

# PORTLAND

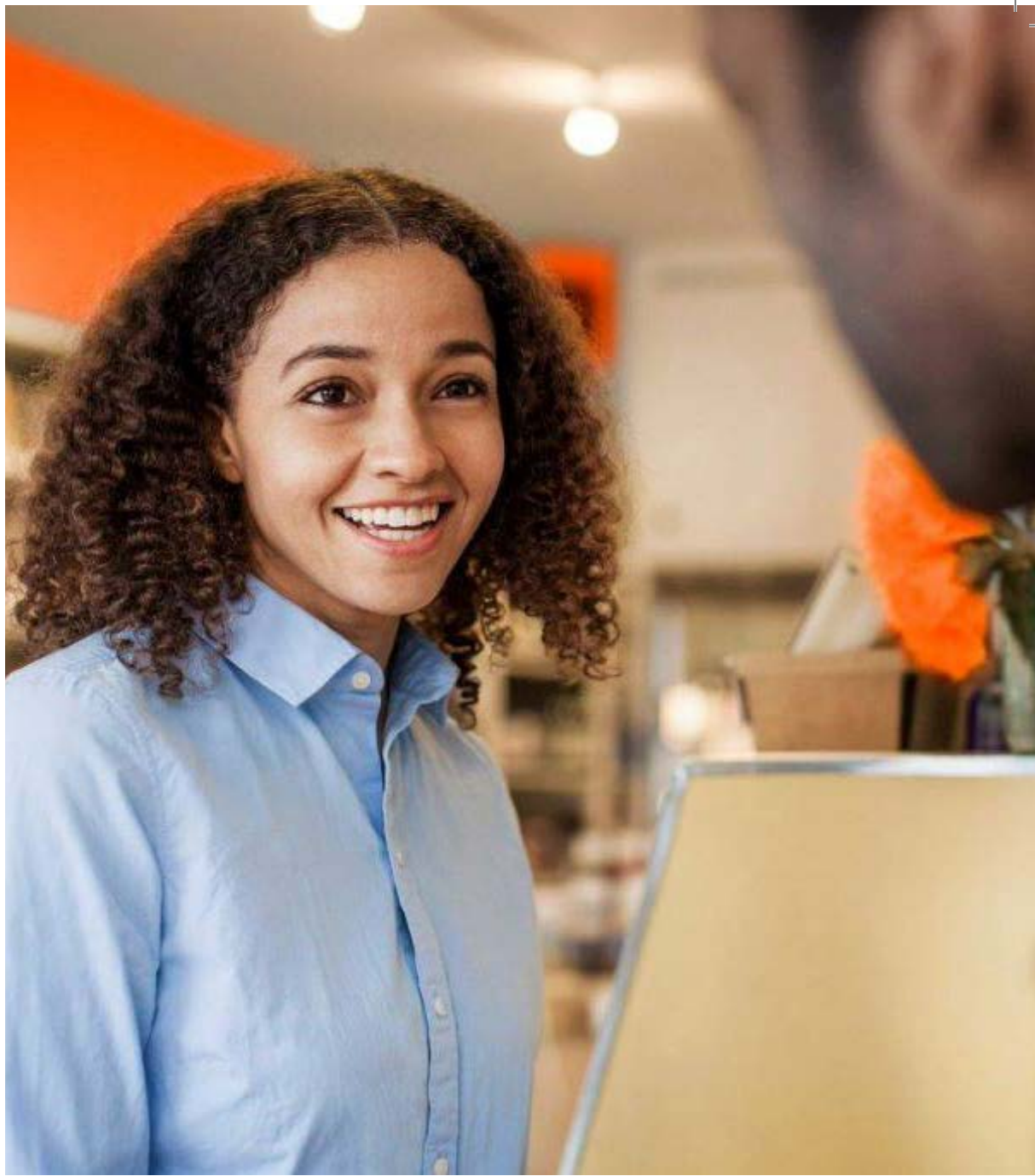
## canopy

BY HILTON

Design Review, Type III Application  
LU 15-209365 DZM, AD  
September 15, 2015 Revision | ZGF Architects, LLP







## Creating a lifestyle...

The Canopy Portland, Pearl District is a proposed 11-story, 153 room hotel located on a quarter block at NW Glisan Street and NW 9th Avenue. The Canopy is Hilton Worldwide's new lifestyle hotel brand that combines the most appealing facilities of a select-service hotel with the services and features more common at higher-end hotels. Canopy strives to be the energizing new hotel in the neighborhood offering simple, guest-directed service, thoughtful local choices, and comfortable spaces, so guests simply feel better going forward. For Canopy Portland, this means a day-lit winter garden that brings light into a banquet/conference facility in the basement level, a bar and café that spills out onto the sidewalk at the ground level serving artisanal breakfast featuring fresh, local ingredients, and a lobby where guests enjoy advice on local neighborhoods and restaurants, and nightly craft beer and wine tastings. A roof terrace and fitness center will provide guests with expansive city and mountain views. The building will be designed with the goal of achieving LEED Silver rating. The design will incorporate energy and water saving measures to achieve this rating.





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# Project Data & Application Request Summary

**Applicant**

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**Other Contact**

Brian DeLawder  
Portland Hotel Partners XXVII LLC  
(302) 691-2099

**Site Address**

425-431 NW 9th Avenue

**Cross Street**

NW Glisan Street

**Site Area**

10,000 Square Feet

**Site Tax Account Numbers**

R140559

**Adjacent Properties**

R140562, R140558, R140561

**Zoning**

EXd (Central Employment with a Design “d” overlay in the River District Subdistrict)

**Neighborhood**

Pearl District

**Pre-Application Conference**

April 21, 2015; EA 15-136319 PC

**Design Advice Request Conference**

June 4, 2015

**Development Staff Review**

Benjamin Nielsen  
(503)823-7812

**Application Request**

Type III Design Review for a new 10-story, full service hotel. The building consists of the hotel lobby, cafe, and lounge spaces at the ground level, banquet and support spaces in the basement, 153 hotel rooms on levels 2-10, and a roof terrace. The building is 79,200sf. The Applicant requests approval of site, usage, and building as detailed in the architectural drawings with the following modification:

**Number of Loading Spaces**

**33.266.310.2.c:**

The project seeks to reduce the required loading spaces from two to one to increase the amount of building frontage available for active use.

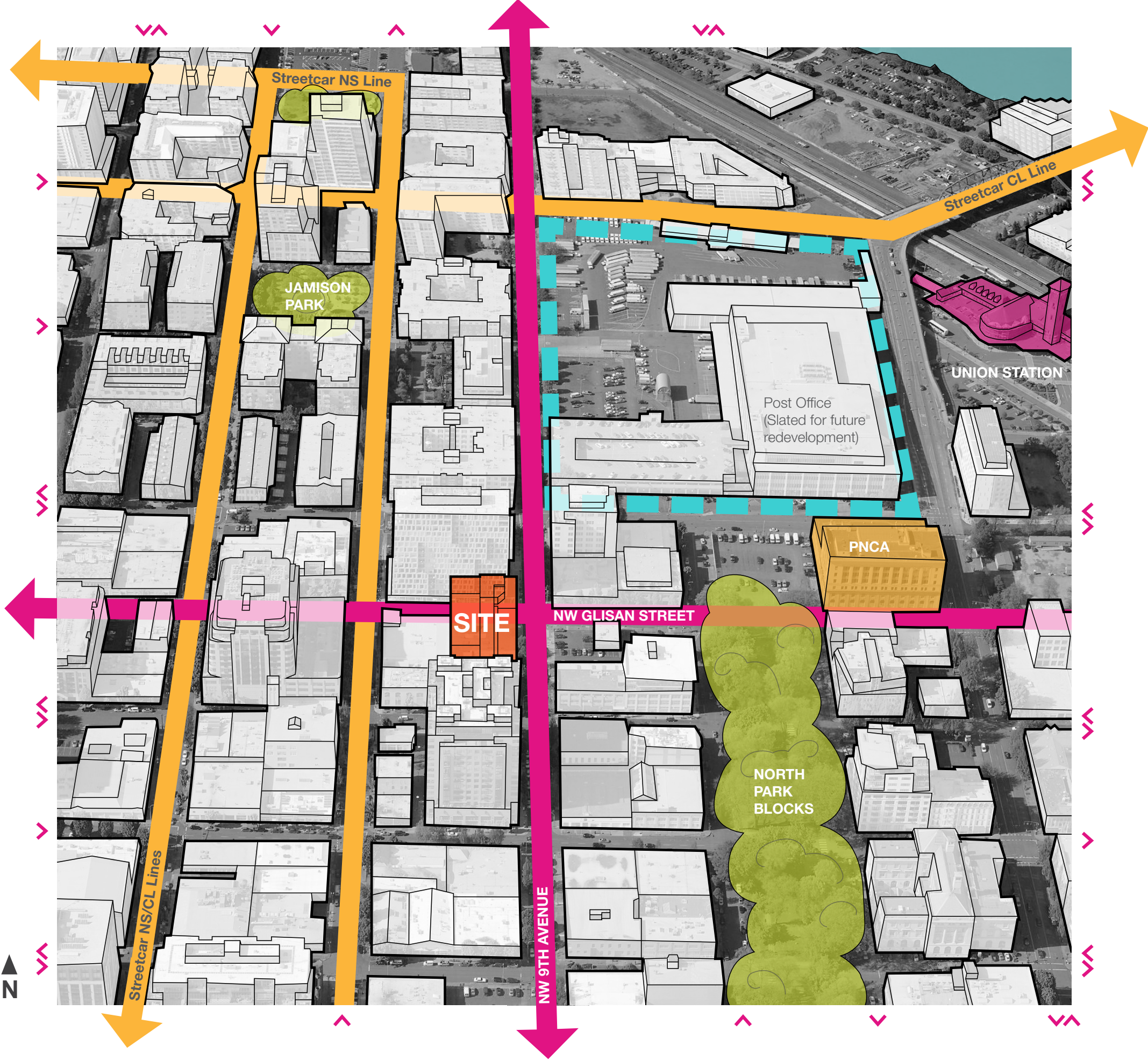








At the heart of  
the Pearl's future







NW 9th Avenue looking North



NW Glisan Street looking West



NW Glisan Street looking West



NW Glisan Street looking East



# Applicant Response to DAR Summary

The Design Advice Request hearing was held on June 4, 2015. Below are our responses to the summary June 18, 2015 memo sent to the project team from Chris Caruso. Some comments have been shortened for space.

## A. Issues to Work On/Provide Additional Information

1. *Roof garden operation, who has access, hours will be? Noise?*

The fitness room is located on level eleven “the roof”. It consists of an interior room with fitness equipment and an exterior paved area which can be used by patrons for relaxing, yoga and stretching. The fitness center is operational 24/7. Hours of operation for access to the outdoor portion of the space are not yet determined. We do not anticipate it to be a source of late night noise. See EXHIBIT 60.

2. *Explain how hotel deliveries will operate, when they will happen, the size of trucks, and if any will be parking on the street.*

Information on hotel deliveries, size of trucks and parking on the street was provided in the submission for on-site loading reduction from the required two bays to one bay. See EXHIBIT 66.

3. *Explain the valet parking operations and show the drop-off area and stand on the plans.*

The site plan EXHIBIT 56 shows the proposed taxi and valet zone along 9th Avenue adjacent the primary entrance to the hotel. A parking management plan will be put in place for this location. The hotel operator is considering an off-site location at City Center Parking located at NW 11th and Davis to handle any vehicles (letter was attached to Adjustment Request) to operate valet parking for the hotel 24 hours a day. In addition, the hotel will also consider providing a 24 hours Valet Parking Manager to manage pick-up and drop-off operations, including taxi drivers, in front of the hotel as well as coordinating drop-off and retrieval of vehicles from off-site parking. A valet stand would be located adjacent the main entry under cover of the entrance canopy. The operator recognizes these operations will be critical to the hotel and the surrounding uses to ensure expedient flow of hotel guests coming and going and to minimize disruptions to traffic flow. It is also understood that the site is located within a high-quality transportation network, with excellent access to local and regional roadways, both rail and bus transit, quality bicycle connections and pedestrian accommodations. Hotel operations plans to take advantage of the transportation network surrounding the site.

4. *Active space adjacent 9th.*

The program layout of the ground level has been reworked. See EXHIBIT 19.

5. *Show signs in the elevations and renderings and with more detail if Desitng Review is required.*

The two sign locations were reviewed in the DAR and are shown on Exterior Elevations within this document. Both signs are less than the maximum 30 sf size thus not reviewed under Design Review. Additional detail will be submitted with the permit set.

6. *Describe how employees will get their bikes in and out of the building and show the long-term bike parking on the plans.*

All bike parking is located within view of the hotel operators working in the lobby and under cover on the north side of the building. The employee bicycle riders’ changing facility is located in the below grade level in conjunction with the break room and other employee facilities.

7. *Describe the Bike Locker Room operations and intent. If the bike racks are spaced less than 2 feet apart, a Modification will be required as part of D.R. application.*

Provision of the Bike Locker Room for employees who travel to/from work on a bike is an allowed means of expanding the available FAR for this site. See EXHIBIT 64. The facility is located in the below grade level in combination with the employee break room. All bicycles are stored under cover at street level on the north side of the building. Bike parking is compliant with criteria; no modification required. Additionally, the project is contributing to the Bicycle Fund to support the location of short-term parking within the neighborhood.

8. *PBOT should study the need for a signal at NW 9th & Glisan. Staff Note: An email requesting this was sent to PBOT on 6/5/15.*

Not Applicable.

## B. General Comments

1. *The Commission noted for the record that most of the Pearl District is zoned EX, our most open zone that allows almost every use. The Pearl District was not zoned as a primarily residential area when the zoning was changed a number of years ago. It may be developing that way, but it was not a policy directive.*

Not Applicable.

## C. Building Form

1. *The NE corner will be visible; Add more glass to the North Facade.*

The NE corner of the building is a primary presence on this ¼ block property. The exterior design has been completely revised since the DAR. Windows are provided on both exterior walls of the corner rooms across both north and east facades. See EXHIBITS 52 & 53. The wood screen at the bike parking has been removed which offers visibility to the bikes for purposes of security while it signals and defines the primary hotel entrance. See EXHIBIT 29.

2. *Consider operable windows.*

Operable windows were considered, but for various energy and security reasons decided against. The exterior design has been completely revised since the DAR utilizing panels with a shingled placement to add texture and shadow to the façade. See Item C1.

## D. Ground Level

1. *Relocate program at the ground floor for more active use at the street.*

The program layout of the ground level has been reworked to incorporate a gallery. See item A4.

2. *The Fitness Room should be relocated off away from the ground level along the sidewalks.*

Fitness has been moved to the 11th floor roof. See item A1.



3. *Describe deliveries. To promote approval of a Modification for loading, add more active use on the exterior of the ground level.*

Deliveries have been addressed in item A2. The ground level program has been revised; see item A4.

4. *Demonstrate how the new ground level knits into the art community and responds to the galleries.*

Infusion of local art is paramount to the Canopy Brand. The Owner and Design team have spoken with neighboring galleries and have discussed incorporating local artists art throughout public areas. Conversations are underway regarding potential collaborations with rotating locally curated art on display in public spaces including the gallery space fronting 9th Avenue. And there is potential for participation in the Thursday gallery walks. The art wall behind the reception is intended to showcase local artists/artisans and to celebrate the history of the city. The potential for an artful screen on the service area doors in under consideration. The location of this hotel so immersed in gallery row offers a unique opportunity to participate in the local art scene promoting local artists in a meaningful and authentic way. See EXHIBIT 24.

5. *Add additional canopies that project over the public rights-of-way for weather protection as required in the applicable Design Guidelines.*

Canopies have been added on the north and east elevations. See EXHIBIT 29

E. Materials

1. *The Canopy brand needs to fit into the Portland brand. How the building materials hit the street at a social and human scale is critical to the success of this design.*

Agree! The Canopy brand aspires to reflect the city in which it resides. The Owner is working with local artists and we have created a sculptural base to the building. Please see the diagrams on EXHIBIT 26 and the larger scale images of the building base on EXHIBITS 28 and 29.

2. *The Commission is seeing a lot of corrugated metal in the city right now. Maybe the industrial aesthetic is overdone? The Commission does not want historicism but does want the human detail and the quirkiness.*

The building exterior has been redesigned. See EXHIBITS 31 and 42.

3. *The theme of the sliding planes is feeling trendy. Take what you have as a starting place and really work on the exterior.*

See item E3 describing the redesigned exterior.

4. *Art House (on the North Park Blocks near W Burnside) is successful because it takes a commonplace material and elevates it past what it is thru the manipulation of plane with a lot of push and pull.*

See item E3 describing the redesigned exterior.

5. *If the design continues to propose the bronze panels up high, look at bringing this material, or real bronze, down to the ground level and let people touch it.*

Quality materials are intended for use in the address signage and hardware at the pedestrian level to bring the richness of the material to a location in can be touched and appreciated.

6. *Wood on the 1st floor is a non-starter for the Commission. This should change for project approval. See if these areas can be a brighter/different version of what's up high or if the building can become a mix of slightly different versions of the corrugated bronze metal.*

The wood under the canopies adjacent the entry, screening the bike parking, and on the loading door has been replaced with metal.

7. *Maybe the metal incorporating the screen wrapping over the top of the building should be more complementary and less different from the body of the building.*

The equipment screen has been revised. It is now the same color as the body of the building. However, the texture is different from the metal wall panels offering a second level of detail and interest. See EXHIBITS 31 and 49.

8. *Study how the selected materials change with the varying sunlight and weather and if this is something the design team wants or can control.*

The intent of the bronze finish, canted panel spans, and the crisp bent panels is to allow light and shadow to cast an ever changing rich character. See EXHIBIT 31.

9. *The Commission needs to be convinced about the durability, permanence, and appearance of the painted metal panels. Provide a full sample, existing installation images, and other manufacturer's information regarding the warranty.*

See EXHIBIT 42

10. *Demonstrate the quality of the metal siding and finish. er.*

See EXHIBIT 42.

11. *Board-formed concrete can be challenging to successfully do as a ribbon. Look at the crafting of these forms early in the design process. Be cognizant of how the texture continues around corners and sides. Cast-in-place concrete could also be beautiful here. The clay of the concrete with the exceptions of the marble and round column needs more clarification.*

The board formed concrete has been replaced with site cast concrete and the intention is to utilize the ribbon as an organizing element. The pattern resulting from the form ties will be detailed to add an additional layer of craftsmanship and texture at the pedestrian scale. See EXHIBIT 43.



# Applicable Standards

## Base Central Employment Zone Standards

The hotel site is zoned EXd (Central Employment with a Design “d” overlay in the River District Subdistrict). Applicable development standards are addressed including standards of the Base Zone and Central City Plan regulations and standards.

### 33.140.100: Primary Uses

Per 33.920.250, a hotel falls under the use category of retail sales and service. As defined in Table 140-1, retail sales and services is a permitted use in the EX zone.

### 33.140.200: Lot Size

The site meets the referenced 33.614.100 section C standard that the front lot line is at least 10 feet long.

### 33.140.205: Floor Area Ratio

The FAR standards of plan districts supersede the FAR standards of this chapter. Reference response to 33.510.200.

### 33.140.210: Height

Per table 140-3, the maximum height for EX is 65 ft. 33.140.04 states that plan district regulations supersede those of this chapter. Reference response to 33.510.205.

### 33.140.215: Setbacks

Per table 140-3, there is no minimum building setback. Additional maximum setback standards are required per Central City Plan District Standard 33.510.215 Building Lines.

### 33.140.220: Building Coverage

There is no limit to building coverage as defined in Table 140-3.

### 33.140.225: Landscaped Areas

There is no requirement for minimum landscaped areas as defined in Table 140-3.

### 33.140.230: Ground Floor Windows

The percentage of glazed street level facade exceeds the standard of 33.140.230 section B, paragraph 3 which states that windows must be at least 50% of the length and 25% of the ground level wall area. The frontage along NW 9th has glazing that is 54% of the length and 43% of the area. Along NW Glisan the glazing is 82% of the length and 70% of the area.

### 33.140.235: Screening

Garbage and recycling for the building is collected and stored behind doors at the service/loading and therefore does not require screening at the ground level. The mechanical equipment is placed on the roofs of the building, are screened and have been carefully integrated within the overall building massing and elevations.

### 33.140.240: Pedestrian Standards

The proposed project has a clear connection between NW 9th and the main lobby entrance. The entrance is located at the intersection of NW 9th and NW Glisan.

### 33.140.275: Demolitions

There are no historic structures located on the site that require special demolition procedures.

### 33.140.300: Street Trees

Street trees will be mitigated per chapter 11.50.

### 33.140.295: Parking and Loading

No required parking. Recycling areas will be incorporated into the garbage collection areas inside the building and loading area and will not require screening. Appropriate signage will be incorporated into the design of all recycling areas.

### 33.140.300: Signs

Signs will follow regulations stated in Title 32, Signs and Related Regulations.

### 33.140.315: Recycling areas

Recycling areas will be incorporated into the garbage collection areas located in the service dock area.

## Central City Plan District Standards

The site is located within the Central City District as shown on Map 510-1

### 33.510.200: Floor Area Ratios

As defined on Map 510-2, the maximum floor area ratio for this site is 6:1. 1:1 of this was sold previously. Therefore, the project is seeking floor area bonuses of 3:1 to increase the floor area ration to 8:1. The gross site area is 10,000 sf and the total gross building area of 79,200 sf. See the appendix for FAR calculations and further explanation.

### 33.510.205: Height

As defined on Map 510-3, the maximum building height is 100 feet and is within the area eligible for general and housing height bonus. The building is 128’-8” tall, and seeks additional building height through provision 33.510.210.D.2.c.

### 33.510.210: Floor Area and Height Bonus Options

The project seeks bonus floor area through options listed in 33.510.210 section C, paragraphs 8 and 10 - locker room and eco-roof bonus options. See the appendix for FAR calculations and further explanation. The total bonus floor area sought is 3:1. Per 33.510.210.D.2.c, the project earns a height bonus of 45 feet.

### 33.510.215: Required Building Lines

As defined on Map 510-6, the building has a required building line on the NW Glisan frontage and must extend to within 12 feet of the street lot line for 75 percent of the lot line. The project does not step back more than 6’-6” from the lot line along NW Glisan.

### 33.510.220: Ground Floor Windows

This standard requires adherence to the base zone standard. The ground floor portion of the proposed building composed of hotel lobby, cafe, and other support services, exceeds the minimum standard of 33.130.230 section B, paragraph 3 which states that windows must be at least 50% of the length and 25% of the ground level wall area.

### 33.510.221: Required Windows Above the Ground Floor

Windows cover more than 15 percent of the area of street-facing facades above the ground level wall areas.

### 33.510.224: Mechanical Equipment along the Portland Streetcar Alignment

Per Map 510-11, mechanical equipment will be screened from the sidewalk.

### 33.510.226: Minimum Active Floor Area

As defined on Map 510-7 the project falls within the minimum active floor area standard, and complies because at least 50% of the floor area is in the active use of a full-service hotel.



Cental City Fundamental Design Guidelines

A Portland Personality

- A1 Integrate the River
- A2 Emphasize Portland Themes
- A3 Respect the Portland Block Structures
- A4 Use Unifying Elements
- A5 Enhance, Embellish and Identify Areas
- A6 Reuse / Rehabilitate / Restore Buildings
- A7 Establish and Maintain a Sense of Urban Enclosure
- A8 Contribute to a Vibrant Streetscape
- A9 Strengthen Gateways

B Pedestrian Emphasis

- B1 Reinforce and Enhance the Pedestrian System
- B2 Protect the Pedestrian
- B3 Bridge Pedestrian Obstacles
- B4 Provide Stopping and Viewing Places
- B5 Make Plazas, Parks and Open Space Successful
- B6 Develop Weather Protection
- B7 Integrate Barrier-Free Design

C Project Design

- C1 Enhance View Opportunities
- C2 Promote Quality and Permanence in Development
- C3 Respect Architectural Integrity
- C4 Complement the Context of Existing Buildings
- C5 Design for Coherency
- C6 Develop Transitions Between Buildings and Public Spaces
- C7 Design Corners that Build Active Intersections
- C8 Differentiate the Sidewalk-Level of Buildings
- C9 Develop Flexible Sidewalk-Level Spaces
- C10 Integrate Encroachments
- C11 Integrate Roofs and Use Rooftops
- C12 Integrate Exterior Lighting
- C13 Integrate Signs

River District Design Guidelines

A Portland Personality

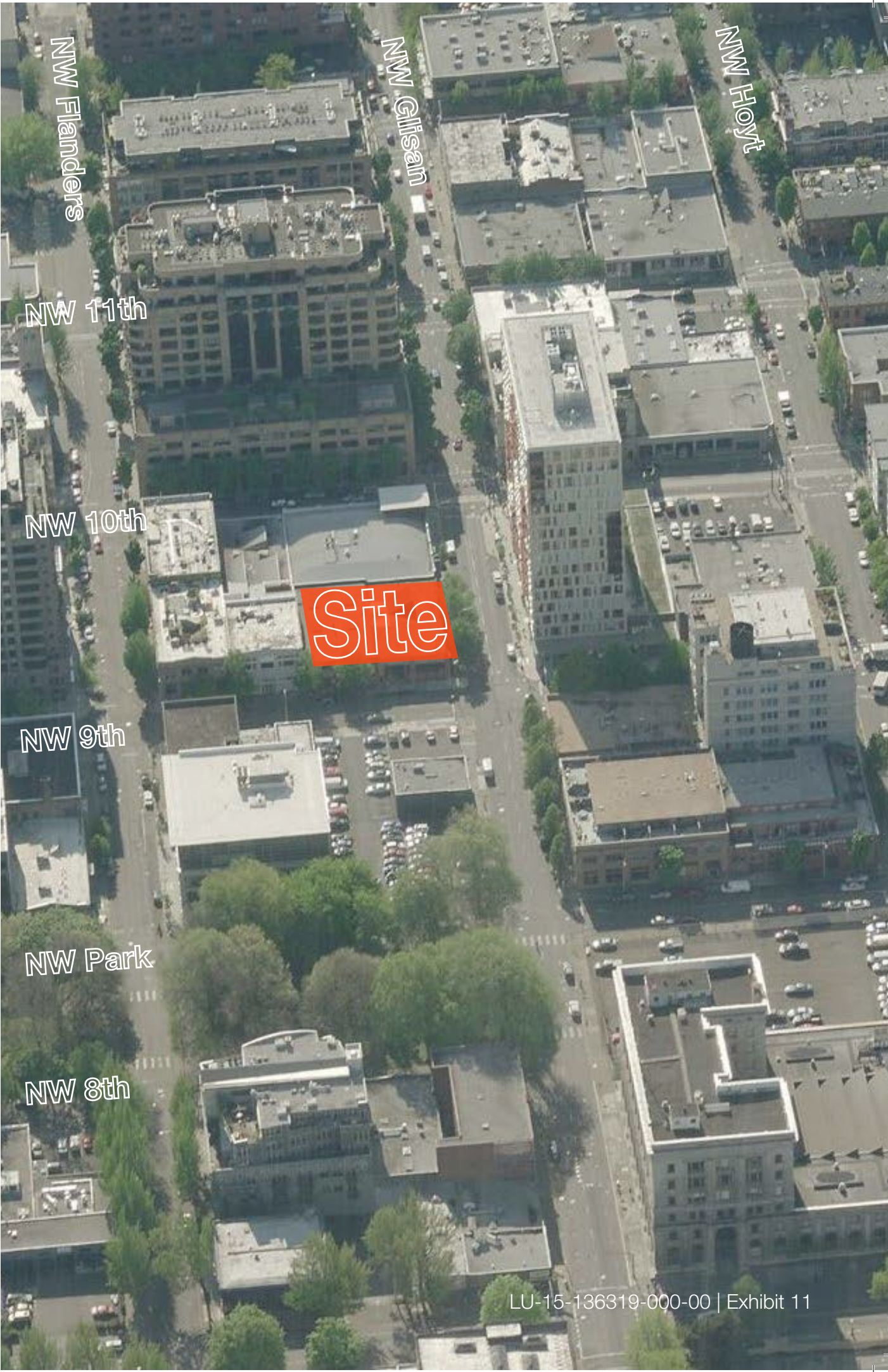
- A1-1 Link the River to the Community
- A3-1 Provide Convenient Pedestrian Linkages
- A5-1 Reinforce Special Areas
  - A5-1-1 Reinforce the Identity of the Pearl District Neighborhood
  - A5-1-2 Reinforce the Identity of the North Park Blocks Area
  - A5-1-3 Reinforce the Identity of Chinatown
  - A5-1-4 Reinforce the Identity of the Union Station Area
  - A5-1-5 Reinforce the Identity of the Waterfront Area
- A5-2 Emphasize N.W. Broadway Bright Lights
- A5-3 Incorporate Water Features
- A5-4 Integrate Works of Art
- A8-1 Design Fences, Walls, and Gateways to be Seen Over
- A9-1 Provide a Distinct Sense of Entry and Exit

B Pedestrian Emphasis

- B1-1 Provide Human Scale to Buildings along Walkways
- B5-1 Recognize the Roles of the Tanner Creek Parks
- B5-2 Strengthen the Significance of the Classical Chinese Garden

C Project Design

- C1-1 Increase River View Opportunities
- C3-1 Integrate Parking
- C9-1 Reduce the Impact of Residential Unit Garages on Pedestrians











## Connected to the city...

Canopy strives to be the energizing new hotel in the neighborhood offering simple, guest-directed service, thoughtful local choices, and comfortable spaces. The hotel seeks to connect guests to an authentic, local experience on all scales. The building itself, is laid out so that connections will occur at multiple levels. The first happens at the more public realm of the ground floor, where the café and bar are located with their main entrance off of NW Glisan. The new addition of the Gallery space adds activity to NW 9th, where the main lobby entrance is located. Both spaces offer residents of the city and guests alike a place to gather, be social, and unwind. The second connection happens at the upper guest room floors and the roof, where there is a fitness center and roof terrace guest amenity space. Views of downtown, the East and West Hills, and Mt. Hood can be seen from the upper floors, and connect guests visually to their surroundings.











...by enhancing the public realm  
and embracing the street









Applicable Design Guidelines

- A3-1 Provide Convenient Pedestrian Linkages

A8 Contribute to a Vibrant Streetscape

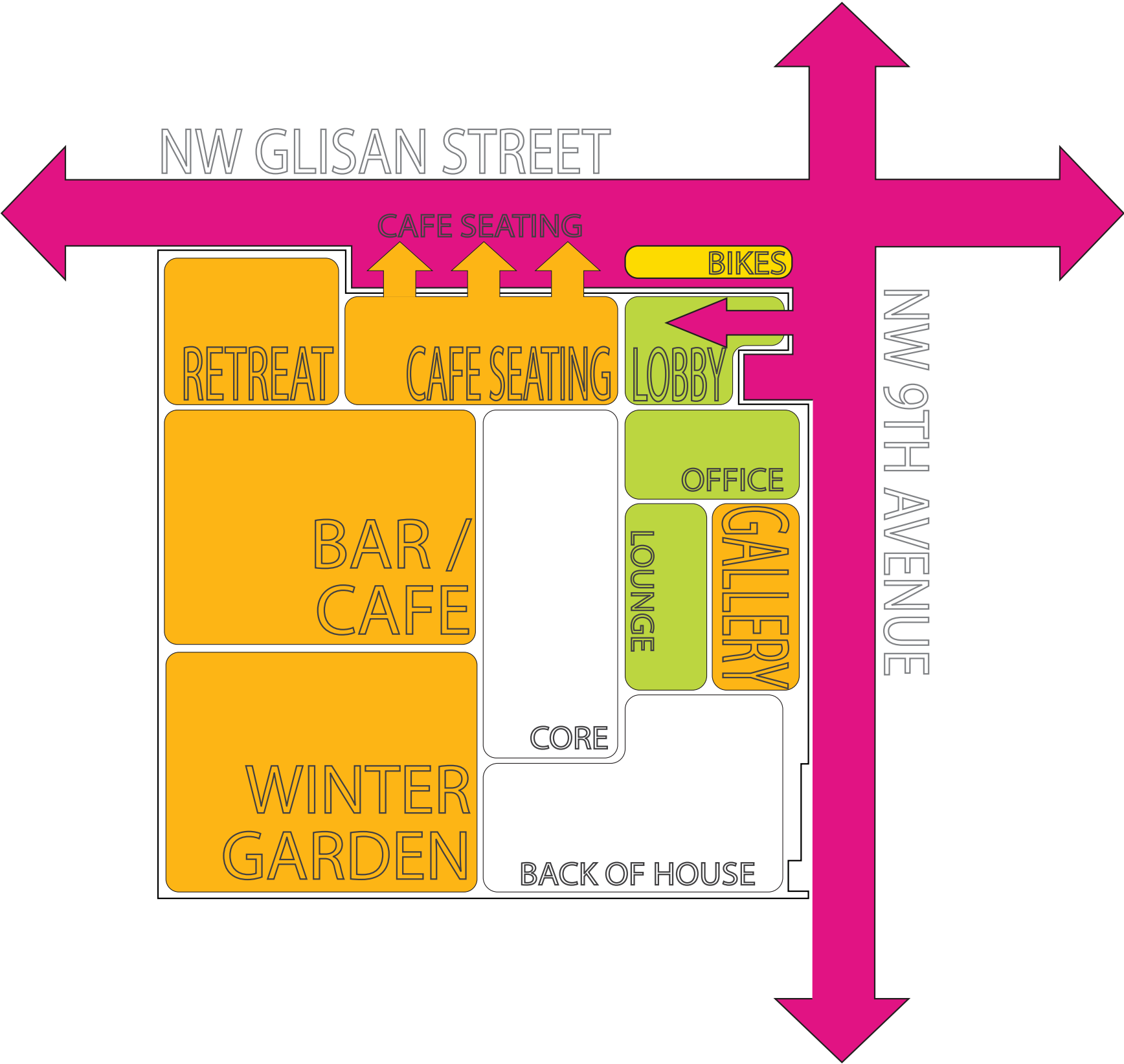
B1 Reinforce and Enhance the Pedestrian System
- B1-1 Provide Human Scale to Buildings along Walkways

B4 Provide Stopping and Viewing Places

C1 Enhance View Opportunities

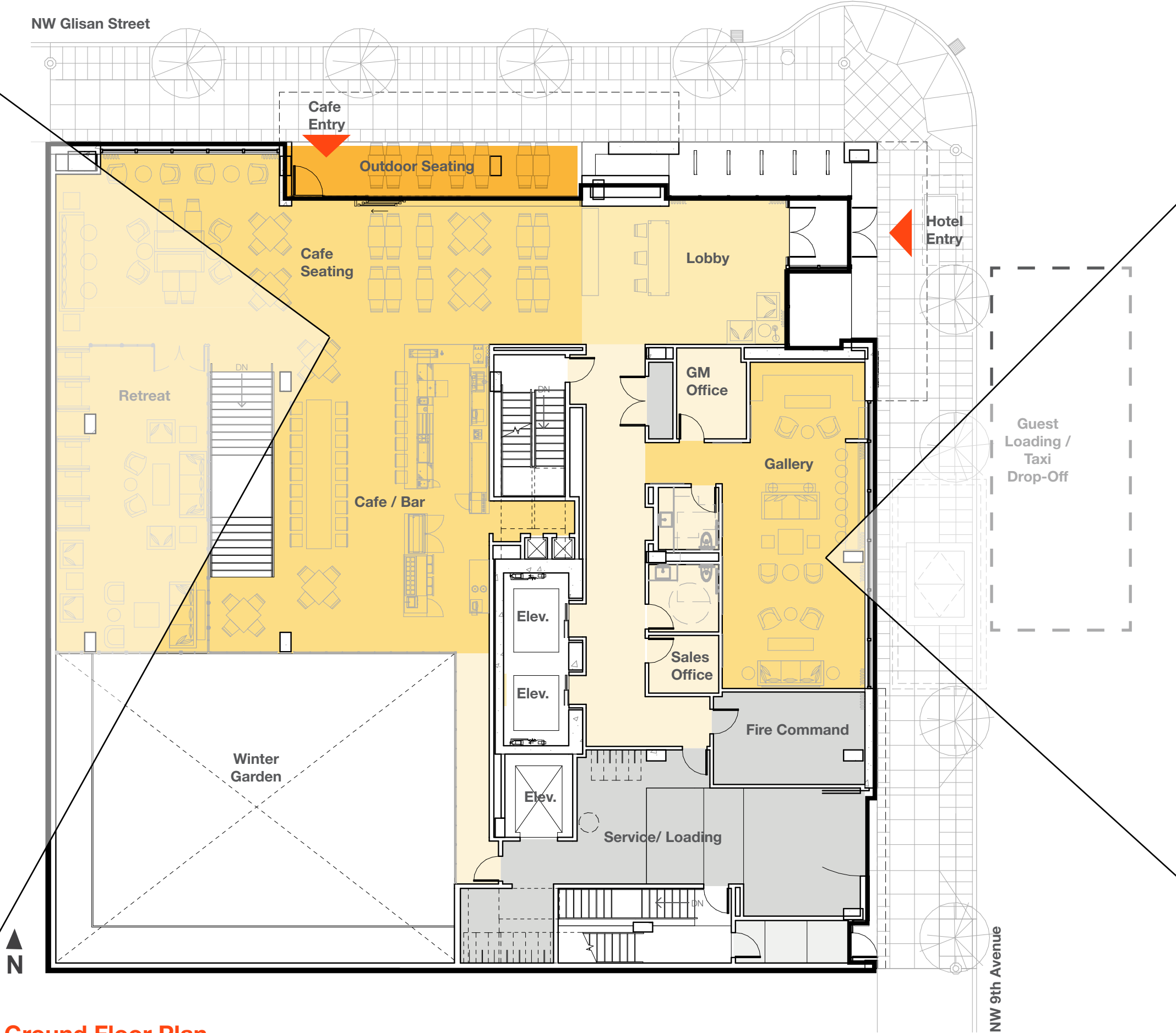
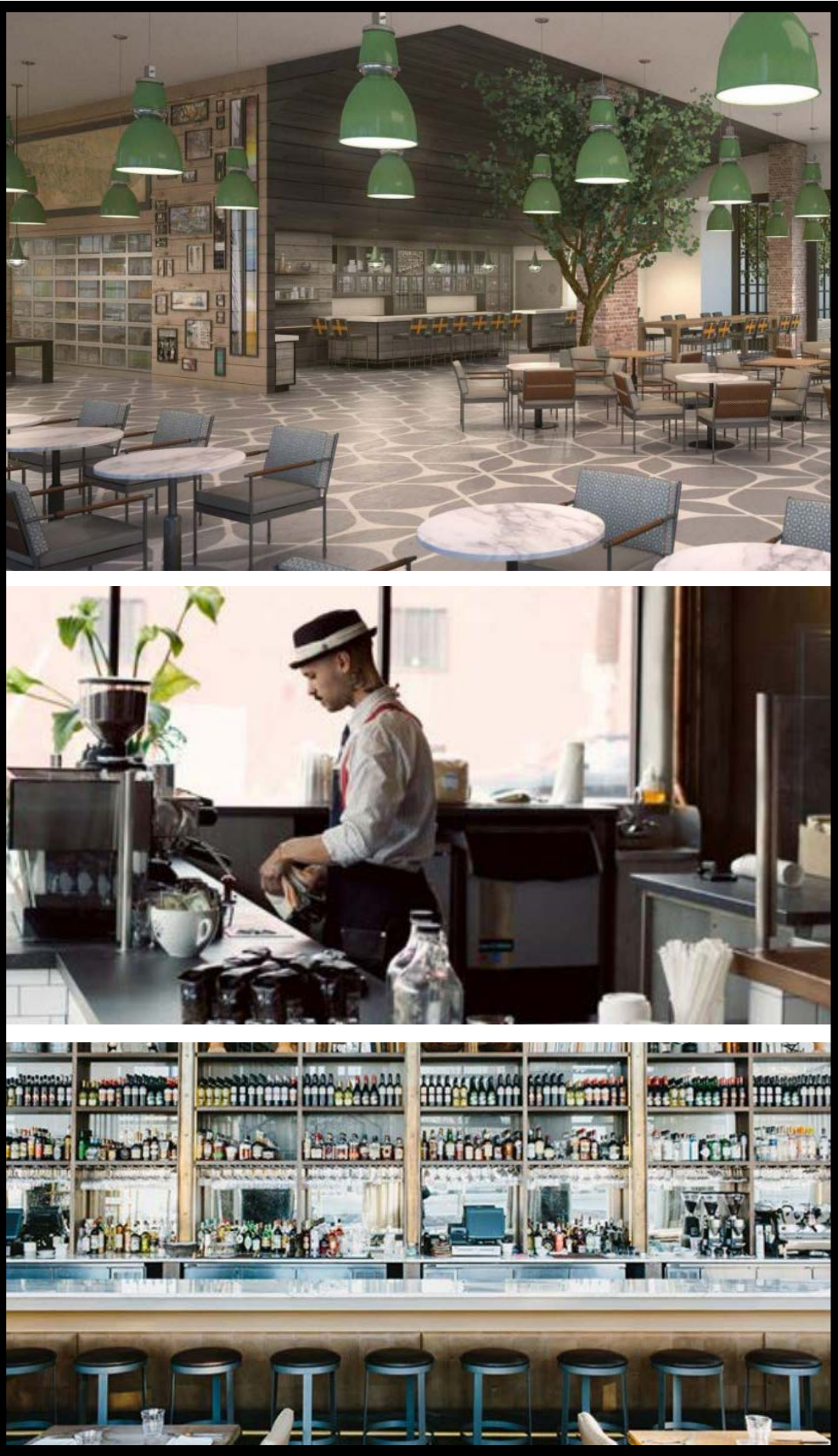
Located on the corner of NW Glisan and NW 9th, the project is located in the part of the Pearl district that is evolving to be the vibrant arts center of the city. With NW 9th being home to many galleries, and NW Glisan connecting pedestrians to the Pacific Northwest College of the Arts (PNCA) a few blocks away, the site is ideally located to contribute to the larger district.

The project’s main entries are strategically located to help contribute to the pedestrian experience. The main lobby entrance is located on NW 9th to promote activity on the street, and take advantage of slower traffic for taxi arrivals/departures. The main entrance for the cafe is on NW Glisan, enlivening the heavily used one-way street. The storefront steps back away from the sidewalk at these locations, providing a place of transition and signifying that these locations are entrances.





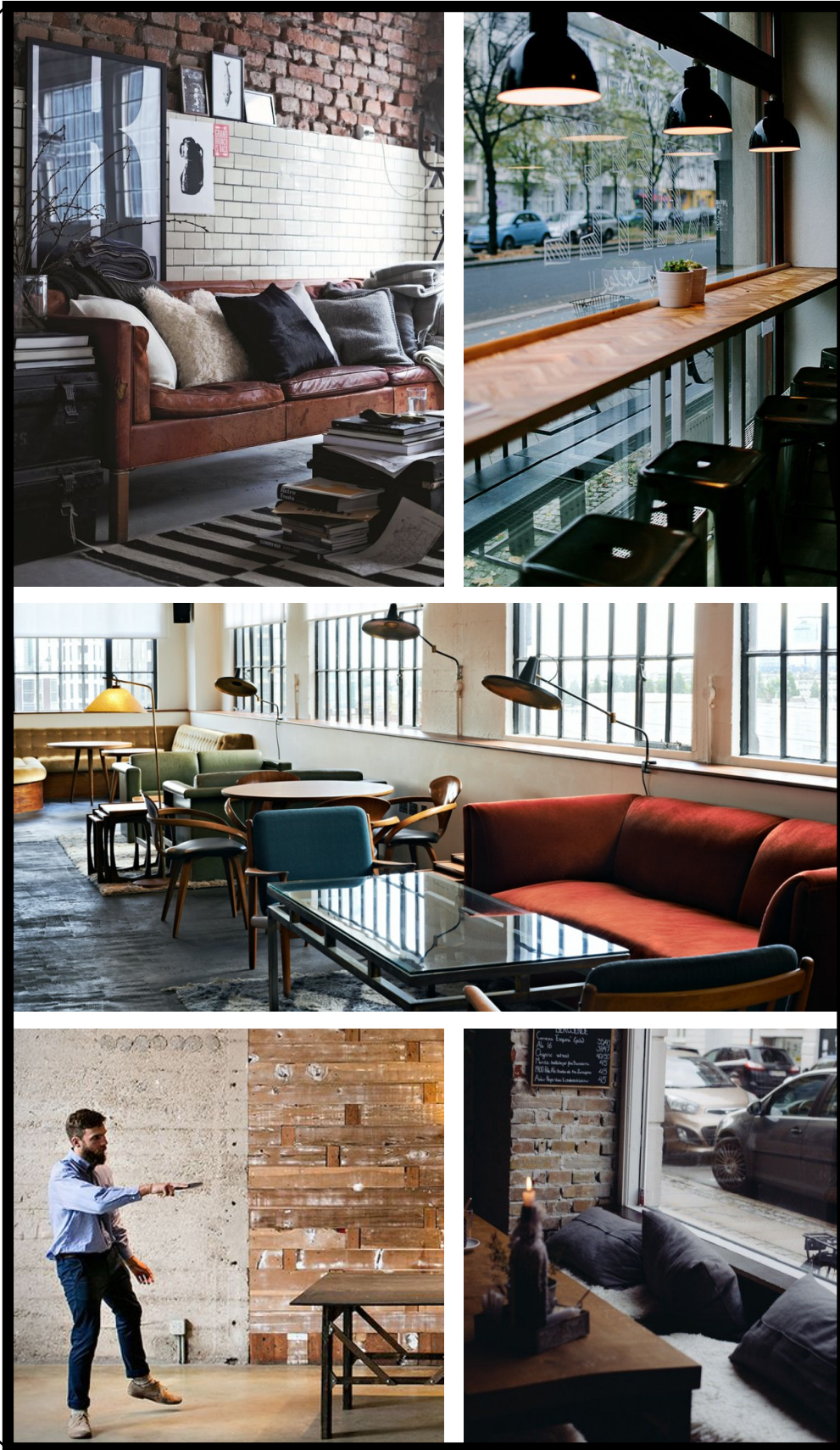
Canopy Central



Ground Floor Plan



## The Gallery



## Embracing the street through program

The project places active uses along the street edges. Work has been done since the DAR to ensure that active program is placed at the ground floor on both street frontages. Back of house functions, except those required by code, have been removed from the street facades and placed elsewhere in the building.

Emphasis has been made to expand Canopy Central on the ground floor. At the heart of the brand, Canopy Central includes the cafe area with family style-seating, bar with nightly local beverage tastings, and the Retreat area for quieter and more intimate interactions.

Spilling out towards NW Glisan Street, Canopy Central expands its activity to a porch-like atmosphere outside and adds vibrancy to the street and experience of the passer-by. Seating is accessed through openings in the glazing which gives patrons an easy connection to the sidewalk and offers pedestrians unobstructed views into the building's heart. This area is setback from the sidewalk to allow for pedestrian movement, and provides a stopping/viewing place without interfering with the movement zone of the sidewalk. The seating also adds activity to NW Glisan, emphasizing the major east-west connection towards the river.

The Gallery, a natural expansion of Canopy Central, has been added to the project and brings active use to the NW 9th Avenue frontage. The space is programmed to be a casual atmosphere for people to gather day and night. During the day, guests will gather along the bar-height table that spans the length of the storefront, to sip coffee, work on laptops, and have casual conversations.

The Winter Garden remains the center-piece of Canopy Central. Filtered with light from the skylights above, the space allows for activity to occur deep into the site. Views of the winter garden, filtered with light from above and the vegetation growing up the walls, can be seen from the sidewalk. This double-height space is an extension of the street level cafe and bar and can be used for private events. The conference area is designed to be flexible in use so that the informal activity of Canopy Central can flow into the rooms when meetings aren't occurring. Garage doors, conference tables doubling as game tables, informal seating, are all aspects of this.

In response to the DAR, the design team has placed as much back of house program underground as possible. The bike locker room and showers required for the FAR bonus have been relocated to the basement and have been combined in function with the employee break room/locker room - a natural pairing.



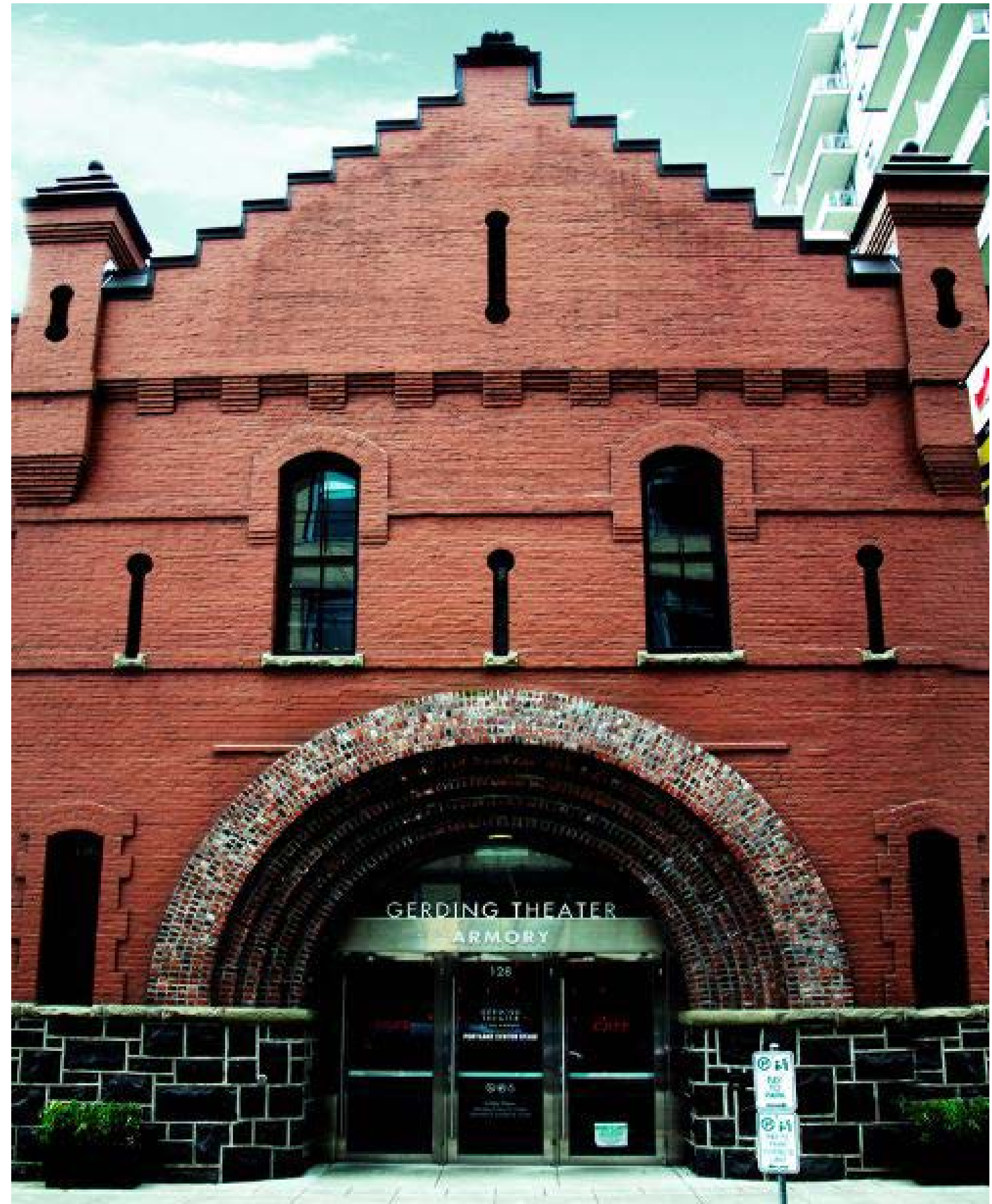




Winter garden rendering



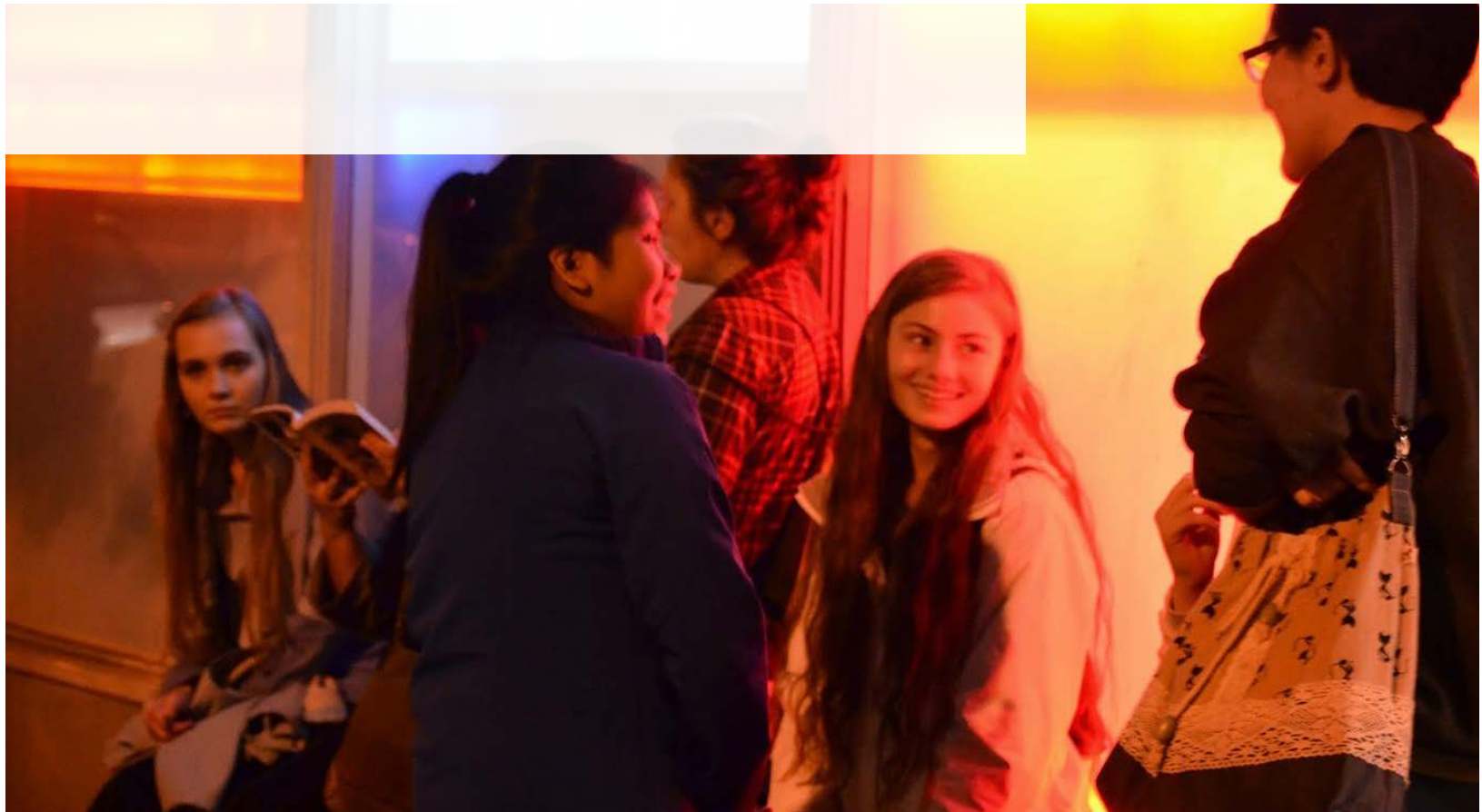








...by enriching the neighborhood character





# Art programming

The Pearl District is home to a culture of making - world class art galleries, advertizing agencies, software firms, breweries, coffee roasters, bakers, restaurants, and art schools. It is a place where craft and creation thrive. Situated on NW 9th Avenue, which hosts a large concentration of the Pearl's art galleries, the project site is ideally located to take advantage of and add to the cultural offerings of the neighborhood.

Through programming and form, the project seeks to tie into the adjacent arts community. There are many and varied opportunities to incorporate art into the project. The opportunity with most impact, is to place art in Canopy Central - the lobby and gallery areas. Discussions are underway with local galleries to provide rotating and more permanent local art through a loan program. Plans are also being made to participate in First Thursday events. Finally, the design team is exploring options to incorporate art at the service/ loading doors on NW 9th.

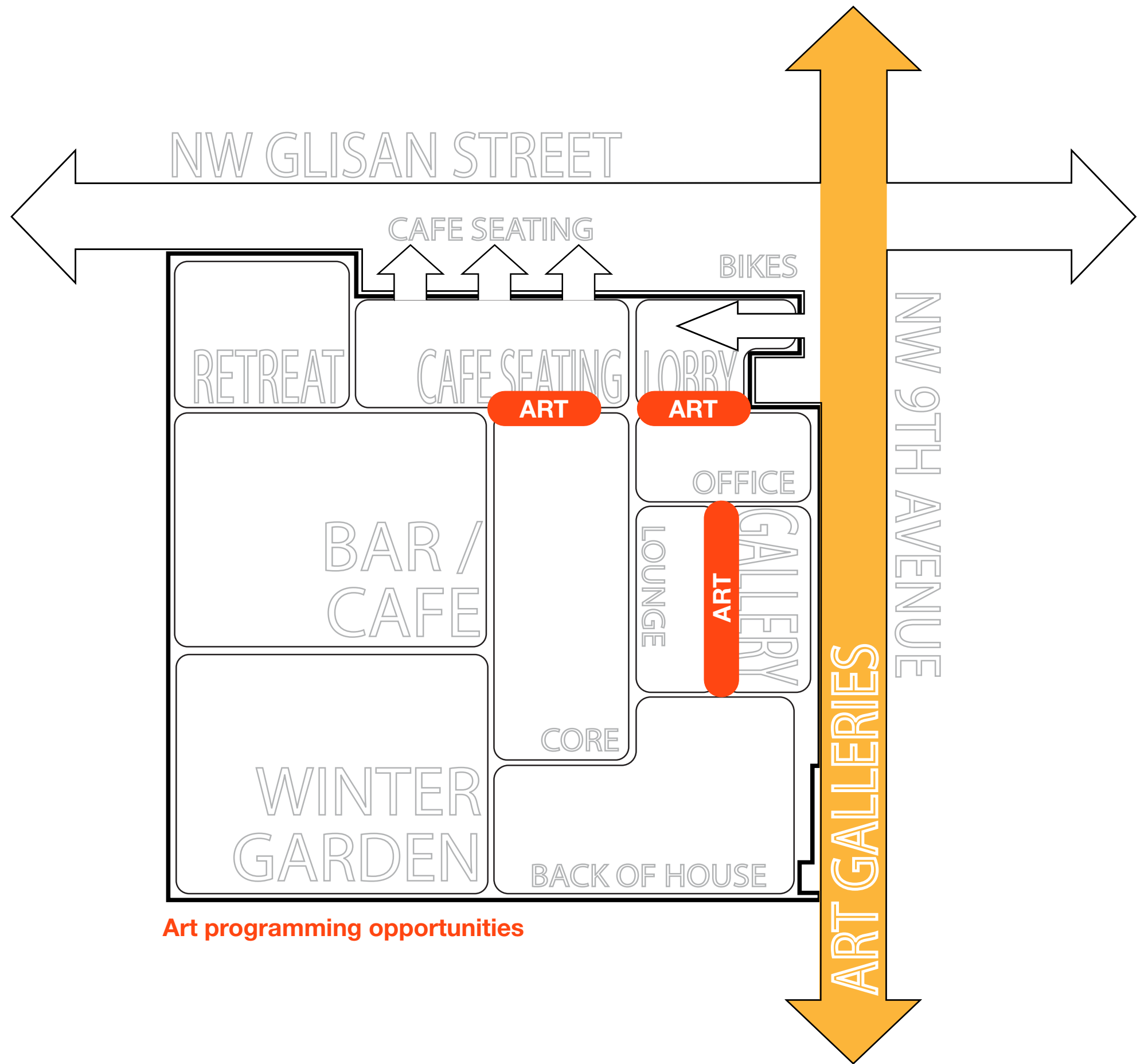
## Applicable Design Guidelines

<b>A4 Use Unifying Elements</b>	<b>B2 Protect the Pedestrian</b>
<b>A5-1-1 Reinforce the Identity of the Pearl District Neighborhood</b>	<b>B6 Develop Weather Protection</b>
<b>A7 Establish &amp; Maintain a Sense of Urban Enclosure</b>	<b>C4 Complement the Context of Existing Buildings</b>
<b>B1 Reinforce and Enhance the Pedestrian System</b>	<b>C8 Differentiate the Sidewalk-Level of Buildings</b>



Lobby art concept





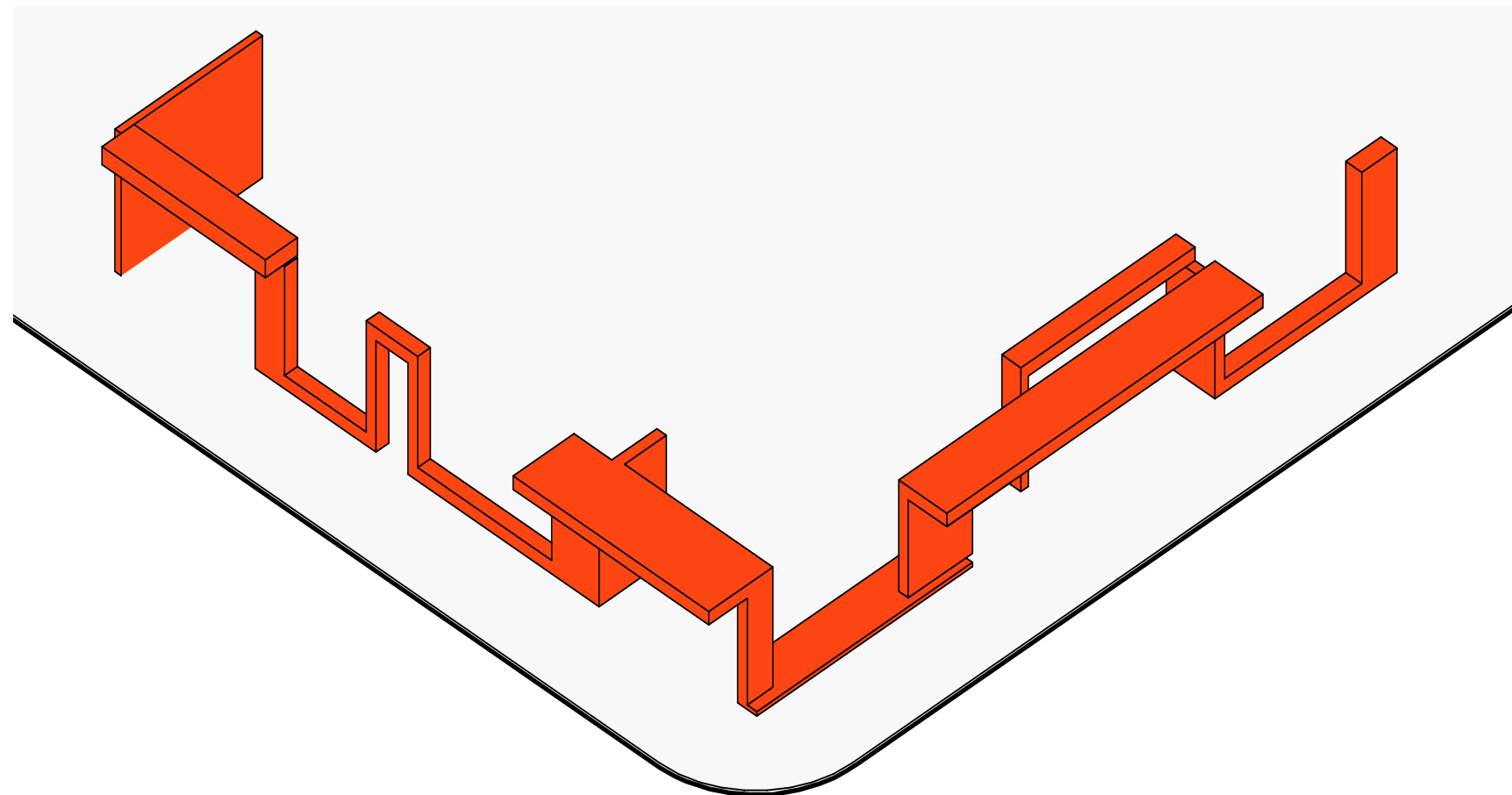
Art programming opportunities



# Base as composition of art

NW 9th is home to a mix of buildings which have windows that are varied in size and height. Storefront glazing of the older buildings, that typically house the art galleries, tend to be eclectic. Whereas the newer ones are more uniform. The base of the building attempts to unify the new with the old to maintain a consistent streetscape. The use of concrete as a sculptural element is twofold. First, it shapes the different glazing conditions and signifies entrances. The large expansive windows at street level allow for activity of the hotel's lobby, cafe, bar, and gallery spaces to be expressed at the sidewalk. Second, it becomes a work of art, similar to that of a constructivist sculpture, enhancing the pedestrian experience and breaking down scale. The play between solid and void, through the construct of folded concrete planes, adds variation and interest to the passerby.

