Rhode Island State Laboratories and Center for Life Sciences

I-195 Redevelopment District
Parcel 25

October 19, 2022

Legal & General ANCORA GRE h+o+k

CONTEXT

Garrahy Judicial Complex
Aloft
Dorrance Street
Providence River
Garrahy Courthouse Parking Garage
Clifford Street
Plaza
Dyer Street
Providence Innovation District Park
CONNECTION TO PLAZA
CITY WALK
Point225
NEW BUILDING
Elbow Street
Richmond Street
Future Development Site
New Mixed-Use Development
SCIENCE ON DISPLAY
CORNER
Plaza
Alpert Medical School
South Street Landing Garage



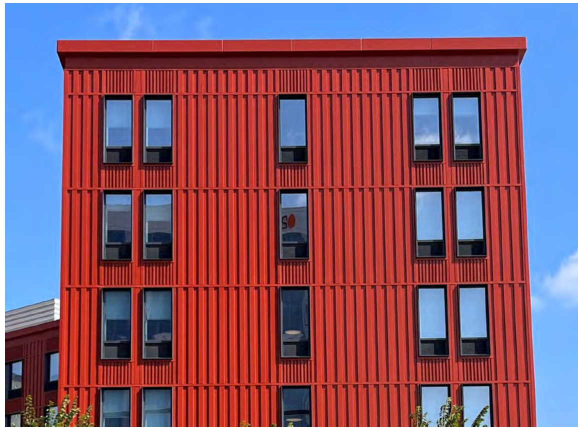
VOTE



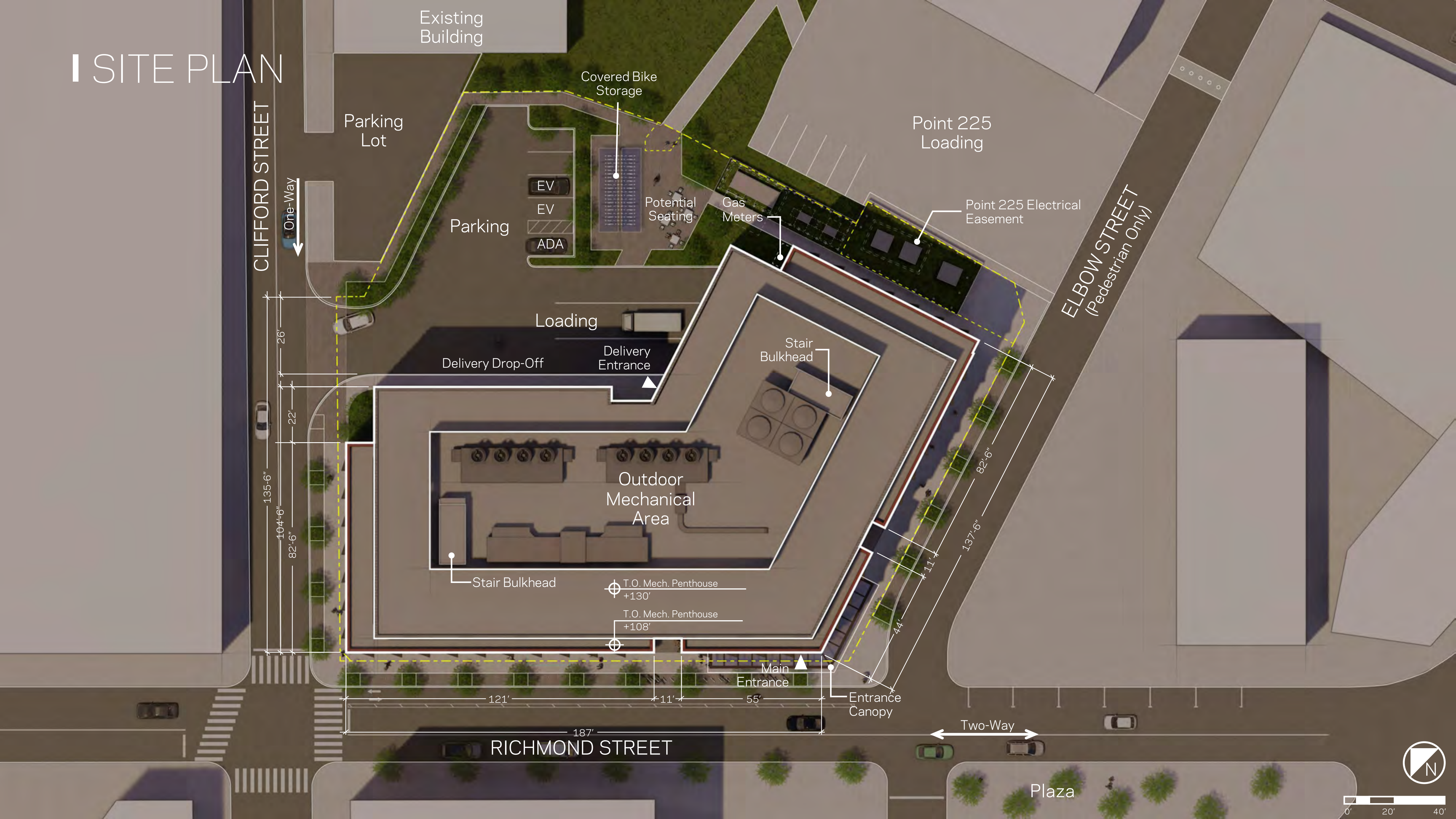


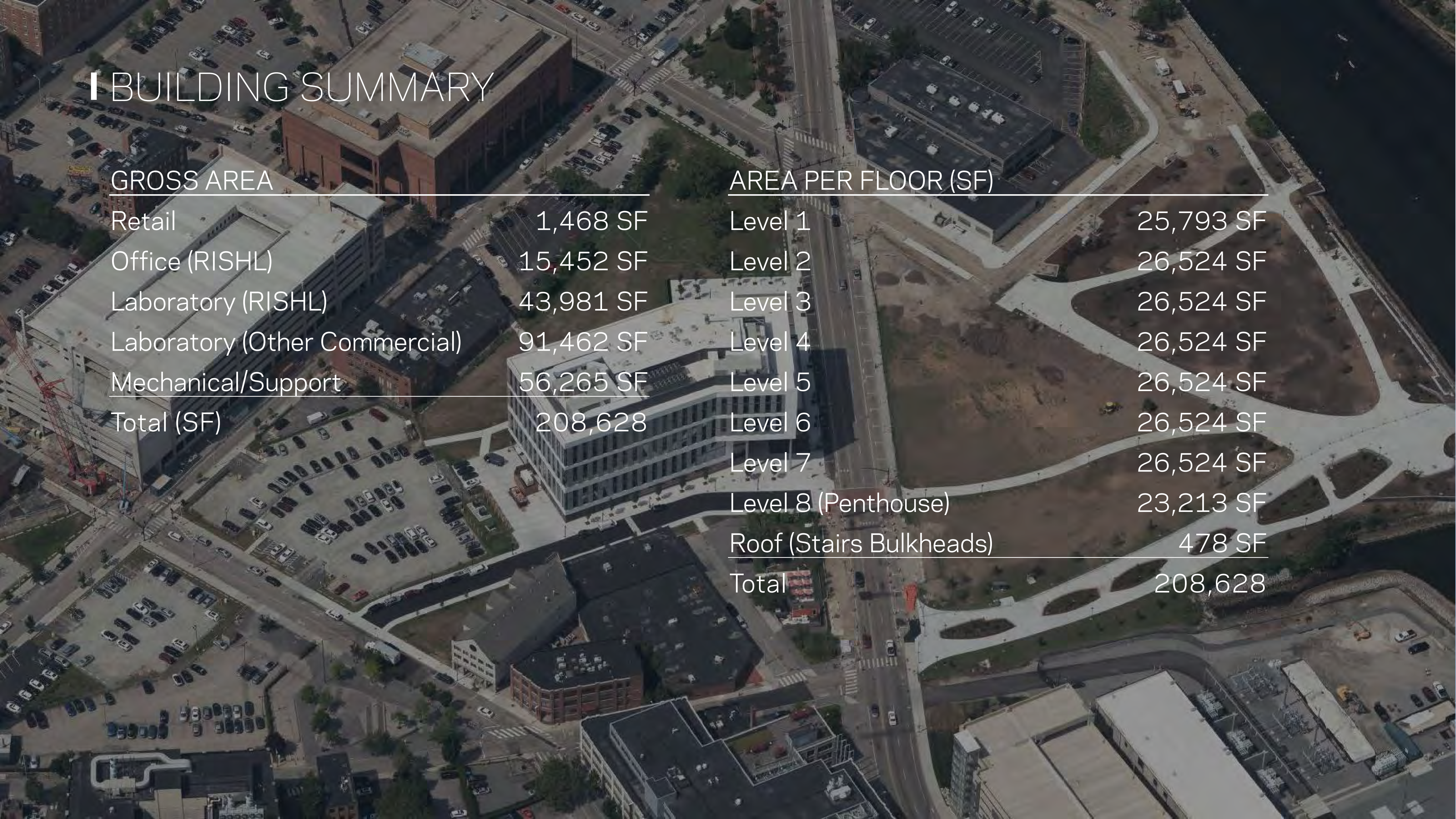


MICH
MEM



SITE PLAN


Existing Building
Covered Bike Storage
Parking Lot
CLIFFORD STREET
One-Way
EV
EV
ADA
Parking
Potential Seating
Gas Meters
