



City of Boston Mayor Michelle Wu

Boston Public Library CODMAN SQUARE BRANCH

Programming Study

MARCH 2022



David Leonard, President

CITY of **BOSTON**

Mayor Michelle Wu Dion Irish, Chief of Operations Kerrie Griffin, Director, Public Facilities Department Sheila A. Dillon, Chief and Director of the Mayor's Office of Housing

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Existing Building and Site Drawings

Executive Summary

- 0.1 Project Scope
- 0.2 Findings
- 0.3 Comparative Analysis of Development Approaches

Resumen ejecutivo en español: Apéndice A Tóm tắt điều hành bằng tiếng Việt: Phụ lục B Rezime Egzekitif an Kreyòl Ayisyen: Anèks C

0.1 PROJECT SCOPE

In early 2021, the City of Boston's Public Facilities Department (PFD), working with the Boston Public Library (BPL), engaged Sasaki to conduct this study of the Codman Square Branch Library.

STUDY GOALS

The study collects information about the Branch Library and the community it serves. It sets priorities for library services and design. It defines a program and analyzes the existing building and site conditions. Finally, it explores options for renovation or replacement of the building. The study also analyzes the possibility of the site being able to accommodate affordable housing without impacting the branch.

METHODOLOGY

A core team including Sasaki, PFD, and key representatives from BPL and the Mayor's Office of Housing met regularly throughout the study to review progress. Four community meetings led by the design team, a survey, and one public workshop led by the Mayor's Office of Housing informed the process. The study was divided into three phases.

Phase I - Information-Gathering

The first phase set the background for the study by identifying the opportunities and constraints of the site. Over the course of 12 weeks, Sasaki reviewed existing documentation, conducted existing facilities assessments, analyzed site and infrastructure conditions, reviewed property and zoning requirements, and studied the demographics and history of the surrounding neighborhood. The goal for community outreach in this phase



Site Aerial. Source: Google

was to hear the neighborhood's and stakeholders' goals for the library.

Phase II - Programmatic Requirements and Test Fit

The second phase established the needs, priorities, and values for the library. A program was drafted from information gathered in discussions and meetings with the community, PFD, BPL, branch staff, and other stakeholders to ensure that the library will meet the neighborhood's needs for today and long into the future. In this phase the team produced a tabulation of the library space needs as well as room data sheets, adjacency diagrams, and housing requirements. The team also explored a number of possible test-fit options for accommodating this program on the site. The community meeting in this phase focused on program confirmation.

Phase III - Final Report

In the third phase of work, the team developed three options that meet the needs identified in the program, including recommendations for building systems and information technology. The options were refined and developed with feedback from PFD, BPL, and other stakeholders, with the development of plans and conceptual massing. Detailed cost estimates were developed for the final options. Community meetings reviewed interim and updated versions of the test fits.

0.2 **FINDINGS**

BACKGROUND

The Codman Square Branch is a 22,000sf building, opened in 1978 and little changed since then except for minor upgrades. It is located just south of Codman Square on a quiet block of Washington Street. Several churches and a social-services organization are its nearest neighbors.

The branch has an active Friends group and devoted patrons, including many seniors, families, and children. Library events for all ages are important to the community.

The site, which previously held a 19thcentury school, is large and there is a well-used garden space and parking lot behind the library building.

The building envelope has room for improvement both in design and in thermal performance, but is in good condition. Inside, the interior does not meet current library needs and would benefit from more spatial division and improved daylighting, finishes, and HVAC systems. There are accessibility issues that should be addressed in any scenario.

Structurally, visible elements seem to be in good condition, but the building's lateral system and slab/foundations are unknown. Structural upgrades may be a major cost factor in any planned renovation.

Most HVAC, electrical, and fire alarm equipment is at or beyond its useful life. Plumbing and fire protection are



Existing locus plan

adequate, with minor issues that should be addressed. Any new development will require a hydrant flow test and an assessment of sewer capacity.

Outside the building, the site is well-used and pleasant, especially the backyard area; there is room for improvement to the function, accessibility, and appearance of site elements. The storm-water and drainage systems are outdated and will need to be updated. There is more detail on existing conditions in Section 2 of this report.

PROGRAM AND DESIGN REQUIREMENTS

This study outlined a space program (described in Section 3) and design aspirations for accommodating that program that would meet BPL's and the community's goals for this Branch. While the existing building is large enough to house this program, it would need to be renovated in a significant way to meet the design aspirations, program adjacencies, and operational needs of the branch. This is also true of the building exterior: significant openings in the existing brick walls are needed to create a more open, transparent, and inviting branch. While there is ample open space on the site, both along Washington Street and behind the building, the BPL's goals for outdoor programming and usable space require a rethinking of the site area. The study considers options for both renovation and demolition/new construction to meet these needs. A new building would be of comparable size to the existing building.

The design goals include not only spatial accommodation but also a vision for a welcoming, airy, transparent, beautiful, and highly functional building with good internal sight lines and acoustics. Moreover, the City of Boston has ambitious sustainability and energyuse goals for projects of this type that influence the proposed approach to building envelope, HVAC, and site design. Specific recommendations for sustainable design features, architectural and landscape Collection design, and building systems, as well as an analysis of embodied and operational carbon for the major options, Mechanical are included in ERVICES Section 5.

HOUSING

PFD and BPL asked the design team to assess whether, after meeting the program and design needs of the library, the site could be developed to include affordable housing. The Mayor's Office of Housing provided invaluable assistance in defining the parameters for unit count and mix that would make the project potentially feasible for possible developers. The team worked together to understand regulatory requirements and their applicability to such a project. A real-estate consultant provided a market study confirming that demand exists at affordable and market rents for 1-, 2- and 3-bedroom units, up to 215 units (far more than the site can accommodate). All of this information informed the test fits in this report.

Community attitudes toward housing are generally supportive, tempered by significant concerns over density and possible over-development. The community feedback is summarized in Section 1.6 and full community-meeting minutes, survey results, and other feedback are included in Appendices E and F.



Section 4 of this report identifies the most promising conceptual development approaches to the site that meet the needs of the branch; these options also include the possibility of affordable housing. This report delineates the design, cost, and environmental benefits and drawbacks of each option.

An independent cost consultant developed an estimate for each option, separating the costs of the library and housing components. Cost information is summarized in Section 6.1 and the full estimates are included in the Appendix. Schedules are included in Section 6.2.

Option A

Option A is an extensive renovation of the existing branch to meet current needs. In this scenario, housing could be developed on a portion of the site as a separate, standalone building. In this scenario, the library building will be renovated according to PFD's typical processes of design and construction procurement. The Mayor's Office of Housing will work with a developer to finance and build a separate housing development, if housing is included.





Option B

Option B is a new, freestanding library building. In this scenario, housing could be developed on a portion of the site as a separate, standalone building. Similarly to Option A, the freestanding library will be constructed according to PFD's typical processes.

In both Options A and B, if the city decides to pursue a standalone housing development on this site, the housing would be completed through a separate process on an independent schedule. Section 4 includes additional information about procurement processes.



Option C

Option C is a mixed-use building that includes both a branch library and affordable housing within a single building. For Option C, PFD and the Mayor's Office of Housing will work with a developer partner to design and construct the mixed-use building, including the core and shell of the library space and the complete housing portion of the building. The library space, excluding the core and shell, will be designed and fit out through separate funding and processes administered by PFD and BPL. Option C would take longer to implement because of its more complex legal and regulatory processes and the additional coordination required during the design and construction phases of the project.



Option C Conceptual massing options for a mixed-use building

0.3 COMPARATIVE ANALYSIS OF DEVELOPMENT APPROACHES

	Option A: Rend	ovated Library	Option B: Star Libr	nd-alone New rary	Option C: Mixed-use Library w/ Affordable Housing			
	Renovated Library	Optional Housing	New Library	Optional Housing	Library	Building Projec	t by Developer	
					Library Interior Fit- Out	Library Portion of Core + Shell	Housing Portion of Base Building; Housing Fitout	
Meets Library Program	Yes		Yes				Yes	
Available Housing Units		35-40		40-45			40-70	
Library Project Costs	\$24.9M		\$27.0M		\$8.6M	\$18.9M		
Developer Project Costs		\$25.0M		\$29.1M	Library subtotal \$27.5M		\$43.9M	
Cost/unit of housing (max. number of units)		\$625,000 (at 40 units)		\$646,667 (at 45 units)			\$627,143 (at 70 units)	
Sustainability Advantages	Least embodied carbon impact	Energy-efficient housing per MOH requirements	Best potental for operational energy efficiency of library	Energy-efficient housing per MOH requirements	Overall lowest embodied + operat life of the buildi		nal carbon over the J	

Refer to Section 5 for sustainability analysis and Section 6 for more detailed cost information

1.0

Project Background

- 1.1 Project Team
- 1.2 History + Demographics
- 1.3 Site Analysis
- 1.4 Existing Library Use
- 1.5 Library Needs, Goals, Objectives
- 1.6 Community Feedback
- 1.7 Housing Objectives + Market Analysis

1.1 **PROJECT TEAM**

Project Name	Boston Public Library Codman Square Branch Library Programming Study						
City of Boston	Mayor Michelle Wu Dion Irish, Chief of Operations						
	Public Facilities Department Kerrie Griffin, Director, Public Facilities Department Paul Donnelly, Assistant Director, Design Alistair Lucks, Staff Architect; Project Manager						
	Mayor's Office of Neighborhood Services George Huynh, Contact for Dorchester Denise Dos Santos, Contact for Mid-Dorchester and Cape Verdean Community Donte Peeples, Contact for Mattapan						
	Mayor's Office of Housing Sheila A. Dillon, Chief and Director of the Mayor's Office of Housing Taylor Cain, PhD., Deputy Director, Office of Housing Stability Joe Backer, Housing Development Officer						
	Office of Budget Management Era Kaplan, Senior Management Analyst						
User Agency	Boston Public Library David Leonard, President Michael Colford, Director of Library Services Eamon Shelton, Director of Operations Alison Ford, Manager of Major Projects and Special Operations Lissa Schwab, Major Projects Coordinator Priscilla Foley, Director of Neighborhood Services Laura Irmscher, Chief of Collections						
Architect Landscape Architect	Sasaki 64 Pleasant Street, Watertown, MA 02472 Lan Ying Ip, Principal in Charge Kate Tooke, Principal, Landscape Architecture Carla Ceruzzi, Architect/Project Manager						
Civil Engineer	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 Chris Hodney, Project Manager						
Structural Engineer	RSE Associates 63 Pleasant Street, Suite 300, Watertown, MA 02472 Jennifer McClain, Principal Georgi Chaykov						

Mechanical, Electrical, Plumbing Engineering	BR+A Consulting Engineers 10 Guest Street, 4th Floor Boston, MA 02135 Cris Copley, Principal Brianna Castellanos Zach Rolfs Jacob Knowles
Fire Protection Engineering	Pristine Engineers, Inc. 534 New State Hwy #5, Raynham, MA 02767 Golam Mustafa, Principal Juan Gonzalez James Park
Code Consulting	JS Consulting 224 Main Street, Suite 2C, Salem, NH 03079 Jennifer Sapochetti, Principal
Geotechnical Engineering	Lahlaf Geotechnical Consulting, Inc. 23 McGinness Way, Billerica, Massachusetts 01821 Madjid Lahlaf, Principal
Sustainability Consulting	Soden Sustainability 19 Richardson Street, Winchester, MA 01890 Colleen Soden, Principal
Cost Estimation	Ellana Construction Consultants 98 North Washington Street, Suite 109, Boston, MA 02114 Clive Tysoe, Senior Cost Manager
Real Estate Consulting	Newmark Knight Frank 225 Franklin St., 18th Floor, Boston, MA 02110 Scott Allen, Executive Vice President; Specialty Practice Leader: HUD FHA/Affordable Housing
Translation	POWERLING Inc. 2 Avenue de Lafayette, 4th Floor, Boston, MA 02110 Manon Debuire, Key Account Manager

1.2 HISTORY + DEMOGRAPHICS History

The area that is now Codman Square was, in the early seventeenth century, home to the Neponset Band of the Indigenous Massachusett Tribe. English settlers arrived in 1620, and initially made treaties with the Neponset Band. Within the decade, however, the English had decimated the Neponset through warfare and disease, establishing the town of Dorchester.

Dorchester developed as a farming and mill community through the nineteenth century, and Codman Square became a population center during this time. The first public school in the area, the Henry L. Pierce School, opened on the current site of the library in 1892. Meanwhile the first Codman Square Library opened in 1905 at 6 Norfolk Street.

During the mid-20th century, the overall population of the Codman Square area dropped significantly, driven by suburbanization, a shift from mass transit to cars, and "white flight." In 1970 the Pierce School was destroyed by fire and demolished. The city commissioned Eco-Texture Architects to design a new branch library on the Pierce site, which opened in 1978. The social upheaval of the time may explain the building's fortress-like design.

Today the area is diverse and evolving yet again. The Codman Square branch library enjoys a dedicated clientele and serves as a community center for many groups within the community. In the first community meeting of the study, one



The site in 1898 showing the Pierce school in pink: Detail of the G.W. Bromley and Co., Atlas of the city of Boston, Dorchester, Mass., vol. 5 (1898). Leventhal Map & Education Center at the Boston Public Library.



Codman Square Library, 1905

neighborhood resident told the team, "This community deserves an improved library and more... the library can help us access resources that will help our community thrive." Improvements to the library are an investment in the Codman Square community and its continued resilience.

Sources:

- Massachusetttribe.org
- Richard Heath, "CODMAN SQUARE: A History" (2009), http://www.dorchesteratheneum.org/
- William Walczak, "Codman Square" (2000), codman.org
- Bpl.org

1.2 HISTORY + DEMOGRAPHICS

Demographic Methodology

The team began the demographic analysis by establishing the catchment area for the Codman Square Branch. The BPDA has established a simple catchment area based on census blocks closest to this branch as the crow flies. Sasaki also reviewed two alternative means of determining the branch's catchment area: census blocks within a 15-minute walk, and census blocks that are closer (on foot) to the Codman Square Branch than to any other branch. This "Closest Library" group of blocks became the basis for the demographic analysis, as it was similar to the BPDA catchment area but with the added nuance of considering pedestrian routes. The catchment areas are summarized in the plan diagram below.

All demographic data is based on available census data at the time the report was prepared: ACS 5-year estimates 2015 - 2019, with historical data compared with ACS 5-years estimates 2006-2010. At the time of this report, detailed 2020 data was not yet available.



Demographics

Key findings are summarized below and in the charts on the following pages.

For all catchment areas, the median household income is lower than Boston's median annual income of \$71,115. For example, in the "Closest Library" catchment area, the median income is \$52,545 or around 74% of the citywide median. Since 2010, lower and middle income groups have been decreasing, while high income groups have been increasing.

The community served by the Codman Square Branch is majority Black and Hispanic. The Black population makes up at least 50% of the total population served. The Hispanic population makes up about 20% of the population served. Although the Black population makes up the majority of the population, it has been decreasing since 2010.

Other than English, Spanish is one of the top languages spoken. Census data shows little change in languages spoken in recent years, although not all languages spoken are captured in the data.

About 30% of households are families of 4 or more people, twice as many as the Boston average. Given that family households make up the majority of households in the catchment areas, it's not surprising that almost 30% of the population is under 17 years old, and about 50% is between 25 – 64 years old. Census data confirms that neighborhood demographics are changing. Since 2010, major trends include:

- An increase in total population (24-34%).
- A decrease in the majority Black population; a slight increase in white and Hispanic populations
- A decrease in lower and middle income households (<\$60,000), and an increase in higher income households (>\$60,000)
- An increase in owner-occupied households.
- An increase in single-female family households

The charts on the next pages capture key trends and metrics.



Top Languages Spoken



Age trends



Race & Ethnicity 2% 15-min walk isochrone 16% 52% 18% 8% 1% Closest Library 21% 11º/o 57% 7% 3% 4% **BPDA Official** 8% 62% 6% 20% 0% 20% 40% 60% 100% 80% White Black/African-American Asian Other Two or More Races Hispanic or Latino Native Hawaiian and Pacific Islander American Indian/Alaska Native

Race & Ethnicity Trends





25 Years and Older

Bachelor's degree or higher





Educational Attainment



Household Income

15-min walk isochrone	10%4	% 12	% 10	<mark>%</mark> 11°	/o	240	1/o	14%	9%	o 7%
Closest Library	11%	6%	14%	10%	11%		22%	12%	5 8 ⁰	2/o 6º/o
BPDA Official	13%	6%	14%	11%	120	/o	19%	120	/o 8	3°/o5°/o
C	10/0	20% 40% 60% 80%					100			
		Less than 10,000 \$60,000 to \$99,999 \$10,000 to \$14,999 \$100,000 to \$149,999 \$15,000 to \$24,999 \$150,000 to \$199,999 \$25,000 to \$39,999 \$200,000 or more								
	1	S	40,000) to \$59	,999					15





Non-family Households

Householder living alone

Female householder, no husband present 🛛 Householder living with non-relatives





Household Income Trends



70% 60% 50% 40% 30% 20%

Trends in Renting vs. Homeownership



Household Size Trends

Sasaki

Male householder, no wife present

1.3 SITE ANALYSIS

The team analyzed the transportation, land use, zoning, and physical characteristics of the site, summarized in the diagrams in this section.

Transportation + Land Use

The site is located within the mixed-use Washington Street corridor. It is served by the MBTA #26 bus line and a BlueBike station. The nearest subway stations are Shawmut and Ashmont on the Red Line; the nearest commuter rail station is Talbot Avenue.





Transportation Network

Zoning + Regulatory Context

The site is located in the Dorchester Neighborhood District, Local Convenience subdistrict. Two Neighborhood Design Overlay Districts (NDOD) border but don't include the site. The pending Ashmont Hill Architectural Conservation District, which does include the site, is under consideration with Boston Landmarks Commission. Because the library building is more than 50 years old, Article 85 Review by Landmarks will be triggered if the building is demolished.

Although not all City of Boston municipal building projects must conform to zoning, the following zoning requirements apply to this subdistrict; the applicability of these requirements to a future library and/or mixed-use housing project is to be determined.

- Max. FAR = 1.0
- Max Bldg Height = 40'
- 20' rear-yard setback; no required front or side setbacks
- Open space: 50 SF/DU plus 50SF/1500SF of nonresidential uses
- Parking minimum requirements waived for residential developments where at least 60 percent of the units are income-restricted at 100 percent Area Median Income (AMI) or below

Additionally, depending on the nature of future development of the site, several other regulatory processes may be applicable, including but not limited to:

- Article 80 Large or Small Project Review
- Article 85 Review (see above)



Surrounding Zoning Designations



Detail of Zoning Districts Map 5D

Topography

The site sits at the base of Ashmont Hill and is relatively flat, but the northeast portion of the parcel has a 6-foot elevation difference.

Highest Elevation: 120 ft

Lowest Elevation: 52 ft

Data source: Analyze Boston



Site Elevation + 1-ft contours



Storm-water flow direction is to the south. There is some storm-water flow that cuts through the site.



Site Hydrography

Sidewalks

According to Analyze Boston data, the sidewalks surrounding the site were last inspected in 2014. At that time, they were generally in good condition.

% Sidewalk that doesn't need maintenance
< 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%



Data source: Analyze Boston

Tree Cover

45% of the 1.3-acre site area is covered by tree cover. The site contains 34 trees; many are in poor condition or are invasive species. Regardless of which options is selected for development, the landscape architect recommends replacing many of these trees and adding new ones. See Section 5.2 for more information.

Tree Locations
 Impervious
 Developed Open Space
 Tree Canopy
 Shrub



Tree cover Data source: Analyze Boston, NOAA C-CAP Land Cover Atlas (1m) Page 20

Solar Exposure

The relatively flat site and broad surrounding streets mean that the building roof gets significant solar exposure throughout the year. The garden area is shaded by the building in the afternoons, especially between September and March. Refer to Section 5.1 for solar exposure of the various development options studied.



Prevailing Wind

The north-south orientation of the existing building shelters the open space from prevailing winds.



Annual Wind Rose. Source: Meteoblue



Cumulative Solar Exposure: Summer Solstice



Cumulative Solar Exposure: Equinox



Cumulative Solar Exposure: Winter Solstice



Annual Solar Path Diagram. Source: GAISMA

1.4 EXISTING LIBRARY USE

Existing Program Distribution

The majority of the open-plan interior of the library is designated as mixed adult shelving and seating. The teen area is a small nook. The children's area is a large sunken section of the floor plate.

Community spaces include a large multipurpose room and a small meeting room, originally intended for staff use, that is now used by the public. The staff areas are ample. Building services are primarily in a partial basement and a partial attic.



Programs + Events

An analysis of all documented library and community events over the course of the year before the pandemic revealed that the library hosts many programs, some concurrent, throughout the day and on evenings when the library is open.

- May and October are the busiest months, with an average of about 2 events per day.
- Throughout the academic year, oneon-one technology and Homework Help sessions are frequent. Homework Help is by far the most frequent event type.
- Other popular events generally host between 20-60 people
- Early-afternoon and evening events happen more consistently throughout the year
- Morning and late-afternoon events decrease over the summer
- Occasional overlap between similarly sized events suggests multiple medium-sized spaces may be useful

While the large community room is sometimes used to capacity, it often hosts smaller events because there are no other rooms for mid-sized classes and meetings.

These observations were confirmed by comments from both the staff and the community. Both groups believe that there is demand for more events throughout the day and the evening if the building could accommodate them.



Events by Type





May 2019: Busy Week Snapshot



1.5 LIBRARY NEEDS, GOALS, OBJECTIVES

Emerging Service Priorities

Working with BPL administration, library staff, and the Codman Square community, priorities emerged that inform the development of the program. The list below summarizes these guiding priorities:

- Codman Branch is a hub for accessing entire BPL collection
- Codman Branch hosts extensive programming
- Need for meeting spaces of all sizes
- Architecture should be more welcoming and make library activities more visible
- Outdoor green space is important to the community
- Users feel at home here; it is a center for the community. Yet, at times the main reading room feels underutilized.

