

60 PENHALLOW STREET

AT

BRICK MARKET

HDC PUBLIC HEARING
NOVEMBER 2019



DRAWING LIST - DANIEL STREET

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D1.0

COVER

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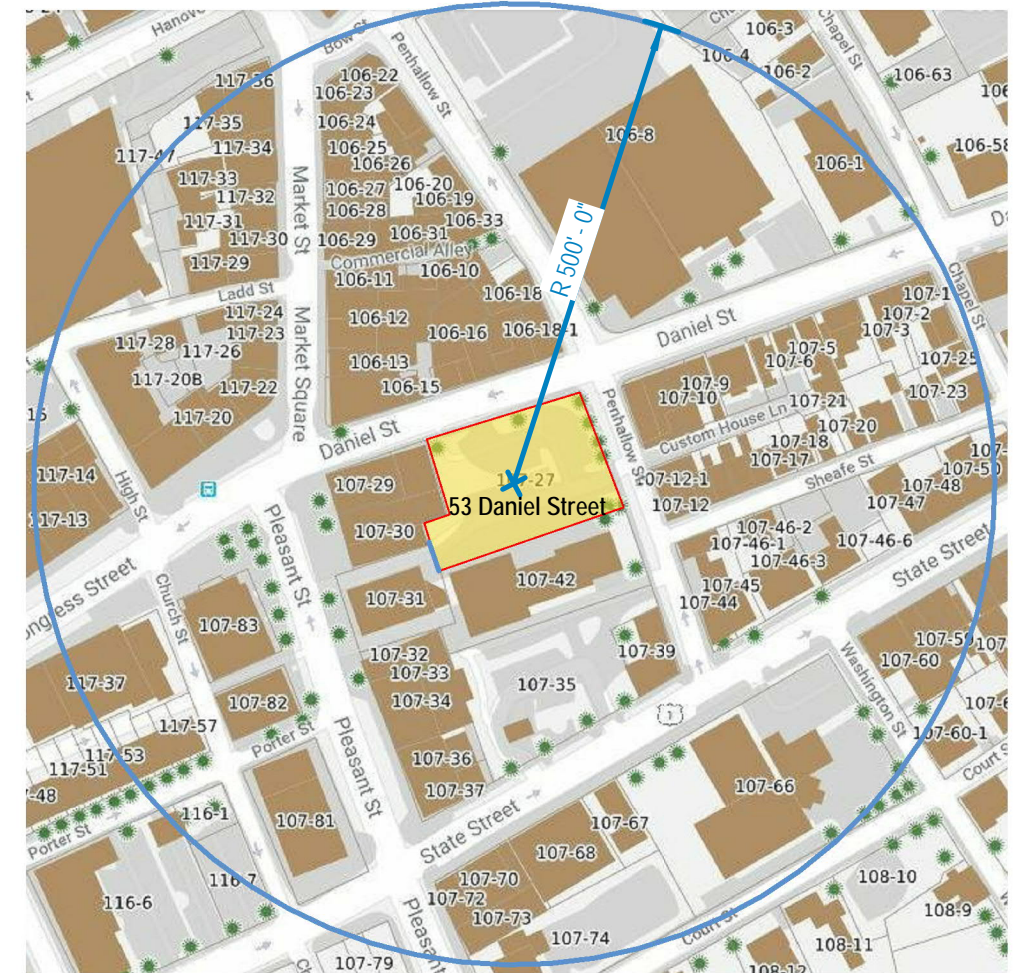
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History is a story of time. This building tells a story of the times of Portsmouth; linking collectively the first origins of our seaside port, the wooden structures previously on this site, the surrounding buildings of today, and this proposed building which can become a part of Portsmouth's ongoing tale.



The special and historic character of this site encompasses a wide variety of architecture which portrays the evolution of this unique area. Evolution achieves compatibility by being sympathetic to its neighbors while remaining authentic and true to itself.



1 500' Radius Site Plan
1" = 200'-0"

D1.1

CONTEXT & LOCUS MAP

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PROJECT OBJECTIVES

- Enliven and enhance pedestrian vibrancy & sense of place. Widened sidewalk plazas, outdoor dining, artist and musician spaces. Master Plan 1.2; Zoning Ordinance 10.631.20 Purpose & Intent 1-6; 10.635.60 Review Factors 1-3; 10.635.70 Criteria 1-4.
- Increased parking with two levels of on-site, underground parking. Master Plan 4.3
- Existing power lines relocated underground.
- Mixed use with street level public open market, and office space above. Master Plan 3.3.2; ZO Purpose & Intent 4-6
- Community accessible space with public courtyard pocket plaza, gardens and landscaped accessways.
- Connectivity - pedestrian connections between Market Square and McIntyre Building. Master Plan 4.2
- Public art at street level outdoor spaces. Master Plan Goal 1.3
- High performance resilience, sustainability and energy conservation. Master Plan 5.1-5, ZO Purpose & Intent 45-6; Review Factor 3, Criteria 4

SUMMARY OF REVISIONS TO PREVIOUS SUBMISSION

1. Copper wave bands simplified, to include a flatter copper panel profile with larger, simpler pattern and a more uniform patina.
2. Wood siding boards increased in width from 6" to 12", to simplify and reduce texture of facade.
3. Material textures of granite and wood elements refined for less rustic look.
4. Curved window assemblies at 2nd and 3rd floor street facades pushed back from a 6" to 2" protrusion (thickness of trim), to simplify facade texture.
5. Curved glass metal connectors have a more subtle, matte gray color and finish for less contrast with surrounding materials.
6. Storefronts now incorporate clear glass with open wood slats below window sills, to allow light to shine through and provide more custom enhanced detailing.
7. Standing seam copper roof at rear curved glass to match copper roof at front curved glass.

COMPLIANCE WITH HISTORIC DISTRICT REGULATIONS

ZONING ORDINANCE, HISTORIC OVERLAY DISTRICT 10.631.10 Purpose & Objectives

Historic significance –

- Current surface parking lot has no historic significance and is not included in the Portsmouth Downtown National Historic District nor the Portsmouth Advocates Historic District Survey.
- Proposed new building will be free-standing and separated from all neighboring structures by public ways.
- Previous buildings on this site were a wide variety of styles, materials, details and eras (1750 – 1880).
- A remarkable historic event on this site was the survival of the area's oldest wooden house (1740 Clagett-Hart House aka. Noah's Ark) through several citywide fires, until its removal in the 1960's. It was also the home of notable historic figure Noah Parker, Portsmouth's first universalist/unitarian minister and acclaimed blacksmith artisan. Proposed building design honors this legacy through the use of crafted wood and sculpted metal.

Compatible with character of surrounding properties –

- Neighboring buildings include a wide variety of styles, sizes, massings, heights, widths, materials, sizes, details and eras (1816-1967).
- One of the only sites in the district which contains within a single view-shed, a wide variety of architectural styles representing over 150 years of evolving history.
- Proposed design is consistent with the character of "variety".

HISTORIC DISTRICT GUIDELINES; Chapter 12 New Commercial Development
Page 12-4: "Three Appropriate Design Approaches":

1. Present Day (compatible contemporary)
2. Reconstruction (duplication of previously existing historic buildings)
3. Traditional (creation of plausible but not previously existing historically styled buildings)

The proposed building follows Design Approach No. 1: Present Day, Compatible Contemporary.

MASTER PLAN 2.1, 2.1 Urban Core: "Blend old & new architecture, preserve but not mimic old construction."

Zoning Ordinance 10.635.60 Review Factors Design Guidelines (12-4) Design Principles for New Commercial Development.

- Scale: height (3 stories with set back 4th story) and footprint are within range of surroundings. Surrounding abutting buildings are varied in scale from 1 story (Ceres Bakery) to 5 stories (McIntyre), with building or connected buildings footprint of similar scope.
- Mass: roofs and façade planes are broken up into multiple smaller volumes, to mirror rhythm of surroundings. Façade is 3 stories at Daniel Street, and 2 stories at Penhallow & Sheafe Streets. 4th story is set back or under attic and does not reach the street front.
- Width: Façades are deeply modulated and organized into bays which mimic the widths of surrounding facades.
- Frontage & setback: proposed building has 96% street front build-out, consistent with surrounding properties. Setback aligns with established streetfronts.
- Orientation: Front and rounded entrance is oriented to street corner, a typical trait of the neighborhood and is seen directly across the street at Customs House building.
- Roof: Shaped roof is stepped back and not seen from Daniel Street, consistent with horizontal cornice lines across Daniel Street. Penhallow cornice line steps down in height, with sloped and stepped roofs set back from façade, similar to widely varied stepped roof planes visible across Penhallow.
- Facade arrangement and openings: 1st floor has traditional wood storefronts in granite walls. Upper floors are composed into bays, utilizing undulating cornice and banding projections evoking the projecting paired bays flanking upper Daniel Street. Fenestration rhythms and ratios are consistent with surroundings. Upper floors include architectural flourishes such as brackets, curves, and deep cornices, which is consistent with abutting buildings such as the Palladian fan windows at 2nd story of Customs House; the projecting bay windows, heavily textured brickwork, and ornate projecting cornices at several buildings along Daniel Street.
- Details: Ratio of articulation to flat surface is consistent with surrounding buildings. Abutting examples include the heavily detailed 30 Penhallow (Old Police Station) and 21 Daniel St (building behind Tuscan Market).
- Materials & texture: Proposed wood siding and framing, granite wall bases & copper roofing reflect the historic materials found throughout the surrounding and abutting properties. Materials proposed have natural and/or patina finishes.

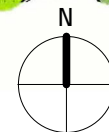
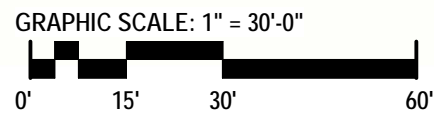
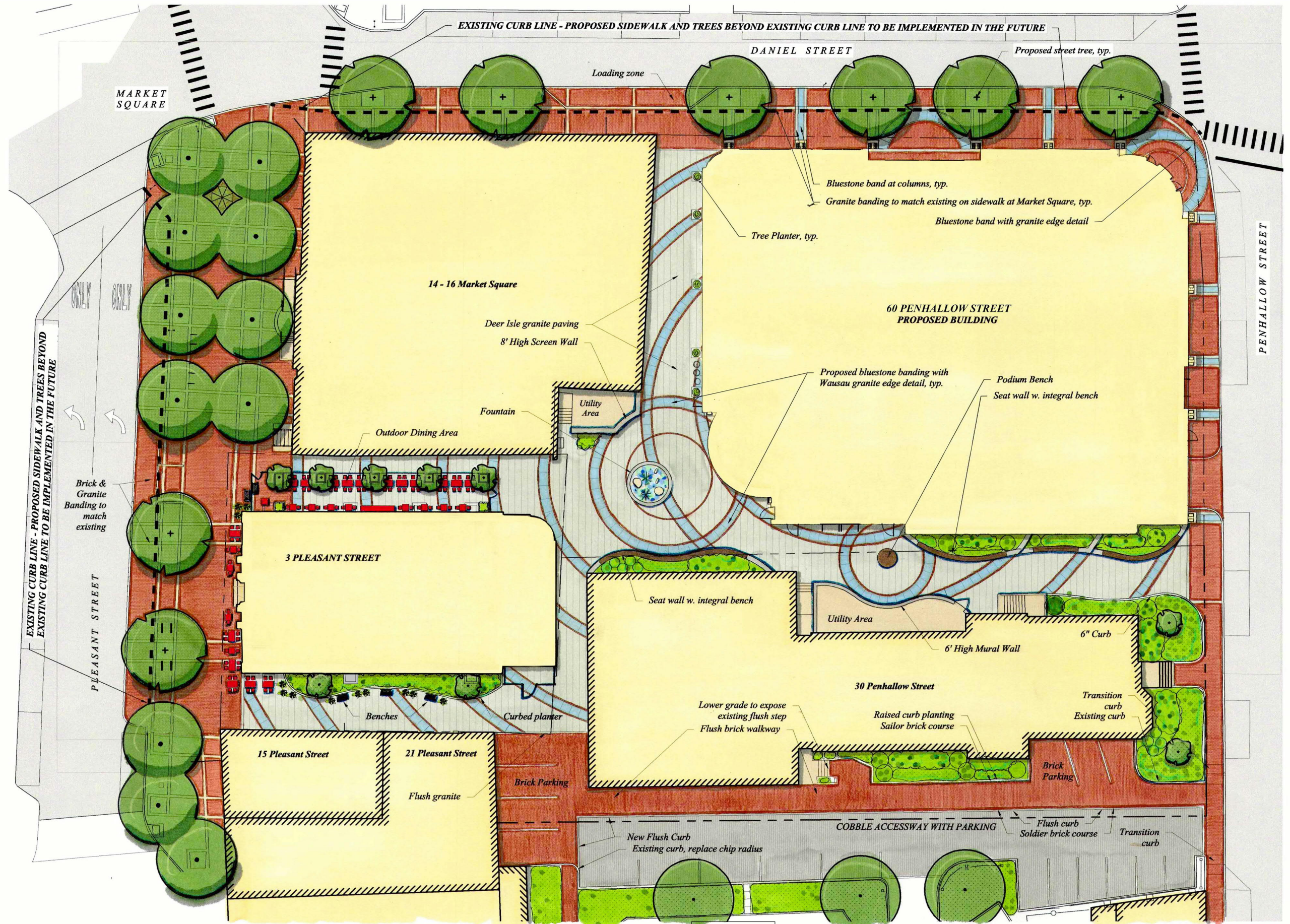
D1.2

PROJECT SUMMARY

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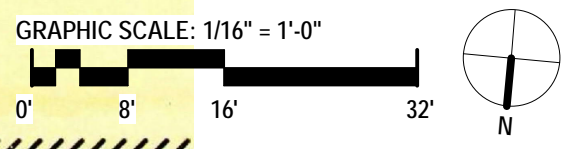
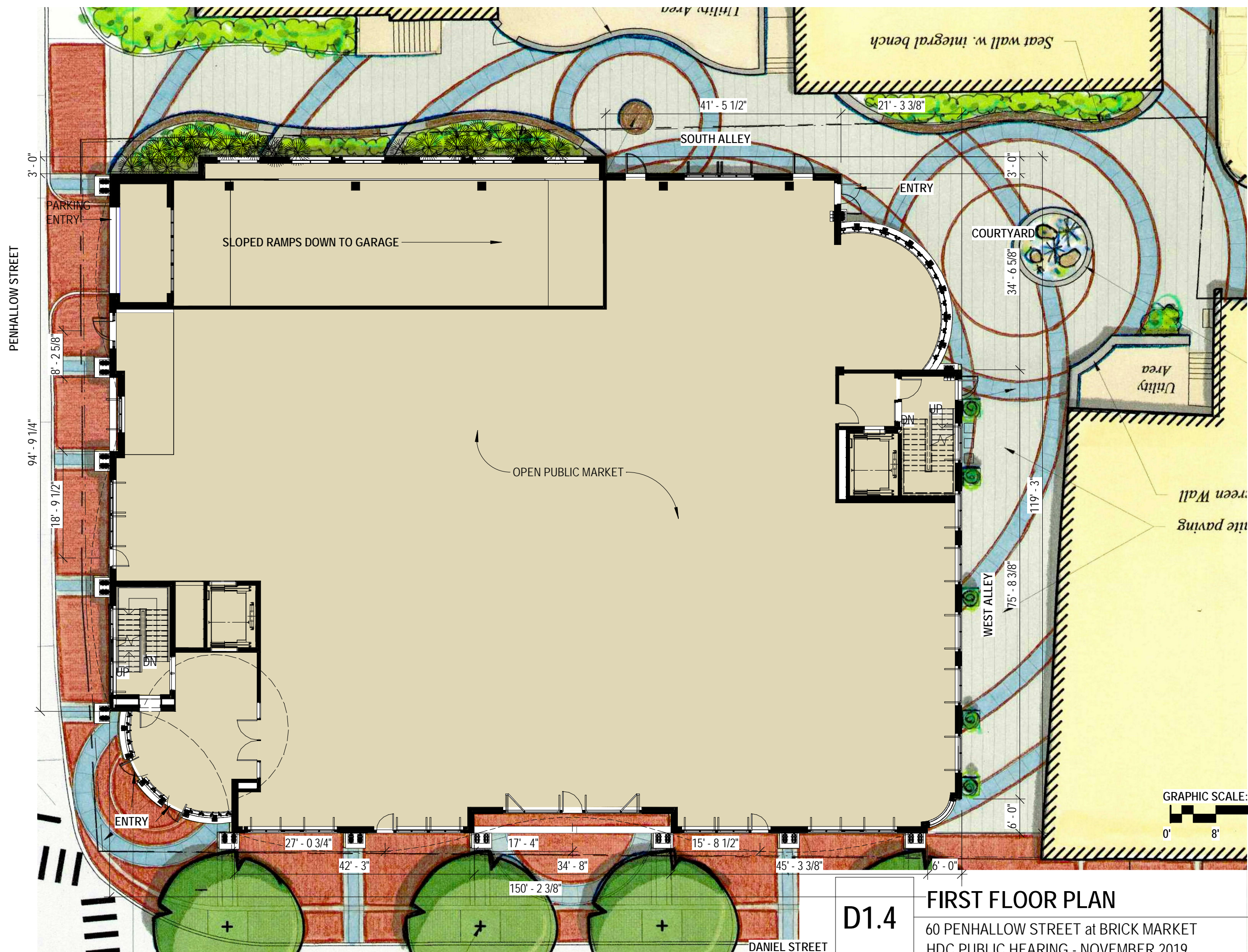
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D1.3

PROPOSED SITE MASTER PLAN

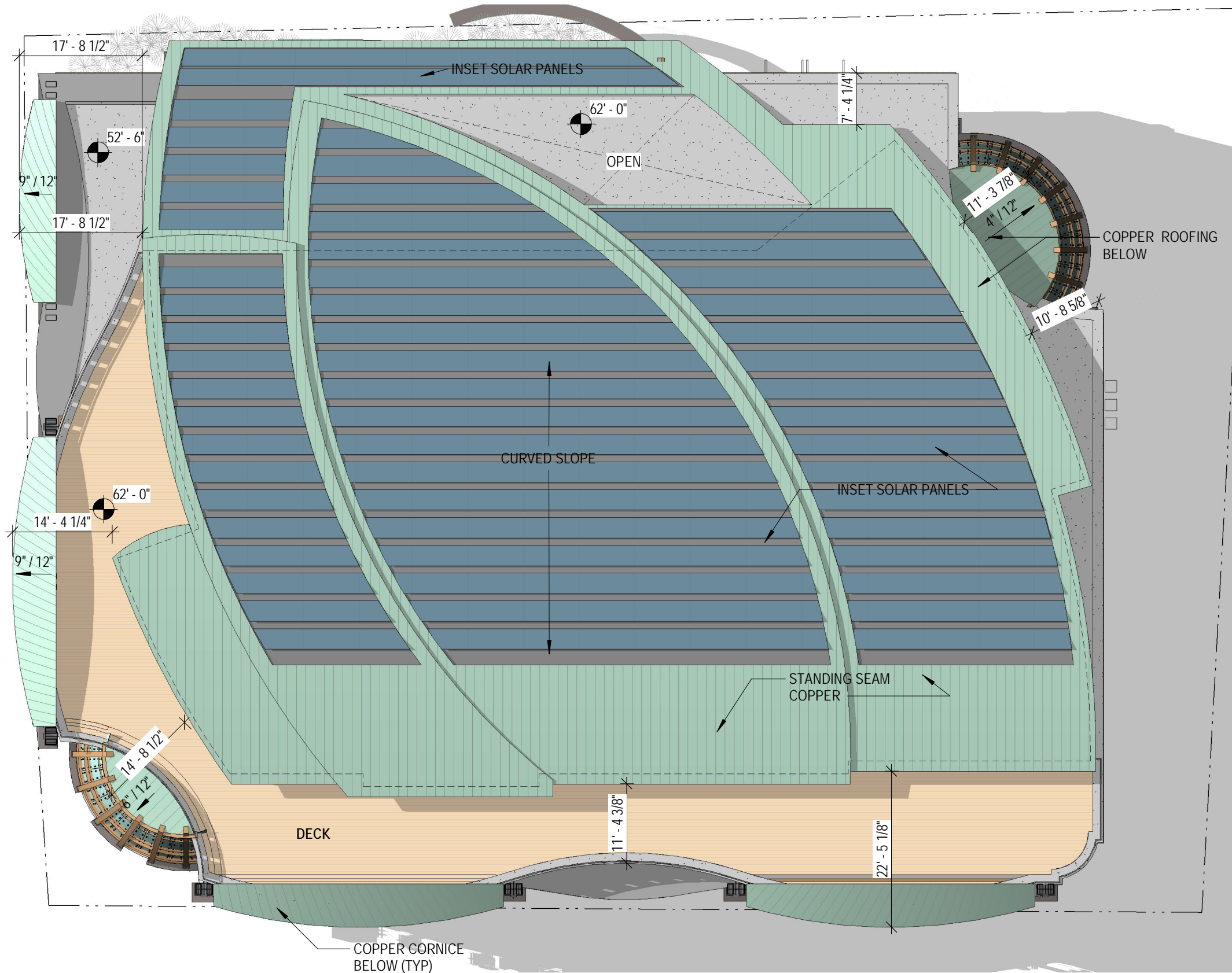
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D1.4 FIRST FLOOR PLAN
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1 FIRST FLOOR OVERALL PLAN
 1/16" = 1'-0"





1 ROOF OVERALL PLAN
1/16" = 1'-0"

D1.5 ROOF PLAN
60 PENHALLOW STREET at BRICK MARKET
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TANGRAM 3DS

D1.6

PERSPECTIVE NE DANIEL ST

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TANGRAM 3DS

D1.7

PERSPECTIVE NW DANIEL ST
60 PENHALLOW STREET at BRICK MARKET
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TANGRAM 3DS

D1.8

PERSPECTIVE SW COURTYARD

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D1.9

PERSPECTIVE SE PENHALLOW ST

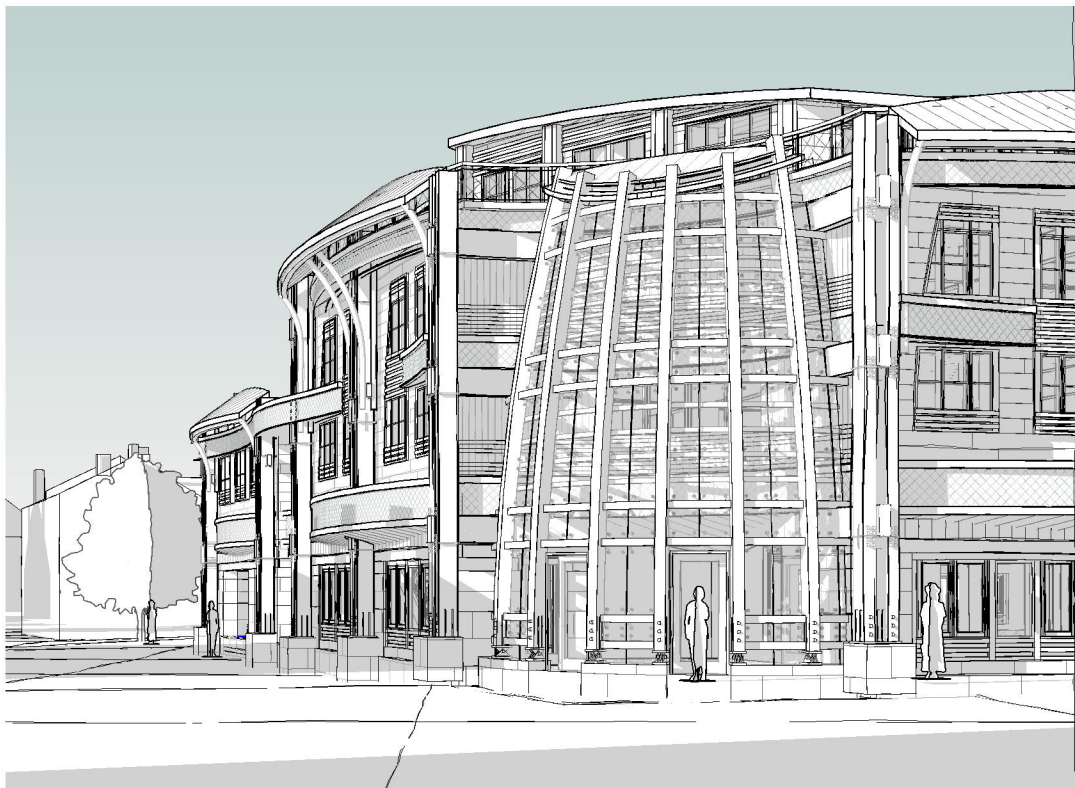
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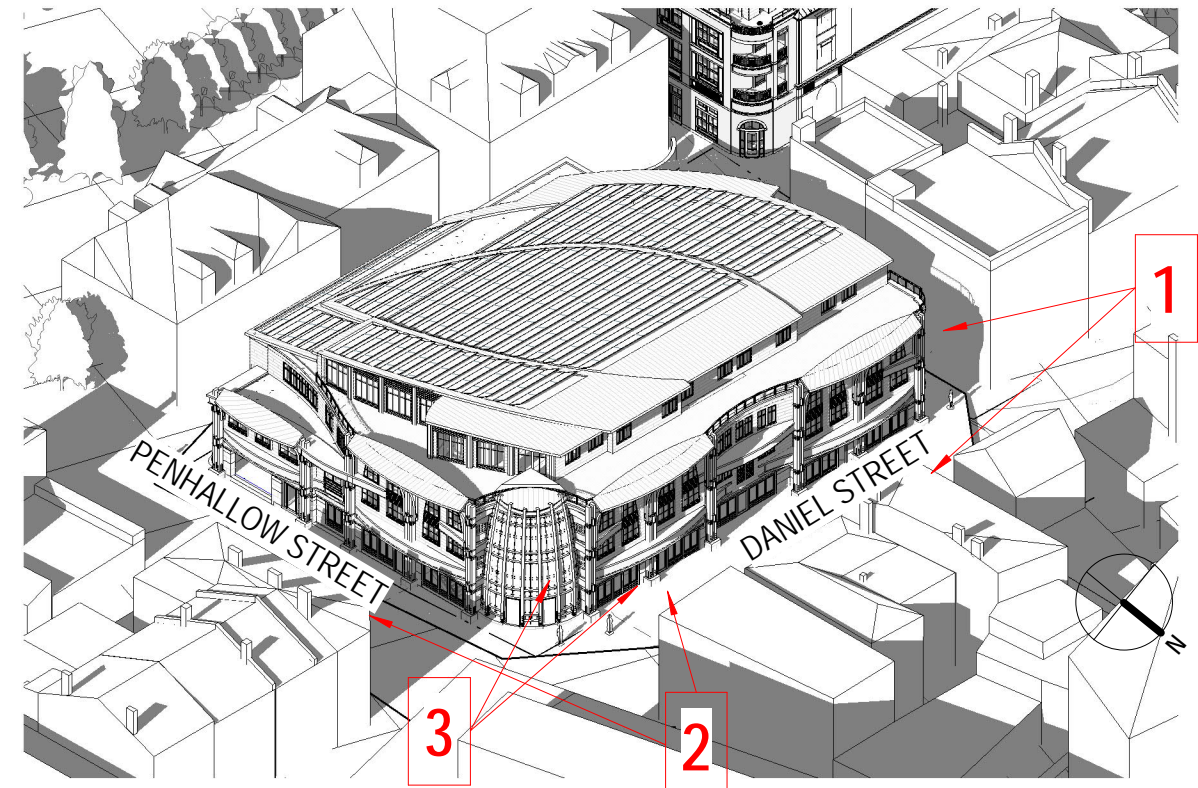
STREET VIEW 1



STREET VIEW 2



STREET VIEW 3



D1.10

3D VIGNETTES - FRONT

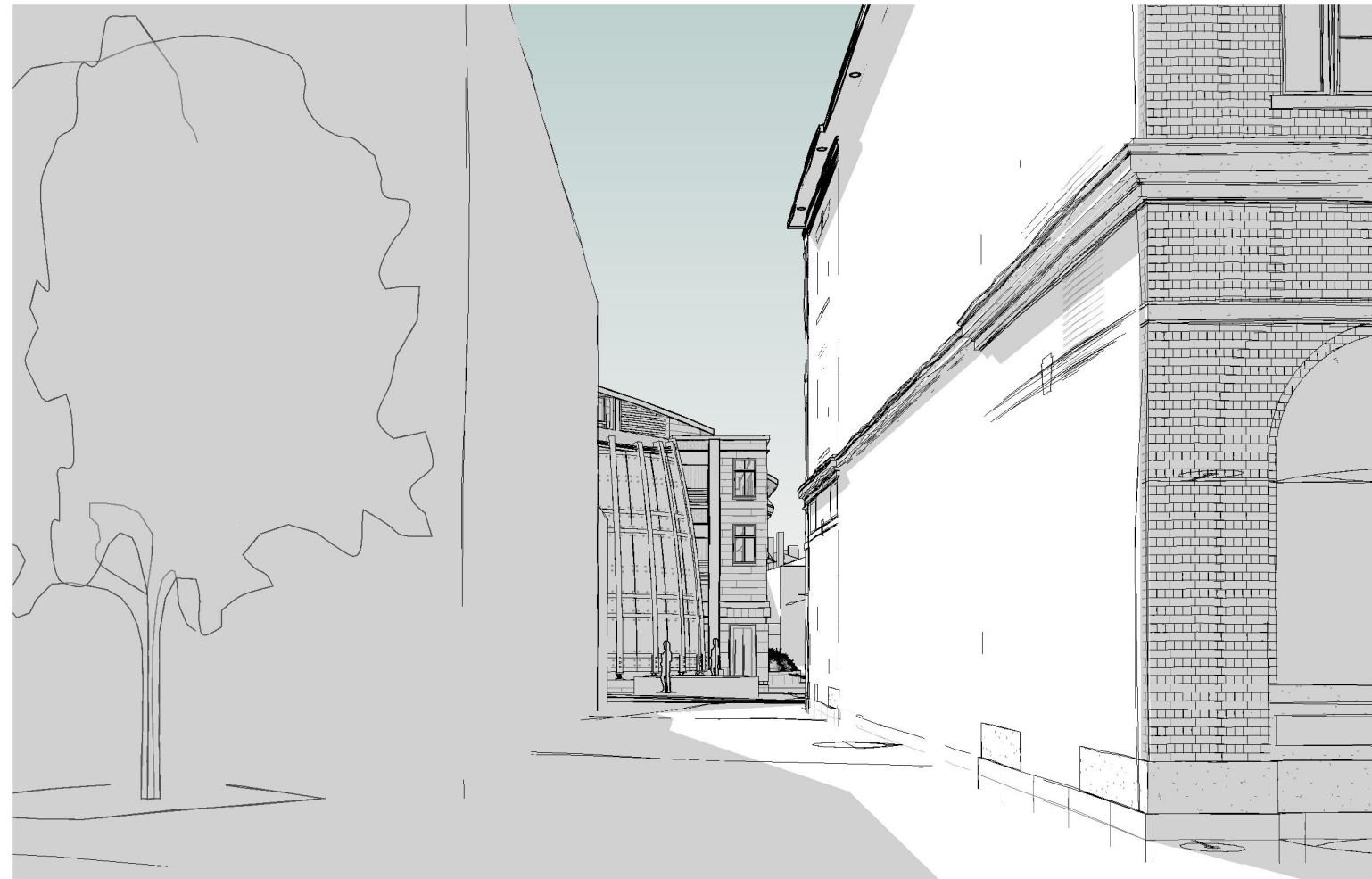
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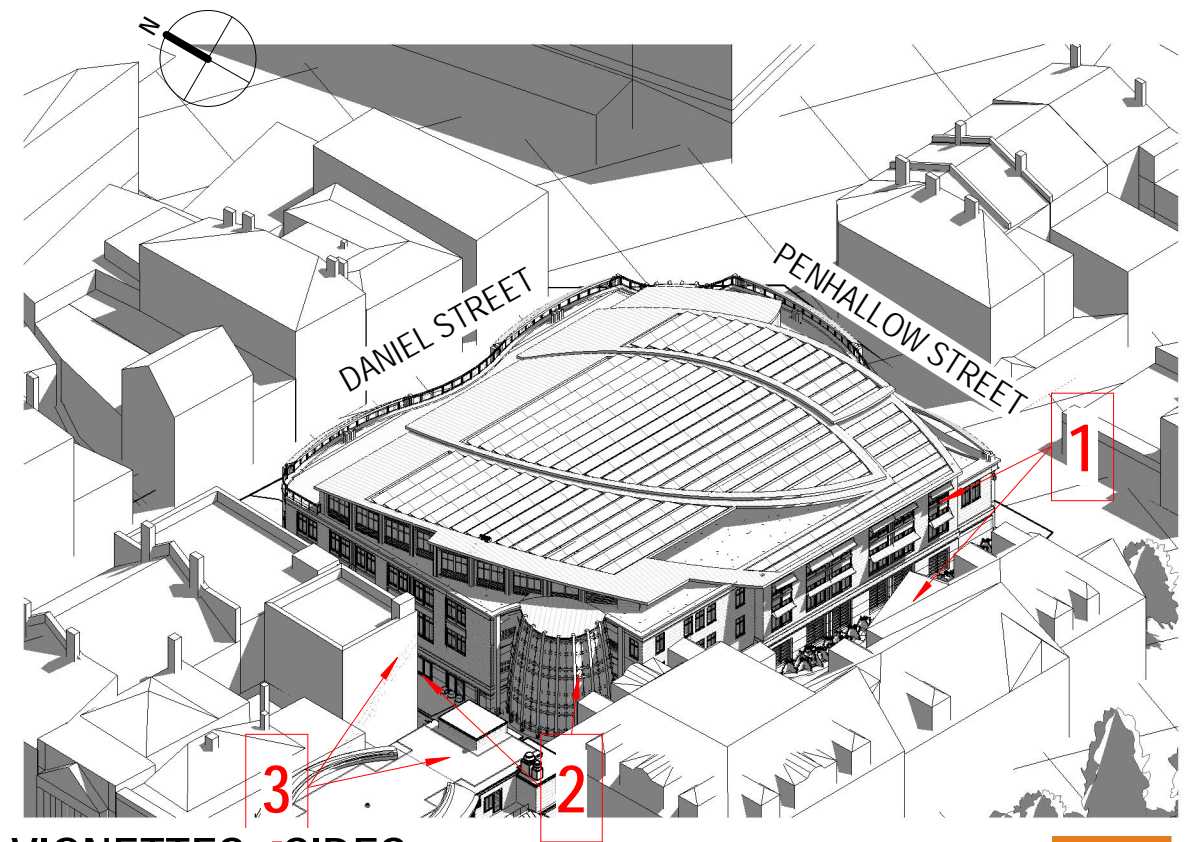
STREET VIEW 1



STREET VIEW 3



STREET VIEW 2



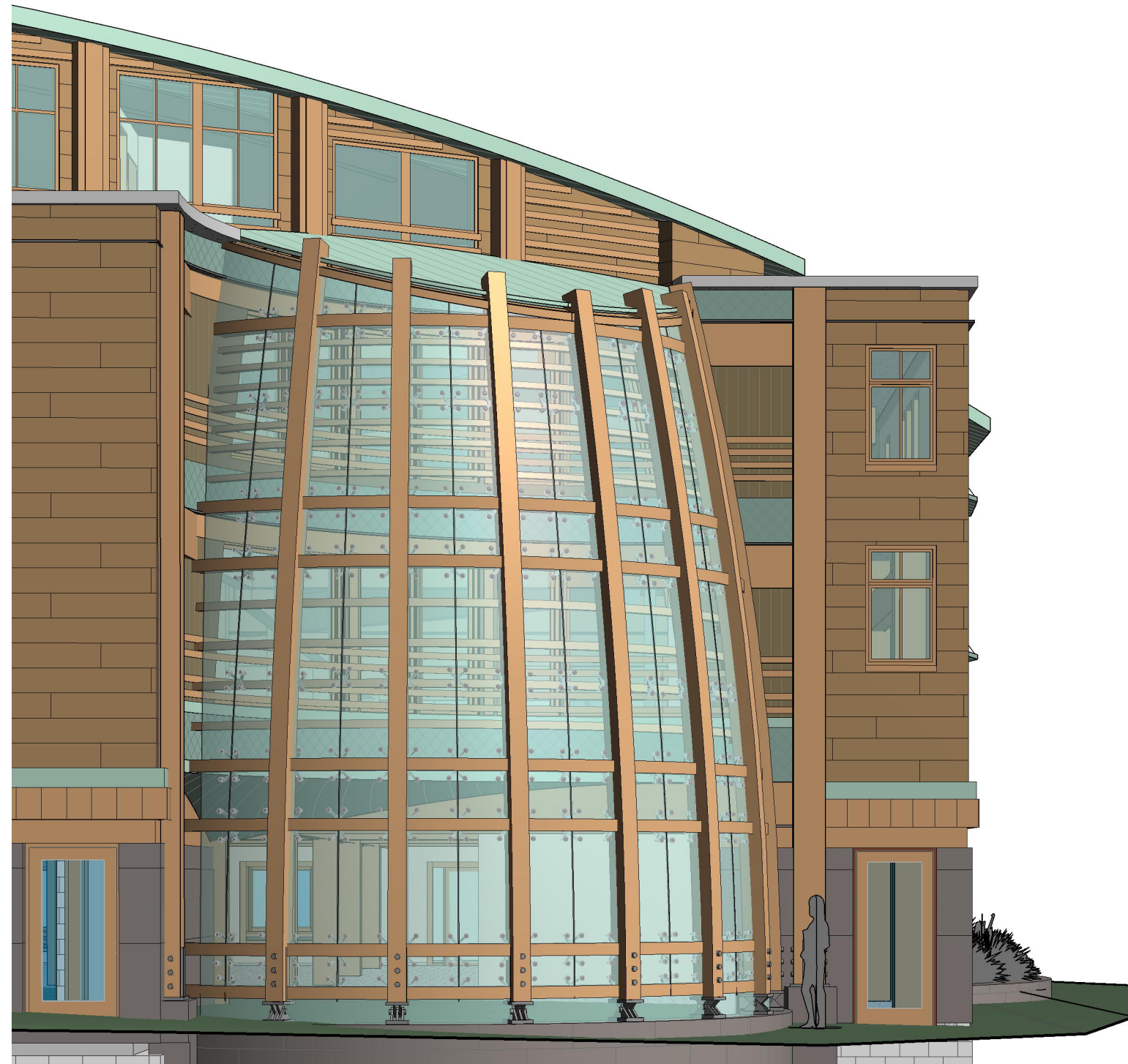
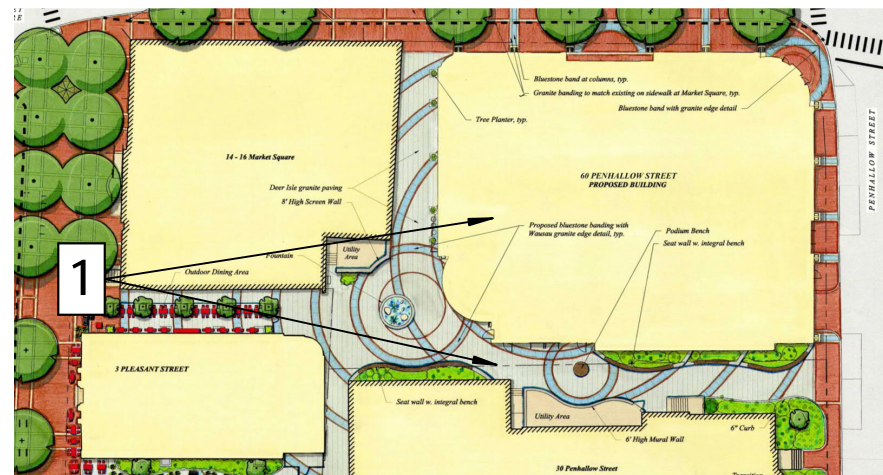
D1.11 3D VIGNETTES - SIDES

