



CITY OF CAMBRIDGE

Community Development Department

To: Planning Board

From: CDD Staff

Date: December 8, 2021

Re: Special Permit **PB-315 Amendment 2, MXD Infill Development Concept Plan (IDCP)**

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Overview

Submission Type: Special Permit Application

Applicant: Boston Properties Limited Partnership

Zoning District(s): Mixed Use Development (MXD) District: Kendall Center

Proposal Summary: Alter the IDCP by increasing the commercial Gross Floor Area (GFA) by 800,000 square feet through the addition of two new commercial building sites, siting a below-grade electrical transformer substation for the public utility company on-site, consolidating required residential GFA from two building sites into one building site, modifying the locations and amounts of open space, demolishing an existing above-grade parking garage with approximately 1,170 parking spaces and constructing approximately 1,558 below-grade parking spaces.

Special Permits Requested: Major Amendment to IDCP in MXD District (14.32.2.5);
Reduction of Bicycle Parking Requirements (6.108.1);
Reduction of Green Roofs requirement (22.35.3)

Other City Permits Needed: PTDM plan amendment

Planning Board Action: Grant or deny requested special permits.

Memo Contents: CDD Zoning Report & Urban Design Report

Other Staff Reports: Parking and Transportation Dept. (TP+T), Department of Public Works (DPW), in separate documents.

Requested Special Permits	Required Planning Board Findings <i>(Summary - see appendix for zoning text excerpts)</i>
Major amendment to IDCP special permit (Section 14.32.2)	<p>The IDCP meets the criteria in Section 12.35.3(3):</p> <ul style="list-style-type: none"> • Conforms with general PUD development controls and district development controls [in this case, requirements of Article 14.000]. • Conforms with adopted policy plans or development guidelines for that portion of the city. [Per Section 14.32.2.2: “In making its findings, the Board shall consider the objectives set forth in the Kendall Square Final Report of the K2C2 Planning Study (“K2 Plan”) and the Kendall Square Design Guidelines.” Those documents can be found at: https://www.cambridgema.gov/CDD/Projects/Planning/K2C2.] • Provides benefits to the city which outweigh its adverse effects, considering: <ul style="list-style-type: none"> ○ quality of site design ○ traffic flow and safety ○ adequacy of utilities and other public works ○ impact on existing public facilities ○ potential fiscal impact <p>The IDCP meets the criteria in Section 19.25:</p> <ul style="list-style-type: none"> • The project will have no substantial adverse impact on city traffic within the study area, upon review of the traffic impact indicators analyzed in the Transportation Impact Study and mitigation efforts proposed. • The project is consistent with the urban design objectives of the City as set forth in Section 19.30 (see following page).
Reduction of Green Roofs Requirement (Section 22.35.3)	<ul style="list-style-type: none"> • The Planning Board may grant a special permit to reduce the required Green Roof Area, Biosolar Green Roof Area, or Solar Energy System below the area required by Section 22.35.2, provided that each square foot so reduced be compensated by a unit price contribution to the Cambridge Affordable Housing Trust.
Special Permit to modify bicycle parking standards (Section 6.108)	<ul style="list-style-type: none"> • The proposal is consistent with the purpose of Section 6.100 and that the Bicycle Parking Plan proposes a quantity, design and arrangement of bicycle parking that will serve bicycle users in a way that is sufficiently comparable, given the circumstances of the specific project, to the bicycle parking that would be required under the regulations of Section 6.100. • The Bicycle Parking Plan will satisfactorily serve the needs of all expected users, based on quantitative and/or qualitative evidence provided by the Applicant.

<p>General Special Permit Criteria (Section 10.43)</p>	<p>Special permits will be normally granted if the zoning requirements are met, unless it is found not to be in the public interest due to one of the criteria enumerated in Section 10.43:</p> <ul style="list-style-type: none"> (a) It appears that requirements of this Ordinance cannot or will not be met, or (b) traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character, or (c) the continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or (d) nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or (e) for other reasons, the proposed use would impair the integrity of the district or adjoining district, or otherwise derogate from the intent and purpose of this Ordinance, and (f) the new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30.
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19.30 Citywide Urban Design Objectives [SUMMARIZED]

Objective	Indicators
<p>New projects should be responsive to the existing or anticipated pattern of development.</p>	<ul style="list-style-type: none"> • Transition to lower-scale neighborhoods • Consistency with established streetscape • Compatibility with adjacent uses • Consideration of nearby historic buildings
<p>Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.</p>	<ul style="list-style-type: none"> • Inhabited ground floor spaces • Discouraged ground-floor parking • Windows on ground floor • Orienting entries to pedestrian pathways • Safe and convenient bicycle and pedestrian access
<p>The building and site design should mitigate adverse environmental impacts of a development upon its neighbors.</p>	<ul style="list-style-type: none"> • Location/impact of mechanical equipment • Location/impact of loading and trash handling • Stormwater management • Shadow impacts • Retaining walls, if provided • Building scale and wall treatment • Outdoor lighting

	<ul style="list-style-type: none"> • Tree protection (requires plan approved by City Arborist)
Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.	<ul style="list-style-type: none"> • Water-conserving plumbing, stormwater management • Capacity/condition of water and wastewater service • Efficient design (LEED standards)
New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.	<ul style="list-style-type: none"> • Institutional use focused on existing campuses • Mixed-use development (including retail) encouraged where allowed • Preservation of historic structures and environment • Provision of space for start-up companies, manufacturing activities
Expansion of the inventory of housing in the city is encouraged.	<ul style="list-style-type: none"> • Housing as a component of large, multi-building development • Affordable units exceeding zoning requirements, targeting units for middle-income families
Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.	<ul style="list-style-type: none"> • Publicly beneficial open space provided in large-parcel commercial development • Enhance/expand existing open space, complement existing pedestrian/bicycle networks • Provide wider range of activities



