

# 5229 UNIVERSITY WAY NE

5229 UNIVERSITY WAY NE, SEATTLE, WA SDCI Project #3032758-LU

> Recommendation Meeting NORTHEAST DESIGN REVIEW BOARD Mar 31st, 2020



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### **PROJECT TEAM**

OWNER 5229 University LLC 11234 SE 6th Street, Suite 135 Bellevue, WA 98004

ARCHITECT Studio 19 Architects 207<sup>1/2</sup> 1<sup>st</sup> Ave S. Suite 300 Seattle, WA 98104 206.466.1225

LANDSCAPE ARCHITECT AHBL 1220 6th Ave , Suite 1620 SEATTLE, WA 98101 206-267-2425

### **SITE INFORMATION**

Project Location: 5229 University Way NE Seattle WA 98105

Parcel #: 881640-0755

Lot Size: 7,440 SF

FAR Allowed:

4.25 - All Residential or All Non-residential Use 4.75 - Mix of Residential and Non-Residential Use

Base Zone: NC3P-65 (Neighborhood commercial 3)

Overlay Zones: University District Northwest (Urban Center Village)

Design Guidelines: Seattle Design Guidelines University District Neighborhood Design Guidelines

### PROPOSAL SUMMARY

Total Gross Floor Area: 40,774 FT Building Height: 65 FT

Number of Residential Units: 64

Total Commercial Square Footage: 1,167 SF

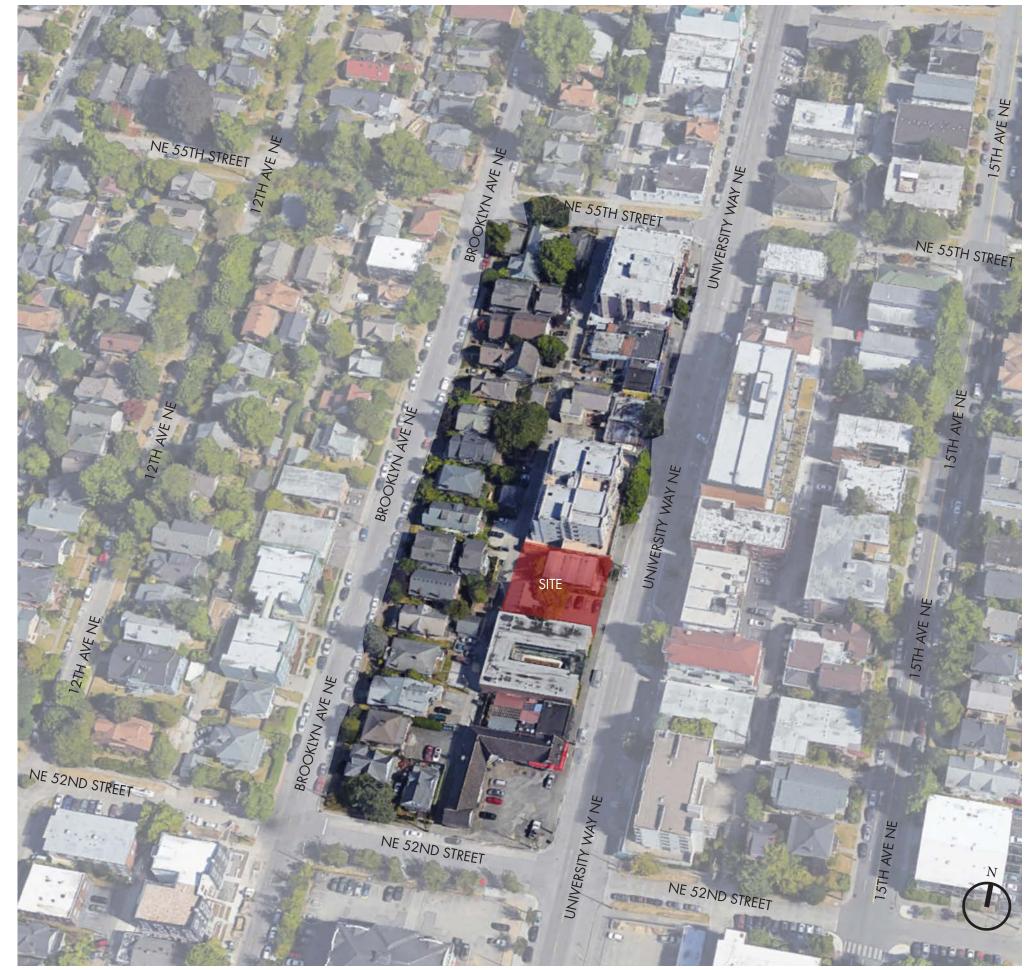
Number of Live Work Units: 0

Number of Parking Stalls at Basement Level: 9

Number of Bike Stalls: 61

### PROJECT DESCRIPTION

The proposed development includes 1 level of below grade parking, a mixed-use residential and commercial space (retail and/or services) at street level, plus 5 floors of apartments (unit count 64) with typical tenant amenities and outdoor common areas.



### **CONTEXT ANALYSIS** SURROUNDING BUILDINGS





#### 5611-1 PARK MODERN UNIVERSITY WAY NE I MIXED-USE

4- ORI APARTMENTS

a similar use.

5260 UNIVERSITY WAY NE | MIXED-USE

• 7-story apartment building across University Way NE

• This is a good example of a new building

in the neighborhood with ground level retail

and apartments above. This project will be

- Boutique condominium project in Northeast
- 12 condominiums with retail space on the ground floor
- Sleek modern design in the area that has a nice articulation of massing and exterior material selection.



-2 PACIFIC APARTMENTS 5219 UNIVERSITY WAY NE | APARTMENTS

- 2 story apartment building
- the location of this building is right beside of our project site



#### -3 ADRIA APARTMENTS 5222 UNIVERSITY WAY NE I MIXED-USE

- 5 story apartment building directly across the street from our site.
- Since this building is of similar type and directly oppsite the street from our site, we looked to it for ideas on the front facade and other visual elements of our building, in order to maintain the streetscape



# -5 MURIELS LANDING APTS 5240 UNIVERSITY WAY NE | MIXED-USE

- 5 story apartment building across University Way NE from our site
- Similar scale and use to our project (ground floor retail with residential above)
- Across the street from our site, Muriels Landing is a newer apartment building in the area with retail below.



# 5237 -6 UNIVERSITY APARTMENTS 5237 UNIVERSITY WAY NE | MIXED-USE

- 5 story apartment building at our north property boundary, similar to our project
- To address the alley and zoning change to the west. This building steps back above the first floor along the alley, responding to the single-story garages across the alley and reduced massing.



# 8- UNIVERSITY HEIGHTS CENTER 5031 UNIVERSITY WAY NE | MIXED-USE

- A elementary school built in 1902, and now serves as a community center that have many functions, such as auditorium, apartments, offices and etc.
- The building, surrounded by an ample amount of open space and parking, occupies the entire block south of our site.



9- HUB U DISTRICT 5000 UNIVERSITY WAY NE | MIXED-USE

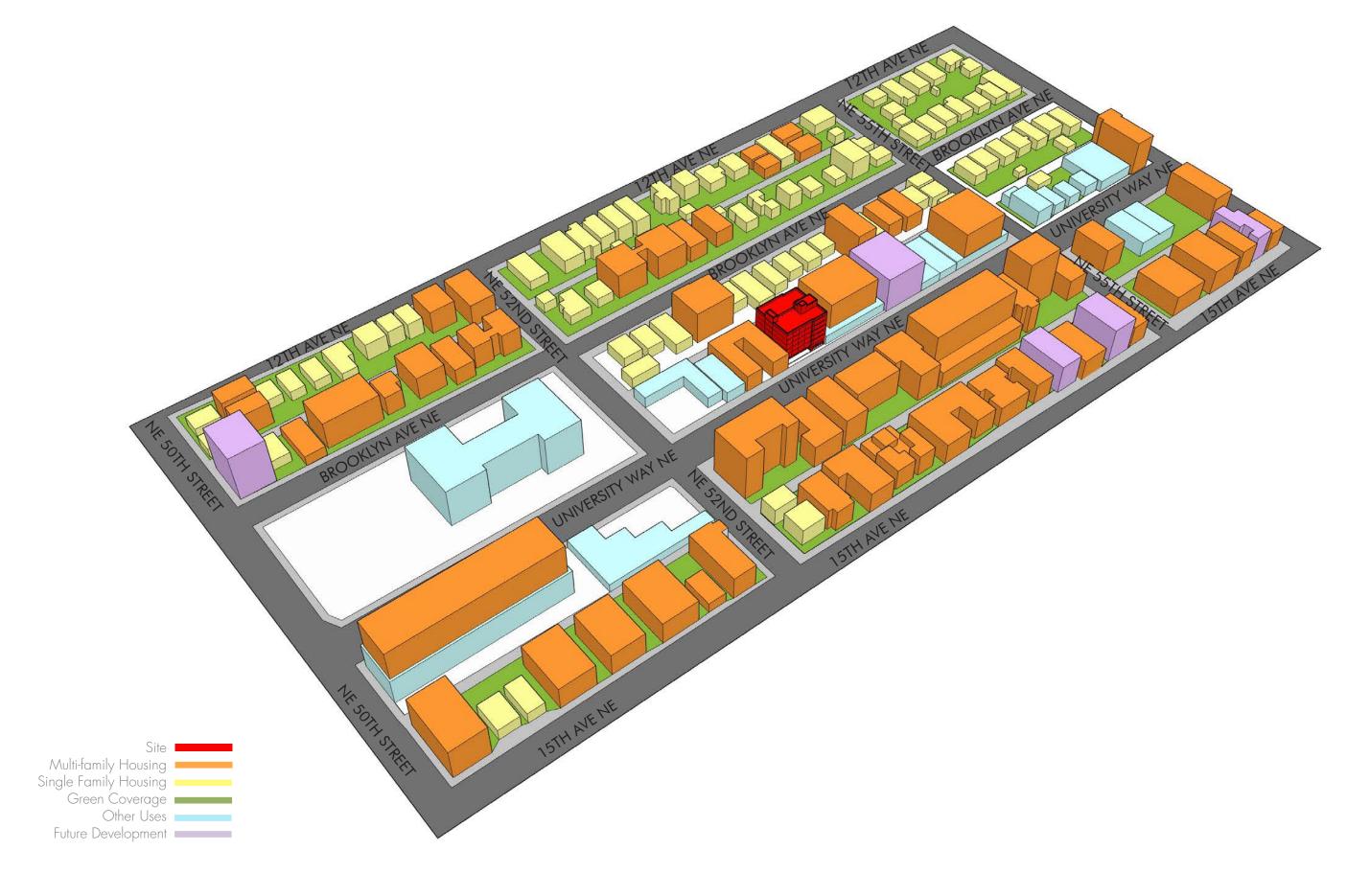
- Newly constructed 111-unit mixed-use student housing development.
- The building is of similar use to our project but at a larger scale, and specifically targeting student community.
- Similar in material and texture to the Muriels Landing Apts near our site.



