34.6	C	0.76	35.7	D

Source: VHB

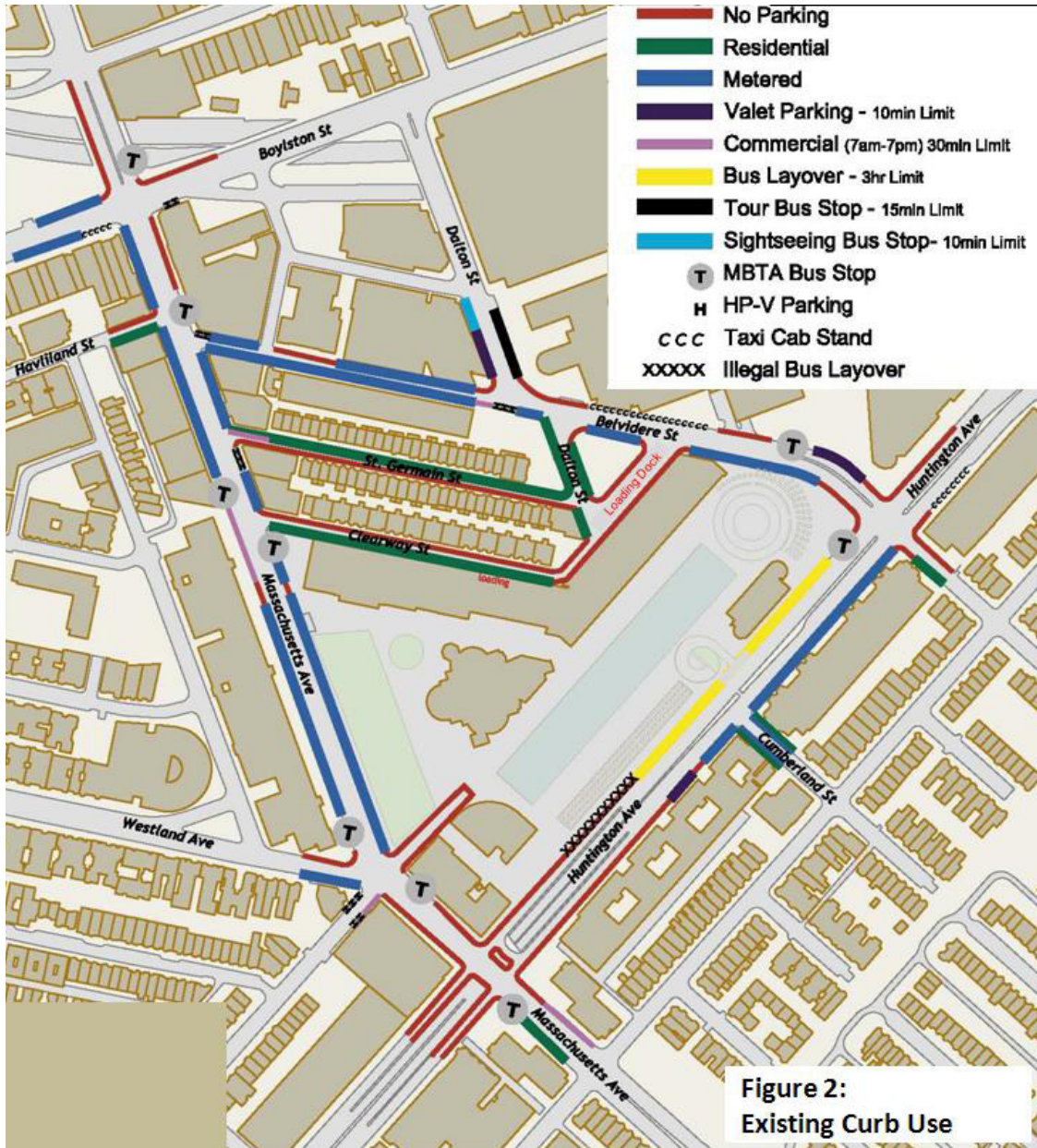
¹ V/C = volume to capacity ratio

² Delay = Average delay in seconds per vehicle

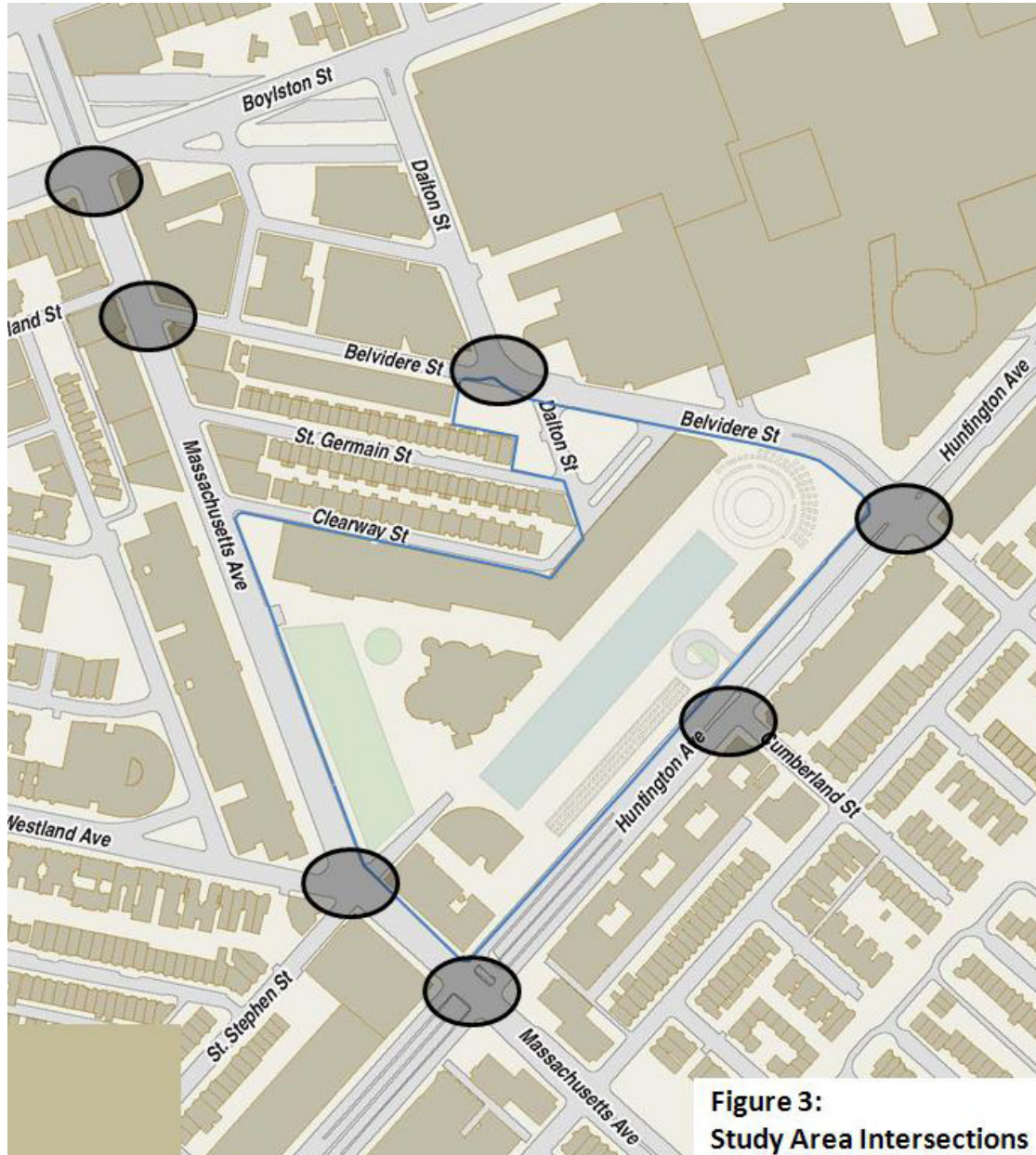
³ LOS = Level of Service



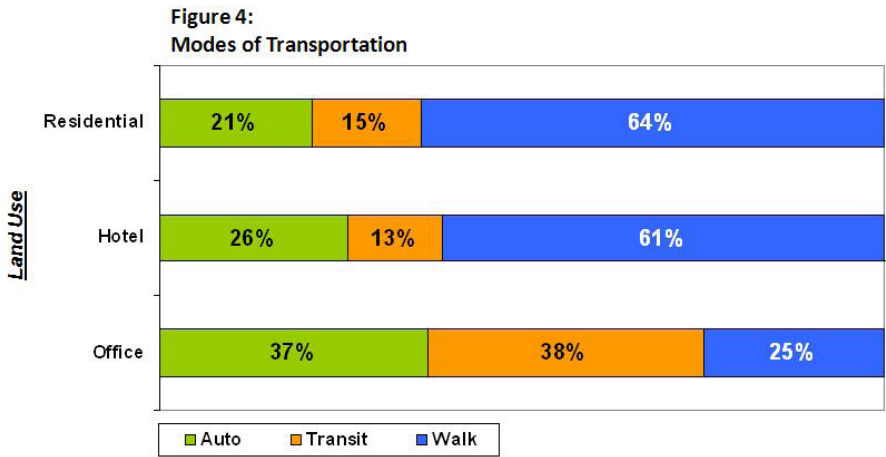
1. Existing transit access.



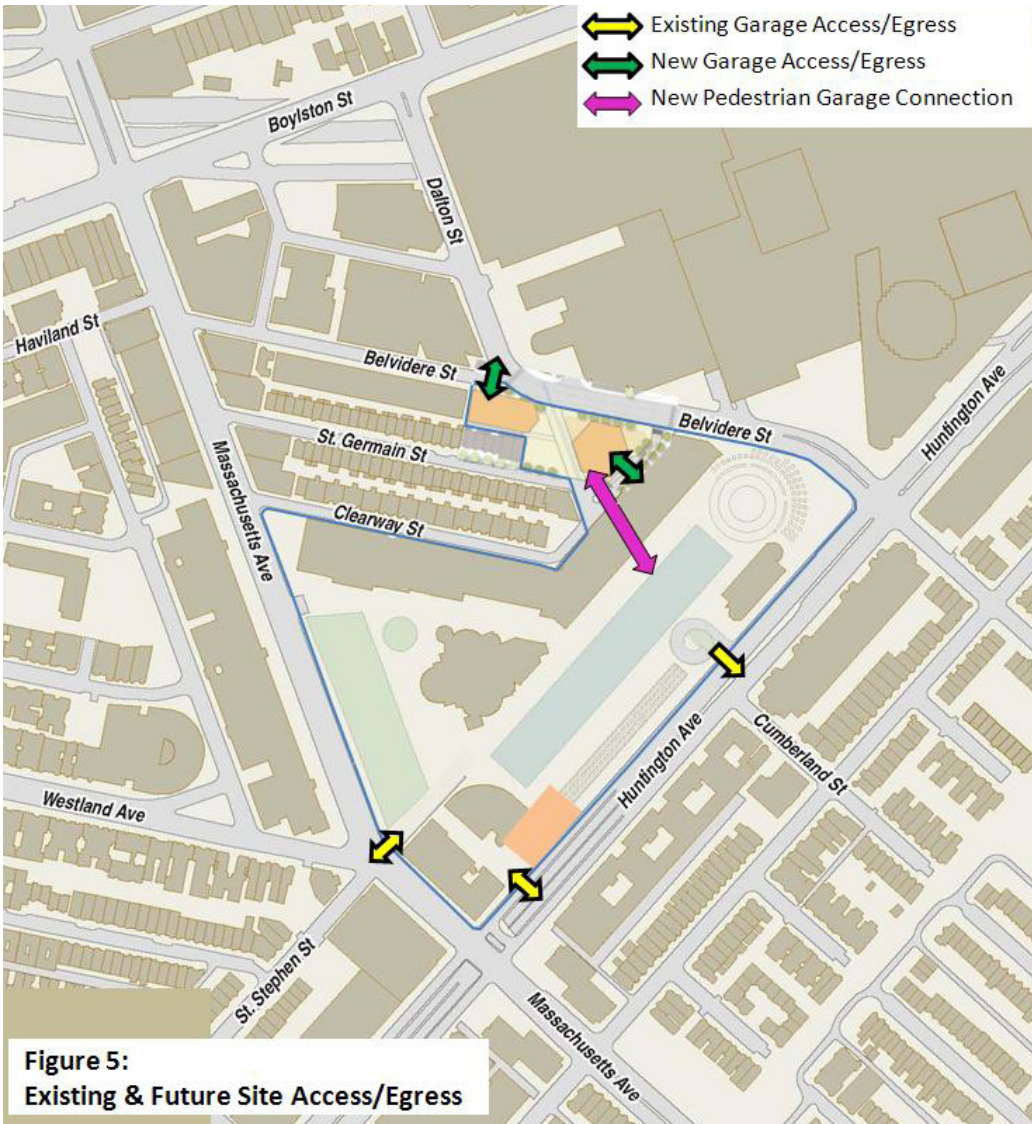
2. Existing curb use.



3. Study area intersections.



4. Modes of transportaion.



5. Existing and future site access/egress.

Wind

Introduction

Tall buildings can significantly affect the intensity and patterns of pedestrian-level winds. Large buildings tend to intercept the stronger winds at higher elevations and redirect them down to the ground level. This “down washing” flow is the main cause for wind accelerations at the pedestrian level.

There is also a tendency for increased wind acceleration at the corners of tall buildings as the down-washed wind flows around the edge of the building. When two buildings are situated side by side, wind flow tends to accelerate through the gap between them creating a channeling effect. If these buildings and wind combinations occur for prevailing winds, there is an increased potential for even higher wind activity. Monolithic buildings (i.e., those that do not change shape with height), if they are significantly taller than most of the surrounding buildings, almost invariably will be windy at their bases. However, when there are many buildings of similar height in an area, they tend to shelter one another.

The results of the wind analysis show that annual wind conditions will remain suitable for walking across the majority of the Plaza, similar to the existing conditions. Existing uncomfortable wind conditions will lessen near 177 Huntington Avenue and on the northern sidewalk of St. Germain Street.

Methodology

The Church contracted with the firm of Rowan Williams Davies & Irwin, Inc. (RWDI) to perform a preliminary analysis of

pedestrian-level wind (PLW) impacts from the proposed buildings. The assessment considered both the local wind climate as well as the physical nature of the proposed buildings and their surroundings.

The wind analysis was done using a combination of numerical modeling software and computational fluid dynamics software, and was based upon a review of long-term meteorological data and a 3-D model of the existing Plaza and its surroundings under both the No-Build and Build conditions, i.e., without and with the proposed new buildings. More specifically, the Build condition included the proposed approximately 310-foot Huntington Building abutting the Sunday School Building at the south end of the Plaza and the proposed buildings on the Belvidere/Dalton Site (approximately 270 feet and 535 feet tall).

Meteorological Data

The wind study relied on weather data recorded at Logan International Airport between 1973 and 2006. On an annual basis, the dominant winds in Boston are from the southwest through northwest directions. The strongest winds come from the west-northwest, west, and the northeast. Although the wind study considered all wind directions, it considered those from the southwest through northwest directions, and northeast as most important.

The wind study generally looked at typical annual winds in Boston; the summer and fall winds tend to be more comfortable than the annual winds, while the winter and spring winds are less comfortable than the annual winds.

BRA Wind Comfort Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity of 31 miles per hour (mph) should not be exceeded more than one percent of the time. The second set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking.

The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded one percent of the time. They are categorized as follows: Comfortable for Sitting, less than 12 mph; Comfortable for Standing, between 12 and 15 mph; Comfortable for Walking between 15 and 19 mph; Uncomfortable, between 19 and 27 mph; and Dangerous, greater than 27 mph. As this massing analysis is preliminary and design of the buildings has not been finalized, the analysis focuses on three comfort criteria instead of five: Comfortable for Standing, Comfortable for Walking, and Uncomfortable.

