
COVER SHEET

In accordance with the requirements of the City of Cambridge Zoning Ordinance, the undersigned hereby requests the Public Advisory Consultation for the premises indicated below.

Parcel Address(s): 15 Mt. Auburn Street

Base Zoning District(s): Office 3

Overlay Zoning District(s): Harvard Square Overlay District

Owner Name: President and Fellows of Harvard College

Owner Address: c/o Harvard Real Estate, 1350 Massachusetts Ave, Cambridge, MA 02138

Applicant Name: President and Fellows of Harvard College

Applicant Address: c/o Jen Dowd, Harvard Capital Projects, 8 Story St, 3rd Floor, Cambridge, MA 02138

Contact Information: Alexandra Offiong, Harvard University Planning and Design, 617-384-8155

Name	Telephone #
<u>alexandra_offiong@harvard.edu</u>	
Email Address	

Brief description of the project:

The project calls for a new home for the Harvard University Native American Program (HUNAP). The new fully accessible, all-electric building is envisioned as a 5,565 square foot (GFA) building with three floors and a full basement. It will be of a similar scale to its predecessor structure, with a narrower but slightly longer footprint to allow for a more generous side yard. The exterior façade has been inspired by Native American traditional materials including tree bark and Wampum, which are the shell beads used as jewelry and for traditional ceremonial purposes.

The project requires the demolition of the existing 15 Mt. Auburn Street building.

Denote other City of Cambridge Board/Commission Review Needed:

☐ Board of Zoning Appeal

☐ Conservation Commission

☒ Historical Commission

5/28/2025

Signature of Applicant**Date**

19.40 CITYWIDE ADVISORY DEVELOPMENT CONSULTATION
19.50 BUILDING AND SITE PLAN REQUIREMENTS

This dimensional form is intended to demonstrate zoning compliance for projects that are subject to Section 19.40 and Section 19.50 of the Cambridge Zoning Ordinance.

Project Address:

Zoning District:

	Existing	Allowed or Required (max/min)	Proposed
Lot Area (sq ft)	18,652	5,000 min.	No change
Total Gross Floor Area (sq ft)	41,314 on lot	55,965 on lot	42,707 on lot
Residential Uses	n/a		n/a
Non-Residential Uses	41,314 on lot	55,956 on lot	42,707 on lot
Total Floor Area Ratio (FAR)	2.22	3.0 in HSOD	2.29
Residential Uses	n/a		n/a
Non-Residential Uses	2.22	3.0	2.28
Total Dwelling Units	n/a		n/a
Total Stories Above Grade	3	6 max	3
Max. Height – Residential (ft)	n/a		n/a
Max. Height – Non-Residential (ft)	39'	60' max HSOD	37.96'
Front Yard Setback(s) (ft)*	25.99'	11.17'	29.97' to centerline
Side Yard Setback(s) (ft)*southeast/east	2-4.52'	12.83-13.11'	Conforms-multiplane setback
Rear Yard Setback(s) (ft)* (side yd north)	18.51	15.66'	18.23
Total Open Space (% of Lot Area)**	28%	10%	26%
Private Open Space	8.5%		7.8%
Permeable Open Space	11.3%		12.1%
Publicly Beneficial Open Space	19.7%		19.1%
Off-Street Parking Spaces	n/a	n/a	n/a
Long-term Bicycle Parking Spaces	0	1.33	2
Short-term Bicycle Parking Spaces	0	2.65	6
Loading Bays	n/a	n/a	n/a

*Indicate all applicable setbacks. Make sure distances match the submitted site plans.

**Refer to Open Space definitions in Article 2.000 and Open Space provisions in Section 5.22 of the CZO. Make sure all open space information matches the submitted site plans.

Use space below and/or attached pages for additional notes:



To: Swaathi Joseph, Cambridge Community Development Department

From: Alexandra Offiong and Diane Gray, Harvard University Planning and Design
Jennifer Dowd, Harvard Capital Projects
Justin Lee and Kathrin Lee, Lee2Design

RE: 15 Mt. Auburn Street, Public Advisory Consultation

Date: May 28, 2025

Harvard University is proposing a new replacement building at 15 Mt. Auburn Street to accommodate the Harvard University Native American Program. This project will be the subject of a Public Advisory Consultation pursuant to the requirements of CZO 19.43. We look forward to discussing this project with City officials and Harvard Square stakeholders at the upcoming Harvard Square Advisory Committee meeting in June.

Supporting materials included in this package include site plan, floor plans, cross sections, elevations, renderings, flood resilience information, Green Factor score card and zoning dimensional chart.

A. Programmatic Need

The Harvard University Native American Program (HUNAP) is an interfaculty initiative of the University with a mission is to cultivate the development, achievement, and impact of American Indian, Alaskan Native, Native Hawaiian, and other indigenous students. HUNAP serves the Harvard community in its efforts to expand the social and academic focuses related to Native American study, history, diplomacy, and culture. It is a vital program to the university and works across the entire institution. This project is intended to further the goals of the Harvard Charter of 1650, which committed the President and Fellows of Harvard College to “the education of the English and Indian youth of this country”, through community, scholarship, and inclusion.

To fulfill this mission, HUNAP requires a physical home base for its associated faculty, staff, and students and programs. Specific space needs include faculty offices, a student lounge, a kitchen and dining area, a classroom, a meeting and event space that creates a sense of community, and a private outdoor area with one or more trees to support ceremonial events. After an extensive search for site options on Harvard University’s campus, the 15 Mt. Auburn Street location was determined to best meet the HUNAP program needs.

The 15 Mt. Auburn Street project will support HUNAP’s mission in several critical areas:

- Helping to **cultivate the development, achievement, and impact** of American Indian, Alaskan Native, Native Hawaiian, and other Indigenous students to further the goals of the Harvard Charter of 1650;
- **Creating a space to nurture a thriving community** of Native American and Indigenous people, their allies and supporters, in the heart of campus
- Enabling **university-wide engagement** with Native American and Indigenous issues in support of Indigenous self-determination through relevant research, teaching, partnership, and exchange; and
- Expanding the **presence, visibility, and impact** of persons of Native American and Indigenous affiliation on campus in a wide variety of roles

B. Project Site

The project site is an 18,652 square foot lot with frontage on both Mt. Auburn Street and Arrow Street in Harvard Square. It is the site of two existing buildings owned by Harvard University:

- **15 Mt. Auburn Street:** *Proposed for demolition and replacement*

A 4,172 square foot (GFA) wood-frame building with three stories and a basement, built in 1873, and acquired by Harvard University in 2022

- **Zero Arrow Street:** *Outside project scope*

A 37,142 square foot (GFA), three-story masonry building, built in 2004. This building accommodates offices and the Arrow Street Arts performing arts theater

The site is bisected by a public pedestrian pathway, the Arrow Street Walkway, that connects Arrow Street to Mt. Auburn Street.

C. Project Scope

The proposed new home for HUNAP is envisioned as a 5,565 square foot (GFA) building with three floors and a full basement. It will be of a similar scale to its predecessor structure, with a narrower but slightly longer footprint to allow for a more generous side yard. The exterior façade has been inspired by Native American traditional materials including tree bark and Wampum, which are the shell beads used as jewelry and for traditional ceremonial purposes. These materials have strong cultural and historical significance to the Tribal Nations of this region. The curved southwest lower corner of the building will be clad in bark to support the entry sequence. Tree bark shingles, durable and protective, are traditionally used on Wetus, which have been built in this area for more than 10,000 years. The majority of the building exterior will have a variegated and polished purple-to-white color scheme on painted metal panels to reflect the Wampum.

The new building will accommodate HUNAP's program needs (faculty offices, student lounge, meeting spaces, kitchen, etc.) in a fully accessible building. The exterior will be designed with private side and backyard space composed of a combination of permeable paving and plantings.

The building will be all-electric and equipped with a Dedicated Outdoor Air System (DOAS) for fresh air supply in the basement and a Variable Refrigerant Flow (VRF) heat pump system for heating and cooling of individual spaces.

The project requires the demolition of the existing 15 Mt. Auburn Street building. See "Historical Context" section below for details on that building and its conditions.

D. Historical Context

The existing 15 Mt. Auburn Street building is a three-story, 4,172 square foot wood-framed Mansard building built in 1873 as a two-family residence and later converted to office use in the 1980s. The building's exterior has been modified over time, including reclad facades and remodeled front porch (1973), multiple window replacements, addition of shutters and window pediments and remodeled front porch/entrance (1988), and building paint color changed multiple times.

In 1989, the Cambridge Historical Commission (CHC) reviewed an adjacent development proposal that resulted in the relocation of one wood-framed building (current 11 Mt. Auburn Street) and the demolition of several other structures along Mt. Auburn Street and Arrow Street. To discourage the further assemblage of small lots to facilitate the construction of larger buildings, the CHC and the property owner granted a perpetual façade preservation easement applicable to the public-facing facades of the cluster of three wood-framed structures at 9, 11, and 15 Mt. Auburn Street. Since the Harvard Square Conservation District was established in 2000, proposed exterior alterations visible from the public way at these properties must be approved by the CHC through the issuance of a certificate.

The current project began as a renovation and addition project. Through a rigorous due diligence feasibility process, the Harvard project team documented extensive building deficiencies and challenges related to meeting all current building, accessibility and energy codes, adapting the building for HUNAP use and to Harvard University's standards for buildings as a long-term investment. Challenges include:

- Geo-technical testing revealed significant issues with the building foundation. The existing building structure is in poor condition and does not meet the current building code. Extensive work is required to build a new foundation, floor slabs, and stairs, along with a reinforcement of the facades and the roof, which is made even more difficult considering the tight site conditions and the close proximity of the residential abutter, currently located only 6 feet away.
- Because the façade easement protects three of the four existing facades and associated Mansard roofs, these facades/roofs cannot be demolished and rebuilt but must be repaired in situ, necessitating the building to be rebuilt from the inside out. The existing facades require extensive rot repair and the installation of a vapor barrier. The existing air/water barrier should be replaced to mitigate water infiltration but this is not possible without replacing the existing cedar cladding. The facades also need additional structural work to provide necessary lateral stability to meet current building code.
- To meet the new Specialized Stretch Energy Code, the facades need to be reworked with new high-performance windows, 100% insulation at facades, roof, and foundation.
- The building is currently not accessible to persons with disabilities. A renovation would require new entrance ramps and an elevator to be installed to provide access to the building and all floors. New accessible restrooms and code-compliant stairs would also be required. Adding these accessible features would be challenging given the tight site conditions to the street line and the residential abutter and existing building layout.
- A small rear addition to the building would be needed to accommodate the accessibility requirements and program space, adding further complexity to the project and the historical design.

In summary, a renovation of 15 Mt. Auburn Street would essentially require the construction of a new building within the existing building, thus incurring significant cost, schedule, and logistical challenges to comply with existing historic preservation controls, resulting in the loss of the majority of the building's historic fabric. Given the existing building's deteriorated conditions, limited original fabric, site challenges, HUNAP programmatic needs, and the University's building and facility standards, Harvard has determined that building demolition and replacement are the preferred path forward.

The proposed project has been reviewed informally and positively by the Executive Director of the Cambridge Historical Commission and will be formally reviewed by the full Cambridge Historic Commission at an upcoming public hearing.

E. Zoning Background

This site is in the Office-3 zoning district within the Harvard Square Overlay District, which is considered an Area of Special Planning Concern per CZO 19.46. This is a project that involves the construction of a new building that increases the gross floor by two thousand (2,000) square feet or more but does not require a Planning Board Advisory Consultation or a special permit from the Planning Board and therefore requires a Public Advisory Consultation (CZO 19.43.1). The project is an as-of-right project under zoning.

While the proposed project is not formally considered a “Green Building Project” because it does not meet the definition of what is considered “Applicable Construction” per CZO 19.51.2(3), it will be designed to ensure sustainable construction and operations and is being designed align with multiple ILFI Living Building Challenge Core criteria. The team is working diligently to design an all-electric building that is energy efficient, uses non-toxic, HHBA (Harvard Healthy Building Academy) compliant materials, and provides the occupants with the best possible indoor environmental quality. The project will also meet the Flood Resilience standards and the Green Factor standards.

F. Urban Design Objectives (CZO § 19.30)

The following is a summary of how the proposed project responds to the City’s Urban Design Objectives:

15 Mt. Auburn Street is responsive to the existing patterns of development. (CZO 19.31)

This section of the Mt. Auburn Street corridor is characterized by many large-scale buildings, punctuated by this small cluster of small, domestic-scale buildings. The proposed project will maintain this small scale with its replacement structure. The project’s design proposes maintaining the approximate height of the existing building, the relationship to the adjacent properties, and proximity to the street. It is approximately 38 feet tall, similar in scale to 9 and 11 Mt. Auburn Street buildings next door. It maintains its front yard setback to support a strong street edge, but it provides a more generous east side yard which will provide a more comfortable buffer for the residential abutters.

15 Mt. Auburn Street is pedestrian and bicycle-friendly, with a positive relationship to its surroundings. (CZO 19.32)

With its location in the very center of Harvard Square, the building at 15 Mt. Auburn Street is well connected to pedestrian, bicycling, Harvard shuttle, and MBTA bus and transit infrastructure. The site’s “Arrow Street Walkway” is an accessible path through the site that connects Massachusetts Avenue and Arrow Street to Mt. Auburn Street which supports pedestrian movement. The sidewalk in front of 15 Mt. Auburn, currently with an uneven surface due to extended roots from the two street trees, will be rebuilt with an improved walking surface.

The new building will be fully accessible, with entry achieved through a sloped walkway to the front entrance and at grade exit at the back exit as the land naturally rises up in grade. The building will be equipped with an elevator, code-compliant stairs, and fully accessible program spaces.

To meet the site’s bicycle parking needs and to conform with the CZO bike parking requirements, the project has incorporated 6 short-term bike parking spaces in a paved area close to the front entrance, exceeding the CZO minimum requirement by 3 spaces. These will be floor-mounted post-and-ring racks. In addition, 2 sheltered and secure bike lockers for long-term bike parking will be provided in the backyard. On the same lot,

the Zero Arrow building provides an additional 12 long-term spaces inside the building and 6 short-term spaces at the top of the Arrow Street Walkway, near Arrow Street, which strengthens the bicycling resources in the area.

15 Mt. Auburn Street mitigates adverse environmental impacts upon its neighbors. (CZO 19.33)

The proposed building has been designed to avoid or mitigate environmental impacts on its neighbors.

- **Mechanical equipment:** The proposed mechanical equipment has been carefully designed, well organized, and sited to minimize visual and acoustical impact. The outdoor mechanical equipment (condensers) will be located along the north side of the site at the backyard, along the fence. The equipment will be shielded from the abutter to the north by a 6' tall wood fence and screened with shrubs on other sides
- **Trash and recycling** collection and storage will occur within the building's lower level and will be moved out to the street for pickup.
- **Loading dock:** The building does not require a loading dock. Deliveries to HUNAP will use the existing on-street loading areas along Mt. Auburn Street
- **Stormwater management:** The site design will increase the amount of pervious site area which will improve rainwater absorption and minimize runoff.
- **Landscape:** The landscape design leverages the existing canopy trees (50'+ tall) on the south and north sides. These trees provide lush canopy coverage from spring through fall. They will be protected during construction. A new birch tree will also be planted in the side yard together with the various native herbs (sage, tobacco, sunflower, etc.). In addition to providing visual and environmental benefits, these landscape elements are integral parts of the Native cultural ceremony and practice.
- **Shadow:** The proposed design has a narrower massing when compared to the existing building. It provides a wider side yard and places the new building farther away from the abutter to the east. The widened side yard space allows for direct sunlight to penetrate further into the site and minimize shadows cast on the site.
- **Grade changes:** The site's relatively flat topography will require no retaining walls.
- **Building scale and wall treatment:** The height and scale of the proposed building is similar to the existing building. It is also complimentary to the residential neighbors. The top of the front facade along Mt. Auburn Street aligns with the roof ridge of neighboring 9 Mt. Auburn Street. The building facade design is inspired by the Native American Wampum, with various shades of purple metal panels interspersed with fields of calm off-white fiber cement panels. The facade facing the neighbors on the east (9 and 11 Mt. Auburn) have more subdued color pattern with the purple panels at the bottom of the facades.
- **Outdoor lighting:** Existing and new outdoor lighting will provide adequate safety and night vision as mandated by the life safety code for egress while also minimizing light pollution.

15 Mt. Auburn Street will not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system. (CZO 19.34)

The proposed project is taking a sustainable approach and will not overburden the local infrastructure.

The project has been designed to use environmentally sustainable materials and methods and is targeting Living Building Challenge Core Certification. Consistent with this certification, the project includes the following measures:

- Removal of all hazardous materials including lead and asbestos.
- High-performance windows, and new insulation throughout the building's envelope to reduce energy loads
- Low emitting construction materials
- Replacement of all existing mechanical systems with fully electric, energy-efficient heating and cooling systems. These systems include DOAS equipment to provide 100% fresh air ventilation. Windows at private offices are operable to allow for natural ventilation controlled by the occupants.
- Energy-efficient LED lighting throughout.
- Temperature control in all common areas and individual controls at every level for future tenants.
- Low flow plumbing fixtures.
- Water bottle filling stations.

The project is expected to relocate approximately nine (9) University faculty and staff from their existing HUNAP office space on Story Street. This small shift in workplace location is unlikely to affect the University's exceptionally low SOV rate (~14%) as affiliates take advantage of Harvard's robust CommuterChoice program for sustainable commuting.

15 Mt. Auburn Street will reinforce and enhance the complex urban aspects of Cambridge as it has developed historically. (CZO 19.35)

Harvard Square has long served as a mixed-use district that weaves together retail, office, university, cultural, and residential uses. The proposed new home for HUNAP in Harvard Square adds to this diverse mix of uses. HUNAP will be located at a site that has been connected to Harvard's campus for nearly two decades, beginning with the establishment of the former Oberon Theatre in 2006. HUNAP will be close to the University's academic and residential heart, thus supporting active pedestrian traffic to the site. And while the pre-existing structure at 15 Mt. Auburn will be replaced, the cluster of small-scale buildings in this location will remain to counterbalance the rest of the area's larger-scale buildings.

15 Mt. Auburn Street is resilient to the effects of climate change. (CZO 19.38)

The design has incorporated the most up-to-date projections of climate change impacts over the project's anticipated lifespan, including increases in temperature and precipitation. According to Cambridge FloodViewer, this site may have precipitation flooding in 2070 with a 1% storm. In response, the project has raised the base building elevation to 18" higher than the LTFE shown. The critical building infrastructure located in the basement is supported by a robust foundation design with concrete slabs, walls up to 3' thick and complete waterproofing on all sides. The critical building infrastructure will be located within this protected basement.

The project incorporates heat resilience and meets the Green Factor through a combination of preservation of existing trees, new trees, and other plantings, as well as high-SRI paving. The building envelope is designed to be highly insulated and will exceed the requirements of the Specialized Stretch Energy Code. It is also designed

with a minimal amount of glazed area to minimize solar heat gain. High performance triple-glazed IGUs will be used at windows and storefront.

G. Harvard Square Development Guidelines

The following is a summary of how this project responds to the goals set out in the Harvard Square Development Guidelines:

Primary goal: *To guide change and encourage diversity in order to protect the distinctive characteristics of the District's buildings and public spaces, and to enhance the livability and vitality of the District for its residents and all Cambridge residents, students, visitors and business people. The District seeks to preserve and enhance the unique functional environment and visual form of the District; preserve its architecturally and historically significant structures and their settings, and encourage design compatible therewith; mitigate any adverse impact of new development on adjacent properties and areas; and discourage homogeneity by maintaining the present diversity of development and open space patterns and building scales and ages. The District must remain a pedestrian-friendly, accessible, human-scaled, mixed-use environment that complements nearby neighborhoods and maintains the history and traditions of its location.*

The proposed new building at 15 Mt. Auburn Street strikes a positive balance between respecting the established-scale and pedestrian-friendly environment of this subarea of Harvard Square while introducing creative and unique design features reflecting Native American cultural traditions. This building will deepen Harvard's Square's role in supporting diverse populations and cultural traditions in Cambridge.

Relevant **secondary goals** include:

Preserve historically or architecturally significant buildings and structures as well as those that contribute to the distinctive visual character or historical significance of the District

After careful study and reflection, it was determined that it would not be feasible to renovate the pre-existing structure at 15 Mt. Auburn given its deteriorated conditions, limited original building fabric, challenging site conditions, compromised site plan, challenges to program and accessibility, and University building standards for long-term investment. So, while the building will be replaced, the cluster of small-scale buildings in this location will remain to counterbalance the rest of the area's larger-scale buildings.

