# 2072 MASSACHUSETTS AVENUE, CAMBRIDGE

## APPENDICES
FEBRUARY 5, 2026

Location

2072 Massachusetts Avenue
Cambridge, MA 02140

Applicant

CC HRE 2072 Mass Ave LLC and CC HRE 2072 Mass Ave Tenant LLC
831 Beacon Street #164
Newton Centre, MA 02459

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# GREEN BUILDING NARRATIVE

# 2072 Massachusetts Avenue 9/4/25

## Green Building Intent

The 2072 Massachusetts Avenue project will use Phius CORE 2021 as its Green Building Rating System to comply with the City of Cambridge's Article 22 Sustainable Design and Development requirements. The Phius CORE building design will feature a high performance facade, passive heating and cooling strategies, efficient all electric building systems, low flow plumbing fixtures, and low/no VOC interior finishes for high quality indoor air conditions. The project will be solar ready and will eliminate the use of fossil fuels for operational energy. 2072 Mass Ave will be Enterprise Green Communities Certified and will also achieve the following 3rd party certifications by way of Phius CORE:

**EnergyStar Multifamily New Construction** - the project will minimize duct leakage and ensure that ventilation rates meet ASHRAE flow minimums

**DOE Zero Energy Ready Home** - the project will use WaterSense compliant plumbing fixtures, reduce plumbing lengths to minimize hot water demands, install EnergyStar appliances, and use LED lights for all fixtures

**EPA Indoor airPlus** - the project will specify and implement low VOC interior materials, manage radon (passively or actively), and ensure that moisture control and ventilation are appropriately designed to achieve high indoor air quality

The project team will include a Certified Passive House Consultant and a Phius Certified Verifier to ensure that the design meets all Phius CORE criteria in both design and construction through energy modeling and on-site verification. The design team will use life cycle analysis tools to ensure that material selection minimizes the embodied carbon of the building.

The team will issue the Green Building Requirements Checklist and the Net Zero Narrative required in Second AHO Design Review.

# 2072 MASS AVE APARTMENTS
# Article 22 Special Permit Submission

## Cambridge, MA
## November 21st, 2025

Submitted to
Cambridge Community Development Department
344 Broadway
Cambridge, MA 02139

Prepared by
New Ecology, Inc.
294 Washington St, STE 830
Boston, MA 02108

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# NET ZERO NARRATIVE

## Project Profile

| Table 1: Development Characteristics | |
|---|---|
| Lot area (sf) | 8,515 sf |
| Proposed land use(s) and total GFA (sf) by use | Residential, GFA = 90,482 sf |
| Proposed new building height(s) (ft and stories) | 136’ 0” (ground floor to parapet) & 12 stories |
| Proposed dwelling units | 73 |
| Proposed open space (sf) | 980 sf roof terrace |
| Proposed parking spaces | 0 |
| Proposed bicycle parking (long- and short-term spaces) | 44 permanent indoor spaces |

| Table 2: Green Building Rating System | | | |
|---|---|---|---|
| **Enterprise** | | | |
| Rating system & version | Enterprise Green Communities 2020 | Seeking certification? | Yes No TBD |
| | Phius CORE 2024 | Seeking Certification? | Yes No TBD |

## Proposed Project Design Characteristics

| Assembly Type | Renovation |
|---|---|
| Roof | Assembly R-60 minimum (10” polyiso) |
| Foundation | Assembly R-20, (4” XPS insulation, 4” depth) |
| Exterior walls | Steel framing: R-28 (4” of continuous exterior polyiso) |
| Windows | Triple pane, fiberglass windows. (U-0.16, SHGC-0.39) |
| Window-to-wall ratio | 21.5% |

| Table 4: Building Envelope Performance | | |
|---|---|---|
| | **Baseline** | **Proposed** |
| | U-value | U-value |
| Window | 0.45 Operable<br>0.39 Fixed | 0.17 Operable<br>0.15 Fixed |
| Wall | Steel-framed – 0.055 | Steel-framed – 0.035 |
| Roof | 0.032 | 0.019 |

As of 11/5/2025, preliminary WUFI modeling is underway. The areas for windows, walls, and roof will be updated as design progresses.

### Envelope Commissioning Process

The Project team plans to test and verify the envelope air barrier and air infiltration rates using bi-directional blower door testing both at construction midpoint and again after construction completion. Two (2) inspections will be performed after framing and air-sealing are complete but before insulation is installed, in order to identify any potential areas of thermal bridging and/or air infiltration. These inspections will be documented with site photos. Once installed, the air barrier will be tested with a bi-directional whole building blower door test conducted to Phius CORE 2024 and Energy Star MFNC standards. At the end of construction, 17 units will be blower door tested for air infiltration rates per RESNET sampling protocols.

## Building Mechanical Systems

| Table 5: Building Mechanical Systems Description | |
|---|---|
| Space heating | VRF air-source heat pump with in-unit fan coils. |
| Space cooling | VRF air-source heat pump with in-unit fan coils |
| Pumps & auxiliary | See above space conditioning and below DHW systems. |
| Ventilation | Central ERV with air-source heat pump |
| Domestic hot water | Proposed: Central, heat pump domestic hot water plant. |
| Interior lighting | All LED lighting. |
| Exterior lighting | All exterior lighting will be LED with photometric lighting controls and Dark Sky-approved fixtures or equivalent. |

### Mechanical Systems Commissioning Process

The project will retain a licensed commissioning agent (CxA) who will develop a detailed commissioning plan based on the building specifications and systems. The CxA will develop a functional performance test sheet for each system to be commissioned and will commission the following systems: Mechanical systems and equipment including Energy Recovery Ventilation (ERV) systems, central VRF air-source heat pump systems, all apartment fan coils, and all direct digital controls. For lighting systems, all common space lighting control systems including occupancy sensors will be commissioned and sampled at the appropriate rate. For plumbing systems, the domestic hot water heating system including central heat pump DHW plant, storage tanks, circulating pumps, thermostatic mixing valves, and controls will be sampled at the appropriate rate.

## Building Energy Performance Measures

| Table 6: Building Energy Performance Measures | |
|---|---|
| Land uses | Housing development promoting walking and bicycling, located close to multiple public transportation modes (bus, subway, commuter rail), close to groceries, schools, daycare, and other necessities, and close to parks. Extensive bicycle storage provided onsite. |
| Building orientation and massing | The proposed building will use the majority of the existing site with the building footprint ensuring the highest number of units possible. The existing site is a trapezoidal shape with its long axis running north/south. The priority for this project is number of affordable units forcing the project to orient with a long east/west elevation and a short north/south elevation. |
| Envelope systems | Continuous insulation, high performance glazing, and white roof. |
| Mechanical systems | Energy recovery ventilators will be provided for ventilation. The VRF distribution system will be designed to minimize energy losses. |
| Renewable energy systems | A preliminary solar PV layout for a roof-mounted system is complete. The project team will continue to evaluate solar PV layout and capacity potential as design progresses. |
| District-wide energy systems | N/A |

## Integrative Design Process

As part of the integrative design process, the developer, architect, and mechanical engineer have participated in an early-stage MEP- and envelope-focused sustainability charrette. The charrette was an early stage integrated design meeting with the design/development team to review preliminary design concepts and to define a comprehensive greening strategy that meets City of Cambridge Article 22, 2021 MA Specialized Opt-In code and Fossil Fuel-free requirements, EGC 2020 requirements, and Phius CORE 2024 requirements. Additional preliminary integrative design meetings will take place with the project team to discuss the design and construction process and to develop consensus on building systems and design that is consistent with Enterprise requirements.

## Green Building Incentive Program Assistance

The project plans to offset some of the costs of an energy efficient building envelope and electric heating and cooling system cost by utilizing all available rebate programs. The project will enroll in the Mass Save Residential New Construction incentive program and expects to use the Passive House Feasibility incentives from this program to offset a portion of the costs of energy modeling to explore possible Passive House certification.

## Net Zero Scenario Transition

| Table 7: Net Zero Scenario Transition | | |
|---|---|---|
| | Net Zero Condition | Transition Process |
| Building envelope | The building envelope will be built to meet or exceed the 2021 MA Stretch Energy Code standards, making it an ideal structure to achieve Net Zero in the future with on and off-site renewables. The envelope will be well-insulated and have a low level of air infiltration which will be tested and verified at construction. | This system will be a zero (site) emissions system at installation and exceed the 2021 MA Stretch Energy Code standards. |
| HVAC Systems | A VRF system is currently included in the proposed HVAC design for the building.<br><br>Central energy recovery ventilation will be used to capture energy from the ventilation system and will be installed at construction. | VRF in current design will be a zero emissions system at installation.<br><br>ERVs in current design will be a zero emissions system at installation. |
| Domestic Hot Water | Heat Pump Domestic Hot Water system is included in design. | Heat Pump Domestic Hot Water system is included in design. |
| Lighting | The project will use LED lighting throughout at construction. The building energy model for this project, will factor in Lighting Power Density as a calculation in overall building energy consumption. Fixtures will be modeled and will be specified in project documents to meet or exceed the energy requirement of the energy model. | The building and management team will include updated technology including: high efficacy lighting, occupancy sensors, and daylighting controls as applicable. |
| Renewable Energy Systems | The project will be solar-ready at construction. | The project is expected to have solar PV installed at construction completion. |

## Energy Systems Comparison

The Project team will proceed with all-electric space conditioning systems, inclusive of a highly efficient VRF air-cooled central heat pump heating and cooling system.

## Assumptions

| Table 9: Energy Systems Included/Excluded in Analysis | | | |
|---|---|---|---|
| | Included in Analysis? | | Describe systems analyzed or explain why it was excluded from analysis |
| | Yes | No | |
| Solar photovoltaics | X | | PV is included in the design. A preliminary analysis includes a 6.1kW roof-mounted system. |
| Solar hot water heater | | X | In combination with potential PV solar panels, there is not enough space on the roofs to justify both technologies. |
| Ground-source heat pumps | | X | Due to the limited space of the site, GSHP was determined to be cost-prohibitive at this time. |
| Water-source heat pumps | | X | Focus was on the ASHP VRF as the most feasible option. |
| Air-source heat pumps | X | | High-efficiency ASHP VRF |
| Non-carbon fuel district energy | | X | This has not been explored. |
| Other non-carbon fuel systems | X | | Purchase of carbon offsets would be included for the NZ scenario should the City of Cambridge require them in the future. |

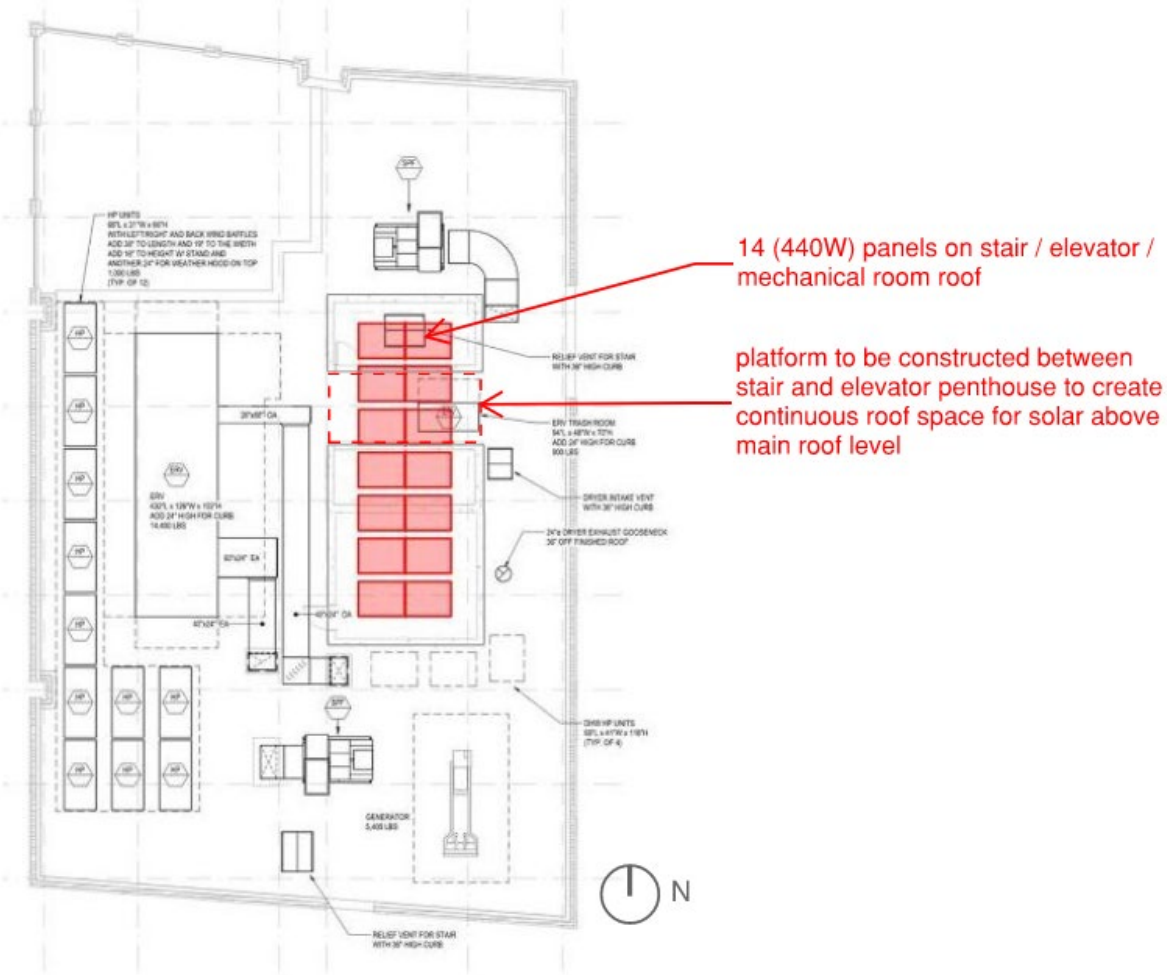
### Non-Carbon Fuel Scenario

The project will be non-carbon, all-electric.

## Solar-Ready Roof Assessment

As of 11/5/2025, WUFI modeling is in progress. Results from the solar PV assessment presented below will be added to the future pre-certification energy model.

| Table 13: Solar-Ready Roof Assessment | |
|---|---|
| Total roof area (sf) | 5,777 sf |
| Unshaded roof area (sf) | 3,210 sf |
| Structural support | Ballasted |
| Electrical infrastructure | Inverter, disconnect, wiring, breaker, meter, combiner |
| Other roof appurtenances | Mechanical pads, mechanical equipment, stair and elevator overheads, mechanical room, plumbing vents, roof drains, walkways, mechanical screen. |
| Solar-ready roof area (sf) | 778 sf |
| Capacity of solar array | 6.1 kW |
| Financial incentives | TBD |
| Cost feasibility | TBD |




## Results

At this early stage in design, cost estimation is still in progress. Table 14 will be updated once all estimates are completed.

| | Proposed Design | |
|---|---|---|
| | *Installation cost* | *Maintenance* |
| Space heating | TBD | TBD |
| Space cooling | TBD | TBD |
| Heat rejection | TBD | TBD |
| Pump & auxiliary | TBD | TBD |
| Ventilation | TBD | TBD |
| Domestic hot water | TBD | TBD |

| | | |
|---|---|---|
| (Financial incentives) | TBD | TBD |
| Total building energy system cost | TBD | TBD |

## Anticipated Energy Loads and GHG Emissions

As of 11/5/2025, WUFI energy modeling is in progress. Results for this assessment will be updated in future submissions as the pre-certification modeling is complete.

