Life Science Building Design Guidelines

February 28, 2023 and March 14, 2023

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Meeting Recording

At the request of community members, this event will be recorded and posted for those who are unable to attend the zoom event live on the Life Science Building Design Guidelines project webpage at:
https://www.bostonplans.org/projects/standards/life-science-building-design-guidelines

It is possible that participants may be recording the meeting with their phone cameras or other devices. If you do not wish to be recorded during the meeting, please turn off your microphone and camera.

If your camera and microphone are off, you can still participate through the text chat feature at the end of the presentation.

Zoom Tips

Welcome! Here are some tips for first-time Zoom users.
Your controls are at the bottom of the screen:

*Use the **chat** to type a comment or ask a question at any time – Members of the team will enable the chat at the end.*

*To **raise your hand**, click on "Participants" at the bottom of your screen, and then choose the "Raise Hand" option in the participant box, or press *9 on your phone*

***Mute/unmute** – Participants will be muted during the presentation – the host will unmute you during discussion if you raise your hand and it is your turn to talk. To mute/unmute on your phone press *6.*

*Turns your **video on/off***

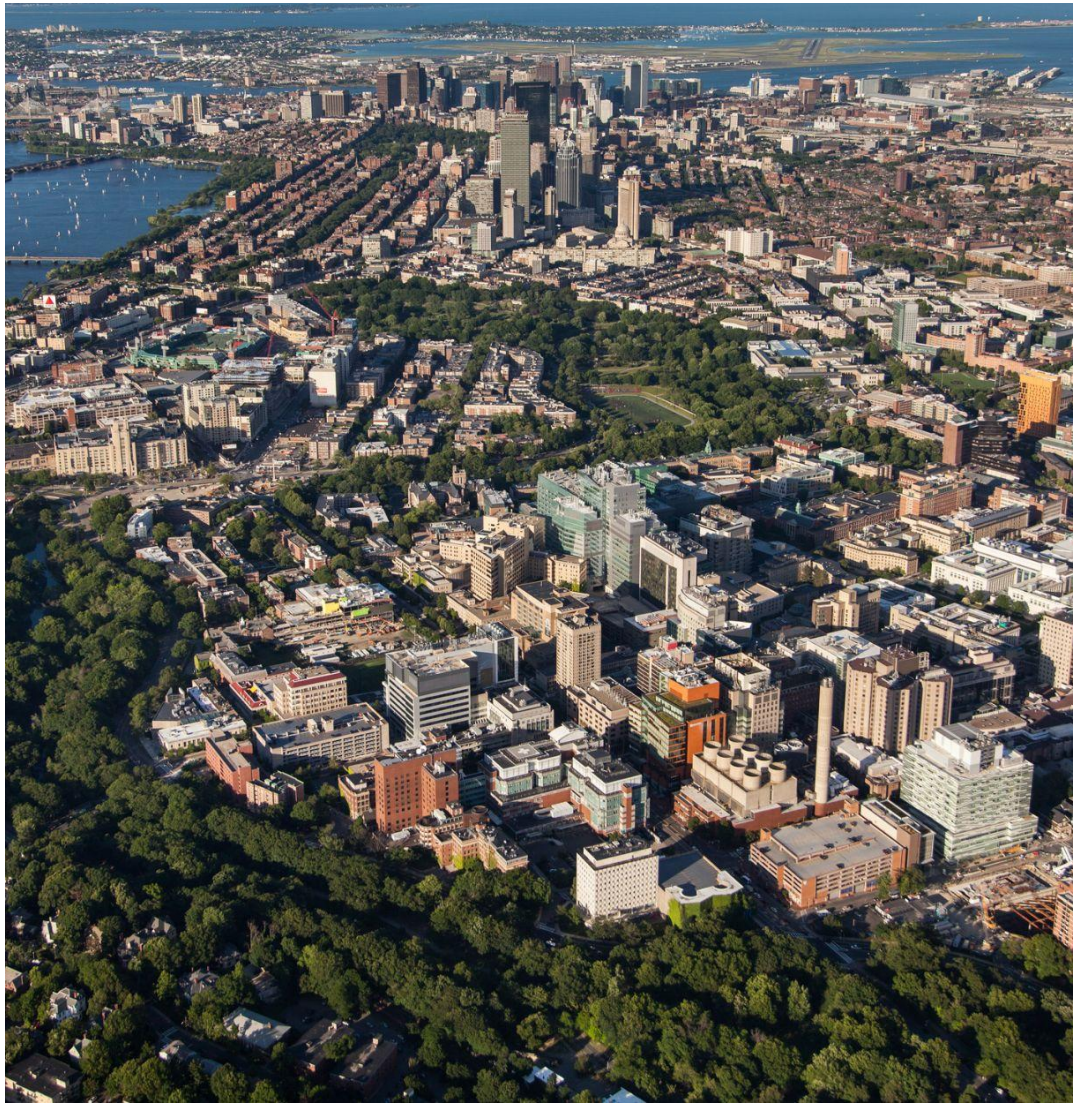
Zoom Etiquette

- We want to ensure that this conversation is a pleasant experience for all attendees.
- Please remain muted until called on. If you'd like to speak during this time please use the "Raise Hand" function in Zoom so a BPDA moderator can unmute attendees.
- Please be respectful of each other's time.
- We ask that participants limit their questions so that others may participate in the discussion. If you have more questions, please wait until all others attending have an opportunity to ask questions.
- If we are unable to get to your question at this meeting please put them in the Chat at the end or email LifeScienceDesign@Boston.gov

One piece of a broad BPDA effort

In light of Boston's rise as a **global center for life sciences**, the BPDA, in partnership with communities, seeks **to shape the impact of Life Sciences** to encourage a **vibrant economy and job creation** while **maintaining Boston's unique character** and **enhancing equity and inclusion**.