Generally, wind conditions suitable for walking are appropriate for sidewalks, and wind speeds comfortable for standing are preferred for building entrances, pick-up and/or drop-off areas. During the summer, lower wind speeds are preferred for areas that are used for passive recreation, while higher wind speeds are suitable in the same areas during the winter when passive recreation is unlikely.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and

thoroughfares and meets the BRA effective gust velocity criterion of 31 mph.

Figures 6 and 7 (provided at the end of the analysis) summarize the predicted annual average wind speeds around the Plaza area for No-Build and Build conditions, respectively. Figures 8 through 10 (provided at the end of the analysis) depict visualizations of the wind conditions under No-Build and Build conditions for winds from the southwest, northwest, and northeast, respectively. These figures represent the average wind speed for the selected directions, and actual wind flows will fluctuate and approach from different directions. In these figures, blue represents low wind speed areas, green represents low to moderate wind speeds, yellow represents moderate wind speeds, and red indicates high wind speeds.

Results

The results of the PLW study have been broken down into and are discussed for five areas as follows (the letter-number designations, e.g., A1, refer to the locations depicted on Figures 6 and 7):

- ◆ The open space and sidewalks surrounding the Original Mother Church and The Mother Church Extension (Areas A1 through A3);
- ◆ The Belvidere/Dalton Site area (Areas B1 through B13);
- ◆ Horticultural Hall, Sunday School, and Huntington Site (Areas C1 through C7);
- ◆ The Reflecting Pool (Areas D1 through D4); and
- ◆ The 177 Huntington Avenue building (Areas E1 through E5).

Open Space and Sidewalks Surrounding The Original Mother Church and The Mother Church Extension (A1-A3)

This area is exposed to prevailing winds from the southwest through northwest directions. The open space area is sheltered from northeast winds by the tall buildings upstream. Annual wind conditions, as well as northwest, northeast, and southwest winds in this area are projected to be similar to the No-Build condition. The trees along the west edge of the Plaza adjacent to Massachusetts Avenue provide some sheltering to pedestrians, mainly in the summer and fall months.

The Belvidere/Dalton Site (B1-B13)

Under the No-Build condition, the open space and parking lot along Dalton Street, south of Belvidere Street (Areas B1 through B5), are exposed to northeasterly winds down-washing off the east facade of the Hilton Hotel and accelerating along Dalton Street. The area is also exposed to west-northwest and northwest winds, channeling along Dalton and Belvidere Streets, but the site is sheltered from southwest winds by the 101 Belvidere building and other existing buildings. The proposed taller building's footprint with a low podium at the northeast and north corners, and the colonnades included along the north facade of both buildings and in the gap between the buildings, will help lessen wind speeds and will not negatively impact the St. Germain neighborhood.

Annual wind conditions are projected to be similar around the Belvidere/Dalton Site, except for areas that are projected to be uncomfortable on the north and northeast sides of the new buildings. Dalton Street northwest of Belvidere Street and St. Germain Street are projected to have similar

or improved wind conditions under the Build condition.

Southwest and northwest winds are generally similar or stronger during the Build condition than the No-Build condition. The arrangement of the proposed Belvidere/Dalton buildings will help mitigate west-northwest winds because the two buildings are aligned with the flows from this wind direction, with the taller building on the east side. In addition, the new open space created on the site will have lower, more comfortable wind speeds for all wind conditions.

For northeast winds, the Build condition will improve wind conditions in the area, especially in front of the Sheraton Boston Hotel, which currently experiences high winds, but is projected to experience more moderate wind conditions.

Horticultural Hall, Sunday School Building, and Proposed Huntington Building (C1-C7)

Annual wind conditions during the Build condition around the Sunday School Building and Horticultural Hall are projected to be similar to the No-Build condition, except for the area to the north of the Sunday School and proposed Huntington building. This area may be subject to gusty winds that can be addressed in the final design.

Under the Build condition, west-northwest and northwest winds will down-wash off the north facade of the proposed Huntington building; however, no excessive gust speeds are predicted because the adjoining Sunday School Building serves as a podium blocking the flows. The proposed Huntington building will be protected from northeasterly winds by the upstream buildings. When

winds are from the southwest, the massing of the existing Horticultural Hall will provide some sheltering to sidewalks around the proposed Huntington building. In general, with the proposed Huntington building in place, wind conditions to the north of the Sunday School Building are expected to remain comfortable for walking.

Wind conditions to the north of the proposed building will be uncomfortable, while wind speeds in other areas will be comfortable for walking. There is some potential for excessive wind gusts to the north of the proposed Huntington building based on annual wind speeds, but mitigation measures will be studied in the final design.

Reflecting Pool (D1-D4)

The annual winds for both the No-Build and Build conditions are generally the same. Under the No-Build condition, the wind conditions are uncomfortable on the northern and eastern side, while under the Build condition, the wind conditions are uncomfortable on the southern side. The Reflecting Pool is partly sheltered from west-northwest and northwest winds by the Original Mother Church, The Mother Church Extension, and 101 Belvidere Street, but is exposed to winds from the northeast and southwest directions. Close to 177 Huntington Avenue, however, existing uncomfortable wind speeds are expected and will need to be addressed in the final plans.

In general, under the Build condition, there will be increased wind speeds at the south end of the Reflecting Pool. These wind conditions will range from comfortable for walking to potentially uncomfortable on windy days. Wind speeds at the central area of the Pool are expected to be similar to No-Build

conditions. Annual wind conditions around the Reflecting Pool close to 177 Huntington Avenue will still be uncomfortable for walking, but within a slightly smaller area when compared to the existing conditions.

177 Huntington Avenue (E1-E5)

177 Huntington Avenue is exposed to winds from the prevailing west-northwest, northwest, northeast, and southwest directions. Under the No-Build condition, winds around the building are known to be uncomfortable. Gusty winds are projected on the north and south sides of the building. Wind conditions farther away from the building are comfortable for walking or better.

Under the Build conditions, although the proposed Belvidere/Dalton buildings will provide some shelter resulting in slightly reduced wind speeds in the immediate vicinity of 177 Huntington Avenue, wind conditions are still expected to remain uncomfortable annually. However, the extent of the uncomfortable wind conditions in the Build condition is less than the No-Build condition.

If the Children's Fountain is used for ice skating during the winter, wind mitigation measures may be needed to shield the high wind speeds from the northeast.

Summary

Under the Build condition, most areas on and around the Plaza are projected to have similar conditions, suitable for walking, to the No-Build condition. The wind conditions of a portion of the area east of the 177 Huntington Avenue building and the northern sidewalk of St. Germain Street are projected to improve. High wind speeds are predicted locally around the new buildings

and in a few areas farther away from the buildings. For the proposed Belvidere/Dalton buildings, uncomfortable wind conditions will be experienced on exposed sidewalks along the Belvidere Street facade, while suitable wind conditions are expected within the covered arcade areas along Belvidere Street and on the proposed open space adjacent to the St. Germain Street and Clearway Street intersection. Uncomfortable wind speeds with severe gusts are predicted on Dalton Street north of the Site, similar to the existing conditions. Final building designs will address these impacts and provide mitigation solutions.

For the Huntington building, uncomfortable wind conditions with the potential for excessive gustiness will be experienced at areas to the north of the building. These potentially high wind speeds can be mitigated by implementing design features such as trellises, canopies, wind screens, and landscape elements.

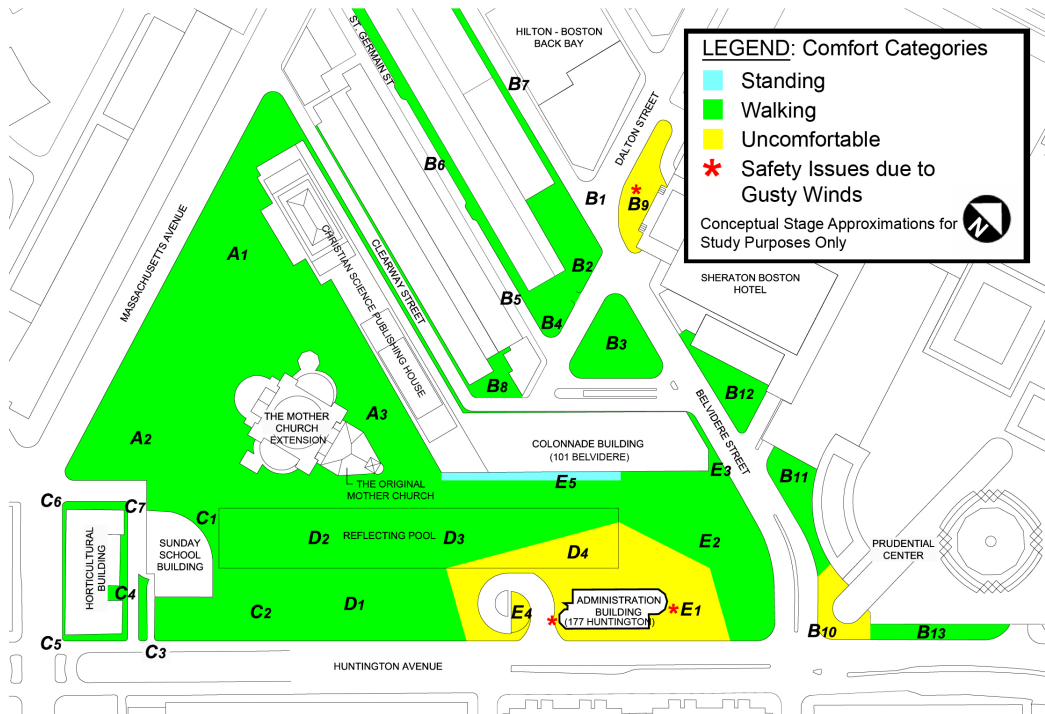
Under Build conditions, slightly reduced wind activity will be experienced around the 177 Huntington Avenue building. However, the existing uncomfortable wind conditions with excessive gustiness are expected to persist.

Wind conditions around the Original Mother Church and The Mother Church Extension will not be significantly influenced by the new development.

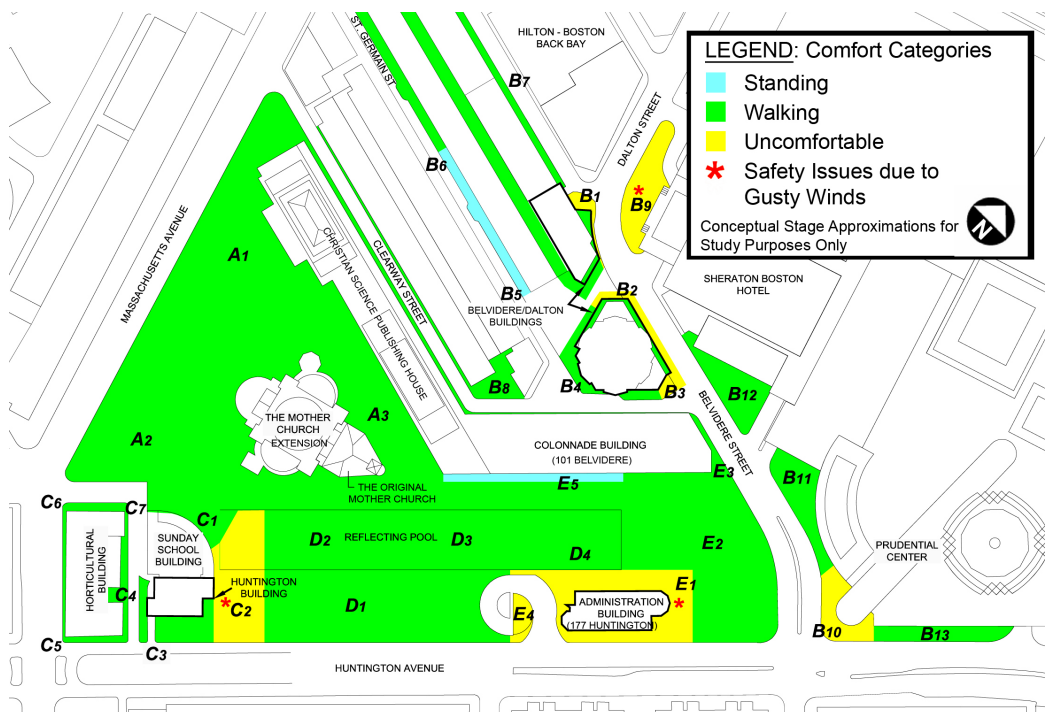
Potential Mitigation

As mentioned above, the wind analysis is preliminary as the design of the buildings will be finalized during the Article 80 process. As the design is better defined, potential mitigation will be studied further. Potential mitigation measures include:

