Brickbottom I QOZB LP
c/o North River Company LLC
610 West 26th Street, Suite 910
NYC, NY

April 29, 2021

Somerville Office of Strategic Planning & Community Development
3rd Floor City Hall
93 Highland Avenue
Somerville, MA 02143
Attn: Sarah Lewis, Planning Director
Attn: Dan Bartman, Senior Zoning & Policy Planner

Re: 28 Fitchburg Development Review Application

To whom it may concern,

This letter is being submitted on behalf of Brickbottom I QOZB LP ("Owner"), the Owner of the property located at 28 Fitchburg Street in Somerville, MA (the "Property"). With this letter, Owner is submitting a Development Review Application for the redevelopment of the Property, compliant with the Somerville Zoning Ordinance (the "Ordinance") seeking site plan approval for the proposed project as set forth below and within (the "Fitchburg Project"), and site plan approval for the lot consolidation/realignment of the lots owned by Owner at 28 Fitchburg Street, 28 Chestnut Street, and 26 Chestnut Street in order to facilitate the project.

The Fitchburg Project being proposed is an approximately 200,000 square foot, four-story plus mechanical penthouse commercial building intended primarily for laboratory and R&D uses including loading docks and below-grade parking accessed from Chestnut Street. The Fitchburg Project is a sister-project with the redevelopment of 28 Chestnut Street (the "Chestnut Project") (collectively, the "Combined Project"), for which a Development Review Application is being simultaneously submitted. The Combined Project is being submitted for zoning approval as two entirely separate, zoning-compliant commercial buildings that appear as separate buildings from the façade, but are joined on the interior to function as a single unit.

Owner of the Combined Project has been working closely with the City, the community, and its neighbors for more than a year to bring the Projects to fruition, and is excited to submit this application.

Included with this application is the following:

1. Project Narrative
2. Surveyor's Plot Plan
3. Architectural/Landscape Plans including:
    a. Cover page with locus map

    b. Illustrative site plan
    c. Scaled site plan showing lot lines, lot dimensions, setback lines, and building footprints
    d. Dimensional compliance table
    e. Floor plan(s)
    f. Exterior building elevations
    g. Tree plan
    h. Landscape plan
    i. Green Score Calculation and diagrams
    j. Signage plan
    k. Lighting plan
4. Neighborhood Meetings Report
5. Design Review Report
6. Certificate of Receipt of Materials from the Sustainability Department, with:
    a. Sustainable & Resilient Buildings Questionnaire
    b. LEED Certifiability Documentation
        i. Narrative
        ii. Affidavit
7. Mobility
    a. Mobility Management Plan (to be submitted subsequently)
    b. Transportation Access Plan (to be submitted subsequently)
    c. Transportation Impact Study (to be submitted subsequently)

If there are any questions, please do not hesitate to contact Nat Wysor, project manager, at nat.wysor@redgate-re.com or 617-721-5259.

Sincerely,

Brickbottom I QOZB LP
By: Christopher H. Pachios
Its: Vice President

28 Fitchburg, Somerville

Project Narrative – Site Plan Approval

April 28, 2021

The proposed building at 28 Fitchburg Street in the Brickbottom neighborhood of Somerville will be constructed alongside a companion building at 28 Fitchburg Street; the two buildings will be interconnected on the interior and will function as a single building unit, but will be articulated as two separate buildings on the exterior for zoning compliance, and to create a more appropriate scale at the streetscape (collectively, the "Project", individually, "28 Fitchburg" and "28 Fitchburg").

This Project has been in the making for the last year plus, including many meetings with the community and immediate neighbors, as well as the City's planning, mobility, urban forestry, and engineering departments. On December 1, 2020, the applicant initiated the first official step in the City's permitting process, and the Project was scoped by the City's planning department and representatives from several other City departments, followed by a first neighborhood meeting on January 11, 2021, three meetings before the Urban Design Commission on January 26, 2021, February 9, 2021, and February 23, 2021, and most recently a second neighborhood meeting on March 22, 2021. In addition to these above-referenced meetings that are part of the formal zoning process, the applicant has been engaged in discussions with the community – including and especially its closest neighbor at 1 Fitchburg – for the last year plus. Having the opportunity to initiate the redevelopment of the Brickbottom neighborhood with this Project is a task the applicant takes seriously and with much forethought.

Zoning

28 Fitchburg is located in a Commercial Zoning District, and the Commercial Industrial ("CI") zoning subdistrict. *See Section 6.3* of the Somerville Zoning Ordinance (the "Code"). As set forth in Section 6.3.1 of the Code, "[t]he Commercial Industry district is characterized by large Floor Plate buildings up to four (4) stories in height…the district is entirely commercial, with uses that are typically auto-oriented, commercial service, industrial, or office in nature." The intent of the CI district is "to maintain industrial and commercial activities that provide employment opportunities and business-to-business commerce." Code, 6.3.2. In the CI district, only Commercial Building types are allowed; this building type is "purpose built for occupation by commercial uses on all floors." Code, 6.3.7. The dimensional regulations set forth below in **Table 1** are applicable to all Commercial Buildings:

TABLE 1: DIMENSIONAL REGULATIONS – Commercial Buildings

Lot Dimensions	
A Lot Width (min)	30 ft

Lot Coverage	
Lot Coverage (max)	100%
Green Factor (min)	0.20

Building Setbacks	
A Primary Front Setback (min)	0 ft
B Secondary Front Setback (min)	0 ft
C Side Setback (min)	0 ft
Side Setback Abutting NR or LHD (min)	10 ft
D Rear Setback (min)	10 ft
Rear Setback Abutting NR or LHD (min)	15 ft

Parking Setbacks	
E Primary Front Setback (min)	10 ft
F Secondary Front Setback (min)	--
Surface Parking	10 ft
Structured Parking	10 ft

Main Mass	
A Width (max)	300 ft
Facade Build Out (min)	--
Primary Frontage	80%
Secondary Frontage	65%
B Floor plate	50,000 sf
C Ground Story Height (min)	14 ft
D Upper Story Height (min)	10 ft
E Number of Stories (max)	4 stories
F Building Height, Feet (max)	65 feet
Roof Type	Flat

Facade Composition	
A Ground Story Fenestration (min)	15%
B Upper Story Fenestration (min)	15%
Blank Wall (max)	50 ft

As referenced above, the Project is intended to be constructed to appear as two separate buildings from the frontage, and as such, will be articulated to comply with the zoning regulations set forth above.

The 28 Fitchburg building will show as a 214'-10" foot wide building fronting Fitchburg Street, with a floor plate of approximately 27,004 sf (approximately 105,472 square feet in total for the entire Project), four stories high, and 65 feet high as measured to the top of the flat roof. The Ground story height will be approximately 19 feet high, and each upper story will measure 15'-0", 16'-0" for 4th floor in floor to floor height. The building will be set back 13'-0" feet from its front property line (despite the fact that there is not any front setback required), 17 feet 8 inches from the rear property line (10 feet required), and 15 feet 3 inches from the south-east side line (no side setback required). In addition, the rooftop penthouse will be set back 42 feet (no setback required) and will be entirely screened (no screening required). 229 parking spaces will be located below the Project, with approximately 103 of those parking spaces located below the 28 Fitchburg building. Because the Project is not located in a Transit Area as defined by the Code and the Transit Area maps related thereto, there is a parking *minimum* for the Project of 1 parking space per 1,000 square feet (based on Research & Development/Laboratory as the primary uses intended for the buildings). There is no parking maximum. There will be 4 (2 loading and 2 trash) loading docks serving the Project as a whole (none required and no maximum), although all loading docks and the entrance/exit for the parking garage will be located on the 28 Fitchburg building. Despite appearing as a separate building from the exterior,

the Project will function as a single unit on the interior without any party wall or separation between 28 Chestnut and 28 Fitchburg.

The 28 Fitchburg building will comply with the additional design regulations set forth in Section 6.3 of the Code as shown on the Plan set included herewith, and as set forth in **Table 2** below:

Code Provision	Regulation	28 Fitchburg
Main Mass		
Width (max)	300 feet	214’-10”
Façade Build Out (min)	--	
- Primary Frontage	80%	94%
- Secondary Frontage	65%	77%
Floor Plate	50,000 sf	27,004 (ground floor)
Ground Story Height (ft, in)	14 feet	19’
Upper Story height (min)	10 feet	15 ft – 16 ft
Number of Stories (max)	4 stories	4 stories
Building Height (max)	65 feet	65 feet
Roof Type	Flat	Flat
Façade Composition		
Ground Story Fenestration (min)	15%	15%
Upper Story Fenestration (min)	15%	33%
Blank Wall (max)	50 feet	21’6”
Building Components		
Awning	Permitted	N/A
Entry Canopy	Permitted	
- Width (max)	> Doorway & Casing	20’-0”
- Depth (max)	3 feet	0’ encroaching; within property line (2’8” depth total)
- Clearance (min)	8 feet	9’9”
- Front Setback Encroachment (max)	100%	0%
Lobby Entrance	Permitted	
- Width (min/max)	15 ft/30ft	24’-0”
- Recessed Entrance Width (max)	15 feet	0

- Recessed Entrance Depth (max)	5 feet	0
Storefront	Permitted	
- Width (min/max)	15 ft/30ft	30’-0’
- Display Window Height (min)	8 feet	12’-8”
- Recessed Entrance Width (max)	15 feet	0
- Recessed Entrance Depth (max)	5 feet	0
Development Standards		
Number of curb cuts per front lot line (max)	2	1
Distance between curb cuts providing access to the same lot	150 feet	N/A (only 1 curb cut)

In the CI zoning subdistrict, the following uses are allowed by right:

- Research and Development
- Laboratory
- Manufacturing
- General Office
- Bar/Restaurant/Tavern
- Bakery/Café/Coffee Shop
- Consumer Goods (retail)
- Accessory Parking
- Commercial Parking

As set forth in more detail below, the Project includes the following uses:

- Below-grade: accessory and commercial parking
- Ground Floor: research & development, laboratory, manufacturing, bar/restaurant/tavern, bakery/café/coffee shop, consumer goods (retail)
- Upper Floors: research & development, laboratory, manufacturing, general office

Design Approach

A. The Neighborhood & the Industry

The Project is located in Brickbottom, a postindustrial neighborhood characterized with the patina of time. The site is located near the imminent East Somerville GLX Station, and is accessible to both Kendall Square and downtown Boston. Tenants will be just within a one half mile walking distance to an MBTA station enabling them to quickly reach anywhere within the Boston Metro area. Furthermore, other emerging neighborhoods like Cambridge Crossing, Boynton Yards and Union Square will also be within walking distance, making 28 Fitchburg part of Somerville’s emerging downtown and life science epicenter.

Brickbottom oozes with character, providing a rich tapestry for the many artists who have called the neighborhood home for more than 40 years. Cultivating connections to the neighborhood and its inhabitants is a priority for the Project. The 28 Fitchburg building is characterized by large transparent areas at its base, stimulating both visual and physical connections to the street.

Additionally, at its base, the Project is programed with a mix of amenity and retail functions intended to provide both an outlet from the workplace and options for the neighborhood residents from what is currently an amenity wasteland. Café, and meeting space are among the ground floor uses that will help the Project integrate into and activate the neighborhood.. In addition to the Project's rich collection of amenities, it will also provide approximately 229 parking spaces in a Commercial garage that is open to tenants, neighborhood residents and visitors alike.

B. Building Design

The Project's office and R&D space is designed for function and flexibility. Laid out on a 33-foot structural module, the 11-foot planning grid is perfect for lab bench planning. Additionally, the Project's 15-foot floor to floor height will accommodate a ten-foot ceiling height for lab functions and eleven feet for office. In combination with oversized windows, the lofty ceilings will provide the natural light and views prioritized by today's leading companies. In fact, 28 Fitchburg provides the highest degree of transparency allowed by code while still meeting stringent performance goals. This is achieved by using windows with a triple glazed configuration and high-performance coatings. The abundance of natural light will help to boost both productivity and employee wellness. Ultimately, the building is organized to accommodate a wide range of life since users who could occupy the entire building, or make spaces of their own.

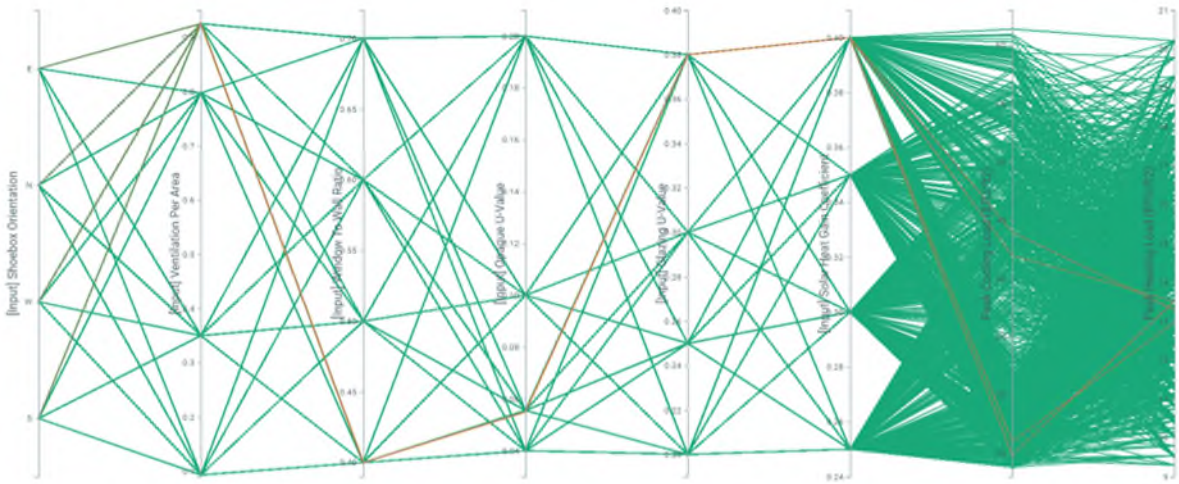
The importance of integrating 28 Fitchburg into the Brickbottom neighborhood cannot be over-stated, and is embodied in the building's form and materiality. Its massing is derived from its turn-of-the-century neighbors like 1 Fitchburg Street and 86 Joy Street. 28 Fitchburg will be constructed to 21st century standards, but in homage to Brickbottom, will be constructed from materials grounded in the neighborhood's heritage. Like the neighborhood's namesake, the bottom floor of 28 Fitchburg will be constructed of brick. It will use an oversized Norman brick made in New England and will incorporate textured panels to lend it human proportion and scale. The exterior's first floor will utilize a black stone at the bottom, also sourced in New England, and with the brick will create a frame revealing the building's thirty-three-foot structural rhythm. A high-performance glass and metal curtain wall infill the frame providing a transparent connection from the street to the activity within. The curtain wall is also used at the principle entry and northern façade to provide the interior with zones of greater daylight that will support collaborative spaces on the interior. The body of the building will be clad in zinc rain screen. Zinc was selected for several reasons, including its representation of the many steel galvanized buildings in the neighborhood, its durability (lasting up to 200 years) and its highly sustainable nature. Zinc uses a fraction of the energy it takes to mine and fabricate other metals and aligns with the building's goal to be LEED platinum. Finally, sustainable performance is further visible in sunshades used across the building's facades. These shades not only help mitigate solar glare and heat gain, but also add a touch of warmth to compliment the gray zinc. The shades are made of corten steel and provide a burnt orange rust color, thereby tying it both to the brick color used at the base of the building and to the rusted metal found throughout the Brickbottom neighborhood. Finally, the building is sensitive to impacting its neighbors, the Brickbottom Artists' building, in several ways. First, the building is placed 23' to the north of the property line to ensure there is adequate distance between the two buildings. Additionally, the building's mechanical penthouse was further set back more than 25' to ensure minimal visual impact. Second, the parking entry and loading dock are placed on Chestnut Street rather than Fitchburg Street to minimize vehicular activity for residents of the neighboring building. Third, the building's fourth floor is set back to the north by approximately 15' to ensure no shadows will be

cast on the residential building throughout the year and provide even greater distance between the two buildings at their roof lines. Fourth, a living green wall at the first level is the final design element featured to enhance the pedestrian experience at the street and further better the experience for the neighbors and neighborhood.

C. Sustainable Design

The LEED Platinum target along with City of Somerville requirements (e.g. stormwater) and the Massachusetts Stretch Energy Code (e.g. envelope criteria and energy efficiency) have established a robust compliance platform for the Project. This framework has provided a structure by which the project team compares the relative impact of design decisions.

In the earliest stages of concept design, parametric envelope analyses were performed to understand how passive envelope performance design strategies impact the active energy systems. The diagram below shows one of the outputs from this analysis.



In Schematic Design, various HVAC energy conservation measures were studied by an Energy Analysis specialist to quantify impact related to energy savings and greenhouse gas emissions to inform design decisions. The design team also includes a Life Cycle Assessment specialist who is performing analysis of the building's materials to measure the embodied carbon impacts of material specifications, and to provide resulting design recommendations to reduce the Project's carbon footprint.

The team also studied water balance scenarios to inform strategies related to potable water use and stormwater management. To maximize water-use cycles through the cooling tower, an evaluation of the water quality was completed for the design team's use. As a result, an additional filtration system is being studied to evaluate the reduction of HVAC make-up water. Low-flow fixtures are incorporated into the basis of design. This solution reduces potable water usage including domestic hot water, which could result in ancillary energy use savings.

Occupant health and wellbeing is considered holistically through metrics like daylight optimization and materials selection to minimize anterior health impacts from VOCs. Enhanced daylight analyses are ongoing to understand the availability of useful daylight throughout occupied hours and the potential for glare. Material selection will be heavily scrutinized to quantify and minimize the environmental, socio-economic, and interior health impacts of all material components.