Point 225 Loading
Point 225 Electrical Easement
ELBOW STREET (Pedestrian Only)
Loading
Delivery Entrance
Delivery Drop-Off
Stair Bulkhead
Outdoor Mechanical Area
Stair Bulkhead
T.O. Mech. Penthouse +130'
T.O. Mech. Penthouse +108'
26'
22'
135'-6"
104'-6"
82'-6"
82'-6"
137'-6"
11'
44'
Main Entrance
Entrance Canopy
121'
11'
55'
187'
RICHMOND STREET
Two-Way
Plaza
N
0'
20'
40'



BUILDING SUMMARY

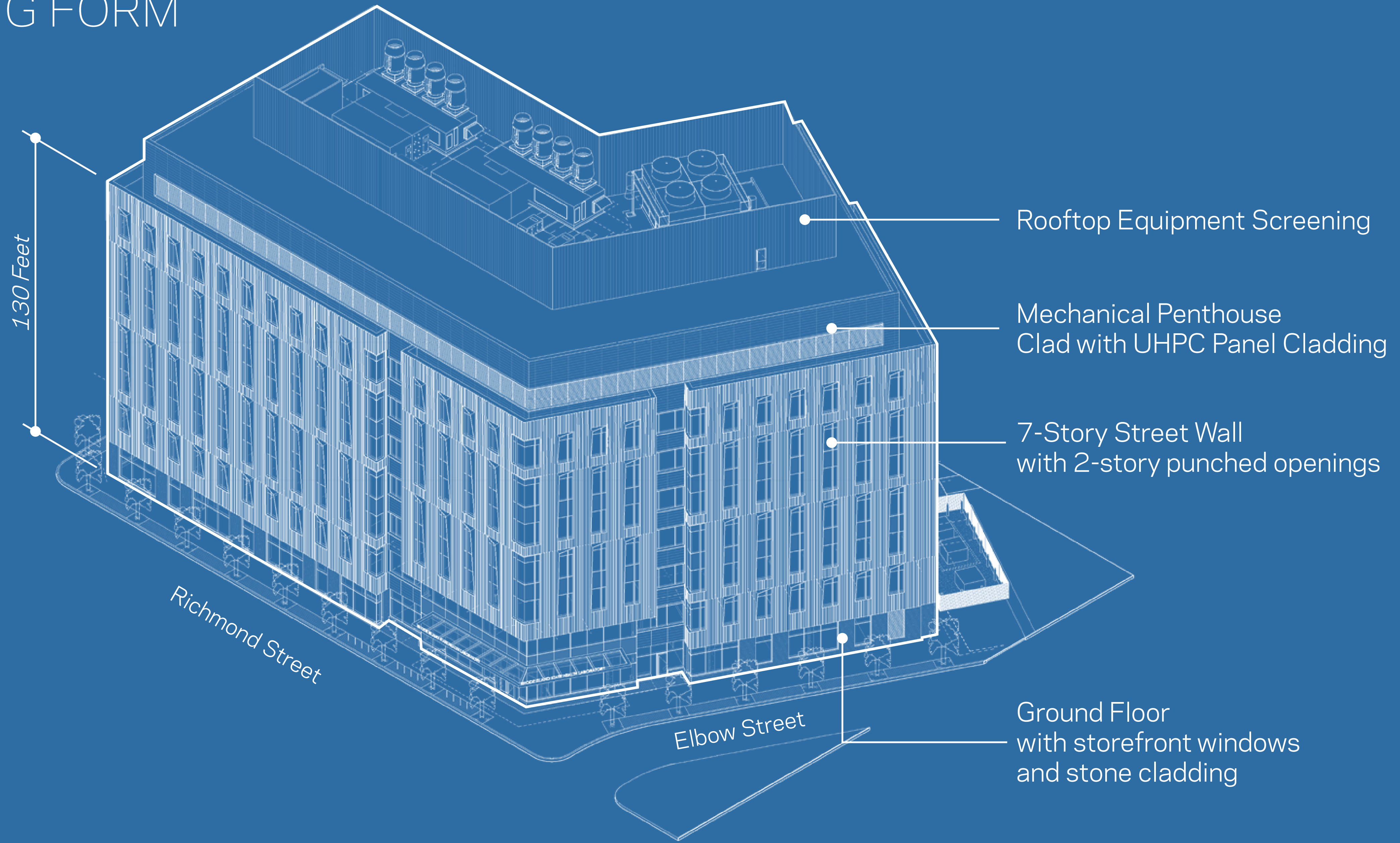
GROSS AREA	
Retail	1,468 SF
Office (RISHL)	15,452 SF
Laboratory (RISHL)	43,981 SF
Laboratory (Other Commercial)	91,462 SF
Mechanical/Support	56,265 SF
Total (SF)	208,628

AREA PER FLOOR (SF)	
Level 1	25,793 SF
Level 2	26,524 SF
Level 3	26,524 SF
Level 4	26,524 SF
Level 5	26,524 SF
Level 6	26,524 SF
Level 7	26,524 SF
Level 8 (Penthouse)	23,213 SF
Roof (Stairs Bulkheads)	478 SF
Total	208,628