#### 7- UNIVERSITY WAY APARTMENTS 5247 UNIVERSITY WAY NE | MIXED-USE

- 6-story apartment building on University Way NE in development
- One building away from our site
- This is a good example of a new building in the neighborhood with ground level retail and apartments above. This project will be a similar use.

# CONTEXT ANALYSIS SURROUNDING USES



### **ZONING SUMMARY** - ZONE NC2-75 (M1)

#### Permitted Uses 23.47A.004

Residential (Including congregate housing "micro-units")

Drinking Establishments – no limit

Restaurants – no limit

Offices - no limit

Retail Sales and Services, multipurpose - no limit

Live-work units, parks and open space, community gardens

#### Street Level Uses 23.47A.005

Residential use may not occupy more than 20 % of street-level street-facing façade

80% of street-level street-facing façade must be occupied with uses defined by 23.47A.005 D

#### Street-level Development Standards 23.47A.008

Blank segments of the street-facing facade between 2 feet and 8 feet above sidewalk may not exceed 20 feet in width. Sixty percent of the street-facing facade between 2 feet and 8 feet above the sidewalk shall be transparent.

Non-residential uses at street level shall have a floor-to-floor height of at least 13'

Non-residential uses shall extend an average depth of at least 30 feet and a minimum depth of 15 feet from the street-level street-facing facade

Total width of all blank façade segments may not exceed 40% of street facades width

#### Standards Applicable to Specific Areas 23.47A.009G

University Community Urban Center: Max width/depth of a structure is 250 feet unless it contains uses specified in 23.47A.009.G.1

#### Structure Height 23.47A.012

The height limit is: 65'-0"

The structure might exceed the limit by 7 feet provided all of the following conditions are met:

- 1. The total gross floor area of at least one multi-purpose retail sales use exceeds 12,000 square feet
- 2. A floor-to-floor height of 16 feet or more is provided for the multi-purpose retail sales use at street level;
- 3. The additional height allowed for the structure will not allow an additional story beyond the number that could be built under the otherwise applicable height limit if a floor-to-floor height of 16 feet were not provided at street level.

Open railings, planters, parapets etc. may extend up to 4 feet above the applicable height limit. Insulation, rooftop decks, and soil - 2 feet. Mechanical equipment -15 feet, stair and elevator penthouses - 16 feet.

#### Floor Area Ratio 23.47A.013

Total FAR permitted for all uses on a lot that is occupied by a mix of uses is 4.75. FAR limit for either all residential uses or all non-residential uses shall not exceed 4.25.

The following gross floor area is not counted toward maximum FAR:

• All underground stories and all portions of a story that extend no more than 4 feet above grade

#### Setback Requirements 23.47A.014

For a structure containing a residential use, a setback is required along any side or rear lot line that abuts a lot in a residential zone or that is across an alley from a lot in a residential zone.

15 feet for portions of a structure above 13 feet in height to a max of 40 feet, and for each portion of a structure above 40 feet in height, additional setback at the rate of 2 feet of setback for every 10 feet by which the height of such portion exceeds 40 feet.

#### Landscaping and Screening Standards 23.47A.016

Green Factor Requirement: .30 or greater determined as set forth in Section 23.86.019. Credit is awarded for planting areas, green roofs, vegetated walls, permeable paving, and other features.

#### Residential Amenity Areas 23.47A.024

Required Area: 5% of the total gross floor area in residential use

Minimum horizontal dimension of the amenity - 10 feet, minimum area: 250 SF

Private balconies: min horizontal dimension - 6 feet, minimum area 60 SF

#### Required parking 23.54.015

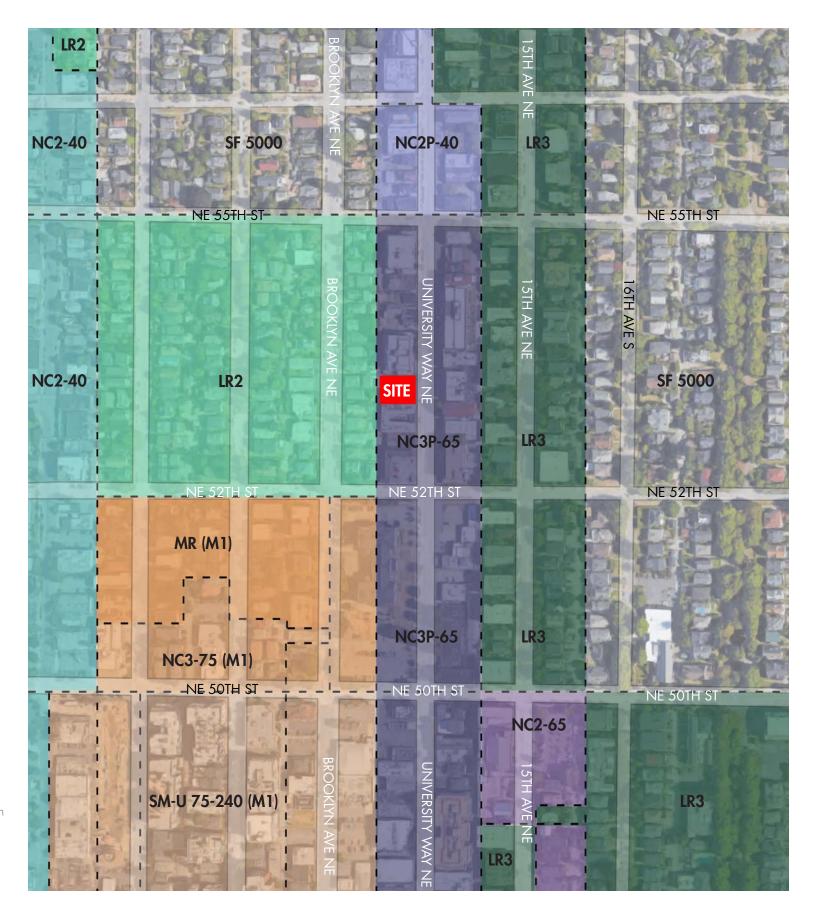
No parking is required in Urban Centers or in Urban Villages with light rail station area overlay districts. Also, no parking is required in Urban Villages as long as frequent service is available within 1/4 mile.

Residential Use - no minimum requirement as located within urban centers.

Commercial use - No parking is required for the first 1,500 SF of any business . Eating and drinking: 1 space for each 250 SF, Sales: 1

space for each 500 SF

Bike parking for Commercial use: eating and drinking establishment, long-term 1 per 5,000 SF, short-term 1 per 1,000 SF; sales, long-term 1 per 4,000 SF, short-term 1 per 10,000 SF of occupied floor area. For Residential Use: long-term 1 per dwelling unit and 1 per small efficiency dwelling unit (shall be located on site), short-term 1 per 20 dwelling units.



### **EDG SUMMARY** MASSING OPTIONS



#### **OPTION 1**

#### PROS:

- Upper level setback to break down the massing
- Recessed residential plaza at lobby entrance
- Community courtyard at lobby level along the alley
- Roof top community deck
- Continuous retail space that can be divided into smaller tenant
- Continuous canopy along retail storefront

#### CONS:

• Minimal recess at retail façade

No departures



#### OPTION 2

#### PROS:

- Recessed retail façade to allow for wider sidewalks, landscaping and seating
- Continuous retail space that can be divided into smaller tenant
- Continuous building overhang at retail frontage for weather protection
- Roof top community deck

#### CONS:

• No residential plaza at ground level

#### **DEPARTURES:**

• SMC 23.47A.005 - Residential uses shall not occupy more than 20% of street-level, street-facing facade along designated principal pedestrian streets.  $[79' \times 20\% = 15.8' \text{ allowed}]$ 



#### **OPTION 3 (PREFERRED OPTION)**

#### PROS:

- Clearly articulated residential entrance
- Recessed retail façade to allow for wider sidewalks, landscaping and seating
- Continuous retail space that can be divided into smaller tenant
- Continuous building overhang at retail frontage for weather protection
- Roof top community deck

#### CONS:

• No residential plaza at ground level

#### **DEPARTURES:**

• SMC 23.47A.005 - Residential uses shall not occupy more than 20% of street-level, street-facing facade along designated principal pedestrian streets.  $[79' \times 20\% = 15.8' \text{ allowed}]$ 

#### Board Recommendations & Responses:

- 1. Massing and Design Concept: The Board had a wide-ranging and productive discussion of these issues, touching on the unique character of the University District, the role and importance of 'fabric' buildings on University Way, and the critical compositional elements of the various possible solutions on this small infill site. (DC2, CS3-1)
- a. The Board supported the applicant's preferred option but agreed that any of the three schemes could be successful, including one (not proposed by the applicant) that eliminated the two-part composition of the upper levels in favor of one wellcomposed expression. (DC2-A, DC2-B)
- b. The Board questioned locating of all of the upper-level massing along University Way and suggested that depth and articulation could be developed on the street edge by taking advantage of buildable area deeper on the lot. (DC2-A, DC2-B, DC2-2, DC2-1)
- c. The Board agreed that flipping the principal entry to the north and retail to the south would create a more harmonious rhythm of elements at the street edge and would be a better response to context. (PL3-A)

#### **RESPONSE:**

The design has progressed with the development of the preferred option per the Board's recommendation and developed it further with the Board's suggestions in mind. The residential entry has been moved to the north of the property and the retail to the south as well. Taking the cues from the precedents in the area and the established street edge pattern, along with the Board's suggestion about the facade composition, we felt that locating all of the upper level massing along University Way is appropriate and a better solution for this site. The upper levels are cantilevered so the ground level along the street edge can be pushed back further to create some outdoor space for the tenants and pedestrians alike.



