



Cambridge Housing Authority

**MODERNIZATION OF 116 NORFOLK STREET - VOLUME 2**

Affordable Housing Overlay Submission  
May 27, 2022

HMFH ARCHITECTS





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Design Guidelines Updated: Feb 2021

AHO DESIGN GUIDELINES: 116 Norfolk

PURPOSE

OBJECTIVES AND PRINCIPLES

ADDRESSING NEIGHBORHOOD CONTEXT

SITE DESIGN

1	RESPONSE TO CONTEXT	COMMENTS
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Objective: Design project site layouts to harmonize with the neighborhood context, including the surrounding urban patterns of streets and blocks, building setbacks, travel paths, and open spaces. In existing neighborhoods with established patterns of development, responsive and context-sensitive site design will help preserve the character of the built environment. In evolving areas of the city, forward looking new developments should help achieve the city's goals for urban character.

Y	1.1	Locate and orient new buildings so that their front yard setbacks relate to those of neighboring and adjacent buildings to the maximum extent possible.	Front yard setbacks have a minimum of 12 feet, slightly more than the required 10 feet and larger than many houses in the neighborhood.
Y	1.2	Locate open space in relation to adjacent yards, residential units, and public spaces that would benefit from natural light and views.	The south yard, which is the sunniest part of the property, is preserved in this design. A terrace on the north is designed to both provide residents a second outdoor space for relaxation and recreation, and to provide light to the units bordering it. The addition's front yard plane facing Suffolk has a larger setback (15 ft) adjacent to the abutting property to allow more light to the neighbor at 25 Suffolk. The addition was planned to preserve as many trees as possible (9 of the 13), providing a green view to residents and neighbors.
Y	1.3	Where site dimensions allow, consider creating entry courtyards, internal courtyards, and semi-enclosed courtyards open to the block interior.	The south yard functions as a semi-enclosed area, surrounded by an existing historic wall that will have several openings for circulation and sight lines and two benches for residents and neighbors to sit. The south porch and north terrace are both bounded outdoor areas.
Y	1.4	Locate pedestrian and bicycle paths, vehicular routes; parking areas; and utility/service areas in response to neighboring buildings.	The pedestrian path is in the enclosed south lawn and does not affect neighboring buildings.
N/A	1.5	In large developments, consider creating through-block pedestrian or vehicular connections.	N/A. 116 Norfolk is not a large development.
Y	1.6	Place buildings and design their landscapes to minimize impacts on nearby existing buildings, to respect the privacy of neighbors, and to maintain their access to natural light and air.	The impact of the addition is split between the north and east sides of property. The addition was planned to preserve as many trees as possible (9 of the 13). All setbacks exceed minimum zoning requirements. The side yard setback between the addition and the abutter at 25 Suffolk was increased slightly in response to abutter feedback, and CHA has also added a row of columnar deciduous trees to add a buffer zone between 116 Norfolk and the abutter's property.
Y	1.7	In siting new buildings, consider public views to adjacent landmark buildings, public open spaces, public art areas, or other features of significant visual interest.	116 Norfolk does not block the view to any landmarks or public art projects.
Y	1.8	In existing well-developed areas, where urban patterns are relatively uniform and stable, match the prevailing pattern of front yard setbacks, building orientations, and the location of entrances as much as possible. Variation may be desirable, however, at certain locations, such as the corners of blocks.	116 Norfolk is at the corner of the block. The addition is planned to infill both Worcester and Suffolk Street. The addition's setback is 12 feet at its shortest and is greater than many front-yard setbacks in the neighborhood.
N/A	1.9	In areas where the patterns of development are stable but more diverse, site buildings in relation to neighbors with the aim of creating a more coherent streetscape while meeting other citywide objectives articulated in these guidelines.	See above.
Y	1.10	In evolving areas of the city, locate new buildings and site elements to support the planned patterns of development.	The Port neighborhood is well established. The proposed design has roughly 48% open space, more than most parcels in the area.
N/A	1.11	In commercial districts, site new buildings to maintain the continuity of existing retail frontage while allowing for comfortable sidewalk width and creating opportunities for activation such as outdoor seating.	N/A. 116 Norfolk is on a residential block.
Y	1.12	Locate and design parking, trash storage, and mechanical equipment to minimize their impacts on abutting residences and the public.	There is no proposed onsite parking and one pickup/dropoff space proposed on Norfolk Street. The trash room is interior to the building, meaning trash will not be outdoors and visible to neighbors and will not attract rodents. All mechanical equipment will be placed on the roof and not visible from the ground level. There is one transformer anticipated, which will be placed on the ground floor and will not impact existing trees.

2	OPEN SPACE AND LANDSCAPE DESIGN	COMMENTS
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Objective: Design open space to enhance the lives of residents and the broader community by offering aesthetic and environmental benefits through the inclusion of vegetation, trees, elements to provide shade. Offer useful amenities to residents, provide opportunities to minimize the impact of the new development neighbors' privacy and quality of life, and contribute to the beauty of the city's streets, sidewalks, and open space.

Y	2.1	Provide a range of types of open spaces as appropriate to the site, context, and building form: yards, entry courtyards, interior courtyards, porches, loggias, balconies, roof terraces, and upper-level decks.	The site currently has a south porch and south lawn highly valued by residents for its access to sun, as well as a shady northeast yard that is less-used by residents but which a few residents enjoy for relaxation in the shade of the Norway Maples. After renovations, the site will continue to have a south yard and south porch as well as a smaller but more landscaped north yard and a new space--the north terrace--that will provide residents with an outdoor space where they can cool off in the hot summers.
Y	2.2	Provide opportunities for enjoyment of nature, such as gathering places and play spaces for residents.	The south yard features a meandering path which both allows a gradual enough gain in elevation to make the main entrance wheelchair accessible and also promotes opportunities for interaction between residents. See more on landscape elements above.
Y	2.3	Provide seating to foster social connection. Consider locations at building entrances, courtyards, and along paths connecting different areas of the site.	The south yard will have a bench placed along the south path, which will allow residents to stop to tie their shoes or rest while walking, or to relax or interact with other residents as they pass by. The south yard will also have a picnic area with a table and chairs. There will be benches in the wall on Norfolk and Worcester, as well, to provide opportunities to watch passing traffic and foster connection with neighbors. Finally, there will be seating provided on south and north porches to provide additional places for social connection.
Y	2.4	Consider summer shading and winter solar access.	The south yard provides winter solar access and the north terrace and north yard provides summer shading.
Y	2.5	Design open spaces to contribute positively to the public realm, maximizing vegetation—particularly canopy trees—to shade and enrich streets and other public open spaces.	9 of the 13 existing, mature trees will be preserved. All removed trees will be replaced. Of the 4 trees removed, 2 are unhealthy.
Y	2.6	In dense residential neighborhoods, design front yards to frame the street and sidewalk as civic spaces and to enhance the privacy of building interiors. Consider organizing front yard landscape elements—low walls, low planting or hedges, fences, trees, ground cover, foundation planting, etc.—as a series of layers parallel to the sidewalk to frame civic space and delineate thresholds of privacy as one moves from the sidewalk to the building entrance.	The site is currently surrounded by a historic brick wall. CHA plans to keep parts of this wall while creating more openings for visibility. Benches and planting will fill in breaks in the masonry wall.
Y	2.7	Where possible in dense residential neighborhoods and on corridors, provide landscaped forecourts and inner courtyards to create transitional space between the public street and the building lobby, to provide light and air to unit interiors, and to enrich the site with plantings.	The landscaped south yard is between Suffolk Street and the building entrance.
Y	2.8	Consider the location, dimension, and orientation of open spaces to best promote healthy trees and other vegetation.	9 of 13 existing trees will be preserved, and all removed trees will be replaced.
Y	2.9	Minimize the urban heat island effect by preserving existing mature canopy trees wherever possible and by planting new ones to shade buildings, open spaces, and paved surfaces.	9 of 13 existing trees will be preserved, and all removed trees will be replaced.
Y	2.10	Follow the recommendations of the Department of Public Works and the City’s Urban Forest Master Plan for species, planting standards, and care.	CHA will do so.
Y	2.11	Select species for low plantings and ground cover that are appropriate for urban conditions.	CHA will do so.
Y	2.12	Minimize paved surfaces. Use permeable surfaces wherever possible for pedestrian pathways, parking areas, and other paved outdoor spaces.	There will be no parking onsite.
N/A	2.13	Use landscaping to screen surface parking and vehicular driveways from residential units and open spaces on and adjoining the site.	N/A. No parking is proposed onsite.
Y	2.14	Screen loading and trash areas, meters, mechanical units, and utility equipment with plantings or other appropriate landscape elements.	The trash area is enclosed. Stairs to the basement are screened ny plantings. Mechanical units, with the exception of an Eversource transformer, are located on the roof and not visible from the street.

3 CIRCULATION

COMMENTS

Objective: Promote non-motorized mobility by prioritizing pedestrian-friendly and bike-accessible site design.

Y	3.1	Create direct, functional, and beautiful paths for pedestrians and bicycles from the public sidewalk to building entrances. Pedestrian access to the building and site should be clearly articulated and accessible to people of all levels of ability, and should take precedence over other mobility modes.	Pedestrian access from sidewalk to door. Path winds to keep the angle of incline low and allow appreciation of landscape.
N/A	3.2	For large buildings, incorporate multiple entrances wherever possible.	N/A. 116 Norfolk is not a large building.
Y	3.3	Locate building entrances wherever possible to address public streets.	116 Norfolk borders three streets. The main entrance will be on Suffolk to make it accessible.
Y	3.4	Consider elevating residential first floors above sidewalk level to enhance privacy, consistent with accessibility needs and requirements.	Residential first floors in the addition will line up to those in the existing building, elevated above ground level. There will continue to be basement residential units in the existing building, but not in the addition.
N/A	3.5	On corner lots with non-residential street level activities such as retail, consider locating entrances to ground floor functions at building corners.	N/A. The immediate neighborhood is primarily residential.
Y	3.6	Establish pedestrian path widths and select their materials in accord with their uses and locations on the site. Provide bicycle access to the site and building that is clearly legible, convenient, and reasonably di-rect. Locate short-term bicycle parking for visitors where it is visible and convenient to main building entrances. Locate long-term bicycle parking for residents in secure and screened locations.	Pedestrian path in south yard to entrance will be appropriate width for walkers and wheelchairs
Y	3.7	term bicycle parking for visitors where it is visible and convenient to main building entrances. Locate long-term bicycle parking for residents in secure and screened locations.	There will be 4 short-term bike spots on Suffolk Street near the building entrance. 36 indoor bike parking spaces for residents will be provided.
Y	3.8	Create vehicular access and circulation routes that are distinct from paths of pedestrian travel.	Pedestrian path does not allow vehicles.
Y	3.9	Minimize the number and widths of curb cuts and driveways.	The project eliminates the only curb cut on the property.
Y	3.10	Locate curb cuts on secondary streets where possible.	The project eliminates the only curb cut on the property.

4 PARKING			COMMENTS
Objective: Minimize the impact of parking and driveways on residents, neighbors, and the general public.			
N/A	4.1	Where possible, separate ground floor structured parking and/or bicycle storage from the street with residential units, common areas, retail, or other populated ground floor uses.	N/A. No parking is proposed onsite.
N/A	4.2	Develop the layout of parking and driveways to avoid conflicts with pedestrian and bicycle movement.	N/A. No parking is proposed onsite.
N/A	4.3	Minimize the site area dedicated to driveways and parking and maximize its distance from neighboring properties.	N/A. No parking is proposed onsite.
N/A	4.4	Use green walls, hedges, art work, metal stencils, fences, louvers, sun shading elements, or other means to visually screen parked cars.	N/A. No parking is proposed onsite.
N/A	4.5	Shade parking lots with canopy trees or by other means where possible.	N/A. No parking is proposed onsite.
N/A	4.6	Utilize permeable pavement where possible.	N/A. No parking is proposed onsite.
5 UTILITIES AND SERVICES			COMMENTS
Objective: Minimize the visual, acoustical, and environmental impacts of essential utilities and services on neighbors and on the public realm.			
Y	5.1	Locate utility functions such as gas, electric, and water meters, transformers, switchgear, and fire safety equipment where they will be least visible from the street. Where possible, conceal them within the building or in side or rear yard setbacks. They should be planned for early in the design process to minimize their impacts.	All mechanical equipment will be placed on the roof and not visible from the ground floor. There is one transformer anticipated, which will be placed on the ground floor in a location that does not impact existing trees.
Y	5.2	Locate mechanical elements such as HVAC units, condensing units, ventilation outlets, mechanical exhausts, louvers, and similar objects to minimize their visibility from the public realm and from neighboring sites and buildings. Screen these elements with plantings, fences or other materials that complement the site design and the building's architecture.	See above.
Y	5.3	Avoid locating air conditioning condensing units on the ground. They should be located on roofs wherever possible.	Air conditioning condensing units will be located on the roof.
Y	5.4	Locate roof mounted air conditioning equipment, and mechanical penthouses away from roof edges and/or provide parapets with adequate height to screen them from adjacent properties and public areas.	Roof-mounted equipment not visible from neighboring properties
Y	5.5	Reduce the noise impact of rooftop mechanical equipment with sound damping materials and screens and proper acoustic and sound isolation methods.	We will study acoustics of proposed MEP equipment and enclose them if needed.
Y	5.6	Screen trash and recycling areas with landscaping and/or fencing and ensure that noise and odor-generating functions are fully enclosed.	The trash room is located inside, sight and scent fully enclosed.
6 OUTDOOR LIGHTING			COMMENTS
Objective: Provide lighting for safety and functionality while minimizing energy use, light pollution, and other negative impacts on neighbors, the public realm, and the larger environment.			
Y	6.1	Use lighting only for safety and functional purposes such as providing wayfinding along access/egress routes, allowing open spaces to be usable in the evening, illuminating signage, or subtly accentuating key architectural elements of a building.	Lighting is proposed only for safety and functional purposes, and subtly accentuating the entrance of the building.
Y	6.2	Outdoor lighting should provide a level of safety for residents while avoiding glare, light pollution, and light trespass onto adjacent properties.	Outdoor lights avoid glare and light pollution.
Y	6.3	Provide lighting that is fully shielded, downlit, has a warm color temperature, and is at or below typical neighborhood light levels.	Lights are shielded, downlit, and have a warm color temp.
Y	6.4	To further reduce light pollution, consider the provisions of Cambridge's draft Outdoor Lighting Ordinance.	The lighting plan will follow the Outdoor Lighting Ordinance.
Y	6.5	Select lighting fixtures that minimize energy consumption.	All lighting fixtures will be efficient.
	6.6	Employ timers, automatic dimming, motion sensors or other mechanisms to avoid excessive lighting, including in tuck-under parking.	All lighting fixtures will be efficient.
Y	6.7	Consider using photovoltaic panels to power lighting.	Rooftop PV panels are proposed in the design.
7 PUBLIC ART			
Objective: Enrich the visual environment and strengthen the sense of place by incorporating art.			
Y	7.1	Incorporate public art as an integral component of the development's architectural and landscape design.	The proposed design plans to incorporate mosaics and/or murals at the new entrance to 116 Norfolk (see rendering from Norfolk/Suffolk to see proposed location). There is opportunity for public art around the site, as well. The CHA currently has an RFP out for artists.
N/A	7.2	Where possible, integrate arts related uses such as artists' galleries, arts displays, or artists studios on the ground level of affordable housing developments that are located on business and commercial streets.	N/A (no gallery space or reserved artist housing/studio space)
BUILDING DESIGN			
1 MASSING			



Objective: Configure building massing for compatibility with the prevailing or desired pattern of neighboring buildings and open spaces. In established neighborhoods, relate to the existing pattern of streets and other open spaces, and prioritize compatibility with existing buildings. In evolving areas, configure new developments to help realize the City’s vision for urban form.