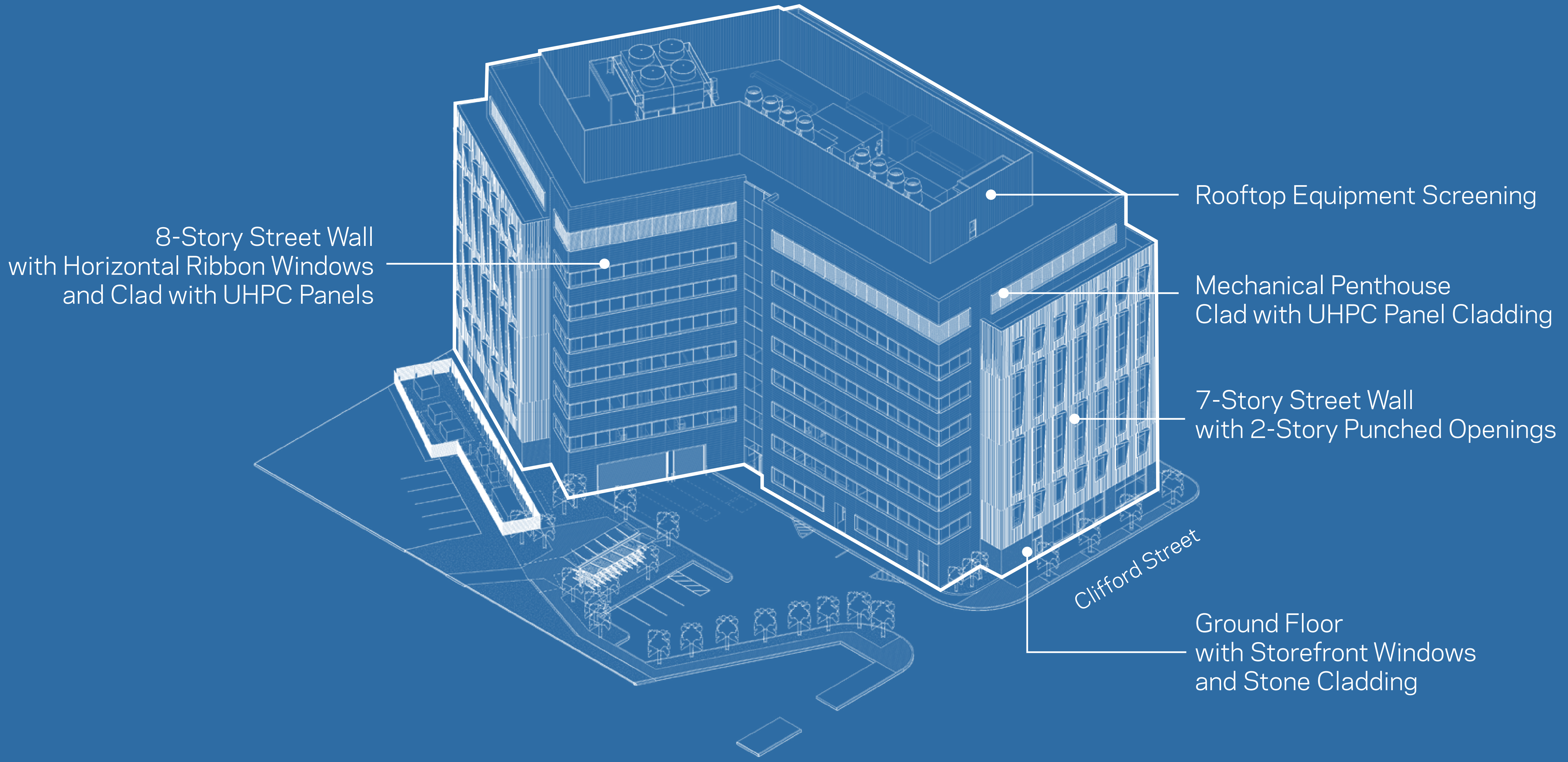

CITY


RIVER

BUILDING FORM



BUILDING FORM

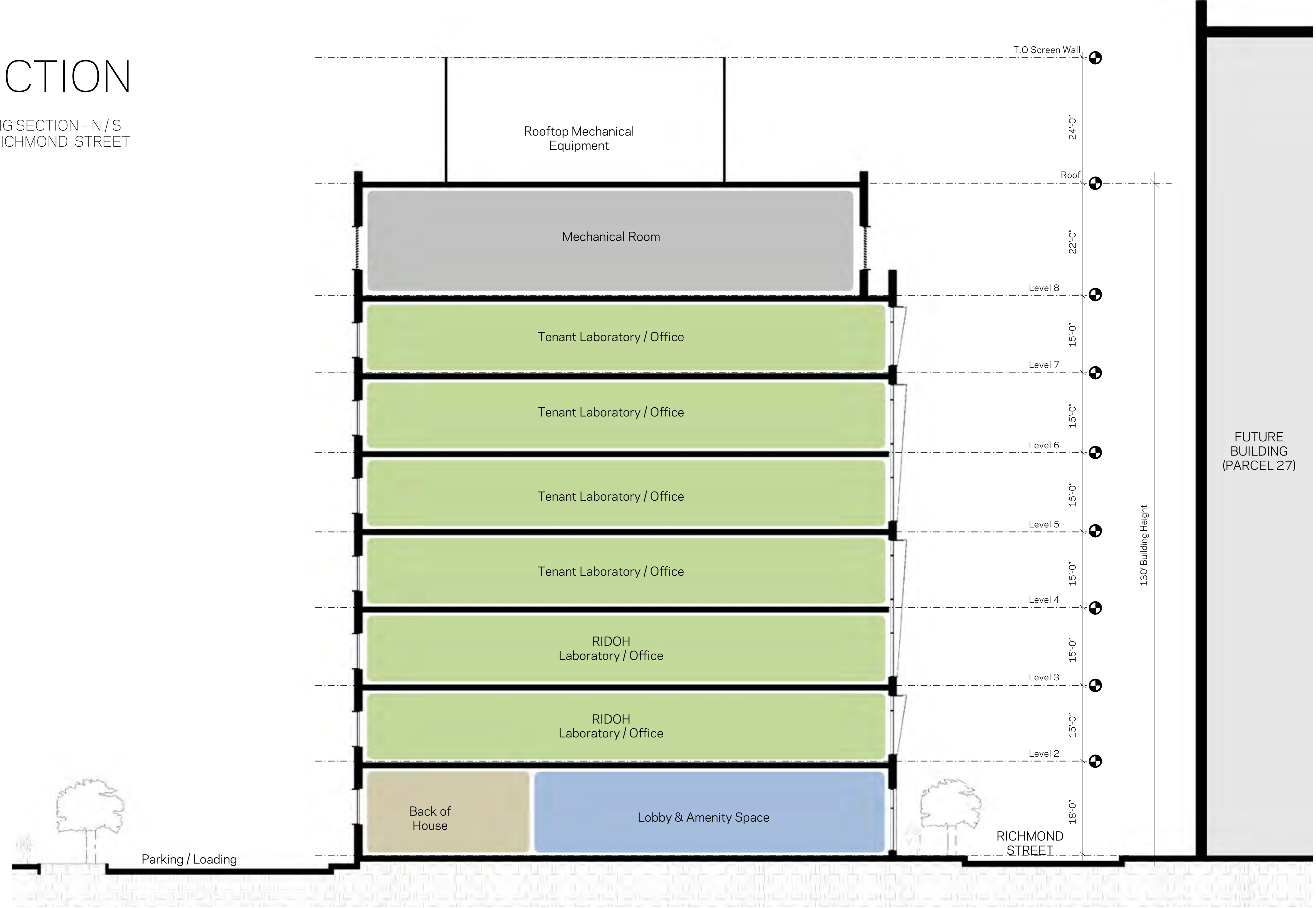


BUILDING CORNER

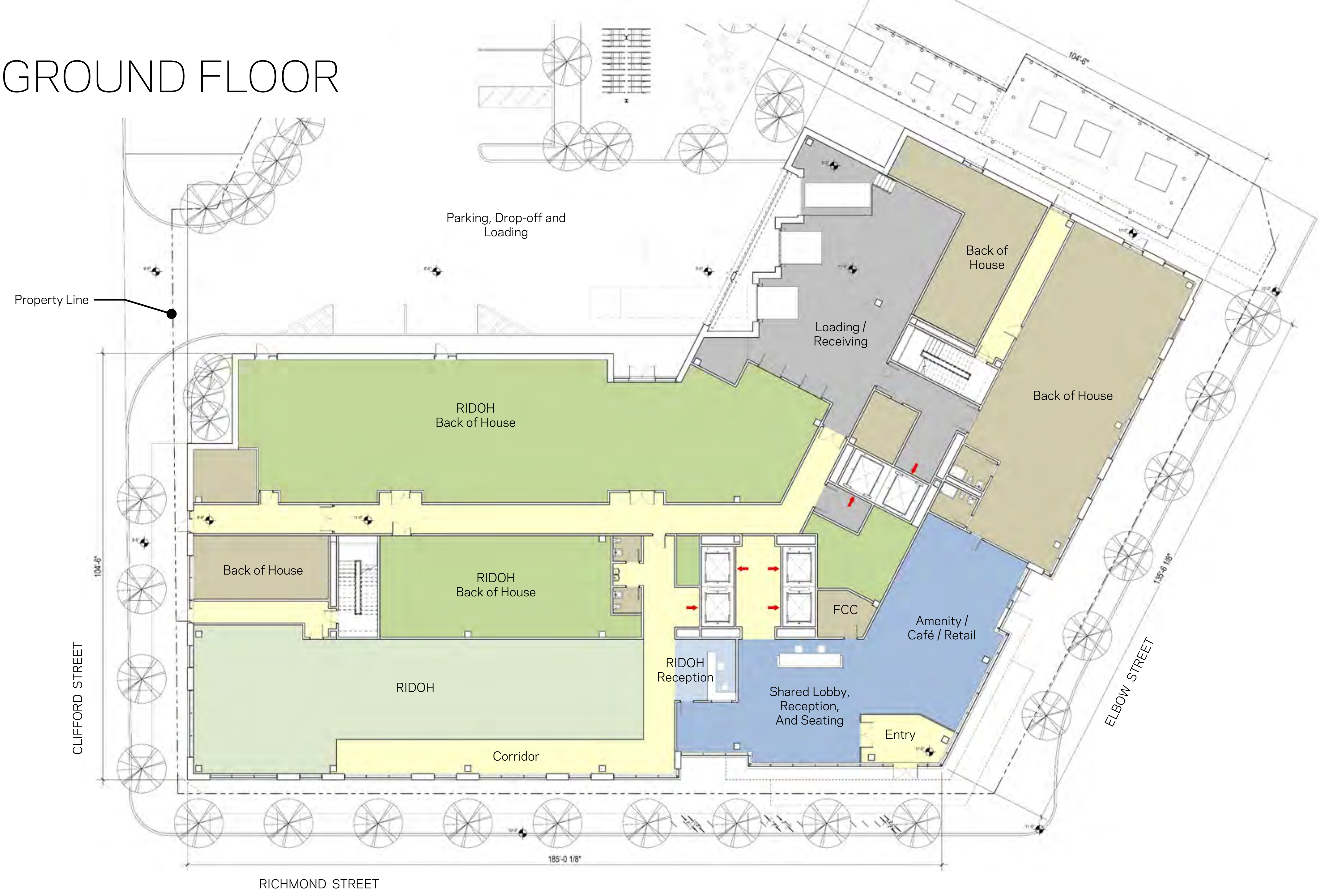
BUILDING ELEVATION: RICHMOND STREET

SECTION

BUILDING SECTION - N / S
THRU RICHMOND STREET



GROUND FLOOR



LAB FLOOR (LEVELS 2-7)