VIEW FROM UNIVERSITY AVE NE



STREET-FACING FACADE

**Board Recommendations & Responses:** 

- 2. Facade Composition:
- a. The Board agreed that if modulation is used as part of the design concept, the move should create legible depth and the distinction between the two expressions should be subtle rather than high contrast. (DC2-B, DC2-C, DC4-A, DC2-2)
- b. For the development of a cohesive and context-sensitive facade, the Board encouraged the applicant to establish a legible order of wellproportioned elements that clearly express the unitized order of dwelling units in a unified composition. (DC2-B, DC2-C, DC2-1, DC2-2)
- c. The Board supported adding depth and visual interest through inset balconies and expressive material detailing. (DC2-B, DC2-C, DC2-1, DC2-2)

#### **RESPONSE:**

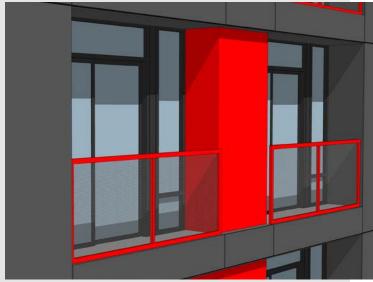
The design is further developed to be in compliance with the Board's recommendations: a cohesive and context-sensitive facade that clearly express the unitized order of dwelling units in a unified composition through the use of individual balconies, expressive material detailing, different texture(matt hardie panel vs. glossy laminate panels) and color contrast. The windows are all spaced evenly throughout the façade which brings order and unified proportion to the overall massing along the street front while the treatment of balconies are differentiated to bring a subtle hierarchy to the massing volume. One massing where the residential entry is located has the patio spaces recessed, while the other massing is expressed with protruding balconies to break up the façade. The distinctions between the two expressions is subtle but enough to create a visual interest and bring richness and different layers to the facade. All of these lead to a design that resonates with the vibrant and eclectic energy and character of the U-District.





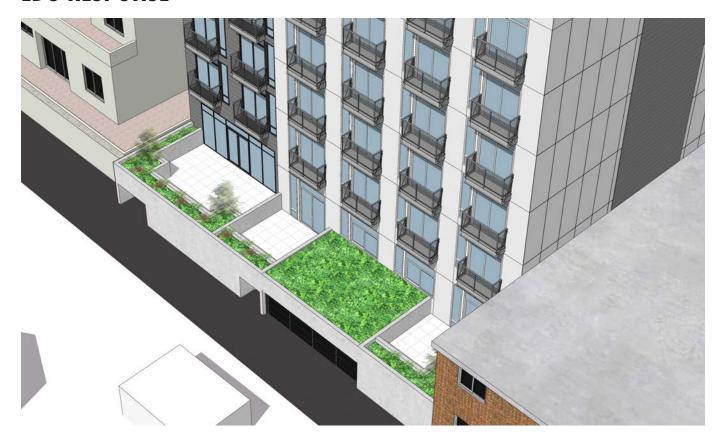
**FACADE FENESTRATION** 







HIERARCHY IN FACADE



WEST FACADE STEPPING BACK ALONG THE ALLEY



INDIVIDUAL DECKS

#### Board Recommendations & Responses:

- 3. Respect for Adjacent Sites:
- a. The Board supported the stepped massing in response to the zone transition along the alley frontage. (CS2-D-3, CS2-D-4, CS2-D-5)
- b. The Board agreed that individual decks would minimize disrupting the privacy of residents in the adjacent properties, compared to one common deck which would likely generate more noise from groups. (CS2-D-3, CS2-D-5)
- c. The Board agreed that the occupiable area of the roof would be best sited along the more active University Way rather than the smaller scale alley. (CS2-D-5)

#### **RESPONSE:**

Per the Board's recommendation the decks along the alley façade have been designed to be private to the units with the exception of the deck that is used as spill-out space for the amenity lounge that was located in this area. The roof deck is located along University Way to activate the street and is designed to incorporate views to the City and mountain as well.



ROOF DECK FACING UNIVERSITY WAY NE

**Board Recommendations & Responses:** 

- 4. Streetscape and Landscape:
- a. Citing the University Neighborhood Guidelines, the Board stressed the importance of the streetscape design at this high profile and important location. (CS2-1-e, DC4-2)
- b. The Board supported the deep (9-foot) setback provided at the street edge, noting how rare truly occupiable space was along University Way NE. The Board also indicated their openness to a potential departure for retail depth if needed to provide this space. (DC2-B-1, DC2-D)
- c. The Board indicated they would be open to a departure request to expand the length of residential frontage at the street edge as long as it is programmed with active uses and there is a benefit to the streetscape. (PL3-A, PL3-B)
- d. The Board supported the proposed street trees along the right of way but recommended focusing planting in protected or raised beds on site, as activity along University Way NE has historically been very hard on at-grade landscape. (CS2-B-3, DC4-D)

#### **RESPONSE:**

Per the Board's recommendation the retail frontage is set back 9 feet from the property line to allow for spill-out space and pedestrian interaction along the street front. This space will be mostly be covered by the building overhang above to allow the area to be utilized throughout the year. A departure will be needed for the retail depth to achieve this area along the street frontage. Street trees and raised planters have been added in the plans per the Board's recommendation.



VIEW FROM UNIVERSITY WAY NE



VIEW FROM UNIVERSITY WAY NE

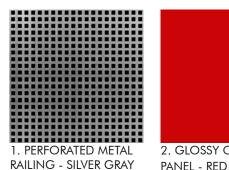
**Board Recommendations & Responses:** 

#### 5. Exterior Materials

a. The Board, citing University Neighborhood Guideline DC4-1-a, agreed that a thicker, higherquality cementitious board panel could be an acceptable cladding material, but encouraged the exploration of other high-quality materials. (DC4-1-a)

RESPONSE: The main façade treatment proposed is high-quality cementitious board panel along with high quality windows, metal accent areas, exposed finished concrete and perforated metal panels at the residential balconies. Glossy Laminate panels are introduced to create a color and contrast in texture to bring visual interest and hierarchy to the massing where the residential entry is located. Accent colored metal frames are employed around the recessed balconies to bring secondary modulation and vibrance to the facade.





2. GLOSSY COMPOSITE



4. PAINTED CONCRETE-**ENTRY CANOPY - RED** YELLOW



& DOOR - BLACK / DARK **BRONZE** 

#### Board Recommendations & Responses:

#### 6. Blank Walls

a. The Board encouraged the use of texture in the development of cladding systems and patterns for the zero-lot-line conditions, discouraging a reliance on color unless it were explicitly tied to the design concept. (DC2)

RESPONSE: The facades along the interior property lines are developed with different textured materials that express the massing of the stair and elevator towers on either side. This allows the façade to be broken down into smaller masses and breaks down the scale of the façade along with giving interest to these areas, as opposed to a monolithic blank façade with one material treatment. The treatment of these two facades are mostly relying on the texture contrast created by the different panel orientations and the shadow lines by the shiplap panels, as well as the various reveal compositions. Color is used to define the massing and is cohesive to the overall design concept.