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53 DANIEL STREET



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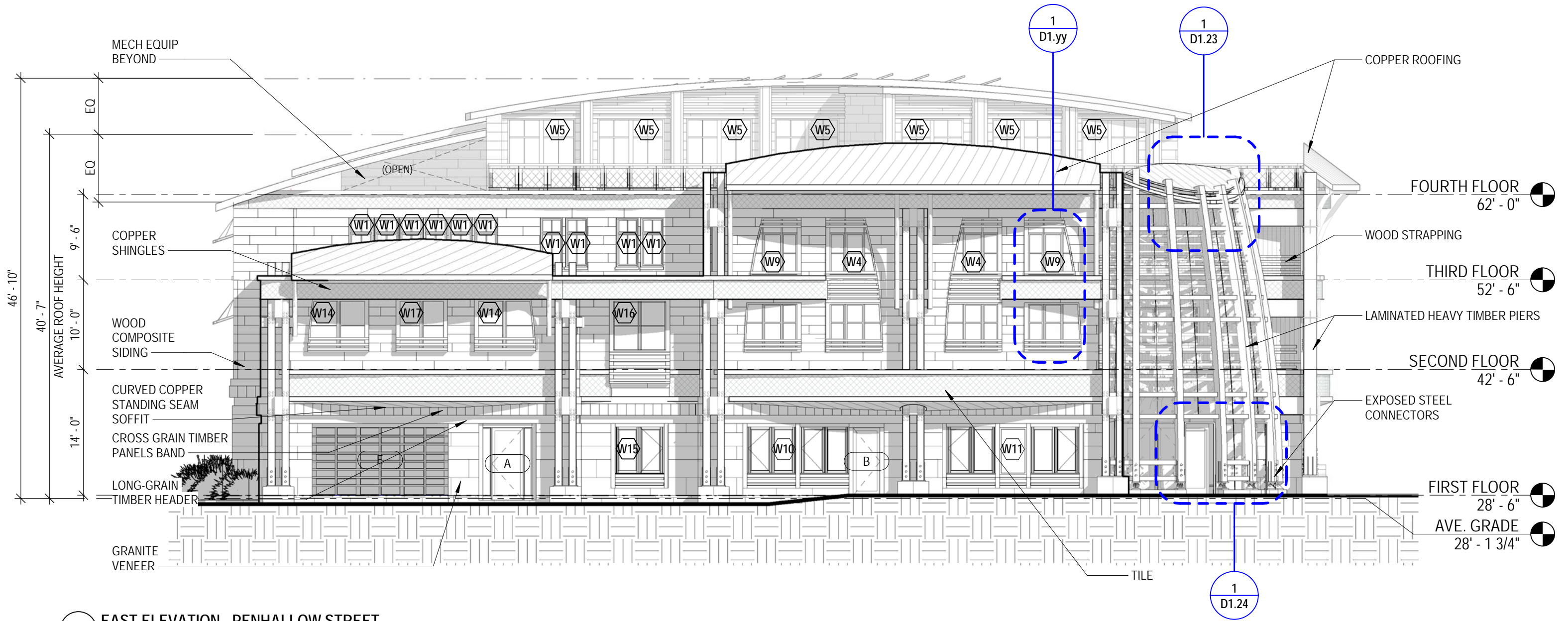


COURTYARD VIEW 1

D1.12 3D VIGNETTE - COURTYARD
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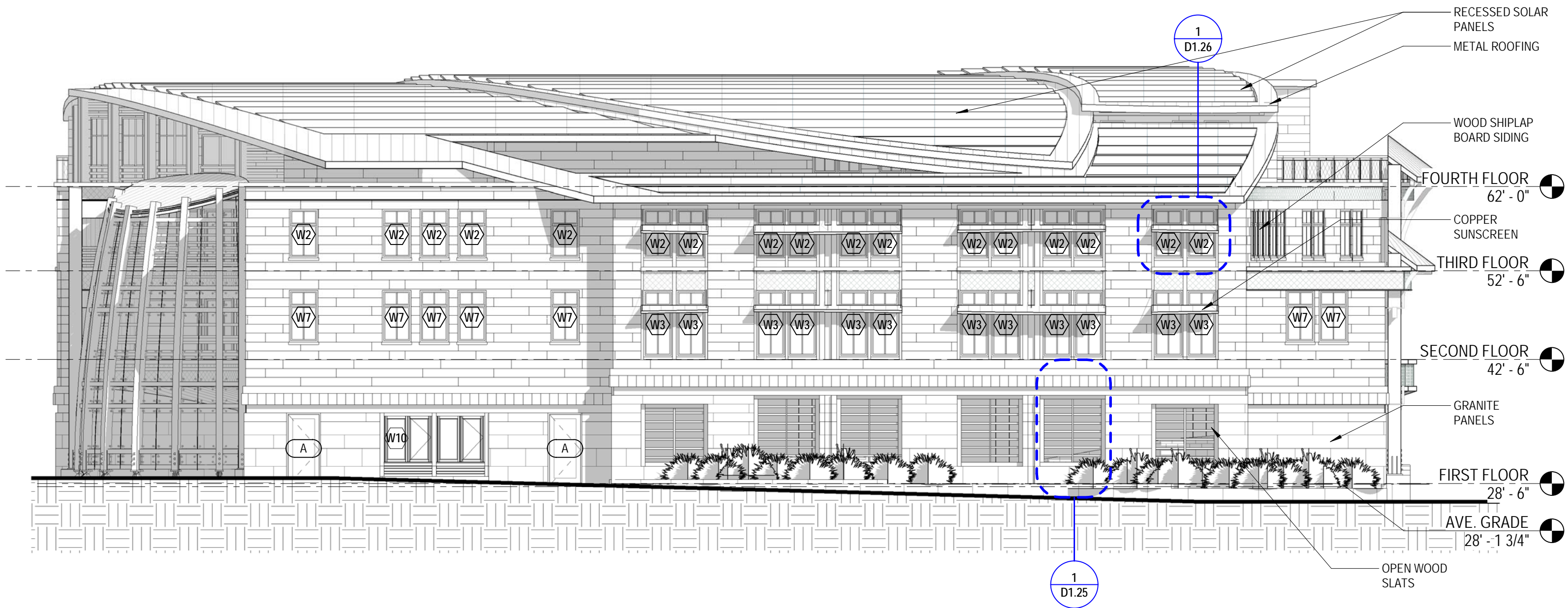


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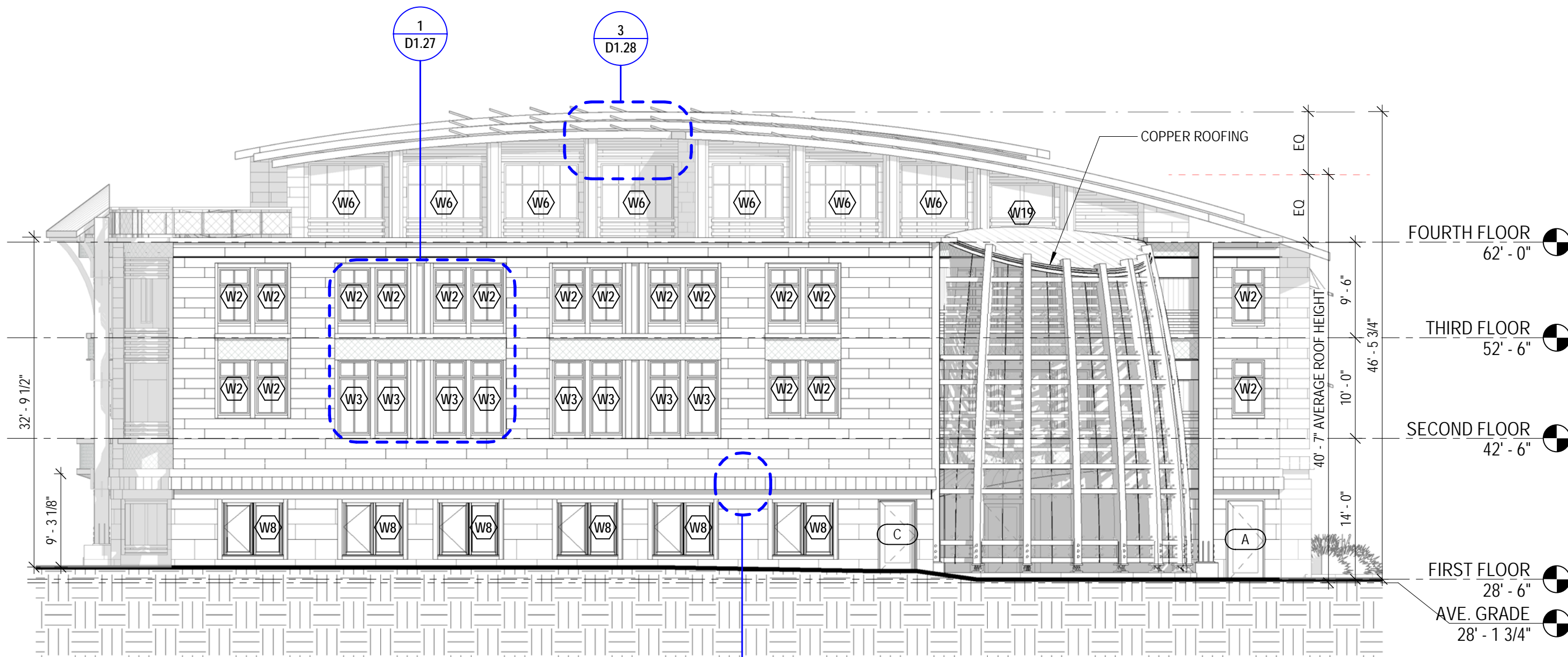
1 EAST ELEVATION - PENHALLOW STREET
 3/32" = 1'-0"

D1.14 EAST ELEVATION
 60 PENHALLOW STREET at BRICK MARKET
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1 SOUTH ELEVATION - ALLEY
 3/32" = 1'-0"

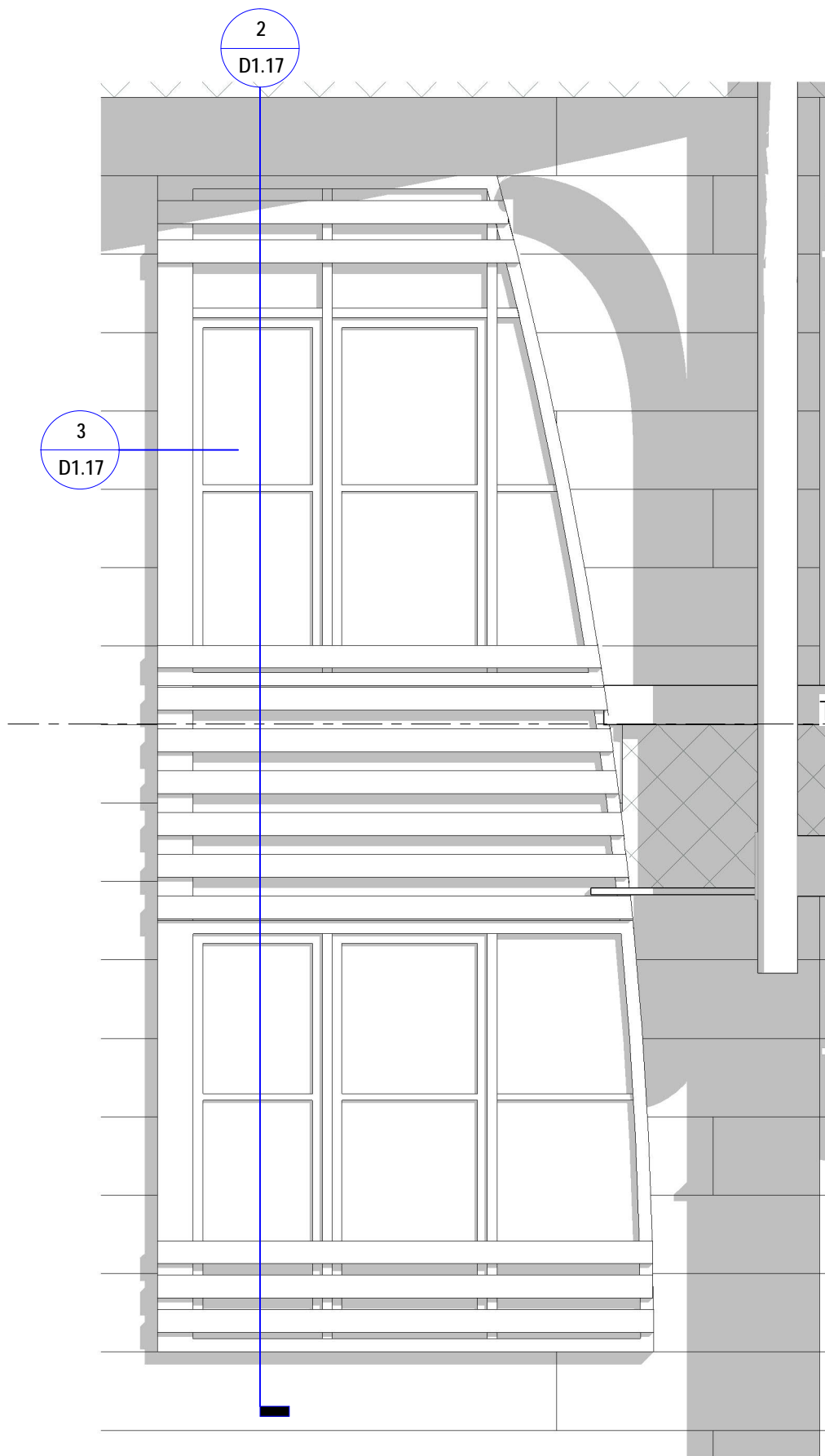
D1.15 SOUTH ELEVATION
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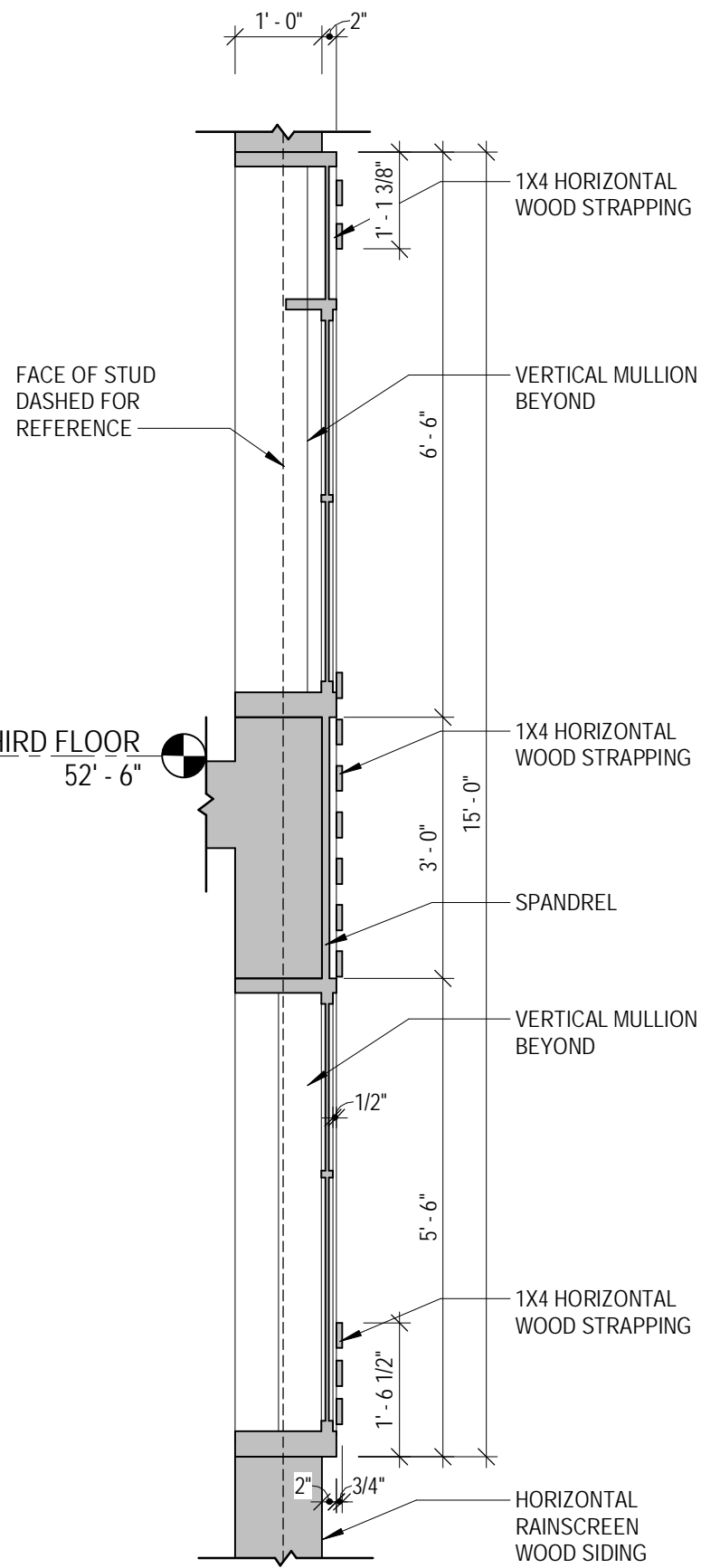
1 WEST ELEVATION - ALLEY
3/32" = 1'-0"

1
D1.28

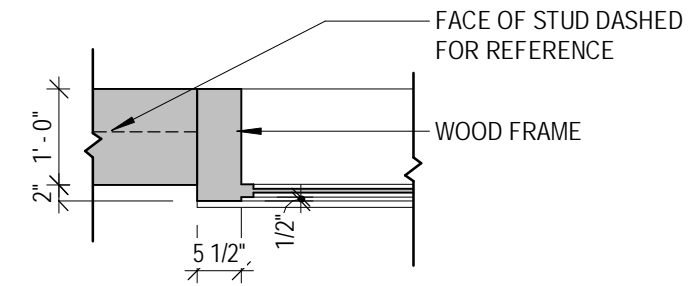
D1.16 WEST ELEVATION
60 PENHALLOW STREET at BRICK MARKET
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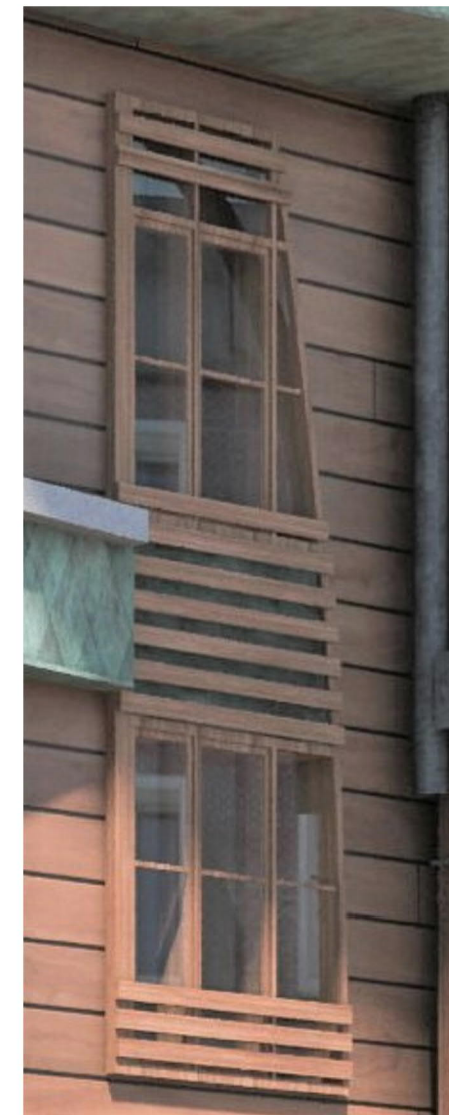
1 HDC WINDOW TYPE W1 ELEVATION
1/2" = 1'-0"



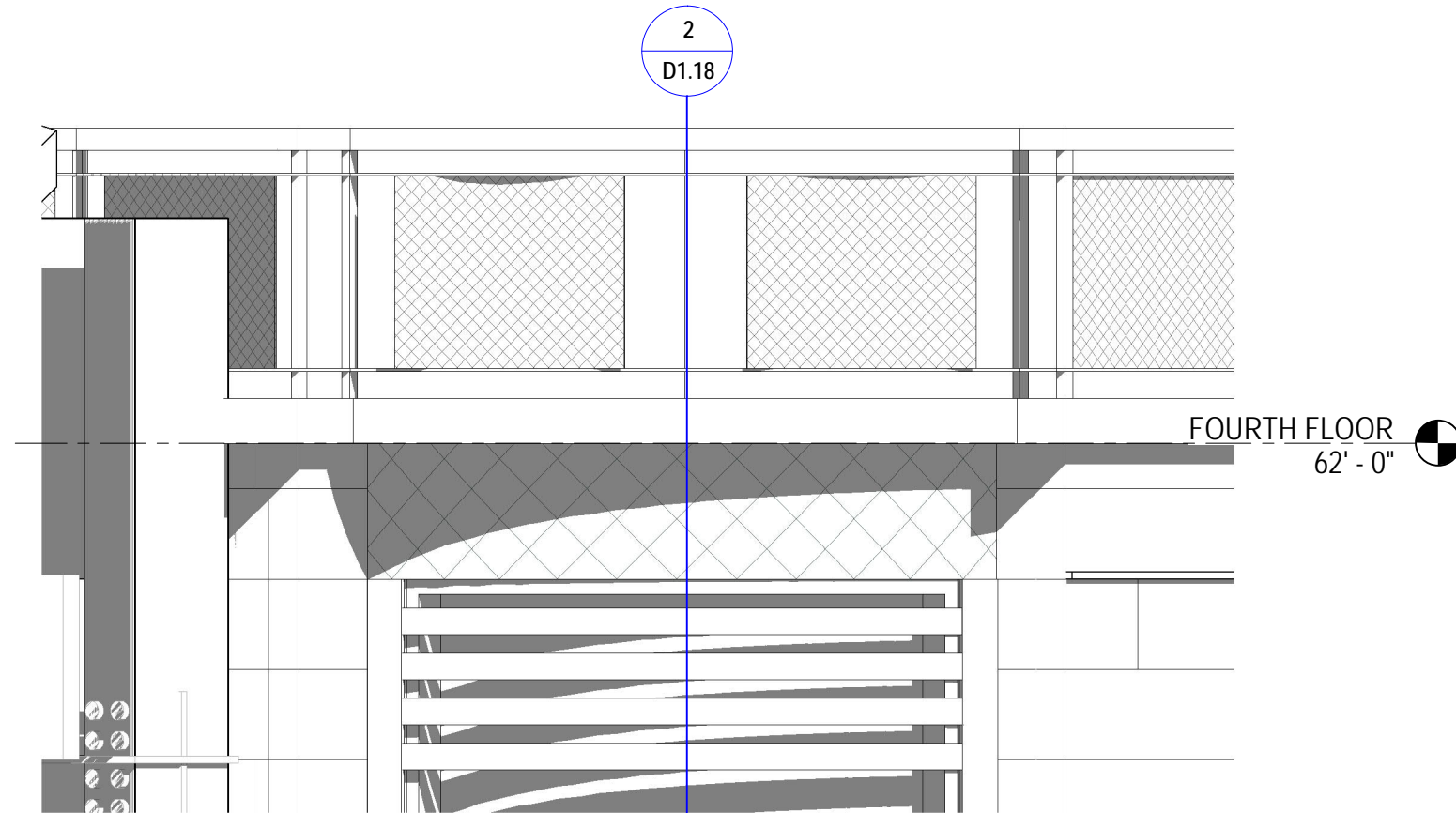
2 HDC WINDOW TYPE W1 SECTION DETAIL
1/2" = 1'-0"



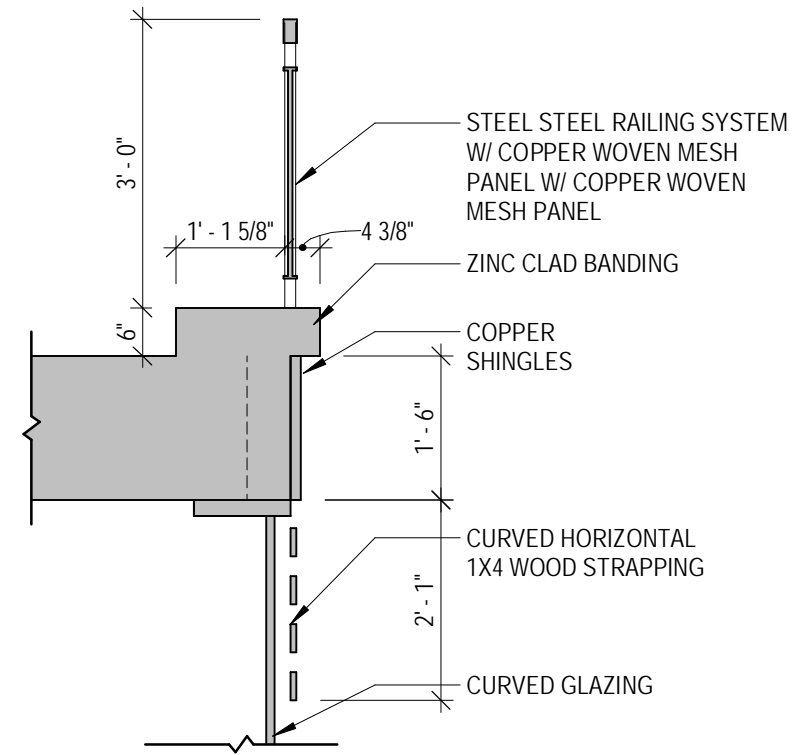
3 HDC WINDOW TYPE W1/W2 JAMB DETAIL
1/2" = 1'-0"



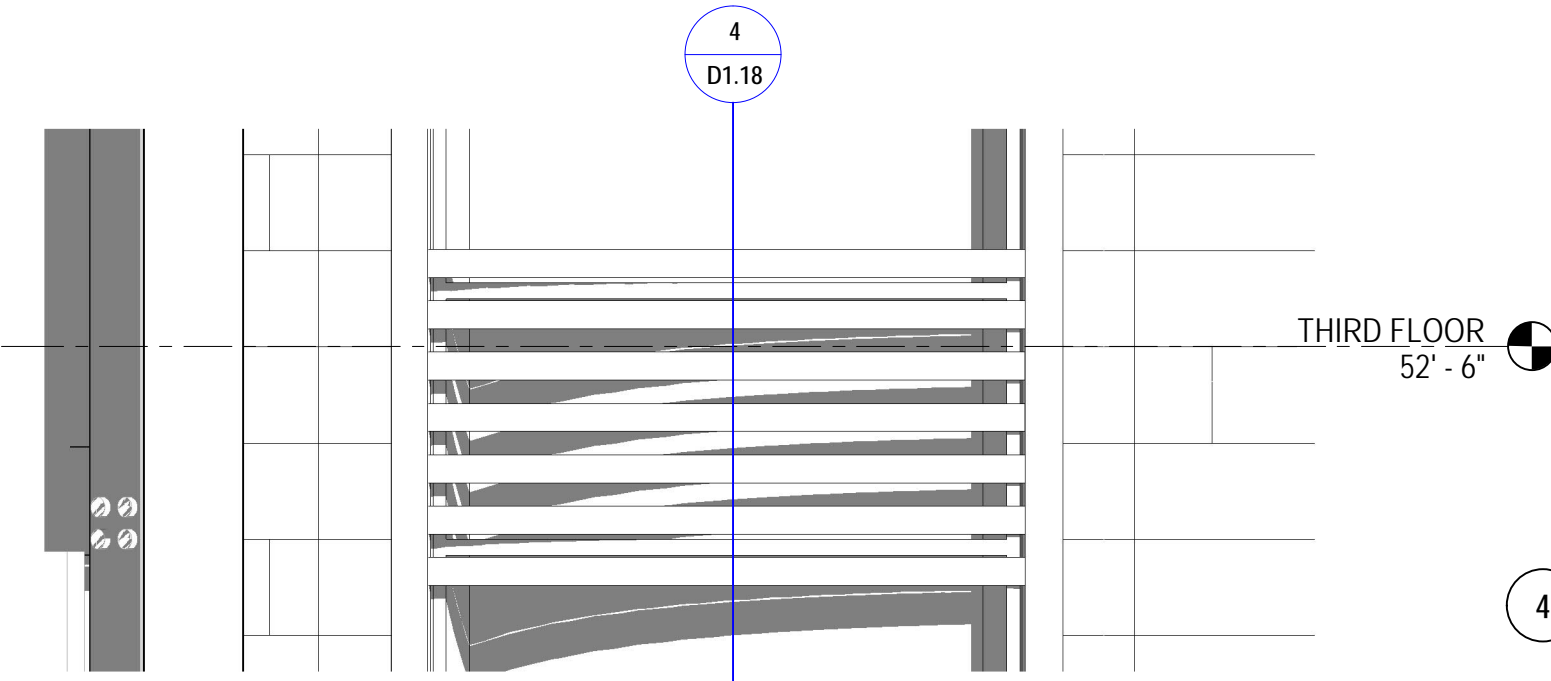
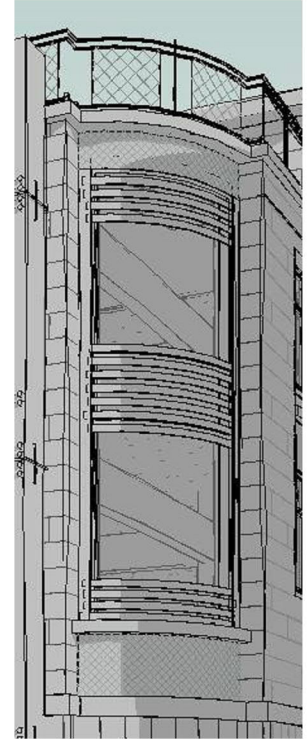
D1.17 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
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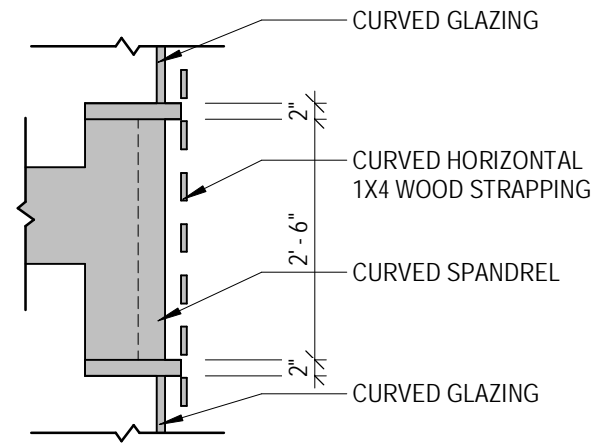
1 HDC CURVED CORNER WINDOW HEADER
1/2" = 1'-0"



2 HDC CURVED CORNER WINDOW HEADER W/ RAILING SECTION DETAIL
1/2" = 1'-0"

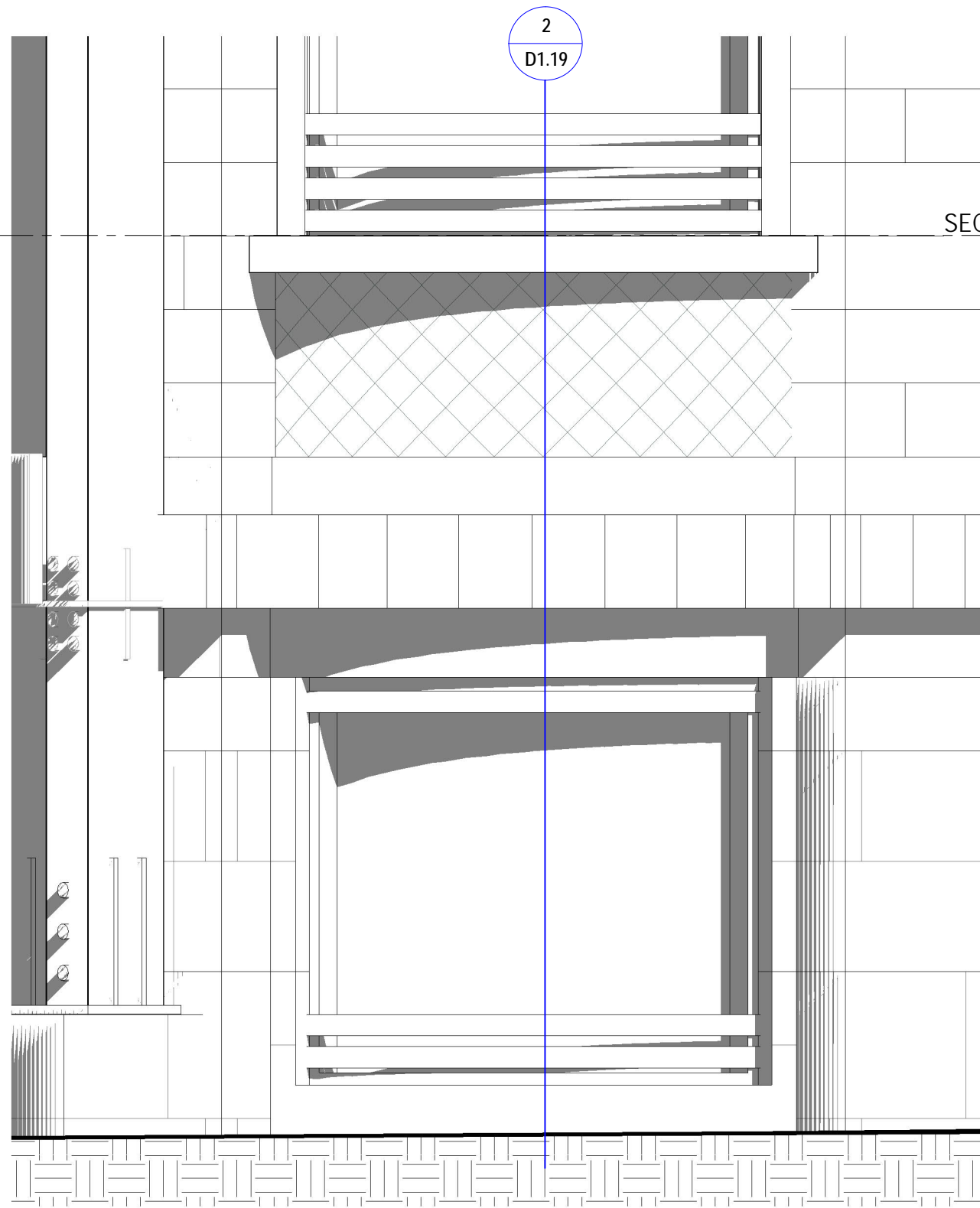


3 HDC CURVED CORNER WINDOW MIDDLE BAND
1/2" = 1'-0"

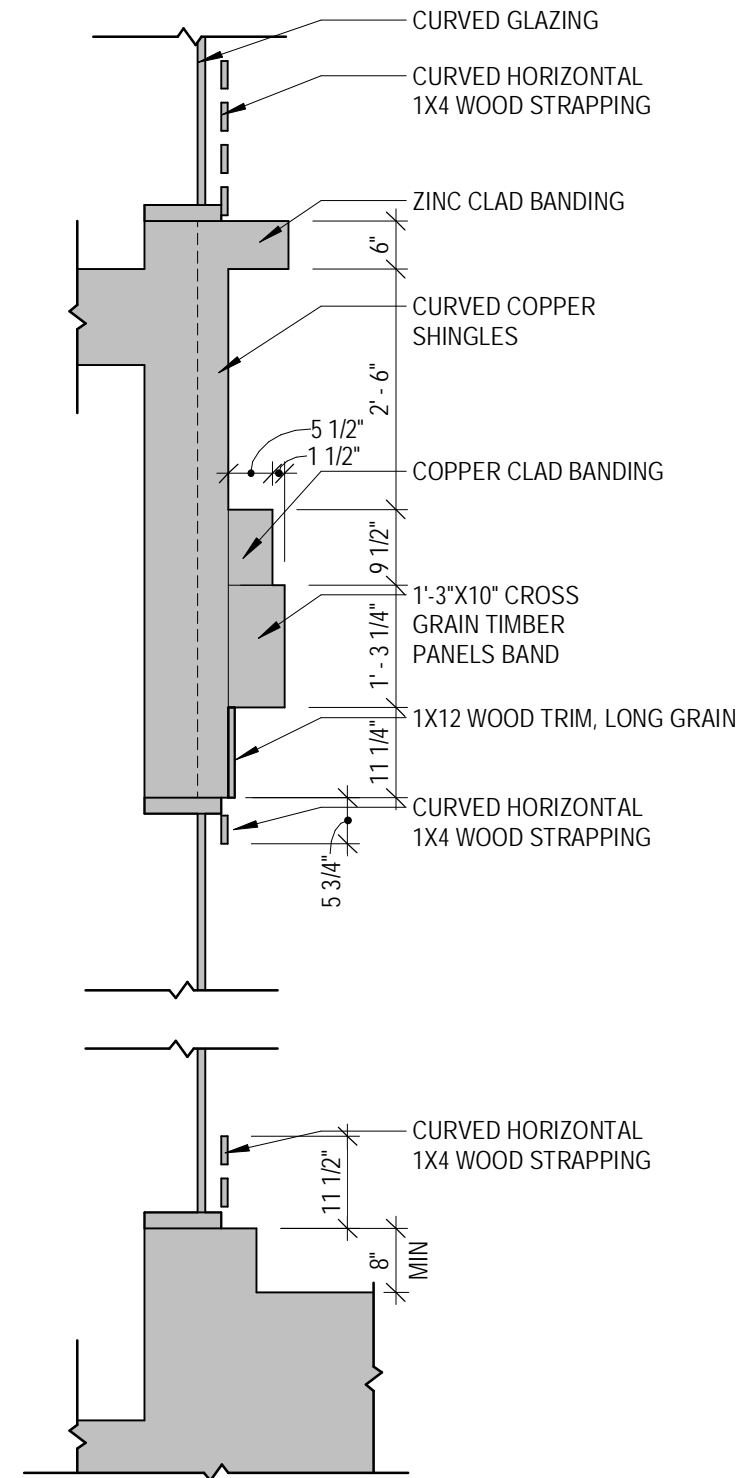


4 HDC CURVED CORNER WINDOW MIDDLE BAND SECTION DETAIL
1/2" = 1'-0"

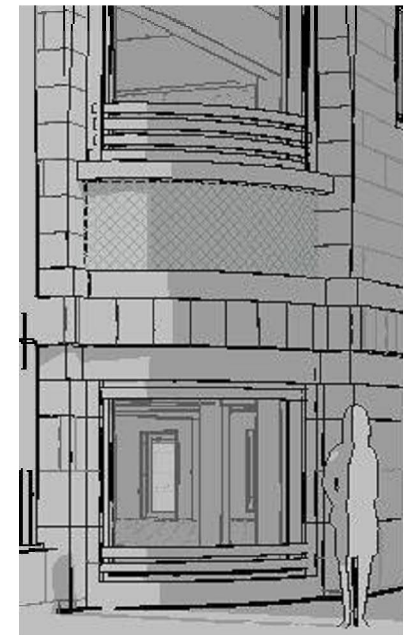
D1.18 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
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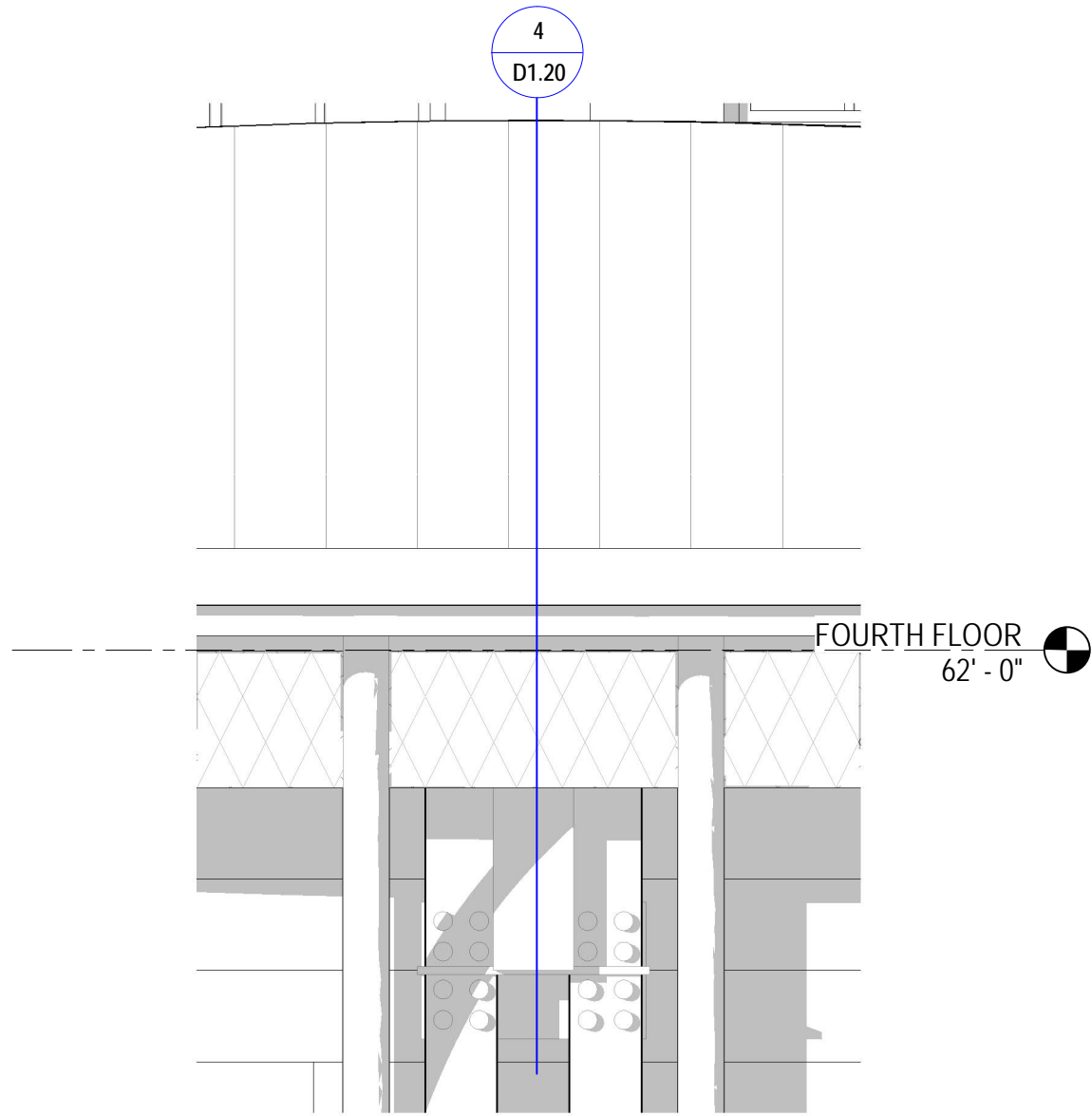
1 HDC CURVED CORNER WINDOW LOWER BAND
1/2" = 1'-0"