ENTRANCE

ACTIVATED STREETSCAPE

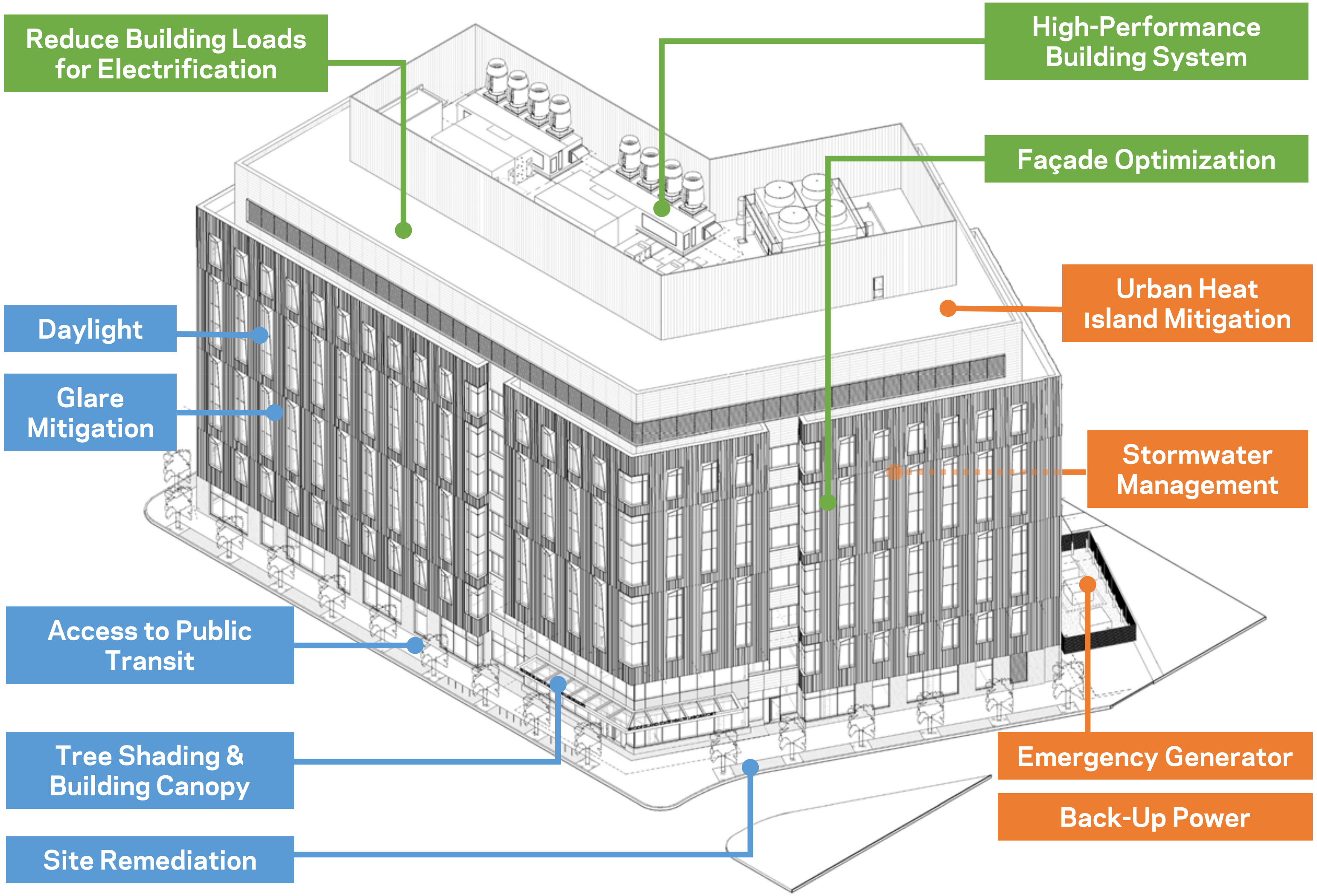
A COMPREHENSIVE APPROACH TO SUSTAINABILITY

Our holistic approach to sustainability incorporates both passive design elements and active building systems, ensuring that the projects serves both the environment and the people.