Y	1.1	Relate new building height, massing, scale, and form to that of existing adjacent buildings.	There are multiple 4-story buildings within a block of 116 Norfolk, including the existing building, church and apartment buildings across Norfolk Street and the apartment building directly across Suffolk Street. The massing of the building is broken up by a glass connector that sets the existing building apart from the addition.
Y	1.2	Incorporate setbacks to relate to the heights of adjoining buildings and to the scale of the street; and to provide a transition between the height of taller buildings and lower surrounding buildings.	The existing building (54 ft) steps down to the addition (45 ft).
N/A	1.3	Where a project's site adjoins a district with a different height and scale, as where a site along a commercial corridor adjoins a lower height residential district, adjust building massing to relate to those heights and scales.	The blocks surrounding 116 Norfolk contain a mixture of 2-4 story buildings.
N/A	1.4	Where possible, divide large developments into separate buildings to reduce their scale.	The proposed 116 Norfolk is not a large development. However, the addition is separated from the existing building by a glass connector to have break down the massing.
Y	1.5	Articulate the facades of large buildings into smaller components by means such as vertical recesses or projections from the primary plane of the street facade.	The addition's massing follows AHO requirements for vertical projections. In addition, the proposed façade design includes differing textured panels for bays (fibre cement shingles versus clapboards, for example) to help add another subtle layer of articulation to the façade.
N	1.6	Reduce the visual bulk of taller buildings by using setbacks, or mansard, gambrel, hipped, or gable roof profiles to enclose habitable upper stories.	The proposed addition is 45 ft tall. The massing is designed to match the simple massing of the existing building, including a flat roof. The beauty of the existing building comes from details such as a cornice and window patterns/details. The addition will also incorporate a cornice and window details.
N/A	1.7	In high density areas, such as commercial corridors, frame streets and squares with streetwall facades.	N/A. This is a primarily residential neighborhood.
Y	1.8	In smaller scaled residential areas, articulate the mass of large buildings to create a sense of scale compatible with smaller scaled neighbors.	The proposed design articulates the massing of the addition through projections and subtle changes in materials between different components of the building. Furthermore, the addition is broken down through varying window details as you move up the addition, like the existing building. Lastly, the addition is proportionally consistent with the massing of existing buidings on surrounding streets, which range from 2-4 stories.
Y	1.9	Reinforce the existing or planned pattern of streets and blocks and minimize impacts on neighbors.	No change to street blocks or parcel limits. Existing building and new addition reinforce the pattern and complete a "gap" that currently exists in the Suffolk and Worcester Streets.
Y	1.10	Adjust building configuration and massing to maximize access to sunlight, air, and sky views from neighboring buildings and sites, and to maintain privacy.	It is unavoidable that building on vacant land in a dense area will have an impact on abutters' current views. The new addition is consistent with heights in the neighborhood and proposed side yard setbacks and setbacks between abutting buildings exceed the norm in the neighborhood. The massing has been configured over time to split the impact of the addition between Worcester and Suffolk Streets. The proposed addition has minimal impact on shadows on abutting buildings given the existing height of 116 Norfolk and 90 Norfolk (see attached shadow studies).
Y	1.11	Where possible, provide courtyard spaces at building fronts or sides to reflect the character of preexisting development and to divide long frontages into smaller scaled facades.	Narrow edge of the addition fronts Suffolk Street and is configured and scaled to be appropriate for the neighbrohood pattern; the existing south facing yard will be improved with new accessible building access and landscaping, and framed by the new addition, creating a landscaped "room".
Y	1.12	Where appropriate, reinforce important street corners or termini of view corridors with special elements.	The important street corners of Norfolk and Suffolk and Norfolk and Worcester are being preserved.
Y	1.13	Consider both symmetrical and asymmetrical arrangements of building massing to best relate new buildings to their existing neighbors.	Projecting bays and jogs in the massing are arranged to maximize light to existing neighbors.
Y	1.14	For buildings fronting onto more than one street, such as buildings on corner lots, respond to the relative significance of the streets with orientation and massing strategies that reinforce their distinct characters. If possible, incorporate multiple building entries.	The existing building entry on Norfolk cannot be made accessible and is closed in the proposed design. However, it will be materially preserved as a significant element of the building's facade. The residential program for the building requires a primary, controlled entrance. The building will have other access doors but these will be primarily for emergency egress. On Norfolk, the "historic" facade will be maintained; the new entrace from Norfolk but facing Suffolk will be architecturally designed to be the clear entrance to the building. The addition is design to split the impact between Worcester and Suffolk Streets, and window patterns of the new addition mirror scale and patterns of neighboring properties facing the street.
Y	1.15	Where an existing neighboring residential building is located very close to the lot line, consider adjusting the new building’s footprint to create a wider side yard than the minimum required.	The closest immediate abutting residential building is on Suffolk Street and has a driveway and garage between the property line and their residential building creating a 21.5 ft setback between the building and the 116 Norfolk property line. Combined with the current setback of 9 ft (greater than the minimum required of 7.5 feet), there is at least 30.5 feet between the proposed addition and the house of the immediate neighbor. This space exceeds almost all the spaces between buildings in this immediate area. We understand that the immediate neighbor has a currently unused garage 0 feet from the property line, and that they intend to build an ADU on the slab of this garage at some point in the future. The 9 foot distance between the addition and the current garage/potential ADU is still greater than the distance between many buildings in the neighborhood.
Y	1.16	Where new buildings are constructed in the rear yards of existing buildings, or on large lots with large setbacks, adjust their massing to reduce impacts on neighboring buildings and yards by careful siting, articulate massing, and by reducing the visual bulk of top floors.	The massing of the addition has been carefully considered to balance proximity to abutters, zoning requirements with regard to first floor height, tree preservation, setbacks, and program requirements.

2 FACADES

*Objective: Design building facades to enhance and enliven the public realm. In established areas, emphasize compatibility and reinforce the sense of place. In evolving residential and commercial districts of the city, contribute to the transfor-mation of urban form by setting precedents for design excellence. Where appropriate, incorporate ground level re-tail spaces and common areas to foster a lively enliven the urban environment. Provide daylight to interior spaces, avoid exces-sive energy use, and protect the privacy of the residents of neighboring buildings. Design facades to relate to the residential scales and patterns of Cambridge's diverse and historic neighborhoods. Design street facades to off er a sense of civic presence and human scale, incorporating ar-chitectural details to provide visual interest as appropriate to their role in defining public space.*

Y	2.1	Consider Cambridge’s architectural history, heritage, culture and regional signifi cance as well as the established pattern of residential neighborhoods and conservation districts.	Massing, projecting bays, varying window sizes, window trim-out, and material selection contribute to elevations that make this new addition respond to its immediate reference (the existing masonry building) and also its neighborhood context (2-4 story clapboard and masonry structures).
Y	2.2	Relate to architectural styles of the immediate neighborhood context, and the street's urban qualities.	See above. Fibre cement horizontal clappboard and fibre cement shingles are proposed to match the neighborhood fabric, as opposed to metal siding.
Y	2.3	Provide architectural elements such as balconies, bay windows, dormers, roof gardens, and terraces where appropriate.	Porches and decks have been incorporated into the building design.
Y	2.4	Enrich facades with changes in plane, projecting bay windows, balconies, and articulated entrances, sun shades, and high quality materials.	The proposed massing meets the AHO's requirements for projecting elements. The addition's glazed connector helps articulate the entrance and break up the massing. Furthermore, varied window details that speak to the varying sizes of windows in the existing building help enrich the facade. High quality materials will be selected.
Y	2.5	Relate to the window-to-wall ratios and the proportion and rhythm of doors and windows prevalent in the district.	Window-to-wall ratios of the addition are designed to speak to the existing building.
Y	2.6	Relate to the scale of materials and joint patterns prevalent in the surrounding neighborhood.	Façade details are in progress. However, the façade design relates to the features of the existing building, such as a simple volume, detailing and progression of window sizes and a prominent cornice.
Y	2.7	Enrich and refine facades with details such as lintels, sills, and other window trim, railings, string courses, cornices, and rake and eave details.	See above.
Y	2.8	Provide shelter and shade at building entrances.	Building entrance is sheltered
Y	2.9	Where buildings present long facades to the street, give the facade visual interest and create an intermediate sense of scale by incorporating elements such as recesses, projections, balconies, bay windows, porticoes, columns, pilasters, piers, or expressed structural bays.	Cornice on addition will add visual interest, as does the cornice on the existing building. The addition will use a variety of window sizes (larger on the ground floor and smaller higher up) to add interest. Furthermore, the materials of the façade will transition at projections add create subtle articulation similar to neighboring buildings.
N/A	2.10	Consider providing emphasis at the corners of blocks by facade treatment and by providing functional entries to ground floor retail spaces.	N/A. There is no ground floor retail proposed.
Y	2.11	Avoid incorporating extravagant or exaggerated building elements or features such as out-of-scale cornices on building parapets.	The façade design relates to features of the exisitng building
Y	2.12	For buildings on lots with significant side and rear setbacks, consider articulating all four sides of the building.	All four sides of the addition are articulated.
Y	2.13	Use building massing, form, color, and materials, and architectural details to differentiate the building’s base, middle, and upper level facades; and add special design emphasis on the ground floor facade.	The façade of the addition is designed to relate to the existing building, which does not have a classic base-middle-top design. With that said, the scale and patterns of the windows in the existing building change as you move from floor to floor. This same design concept is applied to the addition. Lastly, the first floor of the addition is proposed to have a sturdy material such as ground face CMU, in order to differentiate the first floor from the floors above. There is also an opportunity for public art at the first floor by the entrance.
N	2.14	Enrich public streets with identifiable and functional building entrances. Where possible on residential streets, provide multiple entrances to individual first-floor units.	The main entrance will be moved off Suffolk Street in order to provide an accessible main entrance. The entrance will be accessed via Norfolk or Suffolk Street and will be clearly identifiable with signage, walkways, lighting, and canopy.
N/A	2.15	For large buildings on business and commercial streets, emphasize the distinct character of the ground floor facade, particularly where retail space or community spaces are provided.	N/A. Not a business or commercial street.
N/A	2.16	Where ground floors accommodate retail space, common spaces, or community spaces, maximize views of interior spaces on public streets by using clear glass in windows and storefronts.	N/A. There is no ground floor retail proposed.
Y	2.17	Enhance building entrances and spaces around them with features such as stoops, porches, recesses, canopies, awnings, low walls, arcades, landscaping, and seating areas.	The building's main entrance is adjacent to the south porch and south lawn and will be covered by a canopy. The property is currently enclosed by a wall dating back to the site's history as a convent. Parts of this wall will remain.
N/A	2.18	On business and commercial corridors, clearly differentiate ground floor facades from those of upper floors. Provide ceiling heights and facades to accommodate retail or other active uses.	N/A. Not a business or commercial corridor.
N/A	2.19	Wherever possible, screen parking with programed spaces to enliven the street facades.	N/A. No parking is proposed onsite.
N/A	2.20	Where parking spaces immediately behind the ground fl oor street facade or facing neighboring properties, screen the parking with architectural elements that provide depth and visual interest, including decorative louvers, green wall or other decorative treatment including art work, grilles or louvers. Avoid using metal wire mesh screen-ing that does not provide depth to the wall.	N/A. No parking is proposed onsite.
Y	2.21	Avoid blank walls on ground floor facades. Where spaces such as utility rooms, fire control centers, etc. require windowless walls, other means of creating visual interest should be provided, including changes in plane, materials, details, and provision for planting.	Apartments, management office space, and common spaces are located on the first floor and have windows that match the existing neighborhood pattern. Utility areas are located in the basement.

Y	2.22	Give special consideration to the design of top floor facades, particularly in residential neighborhoods, where buildings in Cambridge often have intricate massing, roof lines, or parapet walls.	The cornice detail is a significant feature of the addition to provide articulation to the building and speak to the existing building.
N	2.23	Rooftop terraces and gardens can add visual interest to the tops of buildings and provide needed open space for residents.	Rooftops are reserved for PV. Open space for residents includes a south porch, a north terrace, and a landscaped south and north yard. Proposed open space = 48%.
Y	2.24	Design roofs and top floors as natural extensions of the building massing.	The cornice detail is a significant feature of the addition to provide articulation to the building and speak to the existing building.
Y	2.24	Size and locate fenestration to balance urban design goals and architectural qualities such as transparency and a pedestrian-friendly appearance with building energy performance and neighbors’ privacy.	Window-to-wall ratios of the addition are designed to speak to the existing building.
Y	2.25	Visually enrich glazed areas with carefully considered mullion and muntin patterns and profiles, operable windows, window trim, and sun-shading devices.	Window-to-wall ratios of the addition are designed to speak to the existing building.
Y	2.26	Use best practices in restoration and maintaining historic structures. Consultation with the Cambridge Historical Commission is recommended, especially for developments in Historic and Neighborhood Conservation Districts.	CHA and HMFH have met with CHC and are following their guidance by preserving most of the existing building including its brick façade, and preserving some of the existing wall. The CHA will continue to consult with CHC throughout the design process.
Y	2.27	In renovating or adding to an existing architecturally or historically significant building, or where original materials or components need to be replaced, use traditional building elements with the same architectural features, material quality and craftsmanship. If not feasible, substitute with style-neutral high-quality components and materials compatible with the architecture and historic character of the building and district.	CHA and HMFH have met with CHC and are following their guidance by preserving most of the existing building including its brick façade, and preserving some of the existing wall. The CHA will continue to consult with CHC throughout the design process. The addition will be compatible with the existing.
Y	2.28	Where new units are proposed on an existing lot shared with a historic structure, the new building should, if possible, be detached from the historic structure and distinguish itself as new construction through materials, architectural details, and form.	It is important for the program of the building to have one, attached building. In order to transition between the historic existing and the new addition, a glass connector is propped.

3 ARCHITECTURAL DETAILS, MATERIALS, COLOR, AND FINISHES

Objective: Use materials that are warm, inviting, and compatible with surrounding existing buildings and the neighborhood context. Develop building facades of high-quality, durable materials and with colors, finishes, and textures appropriate to building contexts.

Y	3.1	While it is not required that materials match those of adjacent buildings, select their general color and scale in response to the neighborhood character.	Fibre cement horizontal clappboard and fibre cement shingles are proposed to match the neighborhood fabric, as opposed to metal siding.
Y	3.2	Use high-quality and durable construction materials with proven records of long life-cycle and low environmental impacts.	We are pursuing an Enterprise Green Communities certification and will select durable and sustainable materials such as fiber cement panels.
Y	3.3	Natural and durable materials such as brick, concrete masonry, and stone are preferred. Other optional materials include pre-manufactured panels of cementitious, concrete, or composite materials.	Concrete masonry is proposed for the first floor and fiber cement panels are proposed for upper floors.
Y	3.4	Use materials with colors appropriate to the immediate context and that are commonly used in the area. Avoid the use of garish colors that are not relevant to the architectural vocabulary found in the neighborhood context.	A cool color is proposed for the addition, picking up on the many blue and green clapboard houses in the area, and propose window surrounds in a color similar to the brick of the existing building to both provide contrast within the addition and complement the existing building.
Y	3.5	Avoid reflective facade materials.	Fibre cement panels will not be reflective.
Y	3.6	Glass should be transparent, untinted, and have low reflectivity.	Apartment windows will be transparent, untinted and have low reflectivity. Glass in the connector will be a mixture of transparent and translucent in order to provide privacy to residents in common areas.
Y	3.7	For residential units, strive for divided light or multiple pane windows. Avoid plate glass and single light windows.	Windows have not been selected yet, but we are intending to use tilt-turn windows, not awning. Window details include mullions.
N	3.8	Consider vegetated facade systems.	We considered vegetated façade systems but didn't pursue them given maintenance concerns.

4 BUILDING INTERIORS

Objective: Affordable housing, like all housing, should serve the needs of its residents while contributing to the residential character and sense of neighborhood within the area at large.

