DREXEL VILLAGE
PROJECT NOTIFICATION FORM

Submitted To:	**Boston Planning & Development Agency** **One City Hall Square, Boston, MA 02201**
Submitted By:	**Drexel Village LLC (A partnership of the Planning Office For Urban Affairs, Inc. and JGE Development LLC)** **84 State Street, Suite 600, 02109**
Prepared By:	**Bevco Associates, Inc.** **202 West Selden Street, Boston, MA 02126**
In Association With:	**The Architectural Team, Inc.** **Ground, Inc.** **Goulston & Storrs PC** **Bryant Associates, Inc.** **Nitsch Engineering** **GZA Environmental** **McPhail Associates LLC** **CLEAResult** **EnviEnergy Studio** **Vanasse Hangen Brustlin** **Cross-Spectrum Acoustics, Inc.** **Epsilon Associates** **Rowan Williams Davies & Irwin, Inc. (RWDI)** **The Public Archaeology Laboratory, Inc.** **Tree Specialists, Inc.** **UHM Properties** **Janey Construction Management & Consulting (Janeyco)** **Waypoint KLA**

Submission Date: October 6, 2023

Drexel Village LLC
84 State Street, Suite 600
Boston, MA 02109

October 6, 2023

VIA HAND DELIVERY

Mr. Arthur Jemison
Chief of Planning/Director
Boston Planning & Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Project Notification Form

Dear Director Jemison:

In accordance with Article 80B of the Boston Zoning Code ("the Code"), Drexel Village LLC is pleased to submit the attached *Project Notification Form* (PNF) for large project review of the $130 million *Drexel Village Project* that will be built on the Crescent Parcel in the Nubian Square neighborhood. The development of Drexel Village is dedicated to Roxbury's future by leveraging St. Katharine Drexel Parish's (SKD) long history of community service and education in the neighborhood.

The Proposed Project is comprised of approximately 346,022 gross square feet of space, and the Development Program includes the following components.

Building One
Located at the key intersection of Melnea Cass Boulevard and Tremont Street, this signature residential building will include the following uses:

- 142 mixed-income rental units
- A Resident Lounge and Fitness Center
- A Community Room
- A Management Office
- Retail and commercial space

Building Two
With a prominent location on Tremont Street, this residential building will include the following program.

- 61 mixed-income rental and homeownership units
- Resident Amenity Space
- A Management Office

Building Three
Located at Raynor Circle and Ruggles Street, this key building will adjoin the St. Katharine Drexel Parish Center and will include the following development program.

- 14 rental units
- A Resident Lounge
- SKD Parish Center Renovation to support their existing programs
- ABCD Daycare Program

Parking

- A 60-space underground parking garage will be provided for residents and patrons.

Open Space

- Over 60,000 square feet of open space will provide passive recreation and pedestrian connectivity to the neighborhood's open space network along the Tremont Street corridor.

- An arborist has joined the project team to evaluate the existing condition of on-site trees with the goal to optimize the number of trees that are retained.

Public Art

- Given the site's prominent location at the intersection of Melnea Cass Boulevard and Tremont Street, it will serve as the gateway to the Roxbury Cultural District and reflect the historic cultural diversity and history of the neighborhood.

Economic and Community Benefits

The economic and Community Benefits package includes:

- Wealth Creation-
    - The creation of 15 Affordable Homeownership units, along with a Down Payment Assistance Program, an Asset Building Program, and a Financial Literacy Program.

    - Opportunities for local minority and women-owned businesses.

    - Construction and permanent job opportunities.

Drexel Village LLC looks forward to the upcoming Article 80 public review process associated with the Drexel Village PNF.

Sincerely,
Drexel Village LLC

BY:________________________

William H. Grogan
Partner; Planning Office for Urban Affairs, Inc.

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Jonathan C. Garland
Partner; JGE Development LLC

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1.0 GENERAL INFORMATION

1.1 Introduction

Drexel Village LLC (the Proponent) proposes to redevelop thirteen (13) contiguous parcels of land, together comprising approximately 110,400 square feet ("SF"), (approximately 2.46-acres), located in the Roxbury neighborhood of the City of Boston, bordered by Melnea Cass Boulevard to the north, Tremont Street to the west, Ruggles Street to the south and Raynor Circle to the east, more commonly known as the Crescent Parcel (the "Project Site"), with a new, three-building mixed-use complex containing approximately 346,022 SF of Gross Floor Area ("GFA"), including: (i) approximately 217 residential rental and homeownership units, seventy-five percent (75%) of which will be affordable, (ii) approximately 1,594 SF of new retail GFA on the ground floor, (iii) approximately 10,333 SF of residential amenity space, (iv) approximately 2,000 SF of community space, (v) approximately 11,900 SF of daycare space to be utilized by Action for Boston Community Development ("ABCD"), (vi) approximately 20,975 SF of parish space for Saint Katharine Drexel Parish Church ("St. Katharine"), and (vii) approximately sixty (60) parking spaces and two hundred seventeen (217) bike storage spaces in a one level below-grade parking garage (the "Proposed Project").[1]

The Proposed Project will transform an area of vacant and underutilized parcels currently containing a surface parking lot, a circular parking loop, vacant open space, a daycare operated by ABCD, and a church/parish center, into three (3) mixed-use buildings that will bring new housing opportunities to help address the housing supply shortage facing the City of Boston, including a significant number of affordable housing units. It will also include the renovation of St. Katharine Drexel Church and Parish Ministry space and the relocation of the ABCD daycare.

The Proposed Project will also include 60,000 SF of public open space that will provide passive recreation, and pedestrian connectivity to the neighborhood's open space network along the Tremont Street corridor.

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[1] All references to the SF of buildings and building elements refer to GFA, as defined in the Zoning Code. 4871-3346-9298. v. 3

The Proposed Project's gateway prominence, as a key location in the Roxbury Cultural District, will showcase a dynamic combination of permanent and temporary public art that will celebrate the rich cultural diversity, history and heritage of Nubian Square.

This Project Notification Form ("PNF") is being submitted to the Boston Redevelopment Authority, d/b/a the Boston Planning and Development Agency ("BPDA), to initiate review of the Proposed Project under Article 80B, Large Project Review, of the Boston Zoning Code ("Zoning Code").

1.2 Development Team

Project Name	Drexel Village
Owner	Drexel Village LLC – 84 State Street, Suite 600, Boston, MA 02109
Owner's Project Manager	Joshua Weissman LaFrance joshua.weissman@poua.org
Project Architects	The Architectural Team, Inc 50 Commandant's Way at Admiral's Hill, Chelsea, MA 02150 James Szymanski AIA NCARB LEED AP/Principal jszymanski@architechecturalteam.com Jincy George – Senior Designer jgeorge@architecturalteam.com
Landscape Architect	Ground Inc. 6 Carlton Street, Somerville, MA 02143 Shauna Gillies-Smith -Principal sgs@groundinc.com Cesare Cascella-Project Manager ccascella@groundinc.com
Legal Counsel	Goulston & Storrs 400 Atlantic Avenue Boston, MA 03220 Matthew Kiefer mkiefer@GOULSTONSTORRS.com Connor MacIsaac CMacIsaac@goulstonstorrs.com
Permitting	Bevco Associates, Inc. 202 West Selden Street Boston, MA 02126 Beverley Johnson, President bjohnson@bevcoassociates.comastbiz.net

Construction Advisor	Waypoint KLA 8 Glover Street Wayland, MA 01778 Ray Mitrano AIA Principal
Transportation	Bryant Associates, Inc. 90 Canal Street #301 Boston, MA 02114 Todd Brayton, P.E. Transportation Director tbrayton@bryant-engrs.com
Site/Civil & Survey	Nitsch Engineering 2 Center Plaza, #430 Boston, MA 02108 Jonathan Hedlund, P.E. Project Manager jhedlund@nitscheng.com Coleman Horsley Project Engineer chorsley@nitscheng.com
Environmental	GZA Environmental 31 State Street Boston, MA 02109 Jay Hodkinson, P.E. Associate Principal Jay.hodkinson@gza.com Kenneth Boivin, CHMM kenneth.boivin@gza.com Megan Murphy megan.murphy@gza.com

Geotechnical	McPhail Associates LLC 2269 Massachusetts Avenue Cambridge, MA 02140 Fatima Babic-Konjic, P.E. fbabic-konjic@mcphailgeo.com Joseph Lombardo L.S.P. Associate Principal jlombardo@mcphailgeo.com
Air Quality	Vanasse Hangen Brustlin 99 High Street, #10 Boston, MA 02110 Vincent Tino Senior Air Quality Consultant vtino@vhb.com
Noise	Cross-Spectrum Acoustics Inc 1500 District Avenue #1048 Burlington, MA 01803 Timothy Johnson Principal Associate tjohnson@csacoustics.com
Daylight	Epsilon Associates, Inc. 3 Mill & Main Place, #250 Maynard, MA 01754 David Hewitt Project Manager dhewitt@epsilonassociates.com
Wind and Solar Glare	Rowan Williams Davies & Irwin Inc (RWDI) 600 Southgate Drive Guelph, ON N1G 4P6 Canada Danielle Jensen Project Coordinator Danielle.Jensen@rwdi.com

LEED/Sustainability	CLEAResult 133 Federal Street Boston, MA 02110 Jeremy Dagold, CPHC Senior Project Manager Jeremy.Dagold@clearesult.com Ann John LEED AP, WELL AP ann.john1@clearesult.com
Historic	The Public Archaeology Laboratory, Inc. 26 Main Street Pawtucket, RI 02860 Maureen Cavanaugh Senior Planner mcavanaugh@palinc.com
Arborist	Tree Specialists, Inc. 140 Washington Street, Holliston, MA 01746 David Ropes Operations Manager/Certified Arborist dropes@treespecialists.com
Property Management Services	UHM Properties 530 Warren Street Boston, MA 02121 Kevin Bynoe CEO kbynoe@uhmgt.com
Construction Team	Janey Construction Management & Consulting 236 Huntington Avenue #417 Boston, MA 02115 Gregory Janey President/Founder Greg@Janeyco.com

1.3 Legal Information

1.3.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments or pending actions against the Proposed Project.

1.3.2 History of Tax Arrears on the Property

The Proponent owns no real estate in Boston for which real estate tax payments are in arrears.

1.3.3 Evidence of Site Control/Nature of Public Easement

The Project Site comprises thirteen (13) parcels totaling approximately "110,400 SF"; eleven (11) of the parcels are vacant land which were subject to a Request for Proposals for the Crescent Parcel, issued by the BPDA on January 27, 2021 (the "RFP"). The BPDA owns five (5) parcels; the Massachusetts Department of Transportation ("MassDOT") owns three (3) parcels; and the City of Boston owns three (3) parcels. According to the RFP and a BPDA Board Memorandum dated November 18, 2021 awarding the Proponent Tentative Designation status for the Crescent Parcel, the BPDA will acquire rights in the six (6) vacant land parcels not owned by the BPDA and will convey the entire Crescent Parcel to the Proponent pursuant to a long-term ground lease.

The two (2) remaining parcels, owned by the Roman Catholic Archdiocese of Boston (the "Archdiocese") are occupied respectively by ABCD. The Proponent, which is affiliated with the Archdiocese, will separately acquire the two Archdiocese properties.

1.3.4 Zoning Information

According to Map 6A-6C of the Zoning Code, the Project Site is located within a Multifamily Residential Subdistrict in the Roxbury Neighborhood District, governed by Article 50 of the Zoning Code. A portion of the Project Site is also located in the Boulevard Planning Overlay District adjoining Melnea Cass Boulevard and Tremont Street. The Project Site is located entirely in an existing Urban Renewal Area Overlay District, or so-called "U" Subdistrict, by virtue of comprising Parcels X-35, X-35-1, and X-36 in the Campus High School Urban Renewal Area, and Parcels X-3-0A, X-30A-1, X-30B, X-30C and X-30D in the South End Urban Renewal Area pursuant to Map Amendment No. 597, adopted January 14, 2015. As a result, the Proponent will seek to enter into a Development Regulatory Agreement with the BPDA which will establish zoning controls for the Project Site in place of underlying zoning.

1.4 Anticipated Regulatory Controls and Permits

Table 1-4.1 below lists permits and approvals from governmental agencies expected to be required for the Proposed Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 1-4.1 Anticipated Regulatory Controls and Permits

AGENCY NAME	PERMITS/APPROVALS
FEDERAL	
Environmental Protection Agency	National Pollution Discharge Elimination General Permit
STATE	
Department of Environmental Protection	Plan Approval (If Required) Fossil Fuel Utilization Permit (If required) Notice of Demotion/Construction
Massachusetts Historical Commission	State Register Review, including Determination of No Adverse Effect or Memorandum of Agreement; Section 106 Review (if required)
Executive Office of Energy and Environmental Affairs	MEPA review and approval
Massachusetts Water Resources Authority	Temporary Construction Dewatering Permit (if required) Memorandum of Agreement Section 106 Review (if required)
LOCAL	
Boston Civic Design Commission	Review and approval pursuant to Article 28 of the Boston Zoning Code
Boston Fire Department	Fuel Storage Permits; Fire Alarm Permit; Blasting Permit (if required)
Boston Inspectional Services Department	Building Permit (Long Form) Demolition Permit Certificate of Occupancy
Boston Public Improvement Commission/Dept. of Public Works	Specific Repair Approvals Discontinuances (if required) Permit for signs, awnings, hoods, canopies, or marquees, or other incursion over public right of ways (as required)
Boston Public Safety Commission/Committee on Licenses	Parking Garage Permit License for Storage of Inflammables
Boston Public Works Department	Curb Cut Permits (if required) Street Opening Permits (if required)
Boston Planning and Development Agency	Article 80 Large Project Review Certificate of Consistency and Compliance Development Regulatory Agreement (Zoning Controls) Development Impact Project Agreement Cooperation Agreement Affordable Housing Agreement Boston Residents Construction Employment Plan Agreement
Boston Interagency Fair Housing Development Committee	Affirmatively Furthering Fair Housing Requirements
Boston Transportation Agreement	Transportation Access Plan Agreement Construction Management Plan
Boston Water and Sewer Commission	Sewer Extension/Connection Permit Sewer Use Discharge Permit Site Plan Approval Temporary Construction Dewatering Permit (if required) Cross Connection/Backflow Prevention Approval
Boston Landmarks Commission	Article 85 review and approval
Boston Parks & Recreation Department	Open Space Review (if required)

2.0 PROJECT DESCRIPTION

2.1 Existing Site and Area Context

The 2.46-acre Project Site is comprised of thirteen (13) contiguous parcels of land bordered by Melnea Cass Boulevard to the north, Tremont Street to the west, Ruggles Street to the south, and Raynor Circle to the east. All of the foregoing are City of Boston public ways. The total lot area of the Project Site is approximately 110,400 SF (approximately 2.46 acres). Presently, the Project Site is covered by impervious surfaces including a surface parking lot, a circular parking loop, and vacant open space. The remaining area is currently occupied by St. Katharine and ABCD. It is anticipated that St. Katharine will continue to occupy the existing church space with some building renovations and the ABCD daycare will be incorporated into the Project.

The approximately 346,022 SF mixed-use Proposed Project will serve as a gateway to the rapidly developing Tremont Street corridor, and the Roxbury Cultural District. The Project Site's close proximity to Ruggles Station and Nubian Square will provide convenient access to public transportation, ride-share services, and Blue Bike services. The Project Site is also located in close proximity to a number of rich cultural and historic assets in the Nubian Square Historic District and the John Eliot Square Historic District.

2.2 The Proposed Project

The Proposed Project will establish a prominent gateway at Melnea Cass and Tremont Street. As shown in Table 2-5.1, the Proposed Project will include the construction of a new three-building mixed-use complex containing approximately 346,022 SF, including: (i) approximately 217 residential rental and homeownership units, seventy-five percent (75%) of which will be affordable, (ii) approximately 1,594 SF of new retail on the ground floor, (iii) approximately 10,333 SF of residential amenity space, (iv) approximately 2,000 SF of community space, (v) approximately 11,900 SF of daycare space to be utilized by ABCD, (vi) approximately 20,975 SF of parish space for St. Katharine. The Proposed Project will include approximately 217 residential dwelling units with a mix of bedroom types from studios to three-bedrooms.

The Proposed Project also includes the renovation of the existing building currently occupied by St. Katharine, along with social service space, and over 60,000 SF of open space that will include public art, passive recreation, and pedestrian connectivity to the neighborhood's open space network along the Tremont Street corridor.

2.3 Parking and Public Transit Access

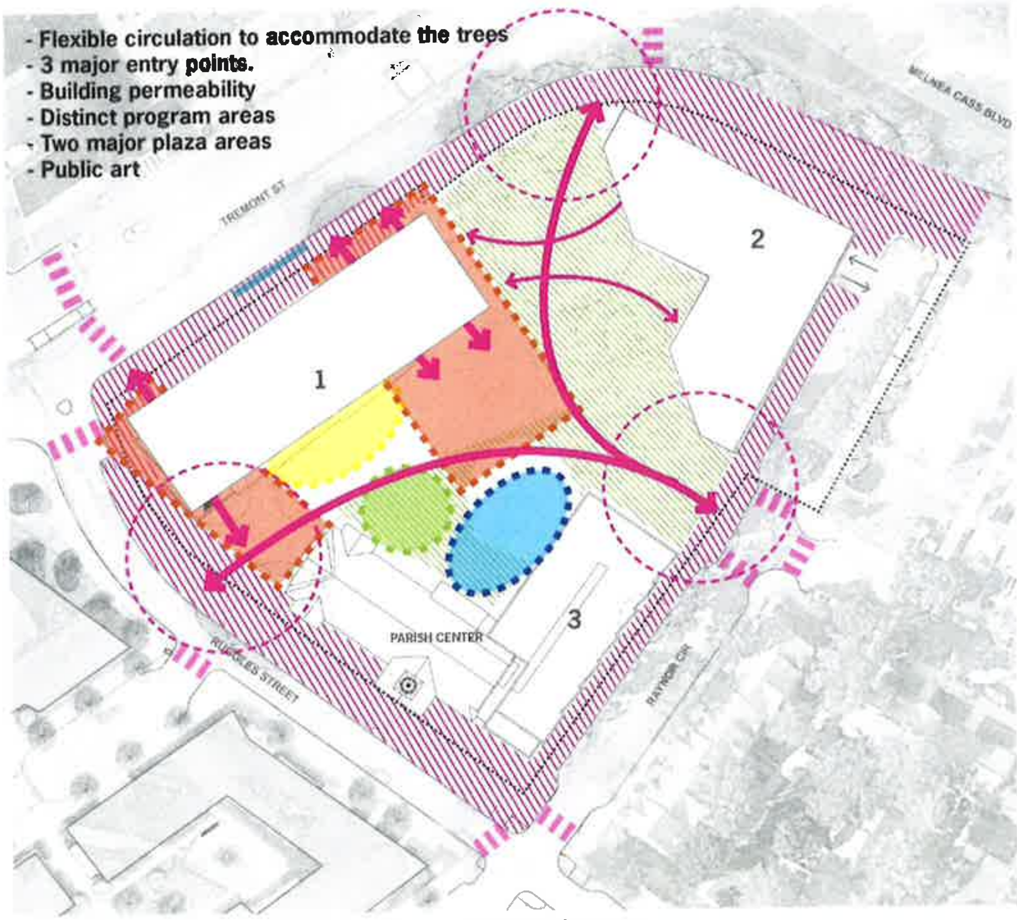
The Proposed Project will include approximately sixty (60) vehicle parking spaces and approximately two hundred seventeen (217) bike storage spaces in a one-level below-grade parking garage that will be available to tenants and patrons of the Project Site. The Project Site is also located directly across the street from Ruggles Station, which provides Orange Line subway service, along with Commuter Rail and bus service.

2.4 Public Realm and Public Art

The Proposed Project includes over 60,000 SF of green open space at a key location along the Tremont Street corridor (the "Open Space Plan"). The overall intent of the Open Space Plan is to create a distinctive green open space that preserves significant existing mature trees within the Project Site and along the adjacent streets, while expanding the outdoor programming of the neighborhood. The Open Space Plan will include a publicly-accessible multi-generational park offering a variety of gathering spaces and community-focused public art installations as well as a growing garden that will provide fresh, nutritious meals for patrons of the Parish Food Pantry. The Open Space Plan also includes a children's playground.

The adjacent streetscape design on Melnea Cass Boulevard, Tremont Street and Raynor Circle will prioritize pedestrian improvements and bicycle accommodations, along with the goal of preserving existing healthy trees. The streetscape on the fourth side will tie into the recently completed Ruggles Street improvements.

The public art component will include a combination of permanent art and temporary art with a goal of showcasing the rich cultural history of Roxbury. In an effort to ensure that the public art component is a top priority, the Proponent has established an internal Public Art Committee to develop a framework for engaging with the community to get neighborhood ideas and feedback.



Open Space Diagram

2.5 Project Development Program

The Proposed Project is comprised of three separate buildings, and includes the following components:

Building One

Located at the key intersection of Melnea Cass Boulevard and Tremont Street, Building One will provide the following uses:

- Approximately 142 mixed-income rental units;
- Residential amenity space that includes a resident lounge and fitness center;
- A community room for the use of residents, community groups and neighborhood activities;

- Bike storage (approximately 142 spaces)
- A management office; and
- Retail/commercial Space

Building Two

With a prominent location directly on Tremont Street, Building Two will provide the following program uses.

- Approximately 61 mixed-income rental and homeownership units;
- Residential amenity space;
- A management office; and
- Bike storage (approximately 61 spaces)

Building Three

Located at Raynor Circle and Ruggles Street, Building Three will adjoin and be connected to St. Katharine and provide the following uses:

- Approximately 14 rental units
- Resident lounge space;
- Parish programs space;
- Daycare space utilized by ABDC;
- Bike storage (approximately 14 spaces); and
- Ancillary space

Table 2-5.1: Project Development Program

DEVLELOPMENT COMPONENTS	APPROXIMATE DIMENSIONS
Building B1	
• 142 mixed-income rental units	150,280 gsf
• Resident Lounge & Fitness Center	5,880 gsf
• Community Room	2,000 gsf
• Retail /Commercial Space	1,594 gsf
• Management Office	1,500 gsf
• Bike Storage (142 spaces)	1,700 gsf
• Ancillary Spaces	27,302 gsf
• Mechanical Space	2,180 gsf
Building B2	
• 61 mixed-income rental and homeownership units	56,611 gsf
• Residential Amenity Space	2,303 gsf
• Management Office	500 gsf
• Bike Storage (61 spaces)	900 gsf
• Ancillary Space	13,389 gsf
• Parking	17,015 gsf
• Mechanical Space	2,165 gsf
Building B3	
• 14 rental units	12,950 gsf
• Resident Amenity	2,150 gsf
• Parish Programs	20,975 gsf
• ABCD Daycare	11,900 gsf
• Bike Storage (14 spaces)	450 gsf
• Ancillary Space	2,833 gsf
• Parking	8,951 gsf
• Mechanical Space	494 gsf
TOTAL GROSS SQUARE FOOTAGE	**346,022 gsf**

2.6 Inclusionary Development Policy (IDP)

Approximately seventy-five percent (75%) of the residential units in the Proposed Project are affordable, which exceeds the City of Boston IDP requirements. Additionally, a key component of the Proponent's wealth-creation plan involves the development of 11 affordable two-bedroom townhouse units. **Table 2-6.1** provides the affordability breakdown of the homeownership and rental units within the Proposed Project.

TABLE 2-6.1: Project Affordability

Rental Unit Breakdown	Homeless Set Aside (30% AMI)	Low-Income (Up to 50% AMI)	Middle-Income (Up to 60% AMI)	Middle Income (Up to 80% AMI)	Middle Income (Up to 100% AMI)	Market Rate	Approximate Total Units
Studio							-0-
1 Bedroom	16@$590/month	9@$1,031/month	4@$1,252/month	21@$1,584/month	2@$2,136/month	21@market $2,700/month	73
2 Bedroom	24@$659/month	4@$1,164/month	8@$1,417/month	35@$1,795/month	4@$2,426/month	33@market $3,600/month	108
3+ Bedroom	14@$734/month	1@$1,303/month	3@$1,586/month	3@$2,011/month	1@$2,721/month	3@market $4,000/month	25
TOTAL UNITS	54	14	15	59	7	57	206
Percent of Total Units	26%	7%	7%	29%	3%	28%	
Home-Ownership Overview	Middle-Income Up to 80% AMI	Middle-Income Up to 100% AMI	Up to Market Rate				Total Units
Studio							-0-
1 Bedroom							-0-
2 Bedroom	8@$213,700	3@$290,400					11*
3+Bedroom							-0-
TOTAL UNITS	8	3					11
Percent of Total Units	73%	27%					

*Depending on the availability of additional subsidies, the developer will work to increase the number of affordable homeownership units. *AMI is an acronym for Average Median Income. AMI is based on where you live and your household size.

2.7 Affirmatively Furthering Fair Housing

The construction of the Proposed Project will not displace any residents of the Nubian Square/Lower Roxbury neighborhood. No portion of the Project Site is currently used for residential purposes. Approximately 75% of the Proposed Project's new housing units will be affordable, and the renovation of St. Katharine will ensure the retention of critically- needed social service and educational programs, as well as the continuation of the ABCD Day Care Program. The Proponent has prepared the *Affirmatively Furthering Fair Housing Assessment* (AFFHA), which is provided in Appendix E of this PNF, along with the Household Composition Community Profile Report.

2.8 Summary of Economic Benefits

Wealth Creation for Local Residents

The wealth-creation package for local residents includes three key components as follows, and as summarized in **Table 2-8.3**.

Affordable Homeownership

- A total of 11 two-bedroom homeownership townhouses will be developed to support wealth generation for local residents.

Down Payment Assistance

- The developer is committed to creating a $110,000.00 *Down Payment Assistance Fund* to maximize opportunities for local residents to have the down payment that is required to purchase the homeownership units.

Financial Literacy Program

- The developer is committed to creating a *Financial Literacy Program* for prospective homebuyers.

Wealth Creation for M/WBEs on the Project Team

A key component of the Proponent's Economic Benefits package includes a long-standing commitment to maximize economic and wealth-creation opportunities for local residents and Minority-Women-Owned Business Enterprises (M/WBE). This commitment is evident based on the fact that over 70% of the project team, including construction and Property Management services are comprised of M/WBE firms, many of whom have deep ties in the Roxbury community. The basic strategy is focused on utilizing M/WBE subcontractors who have previously worked on POUA projects so that they have every opportunity to build their business enterprises through repeat business.

Just as importantly, M/WBE vendors will have contract opportunities through Property Management Operations.

Opportunities for Local M/WBE Businesses

A key element of the Economic Benefits package is for local M/WBE businesses to lease office space at a subsidized rate. A marketing and outreach plan that is targeted to local businesses will be developed and distributed to local business-affiliated organizations such as Roxbury Main Streets.

Permanent Jobs

The permanent job opportunities at Drexel Village will be primarily generated to support the project's Property Management Operations. A summary of the approximate number of permanent jobs that are anticipated to be created by the Drexel Village project is provided in **Table 2-8.3.**

Additionally, it is anticipated that additional permanent jobs will be generated through on-site retail/commercial operations.

Construction Jobs

The Proponent and construction team are committed to exceeding the City of Boston's Resident Job Policy goals. The construction team will accomplish this goal using a number of outreach tools, including outreach to neighborhood-based construction and trade organizations.

Table 2-8.3: Economic Development Opportunities

Economic Opportunity	Est. Jobs	Estimated Value
Wealth Creation		
Down Payment Assistance (Affordable Housing)		**$110,000.00**
M/WBE Property Management Services		**$426,000.00 Annually**
Reduced Rent for local M/WBE Commercial Tenants		
Job Creation		
Permanent Jobs (Property Management Operations)	**8**	**$3,624,194.00 (over a 5-year period)**
Permanent Jobs (Retail/Commercial)		**TBD**
Construction Jobs (Projected)	**1,448**	**$63,700,000.00**

2.9 Summary of Community Benefits

St. Katharine Drexel Parish Center, a primary community partner, provides social services to the neighborhood that builds upon the powerful legacy of St. Katharine Drexel's deeply-rooted commitment to the empowerment of neighborhood residents through educational opportunities, and the establishment of programs that focus on the social development and well-being of neighborhood youth so they can reach their full potential. St, Katharine will leverage to expand these groundbreaking programs, including the Sister Mary Hart Children's Program and The Timothy Smith Network.

St. Katharine's commitment to neighborhood empowerment programs and services will be further expanded with the inclusion of transformative resources, including ABCD's on-site Head Start Program, and a ground-level garden offering a broad array of nutritional products that will support The Food Pantry, and improve the overall quality of life of the Proposed Project's residents, residential abutters, and the broader neighborhood. A summary of these services is provided below in **Table 2.9-1.** A summary of St. Katharine's Affiliate Organizations is also summarized in **Table 2.9-1**.

Table 2.9-1 St. Katharine Drexel Programs

ST. KATHARINE DREXEL SOCIAL SERVICE & COMMUNITY PROGRAMS
Sister Mary Hart Children's Program -Based on neighborhood need that was identified over 40 years ago, the programmatic mission is to address the needs of the neighborhood, specifically as they relate to the educational success of the children of Lower Roxbury. The program provides a safe, supportive and nurturing daycare, after-school and Summer Camp. Over the years, mothers in the neighborhood held permanent jobs to provide staff assistance for both the After-School and Summer Camp Programs. Additionally, teen counselors are hired as Summer Camp Counselors and future camp leaders. Additional Educational staffing for the After-School and Summer Camp is provided by Emmanuel College students who work as volunteers.
The Timothy Smith Network-The Timothy Smith Network (TSN) of Roxbury operates the Computer Lab located in the Parish Center. The after-school students and summer camp participants have access to the Computer Center. The Parish also offers STEM programs, such as Leg Robotics and Astro-Net. Additionally, the TSN introduced the students to the Northeastern Engineering Department and the University's Chapter of Sigma Xi, a nationally-recognized Honor Society for scientific research and the "Think Like a Scientist" Program.
The Food Pantry- The Food Pantry began many decades ago, and continues to be a priority as part of the Parish Outreach Ministry. The Parish offers food assistance to individuals and families in the neighborhood. Throughout the year, the Food Pantry provides healthy and nourishing choices for meal preparation to its neighborhood; and at Thanksgiving and Easter, Parish volunteers distribute turkeys and hams.
ST. KATHARINE DREXEL PARISH AFFILIATE ORGANIZATIONS
Action for Boston Community Development (ABCD)
Archdiocese of Boston Black Catholic Ministry
Boston Black Catholic Choir
City of Boston Kwanza Celebration
Greater Boston Interfaith Organization (GBIO)
Mother Caroline Academy
Timothy Smith Network

2.10 Community Engagement

During the proposal review and site conveyance process led by the BPDA, the Roxbury Strategic Master Plan Oversight Committee ("RSMPOC"), and the PLAN: Nubian Square Project Review Committee (PRC), the Proponent met with a broad range of community groups and influence leaders in the Nubian Square and greater Roxbury neighborhood. The Proponent looks forward to further engaging with neighborhood representatives during the Article 80 public review process.

2.11 Project Schedule

The Proposed Project is anticipated to begin construction in the Fall/Winter of 2025.

3.0 URBAN DESIGN

Introduction

This chapter provides detailed descriptions of the building and site design of Drexel Village, Including considerations relating to the neighborhood conditions, the existing on-site building, and the proposed public realm improvements.

3.1 Key Commitments and Urban Design Benefits

Primary objectives of the Project include:

- Provide a high-quality physical environment built upon the neighborhood's rich historical and cultural identity.
- Provide dignified spaces that will enhance its residents' and users' quality of living.
- To be a 'Celebratory Gateway' to Nubian Square and the City of Boston.
- Enhance Crescent Parcel as a place-making opportunity and ensure an attractive, safe and active environment.
- Improve visual and physical connection and develop site edges, open spaces, and better access.
- Preserve and enhance St. Katharine on the Project Site.
- Provide much-needed affordable housing.
- Develop underutilized site areas and improve the public realm through the site's development.

3.2 Neighborhood Context

The Project Site is a prominent corner site located at the intersection of Melnea Cass Boulevard and Tremont Street in Roxbury. It is bordered on the south by Ruggles Street and Raynor Circle to the east. The existing St. Katharine Drexel Parish Center is on the site's southeast corner. At the southwest corner of the Tremont Street intersection is Renaissance Park, an academic administration building, and parking garage owned by Northeastern University.

Major roadways and public transit serve the Project Site. The Project Site has frontage on Melnea Cass Boulevard, which connects it to the regional highway system of Boston, as well as Tremont Street, which leads to Downtown Boston. In addition, the Project Site is situated along the proposed Urban Ring, across from the Ruggles Station stop on the Orange Line of the Massachusetts Bay Transportation Authority's ("MBTA") subway, and about a quarter of a mile from the Nubian Square Bus Station of the MBTA. The "Ruggles Cluster," which includes the Project Site, comprises several prospects for transformational development for the comparatively expansive area along Tremont Street and Melnea Cass Boulevard. The site's strategic location makes it a vital corner, calling the new development to be a 'Celebratory Gateway' to both Nubian Square and the City of Boston.

3.3 Site Design Approach and Massing

The notable site is embedded in Nubian Square's transforming urban fabric, challenging us to design a development that can stand proud in the present and lead into tomorrow's cityscape.
The buildings are treated as a perimeter block on the site to define the street edges strongly. The building along Tremont Street is oriented such that it reinforces the Tremont Street wall. Ground floor uses along the streets are lively and pedestrian-friendly, with frequent public entrances. Programmatic spaces like the lobby, lounge, retail, and community space along the building perimeters promote great opportunities for contact and exchange.

The urban form and scale of the buildings transition from Tremont Street to Melnea Cass Boulevard to respond to their immediate context. Along Tremont and Ruggles Streets, the building poses as a tall tower, following the scale of its proposed neighbor, 'Whittier Housing,' and forming a secondary gateway. As buildings transition towards Melnea Cass Boulevard and the adjacent Madison Park townhouses, the massing modulates to maintain a compatible scale with their low-rise neighbors.

The preservation and enhancement of the existing historical St. Katharine is one of the primary objectives of the development. To support some of St. Katharine's growing programmatic needs, a new extension is designed to maintain the St. Katharine's integrity while also suiting the site's present and future goals.

The preservation of existing mature trees and the planting of new trees across the Project Site is also a design focus. Taking advantage of this protected view corridor that faces the intersection, the gateway is further emphasized by the building's enclosure and provides a continuous visual connection to the Project Site. The courtyard formed by the buildings is entirely pedestrian; it will serve as a community gathering space to play, relax and celebrate.

Building Design Concept and Development

The layout and massing of the buildings provide a sense of order to the users and surroundings. The architectural character of the buildings signifies being grounded in the transformative present and exudes stability into the future.

The buildings anchor on a base proportional to the pedestrian scale and the urban front. All three buildings maintain a unifying datum, each with its distinct character based on its programmatic uses and location, adding variety and interest. The massing above the datum modulates to respond to various needs of the neighborhood context and adds definition to the skyline. As the buildings rise above the base at the gateway corner, they gradually step back to open and make a grand welcoming gesture. In contrast, the residential massing adjacent to the St. Katharine steps back to respect St. Katharine's significance.

To heighten the quality of the pedestrian experience, the ground floors of each building will host retail, cultural spaces, and entrances that are visually transparent. The Proposed Project's distinctive architectural expression combines local and global traditions. Taking cues from the red-brick apartment houses of Boston, the architectural character applies a system of balance, proportion, and material expression so that buildings at different scales dialogue in a familiar rhythm.

3.3.1 Building Height

The height of the buildings is generally compatible with the existing surrounding structures and is zoning compliant. The building along Tremont Street is fourteen stories high and +/-160 feet. The mid-rise building along Melnea Cass Boulevard is at six stories and +/- 66 feet; and, the low-rise building along Raynor Circle is at four stories and +/- 49 feet. The building heights are in tandem with its neighbors and align with the larger urban design goals for the neighborhood context.

3.3.2 Public Realm/Streetscape Improvements

The various landscaped features, plazas, and well-connected pedestrian network give Drexel Village a strong sense of place. Welcoming plazas and defined pathways at the meeting face of buildings greet residents and visitors into the Project Site. A walkway through the building base at the corner of Ruggles and Tremont Streets enhances north-south and east-west connections - both physical and visual, establishing accessibility and bringing forward St. Katharine's presence towards Tremont Street. The urban courtyard, with a network of threaded pathways, seamlessly connects to the enhanced sidewalks along the Project Site's periphery, creating a continuously engaging street-level experience. These elements, combined, engage and support pedestrians' activities, shaping the area's everyday experience.

Figure 1.1 : Locus Map

Figure 2.1 : Aerial View

Figure 3.1 : Massing Diagram

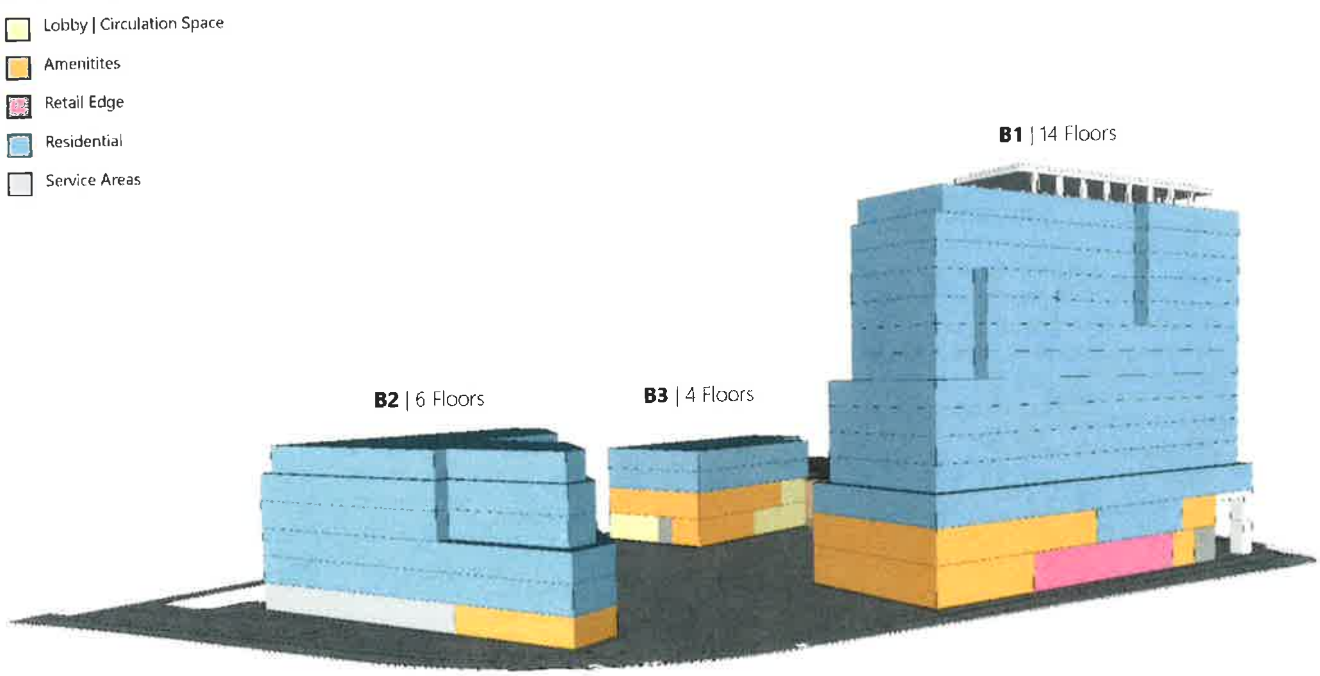


Figure 1.2 : Site Plan

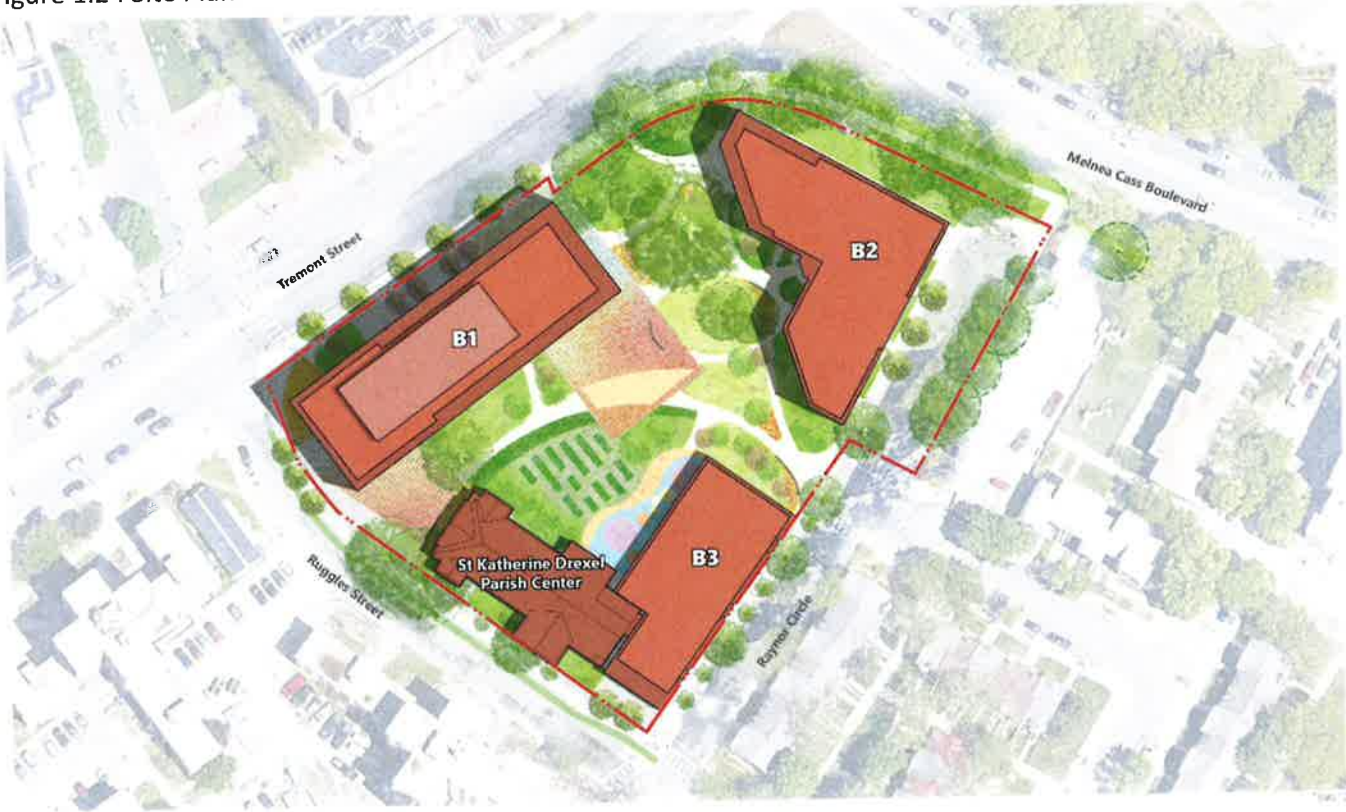


Figure 1.3 : Site Circulation

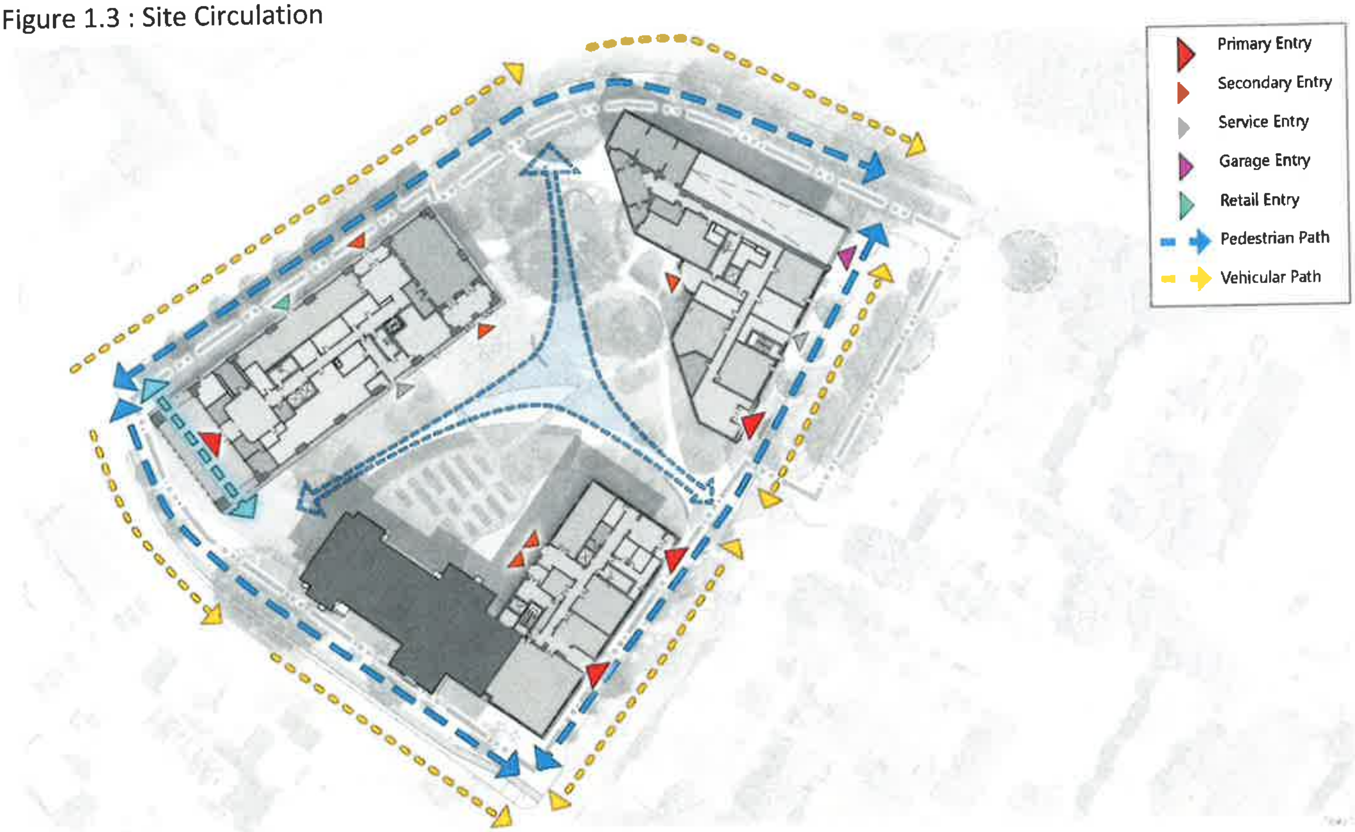


Figure 1.4 : Basement Level Floor Plan

Figure 1.5 : Ground Level Floor Plan

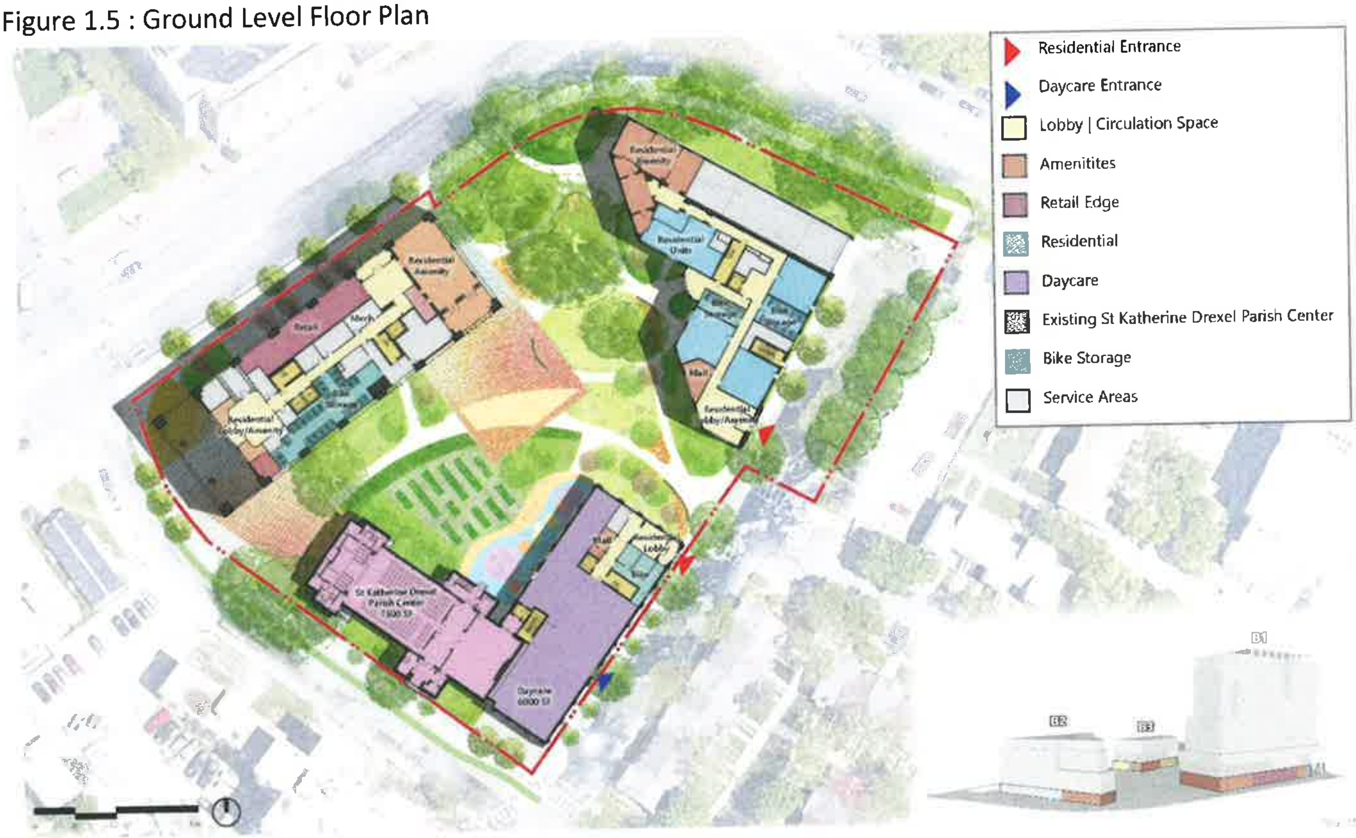


Figure 1.6 : Second Level Floor Plan

Figure 1.7 : Third Level Floor Plan

Figure 1.8 : Fourth Level Floor Plan

Figure 1.9 : Fifth Level Floor Plan

Figure 1.10 : Sixth Level Floor Plan

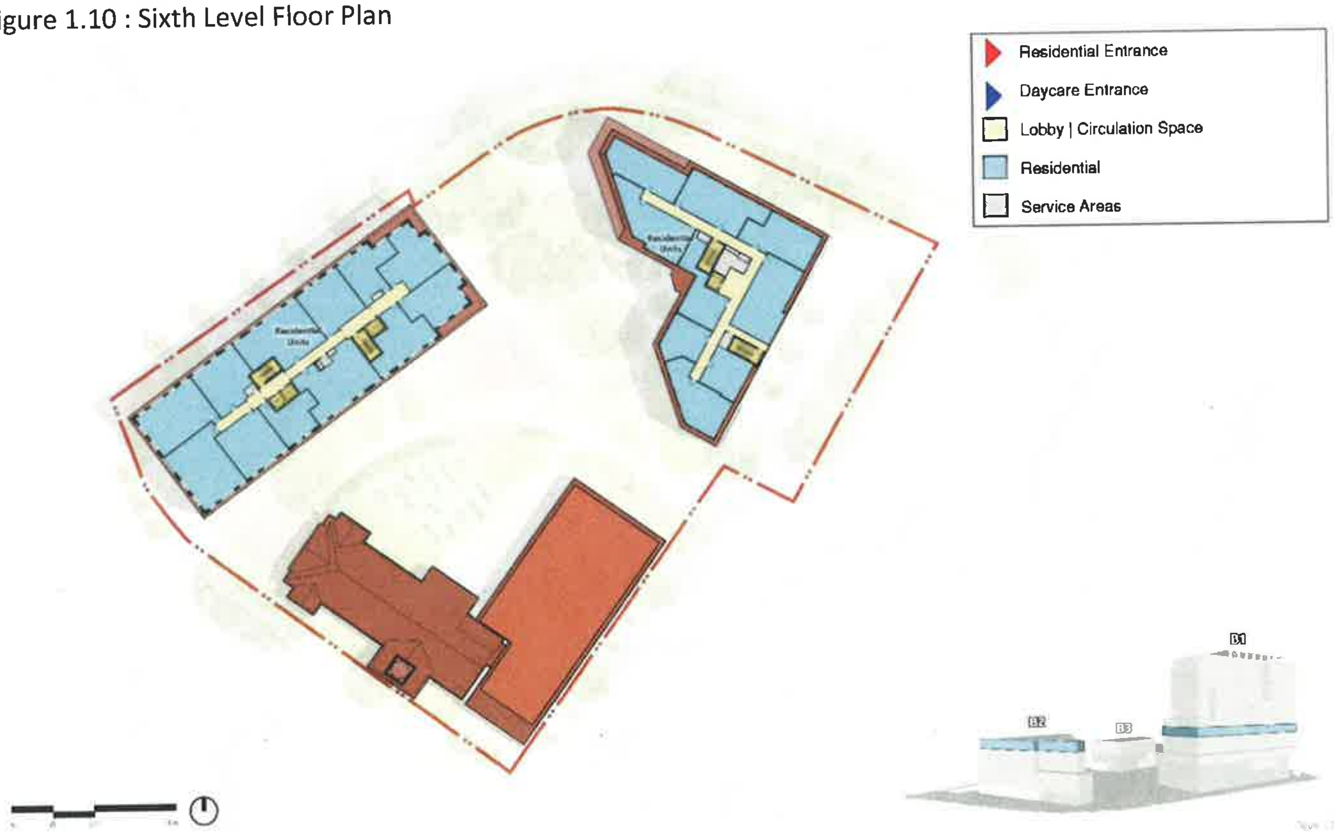


Figure 1.11 : Seventh Level Floor Plan

Figure 1.12 : Eighth and Ninth Level Floor Plans

Figure 1.13 : Tenth and Eleventh Level Floor Plans

Figure 1.14 : Twelfth and Thirteenth Level Floor Plans

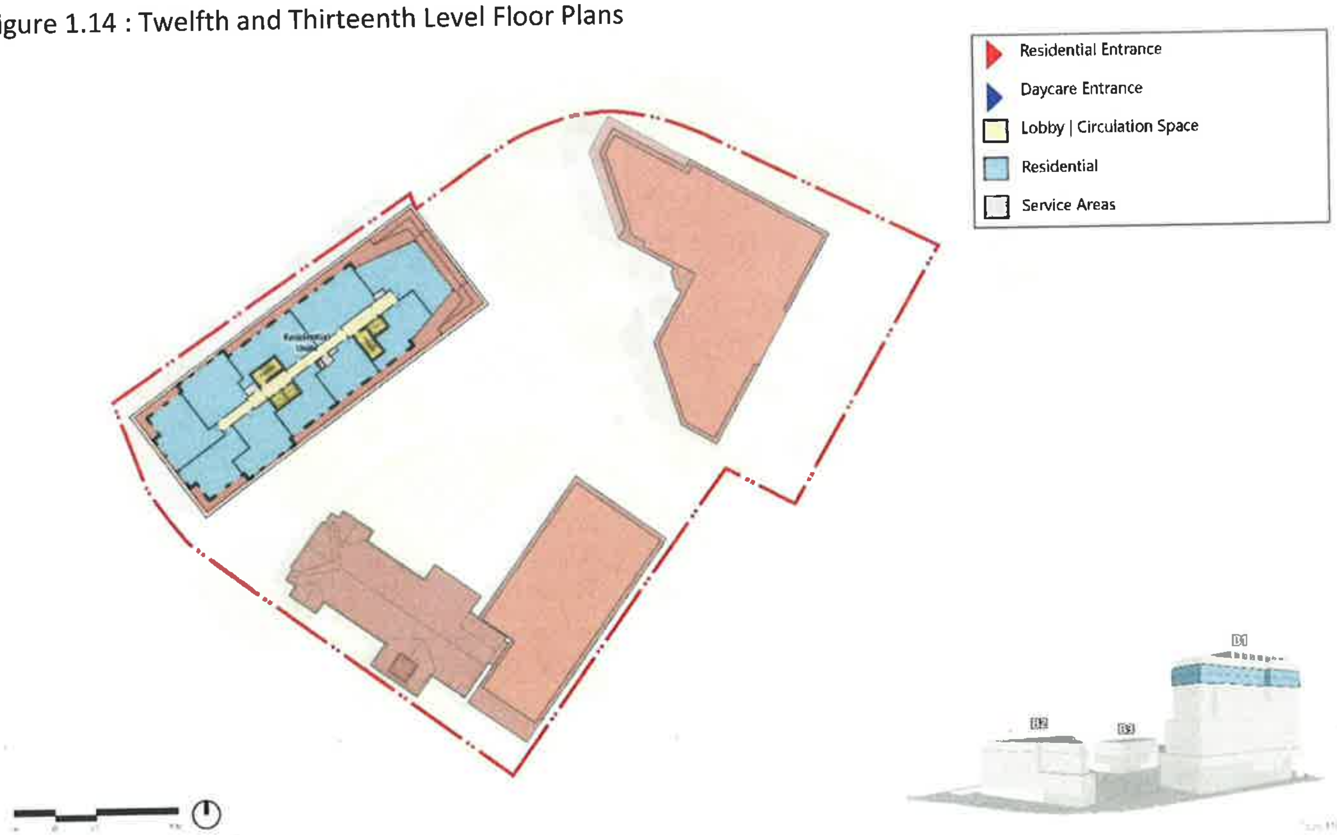


Figure 1.15 : Fourteenth Level Floor Plan

Figure 4.1 : Building 1 Northwest Elevation | Tremont Street

Figure 4.2 : Building 1 Southwest Elevation | Ruggles Street

Figure 4.3 : Building 1 Southeast Elevation

Figure 4.4 : Building 1 Northeast Elevation

Figure 4.5 : Building 2 Northeast Elevation | Melnea Cass Blvd.

Figure 4.6 : Building 2 Northwest Elevation

Figure 4.7 : Building 2 Southwest Elevation

Figure 4.8 : Building 2 Southeast Elevation | Raynor Circle

Figure 4.9 : Building 3 Southeast Elevation | Raynor Circle

Figure 4.10 : Building 3 Southwest Elevation | Ruggles Street

Figure 4.11 : Building 3 Northwest Elevation

Figure 4.12 : Building 3 Northeast Elevation

Figure 4.13 : Northeast Site Section

Figure 2.2 : Gateway View

Figure 2.3 : View from Tremont Street

Figure 2.4 : View from Tremont Street

Figure 2.5 : View from Ruggles Street

Figure 2.6 : Main Entrances | B1 & B2

Figure 2.7 : View of Church Plaza

Figure 2.8 : Retail Edge Along Tremont Street

Figure 2.9 : Walkway to Church Plaza

Figure 5.1 : B1 Material Palette

4.0 TRANSPORTATION

4.1 Overview

This transportation study was prepared in accordance with the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and the BPDA's) Article 80 Large Project Review process. The study includes a review of the existing conditions, site access, future no-build and build conditions, pedestrian and bicycle facilities, public transportation, an analysis of the transportation impacts of the project, and Transportation Demand Management (TDM) strategies.

The transportation impacts of the Proposed Project have been evaluated. The study analyzes transportation use attributable to the Proposed Project on the Project Site and discusses transportation impacts in the vicinity of the Project Site.

4.1.1 Project Description

As portrayed in Figure No. 4.1, the Project Site is bounded predominantly by Tremont Street, Ruggles Street, Raynor Circle, and Melnea Cass Boulevard, all public ways under the jurisdiction of the City of Boston. The current site consists of a surface parking lot, a circular parking loop, daycare, St. Katharine Drexel Parish Center, and open space. The approximately 110,400± SF Project Site is a mixed-use development that will include the construction of three new buildings. It is anticipated that St. Katharine will continue to reside in the existing approximately 17,000± SF church building with some building renovations. The existing building that currently houses the daycare will continue to operate in a space provided in one of the new buildings. Building B-1 is anticipated to be a fourteen story 192,400± SF building, which includes 1,594± SF feet of retail space, a 2,000± SF community area, and 142 mixed-income rental residential units. Building B-2 is anticipated to be a six-story 92,883± SF building, which includes 61 mixed-income rental and homeownership residential units. Building B-3, is anticipated to be a four story 60,703± SF building, which includes 14 rental residential units, 11,900± SF occupied by ABCD, and 20,975± SF of additional parish program space utilized by St. Katharine.

It is anticipated that there will be a 26,000± square-foot parking lot located beneath two of the buildings. It is anticipated that there will be 217 bicycle storage spaces and 60 vehicle parking spaces located in the proposed garage. (All figures are approximate).

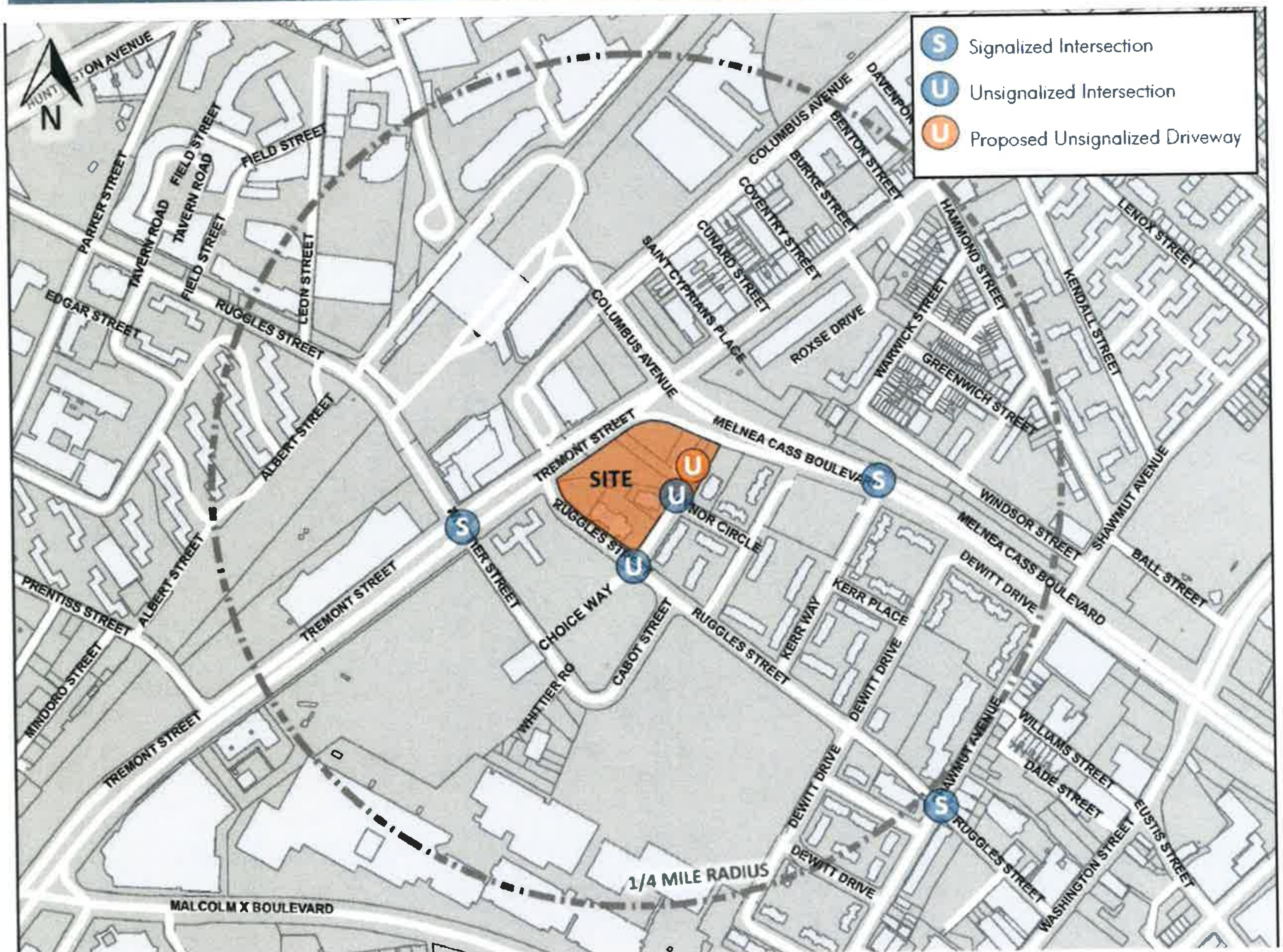
4.1.2 Study Area

Vehicular access to the Project Site will be provided through a proposed driveway on Raynor Circle, shown in Figure No. 4-1. The proposed study area consists of five intersections that are located in the vicinity of the site:

- Melnea Cass Boulevard/Sojourner Truth Court (signalized);
- Tremont Street/Ruggles Street/Whittier Street (signalized);
- Ruggles Street/Shawmut Avenue (signalized);
- Ruggles Street/Raynor Circle/Choice Way (unsignalized); and
- Raynor Circle/Site Driveway/Parking Loop (unsignalized);

Figure No. 4-1 Location Map

Not to Scale



4.1.3 Methodology

The existing condition analysis includes an inventory of the roadway infrastructure including geometric traffic characteristics, public transit, on-street parking, pedestrian and bicycle facilities, etc. Vehicle, bicycle, and pedestrian counts were undertaken in the vicinity of the study area in order to conduct capacity analysis as part of the evaluation.

The following transportation conditions have been included in the analysis:

- The existing (2022) condition analysis includes existing traffic volumes within the project study area.

- The future no-build (2027) condition analysis includes existing traffic volumes, traffic from future site-specific project developments that will impact the intersections in the project study area, and anticipated roadway improvements within the project study area, as applicable.

- The future build (2027) condition analysis includes the previously mentioned parameters in the future no-build condition, the removal of the existing trips accessing the site, and the addition of the estimated project generated trips.

The last section of this transportation study outlines measures anticipated to be taken by the Proponent in order to mitigate traffic impacts, and accommodate transit, pedestrian, and bicycles. Construction and short-term traffic related issues are also addressed in the final section.

4.1.4 Summary

The key findings of the Proposed Project include the following:

- The Proposed Project is anticipated to generate 67 vehicle trips (37 vehicles entering and 30 vehicles exiting) during the A.M. peak hour and 91 vehicle trips (41 vehicles entering and 50 vehicles exiting) during the P.M. peak hour.

- The access to the on-site parking garage will be located approximately in the same area as the existing parking loop and existing site driveway off Raynor Circle, which will be the only proposed driveway for the Proposed Project. Although the existing parking loop area will be removed, some of the existing on-street parking will remain in the vicinity of the proposed driveway and Raynor Circle. The parking garage is anticipated to provide approximately 60 vehicle parking spaces that will be predominantly used by on-site tenants.

- The proposed driveway at its intersection with Raynor Circle will operate at excellent levels of service during the future build A.M. and P.M. peak hours.

- The unsignalized capacity analysis shows the intersection of Ruggles Street, Raynor Circle, and Choice Way will remain the same during the future build A.M. and P.M. peak hours.

- The signalized capacity analysis shows the levels of service at the Melnea Cass Boulevard and Sojourner Truth Court intersection will remain the same during the future build A.M. and P.M. peak hours.

- The levels of service at the intersection of Tremont Street, Ruggles Street, and Whittier Street will remain the same during the future build A.M. peak hour and P.M. peak hours. During the A.M. peak hour, the southbound and eastbound approaches experience poor levels of service under future no-build and build conditions. During the P.M. peak hour, the southbound, eastbound, and westbound approaches experience poor levels of service under future no-build and build conditions.

- The levels of service at the intersection of Ruggles Street and Shawmut Avenue will remain the same during the future build A.M. and P.M. peak hours. The intersection will operate at adequate levels of service.

- Retiming and phasing of the Tremont Street, Ruggles Street, and Whitter Street traffic signal is recommended to improve intersection capacity. It is also recommended that the City of Boston consider the construction of a southbound U-turn lane at this intersection in order to reduce delay on the southbound approach and provide better vehicle access to the neighborhood off Ruggles Street and its connecting roadways, located to the east of Tremont Street.

- The Proponent is also committed to implementing TDM measures in order to reduce traffic congestion in the vicinity of the site.

4.2 Existing Conditions

4.2.1 Roadway Conditions

The study area includes the major roadways of Tremont Street, Melnea Cass Boulevard, Ruggles Street, and Shawmut Avenue, which are functionally classified as presented in the online Road Inventory Interactive Map, which is based on the Year-End 2020 Road Inventory File maintained by the Massachusetts Office of Transportation Planning:

Tremont Street is classified as an Urban Principal Arterial. An arterial highway emphasizes a high level of mobility for through traffic and access to local roadways. Tremont Street, which is located to the west of the site, generally runs northeast and southwest. In the vicinity of the site, Tremont Street is a six-lane, two-way divided roadway with a raised concrete median, and is approximately 76 feet in width. At its intersection with Ruggles Street and the Columbus Avenue access drive, there is a pedestrian traffic signal on Tremont Street that allows the crossing of bicycles and pedestrians. However, the remainder of the surrounding raised median prevents southbound vehicles from taking left turns from Tremont Street onto Ruggles Street. To the south of its intersection with Ruggles Street and Whittier Street, Tremont Street is a seven-lane, two-way divided roadway, with a northbound left turn lane, through travel lanes, a raised median, no marked shoulders and is approximately 84 feet in width. The southbound right through lane is signed as a disabled parking zone, as well as a no stopping zone in front of the Boston Police Headquarters.

This lane routinely has parked vehicles located in it. To the north of the intersection and at its intersection with Melnea Cass Boulevard, Tremont Street is a six-lane, two-way divided roadway with a southbound right turn lane, through travel lanes, and a raised median, which transitions to an undivided roadway further north of this traffic signal. Parking is restricted on Tremont Street in the vicinity of the site. However, there is parking on both sides of the roadway north of Saint Cyprians Place. There is curbing and sidewalks on both sides of the roadway.

Melnea Cass Boulevard, which is classified as an Urban Principal Arterial, is located to the north of the site. Melnea Cass Boulevard, which runs east and west in the vicinity of the site, is a four-lane, two-way divided roadway, which varies from 50 to 52 feet in width at its intersection with Sojourner Truth Court, and has a flush stone median, approximately 4 feet in width. At its intersection with Sojourner Truth Court, there are westbound and eastbound bus stops in the vicinity of the intersection. There is curbing and sidewalks on both sides of the roadway.

Ruggles Street, which is classified as an Urban Minor Arterial, is located to the south of the Project Site and runs generally east. Ruggles Street is a one-lane, one-way roadway, and varies from 19 to 26 feet in width in the vicinity of the site. Parking is prohibited on Ruggles Street between Tremont Street and Raynor Circle. Starting at Choice Way/Raynor Circle, there is permitted parking on both sides of the majority of the roadway. There is curbing and sidewalks on both sides of the roadway. Recent Ruggles Street roadway improvements include the addition of a separated bike lane on the north side of the roadway. Although the road is currently under construction, the street improvement plans include a bike lane on the south side of the roadway separated from traffic with bike curbing and posts. Upon completion of the Proposed Project, the bike lane on the north side of the roadway will be striped for westbound bicycles and the bike lane on the south side of the roadway will be striped for eastbound bicycles.

Raynor Circle is classified as a local road, which by definition provides a higher level of land access and less mobility functions. Raynor Circle, which partially runs north and south, will provide direct access from Ruggles Street to the site. Additionally, Raynor Circle runs east and west to the east of the Project Site. It is a two-lane, two-way undivided roadway, and is approximately 35 feet in width. There is parking on both sides of the roadway. There is curbing and sidewalks on both sides of the roadway.

Sojourner Truth Court, formerly known as Kerr Way, which is classified as a local road, is located to the east of the Project Site and runs north and south. Sojourner Truth Court is a two-lane, two-way undivided roadway, which is approximately 30 feet in width at its signalized intersection with Melnea Cass Boulevard. There is parking on both sides of the roadway. There is curbing and sidewalks on both sides of the roadway.

Shawmut Avenue, which is classified as an Urban Minor Arterial, is located east of the Project Site. It is a one-way roadway that permits southwest traffic flow and varies from 26 to 28 feet in width. The roadway is currently under construction and unstriped. To the north of Ruggles Street, vehicles queue as a one or two-lane roadway at the intersection. There is parking on both sides of the roadway. There is curbing and sidewalks on both sides of the roadway.

4.2.2 Existing Parking Conditions

On-Street Parking

Existing street parking in the vicinity of the Project Site and the surrounding area has been inventoried as seen in Figure No. 4-2. The inventory of parking includes unregulated parking, two-hour parking, disabled parking, residential/permitted parking, no stopping, and no parking.

Car Sharing Services

Car sharing services provide alternative access to short-term vehicle transportation. Vehicles are rented on hourly or day rates and include associated vehicle costs, e.g., gas, maintenance, insurance, and parking. The vehicles are picked up and dropped off at the same location. The City of Boston designates car sharing parking spaces that provide greater benefit to communities and reduce impacts of on-street parking demands.

Car Share Boston has up to 250 parking spaces designated for car sharing services. The City of Boston has partnerships with Zipcar and Getaround. Other car sharing services, such as Turo, also operate in the city and are within the vicinity of the Project Site. Currently, there are three Zipcar and one Getaround locations within a quarter mile of the Project Site, as shown in Figure No. 4-3. There are five Zipcar, two Turo, and two Getaround locations between a quarter mile and a half mile of the Project Site. Additionally, there are four Zipcar, one Getaround, and three Turo locations in the vicinity outside of a half mile radius of the Project Site. There is one Zipcar location northwest of the site beyond the Back Bay Fens outside of the half mile radius.

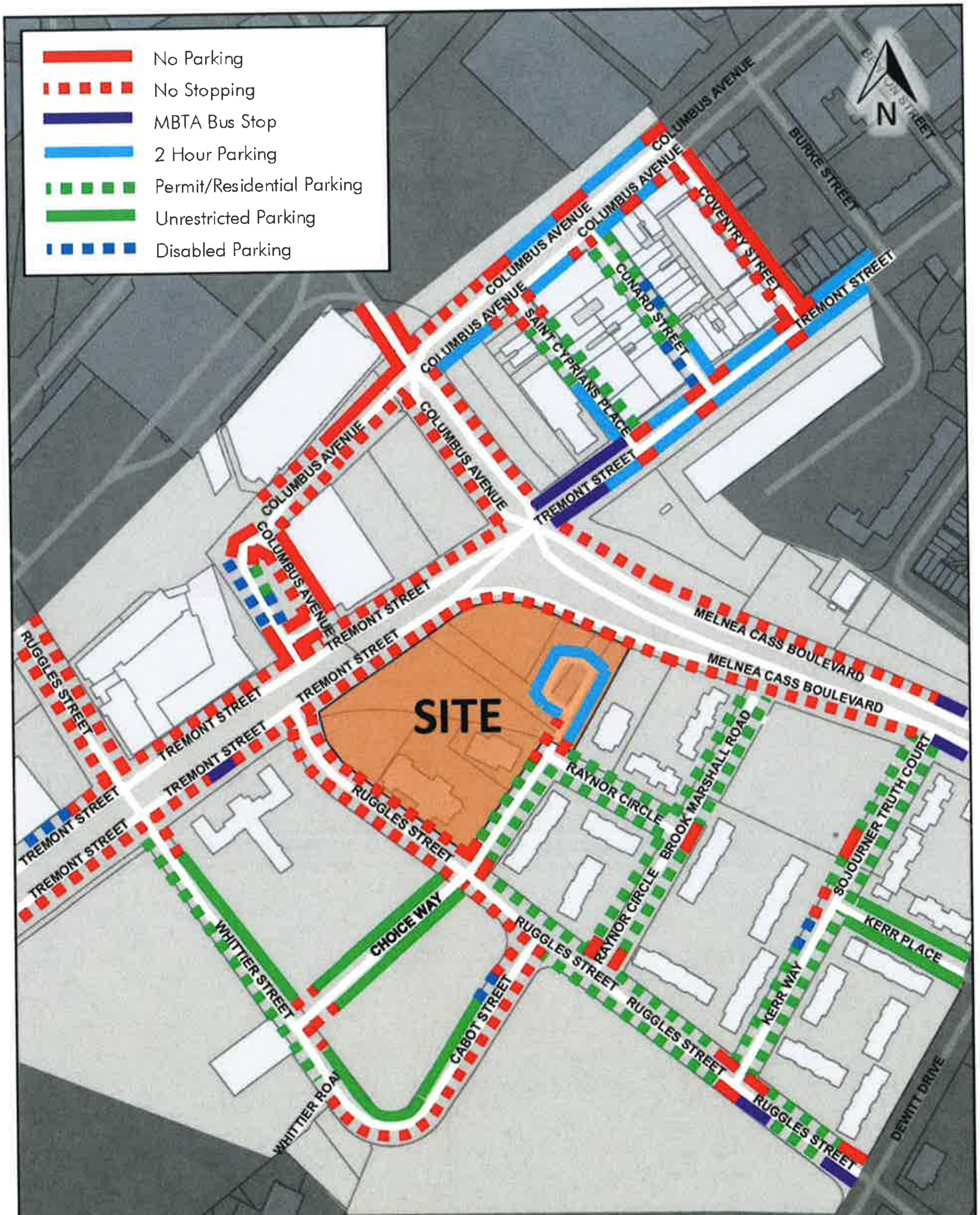
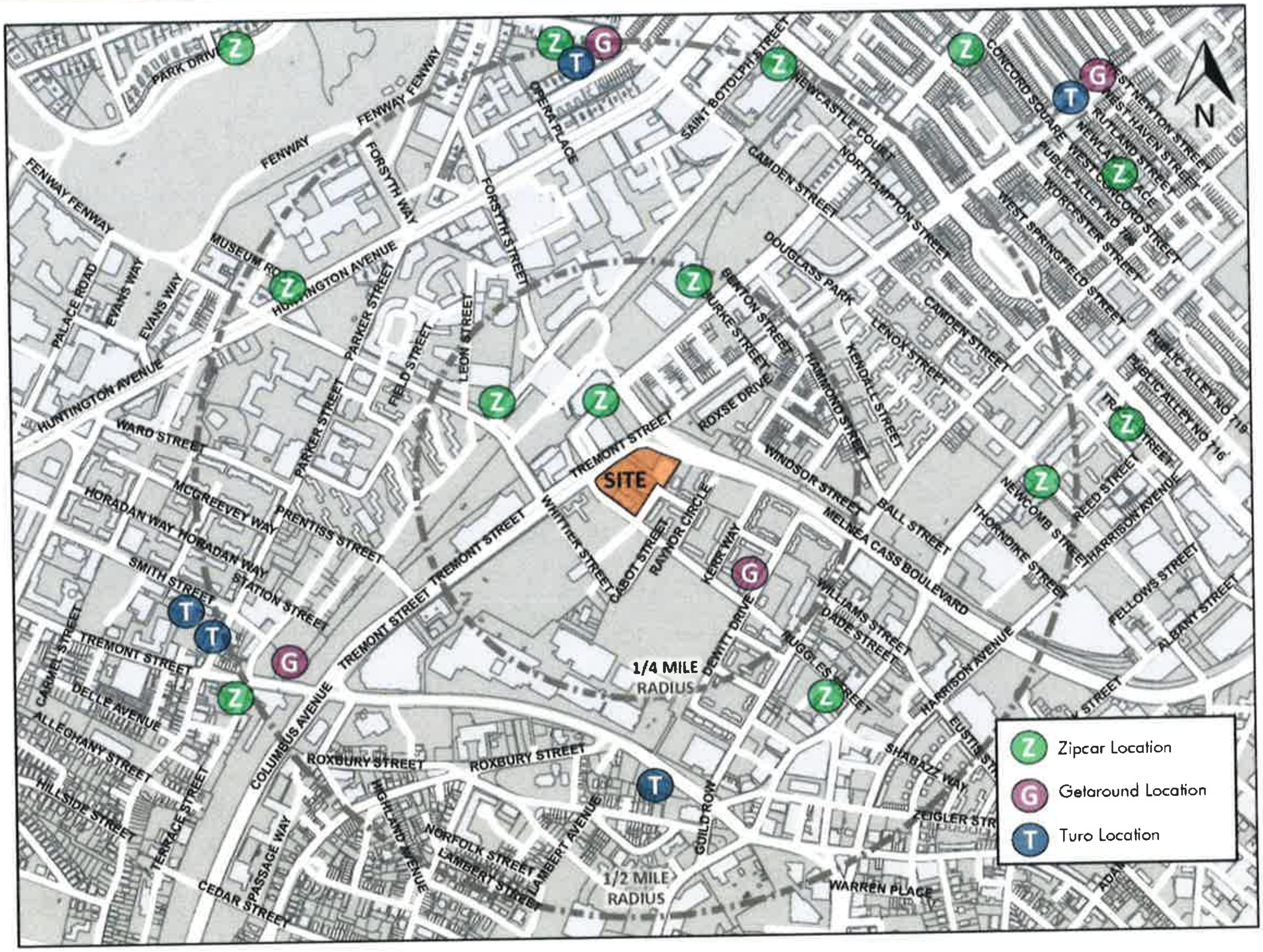


Figure No. 4-2On-Street Parking Inventory Not to Scale

Figure No. 4-3 **Car Sharing Services Locations** **Not to Scale**

Figure No. X-1 *Location Map* *Not to Scale* **Not to Scale**



4.2.3 Existing Public Transportation

The Project Site is located within the vicinity of public transportation, as shown in Figure No. 4-4. Ruggles Station, which is located 600 feet west of the site, is a hub for the Orange Line subway line, the Needham, Franklin/Foxboro, and Providence/Stoughton commuter rail lines, and over a dozen bus routes. Additionally, there is the Museum of Fine Arts MBTA Station for the Green Line subway, which is located 0.4 miles west of Ruggles Station. There is a bus stop for the MBTA Silver line at the intersection of Melnea Cass Boulevard and Washington Street, which is located just outside of the quarter mile radius of the site.

There are MBTA bus routes on all of the arterial roadways in the vicinity of the site. The are bus stops on Ruggles Street between Cabot Street and Shawmut Avenue, on Melnea Cass Boulevard at the intersection with Sojourner Truth Court, and on Tremont Street to the north and south of the site.

4.2.4 Pedestrian Conditions

Pedestrian counts were conducted at the intersections of Melnea Cass Boulevard and Sojourner Truth Court; Tremont Street, Ruggles Street, and Whittier Street; Ruggles Street and Shawmut Avenue; Ruggles Street, Raynor Circle, and Choice Way; and Raynor Circle, the Project Site driveway, and the parking loop on Thursday, April 21, 2022.