1 Low Carbon, High Performance

2 Prioritizing Health & Wellbeing

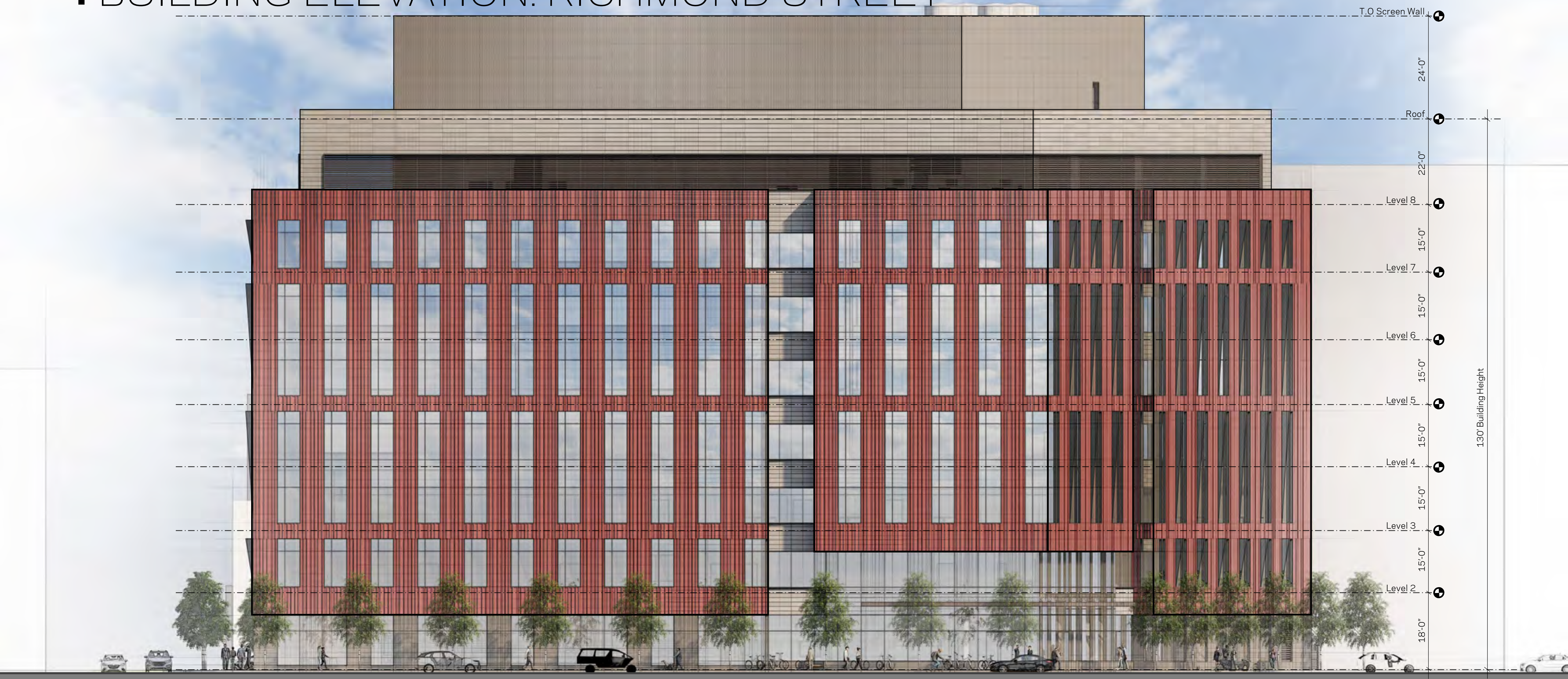
3 Resilience in a Changing Climate



APPENDIX

BUILDING ELEVATION: ELBOW STREET

BUILDING ELEVATION: RICHMOND STREET



BUILDING ELEVATION: ELBOW STREET

BUILDING ELEVATION: NORTH FACADES

BUILDING ELEVATION: CLIFFORD STREET

SUSTAINABILITY HIGHLIGHTS

1. Net-Zero Carbon by 2050
   a) The design team is committed to incorporating principles of sustainability and wellness into the project. Focus is on an integrated approach that optimizes an energy-efficient design with the desire to achieve the Net-zero carbon emissions goal by 2050 as required by the 2021 Act on Climate.

2. Exemplary Energy Performance
   a) The Rhode Island State Health Labs project will set an example for energy conservation goals established by Rhode Island Stretch Code for Commercial Construction in combination with the requirement to achieve the minimum requirements in ASHRAE 90.1-2016 and the International Energy Conservation Code (IECC 2018).

3. LEED BD+C Silver
   a) The pursuit of LEED Silver will elevate performance in areas besides energy and carbon including sustainable sites, transportation, water consumption, and sustainable materials.

4. Optimizing Building Facade
   a) Optimize façade and shading performance will through iterative computer simulations to determine the impact of solar load for the various design schemes.
   b) Increase daylight into the space and bounce light deeper into the laboratory while controlling glare, reducing artificial lighting demand.
   c) high-performance glass, air-tight exterior wall, and enhanced insulation to improve façade thermal performance.

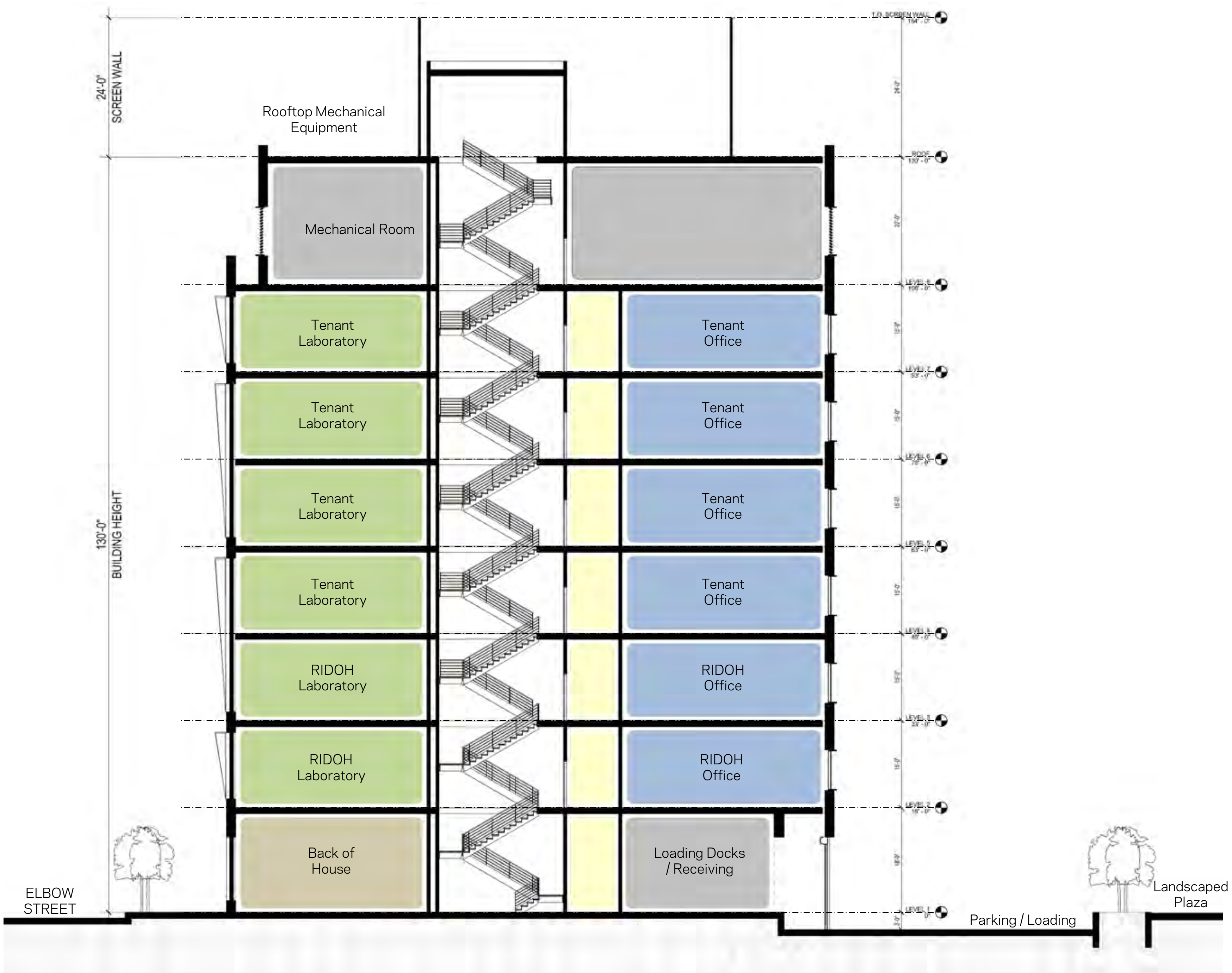
5. High-Performance Building Systems
   a) Energy recovery system
   b) Heat-recovery chillers, air-sourced heat pump systems, and enhanced energy recovery will be considered to reduce building loads, to evaluative the feasibility of building electrification