Program + Design Goals

Informed by the Service Priorities, the team developed a working list of program and design goals that informed not only the space program but also the program adjacencies and potential building organization schemes in each test fit:

- Welcoming building, inside and out; plenty of windows
- Appropriate space for collections, computers, and study seats
- More functional large community room
- Additional, acoustically enclosed meeting spaces of different sizes
- Better definition between adult, children's, and teen spaces
- Improved acoustics
- Improved daylighting and finishes
- Sight lines and staff spaces that function well
- A very sustainable, energy-efficient building
- Outdoor space, including garden beds and space for reading and programs

The BPL's Compass Principles offer a framework to structure the specific goals for this branch within the system.

USER-CENTERED INSTITUTION COMMUNITY GATHERING SPECIAL COLLECTIONS CENTER OF KNOWLEDGE

CHILDREN AND TEENS

ACCESS AND INNOVATION

SUSTAINABLE ORGANIZATION

FUN

1.6 COMMUNITY FEEDBACK

This study included several opportunities for public engagement. These included four meetings led by the design team, one workshop with the Mayor's Office of Housing, a digital and printed survey, and opportunities to provide feedback directly to BPL staff. As of the end of 2021, 98 people had responded to the survey, and many more had attended community meetings or submitted comments directly to BPL.

This section summarizes feedback about the library; about the Codman Square neighborhood; and about the possibility of housing on the site. Detailed meeting notes, letters to the BPL, survey results, and other written comments are included in the Appendix of this report.







FEEDBACK ABOUT THE LIBRARY

Throughout the study, in all of our interactions with the community about the library, several consistent themes emerged.

- 1. The branch has devoted patrons, and community members really appreciate the efforts of the staff to engage the community.
- 2. Library-hosted events are very important to this community. There is a need for more meeting spaces of various sizes as well as better acoustic and spatial differentiation within the open areas of the library.
- 3. Although people like the children's area, there is not a lot of affection for the building itself. The community would like it to be more welcoming.
- 4. There is a constituency of library users that enjoy the backyard area and use the garden frequently in warm weather.
- There is enthusiasm for the opportunities for increased programming and community activity that the proposed program - especially the meeting spaces and Craft Lab would allow.

Responses to the question: What is one word you would use to describe the Library today?



Responses to the question: Before the pandemic, what did you go to the library for?



Responses to the question: The best thing about the Codman Square Branch is...



What is one word you would use to describe the Codman Square neighborhood?



FEEDBACK ABOUT THE NEIGHBORHOOD

The community's commitment to this neighborhood was evident in the consistently high turnout for community meetings and the volume of feedback we received. Library neighbors value the diversity of their neighbors and the scale and character of the urban fabric.

Some residents feel that the neighborhood is under-resourced and overlooked.

Some members of the community had concerns about traffic and pedestrian safety in the area. A traffic study is recommended in a subsequent phase of the work.

Responses to the question: How do you usually get to the Codman Square Branch?



Other comments

FEEDBACK ABOUT HOUSING

The community is generally supportive of the idea of more affordable housing, but not all community members believe it should be part of this site development. Some see potential synergies, while others feel that adding multifamily housing to the site will be out of scale with the surroundings and overburden streets and other resources.

COMMUNITY HOUSING WORKSHOP

The Mayor's Office of Housing hosted a workshop on November 17, 2021. Major presentation points included:

- Codman Square is home to residents with many different racial and ethnic identities and familial arrangements.
- BIPOC households represent almost 85% of Codman's population
- About 60% rent and 40% own homes
- A large portion of Codman Square residents are "housing cost burdened" or pay more than 30% of their income for housing costs
- Households with income < \$50,000 per year typically are housing cost burdened
- Nearly half of new housing built in the neighborhood since 2011 is income-restricted affordable housing, but only 11% of all housing in Codman Square is income-restricted affordable housing.
- There is very high demand for quality, affordable, predictable housing
- The Mayor's Office of Housing works to create and preserve affordable housing in many different ways to address these issues – including studying the feasibility of housing at library sites across Boston.

Feedback from workshop participants echoed these themes:

- Affordable housing is badly needed in Boston and in Codman Square
- Variety of income levels needed
- Library needs are paramount
- Neighborhood context important for any mixed-use design. This includes consideration of traffic impact, size, and architectural character
- Sustainable design
- Open space, green space, tree canopy are important



Constituents

Whom should a new housing development serve?

- Family housing with a variety of unit types; or senior housing
- Affordable or mixed-income
- Don't contribute to displacement

Infrastructure

How does a new development fit into its context?

- City services need to keep pace with increased development
- Don't exacerbate traffic issues

Design

What are the desired characteristics and features of a new housing development?

- Fits with neighborhood character
- Don't compromise open space, tree canopy, and sunshine
- Safe, clean, maintained
- Universal design + accessibility
- Sustainable design + climate resilience

Finally, residents shared their thoughts on the possible relationship between the library and housing, with some major themes and direct quotes highlighted above.

1.7 HOUSING OBJECTIVES + MARKET ANALYSIS Newmark Knight Frank

The primary objective of this study was to determine library space and facilities needs. After establishing library needs and proposing several options for meeting, them, the study explored the possibility of adding housing to the site while meeting all of the library's needs. A housing analysis is included in this study in order to explore whether this site could help meet the citywide need for affordable housing without compromising library services and design.

At the start of the study, the team engaged a real-estate consultant to conduct a market analysis and determine if the market would support affordable housing. The conclusion is that demand exists, at a range of income levels and subsidy types. Any potential housing on the site will likely be limited by the size of the site, the needs of the library, and other planning and design considerations, rather than by what the market will support. The study team used the data from the market analysis to guide an exploration of possible mixed-use housing scenarios, including approximate sizes of various unit types and the potential for a mix of one-, two-, and three-bedroom units.

Market analysis is just one variable that the city will consider when determining the preferred direction for this project. Housing scenarios will also be guided by the needs of the library, community feedback, design considerations, and overall city planning goals.

Refer to the Appendix for the full Housing Market Analysis Study.

2.0

Existing Conditions

- 2.1 Site + Landscape Architecture
- 2.2 Civil Engineering
- 2.3 Exterior Character + Condition
- 2.4 Interior Character + Condition
- 2.5 Code
- 2.6 Structure
- 2.7 Mechanical, Electrical, Plumbing, + Fire Alarm
- 2.8 Fire Protection
- 2.9 Building Systems: User Comments

2.1 SITE + LANDSCAPE ARCHITECTURE Sasaki

At 1.3 acres, the site for the Codman Square Branch is larger than many branch library sites within the City of Boston. Overall, the site is well-used and has many pleasant features, but has fallen into disrepair over many decades of use. There is room for improvement to both function and appearance.

PUBLIC REALM, CIRCULATION + CIVIC AMENITIES

Occupying the entire end of the block between Welles and Walton Streets, the library building sits towards the Washington Street side of the lot. The sidewalk on Washington Street is wider than is typical in the neighborhood, creating a large welcome carpet at the front entrance. This area includes a few metal and wood benches, brick seat walls along the curved portion of the library façade, trees in pavement, and a Blue Bikes station.

Along Walton Street, the building sits close to a relatively narrow sidewalk and includes a raised planter against the façade. The planter wall is brick to match the building, and includes a stone cap with rounded detailing. Further along Walton Street, past the building, a metal fence sits atop the wall preventing access into the Library site. The final few sections of fence are missing, allowing informal (and inaccessible) pedestrian access to the back of the site. Wall, cap and fence are in moderate repair, showing signs of cracking, heaving and shifting over time as well as bearing the marks of graffiti.



Washington Street sidewalk and tree pits

Along Welles Street, the building sits further back from the sidewalk. A small low planter at the corner gives way to a paved area separated from the sidewalk by a low brick wall and metal fence. This area includes a wooden picnic table, and connects to an egress door from interior staff space. The metal fence, low wall and plantings continue up Welles Ave past the building to the driveway entrance to the parking, which is marked by two concrete bollards. Beyond the driveway, the delineation of property gives way to a stone curb with chain link fence.

The backyard of the site is predominantly parking, providing space for approximately 30 cars. At the main back door to the Library, a small plaza includes plantings, a wood bench and shade trees. Adjacent to Walton Street, another small plaza includes shade trees in paving. A line of granite steps at angles separates the parking from an elevated grassy area which serves as a carpet for a new community garden including raised wooden framed beds and compost area. The granite steps appear to have been recycled from a previous building, perhaps from the original Pierce School that occupied the site. Several granite posts are set vertically in the grass without label, but appear to have been reclaimed from previous use.

PAVEMENTS + HARDSCAPE

Overall, site pavements are in various states of disrepair. In general, the concrete sidewalks are in better shape than areas of asphalt pavement, although some cracking and heaving has occurred, mostly at joints. Around tree plantings, the brick detailing and decorative tree grates have generally settled and heaved, and grates are missing from several areas. Numerous utilities dot the hardscape, including several drains mentioned in the civil narrative.

Asphalt pavement around trees at the backyard, particularly along Walton Street is in serious disrepair. Roots of trees confined to small grates have heaved the asphalt and snowplows have damaged rolled asphalt curbs. Asphalt in the parking area is cracked and uneven. The one drain in the parking area suffers from lack of maintenance, and evidence of water pooling around the low point in the parking area is visible in debris.

PLANTINGS

The site currently contains 34 trees. The majority of the trees along Welles, Washington and Walton Streets are in pavement. The majority of the trees are Norway Maples, a popular urban street tree at the time of the Branch construction that has since been placed on the state invasive species list, and is considered problematic by urban arborists. Although details for these tree plantings, which were completed with the Library construction in the 1970s, are not available, it is assumed that they have limited soil volume and no irrigation.



Corner site wall

Trees in the groves along Washington and Walton Streets were also planted close together, resulting in a taller, thinner habit than is typical. Tree mortality has been high, especially along Washington Street, where many bare tree pits tell a strong story of the challenges to survival.

In the back yard, trees have had more access to soil and are more informally planted, resulting in larger trunk sizes and a broad tree canopy over the paved and grassy areas. However, most of the trees are Norway Maples, and show signs of lack of maintenance.

Shrub plantings occur along the building foundations along Welles Ave, Walton Street and at the back of the building. The majority of shrubs are evergreen yews and junipers struggling from compacted soils and lack of maintenance. The yard area includes grass which appears to be mown regularly as well as horticultural plantings within the community garden beds.



Washington Street sidewalk



Backyard and parking

2.2 **CIVIL ENGINEERING** Nitsch Engineering

TOPOGRAPHY

The site topography generally slopes from east to west. Low points were constructed at catch basins in the parking lot such that the parking lot is depressed relative to the sidewalks on Welles Avenue and Walton Street. There is a higher, landscaped area containing community gardens and a fenced off lawn area along the eastern side of the site that steps down to the parking lot with granite steps set into the lawn.

SOILS

Based on the United States Department of Agriculture Web Soil Survey, the soils on-site are Urban land, 0 to 15 percent slopes, and Newport-Urban land complex, 3 to 15 percent slopes. Please refer to the Soils Map included in Appendix D.

Nitsch Engineering recommends that the geotechnical investigation program for any proposed construction on this site include verification of the soil conditions within the Project Site. This portion of the investigation should be completed by open pit excavation for the purposes of evaluating seasonal high groundwater elevations. Soil permeability estimates will be useful to determine the required drawdown for the on-site infiltration system.

SITE DRAINAGE

There are existing BWSC-owned storm drains in Welles Avenue, Washington Street, and Walton Street adjacent to the Project Site:

A 12-inch storm drain in Welles • Avenue:



Sasaki

Urban land

Canton - Urban land complex

Merrimac - Urban land complex

Newport - Urban land complex

- Udorthents, loamy
- Udorthents, wet substratum Data source: USDA NRCS Web Soil Survey
- An 18-inch storm drain in Washington Street: and

A 12-inch storm drain in Walton Street. Two catch basins were observed in the existing parking lot that serve as localized low points to drain storm-water runoff from the entire parking lot. These catch basins were under piles of leaves and sediment and appear to be in poor condition. Smaller area drains were observed in the patio on the north side of the building. The destination of these area drains is unknown. Similarly, a series of catch basins were observed near the tree pits on Washington Street. These catch
basins do not appear to be at low points and their function and destination are unknown. Further investigation is needed for these last two items.

The existing building appears to have separate sanitary sewer and storm drainage systems. There is an existing roof drain pipe that exits the building towards Welles Avenue and likely connects to the 12-inch storm drain in the street. The storm-water management system associated with this redevelopment project will be subject to the Massachusetts Department of Environmental Protection's (DEP) Stormwater Standards. None of the sections of the existing drainage system appear to comply with current DEP Standards. Replacement of the drainage system will include design elements to provide peak flow mitigation, groundwater recharge, and treatment of runoff prior to discharge to the city storm drains. Water quality structures will be implemented to treat the runoff from the parking lot. A stormwater retention and infiltration system will be required to capture and store one inch of runoff from the site impervious areas to meet BWSC requirements. This system will likely be located under the parking lot and will overflow to the storm drain in either Welles Ave or Walton Street. Roof drains from the building will need to be rerouted to this infiltration system. Additional geotechnical investigation will be required before the design of any system.



Drainage in Washington Street sidewalk

WATER SYSTEMS

There are Boston Water and Sewer Commission owned (BWSC) water mains in Welles Avenue, Washington Street, and Walton Street adjacent to the Project Site:

- An 8-inch ductile iron, Southern High main constructed in 1993 in Welles Avenue;
- A 30-inch cast iron, Southern High transmission main constructed in 1902 and relined in 1975 in Washington Street;
- A 12-inch ductile iron, Southern High main constructed in 1993 in Washington Street; and
- An 8-inch ductile iron, Southern High main constructed in 2003 in Walton Street.

Based on a site visit and on record plans received from the Boston Water and Sewer Commission (BWSC), attached in Appendix D, the existing domestic water and fire protection services for the site connect to the 8-inch Southern High, BWSC-owned water main within Welles Avenue. The services appear to extend from the north side of the building from the mechanical basement. There is one hydrant on Welles Ave in the sidewalk to the east of the parking lot. No concerns were reported regarding the water service. A hydrant flow test shall be performed to confirm pressures and flow volume at the site of the building.

New dedicated services may be required for the proposed project depending on the design of the fire protection system and changes to domestic water demand. Any required water shutdowns would need to be coordinated with BWSC. Please refer to the MEP narrative for additional information on interior plumbing.

SANITARY SEWER

There are BWSC-owned sanitary sewer mains in Welles Avenue, Washington Street, and Walton Street adjacent to the Project Site:

- A 12-inch main in Welles Avenue;
- A 20-inch by 26-inch main in Washington Street; and

A 12-inch main in Walton Street. • Based on record plans received from BWSC and a site visit, the building has separate sanitary sewer and storm drain systems, and the existing sanitary sewer service for the site exits from the mechanical basement toward Welles Ave. There is a sewer manhole just outside the building, and another near the intersection of Washington Street and Welles Avenue. It is unclear at this point whether the sewer service runs straight through the first manhole and connects to the 12-inch sanitary sewer in Welles Avenue or whether it turns in the manhole and connects to the 20-inch by 26-inch sewer in Washington Street. A video inspection of the sewer is recommended to determine the existing condition and route of the sanitary sewer service. No external grease traps were observed on the site visit or on record plans. No concerns were reported regarding the sewer service.



Interior meter

There are existing sewer manholes in the sidewalk on Washington Street and Walton Street that appear to be within the property line. These do not match the record location of the sewer main in either of these streets, and further investigation is required to determine the purpose of these manholes.

New sewer services may be needed if the existing line is determined to be unusable or if it is not possible to run sewer internally to the northern end of the building. There are sewer mains available on three sides of the building to accommodate future services. Based on the sizes of the mains in the street, the existing capacity of the lines appears to be adequate for a certain amount of future development, subject to calculated loads. See MEP narrative for additional information on interior plumbing.

2.3 EXTERIOR CHARACTER + CONDITION Sasaki

The Codman Square Branch is located on Washington Street, and occupies a full city block in between Welles Avenue to the North and Walton Street to the south. A ten minute walk from the Ashmont T station, it is situated in between a residential area and an urban neighborhood center characterized by local shops and convenience stores.

The building, built in 1978, is of the late modernist era. Its form can be simplified to a singular prismatic rectangle with one short end skewed along Welles Avenue, and set back from Washington Street. Its simple form is punctuated by two curved volumes, a half circle that forms the children's area on Washington Street, and a quarter circle designated as a quiet reading area towards the rear of the building. These two circular volumes are extruded up to the roof plane at different heights to form a clerestory that spans the short length of the rectangle at approximately mid-point in the building to let light into the building interior. At the other end of the building the community room volume is expressed with its own higher roof and a clerestory provides light to the interior. This simple massing for the building is wrapped in a Boston dark brown clinker-like brick. The exterior style marries a Boston vernacular aesthetic to a modern simple volume. There are very few windows to the exterior and the brick although attractive and modest, beyond its materiality bears no other references to the rich heritage of Boston brick.





Washington Street approach and entrance

The almost completely opaque building envelope results in a branch that is largely mute to the neighborhood. There is no indication of the library functions happening with in the building to the street, and conversely the building does not invite passers-by from the street inside, and lacks a welcoming feel. The building entry is unremarkable: a simple half circle window signals the entrance door, along with a simple sign affixed to the brick, on an otherwise blank wall. The mute expression of the building is carried around the two sides of the building. The Walton Street façade is punctuated by a utilitarian exit door, and a singular window. The Welles Avenue side is similarly mute, although the site opens up along this street to the library

parking area. An open air circular shaped structure, clad in the same building brick, shields the electrical transformer from the street, and marks the vehicular entrance to the parking lot. The rear lot is characterized by the garden area, and the residential properties to the east of the site proper.

The building is structured as a slab on grade construction with load bearing concrete block walls faced in 4-inch brick veneer. The building structure is a steel frame with light gage steel trusses supporting flat EPDM roofs. The windows are aluminum and glass, and the drawings note limited building insulation, 1" at the exterior walls, and 1 1/2" at the roof, indicating poor thermal performance. The building is in decent visible condition for its approximately forty years, although it has suffered roof leaks and damage to its exterior walls in some locations.

The building has undergone several renovations, none of which fundamentally altered the architecture:

- In 1987 the building's original built-up roof was replaced with EPDM.
- In 1999 site walls, outdoor steps, curbs, and other site features were improved, and accessible parking spaces added. The original trees were not replaced in this renovation.
- In 2003, a renovation included reconfigured bathrooms, replacement glazing at the clerestory windows, masonry restoration, HVAC improvements, paint and carpet, some new interior lighting and miscellaneous small interior improvements.



Transformer enclosure



Parking lot facade and entrance



North roof, showing wall-to-roof flashing and roof access

2.4 INTERIOR CHARACTER + CONDITION Sasaki

The interior of the Codman Square Branch is organized as a singular openspace plan. The arrangement of the functional spaces within the open plan is adequate: there are good sight lines from the service desk to the building entrances and to most of the collection and seating areas of the library. The community room is accessed directly adjacent to the service desk, and the staff areas are located behind the service desk in a rambling suite of spaces that connects back to the community room.

There are very few windows to the exterior, and there is very much an inward-looking feel to the space. The ceilings are fairly high, and most of the natural light comes from the clerestories that are sculpted from the building massing. The exposed steel structure and the exposed duct distribution and lighting systems that are suspended from the ceiling impart a "warehouse" feeling to the space.

There is very little distinction in the functional areas of the plan: the children's area is sunken and accessed via a ramp at one end and a stair at the other, and the teen area lacks effective demarcation from the rest of the open volume. The interior feels overly spacious, and it was noted by BPL staff that the Codman Square Branch had "extra" capacity for collections and furniture. The community room has very high ceilings, and is on the large side, but its lack of windows and lack of natural light, in combination with its concrete masonry block walls, makes it feel cold and unfriendly.



Washington Street vestibule

The interior finishes, and furniture within, are outdated and tired. Floors are vinyl tile or carpet, with brick floors in the entryways, walls are painted gypsum wall board or painted concrete masonry block, and ceiling are exposed with Tectum acoustic panels, which probably suffice to dampen general sound but do not provide acoustic separation between zones of the library. There are some fanciful details of boxed enclosures for up-lighting in the vicinity of the clerestories.

ENTRANCE ZONE

Each entrance lets into a spacious vestibule with glass walls looking into the library interior. The two entrances flank the borrower's service desk, which is situated in the center of one end of the plan and has good sight lines to the collection and seating areas beyond. The fixed service desk itself is curved, following the curved motif of the building architecture, and is generous in size, although it seemed that every square inch was well used. The desk is not up to current standards of accessibility.

STAFF ZONE

The staff zone behind the borrower's service desk consists a work room, librarian's office, conference room, break room, and ancillary storage spaces. The open work area has good sight lines to the service desk and is heavily used by the staff. It includes custom movable work stations and clerestory light above. The conference room is being used for programming, resulting in a less than desirable situation where patrons are circulating through back-of-house areas. The staff lounge room is being used but seems oversized; it has ample wall shelving and a window to the street. There are a number of storage areas in the staff zone, including a secure vault. All are being used, but the storage that we observed could be more compact. Overall, the staff and back-of-house space seemed under-utilized.

COMMUNITY ROOM

The community room is a very spacious neutral rectangular space with a very high ceiling, the highest in the branch. The walls are painted concrete masonry block, with Tectum acoustic wall paneling above, and the floor is vinyl tile. There is a small kitchenette off the community room that although very outdated in style seemed very well used. There is a small storage room off of the community room.



Staff Desk with sight lines into Reading Room



Staff Workroom



Community Room

ADULT AREA

The adult area is essentially the volume of the library itself. There is little distinction between it and other areas. Stacks run north south in the space and are interspersed with reading table and chairs; there is a lack of intention in the placement of the shelving and furniture. The teen area is an area within this open area, demarcated only by paper signs placed on reading tables. There is a window to the exterior in the quarter circle niche that is designated as a quiet reading space. The reading area is delineated from the children's area by a low wall of double-sided exhibit cases that line the change in floor elevation across the two spaces. There are a handful of computers in the space, as well as two service desks.

CHILDREN'S AREA

Of all the spaces in the branch the children's zone has the most definition. It is sunken at a lower floor elevation than the main area and is accessed by a ramp at one end and a stair at the other. Low stacks run east west and there is a curved reading area that is lined with shelving and has art work displayed above. The ceiling is very high in the reading area and there is ample natural light from an above clerestory. There are also vertical punched windows to Washington Street. The zone is demarcated from the main reading room by a low wall of exhibit cases which at the time of visiting showcased children's art. There is a service desk on south end, and there are four computer stations. The children's zone has no family restrooms.