CITY OF CAMBRIDGE

Community Development Department

Date: December 8, 2021

Zoning Report: **PB-315 Amendment 2, MXD Infill Development Concept Plan (IDCP)**

Overview

Boston Properties (the Applicant) has proposed an amendment to the Infill Development Concept Plan (IDCP) for the Mixed-Use Development: Kendall Center (MXD) zoning district, which would enable the construction of an additional 800,000 gross square feet of new commercial office/laboratory uses (in two separate, 250' height buildings) in exchange for the siting of an underground electrical transformer substation utility within the district. The plan also contemplates the development of a new 400' high, 420,000 square foot residential building along Broadway and an interior public open space called "Center Plaza". More information about the proposed plan is provided in CDD's [initial memo](#) on the project.

The zoning to enable this additional phase of development was adopted by the City Council earlier this year. It was the result of an extensive, multi-party effort by the City, the Cambridge Redevelopment Authority ("CRA"), and private developers Alexandria Real Estate and Boston Properties to identify a more desirable location for the electrical transformer substation than a site on Fulkerson Street owned by the public utility provider Eversource. If the plan moves forward, it will enable the substation to be built away from the East Cambridge and Wellington-Harrington residential neighborhoods and will trigger a commitment by Alexandria to acquire and convey the Fulkerson Street parcel to the City.

On September 28, 2021, the Planning Board and the CRA Board held a joint hearing on the proposal and provided comments. Since the hearing, representatives of the Applicant's team have met with City staff and prepared a revised submission based on comments received from staff, the public, the CRA Board and the Planning Board.

As a reminder, a Major Amendment to the IDCP follows the same special permit procedure and is subject to the same approval criteria as the original IDCP. The approval criteria ([provided previously](#) to the Board) is also included herein as an appendix. The CRA Board has separate approval authority under the Kendall Square Urban Redevelopment Plan (KSURP). At the last hearing, the Planning Board and CRA Board elected to continue their hearings separately in order to more efficiently review the proposal and take action.

Key Issues Raised at Initial Hearing

The Planning Board and CRA Board provided the following specific comments on the proposal and requests for additional information at the September 28 hearing, in addition to those raised by staff in the CDD, TP+T and DPW memos:

Comments & Concerns

- Commercial Buildings C & D appear overly bulky in their massing
- Concern over the size and number of proposed pedestrian bridges between Commercial Buildings C & D
- The Center Plaza contains too much hardscape and not enough green area
- Importance of Binney Street cycle track improvements, because Binney Street is a “pinch point” for those cycling in Kendall Square
- Concern over the size, location and programming of the proposed children’s play areas
- Concern that the proposed loading area along the East Plaza Service Drive will break the plane of the building envelope and occupy sidewalk and pedestrian areas
- Concern over potential environmental comfort issues (smell, temperature, noise) from the intake and exhaust stacks located at the edges of the Center Plaza
- Concern over the quantity of open space provided given the anticipated number of people who will use the space

Requests for Additional Information

- More information related to the planned operational programming of the bike valet, such as:
 - Location of planned drop-offs and pick-ups
 - Anticipated wait times for bicycle drop-offs and pick-ups
 - Proposed monitoring and reporting of the bike valet once operational
 - Information related to access, storage, security and staffing
- Opportunities for including more green area and trees in and around the Center Plaza
- Providing more information about the substation, such as:
 - Drawings illustrating a cross-section through the plaza, showing the depth of the substation and how much depth exists between the substation roof and the Center Plaza
 - An illustration of the path of the transmission ducts to the substation from Broadway
 - Information related to design and engineering constraints on the Center Plaza and overall site plan from the substation vault and associated equipment
- A drawing illustrating the grading and elevation of the Center Plaza

- Information related to anticipated temperature and noise impacts from the substation vents (both intake and exhaust)
- Opportunities for additional tree plantings within the site, or relocation of existing trees on the site
- More information about what will be the Applicant’s responsibility to construct related to the substation, versus Eversource’s responsibility.

Comments on Supplemental IDCP Materials

Additional materials provided by the Applicant include the following:

- A “Table of Responses” document that includes updated information and plans related to the Eversource substation, the proposed development plan, open space, transportation, infrastructure and environmental impacts.
- Updated drawings illustrating details of the Eversource substation vault, equipment, transmission ducts, and intake/exhaust stacks.
- Updated drawings illustrating alternative massing scenarios and floor plans for Commercial Buildings C & D.
- Diagrams and descriptions of the engineering and technical constraints of the substation and ventilation stacks.
- Updated sections of the plaza and substation vault.
- Updated landscape plans, including schematic plans of the Center Plaza, a new water feature along Broadway, and a plan showing existing trees to be retained or removed.
- Descriptions of the proposed bicycle valet program, and proposed locations of short-term bicycle parking and Bluebikes stations.
- Information related to flood resiliency as it relates to the grading and elevation of the substation and Center Plaza.
- Information related to potential noise and temperature impacts from the substation.
- Information related to the Applicant’s plans to meet the Green Roofs Ordinance requirements.