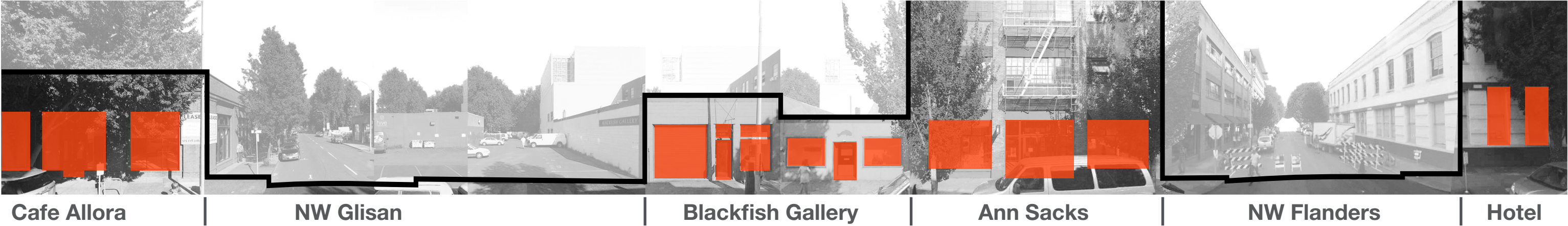
Since the DAR, canopies have been added to the North street frontage and service/loading area on the East. The canopy over the lobby entrance has been increased in depth, providing more weather protection. Stepping the building frontage back from the sidewalk creates a careful transition between the private realm of the site and the public space of the adjacent sidewalk. At the lobby, and as a response to the DAR, the screen has been removed from the design to open up the corner to be as transparent as possible.



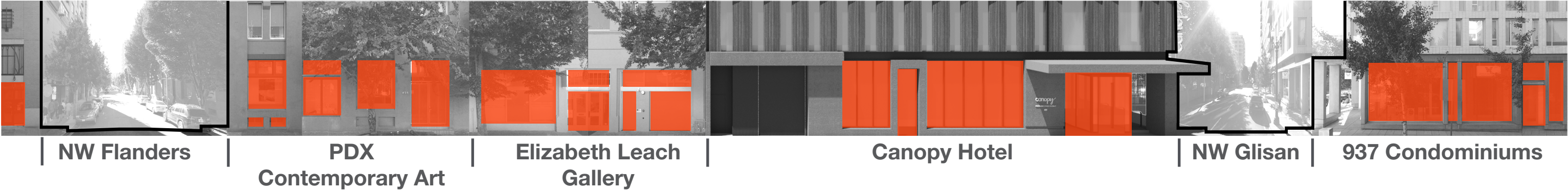
**Constructivist Sculpture**



View East along NW 9th



View West along NW 9th



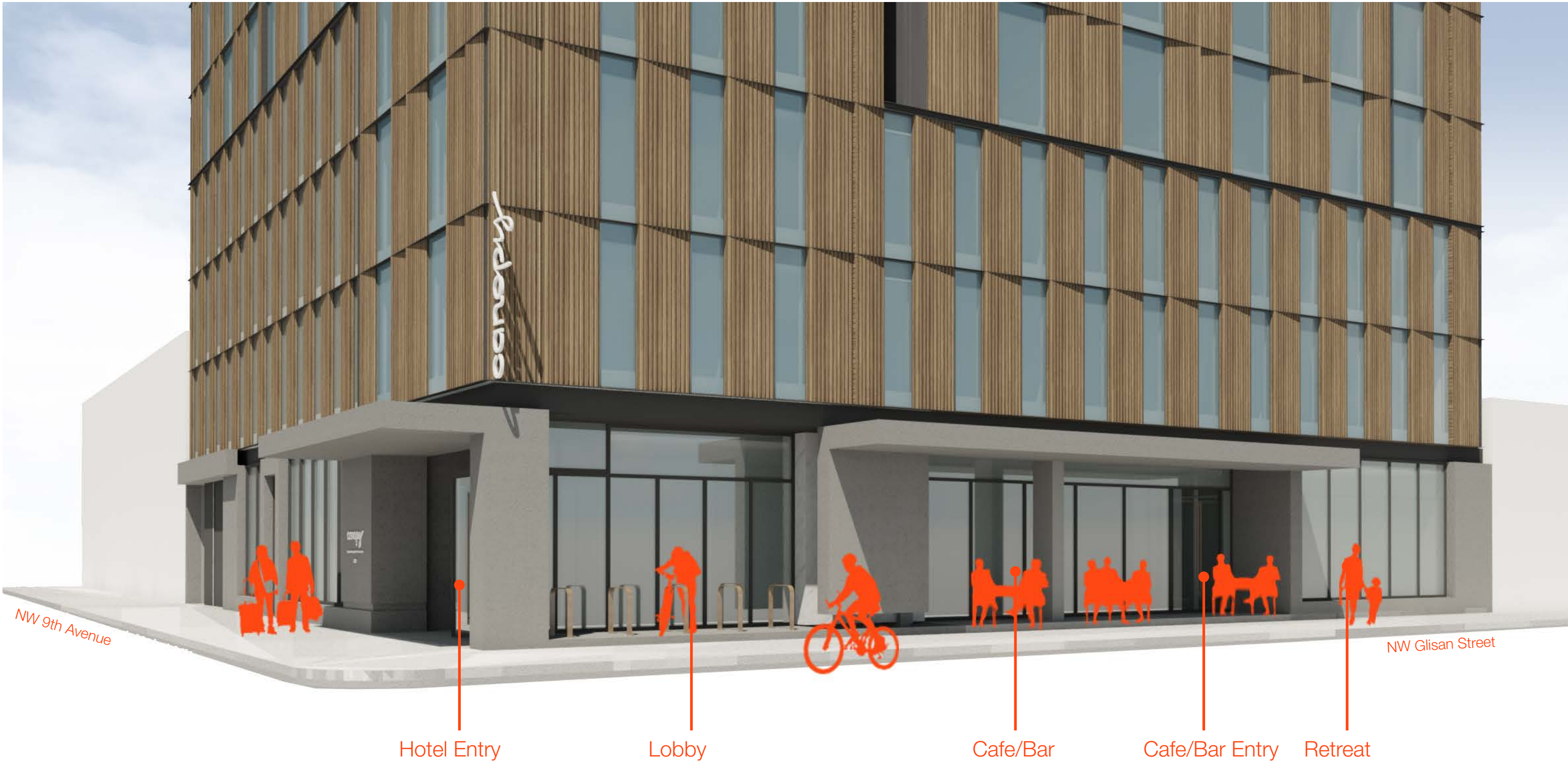


View from NW 9th Avenue

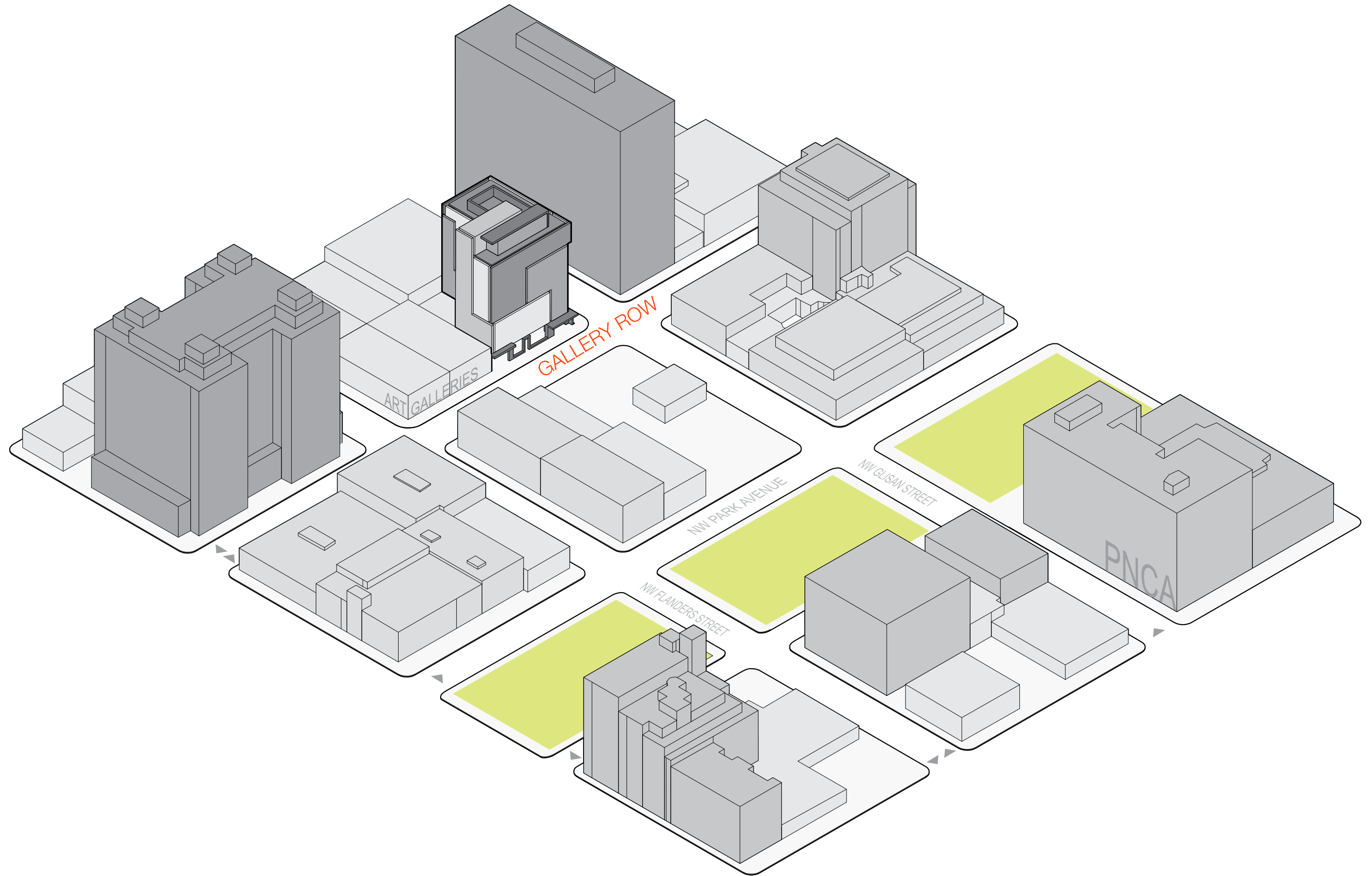




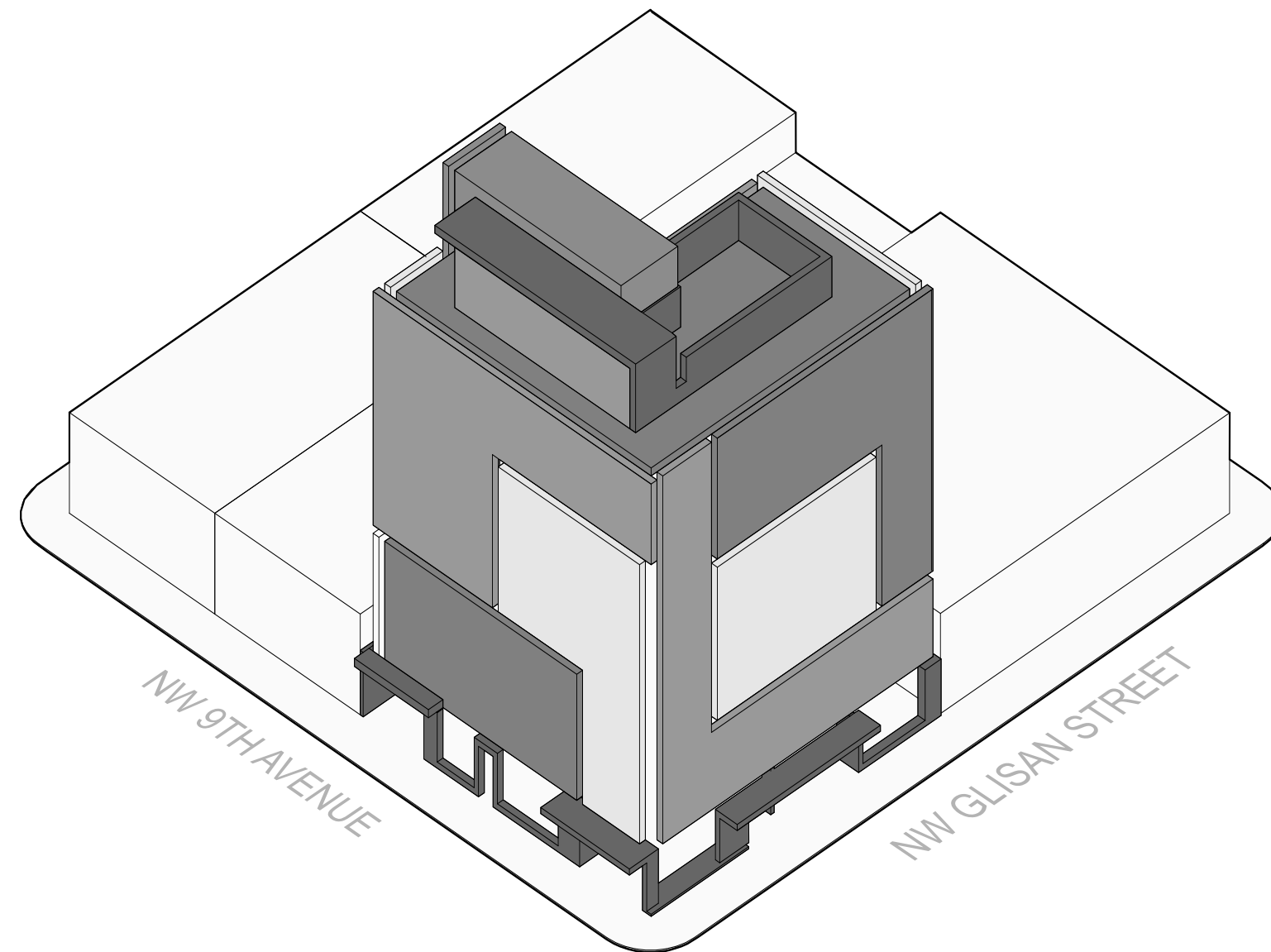
View from NW Glisan Street











## Responding to scale

The buildings that surround the site are diverse in height and scale. This context was used in diagram generation on how to break down the scale of the building. In an attempt to better integrate the hotel with the existing fabric, the facade was divided into geometries that begin to link the multiple scales of adjacent buildings. Once the diagram was created, it was then used as an organizational underlay to place window patterns. Windows of 5'-0" and 2'-6" widths are used to differentiate the patterns. The result is a carefully articulated and subtle building exterior.

Since the DAR, much effort has been given to studying the formed metal panel. The panel texture itself has been refined to a tighter ribbing. The panels span the height of the floor and are now canted so that one vertical edge sits 4" proud of the other. This gives the building much more texture. The orientation of the panels follows the diagram that structures the window placement. As the sun tracks around the building, the facade comes to life.

On NW Glisan, the site sits at a gateway between the north park blocks, future development of the post office block and on the edge of the Pearl District itself. Because of this and the 200' block size, the corner of the building has increased importance. In massing and form, the building is oriented towards the intersection. In response to the DAR, more windows have been placed in the NE hotel rooms, opening up the corner to show activity beyond.

### Applicable Design Guidelines

#### A9 Strengthen Gateways

**A9-1 Provide a Distinct Sense of Entry and Exit**

**C2 Promote Quality & Permanence in Development**

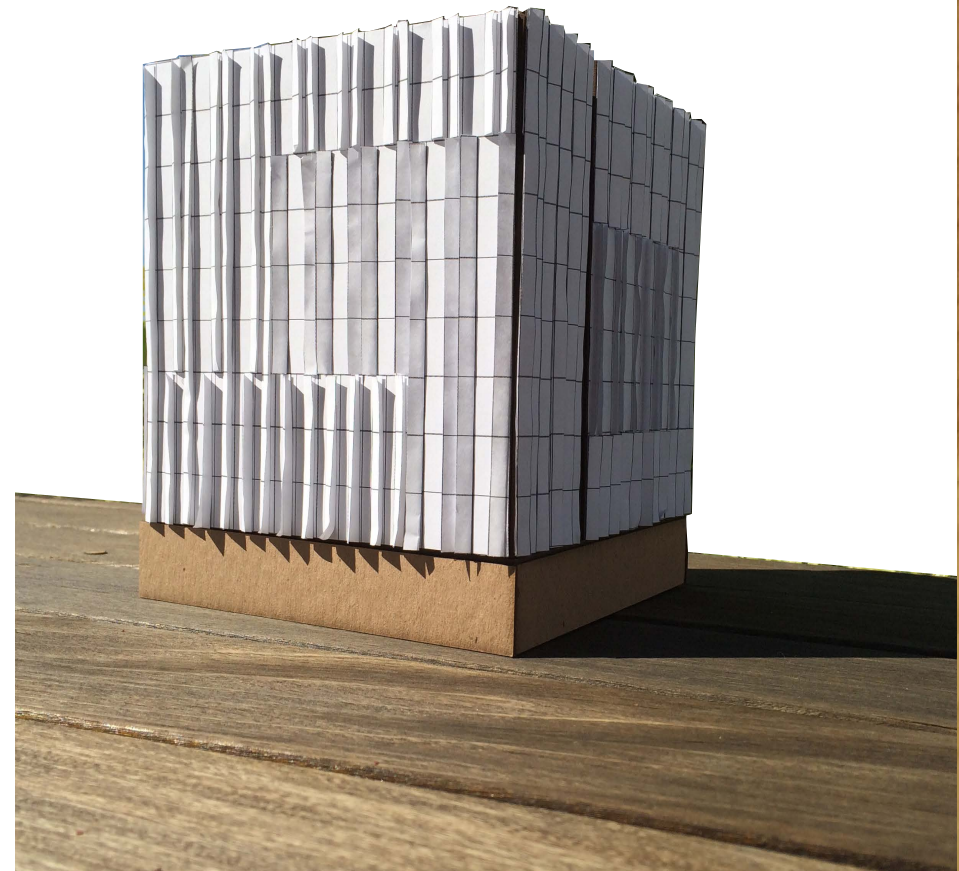
#### C5 Design for Coherency

**C7 Design Corners that Build Active Intersections**

**C12 Integrate Exterior Lighting**

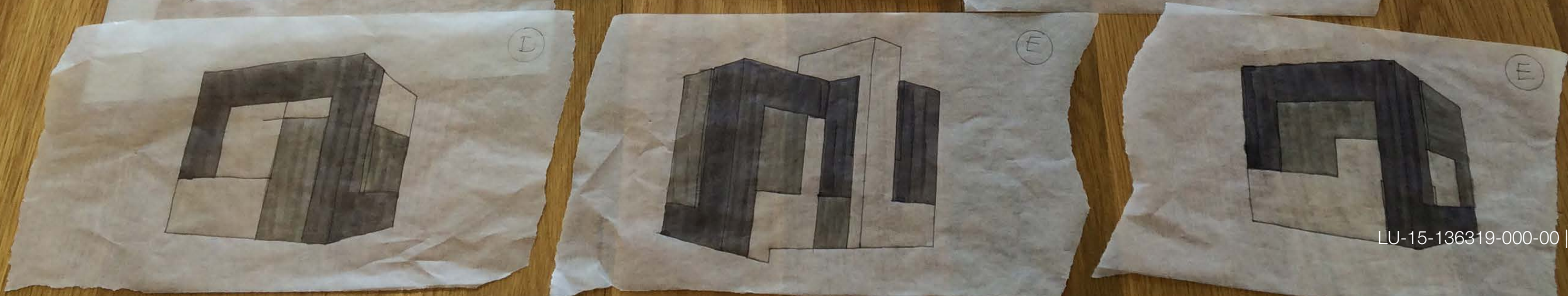
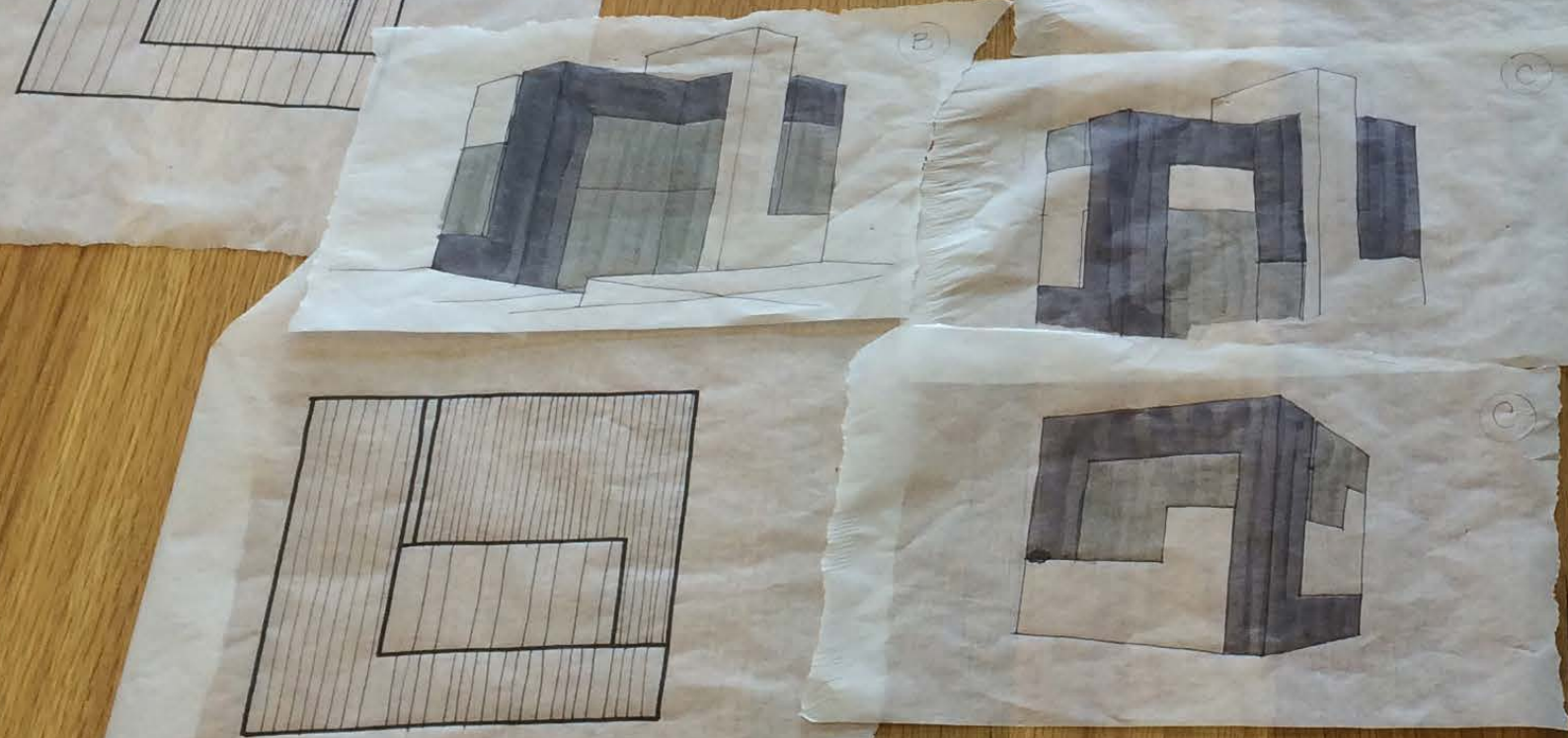
**C13 Integrate Signs**





Facade Studies







View Looking Southwest



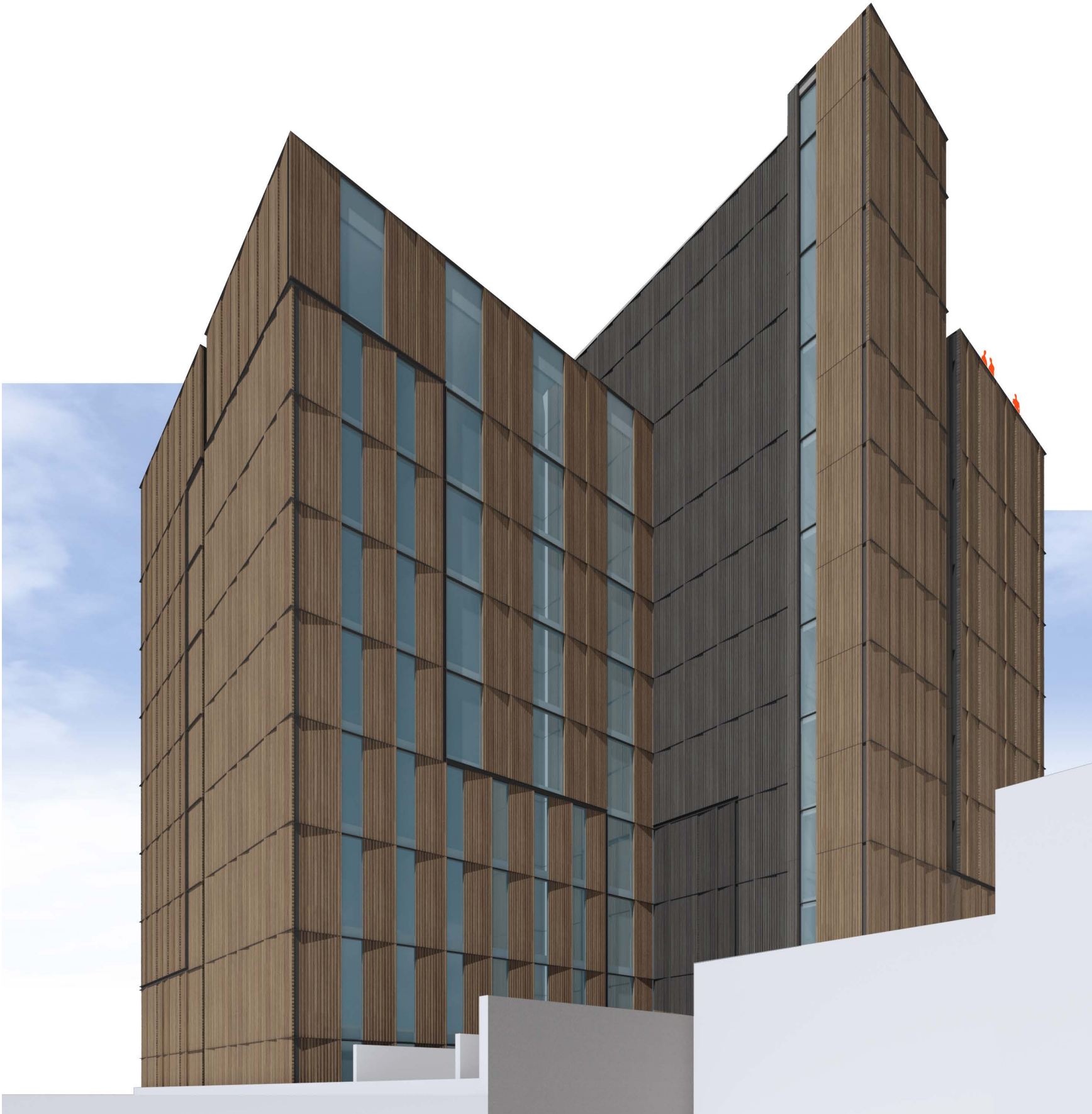


**View Looking Northwest**





View Looking Northeast





## View Looking Southwest





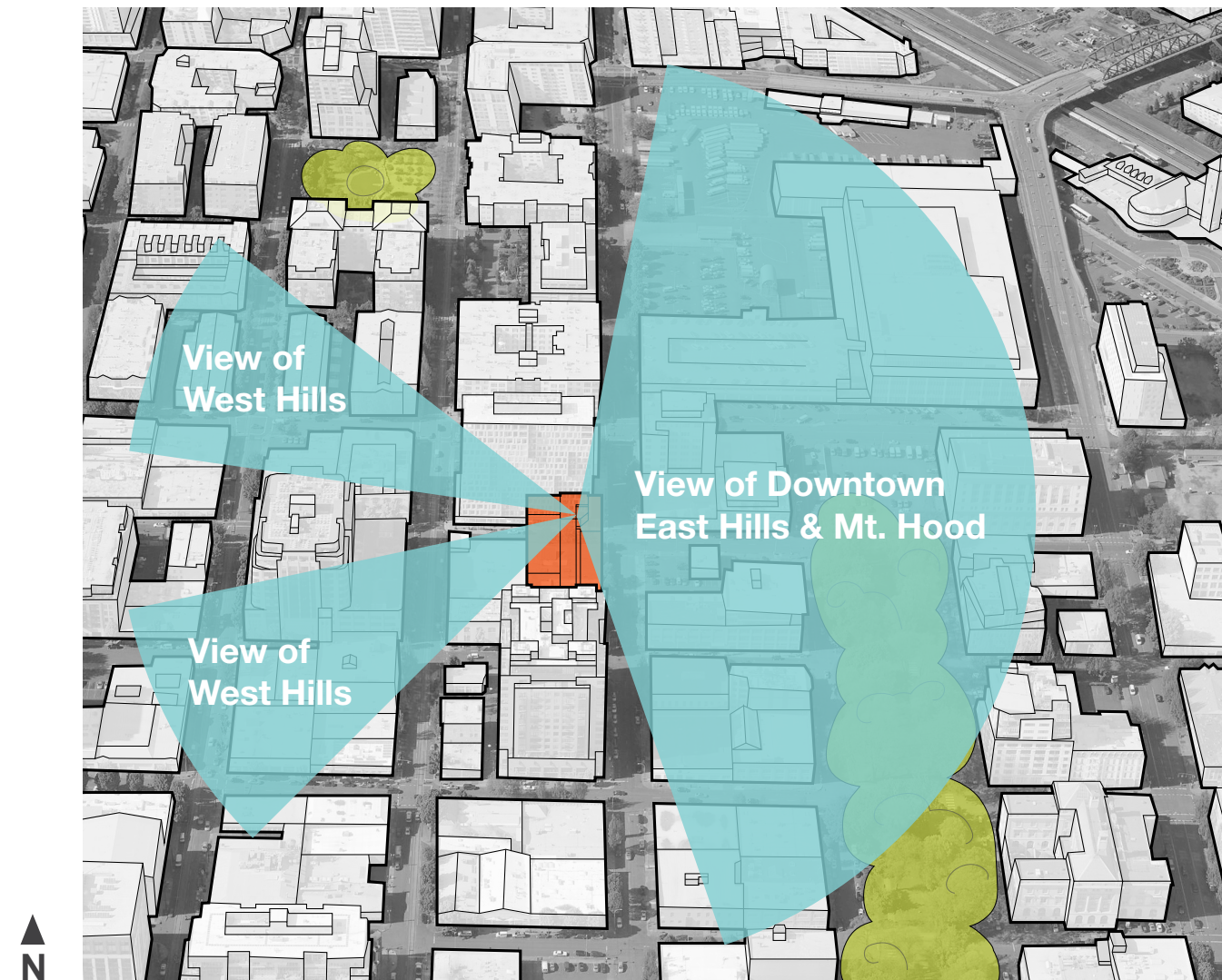
# Through views

In response to the DAR, and to activate the building frontage along NW 9th, the fitness center has been moved to the top floor. The terrace area surrounding the fitness room is for hotel guest use. Both are oriented towards the Southeast to take advantage of the broad sweeping views toward downtown, the East hills & Mt. Hood.

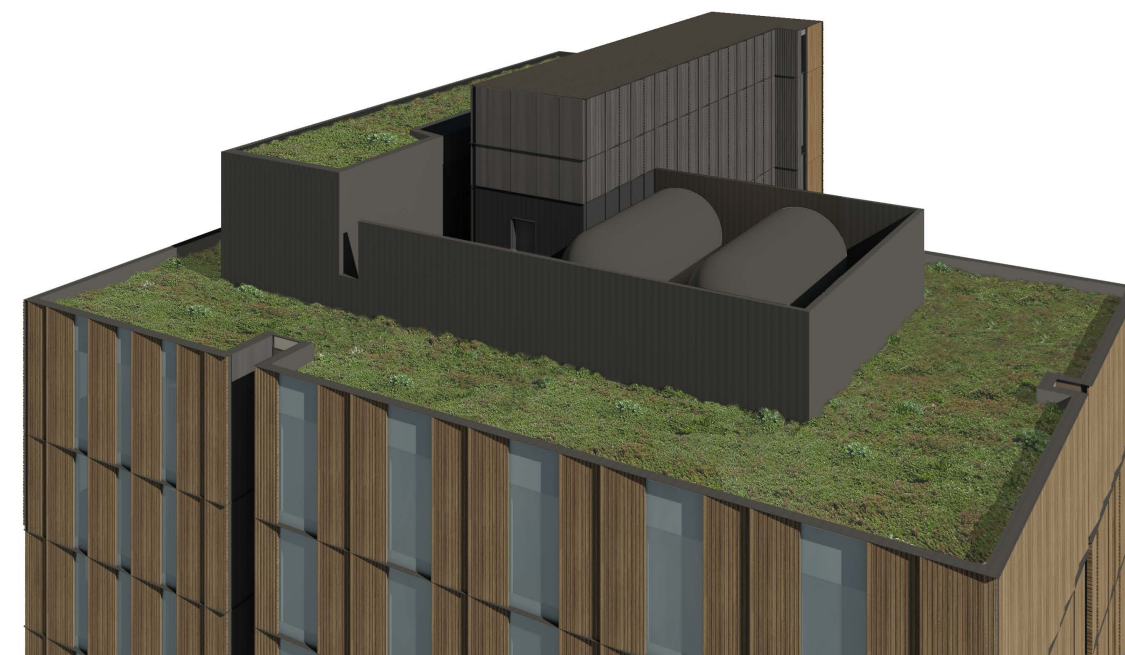
The roof area is treated as an extension of the building. The larger form of the elevator and stair core is clad in an accent material to the rest of the building. The fitness mass and mechanical area screen are treated as an extension of the ribbon at the base - connecting top and bottom. The outdoor roof terrace has a trellis/screen structure that provides shade for the warm summer months.

## Applicable Design Guidelines

<b>A1 Integrate the River</b>	<b>C1-1 Increase River View Opportunities</b>
<b>A1-1 Link the River to the Community</b>	<b>C11 Integrate Roofs and Use Rooftops</b>
<b>A5-3 Incorporate Water Features</b>	
<b>B6 Develop Weather Protection</b>	
<b>C1 Enhance View Opportunities</b>	



Views from the building



View looking Southeast





Park Blocks



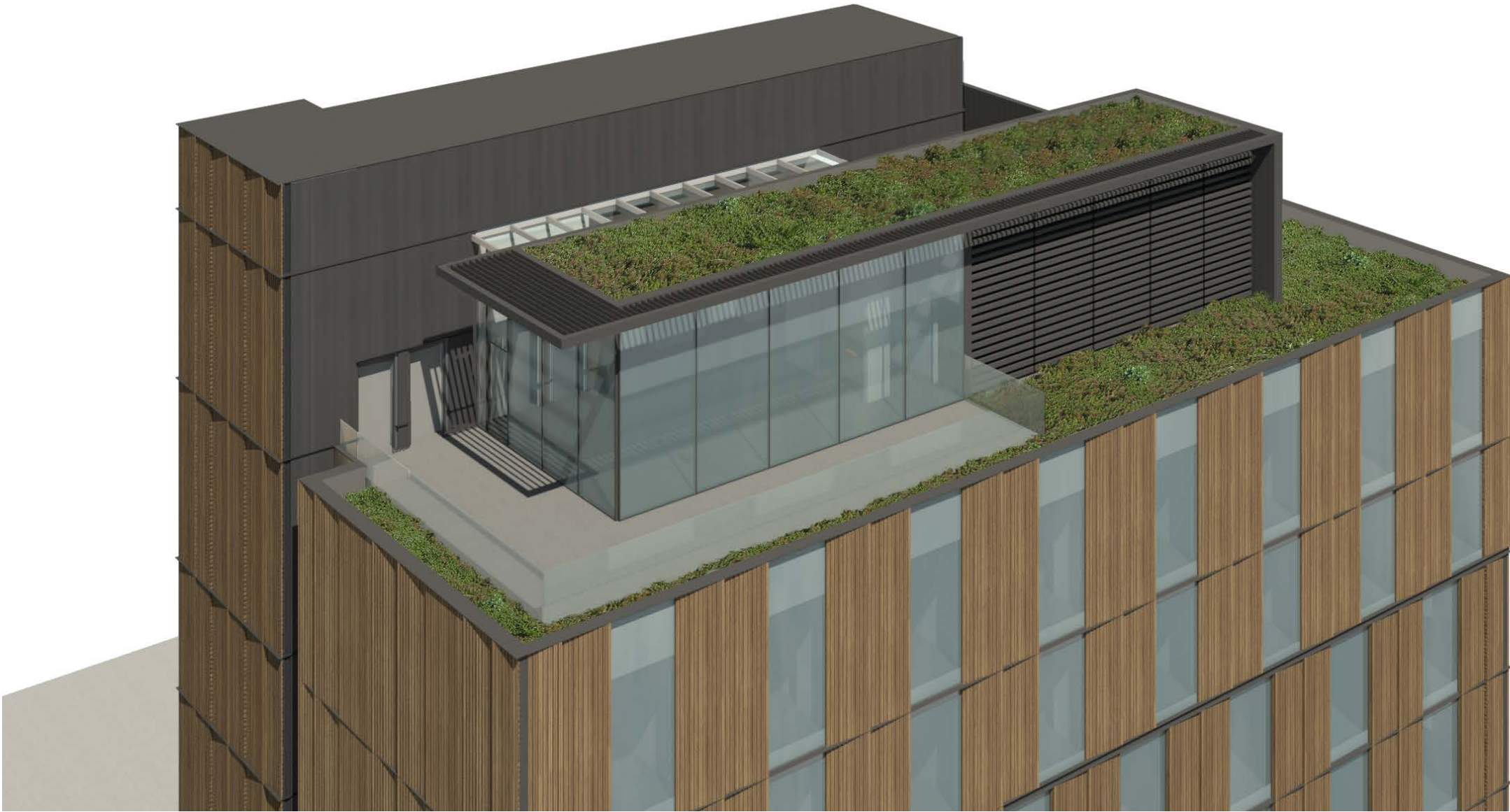
Downtown



Mt. Hood

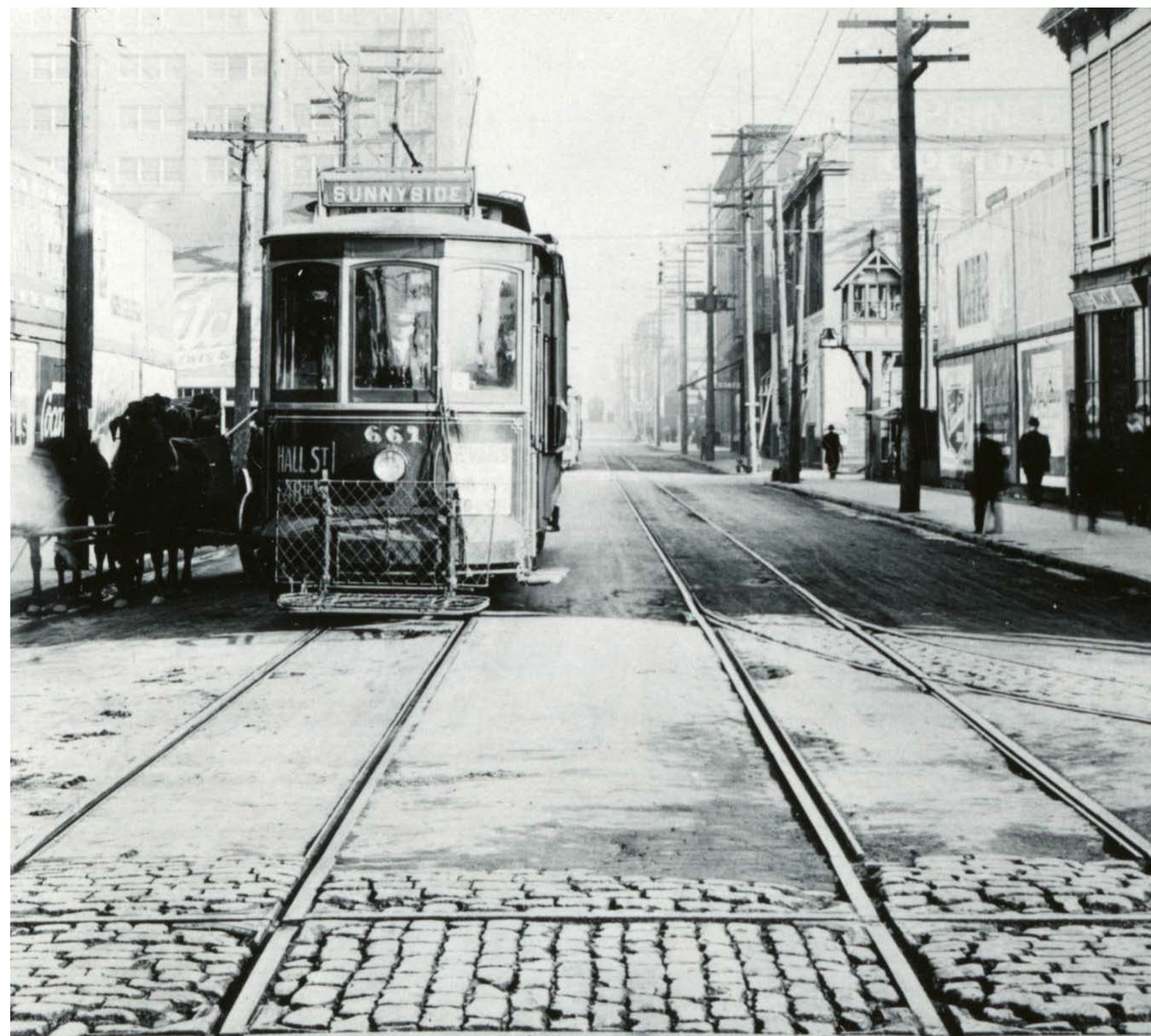


West Hills



View Looking Northwest









...by complimenting with materials of the 'place'





# Materials

Previously known as the “Northwest Industrial Triangle”, the Pearl District was historically home to industry, freight, and warehouses. While the original activities of the district are slowly being replaced, the industrial heritage of the neighborhood remains. Existing buildings of brick and stone are being rehabilitated or replaced with newer modern structures. The project strives to purposefully incorporate a palette of exterior materials that reflect and complement this context. In a simple and humble application, the bent patinated metal cladding references the machined oil rubbed brass of manufacturing.

The materials at the base compliment the metal and provide texture and warmth to the pedestrian experience. Consisting of a site-formed architectural concrete ribbon that wraps around large expanses of glazing and marble, this simple material is utilized in a sculptural way to create a variety of openings sizes and spatial scales at the pedestrian level. The desired appearance of the concrete is similar to that of the Edge Lofts & REI building at NW 14th and Johnson. Specified on-site mock-ups will allow for experimentation and quality assurance. In using materials of craft and industry in different ways, the project diversifies the architectural language and palette of materials of the local fabric.

The design team is working with a Japanese manufacturer, Pure + Freeform, to create custom coated panels. The crisp bent shape of the metal sheet results in a solid and stable metal panel with Lumiflon / FEVE coatings that feature superior durability and weathering as compared to even the high quality, time tested coatings by Kynar that are prevalant in the US. This coating technology has been used for decades in Japan. Its customizable aesthetic effects and a 20-year warranty against color fade, chalk and UV make it a desirable product in the US. On the following page, images are provided of built projects that use this finish demonstrating that it sustains its integrity, gloss, and color far beyond the 20-year warranty with projects as old as 50 years as proof.

## Applicable Design Guidelines

**A2 Emphasize Portland Themes**

**A5 Enhance, Embellish and Identify Areas**

**A5-1-1 Reinforce the Identity of the Pearl District Neighborhood**

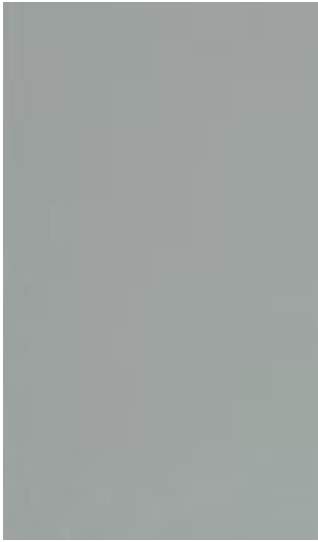
**B1-1 Provide Human Scale to Buildings along Walkways**

**C2 Promote Quality and Permanence in Development**





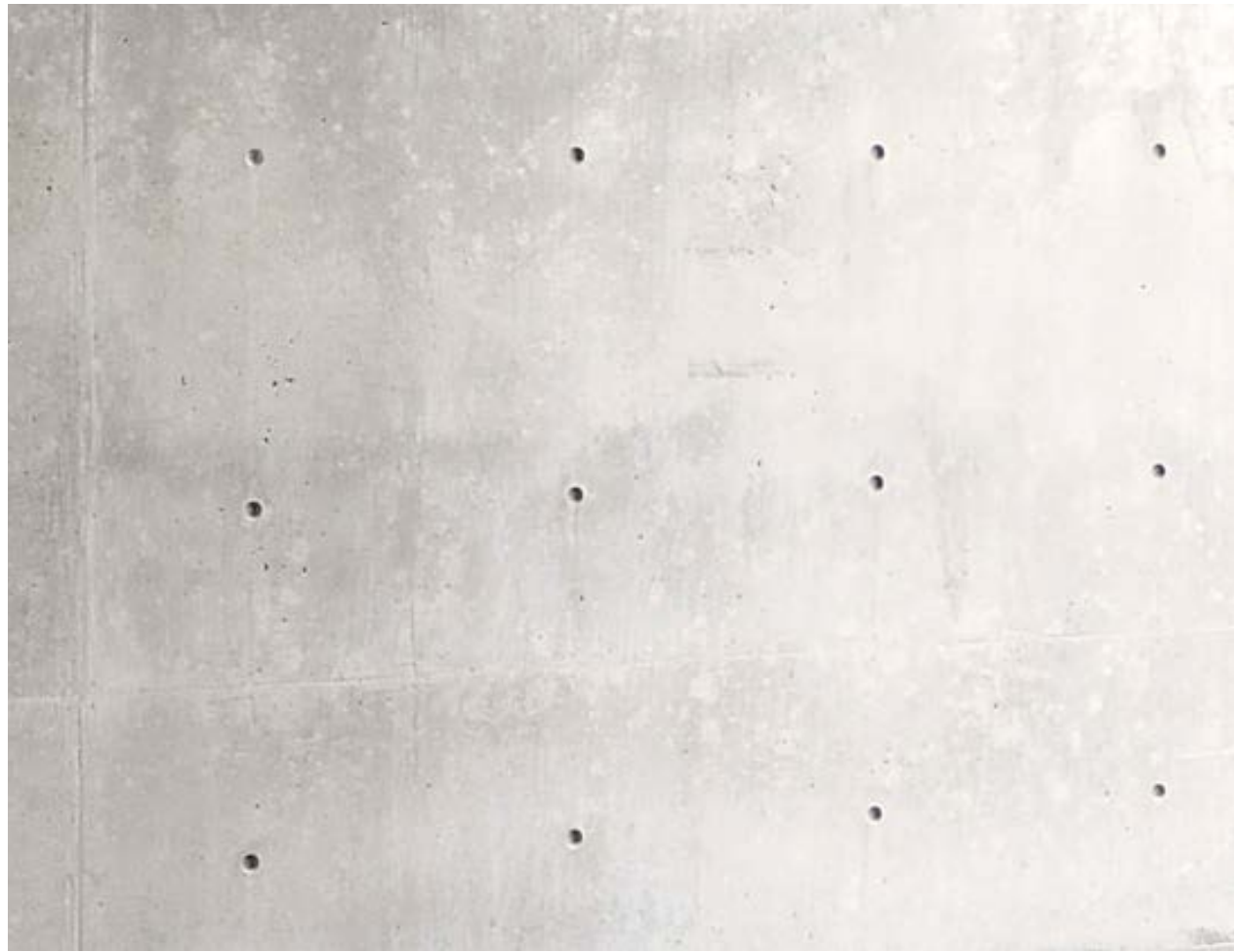
Marble



Clear, Low-E Glass



Accent Metal Panel

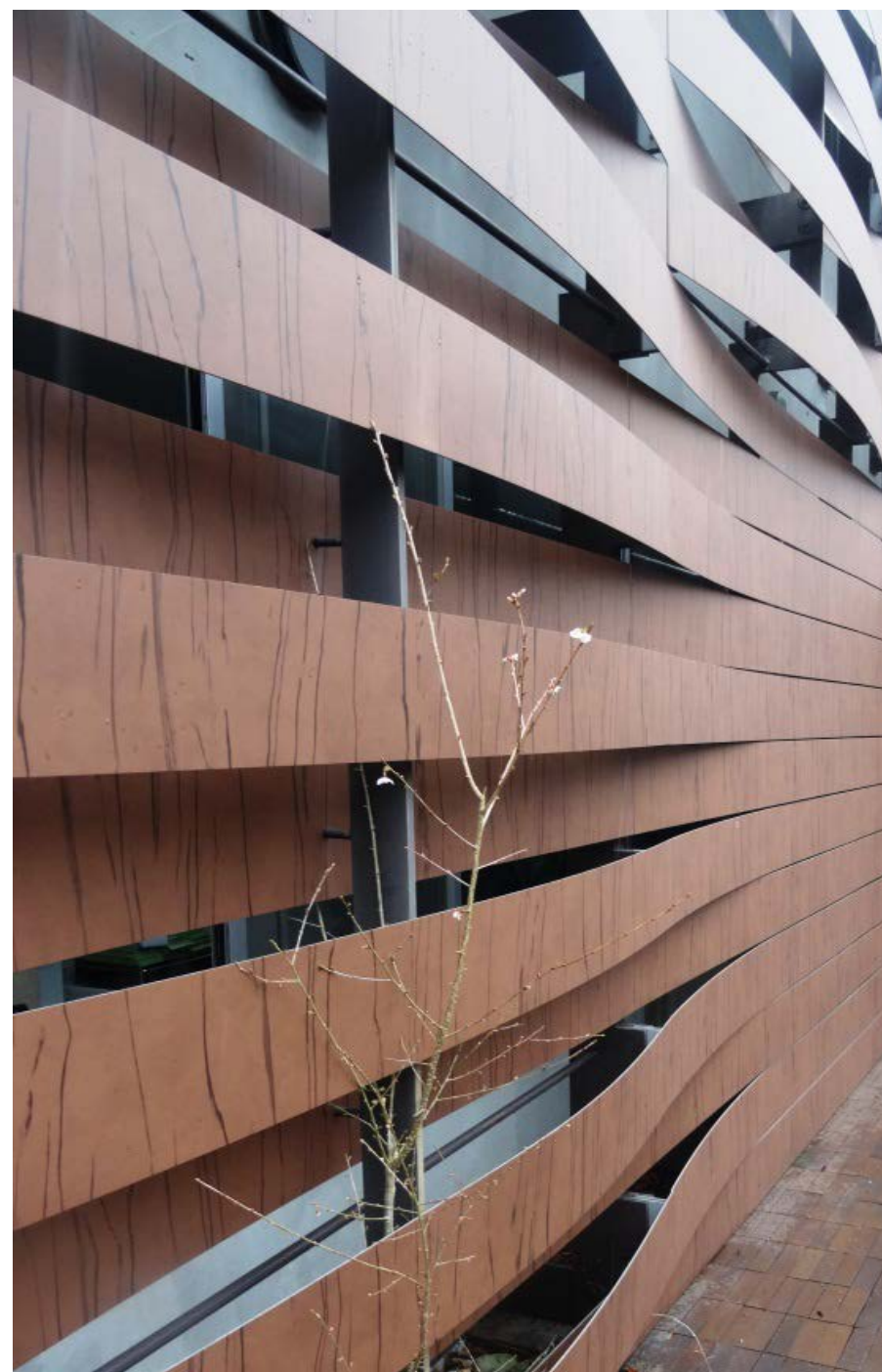
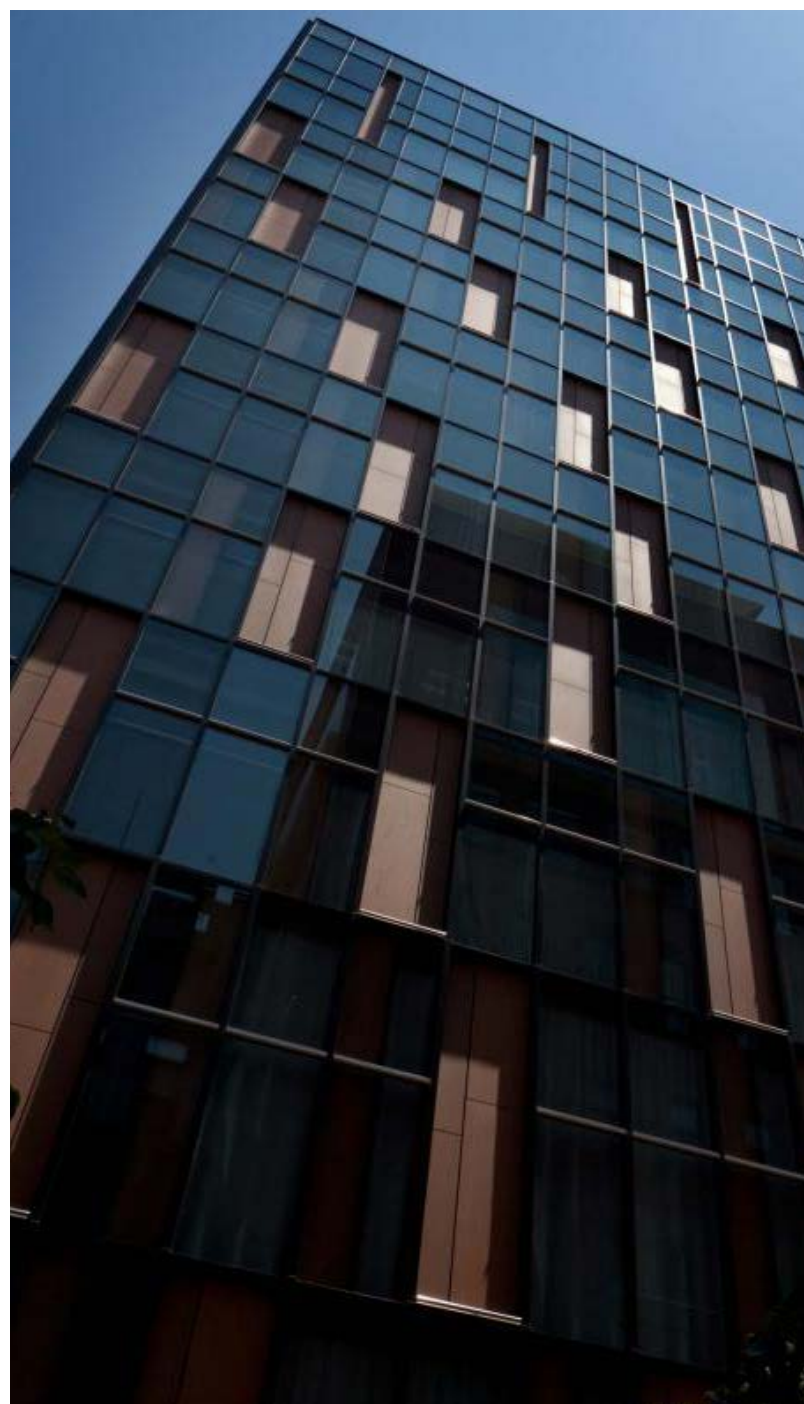


