



PAE Living Building

*SW 1st & Pine
Design Advice Request*

January 14, 2019



PAE

| ZGF

1st & Pine
Old Town
Portland, Oregon



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Project Description



01

This project seeks to achieve the highest levels of building performance and sustainability based on modern design and construction methodologies, while responding respectfully to the characteristics of the Skidmore Old Town Historic District. The overall goal is to design a building that is of its time, but timeless in its response to the context, as well as didactic in its expression of its high performance systems.

The proposed building is a five-story, cross laminated timber (CLT) structure designed to the Living Building Challenge (LBC) guidelines. The ground floor uses include retail space on SW 1st Avenue and SW Pine Street, an office lobby on SW 1st Avenue, a bike hub including bike storage, showers, restrooms and lockers for tenant use, and mechanical and electrical space. The second through fifth floors will be office space. A single tenant is currently expected to lease the third, fourth, and fifth floors. The second floor can be leased to a single tenant or divided for two tenants. The building gross square footage is 58,733.

The proposal engages the street environment through the creation of retail frontages along both SW 1st Avenue and SW Pine St. These retail lease spaces are connected to the street environment with storefront glazing to promote visual connection and a sense of transparency, welcomeness, and safety at the street edge.

Building support services are located away from street frontages to maintain an active street front. This building includes onsite waste water treatment and storm water capture reuse required to meet Living Building performance goals.

Levels two through five are planned as office space with access to natural light, views, and natural ventilation.

The roof will be used for rain water collection and PV generation. Roof area for PV generation is intended to be maximized to meet energy demand. We are looking forward to the opportunity of coordinating it closely with the Design Commission and City of Portland.

Project Goals

1. **A mixed-use building designed to revitalize and complement the Old Town/Skidmore Historic District**
 - Activate the historic district with infusion of jobs and people
 - Replace a surface lot with active ground floor uses
 - Restore the historic street character and enhance the public realm
2. **A Living Building that is net zero energy, net zero water and red list free: a building that uses only the resources available to its site**
 - Help city achieve 2030 Climate Action Plan
 - Mitigate climate change that puts historical district resources at risk
 - Showcase Portland as a leader in Living Buildings
3. **A replicable, developer-led solution that can inspire future Living Building development**
 - Create a financially viable building
 - Share approach to encourage future sustainable development



Living Building Challenge

Living Building Certification (LBC) is the world's most stringent sustainable building standard, moving beyond "less bad" and towards buildings that are truly regenerative and contributing positively to society. Currently there are only fifteen certified Living Buildings in the world, with only two in Oregon (and none in the city of Portland) After over 10 years, the scarcity of certified projects testifies to the difficulty of creating truly sustainable projects. To realize a project, it requires not only enlightened owners and investors and a talented integrated design team, but also the support of the local community and municipality to address areas where its requirements may conflict with local regulations. The system is organized in seven "petals" that encompass twenty mandatory imperatives that address:



Place

The project is designed for people, not cars, will include extensive bicycle commuting amenities as well as onsite urban agriculture. An acre of natural habitat in the Portland bioregion will be permanently preserved from development as part of this project.



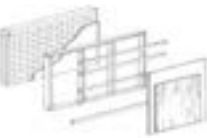
Water

All of the water used in this building is supplied by captured rainwater, or re-used greywater for non-potable needs (as allowed by current code).



Energy

The project will generate all of the energy it needs annually through photovoltaics. Per the LBC exception for dense, energy intensive buildings on small urban lots, over 75% of the solar panels will be onsite, and the remainder supplied by an additional installation within the local grid.



Materials

The project will contribute to the local economy by sourcing at least 50% of materials locally or regionally, selecting the most sustainable and healthy materials possible by avoiding common toxic materials (like PVC and zinc) on the LBC's Red List.



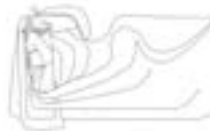
Health

Every occupant will have access to fresh air and daylight through a nearby operable window. Exceptional air quality provided through the elimination of toxic materials, mechanical filtration, and operational practices



Equity

The project will promote a true, inclusive sense of community through external and public-facing elements that are universally accessible and invite all members of the community



Beauty

This project will integrate public art and contain design features intended solely for human delight and the celebration of culture, spirit, and place, as well as educational elements designed about the operation and performance of the project.

For more information on the International Living Future Institute (ILFI) and the Living Building Challenge (LBC), please refer to www.living-future.org/lbc



Urban Pattern

02



SITE OUTLINED IN RED

District Character

- Skidmore / Old Town Historic District
 - Listed on the national register of historic places in 1975
 - National Historic Landmarks are exceptional places and form a common bond between all Americans
 - The District marks the site where the City of Portland started and flourished
 - Once the Center of Commerce and Entertainment in Portland
 - Contains the city's largest remaining collection of mid to late 19th century business buildings
 - Known throughout the United States for its Italianate Architecture

National Historic Landmark District

1 of 58 National Historic Landmark Districts in the United States of America.



FORMER 1883 REID'S BLOCK BUILDING ON SITE (DEMOLISHED MID 20TH CENTURY)



- Significant or Defining Architectural Characteristics
 - Strong facades at the street level as well as on upper stories
 - Strong rhythmic fenestration patterns with balanced ratio of wall and window surfaces on upper stories
 - Clear visual delineation between floors
- Significant or Defining Urban Setting Characteristics
 - Relationship of the street and sidewalks to the buildings
 - Density of development, historically few (if any) vacant lots
 - Absence of street trees

Neighborhood Scale

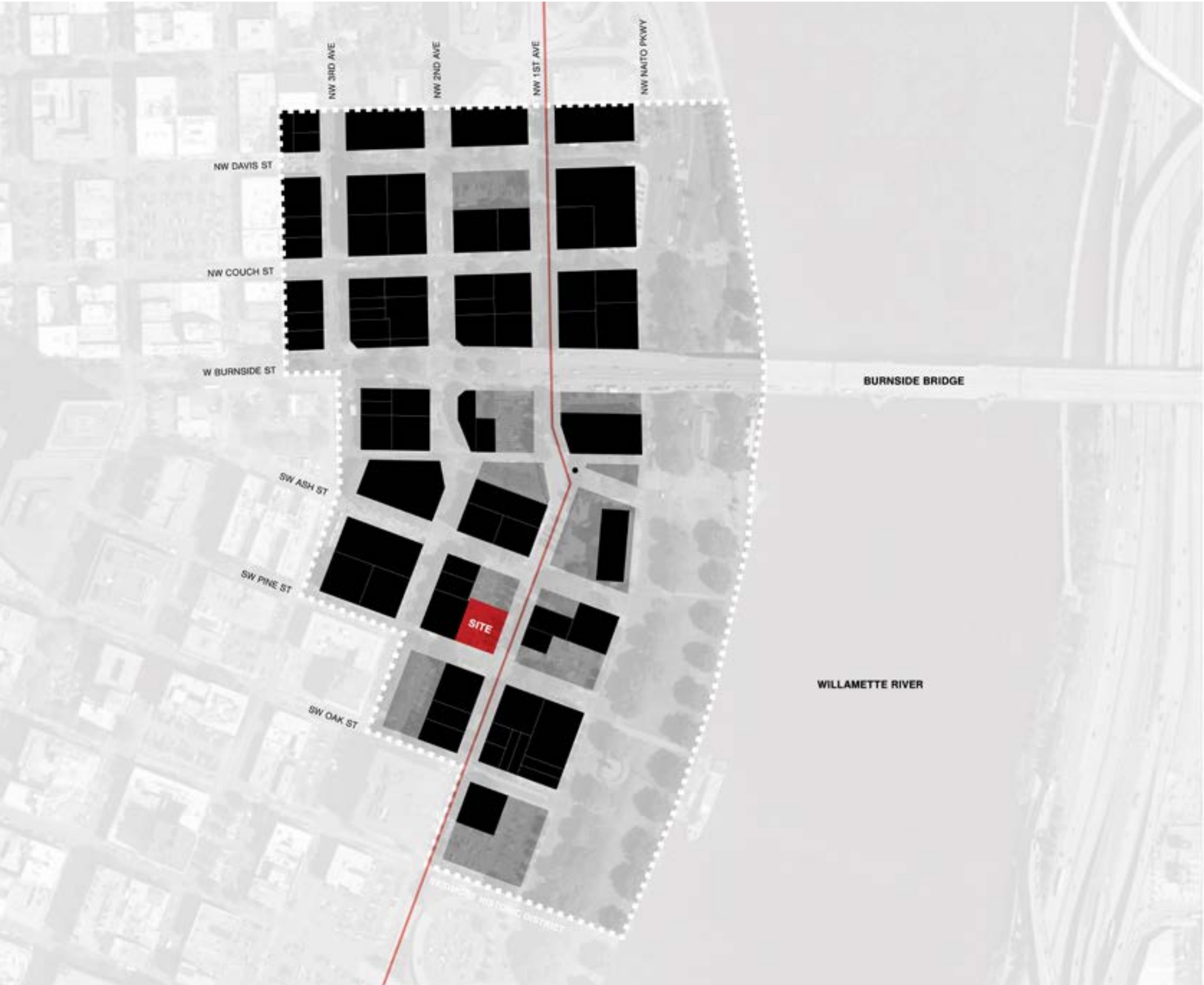
S/OTDG: A1.a, A1.b, D4
CCFDG: A3

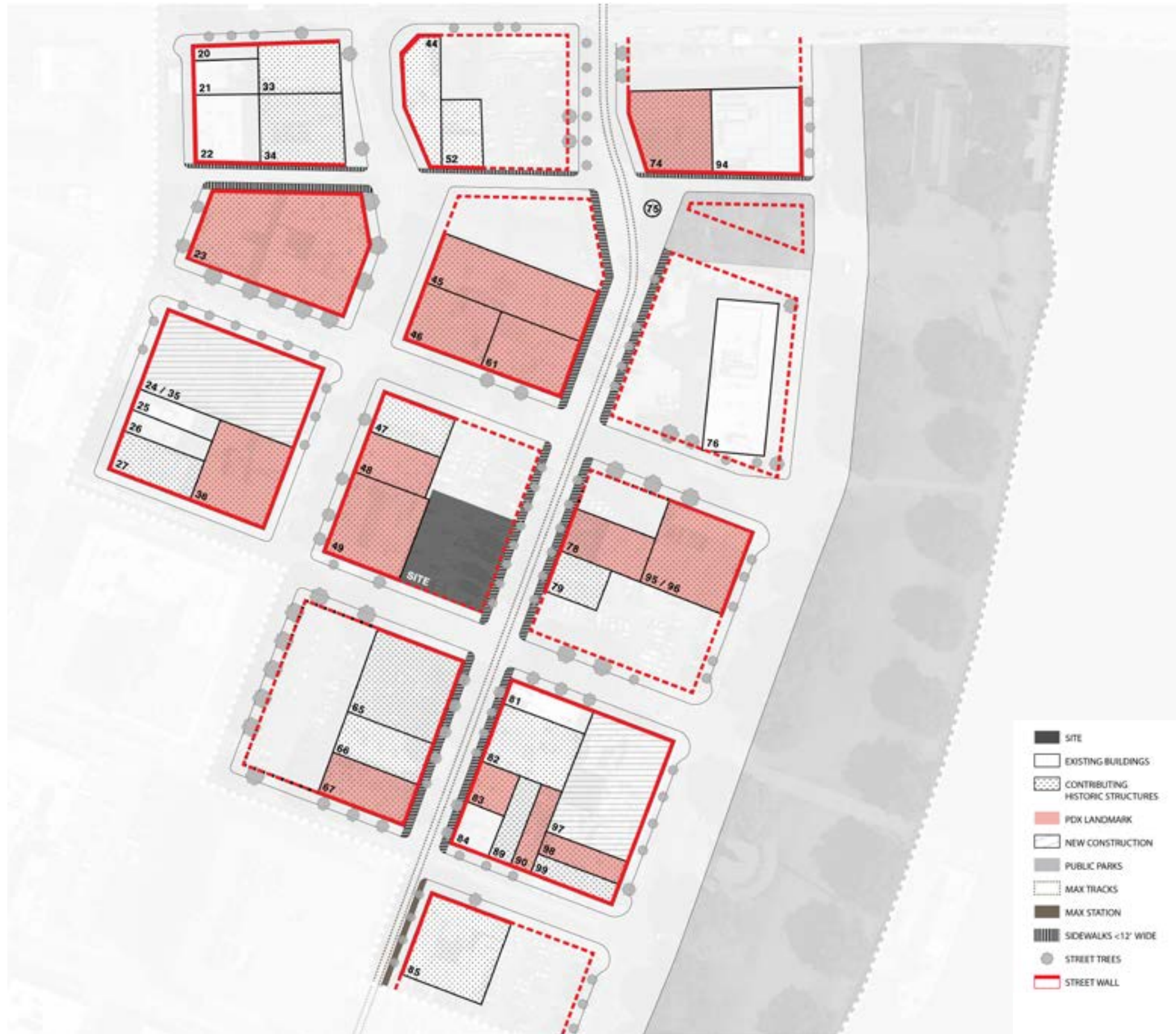
The site is located at the Northwest corner of SW 1st Avenue and SW Pine Street.

The district is comprised of a relatively fine grain urban grid. The 200 foot square blocks are typically subdivided into smaller parcels. Multiple individual buildings typically comprise a block face, full block developments are uncommon.

The proposed project utilizes two joined parcels, the first being roughly 100 feet by 100 feet square at the corner of SW Pine and SW 1st Avenue, the second abutting to the north with a 17 foot frontage on SW 1st Avenue and depth of approximately 100 feet. The building footprint occupies just over 1/4 of the block.

-  SITE
-  EXISTING BUILDINGS
-  DEMOLISHED HISTORIC STRUCTURES
-  MAX TRACKS





Street Wall

S/OTDG: A2, D2

CCFDG: A7, B1

A defining characteristic of The Skidmore Old Town Historic District was a development pattern that resulted in a strong and continuous street wall. The street wall is comprised of facades that are strong at the street level but also on upper stories, strong rhythmic fenestration with a balanced ratio of wall to window surface and clear visual delineation between floors.

The proposed project reinforces the continuity of the historic street wall by developing a strong and rhythmic facade that meets the lot line and extends to the building's full height. Fenestration is rhythmic in nature and articulated to express floor levels and key proportional datums found in the district.





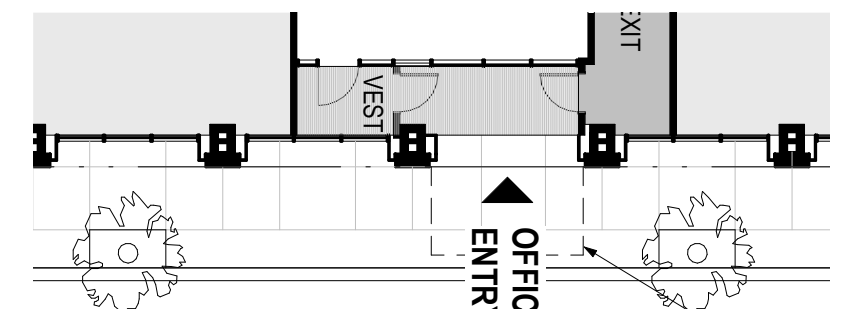
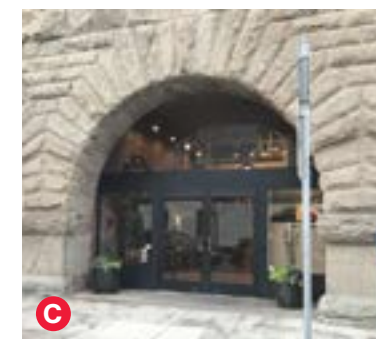
Entry Setback

S/OTDG: A1.b, D6, D7

CCFDG: A8, B4, C6, C8, C9

Historic documents, photos and site survey indicate that entries in the district are often denoted by a setback in the building facade at the primary building entry as well as the use of increased articulation or detail to provide visual cues and hierarchy to primary entry points.

The proposed project's primary entry is on SW 1st Avenue, and is expressed by a setback in the building facade. Additionally, the project will seek to incorporate salvaged cast iron elements that were originally on the project site at the building's primary entry to reinforce the hierarchy through a richness of detail as well as celebrate the architectural tradition of the neighborhood.





Canopies

S/OTDG: A7
CCFDG: A8, B2, B6, C8, C9

While historic documents, photos and site survey indicate that entries in the district are often denoted by a setback in the building facade, the same reference materials indicate that when canopies were used at building entries they were often limited to the entry condition. Historic photographs and documents indicate that where canopies were more broadly used along a building face it was for the protection of goods being loaded, displayed or stored at the street face; and often were more temporary in nature, such as collapsable fabric awnings.

The project proposes a building canopy at the main building entry to provide hierarchy and focus to the façade, weather protection at the main lobby and a visual cue to vehicles and pedestrians as to drop off or entry location. At retail entries, weather protection is provided by three foot setback, borrowing from the historic context of entry setbacks.



HISTORIC 1ST AVENUE



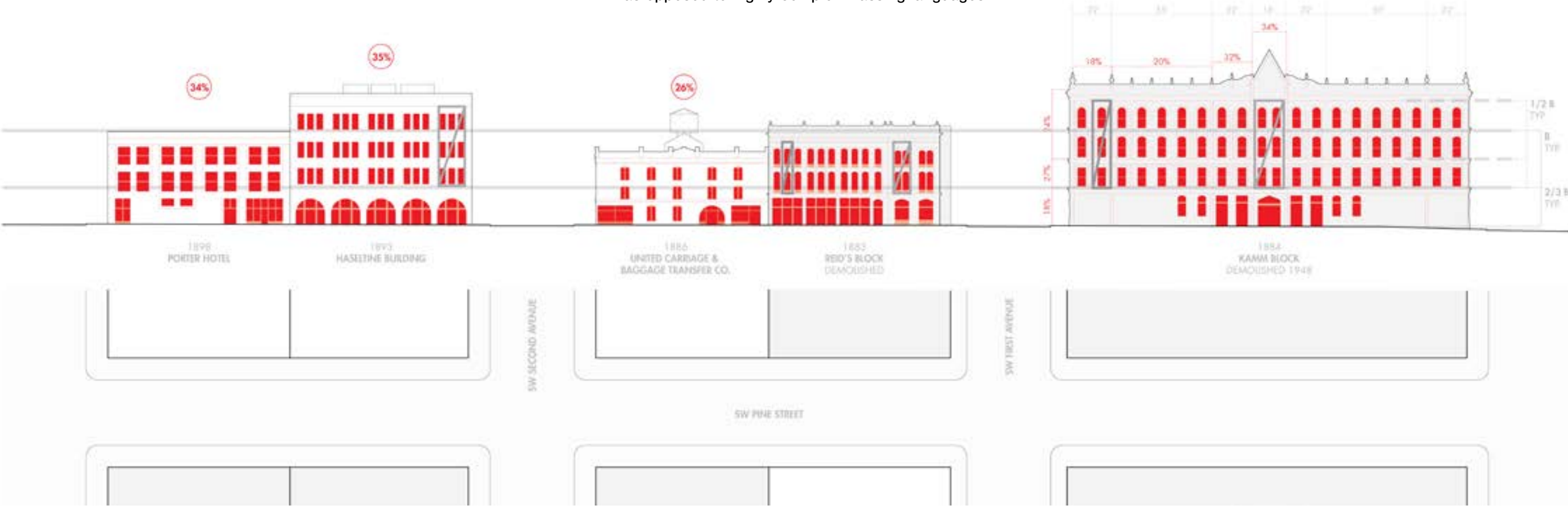
Historic Street Elevation—SW Pine Street

Utilizing historic documents and site survey the project team has identified key defining characteristics of the district to inform the proposed building design.

An overarching proportional system defines the district's architectural character. That system is represented in an articulation of base, body and top, and has a direct relationship to the golden ratio or Fibonacci series often found in classical architecture, which served as inspiration for the historic district's defining structures.

The general range of window-to-wall ratio relates to the need for natural light in historic buildings designed in an era when artificial lighting was less abundant. The window-to-wall ratios also vary by architectural typologies. Cast iron development allowed for larger areas of glazing and higher articulation, while brick bearing wall architecture tended to have lower glazing areas and expressed the load carrying nature of the brick in flat arches and articulated lintels.

There is a consistent building texture and fabric, often expressed as simple forms. Simple block forms are generally the character of the neighborhood as opposed to highly complex massing languages.

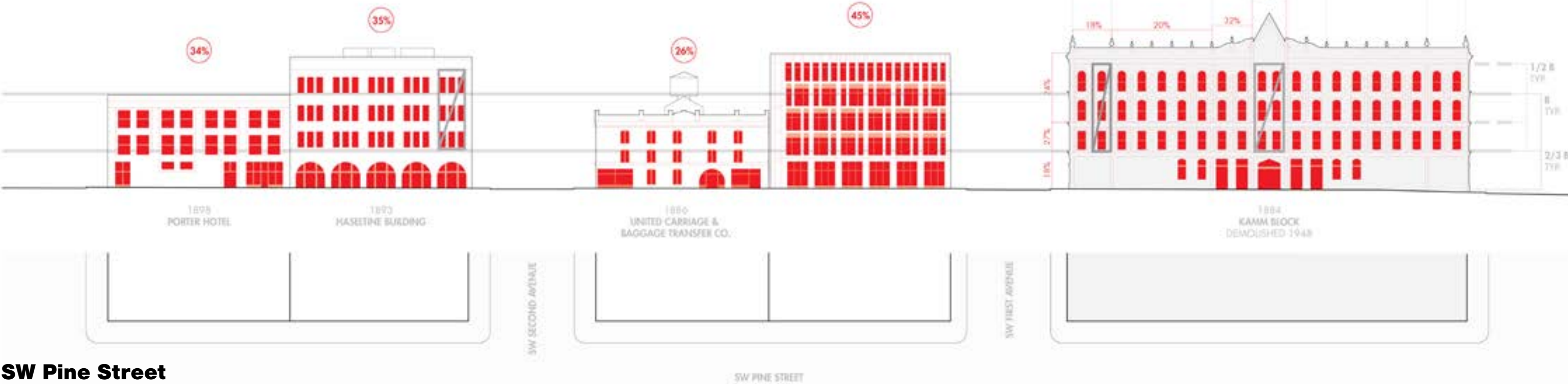


Historic Street Elevation—SW 1st Avenue

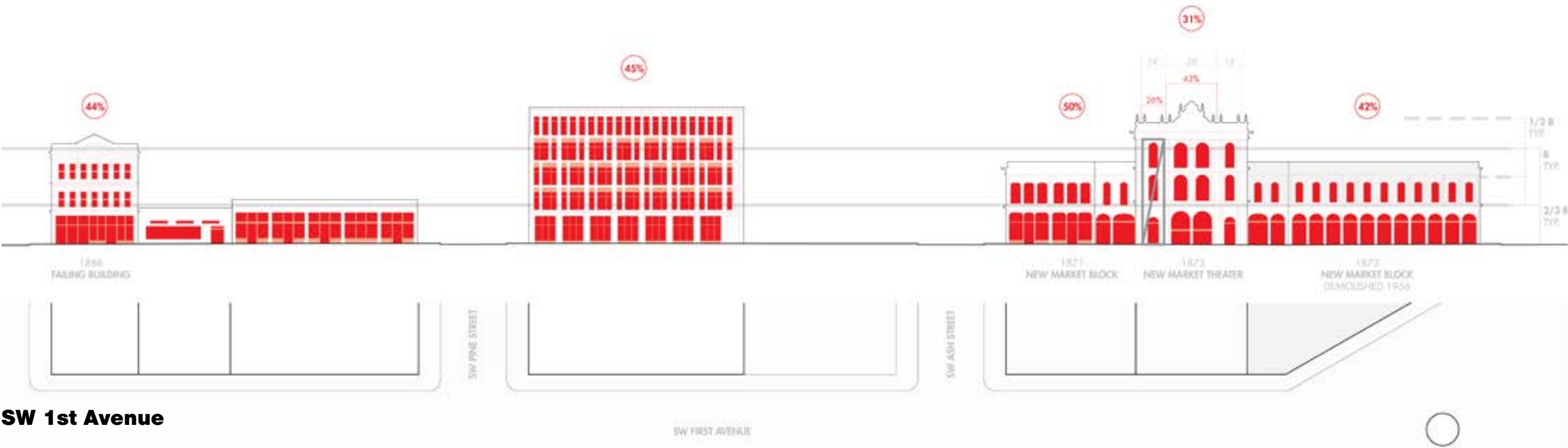


Proposed Street Elevation

S/OTDG: A1.a, D1, D3, D4
CCFDG: A3, A7, C3, C4



SW Pine Street



SW 1st Avenue



Architectural Character

03



Historic Resources

20	6 SW 3rd Ave
21	Paris Theater
22	10 SW 3rd Ave
23	Wachsmuth Building
24	108 SW 3rd Ave
25	122 SW 3rd Ave
26	128 SW 3rd Ave
27	Porter Hotel
33	Holm Hotel
34	Western Rooms
36	Haseltine Building
44	134 W Burnside St
45	New Market Theater
46	New Market Annex
47	Phoenix Building
48	Glisan Building
49	Pine Street Market
52	Salvation Army Building
61	New Market - South Wing
65	106 SW Pine St
66	Apple Music Co Building
67	Failing Building
74	Reed Building
75	Skidmore Fountain
76	Fire Station 1
78	Smith Block
79	Society Hall
81	50 SW Pine St
82	208 Building
83	Seuffert Building
84	Freimann Restaurant Building
85	George Lawrence Building
94	43 SW Naito Pkwy
95	Smith Block
97	221 SW Naito Pkwy
98	Fechheimer & White Building
99	Hallock & McMillen Building

Historic Resources



36 HASELTINE BUILDING



46 NEW MARKET ANNEX



67 FAILING BUILDING



78 SMITH BLOCK
79 SOCIETY HALL



83 SEUFFERT BUILDING



85 GEORGE LAWRENCE BUILDING

Proportional Continuity

S/OTDG: A1.a, D1, D3, D4, D6, D7
CCFDG: C3, C4, C8, C9

The proportional relationships of the district described previously can be identified in individual structures. While buildings may be varied in height, the proportional systems were applied with some rigor, resulting in an overall continuity of the district, but some variation in datums at the detailed level.

