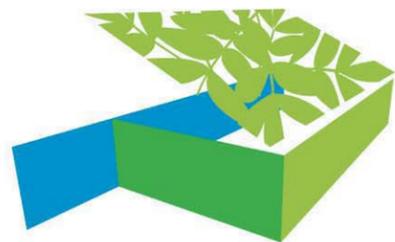


“Leading Everyone to an Abundant Future.”

The Maryland Team has three intertwined goals: to advance sustainable design and construction, to use nature as inspiration and mentor, and to demonstrate that solar technology is practical for everyday life. Solar Decathlon has given the team an opportunity for hands-on experience for students in the process of integrated design; to educate the public about sustainable design; and to promote the role of solar technologies in achieving energy independence. We want to change the rules by which buildings are designed and built, making visible the tools available to do so NOW.



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NREL RECORD “AS-BUILT” DRAWINGS
Submission January 9, 2008

School of Architecture, Planning and Preservation and the A. James
Clark School of Engineering

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C1.01b Competition Site Plan
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C2.02 Site Elevation
C2.03 Site Elevation
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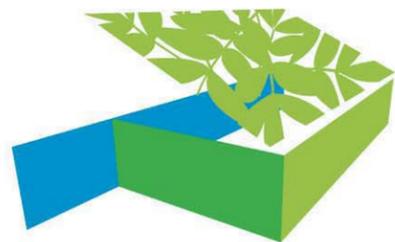
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AS1.01 Foundation
AS1.02 Framing
AS1.03 Exterior Skin / Interior Finish



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AS1.04 Doors & Windows
AS1.05 Exterior Skding
AS1.06 Solar Systems & Acc's.
AS1.07 Complete with Site

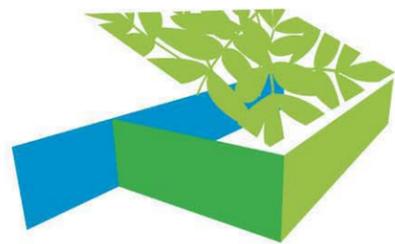
S0.1 Structural Notes
S0.2 Structural Notes
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S1.1 Foundation Framing Plan
S1.2 Ground Floor Framing Plan
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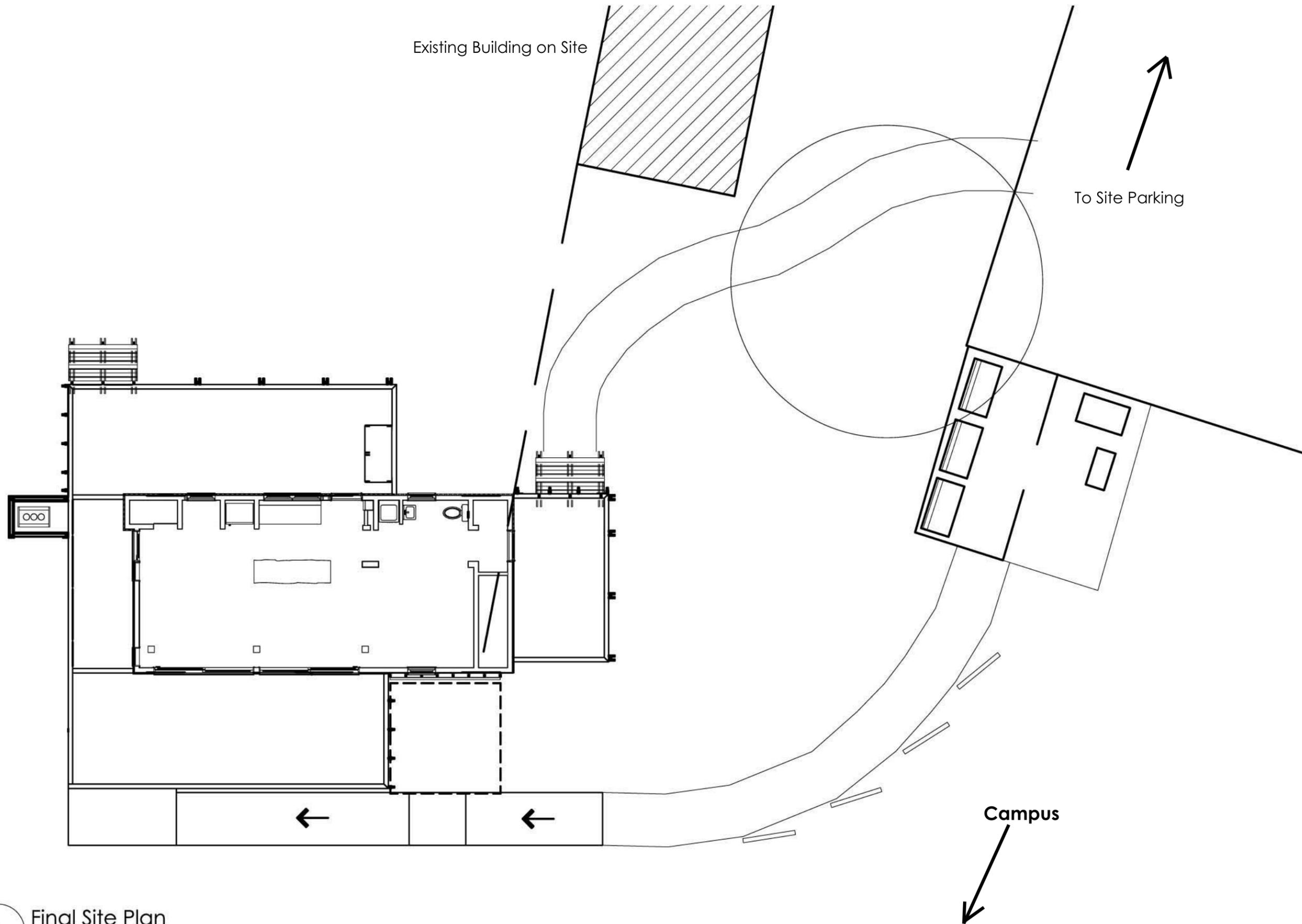
T1.01 Const. Site - Pre Mall
T1.02 Const. Site - On the Mall
T2.01 Assembly
T2.02 Assembly



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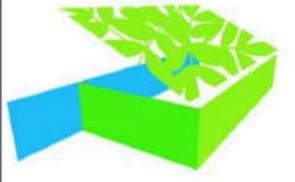


Existing Building on Site

To Site Parking

Campus

A Final Site Plan
NTS



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Final Site Plan

C1.01a



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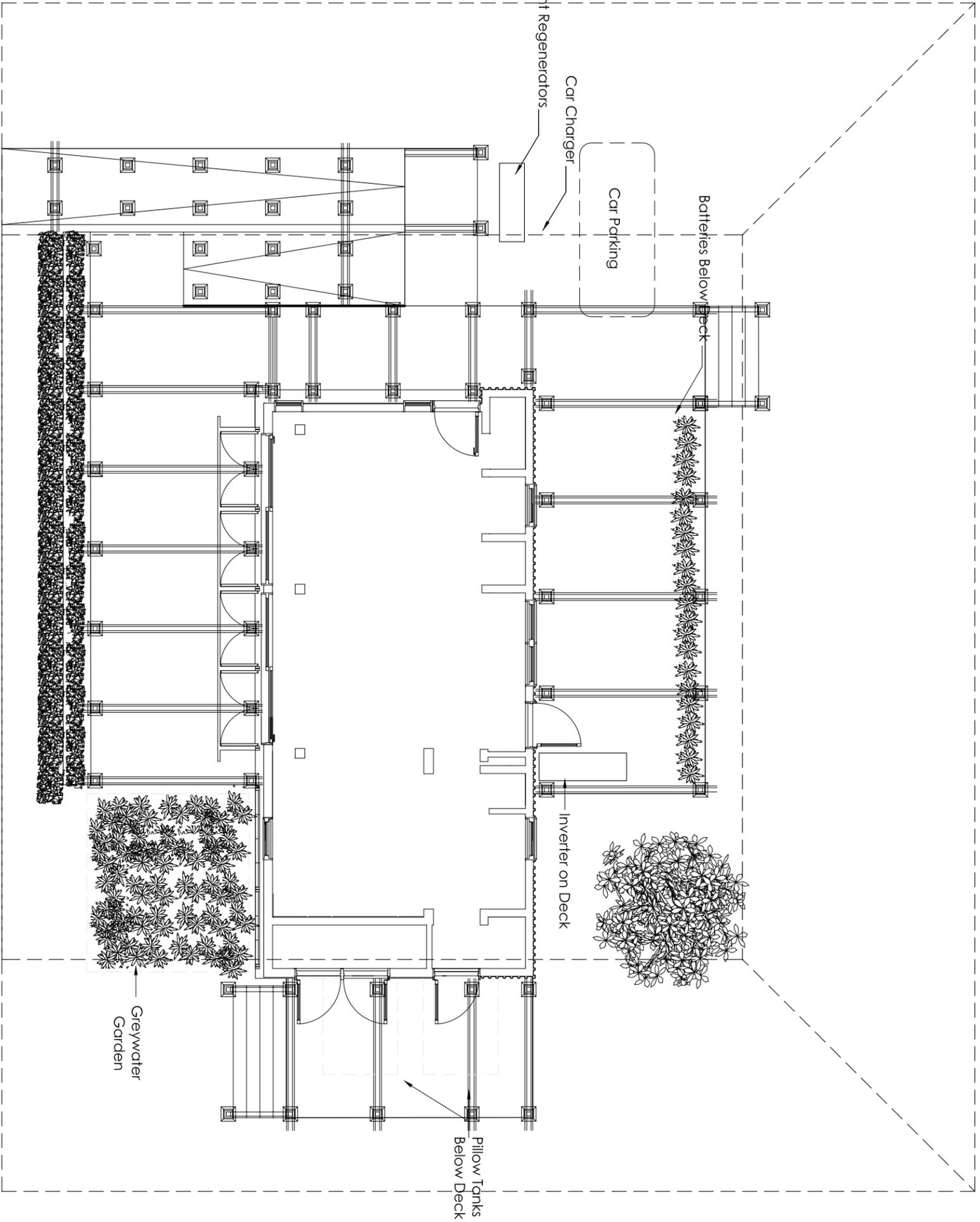


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Site Plan



A

Site Plan

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C1.01b



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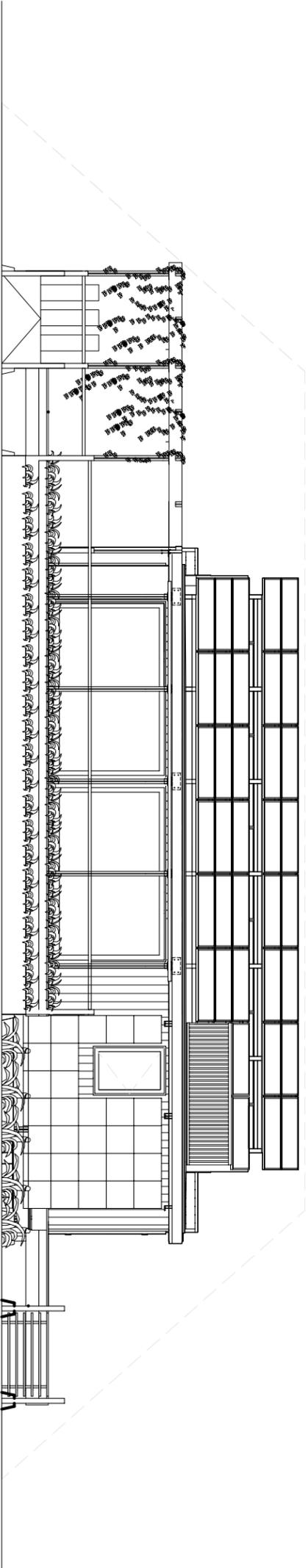
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South Site
 Elevation

C2.01





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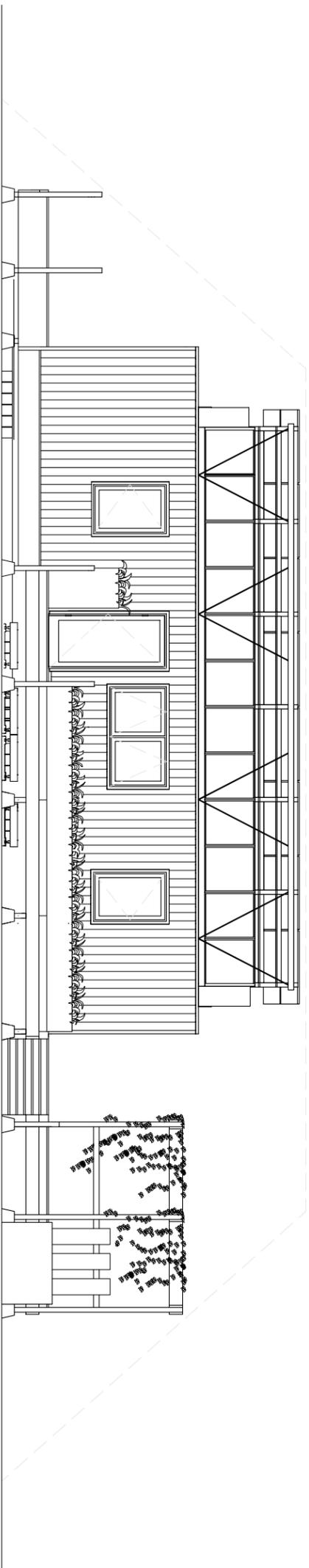
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North Site
 Elevation

C2.02





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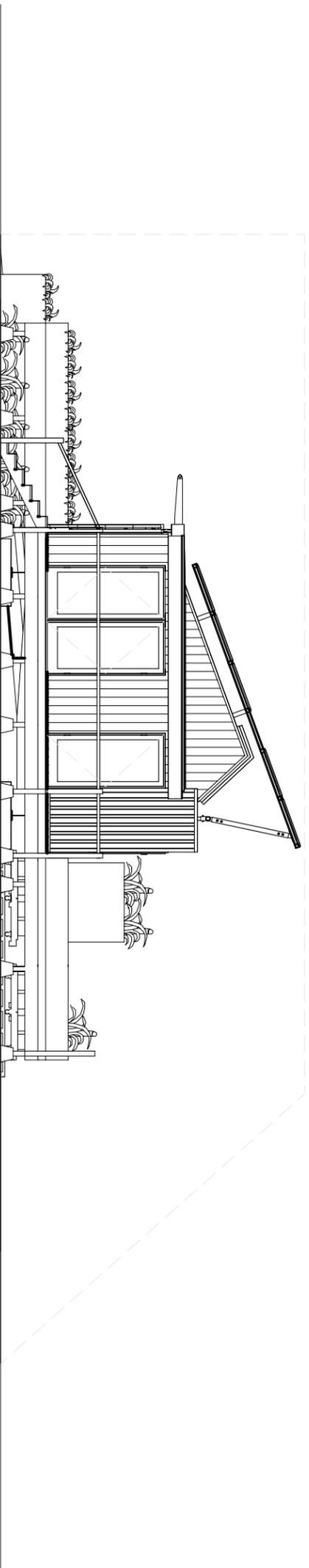
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East Site
 Elevation

C2.03



Native Plant Species	Botanical Name	Light	Characteristics
Perennials:			
Aster	Aster spp.	FS	Late Summer, Fall, attracts butterflies
Blackeyed Susan	Rudbeckia hirta	FS	Summer, attracts butterflies, beneficial insects and hummingbirds
Bleeding Heart	Dicentra eximia	PS	Spring, attracts songbirds and beneficial insects
Butterfly Weed	Asclepias tuberosa	FS	1-3" Summer, tolerates drought and attracts butterflies
Cardinal Flower	Lobelia cardinalis	PS to SH	2-4" Late Summer, Fall, attracts butterflies, songbirds and insects
False Dragonhead		FS	1.5-2" Late Summer, Fall, attracts butterflies, songbirds and insects
Goldenrod	Solidago canadensis	FS	1.5-3" Late Summer, Fall, Herb, attracts butterflies and songbirds
Jacob's Ladder	Polemonium reptans	PS to SH	.5-1.5" Spring, attractive flowers
Mallow	Hibiscus moscheutos	FS to PS	1-3" Summer, attracts butterflies and songbirds
Phlox, Summer	Phlox stolonifera	FS to PS	2-4" Spring, Aromatic, attracts butterflies
Snake Root	Eupatorium rugosum	FS to PS	2.5-8" Late Summer, Fall, attracts butterflies
Sundrops, Evening Primrose		FS	.5-3" Summer day/night, attracts songbirds and hummingbirds
Sunflower	Helianthus angustifolius	FS	1-5" Summer, attracts birds and butterflies
Vines:			
American Bittersweet	Celastrus scandens	FS to SH	45" May, June, attracts birds, showy flowers and fruits
Creeper, Trumpet	Campsis radicans	FS to PS	30" + Flowers fruit, Fall color, attracts butterflies and hummingbirds
Cross Vine	Bignonia capreolata	PS	30-45" Flowers fruit, Fall color, attracts butterflies and hummingbirds
Passon Flower	Maypops	FS	6-8" Blooms May-September, attracts butterflies
Trumpet Huneysuckle	Lonicera sempervivrons	FS to PS	6-12" Flowers fruit, Fall color, attracts butterflies and hummingbirds
Virginias Bower	Clematis virginiana	FS	6-12" Blooms July-September
Virginia Creeper	Parthenocissus quinquefolia	FS to PS	45" Blooms June-Aug. Attracts birds, showy fruit
Ornamental Grasses:			
Big Bluestem	Andropogon gerardii	FS to PS	2-6" Grows in clump, attractive winter foliage
Blue Switch Grass	Panicum spp.	FS to PS	1-3" Fall color, controls erosion, cut flowers
Bottlebush Grass		FS to SH	2-4" Becomes blood red in Fall
Broomsedge	Carex spp.	FS	1-3" Tolerates drought, reddish-tan fall color
Indian Grass	Sorghastrum nutans	FS	2.5-8" Natural Landscapes
Little Bluestem	Schizachyrium scoparium	FS	1.5-4" Natural Landscapes, Fall color
Purpletop	Tidens flavus	FS to PS	2-6" Flowers July-September
Red Switch Grass	Panicum spp.	FS to PS	3-6" Controls erosion, fall color, cut flowers
Spiderwart, Virginia	Tradescantia virginiana	FS to PS	2" Purple flowers Summer
Switch Grass	Panicum spp.	FS to PS	3-6" Controls erosion, fall color, cut flowers
Trillium	Trillium spp.	FS	2" White flowers Summer
Variegated Prairie Grass	Spartina pectinata	FS	4" Natural areas, low drought tolerance
Wild Oats	Chasmanthium spp.	FS to PS	2-5" Cut and dried flowers, spreads quickly



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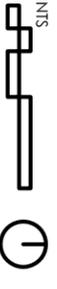
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Planting List

C5.01

Native Plant Species	Botanical Name	Light	Characteristics
Bracken Fern	<i>Pteridium aquilinum</i>	FS to PS	1-4" Host for several ant types
Christmas Fern	<i>Polystichum acrostichoides</i>	PS to SH	1.5-2" Grows in clumps, tolerates different soil types
Cinnamon Fern	<i>Osmunda cinnamomea</i>	FS to SH	2-3" Tolerates drought
Crested Wood Fern	<i>Dryopteris cristata</i>	FS to SH	1.5-2.5" Small rosette fronds
Ebony Spennwart	<i>Asplenium</i> spp.	PS to SH	.5-1.5" Evergreen, easily transplants
Hay-scented Fern	<i>Dennstaedtia punctilobula</i>	FS to PS	1-3" Can spread over larger areas
Interrupted Fern	<i>Osmunda claytoniana</i>	PS to SH	1-4" Grows in clumps
Marginal Shield Fern	<i>Dryopteris marginalis</i>	PS to SH	1-3" Grows in clumps, attractive, easily transplanted
Marsh Fern	<i>Thelypteris palustris</i>	FS to PS	2-3" Spreads
Nettled Chain Fern	<i>Woodwardia areolata</i>	PS to SH	1-2" Deciduous
New York Fern	<i>Thelypteris noveboracensis</i>	PS to SH	1-2.5" Tolerates drought, spreads and transplants easily
Rattlesnake Fern	<i>Botrychium virginianum</i>	PS to SH	1-2" Woodland, persistence, deciduous
Royal Fern	<i>Osmunda regalis</i>	FS to SH	1.5-3" Tolerates full sun when moist
Sensitive Fern	<i>Onoclea sensibilis</i>	PS to SH	1-3.5" Spreads in wet areas
Southern Maiden Fern	<i>Adiantum pedatum</i>	PS to SH	1-2" Grows in clumps, herbal uses
Toothed Wood Fern	<i>Dryopteris</i> spp.	PS to SH	1-2.5" Semi-evergreen
Virginia Chain Fern	<i>Woodwardia virginica</i>	PS to SH	3-6" Persistence, deciduous
Groundcovers:			
Ginger, Wild	<i>Asarum canadense</i>	PS to SH	1-1.5" Prefers moist acidic soils in full shade
Phlox, Moss Pink	<i>Phlox subulata</i>	FS	.5-2" Flowers, fruit, rock gardens, attracts butterflies
Stonecrop	<i>Sedum ternatum</i>	FS to PS	.1-1.5" Flowers, fruit, dry rocky places
Violet	<i>Oxalis violacea</i>	PS to SH	.5-1" Borders, rock gardens
Shrubs:			
Azalea	<i>Rhododendron</i> spp.	FS to PS	1-10" Some evergreen, flowers, requires acidic soils
Bayberry, Northern		FS to PS	5-10" Very aromatic fruit, attracts birds, tolerates salt
Bayberry, Southern		FS to PS	6-15" Adaptable to wet sites with poor drainage
Beautyberry	<i>Callicarpa americana</i>	FS to PS	6" Valued for its fruit
Ceanothus		FS to PS	3-4" <i>Americanus</i> is native, attracts hummingbirds and butterflies
Hydrangea	<i>Hydrangea quercifolia</i>	FS to PS	3-6" Showy flowers in Summer
Inkberry Holly	<i>Ilex glabra</i>	FS to PS	3-8" Evergreen, slow grower, black berries on females
Mountain Laurel	<i>Kalmia latifolia</i>	FS to PS	12-20" Flowers in May, pink and white
Summersweet Clethra		FS to SH	6-12" Fragrant, spikes of pink or white in July-August
Sweetshrub, Common		FS to PS	4-8" Flowers dark purple in Spring
Witch Hazel	<i>Hamamelis</i>	FS to PS	6-10" Fragrant yellow flowers



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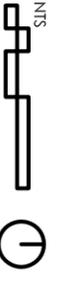
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Planting List

C5.02



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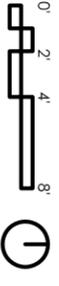


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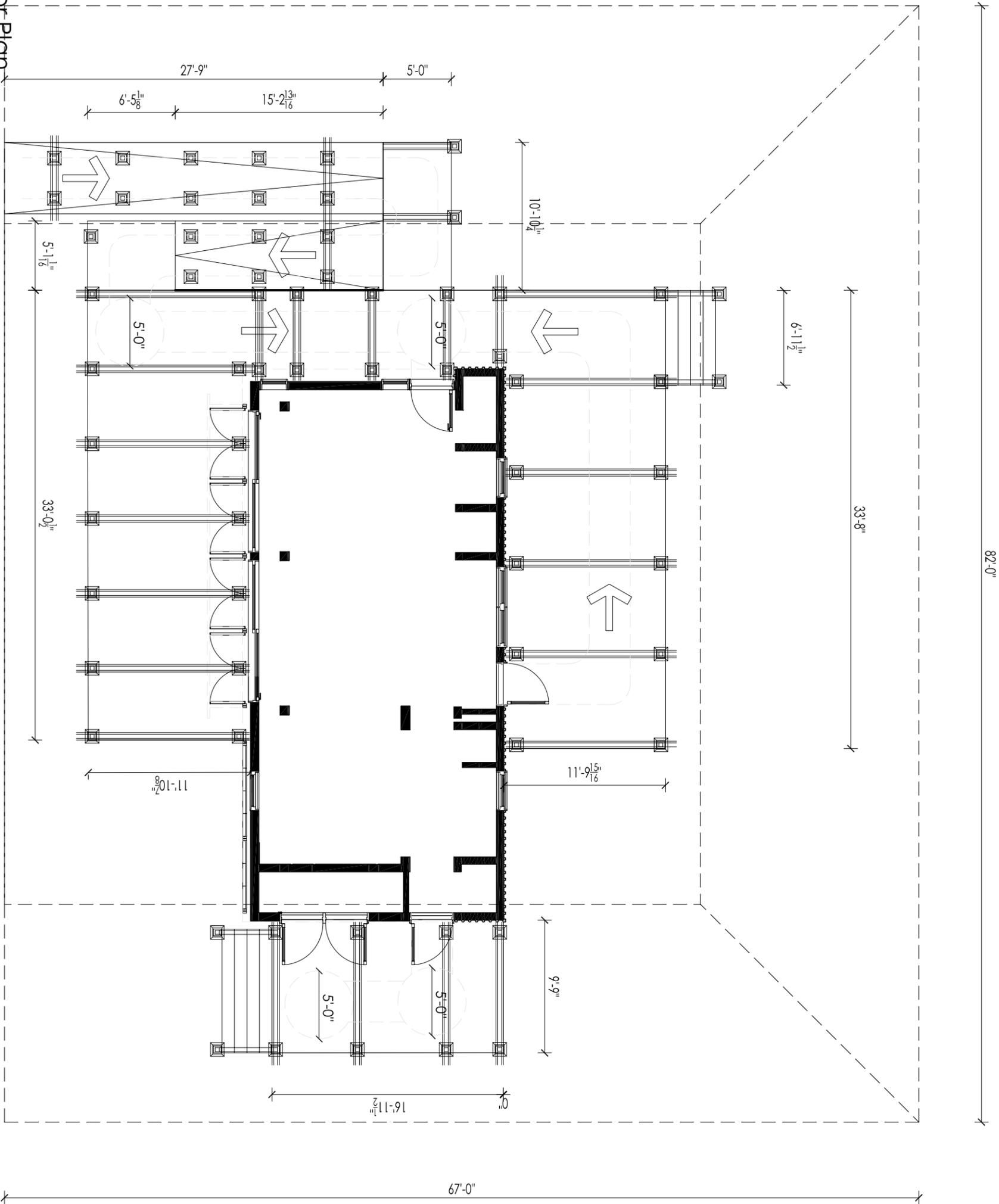
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ADA Floor
Plan

G1.02



A
ADA Floor Plan
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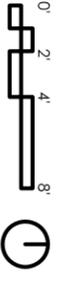


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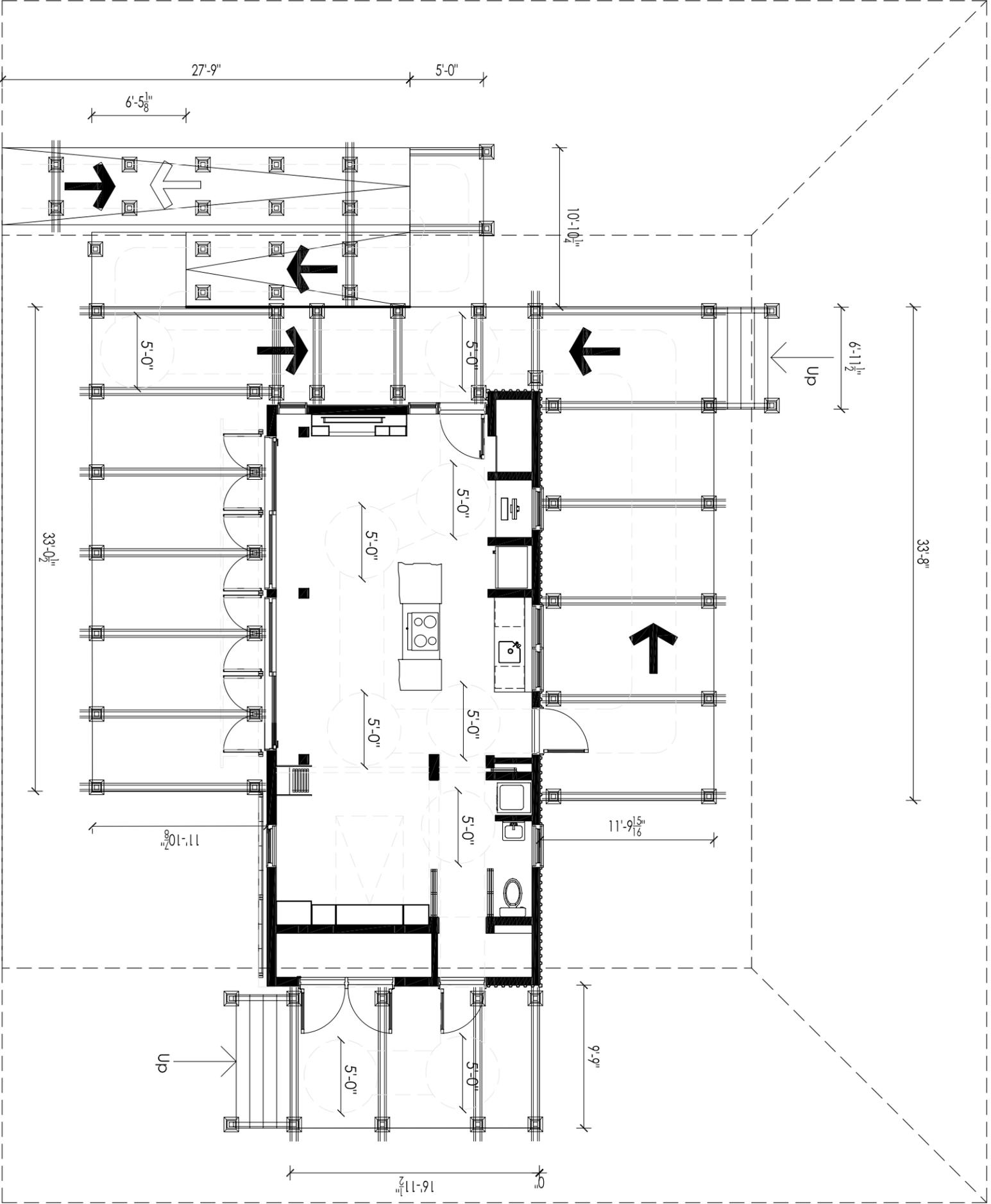
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ADA Tour
Plan

G1.03



A
ADA Tour Plan
1/8" = 1'-0"

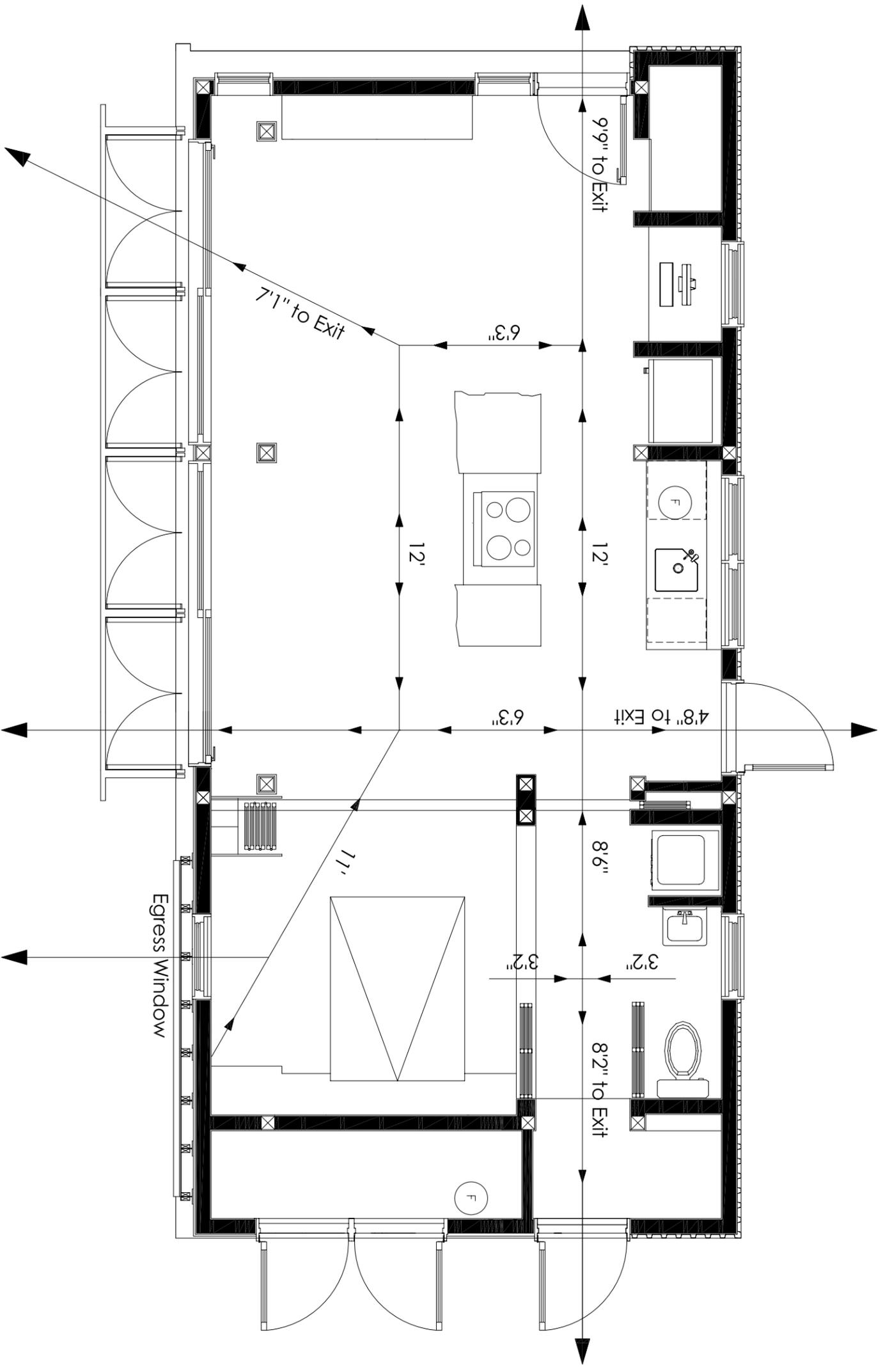


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Notes

- (F) Fire Extinguisher Located Under Kitchen Sink
- (F) Fire Extinguisher Located in Mechanical Room



A
Egress/Fire Protection Plan
1/4" = 1'-0"

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Egress
Plan

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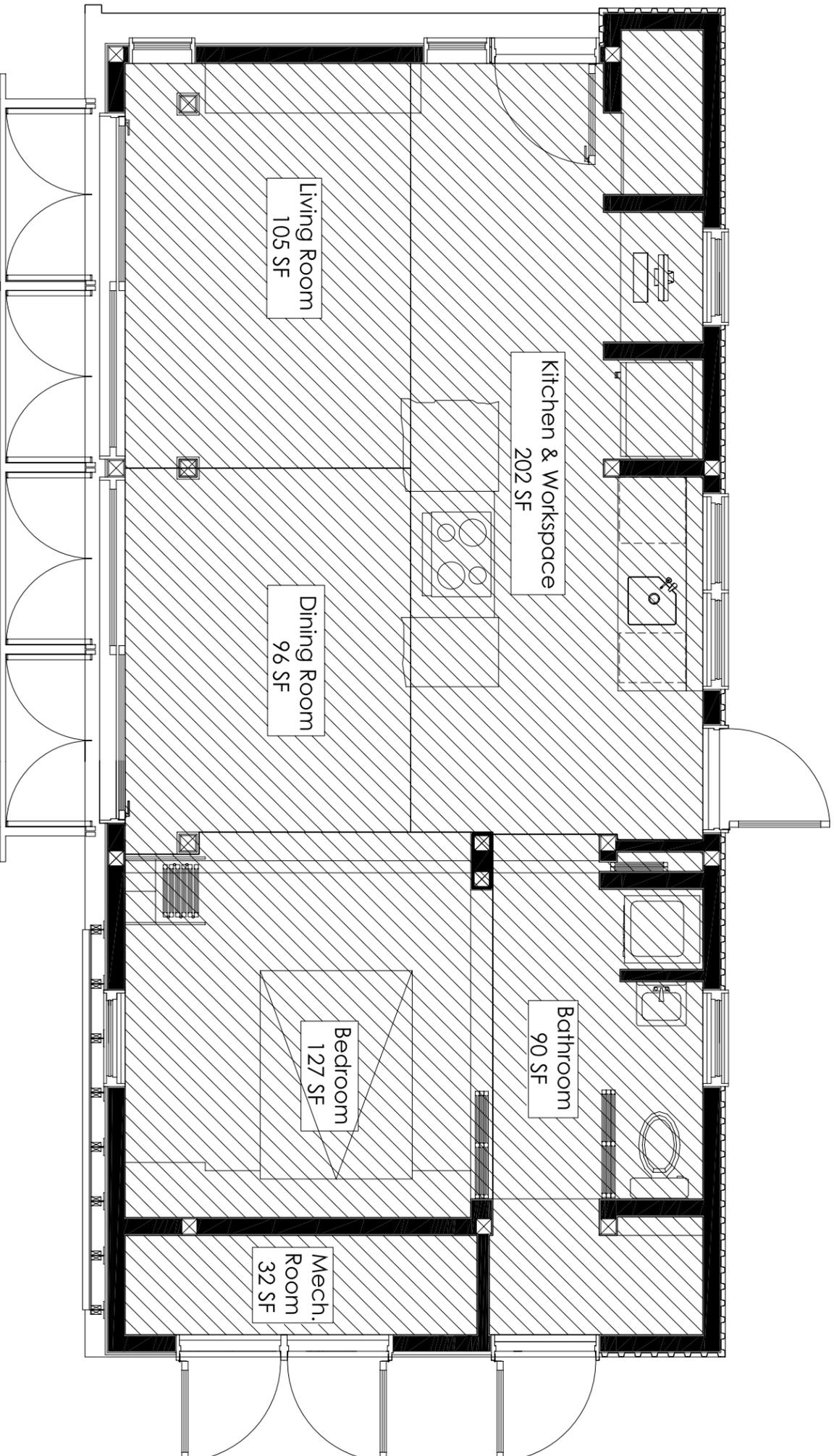
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Conditioned
Area Plan

G1.05

Room	Area
Living Room	105 SF
Dining Room	96 SF
Bedroom	127 SF
Bathroom	90 SF
Mechanical	32 SF
Total	652 SF



A
1/4" = 1'-0"
Conditioned Area Plan



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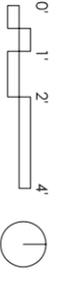