Substation Design Constraints

The additional materials contain clearer illustrations of the physical extents of the electrical transformer substation vault, along with the subsurface utility line connections, access/egress points, and air

intake/ventilation points. This information helps to better explain the site design constraints that arise from the engineering and design requirements of the electrical substation. Such constraints include the maximum bend radii of the transmission ducts, depth limitations of the substation, and siting requirements to minimize the degradation of electrical capacity. The Applicant also describes a number of constraints related to the substation vault structure, such as requirements for locations of vertical elements such as vents, hatchways, elevators, and stairways.

The substation itself is a piece of utility infrastructure that is not subject to local zoning regulations, although it does affect the other parts of the development plan. While some of the design constraints pose challenges, it is important to note that the underlying reason for this development is to accommodate the substation in this location. Some flexibility and compromise may be necessary to ensure that this public benefit can be realized as intended by the City Council when they approved the zoning.

Massing of Buildings C and D

The Applicant's response includes some alternative massing schemes for Commercial Buildings C and D in response to Board Members' comments. These are discussed further in the urban design component of this memo.

- The new buildings would remain subject to future design review and approval by the Planning Board, per the current conditions of the special permit. If this amendment is approved, the Board could incorporate any design objectives that it believes should be addressed in more detail at the time of design review.

Open Space Revisions

Along with revised landscape plans, the response materials provide a size breakdown of the currently approved and proposed open spaces. The materials continue to show an increase in the amount of public open space on "Parcel 2" (the block where the new phases of development are proposed) from about 64,593 square feet (as currently approved) to about 82,011 square feet.

The revised plans for Center Plaza illustrate several changes. Most notably, the Center Plaza now includes 5,000 square feet of additional green space in the form of a "flexible lawn" area. Additional programming areas are shown around the intake and exhaust stacks, as well as the elevator and hatch areas. A new café is shown at the north side of the plaza which will "wrap" the exhaust stack and provide an additional activity node within the plaza. The response also indicates that trees are not feasible above the substation due to waterproofing requirements, but that tree plantings are being contemplated outside the perimeter of the substation vault.

Along Broadway, the Applicant has proposed a water feature (e.g., a splash pad or similar) in front of the proposed Residential Building to provide an additional recreational area for children in response to comments received from the Board. A secondary children's play area is proposed along the East/West Connector between the East Plaza Drive and the Kittie Knox Bike Path/Loughrey Walkway.

- Staff continues to recommend that the Center Plaza be subject to future design review and approval by the Planning Board should the IDCP Amendment be approved. Other landscape

elements of the plan would be subject to design review and approval along with the review of their adjacent building sites. Because the open space will be completed after the electrical transformer vault, it will be more practical to consider design details closer to the time the open space will be constructed. However, in its special permit decision, the Planning Board could articulate a set of design objectives that would be incorporated into the future design review process.

- The proposed changes in public open space will also require the City Council to amend the existing public open space covenants for the site.
- Staff continues to recommend that the legal mechanism for Public Open Space within the development plan, as required by Section 14.21.1 of the Zoning Ordinance, be identified and submitted to the City at the time of Design Review for the Center Plaza.

Environmental Comfort

At the last Planning Board hearing, there were questions from Board members about the pedestrian experience within and around the Center Plaza due to the proximity to the substation intake and exhaust vents. Specifically, Board members wanted more information about how the large volume of air moving through these vents would affect noise, smell, and temperature for someone within the Plaza.

In the revised IDCP materials, the Applicant noted that the substation is cooled with an all-air system of 1.4 million CFM (cubic feet per minute), and that the air exhausted from the substation is approximately 15-20 degrees above ambient air temperature on a “design day”. Further, the Applicant stated that the sounds levels from the exhaust and intake stacks will not exceed existing noise levels, which would equate to approximately 50 decibels A (dBA) at Residential Building South and 55 dBA at the Center Plaza.

- As part of the future design review for the Center Plaza, staff would recommend requiring a more detailed Environmental Comfort Assessment that includes a professional analysis of anticipated noise, wind, and temperature on the surface of the plaza and describes measures that will be taken to mitigate any undesirable site conditions.

Traffic & Transportation

Transportation Mitigation

The Applicant has continued to work with TP+T staff to reach agreement on a transportation mitigation program which addresses the updated Transportation Impact Study (TIS) and anticipated increase in Planning Board Special Permit Transportation Criteria exceedances. More detailed comments are provided in TP+T’s memo provided to the Planning Board.

- The Special Permit that exists for the MXD site (PB-315) contains an existing Transportation Mitigation program, which is expected to continue to be required. Staff would update the existing conditions related to the Transportation Mitigation program to include these new

conditions identified in the TP+T memo, and incorporate the updated program as an appendix to the Planning Board Decision for Amendment #2.

PTDM

Because new parking spaces are being created as part of this proposal, the Project requires an Amended PTDM Plan to be reviewed and approved by the City's PTDM Planning Officer. Such an approval must occur before a special permit can be issued by the Planning Board. At the time of this memo, the amended PTDM Plan was still under review, but approval is anticipated prior to the December 14 hearing. Staff will be available at the meeting to provide a verbal update at that time.

- If approved, the amended special permit will be conditioned on ongoing compliance with the amended PTDM plan.