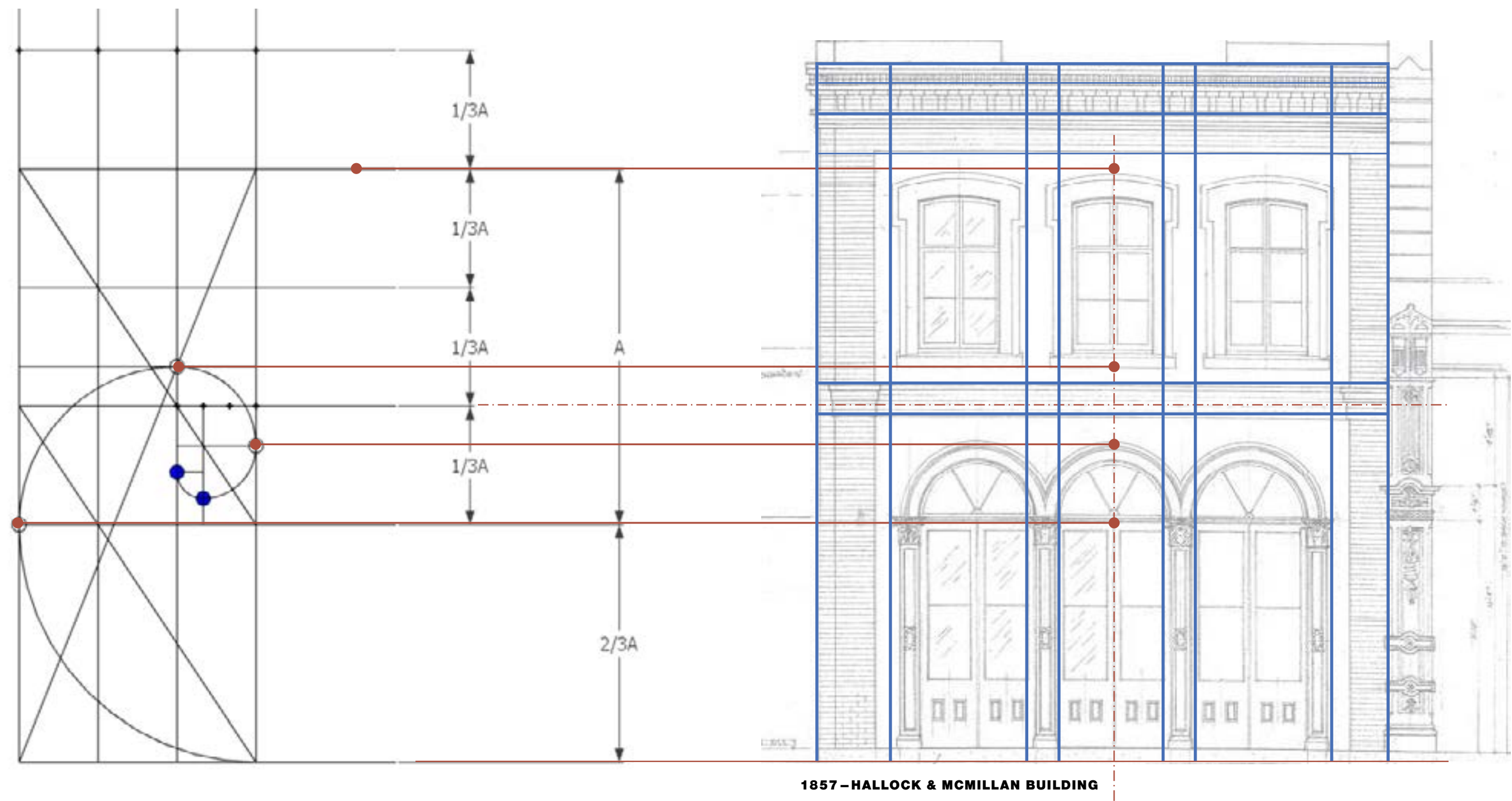
The proposal uses the same vertical proportional break down and relationships to define its facade approach, including articulation of base, body and top, utilization of the golden ratio in the proportional composition, and variation in the window shape or pattern within the facade to further reinforce the vertical hierarchy.

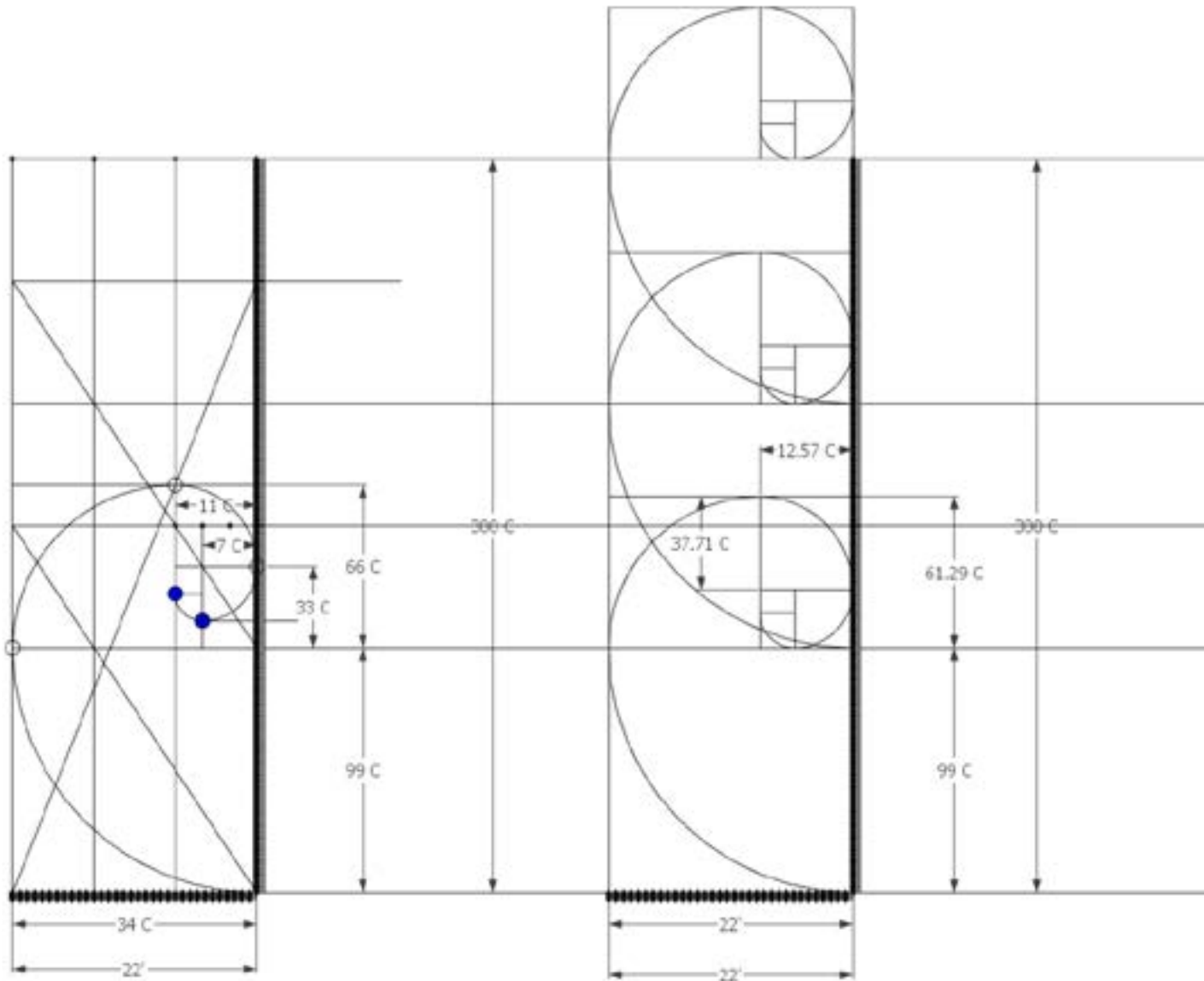


District Character

Clear delineation between floors is provided by strong horizontal lines on the building.

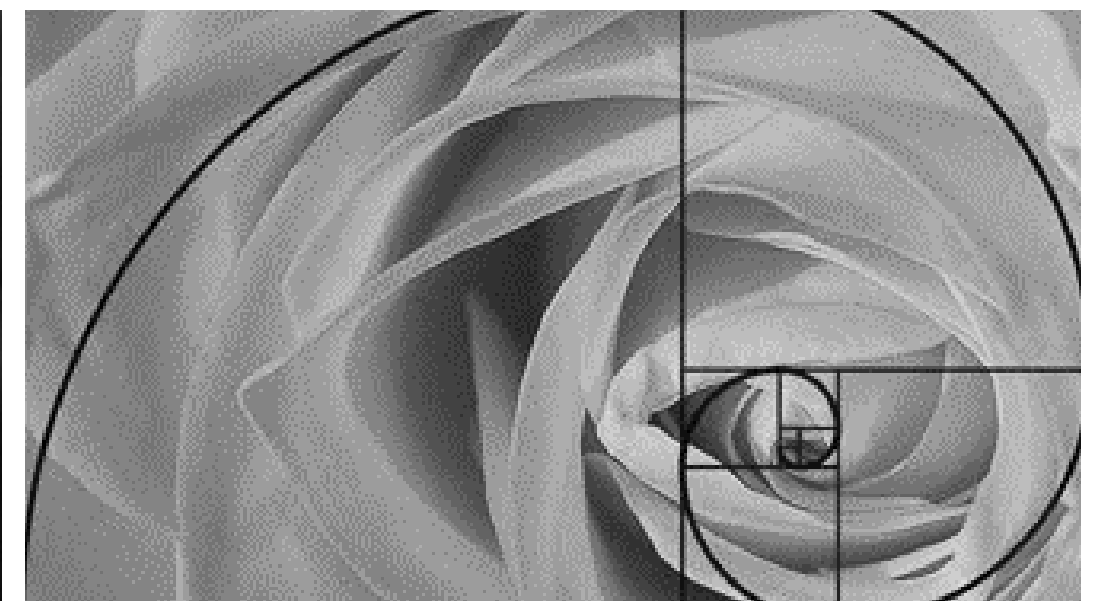
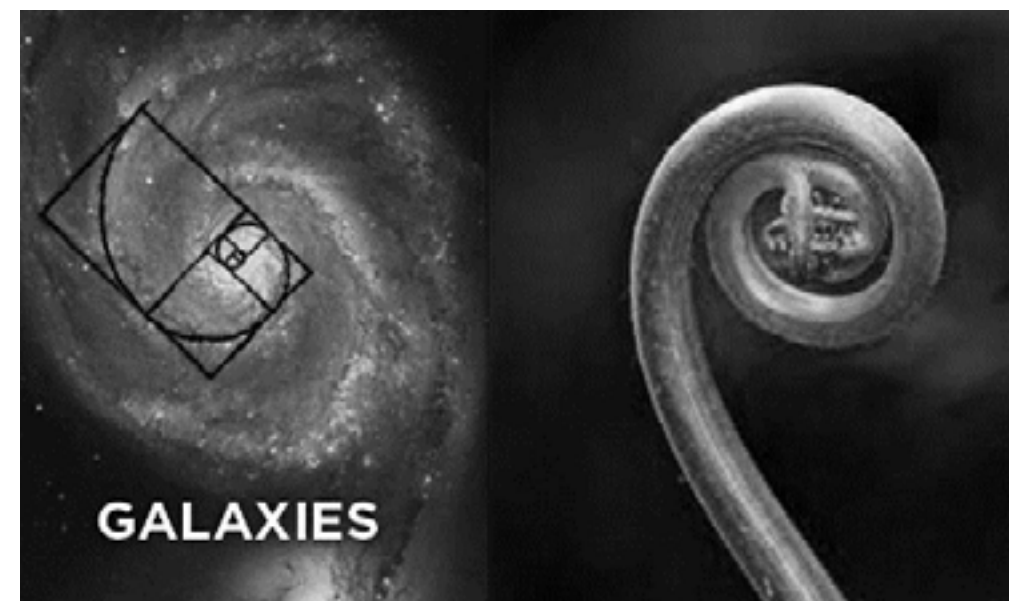
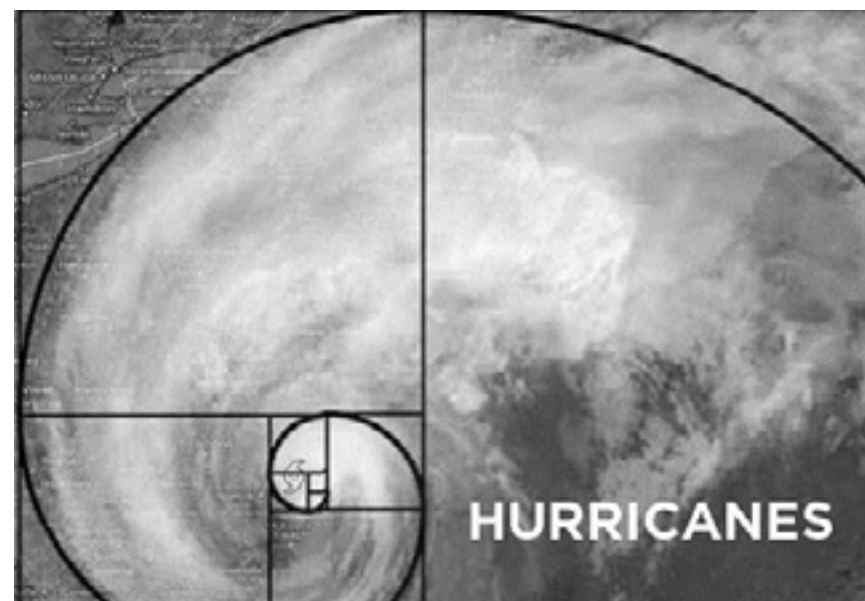
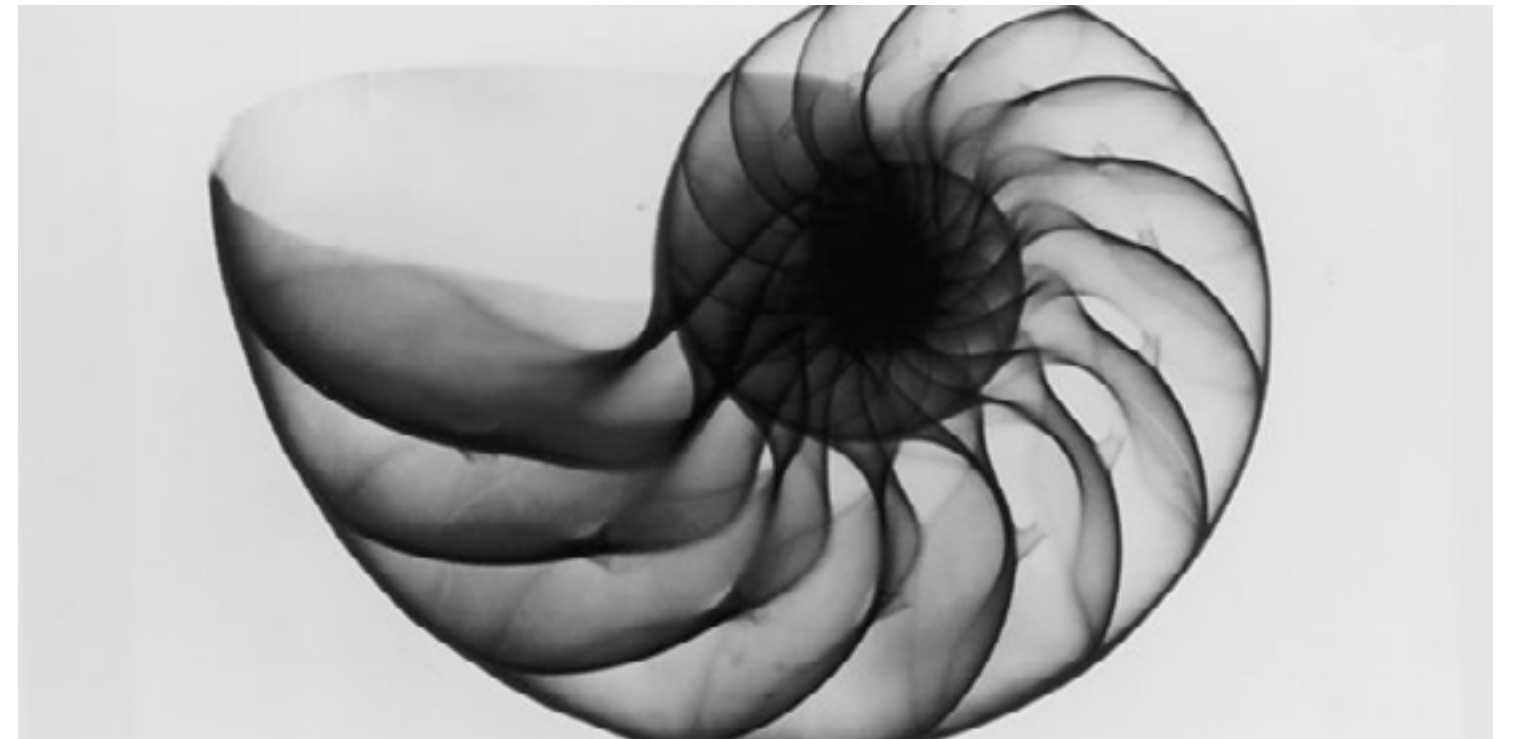
Colonnades and window proportions give buildings a strong vertical orientation.





Relationship to Naturally Occurring Proportions

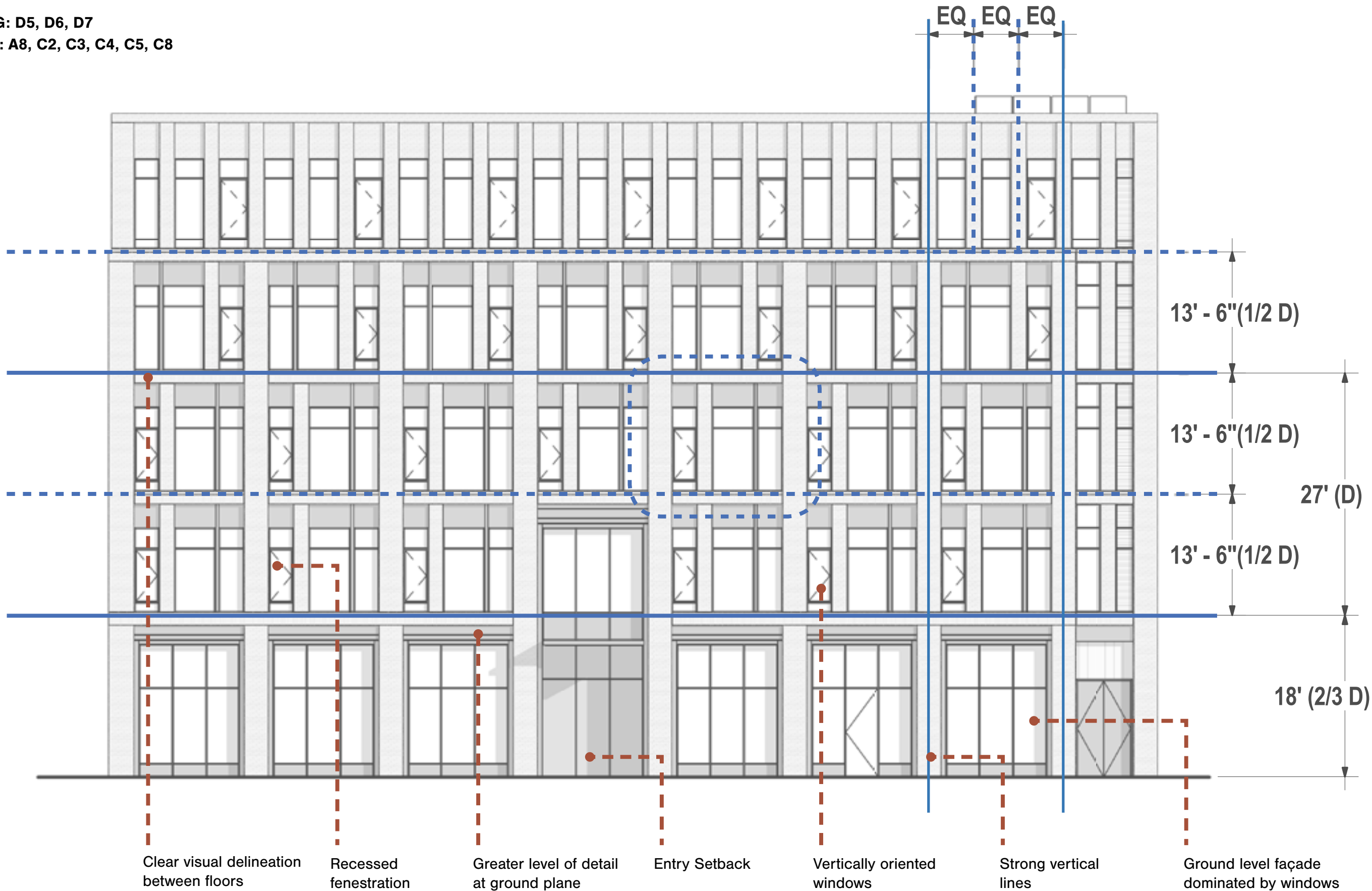
Analysis of the context has identified that many of the underlying proportional relationships of the district's architecture are rooted in the golden section, or Fibonacci series. It is of interest to the team that this proportional relationship is also applicable to many naturally occurring systems. There is an interesting interrelationship between these natural systems and our built environment particularly given the projects design as a Living Building. It is this intriguing collision of the natural and built environment, the historic context and contemporary rediscovery of passive design strategies rooted in optimizing the use of our natural resources that provide a basis and inspiration for the building's design development.



Façade Characteristics

S/OTDG: D5, D6, D7

CCFDG: A8, C2, C3, C4, C5, C8



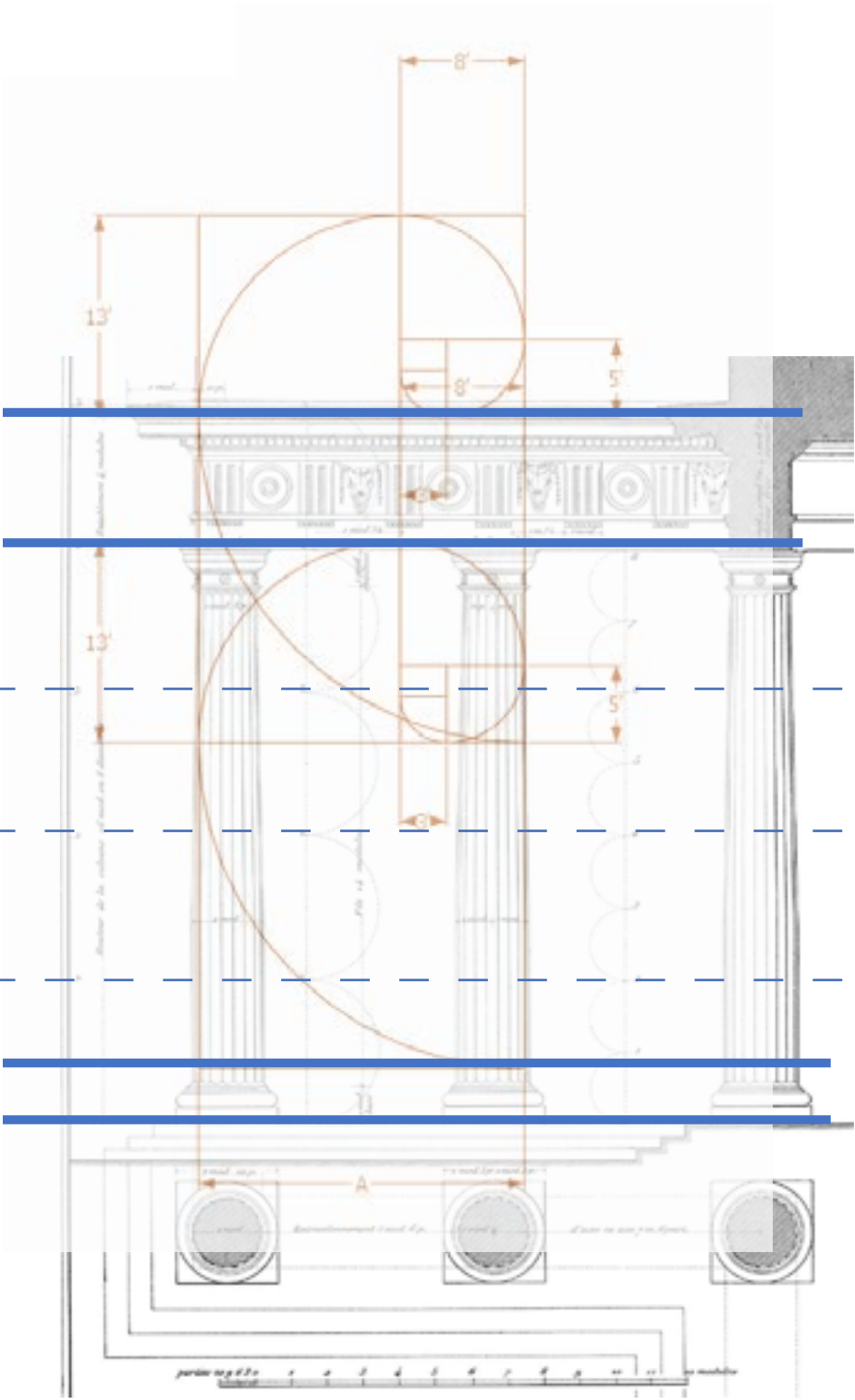
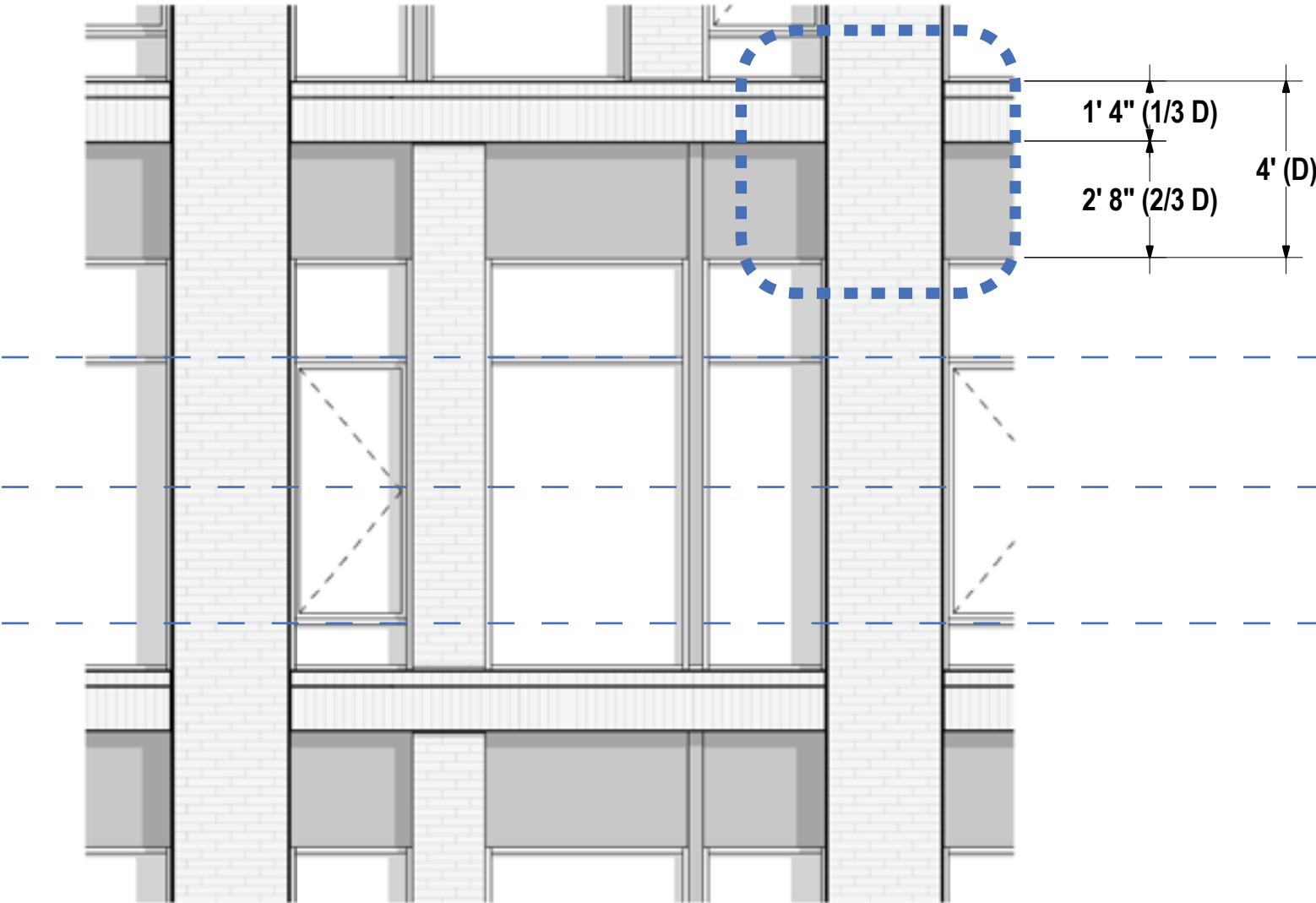
Façade Characteristics

S/OTDG: D1, D5, D7

CCFDG: C2, C3, C4, C5

Interpretation of ornament at window surrounds and horizontal lines.