These guidelines focus on **design challenges unique to life science buildings** related to the large floor-plates, higher floor-to-floor heights, and mechanical and operational needs that are typical of many life science uses.



We've heard concerns about Life Sciences...

Health And Safety

- Air emissions
- Escaping toxins, virus, etc.
- Lab animals and humane treatment
- EMS and fire station service

Workforce

- How many jobs are created that are and can be filled by Bostonians?
- What skills / roles and how many people do employers need now and in the future?

Pace Of Development

- How much is speculative development versus "real" demand?

Communication

- Public participation and input into lab location & design

Planning and Urban Design

- Location- especially in mixed-use areas and near residential uses
- Larger building size and intensity
- Closed off ground floors
- Lab-specific requirements

Sustainability & Resiliency

- Higher GHG intensity of lab use
- Planning for extreme weather events, etc.

Design guidelines can address a subset of the concerns we've heard

To be addressed through other ongoing/forthcoming processes...

Health and safety primarily addressed by Boston Public Health Commission (BPHC) and mix of federal, state, and city regulations

Workforce effort led by OWE along with many partners

Continue to keep track of the market to assess the **Pace of Development**

Communication: Part of Article 80 process, to be supplemented by additional communication

Planning Proximity and impact to other uses e.g., residential, commercial/industrial, arts is a part of ongoing and forthcoming planning

Urban Design Concerns

- Increasing floor plate & massing
- Increasing building height, esp. from rooftop mechanicals
- Higher intensity of lab use (vs. mixed use)
- Closed off ground floors/street walls
- High loading/service requirements
- Higher parking requirements

Sustainability & Resiliency Concerns

- Higher greenhouse gas intensity of lab use
- Planning for extreme weather events, etc.

What is the purpose of the Design Guidelines?

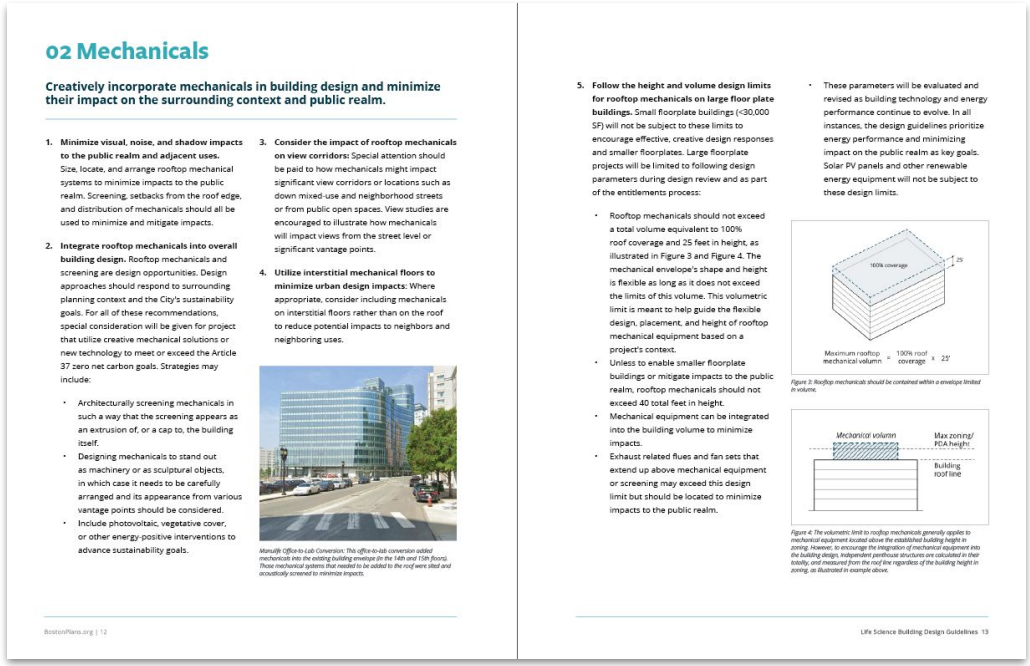
Inform property owners, business owners, developers, and the public about the desired form and character of life science development in the City of Boston.

The BPDA aims to work with developers and the community to help life science development:

- **Achieve a respectful fit** that complements and enhances neighboring buildings and the unique character of each of Boston's neighborhoods.
- **Support flexibility in building design and use**, including allowing future innovations in life science requirements and conversion to non-life science uses in anticipation of market changes in a fast-moving and innovative industry.
- **Contribute to the urban fabric of the City of Boston**, in ways that activate mixed-use and industrial areas and support the growth and preservation of housing, offices, community facilities, neighborhood retail, and new industry.
- **Contribute to citywide planning goals** including resilience, sustainability, and diversity, equity, and inclusion.

How will the Life Science Design Guidelines be used?

- These guidelines will be used by the BPDA, as well as other City agencies, developers, architects, and community members to **evaluate project design and applications**.
- They provide **guidance on citywide design and performance goals** for lab development.
- **They do not supersede neighborhood plans, existing zoning or regulations.**
- Consistency with these guidelines is also **separate and distinct from other review processes** such as the review process of the Boston Civic Design Commission (BCDC) or Boston Public Improvement Commission (PIC).



02 Mechanicals

Creatively incorporate mechanicals in building design and minimize their impact on the surrounding context and public realm.