In summary, the Project design process integrates both quantitative and qualitative sustainability and performance metrics to support informed design-making. Key metrics considered for the Project include carbon emissions, both operational and embodied, water consumption and human health and wellbeing.

D. Landscape Design

The Brickbottom neighborhood as it exists today is lacking in meaningful public realm space and clear delineated connections for pedestrians and cyclists. In conjunction with the neighboring companion building at 28 Fitchburg Street, the Project will establish a sustainable frontage along Fitchburg Street to the West and the GLX MBTA property to the East.

The existing Fitchburg Street will be milled and overlayed with a new roadway surface. An elevated and protected northbound bike lane will be established along Fitchburg Street as part of the mobility management plan for the Project. The project has established an eighteen (18) foot setback from the back of curb along Fitchburg Street (thirteen (13) foot setback from West property line).

Within this generous setback, the Project provides a varying width concrete clear zone sidewalk of six (6) to ten (10) feet along the building frontage. This sidewalk zone will meet all required ADA design standards. Between the sidewalk zone and curb, the Project has established a generous furnishing and planting zone. Permeable granite pavers will be laid around expansive bioretention planters with lush native plantings, large shade trees and understory evergreen trees. Water will flow from Fitchburg Street and the building façade into these bioretention planting areas for reduced stormwater runoff volume and increased site percolation. Bike racks, street lighting, and fixed bench seating matching the character of the streetscape and buildings will be dispersed within the furnishing zone as added public realm amenities. The furnishing zone terminates as one approaches the building lobby entry and the paving expands to create a grand entry into the building. A change of paving occurs at this entry moment creating a welcome mat of granite pavers, tying to the rich material culture of the Brickbottom neighborhood and the existing granite cobble paving of Fitchburg Street.

The Eastern landscape edge provides a planted foreground for the building as viewed from the GLX MBTA site and future Community Path. Low groundcover plantings and small multi-stem and single leader trees will be planted on a sloped landscape area leading down to a 6’ wide porous asphalt path that provides access to the buildings bike storage room and shower facilities.

E. Stormwater Management

Existing Conditions

The Project area and the adjacent streets, Chestnut Street and Fitchburg Street, are drained by existing 12-inch separated storm drains in Chestnut Street and Fitchburg Street. Fitchburg Street and approximately 190 feet of the southerly extent of Chestnut Street drains to the 74-inch brick drain/sewer under McGrath Highway to the west of Brickbottom. The second existing separated storm drain captures the remaining northern extents of the project on Chestnut Street, and drains north to Poplar Street, and is within the Poplar Street Pump Station drainage area.

Proposed Condition

The Project stormwater management system will comply with Somerville's Site Construction Permit Rules & Regulations in that:

- There will be no increase in runoff volume from the Project site
- Stormwater runoff from the Site to the public right of way will be reduced such that the 10-yr proposed peak flow is less than the existing 2-year peak flow
- No water from the ground or any other non-stormwater flow will be discharged to the public storm drain system or public wastewater system
- Project will provide retention and infiltration of 1 inch of rainfall over all impervious areas in the proposed condition
- Project will reduce total Phosphorus (TP) loads as required by the Charles River TMDL, i.e. a 65% reduction

To achieve the stormwater management performance described above the Project will include a number of low impact development and best management practices.

Retention and Infiltration

The roof runoff will be directed to a rainwater collection cistern located within the building under the ground floor. The 37,000-gallon cistern is sized to hold the 1-inch rainfall depth volume from the roof as well as the 90-th percentile rainfall depth over the entire Project Site to achieve the LEED Rainwater Management credit. A proprietary software system that automatically receives weather forecasts (rainfall predictions) will ensure that adequate storage volume is created in the cistern in advance of predicted rainfall events by discharging water from the cistern to the on-site infiltration system.

During rainfall events and once the water level reaches the 37,000-gallon storage level a submersible pump in the cistern will discharge water from the cistern to the on-site infiltration system at a rate less than the 2-yr existing conditions peak runoff. The 37,000-gallon storage volume is adequate to attenuate the 10-yr proposed condition peak runoff to less than the 2-yr existing condition peak runoff.

The on-site infiltration system is located under the sidewalk and parking spaces on the south side of the building and under the apron to the parking garage and the loading court. The infiltration system will utilize arched storage structures surrounded in crushed stone. An overflow from the on-site infiltration system will connect to the 12-inch storm drain in Chestnut Street.
During less frequent, more intense storms (greater than the 10-yr), a secondary outlet from the cistern will convey roof runoff directly to the storm drain in Fitchburg Street.

The water stored in the cistern will be available for irrigation. When irrigation demand is not present the predictive software system will maintain a minimum water level in the cistern by periodically discharging smaller volumes of water to the on-site infiltration system (volumes that will not cause overflow from the infiltration system to the storm drain in the street). This will provide infiltration of retained runoff to meet the phosphorus reduction and TSS removal requirements outside of the irrigation season.

Porous Asphalt Pavement Passageway

The area on the east side of the building consists of a 6-foot wide pedestrian way, a retaining wall and vegetated slope up to the level of the GLX right of way. The 6-foot wide pedestrian way will be paved in porous asphalt pavement with a storage volume in the underlying stone reservoir of at least 1 inch depth over the entire area between the building and the GLX right of way (top of vegetated slope). A series of area drains will drain the pedestrian passageway during rainfall events that exceed 1-inch. The area drains will be connected to the on-site infiltration system on the south side of the building (adjacent to Fitchburg Street).

Bioswales in Chestnut Street sidewalk

Four separate bioswales are proposed along the Chestnut Street frontage. The runoff from the sidewalk between the building and the bioswale will sheet flow directly into the bioswale. Narrow trench drains with grates will pass from the roadway curb line under the bike lane (at sidewalk elevation) and connect to the bioswale to capture runoff from Chestnut Street. Street runoff that cannot be captured by the trench drains and directed to the bioswales will be collected in new catch basins in Chestnut Street. Where the subgrade soils under the bioswales are suitable for infiltration to drain the bioswale within the regulated time, the bioswales will infiltrate to recharge groundwater. Where soils are not suitable for infiltration, the bioswale will be underdrained and connected to the storm drain in Chestnut Street.

See Design Plans for 28 Fitchburg Submitted Herewith

28 Fitchburg
28 Chestnut
Neighborhood Meeting #1 Report
January 11, 2021

Summary of Meeting #1: January 11, 2021

28 Fitchburg Street

Preliminary presentation of the property with respect to property overlay, zoning requirements, architectural approach, façade, parking, vision and development for the area. Focusing on "greening" of the environment, healthier lifestyle, adding to character and identity of the area.

Questions & Answers

Q: When might you start demolition on 28 Fitchburg?

A: Early mobilization will begin by next week. Demolition to begin in earnest in the beginning of February.

Q: What is the height of the building? And what is it compared to our building [1 Fitchburg]?

A: Top of the 3rd floor will be about 45 feet, and then another 15 feet for the 4th floor after the additional step back. Your building is about 60-62 feet. The leading edge of the southern façade, before we step back is at about 50 feet. The step back will take us to about 65.

Q: So the building will be taller than the brickbottom artist building?

A: The step back portion will be taller slightly taller. I will need to confirm. The zoning allows for 65 feet all around, but we have decided to step it back at southern end to give a little more relief.

Q: Expected timeline (muffled)

A: Intent is to start demolition next month (February). We expect that this community engagement and permitting process will take us through the Summer and then goal is to begin construction towards later in the year after once Site Plan review process is completed.

Q: 2 questions:

1 – We currently have a couple of long-standing parking spots parallel/adjacent to Fitchburg lot. Where are those spots in relation to your plan?

2 – Your plan is to have loading dock on our end of our street. Where is that loading dock entrance?

A: [Surface] Parking that is shown is intended to be used by Brickbottom residents. That was obviously one of the more important things for us to preserve parking and potentially try to provide some additional parking. This is a private way, so there is an opportunity to work with residents on that. We have turned the loading dock onto Chestnut Street because of residents'

concerns. The first garage entry is entry to below grade parking. Then the next would be doors that would be for the service/at grade entrance.

Q: The podium level of the building facing the private way, is that envisioned to be retail with doors, etc?

A: No, that would all be solid and landscaped.

Q: How many parking spaces underground and would those be for both buildings or only 28 Fitchburg

A: Approx. 200 parking below grade, working on final numbers now – under both buildings, service both, public parking.

Q: I believe any parking that you put under building cannot be amenity parking, meaning it can't be for residents only. Is it 90-95% have to be available as a "for pay" garage?

A: I don't know the percentage, but the intent is a public garage and make it available to others to pay. Zoning permits accessory parking and commercial. It will all be available "for rent" and is allowable. You can park overnight, etc.

Q: Can you show it on the street in 3d what it will look like?

A: (Question answered showing 3d model slides). Intent is to create a building that fits into the neighborhood material-wise, will all be in zoning conformance, ground floors fronting Chestnut Street there will be open, outdoor space. Moving towards site plan approval process where we will get into more specifics on architectural level.

Q: From the pic looks like huge cement? can you show it with facade details please?

A: Absolutely! Neighborhood Meeting number 1 is at the conceptual level, and as we move forward with this planning process, our next step is to appear before the Urban Design Commission to further develop the design, and after that we will come back to you to share many more details.

Q: Will parking be more or less expensive than private?

A: Intent is "Market Rate" and I believe there are some examples we can get from the city and working together to make sure the pricing is reasonable and market throughout the city.

Q: Does public mean parking is available 24/7?

A: Whatever entity decides to manage this garage will decide for themselves re: daily passes, overnight commuter passes, reverse commuter spaces, etc. Managed asset available to everyone and the Planning and Zoning departments will oversee to ensure market rate is maintained.

Q: You said the parking would be connected between the two buildings. Is this the only entrance?

A: Yes, just the one parking entrance along Chestnut. The parking will be connected underground.

Q: This goes more to project management – I'm situated directly across from the lot and on the top floor so there is a significant impact, I'm also a sound engineer and artist, the GLX has prevented me from working at times, some of that is something we can't avoid. Some of it has been terrible communication at times, this is likely to get worse. If there is not good and timely communication and noise mitigation, this is going to be a nightmare. I'm one person and you're a large project, the whole thing makes me nervous. This is obviously a personal issue but I want to make sure there is a plan in place to make sure communication plan is in place.

A: We certainly do our best to communicate with Juan [1 Fitchburg building manager], and there were some scheduling issues around the holidays and we probably did not get the notification out as early as we would have liked. We will work to do better going forward.

Q: My question is rooted in PTSD [from the GLX], we are 155 households who have children trying to get to school, etc, we have nowhere to go. We have been completely ignored by GLX, and while I appreciate your answer, I also work in recording. What do you have in place to let us know your schedule so we can work around your schedule and what we can do when mistakes are made and things happening that we are not apprised of? I have tried to get officials to respond to our community and the response we have gotten is "crickets". What plans do you have in place to alert us to your plans that will affect our 155 households?

A: Once our contractor is on board, we will set up a series of regular communication meetings, I'm seeing some suggestions about text alerts on the chat. We are happy to communicate proactively. This is a process that we will work out, hopefully together, as we get closer to construction. We hope to work with you all to get through this period of disruption during construction. You will have our contact information and we believe in open communication in order to work through these issues together.

Q: Go on record, I do oppose having the parking for both buildings, the only entrance being closest to Brickbottom, this will give us noise issues, it's going to be really hard to stop traffic from using Fitchburg street as an escape route, cars are going to think they are going to be able to jump traffic and go up Fitchburg street, toward Linwood and the parking entrance will encourage this behavior.

A: We shared earlier with you, a design where the parking entrance was on Fitchburg; by doing this we could preserve Chestnut and put service stuff in the background. Unfortunately, parking and loading is an element of the building's program which we need. We originally had it on Fitchburg and added more parking for the residents. We realize there is never a good place for parking and loading/servicing, but it is an element that is required. We will certainly work with you if there are pedestrian safety concerns, but we feel of all places, this is the best place for it to go.

Q: Is there a way to angle the sidewalk so that cars cannot take a left-hand turn? Taking the choice away from drivers to have that option.

A: How we mandate that or control it is something we need to look into further. Suggestion has also been to move the crosswalk to minimize pedestrian concerns. Let's work together on this as we move forward.

Q: Is it legally required to have parking exit alarms?

A: There is no zoning requirement, but it could be a condition of the site plan approval. If you are specifically concerned with the audio alert, we can work to use some other type of alert. If we put the pedestrian crosswalk towards the southwest corner and moved pedestrian system there, we can remove the need for the alert/"beep beep beep", we could put a flashing light, etc. We can come up with a non-audible way to alert that there is a car exiting the lot.

*****

28 Chestnut Street

Brief presentation on building and site design for the 28 Chestnut building.

<u>Q&A</u>

Q: Will street parking be metered or residential?

A: Not sure, but assumption is public parking. This is the decision of the parking director and the parking commission, depends if spots are on public way or private property. None of this has been determined.

Q: LEED and wellness questions?

A: Approach will be LEED platinum. Looking at landscaping, green spaces. Encouraging stair use instead of elevators. This is just starting but what we are hoping is that when people come to the building and area, they can feel the wellness approach. We are going to take all available roof area to use as green roof. We're excited by the commitment to be LEED Platinum and excited to be part of making Somerville one of the greenest cities in the world.

28 Fitchburg
28 Chestnut
Neighborhood Meeting #1 Report
January 11, 2021

Q: Estimate number of people working in the building, expecting single large tenant or multiple small tenants?

A: Flexibility to have multiple tenants, but having one large tenant, like a headquarters, would also be great. Estimate between 500-600 people depending on types of life sciences company, percentage of offices vs. labs, etc.

Q: During construction, what kind of dirt and dust mitigation will be used?

A: Lots of techniques can be used. In the planning there will be a construction management plan that will address traffic, dust, hours of construction and deliveries, etc. and we will share that with you all and work with you all with developing when that plan takes shape.

Q: Connection to bike path on Poplar side or crossover to innerbelt?

A: Hope is both, but we are certainly going to work to gain access to community path. The more access the better. Conversations around how to work with GLX for a crossing, it's just a matter of how to move that forward.

Q: Are you considering a protected bike lane in front, not protected parking?

A: We have proposed a dedicated bike lane. We think parallel parking for convenience at building is also important. Is the question about removing parking altogether? The jurisdiction to changes to public rights of way, do no lie with planning board or developer, it lies with city departments. There is an extensive process on what to do with public right of way. [Provided a link to page to participate in planning exercise for neighborhood feedback]

Q: I'm concerned why the city has issued a separate demolition permit as opposed to a demolition/construction permit together. Concerned demolition will occur and then financing will fall through and they will be left with a demolished building. Anything can go south and that is a fear of mine. [Question is for the City]

A: Our demolition permits are a process instigated by the historic preservation ordinance and that is the way we do this is Somerville. That is the extent as to what I know. You can follow up with Sara White if you have more questions. The construction is handled by ISD, so it's a totally separate department as well. Building permits are just grants that expire after 2 years. Even if demo permit and building permit together, the risk exposure is the same.

Q: Is the footprint of the building set in stone? Can new building be moved away from 1 Fitchburg? Also, why put entrance of parking and loading dock when buildings are together? Why can't those two be separated.

28 Fitchburg
28 Chestnut
Neighborhood Meeting #1 Report
January 11, 2021

A: We have already pulled 28 Fitchburg back to allow for the street parking we are offering to 1 Fitchburg. There is another setback line at 28 Chestnut that we are working against. We are working within the 2 lots. The footprint is pretty set. The parking can be on either Fitchburg or Chestnut. We have it on Chestnut because the residents do not want it on Fitchburg, we did so to respect Brickbottom residents. We then moved the loading dock/parking to where it is in order to preserve Chestnut and to preserve the neighborhood characteristics that the residents wanted.

Q: What goes on with the Fitchburg private way affects our building. It looks like you're providing 12 parking spaces on west side. Those 12 parking spots – we are hoping you will grant us those spaces on a permanent basis so that our residents are able to continue to use the private way. What are you doing with that open area on the back of the building with landscaping? On construction of the building, the fences you will need to put up to protect construction site, can we assume those fences will go up on your lot lines and will not need to go on the street?

A: The 12 parking spots – the idea is yes, those would be granted to the residents, but that is not set in stone. We are trying to mitigate as much as we can the impact on residents while also making the building functional and making it a community asset. We will be putting together a construction management plan and we will have to work together on how to best share that space.

Q: Would the developers support closing vehicular (but not pedestrian) access to Fitchburg St. from Chestnut street using Jersey barriers or similar, assuming that the City does not prohibit such? Since Fitchburg St. is private this might be allowable.

A: That is more of a city question that they would need to answer and is a broader discussion for us in the future. We are 100% looking at every detail of the streets on how to improve them for everyone who uses them.

Q: Will there be no further discussion or solutions to the planning of the building/parking/loading dock? Also have an issue with the materials being proposed for architecture.

A: We are at the beginning of this process. There will be a formal design review, site plan approval, a follow up neighborhood meeting in the Spring. We will be having future conversations about these things. We strive to be clear. We have looked at other options and have heard comments. There are things going on inside of the building that require the solution we have proposed. We will resurrect other options so residents can see what those options were and why we do not think they will work. But we have but we believe this is the best solution to have a building that works with additional green space to the north of the building.

Q: Construction, poor communication and poor planning – there are really important effects these things have on us, especially financially. Is there any kind of compensation for us, or fines from the City? We get weak apologies. How can we turn this around so we can have

accountability for when these “mistakes” happen? What are the consequences for the developers?

A: We understand and empathize with the disruptions. As a development team, we will take this feedback and come back with a fool-proof communication plan and to mitigate as much of this as we can.