6. Comfort & Wellbeing
   a) Mitigate the urban heat island effect and reduce the increasing heat risk due to climate change through shading and reflective surfaces.
   b) Connect to adjacent public transit including bus stations and CityWalk pedestrian/bike network.
   c) EV charging stations will be included in the parking area to limit ambient air pollution from tailpipe emissions.
   d) Low-impact materials, recycled and low-VOC content in materials will be evaluated along with maintenance, human health, and sustainable sourcing.

7. Resiliency
   a) Design strategies to reduce risks from extreme future storms and sea level rise.
   b) Flood protection measures including raising critical facilities and building systems above the design flood elevation (DFE).
   c) On-site stormwater management strategies to reduce stormwater runoff.
   d) Low Impact Development (LID) site planning and design strategies
   e) High performance and durable materials and systems .
   f) Emergency generators and backup power sources.

SECTION

BUILDING SECTION – NW / SE
THRU ELBOW STREET



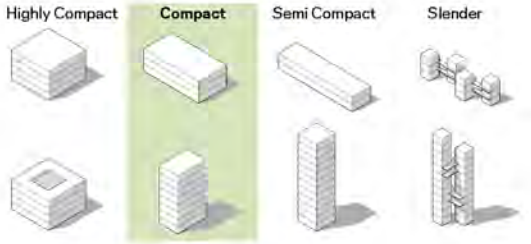
SUSTAINABILITY: PASSIVE DESIGN STRATEGIES

Load Reduction: Massing & Programming Considerations

Massing

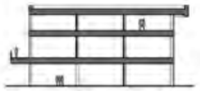
Ideal massing options try to find the right balance between exterior surface area that fits the climate zone and daylight requirements.

Compact Geometry



Aspect ratio of roughly 1 to 1.5 (height:width).
Limited surface to volume ratio minimizes conductive losses while still allowing daylight & solar heat gain for colder climates.

Earth sheltering: Not feasible

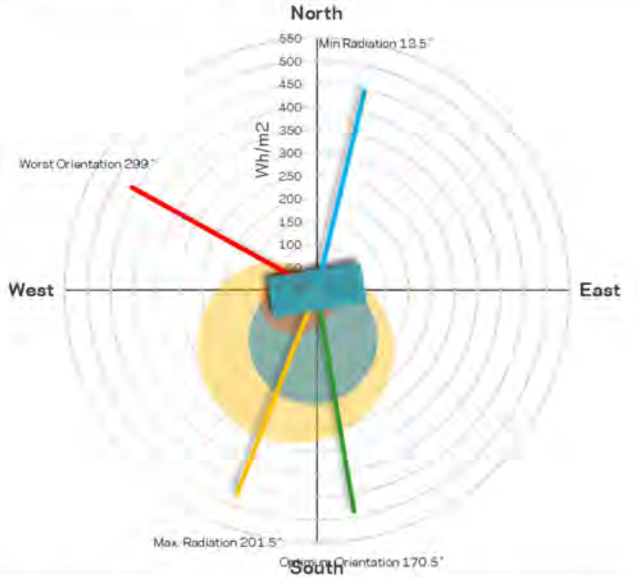


Limited or No benefit to in exposure of the external envelope with a thermally significant volume of soil or substrate.

Orientation

The optimum orientation provides maximum winter solar collection as well as maximum summer solar protection.

Optimum Orientation: 170.5˚



Legend	Wh/m2
	Radiation during underheated period
	Total Radiation
	Radiation during overheated period
	Overal Mass sample
	Best orientation
	Worst Orientation
	Maximum Radiation
	Minimum Radiation

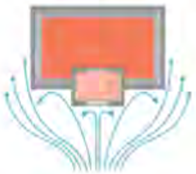
Program

Temperatures are below the comfort range
1- Avoid orientation of any long dimensional facades in the direction of cold winds
2- Passive solar heating during the winter to decrease heating loads

Buffer Zone (Cold Wind)

Place low-occupancy and / or high internal gain zones near exterior surfaces exposed to prevailing cold winds to minimize heating load and avoid thermal discomfort. (e.g. corridor, utility, core, labs, gyms, kitchens, etc.)

Vestibules



Vestibules at building entrances reduce air infiltration which result in reduction of heating and ventilation loads in very cold climates .

Solar Oriented Interior Zones

Maximize the placement of high occupancy space near exterior walls exposed to the maximum radiation angle to allow for passive space heating.

SUSTAINABILITY: PASSIVE DESIGN STRATEGIES

Load Reduction: Daylight & Solar Considerations

Self-Shading & Solar Exposure

Cold temperatures
1-Optimize openings for natural daylight and solar gain
2-Minimum amount of self-shading suggested

Enclosed Central Atrium

A central atrium allows for natural daylight to inner zones without increasing conductive losses through the envelope.

Perimeter Atrium

Consider an atrium (Solarium) at the perimeter oriented for solar exposure to collect solar heat and daylight without excessive increase in envelope surface area

External Shading

Passive solar design needed for most of year, use internal shades are rather than external shades to encourage internal heat gain
Consider external shadings only for very high glare issues
Consider internal blinds primarily to combat glare at times of low sun angle

South Façade

Due to low temperatures and high sky cover, minimize external shade depths (use internal shading to control glare issues)

East and west façade

Minimize shading on eastern and western exposures. Due to the low radiation values, internal shades can help control glare issues.

Heliostat

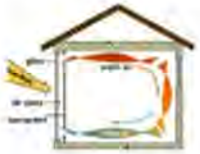
Promote penetration of daylight. Consider allowing low natural light levels into the space by including sky lights, reflective panels outside glazing,a heliostat, etc.

Internal Shading

Radiation intensity during operational hourse (8Am- 6Pm)

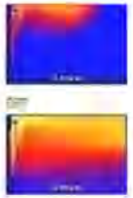
Low 21% | Medium 26% | Intensive 53%

Blind Curtain System



Open top internal shades may effectively block glare and daylight. Conduction, convection and radiation will usually convey a large portion of the heat to the interior of the space.