Cast in Place Concrete



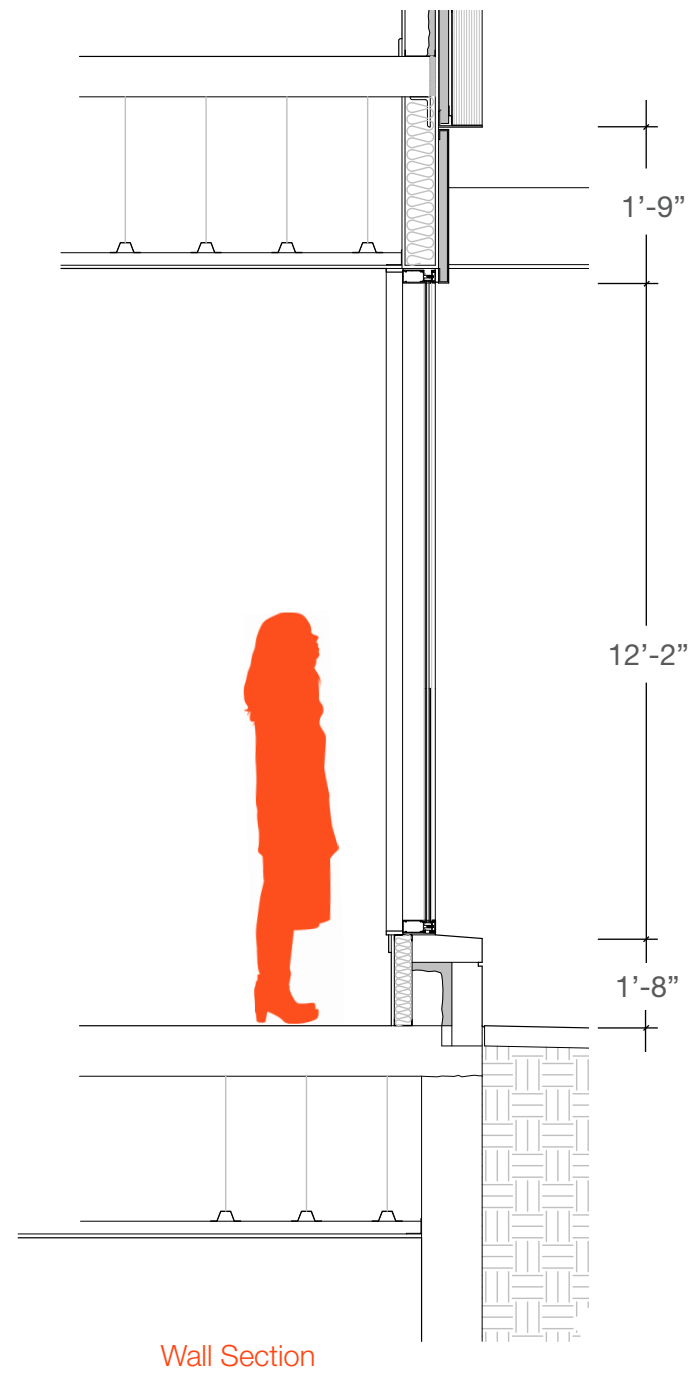
Coated Metal Panel



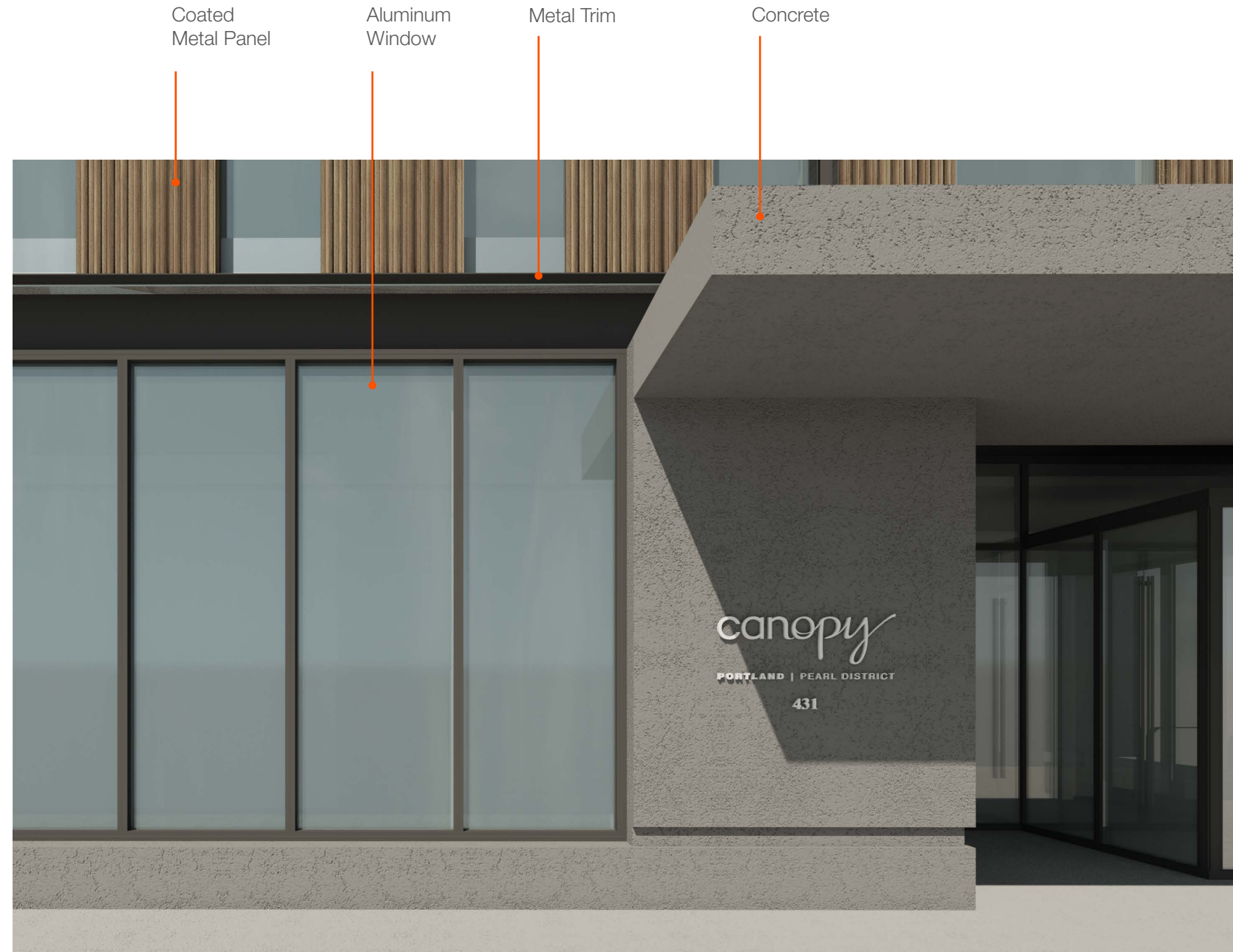


Built projects with Lumiflon /FEVE coatings, 10-20 years old

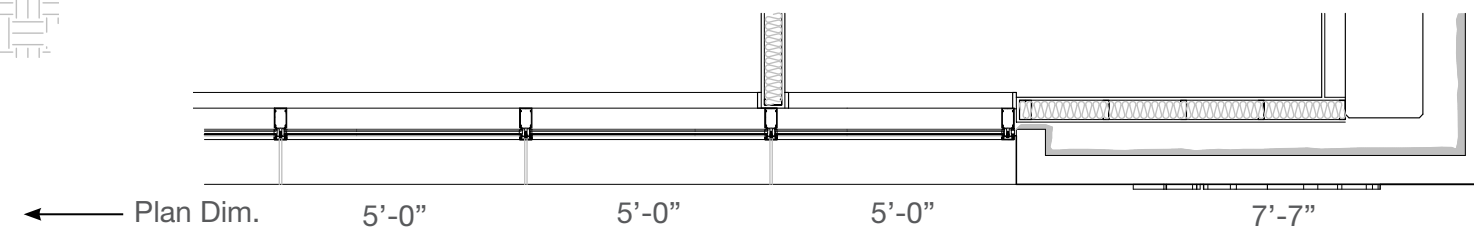




Wall Section



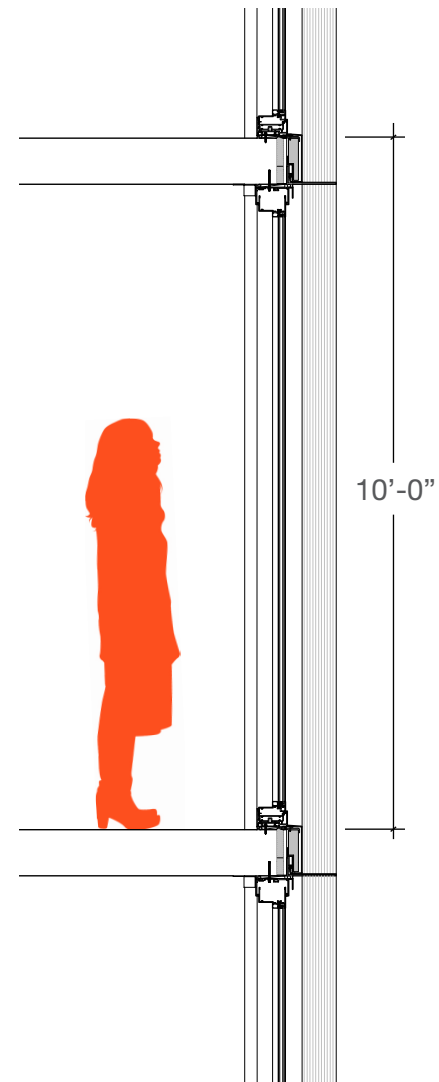
Enlarged Elevation



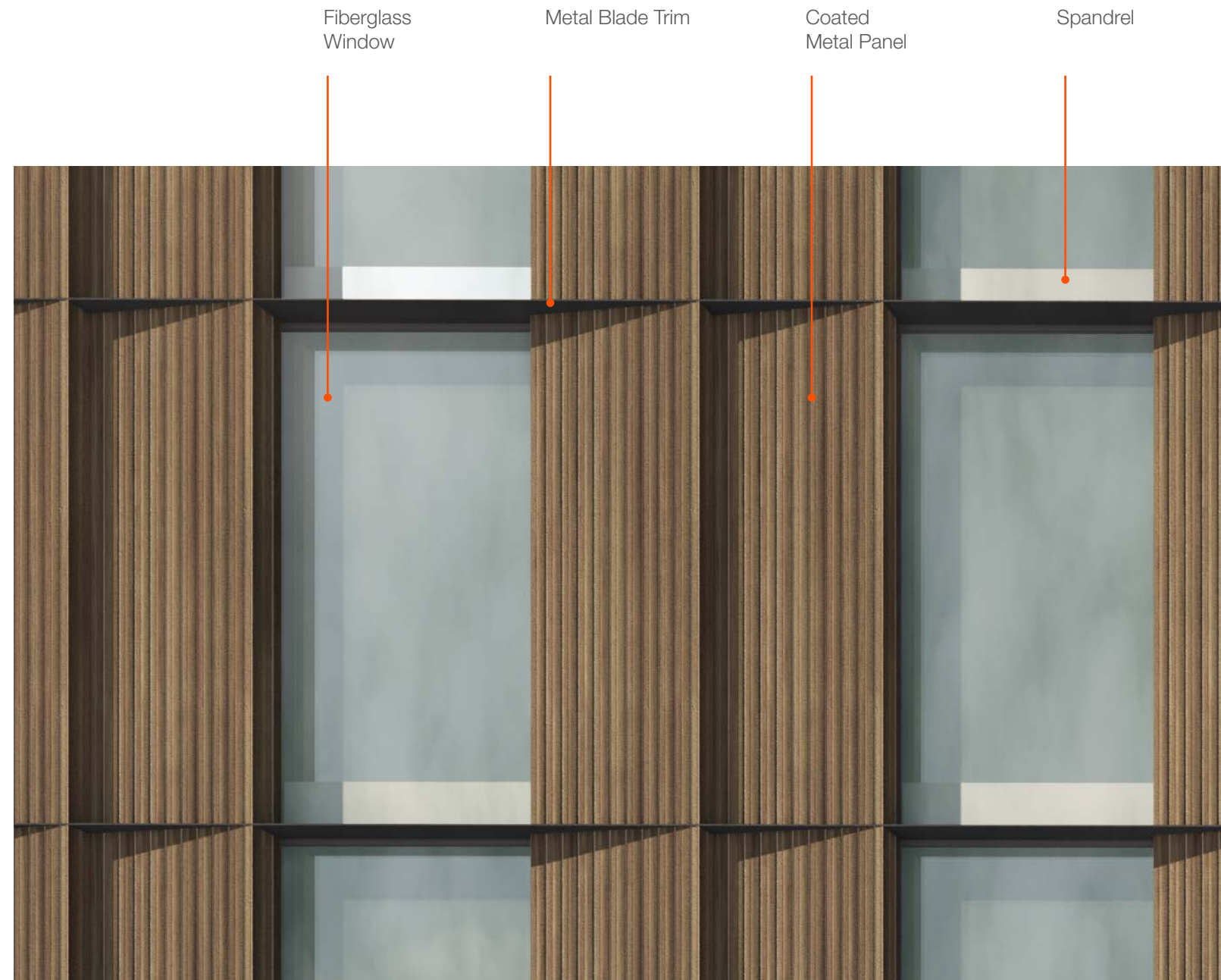
Enlarged Plan

Base Condition

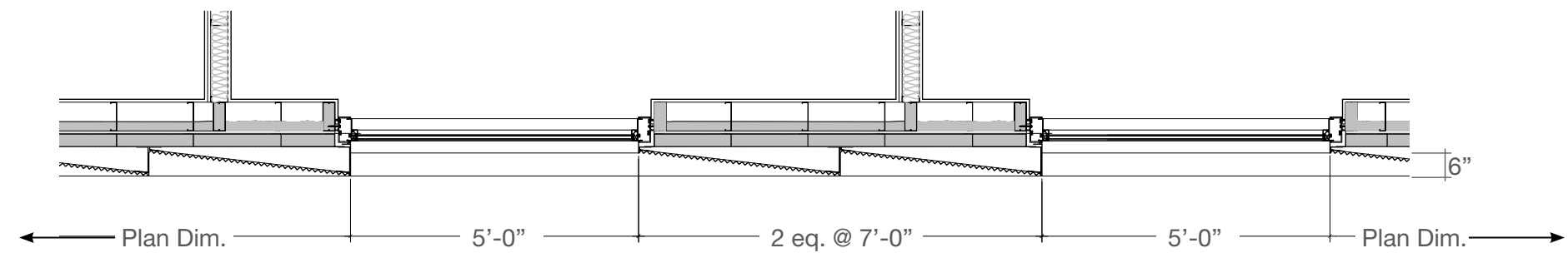




Wall Section



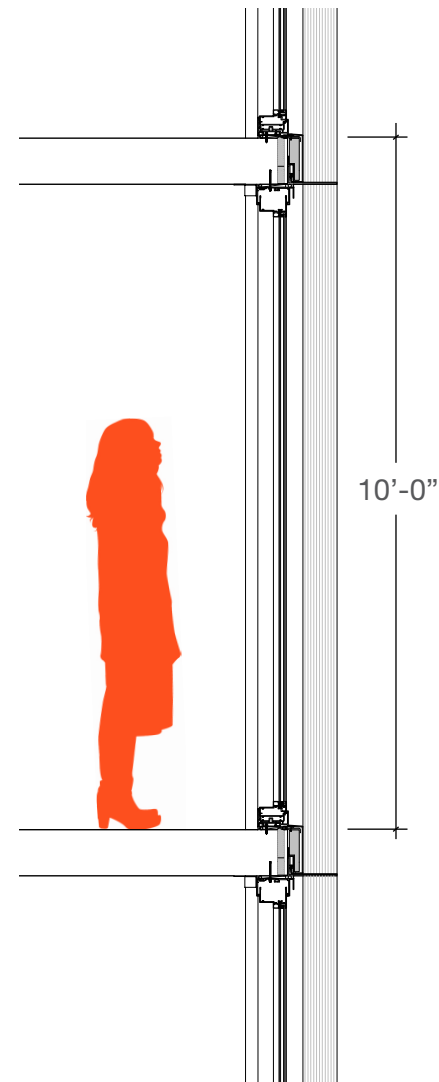
Enlarged Elevation



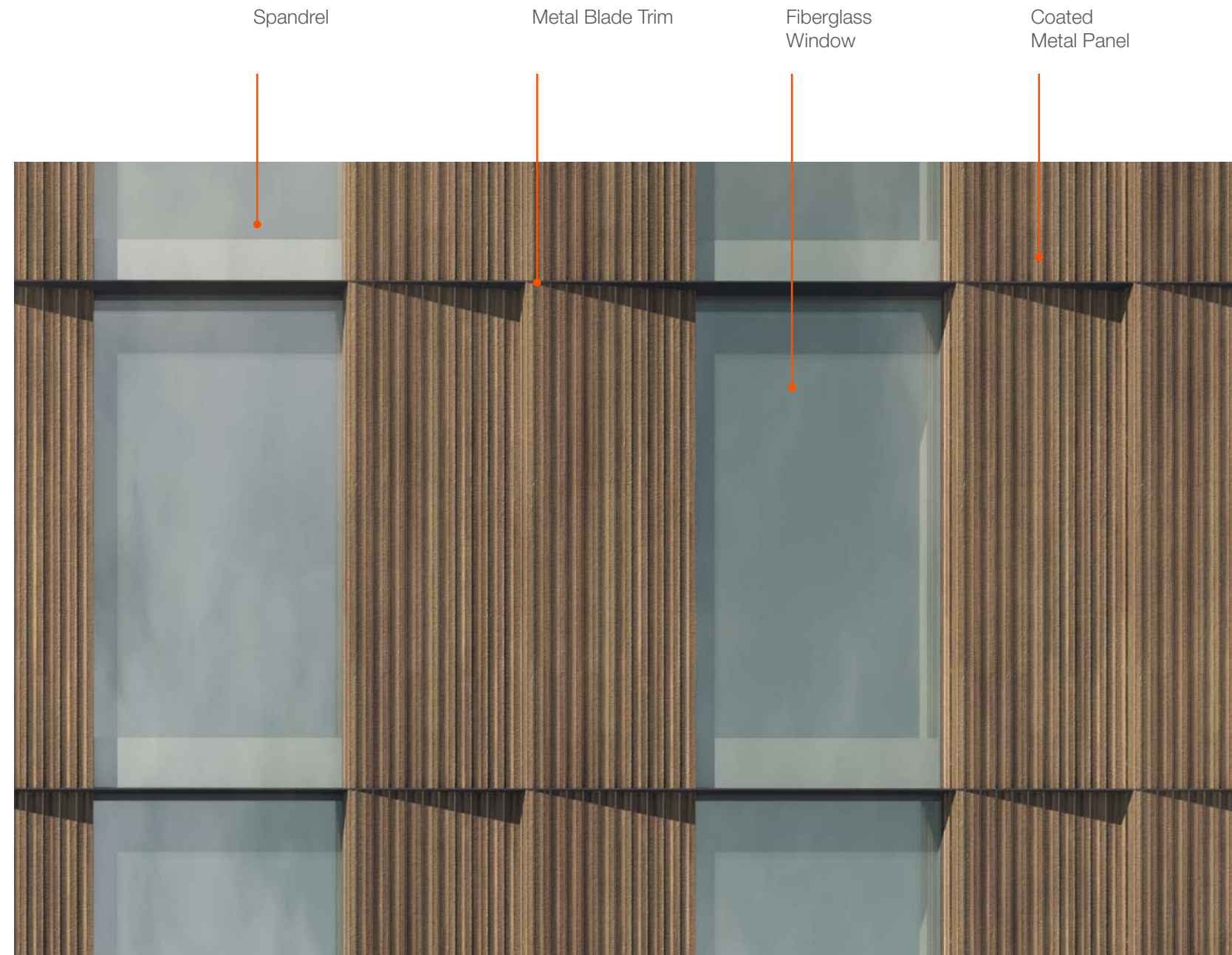
Enlarged Plan

## 5'-0" Upper Window Condition

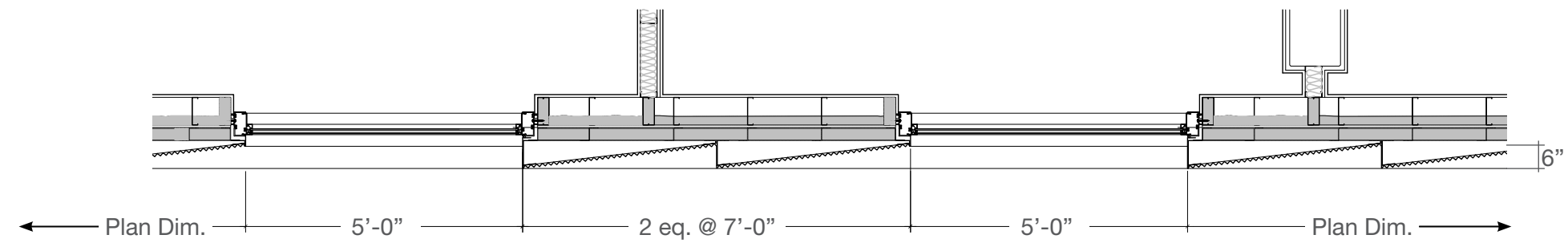




Wall Section



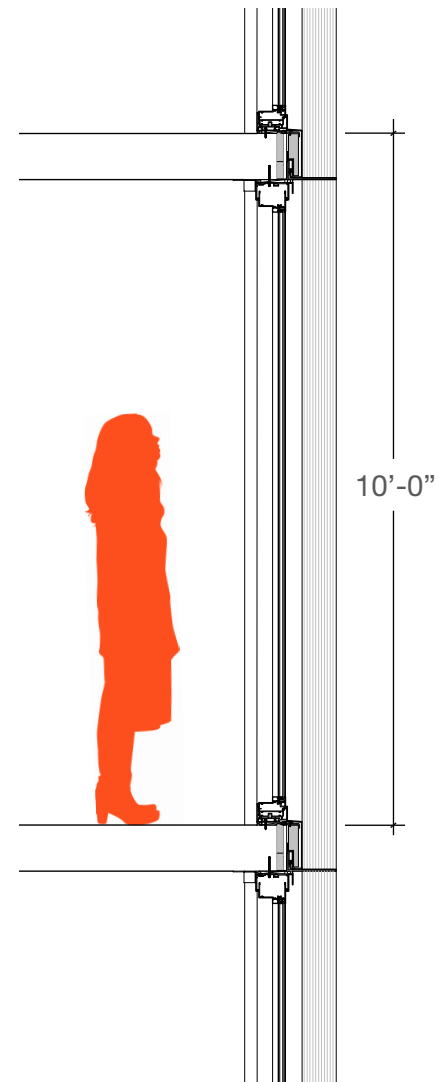
Enlarged Elevation



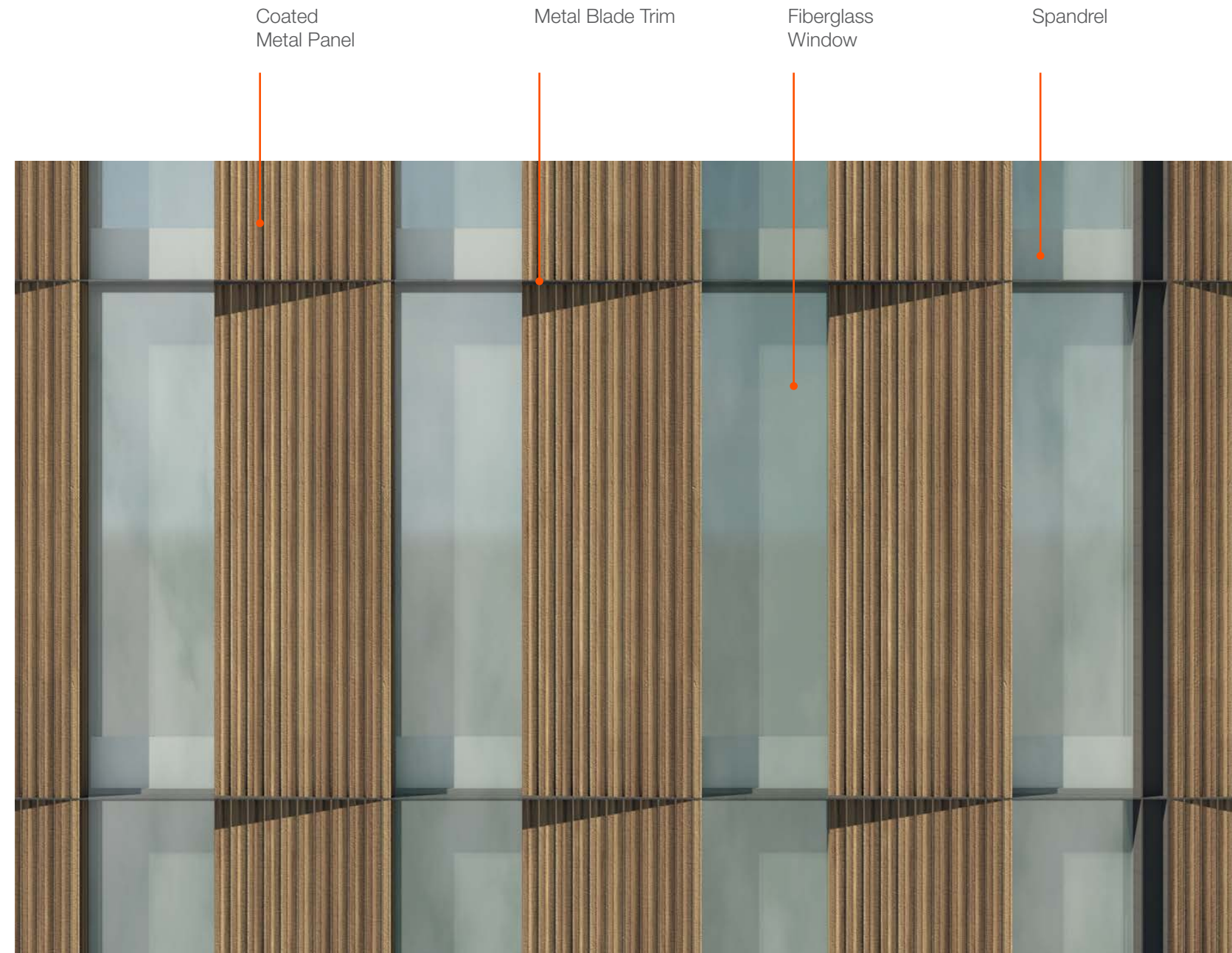
Enlarged Plan

**5'-0" Upper Window Condition**

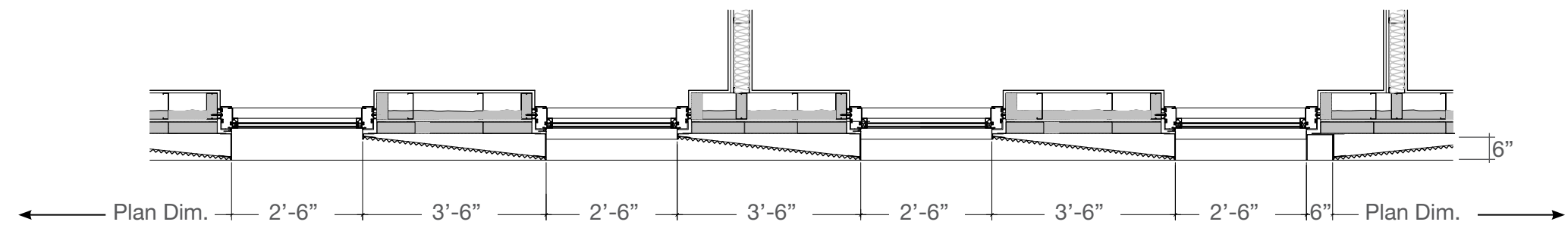




Wall Section



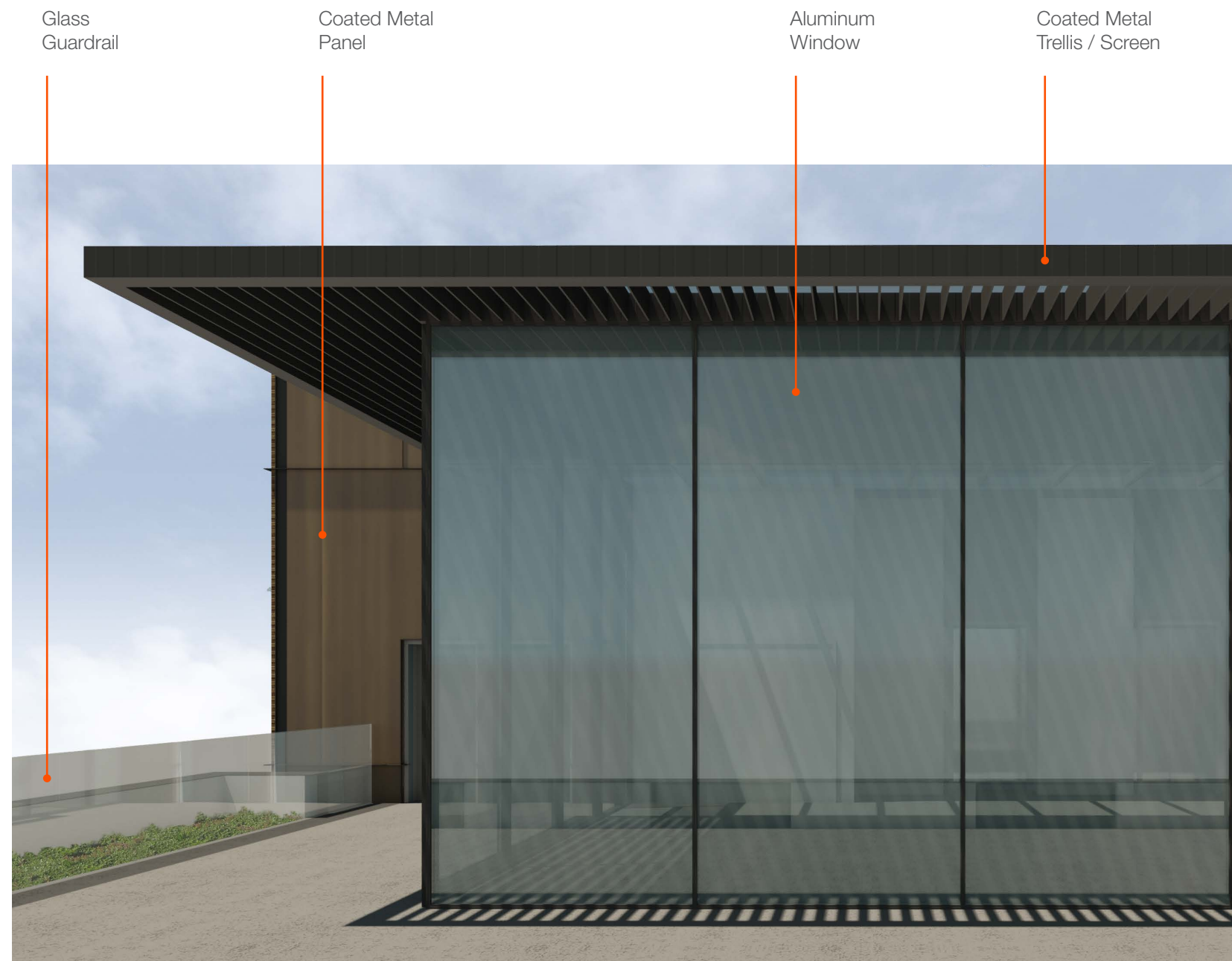
Enlarged Elevation



Enlarged Plan

## 2'-6" Upper Window Condition

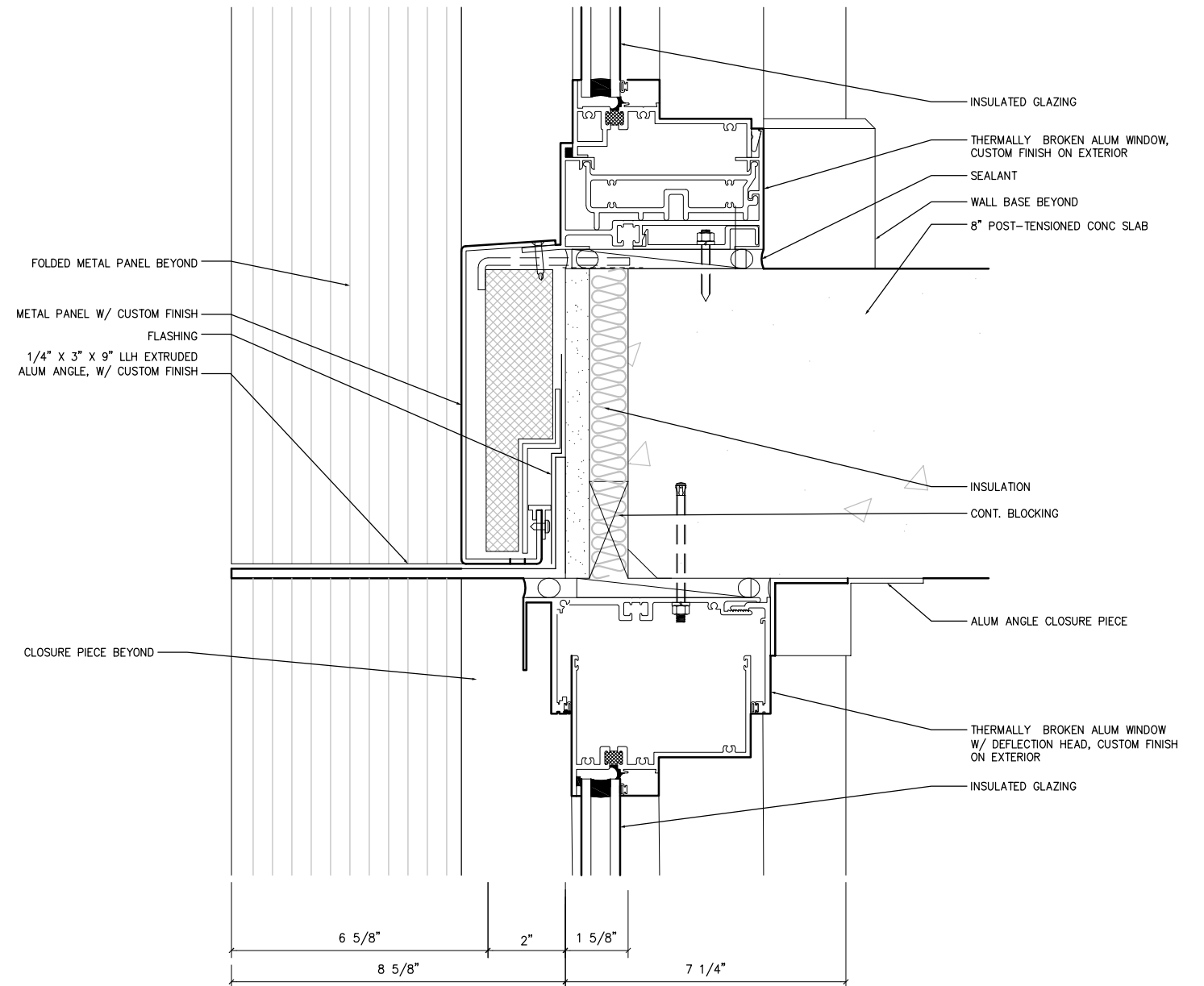
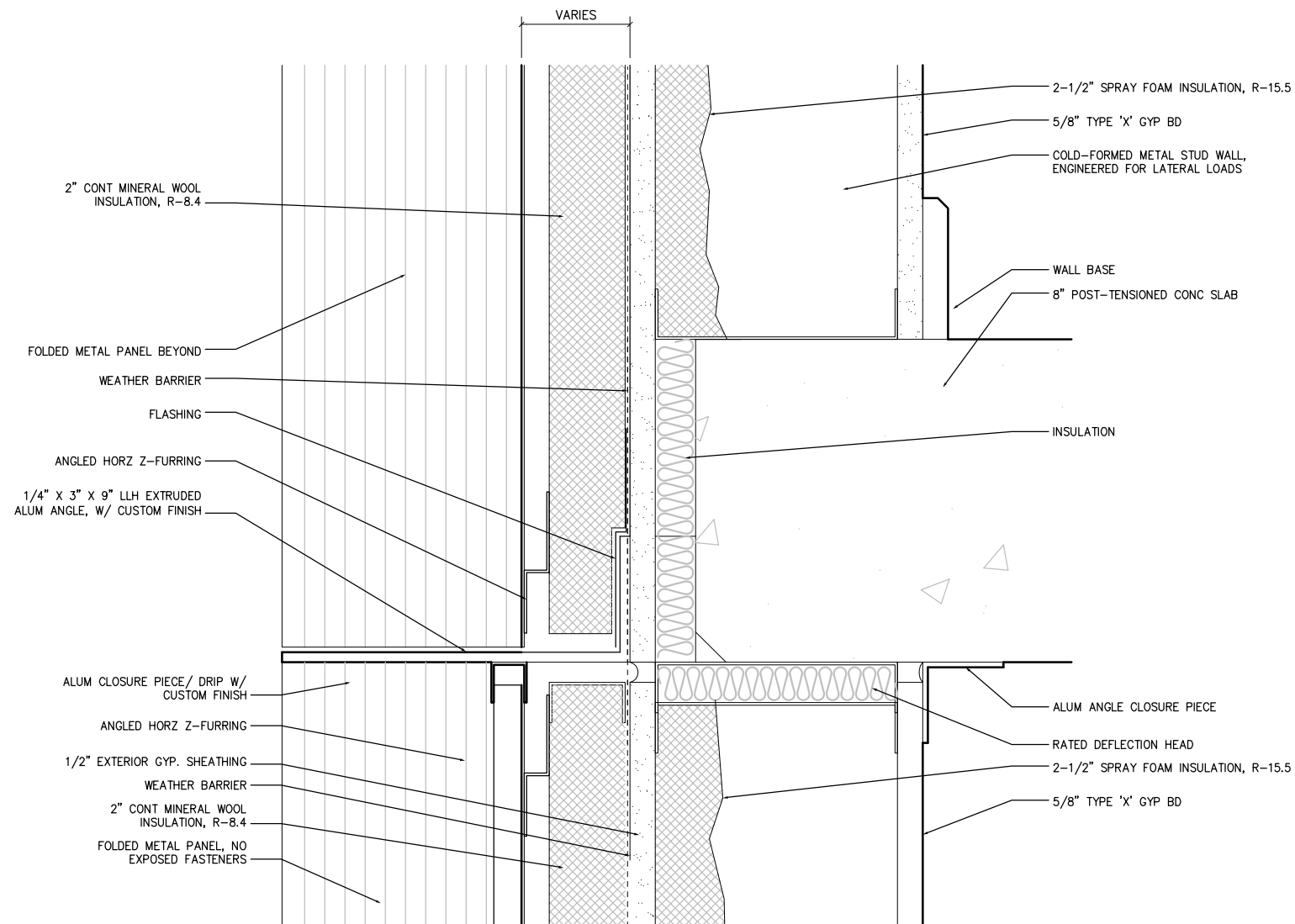




Enlarged Elevation

## Roof Condition

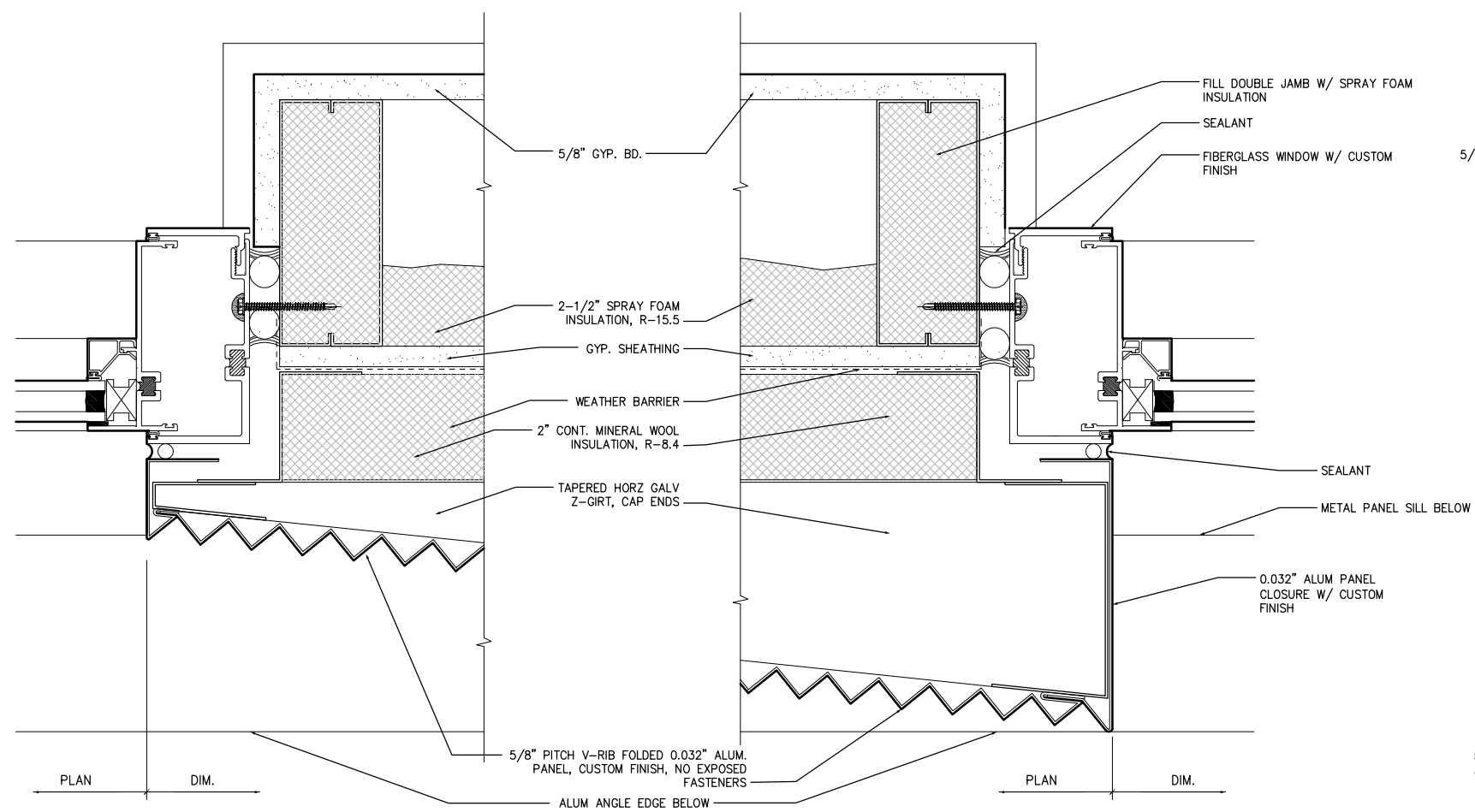




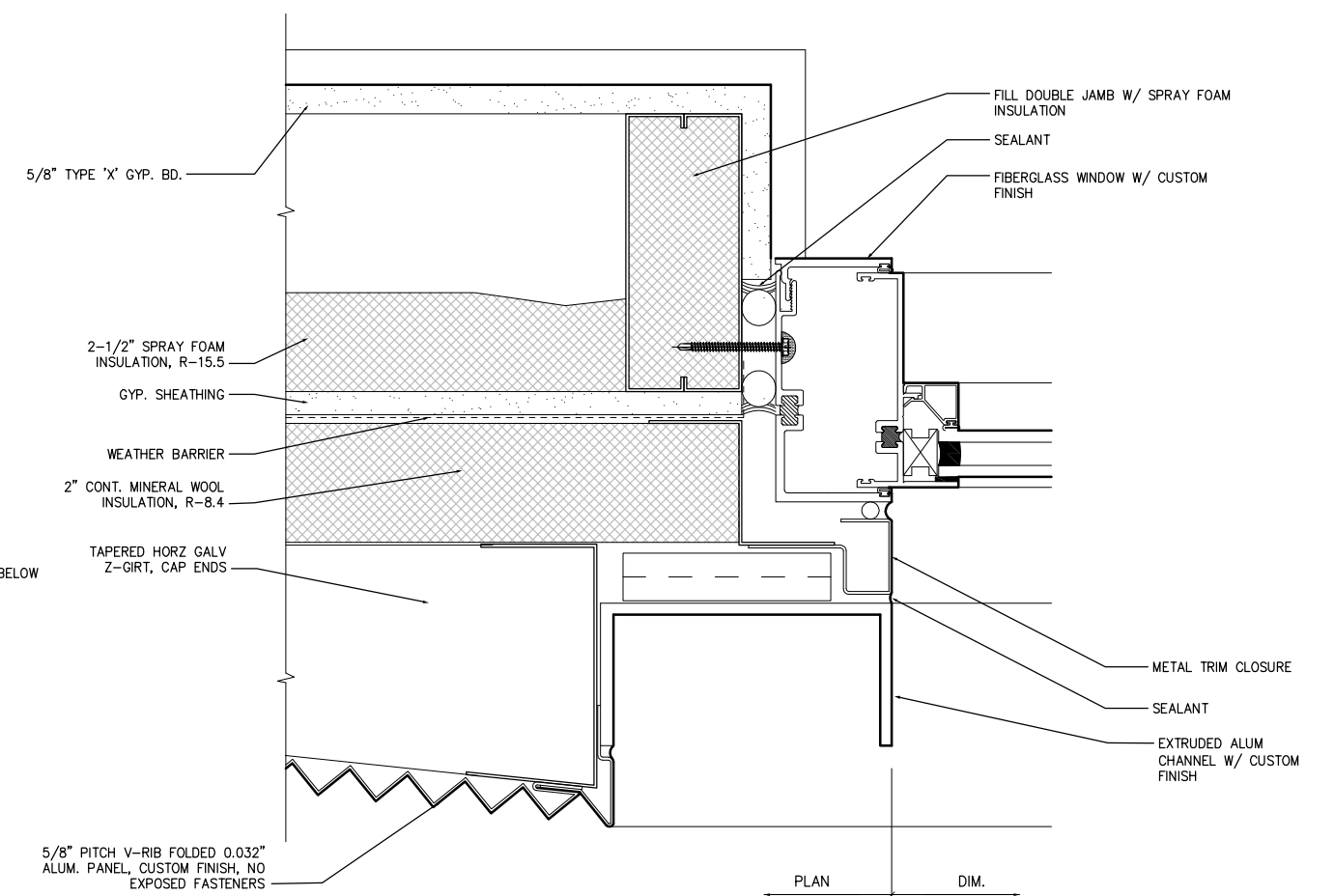
**3"=1'-0" Detail - Metal Panel at Floor**

**3"=1'-0" Detail - Typical Window Head / Sill**





**3"=1'-0" Detail - Typical Window Jamb**



**3"=1'-0" Detail - Window Jamb at Vert. Metal Chanel**





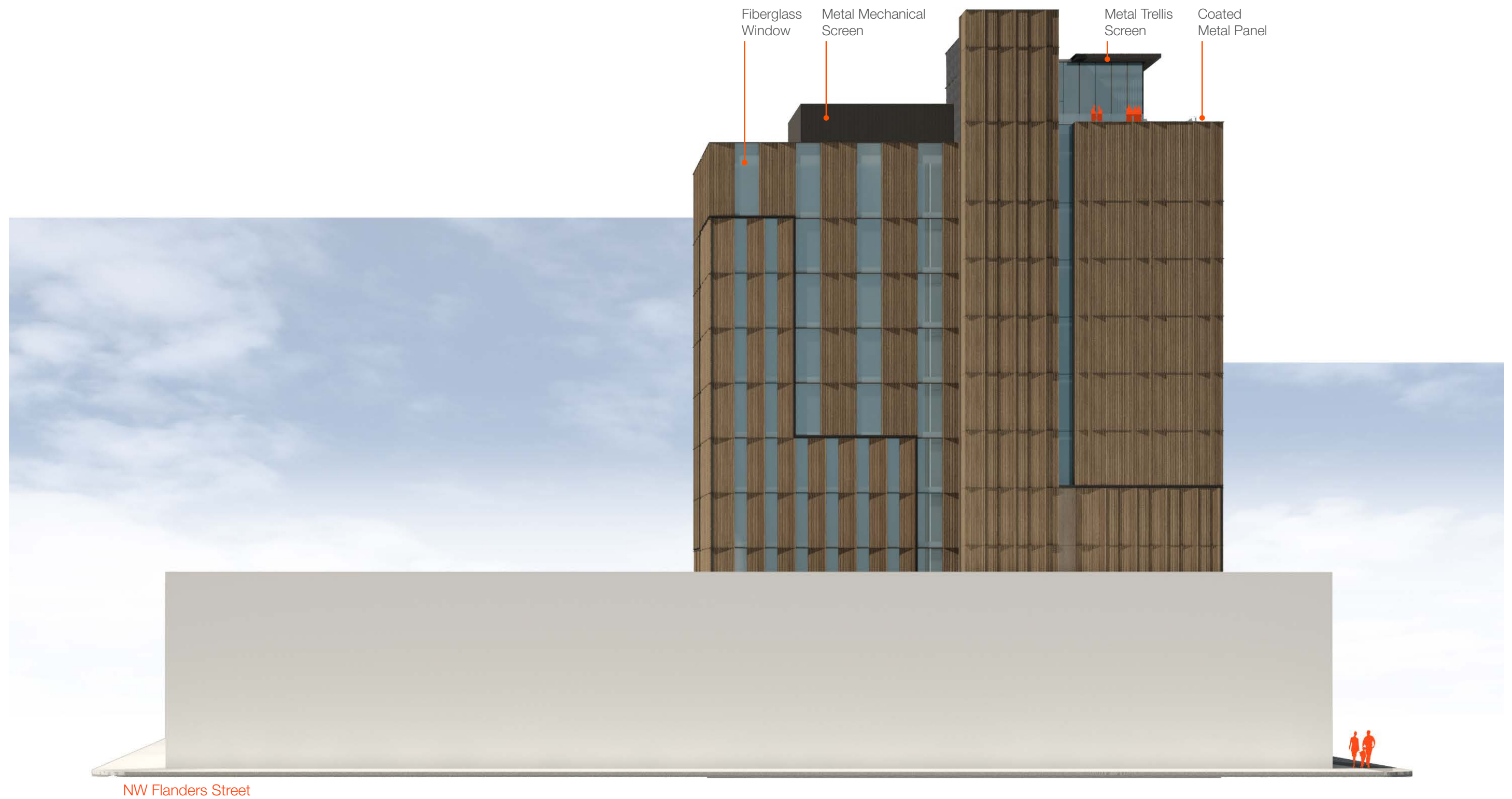
## East Elevation





North Elevation





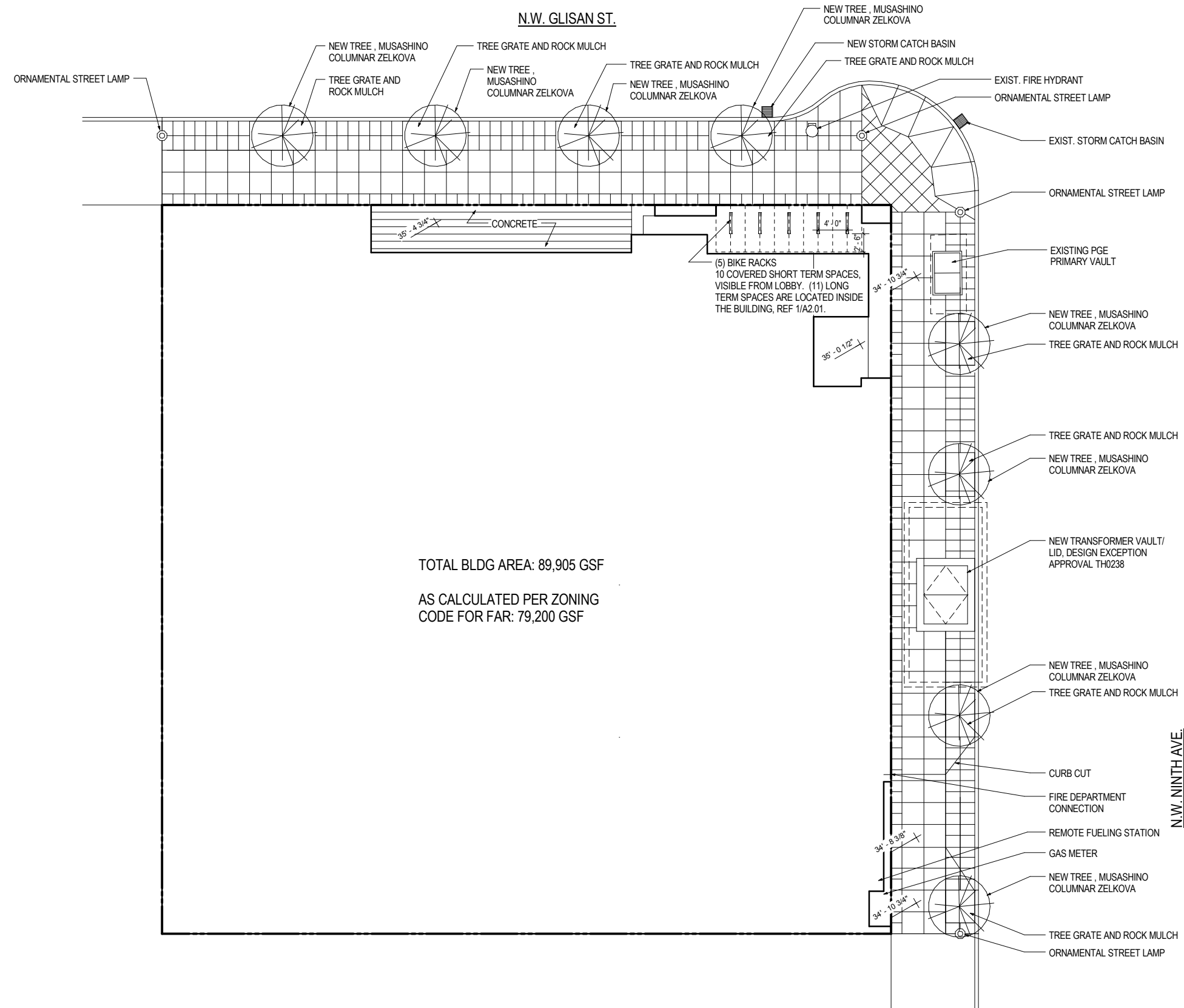
## South Elevation





**West Elevation**





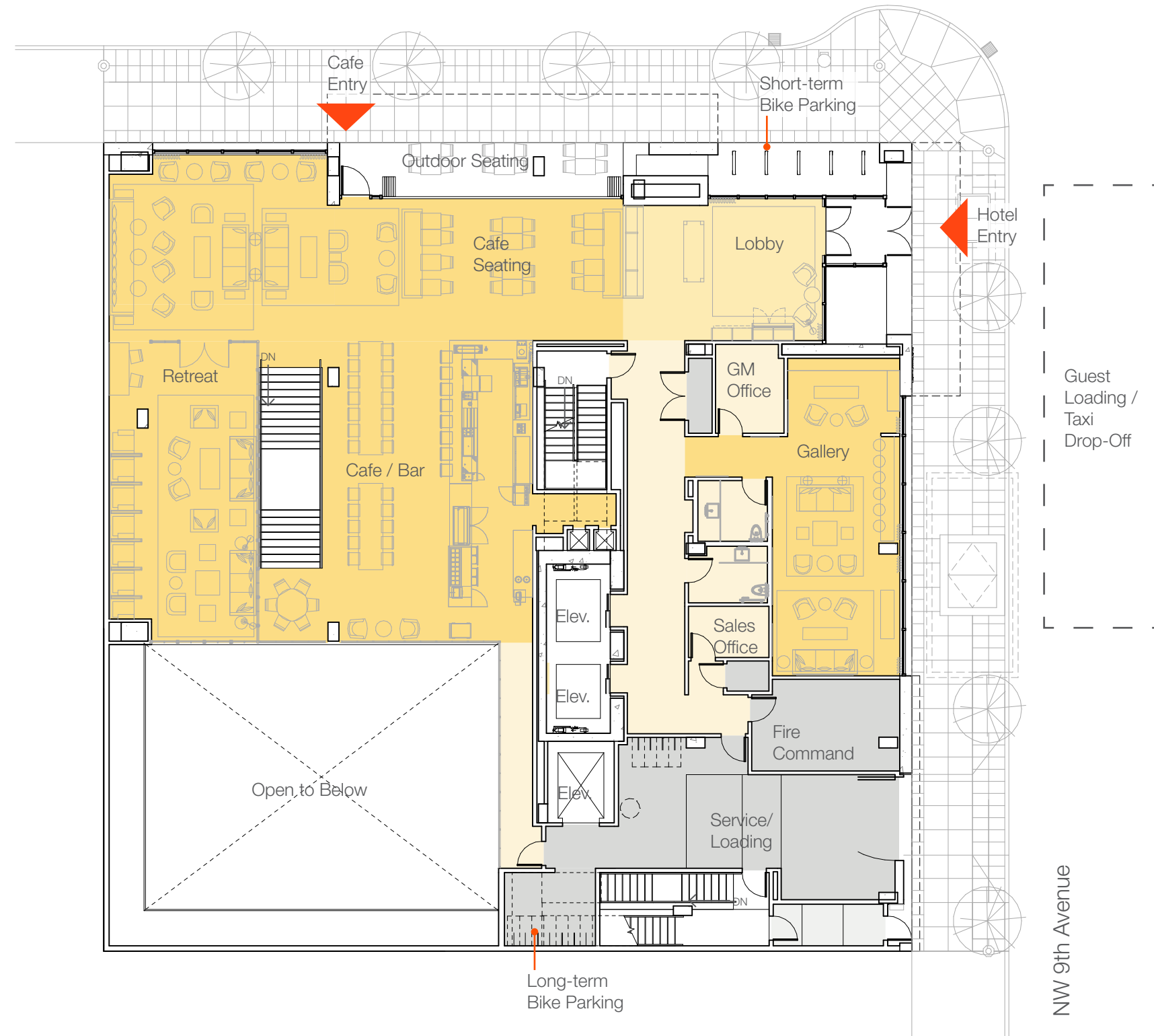





**Basement Floor Plan | 1/16" = 1'-0"**



NW Glisan Street



**Ground Floor Plan | 1/16" = 1'-0"**

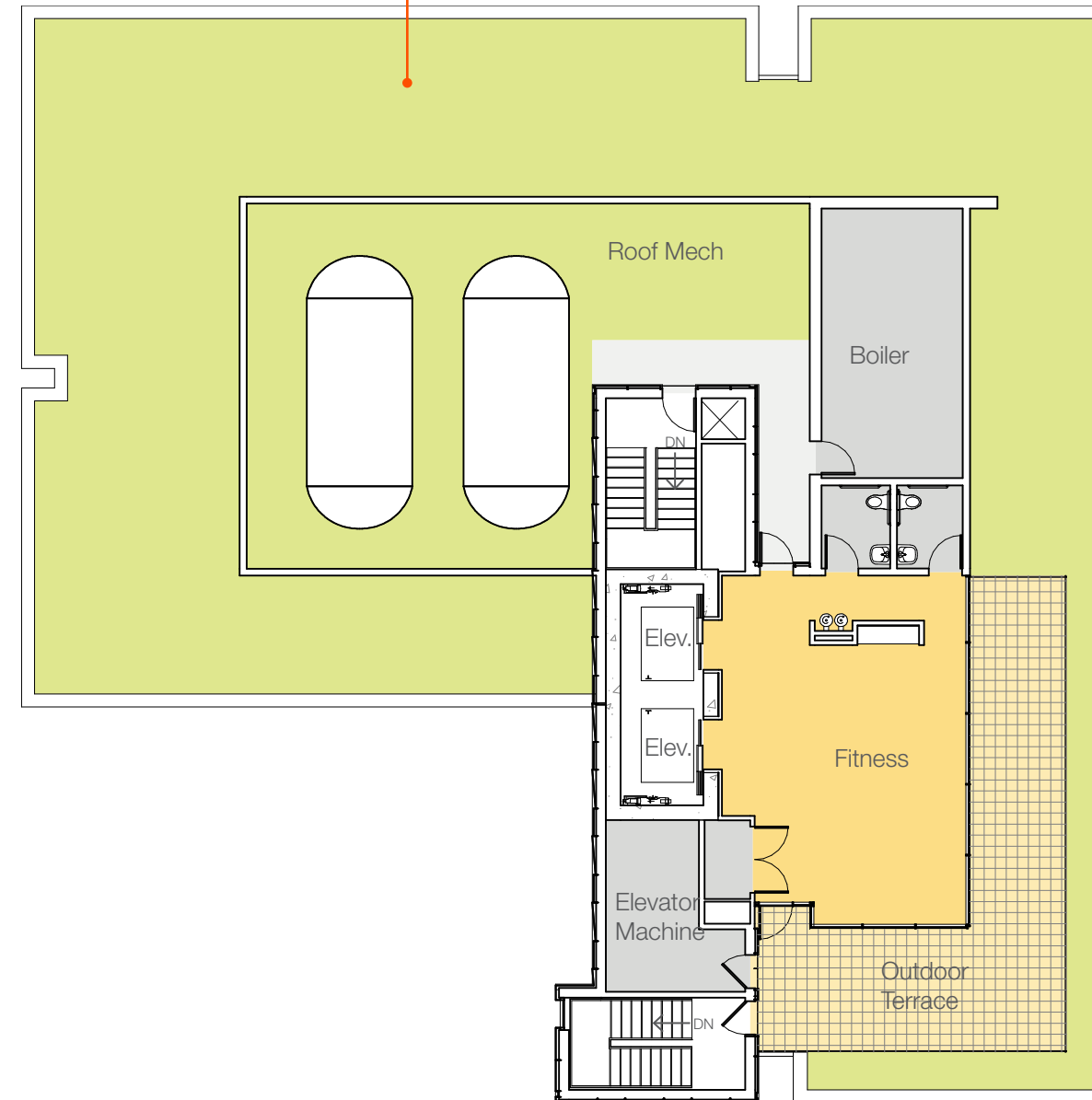




**Second Floor Guest Room Floor Plan | 1/16" = 1'-0"**

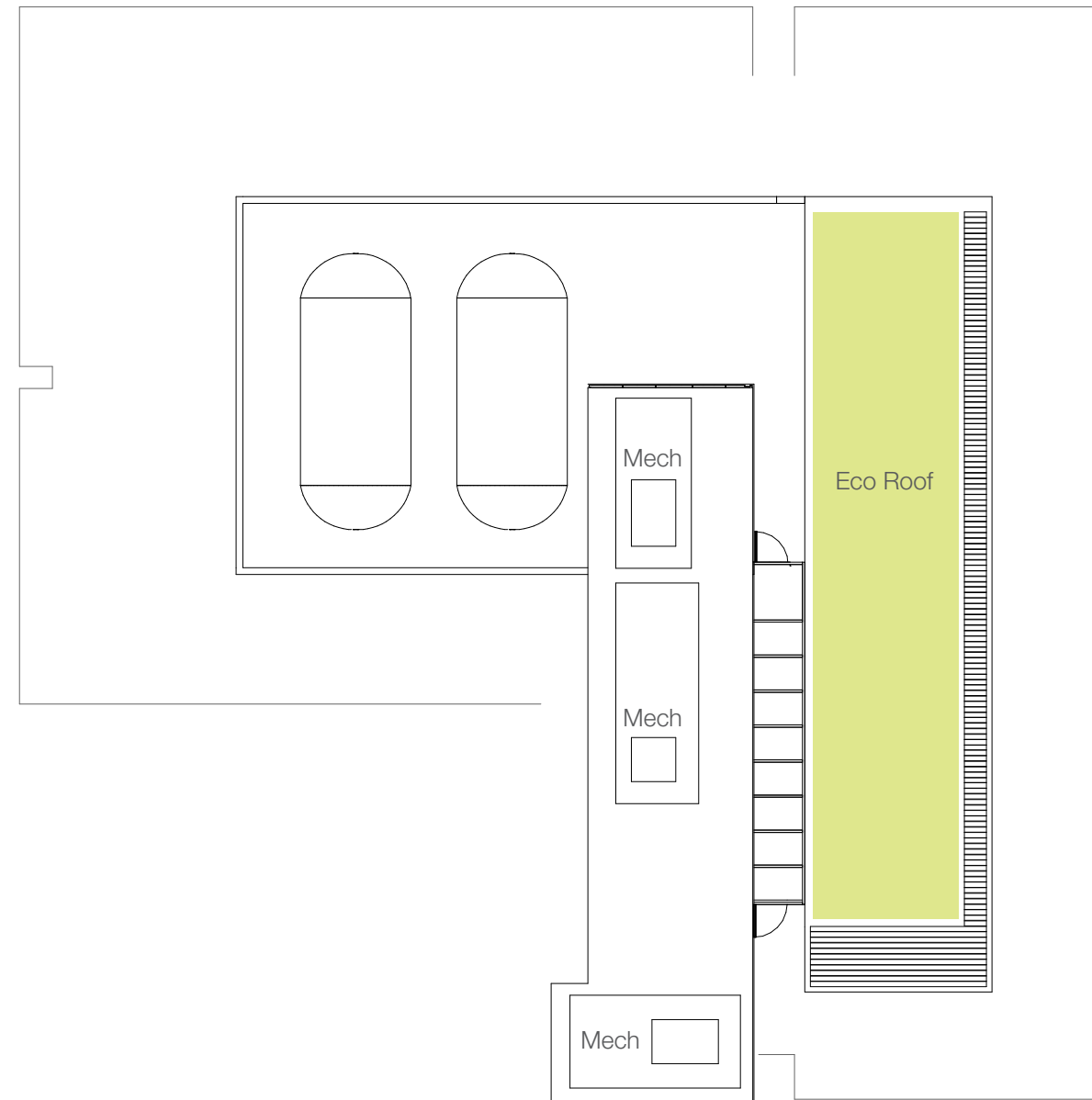


Green Feathers or columbia  
green modular green roof  
system with sun mix.



**Roof Terrace Plan | 1/16" = 1'-0"**





 **Roof Plan | 1/16" = 1'-0"**



# Floor Area Calculations

## Floor Area

### Assumptions

Per 33.910 Floor Area is defined as, “The total floor area of the portion of a building that is above ground. Floor area is measured from the exterior faces of a building or structure. Floor area includes the area devoted to structured parking that is above ground level. Floor area does not include the following:

- Areas where the elevation of the floor is 4 feet or more below the lowest elevation of an adjacent right-of way;
- Roof area, including roof top parking;
- Roof top mechanical equipment; and
- Roofed porches, exterior balconies, or other similar areas, unless they are enclosed by walls that are more than 42 inches in height, for 50 percent or more of their perimeter.”

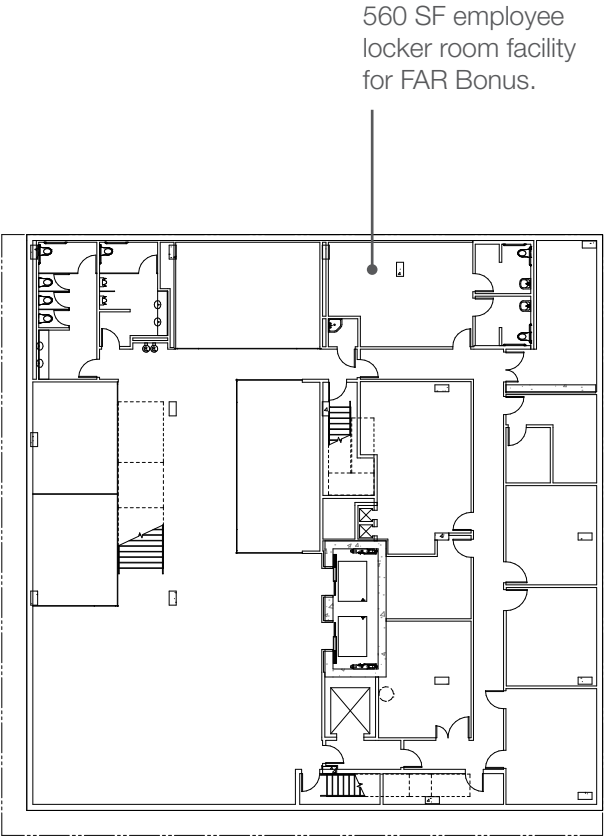
### Floor Area Bonus Summary

The project seeks an additional 3:1 in bonus floor area per 33.510.210, paragraph C, Floor Area Bonus Options.