Q: If there is no alternative design to loading dock and parking entrance – could you commit to the design to be angled in a way that could force traffic away from Brickbottom? When talking about accountability is a commitment from developers that we have a direct line to you for complaints and possibly from the City to fine the developers when they do not follow rules/notify us about changes.

A: We will have a very capable, experienced construction team on site, full time and yes we commit to answering that phone when you call and will communicate in whatever way you prefer. You will see a difference between this management and what is going on with the Green Line tracks. We are not absentee developers. We are invested in the neighborhood; we have offices in this neighborhood. I believe we have been very responsive, and people have our contact info and we will continue to be responsive.

Q: Heard a lot about other commercial buildings and need for parking. Is the representation that minimum legal requirement, if that was different, you would you put less in the building if that was an option?

A: No, we are comfortable with the amount of spaces we have given what we think the market requires and the minimum happens to coincide.

Q: What is the ratio?

A: I believe 1 per 1,000

Q: Expand on art from Brickbottom artists and café options?

A: Pursuing the possibility of gallery spaces, we’d love to work with artists on how to get installations involved and other projects. Continuing to try to use amenities that aren’t exactly commercial, we want more local pursuits. Hope is ground floor units are active and engaging. More about contributing to the people that live here. We are excited about what we are putting forth and we have engaged the community on this project.

28 Fitchburg, Somerville
Design Review Report

UDC Recommendation Response

Summary Response:
The 28 Fitchburg Project is pleased to accept the landscape public realm recommendations from the Urban Design Commission as set forth in more detail below.

The streetscape design along Chestnut street will be enhanced by the use of permeable granite cobble paving that references back to the materials used on old Fitchburg Street. The planted bioretention areas within the furnishing/planting zone provide ample opportunity for art moments; embracing the local art culture of the Brickbottom neighborhood. Fixed benches, integrated with the bioretention planters, area provided along the sidewalk clear zone on Chestnut Street. The streetscape plantings will be a diverse mix of native species including two (2) street tree types (Shade tree and evergreen understory) planted within the biorientation planting areas. Surrounding these trees will be a mix of water and salt tolerant species that will help with the reduction of stormwater runoff. The southern landscape along Fitchburg street will introduce a multi-stem tree for added planting diversity. A green Wall on the southern façade increases plant use types. The eastern landscape has been enhanced with a planted sloped area that includes groundcover and tree plantings.

UDC Recommendations & Responses:

• The ground story design (brick, storefront frames, canopies, etc.) should not be the same as on the neighboring building at 28 Chestnut.

Project Response: The brick on 28 Chestnut is a different size, color and coursing from what is on 28 Fitchburg. Additionally, it is tied to a 11' module where 28 Chestnut is 16'-6"

• Penthouse screening should not become transparent if lit internally

Project Response: The perforated mesh at the penthouse will be less than 10% open which will more than adequately screen the interior even if lit internally which is not currently planned.

• The streetscape design should include a cobble or other material reference to the paving cobbles of old Fitchburg Street.

Project Response: Granite Cobbles will be included in the furnishing zone along Chestnut Street

• The streetscape should include public art such as sculptures, unique inlay materials, artistic furnishings, etc. as a reference to the local artists of Brickbottom

Project Response: The Project proponent welcomes the opportunity to integrate public art – especially from local artists – within the Project. Along the streetscape, the bioretention and furnishing zone areas provide ample opportunity for public art.

• The streetscape should include ample seating options, included along the building façade (built in benches, seating ledges, etc.).

Project Response: Fixed benches are provided along the sidewalk clear zone.

• The streetscape plantings should include a diversity of plant species.

Project Response: A diverse palette of native plantings are provided along Chestnut Street. Two (2) street tree species types are provided. Salt and water tolerant understory bioretention plantings are provided.

• The pedestrian walkway behind the building needs further attention as it and the rear of the building are visible from the community path, an opportunity for art, and also a potential security and safety concern.

Project Response: The project has adapted to provide an increase planted landscape buffer along the eastern edge of the site. Low groundcover plantings and trees will provide a green foreground as visible from the community path. Lighting will be provided along this walkway, and attention will be paid to other safety enhancements as and if needed.

• The Commission raised concerns about location of the vehicular drop off spaces in front of the building and the conflict that may exist between cyclists and passenger pick up and drop off.

Project Response: Parallel parking spaces will occur along Chestnut street with a separated curb from the elevated bike lane. This separated curb and elevation change is designed to limit conflicts with visitors and cyclists.

• The Commission raised concerns about the combined width of the service and parking entrance doors and corresponding curb cuts, but recognized the proposal is based on addressing other neighborhood concerns.

Project Response: The loading dock has been reduced in width by one truck narrowing the overall opening by approximately 14’-0”. Additionally there is a division planned between the parking entry and loading dock that will be planted and will include a tree to break down the expanse of the loading and parking area. Finally, the doors will have a special finish better integrating them into the building elevation; different and improved from standard loading dock doors.

28 Fitchburg
28 Chestnut
Neighborhood Meeting #2 Report
March 22, 2021

Neighborhood Meeting #2: March 22, 2021

Provided update of design in response to feedback from Neighborhood Meeting #1. Update on how project has progressed since last meeting. Façade material and aesthetics updates and landscaping plan.

28 Fitchburg

Q&A

Q: Mentioned access points into building on Fitchburg Street – will this block our [potential] parking easement?

A: Walking zone in between building and parking that allows for entry to certain servicing zones (transformer, etc); no.

Q: Elevation of setback on Fitchburg, 3rd floor – seems to be higher than originally planned.

A: The height has always been consistent since last meeting.

Q: Concerned about 4th floor overlap and preventing from getting light into Brickbottom building, will this cause an issue?

A: Should not be an issue. [Shown on slides that shadow has been mitigated]

Q: Why did you choose the gray brick? Would rather the warmer red brick that is reminiscent of Boston.

A: Chose slightly cooler brick on lower level of Fitchburg with warmer materials and patina of the zinc above. But we will take into consideration. We were encouraged to have 2 different materials for each portion of the building. Have not made a final decision on colors.

Q: Can you clarify – are the surface parking spaces on Fitchburg for general use or are those dedicated for residents of Brickbottom?

A: From development team's perspective, those are for the exclusive use of Brickbottom residents but it would be up to the residents to decide how they are used.

Q: Penthouse entirely mechanicals, if so what are the plans for noise mitigation?

A: Yes, penthouse is all mechanical. All enclosed, the louder equipment is on the Chestnut building. Intentionally putting equipment as far away from Brickbottom side. No zoning

requirement to enclose the equipment but team is committed to mitigating the noise and keeping the noise levels down.

Q: Any further conversation about garage access location?

A: Studied where the best location of this access should be, how it functions internally and any future development. We have invested a lot in trying to create a quiet southern end, making sure there will be limited traffic, keeping it mostly Monday through Friday activity, investing in nice doors when loading garage is in use. Trying to keep it as quiet and pleasant as possible but no, there are no plans to move the entrance to the garage.

****

28 Chestnut

<u>Q&A</u>

Q: Is there any bicycle parking in garage for tenants of buildings?

A: Yes, there are multiple bicycle parking spots in the building.

Q: Is alley accessible to neighborhood? (Space behind building)

A: Yes, it's a pedestrian walk through.

Q: Where do cars park for retail/stores/restaurants? Is underground parking garage public?

A: Yes, underground parking is for building and residents.

Q: On Kiley side of street – looks like there is a bike path. Will there be lost parking?

A: This is still TBD. The City Planning Department is in the middle of planning effort for Brickbottom. There will be a series of public hearings/comments. Intention is to have a bike path but this has not been finalized.

Q: How long does it take to get to building permit phase?

A: Really depends on planning board and how long they take to review and get a report generated. State gives 65 days from design review application submittal but try to get that done more quickly. Then ISD gets involved in permitting, getting construction management plans and that could take up to 6 months. The demolition permit has already been issued. Demolition should be starting week of March 22.

Q: Haven't seen anything about what measures are being taken to prevent dust/debris during demolition being blown toward residents.

A: Demolition is in controlled environment using hoses to ensure dust and debris are not blown around.

Q: We have seen on the GLX side, the efforts are minimal. Isn't there something more consistent and useful?

A: Cannot comment on what GLX is doing, but if you have other concerns, we are happy to communicate with our contractor to ensure there are no issues going forward.

Q: Can you talk about rodent control measures for demolition? Is there someone we can contact if we see an uptick in rodents?

A: Rodent control is part of the plan that was submitted with demolition application. There will be a plan put into place. The website that was set up to send out email/text alerts, there are ways for you to send comments through that site. We are also in constant communication with Juan and on-site staff.

[Trustees of the Brickbottom Condominium indicate a vote of support from the Board for the Projects as presented]

*****

Changes to the Project in response to Neighborhood?

The Project proponent has been engaged with the Brickbottom neighborhood and its immediate neighbors at 1 Fitchburg for the last year plus. Over the course of many communications and meetings, the proponent has made the following changes to the Project and offered the following mitigation to the neighborhood:

1. The proponent originally planned to locate the garage entrance and loading docks on the Fitchburg side of the 28 Fitchburg building. This plan would respect Chestnut street and the pedestrian and bicycle activation opportunities presented there, and would, appropriately, locate these sort of back of house program elements out of the most immediate public way and space. The residents at 1 Fitchburg object to this location for two reasons: first, they indicated that they did not want to directly face parking/loading – the noise and activity; second, they indicated that they had been using (without legal right) the side of Fitchburg street adjacent to the 28 Fitchburg building for many years for street parking to serve the residents of that building. As a result of these concerns, the project proponent was able to redesign the building to re-locate the parking and loading to the Chestnut Street frontage of the building, near the corner of Chestnut and Fitchburg. In addition, the project proponent has agreed to provide the residents of the 1 Fitchburg

with a formal dedication of 12 surface parking spaces on Fitchburg Street alongside the 28 Fitchburg, entirely on property owned and controlled by the project proponent (so long as this project is ultimately approved).

2. The project proponent has worked hard – at the urging of the neighborhood – to activate the public realm surrounding this project in every direction. Through the course of the last year and the two formal public meetings, as well as through the review process with the urban design commission, the project proponent has developed a greatly improved sidewalk/bike lane right of way along the Chestnut Street frontage of the two buildings, a landscaped and well lit passageway behind the building, a green wall and pedestrian path along Fitchburg Street alongside the parking spaces for 1 Fitchburg, and the opportunity for a future green space along 26 Chestnut.

3. Although there are few zoning dimensional requirements applicable to the project, the proponent has designed a building that goes above and beyond simple zoning. This includes the provision of a penthouse setback where none is required, and penthouse/mechanical screening where none is required. The project is also being pulled back from the Chestnut street frontage more than the zoning requirement in order to better improve the public realm.

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28 Fitchburg & 28 Chestnut St, Somerville

LEEDv4 CS Narrative & Checklist

0044899

20 April 2021

Revision 01

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Revision	Description	Issued by	Date	Checked
00	LEEDv4 CS Narrative & Checklist	KB	03/26/21	KB/JJ
01	Revisions based on OSE Comments	KB	04/20/21	JJ

https://burohappold.sharepoint.com/sites/044899/02_Documents/04_Reports/210326 Somerville OSE Submission/2nd Submission/210419 28 Chestnut LEED Narrative.docx

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Glossary

Term	Definition
ANSI	American National Standards Institute
ASE	Annual Sunlight Exposure
BAS	Building Automation System
BECx	Building Envelope Commissioning
BIFMA	Business and Institutional Furniture Manufacturer's Association
BOD	Basis of Design
BOH	Back of House
BPDO	Building Product Disclosure and Optimization
BUG	Backlight, Uplight, Glare
CD	Construction Documents
CFC	Chlorofluoro Carbon
CS	LEED Core and Shell
CWDMP	Construction Waste and Demolition Management Plan
Cx	Commissioning
CxA	Commissioning Agent
DD	Design Development
EA	LEED Energy and Atmosphere
EPA	Environmental Protection Agency
EPD	Environmental Product Declaration
EQ	LEED Indoor Environmental Quality
EV	Electric Vehicle
FSC	Forest Stewardship Council
FTE	Full-Time Equivalent
GBCI	Green Building Certification, Inc.
GLX	Green Line Extension
GPF	Gallons per Flush
GPM	Gallons per Minute
GSF	Gross Square Feet
GWP	Global Warming Potential
HVAC	Heating Ventilation and Air Conditioning
IAQ	Indoor Environmental Quality
O+M	Operation and Maintenance
IN	LEED Innovation
IP	LEED Integrative Process
LCA	Life Cycle Assessment

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LEED	Leadership in Energy and Environmental Design
MERV	Minimum Efficiency Reporting Value
LT	LEED Location and Transportation
LT	Long-Term (related to bicycle storage)
LZ3	Lighting Zone 3
MR	LEED Materials and Resources
OPR	Owner's Project Requirements
OSE	City of Somerville's Office of Sustainability and Environment
PHD	Product Health Declaration
QOZ	Qualified Opportunity Zone
REC	Renewable Energy Credit
RP	LEED Regional Priority
SD	Schematic Design
sDA	Spatial Daylight Autonomy
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SS	LEED Sustainable Sites
ST	Short Term
SZO	Somerville Zoning Ordinance
USGBC	United States Green Building Council
VOC	Volatile Organic Compounds
WE	LEED Water Efficiency

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1 Introduction

28 Chestnut & 28 Fitchburg are designed to appear as two buildings from the exterior, but function as a single building from the interior. The buildings will have separate street addresses, but are described herein, collectively, as "Project" or the "Building". The proposed building is a speculative office and lab of approximately 200,000 gross square feet, intending to support life science lab tenants in four floors of office/lab and support spaces. A below-grade parking structure supports two levels of garage space, at approximately 200 parking spaces, and a mechanical penthouse supports the building systems.

Figure 1—1: Street Rendering

Figure 1—2: Project Site Plan

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1.1 Somerville Sustainability Overview

The City of Somerville is a recognized leader in the drive for the development of more sustainable, energy efficient, resilient, and healthy new construction projects. Through the development of the City's Office of Sustainability and Environment (OSE) as well as the "SustainaVille" initiative, Somerville has developed minimum sustainability goals and standards that result in buildings that incorporate the most advanced energy reducing technologies, resilient design strategies, and interior design and healthy features that promote productive workspaces and occupant comfort, health, and wellbeing.

The City of Somerville has enacted new Sustainable Development Standards within the Zoning Ordinance of the City of Somerville (SZO) – Effective December 12, 2019. Per Section 9.a.i of the SZO, all new construction laboratory buildings must be LEED Platinum certifiable. Therefore, the assumed basis of design for the project includes achieving LEEDv4 Platinum for BD+C: Core + Shell.

1.2 LEED Overview

Leadership in Energy and Environmental Design (LEED) is a cohort of rating systems developed by the U.S. Green Building Council (USGBC) for the design, construction and operation of green buildings and neighborhoods. LEED provides building owners and operators with a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. Within each rating system, projects can achieve one of four certification levels: certified, silver, gold, and platinum.

LEED for Core+Shell (LEED CS) is the LEED rating system being utilized for the project. The CS rating system is well aligned with new building's speculative office and laboratory program. In this rating system there are 110 possible points distributed across six major credit categories: Location & Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, as well as Innovation and Regional Priority. The Narrative section of this report describes the intent of each of these sections as well as the credits included in the project strategy.

Based on the City of Somerville requirements described above, the project is required to achieve LEED Platinum (80 of 110 points). The checklist strategy in support of this requirement is in the following section.

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2 LEEDv4 Core+Shell Checklist

The current LEED checklist illustrates the project's path to LEED Platinum (80+ points), through a combination of the credits in the 'Yes' column. The target is a total of 84 points to include a sufficient buffer for the unknowns of the certification process. The other credits indicated in the 'Maybe' column will continue to be studied for feasibility as applicable.