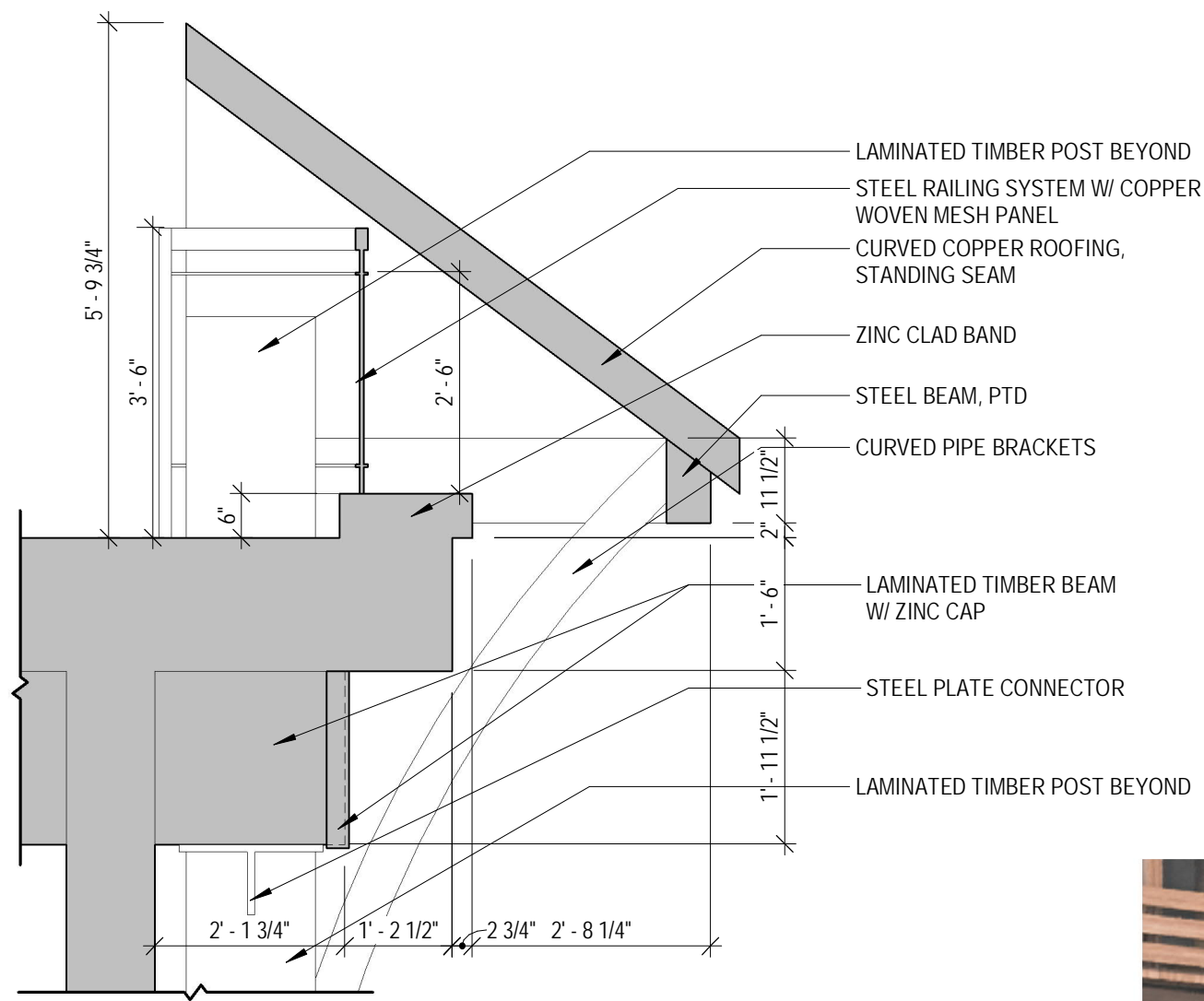
2 HDC CURVED CORNER WINDOW LOWER BAND SECTION DETAIL
1/2" = 1'-0"



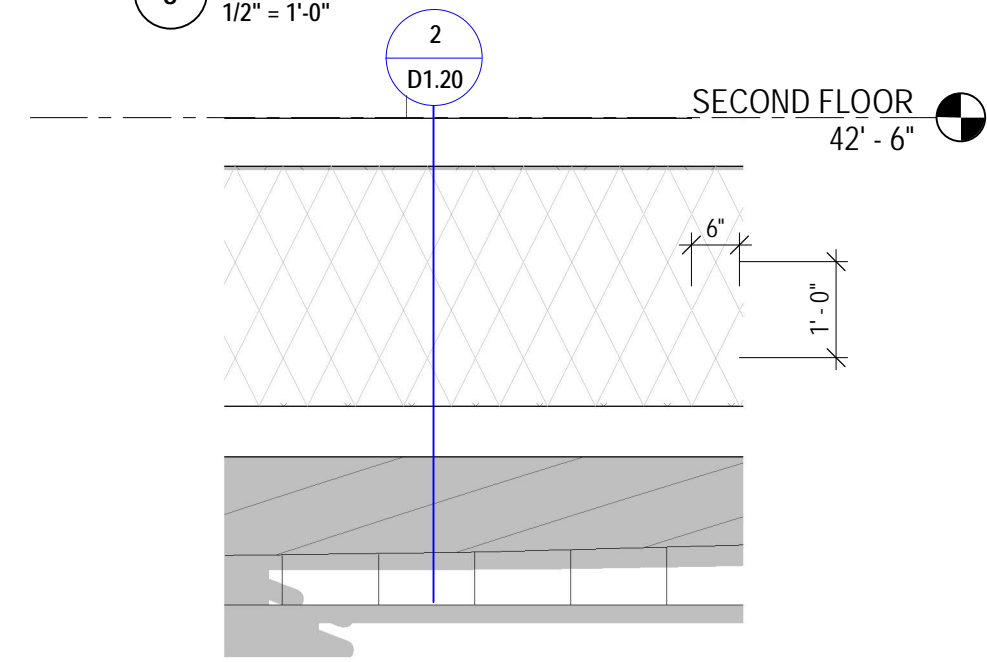
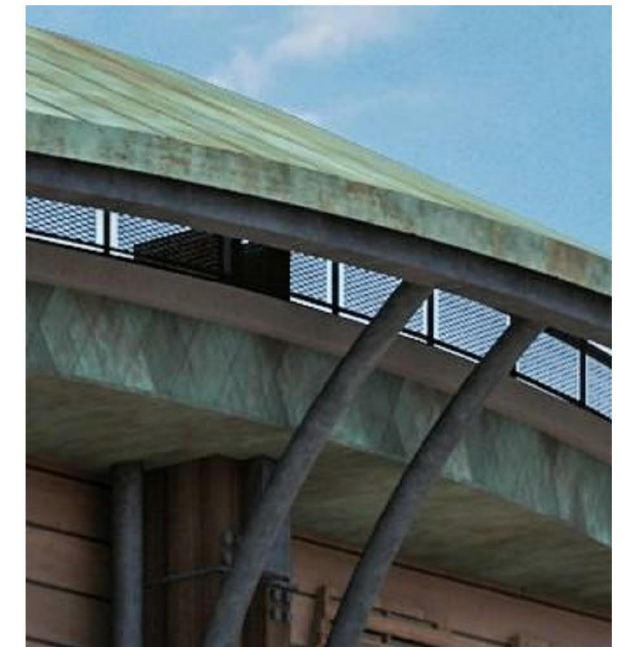
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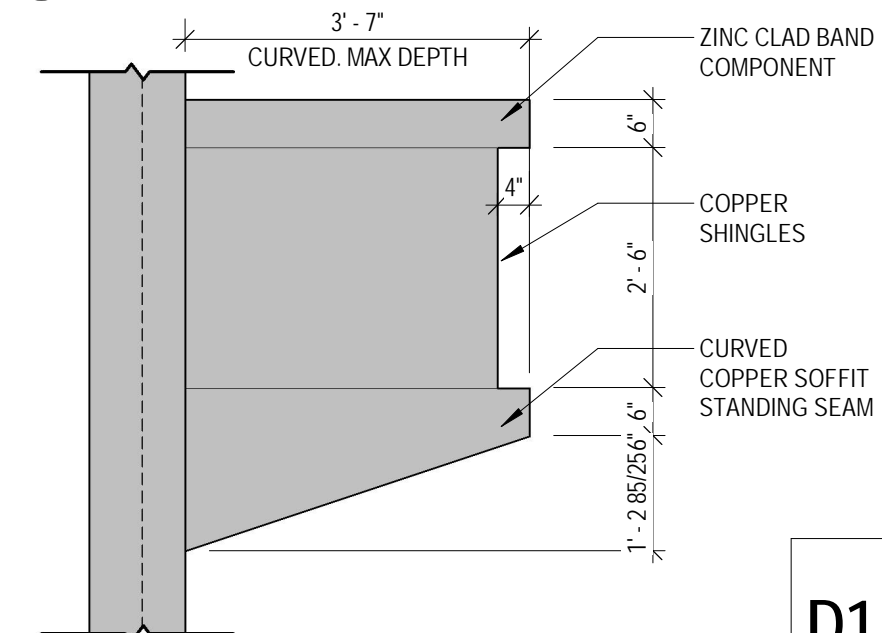
3 HDC TYPICAL ROOF EAVE ELEVATION
1/2" = 1'-0"



4 HDC TYPICAL ROOF EAVE SECTION DETAIL
1/2" = 1'-0"



1 HDC TILE MOSAIC BAND ELEVATION
1/2" = 1'-0"

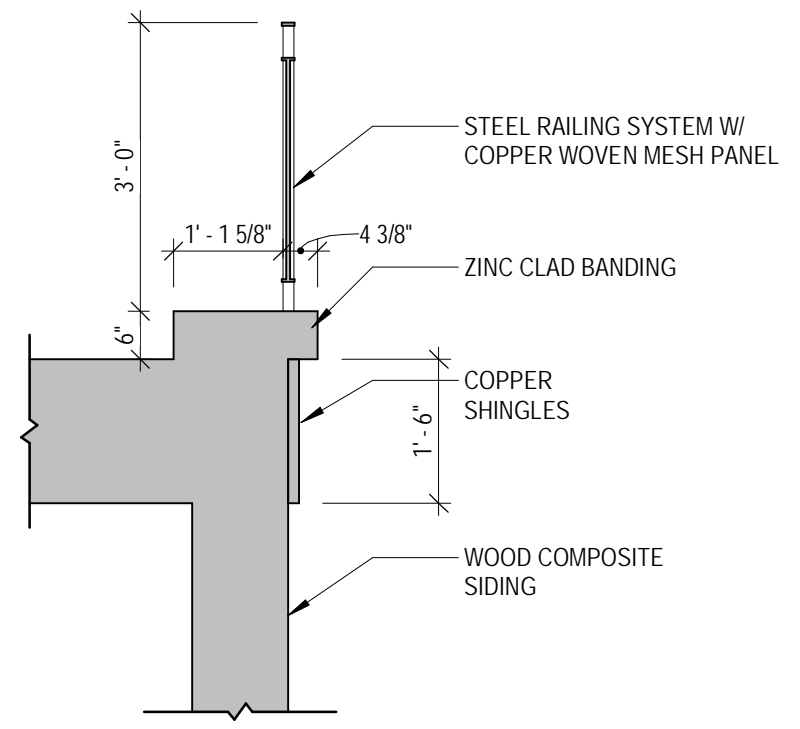
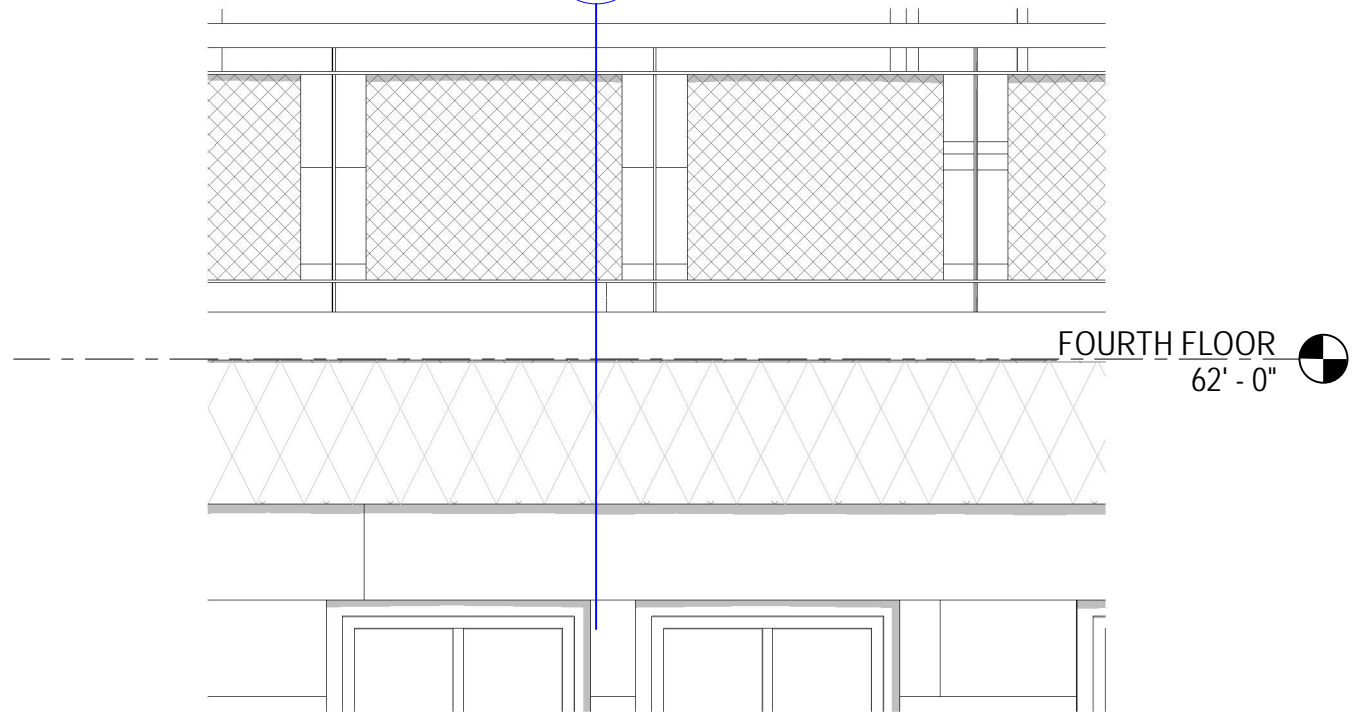


2 HDC TILE MOSAIC BAND DETAIL
1/2" = 1'-0"



D1.20 ELEVATION DETAILS
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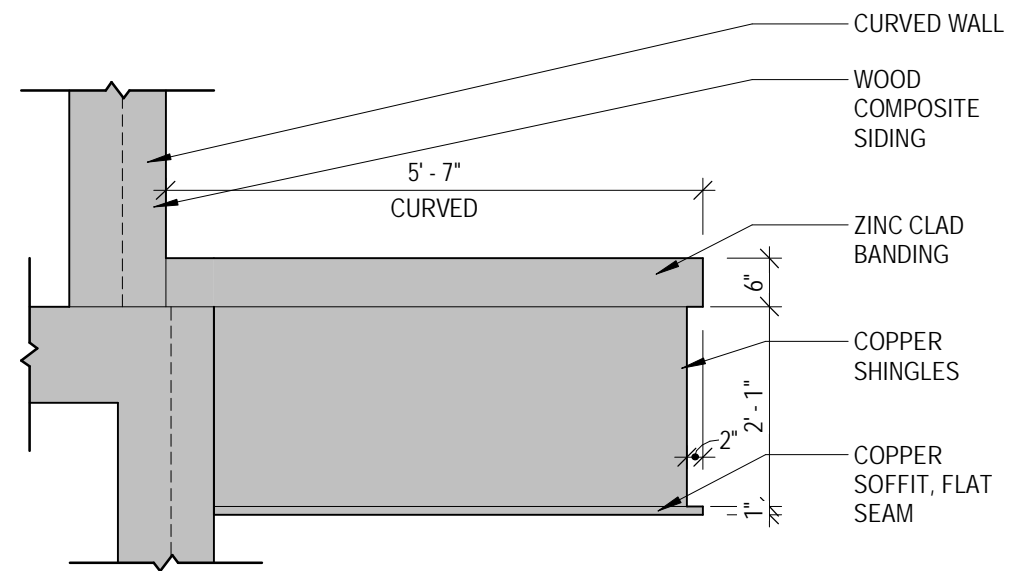
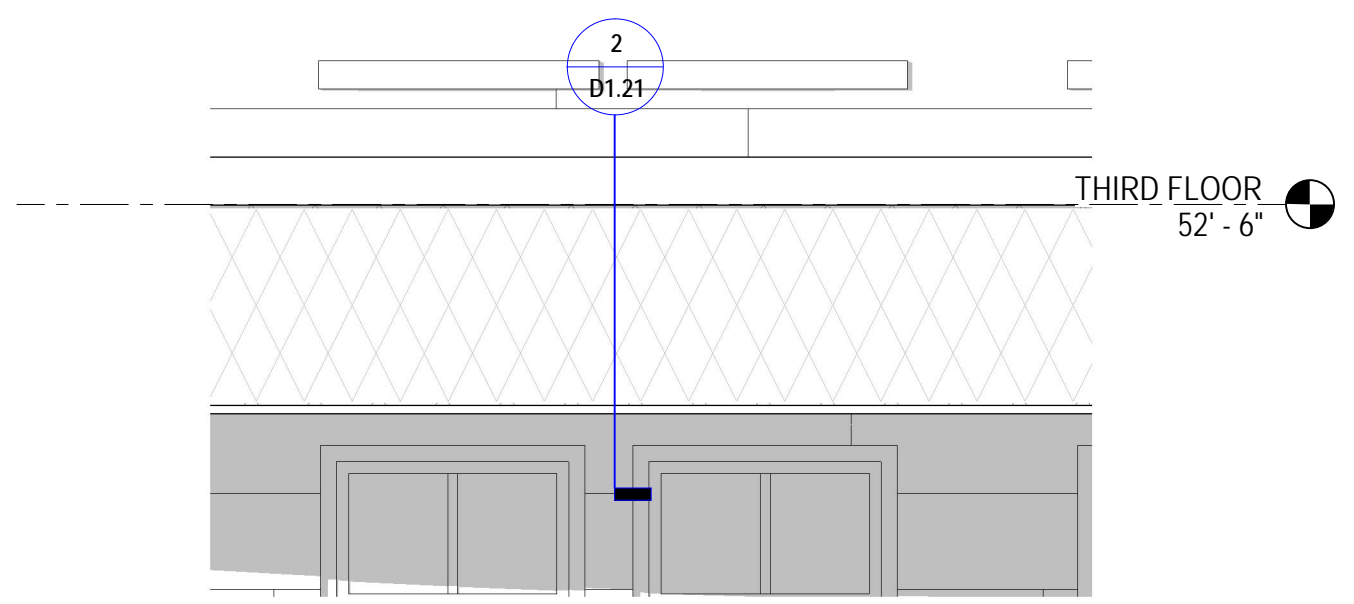
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3 HDC TYPICAL RAILING AND UPPER BAND ELEVATION
1/2" = 1'-0"

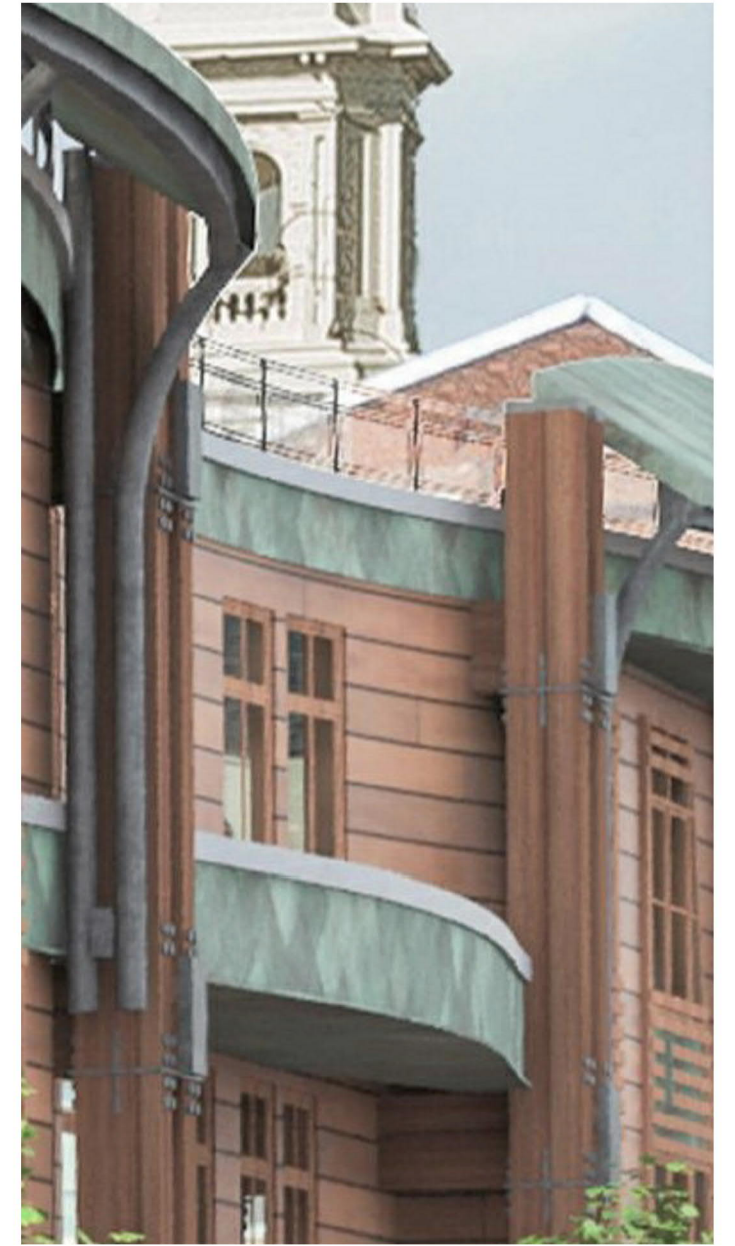
4 HDC TYPICAL RAILING AND UPPER BAND SECTION DETAIL
1/2" = 1'-0"

2
D1.21

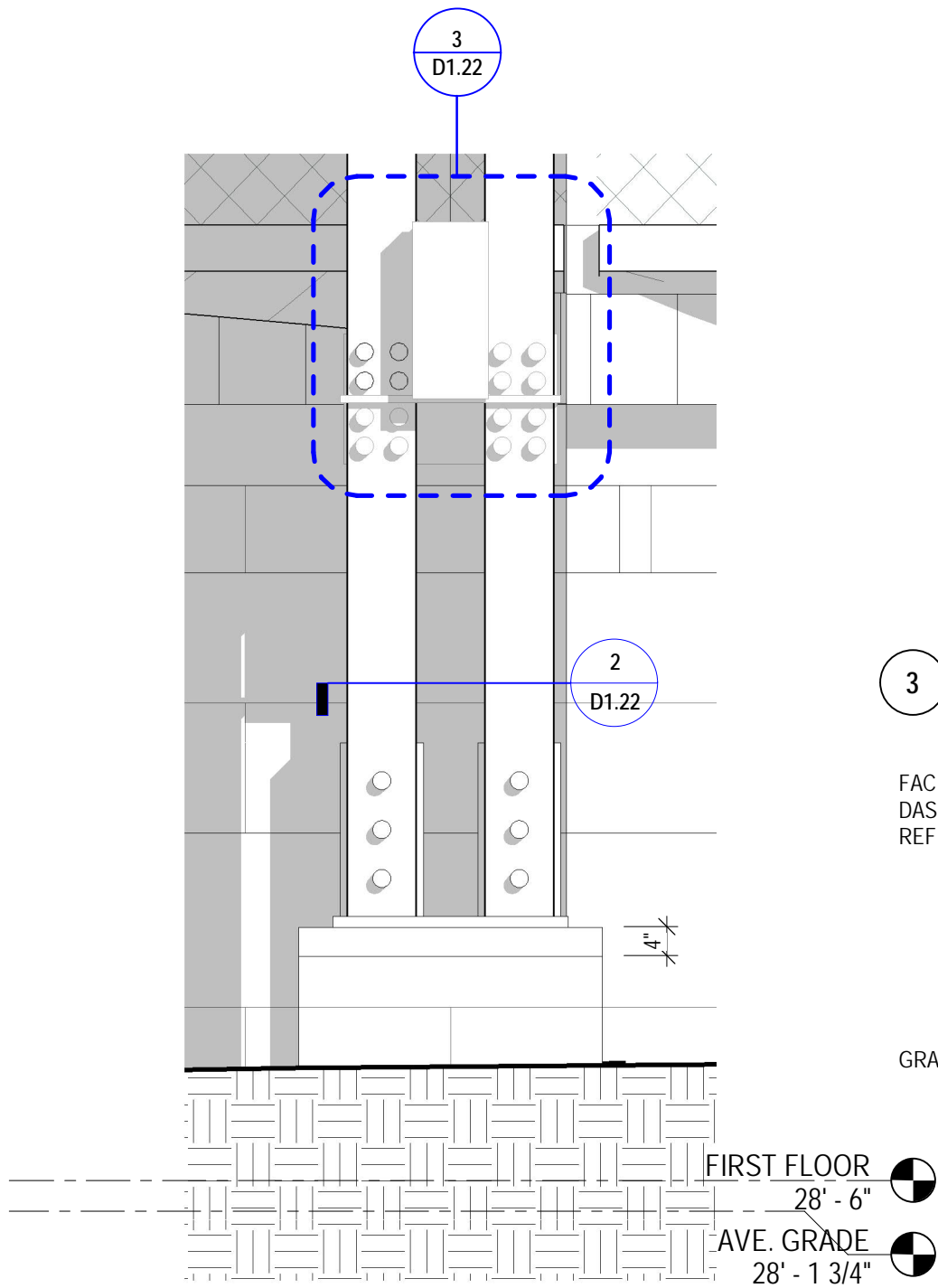


1 HDC TYPICAL MIDDLE BAND ELEVATION
1/2" = 1'-0"

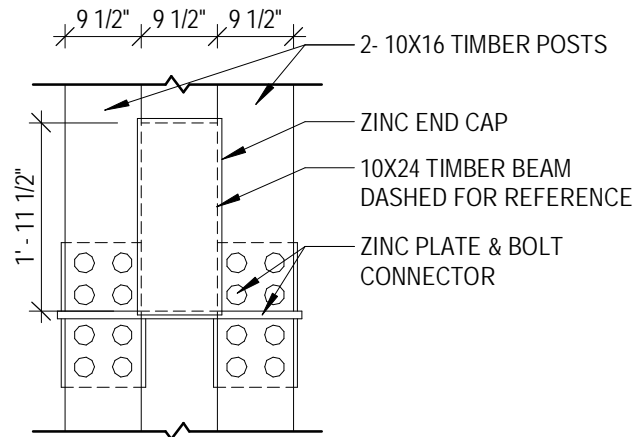
2 HDC TYPICAL MIDDLE BAND SECTION DETAIL
1/2" = 1'-0"



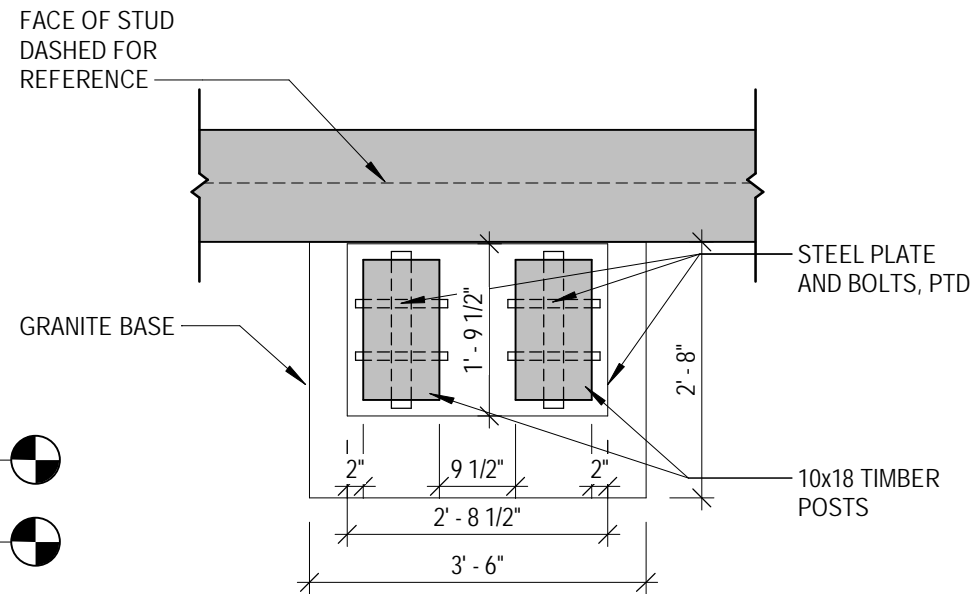
D1.21 ELEVATION DETAILS
 60 PENHALLOW STREET at BRICK MARKET
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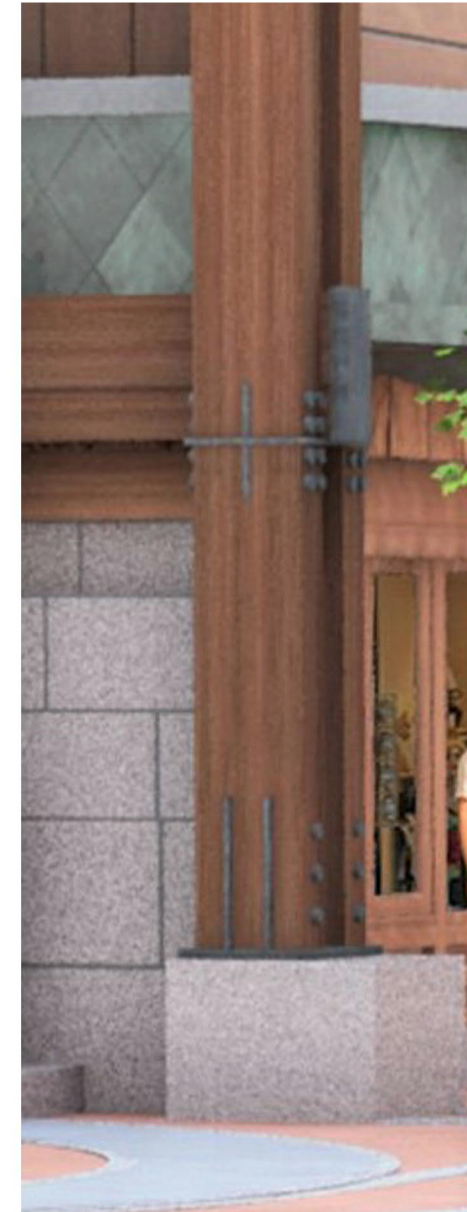
1 HDC TYPICAL TIMBER & GRANITE BASE ELEVATION
1/2" = 1'-0"