N	4.1	Provide a mix of unit types and sizes that will support and contribute to the diversity of housing in the neighborhood. The inclusion of a significant number of units that are suitable for families with children is preferred except in special cases where housing will serve populations with different housing needs, such as housing for seniors.	116 Norfolk is housing for elders, people with disabilities, and individuals exiting homelessness -- vulnerable and underserved populations.
Y	4.2	Design interior living spaces to be attractive and comfortable. Include adequate interior living space, common storage, and access to natural light and air. Interior living spaces should be designed to be comfortable. Size bedrooms to accommodate standard bedroom furniture and include access to natural light. Provide ample counter space and storage in kitchens. Provide access to laundry facilities in residential units or elsewhere in the development.	Sizing of the units is consistent with similar Permanent Supportive Housing programs. Existing units will be significantly larger after renovations than before and will include their own kitchen and full bathroom (currently, apartments are congregate-style and share kitchens and showers). Laundry facilities will be available in the development.
Y	4.3	Utilize interior finishes and fixtures that are high quality, durable, sustainable, and energy-efficient.	116 Norfolk will follow CHA's design standards, which prioritize high quality, durable and sustainable design.
Y	4.4	In larger projects, provide interior common spaces for shared amenities, services and facilities such as storage, recreation and gathering space, or in larger buildings areas that can serve residents in the event of extreme weather or power outages. Consider providing amenities that serve the broader community.	The building will have lounges on each floor as well as a ground-floor common room.



Y	4.5	Consider providing common spaces at ground level, visually connected to outdoor space, whether on building frontages or addressing the interior of the block.	The ground-floor common room will look out onto Norfolk Street and Suffolk Street. A first floor lounge will connect to a south-facing porch.
Y	4.6	Use operable windows for residential units and common spaces to provide passive ventilation and improve indoor air quality.	Residential units will have multiple operable windows.

SUSTAINABILITY

1SUSTAINABLE DESIGN

Objective: Achieve resilience measures to the maximum extent possible, including energy efficiency and measures to promote the health and wellness of residents.

Y	1.1	Use the City's most up-to-date projections for anticipated future flood elevations, including the City's Floodviewer information and dashboard, Seek guidance from the City of Cambridge Department of Public Works (DPW) regarding peak stormwater runoff and on measures to build and protect to the 2070 10% flood level and recover from the 2070 1% flood level.	The design includes a detention basin that captures run off and both slows the rate of flow leaving the site and going into the soil. Installing infrastructure to mitigate flood risk is consistent with the City's "Port Preparedness Plan".
Y	1.2	Avoid locating sensitive uses such as critical building functions, emergency equipment, or residential bedrooms in areas that are at risk of future flooding.	The basement is not in a projected flood plane.
Y	1.3	If seeking a Sustainable Building certification, strive for the highest possible credential.	116 Norfolk will be Enterprise Green Communities (EGC) certified.
N	1.4	In site design, orientation, and facade arrangement, minimize the demand for heating and cooling by considering the effects of solar gain on different sides of the building. Design interior spaces for passive heating, cooling, and ventilation. This approach is intended to conserve energy while also improving resilience in the event of power outages or other mechanical failures.	The addition was proposed to preserve as many existing mature trees as possible and split the impact of the addition between Suffolk and Worcester Streets.
Y	1.5	Incorporate passive cooling and ventilation with operable windows, including operable upper sashes or transoms.	Residential units will have operable windows.
N	1.6	Incorporate sun shading devices or shutters with positive ventilation, solar screens, canopies, porches, or brissoleils to shade strongly sunlit facades.	Sun shading devices are not proposed in order to align more with the existing building.
Y	1.7	On roofs, exterior walls, and paved surfaces, use materials with high solar reflectivity to minimize heat absorption and localized heat island effect. As an alternative, employ vegetated coverings such as green roofs or green walls.	The design includes white roofs and PV. There is minimal paved areas onsite.
Y	1.8	While trees are preferred, where they are not feasible consider the use of shading devices such as canopies, awnings, or pergolas to provide shade on exterior paved areas and/or to reduce solar heat gain on building facades.	The design prioritizes preserving existing trees and planting new trees.
Y	1.9	On large projects, consider providing common spaces that are protected from flooding and extreme heat and are suitable as shelter during emergencies.	N/A, 116 Norfolk is not a large project. There are common lounges on each floor, including the higher floors.
Y	1.10	Employ renewable and low-carbon energy features where feasible, such as solar photovoltaic systems, solar heating systems, or geothermal heating and cooling systems.	The design includes PV.  The existing building is being renovated and reused, with most of the exterior envelope remaining as is. Insulation is being added to the exterior walls of the existing building for lower operational energy consumption. The construction of the addition is wood, the exterior cladding includes fiber cement siding and shingles, poly-ash trim, and brick veneer. The addition's rainscreen wall assembly will have 6" of exterior insulation, in addition to interior insulation to help offset operational energy costs.
Y	1.11	Consider operational and embodied energy in material selection.	
Y	1.12	Select and design building systems and equipment within units to facilitate future conversion to all-renewable energy systems.	Heating and cooling will be all electric. Hot water is being designed for future conversion to all electric.
Y	1.13	Use materials with no volatile organic compound emissions in all walls, floorings, ceilings, furniture, acoustic and thermal insulation, and facades exterior applied products.	This is a requirement of EGC, as well, and will be followed.
N	1.14	Integrate cool roof or green roof systems on building roofs where possible to contribute to strategies for stormwater management and green infrastructure.	Roof prioritizes PV. Green roofs are cost prohibitive and have minimal impact with PV installed. Infiltration system has been designed to manage all roof runoff.
Y	1.15	Where possible, use and integrate recycled content materials without compromising durability and material quality.	Recycled content is prioritized per EGC.

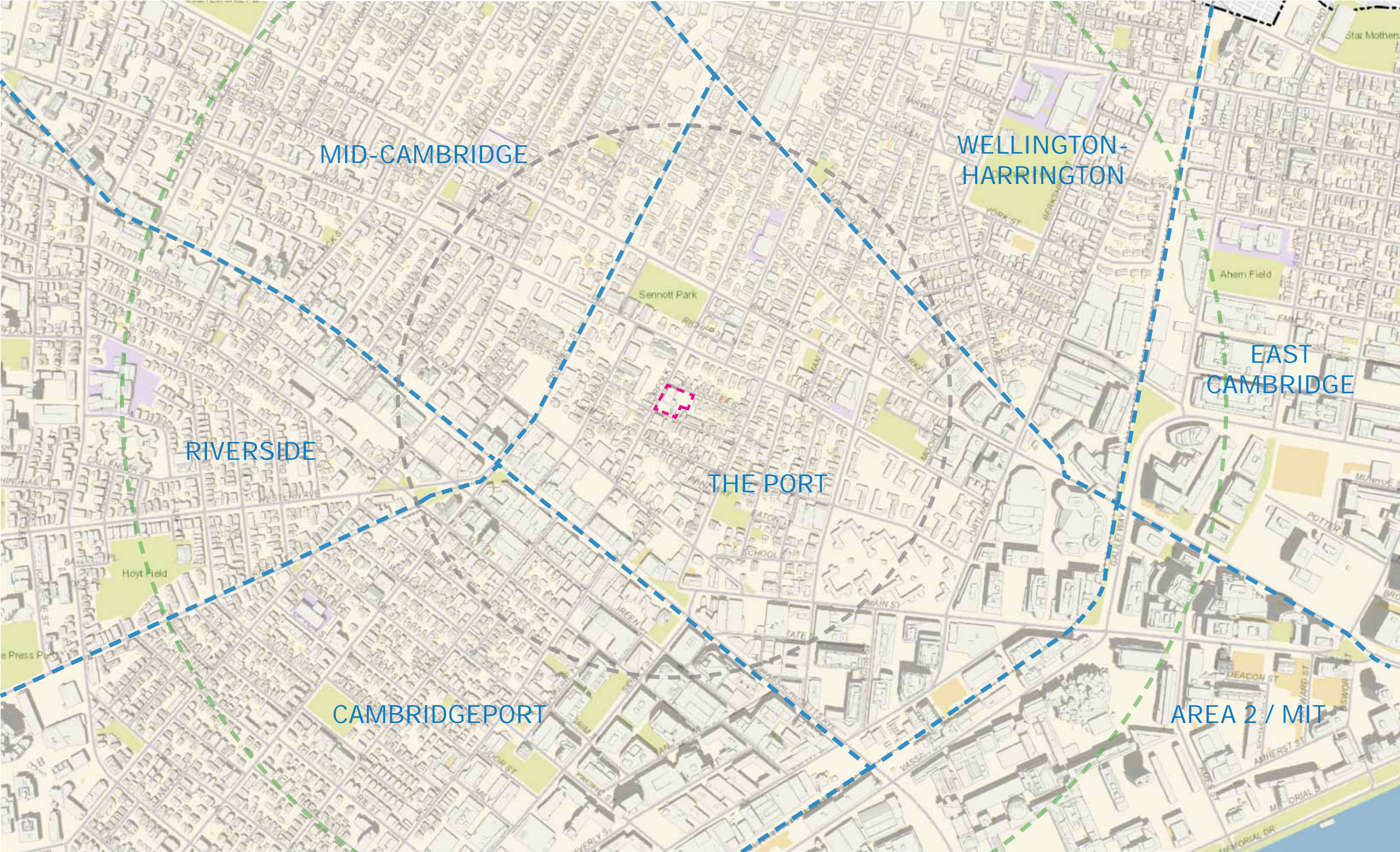
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2.1 Area Context Maps









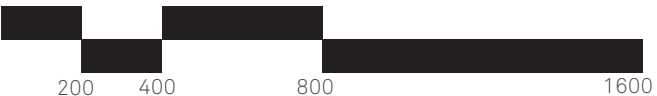
LEGEND

116 NORFOLK STREET

1/4 MILE RADIUS

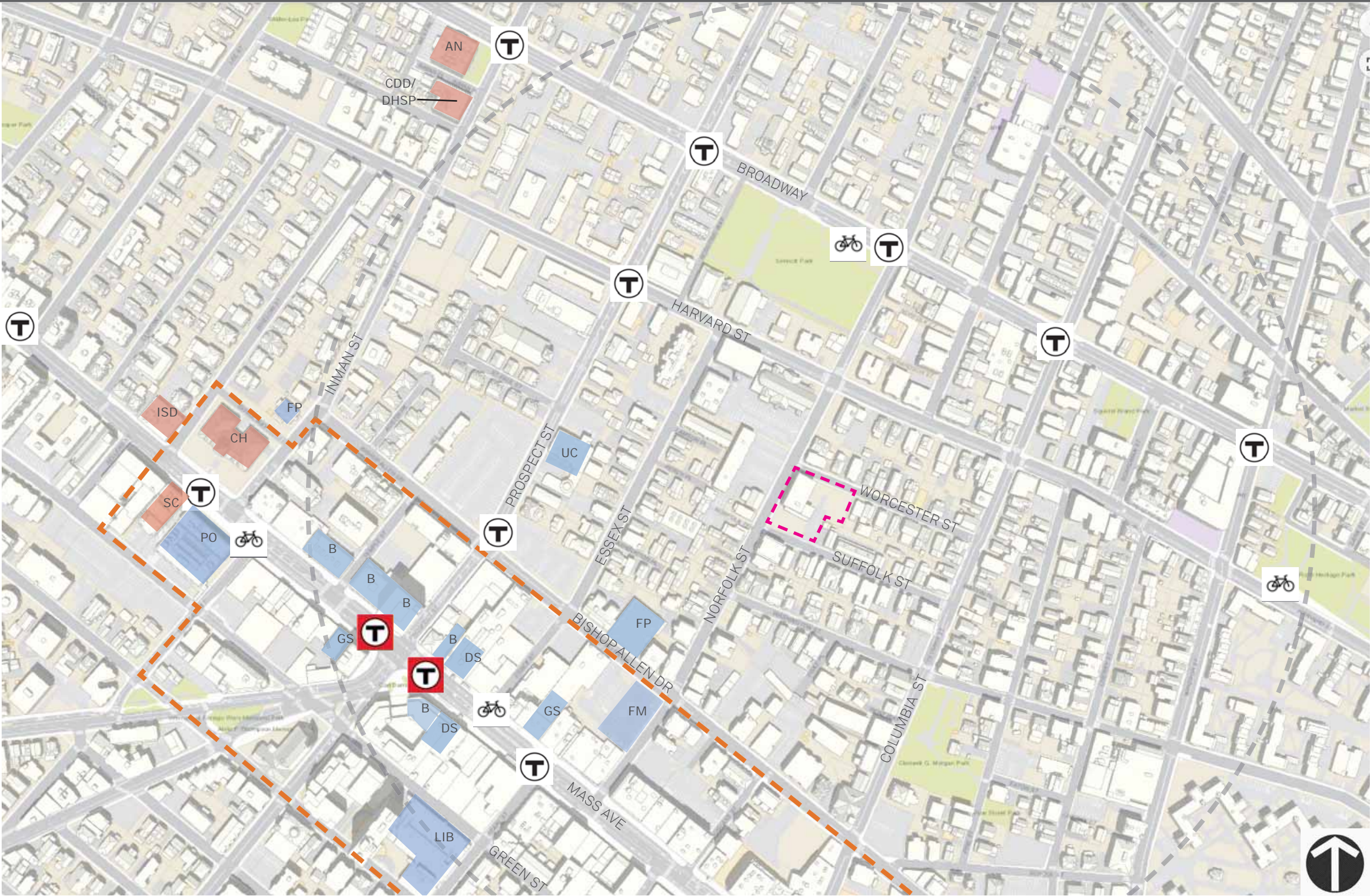
NEIGHBORHOOD BOUNDARY

1/2 MILE RADIUS



Context Map - Port Neighborhood





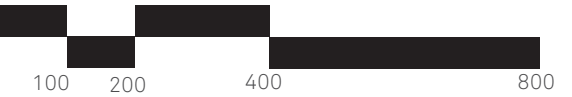
LEGEND

- CITY BUILDINGS/SERVICES
- CH CITY HALL
- ISD INSPECTIONAL SERVICES
- DHSP DHSP/CITY SERVICES
- AN CITY HALL ANNEX
- SC SENIOR CENTER

- AREA AMENITIES
- PO POST OFFICE
- LIB CENTRAL SQ. LIBRARY
- GS GROCERY STORE
- FM FARMERS MARKET
- FP FOOD PANTRY
- DS DRUG STORE
- UC URGENT CARE
- B BANKS

