

WALDEN SQUARE APARTMENTS
CAMBRIDGE, MA



WinnCompanies



NARRATIVE VOLUME



W
C
P

Architecture
Interiors
+ Planning

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AFFORDABLE HOUSING OVERLAY DESIGN REVIEW

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Submission Checklist

Note: Review Section 11.207 of the CZO carefully before submitting a design review package for an AHO project. This checklist and accompanying forms are intended only to assist in assembling and organizing application materials.

Project Address: 21 Walden Square Rd. Cambridge, MA

Applicant: WinnDevelopment Company LP

Contact Name: Matthew Robayna
617-532-2185

Contact Phone: mrobayna@winnco.com

Contact Email:

<p>FOR STAFF USE</p> <p>Complete Submission Received on Date:</p>
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Last Updated: March, 2023

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Project Phase: First AHO Design Review Meeting

Submit these items to CDD for the first AHO Design Review meeting with the Planning Board. Plans and drawings should be presented at a schematic design stage.

Requirements

Narrative Volume (8.5"x11" portrait orientation)

Provided Forms: *Approximate figures may be provided where necessary*

- Design Review Submission Checklist (this form)
- Parcel Dimensional Form [Section 11.207.8(d)(xiii.)]
- Building Dimensional Form for each existing or proposed building on the site [Section 11.207.8(d)(xiii.)]
- Tenure and Affordability Summary [Section 11.207.3]
- Initial Development Budget [Section 11.207.8(d)(v.)]

Written Sections:

- Project Narrative [Section 11.207.8(d)(xiv.)]
- Design Statement [Section 11.207.8(d)(v.)]
- Description of Transportation Demand Management programs offered, if applicable [Section 11.207.6.5]
- Summary of Community Engagement Process [Section 11.207.8]

Graphics Volume (11"x17" landscape orientation)

- Context map [Section 11.207.8(d)(i.)]
- Context analysis [Section 11.207.8(d)(ii.)]
- Existing conditions site plan including tree survey [Section 11.207.8(d)(iii.)]
- Proposed conditions site plan including tree survey [Section 11.207.8(d)(iv.)]
- Schematic first floor plan and typical floor plan of all new buildings and existing buildings to remain [Section 11.207.8(d)(vi.)]
- Schematic elevations and cross-section drawings of all new buildings and existing buildings to remain [Section 11.207.8(d)(vii.)]
- Schematic landscape plan [Section 11.207.8(d)(viii.)]
- Plans of parking and bicycle parking facilities [Section 11.207.8(d)(ix.)]
- List of anticipated materials of proposed façade and landscape materials [Section 11.207.8(d)(x.)]
- Photographs of existing conditions [Section 11.207.8(d)(xi.)]
- Massing plan, schematic views, and sketch renderings of proposed conditions [Section 11.207.8(d)(xii.)]
- Viewshed analysis and shadow studies [Section 11.207.8(d)(xv.)]

Note: Use attached "Graphics Checklist" to ensure that all necessary information is provided.

Other Submissions (as applicable)

- Green Building Requirements – if Section 22.20 of the CZO applies, submit a statement of intent that says what Green Building Rating System will be used and other sustainable design objectives for the project
- *Flood Resilience and Green Factor Standards – note if Sections 22.80 and/or 22.90 of the CZO apply and provide preliminary materials indicating how the standards will be met
- Flood Plain Requirements – note if Section 20.70 of the CZO applies based on the project being within the Flood Plain Overlay District

*See Civil Infrastructure Memo in narrative volume for flood resiliency.
Last Updated: March, 2023

AFFORDABLE HOUSING OVERLAY DESIGN REVIEW SUBMISSION CHECKLIST

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Project Phase: Second AHO Design Review Meeting

Submit these items to CDD for the second AHO Design Review meeting with the Planning Board. Plans and drawings should be at an advanced design development stage.

Requirements

Narrative Volume (8.5"x11" portrait orientation)

Provided Forms: *Updated and detailed from prior submission*

- Design Review Submission Checklist (this form)
- Parcel Dimensional Form [Section 11.207.8(d)(xiii.)]
- Building Dimensional Form for each existing or proposed building on the site [Section 11.207.8(d)(xiii.)]
- Tenure and Affordability Summary [Section 11.207.3]
- Initial Development Budget [Section 11.207.8(d)(v.)]

Written Sections: *Updated and detailed from prior submission*

- Project Narrative [Section 11.207.8(d)(xiv.)]
- Design Statement [Section 11.207.8(d)(v.)]
- Description of Transportation Demand Management programs offered, if applicable [Section 11.207.6.5]
- Summary of Community Engagement Process [Section 11.207.8]

Graphics Volume (11"x17" landscape orientation)

- Context map [Section 11.207.8(d)(i.)]
- Context analysis [Section 11.207.8(d)(ii.)]
- Existing conditions site plan including tree survey [Section 11.207.8(d)(iii.)]
- Proposed conditions site plan including tree survey [Section 11.207.8(d)(iv.)]
- Floor plans of all new buildings and existing buildings to remain [Section 11.207.8(d)(vi.)]
- Elevations and cross-section drawings of all new buildings and existing buildings to remain [Section 11.207.8(d)(vii.)]
- Landscape plan [Section 11.207.8(d)(viii.)]
- Plans of parking and bicycle parking facilities [Section 11.207.8(d)(ix.)]
- Materials palette of proposed façade and landscape materials [Section 11.207.8(d)(x.)]
- Photographs of existing conditions [Section 11.207.8(d)(xi.)]
- Perspective views and renderings of proposed conditions [Section 11.207.8(d)(xii.)]
- Viewshed analysis and shadow studies [Section 11.207.8(d)(xv.)]