Horizontal Interior Louvres



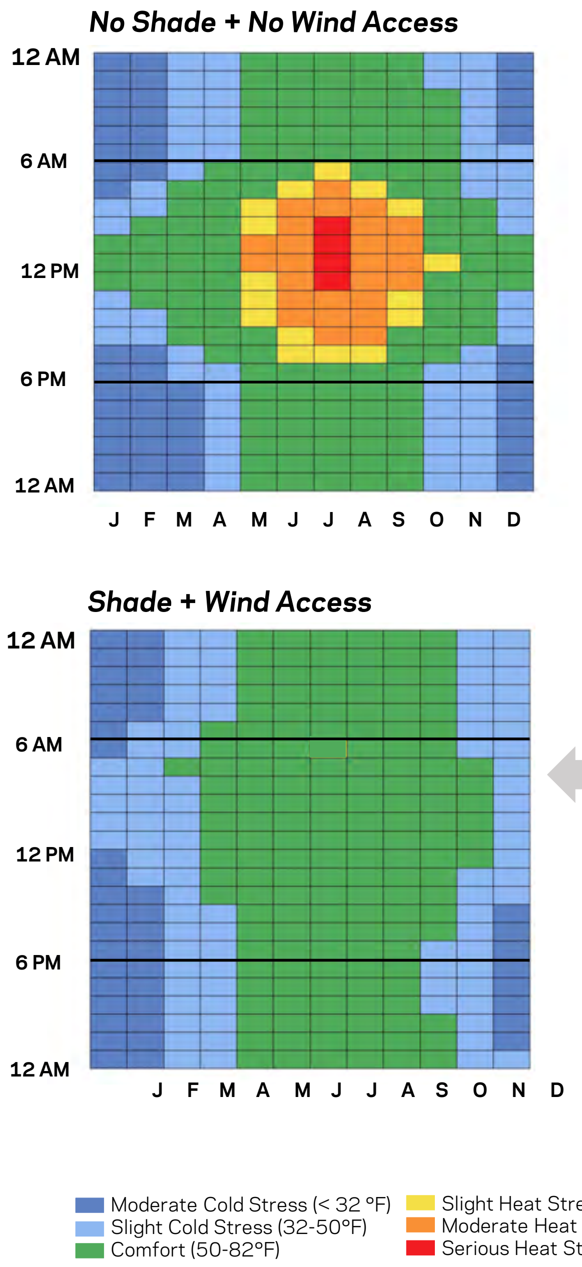
Promote convective heat transfer using horizontal internal louvers (or Trombe Wall) to collect solar radiation and control glare.

Solarium

Consider a solarium or atrium on sun facing exposures to collect solar heat and act as a thermal buffer between interior and exterior space.

I SUSTAINABILITY: URBAN HEAT ISLAND MITIGATION

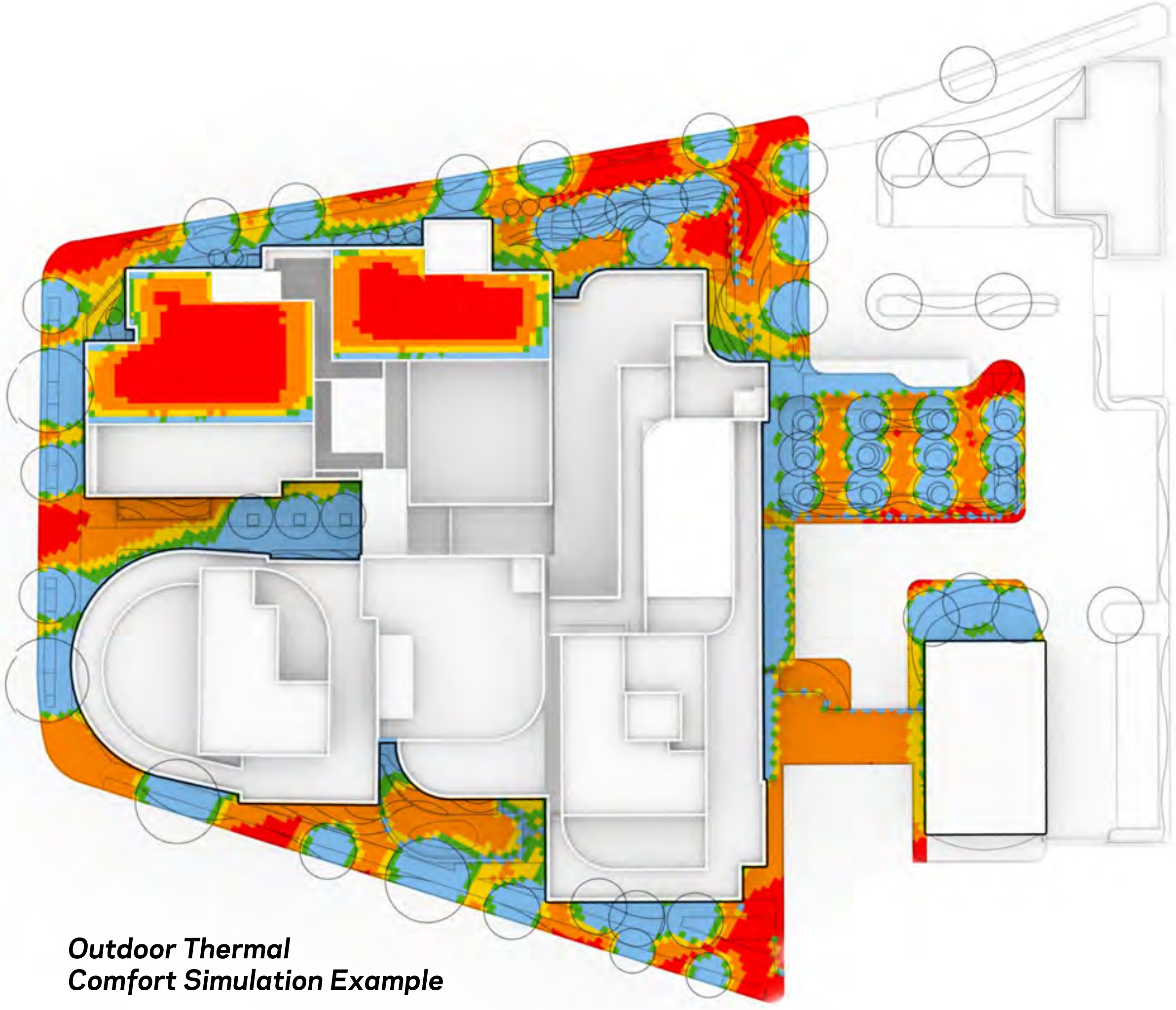
Perceived Temperature (UTCI) in Providence, RI