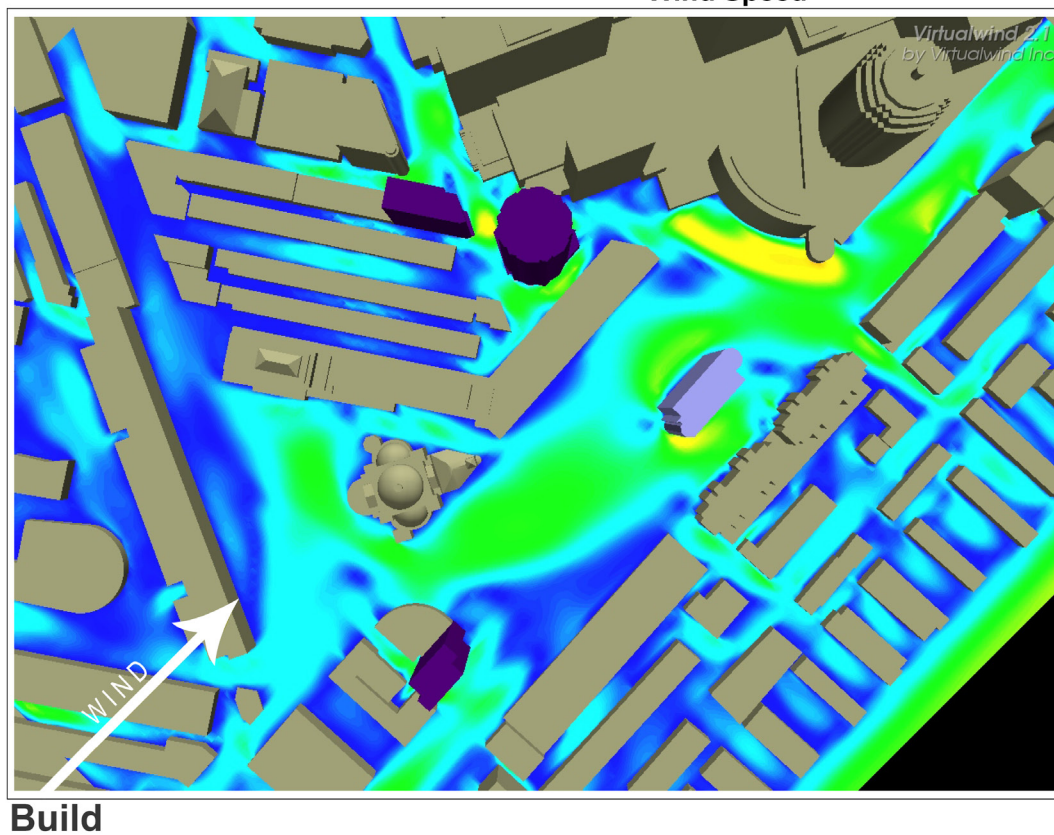
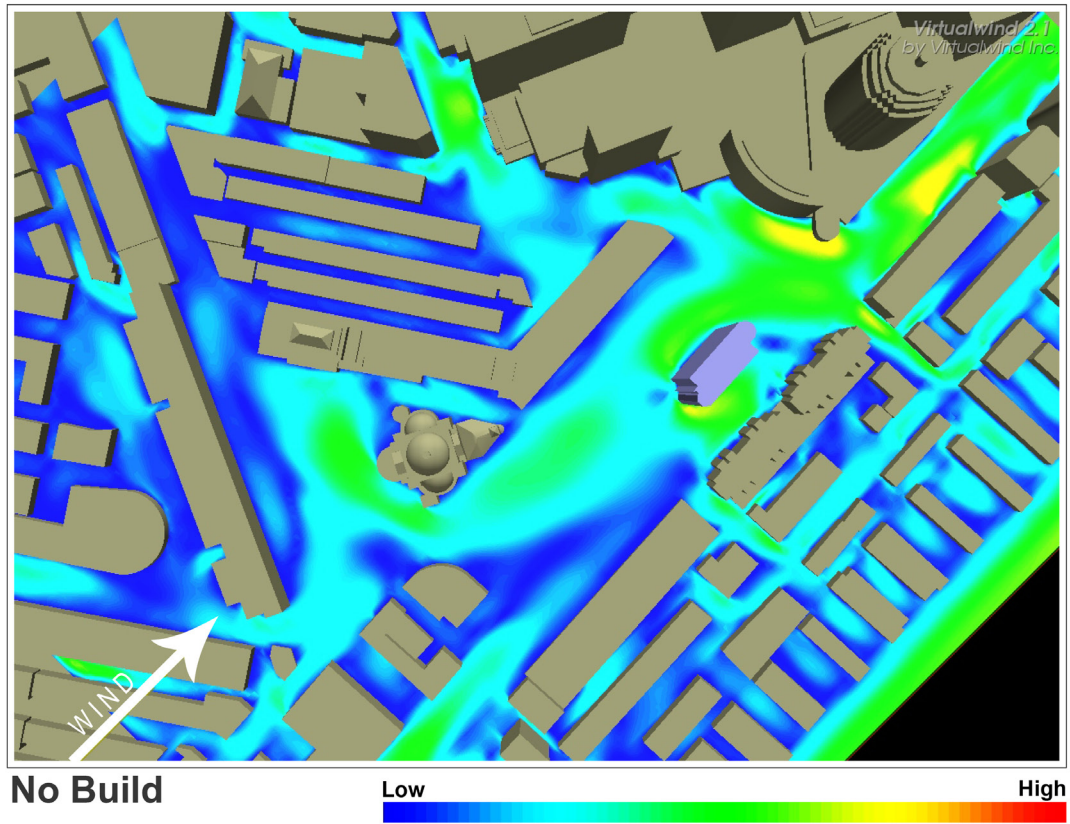
- ◆ For the Belvidere/Dalton buildings, recessing building entrances from the facades and installing wind screens or large planters in specific locations around entrances.
- ◆ For the Huntington building, the provision for setbacks or a podium on the north side of the building, which would serve to block the prevailing northwest winds from reaching the pedestrian level, the introduction of a covered walkway on the north side of the Huntington Building to shield pedestrians from down washing winds, or overhead trellises or additional landscaping.



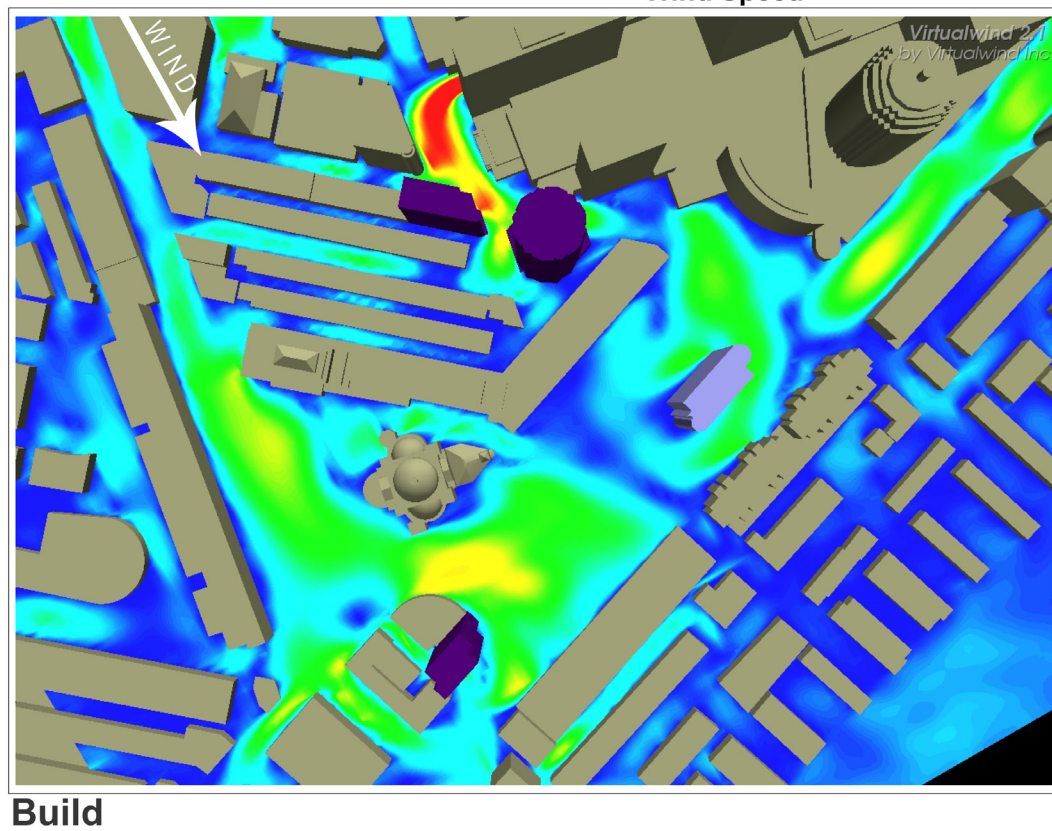
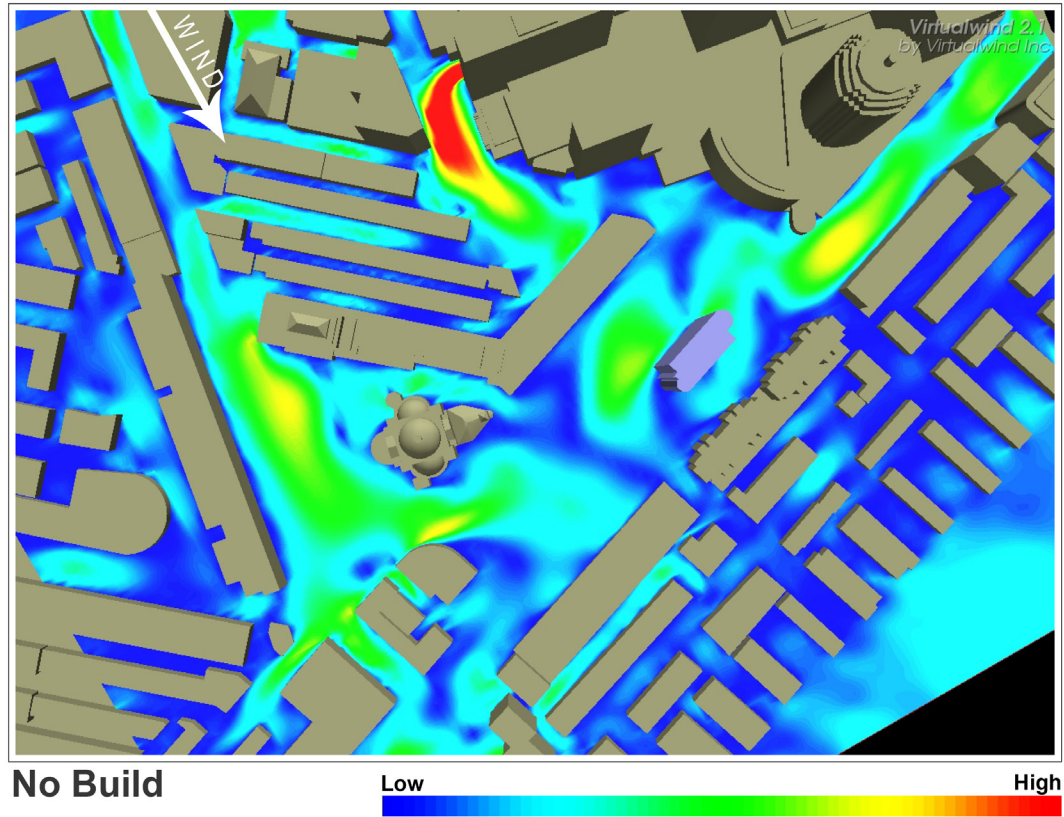
6. Predicted pedestrian annual wind conditions - No Build



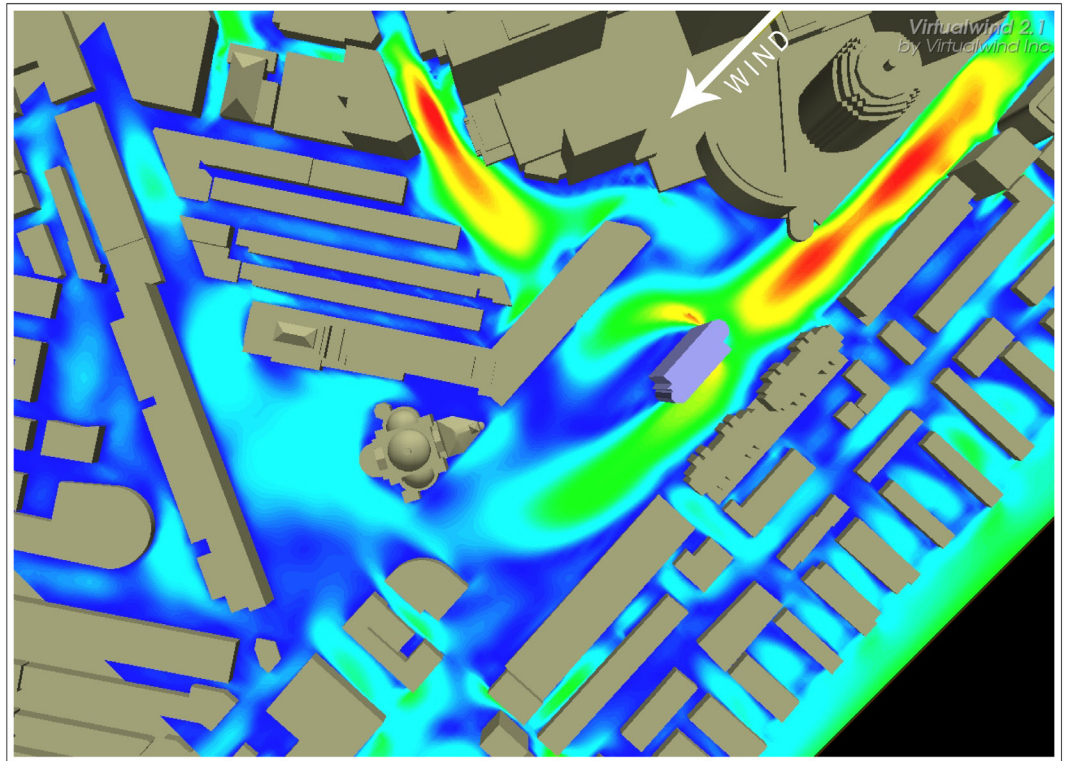
7. Predicted pedestrian annual wind conditions - Build



8. SOUTHWEST - Wind Simulation Results

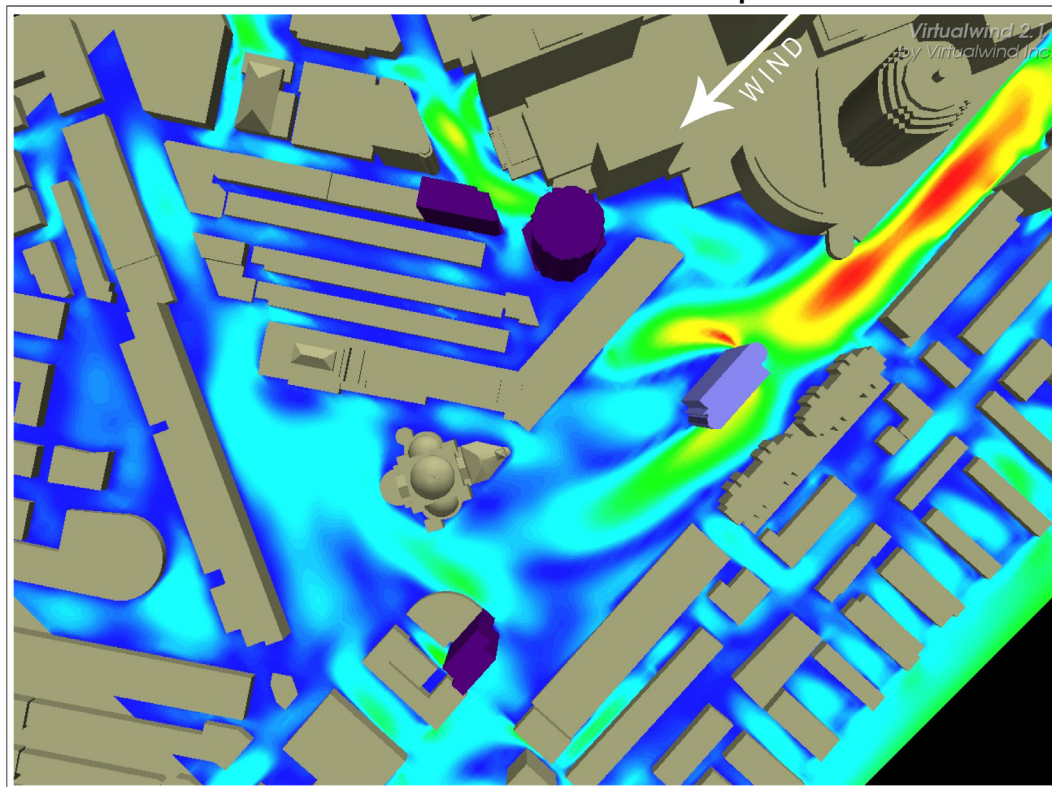


9. NORTHWEST - Wind Simulation Results



No Build

Low High
Wind Speed



Build

10. NORTHEAST - Wind Simulation Results

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Shadow

Introduction

New shadow impacts can vary greatly depending on time of year and the proximity and height of the existing structures surrounding the site. Morning and late-day shadows are long, but have a less significant impact because they tend to overlap preexisting heavy shadow conditions. December has the most shadow impacts due to the low sun angle, while summer has the least.

The shadow analysis is a preliminary study that looks at shadow impacts from the proposed buildings on the 21st of each equinox and solstice. The analysis focuses on:

- ◆ Public streets and open spaces.
- ◆ Neighboring properties.
- ◆ The Christian Science Plaza.
- ◆ The Mother Church edifices.

The shadow analysis will be refined during the Article 80 review process, if required.

In general, shadow created by the new Huntington building will be cast in the area between Massachusetts Avenue and Huntington Avenue, including at times portions of the Plaza open space, the Original Mother Church and The Mother Church Extension, and the Reflecting Pool. New shadow from the proposed Belvidere/Dalton buildings will generally be in the zone north of Belvidere Street and east of Huntington Avenue, including the pedestrian areas at the intersection of Dalton and Belvidere Streets and along Belvidere Street. Most of the new shadow from the Belvidere/Dalton buildings will be cast on rooftops. No new shadow is cast on the open space at the intersection of Clearway Street and Dalton Street. Except

for a small portion of Southwest Corridor Park at 6:00 pm on June 21, no new shadow is created on parks or open spaces in the vicinity of the Plaza.