Bicycle Parking & Bicycle Valet Program

The Planning Board and CRA Board requested additional information related to the proposed bike valet, with questions and concerns focused on the operational parameters of the valet. In the Applicant's response to the Board, several clarifications and commitments have been shared, such as:

- Committing to 24/7 service and staffing for the valet
- Confirming that the bike valet will be 100% complimentary for users
- Confirming that all bicycles stored for the valet will be secured at all times
- Committing to a minimum of 10% of bike valet spaces (approximately 61 spaces) to have electric charging capabilities

The Applicant reiterated that the bike valet will be programmed in two phases. In the first phase, the bike valet will be located in the ground floor of Commercial Building C and contain approximately 402 valet bicycle parking spaces. Once Commercial Building D is completed, the bike valet operations will be transferred to the ground floor of Commercial Building D and have the capability of accommodating up to 610 bike valet spaces.

In addition to these valet spaces, the revised IDCP notes that the Project will include approximately 20 long-term bicycle parking spaces in Residential Building South and an additional 36 short-term bicycle parking spaces distributed evenly around the proposed three buildings (12 each). Final quantities of bike parking spaces should be determined as part of continuing design review.

The Applicant has proposed to install a new 23-dock Bluebikes station in lieu of 46 bicycle parking spaces, as permitted by zoning. This Bluebikes station is planned to be located adjacent to the Center Plaza, which may require additional maintenance costs to be borne by the Applicant, depending on solar operations. The Applicant will also relocate, at their cost, an existing 19-dock Bluebikes Station at Binney/Sixth Streets to accommodate the siting of Commercial Building C.

Staff would offer the following considerations for the Planning Board related to the proposed bike parking and bike valet program:

- The proposed bicycle valet is unprecedented in Cambridge and will be the largest of its kind in the country. To ensure its continued success, staff would recommend a condition of the special

permit that a Monitoring & Reporting program (separate from PTDM monitoring) be reviewed and approved by the City prior to the first building design review submission for the project. Such a Monitoring & Reporting program may include a combination of user and retrieval data, as well as surveys and reviews from valet users; and would be required periodically (e.g., biannually) for a period of up to ten (10) years once the program is fully operational.

- The Applicant has proposed potential locations for the new Bluebikes station, based on Solar Access Studies provided to City Staff, and Staff and the Applicant have agreed on a preferred location adjacent to the Center Plaza. Staff would recommend an approval condition that the Bluebikes location be finalized, subject to review and approval by CDD staff, prior to a building permit being issued for the first building in the new phase of the development program.

Green Roofs Ordinance

In the revised IDCP materials, the Applicant notes that upon review of the preliminary plans and specifications for Residential Building South and Commercial Buildings C & D, it is anticipated that relief from the Green Roof Ordinance would not be required for this Amendment. However, given that the buildings are still at a very conceptual design stage, it is impossible for staff to anticipate whether or not the requirements would be met.

- If the Planning Board approves the proposed amendment but does not grant the special permit to reduce the green roofs requirement, then compliance would be reviewed at the design review and building permit stage for the new buildings. If any building is found not to comply, then a special permit could be sought at that time. As an alternative, the Planning Board could grant the special permit to reduce the requirement along with the amendment to IDCP, with a condition that the roof plan be reviewed and approved by the Planning Board at the design review stage with the intent of maximizing green roof to the extent feasible, and that any deficiency in the green roof requirement would be compensated by a payment to the Cambridge Affordable Housing Trust per zoning requirements. The latter approach was taken in the Board's recent approval of the MIT Volpe PUD.

Phasing

While this memo has focused on the supplemental materials submitted by the Applicant, the previous CDD memo recommended approval conditions in response to the proposed Phasing Plan, which staff continues to recommend:

- As mentioned previously, development would be expected to proceed generally in accordance with the proposed Phasing Plan. Staff recommends the following conditions which have become standardized for Cambridge projects containing multiple building sites and other site elements:
 - Modifications to the phasing plan could be approved as Minor Amendments, subject to the Board making a finding that the revised Phasing Plan complies with the requirements of Article 14.000 and is consistent with the goals and objectives of the zoning.
 - There is an existing condition of the IDCP that a Construction Management Plan be submitted to the City for review and approval prior to a building permit being issued for development within a new phase. Staff would continue to recommend such a condition and include a requirement that such a plan includes details how the site, Center Plaza, and East/West Access Drives will be managed and secured during construction for Phase 3 and Phase 4 of development.
 - Residential buildings, open spaces, and public improvements could be completed earlier in the Phasing Plan should the developer choose to advance these elements earlier in time.

Planning Board Action and Conditions

Because the IDCP special permit was already issued, and contains standard conditions for a development of this type, if the Planning Board approves the requested amendment then the main change to the conditions would be to substitute the elements of the proposed development plan for the previously approved plan. Phasing would proceed in accordance with the proposed IDCP amendment as well as the requirements of the recently adopted zoning.

Additional conditions that could be contemplated would include those recommended above in this memo, along with those in the TP+T and DPW memos.

The existing PB-315 Decision, as modified by Major Amendment #1, included a number of conditions that should be updated based on Amendment #2:

- **Approved Development Program** – This condition will be updated to reflect the updated aggregate development and relevant dimensional characteristics of the proposed development, mix of uses, required innovation space, retail and active uses, parking, bicycle parking, and Bluebikes stations.
- **Design Review** – This condition will be updated to reflect to incorporate submittal and review requirements of the Center Plaza and other public and site improvements.
- **Letter of Commitment** – PB-315 contains a reference to a Letter of Commitment which was nullified and voided as part of the zoning amendment to Article 14.000. A separate Letter of Commitment from the CRA accompanied the zoning change.