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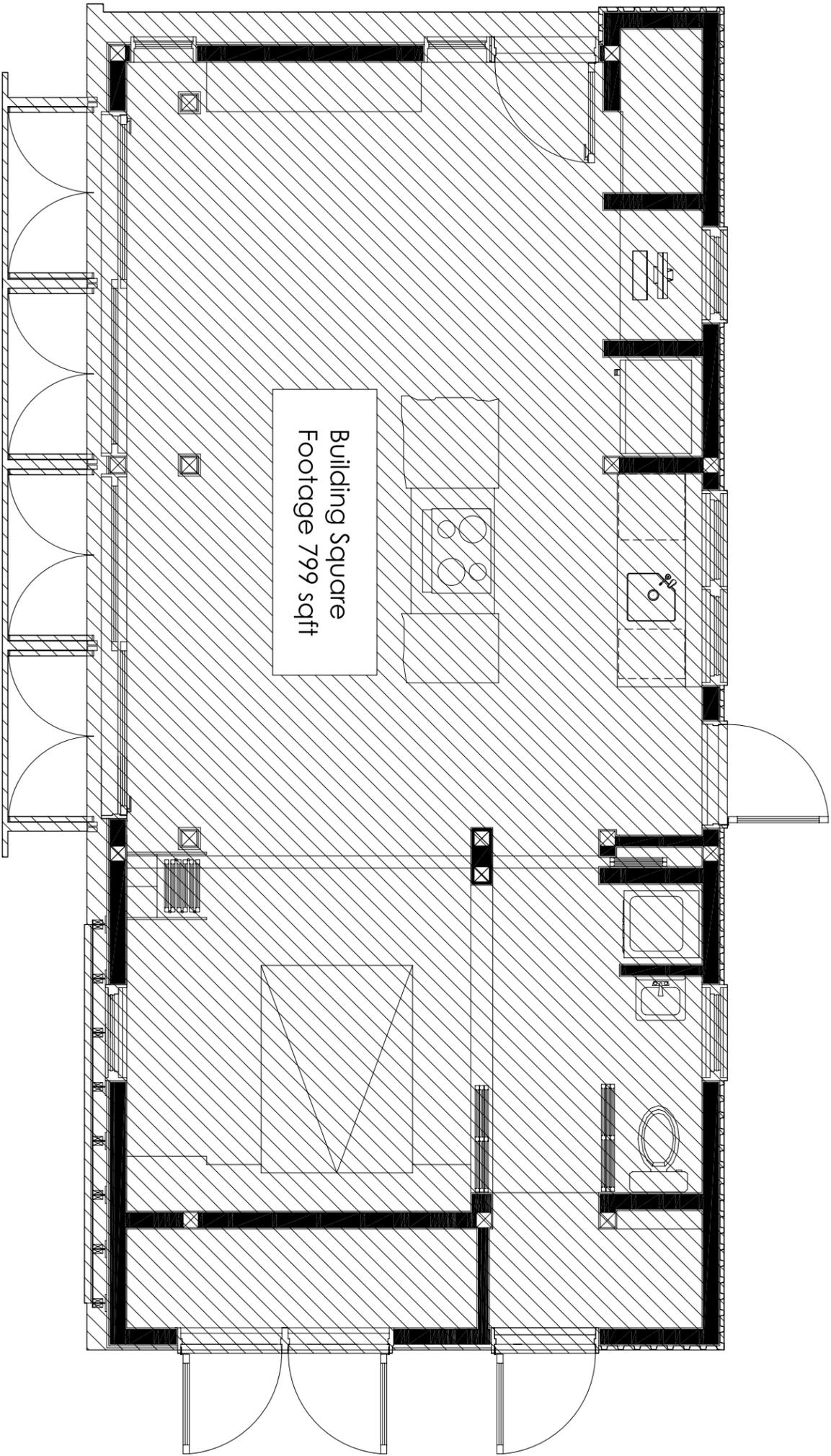
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Max. Allow-
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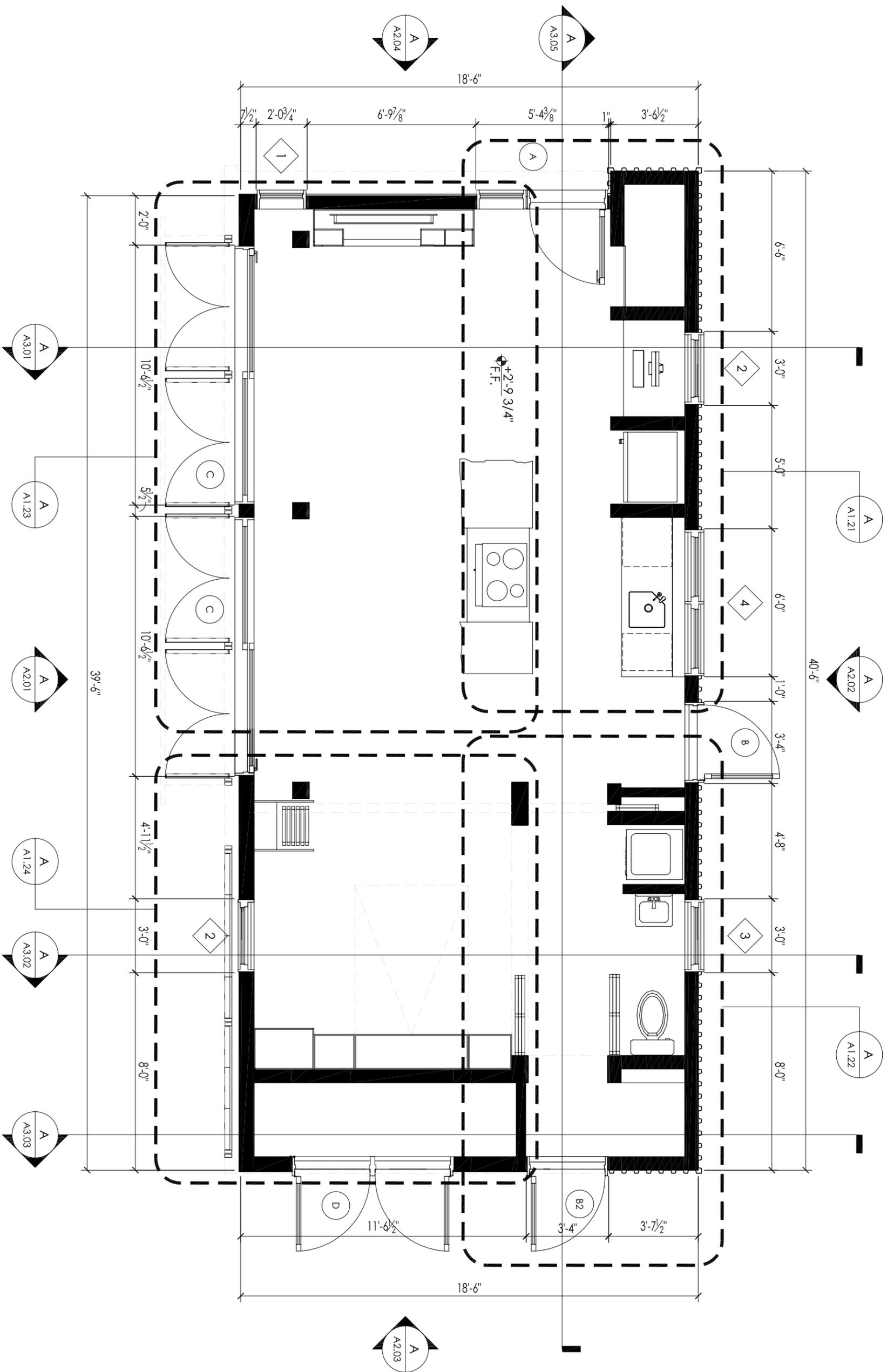
G1.06



Building Square
Footage 799 sqft

A

Max. Allowable Footprint
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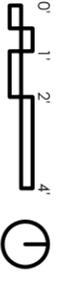
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Floor
Plan

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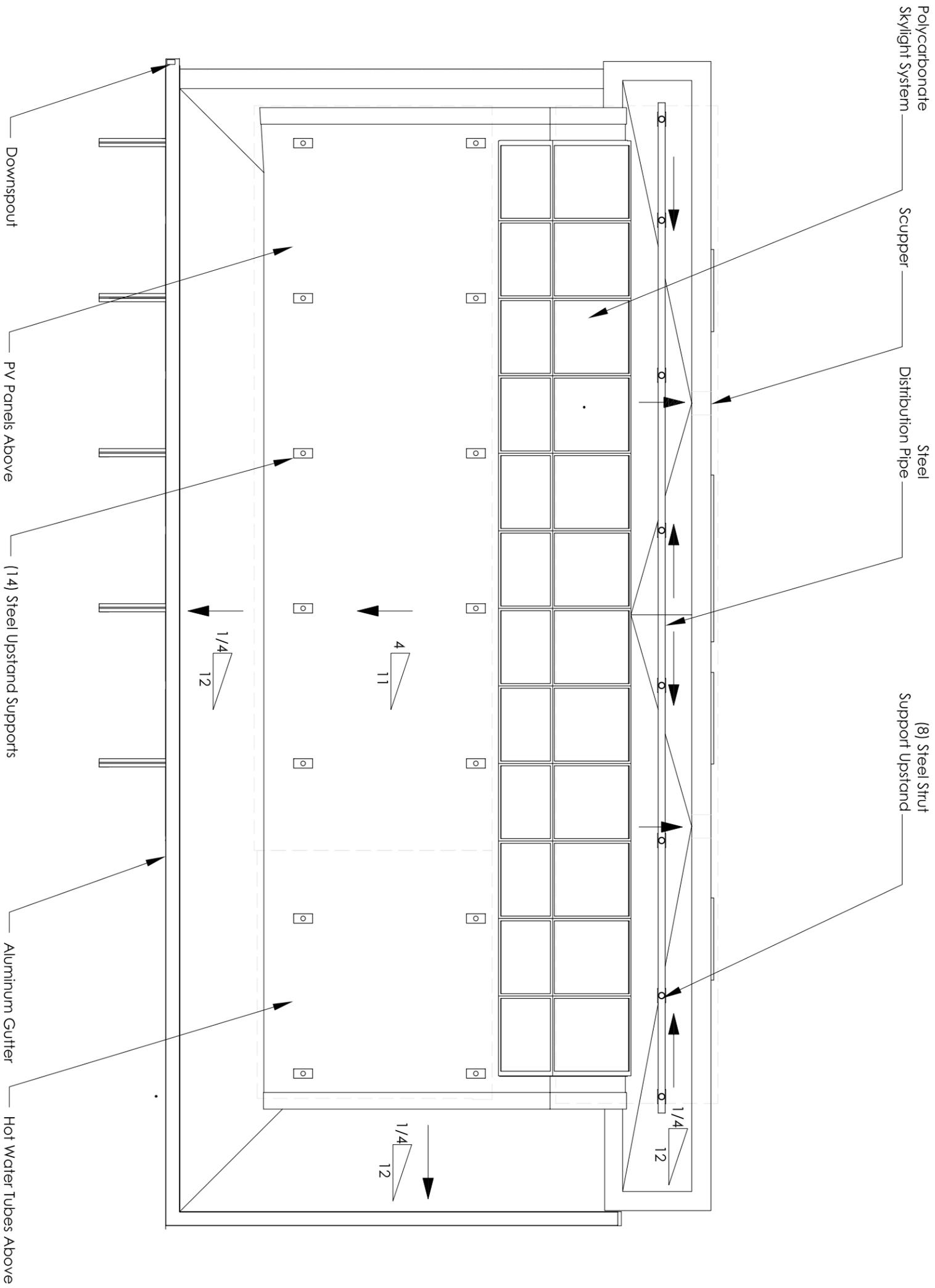
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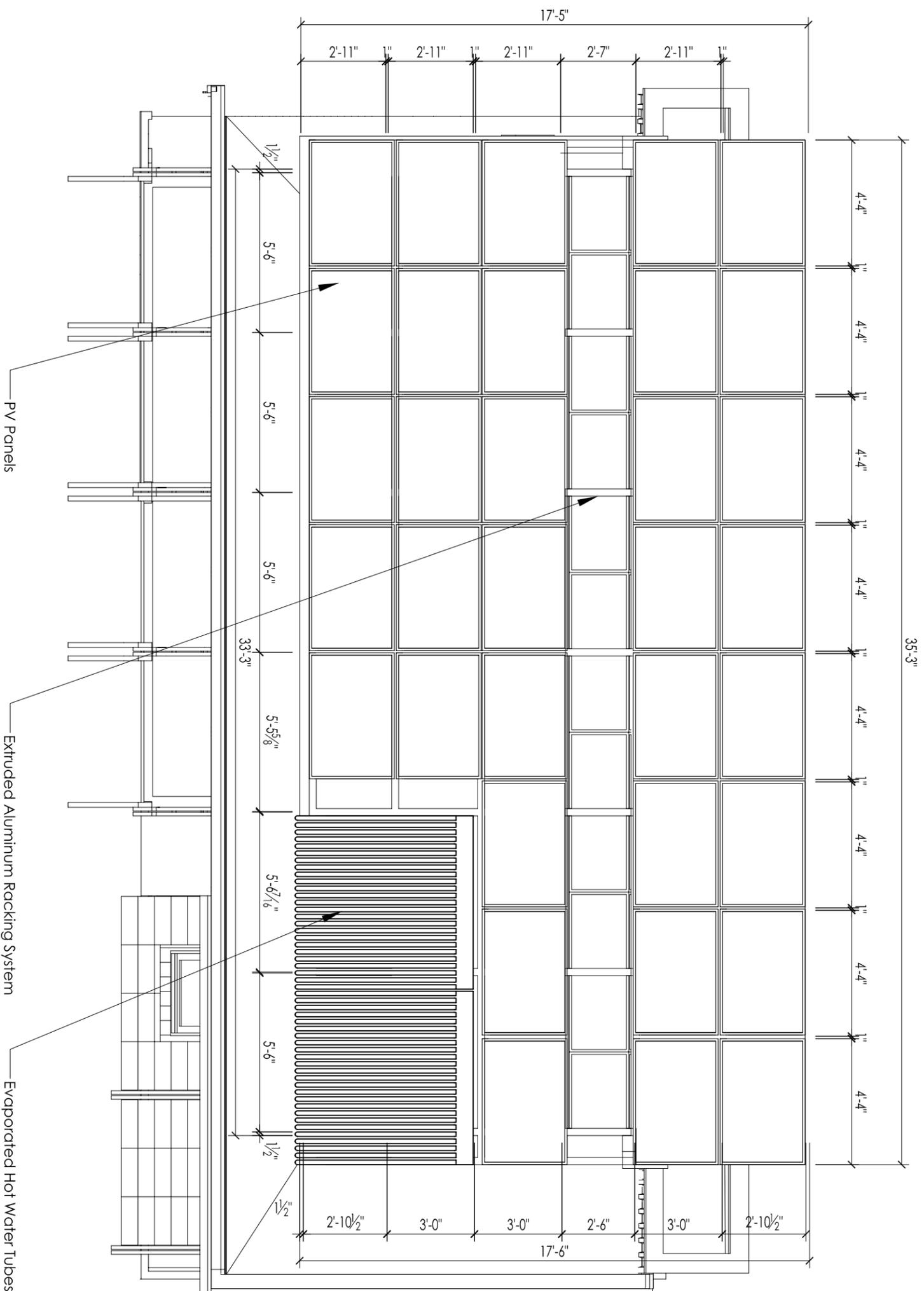
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Roof Plan

A1.02





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Solar Systems
Plan

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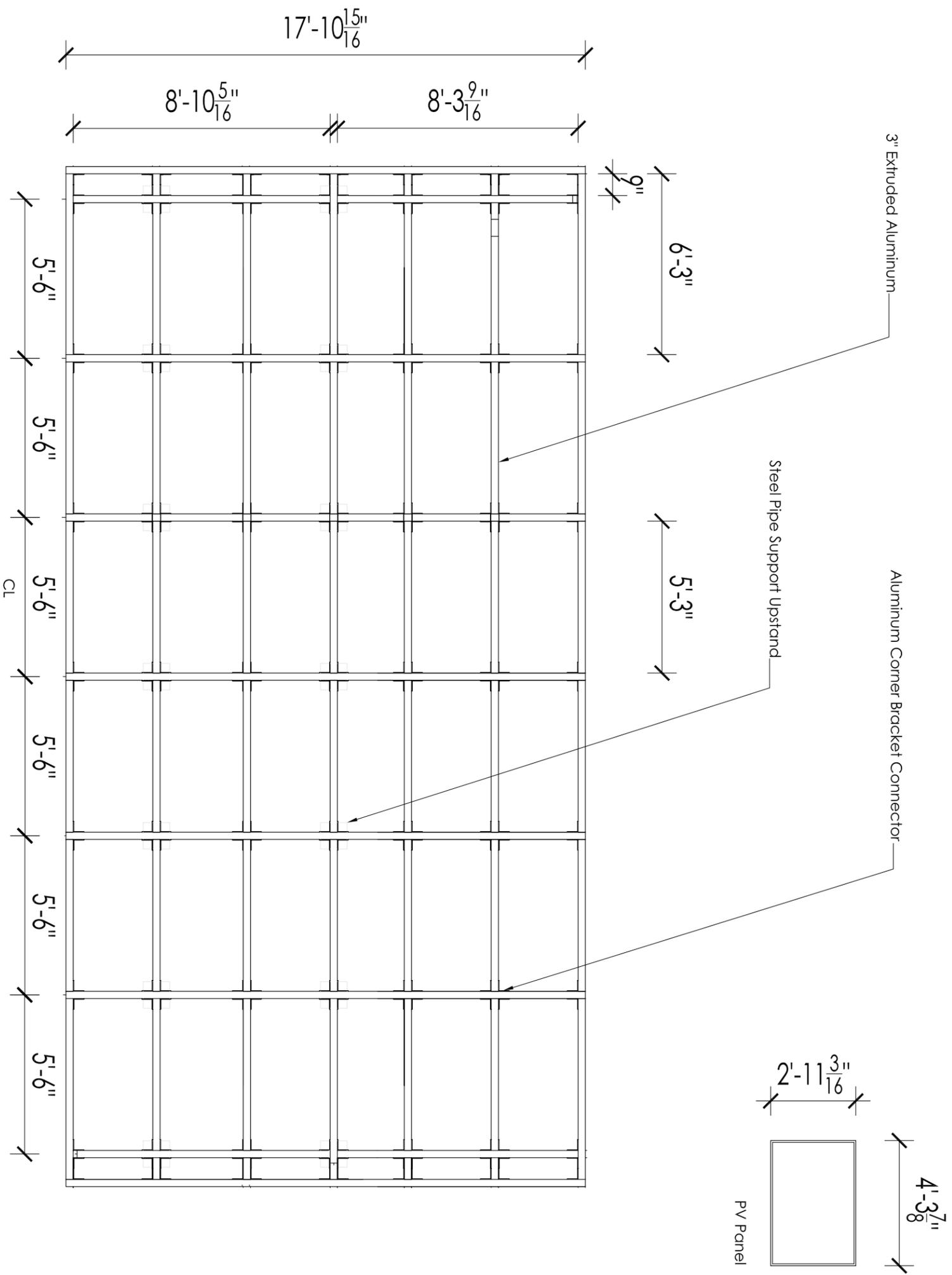
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PV Racking
System

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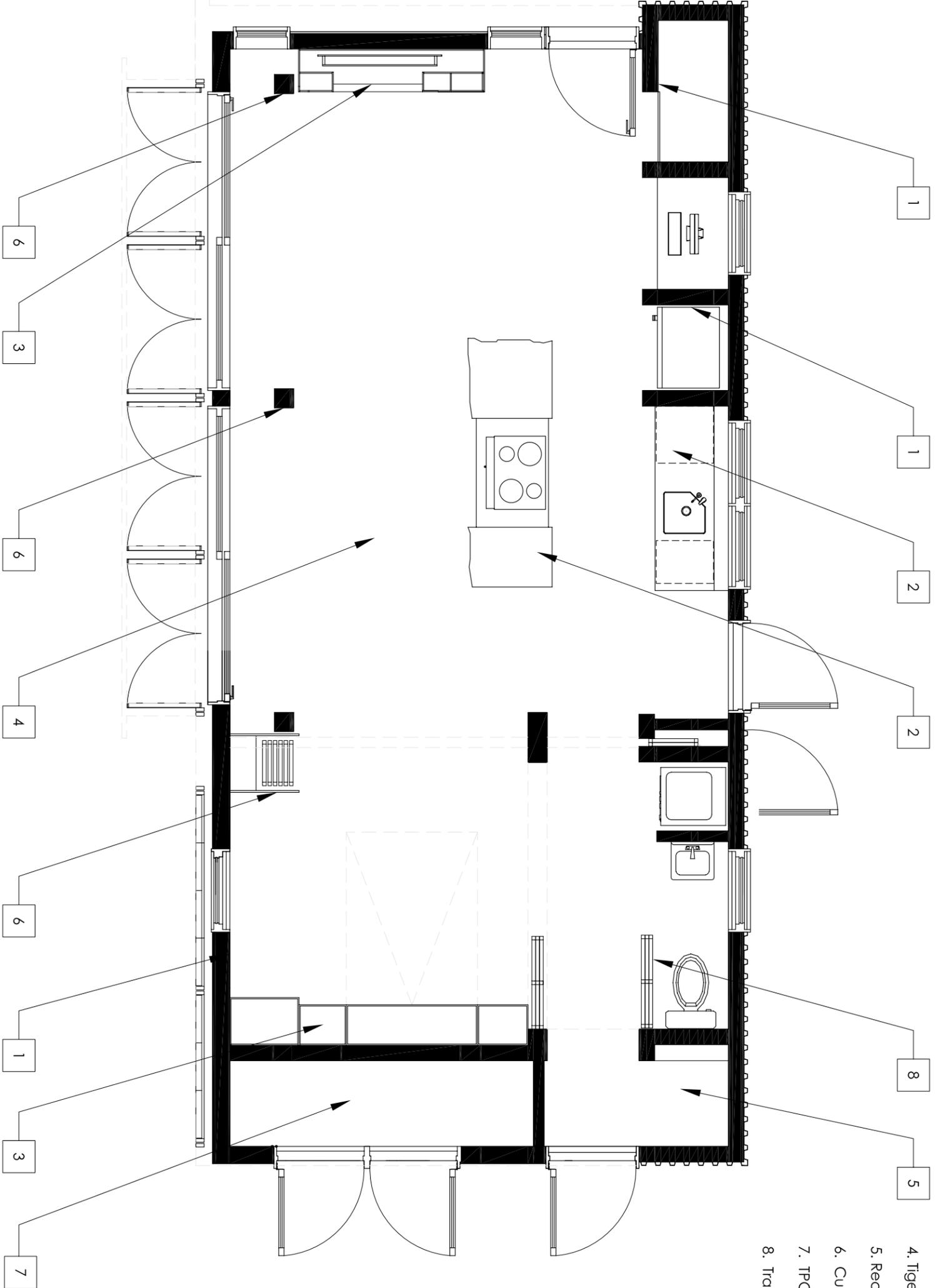
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Materials/
Furniture

A1.11

1. Painted Gypsum
2. Blonde Bamboo Plywood
3. Caramel Bamboo Plywood
4. Tigerwood
5. Recycled Glass Tile
6. Cupibua Veneer Panel
7. TPO Membrane
8. Translucent Panels





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Revisions:

- 03.06.07 SD CDS
- 07.09.07 PFS TPIP
- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



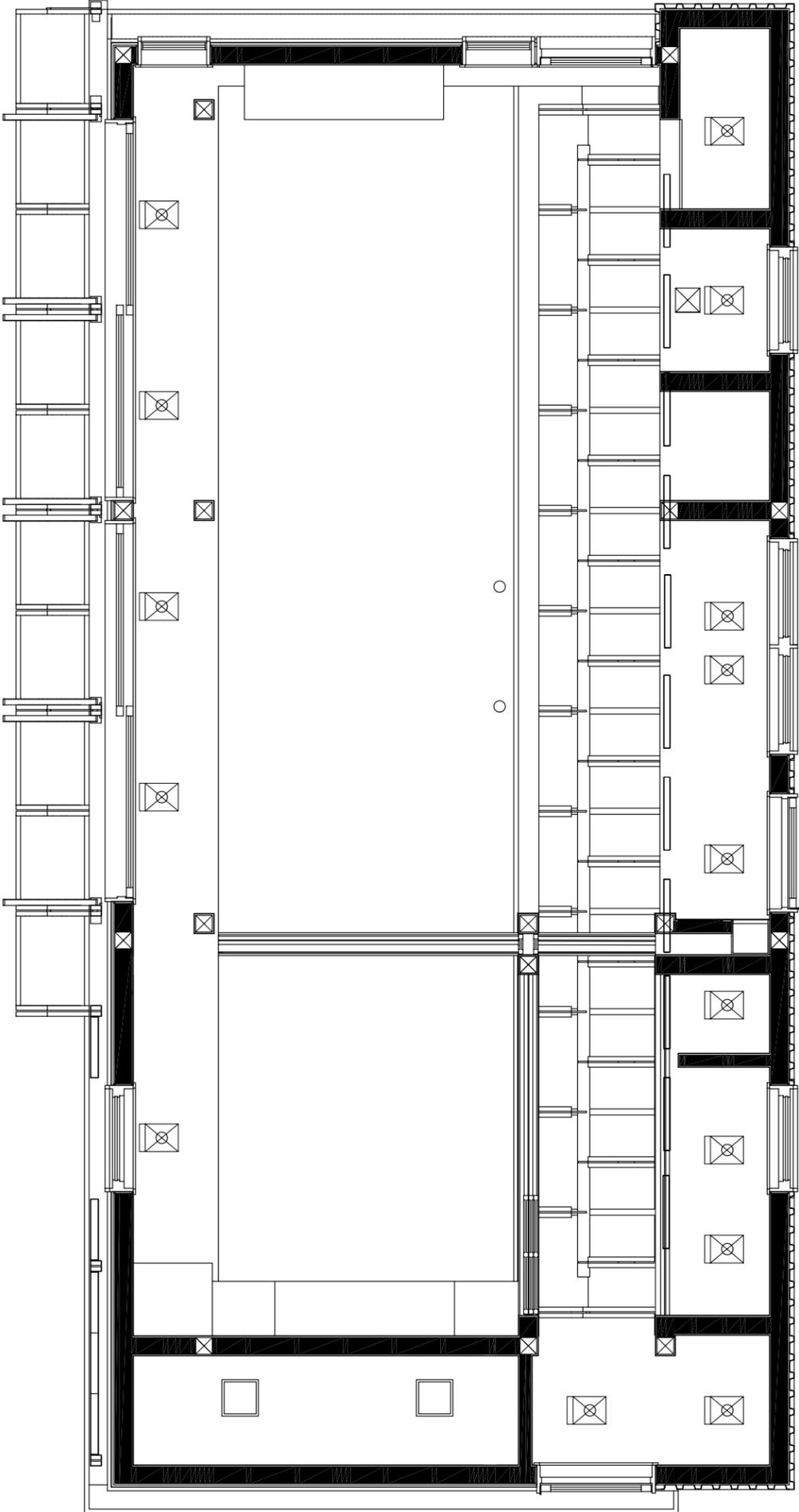
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Reflected
Ceiling Plan

A1.12



Symbol	Fixture Type
	Recessed Halogen
	Pendant Lighting
	LED Panel
	Supply Diffuser
	Fluorescent Strip Light



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03.06.07 SD CDS
07.09.07 PFS TPIP
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



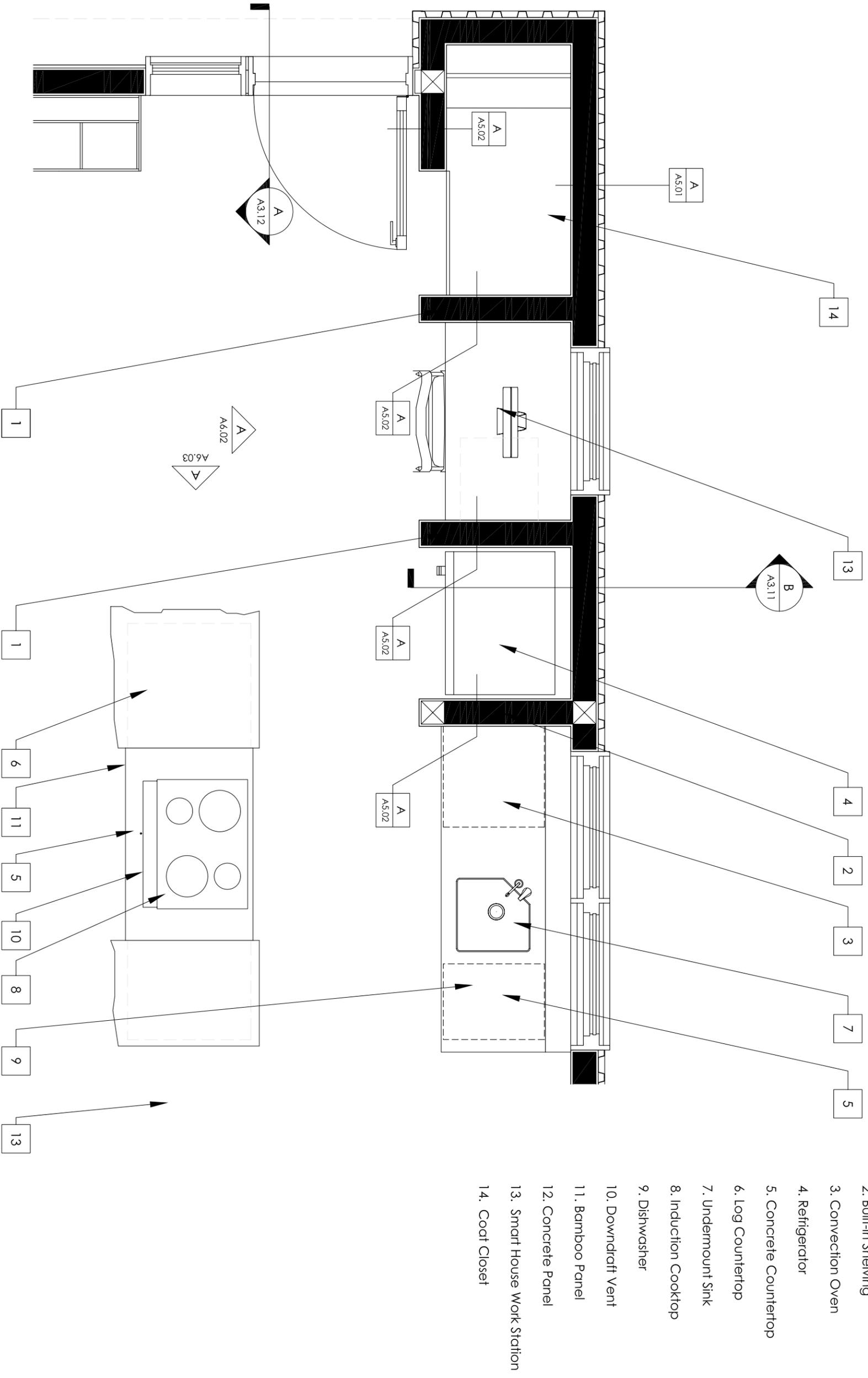
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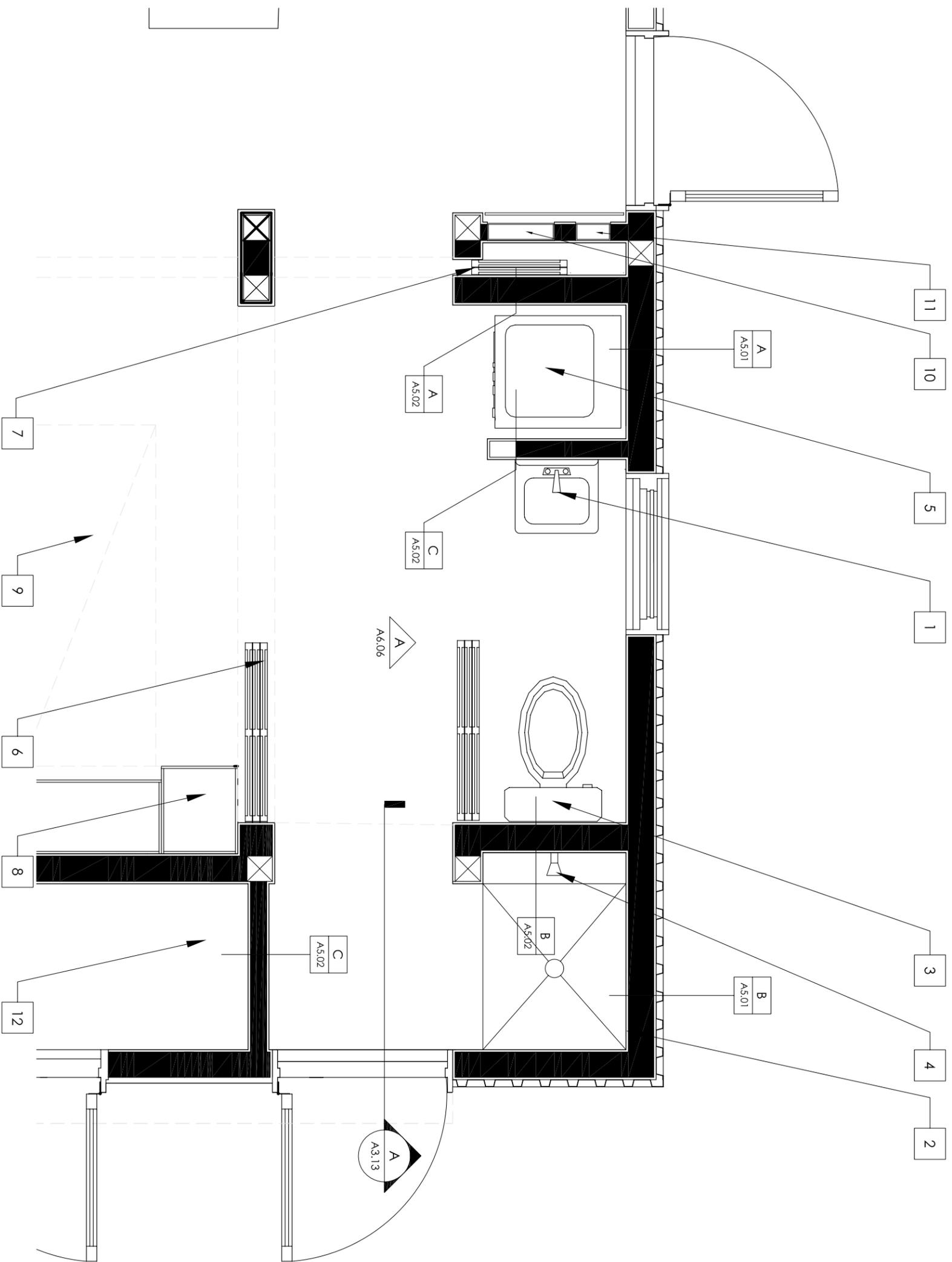
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Northwest
Enlarged Plan

A1.21





- 1. Wall Mount Sink
- 2. Recycled Glass Tile
- 3. Dual-Flush Toilet
- 4. Showerhead
- 5. Combination Washer/Dryer
- 6. Sliding Translucent Door Panels
- 7. Pocketing Bi-fold Translucent Door Panels
- 8. Bamboo Cabinetry
- 9. Murphy Bed
- 10. Electrical Panel
- 11. PV Combiner Boxes
- 12. Mechanical Room



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Revisions:
 03.06.07 SD CDS
 07.09.07 PFS TPIP
 07.28.07 PG CO.
 08.07.07 SD CDS
 08.17.07 SD CDS



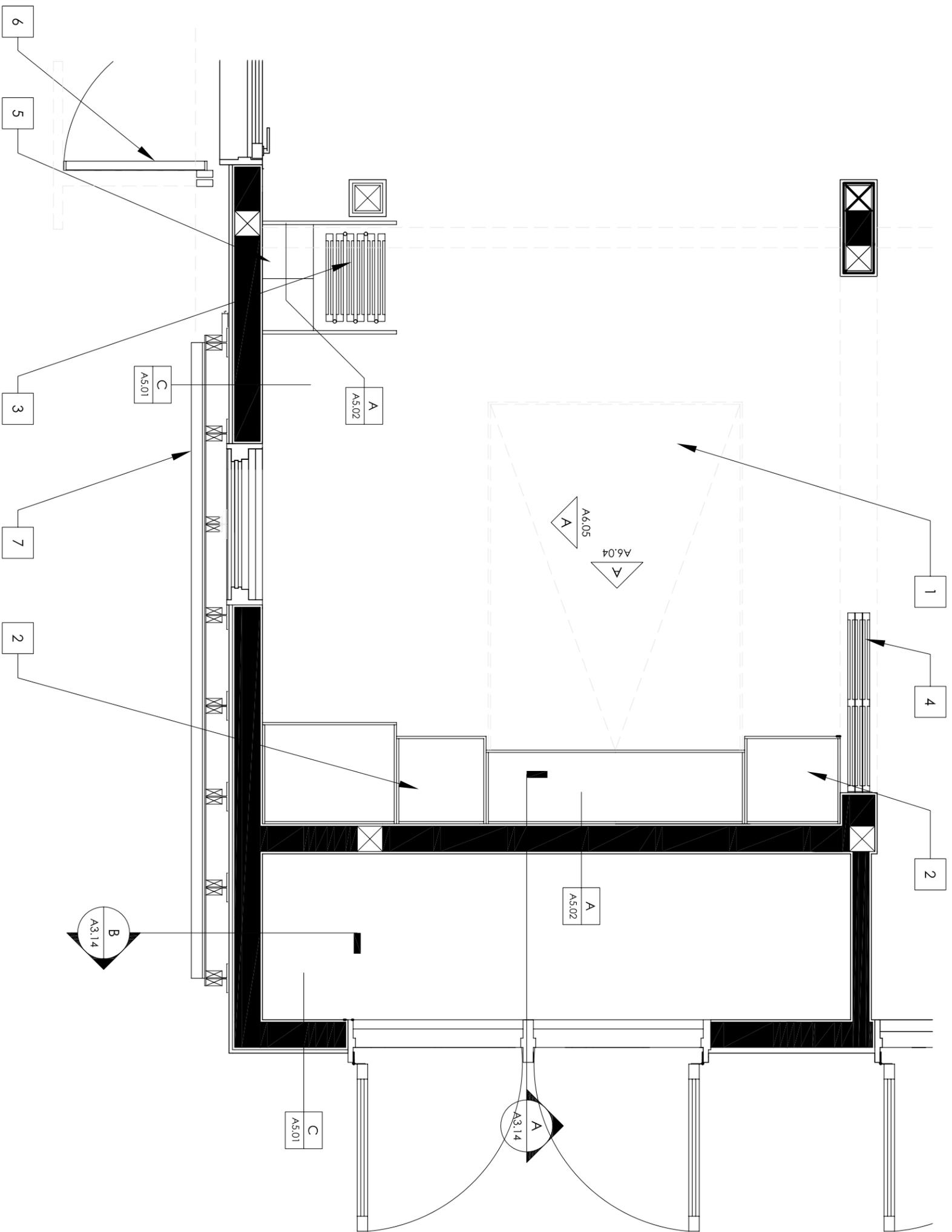
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Northeast
 Enlarged Plan

A1.22



1. Murphy Bed
2. Bamboo Cabinetry
3. Bi-Fold Translucent Door Panels
4. Sliding Translucent Door Panels
5. Cupiuba Shelves
6. Hinged Louvered Panels
7. Exterior Green Wall



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 07.28.07 PG CO.
 08.07.07 SD CDS
 08.17.07 SD CDS



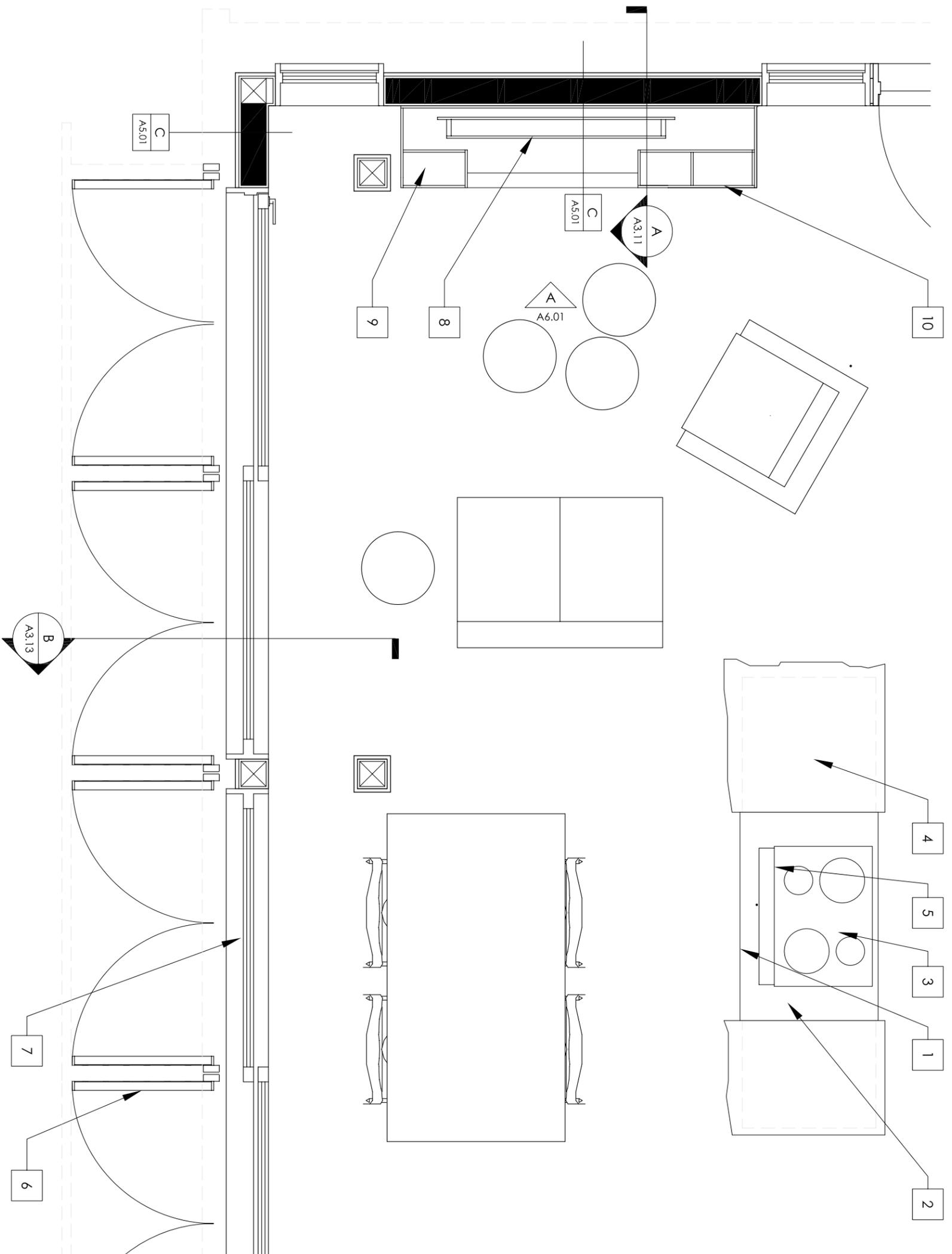
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Southeast
 Enlarged Plan

A1.23



- 1. Bamboo Panel
- 2. Concrete Countertop
- 3. Induction Cooktop
- 4. Log Countertop
- 5. Downdraft Vent
- 6. Hinged Louvered Panels
- 7. Lift and Slide Glass Doors
- 8. Desiccant Waterfall
- 9. Bamboo Cabinetry
- 10. Television and A/V Equip.