### Assumptions

The project will pursue Enterprise Green Communities 2020 certification and utilize WUFI Passive energy modeling to demonstrate energy loads and energy use. The anticipated baseline building (2021 MA Stretch Energy Code) energy use is indicated in the table below. Building heating and cooling loads, hot water heating load, lighting in units and common spaces, appliance and plug loads, as well as miscellaneous system loads were included in this preliminary energy model.

### Annual Projected Energy Consumption

As of 11/5/2025, WUFI modeling is underway. Results for this assessment will be added to report once modeling is complete.

Table 16: Annual Anticipated Baseline and Proposed Building Energy Use

| | Baseline | Proposed | | Non-Carbon-Fuel Scenario | |
|---|---|---|---|---|---|
| | Energy Use and Cost | Energy Use and Cost | % Reduction from Baseline | Energy Use and Cost | % Reduction from Baseline |
| Site EUI (kBtu/sf/yr)* | 22.28 | 20.4 | 8.44% | *Same as proposed* | *Same as proposed* |
| Source EUI (kBtu/sf/yr)* | 44.55 | 40.89 | 8.22% | *Same as proposed* | *Same as proposed* |
| Electricity (kWh)* | 509,191 | 467,317 | -8.22% | *Same as proposed* | *Same as proposed* |
| Gas (therms) | 0 | 0 | - | *Same as proposed* | *Same as proposed* |
| Total Site Energy Use (kBtu/yr)* | 1,737,259 | 1,594,393 | 8.22% | *Same as proposed* | *Same as proposed* |
| Total Energy Cost* | $162,941 | $149,541 | 8.22% | *Same as proposed* | *Same as proposed* |

*Site EUI, Source EUI, Electricity, Total Site Energy Use, and Total Energy Cost do not include on-site solar PV energy production as this design continues to be refined.

Table 17: Annual Projected Renewable Generation

| | Baseline | | Proposed | | Non-Carbon-Fuel Scenario | |
|---|---|---|---|---|---|---|
| | Energy Generation | % Total Energy | Energy Generation | % Total Energy | Energy Generation | % Total Energy |

| | | | | | | |
|---|---|---|---|---|---|---|
| On-site Renewable Energy Generation (kWh) | 0 | 0% | TBD* | 0% | *Same as proposed* | *Same as proposed* |
| Off-site Renewable Energy Generation and Carbon Offsets (site kWh and/or therms) | 0 | 0% | TBD* | 0% | *Same as proposed* | *Same as proposed* |

*On-site solar PV energy production design is ongoing at this stage.

### Annual Projected GHG Emissions

As of 11/5/2025 WUFI modeling is underway. Results for this assessment will be added to report once modeling is complete.

The annual expected CO2 emissions for the proposed building based on the preliminary energy model are provided in the table below.

Table 18: Annual $CO_2$ and $CO_2e$ Emissions*

| | Baseline | Proposed | |
|---|---|---|---|
| | Emissions | Emissions | % Reduction from Baseline |
| Total GHG Emissions (mtCO2 and CO2e/yr) | 127 | 116 | 8.7% |
| GHG Emissions per SF (kgCO2 and CO2e/sf/yr) | 1.626 | 1.492 | 8.7% |

*Emissions based on 2025 grid factors.

# RATING SYSTEM NARRATIVE

## Project Description

The 2072 Mass Ave Apartments project (the Project) complies with the City of Cambridge Zoning Article 22: Sustainable Design and Development requirements. The Project will be designed and constructed under the guidelines of the Enterprise Green Communities 2020 (EGC 2020) certification. The building will meet the design, construction, and testing requirements of the program and will be certified as an EGC 2020 project.

The Project is comprised of one (1) new construction residential building. The total dwelling unit count is 73.

Integral to EGC 2020 certification is compliance with ENERGY STAR Multifamily New Construction and EPA Indoor airPLUS requirements. In combination with third-party, RESNET-approved quality assurance and control testing, the building will exceed the Cambridge Green Building Requirements as outlined in Article 22.20. Brunner Cott and Associates will retain a qualified RESNET HERS Rater for the project.

# I. Enterprise Green Communities 2020 Criteria Checklist

New Ecology reviewed the project scope and understands the credit summary presented in Table 1: EGC 2020 Criteria Checklist to be reasonable and achievable. While 40 optional points are required for certification, and Brunner Cott and Associates commits to reaching that threshold, it is clear that approximately 81 optional points are within reach. Criterion that are not being pursued or are not applicable are omitted from this narrative. Attached in Appendix A, please find the preliminary checklist.

## *Table 1: EGC 2020 Criteria Checklist*

| Criteria Category | Optional Points |
|---|---|
| Integrative Design | 10 |
| Location and Neighborhood Fabric | 11 |
| Site Improvements | 0 |
| Water | 8 |
| Operating Energy | 32 |
| Materials | 7 |
| Healthy Living Environment | 13 |
| Operations, Maintenance, and Resident Engagement | (mandatory) |
| Total Optional Points | 81 |

# II. Narrative Enterprise Green Communities 2020 Criteria Credits

The 2072 Mass Ave Apartments project fulfills all the mandatory criteria for all categories.

## A. Integrative Design

| | |
|---|---|
| 1.1 Project Priorities Survey | Mandatory |
| The 2072 Mass Ave Apartments project team, led by New Ecology, Inc. will complete a Project Priorities Survey during design development, to serve as a guide to the context, population and environmental considerations the project must address. This will ensure a well-informed integrative design process. | |
| | |
| 1.2 Charrettes and Coordination Meetings | Mandatory |
| An EGC2020 charrette was completed October 15th, 2025 which was attended by all members of the 2072 Mass Ave project design team. Meetings have taken place as necessary throughout the 2025 year to discuss the project goals and implement them into the building design. The discussion and outcomes are documented in a memorandum distributed to all team members. | |
| | |
| 1.3 Documentation | Mandatory |
| 2072 Mass Ave Apartments project team will include Enterprise Green Communities 2020 Criteria information into the design and construction documents. | |
| | |
| 1.4 Construction Management | Mandatory |
| The Project team will create, implement, and document an education plan for the general contractor and subcontractors, ensuring that those working on-site understand the objectives found in the Project Priorities Survey. The education plan will include:<br>• A summary of the Project Priorities Survey<br>• Sustainability goals<br>• Anticipated roles of each party in regard to the performance of the building with respect to the stated goals and objectives | |
| | |
| 1.6 Resilient Communities: Multi-Hazard Risk/Vulnerability Assessment | 10 points |
| The Project team will conduct a four-part assessment (social, physical, functional, strategy) to identify critical risk factors of your property and implement at least two sets of strategies to enable the project to adapt to, and mitigate, climate related or seismic risks. | |

## B. Location and Neighborhood Fabric

| | |
|---|---|
| 2.1 Sensitive Site Protection | Mandatory |
| The site location at 2072 Mass Ave does not contain any of the EGC 2020 identified ecologically sensitive features (floodplains, aquatic ecosystems, endangered species habitats, or farmland). | |
| | |
| 2.2 Connections to Existing Development and Infrastructure | Mandatory |
| The project site at 2072 Mass Ave falls within an existing neighborhood. The Project design team will work to connect the project to existing pedestrian and bicycle networks within proximity to the to the project site. | |
| | |
| 2.4 Increased Compact Development | 7 points |
| The 2072 Mass Ave Apartments project is 73 units, with a development density of 384.21 units/acre, well in excess of 3 times the existing census block density of 13.62 units/acre. This not only exceeds the mandatory requirement of 15 units/acre, it also meets the optional 7 points for 3x the residential density of the neighborhood census block group. | |
| | |
| 2.5 Proximity to Services and Community Resources | Mandatory |
| The Project location at 2072 Mass Ave is located within a 0.5-mile walk distance of at least four services and community resources as outlined by EGC 2020 criteria. Services of note include: public transportation, restaurants, gym, grocery store, place of worship and a pharmacy. | |
| | |
| 2.8 Access to Transit | 2 points |
| The 2072 Mass Ave project is located well within a 0.5-mile walking distance of multiple MBTA bus lines which offer more than 45 weekday trips daily as well as weekend trips, as well as the Central Red Line MBTA stop (Mandatory). The site is also located near dedicated bike lanes leading to high-quality transit (offering more than 100 trips/day) which meets 2 optional points. | |
| | |
| 2.9 Improving Connectivity to the Community | 2 points |
| 2072 Mass Ave Apartments will include visitor bicycle parking, and is located less than 0.1 miles (300 ft) from a Blue Bike Station. | |

## C. Site Improvements

| 3.1 Environmental Remediation | Mandatory |
|---|---|
| The project team will complete a Phase 1 Environmental Impact Assessment at the site. | |
| | |
| 3.2 Minimization of Disturbance during Staging and Construction | Mandatory |
| The 2072 Mass Ave Apartments project civil engineer will develop an erosion and sedimentation control plan in accordance with the EGC requirements listed for sites less than one acre:<br>• Stockpile and protect high-quality topsoil from erosion, for reuse.<br>• Control the path and velocity of runoff with silt fencing or comparable measures.<br>• Protect ERPZs, on-site storm sewer inlets, watercourses and water bodies with straw bales, silt fencing, silt sacks, rock filters, or comparable measures.<br>• Provide swales to divert surface water from hillsides.<br>• Identify and protect significant, high value trees during construction (healthy tree with a diameter at breast height greater than 6"). Install tree protection fencing outside the critical root zone.<br>• If soil in a sloped area is disturbed during construction, use tiers, erosion blankets (geotextile mats), compost blankets, filter socks and berms, or some comparable approach, to keep soil stabilized. | |
| | |
| 3.3 Ecosystem Services/Landscaping | Mandatory |
| The Project will ensure all new plantings will be appropriate to the site's soils or to new soils added to the site as well as to the microclimate. No invasive species will be used. | |
| | |
| 3.4 Surface Stormwater Management | Mandatory |
| The project will design the stormwater management system to exceed the minimum 60$^{th}$ percentile precipitation event. | |
| | |
| 3.6 Efficient Irrigation and Water Reuse | Mandatory |
| An irrigation system is planned for 2072 Mass Ave. The system will utilize a zoned drip irrigation, moisture sensor controllers, with other water efficiency strategies being considered. | |

## D. Water Conservation

| 4.1 Water-Conserving Fixtures | Mandatory |
|---|---|
| The 2072 Mass Ave Apartments project will include water-efficient fixtures including toilets, showerheads, and lavatory faucets which will be WaterSense certified. | |
| | |
| 4.2 Advanced Water Conservation | 4 Points |

| | |
|---|---|
| The project will reduce total indoor water consumption by at least 30% compared to baseline indoor water consumption chart. Any new toilet, showerhead, and/or lavatory faucet must be WaterSense certified. | |
| | |
| 4.3 Water Quality | Mandatory |
| The 2072 Mass Ave project will develop a Legionella water management program for the centralized hot water system. | |
| | |
| 4.5 Efficient Plumbing Layout and Design | 4 Points |
| The project will design the plumbing piping to store no more than 0.5 gallon of water in any piping/manifold between the fixture and the water heating source or recirculation line. No more than 0.6 gallon of water will be collected from the fixture before a 10-degree Fahrenheit rise in temperature is observed. Recirculation systems will be demand-initiated. | |

## E. Operating Energy

| | |
|---|---|
| 5.1a Building Performance Standard | Mandatory |
| All dwelling units in the Project will be certified through the Energy Star Multifamily New Construction program. An energy use intensity (EUI) and emissions intensity will be calculated for this project as part of the Article 22 submission which also satisfies this mandatory requirement for EGC 2020. | |
| | |
| 5.2b Moving to Zero Energy: Near Zero Certification | 15 points |
| The 2072 Mass Ave Apartments project team will be certified PHIUS, automatically granting the project 15 points. | |
| | |
| 5.3b Moving to Zero Energy: Renewable Energy | 2 points |
| The 2072 Mass Ave Apartments project team will install a renewable energy PV system on the roof which will account for at least 70% of the common area meter energy consumption. These optional points are dependent on the final analysis of the solar contractor. | |
| | |
| 5.6 Sizing of Heating and Cooling Equipment | Mandatory |
| The mechanical engineer for the Project will run calculations according to ACCA Manuals, Parts J and S, to size the heating and cooling systems appropriately. | |
| | |
| 5.7 ENERGY STAR Appliances | Mandatory |
| 2072 Mass Ave Apartments will include ENERGY STAR clothes washers, dishwashers and refrigerators. | |
| | |
| 5.8 Lighting | Mandatory |
| The Project will include all LED lighting and high-efficacy lighting controls for all permanently installed fixtures. | |

## F. Materials

| | |
|---|---|
| 6.4 Healthier Material Selection | Mandatory |
| The Project team has committed to meeting the VOC reduction goals of this criterion and will select products that comply with SCAQMD or CDPH standards. | |
| | |
| 6.5 Environmentally Responsible Material Selection | 3 points |
| The Project expects to design and install a cool roof for an optional 3 points. | |
| | |
| 6.6 Bath, Kitchen, Laundry Surfaces | Mandatory |
| All wet locations in the interior of the 2072 Mass Ave project; including bathrooms, kitchens, exterior entryways, laundry areas, and mechanical spaces, will be designed to have durable, cleanable surfaces.<br><br>Moisture-resistant backing materials, such as cement board, will be specified behind tub/shower enclosures. | |
| | |
| 6.10 Construction Waste Management | Mandatory with 4 additional points |
| The 2072 Mass Ave Apartments project will divert at least 75% of construction waste from landfill as required by EGC 2020. The project team will explore pursuing 4 optional points for recycling cardboard, wood, metals, and concrete. | |

## G. Healthy Living Environment

| | |
|---|---|
| 7.1 Radon Mitigation | Mandatory |
| 2072 Mass Ave is located in EPA Zone 1 for radon, requiring a passive radon system to be installed. Post construction testing will be completed, and if necessary, the mitigation system will be made active. | |
| | |
| 7.5 Integrated Pest Management | Mandatory |
| All wall, floor, and joint penetrations for the 2072 Mass Ave Apartments project will be sealed with low-VOC caulking to prevent pest entry. | |
| | |
| 7.6 Smoke-Free Policy | 10 points |
| 2072 Mass Ave will be smoke free and smoking will be prohibited within 25 feet of the project. The smoke free rule will be included in lease language and posted with signage at building entrances. | |
| | |
| 7.7 Ventilation | Mandatory |
| The 2072 Mass Ave Apartments project ventilation system will meet the ASHRAE 62.2-2010 and 62.1-2010 standards. | |
| | |
| 7.9 Construction Pollution Management | 3 points |

| |
|---|
| The 2072 Mass Ave Apartments project will have specified that all dwelling unit supply and return ducts (heating, cooling, ventilation) shall be sealed throughout construction to prevent construction debris from entering.<br><br>Additionally, a flush of all dwelling units will be completed post-construction and prior to occupancy. The flush will be a cumulative of 48 hours with all windows and doors open and all HVAC fans running. |
| |

| 7.12 Active Design: Promoting Physical Activity | Mandatory |
|---|---|
| The Project will provide residents with:<br>• High levels of even, natural, and artificial lighting within circulation and common areas (vision impaired, dementia).<br>• Universal, gender-neutral restrooms available for use in common areas.<br>• Permanent essential amenities for shared interior or exterior spaces, including seating, toilets, and drinking water to promote comfort and use. | |