Reading Room



Service Desk in Reading Room



Children's Area

BUILDING SERVICE ZONES

There are separate staff and public restrooms, per current standards. The restrooms were renovated in 2003 and are in good condition. There is an adequate custodian closet in the back-of-house area. Space provided for mechanical equipment in the basement and mezzanine is adequate for the equipment in the building. There is a need for exterior or fire-rated interior storage, as we observed lawn care equipment being stored inside the building in an unrated closet.



Kitchen



Restroom

2.5 CODE

JS Consulting Engineers

1 BACKGROUND

Sasaki has retained JS Consulting Engineers, LLC (JSCE) to provide fire protection and life safety code consulting services to assess the existing fire, life safety and accessibility conditions of the existing Codman Square Library to understand the feasibility of a future renovation of the building. The Codman Square Library is a branch location of the Boston Public Library. It is a 1-story building located at 690 Washington Street, Boston, Massachusetts. The building is primarily used as a Group A-3, Library with office space and spaces used (on occasion) for multi-purpose assembly space.

This Report summarizes our review of the existing conditions of the Codman Square Library as it relates to potential renovations or a future addition to the building. The purpose of this analysis is to review the existing building and identify any current deficiencies or concerns with the existing conditions, as well as evaluate code thresholds that may be triggered as part of future renovation work and the implications thereof. This Report is based on the site visit performed by Jennifer Sapochetti of JS Consulting Engineers, LLC (JSCE) on March 10, 2021 and the requirements of the applicable codes identified below.

The site visit included a visual only observation of the fire safety, life safety, and accessible features of the building. No systems testing, destructive or intrusive inspections were conducted or observed by JSCE. This Report does not include review of existing structural conditions, detailed information regarding fire protection systems, or existing mechanical, electrical or plumbing systems. These issues will be addressed by Others.

1.1 PROJECT DESCRIPTION

The existing building at 690 Washington Street (herein referred to as the Building) is a 1-story fully sprinklered library with a partial basement and a mechanical penthouse level. In addition to the library use (Group A-3, Assembly) the building also contains office space for staff, and a multi-purpose room for general assembly functions (Group A-3) on occasion. There is also a parking lot that provides twenty-one (21) off street parking spaces for patrons. A scope of work as part of a future renovation has not yet been defined.

1.2 ASSUMPTIONS AND CLARIFICATIONS

Based on the information provided by Sasaki and the Project Team; the Code existing building evaluation summarized in this Report is based on the following assumption.

1.2.1 EXISTING NON-CONFORMING FEATURES / SYSTEMS

It is assumed that all work performed in the building has been designed and constructed in accordance with the applicable requirements of the Massachusetts State Building Code (780 CMR) at the time new work was performed.

It is our understanding that there are no outstanding Abatement Orders or Notices of Violation issued against the buildings. It does not appear that the existing buildings' means of egress, lighting, and ventilation systems are "dangerous or hazardous to life and limb".

2 APPLICABLE CODES

This Report is based on the major fire protection and life safety requirements of the following list of currently applicable codes and standards.

<u>Accessibility</u> - Massachusetts Architectural Access Board Regulations, 521 CMR (521 CMR); the Americans with Disabilities Act Architectural Guidelines (ADAS)

<u>Building</u> - Massachusetts State Building Code (780 CMR) Ninth Edition, which is an amended version of the 2015 International Building Code¹

Electrical - Massachusetts Electrical Code, 527 CMR, 12.00. The Massachusetts Electrical Code is an amended version of the 2017 National Electrical Code (NFPA 70); and Massachusetts Fire Prevention Regulations, 527 CMR, 27.00 (527 CMR). The 2013 Emergency and Standby Power Systems Code (NFPA 110) is adopted by 780 CMR and NFPA 70.

Elevators - Massachusetts Elevator Regulations, 524 CMR (524CMR)

Energy – 780 CMR §13.00, which is an amended version of the 2018 International Energy Conservation Code and the 2016 ASHRAE 90.1.

Existing Building – 780 CMR Chapter 34 (780 CMR §34), which is an amended version of the 2015 International Existing Building Code¹

<u>Fire Prevention</u> - Massachusetts Fire Prevention Regulations, 527 CMR (527 CMR) which is an amended version of NFPA 1, The *National Fire Code* 2015 Edition (NFPA 1). In addition, the International Fire Code (IFC), 2015, is also applicable as adopted by 780 CMR².

Mechanical - International Mechanical Code (IMC), 2015, as adopted and amended by 780 CMR¹.

Plumbing - Massachusetts Fuel Gas and Plumbing Codes, 248 CMR (248 CMR)

<u>Other</u> Additional selected National Fire Protection Association (NFPA) Standards as referenced by 780 CMR This report addresses the major fire protection, life safety and accessibility code requirements of 780 CMR, 521 CMR, FHADG and the ADAS.

This report addresses the major fire and life safety code requirements of 780 CMR, 780 CMR Chapter 34, 521 CMR and the ADAS.

3 CODE COMPLIANCE APPROACH

This Report does not address a specific scope of work; however, it is assumed that new work within the existing building would be classified as a Level 1, 2, or 3 Alteration without a Change in Occupancy and could include an Addition in accordance with the 780 CMR Chapter 34. New work performed in an existing building is required to comply with the new construction requirements of 780 CMR, 521 CMR and the ADAS to the extent feasible. Where compliance is deemed not feasible as part of a future project; further review is required.

¹ Note the SBBRS is expected to adopt the 10th Edition of 780 CMR in the first quarter of 2022. JSCE understands this edition of 780 CMR will be an amended version of the 2021 International Building Code (IBC-21).

Note JSCE understands that the state intends to adopt a new version of 527 CMR in 2022 to coincide with the adoption of the 10th Edition of 780 CMR. JSCE understands this new edition is proposed to be based on the 2021 Edition of NFPA 1. No formal announcement has been made.

3.1 ALTERATION WORK

In accordance with the 780 CMR Chapter 34, a Level 1, Level 2 or Level 3 Alteration³ (without a Change in Use⁴) is required to comply with 780 CMR §34-7.00, §34-8.00 and §34-9.00 respectively, and the new construction requirements of RISBC Chapters 2 through 33 as scoped by 780 CMR Chapter 34.

3.2 OCCUPANCY CLASSIFICATION

The building is classified as a Group A-3, Library and multi-purpose assembly occupancy. JSCE understands that any renovation or expansion to the existing building would continue the same occupancy classification in the existing building; however, a future addition could potentially introduce new uses to the building. This Report does not assume any current or future Change in Use for the building.

3.3 HEIGHT, AREA, CONSTRUCTION CLASIFICATION

3.3.1 BUILDING HEIGHT AND AREA

The building is 1-story in height with a maximum footprint area of approximately 18,700 square feet.

3.3.2 CONSTRUCTION TYPE

The construction type of a building is regulated by 780 CMR based upon its occupancy classification, building height, and area with consideration given to the buildings open exterior perimeter and automatic fire suppression systems (780 CMR §503.0, §504.0, §506.0).

The existing building construction is masonry exterior with unprotected steel and CMU interior construction. The roof/ceiling assembly includes tectum panels⁵. It appears these panels (and no other combustible materials) are not part of the roof/ceiling assembly construction and are provided for acoustics only.

Based on this assumption the existing building construction is equivalent to Type IIB noncombustible construction. If the building were to undergo a Level 1, Level 2 or Level 3 Alteration with or without a Change in Use; the height and area of the existing building relative to its construction is permitted to remain as-is (780 CMR §34-1012.5.2)⁶. If the building were to undergo an addition; the construction type of the building relative to its height, area and use classification would be required to comply with the new construction requirements of 780 CMR Chapters 5 and 6.

Envisioning potential alternate uses of the building that could be incorporated as part of a future addition, the table below shows the maximum allowed height and area of a sprinklered building of Type IIB construction based on 780 CMR §504 and §506⁷. Additions constructed of wood or other combustible materials would change the construction type of the building and require a new use, height and area evaluation based on the new construction type.

⁵ Tectum panels are a combustible material (typically Class A flame spread rating).

⁷ Given the location of the building future uses added to the building could include Group B (office/business), Group M (retail) or Group R-2 (residential).

³ Alteration work is defined as the reconfiguration of any space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

⁴ A Change in Use includes a change in occupancy classification, change in occupancy group designation or a change in the purpose or level of activity within a Work Area.

⁶ Except for a Change in Use to a Group H occupancy.

Use Classification	Maximum Allowed Height	Maximum Allowed Footprint Area ⁸
Group A-3	3-stories / 75-feet	28,500 sf
Group B	4-stories / 75-feet	69,000 sf
Group M	3-stories / 75-feet	37,500sf
Group R-2	5-stories / 75-feet	48,000sf

 Table 1. Maximum Allowed Height and Area - Type IIB Construction (sprinklered)

3.4 MEANS OF EGRESS

3.4.1 NUMBER OF EXITS

Even if no new work is provided; the building is required to be served by two (2) remotely located building exits (780 CMR §1006.3, 527 CMR).

The existing building is currently served by five (5) exits that discharge direct to the exterior at grade level. They are described in this Report as follows:

Exit	Location	Description
Exit 1	Main Building Entry/Exit on Washington Street	Double doors to grade (68-inches clear width)
Exit 2	Emergency Exit Only from the southwest corner of the Stack Area discharges to an exterior stair at the corner of Washington Street and Walton Street	Double doors ⁹ (68-inches clear width)
Exit 3	Emergency Exit Only from the southeast corner of the Stack Area discharges to the parking lot	Double doors ¹⁰ (68-inches clear width)
Exit 4	Main Building Entry/Exit from the Parking Lot	Double doors to grade (68-inches clear width)
Exit 5	Back of House Exit (northeast corner) discharges to the parking lot	Double door with center mullion / single leaf clear width 33-inches / one leaf locked

Table 2. Existing Exits

3.4.2 NUMBER OF MEANS OF EGRESS

All rooms and spaces with a calculated egress occupant load exceeding 49-people are required to be served by a minimum of two (2) remotely located, independent means of egress (780 CMR §1006.2).

The library is primarily a large open space with book stacks and reading room / seating space. This area is served by Exits 1, 2, 3, and 4. Each of the exits are equipped with panic hardware (except for doors without latching hardware) as required for an assembly space having an occupant load greater than 49-people.

The large meeting room / multi-purpose room is also served by two (2) means of egress; a set of double doors into the public portion of the Library and a set of double doors that open into the entry vestibule at Exit 1. These doors are equipped with panic hardware as required for an assembly space having an occupant load greater than 49-people.

There is a sufficient number of exits serving the building. Each exit discharges to the exterior at grade. Although an existing building is not required to have accessible means of egress (780 CMR §1009.1 Ex 1); Exits 1, 3, 4 and 5 each provide an accessible route to the public way.

⁸ Not including any allowed area increases based on open perimeter area.

⁹ These doors are labeled as alarmed; therefore, they were not opened during the site survey.

¹⁰ These doors are labeled as alarmed; therefore, they were not opened during the site survey.

3.4.3 OCCUPANT LOAD AND EXIT CAPACITY

The minimum required width for any egress element is determined based upon the occupant load it serves and a corresponding egress width factor.

The egress width factor for all existing portions of the building and new construction is 0.3 inches/occupant for stairs, 0.2 inches/occupant for doors, ramps, and corridors (780 CMR §1005.3.1).

Based on the proposed use of the building the following occupant load factors are summarized in the table below (780 CMR Table 1004.1.2).

Use / Occupancy Classification	Occupant Load Factor
Concentrated Assembly (rowed seating)	7 net
Assembly (table & chair seating)	15 net
Standing Assembly	5 net
Library Stack Areas	100 gross
Library Reading Rooms	50 net
Office / Circulation	100 gross
Storage / MEP (or similar) Spaces	300 gross

Table 3: Occupant Load Factors

The exit capacity of a standard 36-inch door (33-inches clear width) is 165-people (e.g., Exit 5). The exit capacity of double (68-inches of clear width) is 340-people (e.g., Exits 1 through 4). As such the public areas of the Library served by Exits 1 through 4 have exit capacity for 1,360-people. The back-of house area has access to Exit 5 and a set of double doors into the public area of the library with exit capacity for 505-people. There is sufficient exit capacity to serve the existing building¹¹.

3.4.4 TRAVEL, COMMON PATH & DEAD-END DISTANCES

Exits are required to be located such that the maximum length of exit access travel, measured from the most remote point to an approved exit along the natural and unobstructed line of travel does not exceed 250-feet (780 CMR §1017.1).

The common path of travel to a point where access to two (2) independent exits is provided is not permitted to exceed 75-feet.

In new construction or existing to remain areas of an existing assembly occupancy the length of a dead-end passageway or corridor is not permitted to exceed 20-feet (780 CMR§1020.4).

Based on the existing layout of the building, there are no existing dead-end conditions or excessive common path of travel issues. All occupants also have access to a building exit within 250-feet.

¹¹

The area of the multi-purpose room is approximately 1,700sf. At an occupant load factor of 7sf/pp the egress occupant load is 243-people. The public area of the library is approximately 12,200sf. Assuming half the area is used for book stacks (OLF 100sf/pp) and the other half is used as reading room space (50sf/pp) the egress occupant load of the public area of the library is 183-people.

3.5 FIRE PROTECTION SYSTEMS

3.5.1 SPRINKLER SYSTEMS

The existing building is sprinklered with the exception of the Electric Room in the Basement. Although the electrical room is enclosed in masonry construction with a 3-hour fire resistance rated door assembly; the door is propped open. This door should be normally closed. As part of future work, the Fire Protection Engineer of Record should confirm whether this room is permitted to be unsprinklered or if sprinkler protection should be provided. As part of any future work in the building the existing system should be reviewed and modified based on the configuration of space in accordance with the requirements of NFPA 13, 780 CMR §903.0, 780 CMR Chapter 34, and 527 CMR. Modifications to the automatic sprinkler system will be designed by Others.

3.5.2 FIRE DETECTION AND ALARM SYSTEMS

The existing building is equipped with a fire alarm and detection system. All modifications to the existing system or newly installed systems are required to be designed and installed in accordance with NFPA 72, 780 CMR §907.0, 780 CMR Chapter 34, and 527 CMR. The fire alarm and detection system will be designed by Others.

3.6 ACCESSIBILITY

New construction work that is part of the proposed project is required to be fully accessible in accordance with the new construction requirements of 521 CMR and the ADAS¹².

3.6.1 ACCESSIBILITY CODE COMPLIANCE OBLIGATION

3.6.1.1 521 CMR

The new construction requirements of 521 CMR are applicable to all Massachusetts public buildings undergoing new work. In addition, where work is performed in an existing building and the cost of the new work exceeds 30% of the full and fair cash value of the building the entire building, including areas not within the scope of work, are required to be brought into compliance with the new construction requirements of 521 CMR (521 CMR §3.3.2). In determining whether a project exceeds the 30% threshold the aggregate value for all permitted work performed in the past 36-month is included.

Where the cost of new work does not exceed 30% of the building's value but is greater than \$100,000 the following building features are required to be accessible (if not currently compliant) as part of the project: an accessible entrance, and accessible bathroom, an accessible drinking fountain and an accessible phone (where provided).

The current assessed value of the building, excluding the land value is \$1,542,900. Therefore, if the cost of new work exceeds \$462,870¹³; the entire existing building is required to be brought into compliance with the new construction requirements of 521 CMR including areas outside of the Work Area.

¹² Note that although 521 CMR does not cover Employee Only areas; the ADA does. The ADAS is applicable throughout all public, employee common use and employee areas.

¹³ Based on the cost reported on permits filed for a single project or the aggregate cost of work over a 36-month period.

3.6.1.2 ADA STANDARDS

Additions and alterations to covered existing buildings and facilities are required to comply with the ADA. With the exception of the "20% rule" associated with primary function areas¹⁴, the ADA does <u>not</u> utilize cost thresholds as part of the scoping criteria. The ADAS contains the following scoping requirements:

- Each addition to an existing building or facility must comply with the requirements for new construction (also refer to primary function area criteria).
- Where existing elements or spaces are altered, each altered element or space must comply with the applicable provisions.
 - Although limiting the scope of an alteration to individual elements is permitted, it should be noted that the alteration of multiple elements within a room or space might provide a cost-effective opportunity to make the entire room or space accessible.
 - Altered elements or spaces are not required to be located on an accessible route unless they are associated with a primary function area.
 - In alterations where compliance is technically infeasible, the alteration must provide accessibility to the maximum extent feasible. Any elements or spaces of the building or facility that are being altered and can be made accessible must be made accessible within the scope of the alteration.
- An alteration that decreases or has the effect of decreasing the accessibility of a building or facility below the requirement for new construction at the time of the alteration is prohibited.
- An alteration of an existing element, space, or area of a building or facility must not impose a requirement for accessibility greater than required for new construction.
- An alteration that affects or could affect the usability of, or access to, an area containing a primary function must be made so as to ensure that, to the maximum extent feasible, the path of travel to the altered area and the rest rooms, telephones, and drinking fountains serving the altered area, are readily accessible to and usable by individuals with disabilities, unless such alterations are disproportionate in terms of cost and scope as determined under criteria established by the Attorney General (28 CFR Part 36.304).
 - Department of Justice ADA regulations state, "Alterations made to provide an accessible path of travel to the altered area will be deemed disproportionate to the overall alteration when the cost exceeds 20% of the cost of the alteration to the primary function area."
 - The obligation to provide an accessible path of travel may not be evaded by performing a series of smaller alterations of that area served by a single path of travel if those alterations could have been performed as a single undertaking.

If an area containing a primary function has been altered without providing an accessible path of travel to that area, and subsequent alterations of that area, or a different area on the same path of travel, are undertaken within three (3) years of the original alteration, the total cost of alterations to the primary function areas on that path of travel during the preceding three (3) year period shall be considered in determining whether the cost of making that path of travel accessible is disproportionate.

3.6.2 ACCESSIBLE ROUTE

An accessible route is required to provide access into and throughout all areas of the building in accordance with 521 CMR and the ADAS. An accessible route is comprised of level or sloped walking surfaces, ramps, elevators and where permitted lifts. A stair is not considered an accessible egress element. However, stairs are required to comply with 521 CMR §27.0.

¹⁴ The area of a building or facility containing the major activity for which the building or facility is intended is the primary function area.

Currently there is an accessible route throughout the building. However, the existing ramp providing an accessible route to the Children's Area is not fully compliant. Refer to the Issues section of this Report for further detail.

3.6.3 ACCESSIBLE ENTRANCE

The building is currently served by two (2) main entry/exit doors which are both accessible. One entrance is located on Washington Street and the other is located on the parking lot. As part of new work both of these entry/exit points are recommended to remain in use to accommodate patrons that arrive at the library by public transportation or walking and to accommodate patrons that require access to the accessible parking spaces.

3.6.4 BATHROOMS

The existing building is served by multi-stall Men's and Women's Bathrooms as well as employee only Men's and Women's Bathrooms and Locker Rooms. These existing bathrooms are mostly compliant. Refer to the Section Below in this report that summarizes issues identified.

3.7 ISSUES - EXISTING CONDITIONS

As this Report is not based on a defined scope of work, the information provided in this Report should not be considered a complete review of required fire and life safety requirements. If a renovation or addition project commences; it is envisioned that this Report will be updated to provide a detailed summary of the code compliance approach based on the specific scope of work. However, as part of a future project the following issues should be reviewed and addressed according to the scope of work:

No. Issues

1. The existing ramp serving the Children's Area does not comply with the following requirements of 521 CMR §24.0 and the ADAS §405.0.

The ramp does not have handrails along both sides of the ramp.

The existing slope of the ramp exceeds 8.33% (approx. 9.25%)

The ramp handrails do not have the required handrail extensions.

The width of the existing ramp measured between the one handrail and the opposing wall is 3-feet 11-inches at its most narrow point. If a handrail is installed on both sides of the ramp as required; the minimum ramp width of 48-inches between handrails cannot be met.

- 2. The existing drinking fountain does not comply with 521 CMR and the ADAS. The drinking fountain projects into the path of egress travel more than 4-inches at a height greater than 27-inches AFF but less than 80-inches.
- 3. In the multi-stall Men's and Women's Bathrooms the hardware on the accessible stall door does not comply with 780 CMR §30.0 and ADAS §604.0. In addition, the self-closing hinge on these accessible stall doors should be repaired or replaced.
- 4. The existing stairs serving the Children's Area has 9-inch risers; the maximum riser height permitted for new stairs is 7-inches. The existing handrails have extensions at the top and bottom of the stair, but the extension at the bottom of the stair does not comply with 521 CMR §27.4.
- 5. The automatic door opening device (ADO) at the parking lot entrance does not work. The ADO in the vestibule is obstructed by plants.
- 6. The sprinklers in the mechanical penthouse are obstructed in some locations by equipment wider than 48inches. The electrical room in the basement is not sprinklered. As part of future work, sprinkler coverage in both of these areas should be reviewed and modified as necessary.

7. The Men's Locker Room has the following accessibility issues that do not comply with 521 CMR or the ADAS:

The duct near the door obstructs the required pull side clearance of the door.

The accessible stall door is not self-closing, the stall door hardware is not compliant and the coat hook on the door is mounted more than 48-inches AFF.

- 8. The accessible stall door in the Women's Locker Room is not self-closing, the stall door hardware is not compliant and the coat hook on the door is mounted more than 48-inches AFF.
- 9. The signage at the multi-stall bathroom doors does not comply with the accessible signage requirements of 521 CMR and the ADAS.
- 10. The circulation desk is not equipped with an accessible section (36-inches long and 36-inches AFF) required by 521 CMR and the ADAS.

If there are any questions, please contact me at jsapochetti@jsfirecode.com or 603-327-8650.

JS CONSULTING ENGINEERS, LLC

Prepared by:

Jennifer I. Sapochetti, P.E. Principal



Main Circulation Desk



Ramp at Children's Area

2.6 STRUCTURE RSE

INTRODUCTION

On March 10, 2021, RSE visited the existing Codman Square Branch Library to make observations of the building structure. No exploratory probes were performed at this time, so all field observations were made on exposed structure. Original 1975 drawings were provided to RSE to be used as reference, along with 1987 and 2003 renovation drawings. The original 1975 were missing numerous structural and architectural drawings.