1. FIBER CEMENT SIDING PANEL - GRAY

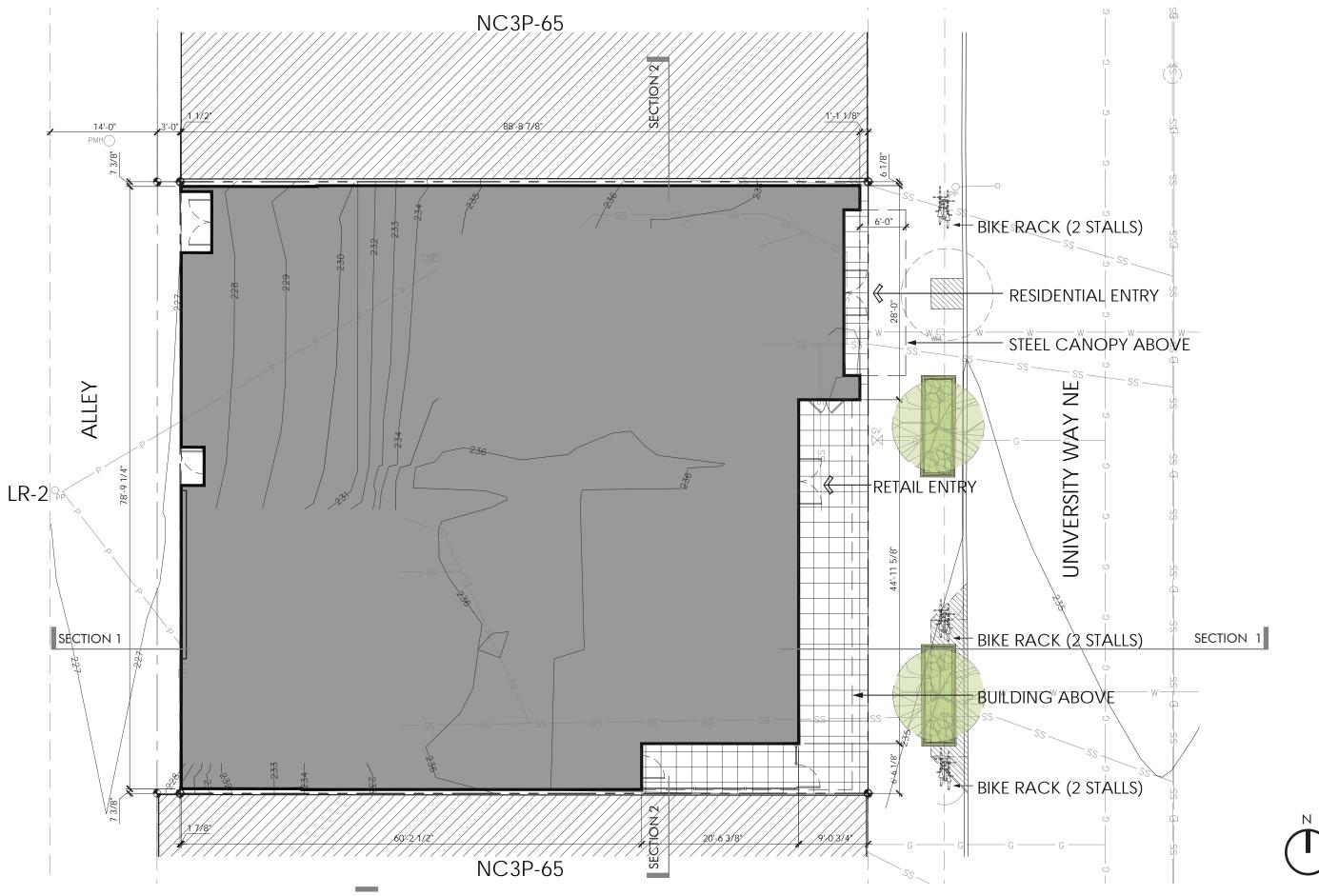


2. FIBER CEMENT PANEL - OFF WHITE / SILVER **GRAY** 



- DARK GRAY

# **SITE PLAN**



# FLOOR PLAN BASEMENT LEVEL





# FLOOR PLAN LEVEL ONE



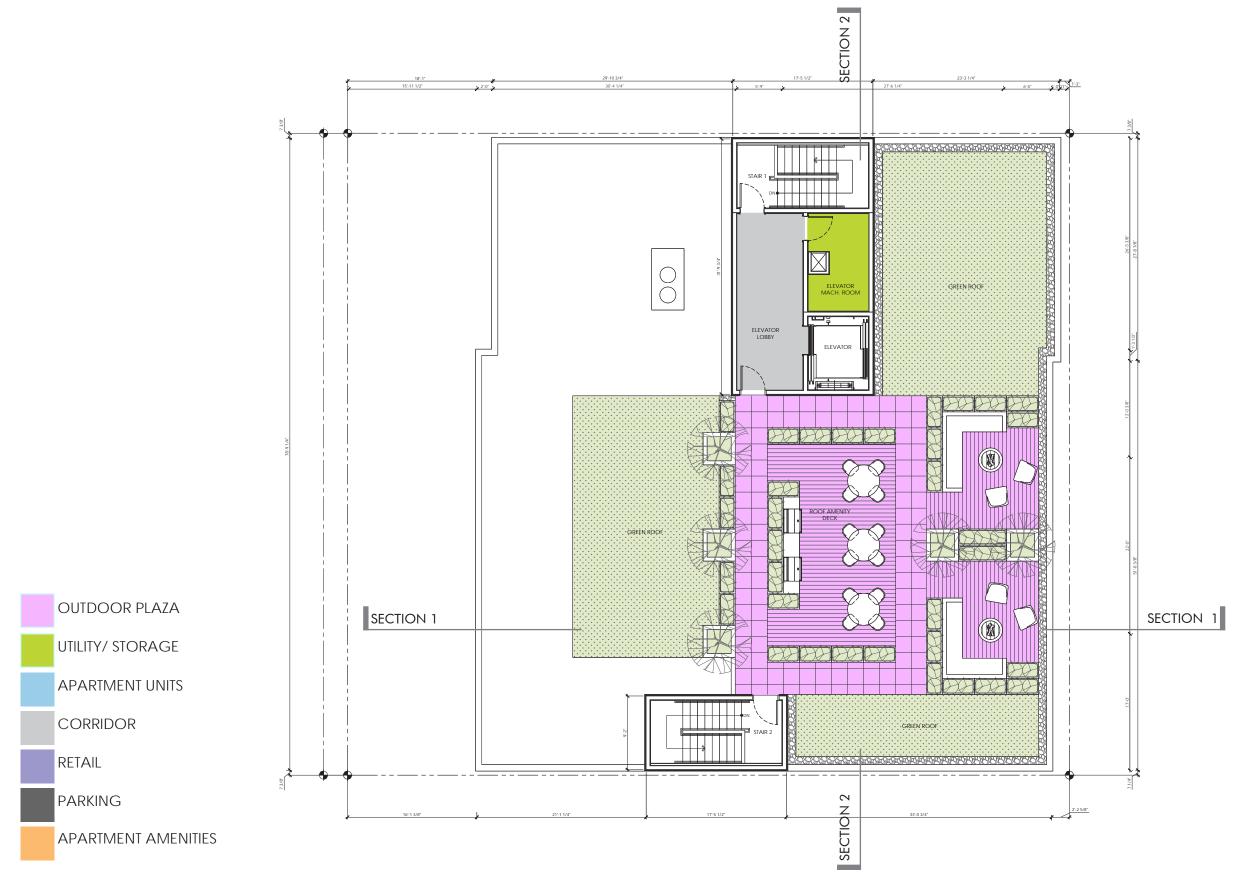


# FLOOR PLAN LEVEL TWO AND ABOVE



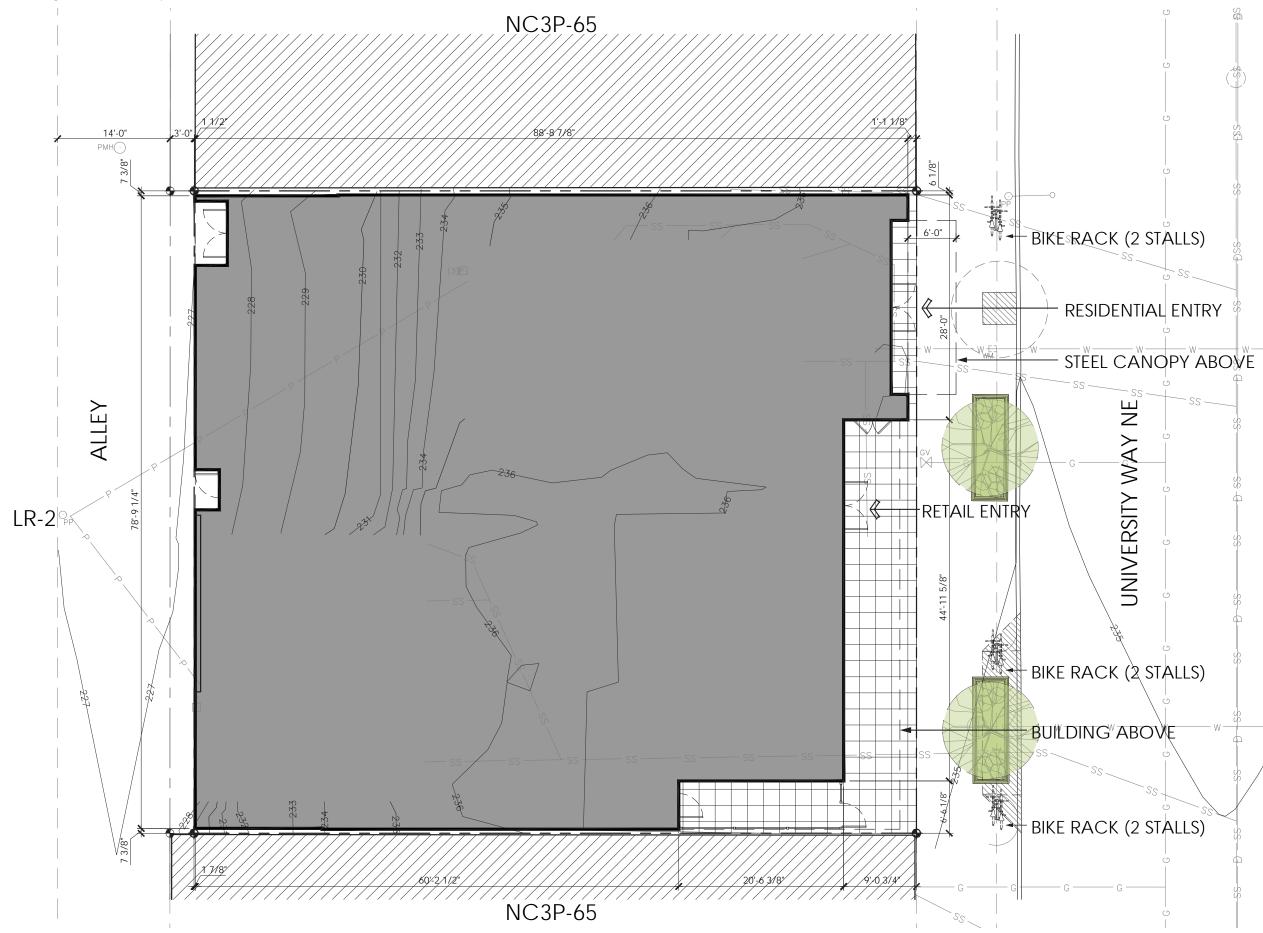


# FLOOR PLAN ROOF PLAN

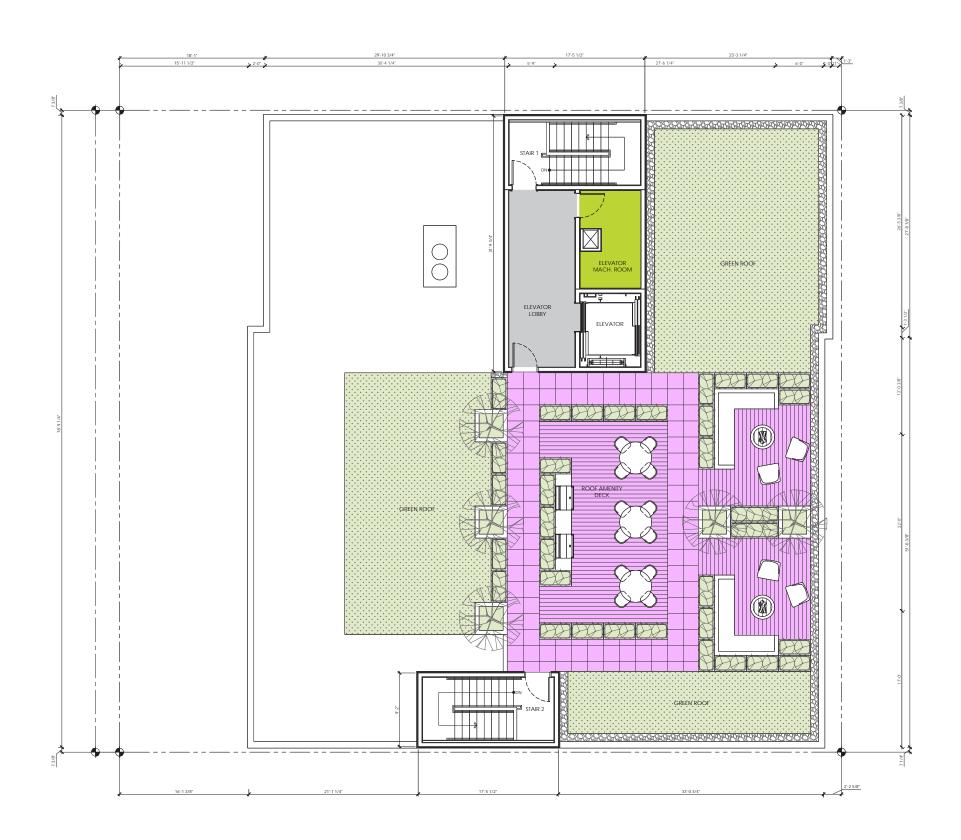