Support creative, contemporary design for new construction that complements and contributes to its immediate neighbors and the character of the District. Recognize and response creativity of design and mitigate the functional impacts of development on adjacent areas.

The proposed new building will showcase unique, creative, contemporary design that incorporates the traditional materials of the user group and create an improved public realm and an improved relationship to the residential neighbor.

Build on and sustain the diversity of existing building form, scale and material. Preserve and encourage flowers, green yards and courtyards and small, free-standing and wood-frame buildings where that character prevails.

The proposed project includes an improved side and backyard that can be enjoyed by building occupants and for events. The yard will feature a native Birch tree and native plantings that are important to the indigenous cultures. Planters will be strategically placed in the front, side, and back yards to take advantage of the varying degrees of sun-light; encouraging a diverse array of plants and flowers, such as a variety of ferns, vines and shrubs like climbing hydrangea and serviceberry, native perennial herbs such as sage, wild ginger, blue violet, and annuals like sunflower and tobacco.

Expand the network of pedestrian walkways and paths wherever they can conveniently provide alternate routes through the District. Increase public access to alleys and interior spaces where appropriate, and upgrade paving and landscaping of such pathways and spaces. Enhance accessibility and safety for pedestrians through the District.

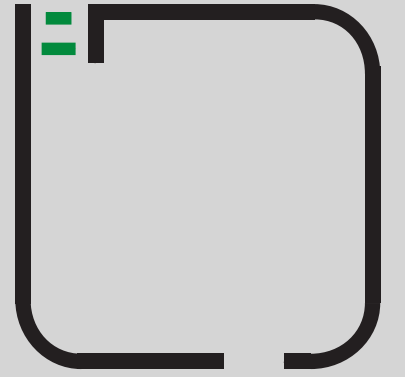
This project will maintain the public Arrow Street Walkway bisecting the site, improve the public sidewalk along Mt. Auburn Street, and provide a fully accessible building and site.

Encourage projects that will maintain a wide diversity of uses serving the needs of surrounding neighborhoods, students, and visitors from around the world.

The space will serve as a home base for faculty, staff and students to gather, build community, and facilitate programming. It will also be a space to welcome students and scholars from other schools/universities and local/regional communities (including native communities) to gather and attend programming. The building will also provide a welcoming space to Harvard alumni when back on campus. Native communities and leaders from across the country will access the space during visits to Harvard University.

Discourage loading docks, which do not generally contribute to the historic character of the street.

The site has no existing or proposed loading.



PUBLIC ADVISORY CONSULTATION PRESENTATION

15 MT AUBURN STREET PROJECT

FOR

HARVARD UNIVERSITY NATIVE AMERICAN PROGRAM



01 OVERVIEW

- » PROJECT SUMMARY
- » SITE HISTORY
- » BUILDING PROFILE
- » CHALLENGES TO RE-USE
- » PROJECT RATIONALE

PROJECT SUMMARY



The project goal is to create a home for the Harvard University Native American Program (HUNAP), a program serving the Harvard community through its mission to expand social and academic initiatives related to Native American study, history, diplomacy, and culture. Various due diligence studies were carried out to fully understand the challenges involved in upgrading the old wood frame house at 15 Mt. Auburn Street to meet both the current building code requirements and the University's building and facility standards. Foundation test pits and boring tests were performed to demonstrate the foundation deficiencies and ground water challenges, structural analyses were carried out to understand retrofitting needs, and Therm modeling was done to show the potential unintended consequential damage of increasing the freeze-thaw cycles of the existing facade elements by improving facade insulation value to meet the energy code.

These due diligence studies led to the conclusion that a renovation of 15 Mt. Auburn Street would essentially require the construction of a new building within the shell of the existing building on a very constrained site, thus incurring significant cost, schedule, and logistical challenges. The level of required rehabilitation would leave almost no original building fabric in place.



Therefore, a building demolition and replacement approach is the preferred path forward, given the existing building's deteriorated conditions, limited original fabric, site challenges, HUNAP programmatic needs, and the University's building and facility standards.

The project acknowledges the building's history and designation by the Cambridge Historical Commission to be a significant building in the context of a group of buildings, but also recognizes the building has changed over time and is in deteriorated condition. The proposed design of the new building carries a similar scale as the existing one, thus, following and respecting the established urban context of small scale wood frame cluster surrounded by large-scale masonry structures. The new building is narrower and slightly longer, and is placed farther away from the adjacent wood frames, resulting in a new side yard of open green space of permeable paving and planting as a buffer to the neighbors to the east. The materials, colors, and construction details of the building façades not only are relevant and meaningful to the Native American Community, but also animate the streetscape, engages the community, and enhance pedestrian experience.

The project site accommodates an existing Mansard building at 15 Mt. Auburn St and a larger brick masonry building that fronts on Arrow St. A public walkway bisects the site connecting Arrow Street to Mt. Auburn Street.



THE NEIGHBORS AND BACKYARD



THE PROJECT SITE:
15 MOUNT AUBURN STREET

MASONRY BUILDING



HISTORIC WOOD FRAME HOUSES CLUSTER



ARROW STREET
WALKWAY

CLUSTER OF WOOD FRAMES

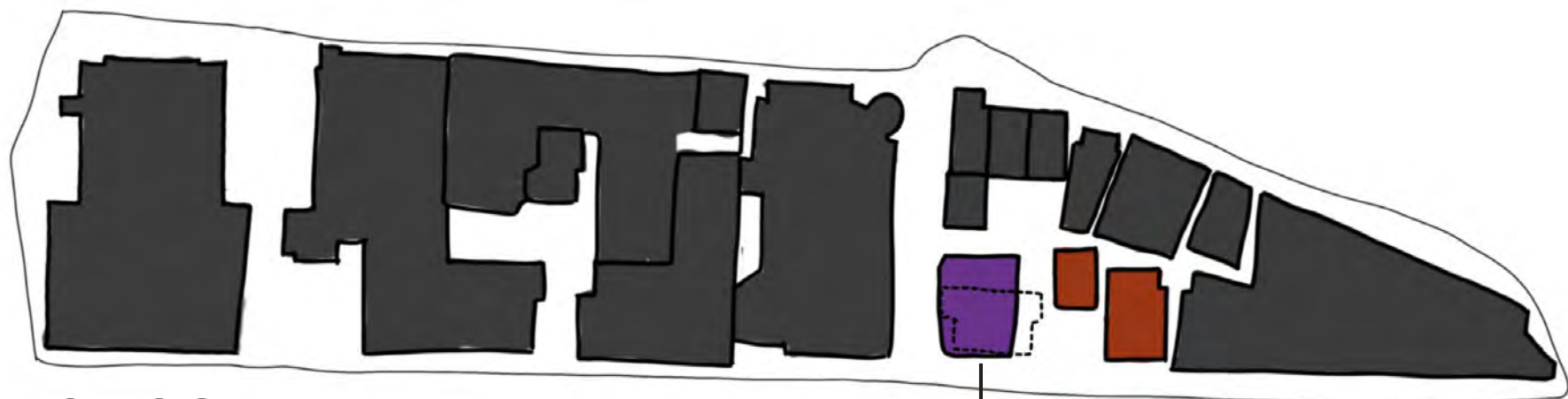


1986

Sources: Sanborn, 1988 and 1996



1989



PROPOSED

NEW FOOTPRINT

- In the 1980s, several 1860/70s wood frame houses on the block between Arrow and Mt Auburn St were demolished to make way for larger scale development.
- The remaining 3 wood frames (9, 11, & 15 Mt Auburn) became a cluster when the building at 19 Mt Auburn was relocated between 9 and 15.
- Facade preservation easement established in 1989 for 3 public-facing façades of these 3 buildings.
- Subsequent inclusion in the Harvard Square Conservation District.
- Historical Significance: 15 Mt Auburn was recognized as part of a cluster of vernacular architecture from 1860/70s, but it is not individually notable, neither in terms of its architecture nor its historical associations.

BUILDING HISTORY



1973



1985



1988



1991

- Constructed in 1873 in vernacular Mansard style by James H. and Joshua P. Thayer
- Exterior modifications over time include:
 - 1973: Façades reclad and front porch remodeled
 - 1985: Front entry changed
 - 1988: Shutters and window pediments added
 - Building color drastically changed multiple times
- **Minimal amount of original building fabric remains today**



2025



CHALLENGES TO RE-USE

Refer to Appendix A for further information

The project was initiated as a renovation project + addition. Extensive due diligence revealed deteriorated conditions and significant challenges.

CHALLENGES SUMMARY:

1. BASEMENT & FOUNDATION

- Water infiltration issue
- Structurally compromised
- Restrictive ceiling height below code min. requirement

2. BUILDING STRUCTURE

- Main building beams and joists structurally compromised
- Bulging foundation at SE corner

3. FAÇADES & ROOF

- Façades and water barrier deteriorating
- Roof leaks and needs replacement

4. ACCESSIBILITY

- Site constraints and building layout restrict universal accessibility

RENOVATION vs REPLACEMENT

- 01 We acknowledge the building's history and designation by the Commission to be a **significant building in the context of a group of buildings**, but recognize **the building has changed over time** and is in **deteriorated condition**
- 02 We recognize the **importance of maintaining the residential scale of the three buildings cluster** within their urban context
- 03 We believe a renovation of 15 Mt. Auburn Street would essentially require the **construction of a new building within the existing building**, thus incurring significant cost, schedule, and logistical challenges
- 04 We propose **building demolition and replacement** as the preferred path forward, given the existing building's deteriorated conditions, limited original fabric, site challenges, HUNAP programmatic needs, and the University's building and facility standards.



COMPROMISED
FOUNDATION WALL



COMPROMISED STRUCTURE



DETERIORATING FACADE



FAILED ROOF

02 PROPOSED REDEVELOPMENT

- » PLANNING PRINCIPLES / STRATEGIES
- » ZONING COMPLIANCE
- » PROPOSED DESIGN

PLANNING PRINCIPLES / STRATEGIES

1. WHAT DOES A BUILDING LOOK LIKE FOR HUNAP, THAT...

- Is on a tight site in Harvard Square
- Is sandwiched between small wood frame houses and a big brick theatre
- **Embraces the Native American Community's identity, traditions, and culture**



TIPI



LONGHOUSE



WETU



WAMPUM FROM QUAHOG CLAM & CHANNELLED WHELK SHELL



CONTEMPORARY WAMPUM

2. AND AVOIDS CLICHÉ FORMAL ARCHETYPE

- A building that does not imitate the past built-form

BUT EMBRACES THE PAST AND PRESENT

- Wampum as the **integral part of design concept**

3. WHAT IS WAMPUM?

- Wampum is a sophisticated, traditional shell bead art of the Native American tribes of the Eastern Woodlands

4. WHY IS WAMPUM SIGNIFICANT?

- **Symbol of harmony and peace** between Communities
- Mnemonic device that **represents specific moments in Native American history**



OTGÓ'Ä.' WAMPUM



5. IDENTITY BY MATERIALITY & COLORS

- Element of traditional Native American culture deployed as contemporary construction material

=



WAMPUM

+



BARK SIDING

PROPOSED SITE PLAN

- REDEVELOP SITE WITH NEWLY CONSTRUCTED SUSTAINABLE BUILDING

RESPECT ZONING

- Comply with all dimensional requirements
- Create more generous side yard to abutter

STRENGTHEN SUSTAINABILITY | RESILIENCY

- All electric | Non fossil fuel combustion
- Comply with flood resilience and green factor zoning requirements

KEEP ALLEYWAY WIDTH

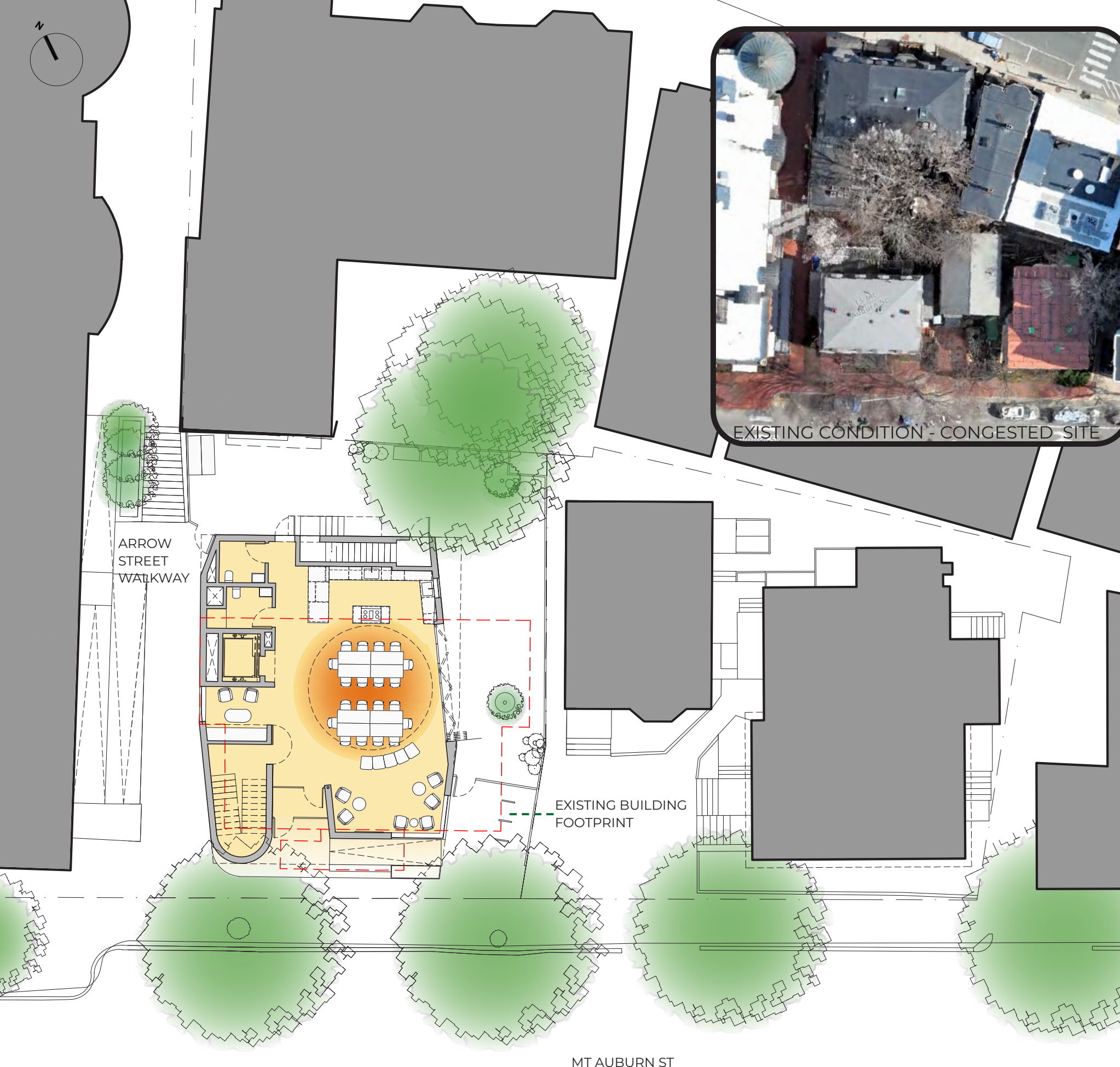
- Provide same public access to alleyway

MAINTAIN SCALE

- Compliment scale of the wood frame residences
- 5,565 GFA
- 36'-10 1/2" height (3 stories)

IMPROVE PUBLIC REALM | OPEN SPACE

- Improve public sidewalk and site accessibility
- New plantings and permeable pavers



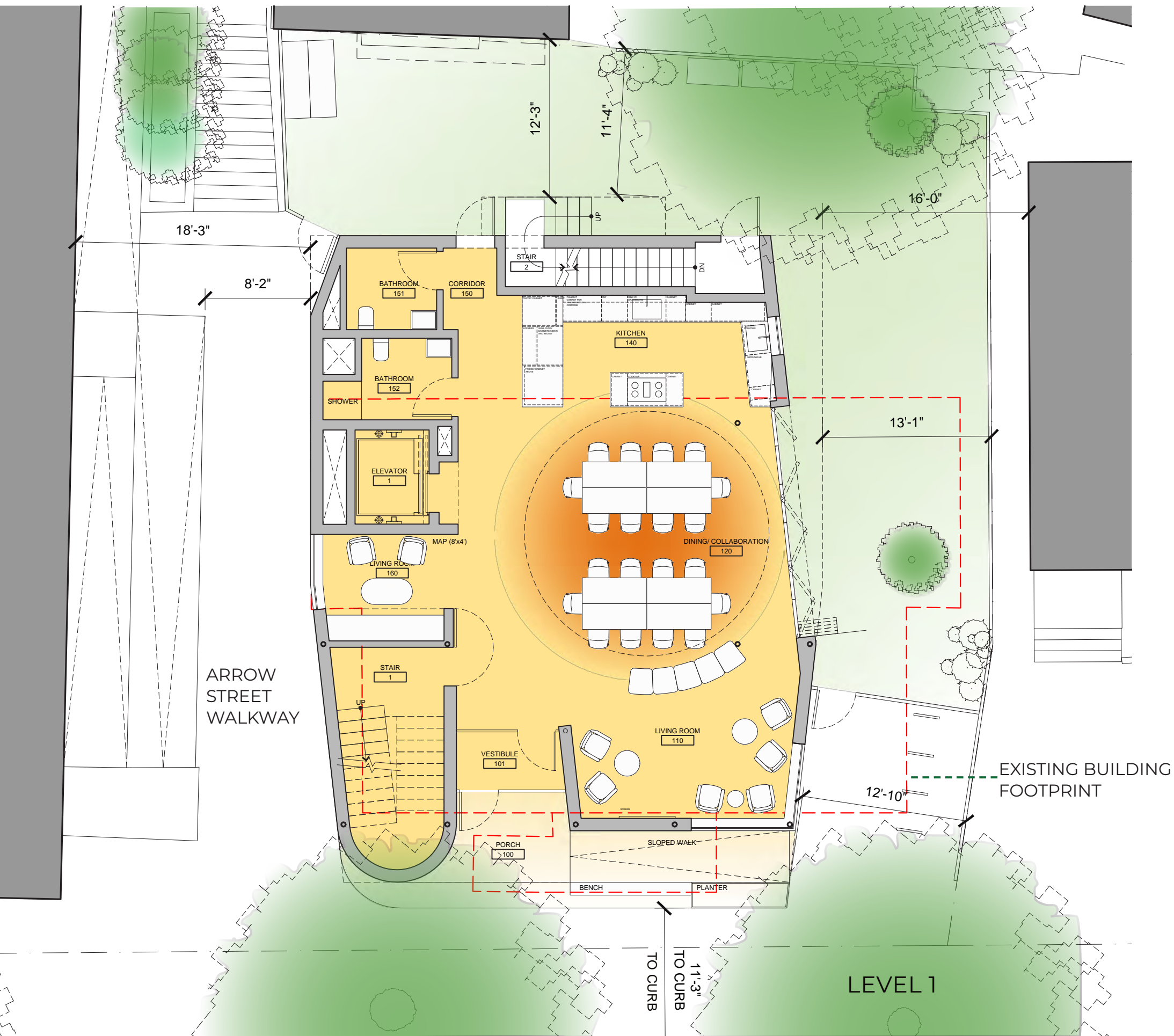
CONTRASTING SCALE

The proposed design maintains the scale of the massing similar to the existing building today. It follows and respects the established urban context of small scale wood frame cluster surrounded by large-scale masonry structures.