Yes	Maybe	No	v4.1				
1	0	0	x	**Integrative Process**		1 Points	Responsible
1	0	0		IPc1	**Integrative Process**	1	BH

Yes	Maybe	No	v4.1				
19	0	1	x	**Location & Transportation**		20 Points	Responsible
N				LTc1	**LEED for Neighborhood Development Location**	20	Team
2	0	0		LTc2	**Sensitive Land Protection**	2	Civil
2	0	1		LTc3	**High Priority Site** - Qualified Opportunity Zone	3	Owner; Env. Engineer
6	0	0		LTc4	**Surrounding Diversity and Diverse Uses**	6	LEED Admin
6	0	0	x	LTc5	**Access to Quality Transit** - Assumes future GLX < .5 mile walk distance	6	LEED Admin
1	0	0	x	LTc6	**Bicycle Facilities** - ST storage for 2.5% peak visitors; LT storage for 5% full-time occ.	1	Arch/LA
1	0	0	x	LTc7	**Reduced Parking Footprint** - Provide no parking, or 30% red. From PCC rec. (~650 cap	1	Arch/Civil
1	0	0	x	LTc8	**Green Vehicles** - 2% EV Charging Stations or 6% EV Charging Infrastructure	1	Arch/Civil

Yes	Maybe	No	v4.1				
9	2	0	x	**Sustainable Sites**		11 Points	Responsible
Y				SSpr1	**Construction Activity Pollution Prevention**	Required	Civil/CM
1	0	0		SSc1	**Site Assessment**	1	Arch/Civil/CM
1	1	0		SSc2	**Site Development-Protect or Restore Habitat**	2	LA
0	1	0		SSc3	**Open Space**	1	LA
3		0	x	SSc4	**Rainwater Management**	3	Civil
2	0	0		SSc5	**Heat Island Reduction**	2	Arch/LA
1	0	0		SSc6	**Light Pollution Reduction**	1	MEP/LA
1	0	0		SSc7	**Tenant Design and Construction Guidelines**	1	Owner

Yes	Maybe	No	v4.1				
7	4	0	x	**Water Efficiency**		11 Points	Responsible
Y				WEpr1	**Outdoor Water Use Reduction**	Required	LA
Y				WEpr2	**Indoor Water Use Reduction** - (20%)	Required	MEP
Y				WEpr3	**Building Level Water Metering**	Required	Owner/MEP
1	1	0		WEc1	**Outdoor Water Use Reduction** - No Irrigation	2	LA
3	3	0		WEc2	**Indoor Water Use Reduction** - (50%)	6	MEP
2	0	0	x	WEc3	**Cooling Tower Water Use**	3	MEP
1	0	0		WEc4	**Water Metering**	1	MEP

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Yes	Maybe	No	v4.1				
23	10	0	x	**Energy & Atmosphere**		33 Points	Responsible
Y				EApr1	**Fundamental Commissioning and Verification**	Required	CxA
Y				EApr2	**Minimum Energy Performance** - (2%)	Required	Team/Modeler
Y				EApr3	**Building Level Energy Metering**	Required	MEP
Y				EApr4	**Fundamental Refrigerant Management**	Required	MEP
6	0	0		EAc1	**Enhanced Commissioning**	6	CxA
14	4	0		EAc2	**Optimize Energy Performance** - (32% for 14 points; 47% for 18 points)	18	Team/Modeler
0	1	0		EAc3	**Advanced Energy Metering**	1	MEP
0	2	0		EAc4	**Demand Response**	2	Owner/MEP
0	3	0		EAc5	**Renewable Energy Production** - (1% for 1pt; 3% for 2pts; 5% for 3 pts)	3	Owner
1	0	0		EAc6	**Enhanced Refrigerant Management**	1	MEP
2		0		EAc7	**Green Power and Carbon Offsets** - (100% over 5 years for 2pts)	2	Owner

Yes	Maybe	No	v4.1				
8	3	3	x	**Materials & Resources**		14 Points	Responsible
Y				MRp1	**Storage & Collection of Recyclables**	Required	Owner/Arch
Y				MRp2	**Construction and Waste Management Planning**	Required	CM
3		3		MRc1	**Building Life-cycle Impact Reduction**	6	Arch
1	1	0	x	MRc2	**Building Product Disclosure and Optimization - EPDs**	2	Arch/CM
1	1	0	x	MRc3	**Building Product Disclosure and Optimization - Sourcing of Raw Materials**	2	Arch/CM
1	1	0	x	MRc4	**Building Product Disclosure and Optimization - Material Ingredients**	2	Arch/CM
2	0	0		MRc5	**Construction and Demolition Waste Management**	2	CM

Yes	Maybe	No	v4.1				
7	3	0	x	**Indoor Environmental Quality**		10 Points	Responsible
Y				EQpr1	**Minimum IAQ Performance**	Required	MEP
Y			x	EQpr2	**Environmental Tobacco Smoke (ETS) Control**	Required	Owner
2	0	0		EQc1	**Enhanced Indoor Air Quality Strategies**	2	Arch/MEP
2	1	0	x	EQc2	**Low-Emitting Materials**	3	Arch/CM
1	0	0		EQc3	**Construction IAQ Management Plan**	1	CM
2	1	0		EQc4	**Daylight**	3	Arch
0	1	0		EQc5	**Quality Views**	1	Arch

Yes	Maybe	No	v4.1				
6	0	0	x	**Innovation & Design Process**		6 Points	Responsible
5	0	0		INc1	**Innovation in Design (TBD)**	5	Team
1	0	0		INc2	**LEED Accredited Professional**	1	Team

Yes	Maybe	No	v4.1				
4	0	0	x	**Regional Priority** (Zip Code 02143)		4 Points	Responsible
1	0	0		RPc1	**EAc2 Optimize Energy Performance (8pts)**	1	-
0	0	x		RPc2	**EAc5 Renewable Energy Production (2pts)**	1	-
1		0		RPc3	**SSc4 Rainwater Management (2pts)**	1	-
0	x	0		RPc4	**WEc4 Indoor Water Use reduction (4pts)**	1	-
1	0	0		RPcX	**LTc3 High Priority Site (2pts)**	1	-
1		0		RPcX	**MRc1 Building Life-Cycle Impact Reduction (2pts)**	1	-

Yes	Maybe	No	v4.1			Certification	Platinum
84	22	4		**Project Totals** (pre-certification estimates)		110 Points	

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points

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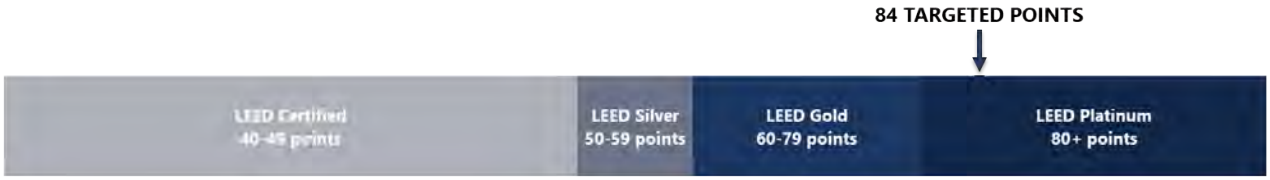
3 LEEDv4 Core+Shell Narrative



The confirmed strategy for the project achieves 84 points, as shown above in the checklist and described in the following sections of this narrative. LEED v4.1 has recently been released as an update to many of the requirements for the LEED v4 credit equivalent credit. Where deemed feasible, the v4.1 credits have been substituted for the v4 credit. These are denoted for each credit.

3.1 Integrative Process (IP)

This category rewards projects for considering sustainability as a forethought throughout the design process.

IP Credit Integrative Process 1/1 point

Intent: This credit encourages early analysis of the interrelationships among systems to develop high-performance, cost-effective outcomes for the project.

Compliance: The project team has been meeting regularly as early as concept phase. Early phase analysis has informed the design via the OPR and the BOD. Studies considered in Concept ranged from envelope sensitivity studies to the analysis of fixture flush and flow rates.

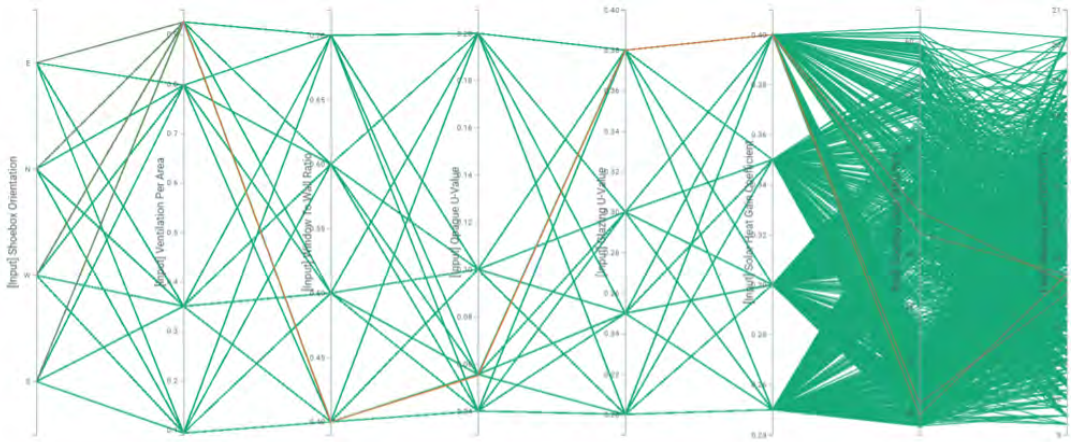


Figure 3—1: Early Concept Envelope Sensitivity Studies

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3.2 Location & Transportation (LT)

This category rewards thoughtful decisions about building location, with credits that encourage compact development, alternative transportation, and connection with amenities, such as restaurants and parks.

LT Credit Sensitive Land Protection 2/2 points

Intent: This credit encourages the development of environmentally sensitive lands and strives to reduce the environmental impacts from building on a site.

Compliance: The project is located on a previously developed site.

LT Credit High Priority Site 2/3 points

Intent: This credit encourages development in areas with previously defined constraints and promotes the health of the surrounding area.

Compliance: The project is located in the US Department of Housing and Urban Development's 2021 Difficult Development Areas (DDAs) which is the federally recognized high-priority sites. Difficult development areas are designated as Priority Sites by USGBC.

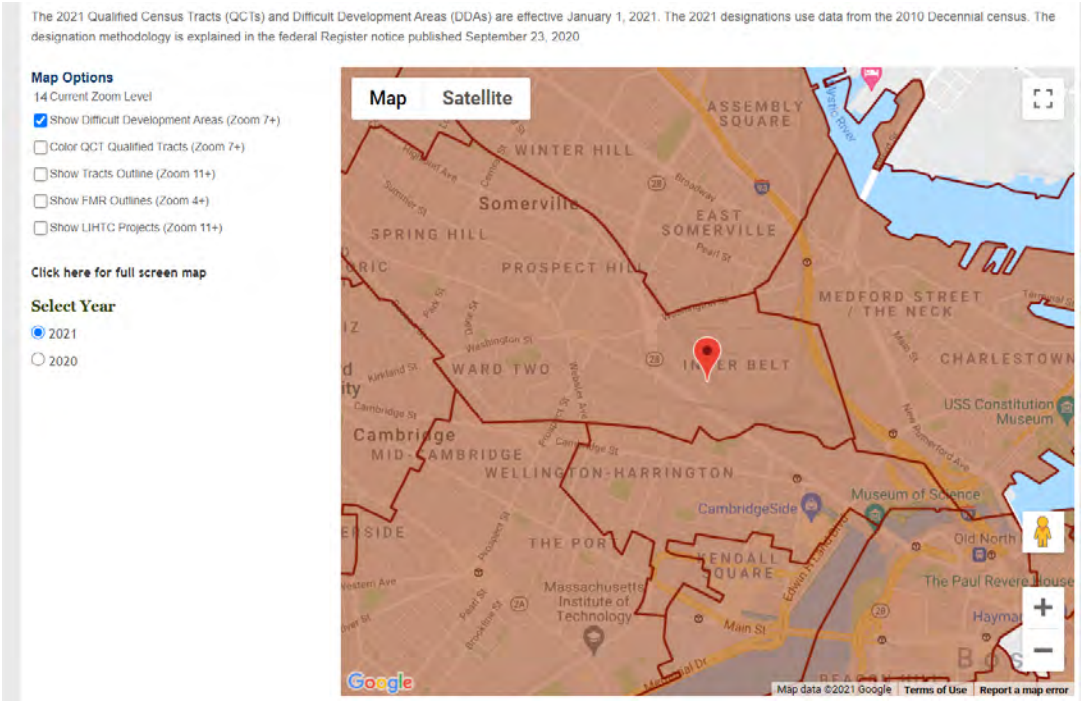

Figure 3—2: Project Site, Somerville, DDA (https://www.huduser.gov/portal/sadda/sadda_qct.html)

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LT Credit Surrounding Density and Diverse Uses 6/6 points

Intent:

- To conserve land and protect farmland and wildlife habitat by encouraging development in areas with existing infrastructure
- Promote walkability, and transportation efficiency and reduce vehicle distance traveled
- Improve public health by encouraging daily physical activity

Compliance: The project is located in an urban setting exceeding a combined residential and non-residential density of 35,000 sf/acre of buildable land. Additionally, the project has eight or more existing and publicly available diverse uses withing a ½ mile of the main entrance. These uses represent at least 3 of the five categories, exclusive of the building's primary use type.

LT Credit Access to Quality Transit (v4.1) 6/6 points

Intent: This credit encourages development in locations shown to have multimodal transportation choices or otherwise reduced motor vehicle use, thereby reducing greenhouse gas emissions, air pollution, and other environmental and public health harms associated with motor vehicle use.

Compliance: The planned Green Line Extension (GLX) will have a stop less than 0.5 miles from a building entrance that will provide over 360 weekday trips and 216 weekend trips. The GLX construction is expected to be completed prior to the completion of the project.

Figure 3—3: Walk under 0.5 miles to GLX Washington St. Station from Project

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LT Credit Bicycle Facilities (v4.1) 1/1 point

Intent: This credit promotes bicycling and transportation efficiency and strives to improve public health by encouraging utilitarian and recreational physical activity.

Compliance: The project will provide 50 long-term, covered bike storage stations for the 1,000 FTE, meeting the 5% requirement. 7 short-term bike storage stations will be provided for the 250 peak visitors, exceeding the 2.5% requirement. The project will have 7 showers, meeting the requirement for the first 100 regular building occupants and 1 additional for each 150 occupants after that.

LT Credit Reduced Parking Footprint (v4.1) 1/1 point

Intent: This credits strives to minimize the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff.

Compliance: The project will have 229 spaces, which is a 66% reduction from the 650 spaces recommended by the Parking Consultants Council. This exceeds the 30% reduction requirement.

LT Credit Green Vehicles 1/1 point

Intent: This credit seeks to reduce the pollution from combustion-fueled vehicles by promoting infrastructure for electric vehicles on site.

Compliance: At least 5% of the parking spaces will have signage indicating that they are preferred parking spaces for green vehicles. Additionally, the project will provide a minimum of 14 Level 2 electric-vehicle charging stations for day 1, exceeding the 2% of all parking spaces requirement.

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3.3 Sustainable Sites (SS)

This category rewards decisions about the environment surrounding the building, with credits that emphasize the vital relationships among buildings, ecosystems, and ecosystem services. It focuses on restoring project site elements, integrating the site with local and regional ecosystems, and preserving the biodiversity that natural systems rely on.

SS Prerequisite Construction Activity Pollution Prevention Required

Intent: This prerequisite reduces pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.

Compliance: An Erosion and Sedimentation control plan that complies with the 2021 US EPA Construction General Permit will be implemented during the construction phase. Dust pollution will be mitigated with regular spraying of the site.

SS Credit Site Assessment 1/1 point

Intent: This credit asks project teams to assess site conditions before design to evaluate sustainable options and inform related decisions about site design.

Compliance: A site survey has been completed that includes details on topography, hydrology, climate, vegetations, soils, human use and human health effects.

SS Credit Site Development–Protect and Restore Habitat (v4.1) 1/2 points

Intent: This credit encourages the conservation of existing natural areas, while restoring damaged areas to provide habitat and promote biodiversity.

Compliance: The site is not located on a greenfield. A portion of the site area will be restored with native and adaptive vegetation, which will exceed the 15% requirement for 1 Point under v4.1. The area threshold will be achieved with plantings at-grade. There will be at least six different species encompassed in the plant selection. If the area in the final design does not meet the 15% threshold, the team will provide financial support equivalent to $0.40/SF site area to meet the requirements for 1 point in LEEDv4.

Figure 3—4 Proposed Site Landscaping

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SS Credit Rainwater Management (v4.1) 3/3 points

Intent: This credit seeks to reduce runoff volume and improve water quality by replicating the natural hydrology and water balance of the site, based on historical conditions and undeveloped ecosystems in the region.

Compliance: Runoff will be managed from the 90th percentile storm event with a rainwater collection tank.

SS Credit Heat Island Effect 2/2 points

Intent: This credit seeks to minimize effects on microclimates and human and wildlife habitats by reducing heat islands.

Compliance: The parking for the project will be entirely underground. The roof and non-roof hardscape will be designed with high-reflectance materials to meet the requirements for 2 points.

SS Credit Light Pollution Reduction 1/1 point

Intent: This credit seeks to increase night sky access, improve nighttime visibility, and reduce the consequences of development for wildlife and people.

Compliance: The backlight, uplight and glare (BUG) rating allowed threshold at each mounting height and distance from the lighting boundary will not be exceeded for LZ3. Internally illuminated signage will not exceed a luminance of 200 nits at night and 2,000 nits during the day.

SS Credit Tenant Design and Construction Guidelines 1/1 point

Intent: This credit strives to educate tenants in the implementation of sustainable design and construction features in their build-outs.

Compliance: A Tenant Document and Construction Guidelines will be provided to each tenant with recommendations for sustainable, efficient, and healthy spaces.

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3.4 Water Efficiency (WE)

This section addresses water holistically, looking at indoor use, outdoor use, specialized uses, and metering. The section is based on an "efficiency first" approach to water conservation. As a result, each prerequisite looks at water efficiency and reductions in potable water use alone. Additionally, the credits recognize the use of non-potable and alternative sources of water.

WE Prerequisite Outdoor Water Use Reduction — Required

Intent: The intent of this prerequisite is to reduce outdoor water consumption.

Compliance: Irrigation requirements will be reduced by at least 50% of the calculated peak baseline from the site's peak water month with the plant selection, exceeding the 30% requirement.

WE Prerequisite Indoor Water Use Reduction — Required

Intent: The intent of this prerequisite is to reduce indoor water consumption.

Compliance: The design team will select water-sense fixtures as applicable. Utilizing low-flow fixtures, the design team is targeting a 35% reduction in indoor water use, which exceeds the 20% reduction requirement. No appliances are anticipated to be installed as a part of the core and shell scope. The cooling tower will not have once-through cooling with potable water and will be equipped with make-up water meters, alarms and drift eliminators.

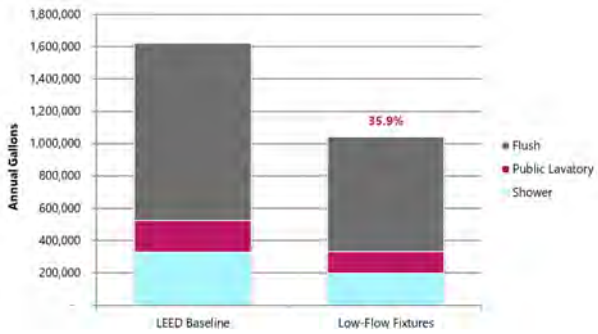

Figure 3—5: Indoor Water Use Reduction

Table 3—1 Fixture Flush/Flow Rates

Fixture	Baseline	Proposed
Water Closets	1.6 gpf	1.1 gpf
Urinals	1.0 gpf	0.125 gpf
Lavatory Faucet	0.5 gpm	0.35 gpm
Showerhead	2.5 gpm	1.5 gpm
Kitchen Faucet	2.2 gpm	1.5 gpm

WE Prerequisite Building Level Water Metering — Required

Intent: This credit supports water management and identifies opportunities for additional water savings by tracking water consumption.