- PUBLIC TRANSIT
- MBTA REDLINE STOP
- MBTA BUS STOP
- BLUEBIKES STATION

- 116 NORFOLK STREET
- 1/4 MILE RADIUS (5-7 MIN WALK)
- CENTRAL SQUARE EXTENTS





2.2 Area Context Analysis





Area Context - Building Heights and Distance Separation





Area Context - Suffolk Street Neighbors

HMFH ARCHITECTS





Area Context - Norfolk Street Neighbors





Area Context - Worcester Street Neighbors



2.3 Existing Conditions Photographs







WEST ELEVATION AND MAIN ENTRANCE



WEST ELEVATION



SOUTH ELEVATION AND PORCH



ENTRANCE AT SOUTH ELEVATION



SOUTH AND PARTIAL EAST



PARTIAL SOUTH ELEVATION AND PORCH





EAST YARD



SOUTH ELEVATION



EAST YARD



NEIGHBOR'S GARAGE ALONG EAST YARD



FRONT YARD, LOOKING EAST



FRONT YARD, LOOKING TOWARDS NORFOLK

Existing Conditions - Photographs





NORTH AND WEST ELEVATIONS



NORTH AND EAST ELEVATIONS



SOUTH ELEVATION AND PORCH FROM NORFOLK STREET



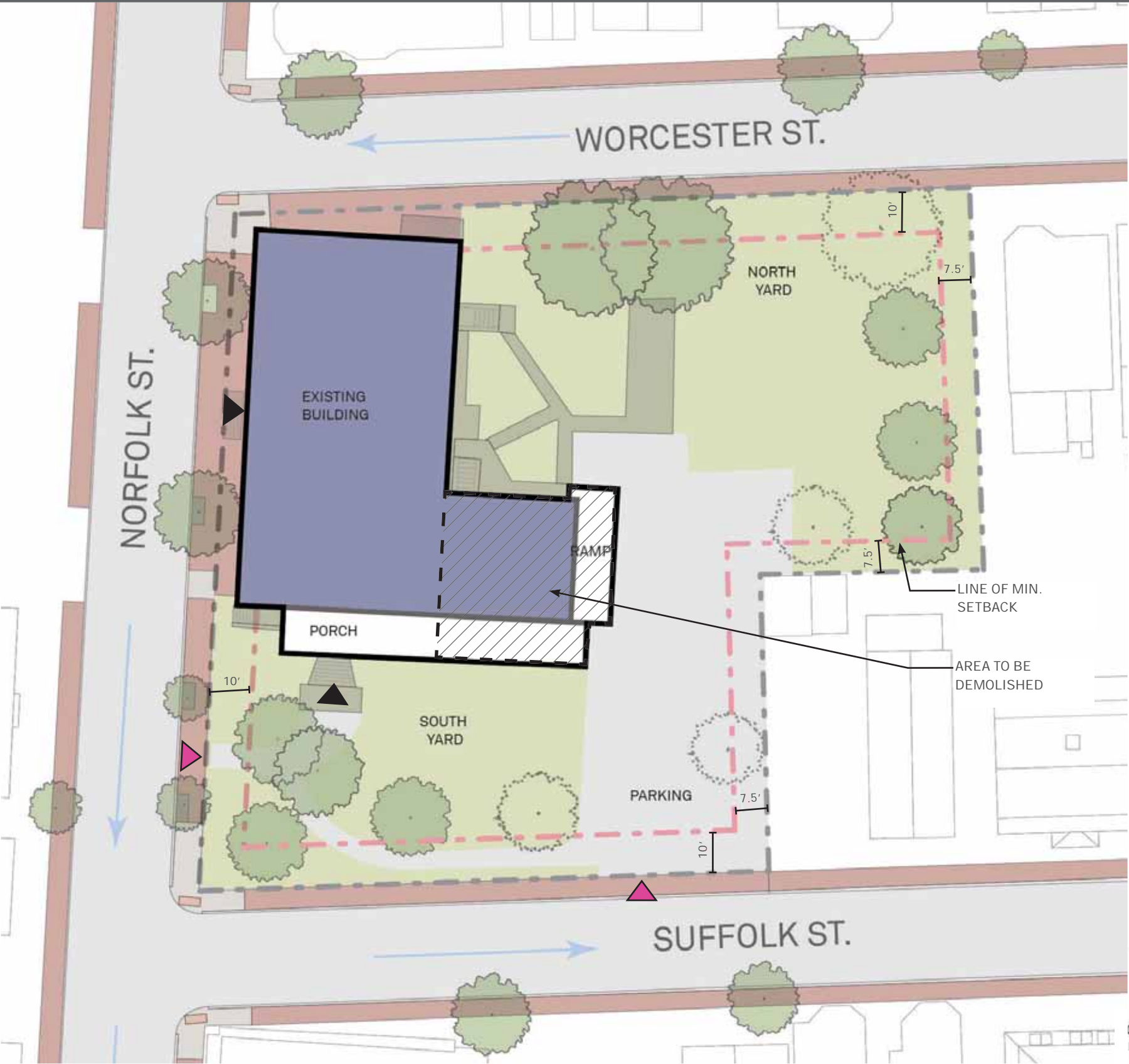
PARKING LOT ALONG SUFFOLK STREET



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2.4 Existing Conditions Site Plan and Sections





EXISTING DIMENSIONS:

- FAR: 0.97
- LOT AREA: 25,230 SF
- BUILDING GSF: 24,528 SF
- BUILDING HEIGHT: 54'

SETBACKS:

- FRONT (NORFOLK ST.): 5'
- FRONT (WORCESTER ST.): 3'
- FRONT (SUFFOLK ST.): 57'
- SIDE: 50'
- OPEN AREA PERCENTAGE: 54%
- # OF EXISTING TREES: 13

ALLOWABLE DIMENSIONS:

- FAR: 2.00
- LOT AREA: 25,230 SF
- BUILDING GSF: 50,460 SF
- BUILDING HEIGHT: 45'

SETBACKS:

- FRONT: 10' MINIMUM (AT PROPOSED BUILDING)
- SIDE: 7.5' MINIMUM (AT PROPOSED BUILDING)
- OPEN AREA PERCENTAGE: 30% MINIMUM

LEGEND

- PROPERTY LINE
- - - SETBACK LINE
- ▲ BUILDING ENTRANCE
- ▲ SITE ENTRANCE
- EXISTING TREE TO REMAIN
- EXISTING TREE TO REMOVE

Site Plan - Existing Site

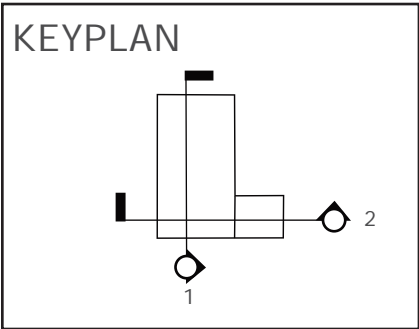




1 - NORTH/SOUTH SECTION



2- EAST/WEST SECTION



2.5 Proposed Conditions Site Plans







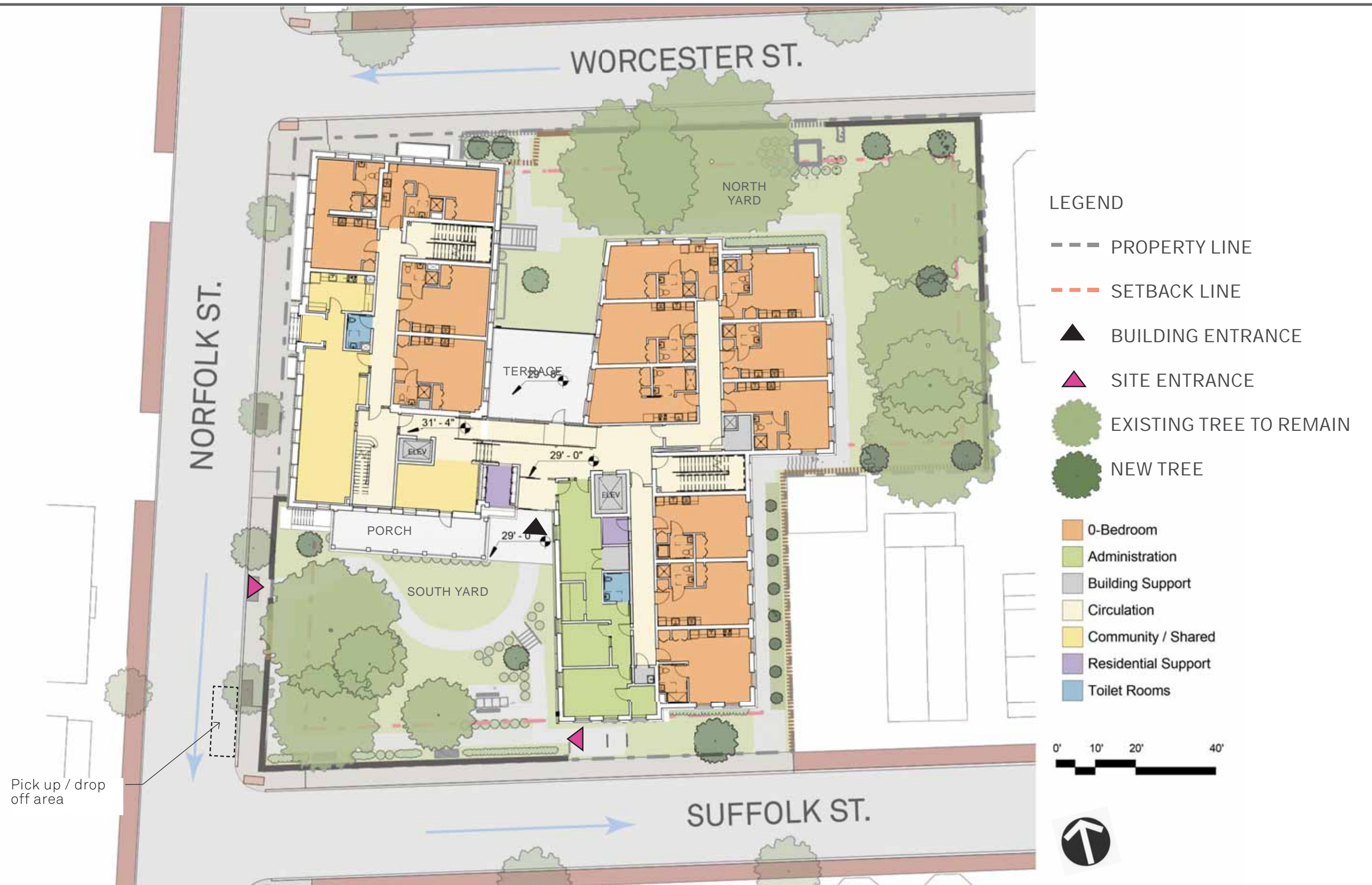
- PROPOSED DIMENSIONS:
- FAR: 1.71
  - LOT AREA: 25,230 SF
  - BUILDING GSF: 43,100 SF
  - BUILDING HEIGHT: 45'
  - FRONT YARD SETBACK: 12' (at new)
  - SIDE YARD SETBACK: 7.5' (at new)
  - OPEN AREA PERCENTAGE: 44%
  - # OF EXISTING TREES: 9 (4 Removed, 2 Identified As "Poor Condition")

- RESIDENT & NEIGHBORHOOD COMMENTS/FEEDBACK TO DATE:
- Trees along Worcester Street and North Yard are preserved as much as possible
  - South Yard is preserved as much as possible
  - Part of porch to be maintained and restored
  - North Yard will be landscaped
  - Existing perimeter brick wall to remain, but provide some opportunities for visibility of site
  - Landscaped buffer/transition at sideyard setback
  - Larger caliper trees where possible

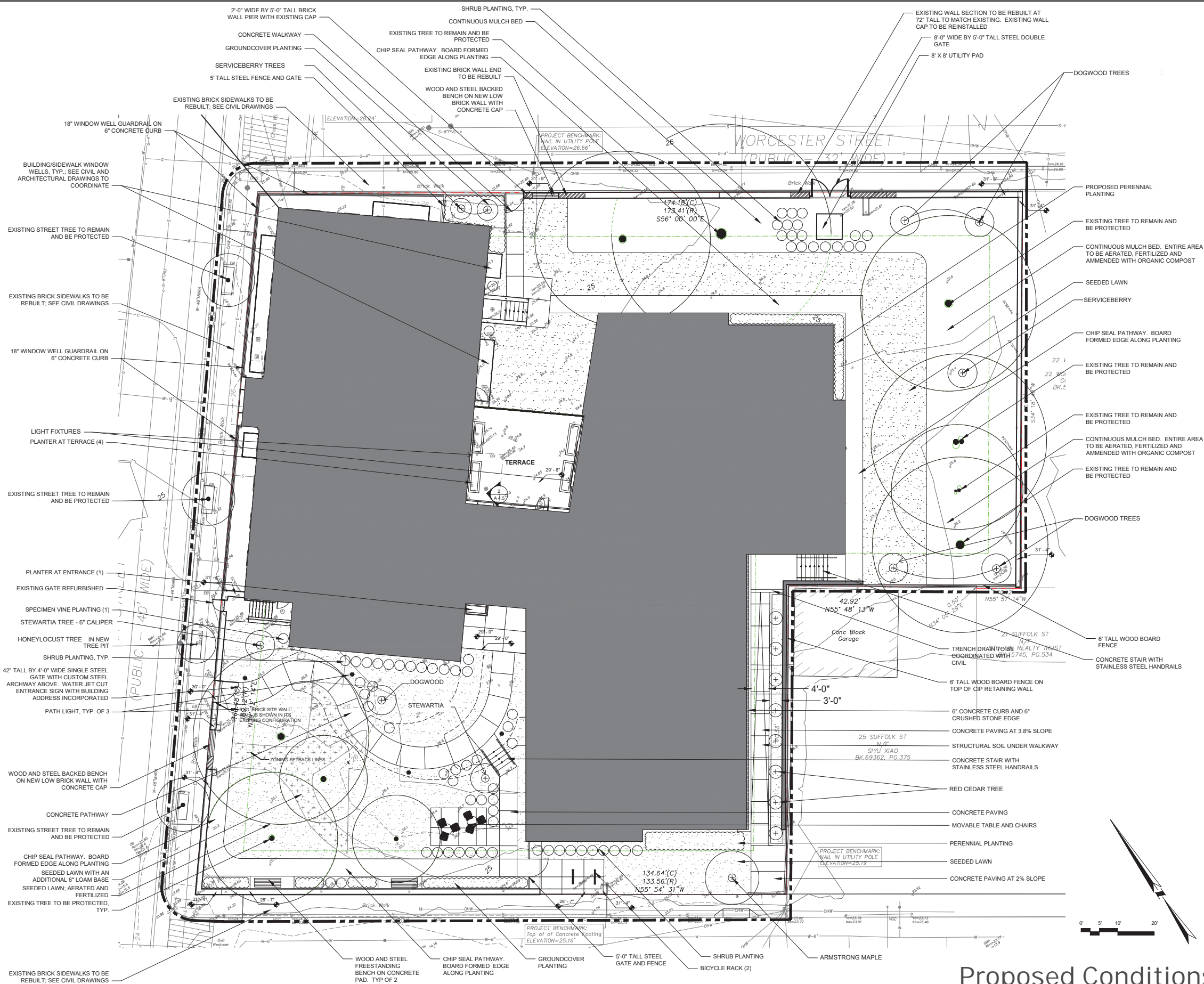
- LEGEND
- PROPERTY LINE
  - SETBACK LINE
  - ▲ BUILDING ENTRANCE
  - ▲ SITE ENTRANCE
  - EXISTING TREE TO REMAIN
  - NEW TREE

Architectural Site Plan





Site Plan and First Floor Use



Proposed Conditions Landscape Plan





Dero Bike Rack



Steel Planters



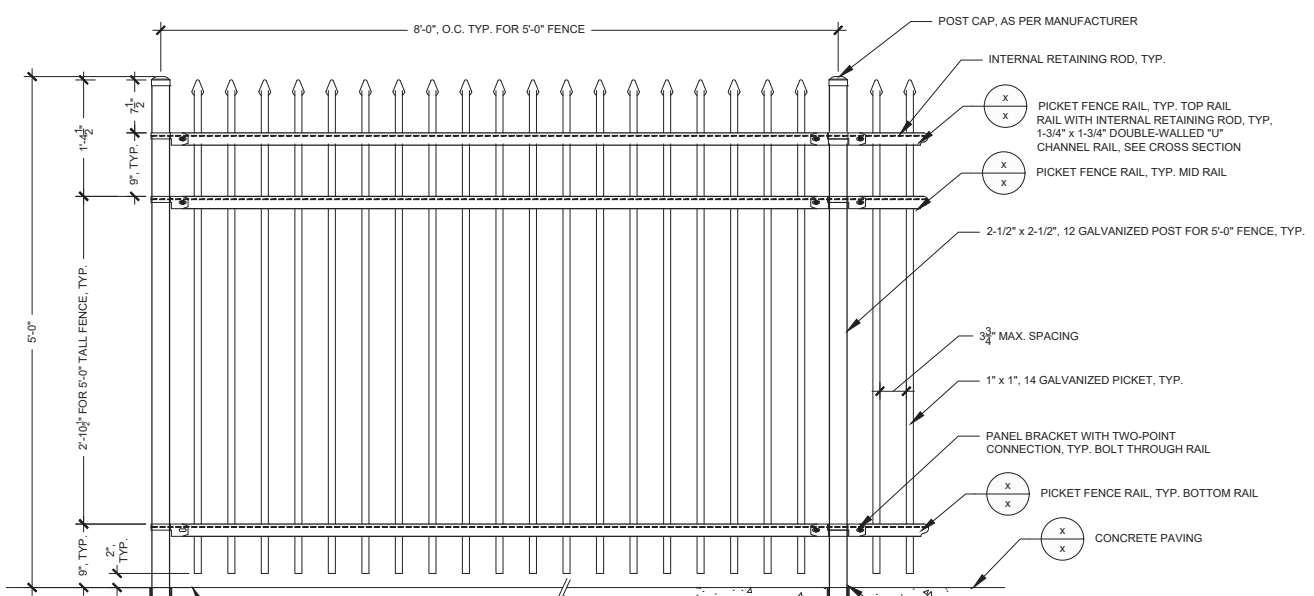
Chip Seal pathway



Wall mounted bench w/ back (and added central armrest)