	Potential	Area	Multiplier	Bldg Area
Base Site FAR (Map 510-2)	6:1	10,000	6	60,000 sf
Previously Sold	(1:1)	10,000	-1	(10,000 sf)
Locker Room (Subsection 8)	40:1	500	40	20,000 sf
Eco-roof > 30% (Subsection 10)	2:1	5,000	2	10,000 sf
Total available FAR (Base + Bonus)				80,000 sf

### Floor Area Calculations

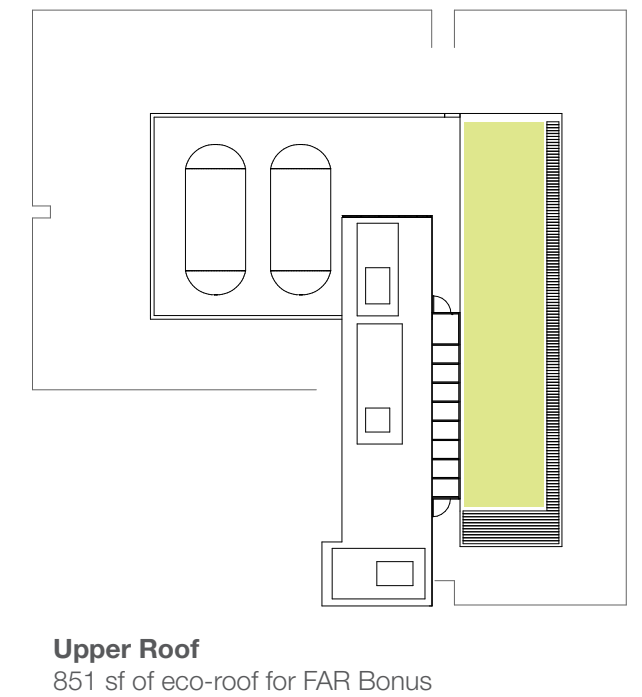
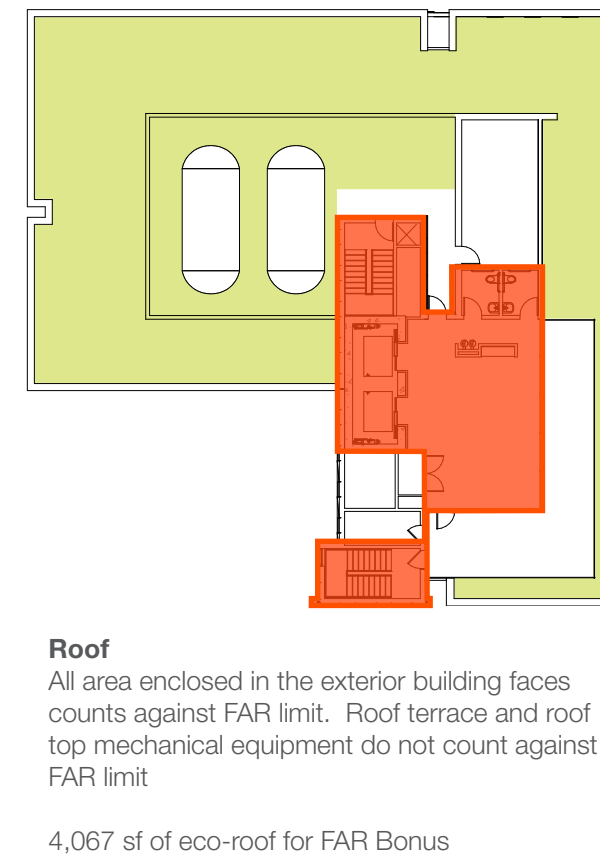
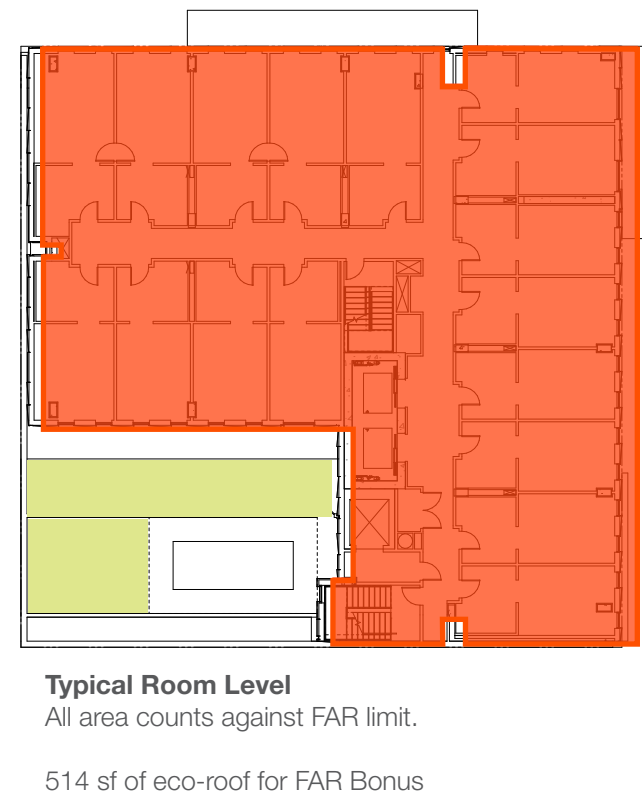
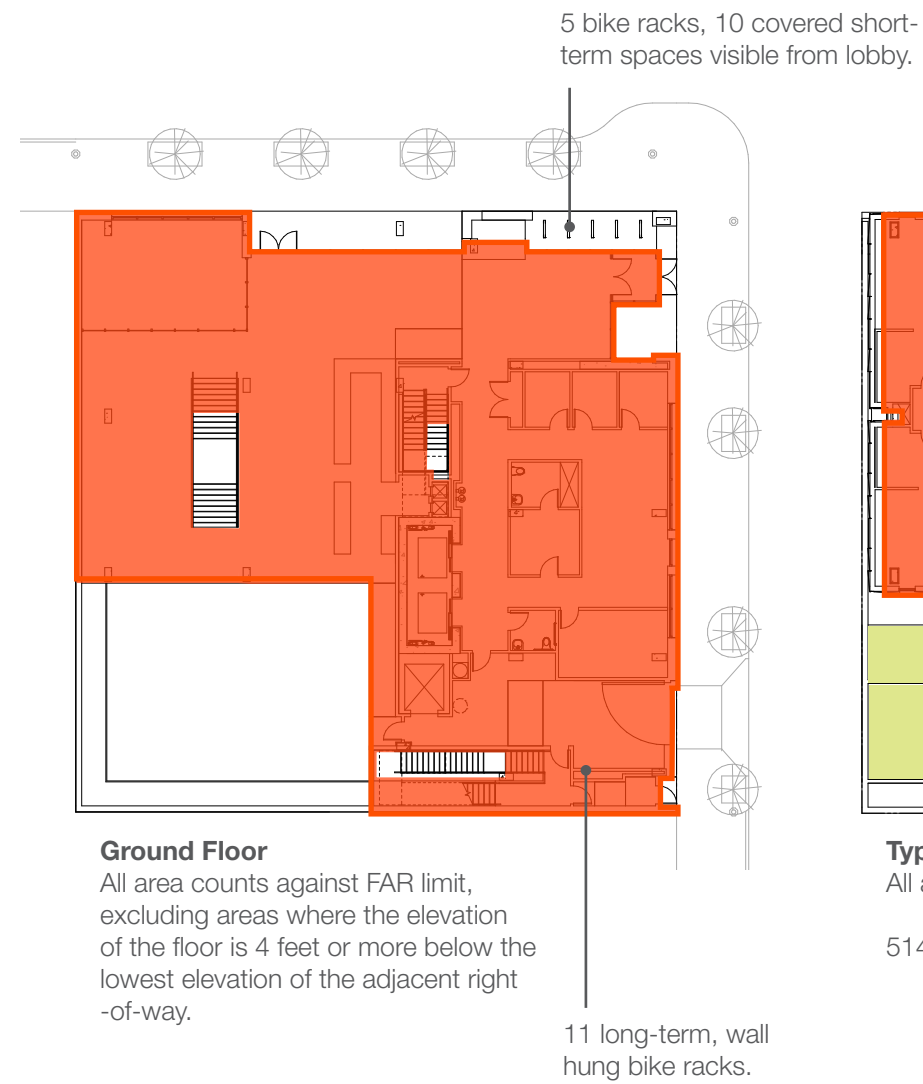
Level	SF towards FAR	Level	SF towards FAR
B1	0	L6	7,805 sf
L1	7,380 sf	L7	7,805 sf
L2	7,825 sf	L8	7,805 sf
L3	7,825 sf	L9	7,805 sf
L4	7,805 sf	L10	7,805 sf
L5	7,805 sf	Roof	1,535 sf
Total		79,200 sf	



### Basement

All space is more than 4’ below grade, thus no area counts against FAR limit.







# Adjustment Request

## Standard

Number of loading spaces 33.266.310 paragraph 2, subsection c, “Two loading spaces meeting Standard A are required for buildings with more than 50,000 square feet of floor area in uses other than Household Living.”

## Request

The project requests an adjustment to this standard to reduce the required loading spaces from two to one. Since the project occupies one quarter block, two loading spaces would significantly impact the amount of building frontage available for active use.

## Approval Criteria

### A. Granting the modification will equally or better meet the purpose of the regulation being modified:

Yes. By reducing the requirement, the project gains 10 feet or 10% of frontage back for active uses. Therefore, contributing more fully to a vibrant streetscape.

### B. If in a residential zone, the proposal will not significantly detract from the livability or appearance of the residential area, or if in an OS, C, E, OR I zone, the proposal will be consistent with the classifications of the adjacent streets and the desired character of the area:

By allowing more active uses at the sidewalk level of the building, the proposal will increase the livability and appearance of the nearby residences and the EXd zone.

### C. If more than one modification is being requested, the cumulative effect of the modification results in a project which is still consistent with the overall purpose of the zone:

Yes. In requesting for a reduction in loading dock spaces, the project gains more space to provide active ground floor uses. The modification requesting a reduced depth loading space does not impact this Adjustment.

### D. City designated scenic resources and historic resources are preserved:

Yes, scenic and historic resources are preserved.

### E. Any impacts resulting from the modification are mitigated to the extent practical:

With the application for Adjustment, we submitted a needs and parking assessment performed by a transportation engineer. The following is excerpted from this study.

An inventory of on-street parking was conducted amongst the blocks surrounding the site showing three existing loading areas (A,B,C) within easy access of the site. The nearest location is reserved 7am-7pm Mon-Sat. The other two are reserved 24/7.

Nationally, Hilton operates facilities with and without on-site loading depending upon the individual needs of the site as well as the type of Hilton hotel being operated. As an example, no loading docks are provided at the Embassy Suites New York City and Homewood Suites New York City. Locally, Hilton operates the Portland Hilton Hotel & Executive tower on a portion of two adjacent City blocks. The Main hotel operates a two bay loading area on SW Taylor Stret while the accompanying Exectutive Tower is located one block to the east on SW Taylor Street and has a single loading area. The Portland Hilton & Executive Tower includes 782 hotel guest roms, multiple restaurants, a bar, convention space for up to 1500 guests in the Grand Ballroom, and 30 individual breakout rooms offering a total of 66,000 sf of meeting space routinely holding weddings, conferences, and other special events. The proposed Portland Canopy hotel with have 629 fewer guest rooms, no convention space and offers limited meeting space. Consequently, the proposed loading demands are much less.

Truck deliveries to the proposed hotel are expected to be provided on a recurring as-needed basis ontce the building is constructed and occupied. Per informaiton provided by the hotel Owner, truck trips are anticipated as shown in Table 1.

As evidenced by the information in Table 1, each of the deliveries can be scheduled by the service provider such that only one provider is serving the site at a given time. parcel pick-up and delivery vehicles as well as refuse and recycling vehicles are likely to park on-street and will not use a loading bay even if provided.

Based on the use information in Table 1, we recommend that a single on-site loading bay be provided and that the bay be sized to accomodate a 23-foot long vehicle on-site (to enable a vehicle in the loading bay without extending into the public sidewalk). As proposed, if a 34-foot long guest and office supply truck is used to deliver to the site twice monthly (it is possible a smaller truck could be used), it would need to park in one of the on-street loading spaces. Based on the informaiton provided, we believe that the provision of on-site loading bay combi9ned with the adjacent on-street dedicated truck loading parking spaces, can sufficiently serve the needs of the proposed hotel.

### F. If in an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable:

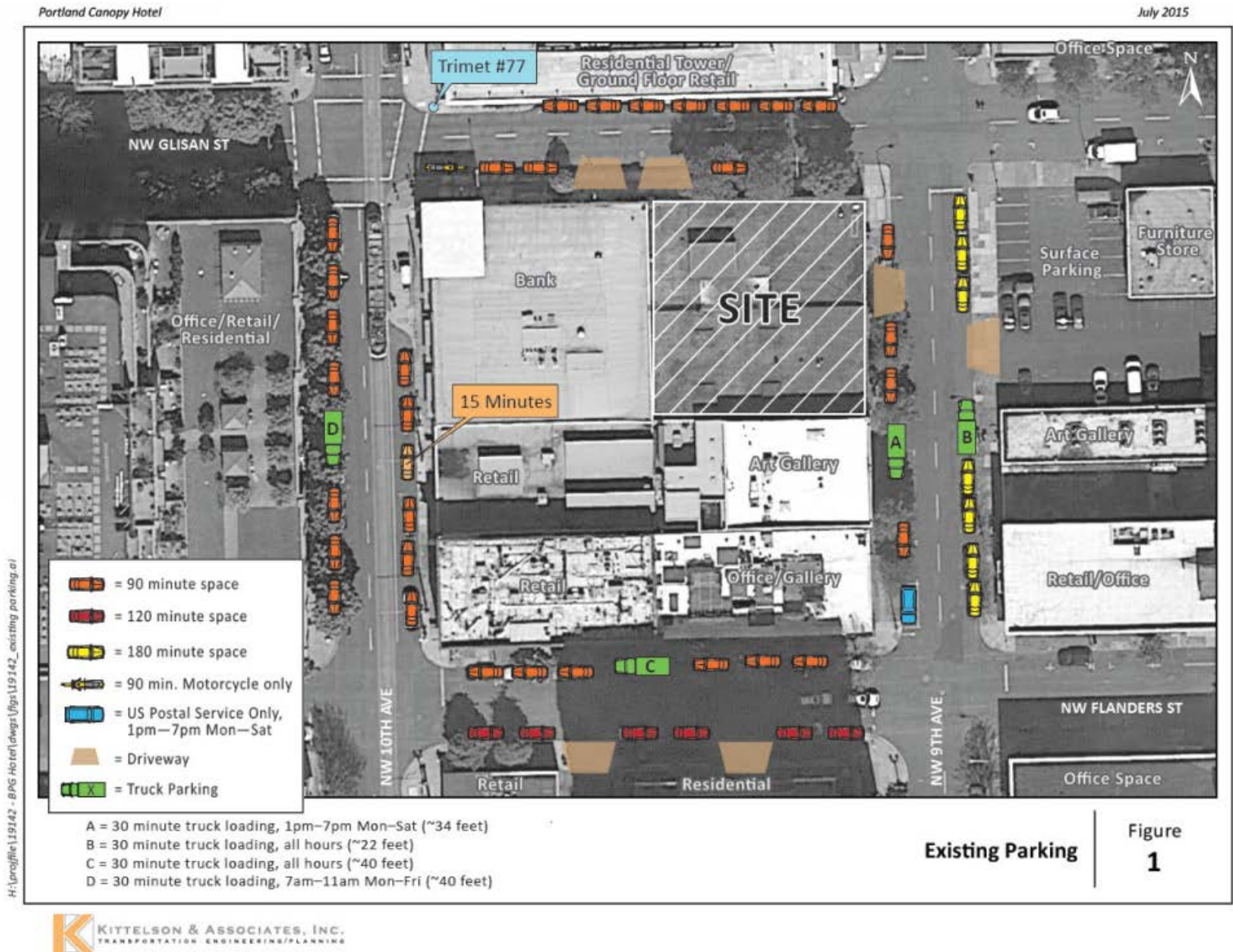
Not applicable.



Table 1. Anticipated Delivery Schedule based on Other Similar Hilton Hotel

Service Provided	Vehicle Length	Deliver Frequency	Delivery Time of Day	Delivery Duration	Delivery can be Scheduled?
Linen and terry delivery	24 foot	2 times weekly	3 PM Monday & Thursday	15-20 minutes	Yes
Laundry pick-up	24-foot	2-3 times weekly	7 AM Tuesday, Thursday	10 minutes	Yes
Food	24-foot	2 times weekly	7 AM Monday & Friday	15-20 minutes	Yes
Guest and office supplies	35-foot	2 times <i>monthly</i>	3 PM Friday	20 minutes	Yes
Beverages and Liquor	24-foot	2 times weekly	7 AM Wednesday & Friday	15-20 minutes	Yes
Parcel pickup (UPS, etc.)	20 - 30 foot	Daily	2 PM	10 minutes	Yes
Refuse pick-up	35-foot	3 times weekly	9 AM Monday/Wednesday/Friday	5 minutes	Yes
Recycle pick-up	35-foot	2 times weekly	9 AM Tuesday & Thursday	5 minutes	Yes

Shaded boxes represent delivery vehicles that are likely only to use on-street parking based on industry practice





# Modification Request #1

### Standard

Size of loading is described in 33.266.310D. Standard A loading spaces are a minimum 35 feet long, 10 feet wide and have minimum 13 foot vertical clearance. Standard B loading spaces are a minimum 18 feet long, 9 feet wide, and have minimum 10 foot vertical clearance.

### Request

We request reduction of the required depth from 35 feet to 30 feet. The assumed purpose of an on-site loading provision is to provide an alternate to on-street loading. Vehicles anticipated for use in delivery or loading of goods are generally 24’ long and will easily fit within the service/loading bay. In requesting this modification, the applicant does not intend to change the service bay from the current physical configuration. All walls and doors will remain in the same position. The applicant simply requests a reduction in the space designated for spatial clearance and the act of loading and unloading. A 24 foot long truck may park in the physical space with 1 or 2 feet of clearance at the head to allow the service door to close fully. This leaves 3 or 4 feet of ‘designated space’ at the tail end for loading/unloading. The additional 5 feet not designated as loading can then be utilized for other program, such as staging of a laundry cart.

## Approval Criteria

### A. Granting the modification will equally or better meet the purpose of the regulation being modified:

Service vehicles anticipated will continue to fit inside the building and gates can be closed for screening. Sidewalk will not be impeded.

### B. If in a residential zone, the proposal will not significantly detract from the livability or appearance of the residential area, or if in an OS, C, E, OR I zone, the proposal will be consistent with the classifications of the adjacent streets and the desired character of the area:

Service vehicles anticipated will continue to fit inside the building and gates can be closed for screening. Sidewalk will not be impeded.

### C. If more than one modification is being requested, the cumulative effect of the modification results in a project which is still consistent with the overall purpose of the zone:

The cumulative effect of the two modifications are complimentary. The additional space provided in modification request #1 makes room for the bike racks in modification request #2.

### D. City designated scenic resources and historic resources are preserved:

Scenic and historic resources are preserved.

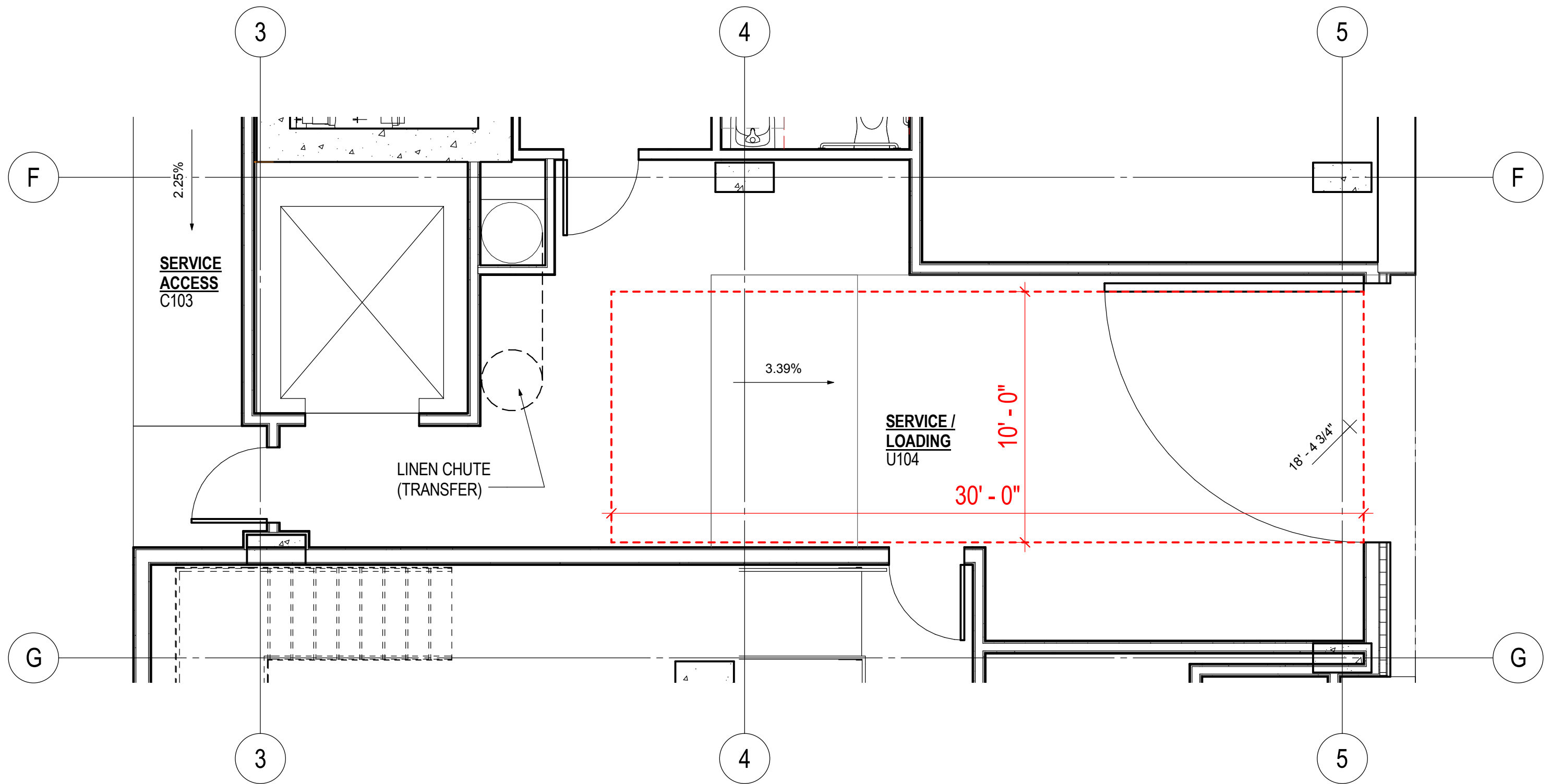
### E. Any impacts resulting from the modification are mitigated to the extent practical:

No visible impacts and no functional impacts result from this modification. It simply provides additional program area for other uses within the loading space.

### F. If in an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable:

Not applicable.






**Enlarged Plan | 1/4" = 1'-0"**



# Modification Request #2

**Standard**

Bike parking racks must meet the standards of subsection 33.266.220.C. Standard 3.c. requires a space of 2 feet by 6 feet be provided for each required bicycle space.

**Request**

We request a reduction of the required spacing from 24 inches to 18 inches. Bike racks will be staggered 0'-10" vertically to account for handle bars.

## Approval Criteria

---

**A. Granting the modification will equally or better meet the purpose of the regulation being modified:**

Long-term bike parking will be able to be accomodated inside the building.

**B. If in a residential zone, the proposal will not significantly detract from the livability or appearance of the residential area, or if in an OS, C, E, OR I zone, the proposal will be consistent with the classifications of the adjacent streets and the desired character of the area:**

The proposal allows for long-term bike parking to be inside the building - which has a positive effect on the character of the street.

**C. If more than one modification is being requested, the cumulative effect of the modification results in a project which is still consistent with the overall purpose of the zone:**

The cumulative effect of the two modifications are complimentary. The additional space provided in modification request #1 makes room for the bike racks in modification request #2.

**D. City designated scenic resources and historic resources are preserved:**

Scenic and historic resources are preserved.

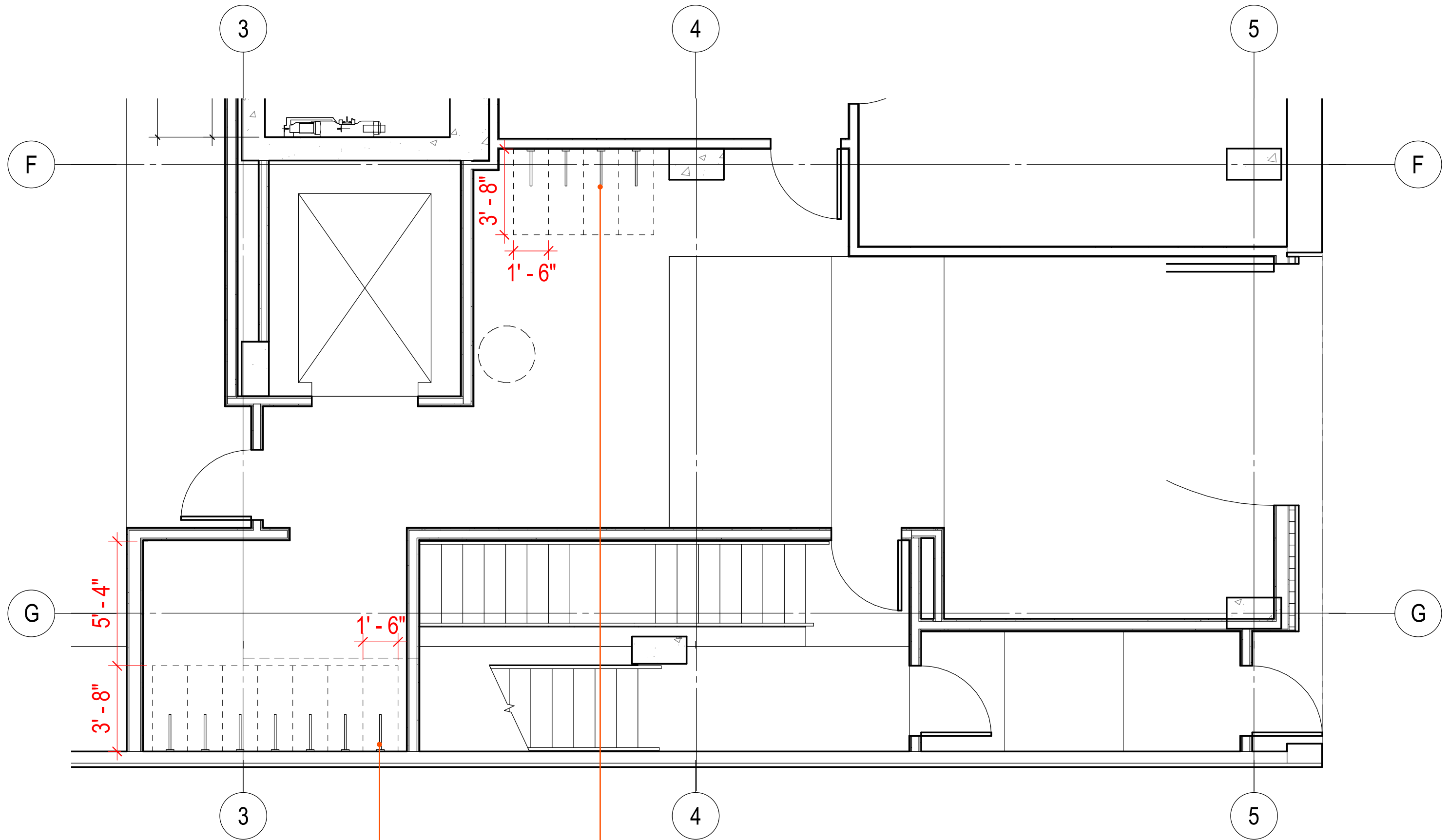
**E. Any impacts resulting from the modification are mitigated to the extent practical:**

No visible impacts and no functional impacts result from this modification.

**F. If in an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable:**

Not applicable.



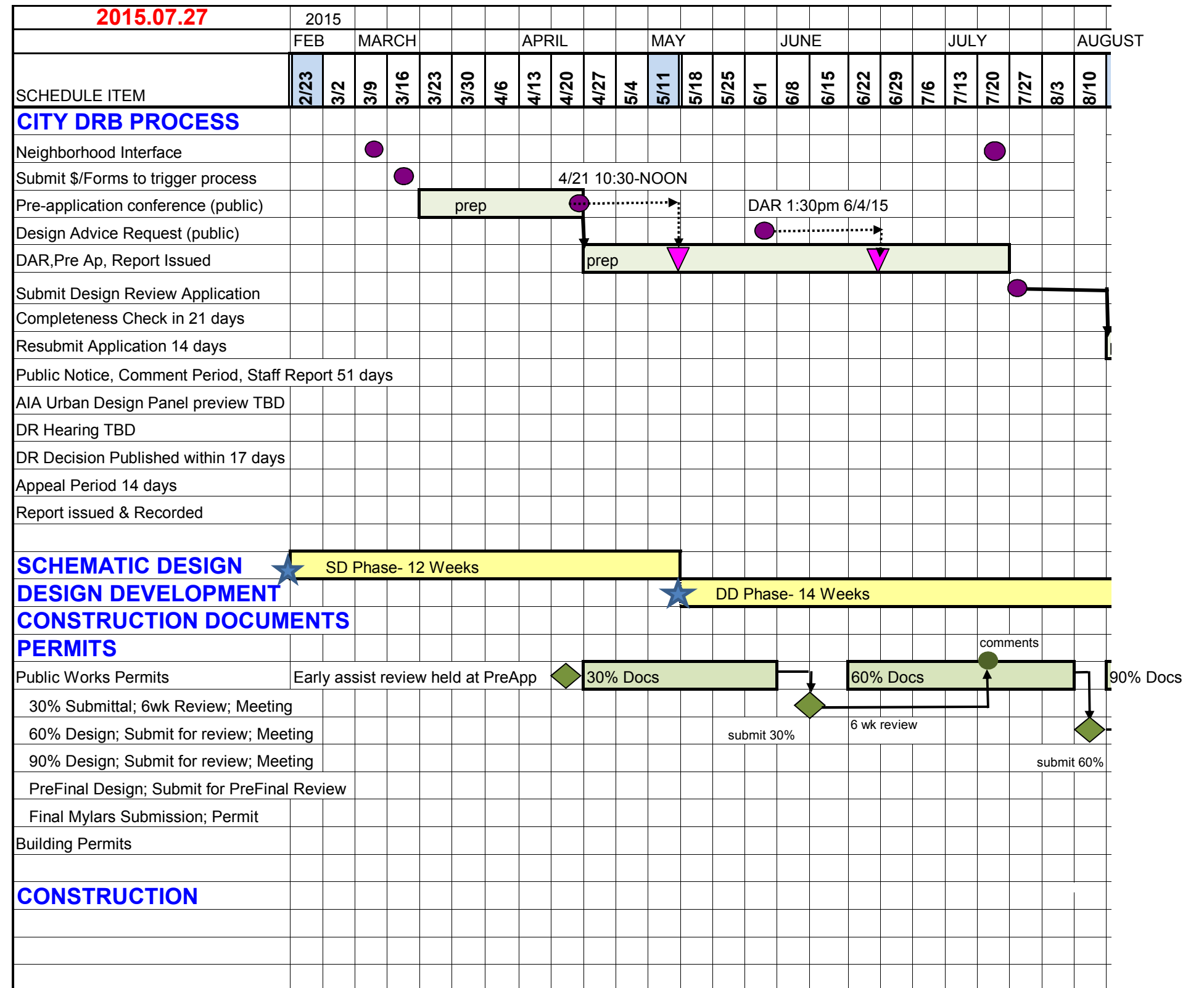


**N** Enlarged Plan | 1/4" = 1'-0"

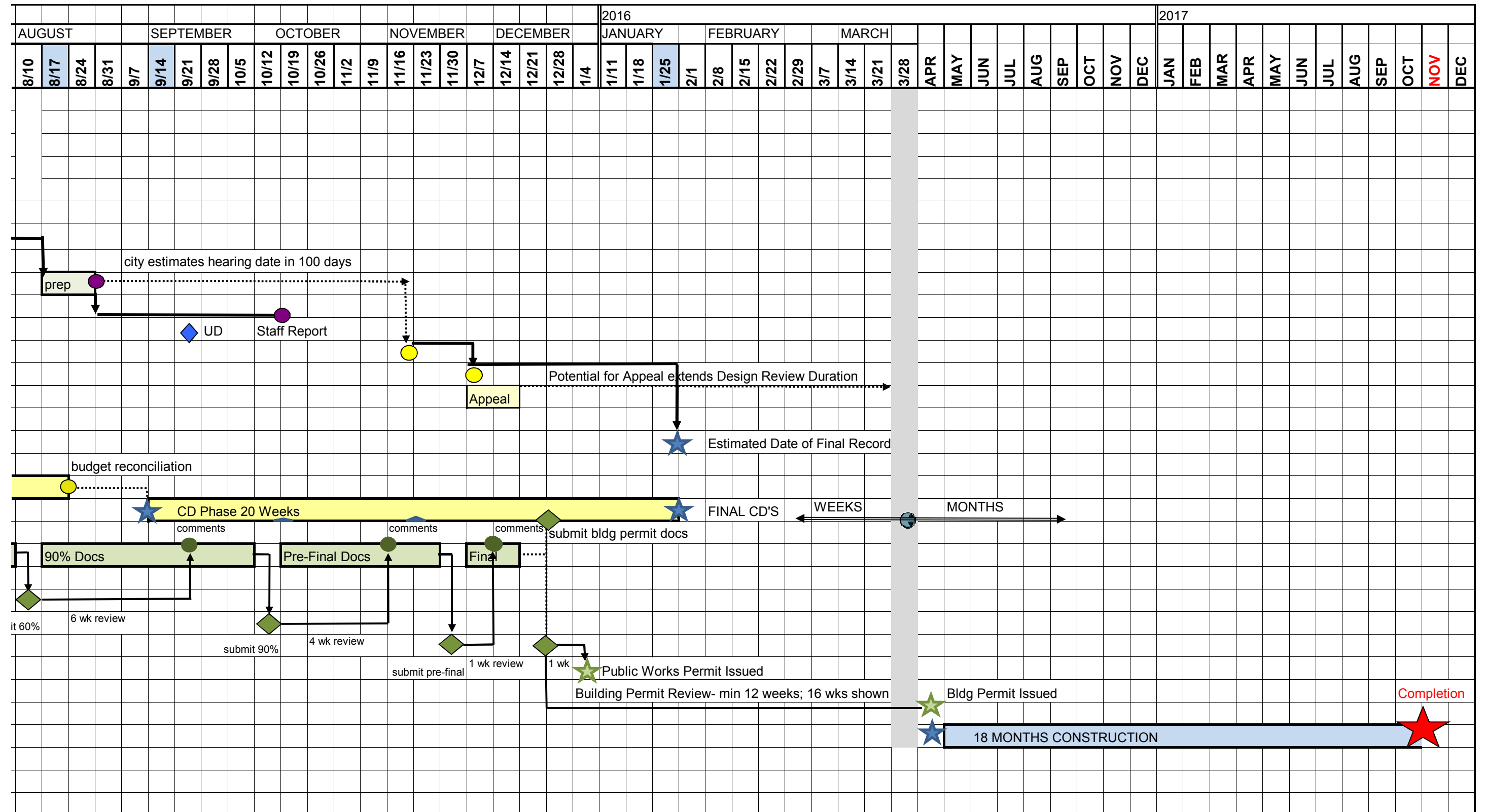
Wall-mounted Bike Racks,  
staggered 0'-10" vertically.



# Project Schedule













# CASCADIA WINDOWS

LU 15-209365 DZM, AD

Exhibit 72

\*For Design Intent Only

## Description

The 400 series is used for fixed, strip, and large 'punched' window applications, with a deep frame section to permit larger spans. It combines with our operable windows to provide versatile glazing systems.

## Standard Features

These standards represent the quality and product features for all Cascadia windows and doors. Each product is then custom manufactured to project-specific design criteria; upgrades are available for even higher performance.

**Glazing Units:** IGU's are installed from the interior side.

- Standard IGU: Cardinal LoE<sup>2</sup> 270® All climate Solar Control. More efficient glazing units also available.
- Sound Transmission Class: STC ratings for glass only will range from low 30's to low 40's.
- Low conductivity stainless steel edge spacer.
- Dual edge seal (PIB and Silicone).

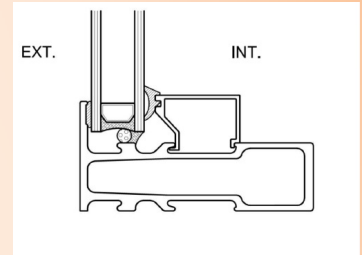
**Finish:** Hydro Tuff® waterborne 2-part acrylic coating available in 9 standard colours, and virtually any custom colour.

**Joint Construction:** Joints are butt connections and mechanically fastened together with shear blocks. Continuous bead of silicone sealant along joints. All fasteners are stainless steel.

**Installation:** Our preferred installation method is a combination of extruded aluminum clip anchors along the window head and jambs with a back dam angle at the sill. This allows for units to be installed from the interior or exterior. Traditional nail flange attachment is an option.

**Options:** Grilles, simulated divided lites, etc.

## 400 Series



### DOUBLE GLAZED THERMAL VALUES :

U-Value	0.28
R-Value	3.57
SHGC	0.31
VLT	0.59
CR	62

### TRIPLE GLAZED THERMAL VALUES:

U-Value	0.17
R-Value	5.88
SHGC	0.21
VLT	0.48
CR	73

### AIR LEAKAGE RESISTANCE:

Fixed	0.002 cfm/ft <sup>2</sup> (Fixed)
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### WATER LEAKAGE RESISTANCE:

Fixed	15 psf (730 Pa)
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### DESIGN WIND PRESSURE:

Fixed	65 psf (3120 Pa)
-------	------------------

### NAFS-08 & 11 PRIMARY DESIGNATORS:

CW-PG65-FW – 78" x 99" (1981 x 2515 mm)
CW-PG65-FW – 99" x 78" (2515 x 1981 mm)



## NanaWall® SL70 The Monumental Thermally Broken Aluminum Framed Folding System

The SL70 is a monumentally-sized, thermally broken aluminum framed folding panel system designed to provide an opening glass wall or storefront up to 39' (12 m) wide. It is available in various configurations utilizing one to twelve panels. The running astragal design provides extra stability.

For benefits of all NanaWall® systems, see the "General Introduction" section. For features common to aluminum folding systems, see the Aluminum Folding Systems Introduction section.

### High Structural Performance

The system with appropriate options is engineered to provide high structural performance and weather resistance, suitable for high-rise structures and buildings. For requirements with impact glass, please look at NanaWall SL73 system.

In accordance with AAMA/WDMA/CSA/101/I.S2/A440 testing standards, units with optional reinforced posts and with panel sizes of 3' x 8', SL70 inswing with Raised Sill (higher weather performance sill) achieved a DP rating of +70 psf / -100 psf, SL70 outswing with Raised Sill (higher weather performance sill) and SL70 inswing/outswing with saddle sill achieved DP ratings of +/- 70 psf.

In accordance with AAMA/WDMA/CSA/101/I.S2/A440 testing standards, standard three panel 9'6" wide by 8'4" high inswing unit with Raised Sill (higher weather performance sill) tested to a DP rating of + 55 psf / - 90 psf. An outswing standard unit with the same size and Raised Sill (higher weather performance sill) tested to a DP rating of +90 psf / -55 psf. Outswing/inswing standard unit with the same size and saddle sill tested to a DP rating of +/-50 psf.

See the Design Windload Charts on pages 23-25 for other sized panels.

### High Water Resistance

Static water resistance test results for inswing/outswing units with a Raised Sill (higher weather performance sill) show no leakage at 12 psf. Dynamic water resistance test results for an inswing unit with a Raised Sill (higher weather performance sill) achieved a Performance Level 2 (no leakage more than allowable at 6-18 psf) and for an outswing unit with a Raised Sill (higher weather performance sill) achieved a Performance Level 1 (no leakage more than allowable at 5-15 psf).

### NFRC-Approved Thermal Performance

The SL70 inswing and outswing models with all sill options have been rated, certified and labeled in accordance with NFRC 100/200. With certain glass options, Energy Star U-factor and SHGC values for some climate zones can be met. See "Performance and Testing Results" for further details.

### Florida Approval

The SL70 reinforced system with panel size of up to 36" wide x 96" high is Florida statewide approved with Product Approval number FL13940. This approval includes segmented and cornerless units.

The SL70 standard system with panel size of up to 35 1/2" wide x 96" high is Florida statewide approved with Product Approval number FL16671. This information with limitations can be viewed at <http://www.floridabuilding.org>.

### Acoustical Performance

The SL70 system has been tested by an independent acoustic lab for acoustical performance. The SL70 with insulated tempered glass achieved STC and Rw values of 32 and with STC 47 insulated laminated glass achieved STC and Rw values of 45 and OITC of 35.

### Life Cycle Performance

The SL70 meets the German "DIN EN 1191/12400 Classification," where a unit is tested after 20,000 opening and closing cycles and is still functional.

### Monumentally Sized Design Options

This system offers monumentally-sized panels: frame heights up to 12'0" and panel widths up to 4' are possible. See the Maximum Size Chart on Page 5 for possible maximum height and width combinations. Heavier and/or thicker glass, such as bullet-resistant laminated glazing, can also be used.

### Running Post, Floor-Mounted System

This system is ideal for applications where load-bearing capability of the header is a concern. The system's main weight is carried by the floor track. The upper-track is merely a guide. The lower-running carriages ride on top of the sill track and lie above the water run-off level. The running post design allows a floor-mounted system even with a flush sill. Stainless steel rollers ride on a stainless steel track cover.

### Cornerless and Segmented Units Possible

Angled units of 90° or 135° are also possible. Segmented angles between panels of up to 6 degrees are also possible. To see these operable wall concepts in action, please visit [www.nanawall.com](http://www.nanawall.com) and click on the "Animations" link.

### Superior Thermal Break

The system is thermally broken with a wide polyamide plastic reinforced with glass fibers. This thermal barrier provides increased strength, superior humidity control, improved acoustics, and energy savings.

### Choice of Finishes and Dual Color Option

In addition to the choices from the NanaWall Powder Coating Finish Chart, the full range of RAL high gloss and matte powder coatings are available. Anodized and fluoropolymer kynar painted finishes are also available. The option of different finishes on the inside and outside is also available. See "Finish Options" in the General Introduction.

### Hardware Options

For the main entry panel, several locking options are available. The profile locking cylinder (if any) on the main entry panel is Schlage-compatible.

### General Description

The SL70 is a monumentally-sized, thermally broken aluminum framed folding panel system designed to provide an opening glass wall or storefront up to 39' (12 m) wide (see Maximum Size Chart). It is available in various configurations utilizing one to twelve panels or more (see elevation drawings). The running post design provides extra stability. An option for swing entry/exit panel(s) is available; note however the further panel size constraints with a swing panel hinged from a pair(s) of folding panels. Units can be either inward or outward opening (see details in the section drawings).

### Frame and Panels

The frame components are 3 1/8" (80 mm) wide (except for the saddle and flush sills that are different widths) extruded aluminum that is thermally broken with 3/4" (20 mm) wide polyamide plastic. The panels and running posts are 2 3/4" (70 mm) wide extruded aluminum that is thermally broken with a 15/16" (24 mm) wide polyamide plastic (see section drawings). In addition to the choices from the NanaWall Powder Coating Finish Chart, the full range of RAL high gloss and matte powder coatings are available. Anodized and fluoropolymer kynar painted finishes are also available. The option of different finishes on the inside and outside is also available. See "Finish Options" in the General Introduction.

The panels and running posts are pre-assembled. All pins and screws to assemble the frame are provided. Besides the higher weather performance (raised) sill, various standard aluminum flush sills (shown in section drawings) are available as an option in a clear or dark bronze anodized finish.

### Glazing

Units can be supplied either glazed with 15/16" (24 mm) double insulated glass, 15/16" (24 mm) double or 1 1/2" (38 mm) triple insulated Low-E safety, other high performing safety glass such as Heat Mirror, acoustic, special tint, etc., or other glass or other thickness on request. See "Glazing" in the General Introduction section for other glass thickness possible.

### Weatherstripping

All weather stripping (consisting of EPDM or brush seals) is provided for sealing between panels and between panels and frames (see section drawings).

### Sliding/Folding Hardware

For sliding and folding each pair of panels, a patented, floor-supported lower running carriage is attached to the running post profile. An upper running carriage is attached as a guide (see the section drawings). The four roller lower running carriage lies above the water run-off level and is constructed to ensure even distribution of pressure on all four rollers. Rollers are stainless steel and have sealed bearings to ensure sound-free running and resistance to extreme temperature. Two to seven hinges per connection are provided to connect panels and running post profiles together and to connect panels to the frame. Finish of standard zinc die cast hinges would be closest powder coat match to panel profile. Available as an option are stainless steel hinges.

### Locking Hardware and Handle Options

For each pair of folding panels (except for the pair to be opened first in a unit with no swing panel) provided is two point locking hardware consisting of top and bottom Polyamide capped locking rods operated by a 180° turn of a handle on the inside only. If there is a swing panel, there are the following hardware options on the main entry panel:

**1. Multi-point Locking.** Consisting of lever handles on both sides, a Schlage compatible lockset, lockable latch, deadbolt and rods at the top and the bottom. After turn of key or thumbturn, depression of handles withdraws latch, lifting of handles engages rods and turn of key or thumbturn engages deadbolt and locks. For a unit with a secondary swing panel available are matching dummy lever handles on both sides and concealed flush bolts that operate the rods at the top and the bottom.

**2. Deadbolt Lock and one point locking at the top and bottom.** Consisting of push/pull handles on both sides with deadbolt(s) operated by a lockset. Turn of key or thumb turn operates lock. Available is a lockset option of having key operation on both sides. One point locking consists of Polyamide capped locking rods operated by a 180° turn of a flat handle on the inside at the top and bottom. To keep the panel closed when locking points are disengaged, a door closer should be field installed, but note that a door closer can only be installed to a swing panel that is attached to the side jamb.

**3. No Hardware.** For panic hardware to be installed by others, the main entry panel can be supplied with no locking hardware. Please note that with this option, the structural design windloads for the unit will no longer be valid.

For a unit with **no swing panel**, on the folding pair is to be opened first: Two point locking hardware consisting of top and bottom Polyamide capped locking rods operated by a 180° turn of handles on both sides. Lockable with a lockset. Turn of key or thumb turn operates lock.

For a unit where locking/handles inside only is desired, like in window applications, on all swing panels or pair of folding panels to be opened first, provided is two point locking with a handle on the inside only.

### Handle Finish Schemes:

Standard - Stainless steel lever, standard and L-shaped handles in brushed satin or black titanium finish.

Optional - Brass lever handles in oil rubbed, satin nickel or white finish and nylon U-shaped and L-shaped handles in dark brown, gray or white finish.

Push/pull handles are available in brushed stainless steel and in nylon dark brown, gray or white finish.

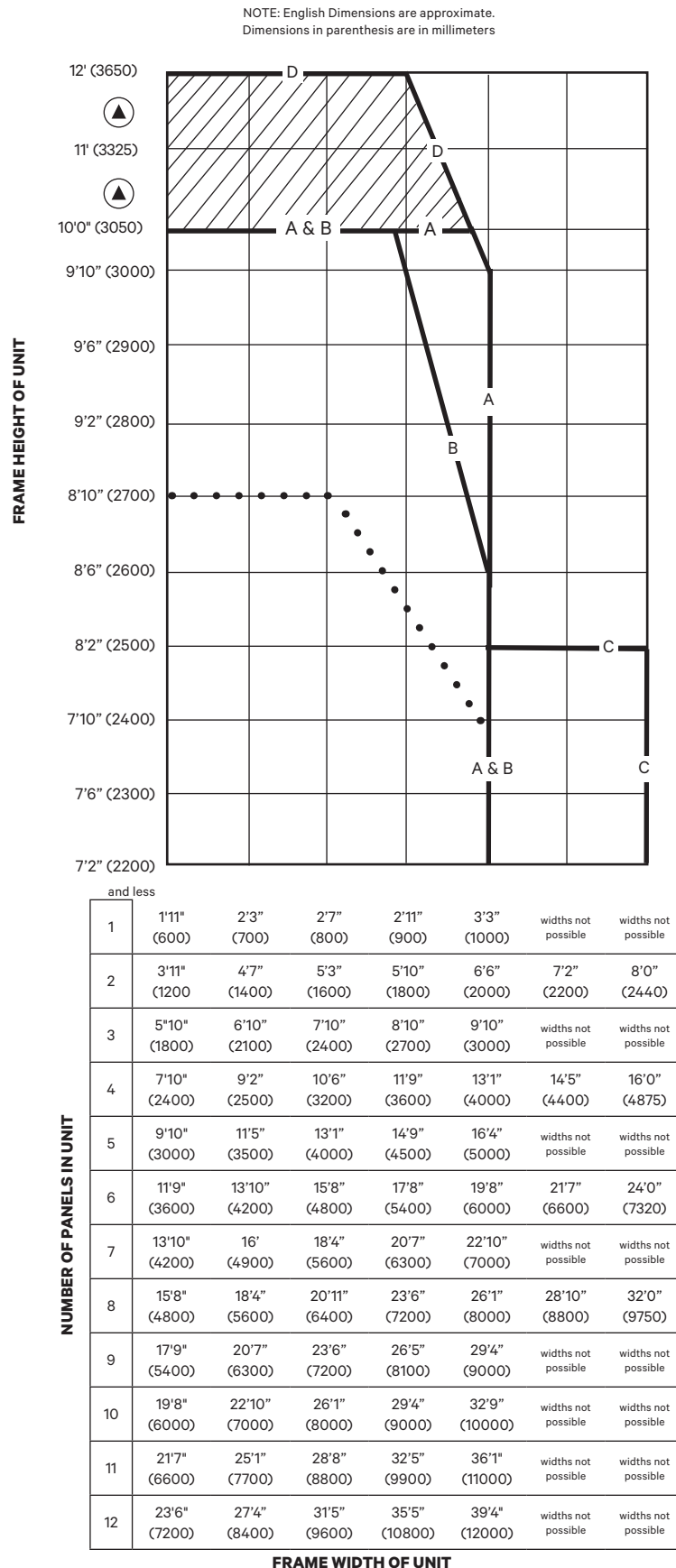


HIGHER WEATHER PERFORMANCE (RAISED) SILL								
TYPE OF TEST			INWARD OPENING UNITS			OUTWARD OPENING UNITS		
*Air Infiltration: ASTM E-283 and NFRC 400, cfm/ft <sup>2</sup>			@1.57 psf (75 Pa): 0.08 to 0.30 (.41 to 1.5 L/s/m <sup>2</sup> ) +A1 to A3			@1.57psf (75 Pa): 0.02 to 0.14 (.10 to .70 L/s/m <sup>2</sup> ) +A1 to A3		
			@6.24 psf (300 Pa): 0.20 to 0.30 (1.02 to 1.5 L/s/m <sup>2</sup> )			@6.24psf (300 Pa): 0.07 to 0.30 (.36 to 1.5 L/s/m <sup>2</sup> )		
*Static Water Penetration: ASTM E-547/E-331			No uncontrolled water entry @12 psf (580 Pa) +B4			No uncontrolled water entry @12 psf (580 Pa) +B4		
*Dynamic Water Penetration: AAMA 520 & ASTM E-2268			Performance level 2: No water entry more than allowable @6-18 psf (300-860 Pa)			Performance level 1: No water entry more than allowable @5-15 psf (250-715 Pa)		
Structural Load Deflection TAS 202 & ASTM E-330: pass <i>Note that the structural test pressures were 50% higher than the design pressures.</i>			*REINFORCED UNIT			*REINFORCED UNIT		
			Design Pressure Positive @70 psf (3350 Pa) Design Pressure Negative @100 psf (4785 Pa)  +Windload resistance: C3 (+/- 2520 Pa) +Blow-Out: C3 (+/- 5040 Pa)			Design Pressure Positive @70 psf (3350 Pa) Design Pressure Negative @70 psf (3350 Pa)  +Windload resistance: C3 (+/- 2520 Pa) +Blow-Out: C3 (+/- 2520 Pa)		
Structural Load Deflection ASTM E-330: pass <i>Note that the structural test pressures were 50% higher than the design pressures.</i>			**STANDARD UNIT			**STANDARD UNIT		
			Design Pressure Positive @55 psf (2630 Pa) Design Pressure Negative @90 psf (4300 Pa)			Design Pressure Positive @90 psf (4300 Pa) Design Pressure Negative @55 psf (2630 Pa)		
*Forced Entry Resistance			In accordance with AAMA-1304 and ASTM F842 requirements, +F1					
Thermal Performance:			Rated, certified and labeled in accordance with NFRC 100 and NFRC 200					
****TYPE OF GLASS (1 LITE)	CENTER OF GLASS U-FACTOR	IG GLASS THICKNESS	UNIT U-FACTOR	SHGC	2010 Energy Star	UNIT U-FACTOR	SHGC	2010 Energy Star
Double IG Clear (air filled)	.48	15/16"	.51	.51	-	.51	.51	-
Double IG Low E (argon filled)	.26	15/16"	.35	.27	-	.36	.27	-
Double IG Low E (air filled)	.30	15/16"	.38	.27	-	.39	.27	-
Double IG Low E #2 & #4 surfaces (argon filled)	.21	1"	.32	.25	✓	.33	.25	-
Double IG Low E #2 & #4 surfaces (air filled)	.24	1"	.34	.25	-	.35	.25	-
Double IG Low E Heat Mirror TC88 (argon filled)	.13	1 1/2"	.29	.25	✓	.29	.24	✓
Double IG Heat Mirror TC88 x 2 (krypton filled)	.08	1 1/2"	.25	.29	✓	.26	.29	✓
Triple IG Low E x 2 (argon filled)	.13	1 1/2"	.26	.23	✓	.27	.23	✓
Triple IG Low E x 2 (air filled)	.13	1 1/2"	.29	.23	✓	.29	.23	✓
***Acoustical performance:			The SL70 with insulated tempered glass with STC 32 achieved STC and Rw values of 32. The SL70 with STC 47 laminated glass achieved STC and Rw values of 45 and OITC of 35.					
NOTES								
*Excerpts of results of 3 separate units of various panels and configurations tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in October 2009 per various fenestration test standards ..						SHGC = Solar Heat Gain Coefficient		
**Excerpts of results of 9'6 7/8" W x 8'4" H three panel units tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in July, 2005 per various fenestration test snadards.						✓ 2010 Energy Star Qualification Criteria: U-Factor ≤.32, SHGC ≤.30 for doors in all climate zones.		
***Excerpts of results of 13'7" W x 8'8" H five panel units with raised sill tested by Nusing Mobile Trennwandtechnik, Munster, Germany, an independent testing laboratory, in October 2003 and November 2005.						+ Results per Canadian CGSB-82.1-M89		
****NFRC simulated U factors of units with a horizontal mullion will have values of .01 to .03 higher than units with no horizontal mullion. Please contact NanaWall for details.								
Call NanaWall for U-Factor & SHGC for other glass types								

# SL70 | Testing Results - Performance of the SL70 NanaWall®

LOW PROFILE SADDLE SILL AND FLUSH SILL														
TYPE OF TEST			INWARD OPENING UNITS						OUTWARD OPENING UNITS					
*Air Infiltration: ASTM E-283 and NFRC 400, cfm/ft <sup>2</sup>			@1.57 psf (75 Pa): 0.10 (.55 L/s/m <sup>2</sup> ) +A3 (.76 m <sup>3</sup> /h/m)						@1.57 psf (75 Pa): 0.11 (.56 L/s/m <sup>2</sup> ) +A3 (.76 m <sup>3</sup> /h/m)					
			@6.24 psf (300 Pa): 0.26 without weeps @6.24 psf (300 Pa): 0.31 with weeps						@6.24 psf (300 Pa): 0.29 without weeps @6.24 psf (300 Pa): 0.32 with weeps					
*Static Water Penetration: ASTM E-547/E-331  <i>Not applicable for standard flush sill</i>			No Uncontrolled water entry @ 5.25 psf (250 Pa) +B2  Subject to the following adaptations of the sill in the field by others: 1. Remove the gaskets covering the inner channel. 2. Drill weep holes through the bottom of this channel (about one ⅜" diameter weep hole per panel.) 3. Drill weep holes through the lower front face of the sill to drain water collected (about two ⅜" diameter weep holes per panel through to the inside lower chamber.) 4. Drill ⅜" diameter weep holes (one per panel) through the middle channel.  Please note that due to varying site requirements and conditions, these sills will not be prepared for drainage by Nana Wall Systems, Inc. If this drainage system is desired, we recommend that a qualified professional construct this system on the project site strictly in accordance with NanaWall instructions with good waterproofing techniques. If drain connections are not made or are not possible, unit may leak with wind driven rain.						No Uncontrolled water entry @ 6.00 psf (300 Pa) +B3					
Structural Load Deflection TAS 202 & ASTM E-330: pass			*REINFORCED UNIT  Design Pressure Positive @70 psf (3350 Pa) Design Pressure Negative @70 psf (3350 Pa)  +Windload Resistance: C3 (+/-2520 Pa) +Blow-out: C3 (+/-5040 Pa)						*REINFORCED UNIT  Design Pressure Positive @70 psf (3350 Pa) Design Pressure Negative @70 psf (3350 Pa)  +Windload Resistance: C3 (+/-2520 Pa) +Blow-out: C3 (+/-5040 Pa)					
Structural Load Deflection ASTM E-330: pass			**STANDARD UNIT						**STANDARD UNIT					
			Design Pressure Positive @50 psf (2390 Pa)						Design Pressure Positive @55 psf (2630 Pa)					
			Design Pressure Negative @55 psf (2630 Pa)						Design Pressure Negative @50 psf (2390 Pa)					
Life Cycle Performance			The SL70 meets the German "DIN EN 1191/12400 Classification," where a unit is tested after 20,000 opening and closing cycles and is still functional.											
* and **Forced Entry Resistance			In accordance with AAMA-1304 and ASTM F842 requirements, +F1											
***Operation / Cycling Performance: AAMA 920			For swing panel attached to side jamb: 500,000 cycles - pass											
Thermal Performance			Rated, certified and labeled in accordance with NFRC 100 and NFRC 200											
			SADDLE SILL			FLUSH SILL			SADDLE SILL			FLUSH SILL		
**** TYPE OF GLASS (1 LITE)	CENTER OF GLASS U-FACTOR	GLASS THICKNESS	UNIT U-FACTOR	SHGC	2010 Energy Star	UNIT U-FACTOR	SHGC	2010 Energy Star	UNIT U-FACTOR	SHGC	2010 Energy Star	UNIT U-FACTOR	SHGC	2010 Energy Star
Double IG Clear (air filled)	.48	15/16"	.52	.52	-	.51	.52	-	.52	.52	-	.51	.52	-
Double IG Low E (argon filled)	.26	15/16"	.36	.27	-	.36	.27	-	.37	.27	-	.36	.27	-
Double IG Low E (air filled)	.30	15/16"	.39	.27	-	.39	.27	-	.40	.27	-	.39	.27	-
Double IG Low E #2 & #4 surfaces (argon filled)	.21	1"	.33	.26	-	.33	.26	-	.33	.26	-	.33	.26	-
Double IG Low E #2 & #4 surfaces (air filled)	.24	1"	.35	.26	-	.35	.26	-	.36	.26	-	.35	.26	-
Double IG Low E Heat Mirror TC88 (argon filled)	.13	1 1/2"	.30	.25	✓	.29	.25	✓	.30	.25	✓	.29	.25	✓
Double IG Heat Mirror TC88 x 2 (krypton filled)	.08	1 1/2"	.26	.29	✓	.25	.29	✓	.26	.29	✓	.26	.29	✓
Triple IG Low E x 2 (argon filled)	.13	1 1/2"	.27	.23	✓	.26	.24	✓	.28	.23	✓	.27	.24	✓
Triple IG Low E x 2 (air filled)	.13	1 1/2"	.29	.23	✓	.29	.24	✓	.30	.24	✓	.29	.24	✓
NOTES														
*Excerpts of results of a 12' 9 15/16" W x 8' 3 7/8" H four panel unit tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in October 2009.  **Excerpts of results of a 9' 6 7/8" W x 8' 4" H three panel unit tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in July 2005.  *** Excerpts of results of a system tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in April 2013.  ****NFRC simulated U factors of units with a horizontal mullion will have values of .01 to .03 higher than units with no horizontal mullion. Please contact NanaWall for details.									SHGC = Solar Heat Gain Coefficient					
									✓ 2010 Energy Star Qualification Criteria: U-Factor ≤.32, SHGC ≤.30 for doors in all climate zones.					
									+Results per Canadian CGSB-821-M89					
Call NanaWall for U-Factor & SHGC for other glass types														





**Up to twelve panels are possible in a unit. Any custom panel size is possible up to the maximum size shown.**

A, B, C & D: Solid dark line on chart indicates maximum frame height possible for a given maximum frame width.

On chart indicates need of a horizontal mullion in each panel such that no individual glass height is more than 7'10" (2400 mm).

Dotted line on chart indicates that for units with triple glazing, a horizontal mullion is needed for sizes beyond this line.

For segmented and cornerless units, a horizontal mullion is needed for all heights more than 8'4" (2550 mm).

Indicates height increase

**A:** For configurations with a swing panel hinged to a side jamb combined with a pair(s) of folding panels or for configurations with a pair(s) of folding panels only - includes Models 1L, 1R, 1L1R, 2R, 1L2R, 4R, 1L6R, 2L2R, 1L4R, 2L4R, 6R, 2L6R, 4L4R, 4L6R, 2L, 2L1R, 4L, 4L1R, 4L2R, 6L, 6L1R, 6L2R, 6L4R, 6L6R

**B:** For all configurations.

**C:** On chart indicates possible only in the following configurations: 2L, 2R, 4L, 4R, 2L2R, 2L4R, 4L2R, 4L4R, 6L and 6R. (Not possible with triple glazing.)

**D:** On chart indicates possible only in the following configurations: 2L, 2R, 4L, 4R, 2L2R, 2L4R, 4L2R and 4L4R. Possible with Raised Sill (higher weather performance sill) only.

Please note that the bigger size panels (especially tall panels) may need to be operated by more than one person.

For configurations with no swing panels, the minimum panel width needed is 2'3" (700 mm).

The maximum size limits shown are based on the weight of a panel that has a net glass thickness of not more than 3/8" (10 mm). For larger net glass thickness, this maximum size limit chart will not apply.

**Dimensions in millimeters unless noted. Calculation applies to the standard stiles and rails.**

**Glass dimensions of all panels in a unit are equal.**

Nominal Panel Height (PH) is defined as Glass Daylight Opening Height + 117 = Glass Daylight Opening Height + 4 5/8".

Nominal Panel Width (PW) is defined as Glass Daylight Opening Width + 117 = Glass Daylight Opening Width + 4 5/8".

Panel Height is as seen from the inside on an inward opening unit and is as seen from the outside on an outward opening unit. Please note that with the overlap of the head jamb and the sill with the panel, the Clear Opening Height will not be the same as the Panel Height.

See Cross-Section Details of both stiles of each panel to determine actual Panel Width. With astragals, overlapping, etc., the actual Panel Width not only varies with position of panel in a configuration, but the inside and outside surface widths of each stile may be different. Running posts and astragals are not included in Panel Width dimensions.

For each configuration, the Frame Width (FW) is the sum of the nominal Panel Width (PW) x the number of panels + a number (N) which is the sum of the side jamb dimensions and dimensions of space between panels in excess of the nominal Panel Width as shown in the Cross-Section Details.

#### Frame Height (FH)

#### SL70 System

Higher Weather Performance (Raised) Sill : Frame Height = Panel Height + 84 (3 5/16") = Clear Opening Height + 130 (5 1/8")

Flush Sill: Frame Height = Panel Height + 99 (3 7/8") = Clear Opening Height + 115 (4 1/2")

Low Profile Saddle Sill: Frame Height = Panel Height + 99 (3 7/8") = Clear Opening Height + 115 (4 1/2")

Surface Mounted Interior Sill: Frame Height = Panel Height + 72 (2 13/16") = Clear Opening Height + 88 (3 7/16")

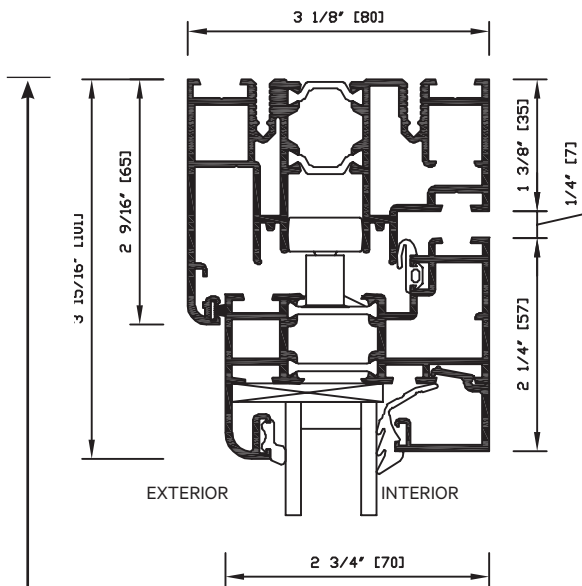
**Frame Widths for Different Configurations with Majority of Panels Folding to Right (and their Mirror Image Configurations with Majority of Panels Folding to Left). See Maximum Size Charts for size limits.** These numbers can be used as a guideline only. Contact NanaWall for the exact calculations for a particular unit.