Cluster of the 3 wood frames surrounded
by large neighboring buildings

PLANS



MAIN ENTRY

- Widened sidewalk
- Covered porch
- ADA sloped walk (1:20)
- 6 short-term bike parking spots
- 2 long-term bike parking spots

BARK CORNER

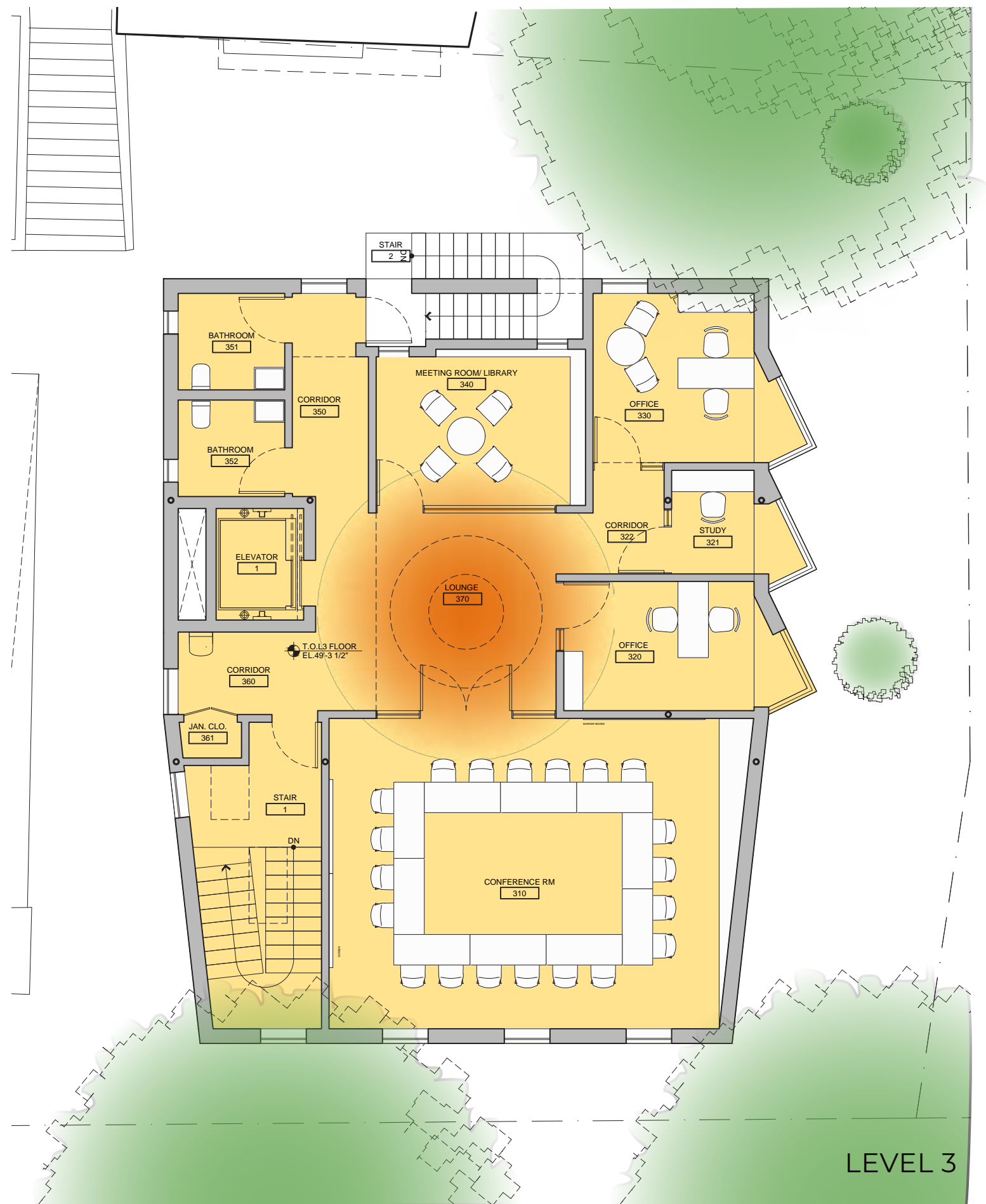
- Curvature + material guide movement to entry

INDOOR GATHERING SPACE

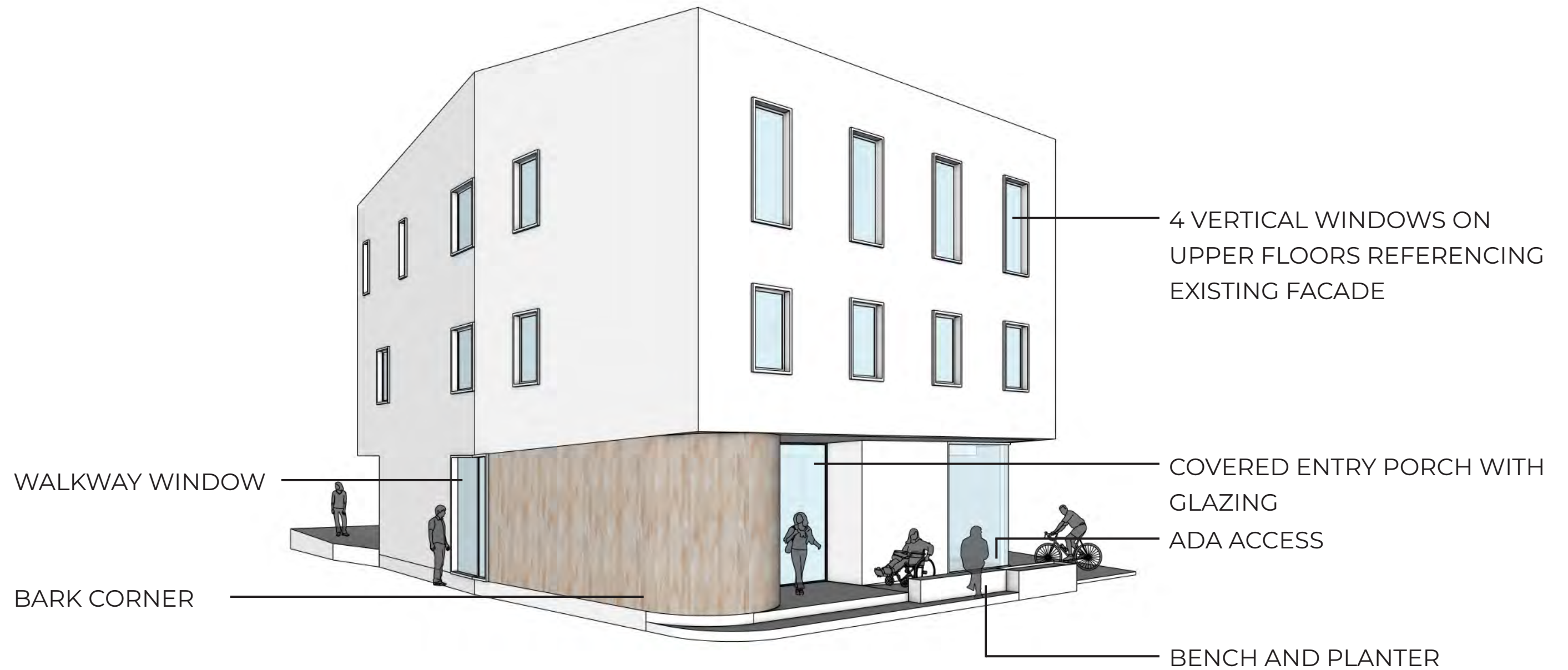
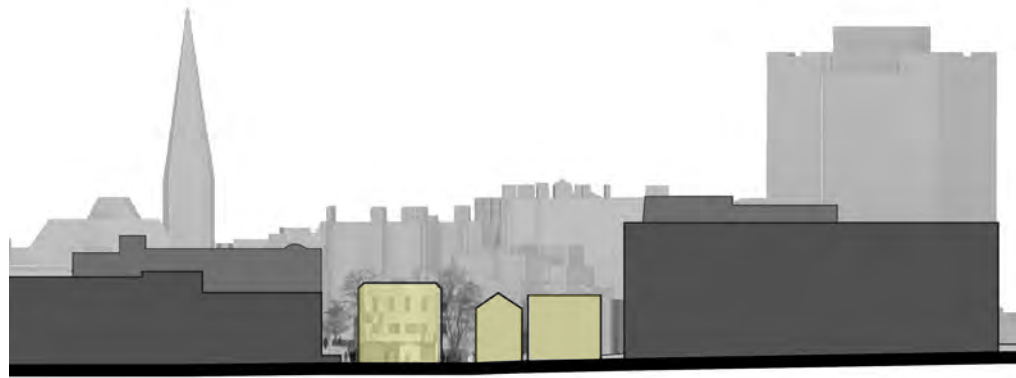
- Flexible student space

OUTDOOR SPACE

- Side yard with sun exposure
- Sacred tree and native plants

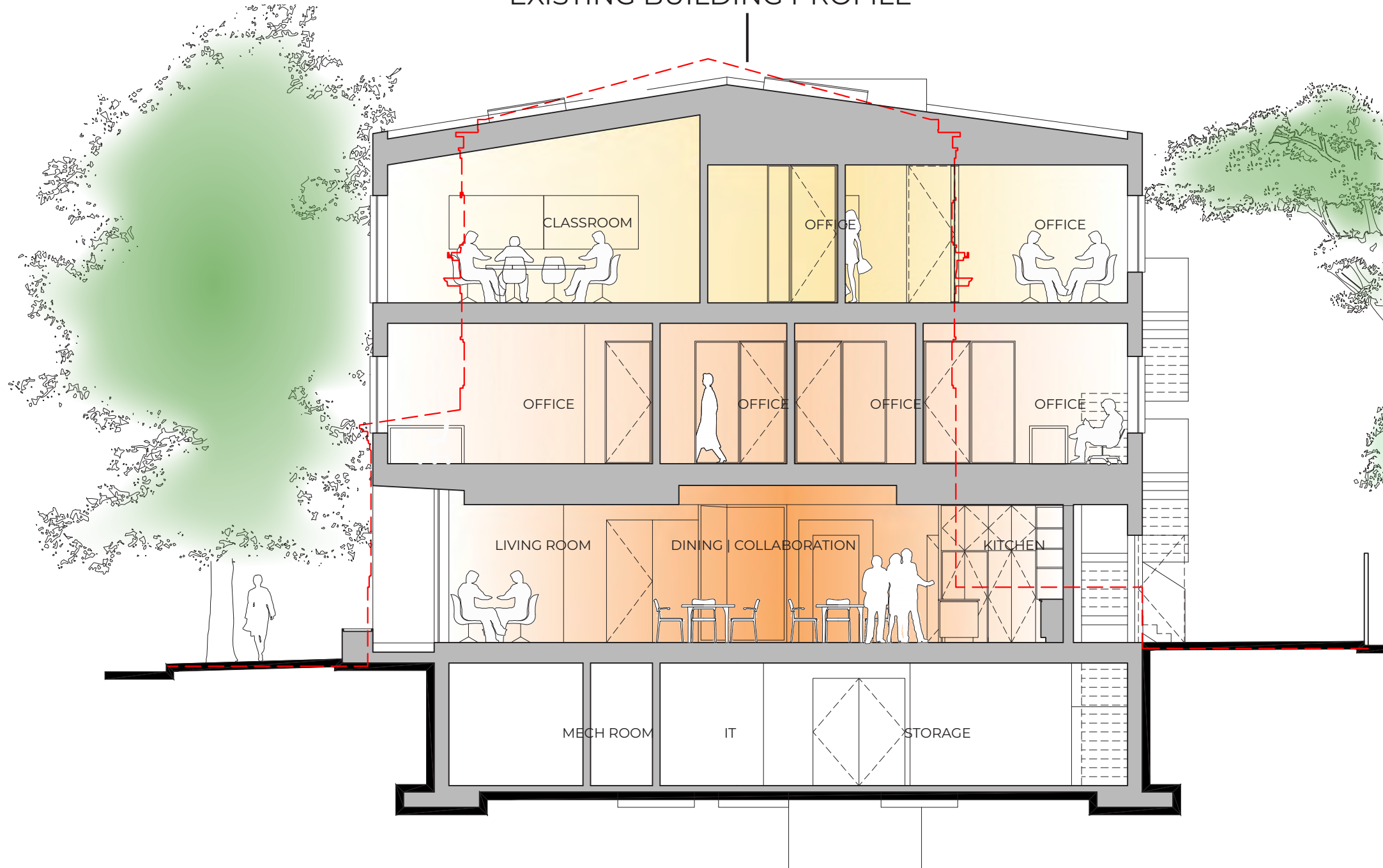


MASSING



SECTIONS

EXISTING BUILDING PROFILE



MT AUBURN STREET

BACK YARD

BUILDING HEIGHTS

- 3 Stories above ground + basement
- 33'-2 1/2" High (street facade) 36'-10 1/2" high (roof ridge)



2 ARROW ST ARROW STREET
WALKWAY

15 MT AUBURN ST

SIDE YARD

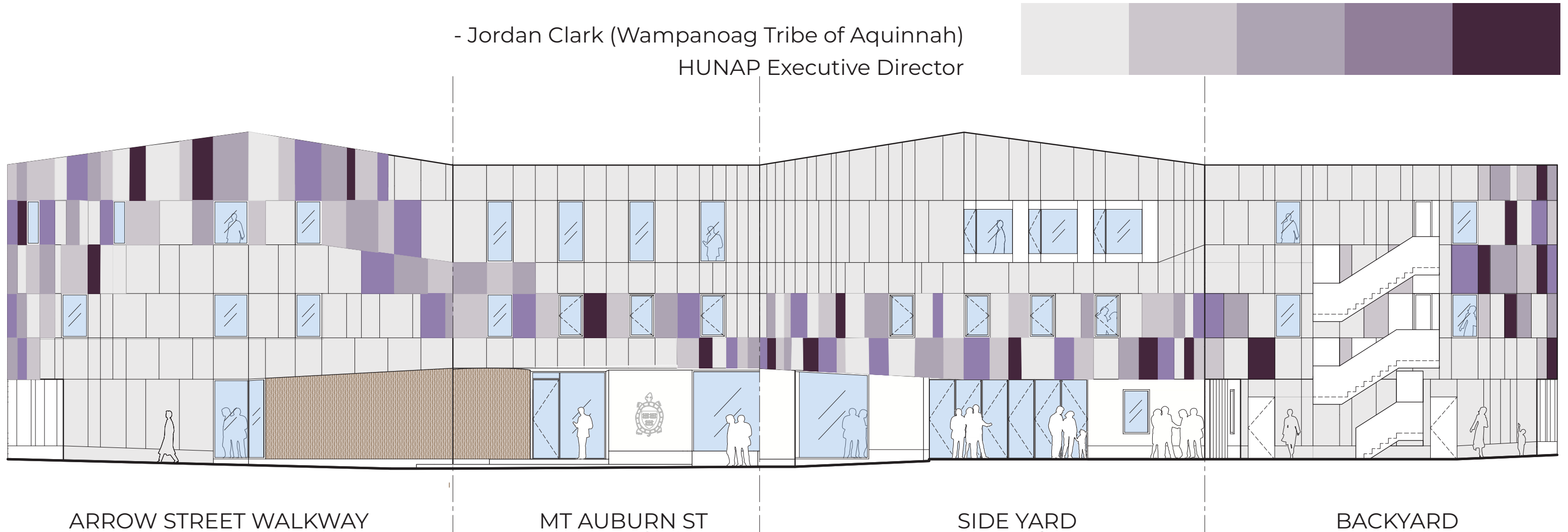
11 MT AUBURN ST

9 MT AUBURN ST

*“For us, its important to find the balance between the past and the present. **The current façade design aims to find that balance and emphasize aspects of culturally significant components of local native culture and history.**”*

- Jordan Clark (Wampanoag Tribe of Aquinnah)
HUNAP Executive Director

FAÇADE DESIGN





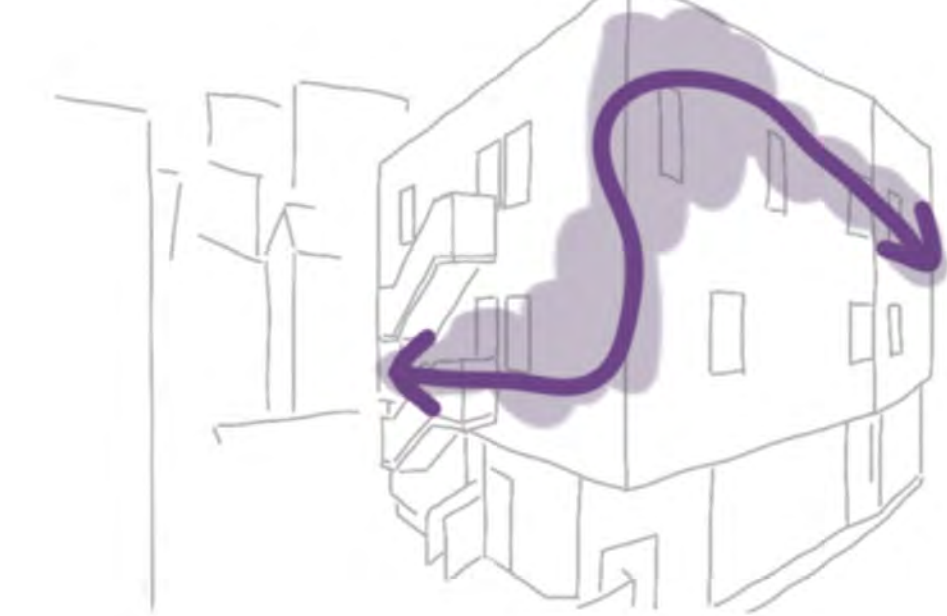
The wampum-inspired purple facade panels move across the façades at different heights, following circulation and activities around the site.

FAÇADE PATTERN

LOW AT ENTRY AND GARDEN



HIGH AT WALKWAY





Use materials, colors, and details that are relevant and meaningful to the Native American Community

Placement by the entrance and the side yard **welcomes and engages the Community**, and enhances the pedestrian experience



MAIN ENTRANCE CLOSE UP



SIDE YARD CLOSE UP

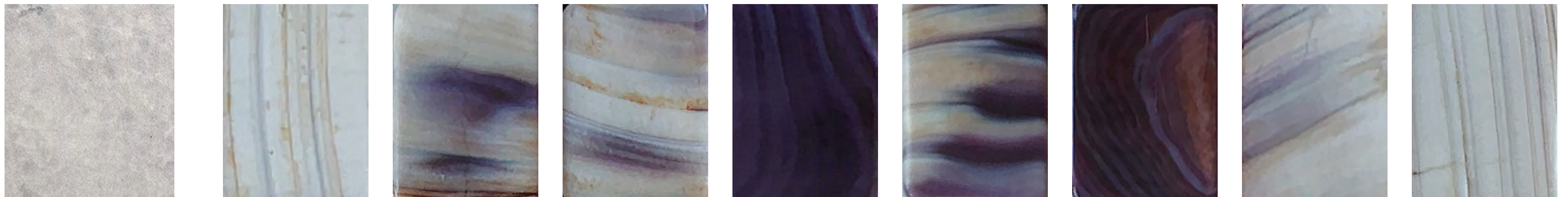
FAÇADE MATERIAL - CLADDING PANELS



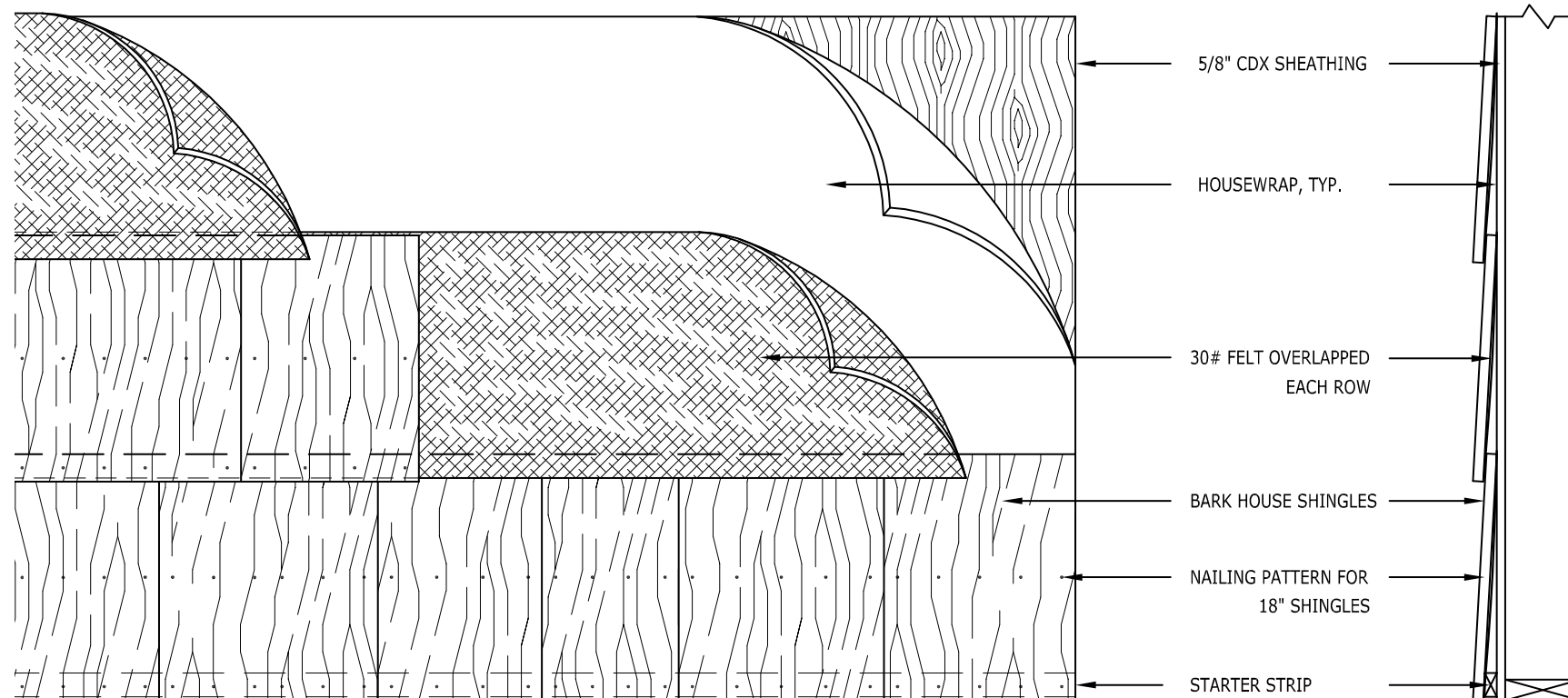
The facade is designed to be a rain screen system. Inspired by the variegated appearance of the wampum beads, a combination of textured fiber cement panels, coated stucco panels, and back-printed glass panels are being considered for the cladding panels to achieve the visual effect.