Compliance: The building will meter the incoming water at the point-of-source. The building will be sharing whole-building water usage data with the USGBC via the EPA Portfolio Manager.

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WE Credit Outdoor Water Use Reduction 1/2 points

Intent: This credit seeks to further reduce outdoor water consumption.

Compliance: Potable water use for irrigation will be reduced by at least 50% from the calculated peak baseline from the site's peak water month with the plant selection. This requirement is incorporated into the design criteria for the forthcoming irrigation consultant/designer.

WE Credit Indoor Water Use Reduction 3/6 points

Intent: This credit seeks to further reduce indoor water consumption.

Compliance: The design team will select water-sense fixtures as applicable. Utilizing low-flow fixtures, the design team is targeting a 35% reduction in indoor water use, which will meet the Credit threshold for 3 Points.

WE Credit Cooling Tower Water Use 2/2 points

Intent: This credit strives to conserve water used for mechanical processes and cooling tower makeup while controlling microbes, corrosion, and scale in the condenser water system.

Compliance: A water quality test was complete on January 21, 2021. A filtration system will be installed for the system to achieved 10 make-up water cycles for 2 Points.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method
Total Metals - Mansfield Lab										
Calcium, Total	5.44		mg/l	0.100	--	1	01/04/21 14:50	01/06/21 22:31	EPA 3005A	19,200.7
Iron, Total	1.058		mg/l	0.0500	--	1	01/04/21 14:50	01/04/21 18:16	EPA 3005A	3,200.8
Magnesium, Total	0.944		mg/l	0.100	--	1	01/04/21 14:50	01/06/21 22:31	EPA 3005A	19,200.7
Manganese, Total	0.0176		mg/l	0.0010	--	1	01/04/21 14:50	01/04/21 18:16	EPA 3005A	3,200.8
Potassium, Total	1.186		mg/l	0.1000	--	1	01/04/21 14:50	01/04/21 18:16	EPA 3005A	3,200.8
Silica, Total	2.62		mg/l	0.500	--	1	01/04/21 14:50	01/06/21 22:31	EPA 3005A	19,200.7
Sodium, Total	32.50		mg/l	0.1000	--	1	01/04/21 14:50	01/04/21 18:16	EPA 3005A	3,200.8
Total Hardness by SM 2340B - Mansfield Lab										
Hardness	17.4		mg/l	0.660	NA	1	01/04/21 14:50	01/06/21 22:31	EPA 3005A	19,200.7

Figure 3—6: Water Quality Test Results

WE Credit Water Metering 1/1 point

Intent: This credit supports water management and seeks to identify opportunities for additional water savings by tracking water consumption.

Compliance: The credit requires two water-subsystems to be submetered. The design currently incorporates irrigation and mechanical make-up water submeters.

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3.5 Energy & Atmosphere (EA)

This category approaches energy from a holistic perspective, addressing energy use reduction, energy-efficient design strategies, and renewable energy sources.

EA Prerequisite Fundamental Commissioning and Verification Required

Intent: This prerequisite supports the design, construction, and eventual operation of a project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.

Compliance: An Owner's Project Requirement (OPR) was provided at the beginning of the project. A Basis of Design (BOD) was developed by the project team as a deliverable for the Schematic Design Phase. A Commissioning Agent (CxA) will be onboarded prior to the completion of the Design Development phase and will perform fundamental commissioning activities.

EA Prerequisite Minimum Energy Performance Required

Intent: This prerequisite reduces the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

Compliance: An update to the whole-building energy simulation following ASHRAE 90.1-2010 Appendix G: Performance Rating Method was completed at 100% SD. The building is tracking 19.7% energy cost savings, which exceeds the 2% requirement.

EA Prerequisite Building Level Energy Metering Required

Intent: This prerequisite supports energy management and identifies opportunities for additional energy savings by tracking building-level energy use.

Compliance: Whole-building electricity and natural gas usage will be metered. The building will be share whole-building energy usage data with the USGBC via the EPA Portfolio Manager.

EA Prerequisite Fundamental Refrigerant Management Required

Intent: This credit has the goal of reducing stratospheric ozone depletion.

Compliance: The project utilizes R-410A and R-134a, which are not CFC-based refrigerants.

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EA Credit Enhanced Commissioning 6/6 points

Intent: This credit seeks to further support the design, construction, and eventual operation of a project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.

Compliance: A CxA will be engaged prior to the completion of the Design Development phase and will perform enhanced and monitoring based commissioning services as well as building envelope commissioning. The tasks will be included in the OPR and the BOD. The CxA are contracted to perform a second systems review 10 months after substantial completion.

EA Credit Optimize Energy Performance 14/18 points

Intent: This credit targets increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.

Compliance: The points for the LEED Credit EA Optimize Energy Performance are awarded based on the percent energy cost savings from a baseline building defined by ASHRAE 90.1-2010 Appendix G. As this project is currently modelled according to ASHRAE 90.1-2013 (with MA Amendments), LEEDv4 BD+C Points are approximated.

The Alternative Compliance Path (ACP) for Energy and Atmosphere (EA) Credit Optimize Energy Performance is generally followed when a project has significant natural gas savings when compared to electricity savings. Using energy cost savings is the default metric for determining LEED Optimize Energy Points, but due to market feedback, the GBCI permits following the ACP for this credit, as cost savings is not always the best representation of the energy performance for a building.

Using metrics of cost, energy sources, greenhouse gas emissions, and (if available) time dependent valuation, the points for the ACP are based on the average percent savings of the two highest-performing metrics using equal weighting to determine percentage savings, and associated credit points. Based on the predicted weighted savings following ACP EApc95 methodology, the building would be awarded **14 Points** under the Optimize Energy Performance Credit.

Table 3—2: LEED ACP EApc95 Savings

Metric	% Savings	Electricity Rate	Natural Gas Rate
Site Energy	37.4%	-	-
Energy Cost	19.7%	$0.1615/kWh	$1.03/Therm
Source Energy	24.5%	2.80 Site to Source	1.05 Site to Source
GHG Emissions	27.7%	107.9 kgCO_2e/MMBTU	53.1 kgCO_2e/MMBTU
Weighted % Savings (Two-Highest Values)	32.5%	-	-

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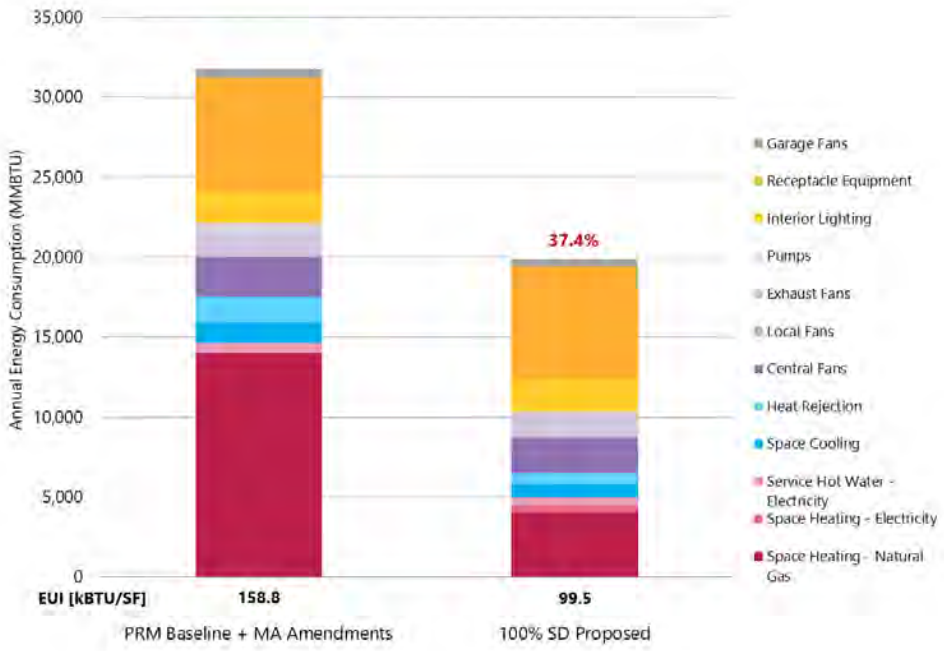

Figure 3—7: 100% SD Energy Model Savings

EA Credit Enhanced Refrigerant Management 1/1 point

Intent: This credit seeks to further reduce contributions to ozone depletion and supports early compliance with the Montreal Protocol while minimizing direct contributions to climate change.

Compliance: The average refrigerant impact will be less than 100 per ton.

EA Credit Green Power and Carbon Offsets 2/2 points

Intent: This credit encourages the reduction of greenhouse gas emissions through the use of grid-source, renewable energy technologies and carbon mitigation projects.

Compliance: 100% of the total energy will be offset using renewable energy credits (RECs), as determined after the energy model LEED submission has been approved. The purchase agreement will be for a minimum of five years and the RECs will be Green-e Energy certified.

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3.6 Materials & Resources (MR)

This credit category focuses on minimizing the embodied energy and other impacts associated with the extraction, processing, transport, maintenance, and disposal of building materials. The requirements are designed to support a life-cycle approach that improves performance and promotes resource efficiency. Each requirement identifies a specific action that fts into the larger context of a life-cycle approach to embodied impact reduction.

MR Prerequisite Storage and Collection of Recyclables — Required

Intent: This prerequisite requires the reduction of waste that is generated by building occupants and hauled to and disposed of in landfills.

Compliance: Recyclables will be collected (mixed paper, corrugated cardboard, glass, plastics, metals and two of the following: mercury lamps, batteries, e-waste). The collection bins will be sized adequately to handle the waste produced by the building occupants. Waste collection will occur on a regular basis.

MR Prerequisite Construction and Waste Management Planning — Required

Intent: This prerequisite reduces the construction and demolition waste disposed of in landfills and incineration facilities.

Compliance: Before construction begins, the Construction Manager will develop a Construction and Waste Demolition Management Plan (CWDMP) to be implemented during the construction phase. The CWDMP will include waste diversion goals on the on-site generated waste from landfill.

MR Credit Building Life-Cycle Impact Reduction — 3/6 points

Intent: This credit encourages adaptive reuse and optimize the environmental performance of products and materials.

Compliance: A life-cycle assessment (LCA) is being completed for this project. A 10% reduction in at least three of the six impact categories is expected, meeting the Credit threshold for 3 Points.

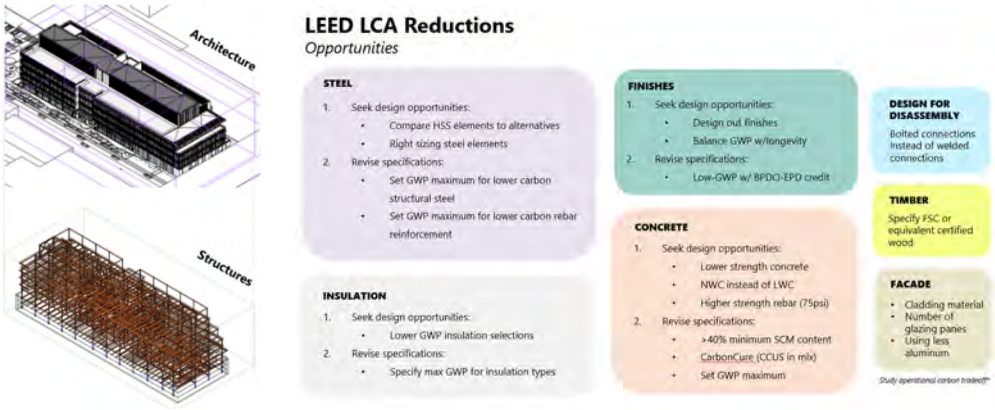

Figure 3—8: LCA Analysis Methodology

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MR Credit BPDO – EPDs (v4.1) 1/2 points

Intent: This credit encourages the use of products and materials for which the life-cycle information is available, and promotes materials that have environmentally, economically, and socially preferable life-cycle impacts.

Compliance: At least 10 different permanently installed products sourced from 3 different manufacturers will have environmental product declarations (EPDs). EPDs may be product specific (1 product), product specific type III (1 product), product specific type III – externally verified (1.5 products) or industry wide type III (1 product).

MR Credit BPDO – Sourcing of Raw Materials (v4.1) 1/2 points

Intent: This credit encourages project teams for selecting products verified to have been extracted or sourced in a responsible manner.

Compliance: At least 20% of the products sourced, by cost, from three manufactures will meet one of the following criteria: extended producer responsibility, bio-based material, FSC wood certification, reused material or recycled content. Products sources within 100 miles of the project are valued at twice their cost.

MR Credit BPDO – Material Ingredients (v4.1) 1/2 points

Intent: This credit encourages project teams to select products for which the chemical ingredients in the product are inventoried using an accepted methodology and are verified to minimize the use and generation of harmful substances. This credit also intends to elevates raw material manufacturers who produce products verified to have improved life-cycle impacts.

Compliance: At least 10 different permanently installed products sourced from 3 different manufactures will have reported chemical inventories to 0.1% (1000 ppm). Qualifying products include ANSI/BIFMA e3 Furniture Standard if earned 3 points or higher, Cradle-to-Cradle Material Health, Cradle-to-Cradle version 3 Bronze or higher, Declare. labels, Facts, Global Greentag PHD label issued in 2020 or later, Health Product Declaration, Living Product Challenge, Greenscreen List Translator, Greenscreen Benchmark, Globally Harmonized System of Classification and Labeling of Chemicals and Product Lens Certification.

MR Credit Construction and Demolition Waste Management 2/2 points

Intent: This credit seeks to reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

Compliance: Construction waste will be diverted by 75% from four material streams and/or the total waste generated will not exceed 2.5 lbs/sf of the building's floors area.

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3.7 Indoor Environmental Quality (EQ)

This category rewards decisions made by project teams about indoor air quality and thermal, visual, and acoustic comfort. Green buildings with good indoor environmental quality protect the health and comfort of building occupants. High-quality indoor environments also enhance productivity, decrease absenteeism, improve the building's value, and reduce liability for building designers and owners. This category addresses the myriad design strategies and environmental factors—air quality, lighting quality, acoustic design, control over one's surroundings—that influence the way people learn, work, and live.

EQ Prerequisite Minimum Indoor Air Quality Performance Required

Intent: This prerequisite enhances the comfort and well-being of building occupants by establishing minimum standards for indoor air quality (IAQ).

Compliance: All spaces are mechanically ventilated and will comply with the ventilation requirements of ASHRAE 62.1-2010. All variable air volume systems will monitor air intake with an accuracy of ±10% and have an alarm indicating a 15% or greater variability from the setpoint. All constant air volume systems will balance outdoor airflow to the design minimum and have a transducer, airflow switch or monitoring device on the supply fan.

EQ Prerequisite Environmental Tobacco Smoke Control Required

Intent: This prerequisite prevents or minimizes the exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke.

Compliance: Smoking is prohibited in this building and signage to indicate that smoking is prohibited within 25 ft of building entrances, operable windows and outdoor air intakes will be provided.

EQ Credit Enhanced Indoor Air Quality Strategies 2/2 points

Intent: This prerequisite seeks to promote occupants' comfort, well-being, and productivity by improving indoor air quality.

Compliance: The project will be completely mechanically ventilated and is planning to follow the LEED requirements for all mechanically ventilated spaces for 1 point.

- The building will install permanently entryway systems that are at least 10 ft long in the primary direction of travel.
- The mechanical design will sufficiently positively/negatively pressurize spaces where hazard gases or chemicals may be present (e.g., garages, janitors' closets).
- Each ventilation system will be equipped with a filter of MERV 13 rating or higher

For 1 additional point, the project is planning to monitor CO_2 concentrations in all densely occupied spaces. CO_2 monitors will have an audible or visual indicator or alert the BAS if the sensed CO_2 concentration exceeds the setpoint by more than 10%. Appropriate CO_2 setpoints will be calculated using the methodology outlined in ASHRAE 62.1-2016 Appendix D.

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EQ Credit Low-Emitting Materials (v4.1) 2/3 points

Intent: This prerequisite strives to minimize concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

Compliance: At least two of the product categories will meet the general emissions evaluations and VOC content standards of the credit. Categories include paints and coatings, adhesives and sealants, flooring systems and composite wood.

EQ Credit Construction Indoor Air Quality Management Plan 1/1 point

Intent: This credit promotes the well-being of construction workers and building occupants by minimizing indoor air quality problems associated with construction and renovation.

Compliance: An indoor air quality (IAQ) management plan will be developed for the construction and preoccupancy phases of the building that meets the SMACNA IAQ Guidelines. Absorptive materials stored on-site will be protected from moisture damage. Air-handling equipment will not be operated during construction unless filtration media is at least MERV 8. Smoking will be prohibited withing 25 ft of the building entrance. (1 point)

EQ Credit Daylight 2/3 points

Intent: This credit strives to connect building occupants with the outdoors, reinforce circadian rhythms, and reduce the use of electrical lighting by introducing daylight into the space.

Compliance: A daylighting analysis will be performed. The design is targeting that at least 75% of the regularly occupied floor area will achieve spatial daylight autonomy 300/50% (sDA300/50%) and annual sunlight exposed 1000, 250 (ASE1000, 250) of no more than 10%.

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3.8 Innovation (IN)

Sustainable design strategies and measures are constantly evolving and improving. New technologies are continually introduced to the marketplace, and up-to-date scientific research influences building design strategies. The purpose of this LEED category is to recognize projects for innovative building features and sustainable building practices and strategies.