Note: Use attached "Graphics Checklist" to ensure that all necessary information is provided.

Other Submissions (as applicable)

- Green Building Requirements provide all materials required in Section 22.20 of the CZO (if applicable). CDD will review and certify materials before the second meeting is scheduled.
- Flood Resilience and Green Factor Standards – provide all materials required in Sections 22.80 and/or 22.90 of the CZO (if applicable) for the initial stage of review. DPW and/or CDD will review and certify materials before the second meeting is scheduled.
- Flood Plain Requirements – provide all materials required in Section 20.70 of the CZO (if applicable). The City Engineer will review and certify materials before the second meeting is scheduled.

Last Updated: March, 2023

AFFORDABLE HOUSING OVERLAY DESIGN REVIEW SUBMISSION CHECKLIST

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Project Address:

Applicant:

Parcel Information – Provide one form for the entire parcel

	Existing	District Zoning Standards	AHO Zoning Standards	Proposed
Base Zoning District(s)	Residence C-2			
Overlay Zoning District(s)	Affordable housing overlay			
Uses on Adjacent Lots	Residential, industrial, open space, commercial, educational			
Lot Area, in sq. ft.	319,049 SF	205,800 SF	--	319,049 SF
Lot Width, in feet	275.8'	50' min.	N/A	275.8'
Number of Buildings	6	--	--	8
Existing to be demolished	0	--	--	0
Existing retained/moved/enlarged	0	--	--	0
New construction	--	--	--	2
Gross Floor Area (GFA), in sq. ft.	183,161	--	--	315,387 Total (132,226 New)
Floor Area Ratio (FAR)	0.57	1.75	N/A	0.99
Dwelling Units	240	--	--	335 (95 new)
Affordable Dwelling Units	240	--	--	335 (95 new)
Total Open Space, in sq. ft.¹	113,485 SF (36%)	47,857 SF (15%)	47,857 SF (15%)	99,627 SF (31%)
Private Open Space	78,264 SF (25%)	47,857 SF (15%)	47,857 SF (15%)	64,180 SF (20%)
Permeable Open Space	113,485 SF (36%)	47,857 SF (15%)	47,857 SF (15%)	99,627 SF (31%)
Open Space above Ground Story	0	--	--	0
Total Off-Street Parking Spaces	190	0 REQ'D	0 REQ'D	198
Provided on-site	190	0 REQ'D	0 REQ'D	198
Provided off-site ²	0	0	0	0
Long-Term Bicycle Parking Spaces⁶	0	98	70 ⁸	74
Short-Term Bicycle Parking Spaces⁶	42	10	10	10 ⁵
Provided on-site	42	10	10	10 ⁵
Fund contribution ³	--	--	--	--
Public Bicycle Sharing Stations⁴	0	0	0	1 ⁷
Provided on-site	0	0	0	1 ⁷
Provided off-site	0	0	0	0
Loading Bays	0	0	0	0

¹ Refer to Open Space provisions in Section 11.207.5.2.4 of the CZO.

² Refer to off-site parking provisions in 11.207.6.2 of the CZO.

³ Refer to Public Bicycle Parking Fund provisions in Section 6.104.2(b.) of the CZO.

⁴ Refer to Public Bicycle Sharing Station provisions in Section 11.207.6.4(d) of the CZO.

⁵ Additional 32 short term bicycle parking spaces are provided in existing courtyards for existing residents.

⁶ Long-Term and Short-Term Bicycle Parking requirements calculated based on new buildings only.

⁷ One station provides 19 docks.

⁸ Includes 28-space reduction per 11.207.6.4 of the AHO zoning bylaws

Attach additional calculations as necessary to explain any figures above.