## H. Operations, Maintenance, and Resident Engagement

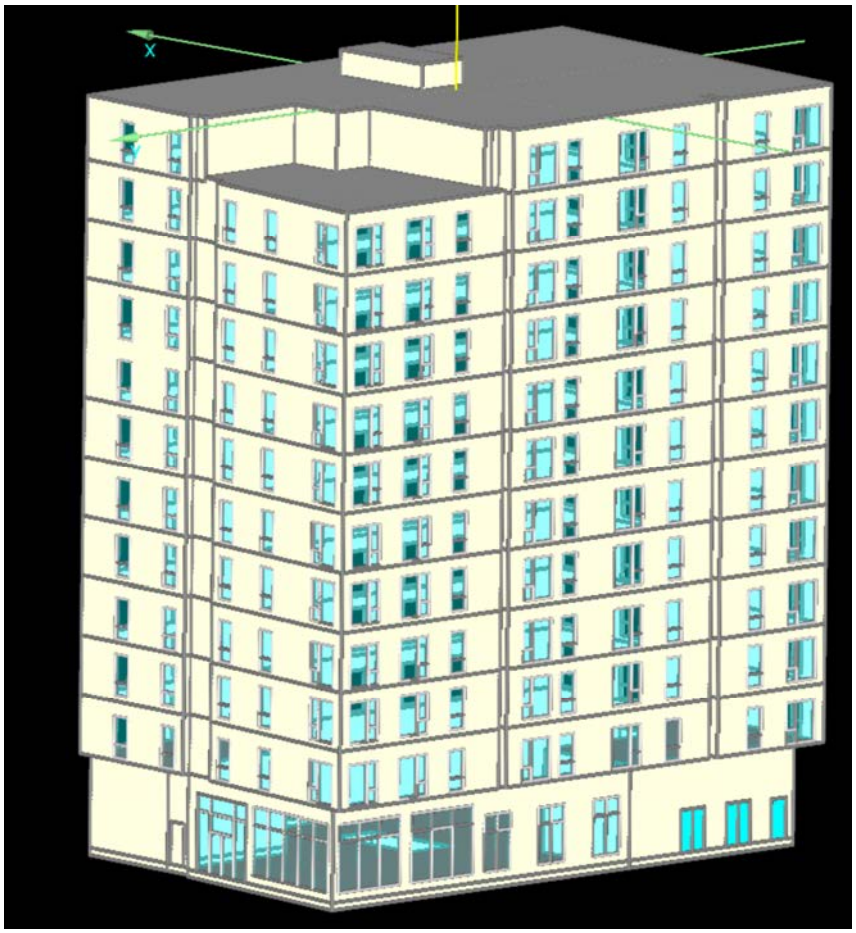
| 8.1 Building Maintenance Manual | Mandatory |
|---|---|
| The general contractor will provide a copy of the building maintenance manual including operations and maintenance guides for all appliances, HVAC operation, water-system shutoffs, lighting equipment, paving materials and plantings, and other system instructions. | |
| | |
| 8.2 Emergency Management Manual | Mandatory |
| New Ecology, Inc. will create, with input from Brunner Cott and Associates, an emergency management manual for the 2072 Mass Ave Apartments project. | |
| | |
| 8.3 Resident Manual | Mandatory |
| New Ecology, Inc. will create, with input from Brunner Cott and Associates, a resident green guide for the 2072 Mass Ave project. | |
| | |
| 8.4 Walkthroughs & Orientations to Property Operation | Mandatory |
| New Ecology, Inc. and the general contractor, in coordination with Brunner Cott and Associates, will provide resident and property manager orientations to identify the green features of the building and to explain the use of the resident green guide and building maintenance manual. | |
| | |
| 8.5 Project Data Collection and Monitoring System | Mandatory |
| The 2072 Mass Ave project will be tracking building performance in WegoWise. The Project expects to provide aggregated whole-property utility data from the utility provider(s). | |

# APPENDIX A: WUFI PASSIVE MODEL SUMMARY REPORTS

| NEW ECOLOGY<br>Community-Based Sustainable Development | Project Name: | **2072 Mass Ave, Cambridge MA** | |
|---|---|---|---|
| | Climate | Boston Logan International Airport | |
| | Case | As Designed | ECM |
| **Direct change from previous case** | Notes | Infiltration rate: 0.066 cfm/ft2 | Roof R-60<br>Slab R-20<br>ERV Efficiencies 80% Sensible |
| **Safety Margin: ≥10%** | | | |
| **Safety Margin: ≥0% & <10%** | | | |
| **Safety Margin: <0%** | | | |
| **WUFI PASSIVE RESULTS** | | | |
| **PHIUS+ 2024 Criteria** | **Units** | **Target** | |
| Heating Demand | kBtu/ft2.yr | 4.20 | **4.72** | **3.50** |
| Cooling Demand | kBtu/ft2.yr | 8.90 | **2.90** | **2.91** |
| Heating Load | Btu/hr.ft2 | 4.60 | **3.73** | **3.24** |
| Cooling Load | Btu/hr.ft2 | 3.70 | **2.90** | **2.84** |
| **Total Site Energy** | **Units** | **Target** | |
| Source Energy | kWh/person.yr | 5,025 | **4,611** | **4,515** |
| Site Energy Use Index | kBtu/ft2.yr | - | **20.9** | **20.4** |
| Site Energy Consumption | kWh/yr | - | **476,738** | **466,692** |
| **WUFI PASSIVE INPUTS** | | | |
| **Geometry** | **Units** | | |
| Interior Conditioned Floor Area (iCFA) | ft2 | 77,995 | 77,995 |
| Envelope Area | ft2 | 62,787 | 62,787 |
| Average Window-to-Wall Ratio (PH Boubdary) | % | 21% | 21% |
| **Exterior Envelope** | **Units** | | |
| Roof | R (Derated 15%) | 43 | 53 |
| Exterior Wall (Only continuous insulation) | R (Derated 8%) | 28 | 28 |
| Exterior Floor | R (Derated 8%) | 28 | 28 |
| Slab | R | 15 | 20 |
| Elevator Overrun Walls | R (Derated 8%) | 11 | 11 |
| Elevator Pit Walls | R (Derated 8%) | 10 | 10 |
| Elevator Pit Slab | R | 1 | 1 |
| Interior Floor (Trash Room and Mech Space) | R | 1 | 1 |
| Interior Wall (Trash Room and Mech Space) | R | 2 | 2 |
| Fixed Window | U (Whole Window) | 0.15 | 0.15 |
| | SHGC (Center-of-Glass) | 0.39 | 0.39 |
| Operable Window | U (Whole Window) | 0.17 | 0.17 |
| | SHGC (Center-of-Glass) | 0.39 | 0.39 |
| Storefront | U (Whole Window) | 0.40 | 0.40 |
| | SHGC (Center-of-Glass) | 0.39 | 0.39 |
| Glass Doors | U (Whole Window) | 0.57 | 0.57 |
| | SHGC (Center-of-Glass) | 0.39 | 0.39 |
| **Airtightness** | **Units** | | |
| Envelope airtightness at 50 Pa | cfm/ft2 | 0.066 | 0.066 |
| Air changes per hour at 50 Pa | ACH50 | 0.42 | 0.42 |
| **Lighting Assumptions** | **Units** | | |
| Lighting | kWh/yr | 75,254 | 75,254 |
| **Plug Loads** | **Units** | | |
| Miscellaneous Electric Loads | kWh/yr | 77,880 | 77,880 |
| **Occupancy** | **Units** | | |
| Units | # | 73 | 73 |
| Bedrooms | # | 134 | 134 |
| Average Occupancy | # Bedrooms + 1 | 207 | 207 |
| **Appliances** | **Units** | | |
| Refrigerator | kWh/year/unit | 451 | 451 |
| Dishwasher | kWh/year/unit | 239 | 239 |
| Clothes Washer | kWh/year/unit | 110 | 110 |
| Clothes Dryer | Combined Energy Factor | 3.93 | 3.93 |
| Electric Cooktop | kWh/use | 0.22 | 0.22 |

| **Ventilation** | **Units** | | |
|---|---|---|---|
| ERV Location | - | Outdoor - Central | Outdoor - Central |
| ERV Ventilation | cfm | 6,705 | 6,705 |
| ERV Power | W/cfm | 1.20 | 1.20 |
| ERV Sensible Recovery Efficiency | % | 70% | 80% |
| ERV Latent Recovery Efficiency | % | 40% | 40% |
| **Mechanical Systems** | **Units** | | |
| Heat Pumps | Heating COP | 2.5 @ 17F and 3.5 @ 47F | 2.5 @ 17F and 3.5 @ 47F |
| | Cooling COP | 4.0 | 4.0 |
| **Domestic Hot Water** | **Units** | | |
| System Type | - | Central HPWH | Central HPWH |
| Hot Water Tanks | Quantity | 3 | 3 |
| Hot Water Tank Capacity | Gallons | 355 | 355 |
| Water Heater Efficiency | COP | 2.21 | 2.21 |
| SwingTank | Quantity | 1 | 1 |
| SwingTank Capacity | Gallons | 150 | 150 |
| **Auxiliary Energy** | **Units** | | |
| Recirculation Pump | W | 84 | 84 |
| **Renewable Generation** | **Units** | | |
| Solar PV (capacity) | kW | 0 | 0 |
| Solar PV (annual generation) | kWh/yr | 0 | 0 |
| Solar PV (coincident generation) | kWh/yr | 0 | 0 |

*Results from the feasibility study are preliminary and are subject to change during the PH certification process.



# APPENDIX B: RATING SYSTEM CHECKLIST

# Green Building Project Checklist

Green Building
Project Location: 2072 Massachusetts Avenue, Cambridge, MA 02140

**Applicant**

Name: CC HRE 2072 Mass Ave LLC & CC HRE 2072 Mass Ave Tenant LLC (Jason Korb)
Address: 831 Beacon Street #164, Newton Centre, MA 02459
Contact Information
Email Address: jkorb@capstonecommunities.com
Telephone #: 617-539-6492

**Project Information (select all that apply):**

- ☐ New Construction – GFA: 91,700 sf
- ☐ Addition – GFA of Addition: n/a
- ☐ Rehabilitation of Existing Building – GFA of Rehabilitated Area: n/a
  - ☐ Existing Use(s) of Rehabilitated Area: _____
  - ☐ Proposed Use(s) of Rehabilitated Area: _____
- ☐ Requires Planning Board Special Permit approval
- ☐ Subject to Section 19.50 Building and Site Plan Requirements
- ☐ Site was previously subject to Green Building Requirements

**Green Building Rating Program/System:**

- ☐ Leadership in Energy and Environmental Design (LEED) – Version: _____
  - ☐ Building Design + Construction (BD+C) – Subcategory: _____
  - ☐ Residential BD+C – Subcategory: _____
  - ☐ Interior Design + Construction (ID+C) – Subcategory: _____
  - ☐ Other: _____
- ☑ Passive House – Version: PHIUS+ 2024
  - ☑ PHIUS+
  - ☐ Passivhaus Institut (PHI)
  - ☐ Other: _____
- ☐ Enterprise Green Communities – Version: _____

## Project Phase

☐ **SPECIAL PERMIT**

Before applying for a building permit, submit this documentation to CDD for review and approval.

## Required Submissions

All rating programs:

- ☐ Rating system checklist
- ☐ Rating system narrative
- ☐ Net zero narrative (see example template for guidance)
- ☐ Affidavit signed by Green Building Professional with attached credentials – use City form provided (Special Permit)

## Project Phase

☐ **BUILDING PERMIT**

Before applying for a building permit, submit this documentation to CDD for review and approval.

## Required Submissions

All rating programs:

- ☐ Rating system checklist – updated from any prior version
- ☐ Rating system narrative – updated from any prior version with additional supporting information from construction documents
- ☐ Net zero narrative – updated from any prior version (see example template for guidance)
- ☐ Energy Simulation Tool results demonstrating compliance with selected rating system. *[Note: For Passive House rating program, must use WUFI Passive, Passive House Planning Package (PHPP), or comparable software tool authorized by Passive House.]*
- ☐ Credentials of Green Commissioning Authority (or copy of contract between developer and Commissioning Authority if an independent consultant or subcontractor), including documentation of Green Commissioning process experience on at least two building projects with a scope of work similar to the proposed project extending from early design phase through at least ten (10) months of occupancy
- ☐ Affidavit signed by Green Building Professional with attached credentials – use City form provided (Building Permit)

Passive House rating program only:

- ☐ Letter of intent from Passive House rater/verifier hired for on-site verification, with credentials of rater/verifier
- ☐ Credentials of Certified Passive House Consultant who has provided design, planning, or consulting services (if different from the Green Building Professional for the project)
- ☐ Construction drawings and specifications

## Project Phase

☐ **CERTIFICATE OF OCCUPANCY**

Before applying for a certificate of occupancy, submit this documentation to CDD for review and approval.

## Required Submissions

All rating programs:

- ☐ Rating system checklist – updated from any prior version
- ☐ Rating system narrative – updated from any prior version with additional supporting information from as-built conditions
- ☐ Net zero narrative – updated from any prior version (see example template for guidance)
- ☐ Energy Simulation Tool results demonstrating compliance with selected rating system, updated to as-built conditions. *[Note: For Passive House rating program, must use WUFI Passive, Passive House Planning Package (PHPP), or comparable software tool authorized by Passive House.]*
- ☐ Affidavit with schedule of commissioning requirements signed by Green Commissioning Authority, with attached credentials – use City form provided (Certificate of Occupancy)
- ☐ Affidavit signed by Green Building Professional with attached credentials – use City form provided (Certificate of Occupancy)

Passive House rating program only:

- ☐ Pressure Test Verification
- ☐ Ventilation Commissioning
- ☐ Quality Assurance Workbook
- ☐ Final testing and verification report from rater/verifier

# APPENDIX C: GREEN BUILDING PROFESSIONAL AFFIDAVIT

# Affidavit Form for Green Building Professional
# Special Permit/Development Review

Green Building Project Location: 2072 Massachusetts Avenue, Cambridge, MA 02140

**Green Building Professional**

Name: Jacqueline Mignone

☑ Architect

☐ Engineer

License Number: 953252

Company: Bruner/Cott Architects

Address: 225 Friend Street, Boston, MA 02114

Contact Information

Email Address: jmignone@brunercott.com

Telephone Number: (617) 492-8400

I, Jacqueline Mignone, as the Green Building Professional for this Green Building Project, have reviewed all relevant documents for this project and confirm to the best of my knowledge that those documents indicate that the project is being designed to achieve the requirements of Section 22.24 under Article 22.20 of the Cambridge Zoning Ordinance.

*(Signature)* Jacqueline Mignone 12/23/25 *(Date)*

Attach either:

☑ Credential from the applicable Green Building Rating Program indicating advanced knowledge and experience in environmentally sustainable development in general as well as the applicable Green Building Rating System for this Green Building Project.

☐ If the Green Building Rating Program does not offer such a credential, evidence of experience as a project architect or engineer, or as a consultant providing third-party review, on at least three (3) projects that have been certified using the applicable Green Building Rating Program.

phius certified consultant

**Jacqueline Mignone**

has fulfilled the requirements for becoming a

# Phius Certified Consultant: CPHC®

This certificate hereby attests that the above-named Consultant has completed training provided by Phius (Passive House Institute US) relating to construction of buildings that can meet the criteria of the Phius standards for all climate zones and has passed Phius' examination.

Buildings designed, modeled and constructed to meet the Phius standards are ultra-efficient and characterized by superior indoor air quality, thermal comfort, resilience and durability.

| 115366 | Apr 28, 2025 | Apr 28, 2028 |
|---|---|---|
| Phius ID | Date Issued | Valid Through |

Executive Director

# GREEN FACTOR

# Green Factor Certification Form

This is for projects that are subject to the Green Factor Standard in Section 22.90 of the Cambridge Zoning Ordinance, which requires site and landscape design features that reduce urban heat.