Please note that widths for units with angle turns will be different.

Model 1R	Frame Width = 1 x Panel Width + 139 = 1 x Panel Width + 5 1/2"
Model 1L1R	Frame Width = 2 x Panel Width + 172 = 2 x Panel Width + 6 3/4"
Model 2R	Frame Width = 2 x Panel Width + 190 = 2 x Panel Width + 7 1/2"
Model 3R	Frame Width = 3 x Panel Width + 219 = 3 x Panel Width + 8 5/8"
Model 1L2R	Frame Width = 3 x Panel Width + 222 = 3 x Panel Width + 8 3/4"
Model 4R	Frame Width = 4 x Panel Width + 270 = 4 x Panel Width + 10 5/8"
Model 1L3R	Frame Width = 4 x Panel Width + 252 = 4 x Panel Width + 9 15/16"
Model 2L2R	Frame Width = 4 x Panel Width + 300 = 4 x Panel Width + 11 13/16"
Model 5R	Frame Width = 5 x Panel Width + 299 = 5 x Panel Width + 11 13/16"
Model 1L4R, Model 2L3R	Frame Width = 5 x Panel Width + 302 = 5 x Panel Width + 11 15/16"
Model 3L3R, Model 1L5R	Frame Width = 6 x Panel Width + 332 = 6 x Panel Width + 13 1/16"
Model 2L4R	Frame Width = 6 x Panel Width + 380 = 6 x Panel Width + 14 15/16"
Model 6R	Frame Width = 6 x Panel Width + 350 = 6 x Panel Width + 13 3/4"
Model 3L4R, Model 2L5R, Model 1L6R	Frame Width = 7 x Panel Width + 382 = 7 x Panel Width + 15 1/16"
Model 4L4R, Model 2L6R	Frame Width = 8 x Panel Width + 460 = 8 x Panel Width + 18 1/8"
Model 3L5R	Frame Width = 8 x Panel Width + 412 = 8 x Panel Width + 16 1/4"
Model 4L5R, Model 3L6R	Frame Width = 9 x Panel Width + 462 = 9 x Panel Width + 18 3/16"
Model 5L5R	Frame Width = 10 x Panel Width + 492 = 10 x Panel Width + 19 3/8"
Model 4L6R	Frame Width = 10 x Panel Width + 540 = 10 x Panel Width + 21 1/4"
Model 5L6R	Frame Width = 11 x Panel Width + 542 = 11 x Panel Width + 21 3/8"
Model 6L6R	Frame Width = 12 x Panel Width + 620 = 12 x Panel Width + 24 7/16"

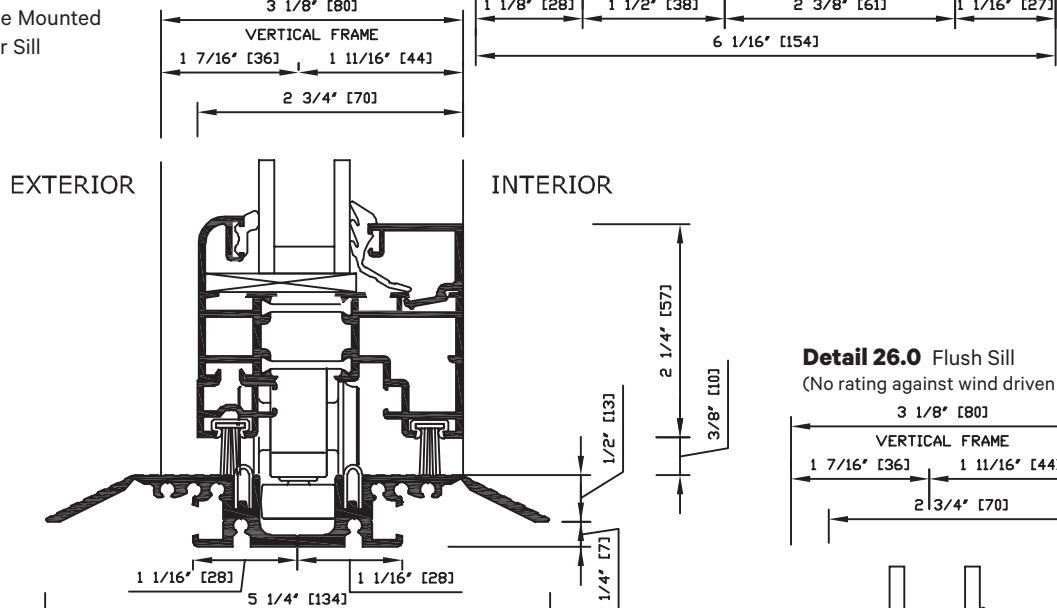


**Detail 1.0** Head Jamb



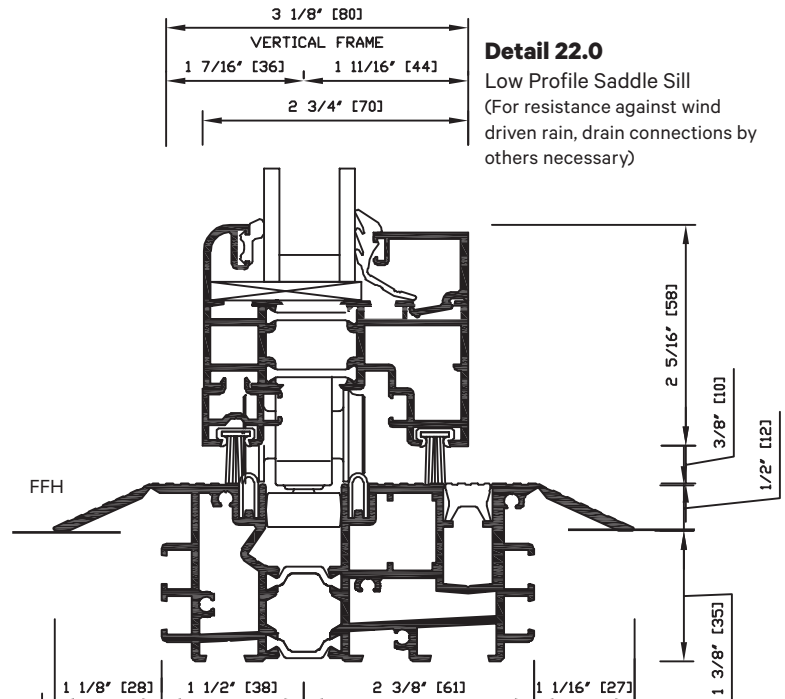
**Detail 23.0**

Surface Mounted Interior Sill



**Detail 22.0**

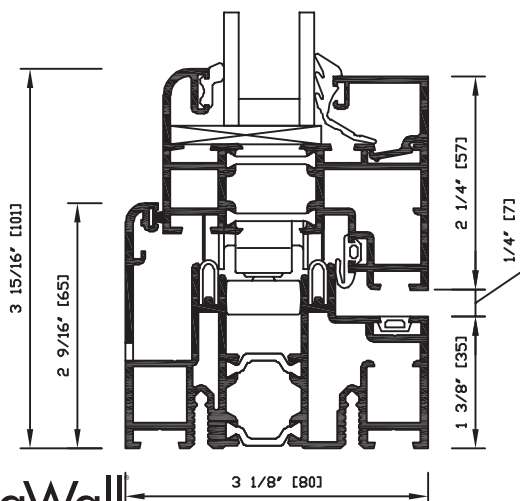
Low Profile Saddle Sill  
(For resistance against wind driven rain, drain connections by others necessary)



**Detail 2.0** Raised Sill

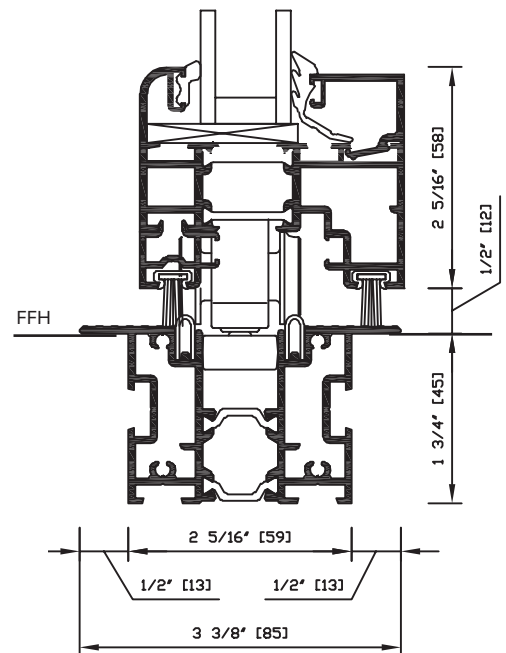
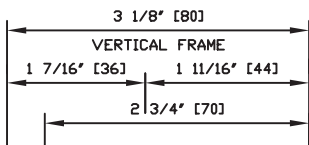
(higher weather performance sill)

2 3/4" [70]



**Detail 26.0** Flush Sill

(No rating against wind driven rain)

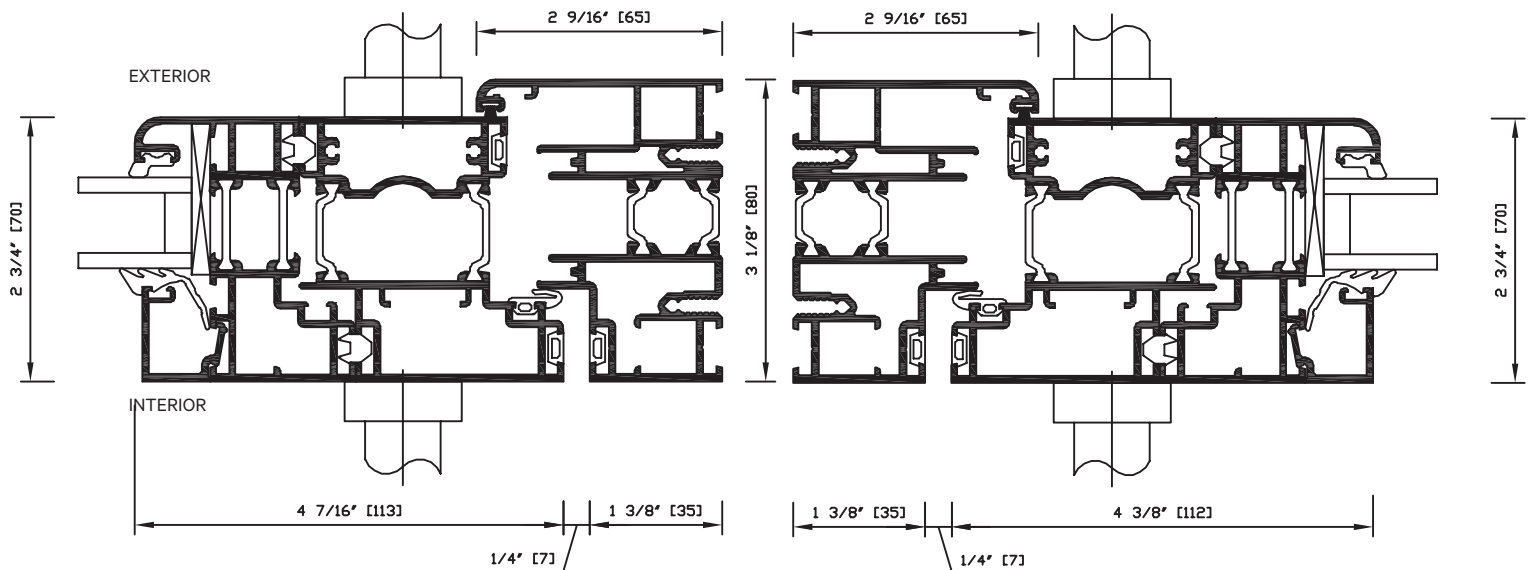


**Notes:** For ADA compliance in commercial projects, a gasket to cover the channel in the sill at swing panels is provided

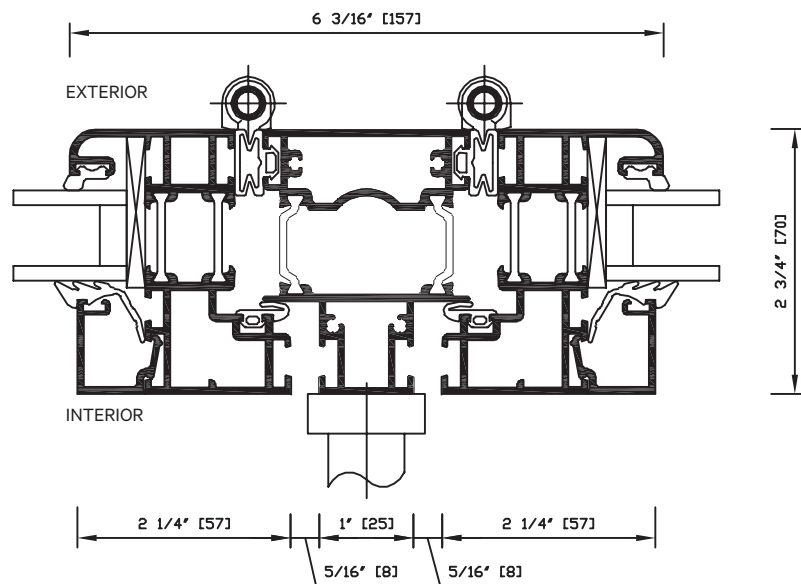
None of the sills, except for the higher weather performance sill, are centered to the rest of the frame members.

**Detail 4R.0** Swing panel with locking right side jamb

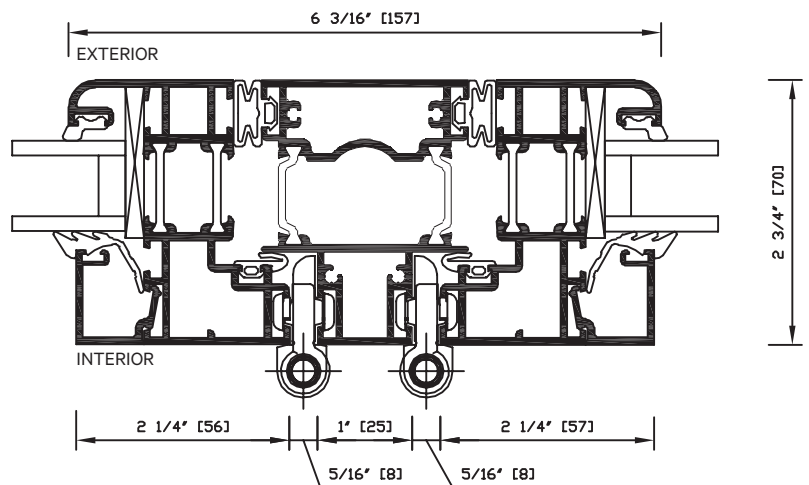
**Detail 4.0** Swing panel with locking left side jamb



**Detail 7.0 & 7R.0**  
Folding panels with locking



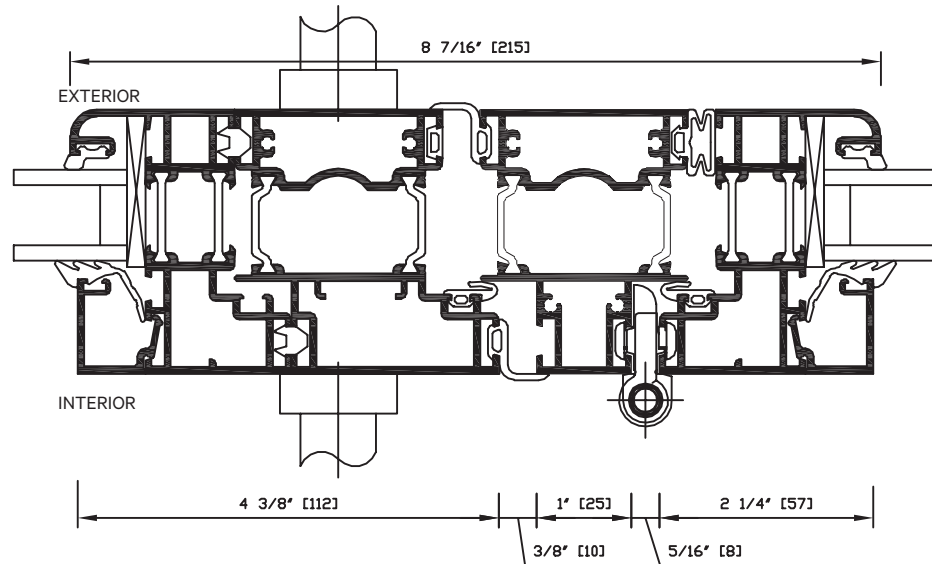
**Detail 7C.0 & 7RC.0**  
Folding panels with running carriage set



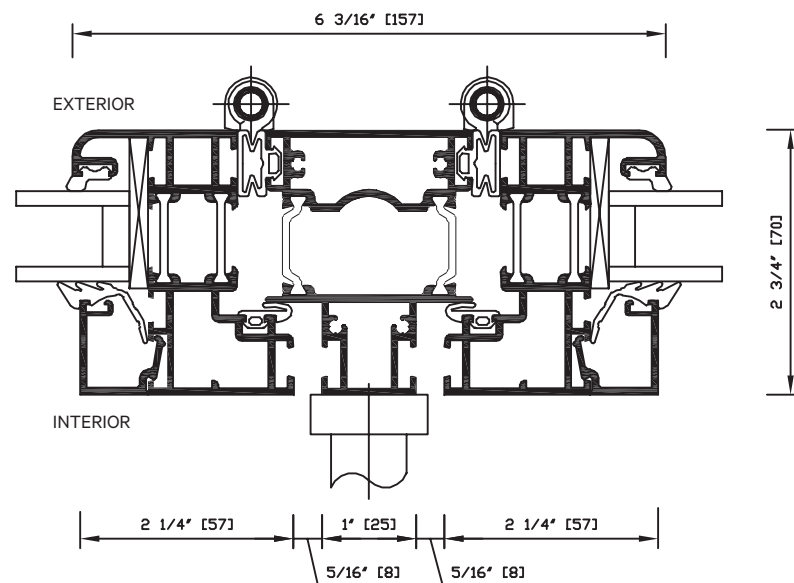


**Detail 10.0**

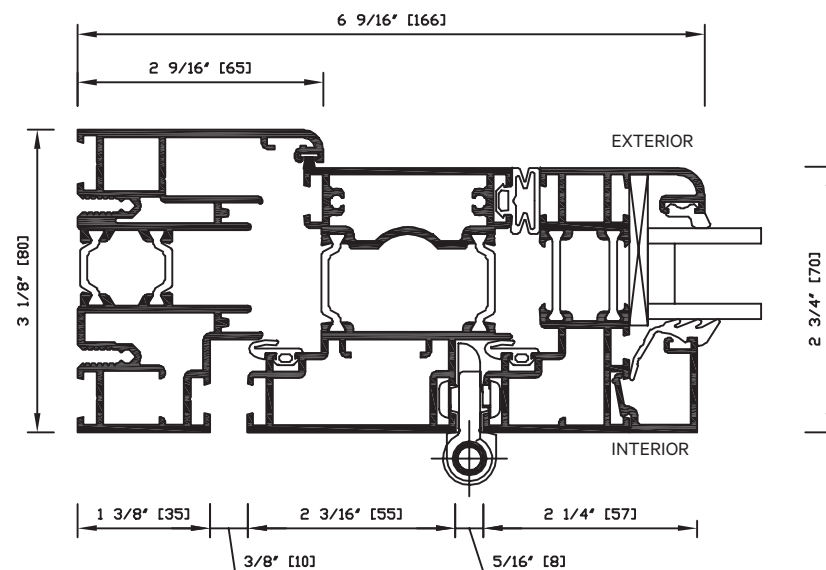
Meeting of swing panel with locking on left and folding panel with running carriage set on right

**Detail 10R.0**

Meeting of swing panel with locking on right and folding panel with running carriage set on left

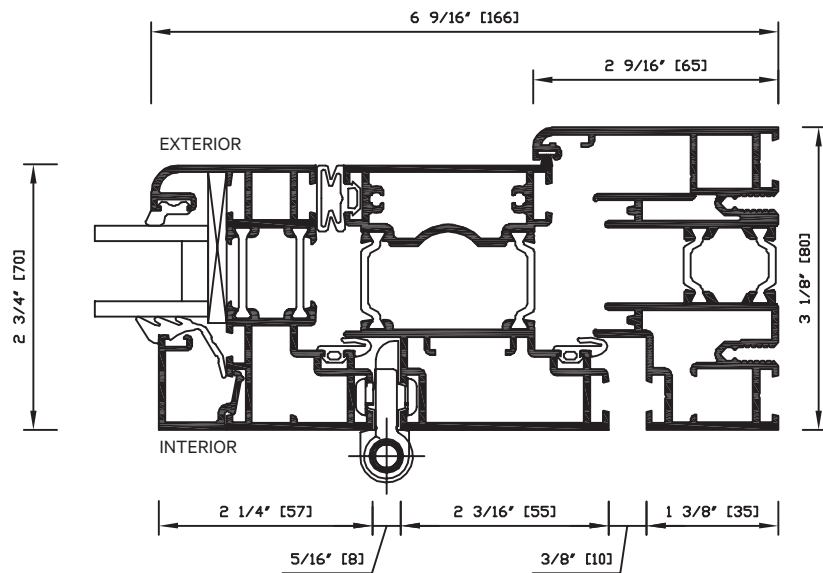
**Detail 5.0**

Panel with running carriage set meeting left side jamb



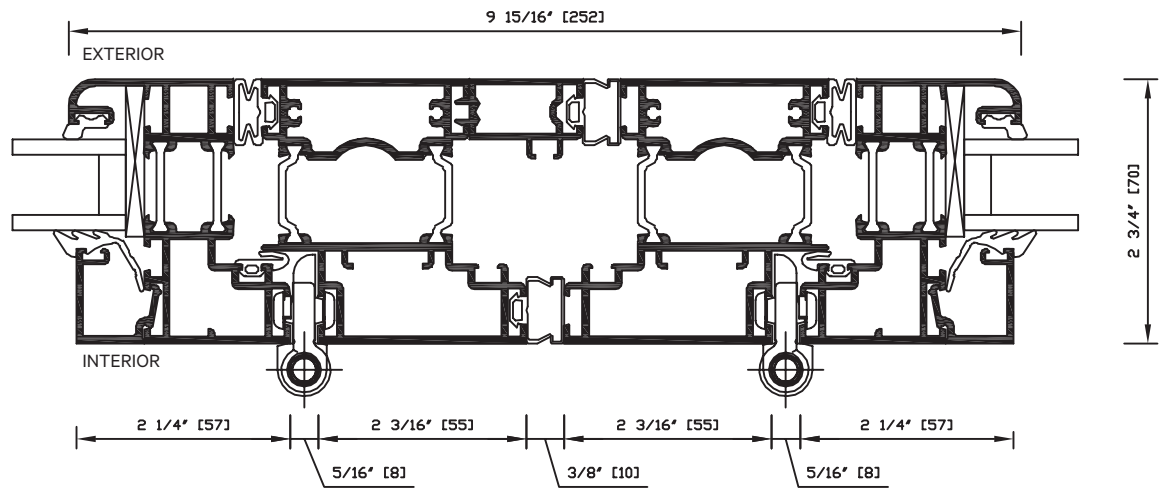
### Detail 5R.0

Panel with running carriage set meeting right side jamb



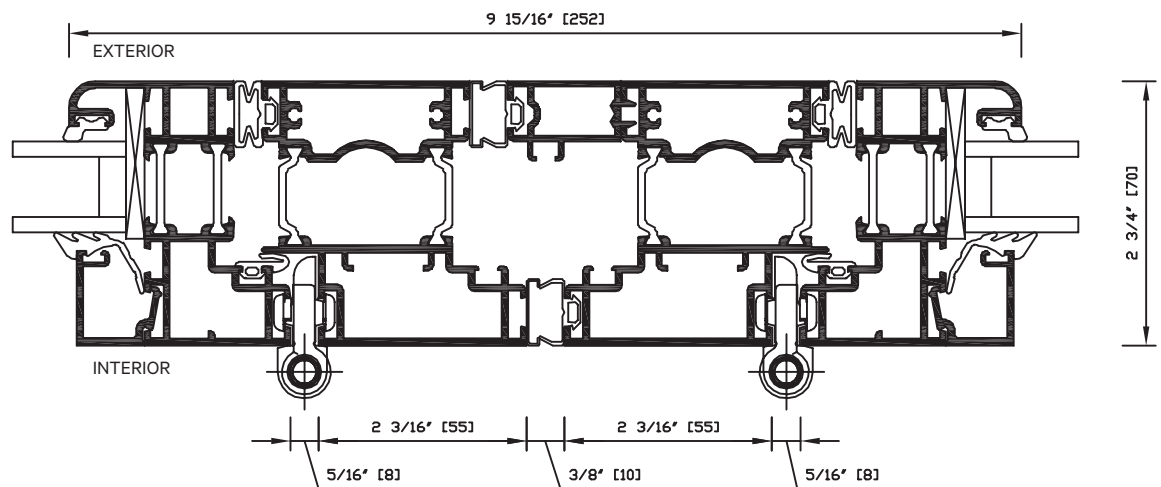
### Detail 9R.0

Meeting of panels folding to opposite sides (no swing panel). Running carriage sets on both panels



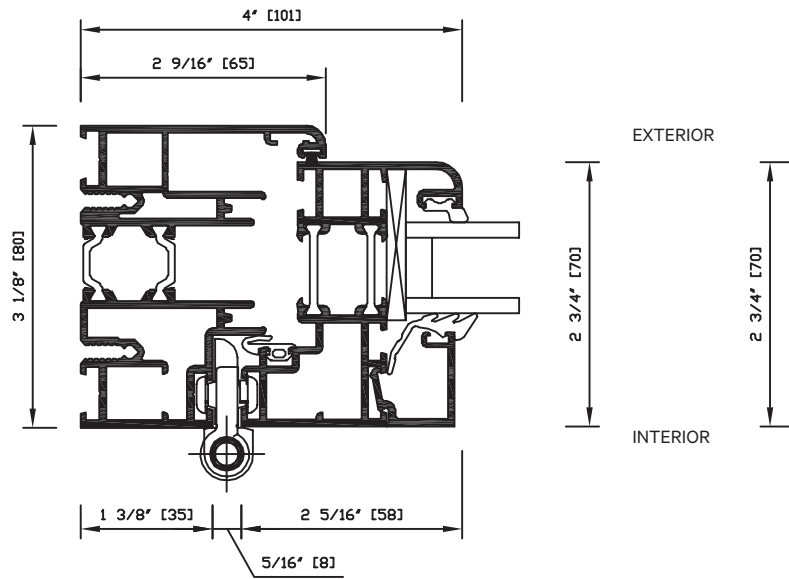
### Detail 9.0

Meeting of panels folding to opposite sides (no swing panel). Running carriage sets on both panels

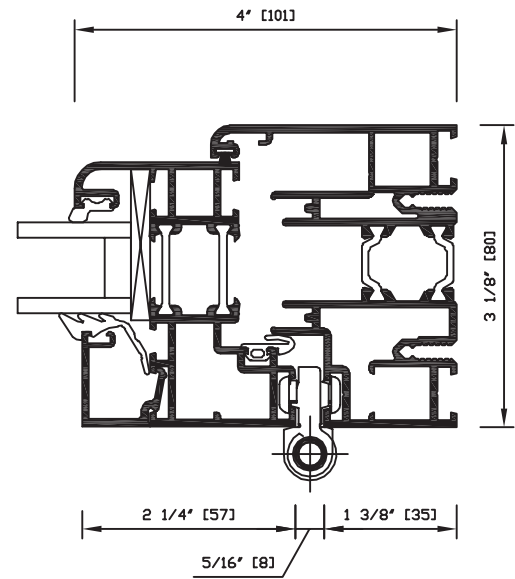




**Detail 3R.0** Panel hinged at left side jamb

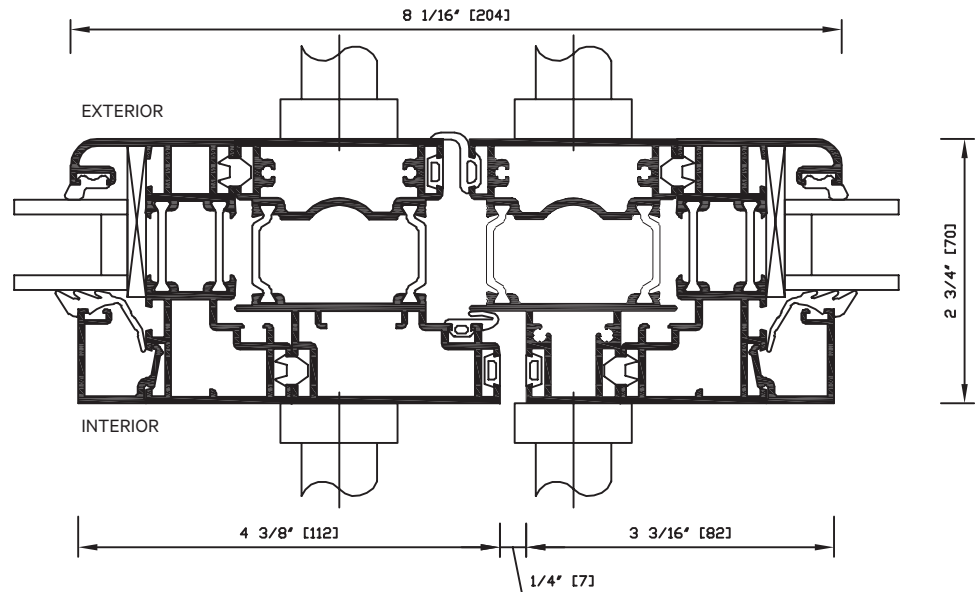


**Detail 3.0** Panel hinged at right side jamb



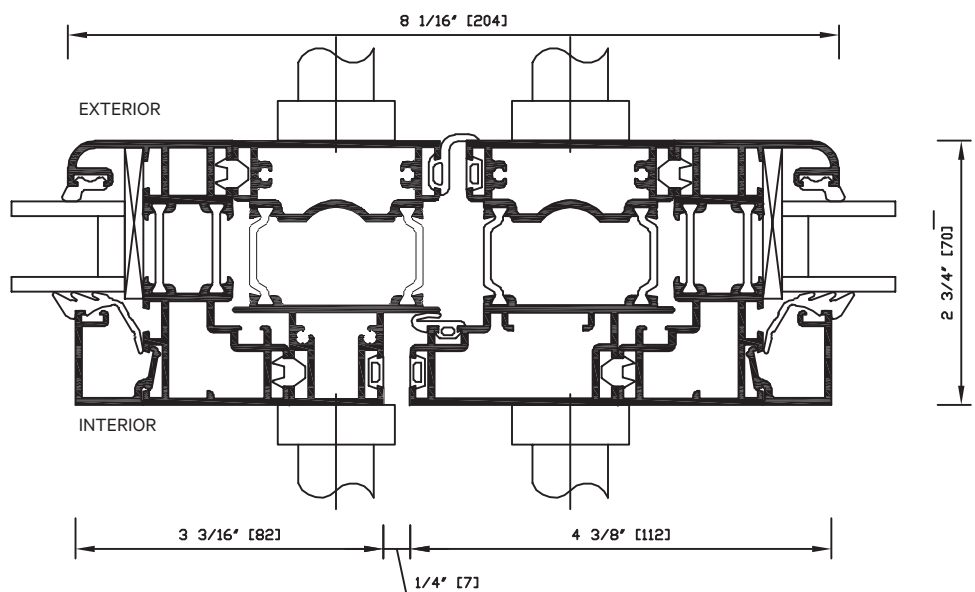
**Detail 8.0**

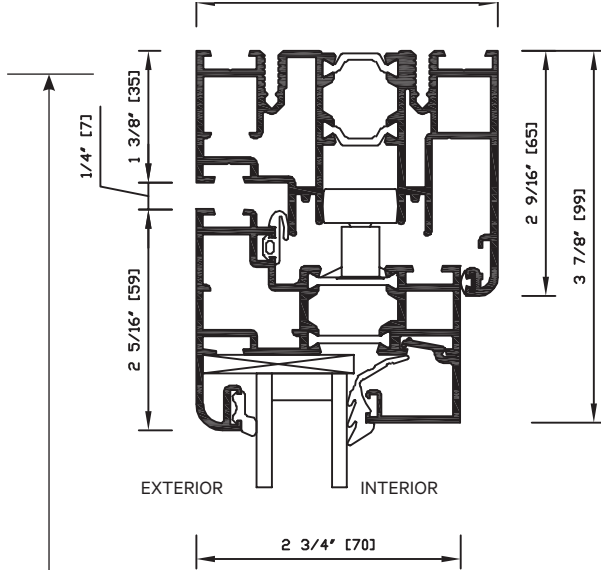
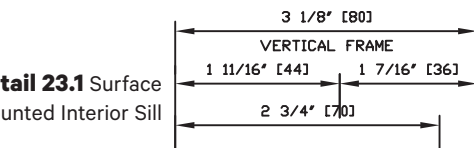
Two swing panels with locking: left panel opening first



**Detail 8R.0**

Two swing panels with locking: right panel opening first

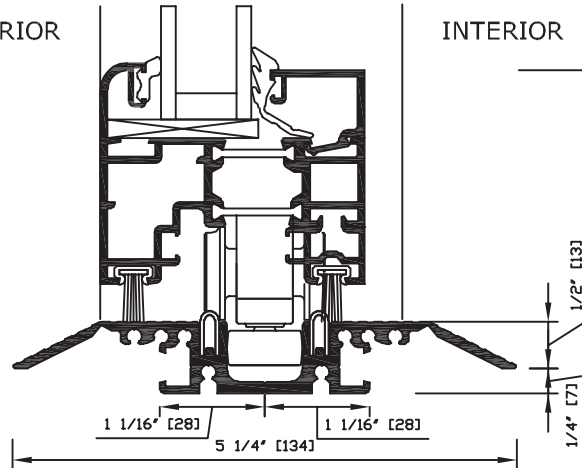
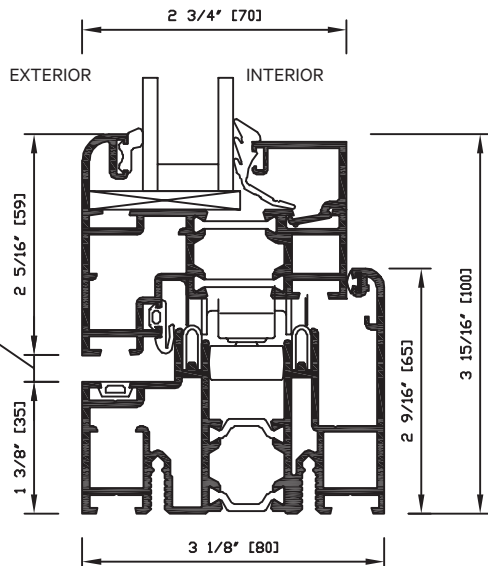


**Detail 1.1** Head Jamb

**Detail 23.1** Surface Mounted Interior Sill


EXTERIOR

INTERIOR

Frame Height

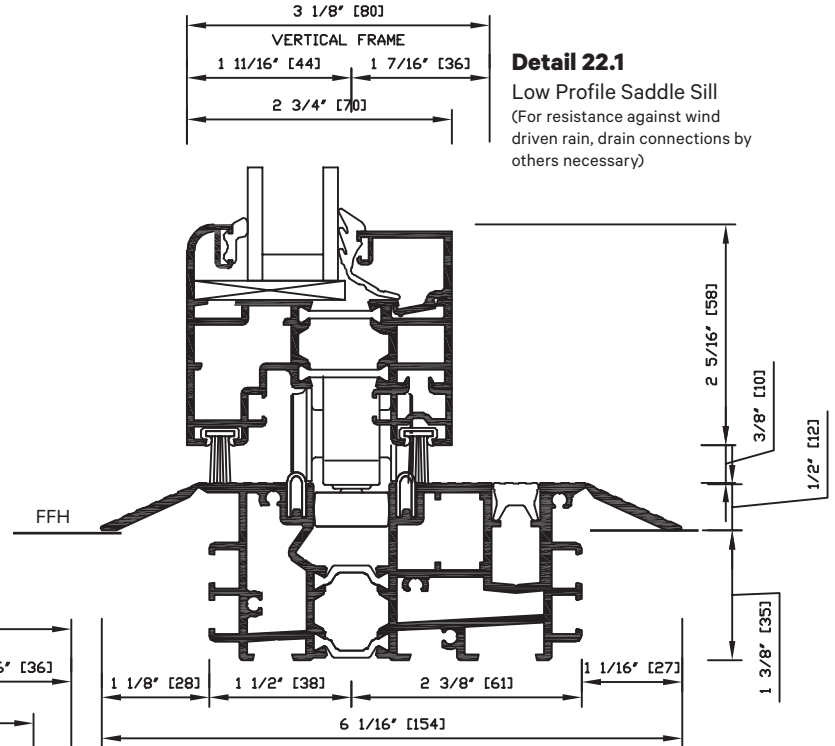

**Detail 2.1** Raised Sill (higher weather performance sill)


**Notes:** For ADA compliance in commercial projects, a gasket to cover the channel in the sill at swing panels is provided

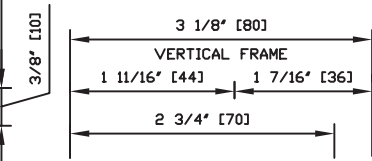
None of the sills, except for the higher weather performance sill, are centered to the rest of the frame members.

**Detail 22.1**

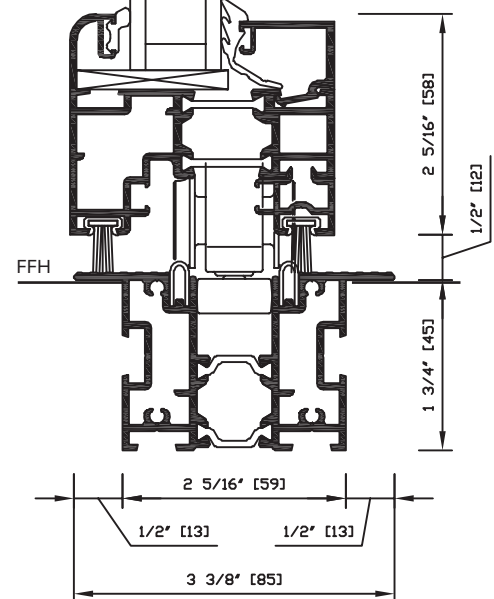
Low Profile Saddle Sill  
(For resistance against wind driven rain, drain connections by others necessary)


**Detail 26.1** Flush sill.

(No rating against wind driven rain.)



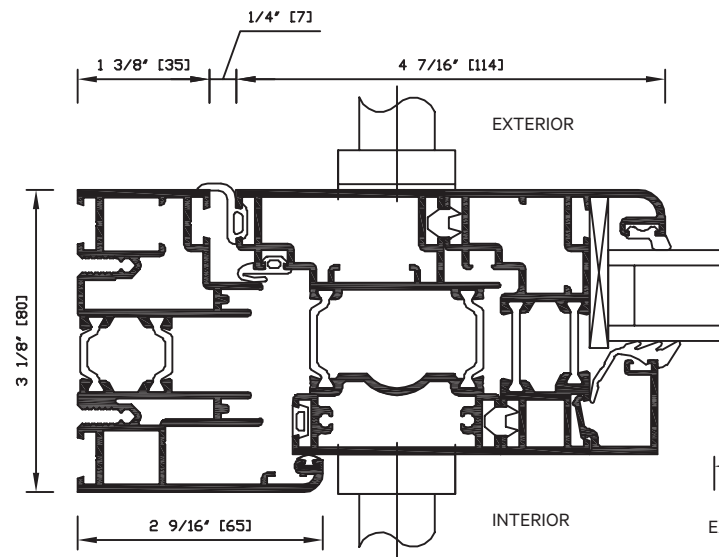
EXTERIOR INTERIOR





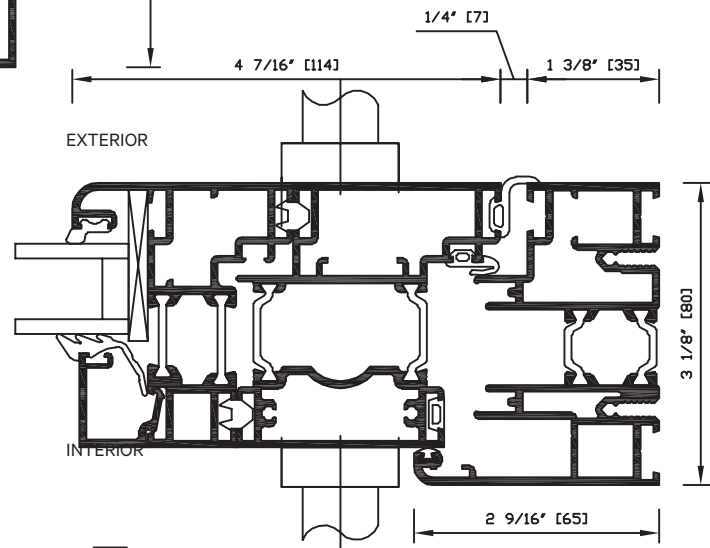
#### Detail 4.1

Swing panel with locking at left side jamb



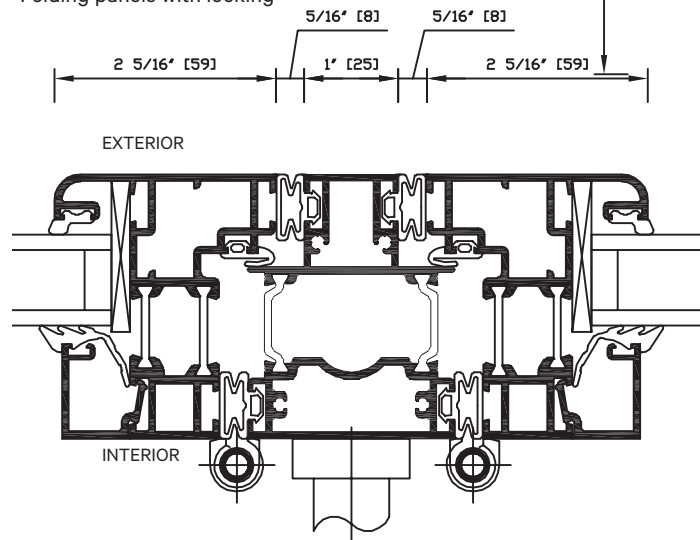
#### Detail 4R.1

Swing panel with locking at right side jamb



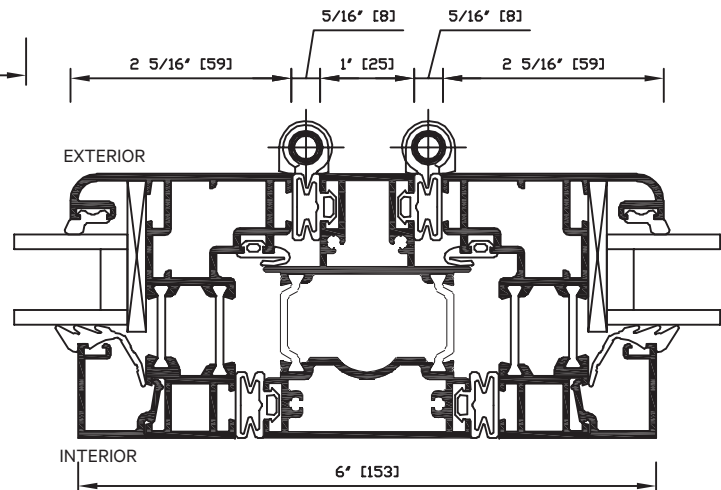
#### Detail 7.1 & 7R.1

Folding panels with locking



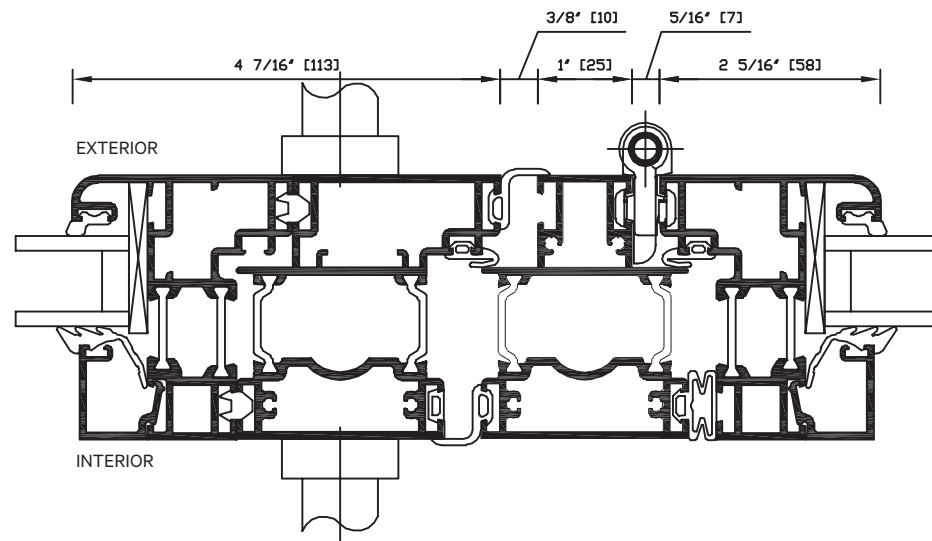
#### Detail 7C.1 and 7RC.1

Folding panels with running carriage set



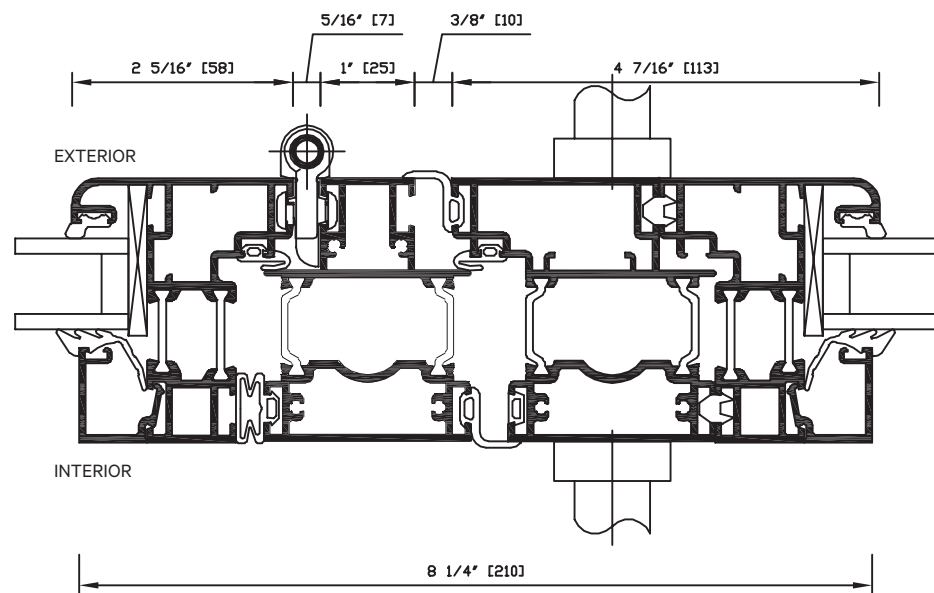
### Detail 10.1

Meeting of swing panel with inside locking on left and folding panel with running carriage set on right.



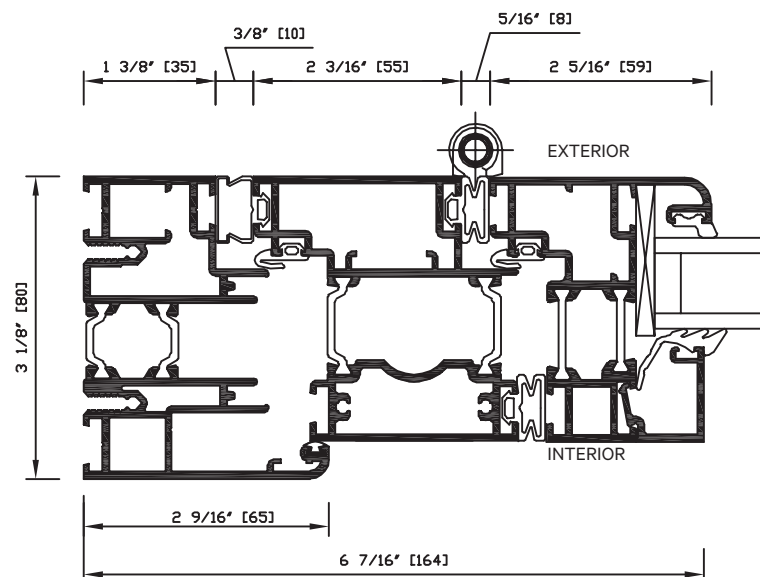
### Detail 10R.1

Meeting of swing panel with inside locking on right and folding panel with running carriage set on left.



### Detail 5.1

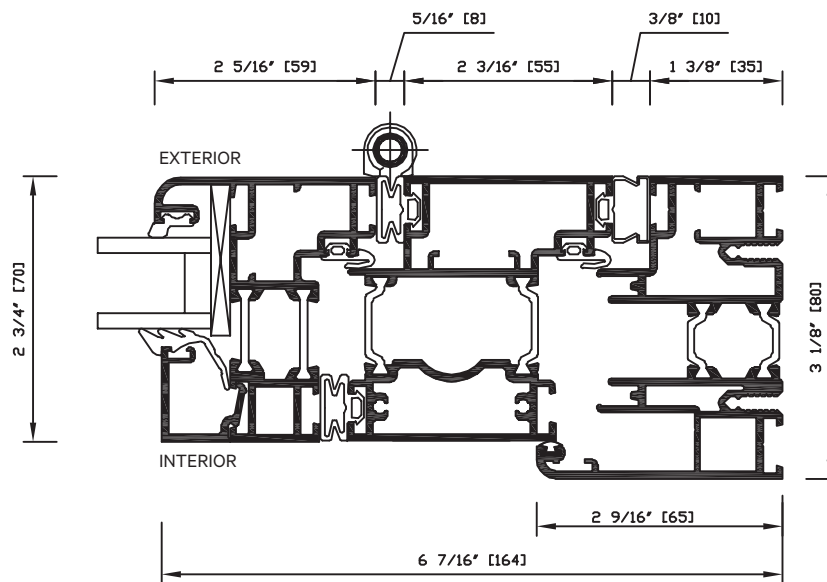
Panel with running carriage set meeting left side jamb



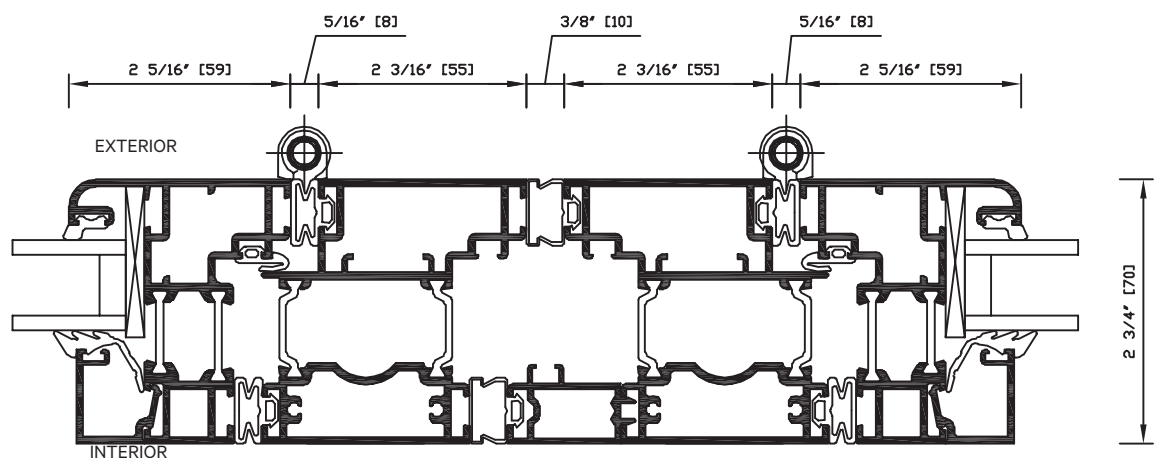


**Detail 5R.1**

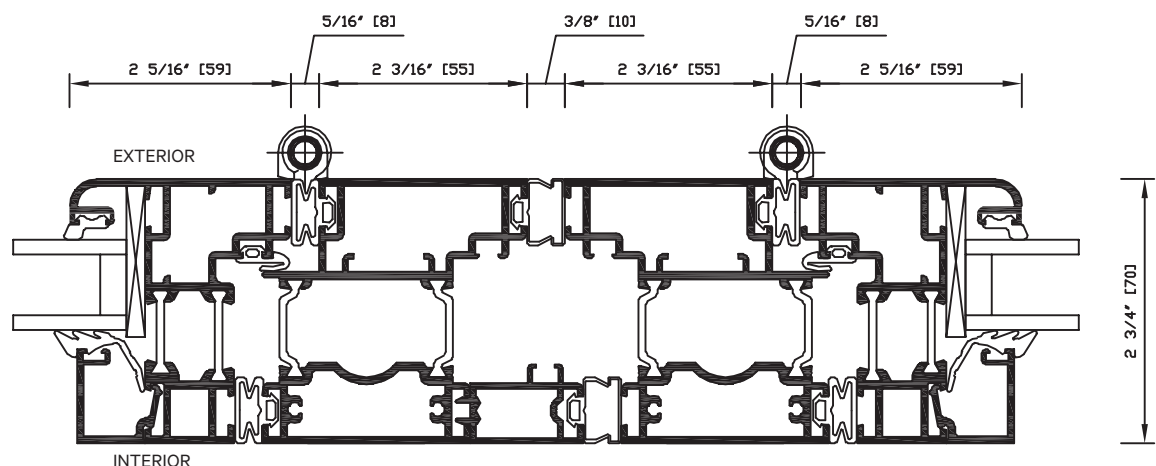
Panel with running carriage set meeting right side jamb

**Detail 9R.1**

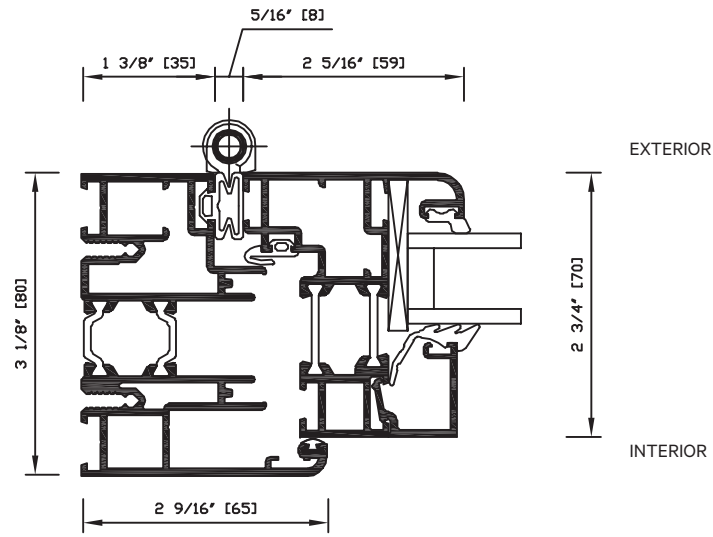
Meeting of panels folding to opposite sides (no swing panel). Running carriage sets on both panels

**Detail 9.1**

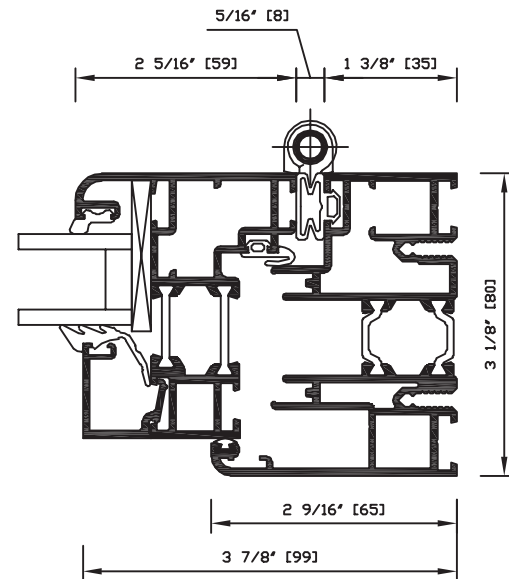
Meeting of panels folding to opposite sides (no swing panel). Running carriage sets on both panels



**Detail 3R.1** Panel hinged at left side jamb

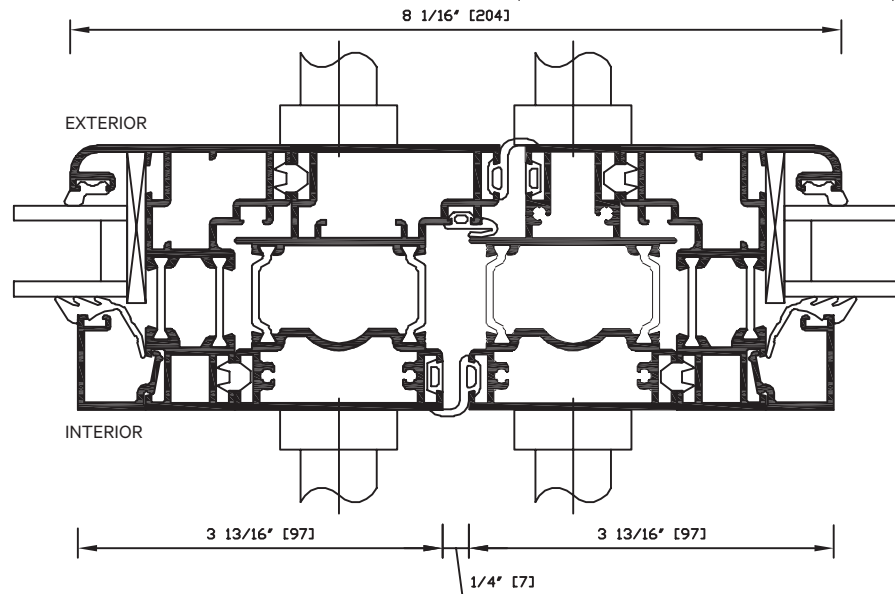


**Detail 3.1** Panel hinged at right side jamb



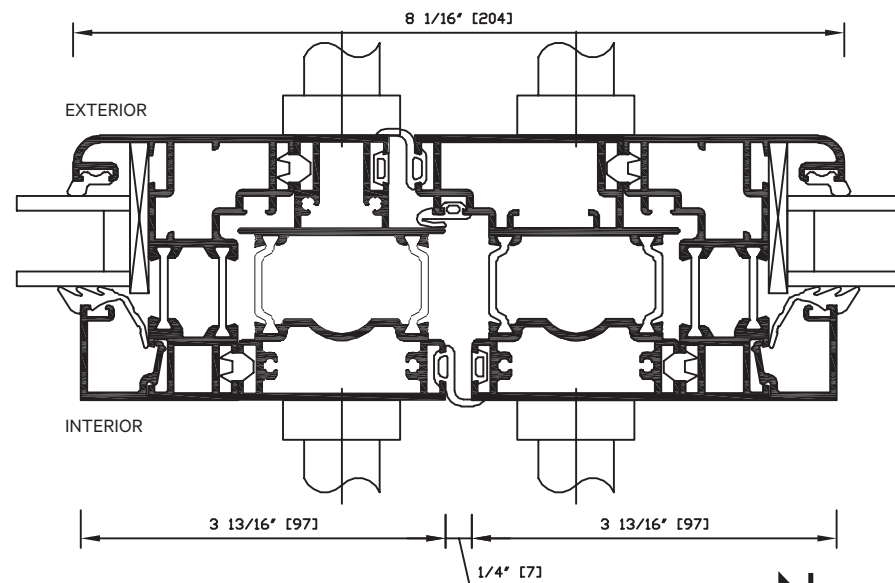
**Detail 8.1**

Two swing panels with  
locking: left panel  
opening first

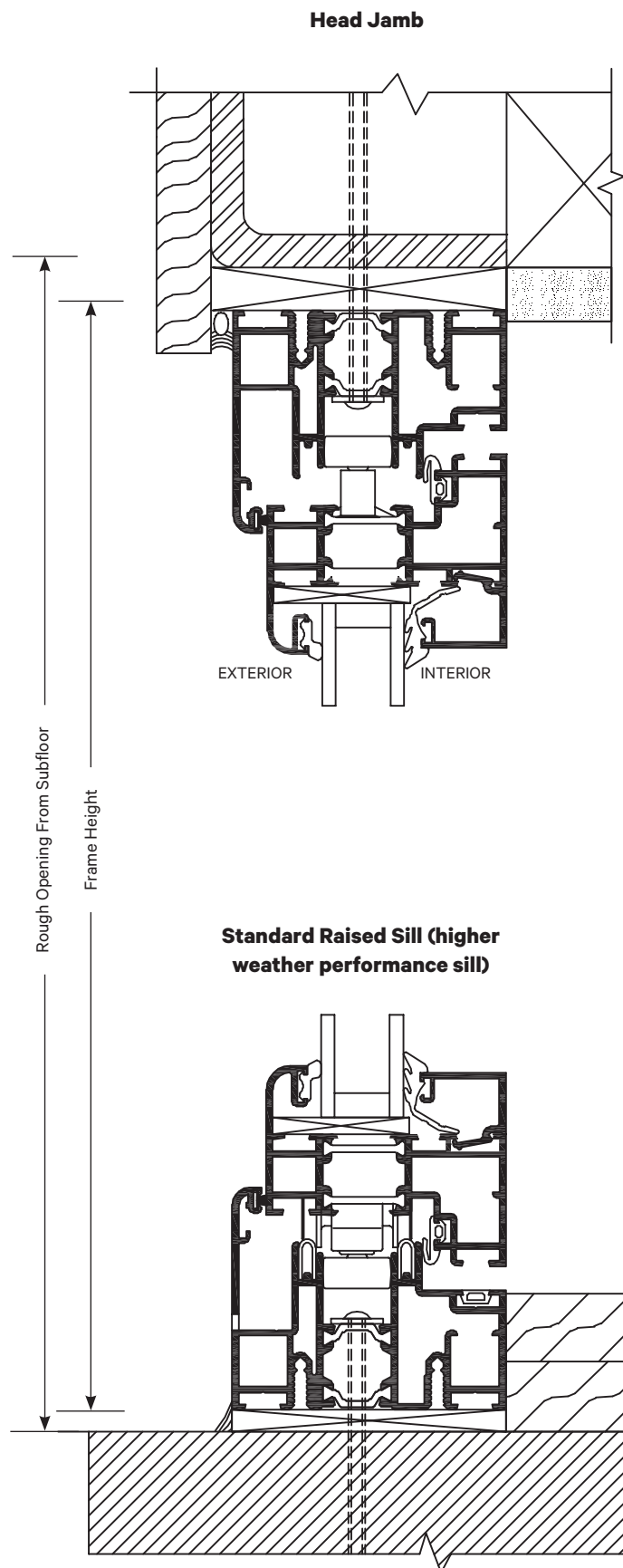


**Detail 8R.1**

Two swing panels with  
locking: right panel opening  
first





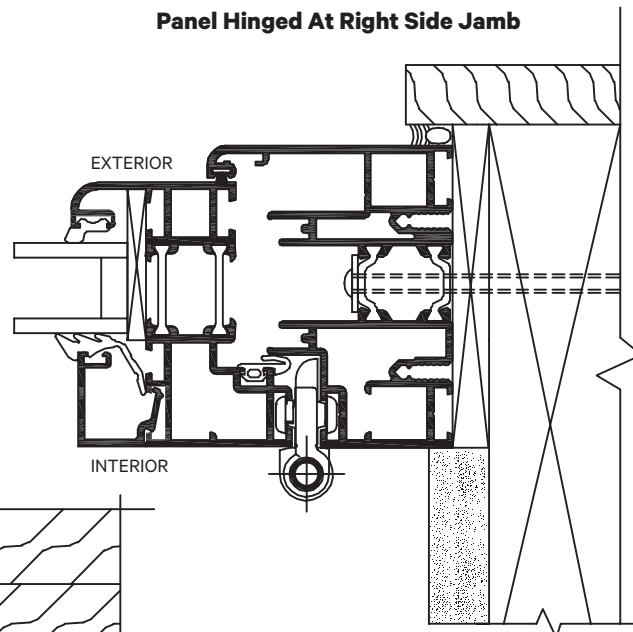
**INSTALLATION NOTES**

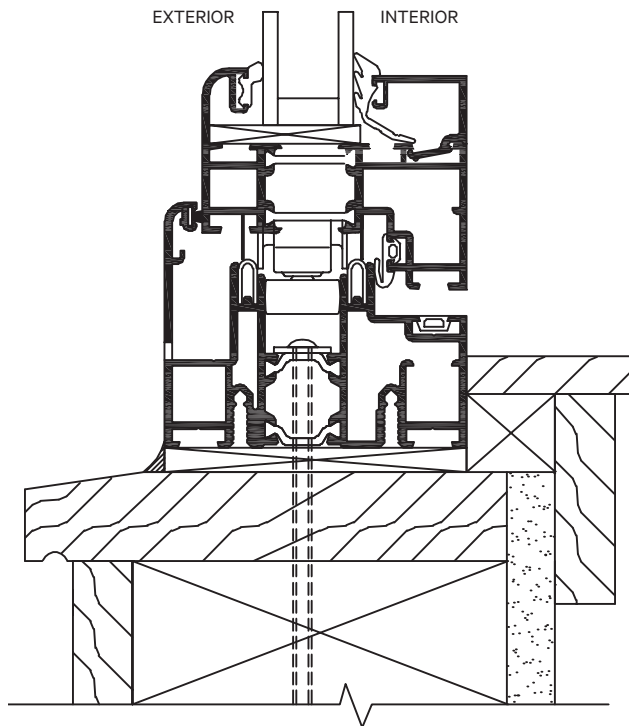
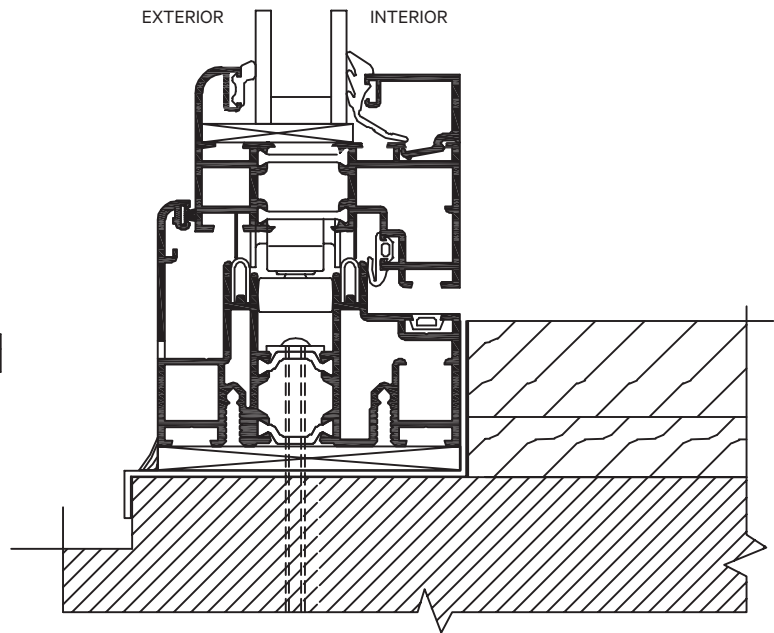
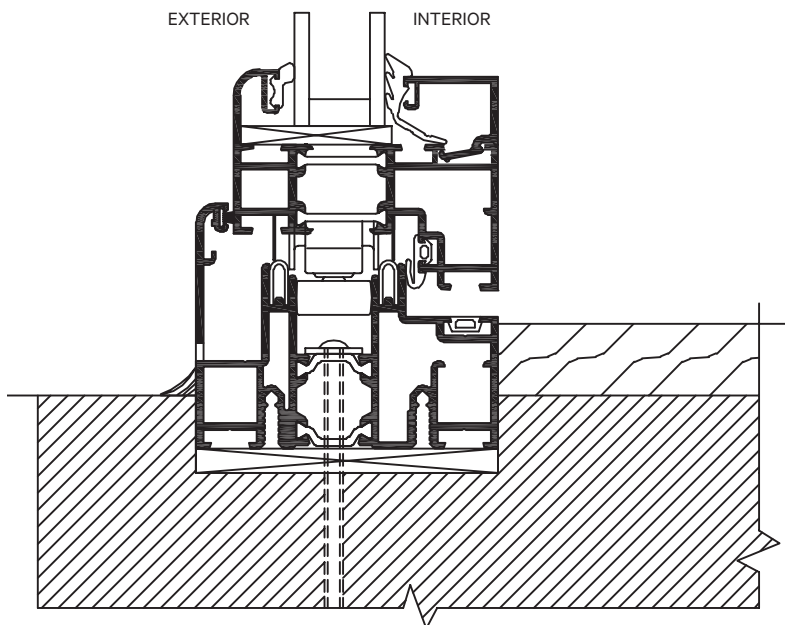
Suggested Typical Installation drawings shown are very general and may not be suitable for any particular installation. Product placement, fasteners, flashing, waterproofing, sealant, trim and other details for specific surrounding conditions must be properly designed and provided by others.