### LANDSCAPE PLAN SITE PLAN



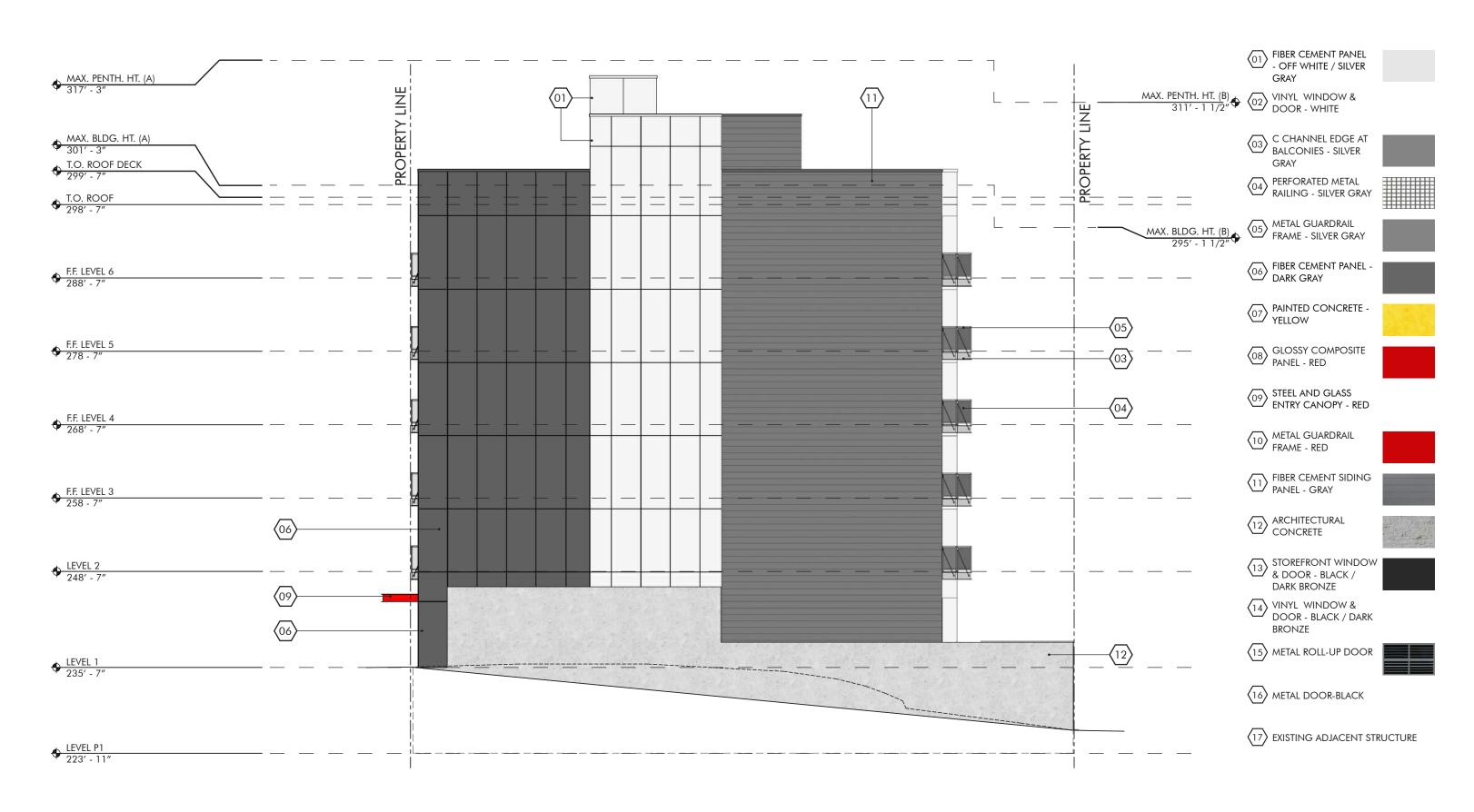
# LANDSCAPE PLAN ROOF PLAN



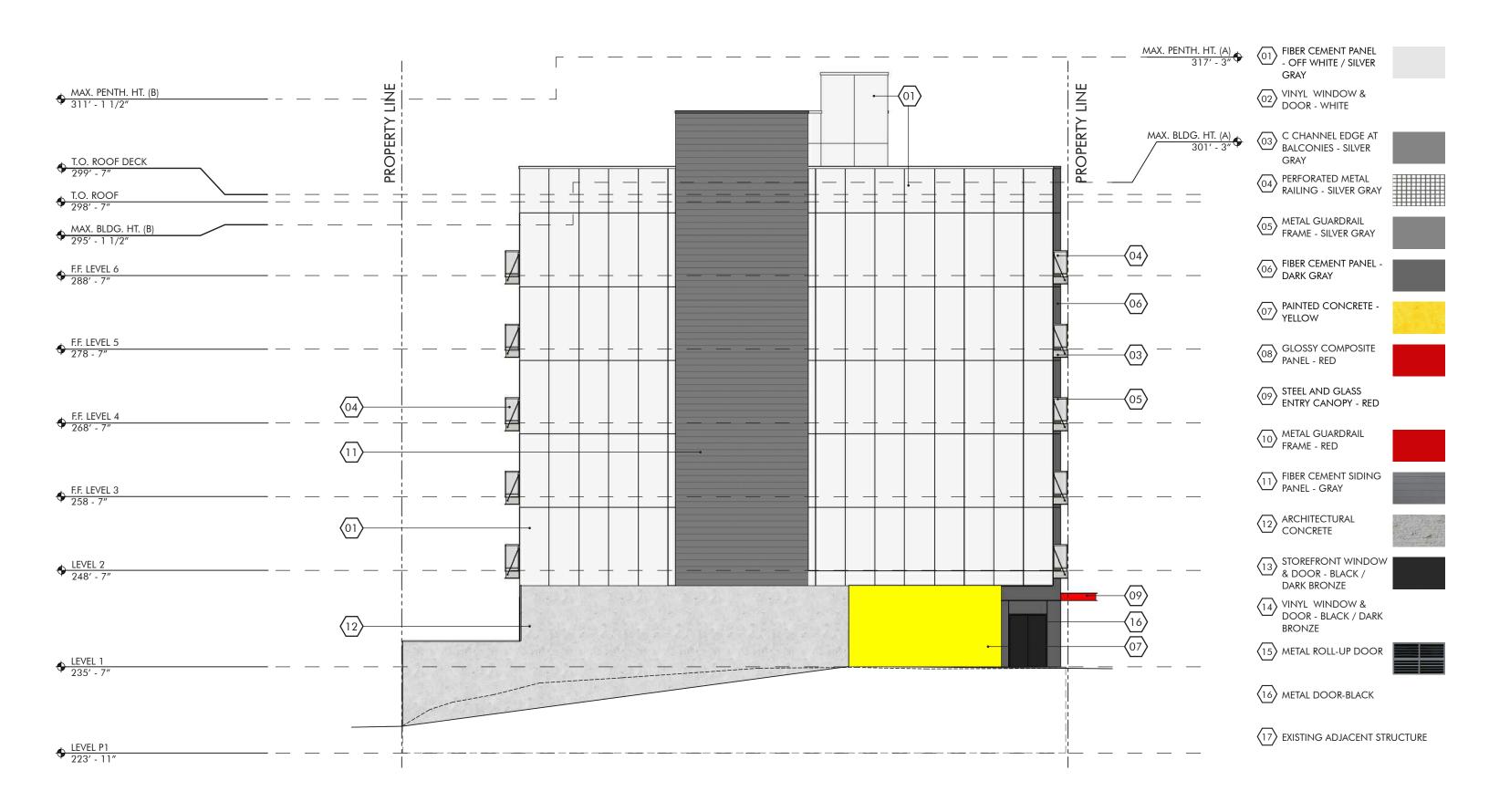
### **ELEVATION** EAST



### **ELEVATION NORTH**



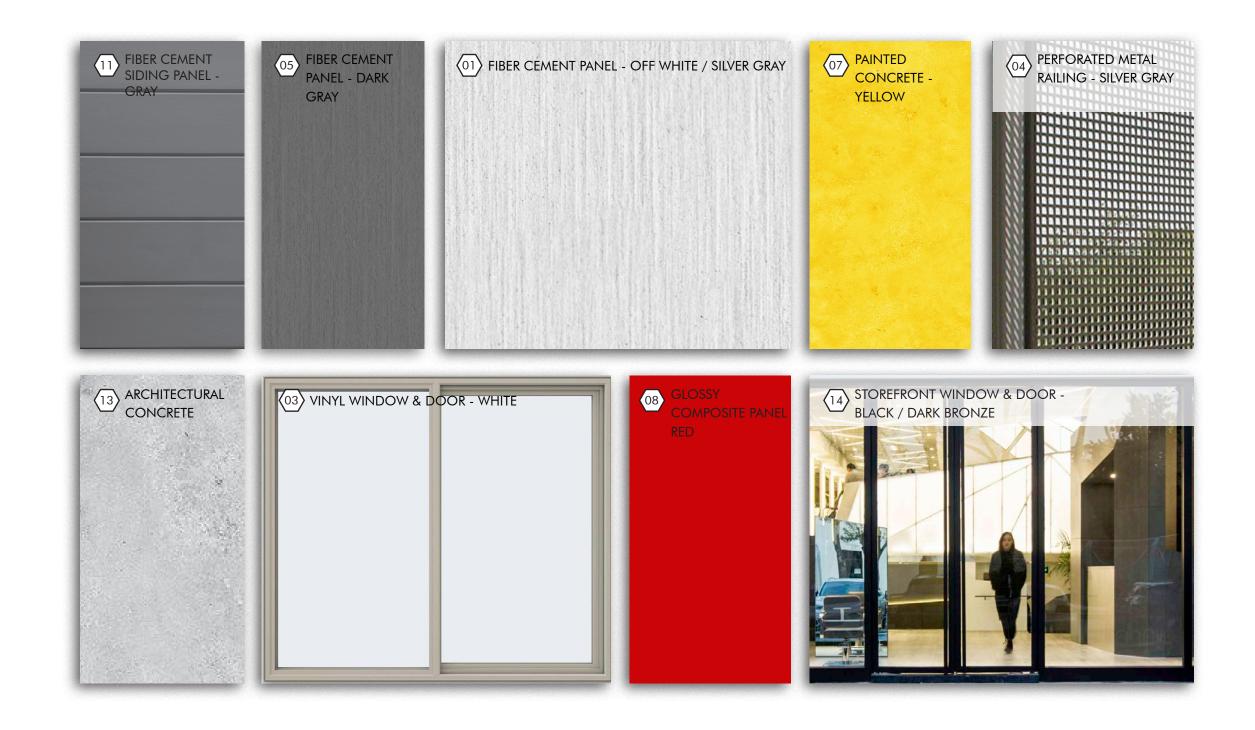
### **ELEVATION** SOUTH



### **ELEVATION VVEST**



### MATERIAL AND COLOR PALETTE



# ADJACENT CONTEXT UNIVERSITY WAY NE