Methodology

To assess the shadow impacts associated with the proposed developments, a shadow impact analysis was conducted for the hours of 9:00 am, 12:00 noon, and 3:00 pm during the summer solstice (June 21), the spring and autumnal equinoxes (March 21 and September 21), and the winter solstice (December 21), as well as 6:00 pm for the summer solstice and spring and autumnal equinoxes, as typically required by the BRA.

The shadow analysis presents existing shadow as well as net new shadow from the proposed new buildings to illustrate the new buildings' incremental impact. For the purposes of clarity, new shadow is shown in a yellow color while the existing shadow is shown in grey. Results of the shadow impact study are discussed in the following sections, and are supported by Figures 11 through 21 (located at the end of this section).

Results

Spring and Fall Equinoxes (March 21 and September 21)

At 9:00 am on the equinoxes, shadow from the proposed new Huntington building will fall across the roof of the Sunday School Building and onto the Massachusetts Avenue lawn and adjacent sidewalk. At the same time, shadow cast by the Belvidere/Dalton buildings will fall onto the intersection of Belvidere and Dalton Streets and onto the Hilton Hotel.

At noon on the equinoxes, shadow from

the Huntington building will fall across the Reflecting Pool and a portion of the Plaza open space adjacent to the Sunday School. Shadow from the Belvidere/Dalton buildings will again fall on the intersection of Belvidere and Dalton Streets as well as the Sheraton Hotel.

By 3:00 pm, shadow from the proposed Huntington building will have swung eastward to fall on the tree bosque and Huntington Avenue, while new shadow from the Belvidere/Dalton buildings will cross Belvidere Street and fall upon the Sheraton, the roof of the Hynes Convention Center, and the Belvidere Condo building.

Late in the day on the equinoxes (6:00 pm), most of the area is already under shadow. New shadow cast by the proposed Huntington building will be cast onto building rooftops across Huntington Avenue. Shadow cast by the Belvidere/Dalton buildings will also be cast onto building rooftops and on the sidewalk along the southern side of Belvidere Street.

Summer Solstice (June 21)

Because the sun is at its highest on the summer solstice, shadows are shortened compared to other times of the year, and fewer areas are shaded.

At 9:00 am on the summer solstice, shadow cast by the Huntington building will fall mostly on the roofs of the Sunday School and Horticultural Hall with a small portion falling on the Massachusetts Avenue lawn. New shadows from the Belvidere/Dalton buildings will fall on the roofs of the residential buildings immediately adjacent to Belvidere Street, onto the proposed new open space, and onto a portion of Belvidere Street's southern sidewalk.

At noon, shadows are at their shortest. New shadow from the Huntington building will fall only on the roof of the Sunday School and the very southern end of the Reflecting Pool and adjacent open space. Meanwhile, shadows from the Belvidere/Dalton buildings will fall onto the intersection of Belvidere and Dalton Streets and the Sheraton Hotel.

By 3:00 pm on the summer solstice, shadow cast by the proposed Huntington building will extend eastward across the tree bosque, Huntington Avenue, and onto the Midtown Hotel. Shadows from the Belvidere/Dalton buildings will extend along Belvidere Street and its sidewalks.

Late in the day on the summer solstice (6:00 pm), much of the area is already under shadow. New shadows from the proposed Huntington building and the Belvidere/Dalton buildings will generally fall across rooftops.

Winter Solstice (December 21)

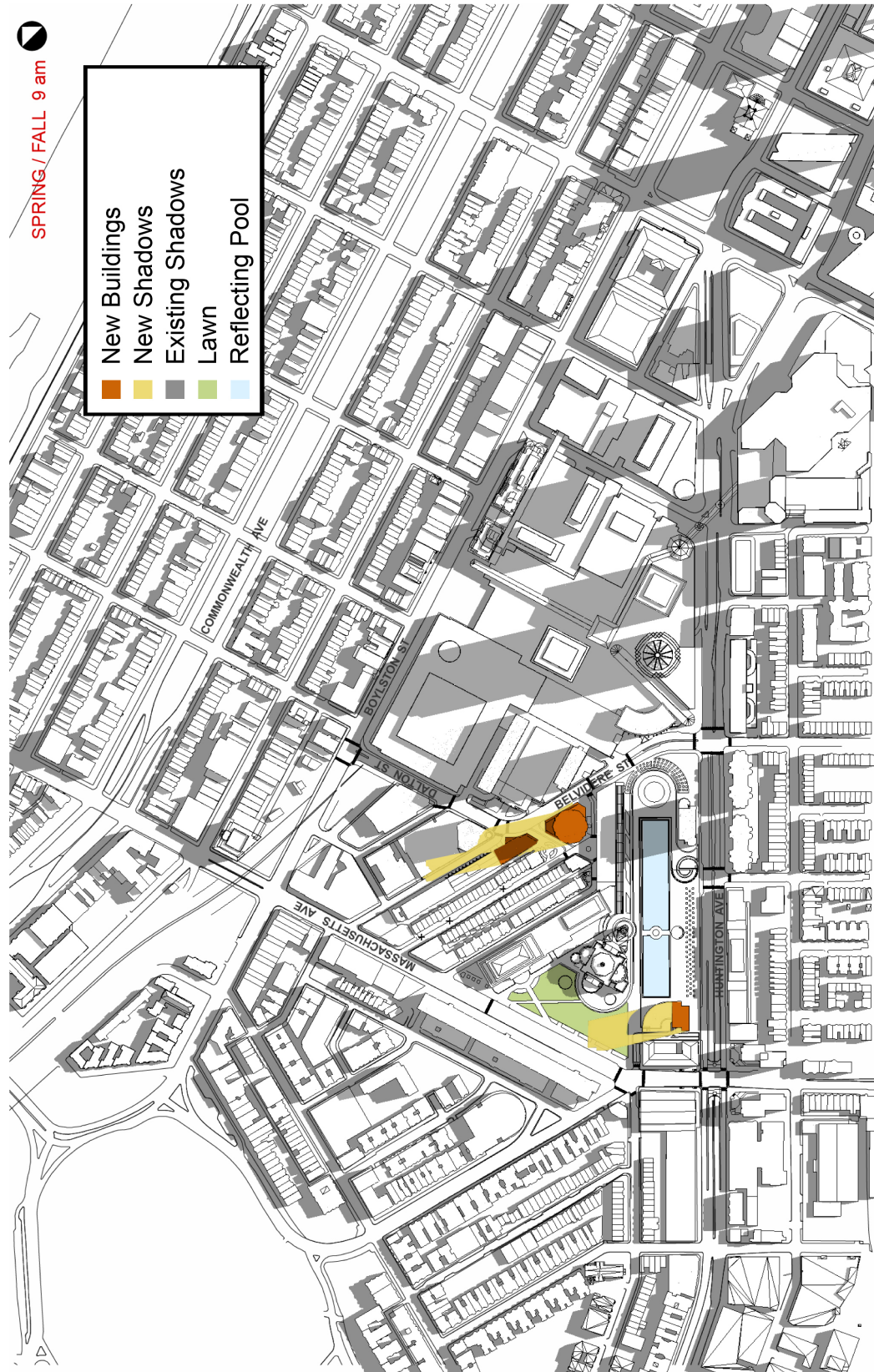
The winter solstice is the least favorable time of year for sunlight in New England because the sun's low angle causes shadows to elongate.

At 9:00 am on the winter solstice, shadow from the Huntington building will be cast west onto portions of the Massachusetts Avenue lawn and portions of Massachusetts Avenue and its sidewalks. New shadows cast by the proposed Belvidere/Dalton buildings will extend west across a minor portion of Commonwealth Avenue, but generally falling on rooftops.

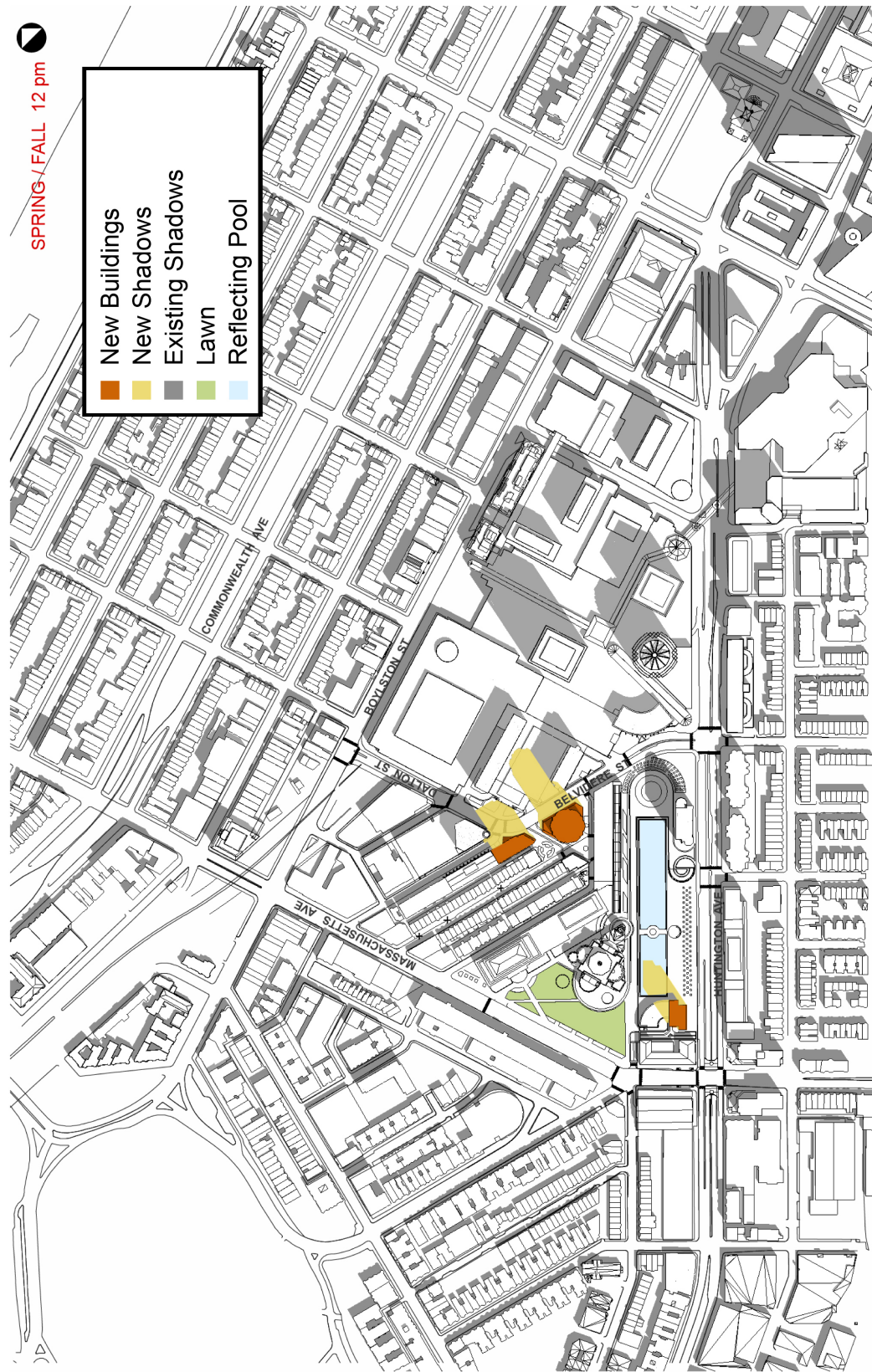
By noon on the winter solstice, shadow cast by the Huntington building swing eastward falling on the southern end of the Reflecting Pool, the Original Mother Church, and the

Publishing House. Shadows cast by the Belvidere/Dalton buildings fall on the intersection of Belvidere and Dalton Streets, the Sheraton Hotel, the roof of the Hynes Convention Center, and a few rooftops at the corner of Boylston and Gloucester Streets.

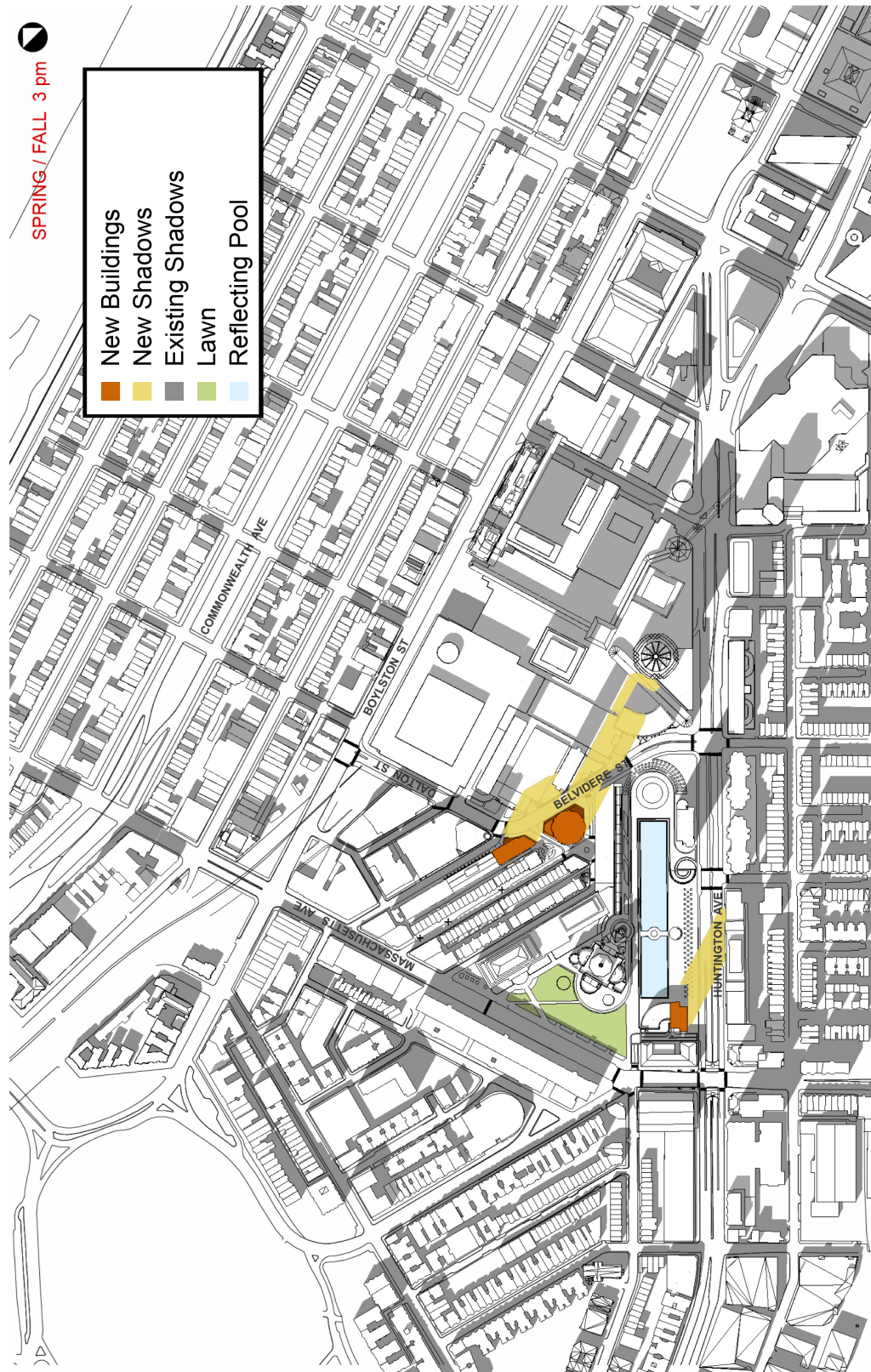
By mid-afternoon (3:00 pm) on the winter solstice, new shadow cast by the Huntington building will extend across the Plaza and fall upon a portion of the tree bosque adjacent to Huntington Avenue and on the side of the 177 Huntington Avenue building. A narrow sliver will extend farther along Huntington Avenue, past its intersection with Belvidere Street. Shadows from the Belvidere/Dalton buildings will be cast across Belvidere Street and its sidewalks, and nearby rooftops.