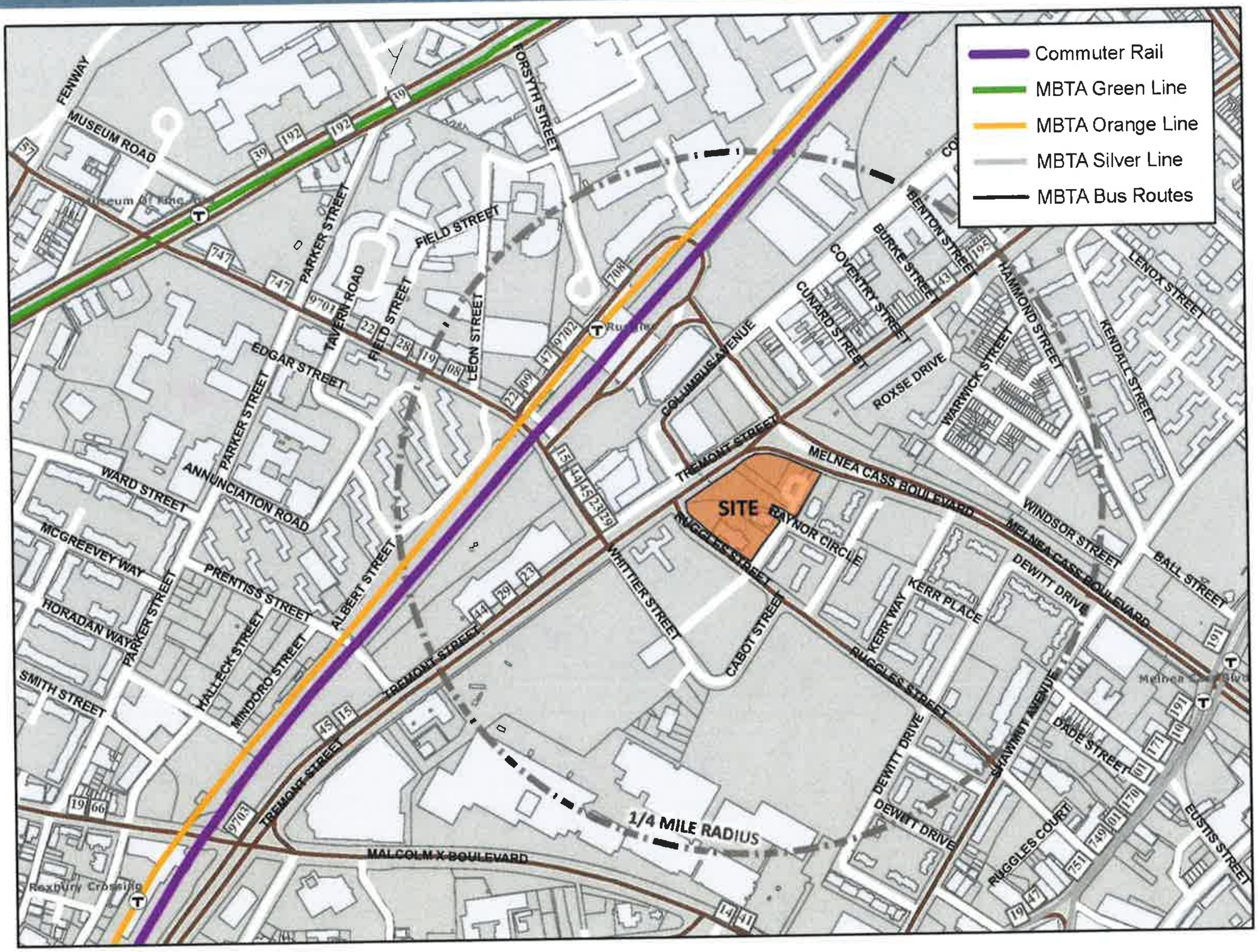
During the A.M. peak hour, the highest volume of pedestrians within the study area occurs at the intersection of Ruggles Street and Shawmut Avenue with 71 pedestrians in the vicinity of the intersection. The intersection of Ruggles Street and Shawmut Avenue also has the highest pedestrian count during the P.M. peak hour with 111 pedestrians. This area is predominantly residential, however, there is a park on Ruggles Street and there is also a community center (Dewitt Center) at the intersection of Ruggles Street and Dewitt Drive, which may attribute to the pedestrian activity.

The sidewalks adjacent to the Project Site are generally in good condition and adequate in capacity. The sidewalks on Raynor Circle in the vicinity of the existing parking loop are approximately 7 feet 8 inches in width. However, they are only 3 feet 6 inches in width behind tree pits located on the sidewalk. Wherever possible, it is recommended that the sidewalk be a minimum of 4 feet. The sidewalk on Raynor Circle in the vicinity of Ruggles Street is 4 feet behind the sidewalk tree pits. The sidewalk on Ruggles Street west of Choice Way is approximately 18 feet 6 inches wide and includes an integrated asphalt bike lane which is delineated from the 5-foot pedestrian sidewalk area with brick pavers. The sidewalk on Tremont Street and Melnea Cass Boulevard adjacent to the Project Site varies from 9 feet 6 inches to 11 feet in width, with 5 feet 6 inches of sidewalk width behind sidewalk tree pits. Curb ramps and crosswalks are provided at all of the intersections in the project study area. There is a signalized pedestrian crossing on Tremont Street in the vicinity of Ruggles Street and the Columbus Avenue access drive, which provides a direct path to the Ruggles MBTA Station and the Southwest Corridor Park, which is a linear urban park connecting various neighborhoods throughout Boston.

Figure No. 4-4 Public Transportation Not to Scale

Figure No. X-1 Location Map Not to Scale

Not to Scale



4.2.5 Bicycle Conditions

Bicycle use has increased throughout the City of Boston in recent years. The Project Site is located in the vicinity of bicycle facilities. According to the Boston Bicycle Network Map, the South Bay Harbor Trail, which is a shared use path, is located just north of the Project Site, and runs adjacent to Melnea Cass Boulevard in the vicinity of the Project Site. The path can be accessed at the intersections of Tremont Street and Melnea Cass Boulevard and Melnea Cass Boulevard and Sojourner Truth Court. The South Bay Harbor Trail is currently missing sections. However, it will connect city neighborhoods and the city waterfront with a 3.5-mile route. The southern section of the South Bay Harbor Trail runs adjacent to Melnea Cass Boulevard between Massachusetts Avenue and the Ruggles MBTA Station. At the intersection of Melnea Cass Boulevard and Columbus Avenue, the South Bay Harbor Trail intersects the Southwest Corridor shared use park and the Columbus Avenue bike lanes. The Southwest Corridor Park connects the South End, Back Bay, Roxbury, and Jamaica Plain with a 4.1 mile greenway, which includes recreational facilities. As described in the previous section, there is a signalized pedestrian crossing in the vicinity of the Project Site that can be used to access the Southwest Corridor Park.

Recent street improvements on Ruggles Street include the addition of bike lanes as described previously. However, the roadway is currently under construction, although nearing completion. Between Tremont Street and Dewitt Drive, the westbound bike lane is part of the sidewalk and delineated from the pedestrian path with brick pavers. The at-grade eastbound bike lane is proposed to be separated from eastbound traffic with curbing and posts. At the intersection of Tremont Street, Ruggles Street, and the Columbus Avenue access drive, there is a proposed signalized bike crossing separated from the existing pedestrian crossing on Tremont Street. This improvement will connect the bike lanes on Ruggles Street to the existing bike lanes on Columbus Avenue. Between Dewitt Avenue and Washington Street, the westbound bike lane on Ruggles Street will be at-grade and delineated from traffic with curbing and posts. The eastbound bike facility will be a shared lane, marked with sharrow markings.

Additionally, a Bluebike facility is located on the southern side of Ruggles Street in the vicinity of its intersection with Raynor Circle and Choice Way, which is directly south of the site. There are additional Bluebike facilities at the Ruggles subway station, in the vicinity of Melnea Cass Boulevard and Columbus Avenue, approximately 400 feet from the site. There are also other Bluebike facilities in the Roxbury, Fenway, and Mission Hill neighborhoods as part of an extensive network throughout the city of Boston. Bluebikes are part of a metropolitan shared bike program that provides a convenient means of transportation.

4.2.6 Data Collection

Traffic turning movement counts were conducted by Transportation Data Corporation at the intersections of Melnea Cass Boulevard and Sojourner Truth Court; Tremont Street, Ruggles Street, and Whittier Street; Ruggles Street and Shawmut Avenue; Ruggles Street, Raynor Circle, and Choice Way; and Raynor Circle, the Project Site driveway, and the parking loop between the hours of 7:00 A.M. and 6:00 P.M. on Thursday, April 21, 2022. The traffic count data will be provided upon request.

The calculated A.M. peak hour for the intersection of Melnea Cass Boulevard and Sojourner Truth Court is 7:00 to 8:00 and the calculated P.M. peak hour is 2:00 to 3:00.

The calculated A.M. peak hour for the intersection of Tremont Street, Ruggles Street, and Whittier Street is 7:15 to 8:15 and the calculated P.M. peak hour is 2:00 to 3:00.

The calculated A.M. peak hour for the intersection of Ruggles Street and Shawmut Avenue is 8:15 to 9:15 and the calculated P.M. peak hour is 3:15 to 4:15.

The calculated A.M. peak hour for the intersection of Ruggles Street, Raynor Circle, and Choice Way is 8:00 to 9:00 and the calculated P.M. peak hour is 3:15 to 4:15.

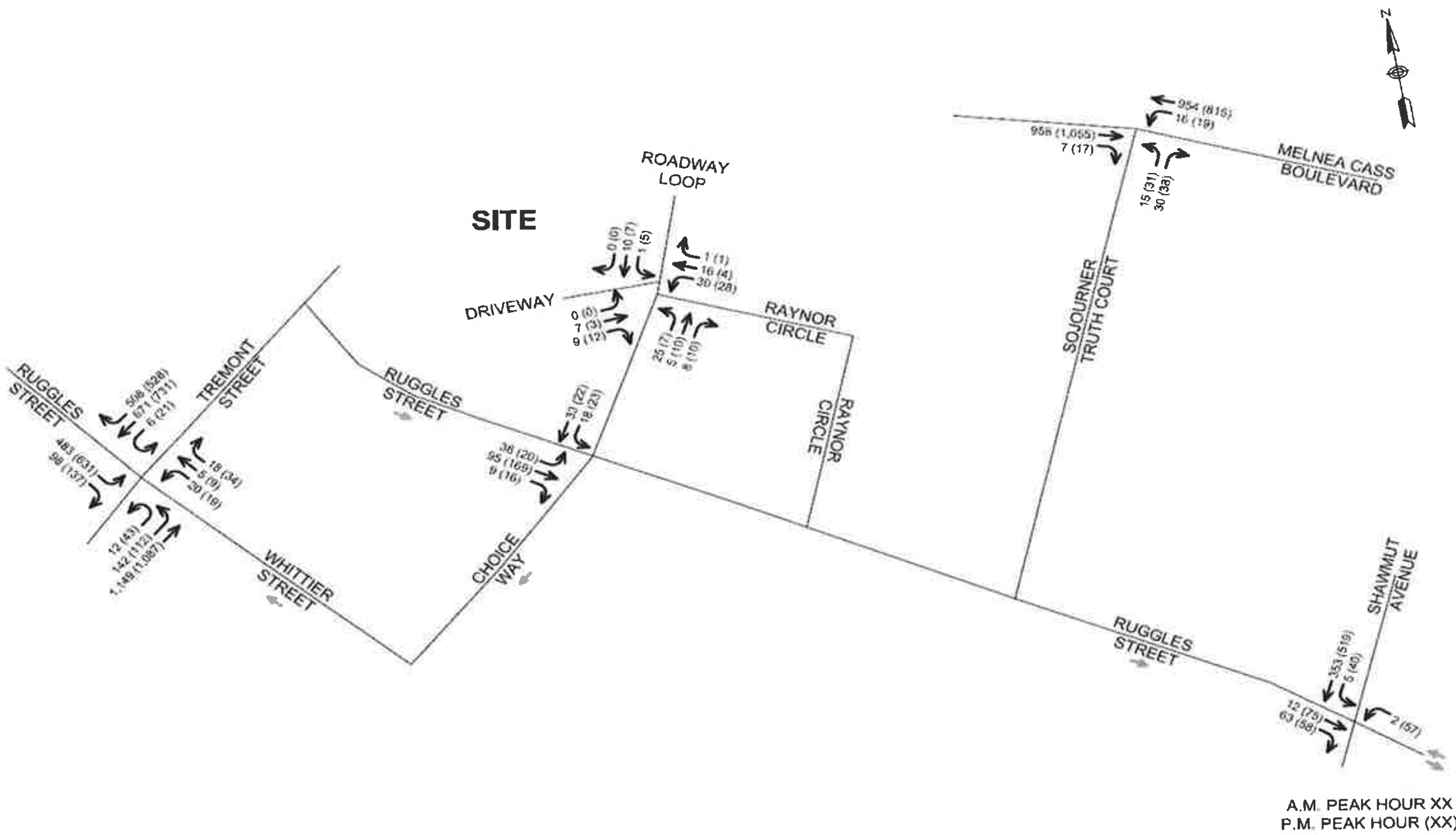


Figure No. 4-5 **Existing Conditions Traffic Volumes Diagram**

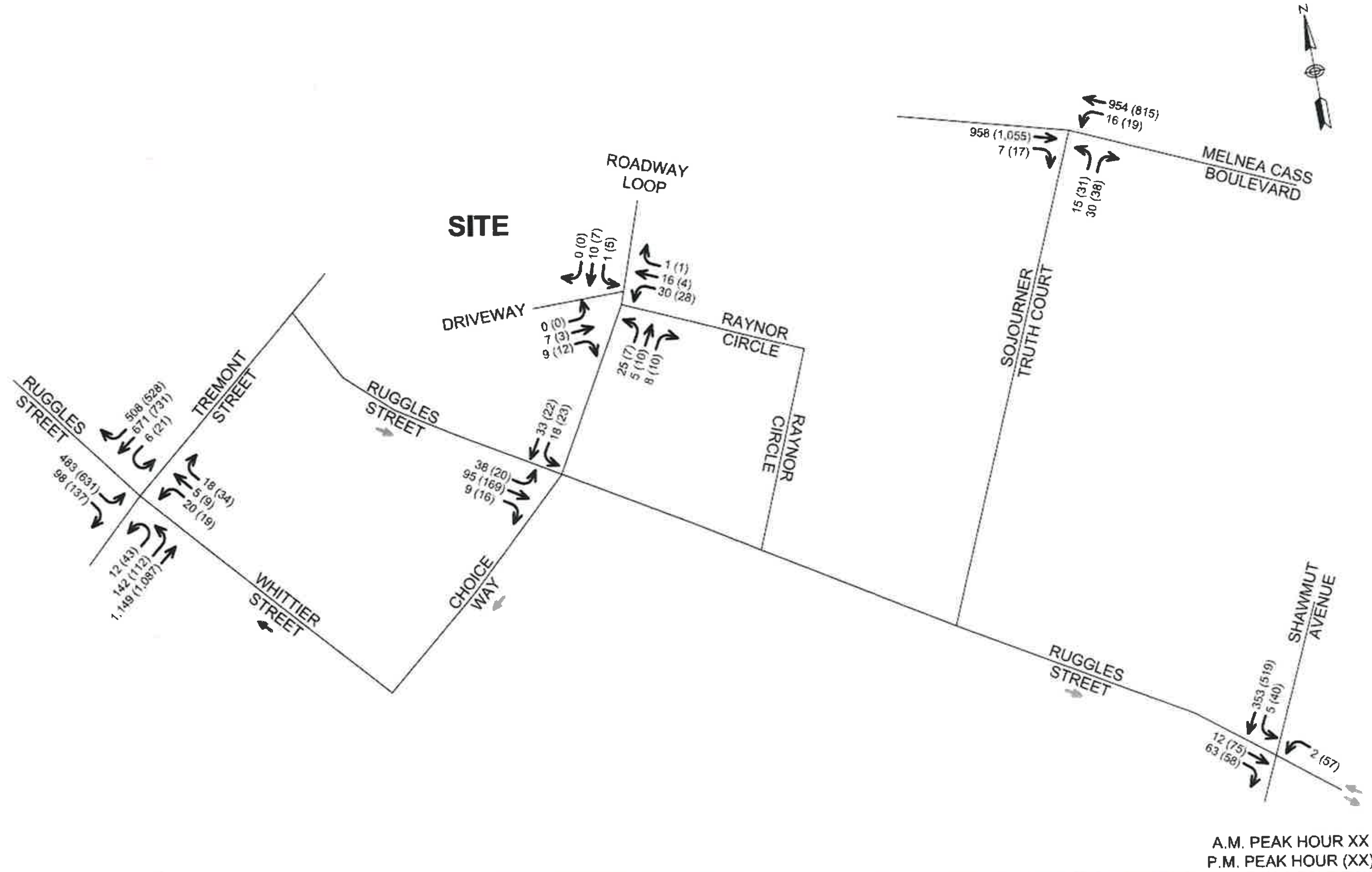


Figure No. 4-5 **Existing Conditions Traffic Volumes Diagram** **Not to Scale**

The calculated A.M. peak hour for the intersection of Raynor Circle, the Project Site driveway, and the parking loop is 8:00 to 9:00 and the calculated P.M. peak hour is 2:45 to 3:45.

The traffic volumes during the A.M. and P.M. peak hours under existing conditions (2022) are shown in Figure No. 4-5.

4.3 Future Conditions

4.3.1 Traffic Growth

A "background" traffic growth rate was not applied to the intersections in the study area for the future (2027) no-build and build conditions. A memorandum issued by the BTD and Public Works on January 21, 2021, states that the policy recommendation is to no longer use background vehicle growth rates during or after the recent COVID 19 pandemic. Since the traffic counts were conducted on April 21, 2022, per this policy, growth rates were not utilized in the analyzes.

4.3.2 Planned Development Traffic Growth

There are a number of development projects in the vicinity of the proposed development that could impact the future no-build volumes. The traffic volumes for applicable projects were added to the existing volumes to determine the future no-build volumes. Many of the projects, however, are smaller projects and/or were not required to prepare a traffic study.

- The Wentworth Institute of Technology Sweeney Field Athletics Complex is an institutional project that includes the relocation of existing athletic fields. The project includes 67,000 SF above-grade construction and a covered parking facility for 330 vehicles. This project has been approved by the BPDA Board. However, since the project was connected to redevelopment of the existing facility at 500 Huntington Avenue, the project was delayed. A Notice of Project Change was filed this year and no longer includes redevelopment of the existing lot.

- Northeastern University EXP is an eight-story building that includes 350,000 SF for additional classrooms, laboratories, and makerspace/collaborative workspaces for the university. This project is under construction.

- The Whittier Choice Neighborhood includes the phased construction of several buildings which house 387 rental units, 7,680 SF of commercial space, and garaged parking for 121 vehicles. This project is under construction and partially completed.

- 2085 Washington Street, Building B, Phase 3 (Parcel 10) is a 12-story mixed use development containing 114 residential units, 2,101 SF of ground floor community space, and 52 garage parking spaces. The remainder of the site has been developed and completed. This supplemental project has been approved by the BPDA board.

- The Benjamin Franklin Institute of Technology is a three-story technical education building. The 68,000 SF building includes 20 labs, 8 classrooms, 13 conference rooms, and other related amenities. This project has been approved by the BPDA board.

- The NUBA (Parcel 8) project is a mixed-use development that includes 109 residential units, 7,500 SF of commercial space, 3,000 SF of retail/café/exhibition space, 7 live/work spaces, and 38 parking spaces. This project has been approved by the BPDA board.

- Nubian Ascends is a mixed-use development that includes a seven-story 201,100 SF building which contains 24,710 SF of retail, a 15,000 SF fitness area, a 175-seat restaurant, 144,500 SF of office space, and a 30,900 SF food hall. This project also includes a 17,500 SF building which contains 15 artist housing units, a 9,200 SF artist lab building, and 305 parking spaces. This project has been approved by the BPDA board.

- 500 Huntington Avenue is the redevelopment of athletic fields into 78,400 SF of institutional facilities, 244,800 SF of office space, 301,800 SF of research space, 15,000 SF of retail, and 410 parking spaces. This project has been approved by the BPDA board.

The traffic volumes during the A.M. and P.M. peak hours under future no-build conditions (2027) are shown in Figure No. 4-6.

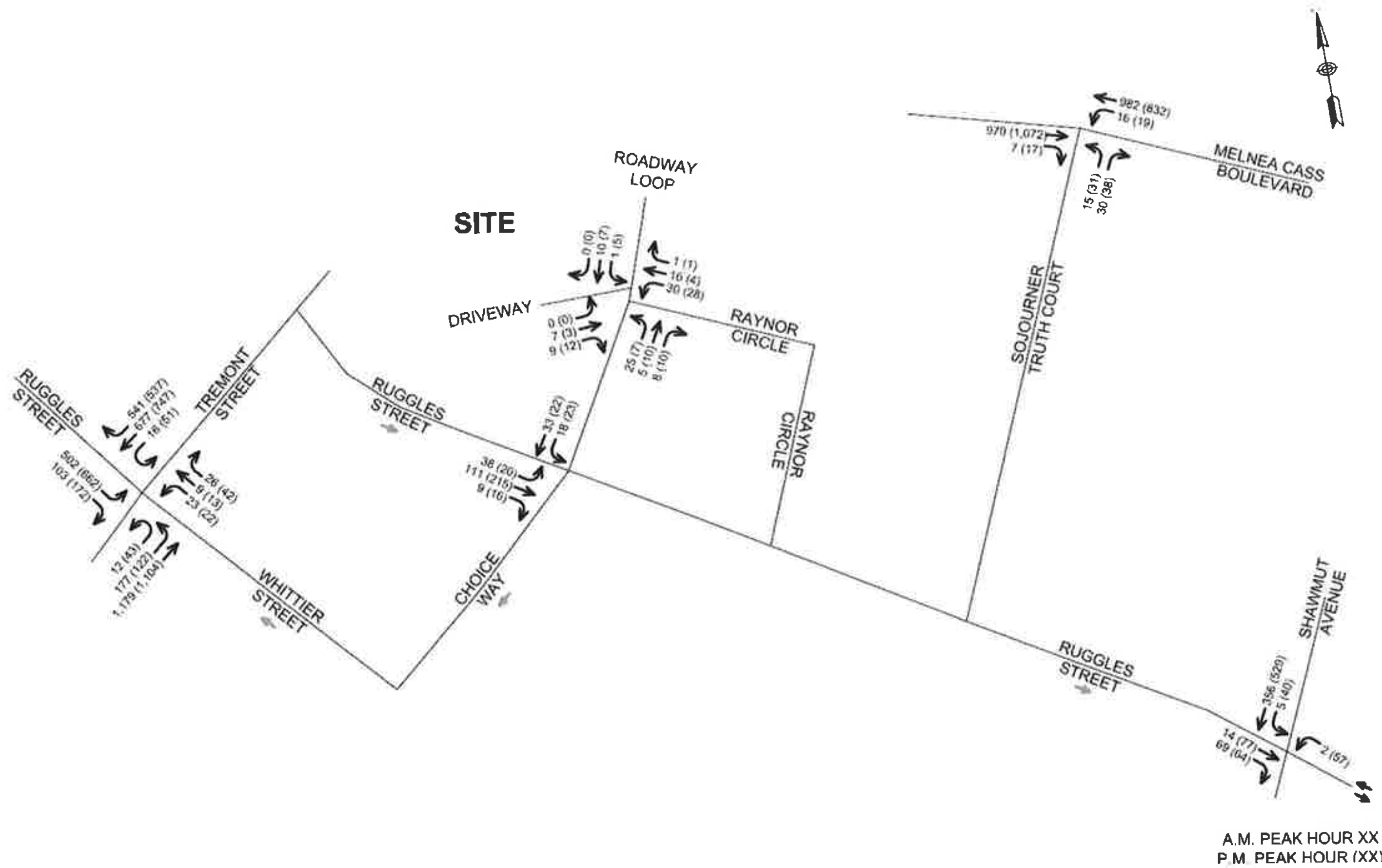


Figure No. 4-6 Future No Build Conditions Traffic Volumes Diagram

4.3.3 Proposed Infrastructure Improvements

The City of Boston has planned roadway improvement projects in the vicinity of the site and a review was conducted of the anticipated impacts on the roadway network in the study area. The Capital Improvement Project for the Highway Reconstruction of Ruggles Street proposes improvements to the Tremont Street signalized pedestrian crossing, which includes new bicycle accommodations located at the intersection of Tremont Street, Ruggles Street, and the Columbus Avenue access road, separated bicycle lanes on Ruggles Street, bump-outs on Ruggles Street at its intersections with Raynor Circle/Choice Way, Cabot Street, Raynor Circle, Sojourner Truth Court, Dewitt Drive, Shawmut Avenue, and Washington Street. The improvements also include bicycle crossing areas, enhanced sidewalks and pedestrian amenities, paving, striping, and signage. This project is currently under construction and nearing completion.

Although the project will improve multimodal access on Ruggles Street, it is not anticipated that the improvements will significantly alter the analysis that is presented within this report since the project is currently being constructed

4.3.4 Build Conditions

The site includes three proposed buildings. The first is a fourteen-story 192,436± SF building (which is anticipated to contain 142 mixed-income residential rental units, 2,000± SF of community space, and 1,594± SF of retail space. The second is a six-story 92,883± SF building which contains 61 mixed-income residential rental and homeownership units. The third is a four-story 60,703± SF building, which is anticipated to contain 14 rental residential units, a 11,900± SF space occupied by ABCD, and 20,975± SF of additional parish program space utilized by St. Katharine. The existing St. Katherine building is to remain on-site and connected to the third building. An underground parking structure will be located under the second and third buildings with a 26,600± SF area for 60 parking spaces and 217 bicycle storage spaces.

Site Access

Access to the parking garage will be provided by a driveway on Raynor Circle, in the vicinity of the existing intersection of the driveway, parking loop, and Raynor Circle. Pedestrian access will be provided by the existing sidewalks on Raynor Circle, Tremont Street, Ruggles Street, and Melnea Cass Boulevard.

The site is also proposed to have internal walkways and pedestrian paths between the buildings. The BPDA recommended that a crosswalk be installed across Ruggles Street at the plaza area of the Project Site, which will be investigated. There is also a proposed drop-off and pick-up area along the west side of Raynor Circle for the daycare.

Parking and Bicycle Accommodations

The on-site parking garage will be accessed from Raynor Circle. The parking garage is anticipated to provide approximately 60 parking spaces and 217 bicycle parking spaces.

Trip Generation Methodology

To evaluate the traffic impacts of the Proposed Project, it is necessary to determine the amount of traffic expected to be generated by the proposed improvements. The trip generation calculations are based on data compiled in Trip Generation, 11th edition, an informational report published by the Institute of Transportation Engineers (ITE). Trip Generation is a tool for planners, transportation professionals, zoning boards, and others who are interested in estimating the number of vehicle trips generated by a proposed development or land use. This document is based on thousands of trip generation studies submitted to the Institute by public agencies, developers, consulting firms, and associations.

The number of trips anticipated to be generated by the 142 residential units in Building 1 was estimated using ITE Trip Generation Land Use Code 222, Multifamily Housing (High-Rise), which sets forth trips generated at facilities similar to the proposed use. The number of trips anticipated to be generated by the 1,594± SF of retail space was estimated using ITE Trip Generation Land Use Code 822, Strip Retail Plaza (<40k), which sets forth trips generated at facilities similar to the proposed use. The number of trips anticipated to be generated by the 2,000± SF of community space was estimated by the anticipated size of groups for community activities using the space during the peak hours.

The number of trips anticipated to be generated by the 61 residential units in Building 2 was estimated using ITE Trip Generation Land Use Code 221, Multifamily Housing (Mid-Rise), which sets forth trips generated at facilities similar to the proposed use.

The number of trips anticipated to be generated by the 14 residential units in Building 3 was estimated using ITE Trip Generation Land Use Code 220, Multifamily Housing (Low-Rise), which sets forth trips generated at facilities similar to the proposed use. The number of trips anticipated to be generated by the approximately 100 students in the pre-k facility was estimated using ITE Trip Generation Land Use Code 565, Day Care Center, which sets forth trips generated at facilities similar to the proposed use. The number of trips anticipated to be generated by the 20,975,000± SF parish space was estimated using ITE Trip Generation Land Use Code 560, Church, which sets forth trips generated at facilities similar to the proposed use.

Travel Mode Share

Due to the urban area and proximity to public transportation, pedestrian and bicycle amenities, and limited on-street and off-street parking, it is anticipated that travel to the development will be multimodal in nature and not all by vehicles. The vehicle trips from the trip generation were converted to person-trips by using vehicle occupancy rates (VOR) provided by "Summary of Travel Trends: 2017 National Household Travel Survey" from the Federal Highway Administration (FHWA), July 2018 and distributed to the various travel modes. The BTD publishes split rates for transit, walk/bicycle, and vehicle travel modes for various neighborhoods in Boston. The Proposed Project is located in Roxbury (Area 15). The split percentages of the travel mode shares can be found in Table No. 4-1.

Table No. 4-1
Travel Mode Shares
Split Percentages

ITE Land Use	Time Period	Direction	Walk/Bike Trips	Transit Trips	Vehicle Trips	Vehicle Occupancy Rate
Residential (Land Use Codes 220, 221 and 222)	Daily	Enter	27%	17%	56%	1.18
		Exit	27%	17%	56%	
	A.M. Peak Hour	Enter	27%	19%	54%	
		Exit	27%	29%	44%	
	P.M. Peak Hour	Enter	27%	29%	44%	
		Exit	27%	19%	54%	
Community Space 2,100 SF	Daily	Enter	35%	12%	53%	2.10
		Exit	35%	12%	53%	
	A.M. Peak Hour	Enter	36%	13%	51%	
		Exit	37%	21%	42%	
	P.M. Peak Hour	Enter	37%	21%	42%	
		Exit	36%	13%	51%	
Retail Space (Land Use Code 822) 1,450 SF	Daily	Enter	35%	12%	53%	1.82
		Exit	35%	12%	53%	
	A.M. Peak Hour	Enter	36%	13%	51%	
		Exit	37%	21%	42%	
	P.M. Peak Hour	Enter	37%	21%	42%	
		Exit	36%	13%	51%	
Pre-K (Land Use Code 565) 100 Students	Daily	Enter	27%	17%	56%	1.67
		Exit	27%	17%	56%	
	A.M. Peak Hour	Enter	27%	19%	54%	
		Exit	27%	29%	44%	
	P.M. Peak Hour	Enter	27%	29%	44%	
		Exit	27%	19%	54%	
Parish Space (Land Use Code 560) 19,000 SF	Daily	Enter	35%	12%	53%	1.67
		Exit	35%	12%	53%	
	A.M. Peak Hour	Enter	36%	13%	51%	
		Exit	37%	21%	42%	
	P.M. Peak Hour	Enter	37%	21%	42%	
		Exit	36%	13%	51%	

Project Trip Generation

The travel mode share percentages were applied to the multimodal person trips as previously mentioned. The walk/bike, transit, and vehicle trips anticipated to be generated by the Proposed Project during the A.M. and P.M. peak hours can be found in Table No. 4-2.

As shown in Table No. 4-2, the Proposed Project will generate 67 vehicle trips (37 vehicles entering and 30 vehicles exiting) during the A.M. peak hour. The project will generate 91 vehicle trips (41 vehicles entering and 50 vehicles exiting) during the P.M. peak hour.

The distribution of the anticipated new vehicle trips by direction, as well as the removal of the existing trips accessing the site, was based upon the existing trip patterns observed in the traffic count data and the expected usage of the roadways for the development, see Figure No. 4-7. These trips were added to the future no-build volumes for analysis of the future build conditions, see Figure No. 4-8.

Table No. 4-2
Trip Generation Summary
Total New Trips

ITE Land Use	Time Period	Direction	Walk/Bike Trips	Transit Trips	Vehicle Trips
Residential (Land Use Code 220) 15 Units	Daily	Enter	11	7	20
		Exit	11	7	21
	A.M. Peak Hour	Enter	1	1	2
		Exit	1	1	1
	P.M. Peak Hour	Enter	1	2	3
		Exit	1	1	2
Residential (Land Use Code 221) 62 Units	Daily	Enter	20	13	35
		Exit	20	13	34
	A.M. Peak Hour	Enter	3	2	4
		Exit	2	3	4
	P.M. Peak Hour	Enter	4	2	3
		Exit	3	1	5
Residential (Land Use Code 222) 140 Units	Daily	Enter	48	30	84
		Exit	48	30	84
	A.M. Peak Hour	Enter	5	4	8
		Exit	5	5	7
	P.M. Peak Hour	Enter	4	5	6
		Exit	4	3	8
Community Space 2,100 SF	Daily	Enter	19	6	13
		Exit	19	6	14
	A.M. Peak Hour	Enter	0	0	0
		Exit	0	0	0
	P.M. Peak Hour	Enter	20	11	10
		Exit	19	7	13
Retail Space (Land Use Code 822) 1,450 SF	Daily	Enter	25	9	21
		Exit	25	9	21
	A.M. Peak Hour	Enter	1	0	1
		Exit	1	0	1
	P.M. Peak Hour	Enter	1	1	1
		Exit	1	0	0
Pre-K (Land Use Code 565) 100 Students	Daily	Enter	91	57	113
		Exit	91	57	113
	A.M. Peak Hour	Enter	17	12	20
		Exit	17	18	16
	P.M. Peak Hour	Enter	16	18	16
		Exit	16	12	20
Parish Space (Land Use Code 560) 19,000 SF	Daily	Enter	42	14	38
		Exit	42	14	39
	A.M. Peak Hour	Enter	1	1	2
		Exit	2	1	1
	P.M. Peak Hour	Enter	3	2	2
		Exit	2	1	2
		Daily Vehicle Total			650
		A.M. Peak Hour Vehicle Total			67
		P.M. Peak Hour Vehicle Total			91

Figure No. 4-7 **Combination of Proposed Trip Generation and Removal of Existing Site Trips Diagram** **Not to Scale**

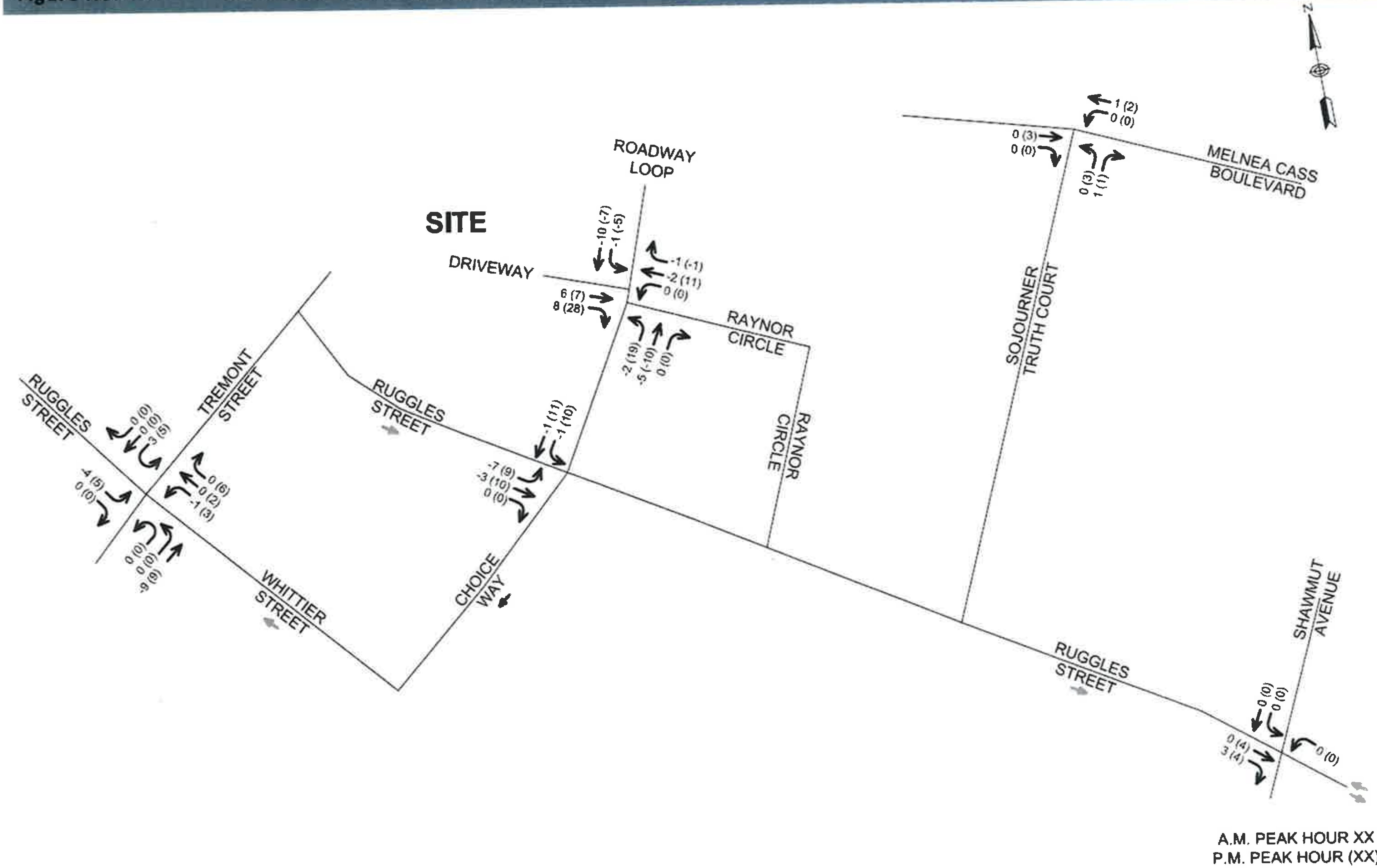
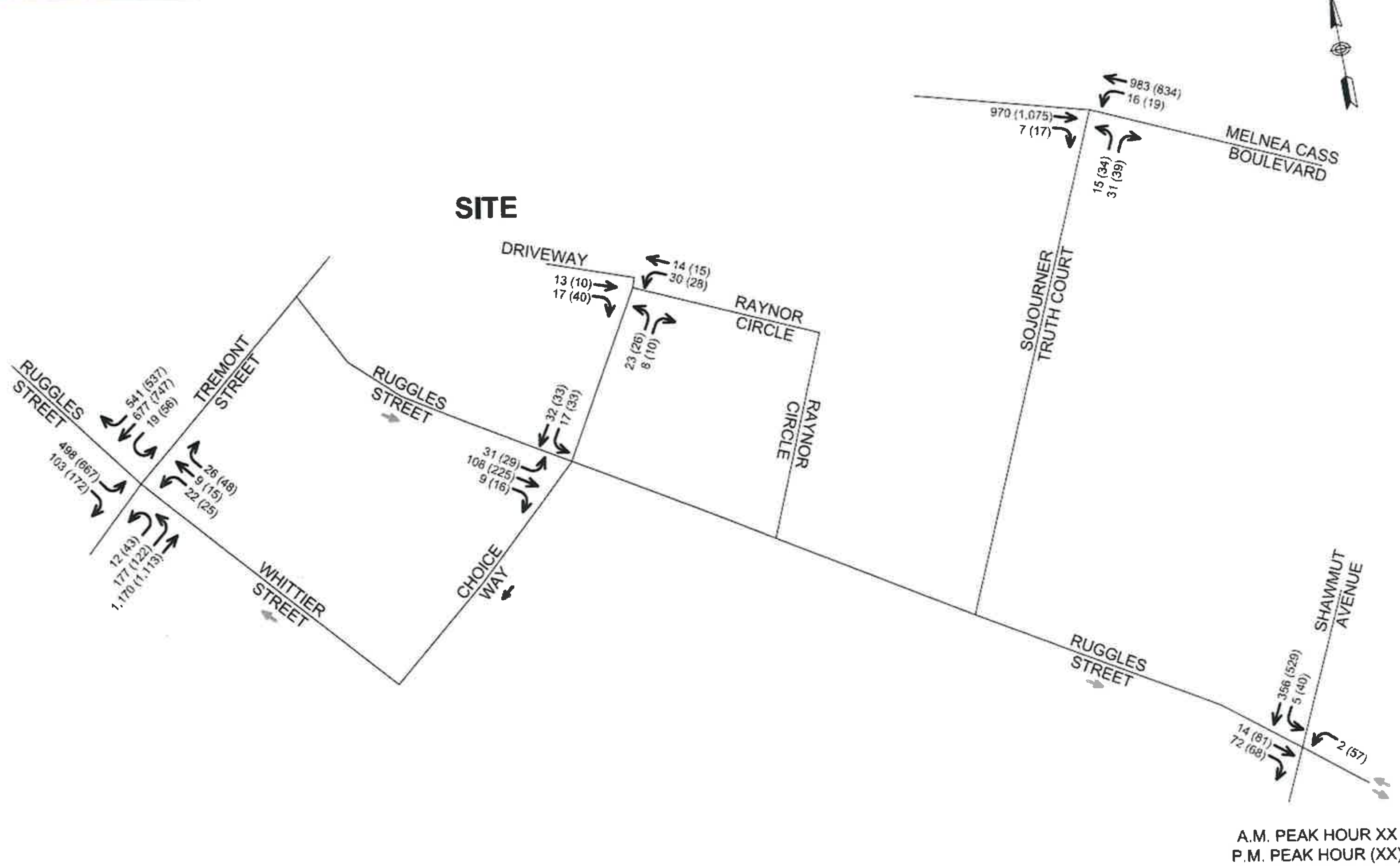


Figure No. 4-8 Future Build Conditions Traffic Volume Diagram

Not to Scale



4.4 Traffic Capacity Analysis

Capacity analyses in this report focus on the peak hours of traffic volume because they represent the most critical periods for operations and have the highest capacity requirements. If traffic operates at acceptable levels of service during the peak hours, then it will operate at acceptable levels during the remaining hours of the day.

The intersection capacity analysis was prepared using the Highway Capacity Manual (HCM), 2016 edition, published by the Transportation Research Board. The analysis utilizes the concept of Level of Service. The term "level of service" is defined as a qualitative measure describing operational conditions within a traffic stream based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience. There are six levels of service utilized for the analysis. They are given letter designations from A to F, with Level of Service A representing the most favorable operating conditions and Level of Service F the least. Level of Service F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay. The level of service criteria for both unsignalized and signalized intersections is shown in Table No. 4-3.

The computer software, Synchro 11, was utilized to perform the capacity analysis for the study area.

Table No. 4-3
Level of Service Criteria for Unsignalized and Signalized Intersections
Source: Highway Capacity Manual, 2016

Level Of Service	Average Total Delay (Second/Vehicle)	
	Unsignalized Intersection	Signalized Intersection
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Unsignalized intersection capacity analysis was undertaken for the intersection of Ruggles Street, Raynor Circle, and Choice Way and the intersection of Raynor Circle, the existing Project Site driveway, and the existing parking loop. A summary of the level of service for these intersections is shown in Table Nos. 4-4 and 4-5 for the A.M. and P.M. peak hour, respectively.

Signalized intersection capacity analysis was undertaken for the intersections of Melnea Cass Boulevard and Sojourner Truth Court; Tremont Street, Ruggles Street, and Whittier Street; and Ruggles Street and Shawmut Avenue. A summary of the level of service for these intersections is shown in Table Nos. 4-6 and 4-7 for the A.M. and P.M. peak hour, respectively.

Table No. 4-4
A.M. Peak Hour – Capacity Analysis Summary
Unsignalized Intersections

Intersection/ Critical Movement	2022 Existing				2027 No-Build				2027 Build			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)
Ruggles Street/Raynor Circle/Choice Way												
Raynor Circle (SB)	**B**	**11.2**	0.111	0.4	**B**	**11.4**	0.114	0.4	**B**	**11.1**	0.105	0.3
Ruggles St. (EB)	**A**	**2.2**	-	-	**A**	**2.0**	-	-	**A**	**1.8**	-	-
Ruggles St. (EB-Left)	A	7.5	0.037	0.1	A	7.5	0.037	0.1	A	7.4	0.030	0.1
Raynor Circle/Existing Site Driveway/Existing Parking Loop												
Raynor Circle (NB)	**A**	**5.0**	-	-	**A**	**5.0**	-	-	-	-	-	-
Raynor Circle (NB-Left)	A	7.3	0.027	0.1	A	7.3	0.027	0.1	-	-	-	-
Parking Loop (SB)	**A**	**1.2**	-	-	**A**	**1.2**	-	-	-	-	-	-
Parking Loop (SB-Left)	A	7.3	0.003	0	A	7.3	0.003	0	-	-	-	-
Existing Driveway (EB)	**A**	**9.2**	0.044	0.1	**A**	**9.2**	0.044	0.1	-	-	-	-
Raynor Circle (WB)	**B**	**10.3**	0.106	0.4	**B**	**10.3**	0.106	0.4	-	-	-	-
Intersection/ Critical Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Raynor Circle/Proposed Driveway												
Raynor Circle (NB)	-	-	-	-	-	-	-	-	**A**	**5.6**	0.02	2
Proposed Driveway (EB)	-	-	-	-	-	-	-	-	**A**	**9.2**	0.08	7
Raynor Circle (WB)	-	-	-	-	-	-	-	-	**B**	**10.4**	0.10	8

Table No. 4-5
P.M. Peak Hour - Capacity Analysis Summary
Unsignalized Intersections

Intersection/ Critical Movement	2022 Existing				2027 No-Build				2027 Build			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (vehicles)
Ruggles Street/Raynor Circle/Choice Way												
Raynor Circle (SB)	**B**	**11.5**	0.109	0.4	**B**	**12.0**	0.117	0.4	**B**	**13.1**	0.185	0.7
Ruggles St. (EB)	**A**	**1.0**	-	-	**A**	**0.9**	-	-	**A**	**1.2**	-	-
Ruggles St. (EB-Left)	A	7.4	0.023	0.1	A	7.4	0.023	0.1	A	7.4	0.034	0.1
Raynor Circle/Existing Site Driveway/Existing Parking Loop												
Raynor Circle (NB)	**A**	**2.0**	-	-	**A**	**2.0**	-	-	-	-	-	-
Raynor Circle (NB-Left)	A	7.3	0.008	0.0	A	7.3	0.008	0.0	-	-	-	-
Parking Loop (SB)	**A**	**3.1**	-	-	**A**	**3.1**	-	-	-	-	-	-
Parking Loop (SB-Left)	A	7.3	0.007	0.0	A	7.3	0.007	0.0	-	-	-	-
Existing Driveway (EB)	**A**	**8.7**	0.024	0.1	**A**	**8.7**	0.024	0.1	-	-	-	-
Raynor Circle (WB)	**A**	**9.6**	0.057	0.2	**A**	**9.6**	0.057	0.2	-	-	-	-
Intersection/ Critical Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Raynor Circle/Proposed Driveway												
Raynor Circle (NB)	-	-	-	-	-	-	-	-	**A**	**5.4**	0.03	2
Proposed Driveway (EB)	-	-	-	-	-	-	-	-	**A**	**8.9**	0.08	6
Raynor Circle (WB)	-	-	-	-	-	-	-	-	**B**	**10.4**	0.08	7

Table No. 4-6
A.M. Peak Hour – Capacity Analysis Summary
Signalized Intersections

Intersection/ Critical Movement	2022 Existing				2027 No-Build				2027 Build			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Melnea Cass Boulevard/Sojourner Truth Court												
Sojourner Truth Ct. (NB)	**C**	**30.9**	0.41	32	**C**	**30.9**	0.41	32	**C**	**30.8**	0.41	32
Melnea Cass Blvd (EB)	**A**	**8.1**	0.45	255	**A**	**8.2**	0.46	260	**A**	**8.2**	0.46	260
Melnea Cass Blvd (WB)	**A**	**9.0**	0.51	283	**A**	**9.2**	0.53	296	**A**	**9.2**	0.53	297
Tremont Street/Ruggles Street/Whittier Street												
Tremont St. (NB)	**B**	**18.0**	-	-	**B**	**18.9**	-	-	**B**	**18.8**	-	-
Tremont St. (NB-Thru)	B	12.3	0.46	220	B	13.8	0.48	245	B	13.7	0.48	242
Tremont St (NB-Left)	D	52.3	0.71	172	D	44.5	0.67	220	D	44.3	0.67	219
Tremont St. (SB)	**C**	**27.1**	-	-	**F**	**121.6**	-	-	**F**	**138.7**	-	-
Tremont St. (SB-Thru)	D	44.5	0.81	450*	F	214.2	1.38	518*	F	244.0	1.45	532*
Tremont St. (SB-Right)	A	5.1	0.62	68	A	6.7	0.70	73	A	6.7	0.70	73
Ruggles St. (EB)	**F**	**125.3**	-	-	**F**	**139.3**	-	-	**F**	**136.2**	-	-
Ruggles St. (EB-Left)	F	151.7	1.20	334*	F	169.2	1.25	350*	F	165.6	1.24	347*
Ruggles St. (EB-Right)	A	3.1	0.24	17	A	2.8	0.22	17	A	2.8	0.22	17
Whittier St (WB)	**D**	**47.2**	0.49	42	**D**	**53.8**	0.59	59	**D**	**52.9**	0.59	57
Ruggles Street/Shawmut Avenue												
Shawmut Ave. (SB)	**A**	**6.2**	0.34	133	**A**	**6.4**	0.35	137	**A**	**6.4**	0.35	138
Ruggles St. (EB)	**B**	**11.4**	0.32	12	**B**	**11.5**	0.34	13	**B**	**11.4**	0.35	13
Ruggles St. (WB)	**B**	**18.5**	0.03	3	**B**	**18.5**	0.03	3	**B**	**18.5**	0.03	3

*Volume exceeds capacity

Table No. 4-7
P.M. Peak Hour – Capacity Analysis Summary
Signalized Intersections

Intersection/ Critical Movement	2022 Existing				2027 No-Build				2027 Build			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Melnea Cass Boulevard/Sojourner Truth Court												
Sojourner Truth Ct. (NB)	**D**	**37.1**	0.55	66	**D**	**37.1**	0.55	66	**D**	**41.1**	0.58	73
Melnea Cass Blvd (EB)	**B**	**10.4**	0.56	349	**B**	**10.6**	0.57	359	**B**	**10.7**	0.58	360
Melnea Cass Blvd (WB)	**B**	**10.7**	0.55	283	**B**	**10.8**	0.57	292	**B**	**11.0**	0.57	294
Tremont Street/Ruggles Street/Whittier Street												
Tremont St. (NB)	**B**	**20.0**	-	-	**C**	**24.6**	-	-	**C**	**26.7**	-	-
Tremont St. (NB-Thru)	B	15.1	0.50	241	B	17.7	0.55	261	B	18.9	0.56	273
Tremont St (NB-Left)	D	47.3	0.64	220*	E	61.7	0.80	266*	E	69.0	0.85	283*
Tremont St. (SB)	**F**	**89.4**	-	-	**F**	**202.1**	-	-	**F**	**222.5**	-	-
Tremont St. (SB-Thru)	F	151.5	1.23	491*	F	338.7	1.67	594*	F	371.8	1.75	607*
Tremont St. (SB-Right)	A	4.6	0.62	64	A	4.7	0.62	64	A	4.7	0.62	64
Ruggles St. (EB)	**F**	**191.8**	-	-	**F**	**207.0**	-	-	**F**	**210.8**	-	-
Ruggles St. (EB-Left)	F	241.3	1.43	455*	F	270.8	1.50	482*	F	275.2	1.51	486*
Ruggles St. (EB-Right)	A	3.2	0.30	13	A	3.8	0.39	13	A	4.0	0.40	13
Whittier St (WB)	**E**	**57.3**	0.62	58	**E**	**60.1**	0.68	71	**E**	**61.0**	0.71	80
Ruggles Street/Shawmut Avenue												
Shawmut Ave. (SB)	**B**	**15.1**	0.60	334*	**B**	**15.9**	0.62	375*	**B**	**16.4**	0.63	385*
Ruggles St. (EB)	**C**	**23.2**	0.54	70	**C**	**23.2**	0.56	73	**C**	**23.6**	0.57	78
Ruggles St. (WB)	**C**	**26.2**	0.28	53	**C**	**26.1**	0.27	54	**C**	**26.3**	0.27	54

*Volume exceeds capacity

4.4.1 Existing Conditions (2022)

The unsignalized intersection capacity analysis shows that the intersection of Ruggles Street, Raynor Circle, and Choice Way operates at excellent levels of service during the A.M. and P.M. peak hours. The intersection operates at LOS A, with the exception of the southbound approach, which operates at LOS B during the A.M. and P.M. peak hours.

The unsignalized intersection capacity analysis shows that the intersection of Raynor Circle, the existing site driveway, and the parking loop operates at excellent levels of service during the A.M. and P.M. peak hours. The intersection operates at LOS A, with the exception of the westbound approach on Raynor Circle, which operates at LOS B during the A.M. peak hour.

The signalized intersection capacity analysis shows that the intersection of Melnea Cass Boulevard and Sojourner Truth Court operates at LOS A during the A.M. peak hour and LOS B during the P.M. peak hour with the exception of the northbound approach, which operates at LOS C and LOS D during the A.M. and P.M. peak hours, respectively.

The intersection of Tremont Street, Ruggles Street, and Whittier Street operates at adequate levels of service during the A.M. peak hour, with the exception of the eastbound approach which operates at LOS F. During the P.M. peak hour, the intersection operates at poor levels of service with the exception of the northbound approach, which operates at LOS B.

The intersection of Ruggles Street and Shawmut Avenue operates at excellent levels of service during the A.M. peak hour, where the intersection operates at LOS A for the southbound approach and LOS B for the eastbound and westbound approaches. During the P.M. peak hour, the intersection operates at LOS B for the southbound approach and LOS C for the eastbound and westbound approaches.

4.4.2 Future No-Build Conditions (2027)

Under no-build conditions, the unsignalized intersection capacity analysis shows that the levels of service at the intersections of Ruggles Street, Raynor Circle, and Choice Way and Raynor Circle, the existing Project Site driveway, and the parking loop remain unchanged during the A.M. and P.M. peak hours.

Under no-build conditions, the signalized capacity analysis shows that the levels of service for the intersection of Melnea Cass Boulevard and Sojourner Truth Court remain unchanged during the A.M. and P.M. peak hours.

During the A.M. peak hour, the levels of service at the intersection of Tremont Street, Ruggles Street, and Whittier Street remain the same with the exception of the southbound approach, which changes from LOS C to LOS F. During the P.M. peak hour, the levels of service at the intersection remain the same with the exception of the northbound approach which changes from LOS B to LOS C.

The levels of service at the intersection of Ruggles Street and Shawmut Avenue remain unchanged during the A.M. and P.M. peak hours.

4.4.3 Future Build Conditions (2027)

Under future build conditions, the unsignalized intersection capacity analysis shows that the levels of service at the intersection of Ruggles Street, Raynor Circle, and Choice Way remain unchanged from the future no-build condition during the A.M. and P.M. peak hours.
The intersection of Raynor Circle and the proposed site driveway will operate at LOS A for the northbound and eastbound approach and LOS B for the westbound approach during the A.M. and P.M. peak hours.

The signalized intersection capacity analysis shows that levels of service for the intersections of Melnea Cass Boulevard and Sojourner Truth Court; Tremont Street, Ruggles Street, and Whittier Street; and Ruggles Street and Shawmut Avenue remain unchanged from the future no-build conditions during the A.M. and P.M. peak hours.

4.4.4 Potential Mitigation

Adjustments to signal timings, phasing, and minor geometric improvements may optimize operations and reduce delays at existing signalized intersections. Due to the poor levels of service at the intersection of Tremont Street, Ruggles Street, and Whittier Street during the future no-build and build A.M. and P.M. peak hours, it is recommended that the City of Boston consider the construction of a southbound U-turn lane at the current raised median and rephase the signal so that the southbound U-turn movement phase is paired with the northbound left and U-turn movements. The city could provide better vehicle access to the residential neighborhood off Ruggles Street and its connecting roadways, which are located to the east of Tremont Street, with these suggested intersection improvements. In the mitigation analysis, the green phase for Ruggles Street eastbound right turns during the Tremont Street northbound left turn phase has been eliminated to remove its conflict with northbound U-turn movements. Mitigation results with these implementations are shown in Table Nos. 4-8 and 4-9.

During the A.M. peak hour, the northbound approach changes from LOS B to LOS C, the southbound approach improves from LOS F to LOS D, the eastbound approach improves from LOS F to LOS E, and the westbound approach remains the same when comparing the future build conditions (with no mitigation) with future build conditions with mitigation.

During the P.M. peak hour, the northbound approach changes from LOS C to LOS D, the southbound approach improves from LOS F to LOS E, the eastbound approach remains at LOS F, however, the delay is significantly reduced, and the westbound approach improves from LOS E to LOS D when comparing the future build conditions (with no mitigation) with future build conditions with mitigation.

Although the northbound approach experiences an increase in delay during the A.M. and P.M. peak hours, the southbound and eastbound levels of service significantly improve during the A.M. and P.M. peak hours, and the westbound approach improves during the P.M. peak hour.

It should be noted that there were previous plans to convert Whittier Street to a two-way roadway under the construction of "Tremont Crossing/Parcel P-3," however, the project was cancelled and the improvements to the intersection were not implemented. If Whittier Street is converted to a two-way street in the future, with the addition of Cabot Street or Choice Way also being converted to two-way access, this would improve access to and from the site and the surrounding neighborhood.

It is recommended that the City of Boston consider installing a "U-Turn Yield to Right Turn" sign (R10-16) on the northbound approach, or a similar type of sign on the eastbound approach, to warn drivers of turning vehicles from another approach, which also is permitted to turn at the same time. The City of Boston also could consider not allowing the northbound U-Turns or eastbound right turns during the same phase to avoid potential conflicts. If the southbound U-Turn- lane were to be added, similar U-Turn signs should also be considered related to that movement.

Table No. 4-8
A.M. Peak Hour – Mitigation Options
Signalized Intersections

Intersection / Critical Movement	2027 No-Build (No Mitigation)				2027 Build (No Mitigation)				2027 Build Mitigation			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Tremont Street/Ruggles Street/Whittier Street												
Tremont St. (NB)	**B**	**18.9**	-	-	**B**	**18.8**	-	-	**C**	**30.8**	-	-
Tremont St. (NB-Thru)	B	13.8	0.48	245	B	13.7	0.48	242	C	26.3	0.62	356
Tremont St (NB-Left)	D	44.5	0.67	220	D	44.3	0.67	219	D	53.4	0.74	274*
Tremont St. (SB)	**F**	**121.6**	-	-	**F**	**138.7**	-	-	**D**	**40.6**	-	-
Tremont St. (SB-Thru)	F	214.2	1.38	518*	F	244.0	1.45	532*	E	64.8	0.95	382*
Tremont St. (SB-Right)	A	6.7	0.70	73	A	6.7	0.70	73	B	10.6	0.77	113
Tremont St. (SB-U-Turn)	-	-	-	-	-	-	-	-	E	61.1	0.46	29
Ruggles St. (EB)	**F**	**139.3**	-	-	**F**	**136.2**	-	-	**E**	**71.1**	-	-
Ruggles St. (EB-Left)	F	169.2	1.25	350*	F	165.6	1.24	347*	F	85.2	1.00	309*
Ruggles St. (EB-Right)	A	2.8	0.22	17	A	2.8	0.22	17	A	7.3	0.38	30
Whittier St (WB)	**D**	**53.8**	0.59	59	**D**	**52.9**	0.59	57	**D**	**41.7**	0.57	42

*Volume exceeds capacity

Table No. 4-9
P.M. Peak Hour – Mitigation Options
Signalized Intersections

Intersection / Critical Movement	2027 No-Build (No Mitigation)				2027 Build (No Mitigation)				2027 Build Mitigation			
	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)	LOS	Delay (s)	V/C Ratio	95th Percentile Queues (feet)
Tremont Street/Ruggles Street/Whittier Street												
Tremont St. (NB)	**C**	**24.6**	-	-	**C**	**26.7**	-	-	**D**	**40.2**	-	-
Tremont St. (NB-Thru)	B	17.7	0.55	261	B	18.9	0.56	273	D	35.8	0.78	448*
Tremont St (NB-Left)	E	61.7	0.80	266*	E	69.0	0.85	283*	E	63.8	0.81	273*
Tremont St. (SB)	**F**	**202.1**	-	-	**F**	**222.5**	-	-	**E**	**66.5**	-	-
Tremont St. (SB-Thru)	F	338.7	1.67	594*	F	371.8	1.75	607*	F	109.4	1.11	458*
Tremont St. (SB-Right)	A	4.7	0.62	64	A	4.7	0.62	64	B	10.8	0.77	122
Tremont St. (SB-U-Turn)	-	-	-	-	-	-	-	-	E	61.6	0.57	76
Ruggles St. (EB)	**F**	**207.0**	-	-	**F**	**210.8**	-	-	**F**	**107.6**	-	-
Ruggles St. (EB-Left)	F	270.8	1.50	482*	F	275.2	1.51	486*	F	137.9	1.18	435*
Ruggles St. (EB-Right)	A	3.8	0.39	13	A	4.0	0.40	13	B	10.5	0.55	31
Whittier St (WB)	**E**	**60.1**	0.68	71	**E**	**61.0**	0.71	80	**D**	**46.7**	0.70	52

*Volume exceeds capacity

4.5 Transportation Demand Management

A Transportation Demand Management (TDM) program will be implemented by the Proponent in support of the City of Boston's efforts to minimize vehicle traffic related impacts. The Proponent will market the Project Site's accessibility to public transit and transportation services.

The TDM measures encourage non-vehicular modes of travel and the use of public transportation infrastructure in order to reduce drive-alone rates. The following TDM measures will be implemented in order to encourage the use of alternative modes of travel:

- TMA Membership: The Proponent will join and participate in a local Transportation Management Association (TMA) when one becomes available for the Roxbury neighborhood.
- On-Site TDM Coordinator: The Proponent will designate a staff member whose duties will include overseeing transportation related issues, including parking, service, loading, and deliveries and to promote alternative transportation options.
- Marketing, Events, and Real-Time Transit Information: The Proponent will distribute annual marketing materials promoting multimodal travel options, and benefits. The Proponent will host two annual events promoting multimodal travel and provide real-time transit information in building lobbies/common space.
- Unbundled, Market Rate Parking: The Proponent will offer tenants the option to lease or purchase building space without the inclusion of a market rate price for on-site parking. Parking may be purchased separately at market rate.
- Mixed-Use Development: The Proponent is constructing secondary land uses which will offset trips elsewhere. The Project Site includes a childcare component.

- Parking Reduction: The Proponent will provide on-site parking with at least an estimated 25% reduction of the maximum allowed by the BTD's Maximum Parking Ratio Guidelines.

- MBTA PERQ Program: The Proponent will facilitate transit pass purchases through participation in the program.

- Bicycle Parking/Storage: The Proponent will provide bicycle storage in the buildings on-site. Bike parking will also be included on-site. The TDM measures will be included in the Transportation Access Plan Agreement (TAPA) with BTD.

4.6 Evaluation of Short-Term Construction Impacts

A Construction Management Plan (CMP) that details the construction schedule, staging, parking, delivery, and associated construction impacts will be submitted for approval by the BTD.

To minimize transportation impacts during construction, workers will be encouraged to use public transportation or carpool, there will be limited construction worker on-site parking, and secure spaces will be provided for on-site worker supplies and tools, so they are not needed to be brought to the Project Site each day. These measures will be incorporated into the CMP. All implemented measures will be documented in the CMP and will be executed with the City of Boston prior to the beginning of construction.

5.0 SUSTAINABLE DESIGN

5.1 Project Overview

The Project will achieve compliance with the City of Boston's Article 37 Green Buildings Zoning Code and Climate Resiliency Policy. Consistent with these goals, the Proposed Project will be designed and constructed to meet LEED Gold under the LEED BD+C v4: Multifamily Mid-Rise rating system. A preliminary LEED checklist shows a total of 67.5 points, reaching Gold certifiability. Additionally, the project team will incorporate principles and practices of the Passive House Institute PHIUS 2021 certification for compliance with Massachusetts Stretch Energy Code.

5.2 Integrative Process

An integrative process will facilitate the design and development team's achievement of green objectives throughout the project life cycle. The team includes skill sets in architecture, civil engineering, mechanical/electrical/plumbing, energy engineering, and sustainable design. The Proposed Project will include Passive House consultant and verifier, LEED Accredited Professional and LEED Green Raters and Passive House Verifiers to ensure a complete, integrated approach to design, construction, operations, and maintenance. Regular design meetings will be held to confirm the entire team is engaged throughout the design and construction process. As the Proposed Project moves into construction, on-site trainings, inspections, and testing will ensure the project is built according to these requirements.

5.3 Location and Transportation

The Project Site will allow residents to minimize vehicle trips and encourage the use of public transportation, walking, and bicycling. The Proposed Project, with its central location, will enable residents ease of use of various community resources within one-half mile walking distance. The site is within ½ mile walking distance to the MBTA Ruggles Station and several bus routes. The Proposed Project is connected to a bicycle network with dedicated lanes and will provide secure bike storage for residents. The neighborhood provides open space opportunities including Whittier and Madison Park Playground within one-half mile walking distance.

5.4 Site Sustainability

Low-impact development and green infrastructure practices will be incorporated into the Project Site design. The site will include landscaping with plants that are native and drought tolerant. An erosion and sedimentation control plan will be implemented to meet LEED prerequisites of construction activity pollution prevention. The Proposed Project will seek out stormwater infiltration opportunities to maximize the building's roof drains directed to an on-site storm water system. The team will develop a construction and demolition waste management plan that establishes waste diversion goals.

5.5 Water Efficiency

The water consumption goals will be achieved by installing Water-Sense labeled low-flow indoor water fixtures, including showerheads, toilets, and faucets. All water using appliances will be high efficiency and low water use. The landscape plan will introduce only native and/or adapted plant species, reducing the need for irrigation. Any irrigation required for landscape maintenance will include smart scheduling technology to reduce unnecessary water consumption.

5.6 Energy Efficiency

The Proposed Project will be designed to exceed energy code by demonstrating compliance with Passive House standards and Energy Star Multifamily New Construction certification. The Proposed Project is designed to be all-electric with a high performing envelope. ERVs will be utilized to reduce the energy required to ventilate the building. The project team will implement a robust building envelope and airtight construction with low air change rates and high-performance windows and doors to manage energy use and minimize leakage. Fundamental commissioning will be pursued to verify and ensure that building elements and systems are designed, installed, and calibrated to operate as intended. The building will maximize the available roof space and will install PV where feasible.

5.7 Materials and Resources

Careful material selection will be performed for the Proposed Project. All wood in the buildings will be non-tropical to comply with the LEED requirement of environmentally responsible forest management. Where possible, the Proposed Project hopes to integrate products that are recycled and reclaimed. The Proposed Project will use locally sourced materials, such as aggregate located within 100 miles of the Project Site to promote the local economy and avoid the effects of long-distance transport. Durability risks will be assessed early in the Proposed Project, and appropriate design, materials, and construction practices will be followed. The LEED interior moisture control measures and the ENERGY STAR water management checklist requirements will be implemented and verified by a 3rd party verification team.

5.8 Indoor Environmental Quality

A major focus of the design and choice of buildings will be on the durability of the building, which is key to occupant comfort and health. The Proposed Project will be designed so that all in-unit spaces and all common area spaces comply with the requirements of ASHRAE 62.2-2010. The Proposed Project will utilize continuous ventilation to exhaust air from bathrooms and kitchens and the system will be balanced by providing fresh air to each residential unit. Testing at the end of construction will ensure that ventilation rates meet the design. Air and odors from the individual units will be contained through compartmentalizing of the units. The Proposed Project will be designed and constructed to meet LEED requirements of allowable air leakage rates of 0.30 CFM50 per square foot of enclosure and will be verified by testing to ensure performance at the end of construction. All interior paints, adhesives, and insulation will meet low-emitting materials and all composite wood materials will meet low- or no-added formaldehyde requirements.

5.9 Innovation

Credits will be achieved for including a LEED Homes Accredited Professional and achieving one Exemplary Performance Credit for Community Resources.

5.10 Regional Priority

Regional priority credits are determined by the USGBC based on zip code. If certain point thresholds are met in these categories, an additional point is awarded. The project is eligible for points in the following category: Annual Energy Use.

5.11 Zero Carbon Approach

In support of the City of Boston's Resiliency and GHG emissions reductions goals, including Carbon Neutral Boston 2050 and proposed Zero Net Carbon Zoning, the Project Team is assessing the potential for a Zero Net (Operational) Carbon Building. Designed to adhere to the PHIUS 2021 passive house standard, the proposed buildings incorporate all-electric mechanical systems and high-performance envelope, resulting in minimal energy consumption. To achieve a state of zero net carbon, further elements required involve the incorporation of on-site renewable energy sources and the exploration of off-site renewable procurement. The Owner is presently in the process of assessing available options for these components.

Building 1	
Modeling Parameter	**Proposed Design**
Roof	R-30
Wall Assembly – Concrete	R-18.9
Wall Assembly – Metal	R-20.7
Slab	R-0.6
Residential Windows	U Value - 0.22 SHGC - 0.20
Storefront Windows	U Value - 0.19 SHGC - 0.20
Window to Wall Ratio	.29
HVAC System	Central Heat Pump
Exhaust Air Energy Recovery	80.1% Efficiency
Hot Water Type	Heat Pump 3.5 Efficiency
Air Tightness	0.06 CFM50/Sq Ft Shell
Lighting Power Density (LPD)	PHIUS multifamily loads

Energy Modeling Results

Total Energy Consumption

	Electricity (kWh/yr)	Natural Gas (therms/yr)	Total (kWh/yr)	Energy Use Intensity (kBtu/sf/yr)
Proposed Design	816,009	0	816,009	5.3

Total GHG Emissions

	Electricity (tons/yr)	Natural Gas (tons/yr)	Total (tons/yr)	GHG Intensity (kg CO2e/sf/yr)
Proposed Design	242	0	242	1.42

Building 2	
Modeling Parameter	**Proposed Design**
Roof	R-36
Walls Assembly	R-16.5
Slab	R-0.4
Windows	U Value - 0.19 SHGC - 0.30
Window to Wall Ratio	.27
HVAC System	Individual Heat Pump
Exhaust Air Energy Recovery	80.1% efficiency
Hot Water Type	Heat Pump 3.5 Efficiency
Air Tightness	0.06 CFM50/Sq Ft Shell
Lighting Power Density (LPD)	PHIUS multifamily loads

Energy Modeling Results

Total Energy Consumption

	Electricity (kWh/yr)	Natural Gas (therms/yr)	Total (kWh/yr)	Energy Use Intensity (kBtu/sf/yr)
Proposed Design	401,003	0	401,003	5.6

Total GHG Emissions

	Electricity (tons/yr)	Natural Gas (tons/yr)	Total (tons/yr)	GHG Intensity (kg CO2e/sf/yr)
Proposed Design	119	0	119	1.43

Building 3	
Modeling Parameter	**Proposed Design**
Roof	R-48
Walls Assembly	R-30.5
Slab to Garage	R-0.40.4
Windows	U Value - 0.15 SHGC – 0.20
Window to Wall Ratio	.34
HVAC System	Central Heat Pump
Exhaust Air Energy Recovery	80.1% efficiency
Hot Water Type	Heat Pump 3.5 Efficiency
Air Tightness	0.06 CFM50/Sq Ft Shell
Lighting Power Density (LPD)	PHIUS multifamily loads

Energy Modeling Results

Total Energy Consumption

	Electricity (kWh/yr)	Natural Gas (therms/yr)	Total (kWh/yr)	Energy Use Intensity (kBtu/sf/yr)
Proposed Design	86,597	0	86,597	5

Total GHG Emissions	Electricity (tons/yr)	Natural Gas (tons/yr)	Total (tons/yr)	GHG Intensity (kg CO2e/sf/yr)
Proposed Design	26	0	26	1.3

Per City of Boston guidelines, the Carbon Neutral Building Assessment includes four components, described below:

1. **LOW ENERGY / ALL-ELECTRIC BUILDING SIMULATION**
The City of Boston guidance on Carbon Neutral Building Assessment suggests enhanced building envelope design characterized by high insulation (R-values) and air tightness, passive system strategies to reduce energy loads, and all-electric high efficiency space conditioning, equipment, and lighting.

   The Proposed Project includes energy efficient all-electric air source heat pump heating and cooling systems, efficient equipment and lighting, and an envelope designed to the passive house standard and is thus aligned with the CNBA.

2. **RENEWABLE AND CLEAN ENERGY**
Renewables are the next step in a carbon neutral approach once a building is designed to low energy demand. The Proposed Project plans to include on-site photovoltaic renewables. To achieve carbon neutrality, the project will look into off-site renewables, RECs or carbon offsets.

3. **ANNUAL NET PERFORMANCE CALCULATION**
The Proposed Project's energy simulation indicates an annual demand of 242 tons CO2/yr for Building 1; 119 tons CO2/yr for Building 2; and 26 tons CO2/yr for Building 3. The Proponent will investigate the opportunities for off-site power purchase, such as RECs to offset the remaining tons.

4. FIRST AND LIFE CYCLE COST ASSESSMENT

The Proponent is committed to a zero-carbon building design in the Proposed Design, and thus cost analysis is not necessary in accordance with City of Boston Carbon Neutral Building Assessment Guidelines.

LEED BD+C: Multifamily Midrise v4 - LEED v4

Drexel Village Scorecard

Location: **175 Ruggles Street, Roxbury, MA 02120**

Note: The information on this tab is READ-ONLY. To edit this information, see the Credit Category tabs.

Integrative Process		**Preliminary Y** 1 of 2	M 0	**Verified** 0
IPc	**Integrative Process**	1 of 2	*0*	

Location and Transportation		**Preliminary Y** 13 of 15	M [illegible]	**Verified** 0
LTp	Floodplain Avoidance	Required		Not Verified
Performance Path				
LTc	LEED for Neighborhood Development	0 of 15	*0*	
Prescriptive Path				
LTc	Site Selection	8 of 8	*0*	
LTc	Compact Development	3 of 3	*0*	
LTc	Community Resources	0 of 2	*0*	
LTc	Access to Transit	2 of 2	*0*	

Sustainable Sites		**Preliminary Y** 1.5 of 7	M [illegible]	**Verified** 0
SSp	Construction Activity Pollution Prevention	Required		Not Verified
SSp	No Invasive Plants	Required		Not Verified
SSc	Heat Island Reduction	0 of 2	*1*	
SSc	Rainwater Management	0 of 3	*2*	
SSc	Nontoxic Pest Control	1.5 of 2	*0*	

Water Efficiency		**Preliminary Y** 5 of 12	M [illegible]	**Verified** 0
WEp	Water Metering	Required		Not Verified
Performance Path				
WEc	Total Water Use	0 of 12	*0*	
Prescriptive Path				
WEc	Indoor Water Use	5 of 6	*0*	
WEc	Outdoor Water Use	0 of 4	*2*	

Energy and Atmosphere		**Preliminary Y** 31 of 37	M [illegible]	**Verified** 29
EAp	Minimum Energy Performance	Required		Not Verified
EAp	Energy Metering	Required		Not Verified
EAp	Education of the Homeowner, Tenant or Building Manager	Required		Not Verified
EAc	Annual Energy Use	29 of 30	*0*	29
EAc	Efficient Hot Water Distribution System	2 of 5	*0*	
EAc	Advanced Utility Tracking	0 of 2	*0*	

Materials and Resources		Preliminary Y 2.5 of 9	M 0	Verified 0
MRp	Certified Tropical Wood	Required		Not Verified
MRp	Durability Management	Required		Not Verified
MRc	Durability Management Verification	1 of 1	0	
MRc	Environmentally Preferable Products	0.5 of 5	0	
MRc	Construction Waste Management	1 of 3	0	

Indoor Environmental Quality		Preliminary Y 9.5 of 18	M 2	Verified 0
EQp	Ventilation	Required		Not Verified
EQp	Combustion Venting	Required		Not Verified
EQp	Garage Pollutant Protection	Required		Not Verified
EQp	Radon-Resistant Construction	Required		Not Verified
EQp	Air Filtering	Required		Not Verified
EQp	Environmental Tobacco Smoke	Required		Not Verified
EQp	Compartmentalization	Required		Not Verified
EQc	Enhanced Ventilation	3 of 3	0	
EQc	Contaminant Control	0.5 of 2	0	
EQc	Balancing of Heating and Cooling Distribution Systems	2 of 3	1	
EQc	Enhanced Compartmentalization	0 of 3	0	
EQc	Combustion Venting	2 of 2	0	
EQc	Enhanced Garage Pollutant Protection	1 of 1	0	
EQc	Low-Emitting Products	0 of 3	1	
EQc	No Environmental Tobacco Smoke	1 of 1	0	

Innovation		Preliminary Y 3 of 6	M 0	Verified 0
INp	Preliminary Rating	Required		Not Verified
INc	Innovation	2 of 5	0	
INc	LEED Accredited Professional	1 of 1	0	

Regional Priority		Preliminary Y 1 of 4	M 0	Verified 0
RPc	Regional Priority	1 of 4	0	

Point Floors	
The project earned at least 8 points total in Location and Transportation and Energy and Atmosphere	Yes
The project earned at least 3 points in Water Efficiency	No
The project earned at least 3 points in Indoor Environmental Quality	No

Total	Preliminary Y 67.5 of 110	M 2	Verified 29

Certification Thresholds Certified: 40-49, Silver: 50-59, Gold: 60-79, Platinum: 80-110

6.0 ENVIRONMENTAL REVIEW COMPONENT

6.1 WIND ANALYSIS

The full Wind Analysis Report is provided in Appendix F of this PNF. An Executive Summary and Methodology are provided below.

6.1.1 Executive Summary

RWDI was retained to conduct a pedestrian wind assessment for the Proposed Project in Boston, MA. The assessment was based on the wind-tunnel testing conducted for the proposed development under the *No Build* and *Build Configurations* of the site and surroundings. The results were analyzed using the regional wind climate records and evaluated against the Mean Speed and Effective Gust criteria adopted by the Boston Planning and Development Agency (BPDA). The results of the assessment are shown on the site plans included in Appendix F, along with the associated annual and seasonal wind speeds. The key findings are summarized as follows:

Effective Gust

- In the No Build scenario, wind speeds that meet the effective gust criterion are predicted at all pedestrian areas assessed on an annual basis, except for an area to the west of the site along the sidewalks of Tremont Street. The criterion is expected to be exceeded on a seasonal basis, mainly in the winter, at four other locations to the west and north of the site, all near the tall buildings that exist on Tremont Street and Columbus Avenue.

- The addition of the Proposed Project is not predicted to result in more areas with effective gust speed exceedance neither annually or seasonally. Positively, the Proposed Project is expected to eliminate some of the seasonal gust exceedances predicted in the No Build Configuration.

Mean Speed

- Mean wind speeds in the No Build configuration are generally comfortable for pedestrian use throughout the year. Wind speeds at five locations, most of which are along Tremont Street near existing tall buildings, are rated uncomfortable for walking on an annual basis.

- With the addition of the Proposed Project, wind conditions are generally expected to be similar to the No Build scenario at most areas on and around the site. The proposed buildings are expected to result in lower wind speeds at the five locations that are uncomfortable in the No Build configuration, two of which become comfortable for walking. A slight increase in wind speeds is expected around Building 1, resulting in wind speeds that are higher than ideal at the west entrance. All other entrances are found to have suitable wind conditions on an annual basis.

6.2 SHADOW ANALYSIS

6.2.1 Introduction and Methodology

As required by Section 80B-2 of the Boston Zoning Code for Large Project Review, a shadow impact analysis was conducted for the hours of 9:00 A.M., 12:00 P.M., 3:00 P.M. and 6:00 P.M. during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21) and winter solstice (December 21).

The shadow analysis presents net new shadow for the Proposed Project, as well as the existing shadows, and illustrates the incremental impact of the Proposed Project. The analysis employs the BPDA's 3D model of existing conditions and Project Site conditions after construction. The shadow study results are presented in Figures 6.2a through 6.2d. A summary of the shadow analysis and results for each respective period are provided below.

6.2.2 Vernal Equinox (March 21)

As shown on Figures 6.2a, the shadow will fall primarily on Tremont Street in the morning then move to the north with less impacts on the central plaza at noon. In the afternoon, the shadow will travel east towards Melnea Cass Boulevard and then further east with an additional coverage by existing tall adjacent buildings by 6:00pm.

6.2.3 Summer Solstice (June 21)

As shown on Figures 6.2b, shadows on summer solstice will follow the same track that vernal equinox shadows would travel along, but with much less shade from morning to the earlier afternoon. As the summer solstice is the day that has the longest period of daylight and the sun is at its highest position in the sky with the least amount of shadows falling on adjacent properties, late afternoon shadow stretches across Raynor Circle.

6.2.4 Autumnal Equinox (September 21)

As shown on Figures 6.2c, the shadow impacts from the vernal equinox and autumnal equinox is virtually identical through the day except for the late-afternoon time when existing shadows from tall neighboring buildings pretty much cover the Project Site.

6.2.5 Winter Solstice (December 21)

As shown on Figures 6.2d, the winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than any other season, causing shadows to elongate. There is little impact from new shadows on areas other than roadways and parking lots at noon and later, with 100% of the Project Site in existing shadow by 6:00 pm.