Classically ordered proportions.



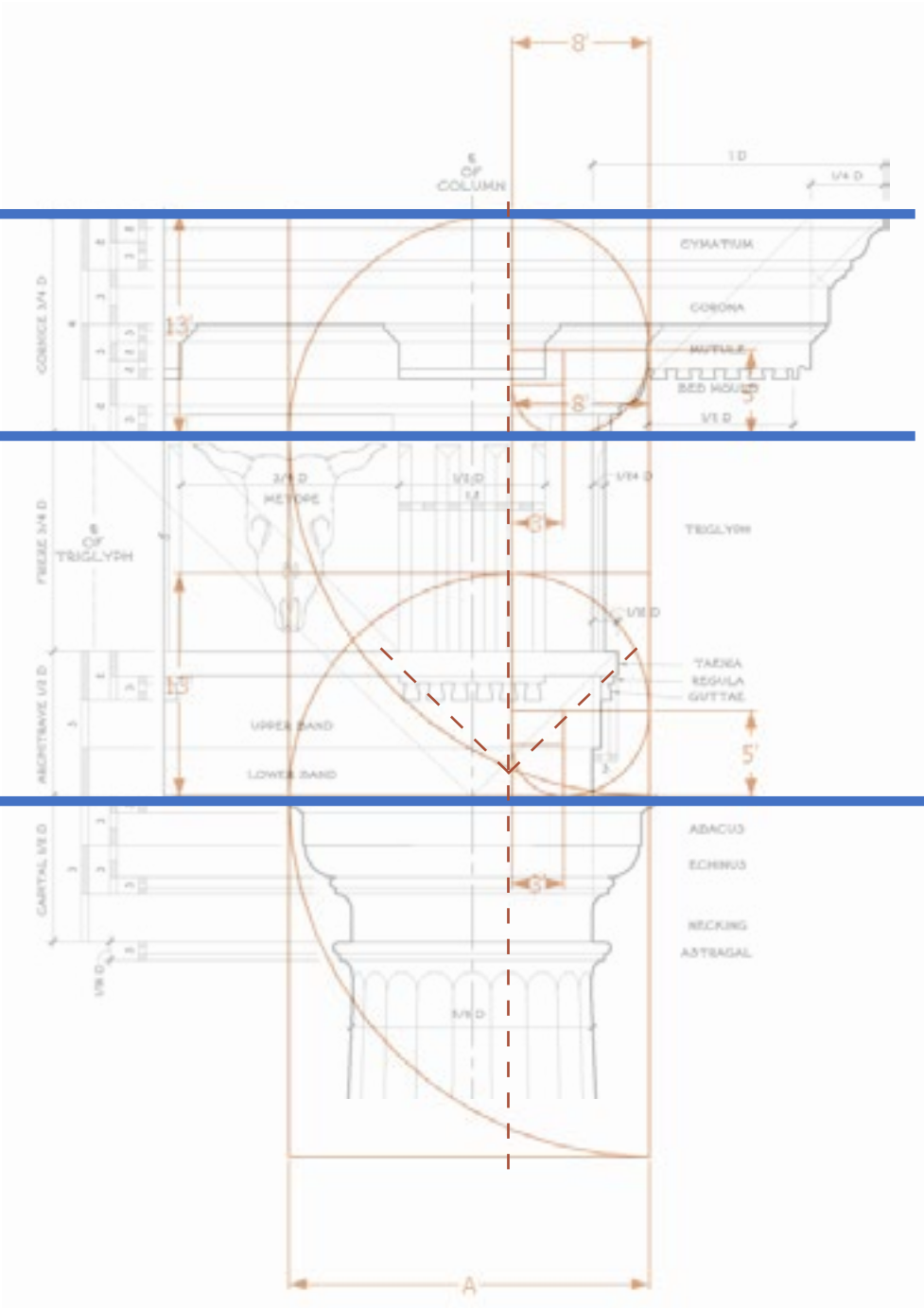
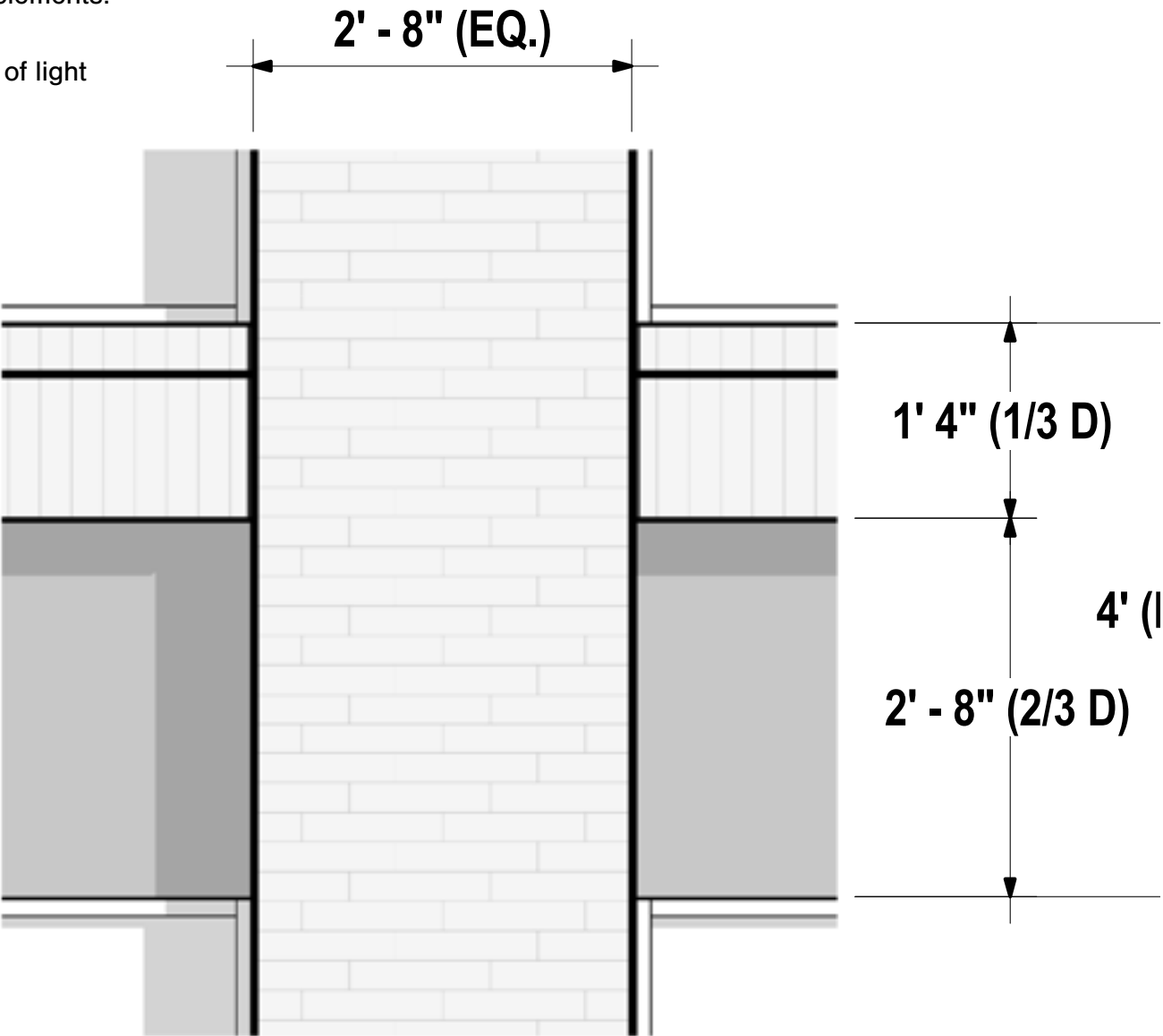
Façade Characteristics

S/OTDG: D5, D7
CCFDG: C2, C3, C4, C5

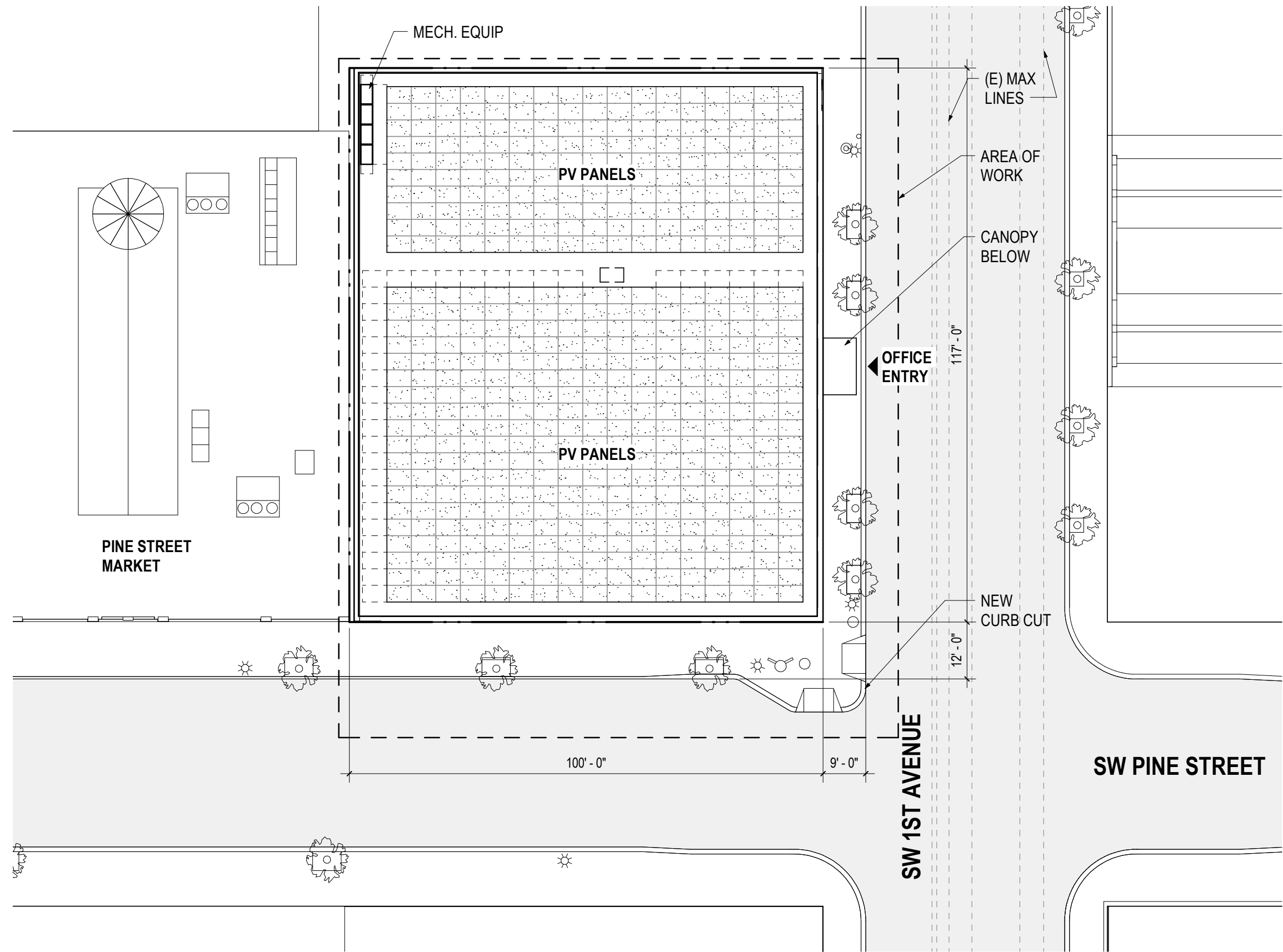
Detail articulation of joinery at windows.

Classically ordered relationships of vertical elements to horizontal elements.

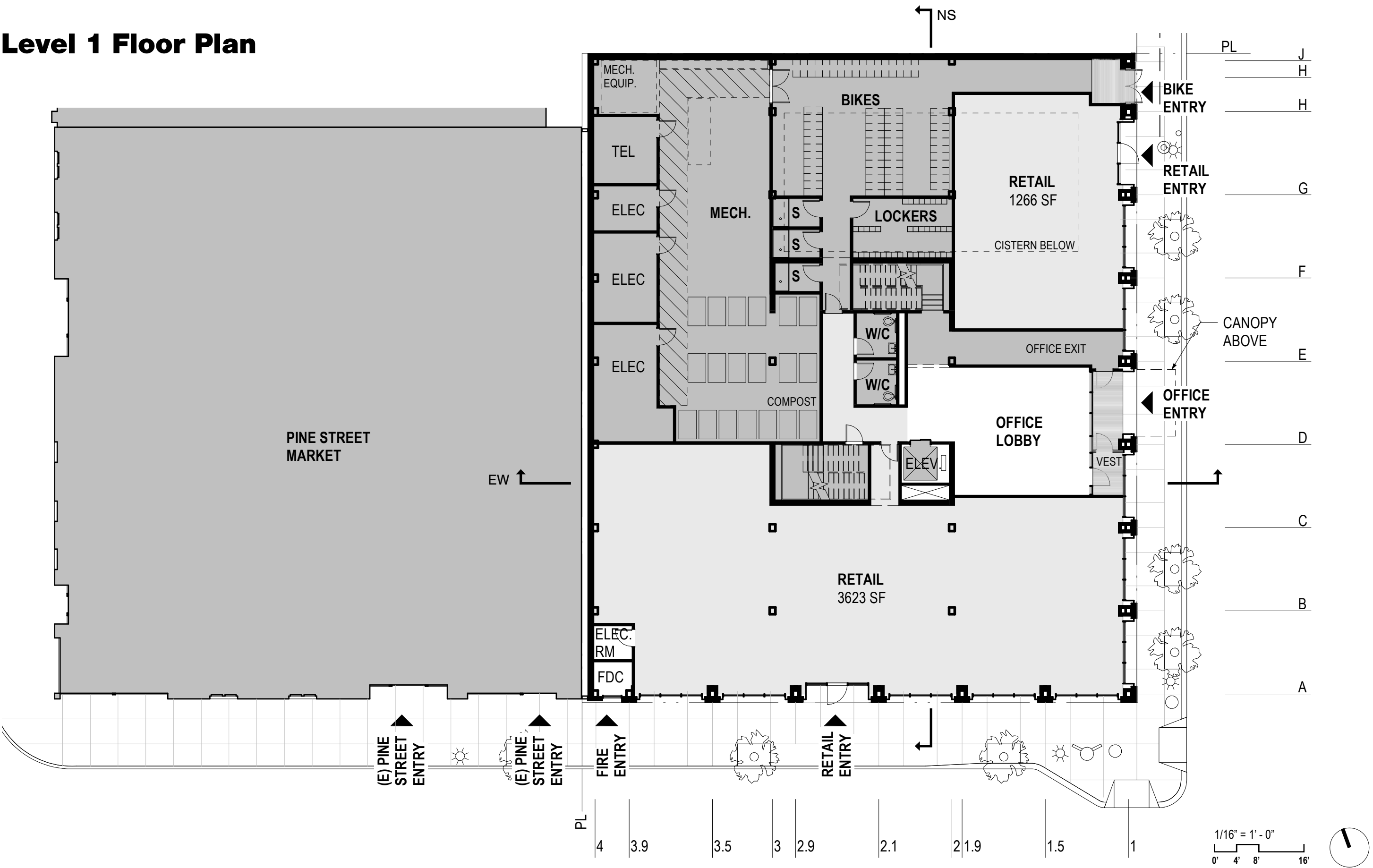
Detail creates interplay of light and shadow.