1. **Minimize visual, noise, and shadow impacts to the public realm and adjacent uses.** Size, locate, and arrange rooftop mechanical systems to minimize impacts to the public realm. Screening, setbacks from the roof edge, and distribution of mechanicals should all be used to minimize and mitigate impacts.
2. **Integrate rooftop mechanicals into overall building design.** Rooftop mechanicals and screening are design opportunities. Design approaches should respond to surrounding planning context and the City's sustainability goals. For all of these recommendations, special consideration will be given for project that utilize creative mechanical solutions or new technology to meet or exceed the Article 37 zero net carbon goals. Strategies may include:
   - Architecturally screening mechanicals in such a way that the screening appears as an extrusion of, or a cap to, the building itself.
   - Designing mechanicals to stand out as machinery or as sculptural objects, in which case it needs to be carefully arranged and its appearance from various vantage points should be considered.
   - Include photovoltaic, vegetative cover, or other energy-positive interventions to advance sustainability goals.
3. **Consider the impact of rooftop mechanicals on view corridors:** Special attention should be paid to how mechanicals might impact significant view corridors or locations such as down mixed-use and neighborhood streets or from public open spaces. View studies are encouraged to illustrate how mechanicals will impact views from the street level or significant vantage points.
4. **Utilize interstitial mechanical floors to minimize urban design impacts:** Where appropriate, consider including mechanicals on interstitial floors rather than on the roof to reduce potential impacts to neighbors and neighboring uses.

5. **Follow the height and volume design limits for rooftop mechanicals on large floor plate buildings.** Small floorplate buildings (<30,000 SF) will not be subject to these limits to encourage effective, creative design responses and smaller floorplates. Large floorplate projects will be limited to following design parameters during design review and as part of the entitlements process:
   - Rooftop mechanicals should not exceed a total volume equivalent to 100% roof coverage and 25 feet in height, as illustrated in Figure 3 and Figure 4. The mechanical envelope's shape and height is flexible as long as it does not exceed the limits of this volume. This volumetric limit is meant to help guide the flexible design, placement, and height of rooftop mechanical equipment based on a project's context.
   - Unless to enable smaller floorplate buildings or mitigate impacts to the public realm, rooftop mechanicals should not exceed 40 total feet in height.
   - Mechanical equipment can be integrated into the building volume to minimize impacts.
   - Exhaust related flues and fan sets that extend up above mechanical equipment or screening may exceed this design limit but should be located to minimize impacts to the public realm.
   - These parameters will be evaluated and revised as building technology and energy performance continue to evolve. In all instances, the design guidelines prioritize energy performance and minimizing impact on the public realm as key goals. Solar PV panels and other renewable energy equipment will not be subject to these design limits.

Figure 3: Rooftop mechanicals should be contained within a envelope limited in volume.

Figure 4: The volumetric limit to rooftop mechanicals generally applies to mechanical equipment located above the established building height in zoning. However, to encourage the integration of mechanical equipment into the building design, independent penthouse structures are calculated in their totality, and measured from the roof line regardless of the building height in zoning, as illustrated in example above.

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Ongoing Life Science Development Approach

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Our Design Guidelines process to date

We are here

Draft Design Guidelines

- Focus groups with Life Science developers and BSA members
- BPDA urban designers, architects, and planners research and draft guidelines

Refine Design Guidelines

- Focus group with Life Sciences developers
- Focus group with BSA members

Release Action Agenda

- Published the *Life Science Action Agenda*: a coordinated strategy for shaping Life Science development including design guidelines, planning, community engagement, and more

Release & Adopt Design Guidelines

- Provide Draft Guidelines for public review and host public meetings
- Adopt the Life Science Design Guidelines this spring

What are we referring to when we say “life sciences”?

For the purposes of these guidelines, “life sciences development” follows the Board approved zoning definition for “research laboratories” and refers to:

- Buildings that are used for the development, conduct, or observation of scientific experimentation or research, including but not limited to the medical, chemical, physical, or biological disciplines.
- Life science buildings have areas that are dedicated to uses which require specialized facilities and/or built accommodations designed for the development, conduct, or observation of scientific experimentation or research – including but not limited to wet laboratory facilities, clean rooms, controlled environment rooms, and facilities with high-frequency ventilation.
- They often include a mix of laboratory and other uses, including office, storage, and prototype manufacturing, and can include ground-up development of new buildings, as well as conversion of all or a meaningful part of an existing building.

Design Guidelines

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Urban Context Considerations

While these guidelines should be considered citywide, each project will require a unique and flexible approach to their site. Urban design considerations, priorities, and requirements will vary based on location, site adjacencies, and urban context.

Areas that will require distinct design approaches and priorities:

- Mixed-use districts
- Industrial areas
- Healthcare and academic campuses

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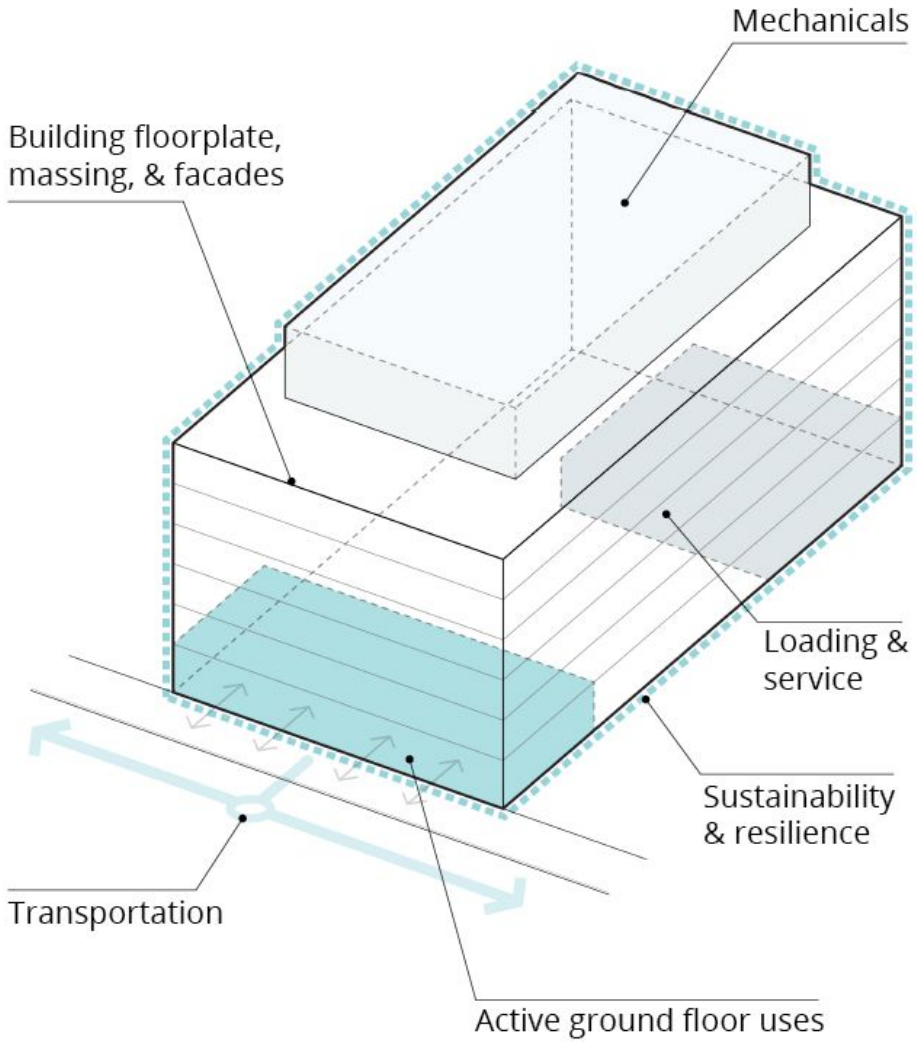
Design Guidelines Focus Areas

This document focuses on the following areas of life science building design:

1. *Building Floorplate, Massing, & Facades*
2. *Mechanicals*
3. *Ground Floor: Active Uses, Loading & Service*
4. *Transportation*
5. *Sustainability & Resilience*

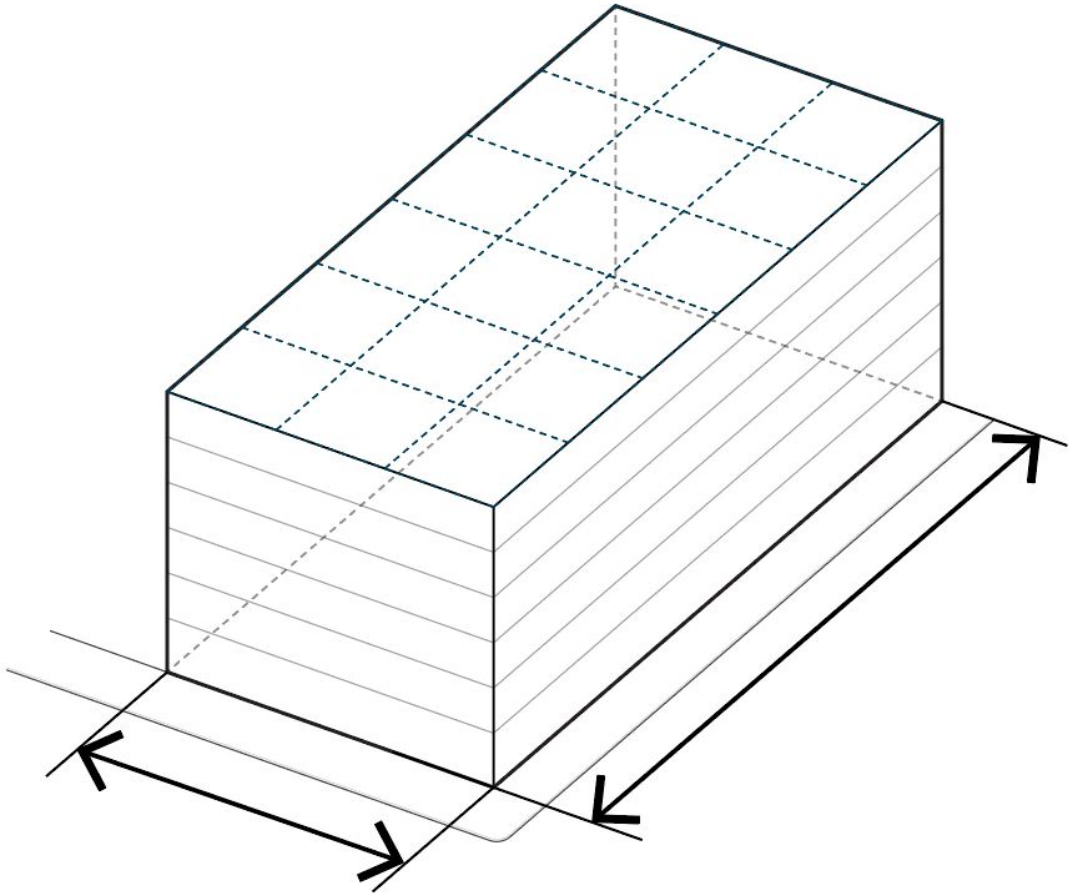


01 Building Floorplate, Massing, & Facades

Breakdown large building massings and sites and organize and shape projects to respect and respond to the surrounding context.

1.1 Prioritize small floor plates (< 30,000 sf) that preserve and respect the scale of the surrounding context.

1.2 Design for flexible mixed-use and future use so buildings can be converted to commercial, residential, or mixed uses in the future.