EXISTING CONSTRUCTION

The existing one story Codman Square Branch Library was built in 1975. The building contains reading rooms for both adults and children, 2 large entryways, and office space for the staff.

The ground floor is a 5" Slab on grade and the foundations are shallow reinforced concrete spread footings and frost walls at the perimeter.

The roof of the building is framed with steel girders spanning to steel columns. Open web steel joists, which vary in depth from 14" to 24", are spaced 6 feet on-center with a 3" cementitious panel roof. There are a number of steps in the roof structure, framed by small posts going from the low roof steel to the high roof elevation. All the steps are framed similarly as the main roof.

There is no identifiable system specifically designed to resist lateral loads (wind and seismic). The 8" CMU infill walls at the exterior and interior are assumed



Typical framing showing open web steel joists

to provide lateral resistance. Further investigation is needed to confirm this.

STRUCTURAL CONDITIONS ASSESSMENT

The condition of the structure appears to be good to very good. No visible rust on the steel was observed from the interior. No significant cracking of concrete or CMU walls was visible. The slab on grade did show a dip in elevation at a couple of locations, however no major signs of cracking due to subsurface settlement were observed, since the slab was carpeted. Further examination may be needed after carpeting is removed to look for cracks in the locations where the slab was dipping.

The exterior façade appeared in generally good condition. There were no signs of roof leaks.

STRUCTURAL RECOMMENDATIONS

Since the existing building appears to be well maintained and shows no major signs of structural distress, no repairs are required unless a proposed renovation or addition triggers structural upgrades per CMR 780 9th edition, which references the IEBC 2015. The following options can be considered.

1. Level 1 Alterations – minor cosmetic changes such as repainting and changing floor finishes, new MEP equipment

- a. Structural elements will be maintained.
- b. New equipment will be designed for current code-mandated loads.

2. Level 2 Alternations – reconfiguration of walls, changes in any doors or windows

- a. Structural elements can remain: i. If existing gravity loads are not increased more than 5%, or capacity of structural elements carrying gravity loads is not reduced by more than 5%. Gravity elements are roof deck, open web steel joists, steel beams, steel columns, and concrete footings. ii. If capacity of existing lateral elements is not reduced by more than 10%. Lateral elements are not defined, but can be assumed to be the CMU infill walls on the exterior and interior of the building. If significant areas of the exterior CMU walls are to be removed to add windows, etc., new lateral bracing elements will need to be added.
- b. Structural elements need to be designed for current IBC 2015 loads:
 i. If the demand/capacity ratio listed above has been exceeded.
 ii. New structural elements
 iii. Voluntarily for the purposes of improving seismic performance

3. Level 3 Alternations – work area exceeds 30% of the total roof and floor area

a. Substantial structural alteration

requires existing gravity and lateral systems to be designed for current IBC 2015 loads and reduced seismic loads. The lateral system specifically will require investigation of the connection between the steel and CMU and may require additional repairs to comply with the current code.

4. Addition – horizontal or vertical addition

- a. For a horizontal addition with an expansion joint between new and existing, the new structure should be designed for current IBC 2015 loads
- b. For a horizontal and vertical addition that adds more than 5% gravity load or 10% lateral load to the existing structure, the affected structure should be designed for current IBC 2015 loads

In general, minor structural changes such as creating small openings for new rooftop equipment will not trigger major structural upgrades. Keeping in place the structural framing and CMU infill walls, and simply providing basic building maintenance such as periodic roofing replacement and scraping and painting exposed steel structure will extend the life of the building for many more years. Any major renovation resulting in an upgrade to the lateral system may require positive connections between the roof diaphragm and the CMU walls. Note that many of the clerestories (high roofs) extend up from the low (main) roof without having the proper lateral connections, and new bracing elements

will be needed to create this connection. Very often the cost of the seismic upgrade results in the renovation option to be cost prohibitive compared to the cost of new construction.

CONCLUSION

Using the existing structural drawings and observations made during the walk-through, the condition of the existing structural system appears to be satisfactory and requires periodic maintenance.



CMU Exterior infill walls, running to bottom of steel framing



Exterior brick façade in generally good condition

2.7 MECHANICAL, ELECTRICAL, PLUMBING, + FIRE ALARM BR+A Consulting Engineers

I. INTRODUCTION

The Codman Square Branch of the Boston Public Library is a single-story existing building at approximately 20,300 square feet. The original as-built record documents are from 1975 with revisions in 1987, 1999, and 2003. There is a Boiler Room and Electrical Room in the Basement, an Electrical Closet on First Floor, and a Mechanical Room on the Second Floor. The library has the following spaces:

- Main Library (Adult & Young Adult Reading Room, Children's Reading Room, and Open Stacks)
- Workroom
- Librarian Office
- Community Room
- Conference Room
- Lounge
- Kitchenette
- (4) Restrooms
- Back-of-House (Janitor Closet, Custodian space, and (2) Storage Rooms)

Refer to the appendix for reference existing conditions site photographs.

II. EXISTING CONDITIONS

A. HVAC

Overall, the heating and cooling mechanical systems mentioned below are either at or approaching the end of their useful life.

The main spaces of the library are served supply air via (5) Trane packaged units located in the Second Floor Mechanical Room. Each thermal zone has ducted return air back to its associated unit. The heating and cooling hydronic systems utilize Propylene Glycol, reducing heat transfer efficiency. Each thermal comfort zone contains its own thermostat (obsolete equipment manufacturer), which is the only type that can tie into the Energy Management System. The Energy Management System is original to the building and one of the oldest in all Boston Public Library branches, leading to a lack of control from communicating with old technology. There is a dedicated ceiling exhaust fan in each of the (4) restrooms as well as the Conference Room and Custodian space.

There is a vertical fan coil unit in each of the two entry vestibules and one near the back-of-house Receiving corridor. There is fin-tube baseboard radiation serving the (4) restrooms, Custodial space, Conference Room, and Lounge. The vertical fan coils and baseboard radiation both appear to be original to the building and at the end of their useful life.

The Basement Boiler Room is comprised of the following heating system equipment:

- (2) gas-hot water boilers utilizing Propylene Glycol (600 MBH max capacity each 703 MBH boiler with 600 MBH gas burner per boiler) installed in 2002
- (2) compression tanks (60 gallons) installed in 1976
- (2) split-case circulating pumps, CP-1 and CP-2, serving baseboard radiation and AHUs
- 3" Hot Water supply/return risers up to First Floor

The Second Floor Mechanical Room is comprised of the following airside and cooling system equipment:

- 20'-0"L outdoor air louver plenum serving all AHUs intake air
- AHU-1 (Trane Indoor Central Station Air Handling Unit with heating coil, cooling coil, belt-driven supply fan, and belt-driven return fan, scheduled at ~14,600 CFM) serving Main Library
 - Codman Facilities has noted an undersized return duct from initial install creating a noisy environment for the Main Library. Facilities has also noted that the spiral ductwork in Main Library causes draft conditions for occupants and requires higher temperature setpoints for draft mitigation.
- AHU-2 (Trane BCBX Blower Coil Air Handler with heating coil, cooling coil, and belt-driven supply fan, scheduled at ~1,890 CFM) serving the Community Room

- AHU-3 (Trane Fan Coil Conditioning Unit with heating coil, cooling coil, and direct drive motor, scheduled at ~600 CFM) serving the Workroom and Library Office
- AHU-4 (Trane Fan Coil Conditioning Unit with heating coil, cooling coil, and direct drive motor, scheduled at ~300 CFM) serving the Lounge and Kitchenette
- AHU-5 (Trane Fan Coil Conditioning Unit with heating coil, cooling coil, and direct drive motor, scheduled at ~300 CFM) serving the Conference Room
- 3" Chilled Water supply/return piping from Air Cooled Chiller with compression tank (30 gallons) and circulating pump, CP-3, serving AHUs

The First Floor Roof has the following cooling system equipment:

- Air Cooled Water Chiller utilizing Propylene Glycol (McQuay, 50 Ton)

The Second Floor Roof houses a louvered penthouse and exhaust stack for AHU-1 and AHU-3 relief air, respectively.

B. Electrical

Overall, the electrical systems are approaching the end of their useful life. There is no 480V electrical service in the building. We would not recommend connecting new circuits to any existing Federal Pacific equipment.

There is a utility transformer by Boston Edison Co. located on site, locked inside a gated, brick enclosure. The transformer is tied to primary electric service via Boston Edison Co. manhole and provides secondary electric service to the Main Electric Switchboard located in the Basement Electric Room.

The Basement Electric Room has the following electrical equipment:

- 1200A Main Electric Switchboard with Utility Meter serving building electrical panels and chiller, installed in 1976
- Panel P1 serving Boiler Room main mechanical loads

The First Floor Electrical Closet has the following electrical equipment:

- Emergency lighting inverter for egress lighting
- Panel L2 serving Main Library general scope

The First Floor Storage/Electrical has the following electrical equipment:

- Panel L1 serving Kitchenette, Lounge, Community Room, and general lighting
- Newer electrical Panel L1A serving library lighting, cameras, and projector

The Second Floor Mechanical Room contains the following electrical equipment:

- Newer electrical Panel L2A serving AHU-1, ATC, RF-1, P-1, and P-2
- AHU-1, P-1, P-2, RF-1 motor start/stop and disconnect
- AHU-1 through AHU-5 motor start/stop and disconnect on equipment
- Chilled water pump motor start/stop

The existing lighting fixtures are the incandescent and fluorescent type.

C. Fire Alarm

There is an EST2 Fire Alarm Control Panel (obsolete equipment manufacturer) in the Basement Electrical Room and a Fire Alarm Annunciator in the entry vestibule, both at the end of their useful life. The Fire Alarm devices are approaching the end of their useful life but could be permitted to remain if necessary. Our recommendation is to replace the Fire Alarm system in its entirety.

D. Plumbing

There is a mop sink, P-6, located in the First Floor Janitor Closet. There is (1) sink, P-9, located in the Workroom and (1) sink, P-7, located in Kitchenette. Within the restrooms, the existing lavatory fixture manufacturer is

Chicago Faucets and the Water Closet fixtures have a flush rate of 1.6 GPF. There is waste piping underground serving the (4) restrooms with (1) floor drain in each. The Second Floor Mechanical Room has a 5" RWL that runs to the Basement Boiler Room. There are (3) roof drains and (2) vents located on the First Floor roof. There is no overflow drain on the First Floor roof but also no parapet, thus, the edge of the building is used for overflow. There is a utility gas meter located at the exterior of the building serving the gas boilers in the Basement Mechanical Room.

The Basement Boiler Room has the following plumbing equipment:

- Electric Domestic Water Heater (40 gallon) with circulator pump serving restroom lavatories, Janitor Closet mop sink, Workroom sink, and Kitchenette sink
- Sump Pump in Concrete Sump Pit with connection to Sanitary
- 10" Storm and 4" Sanitary connection to Utility
- 4" Incoming Domestic Service with City Water Meter
- Air Compressor
- 3" Floor Drain

III. APPENDIX

A. HVAC Reference Site Photos



Second Floor Mechanical Room: AHU-1 (Trane Indoor Central Station Air Handling Unit with heating coil, cooling coil, belt-driven supply fan, and belt-driven return fan, scheduled at ~14,600 CFM) serving Main Library



First Floor Roof: Air Cooled Water Chiller utilizing Propylene Glycol (McQuay, 50 Ton)



Second Floor Roof: Louvered Penthouse



Basement Boiler Room: (2) gas-hot water boilers utilizing Propylene Glycol (600 MBH max capacity each - 703 MBH boiler with 600 MBH gas burner per boiler) installed in 2002



First Floor: Thermostat and Exhaust Fan Control



First Floor: Finned Tube Radiation



Entry Vestibule: Vertical Fan Coil Unit

B. Electrical Reference Site Photos



Basement Electrical Room: 1200A Main Electric Switchboard with Utility Meter serving building electrical panels and chiller, installed in 1976 (left) and Panel P1 serving Boiler Room main mechanical loads (right)



First Floor Storage/Electrical Room: Newer electrical Panel L1A serving library lighting, cameras, and projector



Exterior: Utility transformer by Boston Edison Co

- ----GND FAU OPV FAU ALATH CALENE ...) THE RECORDER N 1 2 3 900 manual 4 5 6 marg 2000 7 8 9 Lune marg FIRE ALARM ANNUNCIATOR + 0 + mmer mer 0 NET DET FIRE
- C. Fire Alarm Reference Site Photos

Basement Electrical Room: EST2 Fire Alarm Control Panel (left) Entry Vestibule: Fire Alarm Annunciator (right)

D. Plumbing Reference Site Photos



Basement Boiler Room: Electric Domestic Water Heater (40 gallon) with circulator pump serving restroom lavatories, Janitor Closet mop sink, Workroom sink, and Kitchenette sink



Basement Boiler Room: 4" Incoming Domestic Service with City Water Meter



Basement Boiler Room: 10" Storm and 4" Sanitary connection to Utility



Basement Boiler Room: Sump Pump in Concrete Sump Pit with connection to Sanitary



First Floor: Water Closet fixture with flush rate of 1.6 GPF



Exterior: Utility gas meter serving the gas boilers in the Basement Mechanical Room

2.8 **FIRE PROTECTION Pristine Engineering**

OBSERVATIONS

The Library is a fully sprinklered building, serviced by a 4" Fire Service located in the basement.

The 4" fire service is fed from a water main located on the Washington Street side. As the service enters the building it is then routed through a 4" Double Check Valve Assembly and then is distributed throughout the Library.

The sprinkler system appears to have had some modifications done in the past several years.

There are locations that the sprinklers appear to be obsolete and obstructed.

The Library has a Siamese Fire Department Connection located on the Washington Street side of the building. It appears that the Siamese Fire Department Connection shows signs of vandalism or damage to it as well as the connections have been locked which poses a problem in accessing the Fire Department connections. Siamese connection appears to be too close to entrance door.

The building also has an electric alarm bell located on the Washington Street side and it also appears to have been vandalized or damaged.

There appears to be a second alarm bell which also appears to be damaged as well, could not verify if bell is operational.





Existing 4" Fire Service



Existing 4" DCVA

RECOMMENDATIONS

Remove & replace obsolete sprinkler heads with newer model of sprinkler heads as needed.

Remove & replace obstructed and obsolete sprinkler heads with newer model head.

Clean all existing heads of any debris or impediments.

Remove and replace existing Siamese Fire Department Connection.

Relocated Siamese Connection further away from door as to not cause any obstruction with access of door.

Disconnect and replace damaged electric bell on the left color red.

Disconnect and remove second damaged alarm bell on right color silver if not in service.

For major renovation, addition, or new development, a hydrant flow test will be needed to do the hydraulic calculations. The test should be performed as close as possible to commencement of the project.



Existing 4" Sprinkler Supply



Existing Sprinkler



Existing Sprinklers



Existing Sprinklers



Existing Obstructed Sprinkler(s)



Existing Sprinklers



Connections have been blocked



Connection on right has been damaged



Damaged Electric Bell #1



Damaged Electric Bell #2
2.9 BUILDING SYSTEMS: USER COMMENTS BPL and EMCOR Facilities Services

As a complement to the study team's in-person observations of building systems, BPL Operations staff and their facilities contractor provided the following background information. This is consistent with the team's observations but includes additional points about ongoing issues.

The Codman Square Branch HVAC consists of 5 air handlers. The air handlers have a hydronic/glycol cooling coil and a hydronic/glycol heating coil.

AHU 1 has a belt driven supply fan and a belt driven return fan. The return duct was undersized from the initial install. This creates a noisy environment and issues with the duct itself. A sheet metal company repaired the collapsed duct, but sizing is still the underlying issue. Otherwise AHU 1 has been reliable.

AHU 2 has a belt driven supply fan. No issues other than normal maintenance AHUs 3 through 5 are direct drive motors and I have not had many issues over the years with these units.

The ducts for AHU 1 are large spiral ducts that discharge a few feet above head (in the main space of the library). BPL gets complaints about people being uncomfortable due to the draft during the off-cycle, after a call for heat is satisfied. The setpoints need to be kept higher than normal to prevent this draft from feeling cold. There is an air cooled chiller that has been fairly reliable. Repairing leaks and recharging with R22 are the most common issues.

There are 2 gas boilers that have held up well over the years, but they are getting older. 2 small split case hot water pumps feed the radiators and the AHUs. These pumps need to be overhauled every few years, which is normal for this application.

Having glycol in both the heating and the cooling loops will cause a loss in heat exchange efficiency.

The EMS is one of the oldest in all the branches. This building was originally on the EMS from the 90s. NSI overlaid new graphics, but the controls are still the same. This causes us to have a lack of control due to communicating with old technology. The thermostats are obsolete and cannot be purchased anymore. They are the only types of thermostats that work with the original EMS.

The sprinkler system and air compressor is very old. I know the alarm company has been working on replacing some of these parts.

There have been roof leaks in the past Recently there was a leak in the sprinkler system in the mechanical room, which has been resolved.

3.0

Proposed Program

- 3.1 Library Program Summary: Existing + Proposed
- 3.2 Detailed Library Program + Room Data Sheets
- 3.3 Library Program Adjacencies

3.1 LIBRARY PROGRAM SUMMARY: EXISTING + PROPOSED

			COLLECTION					C	OMPUTER	R	EADER S	EATS		
Assigned Area	Existing Area SF	Proposed Area SF	Volumes Existing	Volumes Proposed	AV Existing	AV Proposed	Shelving LF	Public	Staff	Catalog	Lounge	Table	Total	Notes
Entry														
Vestibules (2)	730	240												2 @ 120 SF each; depending on library configuration, may only need
Book Drop	147	60												Lockable drop, fire-rated. Space for 2 bins
Lobby	1,045	300										1		with digital signage
Central Service Point	240	400							4					100 SF per station. Room data sheet shown with Staff spaces
Self Check-out and Holds	38	150					36							1 station
New Books/Lucky Day Display	-	100												-
Friends Book Sale Shelving	-	-					9							Shelving does not contibute to the total available for the library collection
Friends Storage	-	150												Enclosed room
Exhibition/Gallery Wall	-	-												Not a separate space, but a wall/zone within either the Entry or Community Program Space zones. Quilts, digital signage, immmigration materials display, and other displays as needed
	2,200	1,400	-	-	-		36	-	4	-	· -	•	•	
Adult														
Secondary Service Point		50							1	1		1		Optional, depending on library layout
Adult Print Collection		2,015	23,051	21,000			2,100						-	Capacity in BPL design standards ranges from 10-12 vol/LF - depending on collection type; using 10 vol/lf as an assumption; assume 75% 3-high stacks and 25% in 6-high perimeter shelving
Adult AV Collection		80			3,222	2,400	133							18 DVDs/lf at 5-high
Adult Seating		1,800									30	3	0	60 30 sf/seat
Adult Computers		490						14				1	4	14 30 sf/seat. 12 desktop/laptop, 2 15-minute, reservation computer
	6,647	4,435	23,051	21,000	3,175		2,233	15	1	1	30	4	4	74
Teen														
Teen Print Collection		610	5,489	7,000			636			1				Capacity in BPL design standards ranges from 12-20 vol/LF - depending on collection type; using 11 vol/lf as an assumption; assume 75% 3-high stacks and 25% in 6-high perimeter shelving
Teen Seating		700									10	1	6	26 30 sf/seat or less, depending on layout
	1,158	1,310	5,489	7,000	-	-	636	-	-	1	10	10	3	26

		_	COLLECTION						OMPUTER	S	RE	ADER SEA	TS	_
Assigned Area	Existing Area SF	Proposed Area SF	/olumes Existing	/olumes Proposed	W Existing	IV Proposed	thelving LF	Jubilc	staff	Atalog	ounge.	lable	[otal	Notes
Children														
Children's Librarian's Desk		50							1	1				with printer. Optional, depending on library layout
Children's Print Collection		1,090	14,846	18,000			900		1					Capacity in BPL design standards ranges from 12-30 vol/LF
Children's AV Collection		55			706	1,600	89							18 DVDs/lf at 5-high
Children's General Seating		780									6	20	26	30 sf/seat; includes sink, cabinets
Tweens' Seating		540									6	12	18	3 30 sf/seat
Children's Early Literacy/Storytime Area		750									25		25	5 30 sf/seat; includes banquette, toys
Stroller Parking		100												Not a designated space but an extra area allowance to account for strollers
Children's Technology		240						8				8	8	3 30 sf/seat; 2 AWE + 6 desktop
Family Restroom (1)		60												
	2,972	3,665	14,846	18,000	706	-	989	. 8	2	1	37	40	77	7
Community Program Space														
Community Room	1,686	6 1,450											-	145 seat (theatre style)/60 seat (tables+chairs); 207 code maximum
Community Room Storage	56	6 150												Adjacent to Community Room. Accommodates all tables and chairs for the room as well as two shelving units
Community Room AV Closet	-	20											-	May be combined with Community Room Storage priovided that ventilation/colling requriements are met
Community Room Kitchenette/Counter	-	50								<u>.</u>			-	Adjacent to Community Room or within the same space. Cabinetry and sink
Project Bread refrigerator	-	25												Industrial refrigerator located near ther community spaces
Craft Lab	-	560											-	20 seat (tables+chairs) at 28 SF/seat; can be used for quilting
Craft Lab Storage	-	50												closet adjacent to classroom nousing laptop cart, sewing machines, shelving
Medium Meeting Rooms (1 existing, 1 proposed	l) 29 ⁻	1 300										12	12	12 seats at 25 SF/seat
Small Meeting Rooms (2 proposed)	-	300										4	4	2 @ 150 SF each; 4 seats each typical use, 6 people max at 25 sf/seat.
Central Print Station		50						1					-	Near staff point
	2,033	3 2,955	-	-	-		-	-	-	-	-	16	16	
Staff														
Staff Workroom	505	5 500							5				-	with sink
Branch Librarian's Office	114	4 120							1				-	
Staff Break Room	313	3 250											-	includes refrigerator, sink , lockers, etc.
Kitchen	80	D -												replace w/ proposed community room kitchenette and staff break room
Staff Restroom (2 existing, 1 proposed)	284	4 60											-	1 @ 60 SF
Library Storage	133	3 200												
	1,429	9 1,130	-	-	-		-	-	6	-	-	-	-	

		_	COLLECTION						OMPUTER	RS	READER SEATS			_
Assigned Area	Existing Area SF	Proposed Area SF	/olumes Existing	/olumes ² roposed	W Existing	W Proposed	shelving LF	aubile	ìtaff	Xatalog	ounge.	lable	[otal	Notes
Service														
Public Restrooms (2 existing + proposed)	405	500											-	2 @ 250 SF each. If allowable by code at the time of design, replace with an equivalent number of fixtures in gender-neutral restrooms
Public Restroom (All Gender)	-	60											-	1 @ 60 SF
Custodial Storage + Office	161	150							1				-	includes 40SF custodian desk area
Custodial Closet	40	40												
Outdoor Equipment Storage	80	100											-	Fire-rated. Includes lawn mower, snow blower, patron use gardening supplies
Trash and Recycling Room	-	80												Required by LEED. Includes 4 large trash/recycle bins
Mechanical	1,500	1,500											-	
Electrical	20	100											-	
Water		50											-	
Server/IT Room		100											-	
Fire Pump Room		100											-	
	2,206	2,780	-	-	-		-	-	1	-	-	-	-	
					COLLECTION	I		C	OMPUTER	s	RE	ADER SEA	TS	_
			Volumes Existing	Volumes Proposed	AV Existing	AV Proposed	Shelving LF	Public	Staff	Catalog	Lounge	Table	Total	
Total SF (Assignable SF)	18,645	5 17,675	43,386	46,000	3,928	4,000	3,895	23	14	3	77	118	195	
Unassigned Area @ 20%		3,535												
Total Estimated Gross SF	22,000	21,210												
Current Unassigned Area %	159	%												

Outdoor Areas								
Entry plaza	4,850	1,250						At main entrance
Reading Garden	9,650	3-5,000						Includes trees, seat walls or benches, informal gathering space, planting area, and approximately (6) 4'x4' raised beds
Van/service parking/loading space	incl. below	280						1
Parking	10,564	3,250						Existing: 24; Proposed: 10 spaces, including ADA parking
15-minute parking	-	400						2 parallel, spaces, located on Washington Street

3.2 DETAILED LIBRARY PROGRAM + ROOM DATA SHEETS

ENTRY: VESTIBULE

 $\textbf{AREA: } 120 \; sq \; ft$

FUNCTION: Primary entry point and beginning of entry sequence to library. Should welcome and help orient visitors

FURNISHINGS: Floor mats, library signage, any security elements, accessible or automatic doors

PROXIMITY: Book drop, central service point, lobby

SIGHT-LINES: Central service point, easily visible from both the street and lobby.