**Installation Considerations**

The approximate weight of a panel with double-glazing is 5.5-6.5 lbs/ft<sup>2</sup> (27-32 kg/m<sup>2</sup>), and with triple glazing is 7-8 lbs/ft<sup>2</sup> (34-39 kg/m<sup>2</sup>). The vertical structural deflection of the header should be the lesser of L/720 of the span and ¼" (6 mm) under full loads. Although for floor mounted systems, there is no vertical load on the header from the panels, structural support for lateral loads (both windload and when the panels are stacked open) must be provided. See "Pre-Installation Preparation and Installation Guidelines" in the General Introduction. An owner's manual with installation instructions is available upon request.

It is recommended that all building dead loads be applied to the header prior to installing the NanaWall. If so and if a reasonable amount of time has been allowed for the effect of this dead load on the header, then only the building's live load can be used to meet the above requirements of L/720 or ¼" (6mm). If not, both the dead and live loads need to be considered. For the floor mounted SL70, please note that there is no vertical load on the header.

**Panel Hinged At Right Side Jamb**

**Standard Window Sill****Raised Sill (higher weather performance sill) with Sub-Sill Installation****Recessed Raised Sill (higher weather performance sill) Installation**

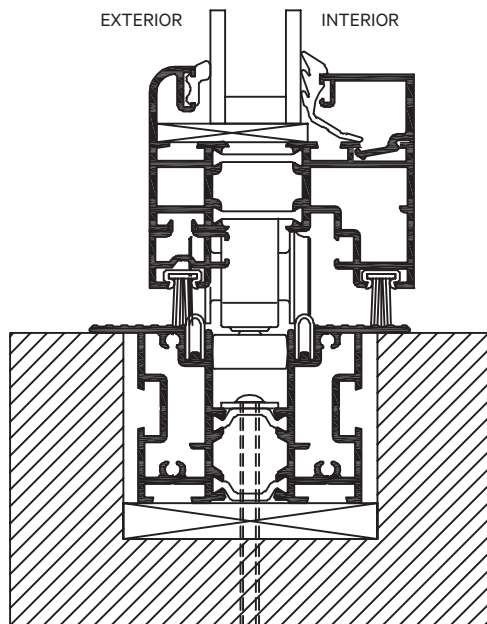
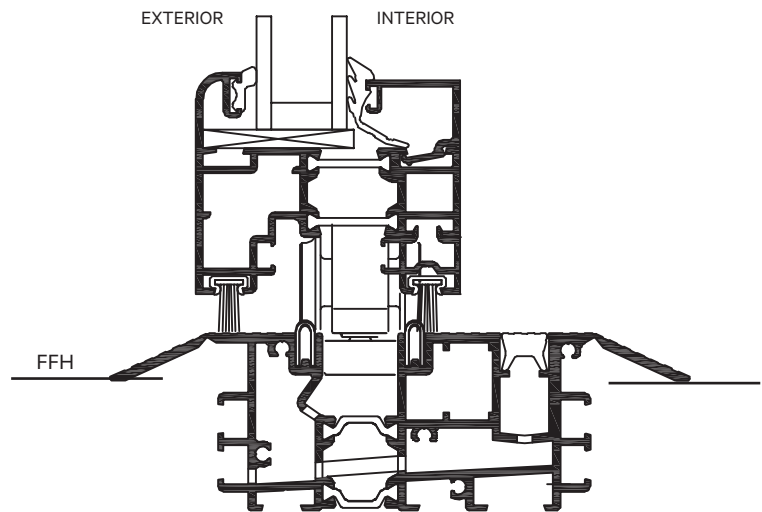
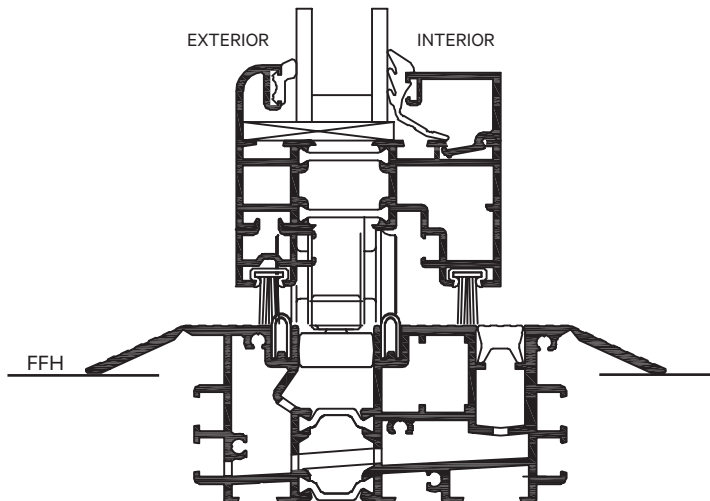
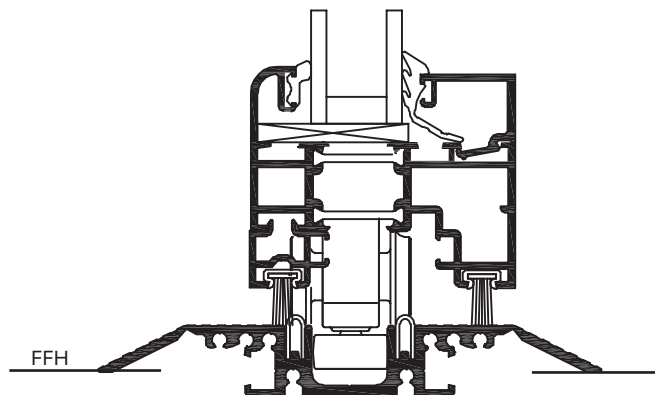
Suggested Typical Installation drawings shown are very general and may not be suitable for any particular installation. Product placement, fasteners, flashing, waterproofing, sealant, trim and other details for specific surrounding conditions must be properly designed and provided by others.

**For Installation Considerations, please see notes on page 17**



**Flush Sill (Inward Opening)**

(No rating against wind driven rain)

**Low Profile Saddle Sill\* (Outward Opening)****Low Profile Saddle Sill\* (Inward Opening)****Surface Mounted Interior Sill (Inward Opening)****NOTES**

Suggested Typical Installation drawings shown are very general and may not be suitable for any particular installation. Product placement, fasteners, flashing, waterproofing, sealant, trim and other details for specific surrounding conditions must be properly designed and provided by others.

**Installation Considerations, please see notes on page 17.**

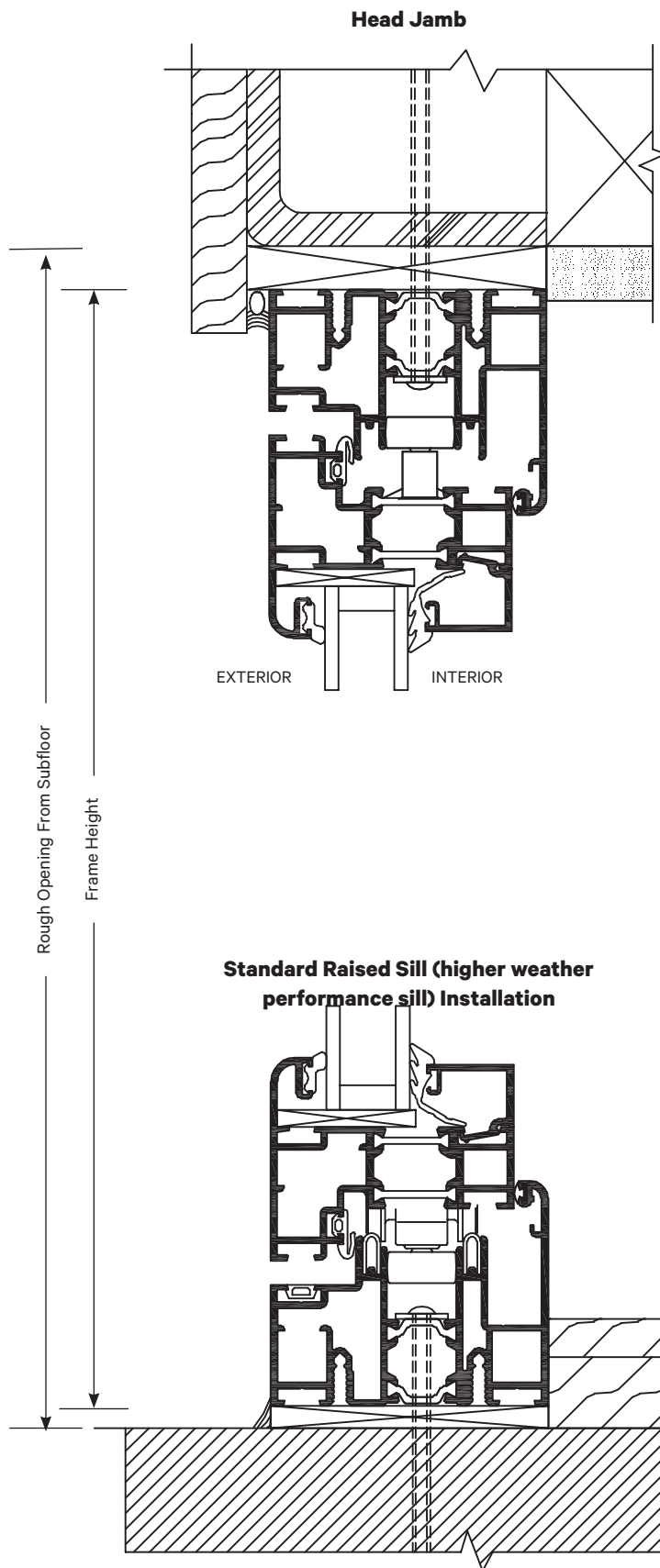
**\*FOR LOW PROFILE SADDLE SILL:**

For resistance against wind driven rain, the following is recommended by others

1. Remove the gasket covering the inner channel.
  2. Provide necessary weepholes at the bottom of the channels and on the outside face of the sill.
  3. Make necessary drain connections.
- Ask NanaWall for a detailed drawing.

Note: None of the sills, except for the higher weather performance sill, are centered to the rest of the frame members.

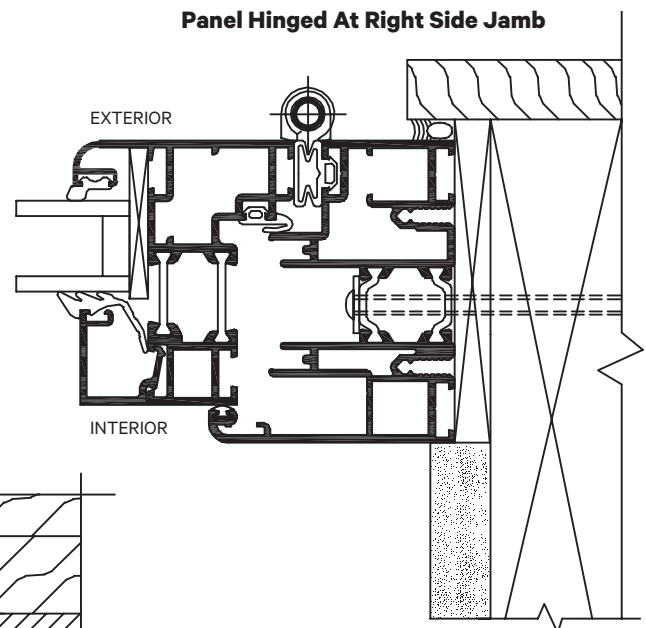
**Note:** For ADA compliance in commercial projects, a gasket to cover the channel in the sill at swing panels is provided



**INSTALLATION NOTES**

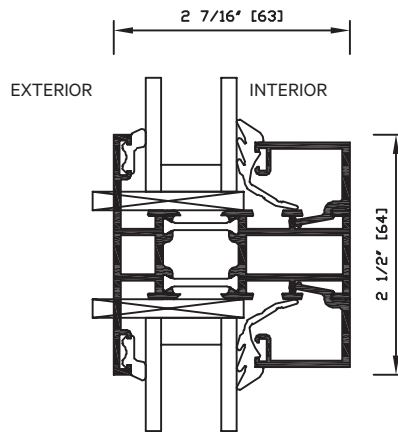
Suggested Typical Installation drawings shown are very general and may not be suitable for any particular installation. Product placement, fasteners, flashing, waterproofing, sealant, trim and other details for specific surrounding conditions must be properly designed and provided by others.

**For Installation Considerations, please see notes on Page 17.**

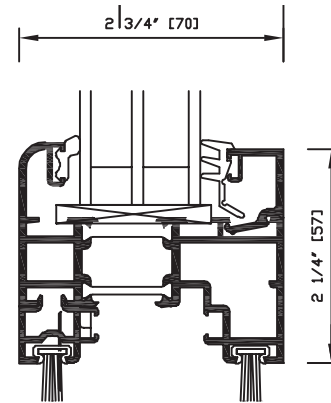




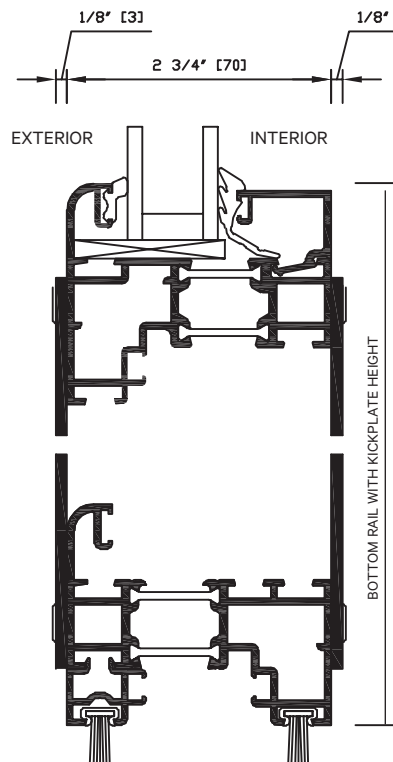
**Typical Mullion Profile**



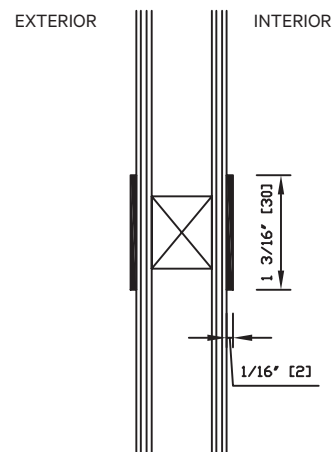
**Typical Glass Stop Profile with Triple Glazing**



**Typical Kickplate**



**Typical Simulated Divided Lites Muntin with Spacer between insulated glass (SDL)**



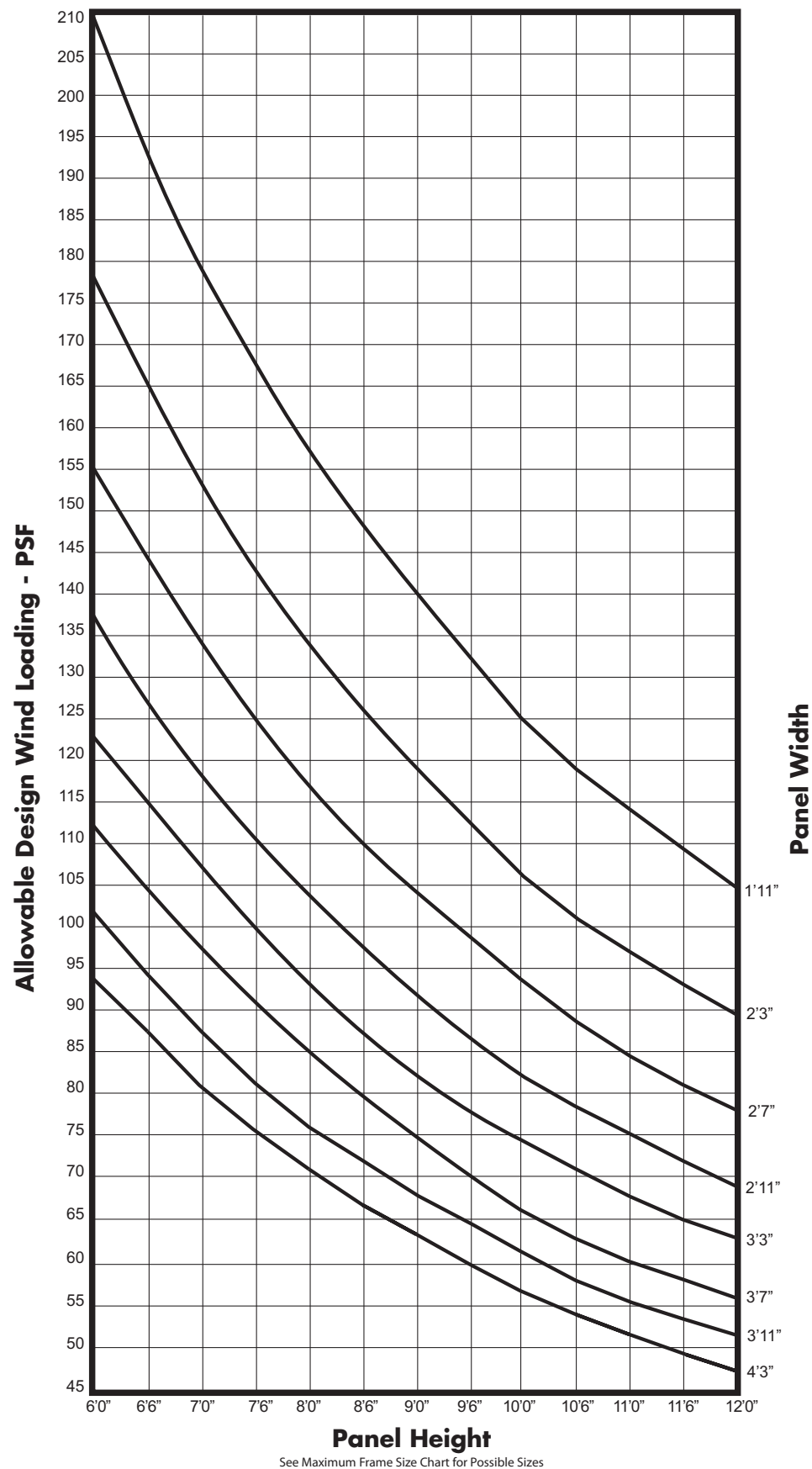
**For Reinforced Unit** (Derived From Comparative Analysis)

Test Panel Size: 3' 0" W x 8' 0" H

**Applies to Inswing Unit with Raised Sill (higher weather performance sill): Negative Pressure**

Please note that some jurisdictions may limit the use of these charts or may not accept them at all. Design pressures and/or sizes may be restricted to what was tested. For Florida approved products, please see detailed FL Evaluation Report for restrictions.

Please also note that chart is only applicable for units with referenced NanaWall supplied locking.





**For Reinforced Unit** (Derived From Comparative Analysis)

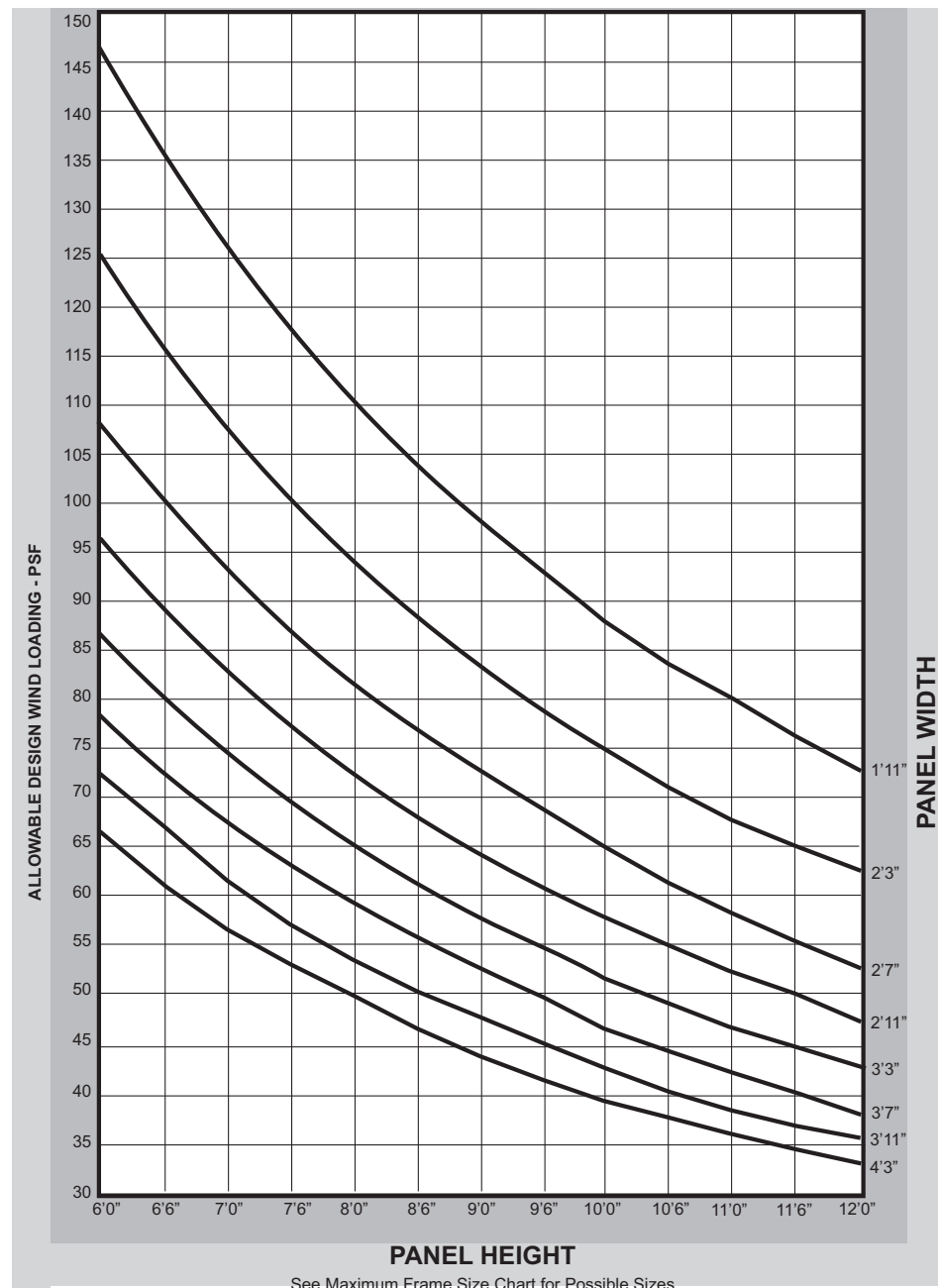
Test Panel Size: 3' 0" W x 8' 0" H

**Applies to Inswing Unit with Raised Sill (higher weather performance sill): Positive Pressure**

**Both Negative and Positive Pressures for the following:**  
**Outswing with Raised Sill (higher weather performance sill)**  
**Inswing and Outswing for Saddle Sill**  
**Inswing and Outswing for Flush Sill**

Please note that some jurisdictions may limit the use of these charts or may not accept them at all. Design pressures and/or sizes may be restricted to what was tested. For Florida approved products, please see detailed FL Evaluation Report for restrictions.

Please also note that chart is only applicable for units with referenced NanaWall supplied locking.



**For Standard Unit** (Derived From Comparative Analysis)

**Applicable for units with Raised Sill (higher weather performance sill) only.**

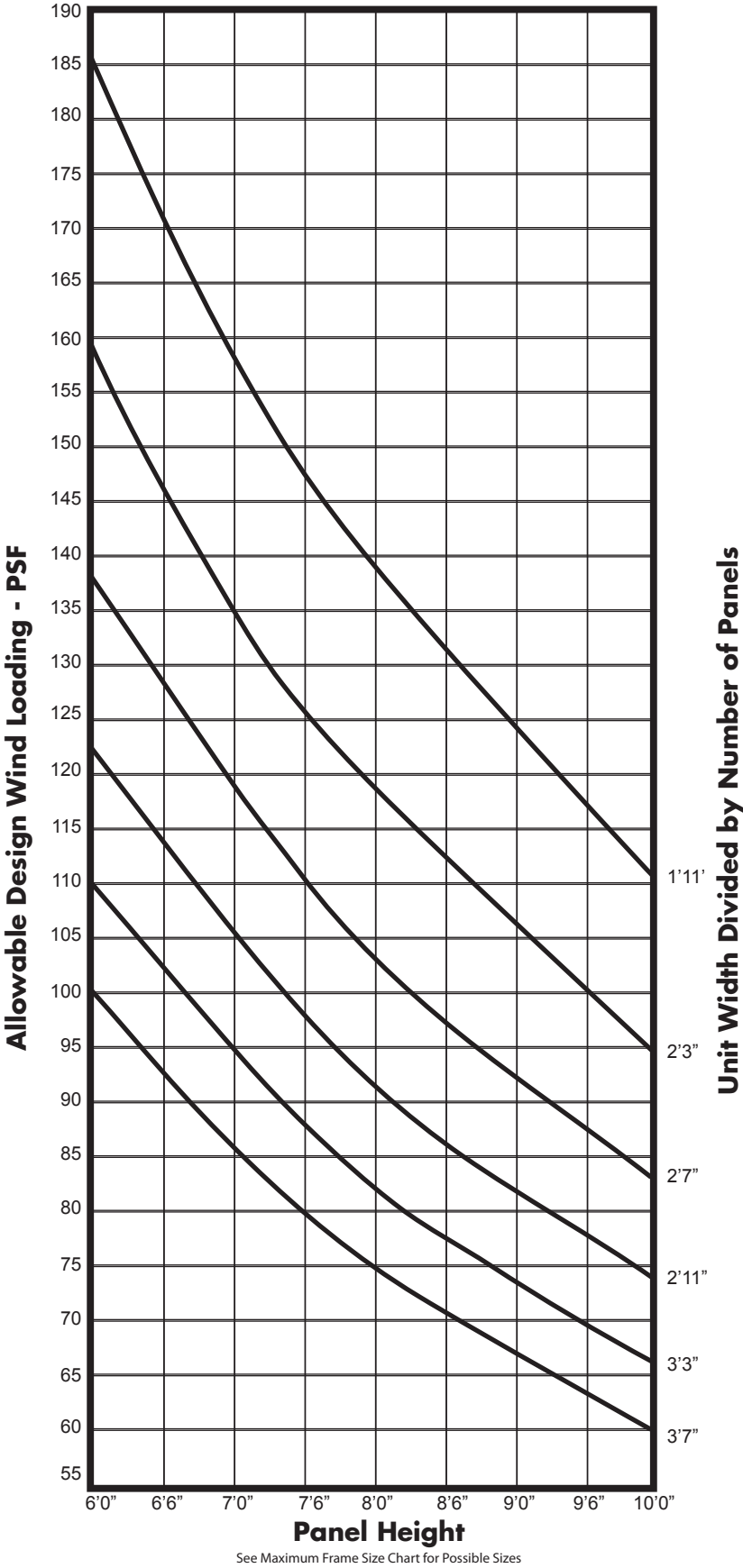
**Inswing Unit:  
Negative Pressure**

**Outswing Unit:  
Positive Pressure**

Test Unit Size: 9'7" W x 8'4" H  
(3 panels)

Please note that some jurisdictions may limit the use of these charts or may not accept them at all. Design pressures and/or sizes may be restricted to what was tested. For Florida approved products, please see detailed FL Evaluation Report for restrictions.

Please also note that chart is only applicable for units with referenced NanaWall supplied locking.





**For Standard Unit** (Derived From Comparative Analysis)

Test Unit Size: 9'7" W x 8'4" H  
(3 panels)

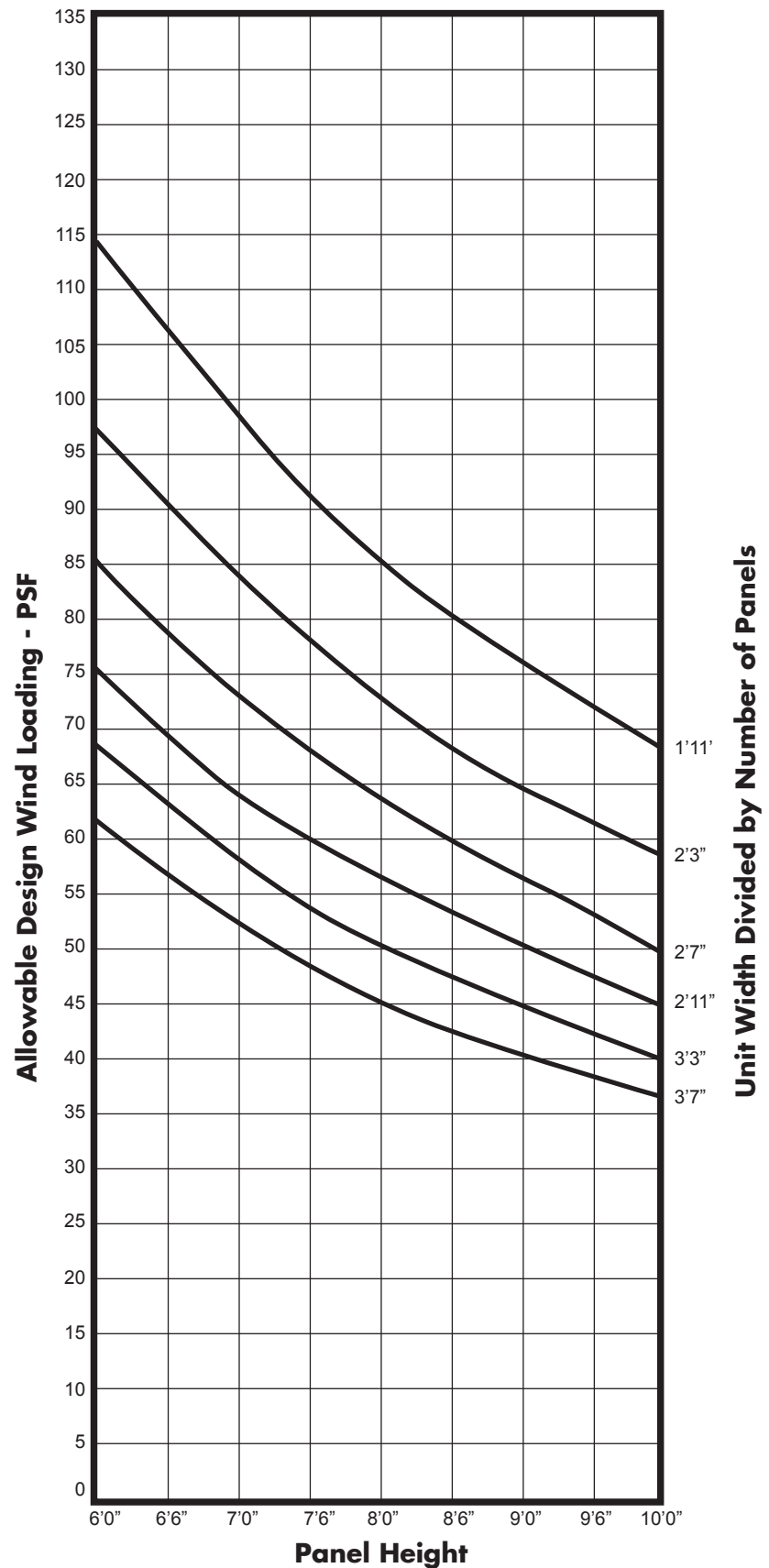
Please note that some jurisdictions may limit the use of these charts or may not accept them at all. Design pressures and/or sizes may be restricted to what was tested. For Florida approved products, please see detailed FL Evaluation Report for restrictions.

Please also note that chart is only applicable for units with referenced NanaWall supplied locking

**Applies to Inswing Unit with Raised Sill (higher weather performance sill): Positive Pressure**

**Both Negative and Positive Pressures for the following:**

**Outswing with Raised Sill (higher weather performance sill)**  
**Inswing and Outswing for Saddle Sill**  
**Inswing and Outswing for Flush Sill**



See Maximum Frame Size Chart for Possible Sizes

**NanaWall® SL70 - Monumental, Thermally Broken Aluminum Framed Folding Panel System****PART 1 - GENERAL****1.01 SUMMARY**

A. Section Includes: Sliding/folding aluminum and glass door system, including aluminum frame, threshold, panels, sliding/folding and locking hardware, weather stripping, glass and glazing; designed to provide an opening glass wall, with sizes and configurations as shown on drawings and specified herein, NanaWall® SL70, Monumental Thermally Broken Aluminum Framed Folding Panel System as supplied by NANA WALL SYSTEMS, INC.

**1.02 REFERENCES**

- A. American Architectural Manufacturers Association (AAMA):
  - 1. AAMA 520, Voluntary Specification for Rating the Severe Wind-Driven Rain Resistance of Windows, Doors and Unit Skylights
  - 2. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.
  - 3. AAMA 1304, Voluntary Specifications for Forced Entry Resistance of Side-Hinged Door Systems.
  - 4. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
  - 5. AAMA 2605, Voluntary Specifications, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM E 283, Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  - 2. ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  - 3. ASTM E 331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
  - 4. ASTM E 547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
  - 5. ASTM E 2268, Standard Test Method for Water Penetration of Exterior Windows, Skylights, and Doors by Rapid Pulsed Air Pressure Difference
  - 6. ASTM F 842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies.
- C. American National Standards Institute (ANSI):
  - 1. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used In Buildings.
- D. Consumer Product Safety Commission (CPSC):
  - 1. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.
- E. National Fenestration Rating Council (NFRC):
  - 1. NFRC 100, Procedure for Determining Fenestration Product Thermal Materials.
  - 2. NFRC 200, Procedure for Determining Solar Heat Gain Coefficient.
  - 3. NFRC 400, Procedure for Determining Fenestration Product Air Leakage.
- F. AAMA/WDMA/CSA 101/I.S.2/A440 Fenestration Standards



**1.03 SUBMITTALS**

- A. Detail Drawings: Indicate dimensioning, direction of swing, configuration, swing panels, typical head jamb, side jambs and sill details, type of glazing material and handle height.
- B. Product Data: Manufacturer's literature including independently tested data listing performance criteria and Owner's Manual with installation instructions.
- C. Contract Closeout Submittal: Submit Owner's Manual from manufacturer. Identify with project name, location and completion date, type and size of unit installed.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer: Provide complete, precision built, engineered, pre-fitted unit by a single source manufacturer with at least 25 years experience in providing folding/sliding door systems for large openings in the North American market.
  - 1. The manufacturer must have a quality management system registration to the ISO 9001: 2008 standard.
- B. Performance Criteria: : Provide from manufacturer that has independently tested typical units per AAMA/WDMA/CSA 101/I.S.2/A440 Fenestration Standard . Testing results to include air infiltration in accordance with ASTM E 283 and NFRC 400, water penetration in accordance with ASTM E 547 and E 331, structural loading in accordance with ASTM E 330, and forced entry in accordance with AAMA 1304. Also provide from manufacturer that has independently tested typical units for water penetration under dynamic pressure in accordance with AAMA 520 and ASTM E 2268 and operation/cycling performance on a swing panel as per AAMA 920.

SPECIFIER NOTE: Air infiltration and water penetration testing results can only be applicable if the unit matches the test unit in the direction of opening and the type of sill. Structural load testing results are only applicable for the test unit size and locking used. (Comparative analysis charts for units published by manufacturer show which panel sizes (if any) would meet the structural loading design pressures specifically required for the project. Check for limitations on the use of these charts in the jurisdiction of the project). See manufacturer's latest published data.]

- C. Thermal Performance U-factor: Unit to be rated, certified and labeled in accordance with NFRC 100, shown in manufacturer's latest published data for the glazing, sill, and direction of opening specified.
- D. Solar Heat Gain Coefficient: Unit to be rated, certified and labeled in accordance with NFRC 200, shown in manufacturer's latest published data for the glazing, sill, and direction of opening specified.

SPECIFIER NOTE: If desired, Energy Star ratings can be achieved by the use of proper glass with the unit. See NanaWall's Performance data for details.

- E. Installer Qualifications: Installer experienced in the installation of manufacturer's product or other similar products for large openings. Installer to provide reference list of at least 3 projects of similar scale and complexity successfully completed in the last 3 years.

**1.05 WARRANTY**

- A. Provide manufacturer's standard warranty against defects in materials and workmanship. Warranty to be issued by the original manufacturer. No third party or other sub-supplier warranties will be accepted.
- B. Warranty Period: Ten years for rollers. For all other components, one year (two years if unit is installed by manufacturer's certified trained installer) from date of delivery by manufacturer.

**PART 2 – PRODUCTS****2.01 SUPPLIER**

- A. NANA WALL SYSTEMS, INC. - SL70 The Monumental Thermally Broken Aluminum Framed Folding System  
 100 Meadow Creek Drive, Corte Madera, CA 94925  
 Toll Free: (800) 873-5673  
 Telephone: (415) 383-3148  
 Fax: (415) 383-0312  
 Website: [www.nanawall.com](http://www.nanawall.com)  
 Email: [info@nanawall.com](mailto:info@nanawall.com)
- B. Other suppliers equal to the specified product must submit substitution request two weeks before bid for prior approval.

**2.02 MATERIALS**

- A. Frame and Panels: From manufacturer's standard profiles, provide head track, side jambs, and panels with dimensions shown on drawings.
1. Provide panels with:  
 Standard one lite  
 [OR with horizontal mullion(s) at specified height(s) from the bottom of the panel]  
 [OR with simulated divided lites in pattern as shown on drawings]
  2. Provide standard bottom rail [OR manufacturer's standard kickplate with height specified].
  3. Aluminum Extrusion: Extrusions with nominal thickness of .078" (2.0 mm). Alloy specified as AlMgSi0.5 with strength rated as 6063-T5 or F-22 (European standard). Anodized conforming to AAMA 611, powder coated conforming to AAMA 2604 or fluoropolymer kynar painted conforming to AAMA 2605.
  4. Thermally broken with 3/4"-15/16" (20-24 mm) polyamide plastic reinforced with glass fibers. **Polyamide plastic less than 3/4" (20 mm) wide or pour and de-bridge thermal break will not be accepted.**
  5. Aluminum Finish:  
 Select from NanaWall Powder Coating Finish Chart  
 [OR clear anodized]  
 [OR dark bronze anodized]  
 [OR select from range of RAL high gloss powder coated finishes available from manufacturer]  
 [OR select from range of RAL matte powder coated finishes available from manufacturer]  
 [OR Wood Grain powder coated finish]  
 [OR select from range of fluoropolymer kynar painted finish]  
 [OR custom finish].  
 Same [OR different] finishes on inside and outside.
- B. Glass:
1. All glass to comply with safety glazing requirements of ANSI Z97.1 and CPSC 16CFR 1201. Provide manufacturer's standard glass with dry glazing with glass stops on the inside only:  
 15/16" (24 mm) double insulated clear safety  
 [OR 15/16" (24 mm) double insulated argon filled Low-E safety]



[OR 1 ½" (38 mm) double insulating krypton filled two layers Heat Mirror TC88 safety]

[OR 1 ½" (38 mm) triple insulated argon filled Low-E safety]

[OR 1 ¼" (28 mm) Ornilux Bird Safe Glass]

[OR other glass available from manufacturer, including glass with other total thickness].

2. Provide manufacturer's standard silver gray [or dark bronze] glass spacers. Provide without capillary tubes [OR with capillary tubes].

C. Locking Hardware and Handles:

1. Main entry panel:

On the main entry panel for models with a pair of swing panels, provide manufacturer's standard lever handles on the inside and outside, a Schlage compatible lock set with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel. Rods to be concealed and not edge mounted. After turn of key or thumbturn, depression of handles withdraws latch. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock. On the secondary swing panel, provide matching dummy lever handles on both sides and concealed flush bolts that operates the rods at the top and the bottom for the secondary swing panel.

Stainless steel lever handles in a brushed satin finish

[OR stainless steel lever handles in a titanium black finish]

[OR oil rubbed bronze solid brass lever handles]

[OR satin nickel solid brass lever handles]

[OR white solid brass lever handles]

[OR on the main entry panel for models with a swing panel, provide manufacturer's standard lever handles on the inside and outside, a Schlage compatible lock set with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel only. Rods to be concealed and not edge mounted. After turn of key or thumbturn, depression of handles withdraws latch. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock. If there is a secondary swing panel, provide two point locking with U-shaped handles on inside only for the secondary swing panel.]

Stainless steel lever handles in a brushed satin finish

[OR stainless steel lever handles in a titanium black finish]

[OR oil rubbed bronze solid brass lever handles]

[OR satin nickel solid brass lever handles]

[OR white solid brass lever handles]

[OR on the main entry panel for models with a swing panel, provide manufacturer's push/pull handles with separate lock set and dead bolt and one point locking at the top and bottom consisting of locking rods operated by a 180° turn of a flat handles on the inside]

Push-pull handles in a brushed stainless steel finish and stainless steel flat handles in a brushed satin finish

[OR push-pull handles in a brushed stainless steel finish and stainless steel flat handles in a titanium black finish]

**SPECIFIER'S NOTE:** This option is recommended with a door closer, but note that in order to slide the swing panel, the door closer will need to be disengaged if the swing panel is not attached to a side jamb.]

[OR on the main entry panel for models with a swing panel, no hardware or locking to be provided by the manufacturer, but with field installed panic device by others.]

[OR on both entry panels for models with a pair of swing panels, no hardware or locking to

be provided by the manufacturer, but with field installed panic devices on both panels by others.]

SPECIFIER'S NOTE: Structural test load results will not apply for locking devices by others.

[OR on main entry pair of panels on models without a swing panel, provide manufacturer's standard L-shaped handles on the inside and on the outside and lock set with profile cylinder. Operation of lock set is by turn of key from the outside and with a thumbturn from the inside with a two point locking hardware operated by 180° turn of the handle.]

Stainless steel L-shaped handles in a brushed satin finish

[OR stainless steel L-shaped handles in a titanium black finish]

[OR L-shaped handles in a brown nylon finish]

[OR L-shaped handles in a gray nylon finish]

[OR L-shaped handles in a white nylon finish]

[OR on main entry panel, provide manufacturer's standard U/L-shaped handle on inside only with concealed two point locking hardware operated by 180 degree turn of handle.

SPECIFIER'S NOTE: Note that with this option, the main entry panel is operable from inside only and that there is no latch.]

SPECIFIER'S NOTE: Note that other compatible lever, L-shaped and push-pull handle styles and finishes are available from other suppliers.

2. On all other secondary panels and pairs of folding panels, provide manufacturer's standard handles [OR removable custodial handles] and concealed two point locking hardware operated by 180 degree turn of handle between each pair. **Face applied flush bolt locking will not be allowed.** Standard handle finish:

Stainless steel standard handles in a brushed satin finish

[OR Stainless steel standard handles in a titanium black finish]

[OR standard handles in a brown nylon finish]

[OR standard handles in a gray nylon finish]

[OR standard handles in a white nylon finish]

3. Provide handle height centered at 41 3/8" [OR as specified] from bottom of panel.

4. Aluminum locking rods with standard fiber glass reinforced polyamide end caps at top and bottom. Rods to have a stroke of 15/16" (24 mm).

5. If there are more than one unit, keyed alike [OR keyed differently].

- D. Sliding/Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top, bottom tracks and threshold. All running carriages to be with sealed, self-lubrication, ball bearing multi-rollers. **Surface mounted hinges and running carriages will not be allowed. Weight of panels to be borne by the bottom of the guide channel in the sill will not be allowed.**

1. Provide upper guide carriage and lower running carriage with four vertical stainless steel wheels and two horizontal polyamide wheels. The vertical wheels to ride on top of stainless steel guide track covers over the full length of the sill track and lie above the water run-off level. Carrying capacity of lower running carriage to be 440 lbs (200 kgs). **Wheels riding below the water run-off level and/or wheels riding on aluminum surfaces will not be allowed.**

2. Threshold:

Provide thermally broken with polyamide plastic Raised Sill (higher weather performance sill) in the same finish as panel finish



[OR clear anodized low profile saddle sill]

[OR dark bronze anodized low profile saddle sill]

[OR clear anodized flush sill]

[OR dark bronze anodized flush sill]

[OR clear anodized Surface Mounted Interior Sill (not thermally broken)]

[OR bronze anodized Surface Mounted Interior Sill (not thermally broken)]

**A cover plate over the sill will not be allowed.**

3. For ADA compliance in commercial projects, provide gasket to cover the channel in the sill at swing doors.
  4. Hinges: Zinc die cast with finish closest match to finish of frame and panels [OR stainless steel hinges]. Provide stainless steel security hinge pins with set screws.
  5. Adjustment: Provide folding/sliding hardware capable of specified amount of compensation and adjustments without needing to remove panels from tracks, in width, 1/16" (1.5 mm) per hinge and in height, 1/16" (2 mm) up and down.
- E. Other Components:
1. Weather stripping: Provide manufacturer's standard double layer EPDM, Q-lon gasket or brush seals with a two layer fiber glass reinforced polyamide fin at both the inner and outer edge of door panels or on frame for sealing between panels and between panel and frame. **Single layer weather stripping will not be allowed.**
  2. Provide tapered pins or stainless steel screws for connecting frame components.

## 2.03 FABRICATION

- A. Use extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and weather stripping as specified herein to make a folding glass wall. Factory pre-assemble as is standard for manufacturer and ship with all components and installation instructions.
- B. Sizes and Configurations: See drawings for selected custom dimensions within maximum frame sizes possible as indicated in manufacturer's literature. See drawings for selected number of panels and configuration. Inward [OR outward] opening unit. On configurations with a pair of swing panels, looking from inside, primary swing panel on the left [OR right]

## 2.04 ACCESSORIES (Edit for project requirements)

- A. Provide the NanaScreen™ Classic, a series of vertical, collapsible, pleated screen panels. Provide pleated screen material with floor tracking chain with 1/4" (5 mm) floor track. See drawings for selected number of panels and configuration.

Provide aluminum top track, side jambs, and vertical struts:

White powder coated

[OR clear anodized]

[OR dark bronze anodized]

[OR powder coated select from range of RAL powder coated finishes available from manufacturer].

NanaScreen™ Classic installation within opening [OR extended beyond opening]

[OR provide NanaScreen One with non-pleated screening material. See drawings for selected

number of panels and configurations.

Provide aluminum top track, side jamb and vertical struts.

White powder coated

[OR clear anodized]

[OR black powder coated]]

B. Provide other side lites, transoms, corner posts, or single or double doors as per drawings provided.

### **PART 3 - EXECUTION**

#### **3.01 ERECTION**

A. Because of the large dimensions involved and the weight and movement of the panels, verify the structural integrity of the header such that the deflection with live and dead loads is limited to the lesser of L/720 of the span and ¼" (6 mm). Structural support for lateral loads (both wind load and eccentric load when the panels are stacked open) must be provided.

It is recommended that all building dead loads be applied to the header prior to installing the NanaWall. If so and if a reasonable amount of time has been allowed for the effect of this dead load on the header, then only the building's live load can be used to meet the above requirements of L/720 or ¼" (6 mm). If not, both the dead and live loads need to be considered

B. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square, with no unevenness, bowing, or bumps on the floor.

C. Installation of units constitutes acceptance of existing conditions.

#### **3.02 INSTALLATION**

A. Install frame in accordance manufacturer's recommendations and installation instructions. Properly flash and waterproof around the perimeter of the opening.

B. Installer to provide appropriate anchorage devices and to securely and rigidly fit frame in place, absolutely level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work.

C. If necessary, provide drain connections from lower track.

D. Install panels, handles and lock set in accordance with manufacturer's recommendations and installation instructions.

E. If necessary, adjust hardware for proper operation.

F. Accessories: Screens; install in accordance with screen manufacturer's recommendations and installation instructions.

### **END OF SECTION**

DISCLAIMER: Nana Wall Systems, Inc. takes no responsibility for product selection or application, including, but not limited to, compliance with building codes, safety codes, laws, or fitness for a particular purpose. The guide specifications is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended and the particular requirements of a specific construction project.





C.R. Laurence Co., Inc.

LU 15-209365 DZM, AD  
Exhibit 74  
\*For Design Intent Only

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**BLUMCRAFT.**  
A DIVISION OF C.R. LAURENCE CO., INC.

## Tempered Glass Door Series 1301

### More Glass... Less Metal...

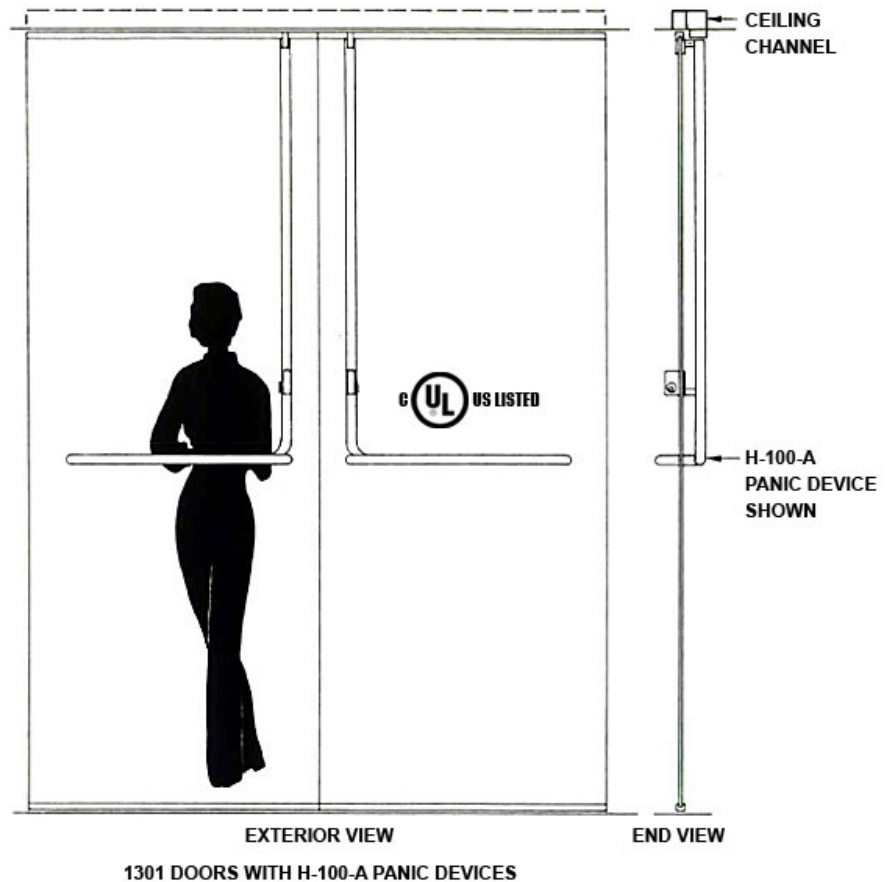
Blumcraft's Series 1301 tempered glass doors have 3/4" high top and bottom rails to provide a "MORE GLASS ... LESS METAL" look. Series 1301 doors are versatile, as they can be adapted for Dorma BTS-80 or Jackson 900 floor closers, adjustable pivots, and door position switches. With slight modifications to the top rail, Series 1301 doors are also adaptable to center-pivoted overhead closers, standard walking beam top pivots, electromagnetic and electromechanical locks.

Series 1301's low profile eliminates the need for tall bottom rails that are required to comply with the Americans with Disabilities Act.

Doors and matching sidelights are available in 1/2" and 3/4" tempered glass.

All Blumcraft tubular panic and deadbolt hardware can be installed on Series 1301 doors.

Please see the "Suggested Design Guidelines" profile for further information regarding design and specification of Blumcraft Series 1301 tempered glass doors.