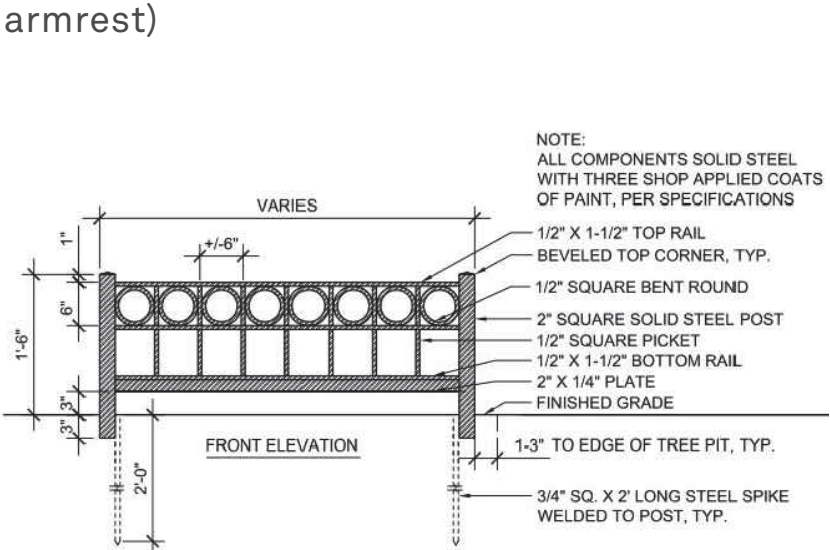
Freestanding bench



Fence detail



Outdoor table and chairs with wheelchair space



Window well guard rail



Wood fence



Existing brick perimeter wall

# Landscaping Materials





Wall mounted downlight at South Porch



Recessed wall grazing fixture at public art mosaic by



Entrance and path lighting through South Yard  
Lighting





Plan View of Rooftop MEP Equipment



Axon View of Rooftop MEP Equipment

## Proposed Rooftop MEP Equipment





1 - View from 15 Worcester Street



2 - View from 17 Worcester Street



3 - View from Across Worcester Street



4 - View from 118-120 Norfolk Street



5 - View from Norfolk Street -  
North



6 - View from 107 Norfolk Street



7 - View from 105 Norfolk Street



8 - View from 103 Norfolk Street

## MEP Equipment - Views

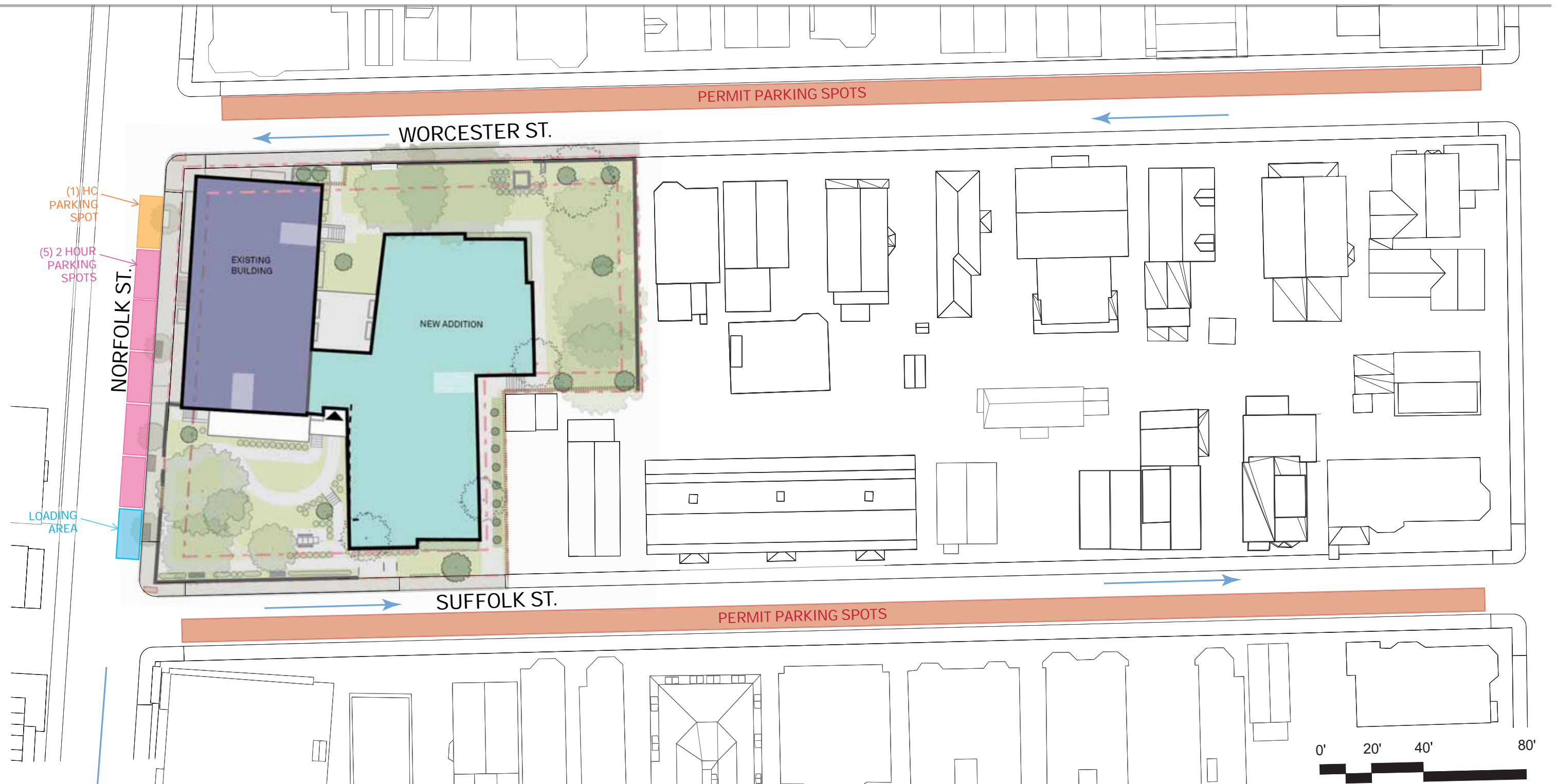




9 - View from Norfolk at Suffolk Street



10 - View from 20-22 Suffolk Street



### Transportation Demand Management Plan

CHA to offer each resident their choice of one of the following:

- 50% off a six-month MBTA Link Pass (subway, local bus, Silver Line, Commuter Rail Zone 1A, and Charlestown Ferry)
- Annual Blue Bikes membership

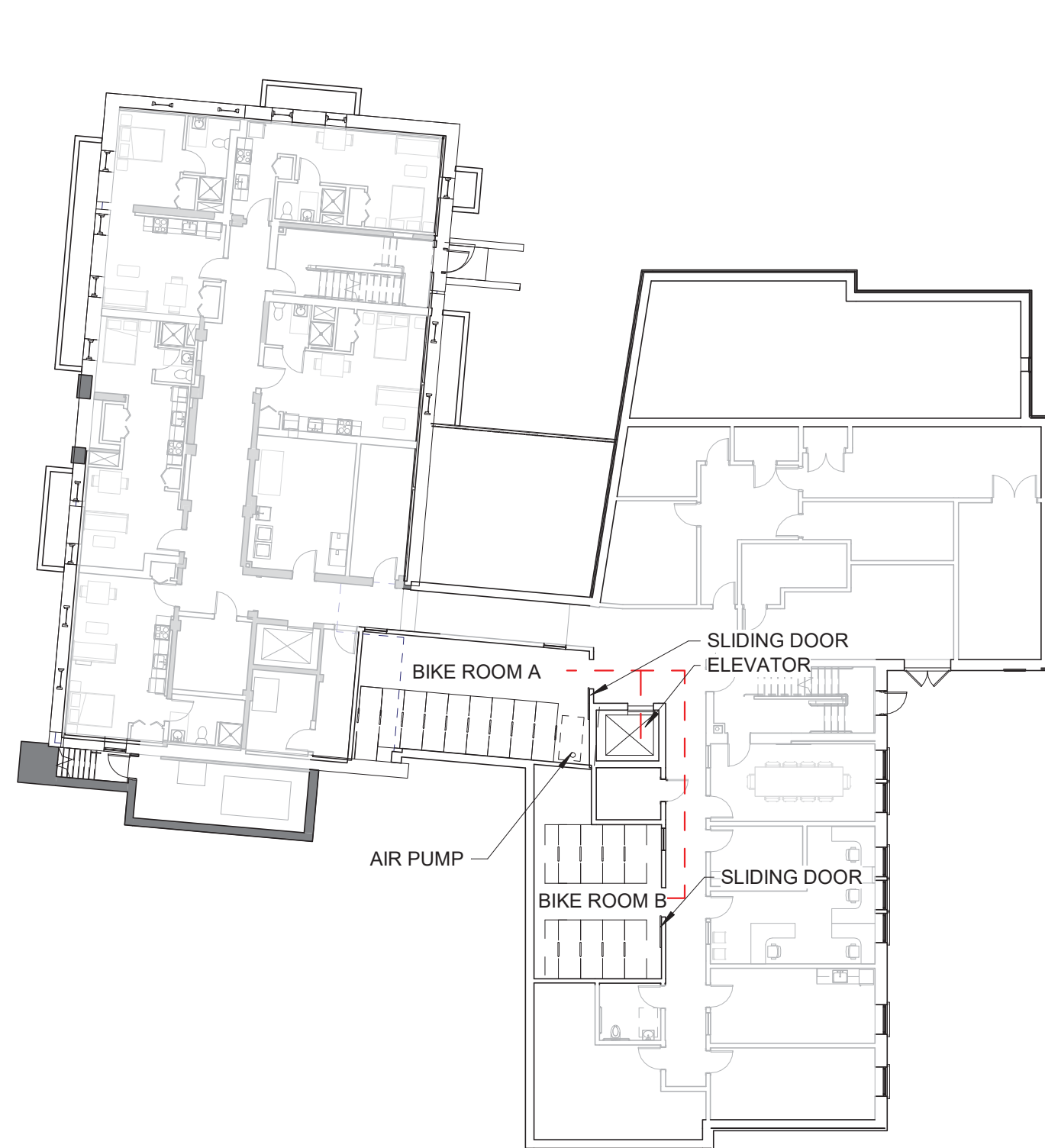
CHA will also install a real-time transit service screen in a convenient common area of the building

- 0 onsite parking spaces
- 1 off-site loading area

### Proposed Conditions Vehicular Parking Plan



	Cambridge Zoning Ordinance	Affordable Housing Overlay	Proposed Design
Short-Term Bicycle Parking	0.10 spaces per unit on a lot	0.10 spaces per unit on a lot  In existing buildings, bike parking spaces are not required to meet AHO standards	35 units in new addition  $35 \times 0.10 = 3.5$  <b>4 short-term bike spaces</b>
Long-Term Bicycle Parking	1.00 spaces per unit for first 20 units in a building.  1.05 spaces per unit for additional units beyond 20.	1.00 spaces per unit for first 20 units in a building.  1.05 spaces per unit for additional units beyond 20.  Up to 20 long-term bike parking spots may be designed to meet short-term bike requirements, as long as they are still covered  In existing buildings, bike parking spaces are not required to meet AHO standards	35 units in new addition  $20 + (1.05 \times 15) = 35.75$  <b>36 long-term bike spaces</b>

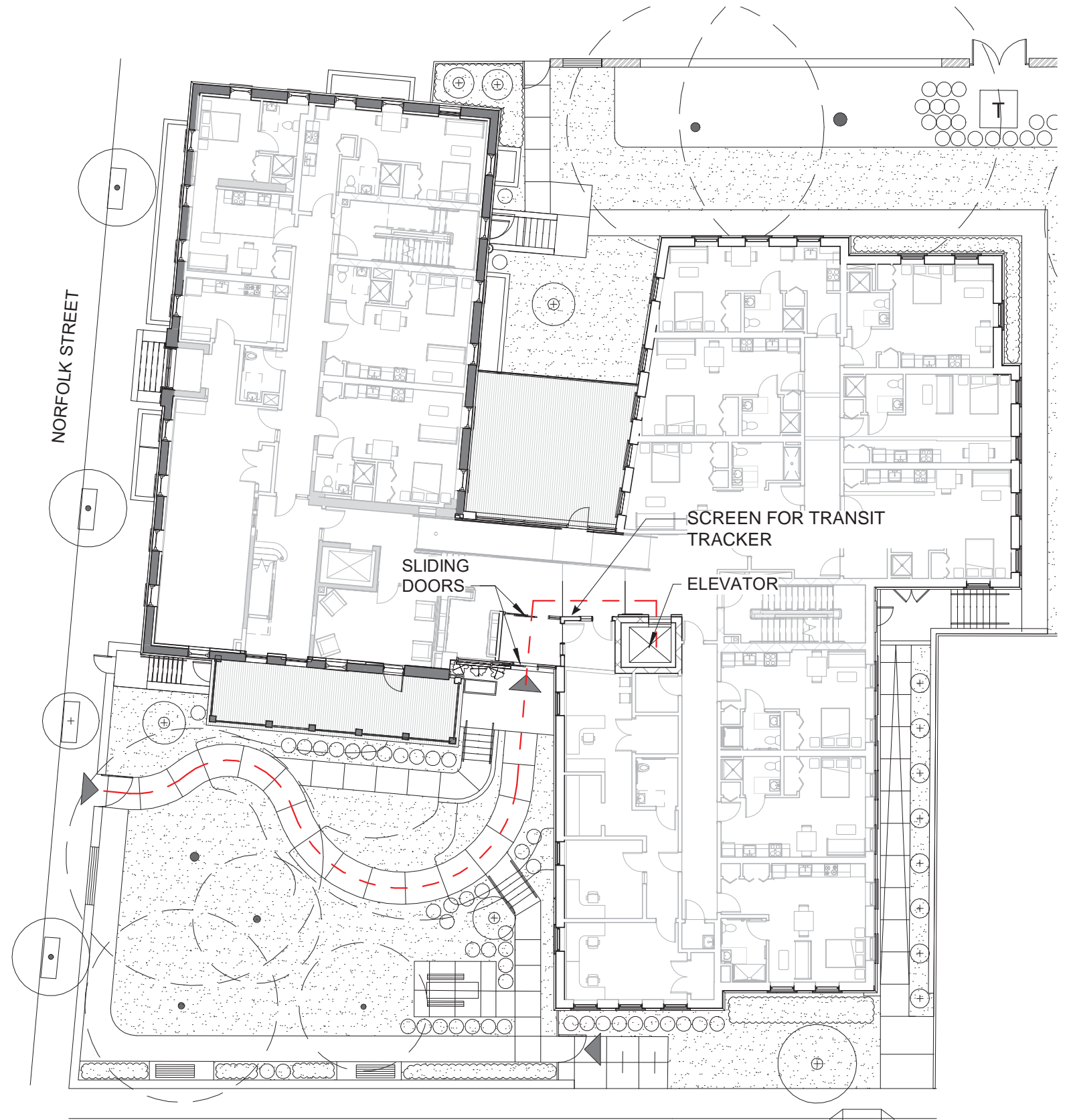


--- Path to Long-Term Bike Parking  
 Long-Term Bike Parking Rooms



0' 10' 20' 40'