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 07.28.07 PG CO.
 08.07.07 SD CDS
 08.17.07 SD CDS



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Southwest
 Enlarged Plan

A1.24



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08.17.07 SD CDS



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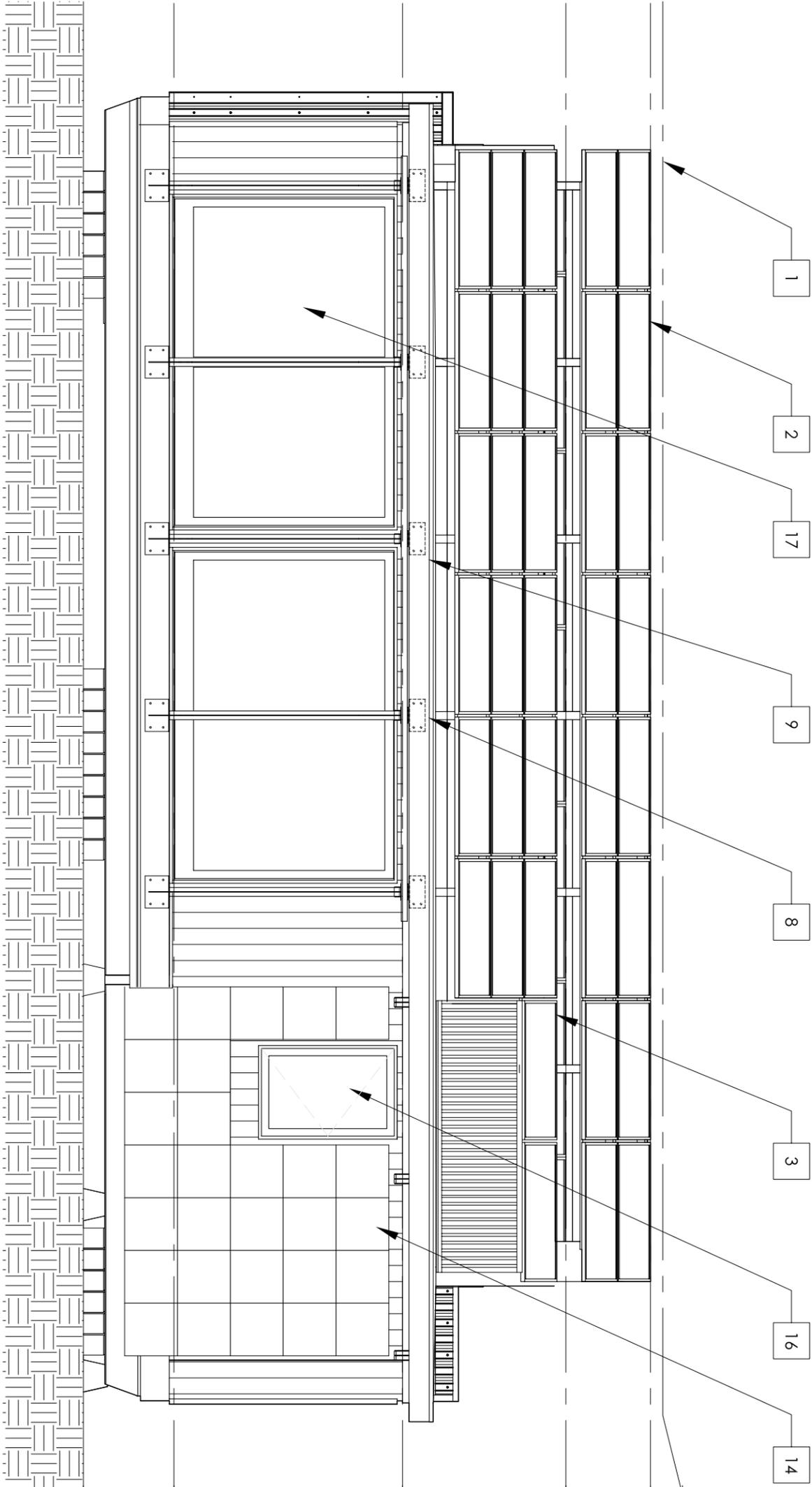
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South
Elevation

A2.01

1. Solar Envelope
2. PV Panels
3. Aluminum Racking System
4. Steel/Douglas Fir Strut Support
5. Polycarbonate Skylight System
6. Aluminum Gutter
7. Aluminum Fascia
8. Wire Trellis Shading Device
9. 1-1/2" Corrugated Metal Cladding
10. 3/4" Eastern White Pine Cladding
11. Mechanical Room Doors
12. Side Light Window
13. 2'-9" Hinged Louvered Doors
14. Green Wall
15. Awning Window
16. Casement Window
17. Lift and Slide Glass Doors
18. Wood Frame Door



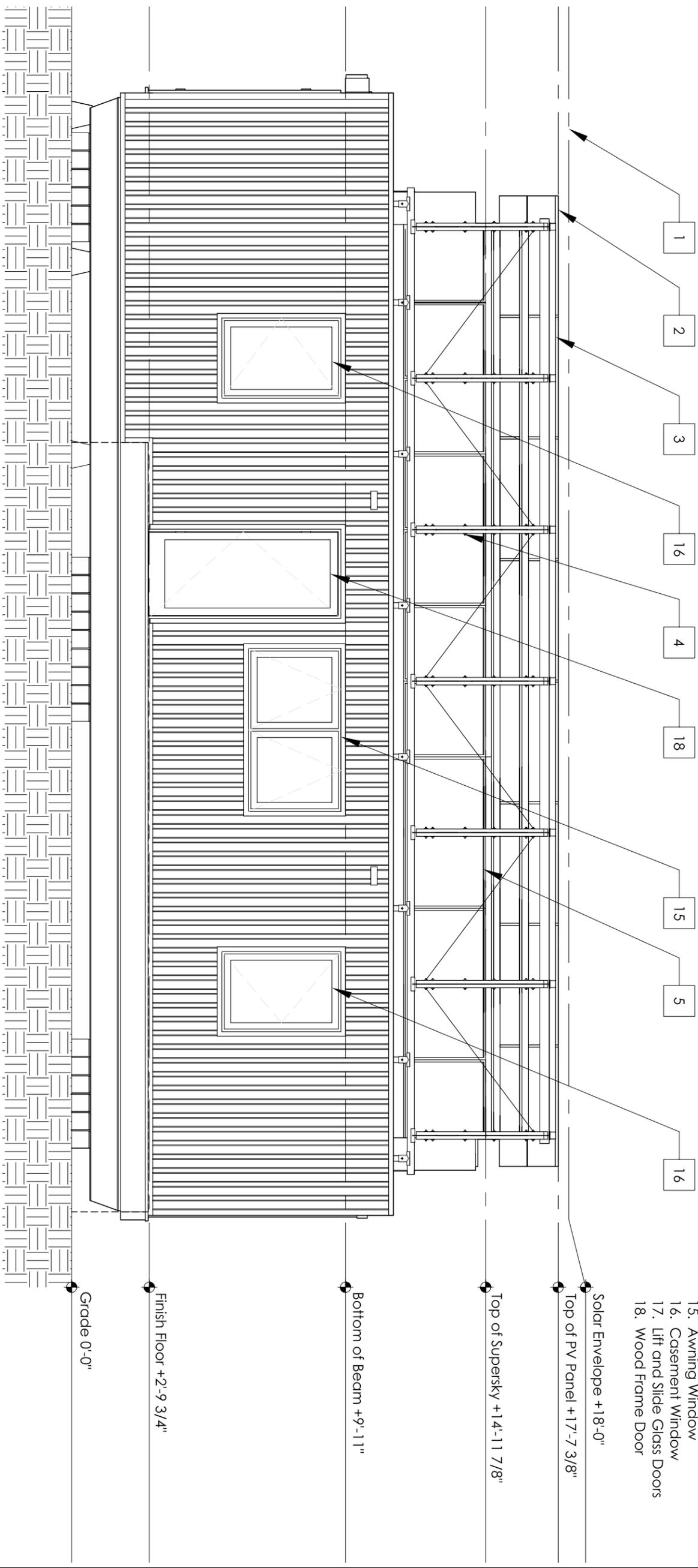
Solar Envelope +18'-0"
Top of PV Panel +17'-7 3/8"
Top of Supersky +14'-11 7/8"
Bottom of Beam +9'-11"
Finish Floor +2'-9 3/4"
Grade 0'-0"



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1. Solar Envelope
2. PV Panels
3. Aluminum Racking System
4. Steel/Douglas Fir Strut Support
5. Polycarbonate Skylight System
6. Aluminum Gutter
7. Aluminum Fascia
8. Wire Trellis Shading Device
9. 1-1/2" Corrugated Metal Cladding
10. 3/4" Eastern White Pine Cladding
11. Mechanical Room Doors
12. Side Light Window
13. 2'-9" Hinged Louvred Doors
14. Green Wall
15. Awning Window
16. Casement Window
17. Lift and Slide Glass Doors
18. Wood Frame Door



Revisions:
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08.07.07 SD CDS
08.17.07 SD CDS



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North
Elevation

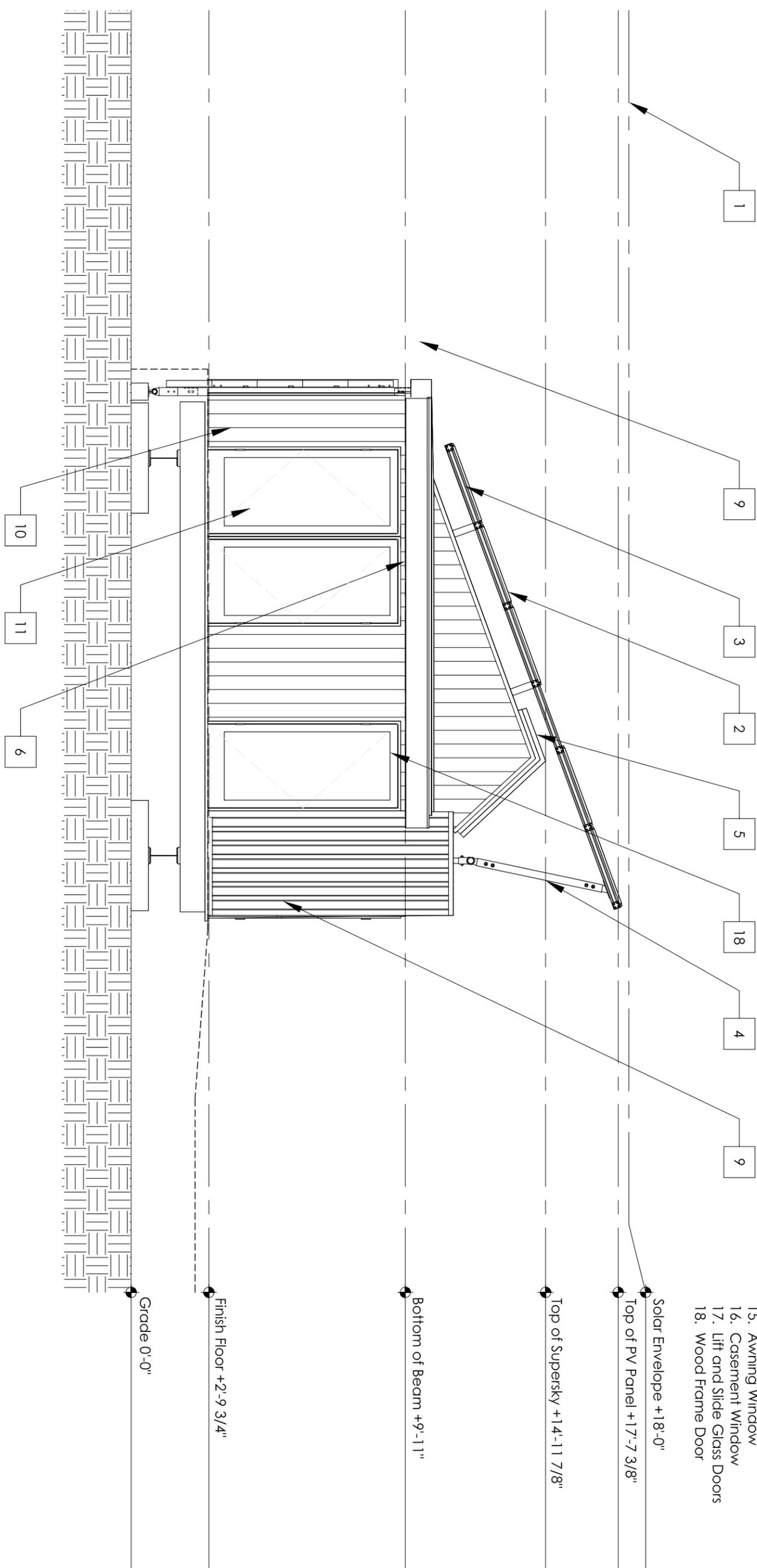
A2.02



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1. Solar Envelope
2. PV Panels
3. Aluminum Racking System
4. Steel/Douglas Fir Strut Support
5. Polycarbonate Skylight System
6. Aluminum Gutter
7. Aluminum Fascia
8. Wire Trellis Shading Device
9. 1-1/2" Corrugated Metal Cladding
10. 3/4" Eastern White Pine Cladding
11. Mechanical Room Doors
12. Side Light Window
13. 2'-9" Hinged Louvred Doors
14. Green Wall
15. Awning Window
16. Casement Window
17. Lift and Slide Glass Doors
18. Wood Frame Door



Revisions:
03.06.07 SD CDS
07.09.07 PFS TPIP
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08.07.07 SD CDS
08.17.07 SD CDS



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East
Elevation

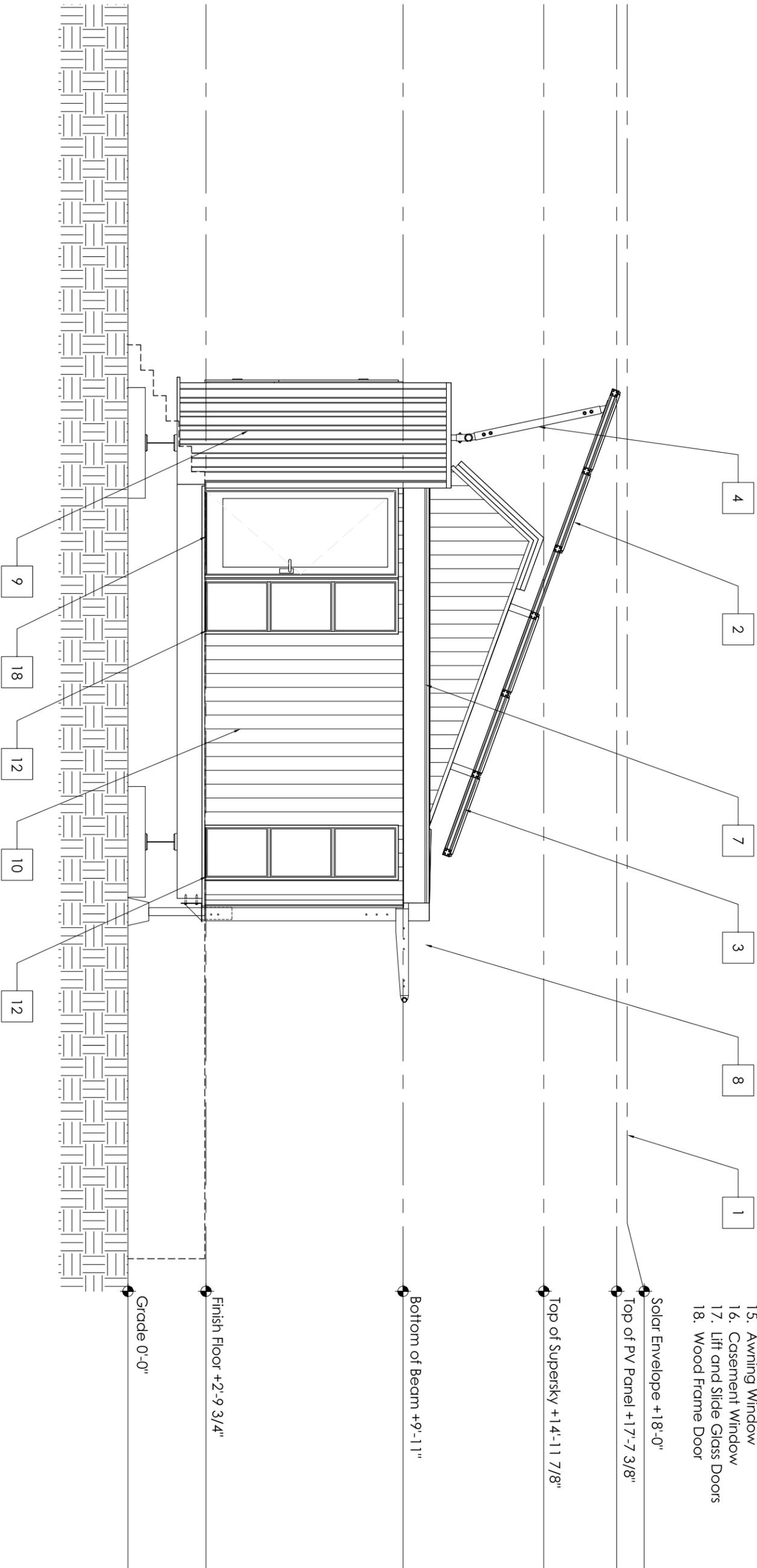
A2.03



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1. Solar Envelope
2. PV Panels
3. Aluminum Racking System
4. Steel/Douglas Fir Strut Support
5. Polycarbonate Skylight System
6. Aluminum Gutter
7. Aluminum Fascia
8. Wire Trellis Shading Device
9. 1-1/2" Corrugated Metal Cladding
10. 3/4" Eastern White Pine Cladding
11. Mechanical Room Doors
12. Side Light Window
13. 2'-9" Hinged Louvred Doors
14. Green Wall
15. Awning Window
16. Casement Window
17. Lift and Slide Glass Doors
18. Wood Frame Door



Revisions:
03.06.07 SD CDS
07.09.07 PFS TPIP
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



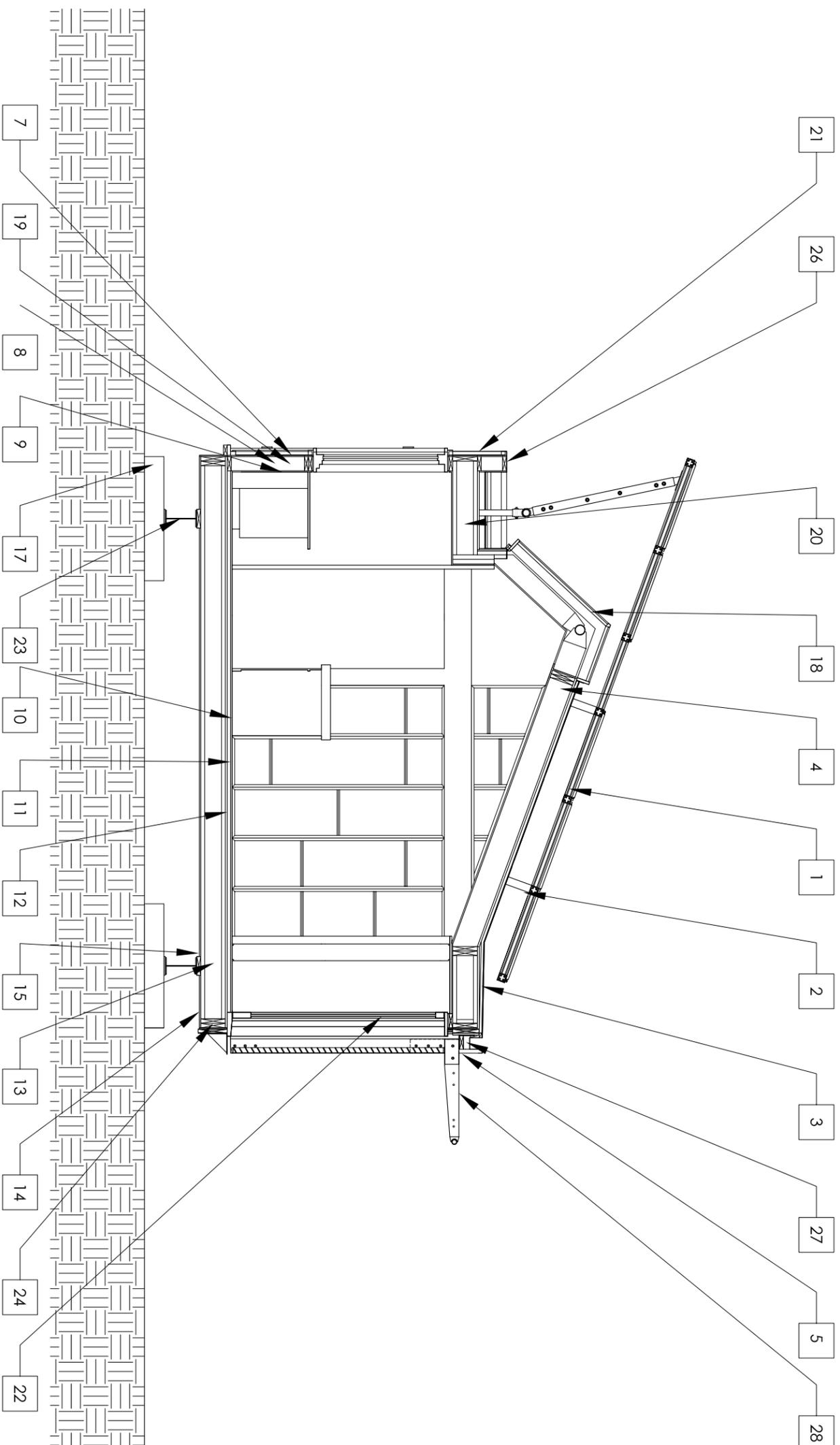
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West
Elevation

A2.04



1. PV Panel
2. Aluminum Racking System
3. 1" Rigid Insulation
4. Paired 2" X 10"
5. Aluminum Fascia
6. 3/4" Eastern White Pine Cladding
7. 1/2" Plywood Sheathing
8. 2" X 6" LSL Wood Stud
9. 1/2" Gyp. Bd. Ptd.
10. 9/16" Tigerwood Finish Floor
11. 1-1/4" Radiant Flooring System
12. 3/4" Plywood Subfloor
13. 9-1/2" TJI
14. 1/2" Plywood Soffit
15. 2" X 8" Nailer
16. +/- 2" Shim
17. 8" X 8" Wood Cribbing
18. Polycarbonate Skylight System
19. Spray Foam Insulation
20. 9-2" TJI
21. 1-1/2" Corrugated Metal Cladding
22. Lift and Slide Glass Doors
23. W12 X 26
24. 2" X 10" LVL Rim Joist
25. Green Wall
26. Parapet
27. Aluminum Gutter
28. Shading Device



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Revisions:

03.06.07 SD CDS
07.09.07 PFS TP/P
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



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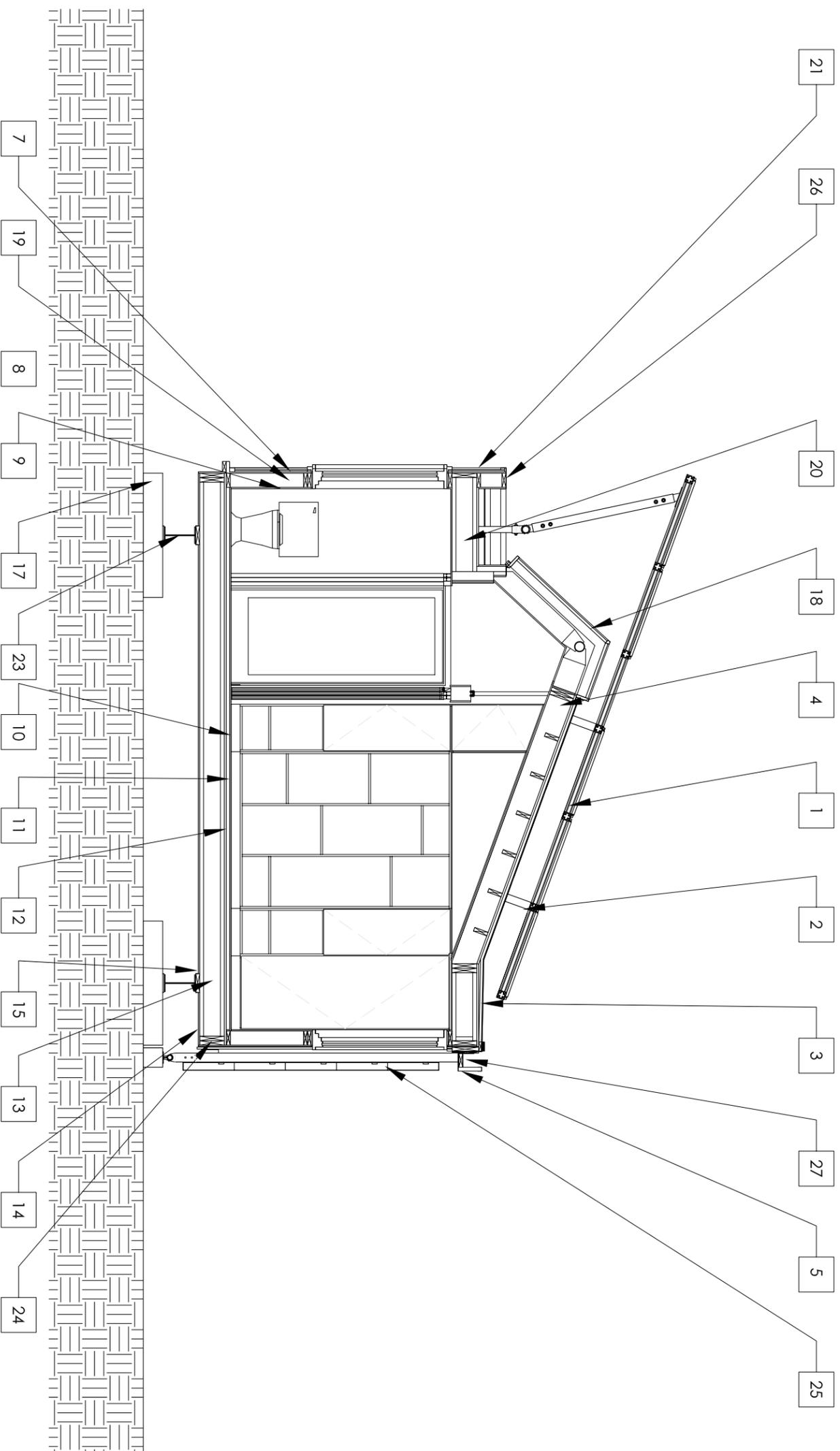
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Section at
Living Rm.

A3.01



1. PV Panel
2. Aluminum Racking System
3. 1" Rigid Insulation
4. Paired 2" X 10"
5. Aluminum Fascia
6. 3/4" Eastern White Pine Cladding
7. 1/2" Plywood Sheathing
8. 2" X 6" LSL Wood Stud
9. 1/2" Gyp. Bd. Ptd.
10. 9/16" Tigerwood Finish Floor
11. 1-1/4" Radiant Flooring System
12. 3/4" Plywood Subfloor
13. 9-1/2" TJI
14. 1/2" Plywood Soffit
15. 2" X 8" Nailier
16. +/- 2" Shim
17. 8" X 8" Wood Cribbing
18. Polycarbonate Skylight System
19. Spray Foam Insulation
20. 9-1/2" TJI
21. 1-1/2" Corrugated Metal Cladding
22. Lift and Slide Glass Doors
23. W12 X 26
24. 2" X 10" LVL Rim Joist
25. Green Wall
26. Parquet
27. Aluminum Gutter
28. Wire Trellis Shading Device

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07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



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Section at
Bedroom

A3.02



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08.17.07 SD CDS



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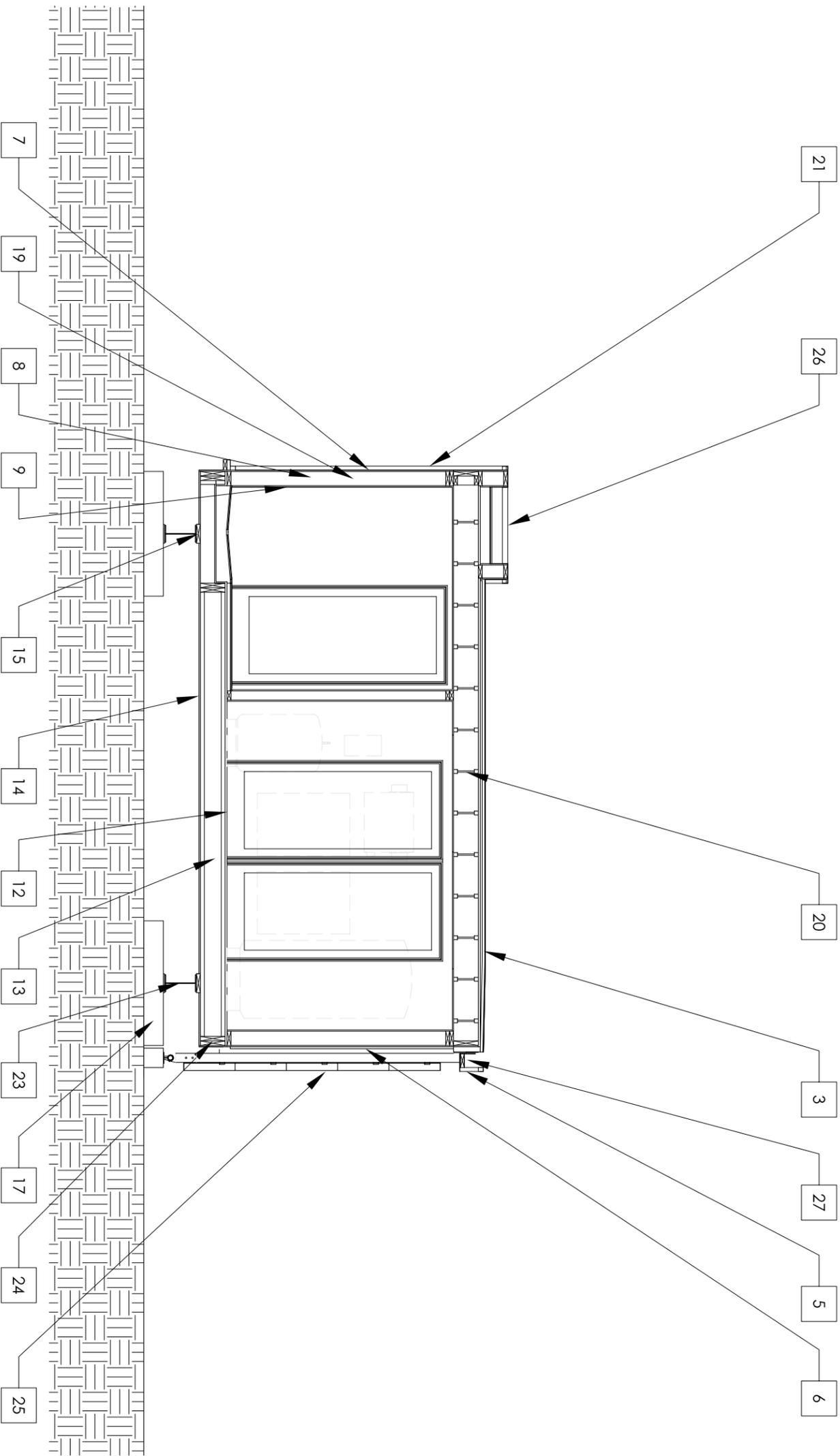
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Section at
Mech. Rm.

A3.03

1. PV Panel
2. Aluminum Racking System
3. 1" Rigid Insulation
4. Paired 2" X 10"
5. Aluminum Fascia
6. 3/4" Eastern White Pine Cladding
7. 1/2" Plywood Sheathing
8. 2" X 6" LSL Wood Stud
9. 1/2" Gyp. Bd. Ptd.
10. 9/16" Tigerwood Finish Floor
11. 1-1/4" Radiant Flooring System
12. 3/4" Plywood Subfloor
13. 9-1/2" TJI
14. 1/2" Plywood Soffit
15. 2" X 8" Nailier
16. +/- 2" Shim
17. 8" X 8" Wood Cribbing
18. Polycarbonate Skylight System
19. Spray Foam Insulation
20. 9-1/2" TJI
21. 1-1/2" Corrugated Metal Cladding
22. Lift and Slide Glass Doors
23. W12 X 26
24. 2" X 10" LVL Rim Joist
25. Green Wall
26. Parapet
27. Aluminum Gutter
28. Wire Trellis Shading Device





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08.07.07 SD CDS
08.17.07 SD CDS



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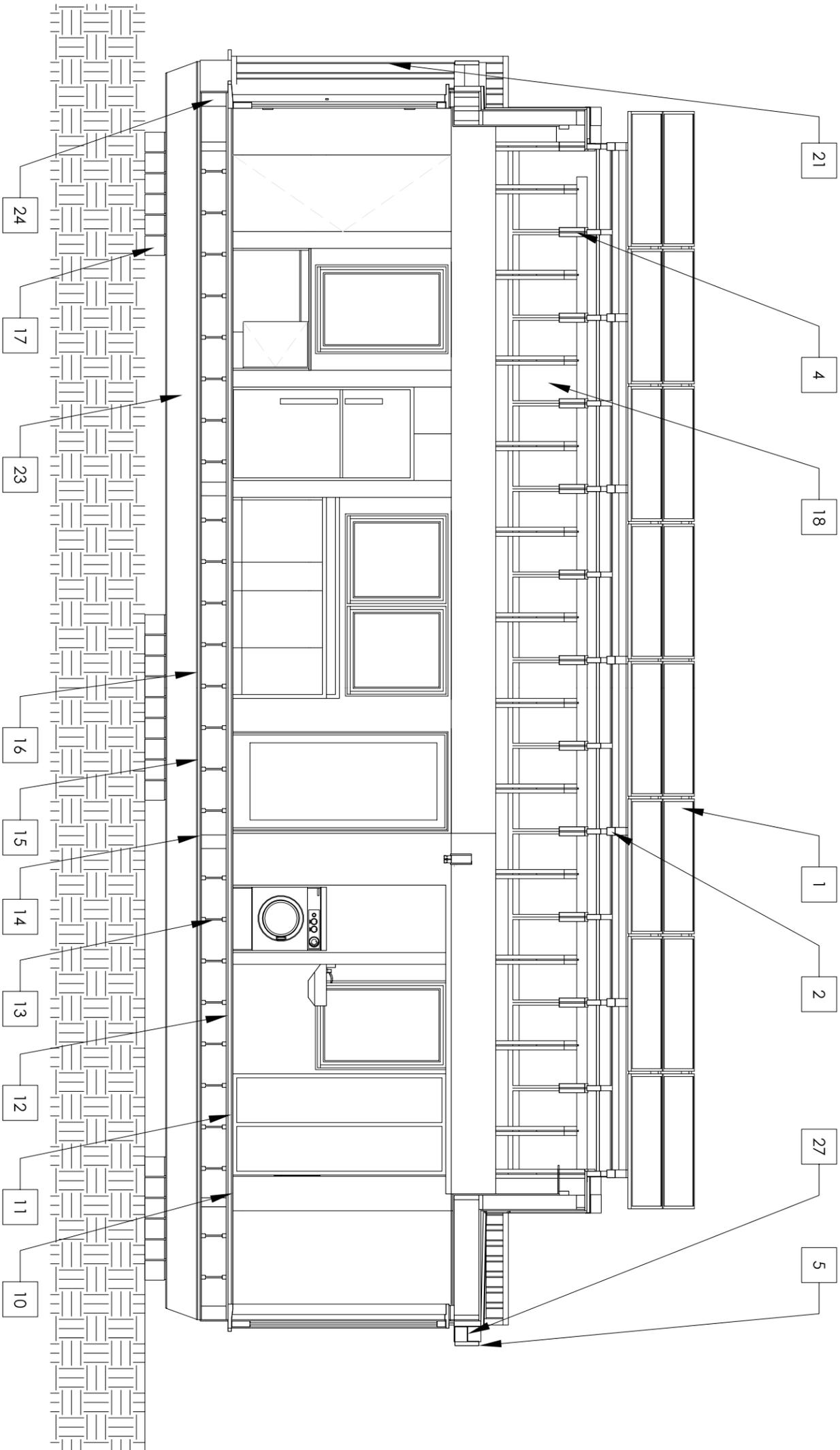
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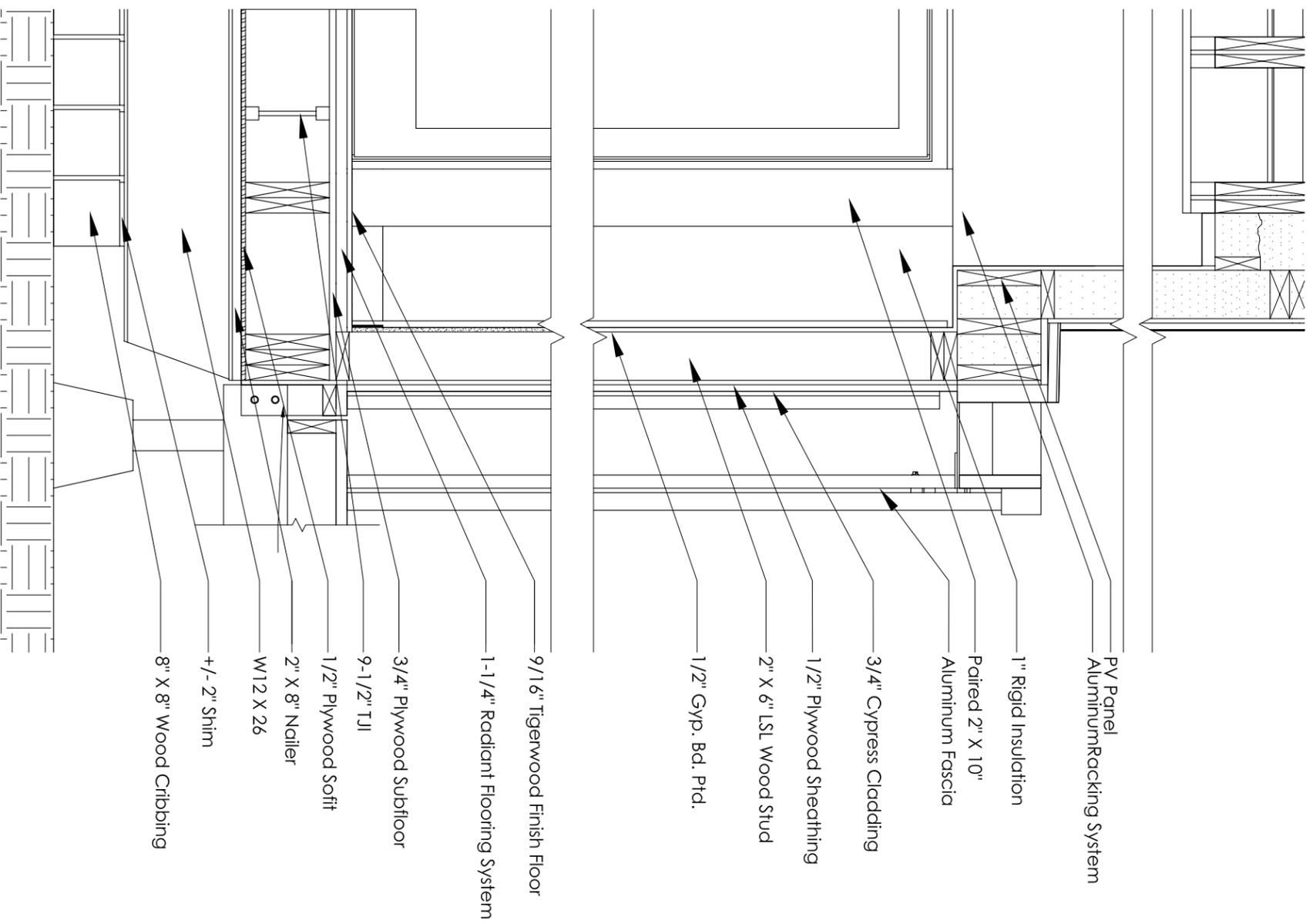


Longitudinal
Section

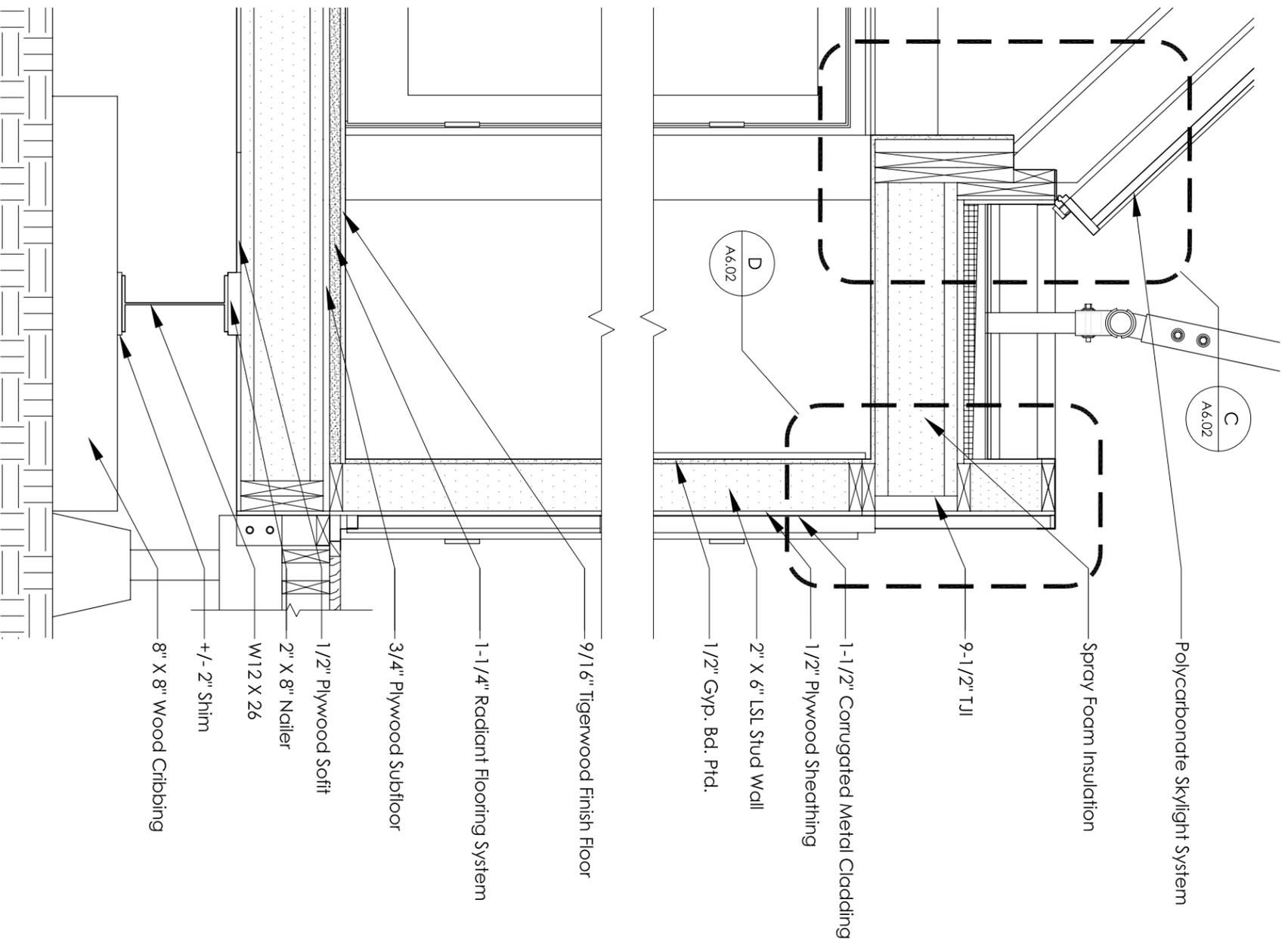
A3.04

1. PV Panel
2. Aluminum Racking System
3. 1" Rigid Insulation
4. Paired 2" X 10"
5. Aluminum Fascia
6. 3/4" Eastern White Pine Cladding
7. 1/2" Plywood Sheathing
8. 2" X 6" LSL Wood Stud
9. 1/2" Gyp. Bd. Ptd.
10. 9/16" Tigerwood Finish Floor
11. 1-1/4" Radiant Flooring System
12. 3/4" Plywood Subfloor
13. 9-1/2" TJI
14. 1/2" Plywood Soffit
15. 2" X 8" Nailier
16. +/- 2" Shirn
17. 8" X 8" Wood Cribbing
18. Polycarbonate Skylight System
19. Spray Foam Insulation
20. 9-5/8" TJI
21. 1-1/2" Corrugated Metal Cladding
22. Lift and Slide Glass Doors
23. W12 X 26
24. 2" X 10" LVL Rim Joist
25. Green Wall
26. Parapet
27. Aluminum Gutter
28. Wire Trellis Shading Device