Last Updated: March, 2023

AFFORDABLE HOUSING OVERLAY DESIGN REVIEW SUBMISSION CHECKLIST

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Project Address: 21 Walden Square Rd. Cambridge, MA

Applicant: WinnDevelopment Company LP

Building Information – Provide one form for each existing or proposed building

BUILDING A	Existing	District Zoning Standards	AHO Zoning Standards	Proposed
Building Designation (per plans)	Describe how this building is labeled on plans			
Type of Alteration Proposed	No change/Use change/Demolition/Enlargement/Relocation/Other			
Building Use(s)	Residential	Residential	Residential	Residential
Ground Story Use(s)	Residential, Parking	Residential, Parking	Residential, Parking	Residential, Parking
Gross Floor Area (GFA), in sq. ft.	183,161	(calculated for lot)	(calculated for lot)	91,149 SF (including garage)
Dwelling Units	240	(calculated for lot)	(calculated for lot)	60
Affordable Dwelling Units	240	(calculated for lot)	(calculated for lot)	60
Stories Above Grade¹	3,9	--	--	7
Building Height, in ft.	80', 30'	85'	150'	85'
Ground Story – floor-to-floor, in ft.	varies	--	--	19'-10"
Building Setbacks, in ft.²	--	--	--	
Front: Raymond Street	--	33.5'	0'	196.1'
Front: Sherman Street	--	33.5'	0'	606.3'
Side: Bolton Street Partners	--	59.2'	0'	9.0'
Side: Friends School	--	56.4'	0'	189.4'
Distance to nearest building, in ft.	--	--	--	14'-10"
Building length along street, in ft.	--	--	--	54'-0"
Fenestration, as % of façade area facing public street or open space	--	--	20% Min.	21% (Raymond St facade)
Ground Story only	--	--	20% Min. 25' Max between windows	32%
Where Ground-Story non-residential uses are proposed in a Business district:³				
Frontage, as % of total façade length	--	--	--	--
Depth from facade, in feet	--	--	--	--

¹ Refer to Definitions in Article 2.000 of the CZO.

² Where the proposal is applying front yard setback standards per Section 11.207.5.2.3(b) of the CZO, attach an area plan identifying the four nearest pre-existing principal buildings that contain at least two Stories Above Grade and directly front the same side of the street as the AHO Project, and a table providing the front yard setbacks for each building and calculating the average of the four.

³ See Section 11.207.7.4(e) of the CZO.

*(Raymond St facade, not incl. vehicular opening)

Attach additional calculations as necessary to explain any figures above.

Facade Calculations:

Total area of Raymond street facade not including the vehicular opening 4092 SF

Total area of windows on Raymond Street facade 1276 SF

Percentage 1276 SF/4092 SF= 0.31=31%

Ground Story area of Raymond Street facade not including vehicular opening 540 SF

Ground Story area of windows on Raymond Street facade 240 SF

Percentage 240 SF/540 SF= 0.44=44%

Last Updated: March, 2023

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Project Address: 21 Walden Square Rd. Cambridge, MA

Applicant: WinnDevelopment Company LP

Building Information – Provide one form for each existing or proposed building

BUILDING B	Existing	District Zoning Standards	AHO Zoning Standards	Proposed
Building Designation (per plans)	Describe how this building is labeled on plans			
Type of Alteration Proposed	No change/Use change/Demolition/Enlargement/Relocation/Other			
Building Use(s)	Residential	Residential	Residential	Residential
Ground Story Use(s)	Residential, Parking	Residential, Parking	Residential, Parking	Residential, Parking
Gross Floor Area (GFA), in sq. ft.	183,161	(calculated for lot)	(calculated for lot)	41,077 SF
Dwelling Units	240	(calculated for lot)	(calculated for lot)	35
Affordable Dwelling Units	240	(calculated for lot)	(calculated for lot)	35
Stories Above Grade¹	3,9	--	--	5
Building Height, in ft.	80', 30'	85'	150'	70'
Ground Story – floor-to-floor, in ft.	varies	--	--	14'-4"
Building Setbacks, in ft.²	--	--	--	--
Front: Raymond Street	--	39'	0'	292.6'
Front: Sherman Street	--	39'	0'	721.3'
Side: Lincoln Way Property	--	27.6'	0'	9.7'
Side: Friends School	--	27.2'	0'	9.2'
Distance to nearest building, in ft.	--	--	--	26'-3"
Building length along street, in ft.	--	--	--	123'-8"
Fenestration, as % of façade area facing public street or open space	--	--	20% Min.	--
Ground Story only	--	--	20% Min. 25' Max between windows	--
Where Ground-Story non-residential uses are proposed in a Business district:³				
Frontage, as % of total façade length	--	--	--	--
Depth from facade, in feet	--	--	--	--

¹ Refer to Definitions in Article 2.000 of the CZO.

² Where the proposal is applying front yard setback standards per Section 11.207.5.2.3(b) of the CZO, attach an area plan identifying the four nearest pre-existing principal buildings that contain at least two Stories Above Grade and directly front the same side of the street as the AHO Project, and a table providing the front yard setbacks for each building and calculating the average of the four.

³ See Section 11.207.7.4(e) of the CZO.

Attach additional calculations as necessary to explain any figures above.