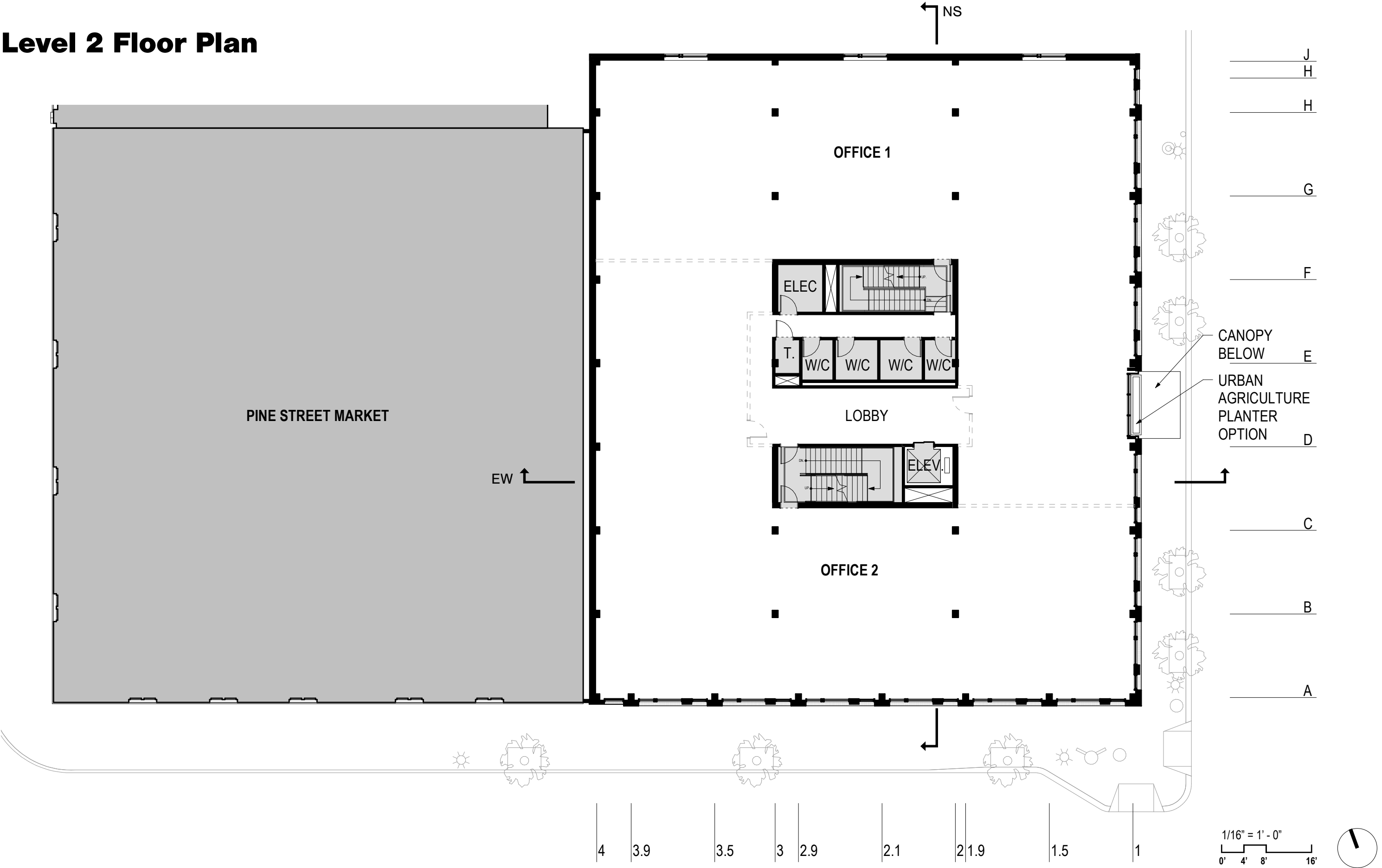
Site Roof Plan



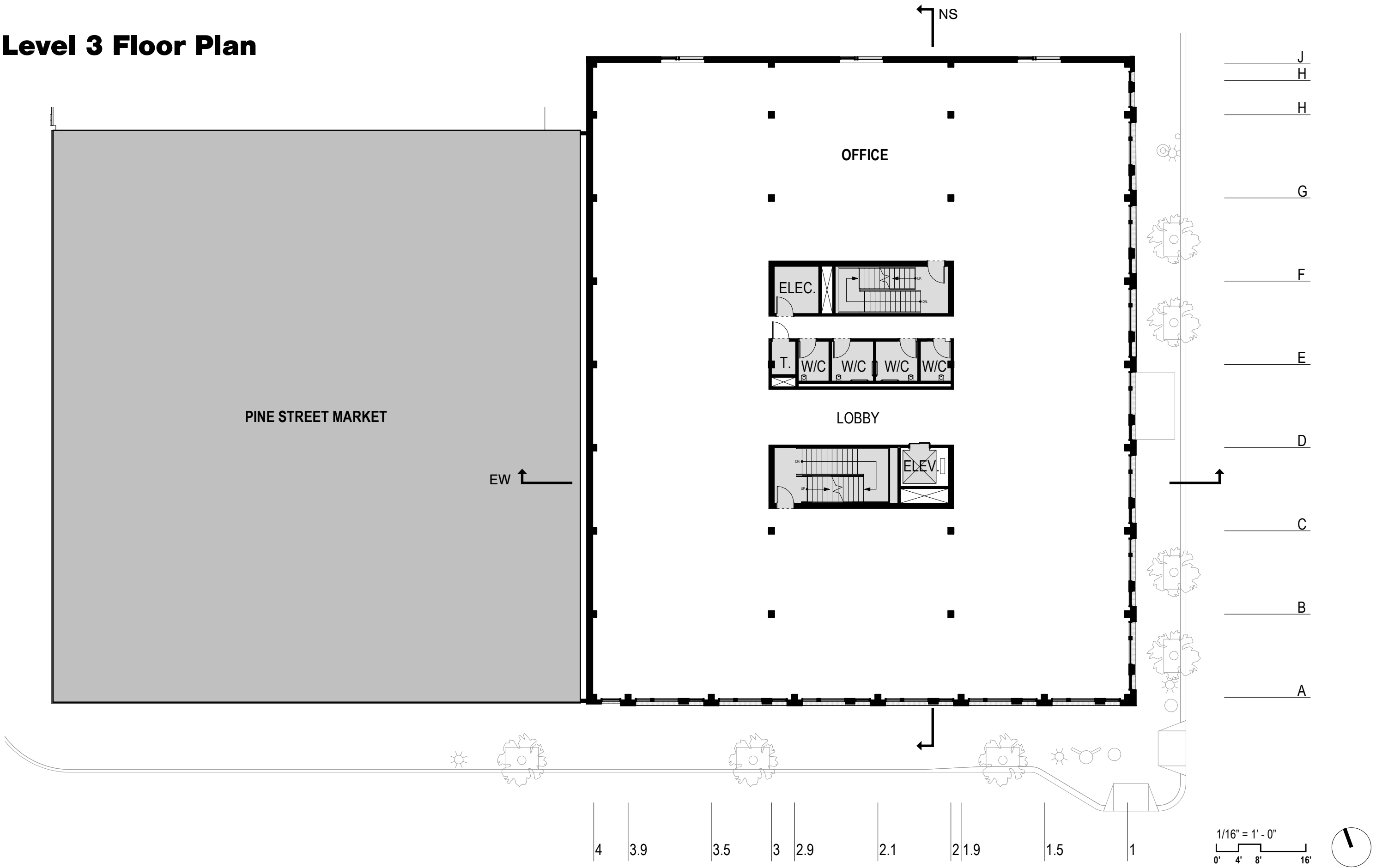
Level 1 Floor Plan



Level 2 Floor Plan



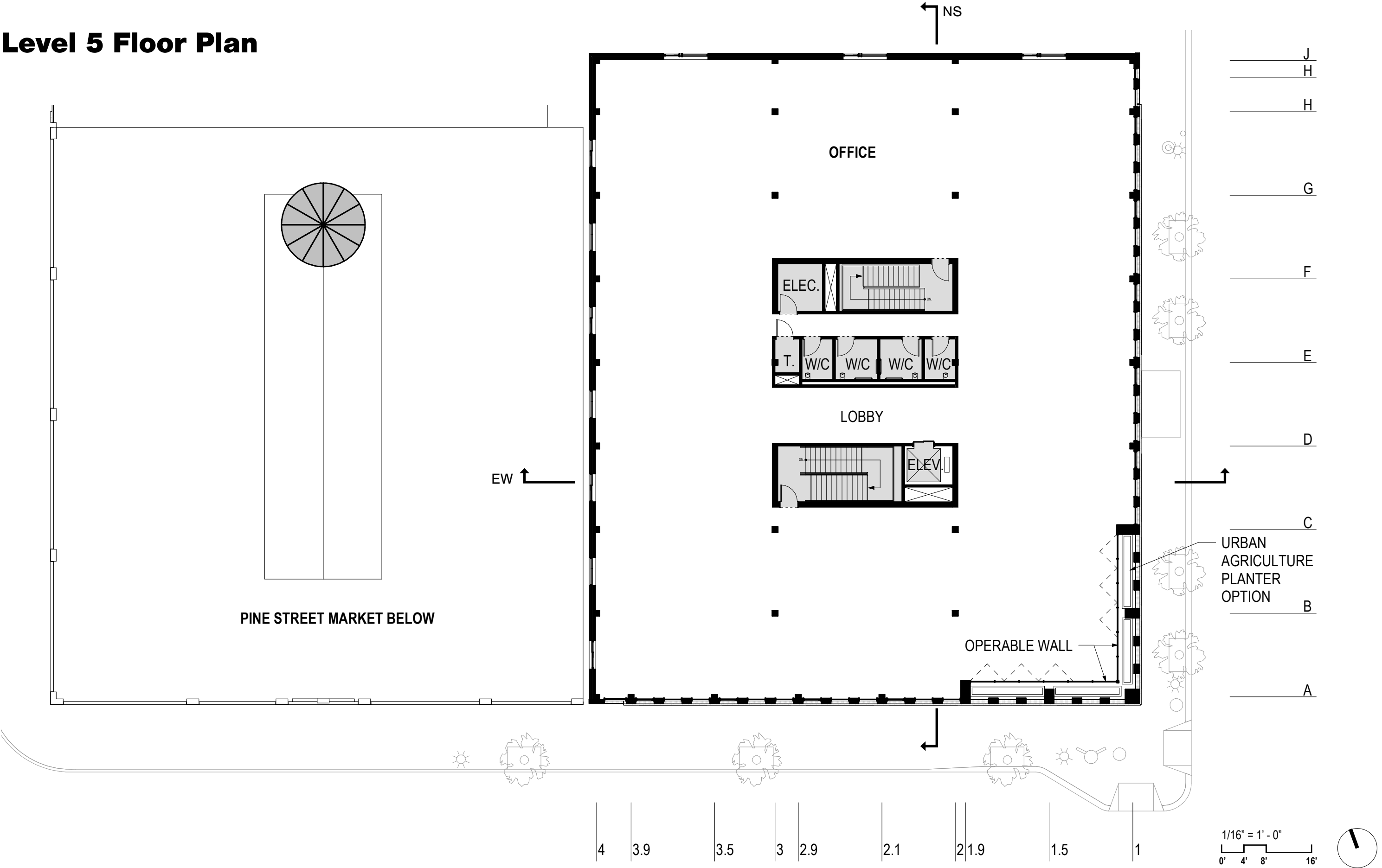
Level 3 Floor Plan



Level 4 Floor Plan

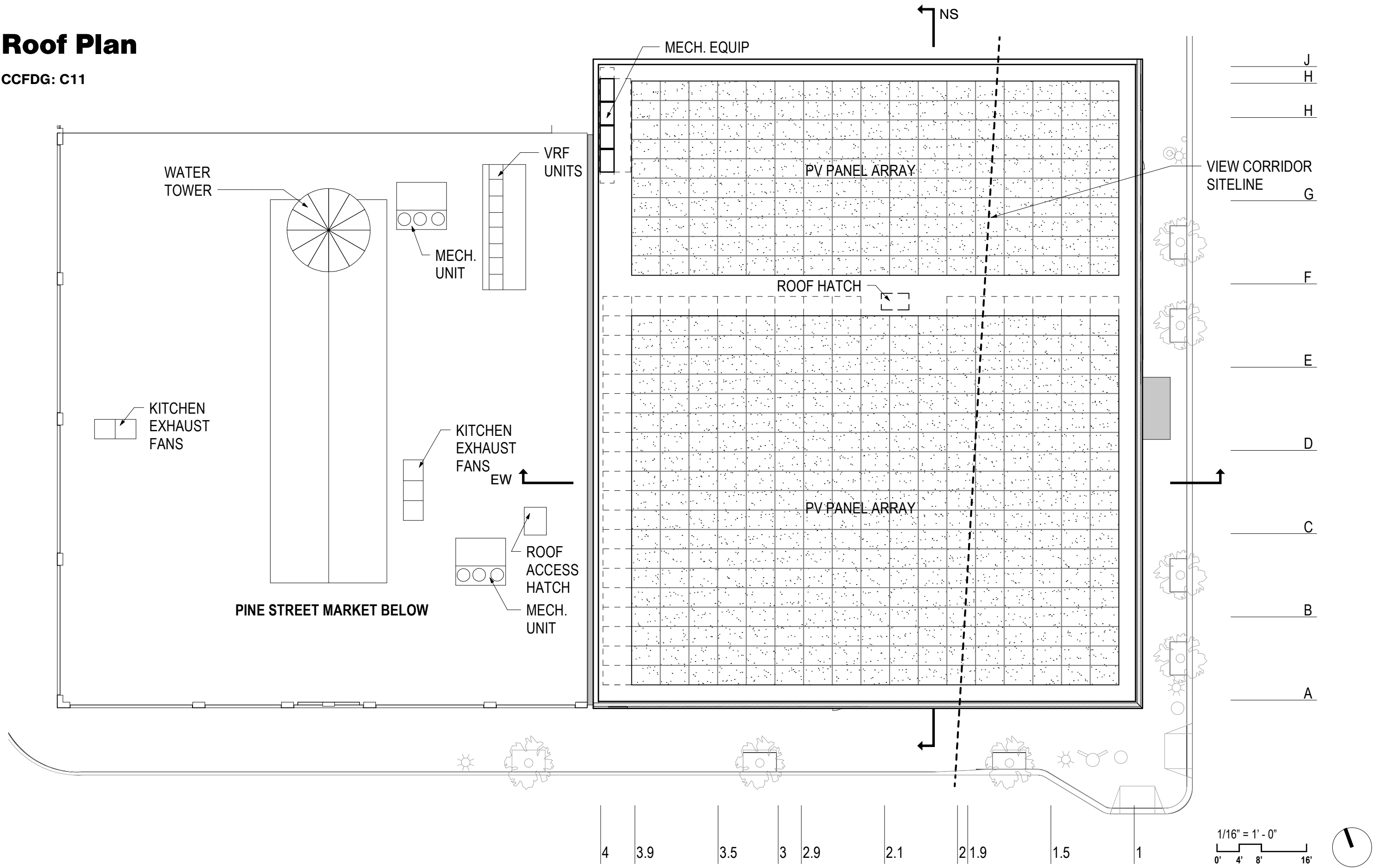


Level 5 Floor Plan

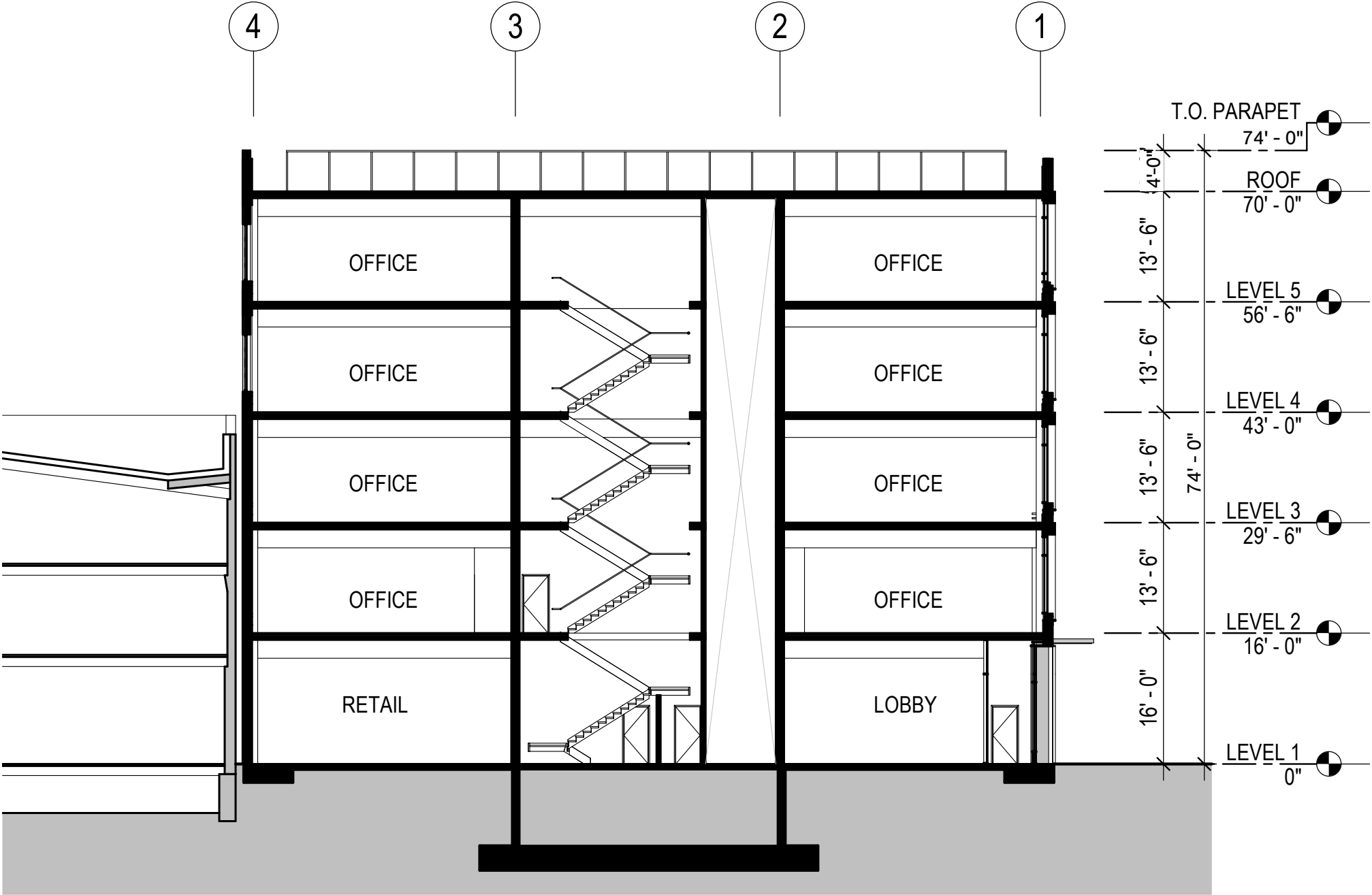


Roof Plan

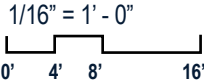
CCFDG: C11



East / West Building Section

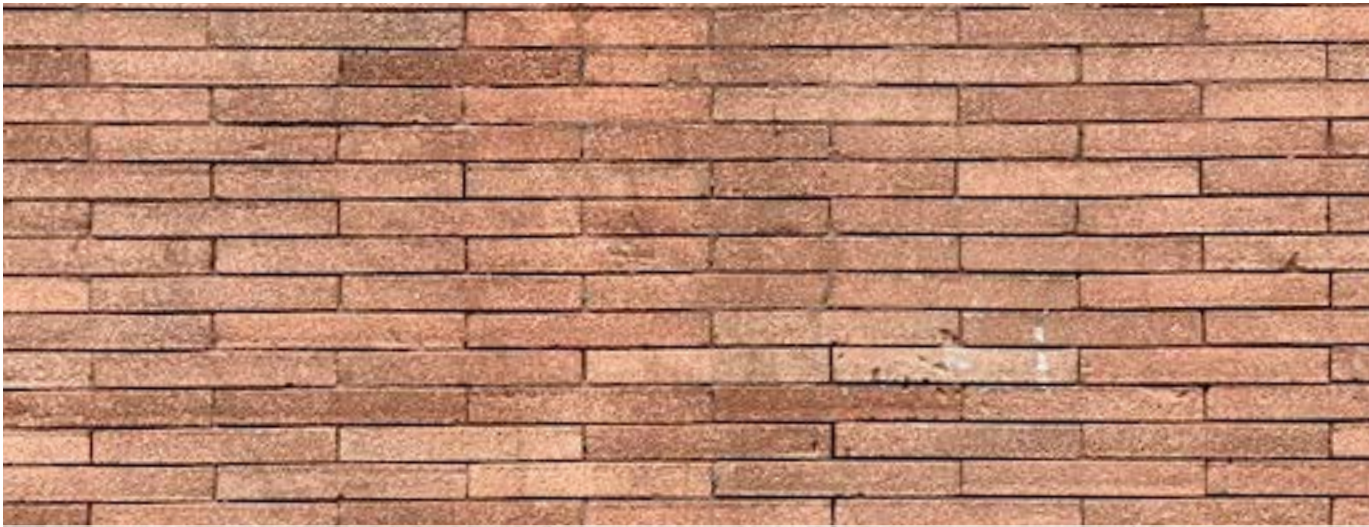


North / South Building Section





23 WACHSMUTH BUILDING



34 WESTERN ROOMS



27 PORTER HOTEL



49 PINE STREET MARKET



82 208 BUILDING



85 GEORGE LAWRENCE BUILDING

Materials

S/OTDG: A4, D8, D9
CCFDG: C2, C3, C5

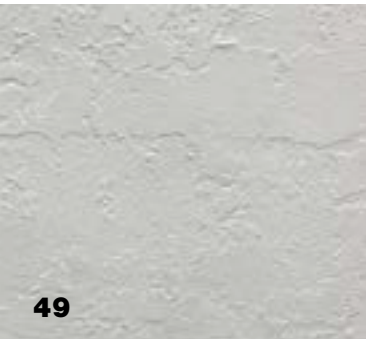
Across the diverse collection of Italianate and Romanesque buildings on site, the Skidmore Historic District boasts an impressive display of materials and textures. Apart from cast iron, brick proves to be the most predominant building material in the district. The range of ways the brick is treated and coursed, however, creates a richness and variation between the many brick buildings.



Materials

S/OTDG: A4, D8, D9
CCFDG: C2, C3, C5

This proposal is inspired by the unique character of the historic brick structures on site and seeks to complement the district's palette.





Materials

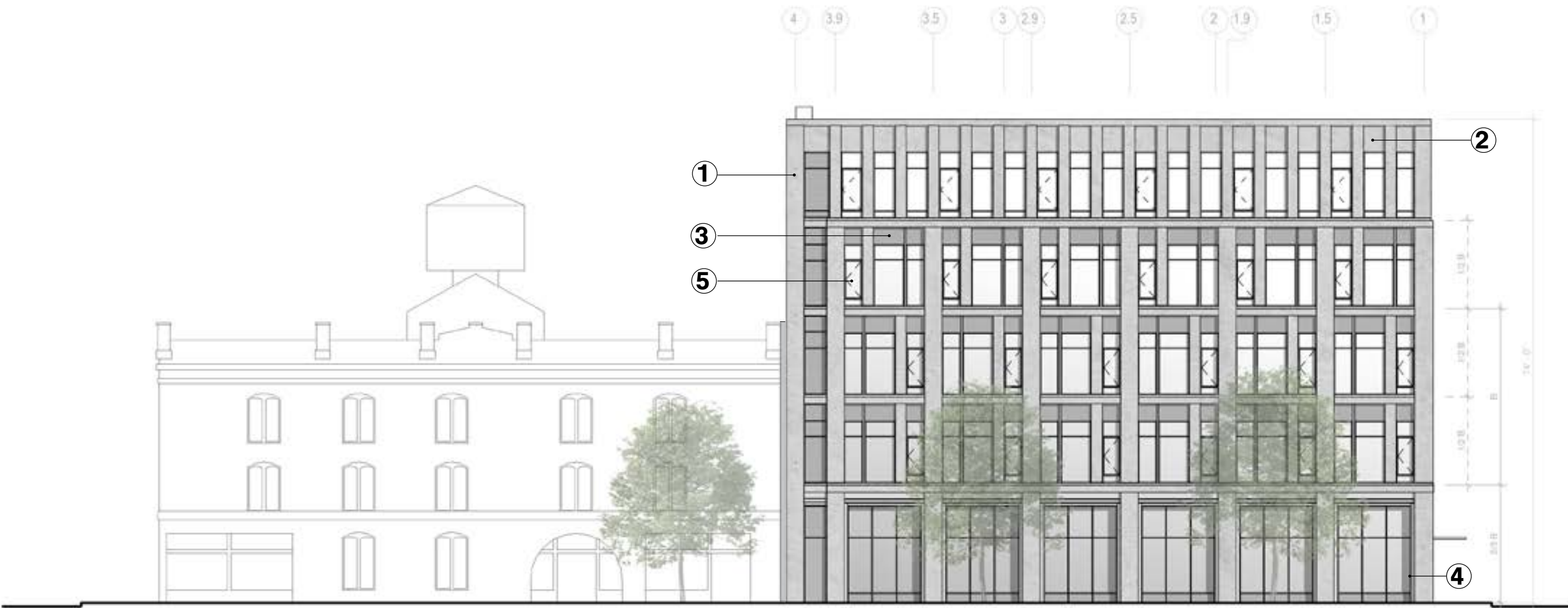
S/OTDG: A4, D8, D9

CCFDG: C2, C3, C5

The material palette takes inspiration from the unique character of the historic brick structures in the district and seeks to complement their rich texture and variation. The example images to the left describe our desire for a warm color palette that celebrates the use of brick in the coursing and joint details that respond in a contemporary way to the proportional characteristics of traditional brick construction in the historic district.