# **ADJACENT CONTEXT** ALLEY



# **RENDERINGS**



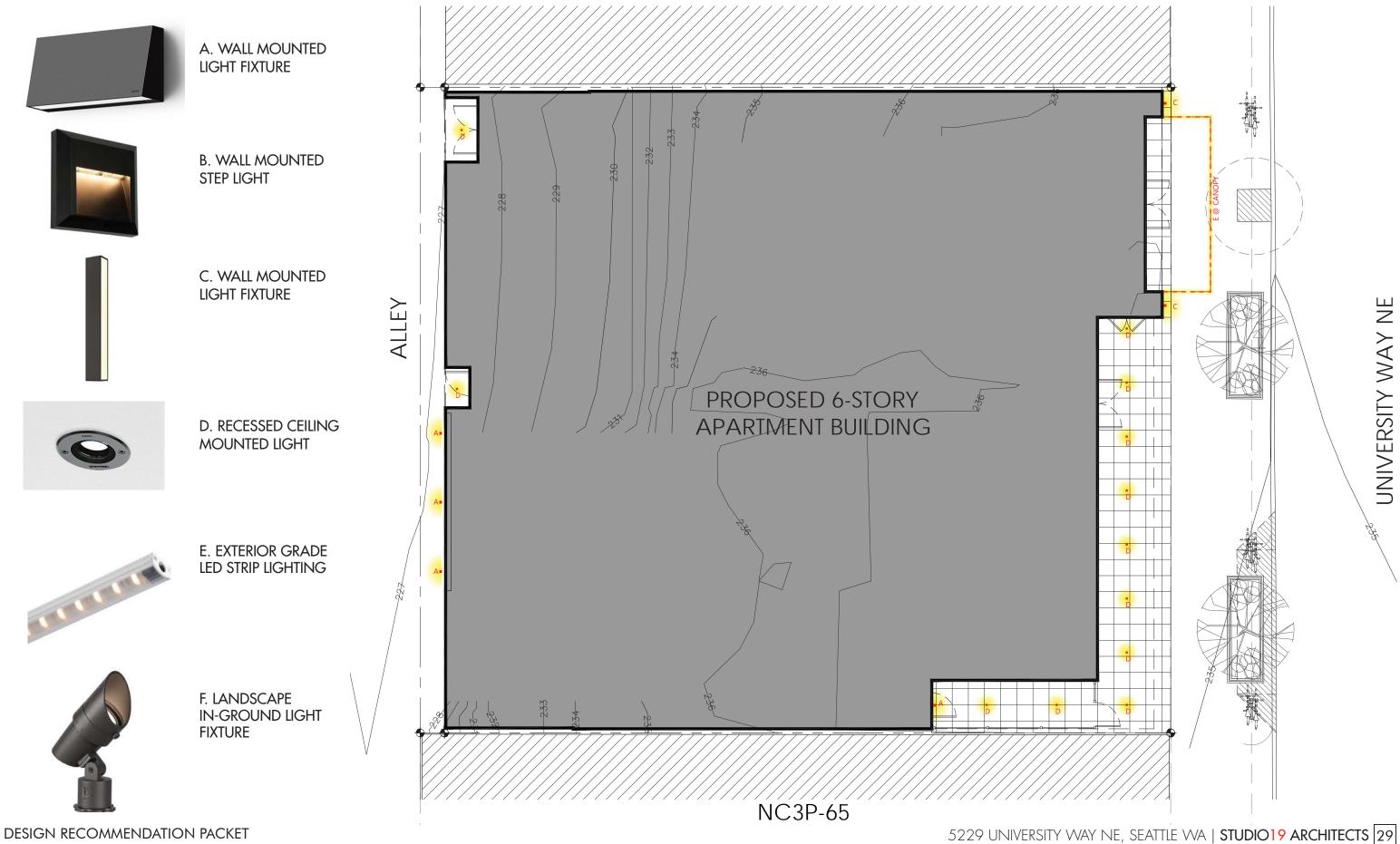
# **RENDERINGS**



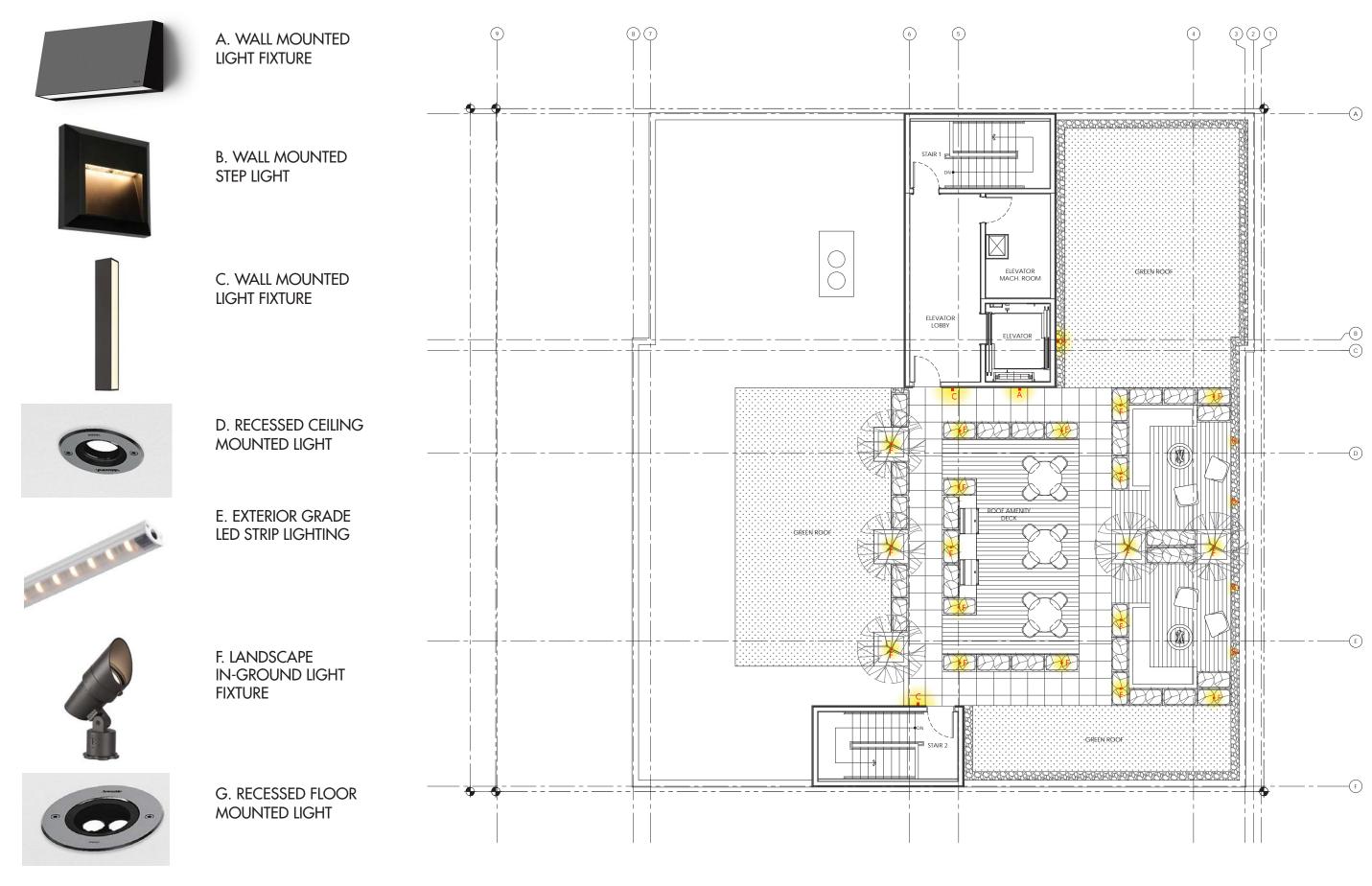
# **RENDERINGS**



# **LIGHTING** GROUND PLAN



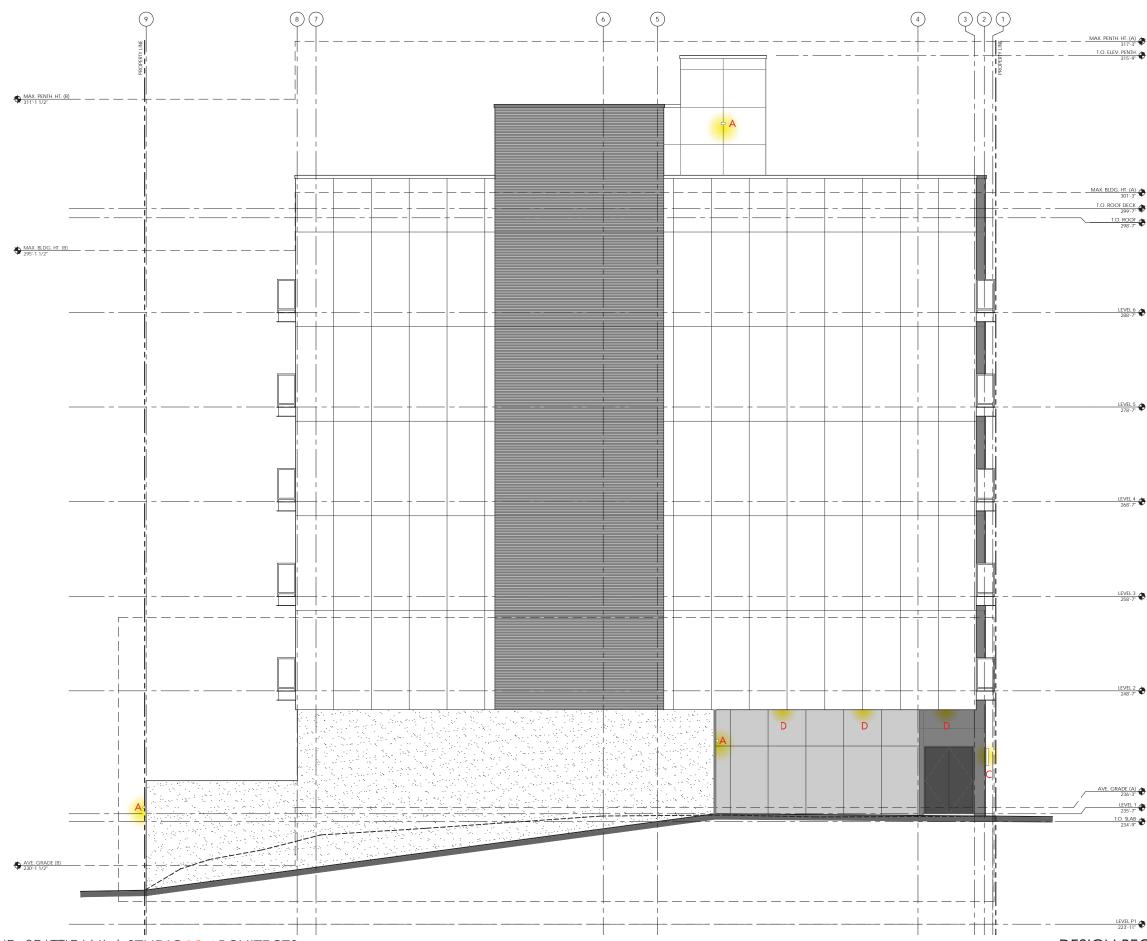
# LIGHTING ROOF PLAN



# LIGHTING EAST ELEVATION



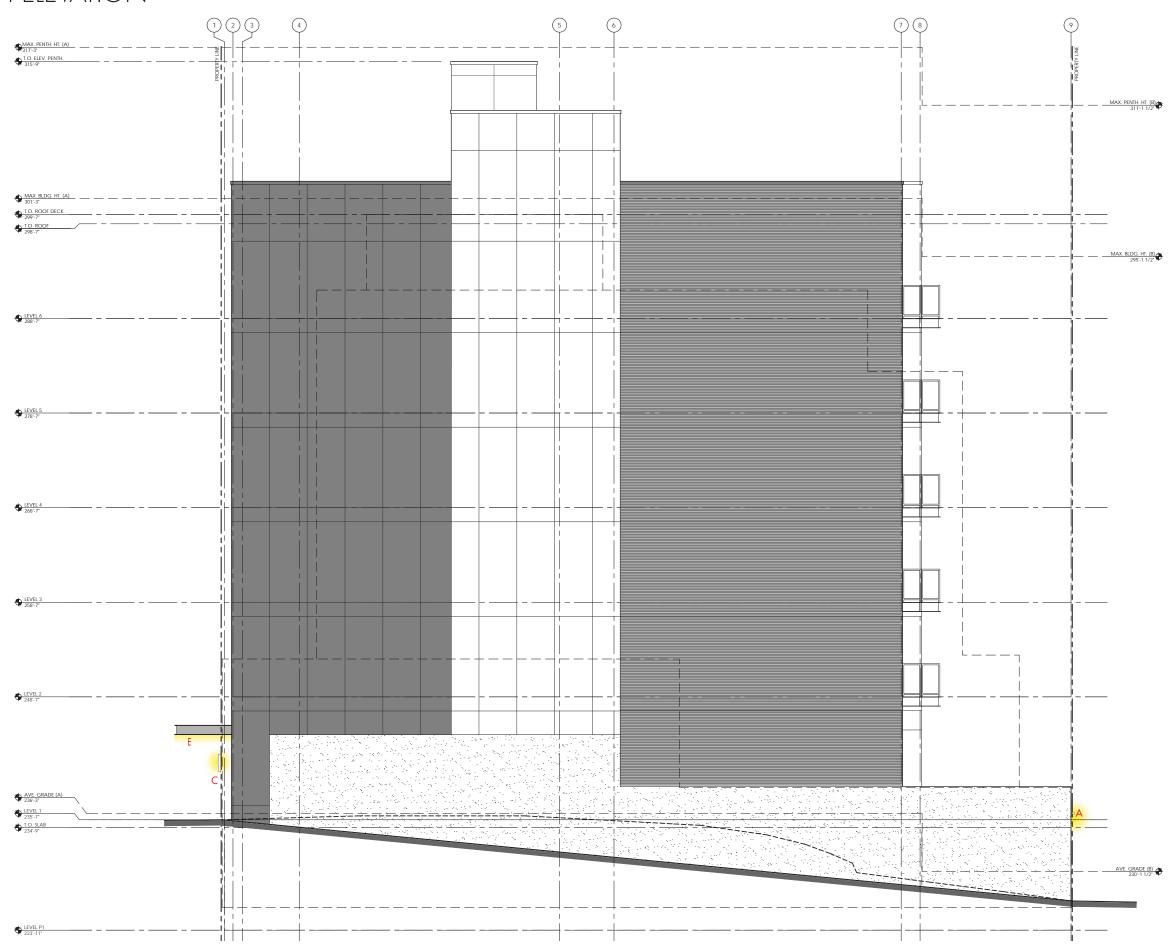
# LIGHTING SOUTH ELEVATION



# LIGHTING VVEST ELEVATION



# LIGHTING NORTH ELEVATION



# **LIGHTING** VISUALS



PRODUCT RENDERING WALL MOUNTED SCONCE (A)



INSPIRATION IMAGE RECESSED CEILING MOUNTED LIGHT (D)



INSPIRATION IMAGE PLANTER MOUNTED STEP LIGHT GRAZING THE WALKWAY (B)



INSPIRATION IMAGE DECK MOUNTED LIGHTING (G)



PRODUCT RENDERING DOUBLE-SIDED VERTICAL WALL MOUNTED SCONCE (C)



INSPIRATION IMAGE IN-PLANTER LIGHTING (F)