A Section at Desiccant Wall
3/4"=1'-0"



B Section at North Wall
3/4"=1'-0"



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08.07.07 SD CDS
08.17.07 SD CDS



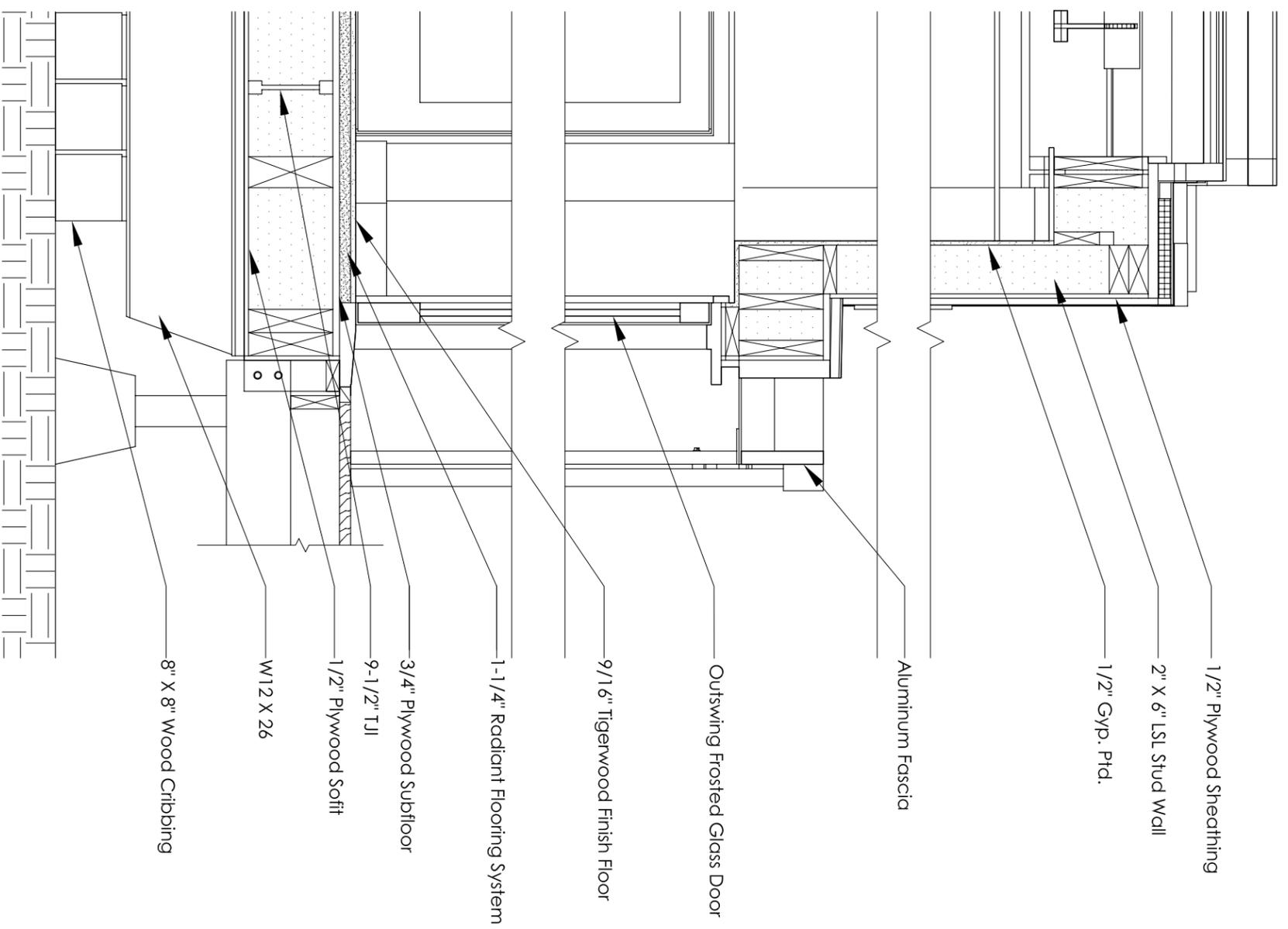
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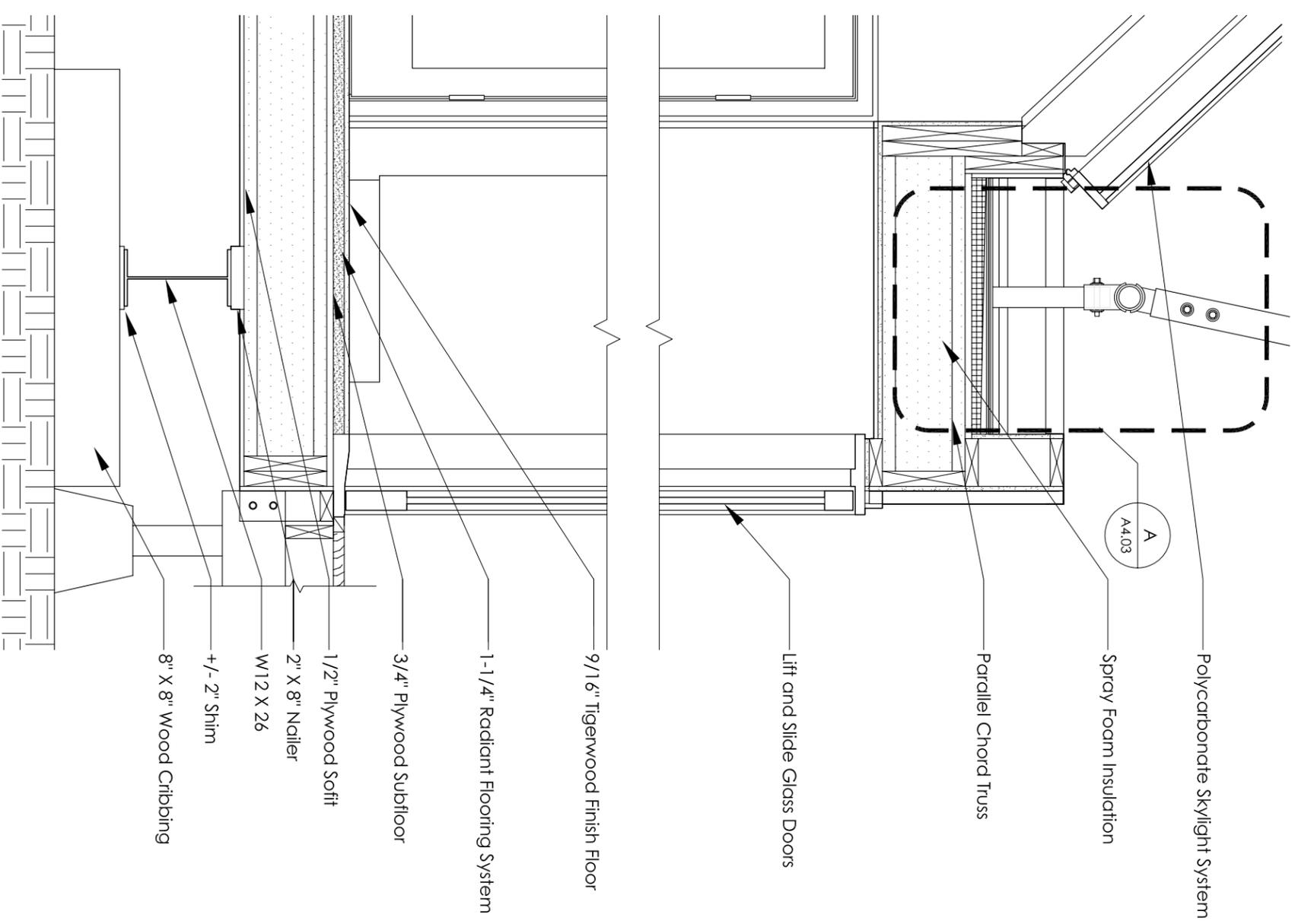


Wall Sections

A3.11



A Section at Front Door
 3/4"=1'-0"



B Section at Kitchen Door
 3/4"=1'-0"



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 07.28.07 PG CO.
 08.07.07 SD CDS
 08.17.07 SD CDS



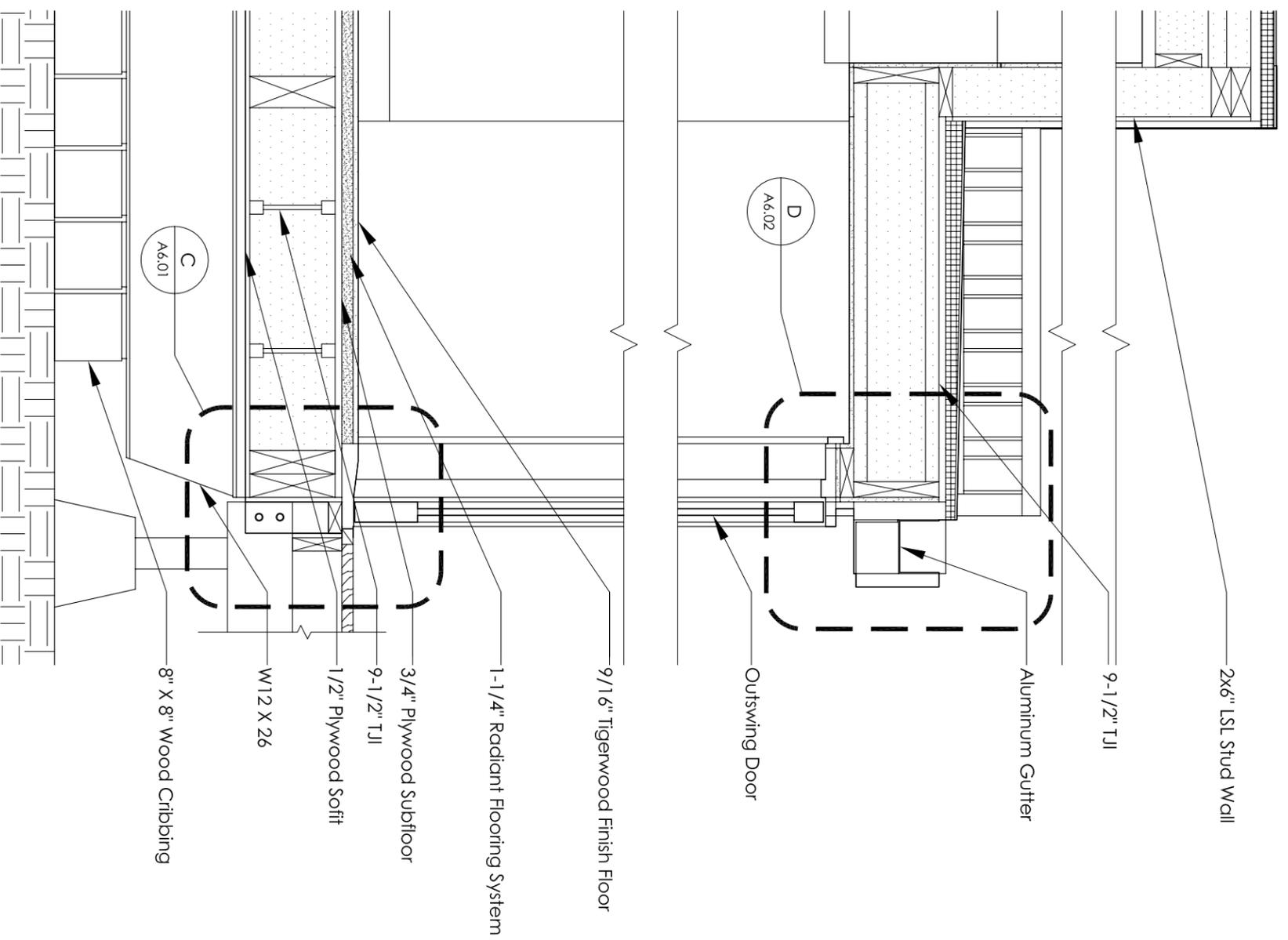
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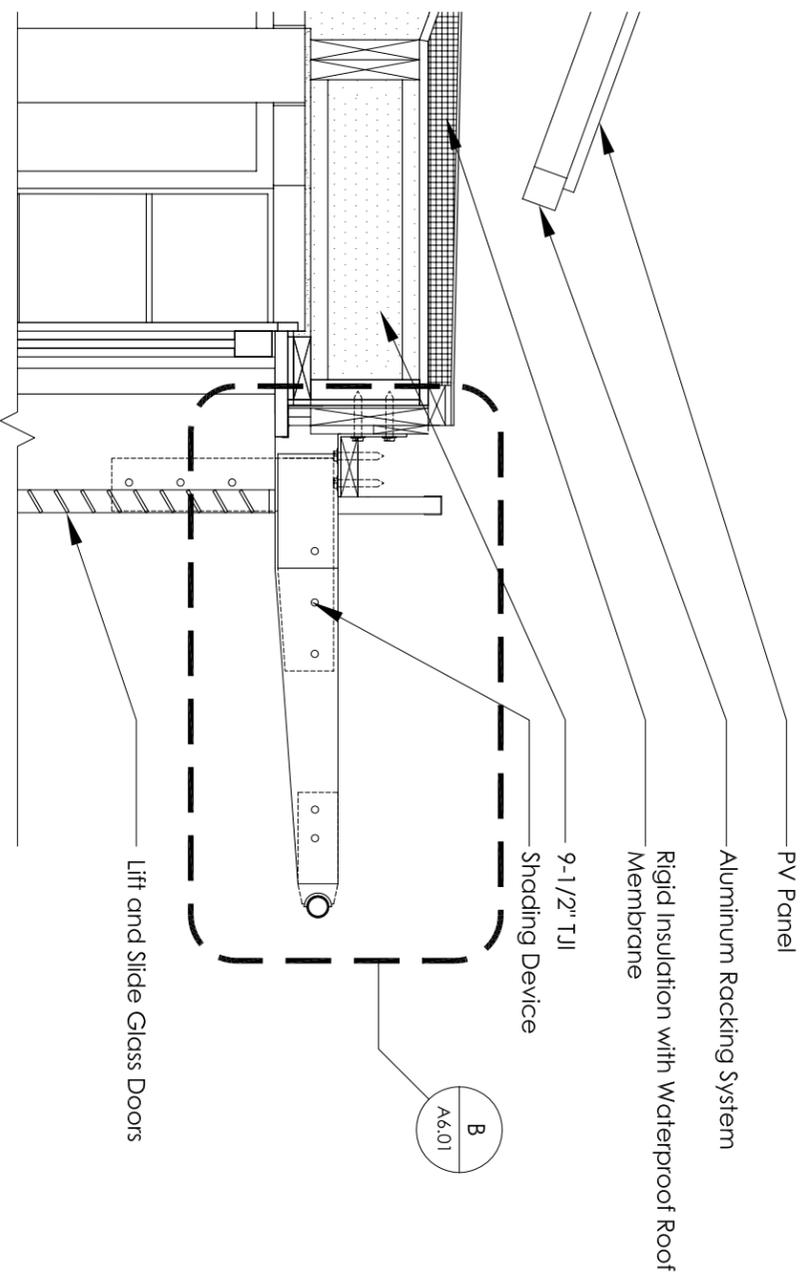


Wall Sections

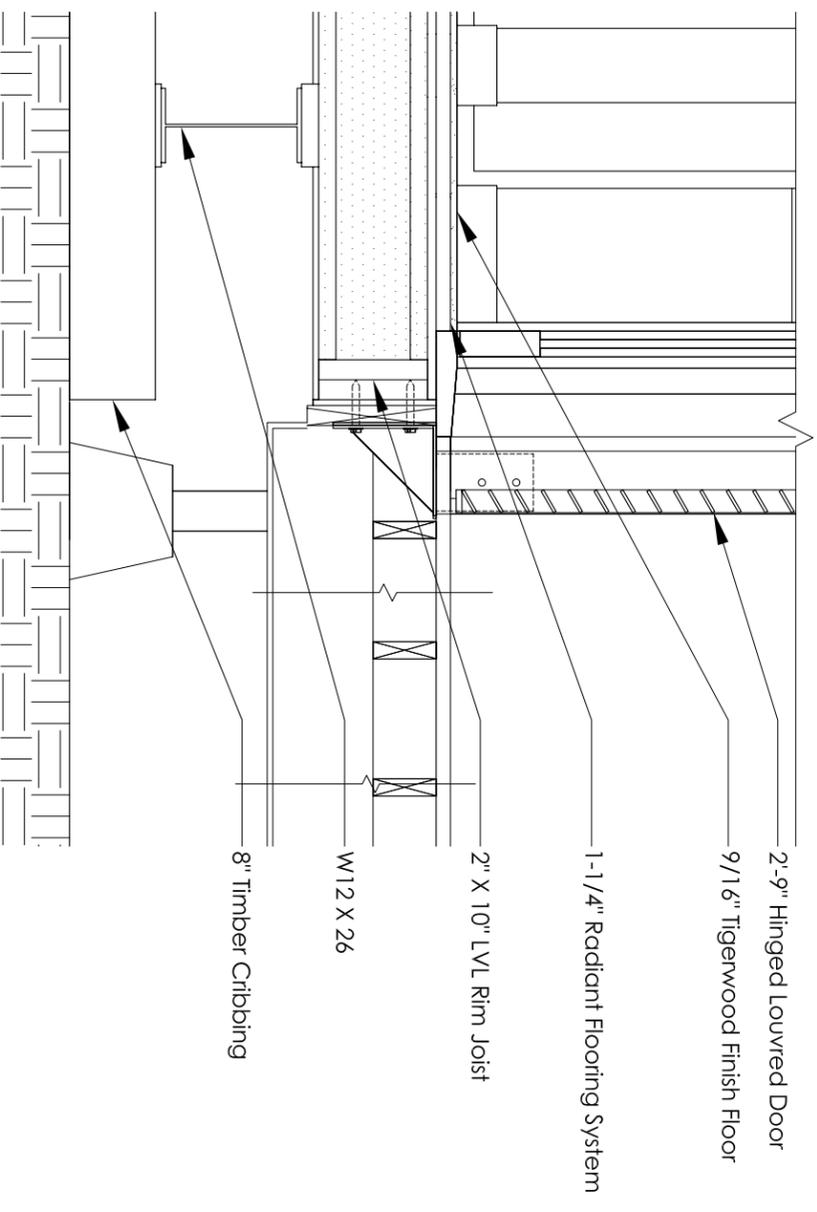
A3.12



A Section at Shower Door
3/4"=1'-0"



B Section at South Wall
3/4"=1'-0"



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 - 08.07.07 SD CDS
 - 08.17.07 SD CDS



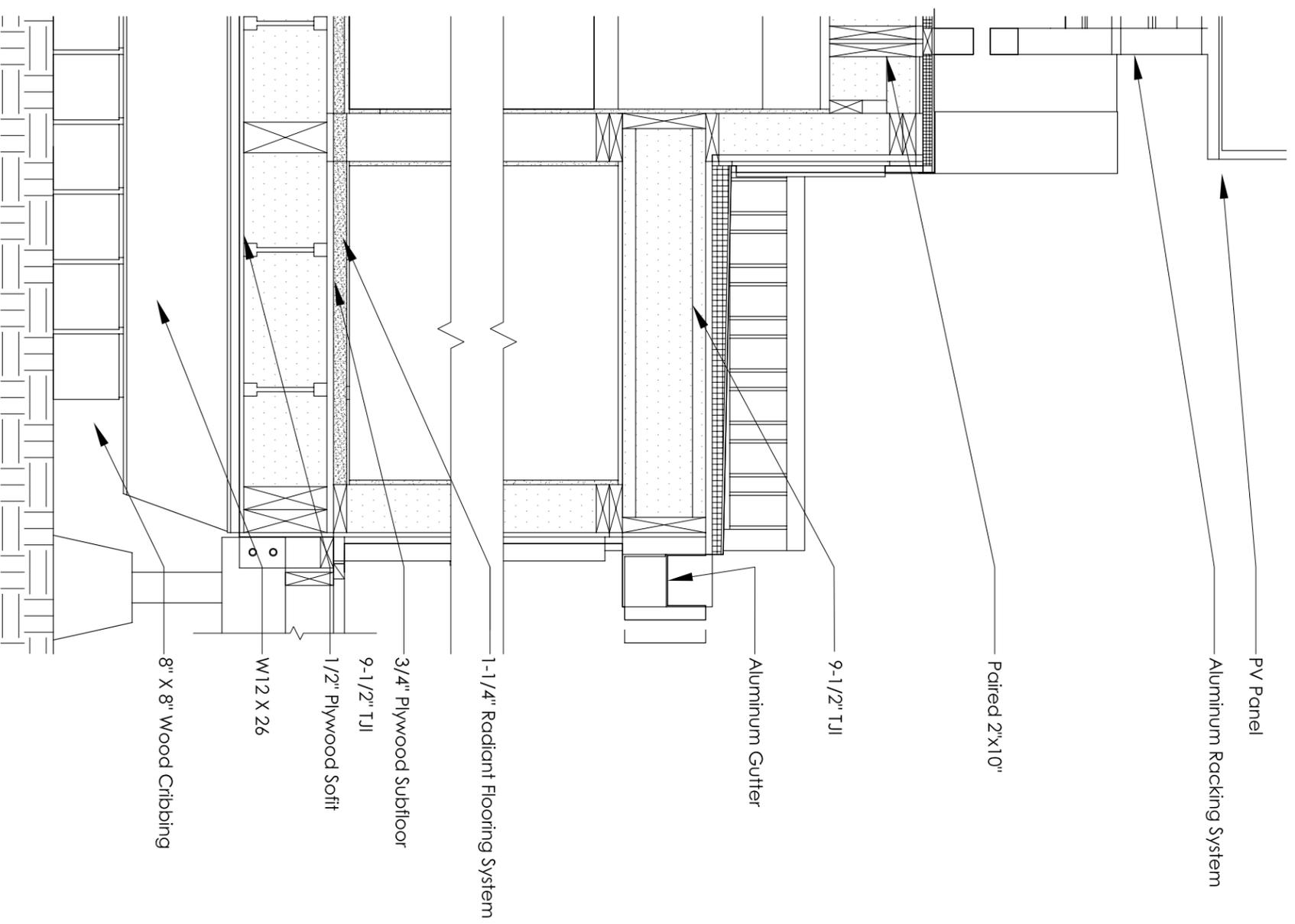
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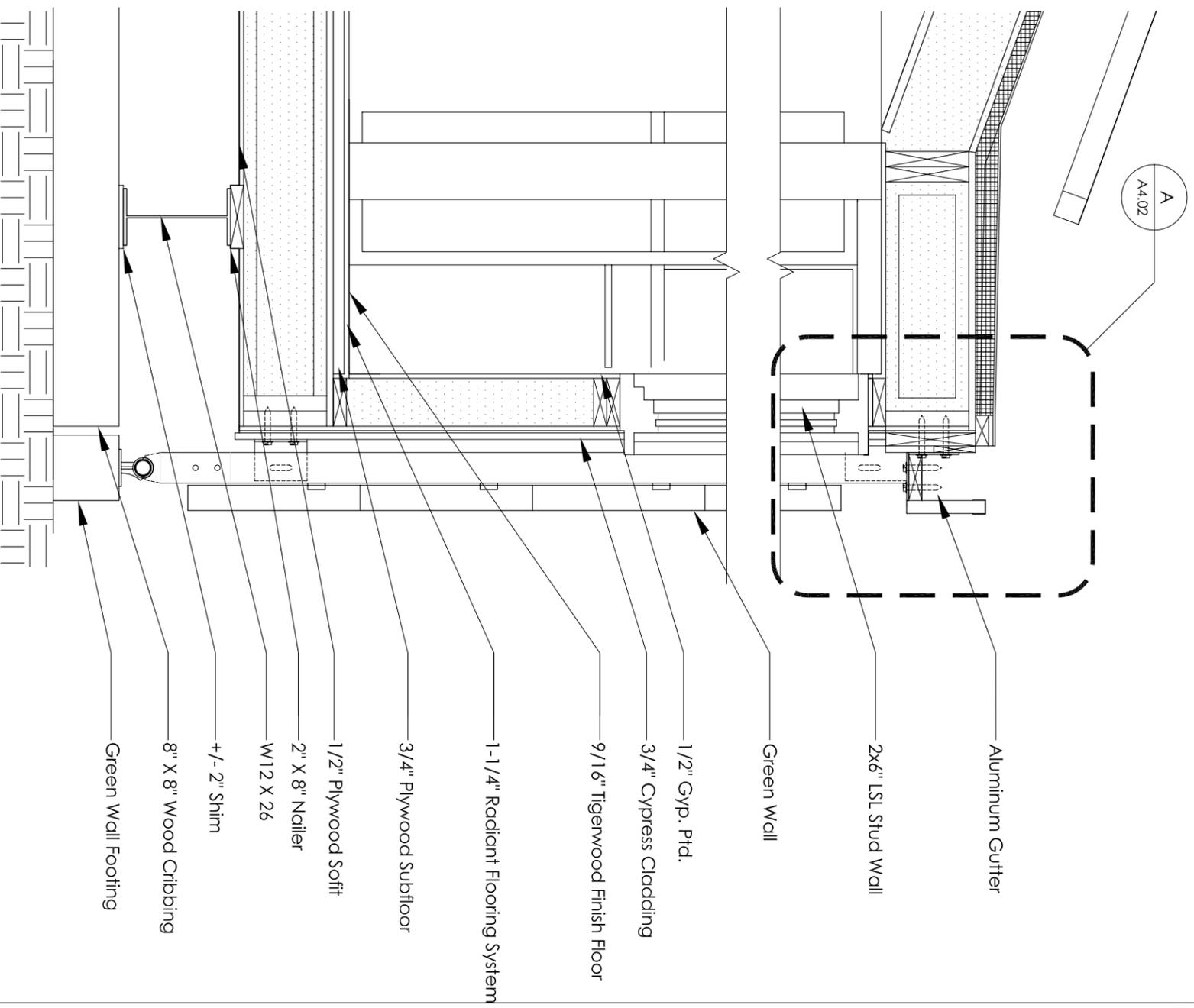


Wall Sections

A3.13



A Section at Mechanical Room
3/4"=1'-0"



B Section at Green Wall
3/4"=1'-0"



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07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



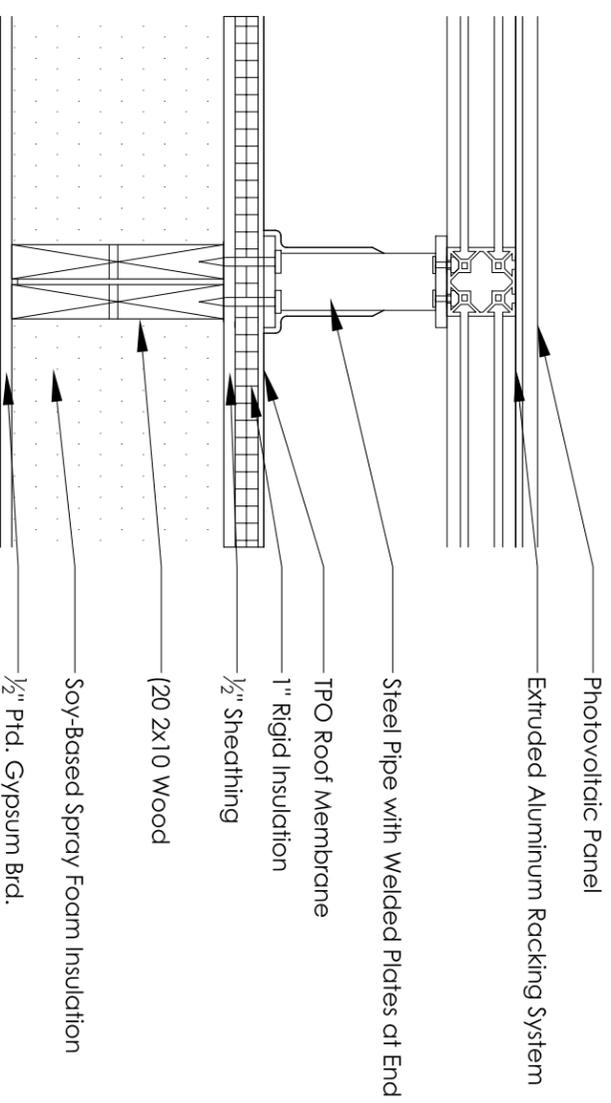
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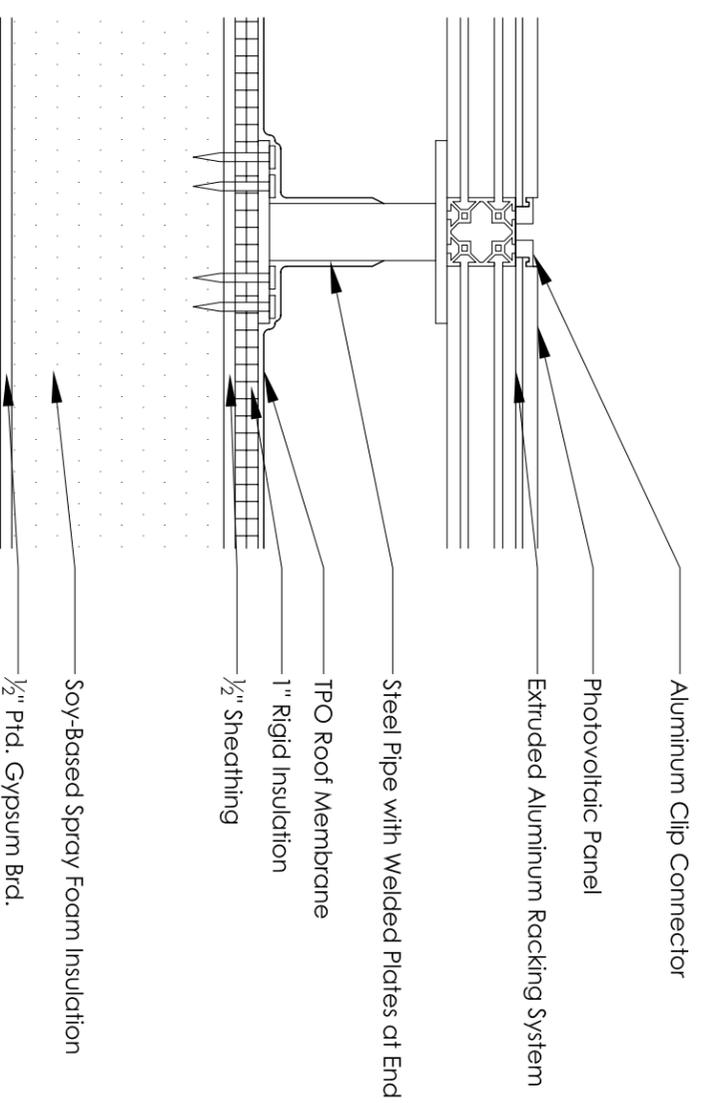


Wall Sections

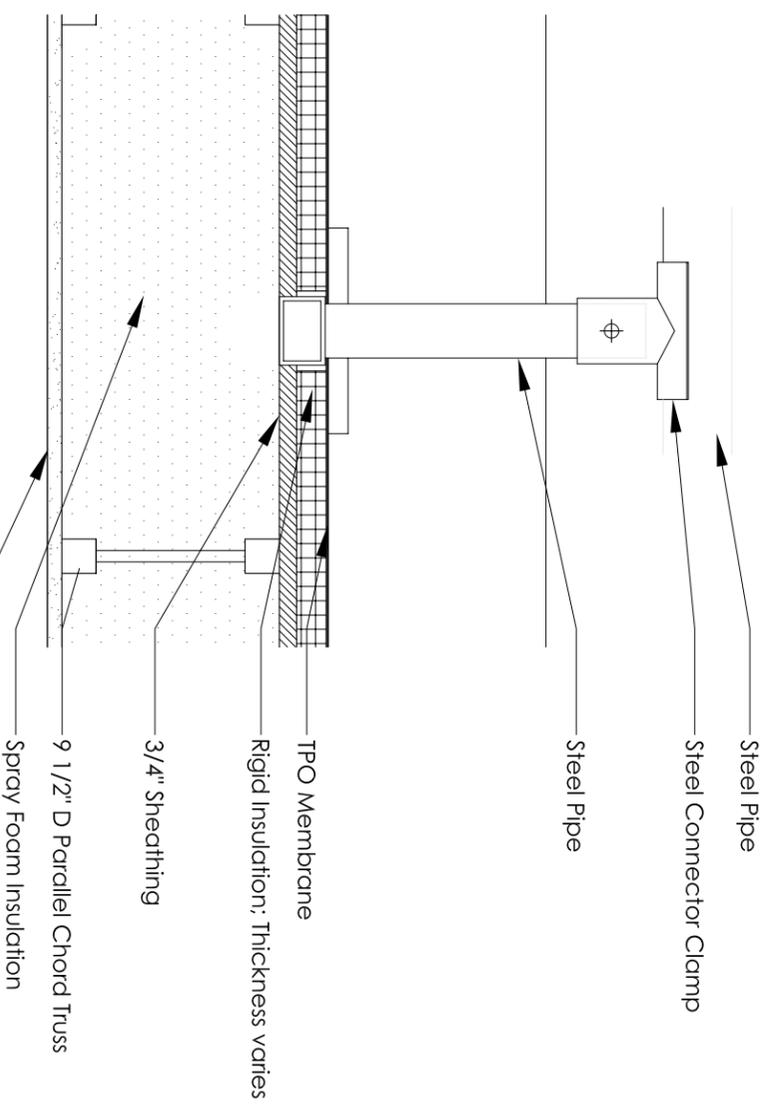
A3.14



A
North-South Racking System
1-1/2"=1'-0"



B
East-West Racking System
1-1/2"=1'-0"



C
Steel Upstand and Distribution Pipe
1-1/2"=1'-0"



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 - 08.17.07 SD CDS



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Enlarged
Details

A4.01



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- 08.07.07 SD CDS
- 08.17.07 SD CDS



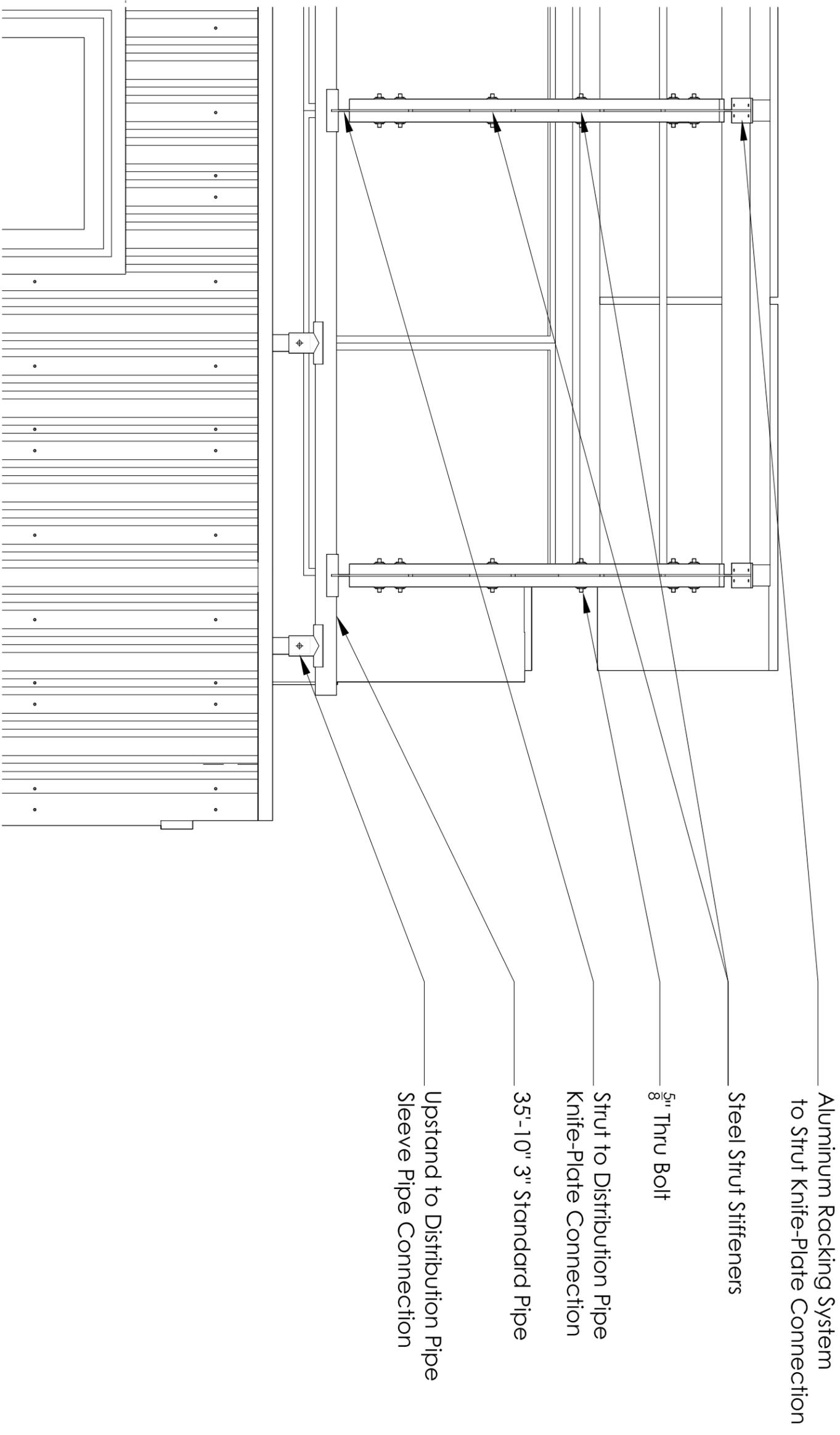
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A4.02



A
3/4"=1'-0"

Racking System Strut Support



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- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



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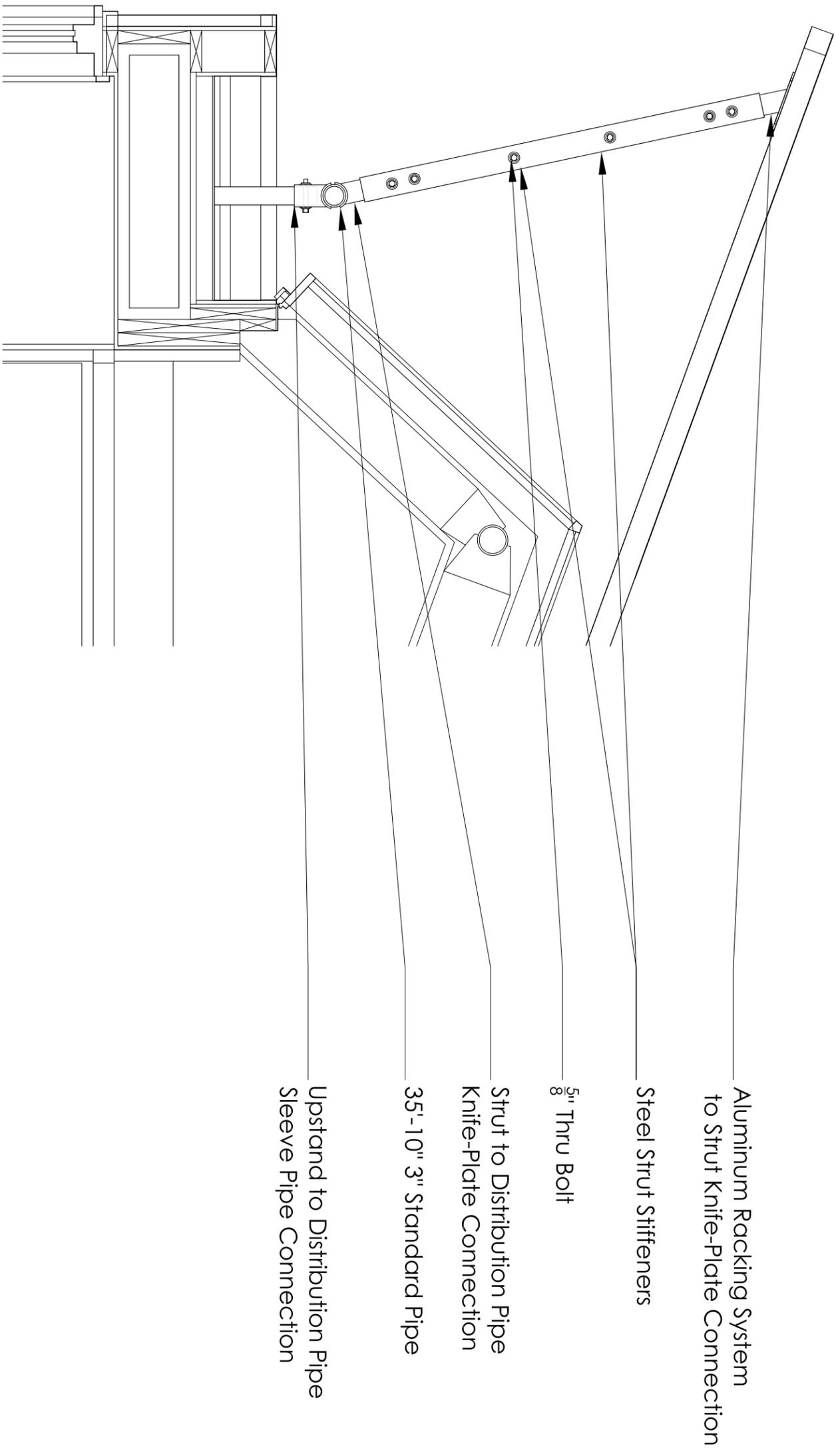
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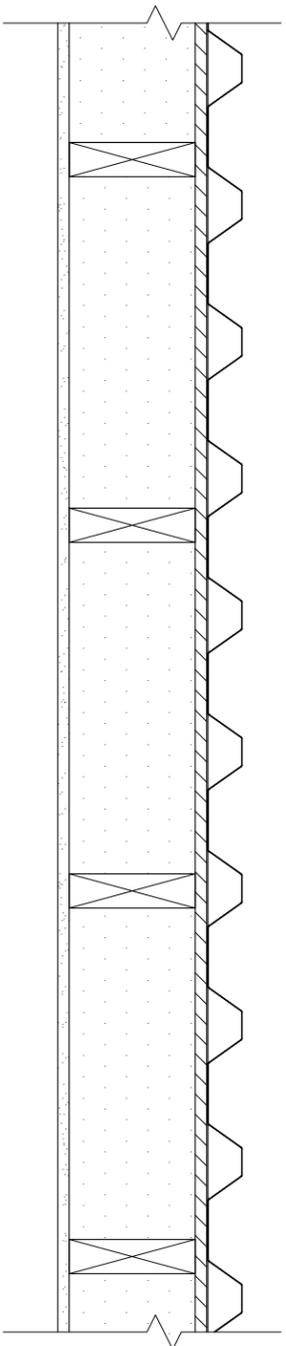