Figure 6.2a : Shadow Studies | March 21

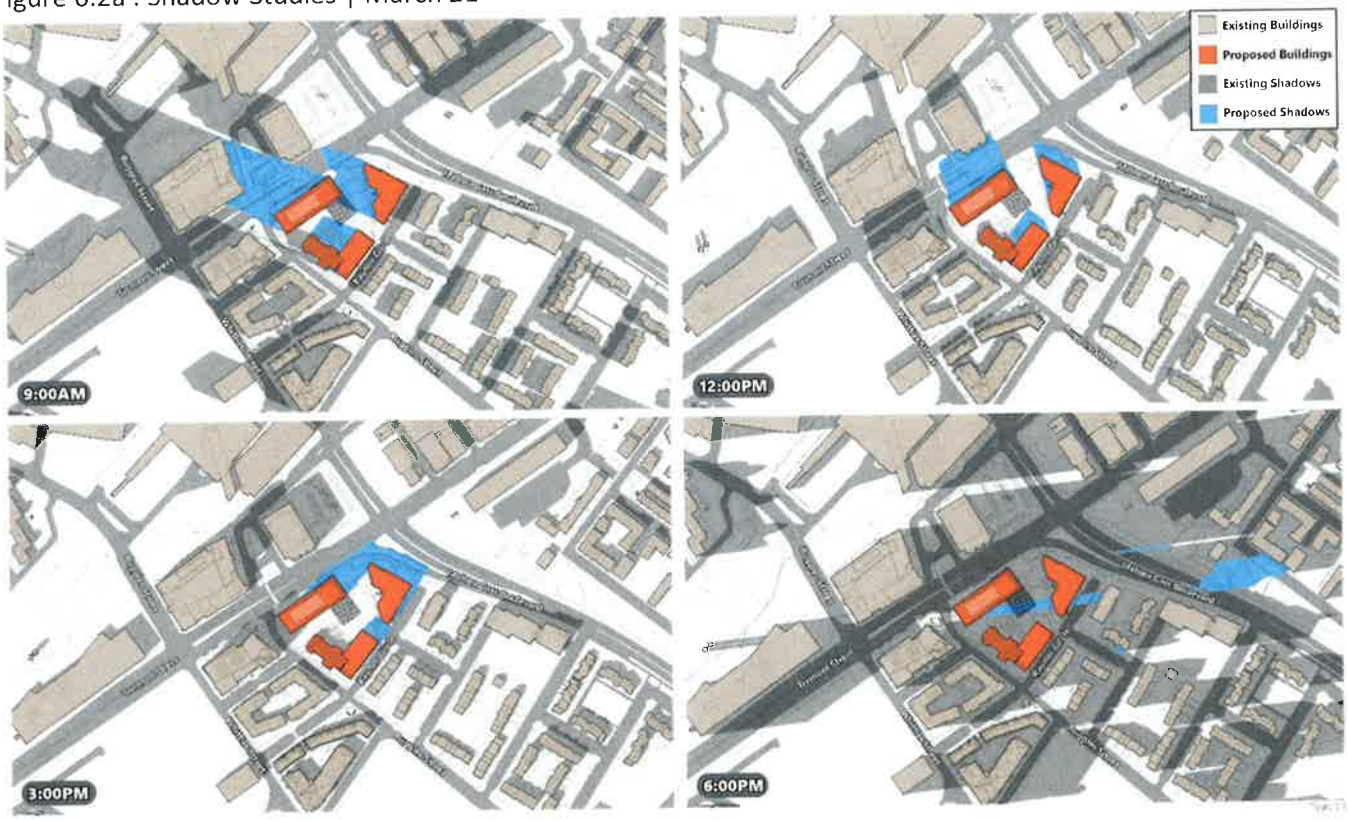


Figure 6.2b : Shadow Studies | June 21

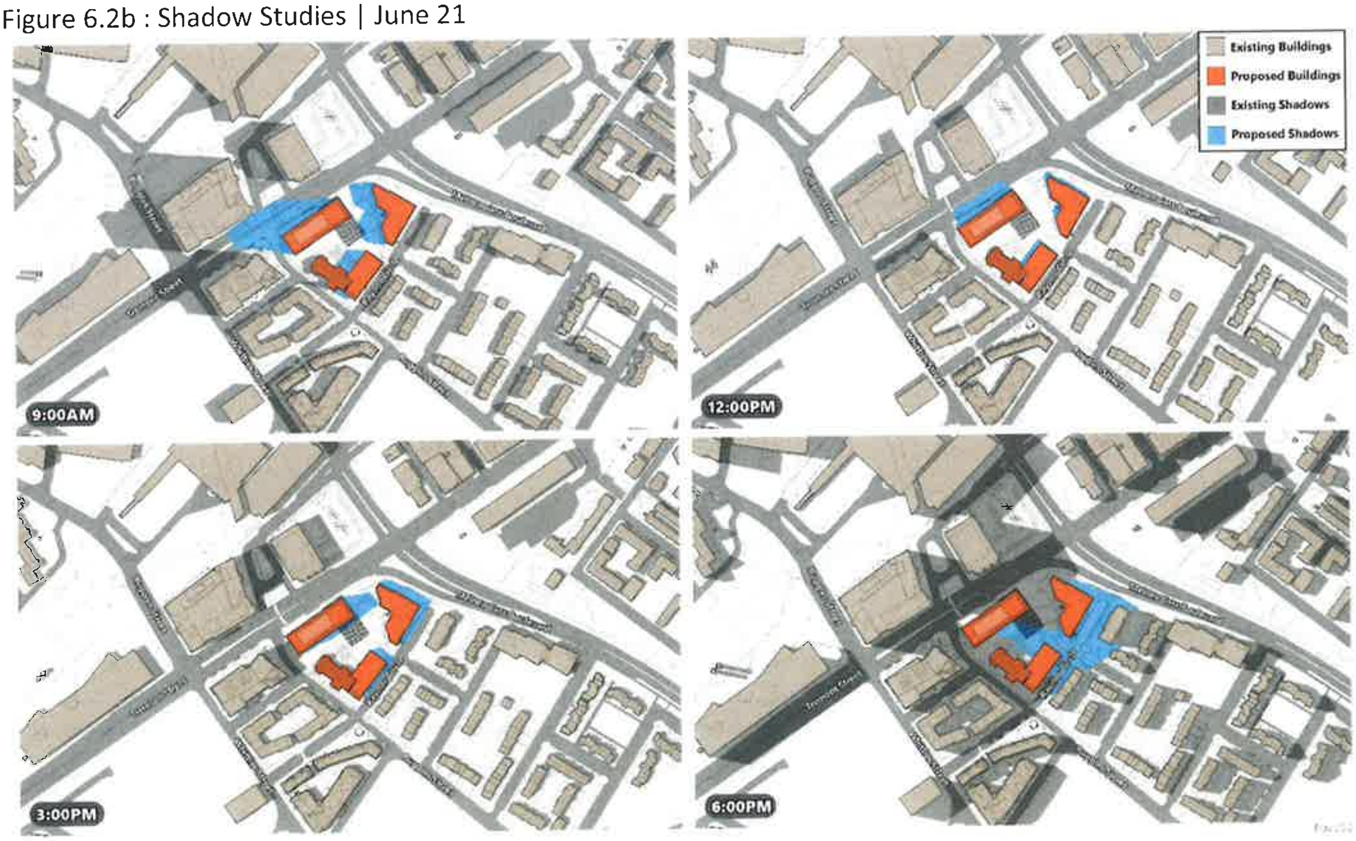


Figure 6.2c : Shadow Studies | September 21

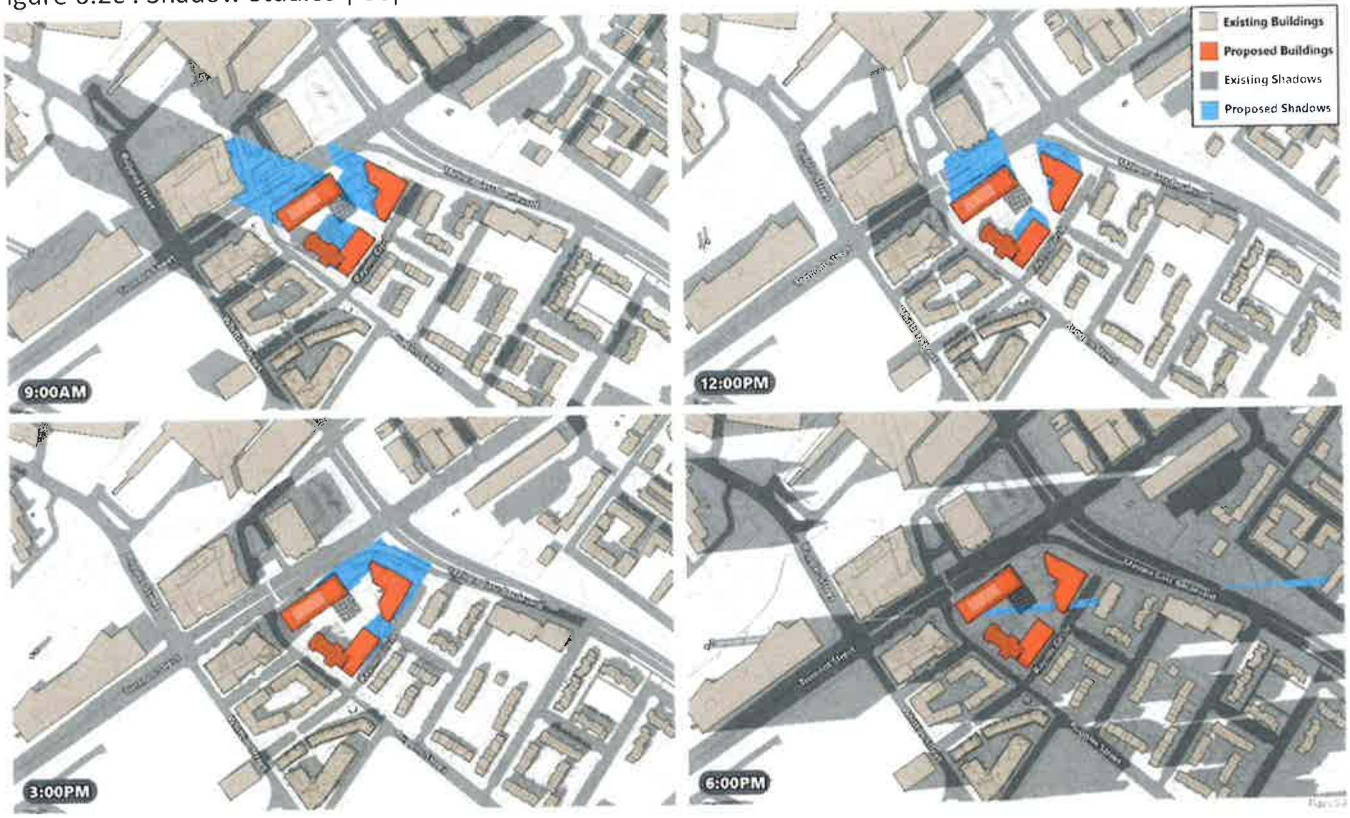
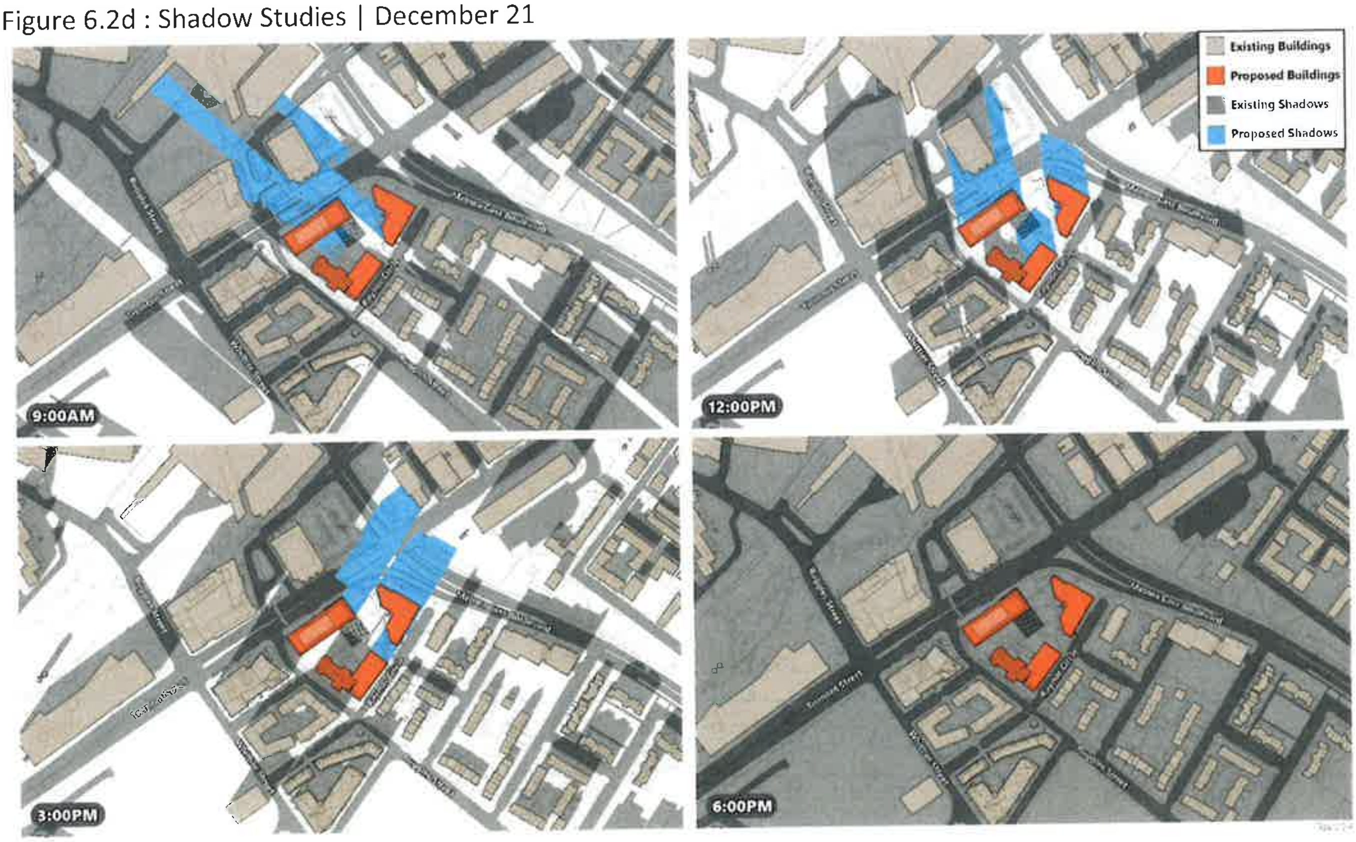


Figure 6.2d : Shadow Studies | December 21



6.3 Daylight Analysis

6.3.1 Introduction

A daylight analysis has been done for the Proposed Project. The analysis describes existing and proposed obstruction of daylight conditions at the Project Site and in the surrounding area. The existing Project Site is largely undeveloped and currently includes two buildings that are modest in height (approximately 4-stories). The Proposed Project's footprint has setbacks from the street, varying roof heights, and open space between the buildings, allowing for more views of the sky. The Project will result in daylight obstruction similar to the surrounding area, and typical of other urban areas in Boston.

6.3.2 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis ("BRADA") computer program[1]. This program measures the percentage of "sky dome" that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

Using BRADA, a silhouette view of the building is taken at ground level from the middle of the adjacent city streets or pedestrian ways centered on the proposed building. The façade of the building facing the viewpoint, including heights, setbacks, corners and other features, is plotted onto a base map using lateral and elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of 0 to 100 percent based on the width of the view, the distance between the viewpoint and the building, and the massing and setbacks incorporated into the design of the building; the lower the number, the lower the percentage of obstruction of daylight from any given viewpoint.

The analysis compares three conditions for the Project Site: (1) Existing Condition; (2) Proposed Condition; and (3) the context of the area.

Four area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoints were taken from the following locations and are shown on Figure 6.3-1 at the end of this section:

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1 Method developed by Harvey Bryan and Susan Stuebing, computer program developed by Ronald Fergle, Massachusetts Institute of Technology, Cambridge, MA, September 1984.

- **Viewpoint 1**: View from Melnea Cass Boulevard facing southwest toward the Project Site.
- **Viewpoint 2**: View from Tremont Street facing southeast toward the Project Site.
- **Viewpoint 3**: View from Ruggles Street facing northeast toward the Project Site.
- **Viewpoint 4**: View from Raynor Circle facing northwest toward the Project Site.
- **Area Context Viewpoint 1 (AC1):** View from Melnea Cass Boulevard facing southwest toward 600 Melnea Cass Boulevard.
- **Area Context Viewpoint 2 (AC2):** View from Tremont Street facing northwest toward 1135 Tremont Street.
- **Area Context Viewpoint 3 (AC3):** View from Tremont Street facing northwest toward 1175 Tremont Street.
- **Area Context Viewpoint 4 (AC4):** View from Raynor Circle facing east toward 40 Raynor Circle.

6.3.3 Results

Results for each viewpoint under each condition are described below in Table 6-3.1. Figure 6-3.1 at the end of this section illustrate the BRADA results for each analysis.

Table 6.3- 1 Daylight Obstruction Values

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	View from Melnea Cass Boulevard facing southwest toward the Project Site	0%	49.4%
Viewpoint 2	View from Tremont Street facing southeast toward the Project Site	1.3%	30.9%
Viewpoint 3	View from Ruggles Street facing northeast toward the Project Site	1.8%	54.6%
Viewpoint 4	View from Raynor Circle facing northwest toward the Project Site	7.9%	22.3%
Area Context Points			
AC1	View from Melnea Cass Boulevard facing southwest toward 600 Melnea Cass Boulevard	38.2%	N/A
AC2	View from Tremont Street facing northwest toward 1135 Tremont Street	20.1%	N/A
AC3	View from Tremont Street facing northwest toward 1175 Tremont Street	59.0%	N/A
AC4	View from Raynor Circle facing east toward 40 Raynor Circle	43.1%	N/A

Melnea Cass Boulevard – Viewpoint 1

Melnea Cass Boulevard runs along the northern portion of the Project Site. Viewpoint 1 was taken from the center of Melnea Cass Boulevard facing southwest toward the Project Site. Since the Project Site currently includes a couple of existing buildings with modest heights, the existing daylight obstruction value for Viewpoint 1 is 0%. The development of the Project will result in a daylight obstruction value of 49.4% which is similar to the surrounding area, including the Area Context viewpoints.

Tremont Street – Viewpoint 2

Tremont Street runs along the western frontage of the Project Site. Viewpoint 2 was taken from the center of Tremont Street facing southeast toward the Project Site. The development of the Project will result in a daylight obstruction value of 30.9%. While this is an increase over existing conditions, the daylight obstruction is similar to the surrounding area, including the Area Context viewpoints.

Ruggles Street – Viewpoint 3

Ruggles Street runs along the southern frontage of the Project Site. Viewpoint 3 was taken from the center of Ruggles Street facing northeast toward the Project Site. The daylight obstruction will be 54.6%, which is similar to the surrounding area.

Raynor Circle – Viewpoint 4

Raynor Circle runs along the eastern frontage of the Project Site. Viewpoint 4 was taken from the center of Raynor Circle facing west toward the Project Site. The daylight obstruction will be only 22.3%, which is similar to or less than the surrounding area.

Area Context Views

The area around the Project Site includes low- to high-rise buildings, surface parking lots, residences, and athletic fields. To provide a larger context for comparison of daylight conditions, daylight obstruction values were calculated for four Area Context Viewpoints described above and shown below. The daylight obstruction values range from 20.1% percent for AC2 to 59.0% for AC3.

6.3.4 Conclusion

The daylight analysis conducted for the Project describes existing and proposed obstruction of daylight conditions at the Project Site and in the surrounding area. The proposed Project allows for views of the sky due to the width of the site, varying roof heights, and space in between the new buildings. Results of the BRADA analysis indicates that while development of the Project will result in increased daylight obstruction values over existing conditions, the resulting conditions will be similar to the daylight obstruction values within the surrounding area and typical of other urban areas of Boston.

Figure 6.3-1

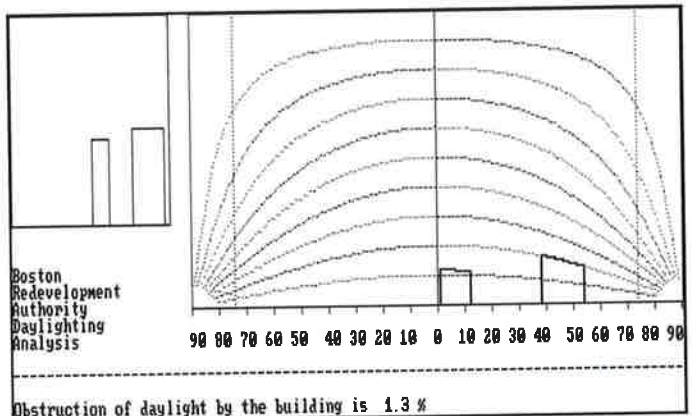
Drexel Village Boston, Massachusetts

Epsilon

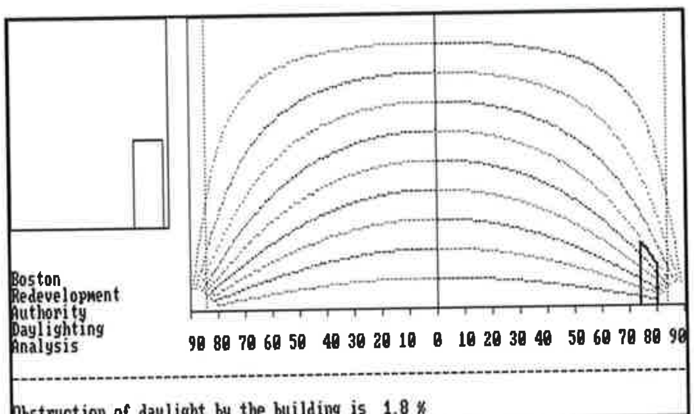
Figure 1
Viewpoint and Area Context Locations

0%

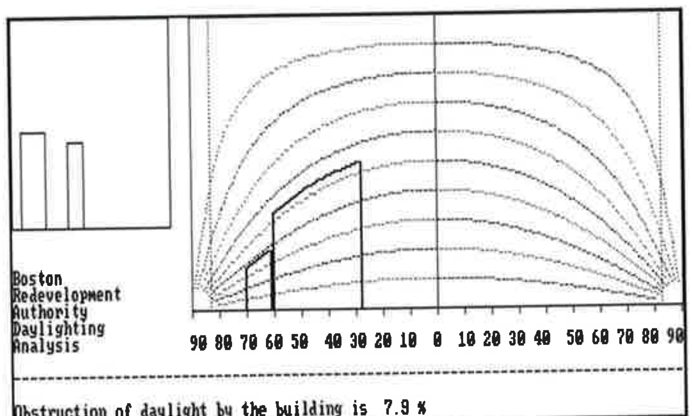
V1: View from Melnea Cass Boulevard facing southwest toward the Project Site



V2: View from Tremont Street facing southeast toward the Project Site



V3: View from Ruggles Street facing northeast toward the Project Site

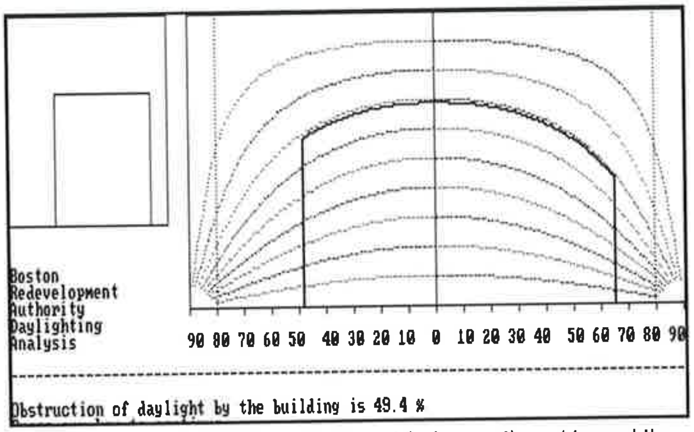


V4: View from Raynor Circle facing northwest toward the Project Site

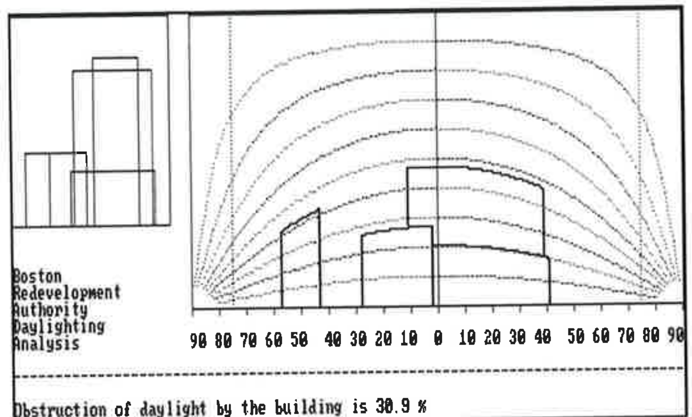
Drexel Village **Boston, Massachusetts**

Epsilon

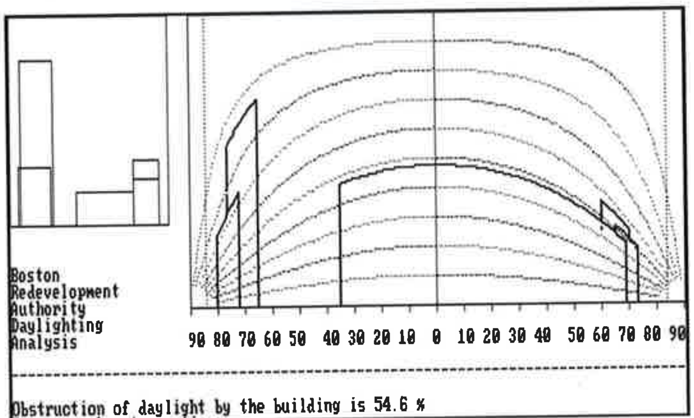
Figure 2
Existing Conditions



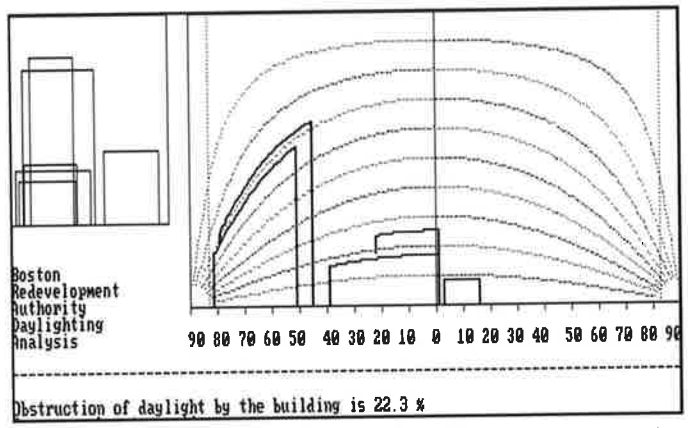
V1: View from Melnea Cass Boulevard facing southwest toward the Project Site



V2: View from Tremont Street facing southeast toward the Project Site



V3: View from Ruggles Street facing northeast toward the Project Site



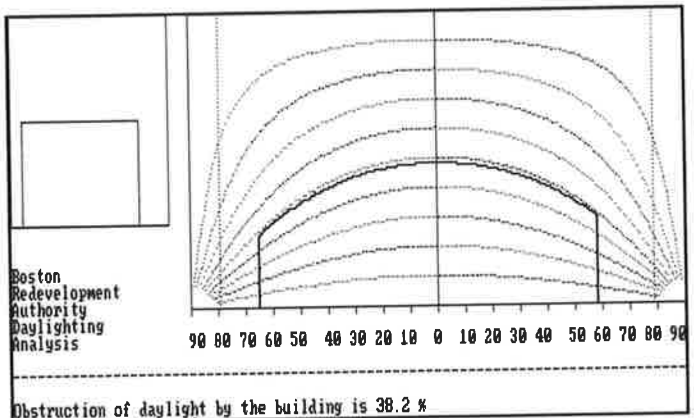
V4: View from Raynor Circle facing northwest toward the Project Site

Drexel Village **Boston, Massachusetts**

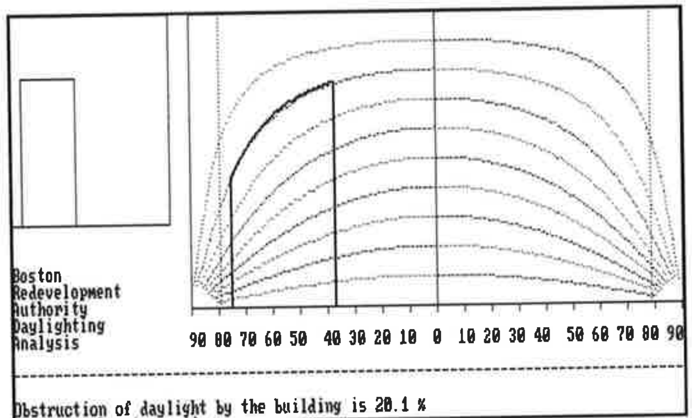
Epsilon

Figure 3

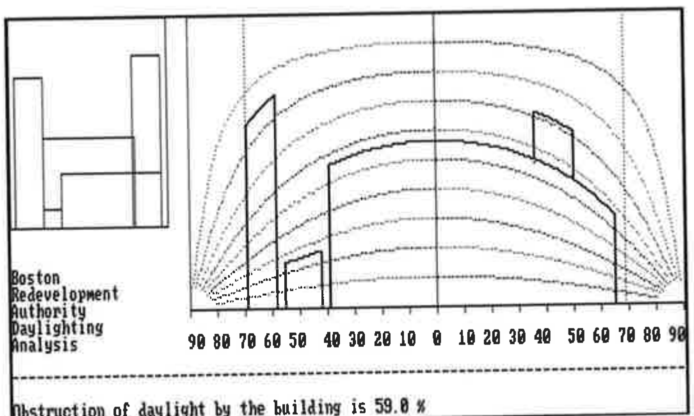
Proposed Conditions



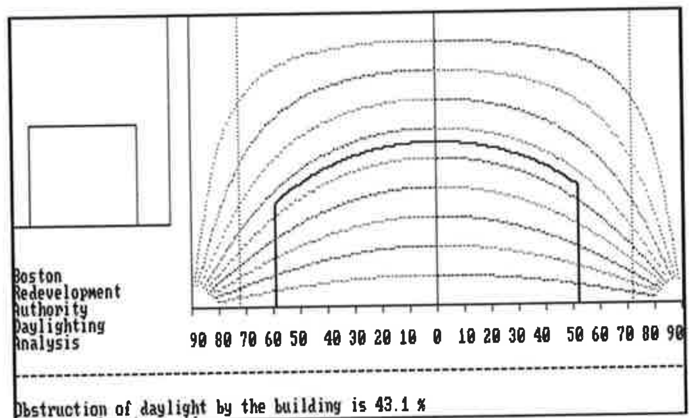
AC1: View Melnea Cass Boulevard facing southwest toward 600 Melnea Cass Boulevard



AC2: View from Tremont Street facing northwest toward 1135 Tremont Street



AC3: View from Tremont Street facing northwest toward 1175 Tremont Street



AC4: View from Raynor Circle facing east toward 40 Raynor Circle

Drexel Village **Boston, Massachusetts**

Epsilon

Figure 4
Area Context

6.4 SOLAR GLARE

The full Solar Glare analysis is provided in Appendix G of this PNF. An Executive Summary and Methodology are provided below.

6.4.1 Executive Summary

RWDI was retained to investigate the impact that solar reflections emanating from the Proposed Project will have on the surrounding urban realm.

Thermal Impacts on People

The planar nature of the facades of the Proposed Project ensure that reflected sunlight will not focus (multiply) in any particular area. Therefore, RWDI does not expect any significant thermal impacts (i.e. risks to human safety or property damage) to occur either on the site or in the surrounding neighborhood. Pedestrians in the vicinity of the "V" shaped corner of Building B2 (receptor P23) could be potentially exposed to higher intensity reflections due to reflections from the two adjacent surfaces intersecting. However, these reflection intensities were predicted to be below RWDI's thresholds and are expected to be a rare occurrence.

Visual Glare Impact on Drivers

As with the addition of any glazed building, drivers travelling in the vicinity of the Proposed Project were predicted to have the potential to experience visual glare. Southwest bound drivers along Tremont Street approaching Melnea Cass Boulevard (D4) were predicted to experience reflections from the Proposed Project which can cause a high level of impact. Though these were very infrequent (less than 0.06% of the daytime annually) and not unusual for any contemporary design.

Visual Glare Impact on Pedestrians and Facades

Typical levels of visual glare were predicted for pedestrians and building occupants in the vicinity of the Proposed Project. These types of reflections represent at worst a visual nuisance, as viewers can safely look away or close blinds. These potential impacts were predicted to be possible in less than 10% of the daytime annually for buildings south, east and west of the

Proposed Project. Reflections may also affect pedestrians along the sidewalks near the development and within the Proposed Project's courtyard more frequently. However, these results are typical of impacts seen in any urban spaces and not a safety concern.

Thermal Impact on Facades

At all studied façade areas, reflections were predicted to be low intensity and short duration. Hence, RWDI would not expect these reflections to lead to a significant additional cooling load for a building. Should an individual choose to expose themselves to the reflected energy, they may feel warm. However, this would be a temporary experience and one which would easily be remedied by closing window treatments.

Overall Impact of Reflections

The predicted impacts of the Proposed Project on its surroundings are typical of modern buildings of equivalent size and glazed area. Additional details on when reflections were predicted to occur throughout the year, as well as predicted durations and intensities can be found in Appendix G of the full Solar Glare Report. If mitigation is desired, strategies to minimize the reflection impacts have been provided. For further details refer to the Mitigation Section of the report.

6.4.2 Methodology

RWDI assessed the potential for reflection impacts using RWDI's in-house proprietary Eclipse software, in two phases as per the steps outlined below:

- The Phase I "Screening" Assessment began with the development of a 3D model of the area of interest (as shown in Figure 3). This was then subdivided into many smaller triangular patches (See Figure 4 in the full Solar Glare Report).

- For each hour in a year, the expected solar position was determined, and "virtual rays" were drawn from the sun to each triangular patch of the 3D model. Each ray that was considered to be "unobstructed" was reflected from the building surface and tracked through the surrounding area. The study domain included the entire pedestrian realm within 1150 feet of the development.

- The total reflected energy at that hour from all of the patches was computed and its potential for visual and thermal impacts assessed.

- Finally, a statistical analysis was performed to assess the frequency and intensity of the glare events occurring throughout the year in the vicinity of the development. The criteria used to assess the level of impact can be found in Appendix G of the full Solar Glare Report.

- Based on the findings of the Screening analysis, multiple representative "receptor points" were selected to undergo the Phase 2 "Detailed" analysis.

- The points were chosen to understand in greater detail how reflections from the Project will impact drivers, pedestrians and the rest of the built environment. The selected locations of the points are discussed further in the Detailed analysis section of the full Solar Glare Report (Appendix G of this PNF).

- The Detailed analysis process is similar to the Screening analysis, except reflections are analyzed at one-minute increments for the entire year and the source of the reflections is stored for each receptor point.

- In addition to the frequency and duration of reflection impacts, the Detailed analysis allows for the prediction of when impacts can occur, how long they can occur for, and the locations of problematic glare sources.

6.4.3 Screening Analysis Observations

- Like any contemporary building, the reflective surfaces of the development are naturally causing solar reflections in the surrounding neighborhood.

- The planar nature of the facades of the Proposed Project prevents reflections from significantly focusing (concentrating) in any particular area. Thus, RWDI does not anticipate any heat gain issues on people or property. That said, the vicinity of the "V" shaped corner of Building B2 could be potentially exposed to higher intensity reflections, which is investigated further in the detailed Solar Glare Report.

- At pedestrian level, reflections were predicted to fall most frequently onto the courtyard within the Proposed Project and immediately west and south of it. The maximum frequency of glare occurrence found at pedestrian level is approximately 21% of daytime hours.

- Reflections from the Project were predicted to be generally confined to within 300 feet of the building and may impact northeast and southwest bound drivers on Tremont Street as well as southeast and northwest bound drivers on Melnea Cass Boulevard. Southeast bound drivers on Ruggles Street, southwest and northeast bound drivers at Raynor Circle may also be impacted.

- The occupants of St. Katharine and residences located close to the development were predicted to experience visible reflections from the Proposed Project. That being said, the reflections are unlikely to pose a risk to safety. They are likely a nuisance at worst, as the occupants can look away or close blinds.

- Pedestrians on the sidewalks at Raynor Circle and Ruggles Street and at the baseball field at Madison Park High were predicted to have the potential to experience intermittent reflections. Pedestrians within the courtyard of the Proposed Project were also predicted to experience reflections. This condition is common in many urban centers and is unlikely to present a significant safety risk.

- The exact nature of these impacts is explored further in the detailed analysis provided in Appendix G.

6.5 AIR QUALITY

Introduction

An air quality assessment was conducted for the Proposed Project. A microscale screening analysis showed that traffic increases at local intersections would not be significant enough to degrade air quality in the area. The project-generated traffic also does not exceed thresholds whereby any significant regional air quality impacts would be found. Expected stationary sources of air pollution such as boilers, heaters, and emergency generators are expected to comply with applicable emissions and energy efficiency standards and are also not expected to contribute to any significant detrimental air quality impacts.

The purpose of the air quality assessment is to demonstrate that the Project satisfies applicable regulatory requirements, and whether it complies with the 1990 CAAA following the local and the U.S. Environmental Protection Agency (EPA) policies and procedures. The sections below discuss regulatory context, existing background concentrations, and the microscale and mesoscale requirements analysis requirements.

6.5.1 Background

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality exceedances. Air quality control regions are classified and divided into one of three categories: attainment, non-attainment, and maintenance areas, depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS; non-attainment areas are those where concentrations exceed the NAAQS. A maintenance area is an area that used to be non-attainment but has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, maintenance areas can be re-designated to attainment.

The Proposed Project is located in the Lower Roxbury neighborhood within the City of Boston, Suffolk County, Massachusetts, which under the EPA designation is a CO Maintenance Area. Projects located in a CO Maintenance Area are required to evaluate their CO concentrations with the NAAQS, as has been done for this Project. The City of Boston is in attainment for the remainder of the criteria pollutants.

6.5.2 Air Quality Standards

The EPA has established the NAAQS to protect the public health. Massachusetts has adopted similar standards as those set by the EPA for CO. Table 6.5-1 presents the NAAQS for carbon monoxide.

Table 6.5-1 National Ambient Air Quality Standards

	Primary Standards		
Pollutant	**Level**	**Averaging Time**	**Form**
Carbon Monoxide	**9 ppm (10 mg/m^3)**	**8-hour**	**Not to be exceeded more than once per year**
	35 ppm (40 mg/m^3)	**1-hour**	

The DEP maintains a network of air quality monitors to measure background CO concentrations. Background concentrations are ambient pollution levels from all stationary, mobile, and area sources. Background CO concentrations are determined by choosing the maximum of the second-highest annual values from the previous three years. Looking at the air quality monitor most representative of the Project Site (Harrison Avenue) for the years 2019-2021, the CO background values are 1.6 ppm for the 1-hour averaging time and 1.1 ppm for the 8-hour averaging time. These values are much less than the 1-hour and 8-hour NAAQS. The background values are presented in Table 6.5-2.

Table 6.5-2 Air Quality Background Concentrations

	Background Concentrations		NAAQS	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide	**1.6 ppm**	**1-hour**	**35 ppm**	**1-hour**
	1.1 ppm	**8-hour**	**9 ppm**	**8-hour**

Monitoring Location: Harrison Avenue, Boston, MA. Years 2019-2021.

The potential CO concentrations from motor vehicle traffic related to the Project will be considered in conjunction with these background concentrations to demonstrate that the Project will comply with the NAAQS Standards.

6.5.2.1 BPDA Development Review Guidelines

The BPDA Development Review Guidelines require a microscale analysis predicting localized carbon monoxide concentrations, including identification of any locations projected to exceed the National or Massachusetts Ambient Air Quality Standards, for projects:

- If the Proposed Project will generate 3,000 or more new average daily trips on roadways providing access to a single location.
- If Proposed Project's traffic would impact intersections or roadway links currently operating at LOS D, E, or F or would cause LOS to decline to D, E, or F during typical peak periods; or
- If project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour).

6.5.2.2 Traffic Data

The air quality study uses traffic data (volumes, delays, and speeds) developed for the analysis condition based upon the traffic study. The traffic study included assessment of three signalized and two unsignalized nearby intersections. The Proposed Project is expected to generate 650 new daily trips, 67 peak morning trips and 91 peak evening trips. Local intersection level of service (LOS) is expected to remain the same between future no-build and future build conditions at all intersections except the intersection of Tremont Street, Ruggles Street, and Whittier Street in the afternoon peak. Mitigation in the form of signal retiming and intersection reconfiguration of the Tremont Street, Ruggles Street, and Whittier Street intersection is recommended to improve the capacity and reduce minimize impacts.
The traffic analysis is presented in Chapter 4 of this PNF.

6.5.3 Microscale Analysis

An evaluation of the traffic data was conducted under the review guidelines developed by the BPDA for determination of the potential for CO impacts. It was determined that:

- Under the AM and PM conditions, respectively, the improved LOS is expected to reduce delay and improve air quality conditions at this intersection. As the Proposed Project will not substantially impact LOS at any intersections, the Project does not exceed this criterion.

- The Proposed Project is not expected to substantially increase traffic volumes at signalized intersections when comparing the Build and No-Build Conditions. Although intersection volumes exceed the 10% threshold at two intersections, the total increase in traffic volumes is less than 100 vehicles. Therefore, the Project does not exceed this criterion.

- The Proposed Project will **not** generate more than 3,000 or more new daily trips on the area roadways. The future site trip generation is expected to be far below the 3,000 vehicles-per-day threshold. As such, the Project does not exceed this criterion.

Based on the microscale screening results discussed above, it has been determined that a quantitative CO hotspot analysis is not required for the Project and that no microscale air quality impacts are anticipated.

6.5.4 Mesoscale Analysis

A mesoscale air quality analysis may be required if the Proposed Project is expected to be of regional significance. The BPDA requires a mesoscale air quality analysis if a project produces 10,000 or more vehicle trips per day. The Proposed Project is anticipated to generate less than 1,000 vehicle trips per day. Therefore, this analysis is not required by the BPDA.

6.5.4.1 Stationary Source Air Quality

Sizable combustion equipment (emergency generators, boilers, etc.) with the potential to emit air pollutants at the Proposed Project may be subject to air permitting under 310 CMR 7.00. MassDEP has established the "Environmental Results Program" (ERP) to streamline the certification process of smaller combustion equipment subject to permitting regulations.

The exact sizes, makes, models of new mechanical equipment to be used by the Project is currently unknown and will be determined during the design process. However, new equipment that may be used at the Project, such as boilers or emergency generators, may be subject to permitting regulations. If a boiler with a rated heat input capacity between 10 to 40 MMBtu per hour is used on the site the Proponent will submit the appropriate self-certification forms under the ERP process before the installation of the boiler. Additionally, if an emergency generator with a rated capacity equal to or greater than 37 kW (engine power) is used on the Project Site, the Proponent will submit the appropriate self-certification forms under the ERP process within 60 days of generator startup. During the ERP process, the stationary sources will be required to show compliance with all applicable air quality regulations, including the NAAQS, in order to ensure public health and safety.

6.6 NOISE

6.6.1 Introduction

A noise analysis was conducted for the Proposed Project that included existing ambient noise monitoring at the Project Site. Acoustical modeling was conducted for the planned future project noise sources, including building rooftop mechanical equipment, and comparisons of future project sound levels were made to the City of Boston Noise Standards at nearby noise-sensitive locations. Operation of the planned rooftop mechanical equipment and emergency standby generators could result in exceedance of the City of Boson noise limits. Additional noise mitigation measures such as rooftop screens and generator canopies will need to be incorporated into the design to reduce noise levels from each building. The planned building façade design was modeled to assess the potential to comply with interior noise goals and window acoustical ratings have been recommended.

6.6.2 Noise Fundamentals and Descriptors

Sound is defined as small changes in air pressure above and below the standard atmospheric pressure and noise is usually considered to be unwanted sound. The three parameters that define sound include:

Level: The level of sound is the magnitude of air pressure change above and below atmospheric pressure, and is expressed in decibels (dB), a logarithmic quantity based on the sound pressure of the sound source of interest and a reference pressure representing the quietest sound we can hear. Although humans can detect sound levels from close to 0 dB (the lower limit of human hearing) to approximately 120 dB without experiencing pain, most environmental sounds fall within a range between about 30 dB and 100 dB. A 3-dB change in sound level is perceived as a barely noticeable change outdoors and a 10-dB change in sound level is perceived as a doubling (or halving) of loudness.

Because decibels are logarithmic quantities, sound pressure levels do not combine, or add, as we might expect. For example, combining two sound sources that each generate a sound pressure level of 40 dB individually causes a total sound pressure level of 43 dB (not 80 dB).

Every doubling of source strength results in an increase of 3 dB, so that four 40-dB sources have a combined sound pressure level of 46 dB, eight 40-dB sources have a combined sound pressure level of 49 dB, etc. A tenfold increase in either the source strength or number of equivalent sources causes the sound pressure level to increase by 10 dB. Because of the non-linear characteristics of human hearing, a doubling in the source strength is not perceived by humans as a doubling of loudness.

Frequency: The frequency (pitch or tone) of sound is the rate of air pressure change and is expressed in cycles per second, or Hertz (Hz). Human ears can detect a wide range of frequencies from around 20 Hz to 20,000 Hz when we are young, but the upper limit tends to decrease to about 10,000 Hz to 15,000 Hz as we age. Because human hearing is not as sensitive at high and low frequencies, and the A weighting system, which measures what humans hear in a more meaningful way by reducing the sound levels of higher and lower frequency sounds, is used to provide a measure (dBA) that correlates with human response to noise. The A-weighted sound level has been widely adopted by acousticians as the most appropriate descriptor for environmental noise. Sound levels that have been measured using A-weighting are expressed as "A-weighted decibels" (dBA) or indicated with a subscript such as LAS (A-weighted "slow response" sound pressure level). Figure 6.6-1 provides examples of A-weighted sound levels for some typical outdoor and indoor noise sources.

Time Pattern: Because environmental noise changes continuously, it is sometimes convenient to describe a particular noise event or source in terms of its maximum sound level (L_{max} or L_{Amax}). While the maximum sound level is useful in describing one aspect of an event or noise source, it provides no information on the duration of the event or the cumulative exposure to a noise source. A common way to account for the cumulative exposure is to express the energy-average of the actual time-varying sound level over a period of time as a single number, called the "equivalent" sound level (L_{eq} or L_{Aeq}). The L_{eq} is the constant or "equivalent" sound level that would contain the same amount of sound energy as the time-varying sound level over the same period. Due to the logarithmic addition of noise sources described above, L_{eq} is influenced strongly by the loudest events that occur during a particular period. Because the L_{eq} represents the changing sound level over a specific interval, such as one hour, it is important that the time period be expressed or understood when using the metric. Because community noise is constantly changing, it is common to use various metrics to describe the overall noise exposure. Some of these metrics are described below:

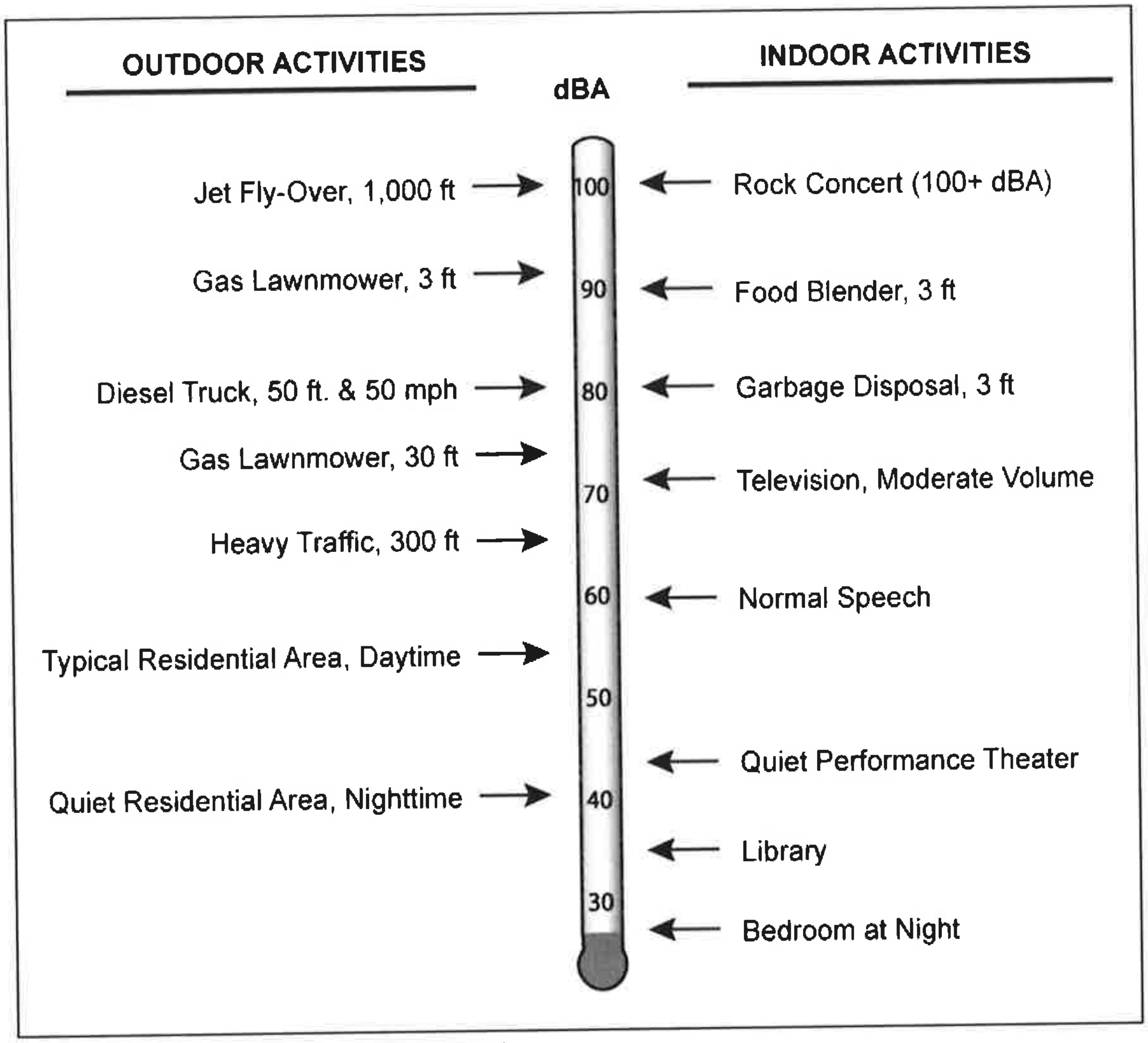
- **L_{eq}** is the "equivalent" sound level over a time period, typically 1 hour or 24-hours, but can be used for periods as small as 1 second. It is the level of steady sound that has the same energy as a fluctuating sound measured over the same time period. L_{eq} is indicative of the average sound level during the measurement period.

- **L_{xx}** represents "percentile" levels, i.e., the sound level that is exceeded over "xx" percent of the time during the measurement period. For example, the L_{90} is the sound level that is exceeded 90% of the time during the measurement period and is the metric commonly associated with the background noise. L_{10} and L_{50} are sound levels that are exceeded 10% of the time and 50% of the time, respectively.

- **L_{max}** is the maximum level and is used to describe the highest level over a measurement period.

- **L_{dn} (or DNL)** is a 24-hour cumulative A-weighted noise level that includes all noises that occur during a day, with a 10-dB penalty for nighttime noise (10:00 PM until 7:00 AM). This nighttime penalty means that any noise events at night are equivalent to ten similar events during the day.

Figure 6.6-1. Typical A-weighted Environmental Sound Levels



(Source: Federal Transit Administration, 1995)

6.6.3 Noise Regulations

The City of Boston Municipal Code sets standards for reasonable noise levels. Chapter 16-26 of the Boston Municipal Code states that unreasonable or excessive noise is that which exceeds 50 dBA between 11:00 P.M. and 7:00 A.M. or 70 dBA at all other times. Based on the City's ordinance, the Boston Air Pollution Control Commission has established *Regulations for The Control of Noise in the City of Boston*. These regulations establish noise restrictions based on zoning districts which are applicable to the noise from the Proposed Project and are used in this noise study.

The zoning district noise standards in this regulation include maximum allowable sound levels based on the land use of affected properties. Table 6.6-1 summarizes the Zoning District Noise Standards which include the maximum allowable overall (broadband) and octave-band sound pressure levels. The Residential Zoning District noise levels apply to residential and institutional land uses.

Table 6.6-1. City of Boston Noise Standards

Zoning District	Time of Day	Single Number Equivalent (dBA)	Octave-Band Center Frequency of Measurement (dB)								
			31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Residential	Daytime[1]	60	76	75	69	62	56	50	45	40	38
	All Other Times	50	68	67	61	52	46	40	33	28	26
Residential / Industrial	Daytime[1]	65	79	78	73	68	62	56	51	47	44
	All Other Times	55	72	71	65	57	51	45	39	34	32
Business	Anytime	65	79	78	73	68	62	56	51	47	44
Industrial	Anytime	70	83	82	77	73	67	61	57	53	50

[1] Daytime is defined as the period between 7:00 A.M. and 6:00 P.M.

The U.S. Department of Housing and Urban Development (HUD) has developed site acceptability standards[2] to ensure that housing projects supported by HUD and the Federal Housing Administration (FHA) are located in suitable living environments. The noise criteria used by HUD can be found in the Federal Register at 24 CFR 51B. The criteria, or site acceptability standards, are based on outdoor L_{dn}. Sites with outdoor L_{dn} not exceeding 65 dBA are considered Acceptable, above 65 dBA, but not exceeding 75 dBA are considered Normally Unacceptable, and above 75 dBA are considered Unacceptable. The goal of HUD is to have projects in the "acceptable" category for a noise environment. HUD also has interior noise goals which necessarily incorporate the building façade noise reduction. The HUD goal is for the interior L_{dn} to not exceed 45 dBA.

[2] U.S. Department of Housing and Urban Development, "Environmental Criteria and Standards", 24 CFR Part 51, 12 July 1979; amended by 49 FR 880, 6 January 1984, http://edocket.access.gpo.gov/cfr_2004/aprqtr/pdf/24cfr51.103.pdf

6.6.4 Existing Noise Conditions

An ambient noise survey at the Project Site was conducted on December 6, 2022. The noise monitoring was carried out substantially in accordance with American National Standard Institute (ANSI) Standard S12.18 and industry standard procedures, using a NTi Audio model XL2 noise monitors that complied with ANSI Standard S1.4 for Class 1 (precision) sound level meters. Calibrations, traceable to the U.S. National Institute of Standards and Technology (NIST), were conducted before and after the measurements using an acoustic calibrator. The measurement microphone was protected by a windscreen and supported on a tripod at a height of approximately 5 feet above the ground. Monitoring included logging of the A-weighted equivalent sound level (L_{eq}) and octave-band sound levels. Audible sources of noise were noted while CSA staff were onsite.

Existing ambient noise levels were measured at four locations at the Project Site as shown in Figure 6.6-2. The short-term noise measurements were conducted between the hours of approximately 11:00 A.M. and 2:00 P.M. to represent typical daytime conditions. The weather conditions were dry with low wind. Each measurement was approximately 1 hour in duration. The dominant noise sources were vehicular traffic on Tremont Street and Melnea Cass Boulevard. Additional noise sources included occasional traffic and buses on Ruggles Street, rooftop mechanical equipment on nearby buildings on Tremont Street, occasional passing emergency vehicle sirens, pedestrian noise, occasional aircraft, and occasional MBTA train noise.

The MBTA Ruggles Station is located approximately 700 feet away from the Project Site and services both Orange Line trains and Commuter Rail trains. All of the rail lines are below grade in a cut in this vicinity. Noise from the trains and passenger station was only occasionally audible during the ambient noise measurements at all of the sites, indicating that the noise levels contributed to the ambient noise environment significantly less than the noise from vehicular traffic.

The measurement locations are described below.

- **Measurement Location M1** was located in an open area at the approximate northern corner of the future planned Building 2 near the intersection of Tremont Street and Melnea Cass Boulevard.

- **Measurement Location M2** was located in the existing parking lot at the approximate northeastern corner of the future planned Building 1 near Tremont Street.

- **Measurement Location M3** was located in the existing parking lot between St. Katharine and the ABCD building at the approximate future setback distance of the future planned Building 3 from Tremont Street.

- **Measurement Location M4** was located in the Raynor Circle turnaround loop at the approximate eastern façade of the future planned Building 2 near Melnea Cass Boulevard. Table 6.6-2 summarizes the existing ambient noise measurement results. The table includes the measured broadband sound levels (L_{eq}, L_{10}, L_{50}, and L_{90}) and the measured L_{90} octave-band sound levels. Additionally, the estimated L_{dn} (day-night sound level) was calculated from the measured 1-hour L_{eq} results based on the methodology in the U.S. Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual (September 2018).

The measured L_{eq} sound levels ranged from 57 to 69 dBA with the highest levels at location M1 near the intersection of Tremont Street and Melnea Cass Boulevard. The measured ambient sound levels generally decreased with increasing distance from Tremont Street and Melnea Cass Boulevard. The measured L_{90} sound levels corresponding to the ambient background ranged from 59 dBA at location M1 to 53 dBA at location M3. The measured existing ambient noise data indicates that the broadband sound levels at the project site currently comply with the City's daytime noise standards, but the octave-band sound levels exceed the noise standards. The estimated exterior L_{dn} sound levels based on the measurements range from 55 to 67 dBA.

The estimated L_{dn} values indicate that the existing noise levels at measurement positions M2, M3, and M4 would meet the HUD site acceptability standards. However, the noise levels at measurement position M1 would exceed the accessible standard by 2 dB.

Table 6.6-2. Existing Ambient Sound Levels

Meas. Loc.	Broadband Sound Level (dBA)					L_{90} Sound Level (dB) - Octave-Band Center Frequency (Hz)								
	L_{eq}	L_{dn}[1]	L_{10}	L_{50}	L_{90}	31.5	63	125	250	500	1000	2000	4000	8000
M1	69	67	71	66	59	66	65	61	56	54	54	50	42	32
M2	67	65	69	62	56	67	64	59	53	52	52	48	40	29
M3	57	55	58	55	53	63	61	56	52	48	47	43	37	28
M4	63	61	63	59	56	65	64	59	52	51	52	46	37	26

[1] Estimated L_{dn} based on the measured $L_{eq(1\ hr)}$.

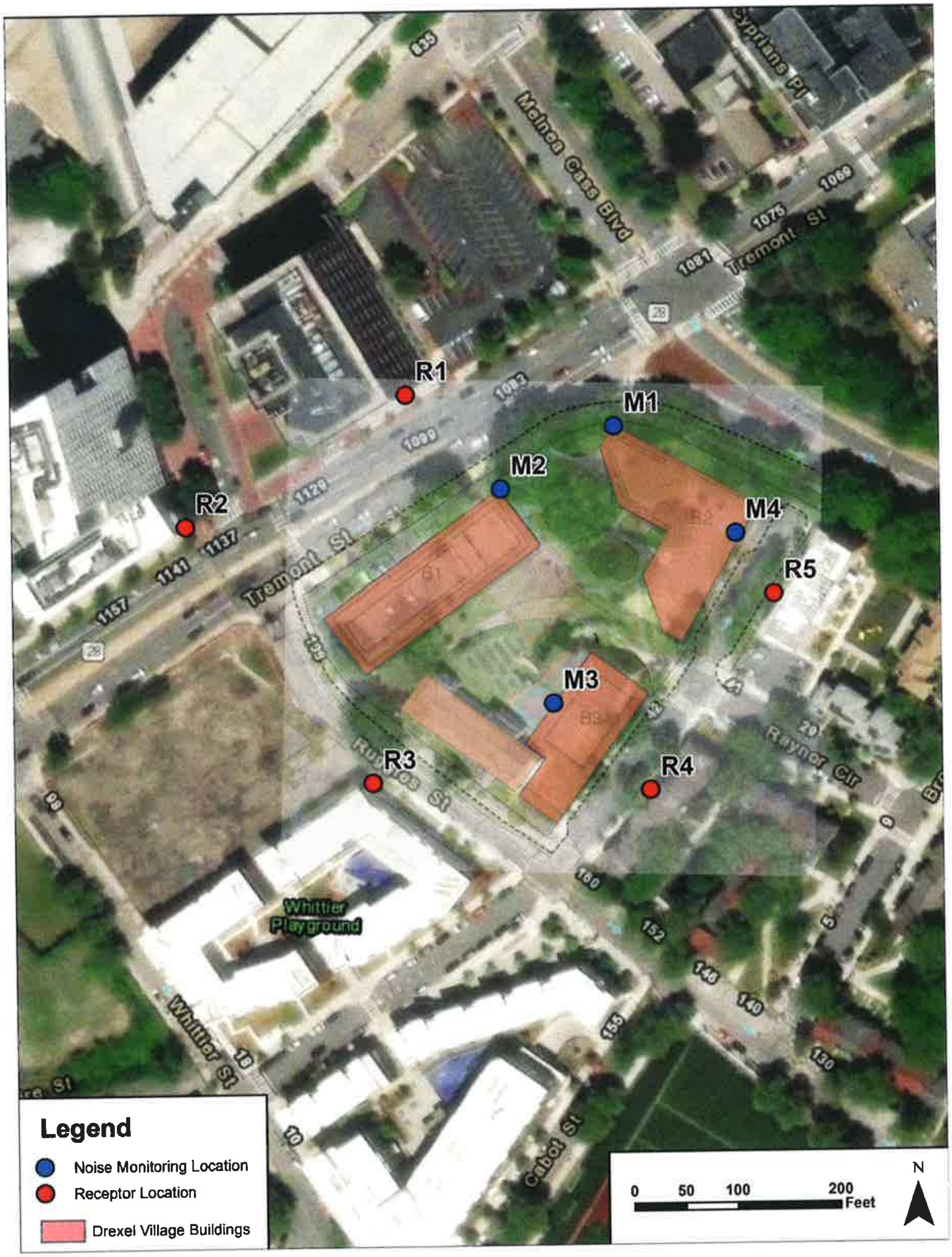


Figure 6.6-2. Typical A-weighted Environmental Sound Levels

6.6.5 Future Noise Conditions

A noise analysis was conducted to assess the potential for noise impacts from the Proposed Project. The main noise sources from the project are rooftop mechanical equipment and emergency generators. The Proposed Project consists of three new buildings as shown in Figure 6.6-2. Building 1 will be approximately 162 feet high; Building 2 will be approximately 68 feet high, and Building 3 will be approximately 55 feet high.

The anticipated rooftop mechanical equipment includes heating and cooling units, air handling units, energy recovery units, heat pump water heaters, fans, and emergency standby generators. Table 6.6-3 lists the anticipated mechanical equipment for the Proposed Project that was included in the noise analysis. The table includes the anticipated type of equipment, building location, quantity, manufacturer, model, and description.

Table 6.6-3. Project Mechanical Equipment Noise Sources

Equip.	Building Loc.	Quantity	Manufacturer	Model	Description
ERU	B1 rooftop	2	Swegon	ERV-1 GOLD F RX	AHU 11,700 cfm
	B2 rooftop	1			
	B3 rooftop	1			
ERU Fan	B1 rooftop	2	Greenheck	QEI-22	Fan 9,000 cfm
	B2 rooftop	1			
	B3 rooftop	1			
SP Fan	B1 rooftop	2	Greenheck	CSW-24-BI-21-10-II-200	Fan 15,000 cfm
DHW-HP	B1 rooftop	2	Lync by WATTS	Aegis A	Heat pump water heater 500 MBH
	B2 rooftop	1			
	B3 rooftop	1			
ACCU ERU	B1 rooftop	2	Daikin	32 Ton, 460V VRV IV X HP RXYQ384XAYDA	VRV 20,000 cfm
	B2 rooftop	1			
	B3 rooftop	1			
ACCU 12 Ton	B2 rooftop	1	Mitsubishi Electric	City Multi VRF 12-TON PURY-HP144TSNU-A	208/230V Outdoor VRF heat recovery system
ACCU 20 Ton	B1 rooftop	16	Mitsubishi Electric	City Multi VRF 20-TON PURY-HP240TSNU-A	208/230V Outdoor VRF heat recovery system
	B3 rooftop	2			
ACCU 1.5 Ton	B2 rooftop	37	Mitsubishi Electric	M-Series Indoor Unit: SVZ-KP18NA Outdoor Unit: SUZ-KA18NAHZ	18,000 BTU/H Air handler heat pump system
	B2 garage	11			
	B3 rooftop	17			
ACCU 2 Ton	B2 rooftop	22	Mitsubishi Electric	P-Series Indoor Unit: PVA-A24AA7 Outdoor Unit: PUZ-HA24NHA	24,000 BTU/H Air handler heat pump system
	B3 rooftop	1			
Generator 200 KW	B3 rooftop	1	Caterpillar	D200-2	200 KW Standby generator
Generator 250 KW	B2 rooftop	1	Caterpillar	PGS250	250 KW Standby generator
Generator 350 KW	B1 rooftop	1	Caterpillar	PGS350S	350 KW Standby generator

The manufacturer's reference octave-band sound power data were provided for each piece of mechanical equipment where available. In some instances, sound power data were not available, in which case sound levels from other similar equipment were used. Conservative (i.e. higher sound level) assumptions were made when necessary to supplement available reference sound level data.

An acoustical model of the Project Site was created using the industry standard SoundPLAN Essential Acoustical modeling software package. The model incorporated ground elevations, ground surfaces, building shielding and reflections, project mechanical equipment noise sources, and the source heights and locations. The model's implementation of ISO Standard 9613-2 (Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation, International Organization for Standardization, Geneva, 1996) was used. The model was used to calculate the future noise levels with the project mechanical equipment noise sources at adjacent noise-sensitive locations. Overall A-Weighted and octave-band noise levels were calculated.

Two different scenarios were modeled. Option A includes unitary heat pump water heaters for each residential unit in each building, with no rooftop water heaters. Option B includes central domestic heat pumps on the rooftop of each building.

Each building will have an emergency standby generator on the rooftop with ratings included in Table 6.6-3. The noise analysis assumes that during regular testing the generators will be operating at a 100 % load, which corresponds to higher sound levels. The generators were modeled under two conditions, assuming they have Sound Attenuation (SA) Level 1 Canopies and with SA Level 2 Canopies. The canopies are enclosures around the generators and the Level 2 canopies provide greater noise reduction than the Level 1 canopies. The noise analysis also included calculations with all other rooftop mechanical equipment operating except the generators to simulate when they are not being tested.

The nearest noise-sensitive receptor locations adjacent to the Proposed Project were identified. Receptor locations R1 through R5 are shown on Figure 6.6-2. Noise from the Proposed Project sources was calculated at each receptor location at the approximate property line at a height of 5 feet above the ground. The receptor locations are described below.

- **Receptor Location R1** represents 1125-1135 Tremont Street which is the Northeastern University Renaissance Park building which is a residential use building.
- **Receptor Location R2** represents 1155 Tremont Street which is the Northeastern University International Village building which is an institutional use building.
- **Receptor Location R3** represents 180 Ruggles Street which is a multi-family residential use building.
- **Receptor Location R4** represents 83 Ruggles Street which is a multi-family residential use building.
- **Receptor Location R5** represents 40 Raynor Circle which is a multi-family residential use building.

Table 6.6-4 summarizes the results of the noise analysis with Option A with no rooftop heat pump water heater units (Option A would utilize individual water heaters within each residential unit). Table 6.6-5 summarizes the results of the noise analysis with Option B with rooftop heat pump water heater units (which would supply hot water to all units within each building.) The modeled future sound levels for options A and B each include 3 conditions: 1) with no rooftop generators operating, 2) with rooftop generators with SA Level 1 Canopies operating at 100 % load, and 3) with rooftop generators with SA Level 2 Canopies operating at 100 % load. Predicted future noise levels that exceed the City of Boston noise limits for "All Other Times" are in bold text in the tables and noise levels that exceed the daytime noise limits are in italics.

The predicted future noise levels with Option B are greater than with Option A because there would be additional noise sources on the building rooftops. With no generators operating, there would be no exceedances of the City of Boston daytime noise limits but there would be exceedances of the "all other times" (nighttime) noise limits at receptors R1, R2, and R3 in the 2,000 Hz and 4,000 Hz octave-bands. This indicates that either quieter equipment must be used in place of the above or that noise mitigation measures such as rooftop screens will be needed.

Because the future noise levels with the Proposed Project will exceed the "all other times" (nighttime) noise limits even without the emergency generators operating, the routine use of the generators for testing should only happen during the daytime. Operation of the generators with SA Level 1 Canopies during the daytime will result in an exceedance of the City of Boston daytime noise limits at receptor R4 in the 8,000 Hz octave-band. Operation of the generators with SA Level 2 Canopies during the daytime would result in no exceedances of the city daytime noise limits.

Table 6.6-4. Predicted Future Project Sound Levels – Option A (No Rooftop Heat Pump Water Heaters)

Rec. Loc.	Address	Broadband (dBA)[1]	Sound Level (dB) - Octave-Band Center Frequency (Hz)[1]								
			31.5	63	125	250	500	1000	2000	4000	8000
Modeled Condition: Option A (No Rooftop Water Heaters) – No Rooftop Generators											
R1	1125-1135 Tremont St	45	59	57	51	49	41	38	**36**	**31**	17
R2	1155 Tremont St	45	59	57	51	50	41	37	**35**	**29**	14
R3	180 Ruggles St	44	59	57	50	48	40	37	**35**	**30**	15
R4	83 Ruggles St	42	57	54	47	45	39	35	30	23	9
R5	40 Raynor Cl	41	55	52	46	43	38	35	31	24	12
Modeled Condition: Option A (No Rooftop Water Heaters) – Rooftop Generators with SA Level 1 Canopies											
R1	1125-1135 Tremont St	48	65	64	58	52	43	40	**37**	**32**	26
R2	1155 Tremont St	46	62	60	53	50	42	38	**35**	**30**	23
R3	180 Ruggles St	**53**	**72**	**71**	61	**55**	**50**	**46**	**40**	**34**	**31**
R4	83 Ruggles St	**53**	**73**	**71**	61	**53**	**49**	**45**	**40**	**34**	***40***
R5	40 Raynor Cl	50	**70**	**69**	60	52	46	**42**	**37**	**31**	**30**
Modeled Condition: Option A (No Rooftop Water Heaters) – Rooftop Generators with SA Level 2											
R1	1125-1135 Tremont St	47	63	61	57	51	42	38	**37**	**31**	19
R2	1155 Tremont St	46	60	57	52	50	41	37	**35**	**30**	16
R3	180 Ruggles St	50	64	63	60	**53**	46	**41**	**37**	**32**	18
R4	83 Ruggles St	48	65	62	59	50	45	40	**36**	**31**	22
R5	40 Raynor Cl	47	63	62	59	50	43	38	33	28	18

[1] Noise levels that exceed the City of Boston All Other Times (nighttime) noise limits are **bold** and levels that exceed the daytime noise limits are in italics.

Table 6.6-5. Predicted Future Project Sound Levels – Option B (with Rooftop Heat Pump Water Heaters)

Rec. Loc.	Address	Broadband (dBA)[1]	Sound Level (dB) - Octave-Band Center Frequency (Hz)[1]								
			31.5	63	125	250	500	1000	2000	4000	8000
Modeled Condition: Option B (with Rooftop Water Heaters) – No Rooftop Generators											
R1	1125-1135 Tremont St	46	59	57	51	49	41	38	**36**	**31**	17
R2	1155 Tremont St	45	59	57	51	50	41	37	**35**	**29**	14
R3	180 Ruggles St	44	59	57	50	48	40	37	**35**	**30**	15
R4	83 Ruggles St	43	58	55	48	46	40	36	30	24	10
R5	40 Raynor Cl	41	56	53	47	43	39	35	31	24	13
Modeled Condition: Option B (with Rooftop Water Heaters) – Rooftop Generators with SA Level 1 Canopies											
R1	1125-1135 Tremont St	49	65	64	58	52	43	40	**37**	**32**	26
R2	1155 Tremont St	46	62	60	53	50	42	38	**35**	**30**	23
R3	180 Ruggles St	**53**	**72**	**71**	61	**55**	**50**	**46**	**40**	**34**	**31**
R4	83 Ruggles St	**53**	**73**	**71**	61	**53**	**49**	**45**	**40**	**34**	***40***
R5	40 Raynor Cl	**51**	**70**	**69**	60	52	46	**42**	**37**	**31**	**30**
Modeled Condition: Option B (with Rooftop Water Heaters) – Rooftop Generators with SA Level 2 Canopies											
R1	1125-1135 Tremont St	48	63	61	57	51	42	39	**37**	**31**	19
R2	1155 Tremont St	46	60	57	52	50	41	37	**35**	**30**	16
R3	180 Ruggles St	50	64	63	60	**53**	46	**41**	**37**	**32**	18
R4	83 Ruggles St	49	65	63	59	50	45	40	**36**	**31**	22
R5	40 Raynor Cl	47	63	62	59	50	43	38	**34**	28	18

[1] Noise levels that exceed the City of Boston All Other Times (nighttime) noise limits are **bold** and levels that exceed the daytime noise limits are in italics.

6.6.6 Building Façade Noise Assessment

A noise analysis was conducted for the project to assess the potential compliance with the HUD interior noise goals in residential buildings. The existing ambient noise measurements at the project site summarized above describe the sound levels at the future project building locations.

The dominant noise sources are vehicular traffic from Tremont Street and Melnea Cass Boulevard. Based on the noise measurements and estimated L_{dn} values, outdoor-to-indoor façade noise reductions into residential units will need to be between 15 dB to 27 dB (this includes a 5 dB safety factor.)

The Proposed Project building façade plans call for curtain wall systems such as Kawneer 1600 or equal. The sound transmission from exterior noise sources into residential units will largely be controlled by the acoustical properties of the curtain wall systems. The sound transmission loss performance of a wall/window system is dependent on the frequency content of the environmental noise and the properties of the wall/window system.

The noise analysis included the measured octave-band sound levels at the Project Site and calculated sound transmission loss of potential curtain wall systems to estimate interior noise levels for comparison with the HUD interior noise goals. The recommended building wall sound transmission loss recommendations are given in terms of the Outdoor/Indoor Transmission Class (OITC) rating. The results indicate that the curtain wall systems of buildings B1 and B2 on the facades facing either Tremont Street or Melnea Cass Boulevard should have windows with OITC ratings not less than 30. The curtain wall systems of building B3 should have windows with OITC ratings not less than 26.

6.6.7 Conclusions

Existing ambient noise levels were measured at the Project Site. Future noise levels from project noise sources included rooftop mechanical equipment and rooftop emergency standby generators. The Proposed Project noise sources were modeled at nearby noise-sensitive receptor locations and the predicted future noise levels were compared to the City of Boston noise limits.

Operation of the planned rooftop mechanical equipment would result in exceedances of the City of Boston noise limits for "all other times" (nighttime) at some receptor locations. Therefore, additional noise mitigation measures such as rooftop screens will need to be incorporated into the building design to reduce mechanical equipment noise.

Operation of emergency standby generators would result in exceedances of the City of Boston noise limits for "all other times" (nighttime). Therefore, routine testing of the generators should only occur during the daytime. The generators should be equipped with SA Level 2 Canopies to reduce noise levels to below the daytime noise limits.

The results of the building façade noise assessment indicate that the windows of buildings B1 and B2 on the facades facing either Tremont Street or Melnea Cass Boulevard should have OITC ratings not less than 30. The windows of building B3 should have OITC ratings not less than 26.

6.6.8 Construction Noise

The *Regulations for The Control of Noise in the City of Boston* includes Restrictions on Noise Emitted from Construction Sites (Regulation 3). Construction work on the Proposed Project will comply with the requirements and noise limits in the City of Boston regulations. Reasonable efforts will be taken to minimize the noise impact of construction activities. The following mitigation measures will be applied as needed to minimize temporary construction noise and vibration impacts:

- Avoiding nighttime construction whenever possible.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receptors.
- Attach noise-deadening material to the inside of hoppers, conveyor transfer points, or chutes.
- Limit the number and duration of equipment idling on the site, the use of annunciators of public address systems and the use of air or gasoline-driven hand tools.

- Minimize noise from the use of back-up alarms using measures that meet OSHA regulations (e.g., by using self-adjusting ambient-sensitive back-up alarms, using manually adjustable alarms on low setting, using observers, and configuring construction sites or scheduling activities to minimize alarm use).

- Routing construction-related truck traffic to roadways that will cause the least disturbance to residents.

- Using alternative construction methods to minimize the use of impact and vibratory equipment (e.g., pile-drivers and compactors).

6.7 INFRASTRUCTURE

6.7.1 Introduction

This Chapter outlines the existing utilities surrounding the Site, the connections required to provide service to the Project, and any impacts on the existing utility systems that may result from the construction of the Project. The following utility systems are discussed herein:

- Sewer
- Domestic water
- Fire protection
- Drainage
- Natural gas
- Electricity
- Telecommunications

The Project includes the construction of a mixed-use residential/commercial and two residential use developments located at 159-173 Ruggles Street in the Roxbury neighborhood of the City of Boston. The Site is bounded by Tremont Street to the northwest, Ruggles Street to the southwest, Raynor Circle to the southeast and Melnea Cass Boulevard to the northeast.

6.7.2 Wastewater

6.7.2.1 Sewer Infrastructure

There is an existing 12-inch sewer main in Tremont Street which flows in the southwest direction prior to discharging to a 24"X36" BWSC Combined Sewer Main running southeast on Ruggles Street.

6.7.2.2 Wastewater Generation

310 CMR 15.00 lists typical sewage generation values for the proposed building uses, as shown in Table 6-7.1. Typical generation values are conservative values for estimating the sewage flows from new construction. As shown in Table 6-7.1, the Project is expected to generate an increase in wastewater flows of approximate 46,524 gallons per day.

The Project consists of a mixed-use residential/commercial building, two residential use buildings and the existing Church building to remain with a total of approximately 396 bedrooms, approximately 20,975 square feet of Parish space, 2,000 square feet of commercial space, daycare space for 100 children, and 2,150 square feet of amenities space. For purposes of estimating the sewage flows, the highest possible amount of non-residential space was used. Sewage flow due to the Parish and amenity space was calculated with the assumption of 75 gallons per day per 1,000 square feet.

Table 6-7.1 Proposed Project Wastewater Generation

Use	Size/Unit	310 CMR Value (gpd/unit)	Total Flow (gpd)
Existing Building Program			
Parish	10,000 sf	75gpd/1,000 sf	750
		Total Existing Sewer Flows	**750**
Proposed Residential Building (using average 310 CMR values)			
Residential	396 bedrooms	110 gpd/bedroom	43,560
Day Care	100 persons	10gpd/1,000 sf	1,000
Retail	1,594 sf	50 gpd/1,000 sf	80
Parish & Amenity	23,125 sf	75 gpd/1,000 sf	1,734
		Total Proposed Sewer Flows	**46,524**

Increase in Sewer Flows (gpd):	**45,774**

6.7.2.3 Sewage Capacity and Impacts

The Proposed Project's impact on the existing BWSC sewer mains in Tremont Street, Ruggles Street and Raynor Circle were analyzed. The existing sewer system capacity calculations are presented in Table 6,7-2.

Table 6-7.2 Sewer Hydraulic Capacity Analysis

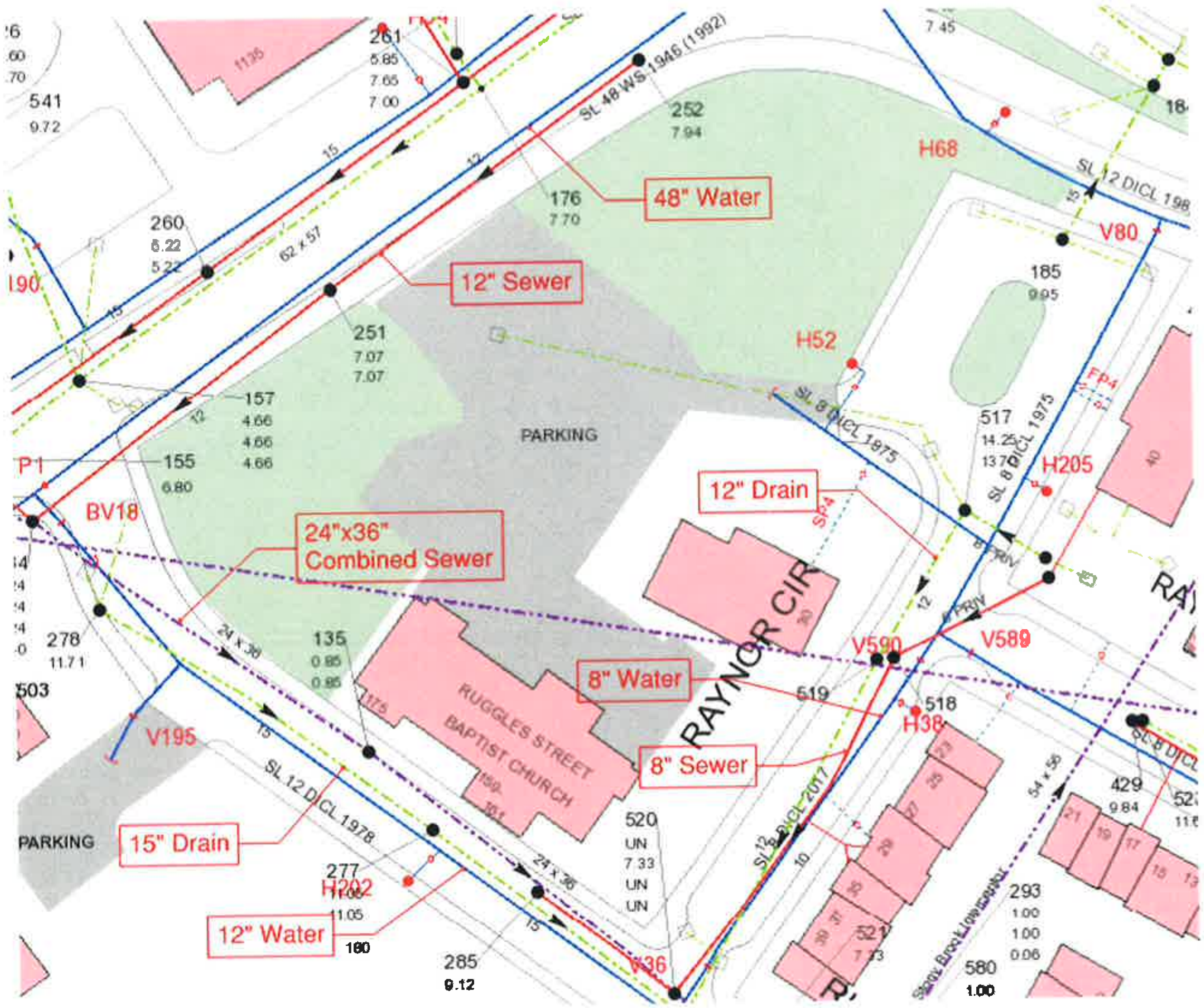
Manhole (BWSC Number)	Distance (feet)	Invert Elevation (up)	Invert Elevation (down)	Slope (%)	Dia. (in)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
Tremont Street								
252 to 251	248	7.94	7.07	0.35%	12	0.013	2.11	1.36
251 to 134	241	7.07	6.40	0.28%	12	0.013	1.88	1.21
Ruggles Street								
285 to 520	78	9.58	8.36	1.56%	12	0.013	4.46	2.88
Raynor Circle								
518 to 520	278	11.80	8.36	1.24%	12	0.013	3.96	2.56
Minimum Flow Analyzed:							1.88	1.21

Notes:
1. Manhole numbers and inverts taken from BWSC Sewer system GIS Map received on November 19, 2021 and topographical surveys performed on June 6, 2015 and July 12, 2017.
2. Flow Calculations based on Manning Equation

Table 6-7.2 indicates the hydraulic capacity of the existing 12-inch sewer mains in Tremont Street, Ruggles Street and Raynor Circle. The minimum hydraulic capacity is 1.21 million gallons per day (MGD) or 1.88 cubic feet per second (CFS) for the 12-inch main.

Based on an average daily flow estimate for the Project of 46,720 GPD or .04672 MGD; and with a factor of safety estimate of 10 (total estimate = 0.04672 MGD x 10 = 0.4672 MGD), no capacity problems are expected within the BWSC sewer systems in Tremont Street.

Figure 6-7.1 Existing Sewer, Drain, and Water Systems



6.7.2.4 Proposed Conditions

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the sewer system. Approval for the increase in sanitary flow will come from BWSC. New sewer services resulting from the Proposed Project will connect to the existing 12-inch sewer main in Tremont Street.

Improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. This process will include a comprehensive design review of the existing and proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts.

6.7.3 Water Supply

6.7.3.1 Water Infrastructure

Water for the Project will be provided by the BWSC. There are five water systems within the city, and these provide service to portions of the city based on ground surface elevation. The five systems are southern low (commonly known as low service), southern high (commonly known as high service), southern extra high, northern low, and northern high. There are existing BWSC water mains in Tremont Street.

In Tremont Street, there is an existing 48-inch southern low main and a 12-inch southern low main.

In Ruggles Street, there is an existing 12-inch southern low main.

In Raynor Circle, there is an existing 8-inch southern low main with an 8-inch stub in the locus property.

In Melnea Cass Boulevard, there is an existing 12-inch southern low main.

The existing water system is illustrated in Figure 6.7-1.

6.7.3.2 Water Consumption

The Proposed Project's water demand estimate for domestic services is based on the Proposed Project's estimated sewage generation, described above. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 314 CMR 15.00 values to account for consumption, system losses and other usages to estimate an average daily water demand. The Project's estimated domestic water demand is 51,392 gpd. The water for the Project will be supplied by the BWSC system in Tremont Street.

The existing site has an existing BWSC water account, but a new one will be needed during the site plan review process for the three proposed buildings.

6.7.3.3 Existing Water Capacity and Impacts

BWSC record flow test data containing actual flow and pressure for hydrants within the vicinity of the Project Site was requested by the Proponent. Hydrant flow data was available for one hydrant near the Site. The existing hydrant flow data is shown in Table 6.7-3.

Table 6-7.3 Existing Hydrant Flow Data

Flow Hydrant Number	Date of Test	Static Pressure (psi)	Residual Pressure (psi)	Total Flow (gpm)
H38	5/25/2022	77	74	2,004 gpm

Note: Data provided by BWSC on May 26, 2022

Water capacity problems are not anticipated within this system as a result of the Project's construction.