**GROUND FLOOR PLAN 1**



SUFFOLK STREET

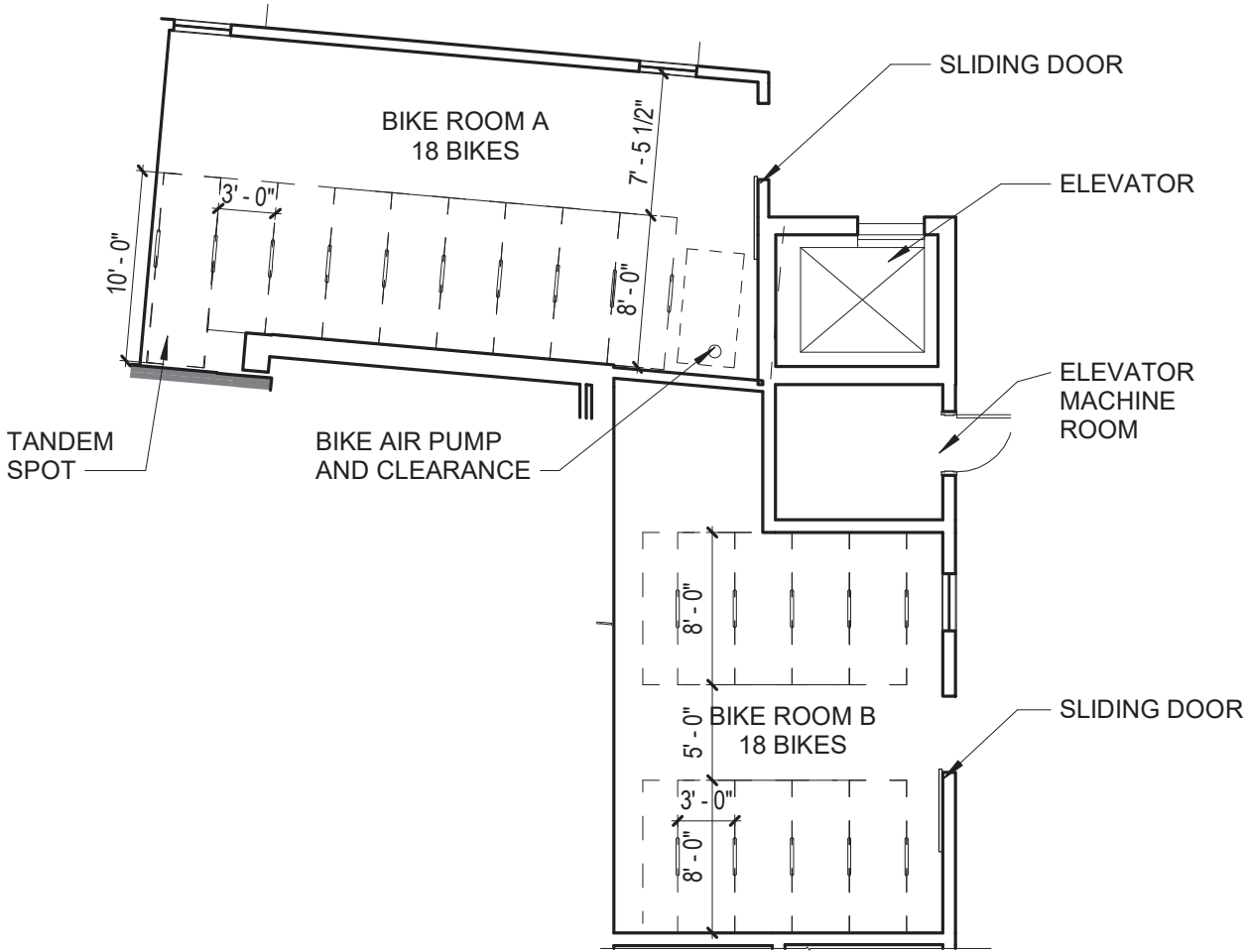
**FIRST FLOOR PLAN 2**

Proposed Conditions Bicycle Parking Plans

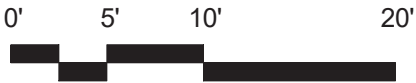




4 short-term bike parking spots



Long-term bike parking in basement, accessed via elevator at main entrance to building



Proposed Conditions Bicycle Parking Plans

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2.6 Rendered Perspectives of Proposed Design







Aerial View





Proposed Viewsheds





1 - View from Corner of Norfolk and Suffolk





2 - View from Suffolk Street





3 - View from Worcester Street





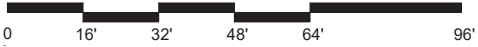
4 - View from Across Worcester Street



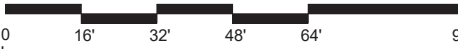
2.7 Architectural Floor Plans





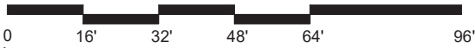


Ground Floor Plan

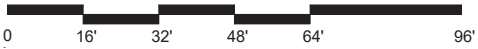


First Floor Plan



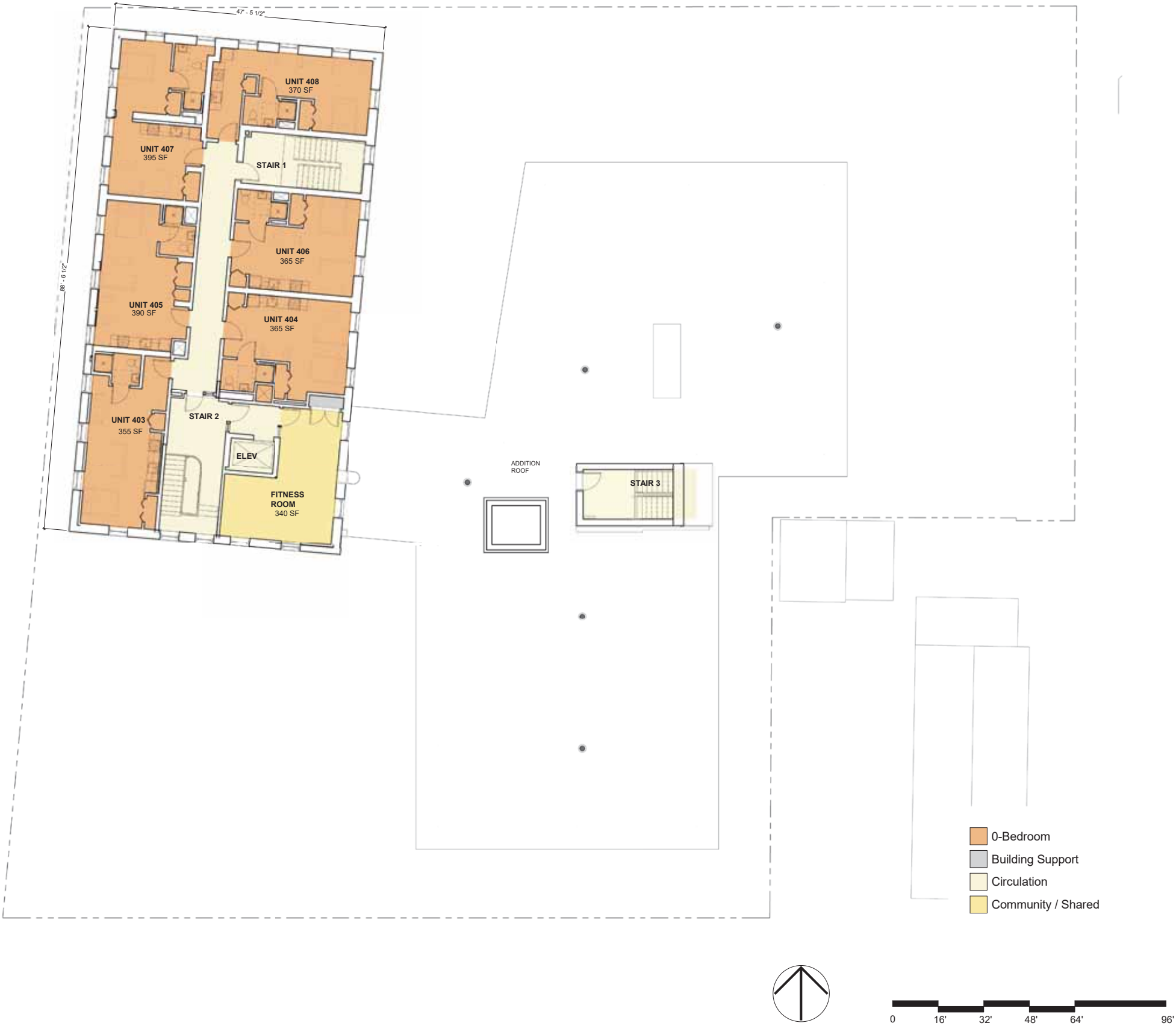


Second Floor Plan

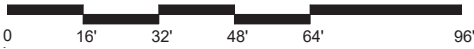
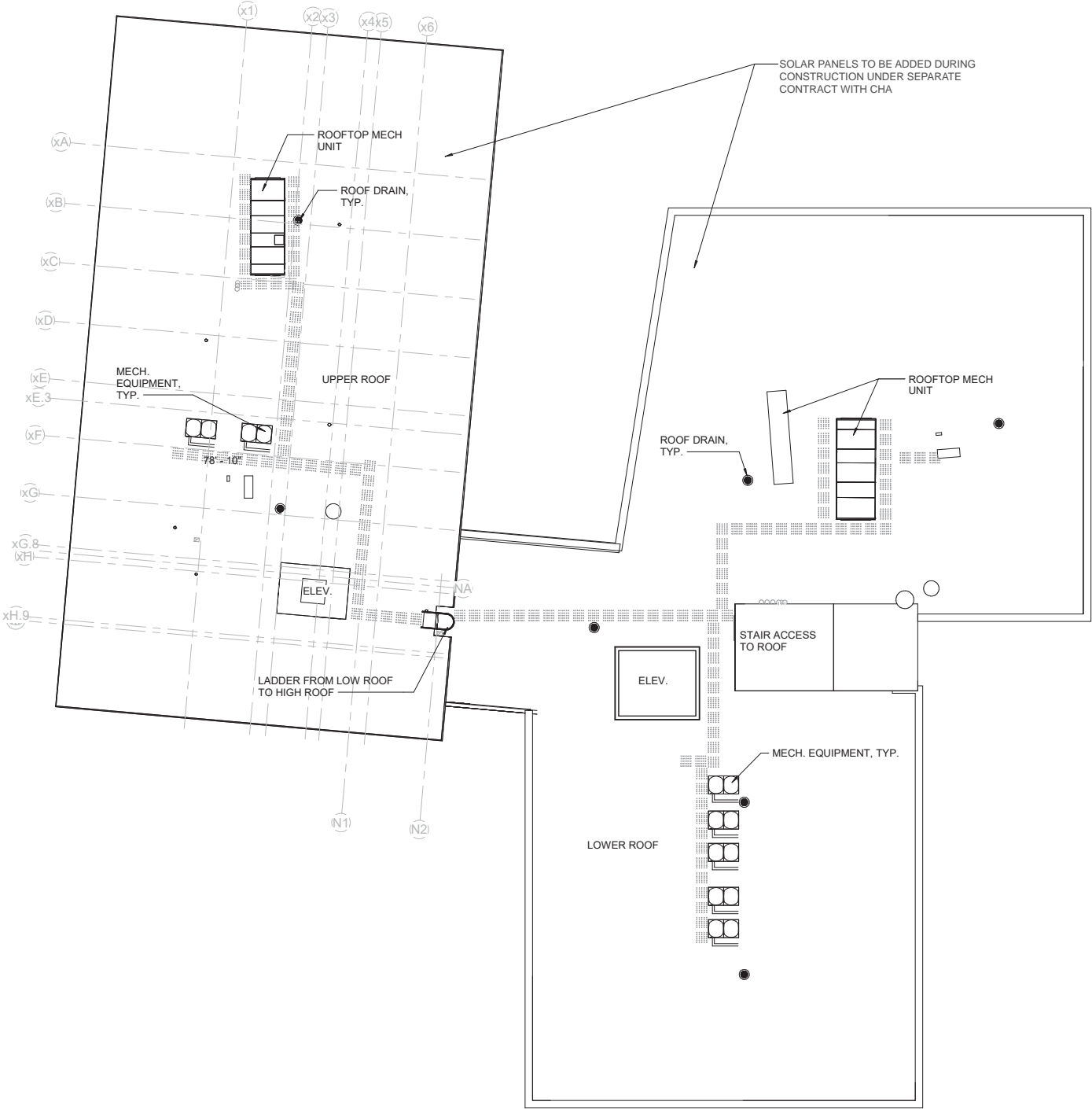


Third Floor Plan





Fourth Floor Plan



Roof Plan





Cooking classes in Community Kitchen



Reading in Lounges



Fitness Room



Laundry Room



Activities in Multipurpose Room



South Porch / Events for Residents and  
Neighbors in South Yard,



Seating and planters on North Terrace



Outdoor Benches

Program Precedents



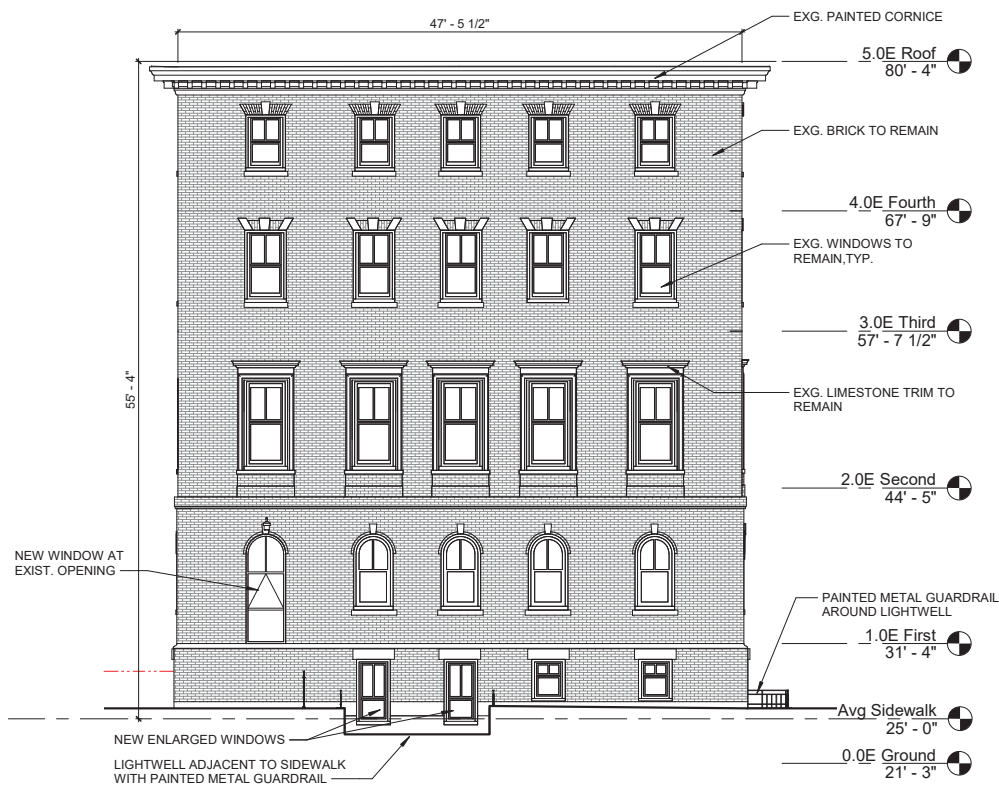
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2.8 Building Elevations and Cross Sections