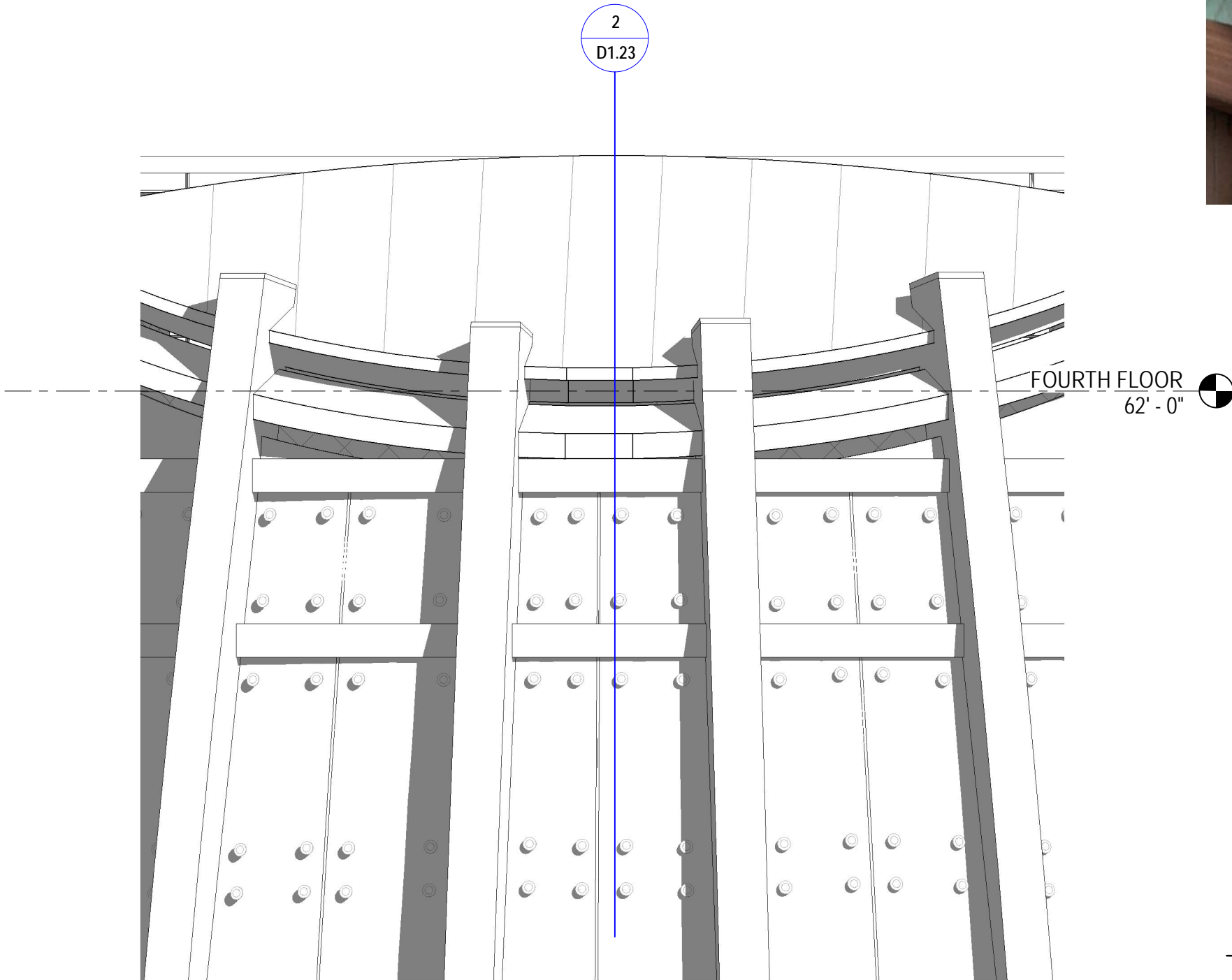
3 HDC TYPICAL BEAM AND POST CONNECTION
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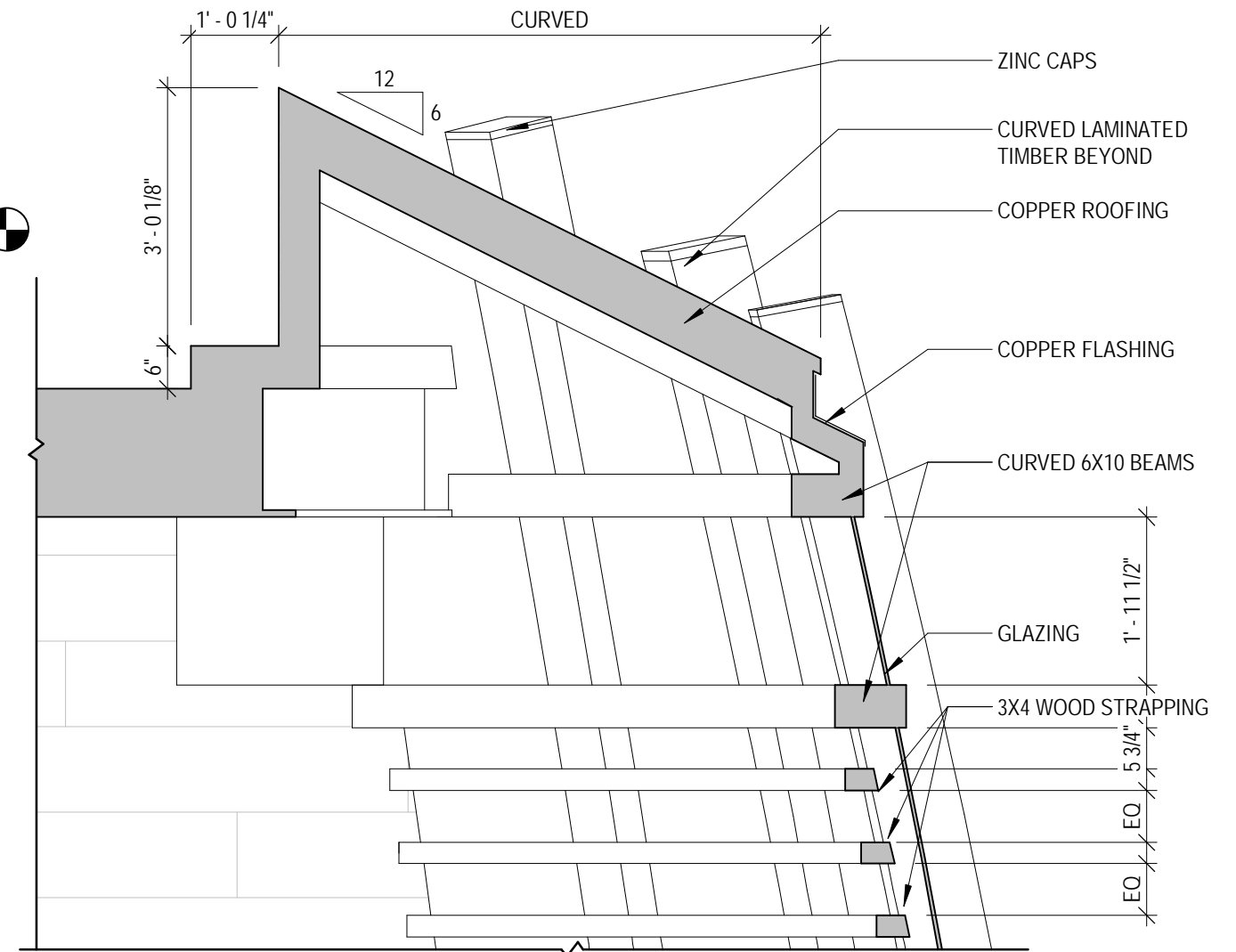
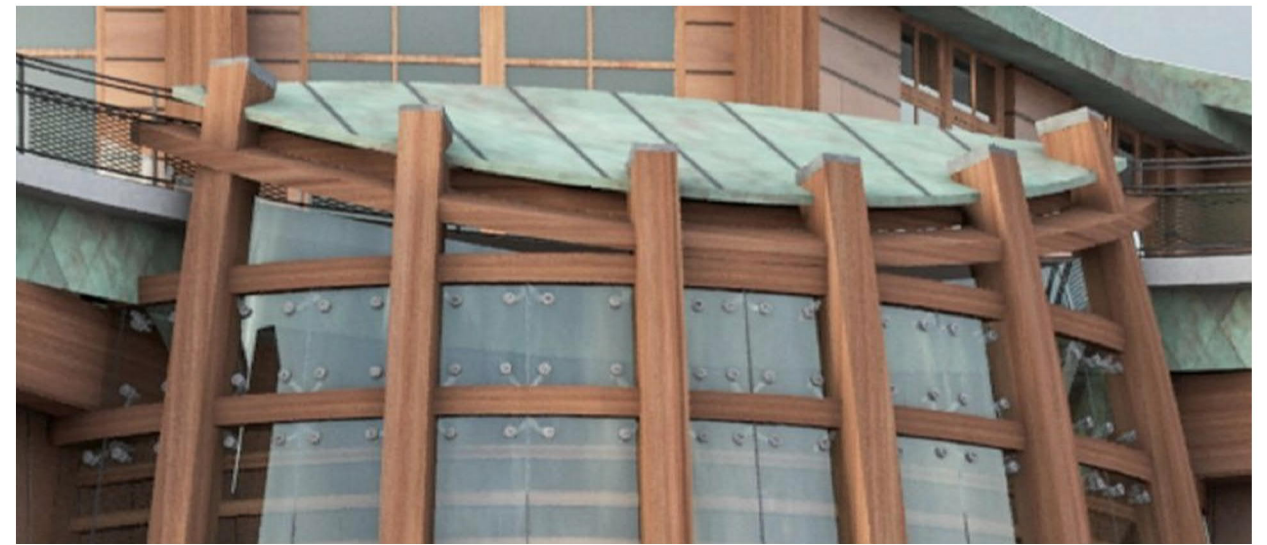
2 HDC TYPICAL TIMBER & GRANITE BASE PLAN DETAIL
1/2" = 1'-0"



D1.22 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
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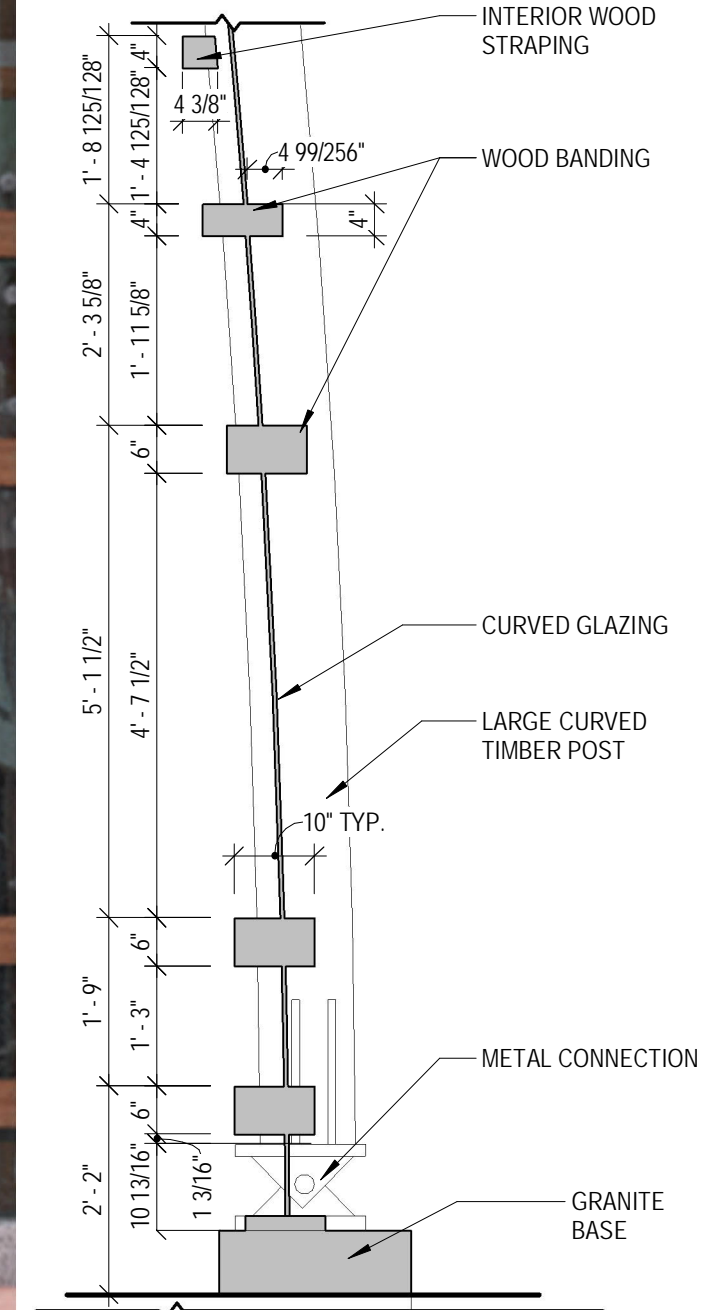
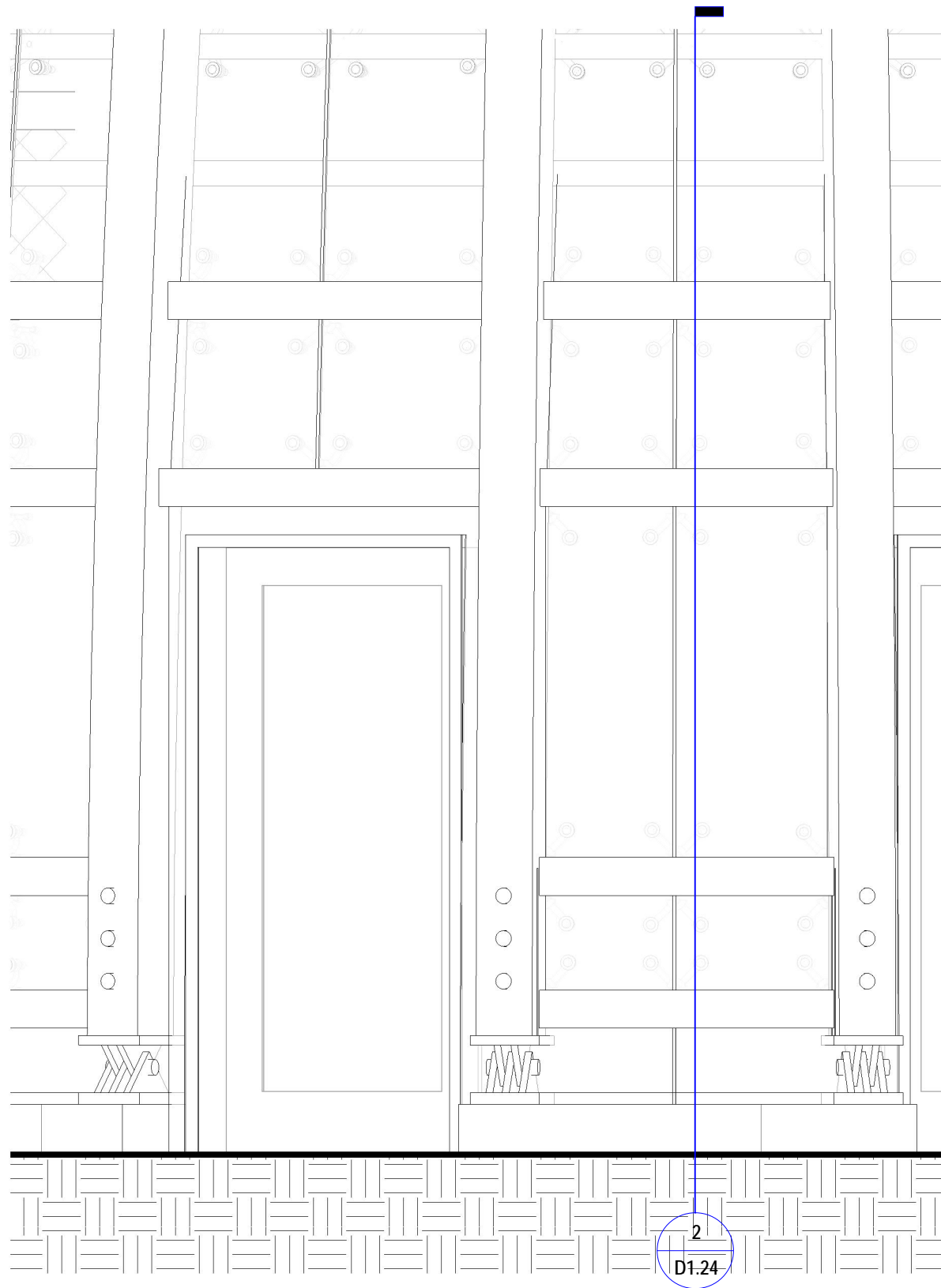


1 HDC ENTRY TOWER ROOF ELEVATION
1/2" = 1'-0"



2 HDC ENTRY TOWER ROOF SECTION DETAIL
1/2" = 1'-0"

D1.23 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
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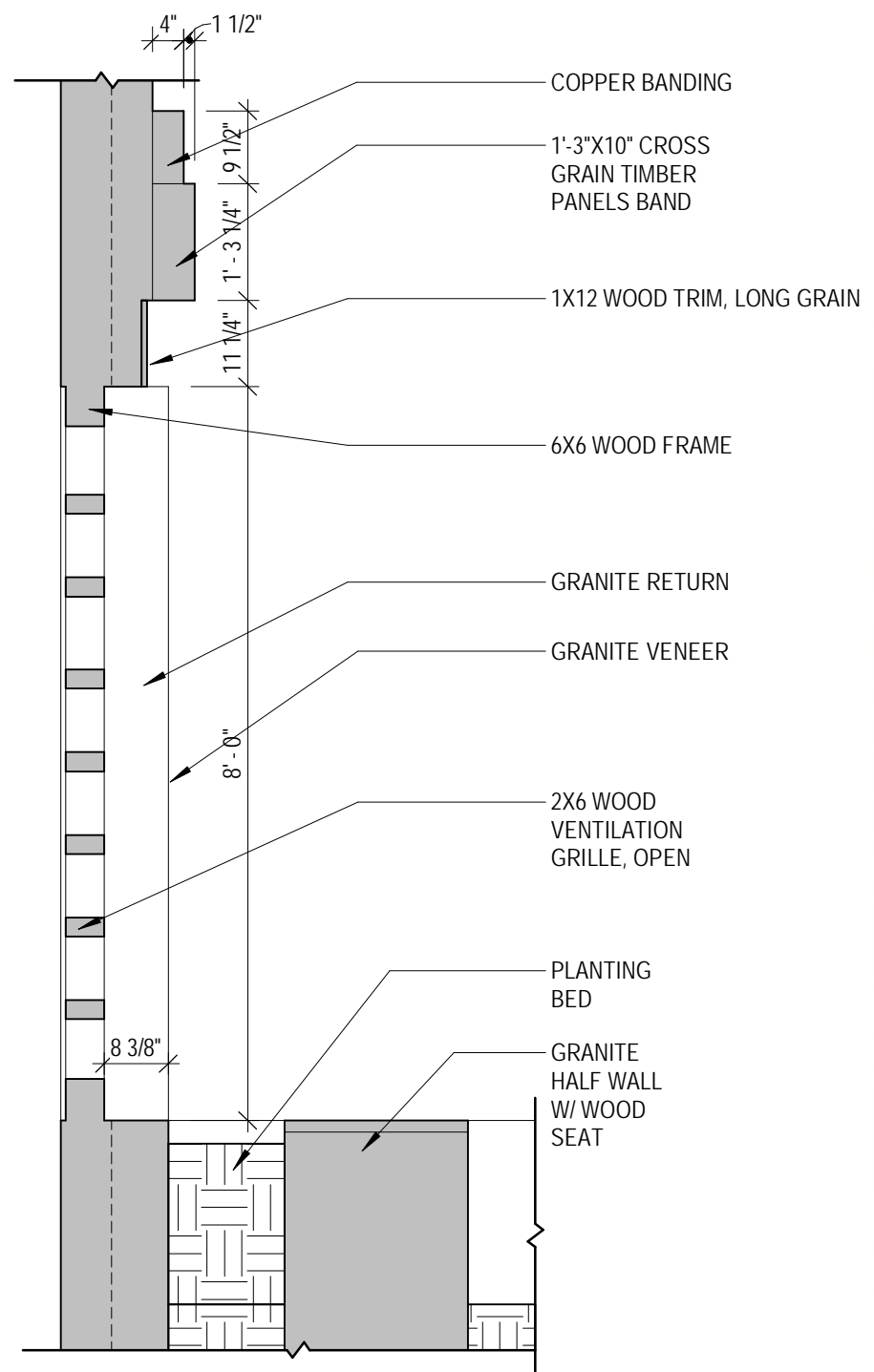
1 HDC ENTRY TOWER BASE ELEVATION
1/2" = 1'-0"

2 HDC ENTRY TOWER BASE SECTION DETAIL
1/2" = 1'-0"

D1.24 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



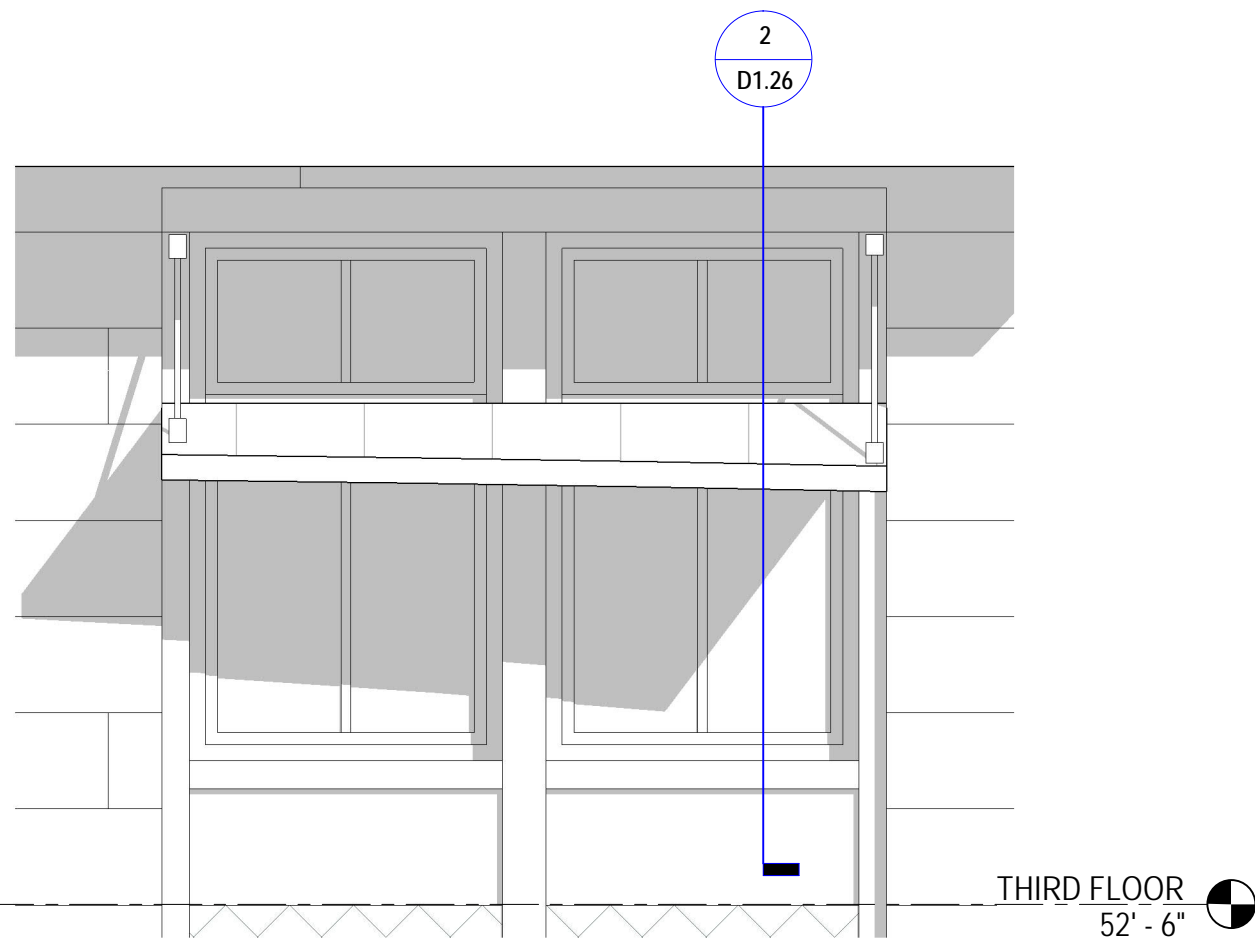
2
D1.25



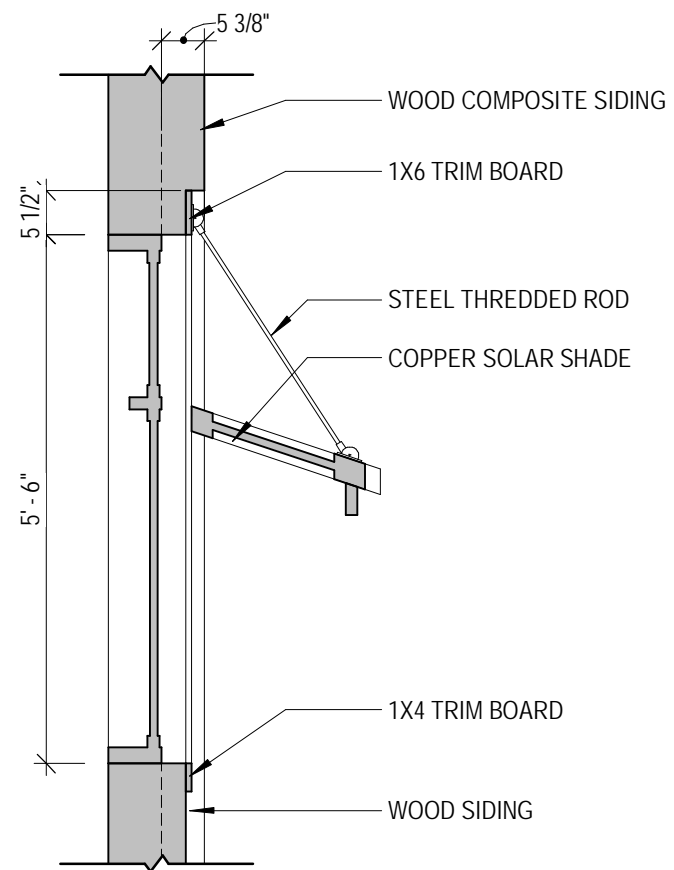
1 HDC TYPICAL VENTILATION ELEVATION
1/2" = 1'-0"

2 HDC TYPICAL VENTILATION SECTION DETAIL
1/2" = 1'-0"

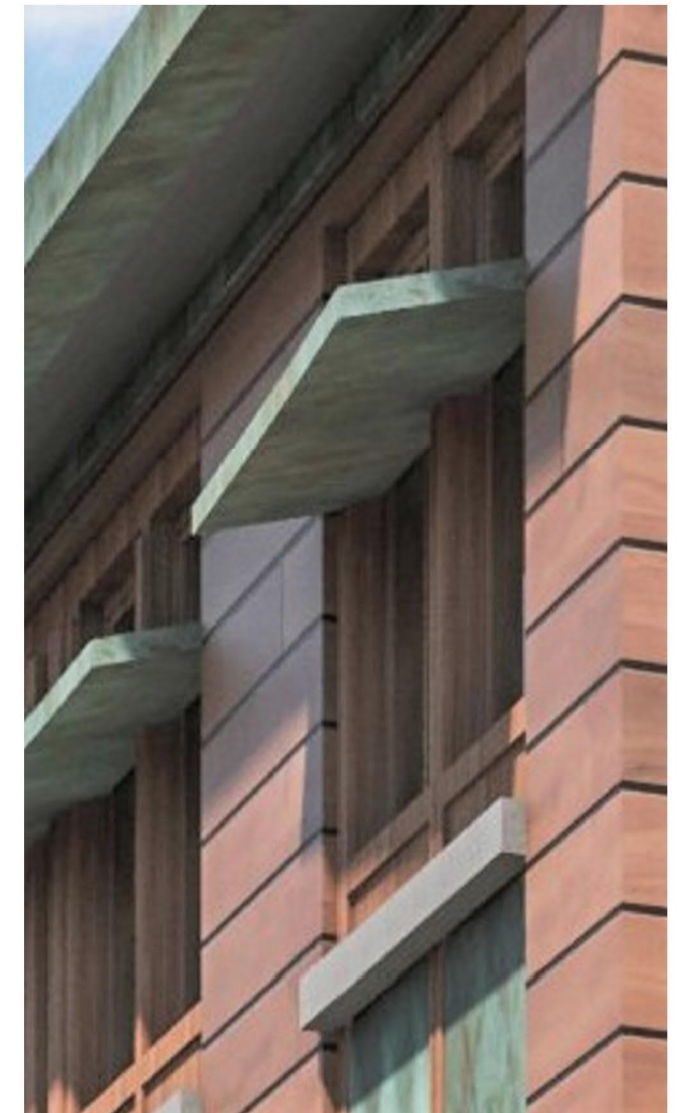
D1.25 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



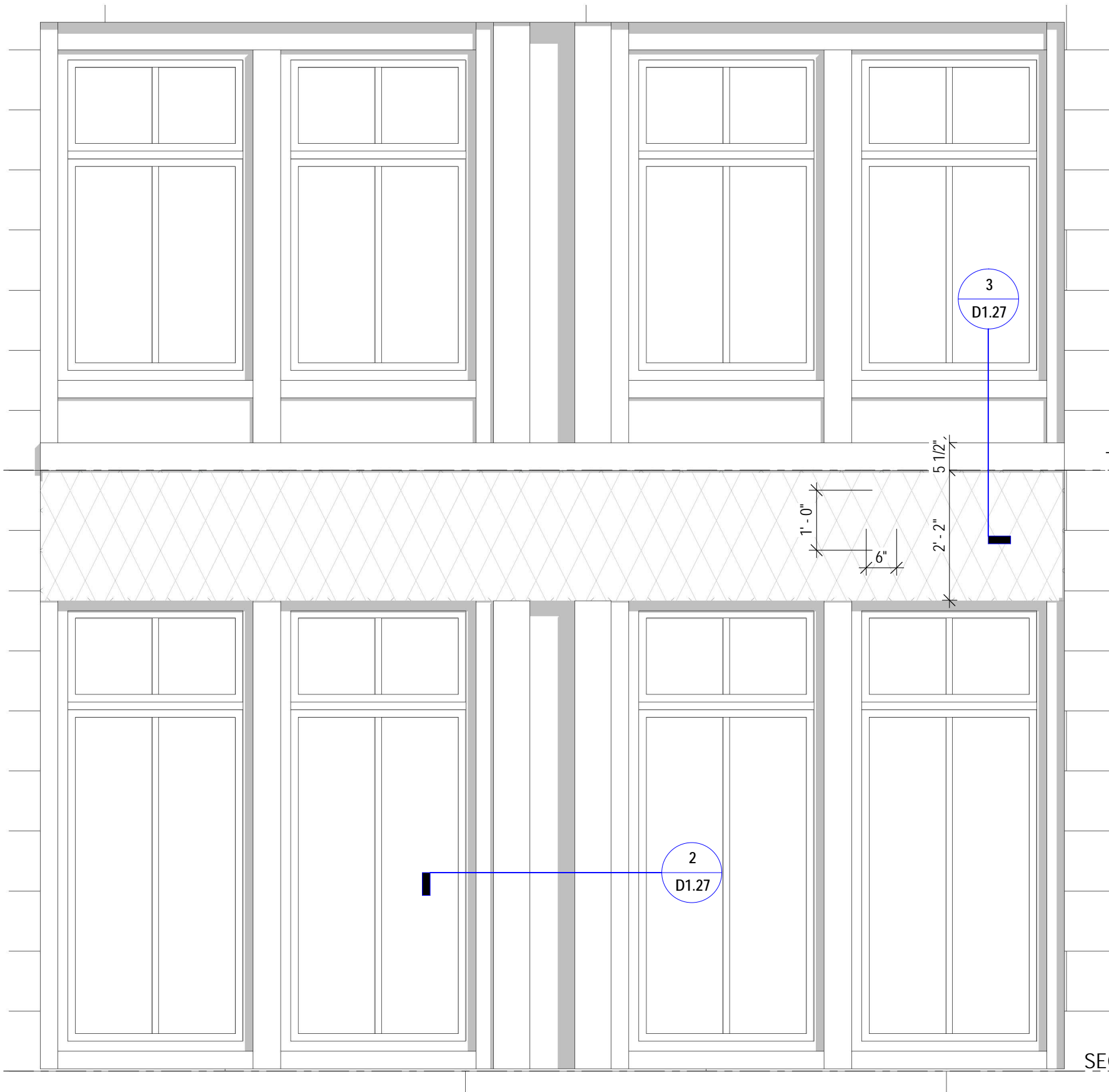
1 HDC TYPICAL SOLAR SHADE ELEVATION
1/2" = 1'-0"



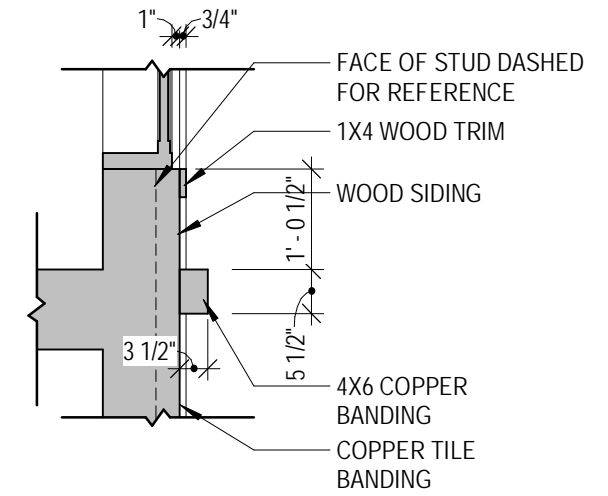
2 HDC TYPICAL SOLAR SHADE
1/2" = 1'-0"



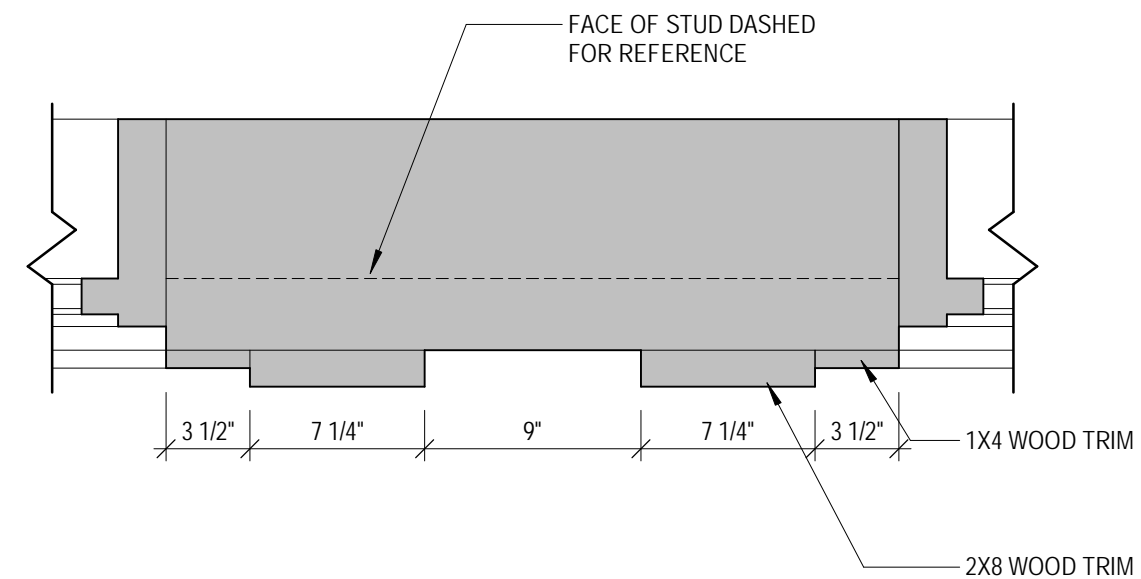
D1.26 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



1 HDC TYPICAL WINDOW BAY ELEVATION
1/2" = 1'-0"



3 HDC WINDOW BAY COPPER BANDING
1/2" = 1'-0"



2 HDC WINDOW BAY JAMB DETAIL
1 1/2" = 1'-0"

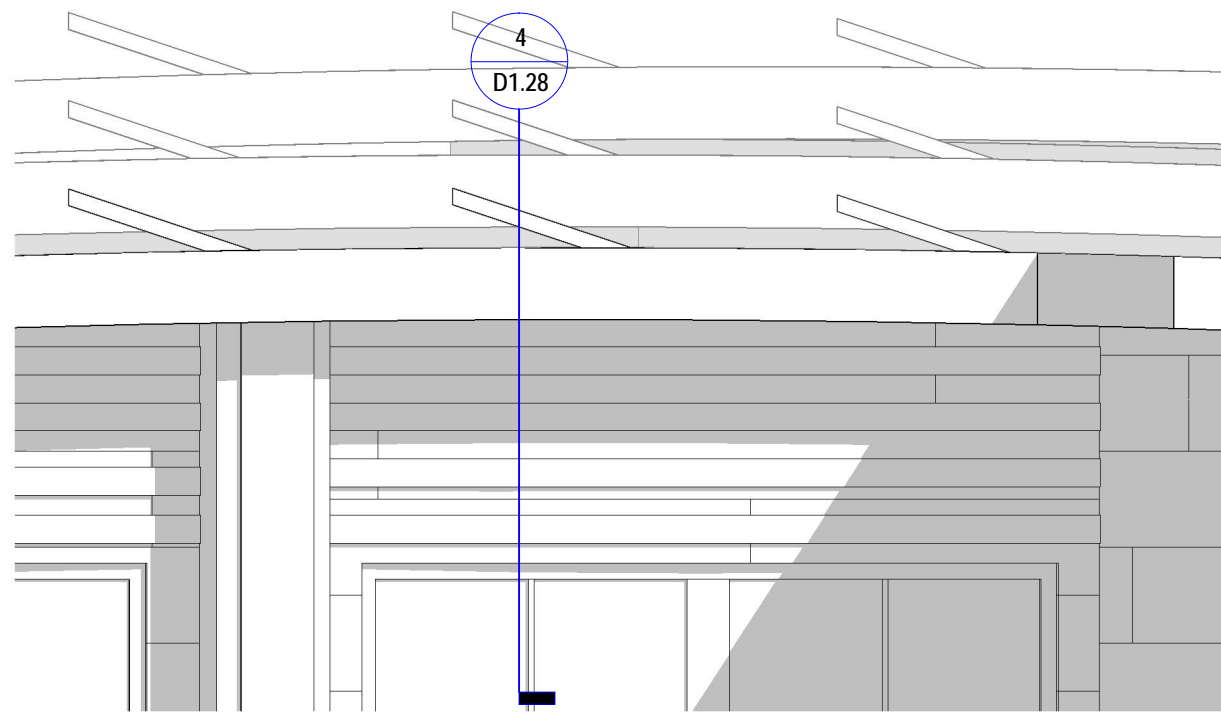
D1.27

ELEVATION DETAILS

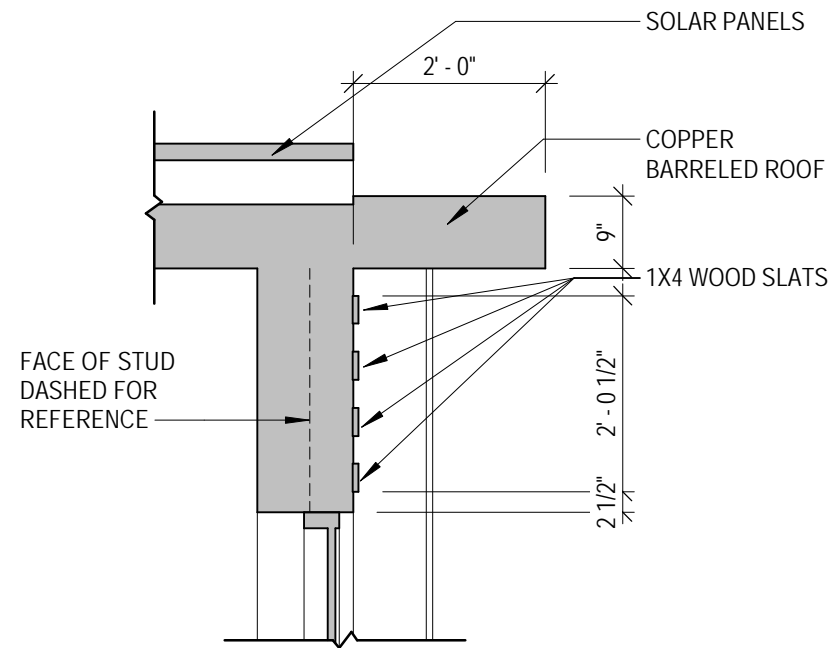
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



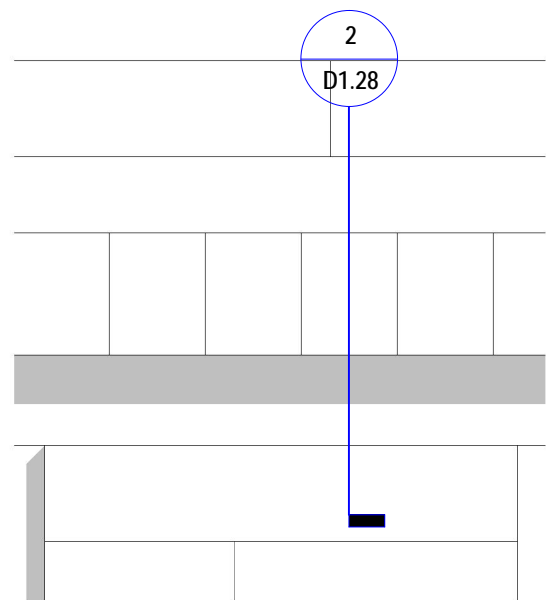
ARCHITECTS
INTERIORS
PLANNERS



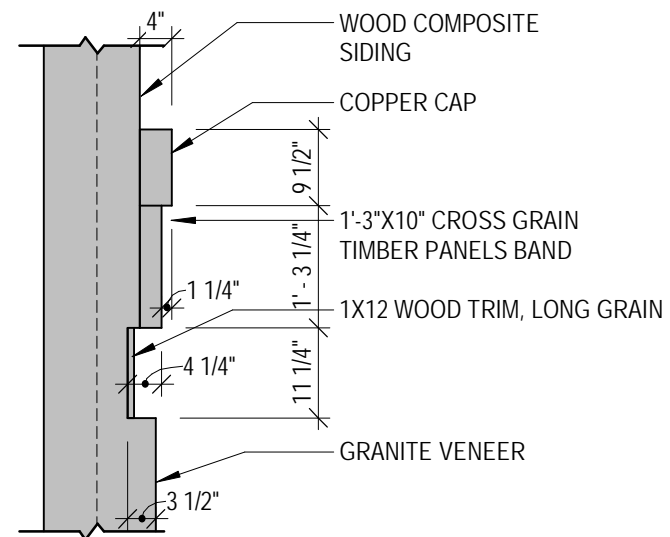
3 HDC BARREL ROOF ELEVATION
1/2" = 1'-0"