6.7.3.4 Proposed Project

The domestic and fire protection water services for the Project will connect to the existing BWSC water main in Tremont Street. The Proposed Project's impacts to the existing water system will be reviewed as part of the BWSC's Site Plan Review process.

The domestic and fire protection water service connections required for the Proposed Project will meet the applicable City and State codes and standards, including cross-connection backflow prevention. Compliance with the standards for the domestic water system service connection will be reviewed

as part of the BWSC's Site Plan Review Process. This review will include sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections that conform to BWSC and Boston Fire Department requirements.

Efforts to reduce water consumption will be made. Aeration fixtures and appliances will be chosen for water conservation qualities. If there are public restrooms, sensor operated faucets and toilets will be installed.

New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

6.7.4 Stormwater

There is an existing 62"x57" BWSC storm drain main in Tremont Street adjacent to the Site. The main flows southwesterly. There is also a 120" Massachusetts Water Resources Authority {"MWRA") Combined Sewer Main running through the site, located at a depth greater than 300' below grade.

The existing BWSC storm drain system is illustrated in Figure 6.7-1.

Stormwater at the Project Site is currently captured by catch basins that direct the surface runoff to the main in Hemenway Street.

6.7.4.1 Proposed Project

Stormwater improvements will be reviewed as part of the BWSC Site Plan Review process. This process includes a comprehensive design review of the proposed service connections, assessment of Project demands and system capacity, and establishment of service accounts. The proposed management system will collect site runoff and 1.25-inch of rainfall over the Project's impervious area, per BWSC's requirements. The Project is not located within the Boston Groundwater Overlay District (GCOD). The Project's storm drainage system will discharge to the 62"x57" BWSC drain main in Tremont Street.

Site runoff will be collected by a closed drainage system and treated before overflowing to the BWSC storm drainage system.

All work on the drainage systems will be performed in accordance with BWSC standards and will be submitted to the necessary agencies for review and approval prior to implementation.

6.7.4.2 Stormwater Measures During Construction

The Project will not affect the water quality of nearby water bodies. Erosion and sediment control measures will be implemented during construction to minimize the transport of site soils to off-site areas and BWSC storm drain systems. During construction, existing catch basins will be protected with filter fabric, straw bales and/or crushed stone, to provide for sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until the areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

All necessary dewatering will be conducted in accordance with applicable MWRA and BWSC discharge permits. Once construction is complete, the Project will be in compliance with local and state stormwater management policies, as described below.

6.7.4.3 Groundwater Recharge Measures/Smart Utilities

The following sections summarize the approach to addressing the City of Boston's Smart Utilities Policy as applicable within the Project. Additional information is provided in the Smart Utilities Checklist in Appendix C.

The Project consists of more than 100,000 square feet of floor area, and therefore will be required to infiltrate the first 1.25 inches of rainfall over the site impervious area. This will be accomplished primarily through an underground infiltration system. The infiltration system will likely consist of injection wells, open-bottomed chambers, or perforated pipes in a bed of crushed stone sized to store the 1.25-inch volume before overflowing by gravity to the drain main in Tremont Street. Stormwater from the roof and site impervious areas will be directed to the infiltration system through a closed drainage system.

6.7.4.4 MassDEP Stormwater Management Policy Standards

In March 1997, MassDEP adopted a Stormwater Management Policy to address non-point source pollution. In 1997, MassDEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Policy prescribes specific stormwater management standards for development projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of Best Management Practices (BMPs) in the stormwater management design. The Policy is administered locally pursuant to MGL Ch. 131, s. 40.

A brief explanation of each Policy Standard and the system compliance is provided below:

Standard #1: *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

Compliance: The Project will comply with this Standard. The design will incorporate the appropriate stormwater treatment and no new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the Project.

Standard #2: *Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR.*

Compliance: The Project will comply with this Standard. The existing discharge rate will be met or decreased as a result of the improvements associated with the Project.

Standard #3: *Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmental sensitive site design, low-impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

Compliance: The Project will comply with this Standard to the maximum extent practicable.

Standard #4: *Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*

a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;

b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and

c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Compliance: The Project will comply with this Standard. Within the Project's limit of work, there will be mostly building roof, paved sidewalk, parking, and roadway areas. Runoff from paved areas that would contribute unwanted sediments or pollutants to the existing storm drain system will be collected by deep sump, hooded catch basins and conveyed through water quality units before discharging into the BWSC system.

Standard #5: *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum* *extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Compliance: The Project will comply with this Standard. The Project is not associated with Higher Potential Pollutant Loads (per the Policy, Volume I, page 1-6).

Standard #6: *Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

Compliance: The Project will comply with this Standard. The Project will not discharge untreated stormwater to a sensitive area or any other area.

Standard #7: *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

Compliance: The Project is a new development and thus this Standard is not applicable.

Standard #8: *A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

Compliance: The Proposed Project will comply with this Standard. Sedimentation and erosion controls will be incorporated as part of the design of the Proposed Project and employed during construction.

Standard 9: *A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Compliance: The Proposed Project will comply with this Standard. An O&M Plan including long-term BMP operation requirements will be prepared for the Proposed Project and will assure proper maintenance and functioning of the stormwater management system.

Standard 10: *All illicit discharges to the stormwater management system are prohibited.*

Compliance: The Proposed Project will comply with this Standard. There will be no illicit connections associated with the Proposed Project.

6.7.5 Electrical Service

The Proponent will work with National Grid to identify where proposed building electrical services will connect and to confirm adequate system capacity as the design is finalized.

6.7.6 Telecommunications Systems

Telecommunication service will be coordinated with the telecommunication providers.

6.7.7 Gas Systems

National Grid owns and maintains the existing gas mains adjacent to the Site. The Proponent will coordinate with National Grid to determine project demands, confirm adequate system capacity, and establish connection points and requirements.

6.8 FLOOD HAZARD ZONES/WETLANDS

The Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), for the site located in the City of Boston – Community Panel Number 25025C0079J indicates the FEMA Flood Zone Designations for the Project Site area. The map shows that the Proposed Project is located in a Zone X Area determined to be outside the 0.2% annual chance flood plan. The site is previously developed and does not contain wetlands.

6.9 GEOTECHNICAL IMPACTS

This section includes a description of anticipated subsurface soil and groundwater conditions at the Project Site, planned foundation and below-grade construction activities, and mitigation measures for maintaining groundwater levels in the Project's vicinity during foundation and below-grade construction.

6.9.1 Subsurface Soil Conditions

Available preliminary subsurface information indicates that the Project Site is covered by a surficial deposit of miscellaneous fill material extending to depths of approximately 10 to 15 feet below ground surface. It is anticipated that underlying the fill deposit, a 2- to 10-foot-thick organic deposit would be encountered across the majority of the Project Site. The fill deposit and/or organics are underlain by interbedded layers of marine sand and clay that extend to depths of approximately 90 feet below the existing ground surface. The interbedded layers of marine sand and clay are underlain by a deposit of glacial till which directly overlays the bedrock surface at depths of 100 to 110 feet below existing ground surface. Groundwater is anticipated at depths ranging from 7 to 14 feet below ground surface.

The Proposed Project will include construction of three buildings identified as Buildings 1, 2 and 3. Building 1 will consist of a 14-story structure with no below-grade space. Building 2 and Building 3 will consist of 6-story and 4-story structures, respectively. In addition, a below grade parking garage will occupy the entire footprints of Building 2 and Building 3.

Based upon the proposed scope of development and the anticipated subsurface conditions, it is anticipated that proposed Buildings 2 and 3 will be supported on or above the thick interbedded layers of the marine sand and clay by means of footings or mats bearing on ground improvement elements. Conversely, foundation support for Building 1 will likely require deep foundations which may consist of high-capacity end-bearing piles installed through the interbedded layers of marine sand and clay and deriving their capacity in the underlying glacial till deposit or bedrock.

Due to the compressible fill and organic deposit located across the site, the lowest level slab of the proposed Building 1 to be supported on piles will be designed as structurally supported slab. The lowest level slab of Building 2 and 3 with the below-grade level will likely have a waterproofed mat and/or lowest level slab designed to resist hydrostatic pressures.

6.9.2 Proposed Foundation Construction

Foundation construction is planned to utilize conventional methods which are not anticipated to adversely impact adjacent structures.

Pre-excavation may be performed at ground improvement and/or pile locations to remove buried obstructions within the fill layer, including the existing timber pile and concrete foundations of the existing site buildings, where they interfere with new construction.

Some ground vibrations and noise may be produced because of the ground improvement and pile installation procedures. Impacts from these vibrations are not anticipated to result in damage to adjacent structures. However, the magnitude of vibrations is anticipated to be of sufficient magnitude to be detected by the abutters. To monitor vibration levels and to assess the potential impacts of pile or ground improvement installation, vibration monitoring with seismographs will be performed.

Excavation for the below-grade parking level will be conducted within an engineered lateral earth support system which will be designed to provide excavation support and limit ground movements outside the excavation to protect the adjacent existing buildings, streets, utilities, and other structures. Localized shoring may also be required to install utilities, deep footings/mats/pile caps, and/or pits which extend significantly below the proposed ground floor slab elevation.

6.9.3 Groundwater Conditions

Based on the anticipated site groundwater level and the proposed depth of excavation related to foundation construction of Buildings 2 and 3, a temporary construction dewatering discharge permit will be obtained from governing agencies prior to discharge of dewatering effluent from the Project Site. Testing of the effluent will be conducted prior to and during discharge to confirm compliance with all permit requirements. The Project Site is not located within the Groundwater Conservation Overlay District (GCOD) as outlined in Article 32 of the City of Boston Zoning Code. However, the Project may include the installation of groundwater observation wells in the vicinity of the site before site excavation to facilitate monitoring of the groundwater levels before, during, and following construction.

The proposed construction is not anticipated to adversely impact groundwater levels at or near the site, temporarily or permanently. Perimeter drainage is not planned to be installed for the structures. The structures with the below-grade level will likely have a waterproofed mat and/or lowest level slab and waterproofed foundation walls designed to resist hydrostatic pressures.

6.10 SOLID AND HAZARDOUS WASTE

In February of 2022, GZA GeoEnvironmental, Inc. (GZA) completed a Phase I Environmental Site Assessment (ESA) consisting of two reports for properties identified as the Crescent Parcel and the Roman Catholic Archdiocese of Boston (RCAB) Parcel in general accordance with the American Society for Testing and Materials (ASTM) Standard Practice for Phase I Environmental Site Assessments, E 1527-13 (ASTM 1527-13). The objective of the Phase I ESA was to render an opinion as to whether surficial or historical evidence indicates the presence of recognized environmental conditions which could result in the presence of hazardous materials in the environment, as defined in the ASTM 1527-13. Background information regarding the site history and compliance with the Massachusetts Contingency Plan (MCP) is included in the following subsections.

6.10.1 Existing Hazardous Waste Conditions

At the time of GZA's site reconnaissance during January 2022, limited quantities of paints and household cleaners were observed within the basement of the RCAB parcel Site Parish Center Building. These containers ranged in volume between approximately one quart and five gallons each, and were either stored on the floor, shelving, or tables. One approximately one-gallon container of gasoline was observed stored on shelving within the basement. Each of the observed containers appeared to be in good condition, and no staining was observed on the concrete flooring in the vicinity of the containers.

GZA also observed two 5-gallon containers of hydraulic oil stored on the concrete floor within the elevator machine room within the four-story Head Start Building of the RCAB parcel. Each of these containers appeared to be in good condition. Minor staining was observed on the floor within the elevator machine room. However, no floor drains or cracks in the flooring were observed. The observed minor staining is considered a de minimis condition. No other areas of active oil or hazardous material use or storage were observed.

Historical information indicated that a former filling station with underground storage tanks (USTs) containing gasoline and oil was listed at the 175-177 Ruggles Street portion of the Crescent Parcel (addressed as 1144 Tremont Street and 1142 to 1152 Tremont Street in historical records) until approximately 1971. In the February 2022 Phase I ESA Report, GZA opined that the lack of information regarding the removal of USTs at the former filling station represents a Significant Data Gap. Based on the 1938 historical Sanborn Map, it is not clear whether tanks shown on the map are/were located on the Site, or adjacent and potentially cross-gradient to the Site. No aboveground storage tanks (ASTs) or USTs were observed on either parcel at the site during the time of GZA's Site reconnaissance.
In addition to the observations mentioned above, GZA also identified the following Business Environmental Risks (BERs) in the February 2022 Phase I ESA Report associated with both the Crescent and RCAB parcels:

- The presence of historical fill material is documented at several adjoining and vicinity properties. It is GZA's opinion that the presence of historical fill material at the site is likely. Future site redevelopment activities might encounter potential contamination in soil and/or groundwater-related to past filling. Impacted material must be managed either on or off-site in conformance with applicable federal, State, and local regulations.

- If dewatering is required for construction, groundwater sampling and testing in conformance with federal, State, and/or local regulations, sewer discharge permit/approval requirements may be required.

- Based on the Site's history, there is potential to encounter subsurface structures related to former buildings at the Site.

GZA concluded that further evaluation for the potential presence of USTs in the vicinity of the former filling station and impacted urban fill and groundwater in areas planned for excavation and soil export may be necessary to address the significant data gap and business environmental risks identified in the Phase I ESA Report for the Site.

A subsurface assessment has been proposed as part of the project construction design phase to evaluate the significant data gap and business environmental risks ("BERs") identified in the February 2022 Phase I ESA. The planned subsurface assessment includes using ground-penetrating radar (GPR) services, installation of groundwater monitoring wells, and collection of soil and groundwater samples for environmental and preliminary soil disposal pre-characterization analyses. The soil disposal pre-characterization sampling and laboratory testing are not intended to pre-characterize the full extent of the Project Site but will provide information relative to potential off-site disposal options for excess soils.

As part of the Proposed Project site redevelopment and based on the findings of the pending subsurface investigation, a soil and groundwater management plan may be necessary to outline procedures for managing soils and groundwater anticipated to be disturbed during construction. In addition, should evidence of contaminated soil or groundwater be discovered during the subsurface assessment, the Proponent will retain a Licensed Site Professional (LSP) to monitor remediation and clean-up operations and to ensure that monitoring and reporting requirements are followed.

6.10.2 Existing and Operational Solid Waste Management Conditions

At the time of GZA's Site Reconnaissance, two solid waste dumpsters were observed at the Site; one in the southern portion of the Crescent Parcel, and one situated in the parking lot to the northeast of the Head Start Building on the RCAB Parcel. Both dumpsters appeared to be in good condition, and no staining was observed in the vicinities. No areas of hazardous waste generation were observed.

The Project will generate solid waste typical of other residential and commercial uses. The Project will include facilities for collecting non-recyclable and recyclable waste. Non-recyclable waste and compacted material will be removed by a waste hauler contracted by the Proposed Project. The Project will not generate hazardous waste, with the exception of "household hazardous wastes" typical of residential use, such as cleaning fluids and paint.

6.11 CONSTRUCTION IMPACTS

The Construction Manager (CM), will administer the Construction Management Plan (CMP), and will enforce the provisions of the CMP with all contractors, subcontractors, suppliers, and vendors participating in the project throughout the construction process. Upon approval, the CMP will become an exhibit to the subcontracts and each subcontractor will be contractually obligated to abide by the approved CMP.

Compliance with the CMP will be monitored through field inspections, meeting minutes, and periodic updates as mandated by the City of Boston and any other authority having jurisdiction.

The CM will have a presence on the site for all days that construction activity is taking place.

6.11.1 Construction Air Quality

Construction activities will potentially generate fugitive dust, which could result in a localized increase in airborne particulate levels. Fugitive emissions from construction activities will depend upon a multitude of factors such as ambient humidity, recent weather patterns, and phase of construction. The CM will be required to implement measures to control odors if needed. These measures may include spraying of odor control foams, limiting the amount of open excavation at any one time, and use of odor neutralizers

6.11.2 Rodent Control

The CM will develop a rodent control program for the Proposed Project prior to its construction start. A Pest Control Service will be hired as the manager of the rodent control program. Rodent control measures will be in-place prior to and during demolition and construction activities. The program will include performance of extermination and control procedures. The contractor has been hired to conduct weekly site visits. Additionally, waste containers will be placed at worker gathering locations and emptied on a daily basis. Litter clean-up will be performed on a daily basis.

6.11.3 Construction Activity Schedule

The typical construction activity will occur between the hours of 7:00 AM and 6:00 PM. In the event that any night work, extended hours, or Saturday work is expected, the CM will coordinate with the City of Boston for approval.

6.11.4 Construction Sequence

It is anticipated that the project will be built out in a sequential manner that maximizes construction efficiencies and minimizes cost, to the greatest extent possible, with the build-out and construction of the high-rise and mid-rise buildings, along with the homeownership building and underground parking garage, to occur first, followed by the renovation and expansion of the Parish Ministry space and residential units contained therein.

6.11.5 Construction Staging Area

The proposed construction logistic plans are designed to isolate construction activity from the surrounding neighborhood while providing safe access for pedestrians and vehicles during normal day-to-day activities and emergencies.

All construction activities will be kept within areas designated by the CMP. There will be no stockpiling of fill, equipment, or materials on public property or public ways unless identified by the CMP and permitted by all authorities having jurisdiction. Truck idling restrictions will be specified in all subcontracts. "Real-Time" management practices will be employed for deliveries. Local streets will not be used for staging delivery trucks. Construction contracts will include provisions restricting truck travel to approved routes. The impact of construction trucks in the evening peak hour is expected to be insignificant because most deliveries are completed prior to the end of the typical construction workday.

6.11.6 Signage and Parking Controls

During construction, secure fencing and barricades will be used to isolate construction areas from pedestrian traffic around the Project Site. In addition, sidewalk areas and walkways near construction activities will be well marked to protect pedestrians and ensure their safety. Directional signage will be installed and regularly updated as site conditions change during construction. When required, overhead protection will be used to isolate and safeguard pedestrians along the sidewalk during all phases of construction.

6.11.7 Perimeter Protection/Public Safety

The perimeter of the Proposed Project will be driven chain link fencing with scrim. A combination of cones, barrels, and soft barriers will be employed to prevent pedestrians from accidently entering the construction site. The fencing will be secured at night and during non-working hours.

The CM or Proponent's Project Manager will maintain a log of all contacts including emergencies and complaints, indicating the incident or complaint, date, time, and nature of the incident or complaint, and resolution of the incident or complaint.

An information board will be posted at the construction site and include the following information.

- General Project Summary
- Contact Information for the Construction Team
- Emergency Contact Information
- Contact Number for Complaints

6.11.8 Abutters

All immediate abutting properties will be contacted to explain the project phasing, and to discuss any anticipated impacts due to the planned construction. Potential impacts on access to Raynor Circle and Ruggles Street will be mitigated throughout the construction period. Immediate abutters will be given updates on progress and expectations for construction activities as the Proposed Project progresses. At all times during construction activity there will be management staff on-site and available for assistance.

6.11.9 Construction Waste

This Proposed Project will be LEED Certifiable Buildings which requires the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that the dictated requirements are met. All waste material will be transported in covered trucks to an approved solid waste facility. In accordance with DEP Regulations for Solid Waste Facilities, 310 CMR 10.00. This requirement will be specified in the disposal contract.

6.11.10 Construction Worker Parking

The number of workers required during the construction period will vary with an estimated workforce of about forty workers during the sitework and peak construction phase. Because the construction workers will be arriving and departing during off-peak traffic periods, they are not expected to significantly affect traffic conditions in the Proposed Project's area. No vehicles will be allowed to park on the project site or public streets. Stacking of delivery trucks is not allowed and subcontractors will encourage their employees to use public transportation.

6.11.11 Roadway and Sidewalk Closures

During construction, the sidewalks directly adjacent to the project site will be temporarily closed when warranted by specific construction activity, but kept to a minimum. During utility tie-ins, temporary parking bans may be required on adjacent streets in order to maintain a safe environment for workers and the general public.

6.11.12 Off-Site Staging

At no time will the City of Boston streets be used for crane placement and/or off-loading of trucks without

a permit application and approval. Any trucks unable to access the loading/queuing area upon arrival shall be directed to off-site areas, not on the public way. Trucks coming to and from the site will be required to use major arterial roadways or highways and not local streets. The selection of proposed truck routes is based on the following criteria:

- Minimizing truck activity in the residential neighborhoods.
- Designating specific roads where trucks are permitted; and
- Providing access to and from the major arteries

6.11.13 Dust Control

To mitigate dust emissions, the CM and all site-related contractors will utilize the following measures:

- Wetting agents will be used regularly to control and suppress dust that may come from exposed excavations, chipping, sawing, etc.
- All trucks for transportation of construction debris will be tarped and their wheels will be cleaned (in the event that trucks ever leave an asphalt surface).

- No storage of construction debris will be allowed on site, other than in dumpsters, which will be tarped over during non-working hours.

- Construction practices will be monitored to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized and that any emissions of dust are negligible.

- Street cleaning shall be provided on a weekly or as-required basis during the excavation phase and on an as-needed basis during construction.

6.11.14 Odor Control

Methods to be used by the CM to control odor emissions associated with earthwork include:

- Improving site drainage in order to minimize standing water from remaining in excavated areas, and pumping collected groundwater to sump locations.

- Covering stockpiles of excavated material with polyethylene sheeting and securing it with sandbags or an equivalent method to prevent the cover from being displaced by wind.

- Reducing the amount of time that excavated material is exposed to the open atmosphere.

- Maintaining the construction site free of trash, garbage, and debris.

6.11.15 Construction Noise

Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures to be undertaken will include:

- Heavy and/or noisy equipment will not be started or utilized prior to 7:00 AM.

- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers.

- Muffling enclosures on continuously running equipment, such as air compressors and welding generators.

- Using less noise-specific construction operations and techniques where feasible (e.g., mixing concrete off-site instead of on-site).

- Selecting the quietest of options for all equipment and procedures (e.g., electric instead of diesel-powered equipment, hydraulic instead of pneumatic impact tools).
- Scheduling equipment operations to keep average levels low, synchronize noisiest operations with times of highest ambient levels, and maintain relatively uniform noise levels.
- Turn off idling equipment.
- Locating noisy equipment as far as possible from sensitive areas.
- If there are noise complaints or issues, the CM will provide quantitative noise metering, and will use that information to mitigate neighborhood impact to the greatest extent possible.

6.11.16 Other Construction Mitigation

Vibration

All means and methods for performing work at the project site will be evaluated to minimize potential vibration impacts on the adjacent properties and other nearby buildings. The Proposed Project does not entail any extensive demolition or other heavy vibration activities. A preconstruction survey of the surrounding buildings may be completed by a 3rd party Engineering Company. They will also monitor throughout the duration of construction.

Utilities

Protection of the City of Boston and the MWRA water, sewer, and drain lines will begin before commencement of the site work. Hand exaction will take place when excavating in the immediate area of pipe walls is required.

The project specifications will require the contractors to give written notice of pending construction that will affect utilities to all public or private service corporations or officials owning or having charge of such utilities. In addition, the contractors will be required to notify Massachusetts Dig Safe and obtain a dig safe number for each off-site area to be disturbed prior to disturbing the existing ground in any way. The contractor will also be required to locate carefully all subsurface structures before beginning any work or operation that might damage such structure. Finally, the contractor will submit pre-task plans reviewing procedures to assure they will conduct operations so to avoid damaging any structures.

Prior to the start of construction in any phase, the CM will provide the authorities with a description of any off-site utility requirements that require street closings. Connections to existing utility services will be coordinated with the appropriate utility provider as well as the City of Boston.

Snow Removal

Snow from the site and sidewalks adjacent to the project site will be removed and deposited on private property or trucked off-site and legally disposed.

Cleaning

Sidewalks and the project site will be cleaned as needed to minimize accumulation of dirt and debris.

Street cleaning will be provided by a mechanical street sweeper on a weekly basis during the excavation phase and on an as-needed basis during subsequent construction phases.

Municipal Coordination

Local Authorities

Boston Police Department-BPD access will be provided to the Project Site, if need be. Police details will be provided during construction activities as required to facilitate traffic flow and pedestrian safety. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

Boston Fire Department- BFD access will be provided to the Project Site. Existing fire hydrants that are to remain will be flagged and clearly marked for BFD use. Access to the site for emergency vehicles will be maintained at all times. The site will be available for inspection by the police and fire departments upon completion of the site preparation and mobilization phase to ensure compliance with all emergency access and safety.

7.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This chapter identifies properties located within and in the vicinity of the Project Site that are listed in the State and National Registers of Historic Places (State and National Registers) or included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory) and evaluates potential Project effects on those properties.

7.1 Historic Resources Within and in the Vicinity of the Project Site

The Project Site includes the St. Katharine, consisting of the church, constructed in 1934, and the daycare center, constructed in 1972-1973, which are included in the Inventory as part of the former St. Francis de Sales-St. Philip Parish Complex. When surveyed in 2004, the Classical Modern style church, originally built as the Ruggles Street Baptist Church, was recommended as eligible for listing in the National Register for its association with the Baptist Church of Boston and as a well-preserved example of the Classical Modern design in Boston; the daycare center was not recommended as National Register eligible.

There are no other historic resources in the immediate vicinity of the Project site. Historic resources within a 1/4-mile radius of the Project site are presented in Figure 7-1 and summarized in Table 7-1.

Table 7-1 Historic Resources within and in the Vicinity of the Project Site

Map ID	Historic Resource	Address	MHC Inv. No.
Properties Included the State and National Registers of Historic Places			
A	Lower Roxbury Historic District	Tremont St. and Columbus Ave.	BOS.QY
B	Frederick Douglas Square Historic District	Hammond St., Warwick St., Windsor St.	BOS.RE
C	Berger Factory	37 Williams Street	BOS.QT
D	Goldsmith Block/Ruggles-Shawmut Housing	41 Ruggles St., 746-750 Shawmut Ave.	BOS.15542
Properties Included in the Inventory of Historic and Archaeological Assets of the Commonwealth			
1	St. Katharine Drexel Parish (St. Francis de Sales Church/Ruggles Street Baptist Church and St. Francis de Sales School)	159 Ruggles St.	BOS.WN
2	United Drug Company/Northeastern University	35-37, 39-41, and 43 Leon St, 105-107 and 111 Forsyth St.	BOS.YF
3	Krentzman Quadrangle/Northeastern University	Huntington Ave. and Forsyth St.	BOS.YE
4	Lenox Street Apartments	601 Shawmut Ave.	BOS.ADO
5	Dudley Square Area/Dudley Station Historic District Extension	9, 11, 13, 15, 25 and 41 Ruggles St., 746-750 Shawmut Ave.	BOS.YP

The Proposed Project is not anticipated to have effects on any of the listed historic resources in Table 7-1.

7.2 Archaeological Resources

There are no known or recorded archaeological sites within the Project Site.

7.3 Potential Impacts to Historic Resources

The Project proposes preservation of the historic church and introduction of new construction on the large urban parcel. Indirect impacts to historic resources, including visual, shadow, and construction, were considered and are discussed in Chapter 3.0, Urban Design, Section 6.2, and Section 6.11, respectively. Visual (urban design) and shadow impacts to historic resources are summarized below.

7.4 Visual

As described in Chapter 3.0, Urban Design, key urban design objectives were established to support the Project purpose. Preserving the existing St. Katharine is one of the primary objectives of the development. In addition, the objectives recognize the Proposed Project location as being prominent and important from an urban design standpoint, serving as a gateway to Nubian Square.

Buildings to the northwest, west, and southwest are a mix of tall, older and newer residential, office, and commercial structures, while buildings to the northeast and southeast are of more moderate scale. The Project Site has been designed to be responsive to its urban context and to enhance the St. Katharine. The Proposed Project is taller along Tremont Street, while transitioning to a more moderate size towards Melena Cass Boulevard and the Madison Park townhouses to the northeast and southeast. Taking cues from Boston's red brick apartment houses, the architectural character applies a language of balance, proportion, and material expression so that buildings at different scales dialogue in a familiar rhythm.

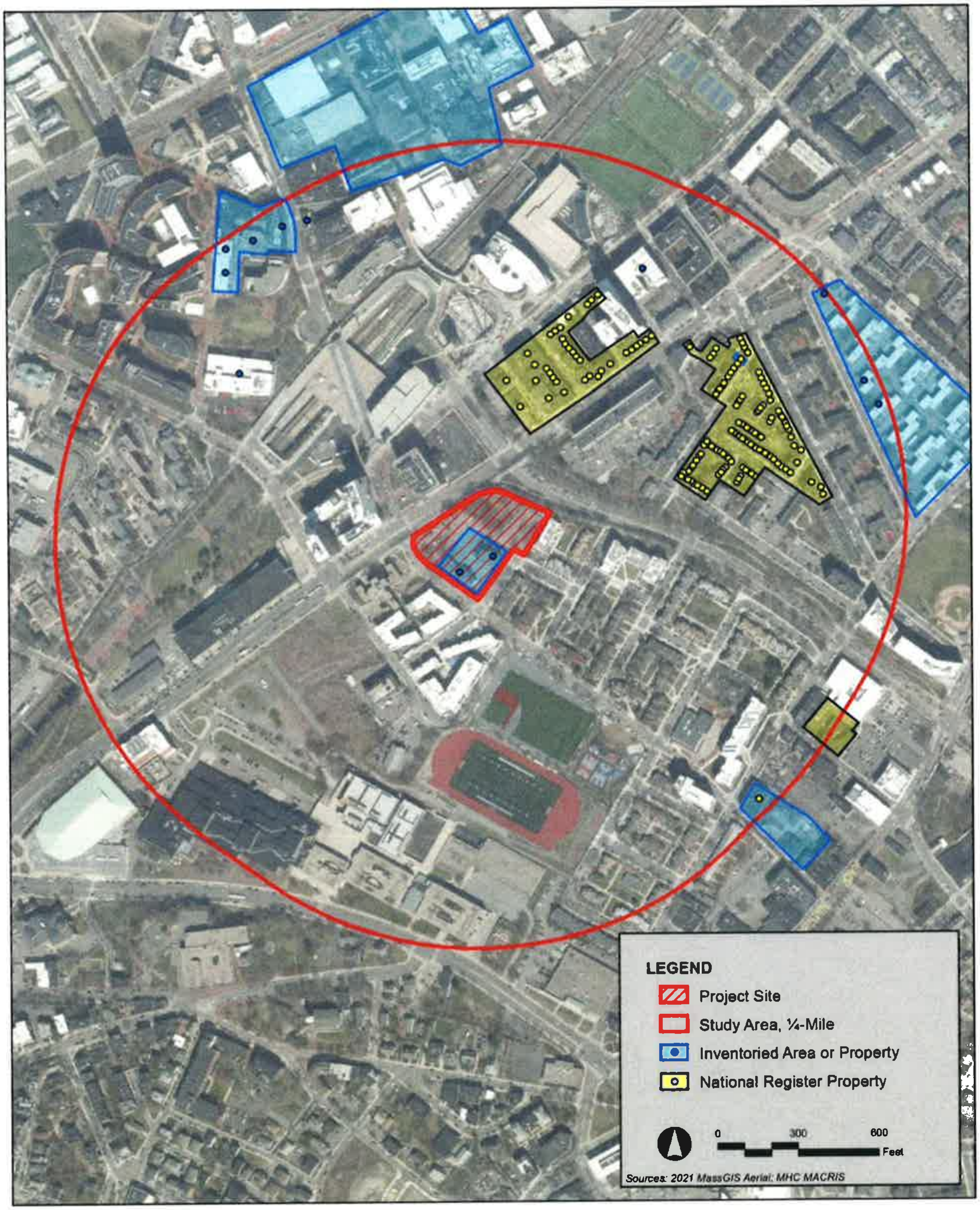
The inclusion of retail, cultural, and community uses at street level with residential units above will support a vibrant urban atmosphere. The Proposed Project will fill in a missing piece of urban fabric, bringing new energy and dramatically improving the character of the pedestrian environment on this predominantly vacant lot.

7.5 Shadow

As described in Section 6.2, Shadow Analysis, an analysis of existing and future shadow conditions was conducted. The shadow analysis examined existing and build condition shadow impacts for March 21, June 21, September 21, and December 21 at 9:00 a.m., 12:00 p.m. and 3:00 p.m., as well as 6:00 p.m. for June 21 and September 21.

The results of the shadow study indicate that the Proposed Project will cause limited shadow impacts to the surrounding area. New shadows from the Proposed Project will generally be limited to the Project Site, surrounding parcels to the northwest, north, and northeast of the Project Site and surrounding roads, including Tremont Street and Melnea Cass Boulevard.

No new shadows from the Project Site will be cast on St. Katharine. The only impact to nearby historic resources is shadow cast on December 21 at 3:00 p.m., reaching the southwest elevation of St. Cyprian Episcopal Church at 1075 Tremont Street, located within the Lower Roxbury Historic District.



Drexel Village **159 Ruggles Street, Boston**

Figure 7-1.1
Historic Resources

8.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

8.1 MEPA Review

The Proponent will schedule a meeting with the Executive Office of Energy and Environmental Affairs, to confirm if the Project meets the threshold review requirements of the Massachusetts Environmental Policy Act ("MEPA").

8.2 Massachusetts Historical Commission

If the Proposed Project is required to submit an Environmental Notification Form (ENF) with MEPA, then the Massachusetts Historical Commission (MHC) will review the Proposed Project through that process. However, if the Proposed Project is not required to file an ENF, then a Project Notification Form (PNF) will be filed with the MHC.

8.3 Boston Landmarks Commission

Since the Project Site includes a daycare that was constructed in 1972, the Proponent will file an Article 85 application with the Boston Landmarks Commission.

8.4 Architectural Access Board Requirements

The Proposed Project will comply with the requirements of the Architectural Access Board and the standards of the Americans with Disabilities Act.

8.5 Boston Civic Design Commission

Article 28 of the Zoning Code stipulates that projects over 100,000 SF shall be subject to review by the Boston Civic Design Commission (BCDC). The Proposed Project meets the square footage requirements for BCDC review.

8.6 Boston Interagency Fair Housing Development Committee

The Proponent has completed the *Affirmatively Furthering Fair Housing Assessment Form* and looks forward to engaging with the BIFHDC during the Article 80 review process.

8.7 Other Permits and Approvals

Section 1.5 of this PNF provides a list of key agencies from which pertinent project permits and approvals will be sought.

8.8 Community Engagement

During Article 80 review, the Proponent will continue to engage with the community.

9.0 PROJECT'S CERTIFICATION

This form has been circulated to the Boston Planning and Development Agency as required by Article 80 of the Boston Zoning Code.

Signature of Proponent
William H. Grogan
President
Planning Office for Urban Affairs

October 6, 2023

Signature of Proponent
Jonathan C. Garland
President & Founder
JGE Development LLC

October 6, 2023

Beverley E. Johnson
Bevco Associates, Inc.

October 6, 2023

Appendix A

Drexel Village

Climate Resiliency Checklists

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

Submitted: 08/31/2023 14:28:56

A.1 - Project Information

Project Name:	Drexel Village, Building One			
Project Address:	175 Ruggles St			
Filing Type:	Initial (PNF, EPNF, NPC or other substantial filing)			
Filing Contact:	Ann John	CLEAResult	ann.john1@clearesult.com	5083653016
Is MEPA approval required?	No	MEPA date:		

A.2 - Project Team

Owner / Developer:	Planning Office for Urban Affairs
Architect:	TAT
Engineer:	RW Sullivan
Sustainability / LEED:	CLEAResult
Permitting:	Bevco Associates
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential, retail
List the First Floor Uses:	Residential, retail
List any Critical Site Infrastructure and or Building Uses:	Transformer vault, electrical room, emergency generator, fire pump, fire command center

Site and Building:

Site Area (SF):	110339	Building Area (SF):	177450
Building Height (Ft):	162	Building Height (Stories):	14
Existing Site Elevation – Low (Ft BCB):	17	Existing Site Elevation – High (Ft BCB):	21
Proposed Site Elevation – Low (Ft BCB):	17	Proposed Site Elevation – High (Ft BCB):	21
Proposed First Floor Elevation (Ft BCB):	20	Below grade spaces/levels (#):	0

Article 37 Green Building:

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LEED Version - Rating System:	LEED BD+C Multifamily Midrise v4	LEED Certification:	No
Proposed LEED rating:	Gold	Proposed LEED point score (Pts.):	67.5

Building Envelope:

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	30	Exposed Floor :	
Foundation Wall:		Slab Edge (at or below grade):	10

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:		Wall & Spandrel Assembly Value:	
Area of Framed & Insulated / Standard Wall:		Wall Value:	R16.75 ci, R19+R21ci
Area of Vision Window:		Window Glazing Assembly Value:	.22
		Window Glazing SHGC:	.25
Area of Doors:		Door Assembly Value :	

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	The project was modeled in WUFI Passive, following procedures laid out in the 2021 PHIUS Certification Guidebook v3.1.		
Annual Electric (kWh):	816009	Peak Electric (kW):	
Annual Heating (MMbtu/hr):	701	Peak Heating (MMbtu):	560
Annual Cooling (Tons/hr):	77008	Peak Cooling (Tons):	41.70
Energy Use - Below ASHRAE 90.1 - 2013 (%):		Have the local utilities reviewed the building energy performance?:	No
Energy Use - Below Mass. Code (%):		Energy Use Intensity (kBtu/SF):	5.3

Back-up / Emergency Power System

Electrical Generation Output (kW):	350	Number of Power Units:	1
System Type (kW):	Combustion Engine	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):	350	Heating (MMbtu/hr):	24
		Cooling (Tons/hr):	10

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 – GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons): 242

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The project was modeled in WUFI Passive, following procedures laid out in the 2021 PHIUS Certification Guidebook. Passive feasibility will be reviewed by Mass Save. Project team will engage with CPHC, energy modeler, MEP, and architect to ensure energy efficiency.

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

The walls will have continual exterior insulation, the windows will be high performance and the units will have high efficiency heat pumps.

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

High performance HVAC systems, lighting controls, low flow fixtures and occupancy sensors

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

The building will install PV where feasible.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

N/A

Describe any energy efficiency assistance or support provided or to be provided to the project:

The proponent will pursue Mass Save energy rebates.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The Project is designed to be all-electric with a high performing envelope. The goal is to minimize the building loads such that future efficiency upgrades can be limited to HVAC equipment and not involve cost-prohibitive strategies such as added insulation or a major retrofit to reduce loads.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low (Deg.):	7	Temperature Range - High (Deg.):	90
Annual Heating Degree Days:	5440	Annual Cooling Degree Days	870

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):	7	Days - Above 100° (#):	1
Number of Heatwaves / Year (#):	2	Average Duration of Heatwave (Days):	3

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The project will specify high SRI roofing as well as adding landscaping/ground cover to the site to reduce heat island effect

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The Project design will be optimized for both heating and cooling. Strategies include continuous insulation, insulated operable windows with Low-E coating and optimum solar heat gain coefficient (SHGC), natural ventilation strategies, and added cooling capacity by using higher design temperatures.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

The high performance glazing and building envelope will retain comfortable temperatures in the building for an extended period of time in the event of a power outage. Operable windows are provided for occupant comfort.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

What is the project design precipitation level? (In. / 24 Hours)	5.16

Describe all building and site measures for reducing storm water run-off:

Stormwater will be captured via internal roof drains and conveyed to subsurface infiltration systems providing recharge storage for the first 1.25" of rainfall. Outlet control structures will be used to mitigate the larger storm events to ensure the post condition flow rates and volumes do not exceed the existing conditions

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

On-site subsurface infiltration systems will be designed to mitigate larger storm events via outlet control structures to ensure the post condition flow rates and volumes do not exceed the existing conditions.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA Special Flood Hazard Area?	No	What Zone:	
What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?			
Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see SLR-FHA online map)?			

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

Boston Planning & Development Agency

Climate Resiliency Report Summary

boston planning & development agency

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2' of sea level rise above 2013 tide levels, an additional 2.5" to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project's Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by adding 12" of freeboard for buildings, and 24" of freeboard for critical facilities and infrastructure and any ground floor residential units.

What is the Sea Level Rise - Base Flood Elevation for the site (Ft BCB)?

What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?

What are the Site Elevations at Building (Ft BCB)?

First Floor Elevation (Ft BCB):

What is the Accessible Route Elevation (Ft BCB)?

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Thank you for completing the Boston Climate Change Checklist!

For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

Boston Planning & Development Agency
Climate Resiliency Report Summary

Submitted: 08/31/2023 14:50:12

A.1 - Project Information

Project Name:	Drexel Village, Building 2		
Project Address:	175 Ruggles St, Boston, MA		
Filing Type:	Initial (PNF, EPNF, NPC or other substantial filing)		
Filing Contact:	Ann John	CLEAResult	ann.john1@clearesult.com	5083653016
Is MEPA approval required?	No	MEPA date:	

A.2 - Project Team

Owner / Developer:	Planning Office for Urban Affairs
Architect:	TAT
Engineer:	RW Sullivan
Sustainability / LEED:	CLEAResult
Permitting:	Bevco Associates
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential
List any Critical Site Infrastructure and or Building Uses:	Main Electrical Room

Site and Building:

Site Area (SF):	110339	Building Area (SF):	90466
Building Height (Ft):	68	Building Height (Stories):	6
Existing Site Elevation – Low (Ft BCB):	17	Existing Site Elevation – High (Ft BCB):	21
Proposed Site Elevation – Low (Ft BCB):	17	Proposed Site Elevation – High (Ft BCB):	21
Proposed First Floor Elevation (Ft BCB):	20	Below grade spaces/levels (#):	1

Article 37 Green Building:

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

LEED Version - Rating System:	LEED BD+C Multifamily Midrise v4	LEED Certification:	No
Proposed LEED rating:	Gold	Proposed LEED point score (Pts.):	67.5

Building Envelope:

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	30	Exposed Floor :	20
Foundation Wall:		Slab Edge (at or below grade):	

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:		Wall & Spandrel Assembly Value:	
Area of Framed & Insulated / Standard Wall:		Wall Value:	R23, 6ci
Area of Vision Window:		Window Glazing Assembly Value:	.29
		Window Glazing SHGC:	.39
Area of Doors:		Door Assembly Value :	

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	The project was modeled in WUFI Passive, following procedures laid out in the 2021 PHIUS Certification Guidebook v3.1.		
Annual Electric (kWh):	401003	Peak Electric (kW):	
Annual Heating (MMbtu/hr):	353	Peak Heating (MMbtu):	282
Annual Cooling (Tons/hr):	32291	Peak Cooling (Tons):	18.55
Energy Use - Below ASHRAE 90.1 - 2013 (%):		Have the local utilities reviewed the building energy performance?:	No
Energy Use - Below Mass. Code (%):		Energy Use Intensity (kBtu/SF):	5.6

Back-up / Emergency Power System

Electrical Generation Output (kW):	250	Number of Power Units:	1
System Type (kW):	Combustion Engine	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):	250	Heating (MMbtu/hr):	24
		Cooling (Tons/hr):	4

B - Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 - GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons): 119

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The project was modeled in WUFI Passive, following procedures laid out in the 2021 Phius Certification Guidebook. Passive feasibility will be reviewed by Mass Save. Project team will engage with CPHC, energy modeler, MEP, and architect to ensure energy efficiency.

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

The walls will have continual exterior insulation, the windows will be high performance and the units will have high efficiency heat pumps.

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

The walls will have continual exterior insulation, the windows will be high performance and the units will have high efficiency heat pumps.

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

The building will install PV where feasible.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

N/A

Describe any energy efficiency assistance or support provided or to be provided to the project:

The proponent will pursue Mass Save energy rebates.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The Project is designed to be all-electric with a high performing envelope. The goal is to minimize the building loads such that future efficiency upgrades can be limited to HVAC equipment and not involve cost-prohibitive strategies such as added insulation or a major retrofit to reduce loads.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low (Deg.):	7	Temperature Range - High (Deg.):	90
Annual Heating Degree Days:	5440	Annual Cooling Degree Days	870

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):	7	Days - Above 100° (#):	1
Number of Heatwaves / Year (#):	2	Average Duration of Heatwave (Days):	3

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The project will specify high SRI roofing as well as adding landscaping/ground cover to the site to reduce heat island effect

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The Project design will be optimized for both heating and cooling. Strategies include continuous insulation, insulated operable windows with Low-E coating and optimum solar heat gain coefficient (SHGC), natural ventilation strategies, and added cooling capacity by using higher design temperatures.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

The high performance glazing and building envelope will retain comfortable temperatures in the building for an extended period of time in the event of a power outage. Operable windows are provided for occupant comfort.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

What is the project design precipitation level? (In. / 24 Hours)	5.16

Describe all building and site measures for reducing storm water run-off:

Stormwater will be captured via internal roof drains and conveyed to subsurface infiltration systems providing recharge storage for the first 1.25" of rainfall. Outlet control structures will be used to mitigate the larger storm events to ensure the post condition flow rates and volumes do not exceed the existing conditions.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

On-site subsurface infiltration systems will be designed to mitigate larger storm events via outlet control structures to ensure the post condition flow rates and volumes do not exceed the existing conditions.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA Special Flood Hazard Area?	No	What Zone:	
What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?			
Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see SLR-FHA online map)?	No		

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2' of sea level rise above 2013 tide levels, an additional 2.5" to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project's Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by adding 12" of freeboard for buildings, and 24" of freeboard for critical facilities and infrastructure and any ground floor residential units.

What is the Sea Level Rise - Base Flood Elevation for the site (Ft BCB)?

What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?

First Floor Elevation (Ft BCB):

What are the Site Elevations at Building (Ft BCB)?

What is the Accessible Route Elevation (Ft BCB)?

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Thank you for completing the Boston Climate Change Checklist!

For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

Boston Planning & Development Agency

Climate Resiliency Report Summary

boston planning & development agency

Submitted: 08/31/2023 15:06:45

A.1 - Project Information

Project Name:	Drexel Village, Building 3			
Project Address:	175 Ruggles St, Boston, MA			
Filing Type:	Initial (PNF, EPNF, NPC or other substantial filing)			
Filing Contact:	Ann John	CLEAResult	ann.john1@clearesult.com	5083653016
Is MEPA approval required?	No	MEPA date:		

A.2 - Project Team

Owner / Developer:	Planning Office for Urban Affairs
Architect:	TAT
Engineer:	RW Sullivan
Sustainability / LEED:	CLEAResult
Permitting:	Bevco Associates
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Church, parish office, day care, residential, parish program
List the First Floor Uses:	Church, parish office, day care, residential, parish program
List any Critical Site Infrastructure and or Building Uses:	Main electrical room

Site and Building:

Site Area (SF):	110339	Building Area (SF):	63000
Building Height (Ft):	52	Building Height (Stories):	4
Existing Site Elevation – Low (Ft BCB):	17	Existing Site Elevation – High (Ft BCB):	21
Proposed Site Elevation – Low (Ft BCB):	17	Proposed Site Elevation – High (Ft BCB):	21
Proposed First Floor Elevation (Ft BCB):	21	Below grade spaces/levels (#):	1

Article 37 Green Building:

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

LEED Version - Rating System:	LEED BD+C Multifamily Midrise v4	LEED Certification:	No
Proposed LEED rating:	Gold	Proposed LEED point score (Pts.):	67.5

Building Envelope:

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	30	Exposed Floor :	20
Foundation Wall:		Slab Edge (at or below grade):	

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:		Wall & Spandrel Assembly Value:	
Area of Framed & Insulated / Standard Wall:		Wall Value:	R23, 6ci
Area of Vision Window:		Window Glazing Assembly Value:	.29
		Window Glazing SHGC:	.39
Area of Doors:		Door Assembly Value :	

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	The project was modeled in WUFI Passive, following procedures laid out in the 2021 PHIUS Certification Guidebook v3.1.		
Annual Electric (kWh):	86597	Peak Electric (kW):	
Annual Heating (MMbtu/hr):	87	Peak Heating (MMbtu):	72
Annual Cooling (Tons/hr):	3357	Peak Cooling (Tons):	3.96
Energy Use - Below ASHRAE 90.1 - 2013 (%):		Have the local utilities reviewed the building energy performance?:	No
Energy Use - Below Mass. Code (%):		Energy Use Intensity (kBtu/SF):	5

Back-up / Emergency Power System

Electrical Generation Output (kW):	200	Number of Power Units:	1
System Type (kW):	Combustion Engine	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):	200	Heating (MMbtu/hr):	24
		Cooling (Tons/hr):	6

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 – GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons): 26

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The project was modeled in WUFI Passive, following procedures laid out in the 2021 PHIUS Certification Guidebook. Passive feasibility will be reviewed by Mass Save. Project team will engage with CPHC, energy modeler, MEP, and architect to ensure energy efficiency.

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

The walls will have continual exterior insulation, the windows will be high performance and the units will have high efficiency heat pumps.

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

High performance HVAC systems, lighting controls, low flow fixtures and occupancy sensors

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

The building will install PV where feasible.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

N/A

Describe any energy efficiency assistance or support provided or to be provided to the project:

The proponent will pursue Mass Save energy rebates.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The Project is designed to be all-electric with a high performing envelope. The goal is to minimize the building loads such that future efficiency upgrades can be limited to HVAC equipment and not involve cost-prohibitive strategies such as added insulation or a major retrofit to reduce loads.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low (Deg.):	7	Temperature Range - High (Deg.):	90
Annual Heating Degree Days:	5440	Annual Cooling Degree Days	870

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):	7	Days - Above 100° (#):	1
Number of Heatwaves / Year (#):	2	Average Duration of Heatwave (Days):	3

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The project will specify high SRI roofing as well as adding landscaping/ground cover to the site to reduce heat island effect

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The Project design will be optimized for both heating and cooling. Strategies include continuous insulation, insulated operable windows with Low-E coating and optimum solar heat gain coefficient (SHGC), natural ventilation strategies, and added cooling capacity by using higher design temperatures.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

The high performance glazing and building envelope will retain comfortable temperatures in the building for an extended period of time in the event of a power outage. Operable windows are provided for occupant comfort.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

What is the project design precipitation level? (In. / 24 Hours)	5.16

Describe all building and site measures for reducing storm water run-off:

Stormwater will be captured via internal roof drains and conveyed to subsurface infiltration systems providing recharge storage for the first 1.25" of rainfall. Outlet control structures will be used to mitigate the larger storm events to ensure the post condition flow rates and volumes do not exceed the existing conditions.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

On-site subsurface infiltration systems will be designed to mitigate larger storm events via outlet control structures to ensure the post condition flow rates and volumes do not exceed the existing conditions.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA Special Flood Hazard Area?	No	What Zone:	
What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?			
Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see SLR-FHA online map)?	No		

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2' of sea level rise above 2013 tide levels, an additional 2.5" to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project's Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by adding 12" of freeboard for buildings, and 24" of freeboard for critical facilities and infrastructure and any ground floor residential units.

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What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?

What are the Site Elevations at Building (Ft BCB)?

First Floor Elevation (Ft BCB):

What is the Accessible Route Elevation (Ft BCB)?

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

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Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Thank you for completing the Boston Climate Change Checklist!

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John.Dalzell@boston.gov

Appendix B

Drexel Village

Accessibility Checklists

ARTICLE 80 – ACCESSIBILITY CHECKLIST

A Requirement of the Boston Planning & Development Agency (BPDA)
Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities works to reduce architectural barriers that impact accessibility in Boston's built environment. This Checklist is intended to ensure that accessibility is planned at the beginning of projects, rather than after a design is completed. It aims to ensure that projects not only meet minimum MAAB/ADA requirements, but that they create a built environment which provides equitable experiences for all people, regardless of age or ability.

All BPDA Small or Large Project Review, including Institutional Master Plan modifications, must complete this Checklist to provide specific detail and data on accessibility. An updated Checklist is required if any project plans change significantly.

For more information on compliance requirements, best practices, and creating ideal designs for accessibility throughout Boston's built environment, proponents are strongly encouraged to meet with Disability Commission staff prior to filing.

Accessibility Analysis Information Sources:

1. Age-Friendly Design Guidelines – Design features that allow residents to Age in Place
   https://www.enterprisecommunity.org/download?fid=6623&nid=3496
2. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
3. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
4. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
5. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
6. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
7. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
8. City of Boston – Mayor's Commission for Persons with Disabilities
   http://www.boston.gov/disability
9. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
10. City of Boston – Public Improvement Commission Sidewalk Café Policy
    http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf
11. International Symbol of Accessibility (ISA)
    https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/guidance-on-the-isa
12. LEED – Pilot Credits for Social Equity and Inclusion
    https://www.usgbc.org/articles/social-equity-pilot-credits-added-leed-nd-and-leed-om

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional requirements set forth by MAAB 521 CMR: Section 8.4
3. ***Age-Friendly*** **–** Implementing structures, settings and polices that allow people to age with dignity and respect in their homes and communities
4. ***Housing – Group 1 Units*** **–** Residential Units that contain features which can be modified without structural change to meet the specific functional needs of an occupant with a disability, per MAAB 521 CMR: Section 9.3
5. ***Housing – Group 2 Units*** **–** Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
6. ***Ideal Design for Accessibility*** **–** Design which meets, as well as exceeds, compliance with AAB/ADA building code requirements
7. ***Inclusionary Development Policy (IDP)*** – Program run by the BPDA that preserves access to affordable housing opportunities in the City. For more information visit: http://www.bostonplans.org/housing/overview
8. ***Public Improvement Commission (PIC)*** – The regulatory body in charge of managing the public right of way in Boston. For more information visit: https://www.boston.gov/pic
9. ***Social Equity LEED Credit*** **–** Pilot LEED credit for projects that engage neighborhood residents and provide community benefits, particularly for persons with disabilities

10. ***Visitability*** – A structure that is designed intentionally with no architectural barriers in its common spaces (entrances, doors openings, hallways, bathrooms), thereby allowing persons with disabilities who have functional limitations to visit

Today's Date: 7.10.23	**Your Name and Title:** James Szymanski, AIA, Principal		
1. Project Information: *If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.*			
Project Name:	**Drexel Village**		
Project Address(es):	**Crescent Parcel + 175 Ruggles St, Roxbury, MA 02120**		
Total Number of Phases/Buildings:	**3 buildings, phasing is to be determined based on funding**		
Primary Contact: (Name / Title / Company / Email / Phone):	**William H. Grogan, President, Planning Office for Urban Affairs, Inc., whg@poua.org, 617.350.8885**		
Owner / Developer:	**Planning Office for Urban Affairs, Inc. + JGE Development LLC**		
Architect:	**The Architectural Team Inc**		
Civil Engineer:	**Nitsch Engineering**		
Landscape Architect:	**Ground Inc**		
Code Consultant:	**TBD**		
Accessibility Consultant (*If you have one*):	**TBD**		
What stage is the project on the date this checklist is being filled out?	**SPRA / PNF / Expanded PNF Submitted**	Draft / Final Project Impact Report Submitted	BPDA Board Approved or other: ___________

2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*			
What are the dimensions of the project? See below:			
Site Area:	110,339 SF	Building Area:	61,000 GSF
First Floor Elevation:	+/- 20'	Any below-grade space	**Yes** / No

What is the construction classification?	**New Construction**	**Renovation**	**Addition**	Change of Use

Do you anticipate filing any variances with the MAAB (Massachusetts Architectural Access Board) due to non-compliance with 521 CMR?	YES **NO**
If yes, is the reason for your MAAB variance: (1) technical infeasibility, **OR** (2) excessive and unreasonable cost without substantial benefit for persons with disabilities? Have you	**N/A**

<table>
<tr><td colspan="2">met with an accessibility consultant or Disability Commission to try to achieve compliance rather than applying for a variance? Explain:</td><td colspan="3"></td></tr>
<tr><td rowspan="3">What are principal building uses? (using IBC definitions, select all appropriate that apply):</td><td>Residential – One - Three Unit</td><td>Residential - Multi-unit, Four+</td><td>Institutional</td><td>Educational</td></tr>
<tr><td>Business</td><td>Mercantile</td><td>Factory</td><td>Hospitality</td></tr>
<tr><td>Laboratory / Medical</td><td>Storage, Utility and Other</td><td colspan="2">Other:
Assembly</td></tr>
<tr><td>List street-level uses of the building:</td><td colspan="4">Residential, Assembly, Institutional, Educational</td></tr>
<tr><td colspan="5">3. Accessibility of Existing Infrastructure:
This section explores the proximity to accessible transit lines and institutions. Identify how the area surrounding the development is accessible for people with mobility impairments, and analyze the existing condition of the accessible routes to these sites through sidewalk and pedestrian ramp reports.</td></tr>
<tr><td>Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:</td><td colspan="4">The Project Site is located within the Lower Roxbury neighborhood. It is bound by Melnea Cass Blvd to the north, Tremont Street to the west, Ruggles Street to the south and Raynor Court to the east.

The site is generally flat with no significant change of grade.</td></tr>
<tr><td>List the surrounding accessible MBTA transit lines and their proximity to development site, including commuter rail, subway stations, and bus stops:</td><td colspan="4">The fully accessible Ruggles MBTA station on the Orange Line is located about 500' from the Project Site. Several accessible bus stops are located within 100-500' from the site including the 43, 8, 19 and 47 lines.</td></tr>
<tr><td>List surrounding institutions and their proximity: hospitals, public housing, elderly and disabled housing, educational facilities, others:</td><td colspan="4">Northeastern University and Wentworth Institute of Technology are located just across Tremont street. The Whittier housing development is just south of the site, across Ruggles street. Madison Melnea Cass Apartments are to the East. Madison Park High athletic fields and Madison Park Vocational School are just to south.</td></tr>
<tr><td>List surrounding government buildings and their proximity: libraries, community centers, recreational facilities, and related facilities:</td><td colspan="4">Boston Police Headquarters is to the west across Tremont street, The Reggie Lewis Athletic Center is located to the southwest. The Nubian Square branch of the Boston Public Library is within walking distance.</td></tr>
</table>

4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a formally recognized historic district? ***If yes,*** which one?	YES **NO**
Are there existing sidewalks and pedestrian ramps at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp slopes, dimensions, materials, and physical condition:	**YES** NO Existing sidewalks are in good physical condition, largely concrete with granite curbing. They appear to be 5-6' wide with running slope no more than 5% and cross slope no more that 2% There are no existing pedestrian ramps
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA/MAAB compliant (with yellow composite detectable warnings, cast in concrete)? ***If yes,*** provide description and photos. If ***no,*** explain plans for compliance:	**YES / NO** Existing sidewalks will be replaced or repaired as needed as part of the construction. When complete sidewalks will have a running slope no more than 5% and cross slope no more that 2% The new condition will be fully ADA / MAAB compliant
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the sidewalks and pedestrian ramps around the development site. Ideal sidewalk width contributes to lively pedestrian activity, allowing people to walk side by side and pass each other comfortably walking alone, in pairs, or using a wheelchair or walker.*	
Are the proposed sidewalks consistent with Boston Complete Streets? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard. Explain:	**YES** NO Raynor Cir. is considered a Neighborhood Residential Street Type and its proposed sidewalk is consistent with the Boston Complete Streets.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of each proposed zone: Frontage, Pedestrian and Furnishing Zone:	The max running slopes of the proposed sidewalks will be 5% (running slope) and 2% (cross slope). Dimensions: **Frontage: 3.5ft** **Pedestrian: 6ft** **Furnishing: 3.5ft**

List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	**Frontage: Unit Pavers** **Pedestrian: Cast-in-Place Concrete** **Furnishing: Permeable Pavers and Planting** The proposed materials for the Furnishing Zone will be on the City of Boston pedestrian right-of-way. The Pedestrian Zone will be on both COB pedestrian right-of-way and private property. The Frontage zone will be on private property.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	YES **NO**
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	**YES** NO An easement will be sought with PIC.
Will any portion of this project be going through the Public Improvement Commission (PIC)? ***If yes,*** identify PIC actions and provide details:	**YES** NO Yes, the project will go through the PIC for a specific repairs permit for the work performed in the public way.

6. Building Entrances, Vertical Connections, Accessible Routes, and Common Areas:

The primary objective in ideal accessible design is to build smooth, level, continuous routes and vertical connections that are integrated with standard routes, not relocated to alternate areas. This creates universal access to all entrances and spaces, and creates equity for persons of all ages and abilities by allowing for "aging in place" and "visitability" (visiting neighbors).

Are all of the building entrances accessible? Describe the accessibility of each building entrance: flush condition, stairs, ramp, lift, elevator, or other. If all of the building entrances are ***not accessible***, explain:	**YES** NO
Are all building entrances well-marked with signage, lighting, and protection from weather?	**YES** NO

Are all vertical connections located within the site (interior and exterior) integrated and accessible? Describe each vertical connection (interior and exterior): stairs, ramp, lift, elevator, or other. If all the vertical connections are ***not integrated and accessible***, explain:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to existing church shall be provided from a new accessible ramp
Are all common spaces in the development located on an accessible route? Describe:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
Are all of the common spaces accessible for persons with mobility impairments? (Examples: community rooms, laundry areas, outdoor spaces, garages, decks/roof decks):	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
What built-in features are provided in common public spaces? (Examples: built-in furnishings such as tables, seating; countertop heights, outdoor grills and benches). Are these accessible? Do benches and seats have armrests? Describe:	No built-in furnishings are designed currently
If this project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package:	This project is subject to large project review – all routes through the site will be accessible

7. Accessible Housing Units (If applicable) – Residential Group 1, Group 2, and Hospitality Guestrooms
In order to create accessible housing and hospitality rooms, this section addresses the number of accessible units that are proposed for barrier-free housing and hotel rooms in this development.

What is the total number of proposed housing units or hotel rooms for this development?	217 total units in the development
If a residential development, how many units are for sale? How many	Of the 217 total residential units, 11 are for sale and 206 are for rent. 83 units will be offered at or below 70% of AMI as IDP units; 77 units (including all 11

are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	homeownership units) will be offered between 80%-100% of AMI; and the remaining 57 units will be offered at market rate.
If a residential development, will all units be constructed as MAAB Group 1* units, which have blocking and other built-in infrastructure that makes them adaptable for access modifications in the future? (**this is required in all new construction*):	**YES** NO
If a residential development, how many fully built-out ADA (MAAB Group 2) units will there be? (*requirement is 5%*):	11 units
If a residential development, how many units will be built-out as ADA/MAAB sensory units? (*requirement is 2%*):	5 units
If a residential development, how many of the fully built-out ADA (MAAB Group 2) units will also be IDP units? ***If none***, explain:	4 units
If a hospitality development, how many of the accessible units will feature a wheel-in shower? Will accessibility features and equipment be built in or provided (built-in bench, tub seat, etc.)? ***If yes,*** provide details and location of equipment:	N/A
Do the proposed housing and hotel units that are standard, non-ADA units (MAAB Group 1) have any architectural barriers that would prevent entry or use of the space by persons with mobility impairments? (Example: stairs or thresholds within units, step up to balcony, etc.). ***If yes,*** explain:	YES **NO**
8. Accessible Parking:	

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirements and the Massachusetts Office of Disability Disabled Parking Regulations.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage? Will they be mechanically stacked? Explain:	60 spaces will be located in the garage accessed via elevator – no mechanical stackers will be included
How many of these parking spaces will be designated as Accessible Parking Spaces? How many will be "Van Accessible" spaces with an 8 foot access aisle? Describe:	3 will be accessible, 1 of which will be van accessible
Will visitor parking be provided? If ***yes***, where will the accessible visitor parking be located?	YES **NO**
Has a drop-off area been identified? ***If yes***, where is it located, and is it wheelchair accessible?	**YES** NO An drop off area will be provided on Raynor Court, accessible curb cuts will be provided
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes to providing an overall development that allows full and equal participation of persons with disabilities and older adults.*	
Has the proponent looked into either of the two new LEED Credit Pilots for (1) Inclusion, or (2) Social Equity – with a proposal that could increase inclusion of persons with disabilities? ***If yes***, describe:	YES **NO** No, but we are willing to explore this possibility.
These new LEED Pilot Credits may be awarded for filling out this checklist and evaluating ways to add features to your design that will increase equity for persons with disabilities. Have you looked at this list to assess the feasibility of adding any of these features?	**YES** **NO** No, but we are willing to explore this possibility.

Is this project providing funding or improvements to the surrounding neighborhood or to adjacent MBTA Station infrastructure? (Examples: adding street trees, building or refurbishing parks, adding an additional MBTA elevator or funding other accessibility improvements or other community initiatives)? ***If yes,*** describe:	YES **NO**
Will any public transportation infrastructure be affected by this development, during and/or post-construction (Examples: are any bus stops being removed or relocated)? ***If yes***, has the proponent coordinated with the MBTA for mitigation? Explain:	YES **NO**
During construction, will any on-street accessible parking spaces be impacted (during and/or post-construction)? **If yes,** what is the plan for relocating the spaces?	YES **NO**
Has the proponent reviewed these plans with the City of Boston Disability Commission Architectural Access staff? ***If no,*** will you be setting up a meeting before filing?	**YES** NO

10. Attachments

Include a list of all documents you are submitting with this Checklist – drawings, diagrams, photos, or any other materials that describe the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor space (if applicable). **N/A**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **Not yet available**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to ensure that all buildings, sidewalks, parks, and open spaces are welcoming and usable to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or contact our Architectural Access staff at:

ADA@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov |
617-635-3682 (phone) | 617-635-2726 (fax) | 617-635-2541 (tty)

The Mayor's Commission for Persons with Disabilities
Boston City Hall, One City Hall Square, Room 967, Boston MA 02201

Updated: October, 2019

ARTICLE 80 – ACCESSIBILITY CHECKLIST

A Requirement of the Boston Planning & Development Agency (BPDA) Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities works to reduce architectural barriers that impact accessibility in Boston's built environment. This Checklist is intended to ensure that accessibility is planned at the beginning of projects, rather than after a design is completed. It aims to ensure that projects not only meet minimum MAAB/ADA requirements, but that they create a built environment which provides equitable experiences for all people, regardless of age or ability.

All BPDA Small or Large Project Review, including Institutional Master Plan modifications, must complete this Checklist to provide specific detail and data on accessibility. An updated Checklist is required if any project plans change significantly.

For more information on compliance requirements, best practices, and creating ideal designs for accessibility throughout Boston's built environment, proponents are strongly encouraged to meet with Disability Commission staff prior to filing.

Accessibility Analysis Information Sources:

1. Age-Friendly Design Guidelines - Design features that allow residents to Age in Place
   https://www.enterprisecommunity.org/download?fid=6623&nid=3496
2. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
3. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
4. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
5. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
6. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
7. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
8. City of Boston - Mayor's Commission for Persons with Disabilities
   http://www.boston.gov/disability
9. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
10. City of Boston – Public Improvement Commission Sidewalk Café Policy
    http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf
11. International Symbol of Accessibility (ISA)
    https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/guidance-on-the-isa
12. LEED – Pilot Credits for Social Equity and Inclusion
    https://www.usgbc.org/articles/social-equity-pilot-credits-added-leed-nd-and-leed-om

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional requirements set forth by MAAB 521 CMR: Section 8.4
3. ***Age-Friendly*** – Implementing structures, settings and polices that allow people to age with dignity and respect in their homes and communities
4. ***Housing – Group 1 Units*** – Residential Units that contain features which can be modified without structural change to meet the specific functional needs of an occupant with a disability, per MAAB 521 CMR: Section 9.3
5. ***Housing – Group 2 Units*** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
6. ***Ideal Design for Accessibility*** – Design which meets, as well as exceeds, compliance with AAB/ADA building code requirements
7. ***Inclusionary Development Policy (IDP)*** – Program run by the BPDA that preserves access to affordable housing opportunities in the City. For more information visit: http://www.bostonplans.org/housing/overview
8. ***Public Improvement Commission (PIC)*** – The regulatory body in charge of managing the public right of way in Boston. For more information visit: https://www.boston.gov/pic
9. ***Social Equity LEED Credit*** – Pilot LEED credit for projects that engage neighborhood residents and provide community benefits, particularly for persons with disabilities

10. ***Visitability*** – A structure that is designed intentionally with no architectural barriers in its common spaces (entrances, doors openings, hallways, bathrooms), thereby allowing persons with disabilities who have functional limitations to visit

Today's Date: 7.10.23	**Your Name and Title:** James Szymanski, AIA, Principal		
1. Project Information: *If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.*			
Project Name:	**Drexel Village**		
Project Address(es):	**Crescent Parcel + 175 Ruggles St, Roxbury, MA 02120**		
Total Number of Phases/Buildings:	**3 buildings, phasing is to be determined based on funding**		
Primary Contact: (Name / Title / Company / Email / Phone):	**William H. Grogan, President, Planning Office for Urban Affairs, Inc., whg@poua.org, 617.350.8885**		
Owner / Developer:	**Planning Office for Urban Affairs, Inc. + JGE Development LLC**		
Architect:	**The Architectural Team Inc**		
Civil Engineer:	**Nitsch Engineering**		
Landscape Architect:	**Ground Inc**		
Code Consultant:	**TBD**		
Accessibility Consultant (*If you have one*):	**TBD**		
What stage is the project on the date this checklist is being filled out?	**SPRA / PNF / Expanded PNF Submitted**	Draft / Final Project Impact Report Submitted	BPDA Board Approved or other: __________

2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*				
What are the dimensions of the project? See below:				
Site Area:	110,339 SF	Building Area:	192,000 GSF	
First Floor Elevation:	+/- 20'	Any below-grade space	Yes / **No**	
What is the construction classification?	**New Construction**	Renovation	Addition	Change of Use
Do you anticipate filing any variances with the MAAB (Massachusetts Architectural Access Board) due to non-compliance with 521 CMR?	YES **NO**			
If yes, is the reason for your MAAB variance: (1) technical infeasibility, **OR** (2) excessive and unreasonable cost without substantial benefit for persons with disabilities? Have you	**N/A**			

met with an accessibility consultant or Disability Commission to try to achieve compliance rather than applying for a variance? Explain:				
What are principal building uses? (using IBC definitions, select all appropriate that apply):	Residential – One - Three Unit	**Residential - Multi-unit, Four+**	Institutional	Educational
	Business	**Mercantile**	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other	Other: **Assembly**	
List street-level uses of the building:	***Mercantile, Residential, Assembly***			

3. Accessibility of Existing Infrastructure:

This section explores the proximity to accessible transit lines and institutions. Identify how the area surrounding the development is accessible for people with mobility impairments, and analyze the existing condition of the accessible routes to these sites through sidewalk and pedestrian ramp reports.

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Project Site is located within the Lower Roxbury neighborhood. It is bound by Melnea Cass Blvd to the north, Tremont Street to the west, Ruggles Street to the south and Raynor Court to the east. The site is generally flat with no significant change of grade.
List the surrounding accessible MBTA transit lines and their proximity to development site, including commuter rail, subway stations, and bus stops:	The fully accessible Ruggles MBTA station on the Orange Line is located about 500' from the Project Site. Several accessible bus stops are located within 100-500' from the site including the 43, 8, 19 and 47 lines.
List surrounding institutions and their proximity: hospitals, public housing, elderly and disabled housing, educational facilities, others:	Northeastern University and Wentworth Institute of Technology are located just across Tremont street. The Whittier housing development is just south of the site, across Ruggles street. Madison Melnea Cass Apartments are to the East. Madison Park High athletic fields and Madison Park Vocational School are just to south.
List surrounding government buildings and their proximity: libraries, community centers, recreational facilities, and related facilities:	Boston Police Headquarters is to the west across Tremont street, The Reggie Lewis Athletic Center is located to the southwest. The Nubian Square branch of the Boston Public Library is within walking distance.

4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a formally recognized historic district? ***If yes***, which one?	YES **NO**
Are there existing sidewalks and pedestrian ramps at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp slopes, dimensions, materials, and physical condition:	**YES** NO Existing sidewalks are in good physical condition, largely concrete with granite curbing. They appear to be 5-6' wide with running slope no more than 5% and cross slope no more that 2% There are two pedestrian ramps at the Ruggles St/Tremont St intersection. They have been recently completed as part of the Ruggles St. Reconstruction Project.
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes***, have they been verified as ADA/MAAB compliant (with yellow composite detectable warnings, cast in concrete)? ***If yes***, provide description and photos. If ***no***, explain plans for compliance:	**YES / NO** Existing sidewalks will be replaced or repaired as needed as part of the construction. When complete sidewalks will have a running slope no more than 5% and cross slope no more that 2% The new condition will be fully ADA / MAAB compliant
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the sidewalks and pedestrian ramps around the development site. Ideal sidewalk width contributes to lively pedestrian activity, allowing people to walk side by side and pass each other comfortably walking alone, in pairs, or using a wheelchair or walker.*	
Are the proposed sidewalks consistent with Boston Complete Streets? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard. Explain:	**YES** NO Tremont St is considered a Downtown Mixed-Use Street Type and its proposed sidewalk is consistent with the Boston Complete Streets.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of each proposed	The max running slopes of the proposed sidewalks will be 5% (running slope) and 2% (cross slope). Dimensions: **Frontage: Varies, 6ft min** **Pedestrian: 8ft**

zone: Frontage, Pedestrian and Furnishing Zone:	**Furnishing: 5ft**
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	**Frontage: Unit Pavers and Planting** **Pedestrian: Cast-in-Place Concrete** **Furnishing: Permeable Pavers and Planting** The proposed materials for the Furnishing Zone will be on the City of Boston pedestrian right-of-way. The Pedestrian Zone will be on both COB pedestrian right-of-way and private property. The Frontage zone will be on private property.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	YES **NO**
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	**YES** NO An easement will be sought with PIC.
Will any portion of this project be going through the Public Improvement Commission (PIC)? ***If yes,*** identify PIC actions and provide details:	**YES** NO Yes, the project will go through the PIC for a specific repairs permit for the work performed in the public way.

6. Building Entrances, Vertical Connections, Accessible Routes, and Common Areas:

The primary objective in ideal accessible design is to build smooth, level, continuous routes and vertical connections that are integrated with standard routes, not relocated to alternate areas. This creates universal access to all entrances and spaces, and creates equity for persons of all ages and abilities by allowing for "aging in place" and "visitability" (visiting neighbors).

Are all of the building entrances accessible? Describe the accessibility of each building entrance: flush condition, stairs, ramp, lift, elevator, or other. If all of the building entrances are ***not accessible***, explain:	**YES** NO

Are all building entrances well-marked with signage, lighting, and protection from weather?	**YES** NO
Are all vertical connections located within the site (interior and exterior) integrated and accessible? Describe each vertical connection (interior and exterior): stairs, ramp, lift, elevator, or other. If all the vertical connections are ***not integrated and accessible***, explain:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to existing church shall be provided from a new accessible ramp
Are all common spaces in the development located on an accessible route? Describe:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
Are all of the common spaces accessible for persons with mobility impairments? (Examples: community rooms, laundry areas, outdoor spaces, garages, decks/roof decks):	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
What built-in features are provided in common public spaces? (Examples: built-in furnishings such as tables, seating; countertop heights, outdoor grills and benches). Are these accessible? Do benches and seats have armrests? Describe:	No built-in furnishings are designed currently
If this project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package:	This project is subject to large project review – all routes through the site will be accessible

7. Accessible Housing Units (If applicable) – Residential Group 1, Group 2, and Hospitality Guestrooms

In order to create accessible housing and hospitality rooms, this section addresses the number of accessible units that are proposed for barrier-free housing and hotel rooms in this development.

What is the total number of proposed housing units or hotel rooms for this development?	217 units in the total development
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	Of the 217 total residential units, 11 are for sale and 206 are for rent. 83 units will be offered at or below 70% of AMI as IDP units; 77 units (including all 11 homeownership units) will be offered between 80%-100% of AMI; and the remaining 57 units will be offered at market rate.
If a residential development, will all units be constructed as MAAB Group 1* units, which have blocking and other built-in infrastructure that makes them adaptable for access modifications in the future? (**this is required in all new construction*):	**YES** NO
If a residential development, how many fully built-out ADA (MAAB Group 2) units will there be? (*requirement is 5%*):	11 units
If a residential development, how many units will be built-out as ADA/MAAB sensory units? (*requirement is 2%*):	5 units
If a residential development, how many of the fully built-out ADA (MAAB Group 2) units will also be IDP units? ***If none***, explain:	4 units
If a hospitality development, how many of the accessible units will feature a wheel-in shower? Will accessibility features and equipment be built in or provided (built-in bench, tub seat, etc.)? ***If yes,*** provide details and location of equipment:	N/A
Do the proposed housing and hotel units that are standard, non-ADA units (MAAB Group 1) have any architectural barriers that would prevent entry or use of the space by	YES **NO**

persons with mobility impairments? (Example: stairs or thresholds within units, step up to balcony, etc.). ***If yes,*** explain:	
8. Accessible Parking: *See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirements and the Massachusetts Office of Disability Disabled Parking Regulations.*	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage? Will they be mechanically stacked? Explain:	60 spaces will be located in the garage accessed via elevator – no mechanical stackers will be included
How many of these parking spaces will be designated as Accessible Parking Spaces? How many will be "Van Accessible" spaces with an 8 foot access aisle? Describe:	3 will be accessible, 1 of which will be van accessible
Will visitor parking be provided? If ***yes,*** where will the accessible visitor parking be located?	YES **NO**
Has a drop-off area been identified? ***If yes,*** where is it located, and is it wheelchair accessible?	**YES** NO A drop off area will be provided on Raynor Court, accessible curb cuts will be provided
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes to providing an overall development that allows full and equal participation of persons with disabilities and older adults.*	
Has the proponent looked into either of the two new LEED Credit Pilots for (1) Inclusion, or (2) Social Equity – with a proposal that could increase inclusion of persons with disabilities? ***If yes,*** describe:	YES **NO** No, but we are willing to explore this possibility.
These new LEED Pilot Credits may be awarded for filling out this checklist and evaluating ways to add features	**YES** **NO**

to your design that will increase equity for persons with disabilities. Have you looked at this list to assess the feasibility of adding any of these features?	No, but we are willing to explore this possibility.
Is this project providing funding or improvements to the surrounding neighborhood or to adjacent MBTA Station infrastructure? (Examples: adding street trees, building or refurbishing parks, adding an additional MBTA elevator or funding other accessibility improvements or other community initiatives)? ***If yes,*** describe:	YES **NO**
Will any public transportation infrastructure be affected by this development, during and/or post-construction (Examples: are any bus stops being removed or relocated)? ***If yes***, has the proponent coordinated with the MBTA for mitigation? Explain:	YES **NO**
During construction, will any on-street accessible parking spaces be impacted (during and/or post-construction)? **If yes,** what is the plan for relocating the spaces?	YES **NO**
Has the proponent reviewed these plans with the City of Boston Disability Commission Architectural Access staff? ***If no,*** will you be setting up a meeting before filing?	**YES** NO

10. Attachments

Include a list of all documents you are submitting with this Checklist – drawings, diagrams, photos, or any other materials that describe the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.

Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor space (if applicable). **N/A**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **Not yet available**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to ensure that all buildings, sidewalks, parks, and open spaces are welcoming and usable to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or contact our Architectural Access staff at:

ADA@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov |
617-635-3682 (phone) | 617-635-2726 (fax) | 617-635-2541 (tty)

The Mayor's Commission for Persons with Disabilities
Boston City Hall, One City Hall Square, Room 967, Boston MA 02201

Updated: October, 2019

ARTICLE 80 – ACCESSIBILITY CHECKLIST

A Requirement of the Boston Planning & Development Agency (BPDA) Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities works to reduce architectural barriers that impact accessibility in Boston's built environment. This Checklist is intended to ensure that accessibility is planned at the beginning of projects, rather than after a design is completed. It aims to ensure that projects not only meet minimum MAAB/ADA requirements, but that they create a built environment which provides equitable experiences for all people, regardless of age or ability.

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   https://www.enterprisecommunity.org/download?fid=6623&nid=3496
2. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
3. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
4. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
5. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
6. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
7. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
8. City of Boston – Mayor's Commission for Persons with Disabilities
   http://www.boston.gov/disability
9. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
10. City of Boston – Public Improvement Commission Sidewalk Café Policy
    http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf
11. International Symbol of Accessibility (ISA)
    https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/guidance-on-the-isa
12. LEED – Pilot Credits for Social Equity and Inclusion
    https://www.usgbc.org/articles/social-equity-pilot-credits-added-leed-nd-and-leed-om

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional requirements set forth by MAAB 521 CMR: Section 8.4
3. ***Age-Friendly*** – Implementing structures, settings and polices that allow people to age with dignity and respect in their homes and communities
4. ***Housing – Group 1 Units*** – Residential Units that contain features which can be modified without structural change to meet the specific functional needs of an occupant with a disability, per MAAB 521 CMR: Section 9.3
5. ***Housing – Group 2 Units*** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
6. ***Ideal Design for Accessibility*** – Design which meets, as well as exceeds, compliance with AAB/ADA building code requirements
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10. ***Visitability*** – A structure that is designed intentionally with no architectural barriers in its common spaces (entrances, doors openings, hallways, bathrooms), thereby allowing persons with disabilities who have functional limitations to visit

Today's Date: **7.10.23**	**Your Name and Title:** **James Szymanski, AIA, Principal**		
1. Project Information: *If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.*			
Project Name:	**Drexel Village**		
Project Address(es):	**Crescent Parcel + 175 Ruggles St, Roxbury, MA 02120**		
Total Number of Phases/Buildings:	**3 buildings, phasing is to be determined based on funding**		
Primary Contact: (Name / Title / Company / Email / Phone):	**William H. Grogan, President, Planning Office for Urban Affairs, Inc., whg@poua.org, 617.350.8885**		
Owner / Developer:	**Planning Office for Urban Affairs, Inc. + JGE Development LLC**		
Architect:	**The Architectural Team Inc**		
Civil Engineer:	**Nitsch Engineering**		
Landscape Architect:	**Ground Inc**		
Code Consultant:	**TBD**		
Accessibility Consultant (*If you have one*):	**TBD**		
What stage is the project on the date this checklist is being filled out?	**SPRA / PNF / Expanded PNF Submitted**	Draft / Final Project Impact Report Submitted	BPDA Board Approved or other: ___________

2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*				
What are the dimensions of the project? See below:				
Site Area:	110,339 SF	Building Area:		93,000 GSF
First Floor Elevation:	+/- 20'	Any below-grade space		**Yes** / No
What is the construction classification?	**New Construction**	Renovation	Addition	Change of Use
Do you anticipate filing any variances with the MAAB (Massachusetts Architectural Access Board) due to non-compliance with 521 CMR?		YES **NO**		
If yes, is the reason for your MAAB variance: (1) technical infeasibility, **OR** (2) excessive and unreasonable cost without substantial benefit for persons with disabilities? Have you		**N/A**		

met with an accessibility consultant or Disability Commission to try to achieve compliance rather than applying for a variance? Explain:				
What are principal building uses? (using IBC definitions, select all appropriate that apply):	Residential – One - Three Unit	**Residential - Multi-unit, Four+**	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other	Other: Assembly	
List street-level uses of the building:	***Residential***			

3. Accessibility of Existing Infrastructure:

This section explores the proximity to accessible transit lines and institutions. Identify how the area surrounding the development is accessible for people with mobility impairments, and analyze the existing condition of the accessible routes to these sites through sidewalk and pedestrian ramp reports.

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Project Site is located within the Lower Roxbury neighborhood. It is bound by Melnea Cass Blvd to the north, Tremont Street to the west, Ruggles Street to the south and Raynor Court to the east. The site is generally flat with no significant change of grade.
List the surrounding accessible MBTA transit lines and their proximity to development site, including commuter rail, subway stations, and bus stops:	The fully accessible Ruggles MBTA station on the Orange Line is located about 500' from the Project Site. Several accessible bus stops are located within 100-500' from the site including the 43, 8, 19 and 47 lines.
List surrounding institutions and their proximity: hospitals, public housing, elderly and disabled housing, educational facilities, others:	Northeastern University and Wentworth Institute of Technology are located just across Tremont street. The Whittier housing development is just south of the site, across Ruggles street. Madison Melnea Cass Apartments are to the East. Madison Park High athletic fields and Madison Park Vocational School are just to south.
List surrounding government buildings and their proximity: libraries, community centers, recreational facilities, and related facilities:	Boston Police Headquarters is to the west across Tremont street, The Reggie Lewis Athletic Center is located to the southwest. The Nubian Square branch of the Boston Public Library is within walking distance.