- Durable recessed mats to clean shoes
- Extending roof to provide shelter from the weather.
- Doors (and space as a whole) should follow principles of universal design: easy to open (perhaps automatic) to cater to a variety of needs and abilities.
- Space for fire alarm panel as required
- Dedication Plaque



ENTRY: BOOK DROP

AREA: 60 sq ft

FUNCTION: To allows the return of library books during or after hours.

FURNISHINGS: (2) Depressible book bins

PROXIMITY: Central service point, lobby, street, vestibule

SIGHT-LINES: Visible upon approach from the street

NOTES: Special care must be take for the condition of books, condition of the space itself. The single exterior slot should be fireproof, waterproof, and vandal-proof. The book drop should be visually and physically accessible to all visitors: well lit with the slot at an accessible height. The route from the book drop room to the work room should be easy to transverse with a book bin.

ARCHITECTURAL FEATURES:

- Lockable book drop slot
- Fire rated walls and door
- Lockable interior door

ENTRY: NEW BOOKS/LUCKY DAY DISPLAY

AREA: 100 sq ft

FUNCTION: To display new books

FURNISHINGS: Display stands and shelves

PROXIMITY: Lobby

SIGHT-LINES: Visible from several angles to allow multiple visitors to engage with the display

ARCHITECTURAL FEATURES:

- Positioned so as to be visible from several angles.
- Well lit to allow easy engagement





ENTRY: LOBBY

AREA: 300 sq ft

FUNCTION: To welcome visitors and orient them within the space.

FURNISHINGS: Digital signage, security gates leading to vestibule

PROXIMITY: Vestibule, central service point, community room, restrooms.

SIGHT-LINES: Central service point, the vestibule entrance, restrooms and community room should all be clearly visible. Should also provide sight-lines to major zones of the library.

ARCHITECTURAL FEATURES:

- Good acoustic performance
- Durable yet attractive materials to handle high traffic
- Accessible signage



ENTRY: EXHIBITION/GALLERY WALL

AREA: TBD

FUNCTION: A space to display rotating community art like quilts

PROXIMITY: Not a separate space, but a wall/zone within either the Entry or Community Program Space zones.

ARCHITECTURAL FEATURES: Flexible wall hanging system, display lighting

Brooklyn Public Library lobby & new book area

15FT



5FT 10FT

ENTRY: SELF CHECK-OUT AND HOLDS

Area: 150 sq ft

FUNCTION: Station where visitors may find and checkout reserved books.

FURNISHINGS: Freestanding self checkout machine, 36 LF of shelving.

PROXIMITY: Central service point

SIGHT-LINES: Central service point, lobby

ARCHITECTURAL FEATURES:

- Durable materials to withstand high traffic
- Good lighting to enable visitors to find books.

ENTRY: FRIENDS STORAGE ROOM

AREA: 150 sq ft

FUNCTION: Storage for Friends of the Library supplies, not accessed by the general public

FURNISHINGS: 15" deep storage shelving, a small table and 2 chairs

Note that a permanent 9 linear feet of dedicated public-facing book-sale shelving is included in the overall shelving totals for the building.

PROXIMITY: Away from entry, but near other public space





ADULT: COLLECTION

AREA: 2,095 sq ft (will vary with alternate arrangements or shelving heights)

FUNCTION: Section containing adult print and AV collections for browsing and reading.

FURNISHINGS:

Print collection: Double-sided shelving units, 3 shelves high, on casters. Perimeter shelving units, 6 shelves high. 2,100 LF shelving total assuming 10 volumes/LF. Bottom shelves tilt up; assume all shelves used to achieve required linear footage.

AV collection is housed in similar shelving to the print collection. Assume that double-sided, 5-high shelves match the height of adjacent 3-high bookshelves. 133 LF shelving total.

1 catalog computer is on a furniture table.

PROXIMITY: Close to central service point

SIGHT-LINES: Within sight of service desk

- Clear and easily changeable signage marking all stacks
- Clear sight lines from service points through the stacks for security
- Layout for easy location of material
- Sufficient lighting to read index labels on bottom shelves. Perpendicular layout to shelving to allow flexible stack arrangement in the future.
- Low stack ranges to promote visibility with taller stacks on perimeter
- 3'- 6" Aisle Spacing (4'- 0" between center and wall perimeter shelving)



n di di

ADULT: SECONDARY SERVICE POINT

AREA: 50 sq ft

FUNCTION: Provide borrower assistance and supervision in spaces not easily reached by central service point. (Optional depending on library layout).

FURNISHINGS: Seated height desk (approximately 2 ft x 3 ft) and chair, lockable storage, 1 staff computer

PROXIMITY: Close to adult collection areas, remote from central service point.

SIGHT-LINES: Sight-lines to collection and seating spaces not easily seen or helped by central service point

ARCHITECTURAL FEATURES:

- Clear signage
- Accessible and welcoming

ADULT: ADULT SEATING

AREA: 1800 sq ft

FUNCTION: Provide space for visitors to read books, write, use laptops, study, work, etc.

FURNISHINGS: 60 seats (16 lounge chairs, 38 table chairs, 6 stools at laptop bar). Tables (no larger than 4-top) and counter-height laptop bar.

PROXIMITY: Near adult collection, central print area

SIGHT-LINES: Visible from service desk

ARCHITECTURAL FEATURES:

- Electrical outlets readily available at seating areas, not just perimeter walls.
- Adequate lighting for reading or laptop use.



ADULT: ADULT COMPUTERS

AREA: 490 sq ft

FUNCTION: Provide easy public access to computers, the Internet, databases, and other digital library resources.

FURNISHINGS: 15 table seats, 12 desktop/ laptop seats, 2 15-minute stations, 1 computer reservation computer

PROXIMITY: Near adult collections and the central print area; away from Children's services.

SIGHT-LINES: Visible from central service point.

NOTES: Per Computer: 2 power receptacles +1 data port located below the work surface and out of sight (and less accessible to the reach of small children). Ethernet cable must be connected directly from computer to data port in wall or floor box; no splitter-type data connections are permitted. Grommets must be sized to accommodate pass-through of the following cables for each computer station: keyboard cable, mouse cable, monitor power cord, USB, power cord, VGA cable (with screw-type connection).



Jamaica Plan Branch computer area



TEEN: COLLECTION

AREA: 610 sq ft (will vary with alternate arrangements or shelving heights)

FUNCTION: Space for storage and browsing of the teen print collection

FURNISHINGS: Double-sided shelving units, 3 shelves high, on casters. Perimeter shelving units, 6 shelves high. 648 LF shelving total, assuming 11 volumes/LF). Assume use of bottom shelves (tilted up). 1 catalog computer may be included if the adult catalog computer is not close enough.

PROXIMITY: Teen seating area; if possible, should be accessible without movement through children or adult area

SIGHT-LINES: Visible from service point, displays visible from teen seating area

- Shelving should be lower in center and high on perimeter for ease of navigation.
- Suitable lighting for reading
- Adequate acoustic separation from adjacent spaces in walls, flooring, and ceiling.
- 3'- 6" Aisle spacing (4'- 0" between center and wall perimeter shelving)



TEEN: SEATING

AREA: 700 sq ft (will vary with furniture selection and layout)

FUNCTION: Space for teenagers, to read, study, use laptops, gather, and browse.

FURNISHINGS: 10 lounge/banquette seats, 12 table seats, 4 stools at counter-height laptop bar, several tables.

PROXIMITY: Should be accessible without movement through children or adult area if possible.

SIGHT-LINES: Visible from service point

NOTES: Spaces should be comfortable, informal, and durable. Flexible seating that can be arranged to accommodate different groups and individuals

ARCHITECTURAL FEATURES:

- Space should be inviting to teenagers and distinguished or slightly separated from other spaces.
- Electrical outlets near the seating (floors, tables) in addition to perimeter walls



Roxbury Branch teen area



10FT 15FT

CHILDREN: COLLECTION

AREA: 1,145 sq ft (will vary with alternate arrangements)

FUNCTION: Space for families to engage in library services with their children, including browsing.

FURNISHINGS:

Double-sided shelving units, 3 shelves high, on casters. Perimeter shelving units, 3 shelves high. 900 LF of shelving total. Assume use of bottom shelves (tilted up) 1 catalog computer on a furniture table or at the service point.

AV collection: Double-sided shelving units 5 shelves high, on casters. 90 LF total. Assume use of bottom shelves (tilted up).

PROXIMITY: In sight of service point, early child literacy resources, tween and children's seating. Far from quiet reading areas.

NOTES: Space should be comfortable and informal with durable materials. Any displays should be flexible so they may shift with changing content.

ARCHITECTURAL FEATURES:

- Suitable lighting for reading
- 3'- 6" Aisle spacing (4'- 0" between center and wall perimeter shelving)
- More generous space between collection and seating areas to accommodate strollers



Jamaica Plain Branch children's area

15FT



5FT

CHILDREN: LIBRARIAN'S DESK

AREA: 50 sq ft

FUNCTION: Service point for children and families, provides supervision of children (and supervision of teen spaces if layout permits)

FURNISHINGS: 1 Desk,1 task chair, 1 staff computer, 1 desktop bar-code scanner; lockable mobile pedestal (with personal drawer + letter-sized file drawer); 1 trash bin, 1 recycle bin

PROXIMITY: Near children/tween seating.

SIGHT-LINES: Visible from as much of children's spaces as possible.

NOTES: Desk should be durable, and approachable for children.

CHILDREN: CHILDREN'S GENERAL SEATING

AREA: 780 sq ft

FUNCTION: Space for children to do homework, study, relax, read, use laptops and socialize.

FURNISHINGS: 6 lounge seats and 20 table seats of appropriate size. Low tables.

PROXIMITY: Children's collection, service point, librarians desk.

SIGHT-LINES: Visible from librarian's desk and service point.

NOTES: Space should be welcoming, informal, and durable. Adequate lighting for a variety of activities. Materials should be easy to clean.

ARCHITECTURAL FEATURES:

• Counter top with sink and storage cabinets





CHILDREN: TWEEN AREA

AREA: 540 sq ft

FUNCTION: Space for older children (10-13) to do homework, study, relax, read, use laptops and socialize.

FURNISHINGS: 6 lounge seats and 12 table seats of appropriate size (30sqft/seat).

PROXIMITY: Children's collection, service point, librarians desk. Far from early literacy seating.

SIGHT-LINES: Visible from librarian's desk and service point.

NOTES: Space should be welcoming, informal, and durable. Adequate lighting for a variety of activities.



CHILDREN: FAMILY RESTROOM

AREA: 60 sq ft

FUNCTION: Restrooms sized and outfitted for children and caretakers.

FURNISHINGS: A toilet, sink, fold-down changing table, covered sanitary disposal container, mirror, step stool for children to reach sink.

PROXIMITY: Close to other children's services

SIGHT-LINES: Visible from service points

- Durable and easily cleaned material like tile should be used.
- The door should lock but not so low as to be easily locked by children in the room.



CHILDREN: CHILDREN'S TECHNOLOGY

Area: 240 sq ft

FUNCTION: Space for families to engage in computer use and introduce children to computers.

FURNISHINGS: 6 desktop computers, 2 AWE computers, 16 seats (2 at each computer for child and caretaker).

PROXIMITY: Near children's collection, central print area, and family restroom. Far from library entrance and quiet reading areas.

SIGHT-LINES: Visible from service point.

NOTES: Materials should be durable and easy to clean, but also easily replaceable, easily maintained, and child safe. 2 AWE + 6 desktop. Per Computer Station: 2 power receptacles +1 data port located below the work surface and out of sight (and less accessible to the reach of small children). Ethernet cable must be connected directly from computer to data port in wall or floor box; no splittertype data connections are permitted. Grommets must be sized to accommodate pass-through of the following cables for each computer station: keyboard cable, mouse cable, monitor power cord, USB, power cord, VGA cable (with screw-type connection).



CHILDREN: EARLY LITERACY/ STORY TIME AREA

AREA: 750 sq ft

FUNCTION: This is an area for young children and their families. Children will browse books, and play with manipulatives and other toys. Families sit together to look at books and toys. Caretakers will sit and talk with children and watch them play. Staff will lead story time and small programs

FURNISHINGS: 25 seats (lounge/banquette), bins for board books and toys, soft seating for adults to sit with children, sensory wall activities

PROXIMITY: Far from teen spaces, and quiet reading rooms

SIGHT-LINES: Visible from service point

NOTES: Materials should be durable and easy to clean, but also easily replaceable, easily maintained, and child safe.

ARCHITECTURAL FEATURES:

• Possible to partially close off space with furnishings or architectural elements (to subtly separate and keep young children from wandering away).



COMMUNITY: COMMUNITY ROOM

AREA: 1695 sq ft total; 1450 sq ft clear area (excluding support spaces)

FUNCTION: Accommodates a wide range of community and library programming including lectures, movies, exhibitions, large children's and adult programs, large group training, performances, classes, etc. Theater seating arrangement shown above and work table arrangement shown below.

FURNISHINGS: 145 seat (theatre style)/60 seat (tables+chairs); 207 code maximum. Option for whiteboards, lectern etc Assisted Listening System, clock

PROXIMITY: Near public restrooms and lobby, far from quiet reading areas.

SIGHT-LINES: In sight of main lobby

ARCHITECTURAL FEATURES:

- Good acoustic performance to handle large gatherings and presentations, performances, etc.
- Acoustically isolated from other library spaces
- AV equipment
- Picture rail
- At least two means of egress
- Community room storage closet for tables and chairs (150 sq ft)
- Kitchenette (50 sq ft)
- Lockable AV closet with adequate ventilation/cooling to prevent damage to equipment (20 sq ft)
- Space for Project Bread refrigerator (25 sq ft)





Adams Branch proposed community room



5FT

10FT 15FT

COMMUNITY: MEDIUM MEETING ROOM

Area: 300 sq ft

FUNCTION: To provide a place for moderate sized groups of people to gather, work or converse.

FURNISHINGS: 12 seats at 6 table 25 SF/seat, whiteboards, clock, AV equipment

PROXIMITY: Near adult or teen areas.

SIGHT-LINES: Within site of service points

ARCHITECTURAL FEATURES:

• Glass partition walls (provide visibility and acoustical separation)



COMMUNITY: SMALL MEETING ROOM

AREA: 150 sq ft

FUNCTION: To provide a place for small groups of people to gather, work or converse. The space should be acoustically isolated to allow for non-disruptive conversation.

FURNISHINGS: 4 seats at 1 table, whiteboards

PROXIMITY: Near adult or teen areas.

SIGHT-LINES: Within sight of service points

ARCHITECTURAL FEATURES:

• Glass partition walls (provide visibility and acoustical separation)



BPL Central Library meeting room



COMMUNITY: CRAFT LAB

AREA: 560sq ft + 50 sq ft storage

FUNCTION: Provide space for arts and crafts, small meetings and enrichment programs such as quilting

FURNISHINGS: 20 seat (tables+chairs). Adjacent closet housing laptop cart, sewing machines, shelving, Assisted Listening System, clock

PROXIMITY: Near restrooms, far from adult computer access, connected to 50 sq ft storage closet

ARCHITECTURAL FEATURES:

- Glass partition wall between classroom and adjacent library spaces to promote visibility, security and allow for borrowed light if internally located.
- Provide acoustical separation from adjacent spaces.
- Counter with cabinets and sink.

COMMUNITY: CENTRAL PRINT STATION

AREA: 50 sq ft

FUNCTION: To provide the public with printing capabilities

EQUIPMENT: MFP (multi-function printer), 1 Pharos pay-for-print kiosk (19.62" wide x 60.1" tall x 22.5" deep)

PROXIMITY: Adult computer area; teen computer area; children's computer area

SIGHT-LINES: Visible from service point

ARCHITECTURAL FEATURES:

• 5 power receptacles and 3 data ports accessible





Park Ridge Public Library craft room



5FT 10FT

ENTRY/STAFF: CENTRAL SERVICE POINT

$\textbf{AREA:}\,400 \; sq \; ft$

FUNCTION: The central service point serves as the primary location for processing book returns, checkouts, renewals, and reservations. It is also the place where most visitors are greeted, an initial point of contact with staff and place where visitors may ask for information.

FURNISHINGS: Depressible book bins for indoor return, below desk cabinets, Assisted Listening System, panic button, door lock button

Per Person: 1 task chair; 1 phone; 1 desktop bar code scanner; lockable mobile pedestal (with personal drawer + letter-sized file drawer); 1 cash drawer; 1 desensitizer; space for laptop cart, book carts

PROXIMITY: Near the central print area, lobby, work room, and community room. Far from designated quiet areas,

SIGHT-LINES: Mutual visibility with lobby, vestibule. In general an effort should be made to create sight-lines throughout the building, especially to the front door, restrooms and program spaces

NOTES: Readily noticeable upon approach/ entry with clear signage. Accessible and welcoming. Materials should be durable and functional for all book processing activities.

- Desk to accommodate the furnishings above
- Book drop built into desk



STAFF: WORKROOM

AREA: 500 sq ft

FUNCTION: All materials added and withdrawn from the collection passes through this room. Staff workstations for focused work and to make phone calls away from the public desk. This will be a hub of activity to receive and prepare books for public use, plan programs, and other behind-the-scenes tasks that keep the public services running.

FURNISHINGS: Per Person: 1 staff computers with desensitizers and bar code scanners, 1 task chairs, 1 telephone, 1 lockable storage units, 1 recycle bin.

Shared: Sink, coat rack/hooks, book trucks, clock, waste receptacles, desktop printer, space for book tote, laptop cart, shelf above work surfaces

PROXIMITY: Connection to the primary service point, storage, near an exterior door for service deliveries, near the staff restroom

- Resilient flooring that will accommodate heavy book trucks and heavy wear from the outside deliveries.
- Stainless steel corner guards and wall protection at book truck height
- Sufficient lighting for detailed work.
- Acoustic separation from the public areas of the library and adjacent spaces.
- Open floor space for temporary storage of totes and materials.
- Security/alarm services for the exterior door



STAFF: BRANCH LIBRARIAN'S OFFICE

area: 120 sq ft

FUNCTION: Space for administrative, managerial tasks, program preparation, small group and individual meetings with staff and public. Location of important files and records.

FURNISHINGS: Desk with lockable file drawers, a desk with computer work station, 1 task chair, 1 mobile pedestal with lockable drawer and letter sized file drawer, approximately 12LF of shelving storage, 1 guest chair. Round conference table seating with 2-3 chairs. Clock, 1 trash bin 1 recycle bin

PROXIMITY: Door directly adjacent to public library areas.

SIGHT-LINES: The office should ideally be visible from the primary service point. Should be located off a public area.

- Glass door with windows for views to and from public areas.
- Adequate acoustic separation from adjacent spaces to facilitate privacy



STAFF: BREAK ROOM

AREA: 250 sq ft

FUNCTION: Staff personnel eat meals/snacks, take breaks, relax, and hang coats.

FURNISHINGS: One table with four chairs, Built in kitchenette with counter and sink, over counter shelf, storage cabinets below counter, waste and recycling baskets, 7 full-height lockers

EQUIPMENT: Microwave oven, refrigerator, electric kettle, coffeemaker, toaster, clock, telephone etc.

PROXIMITY: Near staff restroom. Away from main entrance, primary service point, and high traffic areas of the library.

SIGHT-LINES: The staff break room should not be visible from public areas.

ARCHITECTURAL FEATURES:

- Easily cleaned and maintained materials
- Acoustically separated form the rest of the library. Counters and sink should meet ADA clearance guidelines.

STAFF: LIBRARY STORAGE

AREA: 200 sq ft

FUNCTION: General storage for office supplies, books, seasonal decorations, and craft and program supplies for the library.