*Review Section 22.90 of the Cambridge Zoning Ordinance and the Cambridge Cool Score Information and Guidelines before completing this form. When submitting a completed form, attach the supporting materials listed in the Green Factor Checklist.*

**Project Address/Location:** 2072 Massachusetts Avenue, Cambridge, MA 02140

**Planning Board (PB) and/or Board of Zoning Appeal (BZA) case number (if applicable):** n/a

**Developer Name and Contact Information**

Name: CC HRE 2072 Mass Ave LLC & CC HRE 2072 Mass Ave Tenant LLC (Jason Korb)

Mailing Address: 831 Beacon Street #164, Newton Centre, MA 02459

Email Address: jkorb@capstonecommunities.com

Telephone #: 617-539-6492

**Applicability: Section 22.92 & Section 5.22.5**

| | |
|---|---|
| Is this project subject to Green Building Requirements (Section 22.20)? | ☑ Yes ☐ No |
| Does this project involve the construction of a new building? | ☑ Yes ☐ No |
| Does this project enlarge an existing building's footprint by at least 50%? | ☐ Yes ☑ No |
| Does this project involve the creation of new surface parking area? | ☐ Yes ☑ No |

*Answer the questions below if the answer is "Yes" to any of the above*

**Requirements**

*Cool Roof Requirement*

| | |
|---|---|
| Does this project involve the construction of a new building roof or replacement of more than 50% of an existing roof? | ☑ Yes ☐ No |
| Has this project received a Certificate of Appropriateness from the Cambridge Historical Commission or a Neighborhood Conservation District Commission, or a determination of adverse effect by the Executive Director of the Cambridge Historical Commission? [if "Yes," attach the document to your submission] | ☐ Yes ☐ No<br>☑ N/A |

Last Updated: March 2024

| | |
|---|---|
| How much of the new or replaced roof area (in sq. ft.) has a slope (rise:run) of less than 2:12? [Cool Roof Requirement is not applicable to roof area with a 2:12 or steeper slope] | 5,885 sf |
| What is the initial Solar Reflectance Index (SRI) of the proposed roof surface material for the area described above, excluding any solar energy systems or green roof area? [Minimum is 82] | 99 |

*Cool Score – Base information on the attached Cool Score Sheet and Site/Roof Plan*

| | |
|---|---|
| What is the Cool Score of the proposed site design? [Minimum is 1.0 except per below] | 1.04 |
| What is the Cool Score of the existing site? [Only answer if the project does not involve a new building or enlargement of a building footprint. The proposed Cool Score must not be less than the Cool Score of the existing site] | |

*Modifications to Requirements*

| | |
|---|---|
| Has the project received, or will the project seek, a special permit from the Planning Board to modify the Green Factor Standard for this proposal? | □ Received SP (date: _____)<br>□ Seeking SP<br>☑ No modification |

Sean Hope — 12.4.2025

Signature of Applicant — Date

Last Updated: March 2024

## Green Factor Checklist

| Project Phase | Required Submissions |
|---|---|
| ☑ **Special Permit/Design Review (if applicable)** | ☑ Green Factor Certification Form<br>☑ Cool Score Sheet<br>☑ Site and Roof Plans |
| ☐ **Building Permit** | ☐ Green Factor Certification Form (updated from prior version)<br>☐ Cool Score Sheet (updated from prior version)<br>☐ Site and Roof Plans (updated from prior version)<br>☐ Catalog of plant species including height and canopy spread of trees and height and soil depth of high and low planting areas<br>☐ Specifications of roof surface material including initial Solar Reflectivity Index (SRI)<br>☐ Specifications of paving material including SRI (if applicable)<br>☐ Specifications of green roof installation with operations and maintenance plan (if applicable) |
| ☐ **Certificate of Occupancy** | ***All materials updated based on as-built conditions:***<br>☐ Green Factor Certification Form (updated from prior version)<br>☐ Cool Score Sheet (based on as-built conditions)<br>☐ Site and Roof Plans (based on as-built conditions)<br>☐ Catalog of plant species including height and canopy spread of trees and height and soil depth of high and low planting areas<br>☐ Specifications of roof surface material including initial Solar Reflectivity Index (SRI)<br>☐ Specifications of paving material including SRI (if applicable)<br>☐ Specifications of green roof installation with operations and maintenance plan (if applicable) |

Last Updated: March 2024

City of Cambridge — Cool Score Sheet — 4/7/2025

| Project Address | Special Permit Number | Total Lot Area (SF) |
|---|---|---|
| 2072 Massachusetts Avenue | PB-XXX | 8,515 |
| **Applicant Name** | **Phone Number** | **Open Space Requirement (%)** |
| CC HRE 2072 Mass Ave LLC and CC HRE Mass Ave Tenant LLC | 617-513-6320 | 20% |
| **Applicant Contact / Address** | **Email Address** | **Zoning District** |
| Jason Korb / 831 Bracon St #164, Newton Centre, MA 02459 | jkorb@capstonecommunities.c | BA-2 / Res C-1 |
| **Project Description** | | **Result** |
| 12 story affordable multifamily development | | **Pass** |

Enter minimum required open space ratio. If the ratio is less than 20%, enter 20 here.

When entering strategies that are within 20' of the street (including sidewalks), do not also enter them in column H.

| | | | Outside 20' of Street | Value Factor | | Within 20' of Street | Value Factor | Contributing Area |
|---|---|---|---|---|---|---|---|---|
| **Trees** | | **Preserved Existing Trees** | | | | | | |
| Enter the number of trees in each category. Count each tree only once on this form. | A1 | Understory tree currently <10' canopy spread | 0 | 0.80 | + | 0 | 1.60 | - |
| | A2 | Understory tree currently >10' canopy spread | 0 | 1.00 | + | 0 | 2.00 | - |
| | A3 | Canopy tree currently <15' canopy spread | 0 | 0.80 | + | 0 | 1.60 | - |
| | A4 | Canopy tree currently between 15' and 25' canopy spread | 0 | 1.00 | + | 0 | 2.00 | - |
| | A5 | Canopy tree currently >25' canopy spread | 0 | 1.20 | + | 0 | 2.40 | - |
| | | **New or Transplanted Trees** | | | | | | |
| | A6 | Understory tree | 5 | 0.60 | + | 2 | 1.20 | 810 |
| | A7 | Canopy tree | 0 | 0.70 | + | 0 | 1.40 | - |
| **Planting Areas** | B1 | Lawn Area | 0 | 0.30 | + | 0 | 0.60 | - |
| Enter area in square feet of each component in the box provided | B2 | Low Planting Area | 0 | 0.40 | + | 0 | 0.80 | - |
| | B3 | High Planting Area | 195 | 0.50 | + | 287 | 1.00 | 385 |
| **Green Roofs & Facades** | C1 | Green Façade | 0 | 0.10 | + | 0 | 0.20 | - |
| For definitions, see reference document. | C2 | Living Wall | 0 | 0.30 | + | 0 | 0.60 | - |
| | C3 | Green Roof Area | 0 | 0.30 | + | 0 | 0.60 | - |
| | C4 | Short Intensive Green Roof Area | 0 | 0.50 | + | 0 | 1.00 | - |
| | C5 | Intensive Green Roof Area | 10 | 0.60 | + | 373 | 1.20 | 454 |
| **Paving & Structures** | D1 | Low Slope Roof | 0 | N/A | | | | |
| | D2 | High-SRI Paving | 0 | 0.1 | | | | - |
| | D3 | Shaded Area | 123 | 0.2 | + | 230 | 0.40 | 117 |

High-SRI Paving areas within 20' of a Street do not count towards the Cool Score

**Project Summary**

| | |
|---|---|
| *Portion of lot area utilizing green strategies* | 19% |
| *Portion of score from green strategies* | 93% |
| *Portion of score from trees* | 46% |
| *Portion of score contributing to public realm cooling* | 67% |

| | |
|---|---|
| **Total Contributing Area** | **1,765** |
| **Total Area Goal** | **1,703** |
| **COOL FACTOR SCORE** | **1.04** |

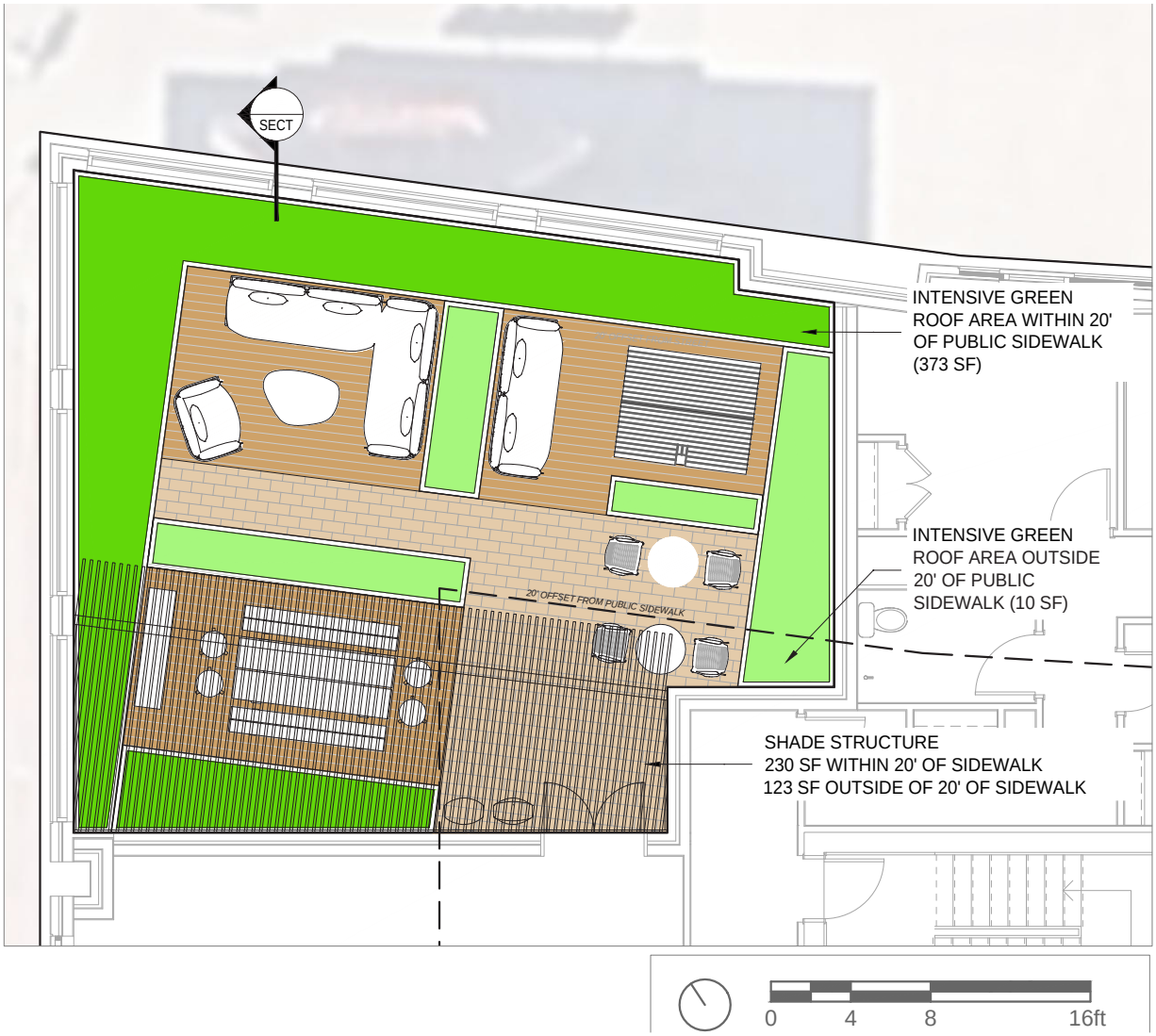
If your project scores 1 or above, you have successfully met the requirements of the Cool Factor.

## Site Plan

See Graphics Volum for enlarged version

## Roof Plan

See Graphics Volum for enlarged version



## CDD Determination for Special Permit submission

The Community Development Department (CDD) received the Green Factor (GF) documentation for the Special Permit stage. Pursuant to Section 22.96 of the Zoning Ordinance, CDD staff have reviewed the project's GF documentation and provide the following Determination and Summary of Compliance.

**CDD Determination: The documentation provided by the Applicant is adequate and demonstrates compliance with the Green Factor Standard applicable to the Special Permit stage.**

**Summary of Compliance:**

- Solar Reflectance Index of Roof – 99
- Solar Reflectance Index of Paving – N/A
- Cool Score – 1.00

# FLOOD RESILIENCE EXEMPTION CONFIRMATION

## Jackie Mignone

**From:** Falise, Kara <kfalise@cambridgema.gov>
**Sent:** Thursday, November 13, 2025 7:20 PM
**To:** Sean Hope
**Cc:** Jackie Mignone; Jason Korb; William Kennerly; Austen Gillen-Keeney
**Subject:** Re: 2072 Mass Ave Permitting (Flood Resiliency Standards)



Hello Sean,

You are correct that you are not subject to the Flood Resiliency Standards because there are not LTFE's associated with the parcel. To avoid any further discussion on this, you can note this in your application.

Kara

---

**From:** Sean Hope <sdhope77@gmail.com>
**Sent:** Thursday, November 13, 2025 4:03 PM
**To:** Falise, Kara <kfalise@cambridgema.gov>
**Cc:** Jackie Mignone <jmignone@brunercott.com>; Jason Korb <jkorb@capstonecommunities.com>; William Kennerly <wkennerly@capstonecommunities.com>; Austen Gillen-Keeney <agillenkeeney@brunercott.com>
**Subject:** 2072 Mass Ave Permitting (Flood Resiliency Standards)

Hi Kara,

I hope you are well. We are in the process of preparing for our second/final meeting at the planning board including addressing items in the Ordinance regarding Flood Resiliency. Based on our Consultants review, no changes to the design are required because there are no LTFE's above the site grade, The screenshot below is the flood elevation data pulled from the Cambridge Floodviewer. Accordingly we are exempt because the site is not affected by the 2070 precipitation or sea level rise flood elevations. I wanted confirmation on our assessment. I appreciate your preliminary review and comments.

Below is the language from the Ordinance/Standards:

### *Flood Resilience Standards*

*These standards require new development to protect vulnerable spaces that have a likelihood of flooding based on future climate projections.*

- *Review the City's FloodViewer tool to see if there are "Long-Term Flood Elevations" (LTFEs) that apply to a site. These are currently based on 2070 projections. Look at both Precipitation and Sea Level Rise / Storm Surge (SLR/SS) flood elevations – the higher of the two will be applicable.*
- *If there are no LTFEs above the site grade, then no changes to the design will be necessary.*

# TREE PROTECTION PLAN

ASCA RCA #766
Registered Consulting Arborist®

MCA #41801

**Plant Healthcare Consultants, Inc.**

American Society of Consulting Arborist ▪ International Society of Arboriculture
Massachusetts Arborist Association ▪ Massachusetts Tree Wardens and Foresters Association
TREE INVENTORIES ▪ APPRAISALS ▪ DIAGNOSIS ▪ TREE RISK ASSESSMENTS

BCMA #TX-1357BM

MQTW #1097

# Tree Protection Plan
# 2072 Massachusetts Avenue
# Cambridge, MA 02140

Prepared for:

CC HRE 2072 MASS AVE LLC
c/o Capstone Communities LLC
831 Beacon Street #164
Newton Centre, MA 02459

Prepared by:

Daniel E. Cathcart
Registered Consulting Arborist
Plant Healthcare Consultants, Inc.
27 Kenilworth Road
Milton, MA 02186

July 16, 2025

Daniel E. Cathcart
Plant Healthcare Consultants, Inc.
27 Kenilworth Road, Milton, MA 02186 ▪ Phone (617) 237-7695
dan.cathcart@gmail.com ▪ www.treeconsultant.com

# Table of Contents

# Summary

I was retained by CC HRE 2072 MASS AVE LLC to perform an evaluation of a *Tilia cordata* (Littleleaf linden) on the property line between 2050 and 2072 Massachusetts Avenue, Cambridge, MA. The focus of the evaluation was to assess the health and condition of the tree and, if preservation is an option, develop a Tree Protection Plan.