- **Phasing** – This condition will be updated to reflect how development will occur in four phases instead of three, and include standardized phasing conditions that have been employed by the City with similar past projects (see *Phasing* section of memo above).
- **Additional Requirements of Phase 2 & 3** – Similar to the phasing condition above, there are additional requirements that apply to Phase 2 and 3 of development and have since been modified by Amendment #1, and will need to be updated again based on the proposed development and phasing plan provided in Amendment #2.
- **Additional Amendment #1 Conditions** – The following conditions in Amendment #1 will need to be updated as part of the Decision for Amendment #2:
 - Condition #3 – references transportation and traffic improvements which will be modified by additional requirements incorporated as part of Amendment #2, and further detailed in the TP+T memo.
 - Condition #5 – applies to “Residential South”, which has since been modified by the development program proposed in Amendment #2.
 - Condition #6 – references updates to the IDCP Design Guidelines, and will need to be updated to reflect the current status of this document.
 - Condition #7 – requires that a study for a pedestrian connection between Broadway and Kendall Plaza be included as part of Design Review for Phase 3 of development, assuming that the Volpe planning process has “progressed to a point to definitively establish the most contextually appropriate connection”. Such a condition should be updated to reflect the current status of such planning, and evaluate if the previously-identified point in time continue to be the most appropriate.



CITY OF CAMBRIDGE

Community Development Department

Date: December 8, 2021

Urban Design Report: **PB-315 Amendment 2, MXD Infill Development Concept Plan (IDCP)**

Executive Summary:

- The supplemental “IDCP Amendment 2 Response to Comments” (November 5, 2021) document includes design alternatives and new information intended to address concerns raised regarding the “IDCP Amendment 2” (July 1, 2021) document. The essential benefits of the project remain unchanged: the provision of the new underground substation, the provision of new residential and commercial space, and the opportunity to create a major new public space in the center of the hitherto congested superblock. The supplemental document includes alternatives for the site plan, building locations, and building massing. More information is provided on bicycle parking, resiliency, and the substation vault and its impacts on environmental comfort. If the Planning Board approves the amendment to the IDCP, then design review of the project’s open spaces and architecture will continue as individual projects are submitted; the urban design comments included below can be incorporated into the future design review process. The scheme and information provided in the supplemental document addresses some of the Planning Board’s concerns in the first hearing, including that it:
 - Reduces the bulkiness of the commercial buildings.
 - Adds vegetation to the Central Plaza.
 - Adds a children’s play area.
 - Provides more information on bicycle parking.
 - Provides sectional information on the substation vault, putting it in context of the Plaza above and its grading.
 - Provides more information on the temperature and noise impacts of the substation’s vents.

Priority comments on the new materials include:

- Greater reference could be made to the K2 and Volpe Design Guidelines, including to their underlying intentions regarding the definition of public space by architectural and landscape design.
- An overall landscape plan should be developed to enhance the coherence and amenity of the site’s public spaces. Priority issues include the spatial definition of the Central Plaza and its public amenities as the site’s primary public open space, the provision of consistent trees and sidewalks along the Drives, improvements to the setback yards of the existing buildings on the east and west sides of the Plaza, and the development of the project’s frontages on Binney Street and Broadway. This plan could be reviewed and revised as individual building sites undergo design review.
- In particular, the design and character of the Central Plaza should be more fully developed, including its accommodation of uses including recreation, play, and public gatherings; its activation by the uses of adjoining buildings; pedestrian desire lines within and through it; the

design of the substation’s ventilation and other structures; and the access routes required for heavy equipment.

- Information was provided on the potential impacts of the substation on environmental comfort and potential means for their mitigation, but these issues should be investigated further in the design review process.
- Additional information was provided regarding building massing and siting, which should be explored further in the design review process, especially relative to public spaces within and adjoining the site.
- Recommendations for more active uses in the first floors along adjoining city streets and the Plaza.
- Recommendations to minimize the impacts of building loading and service on the public realm.

In addition, many of the comments in the September 21, 2021 Urban Design memo are still pertinent.

Introduction:

The conceptual design depicted in the supplementary document is generally similar to that of the original (July 1, 2021) document for Amendment 2. The Central Plaza covers the underground Eversource vault at the center of the site and is bordered on its east and west by East and West Plaza Drives. These drives connect Broadway and Binney Street and organize the site. Two 250-foot-tall commercial buildings are at the north end of the site, separated from each other by East Plaza Drive (which serves their loading docks); a 400-foot-tall residential building is at the south end of the site. Aside from a few drop-off or parallel parking spaces, vehicular parking is located in underground garages. Bicycle parking is primarily provided by a valet system.

The supplementary package includes alternatives for the design of the plaza, the service drives, the ground floor footprints of the three buildings, and the massings of their towers. New information is provided regarding the Eversource substation vault and the constraints it imposes on the design.

The design guidelines included in the July 5, 2021 document focus on details, features, and materials of the site’s landscape and buildings, but also reference the Kendall Square Design Guidelines (the “K2 guidelines”, 2013) and Volpe Site Design Guidelines (2017). Both of these documents stress the importance of the site’s contribution to the city’s public realm: the creation of active, legible, and memorable urban spaces – streets, parks, and squares – by the harmonious collaboration of architectural form and landscape design, with the goal to not only serve the needs of residents and workers for use and comfort, but also for a sense of place.