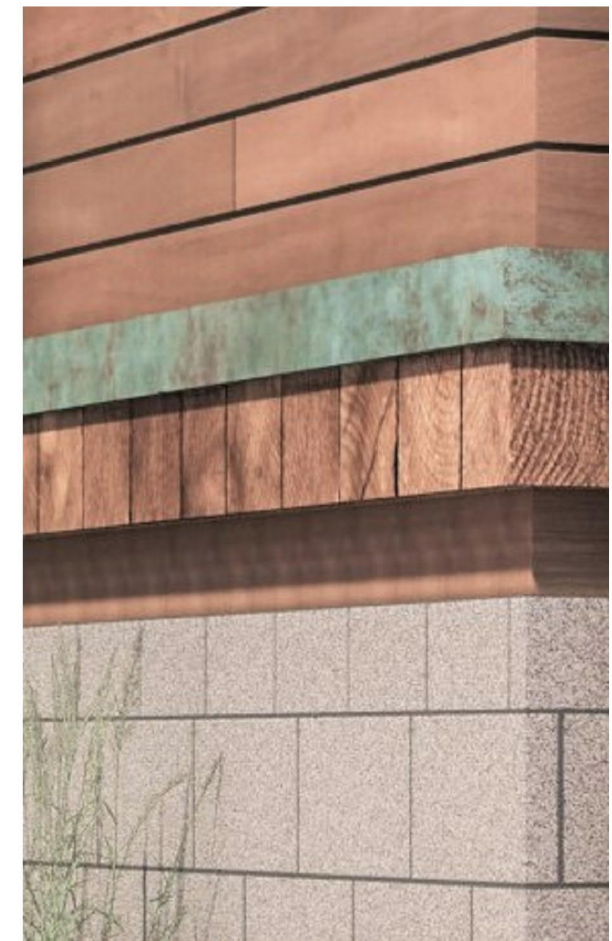
4 HDC BARREL ROOF SECTION DETAIL
1/2" = 1'-0"



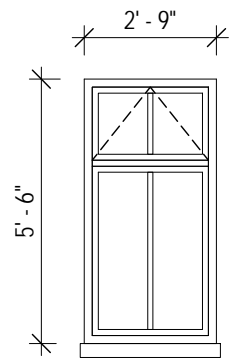
1 HDC RAINSCREEN/GRANITE TRANSITION BANDING
1/2" = 1'-0"



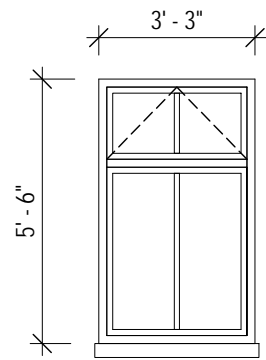
2 HDC RAINSCREEN/GRANITE TRANSITION BANDING
1/2" = 1'-0"



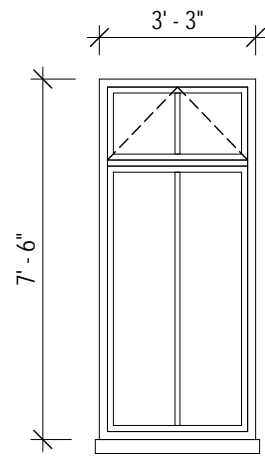
D1.28 ELEVATION DETAILS
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



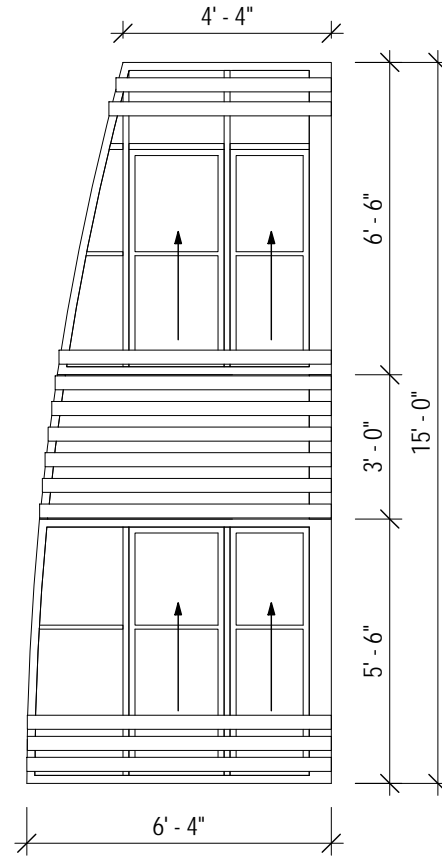
○ WINDOW TYPE W1
1/4" = 1'-0"



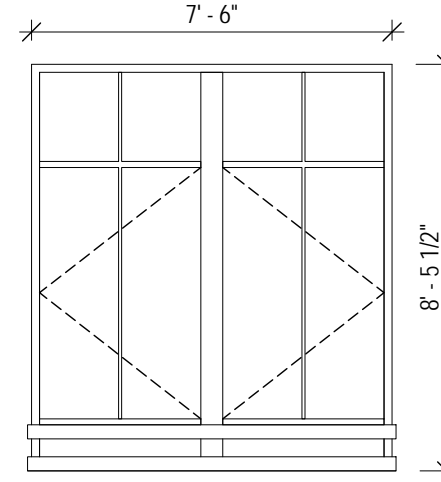
○ WINDOW TYPE W2
1/4" = 1'-0"



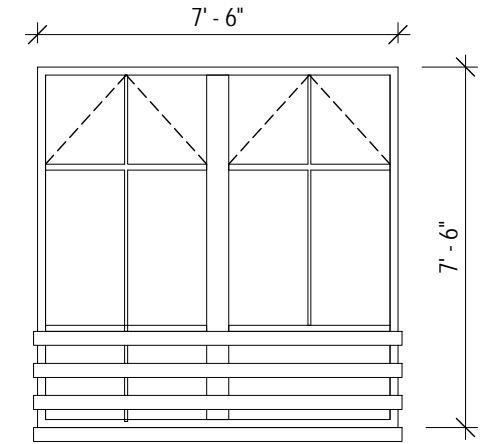
○ WINDOW TYPE W3
1/4" = 1'-0"



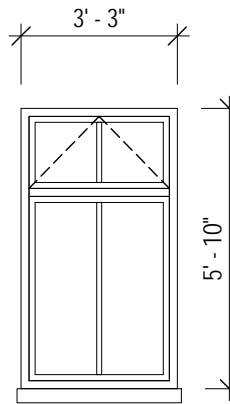
○ WINDOW TYPE W4
1/4" = 1'-0"



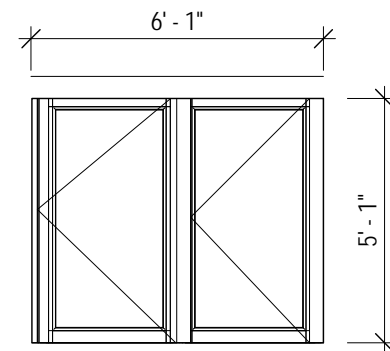
○ WINDOW TYPE W5
1/4" = 1'-0"



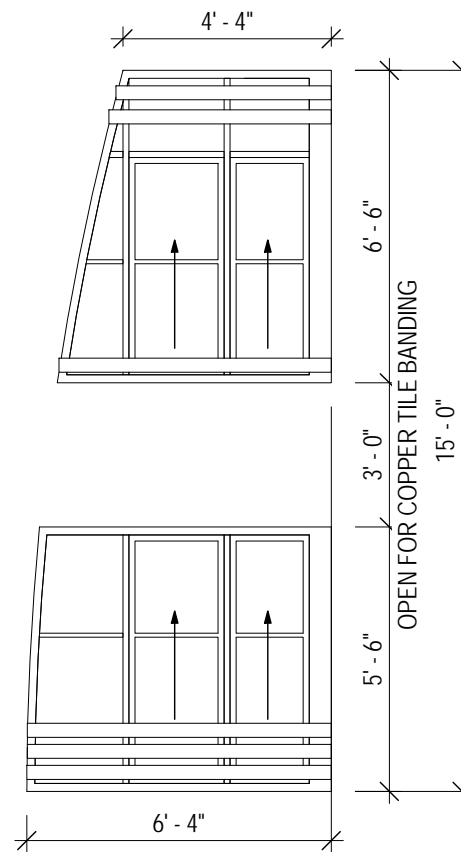
○ WINDOW TYPE W6
1/4" = 1'-0"



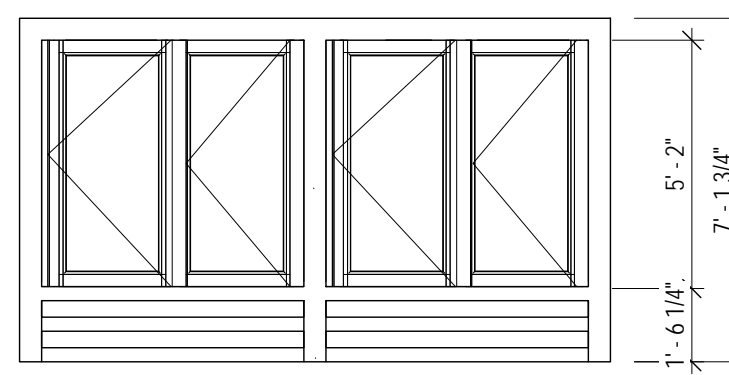
○ WINDOW TYPE W7
1/4" = 1'-0"



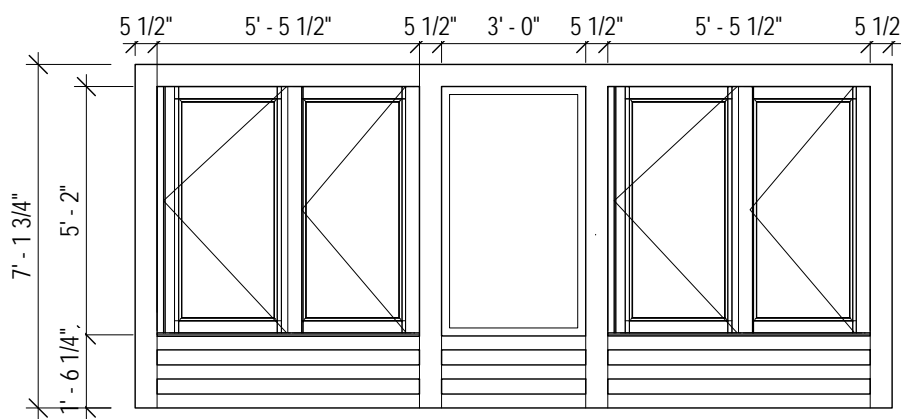
○ WINDOW TYPE W8
1/4" = 1'-0"



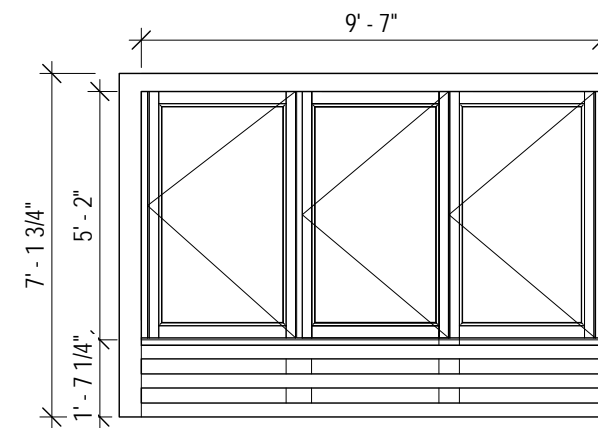
○ WINDOW TYPE W9
1/4" = 1'-0"



○ WINDOW TYPE W10
1/4" = 1'-0"



○ WINDOW TYPE W11
1/4" = 1'-0"

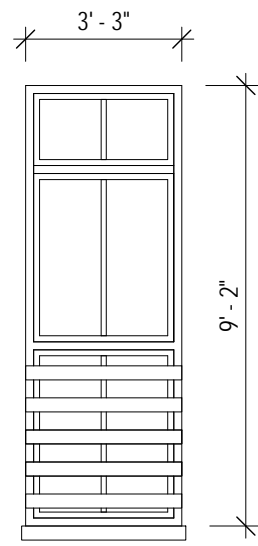


○ WINDOW TYPE W12
1/4" = 1'-0"

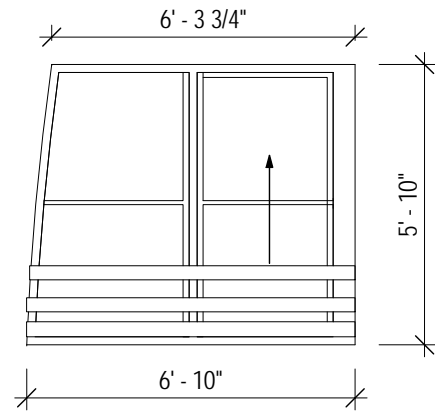
D1.29 WINDOW TYPES
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



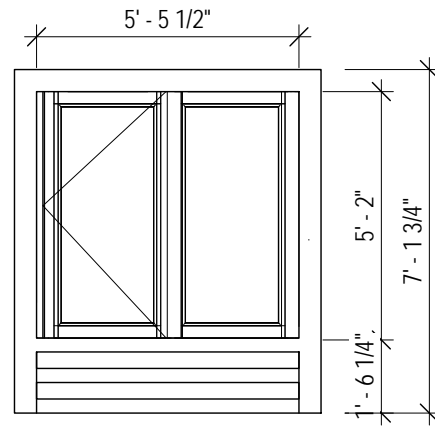
ARCHITECTS
INTERIORS
PLANNERS



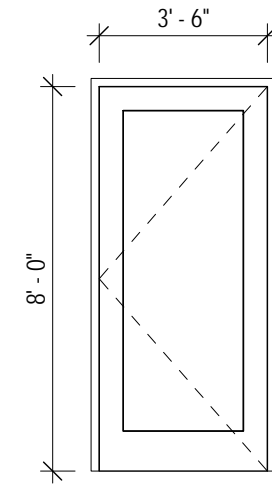
○ WINDOW TYPE W13
1/4" = 1'-0"



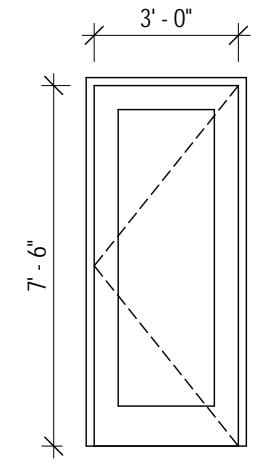
○ WINDOW TYPE W14
1/4" = 1'-0"



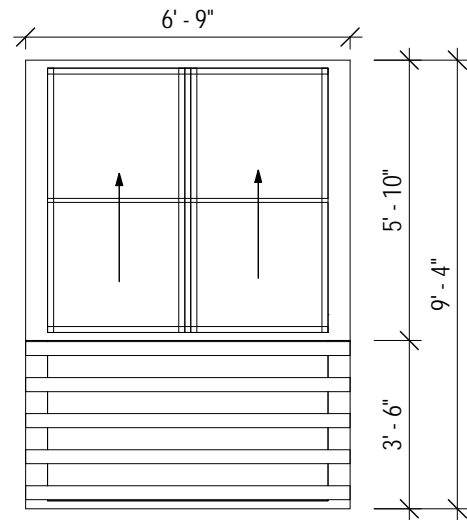
○ WINDOW TYPE W15
1/4" = 1'-0"



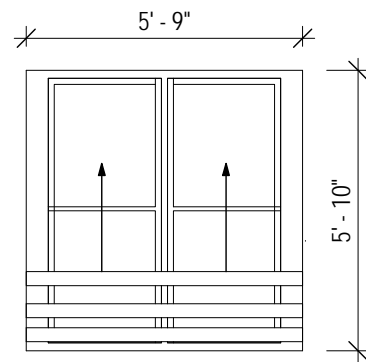
○ DOOR TYPE A
1/4" = 1'-0"



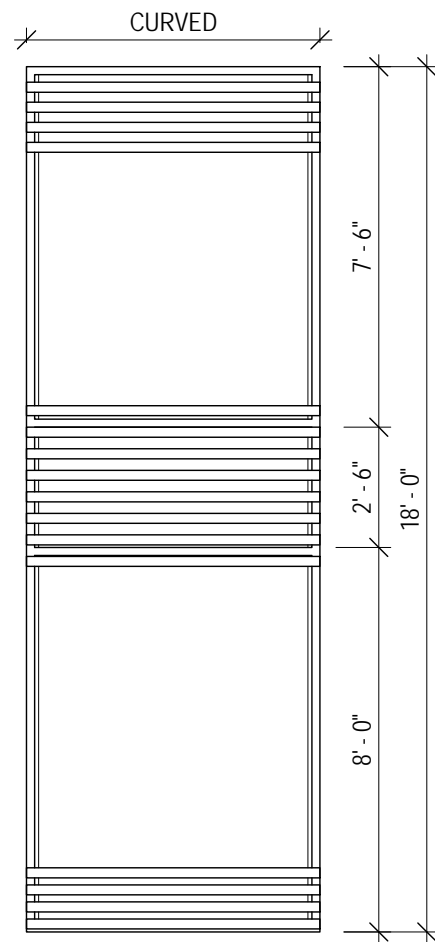
○ DOOR TYPE B
1/4" = 1'-0"



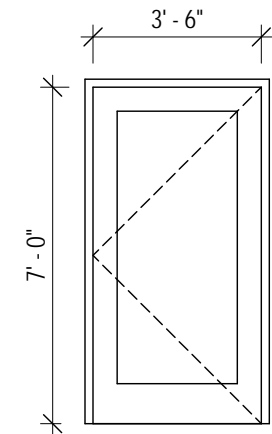
○ WINDOW TYPE W16
1/4" = 1'-0"



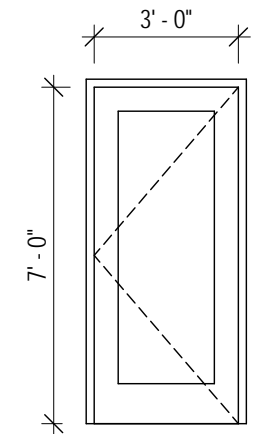
○ WINDOW TYPE W17
1/4" = 1'-0"



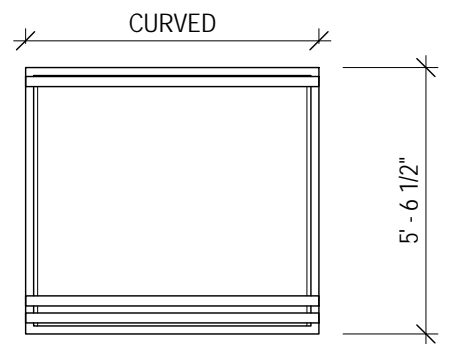
○ WINDOW TYPE W20
1/4" = 1'-0"



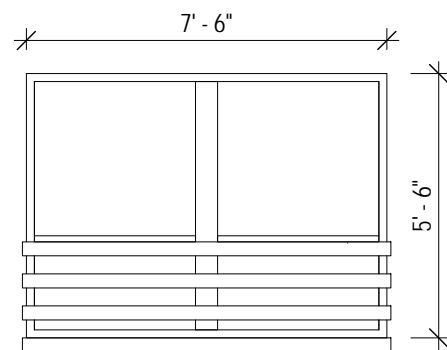
○ DOOR TYPE C
1/4" = 1'-0"



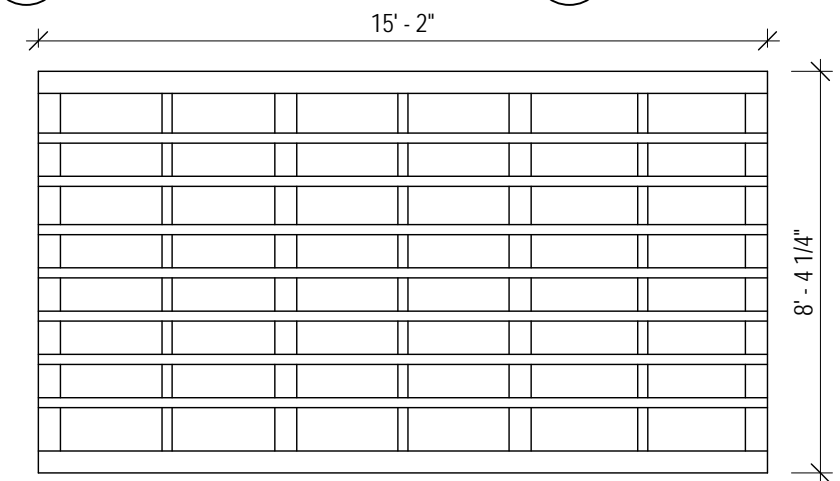
○ DOOR TYPE D
1/4" = 1'-0"



○ WINDOW TYPE W18
1/4" = 1'-0"



○ WINDOW TYPE W19
1/4" = 1'-0"



○ DOOR TYPE E
1/4" = 1'-0"

D1.30

WINDOW & DOOR TYPES

60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



ARCHITECTS
INTERIORS
PLANNERS

Material	Manufacturer	Model/Make	Finish/Color
Copper Roofing & soffits	Revere Copper	standing seam	fully weathered patina
Wood Composite Board Siding - horizontal	Prodema	rainscreen, concealed fasteners	Rustic
Wood Composite Board Siding - vertical	Prodema	rainscreen, concealed fasteners	Nux
Wood trim & strapping, treated	Acoya	acetylated treated wood	natural
Bent steel pipe brackets	custom	custom	painted; graphite to match zinc
zinc coping, trim & beam end caps	Rheinzink	custom	Patina Line; graphite-grey
Copper shingles	custom	hemmed seam; diamond pattern, 6" w x 12" h	fully weathered patina
steel timber fasteners	custom	exposed	painted; graphite to match zinc
granite veneer	regional	flamed & split-face	Deer Isle (pink)
glazing (at windows, storefront, & curved curtain wall)	tbd	insulated low-e	non-reflective; slightly tinted green
Fenestration (windows)	Kolbe	Ultra aluminum clad wood	Nutmeg
Fenestration (storefront)	NanaWall	Wood	natural
heavy timber beams & columns	Bensonwood or equivalent	cross laminated timber (CLT)	as shown
metal glass curtain wall connectors	CR Laurence Co. Inc	Heavy Duty Post mount fittings	graphite
metal mesh panel guardrails			



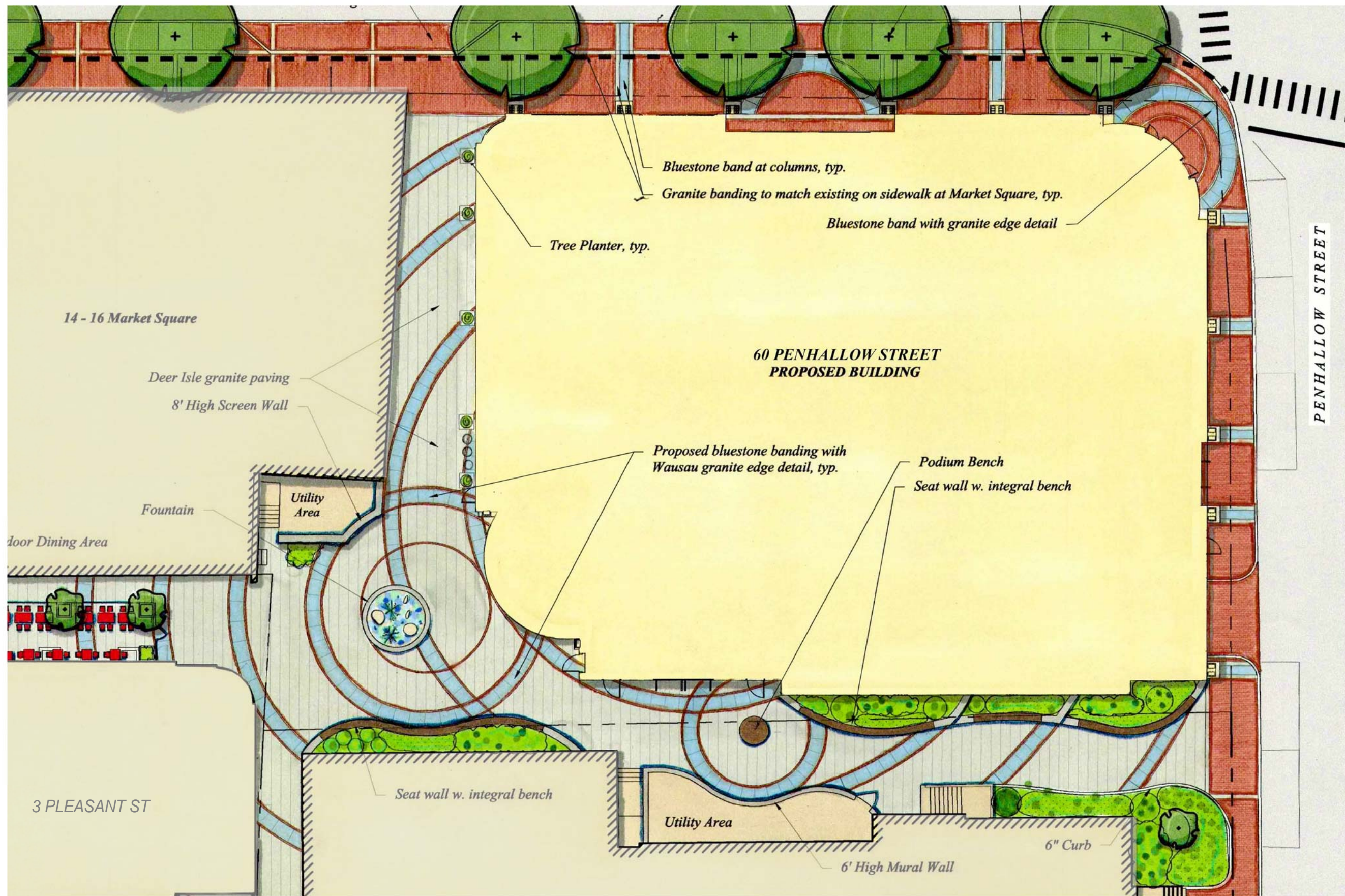
D1.31

BUILDING MATERIALS SCHEDULE

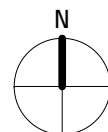
60 PENHALLOW STREET at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



ARCHITECTS
INTERIORS
PLANNERS



GRAPHIC SCALE: 1" = 20'-0"



D1.32

LANDSCAPE PLAN

60 PENHALLOW ST at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019

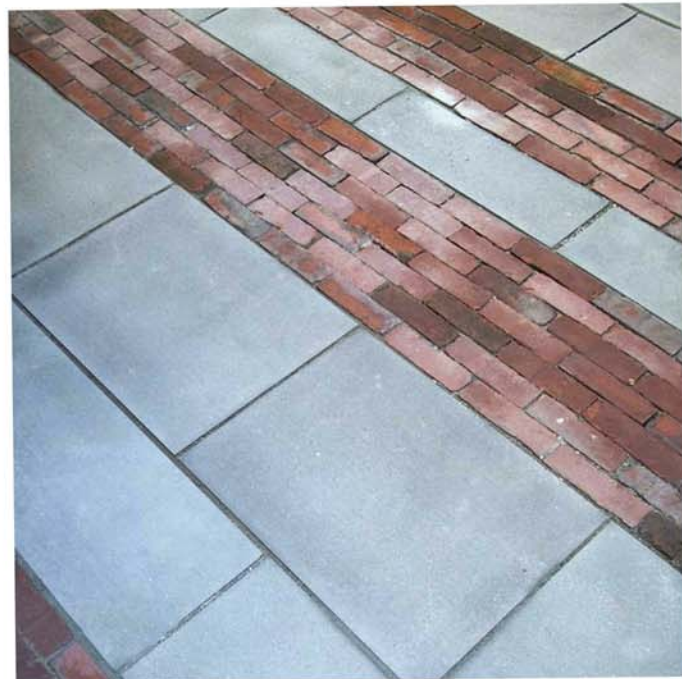




Wausau Red Granite - Slim banding



Deer Isle Granite - Paving Field



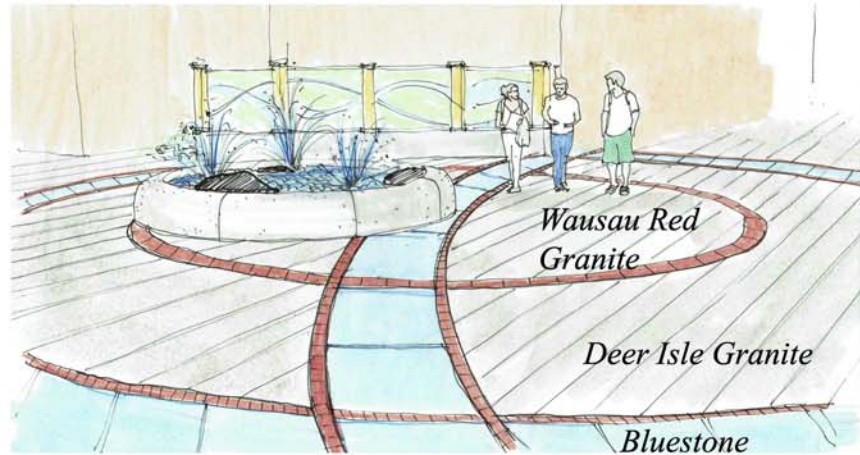
Bluestone



Podium Bench - 6' diameter

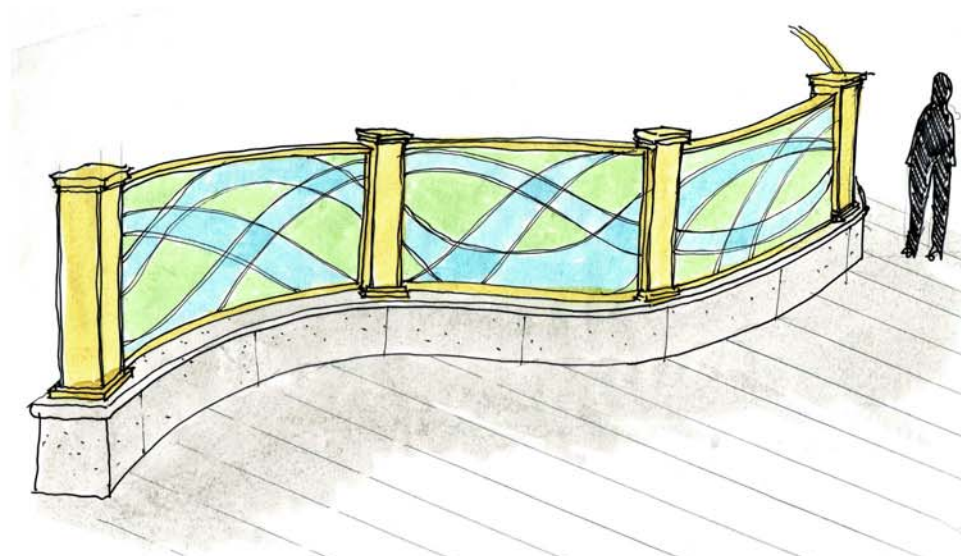


*Wood Bench Top - sits on Deer Isle granite wall base instead of steel feet as shown here
18" w x 14" - 20" base (varies with grade)*



*Granite Fountain - low sprays
18" high x 14' diameter*

*Tree planters shown as core ten here
3'x3'x3'*



*Mural Wall - Height 6' and 8' see plan - Granite base 18x18"
Posts wood to match building*



D1.33

LANDSCAPE MATERIALS

60 PENHALLOW ST at BRICK MARKET
HDC PUBLIC HEARING - NOVEMBER 2019



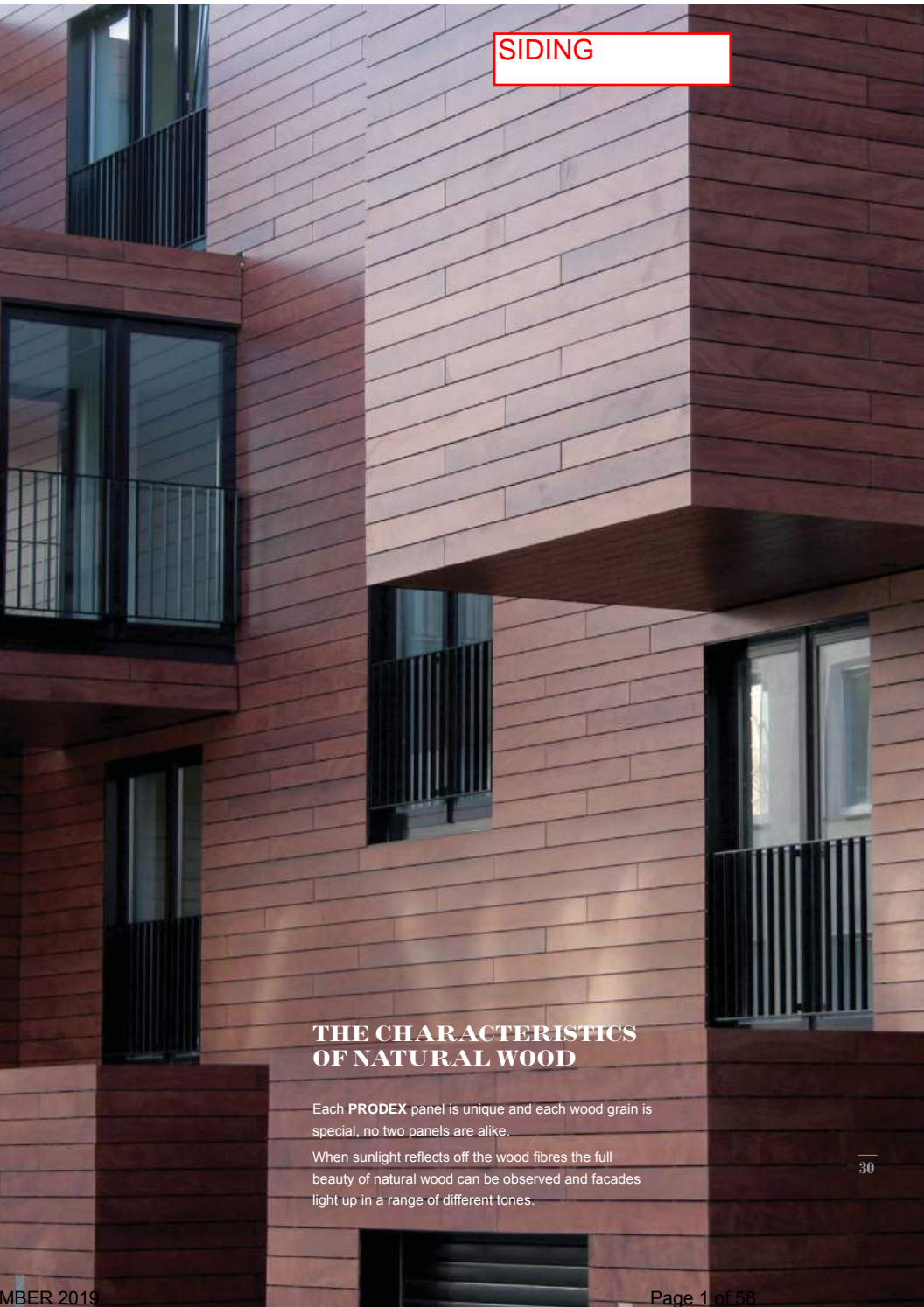
ARCHITECTS
INTERIORS
PLANNERS

MATERIALS LEGEND

No.	Page	Material	Manufacturer	Model/Make	Finish/Color
1	1	Wood Composite Board Siding - horizontal	Prodema	rainscreen, concealed fasteners	Rustic
2	1	Wood Composite Board Siding - vertical	Prodema	rainscreen, concealed fasteners	Nux
3	8	Wood trim & strapping, treated	Accoya	acetylated treated wood	natural
4	17	Granite veneer	regional	flamed & split-face	Deer Isle (pink)
5	18	CLT cross laminate timber beams & columns	Bensonwood	cross laminated timber (CLT)	as shown
6	-	Steel timber fasteners	custom	exposed	galvanized & painted; graphite to match zinc
7	22	Fenestration (windows)	Kolbe	Ultra aluminum clad wood	Nutmeg
8	35	Fenestration (sliding folding storefront & doors)	NanaWall	WD66 - wood framed system	natural
9	43	Metal glass fittings/connectors	CR Laurence Co. Inc	Heavy Duty Post mount fittings	graphite
10	-	Glazing (at windows, storefront, & curved curtain wall)		triple glazed low-e	non-reflective; slightly tinted green
11	48	Copper Roofing & soffits	Zahner Star Blue	standing seam	fully weathered patina
12	52	Copper shingles	Zahner Star Blue	flat lock hemmed seam; diamond pattern, 6" w x 12" h	fully weathered patina
13	54	Zinc coping, trim & beam end caps	Rheinzink	custom	Patina Line; graphite-grey
14	-	Bent steel pipe brackets	custom	custom	painted; graphite to match zinc
15	55	Metal mesh panel guardrails	GKD MetalFabrics	copper woven wire mesh & steel supports	patinated copper mesh & graphite galv. & painted steel



SIDING



THE CHARACTERISTICS OF NATURAL WOOD

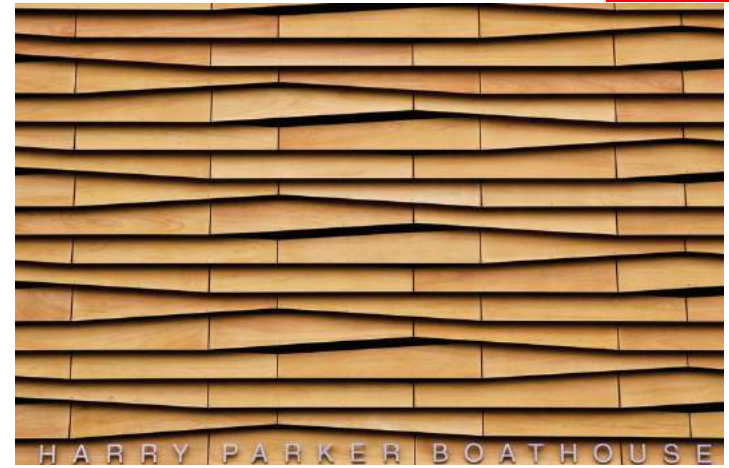
Each PRODEX panel is unique and each wood grain is special, no two panels are alike.

When sunlight reflects off the wood fibres the full beauty of natural wood can be observed and facades light up in a range of different tones.