4. Surrounding Site Conditions – Existing:

This section identifies current condition of the sidewalks and pedestrian ramps at the development site.

Is the development site within a formally recognized historic district? **If yes,** which one?	YES **NO**
Are there existing sidewalks and pedestrian ramps at the development site? **If yes**, list the existing sidewalk and pedestrian ramp slopes, dimensions, materials, and physical condition:	**YES** NO Existing sidewalks are in good physical condition, largely concrete with granite curbing. They appear to be 5-6' wide with running slope no more than 5% and cross slope no more that 2% There is a pedestrian ramp at the Melnea Cass/Tremont St intersection. Another existing ramp is on Raynor Cir.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have they been verified as ADA/MAAB compliant (with yellow composite detectable warnings, cast in concrete)? **If yes,** provide description and photos. If **no,** explain plans for compliance:	**YES / NO** Existing sidewalks will be replaced or repaired as needed as part of the construction. When complete sidewalks will have a running slope no more than 5% and cross slope no more that 2% The new condition will be fully ADA / MAAB compliant

5. Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the sidewalks and pedestrian ramps around the development site. Ideal sidewalk width contributes to lively pedestrian activity, allowing people to walk side by side and pass each other comfortably walking alone, in pairs, or using a wheelchair or walker.

Are the proposed sidewalks consistent with Boston Complete Streets? **If yes**, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard. Explain:	**YES** NO Raynor Cir. is considered a Neighborhood Residential Street Type and its proposed sidewalk is consistent with the Boston Complete Streets.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of each proposed zone: Frontage, Pedestrian and Furnishing Zone:	The max running slopes of the proposed sidewalks will be 5% (running slope) and 2% (cross slope). Dimensions: **Frontage: 3.5ft** **Pedestrian: 6ft** **Furnishing: 3.5ft**

List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	**Frontage: Cast-in-Place Concrete and Planting** **Pedestrian: Cast-in-Place Concrete** **Furnishing: Permeable Pavers and Planting** The proposed materials will be on private property.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes***, what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	YES **NO**
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	**YES** NO An easement will be sought with PIC.
Will any portion of this project be going through the Public Improvement Commission (PIC)? ***If yes***, identify PIC actions and provide details:	**YES** NO Yes, the project will go through the PIC for a specific repairs permit for the work performed in the public way.
6. Building Entrances, Vertical Connections, Accessible Routes, and Common Areas: *The primary objective in ideal accessible design is to build smooth, level, continuous routes and vertical connections that are integrated with standard routes, not relocated to alternate areas. This creates universal access to all entrances and spaces, and creates equity for persons of all ages and abilities by allowing for "aging in place" and "visitability" (visiting neighbors).*	
Are all of the building entrances accessible? Describe the accessibility of each building entrance: flush condition, stairs, ramp, lift, elevator, or other. If all of the building entrances are ***not accessible***, explain:	**YES** NO
Are all building entrances well-marked with signage, lighting, and protection from weather?	**YES** NO

Are all vertical connections located within the site (interior and exterior) integrated and accessible? Describe each vertical connection (interior and exterior): stairs, ramp, lift, elevator, or other. If all the vertical connections are ***not integrated and accessible***, explain:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to existing church shall be provided from a new accessible ramp
Are all common spaces in the development located on an accessible route? Describe:	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
Are all of the common spaces accessible for persons with mobility impairments? (Examples: community rooms, laundry areas, outdoor spaces, garages, decks/roof decks):	**YES** NO All buildings will have an accessible entrance and vertical circulation via elevators to upper floors. Lower level garage access will be provided via elevators from B2 and B3. Accessible entrance to the existing church shall be provided from a new accessible ramp. Internal circulation is provided via accessible corridors to all interior spaces.
What built-in features are provided in common public spaces? (Examples: built-in furnishings such as tables, seating; countertop heights, outdoor grills and benches). Are these accessible? Do benches and seats have armrests? Describe:	No built-in furnishings are designed currently
If this project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package:	This project is subject to large project review – all routes through the site will be accessible
7. Accessible Housing Units (If applicable) – Residential Group 1, Group 2, and Hospitality Guestrooms *In order to create accessible housing and hospitality rooms, this section addresses the number of accessible units that are proposed for barrier-free housing and hotel rooms in this development.*	
What is the total number of proposed housing units or hotel rooms for this development?	217 total units in the development
If a residential development, how many units are for sale? How many	Of the 217 total residential units, 11 are for sale and 206 are for rent. 83 units will be offered at or below 70% of AMI as IDP units; 77 units (including all 11

are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	homeownership units) will be offered between 80%-100% of AMI; and the remaining 57 units will be offered at market rate.
If a residential development, will all units be constructed as MAAB Group 1* units, which have blocking and other built-in infrastructure that makes them adaptable for access modifications in the future? (**this is required in all new construction*):	**YES** NO
If a residential development, how many fully built-out ADA (MAAB Group 2) units will there be? (*requirement is 5%*):	11 units
If a residential development, how many units will be built-out as ADA/MAAB sensory units? (*requirement is 2%*):	5 units
If a residential development, how many of the fully built-out ADA (MAAB Group 2) units will also be IDP units? ***If none***, explain:	4 units
If a hospitality development, how many of the accessible units will feature a wheel-in shower? Will accessibility features and equipment be built in or provided (built-in bench, tub seat, etc.)? ***If yes***, provide details and location of equipment:	N/A
Do the proposed housing and hotel units that are standard, non-ADA units (MAAB Group 1) have any architectural barriers that would prevent entry or use of the space by persons with mobility impairments? (Example: stairs or thresholds within units, step up to balcony, etc.). ***If yes***, explain:	YES **NO**
8. Accessible Parking:	

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirements and the Massachusetts Office of Disability Disabled Parking Regulations.

What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage? Will they be mechanically stacked? Explain:	60 spaces will be located in the garage accessed via elevator – no mechanical stackers will be included
How many of these parking spaces will be designated as Accessible Parking Spaces? How many will be "Van Accessible" spaces with an 8 foot access aisle? Describe:	3 will be accessible, 1 of which will be van accessible
Will visitor parking be provided? If ***yes***, where will the accessible visitor parking be located?	YES **NO**
Has a drop-off area been identified? ***If yes***, where is it located, and is it wheelchair accessible?	**YES** NO An drop off area will be provided on Raynor Court, accessible curb cuts will be provided

9. Community Impact:

Accessibility and inclusion extend past required compliance with building codes to providing an overall development that allows full and equal participation of persons with disabilities and older adults.

Has the proponent looked into either of the two new LEED Credit Pilots for (1) Inclusion, or (2) Social Equity – with a proposal that could increase inclusion of persons with disabilities? ***If yes***, describe:	YES **NO** No, but we are willing to explore this possibility.
These new LEED Pilot Credits may be awarded for filling out this checklist and evaluating ways to add features to your design that will increase equity for persons with disabilities. Have you looked at this list to assess the feasibility of adding any of these features?	**YES** **NO** No, but we are willing to explore this possibility.

Is this project providing funding or improvements to the surrounding neighborhood or to adjacent MBTA Station infrastructure? (Examples: adding street trees, building or refurbishing parks, adding an additional MBTA elevator or funding other accessibility improvements or other community initiatives)? ***If yes,*** describe:	YES **NO**
Will any public transportation infrastructure be affected by this development, during and/or post-construction (Examples: are any bus stops being removed or relocated)? ***If yes***, has the proponent coordinated with the MBTA for mitigation? Explain:	YES **NO**
During construction, will any on-street accessible parking spaces be impacted (during and/or post-construction)? **If yes,** what is the plan for relocating the spaces?	YES **NO**
Has the proponent reviewed these plans with the City of Boston Disability Commission Architectural Access staff? ***If no,*** will you be setting up a meeting before filing?	**YES** NO

10. Attachments

Include a list of all documents you are submitting with this Checklist – drawings, diagrams, photos, or any other materials that describe the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor space (if applicable). **N/A**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **Not yet available**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to ensure that all buildings, sidewalks, parks, and open spaces are welcoming and usable to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or contact our Architectural Access staff at:

ADA@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov |
617-635-3682 (phone) | 617-635-2726 (fax) | 617-635-2541 (tty)

The Mayor's Commission for Persons with Disabilities
Boston City Hall, One City Hall Square, Room 967, Boston MA 02201

Updated: October, 2019

Appendix C

Drexel Village

Smart Utilities Checklists

Boston Smart Utilities Checklist

****This template is intended to help development teams organize their responses. Please use the information here to complete the online form when the checklist is ready for submission.****

Date Submitted:	October 6, 2023
Submitted by:	Drexel Village LLC

Background

The Smart Utilities Checklist will facilitate the Boston Smart Utilities Steering Committee's review of:

a) compliance with the Smart Utilities Policy for Article 80 Development Review, which calls for the integration of five (5) Smart Utility Technologies (SUTs) into Article 80 developments

b) integration of the Smart Utility Standards

More information about the Boston Smart Utilities Vision project, including the Smart Utilities Policy and Smart Utility Standards, is available at: www.http://bostonplans.org/smart-utilities

Note: Any documents submitted via email to manuel.esquivel@boston.gov will not be attached to the pdf form generated after submission, but are available upon request.

Part 1 - General Project Information

1.1 Project Name	Drexel Village
1.2 Project Address	175-177 Ruggles Street
1.3 Building Size (square feet)	346,022

BOSTON SMART UTILITIES boston planning & development agency

Boston Smart Utilities Checklist

**For a multi-building development, enter total development size (square feet)*

1.4 Filing Stage	PNF

1.5 Filing Contact Information

1.5a Name	C/o Joshua Weissman LaFrance
1.5b Company	Planning Office for Urban Affairs, Inc.
1.5c E-mail	Joshua.weissman@outlook.com
1.5d Phone Number	617.307.7681

1.6 Project Team

1.6a Project Owner/Developer	Drexel Village LLC
1.6b Architect	The Architectural Team
1.6c Permitting	Bevco Associates
1.6d Construction Management	Janey Construction

Part 2 - District Energy Microgrids

Fill out this section if the proposed project's total development size is equal to or greater than 1.5 million square feet.

Note on submission requirements timeline:

Feasibility Assessment Part A should be submitted with PNF or any other initial filing.

Feasibility Assessment Part B should be submitted with any major filing during the Development Review stage (i.e., DPIR)

Boston Smart Utilities Checklist

District Energy Microgrid Master Plan Part A should be submitted before submission of the Draft Board Memorandum by the BPDA Project Manager (Note: Draft Board Memorandums are due one month ahead of the BPDA Board meetings)

District Energy Microgrid Master Plan Part B should be submitted before applying for a Building Permit

Please email submission to manuel.esquivel@boston.gov

2.1 Consultant Assessing/Designing District Energy Microgrid (if applicable)	
2.2 Latest document submitted	
2.3 Date of latest submission	
2.4 Which of the following have you had engagement/review meetings with regarding District Energy Microgrids? (select all that apply)	
2.5 What engagement meetings have you had with utilities and/or other agencies (i.e., MA DOER, MassCEC) regarding District Energy Microgrids? (Optional: include dates)	
2.6 Additional Information	

Part 3 - Telecommunications Utilidor

Boston Smart Utilities Checklist

Fill out this section if the proposed project's total development size is equal to or greater than 1.5 million square feet OR if the project will include the construction of roadways equal to or greater than 0.5 miles in length.

Please submit a map/diagram highlighting the sections of the roads on the development area where a Telecom Utilidor will be installed, including access points to the Telcom Utilidor (i.e., manholes)

Please email submission to manuel.esquivel@boston.gov

3.1 Consultant Assessing/Designing Telecom Utilidor (if applicable)

3.2 Date Telecom Utilidor Map/Diagram was submitted

3.3 Dimensions of Telecom Utilidor (include units)

3.3a Cross-section (i.e., diameter, width X height)

3.3b Length

3.4 Capacity of Telecom Utilidor (i.e., number of interducts, 2 inch (ID) pipes, etc.)

3.5 Which of the following have you had engagement/review meetings with regarding the Telecom Utilidor? (select all that apply)

Boston Smart Utilities Checklist

3.6 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding the Telecom Utilidor? (Optional: include dates)	
3.7 Additional Information	

Part 4 - Green Infrastructure

Fill out this section if the proposed project's total development size is equal to or greater than 100,000 square feet.

Please submit a map/diagram highlighting where on the development Green Infrastructure will be installed.

Please email submission to manuel.esquivel@boston.gov

4.1 Consultant Assessing/Designing Green Infrastructure (if applicable)	Nitsch Engineering
4.2 Date Green Infrastructure Map/Diagram was submitted	06/29/2023
4.3 Types of Green Infrastructure included in the project (select all that apply)	Infiltration systems
4.4 Total impervious area of the development (in square inches)	8,934,048 sq in
4.5 Volume of stormwater that will be retained (in cubic inches)*	11,167,560 cu in

Boston Smart Utilities | boston planning & development agency

Boston Smart Utilities Checklist

**Note: Should equal to at least "Total impervious area (entered in section 4.4)" times "1.25 inches"*

4.6 Which of the following have you had engagement/review meetings with regarding Green Infrastructure? (select all that apply)

4.7 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding Green Infrastructure? (Optional: include dates)

4.8 Additional Information

Part 5 - Adaptive Signal Technology (AST)

Fill out this section if as part of your project BTD will require you to install new traffic signals or make significant improvements to the existing signal system.

Please submit a map/diagram highlighting the context of AST around the proposed development area, as well as any areas within the development where new traffic signals will be installed or where significant improvements to traffic signals will be made.

Please email submission to manuel.esquivel@boston.gov

5.1 Consultant Assessing/Designing Adaptive Signal Technology (if applicable)

5.2 Date AST Map/Diagram was submitted

Boston Smart Utilities Checklist

5.3 Describe how the AST system will benefit/impact the following transportation modes

5.3a Pedestrians

5.3b Bicycles

5.3c Buses and other Public Transportation

5.3d Other Motorized Vehicles

5.4 Describe the components of the AST system (including system design and components)

5.5 Which of the following have you had engagement/review meetings with regarding AST? (select all that apply)

5.6 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding AST? (Optional: include dates)

5.7 Additional Information

Part 6 - Smart Street Lights

Fill out this section if as part of your project PWD and PIC will require you to install new street lights or make significant improvements to the existing street light system.

Please submit a map/diagram highlighting where new street lights will be installed or where improvements to street lights will be made.

Please email submission to manuel.esquivel@boston.gov

Boston Smart Utilities Checklist

6.1 Consultant Assessing/Designing Smart Street Lights (if applicable)	Nitsch Engineering
6.2 Date Smart Street Lights Map/Diagram was submitted	6/29/2023
6.3 Which of the following have you had engagement/review meetings with regarding Smart Street Lights? (select all that apply)	N/A – Will require PIC review during design
6.4 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding Smart Street Lights? (Optional: include dates)	N/A – Will require PIC review during design
6.5 Additional Information	

Part 7 - Smart Utility Standards

The Smart Utility Standards set forth guidelines for planning and integration of SUTs with existing utility infrastructure in existing or new streets, including cross-section, lateral, and intersection diagrams. The Smart Utility Standards are intended to serve as guidelines for developers, architects, engineers, and utility providers for planning, designing, and locating utilities. The Smart Utility Standards will serve as the baseline for discussions on any deviations from the standards needed/proposed for any given utility infrastructure.

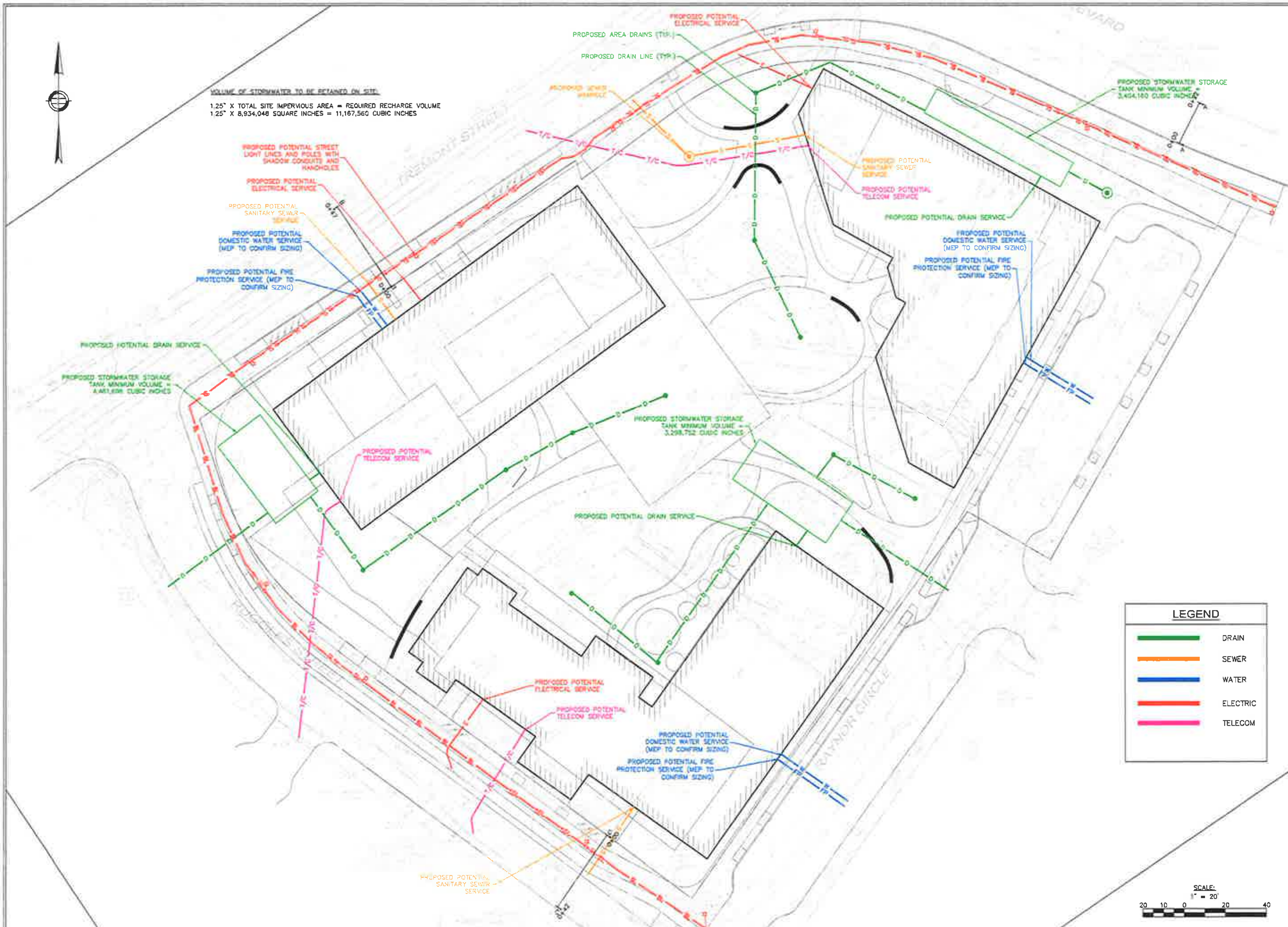
Please submit typical below and above grade cross section diagrams of all utility infrastructure in the proposed development area (including infrastructure related to the applicable SUTs).

Boston Smart Utilities Checklist

Please submit typical below and above grade lateral diagrams of all utility infrastructure in the proposed development area (including infrastructure related to the applicable SUTs).

Please email submission to manuel.esquivel@boston.gov

7.1 Date Cross Section Diagram(s) was submitted	06/29/2023
7.2 Date Lateral Diagram(s) was submitted	06/29/2023
7.3 Additional Information	



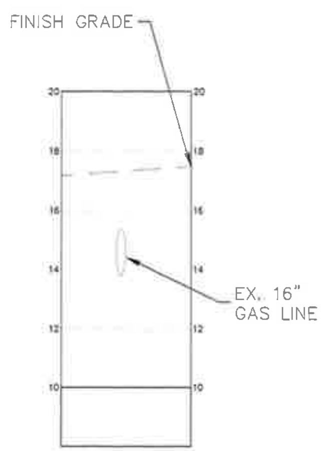
Nitsch Engineering
www.nitscheng.com
2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472

- Civil Engineering
- Land Surveying
- Transportation Engineering
- Structural Engineering
- Green Infrastructure
- Planning
- GIS

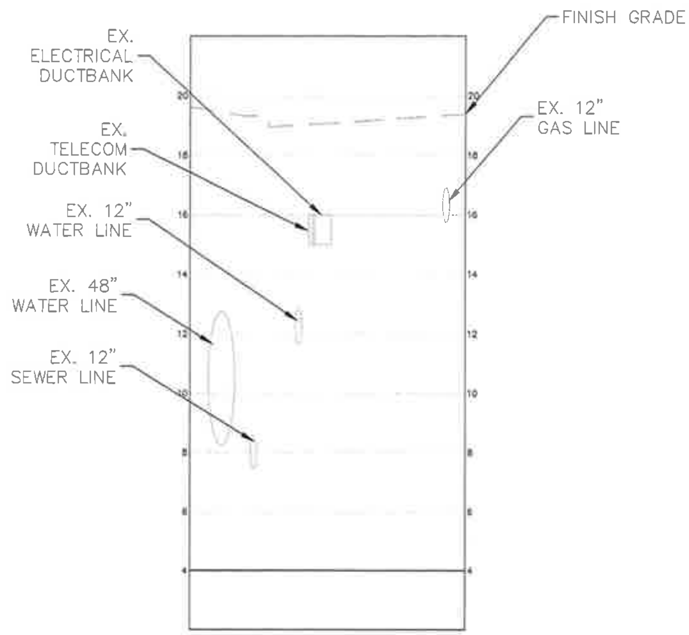
SMART UTILITIES PLAN
DREXEL VILLAGE, TREMONT STREET
BOSTON, MA

DREXEL VILLAGE LLC
84 STATE STREET, SUITE 600, BOSTON, MA

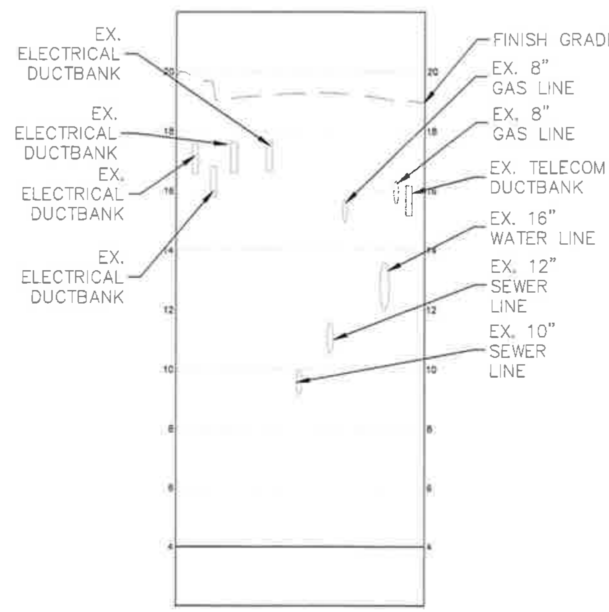
C-100



PV - MELNEA CASS BLVD A-A



PV - TREMONT ST B-B



PV - RUGGLES ST C-C

SCALE:
1" = 20'
20 10 0 20 40

Nitsch Engineering
www.nitscheng.com
2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472

- Civil Engineering
- Land Surveying
- Transportation Engineering
- Structural Engineering
- Green Infrastructure
- Planning
- GIS

SMART UTILITIES PLAN
DREXEL VILLAGE, TREMONT STREET
BOSTON, MA

DREXEL VILLAGE LLC
84 STATE STREET, SUITE 600, BOSTON, MA

REV.	COMMENTS	DATE

REVISIONS

SCALE	1"=20'
DATE	06-23-2023
PROJECT MANAGER	JRH
SURVEYOR	
DRAFTED BY	MF
CHECKED BY	JRH

C-101

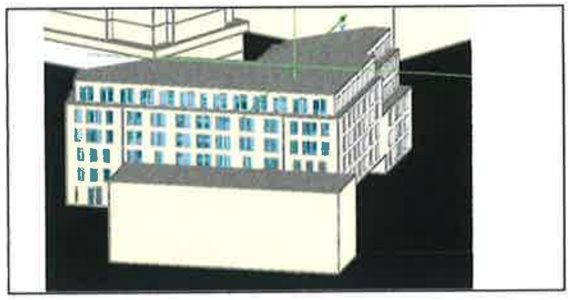
Appendix D

Drexel Village

WUFI Modeling Analysis

BUILDING INFORMATION

Category:	**Residential**
Status:	**In planning**
Building type:	**New construction**
Year of construction:	
Units:	**63**
Number of occupants:	**172 (Design)**
Occupant density:	**415.3** ft²/Person



Boundary conditions

Climate:	**BOSTON LOGAN INT ARPT MA**
Internal heat gains:	**1.1** Btu/hr ft²
Interior temperature:	**68** °F
Overheat temperature:	**77** °F

Building geometry

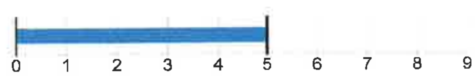
Enclosed volume:	**861,646.2** ft³
Net-volume:	**654,851.1** ft³
Total area envelope:	**66,450** ft²
Area/Volume Ratio:	**0.1** 1/ft
Floor area:	**71,434.7** ft²
Envelope area/iCFA:	**0.93**

PASSIVEHOUSE REQUIREMENTS

Certificate criteria: **Phius CORE 2021**

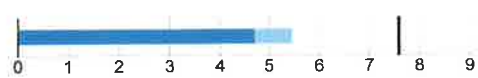
Heating demand

specific:	**4.95** kBtu/ft²yr
target:	**5** kBtu/ft²yr
total:	353,595.75 kBtu/yr



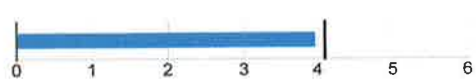
Cooling demand

sensible:	**4.7** kBtu/ft²yr
latent:	**0.72** kBtu/ft²yr
specific:	**5.43** kBtu/ft²yr
target:	**7.6** kBtu/ft²yr
total:	387,499.67 kBtu/yr



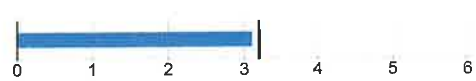
Heating load

specific:	**3.95** Btu/hr ft²
target:	**4.1** Btu/hr ft²
total:	281,930.83 Btu/hr



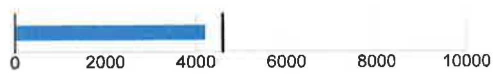
Cooling load

specific:	**3.12** Btu/hr ft²
target:	**3.2** Btu/hr ft²
total:	222,653.14 Btu/hr



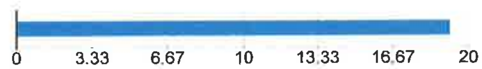
Source energy

total:	**721,806.2**	kWh/yr
specific:	**4,197**	kWh/Person yr
target:	**4,600**	kWh/Person yr
total:	**2,462,661.89**	kBtu/yr
specific:	34.48	kBtu/ft²yr



Site energy

total:	1,368,145.49	kBtu/yr
specific:	19.15	kBtu/ft²yr
total:	401,003.44	kWh/yr
specific:	5.61	kWh/ft²

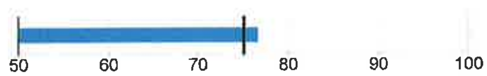


Air tightness

ACH50:	**0.49**	1/hr
CFM50 per envelope area:	**0.08**	cfm/ft²
target:	**0.49**	1/hr
target CFM50:	**0.08**	cfm/ft²

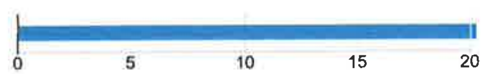
PASSIVEHOUSE RECOMMENDATIONS

Sensible recovery efficiency:	**76.4**	%

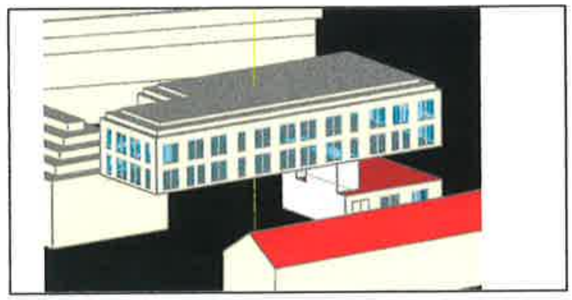


Frequency of overheating: Cooling system is required	**44.8**	%

Frequency of overheating only applies if there is not a [properly sized] cooling system installed.



BUILDING INFORMATION



Category:	**Residential**
Status:	**In planning**
Building type:	**New construction**
Year of construction:	
Units:	**14**
Number of occupants:	**38 (Design)**
Occupant density:	**455.7** ft²/Person

Boundary conditions

Climate:	**BOSTON LOGAN INT ARPT MA**
Internal heat gains:	**1** Btu/hr ft²
Interior temperature:	**68** °F
Overheat temperature:	**77** °F

Building geometry

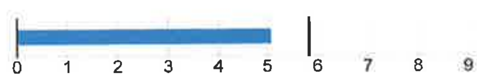
Enclosed volume:	**252,774.7** ft³
Net-volume:	**192,108.8** ft³
Total area envelope:	**22,603.9** ft²
Area/Volume Ratio:	**0.1** 1/ft
Floor area:	**17,316.1** ft²
Envelope area/iCFA:	**1.305**

PASSIVEHOUSE REQUIREMENTS

Certificate criteria: **Phius CORE 2021**

Heating demand

specific:	**5.04** kBtu/ft²yr
target:	**5.8** kBtu/ft²yr
total:	87,203.12 kBtu/yr

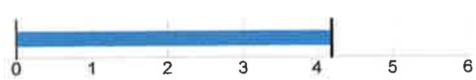


Cooling demand

sensible:	**1.92** kBtu/ft²yr
latent:	**0.4** kBtu/ft²yr
specific:	**2.33** kBtu/ft²yr
target:	**5.6** kBtu/ft²yr
total:	40,287.5 kBtu/yr

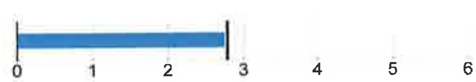
Heating load

specific:	**4.18** Btu/hr ft²
target:	**4.2** Btu/hr ft²
total:	72,397.09 Btu/hr



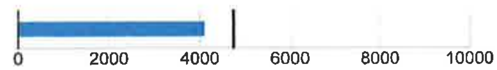
Cooling load

specific:	**2.75** Btu/hr ft²
target:	**2.8** Btu/hr ft²
total:	47,634.09 Btu/hr



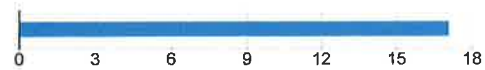
Source energy

total:	**155,873.96**	kWh/yr
specific:	**4,102**	kWh/Person yr
target:	**4,750**	kWh/Person yr
total:	**531,811.54**	kBtu/yr
specific:	30.72	kBtu/ft²yr



Site energy

total:	295,450.86	kBtu/yr
specific:	17.06	kBtu/ft²yr
total:	86,596.65	kWh/yr
specific:	5	kWh/ft²

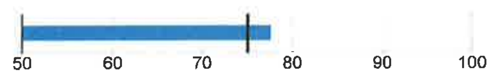


Air tightness

ACH50:	**0.44**	1/hr
CFM50 per envelope area:	**0.04**	cfm/ft²
target:	**0.65**	1/hr
target CFM50:	**0.06**	cfm/ft²

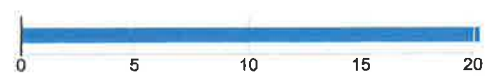
PASSIVEHOUSE RECOMMENDATIONS

Sensible recovery efficiency: **77.5 %**



Frequency of overheating: **24.8 %**
Cooling system is required

Frequency of overheating only applies if there is not a [properly sized] cooling system installed.



BUILDING INFORMATION

Category:	**Residential**
Status:	**In planning**
Building type:	**New construction**
Year of construction:	
Units:	**139**
Number of occupants:	**408 (Design)**
Occupant density:	**380.8** ft²/Person

Boundary conditions

Climate:	**BOSTON LOGAN INT ARPT MA**
Internal heat gains:	**1.1** Btu/hr ft²
Interior temperature:	**68** °F
Overheat temperature:	**77** °F

Building geometry

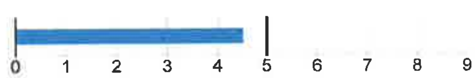
Enclosed volume:	**2,168,818.3** ft³
Net-volume:	**1,648,301.9** ft³
Total area envelope:	**119,604.9** ft²
Area/Volume Ratio:	**0.1** 1/ft
Floor area:	**155,349.4** ft²
Envelope area/iCFA:	**0.77**

PASSIVEHOUSE REQUIREMENTS

Certificate criteria: **Phius CORE 2021**

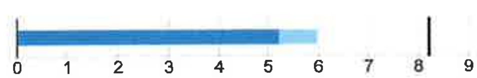
Heating demand

specific:	**4.51** kBtu/ft²yr
target:	**5** kBtu/ft²yr
total:	701,132.23 kBtu/yr



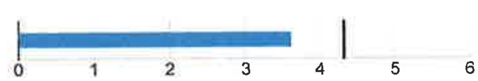
Cooling demand

sensible:	**5.2** kBtu/ft²yr
latent:	**0.75** kBtu/ft²yr
specific:	**5.95** kBtu/ft²yr
target:	**8.2** kBtu/ft²yr
total:	924,102.34 kBtu/yr



Heating load

specific:	**3.61** Btu/hr ft²
target:	**4.3** Btu/hr ft²
total:	560,102.7 Btu/hr



Cooling load

specific:	**3.22** Btu/hr ft²
target:	**3.4** Btu/hr ft²
total:	500,461.82 Btu/hr

Source energy

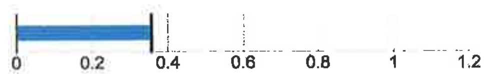
total:	**1,467,793.74**	kWh/yr
specific:	**3,598**	kWh/Person yr
target:	**4,375**	kWh/Person yr
total:	**5,007,825.79**	kBtu/yr
specific:	32.24	kBtu/ft²yr

Site energy

total:	2,782,125.44	kBtu/yr
specific:	17.91	kBtu/ft²yr
total:	815,440.97	kWh/yr
specific:	5.25	kWh/ft²

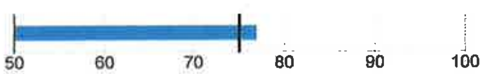
Air tightness

ACH50:	**0.36**	1/hr
CFM50 per envelope area:	**0.08**	cfm/ft²
target:	**0.36**	1/hr
target CFM50:	**0.08**	cfm/ft²



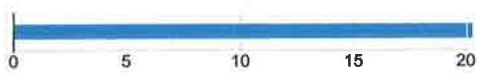
PASSIVEHOUSE RECOMMENDATIONS

Sensible recovery efficiency: **76.8 %**



Frequency of overheating: **43.5 %**
Cooling system is required

Frequency of overheating only applies if there is not a [properly sized] cooling system installed.



<u>Appendix E</u>

Drexel Village

Affirmatively Furthering Fair Housing
Assessment Tool

Article 80 - Affirmative Furthering Fair Housing Assessment Tool

Proponents of Large Projects, Planned Development Areas (PDAs), and Planned Development Area Master Plans that feature a housing component must submit this form with each Project Notification Form and/or Notice of Project Change. If this is a multi-building and/or multiphase project you must submit a separate assessment for each building and/or phase. For PDAs you must submit an assessment for the entire PDA as well as for each Proposed Project within the PDA.

For more information on how to complete this form see The AFFH Assessment and Submission Guide. To complete this form electronically as a Google Form visit: https://bit.ly/38qXmh0. If completing this form as a Word Doc (i.e. not electronically using the Google Form) please submit this form with the rest of your Article 80 filings. For questions about this form please email Michelle McCarthy, Housing Policy Manager at michelle.mccarthy@boston.gov.

Please remember to include all necessary and/or required attachments.

Section 1: Submission Information-Primary Contact			
Date:	7/6/2023		
Name:	William H Grogan	Title:	President
Company:	Planning Office for Urban Affairs, Inc.		
Email:	whg@poua.org	Phone:	617-350-8885, ext. 114

What type of project is this submission for?	☐ Large Project: Single building/phase ☒ Large Project: Multi-building/phase ☐ Planned Development Area ☐ Project located within a Planned Development Area ☐ Other (please explain):
At what stage in the Development Review process is this submission being made?	☒ Project Notification Form ☐ Notice of Project Change ☐ Response to a Supplemental Information Request ☐ Other (please explain):

Section 2: Development Team Information-Primary Contact			
Proponent/Owner			
Name:	William H Grogan	Title:	President
Company:	Planning Office for Urban Affairs, Inc.		
Email:	whg@poua.org	Phone:	617-350-8885, ext. 114
Attorney			
Name:	Matthew J. Kiefer,	Title:	Legal Counsel
Company:	Goulston & Storr		
Email:	mkiefer@goulstonstorr.com	Phone:	617-574-6597
Marketing Agent			
Name:	Dwayne Watts	Title:	Executive Director (NNC)
Company:	UHM Properties LLC		
Email:	dwatts@uhmproperties.com	Phone:	617-541-5510, ext. 206

BPDA Staff			
Project Manager:	Nick Carter	Planner:	nick.carter@boston.gov

Article 80 - Affirmative Furthering Fair Housing Assessment Tool

Section 3: Proposed Project Overview	
A. Proposed Project Information	
Project Name	Drexel Village
Project Address(es)	Ruggles Street, Roxbury Crossing, Massachusetts 02120
What is the square footage of the Proposed Project Site?	300,000
Purchase Date of Proposed Project Site	The site is being conveyed through a Ground Lease with the BPDA. The developer is expected to receive BPDA final designation in December 2023.
Is the Proposed Project located in a Planning Area or subject to a Planning Initiative? If, yes please describe.	☐ No ☒ Yes (please describe): PLAN: Nubian Square
Is the Proposed Project located within a Landmark District or an Architectural Conservation District? If yes, please describe.	☒ No ☐ Yes (please describe):
Are there any current or expiring affordability restrictions, special property tax agreements, or similar (e.g. Urban Renewal, Section 8, 121A, etc.) on any existing building within the Proposed Project Site	☒ No ☐ Yes (please describe):
B. Proposed Project Description	
What is the construction classification of the Proposed Project?	☒ New Construction ☒ Rehabilitation ☐ Other (please describe): New construction of two buildings + rehabilitation of the St. Katharine Drexel Parish building
Total anticipated number Phases and/or Buildings	This is a one phase project comprised of three buildings and a below grade parking garage.
What is the anticipated residential square footage at the Proposed Project?	The proposed residential square footage of the project is approximately 219,841 square feet.
How many residential units are anticipated at the Proposed Project?	217
Are residential units anticipated to be rentals or homeownership units? If there will be a mix, please describe.	☒ Rentals: 206 ☒ Homeownership Units: 11 ☐ Mix (please describe): .
Indicate how many units of each bedroom size are anticipated at the Proposed Project.	Studio: 0 1 Bed: 73 2 Bed: 116 3 Bed: 28 4+ Bed:
Indicate how many units accessible to persons with disabilities (i.e. fully built-out Group 2 units) are anticipated at the Proposed Project.	22
How many total units will be financially available to	54

tenants with Housing Choice Vouchers (i.e. Section 8 vouchers) and/or other state or local housing vouchers? Payment standards for Boston Housing Authority Vouchers are here.	
Are any units anticipated to be Compact Living units? If yes, list the total number of compact units.	☒ No ☐ Yes-Total Number of Compact Units:
Indicate how many compact units of each bedroom size are anticipated at the Proposed Project.	Studio 1 Bed: 2 Bed 3 Bed: 4+ Bed:
Are there non-residential uses anticipated at the Proposed Project Site? If yes, please describe.	☐ No ☒ Yes: Retail/Commercial Space – Approx. 1,595 gsf - On-Site Property Management Offices – Approx. 2,000 gsf -Resident Amenity Space and Public Community Room – Approx. 12,333gsf - Parish Programs – Approx. 20,975 gsf. - ABCD Day Care Center – Approx. 11,900 gsf - Parking – Approx. 25,966 gsf.
Is the Proposed Project anticipated to be subject to Development Impact Project Exactions (i.e.: Linkage)? If yes, please indicate the anticipated amount of each exaction.	☒ No ☐ Yes: Anticipated Housing Exaction: $ Anticipated Jobs Exaction: $

Section 4: Displacement Risk at the Proposed Project Site

A. Previous and Current Uses of the Proposed Project Site

Have there been any buildings on the Proposed Project Site at any time in past two years or, if applicable, since zoning relief was granted at the Proposed Project Site, whichever is longer?	☐ No (**Skip to Section 5: Inclusionary Development Policy**) ☒ Yes
Are there any buildings on the Proposed Project Site currently? Choose the one option that best applies.	☒ Yes, and some or all are currently occupied. ☐ Yes, they are all currently vacant and have been vacant for the past two years. (**Skip to Section 5: Inclusionary Development Policy.**) ☐ Yes, they are all currently vacant but have not been vacant for all the past two years. ☐ No, but there were buildings at the site in the past two years. ☐ No, there have been no buildings at the site in the past two years. (**Skip to Section 5: Inclusionary Development Policy**)
To the best of your knowledge,	Currently, the Roman Catholic Archdiocese of Boston occupies the St. Katharine

describe all uses, including temporary uses at the Proposed Project Site within the past two years. If you are unable to answer this question, please explain why.	Drexel Parish and Community Center on site. The building contains a chapel, classroom, afterschool play area, offices, computer room, and balcony seating for church services. In addition, the Roxbury Head Start Child and Family Development Center occupies a 4-story building used as a preschool/childcare facility with playground to the building's rear. These buildings will be renovated as part of the project to and prolong their current uses. Other portions of the site are paved with asphalt and used primarily for parking, with connecting concrete walkways and landscaped grass areas. There is also a gravel surface parking lot currently used by the Boston Police Department.
What types of tenants and/or occupants are currently present at the Proposed Project Site?	☐ Residential Only ☐ Commercial Only (**Skip to Section 4.C Past and Current Residential Use Details**) ☐ Both residential and commercial ☒ Other (please describe): Roxbury Head Start childcare services and the St. Katharine Drexel Parish offers services with respect to worship and community programming. ☐ None (**Skip to Section 5: Inclusionary Development Policy)**
B. Past and Current Residential Use Details N/A	
How many residential buildings at the Proposed Project Site are currently occupied?	N/A
How many residential units currently exist at the Proposed Project Site? List the number of vacant units and the number of occupied units.	Vacant Units: Occupied Units:
For each unit vacated within the past two years list the vacancy date for each unit, to the best of your knowledge. **Please indicate if you are attaching a separate list.**	
Of the units vacated within the past two years, were any occupied by subsidized housing voucher	☐ No ☐ Yes (please describe):

holders (i.e. Section 8, MRVP, CoC PSH, etc.)?	
Of the currently occupied units, are any occupied by subsidized voucher holders (i.e. Section 8, MRVP, CoC PSH, etc.)?	☐ No ☐ Yes (please describe):
Of the units vacated within the past two years, were any occupied by persons with disabilities?	☐ No ☐ Yes (please describe):
Of the currently occupied units, are any occupied by persons with disabilities?	☐ No ☐ Yes (please describe):
Which of the following tenancy actions have taken place at the Proposed Project Site within the past two years? Indicate the number of times each action has taken place within that time period, to the best of your knowledge.	☐ Tenant voluntarily vacated unit at expiration of lease or tenancy at will period: ☐ Tenant vacated unit due to a rent increase: ☐ Notice to Quit issued for cause (i.e. non-payment of rent; lease violation): ☐ Notice to Quit issued for no cause: ☐ Tenant formally evicted for cause: ☐ Tenant formally evicted for no cause: ☐ Tenant vacated unit because of change in ownership and/or intent to develop: ☐ Other (please describe):
Have residential tenants been informed of any ownership changes?	☐ No ☐ Yes (please provide date, and attach a representative example of the notice)
If condominiums are anticipated within the Proposed Project, have current tenants been informed of their rights under the Condominium Conversion Act?	☐ No, the Proposed Project is 100% rental units. ☐ No, tenants have not yet been informed. ☐ Yes (please provide date and attach a copy of the notification):
Provide the date on which the Department of Neighborhood Development Office Housing Stability was informed of intent to develop the Proposed Project Site, as applicable. **Please attach a copy of the notification**.	
Please provide information on what types of permanent relocation and/or financial assistance has been provided to tenants. If none, what assistance	

do you plan to provide to tenants to assure housing stability?	
If you have been unable to answer any of the questions in Section 4.B-especially those questions relating to use and/or occupancy of the Proposed Project Site within the past two years-please explain why.	
C. Past and Current Commercial Use Details N/A	
How much commercial square footage is currently present at the Proposed Project Site?	Vacant: Occupied:

In a separate attachment for each commercial space currently occupied or occupied within the past two years, please provide the following information, as available:

- Current status (i.e. vacant or occupied)
- Square Footage
- Name of business or organization
- Type of business or organization
- If the tenant is or was a minority or woman owned business
- Length of time the business or organization has or had been at the Proposed Project Site
- The preferred language of tenant

Are there any specific commercial tenants expected after development?	☒ No ☐ Yes (please describe):
Are there any specific minority or woman owned business tenants anticipated after development?	☒ No ☐ Yes (please describe):

Section 5: Inclusionary Development Policy (IDP)

Is the IDP anticipated to apply to the Proposed Project?	☒ Yes ☐ No (please explain why and then skip to **Section 6: Strategy for Addressing AFFH Goals**):					
In which IDP Zone is the Proposed Project Located?	☐ Zone A ☐ Zone B ☒ Zone C					
How is the Proposed Project anticipated to meet IDP obligations? Check all that apply.	☒	On-site units	Number anticipated:	160	Percent of total	74%
	☐	Off-site units	Number anticipated:		Percent of total	
	☐	Payment into IDP fund	Amount anticipated	$		

<table>
<tr><td>How many IDP units are anticipated as rental units and how many units are anticipated as homeownership units?</td><td colspan="4">On-site rental: 149
Off-site rental:
On-site homeownership: 11
Off-site homeownership:</td></tr>
<tr><td rowspan="2">What is the total anticipated square footage for all on-site IDP units?</td><td>Rental Square Footage:</td><td>150,951</td><td>Percent of total square footage:</td><td>68.7%</td></tr>
<tr><td>Homeownership Square Footage:</td><td>11,144</td><td>Percent of total square footage:</td><td>5.1%</td></tr>
<tr><td rowspan="5">Indicate the anticipated number IDP units by bedroom size at the Proposed Project site, including the number of Compact Living IDP units for each bedroom size.</td><td>Total IDP Studio:</td><td>0</td><td>Compact IDP Studio:</td><td></td></tr>
<tr><td>Total IDP 1 Bed:</td><td>52</td><td>Compact IDP 1 Bed:</td><td></td></tr>
<tr><td>Total IDP 2 Bed:</td><td>83</td><td>Compact IDP 2 Bed:</td><td></td></tr>
<tr><td>Total IDP 3+ Bed:</td><td>25</td><td>Compact IDP 3 Bed:</td><td></td></tr>
<tr><td>Total IDP 4+ Bed:</td><td></td><td>Compact IDP 4+ Bed</td><td></td></tr>
<tr><td>Indicate the number of anticipated IDP units that will be made accessible to persons with disabilities (fully built-out MAAB Group 2 units).</td><td colspan="4">16</td></tr>
<tr><td rowspan="2">Indicate the number of anticipated IDP units by AMI at the Proposed Project Site</td><td colspan="2">Rental Units</td><td colspan="2">Homeownership Units</td></tr>
<tr><td colspan="2">30% AMI: 54
50% AMI:14
60% AMI: 15
80% AMI: 59
100% AMI: 7
Other (please describe):</td><td colspan="2">60% AMI:
70% AMI:
80% AMI: 8
90% AMI:
100% AMI: 3
Other (please describe):</td></tr>
<tr><td>If off-site units are anticipated, please describe host site, partnerships, anticipated funding, and development timeline.</td><td colspan="4">N/A</td></tr>
<tr><td>If you are unable to provide the specific details for any question in Section 5, please explain when these details are expected to be available for review.</td><td colspan="4">N/A</td></tr>
</table>

Section 6: Strategy for Addressing AFFH Goals

Proponents must consult the Housing and Household Composition Community Profile Report and the Department of Neighborhood Development Displacement Risk Index and Maps in order to complete this section. For more information on how to complete this section see The AFFH Assessment and Submission Guide. The Boston Interagency Fair Housing Development Committee (BIFDC) may request Proponents to consider different or additional Intervention Options after submission of this form and prior to its recommendation to the BPDA Board.

A. Intervention Options & Intervention Enhancements

<table>
<tr><td rowspan="2">Indicate which Article 80 Intervention Options will be</td><td>☒</td><td>Provide an additional percentage of IDP units than required:</td></tr>
<tr><td>☒</td><td>Deepen the affordability of IDP units</td></tr>
</table>

incorporated into the Proposed Project. All projects must select at least one option. Selection(s) must be proportional to the size, scope, and impact of the Proposed Project. Certain projects may be required to select more than one option as an Intervention Enhancement.	☒	Provide all IDP units on-site
	☐	Provide higher proportion of 2+ bedroom IDP units than required
	☐	Meet or exceed proportion of market rate 2+ bedroom units in the community
	☐	Increase the number fully built-out Group 2 units accessible to persons with disabilities
	☐	Increase building density to directly increase affordable units for and available to people in protected classes
	☐	Agree to apply to host Project Based Vouchers or Rental Assistance Demonstration units onsite, in addition to meeting IDP
	☐	Partner with a non-profit developer, land trust, housing authority, or other entity to provide land or bear some capital costs to enable affordable housing construction, in addition to fulfilling IDP requirements
	☐	Other (please describe):
For each Article 80 Intervention Option selected, describe how many units the proposed Intervention options will apply to. Please distinguish between market-rate and IDP units. Refer to the AFFH Submission Guidance document for more information on what information should be included for each Article 80 Intervention Option.		Option 1: IDP required 13% of all units; this project contains 74% IDP units. Option 2: 54 rental units are affordable at 30% of AMI, with an additional 14 units available up to 50% of AMI, 15 units up to 60% of AMI; 59 units up to 80% of AMI, and 7 units up to 100% of AMI. Additionally, 8 homeownership units are available up to 80% of AMI while the remaining 3 homeownership units are available up to 100% of AMI. Option 3: There are 160 IDP units and 57 market rate units, all offered on site. 149 rental units are available at or below 100% of AMI and 11 homeownership units are available at or below 100% of AMI. Additionally, there are 57 rental units offered at market rate. Providing all IDP units on site will go beyond complying with the IDP to meet AFFH goals. The project has provided more IDP units than required, a higher proportion of family-size (3+ bedroom) IDP units, all IDP units on-site, match the percentage of family-sized units in the surrounding neighborhood. Project will market IDP units in accordance with an Affirmative Fair Housing Marketing Plan to further access to housing.
Indicate which Marketing & Housing Access Intervention Options will be incorporated into the Proposed Project. All projects must select at least one option. Selection(s)must be proportional to the size, scope, and impact of the Proposed Project.	☐	Provide a preference for an agreed upon percentage of units to rental voucher-holders and develop marketing and tenant selection policies and procedures that are least likely to exclude voucher-holders.
	☐	Provide preference for an agreed percentage of units to families that are currently rent-burdened, have experienced a no-fault eviction, or have experienced eviction but now display the ability to pay and develop marketing and tenant selection policies and procedures that least likely to exclude preferred tenants.
	☐	In the case of homeownership units, provide a preference to first-time/generation Homebuyers and develop marketing policies and procedures that are least likely to exclude preferred homebuyers.
	☐	Allow last month's rent and security deposit to be paid in installments for an agreed upon percentage of units or by renters up to a certain income level

	☒	Agree to follow best practices related to the use of CORI, eviction, and credit records in the tenant screening and selection process
	☒	Agree to follow progressive practices related to the use of CORI, eviction, and credit records in the tenant screening and selection process, and in marketing of units, for example following Fair Chance Housing guidelines, and/or waiving eviction and credit checks for affordable units and/or housing voucher-holders.
	☒	Agree to best practices in marketing the market-rate units that are inclusive of and welcoming to members of protected classes
	☐	Other (please describe);
For each Marketing & Housing Access Intervention Option selected, describe how many units the proposed Intervention options will apply to. Please distinguish between market-rate and IDP units. Refer to the AFFH Submission Guidance document for more information on what information should be included for each Marketing & Housing Access Intervention Option.	Option 5: There are 160 IDP units and 57 market rate units. Applicants will be asked to sign the release of information form along with the 3rd party verification to permit us to obtain info for the screening. CORI screening will be conducted by utilizing our Software System – CORI-Real Page. For drug related criminal history, if applicant has gone through treatment for addiction and is no longer using, this counts as a mitigating circumstance. All screening will be adjusted to comply with the Fair Chance Tenant Selection Policy. Option 6: Please see response to Option 5 for policies and procedures. Option 7: 57 market rate units. Agent will implement a marketing strategy to attract neighborhood residents who may have previously been excluded from the target demographic for market rate rental and home ownership units. Our expanded marketing and outreach plan will identify prospective market renters regardless of race, creed, national origin, sexual orientation, military status, sex, gender identify, age disability, marital status or familial status and comply with state, local or federal laws pertaining to protected classes, to make them aware of available housing opportunities. Our staff will engage residents who speak Spanish, French, Portuguese, Cape Verdean Creole and Haitian Creole. Language will not be an accessibility barrier.	

Supplemental Process Options: These are **optional** Intervention Options a Proponent may propose as an Intervention Enhancement. Supplemental Process options must be legal feasible and must clearly be linked to AFFH goals. Supplemental Process Options will be reviewed by the BIFDC as well as any relevant City departments and/or Agencies before they can be recommended and/or implemented. Examples of Supplemental Process Options are:

- Establishing a housing stabilization fund
- Entering into voluntary deed restriction granting tenants the right of first refusal to purchase property upon conversion or sale
- Establishing and/or contributing to a neighborhood housing Acquisition Opportunity Program
- Restricting the percentage of non-owner-occupied units
- Providing flexible lease options to local, small business tenants in mixed-use developments
- Agreeing to support cooperative housing units

Proponents choosing to pursue one or more Supplemental Process Options should attach a description of the proposed Supplement Process Option(s) that describes the scope of the proposed option(s) and how the option is anticipated to be implemented. The BPDA Project Manager and/or BIFDC will follow up with the Proponent requesting any different or additional information necessary to review the proposed Supplemental Option(s).

If required, indicate which	***Areas of High Displacement Risk must select one of the following:***

Intervention Enhancements will be incorporated into the Proposed Project. Note: The Boston Interagency Fair Housing Development Committee may determine that the Proposed Project is in an Area of High Displacement Risk and/or Area of High Historical Exclusion after submission of this form.	☐	Diversity Preservation Preferences (if permitted at Proposed Project Site)
	☐	Additional Article 80 Option(s)
	☐	One or more Supplement Process Options
	Areas of High Historical Exclusion must select one of the following:	
	☐	Build all IDP units on-site
	☐	Additional Article 80 Option(s)
	☐	One or more Supplement Process Options
	Planned Development Areas (PDA) must select one of the following	
	☐	Additional Article 80 Option(s)
	☐	One or more Supplement Process Options

B. Discussion of the Impact of Intervention Options on Displacement Risk – To complete this section Proponent must reference specific answers provided throughout this form, as well as information form the Housing and Housing Composition Community Profile Report which details the racial, ethnic, economic characteristics of the community within ¼ mile of the Proposed Project Site as well as the characteristics of the housing within the same radius, to discuss how selected intervention Options mitigate Displacement Risk. For more information on Displacement Risk throughout the City, Proponents should review the DND Displacement Risk Index and Maps.

Displacement Risk Analysis: Using the answers provided in **Section 4: Displacement Risk at the Proposed Project Site** the information provided in the Housing and Household Composition Community Profile Report and DND's Displacement Risk Index and Map, please discuss the displacement pressures at the Proposed Project Site and within the surrounding community and how the selected Intervention Options mitigate those pressures and create opportunities for members of protected classes. Please address how proposed Intervention Options are proportional to the size, scope, and impact of the Proposed Project on the surrounding community.	N/A
IDP Programming: Using the answers provided **Section 5: Inclusionary Development Policy (IDP)** and the information provided in the Housing and	By Supporting income restricted/affordable housing for residents in the surrounding community, especially members of protected classes. DND's displacement Risk Index, under Tier 2 Analysis, shows that there is a percentage of renter households with annual income under $75k who are cost burden. The IDP unit sizes at the development and AMI target will

Housing Composition community Profile Report and DND's Displacement Risk Index and Map, describe how IDP commitments will contribute to a more inclusive community, including how unit sizes and AMI targets meet the needs of residents in the surrounding community, especially members of protected classes.	meet the needs of residents as noted below: - 54 of the rental units in the development are set aside for households at 30% AMI. The community profile shows that 56.3% of the households in the surrounding community spend 30% or more for rent. - 14 of the units are set aside for households at 50% AMI. Per the community profile, 31.9% of households spend more than 50% of household income on rent. - 15 of the units set aside for middle income up to 60% AMI and 66 units for 80%-100% AMI. Some of the high risk areas from the MAP have a high concentration of income restricted units, which help protect households from displacement.
Please describe any additional efforts undertaken to address Displacement Risk at and within ¼ mile of the Proposed Project Site that have not already been discussed.	
C. Discussion of the Impact of Intervention Options on Historical Exclusion – to complete this section Proponent must use the Historical Exclusion Map to discuss how selected Intervention Options assure that the Proposed Project is an inclusive, integrated, and welcoming place and that the Proposed Project contributes to making the neighborhood more inclusive by creating opportunities for residency for members of protected classes, especially those that have been Historically Excluded	
Historical Exclusion Analysis: Using the Historical Exclusion map please discuss the factors contributing to Historical Exclusion surrounding the Proposed Project Site how the selected Intervention Options attempt to mitigate Historical Exclusion at the Proposed Project Site and are inclusive of members of protected classes.	All IDP units are built on site. The selected intervention option chosen will include members of protected classes.
Integration and Inclusivity: Considering the extent of Historical Exclusion surrounding the Proposed Project Site please discuss all efforts-including housing, commercial, and programmatic efforts-that will be taken to make the Proposed Project an inclusive, integrated, and welcoming place and how	

the Proposed Project will contribute to making the neighborhood more inclusive.	
D. Discussion of Marketing and Tenant Selection – to complete this section the Proponent should reference how Marketing Intervention Options will be used and incorporated into occupancy and tenant selection policies in order to reach protected classes.	
Describe efforts that will be made to reach out to neighborhood residents-especially members of protected classes-when marketing residential units, keeping in mind language access and channels through which units are marketed.	The Agent will implement a marketing strategy to attract neighborhood residents. We will utilize local community organizations to help reach the populations that are least likely to apply, provide translation and interpretation services during application process, public meetings and lotteries, including translation for limited English proficiency and for those who are Deaf/hard of hearing.
Describe efforts that will be made to assure residential unit marketing will meet the requirements of the Fair Housing Act of 1968 and promote an inclusive and diverse community.	Will affirmatively market.
For Proposed Projects anticipated to have rental units, describe tenant selection and occupancy policies regarding tenant eligibility (i.e.: use of CORI history, credit reports, eviction history, etc.), application fees, payment of first last/month rent and security deposits. **You may attach sample policies to complete this question.**	Please see response to Option 5 above

Section 7: Attachments

Please indicated that the following attachments have been included with this form (* indicates the attachment is required). If you are including attachments other than those listed here please describe the attachment.

1.	Housing and Household Composition Community Profile Report for Proposed Project Site*	☒
2.	Condominium Conversion Notice to tenants (representative example)	☐
3.	Vacant unit by vacancy date list	☐
4.	Notice of intent to develop sent to Department of Neighborhood Development Office of Housing Stability	☐
5.	Representative example of each notice sent to tenants about redevelopment at the Proposed Project Site	☐
6.	Commercial tenant information	☐

7.	Supplemental Process Option(s) description	☐
8.	Sample tenant selection and occupancy policies	☒
9.	Other (please describe):	☐

Section 8: Acknowledgements		
By submitting this form, I acknowledge that the information provided is true and correct to the best of my knowledge and is subject to review by the Boston Interagency Fair Housing Development Committee (BIFDC) and that a recommendation by the BIFDC that AFFH strategies are appropriate for the Proposed Project must be made to the BPDA Board as part of seeking approval for the Proposed Project. I further acknowledge that Intervention Options and other strategies for the meeting AFFH goals will be memorialized in Housing Agreements and/or Cooperation agreements which will restrict who may live in a particular unit of housing, how much rent may be charged for a particular unit of housing, the maximum sales price for a particular unit of housing, as allowed under local, state, and of federal laws. I further acknowledge that some or all housing units shall be marketed in accordance with the policies and procedures established by the City of Boston are Affirmative Fair Housing Marketing Program and outlined in an Affirmative Fair Marketing Plan.		
William H Grogan	-President	8/7/2023
Name	**Title**	**Date**

Appendix F

Drexel Village

Wind Analysis (Full Report)

REPORT

DREXEL VILLAGE - CRESCENT PARCEL

BOSTON, MA

PEDESTRIAN WIND STUDY
RWDI # 2203419
February 16, 2023

SUBMITTED TO

Mr. William H. Grogan
President

Planning Office for Urban Affairs, Inc.
84 State Street, Suite 600
Boston, MA 02109

SUBMITTED BY

Maryam Al Labbad, M.A.Sc., EIT
Technical Coordinator
Maryam.AlLabbad@rwdi.com

Jennifer Shoniker
Technical Coordinator - Associate
jennifer.shoniker@rwdi.com

Hanqing Wu, Ph.D., P.Eng.
Senior Technical Director / Principal
Hanqing.Wu@rwdi.com

Derek Kelly, M.Eng., P.Eng.
Project Manager - Principal
Derek.Kelly@rwdi.com

RWDI
600 Southgate Drive
Guelph, Ontario, Canada N1G 4P6
T: 519.823.1311

EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed Drexel Village – Crescent Parcel project in Boston, MA (Image 1). The assessment was based on the wind-tunnel testing conducted for the proposed development under the No Build and Build configurations of the site and surroundings (Images 2A and 2B). The results were analyzed using the regional wind climate records (Image 3) and evaluated against the Mean Speed and Effective Gust criteria adopted by the Boston Planning and Development Agency (BPDA). The results of the assessment are shown on site plans in Figures 1A through 2B, and the associated annual and seasonal wind speeds are listed in Tables 1 and 2, respectively. The key findings are summarized as follows:

Effective Gust

- In the No Build scenario, wind speeds that meet the effective gust criterion are predicted at all pedestrian areas assessed on an annual basis, except for an area to the west of the site along the sidewalks of Tremont Street. The criterion is expected to be exceeded on a seasonal basis, mainly in the winter, at four other locations to the west and north of the site, all near the tall buildings that exist on Tremont Street and Columbus Avenue.

- The addition of Drexel Village development is not predicted to result in more areas with effective gust speed exceedance neither annually nor seasonally. Positively, the proposed development is expected to eliminate some of the seasonal gust exceedances predicted in the No Build configuration.

Mean Speed

- Mean wind speeds in the No Build configuration are generally comfortable for pedestrian use throughout the year. Wind speeds at five locations, most of which are along Tremont Street near existing tall buildings, are rated uncomfortable for walking on an annual basis.

- With the addition of the proposed buildings, wind conditions are generally expected to be similar to the No Build scenario at most areas on and around the site. The proposed buildings are expected to result in lower wind speeds at the five locations that are uncomfortable in the No Build configuration, two of which become comfortable for walking. A slight increase in wind speeds is expected around Building 1, resulting in wind speeds that are higher than ideal at the west entrance. All other entrances are found to have suitable wind conditions on an annual basis.

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LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

RWDI was retained to conduct a pedestrian wind assessment for the proposed Drexel Village – Crescent Parcel project in Boston, MA (Image 1). This report presents the project objectives, approach, and the main results from RWDI's assessment. It also provides conceptual wind control measures, where necessary.

1.1 Project Description

The proposed development site is bounded by Tremont Street to the north, Melnea Cass Boulevard to the east, Raynor Circle to the south and Ruggles Street to the west. It consists of three buildings; Building 1 (14-story). Building 2 (6-story) and Building 3 (4-story), with outdoor seating areas north and south of Building 1, and to the west of Building 3.

1.2 Objectives

The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas on and around the study site and provide recommendations for minimizing adverse effects, if needed. This quantitative assessment was based on wind speed measurements on a scale model of the project and its surroundings in one of RWDI's boundary-layer wind tunnels. These measurements were combined with the local wind records and compared to Mean Speed and Effective Gust criteria adopted by the Boston Planning and Development Agency (BPDA) for gauging wind comfort and safety in pedestrian areas. The assessment focused on critical pedestrian areas, including main entrances, public sidewalks/walkways and the outdoor seating areas.

Image 1: Aerial View of the Existing Site and Surroundings (Photo Courtesy of Google™ Earth)

2 BACKGROUND AND APPROACH

2.1 Wind Tunnel Study Model

To assess the wind environment around the proposed project, a 1:300 scale model of the project site and surroundings was constructed for the wind tunnel tests of the following configurations:

A – No Build: Existing site with existing surroundings (Image 2A), and,

B - Build: Proposed project with existing surroundings (Image 2B).

The wind tunnel model included all relevant surrounding buildings and topography within an approximately 1200 ft radius around the study site. The wind and turbulence profiles in the atmospheric boundary layer beyond the modeled area were also simulated in RWDI's wind tunnel. The existing and proposed trees on and around the site were modeled in their winter conditions (i.e., without foliage). The wind tunnel model was instrumented with 117 specially designed wind speed sensors to measure mean and gust speeds at a full-scale height of approximately 5 ft above local grade in pedestrian areas throughout the study site. The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site and reviewed by the design team. Wind speeds were measured for 36 directions in 10-degree increments. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the mean wind speed at a reference height above the model.

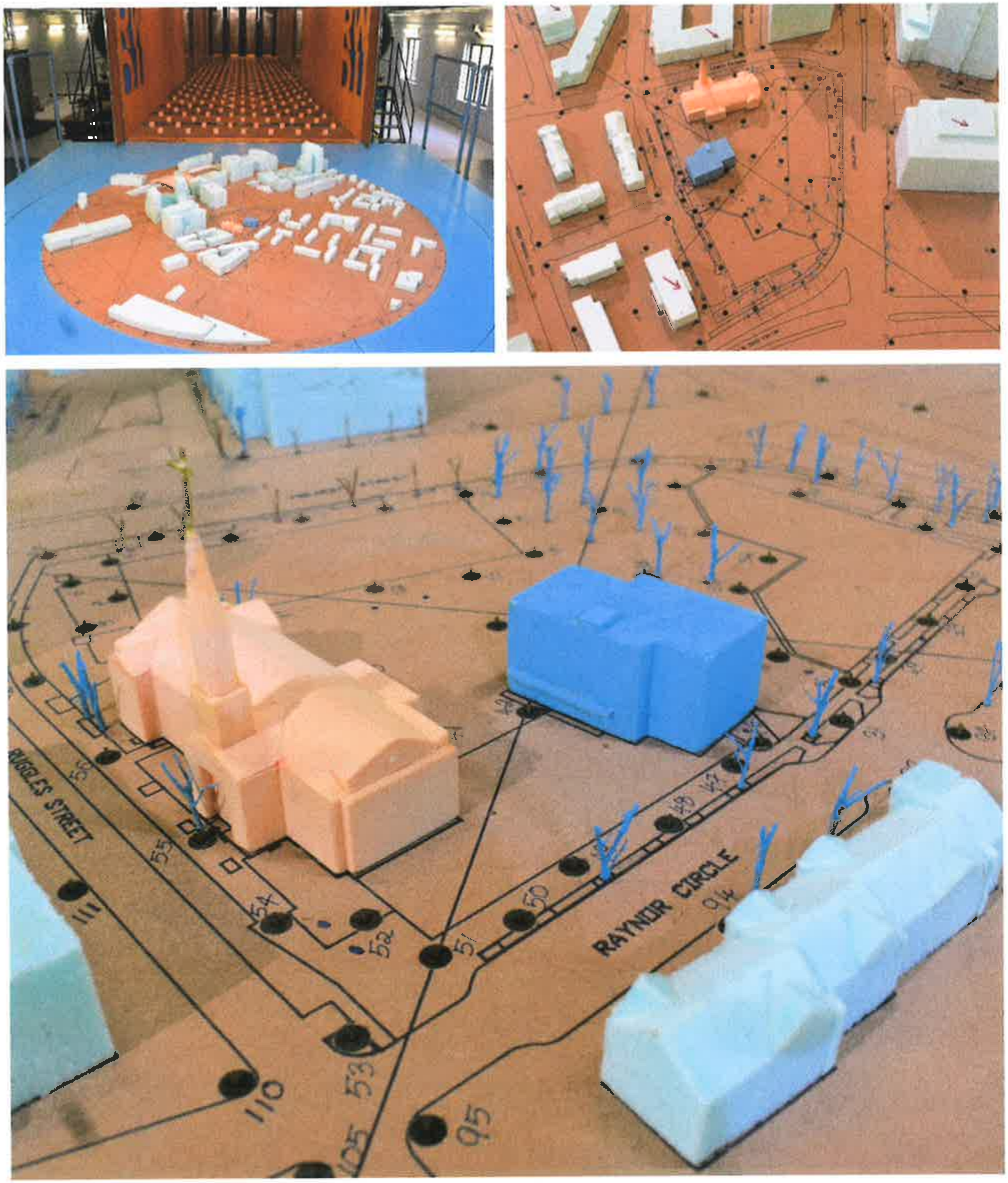


Image 2A: Wind Tunnel Study Model – No Build Configuration

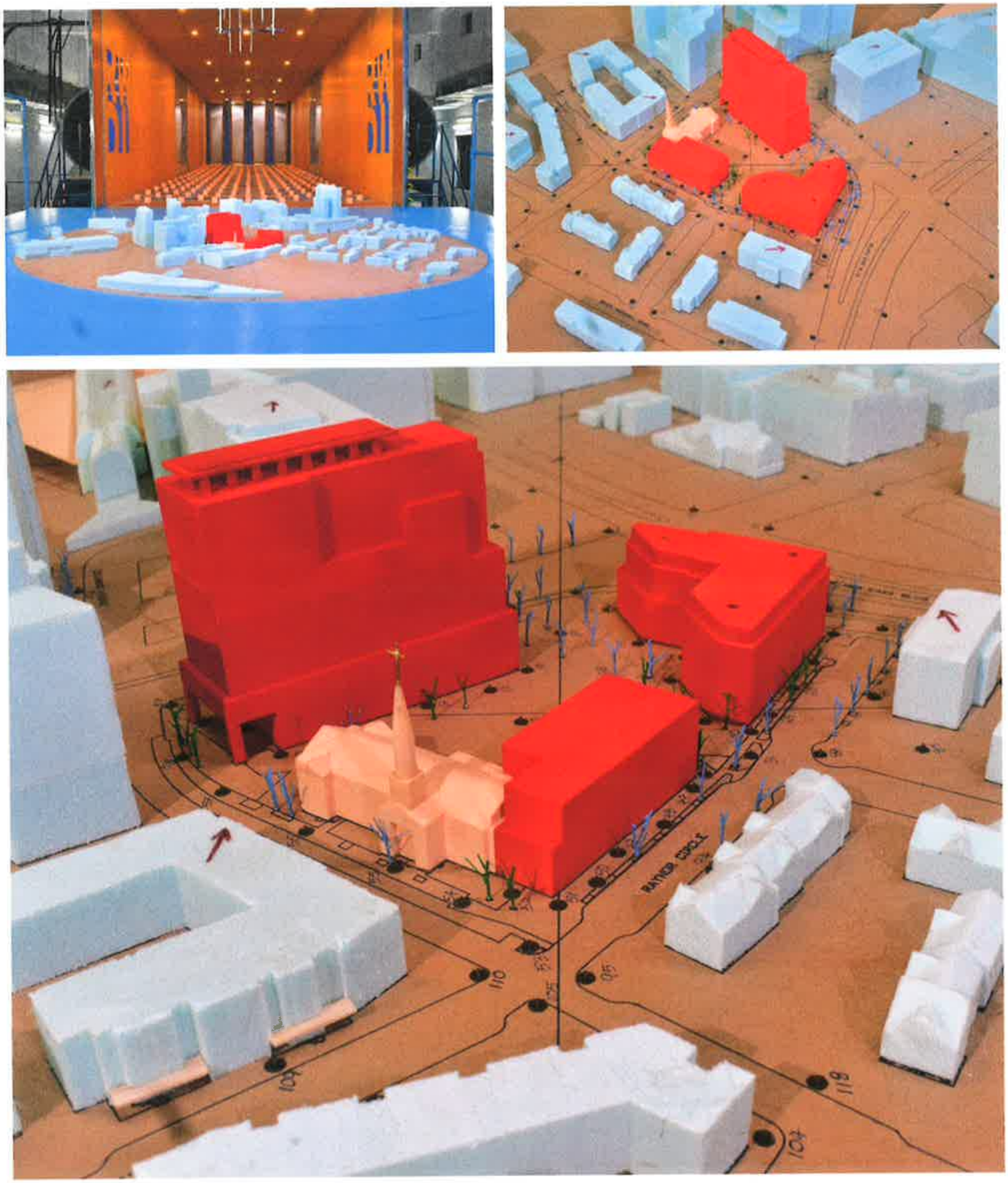
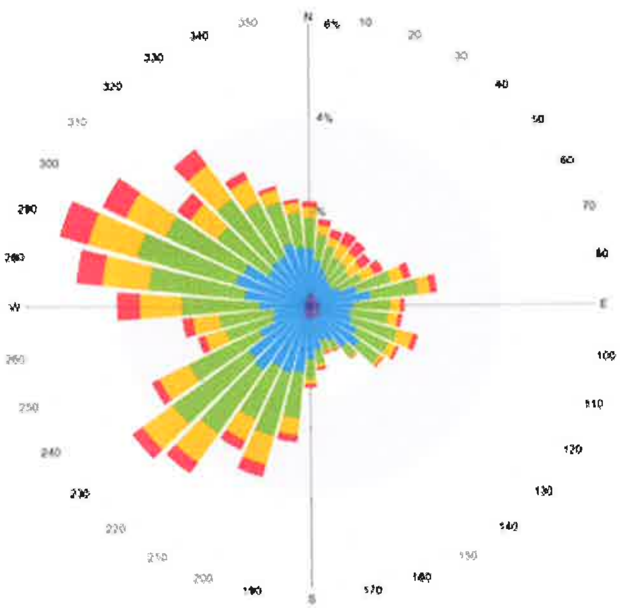


Image 2B: Wind Tunnel Study Model – Build Configuration

2.2 Meteorological Data

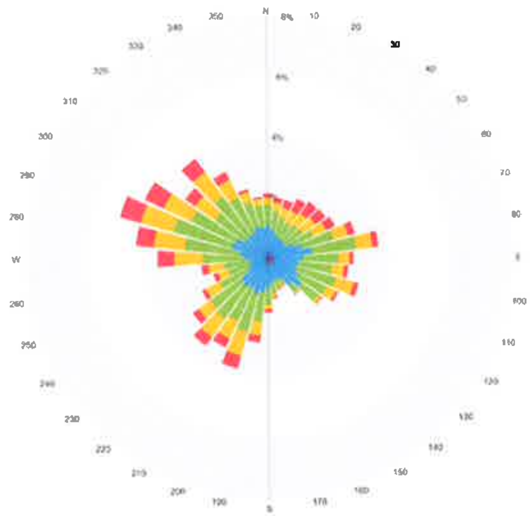
The data from the wind tunnel tests was combined with long-term meteorological data recorded during the years 1991 through 2021 at Boston Logan International Airport to predict full scale wind conditions. The analysis was performed separately for the entire year and for each of the four seasons. Images 3 and 4 present "wind roses", summarizing the annual and seasonal wind climates in the Boston area, respectively, based on the data from Logan Airport.

On an annual basis, the most common wind directions are those between north-northwest and south-southwest. Winds from the east-northeast to the east-southeast are also relatively common. In the case of strong winds, west-northwest, northwest, west and northeast are the dominant wind directions. A similar directional distribution is seen in the seasonal wind roses as well (Image 4).

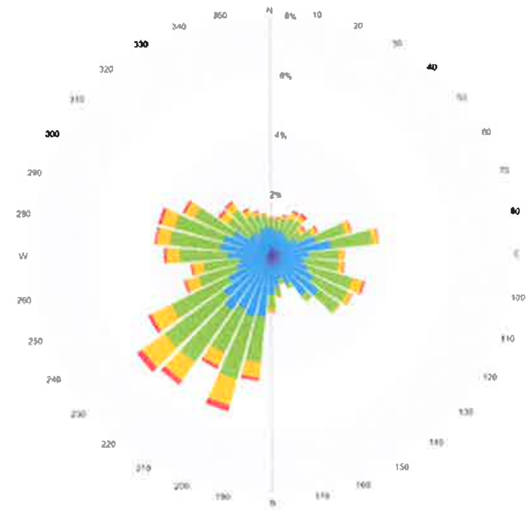


Wind Speed (mph)	Probability (%) Annual
Calm	2.6
1-5	7.6
6-10	32.2
11-15	35.3
16-20	15.1
>20	7.1

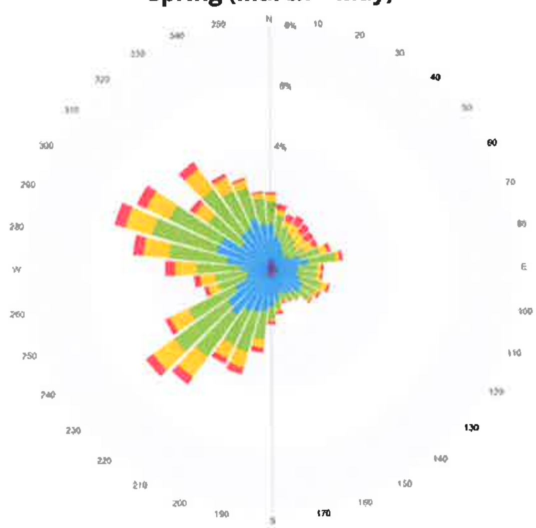
Image 3: Annual Directional distribution of winds approaching Boston Logan International Airport from 1991 through 2021



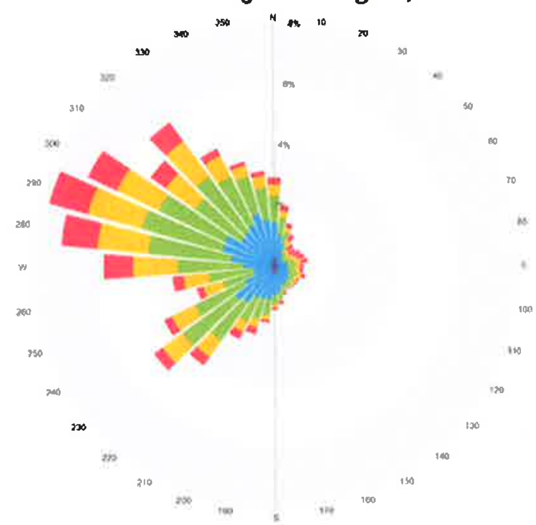
Spring (March – May)



Summer (June – August)



Fall (September – November)



Winter (December – February)

Wind Speed (mph)	Probability (%) Spring	Summer	Fall	Winter
Calm	2.4	2.7	3.0	2.4
1-5	6.6	9.0	8.3	6.4
6-10	28.4	38.4	34.2	27.9
11-15	35.6	36.9	34.8	34.1
16-20	17.9	10.8	13.8	18.1
>20	9.2	2.1	6.0	11.2

Image 3: Seasonal Directional Distribution of Winds Approaching Boston Logan International Airport from 1991 through 2021

2.3 BPDA Wind Criteria

The Boston Planning and Development Agency (BPDA) has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than 1% of the time.

The second set of criteria used by the BPDA to determine the acceptability of specific locations is based on the work of Melbourne. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time.

Wind Acceptability	Effective Gust Speed (mph)
Acceptable	≤ 31
Unacceptable	> 31
Comfort Category	**Mean Wind Speed (mph)**
Comfortable for Sitting	< 12
Comfortable for Standing	≤ 15
Comfortable for Walking	≤ 19
Uncomfortable for Walking	> 19
Dangerous	> 27

**Effective gust and mean wind speeds are based on a 1% exceedance or 99 percentile wind speeds.

The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where people would be standing, somewhat higher winds can be tolerated. For frequently used sidewalks, where people are primarily walking, stronger winds are acceptable. For infrequently used areas, the wind comfort criteria can be relaxed even further. The actual effects of wind can range from pedestrian inconvenience, due to the blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BPDA effective gust velocity criterion of 31 mph. However, without any mitigation measures, this wind climate is likely to be frequently uncomfortable for more passive activities such as sitting.

This study involved state-of-the-art measurement and analysis techniques to predict wind conditions. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in this report represent an average for the total population. Also, unforeseen changes in the project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated (1% of the time). Higher wind speeds will occur but on a less frequent basis.

2.4 Generalized Wind Flows

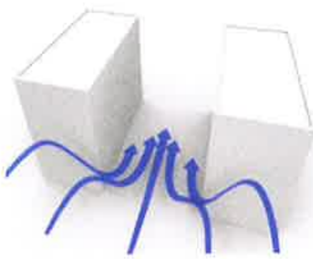
In our discussion of wind conditions, reference may be made to the following generalized wind flows (Image 5):

DOWNWASHING

Tall buildings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. This is often the main cause for wind accelerations around large buildings at the pedestrian level.

CORNER ACCELERATION

When winds approach at an oblique angle to a tall façade and are deflected down, a localized increase in the wind activity or corner acceleration can be expected around the exposed building corners at pedestrian level.



CHANNELING EFFECT

When two buildings are situated side by side, wind flow tends to accelerate through the space between the buildings due to channeling effect caused by the narrow gap.

Image 5: Generalized Wind Flows

If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity. Design details such as; setting back a tall tower from the edges of a podium, deep canopies close to ground level, wind screens, tall trees with dense landscaping, etc. (Image 6) can help reduce wind speeds. The choice and effectiveness of these measures would depend on the exposure and orientation of the site with respect to the prevailing wind directions and the size and massing of the proposed buildings.