The proposed buildings and the plaza will be subject to future design review by the Planning Board, as detailed in the Z&D report. The following recommendations regarding design guidelines, the designs of buildings and spaces, and requests for more detailed technical information regarding issues that will affect environmental comfort should be fully addressed during that process, but may help inform the discussion at present.

Site Plan:

The K2 and Volpe design guidelines emphasize the design of streets, parks, squares, and plazas as fundamental components of the public realm. As the design of the site’s buildings and open spaces are

further developed, greater reference could be made to the guidelines' objectives and recommendations regarding the provision of open flexible areas with legible yet permeable edges, the provision of more intimate sheltered areas and areas dedicated to specialized uses, provision of vegetation, and the potential of canopy trees to provide shade and spatial definition.

The Central Plaza

The necessity to leave the area over the vault free of structures presents the opportunity to create a significant open space at the center of the district.

The underground substation requires two ventilation structures, a large hatchway elevated roughly four feet above grade, and an elevator headhouse. In the July 5 document, the remaining area above the vault is primarily paved. The supplementary document adds an alternative with larger, irregularly shaped grass & programming areas, raised platforms, furniture, light posts, ventilation structures, etc. – distributed on a field of pavement, and surrounded by clumps of trees and buildings of disparate massing. Particularly in the perspectives, these varied objects seem insufficiently related to each other by their forms, by accommodation of pedestrian desire lines within and through the plaza, or by an overall concept for layout of the space.

During design review, consideration should be given to developing the plaza's ground plane and plantings and to adjusting the structures serving the substation vault to create a more coherent public space - a calm unifying center for the site's disparate buildings and a place of respite from the densely constructed urban context. More specifically:

1. Consideration should be given to further increasing the amount of vegetation in the space as feasible – to treating less as a plaza and more as a park.
2. Consideration should be given to revising the plaza's ground plane to create a simpler arrangement of grass areas and other features. A grass lawn, large enough to dominate the plaza's form and character despite any interruptions by paths and other features, would provide more flexible area for gathering and recreation, provide welcome greenery, and give the space priority it deserves as the site's most prominent organizational element.
3. Consideration should be given to providing canopy trees along the east and west edges of the Plaza to the extent feasible, providing shade, enhancing its pedestrian scale, and giving the Plaza additional spatial definition. To make space for them between the area precluded by the vault and the East and West Drives, consideration should be given to relocating the central portions of the Drives slightly farther away from the Plaza.
4. To activate the space, consideration could be given to incorporating recreation and play areas.

East and West Plaza Drives

The drives are proposed to remain in approximately their current locations, but are reconceived as pedestrian and bicycle friendly woonerfs. The north end of East Plaza Drive serves the loading docks and garage entrances for the two commercial buildings, interrupting the continuity of curbs and sidewalks. Most of the numerous trees that currently border the Drives must be removed for the construction of the vault and the new buildings; few new trees are added.

The two commercial buildings are sited directly along Binney Street, potentially activating the street with first floor uses. In the more recent alternative, Building D, (the eastern commercial building) is rotated away from building C, creating a triangular space at the north end of the East Plaza Drive. This

change seems to address concerns about the narrowness of the space between the two commercial buildings in the earlier scheme. The creation of a park-like space, adjunct to the Central Plaza but more intimate, and linked to it by the continuity of East Plaza Drive, connected to the lobbies of the commercial buildings, and less compromised by loading docks, would enrich the pattern of public spaces in the district.

The east and west drives and the setback yards between the drives and the existing buildings on their east and west sides should be seen as integral parts of the overall scheme for the site, complementing and reinforcing the design of the area directly over the vault. As the Project moves towards design review, the following principles could be used to better guide the design refinement of these Drives:

1. To create a more pleasant pedestrian environment with shade on hot summer days, a sheltering sense of scale relative to the large buildings, and to enhance the Central Plaza's legibility as the project's central public space, consideration should be given to providing more consistent street trees and curbs and sidewalks along the drives – to treating the drives as allées similar to the Loughrey Walkway. Merely relocating the East Drive's central portion to align with its location between buildings C and D may provide enough width for additional tree plantings and could be studied further in the design review process.
2. To reduce the impacts of the existing and proposed loading docks and garage entries on the pedestrian realm, consideration should be given to reducing their widths if possible, introducing medians between multiple adjoining drives, and giving sidewalks continuity across them.
3. The plans show drop-off or parking areas along the drives. The quantity of such spaces should be carefully evaluated in light of increasing use of rideshare vehicles and package delivery vehicles.

Broadway

In the previous alternative, Residential Building South is rectilinear, oriented parallel to the Drives. In the newer alternative, the south and west sides of its ground floor and streetwall levels are angled and set back from Broadway and West Plaza Drive to maximize the view of the Akamai Building's southeast corner from Broadway. Together with the adjoining building at 145 Broadway, this creates a tapered space leading from Broadway to the Central Plaza. The setback, occupied by a water feature and a grove of trees, intervenes the building's ground floor uses from Broadway. Staff would offer the following comments on the proposed design changes as the Project moves towards design review:

1. To give Broadway greater continuity and to strengthen the relationship of the residential building to its context, consideration could be given to bringing at least the southeast corner of the building's first floor and streetwall façade out to the plane established by the adjoining building to the east.
2. The landscaping in the Broadway setback should continue the curbside street trees elsewhere on Broadway unless precluded by utilities.
3. Staff is concerned that the water feature in its exact location, and perhaps the trees too, will constitute a buffer between the pedestrian sidewalk and the ground floor uses in the building, reducing their potential to activate Broadway. Alternatives to the design should be considered, including relocating it interior to the block.
4. The photographic examples suggest that the water feature is conceived as a play element. Consideration could be given to instead locating such a feature in the yards of one of the existing buildings on the east or west sides of the Central Plaza, particularly where it could be used in relation to the proposed play area in the East/West Connector to the Sixth Street Walkway.