+ Shading & Wind

100% Comfort time in Summer

SUSTAINABILITY: URBAN HEAT ISLAND MITIGATION



Outdoor Thermal Comfort Simulation Example

In-house Data-Driven Design with Simulations

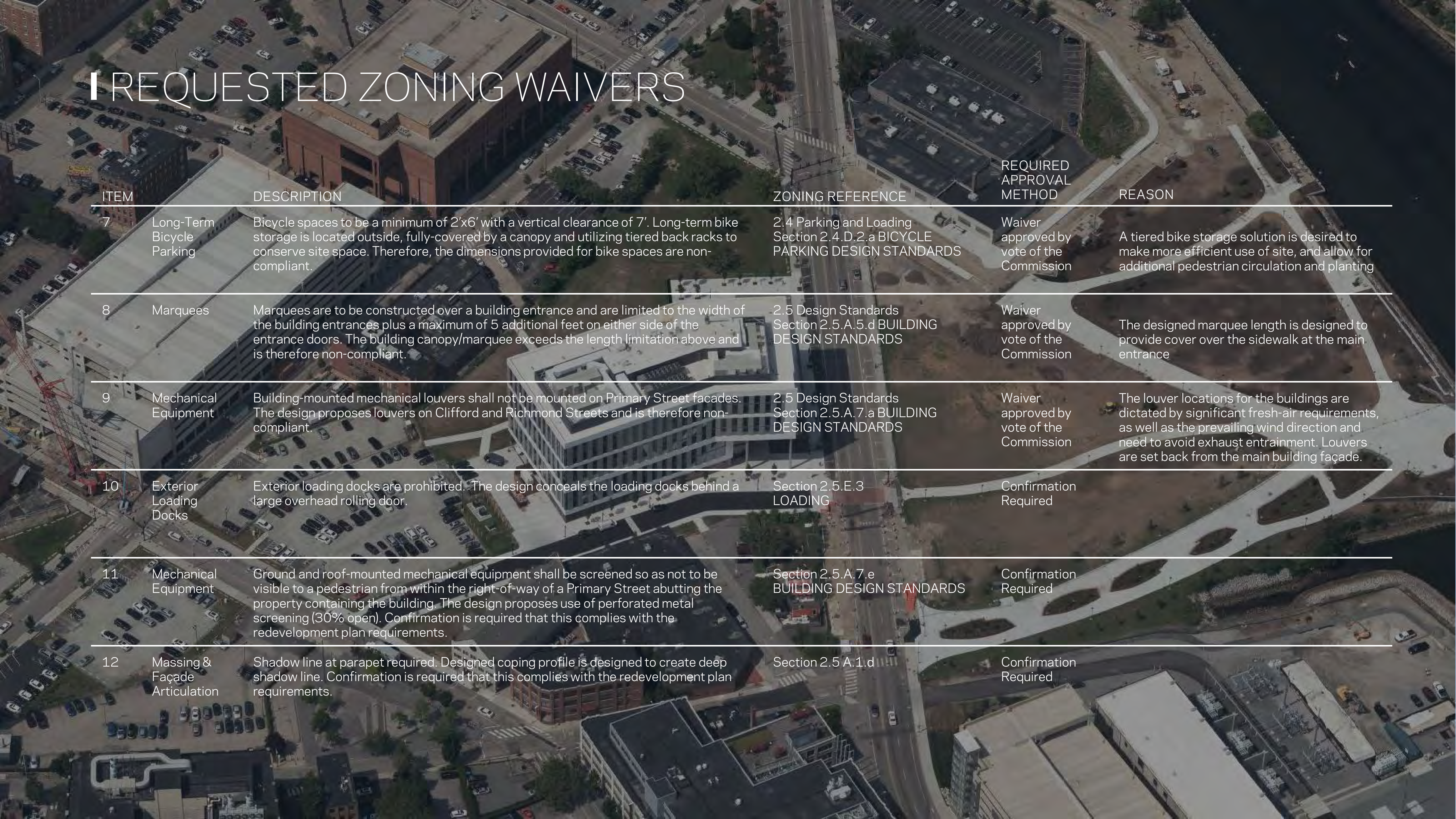
Simulations to analyze direct sunlight, thermal comfort, and wind access on site, will drive the landscape and shading design to mitigate urban heat island effect and improve pedestrian comfort.

Harmful Direct Sun (Summer)

- < 2 hr / day (Very Low)
- < 3 hr / day (Low)
- < 4 hr / day (Moderate)
- < 6 hr / day (High)
- > 6 hr / day (Very High)

REQUESTED ZONING WAIVERS

ITEM		DESCRIPTION	ZONING REFERENCE	REQUIRED APPROVAL METHOD	REASON
1	Street Frontage	Clifford Street Frontage 80% required. Clifford Street property line is 143'-4" in length. Length of building facade within the 8ft build-to zone is 82'-6" long (58% frontage) and is therefore non-compliant. An additional 22'-0" (15%) of building wall is set back 14'-5" from property line for landscaping and building articulation.	2.3 Dimensional Standards Table 2.3-1 and Figure 2.3-1	Waiver	Pedestrian, vehicular and service access cannot be accommodated without a waiver to this requirement
2	Massing & Façade Articulation	For buildings more than 120 feet long, there must be a change in plane in the building façade above the first floor every 100 feet, using notches, bays, offset façade, etc. Facade along Richmond Street is currently 121' long without a significant change in plane, and therefore non-compliant.	2.5 Design Standards Section 2.5.A.1.a BUILDING DESIGN STANDARDS	Waiver approved by vote of the Commission	Design relates façade recess within order ground floor lobby/amenity location and structural grid, which is dictated my lab planning module
3	Surface Parking	Surface parking is permitted only as a special exception by vote of the Commission and is only permitted along Secondary Streets. Parking area will be accessed from Clifford Street. Richmond & Clifford are both Primary Streets; the site has no access to secondary streets.	2.4 Parking and Loading Section 2.4.B.6 VEHICLE PARKING LOT AND PARKING STRUCTURE DESIGN STANDARDS	Special Exception by vote of the Commission	Parking immediately adjacent to the building is required to facilitate delivery of lab samples to the RISHL
4	Loading	Clifford Street curb cut width exceeds maximum of 24'. Waiver by Commission required to modify this requirement.	2.4 Parking and Loading Section 2.4.E.5 LOADING	Waiver approved by vote of the Commission	This is needed in order to accommodate delivery vehicle turning maneuvers
5	Fenestration	Facades shall provide areas of transparency equal to at least 70% of the wall area, between the height of 1 and 12 feet from the ground. Design does not meet requirement for 70% transparency.	2.5 Design Standards Section 2.5.A.2.b BUILDING DESIGN STANDARDS	Waiver approved by vote of the Commission	Waiver required due to building program requirements at ground floor. State laboratory and building program does not allow for 70% transparency.
6	Building Entry	Building facades more than 100' in length shall incorporate entrances no more than every 40' along the primary building frontage. Distance between building entrances exceeds this limitation and is therefore non-compliant.	2.5 Design Standards Section 2.5.A.3.c BUILDING DESIGN STANDARDS	Waiver approved by vote of the Commission	A single point of entry for building is desired to ensure a single secure point of entry for building, and promote interaction between public and private enterprises



REQUESTED ZONING WAIVERS

ITEM		DESCRIPTION	ZONING REFERENCE	REQUIRED APPROVAL METHOD	REASON
7	Long-Term Bicycle Parking	Bicycle spaces to be a minimum of 2'x6' with a vertical clearance of 7'. Long-term bike storage is located outside, fully-covered by a canopy and utilizing tiered back racks to conserve site space. Therefore, the dimensions provided for bike spaces are non-compliant.	2.4 Parking and Loading Section 2.4.D.2.a BICYCLE PARKING DESIGN STANDARDS	Waiver approved by vote of the Commission	A tiered bike storage solution is desired to make more efficient use of site, and allow for additional pedestrian circulation and planting
8	Marquees	Marquees are to be constructed over a building entrance and are limited to the width of the building entrances plus a maximum of 5 additional feet on either side of the entrance doors. The building canopy/marquee exceeds the length limitation above and is therefore non-compliant.	2.5 Design Standards Section 2.5.A.5.d BUILDING DESIGN STANDARDS	Waiver approved by vote of the Commission	The designed marquee length is designed to provide cover over the sidewalk at the main entrance
9	Mechanical Equipment	Building-mounted mechanical louvers shall not be mounted on Primary Street facades. The design proposes louvers on Clifford and Richmond Streets and is therefore non-compliant.	2.5 Design Standards Section 2.5.A.7.a BUILDING DESIGN STANDARDS	Waiver approved by vote of the Commission	The louver locations for the buildings are dictated by significant fresh-air requirements, as well as the prevailing wind direction and need to avoid exhaust entrainment. Louvers are set back from the main building façade.
10	Exterior Loading Docks	Exterior loading docks are prohibited. The design conceals the loading docks behind a large overhead rolling door.	Section 2.5.E.3 LOADING	Confirmation Required	
11	Mechanical Equipment	Ground and roof-mounted mechanical equipment shall be screened so as not to be visible to a pedestrian from within the right-of-way of a Primary Street abutting the property containing the building. The design proposes use of perforated metal screening (30% open). Confirmation is required that this complies with the redevelopment plan requirements.	Section 2.5.A.7.e BUILDING DESIGN STANDARDS	Confirmation Required	
12	Massing & Façade Articulation	Shadow line at parapet required. Designed coping profile is designed to create deep shadow line. Confirmation is required that this complies with the redevelopment plan requirements.	Section 2.5 A.1.d	Confirmation Required