Enlarged
Details

A4.03

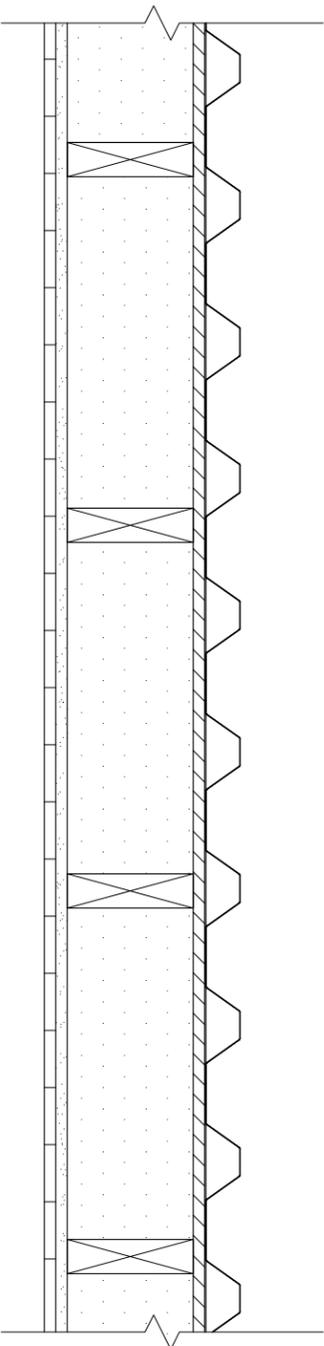


A Racking System Strut Support Section
3/4"=1'-0"



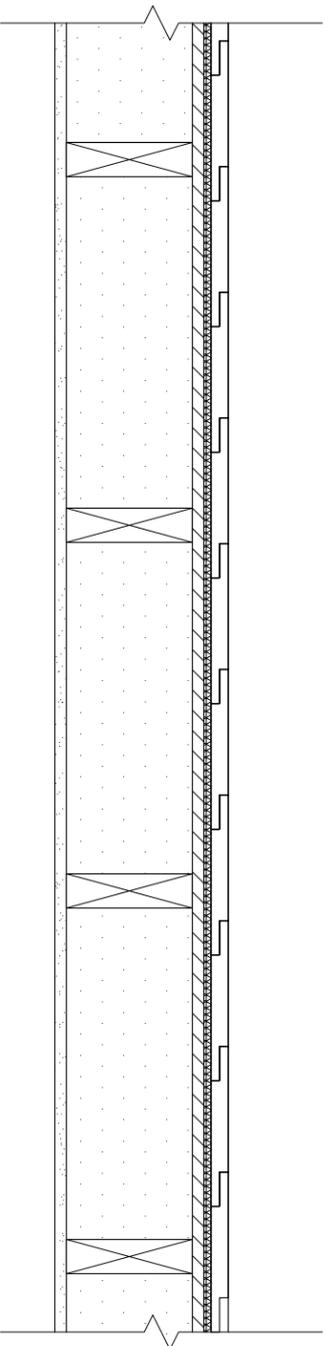
A 2" x 6" Exterior Partition Corrugated Metal & Gyp. Board
1'-1 1/2" = 1'-0"

- 1 1/2" Corrugated Steel Siding
- Waterproof Membrane
- Housewrap
- 1/2" Plywood Sheathing
- 2" x 6" LSL Stud 16" OC
- Sprayfoam Insulation
- 1/2" Gypsum Board



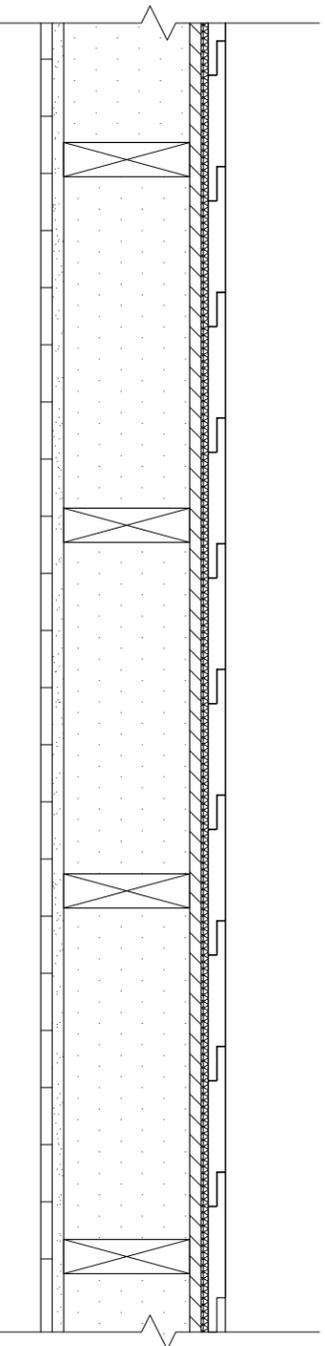
B 2" x 6" Exterior Partition With Corrugated Metal & Tile
1'-1 1/2" = 1'-0"

- 1 1/2" Corrugated Steel Siding
- Waterproof Membrane
- Housewrap
- 1/2" Plywood Sheathing
- 2" x 6" LSL Stud 16" OC
- Sprayfoam Insulation
- 1/2" Cementitious Board
- 1/8" Recycled Glass Tile



C 2" x 6" Exterior Partition With Wood Siding and Gyp. Board
1'-1 1/2" = 1'-0"

- 3/4" Channel Lap Wood Siding
- 1/4" Drainage Mat
- 1/2" Plywood Sheathing
- 2" x 6" LSL Stud 16" OC
- Sprayfoam Insulation
- 1/2" Gypsum Board



D 2" x 6" Exterior Partition with Wood Siding and Tile
1'-1 1/2" = 1'-0"

- 3/4" Channel Lap Wood Siding
- 1/4" Drainage Mat
- 1/2" Plywood Sheathing
- 2" x 6" LSL Stud 16" OC
- Sprayfoam Insulation
- 1/2" Cementitious Board
- 1/8" Recycled Glass Tile



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Revisions:

- 03.06.07 SD CDS
- 07.09.07 PFS TPIP
- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



date: 01.09.08
drawn by: BW/KS
checked by: AEG

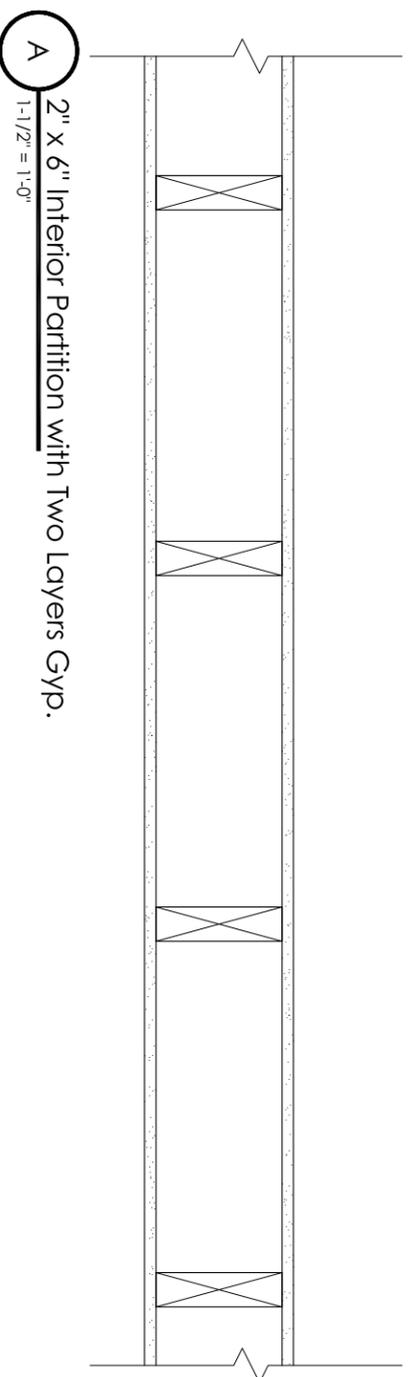
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Ext. Wall
Types

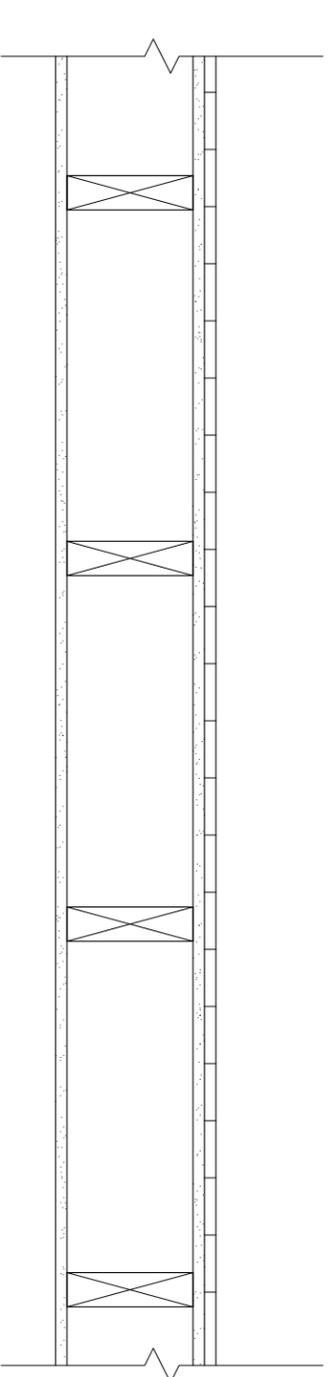
A5.01



A

2" x 6" Interior Partition with Two Layers Gyp.
1'-1/2" = 1'-0"

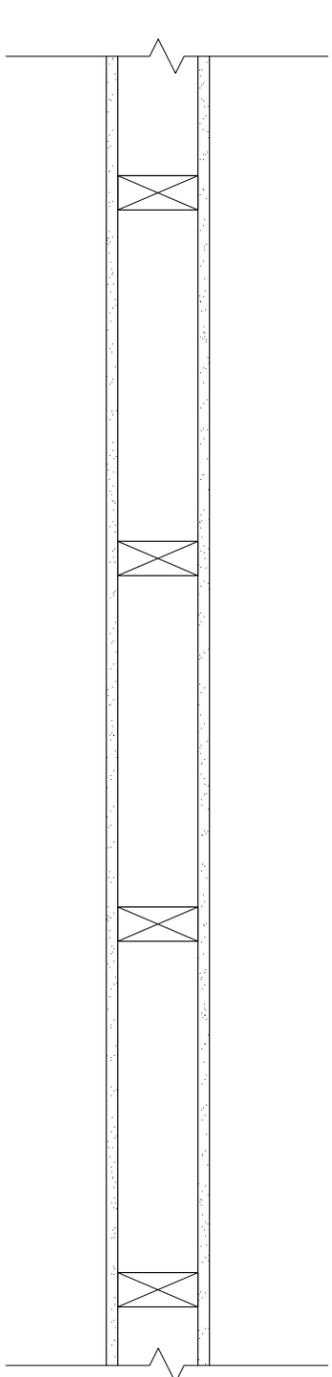
- 1/2" Gyp. Board
- 2" x 6" LSL Stud 16" OC
- 1/2" Gypsum Board



B

2" x 6" Interior Partition with Two Layers Gyp. & Tile
1'-1/2" = 1'-0"

- 1/8" Ceramic Tile
- 1/2" Cementitious Board
- 2" x 6" LSL Stud 16" OC
- 1/2" Gypsum Board



C

2" x 4" Interior Partition with Two Layers Gyp.
1'-1/2" = 1'-0"

- 1/2" Gyp. Board
- 2" x 4" LSL Stud 16" OC
- 1/2" Gypsum Board



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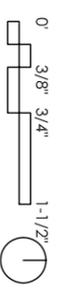


- Revisions:
- 03.06.07 SD CDS
 - 07.09.07 PFS TPIP
 - 07.28.07 PG CO.
 - 08.07.07 SD CDS
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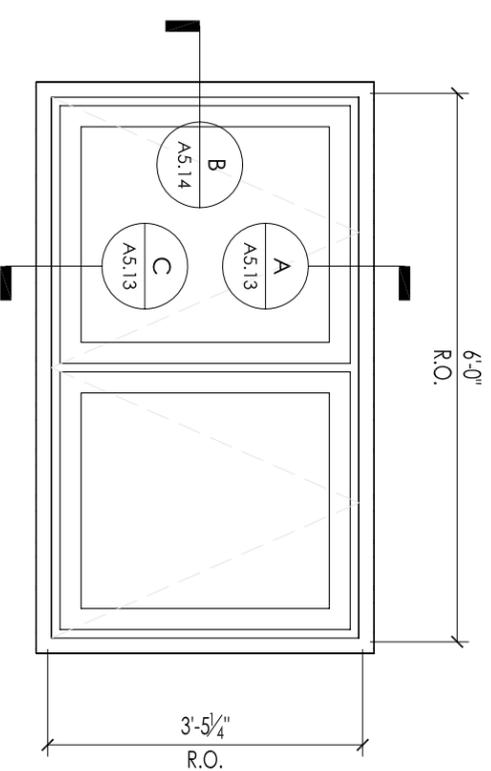
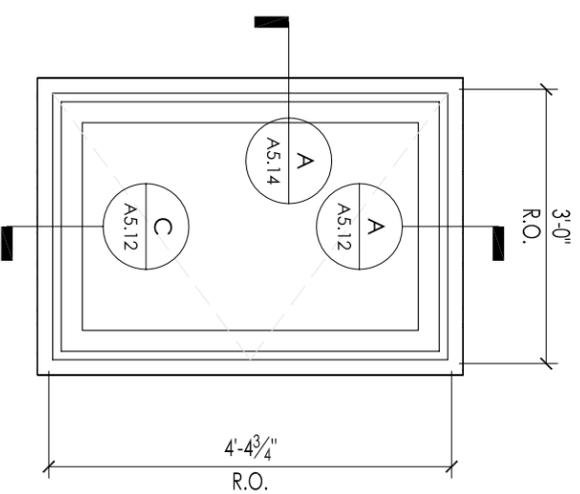
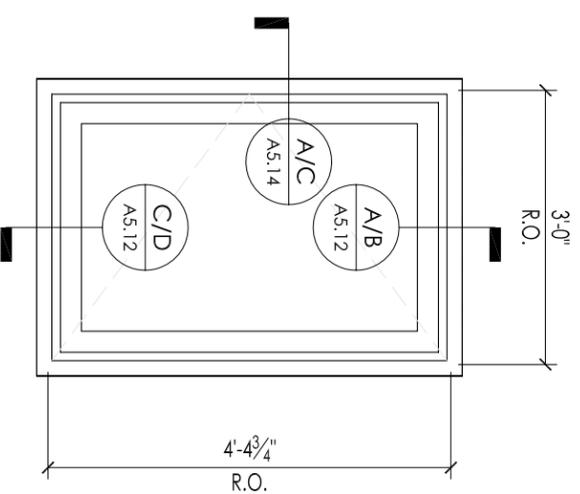
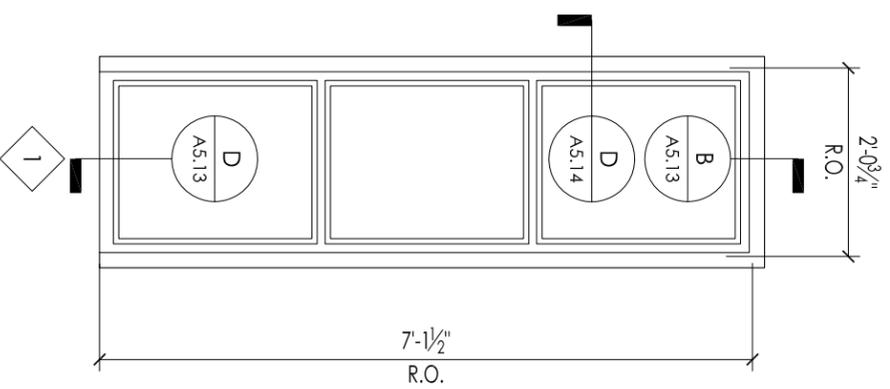


**Int. Partition
Types**

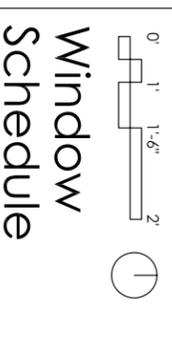
A5.02

WINDOW SCHEDULE

MARK	R.O. SIZE		TYPE	MATERIAL	Hardware	Frame Material	Glass	Location
	WIDTH	HEIGHT						
1	2'-0 ³ / ₄ "	7'-1 ¹ / ₂ "	Fixed	Doug. Fir	Truth Mirage Lock	Doug. Fir	³ / ₄ " Low-e, Temp.	Living Room
2	3'-0"	4'-4 ³ / ₄ "	Csmt.	Doug. Fir	Truth Mirage Lock	Doug. Fir	³ / ₄ " Low-e	Workstation
2	3'-0"	4'-4 ³ / ₄ "	Csmt.	Doug. Fir	Truth Mirage Lock	Doug. Fir	³ / ₄ " Low-e	Bedroom
3	3'-0"	4'-4 ³ / ₄ "	Csmt.	Doug. Fir	Truth Mirage Lock	Doug. Fir	³ / ₄ " Low-e, Temp.	Bathroom
4	6'-0"	3'-5 ¹ / ₄ "	Awng.	Doug. Fir	Truth Mirage Lock	Doug. Fir	³ / ₄ " Low-e	Kitchen



A
1/2" = 1'-0"



Window
Schedule

A5.11



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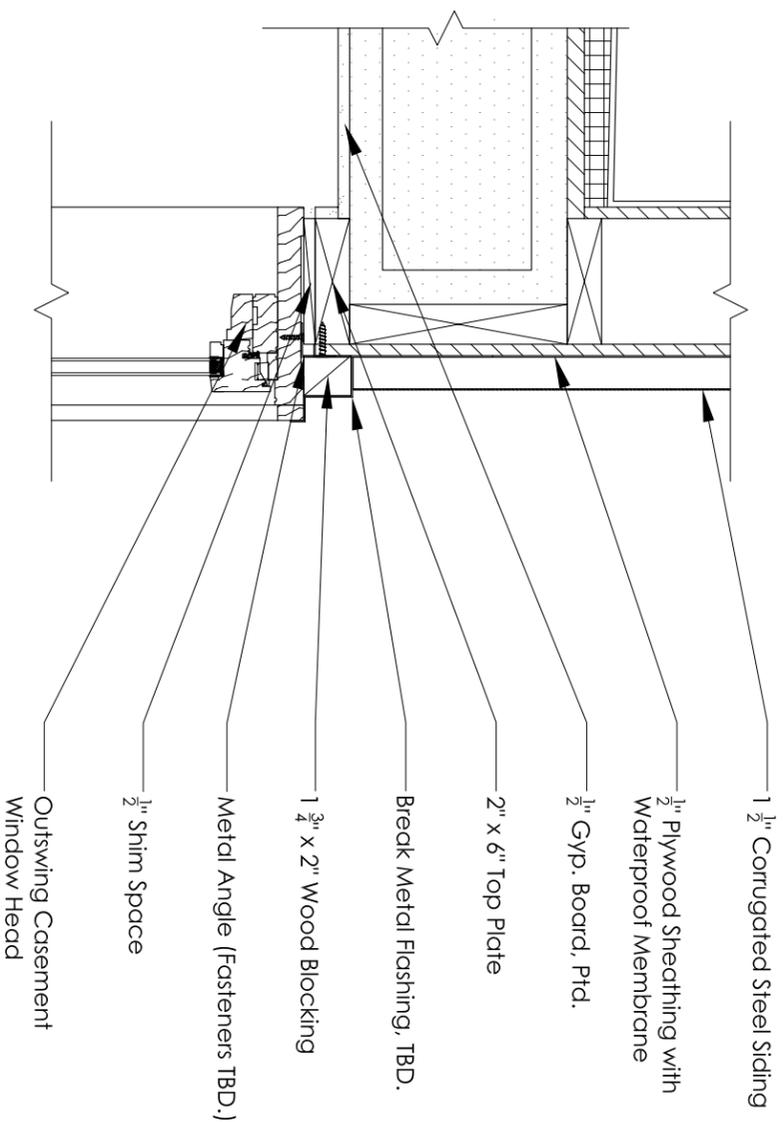


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07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS

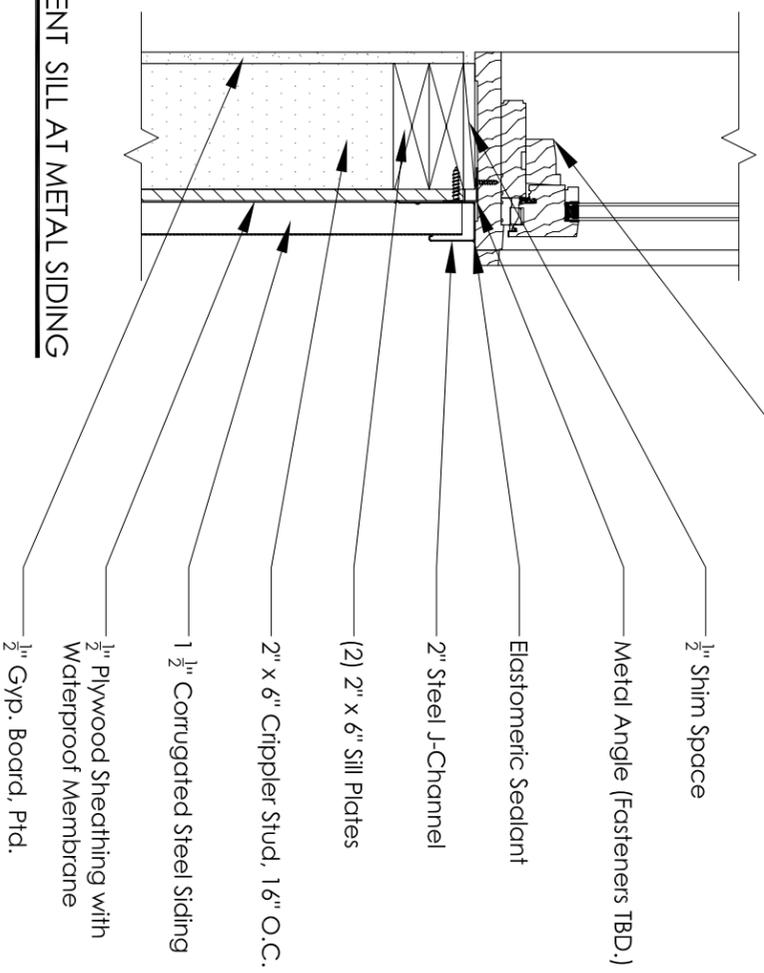


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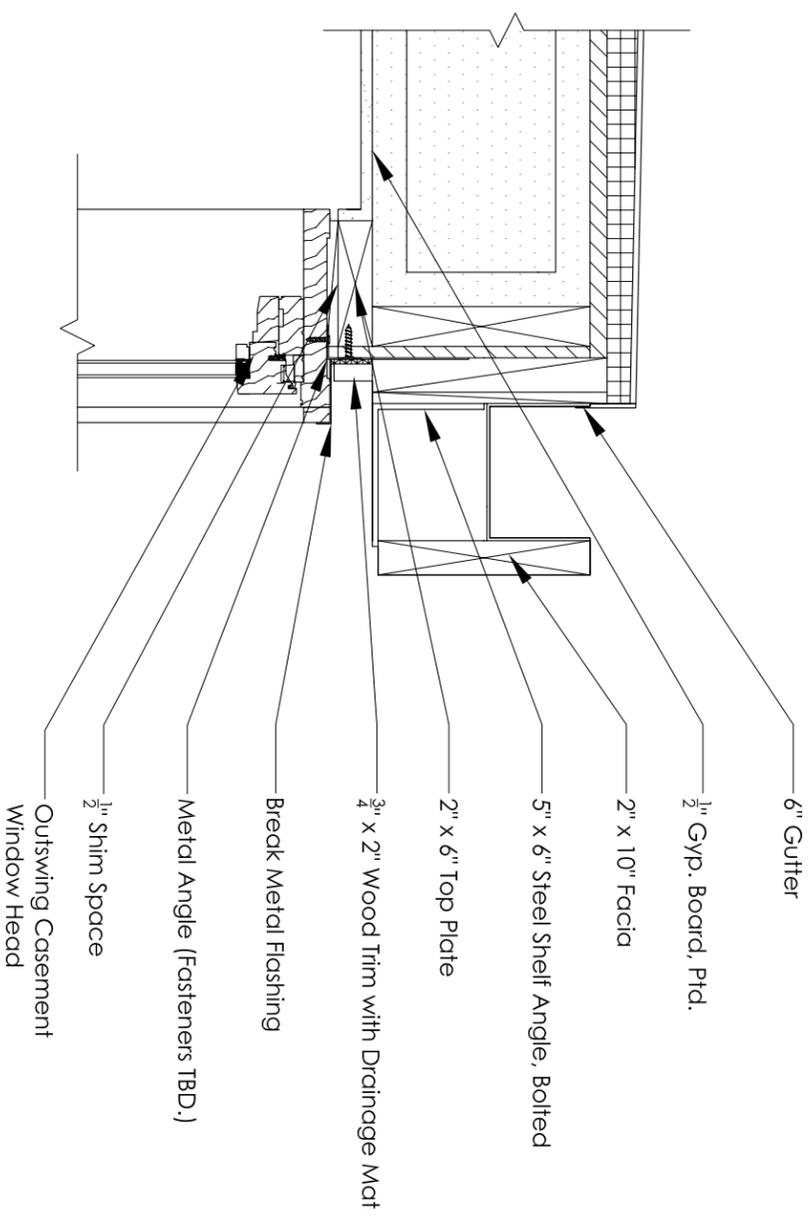
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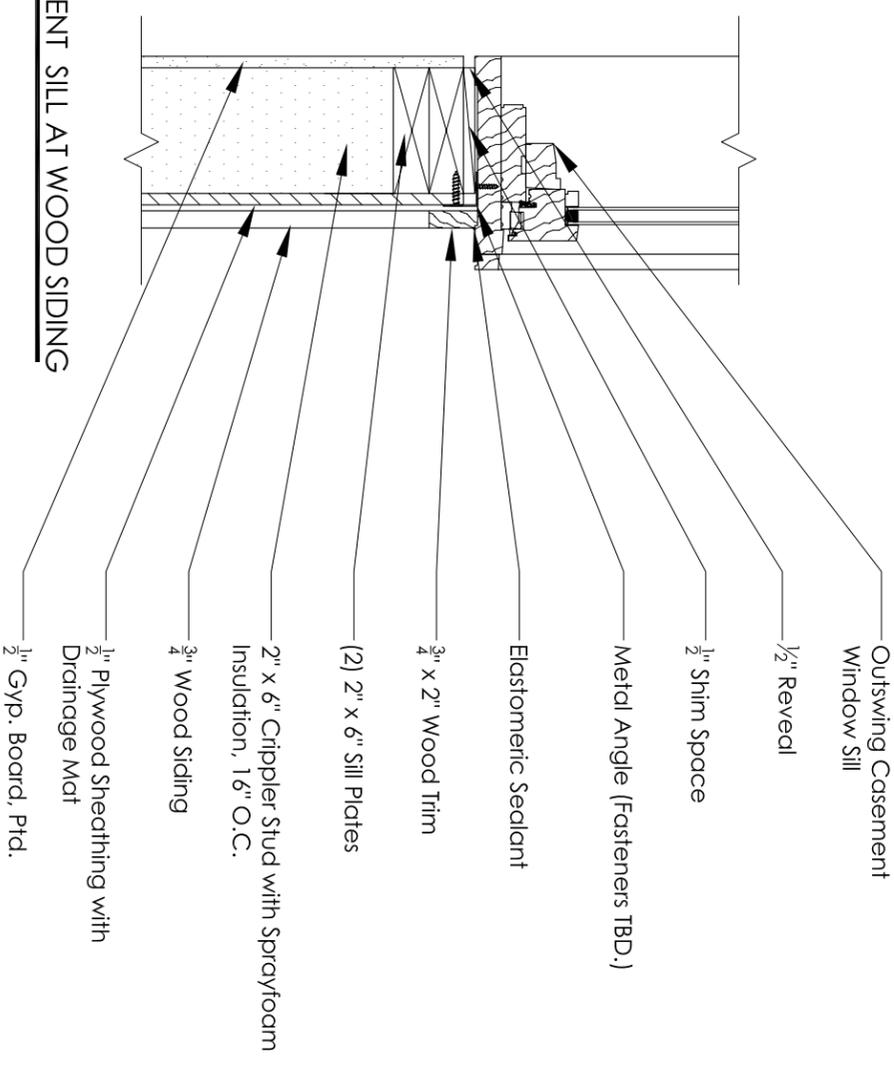
A
CASEMENT HEAD AT METAL SIDING
1-1/2" = 1'-0"



C
CASEMENT SILL AT METAL SIDING
1-1/2" = 1'-0"



B
CASEMENT HEAD AT FACIA
1-1/2" = 1'-0"



D
CASEMENT SILL AT WOOD SIDING
1-1/2" = 1'-0"



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- 03.06.07 SD CDS
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- 08.07.07 SD CDS
- 08.17.07 SD CDS



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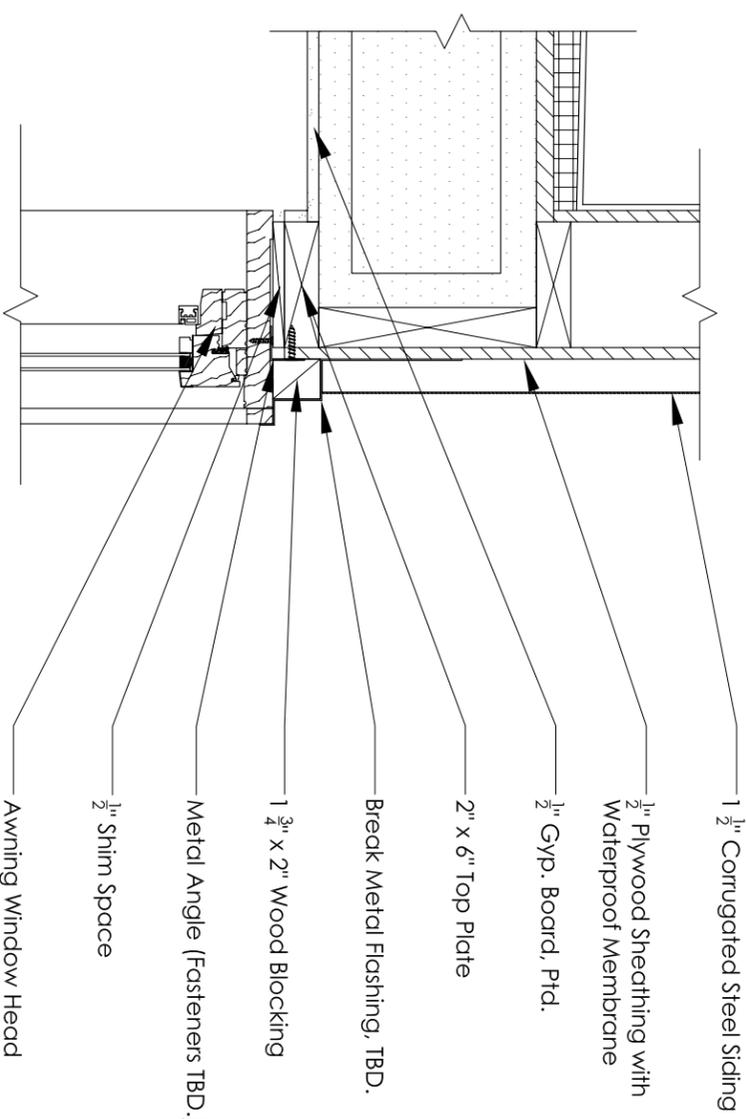
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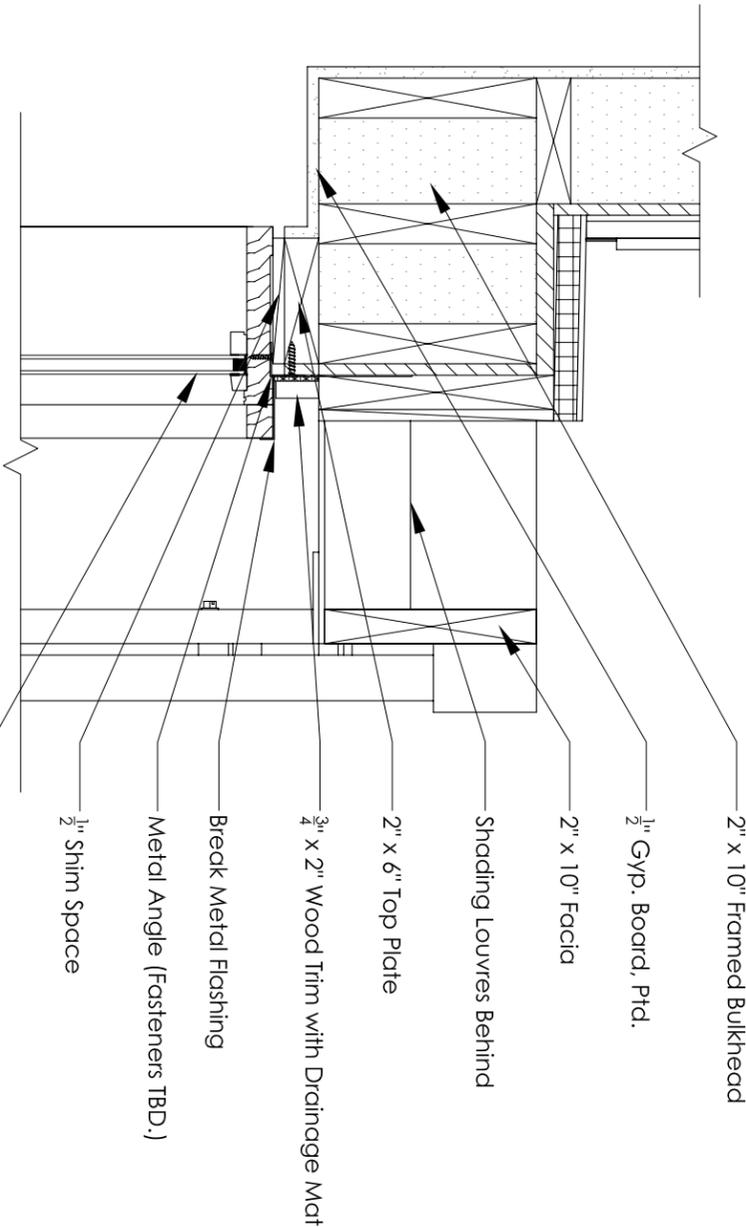


Window
Details

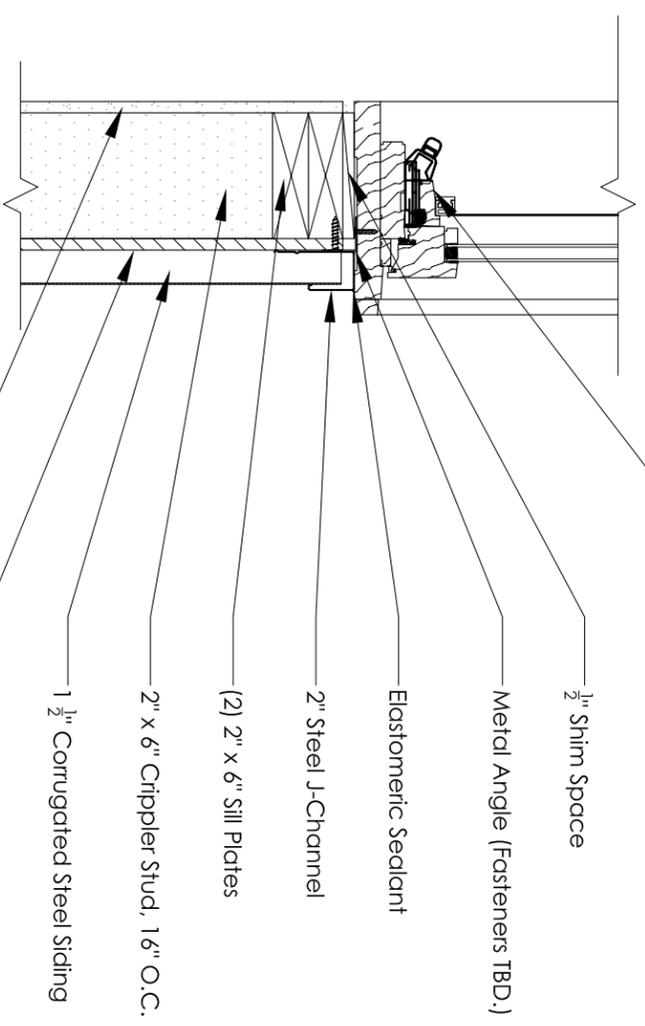
A5.12



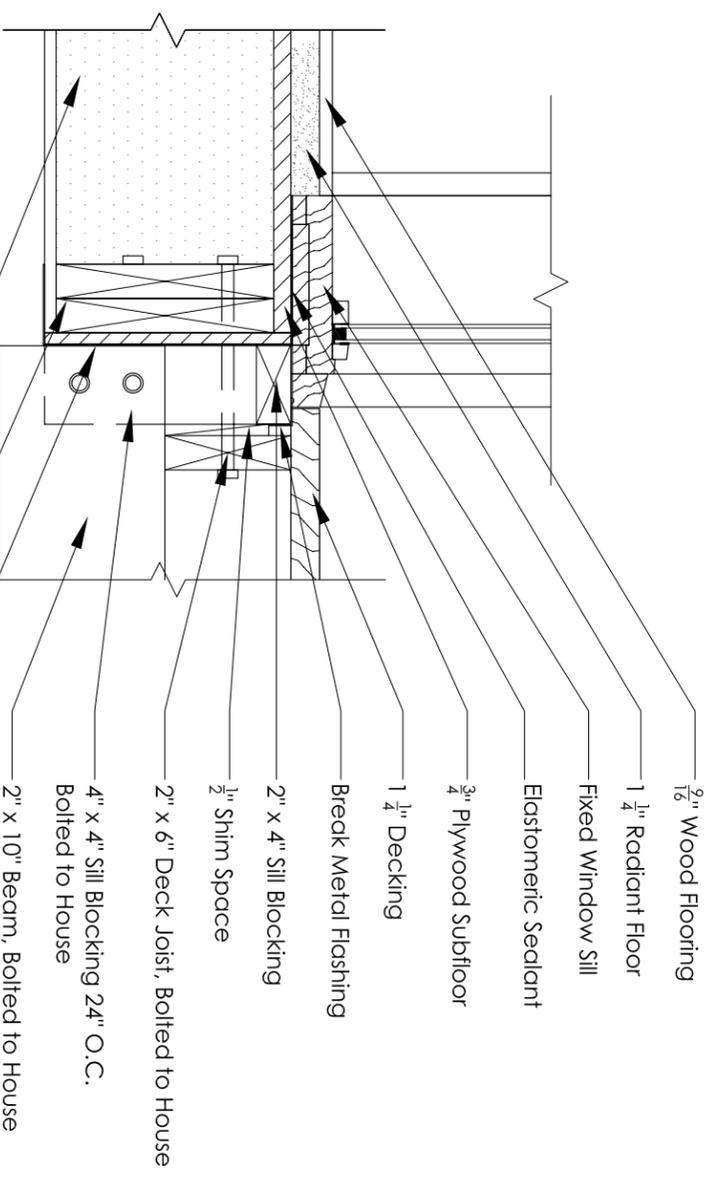
A **AWNING HEAD AT METAL SIDING**
1'-1/2" = 1'-0"



B **FIXED HEAD AT SHADING**
1'-1/2" = 1'-0"



C **AWNING SILL AT METAL SIDING**
1'-1/2" = 1'-0"



D **FIXED SILL AT DECK**
1'-1/2" = 1'-0"



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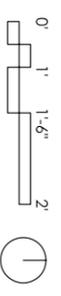