The cladding panels would have the following characteristics:

- A mix of custom colors with various shades of muted grey and purple tones
- A mix of textured or patterned surfaces to reflect the visual interest of wampum
- Durable and low maintenance

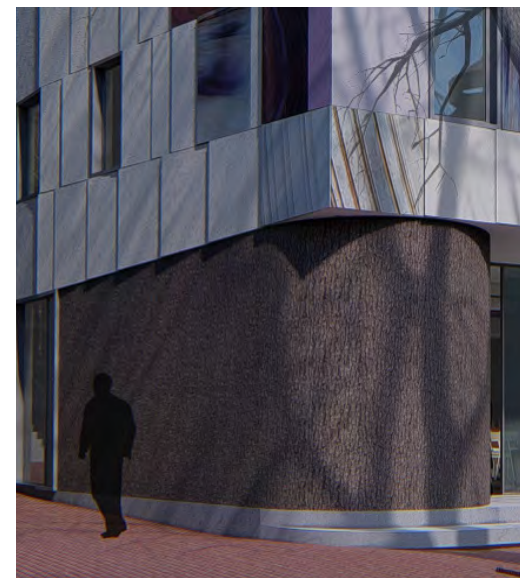


FAÇADE MATERIAL - BARK SIDING



BARK SIDING CHARACTERISTICS

- Species: tulip poplar
- Natural weather resistance
- Durable and low maintenance
- Sustainable, reclaimed forestry waste product
- Fire rated (class b)
- Kiln dried to sterilize and remove pests
- Insect resistant due to alpha pinene presence
- Ages naturally
- Up to 1 1/2" thick



FAMILIAR FAÇADE ELEMENTS

The proposed design at 15 Mt Auburn draws inspiration from facade elements existing at and near the site



CORNICE

BAY WINDOW



1. BAY WINDOWS

- Reference to those on adjacent buildings, big or small

2. HORIZONTAL DATUM ON FACADE

- Exterior soffit creates a strong datum, similar to cornices

3. WINDOW ARRAY

- Vertical windows reference existing building main facade

WINDOW
ARRAY



CORNICE

BAY WINDOW



BUILDING EXTERIOR VIEWS (WINTER)





MT AUBURN STREET VIEW (SUMMER)



ZONING ANALYSIS TABLE

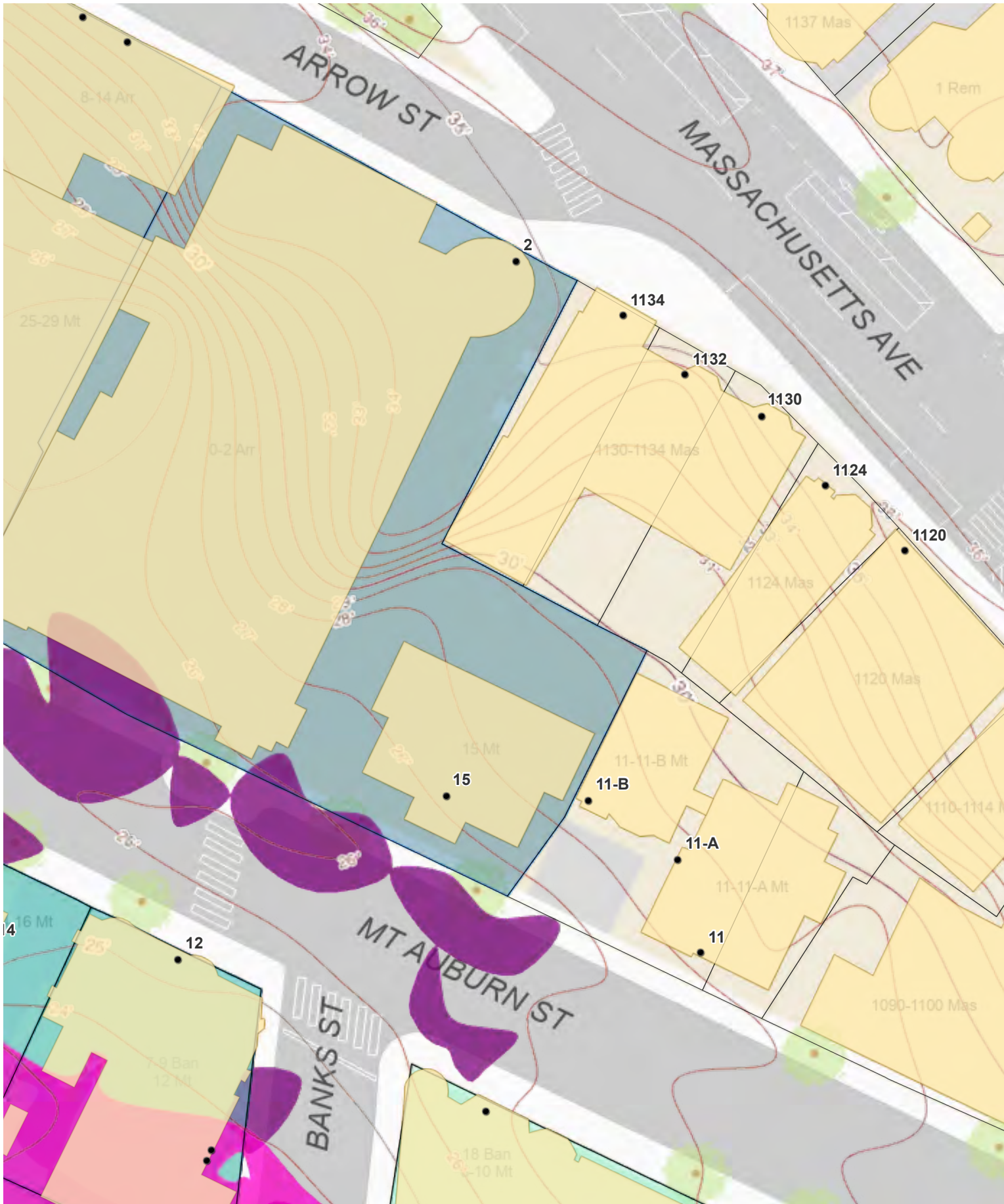
Refer to Appendix B for further information

CZO PROVISION	EXISTING (with existing structure)	PROPOSED (with proposed new structure)	ORDINANCE REQUIREMENT
Lot Size (CZO Table 5-1)	18,652 sq. ft.	No change	5,000 SF minimum
Total Building GFA on Lot (CZO Section 20.54.6)	41,314 sq. ft.	42,707 sq. ft.	Total Maximum Floor Area: 18,652 x 3.0 = 55,956 SF
15 Mt Auburn St. GFA only	4,172 sq. ft.	5,565 sq. ft.	Assumes DPW concurrence on basement level GFA exemption for flood resilience compliance
Floor Area Ratio (FAR) (CZO Table 5-1) (CZO 20.54.6)	2.22	2.28	2.0 maximum within O-3 zoning district 3.0 maximum within HSOD
Min. ratio of private open space to lot area (CZO Table 5-1)	28%	26%	10% of lot area
Setbacks (CZO Table 5-1) (CZO 5.24.4)	Front Yard to Mt Auburn St. 25.99 ft.	29.97 ft. Proposed front yard setback to centerline 5 ft. Proposed setback to property line	Formula: FRONT YARD: (H + L) / 7 measured from the centerline of the street, but not nearer than 5’ to street Minimum Required: 35.62+42.60/7=11.17 CONFORMING
	Side Yard Southeast 4.52 ft.	12.83 ft.	The architect Lee2 Design has completed multiplane calculations and confirmed that setbacks are conforming. See appendix. CONFORMING
	Side Yard East 2.00 ft.	13.11 ft.	The architect Lee2 Design has completed multiplane calculations and confirmed that setbacks are conforming. See appendix. CONFORMING
	Side Yard North 25.10 ft.	11.32 ft.	Formula: SIDE YARD: (H+L) / 8 Minimum Required: 34.67+42.60/8=9.66 ft CONFORMING
	Rear Yard Setback	Not applicable	Not applicable
Distance to Nearest Building on Same Lot (CZO Section 5.13)	18.51 ft.	18.23 ft.	Formula: Height (Bldg 1) + Height (Bldg 2) / 6; (10 feet minimum) Minimum required: 56+ 37.96/6= 15.66 ft. min CONFORMING
Building Height (CZO Table 5-1) CZO 20.54.2)	39 ft.	34.67-37.96 ft.	60 ft. max. HSOD
No. of Vehicular Parking Spaces (CZO Section 6.31, HSOD CZO 20.54.4.1)	Not applicable	Not applicable	Not applicable
No. of Bicycle Parking Spaces (6.100, CZO 6.107.2, 6.107.3)	Not applicable	6 Short-Term Spaces, 2 Long-Term Spaces	Short-term E2 College or university facilities (excluding residences) 0.40 space per 1,000 square feet <u>6,641 GFA = 2.65</u> Long-term E2 College or university academic or administrative facilities 0.20 space per 1,000 square feet <u>6,641 GFA = 1.33</u>
No. of Loading Areas (CZO Section 6.83)	0 loading areas	No change	Loading Category F: one bay required at 10,000 SF GFA Project is 6,641 sq. ft., resulting in a requirement for zero loading bays.

FLOOD RESILIENCE

The design complies with the Flood Resilience standard per CZO 22.80.

- The finish floor elevation (FFE) for the Story Above Grade is 27.13', which is higher than the established 1% LTFE (25.7'), and is considered protected from the 1% LTFE standard.
- The lowest grade adjoining the building is 26.0', which is higher than 1% LTFE (25.7') , and therefore the Story Below Grade is considered a finished floor protected from flooding to the 1% LTFE standard.
- The Story Below Grade has permanent, passively deployable barriers (foundation waterproofing system) in place at the height of the LTFE standard adequate to fully prevent the entry of floodwater into the interior.



Address: 2 Arrow St	
Ground Elevation Min:	23.6 ft-CCB
Ground Elevation Max:	35.0 ft-CCB
2070 - 1% - SLR/SS	N/A
2070 - 1% - Precip	25.7
2070 - 10% - SLR/SS	N/A
2070 - 10% - Precip	N/A
2030 - 1% - Precip	N/A
2030 - 10% - Precip	N/A
Present Day - 1% - Precip	N/A
Present Day - 10% - Precip	N/A
FEMA 500-Year	N/A
FEMA 100-Year	N/A
1% - LTFE	25.7
10% - LTFE	N/A
Selected Map-Lot: 133-36	
Selected Address: 2 Arrow St	

Project Address	Special Permit Number	Total Lot Area (SF)	
15 Mt Auburn St		18,652	
Applicant Name	Phone Number	Open Space Requirement (%)	Enter minimum required open space ratio. If the ratio is less than 20%, enter 20 here.
President and Fellows of Harvard College	617-496-3606	20%	
Applicant Contact / Address	Email Address	Zoning District	
HUPAD 1350 Massachusetts Avenue Cambridge MA 02138	diane_gray@harvard.edu	O-3	
Project Description		Result	
Harvard University proposes to build a new 6,641 square foot building at 15 Mt Auburn St to create a home for the Harvard University Native American Program.		Pass	

		Outside 20' of Street	Value Factor		Within 20' of Street	Value Factor	Contributing Area	
Trees Enter the number of trees in each category. Count each tree only once on this form.	Preserved Existing Trees							
	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	3	0.80	+	0	1.60	1,680
	A4	Canopy tree currently between 15' and 25' canopy spread	0	1.00	+	0	2.00	-
	A5	Canopy tree currently >25' canopy spread	1	1.20	+	0	2.40	420
	New or Transplanted Trees							
	A6	Understory tree	1	0.60	+	0	1.20	90
A7	Canopy tree	1	0.70	+	0	1.40	490	
Planting Areas Enter area in square feet of each component in the box provided	B1	Lawn Area	0	0.30	+	0	0.60	-
	B2	Low Planting Area	0	0.40	+	0	0.80	-
	B3	High Planting Area	399	0.50	+	467	1.00	667
Green Roofs & Facades For definitions, see reference document.	C1	Green Façade	0	0.10	+	0	0.20	-
	C2	Living Wall	440	0.30	+	0	0.60	132
	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	0	0.60	+	0	1.20	-
Paving & Structures	D1	Low Slope Roof	13,507	N/A				
	D2	High-SRI Paving	1,033	0.1				103
	D3	Shaded Area	207	0.2	+	268	0.40	149
Project Summary								
	Portion of lot area utilizing green strategies 19%				Total Contributing Area		3,730	
	Portion of score from green strategies 93%				Total Area Goal		3,730	
	Portion of score from trees 72%				COOL FACTOR SCORE		1.00	
Portion of score contributing to public realm cooling 15%								

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

Note 1

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

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

The design complies with the Green Factor standard per CZO 22.90.

- The project includes:
- Preserve existing trees
 - New trees
 - High planting area
 - Living wall
 - High SRI paving
 - Shaded area

Note

1 The canopy tree is owned in common with abutter to the north. Given the shared ownership, the scorecard reflects the count for half of this tree.

03 APPENDIX A

» CHALLENGES TO REUSE | OPTIONS STUDIED

- BASEMENT AND FOUNDATION
- BUILDING STRUCTURE
- FAÇADE AND ROOF
- ACCESSIBILITY

1. BASEMENT & FOUNDATION

CHALLENGES

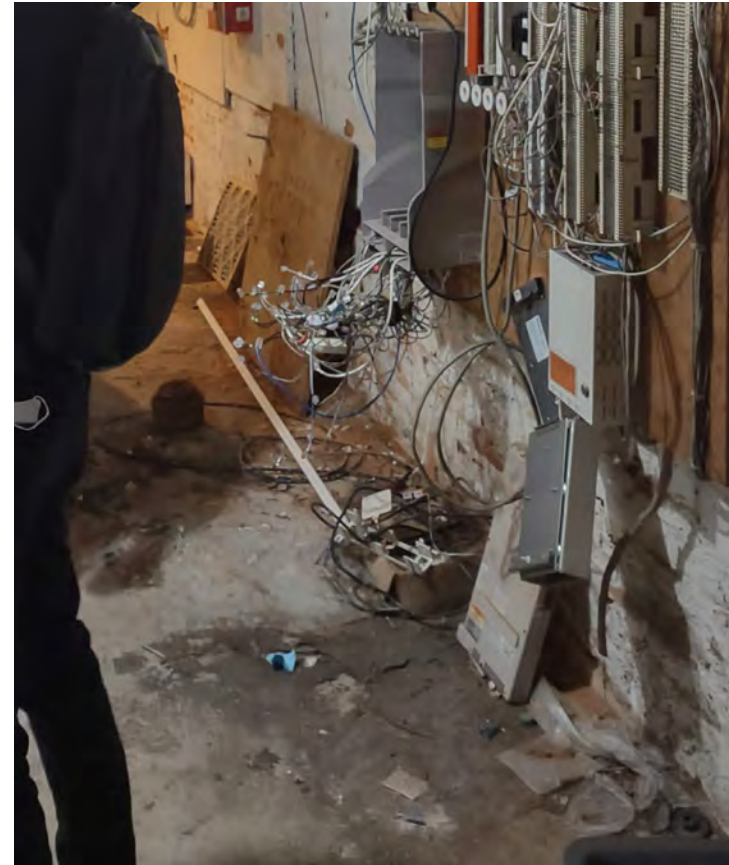
- Basement
 - Ceiling height does **not meet building code** (6'-3" to 7'-0")
 - **Water infiltration** on slab observed
- Existing foundation walls
 - Bricks over rubble stone
 - **Poor to fair conditions**
 - Shallow
 - SE and NE corner settled, with existing underpinning and shoring to remediate
 - East foundation wall bowing

ACTION REQUIRED

- Would need extensive work of **foundation underpinning** to make basement functional in a challenging tight site **6' away** from the residential abutter