Podium/tower setback, canopy, landscaping and wind screens (left to right)

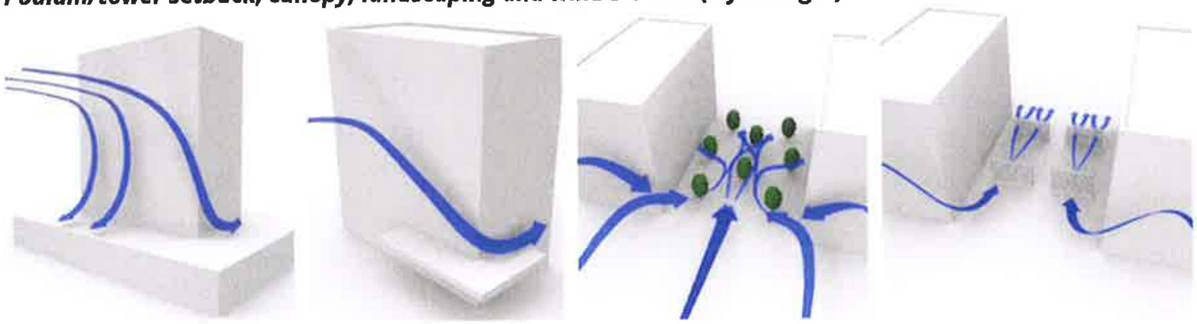


Image 6: Common Wind Control Measures

3 RESULTS AND DISCUSSION

The predicted wind conditions in terms of mean and effective gust speeds pertaining to the tested configurations are graphically depicted on site plans in Figures 1A through 2B located in the "Figures" section of this report. These conditions and the associated wind speeds are presented in Tables 1 and 2, located in the "Tables" section of this report. The following is a detailed discussion of the suitability of the predicted wind comfort conditions for the anticipated pedestrian use of each area of interest on an annual basis. Typically, the summer and fall winds tend to be more comfortable than the annual winds while the winter and spring winds are less comfortable than the annual winds.

In general, wind conditions comfortable for walking are appropriate for sidewalks and walkways as pedestrians will be active and less likely to remain in one area for prolonged periods of time. Lower wind speeds conducive to standing are preferred at main entrances where pedestrians are apt to linger. Wind speeds comfortable for sitting are ideal during the summer for areas intended for passive activities, such as the grade level outdoor seating areas.

3.1 No Build Configuration

On an annual basis, the mean wind speeds on and around the existing site are generally comfortable for sitting or standing, with slightly higher wind speeds comfortable for walking at few areas along the nearby sidewalks (Figure 1A). These wind conditions are considered suitable for the intended use of the areas. Mean wind speeds that are uncomfortable are predicted at four locations along the sidewalks of Tremont Street (Locations 59, 61, 116 and 117 in Figure 1A), and at another location along the sidewalk of Columbus Avenue (Location 65 in Figure 1A). The higher wind speeds are a result of the wind interactions with the existing taller buildings in the surroundings to the north and west, which cause both downwashing and flow accelerations due to the corner and channeling effects (Image 5).

The effective gust criterion is predicted to be met, annually, at all areas assessed on and around the existing site, except for a localized area to the west of the site along the sidewalk of Tremont Street (Location 117 in Figure 2A). As outlined in Table 2, high gust events are expected in the winter and/ or spring at some other areas along Tremont Street (Locations 59 and 116), Columbus Avenue (Location 65) and Melnea Cass Boulevard (Location 74).

3.2 Build Configuration

The proposed development is of similar height to the existing buildings in the prevailing wind directions. Therefore, it is not expected to have a notable influence on wind conditions around the neighboring properties. Thus, with the addition of the proposed development to the site, the annual mean wind speeds along the surrounding sidewalks are expected to remain similar to those in the No Build configuration. Calmer wind conditions are anticipated at the five locations that are uncomfortable in the No Build configuration, two of which become comfortable for walking (Locations 59 and 61 in Figures 1A and 1B).

On-site, annual mean wind speeds comfortable for sitting or standing are predicted at most areas, including at the north entrance of Building 1 (Location 1 in Figure 1B), the entrance of Building 2 (Location 29 in Figure 1B) and the entrances of Building 3 (Locations 47 and 49 in Figure 1B). Similar wind conditions are predicted in the on-site seating areas and walkways between the buildings. These mean wind speeds are appropriate for the intended use of these areas.

Slightly higher mean wind speeds with conditions comfortable for walking are predicted around the exposed corners of Buildings 1 and 2 (Locations 5, 14, 16 and 36 in Figure 1B), and in the undercut along the west façade of Building 1 (Locations 6 and 7), where a walkway and an entrance are planned. While these wind speeds are appropriate for walkways, they are higher than desired near an entrance (Location 7 in Figure 1B).

Positively, the proposed development is not predicted to result in more areas with effective gust exceedance neither annually nor seasonally (Figure 2B). Thus, only Location 117 is predicted to have effective gust speed exceedance, which is an existing condition. It is worth noting that the proposed development is expected to eliminate the existing seasonal exceedances predicted at Location 59 in the winter and at Location 116 in the spring (Table 2).

If lower wind speeds are desired at the west entrance of Building 1, the design team may consider recessing the entrance from the façade. Alternatively, wind screens and/or landscaping elements at both sides of the entrance may be considered. Examples are shown in Image 7 for reference.

Image 7: Examples of Wind Control Measures Applicable to the West Entrance of Building 1

4 STATEMENT OF LIMITATIONS

Limitations

This report was prepared by Rowan Williams Davies & Irwin, Inc. ("RWDI") for Planning Office for Urban Affairs, Inc. ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

Design Assumptions

RWDI confirms that the pedestrian wind assessment (the "**Assessmen**t") discussed herein was performed by RWDI in accordance with generally accepted professional standards at the time when the Assessment was performed and in the location of the Project. No other representations, warranties, or guarantees are made with respect to the accuracy or completeness of the information, findings, recommendations, or conclusions contained in this Report. This report is not a legal opinion regarding compliance with applicable laws.

The findings and recommendations set out in this report are based on the following information disclosed to RWDI. Drawings and information listed below were received from The Architectural Team, Inc. and used to construct the scale model of the proposed Drexel Village – Crescent Parcel project **("Project Data**")

File Name	File Type	Date Received (dd/mm/yyyy)
2022-03-10 Crescent Parcel_reduced	PDF	04/10/2022
2022-19_10_current massing_	SketchUp	19/10/2022
Crescent site plan	PDF	11/01/2023
whittier landscape drawings	PDF	11/01/2023

The recommendations and conclusions are based on the assumption that the Project Data and Climate Data are accurate and complete. RWDI assumes no responsibility for any inaccuracy or deficiency in information it has received from others. In addition, the recommendations and conclusions in this report are partially based on historical data and can be affected by a number of external factors, including but not limited to Project design, quality of materials and construction, site conditions, meteorological events, and climate change. As such, the conclusions and recommendations contained in this report do not list every possible outcome.

The opinions in this report can only be relied upon to the extent that the Project Data and Project Specific Conditions have not changed. Any change in the Project Data or Project Specific Conditions not reflected in this report can impact and/or alter the recommendations and conclusions in this report. Therefore, it is incumbent upon the Client and/or any other third party reviewing the recommendations and conclusions in this report to contact RWDI in the event of any change in the Project Data and Project Specific Conditions in order to determine whether any such change(s) may impact the assumptions upon which the recommendations and conclusions were made.

5 REFERENCES

1. ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.

2. Williams, C.J., Hunter, M.A. and Waechter, W.F. (1990). "Criteria for Assessing the Pedestrian Wind Environment," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.36, pp.811-815.

3. Williams, C.J., Soligo M.J. and Cote, J. (1992). "A Discussion of the Components for a Comprehensive Pedestrian Level Comfort Criteria," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.41-44, pp.2389-2390.

4. Soligo, M.J., Irwin, P.A., and Williams, C.J. (1993). "Pedestrian Comfort Including Wind and Thermal Effects," *Third Asia-Pacific Symposium on Wind Engineering*, Hong Kong.

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6. Williams, C.J., Wu, H., Waechter, W.F. and Baker, H.A. (1999). "Experiences with Remedial Solutions to Control Pedestrian Wind Problems," *Tenth International Conference on Wind Engineering*, Copenhagen, Denmark.

7. Lawson, T.V. (1973). "Wind Environment of Buildings: A Logical Approach to the Establishment of Criteria", *Report No. TVL 7321*, Department of Aeronautic Engineering, University of Bristol, Bristol, England.

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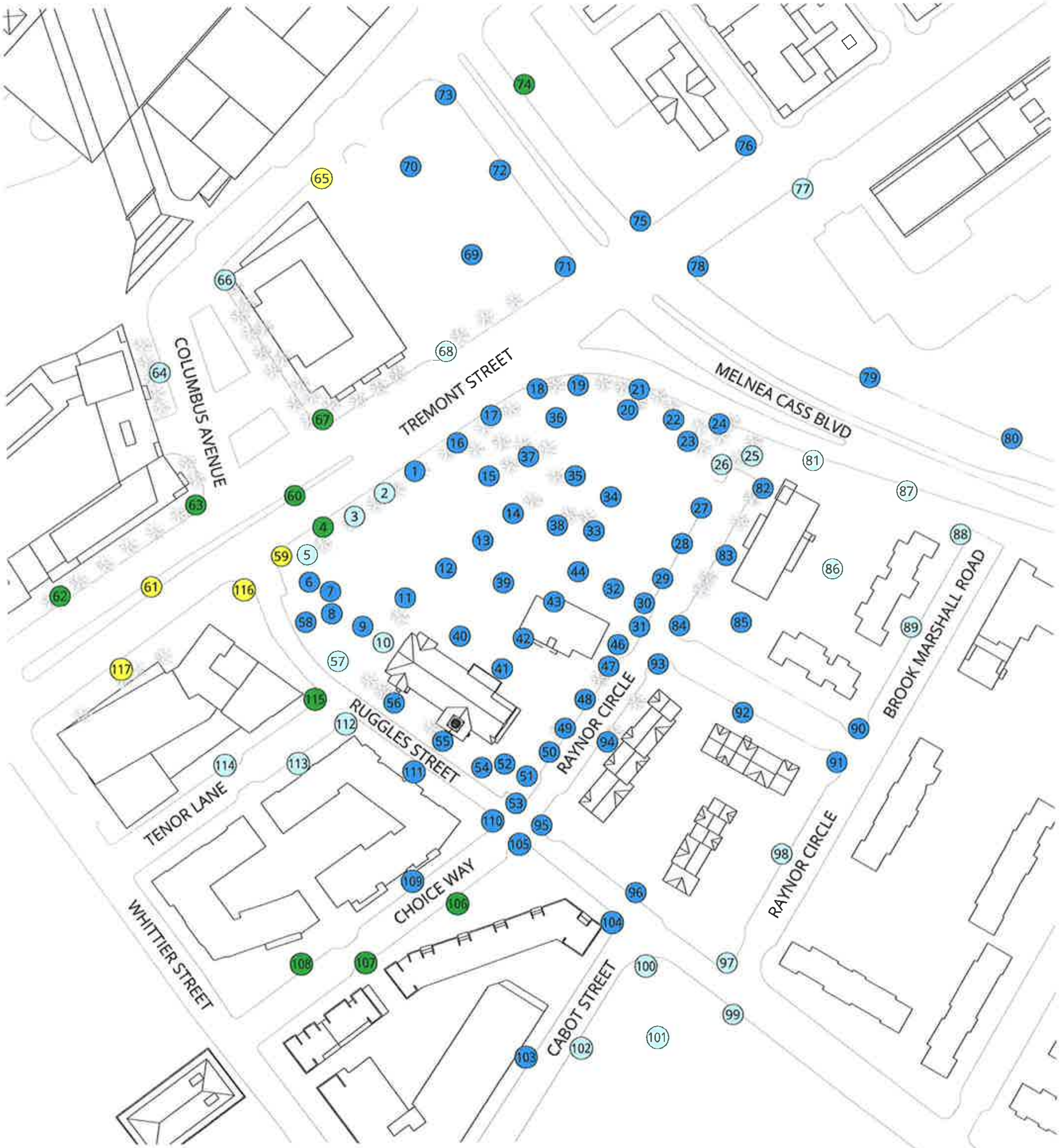
9. Wu, H. and Kriksic, F. (2012). "Designing for Pedestrian Comfort in Response to Local Climate", *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.104-106, pp.397-407.

10. Wu, H., Williams, C.J., Baker, H.A. and Waechter, W.F. (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", *ASCE Structure Congress 2004,* Nashville, Tennessee.

FIGURES



LEGEND:

MEAN SPEED CATEGORIES:
- Sitting
- Standing
- Walking
- Uncomfortable
- Dangerous

SENSOR LOCATION:
- Grade Level
- Winter Deciduous Tree

0 75 150ft

Pedestrian Wind Conditions - Mean Speed
No Build
Annual (January to December, 0:00 to 23:00)

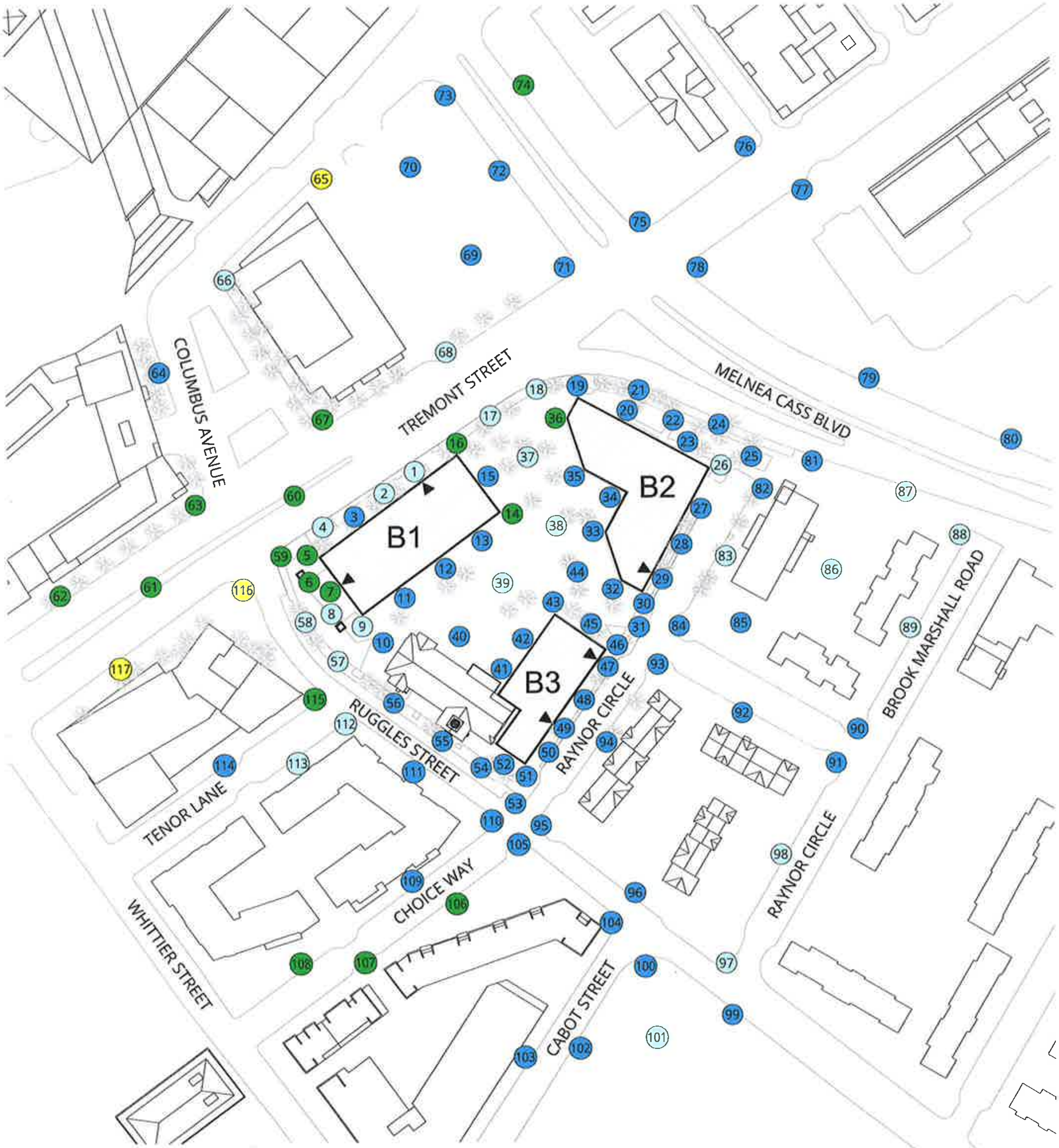
Drexel Village-Crescent Parcel - Boston, MA

True North

Project #2203419

Drawn by: GRE	Figure: 1A
Approx. Scale:	1"=150'
Date Revised:	Jan. 30, 2023

RWDI



LEGEND:

MEAN SPEED CATEGORIES:

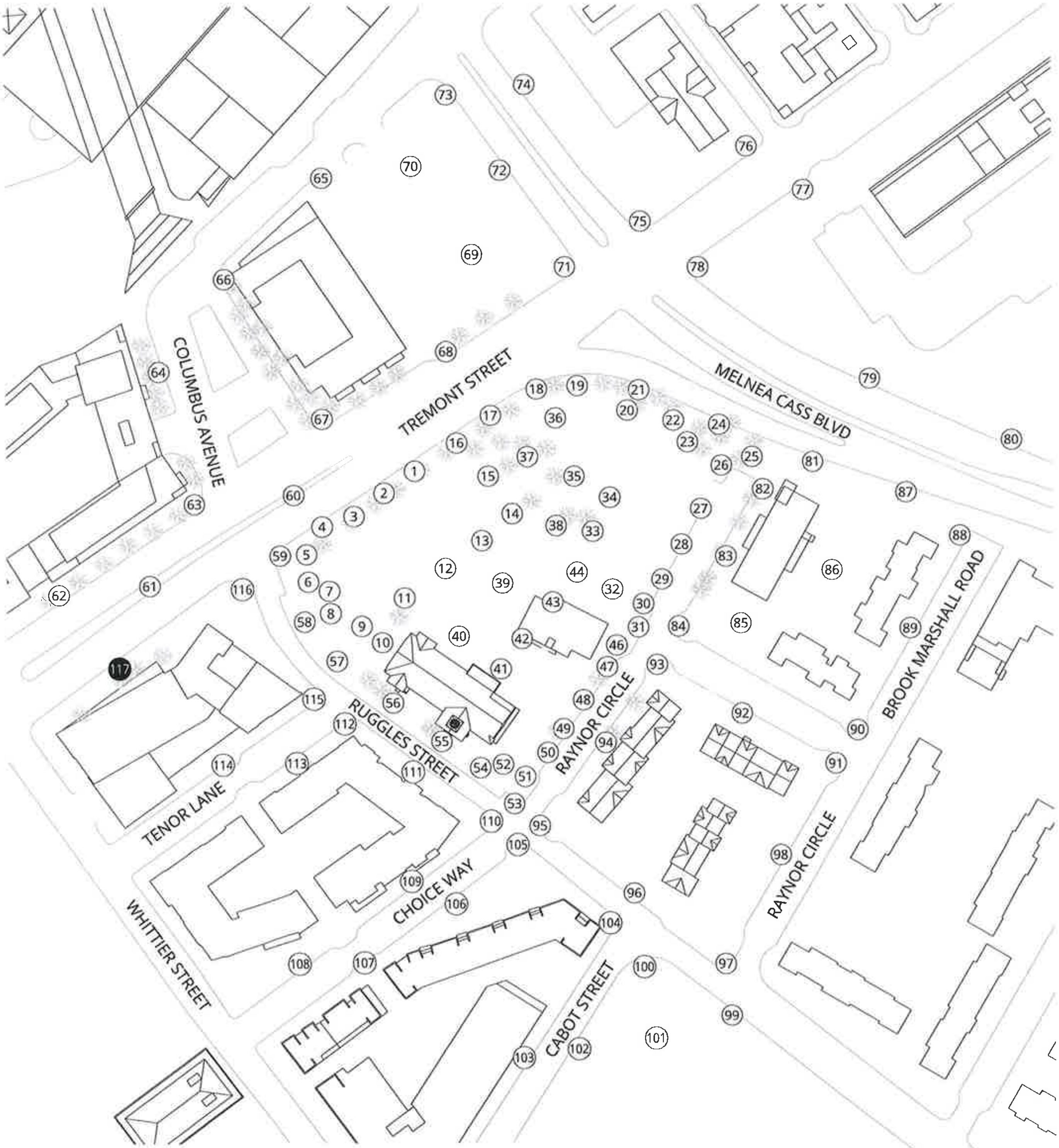
- Sitting
- Standing
- Walking
- Uncomfortable
- Dangerous

SENSOR LOCATION:

- Grade Level
- Winter Deciduous Tree
- Building Above Removed for Clarity
- ▶ Main Entrance Location

0 75 150ft

Pedestrian Wind Conditions - Mean Speed Build Annual (January to December, 0:00 to 23:00)	True North	Drawn by: GRE	Figure: 1B
		Approx. Scale: 1"=150'	
Drexel Village-Crescent Parcel - Boston, MA	Project #2203419	Date Revised: Jan. 30, 2023	



LEGEND:

EFFECTIVE GUST SPEED CATEGORIES:
- Acceptable ○
- Unacceptable ●

SENSOR LOCATION:
- ○ Grade Level
- Winter Deciduous Tree

0 75 150ft

Pedestrian Wind Conditions - Effective Gust Speed

No Build

Annual (January to December, 0:00 to 23:00)

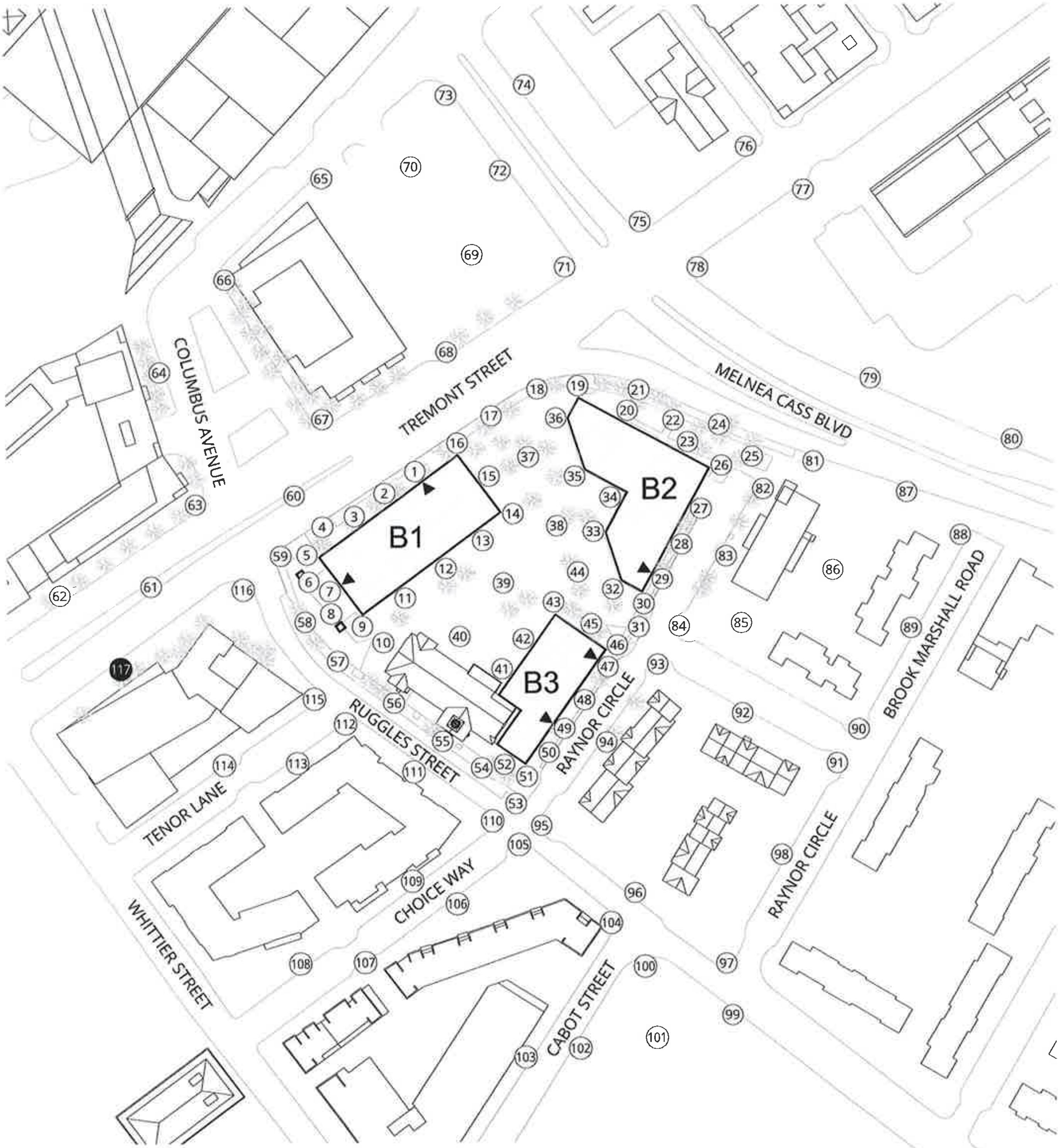
Drexel Village-Crescent Parcel - Boston, MA

True North

Project #2203419

Drawn by: GRE	Figure: 2A
Approx. Scale:	1"=150'
Date Revised:	Jan. 30, 2023

RWDI



LEGEND:

EFFECTIVE GUST SPEED CATEGORIES:
- Acceptable
- Unacceptable

SENSOR LOCATION:
- Grade Level
- Winter Deciduous Tree
- Building Above Removed for Clarity
- Main Entrance Location

0 75 150ft

Pedestrian Wind Conditions - Effective Gust Speed Build Annual (January to December, 0:00 to 23:00)	True North	Drawn by: GRE / Figure: 2B
		Approx. Scale: 1"=150'
Drexel Village-Crescent Parcel - Boston, MA	Project #2203419	Date Revised: Jan. 30, 2023

TABLES

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
1	A	Annual	12		Sitting	20		Acceptable
	B	Annual	15	25%	Standing	24	20%	Acceptable
2	A	Annual	14		Standing	22		Acceptable
	B	Annual	14		Standing	22		Acceptable
3	A	Annual	13		Standing	21		Acceptable
	B	Annual	11	-15%	Sitting	18	-14%	Acceptable
4	A	Annual	16		Walking	26		Acceptable
	B	Annual	14	-12%	Standing	23	-12%	Acceptable
5	A	Annual	13		Standing	23		Acceptable
	B	Annual	17	31%	Walking	25		Acceptable
6	A	Annual	12		Sitting	20		Acceptable
	B	Annual	16	33%	Walking	24	20%	Acceptable
7	A	Annual	11		Sitting	18		Acceptable
	B	Annual	16	45%	Walking	24	33%	Acceptable
8	A	Annual	11		Sitting	18		Acceptable
	B	Annual	14	27%	Standing	21	17%	Acceptable
9	A	Annual	12		Sitting	19		Acceptable
	B	Annual	13		Standing	21	11%	Acceptable
10	A	Annual	14		Standing	21		Acceptable
	B	Annual	12	-14%	Sitting	18	-14%	Acceptable
11	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
12	A	Annual	10		Sitting	17		Acceptable
	B	Annual	12	20%	Sitting	18		Acceptable
13	A	Annual	10		Sitting	16		Acceptable
	B	Annual	12	20%	Sitting	18	12%	Acceptable
14	A	Annual	10		Sitting	17		Acceptable
	B	Annual	17	70%	Walking	23	35%	Acceptable
15	A	Annual	10		Sitting	17		Acceptable
	B	Annual	8	-20%	Sitting	13	-24%	Acceptable
16	A	Annual	11		Sitting	19		Acceptable
	B	Annual	16	45%	Walking	25	32%	Acceptable
17	A	Annual	11		Sitting	19		Acceptable
	B	Annual	13	18%	Standing	21	11%	Acceptable
18	A	Annual	11		Sitting	18		Acceptable
	B	Annual	14	27%	Standing	21	17%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
19	A	Annual	11		Sitting	17		Acceptable
	B	Annual	12		Sitting	19	12%	Acceptable
20	A	Annual	11		Sitting	18		Acceptable
	B	Annual	9	-18%	Sitting	16	-11%	Acceptable
21	A	Annual	11		Sitting	18		Acceptable
	B	Annual	11		Sitting	17		Acceptable
22	A	Annual	12		Sitting	18		Acceptable
	B	Annual	11		Sitting	18		Acceptable
23	A	Annual	11		Sitting	17		Acceptable
	B	Annual	11		Sitting	18		Acceptable
24	A	Annual	11		Sitting	18		Acceptable
	B	Annual	12		Sitting	19		Acceptable
25	A	Annual	13		Standing	19		Acceptable
	B	Annual	11	-15%	Sitting	17	-11%	Acceptable
26	A	Annual	13		Standing	19		Acceptable
	B	Annual	14		Standing	21	11%	Acceptable
27	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	15	-12%	Acceptable
28	A	Annual	11		Sitting	17		Acceptable
	B	Annual	9	-18%	Sitting	14	-18%	Acceptable
29	A	Annual	11		Sitting	18		Acceptable
	B	Annual	10		Sitting	15	-17%	Acceptable
30	A	Annual	11		Sitting	18		Acceptable
	B	Annual	12		Sitting	18		Acceptable
31	A	Annual	12		Sitting	19		Acceptable
	B	Annual	10	-17%	Sitting	16	-16%	Acceptable
32	A	Annual	10		Sitting	16		Acceptable
	B	Annual	10		Sitting	16		Acceptable
33	A	Annual	10		Sitting	17		Acceptable
	B	Annual	9		Sitting	14	-18%	Acceptable
34	A	Annual	11		Sitting	18		Acceptable
	B	Annual	7	-36%	Sitting	12	-33%	Acceptable
35	A	Annual	11		Sitting	18		Acceptable
	B	Annual	11		Sitting	17		Acceptable
36	A	Annual	11		Sitting	18		Acceptable
	B	Annual	16	45%	Walking	22	22%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
37	A	Annual	11		Sitting	17		Acceptable
	B	Annual	15	36%	Standing	21	24%	Acceptable
38	A	Annual	10		Sitting	17		Acceptable
	B	Annual	14	40%	Standing	21	24%	Acceptable
39	A	Annual	11		Sitting	17		Acceptable
	B	Annual	13	18%	Standing	19	12%	Acceptable
40	A	Annual	9		Sitting	14		Acceptable
	B	Annual	11	22%	Sitting	16	14%	Acceptable
41	A	Annual	10		Sitting	16		Acceptable
	B	Annual	6	-40%	Sitting	10	-38%	Acceptable
42	A	Annual	7		Sitting	12		Acceptable
	B	Annual	8	14%	Sitting	14	17%	Acceptable
43	A	Annual	6		Sitting	10		Acceptable
	B	Annual	10	67%	Sitting	16	60%	Acceptable
44	A	Annual	9		Sitting	15		Acceptable
	B	Annual	10	11%	Sitting	16		Acceptable
45	A	-	-		-	-		-
	B	Annual	9	-	Sitting	15	-	Acceptable
46	A	Annual	10		Sitting	17		Acceptable
	B	Annual	11		Sitting	18		Acceptable
47	A	Annual	12		Sitting	19		Acceptable
	B	Annual	9	-25%	Sitting	14	-26%	Acceptable
48	A	Annual	10		Sitting	16		Acceptable
	B	Annual	9		Sitting	14	-12%	Acceptable
49	A	Annual	10		Sitting	16		Acceptable
	B	Annual	9		Sitting	14	-12%	Acceptable
50	A	Annual	10		Sitting	16		Acceptable
	B	Annual	10		Sitting	15		Acceptable
51	A	Annual	10		Sitting	16		Acceptable
	B	Annual	10		Sitting	16		Acceptable
52	A	Annual	9		Sitting	14		Acceptable
	B	Annual	7	-22%	Sitting	11	-21%	Acceptable
53	A	Annual	11		Sitting	17		Acceptable
	B	Annual	11		Sitting	17		Acceptable
54	A	Annual	9		Sitting	16		Acceptable
	B	Annual	9		Sitting	14	-12%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
55	A	Annual	8		Sitting	13		Acceptable
	B	Annual	7	-12%	Sitting	11	-15%	Acceptable
56	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	16		Acceptable
57	A	Annual	15		Standing	22		Acceptable
	B	Annual	15		Standing	21		Acceptable
58	A	Annual	12		Sitting	19		Acceptable
	B	Annual	15	25%	Standing	23	21%	Acceptable
59	A	Annual	20		Uncomfortable	30		Acceptable
	B	Annual	18		Walking	28		Acceptable
60	A	Annual	18		Walking	28		Acceptable
	B	Annual	17		Walking	27		Acceptable
61	A	Annual	20		Uncomfortable	29		Acceptable
	B	Annual	19		Walking	28		Acceptable
62	A	Annual	19		Walking	25		Acceptable
	B	Annual	18		Walking	24		Acceptable
63	A	Annual	18		Walking	25		Acceptable
	B	Annual	18		Walking	25		Acceptable
64	A	Annual	13		Standing	21		Acceptable
	B	Annual	12		Sitting	20		Acceptable
65	A	Annual	23		Uncomfortable	30		Acceptable
	B	Annual	22		Uncomfortable	30		Acceptable
66	A	Annual	15		Standing	22		Acceptable
	B	Annual	15		Standing	22		Acceptable
67	A	Annual	17		Walking	25		Acceptable
	B	Annual	17		Walking	25		Acceptable
68	A	Annual	13		Standing	21		Acceptable
	B	Annual	13		Standing	20		Acceptable
69	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	17		Acceptable
70	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	17		Acceptable
71	A	Annual	11		Sitting	18		Acceptable
	B	Annual	12		Sitting	19		Acceptable
72	A	Annual	12		Sitting	20		Acceptable
	B	Annual	12		Sitting	19		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
73	A	Annual	12		Sitting	19		Acceptable
	B	Annual	11		Sitting	19		Acceptable
74	A	Annual	19		Walking	29		Acceptable
	B	Annual	19		Walking	29		Acceptable
75	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	19		Acceptable
76	A	Annual	11		Sitting	17		Acceptable
	B	Annual	11		Sitting	17		Acceptable
77	A	Annual	13		Standing	21		Acceptable
	B	Annual	12		Sitting	21		Acceptable
78	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	19		Acceptable
79	A	Annual	12		Sitting	18		Acceptable
	B	Annual	11		Sitting	18		Acceptable
80	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
81	A	Annual	13		Standing	20		Acceptable
	B	Annual	12		Sitting	19		Acceptable
82	A	Annual	10		Sitting	17		Acceptable
	B	Annual	10		Sitting	17		Acceptable
83	A	Annual	11		Sitting	19		Acceptable
	B	Annual	13	18%	Standing	20		Acceptable
84	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
85	A	Annual	10		Sitting	16		Acceptable
	B	Annual	8	-20%	Sitting	14	-12%	Acceptable
86	A	Annual	13		Standing	19		Acceptable
	B	Annual	13		Standing	19		Acceptable
87	A	Annual	13		Standing	20		Acceptable
	B	Annual	13		Standing	20		Acceptable
88	A	Annual	13		Standing	19		Acceptable
	B	Annual	13		Standing	18		Acceptable
89	A	Annual	13		Standing	20		Acceptable
	B	Annual	13		Standing	20		Acceptable
90	A	Annual	12		Sitting	18		Acceptable
	B	Annual	12		Sitting	18		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
91	A	Annual	12		Sitting	17		Acceptable
	B	Annual	11		Sitting	17		Acceptable
92	A	Annual	10		Sitting	15		Acceptable
	B	Annual	9		Sitting	14		Acceptable
93	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	15	-12%	Acceptable
94	A	Annual	10		Sitting	16		Acceptable
	B	Annual	10		Sitting	15		Acceptable
95	A	Annual	11		Sitting	17		Acceptable
	B	Annual	11		Sitting	17		Acceptable
96	A	Annual	11		Sitting	18		Acceptable
	B	Annual	11		Sitting	16	-11%	Acceptable
97	A	Annual	14		Standing	20		Acceptable
	B	Annual	14		Standing	20		Acceptable
98	A	Annual	13		Standing	20		Acceptable
	B	Annual	13		Standing	19		Acceptable
99	A	Annual	13		Standing	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
100	A	Annual	13		Standing	18		Acceptable
	B	Annual	12		Sitting	18		Acceptable
101	A	Annual	14		Standing	20		Acceptable
	B	Annual	14		Standing	20		Acceptable
102	A	Annual	13		Standing	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
103	A	Annual	10		Sitting	15		Acceptable
	B	Annual	10		Sitting	15		Acceptable
104	A	Annual	11		Sitting	17		Acceptable
	B	Annual	10		Sitting	15	-12%	Acceptable
105	A	Annual	12		Sitting	19		Acceptable
	B	Annual	12		Sitting	18		Acceptable
106	A	Annual	17		Walking	24		Acceptable
	B	Annual	17		Walking	25		Acceptable
107	A	Annual	18		Walking	26		Acceptable
	B	Annual	18		Walking	26		Acceptable
108	A	Annual	19		Walking	26		Acceptable
	B	Annual	19		Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Annual

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
109	A	Annual	11		Sitting	16		Acceptable
	B	Annual	10		Sitting	16		Acceptable
110	A	Annual	12		Sitting	18		Acceptable
	B	Annual	11		Sitting	17		Acceptable
111	A	Annual	11		Sitting	18		Acceptable
	B	Annual	11		Sitting	17		Acceptable
112	A	Annual	15		Standing	21		Acceptable
	B	Annual	13	-13%	Standing	20		Acceptable
113	A	Annual	15		Standing	23		Acceptable
	B	Annual	13	-13%	Standing	20	-13%	Acceptable
114	A	Annual	13		Standing	20		Acceptable
	B	Annual	12		Sitting	19		Acceptable
115	A	Annual	16		Walking	23		Acceptable
	B	Annual	16		Walking	22		Acceptable
116	A	Annual	22		Uncomfortable	31		Acceptable
	B	Annual	20		Uncomfortable	29		Acceptable
117	A	Annual	24		Uncomfortable	32		Unacceptable
	B	Annual	23		Uncomfortable	32		Unacceptable

Configurations	Mean Wind Criteria Speed (mph)	Effective Gust Criteria (mph)
A: No Build	≤ 12 Comfortable for Sitting	≤ 31 Acceptable
Existing site and surroundings	13 - 15 Comfortable for Standing	> 31 Unacceptable
B: Build	16 - 19 Comfortable for Walking	
Project with existing surroundings	20 - 27 Uncomfortable for Walking	
	> 27 Dangerous Conditions	

Notes

1) Wind Speeds are for a 1% probability of exceedance

2) % Change is based on comparison with Configuration A

3) % changes less than 10% are excluded

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
1	A	13	9	12	14	20	15	19	22
	B	15	11	14	16	24	18	22	26
2	A	14	10	13	15	23	17	21	25
	B	14	11	13	15	23	17	21	25
3	A	13	10	12	14	22	16	20	23
	B	11	8	10	12	19	14	17	20
4	A	16	12	15	17	26	20	24	28
	B	14	11	13	16	24	18	22	26
5	A	14	10	13	15	23	18	21	25
	B	17	15	16	18	26	21	24	26
6	A	12	9	11	13	20	15	19	22
	B	16	12	15	17	25	19	23	27
7	A	11	8	11	12	19	14	18	19
	B	17	15	16	16	25	20	23	26
8	A	12	9	11	11	19	14	18	19
	B	15	13	14	15	22	18	20	22
9	A	13	11	12	12	20	17	19	19
	B	14	11	13	14	21	17	19	23
10	A	15	13	14	14	22	19	21	21
	B	13	11	12	13	19	16	18	20
11	A	13	11	12	12	21	18	19	20
	B	13	11	11	11	19	17	18	18
12	A	11	9	10	11	18	15	17	18
	B	13	12	12	12	19	17	18	18
13	A	10	8	9	10	16	13	15	17
	B	13	12	12	11	19	17	18	17
14	A	10	8	10	11	17	13	16	18
	B	18	15	17	17	25	20	24	25
15	A	11	9	10	11	18	14	16	18
	B	8	6	8	9	14	11	13	15
16	A	12	9	11	12	19	15	18	21
	B	16	13	15	17	26	19	23	27
17	A	12	10	11	12	19	15	18	20
	B	13	10	12	14	22	16	20	24
18	A	12	9	11	12	19	14	17	20
	B	15	12	14	14	22	18	20	22

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
19	A	11	9	10	12	18	14	17	19
	B	13	9	12	13	20	15	19	21
20	A	12	9	11	12	19	14	17	20
	B	10	8	9	10	17	13	15	18
21	A	12	9	11	13	19	14	17	20
	B	11	8	10	12	17	13	16	19
22	A	12	10	11	13	19	15	18	20
	B	11	8	10	12	18	13	17	19
23	A	11	9	11	12	18	14	17	19
	B	11	8	10	12	18	14	17	20
24	A	12	9	11	12	18	14	17	19
	B	13	10	12	14	19	15	18	21
25	A	14	10	12	14	20	15	18	20
	B	12	9	11	12	18	14	17	19
26	A	14	10	12	14	20	15	18	20
	B	15	11	14	16	22	16	21	24
27	A	11	9	11	12	18	15	17	19
	B	10	8	10	11	16	12	15	17
28	A	11	9	10	12	18	14	17	19
	B	9	7	9	9	15	11	14	15
29	A	11	9	11	12	18	14	17	19
	B	10	8	9	10	16	12	14	16
30	A	12	9	11	13	19	14	17	20
	B	13	10	12	13	19	15	17	19
31	A	12	9	12	13	19	15	18	20
	B	11	8	10	11	17	14	16	18
32	A	10	7	9	11	16	12	15	17
	B	11	9	10	10	17	14	16	17
33	A	10	8	10	11	17	14	16	18
	B	9	7	9	9	14	12	14	15
34	A	11	9	10	12	19	14	17	20
	B	7	6	7	7	12	10	11	12
35	A	12	9	11	12	19	14	17	20
	B	11	9	10	11	18	15	17	19
36	A	11	9	10	12	18	14	17	19
	B	17	14	15	16	23	20	22	24

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
37	A	11	9	10	12	18	14	17	19
	B	15	13	15	16	22	18	21	23
38	A	11	8	10	11	17	13	16	18
	B	14	11	13	15	21	16	20	22
39	A	11	9	11	11	18	14	17	19
	B	13	11	13	14	20	16	19	21
40	A	9	8	9	9	15	12	14	15
	B	11	9	11	12	17	14	17	18
41	A	11	8	10	11	16	13	15	17
	B	6	5	6	6	10	8	10	11
42	A	7	6	7	8	12	10	11	13
	B	8	6	8	9	14	11	13	15
43	A	6	5	5	6	10	8	9	10
	B	11	8	10	11	16	12	15	17
44	A	9	8	9	10	15	12	14	16
	B	10	8	10	11	17	13	16	18
45	A	-	-	-	-	-	-	-	-
	B	10	8	9	10	16	12	14	16
46	A	11	9	10	11	17	14	16	18
	B	12	9	11	13	19	14	17	20
47	A	13	11	12	13	19	16	19	20
	B	9	7	9	10	15	11	14	15
48	A	10	8	9	10	16	13	15	17
	B	9	7	9	10	14	11	13	15
49	A	10	8	10	11	17	13	16	18
	B	9	7	8	9	15	11	13	15
50	A	10	8	9	11	16	13	15	17
	B	10	8	9	10	16	13	15	17
51	A	10	8	10	11	16	13	16	18
	B	10	8	10	11	17	13	16	18
52	A	9	7	8	9	15	12	14	16
	B	7	6	7	7	11	10	11	12
53	A	11	9	10	12	17	13	16	19
	B	11	9	10	12	17	14	16	18
54	A	10	8	9	10	16	13	15	17
	B	9	8	9	9	14	12	14	15

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
55	A	9	7	8	9	14	11	13	14
	B	7	6	7	7	12	9	11	12
56	A	12	9	11	12	18	14	18	19
	B	10	8	10	11	17	13	16	17
57	A	16	13	15	16	23	19	22	23
	B	15	13	15	16	22	18	21	23
58	A	13	9	12	13	20	15	20	20
	B	15	12	15	16	23	18	22	25
59	A	20	15	18	22	31	24	28	34
	B	19	14	17	20	29	22	26	31
60	A	18	14	17	20	29	23	27	31
	B	17	14	16	18	27	21	26	29
61	A	20	17	19	21	29	24	28	31
	B	19	16	18	20	28	23	27	30
62	A	20	17	19	20	26	23	25	26
	B	19	17	18	19	25	22	24	26
63	A	18	14	17	19	26	21	24	27
	B	18	15	17	19	26	20	24	27
64	A	13	11	12	14	22	17	20	23
	B	13	10	12	14	21	17	20	22
65	A	23	17	21	25	31	23	28	34
	B	23	17	20	25	30	23	28	33
66	A	16	13	14	16	24	19	22	24
	B	16	13	14	16	23	19	21	23
67	A	17	13	16	19	26	19	23	28
	B	18	13	16	19	26	19	24	28
68	A	14	11	13	14	22	17	20	23
	B	13	10	12	14	21	16	19	22
69	A	11	8	11	12	18	14	17	19
	B	11	8	10	11	17	13	16	18
70	A	11	8	10	12	18	13	16	19
	B	10	8	9	11	17	13	16	18
71	A	11	9	11	12	18	14	17	20
	B	12	10	11	13	19	15	18	20
72	A	13	9	12	14	21	15	19	22
	B	12	9	11	13	20	14	18	21

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
73	A	12	9	11	13	19	15	18	21
	B	11	9	10	12	19	14	17	20
74	A	20	15	18	21	29	23	27	32
	B	20	15	18	21	30	23	27	32
75	A	12	9	12	13	20	15	18	21
	B	13	9	12	14	20	15	18	21
76	A	12	9	10	12	17	14	16	18
	B	12	10	10	12	18	14	16	18
77	A	13	10	12	14	22	16	20	23
	B	13	10	12	13	21	16	20	22
78	A	13	10	12	13	20	15	18	21
	B	13	10	12	14	19	15	18	21
79	A	12	10	11	13	19	15	18	20
	B	12	9	11	13	19	14	18	20
80	A	12	11	12	13	19	16	18	20
	B	12	10	11	12	18	15	17	19
81	A	13	10	12	15	21	16	19	23
	B	13	10	12	14	19	15	18	21
82	A	11	9	10	11	18	14	16	18
	B	11	8	10	11	18	13	16	18
83	A	12	9	11	13	19	15	18	21
	B	14	11	13	15	21	16	19	22
84	A	12	9	12	13	19	15	18	21
	B	12	10	11	12	18	15	17	19
85	A	10	8	9	11	16	13	15	17
	B	9	7	8	9	14	11	13	15
86	A	13	10	12	14	20	15	19	21
	B	13	10	13	14	20	15	18	20
87	A	14	11	13	14	21	16	20	22
	B	14	11	13	14	21	16	20	22
88	A	14	10	13	14	20	15	19	20
	B	14	10	12	14	19	15	18	20
89	A	14	11	13	14	21	16	20	22
	B	14	11	13	14	21	16	20	21
90	A	12	10	12	13	19	16	18	20
	B	12	10	12	12	18	16	18	19

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
91	A	12	10	12	12	18	15	17	19
	B	12	10	12	12	18	15	17	18
92	A	10	8	10	11	16	12	15	17
	B	10	7	9	10	15	11	14	15
93	A	11	9	11	12	18	14	17	19
	B	10	8	10	11	16	13	15	17
94	A	10	8	9	10	17	13	16	18
	B	10	8	10	10	16	13	15	16
95	A	11	9	11	12	18	14	17	19
	B	11	9	10	12	17	13	16	19
96	A	12	9	11	12	19	14	18	19
	B	11	9	10	11	17	13	16	18
97	A	14	12	14	15	21	17	20	22
	B	14	12	14	15	21	17	20	21
98	A	14	12	13	14	20	17	19	21
	B	14	12	13	14	20	17	19	21
99	A	13	11	13	14	20	16	19	21
	B	12	11	12	13	19	16	18	20
100	A	13	11	13	13	19	16	18	20
	B	13	11	12	13	19	16	18	19
101	A	15	13	14	15	21	18	20	22
	B	15	13	14	15	21	18	20	22
102	A	13	11	13	13	19	17	19	20
	B	13	11	12	13	19	16	18	20
103	A	11	9	10	11	16	13	15	16
	B	11	8	10	11	16	13	15	16
104	A	11	8	10	12	18	13	16	18
	B	10	8	9	11	16	12	15	17
105	A	12	9	11	13	19	15	18	20
	B	12	9	11	13	19	14	17	20
106	A	17	13	15	18	25	19	23	27
	B	17	13	16	19	25	19	23	27
107	A	18	14	16	20	26	20	24	29
	B	18	14	16	20	26	20	24	29
108	A	19	17	18	20	27	22	25	29
	B	19	16	18	20	26	22	25	28

Table 2: Mean Speed and Effective Gust Categories - Seasonal

Location	Configuration	Mean Wind Speed (mph)				Effective Gust Wind Speed (mph)			
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
109	A	11	9	10	12	17	14	16	18
	B	11	8	10	12	16	13	15	18
110	A	12	9	11	13	19	14	18	20
	B	11	8	10	12	18	13	16	19
111	A	12	9	11	12	19	14	18	19
	B	12	9	11	12	18	13	17	18
112	A	15	13	15	15	23	18	21	22
	B	13	11	13	14	21	17	19	21
113	A	16	12	15	17	25	19	23	25
	B	13	11	13	14	21	17	20	22
114	A	13	12	13	13	20	18	20	21
	B	12	11	12	13	20	18	19	21
115	A	17	14	16	17	25	19	23	24
	B	17	13	16	17	23	19	22	24
116	A	22	17	20	24	32	24	29	35
	B	21	16	19	23	30	23	28	33
117	A	24	18	22	27	33	25	30	36
	B	24	18	22	26	32	24	29	35

Seasons	Months
Spring	March - May
Summer	June - August
Fall	September - November
Winter	December - February
Annual	January - December

Mean Wind Criteria Speed (mph)	
≤ 12	Comfortable for Sitting
13 - 15	Comfortable for Standing
16 - 19	Comfortable for Walking
20 - 27	Uncomfortable for Walking
> 27	Dangerous Conditions

Effective Gust Criteria (mph)	
≤ 31	Acceptable
> 31	Unacceptable

Configurations

A: No Build

Existing site and surroundings

B: Build

Project with existing surroundings

Notes

1) Wind Speeds are for a 1% probability of exceedance

Appendix G

Drexel Village

Solar Glare Analysis (Full Report)

REPORT

DREXEL VILLAGE

DETAILED SOLAR REFLECTION ANALYSIS

DECEMBER 14, 2022
PROJECT #2203419

SUBMITTED TO
Mr. William H. Grogan
President

Planning Office for Urban Affairs, Inc.
84 State Street, Suite 600
Boston, MA 02109

CC: Beverley Johnson
BJohnson@bevcoassociates.comcastbiz.net

SUBMITTED BY
Derek Kelly, M.Eng., P.Eng.
Project Manager/Principal
derek.kelly@rwdi.com

Ryan Danks, B.A.Sc., P.Eng.
Technical Director/Associate
ryan.danks@rwdi.com

Abdul Malik Huzaifa, M.A.Sc.
Technical Coordinator
malik.huzaifa@rwdi.com

RWDI
600 Southgate Drive,
Guelph, Canada, N1G 4P6

EXECUTIVE SUMMARY

RWDI was retained to investigate the impact that solar reflections emanating from the proposed Drexel Village development will have on the surrounding urban realm.

Thermal Impacts on People

The planar nature of the facades of the development ensure that reflected sunlight will not focus (multiply) in any particular area. Therefore, RWDI does not expect any significant thermal impacts (i.e. risks to human safety or property damage) to occur either on the site or in the surrounding neighborhood. Pedestrians in the vicinity of the "V" shaped corner of Building B2 (receptor P23) could be potentially exposed to higher intensity reflections due to reflections from the two adjacent surfaces intersecting. However, these reflection intensities were predicted to be below RWDI's thresholds and are expected to be a rare occurrence.

Visual Glare Impact on Drivers

As with the addition of any glazed building, drivers travelling in the vicinity of the development were predicted to have the potential to experience visual glare. Southwest bound drivers along Tremont Street approaching Melnea Cass Blvd (D4) were predicted to experience reflections from the development which can cause a high level of impact. Though these were very infrequent (less than 0.06% of the daytime annually) and not unusual for any contemporary design.

Visual Glare Impact on Pedestrians and Facades

Typical levels of visual glare were predicted for pedestrians and building occupants in the vicinity of the development. These types of reflections represent at worst a visual nuisance, as viewers can safely look away or close blinds. These potential impacts were predicted to be possible in less than 10% of the daytime annually for buildings south, east and west of the development. Reflections may also affect pedestrians along the sidewalks near the development and within the development's courtyard more frequently. However, these results are typical of impacts seen in any urban space and are not a safety concern.

Thermal Impact on Facades

At all studied facade areas, reflections were predicted to be low intensity and short duration. Hence, RWDI would not expect these reflections to lead to a significant additional cooling load for a building. Should an individual choose to expose themselves to the reflected energy, they may feel warm, however this would be a temporary experience and one which would easily be remedied by closing window treatments.

Overall Impact of Reflections

The predicted impacts of the development on its surrounds are typical of modern buildings of equivalent size and glazed area. Additional details on when reflections were predicted to occur throughout the year, as well as predicted durations and intensities can be found in Appendix A. If mitigation is desired, strategies to minimize the reflection impacts have been provided. For further details, refer to the Mitigation Suggestions section on page 22.

TABLE OF CONTENTS

INTRODUCTION

This report provides the computer modeling results of reflected sunlight from the proposed Drexel Village development in Boston, MA. The development consists of three mixed-use residential buildings (B1, B2 and B3) located on the Crescent Parcel in Nubian Square, Roxbury, MA. The development is bound by Tremont Street to the north, Melnea Cass Blvd to the east, Raynor Circle to the south and Ruggles Street to the west (as shown in Figure 1). It is RWDI's understanding that the development is in a typical urban setting with busy roadways and other buildings.

RWDI was retained to investigate the impact that solar reflections emanating from the development will have on the surrounding urban terrain.

A preliminary set of simulations was conducted to determine peak reflection intensities and the frequency of reflection occurrence for a broad area around the development. This served to identify areas which may experience high intensity or very frequent reflections. This information informed the selection of 25 points for a more detailed analysis.

These receptor points represent drivers, pedestrians, and building facades and the detailed results allow us to quantify the frequency, intensity and duration of glare events at the receptors as well as the sources of those reflections.

Figure 1: Location of the Proposed Development (Grey) with Surrounding Context (White) (Map Credit: Bureau of Geographic Information, MassGIS)

Urban Reflections

While a common occurrence, solar reflections from buildings can lead to numerous visual and thermal issues.

Visual glare can:

- Impair the vision of motorists and others who cannot easily look away from the source;
- Cause nuisance to pedestrians or occupants of nearby buildings; and,
- Create undesirable patterns of light throughout the urban fabric.

Heat gain can:

- Affect human thermal comfort;
- Be a safety concern for people and materials, particularly if multiple reflections are focused in the same area; and
- Create increased cooling needs in conditioned spaces affected by the reflections.

The most significant safety concerns with solar reflections occur with concave facades (Figure 2) which act to focus the reflected light in a single area. RWDI does not expect this to be a concern given the form of the development.

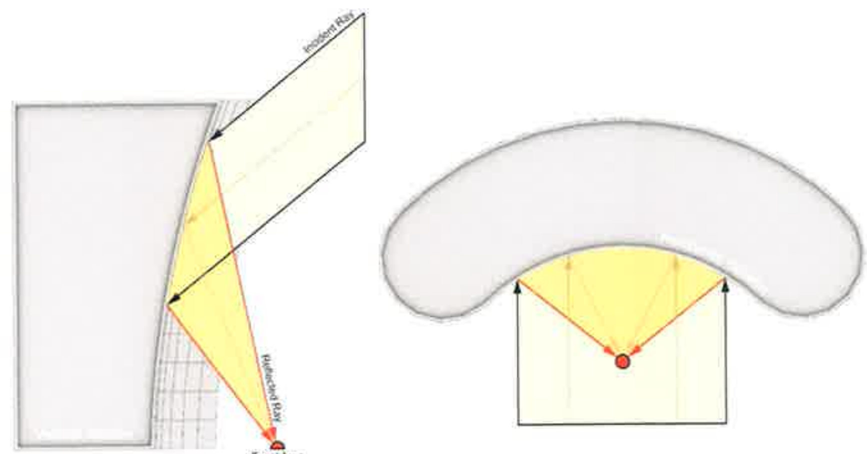


Figure 2: Illustration of Reflection Focusing Due to a Concave Facade

Methodology

RWDI assessed the potential for reflection impacts using RWDI's in-house proprietary *Eclipse* software, in two phases as per the steps outlined below:

- The Phase 1 'Screening' assessment began with the development of a 3D model of the area of interest (as shown in Figure 3). This was then subdivided into many smaller triangular patches (see Figure 4).
- For each hour in a year, the expected solar position was determined, and "virtual rays" were drawn from the sun to each triangular patch of the 3D model. Each ray that was considered to be "unobstructed" was reflected from the building surface and tracked through the surrounding area. The study domain included the entire pedestrian realm within 1150 feet of the development.
- The total reflected energy at that hour from all of the patches was computed and its potential for visual and thermal impacts assessed.
- Finally, a statistical analysis was performed to assess the frequency, and intensity of the glare events occurring throughout the year in the vicinity of the development. The criteria used to assess the level of impact can be found in Appendix B of this report.

Figure 3: 3D Computer Model of the Proposed Development and Surrounding Context

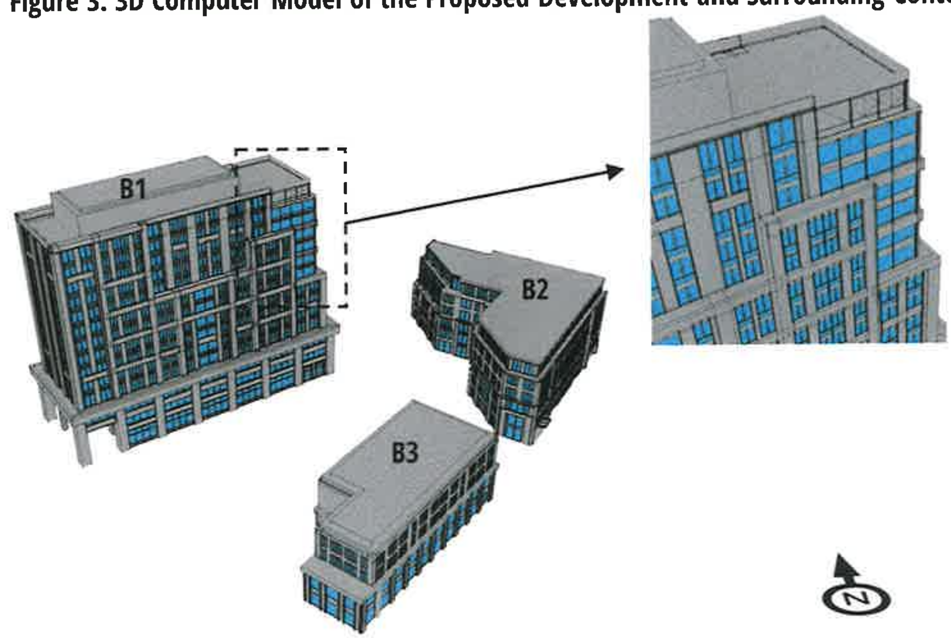


Figure 4: Close-up View of the Model, Showing Surface Subdivisions

Methodology (cont'd)

- Based on the findings of the Screening analysis, multiple representative 'receptor points' were selected to undergo the Phase 2 'Detailed' analysis.

- The points were chosen to understand in greater detail how reflections from the Project will impact drivers, pedestrians and the rest of the built environment. The selected locations of the points are discussed further in the Detailed Analysis section this report.

- The Detailed analysis process is similar to the Screening analysis, except reflections are analyzed at one-minute increments for the entire year and the source of the reflections is stored for each receptor point.

- In addition to the frequency and duration of reflection impacts, the Detailed analysis allows for the prediction of when impacts can occur, how long they can occur for and the locations of problematic glare sources.

Assumptions and Limitations

Meteorological Data

This analysis used 'clear sky' solar data computed at the location of Logan International Airport using the methodology promulgated by the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE). This approach uses mathematical algorithms to derive solar intensity values for a given location, ignoring local effects such as cloud cover. This provides an assessment of a complete year showing the full extent of when and where glare could ever occur.

Radiation Model

RWDI's analysis is only applicable to the thermal and visual impacts of solar radiation (i.e. ultraviolet, visible and infrared wavelengths) on people and property in the vicinity of the development. It does not consider the impact of the building related to any other forms of radiation, such as cellular telephone signals, RADAR arrays, etc.

Study Building and Surrounds Models

The analysis was conducted based on a 3D model of the Project provided by The Architectural Team Inc. to RWDI on November 8, 2022.

The surroundings model was developed based on data made available by the Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts. The surrounds model includes all buildings which currently exist or are approved for construction by the BPDA,

The ground surface and the surrounding buildings were topographically corrected based on a high-resolution LiDAR survey conducted by the National Oceanic and Atmospheric Administration (NOAA) in 2013-2014. NOAA states that the horizontal accuracy of this data set is 16.5 inches at a 95% confidence level. Its vertical accuracy is stated as 4.8 inches at a 95% confidence level.

Potential reductions of solar reflections due to the presence of Vegetation or other non-architectural obstructions were not included, nor are reflections from other buildings. Light that has reflected off several surfaces is assumed to have a negligible impact. As such, only a single reflection from the development was included in the analysis.

This analysis assumed that all reflective elements are in their as-designed condition, (i.e. clean, free from damage, degradation, distortion, etc.) and that the building envelopes of all buildings are complete and uncompromised (i.e. any elements of the walls/roofs that are not designed to be exposed to sun, are shielded).

Assumptions and Limitations (cont'd)

Facade Material Reflectance

Based on the information provided by The Architectural Team Inc. on November 9, 2022, the insulating vision glass for the development was modeled as Guardian Sunguard Superneutral SN70/35. It has a nominal visible reflectance of approximately 12% and the full spectrum reflectance (which relates to heat gain related issues) is 43%. All glass on all three buildings has been modeled with this glazing type.

It is RWDI's understanding that all other facade materials have negligible specular reflectance.

The reflectance properties of the reflective elements are summarized in Table 1. Figure 5 illustrates the location of the reflective materials on the facades.

Applicability of Results

The results presented in this report are highly dependent on both the form and materiality of the development's facades. Should there be any changes to the design, RWDI should be contacted and requested to review their potential effects on the findings of this report.

This analysis also assumes reasonable and responsible behaviour on the part of people in the vicinity of the development. A reasonable and responsible person would not purposely look towards a bright reflection, purposely prolong their exposure to reflected light or heat, or otherwise intentionally try to cause discomfort/harm to themselves or others and/or damage to property.

This report has endeavored to provide a robust and suitably conservative analysis of the potential effects of reflected sunlight, contextualized based on current industry and academic research, and common best practices. Regulation and enforcement of performance requirements is the responsibility of the relevant regional regulatory authority.

Assumptions and Limitations (cont'd)

Table 1: Nominal Visible and Full Spectrum Reflectance Values of the Reflective Building Elements

Location	Material	Visible Reflectance	Full Spectrum Reflectance
Facade Vision Glass	Guardian SN70/35 on ExtraClear	12%	43%

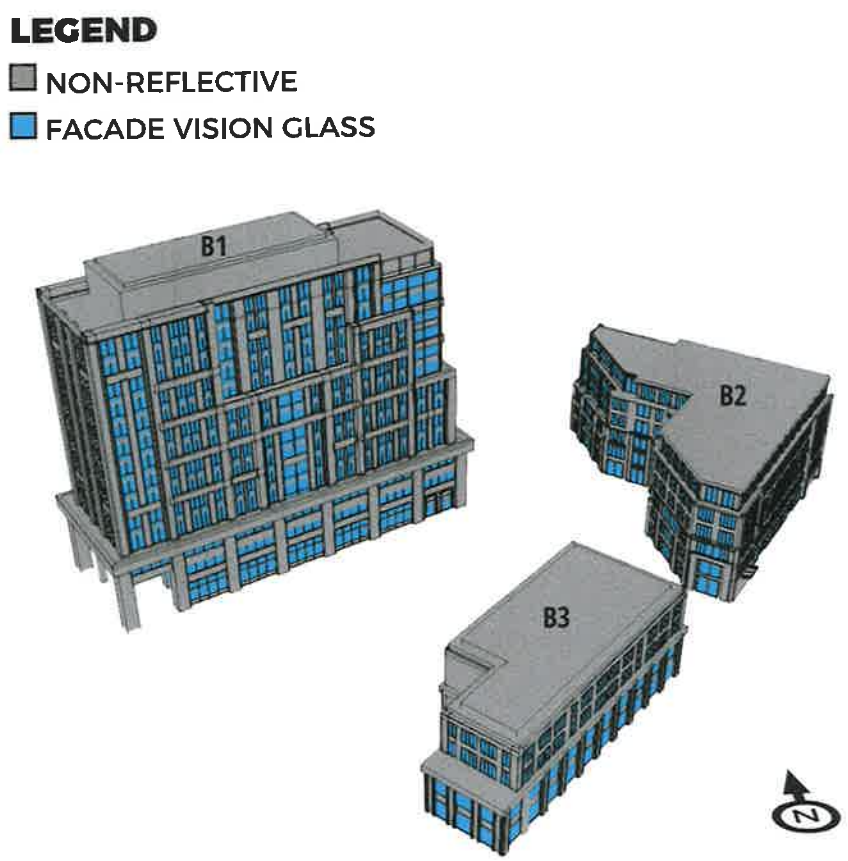


Figure 5: Locations of Reflective Building Elements (Surrounding Context removed for Clarity)

Presentation of Results

This section presents the screening results pertaining to the solar impacts of the development on the surrounding urban area. The following plots are presented:

Peak Annual Reflected Irradiance
This plot displays the annual peak intensity of all reflections emanating from the development at a typical pedestrian height (5 feet) above local grade.

Two versions of this plot are included:

- **Visible Reflectance (Visual Glare):** This plot (Figure 6a) displays the intensity of reflected visible light only. Depending on the ambient conditions, reflection intensities as low as 50 W/m² could be visible to people outdoors.

- **Full Spectrum Reflectance (Heat Gain):** This plot (Figure 6b) presents the total intensity of a reflection, including both visible light and thermal energy which relates to the risk of excessive heat gain. For full spectrum reflectance, RWDI considers 1500 W/m² as a short-term thermal comfort threshold and reflections above 2500 W/m² as a human safety threshold (refer to Appendix B).

Frequency of Significant Visual Reflections
This plot (Figure 6c) identifies the locations of the most frequent significant reflections emanating from the facades. In this context a 'significant' reflection is one that is at least 50% as intense as one that would cause after imaging on a viewer (refer to Appendix B).

As this criteria is visually based, the visible reflectance of the facades was used.

Note that none of these figures show a specific moment in time, but rather present aggregated reflection predictions for an entire year.

In order to attain a complete understanding of the impact that reflections may have on drivers, other factors must be considered, including the duration of the reflections and when they occur. The following plots serve to illustrate the general characteristics of reflections from the development and inform the locations of the receptor points used in the detailed phase of work which will analyze these factors in greater detail.

Peak Annual Reflected Irradiance - Visible Reflectance (Visual Glare)

Reflections as low as 50 W/m² may be visible to people, depending on outdoor lighting levels.

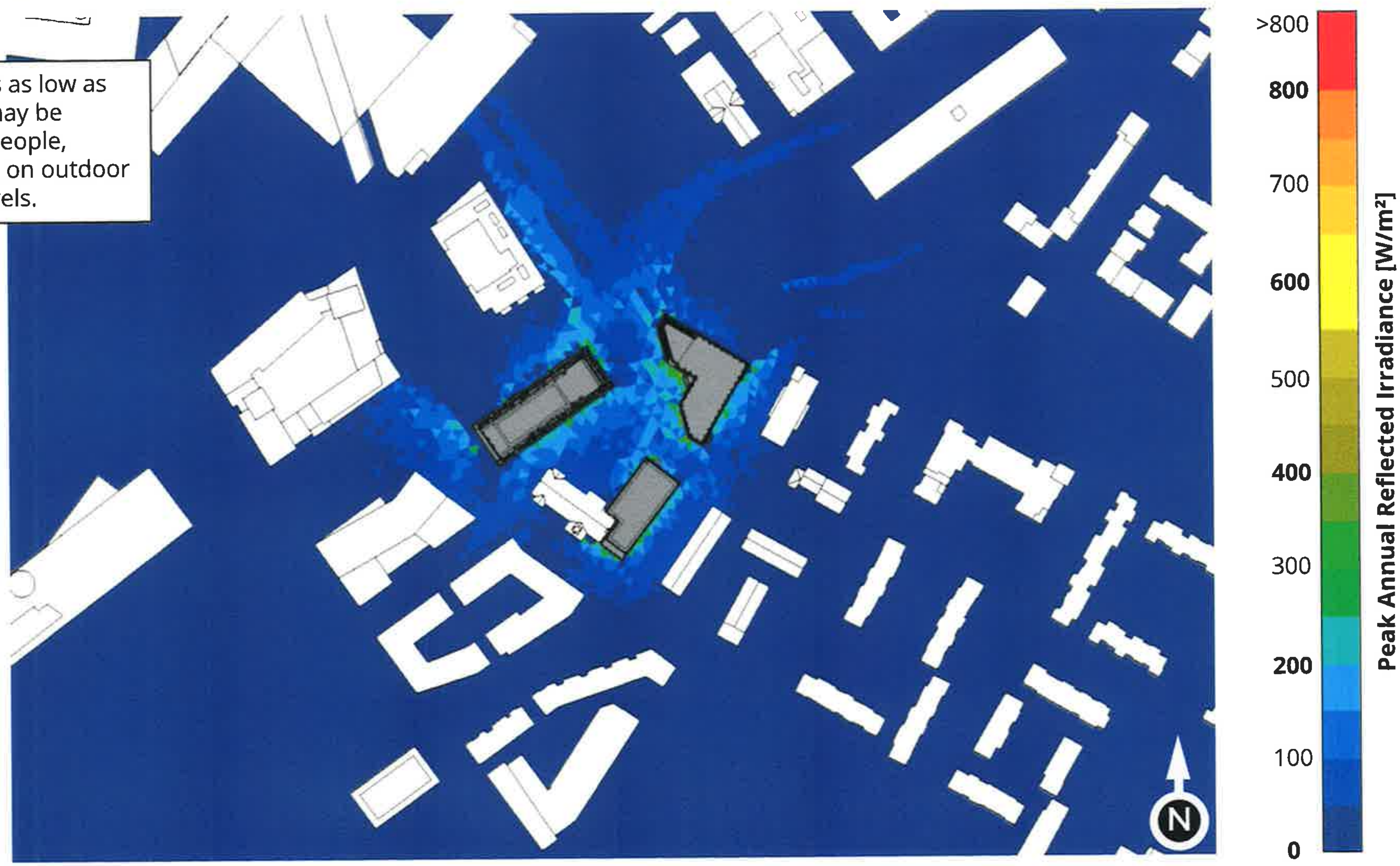


Figure 6a: Maximum Annual Intensity of Visible Reflections at Pedestrian Height

Peak Annual Reflected Irradiance - Full Spectrum Reflectance (Heat Gain)

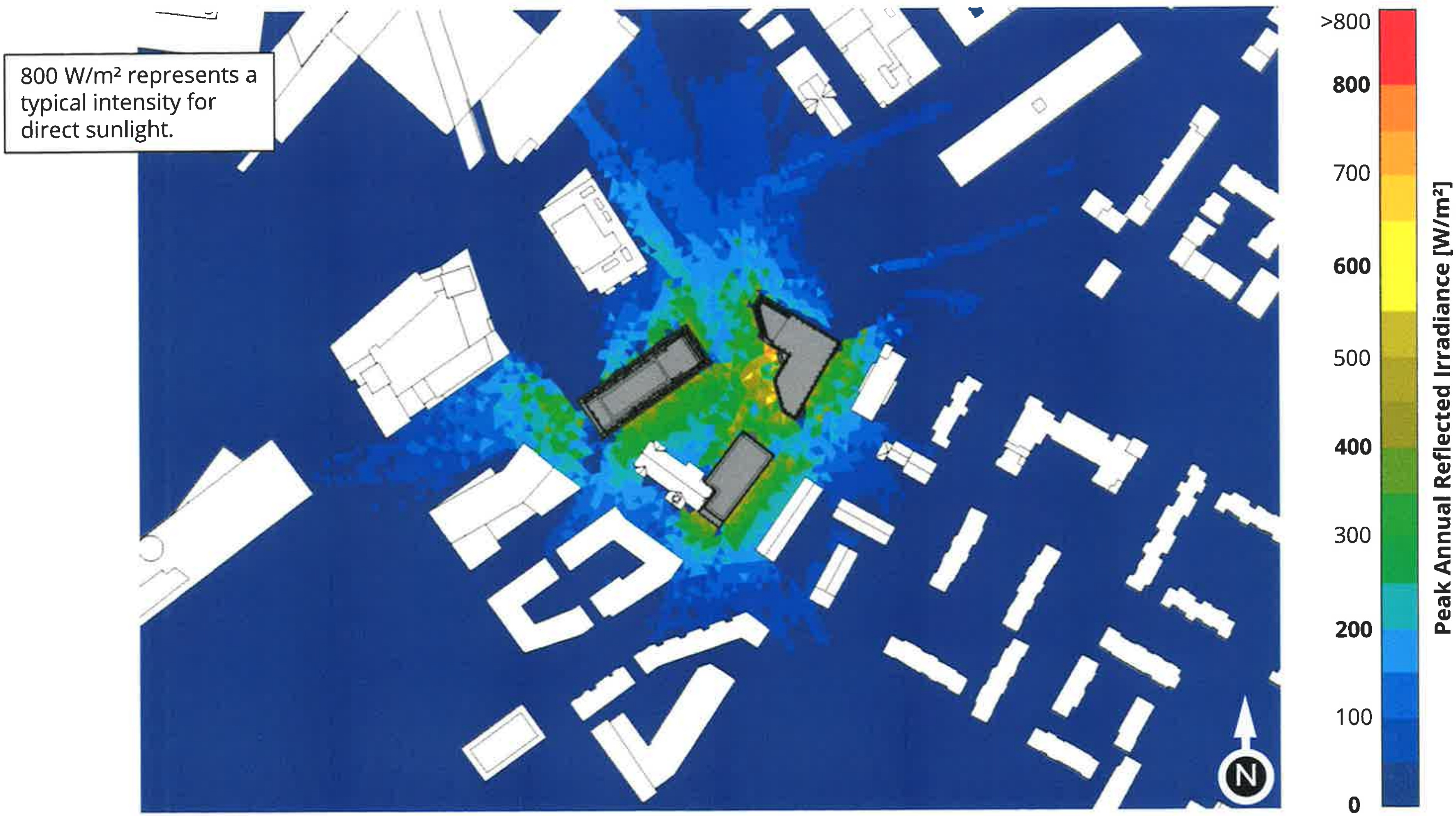


Figure 6b: Maximum Annual Intensity of Full Spectrum Reflections at Pedestrian Height

Frequency of Significant Visible Reflections

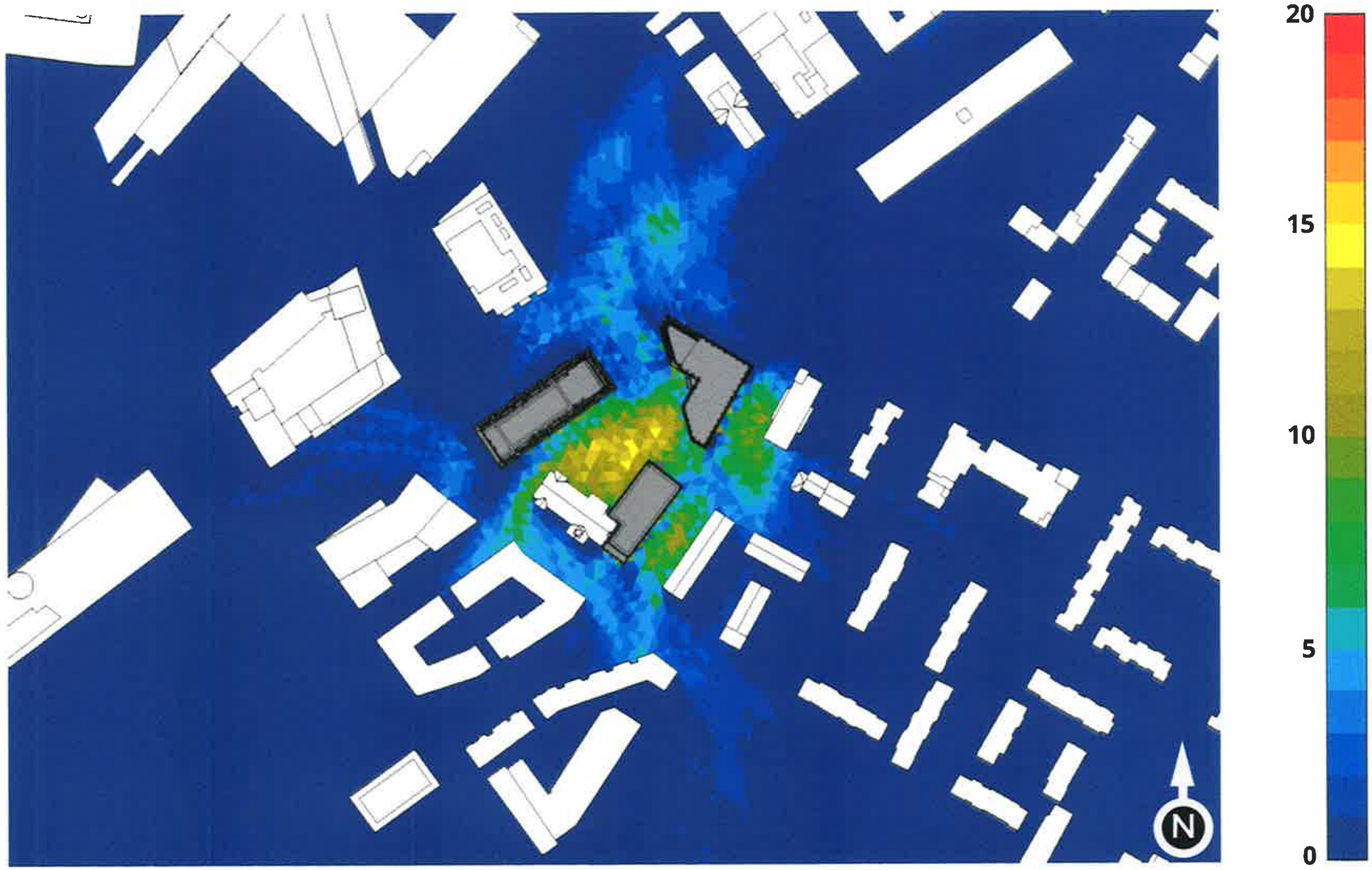


Figure 6c: Frequency (% of Daylit Hours) Where Significant Visible Reflections Can Occur

SCREENING ANALYSIS OBSERVATIONS

1. Like any contemporary building, the reflective surfaces of the development are naturally causing solar reflections in the surrounding neighborhood.
2. The planar nature of the facades of the development prevent reflections from significantly focusing (concentrating) in any particular area. Thus, RWDI does not anticipate any heat gain issues on people or property. That said, the vicinity of the "V" shaped corner of Building B2 could be potentially exposed to higher intensity reflections, which is investigated further in the detailed analysis section.
3. At pedestrian level, reflections were predicted to fall most frequently onto the courtyard within the development and immediately west and south of it. The maximum frequency of glare occurrence found at pedestrian level is approximately 21% of daytime hours.
4. Reflections from the Project were predicted to be generally confined to within 300 feet of the buildings and may impact northeast and southwest bound drivers on Tremont Street as well as southeast and northwest bound drivers on Melnea Cass Blvd. Southeast bound drivers on Ruggles Street, southwest and northeast bound drivers Raynor Circle may also be impacted.
5. The occupants of the St. Katharine Drexel Parish Center and residences located close to the development were predicted to experience visible reflections from the development. That being said, the reflections are unlikely to pose a risk to safety. They are likely a nuisance at worst, as the occupants can look away or close blinds.
6. Pedestrians on the sidewalks at Raynor Circle and Ruggles Street and at the baseball field at Madison Park High were predicted to have the potential to experience intermittent reflections. Pedestrians within the courtyard of the proposed development were also predicted to experience reflections. This condition is common in many urban centers and is unlikely to present a significant safety risk.
7. The exact nature of these impacts are explored further in the following detailed analysis section.

DETAILED ANALYSIS RESULTS

Based on the findings of the Screening Analysis and the risk levels associated with reflections effecting specific areas, 25 representative points were selected for the Detailed Analysis. These points are described in Tables 2 and 3 and illustrated in Figures 7 and 8. Unless otherwise noted all driver/pedestrian receptors are located at 5 feet above local grade.

Table 2: Receptor Descriptions

Receptor Number	Receptor Description
D1	Northeast bound drivers on Tremont Street, turning right onto Ruggles Street
D2	Northeast bound drivers on Tremont Street
D3	Northeast bound drivers on Tremont Street, merging right onto Melna Cass Blvd
D4	Southwest bound drivers on Tremont Street approaching Melnea Cass Blvd
D5	Southeast bound drivers on Melnea Cass Blvd, turning right onto Tremont Street
D6	Northwest bound drivers on Melnea Cass Blvd
D7	Southwest bound drivers on Raynor Circle
D8	Northwest bound drivers on Raynor Circle turning left and continuing on Raynor Circle
D9	Southeast bound drivers on Ruggles Street

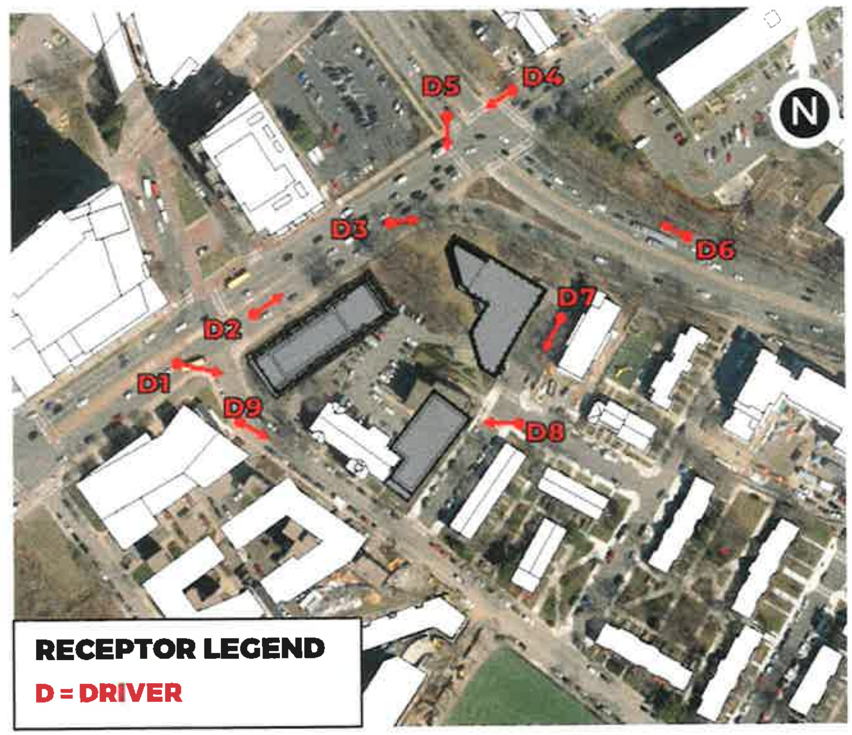


Figure 7: Driver Receptor Locations (Map Underlay Credit: Bureau of Geographic Information, MassGIS)

Table 3: Receptor Descriptions

Receptor Number	Receptor Description
F10-F11	Northeast facing facades of St. Katharine Drexel Parish Center
F12	Northeast facing facades at approximately 5th floor of 1170 Tremont Street
F13	Northeast facing facades at approximately 3rd floor of 190 Ruggles Street
F14	North facing facades at approximately 2nd floor of 154 Ruggles Street
F15	Northwest facing facades at approximately 2nd floor of 39 Raynor Circle
F16	Northwest facing facades at approximately 2nd floor of 25 Raynor Circle
F17	Northwest facing facades at approximately 3rd floor of 40 Raynor Circle
F18	Southeast facing facades at approximately 3rd floor of 1135 Tremont Street
P19	Pedestrians on the sidewalk at Raynor Circle
P20	Pedestrians on the sidewalk at Ruggles Street
P21	Pedestrians on the Madison Park High baseball field
P22-P25	Pedestrians within the courtyard of the development

Figure 8: Facade, Pedestrian Receptor Locations (Map Underlay Credit: Bureau of Geographic Information, MassGIS)

DETAILED ANALYSIS RESULTS

Table 4 summarizes the level of visual and thermal impact from the development's reflections at each of the studied locations. For each category (visual impact, thermal impacts on people, thermal impacts on facades/property) the point is classified as experiencing one of four impact levels:

- **Low** impacts indicate that either no reflections reach the receptor, or that reflections which do reach the location are unlikely to lead to visual or thermal concerns.
- **Moderate** impacts indicate the potential for visual nuisance, minor thermal discomfort to people, or minor heating of materials. Moderate impacts do not indicate a significant safety risk and are common in urban areas. They represent effects such as intermittent visual glare on pedestrians or occupants of adjacent buildings which can be safely self-mitigated.
- **High** impacts indicate the potential for risks to safety, either through impairing the visual acuity of a vehicle operator or through reflection intensities high enough to cause injury or property damage. When the sun is also in a driver's field of view, RWDI would expect that brightness of the sun to dominate over the less intense reflected light, likely reducing the perceived effect of high impact reflections. This situation is noted in Table 4 where applicable, as are notes on high impact reflection frequencies and durations.
- **Very High/Damaging** impacts indicate the potential for extreme risks to safety, either due to reflected energy intensities well in excess of RWDI's ceiling exposure limit or visual glare bright enough to damage the retina faster than an individual can blink.