11. Shadow Study - March 21/September 21, 9:00 am



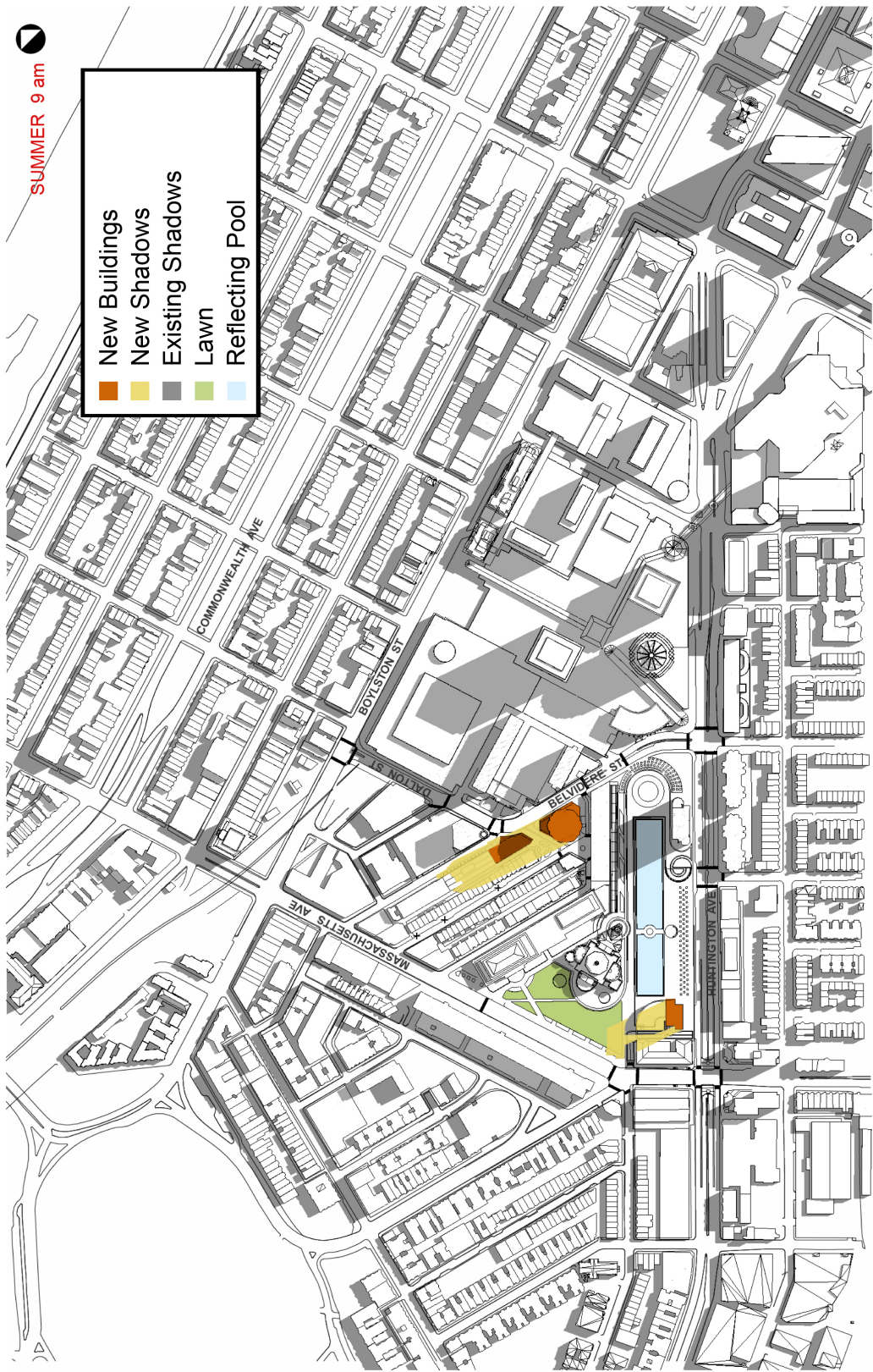
12. Shadow Study - March 21/September 21, 12:00 pm



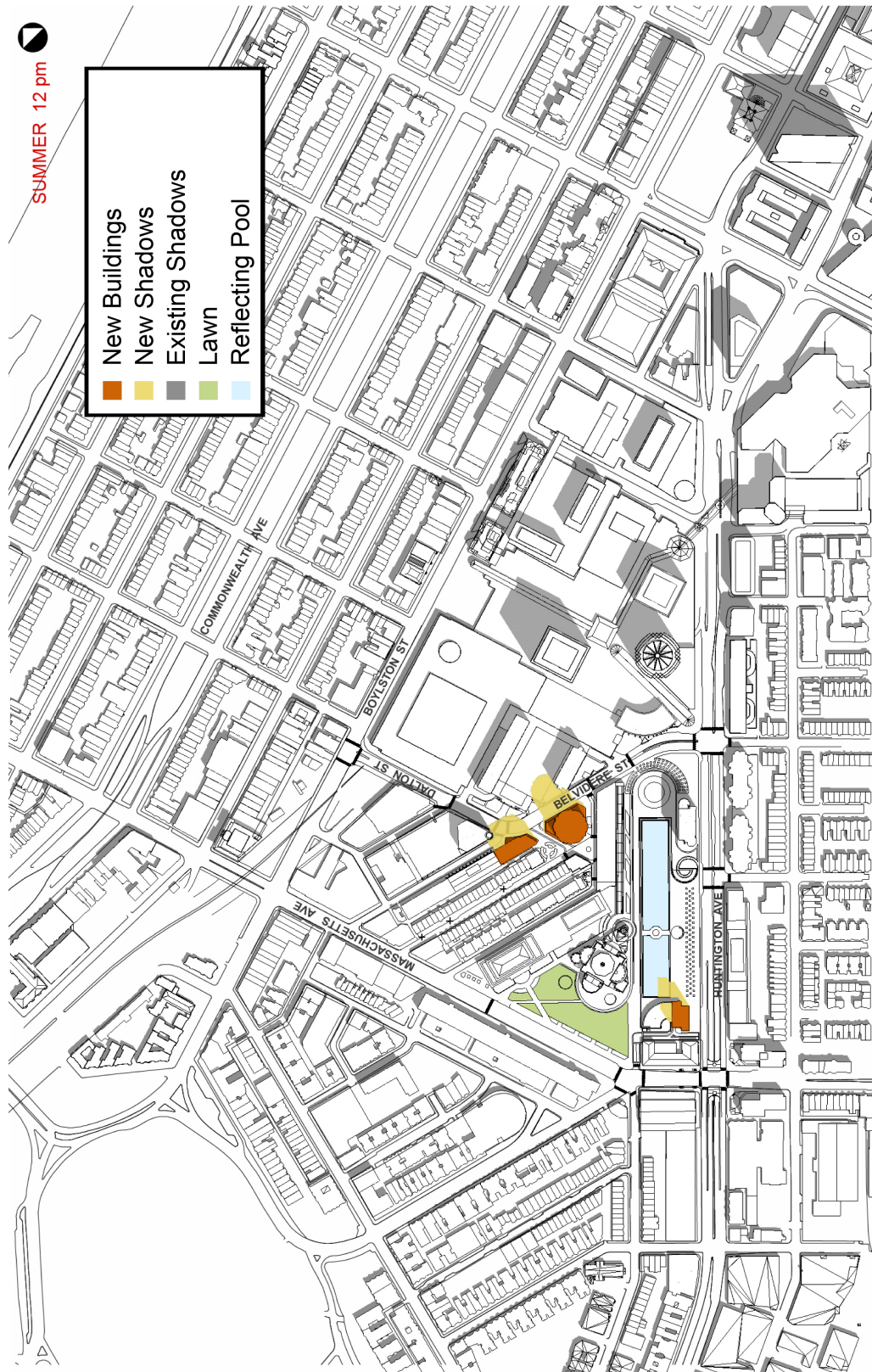
13. Shadow Study - March 21/September 21, 3:00 pm



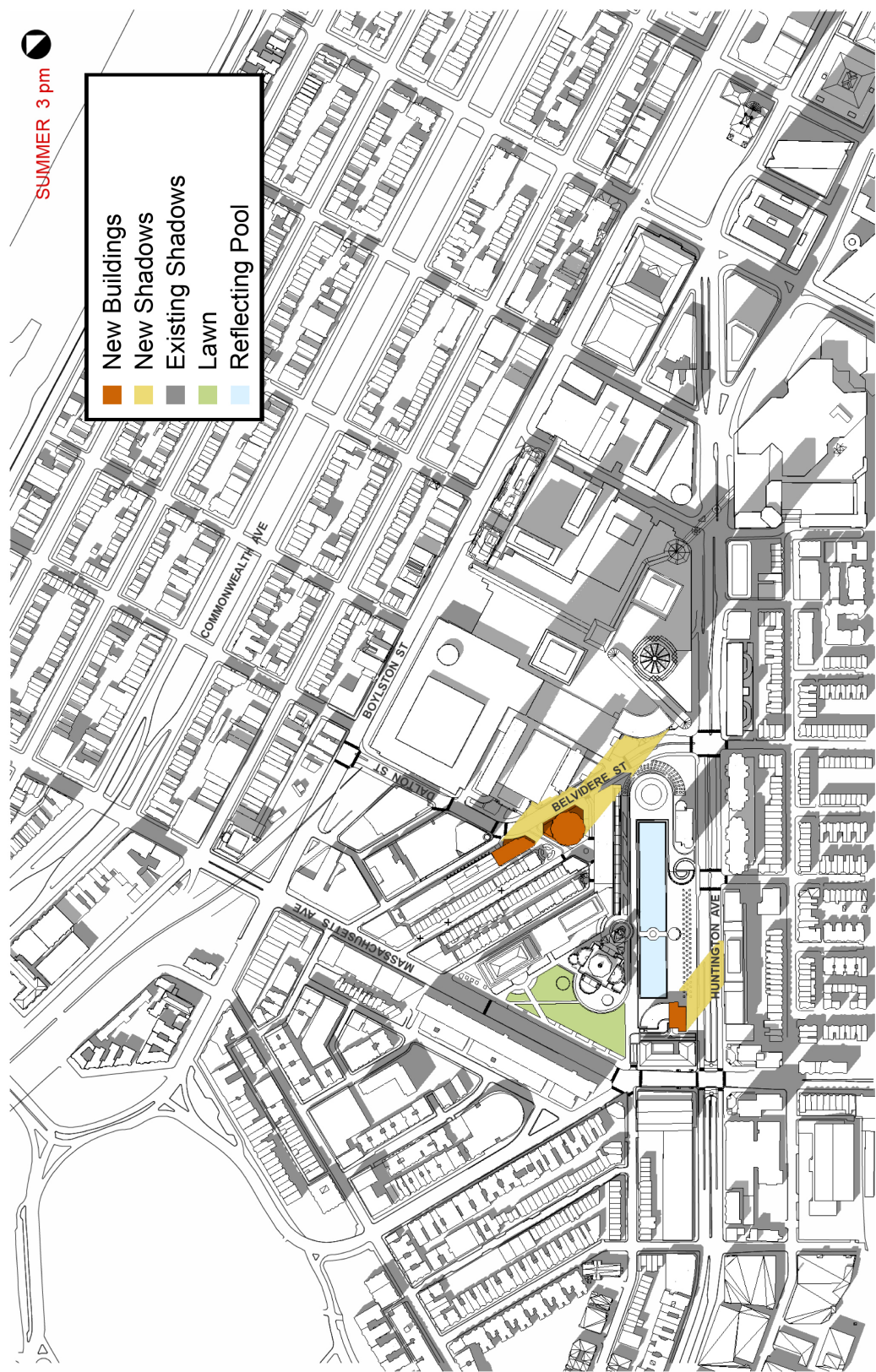
14. Shadow Study - March 21/September 21, 6:00 pm (Because of the extent of the new shadow, the scale of this figure is smaller than on the other figures.)



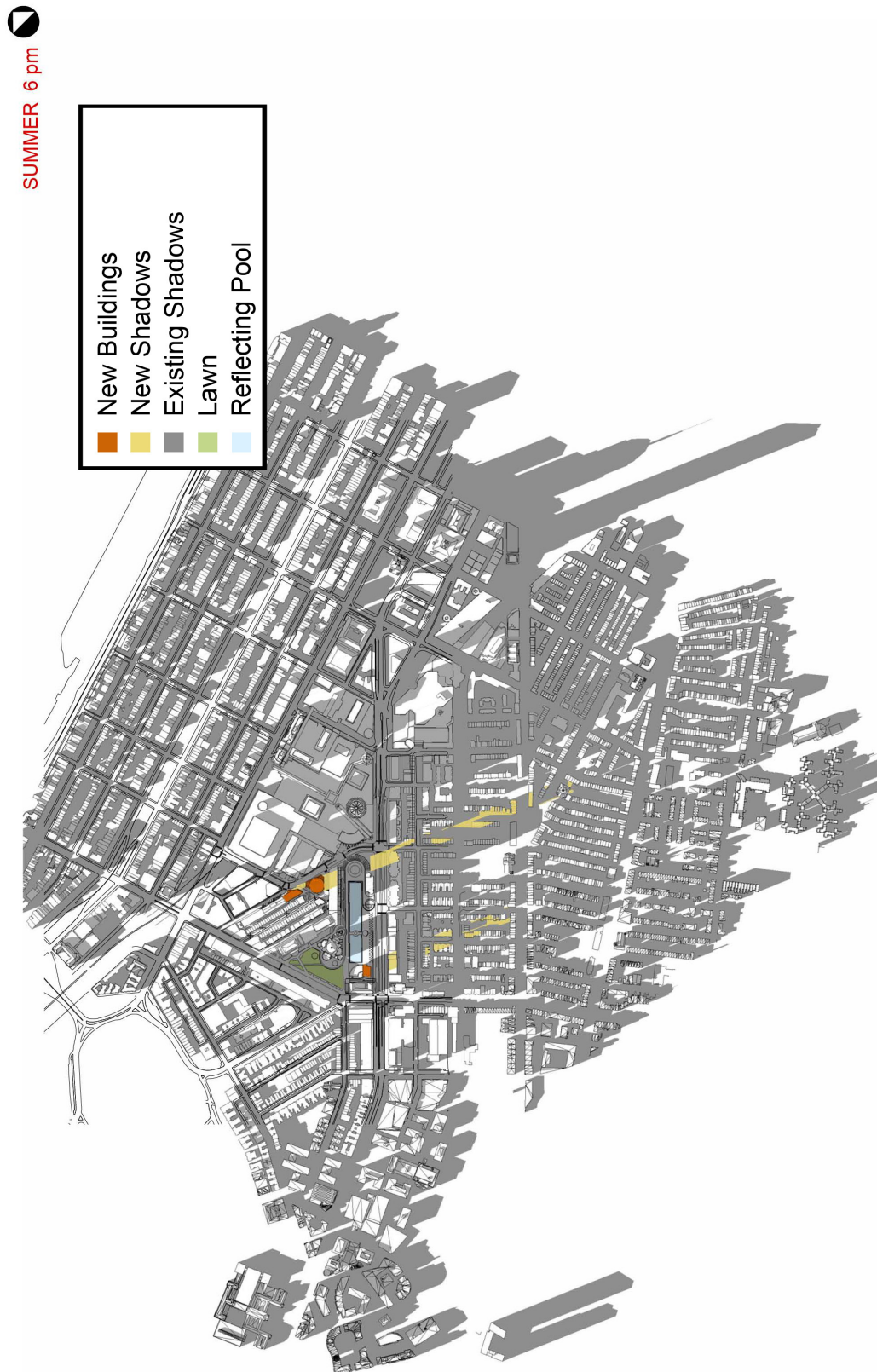
15. Shadow Study - June 21, 9:00 am



16. Shadow Study - June 21, 12:00 pm



17. Shadow Study - June 21, 3:00 pm



18. Shadow Study - June 21, 6:00 pm (Because of the extent of the new shadow, the scale of this figure is smaller than on the other figures.)