EXISTING BASEMENT WITH LOW HEAD HEIGHT



WATER INFILTRATION AT SLAB



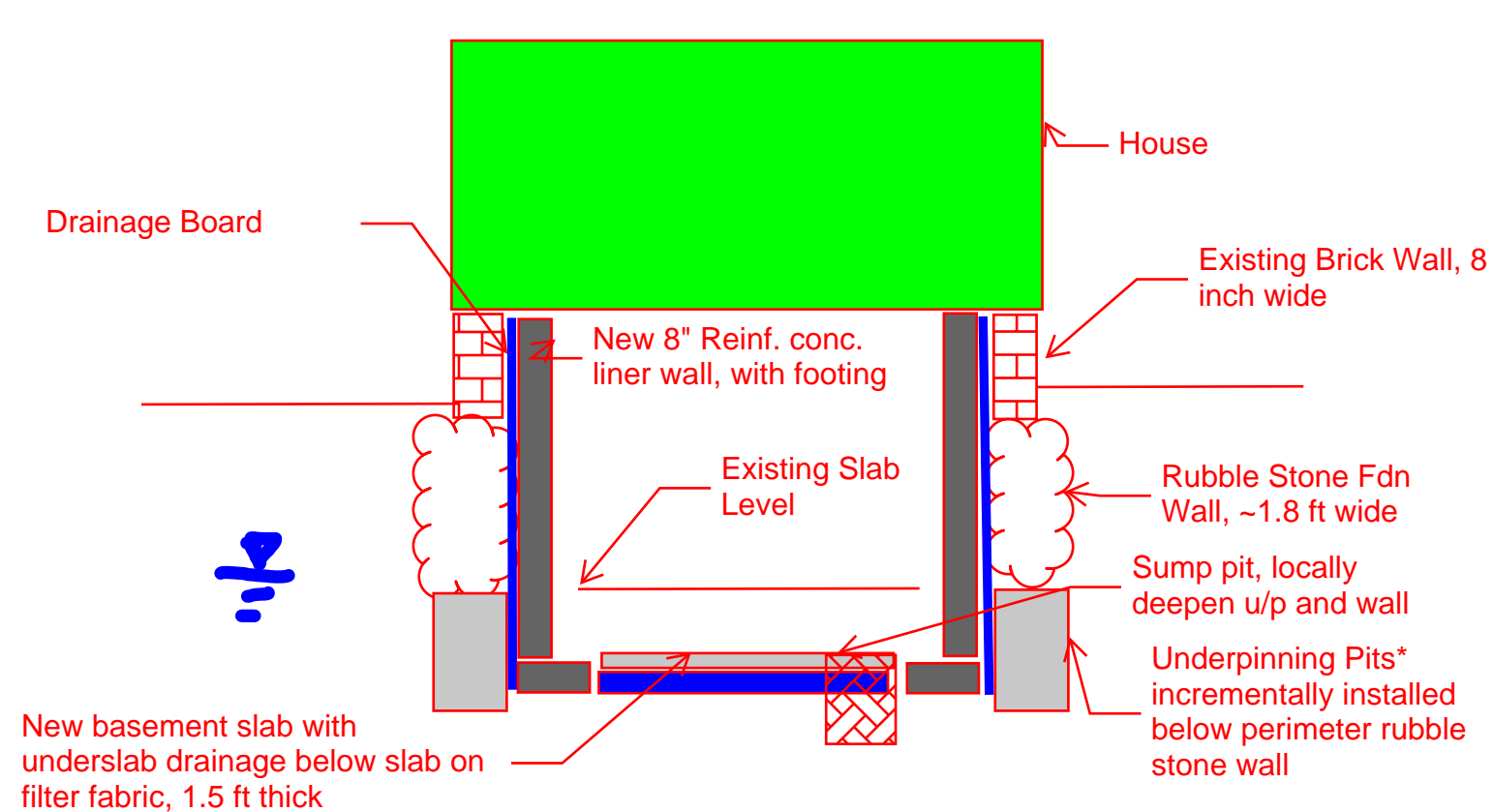
DETERIORATED MASONRY AT
FOUNDATION WALL



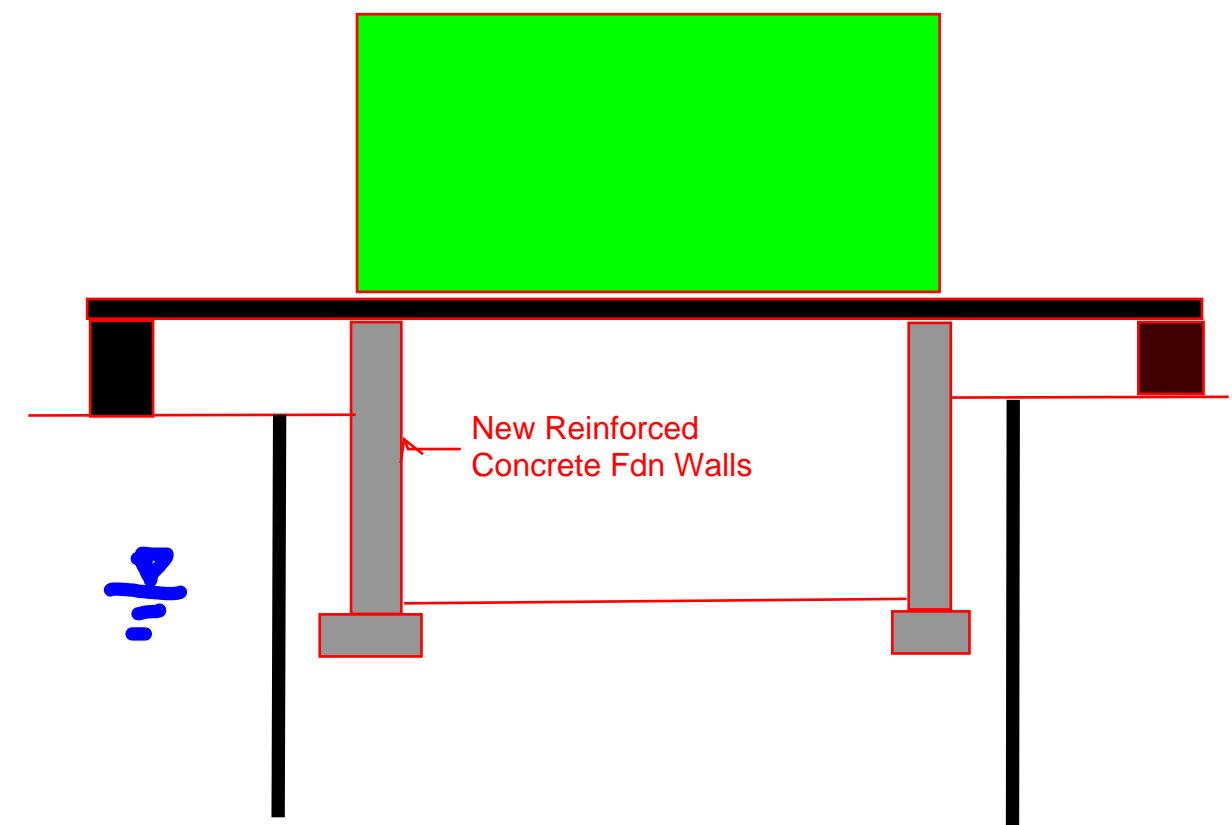
PREVIOUS UNDERPINNING/ REPAIR AT SE CORNER

FOUNDATION - REPAIR VS REPLACEMENT

Two foundation repair strategies were investigated to understand the feasibility of addressing the structural deficiencies, water infiltration, and to bring the existing foundation and basement space up to current code.

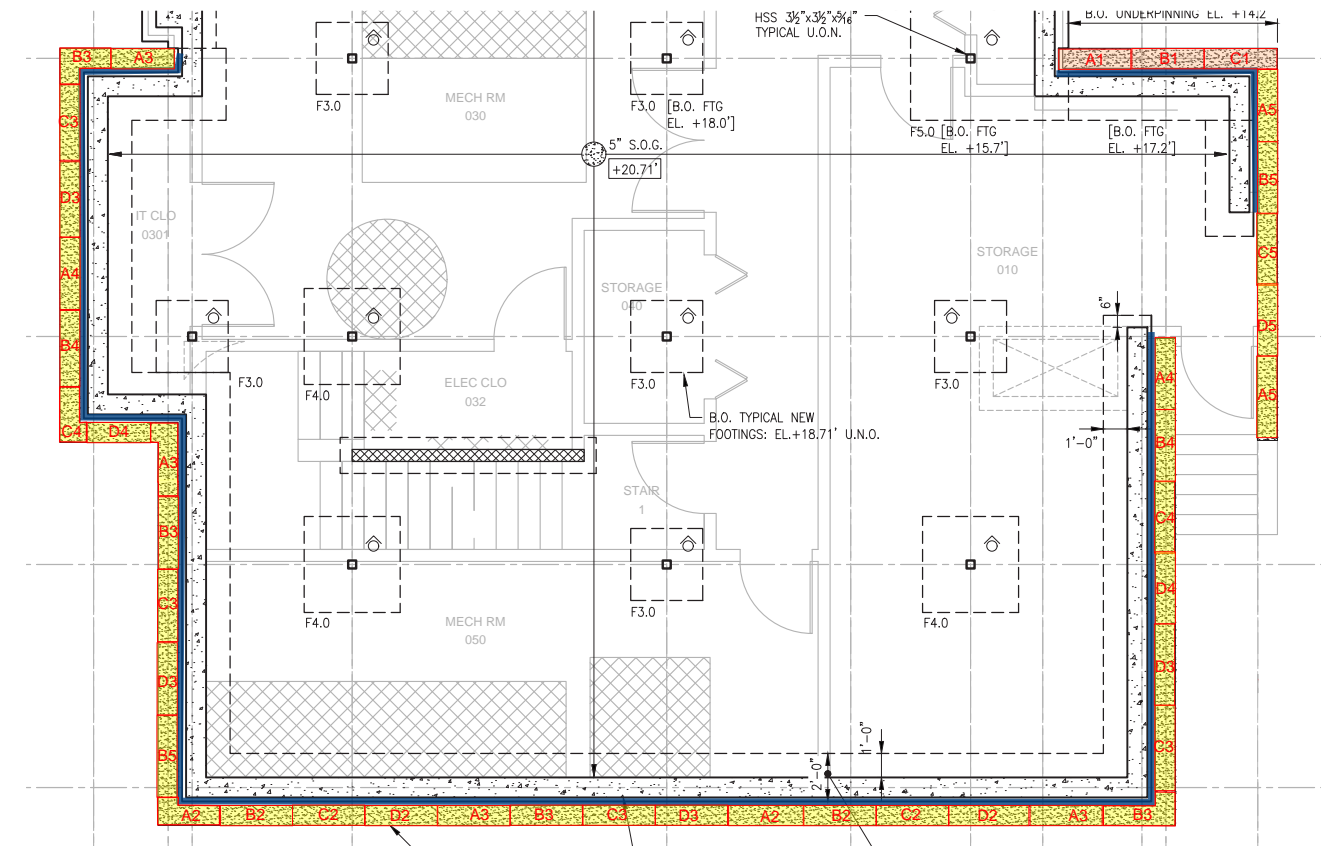
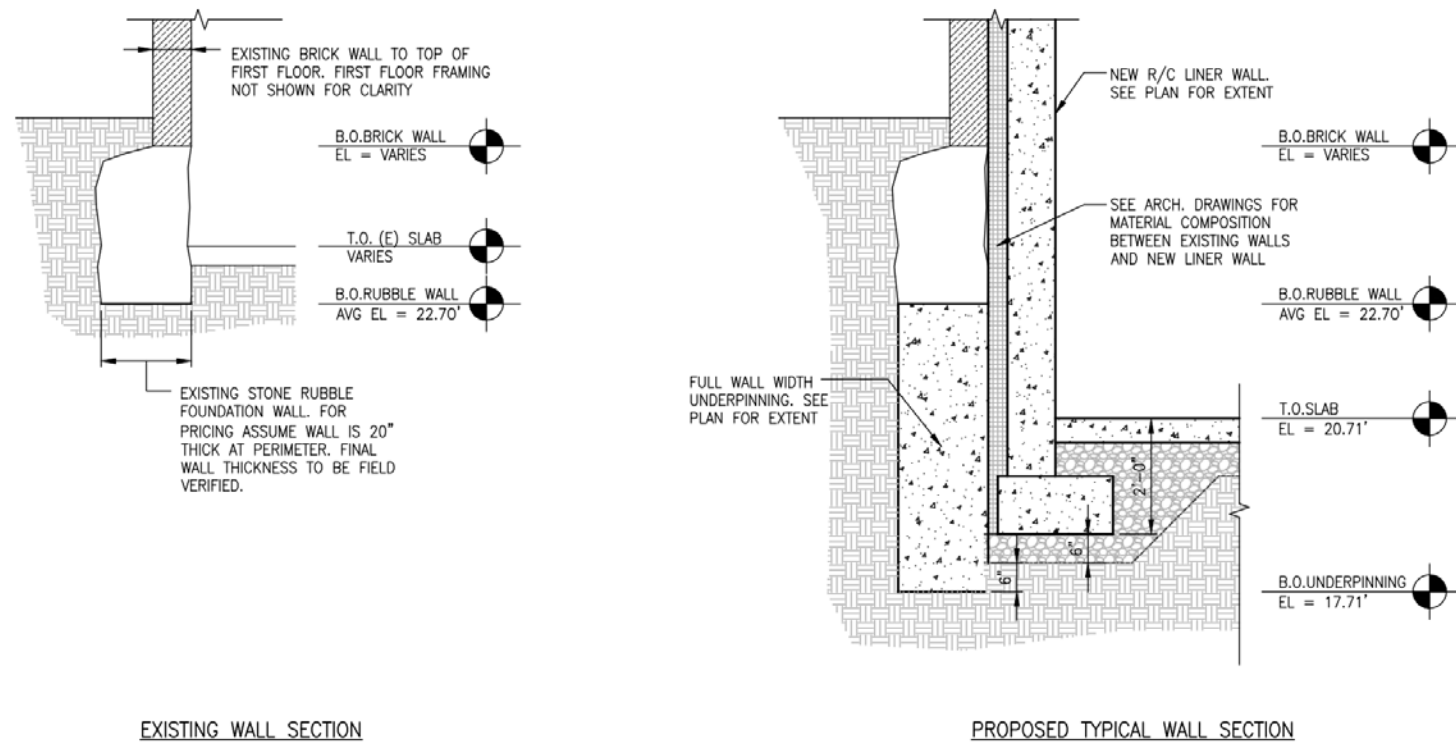


STRATEGY 1 - FOUNDATION REPAIR + UNDERPINNING



STRATEGY 2- TEMP SUPPORT OF SUPERSTRUCTURE + FOUNDATION REPLACEMENT

FOUNDATION - UNDERPINNING AND NEW LINER WALL



After evaluating the feasibility of the two repair/replacement strategies, it was determined that the more feasible option would be to repair the existing foundation with underpinning and construct an additional 10" thick structural concrete liner and slab inside the existing foundation to meet current structural code.

While it was the more feasible option, the site constraints would make this task extremely challenging.

To accomplish this, underpinning would need to be performed in 4' segments beneath the existing foundation walls. A new 10" thick concrete linear wall would need to be constructed with blind-side waterproofing and drainage system as part of the foundation design. The basement slab would need to be a reinforced concrete slab-on-grade with an underslab drainage system.

2. BUILDING STRUCTURE



COMPROMISED FLOOR FRAMING BEAM

CHALLENGES

- Floors
 - Sagging with noticeable dips at various locations
- Beams | Floor joists
 - Connection = Lap joints, not joist hanger
 - Main beam has split along the length at various locations
 - **Compromised structural integrity and performance**

ACTION REQUIRED

- Would need **reinforcement or replacement** to make it code compliant and meet safety standard.

3. FAÇADE AND ROOF

CHALLENGES

- Sidings
 - Deteriorated and require replacement at many locations
- Facade substrate
 - Air/ Water barrier shows **sign of deterioration & failure**, but repairing it would require replacing existing cedar siding
 - Insulation is **insufficient**
 - Framing is undersized, requires **reinforcement**
 - Adding new insulation to meet code will increase freeze-thaw cycles within the facade substrate and increase **risk of further deterioration**
- Roof
 - Roof leaks. **End of life expectancy**
 - Roof framing undersized. Need **structural upgrade**

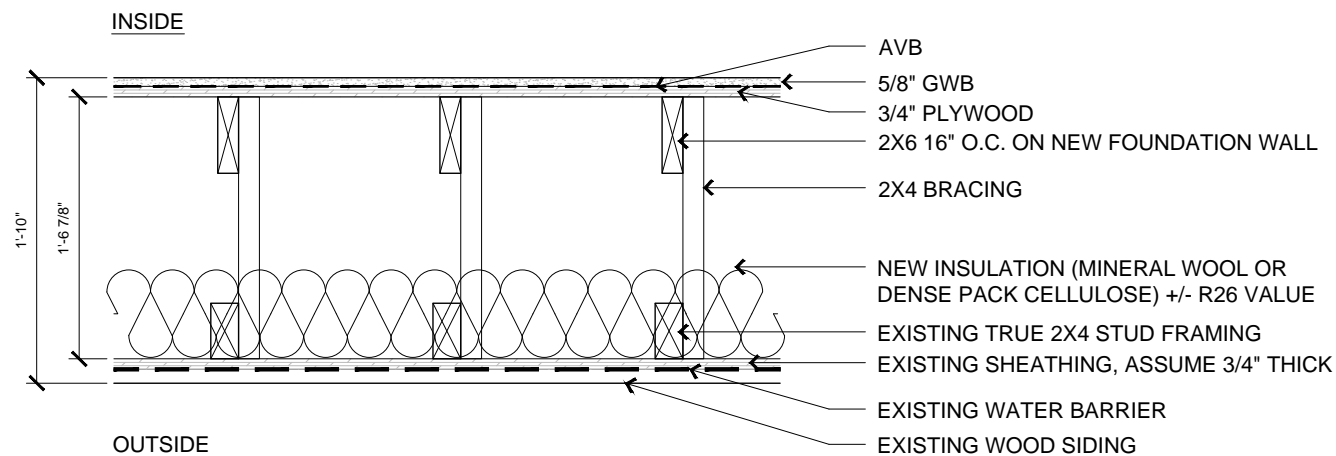
ACTION REQUIRED

- Install a **new roof**
- Provide **reinforcement at every facade framing stud location to meet code**
- **Rebuild façades entirely from within**



DETERIORATED SIDINGS, BUILDING PAPER, ROOF SHINGLES, AND CEILING

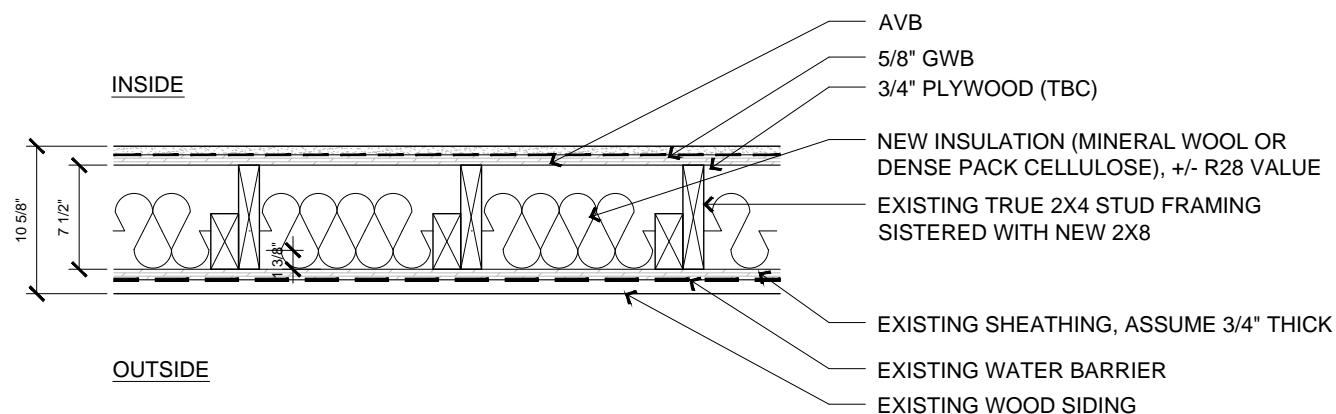
FAÇADE - NEW INSULATED WALLS AND WINDOWS



A) EXISTING FACADE WITH LATERAL BRACING

FACADE ORIENTATION AND TOTAL WALL LENGTH

- L1 - EAST, SOUTH & WEST = +/- 30'-6"



B) EXISTING FACADE WITHOUT LATERAL BRACING

FACADE ORIENTATION AND TOTAL WALL LENGTH

- L1 - EAST, SOUTH & WEST = +/- 84'-9" (FULL HEIGHT), +/-20'-6" (ABOVE AND BELOW WINDOWS)
- L2 - EAST, SOUTH & WEST = +/- 80'-3" (FULL HEIGHT), +/-24'-0" (ABOVE AND BELOW WINDOWS)
- L3 - EAST, SOUTH & WEST = +/- 80'-3" (FULL HEIGHT), +/-24'-0" (ABOVE AND BELOW WINDOWS)

ENERGY CODE COMPLIANCE

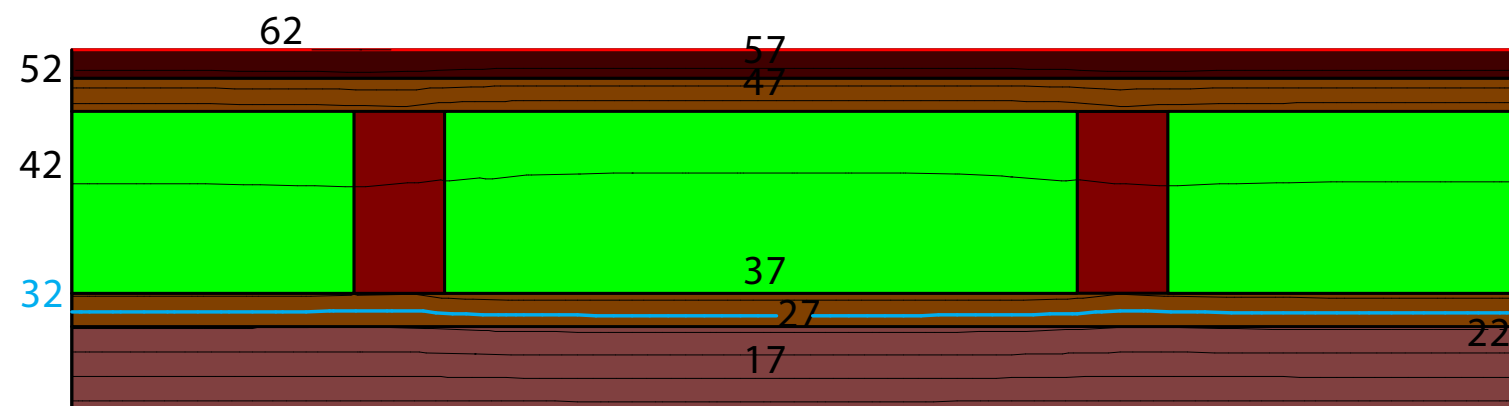
The HUNAP project falls under the 2021 version of the International Energy Conservation Code (2021 IECC) as amended by 225 CMR 23, the current version of the Massachusetts Commercial Stretch Energy Code.