FURNISHINGS: Adjustable steel shelving, approximately 20" deep (to hold plastic tubs/boxes)

ARCHITECTURAL FEATURES:

- Easily cleaned flooring,
- Open space for larger items





5FT 10FT

15FT

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STAFF: BATHROOM

AREA: 60 sq ft

FUNCTION: Dedicated private staff restroom.

EQUIPMENT: Toilet, sink, mirror, paper towel dispenser, toilet paper holder, soap dispenser

PROXIMITY: Near primary service point, staff workroom, and staff break room.

SIGHT-LINES: To other staff areas. Away from public areas.

- Tile flooring, floor to ceiling wall tile and floor drain for easy cleaning and maintenance.
- Provide acoustical separation to adjacent spaces.
- Hose bib and floor drain



SERVICE: PUBLIC RESTROOM

AREA: 250 sq ft

FUNCTION: Gender dedicated restroom for public use: 1 Men's, 1 Womens (1 restroom shown) May be replaced with equivalent number of fixtures in gender-neutral restrooms if code permits

EQUIPMENT: Sinks, toilets, electric hand dryers, mirrors, trash receptacles, and soap dispensers. Changing tables shall be provided in men's and women's restrooms

PROXIMITY: Community Room

ARCHITECTURAL FEATURES:

- Tile flooring, floor to ceiling wall tile and floor drain for easy cleaning and maintenance
- Provide acoustical separation to adjacent spaces
- Floor drain and hose bibs

SERVICE: PUBLIC RESTROOM (ALL GENDER)

AREA: 60 sq ft

FUNCTION: Single-user restroom for all genders

EQUIPMENT: Sink, toilet, electric hand dryer, mirror, trash receptacle, soap dispenser, and changing table

PROXIMITY: Near entrance and meeting room.

ARCHITECTURAL FEATURES:

- Tile flooring, floor to ceiling wall tile and floor drain for easy cleaning and maintenance.
- Provide acoustical separation to adjacent spaces.
- Floor drain and hose bibs.





15FT

Page 100

SERVICE: CUSTODIAL STORAGE + OFFICE

AREA: 150 sq ft total (40 sq ft desk area)

FUNCTION: Storage of cleaning supplies and equipment, attic stock; custodial office space

FURNISHINGS: 2.5'x 3.5' desk, staff computer, 1 task chair, adjustable steel shelving (approximately 24" deep), wall mounted key cabinet

EQUIPMENT: Vacuum cleaners, stepladder, broom, buckets and mops for cleaning, boxes of supplies and attic stock, custodian cart, ladders

PROXIMITY: Near restrooms and an outdoor entrance



SERVICE: CUSTODIAL CLOSET

AREA: 40 sq ft

FUNCTION: Mop sink and mop storage

FURNISHINGS: Mop sink, clamps for mops

EQUIPMENT: Mops, brooms

PROXIMITY: Near restrooms

ARCHITECTURAL FEATURES:

• Moisture-resistant walls adjacent to mop sink



SERVICE: OUTDOOR EQUIPMENT STORAGE

AREA: 100 sq ft

FUNCTION: Storage space for outdoor equipment

FURNISHINGS: Shelving

EQUIPMENT: Includes lawn mower, snow blower, patron use gardening supplies

PROXIMITY: Near outdoor entrances, away from public spaces.

ARCHITECTURAL FEATURES:

• Fire-rated

SERVICE: TRASH/RECYCLING ROOM

AREA: 80 sq ft

FUNCTION: Storage of trash and recycling bins (LEED requirement)

FURNISHINGS: 4 large trash/recycling bins

PROXIMITY: Near outdoor entrances, away from public spaces.

- Well ventilated
- Wide doors for easy access
- Note that LEED requires a designated storage area for trash and recyclables, but does not require it to be a separate room. This room data sheet indicates a separate space from the custodial storage + office due to possible odors.





SERVICE: MECHANICAL

AREA: 1500 sq ft

FUNCTION: Storage space for other library operation equipment

FURNISHINGS: Shelving

EQUIPMENT: HVAC systems. Refer to Section 5 of study for detailed requirements.

PROXIMITY: Easy access to exterior.

SIGHT-LINES: Outdoor equipment should be screened if visible from the street.

ARCHITECTURAL FEATURES:

- Wide doors for moving equipment easily in and out.
- All equipment must be installed in a manner that accommodates access for periodic maintenance.
- Floor drain.
- Some equipment may be located on the roof outside the building.
- Open ceilings and sealed concrete floors.

SERVICE: ELECTRICAL

AREA: 100 sq ft

FUNCTION: Houses building electrical system and equipment.

EQUIPMENT: Electrical service equipment. Refer to Section 5 of study for detailed requirements.

PROXIMITY: Mechanical service room.

- Wide doors for moving equipment easily in and out.
- Open ceiling and sealed concrete floor.





SERVICE: WATER SERVICE

AREA: 50 sq ft

FUNCTION: Houses controls and for the water service.

EQUIPMENT: Water service equipment. Refer to Section 5 of study for detailed requirements.

PROXIMITY: Mechanical service room.

ARCHITECTURAL FEATURES:

- Wide doors for moving equipment easily in and out.
- Open ceiling and sealed concrete floor.

SERVICE: SERVER/IT ROOM

AREA: 100 sq ft

FUNCTION: Houses network servers for circulation network, public network, VOIP phone system, and security system and lighting controls.

FURNISHINGS: Server racks, monitor, and wire management, and shelving for spare parts.

EQUIPMENT: Routers for internal and area networks, uninterrupted power supply

- Well lit
- Individual heating and cooling thermostat zone.
- Adequate room for present and future equipment and equipment waiting repair.
- No carpeting, resilient flooring.
- Wide doors for moving equipment easily in and out. Ceiling should be left open with a cable tray for wire management.





SERVICE: FIRE PUMP

AREA: 100 sq ft

FUNCTION: Houses fire pump if water pressure is not adequate for sprinkler system. A flow test should be completed at the beginning of the design phase to determine whether this space is needed.

EQUIPMENT: Fire pump. Refer to Section 5 of study for detailed requirements.

PROXIMITY: Must be directly accessible from the exterior of the building per Boston Fire Department regulations.

- Wide doors for moving equipment easily in and out.
- Open ceiling and sealed concrete floor.



COMMUNITY/OUTDOOR: URBAN READING GROVE & BACKYARD GARDEN

AREA: 3,000-5,000 sq ft (4,000 shown)

FUNCTION: Informal uses such as reading and small gatherings outdoors; BPLled programming such as story times, gardening

PROXIMITY: Accessible from public spaces within library and adjacent to street; positioned to receive adequate sunlight

ARCHITECTURAL FEATURES:

- Trees
- Fixed benches and seat walls
- Planting areas
- Hardscape areas
- Movable chairs and tables
- (6) 4'x4' raised garden beds
- Variety of different space types for group and solo uses
- WiFi coverage



AREA: 1,250 sq ft

FUNCTION: Provide public space for gathering, entering library, accessing book drop.

PROXIMITY: At the main entrance. Fair Foods Truck and other community events will use the adjacent Washington Street sidewalk

- Paver/hardscape surface(s)
- Exterior signage
- Bike racks
- Seat walls/benches
- Lighting
- Shade tree planting





SERVICE/OUTDOOR: VAN/SERVICE PARKING/LOADING SPACE

 $\textbf{AREA: } 280 \; sq \; ft$

FUNCTION: Parking space for service deliveries, loading and unloading

PROXIMITY: Near service entrance

ARCHITECTURAL FEATURES:

• Open space for loading and unloading of items



SERVICE/OUTDOOR: 15-MINUTE PARKING

AREA: 400 sq ft

FUNCTION: Public parking spaces

PROXIMITY: Located on Washington Street

ARCHITECTURAL FEATURES:

• 2 parallel spaces



SERVICE/OUTDOOR: PARKING

AREA: 3,250 sq ft

FUNCTION: Public parking spaces

PROXIMITY: Behind library building

ARCHITECTURAL FEATURES:

• 10 total spaces including ADA spaces


3.3 LIBRARY PROGRAM ADJACENCIES



4.0

Development Approaches

- 4.1 Library Options
- 4.2 Other Test-Fit Options Considered
- 4.3 Housing Planning Template

4.1 LIBRARY OPTIONS

The team studied a number of possible development options that would accommodate the library program needs and potentially an affordablehousing project on the site. These initial options are outlined in Section 4.2 of this report. From those initial options, three options were selected for more detailed exploration as part of this study.

- Option A is the renovation option. This option allows for the possibility of freestanding housing on a portion of the site.
- Option B is a freestanding new library, which makes more efficient use of the available site area. This option also allows for the possibility of freestanding housing on a portion of the site.
- Option C is a mixed-use approach that combines the library and housing into a single building.

This section, along with the sustainability, building-systems, and cost information in Sections 5 and 6, highlights the challenges and opportunities of each approach and documents the feedback that the team received along the way, in order to inform the future project once a development approach is selected by the City.

DELIVERY METHODS

PFD's typical project delivery process follows MGL Ch. 149. After designer selection, the project will be designed and documented with extensive input from BPL and from the community. PFD will bid and procure the project according to Ch. 149. Estimated construction durations are described in Section 6.2 of this report. If the library is renovated without housing (Option A) or rebuilt (Option B), the project will follow PFD's typical process described above.

If housing is included in the planning for Option A or B, the library will be renovated or constructed according to PFD's typical process described above. For the housing component, the Mayor's Office of Housing will select a private developer through an RFP process, stipulating affordable-housing and other requirements as part of that RFP. The housing project's limit of work will be defined on site and the site will essentially be divided in two. The housing and library portions of the project may follow separate schedules and be executed by different construction teams.

For Option C, the mixed-use approach, the Mayor's Office of Housing will work with a developer partner similar to that described above to design and construct the base building, including the core and shell, envelope, and full housing fitout. The library space will be delineated as a condominium space within the building, which will be designed and fit out through City of Boston capital funding and a Chapter 149 process administered by PFD and BPL.

A. Library Renovation

The renovation approach retains the overall volumetric structure of the existing building while replacing large portions of the facade to serve a transparent reading room along Washington Street. The outdoor garden space is south-facing, leaving space to the northeast for parking and an optional housing development.

For pricing and planning purposes, the team assumes that this renovation will be extensive; that major portions of the exterior facade will be reconstructed to allow for greater transparency; that the roof-level clerestory will be reconfigured; and that interior finishes and building systems will be replaced. Refer to Section 5 for more information.

The sustainable-design trade-offs of retaining an existing building are explored in Section 5.1 of this report.



Key Metrics

Renovated library Library open space Library parking 22,000 SF 16,500 SF 10 spaces

Development Approach

Library renovated via typical PFD design and construction processes

Advantages

- > Retains existing structure while transforming the interior and exterior experience
- > Significant site area available for library uses
- Library garden relocated to south-facing portion of the site
- > Driveway access off of Welles, as it is today
- > Renovation has less embodied carbon impact than a new building of the same size

Disadvantages

- > Existing configuration is not the most efficient use of the site
- Renovated library building has design constraints that a new-construction building does not have

A. Library Renovation

Leveling the floor at the sunken children's area and replacing the quarter-circle bay windows with more extensive window walls will create a well-lit, flexible open plan. The borrower's service desk, mechanical spaces, and Community Room keep their current locations with some adjustments.







A. Library Renovation



B. New Library

This new-construction option uses the site area more efficiently than the existing building. The library is positioned to the north with its corner entrance facing Codman Square proper, opposite a nearby church forming a civic focus at the intersection of Welles and Washington. Outdoor space is connected to the library with parking towards the center of the site, leaving a relatively large area of the site available for open space or possible housing after the library's indoor and outdoor space needs are met.

The sustainable-design impacts of a freestanding, new-construction building are explored in Section 5.1 of this report.



Key Metrics

New library Library open space Library parking 22,000 SF 26,000 SF 10 spaces

Development Approach

Library constructed via typical PFD design and construction processes

Advantages

- New construction building offers more design freedom and potential for a high-performance building envelope
- > Library prominently sited on Washington
- Library entrance at the corner of Washington and Welles, facing a church and commercial uses, and facing north toward Codman Sq.
- Available site area is larger than other newconstruction options. Space along Washington St. sidewalk, near parking, for community events

Disadvantages

- > Driveway access off of Walton St., which is the narrower of the two bounding side streets
- More embodied-carbon impact for new construction than a comparably-sized renovation

B. New Library

Organized around a corner entrance and centrally-located borrowers' service desk, the public spaces of the library form an "L" that can be supervised from the borrowers' service desk. The Children's Area has direct access to the garden.

The garden is partially shaded by the building at times; the raised beds are positioned to the east in the location with the best solar exposure. Sun studies are included in Section 5.1 of this report.



Floor plan

Teen

Staff

B. New Library

Internally, a strong "spine" organizes the adult, children's, and teen areas near the entry, and facing Washington Street and Welles Avenue, and provides access to the smaller study and meeting rooms. Rooms for the community in varying sizes are organized in a bank at the end of this path and anchor the experience. Staff have visual control of the entire space from the borrowers' service desk and the children's area.

Externally, the north-facing exposure along quiet Welles Ave. is ideal for bringing a significant amount of glazing to the children's and teen areas. Transparency along Washington, at the adult area, should be modulated by shading devices and street trees.

SUPPORT

3-D view

WELLES ST.

MALTON ST.

Options for Adding Housing

After meeting all of the library's program needs, including outdoor spaces, Options A and B both have additional space available on site for housing to be added. These options are briefly described below. In the course of the RFP and design phases, affordable-housing developers would finalize the size, unit count and mix, and design of these housing developments; the information here is simply an illustration of possible approaches to housing on the site.

A mixed-use approach ("Option C") is described on the next page.

A. LIBRARY RENOVATION + HOUSING





Key Metrics

Renovated library	22,000 SF
Library open space	5,500 SF
Library parking	10 spaces
Potential Housing Units	35-40 units
Potential Housing # Stories	up to 5
(subject to zoning	relief)
Housing open space*	3,400 sf
FAR	1.0

Development Approach

Library renovated via typical PFD design and construction processes; housing developed separately

Advantages

- > Housing is tucked away on Welles Ave., with library prominently sited on Washington
- > Driveway access off of Welles, as it is today

Disadvantages

> Existing configuration is not the most efficient use of the site; limited area available for housing constrains the size of the potential development

B. NEW LIBRARY + HOUSING



Key Metrics New library Library open space Library parking

22,000 SF 9,000 SF 10 spaces

Potential Housing Units 40-45 units Potential Housing # Stories up to 5 (subject to zoning relief) Housing open space* 1,700 sf FAR 1.16 (subject to zoning relief)

Development Approach

Library constructed via typical PFD design and construction processes; housing developed separately

Advantages

- Housing faces a larger mixed-use building across Walton St.
- Positioning of new library leaves larger area available for housing

Disadvantages

- > Driveway access off of Walton St., which is the narrower of the two bounding side streets
- > Higher-density use of site than Option A

*not including deck and rooftop space

C. Mixed-Use Building

This mixed-use approach uses the same basic library plan as Option B, with the library and its outdoor space to the north opposite a church. The approach creates a singular street wall on Washington Street, which may be softened using setbacks. An important design requirement is the separation of the entrances, open space, and parking belonging to the library and to the housing. This is true of all options but must be carefully managed in the mixed-use option. The sustainable-design impacts of a single, mixed-use building is explored in Section 5.1 of this report.

Key Metrics

FAR

New library	22,000 SF
Library open space	9,000 SF
Library parking	10 spaces
Potential Housing Units	40-70 units
Potential # Stories	up to 5
(subject to zoning	relief)
Housing open space*	1,700 sf

1.2 - 1.6 (subject to zoning relief)

Development Approach

PFD, BPL, and the Mayor's Office of Housing will work with a developer partner to design and construct the base building, including the core and shell, envelope, and full housing fitout. The library space will be delineated as a condominium space within the building, which will be designed and fit out through separate funding and processes.

Advantages

- New construction building offers more design freedom and potential for a high-performance building envelope
- > Space, cost, and material efficiencies available when housing and library structures combined
- > Library entrance, and tallest part of the building, prominently sited on Washington
- > Library roof could serve as housing's open space
- > Housing and library entrances and open spaces are distinct and separated

Disadvantages

- > Driveway access off of Walton St., which is the narrower of the two bounding side streets
- > Depending on massing, the building may feel too large for the surrounding neighborhood





Massing studies showing four- and five-story versions of this option with a range of unit counts from 40 to 70

C. Mixed-Use Building

The plan organization of the library portion of the mixed-use building is very similar to that of Option B. The library's parking and service entrance are located in the center of the block. The library's garden is along Welles while the housing development's green space is along Walton, maintaining a clear separation; and the entrances to the library and housing are at opposite ends of the block along Washington.



4.2 OTHER TEST-FIT OPTIONS CONSIDERED

This section summarizes the other options that the team studied in addition to the more detailed options shown in Section 4.1. All test fits in this section accommodate the entire branch program, including the garden space, parking, and other outdoor needs. While all options also identify the potential for housing on the site, the "A" (renovation) and "B" (new library) options could move forward with or without the housing component.

B. NEW LIBRARY IN VARIOUS CONFIGURATIONS; HOUSING OPTIONAL



C. MIXED-USE BUILDING IN VARIOUS CONFIGURATIONS





B. New Construction Options

NEW LIBRARY ON WASHINGTON ST.; HOUSING OPTIONAL



New library



New library with housing

Key Metrics

New library	22,000 SF
Library open space	16,500 SF
with housing	5,500 SF
Library parking	10 spaces
Potential Housing Units	35-40 units
Potential Housing # Stories	up to 5
(subject to zoning	relief)
Housing open space*	3,400 sf
FAR (with housing)	1.0

Development Approach

Library constructed via typical PFD design and construction processes; housing, if included, developed separately



Preliminary program organization diagram

Advantages

- New construction building offers more design freedom and potential for a high-performance building envelope
- > Library prominently sited on Washington St.
- > Housing, if included, is tucked away on Welles Ave.
- > If housing is not included, significant site area available for library uses
- > Driveway access off of Welles, as it is today

Disadvantages

- > Existing configuration is not the most efficient use of the site; limited area available for housing constrains the size of the potential development
- More embodied-carbon impact for new construction than a comparably-sized renovation
- > Not selected for more detailed development in this study

*not including deck and rooftop space

B. New Construction Options

NEW LIBRARY AT WASHINGTON ST. + WALTON ST.; HOUSING OPTIONAL



New library



New library with housing

Key Metrics

New library	22,000 SF
Library open space	16,500 SF
with housing	5,500 SF
Library parking	10 spaces
Potential Housing Units	40-45 units
Potential Housing # Stories	up to 5
four la set de manieres	raliaf

(subject to zoning relief) Housing open space* 1,000 sf

FAR (with housing) 1.16 (subject to zoning relief)

Development Approach

Library constructed via typical PFD design and construction processes; housing, if included, developed separately



Preliminary program organization diagram

Advantages

- New construction building offers more design freedom and potential for a high-performance building envelope
- > Library prominently sited on Washington St.
- Housing, if included, is tucked away on Welles Ave.
- > If housing is not included, significant site area available for library uses
- > Driveway access off of Welles, as it is today

Disadvantages

- Primary open space is located at corner of Washington + Welles, creating perceived ambiguity between housing-specific and libraryspecific open space
- More embodied-carbon impact for new construction than a comparably-sized renovation
- > Not selected for more detailed development in this study

*not including deck and rooftop space

The mixed-use approach assumes that a single building would be built with library at ground level and housing, possibly including an occupied roof terrace, above. This approach presents a more efficient use of the site, is achieved with a single building foundation, and allows for additional open space and parking. It is more complex from a funding and construction standpoint. All mixed-use schemes would include separate entrances and separate parking for the library and the housing respectively.

C. Mixed-Use Options

MIXED-USE BUILDING INCORPORATING EXISTING LIBRARY AND NEW HOUSING



New and renovated mixed-use building



Preliminary program organization diagram

Key Metrics

Renovated library	22,000 SF
Library open space	5,500 SF
Library parking	10 spaces
Potential Housing Units	40 units
Potential # Stories	up to 4
(subject to zoning	relief)
Housing open space*	TBD
FAR (with housing)	TBD
(subject to zoning)	relief)

Development Approach

PFD, BPL, and the Mayor's Office of Housing will work with a developer partner to design and renovate/construct the base building, including new structural elements, building systems, envelope, and full housing fitout. The dedicated library space within the building will be designed and fit out through separate funding and processes.

*not including deck and rooftop space

Advantages

- > Open-space and material efficiencies available when housing and library structures combined
- Library entrance, and tallest part of the building, prominently sited on Washington
- > Library roof could serve as housing's open space
- > Housing and library entrances and open spaces are distinct and separated
- Efficient use of the site area for open space, parking, and driveway

Disadvantages

- Renovated library building has design constraints that a new-construction building does not have
- > Clerestory windows in library would be removed
- > Significant structural challenges with adding additional stories to the existing library structure will make this project more complex and costly than other options considered
- Structural constraints would also impose additional constraints on library floor plan organization
- > Not selected for more detailed development in this study

C. Mixed-Use Options

MIXED-USE BUILDING WITH HOUSING ALONG WELLES AVE.



New mixed-use building

Washington St	Vinites Ma
	Washington St

Preliminary program organization diagram

Key Metrics

New library	22,000 SF
Library open space	5,000 SF
Library parking	10 spaces
Potential Housing Units	40-50 units
Potential # Stories	up to 4
(subject to zoning	relief)
Housing open space*	5,000 sf
FAR (with housing) (subiect to zoning	1.23 relief)

Development Approach

PFD, BPL, and the Mayor's Office of Housing will work with a developer partner to design and construct the base building, including the core and shell, envelope, and full housing fitout. The dedicated library space within the building will be designed and fit out through separate funding and processes.

Advantages

- New construction building offers more design freedom and potential for a high-performance building envelope
- > Space, cost, and material efficiencies available when housing and library structures combined
- Library entrance, and tallest part of the building, prominently sited on Washington
- > Library roof could serve as housing's open space
- > Housing driveway off of Welles, as it is today

Disadvantages

- > Driveway access off of Walton St., which is the narrower of the two bounding side streets
- Primary open space is located at corner of Washington + Welles, creating perceived ambiguity between housing-specific and libraryspecific open space
- > Not selected for more detailed development in this study

*not including deck and rooftop space

4.3 HOUSING PLANNING TEMPLATE

Given the size of the site and the program and space needs of the library, any of the library development options (whether renovation or new construction) could potentially accommodate some quantity of housing on the site. Guided by the market analysis included with this report, the study team developed a set of program assumptions to inform the test fits.