Lighting & Signage

The supplemental documents indicate that site lighting will be on the grass areas. No information is provided regarding proposed signage, which is not regulated by zoning in this district but is subject to CRA review and approval. Staff would offer the following additional thoughts as the proposal moves towards design review:

1. Consideration should be given to instead locating lighting primarily at the paved areas, along the Drives, and near the proposed buildings at the north and south ends of the plaza. Further exploration of lighting will be an important component of design review for the Center Plaza and proposed buildings.
2. The Planning Board may wish to collaborate with the CRA in its review of a future signage plan for the proposed buildings.

Play and Recreation

The supplemental document indicates a play area in the southern east/west connector to the Loughrey walkway, and suggests that a water feature in the Broadway frontage may also offer opportunities for play.

1. Consideration could be given to relocating the play area in the southern east/west connector to the Central Plaza, where it would have a more direct relationship to the residential building and could help activate the space.
2. Consideration could be given to locating the water feature in closer proximity to the play area, where its use would be less compromised by nearby traffic, perhaps in the west setback of the existing building on the east side of the Central Plaza.

Built Form:

As the designs of the proposed buildings are further developed, greater reference should be made to the objectives and recommendations of the K2 and Volpe Guidelines regarding the role of architecture in shaping and giving scale to the site's streets and other public spaces, the proportions of massing and details of facades, and the provision of active first floor uses with direct relationships to open spaces within and adjoining the site.

Building Massing

While not stressed in design guidelines included in the July 1, 2021 document, the Volpe and K2 Guidelines make recommendations regarding active first floor uses and their direct relationship to adjoining outdoor spaces, the role of streetwalls in framing streets and enriching the pedestrian experience by façade design, the collaboration between different buildings to shape and define public spaces, the emphasis on slender vertical proportions, and the provision of stepbacks in deference to adjoining public spaces. These are intended to refocus design emphasis from individual buildings to the public spaces between them and to suggest ways to minimize the sense of bulk that large buildings might otherwise present.

As recommended in the guidelines, the buildings are conceived in horizontal zones: the pedestrian zone, streetwall, tower, and top. The Volpe Design Guidelines, and to a lesser extent the K2 Guidelines, emphasize that these zones have different roles in creating legible public spaces, and in mediating between the scale of the pedestrian, the street or square, the district, and the city.

1. Given that the design of the buildings is still in flux, it is perhaps premature to make detailed recommendations beyond mentioning that their precise massing should be developed to enhance the qualities of the open spaces on and adjoining the site.
2. To reduce the sense of bulk that the large buildings may create, consideration could be given to avoiding massing that leans over the Central Plaza , and to adjusting façade elements to emphasize vertical proportions.
3. To address flood resilience, the supplemental materials describe providing deployable flood barriers for grade level first floors, raising the grade at entrances to underground garages, and deployable barriers. As the design develops, more information should be provided on floor levels, accessible routes, connections between first floor interior spaces and outdoor spaces, etc.

Commercial Buildings C & D

The supplemental documents show greater separation between the two commercial buildings, and more developed massing; both are positive responses to concerns about the bulkiness of the buildings presented in the July 1 documents. As part of design review, staff would recommend the Applicant focus on the following comments to better guide design development and refinement:

1. Both buildings incorporate “active use” space on the south sides of their first floors. Note, however that the valet-operated long term bicycle parking facility will occupy that space in Commercial Building C in the initial phase of construction, and will move to Building D in the final phase. Consideration should be given to the appearance of that facility as seen from the Plaza.
2. While the first floors on Binney Street are aligned along the sidewalk, the interior spaces on the frontage consist of large lobbies and back-of-house space. Consideration should be given to providing street activating uses in these frontages.
3. Consideration should be given to recessing the loading docks accessed from the East Plaza Drive more deeply into the buildings, so that the trucks would fit entirely inside the buildings.
4. Consideration could be given to the potential benefits of introducing a streetwall zone on the building’s Binney Street facades, similar in height to the building on the opposite side of Binney Street.
5. The south façade of Commercial Building C is depicted in the new alternative as leaning over the Central Plaza. In the interest of the experiential quality of that space, and of the sky views it offers, consideration should be given to making that façade vertical, if not stepped back from the Plaza.
6. The revised application suggests that one or more upper-level connectors may be considered between the two commercial buildings. Staff recommends that if they are provided, they would preferably be positioned where the buildings are closest together, be minimal in size, and be well above ground level. The recommendations in the Volpe and K2 Guidelines should be reviewed.