The recommended targets for envelope performance are as follows:

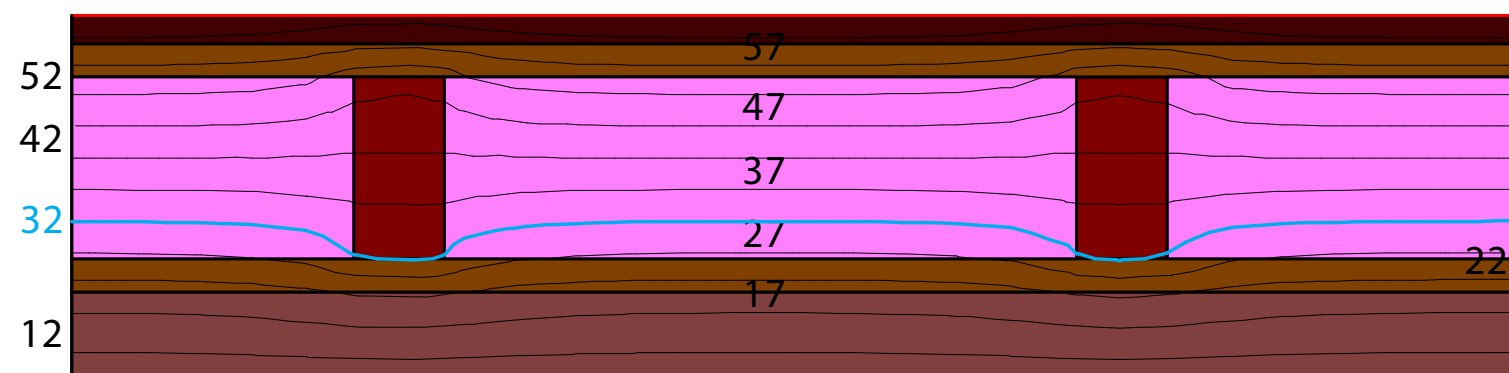
- » Solid wall assemblies: minimum R-24 insulation
- » Opaque doors: Assembly U-value 0.31
- » Operable glazing: Assembly U-value 0.25.
- » Fixed glazing: Assembly U-value 0.3.
- » Porch doors (existing building): Assembly U-value 0.63.
- » Folding doors (addition): Assembly U-value 0.3.

Energy code compliance further undermines historic fabric of building. To achieve the required R-value at the existing façades, windows would need replacement with energy efficient windows, wall depths would need to be increased (by sistering 2x6 studs to existing 2x4 studs) to provide the cavity depth needed for required insulation.

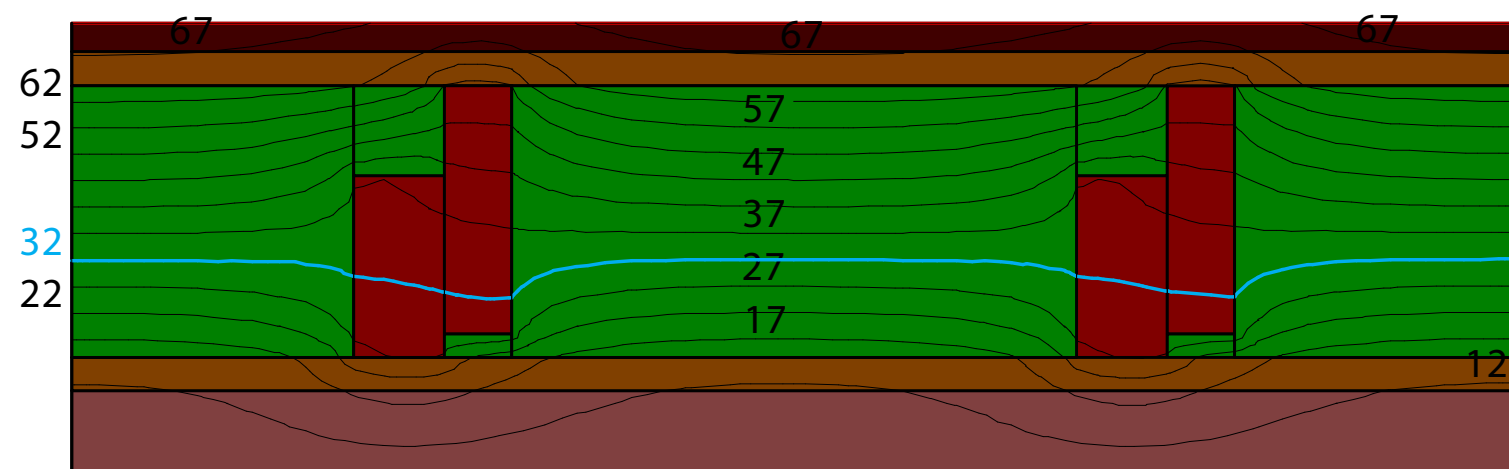
FAÇADE - MOISTURE | WATER MANAGEMENT



ISOTHERMS DIAGRAM @ EXISTING FACADE (TOP OF WALL)



ISOTHERMS DIAGRAM @ EXISTING FACADE (BOTTOM OF WALL)



ISOTHERMS DIAGRAM @ PROPOSED FACADE

As observed with the existing conditions on site and anticipated with the age and type of the facade materials used, we have concerns of the integrity and performance of the existing weather restive barrier (building paper) at the 3 existing façades that are to remain per the historic easement.

Air, water and moisture pass through the deteriorated barrier and reach the wood plank sheathing and other elements. Water and moisture can only dry out towards the exterior with the presence of a new vapor barrier installed on the warm side of insulation (interior side). As the façades are to be much better insulated and sealed, very little amount of heat is expected to escape the interior to dry out the moisture. Condensation would occur at the inside of the facade built-up, as shown on the isotherms diagrams on the left.

The results were then used to quantify how many times the wood planks would be exposed to freeze-thaw cycles in a period of 24 hours. The proposed design, due to the added insulation, undergoes 73 freeze-thaw cycles in a year, while the existing detail, sees a range of 5 freeze-thaw cycles (no insulation) to 51 freeze-thaw cycles (R-4).

Adding new insulation to meet code will increase freeze-thaw cycles within the facade substrate and increase risk of further deterioration

4. ACCESSIBILITY

CHALLENGES

- Site conditions
 - Existing site constraints - size, setback, trees
 - Current conditions do not naturally provide accessible path
 - Not universally accessible from front or back
 - No elevator
 - Building should be universally accessible but site constraints do not allow for accessible ramp at front entrance

ACTION REQUIRED

- Install mechanical lift at front porch
- Install ADA ramp at back yard
- Install elevator



STREET ENTRANCE AND PORCH



GARDEN ENTRANCE AND DECK

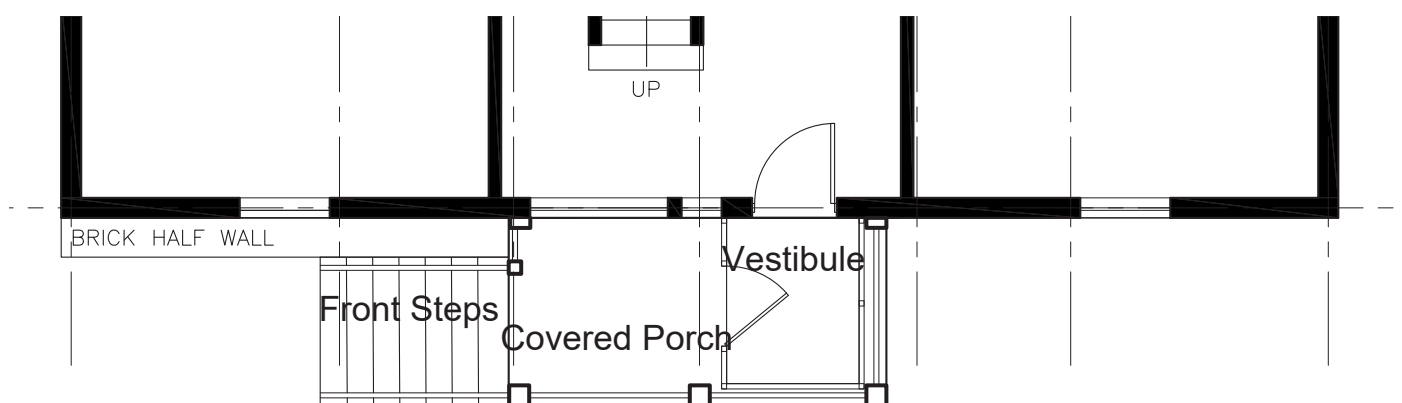
ACCESSIBILITY - PLATFORM LIFT & PORCH ENLARGEMENT



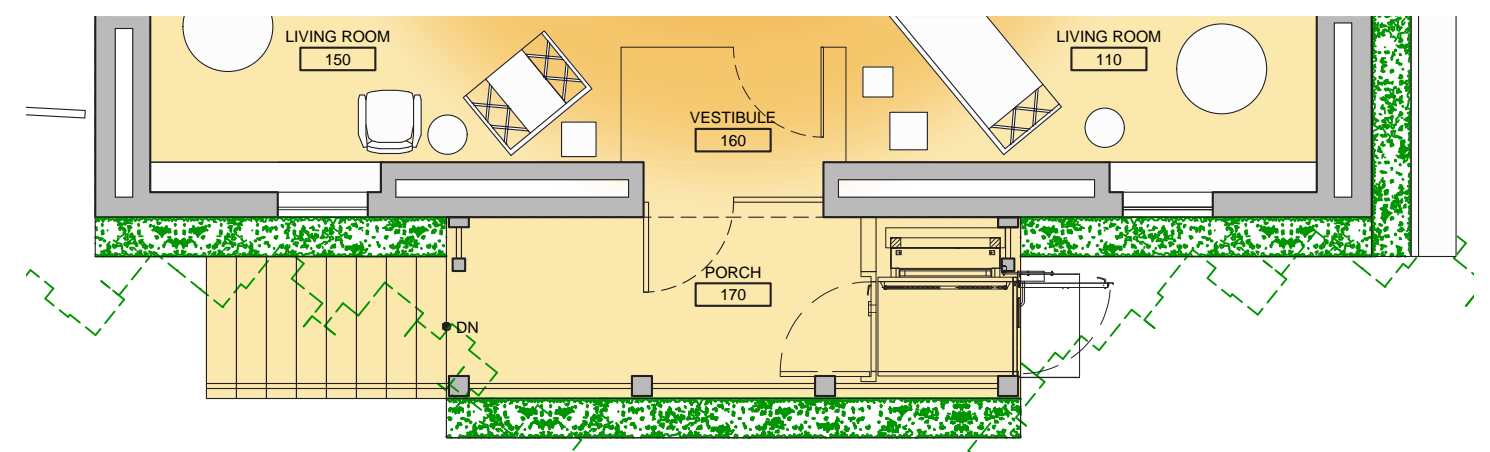
Building code 521 CMR 20.11.1 requires the interior spaces to be served by two accessible means of egress.

Multiple options were investigated to provide accessible front entrance. Adding an accessible ramp would not be possible due to site constraints. The only possible solution would be to add a vertical platform lift. The porch would need to be widened by 60" to maintain code required door clearance and to fit the lift equipment.

The back entrance would achieve accessibility via a ramp.



EXISTING PLAN

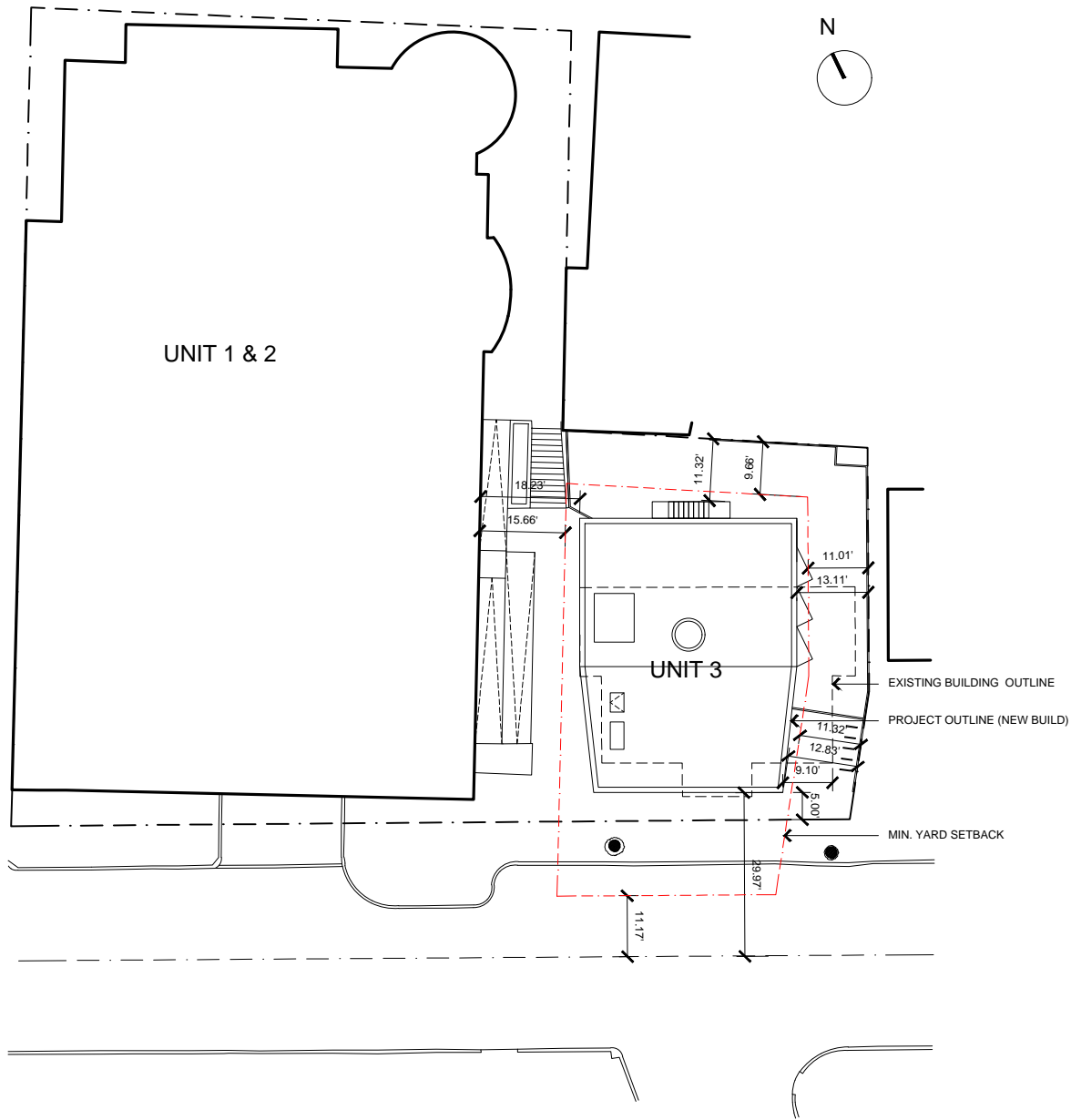


PROPOSED PLAN

04 APPENDIX B

- » SETBACK CALCULATIONS
- » GREEN FACTOR SCORE CALCULATIONS

SETBACKS - SUMMARY



0 ARROW STREET, CAMBRIDGE, MA 02138

SINGLE PLANE SETBACKS

$FRONT\ YARD: (H + L) / 7$

$SIDE\ YARD: (H + L) / 8$

FACADE	AVERAGE HEIGHT (H) IN FT	LENGTH (L) IN FT	SINGLE PLANE SETBACK DISTANCE IN FT	PROPOSED SETBACK (NEW CONSTRUCTION)
FRONT (SOUTH)	35.62	42.60	11.17	29.97 (CONFORMING)
SIDE (NORTH)	34.67	42.60	9.66	11.32 (CONFORMING)

MULTI-PLANE SETBACKS

FACADE	METHOD	SETBACK (SB) IN FT	FACING AREA IN SF	PRODUCT
SIDE (EAST)	SINGLE PLANE	11.01	1,855.56	20,428.61
	MULTI-PLANE	VARIOUS (SEE Z04')	1,855.77	29,179.38
SIDE (SOUTHEAST)	SINGLE PLANE	11.32	1,944.98	22,021.55
	MULTI-PLANE	VARIOUS (SEE Z03')	1,946.14	33,473.67

THE SUM OF THE PRODUCTS OF THE INDIVIDUAL PLANE AREAS AND THE INDIVIDUAL PLANE SETBACKS TOTALS MORE THAN THE PRODUCT OF THE SINGLE PLANE AREA AND ITS SETBACK.

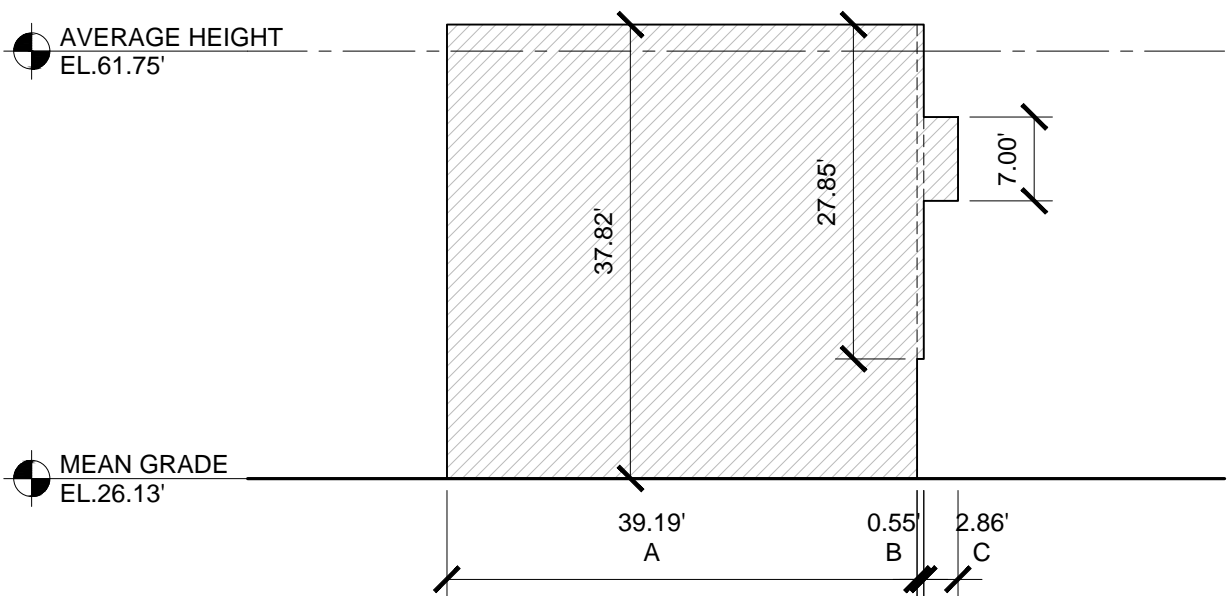
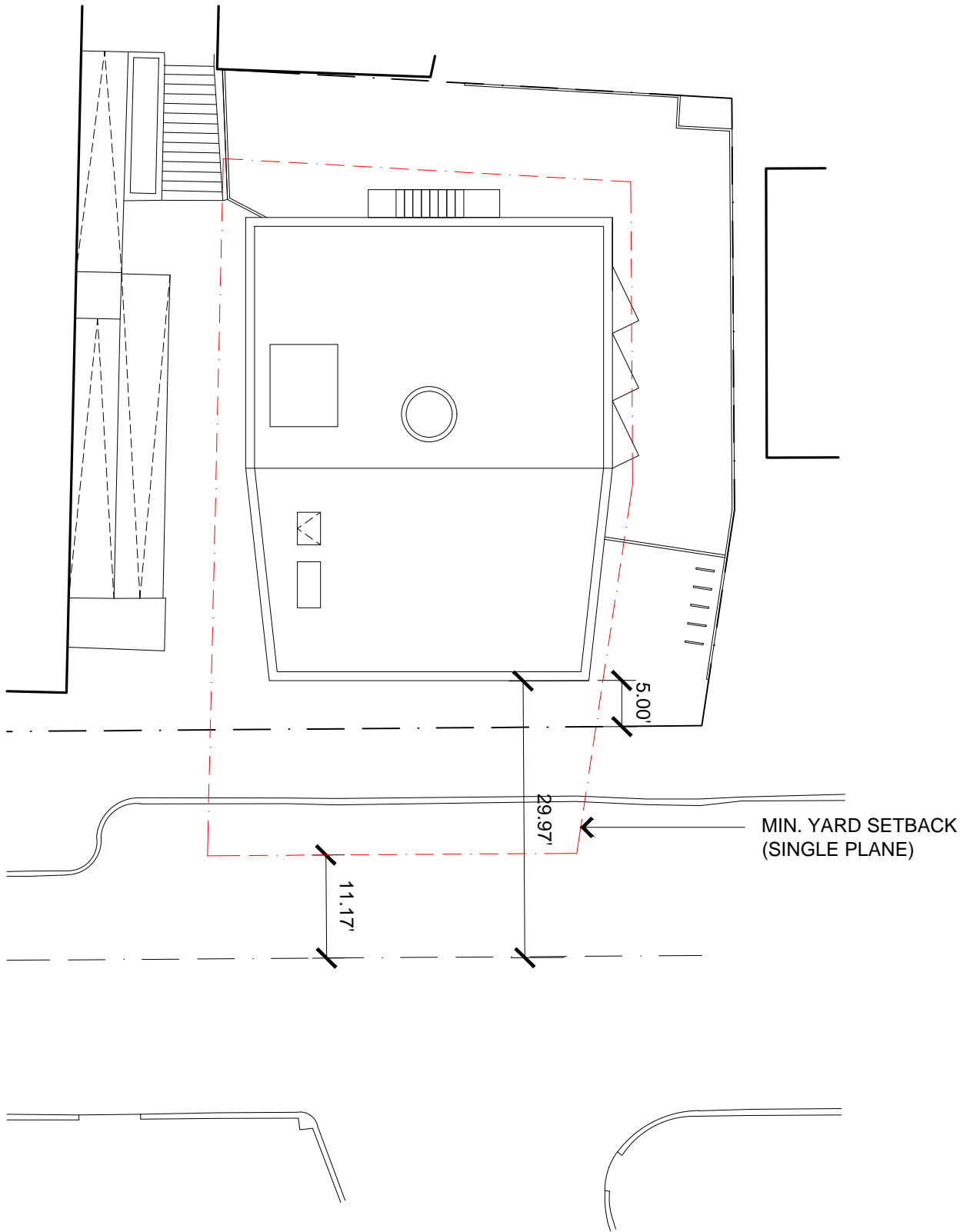
THEREFORE THE SETBACKS MEET ZONING REQUIREMENTS PER CZO 5.24.4 (3).