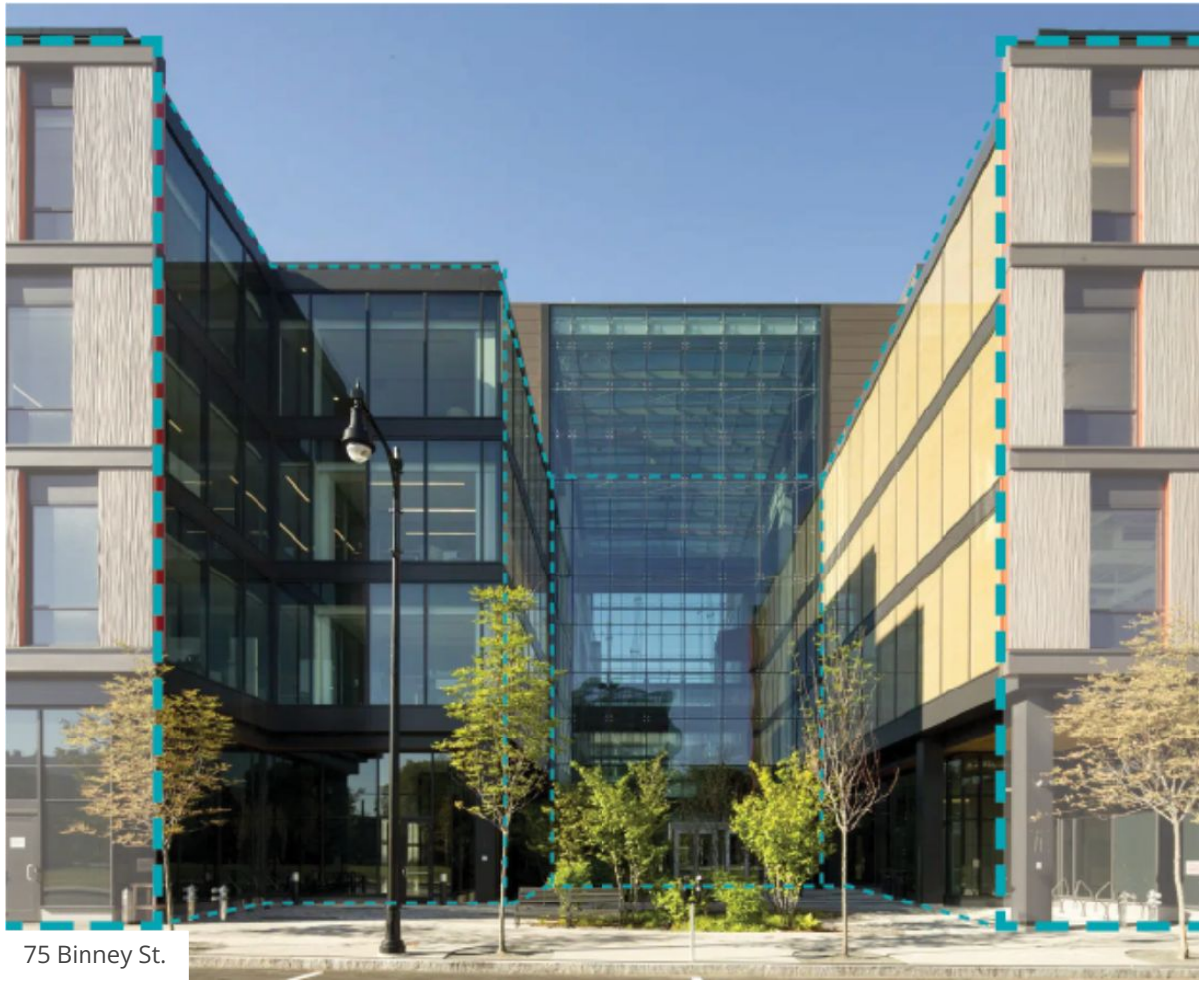


01 Building Floorplate, Massing, & Facades

Large floorplate buildings especially should utilize design strategies to mitigate scale and ensure the building responds to the scale of the area.

1.3 Mitigate large floorplates: Floor plates greater than 30,000 sf will require additional design review.

1.4 Breakdown large-blocks: Where relevant, new development and redevelopment of sites should break up excessively large blocks and increase permeability.