It is my opinion that the tree can be preserved and the specifications for the Tree Protection Plan are included in this report.

# Introduction

## Background & History

CC HRE 2072 MASS AVE LLC has acquired 2072 Mass Avenue, Cambridge, MA an ~8,500 sq ft property on the corners of Mass Ave and Walden Street. CC HRE 2072 MASS AVE LLC plans to renovate the property. There is one mature tree on the property line between 2072 and 2050 Mass Ave, a 12" diameter at breast height (DBH) Littleleaf linden. CC HRE 2072 MASS AVE LLC's goal is to preserve this tree.

On October 20, 2020, Jason Korb, of CC HRE 2072 MASS AVE LLC, contacted my office inquiring to retain consulting arborists in regard to a redevelopment project in Cambridge, MA. Mr. Korb informed me that there was a tree on the property line between the property he was redeveloping at 2072 Mass Ave. and the abutter at 2050 Mass Ave. He expressed a desire to preserve the tree and requested specification for a Tree Protection Plan.

I agreed to assist on the project. A site visit was scheduled for October 23, 2020, at 10:00 am.

The project was put on hold at that time.

On June 25, 2025, I was contacted by Mr. Korb and advised that the project was proceeding with changes, and I was asked to revise my original report to accommodate those changes.

Daniel E. Cathcart
Plant Healthcare Consultants, Inc.
27 Kenilworth Road, Milton, MA 02186 ▪ Phone (617) 237-7695
dan.cathcart@gmail.com ▪ www.treeconsultant.com

### Assignment

The scope of the assignment is to assist CC HRE 2072 MASS AVE LLC in creating a Tree Protection Plan for the Littleleaf linden. This plan will have recommendations and specifications to provide the tree with the best chance of surviving the construction project.

### Limits of Assignment

The recommendations and conclusions provided in this report are based on my visual observations only. I did not examine the plant's interiors, nor did I collect soil or plant tissue samples for laboratory testing.

### Purpose and Use of Report

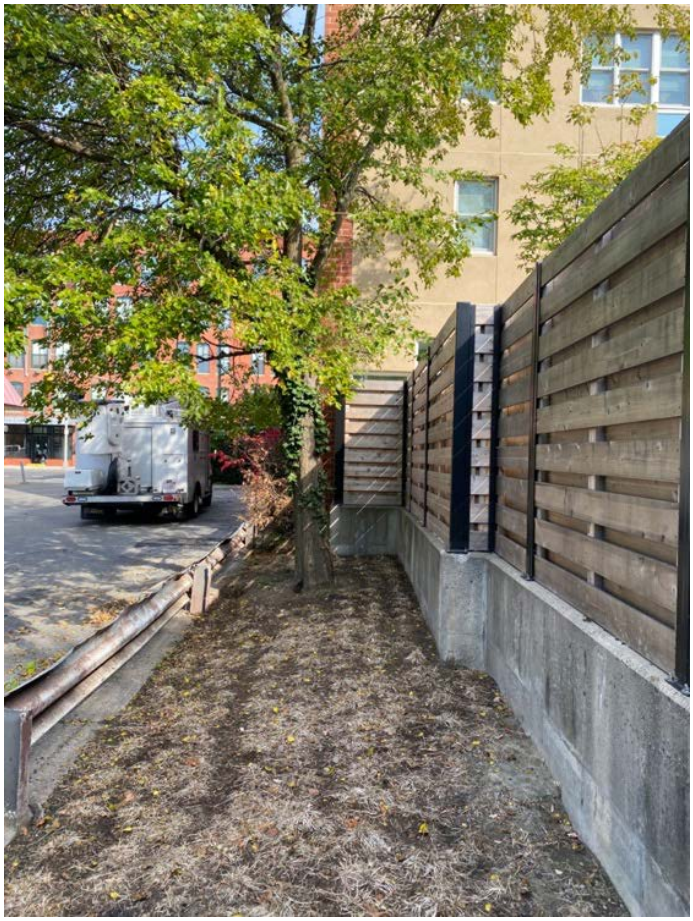
This report is intended to provide CC HRE 2072 MASS AVE LLC with as much information regarding the tree at 2072 Mass Ave. It will outline the tree protection plan, tree management plan and provide recommendations and specifications for care of the tree in all phases of the site development.

This report is the property of CC HRE 2072 MASS AVE LLC and can be used and shared as they see fit.

## Observations

On October 23, 2020, at approximately 10:00 am I visited the site and inspected the Littleleaf linden. At this visit I observed the tree and its surroundings and took measurements and photographs. I also examined the construction plans for the site to determine impact in regard to the tree.

I identified the tree as a 12" DBH *Tilia cordata*, Littleleaf linden. It is located on the south property line of 2070 Mass Ave that abuts 2050 Mass Ave. It is growing in a strip of land approximately 10' x 55' running in roughly an east-west orientation.



*Planting Strip October 23, 2020*

The tree appears to be in good health and has established itself well in this area.

*October 23, 2020*

Due to the fact that the roots zone is confined by a retaining wall to the south and the paved parking area to the north, the majority, if not all, of the viable roots of the tree are located in the planting strip. As such, if this area is to be protected and proper steps taken, the root system should remain viable and sustain the tree through construction.

I also reviewed the attached the proposed building plans, (See pages #12 & #13). The revised plan does not call for excavation of the critical root zone, this modification to the plans will decrease the impact on the tree even more and increase the tree's likelihood of surviving the contraction project.

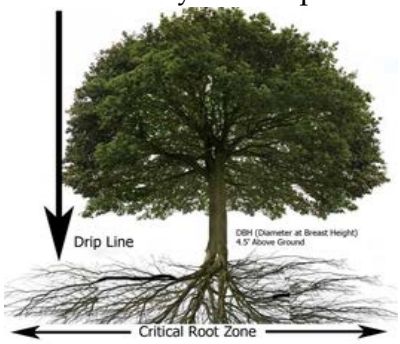
A photograph of the tree in its current condition, provided by the client, is included in Appendix B – Photographs, page 14.

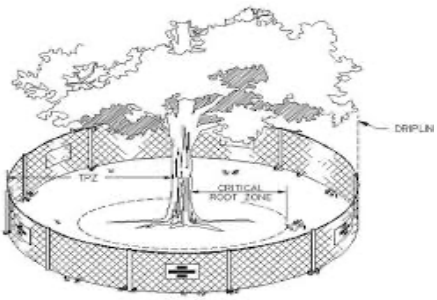
## Discussion

Tree Projection Zone

A Tree Preservation Plan has several components, all focusing on giving the tree the best chance for surviving the construction project. The majority of the components involve protection the Critical Root Zone (CRZ). The CRZ is the minimum area beneath the canopy of a tree which must be left undisturbed in order to preserve a sufficient root mass to give a tree a reasonable chance of survival. The CRZ should be defined, at a minimum, of the tree's dripline, the area represented by the outer canopy of the tree. This is crucial because the absorbing roots, the roots that take in water and nutrients, must be undisturbed or the tree will suffer stress and may decline and even die. The Tree Protection Plan includes the establishment of a Tree Protection Zone (TPZ), ideally, the TPZ must include the CRZ.

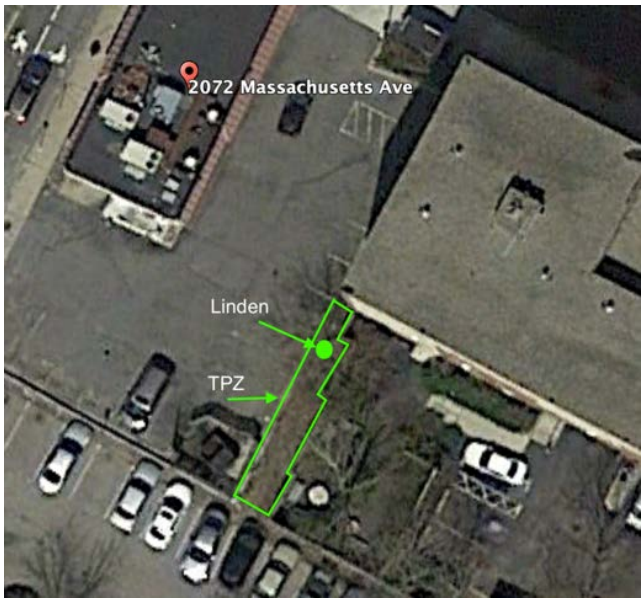
The larger the TPZ the better as the root zone of a tree could extend as much as two or three times the width of the canopy. This is an area that is enclosed by a semi-permanent fence with appropriate signage. Within the CRZ, trenching, pavement, soil compaction, mechanical injury, storing of materials and spoils and any change in grade should be avoided.



Ideal Tree Protection Zone

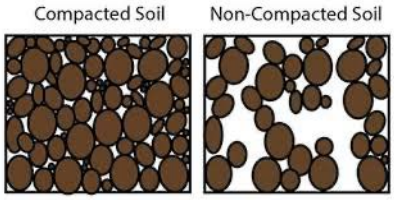
In this case the CRZ has been encroached upon by the pavement and retaining wall and the tree has adjusted its root growth accordingly by concentrating its root into the planting strip. As a result of the trees natural compensation to its environment a modified TPZ should be made to include as much of the planting strip as possible.



*Proposed TPZ*

Soil Compaction

All protected trees in the construction zone are subject to soil compaction from heavy vehicles, and any heavy debris placed in the Critical Root Zone (CRZ). Soil compaction occurs when the pore space between soil particles is greatly reduced. This causes the reduction of oxygen available to the roots and can lead to decline in trees. Use of equipment, grading, digging, and heavily used walking paths can cause soil compaction in a construction area. Use protective fencing, mulching within the protective fencing, and limiting the amount of access routes will minimize soil compaction.



As the root system of trees is far more extensive than just the dripline, in this case in the entire planting strip, all equipment and materials should be kept out of the TPZ.

Mechanical Injury

There will be heavy equipment and vehicles used near the trees that are to be protected. Wounds to the tree's branches and trunk, caused by mechanical damage, may reduce tree stability by decreasing the wood strength, the internal movement of water and nutrients, and the ability to compartmentalize against decay. Enclosing the Critical Root Zone with protective fencing will prevent damage from construction equipment.

Change in Grade

Lowering or rising of the grade within the root zone can damage or kill a tree. The normal exchange of moisture and gases within the root zone is disrupted with the change in grade. The original grade should be maintained as far out from the trunk as possible. As little as four inches of soil placed over the root system can kill some species of trees. The change in grade can have either immediate or long-term adverse effects on the tree. If grade change is required use of retaining walls or soil cuts can improve the tree's tolerance to the grade change.

Excavation & Trenching

This project will require no excavation for foundations in the TPZ. Excavation & trenching within the CRZ can damage the root system of a tree. If the job parameters change, but care should be taken to excavate as little of the area adjacent to the tree as possible.

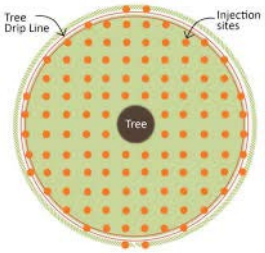
Irrigation

Irrigation should be provided within the CRZ as needed. A deep watering of the trees should take place before construction begins. During construction, the soil in the CRZ should be watered regularly and deeply so water penetrates the root area at least six to eight inches deep. A watering schedule will vary with climatic conditions, but a rule of thumb is 1" of water weekly during construction.

Soil Treatment

I am prescribing a non-nitrogen fertilizer that is high in phosphorus and potassium (0-20-20 fertilizer analysis) to promote root development. I recommend a fertilization in the spring. Applying the fertilizer in the early spring will prepare the trees for a flush of root development. Root development is most critical for the trees to prepare themselves for construction impact. The healthier and abundant the root system the more water and nutrients the tree can take in which is the best defense against stress.

The fertilizer shall be applied in a water solution, injected directly into the CRZ, in this case the entire TPZ, by means of an application needle under pressure. Injections should be made about every foot in a grid-like pattern.

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Plant Healthcare

At this stage there does not appear to any major pest concerns on the trees. This will be monitored regularly (monthly) to see if conditions change. If there is a need to address insect, mite or disease pest a proper course of action will be prescribed at that time.

All plant healthcare treatments shall be performed by a certified arborist who is also a licensed pesticide applicator and supervised by an ISA Board Certified Master Arborist.

## Conclusion

Based on my education, training and experience it is my professional opinion that taking this proactive approach to tree preservation will provide the Littleleaf linden at 2072 Massachusetts Avenue the best chance of surviving the construction. Setting up tree protection zones around the tree to retain, managing the flow and access of heavy equipment, performing required tree work prior to commencing construction and regular monitoring of the work site to ensure all practices are adhered to should make for a successful worksite.

## Recommendations

**Pre-Construction**

Prior to construction the Tree Protection Zone should be established. A six-foot chain-link fence (or suitable alternative, i.e. snow fence), with signage designating a Tree Protection Zone, Keep Out, should be erected around all the protected tree and encompass the modified Critical Root Zone as explained above. Once installed this fence should not be moved nor the CRZ disturbed for the duration of the construction project.

The access way for heavy equipment should be established, as well as where equipment and materials will be stored. This should be as far away as possible from all protected trees and their root systems. No equipment or material may be stored on the root systems of the protected trees.

**Construction**

During the construction Phase of the project monitoring of the site is crucial. An ISA Board Certified Master Arborist should inspect the site monthly. The purpose of those visits is to ensure that the Tree Preservation Plan is being adhered to, adequate watering is taking place, trenching and excavations are following plan, inspect the trees for pest issues and make observations regarding any changes to the trees on the site.

**Post-Construction**

Monitoring after the construction is completed is very important to the long-term health of the trees. For a period of one growing season (starting the April following construction completion through that September) monthly monitoring will continue as during the construction period.