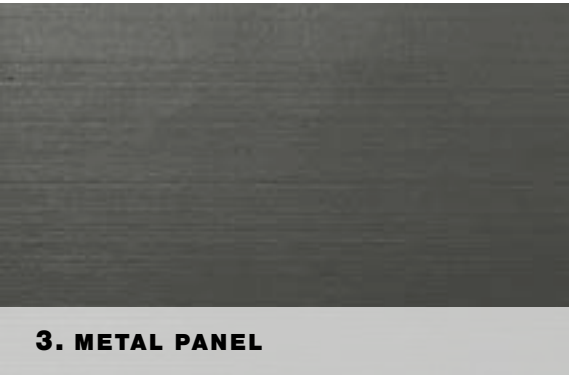
South Elevation



1. BRICK



2. TEXTURED BRICK



3. METAL PANEL



4. GFRP

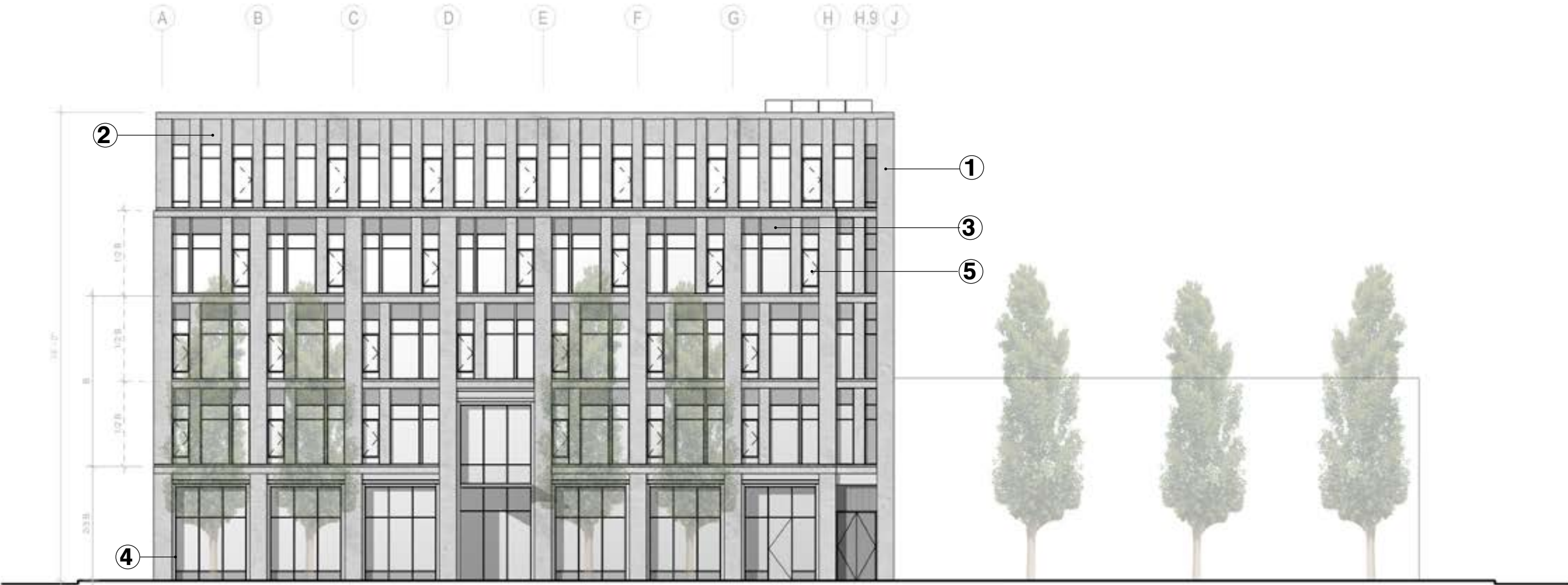


5. OPERABLE CASEMENT WINDOW

South Elevation



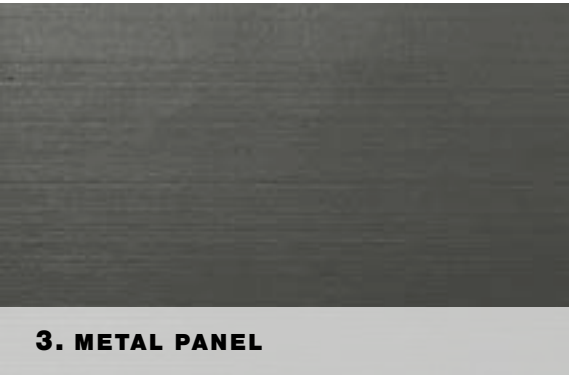
East Elevation



1. BRICK



2. TEXTURED BRICK



3. METAL PANEL



4. GFRC

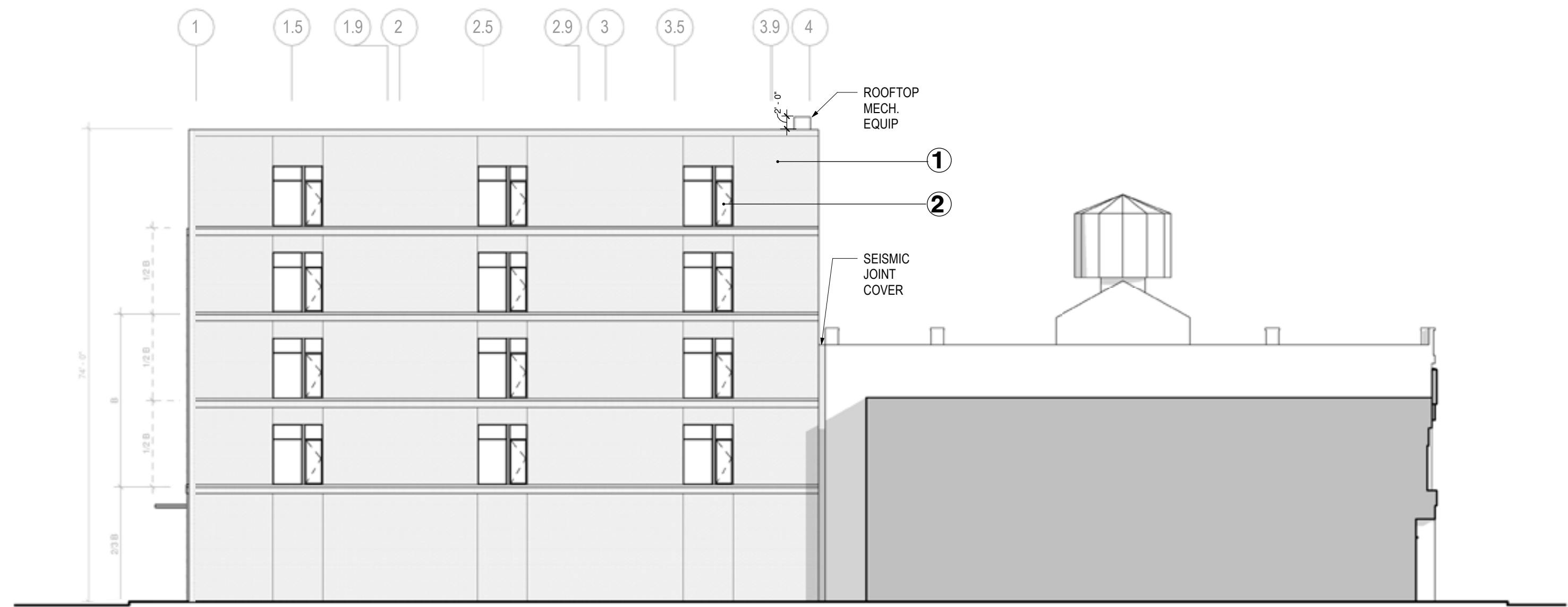


5. OPERABLE CASEMENT WINDOW

East Elevation



North Elevation

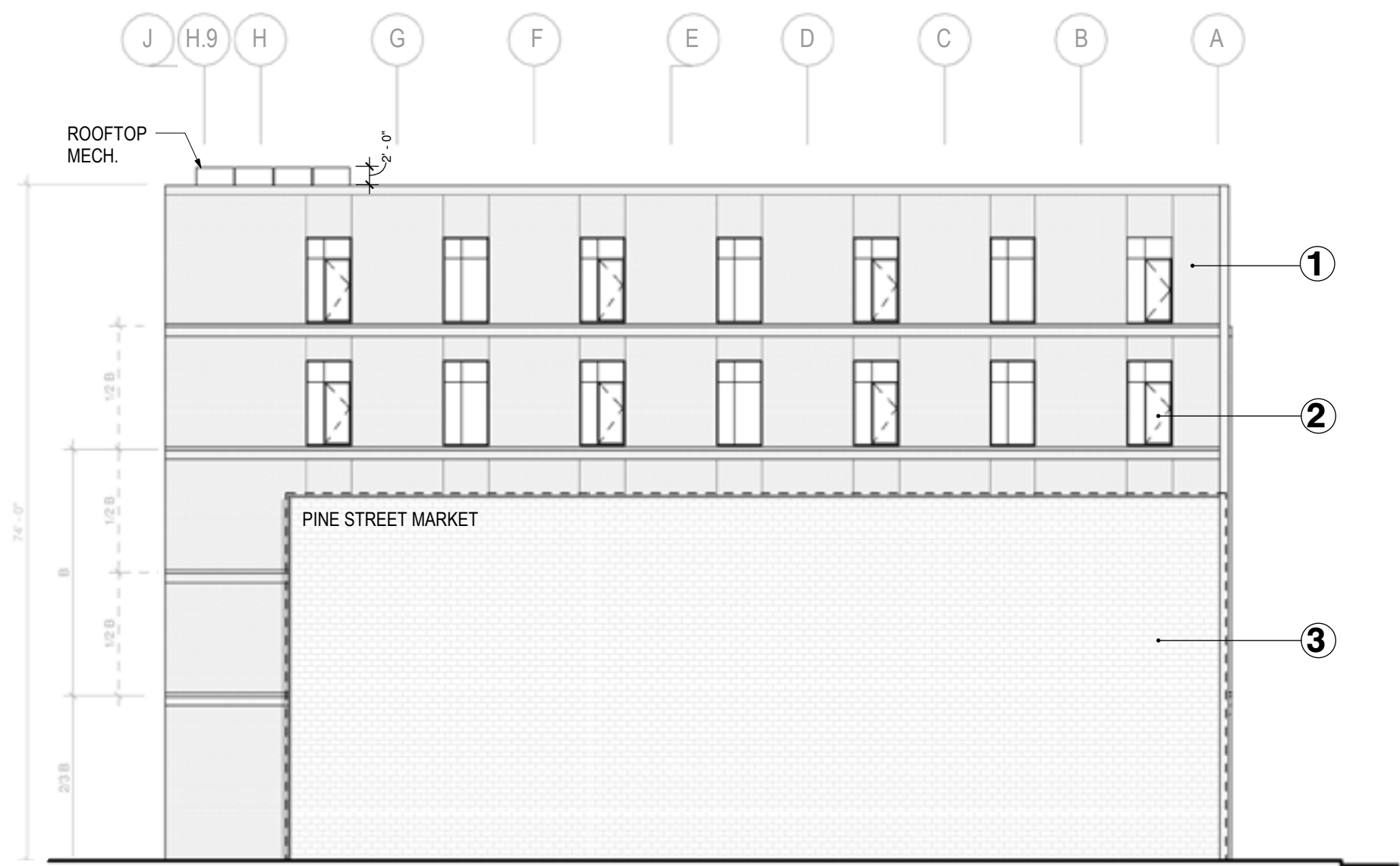


1. BRICK



2. OPERABLE CASEMENT WINDOW

West Elevation



1. BRICK



2. OPERABLE CASEMENT WINDOW

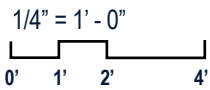
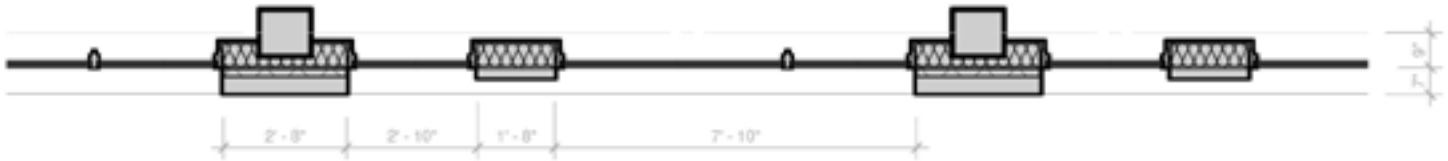
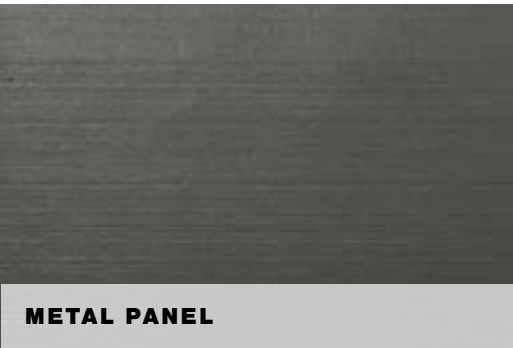
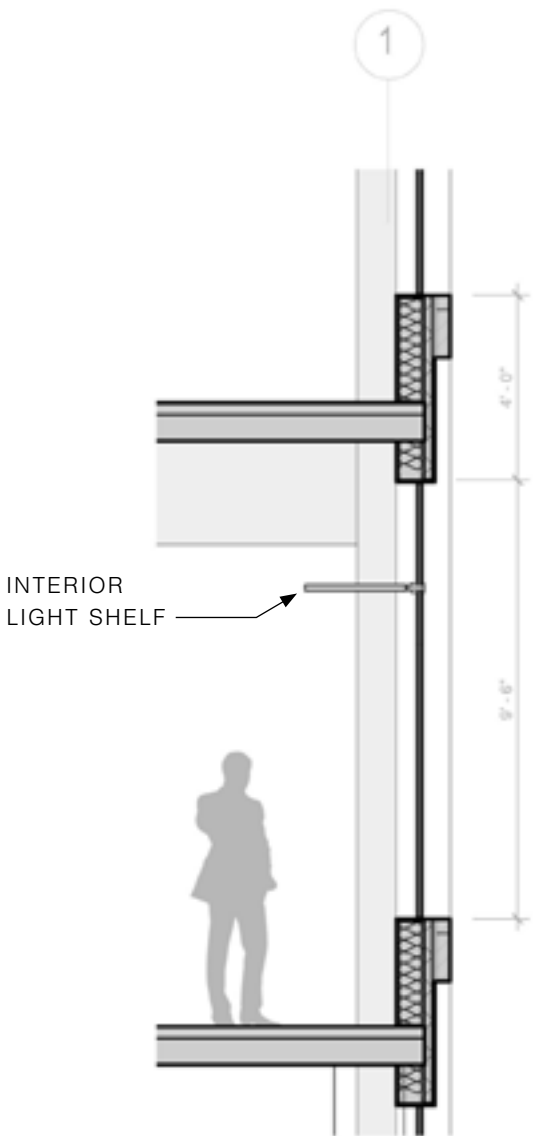
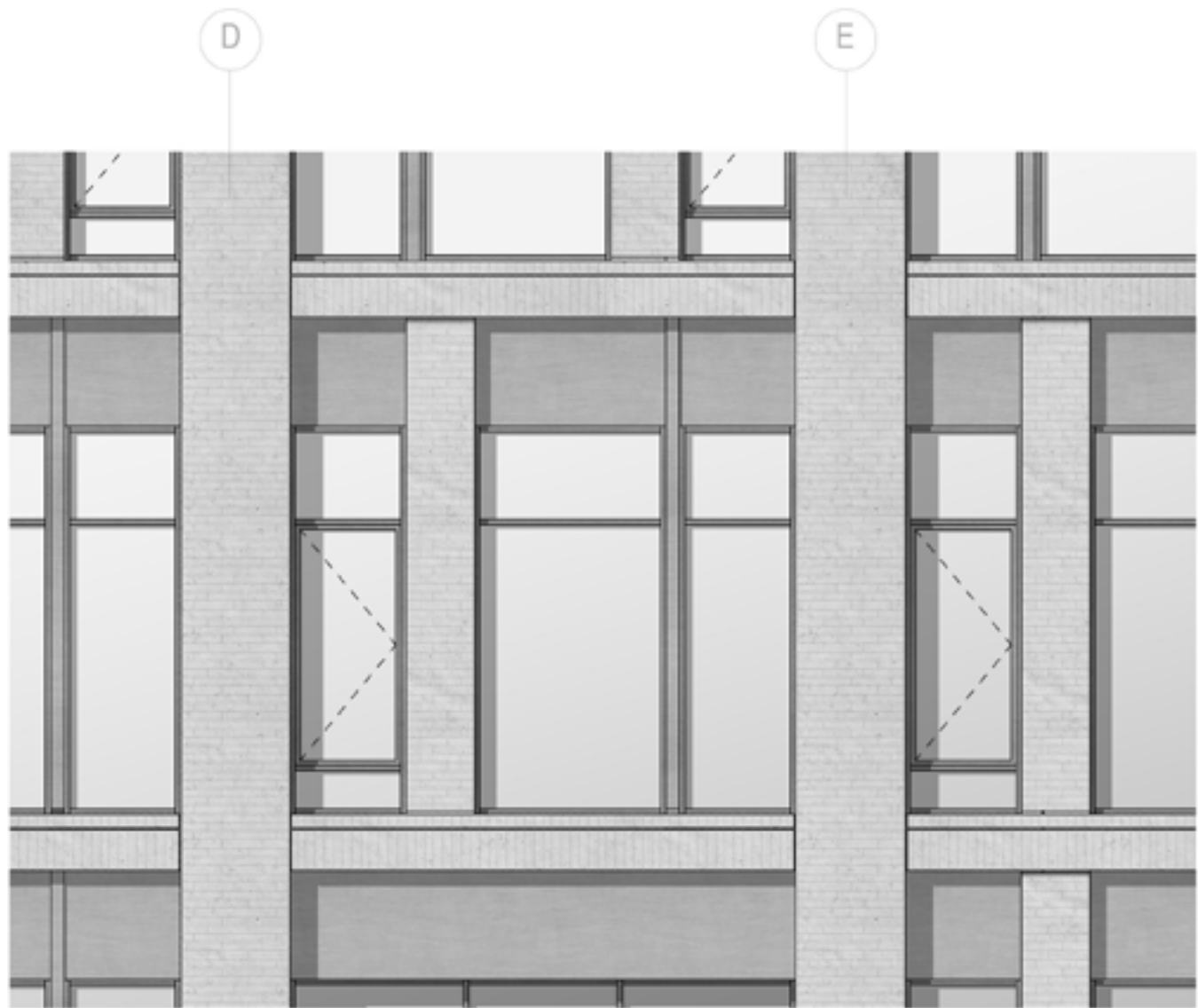


3. CMU

Fenestration

Vertically oriented windows.

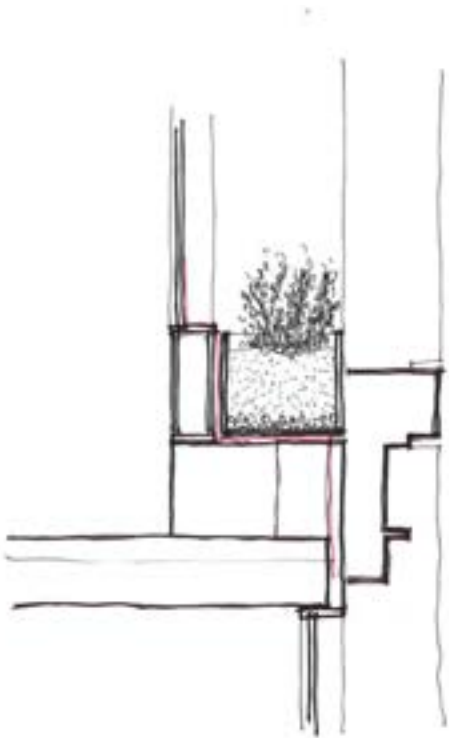
Recessed fenestration provides detail and creates an interplay of light and shadow.



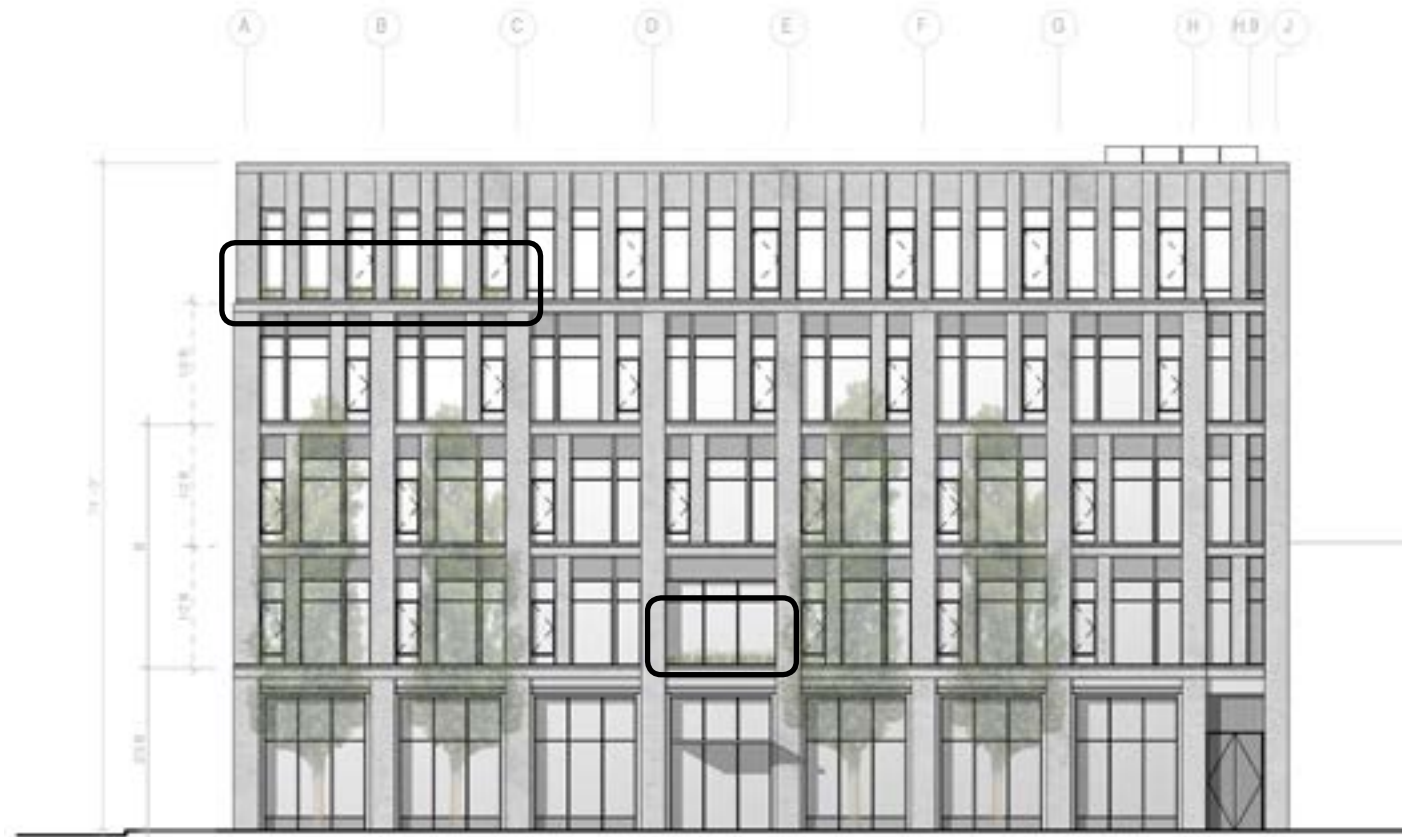
Urban Agriculture

CCFDG: A2

As part of its Living Building Challenge certification, the project is required to provide at least 120 SF of urban agriculture. In addition the possibility of planting nut trees (acceptable to the city) on Pine Street, the project is also investigating the potential of incorporating facade planter boxes on the facade, aligned with the historic district as shown in these accompanying images. Plants would be selected for the food value (including herbs) as well as their year-round viability: rosemary and lavender may be two possibilities.



36 HASELTINE BUILDING



23 WACHSMUTH BUILDING



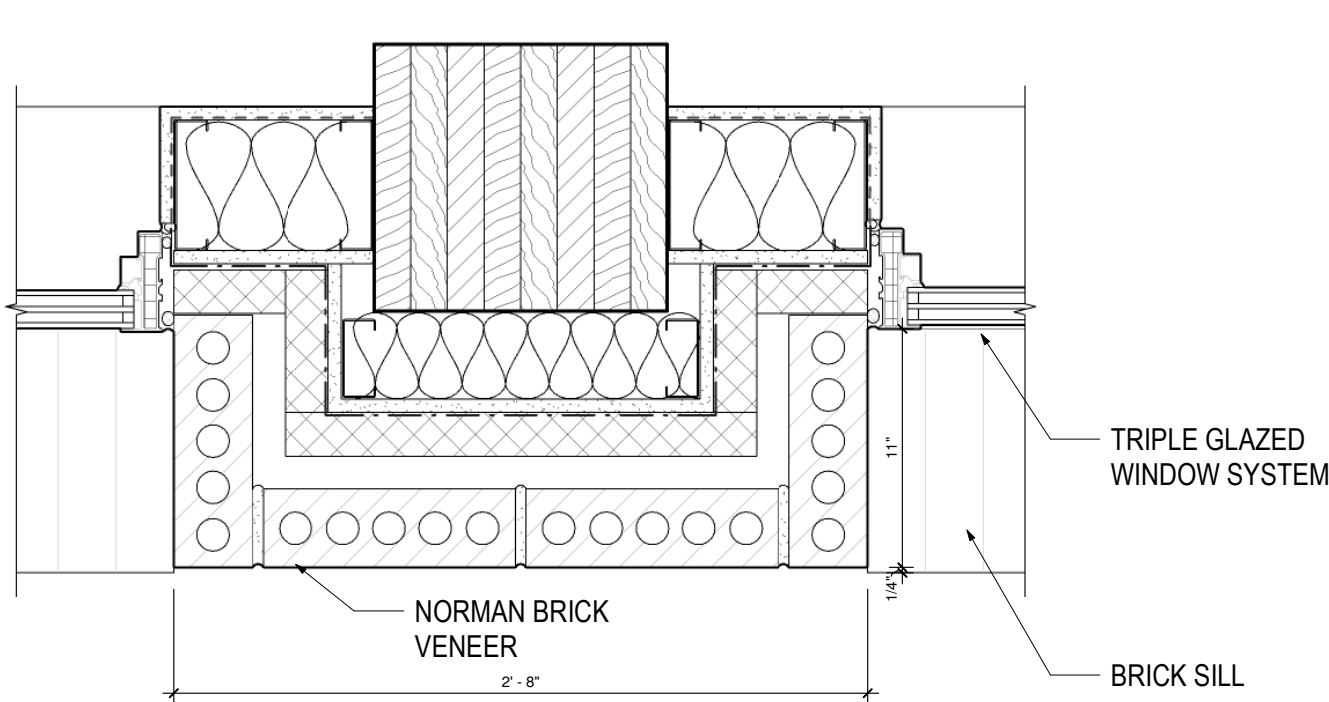
34 WESTERN ROOMS

SW Pine Street Perspective

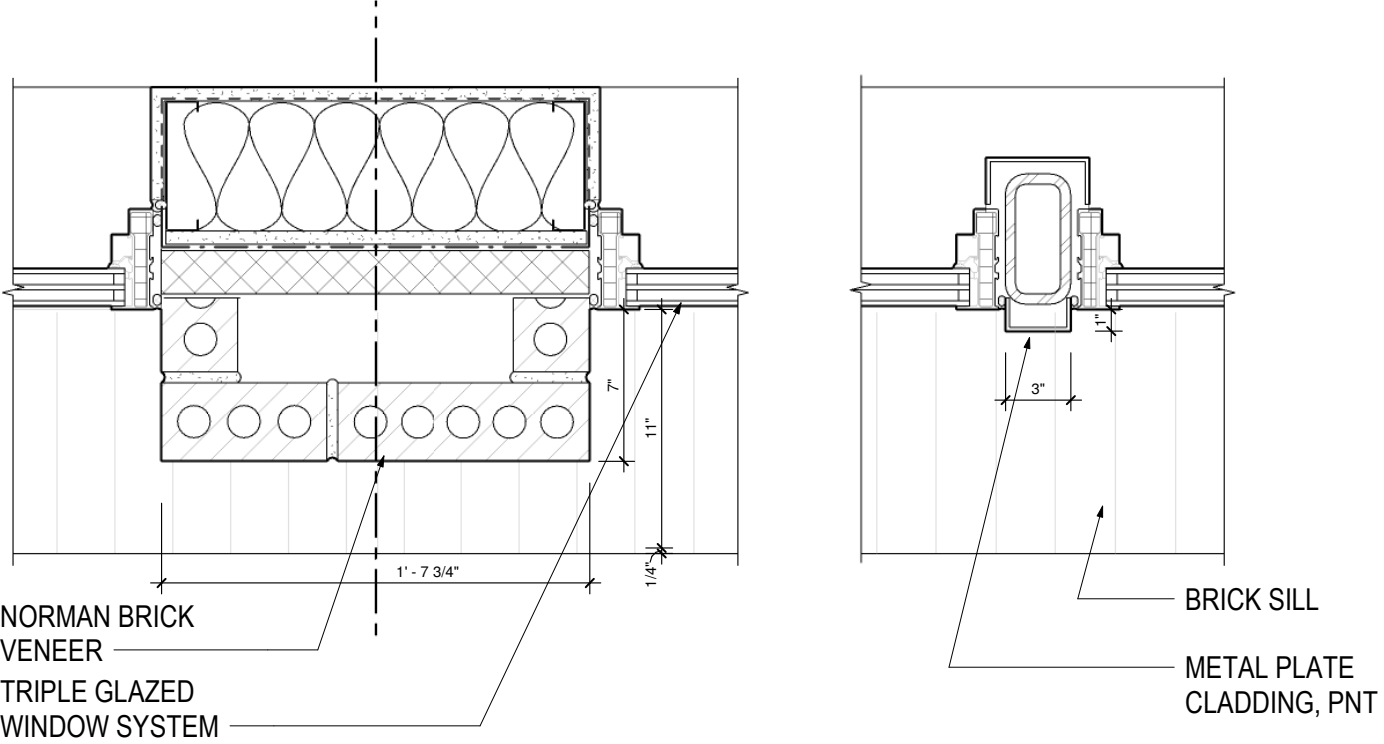
Urban Agriculture Planter Option



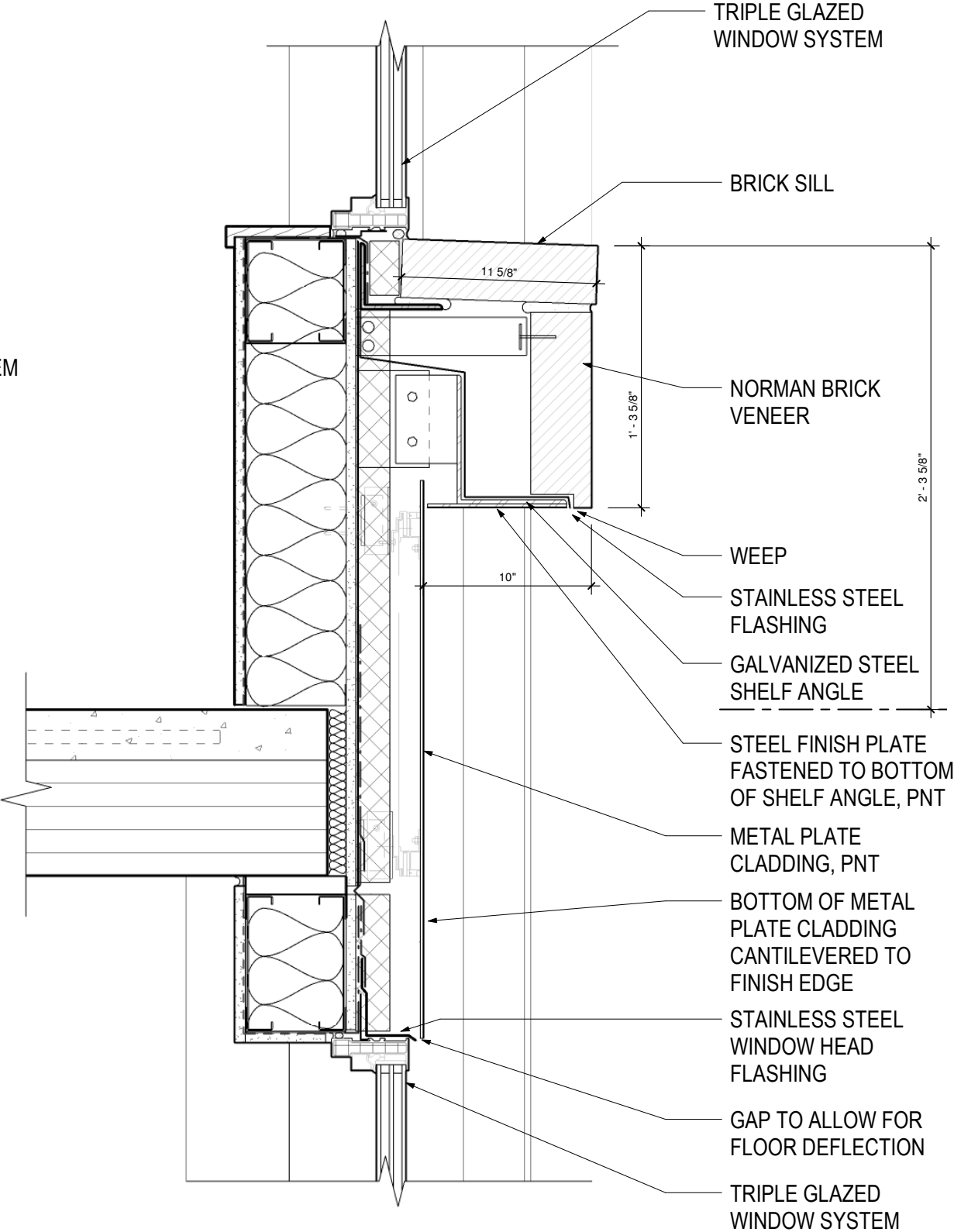
Exterior Wall Details



2 PLAN SECTION - STRUCTURAL PILASTER
1 1/2" = 1'-0"



3 PLAN SECTIONS - PILASTER AND WINDOW INTERMEDIATE
1 1/2" = 1'-0"



1 SECTION - WINDOW SILL & HEAD
1 1/2" = 1'-0"

Sidewalk Experience

04



Sidewalk Dedication

Existing Conditions

Skidmore Historic District Design Guidelines

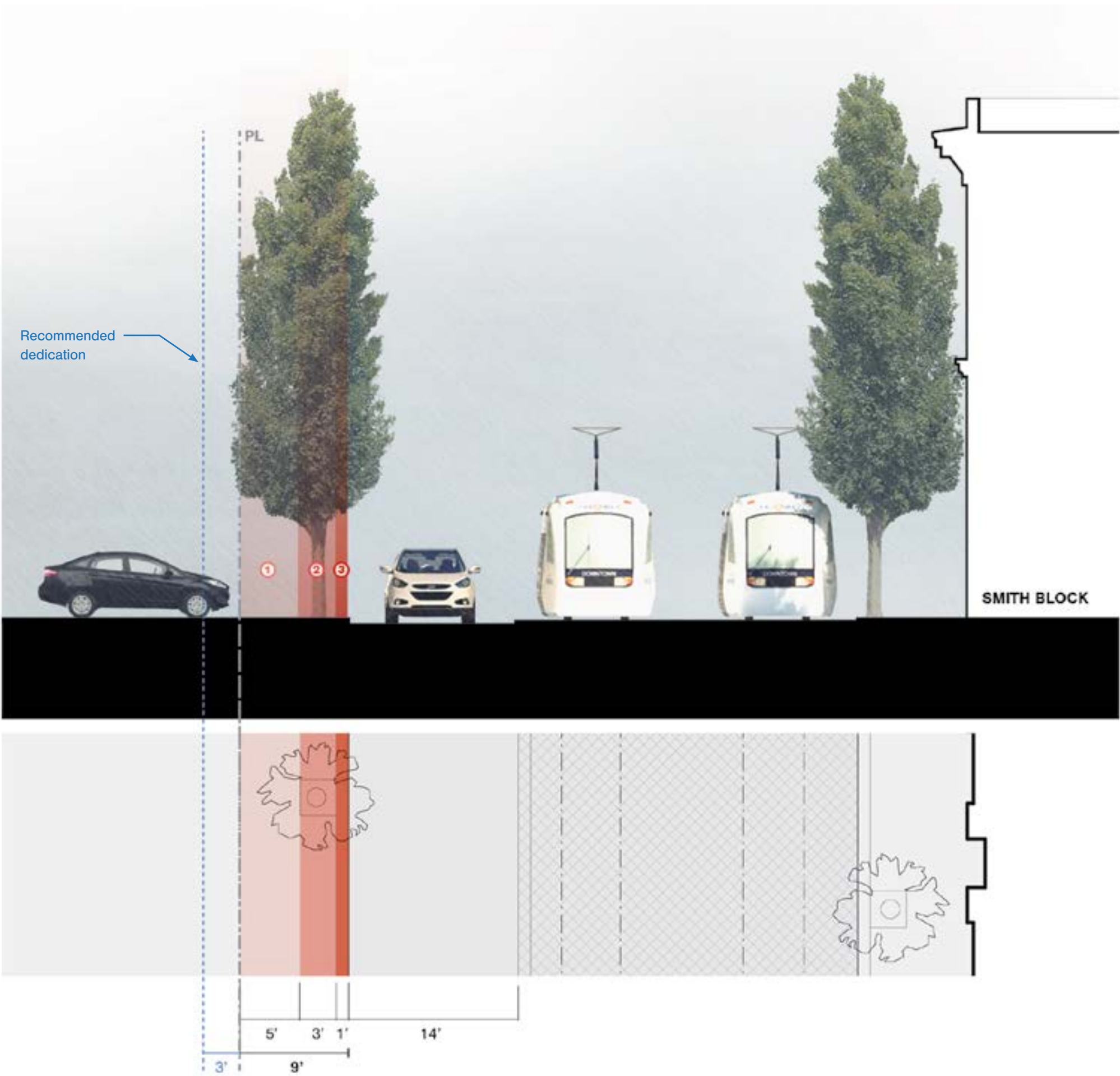
“Buildings in the District were typically built with no setbacks from the street and no stepbacks at the upper stories. This street enclosure is a key ingredient of the District’s character. Alterations, additions, and new construction in the District should be built to the street lot line to strengthen the existing street walls.”
– Guideline A2, page 29