19. Shadow Study - December 21, 9:00 am



20. Shadow Study - December 21, 12:00 pm



21. Shadow Study - December 21, 3:00 pm

Geotechnical Conditions/ Groundwater

Introduction

A large percentage of the buildable land in Boston, including the area of the Plaza, consists of former low-lying areas that were filled. Many of the buildings constructed in these filled areas in the late 1800s and early 1900s are supported on timber pile foundations. The timber piles have generally performed satisfactorily where the entire pile has remained submerged below groundwater. However, in some of these filled areas of Boston, groundwater levels have dropped below their historic levels. Where groundwater levels have dropped below the tops of the timber piles, the tops of the piles have deteriorated resulting in settlement of the buildings. Some of the piles supporting the Original Mother Church and The Mother Church Extension have been affected by dropping groundwater levels, and the Church has repaired or replaced those piles.

It is believed that throughout Boston leaky storm drains and sewers, sump pumps, foundation under drains, leaks in foundation walls, construction dewatering, and reduced storm water infiltration have contributed to the lower groundwater levels. In areas of the City at risk because of dropping groundwater levels such as the Plaza, the City created Groundwater Conservation Overlay Districts (GCODs) in an effort to prevent further lowering of groundwater levels, and where possible, to restore groundwater levels through recharge and elimination of sources of groundwater drawdown.

The Church has been monitoring groundwater levels since the early 1930s. In the fall of 2007, the Church initiated a program to evaluate the feasibility of recharging the

groundwater on the Plaza and conducted a test recharge program, and in November 2009 the Church put into operation a permanent groundwater recharge system. In addition, the Church conducted a study to evaluate whether its building systems were contributing to the lowering of the groundwater and found no sources of groundwater drawdown.

The proposed redevelopment of the Plaza provides an opportunity to further contribute to the Church's ongoing efforts to stabilize groundwater levels on the Plaza through the recharge of storm water from the developed areas of the site. Where the proposed buildings that are part of the redevelopment of the Plaza extend below groundwater, the buildings will be waterproofed and will not impact groundwater levels.

Subsurface Conditions

To understand why the groundwater levels are dropping, it is helpful to understand the typical soil profile at the Plaza and the surrounding community. The typical soil profile consists of the following strata, beginning at the ground surface:

- ◆ Sand and Gravel Fill: Miscellaneous granular fill consisting of sand and gravel with varying amounts of silt, bricks, cinders, and other debris (Upper Aquifer).
- ◆ Organic Silt: Tidal marsh deposits of organic soil and peat with shells and fine sand (Aquitard).
- ◆ Sand and Gravel Glacial Outwash: Stratified deposits of sand and gravel (Lower Aquifer).
- ◆ Marine Clay: Silty, medium plasticity clay, commonly referred to as Boston Blue Clay.

- ◆ Glacial Till: Very hard sandy, gravelly clay.
- ◆ Bedrock: Cambridge Argillite and Slate underlain by Roxbury Conglomerate.

There are two relatively shallow aquifers (water-bearing soil layers) underlying the Plaza and the surrounding community. The Upper Aquifer is within the sand and gravel fill layer, and the Lower Aquifer is within the sand and gravel glacial outwash layer. The organic silt layer acts as an aquitard, restricting groundwater flow between the Upper Aquifer and the Lower Aquifer.

The Upper Aquifer is an unconfined (perched) aquifer in the sand and gravel fill layer that is perched on the top of the relatively low permeability organic silt. The Upper Aquifer is recharged by rainwater infiltration and possibly leakage from storm drains and sewers in the fill. The volume of recharge of rainwater to the Upper Aquifer has decreased because of development and the decrease of pervious surface area allowing infiltration. In addition to the decrease in infiltration, other factors as noted above are contributing to the dropping groundwater levels in the Upper Aquifer.

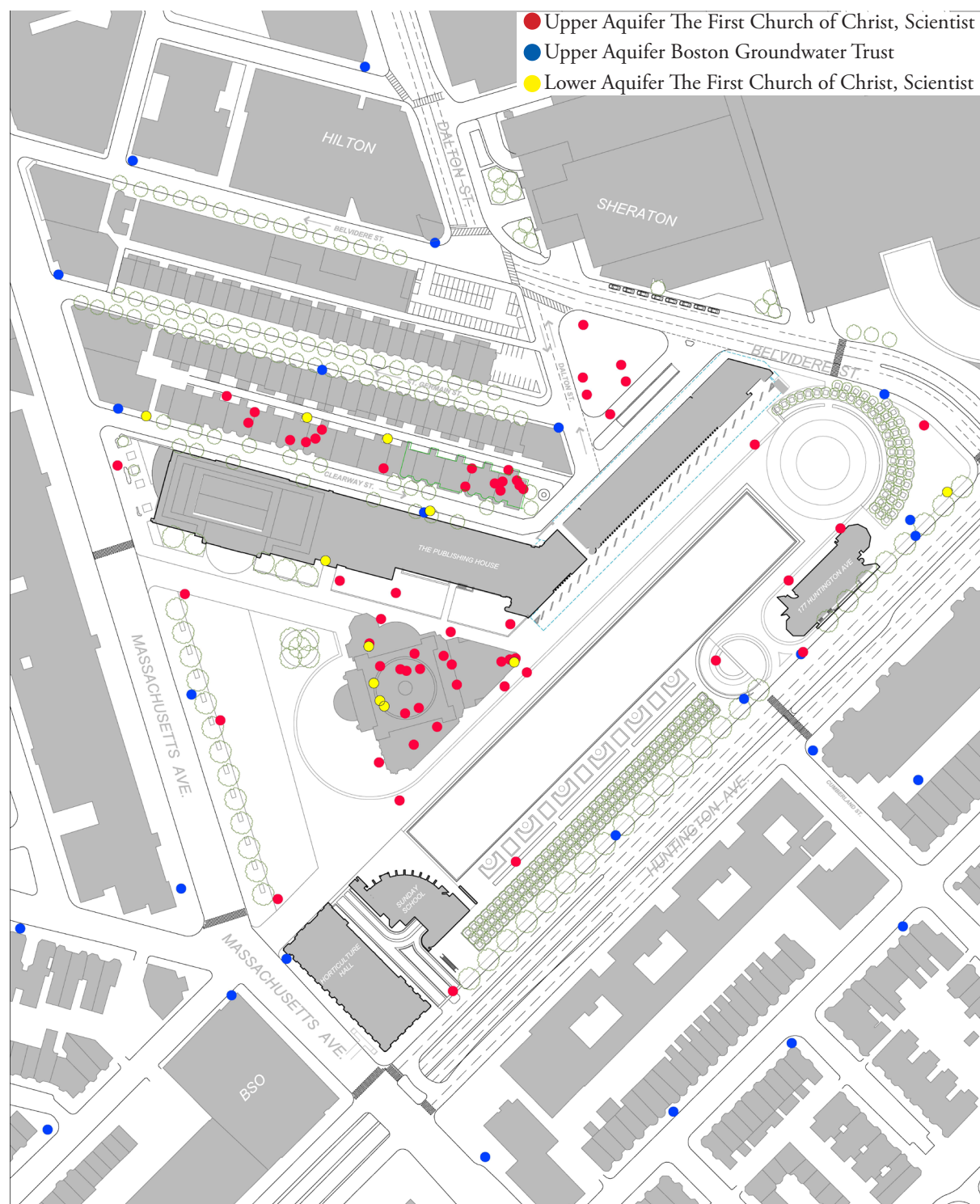
The Lower Aquifer is a confined aquifer in the sand and gravel glacial outwash and marine clay layers. The groundwater in the Lower Aquifer is confined by the relatively low permeability overlying organic silt layer. The Lower Aquifer is recharged by gradual infiltration of water from the Upper Aquifer through the organic silt, or by direct flow from the Upper Aquifer in areas where the organic silt has been perforated. Construction dewatering within the Lower Aquifer can cause groundwater levels in the Lower Aquifer to be lowered up to a mile from the construction site, because of the limited recharge to the Lower Aquifer.

Groundwater levels have been monitored at the Plaza since about 1931, when preparation for the construction of the Publishing House building began. The Boston Groundwater Trust (BGWT) also monitors groundwater levels around the perimeter of the Plaza and in the surrounding community. Figure 17 shows the Church and BGWT wells on and around the Plaza. Based on the extensive database of groundwater level data, groundwater levels in the area of the Church have stabilized and have risen in response to the Church's efforts to recharge the groundwater.

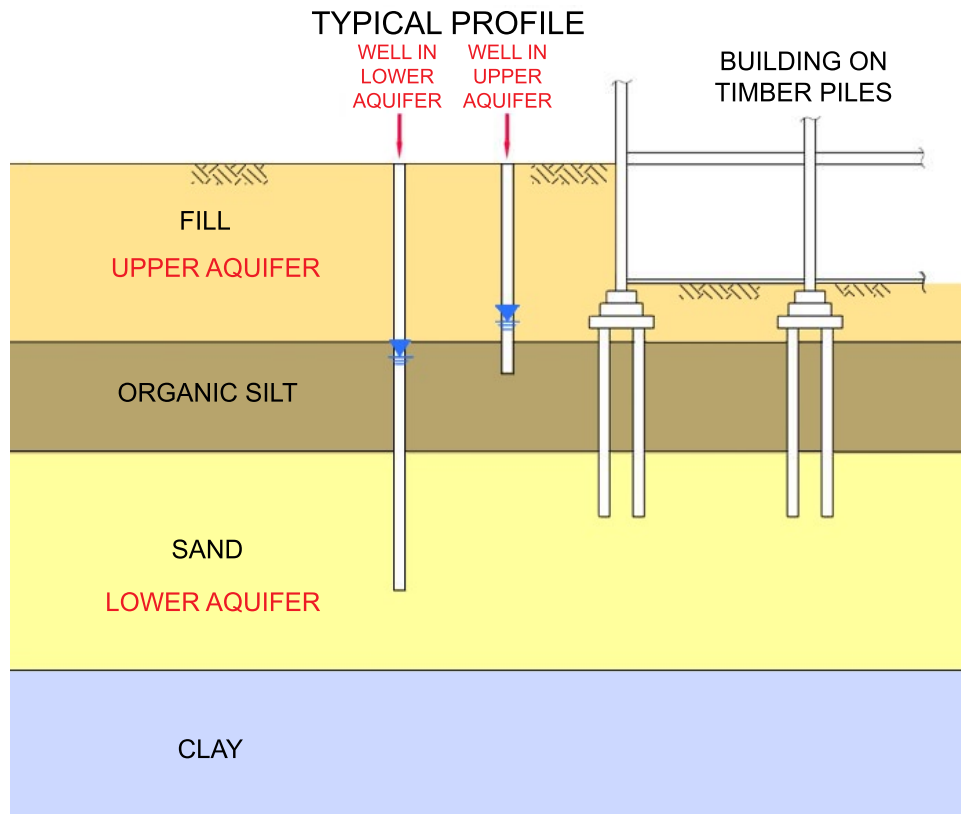
Proposed Development

The planned redevelopment of the Plaza will provide an opportunity to further contribute to the stabilization of groundwater levels through the collection and recharge of storm water from the developed areas of the site. Where the proposed buildings on the Belvidere/Dalton Site extend below the groundwater table, the construction will include installation of groundwater cutoffs and waterproofed below-grade structures. Because the proposed building on the Huntington Site will not extend beyond the groundwater table, there will not be a need to install groundwater cutoffs or waterproof below-grade structures.

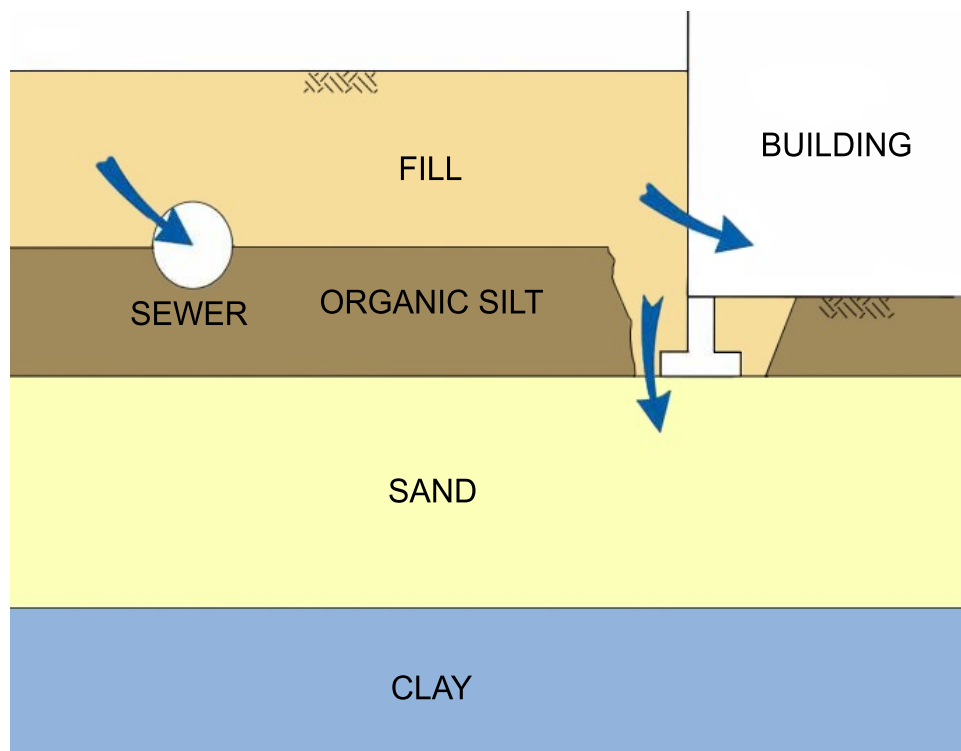
The Church will consider installing new groundwater wells if it is determined that they will provide additional helpful data.



22. Groundwater monitoring locations.



23. Typical Back Bay soil profile showing building on timber piles and difference in ground-water levels between the upper and lower aquifers.



24. Sources of drawdown of upper aquifer groundwater levels.

Water and Sewer Infrastructure

This section provides information about the water and sewer infrastructure systems serving the site.

The analysis of sewer generation and water consumption is preliminary and will be further refined during the Article 80 process. This preliminary analysis shows, as described below, that the location and capacity of existing infrastructure in the vicinity of the Plaza is anticipated to be able to accommodate the proposed development.

Infrastructure Systems

The water and sewer infrastructure systems serving the Plaza will be designed to meet or exceed applicable guidelines and regulations. At this early stage of the Revitalization Project, no significant infrastructure mitigation measures are anticipated, but the Church will undertake appropriate steps to ensure compliance with all regulations. For each development project, a Site Plan and a General Service Application will be prepared and submitted to the Boston Water and Sewer Commission (BWSC) for all new water, sewer, and storm drain connections to the new buildings. As required by BWSC, all new connections to the BWSC's systems will be constructed at the Church's and/or future development partner's expense and are subject to approval by the Commission.