IN Credit Innovation in Design 5/5 points

Intent: To encourage projects to achieve exceptional or innovative performance.

Compliance: The project is currently reviewing a menu of innovation credits but is committed to achieving all five Innovation in Design points. The following list of credits are being held as the targets, but this list may change in future design iterations. The team will have a clearly defined Innovation Point strategy for Building Permit.

1. Innovation: Purchasing – Lamps

   The project team has committed to using all LED fixtures, eliminating the potential of mercury in lamps.

2. EP: SSc Heat Island Reduction – achieved by meeting Option 1 and Option 2 (100% of parking under cover and roof and non-roof strategies)

   The project is committed to meeting the threshold for 2 points for SSc Heat Island Reduction. As 100% of parking is under cover, the design will meet the requirements for the Exemplary Performance point.

3. Pilot Credit – MRpc103 Integrative Analysis of Building Materials

   To demonstrate compliance with this credit, the project shall utilize at least three permanently installed products that have a documented qualitative value for health, safety, and environmental impacts for all five stages of the product's life cycle. The project is committed to selecting materials that report these thresholds, therefore the design team will continue to review material selections options that demonstrate compliance as a part of the LCA study.

4. Pilot Credit – EQpc123 Biophilic Design

   This credit requires the exploration of the biophilic design potential for the project and connecting people to the natural environment. The design team shall identify at least five distinct design strategies related to biophilic design. The design team is looking at incorporating green features, such as a green wall. Other strategies will be evaluated as well for credit compliance.

5. EQpc57 Enhanced Acoustical Performance – Exterior Noise Control

   This Pilot Credit requires the project to reduce impact of environmental noise from building and/or site on community noise which can help mitigate sleep disturbance and general annoyance. The Acoustician on the project has reviewed the credit requirements and understands that the basis of design is likely in compliance. The credit will require on-site testing post-occupancy.

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Other Innovation Credits under consideration:

- SSpc129 Comprehensive Composting
- IPpc90 Social Equity within the Project Team
- INpc137 Safety First: Cleaning and Disinfecting Your Space

IN Credit LEED Accredited Professional 1/1 point

Intent: This credit seeks to enhance the team integration required by a LEED project and to streamline the application and certification process.

Compliance: Several LEED AP's, specialized in building design and construction, have been involved in the design process.

3.9 Regional Priority (RP)

Volunteers from USGBC chapters and the LEED International Roundtable have identified distinct environmental priorities within their areas. These Regional Priority credits encourage project teams to focus on their local environmental priorities.

RP Regional Priority Credits 4/4 points

Intent: To provide an incentive for the achievement of credits that address geographically specific environmental, social equity, and public health priorities.

Compliance:

1. LTc High-Priority Site - 2 points anticipated, meeting the 2 point requirement.
2. SSc Rainwater management – 2 points anticipated, exceeding the 2 point requirement.
3. EAc Optimize Energy Performance – 14 points anticipated, exceeding the 8 point requirement.
4. MRc Building Life-Cycle Impact Reduction - 3 points anticipated, exceeding the 2 point requirement.

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SUSTAINABLE & RESILIENT BUILDINGS QUESTIONNAIRE

Section 1: Proposal Information

Proposal Name	28 Fitchburg and 28 Chestnut Street
Address	28 Fitchburg St Somerville, MA 02143
Developer	Brickbottom I QOZB, LP
Business Address	610 West 26th Street, Suite 910, New York, NY
Designated Contact	Chris Pachios
Telephone Number	917-697-3960
Contact's Email Address	cpachios@northriverco.com
Date Submitted	March 26 2021 / April 20 2021 (rev01)
Filing Type (Development review application, Building Permit, or CoA)	Development Review Application
Is this a revised Questionnaire?	Yes
Is MEPA Approval Required?	Yes, state action due to MBTA license requirement

Section 2: Building & Site Details

2.1 Building Information

Building Uses	Laboratory/Life Science/Office/Limited First Floor Retail/Food & Beverage
Gross Floor Area	200,000 GSF above grade
Expected Life of Building	100 years
Expected Life of Building Systems: HVAC, electrical, boilers, plumbing, telecom, lighting, energy management.	The mechanical systems are expected to have a lifespan of 20-30 years. HVAC: 20-30 Years Electrical: 20 Years Plumbing: Pumps: 20-30 years; Heaters: 10-15 years Telcom: 10 Years Lighting: 10-15 Years BMS: 20-30 years
Type of Heating System(s)	Natural gas fired condensing boilers
Type of Cooling System(s)	Magnetic bearing centrifugal chillers

2.2. Green Building

Green Building Professional(s): Name(s) and contact information	Julie Janiski, Principal (julie.janiski@burohappold.com) Kristen Brozowski, Senior Sustainability Engineer (kristen.brozowski@burohappold.com)

Professional Credentials: Green Building Program Certification(s)	Julie: LEED AP, CPHC Kristen: EIT, CPHC, LFA, LEED AP BD+C
Building LEED Rating	Platinum
Building LEED Point Score	Targeting 84-86 points (80 points are required for Platinum)
Will you pursue LEED certification through the USGBC?	Yes Registered Jan 12 2021 LEED ID 1000139821
Are any other green building certifications being pursued? (Passive House, Enterprise Green Communities, etc.). Please describe.	No

2.3. Electric Vehicle Parking

The number of electric vehicles (EVs) in Somerville is expected to increase significantly over the next decade with more electric vehicles coming to market than ever before. Conservative estimates based on historical trends alone suggest 20% of personal vehicles in Somerville will be electric by 2040. Installing capacity for EV supply equipment (EVSE) has been shown to be more feasible and cost effective during construction than when retrofitting parking areas to support the installation of EVSE in the future[1]. Providing EVSE can increase the property value, become a future revenue source, and provide an amenity that more tenants and commuters will be looking for. It is recommended that parking facilities be designed to allow for the most flexibility to adapt to future needs of electric vehicles and changing mobility needs. The City of Somerville recommends 25% of spaces have installed charging access and up to 100% of spaces be "EV Ready" (everything but the station installed). Eversource currently has a program to pay the associated infrastructure costs of EV charging, including infrastructure needed to be "EV ready." Please consult with Eversource to determine if any installation costs could be covered through their Make Ready Program.

Total # of Parking Spaces	229
EVSE Plugs (number and voltage/ level of plugs)	The project includes a minimum of 14 Level 2 Electric Vehicle charging spaces for Day 1 Occupancy.
EV Ready Spaces (everything but station is installed)	The project will install the electrical capacity to have 44 Level 2 EV ready spaces for the project. This infrastructure will ensure that 25% of spaces in the garage will have EV charging capacity.

[1] http://evchargingpros.com/wp-content/uploads/2017/04/City-of-SF-PEV-Infrastructure-Cost-Effectiveness-Report-2016.pdf; https://www.richmond.ca/__shared/assets/Residential_EV_Charging_Local_Government_Guide51732.pdf

Please share any other information on your EV strategy. Have you spoken with Eversource? Are you talking with EVSE providers? Have you considered EVSE needs in conjunction with your parking and mobility management plans?	The project team and owner has met with Eversource about their EV make ready program to understand the incentives available. The owner will discuss additional opportunities with EVSE providers. The project team is evaluating the additional electricity infrastructure required (including transformers, conduit/pathways, metering and panels) to readily support the growth of EV charging spaces.

2.4 Key Building Efficiency Metrics
The following should be provided for each building type (office, retail, multifamily, hotel, restaurant, etc.).

Vertical Envelope Performance

Vertical Envelope	ASHRAE Reference Building			Proposed Building		
	Percent of Vertical Area	**R value** *(see note 1)*	**U value** *(see note 2)*	**Percent of Vertical Area**	**R value** *(see note 1)*	**U value** *(note 2)*
Framed, insulated Wall	60%	13+10 c.i.	0.055	62%	18 c.i.	U-0.055
Opaque glass, curtain wall, shadowbox, spandrel	NA – ASHRAE reference building has no spandrel			~1%	R-5 + 0 c.i.	U-0.20
Vision glass	40%	R-value	0.42	37%	R-4 + 0 c.i.	U-0.24
	100%	***U-0.201***	***Aggregate U*** *(note 4)*	***100%***	***U-0.125***	***Aggregate U*** *(note 4)*
		R-5	***Aggregate R***		***R-8***	***Aggregate R***

Notes:

1. Show in format of R+R c.i. where first R is amount of discontinuous insulation and second R is amount of continuous insulation.

2. U values shall be based on indicated R+R c.i. and shall conform to Appendix A of ASHRAE 90.1 2013.

3. U value includes frame, per NRFC standard methods.

4. Aggregate U is calculated as: $(U_1\%_1 + U_2\%_2 + U_3\%_3)$ where U is the respective thermal transmittance values and $\%_1$ is the percent area of framed insulated wall; $\%_2$ is the percent area of opaque glass, curtain, or shadowbox; and $\%_3$ is the percent area of vision glass. Only areas adjacent to conditioned space are counted, areas adjacent to unconditioned spaces (e.g. parking garages, mechanical penthouses)

are not counted. Aggregate R is the inverse of aggregate U. For percent areas for ASHRAE reference building, see Table G3.1.1-1 in ASHRAE 90.1 2013.

Other Performance Metrics

	ASHRAE Reference Building	**Proposed Building (ASHRAE 90.1 Appendix G methodology)**
Air Infiltration (ACH 50)	0.41 ACH_{50}	0.41 ACH_{50}
Aggregate Vertical Envelope R	R-5	R-8
Roof R	R-30 c.i.	R-30 c.i.
Lowest level conditioned floor above unconditioned space (if any) R	R-15 for 24 in	R-15 for 24 in
Cooling End Use (kBtu/sf-yr)	15.9 kbtu/sf-yr	3.9 kbtu/sf-yr
Heating End Use (kBtu/sf-yr)	64.2 kbtu/sf-yr	27.4 kbtu/sf-yr
Peak Heating (kBtu/hr-sf)	5,012 kbtu/hr (0.025 kbtu/hr-sf)	3,757 kbtu/hr (0.019 kbtu/hr-sf)
Peak Cooling (kBtu/hr-sf)	1,576 kbtu/hr (0.008 kbtu/hr-sf)	1,315 kbtu/hr (0.007 kbtu/hr-sf)
Site EUI (kBtu/hr-sf)	158.8 kbtu/sf-yr (0.018 kbtu/hr-sf)	99.5 kbtu/sf-yr (0.011 kbtu/hr-sf)

Section 3. Planning for Net Zero Emissions and Energy Resilience

3.1. How is the building currently designed to reduce energy usage? Please describe the key design features of the building including:

A) Building envelope performance (including roof, foundation, walls, and window assemblies)
B) How has the design team integrated energy performance into the building and site design and engineering (orientation, massing, mechanical systems, envelope, etc.)?
C) Efficiency of heating and cooling systems. Will these systems be electric? Provide reasoning for selection of heating and cooling systems.

A. The proposed envelope design aggregate U-value exceeds the baseline performance by 38%. In addition to a lower window-wall ratio and an envelope performance that complies with the current 9th Edition Revised energy stretch code envelope backstop calculation, the owner is assessing the opportunity, benefits and cost of using triple glazing at some or all of the solar exposures. While typically contributing to enhances acoustic and thermal comfort, preliminary analysis for this building shows a limited benefit for both these metrics as well as energy use.

B. Energy criteria has been a significant influence in the design process. While the shape of the lots and zoning criteria defined the overall massing of the building, the approach to the envelope design has included an attention to using enough glazing to support daylighting but not so much that it causes excess thermal loss or solar gain. The envelope design also accounts for daylighting, glare and solar

gains with the use of fixed metal mesh shading elements positioned based on façade orientation. Early energy modelling completed during the Concept Design phase studied the impact of energy conservation measures ranging from envelope performance to mechanical system options. This informed the criteria for the envelope as well as the basis of design for the systems.

C. The basis of design is comprised of natural gas condensing boilers to produce heating hot water (HHW), and water-cooled magnetic bearing centrifugal chillers to produce chilled water (CHW). This central plant equipment is selected based on proven technology, industry and market best-practice, and improved efficiency over all-air systems by using a more efficient distribution method (water) as well as de-coupling ventilation from heating and cooling. The HHW and CHW support efficient hydronic heating and cooling terminal units, which could be chilled beams or fan coil units depending on the space needs and tenant preferences or standards. The ventilation system is a dedicated outdoor air system (DOAS) with a wrap-around coil heat recovery system that maximizes heat recovery from lab/building exhaust without any risk of mixed or contaminated airstreams. The domestic hot water (DHW) system is a hybrid heat pump hot water heater, designed to operate in an efficient heat pump mode by default with the ability to switch to electric resistance if required to meet the load.

The enhanced envelope design for the building has significantly reduced the heating demand and mechanical equipment sizing. The majority of heating energy needed is for the conditioning of ventilation air. However most of the ventilation load is met through the energy recovery system, and therefore natural gas energy to the building is significantly reduced from the baseline building. The active heating energy that does remain is generated by the 96% efficient natural gas condensing boilers, for which the carbon emissions is half that of the equivalent electric resistance boilers in Massachusetts (on the ISO NE grid). An effective conversion to all-electric is described in the following section.

3.2 Will the building be a net zero carbon building? A net zero carbon building is a highly energy efficient building that does not burn fossil fuels and either produces or procures enough carbon-free electricity to meet the building's total energy demand. If the building will not be a net zero carbon building, provide a technical description of how the building's systems will be transitioned over time to achieve net zero carbon emissions, including how and when systems can be transitioned in the future to carbon-free alternatives (provide timeline including 2030, 2040, and 2050 targets). Description must include whether any remaining emissions will be offset with on-site or off-site renewables and at what quantity. Changes could include, but are not limited to, addition of on-site renewable energy generation, energy storage, additional energy efficiency measures, building electrification, or other measures that would further reduce greenhouse gas emissions.

The current basis of design is not designed as zero carbon, though as noted above in Section 3.1, the design incorporates a variety of passive design strategies to minimize the carbon consumption on site of the active systems.

To support the transition to an all-electric building in the future, the owner is committed to a hybrid solution using a heat pump chiller, with a final decision on this pending the completion of the team's current feasibility assessment - see more below. This includes cost, technology specs, and space planning for the hybrid and future all-electric scenarios. The team expects that the decision on the hybrid solution will be made in the coming months, and certainly before the Permit submission.

The conversion to all-electric over time is described below.

2030: Building is not expected to change equipment at this time, ahead of the systems' end of useful life. Expected carbon impact of the building should decrease as a result of improved and cleaner electrical grid in line with the Commonwealth's 3% per year mandate of renewable energy supplied to the grid.

2030-45: By 2045, project will have phased out a majority of the equipment (equipment lifespan of 20 years). It is expected that heating will be provided by heat pump technology, but improved technologies in the market could be available to further reduce electrical consumption for heating. Based on the Massachusetts Clean Energy Standard, the energy sources for the electrical grid are expected to be 80% cleaner, and the carbon emissions of the building would therefore be greatly reduced.

2050: By 2050, it is expected that any remaining natural gas equipment will have been phased out and replaced with electric-fueled heating systems. Fossil-fuels would only remain on the project for emergency backup situations, unless/until large-scale battery back-up is available in the market. The all-electric building in this scenario would be zero carbon as there would be no on-site combustion for regular building operations, assuming the electricity grid in MA is 100% renewable.

The design team is committed to preparing for an all-electric future and is evaluating in greater depth the potential feasibility for the hybrid solution with a heat-pump chiller at the site. The heat pump chiller would be designed to serve the primary heating demand. In this scenario, natural gas boilers would provide secondary heating loads and heating in power-loss situations. Heating via electric resistance boilers at this time would not be recommended as the carbon emissions of the electrical grid is double that of natural gas.

As the electrical grid in MA converts to green infrastructure, the building will in the future evaluate the conversion of the building to full electrification, similar to the transition described above.

On-site renewables are not currently included in the project design, though the roof is designed to be PV-Ready. Off-site renewables are also not included in the project design.

3.3 Describe any and all incentives, rebates, grants provided by utilities, government organizations, and other organizations being pursued to maximize building efficiency and to reduce emissions. Description must include any incentives that were considered but are not being pursued, including reasoning for each decision.

The Mass Save Incentive program has been involved in the design process. Included ECMs at this time are envelope performance increase (walls, roof and windows), lighting and lighting controls, HVAC and HVAC controls, plumbing and various prescriptive measures.

3.4 Evaluate feasibility of on-site renewable generation. Please describe your analysis and findings. Analysis should consider incentives available. Will any renewable energy generation be incorporated into the project? If so, please describe (system type and capacity). If no, could it be added in the future? And will any off-site renewable energy be purchased?

Renewable energy generation will not be included in the project on day one. However, the roof will have a PV-ready zone with the ability to plug-and-play later.

3.5. Are any on-site energy storage systems planned? Please describe.

No.

3.6 Does the electric utility's infrastructure have enough capacity to support the addition of your building's energy load? Please provide confirmation from utility.

The electrical load letter was delivered to the utility on 2/4/2021.

3.7 Will the building's roof include any sustainability features? These may include, but are not limited to, high albedo roof materials, solar panels, or vegetation. Please describe what features could be added in the future (i.e. roof will be designed to support solar or green roof installation of X size).

The building's roof will feature a combination of PV-ready areas and where exposed, use high reflectivity roofing materials meeting the reflectivity/emissivity criteria set forth in the IECC and applicable LEED requirements. The PV-ready roof allows for a later installation of solar panels, described above.