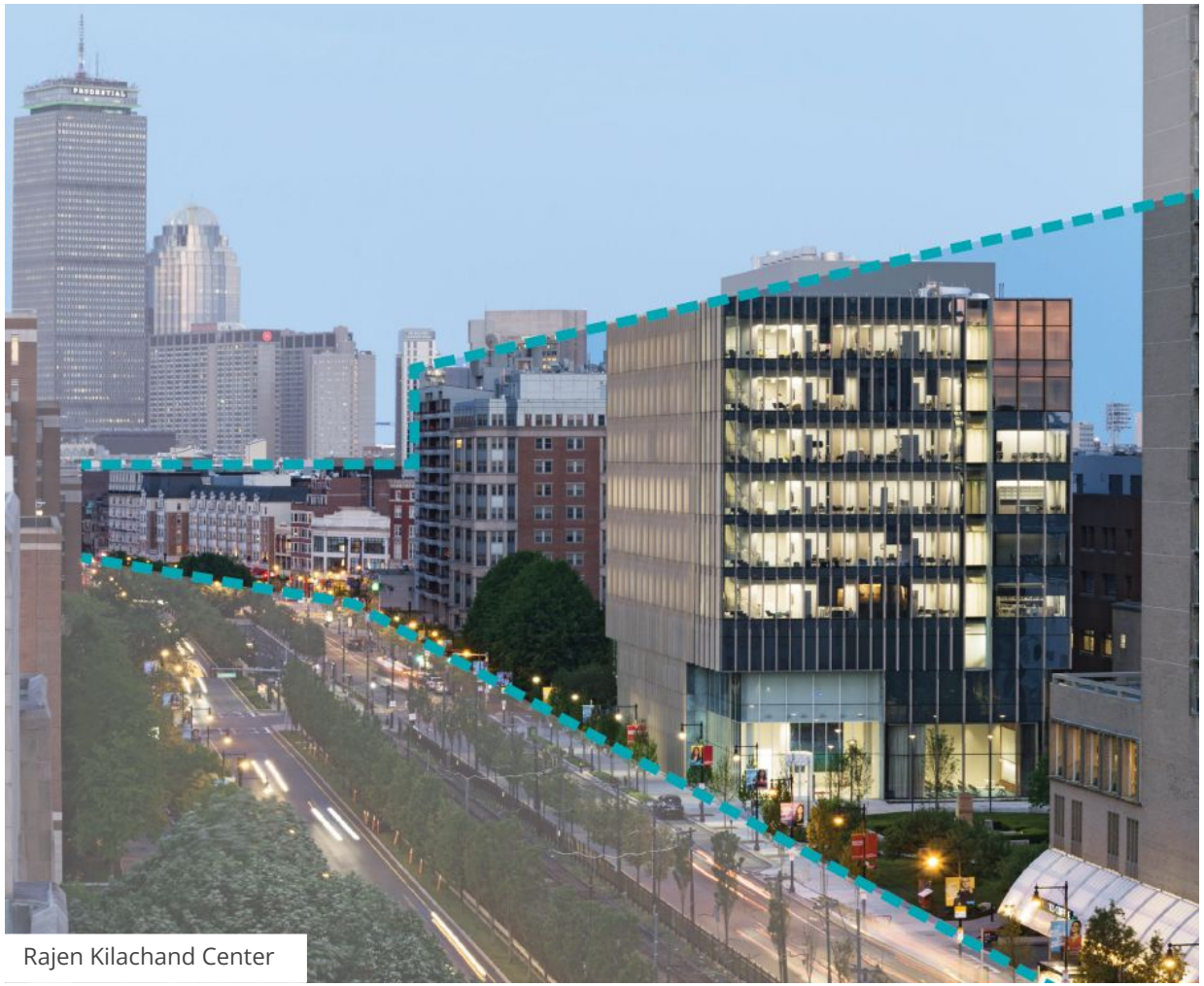


75 Binney St.

01 Building Floorplate, Massing, & Facades

A combination of strategies should be used. These may include:

- **Setback and modulate the building massing** to reduce scale and break up the block especially if the building length exceeds 250 feet or more than 75 percent of the block.
- Shape the building design to **respond to the height and horizontal datums** of adjacent structures.
- Utilize changes in **height**, **façade** articulation, **material** changes, **setbacks**, and/or similar architectural features.
- Vary and articulate the building façades to add scale and **reinforce existing façade rhythm along the street** where it exists.



Rajen Kilachand Center

02 Mechanicals

Creatively incorporate mechanicals in building design and minimize their impact on the surrounding context and public realm.

2.1 Minimize visual, noise, and shadow impacts to the public realm and adjacent uses.

2.2 Integrate rooftop mechanicals into overall building design.

2.3 Consider the impact of rooftop mechanicals on view corridors.

2.4 Utilize interstitial mechanical floors to minimize urban design impacts.

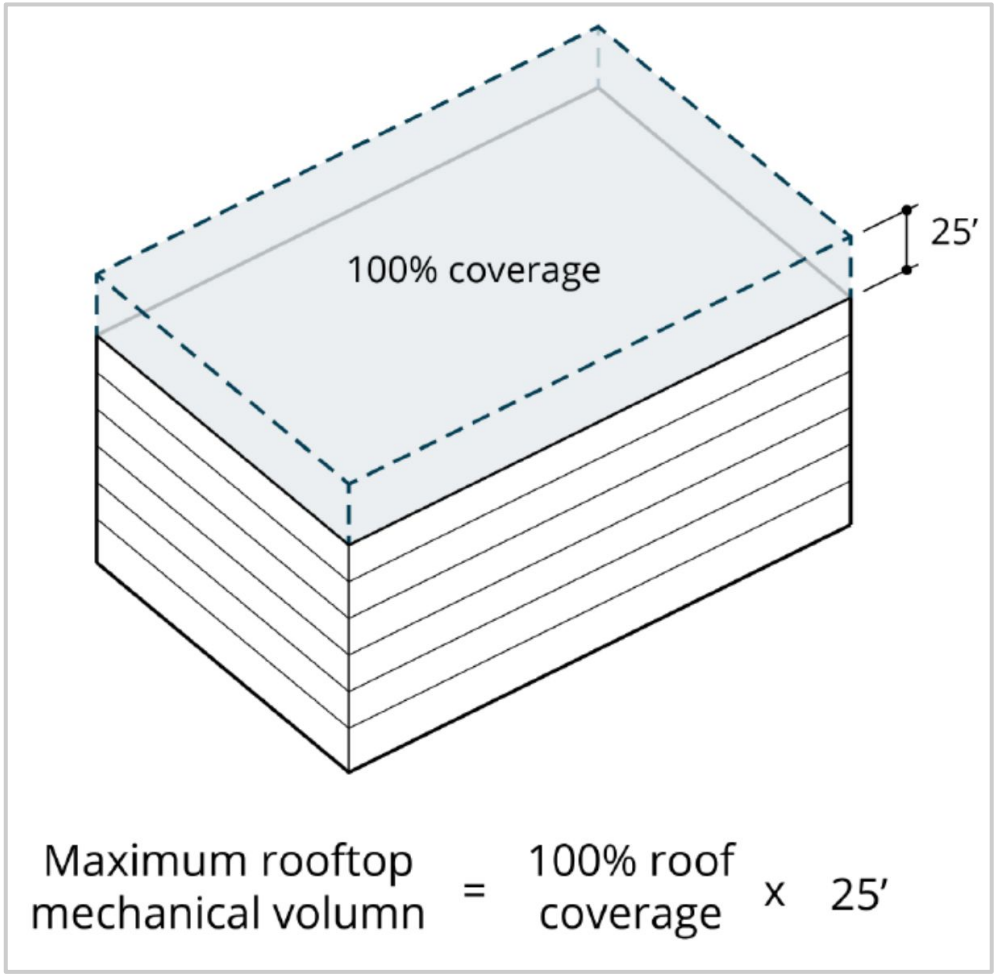
Manulife Office-to-Lab Conversion: Interstitial mechanical floors

02 Mechanicals

To guide the flexible design, placement, and height of rooftop mechanical equipment based on a project's context the guidelines provide a volumetric limit on rooftop mechanicals that will be used during design review and as part of the entitlement process.