AFFORDABLE HOUSING OVERLAY DESIGN REVIEW SUBMISSION CHECKLIST

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Project Address: 21 Walden Square Rd. Cambridge, MA

Applicant: WinnDevelopment Company LP

Tenure:

- Rental housing
- Homeownership housing

Unit Affordability Summary ¹

	Units at or Below 80% AMI	Units 80% to 100 %AMI	Total
# of Units:	95		95
% of Units:	100%		100%

¹ Refer to Section 11.207.3 in Article 2.000 of the CZO

Unit Size Summary:

	0-bedrooms	1-bedrooms	2-bedrooms	3-bedrooms	4+bedrooms	Total
# of Units:	0	33	33	23	6	95
Average size range (sf):	--	636	960	1168	1380	1036
Smallest unit size (sf):	--	550	912	1134	1374	--
Largest unit size (sf):	--	680	1016	1223	1381	--

Please describe other anticipated affordability limitations, if applicable (voluntary):

The proposed affordability mix is 27 units at or below 80% AMI, 44 units at or below 60% AMI, and 24 units at or below 30% AMI.

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Project Address:

Applicant:

Initial Development Budget (see Section 11.207.8 of CZO):

Anticipated Uses/Costs:	
Acquisition:	\$ 1
Construction/Hard Costs:	\$ 59,908,830
Other Costs/Soft Costs:	\$ 13,500,505
Developer Overhead:	\$2,342,823
Developer Fee:	\$ 2,342,823
Total Uses/Costs:	\$ 78,094,982

Anticipated Sources:	
Federal 4% LIHTC Proceeds	\$ 35,664,000
Permanent Loan	\$ 3,780,000
Cambridge AHT	\$ 33,250,000
MassHousing/EOHLC	\$ 5,000,000
Energy Grants	\$ 285,000
Deferred Developer Fee	\$ 115,982
	\$
	\$
	\$
Total Sources:	\$ 78,094,982

Last Updated: March, 2023

AFFORDABLE HOUSING OVERLAY DESIGN REVIEW SUBMISSION CHECKLIST

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Project Address:

Applicant:

Graphics Checklist

Review Section 11.207 of the CZO for all submission requirements.

Make sure that submitted graphic materials include the following information, at a minimum, to verify compliance with applicable sections of the AHO:

All maps, plans and elevation drawings should include:

- Graphic scale
- North arrow / orientation

Context maps should include:

- Streets and pedestrian/bicycle routes leading to and from the site
- Distance to public facilities in vicinity, including transit
- Buildings and uses on adjacent sites
- Distance to off-site parking, where proposed

Site plans or landscape plans should include:

- Lot boundaries
- Adjacent streets (labeled) and dimensions of adjacent public sidewalks
- Building footprints with locations of entrances/exits, labeled areas of ground story uses, dimensioned façade lengths, setbacks, and distances to nearest buildings
- Natural and other landscape features including trees and plantings
- Open space, dimensioned and labeled by type (private, green area, permeable, publicly beneficial)
- Proposed locations of light fixtures, specifying type
- Locations, dimensions, and screening of all mechanical equipment located on-site, including all screening (*Section 11.207.7.5 of the CZO*)
- Pedestrian and bicycle travel routes, dimensioned
- Curb cuts, vehicular drives, off-street parking, loading and service facilities, dimensioned (*Section 6.50 of the CZO*)
- Pick-up/drop-off area(s), if project contains 20 units or more and no off-street parking spaces (*Section 11.207.6.1(b) of the CZO*)
- Features of adjacent lots and buildings that abut the project site

Building floor plans, elevations, and cross-sections should include:

- Dimensioned floor plans labeling the uses in each portion of the building
- Dimensions (length and depth) of articulation and breaks in the façade plane (*Sections 11.207.7.2(c) and 11.207.7.3(b) of the CZO*)
- Dimensions of fenestration on façades facing public streets and open spaces (*Section 11.207.7.3(a) of the CZO*)
- Length of separation between windows and entrances on the ground story (*Section 11.207.7.4(c) of the CZO*)
- Dimensions (length, height, and depth from façade) of non-residential uses and parking proposed on the ground story (*Section 11.207.7.4 of the CZO*)
- Rooftop plans, elevations, and perspective views showing the locations, dimensions, and screening of all mechanical equipment (*Section 11.207.7.5 of the CZO*)

Last Updated: March, 2023

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Project Address: 21 Walden Square Rd., Cambridge, MA

Applicant: Winn Development Company LP

Project Narrative:

The proposed buildings are designed to add 95 affordable units and maintain the existing building structures and improve the open space on the existing Walden Square site. Both buildings minimize shadow impact on the surrounding residential neighborhoods as well as “on campus” buildings and spaces and improve the pedestrian access through the site from the surrounding neighborhoods. The ground floor of the buildings are treated with architectural elements and detailing to create a human scale and enhance the existing pedestrian access to the site, specifically from the Yerxa underpass and from the residential neighborhoods to the east on Raymond St and Richdale Ave. The massing of the buildings height are mitigated through the use of projections, recesses, façade setbacks on the upper levels and change of plane along the longer facades.

Design Statement:

The proposed buildings are designed to maintain the existing Walden Square structures, improve the open space on the existing site and minimize shadow impact on the surrounding neighborhoods and buildings. The massing integrates well with the surrounding buildings. The building heights are respectful of those that area adjacent.