Section 4: Climate Change Risk and Vulnerability

4.1 Climate Vulnerability Exposure
(check all that apply)

- ☒ Sea Level Rise & Storm Surge
- ☒ Precipitation Induced Flooding
- ☐ Heat
- ☐ Other(s):

4.2 How is your site vulnerable to projected climate change impacts?

SLR and Precip 2070 100-year vulnerability mapping shows local street flooding in Chestnut Street to approximately elevation 10 feet. The ground floor elevation is set at elevation 11 feet and the electrical equipment room floor is set at elevation 12 feet.

The next two sections ask specific questions about how the project is designed to manage climate-related risks from heat, coastal and inland flooding.

Section 5: Managing Heat Risks

5.1 Describe all building features that will keep building occupants safe and comfortable during extreme heat, including mechanical systems and non-mechanical design elements to cool building (orientation, envelope, operable windows, etc.).

The building mechanical system design is based on a load prioritization strategy that can be implemented through the BMS system during extreme weather events. Design temperatures (external conditions) are based on 2017 ASHRAE Fundamentals Handbook (Boston Logan Int'l Airport 1990-2014) at 99.6% heating design temperature and 0.4% cooling design temperature. The envelope design has a reduced window to wall ratio on the south, east and west to minimize solar gains. The owner is also assessing the opportunity, benefits and cost of using triple glazing at some or all of the solar exposures to minimize conduction loses through the envelope.

5.2 How has increased demand for indoor cooling been factored into the building design and energy management strategy?

Sizing of the chiller plant includes a safety factor to allow for a potential cooling increase in the future.

5.3 List any indoor spaces without cooling and their uses.

The only indoor spaces without cooling are spaces that are not regularly occupied (MEP rooms).

5.4 What design features will be implemented on site to minimize the site's contribution to the urban heat island effect? Please describe any and all design elements. Strategies could include, but are not be limited to, the following:

- High albedo pavement or roof materials
- Passive cooling or increased ventilation capacity
- Green roofs or walls
- Heat resistant trees and plants
- Additional landscaped areas

The following items are under consideration:

- Roofing surfaces with a high SRI (solar reflectance index)
- Green walls (south façade)
- Native Plants and Shade trees at streetscape (Southwest orientation) provides shading on ground plane materials and lower building levels
- High albedo pedestrian sidewalk concrete paving material
- Increased green area at streetscape (as compared to zoning streetscape section) in the form of Bio-retention planting areas.
- Increased green areas on the Site's southern and eastern edges – reducing impervious paving and absorbing hardscape areas.
- Bioswales at streetscape

Section 6: Managing Flood Risks

6.1 Is the site susceptible to flooding from sea level rise and storm surge and/or rain events now or during the building's expected lifetime? Please refer to the Somerville Climate Change Vulnerability Assessment and the updated stormwater flooding maps provided in the Background section of this Questionnaire. Additional maps and data are available by request (email hpayne@somervillema.gov)

No.

SLR and Precip 2070 100-year vulnerability mapping shows local street flooding in Chestnut Street to approximately elevation 10 feet. The ground floor elevation is set at elevation 11 feet and the electrical equipment room floor is set at elevation 12 feet.

The project stormwater management system will comply with Somerville's Site Construction Permit Rules & Regulations in that:

- There will be no increase in runoff volume from the Project site
- Stormwater runoff from the Site to the public right of way will be reduced such that the 10-yr proposed peak flow is less than the existing 2-year peak flow
- No water from the ground or any other non-stormwater flow will be discharged to the public storm drain system or public wastewater system

- Project will provide retention and infiltration of 1 inch of rainfall over all impervious areas in the proposed condition

The roof runoff will be directed to a rainwater collection cistern located within the building under the ground floor. The 37,000-gallon cistern is sized to hold and infiltrate the 1-inch rainfall depth volume from the roof as well as the 90-th percentile rainfall depth over the entire Project Site to achieve the LEED Rainwater Management credit.

If you answered YES to the previous question, please complete the remainder of Section 6. Otherwise, you have completed the Questionnaire. Thank you.

6.2 Flooding Design Considerations

Proposed Site Elevation - Low	10.5 (ft)	Proposed Site Elevation - High	13 (ft)
Lowest elevation of life-safety systems	12 (ft)	Proposed First Floor Elevation	11 (ft)
Nearest flood elevation for the 2070 10-year storm	0 feet	Nearest flood elevation for the 2070 100-year storm	0 feet; same as 10-yr

6.3 What are the first floor uses of the building? Are there any below ground stories of the building? If so, what uses are located below ground?

6.4 Are there any flood-sensitive assets, utilities, mechanical equipment, or life-safety systems located in areas of the building that are at risk of flooding? What measures will protect building systems during a flood or severe storm? These might include, but may not be limited to, the following:

- Elevation of utilities and mechanical systems
- Water tight utility conduits
- Waste water back flow prevention
- Storm water back flow prevention
- Systems located above the ground floor
- Securing objects at risk of becoming dislodged

6.5. Residential and commercial buildings should be designed to maintain regular operations during a 10-year storm in 2070. **Describe how the site and building have been designed to maintain regular operations--meaning all systems will remain operational and all occupied spaces are protected from flooding--during the 2070 10-year storm.** Please refer to both the 2070 coastal flood probability map and the 2070 10-year storm and 1-year sea level rise scenario (pages 3 and 6). Resilience measures might include, but may not be limited to, the following:

- Elevation of the site
- Structural elevation of the building
- Non-structural elevation of the ground floor
- Energy storage and backup generation
- Wet flood-proofing (allowing water to flow through building envelope)
- Dry flood-proofing (preventing water from entering building)

6.6 Residential buildings should be designed to allow occupants to shelter in place during a catastrophic storm (100-year event) today and in the future, this means all life-safety systems should be above the 2070 100-year flood elevation. **How will your site and building be impacted by the 2070 100-year, 24-hour storm and how will your site and building be designed to protect against those impacts?** Please evaluate impact based on both the 2070 coastal flood depth model for the 100-year storm and the 2070 100-year, 100-year sea level rise model (pages 4 and 7). Summarize anticipated pre- and post-event policies, strategies, and actions necessary to facilitate post-flood recovery.

6.7 Will hazardous or toxic material be stored on site? Where will it be stored? How will you protect hazardous or toxic material from flooding?

6.8 Will the site be accessible by a typical vehicle during a 10-year event (up to 6 inches of water) and by emergency vehicles (up to 12 inches of water) during a 100-year event?

INTRODUCTION

This document outlines Development Review Application requirements in relation to the long-term environmental sustainability and climate resilience of buildings within Somerville. Development proposals that require Site Plan Approval by the Somerville Zoning Ordinance must include a completed Sustainable & Resilient Buildings Questionnaire (Questionnaire) with the required Development Review Application. A Development Review Application is considered incomplete unless a completed questionnaire is submitted with the application. It is strongly recommended that the development team meets with staff from the Office of Sustainability and Environment prior to submitting the Development Review Application.

The purpose of this Questionnaire is to minimize the adverse environmental impacts in the design, construction, and occupancy of buildings in Somerville and to ensure that the impacts of future climate conditions are carefully evaluated.

Please review the following documents before completing the Questionnaire:

- **Somerville Climate Change Vulnerability Assessment**
- **Carbon Neutrality Pathway Assessment**
- **Somerville Climate Forward**

PROCEDURE:

A completed Sustainable & Resilient Buildings Questionnaire must be submitted with a Development Review Application for all development proposals that require Site Plan Approval. New construction or alterations to existing structures of 25,000 square feet or more must also submit an updated Questionnaire prior to the issuance of the first Building Permit and prior to the issuance of the first Certificate of Occupancy to identify any design changes made subsequent to Site Plan Approval or additional information determined as the development process unfolds.

BACKGROUND: CARBON NEUTRALITY

Understanding the global imperative to reduce greenhouse gas emissions in order to prevent extreme changes to the climate, Mayor Joseph A. Curtatone set a goal for Somerville to become carbon neutral by the year 2050. Carbon neutrality is defined as the net-zero release of carbon dioxide and other greenhouse gases (GHG) within Somerville's municipal boundary. Reducing greenhouse gas emissions is critical to avoiding the worst impacts of climate change and to protecting the health, safety, and welfare of current and future generations. In 2017, the Somerville Board of Aldermen passed a resolution reaffirming the city's carbon neutrality goal. And In 2018, Somerville released its first community-wide climate action plan, Somerville Climate Forward.

To achieve carbon neutrality by 2050 and to minimize adverse environmental impacts, Somerville will need to drastically reduce greenhouse gas emissions from electricity, buildings, transportation, and waste disposal. To meet these goals, all buildings within the city will need to pursue net zero emissions. New development should

be designed to maximize envelope performance and energy efficiency, produce or procure renewable energy, and phase out fossil fuel use through electrification of building systems. The City of Somerville recognizes that as technology advances, incorporating design elements to mitigate carbon emissions and increase resilience may become more feasible. Applicants are asked to devise strategies that permit building systems to adapt and evolve over time to further reduce GHG emissions and to avoid path dependency that perpetuates reliance on fossil fuels.

BACKGROUND: CLIMATE CHANGE VULNERABILITY

Despite efforts to minimize greenhouse gas emissions, climate change is already impacting Somerville and changes to the climate will continue to intensify. The City of Somerville's Climate Change Vulnerability Assessment analyses vulnerabilities associated with Somerville's key climate stressors: increased precipitation, sea level rise and storm surge, and higher temperatures. The analysis recommends that new development consider these climate impacts and take appropriate measures to address the projected climatic conditions described in the assessment.

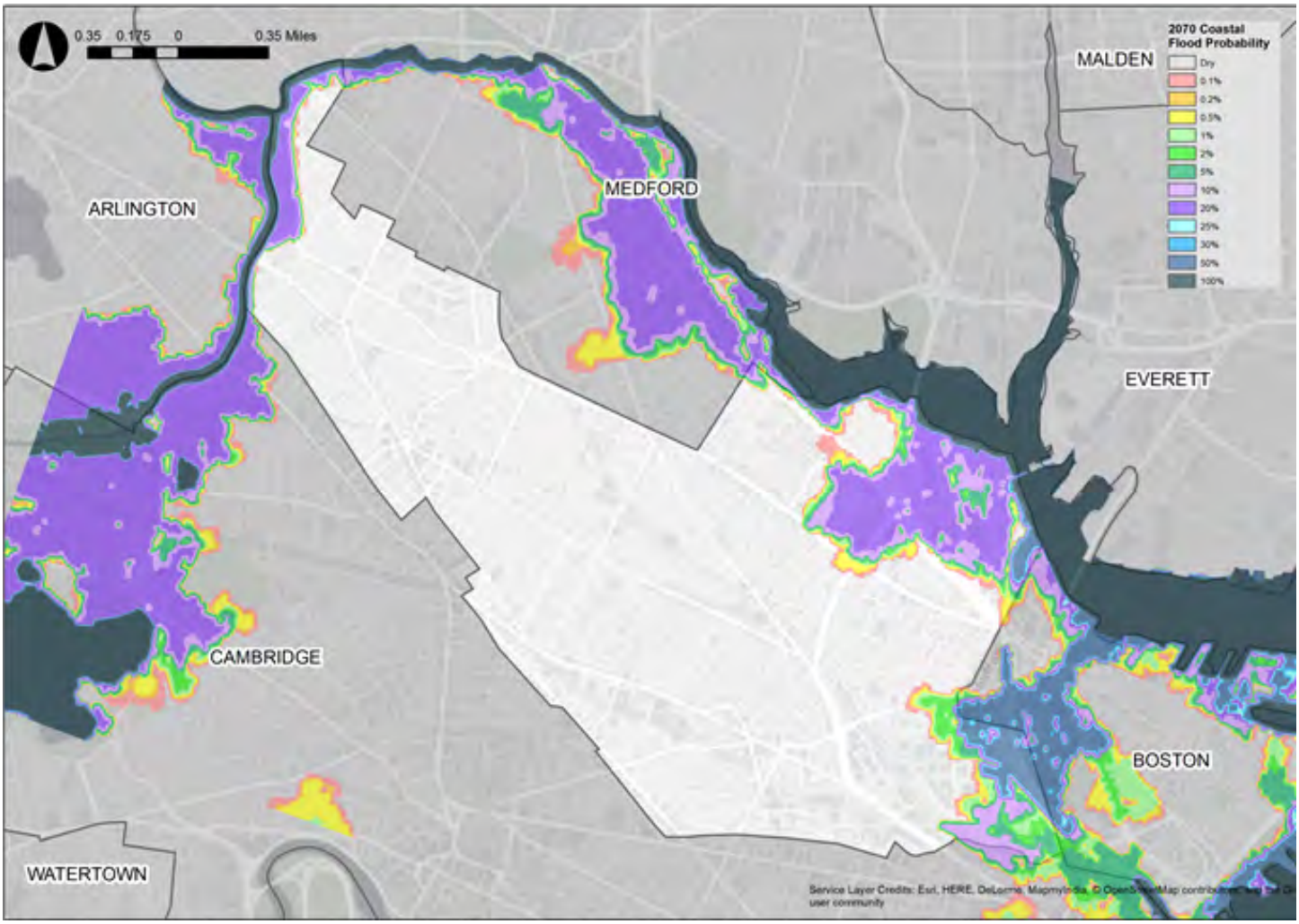
Several areas of Somerville are already prone to flooding from intense precipitation. With climate change, precipitation events will become more intense—meaning that a greater volume of rain will fall in a shorter period of time. Somerville is projected to experience more than a 30% increase in rainfall during a 100-year 24-hour event. This increase in precipitation will increase the risk of flooding in areas where the drainage system does not have sufficient capacity.

In addition to flooding from precipitation, sea level rise and storm surge are already potential concerns for areas of East Somerville and by 2035-2040 the Amelia Earhart Dam could be regularly flanked by storms, resulting in flooding for areas of Assembly Square, Ten Hills, and Winter Hill.

As the climate continues to change, average seasonal temperatures are also expected to increase and the number of days above 90 degrees Fahrenheit (historically about 10 a year) could rise to 40 days by 2030, a third of the summer, and 90 days by 2070, nearly the entire summer. In 2018 there were 23 days over 90 degrees.
As temperatures increase, Somerville will become more susceptible to the urban heat island effect which causes hotter temperatures due to paved surfaces and waste heat generated by energy use when compared to less developed areas. Increasing average temperatures can have wide-ranging impacts on human life, the built environment, and natural ecosystems. Rising temperatures and more intense heat waves present significant public health concerns and can contribute toward kidney, lung, and heart problems. Vulnerable populations are particularly susceptible to heat-induced illness and mortality. There will also be increasing demand for indoor cooling.

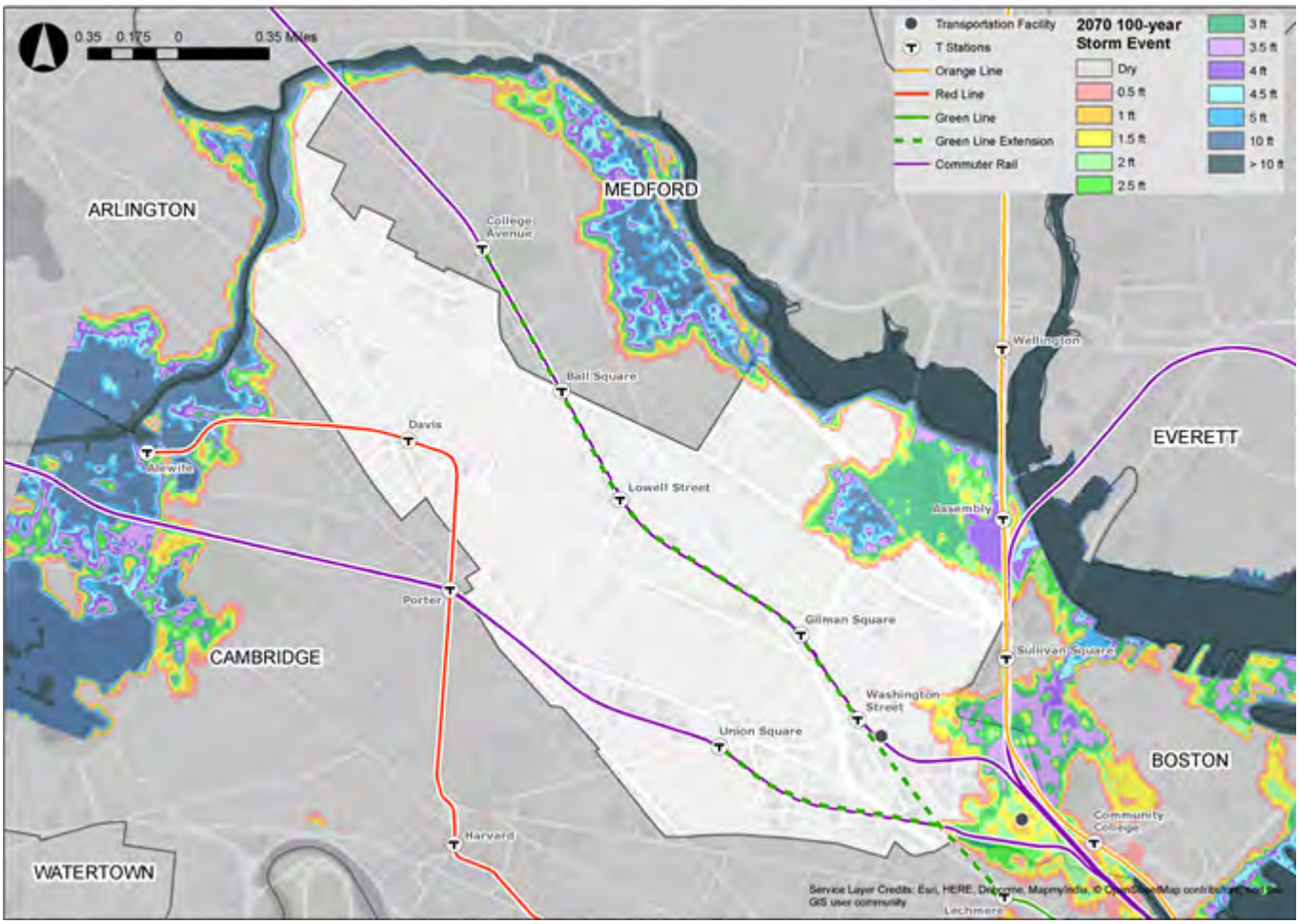
The following maps and figures provide an overview of projected climate exposure. Please review the Climate Change Vulnerability Assessment for more detailed analysis on Somerville's exposure, vulnerability, and risk to climate change. For higher resolution maps and GIS files, please contact Hannah Payne, Sustainability Coordinator, at hpayne@somervillema.gov.