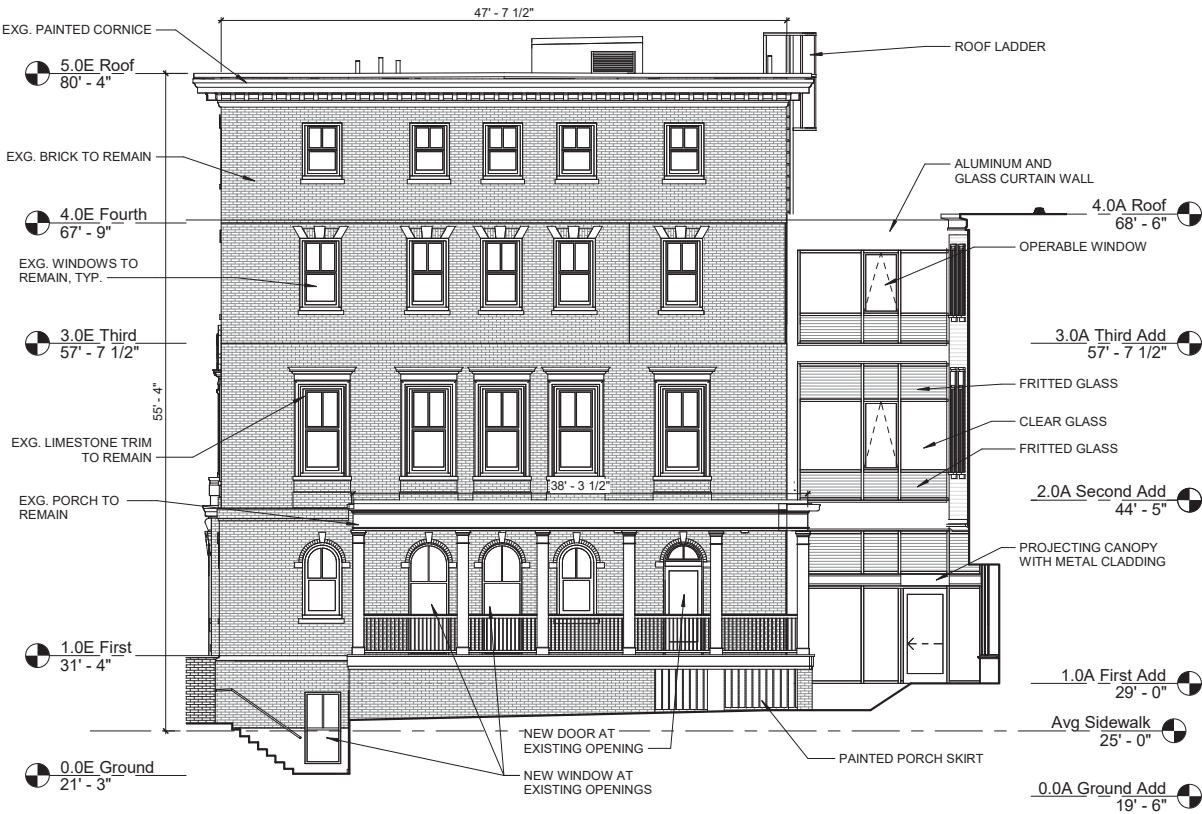




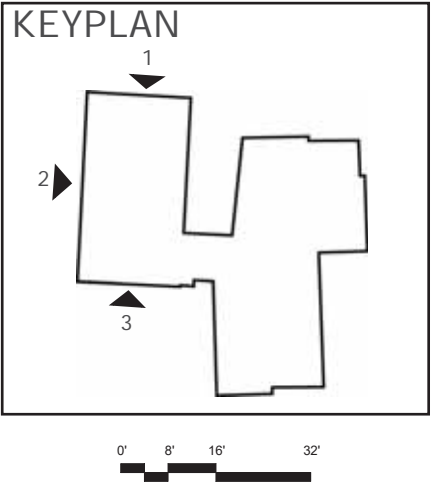
1 - Partial North Elevation

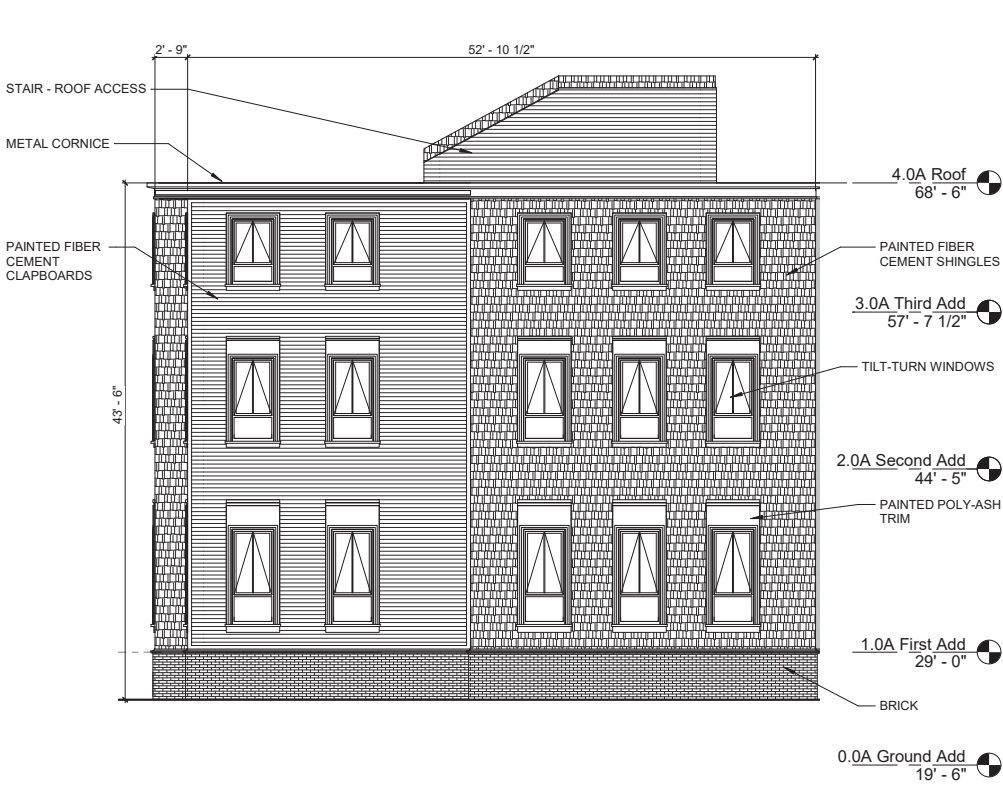


2 - West Elevation

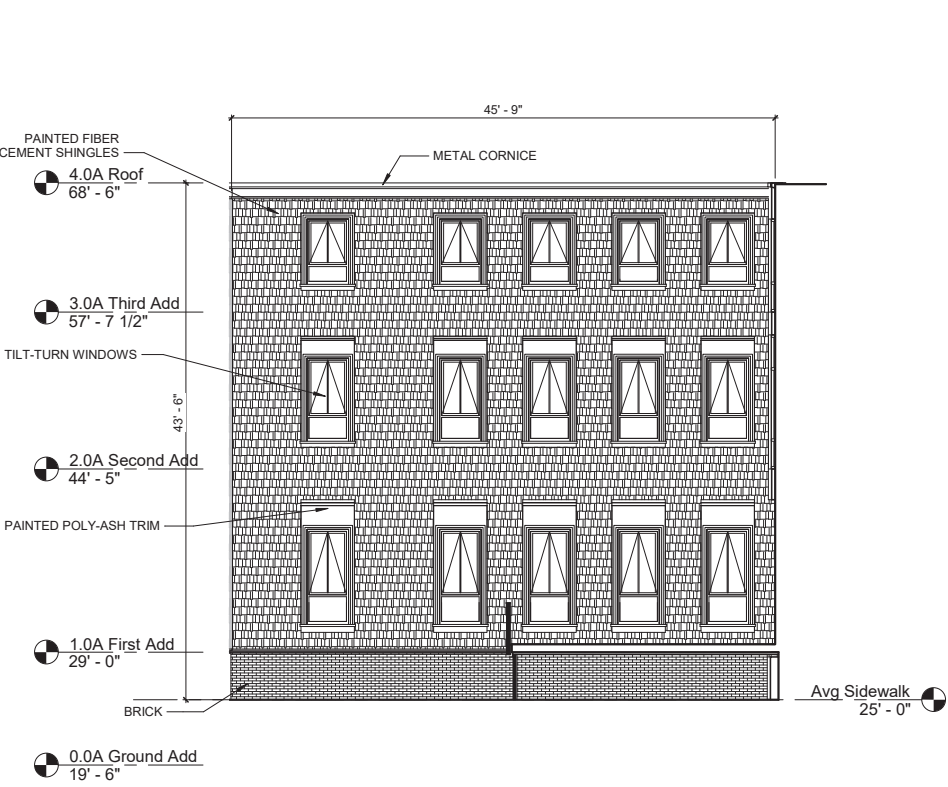


3 - Partial South Elevation

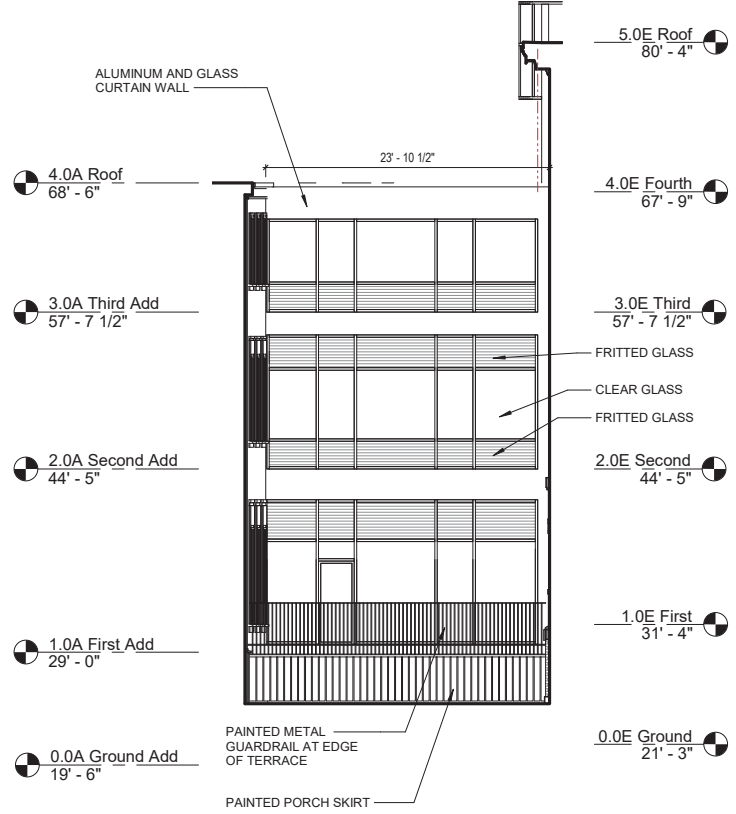




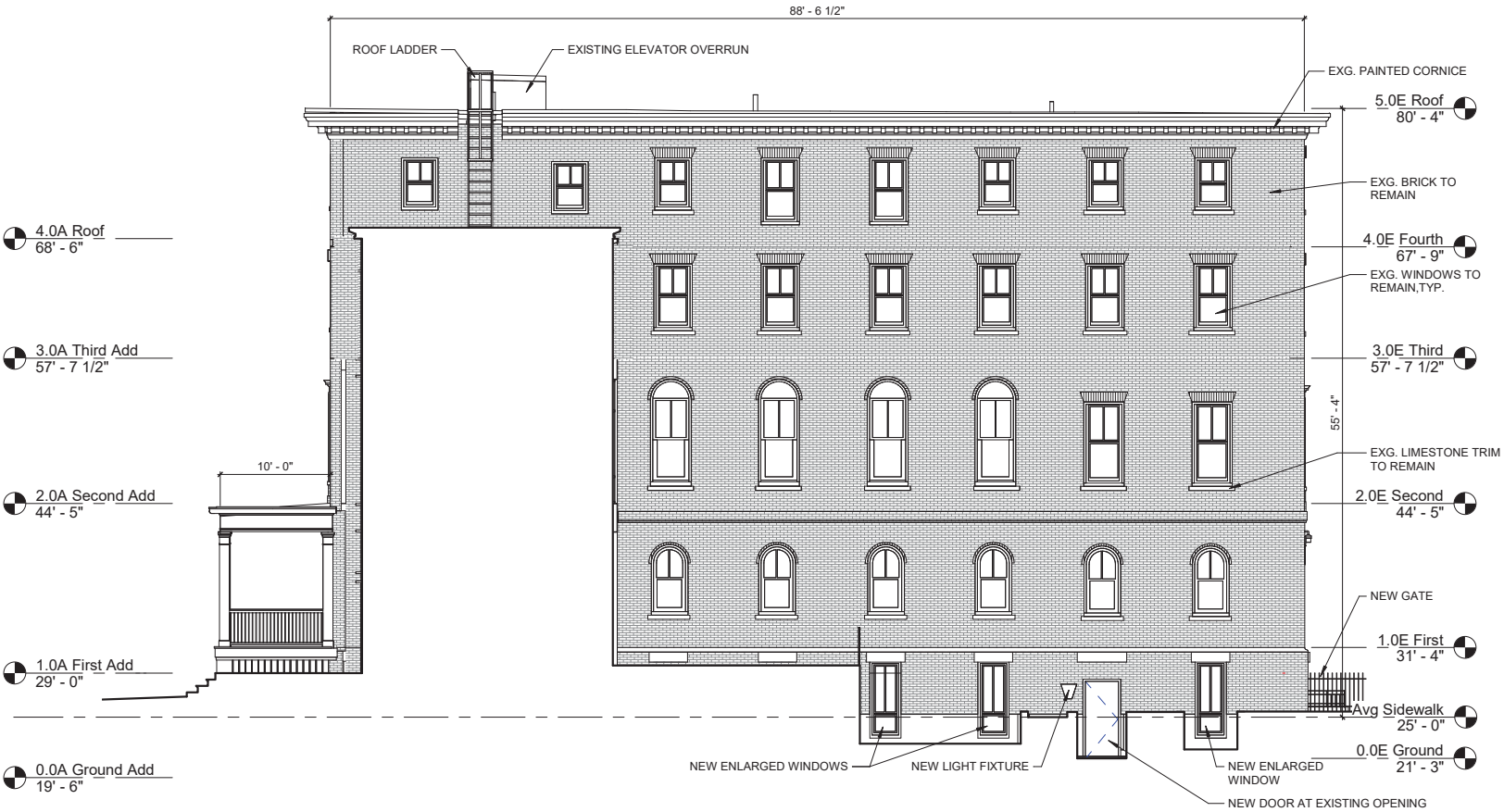
Partial North Elevation



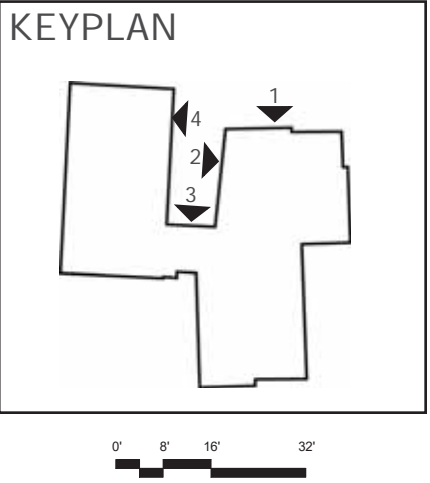
West Elevation at Terrace



North Elevation at Terrace



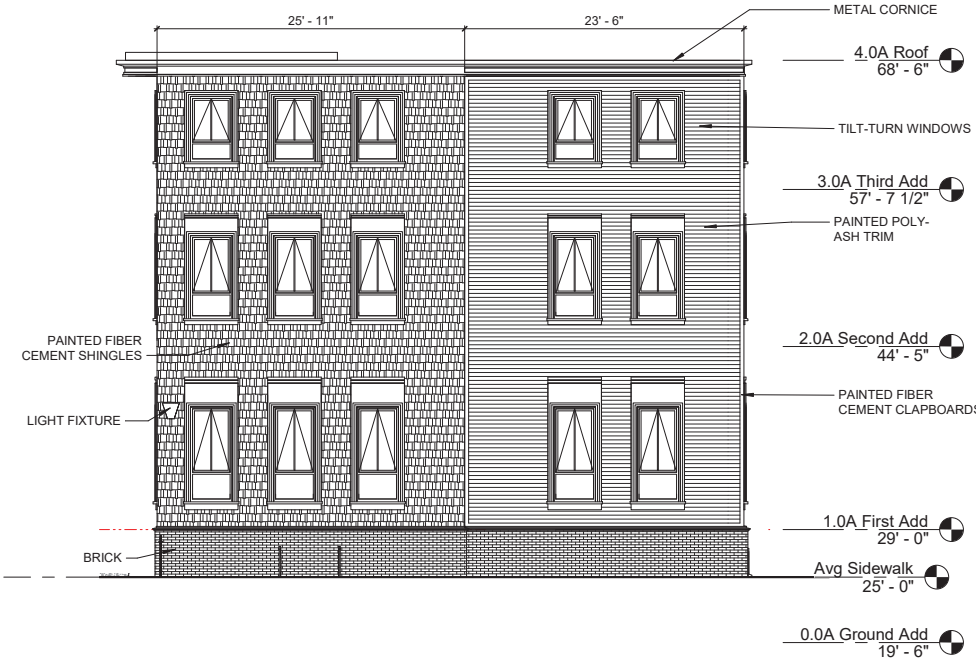
East Elevation at Terrace



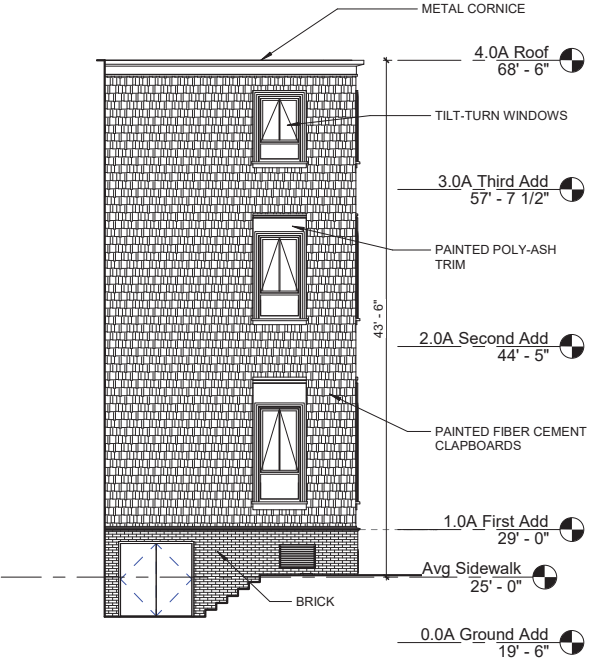




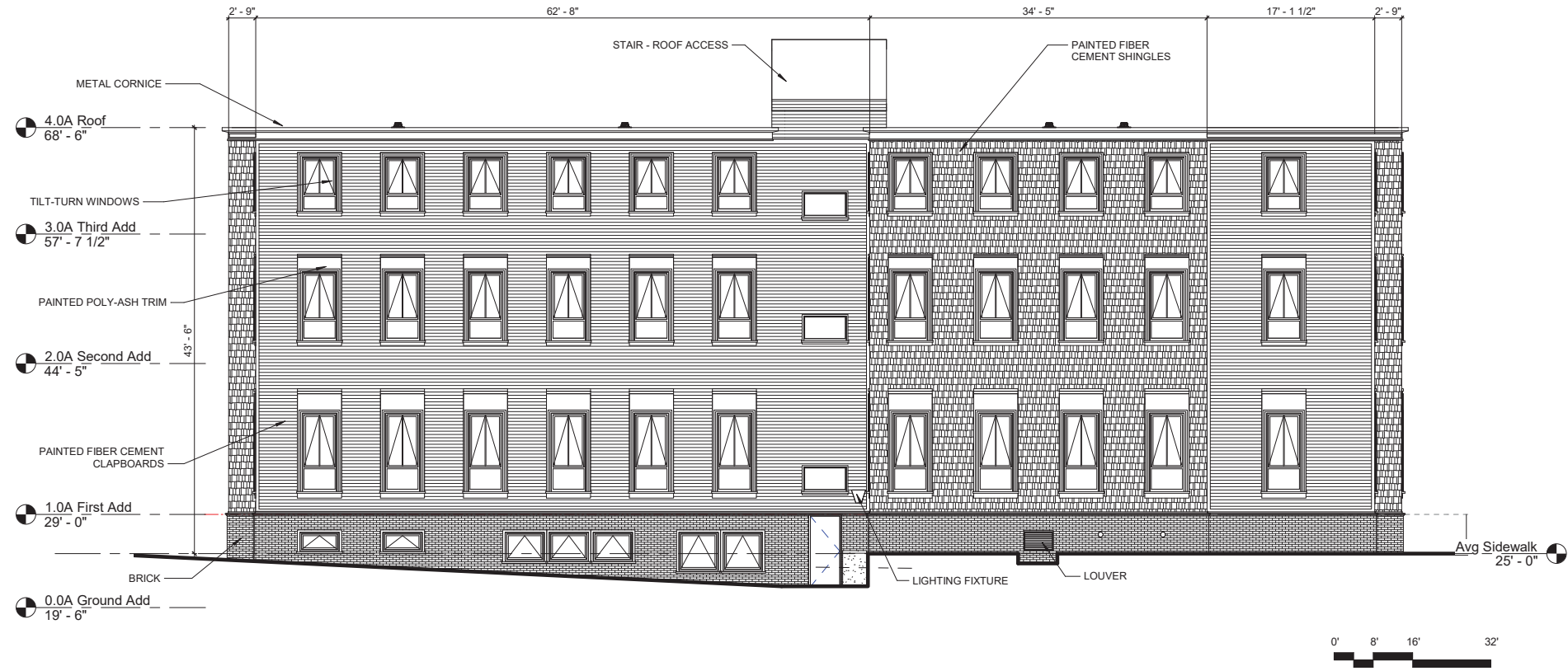
1 - West Elevation at South Yard



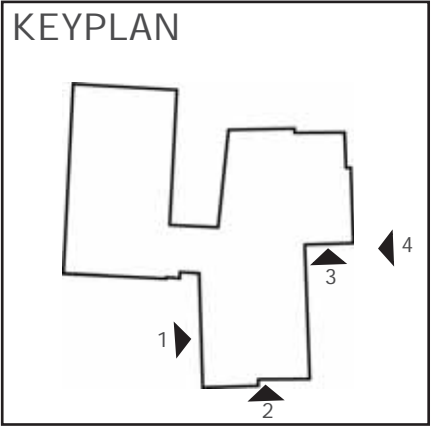
2 - Partial South Elevation at Suffolk Street

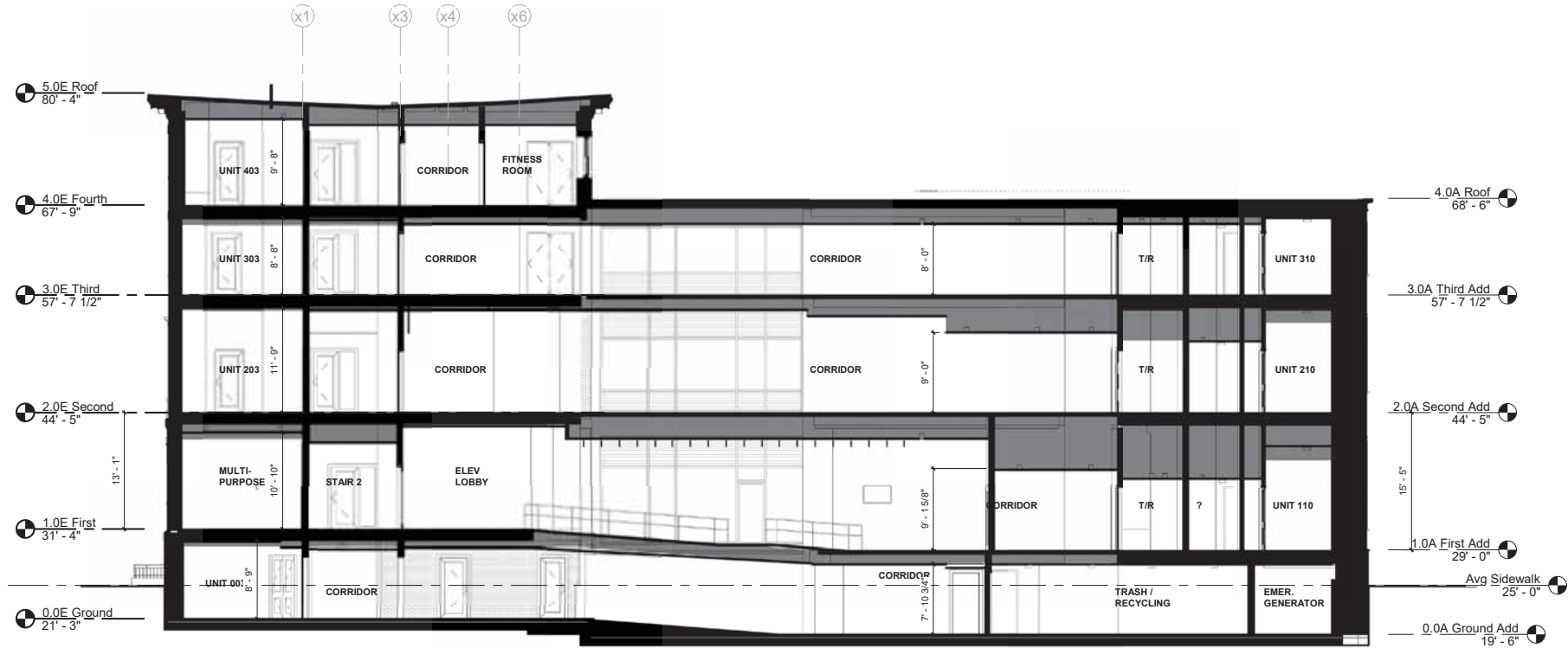


3 - Partial South Elevation



4 - East Elevation





1 - Longitudinal Section





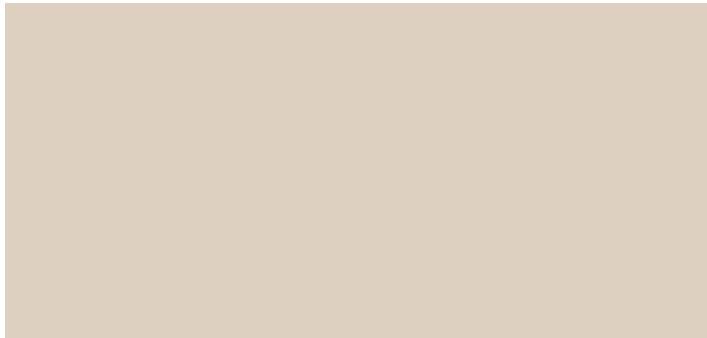
2.9 Materials Palettes



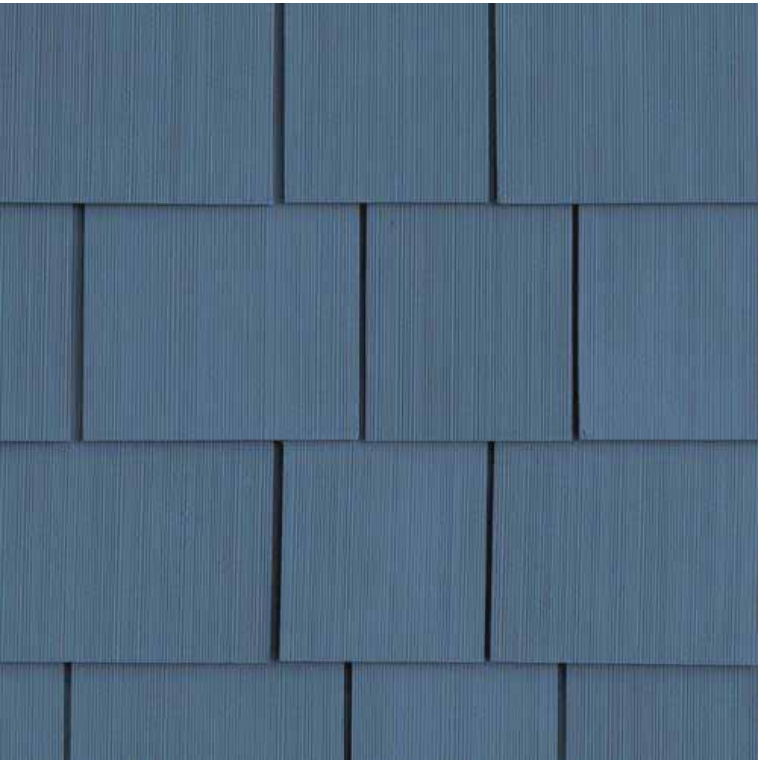




Existing brick and limestone



Color of cornice and window trim