The building heights and densities are mitigated by using projections, recesses, and façade setbacks on the upper levels and change of plane along the longer facades. The ground floor and the top floor have varied treatments from the middle portion that provide the sense of base, middle and top, reducing the visual bulk of the buildings.

An important goal for the project is to separate pedestrian and bicycle traffic from vehicular traffic. This is accomplished by establishing clearly separated routes for each modality.

At the northeast corner of building A at Raymond Street side, a pedestrian scale canopy denotes pedestrian routes by wrapping the corner and leading pedestrians to an important path along the north façade. An important pedestrian crossing is also in line with and visible from the Yerxa underpass clearly marking an important entry way to the overall project.

The ground floor of each building throughout is treated with architectural elements and detailing to create a human scale and enhance the existing pedestrian access to the site, specifically from the Yerxa underpass and from the residential neighborhoods surrounding the project.

Parking is at grade below the buildings and is screened with solid walls as well as screen walls. The buildings utilize warm, inviting materials such as masonry and clapboard that relate to the neighborhood buildings. Only high quality, durable materials will be utilized. The color palette is calm and neutral relating to the surrounding context.

The trash facilities have been carefully planned with the trash hauler to meet the needs of the project.

The project provides a mix of unit sizes and types that support the diversity of neighborhood housing, including a significant amount of large family-sized units. The interior layouts of the units have been thoughtfully considered in order to provide a comfortable living experience for the residents.

These forms are intended to demonstrate compliance with the provisions of the Affordable Housing Overlay (AHO), Section 11.207 of the Cambridge Zoning Ordinance (CZO). Refer to the CZO for detailed provisions.

Existing on-site shared amenities include several playgrounds, a basketball court, common laundry, a community room for gathering, as well numerous shady landscaped parklets. The new project will bring to the site additional laundry facilities and additional community gathering spaces for all Walden Square residents to commune with their neighbors.

Community Engagement Process:

The Walden Square II project has fully complied with the community engagement process outlined by Sec. 11.207.8 of the Cambridge Zoning Ordinance. This project, through multiple design iterations, has engaged with the community since March 2021, with numerous community meetings. During 2021 and 2022, the developer hosted virtual and in person meetings for the Walden Square Community Association, for the Walden Square resident base, and for the community at large. From public input through 2021 and 2022, the design was modified from a prior single-building proposal to the current two-building proposal. The change to the project design had several benefits, including increasing the number of parking spaces proposed at the site, reducing the length of the primary building by almost half, removing a perceived “wall” along the northern property edge leading from the Yerxa underpass, and preserving more mature trees along Walden Square Road.

During 2022, numerous resident meetings were held with Walden Square residents to address ongoing concerns. These meetings included representatives from the Mayor’s office. The resident meetings resulted in several ongoing improvements to Walden Square, which include ongoing renovations in existing apartments, including 50 units undergoing renovation work in 2023; ongoing conversions of 8 fully accessible units in 2022 and 2023; new security cameras throughout the site; added lighting along Walden Square Road; new flooring and painting of all common areas in the existing low-rise buildings; enhanced extermination, including full building clean outs and installation of SMART exterior bait stations; the creation of a new Resident Advisory Committee; and the hiring of a new resident service coordinator and new property manager.

In the Summer of 2023, engagement around Walden 2 was restarted. Meetings were held with the Walden Square Resident Advisory Committee and the Porter Square Neighborhood Association. Four in-person lunch time and evening meetings were held with Walden Residents at Walden Square to discuss the proposal prior to scheduling broader community meetings. The two required AHO community meetings were held on August 1, 2023, and September 14, 2023. The first meeting was virtual only on Zoom. The second meeting was a hybrid meeting with both virtual and in person participation. The City Community Development Department (CDD) was notified of both of the two required community meetings three weeks prior, and was provided with a flyer advertising the community meetings. CDD distributed the flyers according to the requirements of Sec. 11.207.8. Additional outreach was conducted with flyers distributed by WinnResidential to Walden Square residents and e-blasts sent out to the project’s mailing list.

Furthermore, the project proponent has set up a project website, www.waldensquare2.com to provide project updates to the community and to allow them to ask questions of the development team. The development team responds to questions received through the website on a periodic basis. Furthermore, several one-on-one meetings have been held with interested parties and abutters, as requested of the development team.



To: City of Cambridge
Department of Public Works
147 Hampshire Street
Cambridge, MA 02139

Date: June 24, 2022
REV August 25, 2023

Project #: 15190.00

From: Sarah Ebaugh, P.E. - VHB

Re: Walden Square Apartments – Planning Board Filing
21 Walden Square Road

In support of the City of Cambridge Planning Board's review required under the Affordable Housing Overlay (AHO) requirements, this memorandum has been prepared to present the planned infrastructure improvements associated with the proposed residential building located at 21 Walden Square Road, in Cambridge, Massachusetts. The applicant, Winn Development, is seeking confirmation from the City of Cambridge Department of Public Works (DPW) that the proposed infrastructure improvements are in general alignment with the City's stormwater management, resiliency and other city-wide initiatives. The Applicant is aware that the Project will require further review with DPW and is subject to the City's Land Disturbance Regulations and Stormwater Control Requirements.