2070 Coastal Flood Probability



This map shows the annual chance of flooding from coastal storm events and sea level rise in 2070. A 100% chance of flooding means that there is a nearly certain chance that the area will flood at least once in a given year, while a 50% chance means that there is an equal chance that it may or may not flood in a given year. A 1% chance of flooding corresponds with a 100-year event. A 0.1% chance corresponds with a 1000-year event. This map does not account for drainage (Somerville Climate Change Vulnerability Assessment, 2017)

2070 Coastal Flood Depth from 2070 100-year Storm Event

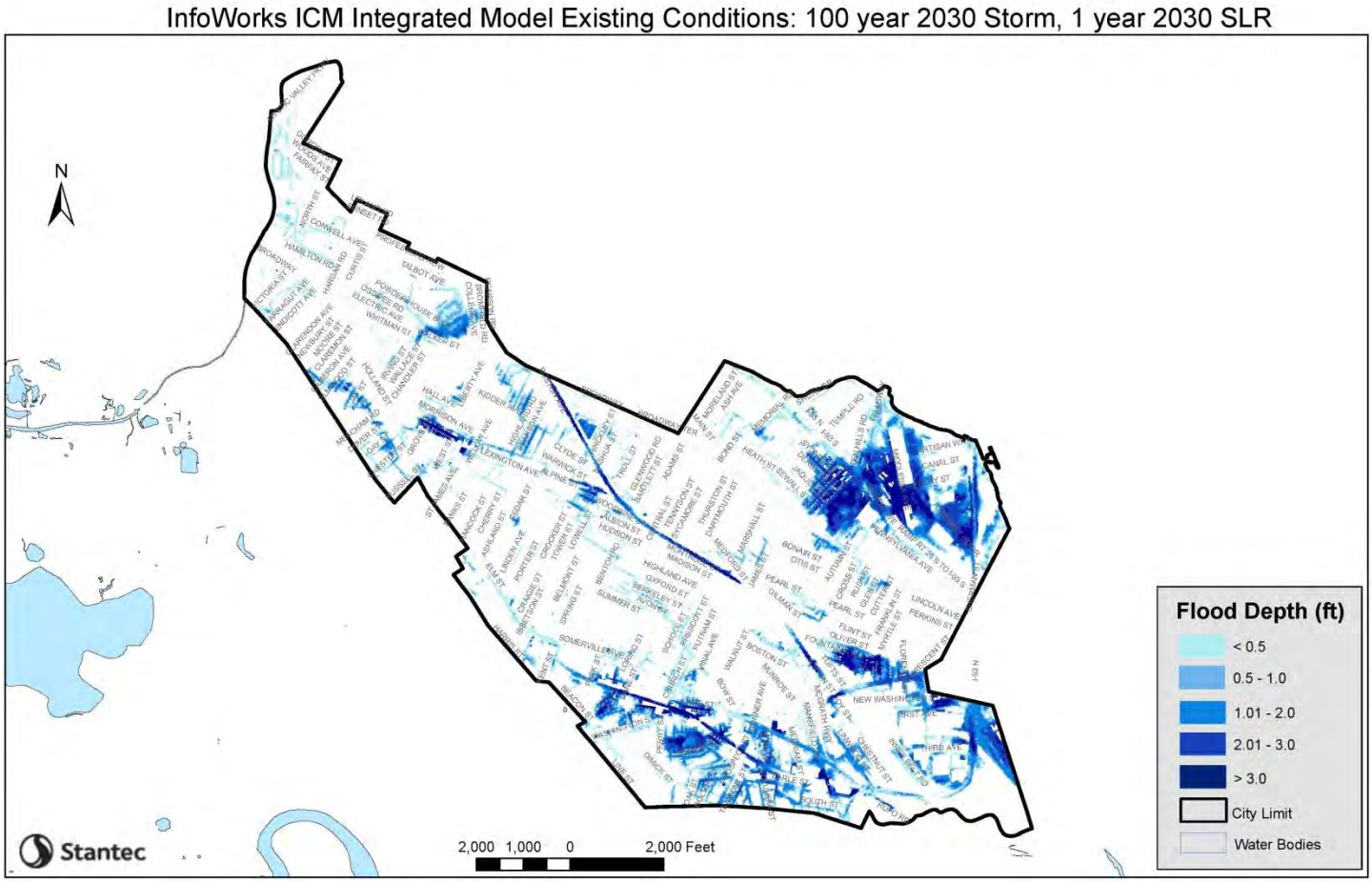


This map shows the projected flood depths of a 100-year coastal storm event in 2070 along with public transportation infrastructure assets. This map does not account for drainage (Somerville Climate Change Vulnerability Assessment, 2017)

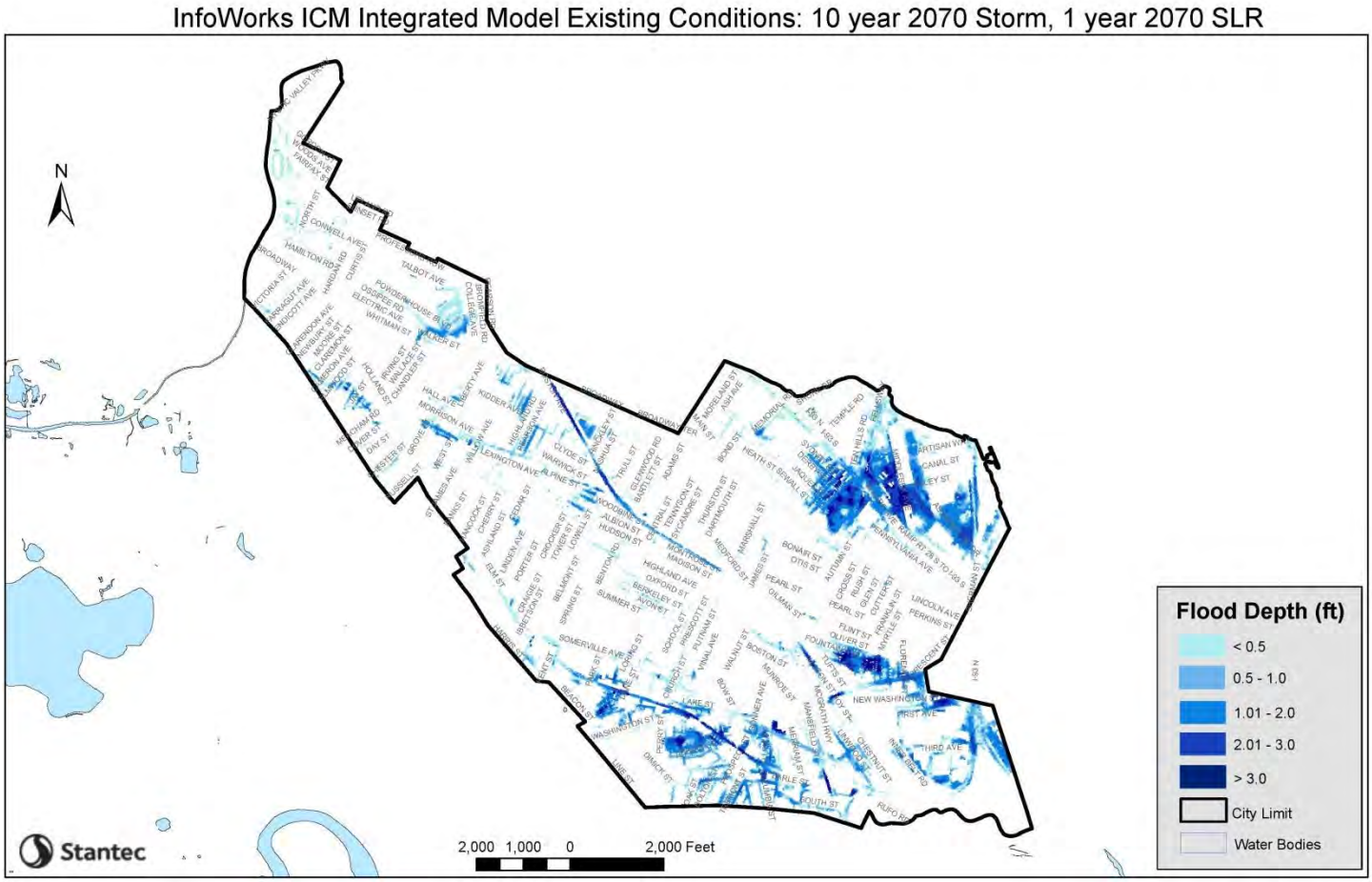
Precipitation Projections

Precipitation-based flooding is projected to increase in Somerville and is currently more of an immediate and widespread threat than sea level rise and storm surge. The intensification of both the frequency and intensity of rainfall events is likely to cause increased risk of flooding during rain events.

Storm Type	Present-day Rainfall	2030 Rainfall	2070 Rainfall
10-year (10% annual chance), 24-hour	4.9 in	5.6 in	6.4 in
100-year (1% annual chance), 24-hour	8.9 in	10.2 in	11.7 in

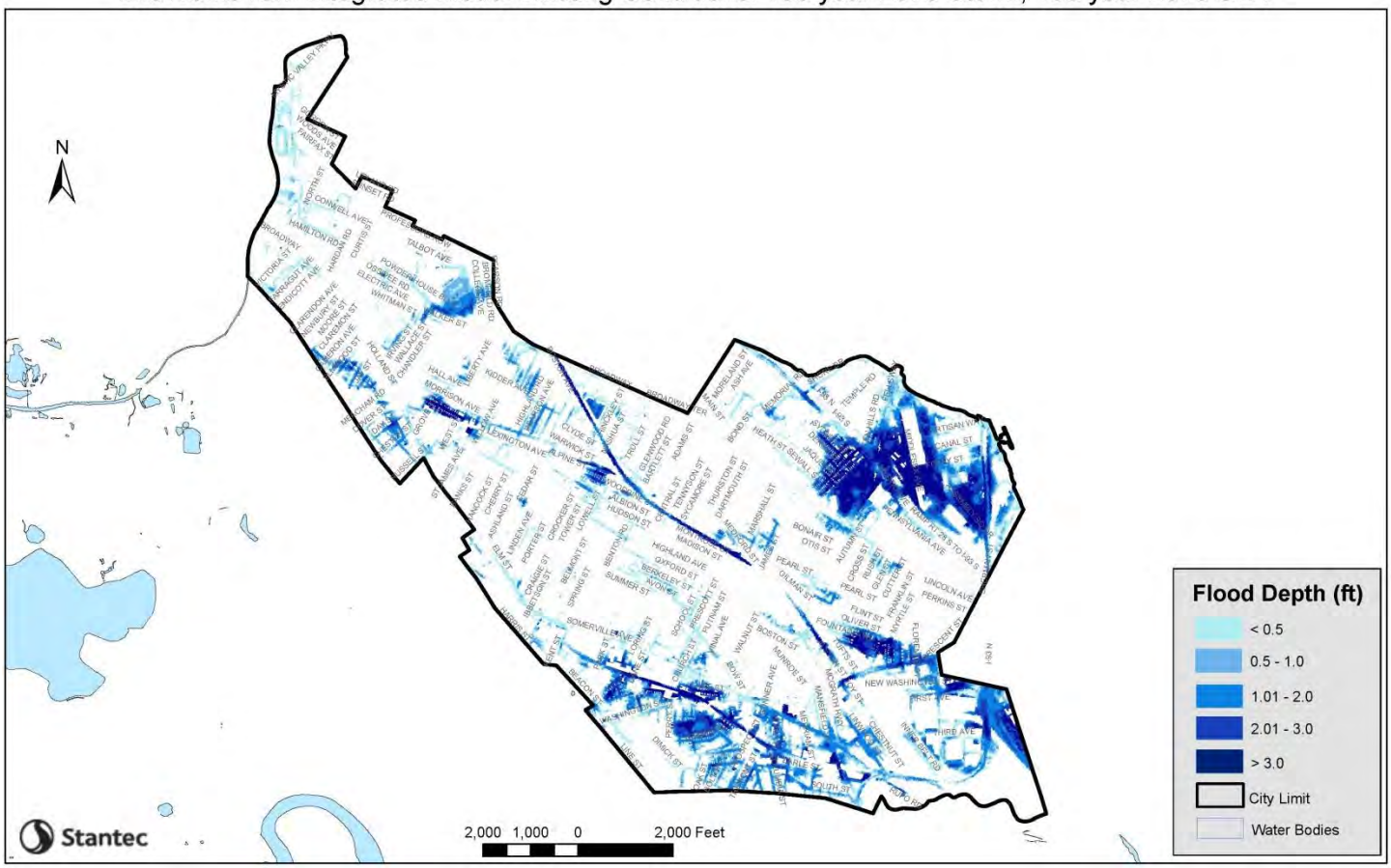


This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of a 100-year, 24-hour Design Storm with 1-year storm surge and sea level rise projections in 2030. Unlike the maps above, this includes modeling of the drainage system, which takes into account how water will be conveyed out of the city. The model is based on how the system is designed to function, so actual areas of flooding and depth of flooding could vary (Stantec, 2019).



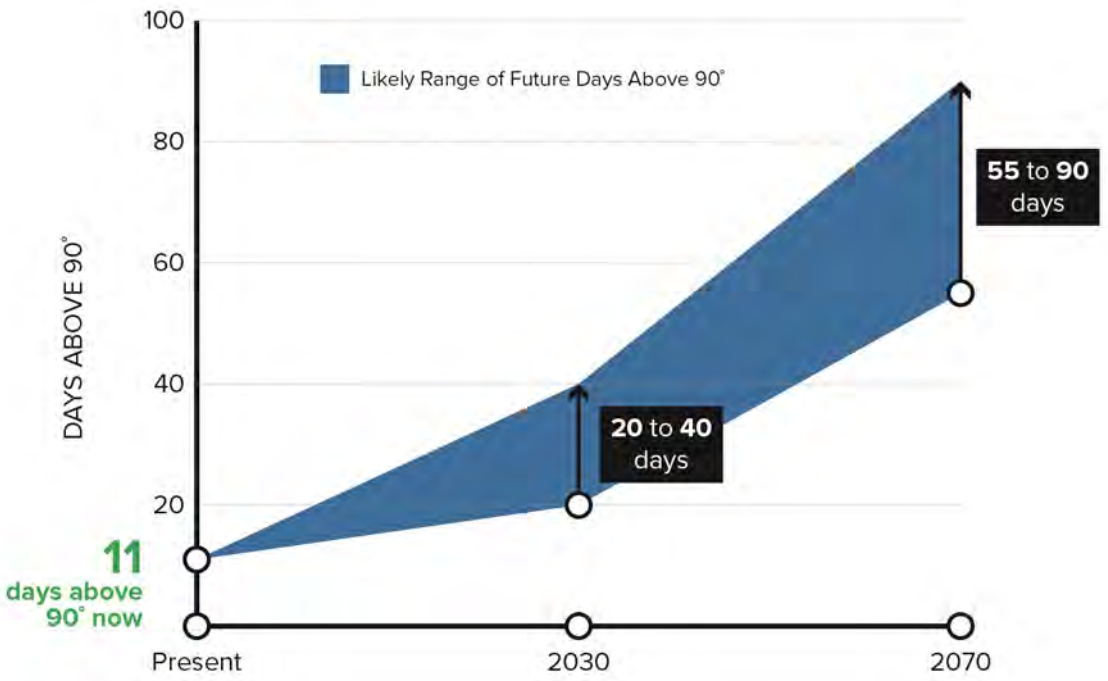
This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of the 10-year, 24-hour Design Storm with 1-year storm surge and sea level rise projections in 2070. This map includes modeling of the drainage system, which takes into account how water will be conveyed out of the city. The model is based on how the system is designed to function, so actual areas of flooding and depth of flooding could vary (Stantec, 2019).

InfoWorks ICM Integrated Model Existing Conditions: 100 year 2070 Storm, 100 year 2070 SLR



This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of 2070 100-year, 24-hour Design Storm with 100-year storm surge and sea level rise projections in 2070. This map includes modeling of the drainage system, which takes into account how water will be conveyed out of the city. The model is based on how the system is designed to function, so actual areas of flooding and depth of flooding could vary (Stantec, 2019).

Temperature Projections



(Somerville Climate Change Vulnerability Assessment 2017)

Temperature	1971-2000 (average)	2030 (low)	2030 Avg. (high)	2070 (low)	2070 Avg. (high)
Annual	50.0º F	53.3º F	53.5º F	55.8º F	58.7º F
Summer	70.6º F	74.5º F	74.8º F	77.4º F	80.6º F
Winter	29.8º F	32.2º F	33.0º F	34.6º F	38.0º F

RESOURCES:

For information on net-zero and resilient building and site design, please review the following resources:

- Passive House Principles
- Architecture 2030 Palette (Net-zero design tools)
- Building Resilience in Boston
- Enhancing Resilience in Boston
- A Better City's Resiliency Toolkit
- Ready to Respond: Strategies for Multifamily Building Resilience

For additional information visit www.somervillema.gov/sustainaville