2.5 Follow the height and volume design limits for rooftop mechanicals on large floor plate buildings (>30,000 SF).

- Rooftop mechanicals should not exceed a total volume equivalent to 100% roof coverage and 25 feet in height
- Unless to enable smaller floorplate buildings or mitigate impacts to the public realm, rooftop mechanicals should not exceed 40 total feet in height.



03 Ground Floor: Loading, Service, & Active Uses

Design to create an inviting, active, and comfortable streetscape sensitive to the surrounding context and avoid conflicts with pedestrians, bicyclists and neighboring uses.

3.1 Activate the street and public realm with ground floor uses. Design ground floors to include and feature active ground floor uses to the maximum extent feasible.

- They should be prioritized on first floors fronting primary streets and open space, particularly in mixed-use areas.
- Active uses should serve the local community, including those who live and work in the area and/or identified city-wide priorities.

75 Binney St.: Activated ground floor

03 Ground Floor: Loading, Service, & Active Uses

Particular attention should be paid to the design of loading and service areas that can often have a significant impact on the public realm and neighboring uses.

3.2 Minimize the impact of loading and service areas on the public realm. Locate loading and servicing areas on secondary streets or, preferably, alleyways or other locations on private property.

3.3 Minimize curb cuts: Curb cuts on public ways shall comply with City of Boston standards.

3.4 Integrate loading and service bays into the overall building design.

Longwood Medical Area: loading areas and curb cuts often disrupt the public realm

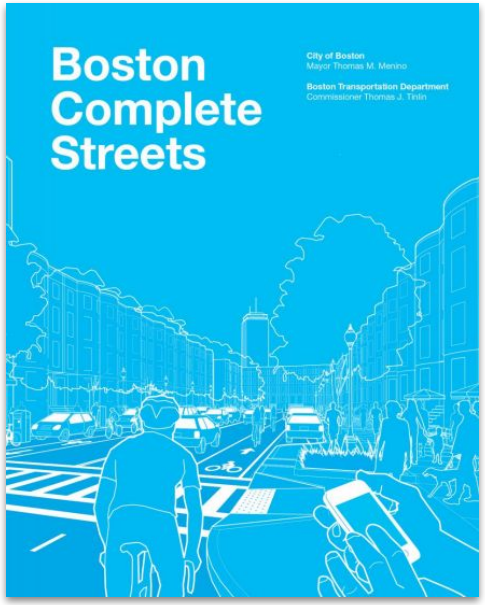
04 Transportation

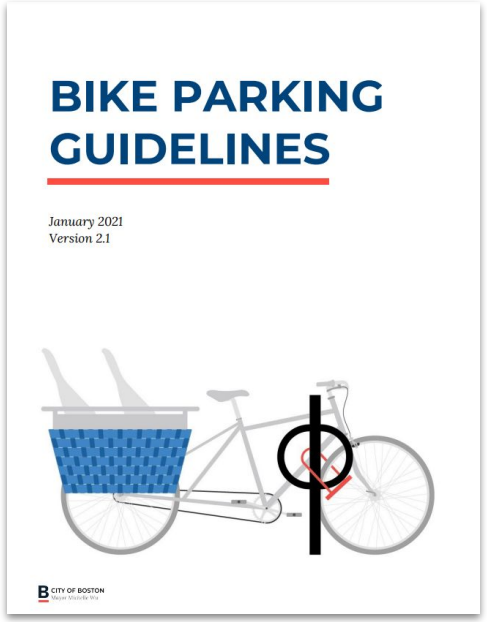
Design features that facilitate transit use and active transportation including biking, running, and walking.

4.1-4.3 Life science development should integrate existing City guidelines into building design to support active transportation, reduce reliance on single-person car trips. These include:

- *Boston Complete Streets*
- *Bike Parking Guidelines*
- Boston Transportation Department maximum parking ratios (required for building >50,000 sf)
- Transportation Demand Management strategies for all buildings over >50,000 sf