Site & Project Description

The Applicant, Winn Development, is proposing to construct approximately 95 affordable housing units (the Project) at their existing Walden Square Apartment complex. As proposed, the Project consists of two buildings, Building A, with seven stories and 60 units located at the north side of the Site, and Building B, with six stories and 35 units at the southwest of the Site. Both buildings total 127,165± gsf residential building with approximately 25 parking spaces located at ground level, ancillary landscape improvements and utility improvements to support this use. The residential floors will be located above the ground level parking area.

The Project site occupies approximately 1.9-acres (the Site) of the northeast and southern corner of 7.3-acre Walden Square Apartment complex, adjacent to Raymond Street. The Site lies within the surface watershed of the Alewife Brook and is bounded by an industrial development and City land to the north, residences to the east and south and commercial/ residential uses to the west. See Figure 1, Site Locus Map.

Stormwater Management

The Project is currently designed to comply with DPW's Wastewater and Stormwater Management Guidance, including retention of the difference between the 2-year 24-hour pre-construction runoff hydrograph and the post-construction 25-year 24-hour runoff hydrograph. The Project proposes to achieve this goal with the use of subsurface infiltration chambers located at both Building A and Building B. Both of these systems connect back to the drainage trunk line on site which discharges to Sherman Street. Please refer to the attached Permit Plans for additional detail.

Rainfall volumes used for this analysis were based on the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Type III, 24-hour storm event for Cambridge. Runoff coefficients for the existing and proposed conditions were determined using NRCS Technical Release 55 (TR-55) methodology as provided in HydroCAD. The HydroCAD model is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology. Results are summarized below in Tables 1 & 2.



Table 1
Peak Discharge Rates (cfs*)

<i>Design Point</i>	<i>2-year</i>	<i>10-year</i>	<i>25-year</i>	<i>100-year</i>
Design Point: Sherman Street Drainage				
Existing	5.0	8.7	11.1	14.7
Proposed	1.3	4.6	3.8	6.4

Table 2
Stormwater Volume Analysis (af)

<i>Design Point</i>	<i>2-year</i>	<i>10-year</i>	<i>25-year</i>	<i>100-year</i>
Design Point: Sherman Street Drainage				
Existing	0.3	0.6	0.8	1.1
Proposed	0.1	0.2	0.3	0.5

The results of the analysis indicate that there is no increase in peak discharge rates between the pre- and post-development conditions for the 2-, 10-, 25-, and 100-year storm events and provides a reduction in overall runoff volume for all storm events analyzed. Project increases pervious area over the existing condition, resulting in a reduced overall runoff volume. The on-site drainage infrastructure will be designed to convey the 10-year storm event, taking into account that the City’s system is only able to convey the 2-year storm event.

The Project will achieve recommended removal rates of Phosphorous, Total Suspended Solids (TSS) and other pollutants. A minimum of 80% TSS removal will be achieved through the use subsurface infiltration chambers and 44% pre-treatment will be provided by deep sump hooded catchbasins and structural water quality units. It is anticipated that the Project will provide phosphorous removal, primarily through infiltration.

Flood Resiliency

In accordance with the Flood Resiliency Standards, the Project proposes that all occupiable spaces are protected from the 10% LTFE and habitable spaces and critical building equipment protected from the 1% LTFE. According to the City of Cambridge’s Flood Viewer, the 10% LTFE (2070 10-year storm event) is 26.6 Cambridge City Base (CCB), and the 1% LTFE (2070 100-year storm event) is 26.7 CCB.

Within the Project limits of Building A, the Site topography varies between elevation 30 CCB at Raymond Street and slopes down in a westerly direction to elevation 23 CCB. Grades within the proposed parking areas of Building A will generally match the existing surface. All entrances to occupiable spaces (lobby entrance, management office entrance, bike room) are proposed at a finished floor elevation of 26.7 (1% LTFE). All residential units will be located above ground level, on floors 2-7 For the electrical room, sub-station and transformer locations, the site topography is lower at approximately elevation 24 CCB, however all equipment will be raised to be at a minimum elevation of 26.7. Within the Project limits of Building B, the topography varies between elevation 24 CCB and 27.5 CCB. All entrances are proposed above elevation 26.7, with residential units located above ground level on floors 2-6. The transformer located at the northwest corner of Building B will also be elevated such that it is at a minimum elevation of 26.7.

According to the effective FEMA flood map panel 25017C0419E, dated June 4, 2010, the Site is located in Zone X, “areas determined to be outside of the 0.2% annual chance floodplain”. Please see Figure 4.



Sanitary Sewer Generation and Water Demand

The Walden Square Apartment complex is currently comprised of six residential buildings, containing a total of 240 units. The proposed building program is anticipated to include 95 residential units, containing a total of 192 bedrooms and 25 covered parking spaces within the ground level garage across the two buildings. The estimated wastewater generation of the proposed project is 21,145 gallons per day (GPD). The existing generation rate for the Project area is 0 GPD, because the Project is located over an existing parking lot. Sewer generation rates are calculated in accordance with consistent with Massachusetts Department of Environmental Protection 310 CMR 15.000 – Septic Systems (“Title V).