Harry Parker Boathouse, Boston

2014 AIA Institute Honor Awards for Architecture.
Chicago Athenaeum American Architecture Award 2008.







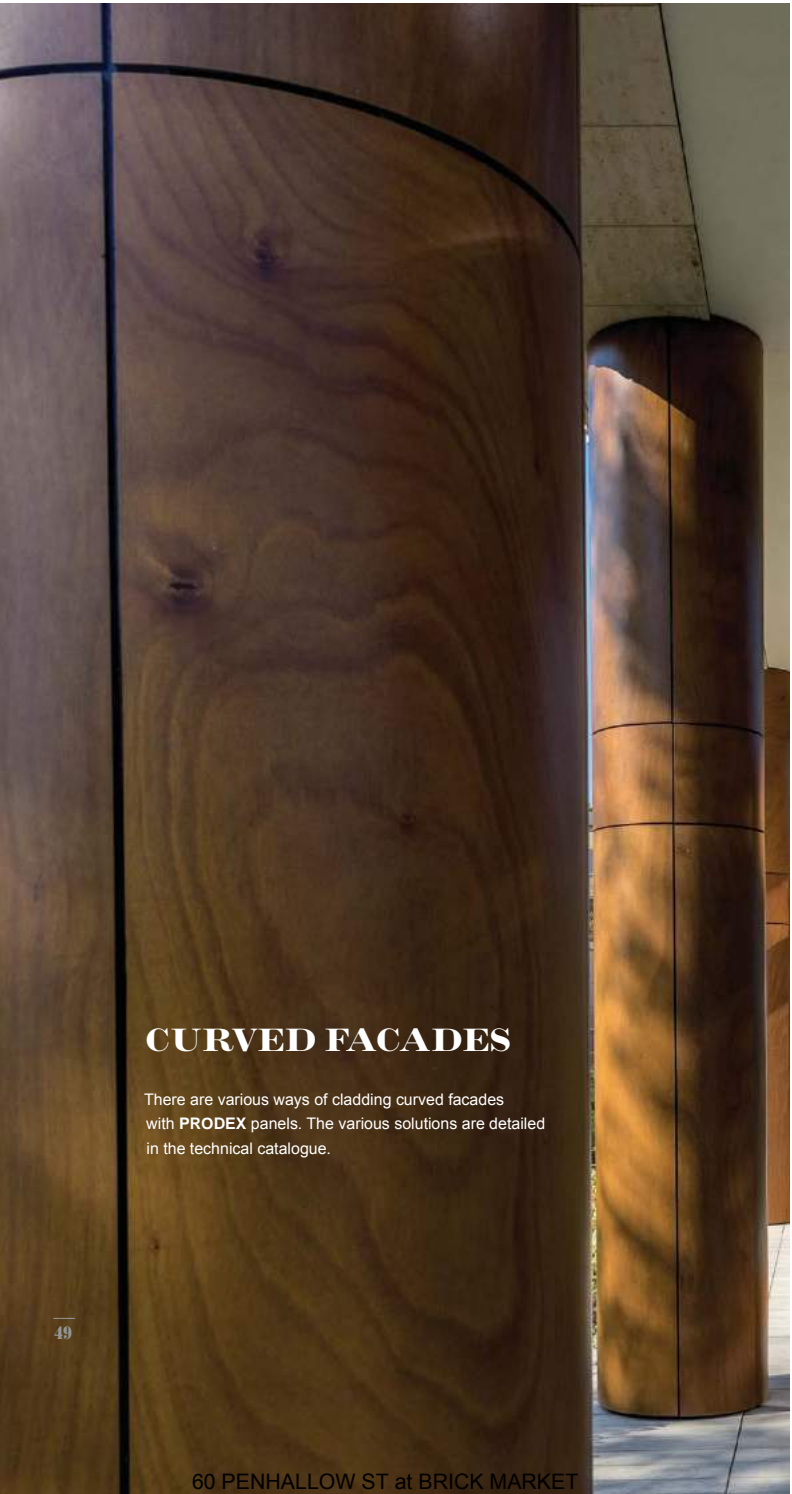
PRODEX pushes the envelope in facade design as architects partner with Prodem to create innovative designs never thought possible. A product that allows your vision become reality by offering versatility, warmth, elegance, and remarkable performance.

Here at Prodem we work hard to be a source of inspiration for architects. This partnership has translated into prestigious architectural design awards, globally.



18





CURVED FACADES

There are various ways of cladding curved facades with **PRODEX** panels. The various solutions are detailed in the technical catalogue.



SIDING

MOUNTING SYSTEMS

Concealed:

The concealed fixing system is available for both walls and ceilings. The attachment system hides behind the panel for those projects requiring an aesthetically smooth facade, free of hardware.

Exposed:

This is the most common mounting system employed with **PRODEX** panels: simple, strong and more cost-effective than other systems.

IN THE **PRODEX** TECHNICAL CATALOGUE ALL THE TECHNICAL SPECIFICATIONS AND POSSIBLE USES FOR THE PRODUCT CAN BE FOUND

PANEL COMPOSITION:

PRODEX panels have a bakelite core covered with a natural wood veneer that is specially treated to ensure maximum resistance. We have developed an exterior PVDF film with non-stick qualities in order to achieve a maximum level of care for the wood, ensuring panels are protected from moisture, rain, sunlight, and even the build-up of dirt on the panels' surface.

MAINTENANCE-FREE:

PRODEX natural wood panels do not need the regular maintenance other woods for exterior require.

AESTHETIC:

PRODEX panels offer the design world the possibility to create natural, living facades with a wide range of tones and creative options available.

RESISTANCE AND DURABILITY:

PRODEX panels are the perfect material for cladding facades thanks to the panel's technical qualities. The panel's bakelite core means it is possible to adjust the panel's thickness and its subsequent technical qualities making **PRODEX** the ideal solution for all types of projects.

PRODEX panels are extremely hard, rendering them perfectly resistant to continuous exposure to sunlight and sharp changes in temperature and humidity.

They also offer a high level of durability against termite attacks and maximum resistance to vandalism.

PRODEX panels also offer excellent dimensional stability.

CLEANING:

The PVDF surface prevents dust and all kinds of dirt from sticking to the panel surface, ensuring ease of maintenance and cleaning.

ANTI-GRAFFITI RESISTENCE:

The outer chemical non-stick layer impregnated into **PRODEX** panels prevents aerosol paint from sticking permanently to the surface.

PANEL DIMENSIONS:

Length x width: 2.440 mm x 1.220 mm. Thicknesses 6, 8, 10, 12, 14, 16, 18, 20, 22 mm.

FIRE RATING:

On request, panels may be supplied with different reactions to fire in line with standard EN 13.501-1:

▼ **PRODEX C** - s1, d0

▼ **PRODEX IGN B** - s1, d0

▼ **PRODEX**: Class B for North America

▼ **PRODEX IGN**: Class A for North America

AYOUS VENEER



Dark Brown



Light Brown



Pale



Cream



Mocca



Mint

OKUME VENEER



Deep Brown



Rustik



Ice grey

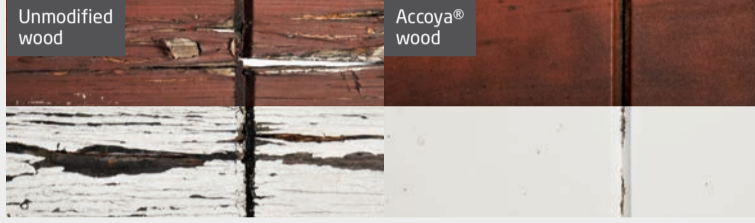
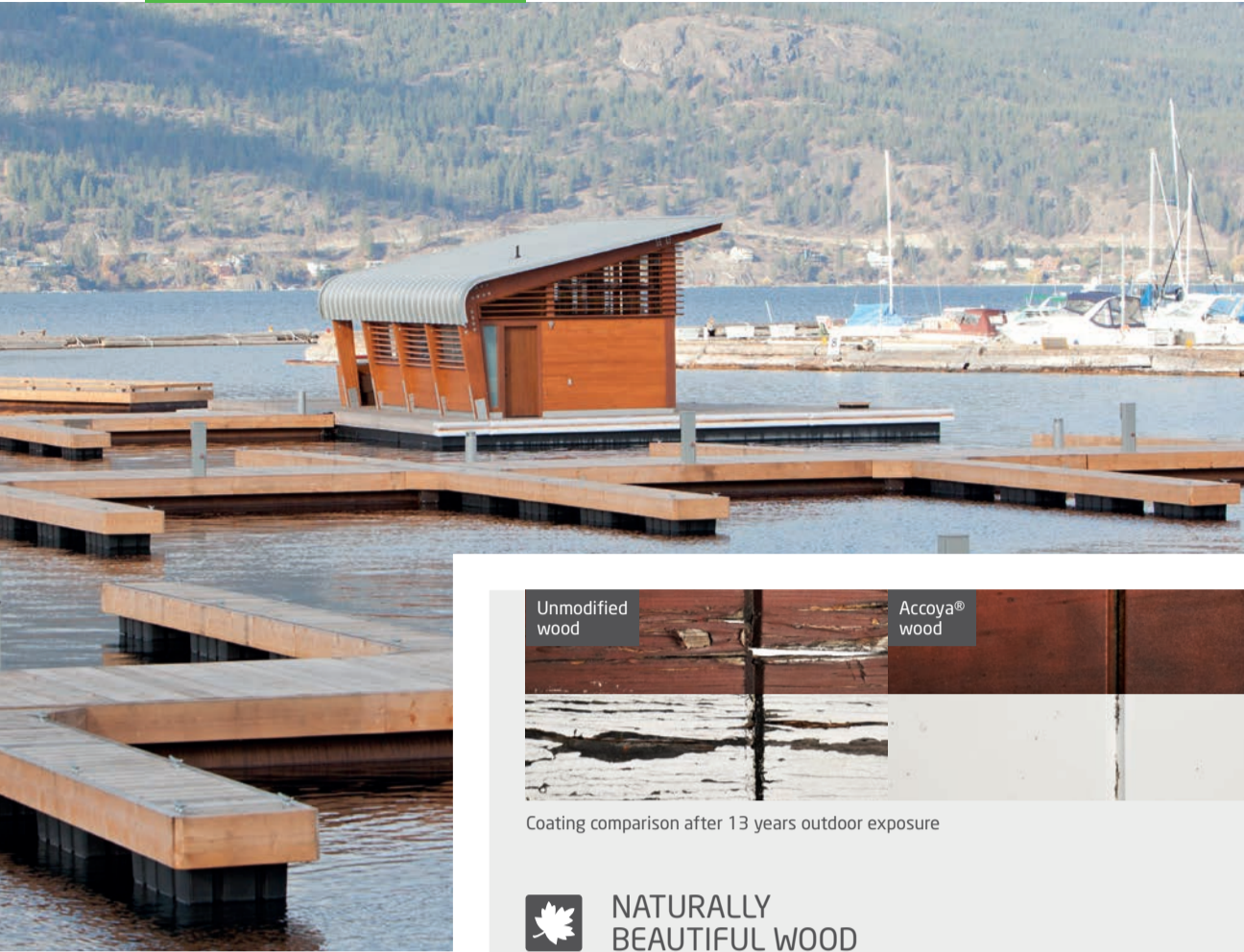


Nux

TRIED AND TESTED

Extensive laboratory and field testing by leading institutes around the world (including in New Zealand, USA, UK, Sweden, Malaysia, Indonesia, Russia, the Netherlands, Germany and Japan) has shown the performance of acetylated wood to be extremely reliable.

Accoya® wood has been thoroughly tested for performance characteristics such as dimensional stability, durability, paint retention and in-ground conditions to ensure optimal performance. Indeed, it is so reliable that for many years it has been and continues to be used by scientists as the benchmark against which other treatments and modification techniques are measured.



Coating comparison after 13 years outdoor exposure



Durability tests

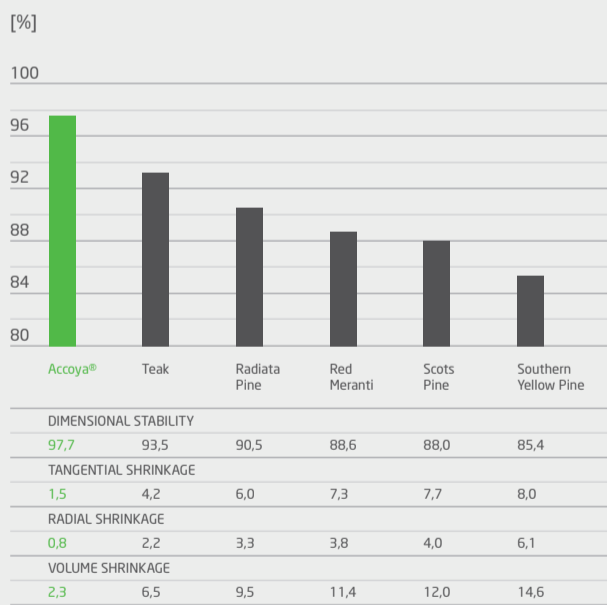
NATURALLY BEAUTIFUL WOOD

Accoya wood retains its natural colour after acetylation demonstrating that the natural beauty of the wood lasts longer in exposed conditions. This, coupled with Accoya® wood's improved dimensional stability and excellent thermal properties, means that wooden windows, doors and cladding/siding can once again compete effectively with artificial alternatives.

OUTSTANDING DURABILITY

Accoya® wood's durability is Class 1, matching and even exceeding the performance of nature's most durable woods. Scion, formerly known as the New Zealand Forest Research Institute, has published a report which concludes that Accoya® wood is more durable than four of the most naturally durable species. After six years of exposure in accelerated decay chambers and exterior ground contact tests, Accoya® wood was in much better condition than the cypress, cedar, kwila and teak when tested to the same rigorous standards. Radiata pine with copper chrome arsenate (CCA) treatment to the H3.2 and H4 New Zealand industry specifications for ground contact was also notably outperformed by Accoya® wood.

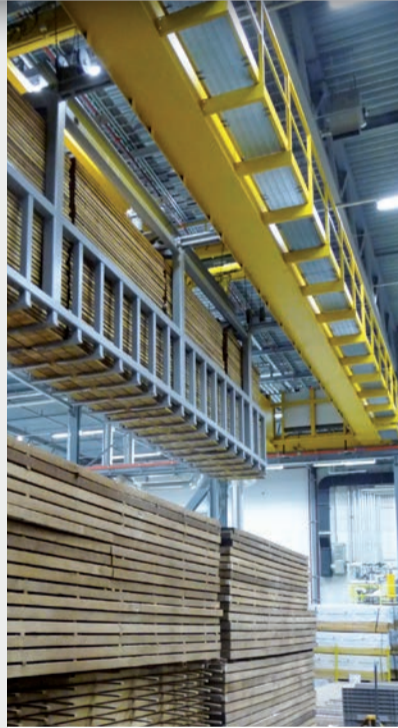
DIMENSIONAL STABILITY



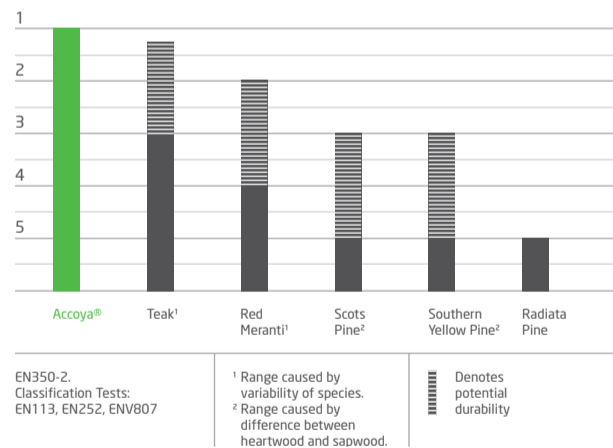
N.B. This graph shows the dimensional stability (volume metric) from fully soaked to oven dry (the most extreme laboratory test). Where a material is unaffected by moisture changes the dimensional stability would be 100%. The table above does not show changes due to temperature conditions (wood is very stable). The table to the right shows the shrinkage in more normal weather conditions (with simulated humidity varying between 60 and 90%).

DIMENSIONALLY STABLE

Accoya® wood offers dimensional stability (resistance to swelling and shrinkage) in both radial and tangential directions. Tests have shown up to 80% reduction in swelling caused by moisture uptake, depending on the source species and conditions. From oven dry to water saturated conditions, the swelling and shrinkage of acetylated wood is only minimal and, in fact, better than tropical hardwoods. Dimensional variability resulting from thermal changes (ambient or radiant temperature variations) is, like most woods, minimal.



DURABILITY COMPARISON



EN350-2. Classification Tests: EN113, EN252, ENV807

¹ Range caused by variability of species. ² Range caused by difference between heartwood and sapwood.

Denotes potential durability

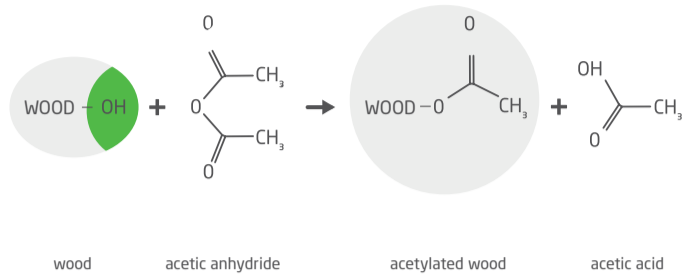
WOOD SPECIES	DURABILITY CLASS ¹ [1=highest]	JANKA HARDNESS ² [N/mm ²]	BENDING STRENGTH ² [N/mm ²]	RADIAL SHRINKAGE [60-90% RH]	TANGENTIAL SHRINKAGE [60-90% RH]
Accoya® wood	1	3950	80	0.4	0.7
Radiata Pine	5	3850	80	1.2	2.2
Scots Pine	3/4	2900	80	1.0	2.4
Beech (not steamed)	5	7100	115	1.2	2.5
Western Red Cedar	2	1450	55	0.5	1.2
Meranti (DRM)	2/3	4300	90	0.9	1.8
Sapele Mahogany	3	6700	105	0.9	1.2
Ponderosa Pine	3/4	3000	80	1.1	2.1

Comparison of the technical specifications of different wood species and Accoya® using various source species. Accoya® wood based on a radiata pine source material.

¹ Based upon classification by EN350. Durability Class 1 corresponds to a 60-year service life in applications such as windows, doors, balconies and cladding in the British Standard recommendation BS8417.

² Janka Hardness and Bending Strength are based on wood conditioned at 65% RH and 20°C. Values are heavily influenced by local growth conditions.

ENABLING NATURE NATURALLY



Wood acetylation is a process that has been studied by scientists around the world for more than 80 years. This method of improving wood has been proven to deliver such superior performance that it has long been used as the “gold standard” against which other methods are measured. The Accoya® wood patented production process combines this work with years of proprietary research and investment to deliver consistent results on a commercial scale.

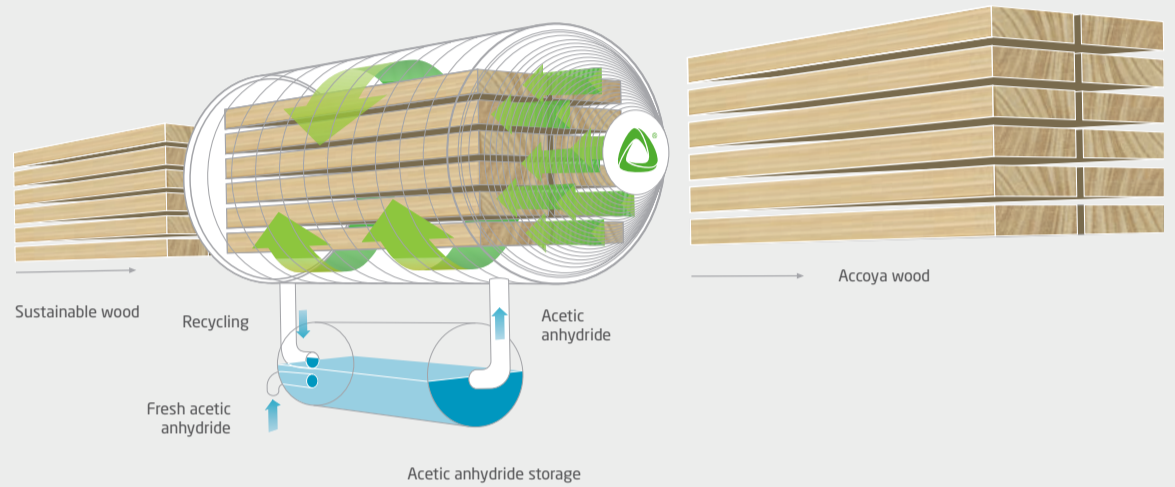
The physical properties of any material are determined by its chemical structure. Wood contains an abundance of chemical groups called “free hydroxyls”. Free hydroxyl groups absorb and release water according to changes in the climatic conditions to which the wood is exposed. This is the main reason why wood swells and shrinks. It is also believed that the digestion of wood by enzymes initiates at the free hydroxyl sites - which is one of the principal reasons why wood is prone to decay.

Acetylation effectively changes the free hydroxyls within the wood into acetyl groups. This is done by reacting the wood with acetic anhydride, which comes from acetic acid (vinegar when in dilute form). When the free hydroxyl group is transformed to an acetyl group, the ability of the wood to absorb water is greatly reduced, rendering the wood more dimensionally stable and extremely durable.

NATURAL SCIENCE

Acetyl groups are already naturally present in all wood species. This means that the manufacturing process adds nothing into the wood that does not already naturally occur within it. The end product, Accoya® wood, does not add toxins to the environment.

The effect of altering the wood’s chemical structure, as opposed to merely altering its chemical content, is to create an end product that is dramatically superior to its source species. Accoya® wood is modified right through the cross section whereas, by contrast, virtually all other treatments merely insert chemicals (such as oils, ammonia or metal compounds) into the wood, improving durability, to a degree, but not dimensional stability.



ACETYLATED L-JOINTS OUTPERFORM ASA AND UNTREATED L-JOINTS AFTER 15 YEARS*

The BRE (Building Research Establishment) is an independent institute based in Watford, UK. In durability field testing to European Norm (EN) 330:1993 - which parallels America Wood-Preservers’ Association (AWPA) E9 - simple mortice and tenon joints (L-joints) are assembled, coated and placed outside, with the coating over the joint deliberately broken to allow typical water ingress. This test represents a worst case scenario for joinery products and requires the coated wood to be exposed to normal environmental factors.

In February 1998, L-joints were installed at the BRE Garston field exposure site (Watford, UK) facing the prevailing south westerly weather on an elevated test rig. The test remains in progress with inspections at regular intervals. The durability class 1 acetylated wood condition is unchanged and continues to look good, while the unmodified wood has degraded completely after 7 years of exposure.

The BRE reported: “In simulated accelerated joinery field trials that represent a worst case scenario joinery product by enabling moisture ingress into the joint pine, sapwood wood L-joints acetylated to a slightly lower modification level than Accoya, after 15 years exposure in the UK are performing very well.”

*test report dated 2013

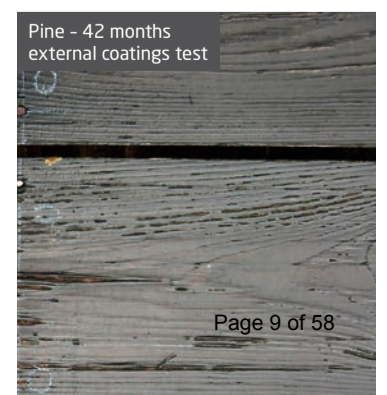
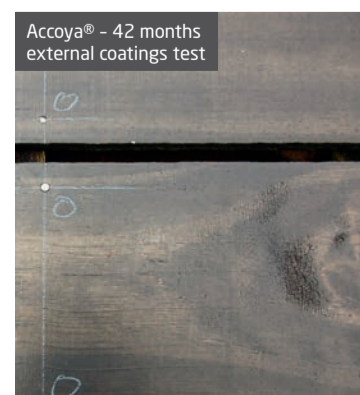
LONGER LASTING COATINGS

Accoya® wood is the ultimate substrate, and its lower maintenance requirements add to its cost effectiveness and environmental credentials. Coatings may be translucent or opaque, allowing for more adventurous colour schemes that will endure.

All major coatings systems can be used on Accoya® wood, with significantly improved performance, due to the wood’s outstanding dimensional stability and resistance to UV degradation. Extensive tests have shown that the natural beauty of Accoya® wood lasts longer, even in the most severe weather conditions.

EXCELLENT COATINGS PERFORMANCE TESTED BY BM TRADA

The translucent stain finish was seen to have remained fully intact over the 42 month outdoor exposure period on all the boards with no visible failures in evidence apart from where the coating had been broken by an end-fissuring. No evidence of any peeling of the stain coating was seen along fissures where they occurred. No evidence of mould colonisation was observed on any of the boards. Other competing cladding material coatings failed in the same tests with severe issues.



THIS IS THE FUTURE OF WOOD...

Accoya® wood has been tested over prolonged periods in all types of weathering conditions - above ground, below ground and even in water - and has been proven to withstand even the toughest of external environments. Not only is its durability proven, but it has also been shown to retain its appearance, requiring much less frequent maintenance than other wood species. This gives added reassurance to the manufacturers, architects, specifiers, builders and property owners who have chosen Accoya® wood for a diverse range of projects. Accoya® wood is also being tested for additional uses by leading independent institutes worldwide.



WINDOW FRAMES, DOORS & SHUTTERS

Accoya® wood is the material of choice for these products as it has low thermal conductivity and is more durable and more dimensionally stable than the best tropical hardwoods. It may be finished with opaque coatings, or for those who enjoy the natural beauty of wood, finished with transparent coatings. Accoya® wood's low maintenance requirements add to its cost effectiveness and environmental credentials.

CLADDING, SIDING & FAÇADES

Accoya® wood is suitable for cladding, siding and façades where aesthetics, less frequent maintenance, dimensional stability and durability are key factors. Accoya® gives a wide range of coatings choices for unprecedented choice without compromising performance.

PORCH AND EXTERIOR FLOORING

Accoya® allows solid wood flooring in environments previously unthinkable such as wet areas and over-radiant heating without risk of excessive distortion.

DECKING & MARINAS

In specifying decking, jetties and pontoons, beauty, strength and all-weather performance are important. A material that will not cup, bow, warp, split, swell or be affected by fungi, water uptake or rot is desirable. It is also crucial that the wood is non-toxic and therefore totally safe for people and animals. Accoya® meets these requirements, even in salt water splash zones.

OUTDOOR FURNITURE & EQUIPMENT

Accoya® wood is perfectly suited to tables, chairs, play frames, planters and landscaping timbers as it is non-toxic and able to withstand the rigors of different weather conditions.

BRIDGES & CIVIL WORKS

With its high strength to weight ratio and overall superior performance, Accoya® allows wood to be used in demanding applications such as heavy traffic road bridges. Certain environments are particularly punishing and few are harsher than canal banks where wood is used to hold back the earth, exposing it to water, microbe rich soil and - most obviously at the waterline - air. Accoya® wood offers unparalleled performance in this application, replacing tropical hardwood.



...THIS IS ACCOYA

By significantly enhancing the durability and dimensional stability of fast-growing and abundantly available certified wood species, Accoya® wood provides compelling environmental advantages over slow-growing hardwoods (which are often unsustainably sourced), woods treated with toxic preservative chemicals, and non-renewable carbon-intensive materials such as plastics, steel and concrete.

- The Accoya® wood patented modification process adds nothing to the wood that does not already naturally occur in it
- Class 1 durability - facilitating a longer lifespan, improved carbon sequestration potential and lower lifetime material consumption versus other materials
- Outstanding dimensional stability, resulting in lower maintenance frequency and therefore less coating over the lifetime of the product
- Superior thermal insulation, providing energy conservation advantages when used for applications such as windows and doors
- All Accoya® wood is produced from well managed sustainable sources including FSC® and other regionally certified woods
- Low carbon footprint: Accoya® wood is an environmentally compatible substitute for carbon intensive materials
- Environmentally compatible: 100% recyclable and reusable, naturally renewable
- Rapidly renewable materials: use of abundantly available and fast-growing source species

IMAGINATION UNLIMITED

Accoya® wood is already being used for many new and exciting applications. It opens up all kinds of creative possibilities and is inspiring architects and designers to look at new and different ways of using wood instead of manmade products, safe in the knowledge that their creations will be sustainable and long lasting. Wherever you can imagine wood, imagine Accoya® wood.



LUMBER GRADING SPECIFICATIONS



Grade Names & Definitions
for Accoya® Radiata Pine
Version 9.1

GENERAL SPECIFICATIONS

PROPERTY	SPECIFICATION
Thickness	No more than 1 mm less than the specified size.
Width	No more than 1 mm less than the specified size.
Length	No more than 20 mm shorter than nominal length.
Moisture Content	Less than 10%.

SURFACE FINISH AND DIMENSION

Accoya® boards can be rough sawn or dressed to a smaller dimension. The dressed dimensions have been selected with the intent of enabling production of the same final products. Boards are sold and classified according to their original sawn (nominal) dimension. 25 and 32mm boards have one hit and miss back face and one smooth appearance face. The hit and miss back side will generally have more process discoloration. This orientation should be maintained in finished product manufacture.

ADDITIONAL GRADE SPECIFICATIONS

Internal Defects Not Visually Present on Surface: Accoya® wood is produced from a natural resource. All wood has natural variation from tree to tree and board to board. This natural variation results in a product that can have defects naturally present within the wood. Furthermore, the process of cutting trees into lumber and drying of the lumber can induce defects such as shakes, cracks and checks. Accoya® wood is produced from lumber visually inspected on the surface to meet the grade specifications, however upon further processing internal defects can be discovered.

MANUFACTURING IMPERFECTIONS

Lumber may have slight manufacturing related imperfections.

OVERALL DEVIATION FROM SPECIFICATIONS

Up to 5% of boards off grade shall be deemed acceptable.

A1 MINIMUM GRADE DEFINITION

4 sides primarily clear with total allowance (combination of all sides) of the following:

LESS THAN 50 MM THICKNESS:

Up to 3 of the following defects or equivalent:

- Knot (pin): 8 mm or less
- Bark or resin pocket: 8 mm wide, 50 mm long or equivalent.

50 MM THICKNESS AND GREATER:

Up to 6 of the following defects or equivalent:

- Knot (intergrown, partially intergrown and tight encased): 15 mm
- Bark or resin pocket: 10 mm wide, 100 mm long or equivalent.

RESIN STREAKS

Three up to 8 mm wide, 100 mm long or equivalent, slightly more for a short distance.

SURFACE CHECKS

- Three up to 1 mm wide, 250 mm long or equivalent, slightly more for a short distance.
- For boards 200-300 mm wide the following additional allowance applies: Up to 1 surface check per 50 mm width, no wider than 1 mm, 250 mm long or equivalent, slightly more for a short distance.

SPLITS

Short split, up to width of board and not to exceed 200 mm.

NEEDLE FLECK / BIRDS EYE

Medium birds eye or fleck.

WARP

As given in tables 1,2,3,4.

WANE

Up to 8mm in depth, ¼ length of board of equivalent, slightly more for short distance. Transport damage is permitted within the same wane limits.

SURFACE FINISH

Supplied sawn.

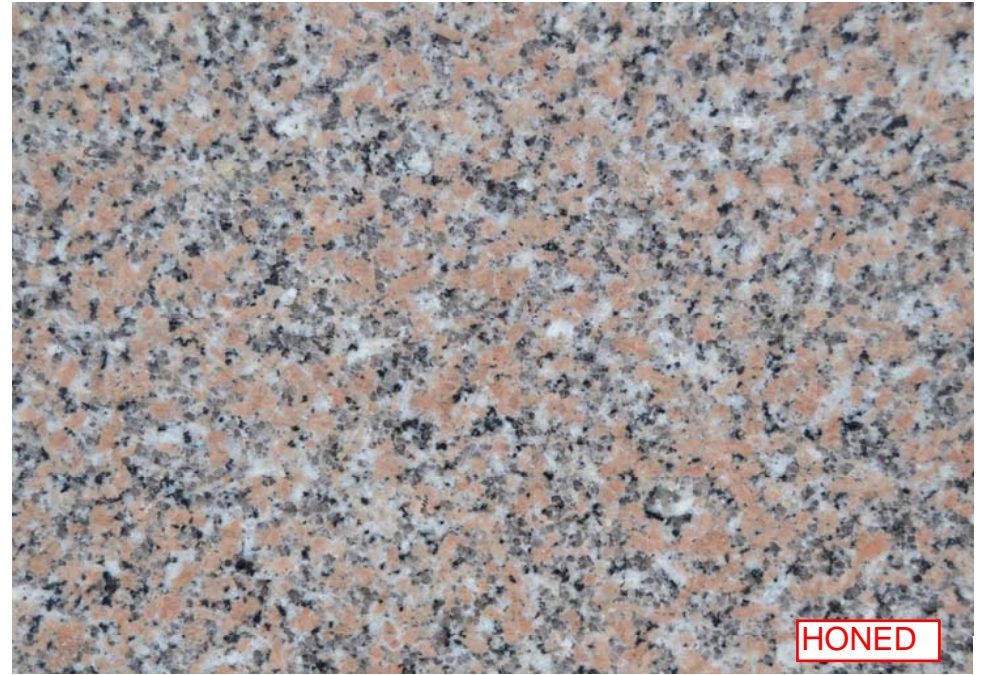
A1

SURFACED
FRONT SIDE

SURFACED
BACKSIDE









CUSTOM HOMES | TIMBERFRAME | PASSIVE HOUSE



[BACK TO TIMBERFRAME](#)

HIGH-CAPACITY

Robotic Fabrication

For timber and mass timber

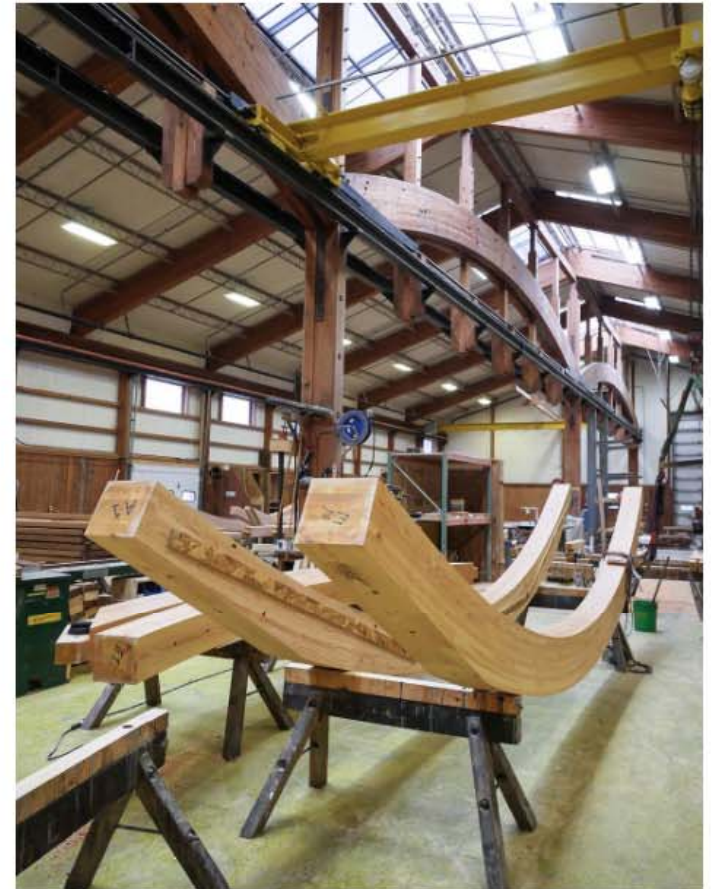
R.W Kern Center
Hampshire College

Construction of the cross laminated timber frame.

OFF-SITE MANUFACTURING

The Craft of Timberframing

We've mastered the compound layout and cutting techniques that evolved from simple historic mortise and tenon to modern fasteners designed with engineered analysis. At Bensonwood we use off-site manufacturing to build all of our timberframes to ensure superior quality and craftsmanship. CNC timber milling machines rough-cut all joinery while a skilled timber framer then finishes each joint by hand. Our systems are continuously refined ensuring the best timber frame products available.



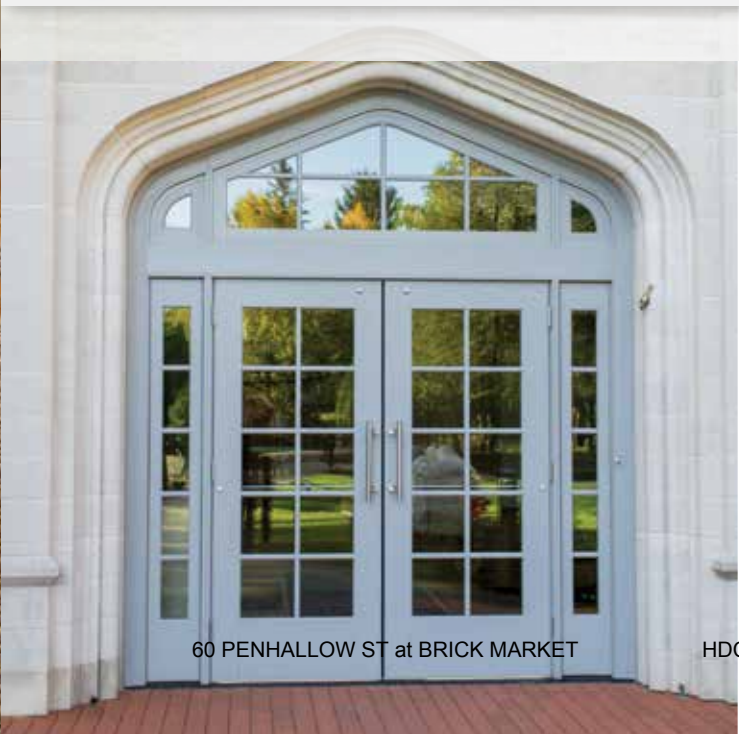


The Ultra Series

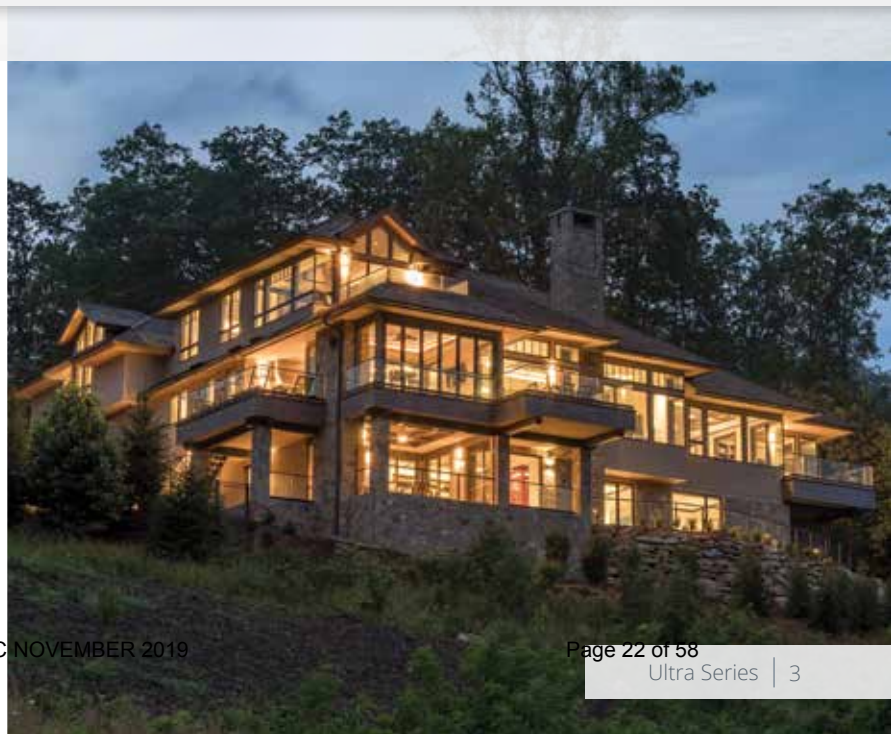
Kolbe's Ultra Series windows and doors can mimic the traditional style of wood windows and doors with a warm wood interior and intricate exterior trim details, or they can accommodate modern design needs. Choose from an extensive palette of exterior colors, interior wood species and finishes, divided lite profiles, and more.

The Ultra Series provides:

- Versatile styling, from traditional to modern architectural details
- Divided lite profiles & patterns; aesthetic & efficient glass choices
- Wood interior in familiar to exotic wood species
- Strong and durable extruded aluminum exterior
- A palette of 50+ exterior & 20 interior pre-finish choices



60 PENHALLOW ST at BRICK MARKET



HDC NOVEMBER 2019



Crank-Out XL Casement

Kolbe's crank-out XL casements fill massive openings for generous views and ventilation. A simple cranking operation opens and closes the window easily, despite the large size, with a choice of handle styles that fold down to avoid interference with curtains or drapes.