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## Glossary of Terms

| | |
|---|---|
| ASCA | American Society of Consulting Arborists, professional association of arborist specializing in arboricultural consulting |
| Branch Union | The structural union of a lateral branch to the tree stem. |
| Canopy | The part of the crown composed of leaves and small twigs. |
| Certified Arborist | A professional arborist possessing current certification issued by the Massachusetts Arborists Association (MAA) and/or the International Society of Arboriculture (ISA) |
| Clinometer | A device used to measure the height of an object |
| Co-dominant | Stems or branches, equal in size and relative importance usually associated with either the trunk/stems or scaffold limbs/ branches in the crown. |
| Crown | The upper part of a tree, measured from the lowest branch, including all the branches and foliage |
| DBH | Stands for Diameter Breast Height. The diameter of a tree measured at 4.5 feet above the ground. |
| Dripline | Perimeter of the area under a tree including the branches and leaves |
| Establishment | The process of a tree becoming acclimated to a new environment, usually correlating the new root development that can sustain normal biological functions of the tree |
| Included Bark | An inherent weak point where two or more stems grow independently pressing on one another |
| ISA | International Society of Arborists, a global, professional association of arborist |
| Level II Tree Risk Assessment | A visual assessment only. The tree is inspected from the ground only and diagnostic tools used |
| Parity | The time, usually in years, that it takes for a replacement tree to provide similar attributes and benefits of a removed tree |
| Pruning | Systematic removal of branches of a plant usually a woody perennial |
| RCA | Registered Consulting Arborist, a credential issued by ASCA to an arborist that has demonstrated higher skills in certain technical areas related to trees and tree care, providing objective, independent opinions, with training for higher communication, presentation, and/or report writing skills. |

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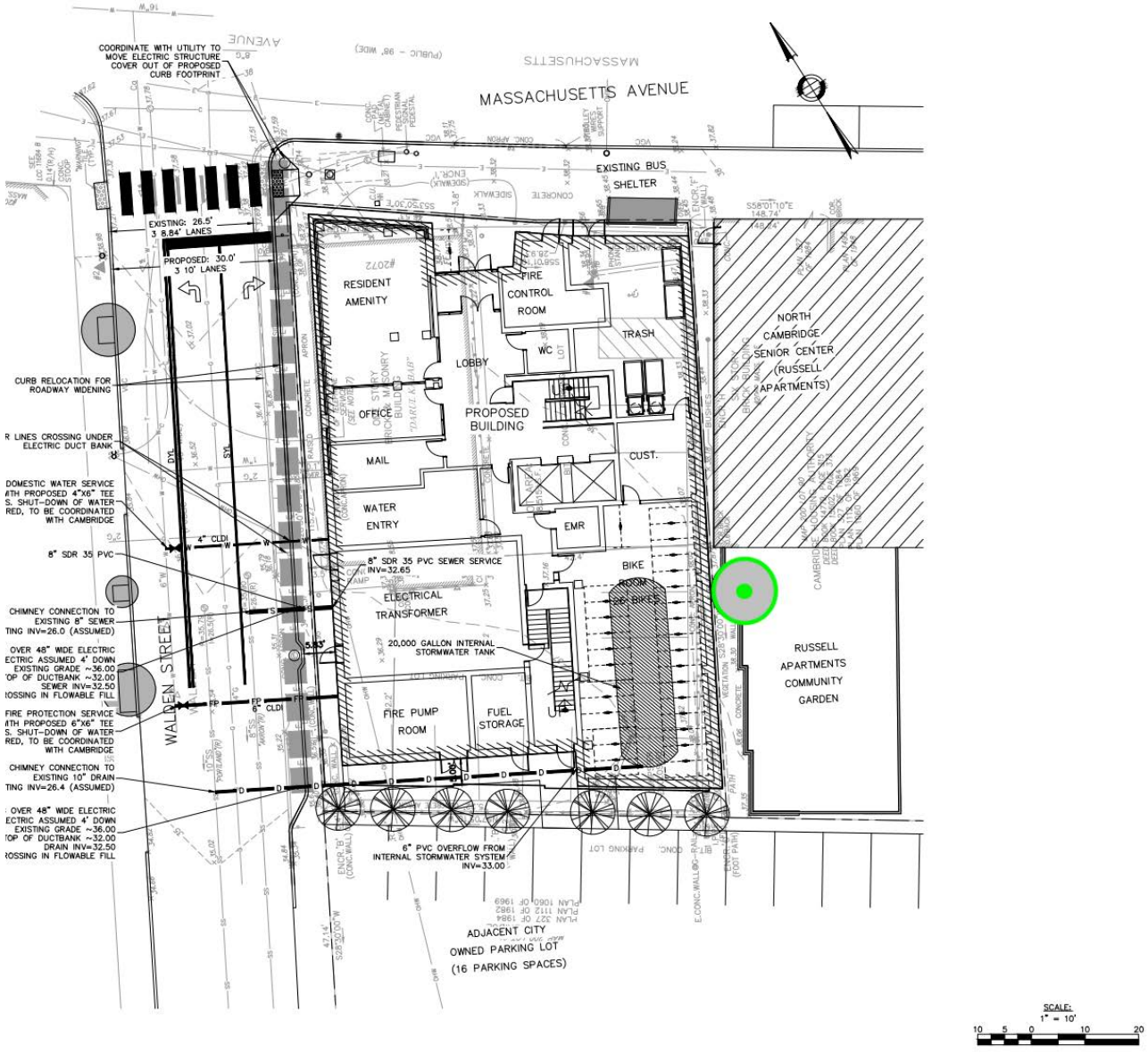
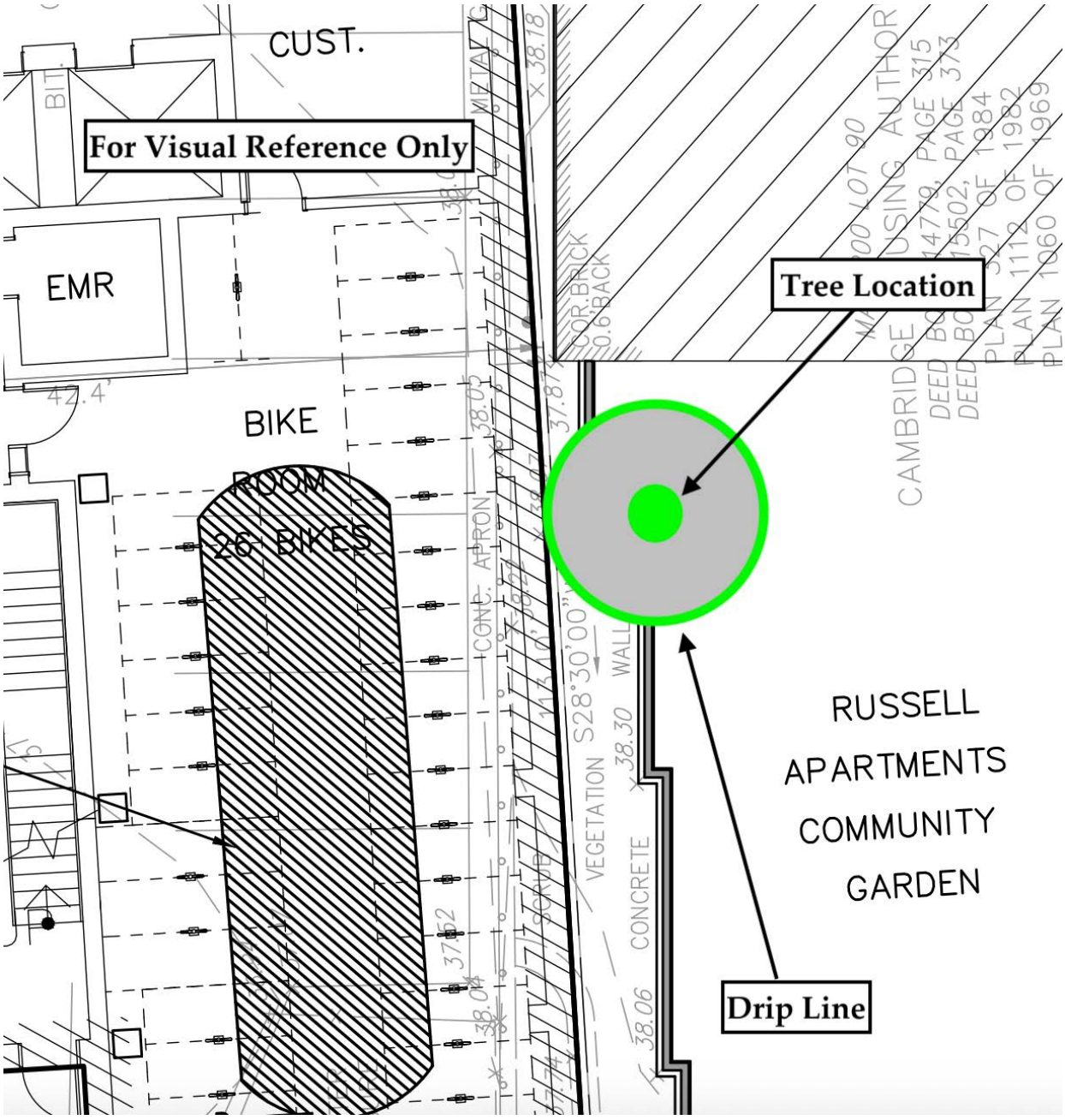
# Appendix A – Site



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# Appendix B – Photographs

*Photograph of subject tree. Taken by client on June 24, 2025*

## Appendix C - Assumptions and Limiting Conditions

1. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
3. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
4. Unless required by law, otherwise, possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.
5. Unless required by law, neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant-particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his qualifications.
6. This report expressed herein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
7. Sketches, drawings, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise. The reproduction of any information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by *Plant Healthcare Consultants, Inc.* as to the sufficiency or accuracy of said information.
8. Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring unless otherwise specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

# Appendix D - Certification of Performance

Plant Healthcare Consultants, Inc. certify that:

1. We have personally inspected the tree and property referred to in this report and have stated our findings accurately.
2. We have no current or prospective interest in the trees or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
3. The analysis, opinions and conclusions stated herein are our own and are based on current scientific procedures and facts.
4. Our analysis, opinions and conclusions were developed, and this report has been prepared according to commonly accepted arboricultural practices.
5. No one provided significant professional assistance to us, except as indicated within the report.
6. Our compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

We further certify that Plant Healthcare Consultants, Inc. is a member in good standing of the Massachusetts Arborist Association, American Society of Consulting Arborists, the International Society of Arboriculture and Massachusetts Tree Wardens and Foresters Association. We have been involved in the field of Arboriculture for over 30 years.

*Daniel E. Cathcart*

ASCA Registered Consulting Arborist® #766
ASCA Tree and Plant Appraisal Qualified
ISA Board Certified Master Arborist® #TX-1357BM
ISA Certified Urban Forest Professional
ISA Tree Risk Assessment Qualified
Massachusetts Certified Arborist #41801
Massachusetts Qualified Tree Warden #1097
Rhode Island Licensed Arborist #1307

# DRAINAGE APPROACH

Nitsch Engineering

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**2072 Massachusetts Avenue – Nitsch Project #14047**
**Civil Infrastructure Narrative**

The proposed project involves redeveloping the 2072 Massachusetts Avenue site (subsequently referred to as "the Site") from an existing single-story restaurant building and associated parking lot into a twelve-story building containing affordable housing units. The site is at the southeast corner of Massachusetts Avenue and Walden Street in Cambridge, MA.

The existing building comprises roughly 1,840 square feet of the 8,515 square foot site. In addition to the building, the site contains a parking lot with 15 parking spaces and a dumpster enclosure. The majority of the site is paved, with the exception of a small planter at the eastern corner of the site. There is a driveway curb cut on Massachusetts Avenue as well as on Walden Street, and the site has concrete sidewalk along each street. Additionally, there is a bus stop on Massachusetts Avenue.

Elevations on site range from 35.95+/- to 38.5+/- Cambridge City Base (CCB), and the site generally slopes from east to west, towards Walden Street. Existing site features and utilities described in this narrative have been identified and evaluated using the Site Survey performed by Hancock Associates titled "Existing Conditions Plan of Land in Cambridge, MA", dated March 12, 2018, with supplementary information obtained from ground-penetrating radar (GPRS) performed in October 2024, and information available from Cambridge's GIS mapping.

Attachments:
- Phosphorus and TSS Removal Calculations
- Existing and Proposed HydroCAD calculations
- Geotechnical Report, dated November 14, 2025
- Civil Plans, dated 12/3/2024

## Sanitary Sewer

The existing building sewer ties into the 8-inch vitrified clay sewer line in Walden Street. A breakdown of the site's existing sanitary sewer flow rates is as follows:

Table 1. Existing Sanitary Sewer Flows (per 310 CMR 15.203)

| Use | Unit Sewer Flow Rate (gpd) | Size | Existing Sewer Flow Rate (gpd) |
|---|---|---|---|
| Restaurant | 35 (per seat) | 37 seats | 1,295 |
| | | **Total** | **1,295** |

The sanitary sewage from the proposed building will be collected in new onsite sewer infrastructure and discharge into the existing 8-inch sewer main in Walden Street. A breakdown of the site's proposed sanitary sewer design flow rates are as follows:

Table 2. Proposed Sanitary Sewer Flows (per 310 CMR 15.203)

| Use | Unit Sewer Flow Rate (gpd) | Size | Proposed Sewer Flow Rate (gpd) |
|---|---|---|---|
| Residential Occupancy | 110 (per bedroom) | 145 bedrooms | 15,950 |
| Office | 75 (per 1000 sf) | 802 square feet | 60 |
| | | **Total** | **16,010** |

The City of Cambridge requires Inflow and Infiltration Mitigation if a project increases the flow to the City's infrastructure by more than 15,000 gallons per day. Per the calculations above, the proposed project would result in an increase of 14,715 gallons, which is under the I/I threshold.

### Domestic Water and Fire Protection Service

The Project's water demand estimate for domestic services is based on the Project's estimated sewage generation, described above. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 310 CMR 15.203 values to account for consumption, system losses and other usages to estimate an average daily water demand. The Project's estimated domestic water demand is 17,611 gallons per day. The project proposes installing new domestic and fire protection services that connect to the City water main in Walden Street in accordance with the Cambridge Water Department regulations and requirements.

A hydrant flow test was completed to determine pressure in the existing water main. Based on the results, it is anticipated that a water pressure booster pump will be required for the domestic water system, and a fire pump will be required to provide the required pressure for the building's sprinkler system. This fire pump will require a secondary water service connection, so an additional water service connecting to the water main in Massachusetts Avenue will be provided. The fire protection system design will be coordinated with the City Fire Chief, and all water service connections will be fully coordinated with the City Water Department.

### Stormwater Management and Drainage Design

The site stormwater management system has been designed in accordance with the Massachusetts Stormwater Handbook as well as the City of Cambridge Standards. As mentioned above, the existing site slopes from east to west and currently provides no peak rate or volume attenuation and no water quality treatment, as water sheet flows untreated into Walden Street.

The City of Cambridge standards require a "25-to-2" rate reduction using 2070 storm values, as well as water quality treatment requirements. To meet this standard, the project is proposing an underground infiltration system comprised of 30-inch perforated pipe in crushed stone. Due to limited site space, this system will be located beneath the building footprint and will be coordinated with plumbing to collect, retain, and slowly infiltrate stormwater runoff from the building roof. Overflow from the system will tie into the 10-inch combined sewer main in Walden Street.

Soils

Subsurface explorations were performed by Haley & Aldrich in May 2020 with additional explorations in October 2025. Three (3) borings and two (2) test pits were performed in the 2020 round of exploration, and one (1) additional boring was drilled in 2025. The results of the subsurface exploration found roughly 7-10 feet of fill above, 5-10 feet of marine sand, followed by 24 to 27 feet of marine clay and 5-16 feet of glacial till. Bedrock was encountered at a depth of 53.5 to 59 feet. Infiltration testing was performed in the footprint of the proposed subsurface system, which classified the fill and marine sand layers as silty sand with hydrologic soil group (HSG) rating of B which indicates fair to good infiltrative capacity. The infiltration rate was obtained with a falling head test which measured a coefficient of permeability of 7 inches per hour; however, for stormwater infiltration purposes, a 50% value of 3.5-inches per hour was recommended.

Groundwater was measured at approximately 12.5 feet below grade (roughly elevation 23.6) and Haley & Aldrich recommended an estimated seasonal high groundwater elevation (ESHGW) of 28.0. Nitsch is maintaining a four-foot separation from ESHGW to the infiltration system as recommended by the Massachusetts Stormwater Handbook.

Land Use

Development of the site results in an overall decrease of impervious surfaces by approximately 741 square feet. In addition to this, the project is providing at-grade planters around the building. A breakdown of existing and proposed land use is as follows:

Table 3. Pre- and Post- Land Use for 2072 Massachusetts Avenue (square feet)

| | Total | Building | Green Roof | Site Impervious | Planters | Landscaped |
|---|---|---|---|---|---|---|
| Existing | 8,515 | 1,840 | 0 | 6,565 | 0 | 109 |
| Proposed | 8,515 | 7,234 | 303 | 430 | 0* | 547 |
| Change | -- | + 5,394 | + 303 | - 6,135 | -- | + 438 |

*Planters totaling 117 square feet are underneath roof footprint, so have been included in the building square footage

Peak Runoff Rates

The Project is collecting the entire roof area (a majority of the site), including a portion of green roof, and directing it to the underground infiltration system that will reduce peak rates of the site and meet the Cambridge requirement of matching or improving upon the proposed 25-year peak runoff to the existing 2-year peak runoff for the Cambridge 2070 storms. Below is a table demonstrating the pre- and post-construction runoff values.