The market study identified significant demand in this neighborhood; the number of housing units in each test fit is limited by site constraints rather than by market demand. Mayor's Office of Housing projects that make use of affordable-housing funding typically see economic benefits from a unit count range of 30-50, with 40-45 units seen as ideal. Accordingly, the test fits target 45 units, with a lower limit of 30.

The market study identified a range of unit types from 1-3 bedrooms with assignable/ leasable unit sizes from 675-1100 sf. The test fits use a working assumption of 1000 gross square feet per unit to accommodate this mix and to account for hallways, lobbies, stairs, etc.

It is assumed that housing on this site will be wood-framed with a noncombustible podium. Accordingly, the test fits assume 5 stories maximum, with the first level largely occupied by surface parking serving the housing. For an affordablehousing development in partnership with a city agency, zoning and FAR limits may be exceeded depending on



Levels 2-5



a range of program, site, and massing considerations. Late in the study Mayor Wu signed an amendment to the Boston Zoning Code to eliminate offstreet parking minimums for affordable housing developments. Some of the test fit options do account for a modest amount of housing-related parking. The final configuration would be part of the selected developer's proposal.

5.0

Building Systems Recommendations

- 5.1 Sustainable Design
- 5.2 Landscape Design Narrative
- 5.3 Site Utilities and Drainage Summary and Narrative
- 5.4 Structural Design Summary and Narrative
- 5.5 Architectural Systems Narrative
- 5.6 Mechanical, Electrical, Plumbing, + Fire Alarm Systems Narrative
- 5.7 Fire Protection Narrative

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5.1 SUSTAINABLE DESIGN

Summary of Requirements

LIBRARY

A <u>renovated</u> library will meet the City of Boston's sustainability requirements:

- LEED Silver Minimum
- Climate resiliency requirements

A <u>new</u> library will meet the City of Boston's ambitious climate goals for new municipal buildings as described in Article 37, the Mayoral Executive Order relative to Municipal Carbon- neutral Buildings in Boston signed on December 11, 2019:

- Net Zero Operating Carbon on-site, off-site, ready, or convertible
- All electric preferred
- On- and off-site renewable energy
- LEED Silver Minimum
- Climate resiliency requirements

HOUSING

An affordable-housing project on this site would be subject to Mayor's Office of Housing design standards and guidelines. This housing development, if it becomes part of the project, will be less than 50,000 square feet and as such will not be subject Article 37. The key requirements are:

- LEED Silver "certifiable" Minimum
- Zero Emissions Building, CO2 Emissions Target
- Prescriptive Design Requirements
- Zero Net Carbon for City-funded affordable housing on a per-person budget basis

INCENTIVES

There are advantages to starting the MassSave utility incentives process early in the design process for maximum incentives. MassSave will push the project towards an energy-use intensity (EUI) of 25 kBTU/sf/year. Refer to the Appendix for incentive pathways. Available programs change periodically, so the topic of incentives should be explored in more detail at the beginning of the project's design phase.

ON-SITE POWER GENERATION

Conservative preliminary analysis suggests that a rooftop photovoltaic system might generate around 125-150,000 kW. To fully power the building with photovoltaics, this translates to a required EUI of no more than 22-26 kBTU/sf/year, which is very aggressive, especially for the renovated scheme; it does align well with MassSave incentives noted above. Adding more photovoltaic coverage above mechanical equipment could close the gap; otherwise, some offsite green-power purchase will be required to meet the Net Zero goal. Any photovoltaic installation on site will likely be via a power-purchase agreement with a third-party solar provider.

Other renewable energy sources such as wind power and ground-source heat pumps are less likely to be economically feasible but could be studied in the design phase of the project.

OTHER CONSIDERATIONS

In addition to meeting the specific energy requirements noted above, all options, whether renovation or new construction, will include strategies to achieve LEED certification and a sustainable building and site:

- Highly efficient HVAC systems
- Meeting the city's stringent climate-resiliency and stormwatermanagement requirements
- Green space
- Bike parking and a bus stop
- Healthy indoor materials

• Good ventilation and daylighting Refer to Sections 5.2 - 5.7 for more specific information.

Carbon Impact

The climate impact of the project can be measured by its contribution to CO₂ emissions. This study considers two sources of CO₂ emissions:

- "Operational Carbon" refers to the CO₂ emissions produced by operating the building. Per the Net Zero Carbon goal, this metric should be zero once energy generation is included.
- "Embodied Carbon" refers to the CO₂ emitted in the production of building materials, the construction of the building, and eventual demolition. With the City's Net Zero Carbon goal, carbon intensive building materials should be avoided and materials that sequester carbon are preferred when feasible.

Considering both of these sources over the life of the building gives us an understanding of the total impact of each version of the project over the life cycle of the building.

The analysis in this section is based on very preliminary conceptual assumptions about building systems as defined in Sections 5.2 - 5.7 of this report, and should be refined once the project proceeds into the design phase.

OPERATIONAL CARBON

With the City's goal of Zero Net Operating Carbon for new buildings, a newconstruction project should have no operational impact. Practically, the more that we can improve the building's energy efficiency through high-quality building systems and a well-insulated envelope, the less energy needs to be offset by photovoltaics or green-power purchase.



Operational CO2 impact over building life cycle: Libraries + Housing



The charts on this page illustrate that new construction has a slight advantage over renovation in terms of the ability to optimize the building envelope. There are further savings anticipated for a mixeduse building which is more condensed, with less exterior envelope, than two freestanding buildings of similar size.

This analysis does not include potential solar power noted on the previous page. If photovoltaic solar power is included in the project, much of the operational impact will be offset.

EMBODIED CARBON

A new building takes energy to build; additionally, demolishing a building releases CO₂ into the atmosphere. Concrete and steel used in building structures are major sources of CO₂ emissions. New construction using more timber and less steel produces less impact. Accordingly, Section 5.4 considers both steel/concrete and timberbased structural systems.

Considering the library alone, renovating the existing building produces significantly less CO₂, both because the structure is reused and because the building is not demolished. When housing is added to the project, that adds embodied carbon at a higher rate, since residential construction is more intensive, with more walls, appliances, etc. The mixed-use option "shares" the carbon burden of the foundation and structure between the library and the housing. While housing in the mixed-use scenario has slightly less carbon impact than a comparable amount of freestanding housing, the library portion has a bit more structure; at this conceptual level of analysis, the embodied carbon impacts of the new-construction options are not significantly different from each other.

Embodied CO2 impact:





LIFE-CYCLE CARBON

Adding operation and embodied CO₂ together tells us how much CO₂ emissions may be associated with the building over its lifespan (calculated as 60 years here, for example). Each option for library and housing construction begins with its initial impact (embodied carbon) and increases over time as the building uses energy. This analysis also includes an additional embodied-carbon impact representing a renovation of the building at 20-year intervals.

At the conceptual level of this analysis, the operational savings of a more efficient new-construction building is offset by the initial embodied-carbon savings of a renovation scheme. The embodied and operational efficiencies of a mixed-use option mean that over the building's lifespan, this option contributes less CO₂ to the atmosphere than the other two options.

Note that this analysis assumes comparable library and housing square footage for each option and should be refined once the project moves into design.

Life-Cycle Carbon: 60-year CO2 impact (steel + concrete structures)





Life-Cycle Carbon: Cumulative 60-year CO2 impact (steel + concrete structures)

Cumulative Solar Exposure Analysis

Solar exposure is an important consideration for shaping the building to maximize thermal comfort (shade in summer and sun in the swing seasons), as well as providing adequate sun for the raised bed garden. These studies quantify cumulative exposure across the day and year.



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Opt. B

Cumulative hours of solar exposure, June 21, 9:00am - 6:00pm



Opt. A with housing



Cumulative hours of solar exposure, September 21, 9:00am - 6:00pm



Opt. A with housing





Cumulative hours of solar exposure, December 21, 9:00am - 6:00pm

Opt. C

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Library LEED v4 Checklist

	LEE Proje	D v4 for BD+C: New Construction and act Checklist	Major Renovatior	n Proj Dat	ject e:	Nai	me:	Codman Square Library 7/1/2021	
Y ? N	Credit	Integrative Process	1						
15 1 0	Loca	tion and Transportation	16	2	6	5	Mater	ials and Resources	13
	Credit	LEED for Neighborhood Development Location	16	Y			Prereq	Storage and Collection of Recyclables	Required
1	Credit	Sensitive Land Protection	1	Y			Prereq	Construction and Demolition Waste Management Planning	Required
1 1	Credit	High Priority Site	2		1	4	Credit	Building Life-Cycle Impact Reduction	5
5	Credit	Surrounding Density and Diverse Uses	5		2		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
5	Credit	Access to Quality Transit	5		1	1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	Credit	Bicycle Facilities	1		2		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	Credit	Reduced Parking Footprint	1	2			Credit	Construction and Demolition Waste Management	2
1	Credit	Green Vehicles	1						
				5	9	2	Indoo	r Environmental Quality	16
3 6 1	Susta	ainable Sites	10	Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y	Prereq	Construction Activity Pollution Prevention	Required	Y			Prereq	Environmental Tobacco Smoke Control	Required
1	Credit	Site Assessment	1	2			Credit	Enhanced Indoor Air Quality Strategies	2
1 1	Credit	Site Development - Protect or Restore Habitat	2		3		Credit	Low-Emitting Materials	3
1	Credit	Open Space	1	1			Credit	Construction Indoor Air Quality Management Plan	1
2 1	Credit	Rainwater Management	3	1	1		Credit	Indoor Air Quality Assessment	2
2	Credit	Heat Island Reduction	2		1		Credit	Thermal Comfort	1
1	Credit	Light Pollution Reduction	1	1	1		Credit	Interior Lighting	2
					1	2	Credit	Daylight	3
5 3 3	Wate	r Efficiency	11		1		Credit	Quality Views	1
Y	Prereq	Outdoor Water Use Reduction	Required		1		Credit	Acoustic Performance	1
Y	Prereq	Indoor Water Use Reduction	Required						
Y	Prereq	Building-Level Water Metering	Required	6	0	0	Innov	ation	6
1 1	Credit	Outdoor Water Use Reduction	2	5			Credit	Innovation	5
3 2 1	Credit	Indoor Water Use Reduction	6	1			Credit	LEED Accredited Professional	1
2	Credit	Cooling Tower Water Use	2				•		
1	Credit	Water Metering	1	2	2	0	Regio	nal Priority	4
				1			Credit	Regional Priority: Optimize Energy (8)	1
14 12 7	Energ	gy and Atmosphere	33	1			Credit	Regional Priority: Rainwater (2)	1
Y	Prereq	Fundamental Commissioning and Verification	Required		1		Credit	Regional Priority: Indoor Water (4)	1
Y	Prereq	Minimum Energy Performance	Required		1		Credit	Regional Priority: BLC, HPS, Renewable	1
Y	Prereq	Building-Level Energy Metering	Required						
Y	Prereq	Fundamental Refrigerant Management	Required	52	40	18	ΤΟΤΑ	LS Possible Poin	ts: 110
4 2	Credit	Enhanced Commissioning	6				Certifie	d: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to	110
8 5 5	Credit	Optimize Energy Performance	18						
1	Credit	Advanced Energy Metering	1						
1 1	Credit	Demand Response	2						
2 1	Credit	Renewable Energy Production	3						
1	Credit	Enhanced Refrigerant Management	1						
2	Credit	Green Power and Carbon Offsets	2						

Housing LEED v4 Checklist

	LEE Proje	D v4 for BD+C: New Construction and act Checklist	d Major Renovatior	1 Proj Dat	ject e:	Nai	me:	Codman Square Residential 8/6/2021	
Y ? N	Credit	Integrative Process	1						
15 1 0	Loca	tion and Transportation	16	2	4	7	Mater	ials and Resources	13
	Credit	LEED for Neighborhood Development Location	16	Y			Prereq	Storage and Collection of Recyclables	Required
1	Credit	Sensitive Land Protection	1	Y	1		Prereq	Construction and Demolition Waste Management Planning	Required
1 1	Credit	High Priority Site	2		1	4	Credit	Building Life-Cycle Impact Reduction	5
5	Credit	Surrounding Density and Diverse Uses	5		1	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
5	Credit	Access to Quality Transit	5		1	1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	Credit	Bicycle Facilities	1		1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	Credit	Reduced Parking Footprint	1	2			Credit	Construction and Demolition Waste Management	2
1	Credit	Green Vehicles	1						
	_			4	9	3	Indoc	or Environmental Quality	16
4 4 2	Susta	ainable Sites	10	Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y	Prereq	Construction Activity Pollution Prevention	Required	Y			Prereq	Environmental Tobacco Smoke Control	Required
1	Credit	Site Assessment	1	1		1	Credit	Enhanced Indoor Air Quality Strategies	2
2	Credit	Site Development - Protect or Restore Habitat	2		3		Credit	Low-Emitting Materials	3
1	Credit	Open Space	1	1			Credit	Construction Indoor Air Quality Management Plan	1
2 1	Credit	Rainwater Management	3		2		Credit	Indoor Air Quality Assessment	2
1 1	Credit	Heat Island Reduction	2	1			Credit	Thermal Comfort	1
1	Credit	Light Pollution Reduction	1	1	1		Credit	Interior Lighting	2
					1	2	Credit	Daylight	3
5 3 3	Wate	r Efficiency	11		1		Credit	Quality Views	1
Y	Prereq	Outdoor Water Use Reduction	Required		1		Credit	Acoustic Performance	1
Y	Prereq	Indoor Water Use Reduction	Required				-		
Y	Prereq	Building-Level Water Metering	Required	6	0	0	Innov	ation	6
1 1	Credit	Outdoor Water Use Reduction	2	5			Credit	Innovation	5
3 2 1	Credit	Indoor Water Use Reduction	6	1			Credit	LEED Accredited Professional	1
2	Credit	Cooling Tower Water Use	2						
1	Credit	Water Metering	1	2	2	0	Regio	onal Priority	4
	-			1			Credit	Regional Priority: Optimize Energy (8)	1
14 12 7	Energ	gy and Atmosphere	33	1			Credit	Regional Priority: Rainwater (2)	1
Y	Prereq	Fundamental Commissioning and Verification	Required		1		Credit	Regional Priority: Indoor Water (4)	1
Y	Prereq	Minimum Energy Performance	Required		1		Credit	Regional Priority: BLC, HPS, Renewable	1
Y	Prereq	Building-Level Energy Metering	Required				-		
Y	Prereq	Fundamental Refrigerant Management	Required	52	36	22	TOTA	LS Possible Point	s: 110
4 2	Credit	Enhanced Commissioning	6	·	•		Certifie	d: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to	110
8 5 5	Credit	Optimize Energy Performance	18						
1	Credit	Advanced Energy Metering	1						
1 1	Credit	Demand Response	2						
2 1	Credit	Renewable Energy Production	3						
1	Credit	Enhanced Refrigerant Management	1						
2	Credit	Green Power and Carbon Offsets	2						

5.2 LANDSCAPE DESIGN NARRATIVE

All options include the following landscape and site elements.

STREETSCAPE

Improvements to the sidewalks along Welles, Washington and Walton streets will be an integral part of any site efforts for the Library renovation. Sidewalk improvements should align with the Boston Complete Streets Guidelines (2013). In these guidelines, Washington Street is considered a neighborhood connector street typology and Welles and Walton streets are considered neighborhood residential scale streets. Both should have an "greenscape/ furnishing zone" against the granite curb, including 2-5' of permeable unit pavers, tree plantings with structural soils, planting beds, signage, lighting and other streetside amenities (such as parking meters, fire hydrants, mailboxes, bus shelters, blue bikes stations, etc). Street trees should be considered at a spacing of 15-25' and align with the city's recommended species for trees tolerant to urban conditions. It is assumed that street and sidewalk lighting will conform to city of Boston standard fixture specifications.

A continuous concrete "pedestrian zone" pathway 5-8' wide would run the length of the sidewalk inset from the greenscape/ furnishing zone. It is assumed that existing crosswalks and curb ramps would remain in place, but that curb ramp paving and tactile warnings would be replaced.

In the design phase, PFD and the project design team can work with BTD to study options for improving the existing crossing at Welles.

Jamaica Plain Branch outdoor space

The area between the concrete pathway and building facade is considered the building frontage zone. This area is treated a little differently along the different streets and in the different options:

- Planter in areas where the building facade is close to the sidewalk, consider a wide planter filled with horticultural soil and planted with resilient perennials and shrubs.
- Building Entries and Reading Garden
 see below
- Urban Grove - in the renovation option as well as some of the new library options the library facade is set back from Washington Street. This provides an opportunity for urban amenities that provide a friendly welcoming presence along the sidewalk. A grid of street trees would provide shade and human-scale comfort in these zones. These zones would be paved with permeable unit pavers atop a structural soil to provide a continuous uncompacted growing medium for the trees. Urban furnishings may include bike racks and fixed benches and tables to provide flexible seating in the shade. Low seat walls or planters can provide a buffer from the sidewalk and an opportunity for signage near the Library entrances.

LIBRARY ENTRY

The main library entrance on Washington Street should be highlighted with specialty pavers of a unique texture, tone or quality to distinguish it from the surrounding sidewalks and groves. The entrance court should be wide enough to provide a visual connection to the street (12-20') and free of trees. Grading will ensure universal accessibility. Key amenities such as benches, wayfinding signage, trash/recycling receptacles and bike racks will be included to facilitate access in an intuitive manner.

READING GARDEN

All schemes include a reading garden sized and programmed consistent with the room data sheets. The goal of this space is to provide three distinct library programs - raised garden beds, a paved terrace with seating and a grassy outdoor classroom area - within a tranquil vegetated setting. The reading garden should be located on the far side of the property from Washington Street, helping to transition the library's mass to the neighborhood scale.

- Raised planters the program includes 6 4x4' raised planters, at least 2 of which are accessible. The planter area will have accessible pathways. Consider fencing to protect the planters from animals.
- Paved Terrace a paved patio surrounded by seat walls and plantings would provide flexible space for the library to extend programming outside or for informal use by patrons. Flexible furnishings (movable tables, chairs and umbrellas) would populate the space.
- Outdoor Classroom an informal grassy or mulched area with simple stones or logs for seating would extend programming opportunities for the library out of doors.
- Plantings all planted material for areas will be selected for ease of maintenance and urban durability.

PARKING

The library program includes 10 parking spaces, 2 of which will be ADA accessible. Spaces are accessed via

Adams Street Branch outdoor space

a 24' wide asphalt driveway detailed for vehicular loading. Parking spaces could be permeable pavers with granite delineations. Granite curbs are recommended. An ADA curb ramp provides access from the area between the two ADA parking spaces. Concrete pathways at least 6' wide lead from the parking areas to the main sidewalks.

SERVICE

Library service functions occur at the rear of each scheme and have vehicular access which aligns with the parking. Service doors connect the vehicular paving via concrete walks min 6' wide and rated for vehicular loading. Any service entries will have a level concrete pathway connecting to adjacent paved areas and signage to differentiate service from public access points.

HOUSING LANDSCAPE

If housing is included, the housing portion of the site will be accessed via the same driveway as the library parking, and concentrated under the building. Any outdoor space for housing should be buffered via landscape plantings, low walls or decorative fences from the library outdoor spaces to ensure privacy for both user groups. Housing entrances should be paved with unit pavers and include amenities such as benches, signage, bike racks and trash/recycling receptacles.

5.3 SITE UTILITIES AND DRAINAGE SUMMARY AND NARRATIVE

See Section 2.2 for information on existing utility and drainage infrastructure.

New sewer services may be needed if the existing line is determined to be unusable or if it is not possible to run sewer internally to the northern end of the building. There are sewer mains available on three sides of the building to accommodate future services. Based on the sizes of the mains in the street, the existing capacity of the lines appears to be adequate for a certain amount future development, subject to calculated loads. See MEP narrative for additional information on interior plumbing.

New sewer services may be connected to 3 different Sanitary Sewer mains depending on the final design choice. The new Sanitary Sewer service can connect to a 12-inch BWSC-owned Sanitary Sewer on Welles Ave, a 12-inch BWSC-owned Sanitary Sewer on Washington Street, or a 12-inch BWSC-owned Sanitary Sewer on Walton Street.

For Options A and B, the housing and library buildings would require separate utility, sewer, and drainage connections, and their sites would manage storm-water separately. For the mixed-use approach, some of these systems could be combined as allowable by code and local regulations. There may be opportunity (given load diversity) to explore sewer heat recovery as a central source of heating and cooling for the building.

5.4 STRUCTURAL DESIGN SUMMARY AND NARRATIVE

INTRODUCTION

RSE evaluated the structural feasibility of 4 schemes outlined below, which can be considered individually or in combination according to the test fit options:

- Scheme A: Renovation of the existing one-story building
- Scheme B: Demolish existing building and construct new one-story Library
- Scheme C: Demolish existing building and construct new five-story mixed-use building
- Scheme H: Construction of new fivestory housing building along with Library Scheme A or B

SCHEME A: RENOVATION

The renovation of the existing building includes reconfiguring the existing interior partitions to allocate space for different programming. The existing steel framing, roof deck, and foundations would largely remain unchanged. The front entrance façade would undergo significant alteration.

Per the IEBC, the renovation is expected to be classified as an Alteration Level 3, with Limited Structural Alterations. If the extent of the renovation reduces the stiffness of the masonry shear walls by more than 10%, a lateral analysis is required to be performed. Depending on the extent of new openings in the shear walls, it is likely that a supplemental lateral system will be needed in the form of new braced frames or additional shear walls. Assuming the changes to the gravity framing is limited (less than 30% of total roof area), any changes to the roof beams can be evaluated on a local level without requiring the entire roof be upgraded to resist the loads in the current code.

Changes to the façade and exterior CMU walls would require lintels to support the new openings. As part of the code requirements, masonry walls will also need to be anchored to the roof diaphragm to resist out-of-plane forces. New openings in the roof can be located between steel beams and framed out with steel members as required.

SCHEME B: NEW ONE-STORY LIBRARY BUILDING

The existing building would be demolished in its entirety and replaces with a new structure designed per the latest building code.