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Exhibit 74  
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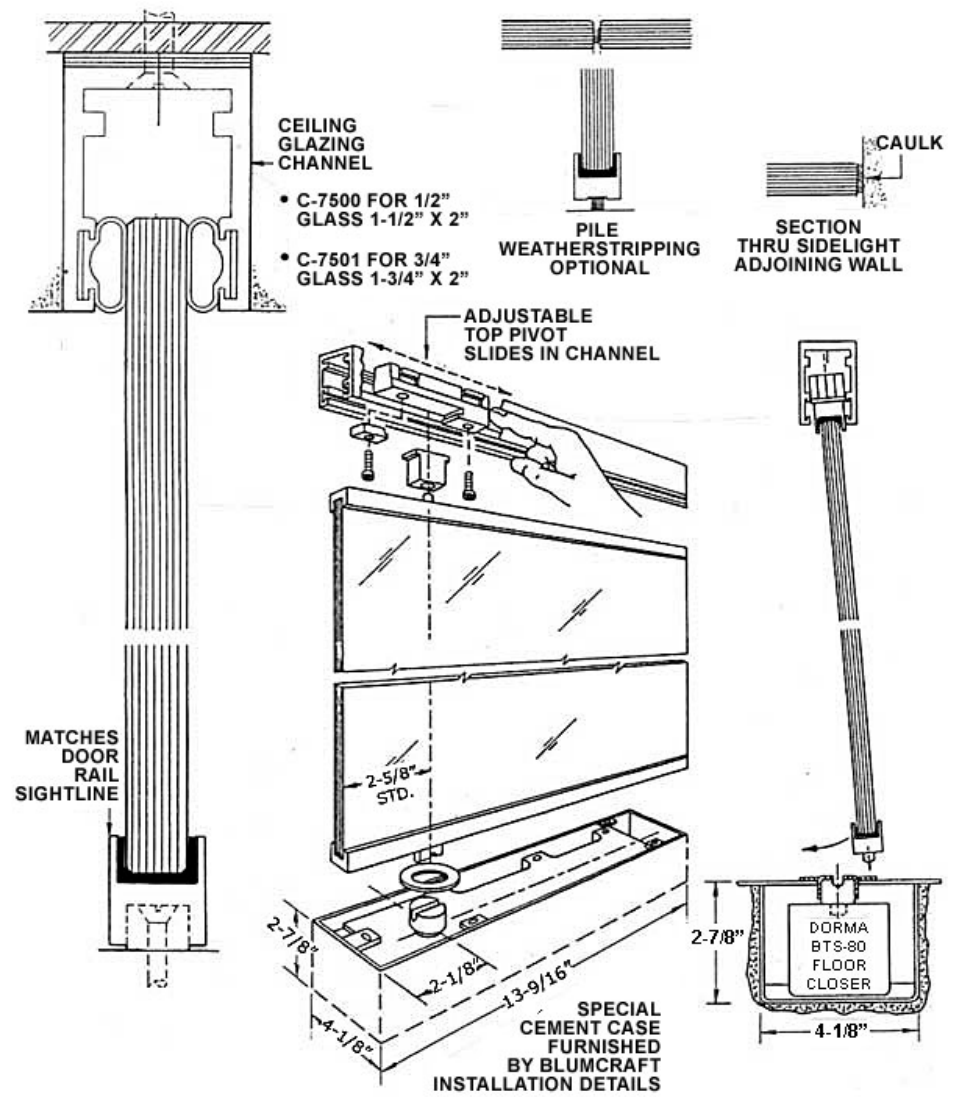




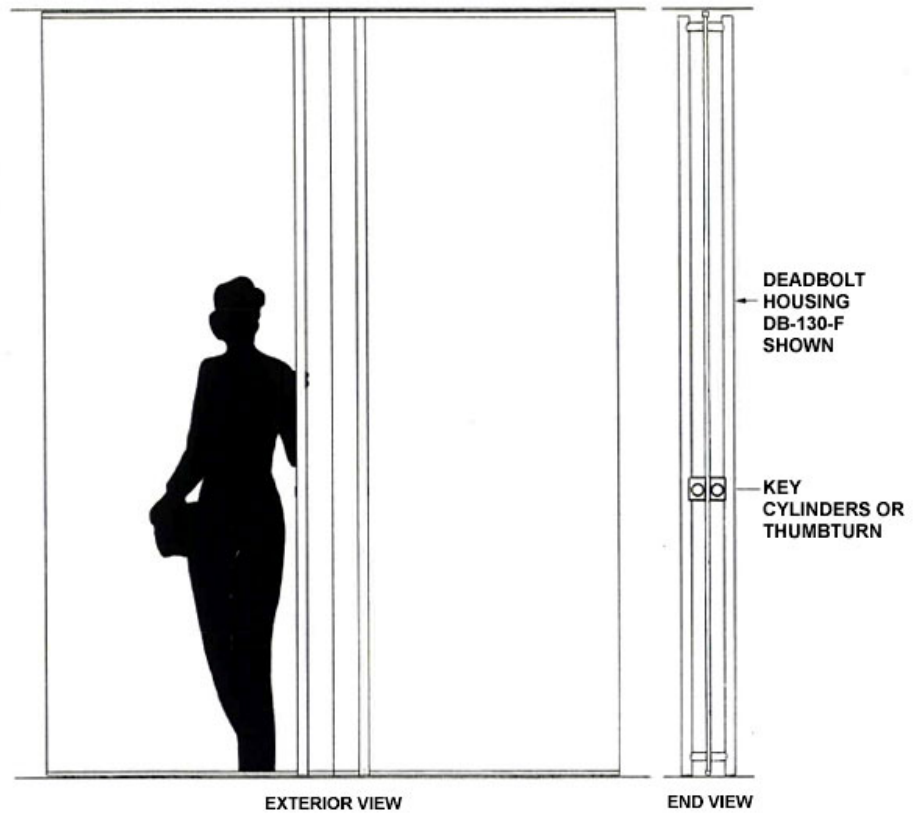
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Exhibit 74

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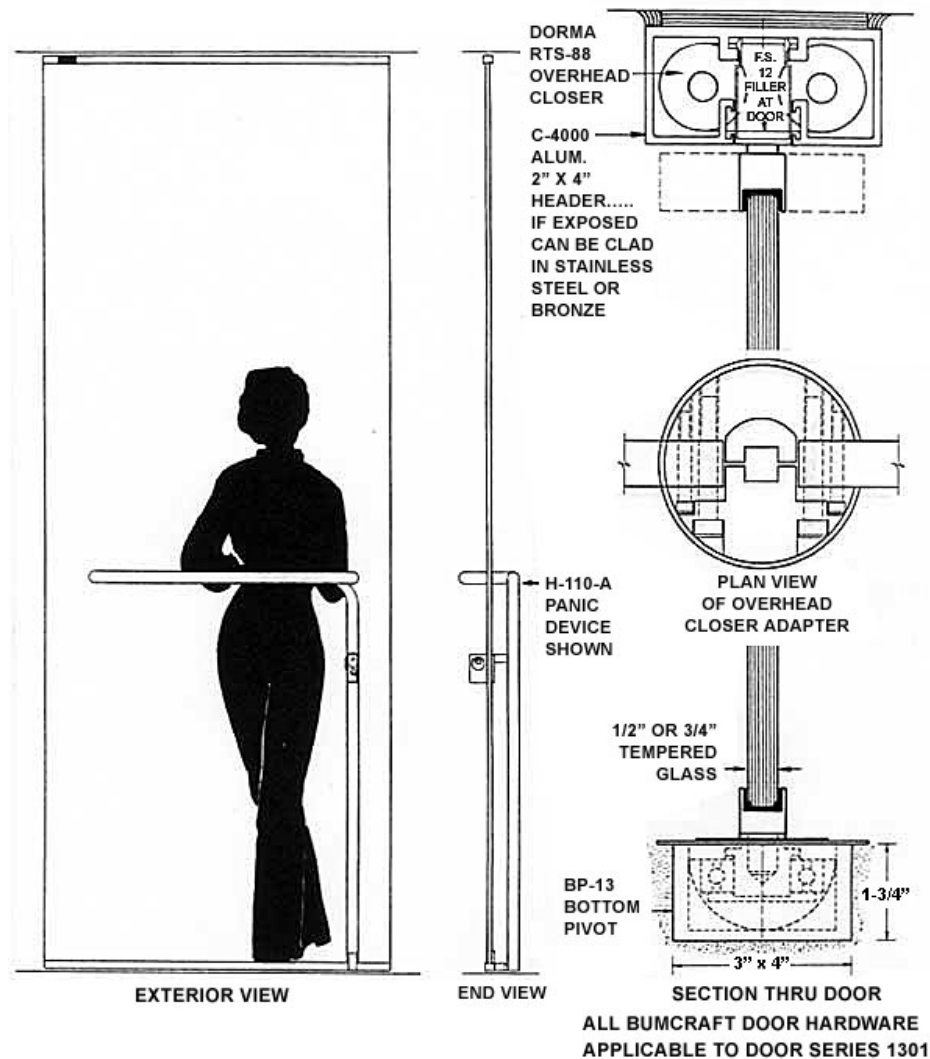


1301 DOORS WITH FULL HEIGHT DEADBOLT HOUSING DB-130-F  
LOCKING IS SIMULTANEOUS AT TOP AND BOTTOM OR  
SEPARATELY AT TOP OR AT BOTTOM



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Exhibit 74  
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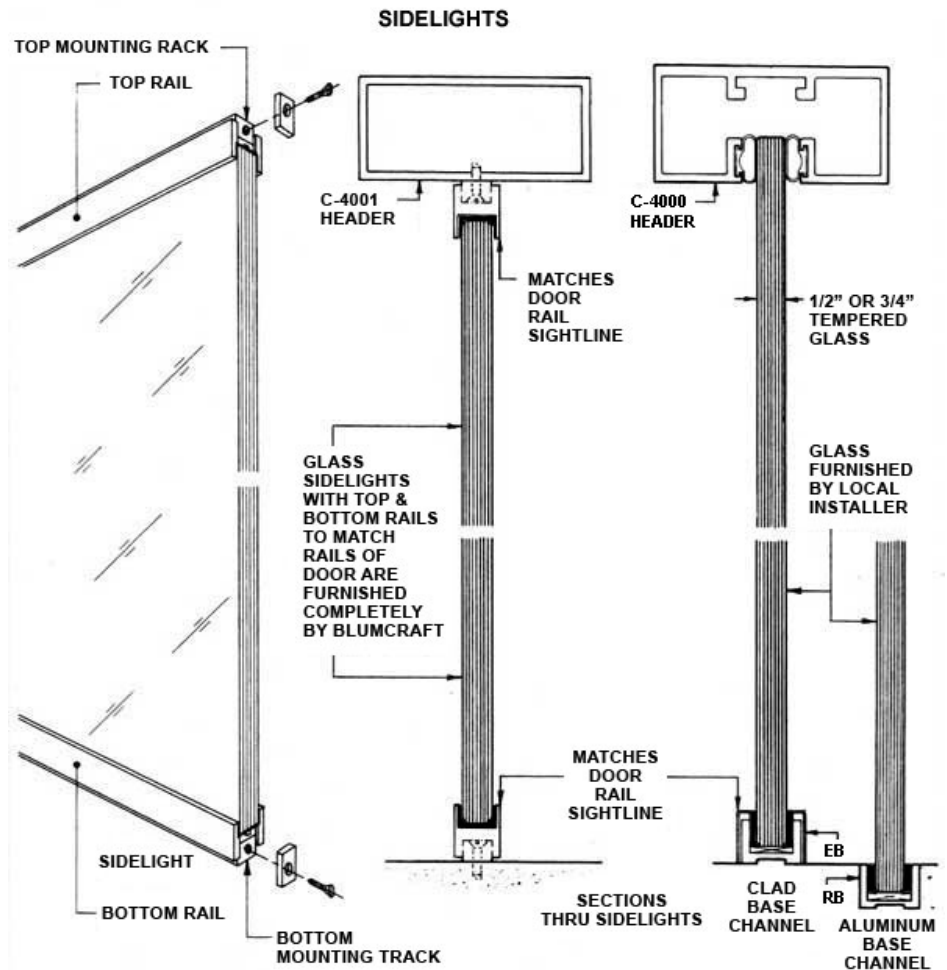
**OVERHEAD CLOSER DETAILS**  
ADAPTABLE FOR OVERHEAD AUTOMATIC OPERATORS  
BLUMCRAFT RECOMMENDS THE USE OF FLOOR CLOSERS FOR TEMPERED GLASS DOORS



### Automatic Operator

Series 1301 doors can be modified and adapted for a variety of overhead automatic or power assisted operators. The top rail is slightly increased in size to accommodate the direct drive spindle or an exposed arm of operators manufactured by Besam, LCN, Horton, or Norton; other operators on request. To insure compatibility, contact Blumcraft with the model number. The bottom rails can remain 3/4" high or match the top rails depending on the architect's preference.

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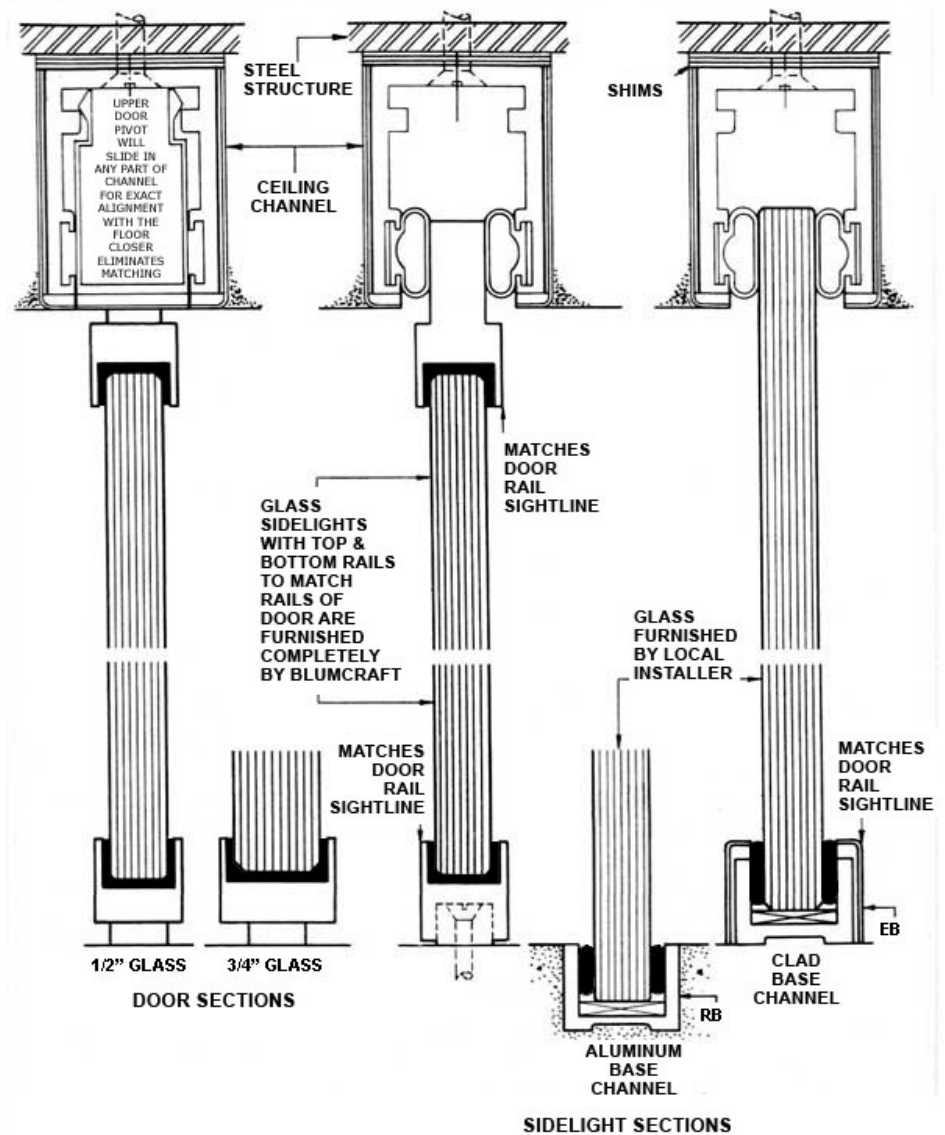


ALL BLUMCRAFT DOOR HARDWARE APPLICABLE TO DOOR SERIES 1301

HEADERS		
PART NO.	C-4001	C-4000
ALUMINUM HEIGHT	1-3/4"	2"
ALUMINUM WIDTH	4"	4"
*CLAD HEIGHT	1-13/16"	2-1/16"
*CLAD WIDTH	4-1/4"	4-1/4"
* IF EXPOSED, CAN BE CLAD IN STAINLESS STEEL OR BRONZE		



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CEILING CHANNELS		
PART NO.	C-7500	C-7501
GLASS	1/2"	3/4"
ALUMINUM HEIGHT	2"	2"
ALUMINUM WIDTH	1-1/2"	1-3/4"
*CLAD HEIGHT	2-1/8"	2-1/8"
*CLAD WIDTH	1-11/16"	1-15/16"
* IF EXPOSED, CAN BE CLAD IN STAINLESS STEEL OR BRONZE		

BASE CHANNELS		
PART NO.	RB-500 OR EB-500	RB-750 OR EB-750
GLASS	1/2"	3/4"
ALUMINUM HEIGHT	3/4"	3/4"
ALUMINUM WIDTH	1"	1-1/4"
*CLAD HEIGHT	15/16"	15/16"
*CLAD WIDTH	1-1/8"	1-3/8"
* IF EXPOSED, CAN BE CLAD IN STAINLESS STEEL OR BRONZE		

### A Comparison: Series 1301 and Series 640C Doors

While the 640C Door has many quality features, as an alternate Blumcraft suggests using the Series 1301 Door **With Less Metal and More Glass** which eliminates the cumbersome rails.

This distinctive feature is the main characteristic that separates the two. With the top and bottom rails being only 3/4" high, the 1301 Series Door achieves the ultimate in architectural beauty and design.

These doors are versatile, as they can be adapted for Dorma BTS-80 or Jackson 900 floor closers, adjustable pivots, and door position switches. With slight modifications to the top rail, Series 1301 Doors are also adaptable to center-pivoted overhead closers, standard walking beam top pivots, electromagnetic and electromechanical locks.

With the Series 1301's low profile, the need for tall bottom rails that are required to comply with A.D.A. is no longer necessary. Doors and matching sidelights are available in 1/2" or 3/4" tempered glass.

All Blumcraft tubular and panic hardware can be installed on Series 1301 Doors.

The 640C Series Door certainly has its own distinctive look but has some disadvantages. In certain situations some building codes and usage may indicate that the bottom lock shown is not in compliance with The Americans With Disabilities Act since it is out of reach of the handicapped. Another is that the projection of the bottom rail from the face of the glass can interfere with a wheelchair.

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Exhibit 74  
\*For Design Intent Only



DOOR SERIES 1301

DOOR SERIES 640C

Before sending preliminary sketches to Blumcraft, please refer to complete catalogs in Sweets:

Tempered Glass Doors - 08 41 00 / BLU  
Architectural Hardware - 08 71 00 / BLU  
Display Case Doors - 12 35 59 / BLU  
Railing Systems - 05 73 00 / BLU

## Location and Contact Information

3852 South Water St., Building D  
Pittsburgh, PA 15203-2375

Phone: (412) 681-2400

Fax: (412) 681-6840

E-mail: [architectural@blumcraft.com](mailto:architectural@blumcraft.com)

*For general inquiries and drawing requests*

Questions? Contact CRL Customer Service by calling (800) 421-6144 or online by clicking on Contact Us.

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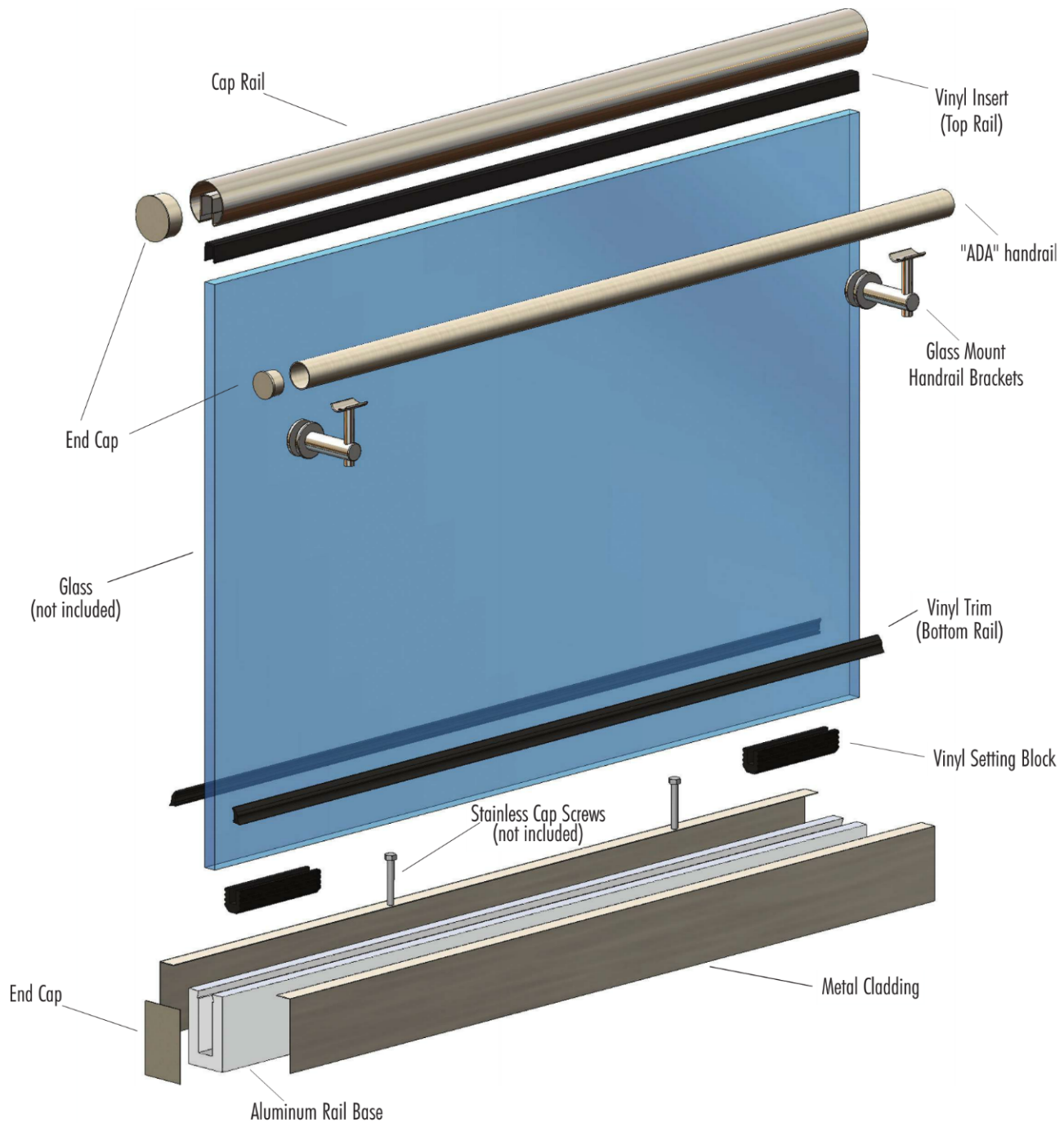


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ARTACO's glass railing systems feature ARTACO's continuous aluminum base for use up to  $\frac{3}{4}$ " glass panels and meet code regulations\*. For base installations with flat surfaces and stairways, ARTACO introduces an alternative to wet glaze systems that utilize cement. The patented Glasswedge™ dry glaze glass mount system utilizes a high impact plastic Isolator and a high strength aluminum wedge that lock the glass in place without cement. This system installs from the floor side and offers up to 50% reductions in labor time. The Glass wedge can be removed if required. Both wet and dry base systems are available with stainless steel cladding and end caps for a polished, professional look.

\*The Uniform Building Codes call for a Glass Rail System to be engineered by a professional (i.e., Architect, Structural, or Professional Engineer). It must meet load requirements at a minimum of 50lb/ft or 200 lb concentrated load per section. This is applied to the handrail at a distances of 42" above floor elevation.

# Trifab® VG (VersaGlaze®)

Trifab VG 450, 451 & 451T (Thermal) Framing Systems

Design Versatility  
with Unmatched  
Fabrication Flexibility

LU 15-209365 DZM, AD  
Exhibit 76  
\*For Design Intent Only



Preston Pointe, Louisville, KY

Architect: Potter & Associates Architects PLLC, Louisville, KY

Glazing Contractor: Kentucky Mirror & Plate Glass Company, Louisville, KY

Trifab® VG (VersaGlaze) is built on the proven and successful Trifab platform – with all the versatility its name implies. Trifab set the standard and Trifab® VG improves upon it. There are enough fabrication, design and performance choices to please the most discerning building owner, architect and installer. Plus the confidence a tried and true framing system instills. Select from four glazing applications, four fabrication methods and multiple infill choices. Consider thermal options and performance, SSG and Weatherseal alternatives and your project takes an almost custom shape whether your architecture is traditional or modern and the building is new or retrofitted.

## Aesthetics

Trifab® 450 has 1-3/4" sight lines and both Trifab® 451 and Trifab® 451T have 2" sight lines, while all three have a 4-1/2" frame depth. Designers can not only choose front, center or back glass planes, they can now add the versatility of multi-plane glass applications, thus allowing a greater range of design possibilities for specific project requirements and architectural styles. Structural Silicone Glazing (SSG) and Weatherseal options further expand the designer's choices.



Trifab® VG can be used on almost any project due to virtually seamless incorporation of Kawneer entrances, Sealair® windows or GLASSvent™ for visually frameless ventilators. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing owner, architect and installer with proven, tested and quality products from a single source supplier.

## Economy

Trifab® VG offers four fabrication choices to suit your project:

- **Screw Spline** – for economical continuous runs utilizing two piece vertical members. Provides the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- **Shear Block** – for punched openings or continuous runs using tubular moldings. Provides the option to pre-assemble multi-lite units using shear block clips under controlled shop labor conditions. Clips provide tight joints for transporting large units. Less field time is necessary to fill large openings.
- **Stick** – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the job.
- **Type B** – for multi-lite punched openings. Provide option for pre-assembled units for installation into single openings and controlled shop labor costs. Head and sill running through provide fewer joints and require less time to fill large openings.



Brighton Landing, Cambridge, MA  
Architects: ADD Inc., Cambridge, MA  
Glazing Contractors: Ipswich Bay Glass Company, Inc., Rowley, MA

Trifab® VG 450, 451 and 451T can be flush glazed from either the inside or outside. The Weatherseal option provides an alternative to the structural silicone glazed vertical mullions. This ABS/ASA rigid polymer extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior, without the added labor of scaffolding or swing stages. Optional patented HP Flashing™ and HP Interlock

clip are engineered to eliminate the perimeter sill fasteners and their associated blind seals and are compatible with all glass planes.

## Performance

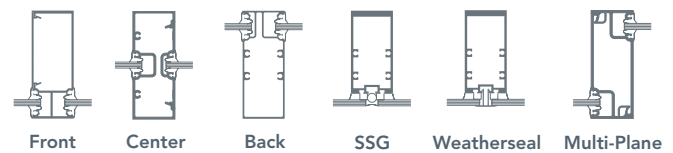
Kawneer's IsoLock™ Thermal Break option is available on Trifab® VG 451T. This process creates a composite section and prevents dry shrinkage.

U-factor, CRF values and STC ratings for Trifab® VG vary depending upon the glass plane application. Project specific U-factors can now be determined for each individual project. (See Kawneer Architectural Manual or Website for additional information)

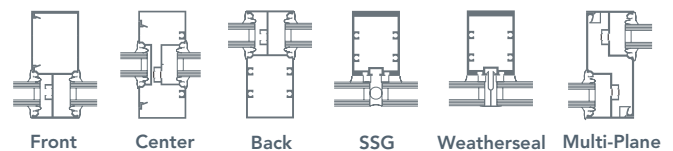
## Performance Test Standards

Air Performance	ASTM E 283
Water	AAMA 501 and ASTM E 331
Structural	ASTM E 330
Thermal	AAMA 1503
Thermal Break	AAMA 505 and AAMA TIR-A8
Acoustical	AAMA 1801 and ASTM E 1425

### Trifab VG 450



### Trifab VG 451/451T



## Finishes

Permadonic Anodized finishes are available in Class I and Class II in seven different colors.

Painted Finishes, including fluoropolymer that meet or exceed AAMA 2605, are offered in many standard choices and an unlimited number of specially-designed colors.

Solvent-free powder coatings add the "green" element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

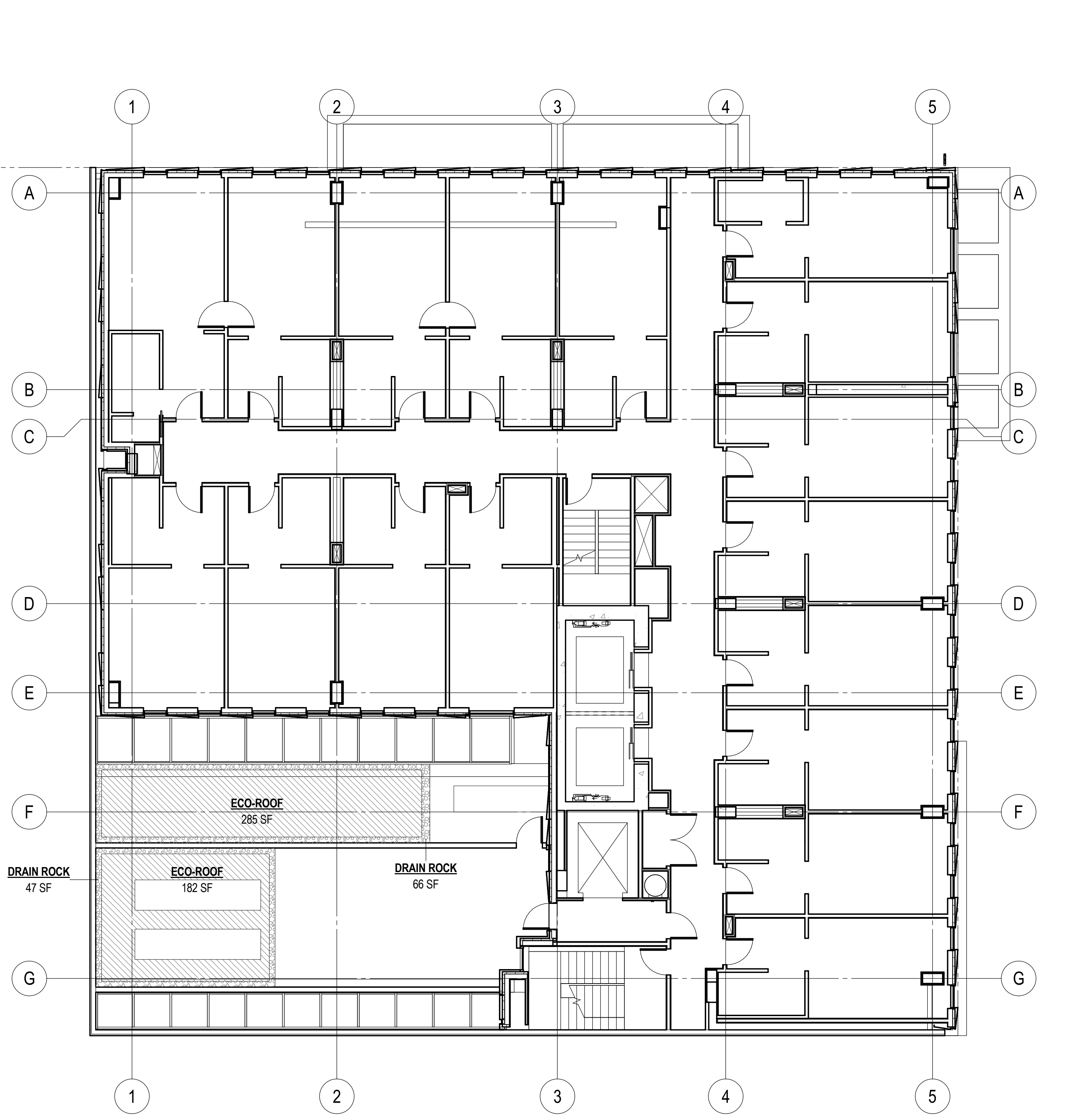
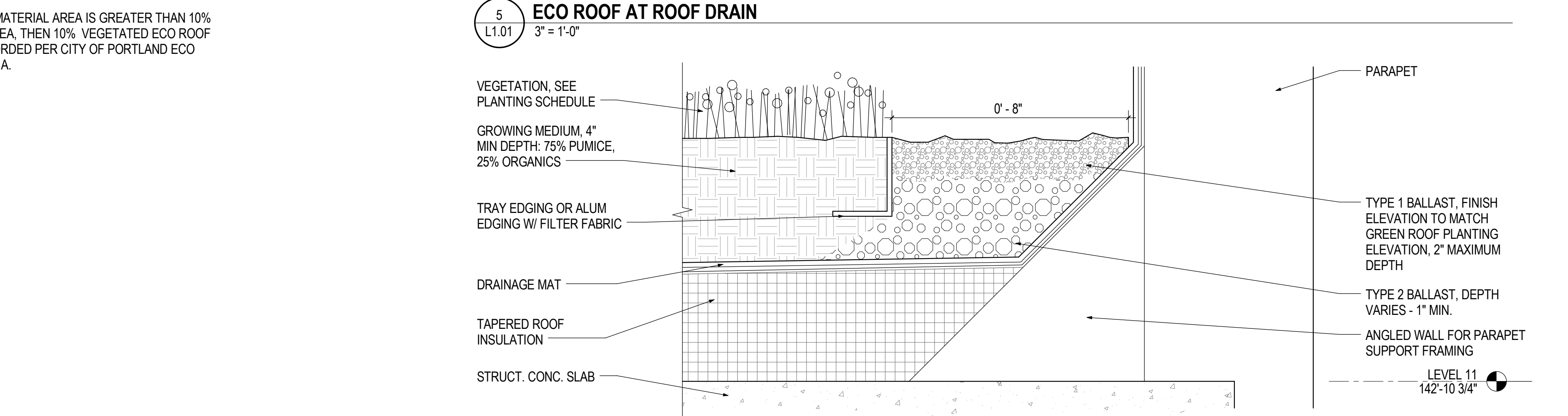
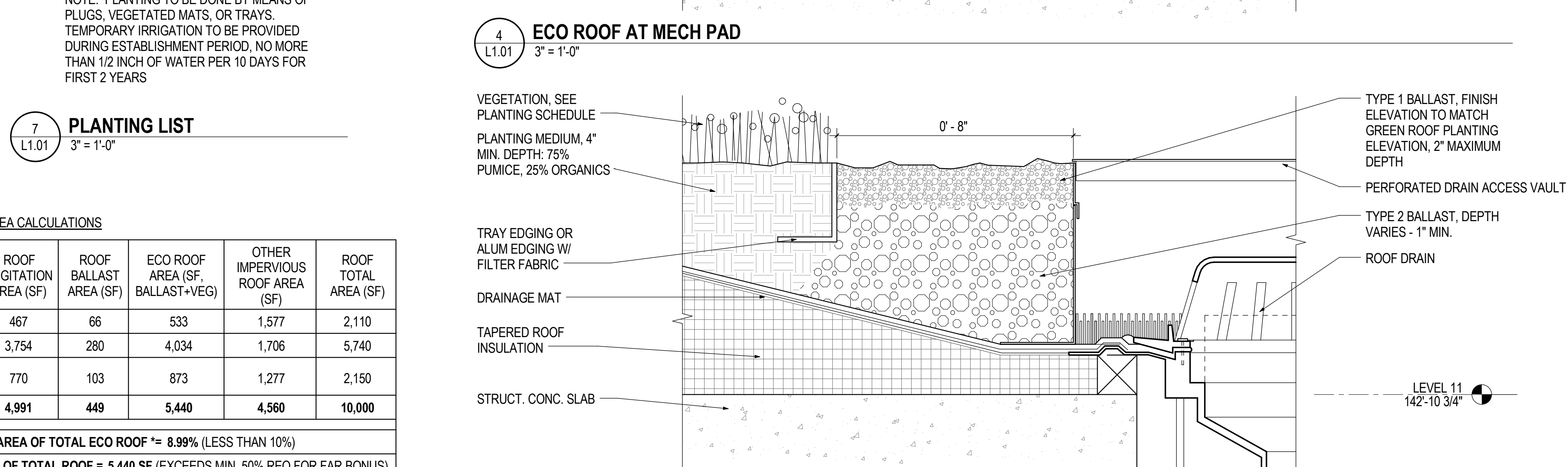
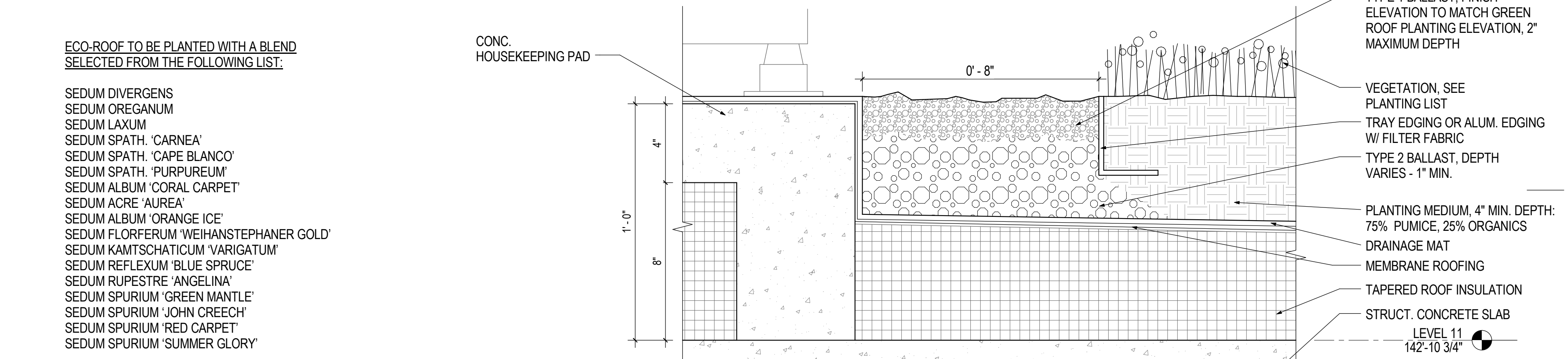
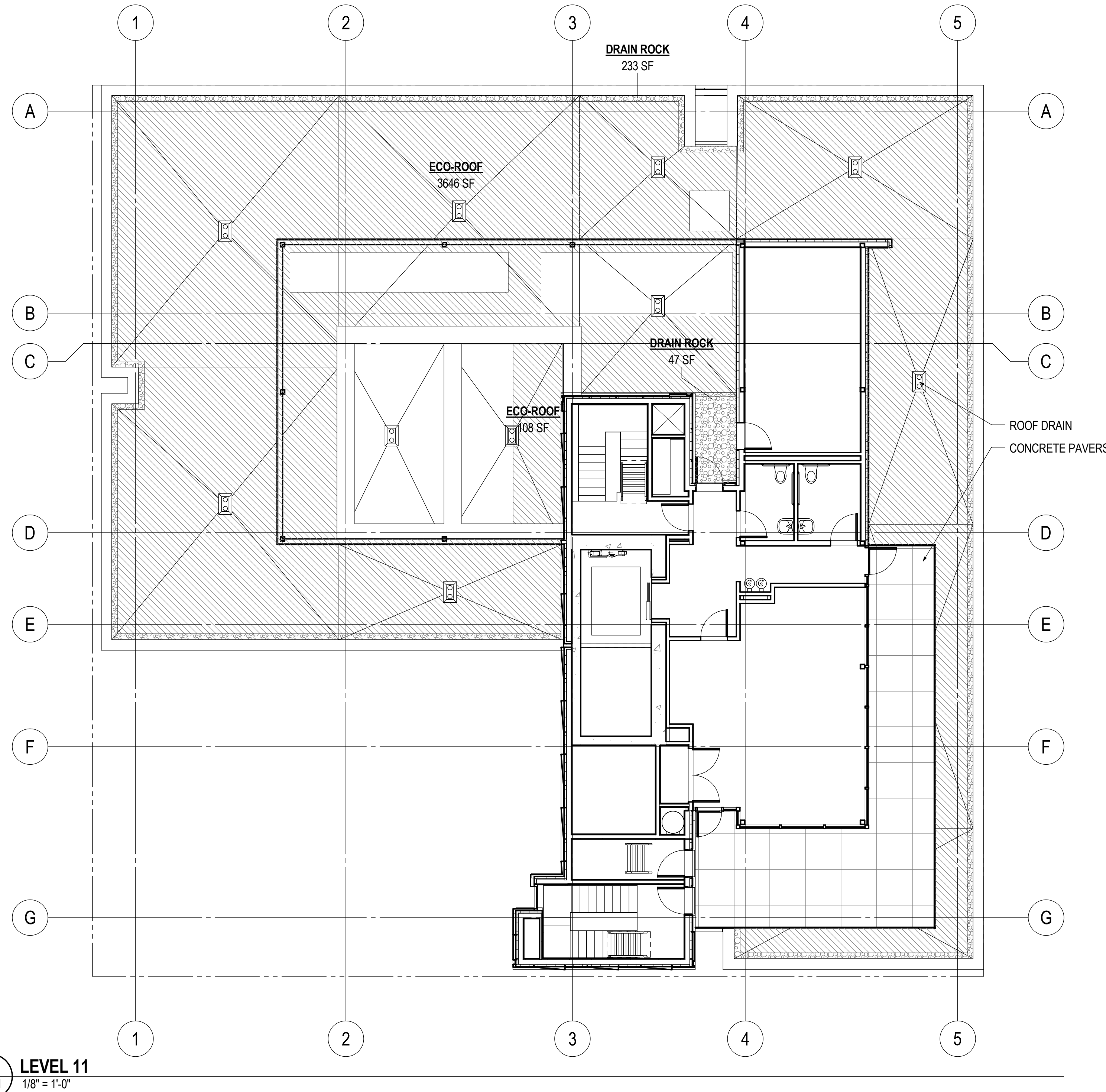
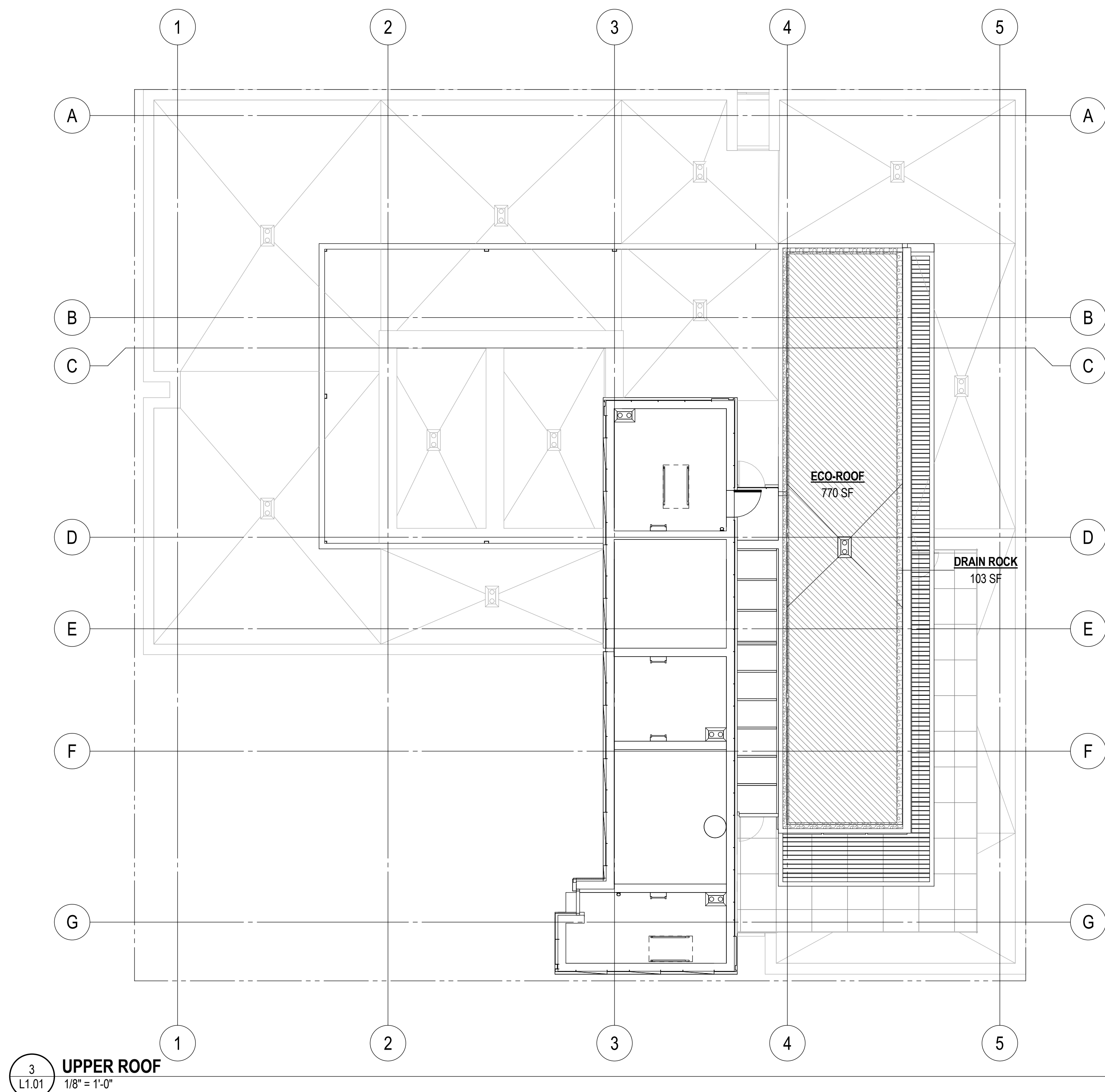
Kawneer Company, Inc.  
Technology Park / Atlanta  
555 Guthridge Court  
Norcross, GA 30092

kawneer.com  
770 . 449 . 5555

**KAWNEER**  
AN ALCOA COMPANY







**ECO ROOF AREA CALCULATIONS**

BUILDING LEVEL	ROOF VEGETATION AREA (SF)	ROOF BALLAST AREA (SF)	ECO ROOF AREA (SF, BALLAST+VEG)	OTHER IMPERVIOUS ROOF AREA (SF)	ROOF TOTAL AREA (SF)
2	467	66	533	1,577	2,110
11	3,754	280	4,034	1,706	5,740
UPPER ROOF	770	103	873	1,277	2,150
<b>TOTAL</b>	<b>4,991</b>	<b>449</b>	<b>5,440</b>	<b>4,560</b>	<b>10,000</b>

% BALLAST AREA OF TOTAL ECO ROOF = 8.99% (LESS THAN 10%)  
ECO ROOF % OF TOTAL ROOF = 5.44% SF (EXCEEDS MIN. 50% REQ FOR FAR BONUS)

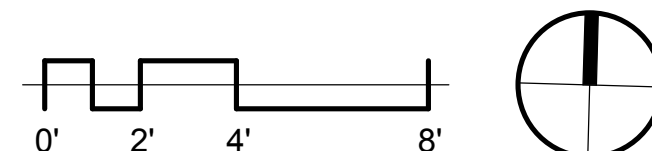
\* IF BALLAST MATERIAL AREA IS GREATER THAN 10% ECO ROOF AREA, THEN 10% VEGETATED ECO ROOF AREA IS RECORDED PER CITY OF PORTLAND ECO ROOF CRITERIA.





GENERAL NOTES

FOR TYPICAL PARTITION TYPES AND NOTES SEE A2.03

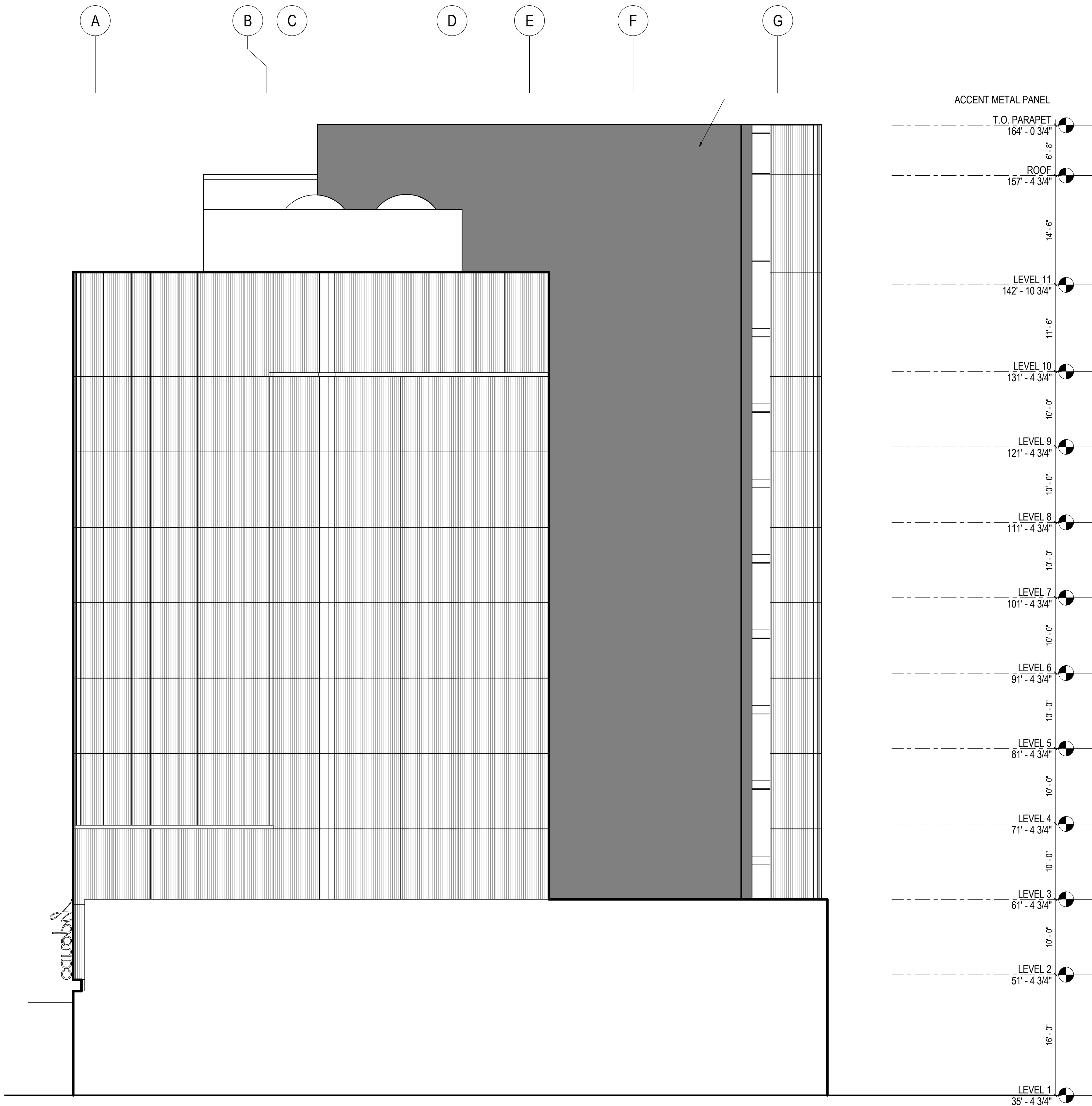




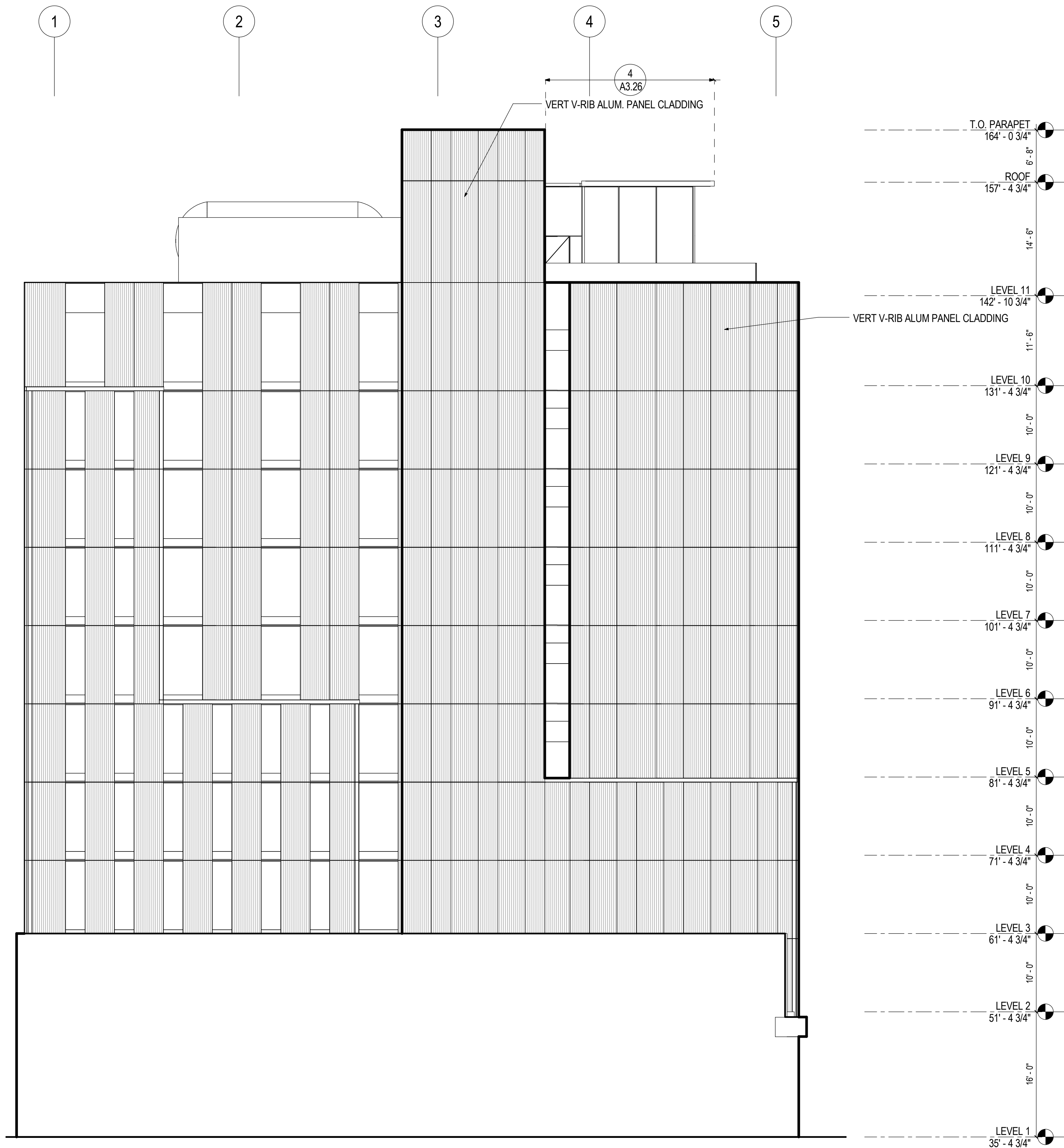


FOR TYPICAL NOTES, SEE 1/A3.01

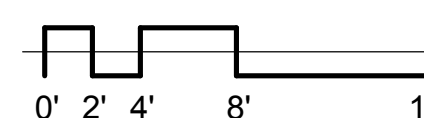
FOR TYPICAL NOTES, SEE 1/A3.01

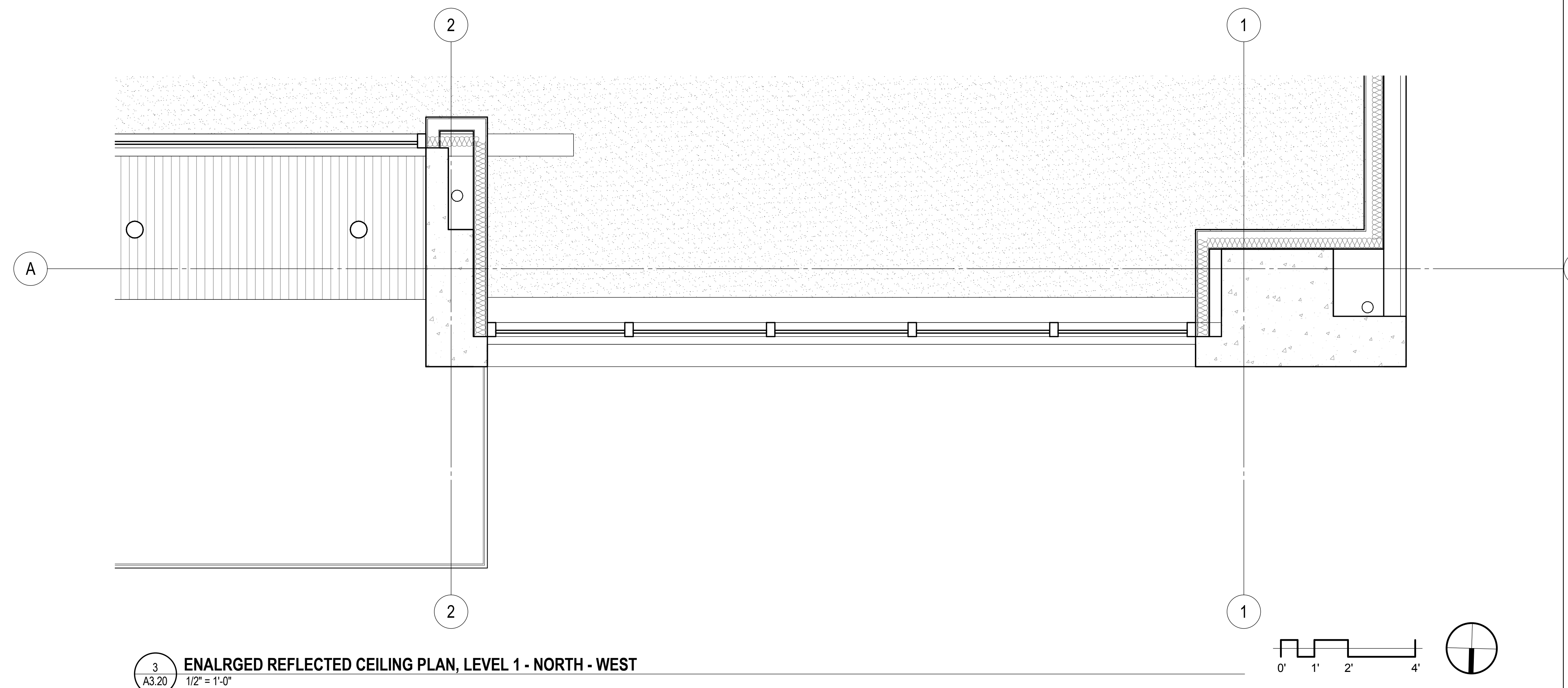
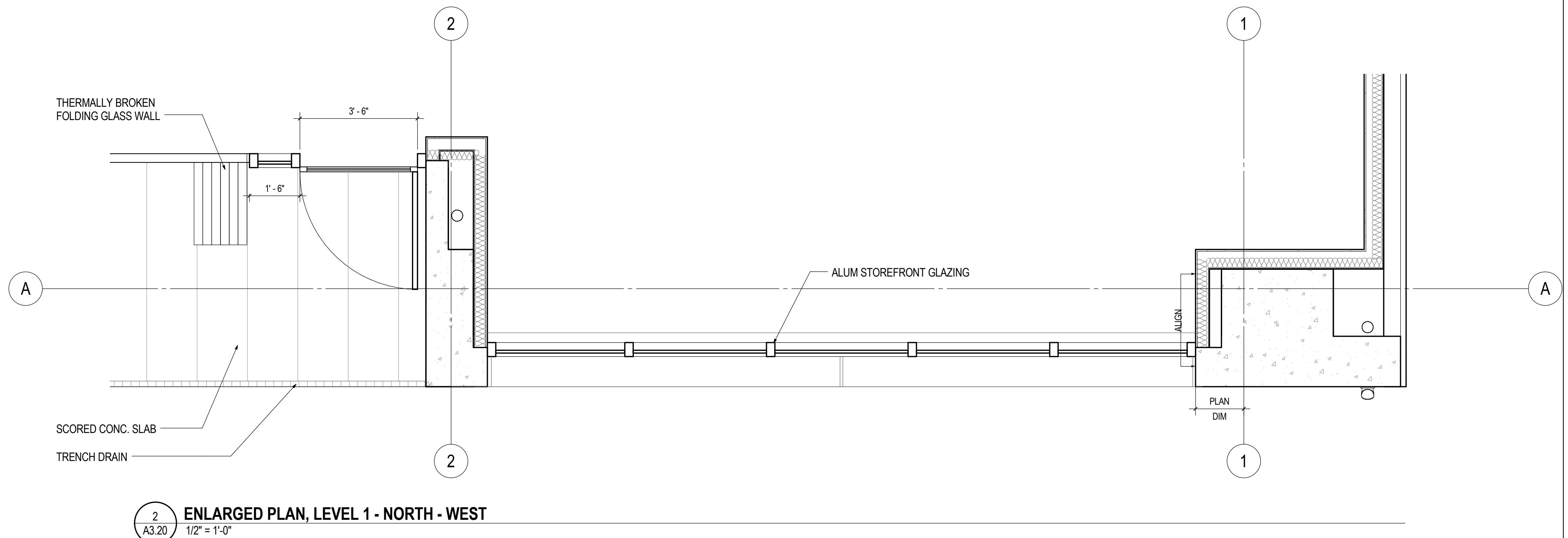
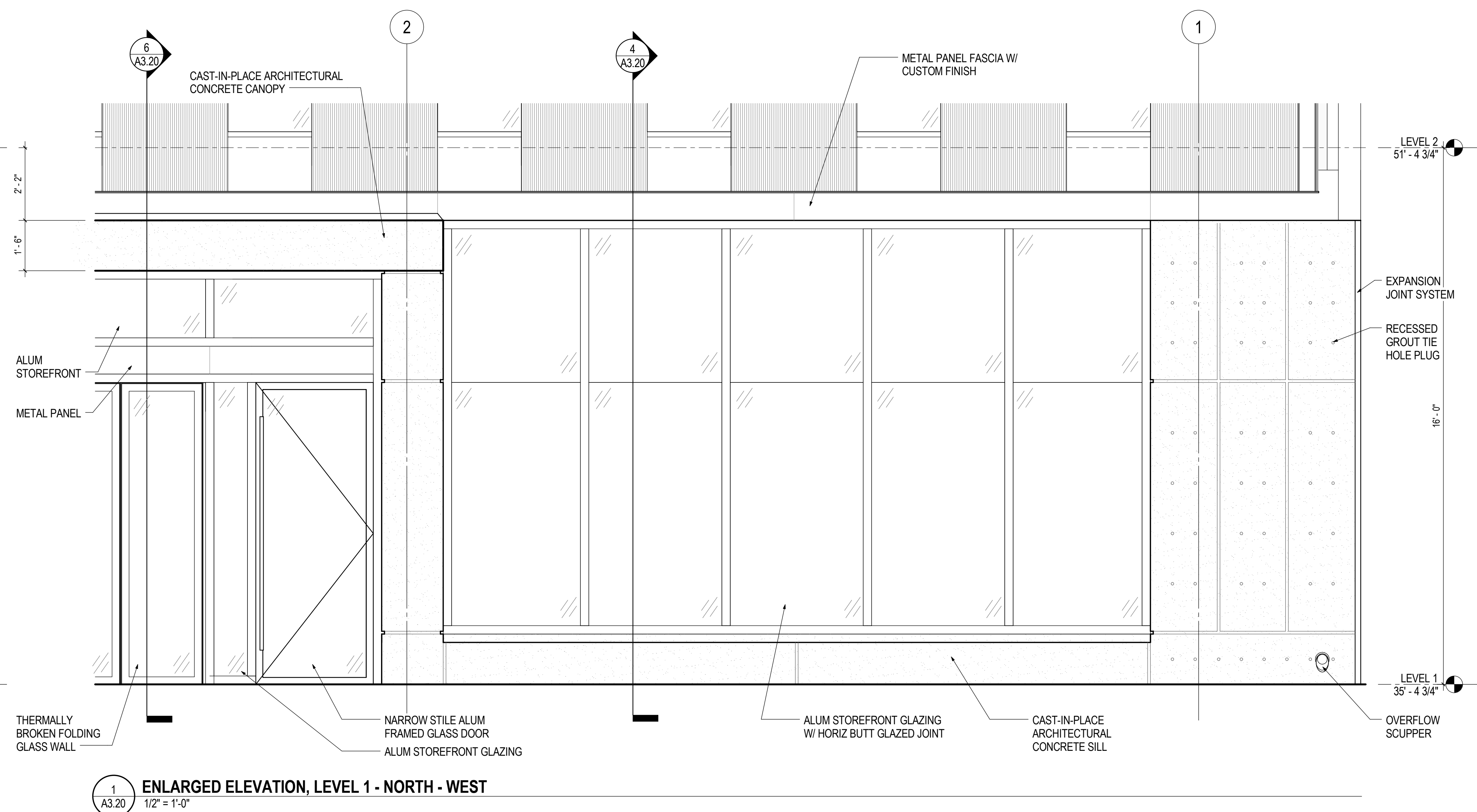
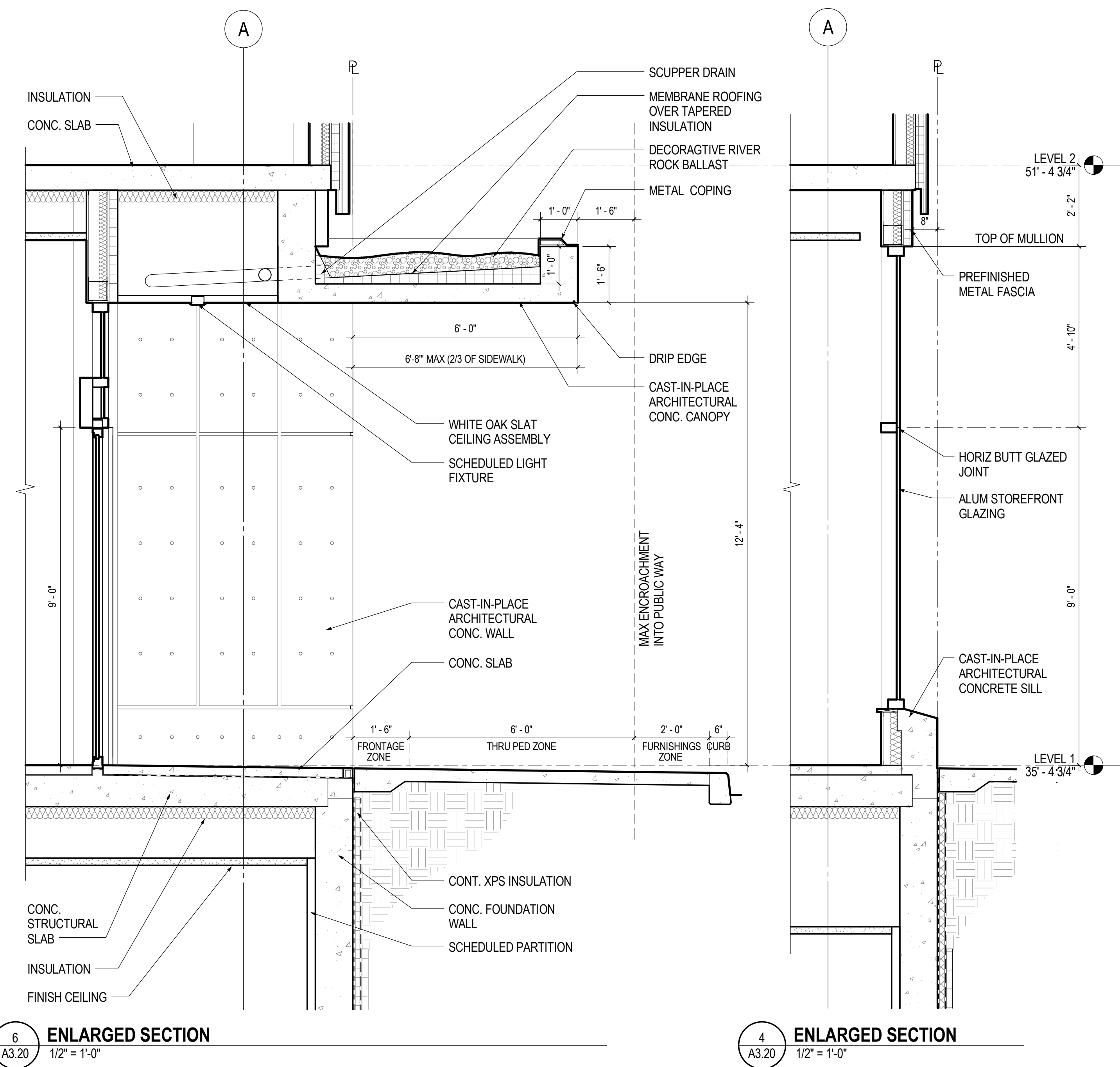