Many of the existing infrastructure systems that serve the Plaza are privately owned and maintained. At this time, it is anticipated that this arrangement will be continued.

Sewer Service

The wastewater collection system in the vicinity of the Plaza is owned and operated by the

BWSC. The BWSC system is a part of the Massachusetts Water Resources Authority (MWRA) service area.

Generation

The sewer generation calculation described below evaluates the three buildings included in the Plaza Revitalization Project. Sewer generation from other components of the existing development will remain in comparable uses and therefore is not included in this computation.

Although the exact number of residential and hotel units has not been established at this time, sewer use has been estimated based on recent comparably sized projects in the Boston area. Conservatively, all ground-floor spaces proposed as retail/restaurant have been assumed to be 100-seat restaurants. Pursuant to the Massachusetts State Environmental Code (Sewer Connection and Extension Regulations, 314 CMR 7.15), the sewage generation rates were calculated by gallons per day (gpd) using the following:

- ◆ Office = 75 gpd/1000 sf
- ◆ Restaurant = 35 gpd/seat
- ◆ Multiple dwelling units = 110 gpd/bedroom
- ◆ Standard hotel room = 110 gpd/room

The projected sewage generation rate is conservatively projected to be approximately 174,000 gpd.

Existing Sanitary System

The existing sanitary sewer collection system in the vicinity of the Belvidere/Dalton Site consists of a 48-by-50 inch combined brick (common) sewer in Dalton Street as well as the (lower) 57-by-66 inch West Side

Interceptor which continues from the terminus of Dalton Street under the 101 Belvidere Street building and turns to run under the Reflecting Pool toward Massachusetts Avenue. There are additional BWSC sanitary sewer mains in Belvidere Street which are accessible to the development, but it is likely that new connections in this area will be to the Dalton Street common sewer.

The proposed Huntington Avenue building will likely pursue a sewer connection to the West Side Interceptor which consists of a 72-inch steel pipe running in a concrete vault under the existing garage floor. As the design of each proposed building advances, the flows at each proposed discharge point will be determined, and a further analysis of the existing flows and remaining capacities in those sewer mains can be finalized. The Church and its development partners will work closely with the BWSC to determine the existing system capacities and preferred connection points to the existing infrastructure. The Church has conducted initial discussions with the BWSC regarding the development plans, but since no specific development proposal had evolved at the time of these discussions, no specific connections were presented and/or approved by BWSC.

Water Service

The water distribution facilities in the general vicinity of the Plaza are owned and operated by the BWSC. The MWRA supplies water to the BWSC system.

Consumption

The BWSC currently provides water to the Plaza, and will continue to provide water to all proposed facilities. Determination of existing and future water usage is based upon

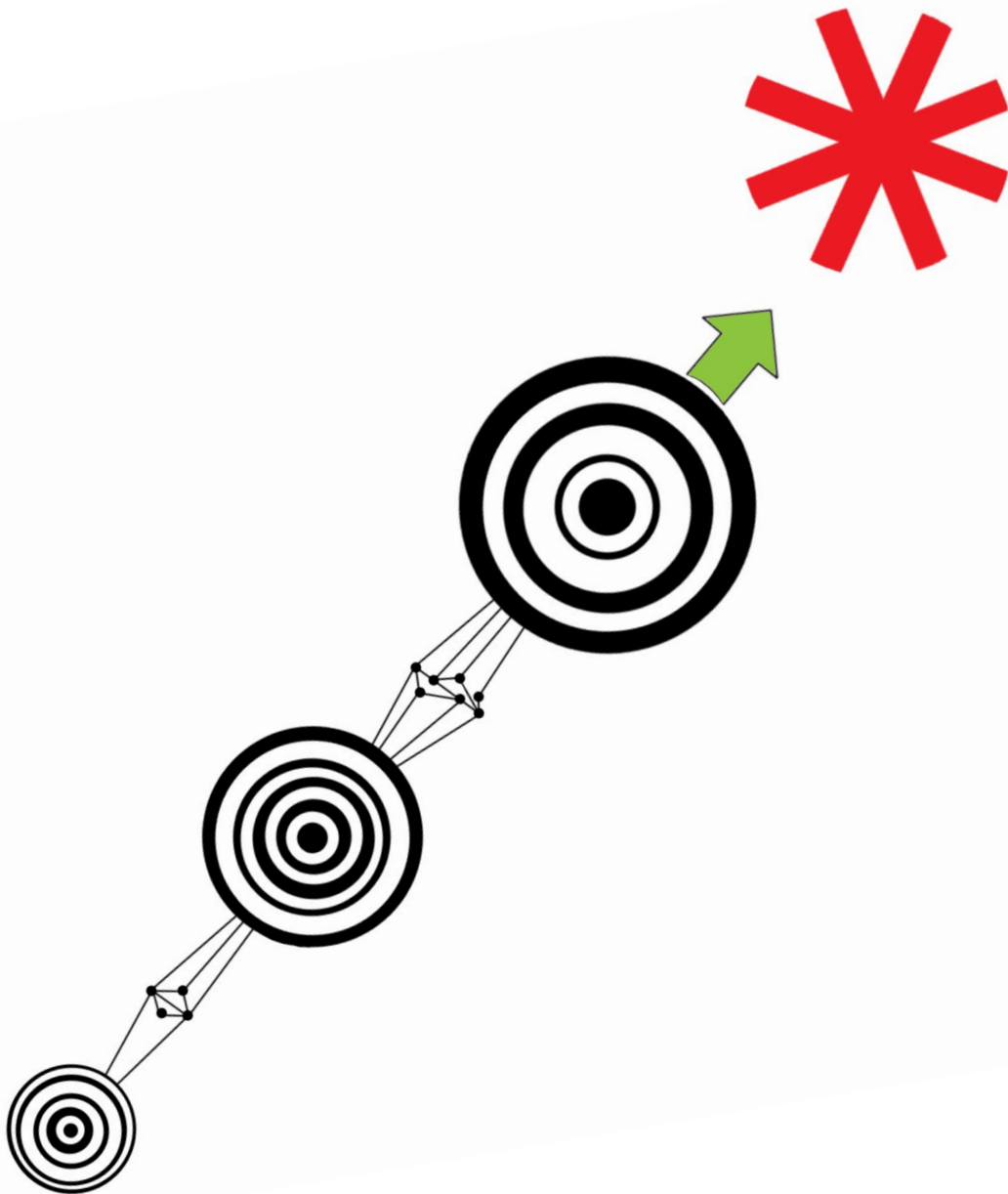
estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other usage.

System Configuration

The Plaza is supplied via a master-metered private water distribution system within the site. All water lines within the interior of the Plaza are private and will continue to serve the existing buildings. The new Huntington Avenue building will likely pursue a connection to this private system within the Plaza and therefore will not require a new connection to BWSC-owned infrastructure. The Church and/or its development partner will be responsible for sub-metering the new building if the new tenant is to be responsible for water use charges.

The Belvidere/Dalton buildings are remote from the private system and will likely pursue individual connections to the BWSC system. There is a 10-inch water main in Dalton Street and two 12-inch lines in Belvidere Street for potential connection points in the vicinity of the new development parcels.

IMPLEMENTATION



City Implementation and Approval Process

The implementation of the Project will require certain zoning relief. There has been no final determination as to the exact form this will take, but it will include one or more of the following alternatives.

- ◆ Establishment of a Planned Development Area.
- ◆ Establishment of an Urban Renewal Area District.
- ◆ Zoning map changes.
- ◆ Zoning variances.

All of these alternatives will require further public process in the form of formal submissions to the BRA and other City agencies with public hearings and the opportunity for additional community input.

In addition, regardless of the form of zoning relief, Article 80 Large Project Review will be required for each building that is developed as a part of the Project, which will require a formal submission to the BRA, a public hearing, and the opportunity for community input concerning the specific building.

Article 80 Large Project Review Process

The proposed buildings, individually or together, will be subject to Article 80B, Large Project Review. The Large Project Review process is a three-phased process allowing truncation of the process at the end of each phase. Typically, the process begins with a Project Notification Form (PNF), which includes a brief description of the Project and brief qualitative discussions of the potential environmental impacts, such as transportation, wind, shadow, daylight, solar glare, air

quality, and noise. The PNF is followed by the issuance of a Scoping Determination by the Boston Redevelopment Authority (BRA). The Scoping Determination either waives further review or outlines the scope of the Draft Project Impact Report (DPIR) including each of the environmental issues that needs to be studied for the DPIR, as well as comments from public agencies and communities.

Continuing Community Review

During the Article 80 review process, there are a number of opportunities for the community to be involved and comment on the proposals. After each document, there is a comment period during which individuals can provide comments to the BRA. There will also be public meetings on the specific proposals, during which comments will also be welcome. In addition, it is anticipated that an Impact Advisory Group (IAG) will be set up for the individual or combined projects during the Article 80 process, and will likely be made up of individuals who currently serve on the CAC. The IAG assists the BRA in determining how to mitigate impacts from the future development.

Boston Landmarks Commission Landmark Study Report

In early January 2007, a petition was submitted by 15 Boston residents to the Boston Landmarks Commission (BLC) to designate the Christian Science Plaza as a Boston Landmark.

At its January 23, 2007, public hearing, the BLC voted to accept the petition for further study. The petition was then placed on the BLC's list of properties requiring a landmark study report. At the hearing, Church officials did not raise any objections to BLC

conducting the study and expressed an interest in working with BLC staff as the study report moved forward.

Since the January 2007 hearing, the Church has kept the BLC staff informed of various maintenance-related activities at the Church and other projects being undertaken. In addition, Church representatives have met with BLC staff to apprise them of the various development scenarios being considered for the Plaza Revitalization Project.

At its February 23, 2010, public hearing, the BLC voted to move forward with the study report on the Plaza, with an expectation of having it completed in June 2010. To assist the advancement of the study report, Church representatives have provided the BLC staff and its consultant team with background materials and tours of the site, as well as the opportunity to conduct research at the Church's archives.



The BLC study report was made available for review on June 22, 2010, and a public hearing was held on July 13, 2010. The BLC will consider public comments and requested amendments before a vote is taken at a subsequent public hearing.

The Church is looking forward to working with the BLC to develop appropriate standards and criteria for the revitalization and redevelopment of the Plaza so improvements are integrated sensitively within the historic context.


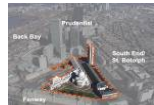


INDEX OF PHOTOGRAPHS AND DRAWINGS

Photographs and Drawings

COVER

Figure	Title	Description	Credit	Creator	Image
Front	Boston Aerial	Photo of the Christian Science Plaza and Boston.	© Skyshots	Skyshots	
Back	The Mother Church	The Mother Church at sunrise.	Photo by Charles Meyer © meyermedia	Meyer, Charles	




EXECUTIVE SUMMARY

Figure	Title	Description	Credit	Creator	Image
0	Plaza - from Prudential Skywalk	Photo of the Christian Science Plaza from the Prudential building Skywalk.	© The First Church of Christ, Scientist	Photo: Herlinger, Robert A.; Modified by: Williams, Kayle	
1	Boston Aerial	Photo depicting the location of the Christian Science Plaza.	© Skyshots	Aerial: Skyshots; Modified by: Williams, Kayle	
2	Site Sketch	Site Sketch of the Christian Science Plaza.	Courtesy of The First Church of Christ, Scientist	Sketch: Unknown; Modified by: Williams, Kayle	
3	Boston Aerial	Aerial view of the Christian Science Plaza and surrounding areas.	© Skyshots	Aerial: Skyshots; Modified by: Williams, Kayle	





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4	Existing Conditions Plan	Existing Site Plan.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects	
5	Enhanced Open Space	Illustrative plan showing proposed open space improvements and footprints of new buildings.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects	
6	Massing Model	Model showing proposed new buildings.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects	




CHAPTER 1

Figure	Title	Description	Credit	Creator	Image
0.1	Model Discussion 1	Consultant Howard Elkus of Elkus Manfredi Architects, discusses design proposal with the CAC members and public.	© The First Church of Christ, Scientist	Williams, Kayle	
0.2	Presentation 1	Consultant Jim Van Sickle of Elkus Manfredi Architects, discusses design proposal with the CAC members and public.	© The First Church of Christ, Scientist	Williams, Kayle	
0.3	Model Discussion 2	Consultant Howard Elkus of Elkus Manfredi Architects, discusses design proposal with the CAC members and public.	© The First Church of Christ, Scientist	Williams, Kayle	
0.4	Presentation 2	"Economic Rationale" presented to the CAC and public by Harley Gates.	© The First Church of Christ, Scientist	Furbush, Julie	

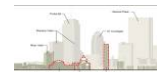
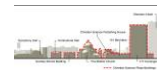


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1	Presentation 3	"Economic Rationale" presented to the CAC and public by Harley Gates.	© The First Church of Christ, Scientist	Furbush, Julie	
2	Presentation 4	"Economic Rationale" presented to the CAC and public by Harley Gates.	© The First Church of Christ, Scientist	Furbush, Julie	
3	Model Discussion 3	Consultant Howard Elkus of Elkus Manfredi Architects, discusses design proposal with the CAC members and public.	© The First Church of Christ, Scientist	Williams, Kayle	









CHAPTER 2

Figure	Title	Description	Credit	Creator	Image
0.1	Massachusetts Avenue Elevation	Elevation drawing of the Plaza from Massachusetts Avenue.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates; Altered by: Williams, Kayle	
0.2	Huntington Avenue Elevation	Elevation drawing of the Plaza from Huntington Avenue.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates; Altered by: Williams, Kayle	
1	Mary Baker Eddy Portrait	Mary Baker Eddy, founder of The First Church of Christ, Scientist, and <i>The Christian Science Monitor</i> .	Courtesy of The Mary Baker Eddy Library Collection		
2	Church Service	Special meeting being held in the Original Mother Church.	© The First Church of Christ, Scientist	Menchel, Neil	

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3	Reading Room	The Christian Science Reading Room at 194 Massachusetts Avenue.	© The First Church of Christ, Scientist	Tyler, Cynthia	
4	Christmas Toy Drive	Church members helping during a Christmas toy drive.	© The First Church of Christ, Scientist	Unknown, Church employee	
5	Opening Our Doors	Opening Our Doors kick-off event taking place on the Massachusetts Avenue lawn.	© The First Church of Christ, Scientist	Unknown, from the Library	
6	"One World" Event	Children painting murals during a community program hosted by TMC Youth.	© The First Church of Christ, Scientist	McNichol, Taryn	
7	Mapparium	The world-renowned Mapparium.	Photo by Mark Thayer, The Mary Baker Eddy Library, Boston, MA	Thayer, Mark	
8	Children's Fountain	Children's Fountain on the Plaza.	Courtesy of The First Church of Christ, Scientist	Unknown, from the Mary Baker Eddy Library	
9	Christian Science Plaza	Visitors on the Plaza.	© The First Church of Christ, Scientist	McNichol, Taryn	
10	Site Plan	Site Plan of the Christian Science Plaza.	Courtesy of The First Church of Christ, Scientist	Created by: Site Services; Modified by: Williams, Kayle	