Table 3
Existing and Proposed Sewer Generation

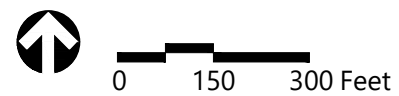
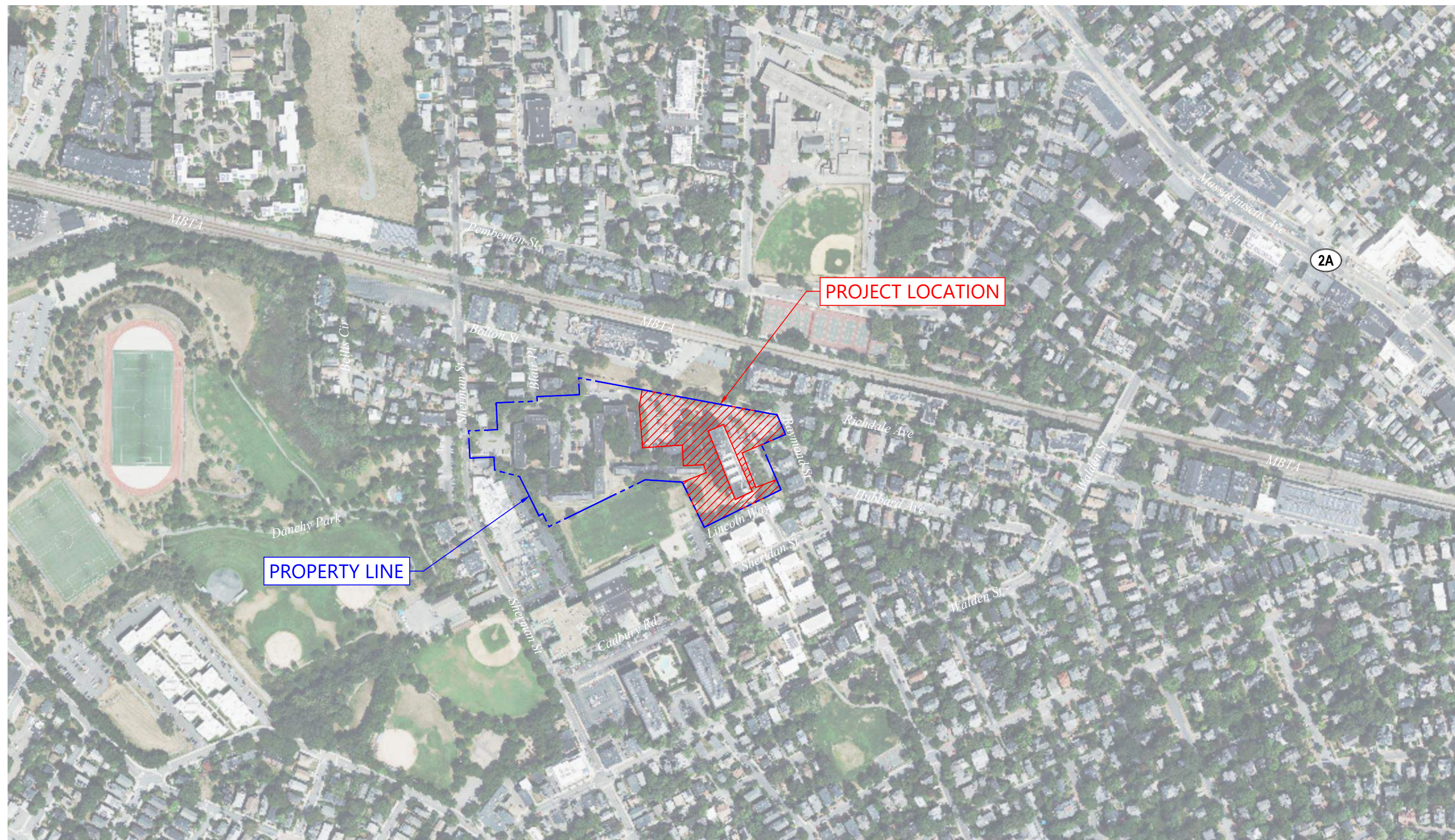
<i>Existing Generation</i>	<i>Units</i>	<i>Generation Rate</i>	<i>Sewer Generation (GPD)</i>
Parking Lot	N/A	N/A	0
EXISTING TOTAL			0
<i>Proposed Generation</i>	<i>Units</i>	<i>Generation Rate</i>	<i>Sewer Generation (GPD)</i>
Residential	192 Bedrooms	110 gal/ bedroom	21,120
Covered Parking (Garage)	25 spaces	1 gal/space	25
PROPOSED TOTAL			21,145
NET NEW SEWER=			21,145

In accordance with the DPW’s Inflow and Infiltration (I&I) Policy, the Project will require I&I mitigation at a rate of 4:1. Based on the increase in sewer generation, the Applicant anticipates that the Project will be required to mitigate a volume of 84,580 gallons. During the 1-year, 6-hour storm event with a depth of 1.72” and peak intensity of 0.87 inch/ hour, the proposed subsurface infiltration system is anticipated to infiltrate approximately 68,429 gallons rainfall. The Applicant has partnered with The Davis Companies to provide the remaining 16,000 gallons of required mitigation through an I/I project located within Sherman Street. This project was completed in April 2023.