Portland Pedestrian Design Guide

Sidewalk Corridor 3.7m (12’-0)
“Recommended for City Walkways, for local streets in Pedestrian Districts, and for streets where ROW width is 18.2 m (60’-0).”
– Table A-1 Recommended Widths for Sidewalk Corridor Zones

Creating Public Streets and Pedestrian Connections through the Land Use Process

“A site may have frontage on a street or right-of-way that is not improves to current standards... Where the right-of-way width is not sufficient, a dedication may be required.”
– Section 1 & Table D



- 1 Pedestrian Through Zone
- 2 Furnishing Zone
- 3 Curb

Sidewalk Environment

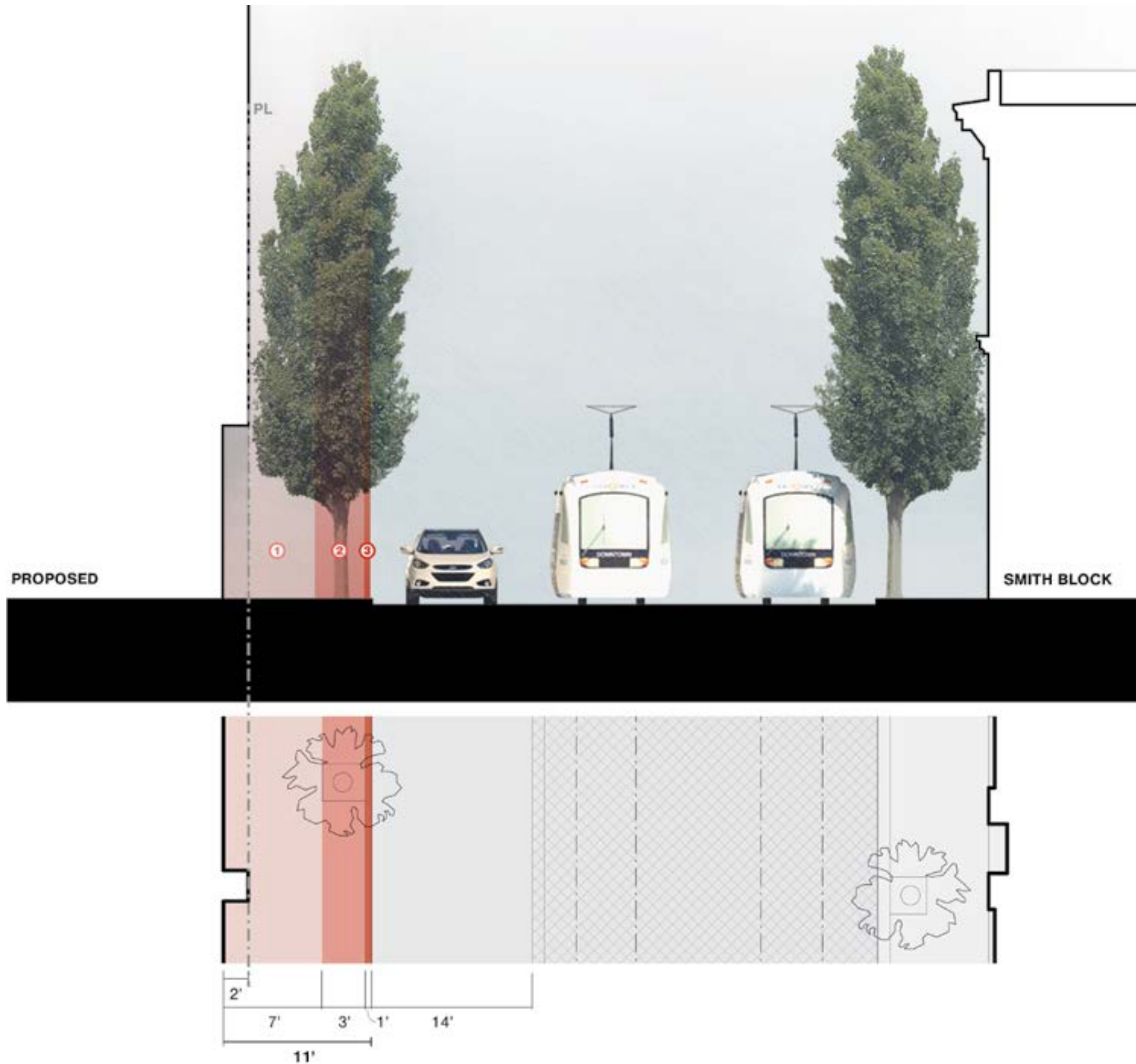
S/OTDG: A2, D2
CCFDG: A7, B1

Proposed Design

PBOT Alternative Review: 18-280764-PW

- At level one, the exterior face of the building structural columns will align with the property line. The walls between columns will set back 2' from property line. At entrance door locations, the setback will be 3' in order to avoid door swing in the right of way.
- At levels two through five, the exterior face of the building will align with the property line.
- Reinforces the street wall per the Historic District design guidelines
- If allowed on adjacent vacant lot to the north, may preserve opportunities for future development of remaining quarter blocks due to impacts on lot size
- Improves project viability by mitigating loss of square footage at upper floors
- Does not require relocation of
 - curb and gutter
 - storm drain
 - catenary structures
 - utility poles
- Building elements encroach into recommended sidewalk configuration width
- No reduction to travel lane width

- ① Pedestrian Through Zone
- ② Furnishing Zone
- ③ Curb



Pine Street Sidewalk Perspective





79 SOCIETY HALL



23 WACHSMUTH BUILDING



78 SMITH BLOCK



23 WACHSMUTH BUILDING



49 PINE STREET MARKET



85 GEORGE LAWRENCE BUILDING

Signage

S/OTDG: A6

CCFDG: B2, C8, C13

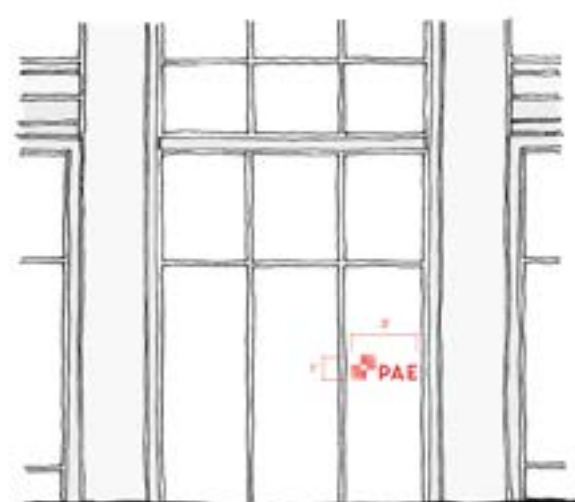
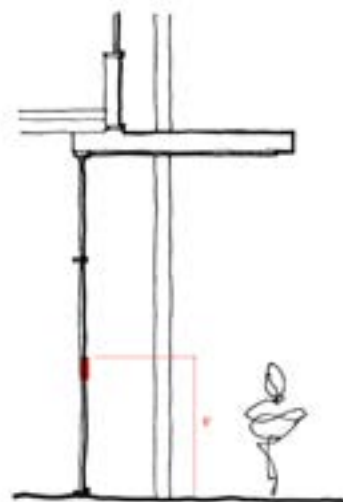
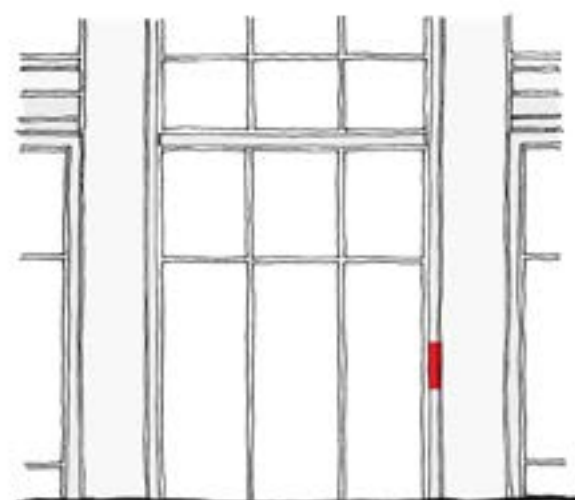
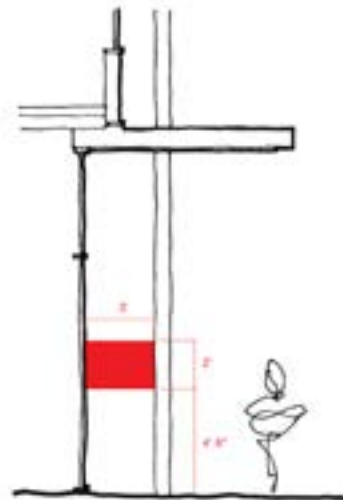
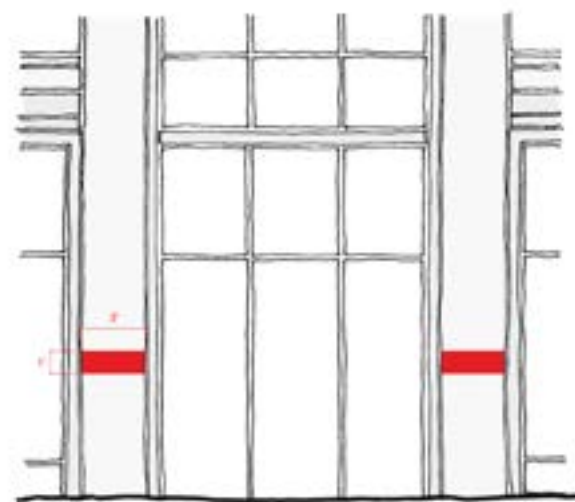
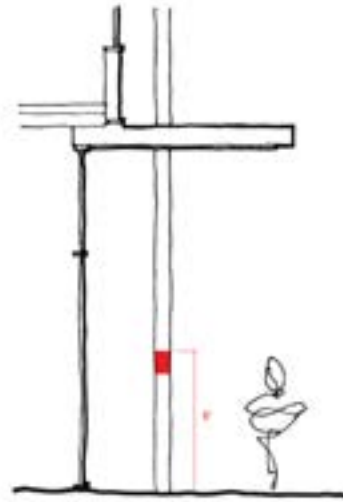
There are many types of building signage throughout the Skidmore Historic District. Building names and dates tend to be more permanent and integrated, while retail signage is typically hung off the side of the building or stuck onto the window.



1868—ANKENY & WATSON BUILDING



1873—NEW MARKET BLOCK



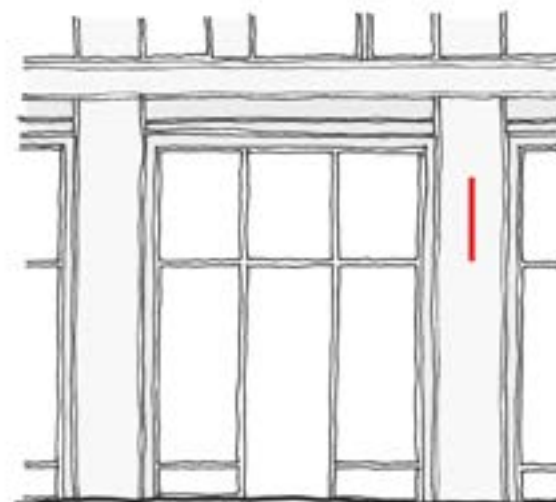
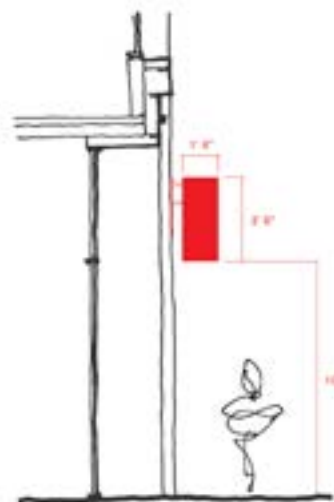
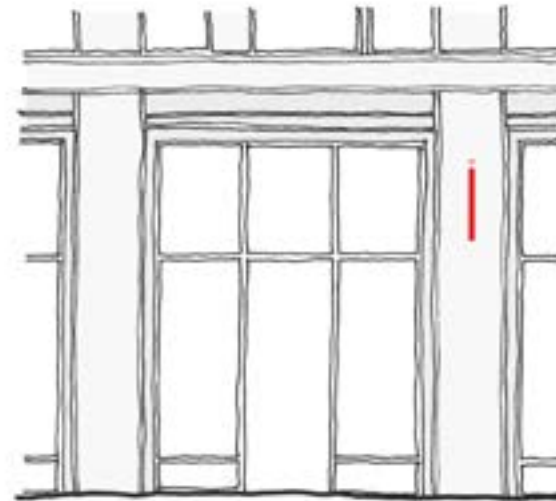
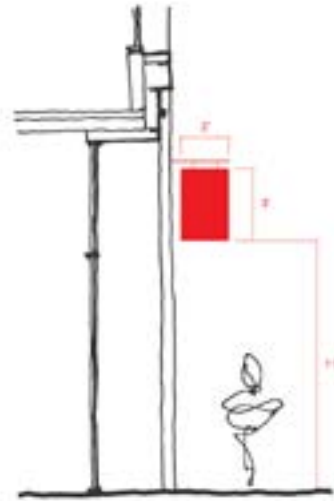
Main Building Signage

S/OTDG: A6

CCFDG: B2, C8, C13

One of the main objectives of this project is to showcase Portland as a leader in Living Buildings and encourage future sustainable development. The main building signage is a great opportunity to market those ideas. As such, the intent of the main building signage is to give a sense of permanence and integrity. The sign will be displayed in a place that encourages pedestrian interaction.

Another opportunity we will explore is that of a "storytelling" signage or expression through the architecture that subtly communicates the broader story of the importance of sustainable approaches in the built environment. For example, a change in brick course could signify the precise elevation datum of historic Portland flood events, and then another of projected flood levels should we fail to meet our 2030 goals for carbon reduction - communicating in a discoverable manner the role this building plays in our climate future and preservation of historic districts like Skidmore/Old Town.



Retail Signage

S/OTDG: A6

CCFDG: B2, C8, C13

The intent of the retail signage is to create a modern hanging retail sign that complements both the district's character and the design of the proposed building. The signs will be made of durable, lasting materials and hung within the ground floor's transom area to maintain a clear pedestrian through zone.

1st Avenue Sidewalk Perspective

S/OTDG: A3

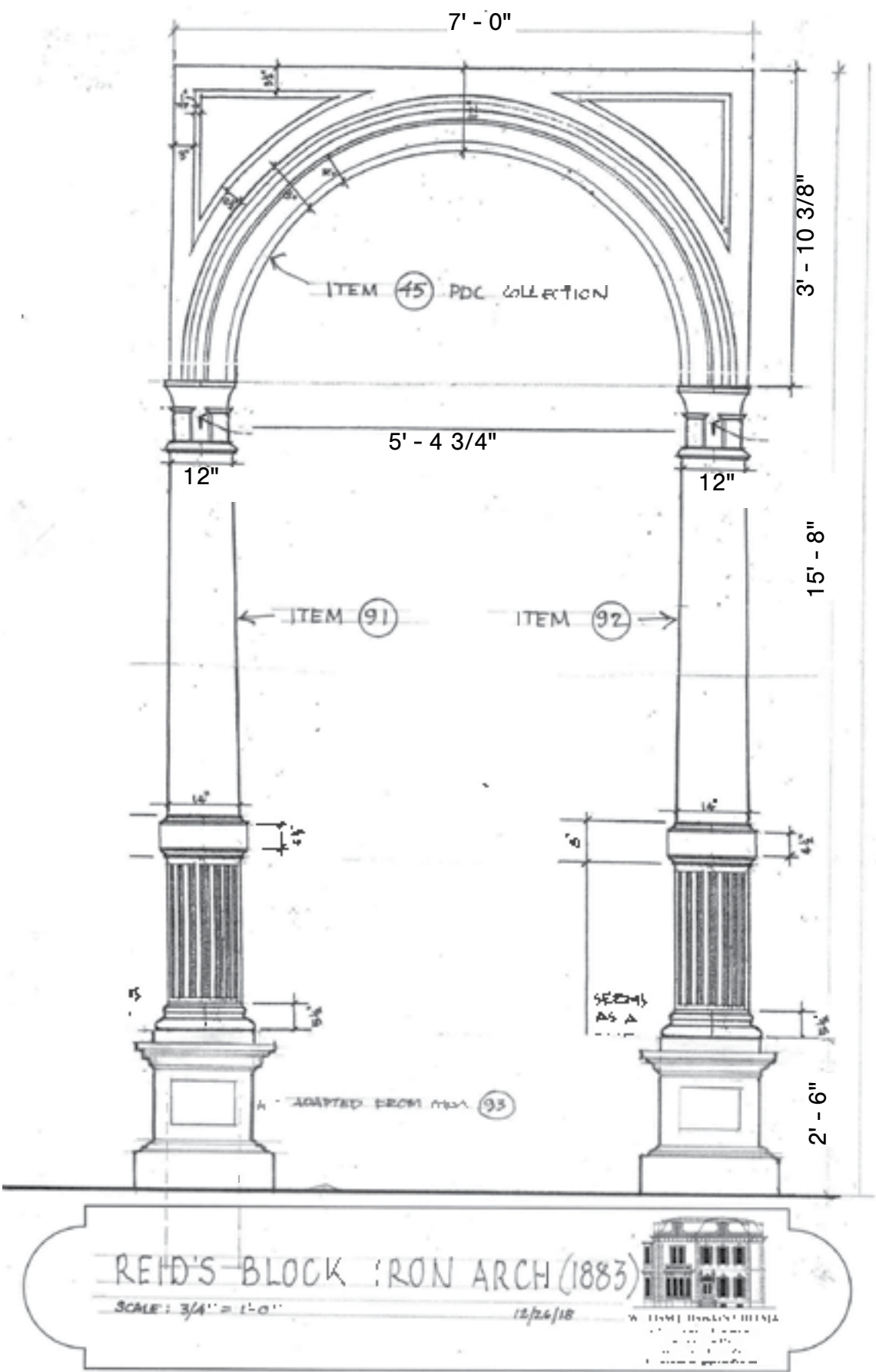


Historic Cast Iron at Entry

S/OTDG: A3, D1
CCFDG: A6, C5

The project team very recently discovered Cast Iron elements that were salvaged from the historic Reid Block building which stood on the project site from 1883 to the mid-20th century, when it was demolished. The cast iron columns and archway were previously used to designate the main entry to the Reid Block building. We plan to explore the potential use of these elements as part of the main building entry or within the interior lobby.

The proportional relationships of these elements may further inform detailing of the building at the ground floor, through the vertical datums or changes in texture so that the salvaged materials feel part of the overall composition and well integrated into the design solution.



DRAWING-ENTRY ARCH FROM REID'S BLOCK BUILDING



1883-REID'S BLOCK BUILDING, ENTRY WITH ARCH



IMAGES OF THE ARCH COMPONENTS

SW Pine Street Perspective



SW 1st Avenue Perspective



Exterior Lighting

S/OTDG: A5
CCFDG: A8, B1, B2, C8, C12

The exterior lighting design incorporates carefully placed luminaires hidden from view, providing streetscape safety and comfort. The lighting product choices and layout strategies are designed to fit seamlessly within the building's ground level façade, accentuating the architectural vision and pattern that speaks to the character of the surrounding historic structures.

OPTION A

Within the entry portals of the building, illumination of the upper horizontal and vertical faces through a wall mounted recessed linear asymmetric lensed LED source. These luminaires would be installed well above eye-height to keep them discreet and avoid any glare. The light in these spaces uses architectural surfaces to indirectly fill the ground plane, which is a more gentle way of illuminating each doorway.



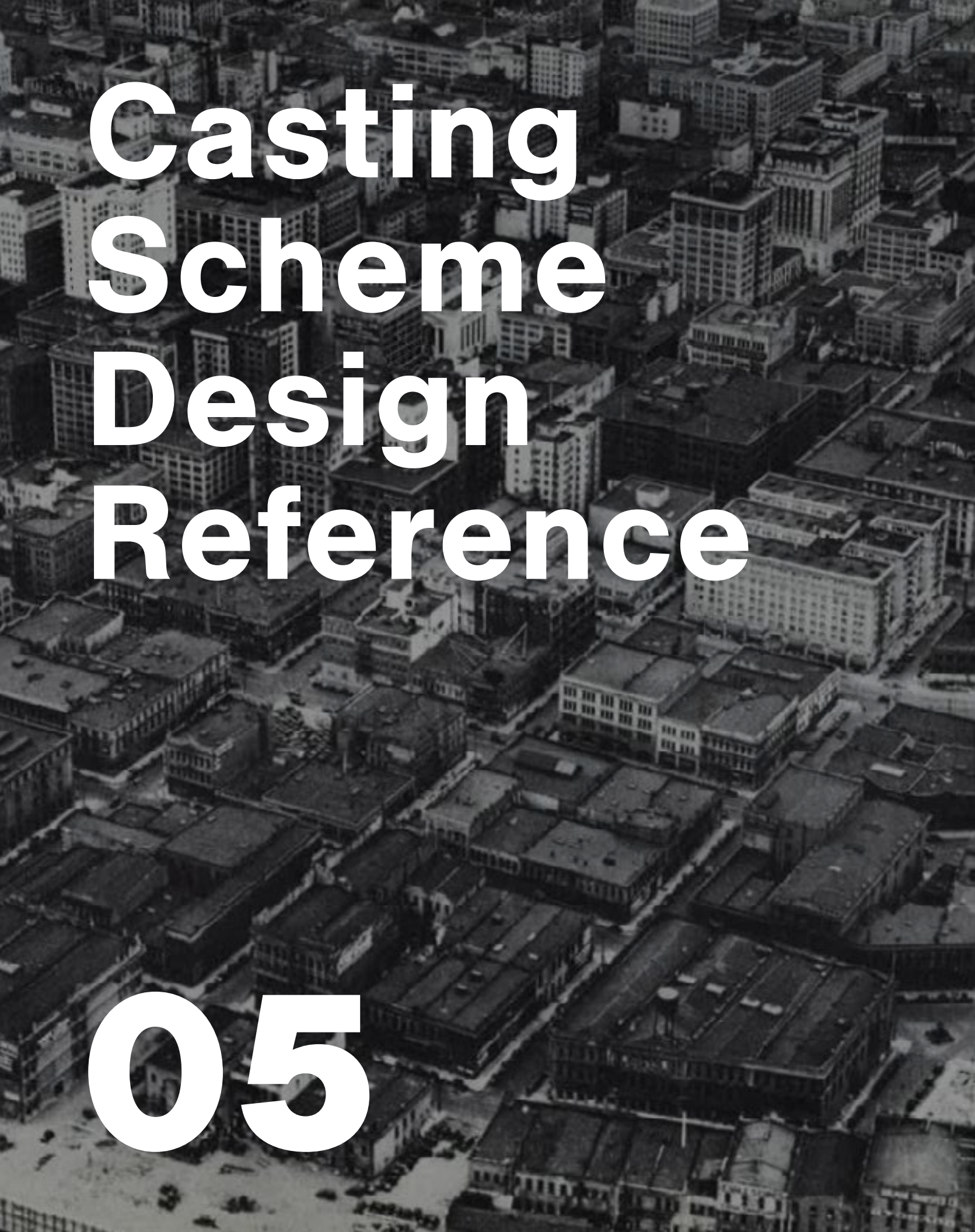
Exterior Lighting

S/OTDG: A5
CCFDG: A8, B1, B2, C8, C12

OPTION B

Tucked within the depth of each entryway, recessed, with regress lens LED downlights fill the portals with wide spread direct illumination. A wall wash optic kicks the light toward the vertical surfaces, avoiding distracting side-wall scalloping and shadowing.



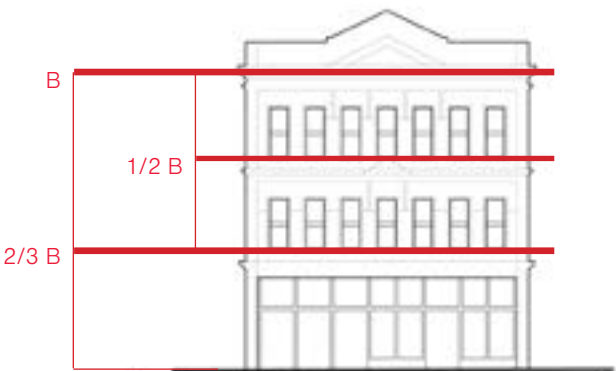


Casting Scheme Design Reference

05

The following scheme is to be reviewed for design reference purposes only and is not intended to be reviewed as a proposal. Due to the project budget this material option is not feasible, but we want to have a discussion and collect feedback about what proportional attributes have merit for application to the brick scheme proposed.