BETWEEN BUILDING SETBACK

$(H1 + H2) / 6$

HEIGHT OF BUILDING UNIT 1 & 2	HEIGHT OF BUILDING UNIT 3 (HIGHEST POINT)	REQUIRED BETWEEN BUILDING SETBACK	PROPOSED BETWEEN BUILDING SETBACK
56	37.96	15.66	18.23 (CONFORMING)

SOUTH



SINGLE PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

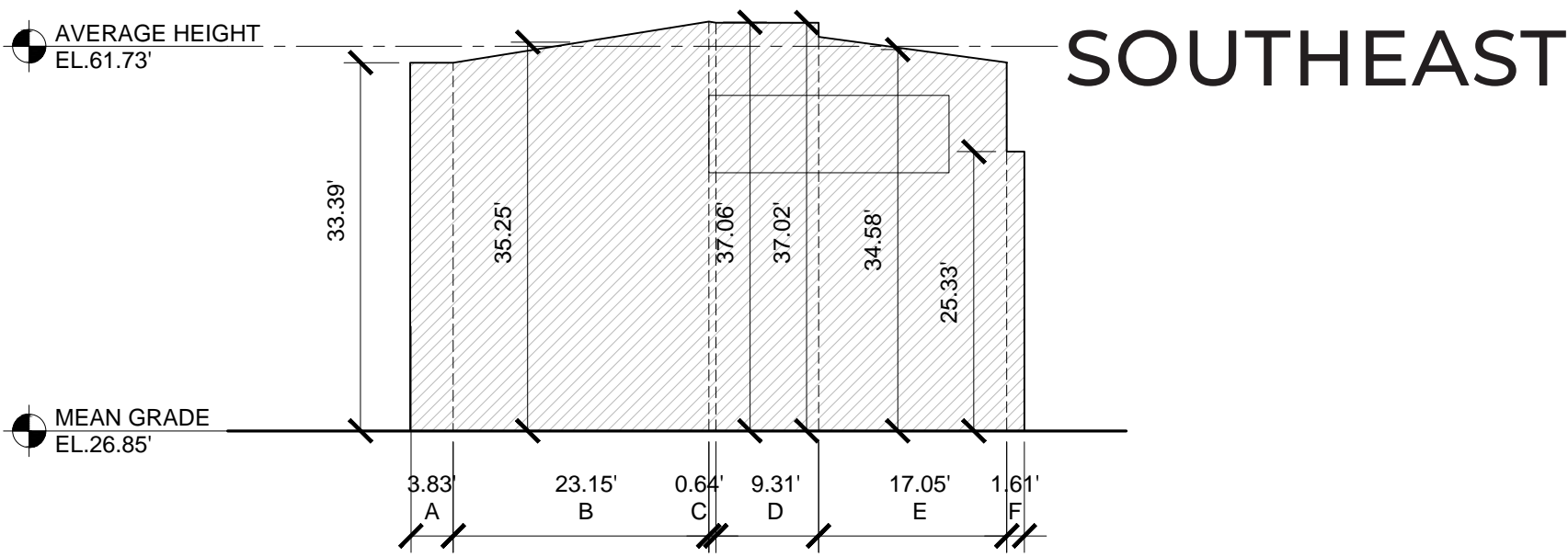
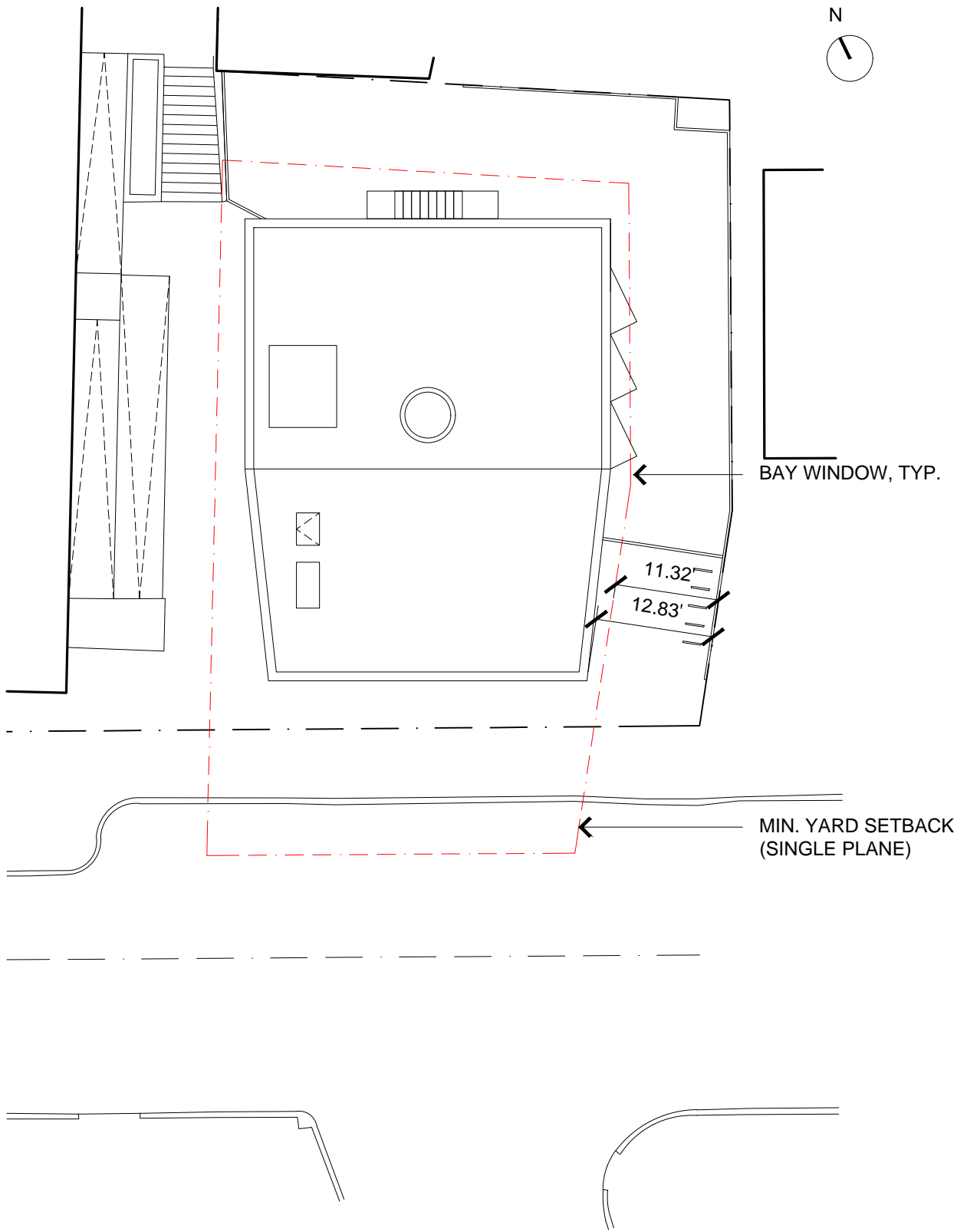
Plane	Height (H) in ft.	Length (L) in ft.	Facing area s.f.
A	37.82	39.19	1,482.17
B	27.85	0.55	15.32
C	7.00	2.86	20.02
Total		42.60	1,517.50
AVERAGE HEIGHT IN FT (FROM MEAN GRADE)			35.62

SINGLE PLANE SETBACK: $(H+L) / 7$

Average Height (H) in ft.	Total Length (L) in ft.	Required setback in ft.
35.62	42.60	11.17

SINGLE PLANE SETBACK @ SOUTH FRONT YARD: 11.17'

PROPOSED SETBACK (ARCADE) @ SOUTH FRONT YARD: 29.97' => CONFORMING



SINGLE PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

Plane	Height (H) in ft.	Length (L) in ft.	Facing area s.f.
A	33.39	3.83	127.88
B	35.35	23.15	818.35
C	37.06	0.64	23.72
D	37.02	9.31	344.66
E	34.58	17.05	589.59
F	25.33	1.61	40.78
TOTAL		55.59	1,944.98

AVERAGE HEIGHT IN FT (FROM MEAN GRADE) 34.99

SINGLE PLANE SETBACK: $(H+L) / 8$

Average Height (H) in ft.	Total Length (L) in ft.	Required setback in ft.
34.99	55.59	11.32

SINGLE PLANE SETBACK @ SOUTHEAST SIDE YARD: 11.32'

TOTAL FACING AREA = 1,944.98 SF

TOTAL FACING AREA x SETBACK = 22,021.55

SEE MULTI-PLANE SETBACK CALCULATIONS

SOUTHEAST

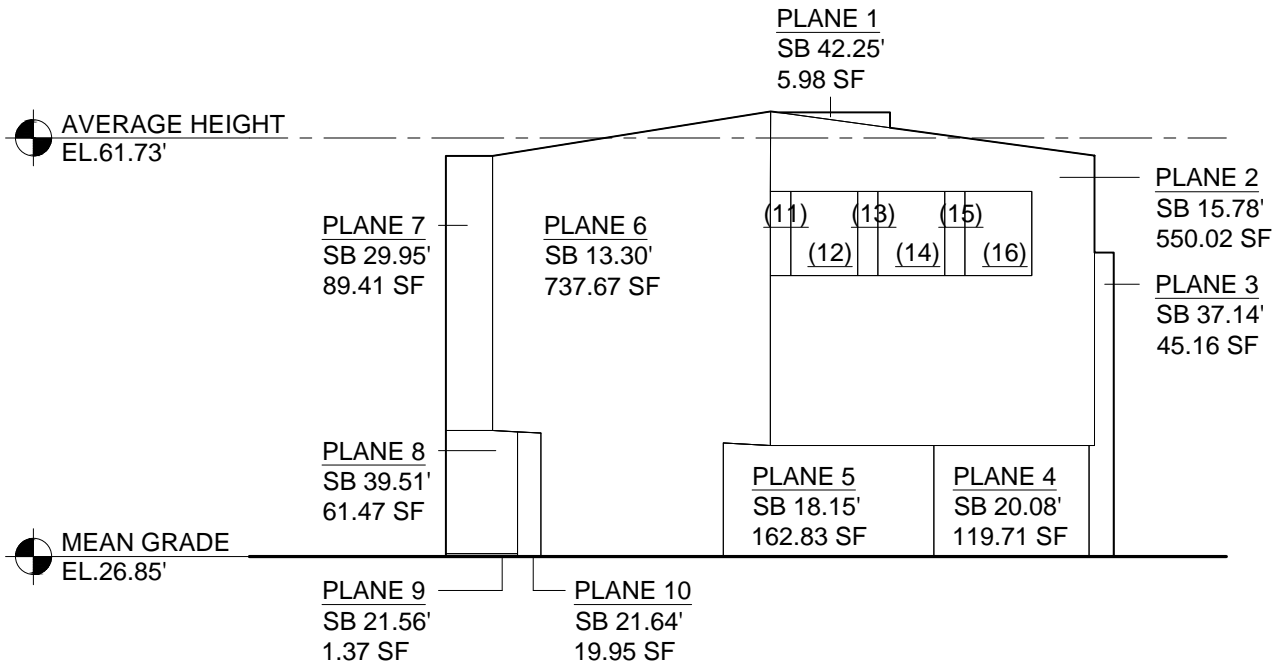
MULTI-PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

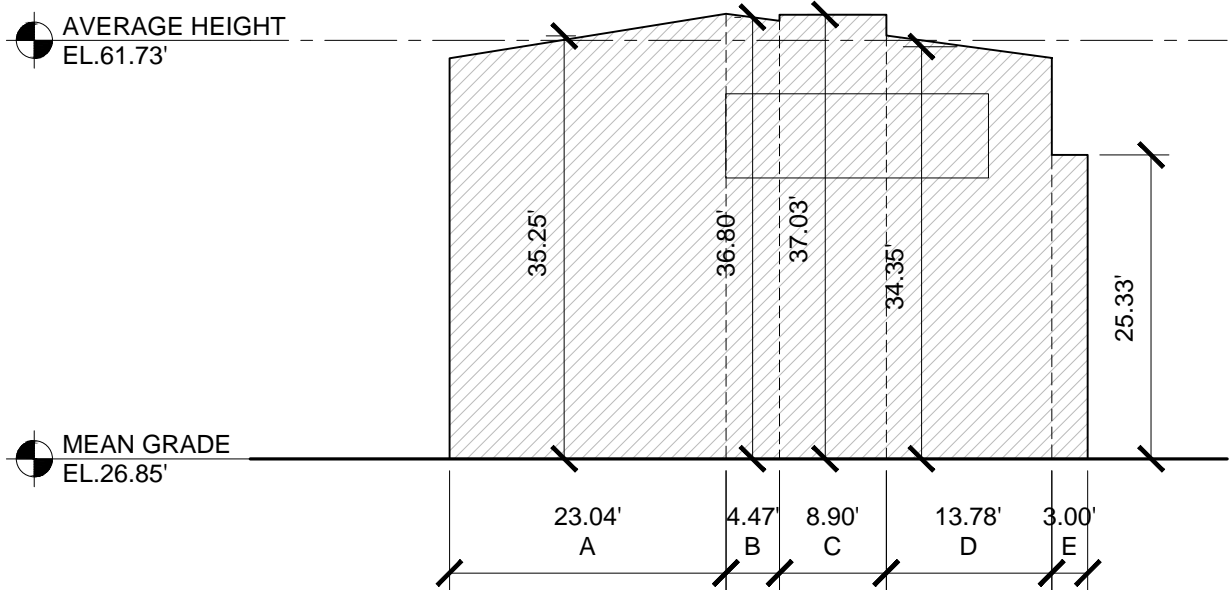
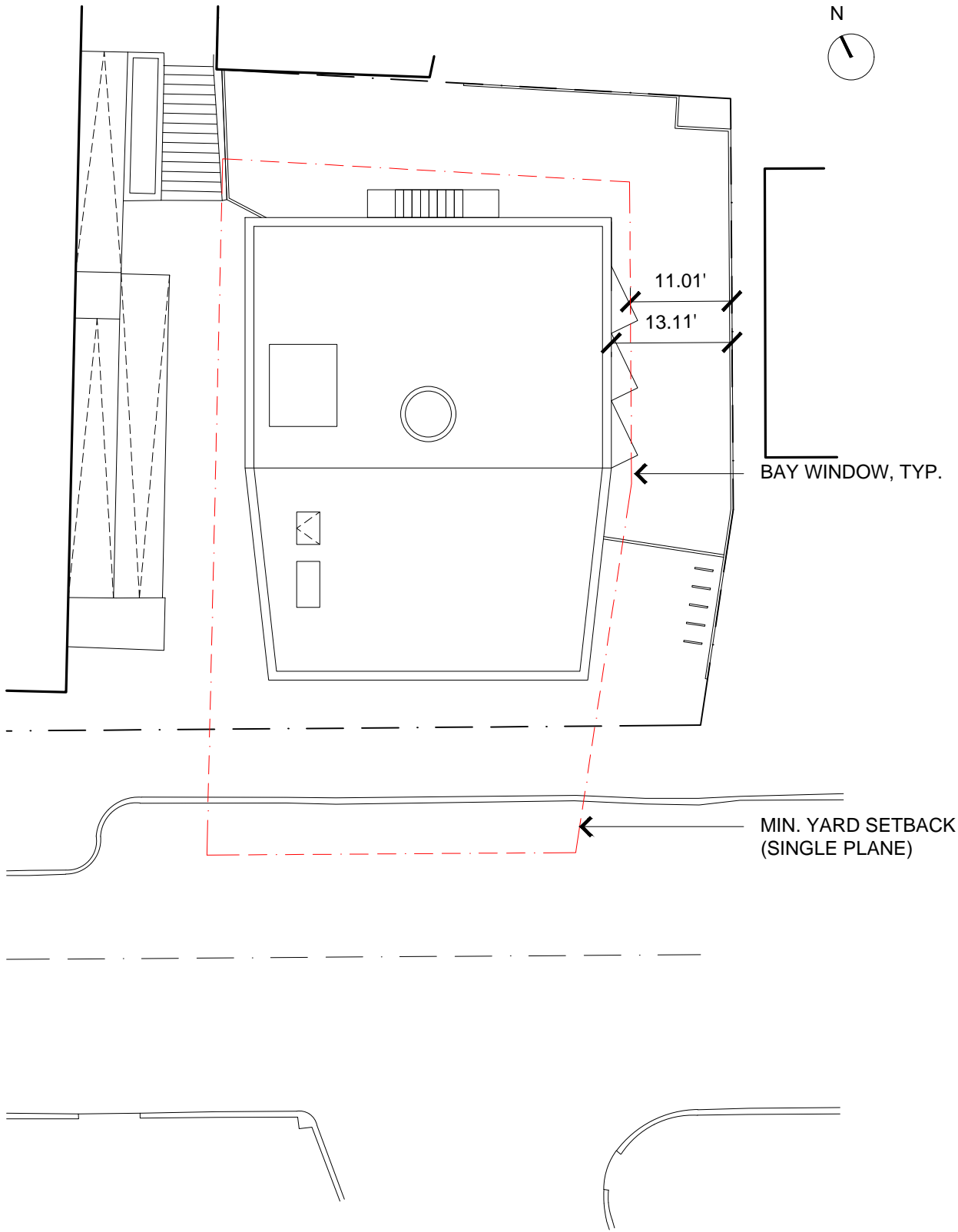
Plane	Setback (SB) in ft.	Facing Area sf.	Product
1	42.25	5.98	252.66
2	15.78	550.02	8,680.00
3	37.14	45.16	1,677.27
4	20.08	119.71	2,404.18
5	18.15	162.83	2,955.36
6	13.30	737.67	9,808.71
7	29.95	89.41	2,678.11
8	39.51	61.47	2,428.39
9	21.56	1.37	29.53
10	21.64	19.95	431.73
11	12.44	11.95	148.63
12	12.98	39.02	506.65
13	13.53	11.86	160.48
14	14.07	38.94	548.00
15	14.62	11.86	173.39
16	15.17	38.94	590.59
Total		1,946.14	33,473.67

THE SUM OF THE PRODUCTS OF THE INDIVIDUAL PLANE AREAS AND THE INDIVIDUAL PLANE SETBACKS TOTALS MORE THAN THE PRODUCT OF THE SINGLE PLANE AREA AND ITS SETBACK.

THEREFORE THE SETBACK MEETS ZONING REQUIREMENTS PER CZO 5.24.4 (3).