The minute-by-minute results for each point are presented as 'Annual Reflection Impact Diagrams' which distill an entire year's worth of data into a single diagram. The diagrams for each of the receptor points as well as an explanation for how to read the diagrams are provided in Appendix A.

For further detail on RWDI's criteria refer to Appendix B.

The level of mitigation required (discussed further in the Overall Observations and Conclusions section), is determined based on a combination of factors including the predicted level of impact, the frequency and duration of the impacts, and the risk level associated with activities likely to be engaged in at the location.

Table 4: Summary of Overall Predicted Impacts on Receptors

Receptor Number	Receptor Type	Assumed Activity Risk Level	Assumed Ability to Self-Mitigate	Peak Reflected Light Visual Impact	Duration / Number of Days with High Impact Reflection	Percentage of High Impacts Where the Sun Is Also Visible	Peak Reflected Solar Thermal Impact on People	Peak Reflected Solar Thermal Impact on Facade
D1	Driver	High	Low	***Moderate***	N/A	N/A	***Low***	N/A
D2	Driver	High	Low	***Low***	N/A	N/A	***Low***	N/A
D3	Driver	High	Low	***Moderate***	N/A	N/A	***Low***	N/A
D4	Driver	High	Low	***High****	Longest Duration: **6 minutes** Average Duration: **4 minutes** No. of days: **38**	***0%***	***Low***	N/A
D5-D9	Driver	High	Low	***Moderate***	N/A	N/A	***Low***	N/A
F10-F18	Facade	Low	High	***Moderate***	N/A	N/A	N/A	***Low***
P19-P20	Pedestrian	Low	High	***Moderate***	N/A	N/A	***Low***	N/A
P21	Pedestrian	Low	High	***Low***	N/A	N/A	***Low***	N/A
P22-P25	Pedestrian	Low	High	***Moderate***	N/A	N/A	***Low***	N/A

* The high impact reflections are infrequent and short in duration

OVERALL OBSERVATIONS AND CONCLUSIONS

Thermal Impacts on People

1. The planar facades of the development ensure that reflected sunlight will not create significant focusing (multiply) in any particular area. Therefore, RWDI does not expect any significant thermal impacts (i.e. risks to human safety or property damage) to occur either on the site of the development or in the surrounding neighborhood.

   That said, pedestrians in the vicinity of the "V" shaped corner of Building B2 (receptor P23) could be potentially exposed to higher intensity reflections due to reflections from the two adjacent surfaces intersecting. While this was present in RWDI's simulations, the peak intensities of such reflections were predicted to be well below RWDI's intensity thresholds and occur quite rarely.

Visual Glare Impact on Drivers

2. As with the addition of any glazed building, drivers travelling in the vicinity of the development are expected to have the potential to experience visible reflections from it. A driver's experience could be altered when travelling southwest on Tremont Street approaching Melnea Cass Blvd (receptor D4). The predicted high impact reflections can last up to 6 minutes, but on average last 4 minutes. The impacts were predicted between 4:00 pm EST and 4:30 pm EST in February to early March and between 3:30 pm EST and 4:30 pm EST in October. This equates to the potential for high impact glare being predicted at in less than 0.06% of the annual daytime.

3. For the remainder of the driver receptors, visual glare impacts were predicted to be moderate at worst, and therefore are not expected to pose a significant safety concern to drivers. For further details refer to the visual impact diagrams for all driver receptors (D1-D9) illustrated in Appendix A.

Visual Glare Impacts on Pedestrians and Facades

4. Moderate levels of visual impact were predicted to fall on most of the pedestrian and facade receptors studied in this analysis. The exception to this was the receptor representing pedestrians at the Madison Park High baseball field where essentially no impact was predicted.

5. The potential impacts predicted along the northeast facades of the St. Katharine Drexel Parish Center (F10-F11) can last between 29 to 37 minutes at most, but on average last between 8 and 9 minutes. These reflections were predicted mainly in the morning hours between 6:00 am EST and noon EST throughout the year. This equates to glare being possible between 6% and 8% of the daytime annually. The limited window area of the effected facades of the Parish Center make internal impacts less likely.

OVERALL OBSERVATIONS AND CONCLUSIONS

6. Impacts to the residences west of Ruggles Street (F12-F14) were predicted to last between 11 to 26 minutes at most, but on average last between 5 and 9 minutes. These reflections were predicted in the morning hours between 6:00 am EST and 10:00 am EST from late January to mid-November and in the evening between 2:00 pm EST and 6:00 pm EST from March to early October. This equates to glare being possible between 0.03% and 3% of the daytime annually.

7. The potential impacts to the residences south of Raynor Circle (F15-F17) were predicted to last between 32 to 35 minutes at most, but on average last between 9 and 10 minutes. These reflections were predicted mainly in the morning hours between 6:00 am EST to 12 noon EST during most of the year, except during the month of June. This equates to glare being possible between 3% and 6% of the daytime annually.

8. The potential impacts to the southeast facing facades (F18) of the university building at 1135 Tremont Street were predicted to be minor, with the reflections lasting up to 13 minutes at most and on average lasting 5 minutes. These reflections were predicted to occur in the evening between 4:00 pm EST and 5:00 pm EST from mid-April to late August. This equates to glare being possible in less than 1% of the daytime annually.

9. The potential visual impacts noted above do not present a safety risk, but rather a temporary nuisance at worst which can be mitigated by briefly closing blinds or looking away from the glare source.

Thermal Impacts on Facades

10. The majority of reflected solar energy at the studied facade areas was predicted to be low intensity (less than 300 W/m^2) and short duration. Hence, RWDI would not expect these reflections to lead to a significant additional cooling load for a building. Should an individual choose to expose themselves to the reflected energy, they may feel warm however this would be a temporary experience and once which would easily be remedied by closing window treatments.

MITIGATION SUGGESTIONS

Overall, the reflections emanating from the proposed Drexel Village development onto the surrounding neighborhood are comparable to reflections elsewhere in the city. If, however, there are concerns about the predicted reflection impacts, RWDI offers the following suggestion for further consideration (refer to Figure 9 on the following page for a mark-up of the suggestion):

Building Mounted Shading Devices: The impacts predicted at the receptors on Tremont Street (D4) could be reduced or eliminated outright by constructing physical blockages. In particular, employing vertical mullion fins approximately 11 inches deep spaced 7 feet apart in the locations highlighted in Figure 9 would reduce the frequency and duration of high-impact reflections falling onto these receptors. Further or closer spacing of the fins would require proportionally deeper/shallower fins.

It should be noted that building mounted shading devices need careful design to ensure that they do not lead to potential problems with wind induced noise or vibration, snow and ice build up, etc. Thus, if mitigation via facade mounted shading structures is desired, RWDI would recommend re-running the simulations with the proposed shading devices included to predict their effectiveness.

MITIGATION SUGGESTIONS

Employing vertical mullion fins on this area would act to reduce the frequency and duration of the high impacts which occur at points D4. The required depth of the fins would be approximately 11 inches spaced 7 feet apart.

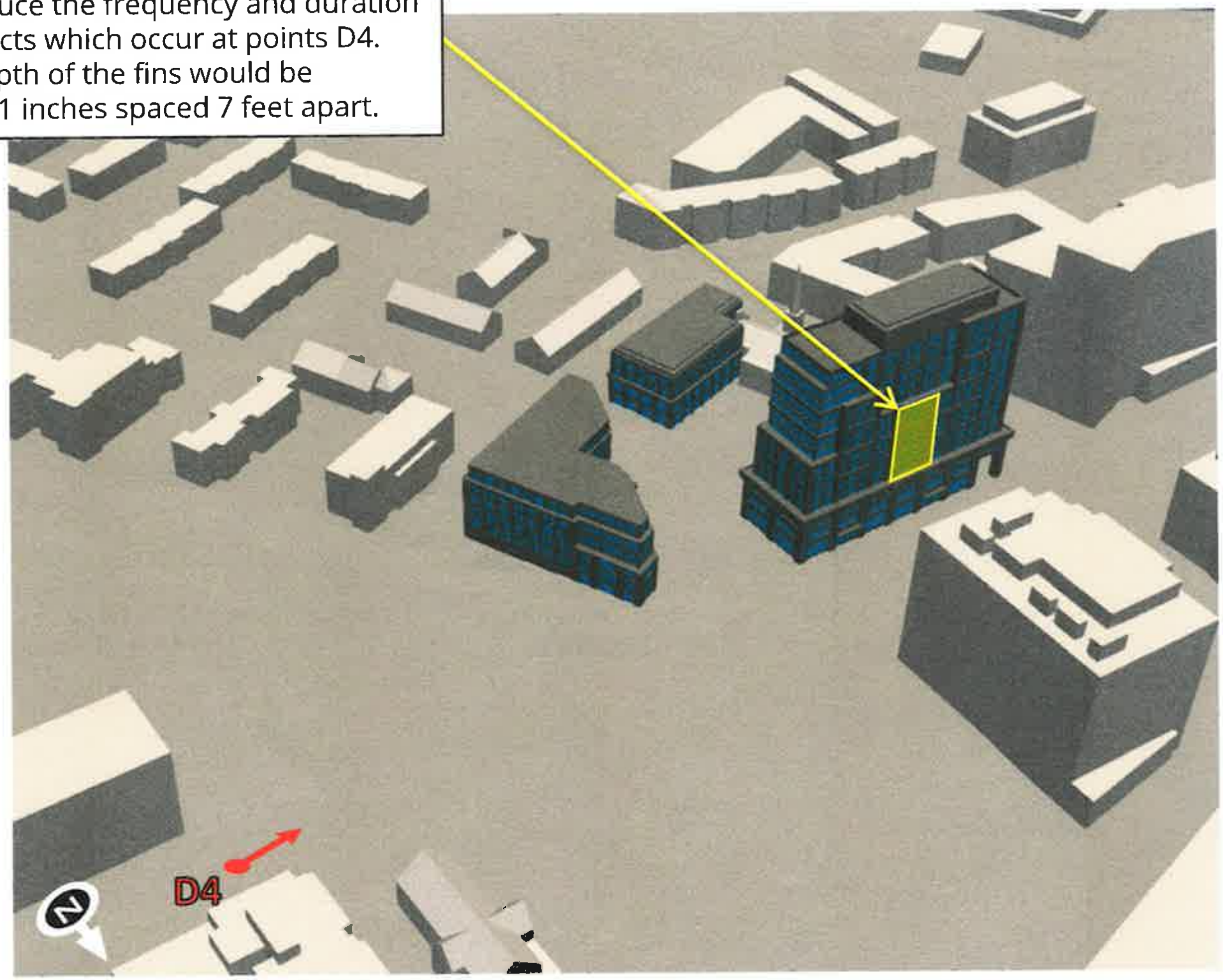


Figure 9: Markup of Facade Locations Where Building-mounted Shading Devices Would be an Appropriate Approach

GENERAL STATEMENT OF LIMITATIONS

This report entitled Drexel Village Detailed Solar Reflection Analysis (dated December 14, 2022) was prepared by Rowan Williams Davies and Irwin Inc. ("RWDI") for Planning Office for Urban Affairs, Inc. ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared.

Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

APPENDIX A

ANNUAL REFLECTION IMPACT DIAGRAMS

Presentation of Results

The frequency, duration, and intensity of glare events throughout the year is illustrated using "annual impact diagrams" (see Figure A1 below for the general layout of these plots). The color of the plot for a given combination of date and time indicates the relative impact of any glare sources found. The horizontal axis of the diagram indicates the day of the year, and the vertical axis indicates the hour of the day.

We note that the referenced times are in local standard time, so in jurisdictions where Daylight Savings Time is used, the time should be shifted by an hour when appropriate.

The following pages present the impact categories for three types of Annual Impact Diagrams: Visual Impact, Thermal Impact on People, and Thermal Impact on Property. More information on RWDI's criteria is available in Appendix B.

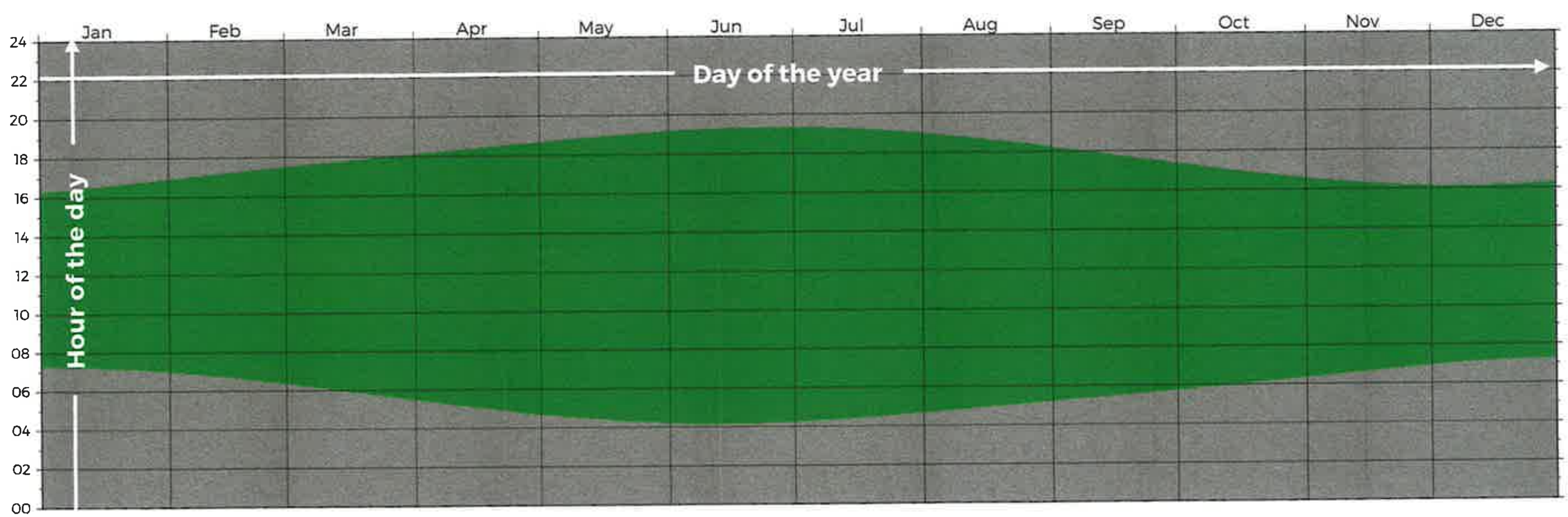


Figure A1: Layout of Annual Reflection Impact Diagram

Visual Impact Categories

Low: Either no significant reflections occur or the reflections will have a minimal effect on a viewer, even when looking directly at the source.

Moderate: The reflections can cause some visual nuisance only to viewers looking directly at the source.

High: The reflections can reduce visual acuity for viewers operating vehicles or performing other high-risk tasks who are unable to look away from the source, posing a significant risk of distraction.

Damaging: The brightest glare source is bright enough to permanently damage the eye for a viewer looking directly at the source.

Hatched areas indicate times and dates when the sun would also be in a driver's field of view.

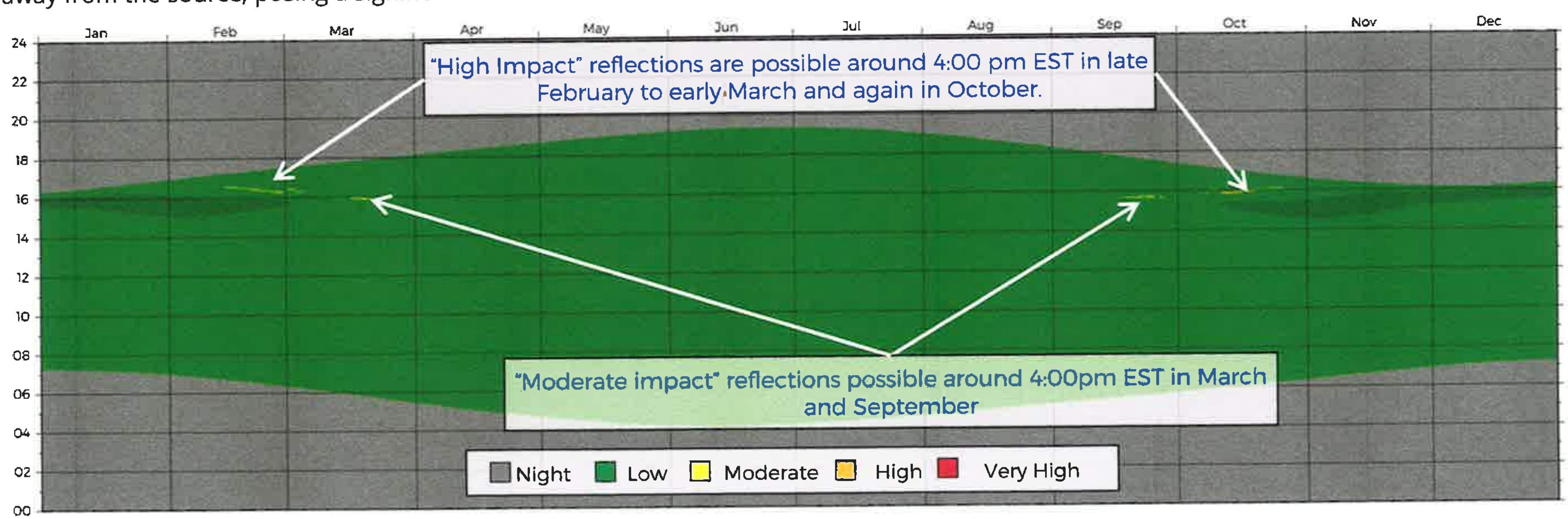


Figure A2: Example of Annual Visual Glare Impact Diagram – Receptor D4

Thermal Impact Categories for People

Low: Either no significant reflections occur or the reflection intensity is below the short-term exposure threshold of 1500 W/m².

Moderate: The reflection intensity is above the short-term exposure threshold of 1500 W/m² but below the safety threshold of 2500 W/m². Such reflections would quickly cause thermal discomfort in people.

High: The reflection intensity is above the safety threshold of 2500 W/m² but below 3500 W/m². This level of exposure to bare skin would lead to the onset of pain within 30 seconds.

Very High: Reflection intensity exceeds 3500 W/m². This level of exposure leads to second degree burns on bare skin within 1 minute.

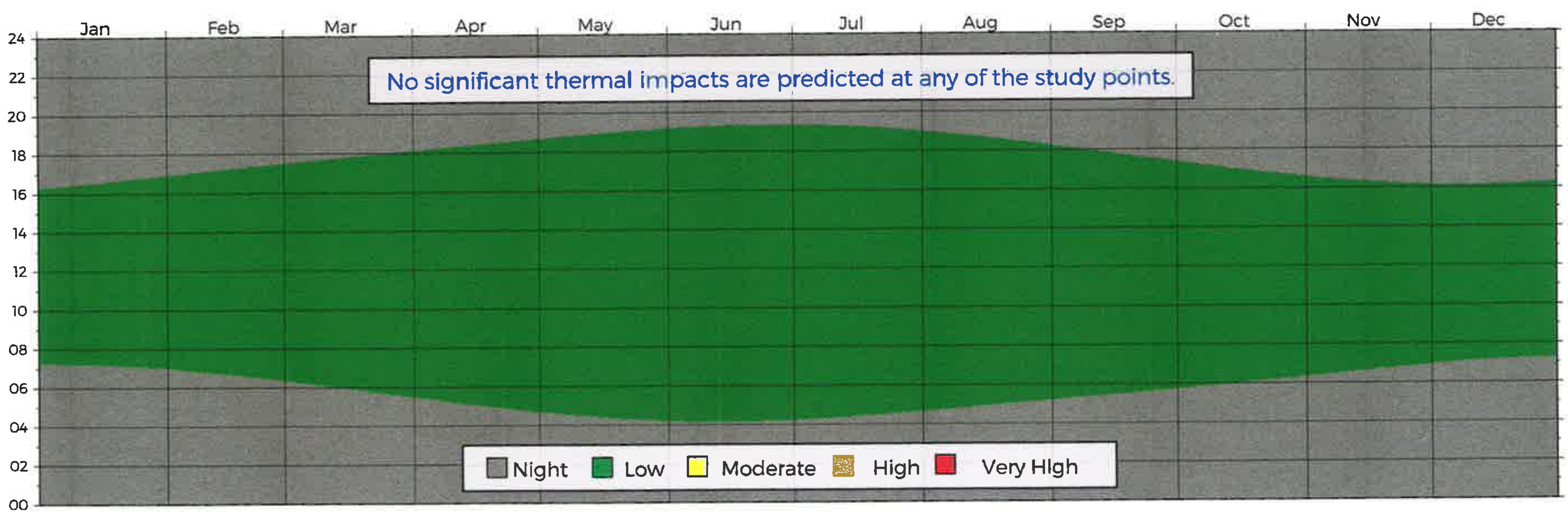


Figure A3: Example of Annual Pedestrian Thermal Impact Diagram – Receptor P19

ANNUAL REFLECTION IMPACT DIAGRAMS

Thermal Impact Categories for Property

A different scale is used to illustrate the reflected thermal energy on facades in order to provide further clarity on the potential for heat gain issues. The diagrams illustrate the irradiance levels of all predicted reflection events along with their frequency and duration.

The format of the diagram is similar to the diagrams described in the previous pages. The color of the plot for a given combination of date and time indicates the intensity of the reflected light at that point in time.

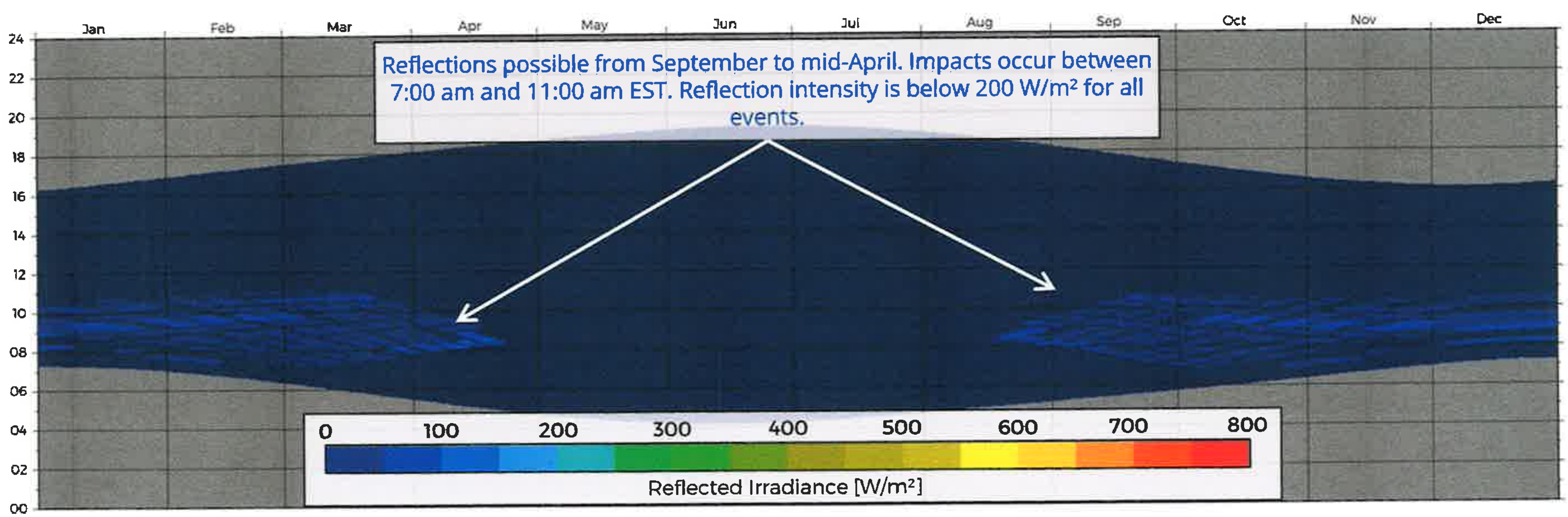


Figure A4: Example of Annual Property Thermal Impact Diagram – Receptor F11

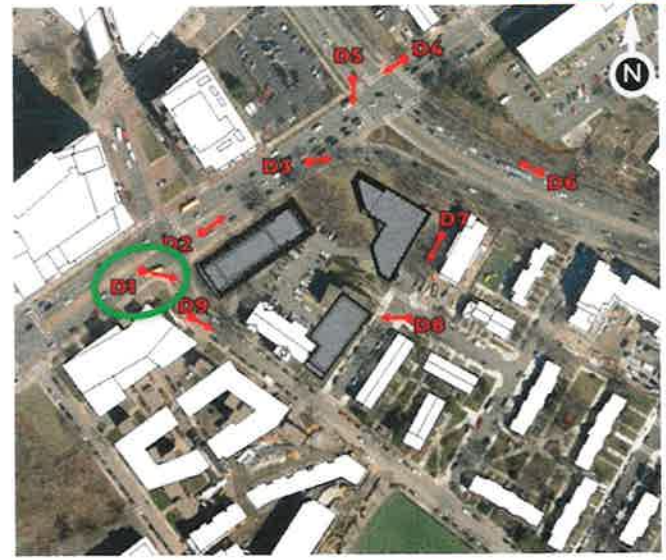
ANNUAL VISUAL IMPACT

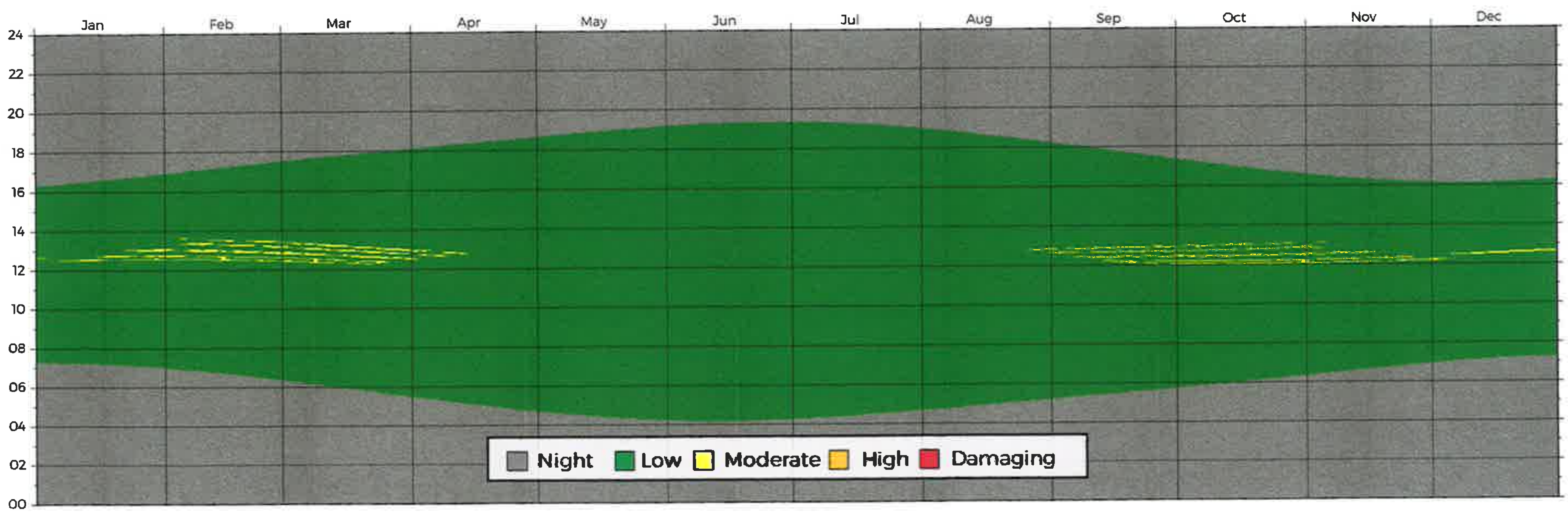
Driver Receptor D1

Receptor D1 was chosen to assess the visual impact associated with solar reflections affecting northeast bound drivers on Tremont Street, turning right onto Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





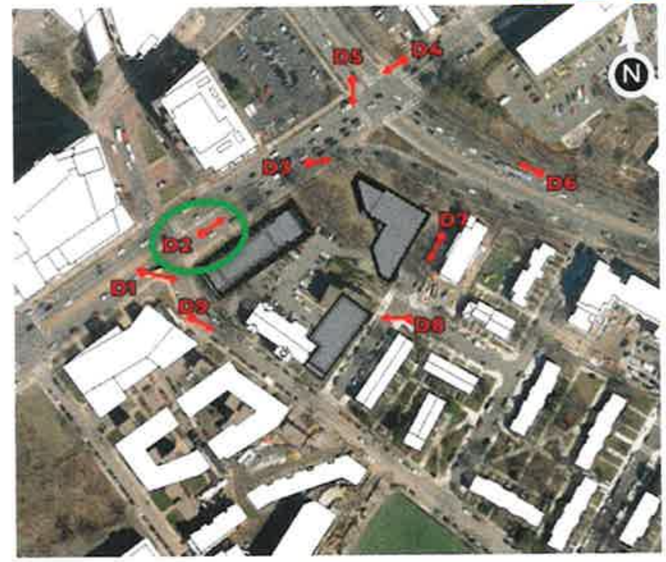
ANNUAL VISUAL IMPACT

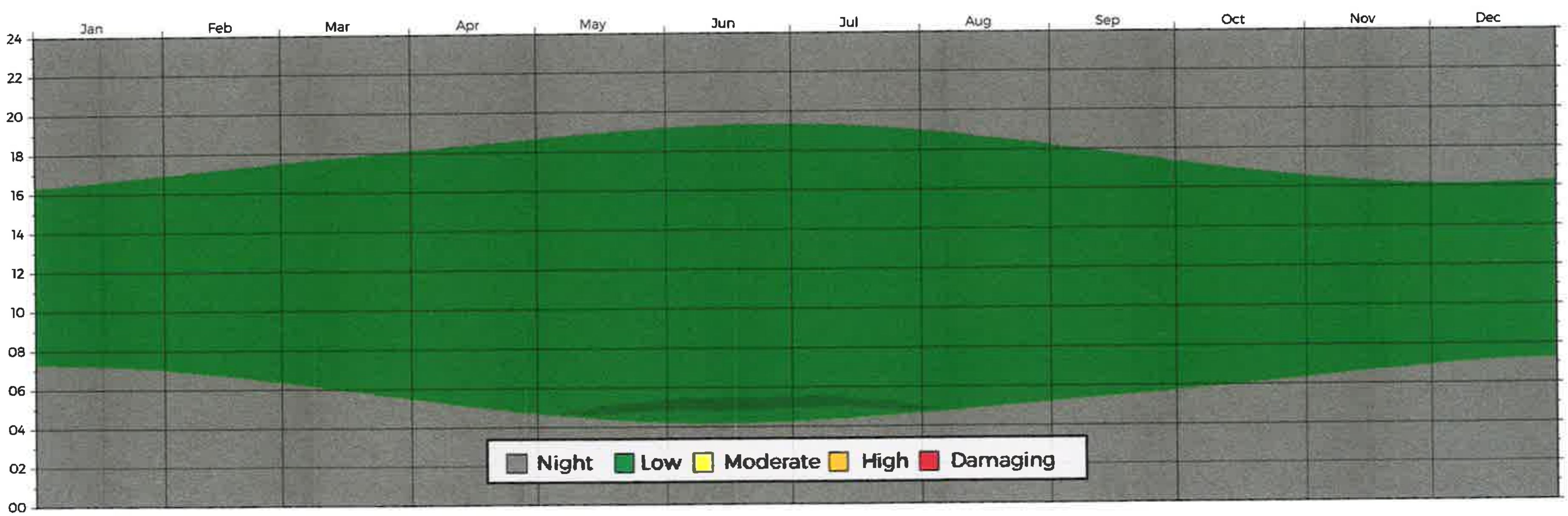
Driver Receptor D2

Receptor D2 was chosen to assess the visual impact associated with solar reflections affecting northeast bound drivers on Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





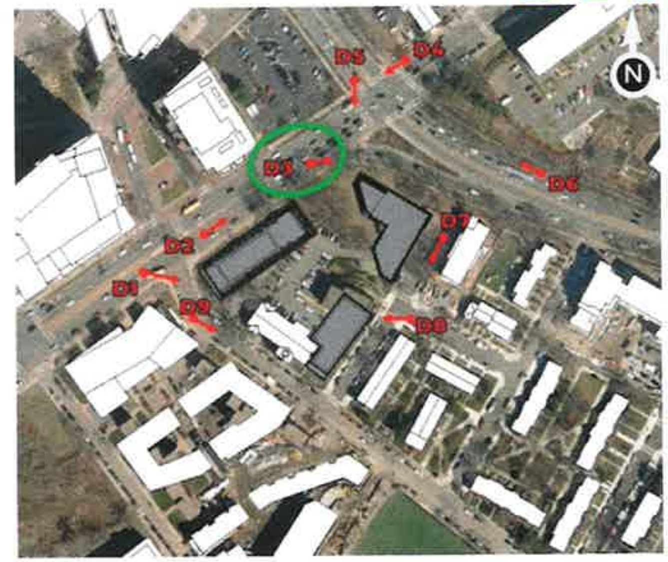
ANNUAL VISUAL IMPACT

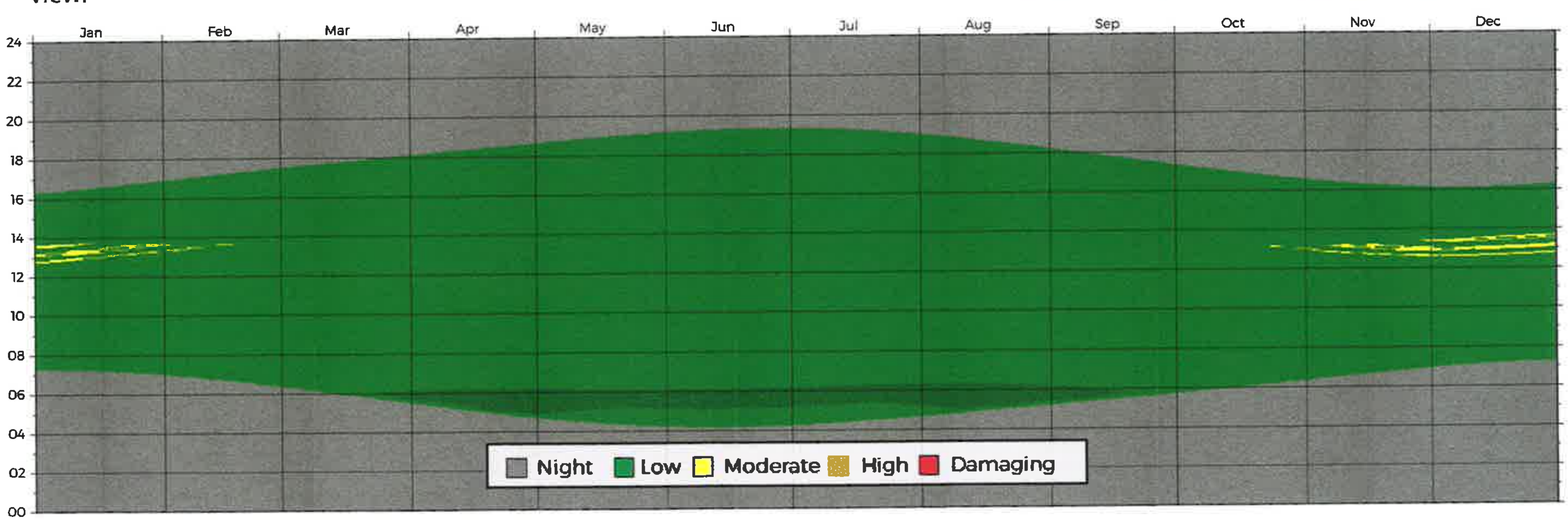
Driver Receptor D3

Receptor D3 was chosen to assess the visual impact associated with solar reflections affecting northeast bound drivers on Tremont Street, merging right onto Melna Cass Blvd.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





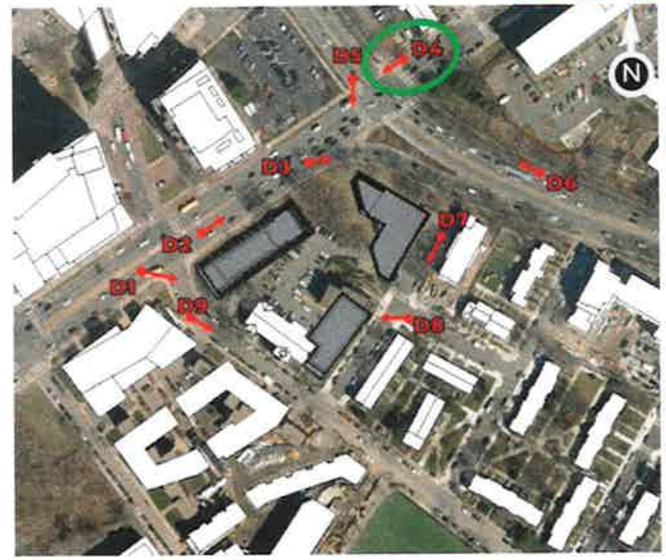
ANNUAL VISUAL IMPACT

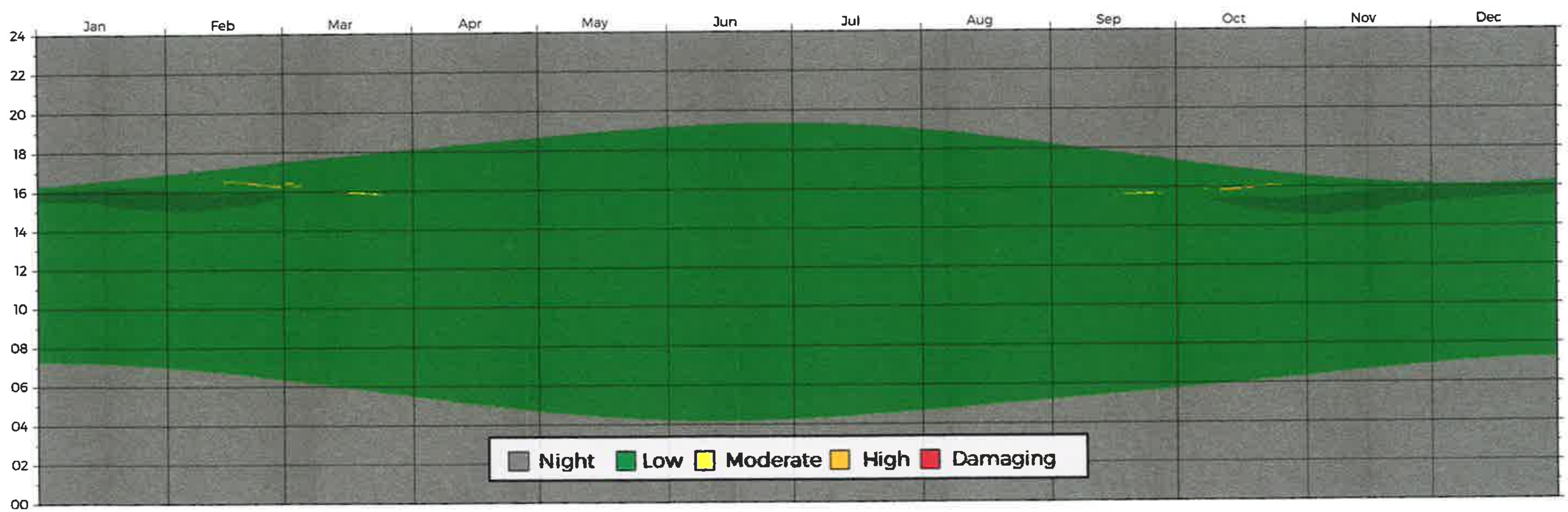
Driver Receptor D4

Receptor D4 was chosen to assess the visual impact associated with solar reflections affecting southwest bound drivers on Tremont Street approaching Melnea Cass Blvd.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





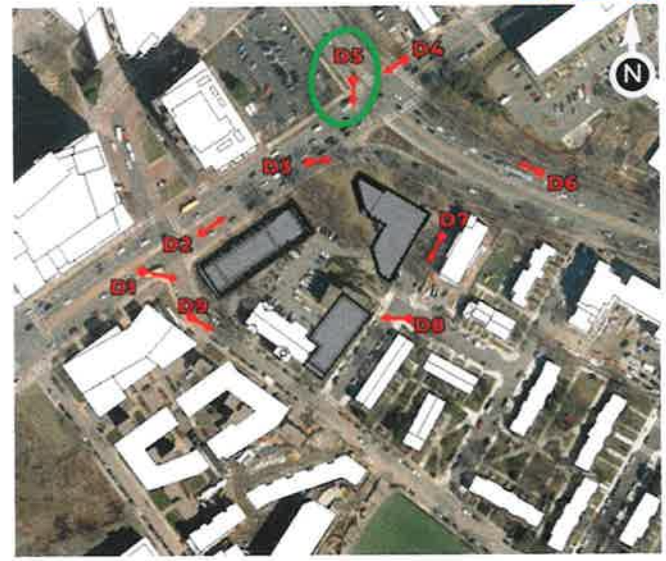
ANNUAL VISUAL IMPACT

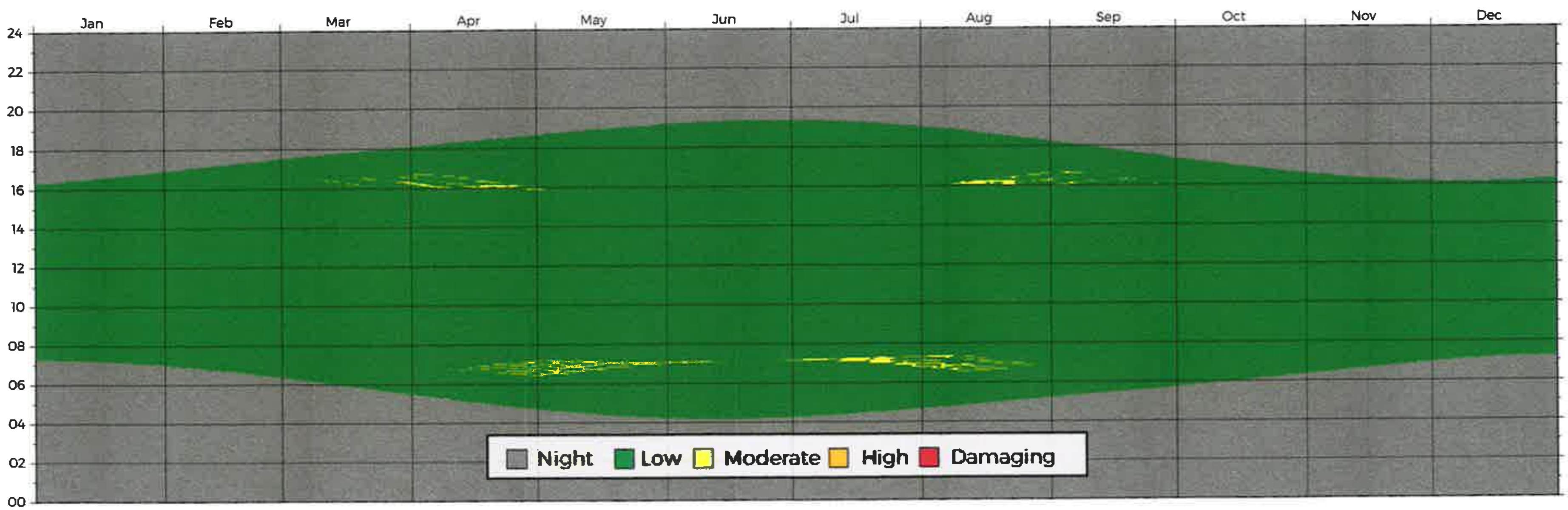
Driver Receptor D5

Receptor D5 was chosen to assess the visual impact associated with solar reflections affecting southeast bound drivers on Melnea Cass Blvd, turning right onto Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





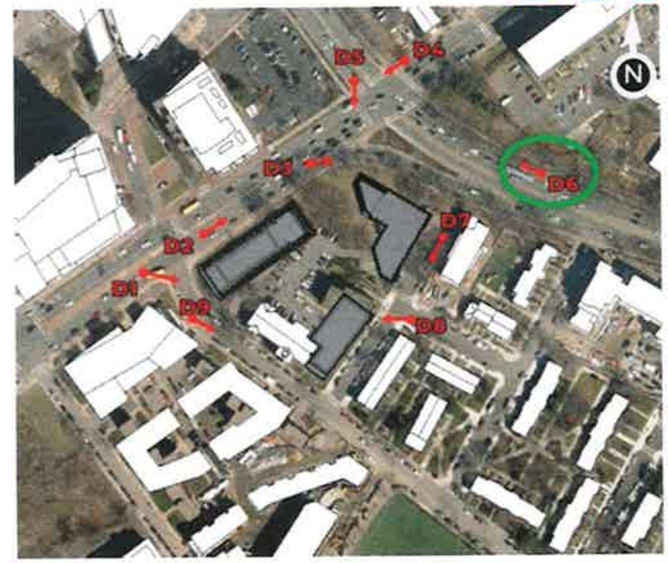
ANNUAL VISUAL IMPACT

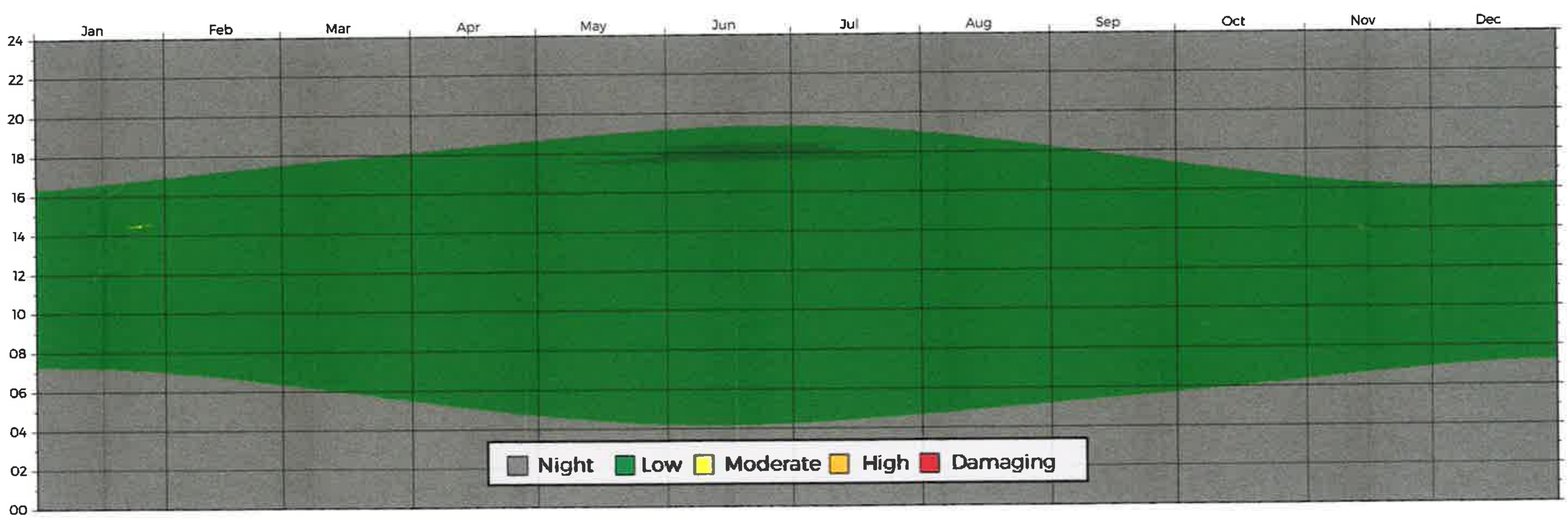
Driver Receptor D6

Receptor D6 was chosen to assess the visual impact associated with solar reflections affecting northwest bound drivers on Melnea Cass Blvd.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





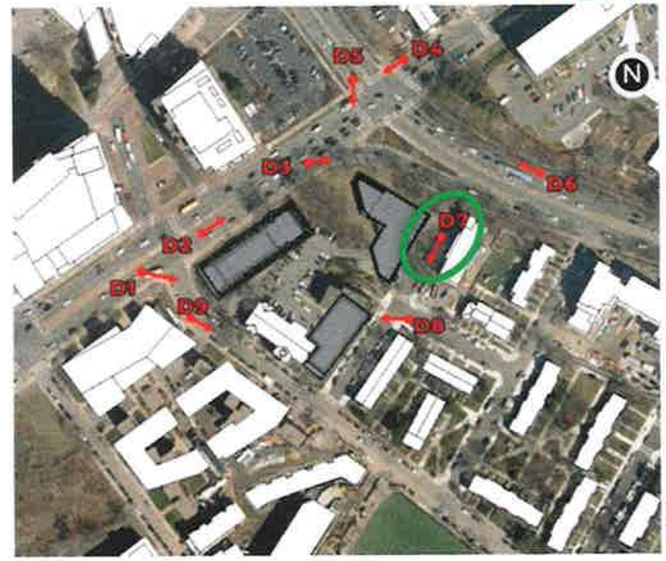
ANNUAL VISUAL IMPACT

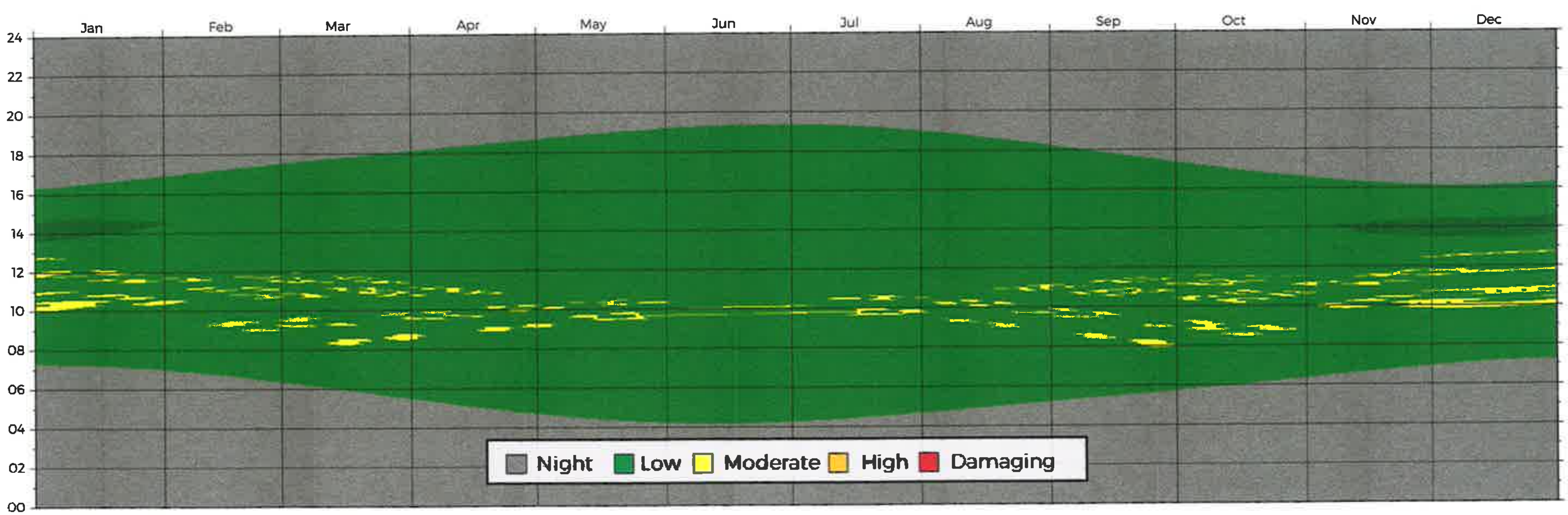
Driver Receptor D7

Receptor D7 was chosen to assess the visual impact associated with solar reflections affecting southwest bound drivers on Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





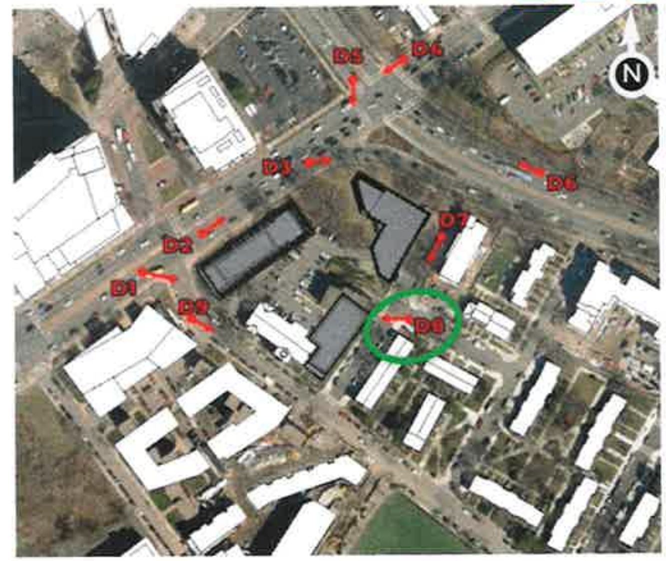
ANNUAL VISUAL IMPACT

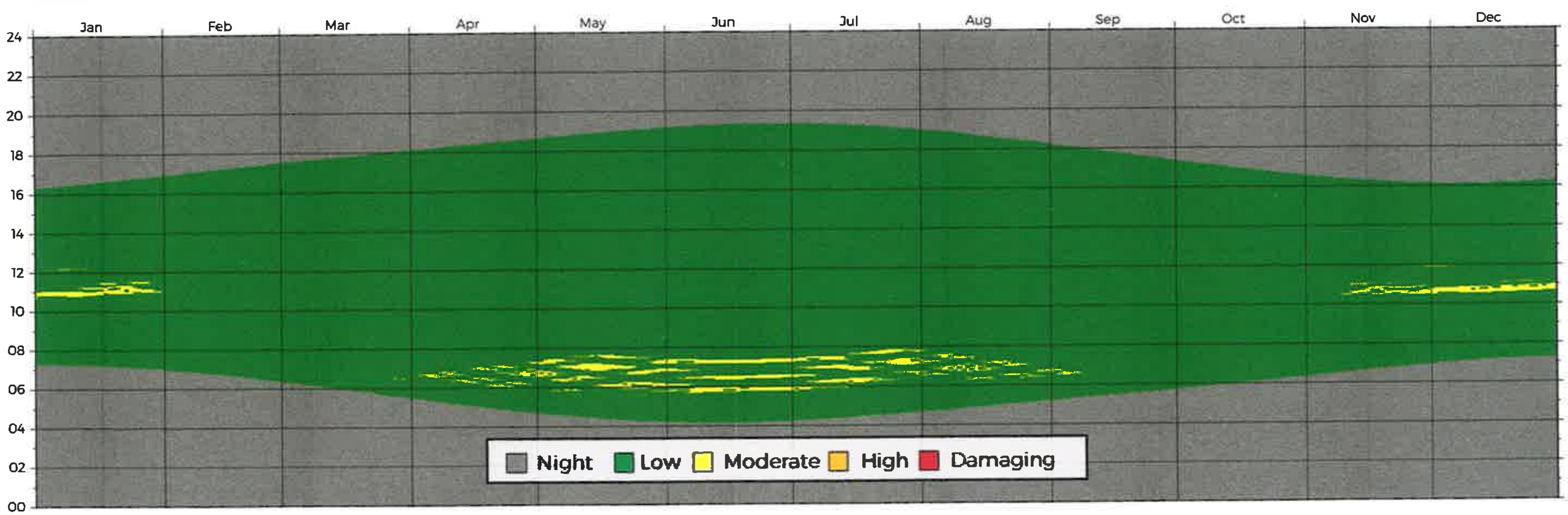
Driver Receptor D8

Receptor D8 was chosen to assess the visual impact associated with solar reflections affecting northwest bound drivers on Raynor Circle turning left and continuing on Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.





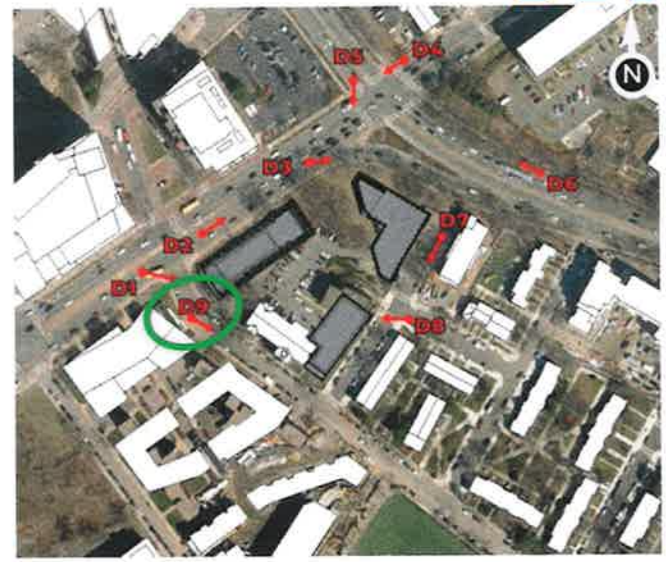
ANNUAL VISUAL IMPACT

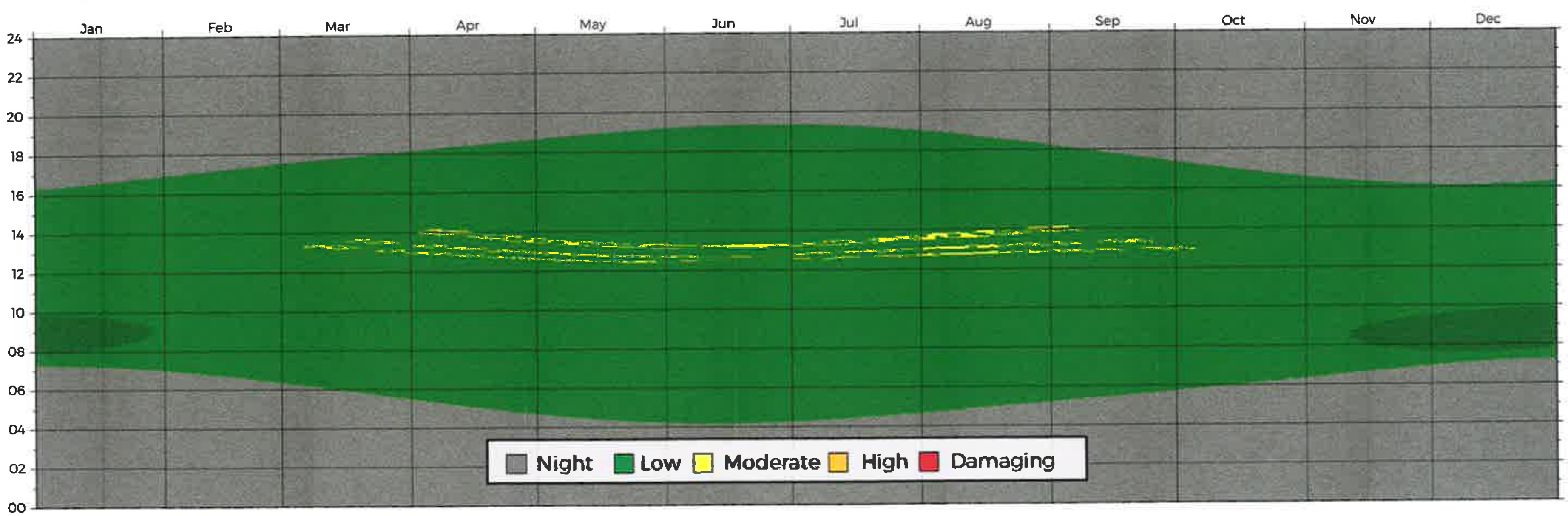
Driver Receptor D9

Receptor D9 was chosen to assess the visual impact associated with solar reflections affecting southeast bound drivers on Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

Hatched areas on the plot indicate times when the sun is within a driver's field-of-view.



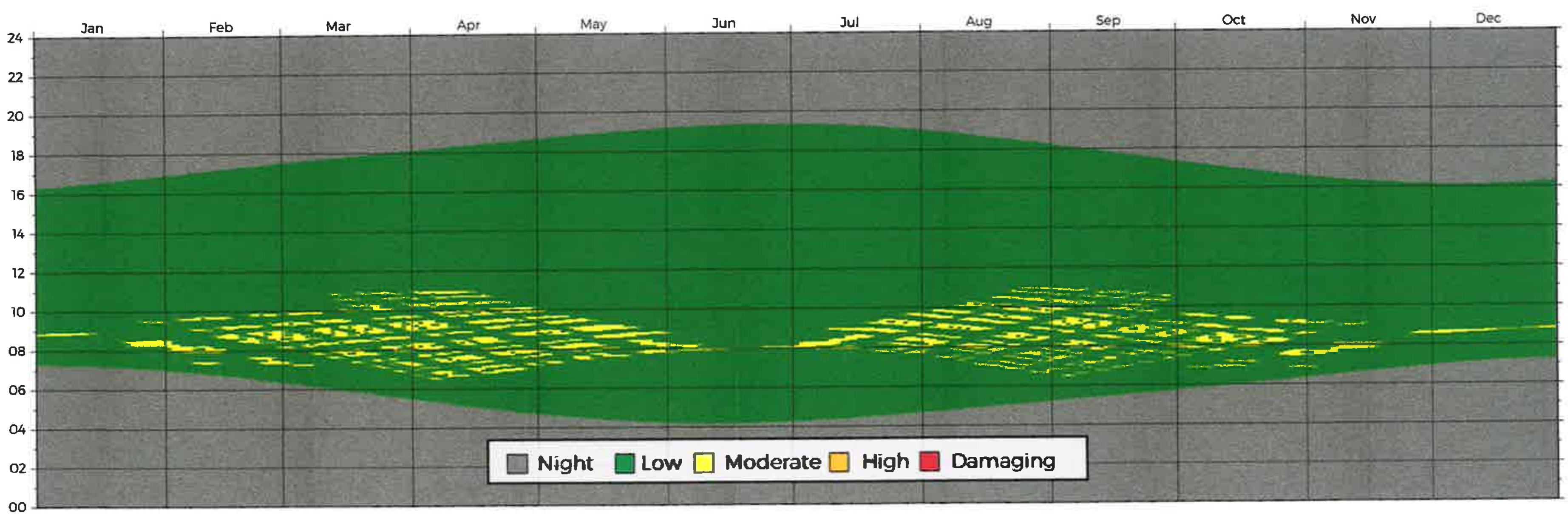


ANNUAL VISUAL IMPACT

Facade Receptor F10

Receptor F10 was chosen to assess the visual impact associated with solar reflections affecting northeast facing facades of St. Katharine Drexel Parish Center.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

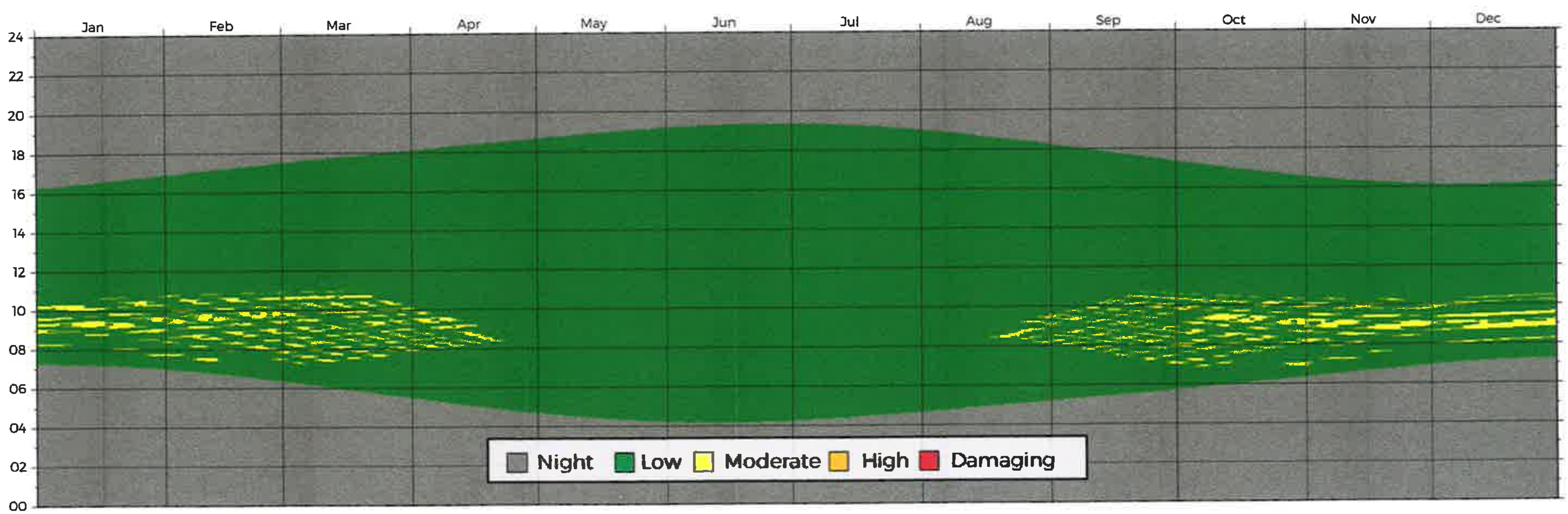


ANNUAL VISUAL IMPACT

Facade Receptor F11

Receptor F11 was chosen to assess the visual impact associated with solar reflections affecting northeast facing facades of St. Katharine Drexel Parish Center.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

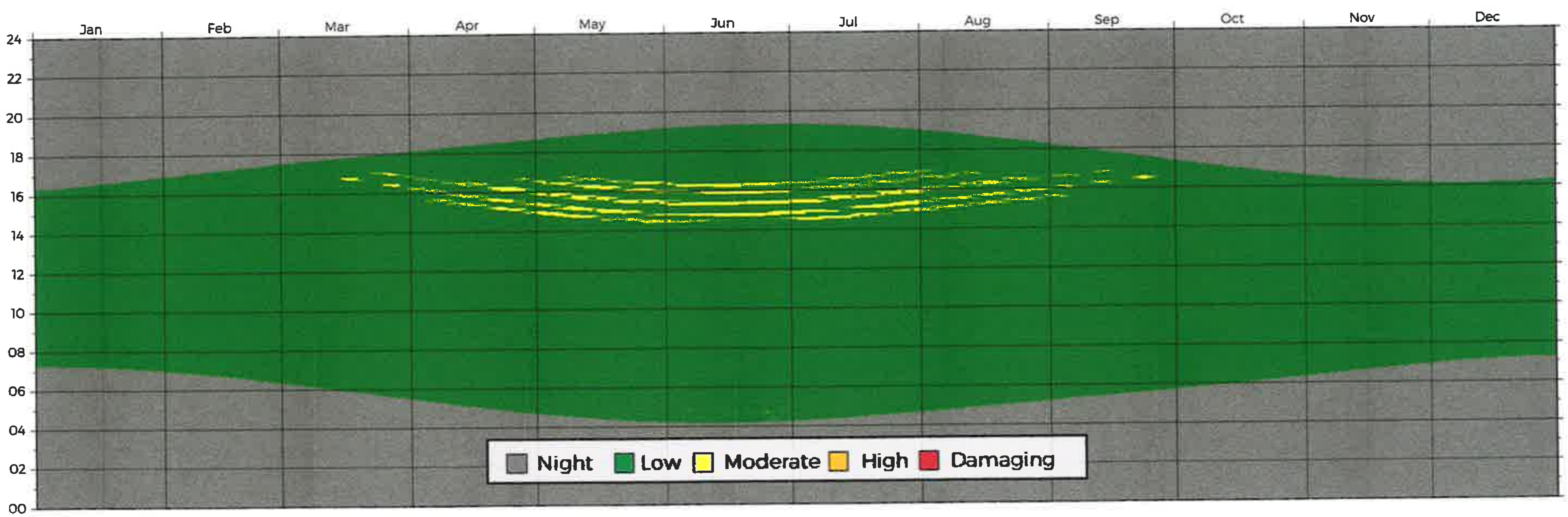


ANNUAL VISUAL IMPACT

Facade Receptor F12

Receptor F12 was chosen to assess the visual impact associated with solar reflections affecting northeast facing facades at approximately 5th floor of 1170 Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

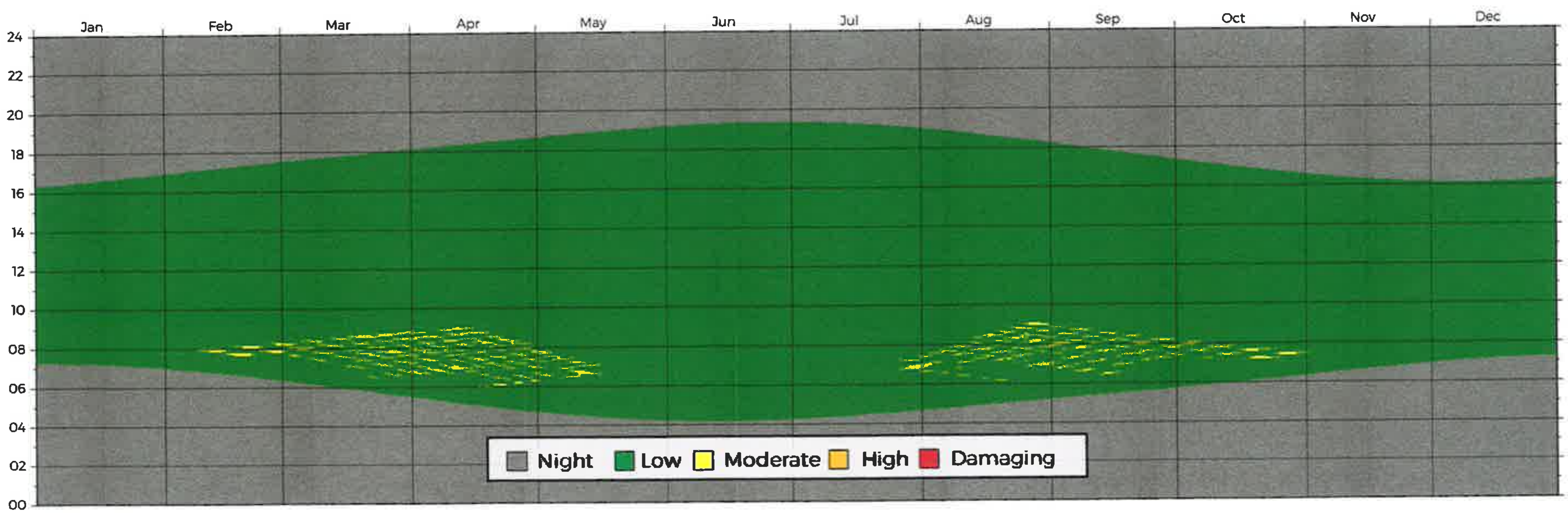


ANNUAL VISUAL IMPACT

Facade Receptor F13

Receptor F13 was chosen to assess the visual impact associated with solar reflections affecting northeast facing facades at approximately 3rd floor of 190 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

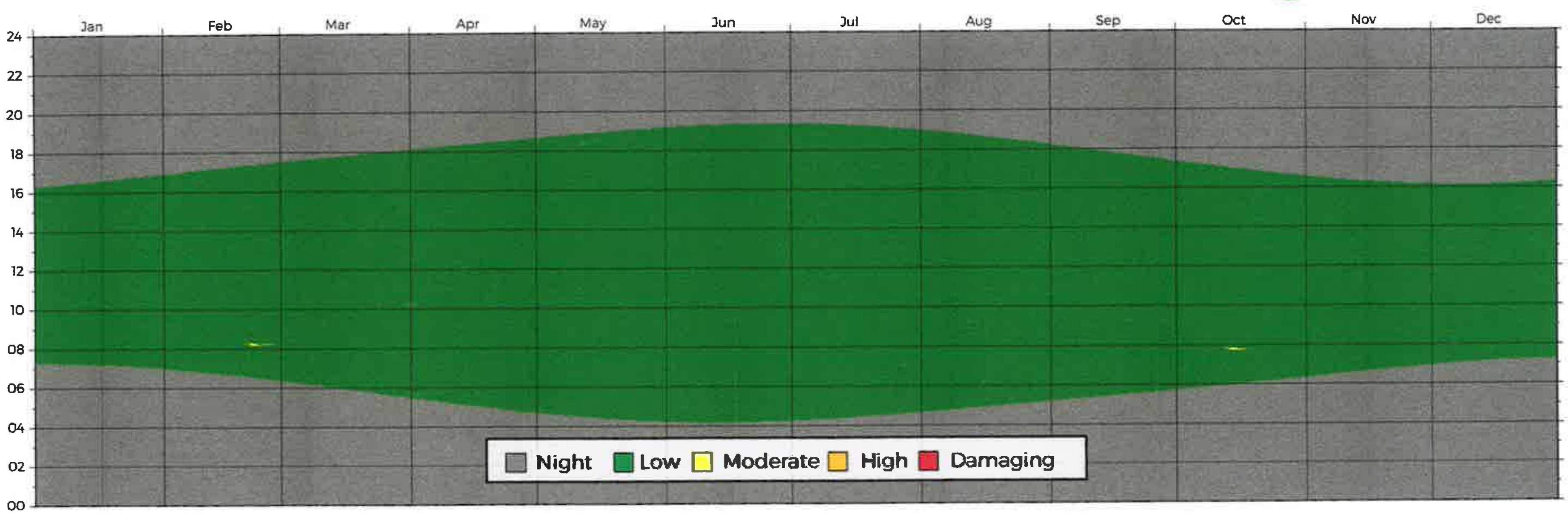


ANNUAL VISUAL IMPACT

Facade Receptor F14

Receptor F14 was chosen to assess the visual impact associated with solar reflections affecting north facing facades at approximately 2nd floor of 154 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

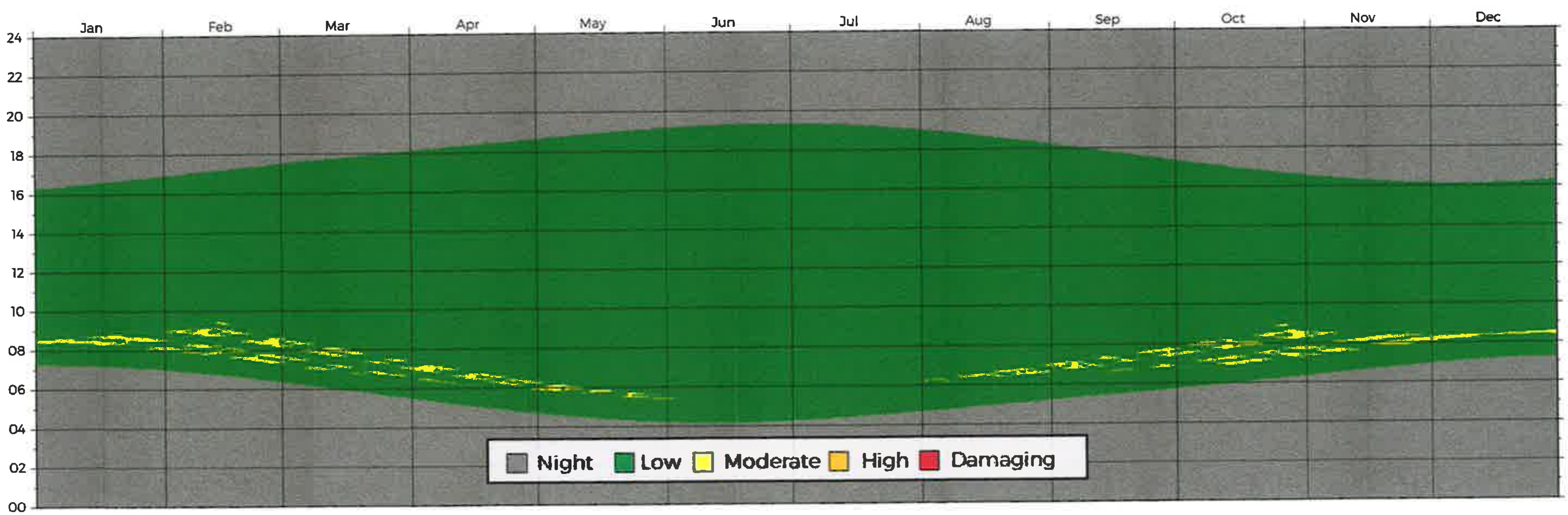


ANNUAL VISUAL IMPACT

Facade Receptor F15

Receptor F15 was chosen to assess the visual impact associated with solar reflections affecting northwest facing facades at approximately 2nd floor of 39 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

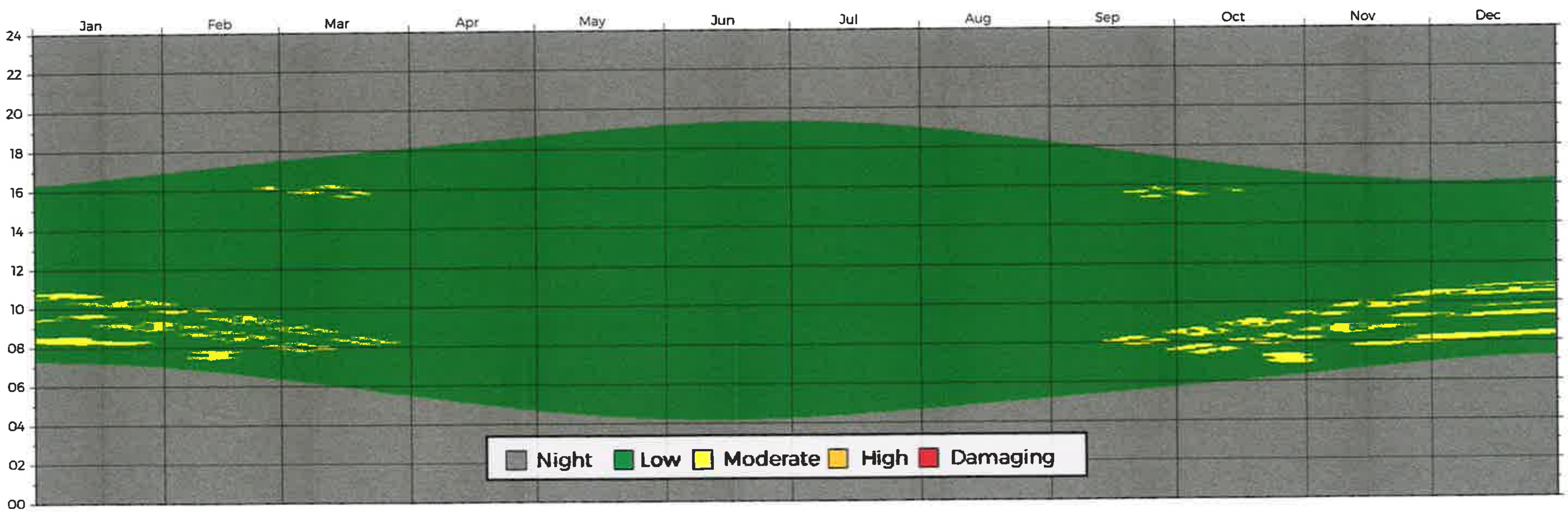


ANNUAL VISUAL IMPACT

Facade Receptor F16

Receptor F16 was chosen to assess the visual impact associated with solar reflections affecting northwest facing facades at approximately 2nd floor of 25 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

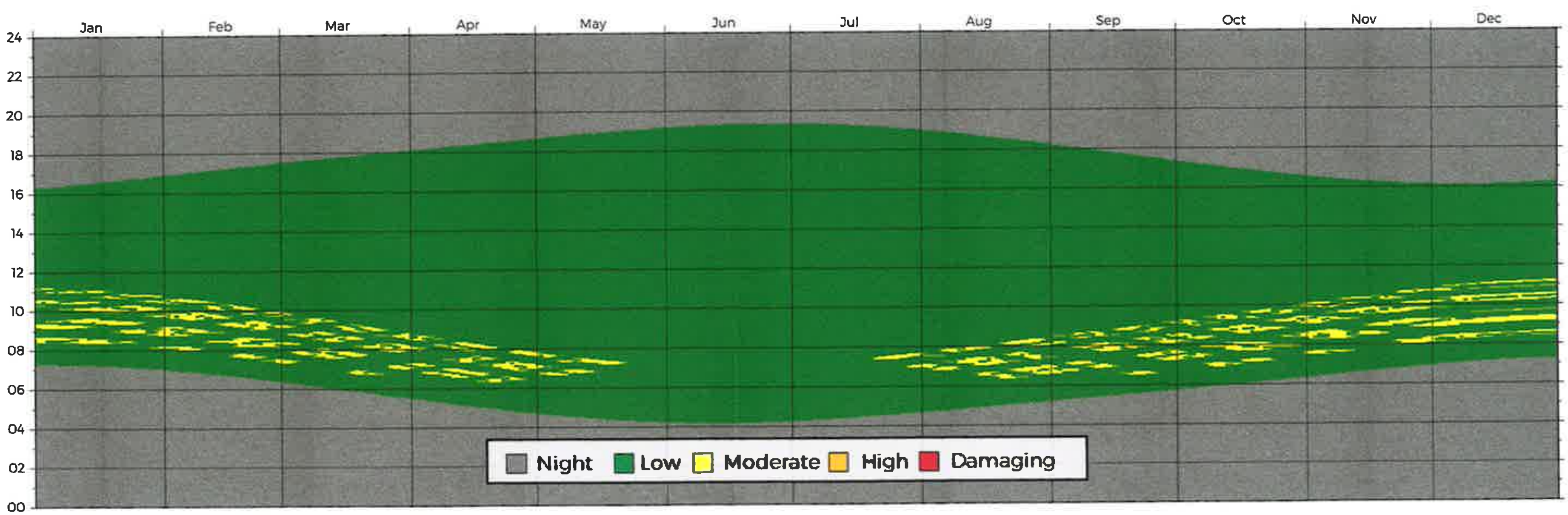


ANNUAL VISUAL IMPACT

Facade Receptor F17

Receptor F17 was chosen to assess the visual impact associated with solar reflections affecting northwest facing facades at approximately 3rd floor of 40 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