Domestic water demand is based on estimated sewer generation with an added factor of 10 percent for consumption, system losses and other uses. Based upon sewage generation rates outlined in the DEP State Environmental Code, Title 5, 310 CMR 15.000 and a factor of 1.1, the Project is anticipated to demand 23,260 gallons of water per day.

Figures:

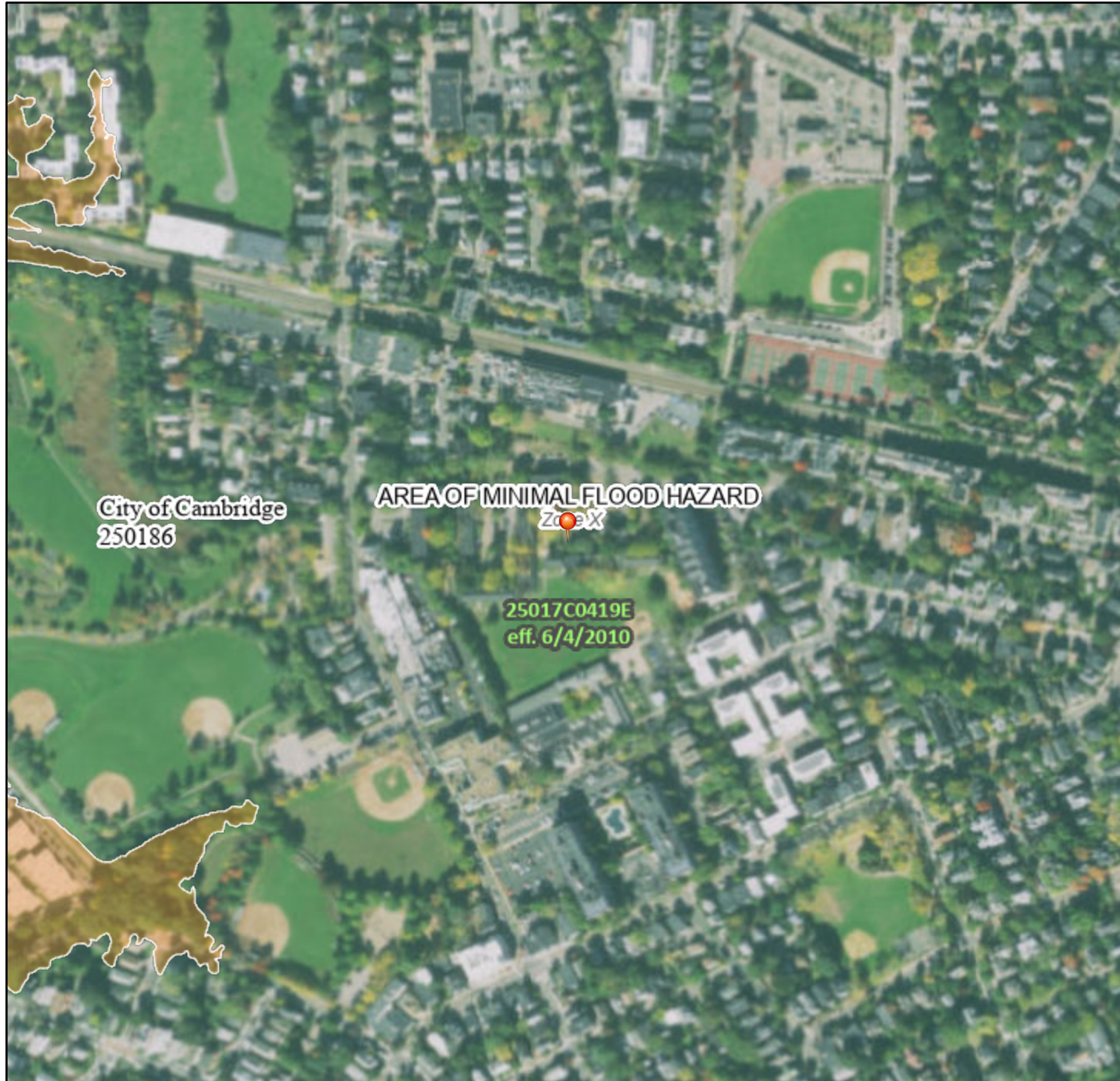
- Figure 1 – Site Locus Map
- Figure 2 – FIRMETTE, Map Panel 25017C0419E



National Flood Hazard Layer FIRMMette



71°8'9"W 42°23'34"N



71°7'32"W 42°23'7"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **4/15/2021 at 4:25 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.