2  
A3.02  
ELEVATION - WEST  
1/8" = 1'-0"

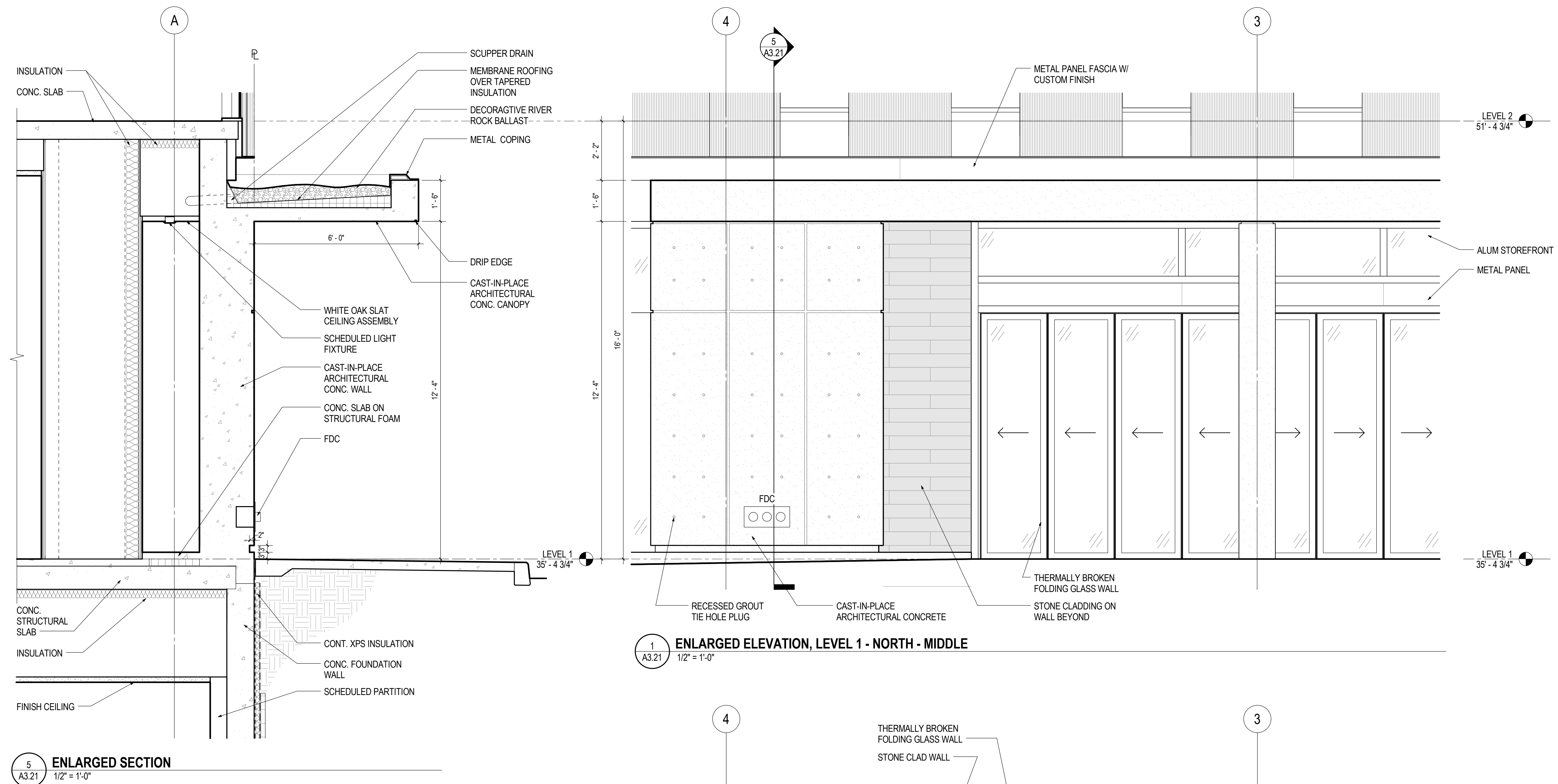


1  
A3.02  
ELEVATION - SOUTH  
1/8" = 1'-0"



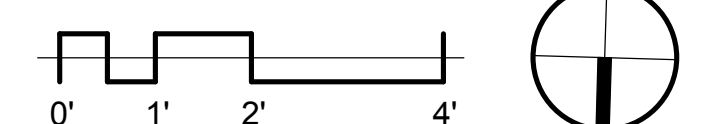
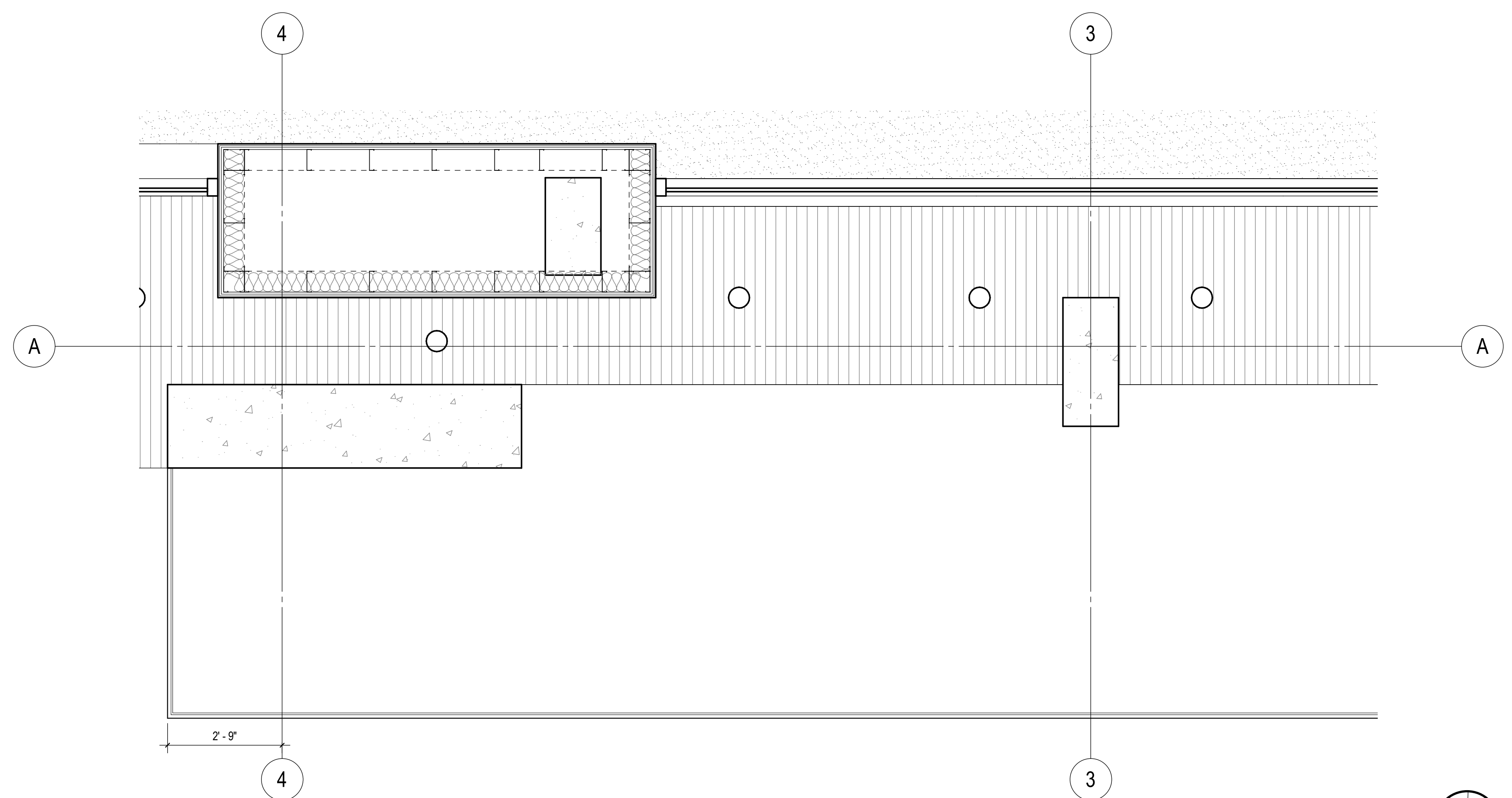
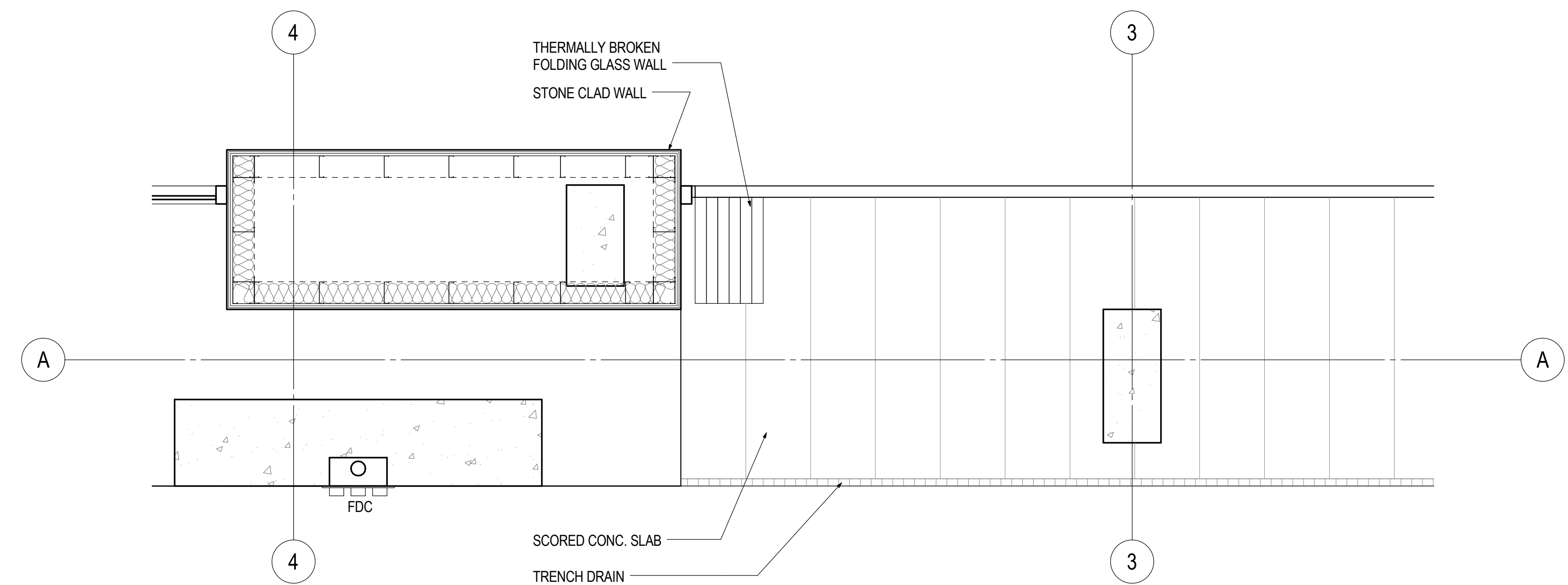




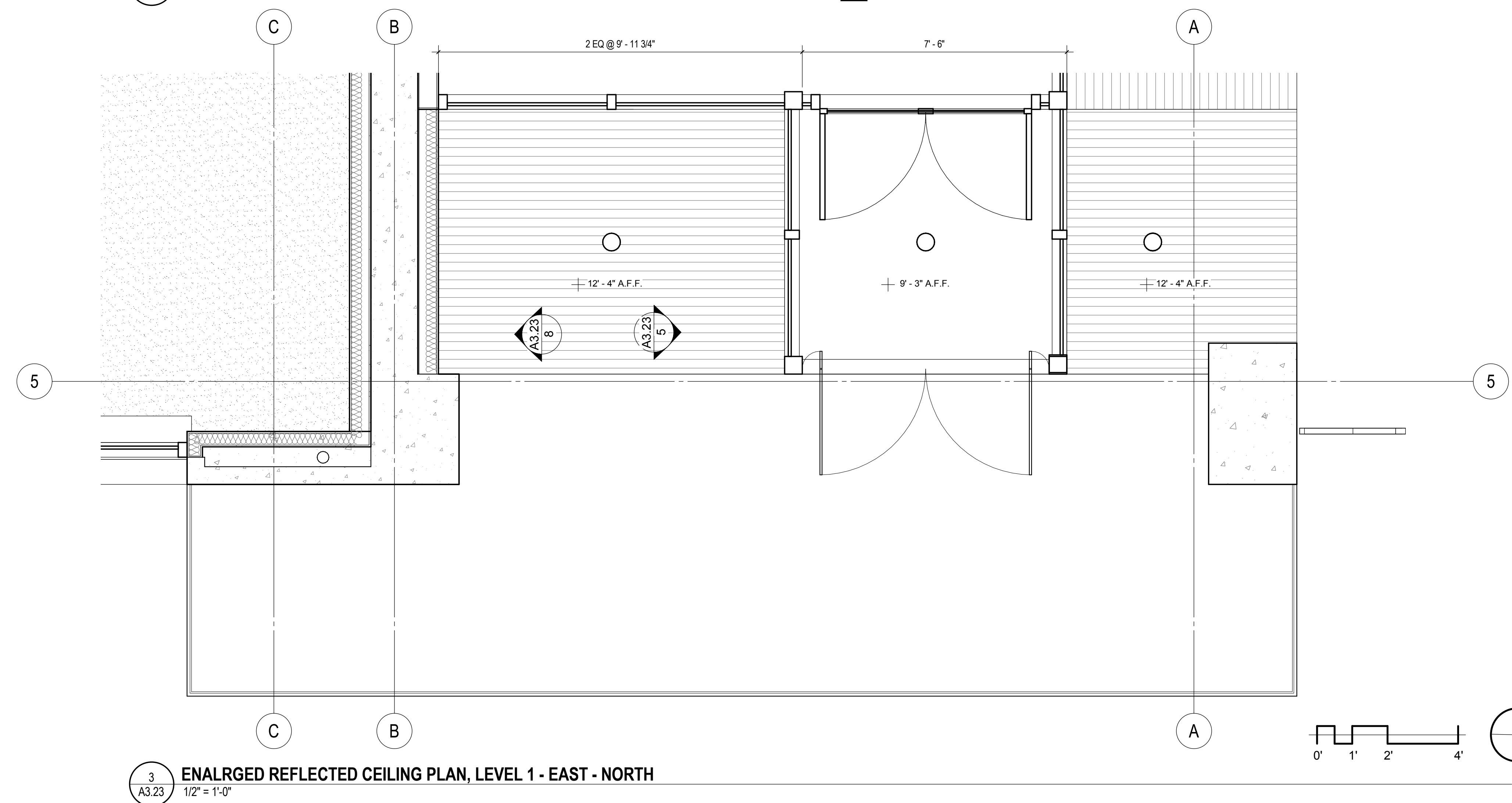
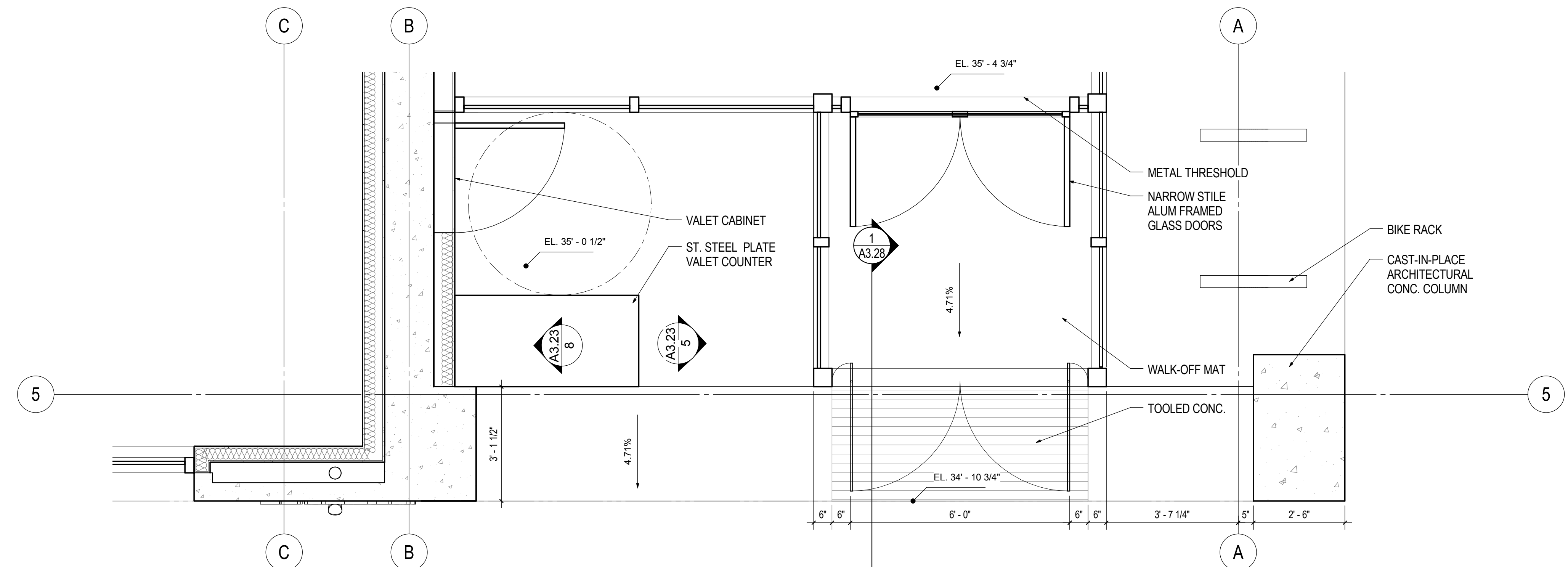
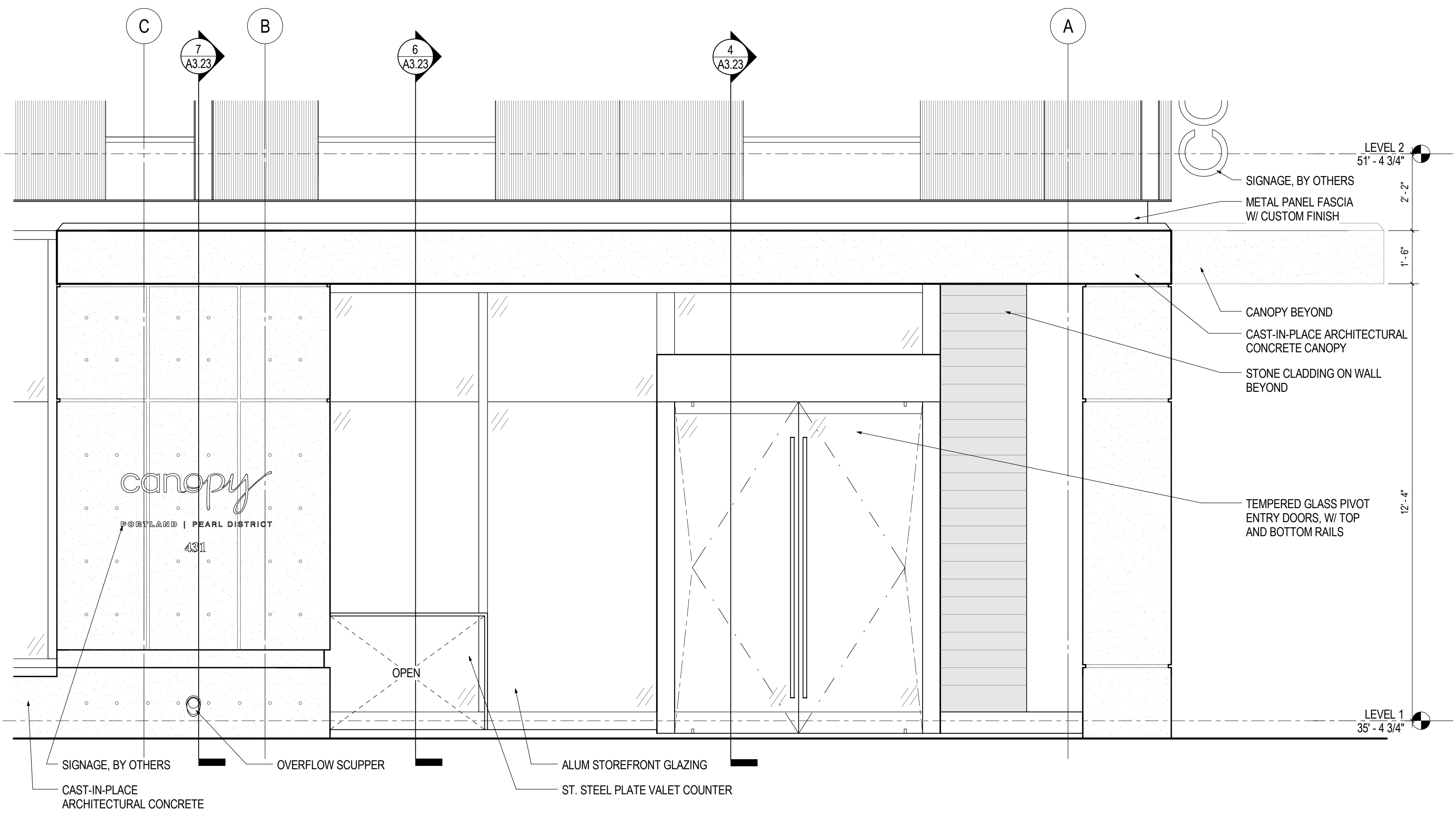
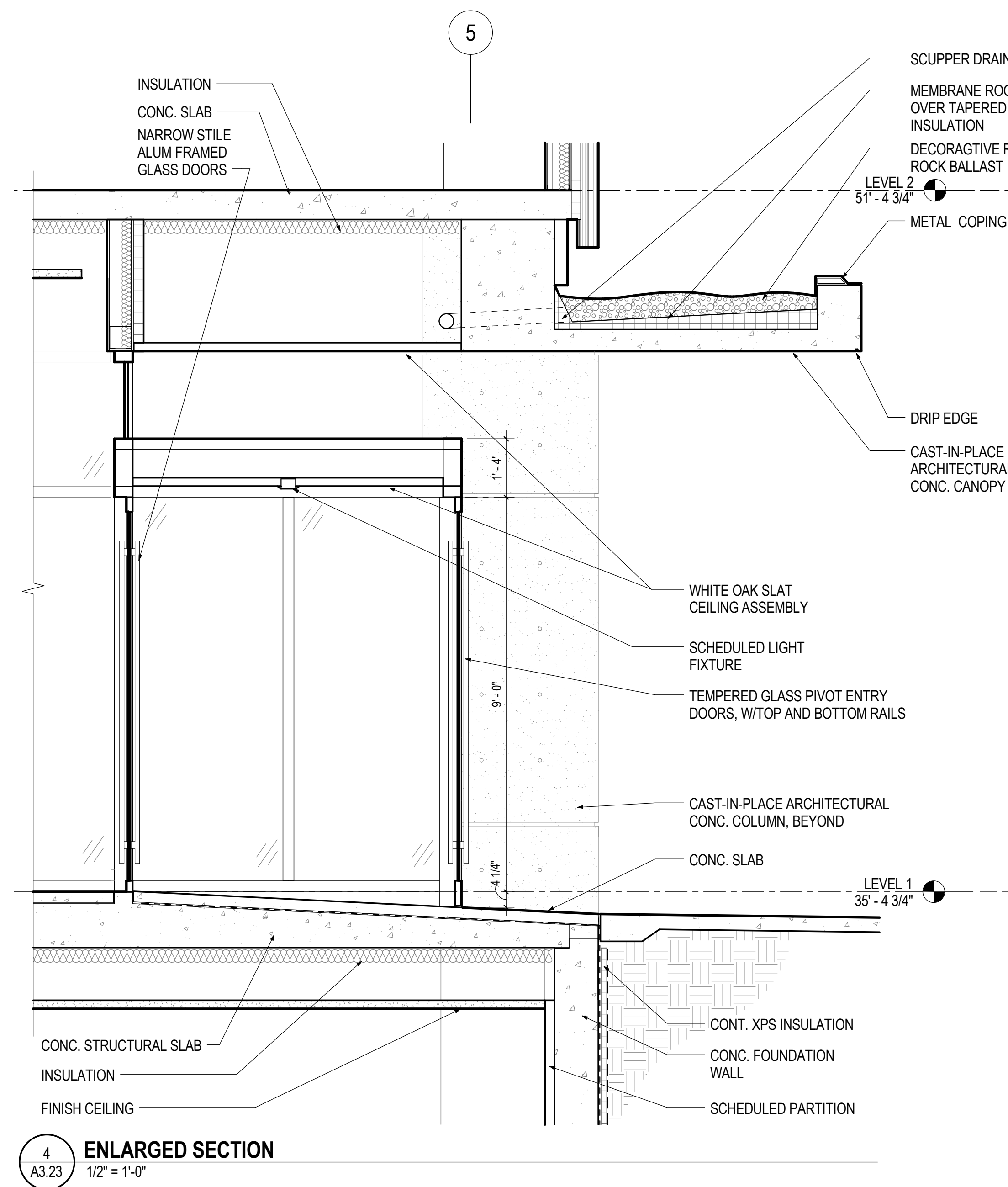


1  
A3.21  
1/2" = 1'-0"

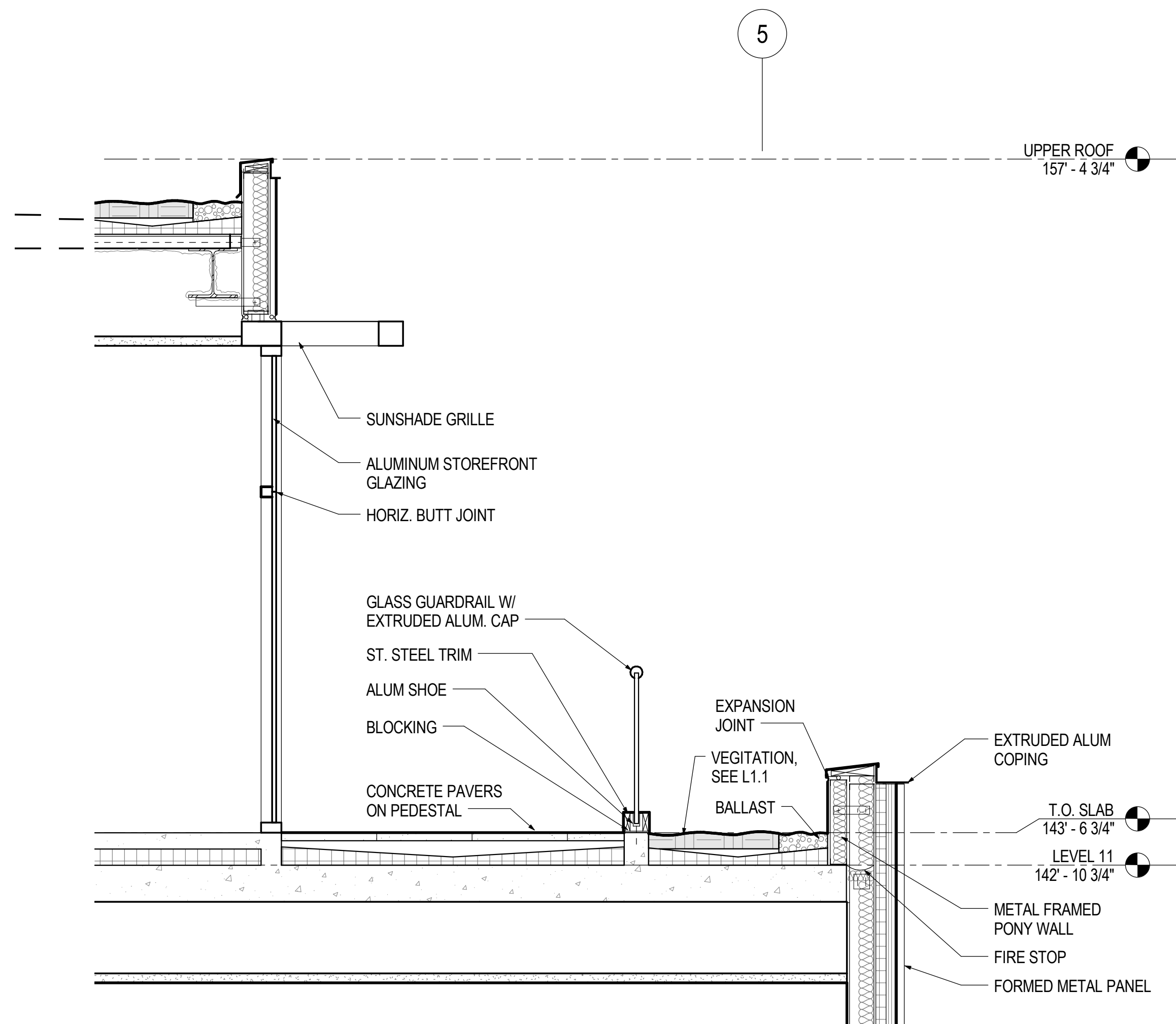
ENLARGED ELEVATION, LEVEL 1 - NORTH - MIDDLE



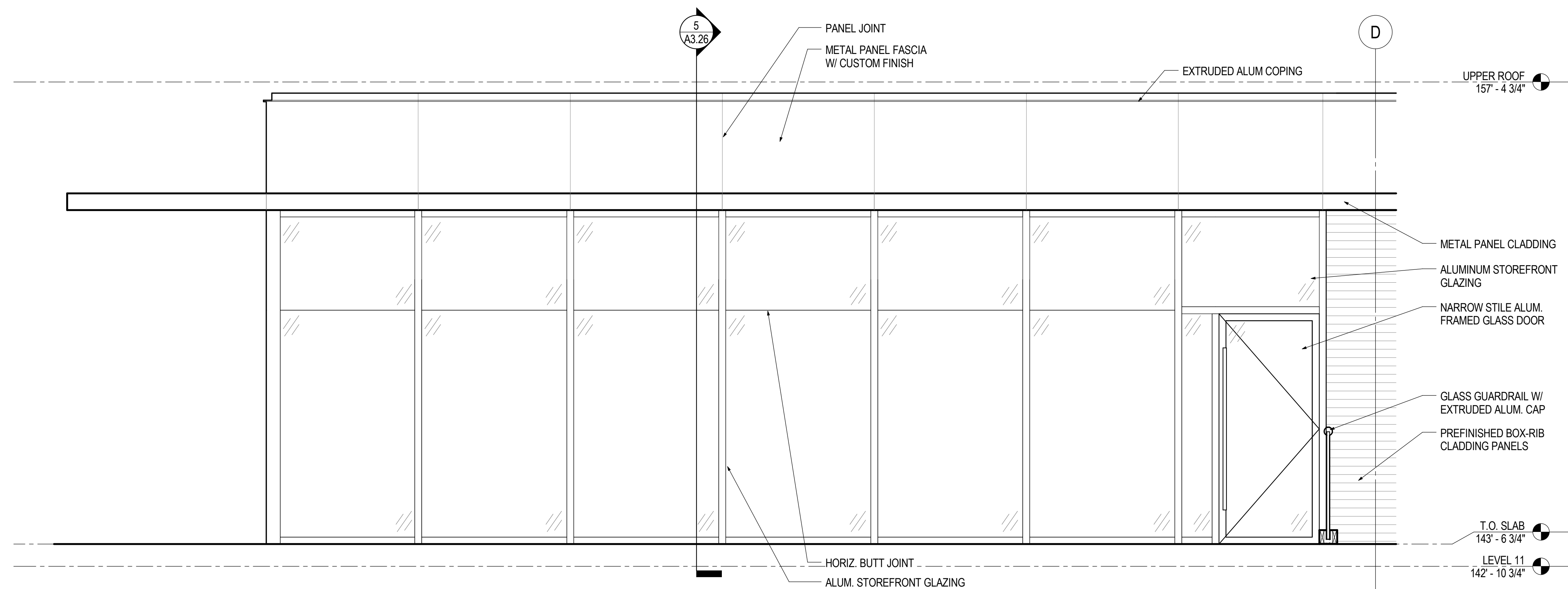




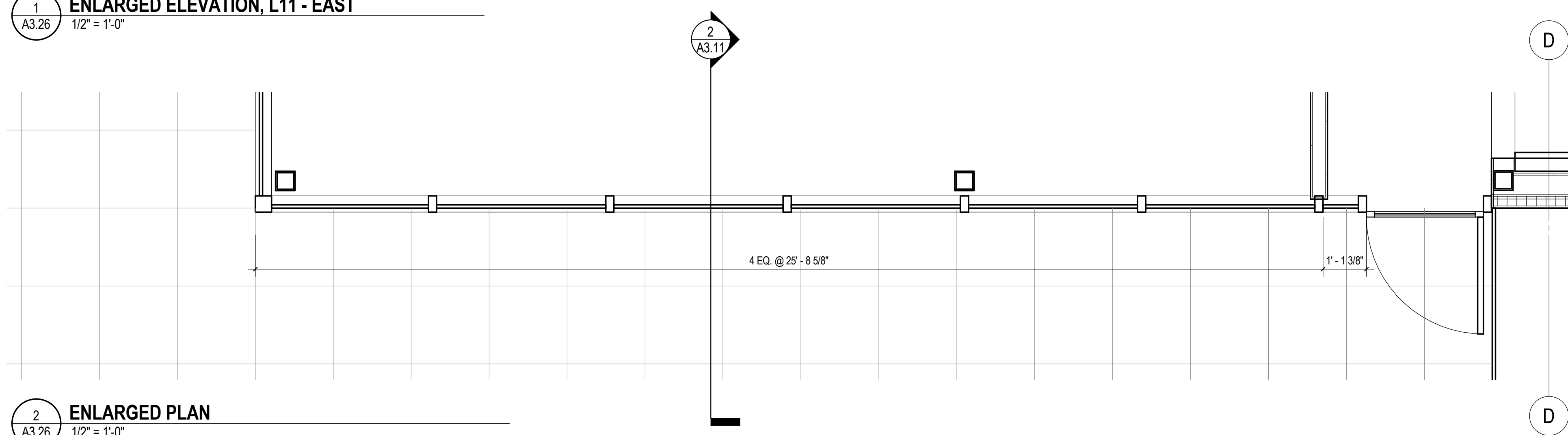




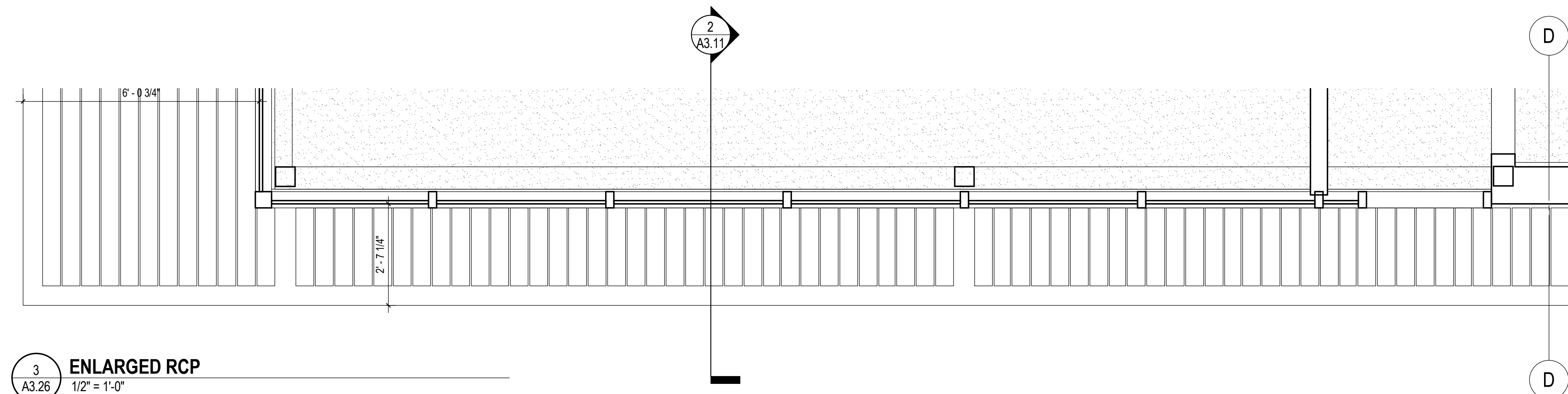
**5 ENLARGED SECTION**  
A3.26 1/2" = 1'-0"



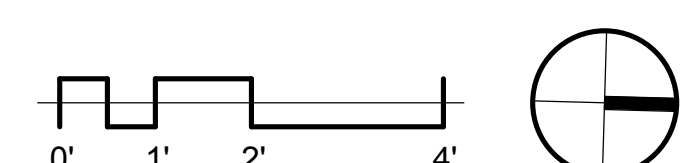
**1 ENLARGED ELEVATION, L11 - EAST**  
A3.26 1/2" = 1'-0"

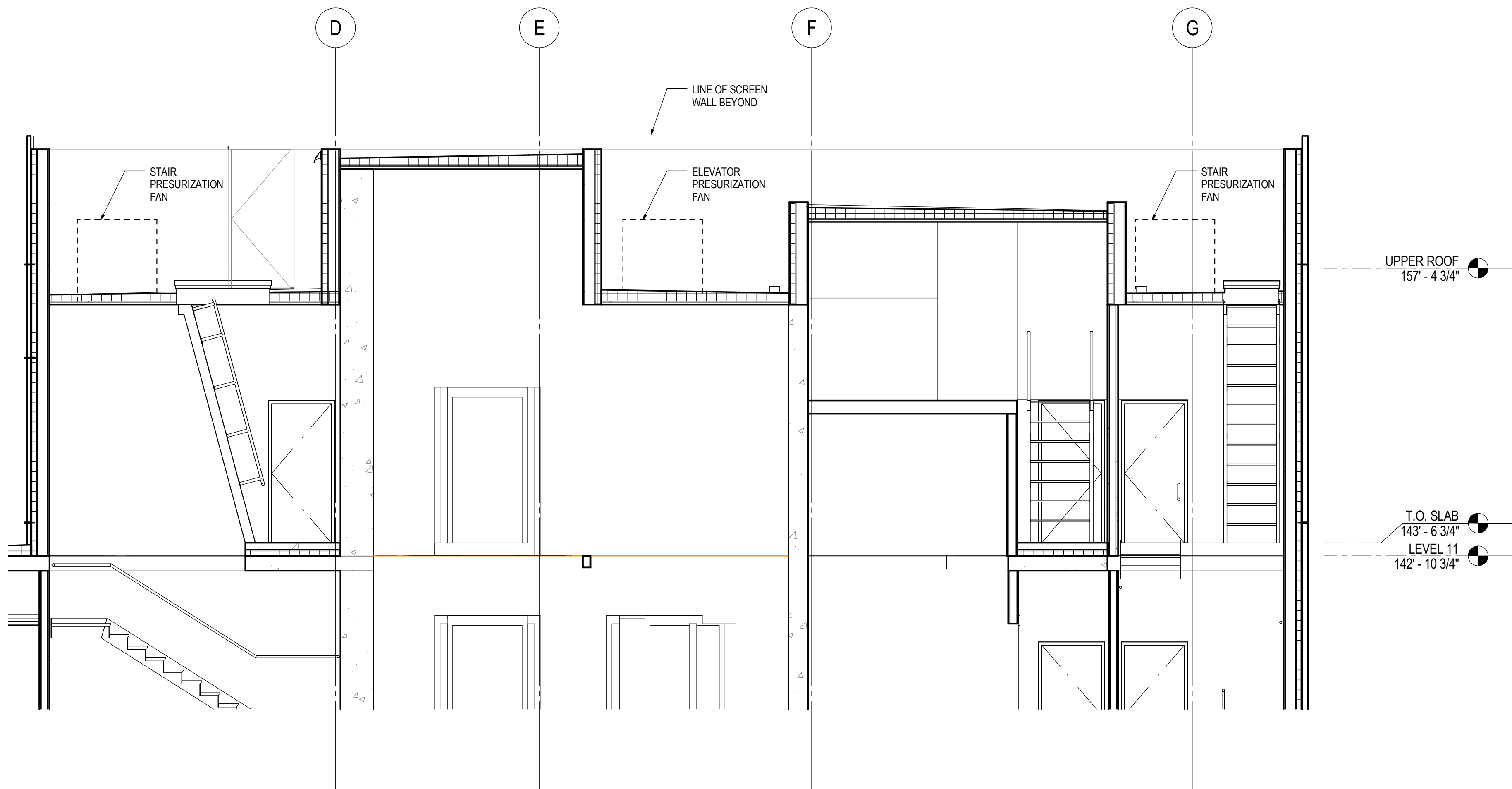


**2 ENLARGED PLAN**  
A3.26 1/2" = 1'-0"



**3 ENLARGED RCP**  
A3.26 1/2" = 1'-0"





1  
A3.29  
ENLARGED SECTION - CORE  
1/4" = 1'-0"

Revisions

LU 15-209365 DZM, AD

Exhibit A3.29

canopy  
BY HILTON

431 NW 9TH AVENUE  
PORTLAND, OR 97209

Drawing Title

SECTIONS, WALL  
AND ENLARGED  
ELEVATIONS

Date: October 28, 2015  
Job No: 22563.bpg  
Drawn By: Author  
Checked By: Checker

Drawing No.

A3.29  
50% CONSTRUCTION  
DOCUMENTS



**1.01 BICYCLE RACKS**

A. Basis of Design Product: Subject to compliance with requirements, provide product indicated on Drawing by the following:

1. Type 1 - Locking Vertical Wall Rack

a. Manufacturer: Saris Cycling Group; [www.sarisparking.com](http://www.sarisparking.com)

b. Model: 6006

c. Quantity as shown on plans.

d. Material: Steel.

e. Finish: Polyester powder coat.

f. Color: Black.

g. Attachment Method: Surface wall installation, per manufacturer's recommendations.

2. Type 2 - Stainless Steel Site Rack

a. Manufacturer: Landscape Forms, Inc; [www.landscapeforms.com](http://www.landscapeforms.com)

b. Model: Bola

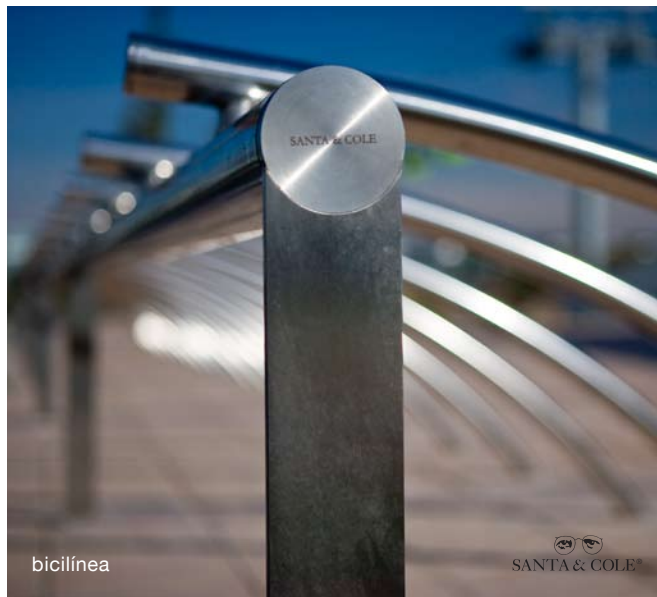
c. Quantity as shown on plans.

d. Material: 304 Stainless Steel.

e. Finish: Electropolish.

f. Attachment Method: Embedded in concrete, per manufacturer's recommendations.

bike racks



Landscape Forms takes bike racks seriously. We collaborate with landscape architects and designers to develop beautiful forms that also provide exceptional function. Pi, designed by landscape architect and cyclist Bob Chipman, is a graceful vertical rack with powdercoat finish on which bikes are hung by their frames. Bola, Flo and Ring, designed by Brian Kane, are fluid forms in handsome stainless steel that store bikes in the horizontal position. Bicilínea and Key, from Santa & Cole, provide robust side-by-side stainless steel

storage for multiple cycles and droll, colorful one-on-one accommodation for a single bike. Ride, from the Metro40 Collection designed by BMW Group DesignworksUSA, is an elegant loop that echoes the Metro40 signature ribbon frame. All are made of robust steel, are strong, durable and weather resistant, and meet APBP (Association of Pedestrian and Bicycle Professionals) recommendations.



We believe in the power of design and its ability to influence and elevate the quality of public space. High quality products and outstanding customer experience makes us one of the world's premier designers and manufacturers of outdoor commercial furnishings.

## Bike Rack Specifications

**Bicilinea:** Bike racks available in 10' and 20' lengths. 10' accommodates 8 bicycles, and 20' holds 16 bicycles. Stainless steel horizontal tube connects to support posts and curved tubes. Bicilinea must be embedded, and needs some assembly.

**Bola® and Ring®:** Bike racks made of 1.5" o.d., .120" wall stainless steel tubing, with a #4 satin electropolish finish on bare stainless steel. Ring and Bola are also available in powdercoated steel. Both Ring and Bola must be embedded. Ring and Bola can secure two bicycles parked parallel to the rack. The bicycles can be headed in opposite directions, or in the same direction. The rack provides two-point contact to prevent the bicycle from tipping over. A standard D-shaped bike lock can secure both a wheel and the frame.

**Flo:** Bike rack is made of 1.5" o.d., .120" wall stainless steel tubing, with a #4 satin electropolish finish on bare stainless steel. Flo is also available in powdercoated steel. Nylon glides cushion the two intermediate loops. Flo may be surface mounted or embedded. Flo can secure three bicycles parked parallel to the rack. The bicycles must alternate directions, so access is required from both ends. If access is limited to one direction, the capacity is reduced to two bicycles. The rack provides two-point contact to prevent the bicycles from tipping over. A standard D-shaped bike lock can secure both a wheel and the frame.

**Key:** Bike rack is made of red or grey polyurethane plastic molded over galvanized finish on internal steel tubing. Aluminum base comes standard in silver powdercoat. Key must be embedded, and ships fully assembled. Supports bike upright by its frame in two places, and holds two bicycles. Standard D-shaped bike lock can be placed to secure both a wheel and the frame.

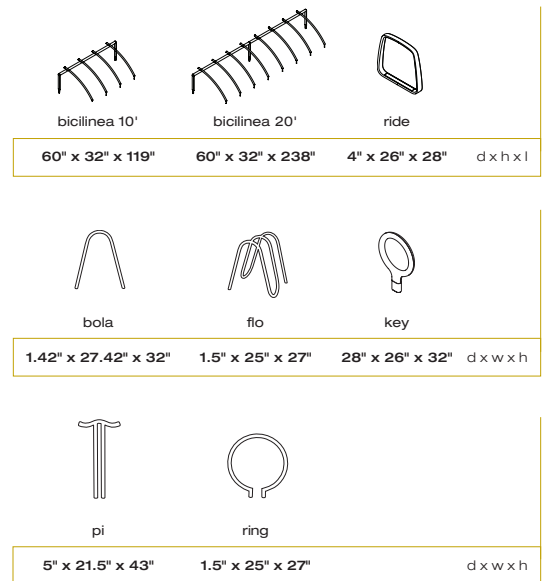
**Pi™ Rack:** Horizontal bar and legs are 2" o.d., .120" wall tubular steel, powdercoated with Pangard II, a polyester powdercoat. Surface mount plate is 5" deep x 10" wide. Pi Rack can secure two bicycles.

**Ride™:** Ride can be surface mount or embedded, and ships fully assembled. Must be spaced 30' apart, and 24' from wall. Provides bicycle support with capability for attachment at two points and holds two bicycles. Cover plate over bike rack base provides seamless appearance. Aluminum casting finished with Pangard II® powdercoat, offered in selection of colors.

**All Landscape Forms bike racks meet guidelines established by the Association of Pedestrian and Bicycle Professionals.**

## Finishes

All metal parts are finished with Landscape Forms' proprietary Pangard II® polyester powdercoat, a hard yet flexible finish that resists rusting, chipping, peeling and fading. Call for standard color chart.



## To Specify

**Bicilinea:** Specify collection and product name.

**Bola and Ring:** Select bike rack style. Specify powdercoat color or stainless steel.

**Flo:** Specify powdercoat color or stainless steel.

**Key:** Specify grey or red.

**Pi and Ride:** Select surface mount or embedded style.

Specify powdercoat color.

## landscapeforms.com

Visit our website for product details, pricing, color charts, technical sheets, sales office locations. Download JPG images, brochure PDF, CAD details, CSI specifications, and assembly instructions.



SANTA & COLE®

Bicilinea and Key are Santa & Cole products.

Specifications are subject to change without notice.

Bola, Flo and Ring are designed by Brian Kane, IDSA.

Pi is designed by Robert Chipman, ASLA.

Ride is designed by BMW Group DesignWorksUSA.

Protected by U.S. Patent Nos - Pi: D374,849. Flo: D529,433

Landscape Forms supports the LAF at the Second Century level.

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800.521.2546 269.381.3455 fax

431 Lawndale Avenue, Kalamazoo, MI 49048

landscapeforms.com



Metal is the world's most recycled material and is fully recyclable. Consult our website for recycled content for this product. Powdercoat finish on metal parts contains no heavy metals, is HAPS-free and has extremely low VOCs.

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Exhibit 80

\*For Design Intent Only

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[Home](#) » [Home Bike Storage](#) » Bike Trac



**Model 6600**





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Exhibit 80  
\*For Design Intent Only

## Bike Trac

Vertical bike parking with variety of security options

From: \$ 49.99 USD

Security

SKU: 3477

Posted in [Home Bike Storage](#), [Indoor Bike Parking](#).

Custom finishes, commercial freight and commercial pricing available. [Contact us](#).

- [Description](#)
- [Design & Installation Resources](#)
- [Additional Information](#)

## Bike Trac

The Bike Trac provides full bike coverage to protect the walls, while also providing freedom for capacity and mounting configuration. Available in locking and non-locking options.

### Product Details

- Wide wheel track accepts all bikes
- Full length tray keeps bike in place and protects wall surface
- Two locking mechanism options available

### Number of Bikes

- 1 bike per Trac

### Finish

- Powder coat black only

### Hardware

Recommended anchor: [Anchor Lag Bolts and Shield \(Qty 4\) #6264](#) – Sold Separately

### Spacing

- At 18" Spacing, stagger Tracs 10"

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Vertical Rack From: \$ 293.82 USD Select



Stretch Rack From: \$ 482.97 USD Select

- Products
  - Outdoor Bike Parking
  - Indoor Bike Parking
  - Home Bike Storage
  - Cycling Infrastructure
- Planning
  - Bike Parking Design Guidelines



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## Saris



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**LIGHT SOURCE**

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Incandescent  
LED  
Metal Halide  
MR16

**LUMEN OUTPUT**

Under 1000  
1000-2000  
2000-3000  
3000-4000  
4000-5000  
Over 5000

**APERTURE SIZE**

3"  
3.5"  
4"  
6"  
8"

**APERTURE**

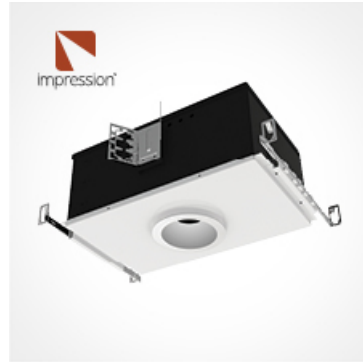
Round  
Square

**TRIM**

Trim  
Trimless

**CONSTRUCTION TYPE**

Remodel  
New Construction  
Air-Tight IC  
CCEA Chicago Plenum  
Shallow  
IC



4" IMPRESSION LED DOWNLIGHT  
IL-DRTR



LINKS:

ENERGY STAR® PRODUCTS

REPRESENTATIVE

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Exhibit 81  
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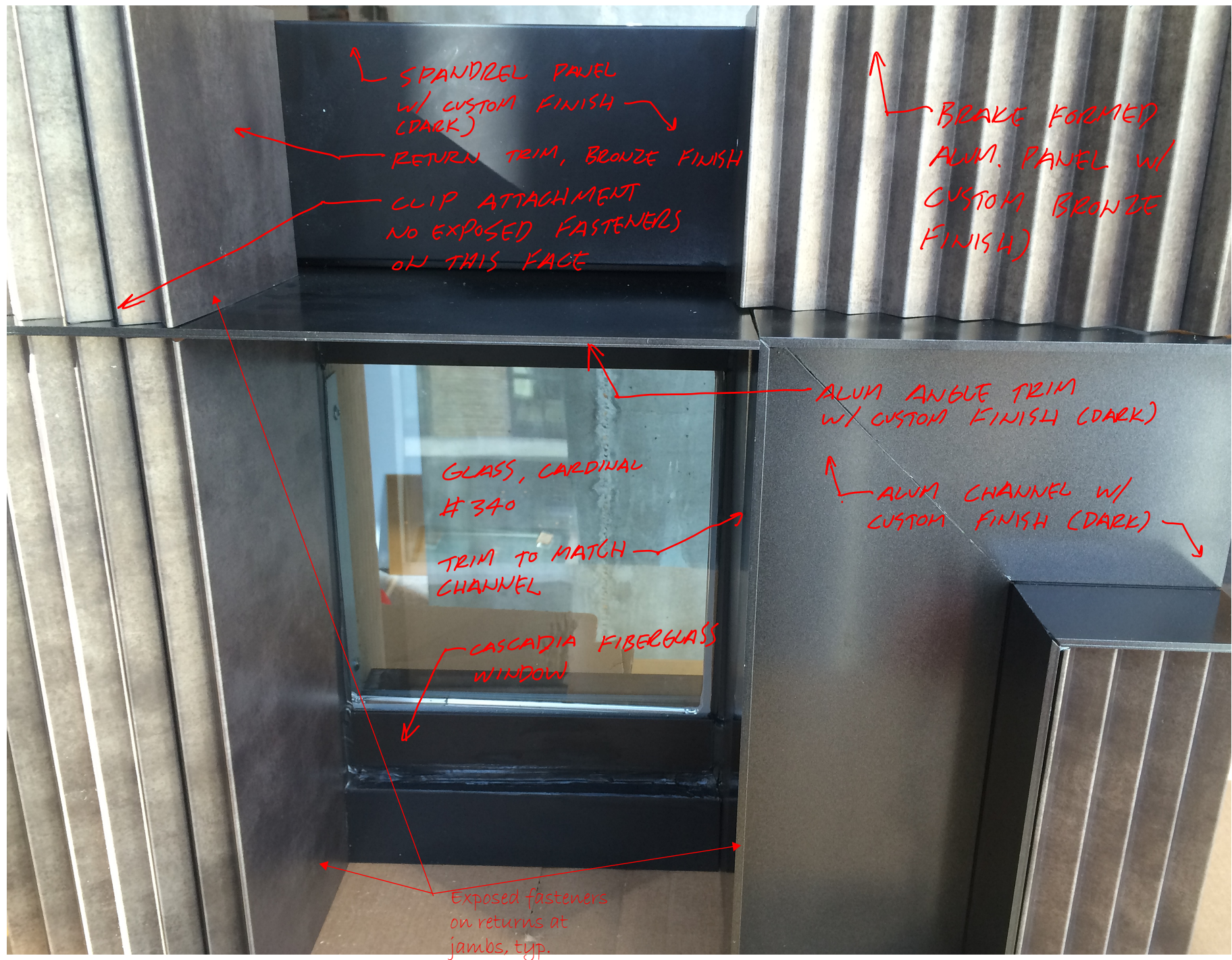
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A Leviton Company  
www.leviton.com



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Note: This mockup is meant to illustrate general material finishes and adjacencies. It does not represent construction methods. It is meant to illustrate many types of conditions, and as such, does not represent a specific building detail.



Estimated top of adjacent CLT tower based on concept design documents is 180.5' Elevation or 16.5 feet taller than the Canopy Hotel. On this end of the site, the CLT tower is planned to be constructed a couple feet from the property line (as Canopy is) and has no windows on the east facade. This means the gap between the two buildings is < 4 feet (+/-) which will be enclosed by a seismic expansion joint.

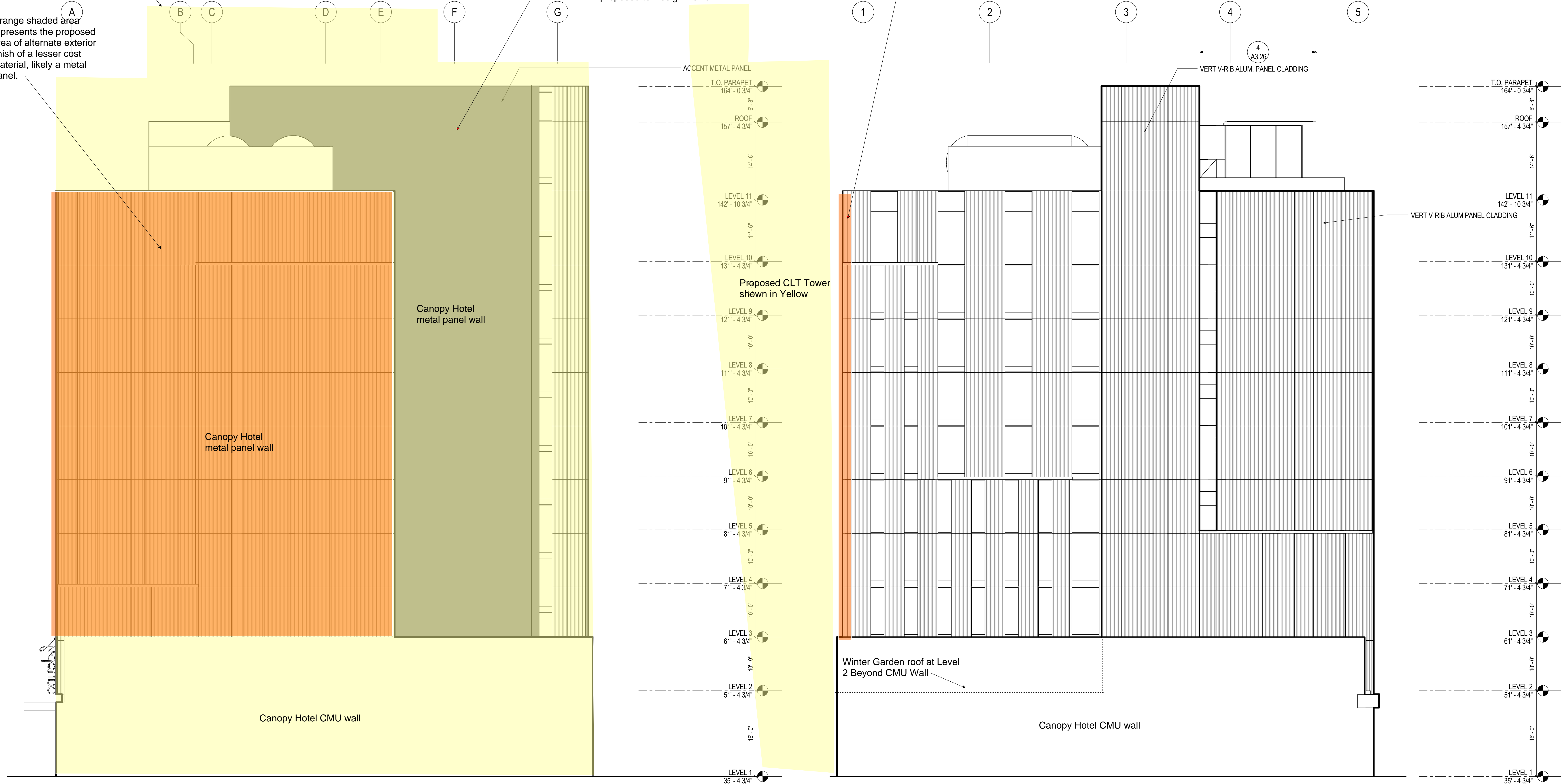
Orange shaded area represents the proposed area of alternate exterior finish of a lesser cost material, likely a metal panel.

FOR TYPICAL NOTES, SEE 1/A3.01

On the south end of the site, the CLT tower is proposed to step back from the property line an additional 2 feet adjacent the elbow in the guest room floor plate that is the wintergarden. As the north and west facades of the guest room floors is visible from the south, even if the CLT tower is constructed, we propose these remain the original metal panel finish proposed to Design Review.

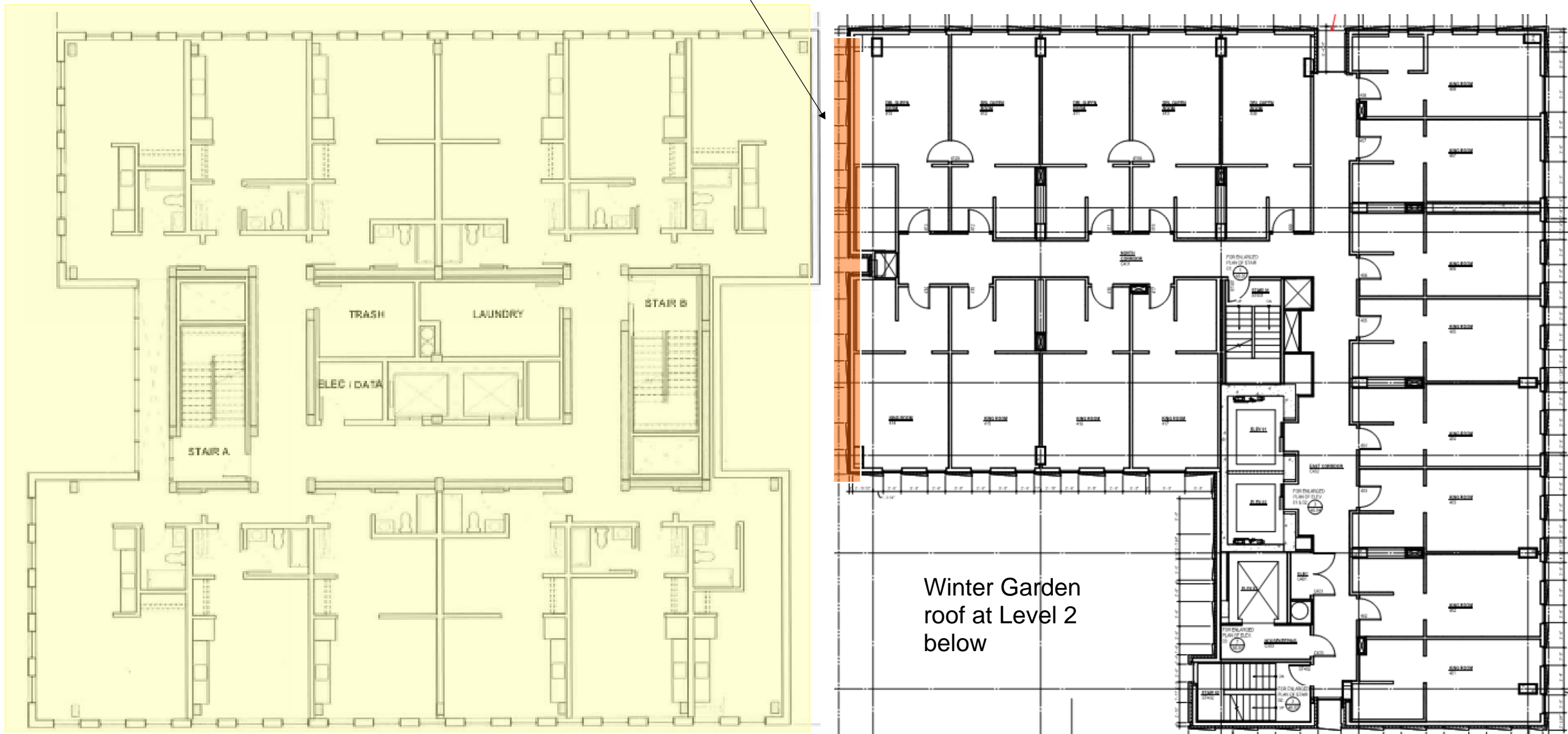
Orange line shows Canopy Hotel wall to be covered by CLT Tower thus proposed to be of alternate lesser cost material.

FOR TYPICAL NOTES, SEE 1/A3.01



2 ELEVATION - WEST  
1/8" = 1'-0"

1 ELEVATION - SOUTH  
1/8" = 1'-0"



CLT Tower Plan

Canopy Hotel Plan