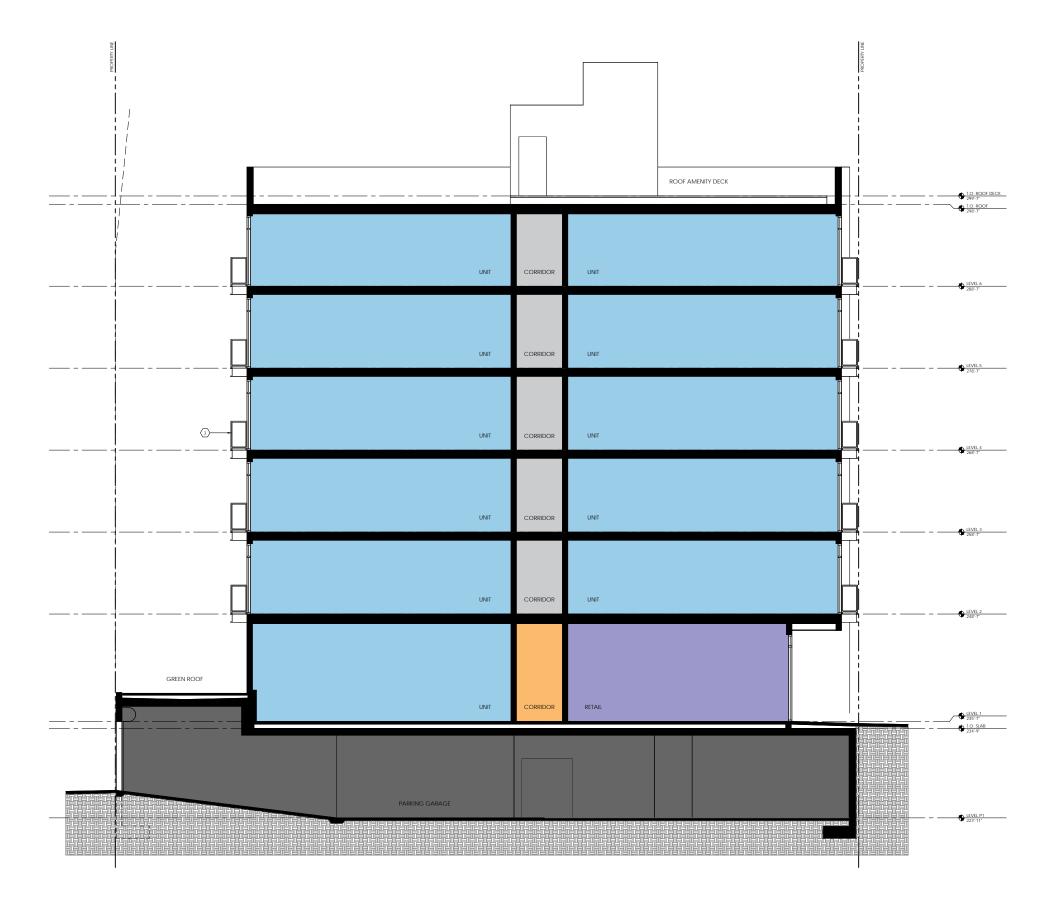
# **SIGNAGE CONCEPT**



CANOPY HANGING BLADE SIGNAGE

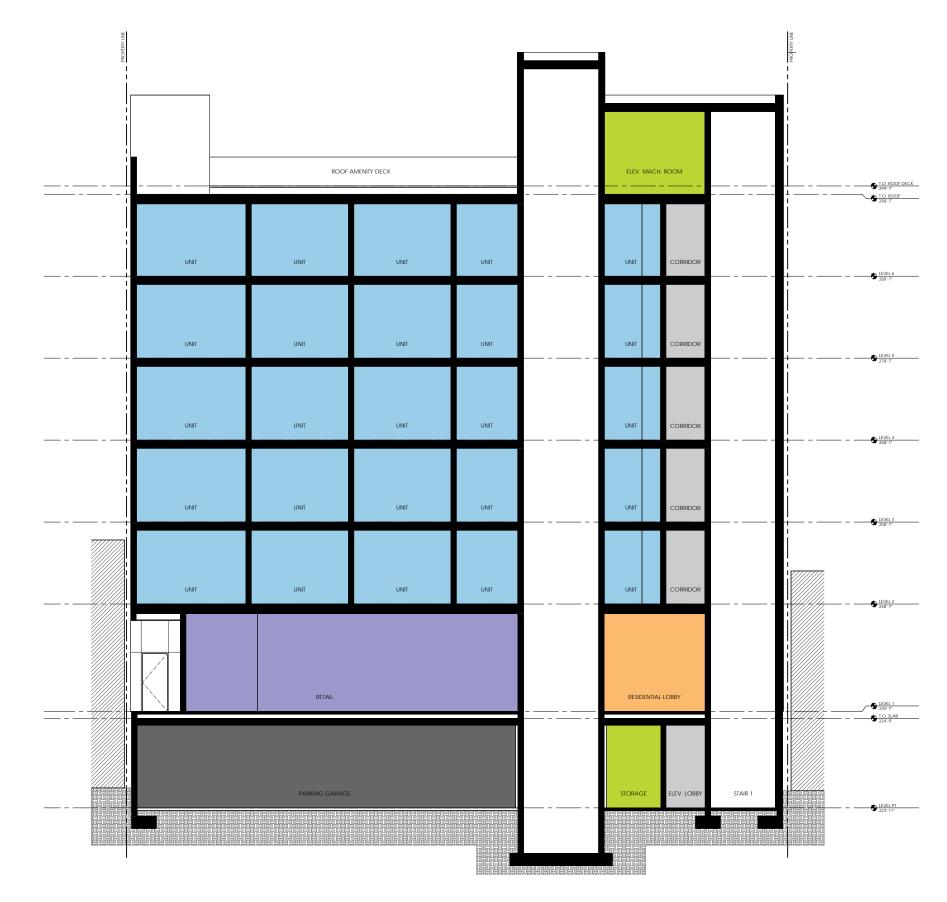
CANOPY MOUNTED RETAIL SIGNAGE

# **SECTION 1** WEST-EAST





# SECTION 2 NORTH-SOUTH



UTILITY/ STORAGE

APARTMENT UNITS

CORRIDOR

RETAIL

PARKING

APARTMENT AMENITIES

# **DEPARTURE REQUEST**

DEPARTURE NUMBER	REQUIRED	REQUEST	JUSTIFICATION
D1	SMC 23.47A.005.C.1 - In all NC and C zones, residential uses may occupy, in the aggregate, no more than 20 percent of the street-level street-facing facade in a pedestrian-designated zone, facing a designated principal pedestrian street.	An increase of the maximum residential use percentage permitted along principal pedestrian street façade from 20% to 23.56%.	A departure from this code section is being requested in order to allow for a realistic size for the apartment lobby, considering the relatively small lot size of the development. The lot is only 80 feet wide and is a mid-block development which yields a maximum width for the lobby, by code, of only 16 feet. This is very narrow considering that this area will need to include an energy code required vestibule, circulation space, a gathering / waiting area, managers office area, apartment leasing area, mail boxes, package storage, elevator lobby, etc. In order to make the residential lobby viable, we ask for a departure to allow the lobby to be 17'-2 1/4" wide, which is 23.56% of the street level street facing façade (an additional 3.56% or 2'-7" above the code allowed max.). At the EDG meeting, the board indicated they would be open to a departure request to expand the length of residential frontage at the street edge as long as it is programmed with active uses and there is a benefit to the streetscape.
2 D2	SMC 23.47A.008.C.1 - A minimum of 80 percent of the width of a structure's street-level street-facing facade that faces a principal pedestrian street shall be occupied by uses listed in subsection 23.47A.005.D.1. The remaining 20 percent of the street frontage may contain other permitted uses and/or pedestrian entrances (see exhibit a for 23.47A.008).	A reduction of the minimum width of a structures street level street facing facade that faces a principal pedestrian street occupied by uses listed in subsection 23.47A.005.D.1 From 80% to 76.54 %	A departure from this code section is being requested in order to allow for a realistic size for the apartment lobby, considering the relatively small lot size of the development. The lot is only 80 feet wide and is a mid-block development which yields a maximum width for the lobby, by code, of only 16 feet. This is very narrow considering that this area will need to include circulation space, a gathering / waiting area, managers office area, apartment leasing area, mail boxes, storage, elevator lobby, etc. In order to make the residential lobby viable, we ask for a departure to allow width of approved uses per 23.47A.005.D.1 To be 55'-9 1/2" wide, which is 76.44% Of the street front facing façade (a reduction of 2'-7" or 3.56% From the code required minimum).
3 D3	SMC 23.47A.008.B.3 - Height and depth provisions for new structures where nonresidential uses shall extend an average depth of at least 30 feet and a minimum depth of 15 feet from the street-level street-facing facade.	A reduction of the minimum nonresidential use average depth required from 30' down to 23.49'.	To comply with university district neighborhood design guidelines PL1(1.a), DC2 (2i), DC3(3a-3b) and per the design review boards request, the retail portion of the street facing façade is setback 9' from the property line in order to provide open space at grade that both physically and visually engages the public realm. The provided open space includes seating, special paving and raised planters. Providing for this open space reduces the feasible depth of the retail space required to meet the minimum 30' average requirement. The minimum required depth of 15'-0" is maintained for the entirety of the non-residential use. At the EDG meeting the design review board supported the deep (9-foot) setback provided at the street edge, noting how rare truly occupiable space was along university way NE. The board also indicated their openness to a potential departure for retail depth if needed to provide this space.

### SUPPLEMENTAL INFORMATION SITE ANALYSIS

#### **TREES**

- No significant trees have been identified within the boundaries of our site
- One street tree located in front of our site will be retained
- Surrounding landscape:
  - -Street trees to the north and south of the site along University Way NE
  - -Shiga's P-Patch Community Garden 1.5 blocks north of the site
- The landscape of the site is expected to provide a level of green coverage that is consistent with the surroundings.

#### SIGNIFICANT VIEWS

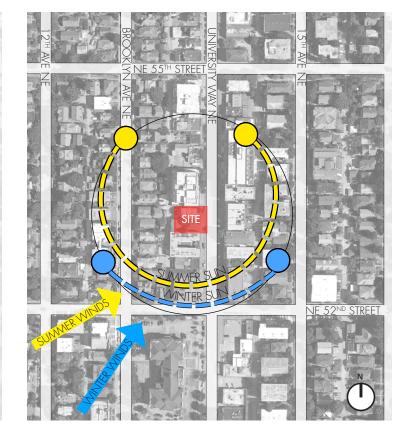
- No immediate ground level views due to the heights of the surrounding buildings
- The upper floors and the building's rooftop will have views of the surrounding neighborhood, Downtown Seattle, the Olympic Mountains, Mt. Rainier, and of South Lake Union.
- As the views are in different directions, the positioning of the roof deck and upper level windows will decide the range of scenery perceivable.

### **ACCESS OPPORTUNITIES + CONSTRAINTS**

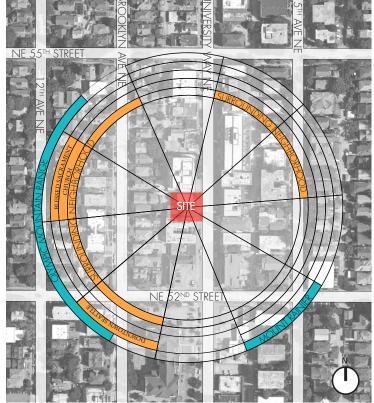
- University Way NE is a two way street that runs north to
- There are 5 nearby bus stops serving 5 different bus routes, including three stops on University Way
- There is a designated bike lane in front of the site and mulitple bike racks around on University Way, as well as a bike shop located on University Way
- Pedestrian access to the site occurs from University Way
- There is a future light rail station going in at Brooklyn Ave NE & NE 45th St as part of the Northgate light rail extension, expected to be completed by 2021.
- Since the site is bordered by a very active street, the entrance to the project should to be clearly indicated.

#### SOLAR EXPOSURE + PREVAILING WINDS

- The site is bordered by a five-story apartment on the north and a two-story apartment on the south.
- Due to the surrounding building's heights on the north side of the site, the proposed design will not receive much sun and wind exposure on the building northern facade, except for at the upper levels.







### TREES LEGEND



#### VIEWS LEGEND

Neighborhoods and Structures Natural Surroundings

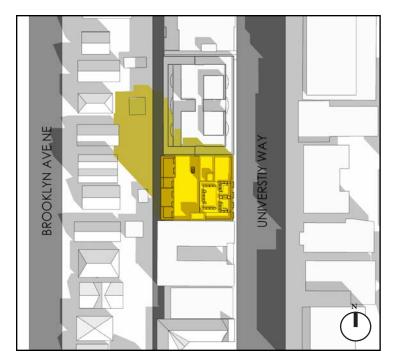
#### ACCESS/CIRCULATION LEGEND

Site Direction of Traffic Arterial Streets Designated Pedestrian Area Bike Routes **⟨·····>** Future Rail Bus Stops Bike Shop

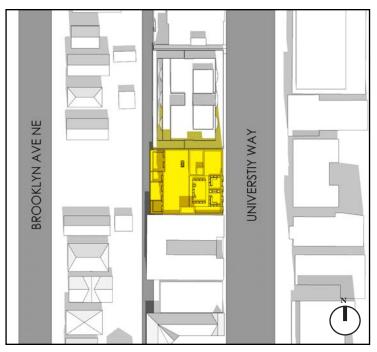
#### SOLAR/WINDS LEGEND



### SUPPLEMENTAL INFORMATION SHADOW ANALYSIS



10 AM | SPRING EQUINOX March 20, 2019



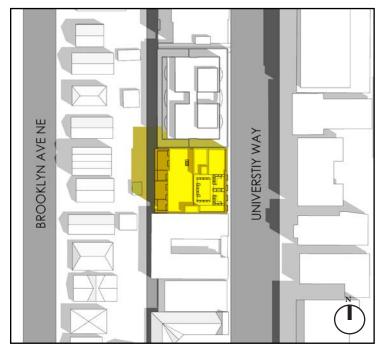
12 PM | SPRING EQUINOX March 20, 2019



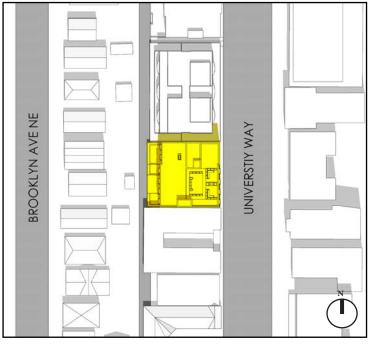
2 PM | SPRING EQUINOX March 20, 2019



4 PM | SPRING EQUINOX March 20, 2019



10 AM | SUMMER SOLSTICE June 21st, 2019



12 PM | SUMMER SOLSTICE June 21st, 2019

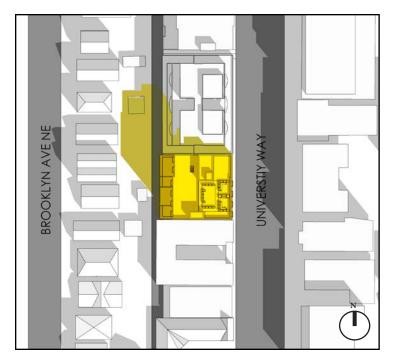


2 PM | SUMMER SOLSTICE June 21st, 2019

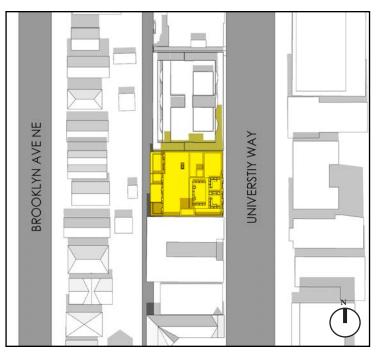


4 PM | SUMMER SOLSTICE June 21st, 2019

### SUPPLEMENTAL INFORMATION SHADOW ANALYSIS



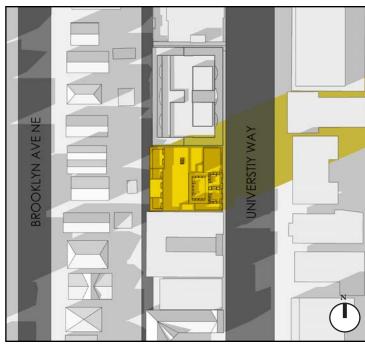
10 AM | AUTUMN EQUINOX September 23, 2019



12 PM | AUTUMN EQUINOX September 23, 2019



2 PM | AUTUMN EQUINOX September 23, 2019



4 PM | AUTUMN EQUINOX September 23, 2019



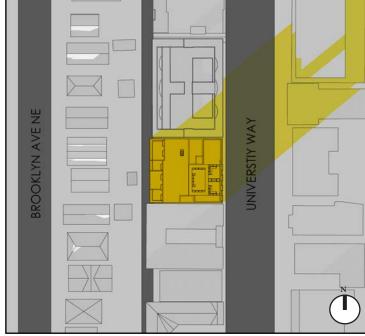
10 AM | WINTER SOLSTICE December 21st, 2019



12 PM | WINTER SOLSTICE December 21st, 2019



2 PM | WINTER SOLSTICE December 21st, 2019



4 PM | WINTER SOLSTICE December 21st, 2019