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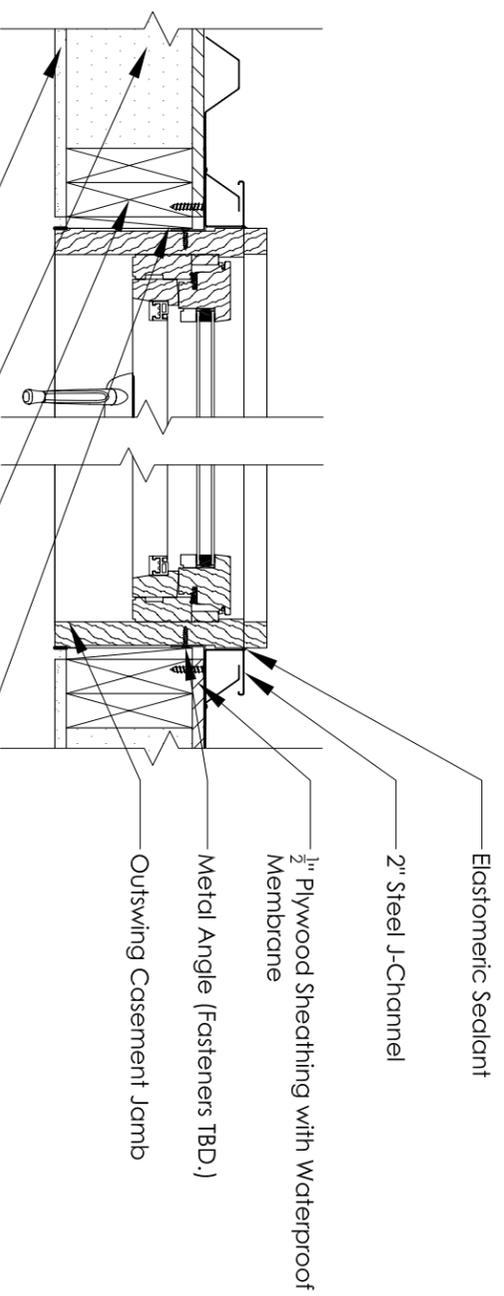
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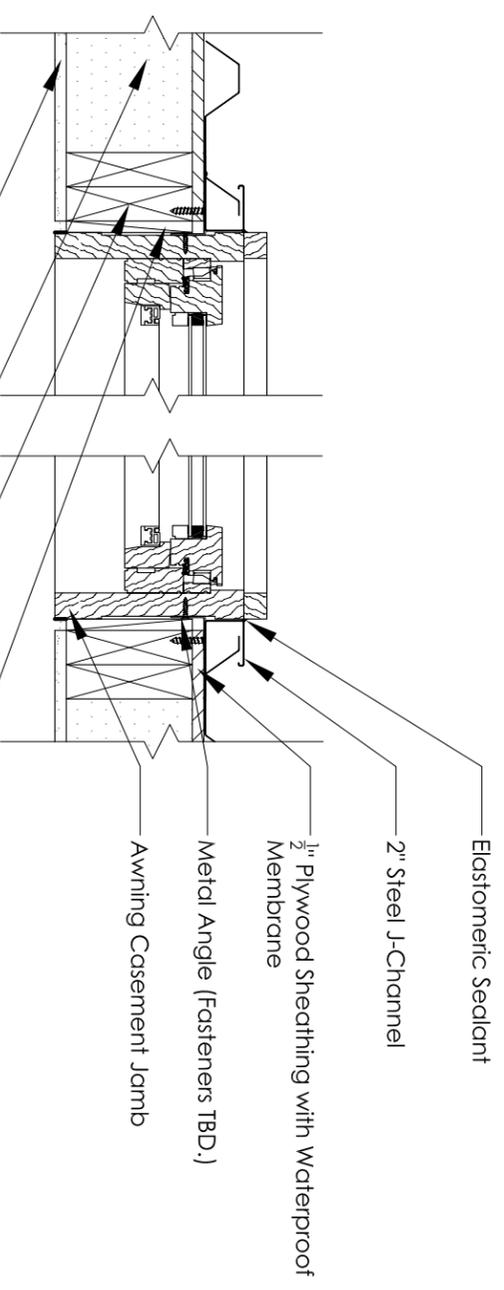


Window
Details

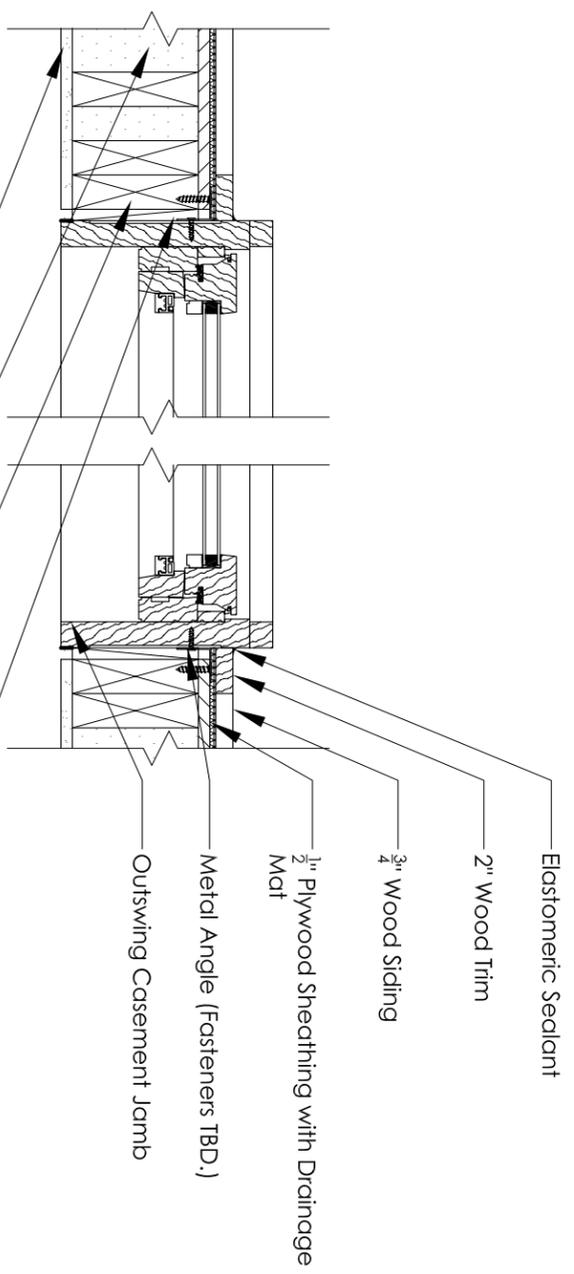
A5.13



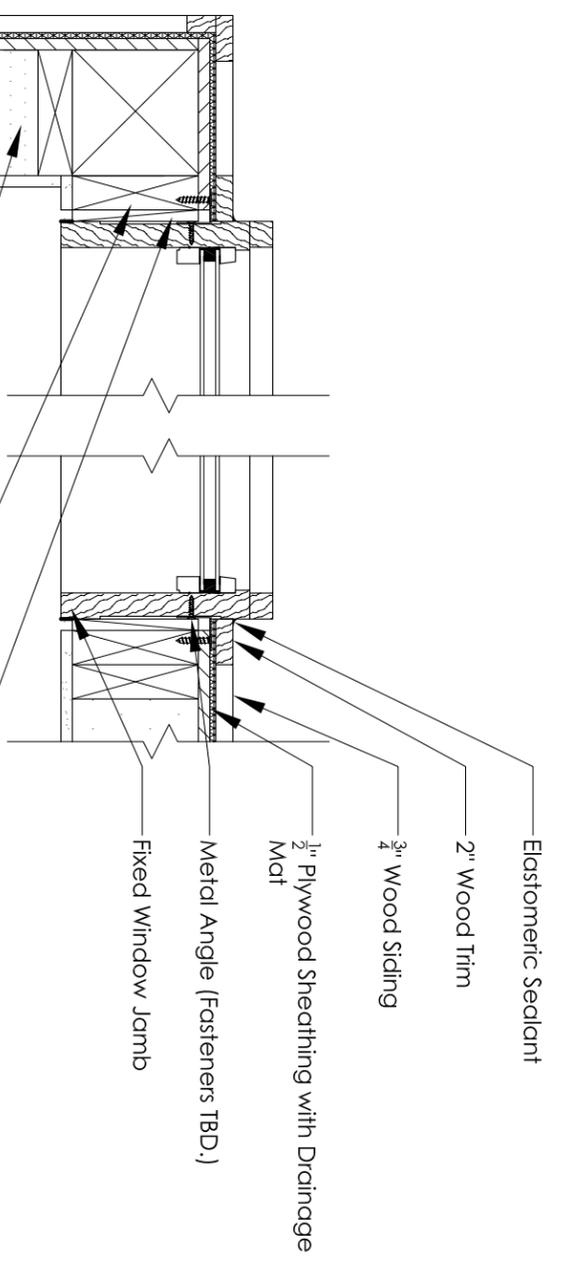
A CASEMENT WINDOW JAMB AT METAL SIDING
 1'-1/2" = 1'-0"



B AWNING WINDOW JAMB AT METAL SIDING
 1'-1/2" = 1'-0"



C CASEMENT WINDOW JAMB AT METAL SIDING
 1'-1/2" = 1'-0"



D FIXED WINDOW JAMB AT WOOD SIDING
 1'-1/2" = 1'-0"



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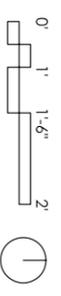


Revisions:
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 07.09.07 PFS TPIP
 07.28.07 PG CO.
 08.07.07 SD CDS
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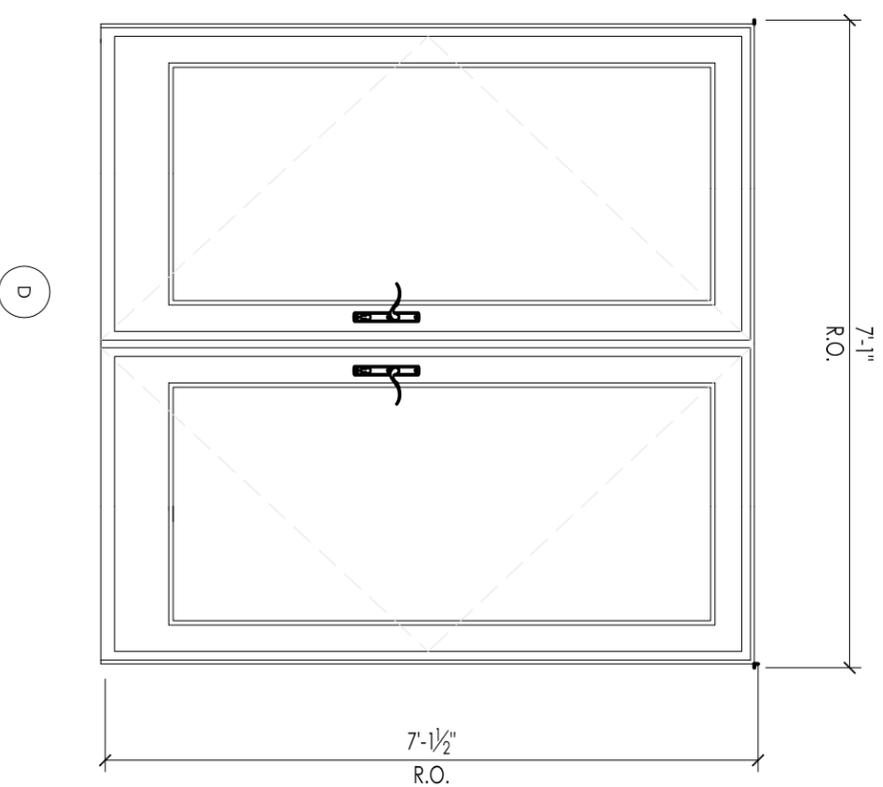
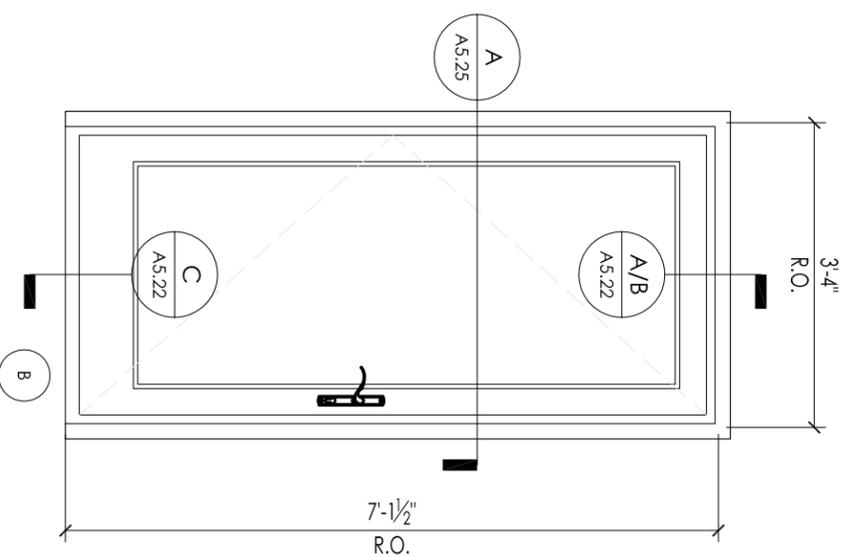
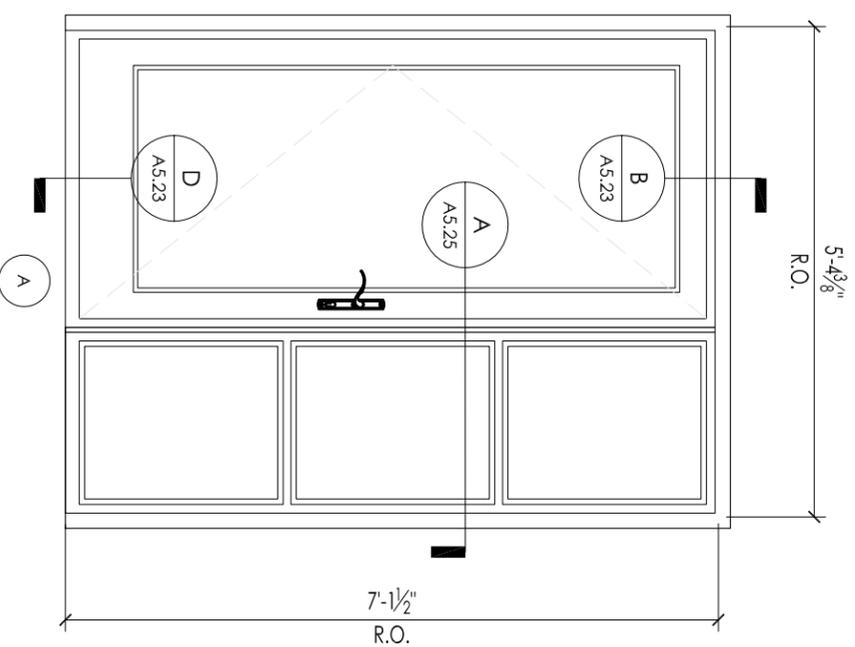
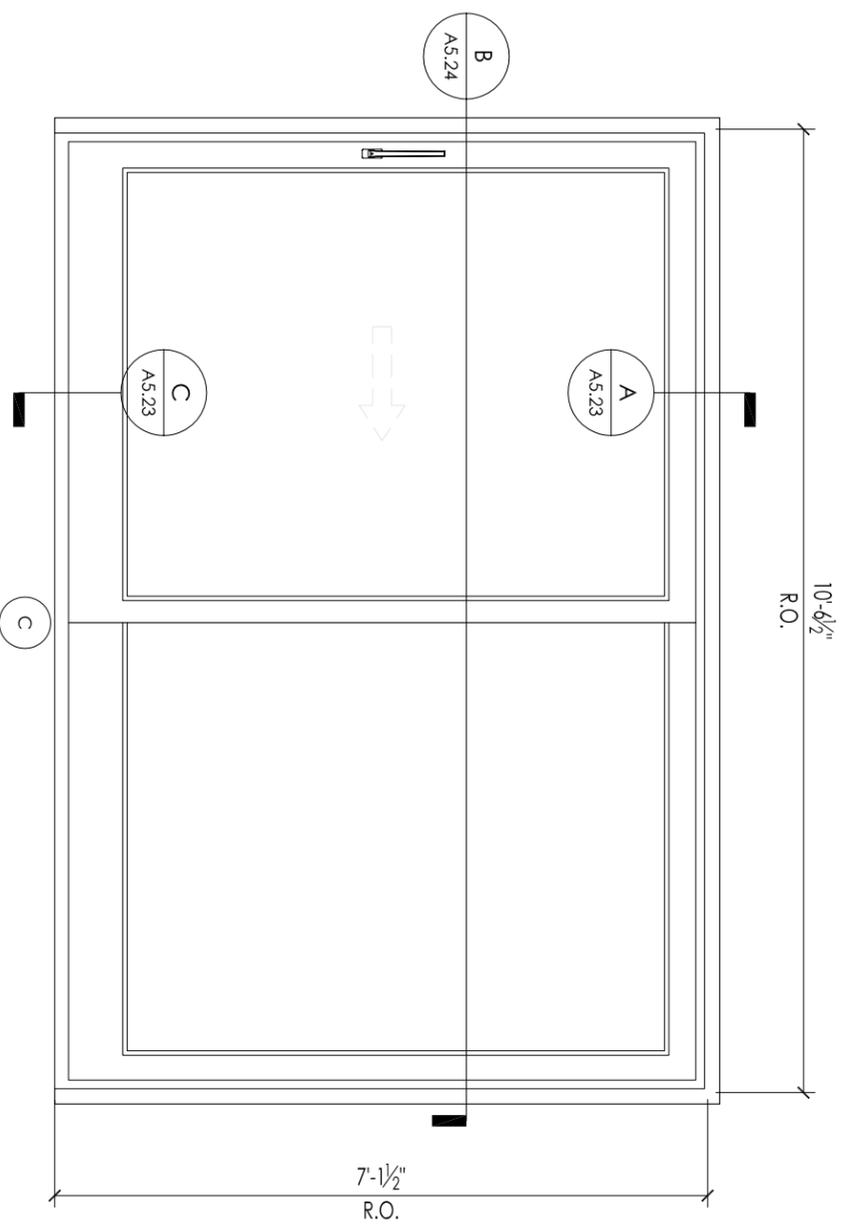


Window
 Details

A5.14

DOOR AND FRAME SCHEDULE

MARK	DOOR R.O.			MATERIAL	GLAZING	FRAME MATERIAL	FIRE RATING LABEL	HARDWARE SET NO	LOCATION
	WD	HGT	THK						
A	5'-4 3/8"	7'-1 1/2"	9 1/4"	Doug. Fir	3/4" Temp.	Doug. Fir	N/A	HOPPE M112PL	West Entry Door
B	3'-4"	7'-1 1/2"	9 1/4"	Doug. Fir	3/4" Temp.	Doug. Fir	N/A	HOPPE M112PL	Kitchen Door
B2	3'-4"	7'-1 1/2"	9 1/4"	Doug. Fir	3/4" Temp., Frosted	Doug. Fir	N/A	HOPPE M112PL	Bathroom Door
C	10'-6 1/2"	7'-1 1/2"	9 1/4"	Doug. Fir	3/4" Temp.	Doug. Fir	N/A	Tredewood L&S Handle HOPPE M112PL	Living Room Mechanical Room
D	6'-0"	7'-1 1/2"	9 1/4"	Doug. Fir	3/4" Temp.	Doug. Fir	N/A		



A
1/2" = 1'-0"



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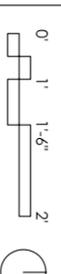
- 03.06.07 SD CDS
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- 08.07.07 SD CDS
- 08.17.07 SD CDS



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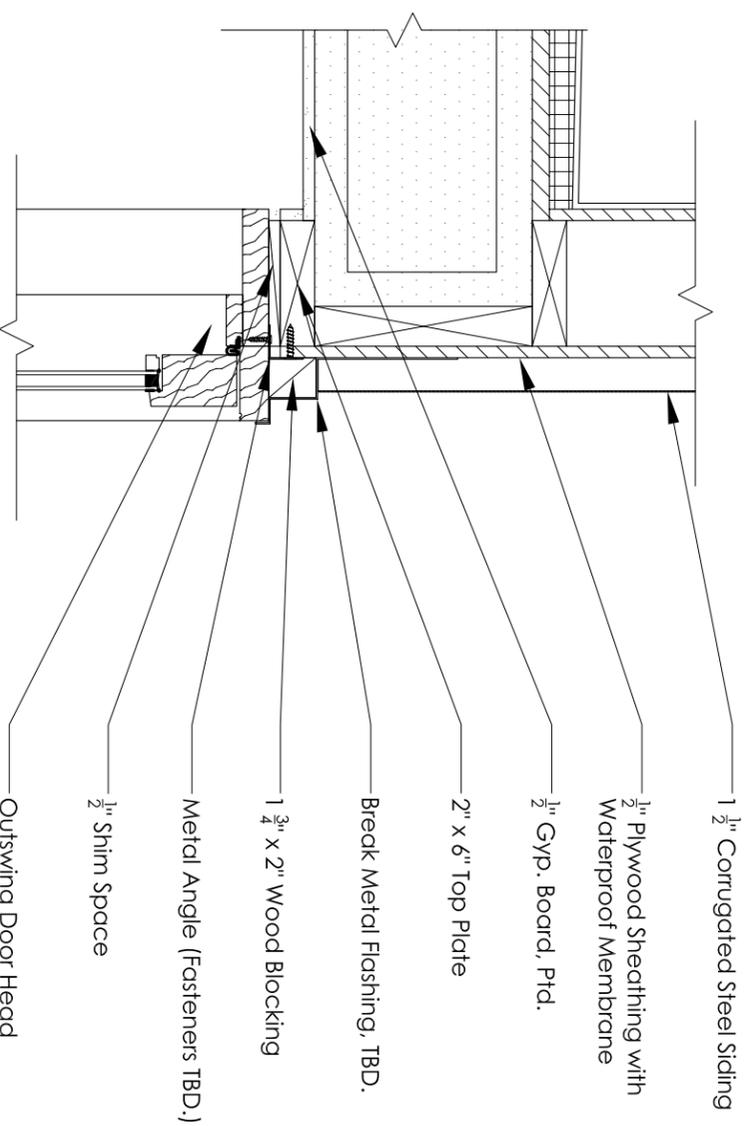
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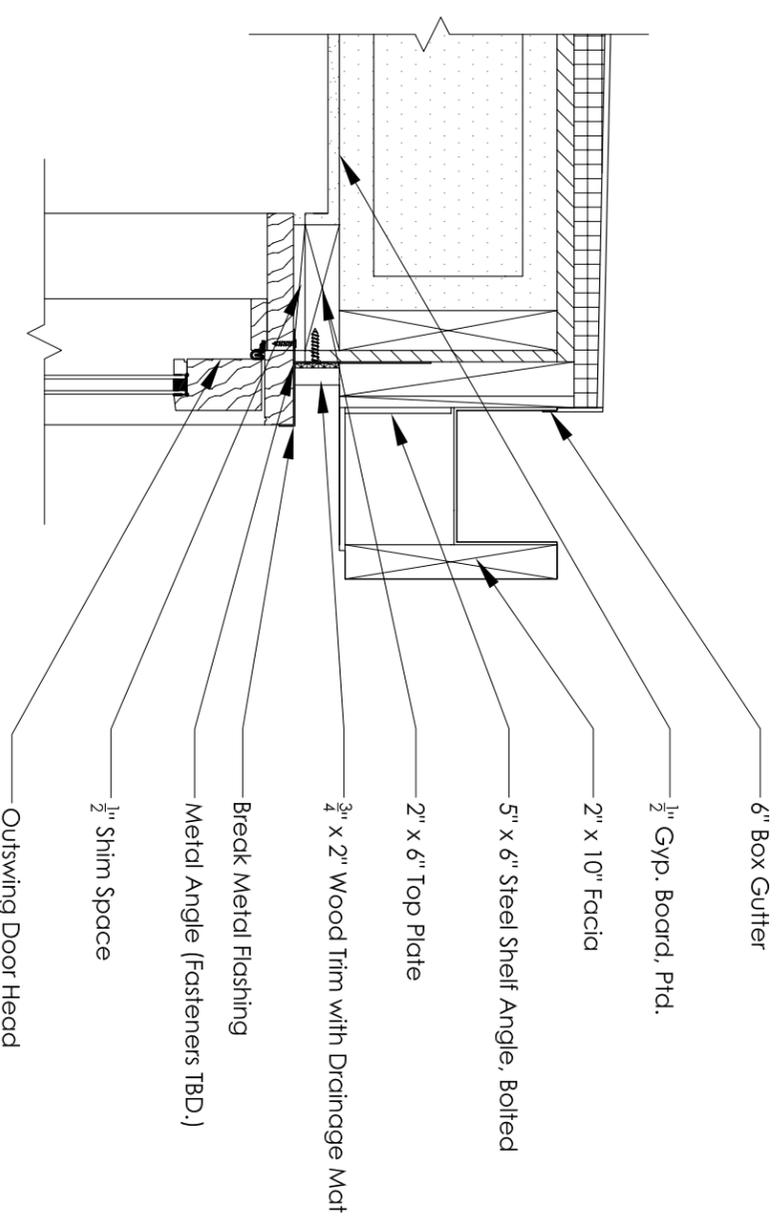


**Door
Schedule**

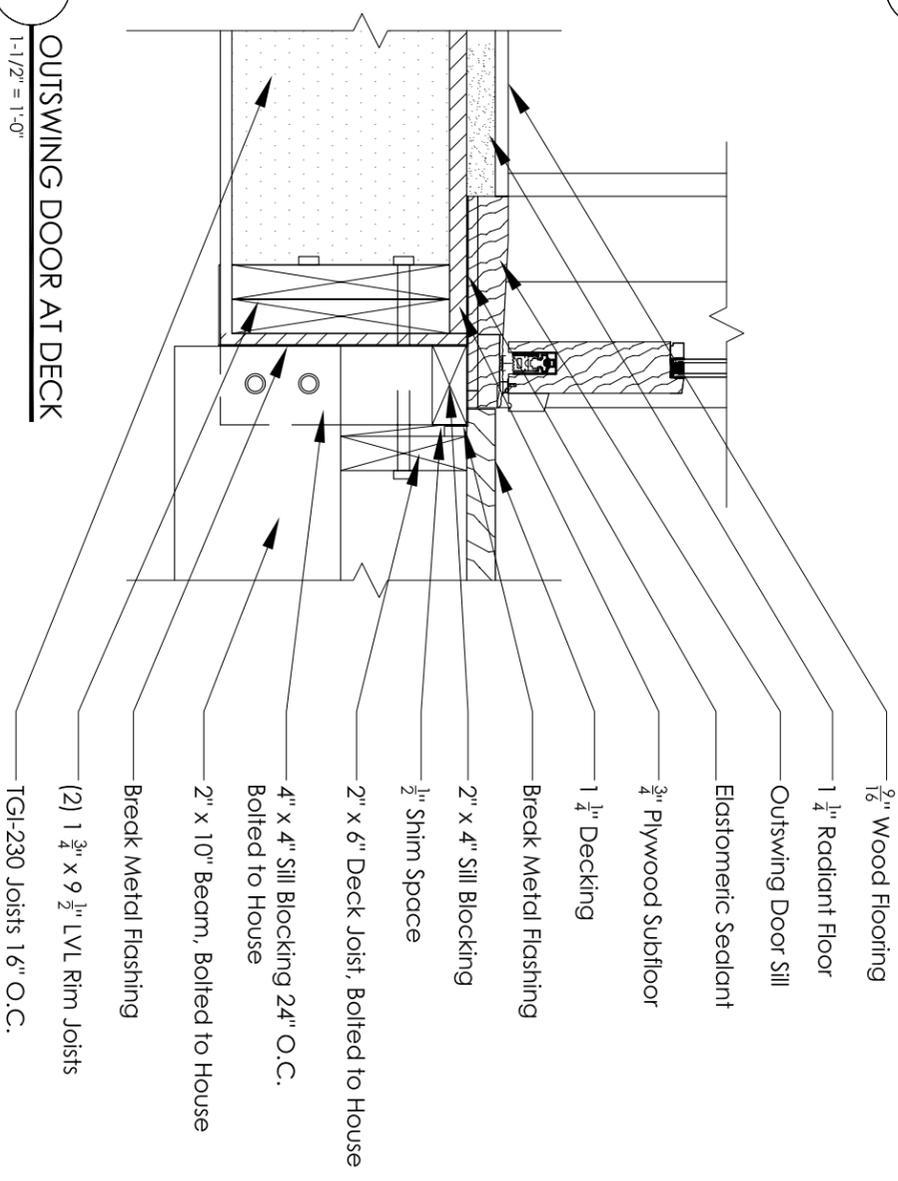
A5.21



A
OUTSWING HEAD AT METAL SIDING
1'-1/2" = 1'-0"



B
OUTSWING HEAD AT FACIA
1'-1/2" = 1'-0"



C
OUTSWING DOOR AT DECK
1'-1/2" = 1'-0"



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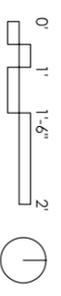


- Revisions:
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 - 07.09.07 PFS TPIP
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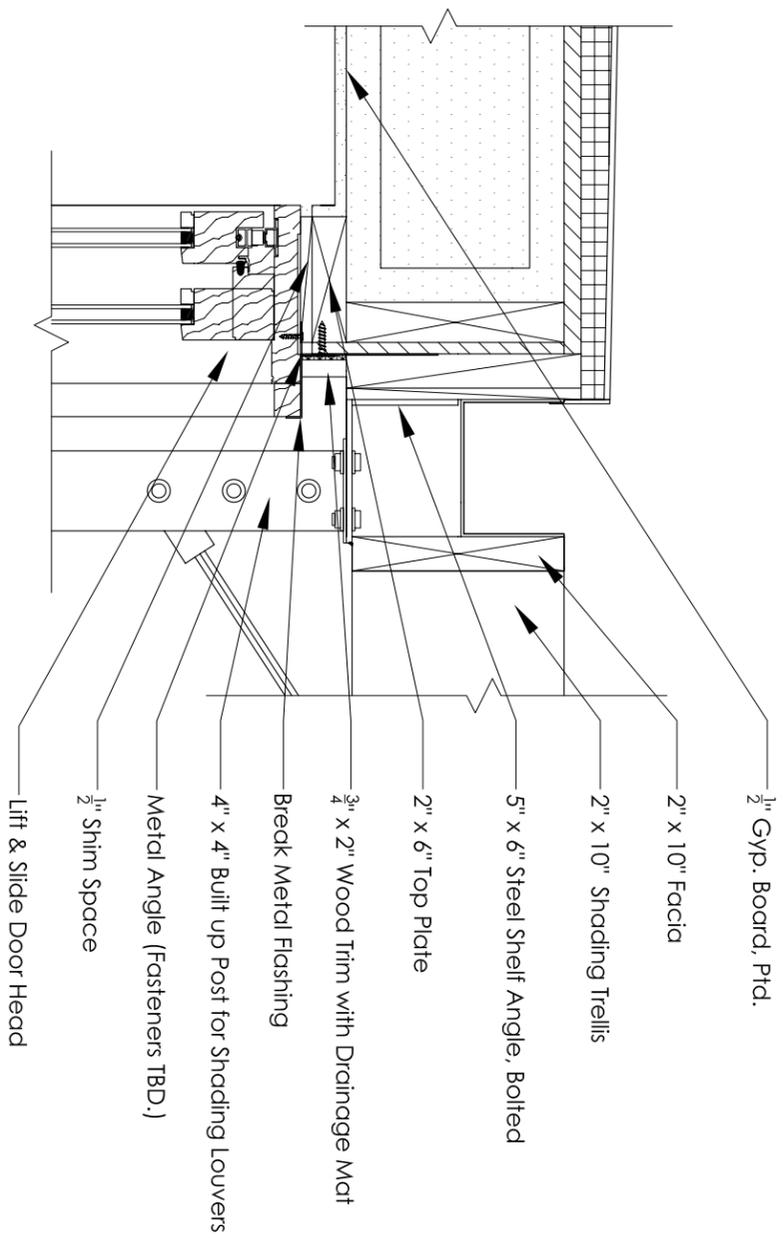
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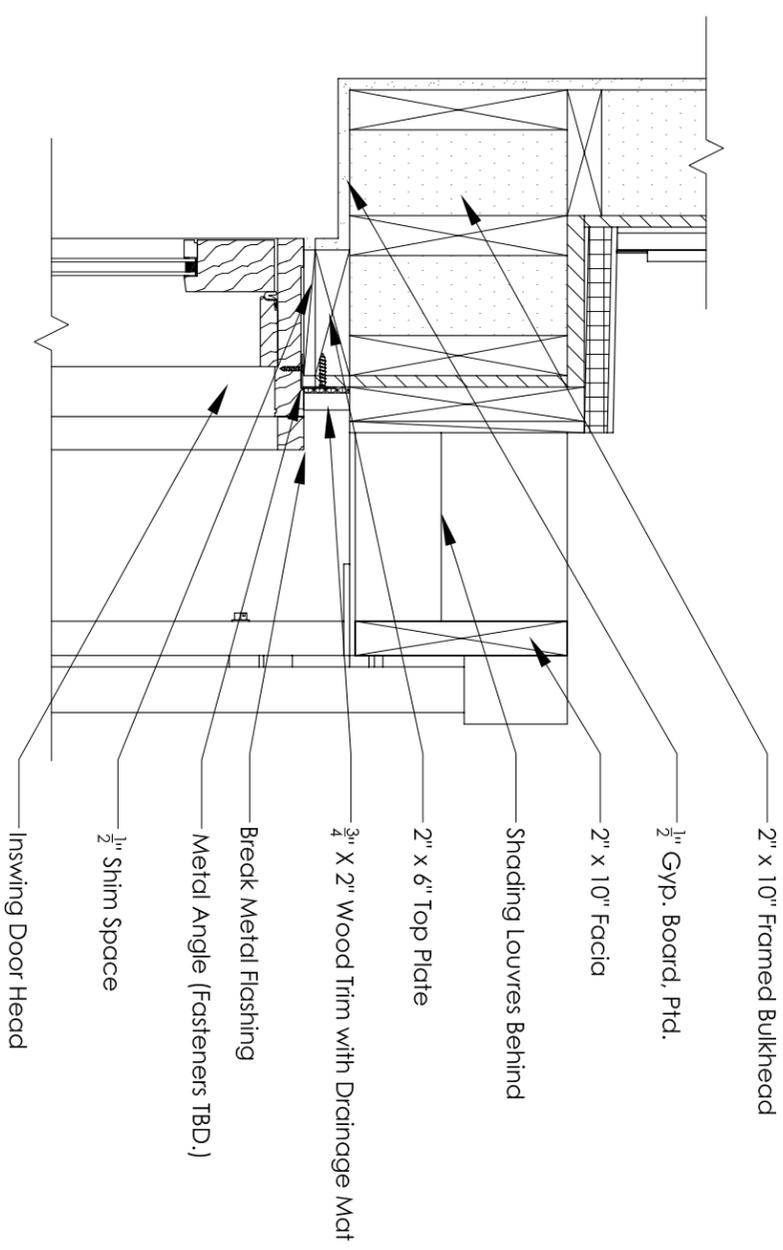


Door
Details

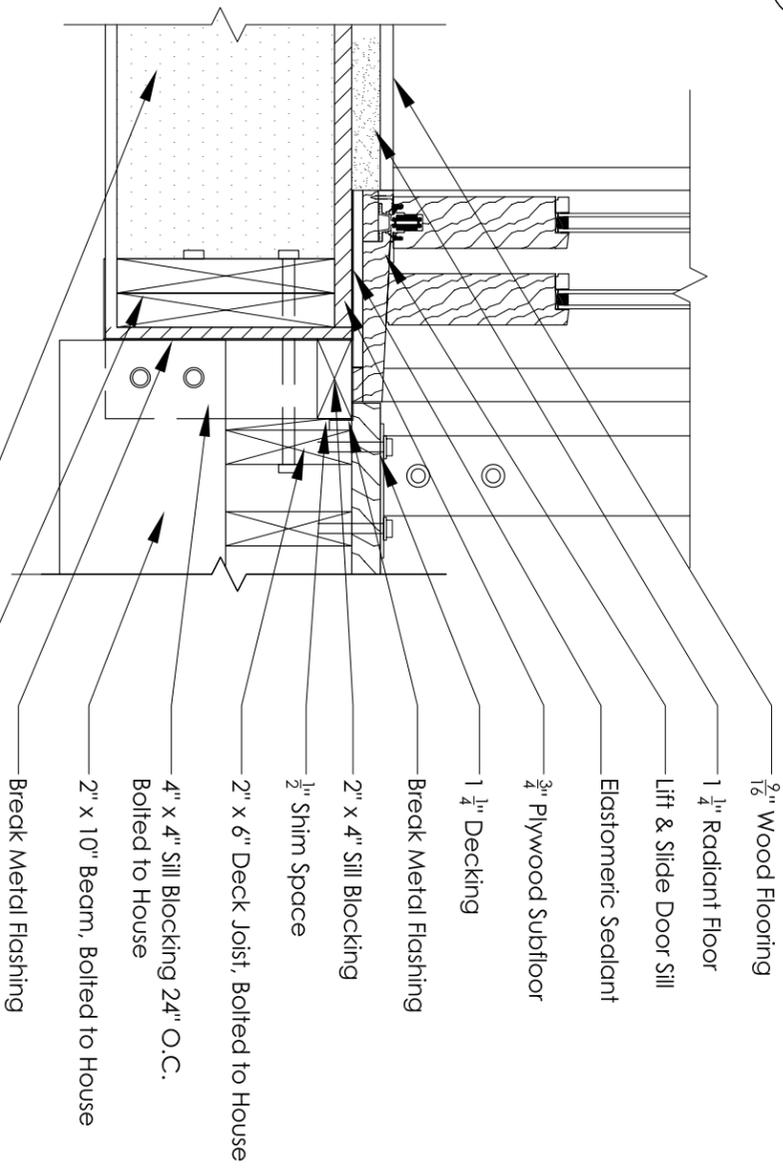
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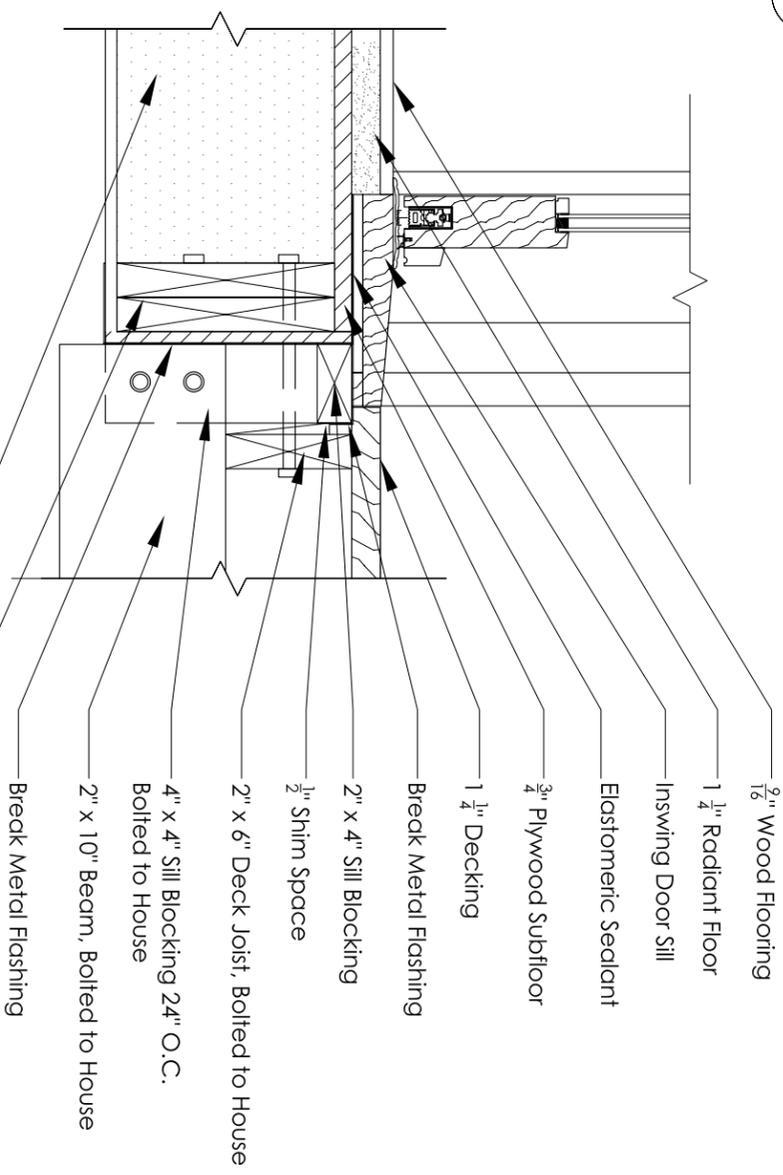
A LIFT & SLIDE HEAD AT SHADING
1'-1/2" = 1'-0"



B INSWING HEAD AT SHADING
1'-1/2" = 1'-0"



C LIFT & SLIDE SILL AT DECK
1'-1/2" = 1'-0"



D INSWING SILL AT DECK
1'-1/2" = 1'-0"