Residential Building South

The alternative massing introduced in the supplementary documents pulls the streetwall zone of the façade away from the street, weakening its association with the corresponding zone of the existing building to the east and reducing its contribution to the definition of Broadway as public space. In addition, it separates potential retail uses from pedestrians on the street. The following comments could

assist the Applicant in further developing the design of Residential Building South as it moves towards design review by the Planning Board:

1. Consideration could be given to reducing the setback.
2. Consideration should be given to reducing the size of the residential lobby, or accommodating an active use within it, and to increasing the size of the retail space facing Broadway.
3. The south and west sides of the building's tower is angled to maximize views of the Akamai Building's southeast corner, creating a tapered space leading to the Central Plaza and reinforcing a reading of the Akamai building as an independent object, and eroding the continuity of Broadway at the tower level. While some deference to the Akamai building's signature features may be appropriate, the more rectilinear arrangement of the July 1 alternative offers potential benefits in terms of creating a more dramatic entry to the Plaza, and provides clearer definition of Broadway as one of the city's primary public spaces. The east façade of the tower is also angled in plan; the reasons for doing so are not clear. Further documentation of the space on the east side of the building should be provided.
4. Consideration could be given to stepping the building's north façade away from the Central Plaza to relate to the heights of the existing buildings on the east and west sides of the Plaza, and to reduce wind impacts.

Environmental Comfort:

General

1. The July 1, 2021 document includes wind and shadow studies. These should be updated in accord with selected alternatives for building massing, and the potential impacts of the exhaust air from the substation should be evaluated.
2. Means should be taken to minimize light trespass from site, architectural, and interior lighting.

The Impacts of the Eversource Substation

A fuller explanation of the substation's impacts on the Central Plaza should be provided and of potential measures that could be taken to mitigate them. Staff supports the Z&D report's recommendation to include an environmental comfort plan as part of future design review. Some suggestions for more detailed analyses include:

Noise

1. A full acoustical study of noise impacts and potential means of mitigation should be provided, addressing the distribution of anticipated noise levels in different parts of the site's open spaces and at its buildings, and evaluating the combined effect of existing ambient noise, noise from building systems, and from the intake and exhaust ventilation structures.
2. Are the air noise levels above ambient given in the application average or peak levels? If average, how much louder will the peaks be?
3. Will the noise have a discernable frequency component – from the hum of machinery or electric equipment – or will it be just white noise?

Heat

The vault will be air cooled with 1,400,000 CFM, exhaust air that will be 15 to 20 degrees warmer than the ambient air temperature on a "design day".

1. Consideration should be given to providing a full thermal study of the anticipated heat impacts on the public realm and potential means to mitigate them in order to inform the open space design, addressing questions such as:
 - a. What will be the estimated temperature distribution in different parts of the plaza on calm days and with a breeze?
 - b. How will it affect human comfort?
 - c. How will it affect species of trees and other plantings?
 - d. Are the air volume and temperature above ambient given in the application average or peak? And if average, how much higher will the peaks be?
 - e. How rapidly will the hot air dissipate in different wind conditions?
 - f. Will the difference between exhaust air temperature and ambient be consistent throughout the year?
 - g. Will ground level horizontal air flow induced by forced air flow from the exhaust vent and from convection significantly affect the site's wind analysis?
 - h. Will the intake vent pull in exhaust air and recycle it through the vault, resulting in even higher temps?
 - i. How warm will the top of the vault be? Will it affect the proposed grass or trees planted nearby?
 - j. Heat mitigation and use strategies could include:
 - i. Extending the exhaust vent higher (perhaps much higher), so that the exhaust air is exhausted well above pedestrian level.
 - ii. Heat to warm outdoor play and recreation areas in the winter.

Olfactory impacts

1. If the exhaust air will have a smell, can anything be done to mitigate it?

Sustainability:

The substation vault is protected from flooding by waterproofing and by raising all openings 2 feet above anticipated 2070 100-year flood level. See the DPW memo dated September 22, 2021 for further information and comments regarding resilience to anticipated flood levels.

1. Cambridge's Urban Forest Master Plan recommends that the decline in the city's tree canopy be reversed by protecting existing trees and encouraging planting of new ones. Due to the construction of the new buildings, numerous trees will be lost from the site. Consideration should be given to prioritizing planting additional trees throughout the site to help mitigate those that must be removed for the development of the substation.
2. Further analysis should be conducted of the substation's heat impacts, and consideration of potential means to mitigate it and/or to use it.

Continuing Design Review

The following are additional recommendations for ongoing design review by staff if the Board decides to grant the Amendment to the special permit:

- The topics listed in the September 21, 2021 memo remain worthy of consideration:
 - Landscape design
 - Traffic and transportation
 - Bicycle parking
 - Built form and its impact on the public spaces within and adjoining the site.

- Building materials and mockup.
- In addition, continuing review is recommended for the following topics:
 - Architectural massing and facades.
 - Provision for first floor active uses.
 - Design of the Central Plaza, including a clearer understanding of intended pedestrian desire lines, play and recreational facilities, provisions for public gatherings, short-term bicycle parking and Bluebikes station, lighting, improvements to the yards of the existing adjoining buildings, opportunities for additional vegetation, etc.
 - Programs and facilities for play and recreation, and public gathering.
 - Measures to mitigate the substation's heat, noise, vibration, and olfactory impacts on the project's open spaces and on the workers and residents in the adjoining buildings.
 - Further development of the architectural/sculptural forms of the intake and exhaust ventilation structures, the elevator headhouse, and the vault's hatchway.
 - The design of East and West Plaza Drives.
 - Site design of the frontages on Binney Street and Broadway.
 - Short term vehicular parking, and dropoff and pick up areas.
 - The valet bicycle system's design and operations.
 - The possibility of transplanting existing trees.
 - Continued coordination with city staff on the design of Binney Street and Broadway.
 - Analysis of embodied energy.