Crank-Out XL Casement Standard Features

- ▶ 2-1/4" thick sash
- ▶ Overall jamb width is 4-9/16" *(basic box width is 3-1/4" plus extensions)*
- ▶ Constructed of pine, with pine interior stops and wood mull casings on mullied units
- ▶ Exterior wood parts are treated
- ▶ Extruded aluminum exterior finished with a 70% PVDF fluoropolymer coating *(meets performance requirements of AAMA 2605)*
- ▶ Accessory grooves are integral to the extruded frames for the easy addition of accessories
- ▶ Energy efficient, insulating Solar Low-E glass
- ▶ Glazed to the interior with beveled wood glazing beads
- ▶ Interior insect screen with Clay-colored aluminum frame and BetterVue® fiberglass mesh
- ▶ Clay-colored nesting handle and locking lever with multi-point locking system
- ▶ Corrosion resistant, dual-arm operators with concealed, adjustable hinges *(On "W" series and wider. Dyad operators with concealed, adjustable hinges on units narrower than "W"; single-arm operators with Tri-Euro hinges for added support on segment head, half-circle top and impact units)*
- ▶ Heavy vinyl nailing fins with head drip caps*

NOTE: All measurements are nominal.

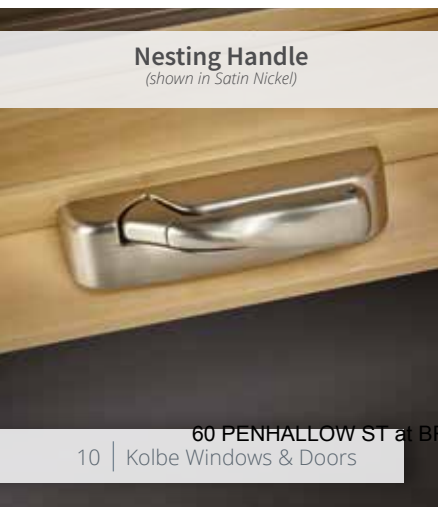
* Standard only on units without brickmould.

Hardware

- ▶ Nesting handle and locking lever† provide a sleek look and are unobtrusive. Available in Clay, White, Beige, Bright Brass, Antique Brass, Satin Nickel, Antique Nickel, Rustic Umber, Oil-Rubbed** or Matte Black.
- ▶ Metal Ashlar handle with multi-point locking lever. Available in White, Rustic Umber, Satin Nickel or Matte Black.
- ▶ Nesting handle with custodial lock prohibits unauthorized operation. Available in White, Beige, Rustic Umber or Matte Black.
- ▶ Universal design casement handle and lock are larger and offer ease-of-use for people with physical limitations. Available in White or Clay.

†Locking lever is not available on French casements.

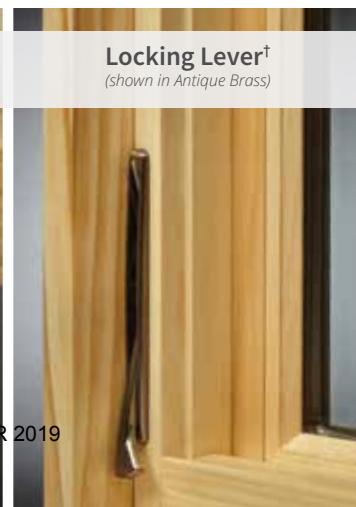
**The Oil-Rubbed finish is a living finish, which means that it will change appearance over time with use.



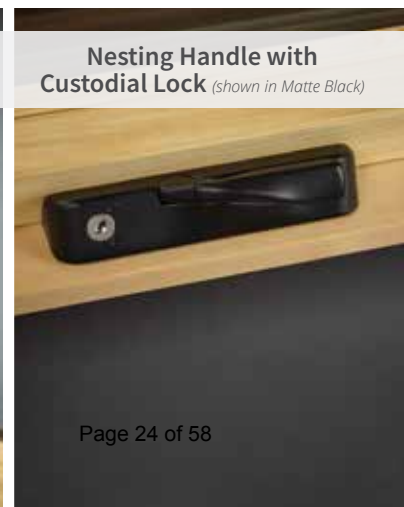
Nesting Handle
(shown in Satin Nickel)



Ashlar Handle
(shown in Rustic Umber)



Locking Lever†
(shown in Antique Brass)



Nesting Handle with Custodial Lock
(shown in Matte Black)



Crank-Out XL Casement Options

Glass (pg. 200)

- ▶ Solar Gain Low-E
- ▶ Solar Advanced Control Low-E
- ▶ Solar Control Low-E
- ▶ ThermaPlus™ Low-E
- ▶ Neat®
- ▶ Triple pane
- ▶ Patterned-, bronze-, or gray-lite
- ▶ Tempered or laminated
- ▶ Other options standard to the industry

Divided Lites (pg. 201)

- ▶ Performance divided lites with 5/8", 7/8", 1-1/8", 1-3/8", 1-3/4", 2-1/4" or 4-1/2" bars
- ▶ Grilles-in-the-airspace

Insect Screens

- ▶ Insect screen with aluminum or UltraVue® fiberglass mesh; frame available in White, Beige, Dark Bronze anodized, Clear anodized, or Coal Black
- ▶ Retractable insect screen kit with beveled or square cover (pg. 204)
- ▶ Wood wrapped insect screen frame (not available on radius top units)
- ▶ Brass insect screen with Brass frame (not available on radius top units)

NOTE: All measurements are nominal.

Other Options (not all options are available on all casement types; custom options are also available)

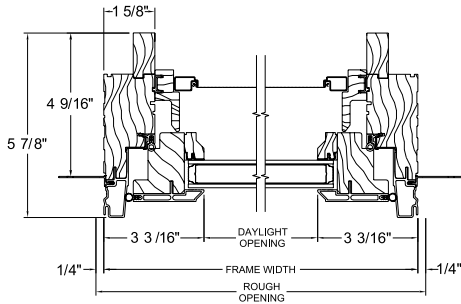
- ▶ French crank-out casements
- ▶ Other wood species and FSC®-certified wood (pg. 198)
- ▶ Interior prefinishing (pg. 198)
- ▶ Interior casing
- ▶ Ovolo or square profile glazing beads and interior divided lite bars (pg. 201)
- ▶ Prep for stool
- ▶ Extruded aluminum accessories applied to accessory grooves on the exterior frame (pgs. 206-212)
- ▶ Ashlar handle in Satin Nickel, White, Rustic Umber or Matte Black
- ▶ Single-arm operators with Euro hinges (meet emergency escape and rescue requirements on some "L" Series casements)
- ▶ Stainless steel exterior operator parts
- ▶ Extension jambs (up to 12" applied, over 12" shipped loose for field application)
- ▶ Galvanized steel installation clips
- ▶ Factory-installed Window Opening Control Device (WOCD) (pg. 203)
- ▶ High performance or impact performance modifications (pg. 205)

Universal Design Handle (shown in Clay)

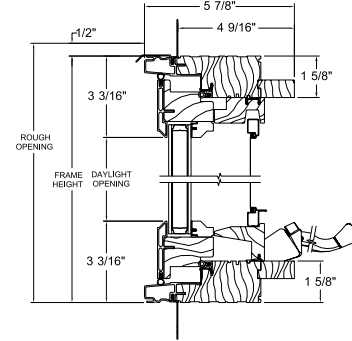


Crank-Out XL Casements | Double Pane

Horizontal Section

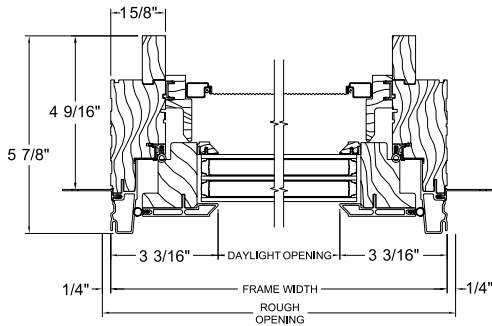


Vertical Section

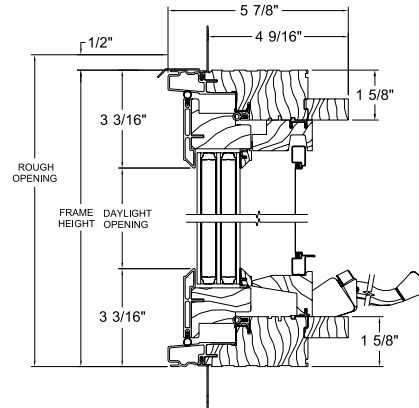


Crank-Out XL Casements with 4-9/16\" Jamb | Triple Pane

Horizontal Section



Vertical Section



NOTE: Drawings are not to scale. Brickmould is shown factory-applied. Brickmould may be shipped loose for field application. Some units are shown with optional drip cap or nailing fin. For Ultra accessory or application drawings, see pgs. 206-212. Additional and the most current drawings are available at www.kolbewindows.com.

Sterling Double Hungs

Sterling double hungs are made to blend seamlessly with the grandest décor. A patented interior wood cover conceals the jambliner, giving the windows a rich, all-wood appearance.

Patents: 7,296,381 | 7,448,164 | 8,196,355 | 8,429,856



Sterling Double Hung Standard Features

- ▶ 1-3/4" thick sash
- ▶ Overall jamb width is 4-9/16" (*basic box width is 4-9/16"*)
- ▶ Frame thickness is 3/4" at side jambs and head
- ▶ Sill thickness is 1-3/16"; slope is 14°
- ▶ Constructed of pine, with pine interior stops and wood mull casings on mullied units
- ▶ Exterior wood parts are treated
- ▶ Extruded aluminum exterior finished with a 70% PVDF fluoropolymer coating (*meets performance requirements of AAMA 2605*)
- ▶ Accessory grooves are integral to the extruded frames for the easy addition of accessories
- ▶ Energy efficient, insulating Solar Low-E glass
- ▶ Glazed to the interior with beveled wood glazing beads
- ▶ Wood interior head parting stop
- ▶ Clay-colored heavy duty Signature sash lock
- ▶ Spring-loaded block-and-tackle mechanical balances to carry the sash weight
- ▶ Concealed balance system
- ▶ Patented wood wrapped jambliner closure on the interior (*unless interior is prefinished white or primed, then jambliner will be white*) and extruded aluminum jambliner closure on the exterior hide balance system
- ▶ Heavy vinyl nailing fins with head drip caps*
- ▶ Pine-veneered head and seat boards; unique narrow mullions and cable support system on bay units

NOTE: All measurements are nominal.

* Standard only on units without brickmould.

Hardware

- ▶ Pick-resistant Signature or Spoon sash lock with a concealed locking system and tilt latches. Available in Clay, White, Beige, Brass, Antique Brass, Satin Nickel, Chrome†, Brushed Chrome†, Antique Nickel, Rustic Umber or Matte Black.
- ▶ Curved, square, or traditional style sash lift handles for ease of use. Available in Clay, White, Beige, Brass, Antique Brass, Satin Nickel, Chrome†, Brushed Chrome†, Antique Nickel, Rustic Umber or Matte Black.
- ▶ Custodial lock to prohibit unauthorized operation (*not pictured*).
- ▶ Universal design crank handle hardware kit offers ease-of-use for people with physical limitations. Available in White (*not pictured*).

† Chrome and Brushed Chrome finishes are only available on Signature sash locks and curved sash lift handles.

Signature Sash Lock

(shown in Antique Nickel)



Spoon Sash Lock

(shown in Antique Brass)



Curved Sash Lift Handle

(shown in Chrome)





Sterling Double Hung Options

Glass (pg. 200)

- ▶ Solar Gain Low-E
- ▶ Solar Advanced Control Low-E
- ▶ Solar Control Low-E
- ▶ ThermaPlus™ Low-E
- ▶ Neat®
- ▶ Triple pane
- ▶ Patterned-, bronze-, or gray-lite
- ▶ Tempered or laminated
- ▶ Other options standard to the industry

Divided Lites (pg. 201)

- ▶ Performance divided lites with 5/8", 7/8", 1-1/8", 1-3/8", 1-3/4", 2-1/4" or 4-1/2" bars
- ▶ Grilles-in-the-airspace

Insect Screens

- ▶ Full or half insect screen with aluminum frame and options for BetterVue® or UltraVue® fiberglass mesh or aluminum mesh; frame will match the exterior color of the unit
- ▶ Retractable insect screen kit with beveled or square cover (pg. 204)

NOTE: All measurements are nominal.

Other Options (custom options are also available)

- ▶ Other wood species and FSC®-certified wood (pg. 198)
- ▶ Interior prefinishing (pg. 198)
- ▶ Interior casing
- ▶ Ovolo or square profile glazing beads and interior divided lite bars (pg. 201)
- ▶ Prep for stool
- ▶ Class 5 balances available for commercial specifications or larger units
- ▶ Extruded aluminum accessories applied to accessory grooves on the exterior frame (pgs. 206-212)
- ▶ Extension jambs (up to 12" applied, over 12" shipped loose for field application)
- ▶ Segment head, cottage style segment head, half-circle top, and cottage style half-circle top units
- ▶ Factory-installed Window Opening Control Device (WOCD) (pg. 203)
- ▶ Sash limiters for safety
- ▶ Galvanized steel installation clips
- ▶ High performance or impact performance modifications (pg. 205)



A wood wrapped jamb liner closure on the interior (shown) and an extruded aluminum jamb liner closure on the exterior hide the PVC jamb liners.

Traditional Style Sash Lift Handle

(shown in Rustic Umber)



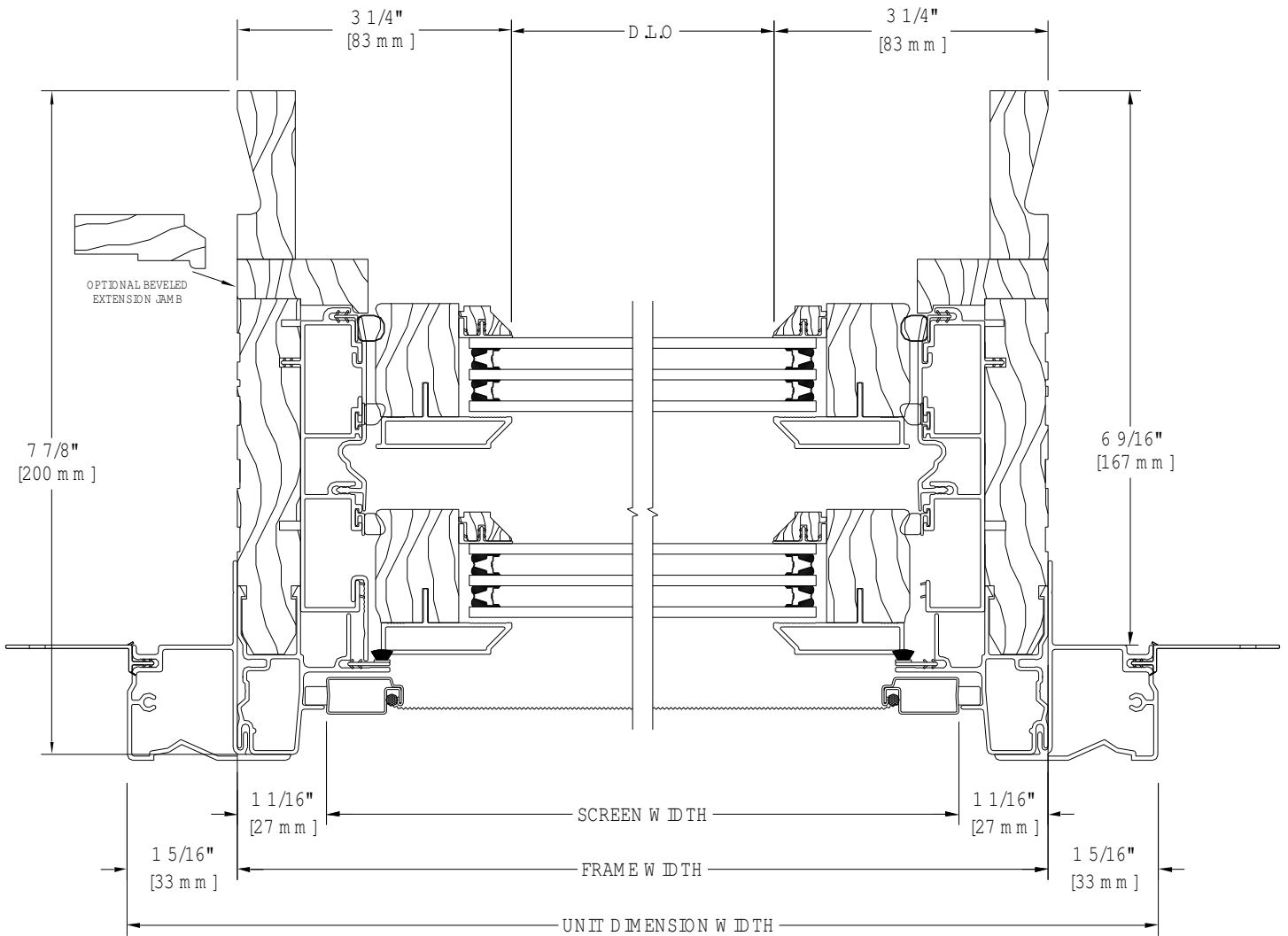
60 PENHALLOW ST at BRICK MARKET

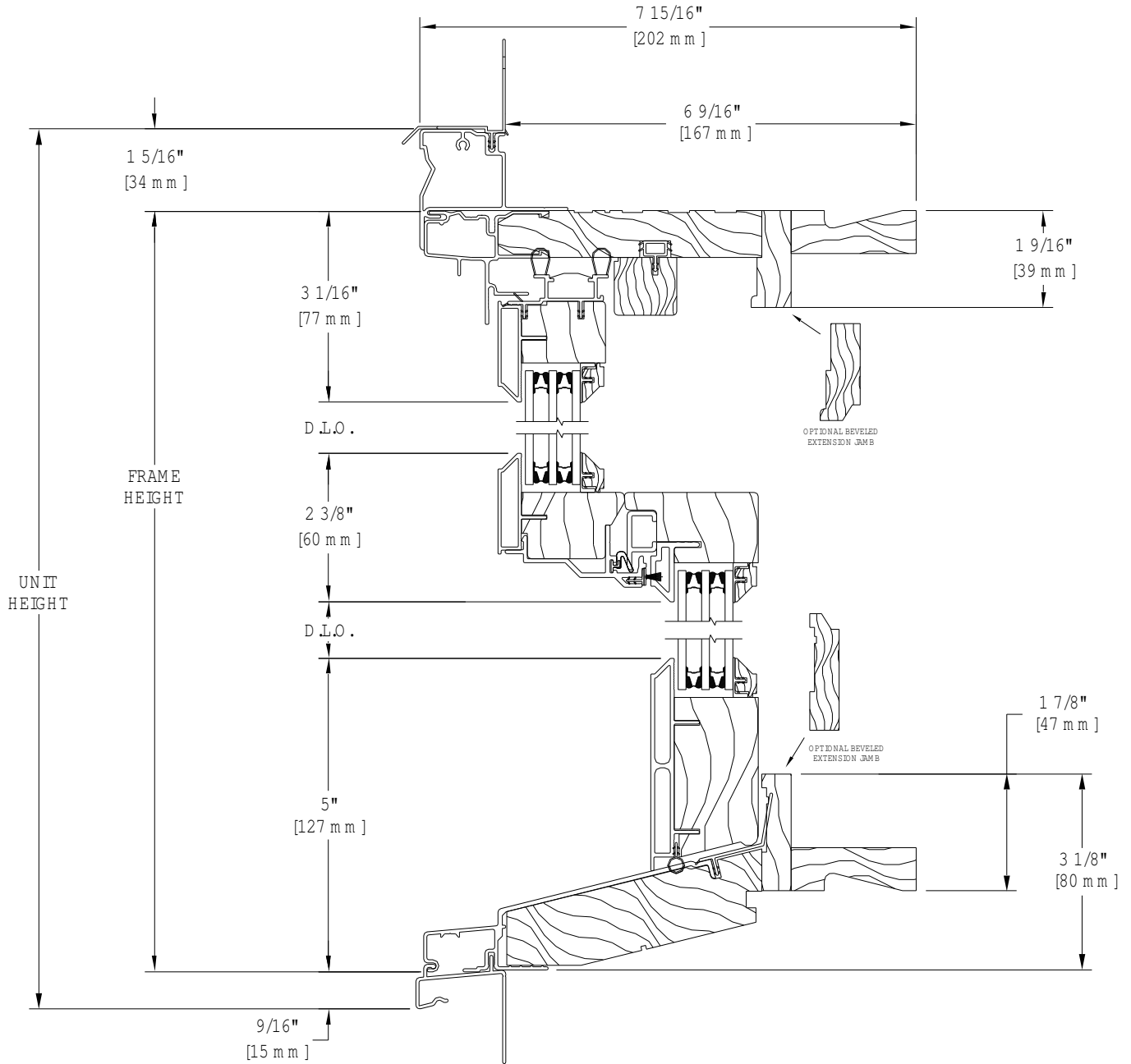
Square Style Sash Lift Handle

(shown in Satin Nickel)



HDC NOVEMBER 2019





Exterior Color Options

Ultra Series products are finished with a 70% PVDF fluoropolymer coating, which is the best choice for durability and resistance to chemicals, abrasion, corrosion, and weathering. It carries up to a 30-year warranty, which proves Kolbe's commitment to providing the very best. In addition to the standard colors, custom colors can be specified, as can 4 anodized aluminum finishes and 4 mica fluoropolymer finishes.



Some options for our products may have limited color offerings or may incur a nominal charge. Check with your Kolbe dealer for further details on pricing and availability. Printed images of exterior finishes may vary slightly from actual colors. Selections should be made based on actual color samples available from your Kolbe dealer. There is a "color range" with anodized colors. That is, there is an acceptable "light" to "dark" color range that can be experienced on any job. According to AAMA 611-98 specifications, Section 8.3, the range may be up to 5 Delta E's. We can provide from our anodized vendor color samples of this color range if requested. The color range may include (but are not limited to) variations of the parts, alloy variations and time in the anodizing process. This could mean that a sash part may appear slightly different in color than a frame part. This is/will be acceptable. Even the samples that may be provided may vary from the final product due to the variables. You must be aware of this as this will be considered acceptable.

Glass Options

Glass

Kolbe offers glazing options to provide optimum energy efficiency for the geographic region in which you live. Low-E is a “smart” coating that reduces energy transfer through the insulating glass unit. The result is reduced heating and cooling costs throughout the year. Low-E coatings also reduce the potential for condensation, as well as provide protection against fading of furniture, fabrics and carpeting.

Kolbe offers the following Low-E glass options, as well as many specialized options.

Solar Low-E

Suitable for most climates and meets most energy zone requirements. Solar Low-E glass is designed to reflect room-side heat back into the room during winter months. In summer, visible sunlight is allowed in while blocking most of the sun’s infrared heat energy. Kolbe’s standard.

Solar Gain Low-E

When the weather turns frigid, Solar Gain Low-E glass is the perfect cold remedy. It keeps homes warmer and more comfortable by blocking heat loss to the outside and letting the sun’s heat stream in to increase solar heat gain.

Solar Advanced Control Low-E

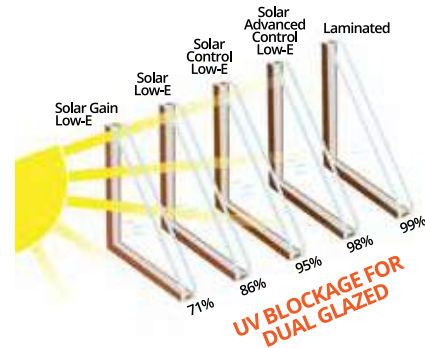
A tinted glass recommended for warm climates that achieves solar control over a wide range of the spectrum, while also helping to reduce glare.

Solar Control Low-E

Offers an ideal balance of solar control and high visibility by blocking 95% of UV rays while maintaining the interior temperature.

ThermaPlus™ Low-E

An additional Low-E coating which helps to meet the strictest energy requirements by providing protection against heat loss and UV damage. Available with dual pane versions of Solar Low-E, Solar Control Low-E or Solar Advanced Control Low-E glass.



NOTE: Tested units include argon. The laminate has 1/4" inner pane. Based on Lawrence Berkeley Lab (LBL) Window 5.2 © 2003 analysis for classical UV transmission data.

Triple Pane

Provides a greater energy performing window that keeps indoor air warm and comfortable, prevents heat loss and lowers your heating bills. It is constructed with three panes of glass, thermal spacer bars and is available in Solar Low-E, Solar Gain Low-E, Solar Control Low-E and Solar Advanced Control Low-E glass.

Preserve® Film

A protective film that protects the glass surfaces from scratches during transit and construction, as well as reducing the time involved in job site clean-up.



Tinted, Colored or Patterned

Provides shading, privacy or visual interest.

Tempered

Standard in Kolbe doors to address safety concerns. Also available in window units to meet specific building codes.

Laminated

Benefits include safety, security, sound control and provides the ultimate in UV blockage.

Impact

Glazing utilized to withstand harsh environmental conditions, especially in coastal regions. Combined with an impact rated product, this glazing offers the highest level of security.

Neat®

Harnesses the sun’s UV rays to loosen dirt so water can rinse it away, leaving windows virtually spotless. A special sputter-coating process makes the glass ultra smooth, so the water “sheets off” more readily than it would on uncoated glass, allowing you to spend less time cleaning.

Not all glass is available on all products. Please contact your Kolbe dealer for product specifics. Neat and Preserve are trademarks of Cardinal IG. Low-E insulating glass with a stainless steel spacer bar carries a 20-year warranty. Not all glass options listed have the same glass warranty. Please contact your dealer for details.

Divided Lite Options

Expand the character of your home or project by adding one of our divided lite options to your windows and doors. Choose anything from a traditional, colonial-style pattern to a unique, custom design to accentuate the overall appearance of your project. Kolbe offers two types of divided lites for Ultra Series products: performance divided lites and grilles-in-the-airspace. As standard, wood bars have a beveled profile, however, an ovolo profile or a square profile is also available. Divided lite cross section drawings can be found on pg. 213.

Performance Divided Lites

Kolbe's performance divided lite (PDL) glazing system gives the appearance of true divided lites without sacrificing energy efficiency. Extruded aluminum bars are adhered to the exterior and pine bars are adhered to the interior of the single lite of insulating glass. Aesthetically pleasing spacer bars are installed within the insulating glass unit. Together, these bars create the illusion of true divided lites. PDL bars are available in 5/8", 7/8", 1-1/8", 1-3/8", 1-3/4", 2-1/4" or 4-1/2" bar widths. The exterior finish of the aluminum bars will match the exterior finish on the unit. Variations on the PDL option may include custom grille patterns, custom bar widths or no spacer bars. Some designs may have a composite material for the exterior PDL bar.



Beveled



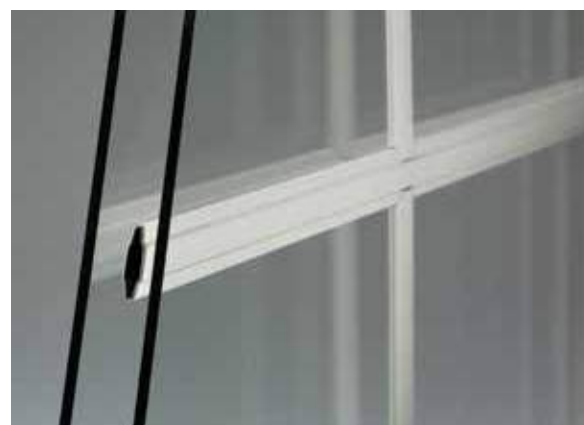
Ovolo



Square

Grilles-in-the-Airspace

Grilles-in-the-airspace are constructed with aluminum bars sealed between two panes of insulating glass, offering the look of divided panes while reducing cleaning time. For units with 7/8" insulating glass, contoured, 3/4" wide bars are standard in White, Beige, Sand, Rustic, Hartford Green and Chutney. Optional colors are light wood and dark wood faux finishes. Two-tone contour or flat grilles are available with either light or dark wood faux finishes to the interior and White to the exterior. Also available for 7/8" insulating glass are 5/16" wide Brass and Pewter pencil bars.



Glazing Beads & Muntin Bars

As standard, glazing beads have a beveled profile, but may also be ordered with an ovolo or square profile. Matching muntin bars are available on units with performance divided lites (PDL). Units will have beveled muntin bars on the exterior, regardless of which profile is chosen for the interior (See divided lite cross section drawings on pg. 213).



Beveled



Ovolo



Square

Exterior Trim Options

Ultra Series windows and doors are standard without brickmould. For a more distinctive look, numerous different extruded aluminum trim profiles are available. Various sill nosings can also be applied with brickmould to enhance the overall appearance and to create the perfect look. Custom brickmoulds and casings are available as well; talk to your local Kolbe dealer for more information.



1-15/16" brickmould



1-5/8" brickmould



2" flat casing



2" flat casing with backband



3-1/2" profiled brickmould



3-1/2" flat casing



3-1/2" flat casing with backband



Ogee casing



Bull nose casing



Historic brickmould



Pavilion brickmould



Stucco casing



Beaded casing



Beaded casing with backband



Chicago brickmould
(field applied only)

NOTE: Additional trim details are shown on pgs. 206-212.

WE ARE COMMERCIAL MARKETPLACE TESTED

NanaWall opening glass walls stand up to the daily commercial grind, as well as the challenges of wind, water, extreme temperatures, forced entry, impact, and structural load.

- Independent testing results are available for air, water, forced entry and impact, thermal performance, and structural load.
- STC ratings for sound attenuation are available for select systems.
- Swing panels are tested for 500,000 cycles and meet industry operational standards (AAMA920) for the SL45, SL70, HSW60, HSW75, PrivaSEE, and ClimaCLEAR systems.

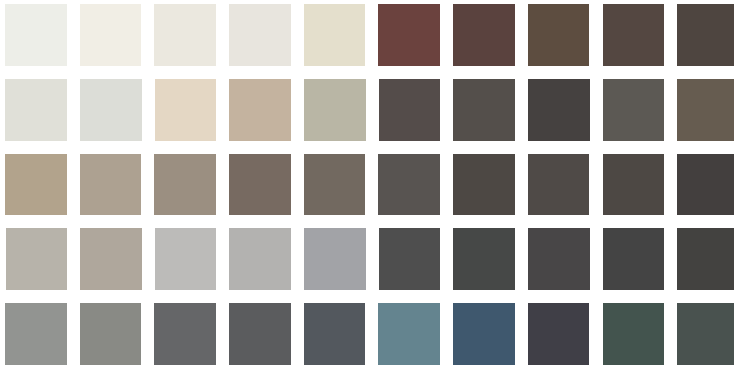


NanaWall Finishes, Glazing & Hardware Options

Standard 50 Finishes for Aluminum and Clad Systems

50 standard colors are available in powder coat and anodized finishes. *For accurate color swatch examples, please request our Powder Coating Finish Options brochure.*

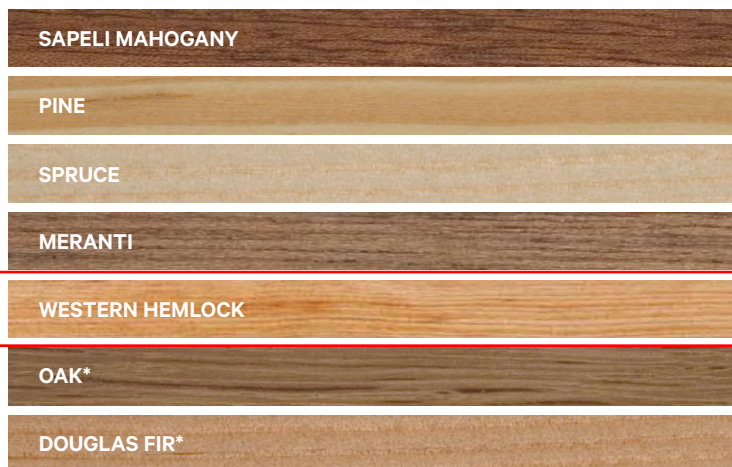
STANDARD POWDER COAT OPTIONS



Custom Color Matching Available
Non-metallic colors only, with upcharge.

Wood Systems Finish Options

Standard woods include Sapeli Mahogany, Pine, Spruce, Meranti and Western Hemlock. Other specialty woods are available upon request. Please consult NanaWall for additional costs. *For accurate wood representation, please request our Wood & Finish Options brochure.*



** available with upcharge.*

Hardware Options

The standard locking hardware is compatible with a wide array of commercially available handle sets and escutcheon plates to match any design style.



Black Titanium Finish



Brushed Satin Finish



Glazing Area Options

Glazing options include insulated, low-E, argon filled triple insulated low-E, impact, and other specialty glass.

WD66 — The Standard Wood Framed Folding System

Weather Resistant

Engineered to provide high weather resistance and structural performance. Excellent results were achieved with independent testing per AAMA/WDMA /CSA 100/I.S.2/A440, NAFS – North American Fenestration Standard. See Performance Testing Results pages.

For benefits of all NanaWall systems, see the “General Introduction” section. For features common to wood folding systems, see the “Wood Folding Systems” Introduction.

NFRC-Approved Thermal Performance

The WD66 has been rated, certified and labeled in accordance with NFRC 100 and 200; see the “Performance and Testing Results” section for more details. 1 1/8” (28 mm) and 1 1/2” (38 mm) triple glazing available. Energy Star values can be met with selected glazing.

Florida Approval

The WD66 is Florida statewide approved with Product Approval number FL 5586. This information with limitations can be viewed at <http://www.floridabuilding.org>.

Life Cycle Performance

The WD66 meets the German “DIN EN 1191/12400 Classification,” where a unit is tested after 20,000 opening and closing cycles and is still functional.

Option of Top Hung (WD66/o) or Floor Supported System (WD66/u)

The standard system is top hung, where the main weight is carried by the head track. The bottom track is a guide.

The floor supported system is recommended for applications where the vertical load bearing capability of the header is a concern. The main weight is carried by the floor track. The upper track is merely a guide.

Acoustical Performance

A five panel WD66 unit has been tested by an independent acoustic lab for acoustical performance. The WD66 with STC 38 laminated glass achieved STC and Rw values of 37.



General Description

The WD66 is the standard commercial and/or residential folding or paired-panel wood framed system designed to provide an opening glass wall or storefront for widths up to 39' (12 m); see Maximum Size Chart. It is available in various configurations utilizing one to twelve panels; see elevation drawings. The option exists for a swing entry/exit panel(s). Units can be either inward-opening or outward-opening; see section drawings.

Frame and Panels

The three-layer, cross grained, solid wood panel frame thickness is 2 5/8" (66 mm) or 3 1/16" (78 mm); see various frame profiles in section drawings. The aluminum head jamb of the WD66/o system is clad with matching wood fascia pieces on both sides. Standard woods are European Pine, Douglas Fir, Western Hemlock, Spruce or Meranti. Other woods are also available. Frames and panels have a sanding sealer or a base coat applied to be field finished by others; see "Wood Finish Options" in the General introduction. Panels are pre-assembled. All pins and screws to assemble the frame are provided. The Raised Sill (higher weather performance sill), thermally broken aluminum with 3/4" (18.5 mm) wide polyamide plastic, and various flush sills are available in a clear or dark bronze anodized finish.

Glazing

Units can be supplied glazed with 15/16" (24 mm) double insulating Low-E safety glass, clear double insulating safety, 1 1/8" (28 mm) and 1 1/2" (38 mm) triple insulating Low-E safety, 1/4" (6 mm) single tempered or laminated, other high performing safety glass such as Heat Mirror, acoustic, special tint, etc., or other glass on request.

Weatherstripping

All weatherstripping 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 of each pair of panels, for the WD66/o top hung system, a load-bearing, upper-running carriage and a lower-running guide carriage is attached between the two panels (shown in the section drawings). The double pair, twin-tandem, upper-running carriage is constructed to ensure even distribution of pressure on all four rollers.

For the WD66/u floor supported system, a floor supported, lower running carriage and an upper running carriage as a guide is attached between the panels. Rollers have sealed bearings and are coated with toughened Polyamide to ensure sound-free running and optimal resistance to extreme temperature.

Two to five patented clear or dark bronze anodized hinges

per connection are provided to connect panels together and to connect panels to the frame.

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 flat handle on the inside only.

If there is a **swing panel**, there are the following hardware options on the primary swing panel:

1. Multi-point Locking. Consisting of lever handles on both sides, a 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 a concealed flush bolt that operates the rods at the top and the bottom. Available with profile cylinder or with SFIC adapter.

2. Deadbolt Lock. 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. To keep the panel closed, a door closer should be field installed, but please note that a door closer can only be installed for 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.

For a unit with **no swing panel**, on the folding pair to be opened first, provided is two point locking hardware consisting of top and bottom Polyamide capped locking rods operated by a 180° turn of an L-shaped handle for an inward opening unit and a flat handle for an outward opening unit on the inside. In both cases, there will be a flat handle on the outside. Lockable with a lockset. Turn of key or thumb turn operates lock. Please note that for an outward opening unit, locking from the inside will need to be with a key that may not meet egress requirements.

For a unit where locking/handles on the 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 flat handle on the inside only.