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- 08.07.07 SD CDS
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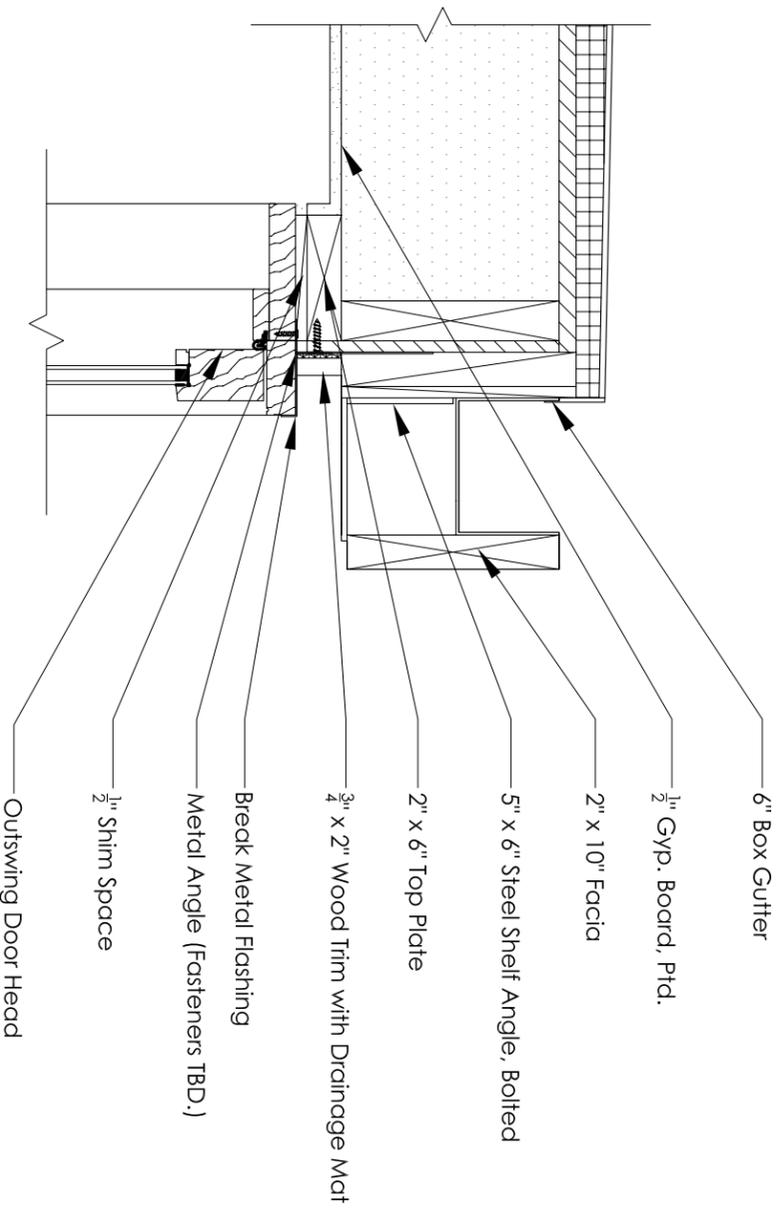
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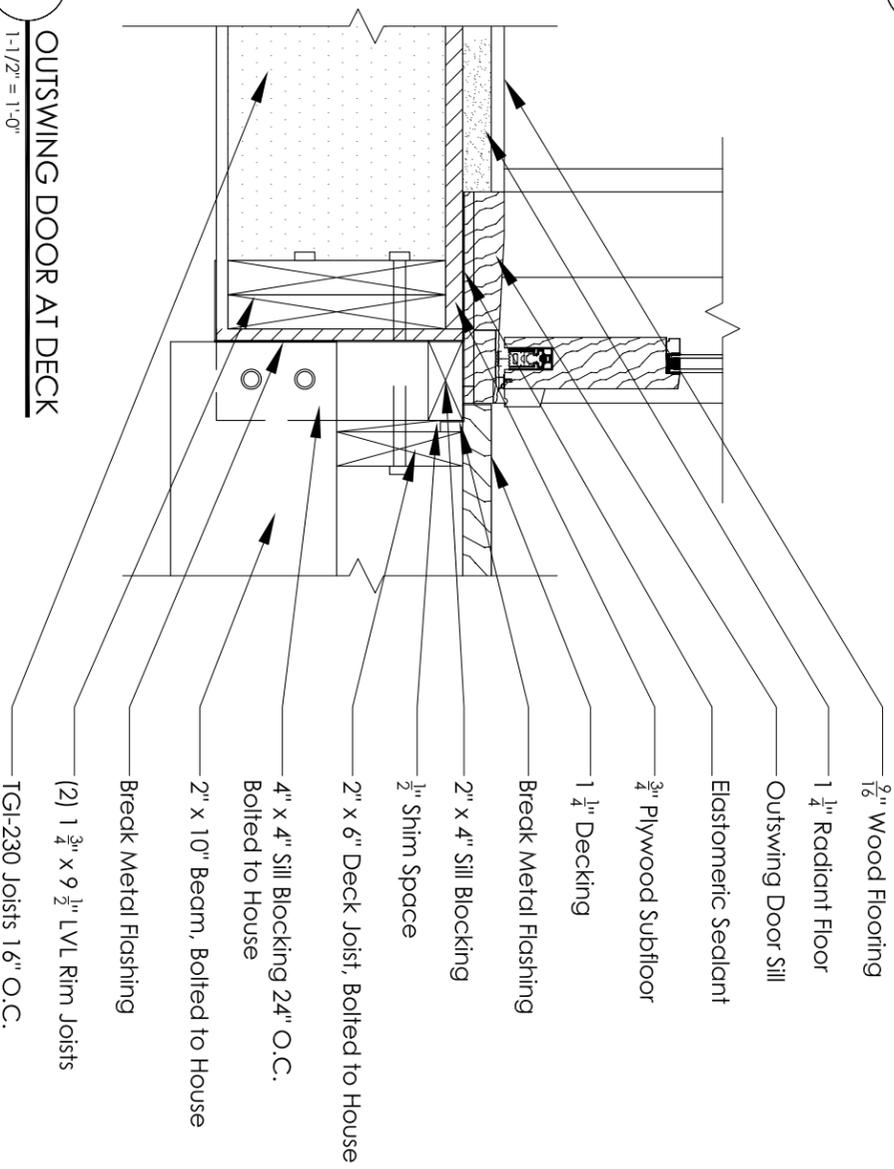
Door
Details

A5.23



A OUTSWING HEAD AT FACIA

1-1/2" = 1'-0"



B OUTSWING DOOR AT DECK

1-1/2" = 1'-0"



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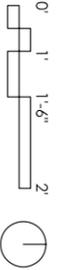


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Door
Details

A5.24



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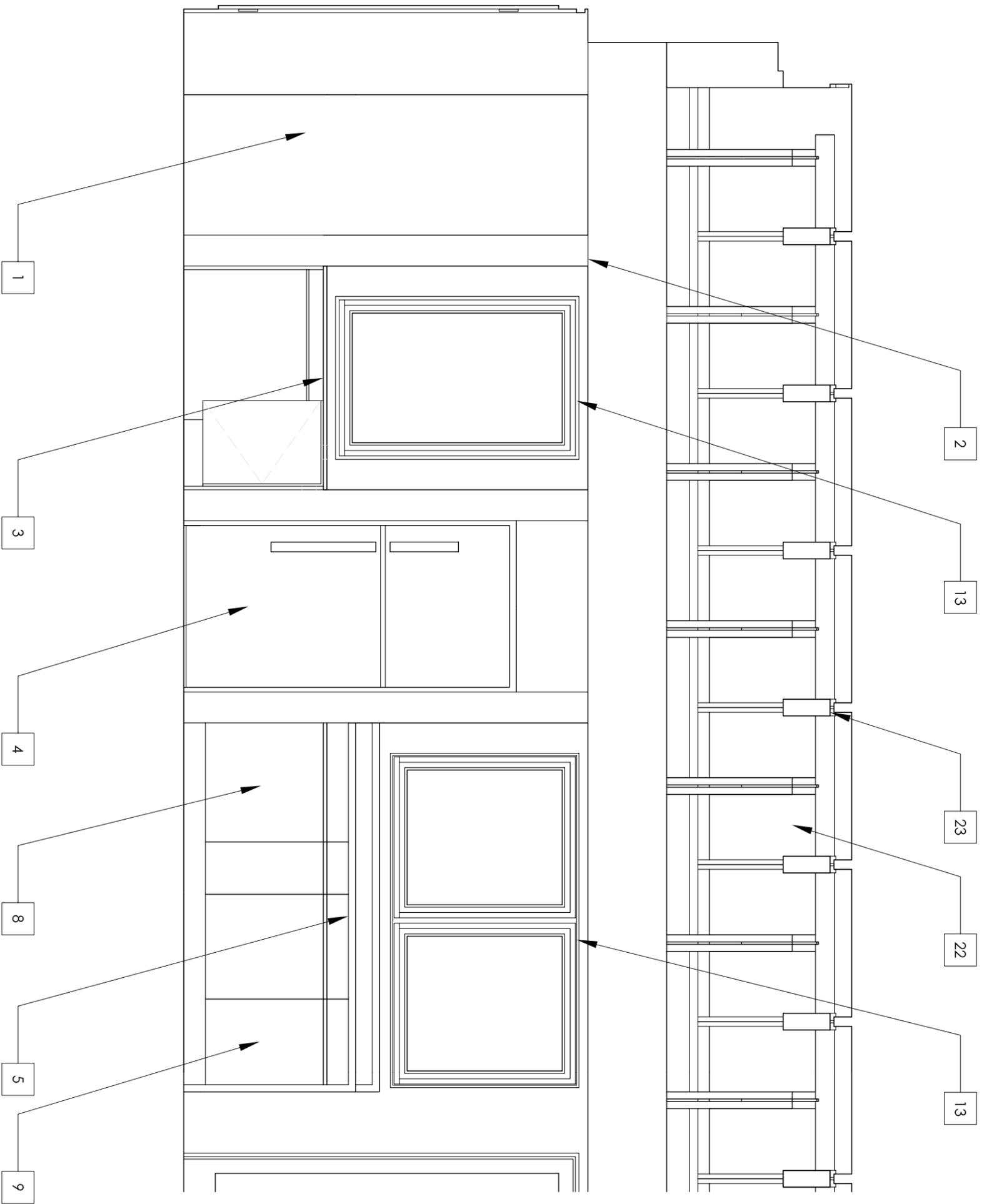
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Interior
Elevations

A6.01

1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinet
7. Bamboo Shelving
8. Oven/Microwave
9. Dishwasher
10. Outswing Doors
11. Lift and Slide Doors
12. Window/Door Assembly
13. Awning Window
14. Casement Window
15. Electrical Panel
16. Diffuser
17. Translucent Moveable Panels
18. Washing Machine/Dryer
19. Bathroom
20. Sink
21. Shower
22. Polycarbonate Skylight System
23. Paired 2x10" Rafter
24. Murphy Bed
25. Kitchen Island
26. Liquid Desiccant System
27. Fixed Window
28. Fixed Translucent Clerestory



A

North Wall Elevation

1/2"=1'-0"



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Revisions:

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- 08.07.07 SD CDS
- 08.17.07 SD CDS



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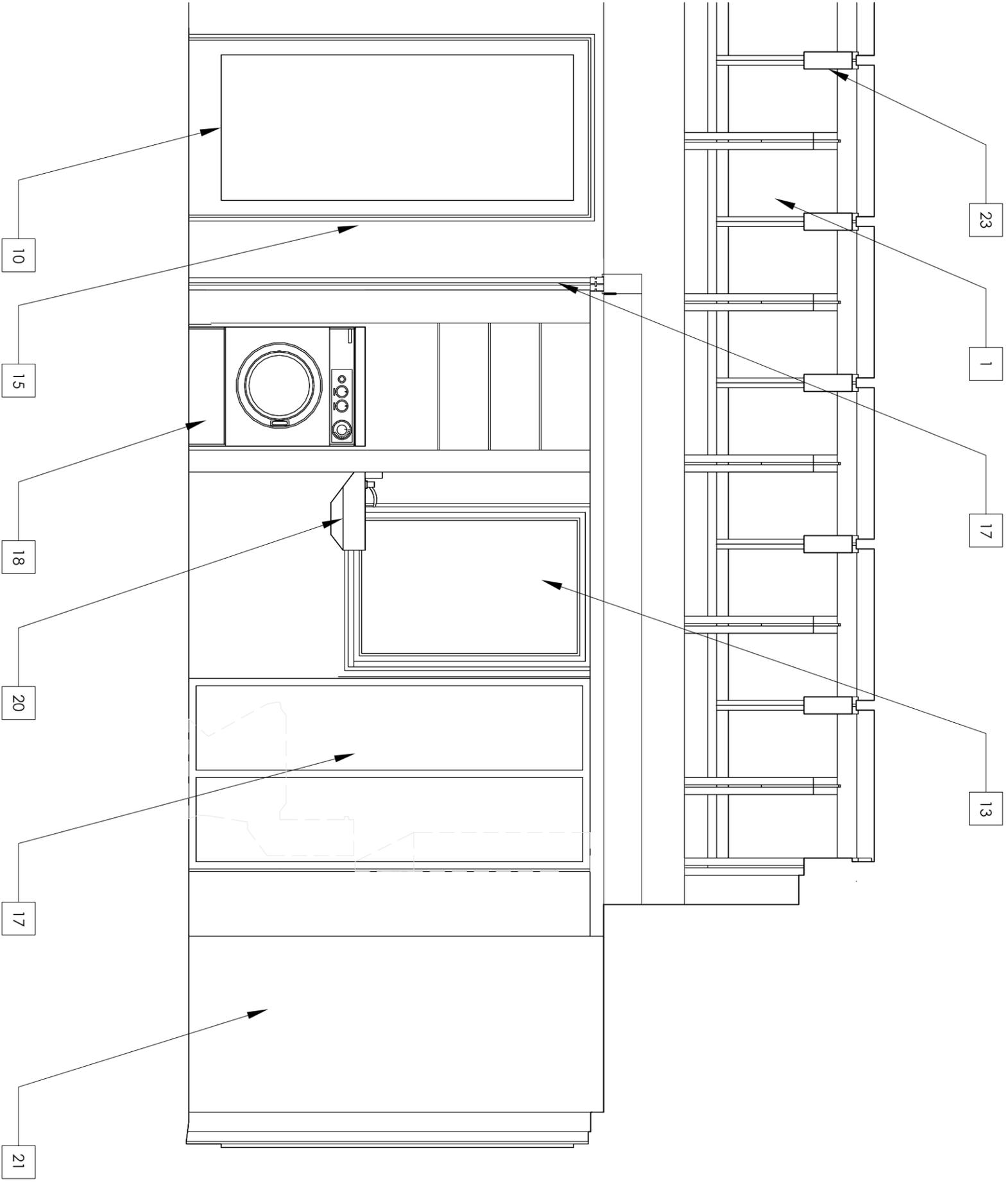
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Interior
Elevations

A6.02

1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinet
7. Bamboo Shelving
8. Oven/Microwave
9. Dishwasher
10. Outswing Doors
11. Lift and Slide Doors
12. Window/Door Assembly
13. Awning Window
14. Casement Window
15. Electrical Panel
16. Diffuser
17. Translucent Moveable Panels
18. Washing Machine/Dryer
19. Bathroom
20. Sink
21. Shower
22. Polycarbonate Skylight System
23. Paired 2x10" Rafters
24. Murphy Bed
25. Kitchen Island
26. Liquid Desiccant System
27. Fixed Window
28. Fixed Translucent Clerestory



A
1/2"=1'-0"
North Wall Elevation



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Revisions:

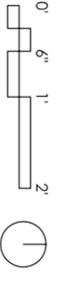
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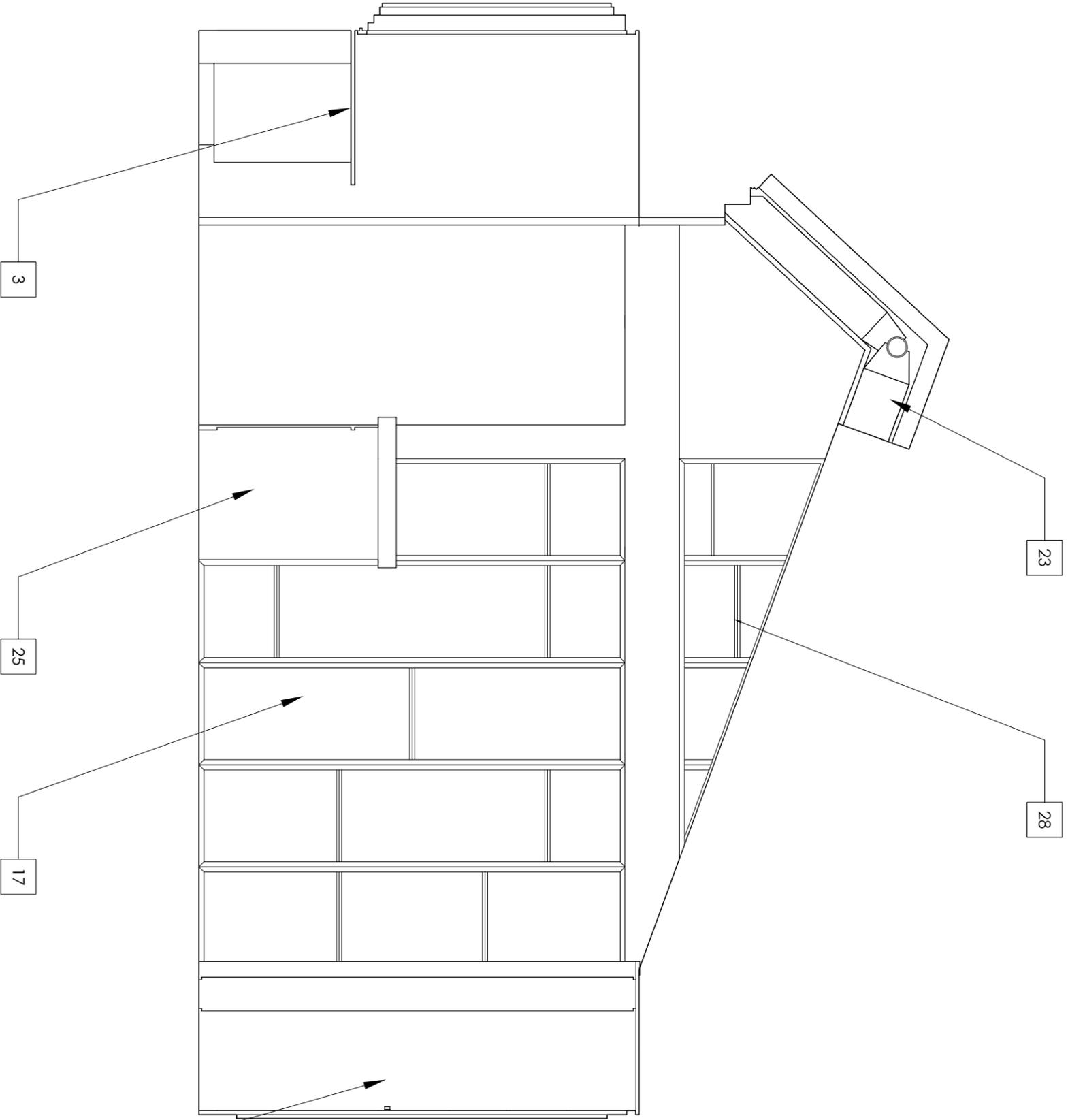
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Interior
Elevations

A6.03

1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinet
7. Cupiubba Shelves
8. Oven/Microwave
9. Dishwasher
10. Outswing Doors
11. Lift and Slide Doors
12. Window/Door Assembly
13. Awning Window
14. Casement Window
15. Electrical Panel
16. Diffuser
17. Translucent Moveable Panels
18. Washing Machine/Dryer
19. Bathroom
20. Sink
21. Shower
22. Polycarbonate Skylight System
23. Paired 2x10" Rafter
24. Murphy Bed
25. Kitchen Island
26. Liquid Desiccant System
27. Fixed Window
28. Fixed Translucent Clerestory



A

East Wall Elevation

1/2"=1'-0"



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- 03.06.07 SD CDS
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- 08.07.07 SD CDS
- 08.17.07 SD CDS



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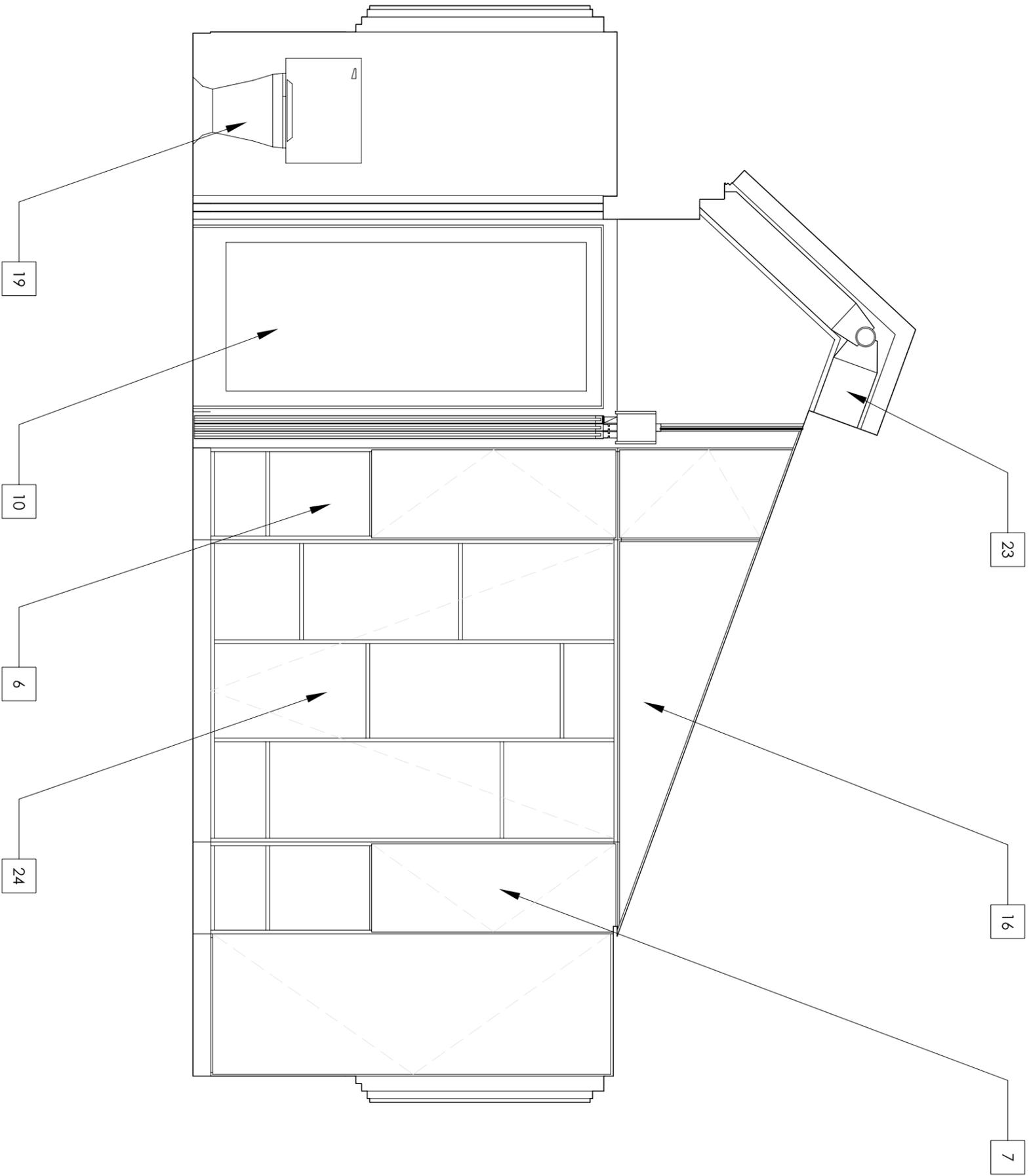
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Interior
Elevations

A6.04

1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinetry
7. Bamboo Shelving
8. Oven/Microwave
9. Dishwasher
10. Outswing Doors
11. Lift and Slide Doors
12. Window/Door Assembly
13. Awning Window
14. Casement Window
15. Electrical Panel
16. Diffuser
17. Translucent Moveable Panels
18. Washing Machine/Dryer
19. Bathroom
20. Sink
21. Shower
22. Polycarbonate Skylight System
23. Paired 2x10" Rafter
24. Murphy Bed
25. Kitchen Island
26. Liquid Desiccant System
27. Fixed Window
28. Fixed Translucent Clerestory



A

East Wall Elevation

1/2"=1'-0"



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Revisions:

- 03.06.07 SD CDS
- 07.09.07 PFS TPIP
- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



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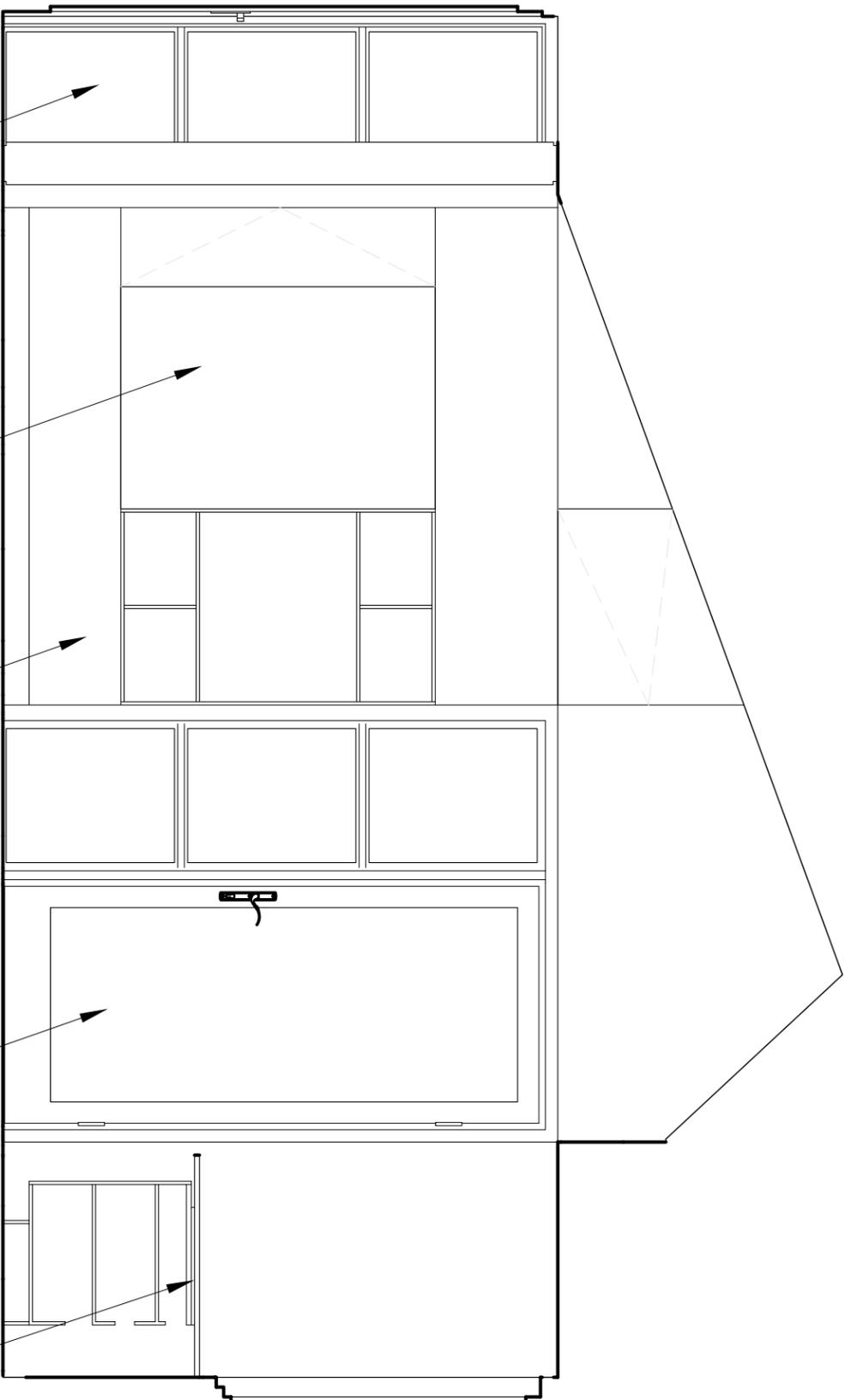
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Interior
Elevations

A6.05

1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinet
7. Bamboo Shelving
8. Oven/Microwave
9. Dishwasher
10. Outswing Doors
11. Lift and Slide Doors
12. Window/Door Assembly
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18. Washing Machine/Dryer
19. Bathroom
20. Sink
21. Shower
22. Polycarbonate Skylight System
23. Paired 2x10" Rafters
24. Murphy Bed
25. Kitchen Island
26. Liquid Desiccant System
27. Fixed Window
28. Fixed Translucent Clerestory



27

26

6

12

3

West Wall Elevation

1/2"=1'-0"

A



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Revisions:

- 03.06.07 SD CDS
- 07.09.07 PFS TPIP
- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



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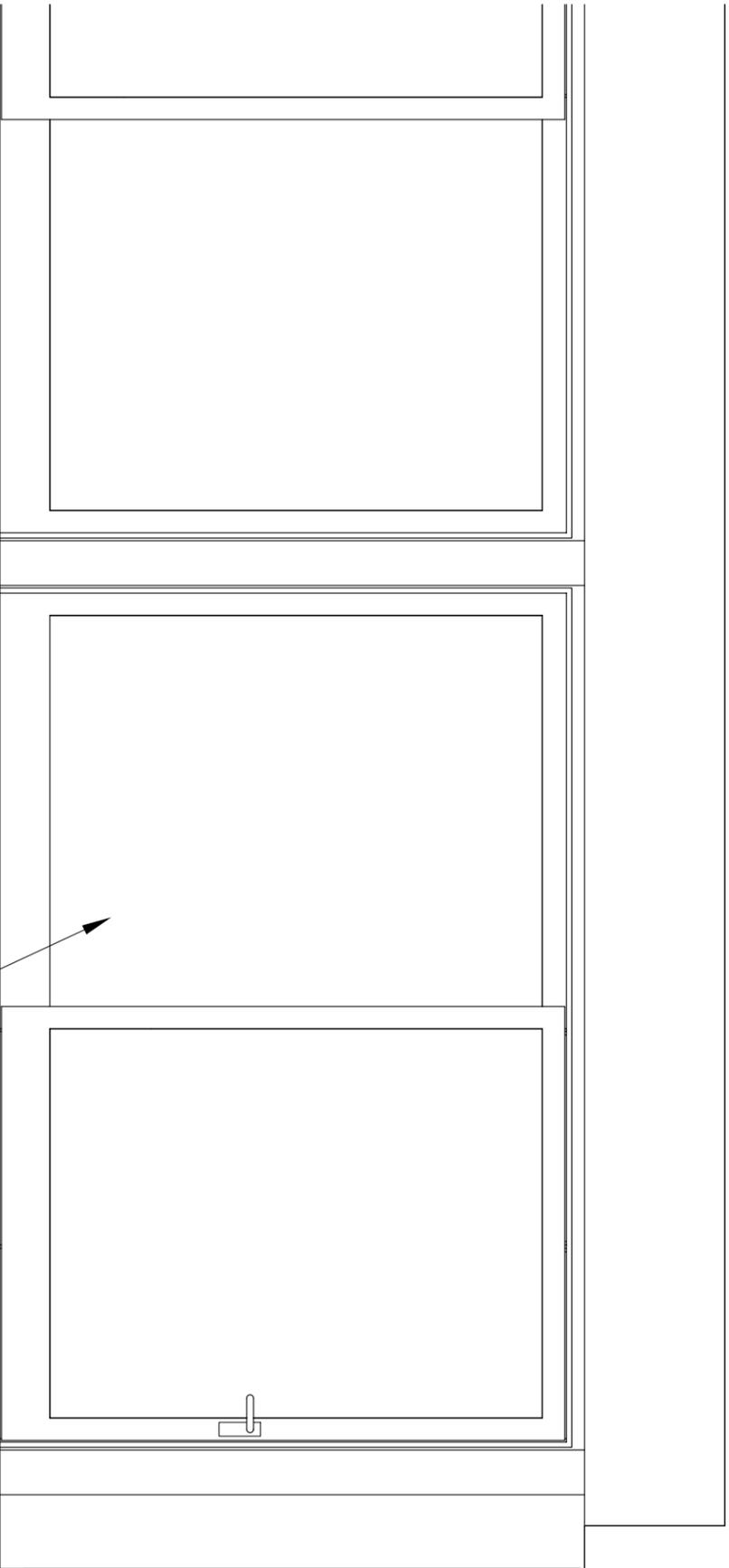
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Interior
Elevations

A6.06

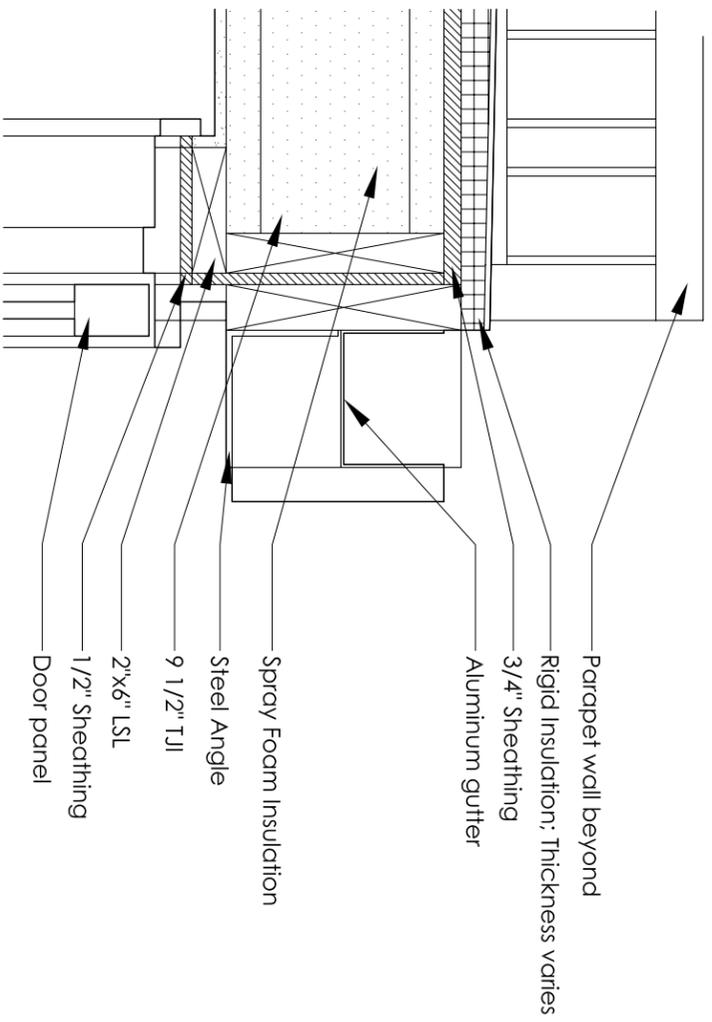
1. Coat Closet
2. Pull-out Cabinets
3. Work Space
4. Refrigerator
5. Concrete Countertop
6. Bamboo Cabinet
7. Bamboo Shelving
8. Oven/Microwave
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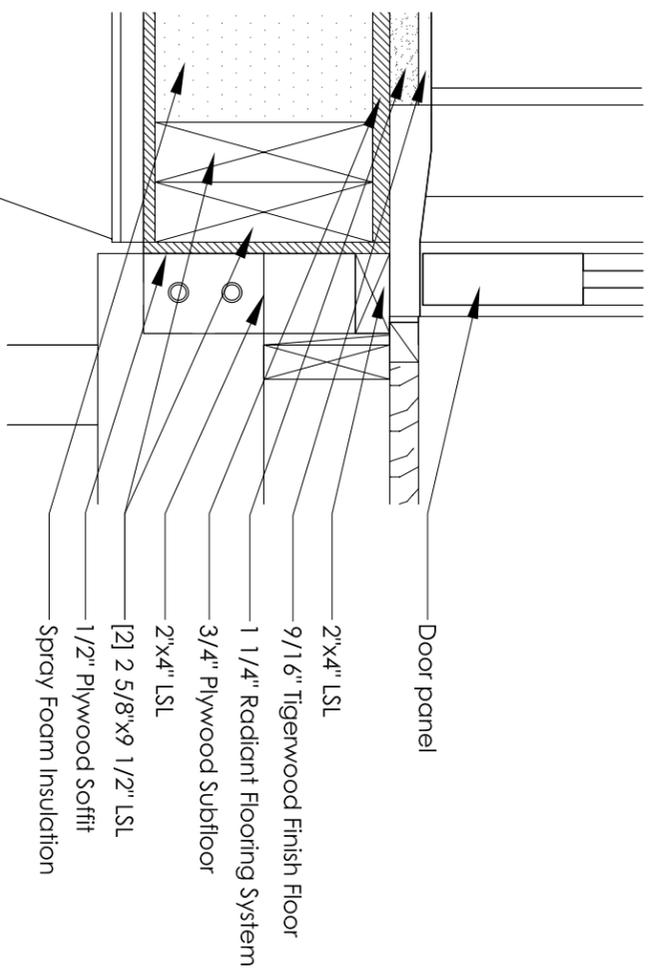
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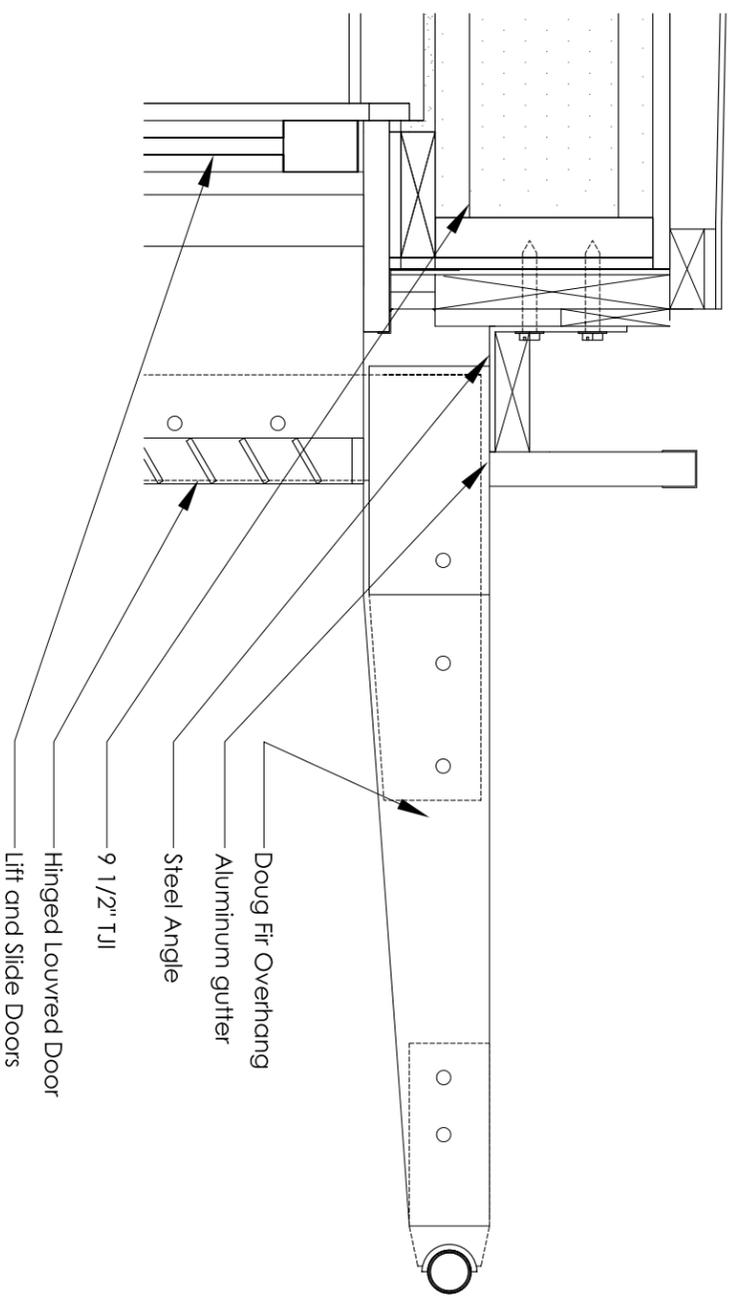
A
South Wall Elevation
1/2"=1'-0"



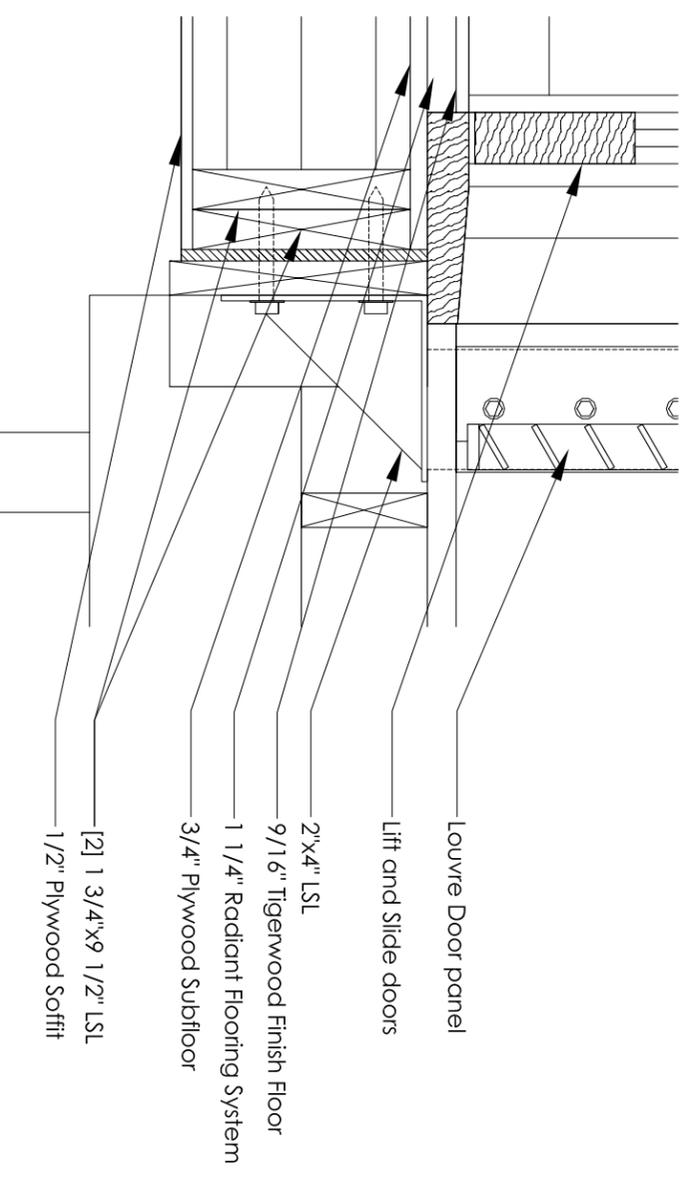
A Section through East Wall Gutter
1-1/2"=1'-0"