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11	Site Sketch	Site Sketch of the Christian Science Plaza.	Courtesy of The First Church of Christ, Scientist	Unknown; Modified by: Williams, Kayle	
12	Aerial - Boston, for Church Properties	Aerial photo of the Plaza and surrounding Church properties.	© Skyshots	Aerial: Skyshots; Modified by: Williams, Kayle	
TIMELINE: Page 13 & 14					
T1	Aerial - 1894-2008	Image altered to give context of the evolution of the Plaza.	Courtesy of The First Church of Christ, Scientist		
T2	1894 - The Mother Church Original	Adaptation of image P07972 to show the beginning of the Church's presence in the Boston.	Courtesy of The Mary Baker Eddy Collection		
T3	1906, 1908 & 1917 - Aerial	Adaptation of image P08707 to show changes of the Church's property.	Courtesy of The Mary Baker Eddy Collection		
T4	1934 - Aerial	Adaptation of image P08698 to show changes of the Church's property.	Courtesy of The Mary Baker Eddy Collection		
T5	1971-75 to 2008 - Aerial	Aerial image that has been altered to show changes of the Church's property.	© Skyshots	Skyshots	

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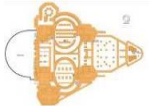
CHAPTER 3

Figure	Title	Description	Credit	Creator	Image
0	Original Pathway to the The Mother Church	Picture of the "direct" pathway to the Original Mother Church, as seen in the 1950s.	Courtesy of Robert A. Herlinger.	Herlinger, Louis F.	
1	Reflection	The Reflecting Pool.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
2	French Bosque's	Example of well-used open space (Jardin des Tuileries, Paris).		Unknown	
3	Boston Open Space	Example of well-used open space (Post Office Square, Boston).	© Halvorson Design Group	Halvorson Design Group	
4	Original Pathway to the The Mother Church	Picture of the "direct" pathway to the Original Mother Church, as seen in the 1950s.	Courtesy of Robert A. Herlinger.	Herlinger, Louis F.	
5	Plaza completed in the 1970s	Picture of the Christian Science Plaza in the early 1970s.		Unknown	
6	Publishing House Entrance	Main entrance for the worldwide administrative headquarters of the Church and the Christian Science Publishing Society.	© The First Church of Christ, Scientist	Williams, Kayle	




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7	Dalton/Belvidere Intersection	Dalton Street/Belvidere Street intersection.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
8	Picture depicting pedestrian circulation	Existing pedestrian circulation through the Christian Science Plaza.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
9	Busses along Huntington Ave.	Tour buses along Huntington Avenue.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
10	The Mother Church Structural Plan	Footprint plan of the Church edifices, which are supported by approximately 4,800 wood piles.	Courtesy of The First Church of Christ, Scientist	Plan: Simpson, Gumpertz & Heger Inc; Modified by: Williams, Kayle	

CHAPTER 4

Figure	Title	Description	Credit	Creator	Image
0	Plaza and Reflecting Pool improvements	Illustrative plan to give detail of the potential open space improvements.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
1	Illustrative pool depth change	Sketch of the current pool depth (26 inches) and the new pool depth will be 6-12 inches.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
2	Reflecting Pool Sketch	Illustrative sketch of the proposed Reflecting Pool crossing.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	

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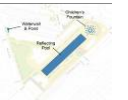


3	MassGIS image with grid overlay	Aerial view showing the grid system in the vicinity of the Plaza.	Courtesy of The First Church of Christ, Scientist	MassGIS Satellite image; Modified by: Epsilon Associates, Inc.	
4	Mass. Avenue Lawn	View of the Massachusetts Avenue as seen today.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
5	Huntington Bosque	View of the Huntington Avenue Bosque as seen today.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
6	Areas on site for future improvements	Site plan depicting areas on site for future improvements.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
7	Children's Fountain in action	The Children's Fountain in the summer months.	© The First Church of Christ, Scientist	Carr, Jennifer	
8	Huntington Ave Buses	Layover buses parked on Huntington Avenue.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
9	Open Space Improvements	Proposal of the enhanced open space.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	

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CHAPTER 5

Figure	Title	Description	Credit	Creator	Image
0	Sustainability Framework	Framework in which sustainability was studied	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	
1	Big Belly's	"Big Belly" Solar powered trash compactors set up on the Plaza.	© The First Church of Christ, Scientist	Williams, Kayle	
2	LEED Plaque	Plaque awarded for the 2008 renovation of floors 5-9 of the Publishing House.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
3	Elevation Drawing of the Publishing House	Drawing of the Publishing House floors that were renovated in 2008.	© The First Church of Christ, Scientist	Unknown	
4	Existing Water Features	Plan of the existing water features.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	
5	Garden and Waterwall	Mary Baker Eddy Library Waterwall and Garden	© The First Church of Christ, Scientist	Herlinger, Robert A.	
6	Existing Water Features	Photo of the existing water features.	© The First Church of Christ, Scientist	Herlinger, Robert A.	


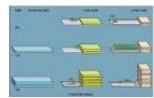

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7	Existing Landscaped Features	Plan of the existing landscape area.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	
8	Illustrative Landscaped Features	Plan of the proposed landscaped areas.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	
9	Illustrative Tree Planting Changes	Plan of the proposed tree planting changes.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	
10	Plaza Buildings	Plan of all buildings continued to be used. No demolition.	Courtesy of The First Church of Christ, Scientist	Sasaki Associates, Inc.	









CHAPTER 6

Figure	Title	Description	Credit	Creator	Image
0	Massing Model	Image created to show the massing of the potential development.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
1	FAR Description	Graphical description of the floor area ratio (FAR).	Boston Redevelopment Authority	Boston Redevelopment Authority	
2	Reflecting Pool Damage (repeat)	Working on the Reflecting Pool membrane.	© The First Church of Christ, Scientist	Herlinger, Robert A.	

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3	Contractor Repairing Wood Pile	Working on wood piles beneath the Church edifices.	© The First Church of Christ, Scientist	Lehr, Paul	
4	Repairing Paving on Plaza	Site paving in need of repair.	© The First Church of Christ, Scientist	Williams, Kayle	
5	Deteriorating Façade	Example of the deteriorating facades on the Plaza buildings.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
6	Aerial - Boston; Leased Plaza Properties	Aerial image showing leased properties on the Plaza.	© Skyshots	Aerial: Skyshots; Modified by: Williams, Kayle	
7	BRA Zoning Map	Zoning Map created based on the Boston Redevelopment Zoning Map of the area around the Plaza.	Courtesy of The First Church of Christ, Scientist	Original Map: Boston Redevelopment Authority; Recreated: Williams, Kayle	
8	As-of-Right Plaza Build-out	Computer model showing what the Plaza would look like if they were to build-out all of the open space per "as-of-right" zoning.	Courtesy of The First Church of Christ, Scientist	Model: Sasaki Associates, Inc.; Modified by: Williams, Kayle	
9	Plaza Development "Sites"	Plan of the development locations studied.	Courtesy of The First Church of Christ, Scientist	Plan: Elkus Manfredi Architects Ltd; Modified by: Williams, Kayle	
10	Site 2	Photo of Site 2 that was analyzed for potential development.	© The First Church of Christ, Scientist	Herlinger, Robert A.	

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11	Site 5	Photo of the Site 5 that was analyzed for potential development.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
12	Site 6	Photo of the Site 6 that was analyzed for potential development.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
13	Sites 8 & 9	Plan of "Sites 8 & 9" as originally studied.	Courtesy of The First Church of Christ, Scientist	Plan: Elkus Manfredi Architects Ltd; Modified by: Williams, Kayle	
14	Site 8/9	Plan of "Site 8/9" studied as a combined property.	Courtesy of The First Church of Christ, Scientist	Plan: Elkus Manfredi Architects Ltd; Modified by: Williams, Kayle	
15	Sketch-Up: Dalton Existing	Plan of the existing conditions at the Belvidere/Dalton Site.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
16	Sketch-Up: Proposed footprint of the Dalton/Belvidere site	Plan of the proposed Belvidere/ Dalton Site showing footprints of two new buildings and new open space.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
17	Sketch-Up: Potential ground floor of the Dalton/Belvidere site	Proposed Belvidere/ Dalton Site ground plan.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
18	Traffic at Belvidere/Dalton	Picture of Belvidere Street/Dalton Street intersection.	© The First Church of Christ, Scientist	Williams, Kayle	

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19	Belvidere Parking Lot	Picture of the Belvidere Street parking lot.	© The First Church of Christ, Scientist	Lawrence, Deb	
20	Historic Saint Germain	Picture of the historic row houses along St. Germain Street.	© The First Church of Christ, Scientist	Herlinger, Robert A.	
21	Community Connectivity	The Huntington Site as the nexus of two prominent community connections.	MassGIS Image	Elkus Manfredi Architects Ltd.	
22	Sketch-Up: Huntington Existing	Existing conditions plan of the Huntington Site.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
23	Sketch-Up: Huntington Proposed	Proposed Huntington Site ground plan.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
24	Sketch-Up: Proposed Massing of the Huntington Ave site	Rendering showing Huntington Site proposal from the Children's Fountain.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
25	Sketch-Up: Huntington Rendered Massing	Rendering showing Huntington Site proposal with 177 Huntington in the foreground.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	
26	Huntington Elevation of the Plaza ONLY	Huntington Avenue elevation of the Plaza.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	


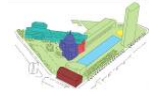


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27	Sites 5, 8 & 9	Plan of the proposed development sites.	Courtesy of The First Church of Christ, Scientist	Plan: Elkus Manfredi Architects Ltd; Modified by: Williams, Kayle	
28	Community Connectivity	Aerial of the proposed development sites.	© Skyshots	Skyshots; Modified by: Elkus Manfredi Architects Ltd.	
29	Massing Model	Model showing the proposed development.	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects Ltd.	









CHAPTER 7

Figure	Title	Description	Credit	Creator	Image
0	The Mother Church Original	Historic photo of the Mother Church Original.	Courtesy of The Mary Baker Eddy Library and The Mary Baker Eddy Collection		
1	Site Sketch	The Christian Science Plaza key.	Courtesy of The First Church of Christ, Scientist	Sketch: Unknown; Modified by: Williams, Kayle	
2	The Mother Church Extension	The Mother Church Extension completed in 1906.	Courtesy of the Mary Baker Eddy Collection		
3	TMCX Organ	The organ by Aeolian-Skinner Company.	© The First Church of Christ, Scientist	Site Services Employee	

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4	Christian Science Publishing House	The Christian Science Publishing House, home to <i>The Christian Science Monitor</i> , completed in 1934.	Courtesy of The Mary Baker Eddy Library and The Mary Baker Eddy Collection	Unknown	
5	Garden Wall	The garden wall before the renovation in 2002.	© The First Church of Christ, Scientist	Site Services Employee	
6	Garden Renovated	The garden and new Massachusetts Avenue entrance after the renovation in 2002.	Photo by Mark Thayer, The Mary Baker Eddy Library, Boston, MA	Thayer, Mark	
7	Mapparium Historic	The Mapparium as completed in 1935.	Courtesy of The Mary Baker Eddy Library and The Mary Baker Eddy Collection	Unknown	
8	Historic Photo from corner of Norway & Falmouth Streets	A view of the Church buildings and park prior to the creation of the Plaza in 1970.	Courtesy of The Mary Baker Eddy Library and The Mary Baker Eddy Collection		
9	Aerial - 1970's	A view of the Plaza after its creation in the 1970s.	Courtesy of The First Church of Christ, Scientist		
10	Original Children's Fountain	The Children's Fountain in the 1970s before it was redesigned to be more kid-friendly.	© The First Church of Christ, Scientist	Unknown, Church employee	
11	Children's Fountain Today	The Children's Fountain as seen today.	© The First Church of Christ, Scientist	Williams, Kayle	






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12	Children's Fountain in action	Children playing in the Children's Fountain.	© The First Church of Christ, Scientist	Carr, Jennifer	
13	Horticultural Hall	Horticultural Hall.	© The First Church of Christ, Scientist	Lawrence, Deb	




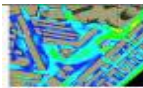
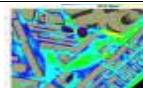
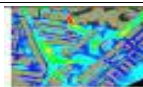
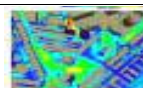
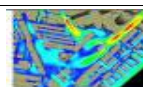
CHAPTER 8

Figure	Title	Description	Credit	Creator	Image
0	Environmental Studies - Doodles	Chapter title page - 4 doodles	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
1	Transit Access	Transportation - Existing transit access.	Courtesy of The First Church of Christ, Scientist	Vanasse Hangen Brustlin, Inc.	
2	Curb Use	Transportation - Existing curb use.	Courtesy of The First Church of Christ, Scientist	Vanasse Hangen Brustlin, Inc.	
3	Intersections studied	Transportation - Study area intersections.	Courtesy of The First Church of Christ, Scientist	Vanasse Hangen Brustlin, Inc.	
4	Modes of transportation	Transportation - Modes of transportation.	Courtesy of The First Church of Christ, Scientist	Vanasse Hangen Brustlin, Inc.	

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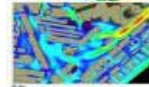






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5	Access/Egress	Transportation - Existing and future site access/egress.	Courtesy of The First Church of Christ, Scientist	Vanasse Hangen Brustlin, Inc.	
6	Wind - Pedestrian Conditions No Build	Wind - Predicted pedestrian annual wind conditions - No Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
7	Wind - Pedestrian Conditions Build	Wind - Predicted pedestrian annual wind conditions - Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
8.1	Wind - Simulations - SW - No Build	Wind - Simulation Results - Winds from the Southwest - No Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
8.2	Wind - Simulations - SW - Build	Wind - Simulation Results - Winds from the Southwest - Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
9.1	Wind - Simulations - NW - No Build	Wind - Simulation Results - Winds from the Northwest - No Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
9.2	Wind - Simulations - NW - Build	Wind - Simulation Results - Winds from the Northwest - Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
10.1	Wind - Simulations - NE - No Build	Wind - Simulation Results - Winds from the Northeast - No Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	

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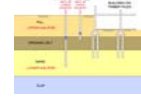
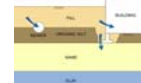
Photographs and Drawings

10.2	Wind - Simulations - NE - Build	Wind - Simulation Results - Winds from the Northeast - Build	Courtesy of The First Church of Christ, Scientist	Rowan Williams Davies & Irwin, Inc.	
11	Shadow Study - Spring/Fall	Shadow Study - March 21/September 21, 9:00am	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
12	Shadow Study - Spring/Fall	Shadow Study - March 21/September 21, 12:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
13	Shadow Study - Spring/Fall	Shadow Study - March 21/September 21, 3:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
14	Shadow Study - Spring/Fall	Shadow Study - March 21/September 21, 6:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
15	Shadow Study - Summer	Shadow Study - June 21, 9:00am	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
16	Shadow Study - Summer	Shadow Study - June 21, 12:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
17	Shadow Study - Summer	Shadow Study - June 21, 3:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	

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18	Shadow Study - Summer	Shadow Study - June 21, 6:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
19	Shadow Study - Winter	Shadow Study - December 21, 9:00am	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
20	Shadow Study - Winter	Shadow Study - December 21, 12:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
21	Shadow Study - Winter	Shadow Study - December 21, 3:00pm	Courtesy of The First Church of Christ, Scientist	Elkus Manfredi Architects, Ltd	
22	Groundwater	Groundwater monitoring locations.	Courtesy of The First Church of Christ, Scientist	GEI Consultants, Inc.	
23	Groundwater - Soil Profile.	Groundwater - Soil Profile.	Courtesy of The First Church of Christ, Scientist	GEI Consultants, Inc.	
24	Groundwater - Water drawdown.	Groundwater - Water drawdown.	Courtesy of The First Church of Christ, Scientist	GEI Consultants, Inc.	

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CHAPTER 9

Figure	Title	Description	Credit	Creator	Image
0	Spiral Doodle	Chapter title page - Doodle created by Robert Herlinger	© The First Church of Christ, Scientist	Original: Herlinger, Robert A.; Re-created: Williams, Kayle	

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