EAST



SINGLE PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

Plane	Height (H) in ft.	Length (L) in ft.	Facing area s.f.
A	35.25	23.04	812.16
B	36.80	4.47	164.50
C	37.03	8.90	329.57
D	34.35	13.78	473.34
E	25.33	3.00	75.99
TOTAL		53.19	1,855.56
AVERAGE HEIGHT IN FT (FROM MEAN GRADE)			34.89

SINGLE PLANE SETBACK: $(H+L) / 8$

Average Height (H) in ft.	Total Length (L) in ft.	Required setback in ft.
34.89	53.19	11.01

SINGLE PLANE SETBACK @ EAST SIDE YARD: 11.01'

TOTAL FACING AREA = 1,855.56 SF

TOTAL FACING AREA x SETBACK = 20,428.61

SEE MULTI-PLANE SETBACK CALCULATIONS

SOUTHEAST

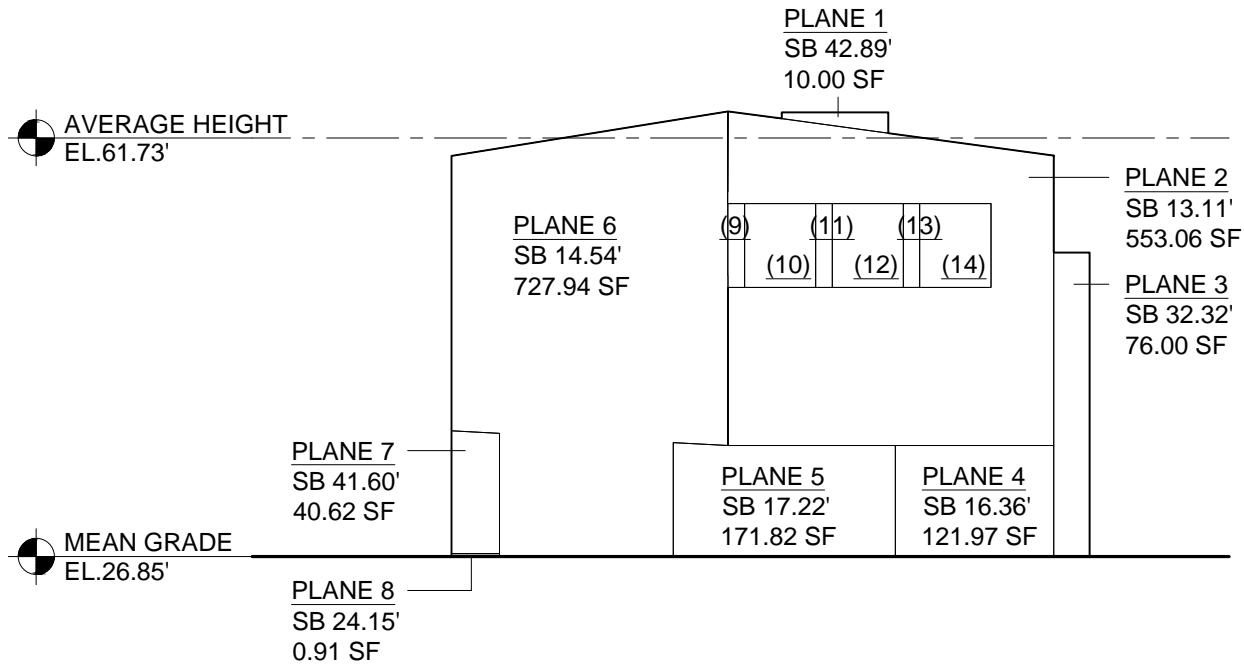
MULTI-PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

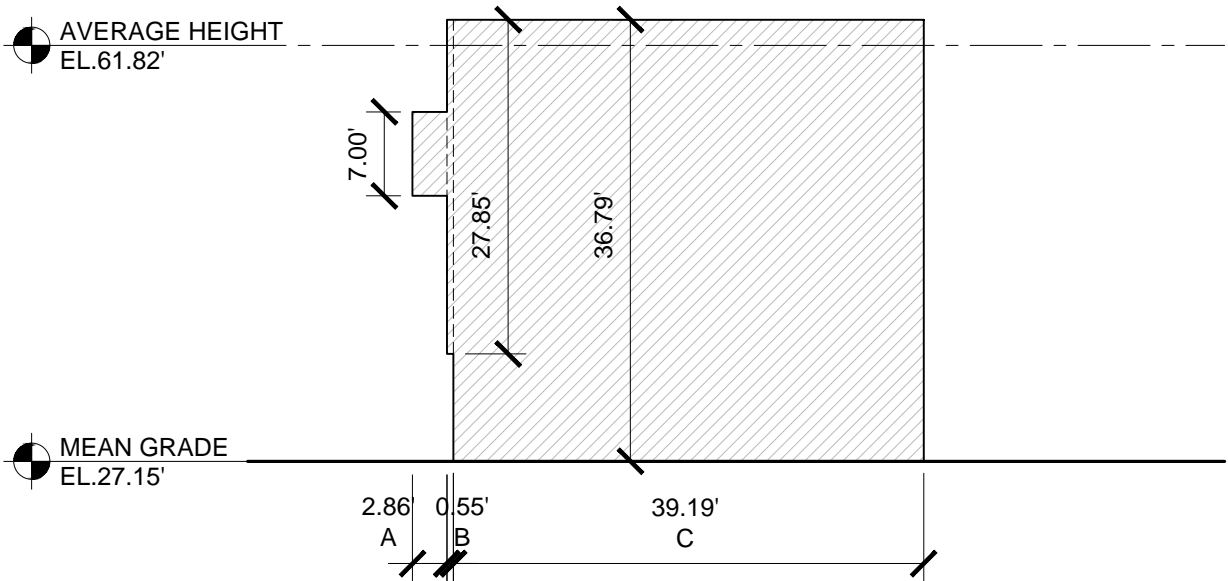
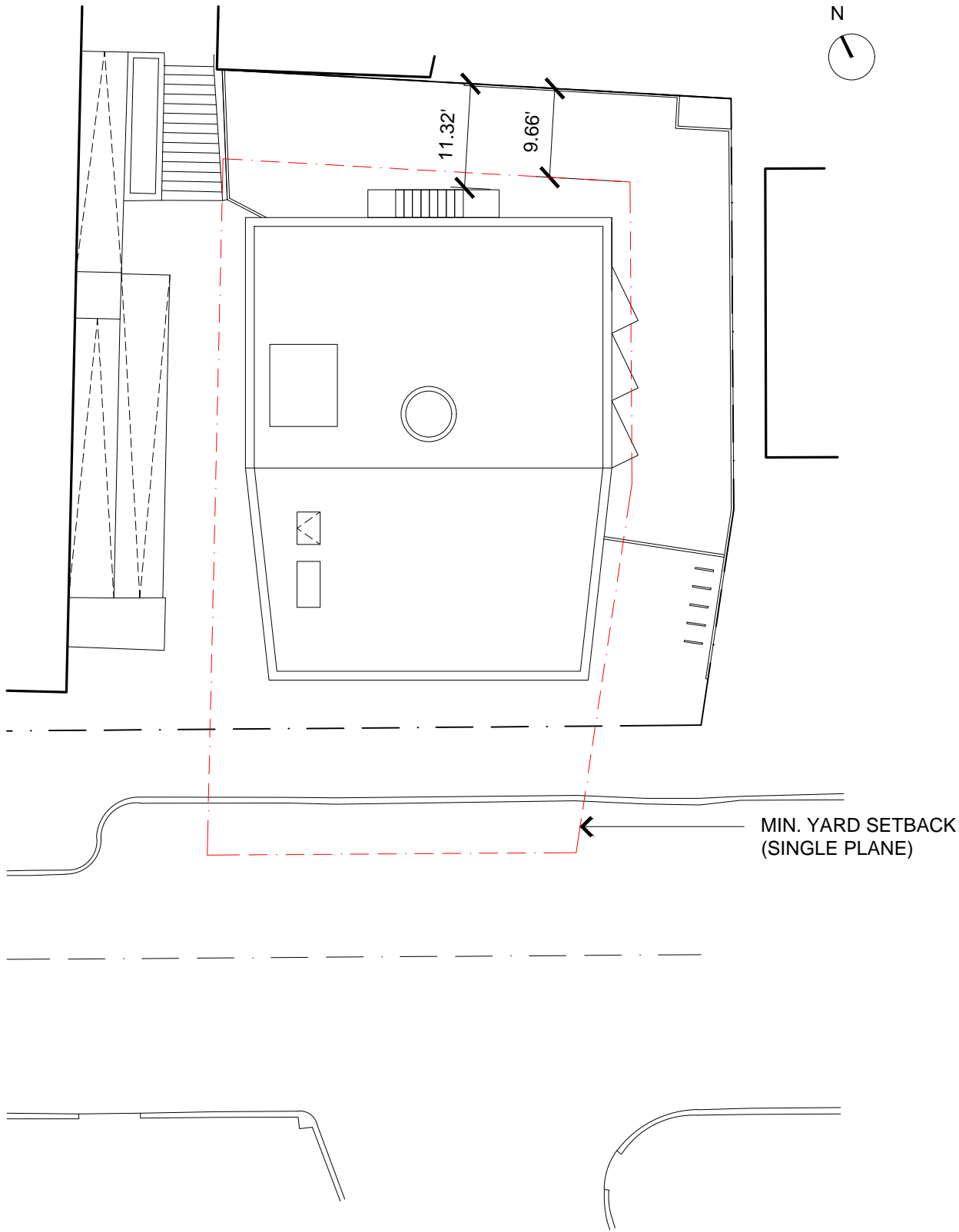
Plane	Setback (SB) in ft.	Facing Area sf.	Product
1	42.89	10.00	428.88
2	13.11	553.06	7,250.27
3	32.32	76.00	2,456.54
4	16.36	121.97	1,995.35
5	17.22	171.82	2,958.74
6	14.54	727.94	10,583.57
7	41.60	40.62	1,689.75
8	24.15	0.91	21.98
9	11.71	9.68	113.31
10	11.69	41.47	484.79
11	11.71	9.68	113.31
12	11.69	41.47	484.79
13	11.71	9.68	113.31
14	11.69	41.47	484.79
TOTAL		1,855.77	29,179.38

THE SUM OF THE PRODUCTS OF THE INDIVIDUAL PLANE AREAS AND THE INDIVIDUAL PLANE SETBACKS TOTALS MORE THAN THE PRODUCT OF THE SINGLE PLANE AREA AND ITS SETBACK.

THEREFORE THE SETBACK MEETS ZONING REQUIREMENTS PER CZO 5.24.4 (3).



NORTH



SINGLE PLANE CALCULATIONS

AVERAGE HEIGHT CALCULATIONS: $[(H1 \times L1) + (H2 \times L2)] / (L1 + L2)$

Plane	Height (H) in ft.	Length (L) in ft.	Facing area s.f.
A	7.00	2.86	20.02
B	27.85	0.55	15.32
C	36.79	39.19	1,441.80
TOTAL		42.60	1,477.14
AVERAGE HEIGHT IN FT (FROM MEAN GRADE)			34.67

SINGLE PLANE SETBACK: $(H+L) / 8$

Average Height (H) in ft.	Total Length (L) in ft.	Required setback in ft.
34.67	42.60	9.66

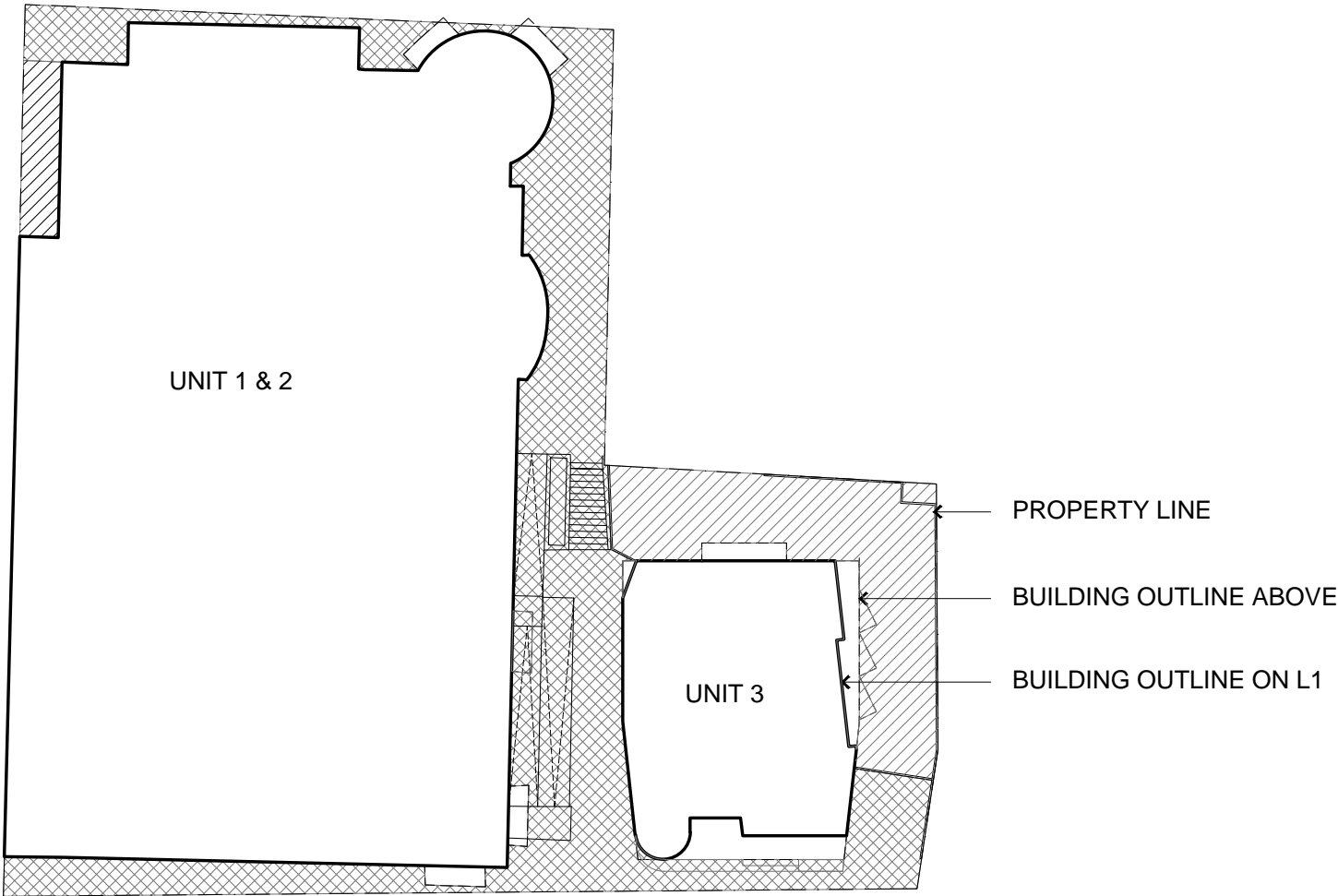
SINGLE PLANE SETBACK @ EAST SIDE YARD: 9.66'




PROPOSED SETBACK @ EAST SIDE YARD: 11.32' => CONFORMING

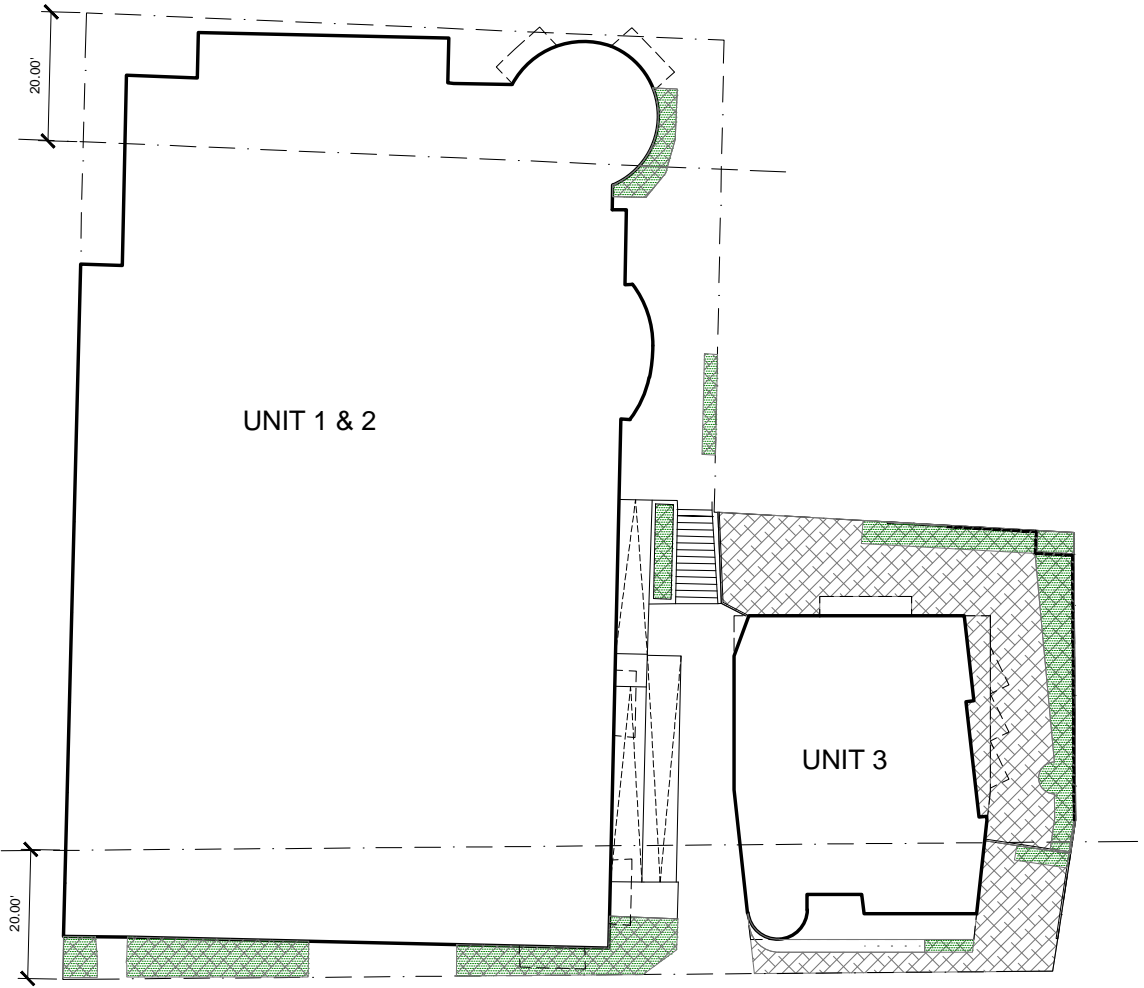
0 ARROW STREET, CAMBRIDGE




LOT SIZE: 18,652 SF
BUILDING AREAS:
UNIT 1 & 2: 11,571 SF
UNIT 3: 1,979 SF
OPEN SPACE: 4,849 SF (26%)

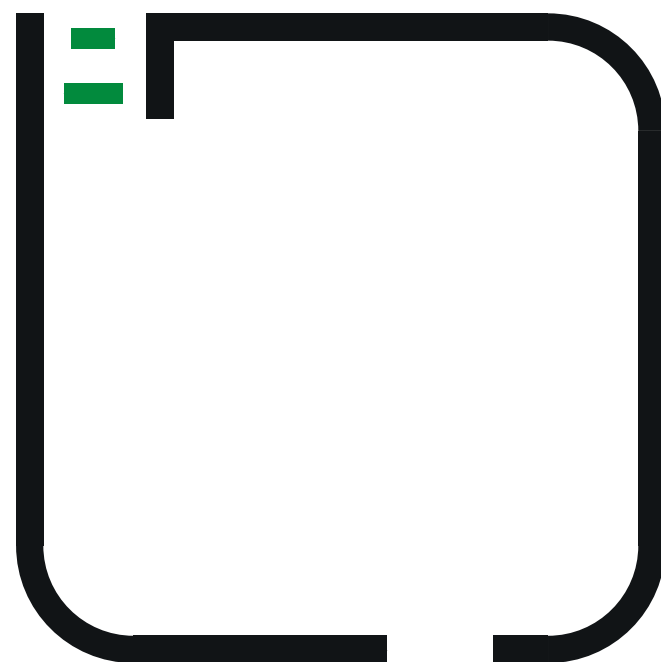
OPEN SPACE DIAGRAMS



OPEN SPACE TYPE		AREA
	PRIVATE	1,413 SF
	PUBLIC	0 SF
	PUBLICLY BENEFICIAL	3,436 SF
TOTAL		4,849 SF



OPEN SPACE TYPE		AREA
	GREEN AREA	866 SF
	WITHIN 20' OF STREET	467 SF
	BEYOND 20' OF STREET	399 SF
	PERMEABLE AREA	2,223 SF
	LIVING WALL (6' TALL)	380 SF



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