Handle Finish Schemes:

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

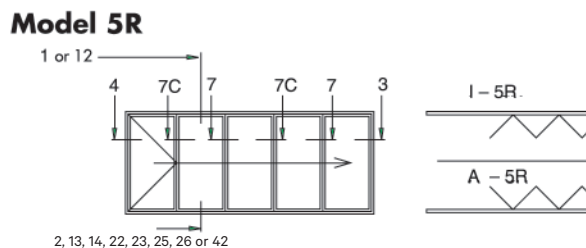
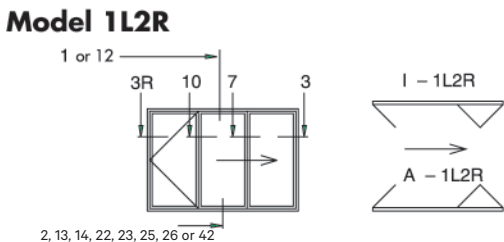
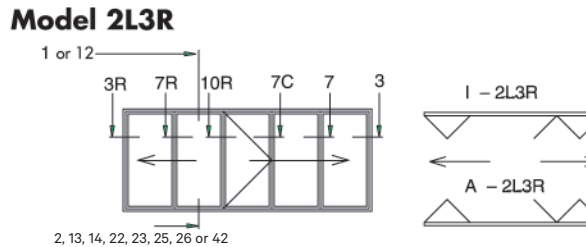
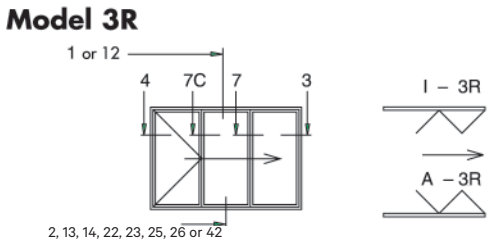
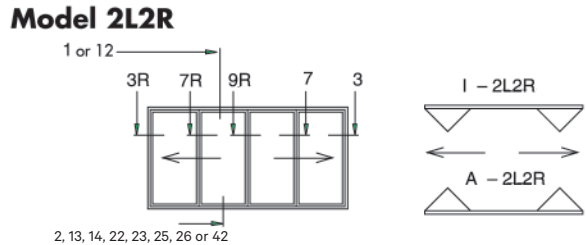
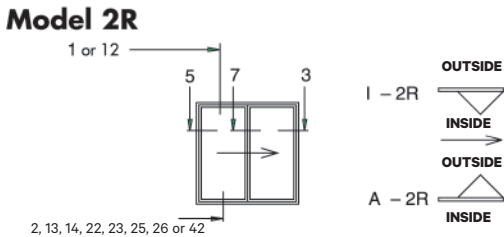
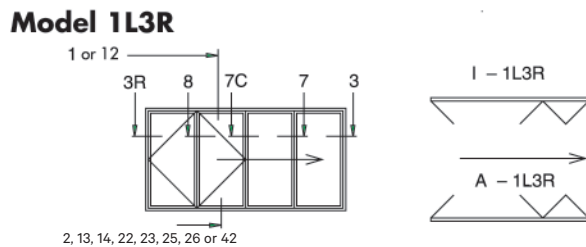
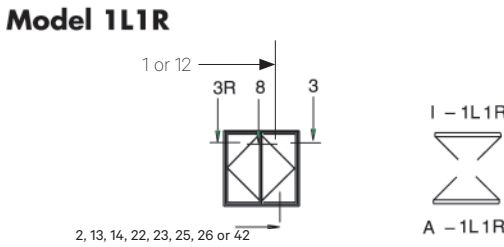
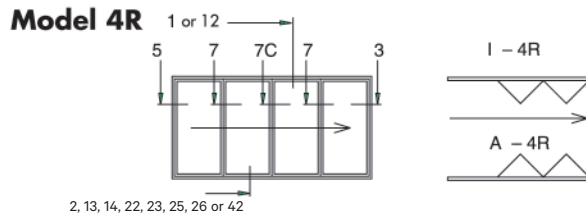
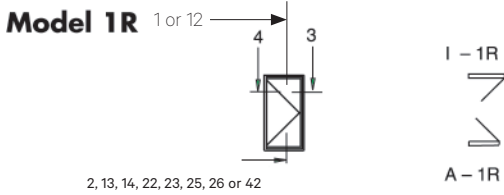
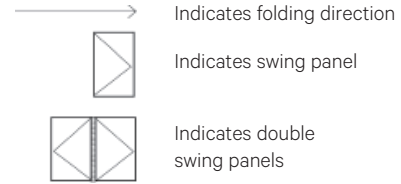
Push/pull handles are in brushed stainless steel.

Optional – Brass lever handles in oil rubbed brass or satin nickel, and flat handles powdercoated dark brown or silver gray.

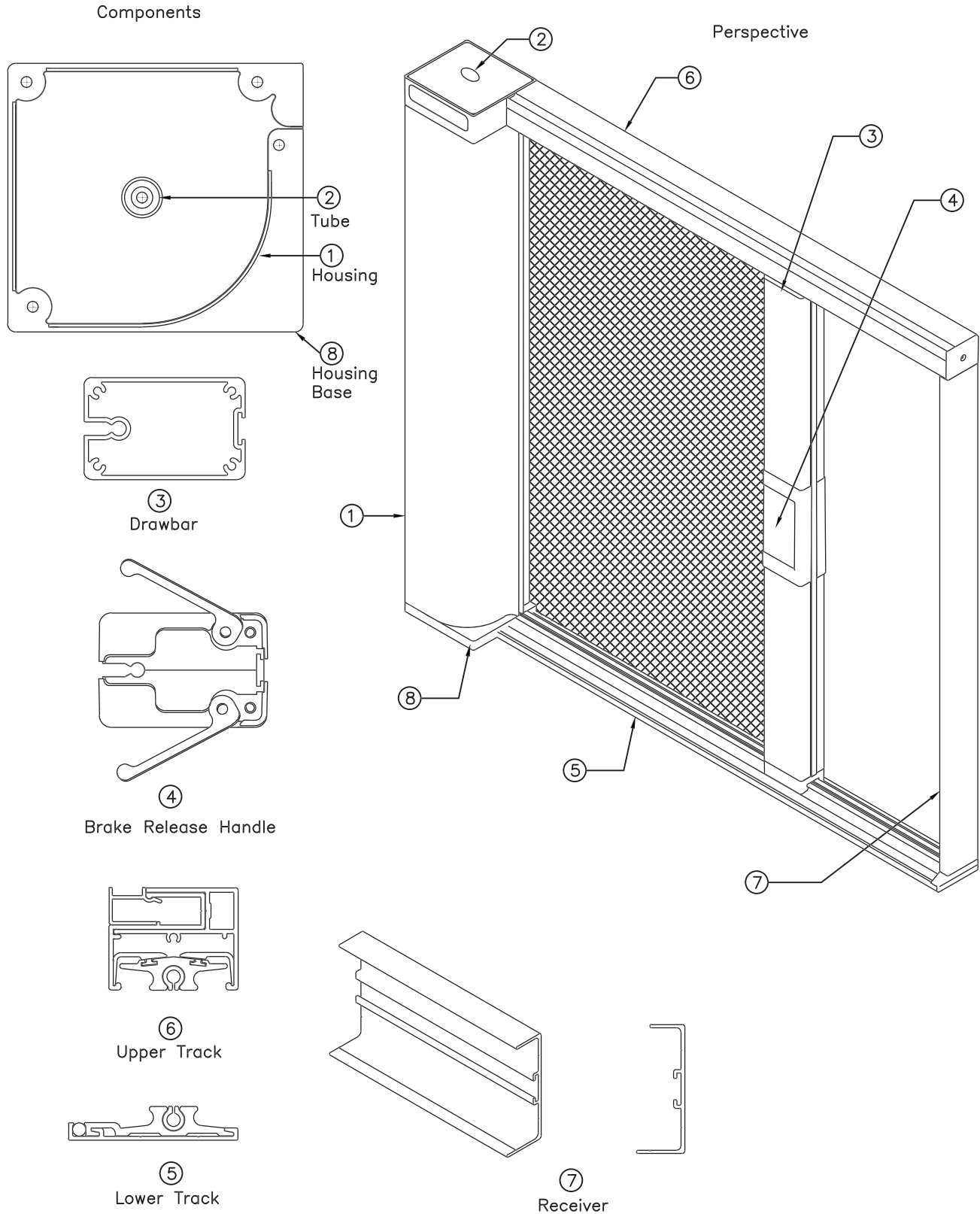
Standard Configurations Possible for Both Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Right (looking from inside)

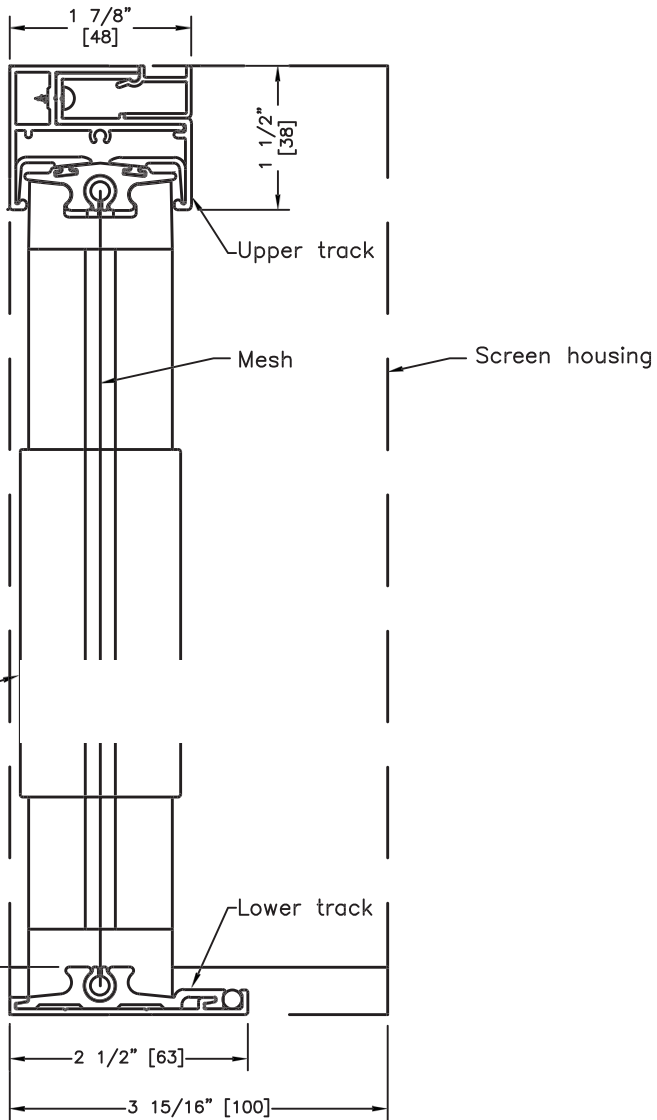
Shown to right of each elevation are horizontal cross-section schematics of the folding operation of the panels. Shown are schematics for both inward (“I”) and outward opening (“A”) units with the upper part being the outside and lower part being the inside as shown on Model 2R below. For inward opening section details, look at details with “.O” suffix and for outward opening section details, look at details with “.I” suffix on the following pages for each system.



Typical Screen ONE XL Panel Components



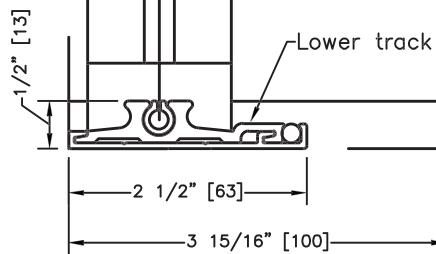
Detail 1
Head Track



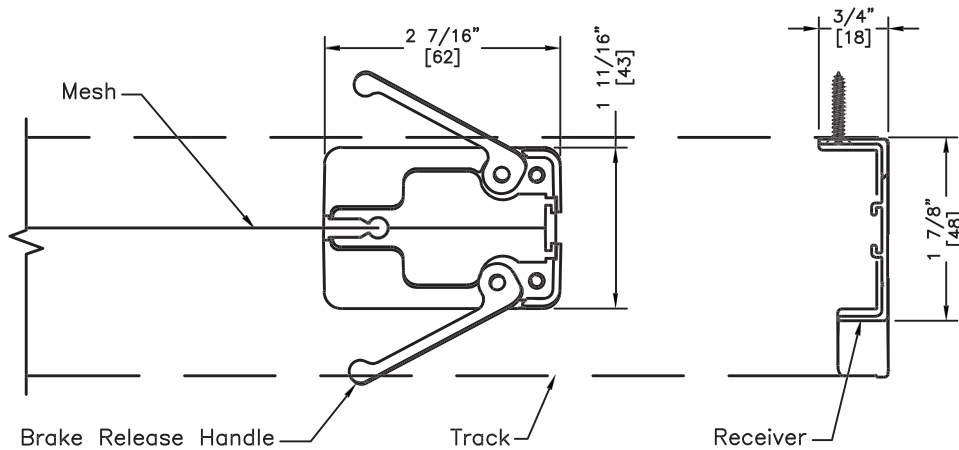
Detail 2
Bottom Track

Brake Release Handle

Typical NanaWall Unit
Here



Detail 4
Screen Panel meeting
Right Side Jamb



NanaWall Swing Doors

NanaWall Swing doors are available as single doors or double French doors. Very narrow stiles and rails are possible.

NanaWall Swing doors use exactly the same profiles and hardware as the matching NanaWall folding system. Hence, the same size charts, glazing options, wood/finish options and finish hardware options as the matching NanaWall folding system are applicable.

The same testing performance results also apply (within a folding system, with an odd number of panels stacking to one side, the last panel is a swing door).

For aluminum-clad, wood framed French doors, see WA67.

For wood framed French doors, see WD66 and WD65.

For standard aluminum framed French doors, see SL45.

For thermally broken aluminum framed French doors, see SL60, SL70 and SL80/81.

For Miami Dade / AAMA hurricane thermally broken aluminum framed French doors, see SL73.

For structurally glazed aluminum framed French doors, see SL82.

Coordinated Walls

Available are matching systems in aluminum-clad wood, wood, standard aluminum and thermally broken aluminum.

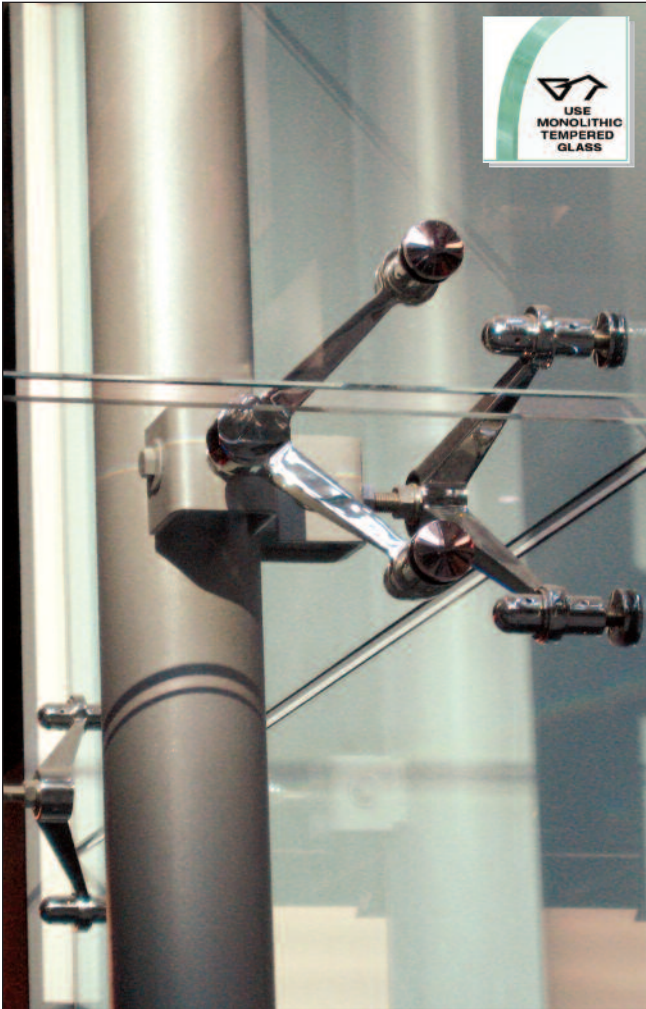
Depending on sizes and wind load requirements, matching systems can be mulled (with appropriate structural support) with folding and individual panel sliding system.

Fixed Windows and Storefront

Fixed units are available for transoms above a folding or individual panel sliding unit. Center lines can be lined up.

Sidelites are available with frame extenders so that horizontal glass lines are approximately the same.





- For Use With 1/2" to 1-1/16" (12 to 27 mm) Tempered Glass
- Spiders for Mounting to Posts, Walls or Fins
- Designed for the 'All-Glass' Look
- New Combination Glass Attachments – Same Attachment Can Be Used for Flush Mount or Cap Mount Applications – Rigid Head and Swivel Head Styles Available
- Made of 316 Alloy Stainless Steel in Two Attractive Finishes: Brushed or Polished

GLASS FITTINGS



We have expanded our line of Heavy-Duty Spider Fittings for 1/2" to 1-1/16" (12 to 27 mm) tempered glass wall and canopy applications. CRL now stocks fourteen designs of Heavy-Duty Spiders that can be incorporated into these systems. We have one, two, and four arm fittings that can be mounted to railing posts, structural walls or fins.

We offer two types of Combination Glass Attachments that can be used for any of these fittings. The Rigid Combination Attachment can be used for both countersunk (flush) mounting and cap (standard hole) mounting. This rigid head fastener would be used in areas where movement of the glass (deflection) needs to be minimized. The Swivel Combination Attachment can also be used for both countersunk (flush) mounting and cap (standard hole) mounting. This swivel head fastener allows for six degrees of rotation in any direction, which can be used in segmented radius applications or in areas where the glass will get a small amount of dynamic loading.

All CRL Spider Fittings and Glass Attachments are made of 316 Alloy Stainless Steel to provide a virtually maintenance free design and a beautiful finish to complement most any décor.

For more information or a quote on your next project, contact CRL Technical Sales at (800) 421-6144 in the U.S., (877) 421-6144 from Canada, or (323) 588-1281 International. Ask for Extension 7770. You can also send e-mail by logging on to crlaurence.com. From the home page click on Contact Us, and then click on Technical Sales for Architectural Metals Products.





GLASS FITTINGS

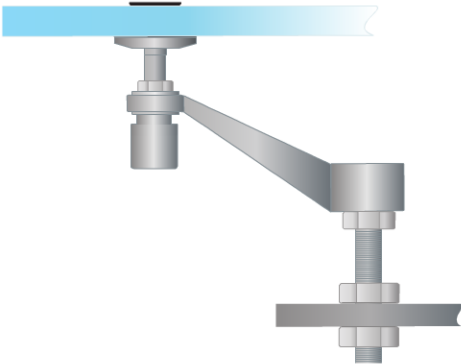
CRL Single Arm Heavy-Duty Post Mount Fitting

- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column



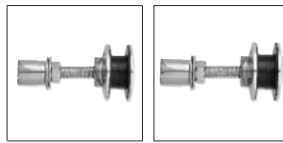
This Single Arm Fitting is used to attach a single glass panel to a structural end post. Comes with a 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and three matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fitting use Cat. No. PMH2BS or PMH2PS Fittings.

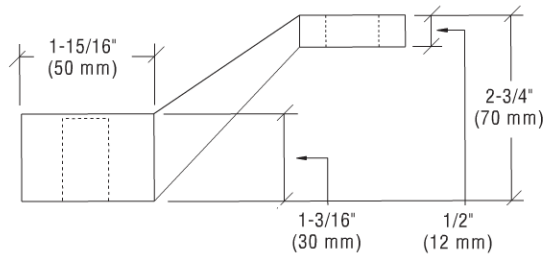
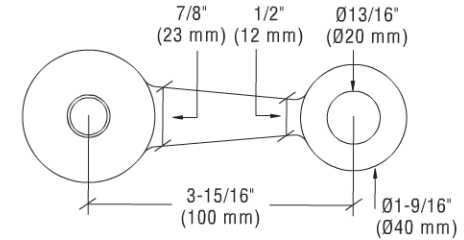
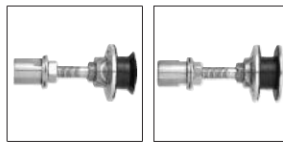


Glass Attachments Below Must Be Ordered Separately (See page 549H)

Rigid Type



Swivel Type



CAT. NO.	FINISH
PMH1BS	Brushed Stainless
PMH1PS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.

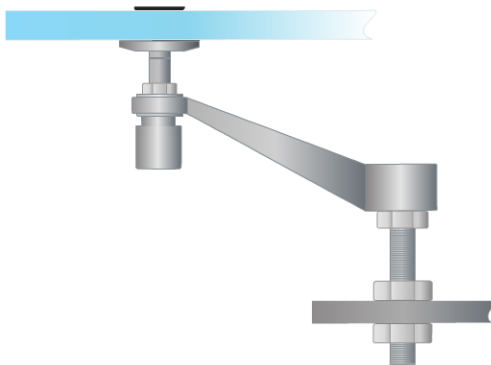
CRL Single Long Arm Heavy-Duty Post Mount Fitting

- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column



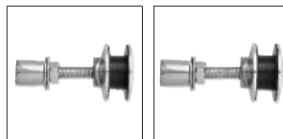
This Long Arm Fitting is used to attach a single glass panel to structural end post and match over "V" fitting arms. Comes with 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fitting use Cat. No. PMH2VBS, PMH2VPS, PMH3BS, PMH3PS, PMH4BS or PMH4PS Fittings.

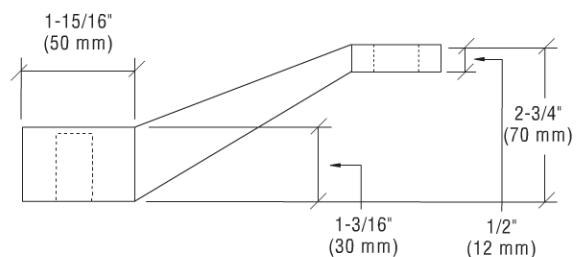
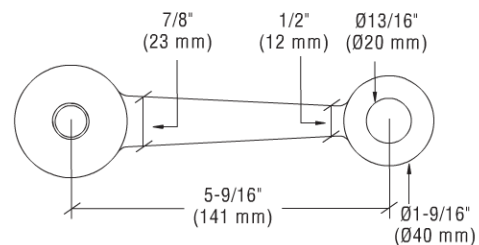
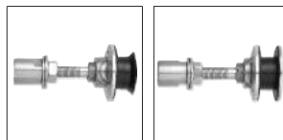


Glass Attachments Below Must Be Ordered Separately (See page 549H)

Rigid Type



Swivel Type



CAT. NO.	FINISH
PMH1LBS	Brushed Stainless
PMH1LPS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.

CRL Double Arm Heavy-Duty Post Mount Fitting

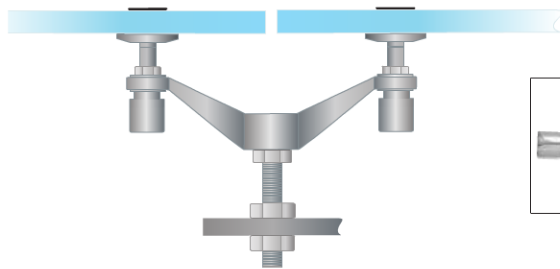
- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column



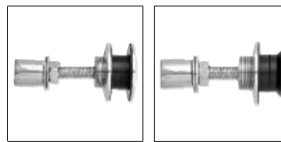
This Double Arm Fitting is used to attach two inline glass panels to a structural center post. Comes with 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and three matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fitting use Cat. No. PMH1BS or PMH1PS Fittings.

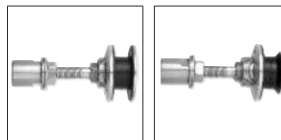
Glass Attachments Below Must Be Ordered Separately (See page 549H)



Rigid Type

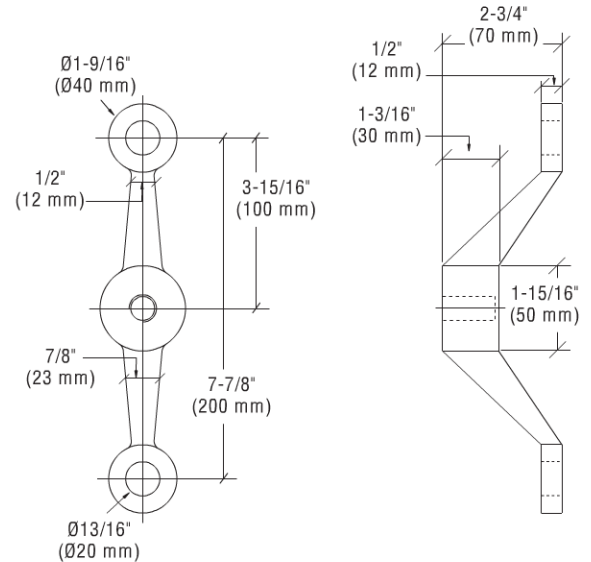


Swivel Type



CAT. NO.	FINISH
PMH2BS	Brushed Stainless
PMH2PS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.



CRL Double Arm "V" Heavy-Duty Post Mount Fitting

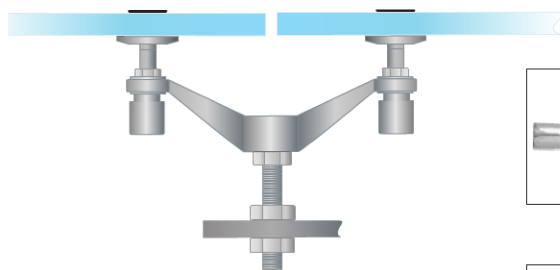
- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column



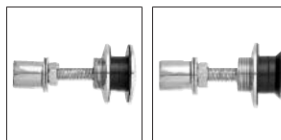
This Post Mount Fitting is used to attach a single glass panel to a structural end post, or two inline glass panels to a structural center post. Comes with 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and three matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fitting, use Cat. No. PMH1LBS, PMH1LPS, PMH3BS, PMH3PS, PMH4BS or PMH4PS Fittings.

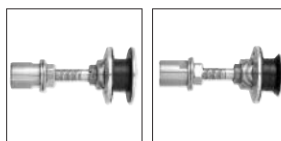
Glass Attachments Below Must Be Ordered Separately (See page 549H)



Rigid Type

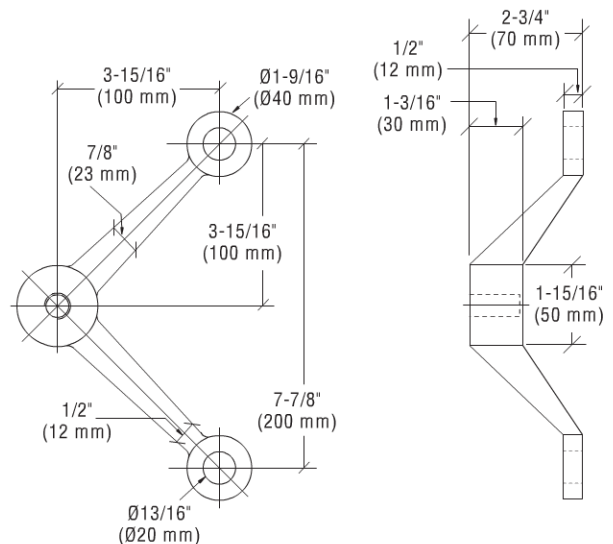


Swivel Type



CAT. NO.	FINISH
PMH2VBS	Brushed Stainless
PMH2VPS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.

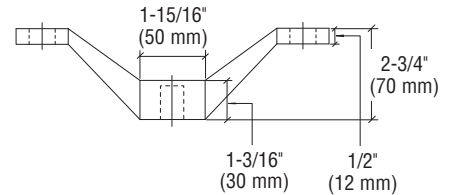


CRL Three Arm Heavy-Duty Post Mount Fitting

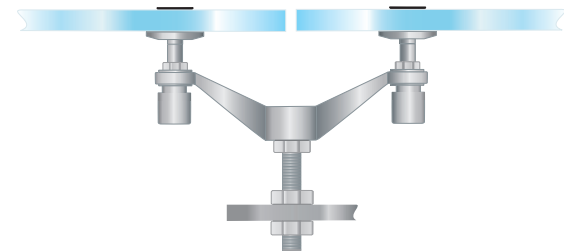
- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column

This Three Arm Fitting is used to attach three inline glass panels to a structural center post where they abut to a soffit corner. Comes with 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and three matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fittings use Cat. No. PMH1LBS, PMH1LPS, PMH2VBS, PMH2BVPS, PMH4BS, or PMH4PS Fittings.

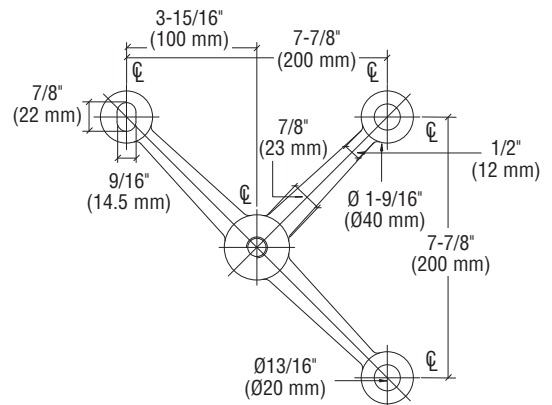
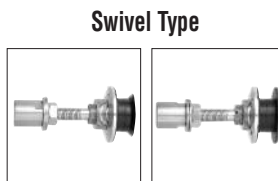
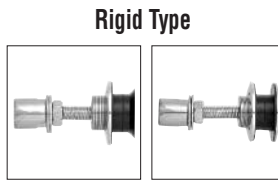


Glass Attachments Below Must Be Ordered Separately (See page 549H)



CAT. NO.	FINISH
PMH3BS	Brushed Stainless
PMH3PS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.

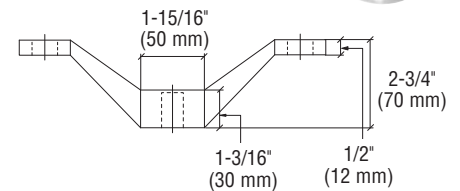


CRL Four Arm Heavy-Duty Post Mount Fitting

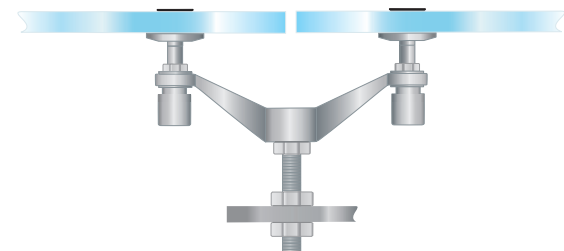
- For Use With Glass Up to 1-1/16" (27 mm)
- Complete With Hardware to Mount to Post or Column

This Four Arm Fitting is used to attach two inline glass panels to a structural center post. Comes with 16 mm x 99.5 mm (3-7/8") stainless steel threaded stud and three matching nuts with washers. See page 549H for Replacement Stud Set.

For companion fittings use Cat. No. PMH1LBS, PMH1LPS, PMH2VBS, PMH2VPS, PMH3BS or PMH3PS Fittings.

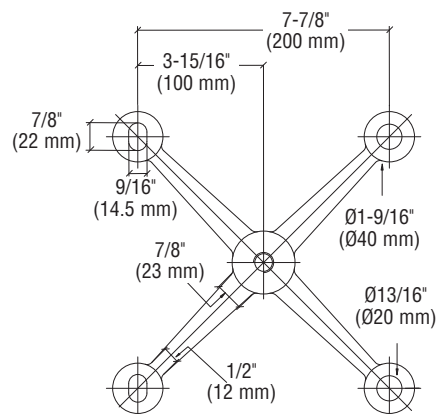
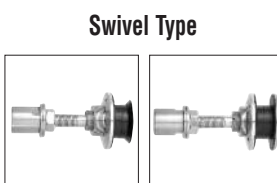
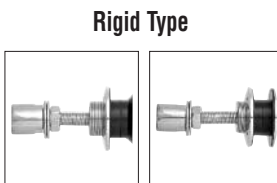


Glass Attachments Below Must Be Ordered Separately (See page 549H)



CAT. NO.	FINISH
PMH4BS	Brushed Stainless
PMH4PS	Polished Stainless

Minimum order: 1 each. All Spider Fittings can be combined for quantity pricing.



COPPER

ZAHNER®

STAR BLUE™
PATINATED COPPER

STAR BLUE™



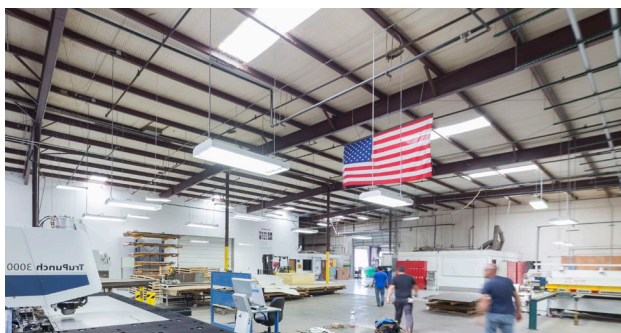
A Prestige Metal Material from Zahner

Star Blue copper is a lead-free material with custom patina on copper-alloy sheet metal. The sophisticated material is part of Zahner's line of raw patinated materials which are designed to age like tanned leather and vintage wine. The result is a look that can function both for contemporary as well as historic aesthetics.

Designed to Age and Endure

An iridescent surface, the Star Blue copper appearance benefits from a microfilm which develops on the exterior layer of the material. The oxidized layer is like a living protecting barrier which grows and evolves as it further oxidizes.

For exteriors, this appearance will change over time. If sealed and maintained, it is possible for a custom copper patina such as Star Blue to maintain its iridescent luster. As an interior surface, the Star Blue copper's unique finish can last indefinitely, especially if the material is sealed.



Meeting EPA Standards for Patinated Copper

Star Blue copper is produced in Zahner's award-winning, EPA compliant facility. Patina effluent is properly captured and disposed of in compliance with local, state, and federal regulations. This ensures the health and safety for the families who work at Zahner, as well as the community at large in which it is made.



Patina vs. Paint

Surface patina should not be confused with paint. Patina is a mineralized oxide on metal that is self-limiting (rust, for instance, is not self-limiting because it will continue to eat through a surface). It is a reaction to the elements that in turn provides a protective barrier from the elements. While paints will have a short lifespan, deteriorating over time, a patina on metal can last for generations.



Exterior and Interior Applications

Star Blue copper can be used on interior and exterior applications. The patina will not rub off. However, over time, the patina appearance will continue to change. As the mineralized patina reacts with the atmosphere, it will continue to change in tone and contrast as it further oxidizes.

COPPER

COPPER TILE
PATTERN &
SEAMING



COPPER - TILE PATTERN
ZINC - MATERIAL/COLOR



RHEINZINK-prePATINA®

schiefergrau | graphite-grey | ardoise



[3]

The Architecture of Metal Fabrics



Safety and Security

CKD metal fabrics are an ideal solution for safety and security concerns. For railing or balustrade infill they provide security while retaining a light and graceful presence. The material flexibility also facilitates its use on more complex, organic designs.

Product Specifications

Flexible, two directions

Material	Bronze
Open Area	37%
Weight	0.50 lbs/sqft
Max. width	12'

System Components

- Flat & angle
- Flats with clevis
- Flats, clevis & binding rod

Applications

- Mesh Wall Coverings
- Ceilings
- Mesh Partitions

North American Headquarters

North America
GKD-USA, Inc.

825 Chesapeake Drive
Cambridge MD 21613
Direct: 410.901.8429 or
410.901.8428
Fax: 410-221-0544
metalfabrics@gkdusa.com

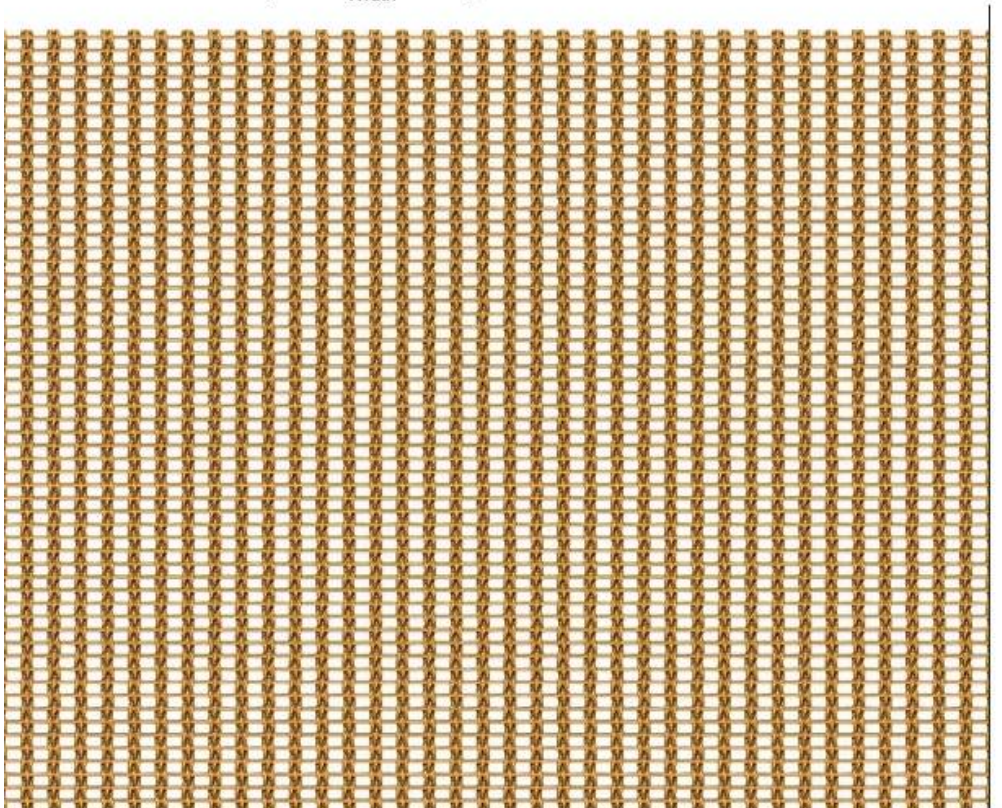


SUNSHADING

Please refer to
page 2 for Solar
Control Data



← Width →





GKD-USA offers a complete sunshade technical program. Our engineering team works with you to provide an assessment and application analysis to your specific need or project. GKD Metal Fabric Sunshading Façades offer significant energy saving, comfort, and a pleasant work environment by filtering light and providing transparent views to the outside.

North American Headquarters

North America
GKD-USA, Inc.

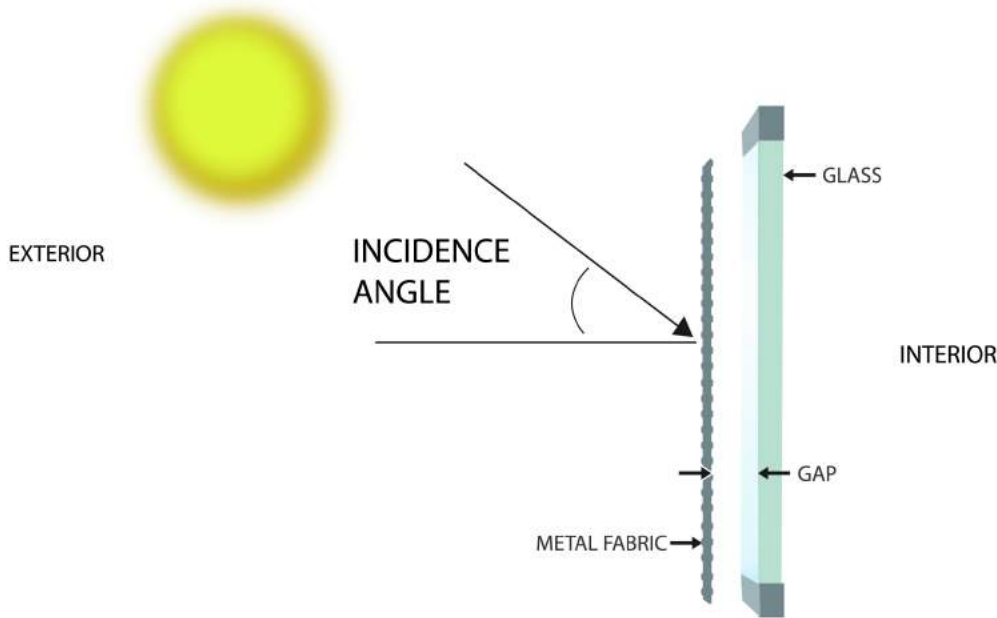
825 Chesapeake Drive
Cambridge MD 21613
Direct: 410.901.8429 or
410.901.8428
Fax: 410-221-0544
metalfabrics@gkdusa.com



Solar Control Data

Percentage of Visible Light Transmittance
Percentage of Visible Light Reflectance
Solar Gain Coefficient (SHGC)

Minimum 0.23, Maximum 0.41
Minimum 0.25, Maximum 0.33
Minimum 0.18, Maximum 0.30



SOLAR CONTROL DATA NOTES:

Test per EN 410 "Glass in building - Determination of luminous and solar characteristics of glazing"
SHGC per EN 13363-1 "Solar protection devices combined with glazing - calculation of solar and light transmittance"
Glazing system constants: Uglazing = 1.2 W/m²K, gglazing= 0.60
TVtot = Visible light transmittance
PVtot = Visible light reflectance
gtot = Solar Heat Gain Coefficient (SHGC)