Horizontal Continuity Casting Scheme



1872
NEW MARKET THEATER

1889
NEW MARKET ANNEX

1886
FAILING BUILDING



1893
HASELTINE BUILDING



1886
UNITED CARRIAGE &
BAGGAGE TRANSFER CO.

South Elevation
Casting Scheme



**South Elevation
Casting Scheme**



East Elevation
Casting Scheme



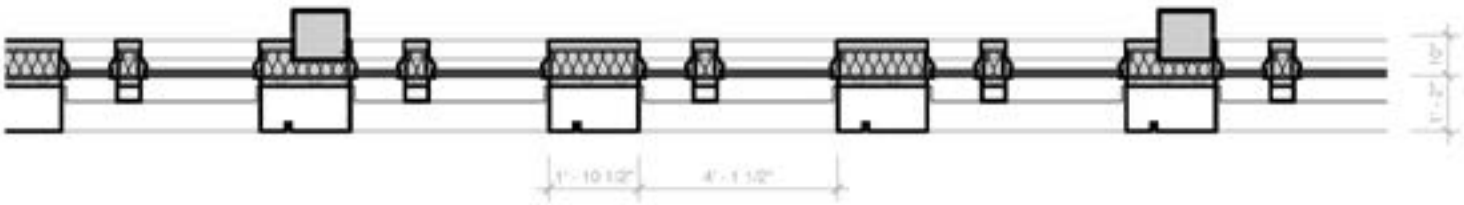
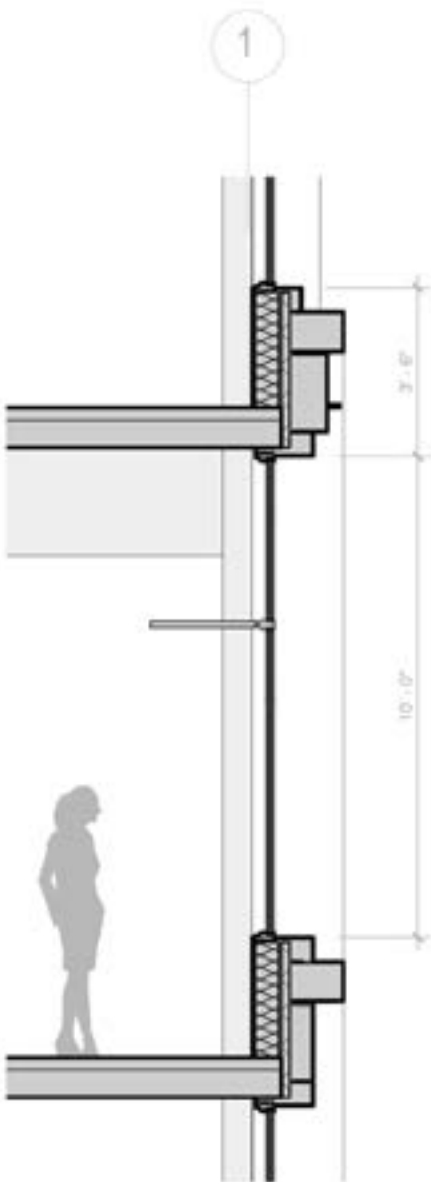
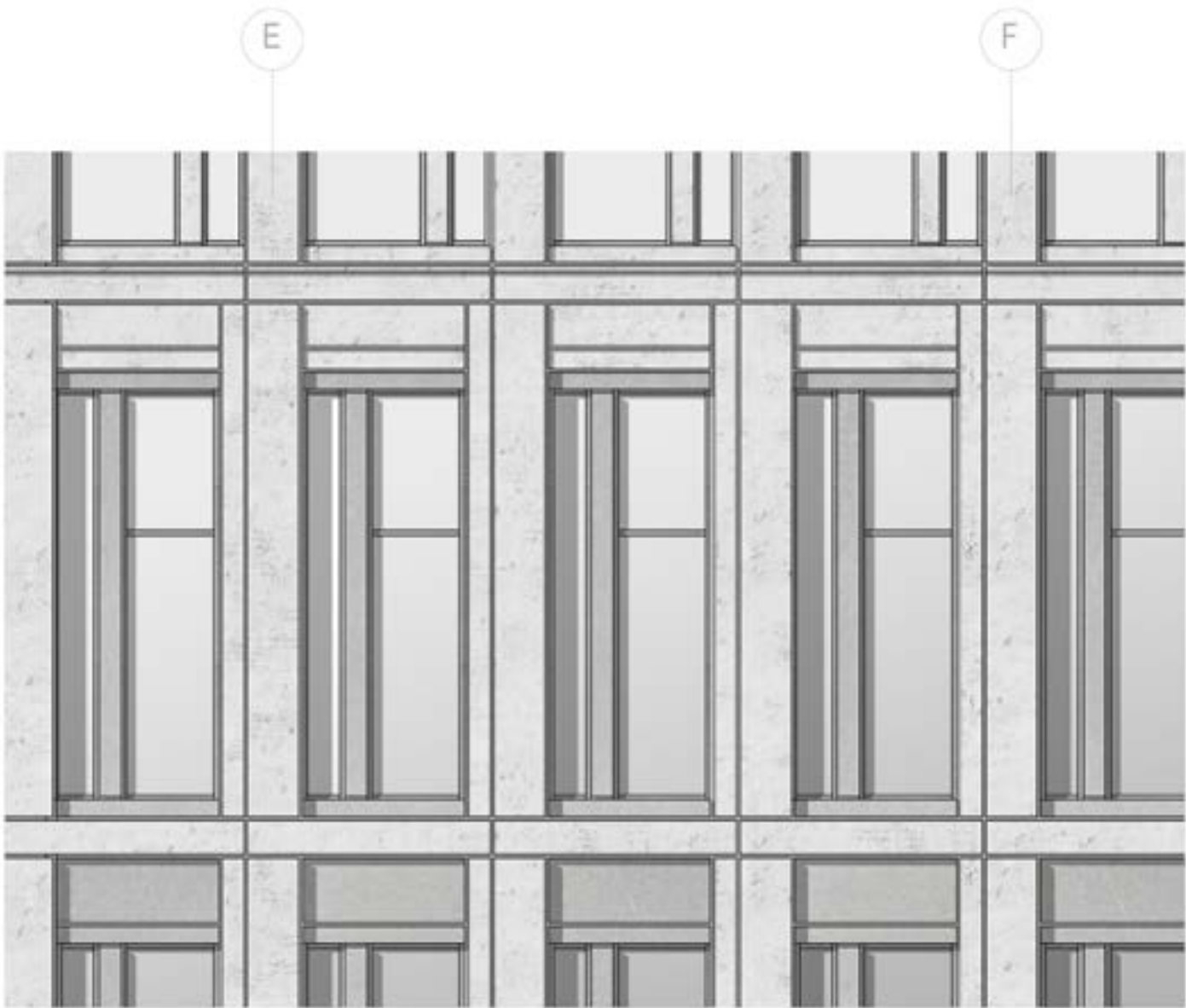
**East Elevation
Casting Scheme**



Fenestration Casting Scheme

Vertically oriented windows.

Recessed fenestration provides detail and creates an interplay of light and shadow.

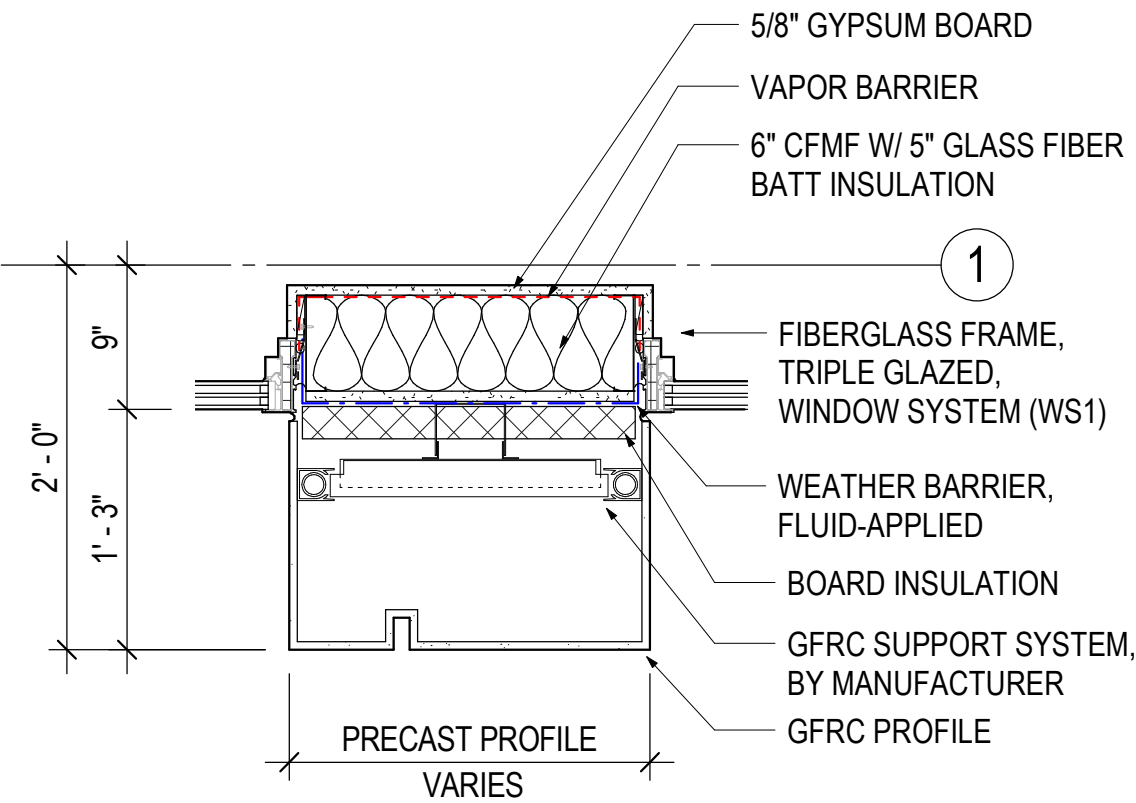


1/4" = 1' - 0"

0' 1' 2' 4'

Exterior Wall Details

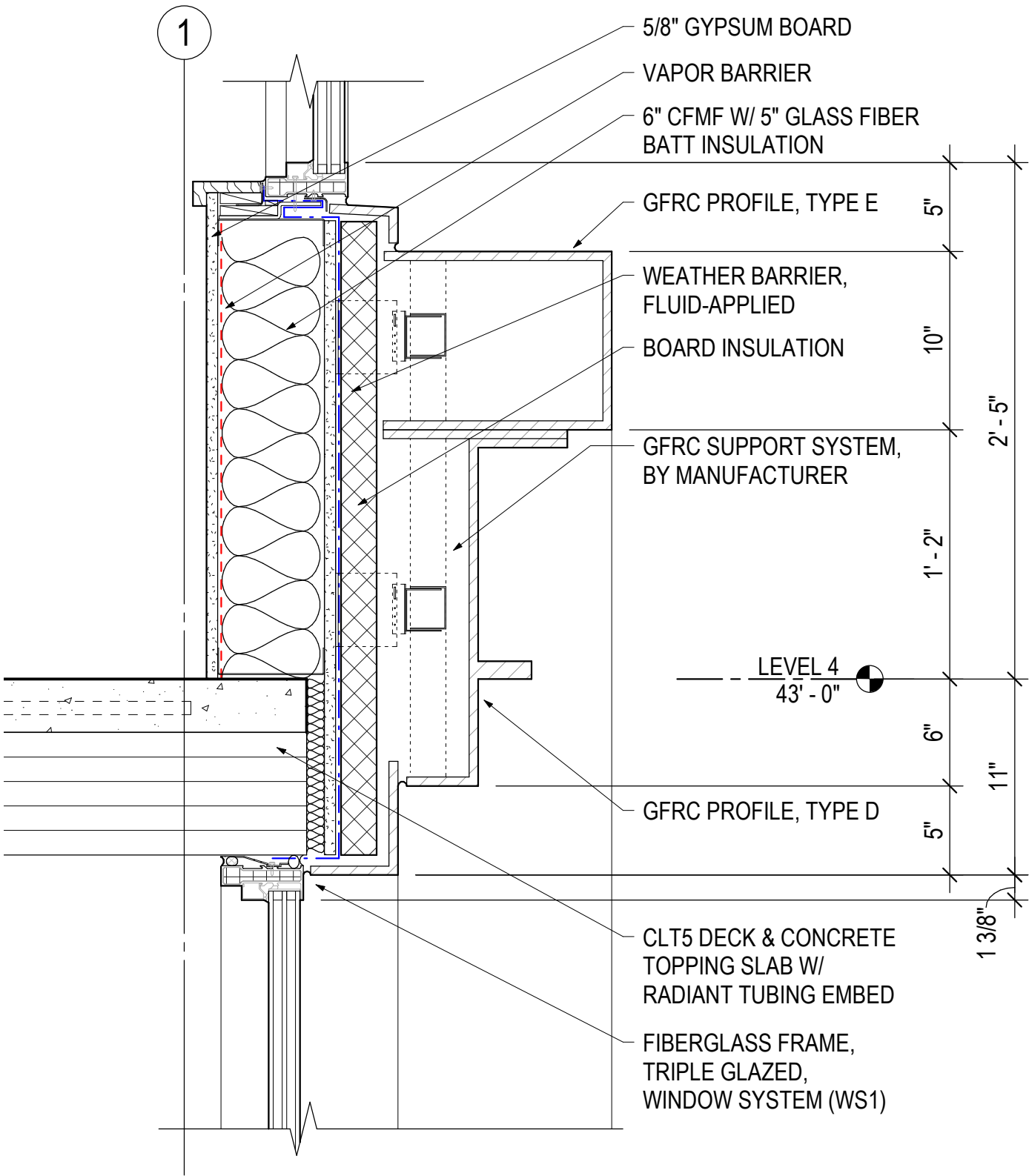
Casting Scheme



1

PLAN DETAIL - PRECAST

1" = 1'-0"



2

SECTION DETAIL - PRECAST

1 1/2" = 1'-0"

Pine Street Sidewalk Casting Scheme



1st Avenue Sidewalk Casting Scheme



**SW Pine Street Perspective
Casting Scheme**



**SW 1st Avenue Perspective
Casting Scheme**



Adjustments

06

1. Loading

Section 33.266.310.C.2

Two Type A loading docks are required on site for office buildings over 50,000 GSF. Based on the historic district design guidelines A8 and precedent of no loading in similar historic buildings, the project is seeking an adjustment to eliminate the on site loading requirement and use street loading in lieu. A PBOT approved loading analysis study is currently ongoing.

2. Ecoroofs

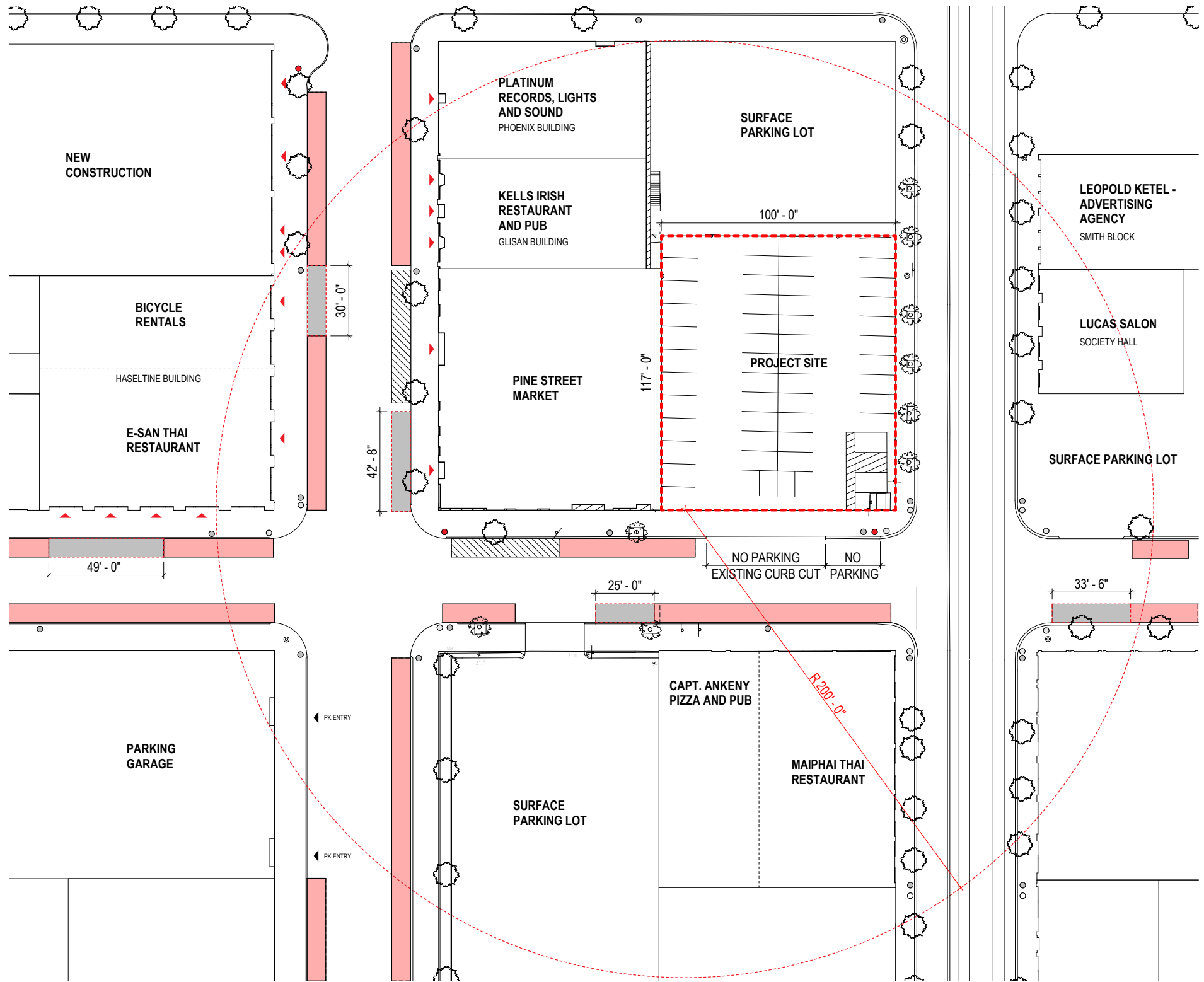
Section 33.510.243

A vegetated roof covering at least 60% of overall rooftop area (after various exceptions for rooftop equipment and amenities) is required for buildings in the Central City over net 20,000 square feet. However, the ecoroof has a negative impact to net zero energy and water systems, and with other project elements providing stormwater benefits (including a minimum 50,000 gallon rainwater reclamation cistern, and an acre of permanently protected (offsite) habitat, the project is seeking an adjustment to eliminate the ecoroof requirement.

3. Bird-Safe Exterior Glazing

Section 33.510.223

New buildings with over 30% windows on any facade are required to employ a pre-approved strategy on at least 90% of glazing on that that facade to reduce the occurrence of bird-strikes. The project team is still investigating potential options and their impacts on project performance and has not yet confirmed whether an adjustment will be necessary.



Loading Adjustment

S/OTDG: A8

CCFDG: B2, B3

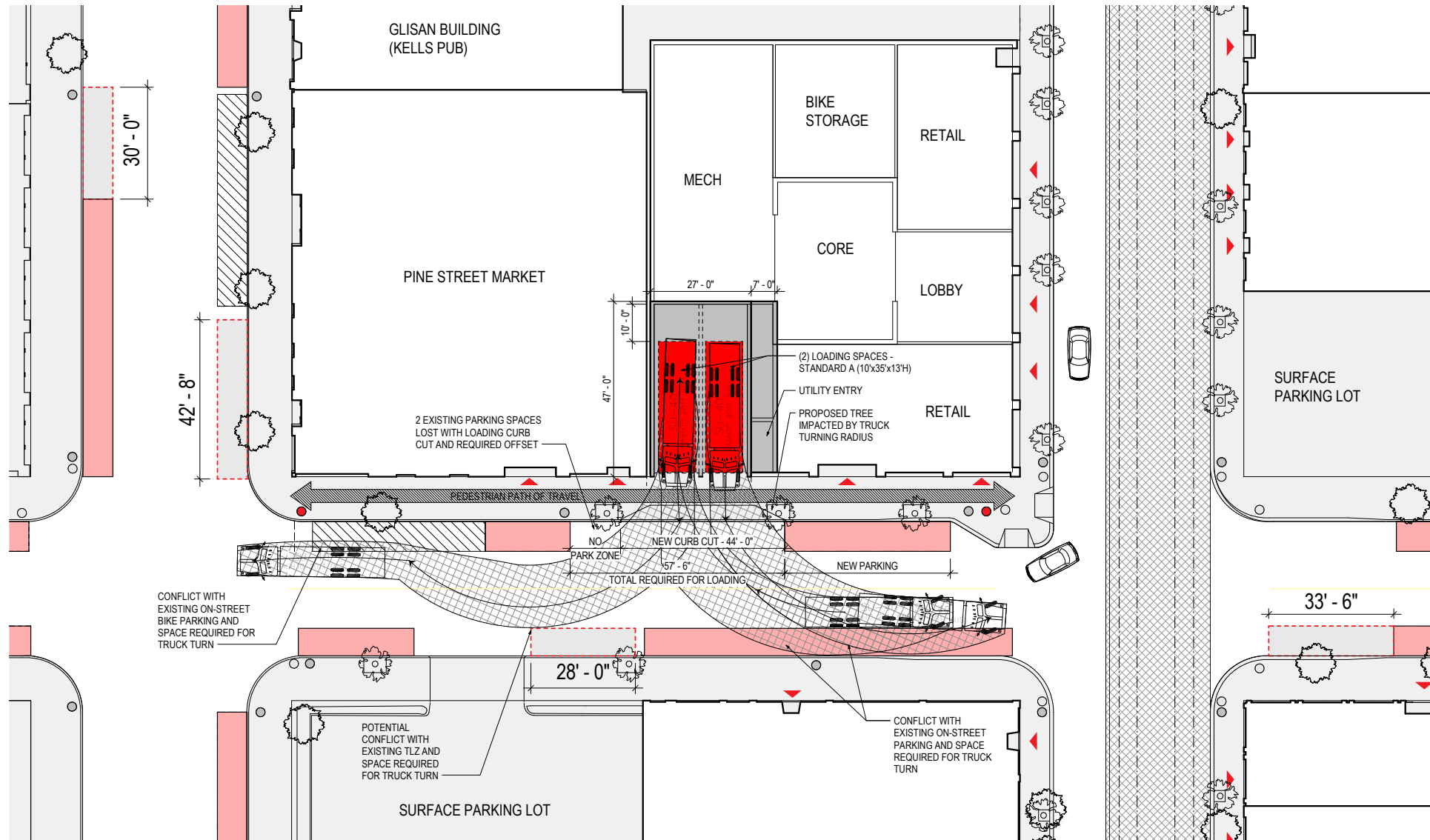
Per Chapter 33.266.310.C.2, Two Type A Loading Docks are required on site for office buildings over 50,000 GSF. The project is seeking a modification to eliminate the on-site loading requirement and use street loading in lieu.

EXISTING SITE CONTEXT

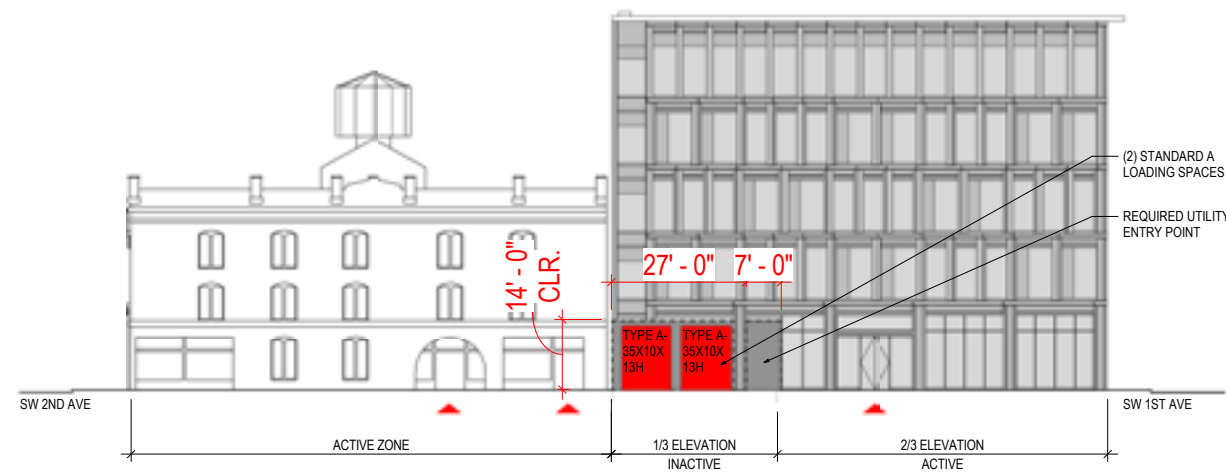
- 1 Within 200' radius of project site, all adjacent buildings are served by on street TLZ, not by on site loading docks.
- 2 A total of 5 TLZs exist within a 200' radius of the project site.