Foundations

The foundation design will be developed based on recommendations from a geotechnical engineer. It is anticipated that the foundations will be 10"- 16" thick concrete frost walls (depending on any masonry shelves) on 3'x1' concrete spread footings along the perimeter. Any interior columns and columns along the north wall would bear on reinforced concrete spread footings. There would be a 5" concrete slab on grade reinforced with 6x6 W2.9x2.9 steel mesh for the ground level.

Pricing Assumptions based on a 30'x30' column grid:

- 4'x4'x1' concrete spread footings with 3 PSF rebar below columns
- 3'x1' with 3 PSF rebar continuous

footing under exterior walls

• 16" thick x 3' frost walls with 8 PSF rebar

Superstructure

The roof would be constructed from steel beams and metal roof deck. The lateral system can be steel braced frames between steel columns. Assume 11 PSF for steel tonnage, including connections, columns, and braced frames.

SCHEME C: NEW STACKED "MIXED-USE" BUILDING

The existing building would be demolished in its entirety. New structure would be designed per the latest building code, with a design live load of 150 PSF for library spaces and 40 PSF for residential.

Foundations

The foundation design will be developed based on recommendations from a geotechnical engineer. The existing building is supported by shallow concrete spread footings and it is anticipated that the proposed building can be a similar system but larger footings for the heavier loads. The ground level will have a 5" concrete slab on grade with 6x6 W2.9x2.9 WWF, 12"-16" thick concrete frost walls bearing on continuous concrete footings that extend 4'-0" below grade. There will be a 5-foot reinforced concrete elevator pit.

Pricing Assumptions based on a 30'x30' column grid:

- 12'x12'x2' concrete spread footings with 6 PSF rebar below columns under 4-story potion of building or 8'x8'x1.5' concrete spread footings with 6 PSF rebar below 1-story portion of building
- 3'x1' with 4 PSF rebar continuous

footing under exterior walls

• 16" thick foundation and frost walls with 8 PSF rebar

Superstructure: Steel Frame Option

The roof would be constructed from steel beams and metal roof deck. All other floors would be constructed from composite steel beams with 3¼" lightweight concrete with WWF on 3" composite steel deck. The lateral system can be steel braced frames between steel columns. Assume 11 PSF for the roof and 14 PSF for all other floors for steel tonnage, including connections, columns, and braced frames. Assume ³⁄₄" diameter headed shear studs at 12" OC for the steel beams.

Superstructure: Mass Timber Option

In lieu of concrete on metal deck, CLT can be used as the slab spanning between beams. A 2" concrete topping will be added to the top of the CLT. 5-ply CLT (67/8" thick) can span 16 feet under residential loads. The beams can be steel or glulam, with sizes dependent on column spacing. To achieve the longer spans at the community room (approx. 30'x50') and the main open reading spaces of the library at approx. 65' wide, intermediate glulam members are proposed to support the CLT thickness noted above. The columns can also be steel or wood. The lateral system will either be CLT shear walls or steel braced frames, depending on the beam and column material.

SCHEME H: NEW HOUSING BUILDING

Foundations

The foundation design will be developed based on recommendations from a geotechnical engineer. The existing building is supported by shallow concrete spread footings and it is anticipated that the proposed building can be a similar system but larger footings for the heavier loads. The ground level will have a 5" concrete slab on grade with 6x6 W2.9x2.9 WWF, 12"-16" thick concrete frost walls bearing on continuous concrete footings that extend 4'-0" below grade. There will be a 5' reinforced concrete elevator pit. Pricing Assumptions based on a 30'x30' column grid:

- 13'x13'x2' concrete spread footings with 6 PSF rebar below columns
- 3'x1' with 4 PSF rebar continuous footing under exterior walls
- 16" thick foundation and frost walls with 8 PSF rebar

Superstructure - Second Floor

The 3-hour rated second floor will be steel framed with structural steel columns and beams, supporting a 4¹/₄" lightweight concrete slab on 3" composite metal deck. Assume ³/₄" diameter shear studs on each beam @ 1'-0" OC. Typical beam size will be W14-W24's, and typical column sizes will be 8" or 10" at the lateral frames. Column shapes can be wide flange, round, or square. The floor will be designed for 40 PSF live load for residential spaces plus 15 PSF partition loading. Lateral bracing at the first floor will include steel braced frames. Assume 17 PSF steel weight for the second floor, inclusive of connections.

Superstructure - Third floor through Roof - change to spanning between demising walls assuming framing of 2nd to Roof will be V-A construction type

Framing at the third, fourth, fifth floors and roof will consist of wood trusses or wood I-joists supported on wood stud walls. Upper floor framing is assumed to be type 5-A construction. The wood framing will run between the demising walls with sizes as follows:

Location	I-joists	Wood Trusses
Middle units	11 7/8″ TJI 360	14" trusses
(20' span max)	@ 16" OC	@ 16″ OC
End units (27' span max)	14″ TJI 560 @ 16″ 0C	18″ trusses @ 12″ 0C
Corridor (6′ span max)	2x6 @ 16" 0C	2x6 @ 16" 0C

There will be a 1" gypcrete topping on the plywood to help mitigate sound and vibration. Elevator core will be 8" CMU block. Stair cores will be 8" CMU block or wood shear walls. Exterior walls will be 2x6 studs @ 16" OC, and interior walls will be double 2x4 studs @ 16" OC.

The main roof framing will be similar in size and direction as the floors below. Non-load bearing demising walls between units will consist of 2x4 studs. These walls will also act as shear walls and will require plywood on one or both sides.

Lateral bracing at the upper floors will be provided by wood shear walls at the bearing walls and demising walls. Shear walls will require APA rated structural sheathing on one or both sides. Selective use of steel on the upper floors may be required and is not included in any steel tonnage already provided. Assume 2 PSF steel tonnage for floors 3-Roof. The upper floors will be designed for 40 PSF live load for residential spaces plus 15 PSF partition loading. The roof will be designed for snow load and an allowance for mechanical units or ballasted PV panels.

5.5 ARCHITECTURAL SYSTEMS NARRATIVE

LIBRARY EXTERIOR

Glazed openings will make up approximately 40% of the total wall area. Assume triple glazing in a thermally broken curtain wall system to reduce the burden on heating and cooling systems. Operable windows will be included where appropriate.

Clerestory glazing will be added with all associated framing and roofing work.

Walls will target R-30 thermal performance and roof will be R-50, understanding that renovated existing assemblies may not meet these targets. Insulation will be mineral- or bio-based when possible rather than foam for embodied carbon considerations. Special attention to connection details will promote a tight envelope to reduce air infiltration.

Roofing will be "cool" white TPO and will accommodate ballasted photovoltaics.

Renovation option

Existing brick walls to remain will be repointed and repaired as needed. Interior insulation may be added to the existing CMU walls along with metal stud furring and drywall finishes. Additional insulation will be added to the roof to achieve more ambitious insulation values.

A significant portion of existing walls will be removed and replaced with glazing as described above for a total of approximately 40% glazing. Existing windows will be replaced to match.

Roxbury Branch interior space

New construction option

In keeping with the neighborhood context and low-embodied-carbon project goals, the building cladding will be primarily brick masonry or local, natural stone, with small accent areas of metal, acetylated wood, or cementitious panels. Backup will be metal stud with both outboard and inboard insulation, and interior drywall finishes.

LIBRARY INTERIOR

For reasons of cost, sustainability, and architectural expression, finishes will be durable and low-maintenance to remain attractive for many years under heavy use. With the deep open plans under consideration, the use of light-reflective surfaces where possible will maximize natural daylighting, while mitigating glare. All finishes will be in keeping with BPL standards. Materials made from renewable and natural materials should be prioritized.

Flooring will be bio-based resilient or rubber. Recessed walk-off mats will protect interior finishes.

Walls will have drywall finishes with interior frameless storefront systems providing visibility into enclosed areas. Interior partitions will extend from slab to deck with acoustic insulation and detailing to create sound separation.

Ceilings in public areas will celebrate the roof structure, leaving it about 50% exposed, with the other 50% clad in perforated metal, wood, or gypsum for visual and acoustic performance. Ceilings in back-of-house areas will be environmentally friendly acoustic ceiling tiles.

Casework will be in keeping with BPL design standards, and careful consideration will be given to appropriate uses of custom casework versus off-theshelf furniture to maximize functionality and future flexibility.

Furnishings will be in keeping with BPL design standards, prioritizing durability and accessibility for a range of ages and body types.

Indoor air quality is an important component of a healthy interior environment. In addition to the clean, durable, low-emitting materials noted above, the mechanical systems will be well-coordinated with the interiors and provide high-quality ventilation and filtration. See Section 5.6 for more information. Likewise, high-quality lighting and acoustics make for a positive experience of the space and require coordination between interior finishes, mechanical and electrical equipment, and space layout.

East Boston Branch interior space

HOUSING

Housing, if included, is assumed to clad in fiber cement rainscreen with accent areas of brick or natural stone masonry at ground level. Insulation values are assumed to be as noted for the library. Windows are assumed to be operable, thermally broken, and double-glazed. Roofing is assumed to be white TPO with a low parapet.

Interior finishes are assumed to be durable, healthy, and in keeping with current market standards for multifamily residential construction. Vinyls and plastics should be avoided in favor of biobased materials.

5.6 MECHANICAL, ELECTRICAL, PLUMBING, + FIRE ALARM SYSTEMS NARRATIVE

I. INTRODUCTION

The Codman Square Branch of the Boston Public Library is a single-story existing building at approximately 20,300 square feet. The library includes the following spaces: Main Library (Adult & Young Adult Reading Room, Children's Reading Room, and Open Stacks), Workroom, Librarian Office, Community Room, Conference Room, Lounge, Kitchenette, (4) Restrooms, Back-of-House (Janitor Closet, Custodian space, and (2) Storage Rooms).

The Codman Square Branch of the Boston Public Library is pursuing either a renovated building design or a new building with similar program and area allocation to the existing building. In addition, the project site may be shared with a residential building that supports a maximum of (70) seventy affordable housing units. The residential building is assumed to be low-rise at this time. Both the library building and residential building will be carbon neutral, aiding in Boston's pledge for a carbon neutral city by the year 2050. Additional sustainable strategies to be studied include on-site rooftop solar, battery storage for peak load reduction, ground source heat pumps, renewable energy lab on roof (educational opportunity to display solar panels and content related to achieving zero emissions), building integrated energy dashboard, and RECs for offsite solar/wind.

Overall, most MEP/FA building systems are original to the building and approaching or at the end of their useful life. Any major renovation to this building should include state-of-the-art equipment rather than replace in kind, with a focus on systems that do not rely on fossil fuels. The following narrative lists considerations for both the renovated and new library design options as well as the new housing building.

II. PROPOSED RENOVATION + NEW WORK

A. HVAC

The existing building heating and cooling mechanical systems are either at or approaching the end of their useful life. To enable the renovation of the library, remove the following existing mechanical equipment:

- Basement heating equipment including: gas-water boilers and all associated piping, compression tanks, split-case circulating pumps and all associated piping to baseboard radiation up to and including all baseboard radiation
- Second floor mechanical room airside and cooling system equipment including: outdoor air louver/plenum, all air handling and fan coil units serving Main Library, Community Room, Workroom, Library Office, Lounge, Kitchenette, and Conference Room and ductwork distribution up to and including diffusers, volume dampers, thermostats, control wiring, hangers, and any additional appurtenances
- First floor roof cooling system equipment including: air cooled water chiller and all associated piping, penthouse pumps, and any additional appurtenances
- Second floor roof louvered penthouse and exhaust stack
- First floor general equipment including: lobby and back of house cabinet unit heater, restroom exhaust fans and associated ductwork distribution up to and including diffusers, and all general exhaust fans and associated ductwork distribution, fan switches, and associated wiring

Both the renovated library option and new building option will be designed with the following heating and cooling system:

- New roof-mounted dedicated outdoor air unit with Dual Core energy recovery, (backup) electric heating coil, and DX cooling coil.
- New roof-mounted condensing unit serving DX cooling coil
- New electrical resistance boiler serving perimeter baseboard radiation located in basement boiler room

Both the renovated library option and new building option will be designed with the following local equipment:

- New roof-mounted condensing units serving indoor wall-mounted units
- New unit heater at front and back entry of library
- New baseboard radiation at perimeter glazing
- Occupant control via combination temperature and humidity thermostat

The new housing building will likely be designed with the following heating and cooling system:

- New roof-mounted dedicated outdoor air unit with Dual Core energy recovery, (backup) electric heating coil, and DX cooling coil
- New roof-mounted condensing unit serving DX cooling coil

The new housing building will likely be designed with the following local equipment:

- New roof-mounted condensing unit and associated indoor wall-mounted units for each housing unit
- New unit heater for front entry and back of house entry
- Occupant control via combination temperature and humidity thermostat

B. Electrical

The existing building electrical systems are approaching the end of their useful life. There is no 480V electrical service in the building. It is strongly advised to avoid connecting new circuits to existing Federal Pacific equipment. To enable the renovation of the library, remove the following existing electrical equipment:

- Exterior pad-mounted primary service utility transformer, associated high voltage feeders, and any additional appurtenances
- Basement main electric switchboard and associated low voltage feeders and meter serving building electrical panels and chiller, and any additional appurtenances
- Basement Panel P1 and associated circuits serving Boiler Room main mechanical loads
- First floor emergency lighting inverter for egress lighting and associated egress lighting fixtures
- First floor Panel L2 and associated circuits serving Main Library general scope
- First floor Panel L1 and associated circuits serving Kitchenette, Lounge, Community Room, and general lighting
- First floor Panel L1A and associated circuits serving library lighting, cameras, and projector
- Second floor mechanical room Panel L2A and associated circuits serving air handling units, return fan, and pumps
- All lighting fixtures throughout the building

Both the renovated library option and new building option will be designed with the following electrical service:

- New exterior pad mounted 13.8kV primary service utility transformer providing 277/480V secondary service to the building
- New step down transformers for 120/208V building loads
- New switchboard feeders serving building
- New 480V panel board for all mechanical loads and lighting
- New 120V panel board for all receptacles
- Battery backup for egress lighting

The new housing building will likely be designed with the following electrical service:

- New building utility primary and secondary service
- New service panel for each housing unit

C. Fire Alarm

The existing building fire alarm system is approaching or at the end of its useful life and it is recommended to replace the Fire Alarm system in its entirety to ensure proper life safety communication. To enable the renovation of the library, remove the following fire alarm system:

- Basement fire alarm control panel
- First floor fire alarm annunciator in entry vestibule
- All wiring and ancillary fire alarm devices

Both the renovated library option and new building option will be designed with the following fire alarm system:

• New fire alarm system including headend equipment, wiring, and ancillary devices with service to the entire building

The new housing building will likely be designed with the following fire alarm system:

• New fire alarm system including headend equipment, wiring, and ancillary devices with service to the entire building

D. Plumbing

The existing building plumbing systems are either at or approaching the end of their useful life. To enable the renovation of the library, remove the following existing plumbing equipment:

- Roof rainwater drains and piping
- All sanitary, vent, and domestic water piping throughout building
- Electric domestic hot water heater and circulating pump
- Sump pump but reuse sump pit
- Air compressor
- Existing gas distribution; cut/cap gas service outside of the building
- All plumbing fixtures in restrooms, kitchenette, and janitor closet
- All water fountain fixtures

Both the renovated library option and new building option will be designed with the following plumbing system:

- New rainwater drains and piping
- New overflow drains and piping
- New sanitary, vent, and domestic water piping throughout building
- New electric domestic water heater and circulating pump
- New sump pump
- New sump pit (new building option only)
- New air compressor
- New fixtures in restroom, kitchenette, janitor closet,
- New water fountain fixtures

The new housing building will likely be designed with the following plumbing system:

- New building utility supply, drainage, and storm drain
- New electric domestic hot water heaters
- New sump pit and pump
- New plumbing fixture for each housing unit

5.7 FIRE PROTECTION NARRATIVE

The existing Library is a fully sprinklered building, serviced by an existing 4" diameter service. The service is fed from the water main in Washington Street and enters through the basement wall. Reusing the existing building will require significant demolition. This demolition will be to accommodate the programming required to provide the best library experience. If the building is reused, the existing sprinkler system will be removed back to the service, to allow coordination and installation of the new architecture and mechanical systems.

The building has an existing 4" water service, with back-flow preventer and alarm valve assembly. The existing service may be adequate to serve the new automatic sprinkler system in the renovated building. This would be determined by the preparation of hydraulic calculations prepared after a new water flow test is performed. The test results will be used to determine suitability of reuse. In the event that the existing 4" service is not adequate, a new 6" service will be added. A new service would also include a new back-flow preventer and wet alarm valve assembly. If the building is increased in size, a new 6" fire service will be added to replace the existing 4" service.

The building will be protected throughout by an automatic sprinkler system, designed and installed in accordance with NFPA 13. This will be a standard wet system, with sprinklers located to control or eliminate a fire occurrence in any space within the property.

The wet sprinkler system shall consist of a service, backflow preventer, wet alarm valve assembly, sprinkler mains, crossmains and branches, automatic sprinklers, a fire department inlet connection, electric bell (waterflow alarm), and all necessary hangers, sleeves, firestopping and appurtenances. A spare sprinkler cabinet will be provided. Sprinkler layout and spacing will be according to hazard classifications identified in NFPA 13, and shall include: Light Hazard: Corridors, Lobbies, Classrooms, Seating Areas, Offices. Ordinary Hazard: Mechanical Rooms and spaces, Large Stack Rooms, Storage Rooms.

Special consideration will be given to the selection, layout and installation of automatic sprinklers, to accommodate the architectural and ceiling features provided at the Library.

If a separate building is provided on site for housing, it must be protected by its own automatic sprinkler system. A new 6" water service, including backflow preventer and accessories will be provided. The new building will be 100% protected, as required by Code.

6.0

Estimated Cost + Schedule

- 6.1 Project Cost
- 6.2 Construction Schedule

6.1 PROJECT COST SUMMARY

This section summarizes the construction costs and project costs of the three major options defined in Section 4.1. A detailed cost estimate is included in the Appendix.

DIRECT TRADE COSTS

In these estimates, direct trade costs are based on the cost estimator's analysis of market conditions. General conditions, overhead and profit, bonds, insurance, and permitting are based on PFD guidelines.

Housing costs are summarized here using union labor rates. For a variation on the estimate using non-union prevailing wage labor rates, please refer to the detailed cost estimate included in the Appendix.

For options including housing, the site open space that is associated with the housing and that would be developed by the housing developer is included in the cost of housing; library open space is included in the cost of the library building. For Option C, all site/open space cost are included in the base building cost.

The concept-level housing costs included here have been reviewed by the Mayor's Office of Housing and are generally in line with that office's benchmarks.

CONSTRUCTION TYPE ASSUMPTIONS

These estimates are informed by the building systems recommendations in Section 5. For the new-construction library options, the structural system shown in this summary is steel frame with composite concrete-and-steel deck. The timber option described in the Structural Design narrative in Section 5.4 has slightly different costs. Please refer to the full estimate in the Appendix for details.

SOFT COSTS

Soft costs (including FF&E, AV, design fees, etc.) are based on PFD and BPL guidelines for the library portion of each option, and the soft costs for the housing are based on typical Mayor's Office of Housing guidelines. Escalation is calculated to the mid-point of construction, assumed Spring 2025, at 5% per annum.

SUMMARY OF PROJECT COSTS

	Option A: Renovated Library		Option B: Stand-alone New Library		Option C: Mixed-use Library w/ Affordable Housing		
	Renovated Library	Optional Housing	New Library	Optional Housing		Building Project by Developer	
					Library Interior Fit-Out	Library Portion of Core + Shell	Housing Portion of Base Building; Housing Fitout
	22,000 sf	40,925 sf Rapprox. 40 units	(steel frame) 22,000 sf	46,810 sf approx. 45 units	22,000 sf	(steel frame) 22,000 sf	(steel frame) 66,910 sf approx. 65-70 units
TOTAL ESTIMATED CONSTRUCTION COST includes direct trade costs, contingencies, markups, and escalation to mid-2025	\$17,426,555	\$17,269,366	\$19,039,321	\$20,098,270	\$5,104,570	\$13,028,694	\$30,330,859
Library Soft Costs Library FF&E (includes shelving, furniture, BPL equipment, and contingency) AV Equipment Contingencies and design costs	\$1,600,000 \$200,000 \$5,663,630		\$1,600,000 \$200,000 \$6,187,779		\$1,600,000 \$200,000 \$1,658,985		
Developer Soft Costs (Housing, Core & Shell) Contingencies and design costs		\$7,753,945		\$9,024,123		\$5,849,884	\$13,618,556
ESTIMATED PROJECT COST	\$24,890,185	\$25,023,312	\$27,027,100	\$29,122,393	\$8,563,556	\$18,878,578	\$43,949,414
					Library subtotal \$27,442,133		
						\$62,827,992	
TOTAL ESTIMATED PROJECT COST	\$49,913,497		\$56,149,494		\$71,391,548		

6.2 **PROPOSED OPTIONS PROJECT SCHEDULES**

Please refer to Section 4.3 for the project delivery methods that inform each of these schedule options. All durations are estimated.



4-6 months
12 months
3 months
21 months

SCHEDULE B: Stand-alone New Library Option B

Designer Selection	4-6 months
Library Design	12 months
Article 85 (Demolition Delay/Landmarks)	6 months
Bidding	3 months
Construction + BPL Move-In	24 months

SCHEDULE H: Stand-alone Housing Could accompany Options A, B

Community Engagement by MOH	3 months
RFP Process + Developer Selection	3 months
Housing Design + Permitting	12 months
City and StateHousing Funding 😦	18-30 months
Developer Construction	18 months

SCHEDULE C: Mixed-use Library with Affordable Housing Option C

egal Review	6 months
Community Engagement by MOH	3 months
RFP Process + Developer Selection	3 months
State Waivers	14 months
Developer Design + Permitting	12 months
3PDA Article 80 Review	12 months
City and State Housing Funding \star	18-30 months
Developer Construction	20 months
ibrary Designer Selection	4-6 months
ibrary Design	12 months
ibrary Bidding	3 months
ibrary Fitout Construction + BPL Move-In	18 months



*Note: City and state funding for housing is made available on a yearly cycle, hence the offset construction time frames shown in schedules H and C.