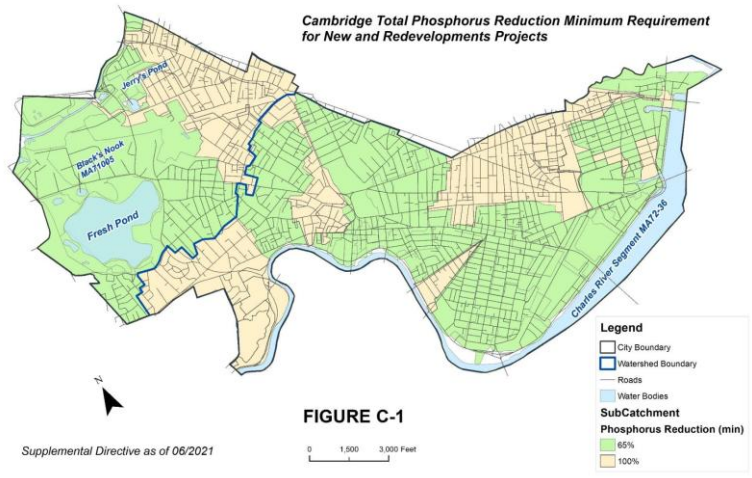
Table 4. Pre- and Post- Construction Peak Rates for 2072 Massachusetts Avenue (cfs)

| | 2-year | 10-year | 25-year | 100-year |
|---|---|---|---|---|
| Existing | **0.68** | 1.20 | 1.54 | 2.19 |
| Proposed | 0.04 | 0.46 | **0.67** | 2.09 |

Water Quality

The site is subject to 100% total phosphorus (TP) removal per Figure C-1 of the Cambridge Wastewater and Stormwater Management Guidance document, shown below. In addition, 80% of total suspended solids (TSS) need to be removed per the Massachusetts Stormwater Regulations. The proposed project provides some water quality mitigation from the land use conversion from majority parking lot to majority roof, which has a lower pollutant loading, and through an overall reduction in impervious. Furthermore, the infiltration system provides a treatment depth of 1-inch which provides a 99.5% phosphorus removal and 100% TSS removal for what is routed to the system. The remainder of the site, including land use conversion results in an overall 100% TP and 98% TSS removal for the site. Refer to attached phosphorus calculations for more information.

Figure C-1. TP Removal Requirement



Flood Resiliency

The Cambridge FloodViewer 2025 does not establish any present or future flood elevations for the 2072 Massachusetts Avenue parcel; however, the adjacent site across Walden Street has been identified as elevation 36 (CCD) for the 2070 – 1% precipitation event. This elevation was considered when planning the proposed building FFE and site features.


*Snip from Cambridge FloodViewer 2025*

# UTILITY SURVEYS

# Summary of Underground Utility Locating

Prepared For: Capstone Communities

**Prepared By:**
**Sean Parker**
**Sean.Parker@gprsinc.com**
**Project Manager -Boston**
**617-372-6695**

Capstone Communities
**Attn:** Jenny Tamarkin
**Site:** 2072 Massachusetts Ave
Cambridge, MA

We appreciate the opportunity to provide this report for our work completed on November 2, 2020.

## PURPOSE

The purpose of the project was to search for underground utilities within the project boundaries provided by the client. The scope of work consisted of 1 sidewalk and 2 electrical manholes/vaults. The client was concerned with the depth of the primary electrical lines running up and down the sidewalk adjacent to the building.

## EQUIPMENT

- **Underground Scanning GPR Antenna**. The antenna with frequencies ranging from 250 MHz-450 MHz is mounted in a stroller frame which rolls over the surface. The surface needs to be reasonably smooth and unobstructed in order to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the feasibility of GPR. The data is displayed on a screen and marked in the field in real time. The total depth achieved can be as much as 8' or more with this antenna but can vary widely depending on the types of materials being scanned through. Some soil types such as clay may limit maximum depths to 3' or less. As depth increases, targets must be larger in order to be detected and non-metallic targets can be especially difficult to locate. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: Link
- **Electromagnetic Pipe Locator**. The EM locator can passively detect the electromagnetic fields from live AC power or from radio signals travelling along some conductive utilities. It can also be used in conjunction with a transmitter to connect directly to accessible, metallic pipes or tracer wires. A current is sent through the pipe or tracer wire at a specific frequency and the resulting EM field can then be detected by the receiver. A utility's ability to be located depends on a variety of factors including access to the utility, conductivity, grounding, interference from other fields, and many others. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: Link
- **GPS**. This handheld GPS unit offers accuracy down to 4 inches; however, the accuracy will depend on the satellite environment and obstructions and should not be considered to be survey-grade. Features can be collected as points, lines, or areas and then exported into Google Earth or overlaid on a CAD drawing. For more information, please visit: Link

## PROCESS

The process typically begins with using the EM pipe locator to locate pipes or utilities throughout the scan area. First, the transmitter is used to connect to and trace any visible risers, tracer wires, or accessible, conductive utilities provided that there is an exposed, metallic surface. The areas are then swept with the receiver to detect live power or radio frequency signals. Locations and depths are painted or flagged on the surface. Depths cannot always be provided depending on the location method and can be prone to error.

Initial GPR scans were then collected in order to evaluate the data and calibrate the equipment. Based on these findings, a scanning strategy is formed, typically consisting of scanning the entire area in a grid with 5x5' scan spacing in order to locate any potential utilities that were not found with the pipe locator. The GPR data is viewed in real time and anomalies in the data are located and marked on the surface along with their depths using spray paint, pin flags, etc.

## LIMITATIONS

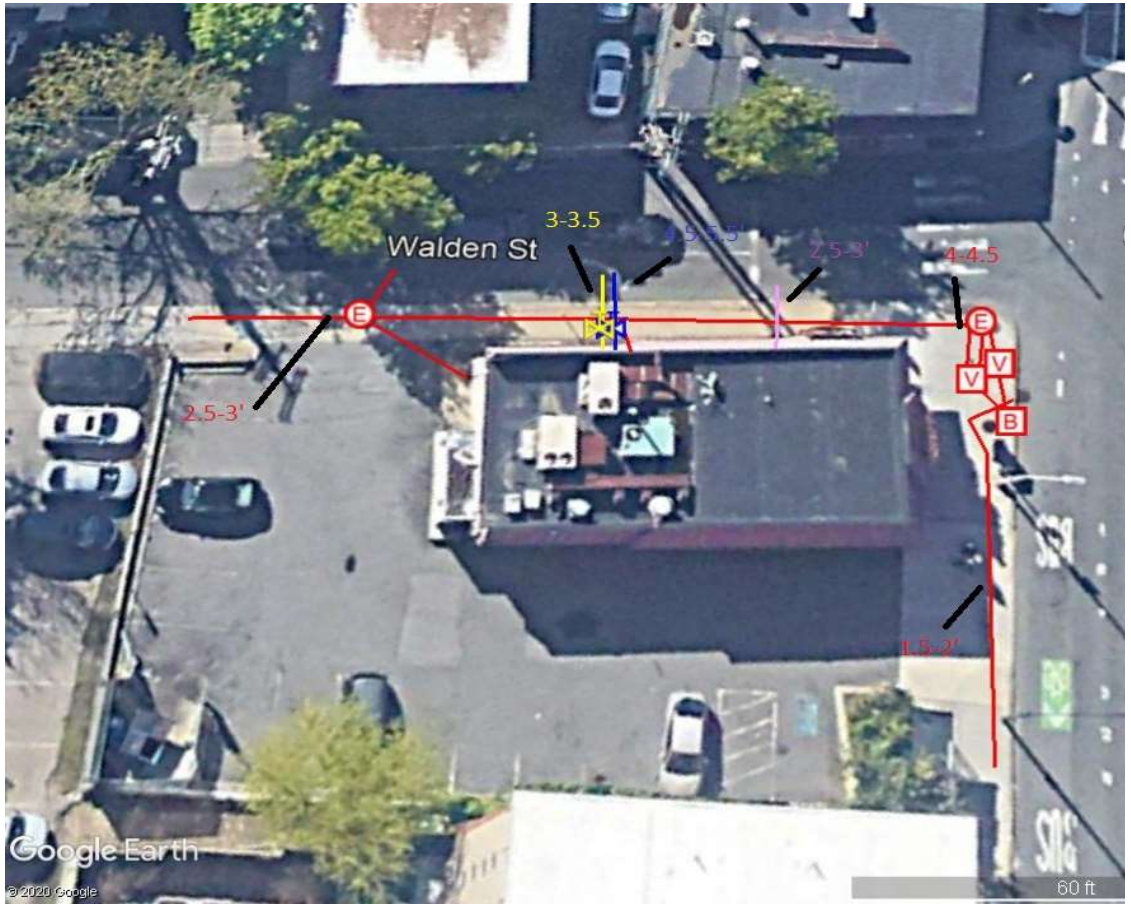
Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to soil conditions, above ground obstructions, reinforced concrete, and a variety of other factors. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible including consulting existing plans and drawings, exploratory excavation or potholing, visual inspection of above-ground features, and utilization of services such as One Call/811. Depths are dependent on the dielectric of the materials being scanned so depth accuracy can vary throughout a site. Relevant scan examples were saved and will be provided in this report.

## FINDINGS

The subsurface conditions at the time of the scanning allowed for maximum GPR depth penetration of 4-5 feet in most areas. Multiple utilities were able to be located such as gas, water, unknown, signal controls and possible secondary lines feeding street lamps using either the GPR or EM pipe locator. Some utilities were not able to be located such as the sanitary line. GPR data did not allow for depth information and exploring manholes located on Walden St did not show any laterals, estimated depth entering the sanitary main would be 7-9 feet.

The primary electrical line was estimated at 3.5-4.5 feet for most of the investigation, one manhole it was measured at 2.5-3 feet from the surface, and after passing through the service utilities it measured 5 feet at the manhole on the corner or Walden and Mass Ave. GPR depths in the middle sections estimated at lines at 3.5-4.5 feet.

The following pages will provide further explanation of the findings.




BRUNER / COTT ARCHITECTS
225 Friend St., #701
Boston, MA 02114
617.492.8400
www.brunercott.com

**Terms and Conditions**

GPRS does not provide land survey or civil engineering data collection or documentation. This is provided as a reference map of the field markings and is not survey-grade.

**LEGEND**

| | | | |
|---|---|---|---|
| | ELECTRIC | | SANITARY |
| | WATER | | STORM |
| | COMM | | UNKNOWN |
| | GAS | | |

2072 Massachusetts Ave
Cambridge, MA

Prepared by:

GPRS

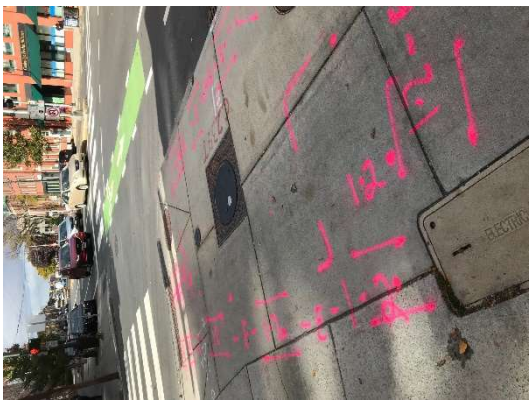
Secondary electrical line to the building exits at 1.5-2 feet and enters the building under the concrete ramp area.

Primary electrical line exits this manhole at 2.5-3 feet from the surface and travels up the sidewalk at a depth of 3.5-4.5 feet.

Water service 4.5-5.5 feet from the surface, valve located on the sidewalk, gas line 3-3.5 deep, valve located on the sidewalk. Electrical line 4-4.5 in this section.

Manhole located on the corner of Walden and Mass Ave, enters the vault at 5-5.5 feet with multiple lines running to adjacent handholes and vaults 2-3 feet from the surface and 1-2 feet.

Possible signal control or site lighting located 1-2 feet from the surface, extending in both directions down Mass Ave.



Electrical handhole located on the bottom right, potential signal or site lighting controls – electrical was being feed from a black transformer located on the sidewalk.

## CLOSING

GPRS, Inc. has been in business since 2001, specializing in underground storage tank location, concrete scanning, utility locating, and shallow void detection for projects throughout the United States. I encourage you to visit our website (www.gprsinc.com) and contact any of the numerous references listed.

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this report.

Thank you,

Sean Parker
Project Manager —Boston

Direct: 617-372-6695

Sean Parker

www.gprsinc.com

# JOB SUMMARY REPORT

| | | | |
|---|---|---|---|
| **Order Number:** | Work Order #717710 | **Job Date:** | Oct 18, 2024 11:45:00 AM |
| **Customer:** | 70808 CAPSTONE COMMUNITIES LLC | **Billing Address:** | CAPSTONE COMMUNITIES LLC<br>1087 BEACON STREET<br>SUITE 302<br>NEWTON MA 02459<br>United States |

## JOB DETAILS

| | |
|---|---|
| Jobsite Location | 2072 MASS AVE, CAMBRIDGE, Massachusetts, '02163 |
| Work Order Number | Work Order #717710 |
| Job Number | |
| PO Number | 2072 Mass Ave |

**GPRS Project Manager:** Stephen Layon

Thank you for using GPRS on your project. We appreciate the opportunity to work with you. If you have questions regarding the results of this scanning, please contact the lead GPRS project manager on this project.