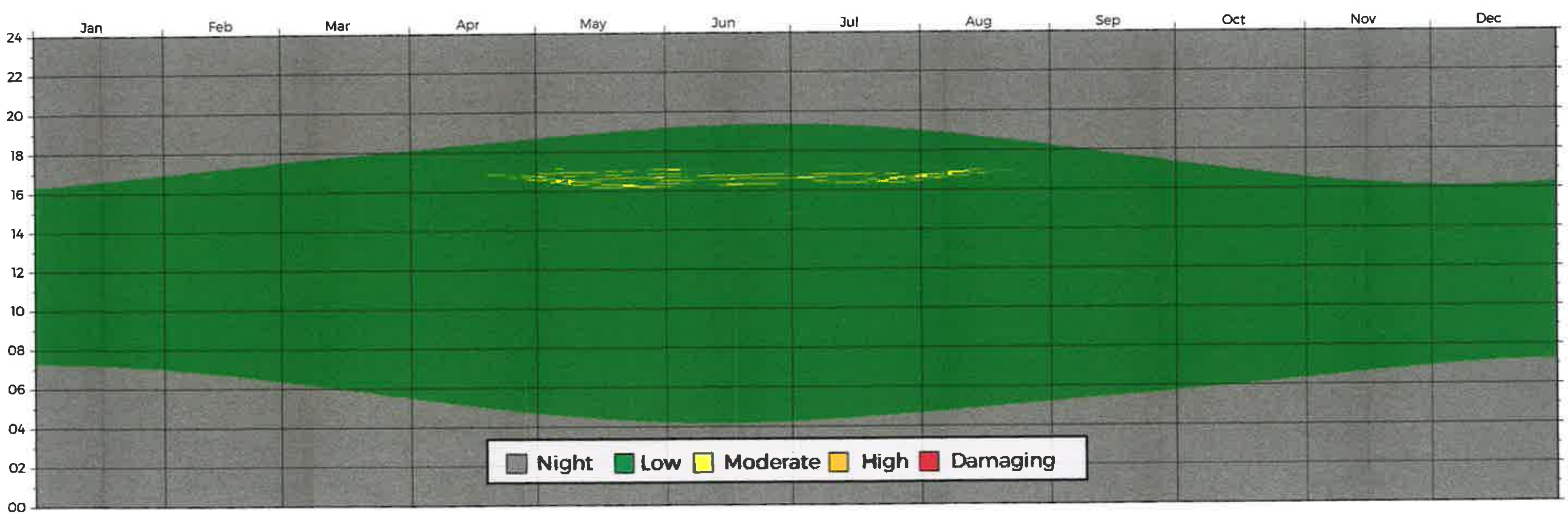


ANNUAL VISUAL IMPACT

Facade Receptor F18

Receptor F18 was chosen to assess the visual impact associated with solar reflections affecting southeast facing facades at approximately 3rd floor of 1135 Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

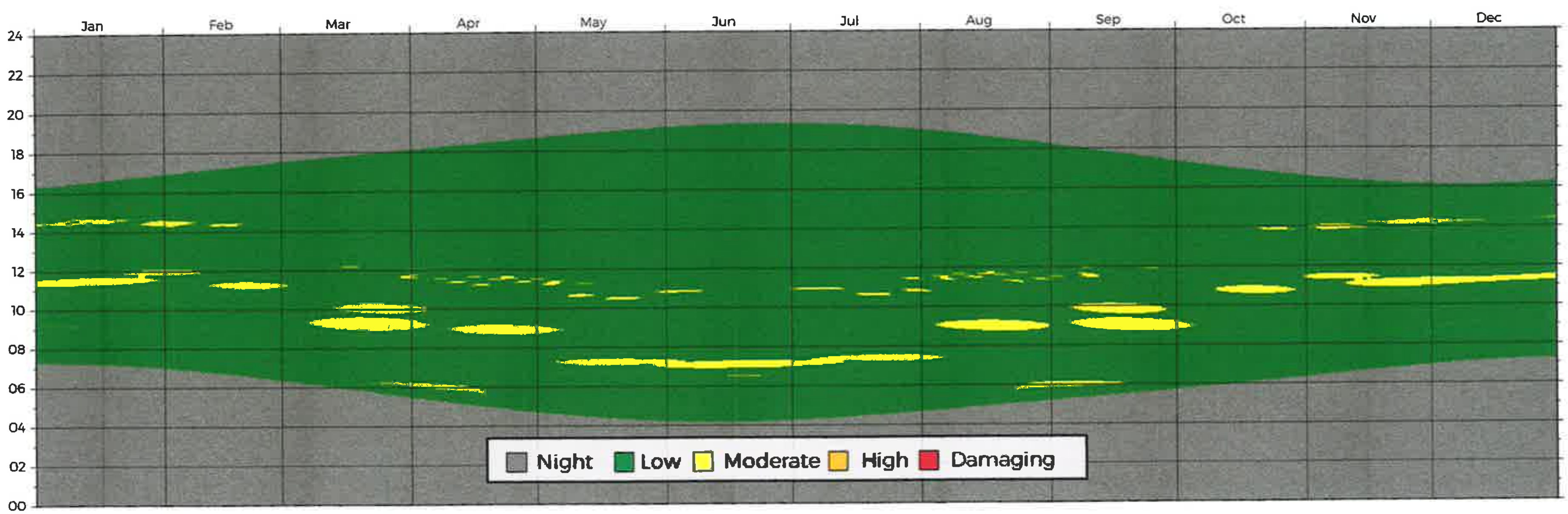


ANNUAL VISUAL IMPACT

Pedestrian Receptor P19

Receptor P19 was chosen to assess the visual impact associated with solar reflections affecting pedestrians on the sidewalk at Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

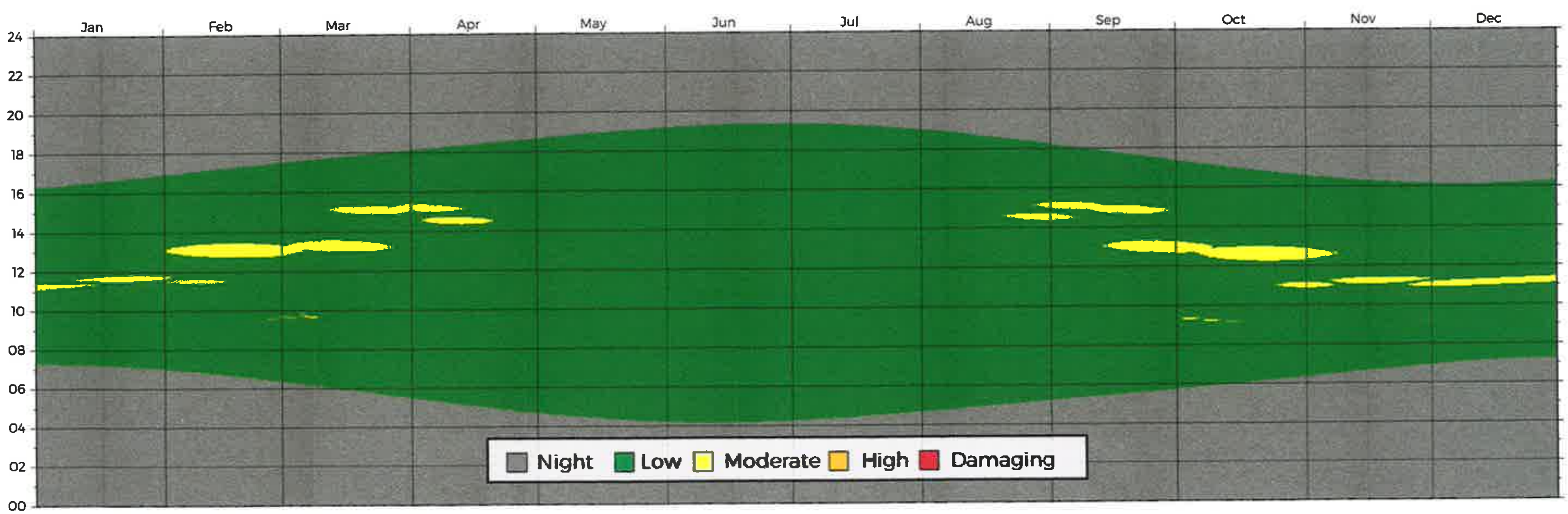


ANNUAL VISUAL IMPACT

Pedestrian Receptor P20

Receptor P20 was chosen to assess the visual impact associated with solar reflections affecting pedestrians on the sidewalk at Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

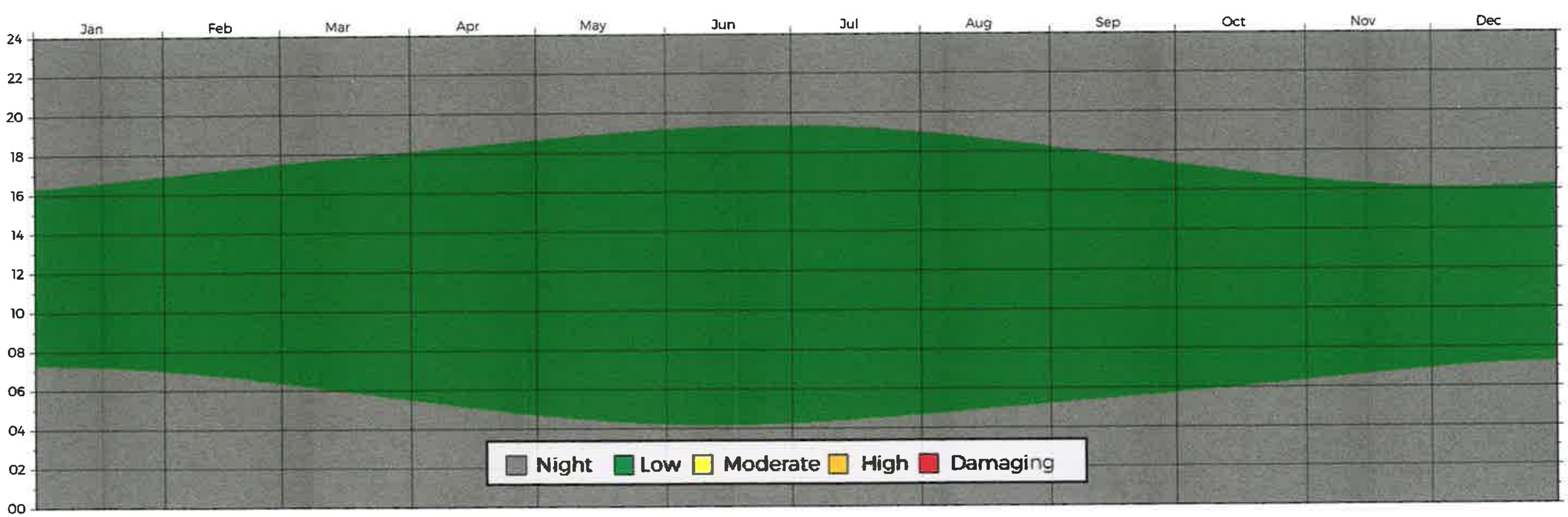


ANNUAL VISUAL IMPACT

Pedestrian Receptor P21

Receptor P21 was chosen to assess the visual impact associated with solar reflections affecting pedestrians on the Madison Park High baseball field.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

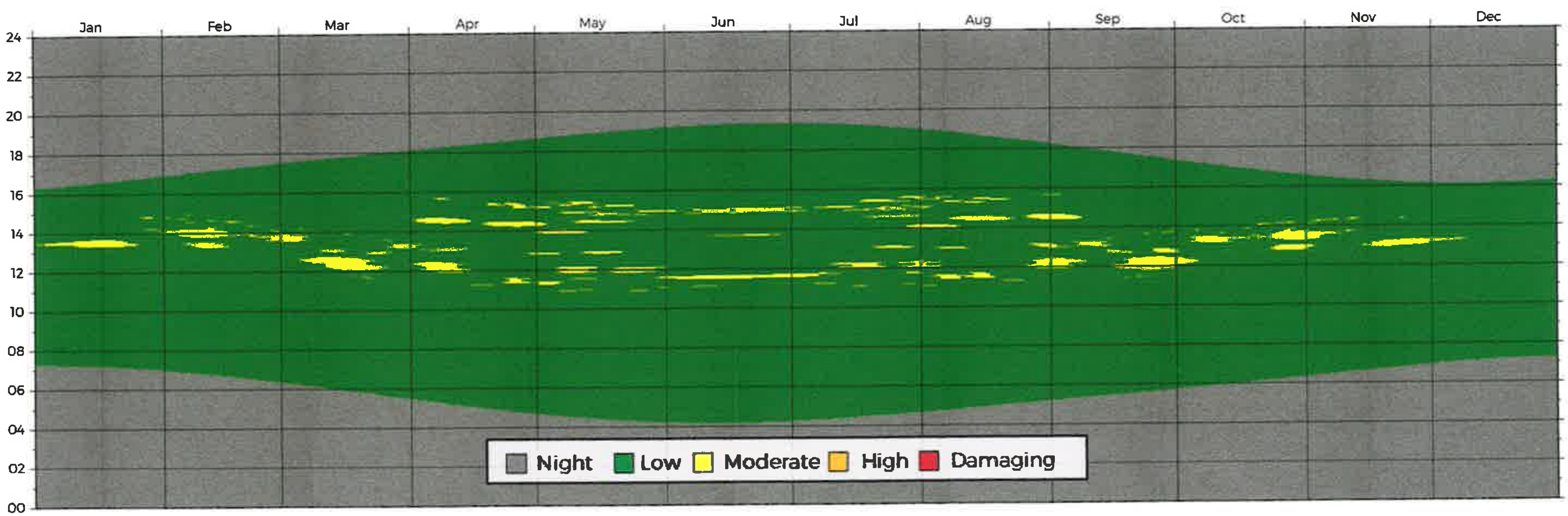


ANNUAL VISUAL IMPACT

Pedestrian Receptor P22

Receptor P22 was chosen to assess the visual impact associated with solar reflections affecting pedestrians within the courtyard of the development.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

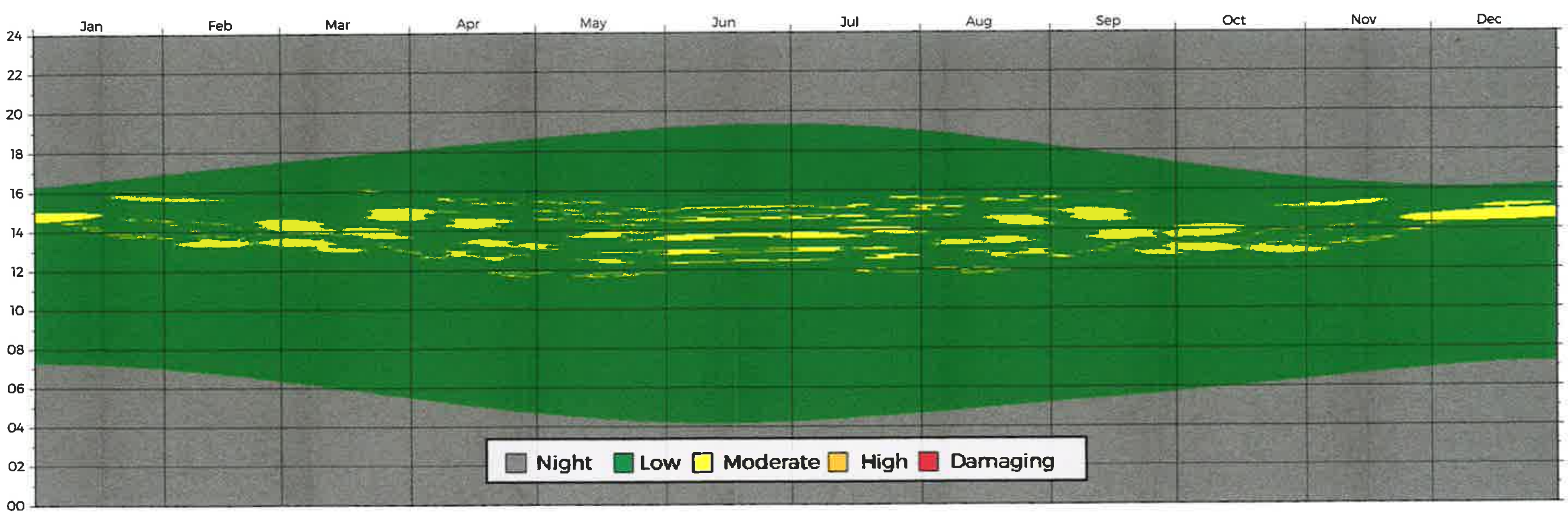


ANNUAL VISUAL IMPACT

Pedestrian Receptor P23

Receptor P23 was chosen to assess the visual impact associated with solar reflections affecting pedestrians within the courtyard of the development.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

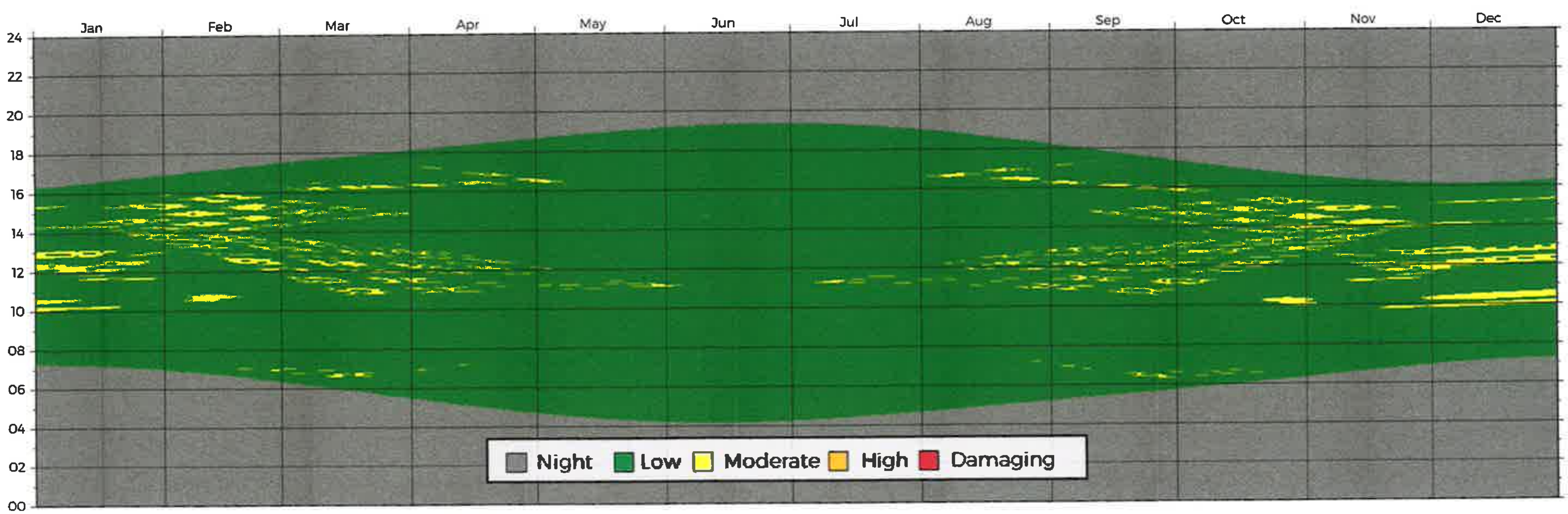


ANNUAL VISUAL IMPACT

Pedestrian Receptor P24

Receptor P24 was chosen to assess the visual impact associated with solar reflections affecting pedestrians within the courtyard of the development.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

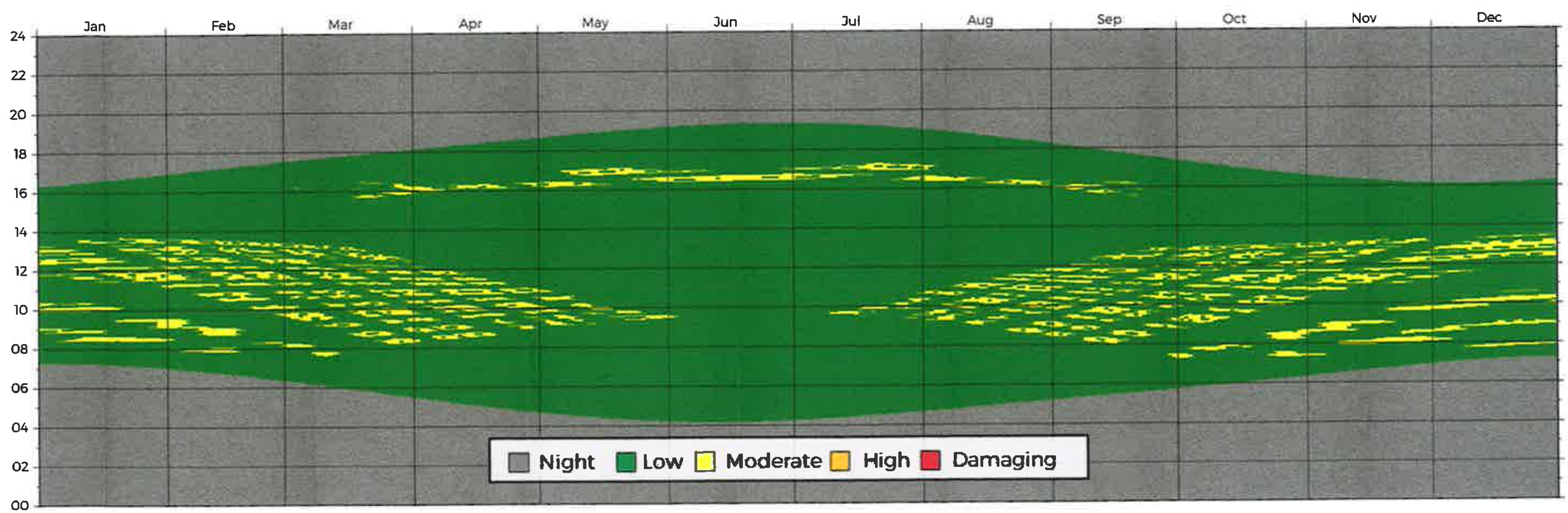


ANNUAL VISUAL IMPACT

Pedestrian Receptor P25

Receptor P25 was chosen to assess the visual impact associated with solar reflections affecting pedestrians within the courtyard of the development.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

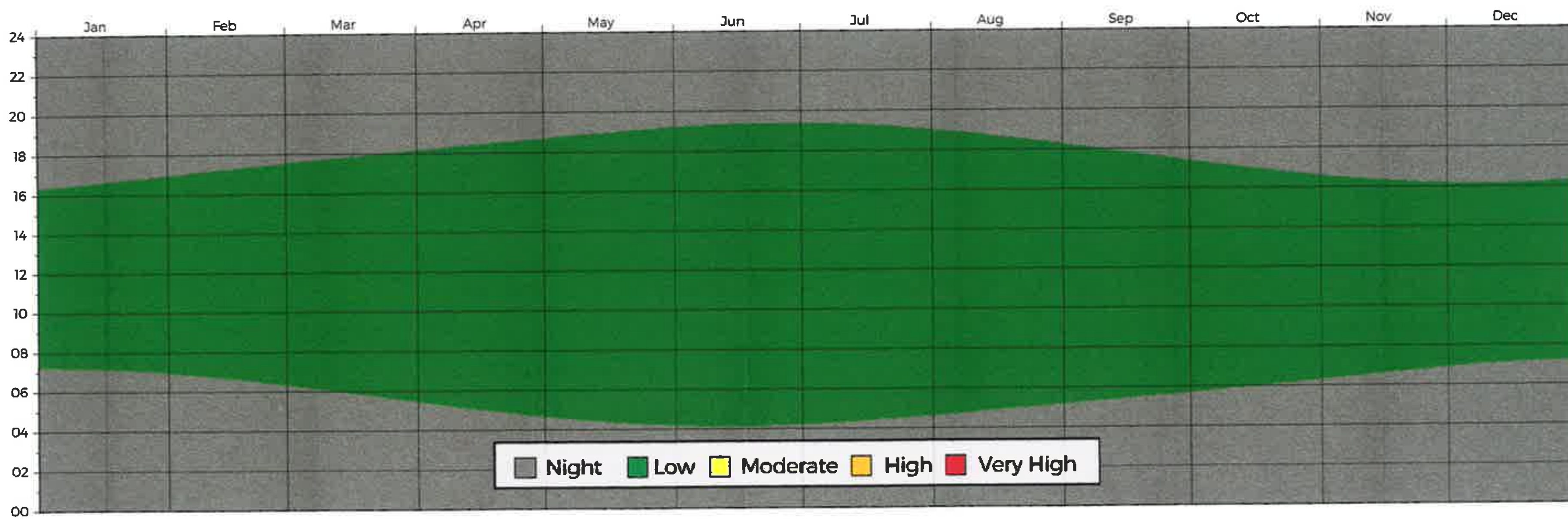


ANNUAL THERMAL IMPACT - PEOPLE

All Receptors

All reflection impacts at all receptors were found to have intensities below RWDI's short-term and human safety threshold values.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

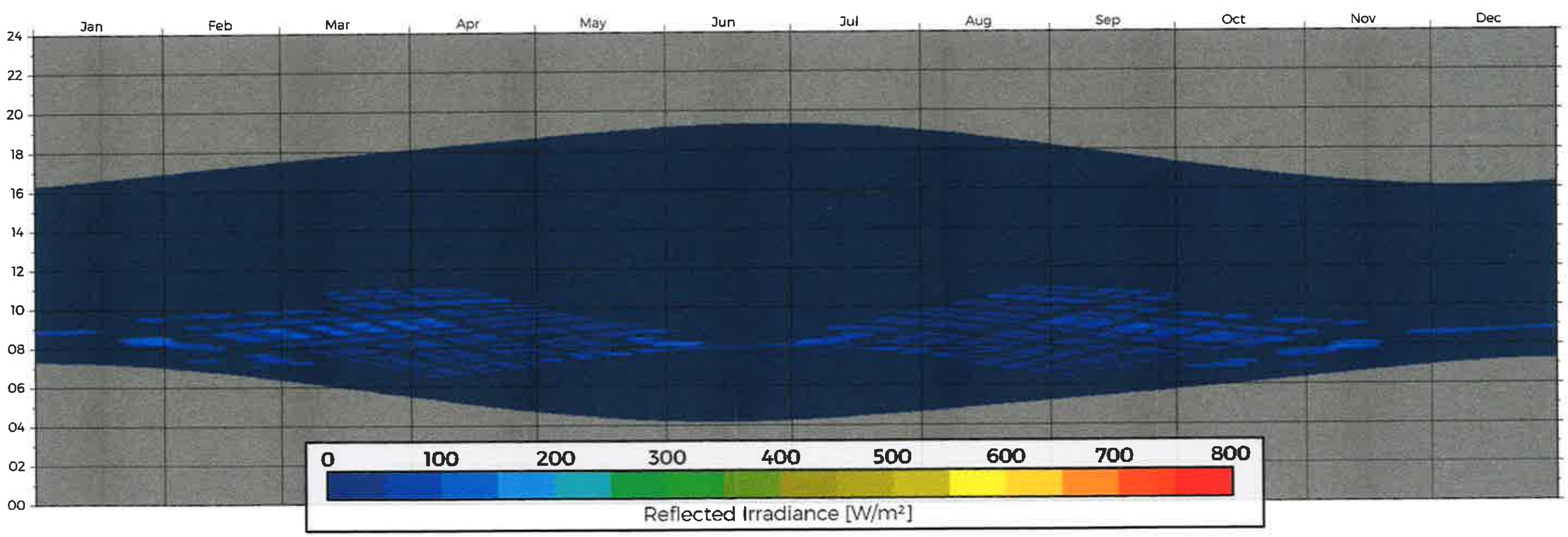


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F10

Receptor F10 was chosen to assess the thermal impact associated with solar reflections affecting northeast facing facades at approximately 1st floor of 175 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

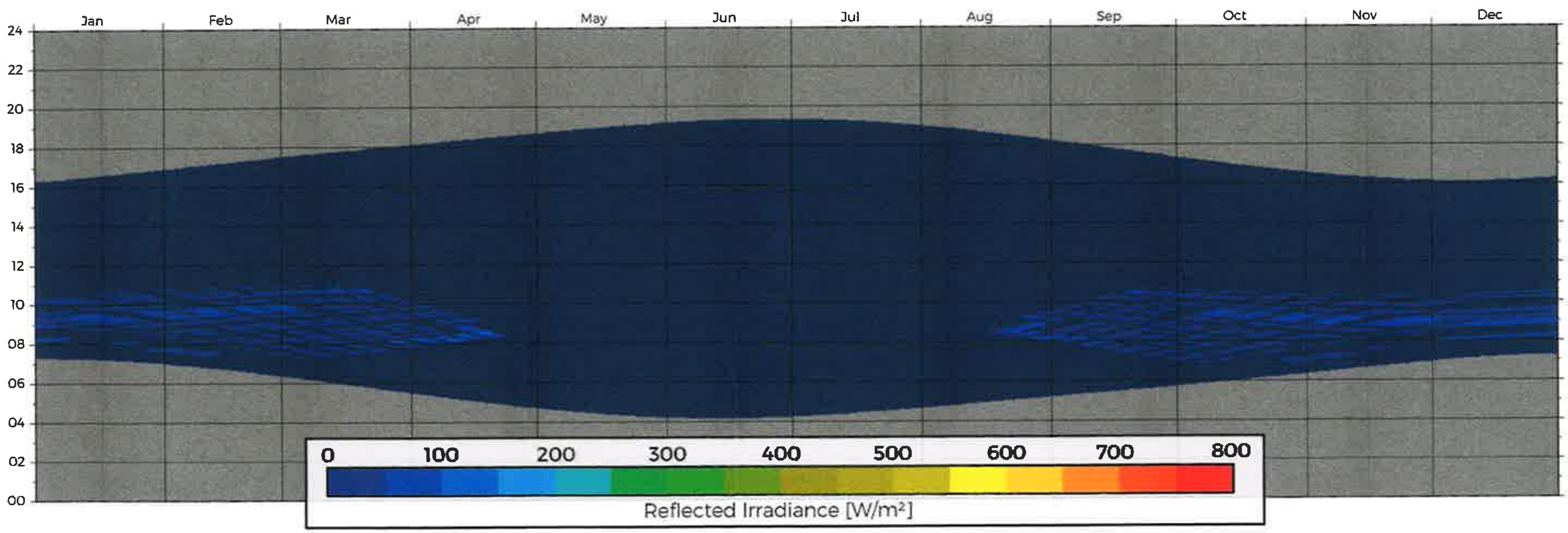


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F11

Receptor F11 was chosen to assess the thermal impact associated with solar reflections affecting northeast facing facades at approximately 1st floor of 175 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

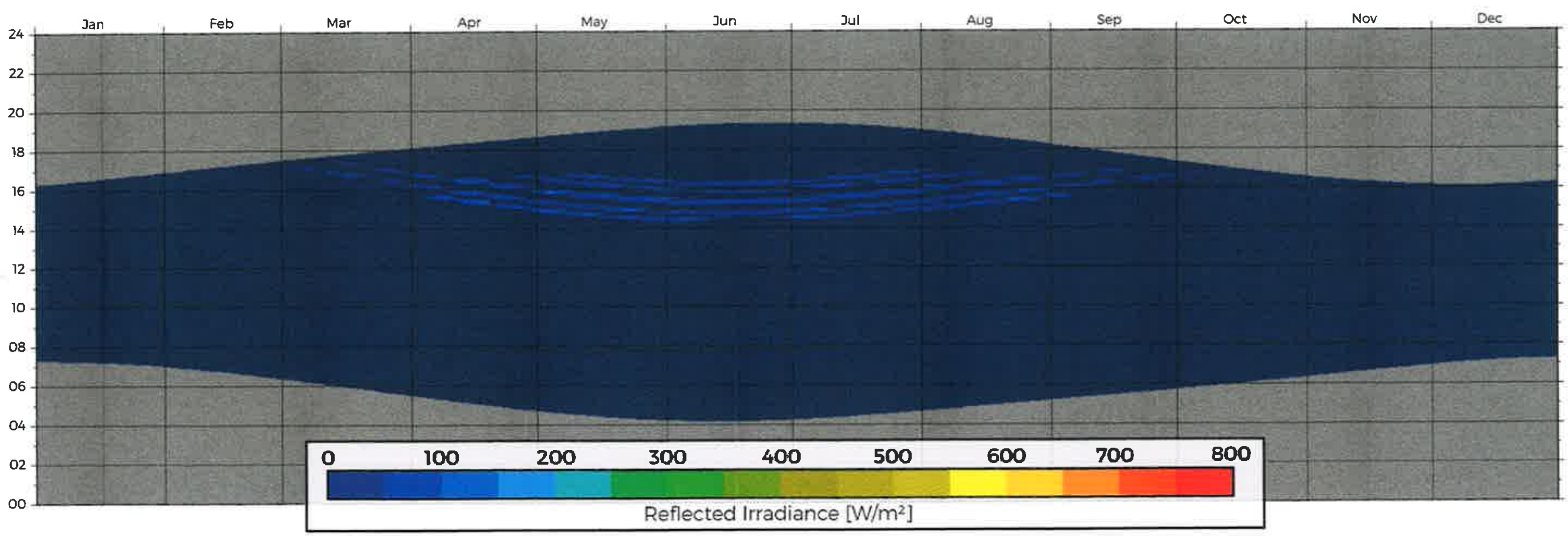


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F12

Receptor F12 was chosen to assess the thermal impact associated with solar reflections affecting northeast facing facades at approximately 5th floor of 1170 Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

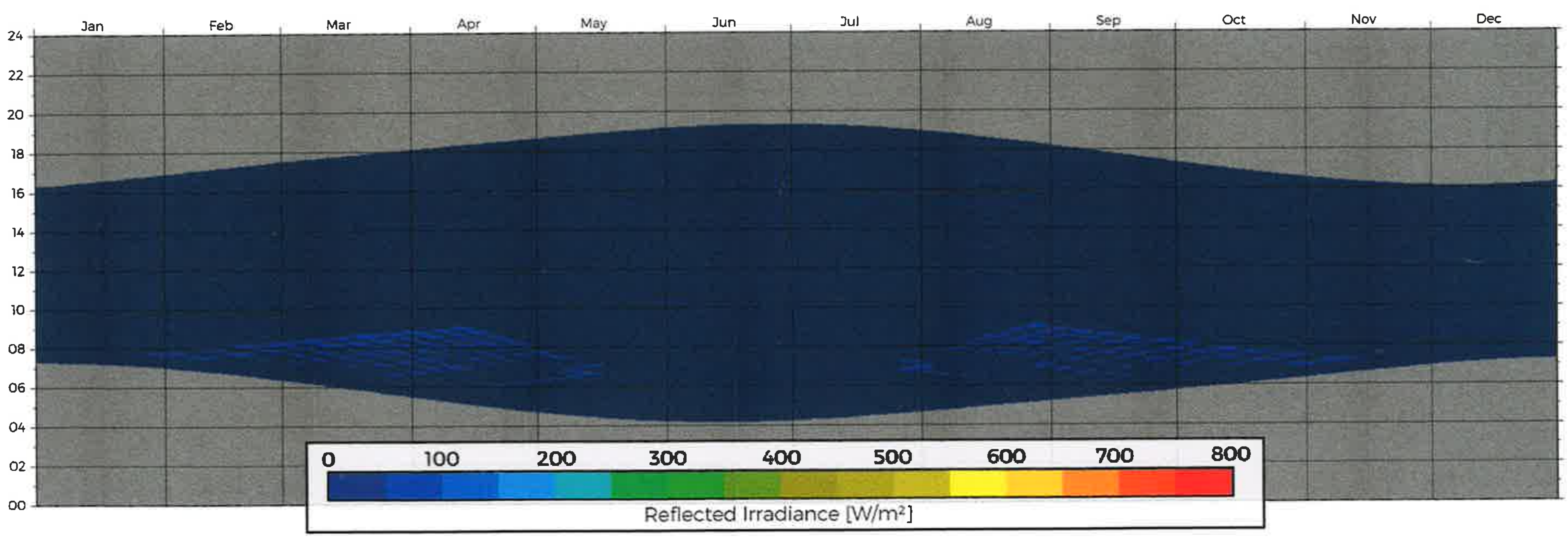


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F13

Receptor F13 was chosen to assess the thermal impact associated with solar reflections affecting northeast facing facades at approximately 3rd floor of 190 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

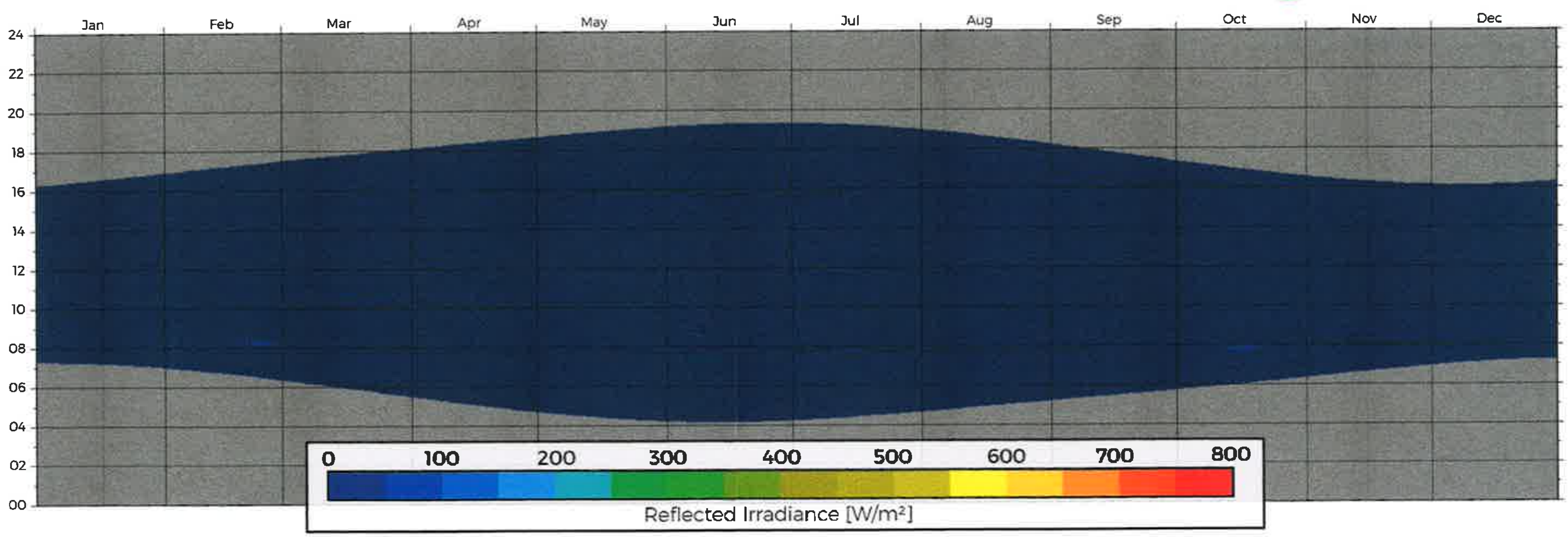


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F14

Receptor F14 was chosen to assess the thermal impact associated with solar reflections affecting north facing facades at approximately 2nd floor of 154 Ruggles Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

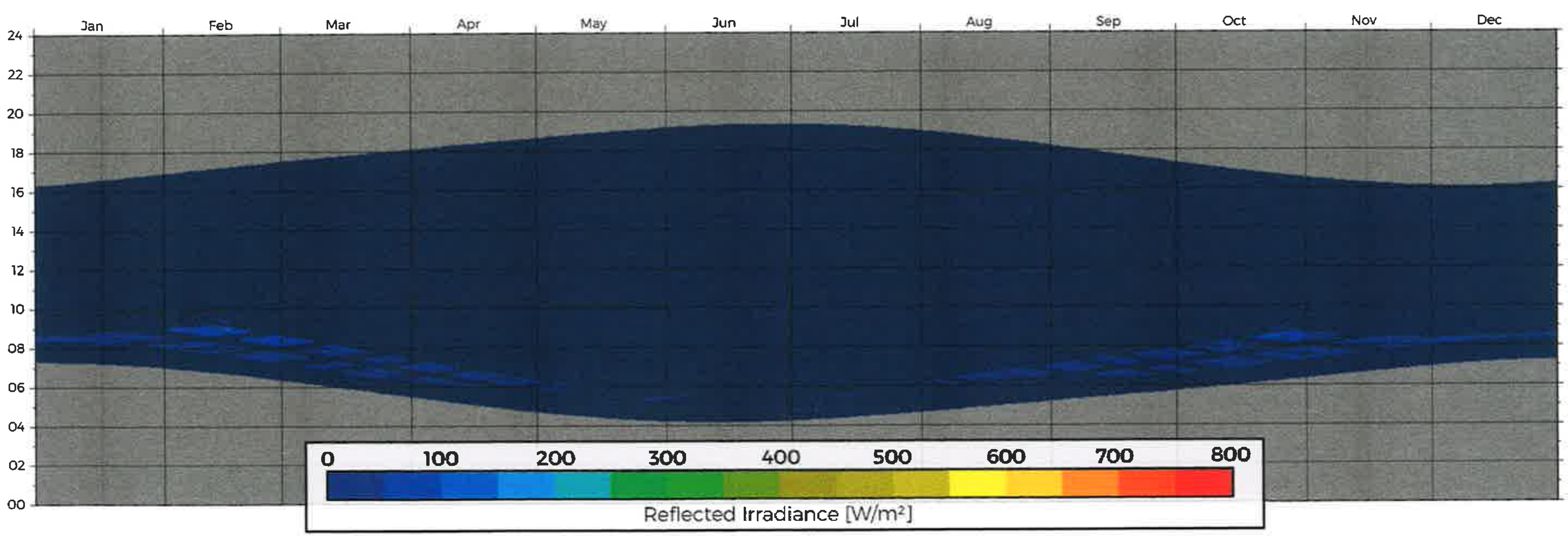


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F15

Receptor F15 was chosen to assess the thermal impact associated with solar reflections affecting northwest facing facades at approximately 2nd floor of 39 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

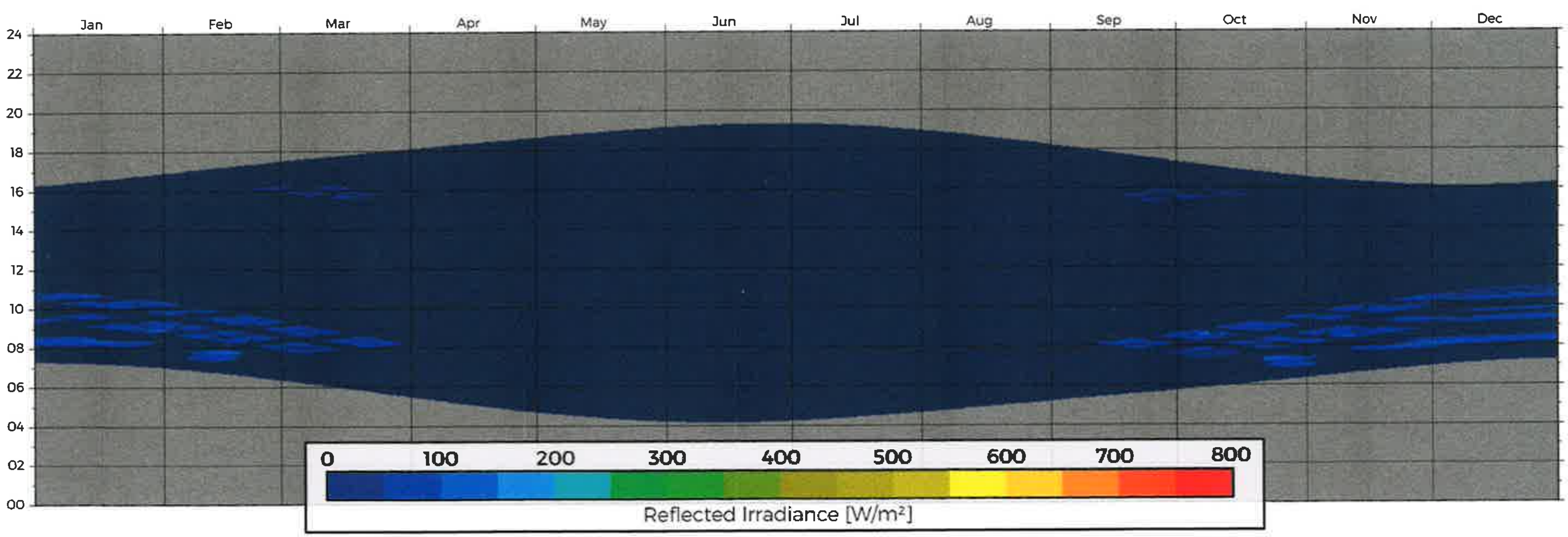


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F16

Receptor F16 was chosen to assess the thermal impact associated with solar reflections affecting northwest facing facades at approximately 2nd floor of 25 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

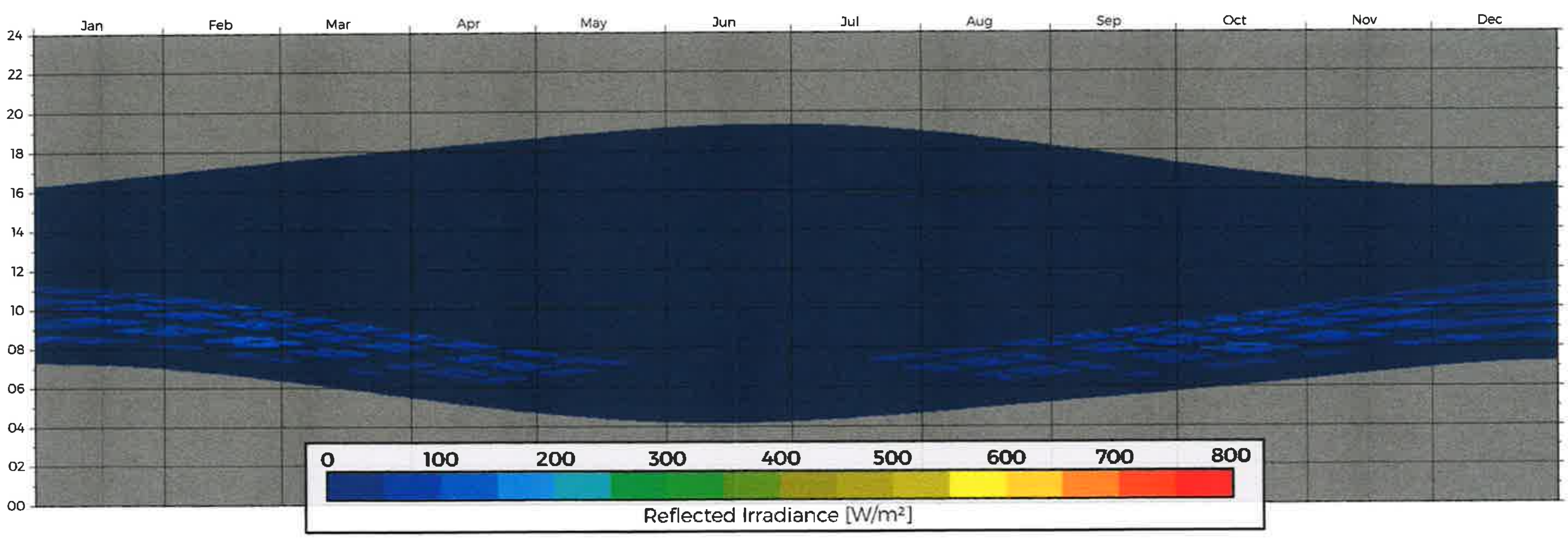


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F17

Receptor F17 was chosen to assess the thermal impact associated with solar reflections affecting northwest facing facades at approximately 3rd floor of 40 Raynor Circle.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.

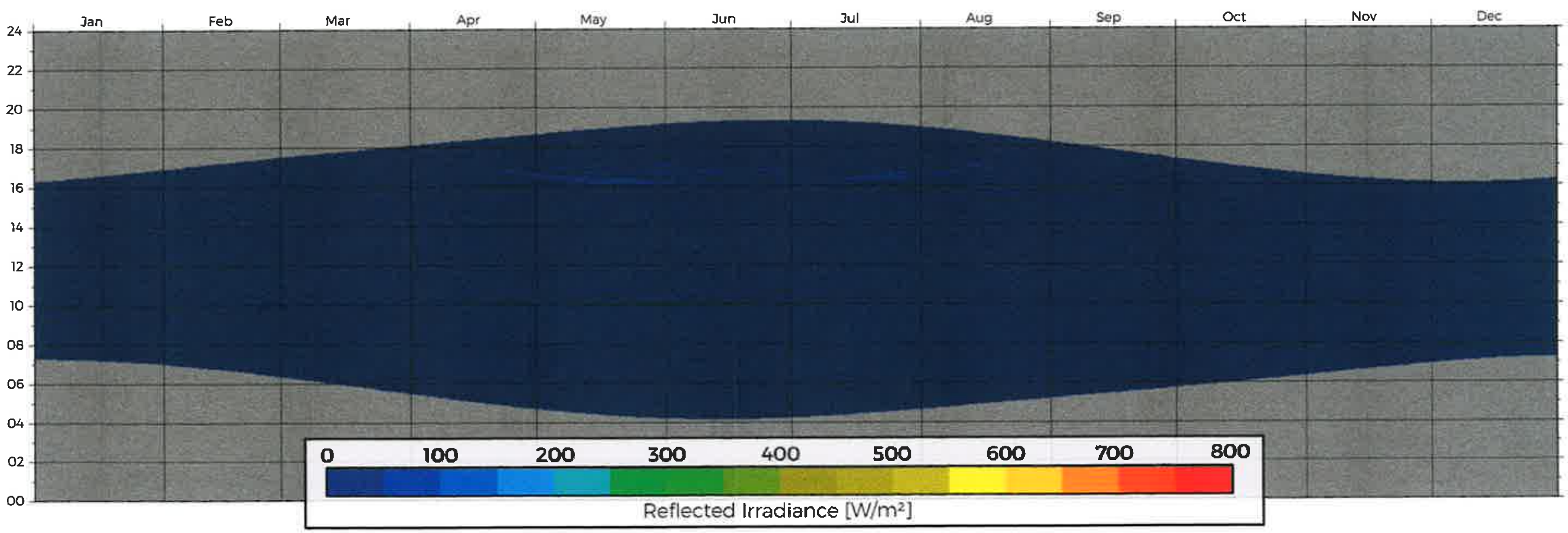


ANNUAL THERMAL IMPACT - PROPERTY

Facade Receptor F18

Receptor F18 was chosen to assess the thermal impact associated with solar reflections affecting southeast facing facades at approximately 3rd floor of 1135 Tremont Street.

Please note that the referenced times are in local standard time. In jurisdictions where Daylight Savings Time is used, the time should be shifted by one hour when appropriate.



APPENDIX B

RWDI REFLECTION CRITERIA

Visual Glare

There are currently no criteria or standards that define an "acceptable" level of reflected solar radiation from buildings. RWDI has conducted a literature review of available scientific sources[1] to determine levels of solar radiation that could be considered acceptable to individuals from a visual standpoint.

Many glare metrics are designed for interior use and have been found to not correlate well with the glare impact humans perceive from direct sun or in outdoor environments. RWDI uses the methodology of Ho et al[2], which defines glare impact based on a physical reaction rather than on a preference-based correlation.

Based on the intensity of the glare source and the size of the source in the field of view (Figure B1), the risk of that source causing temporary flash blindness (i.e. the after images visible after one is exposed to a camera flash in a dark room) faster than a person can reflexively close their eyes can be determined.

If this 'after-imaging' can occur faster than the human blink reflex, it presents an unavoidable effect on a person based on physiology rather than preference. This forms the basis of how we determine if a reflection is 'significant'.

This methodology was previously required by the United States Federal Aviation Administration (FAA) to determine the risk of glare to pilots and other airport staff under FAA Interim Policy 78 FR 63276. While the need to use this exact metric has since been relaxed under FAA Policy 86 FR25801, RWDI still feels that it is appropriate for this work.

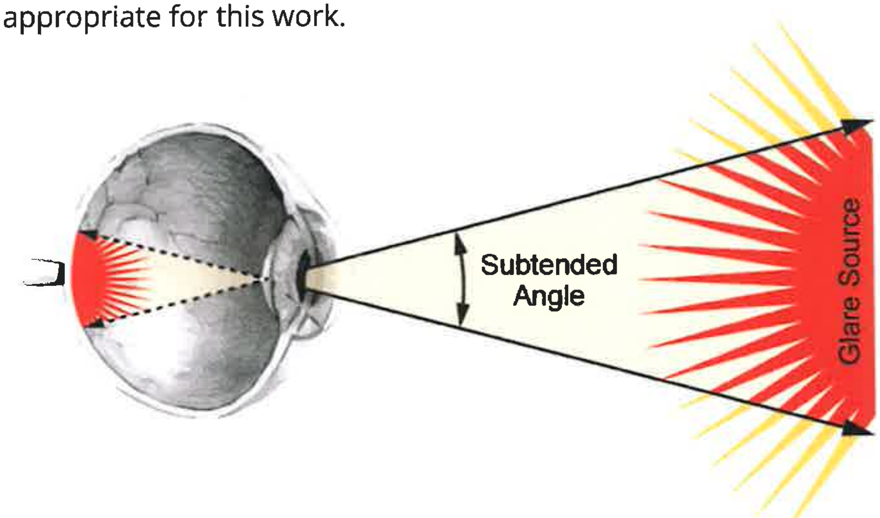


Figure B1: Schematic Illustrating the Subtended Angle of a Glare Source

Visual Glare (cont'd)

At the screening level, we conservatively take any reflections at least 50% of the intensity required to cause after-images as a "significant" reflection to be counted in the frequency analysis. In the detailed phase of work, we use the typical threshold level.

As a reference, point 1 on Figure B2 illustrates where looking directly at the sun falls in terms of irradiance on the retina (the back of the eye) and the size of the angle that the sun subtends in the sky. This puts it just at the border of causing serious damage before the blink reflex can close the eye.

The other points in Figure B2 correspond to the following:

2. Direct viewing of high-intensity car headlamp from 50 feet / 15 m

3. Direct viewing of typical camera flash from 7 feet / 2 m

4. Direct viewing of high-intensity car headlamp from 5 feet / 1.5 m

5. Direct viewing of frosted 60W light bulb from 5 feet / 1.5 m

6. Direct viewing of average computer monitor from 2 feet / 0.6 m

Note that the retinal irradiances described on this page are significantly higher than the irradiance levels discussed elsewhere in this report. This is because the human eye focuses the energy on to the retina. The magnitude of the increase is dependent on the geometry of the human eye and the source of the glare, both of which are computed per the Ho et al methodology.

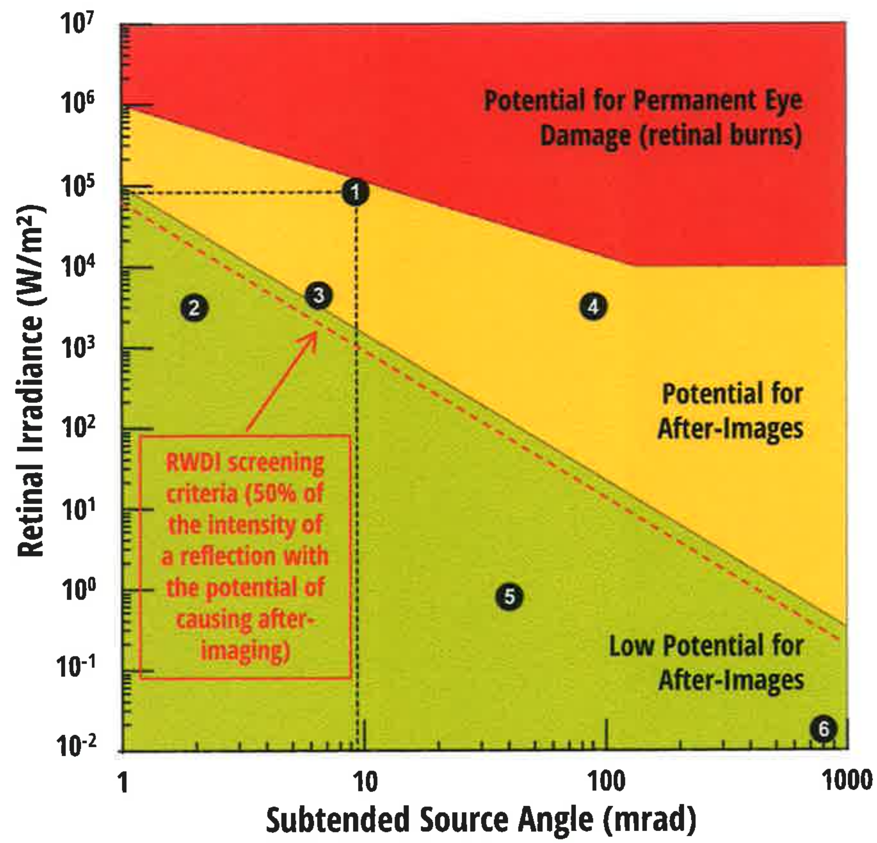


Figure B2: After-Imaging Potential From Various Glare Sources

Visual Glare (cont'd)

Significant glare impacts on the operators of vehicles or heavy equipment pose a particular risk to public safety due to operator distraction or reduction in their visual acuity. Thus, in the detailed analysis, RWDI assigns an assumed view direction to those engaged in "high-risk" activities (e.g. driving a car or flying a plane) as well as an assumed field of view.

The assigned directions and fields of view acknowledge that an operator is particularly sensitive to reflections emanating from the direction in which they are travelling (and therefore cannot safely look away from) and that the opaque elements of the vehicle will act to obstruct reflections beyond a given angle.

For drivers, the critical angle is taken to be 20° away from the direction of view[3]. Thus, any reflections emanating from within this 20° field of view are considered 'high' impacts, whereas reflections emanating from outside this cone are classified as 'moderate' impacts. This angle is adjusted as needed for impacts on other vehicles such as aircraft[4], trains[5], and other heavy equipment[6].

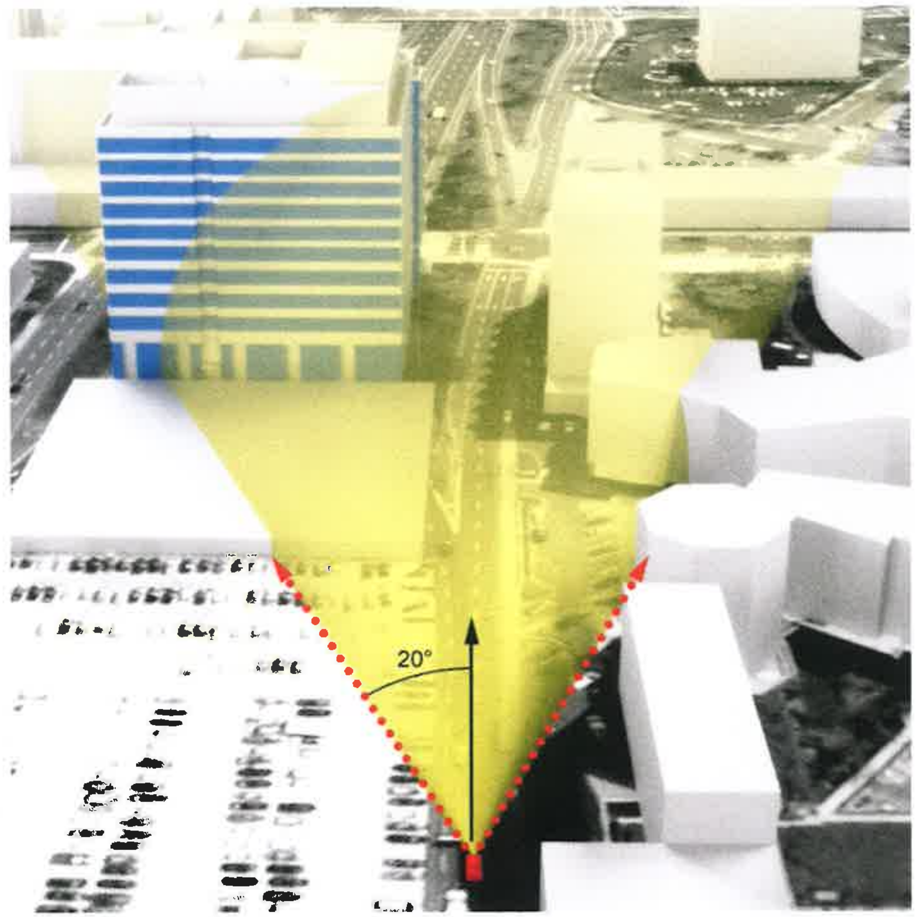


Figure B3: Illustration of a Driver's 20° Field of View

Thermal Impact (Heat Gain) on People

The primary sources for exposure limits to thermal radiation come from fire protection literature. However, there is currently inconsistency between different bodies regarding what level of exposure can be reasonably tolerated by people.

The U.S. National Fire Protection Association (NFPA) defines 1,700 W/m^2 as an upper limit for a tenable egress environment[7]; i.e. an individual could escape through such an environment successfully, though they would not necessarily emerge unscathed. The British Standards Institution[8] sets their limit at 2,000 W/m^2, which "*...is tolerable for ~ 5 min[utes]...*". Other researchers[9] have found that higher irradiance levels (3,500 – 5,000 W/m^2) can be tolerated in outdoor environments for several minutes without issue.

The only current quantitative guideline specific to reflections comes from the City of London's Planning Note on 'Solar Convergence'[10]. Produced in conjunction with the UK Building Research Establishment (BRE), this document indicates that no areas should receive 10,000 W/m^2 or more for any duration, exposures above 2,500 W/m^2 should be limited to less than 30 seconds; and that "*...areas with reflected irradiances above 1,500 W/m^2, and preferably those above 1000 W/m^2, should be minimized.*"

It should be noted that all these thresholds are guideline values only, and that in reality many factors (skin color, age, clothing choice, etc.) influence how a person reacts to thermal radiation.

Clearly, there are currently no definitive guidelines or criteria with respect to the issue of thresholds for exposure to thermal irradiance in an urban setting. We know this criterion should be lower than the thresholds set in the context of an individual escaping from a fire and greater than typical peak solar noon levels of 1,000 W/m^2 which people commonly experience.

Therefore, RWDI's opinion at this time, is that reasonable criteria is to establish 2,500 W/m^2 as a ceiling exposure limit, which reflection intensity should not exceed for any length of time; and 1,500 W/m^2 as a short term (10 minutes or less) exposure limit.

Thermal Impact (Heat Gain) on Property

The impact of solar irradiance on different materials is primarily based on the temperature gains to the material which can cause softening, deformation, melting, or in extreme cases, combustion. These temperature gains are difficult to predict as they are highly dependent on the convective heat transfer from air movement around the object and long-wave radiative heat transfer to the surroundings.

Generally, irradiance levels at or above 10,000 W/m^2 for more than 10 minutes are required to ignite common building and automotive materials in the presence of a pilot flame. That value increases to 25,000 W/m^2 when no pilot flame is present[11,12,13]. However, some materials like plastics and even some asphalts may begin to soften and deform at lower temperatures. For example, some plastics can deform at a temperature of 140°F (60°C), or lower if force is applied. The applied force typically comes from the thermal expansion of the material, the force of gravity acting on the material or an external mechanical force (i.e. someone or something pushing or pulling on it).

Aside from the risk of damage to the material itself, a hot surface poses a safety risk to any person who may come into contact with it. This is particularly important in an urban context as the individual may not expect the object to be heated. NASA[14] defines an upper limit of 111°F (44°C) for surfaces that require extended contact time with bare skin. Surface temperatures below this limit can be handled for any length of time without causing pain.

That said, surfaces within the urban realm are routinely exposed to reflections from windows, metal panels and bodies of water without causing material damage or excessive heating.

Therefore, as this time, RWDI takes a conservative approach and **uses a value of 1,000 W/m^2, consistent with a single (i.e. non-focused) reflection of the sun's peak intensity, as a baseline threshold for reflected irradiance on stationary objects.**

However, this is simply a starting point. As noted, depending on the environmental conditions and material properties of the object/assembly other values may be used instead.

We note that this also assumes any materials exposed to direct/reflected light were appropriately designed for the exposure to direct sun and/or reflections typically expected in the project's location. More sensitive materials (i.e. internal components of walls and roofs exposed during construction/ maintenance), or materials intended for other climates may not be as robust.

References

1. Danks, R., Good, J., and Sinclair, R., "Assessing reflected sunlight from building facades: A literature review and proposed criteria." *Building and Environment*, 103, 193-202, 2016.

2. Ho, C., Ghanbari, C. and Diver, R., "Methodology to Assess Potential Glint and Glare Hazards From Concentrating Solar Power Plants: Analytical Models and Experimental Validation," *Journal of Solar Energy Engineering*, vol. 133, no. 3, 2011.

3. Vargas-Martin, F., and Garcia-Perez, M.A., "Visual fields at the wheel." *Optometry and Vision Science* 82, no. 8 (2005): 675-681.

4. Rogers, J.A., et al, "Evaluation of Glare as a Hazard for General Aviation Pilots on Final Approach." *Federal Aviation Administration* (2015).

5. Jenkins, D.P., et al, "A practical approach to glare assessment for train cabs." *Applied Ergonomics* 47 (2015): 170-180.

6. Hinze, J.W., and Teizer J., "Visibility-related fatalities related to construction equipment." *Safety Science* 49, no. 5 (2011): 709-718.

7. National Fire Protection Association. (2017). NFPA 130: standard for fixed guideway transit and passenger rail systems. NFPA.

8. The application of fire safety engineering principles to fire safety design of buildings – Part 6: Human Factors' PD 7974-6:2019, British Standards Institution, 2019.

9. Raj, P.K., "Field tests on human tolerance to (LNG) fire radiant heat exposure, and attenuation effects of clothing and other objects", *Journal of Hazardous Materials,* vol. 157 no. 2-3, 2008.

10. Department of the Built Environment. (2017). Solar Convergence Planning Advice Note. City of London Corporation.

11. Building Research Establishment: 'Fire spread in car parks' BD2552, Department of Communities and Local Government 2010.

12. SFPE Handbook of Fire Protection Engineering 4th Edition NFPA/SPFE 2008 USA

13. V. Babrauskas 'Ignition Handbook' Fire Science Publishers + SFP, 2003

14. E Ungar, K Stroud 'A New Approach to Defining Human Touch Temperature Standards' National Aeronautics and Space Agency , 2010

Appendix H

Drexel Village

Air Quality Intersection Screening Analysis

Drexel Village - Boston, MA

Intersection Screening for BPDA Article 80 Air Quality Analysis

Date	1/4/2023
Creato	VRT
Check	MA

			No Build						Build						Volume Increase		Percent Increase		BPDA Thresholds			
			AM			PM			AM			PM										
#	Intersection	Signalized?	Volume	Delay	LOS	Volume	Delay	LOS	Volume	Delay	LOS	Volume	Delay	LOS	AM	PM	AM	PM	1:LOS	2a:Vol #	2b:Vol %	3:ADT
23	Choice Way/Raynor Circle & Ruggles St	No	209	4.4		296	2.9		197	4.3		336	4.0		-12	40	-5.7%	13.5%	OK	OK	Exceed	OK
15	Raynor Circle & Site Driveway & Parking Loop	No	112	7.4		87	5.9		105	8.7		129	8.3		-7	42	-6.3%	48.3%	OK	OK	Exceed	OK
1	Sojourner Truth Ct & Melnea Cass Blvd	Yes	2,020	9.4	A	2,009	11.8	B	2,022	9.4	A	2,018	12.2	B	2	9	0.1%	0.4%	OK	OK	OK	OK
5	Tremont St & Whittier St/Ruggles St	Yes	3,265	80.4	F	3,515	131.9	F	3,254	86.5	F	3,545	140.6	F	-11	30	-0.3%	0.9%	Stay DEF	OK	OK	OK
10	Shawmut Ave & Ruggles St	Yes	446	7.5	A	767	18.3	B	449	7.5	A	775	18.8	B	3	8	0.7%	1.0%	OK	OK	OK	OK

<u>Appendix I</u>

Drexel Village

Diversity, Equity and Inclusion Plan Disclosure

DIVERSITY PLAN

The purpose of this Diversity Plan is to maximize economic opportunity for local residents and Minority/Women Business Enterprises (M/WBE) through the development of the Morton Station project. This Diversity Plan reflects the developer's commitment to achieve, and to the greatest extent feasible, exceed the employment and business participation goals required by Federal, state, and local government entities.

Accordingly, a core component of the Diversity Plan involves working with Janey Construction to develop and implement a comprehensive outreach and recruitment plan well in advance of construction start. Janey Construction will also be responsible for monitoring subcontractor efforts to recruit and maintain the diversity goals of the construction workforce and M/WBE participation throughout the construction phase of the project.

PROGRAMS | FEDERAL, STATE, AND LOCAL DIVERSITY REQUIREMENTS

HUD Section 3 Program

The purpose of the HUD Section 3 Program is to foster local economic development opportunities, along with economic improvement, and individual self-sufficiency. The program requires developers who are receiving certain HUD financial assistance to provide job training, employment, and contracting opportunities for low-or very-low-income residents. To the greatest extent feasible, Drexel Village LLC and Janey Construction will provide preference to Section 3 residents and businesses located in the neighborhood where the project will be constructed or renovated. This preference includes construction jobs, job training, and subcontracting opportunities.

Section 3 Residents

Section 3 residents are defined as public housing residents or persons who live in the area where a HUD-assisted project is located and who have a household income that falls below HUD's income limits.

Section 3 Business Criteria

- Section 3 businesses must complete the Section 3 Business Self-Certification Form.
- Section 3 business concerns are companies that are 51% or more owned by Section 3 residents;
- Businesses that employ Section 3 residents as at least 30% of their full-time, permanent staff; or
- Businesses that provide evidence of a commitment to subcontract 25% or more of the dollar amount of the awarded contract to Section 3 business concerns.

Minimum Required Goals for Section 3 Businesses

- Award 10% of construction contracts and 3% of non-construction contracts to Section 3 businesses.
- New hires must represent at least 30% of the workforce.

DIVERSITY PLAN

Required Outreach to Section 3 Businesses

- Publish ads for business contracting opportunities in the Boston Globe and the Bay State Banner.

Section 3 Workforce Opportunities

- Notify the following community-based organizations regarding workforce opportunities: Youth Build Boston, Building Pathways, Madison Park Technical High School, Action for Boston Community Development (ABCD), Center for Youth & Families

- Post job opportunities and job applications at the job site.

- Advertise in local newspapers and public housing projects.

- Identify other qualified candidates available for work.

- Janey Construction will serve as the liaison with Youth Build Boston to consider graduates for work.

- Janey Construction will designate a Compliance Coordinator to take referrals, and interview any applicants and walk-on candidates.

City of Boston Ordinance

Boston Residents Job Policy: Construction Workforce Requirements

- At least 51% Boston Residents

- At least 40% minority residents

- At least 12% female residents.

Drexel Village LLC and Janey Construction Establishment of Neighborhood Workforce Goals

- In addition to the above-referenced workforce requirements, Drexel Village LLC and Janey Construction have established a neighborhood workforce goal of 25%.

- The Drexel Village LLC and Janey Construction will establish a definition of the neighborhood based on zip codes of the adjacent neighborhoods of Roxbury, Mattapan, Dorchester, and Hyde Park.

City of Boston Construction Workforce Referrals

- The Boston Residents Jobs Bank shall refer City residents, people of color, and women to Janey Construction.

DIVERSITY PLAN

City of Boston Required Workforce Outreach

- Janey Construction will conduct regular outreach prior to the start of construction and during construction with the above-identified Section 3 community organizations, along with outreach to union hiring halls, Business Agents, and General Contractors/Construction Managers.

- Additionally, Janey Construction will conduct regular outreach with Roxbury-based community organizations.

Developer Commitment to Construction Workforce Outreach

Drexel Village LLC has established a goal to hire a minimum of 50 walk-on applicants as workforce employees. Janey Construction will conduct any necessary Workforce Outreach necessary to achieve the City of Boston requirements and developer goals, including:

- Scheduling at least one local job fair.

- Providing an on-site kiosk for walk-on applications

- Processing of applications by Janey Construction's Compliance Officer

- Referring applicants to subcontractors for interviews, and following up with subcontractors on the status of referred applications.

City of Boston Compliance Monitoring and Reporting

- City of Boston Office of Economic Development (BRJP Office) and/or

- Boston Planning & Development Agency (BPDA)

- Janey Construction will be required to submit all necessary written reports to the BRJP and the BPDA.

State and Municipal Compliance Monitoring and Reporting

- Janey Construction will monitor subcontractor workforce participation levels and maintain compliance records.

- Janey Construction will be required to submit all necessary written Compliance Monitoring reports to states and municipalities, and also provide copies and summary reports to the owner on a monthly basis. Specific requirements will be described in the Construction Contract and may include:

    - City of Boston Office of Economic Development (BRJP Office)
    - Boston Planning & Development Agency (BPDA)
    - Massachusetts Department of Housing and Community Development (DHCD)

DIVERSITY PLAN

M/WBE Contract Award Goals (subcontract dollars)

- MBE: in excess of the City of Boston requirements
- WBE: in excess of the City of Boston requirements
- Section 3: in excess of the City of Boston requirements

Janey Construction to Maximize M/WBE Business Participation

- Janey Construction Referrals

- Outreach to local M/WBE Advocacy Groups, such as the Massachusetts Minority Contractors Association (MMCA), and the Black Economic Council of Massachusetts (BECMA). This outreach shall include providing these organizations with copies of the project buyout lists.

- Business marketing events

- Newspaper ads

- Email buyout lists to M/WBE advocacy groups

Contract Award to M/WBE Firms

- Janey Construction will provide a list of all subcontractor bids, with recommendations regarding their hiring preference. In each instance, Janey Construction will justify why they are or are not recommending contract award to specific M/WBE firms on the basis of scope of work, budget, track record, and M/WBE certification.

- Drexel Village LLC will create and maintain a database of M/WBE subcontractors that were awarded contracts on previous jobs. The database will be used to create a pipeline of M/WBE firms that will be given an opportunity to bid on future projects.

Contract Award to M/WBE Firms

- Janey Construction will monitor the achievement of workforce and M/WBE goals, and maintain compliance records.

- Additional compliance monitoring may be required by DHCD or others to be described in the Construction Contract.

Appendix J

Drexel Village

Letters of Support

The Commonwealth of Massachusetts

MASSACHUSETTS STATE SENATE

LIZ MIRANDA
STATE SENATOR
2ND SUFFOLK DISTRICT

STATE HOUSE, ROOM 519
617-722-1673
LIZ.MIRANDA@MASENATE.GOV

Chair - Racial Equity, Civil Rights and Inclusion
Vice Chair - Economic Development and Emerging Technologies

Ways & Means, Census, Juvenile and Emerging Adult Justice
Community Development and Small Businesses, Elder Affairs,
State Administration and Regulatory Oversight

September 22nd, 2023

Arthur Jemison
Chief of Planning/Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Letter of Support

Dear Director Jemison:

I am submitting this letter to express my strong support for the Drexel Village project which will be undergoing Article 80 Large Project Review. This transformative project will have a 75% level of affordability, providing both affordable rental and homeownership units. Drexel Village will also serve as the gateway to the rapidly developing Tremont Street corridor. Just as importantly, Saint Katharine Drexel Parish, which is located on the project site, is the principal community partner working with the project developers.

The development of Drexel Village is dedicated to Roxbury's future by leveraging St. Katharine Drexel Parish's (SKD's) long history of community service and meaningful engagement. Established in 1890 and reconstituted over decades to become St. Katharine Drexel Parish, the church is a Black Catholic community that serves the people of Roxbury and Dorchester.

The approximately 346,022 square foot project includes 217 units of mixed-income rental and homeownership units in three buildings. Other key project components include the renovation and expansion of the SKD Parish Center to increase their social service space; and the expansion of the ABCD Pre-K facility, along with retail/commercial space. Drexel Village also includes over 60,000 square feet of open space that will provide Public Art, passive recreation, and pedestrian connectivity to the neighborhood's open space network along the Tremont Street corridor.

Based on the merits of the project, I urge the Boston Planning and Development Agency to approve the Article 80 filing in a streamlined manner to facilitate the developer's ability to qualify for critically-needed state and local funding.

Sincerely,

Senator Liz Miranda
2nd Suffolk District
(Roxbury, Dorchester, Mattapan, Hyde Park, Mission Hill,
Jamaica Plain, South End, Roslindale, Fenway)

Greater Boston Interfaith Organization

Arthur Jemison
Chief of Planning/Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Letter of Support

Dear Director Jemison:

The Greater Boston Interfaith Organization (GBIO) is submitting this letter to express our strong support for the Drexel Village project. For more than 20 years, the GBIO has prioritized rebuilding schools and neighborhoods. The Drexel Village project achieves this goal with the upcoming redevelopment of a long-vacant parcel that is located in the heart of Nubian Square. Additionally, the project will anchor the rapidly-developing Melnea Cass Boulevard and Tremont Street corridor. Just as importantly, the inclusion of St. Katharine Drexel Parish (SKD) as the key community partner of Drexel Village will broaden the project's impact with the continuance of SKD's social and community service programs within the greater Nubian Square neighborhood. As a long-time member of the GBIO, the SKD shares the vision and goals of our organization to create sustainable housing, economic and educational opportunities for Boston residents. Moreover, the scope and substance of the Drexel Village project also reflects the developer's deep commitment to building a vibrant, transformative project that will sustain the neighborhood for years to come.

The approximately 300,000 square foot project includes 217 units of rental and homeownership units in three buildings. Other key project components include the renovation of the St. Katharine Drexel Parish Center, along with social service space and ground-floor retail and commercial space. The Drexel Village project also includes over 60,000 square feet of open space that will provide public art, passive recreation, and pedestrian connectivity to the neighborhood's open space network along the Tremont Street corridor.

Based on the substantial benefits and transformative impacts of the Drexel Village Project, we urge the BPDA to approve the project's upcoming Article 80 Project Notification Form on a streamlined schedule so that the development team can qualify for City and State funding rounds in the Fall of 2023.

Sincerely,

Reverend Burns Stanfield

Burns Stanfield

Chair GBIO Board of Directors

File: Drexel

ACTION FOR BOSTON COMMUNITY DEVELOPMENT

October 5, 2023

VIA ELECTRONIC MAIL

Arthur Jemison
Chief of Planning and Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Letter of Support

Dear Director Jemison:

Action for Boston Community Development, Inc. (ABCD) is submitting this letter to express our enthusiastic support for the Drexel Village Project.

For over twelve years, ABCD has successfully operated a Pre-K Program at the Saint Katharine Drexel Parish. Our program currently serves 56 children between the ages of 2 months and 5 years who are provided a comprehensive early childhood education that seeks to instill a strong foundation of knowledge that prepares them for academic achievement in primary school. ABCD's curriculum includes cognitive and interactive reading, emotional development, and social/physical development through such activities as interactive play time.

The inclusion of an expanded ABCD facility of up to 11,900 gross square feet at Drexel Village will provide our organization with a substantial opportunity to serve up to 100 children on site. Our relationship with Saint Katharine Drexel is based on a shared commitment to provide comprehensive educational opportunities that will prepare youth for successful, well-adjusted lives.

Just as importantly, Drexel Village will create a dynamic, multi-generational environment through the provision of critically -needed family housing, retail and commercial space, and over 60,000 square feet of Open Space and Public Art that will expand our educational program through the stimulating outdoor environment that will be available for the children that we serve.

Based on the substantial benefits and transformative impacts of the Drexel Village Project, we urge the Boston Planning and Development Agency to approve the project's upcoming Article 80 Filing on a streamlined schedule to facilitate the development team's qualification for upcoming City and State Funding rounds.

Sincerely,

Sharon Scott-Chandler
President and CEO

178 Tremont Street, Boston MA 02111 | P: 617.348.6000 | TTY: 617.423.9215 | F: 617.357.6041 | bostonabcd.org

TSN

TIMOTHY SMITH NETWORK

617-238-7876

mirving@timothysmithnetwork.org

20 Eustis St., Roxbury, MA 02301

10/4/2023

VIA ELECTRONIC MAIL

Arthur Jemison
Chief of Planning and Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Letter of Support

Dear Director Jemison:

The Timothy Smith Network (TSN) is submitting this letter to express our strong support for the Drexel Village Project.

For over 12 years TSN has worked in partnership with St. Katharine Drexel Parish (SKD) to provide state-of-the-art technology for children in the After School and Summer Camp Programs and "Seniors" from the community. In addition to strengthening their technological literacy, the children have benefited from programs which include Robotics, Youth Astro-Net, and Microbit. A favorite among "Seniors" and other adults was the Cyber Cafe. After the initial technological skills were complete, the participants chose a specific skill each wanted to develop, and during the semester they worked one-on-one with students from Emmanuel College.

Since 1996 TSN in partnership with community organizations like SKD, provides comprehensive technology education services to residents of the greater Roxbury community. Our aim is for people of all ages to have access to state of the art computer technology and to programs as rich in diversity as the neighborhood we serve. These programs build the capacity of the people of Roxbury as they acquire the knowledge and skills critical to success in our increasingly technology-driven world.

We cannot do this work alone, the need for tech equity demands the establishment of great partnerships. The Timothy Smith Network considers SKD to be an ideal partner that fully supports our mission to create pathways to higher education and inclusion for people who too often have been left out of the tech marketplace. Given our strong affiliation with SKD, we fully support them in the development of the upcoming Drexel Village project. This approximately 346,022 gross square foot project will create a dynamic, multi-generational environment through the provision of over 200 units of mixed-income, critically-needed family housing, retail and commercial space, and over 60,000 square feet of Open Space and Public Art that will provide passive recreation and pedestrian connectivity to the Tremont Street open space network.

Based on the substantial benefits and transformative impacts of the Drexel Village Project, we urge the Boston Planning and Development Agency to approve the project's upcoming Article 80 Filing on a streamlined schedule to facilitate the development team's qualification for upcoming City and State Funding rounds.

Sincerely,

Executive Director/CEO
Timothy Smith Network

September 4, 2023

VIA ELECTRONIC MAIL

Arthur Jemison
Chief of Planning and Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Drexel Village Letter of Support

Dear Director Jemison:

Emmanuel College is submitting this letter to express our strong support for the Drexel Village Project.

For over twelve years, Emmanuel College has worked in partnership with Saint Katharine Drexel Parish (SKD) to support their Social Service and Educational Programs. Our collaborative relationship is built around Emmanuel College's commitment to provide our students with opportunities to engage with the neighborhoods of Boston in support of building strong educational foundations, while also affording Emmanuel College students the opportunity to develop critical skills that support their career goals. This partnership provides critical field work for our students, while also contributing to the academic enrichment of neighborhood youth.

To this end, our students are currently involved in assisting SKD staff in their After-School Program and their Summer Camp. Additionally, Emmanuel College students have played a major role in the establishment of the SKD Cyber Café and their work in this endeavor includes providing participants in the Cyber Café with technology skills.

Emmanuel College also looks forward to the development of the upcoming Drexel Village project. This approximately 346,022 gross square foot project will create a dynamic, multi-generational environment through the provision of over 200 units of mixed-income, critically-needed family housing, retail and commercial space, and over 60,000 square feet of Open Space and Public Art that will provide passive recreation and pedestrian connectivity to the Tremont Street open space network.

Based on the substantial benefits and transformative impacts of the Drexel Village Project, we urge the Boston Planning and Development Agency to approve the project's upcoming Article 80 Filing on a streamlined schedule to facilitate the development team's qualification for upcoming City and State Funding rounds.

Sincerely,

Sister Karen Hokanson SNDdeN

Dean: School of Education
Emmanuel College
hokanson@emmanuel.edu