Fiber cement shingles



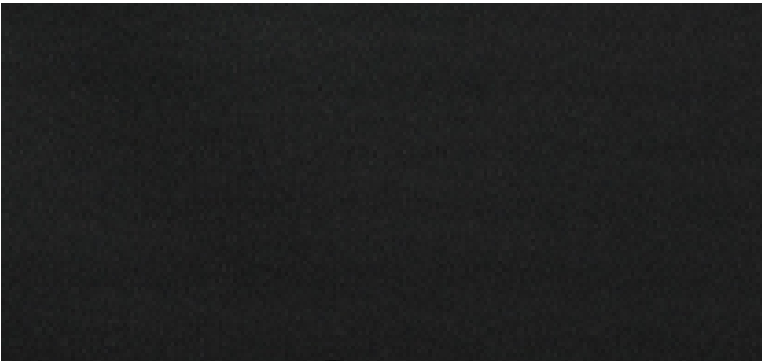
Fiber cement clapboards



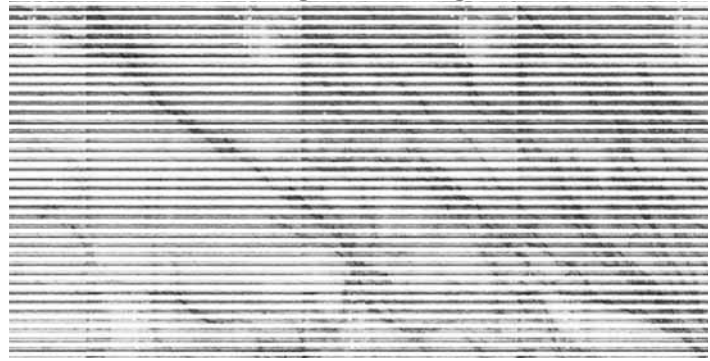
Curtainwall connector between existing building and addition



Cornice Details



Black Window Frames



Horizontal Fritted Glass Pattern



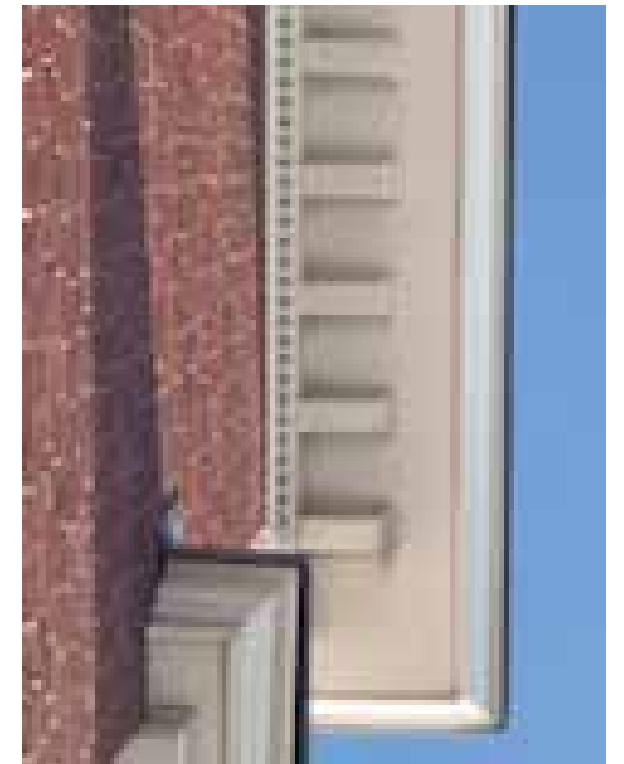
Mural examples at Building Entrance



Brick base

Facade Materials





Existing brick and limestone details

Details at existing cornice



Details of existing Norfolk Street entrance



Detail above existing Norfolk Street entrance

## Details of Existing Building



2.10 Shadow Studies







LEGEND

- EXISTING SOLAR PANELS
- 116 NORFOLK STREET

March 21 - Existing





**LEGEND**

EXISTING SOLAR PANELS

116 NORFOLK STREET

March 21 - Proposed





**LEGEND**

EXISTING SOLAR PANELS

116 NORFOLK STREET

June 21 - Existing





**LEGEND**

EXISTING SOLAR PANELS

116 NORFOLK STREET





**LEGEND**

EXISTING SOLAR PANELS

116 NORFOLK STREET

December 21 - Existing





**LEGEND**

EXISTING SOLAR PANELS

116 NORFOLK STREET

December 21 - Proposed