## EQUIPMENT USED

The following equipment was used on this project:

- **Underground GPR Antenna:** This GPR Antenna uses frequencies ranging from 250 MHz to 450 MHz and is mounted in a stroller frame that rolls over the surface. Data is displayed on a screen and marked in the field in real time. The surface needs to be reasonably smooth and unobstructed to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the efficacy of GPR. The total effective scan depth can be as much as 8’ or more with this antenna but can vary widely depending on the soil conditions and composition. Some soil types, such as clay, may limit maximum depths to 3’ or less. As depth increases, targets must be larger to be detected, and non-metallic targets can be challenging to locate. The depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: Link
- **EM Pipe Locator:** Electromagnetic Pipe and Cable Locator. Detects electromagnetic fields. Used to actively trace conductive pipes and tracer wires, or passively detect power and radio signals traveling along conductive pipes and utilities. For more information, please visit: Link

# JOB SUMMARY REPORT

## WORK PERFORMED

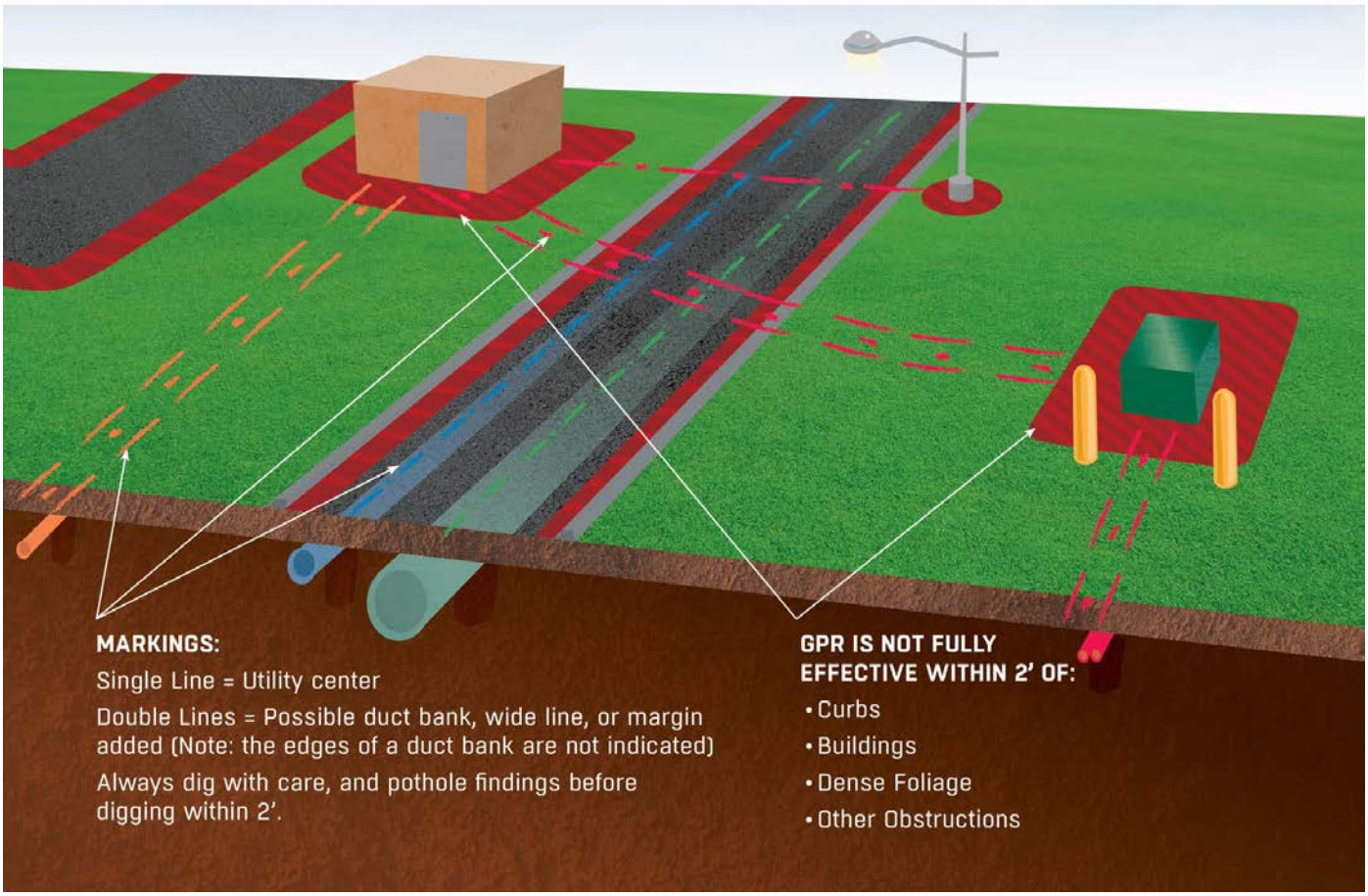
| UNDERGROUND UTILITY | |
|---|---|
| **Client Provided Drawings** | Yes |
| **Client completed 811 locate request** | Yes |
| **Scope of Work** | GPRS is tasked with trying to measure the width of the dict bank in question. Client understands the limitations of the technology but elected to do it anyway. |
| **Trenching / Linear Scan (ft)** | 100 |
| **Approximate GPR Effective Depth (ft)** | 4 |
| **Utilities Located** | - Electric |
| **Utilities NOT Located** | - Communication<br>- Natural Gas<br>- Water<br>- Storm Sewer<br>- Sanitary Sewer |
| **Details on Non-locatable Utilities** | Not part of the requested scope. |
| **Limitations Encountered** | - Surface obstructions<br>- Soil conditions not suitable for GPR at time of scanning |
| **Obstructions Encountered** | Curbing and side of the building. |
| **Marking Medium** | - Spray Paint |
| **Results Notes** | GPR penetration fluctuated, (0-1') along Mass ave and (3-4') along Walden St.<br>- The duct bank along Walden street was able to be scanned and measured. However, we could not identify/locate the duct bank along Mass ave with GPR.<br><br>Walden Street Duct;<br>-Depth (4-5')<br>-Width (~48")<br>- We were able to take measurements in three areas along Walden street. We could not take accurate measurements on the part of the side walk that abuts the restaurant. Due to the limited space between the edge of the curb and side of the building. |

# JOB SUMMARY REPORT

## SUPPLEMENTAL INFORMATION

### COMMON UTILITY LOCATING LIMITATIONS

There are many limitations to locating utilities, due to a variety of factors, with several more common examples illustrated here.



# JOB SUMMARY REPORT

## JOBSITE IMAGES


Jobsite Photo #1

Jobsite Photo #2

# JOB SUMMARY REPORT


Jobsite Photo #3

## CONTACT / SIGNATURE INFORMATION

**Contact Information**

| | | | |
|---|---|---|---|
| **Contact Name** | Jason Korb | **Email** | jkorb@capstonecommunities.com |

## TERMS & CONDITIONS

http://www.gprsinc.com/termsandconditions.html

# CAMBRIDGE DAY ARTICLE + COMMENTS

# Twelve-story affordable housing project moves toward 2027 construction in North Cambridge

By Gandharvika Gopal
Tuesday, July 1, 2025

A rendering of the housing project proposed for 2072 Massachusetts Ave. in North Cambridge.

An all-affordable apartment building is moving forward at 2072 Massachusetts Ave. under zoning changes made since its first version was withdrawn in August 2021 – then as high as nine stories with 49 homes, now 12 stories with 73 homes that would become available within four years.

The project awaits additional funding from the Cambridge Affordable Housing Trust and an official zoning certification from the city.



The proposal is at Massachusetts Avenue and Walden Street near Porter Square in North Cambridge, replacing the Darul Kabab restaurant and parking lot. The proposed building features a rooftop garden, bike parking and recreation spaces, some that may be open to nonresidents along with tenants. Developers plan to use low-carbon materials and all electric energy.

The development team of Capstone Communities, Hope Real Estate Enterprises and MPZ Development presented updated plans and addressed neighbors' concerns at a community meeting May 29, explaining that changes to the Affordable Housing Overlay zoning allow 100 percent affordable housing buildings to reach 12 stories along major Cambridge corridors.

"We're back here with a new design, a new concept, but the mission remains the same, which is to provide really high-quality affordable housing to folks that really need it," Jason Korb of Capstone Communities said at the meeting.

## Height concerns

Some residents pushed back on the building's design and height as inappropriate for the area, as well as its lack of parking. Others applauded the project as a necessary addition to the community.

"This sounds like you're just trying to maximize your potential revenue with a 12-story building whose height is two and a half times the Russell Senior Center," one person said, referring to the structure next door at 2050 Massachusetts Ave. to call the proposed building "just very out of place."

Some speakers suggested a decrease in the number of apartments to between 30 and 45 units. Developers pushed back. "From an urban planning standpoint and urban design standpoint, based on all those facts and circumstances, it's appropriate," Korb said of the size of the project. He described the project as a directive from the city to increase affordable family housing.

Other neighbors noted the benefits of large development projects that bring more people to the area and encourage local commerce. "We are going to have a much more tall and variant kind of neighborhood," one said. "There'll be more vibrancy."

## Mixed reviews on design

Developers introduced detailed design plans incorporating feedback from an earlier community meeting and the city's urban design staff. They are prioritizing large windows, wood materials, warm neutral colors and a contemporary aesthetic. "We're setting out to design an elegant, light and airy building that looks forward," said Jason Forney, lead architect for the project with Bruner/Cott Architects.

As is often heard in new-development meetings, neighbors are concerned with the modern look and size of the building. "Architecturally it's not attractive to me. I think that it doesn't fit in with the historic nature of Cambridge," said Pamela Winters, who formerly served on the Cambridge Planning Board. Others called the design "industrial" and "too geometric."

Developers said they are open to input on colors, textures and materials, though some at the meeting praised the proposed look – and the use of mass timber, a wood construction product created by laminating timber together to create larger beams and increase durability.

## Parking and accessibility

In accordance with zoning policies, the developers are not required to provide parking. Because they are building in a transit-friendly location near Porter Square, developers estimate half of building residents will have cars, adding approximately 35 vehicles to the neighborhood. A traffic study found sufficient on-street parking within a quarter- to a half-mile radius of the site, the team said.

This raised another concern for neighbors: The Russell apartments next door, home to disabled and elderly residents who could be affected by limited parking and increased traffic.

Developers say they will widen Walden Street and move part of the sidewalk onto the 2072 Mass. Ave. property to help ease traffic impacts. The building's main entrance has been moved to Massachusetts Avenue from Walden Street, a change inspired by feedback from earlier community meetings.

"I just wanted to thank you for being responsive, and to say that I think this is going to be really great for Porter Square," said the resident who initially proposed the idea. "I'm excited about the project."

## Affordable housing

The current development plans meet the minimum state guidelines for housing for families in the "extremely low income" tier, determined as earning 30 percent of the median income for the area. This includes an income range of $39,000 for two household members and up to $53,000 for a family of five. (Overall, 71 percent of the project's units have two or three bedrooms meant to be useful for families.)

Twelve of the 73 units at 2072 Massachusetts Ave. will be for families in that bracket. "We would really like to make a concerted effort to add many more," Korb said.

The property would be managed by Peabody Properties, which provides resident services such as home care visits and wellness programs. "We have had residents that have struggled, and we don't want that, we want them to succeed," Korb said.

## Process and timeline

Though the project is designed to be built "as of right" – permitted under existing zoning regulations – developers say it awaits an official city approval as meeting affordable housing guidelines. The team also anticipates a hearing with the Cambridge Affordable Housing Trust for an addition of approximately $14 million. The total project is estimated at $70 million, primarily sourced through public funding from a federal loan and through the Low-Income Housing Tax Credit.

The development team plans to submit applications "detailing specific parts of the project and compiling information" to the Community Development Department and Affordable Housing Trust by the end of July, Hope said Monday.

Since the May meeting, developers met with Russell apartment residents and the Porter Square Neighborhood Association to continue outreach. They answered further questions about the corner where it meets the Russell building, which has

raised concerns about accessibility for the senior residents. They also addressed worries over the construction process and talked about “ways we could increase communication and what things might be able to support them during that time,” Hope said in a phone call.

Construction would begin in mid-2027 at the earliest, and residents could move in around mid-2029. Hope said the team is in contact with neighbors but does not plan on further community meetings as the development continues. The Community Development Department meeting to certify the development will be open to public comment.

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Previous story

Height at 2072 Mass. Ave. project again rejected by zoning board; project to return in September

May 21, 2021

Development, North Cambridge, affordable housing, business, housing, zoning

## 15 Comments

1.

cwec on Tuesday, July 1, 2025 at 4:07 pm

This is great news! Too bad it’s taken this long to come this far, but still a good step forward

2.

bahmutov on Tuesday, July 1, 2025 at 4:25 pm

Congratulations to the development company and 73 families that will be able to live in the new apartments. Great and much needed addition to our Cambridge housing stock.

3.

CambResident on Tuesday, July 1, 2025 at 5:59 pm

Fantastic news. This is the type of development our city should focus on: high density, major corridors, near public transportation, affordability-

focused... Never made sense to me why we have wasted so much time on trying to torch the neighborhoods... Fingers crossed this gets done!

4.

AvgJoe on Tuesday, July 1, 2025 at 6:43 pm

This is a vital project that directly addresses Cambridge's acute affordable housing crisis, adding 73 affordable homes—including 12 deeply affordable units—to a severely undersupplied market.

Opposition based on vague claims about "neighborhood character" or being "out of place" is subjective and can be used to block any project.

Parking complaints are similarly misplaced. People need homes more than free public land to store private vehicles. The site's proximity to Porter Square supports a car-light lifestyle and aligns with city policy for transit-rich corridors. Subsidizing parking would only encourage more driving, traffic, and pollution.

This is a necessary and thoughtful step toward addressing Cambridge's housing needs, climate goals, and equity commitments. Delaying or downsizing it would mean fewer families housed and a missed opportunity for sustainable, inclusive development.

5.

cportus on Tuesday, July 1, 2025 at 10:07 pm

Does anyone know why it would take another 2 years to start construction? That seems so long

6.

concerned43 on Wednesday, July 2, 2025 at 10:17 am

Because of the cost of housing, Cambridge firefighters can't afford to live here. Why doesn't the city subsidize their rent and the rent of those who also work for the city?

We need the economic middle class families to remain (and come back) to Cambridge, if we are going to continue to have a diverse city.

The city should be willing to use it’s funds for these people.

7.

concerned43 on Wednesday, July 2, 2025 at 1:42 pm

its, not tis or it’s :)

8.

Poor Bono Publico on Thursday, July 3, 2025 at 2:42 pm

Poor Bono Publicoon Wednesday, July 2, 2025 at 2:19 am
Your comment is awaiting moderation.

[???]

As is often the case, the renderings for this project underestimate the true impact of this 12-story building in terms of height and scale. There are no images whatsoever showing the impact of a large “wall” immediately adjacent to the Russell Apartments Garden, which will overwhelm this otherwise lovely amenity for those living in the *already existing* affordable housing next door. Must we destroy existing affordable housing in Cambridge for an oversized project only 12 of whose units are for lower income residents, and 30 percent of whose “qualified applicants” will not even have to either “live or work” (currently) in Cambridge? Some asked if units in a building of this size could truly be considered appropriate for actual “families.” Smaller unit sizes would make much better sense here. “Pack’em and stack’em” is neither good design nor good planning.

9.

L-in-WeHa on Thursday, July 3, 2025 at 3:12 pm

This is amazing. I’m so glad housing projects can finally move forward in Cambridge.

Progress at last!

10.

Frank on Saturday, July 5, 2025 at 1:45 pm

Great to see zoning reform working and Cambridge building the affordable housing we so badly need.

So much for the fearmongering that reform would lead to a wave of McMansions—nothing but hyperbolic nonsense.

And now we're supposed to believe a "wall" will somehow "destroy" the affordable housing next door? This kind of histrionics only weakens NIMBY arguments. Families shouldn't have homes because a wall might shade a garden?

Don't dismiss the project because it includes "only" 12 affordable units. That's 12 families who will finally have a place they can afford. And market-rate housing helps too—by boosting supply, it puts downward pressure on prices.

It is great to see progress and to see zoning reform working as planned, and not as opponents predicted.

11.

maggieb on Monday, July 7, 2025 at 9:52 am

FYI. Cambridge has no vouchers to give out for this project. The Developers will have to rely on the state for any "deeply affordable " vouchers. All levels of affordable housing are needed for our city but I wouldn't be so quick to think folks on CHA housing lists will be able to get in. There is a minimum income requirement unless vouchers come through.

12.

Hockey Puck on Monday, July 7, 2025 at 10:16 am

First, let's see if the numbers actually work, and the developers can get a construction loan. With higher interest rates and construction costs, they'll need to prove financial viability. I'm rooting for them, but it's not a sure thing.

Second, the project will need support from the Affordable Housing Trust, on below-market terms. At the end of the day, this project–and others like it–will need a significant amount of public-sector financial support to be

viable, even with more favorable zoning terms. The public debate has tended to focus on zoning, but financial support is equally important.

13.

concerned43 on Monday, July 7, 2025 at 12:16 pm

@ Hockey Puck

What is the public-sector financial support that you are referring to ?

14.

Hockey Puck on Monday, July 7, 2025 at 7:02 pm

Fair question. I was referring to the Affordable Housing Trust. My understanding (subject to correction) is that it is administered by the City.

15.

pete on Thursday, July 10, 2025 at 10:53 pm

the white grid emphasizes the big glass windows. I don’t know about you, but I have lived in an apt that reminds me of a hotel with very little privacy. And I don’t want to see actual living spaces and activities from the sidewalk. Glass is not the great think people think it is.