LEGEND

- ON-STREET PARKING
METERED - 2HR LIMIT
- TLZ (TRANSIT LOADING ZONE)
30 MIN LIMIT FROM 7AM TO 7PM
- ON-STREET BIKE PARKING
- EXISTING LIGHT POLE
- EXISTING TRAFFIC SIGNAL POLE
- EXISTING FIRE HYDRANT
- BUILDING ENTRY



SITE PLAN - ON SITE LOADING ANALYSIS



SW PINE STREET ELEVATION - ON SITE LOADING ANALYSIS

Loading Adjustment

S/OTDG: A8

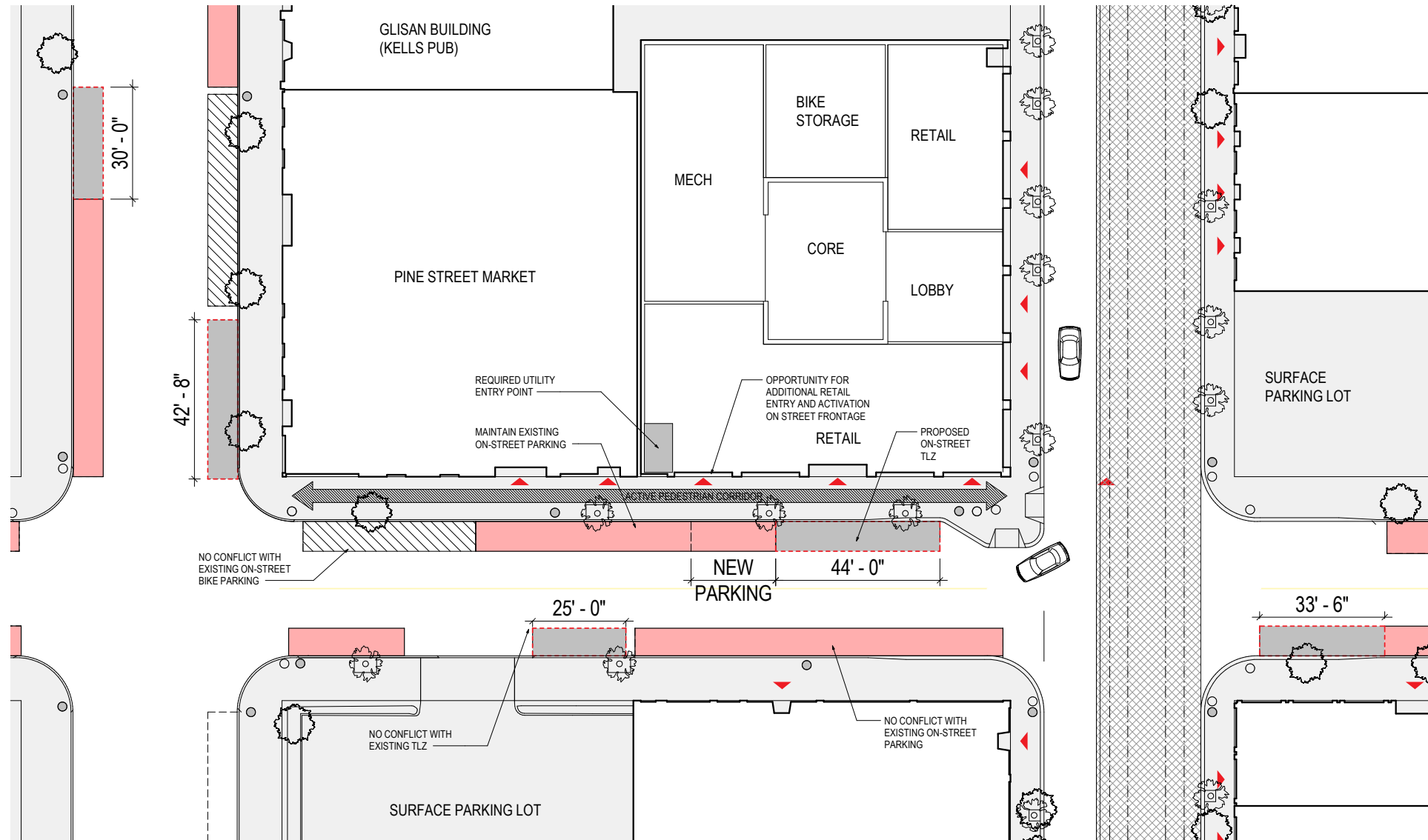
CCFDG: B2, B3

LOADING STUDY - ONSITE LOADING ANALYSIS

- 1 The only location due to the light rail lines is mid-block on Pine, near one of the main entrances to Pine Street Market. This would create pedestrian conflict as the trucks would be backing into the dock right next to the entry and across the sidewalk path of travel.
- 2 The loading dock would fill 1/3 of the Pine Street façade with inactive space, eliminating the same amount of potential retail / ground floor active use.
- 3 The loading dock would require the removal of parking on Pine Street, and would interrupt the flow of both lanes of traffic to allow a truck to pull in. A minimum of four parking spaces would be lost as well as a proposed street tree.
- 4 The loading dock would displace 1,200 square feet of leasable area, a significant impact to a historic quarter block. This would reduce the overall lease area by the same amount and reduce the efficacy of developing quarter block sites in the neighborhood. The reduction of leasable area cannot be recovered due to historic height limits of the site.

LEGEND

- ON-STREET PARKING
METERED - 2HR LIMIT
- TLZ (TRANSIT LOADING ZONE)
30 MIN LIMIT FROM 7AM TO 7PM
- ON-STREET BIKE PARKING
- EXISTING LIGHT POLE
- EXISTING TRAFFIC SIGNAL POLE
- EXISTING FIRE HYDRANT
- BUILDING ENTRY



SITE PLAN - STREET LOADING PROPOSAL

Loading Adjustment

S/OTDG: A8

CCFDG: B2, B3

LOADING STUDY - NO ONSITE LOADING

- 1 One new on-street parking and one new 44' TLZ.
- 2 No impact to existing on-street parking, existing TLZs and existing bike parking.
- 3 Full block of activated retail frontage.

LEGEND

- ON-STREET PARKING
METERED - 2HR LIMIT
- TLZ (TRANSIT LOADING ZONE)
30 MIN LIMIT FROM 7AM TO 7PM
- ON-STREET BIKE PARKING
- EXISTING LIGHT POLE
- EXISTING TRAFFIC SIGNAL POLE
- EXISTING FIRE HYDRANT
- BUILDING ENTRY

City Ecoroof Ordinance

33.510.243 Ecoroofs

A. Purpose. Ecoroofs provide multiple complementary benefits in urban areas, including stormwater management, reduction of air temperatures, mitigation of urban heat island impacts, air quality improvement, urban green spaces, and habitat for birds, plants and pollinators. The standards are intended to:

- Maximize the coverage of ecoroofs;
- Allow for the placement of structures and other items that need to be located on roofs; and
- Support the architectural variability of rooftops in the Central City.

B. Ecoroof standard. In the CX, EX, RX, and IG1 zones, new buildings with a net building area of 20,000 square feet or more must have an ecoroof that meets the following standards:

1. The ecoroofs, including required firebreaks between ecoroofs areas, must cover 100 percent of the building roof area, except that up to 40 percent of the building roof area can be covered with a combination of the following. Roof top parking does not count as roof area. Roof area that has a slope greater than 25% does not count as roof area:

- a. Mechanical equipment, housing for mechanical equipment, and required access to, or clearance from, mechanical equipment;
- b. Areas used for fire evacuation routes;
- c. Stairwell and elevator enclosures;
- d. Skylights;
- e. Solar panels;
- f. Wind turbines;

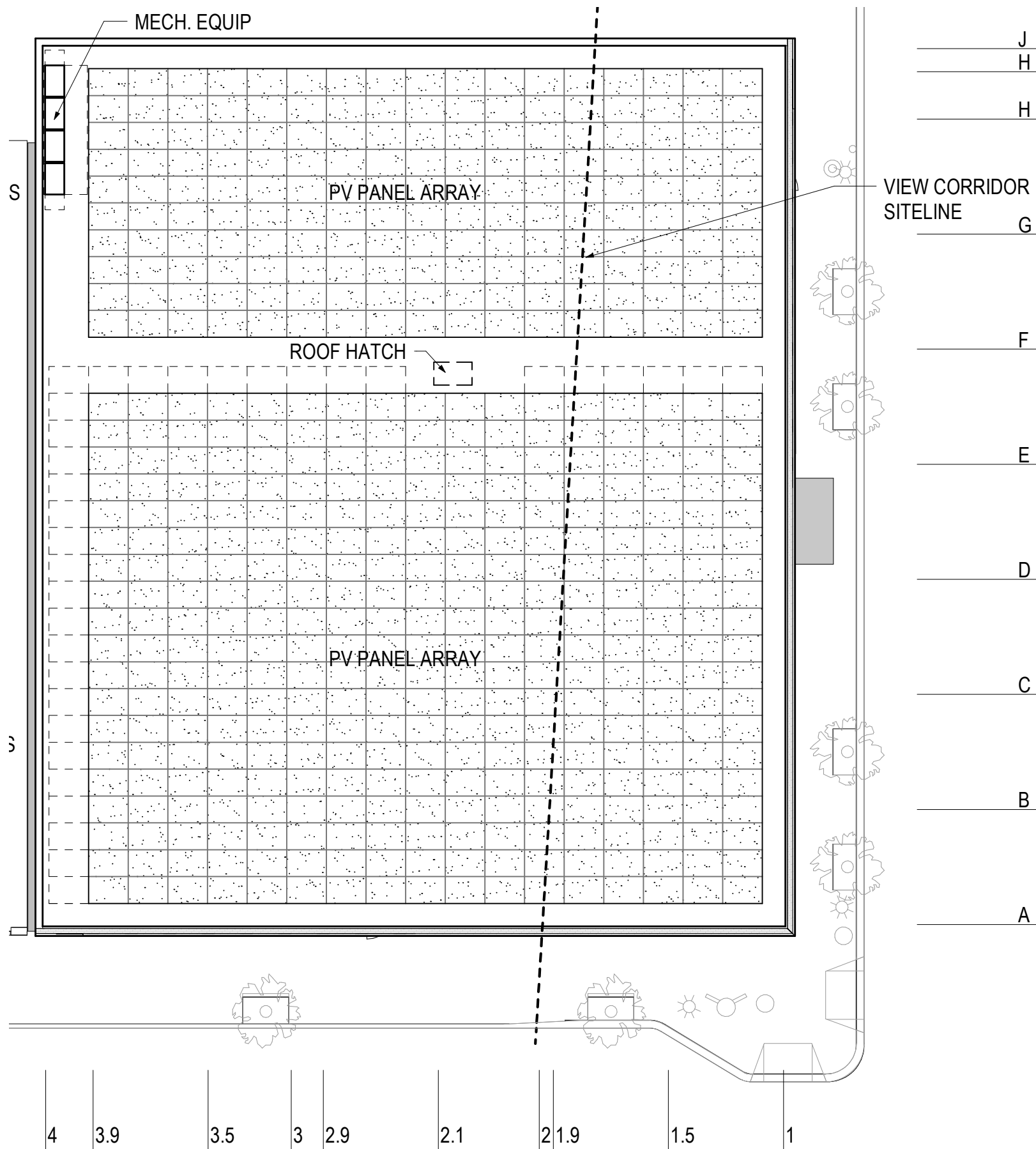
g. Equipment, such as pipes and pre-filtering equipment, used for capturing or directing rainwater to a rainwater harvesting system; or h. Uncovered common outdoor areas. Common outdoor areas must be accessible through a shared entrance.

2. The ecoroof must be approved by the Bureau of Environmental Services as meeting the Stormwater Management Manual’s Ecoroof Facility Design Criteria.

Eco-Roof Adjustment

Due to Living Buiding Challenge (LBC) requirements associated with achieving net zero energy and water (as explained on the following pages), the project is unable to meet the specific detailed requirements of the city's ecoroof ordinance. However, the project's approach to sustainability in general, and the specific requirements of the LBC, allow it to essentially meet the intent of the eco-roof ordinance performance ojectives, as described below:

Ecoroof Benefit Focus Area	Documented Ecoroof benefit	PAE Living Building Proposed approach	Status
Stormwater management	Green roofs have been shown capable of reducing by 50% overall stormwater delivered to municipal infrastructure, but effectiveness can be reduced in large storns and when the roof is already saturated (https://www.nps.gov/tps/sustainability/greendocs/epa%20stormwater-sm.pdf)	By targeting Living Building Challenge Net Zero Water Petal, project will reduce municipal burden through rainwater reclamation, capturing precipitation to meet its water demand needs. Any overflow will be filtered and cleaned before being sent to municipal storm system.	Project exceeds intended stormwater benefits (see Net Zero Water Impacts on following page).
Reduction of air temperatures / Mitigation of urban heat island impacts	Green roof temperatures can be 30–40°F lower than those of conventional roofs and can reduce city-wide ambient temperatures by up to 5°F. (https://www.epa.gov/heat-islands/using-green-roofs-reduce-heat-islands)	Research on the effect of PVs on urban heat island and ambient air temperatures are still emerging. Studies of large scale industrial PV installations have identified a network of complex influencing factors, but have shown a net small (3-4 °C) heat island increase over natural vegetation. (https://phys.org/news/2016-11-solar-island-effect-large-scale-power.html)	PV will have a negligible effect on urban heat island and ambient air temperature, compared to ""typical"" urban development rooftops. Additional heat island benefits will be provided through one acre habitat offset (LBC Imperative #3); project team is targeting permanent preservation of land within the Portland bioregion.
Air quality improvement	Green roofs have been shown capable of reducing urban air pollution at scale across cities, but effect of any one installation is small to negligible. (https://blogs.umass.edu/natsci397a-eross/green-roofs-an-analysis-on-air-pollution-removal-and-policy-implementation/)	PVs will not actively mitigate air pollution, but create more more independence from fossil fuel utility infrastructure and will supply a net postive surplus of green energy to the grid. Small amount of integrated plantings have some air quality benefit.	Project vegetation does not improve air quality as much as city requirement, but on-site PV reduces utility energy productopm impact on clean air. Equivalent or greater regional air quality benefits will be provided through 1 acre habitat offset (LBC Imperative #3); project team is targeting permanent preservation of land within the Portland bioregion.
Urban green spaces	Depending on location, green roofs can provide an open space benefit, whether the roof is occupiable or just viewable.	District historic guidelines will likely require that green roof is not visible from the street, and based on the location and the neighborhood height limits, the roof will generally not be visible from nearby buildngs. Project is being designed without a rooftop accessible stair bulkhead to better fit within historic district.	Because of historic district and height limits, open space benefit of green roofs is limited in this district. Equivalent open space benefits will be provided through 1 acre habitat offset (LBC Imperative #3); project team is targeting permanent preservation of land within the Portland bioregion. Additional accessible human space will be enhanced through meeting LBC Imperatives 15 (Human Scale + Humane Places) and 16 (Universal Access to Nature & Place), which require people-oriented spaces in public-oriented space - see more below under these imperatives."
Habitat for birds, plants and pollinators.	Green roofs can provide habitat for birds and insects, though the value is dependent on the design and vegetation (typical extensive sedum green roofs have greatly reduced habitat benefits)	Project design incudes mininum 120SF "urban agriculture," whcih will involve balcony planters and/or street trees on Pine Street that will have some habitat benefit.	Project's roofotp habitat is less than green roof, but street trees and urban agriculture will mitigate. Equivalent habitat benefits will be provided through 1 acre habitat offset (LBC Imperative #3); project team is targeting permanent preservation of land within the Portland bioregion."

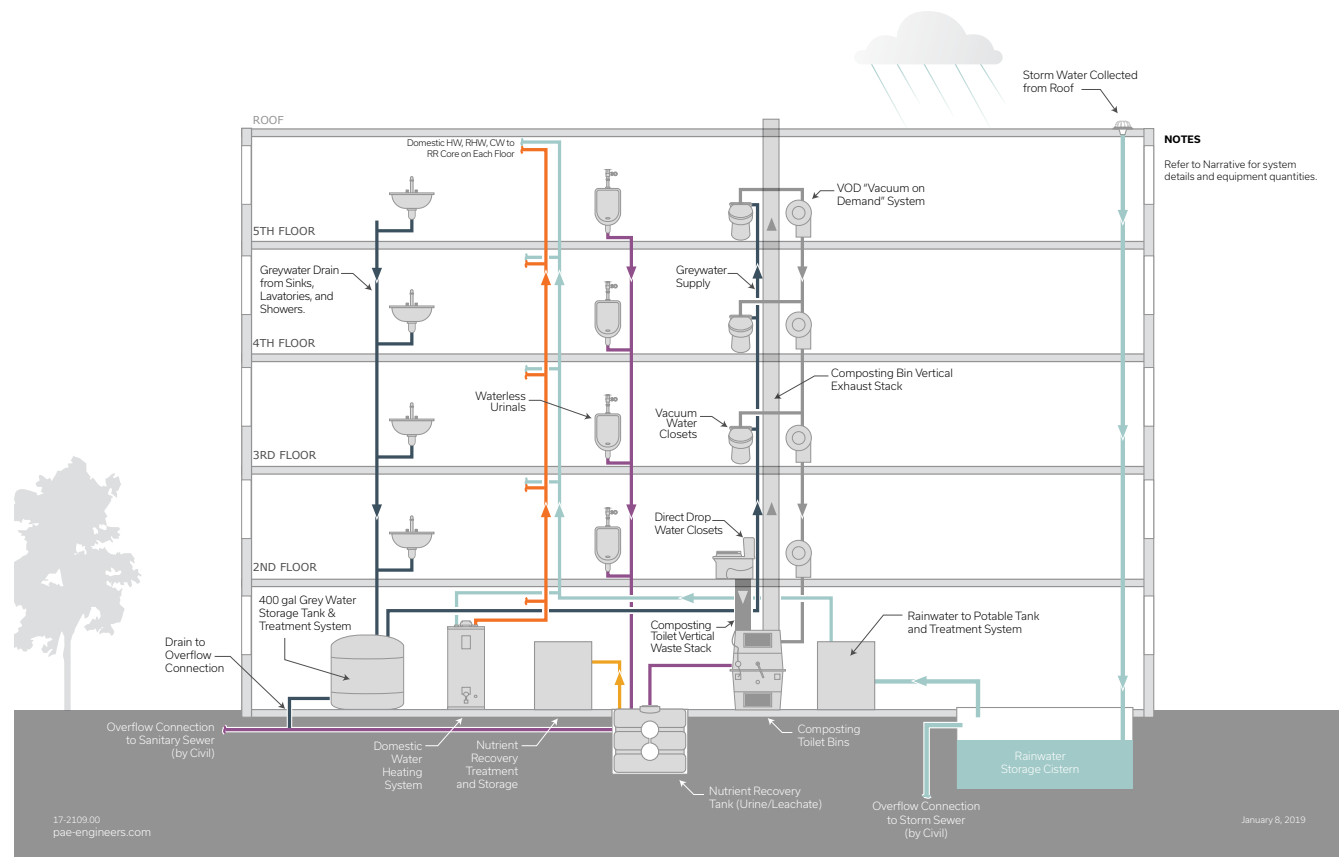


Eco-Roof Adjustment: Net Zero Energy Impact

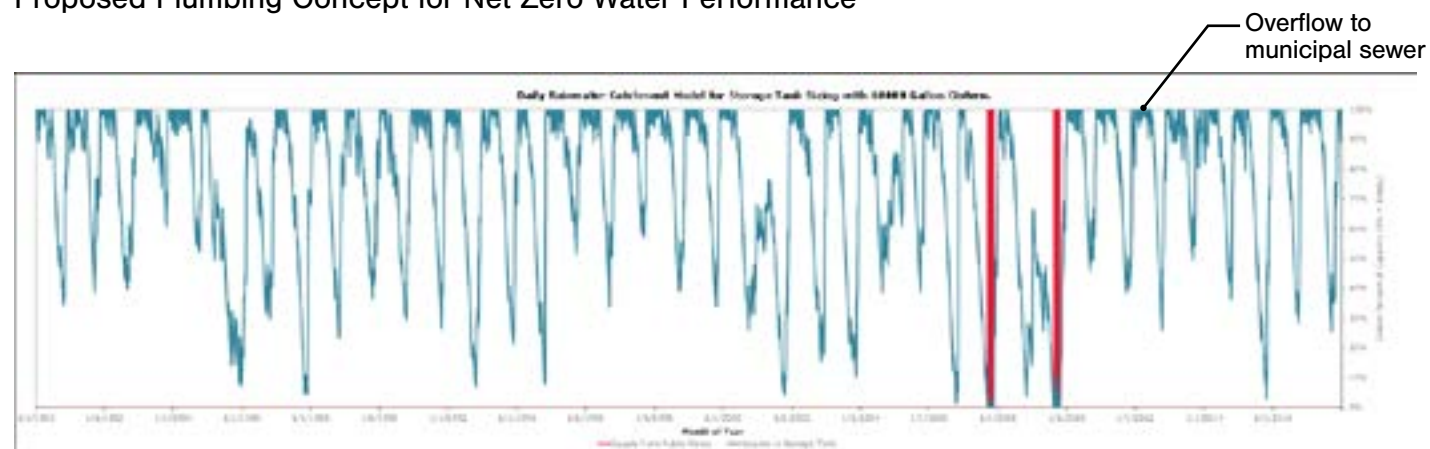
The Living Building Challenge (LBC) exception that allows tall, dense buildings on narrow urban site to use some off-site photovoltaics, still requires that at least 75% of the total annual energy production occur on the project's site. Our current PV layout, after accounting for maintenance access as well as required firefighter access around the perimeter, will provide between a minimum of 76% of annual energy (and up to 80% pending discussions with the fire marshal). Ecoroof beneath the panels would not be viable, as the required strategy to maximize onsite production necessitates a flat array of panels, without spacing: thus the ecoroof would not get adequate light or rainfall.



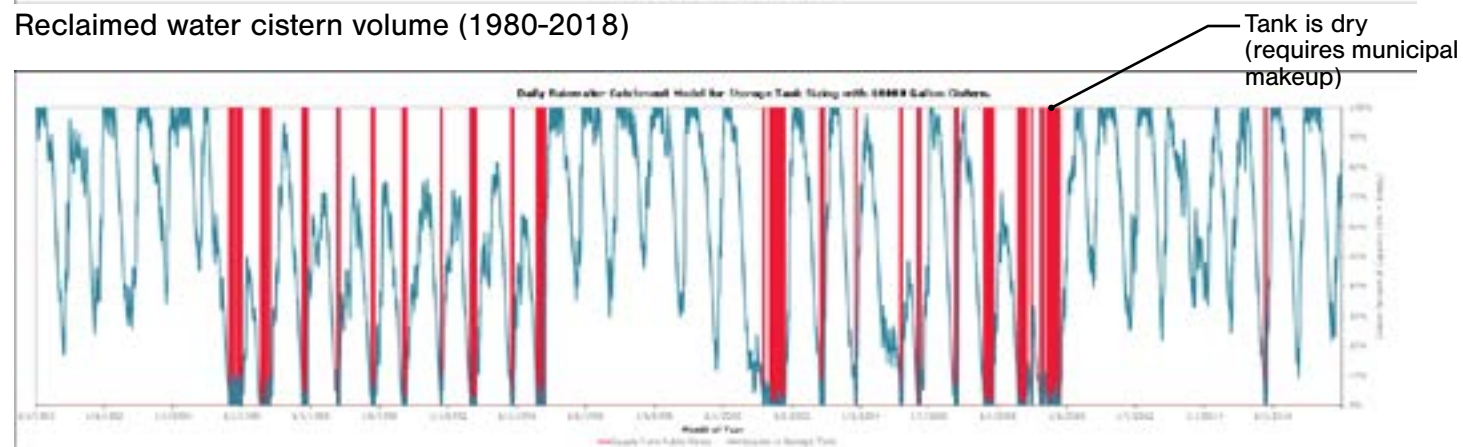
Illustrative photograph showing flat, tight-racked photovoltaic array necessary to meet LBC's net zero energy requirements.



Proposed Plumbing Concept for Net Zero Water Performance



Reclaimed water cistern volume (1980-2018)



Reclaimed water cistern volume (1980-2018), with Ecoroof

Eco-Roof Adjustment: Net Zero Water Impact

Net Zero Water: Every Living Building Challenge (LBC) project must be designed to supply all building water needs from onsite water resources, and utilize this resource to full extent permitted by code officials. Our approach to net zero water involves capturing annual precipitation (the only viable on-site water source) into a (minimum) 50,000 gallon tank and filtering this water for all non-potable needs (including irrigation and toilet-flushing), assuming rainwater to potable applications are not approved.

Even if an ecoroof were possible (given the energy production needs of the project), it would create two substantial challenges to net zero water performance:

1. An eco-roof introduces organic contaminants into the reclaimed rooftop rainwater supply, creating additional costs and difficulties in filtering them out. Based on based practices and the experience of this team on numerous high performance projects with rainwater recovery systems, rainwater collected directly from a membrane roof and the photovoltaic system is more conducive to efficient and effective recovery.
2. Ecoroofs reduce the amount of rainwater available to the project. Even a 60,000 gallon cistern would run dry in 20 of the last 38 rainfall years, based on historic data (the proposed rooftop design would result in only a couple of instances in the two driest years).

	Baseline	Proposed cistern*		Ecoroof	
	Existing Condition Average Daily Runoff (gal)	Average Daily Runoff (gal)	Reduction from Baseline	Average Daily Runoff (gal)	Reduction from Baseline
	100% to municipal sewer	100% to sewer when cistern is full		60% ecoroof coverage retains 50%, remainder of roof 100% runoff to sewer	
Jan	1111	699	37%	778	30%
Feb	859	517	40%	601	30%
Mar	879	463	47%	615	30%
Apr	602	264	56%	421	30%
May	430	138	68%	301	30%
Jun	296	61	79%	207	30%
Jul	100	2	98%	70	30%
Aug	110	0	100%	77	30%
Sep	291	3	99%	204	30%
Oct	675	33	95%	473	30%
Nov	1215	430	65%	851	30%
Dec	1301	729	44%	911	30%
Total annual	247,548	106,370	57%	173,284	30%

*Assumes a 50,000 gallon cistern (minimum planned size - larger sizes will result in greater reductions)



SOLYX Bird Safety Film comes in horizontal and vertical patterns that meet city requirements, but has substantial (~20%) impacts on visual transmission and solar heat gain that are being analyzed.



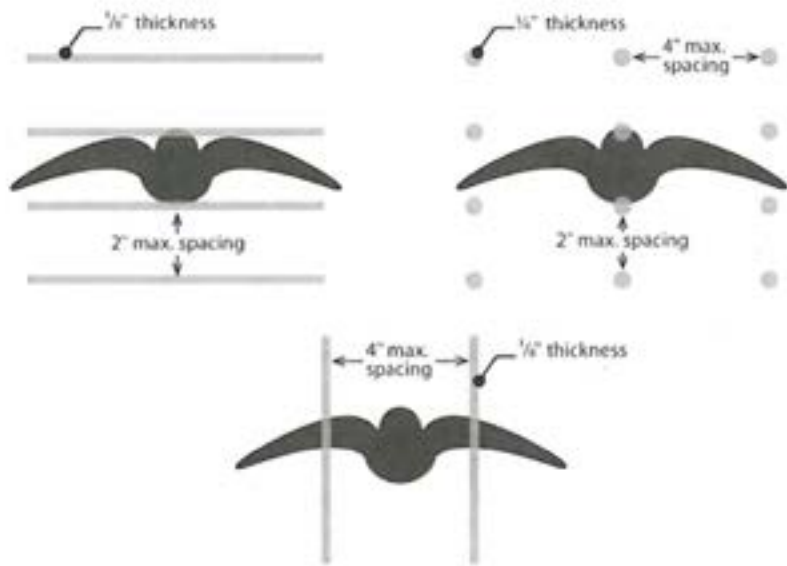
At least one of Collidescape's Bird Safety Films is unacceptably opaque (for historic district at least), but the team is also looking at a product that should be more clear.

Bird-Safe Glazing Adjustment

The project is pursuing and investigating bird-safe glazing options, including frit, films, and UV coating, but are cognizant that all of the options may have negative impacts on the project, whether aesthetic impacts (contrary in a historic district), performance impacts (detrimental to net zero energy performance, or cost impacts (in the case of UV-coated glass that may make the project not viable). All options will be investigated in order to find the best option that meets city requirements as well as that of the historic district and the Living Building Challenge, but in the event this is not possible, the project may pursue an adjustment on this regulation.



Ornilux bird safety glazing has a UV coating that is invisible to humans (left) but apparent to birds (right). It comes in double or triple glazed units, but has limited options for other performance characteristics.



Frit patterns per the city guidelines may have the least impact on performance and may be acceptable to the historic district as well.