4.4 Transit use: Where possible, development should consider linkages and accessibility to public transit.





05 Sustainability and Resiliency

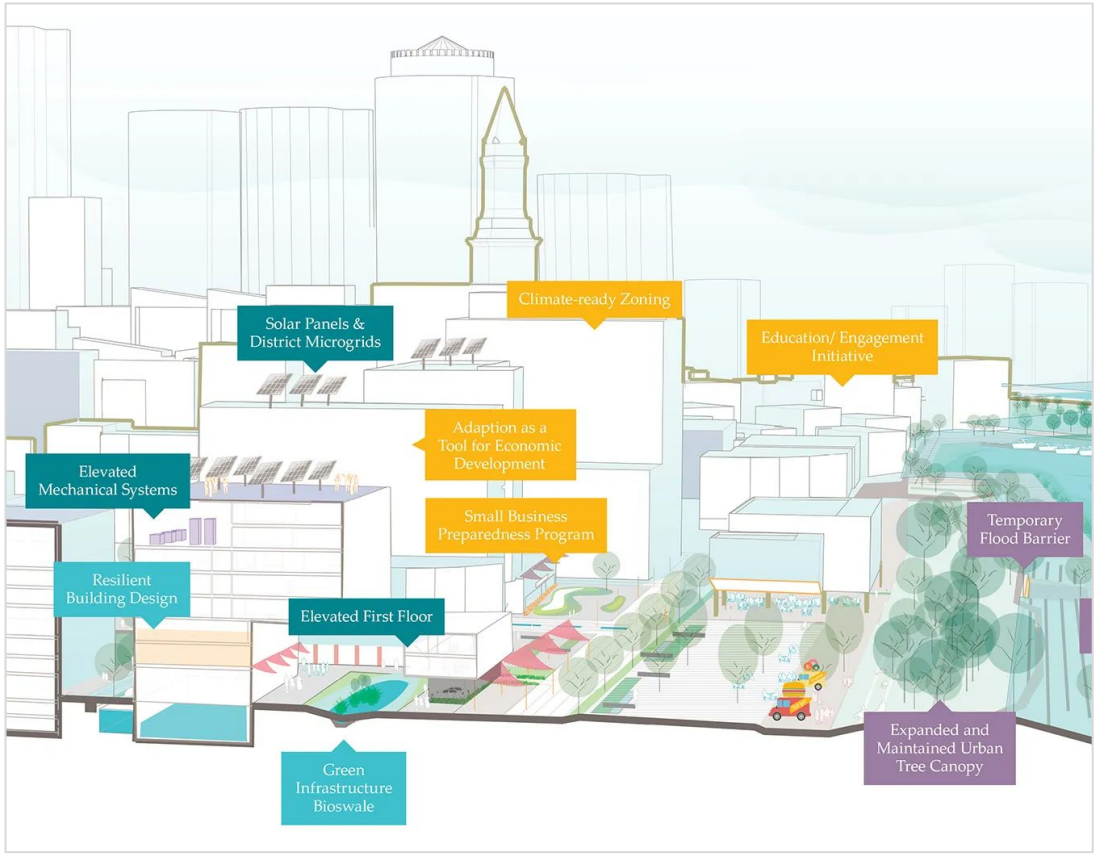
Ensure projects are resilient and mitigate high energy needs and climate change impact.

5.1-5.3 Sustainability: Life science development should adhere to existing sustainability standards including:

- Article 37 of the Boston Zoning Code sustainability standards and LEED rating system (required for all buildings subject to Article 80)
- Smart Utilities Policy (BSU)
- Zero Net Carbon (ZNC) policy and standards
- Building Emissions Reduction and Disclosure Ordinance (BERDO) (required for all building >20,000 sf)
- Zero Waste Boston initiative

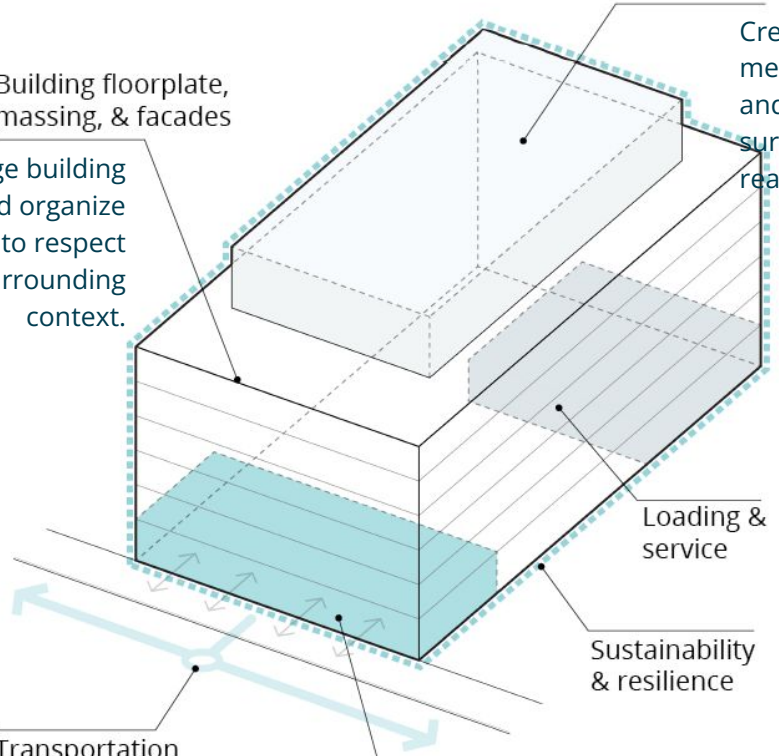
5.4 Resilience: Life science buildings should be designed to prepare for, easily recover from, and adapt to site-relevant climate hazards and follow the appropriate guidelines including:

- Coastal Flood Resilience Overlay District (as codified in Article 25A)
- Flood Resilience Design Guidelines



Climate Ready Boston

When these design elements are considered holistically from the beginning of the design process, future lab buildings can become more flexible, inclusive, resilient, and responsive to the evolving needs of the city.



Next Steps

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Next Steps - Life Science Building Design Guidelines

Public Process

- Public Meetings:
  - Tuesday, February 28th, 6:00 pm
  - Tuesday, March 14th, 6:00 pm *(same content as February 28th meeting)*
- Public comment period open until Friday, March 31st
  - *Please submit comments on the project website:* https://www.bostonplans.org/projects/standards/life-science-building-design-guidelines

BPDA Board vote - Date to be determined

Future Health and Safety Public Meetings - Date to be determined

For a general overview of Federal, State, and City regulations please refer to the Life Science Action Agenda: https://www.bostonplans.org/projects/standards/life-sciences-action-agenda

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