C Section through East/West Wall @ Floor
1-1/2"=1'-0"



B Section through South Wall Overhang
1-1/2"=1'-0"



D Section through South Wall @ Floor
1-1/2"=1'-0"



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Revisions:
03.06.07 SD CDS
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07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



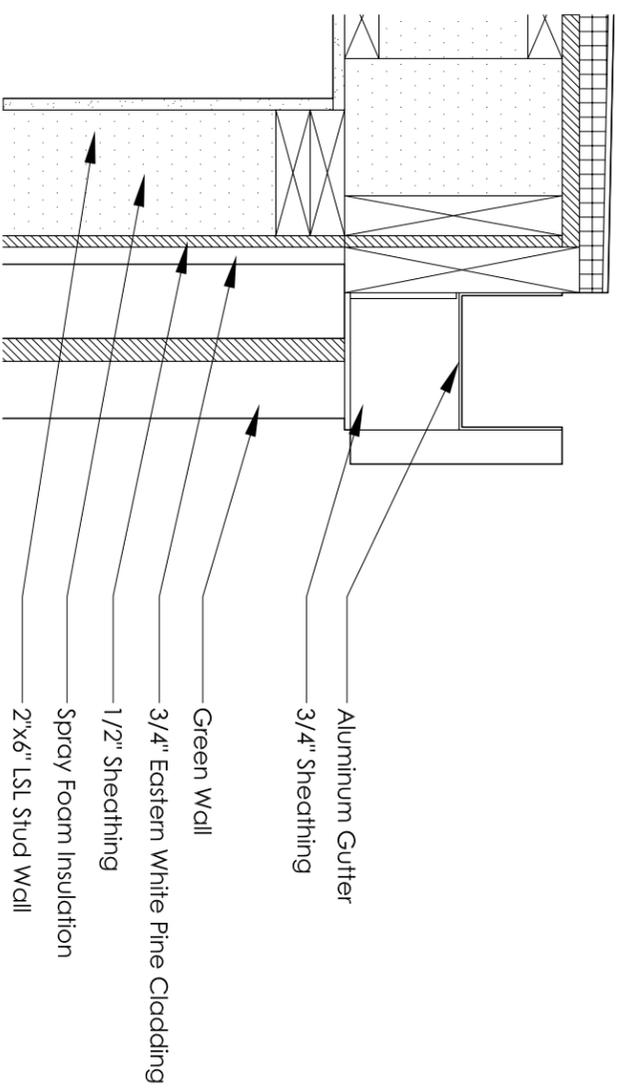
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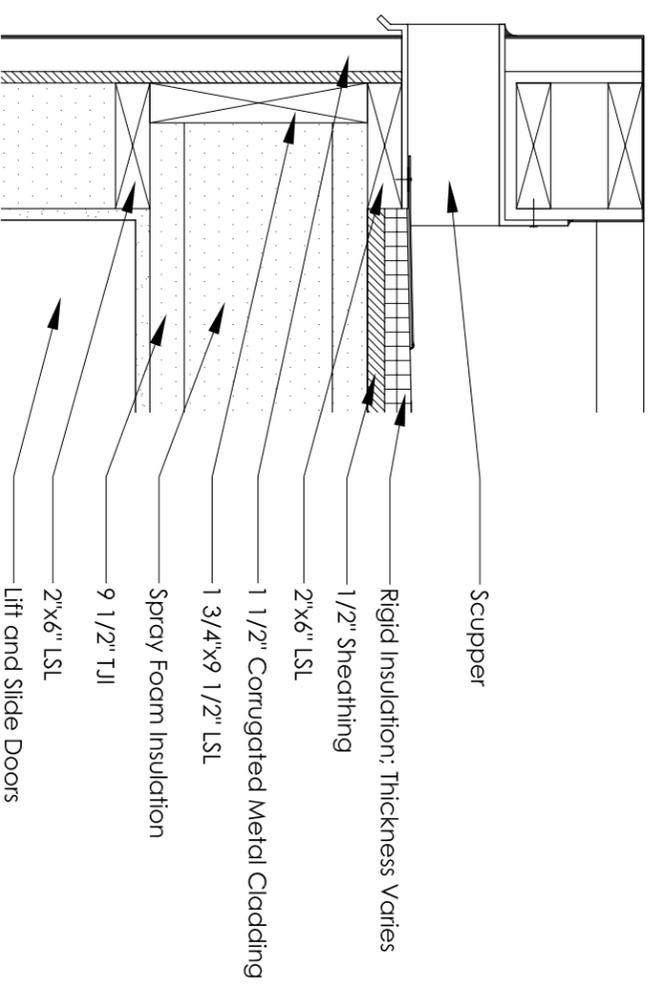


**Enlarged
Details**

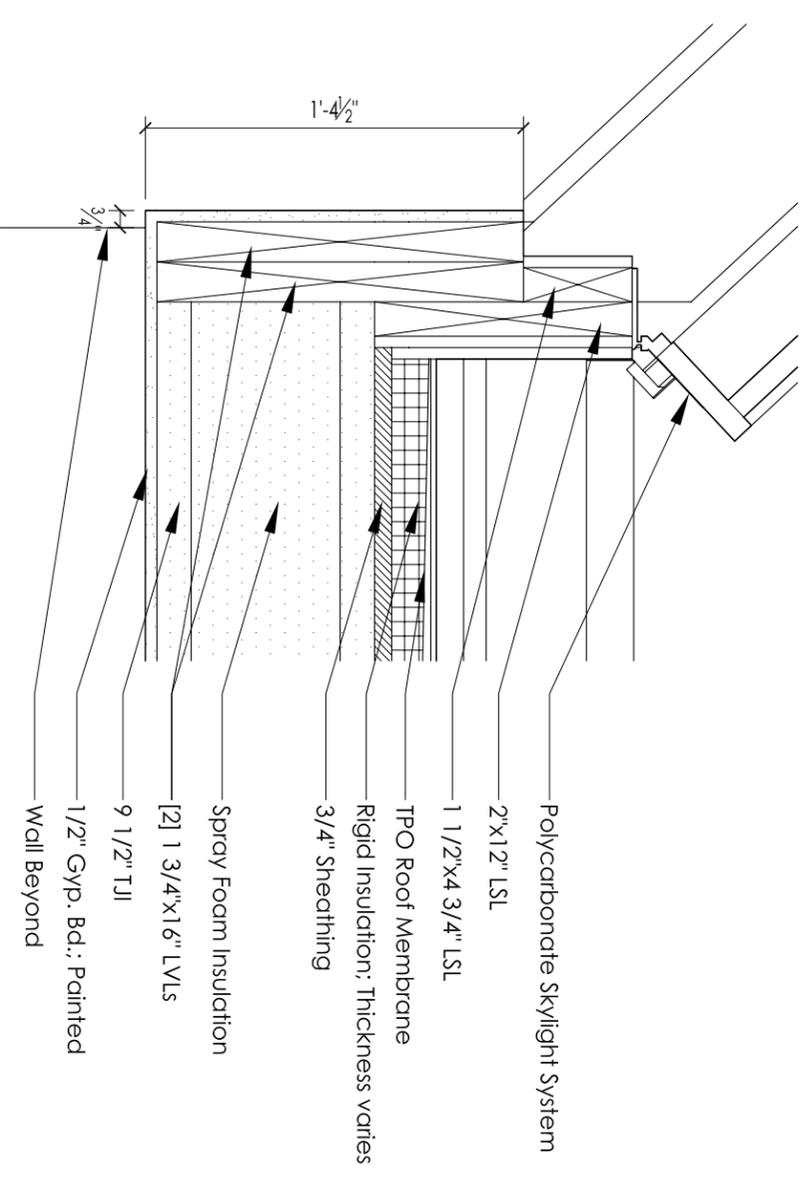
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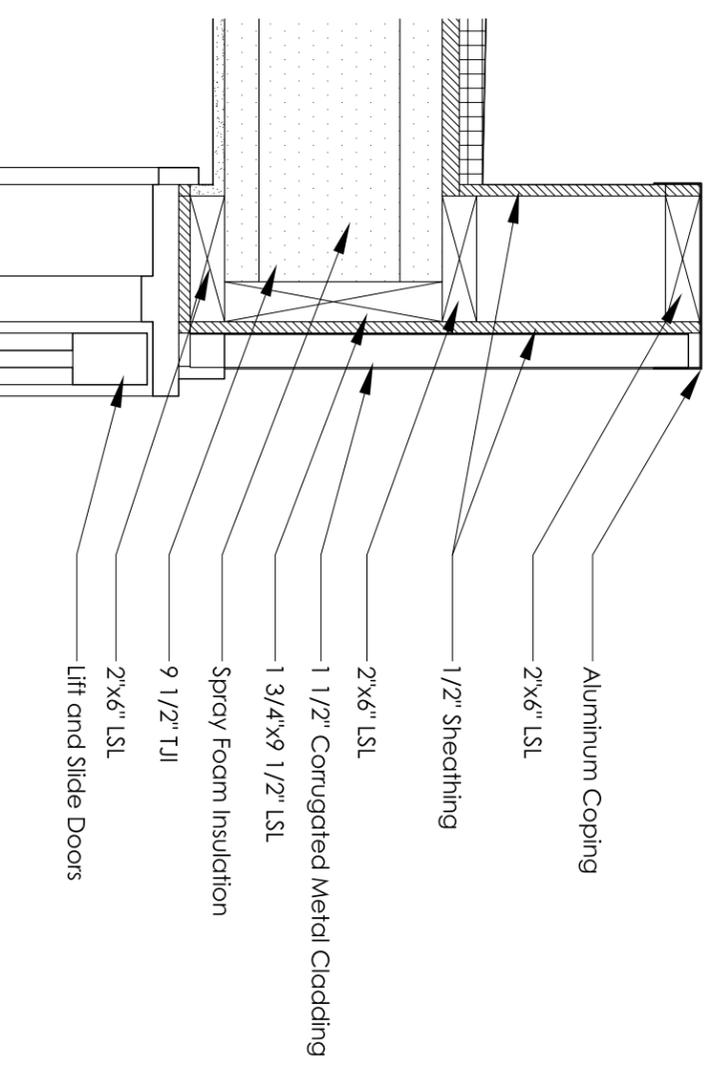
A Section through Green Wall Roof Edge
1-1/2"=1'-0"



B Section through Scupper
1-1/2"=1'-0"



C Section through Skylight Curb
1-1/2"=1'-0"



D Section through Parapet Wall
1-1/2"=1'-0"



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Revisions:
03.06.07 SD CDS
07.09.07 PFS TPIP
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



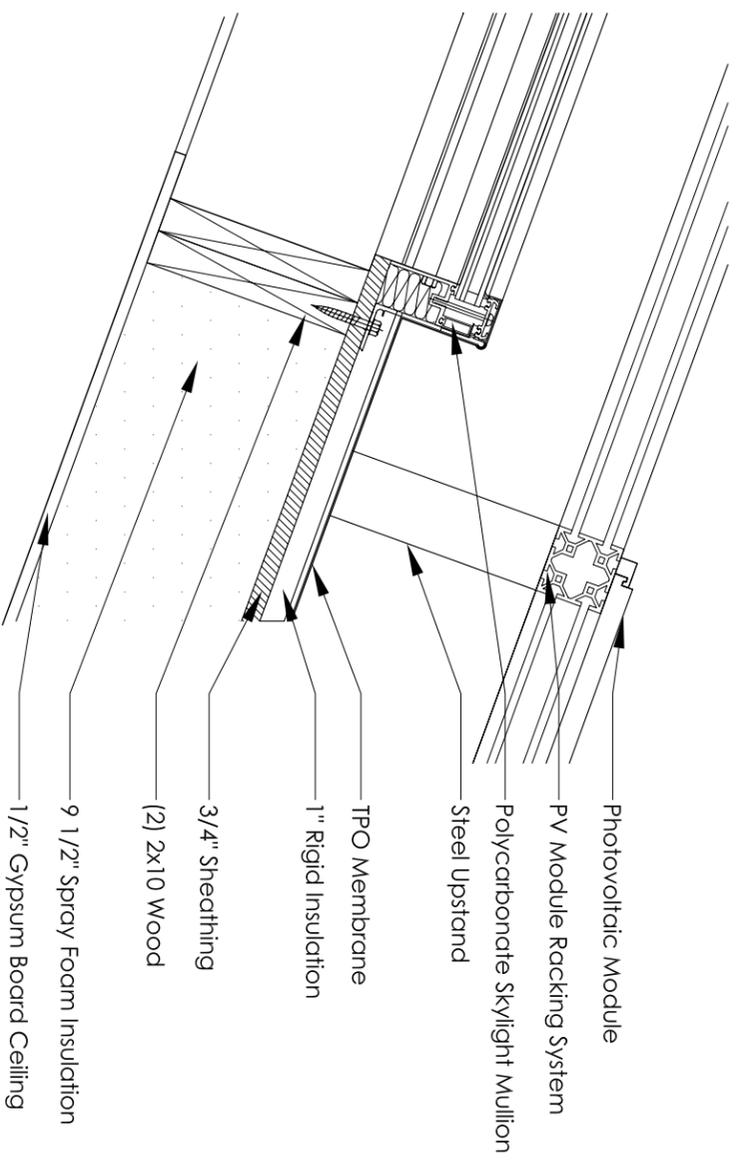
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A6.12



A

Section through Roof @ Typical Bay Condition
1-1/2"=1'-0"

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A6.13



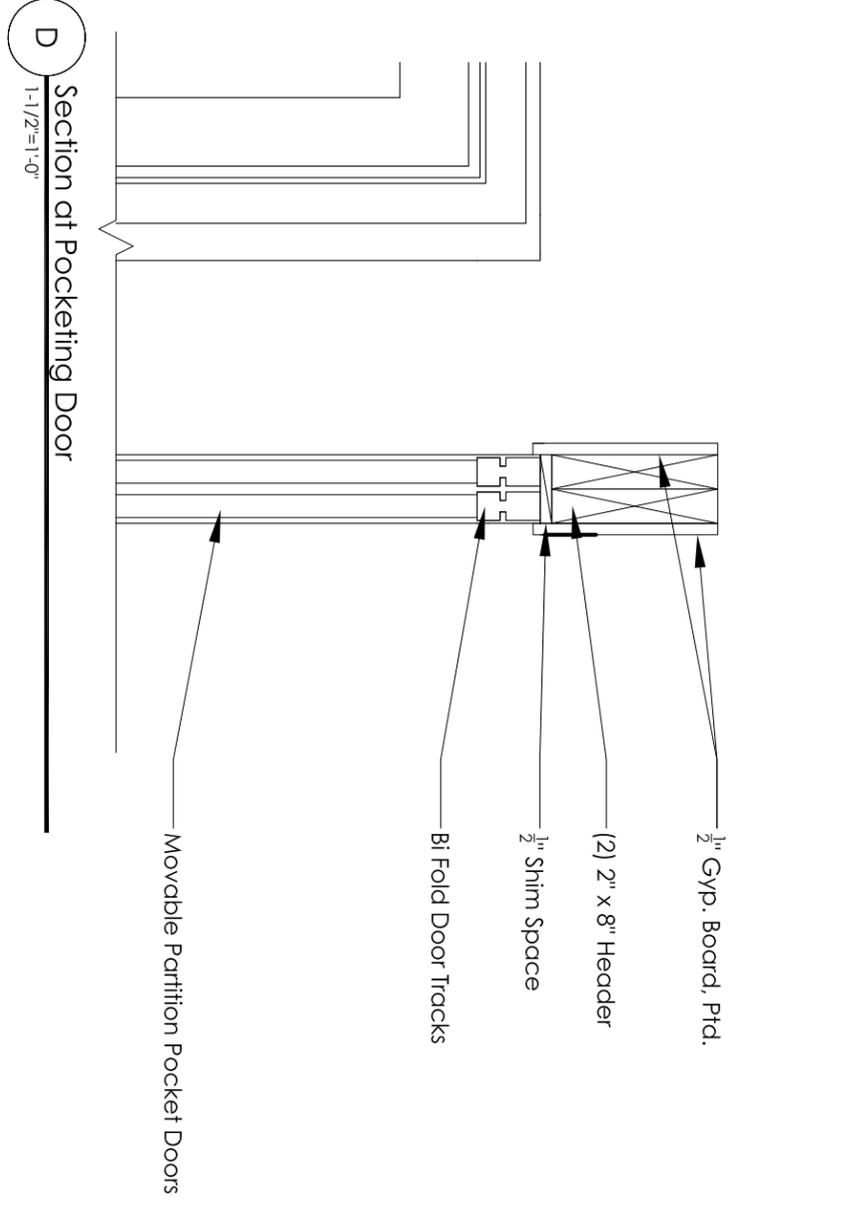
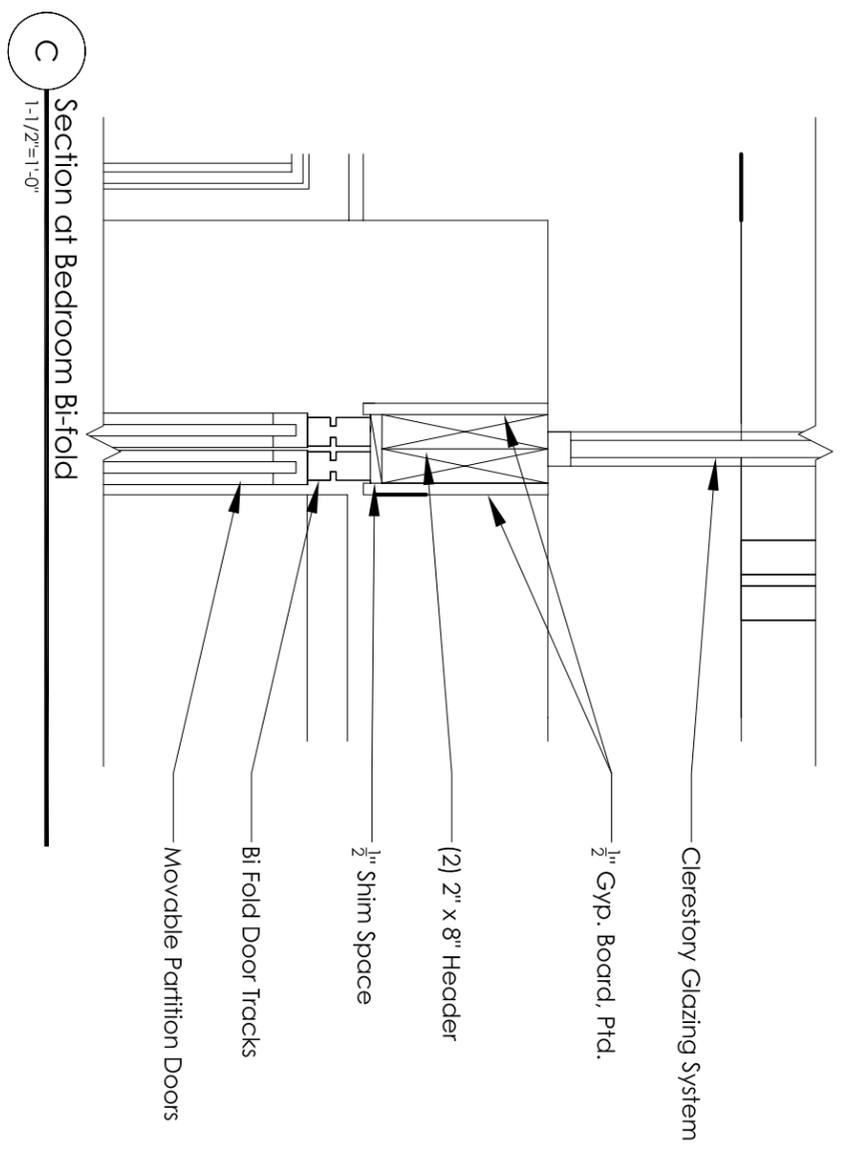
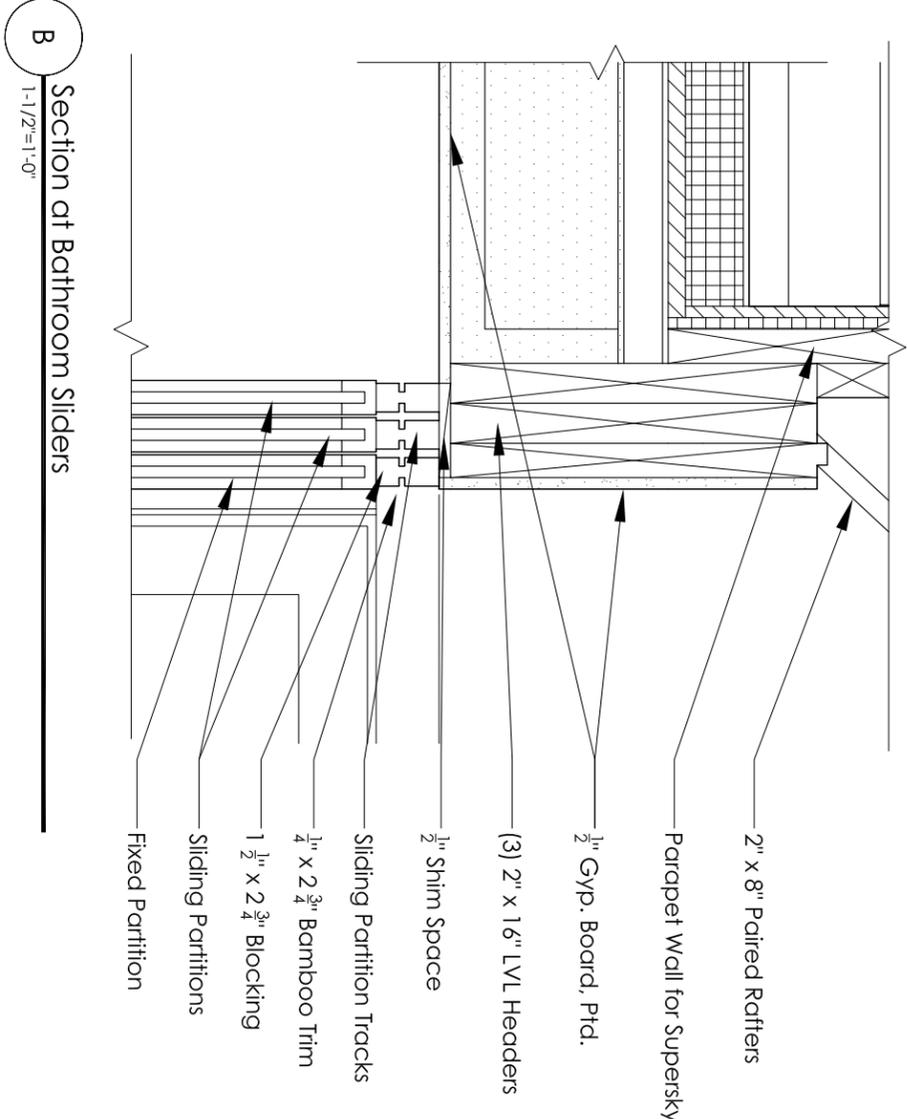
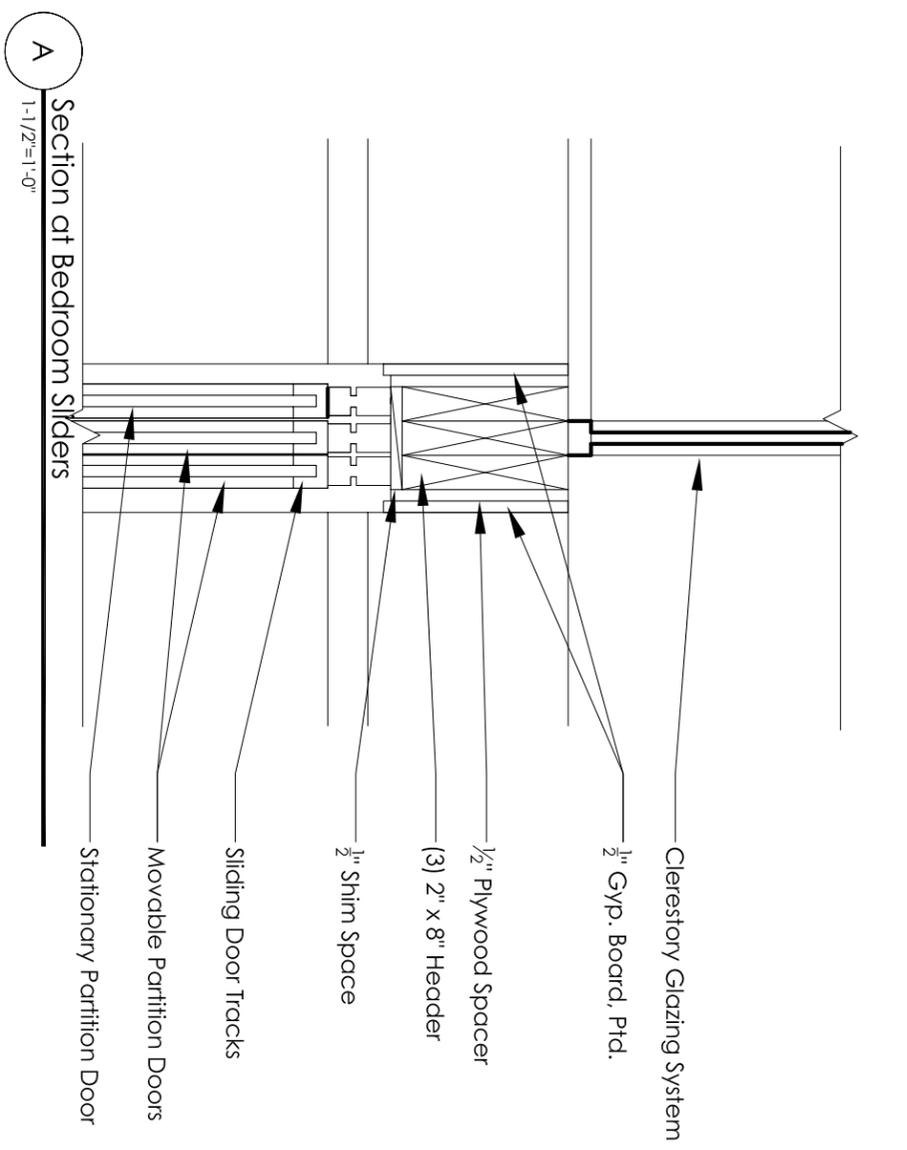
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 - 07.09.07 PFS TPIP
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 - 08.07.07 SD CDS
 - 08.17.07 SD CDS



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A6.14

GENERAL

1. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING, BRACING, SHEETING AND MAKE SAFE ALL FLOORS, ROOFS, WALLS AND ADJACENT PROPERTY, AS PROJECT CONDITIONS REQUIRE. A PROFESSIONAL ENGINEER, LICENSED BY THE GOVERNING STATE IN WHICH THE PROJECT IS LOCATED AND HIRED BY THE CONTRACTOR, SHALL DESIGN ALL SHORING AND SHEETING AND SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR THE OWNER'S REVIEW.
2. ALL STRUCTURAL WORK SHALL BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SHALL CONFORM TO THE PROJECT SPECIFICATIONS, INCLUDING THE INTERNATIONAL RESIDENTIAL CODE (LATEST EDITION) AS MODIFIED BY THE GOVERNING LOCALITY.

FOUNDATIONS

1. FOUNDATION SYSTEM IS DESIGNED TO BEAR ON UNDISTURBED SOIL HAVING A MINIMUM SAFE BEARING CAPACITY OF 1500 PSF. FOUNDATION ELEMENTS ARE DESIGN TO BE COMPLETELY REMOVED AFTER COMPETITION. SOIL ANCHORS SHALL NOT PENETRATE MORE THAN 18" INTO THE SOIL OF THE NATIONAL MALL .

PLYWOOD SHEATHING

1. PROVIDE PLYWOOD SHEATHING COMPLYING WITH APA - EITHER C-D INTERIOR APA, STRUCTURAL I/II C-D INTERIOR APA, OR STRUCTURAL I/II C-C EXTERIOR APA, AS APPLICABLE.
2. FLOOR SHEATHING: 3/4" THICK T & G 48/24 SPAN RATING, APA STURD-I-FLOOR (APPROVED ALTERNATE: ADVANTEC SUBFLOOR). GLUE AND SCREW SHEATHING TO FLOOR JOISTS.
3. WALL SHEATHING: 1/2" THICK, 32/16 SPAN RATING.
4. ROOF SHEATHING: 5/8" THICK, 48/24 SPAN RATING.
5. ALL PLYWOOD SHALL BE GLUED AND SCREWED TO FLOOR JOISTS USING AN APA APPROVED ADHESIVE (B.F. GOODRICH PL400 OR EQUAL).
6. USE PLY CLIPS OR OTHER EDGE SUPPORT AS REQUIRED FOR PLYWOOD SHEATHING.
7. LEAVE 1/8" SPACE AT ALL PLYWOOD PANEL END JOINTS AND 1/8" SPACE AT ALL PANEL EDGE JOINTS.
8. UNLESS NOTED OTHERWISE, PLYWOOD WALL SHEATHING SHALL BE FASTENED TO SHEARWALL STUD FRAMING WITH 8d COMMON NAILS @ 4" O.C. AT EACH SHEET PERIMETER AND 12" O.C. ELSEWHERE. PROVIDE 2x6 BLOCKING AT ALL FREE EDGES.

FRAMING LUMBER

1. FRAMING LUMBER SHALL HAVE EACH PIECE GRADE STAMPED, SHALL BE SURFACED DRY (EXCEPT STUDS, WHICH SHALL BE KILN-DRIED) AND SHALL CONFORM TO THE FOLLOWING SPECIES AND GRADE:
RAFTERS AND JOISTS: DOUGLAS FIR-LARCH #2
BEAMS, GIRDERS AND HEADERS: DOUGLAS FIR-LARCH #1
STUDS AND PLATES: DOUGLAS FIR-LARCH, STUD GRADE
2. TIMBER LUMBER SHALL CONFORM TO THE FOLLOWING SPECIES AND GRADE:
POST AND TIMBER: DOUGLAS FIR-LARCH #1
BEAMS AND STRINGERS: DOUGLAS FIR-LARCH #1
3. PRESERVATIVE-TREATED WOOD: PROVIDE TREATED LUMBER COMPLYING WITH ACQ-D (CARBONATE), COPPER AZOLE (CA-B), OR SODIUM BORATE (SBX (DOT) WITH NaSiO₂) AT ALL LUMBER IN CONTACT WITH CONCRETE OR MASONRY, OR AS OTHERWISE INDICATED ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. ACZA TREATMENT IS NOT PERMITTED. TREATED LUMBER AND/OR PLYWOOD SHALL BEAR THE LABEL OF AN ACCREDITED AGENCY SHOWING 0.40 PCF RETENTION. WHERE LUMBER AND/OR PLYWOOD IS CUT OR DRILLED AFTER TREATMENT, THE TREATED SURFACE SHALL BE FIELD-TREATED WITH COPPER NAPHTHENATE (THE CONCENTRATION OF WHICH SHALL CONTAIN A MINIMUM OF 2% COPPER METAL) BY REPEATED BRUSHING, DIPPING, OR SOAKING UNTIL THE WOOD ABSORBS NO MORE PRESERVATIVE.

FRAMING LUMBER (CONT.)

4. ALL WOOD FRAMING INCLUDING DETAILS FOR BRIDGING, BLOCKING, FIRE STOPPING, ETC., SHALL CONFORM TO THE LATEST EDITION OF THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION" AND ITS SUPPLEMENTS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE NFPA "MANUAL FOR HOUSE FRAMING".
5. FASTENING SHALL BE IN ACCORDANCE WITH THE MOST RESTRICTIVE OF: THE INTERNATIONAL BUILDING CODE (LATEST EDITION), THE 1992 CABO FOR 1 AND 2 FAMILY DWELLINGS, OR THE MANUFACTURER'S RECOMMENDED FASTENING SCHEDULES.
6. ALL FLUSH FRAMED CONNECTIONS SHALL BE MADE WITH APPROVED GALVANIZED STEEL JOIST OR BEAM HANGERS, MINIMUM 18 GAUGE, INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. WHERE FRAMING LUMBER IS FLUSH FRAMED TO MICROLLAM, STEEL OR FLITCH-PLATE GIRDER, SET THESE GIRDERS 1/4" CLEAR (MIN.) BELOW TOP OF FRAMING LUMBER, TO ALLOW FOR SHRINKAGE.
8. STUD BEARING WALLS ARE TO BE CONSTRUCTED OF ENGINEERED LSL STUDS OF 2x4 @ 16" O.C. AT THE INTERIOR AND 2x6 @ 16" O.C. AT THE EXTERIOR, UNLESS NOTED OTHERWISE ON PLAN.
9. LAP ALL PLATES AT CORNERS AND AT INTERSECTION OF PARTITIONS.
10. STAGGER ALL TOP AND BOTTOM PLATE SPLICES A MINIMUM OF 32 INCHES.
11. USE DOUBLE STUDS @ ENDS OF WALL AND ENDS OF WALL OPENINGS.
12. AT THE ENDS OF ALL BEAMS, HEADERS AND GIRDERS PROVIDE A BUILT UP OR SOLID POST WHOSE WIDTH IS AT LEAST EQUAL TO THE WIDTH OF THE MEMBER IT IS SUPPORTING AND WHOSE DEPTH IS 4" (NOM.) AT INTERIOR WALLS AND 6" (NOM.) AT EXTERIOR WALLS.
13. USE DOUBLE TRIMMERS AND HEADERS AT ALL FLOOR OPENINGS WHERE BEAMS ARE NOT DESIGNATED.
14. BRIDGING FOR SPANS UP TO 14 FT., PROVIDE 1 ROW. BRIDGING FOR SPANS OVER 14 FT., PROVIDE 2 ROWS.
15. BUILT-UP BEAMS LESS THAN 8" DEEP SHALL BE SPIKED TOGETHER WITH (2) 16D NAILS @ 16" O.C. BUILT-UP BEAMS GREATER THAN 8" DEEP SHALL BE SPIKED TOGETHER WITH (3) 16D NAILS @ 16" O.C.
16. WHERE CANTILEVERED BEAMS ARE INDICATED, THE FAR CONNECTOR SHALL BE CAPABLE OF RESISTING AN UPLIFT OF 1000 LBS. MIN., U.N.O.
17. NO JOISTS SHALL BE CUT OR NOTCHED WITHOUT APPROVAL.
18. ALL LIGHT-GAGE HANGERS SUPPORTING PRESERVATIVE TREATED WOOD SHALL MEET OR EXCEED G185 (1.85 oz OF ZINC PER SQUARE FOOT). ALTERNATIVELY, STAINLESS STEEL CONNECTORS MAY BE USED. FASTENERS SHALL MATCH THE SELECTED HANGER FINISH AND MATERIAL.
19. WHERE JOIST ORIENTATION IS PARALLEL TO EXTERIOR STUD OR FOUNDATION WALLS, PROVIDE FULL-SECTION BLOCKING FOR 3 BAYS @ 4'-0" O.C. MAX. WHERE SHEATHING IS NOT CONTINUOUSLY FASTENED TO TOP OR BOTTOM OF JOIST, PROVIDE 18 GA. x 1/2" x 12" (MIN.) FLAT TENSION STRAPS BETWEEN ALIGNED BLOCKING MEMBERS.
20. ALL SILL PLATES SHALL BE P.T. AND ANCHORED TO FOUNDATION WALLS W/ 1/2" DIA. HEADED ANCHOR BOLTS (ASTM F1554) @ 4'-0" O.C. AND WITHIN 12" OF ALL SILL PLATE SPLICES. (MIN. 7" EMBED.)

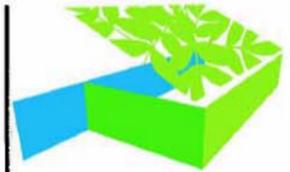
WOOD HEADER SCHEDULE

1. UNLESS NOTED OTHERWISE IN PLAN, PROVIDE HEADERS PER THE FOLLOWING:
ROUGH OPENING WIDTH: HEADER:

	2x4 WALL	2x6 WALL
LESS THAN 3'-0"	(2) 2x6	(3) 2x6
3'-1 TO 4'-0"	(2) 2x8	(3) 2x8
4'-1 TO 6'-0"	(2) 2x10	(3) 2x10
6'-1 TO 8'-0"	(2) 2x12	(3) 2x12
OVER 8'-0"	SEE PLANS	SEE PLANS

NOTE: PROVIDE

- (1) JACK STUD FOR SPANS LESS THAN 4'-0" WIDE,
- (2) JACK STUDS FOR SPANS LESS THAN 8'-0" WIDE,
- (3) JACK STUDS FOR SPANS OVER 8'-0" WIDE.



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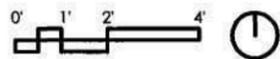


Revisions:
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08.17.07 SD CDS



date: 3.1.07
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checked by: CC
approved by: KM

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STRUCTURAL
NOTES

cad file:

S0.1

ENGINEERED WOOD PRODUCTS

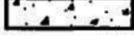
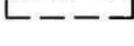
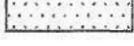
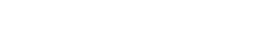
1. **WOOD I-JOISTS:** PROVIDE ENGINEERED WOOD I-JOISTS, SIZES AND SERIES AS SHOWN, AS MANUFACTURED BY TRUSJOIST MACMILLAN OR APPROVED EQUAL. INSTALL IN STRICT COMPLIANCE WITH THE MANUFACTURER'S STANDARD RECOMMENDATIONS AND DETAILS, INCLUDING CONSTRUCTION BRACING, MINIMUM BEARING LENGTHS, WEB STIFFENERS, SQUASH BLOCKS, BLOCKING, KNOCKOUTS AND HOLES, ETC.
2. **RIM BOARDS:** PROVIDE CONTINUOUS 1/4" THICK RIM BOARDS, TIMBERSTRAND LSL AS MANUFACTURED BY TRUSJOIST MACMILLAN, OR APPROVED EQUAL. INSTALL IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AT THE PERIMETER OF ALL FLOOR PLATFORMS.
3. **MICROLLAM BEAMS:** PROVIDE ENGINEERED BEAMS, SIZES AS SHOWN, MICROLLAM LVL (Fb=2600 PSI, E=1,900,000 PSI) OR PARALLAM PSL (Fb=2900 PSI, E=2,000,000 PSI) AS MANUFACTURED BY TRUSJOIST MACMILLAN OR APPROVED EQUAL. INSTALL IN STRICT COMPLIANCE WITH THE MANUFACTURER'S STANDARD RECOMMENDATIONS AND DETAILS.
4. **GLUED LAMINATED TIMBER (SOFTWOOD):** PROVIDE ENGINEERED BEAMS, SIZES AS SHOWN, IN ACCORDANCE WITH AITC I17-84 DESIGN STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES. UNLESS NOTED OTHERWISE, ALL LAMINATIONS SHALL BE SOUTHERN PINE.

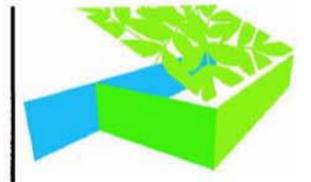
STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE FOLLOWING GOVERNING STANDARDS:
 - A. AISC "SPECIFICATION FOR THE DESIGN FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS," LATEST EDITION.
 - B. THE AMERICAN WELDING SOCIETY (AWS D1. 1) "CODE FOR WELDING IN BUILDING CONSTRUCTION," LATEST EDITION.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
 - A. ASTM A572 (Fy=50,000 PSI): STEEL COLUMNS AND BEAMS
 - ASTM A36: MISCELLANEOUS STEEL SHAPES, BASE PLATES, STIFFENERS, ETC.
 - ASTM A500, GRADE B: STRUCTURAL STEEL TUBULAR SHAPES
 - ASTM A-53, GRADE B: STRUCTURAL STEEL PIPE.
 - B. BOLTED CONNECTIONS OF BEAMS OR GIRDERS ARE TO BE MADE WITH ASTM A325-SC BOLTS (5/8" DIA. MIN.).
 - C. ANCHOR BOLTS: ASTM F1554.
3. STEEL CONNECTIONS SHALL BE STANDARD AISC FRAMED BEAM CONNECTIONS
 - A. FOR NON-COMPOSITE MEMBERS. PROVIDE CONNECTIONS BASED ON REACTION AS DETERMINED FROM AISC UNIFORM LOAD TABLE. (U.N.O. ON PLANS.)
 - B. FOR COMPOSITE MEMBERS. PROVIDE CONNECTIONS BASED ON 1.5 x REACTION FROM AISC UNIFORM LOAD TABLE. (U.N.O. ON PLANS.)
 - C. REINFORCING IS TO BE PROVIDED AT CONNECTIONS WHERE CUTS REDUCE THE SHEAR OR MOMENT CAPACITY BELOW THAT REQUIRED TO SUSTAIN THE REACTION. FLANGES AND WEB ARE TO BE REINFORCED WHERE THE LOCAL CAPACITY TO SUSTAIN THE CONNECTION LOAD IS INADEQUATE.
 - D. CONNECTIONS SHALL BE DESIGNED FOR SHEAR AND ECCENTRICITY, CONSIDERING THAT THE CONNECTION IS AN EXTENSION OF THE BEAM AND GIRDER.
 - E. MOMENT CONNECTIONS SHALL BE TYPE I (FULL RIGIDITY), DESIGNED FOR THE CONNECTED ELEMENT'S YIELD MOMENT U.N.O.
 - F. EXISTING STEEL SHALL BE DRILLED TO RECEIVE STANDARD CONNECTIONS FOR NEW WORK.
 - G. PROVIDE MECHANICALLY GALVANIZED BOLTS FOR EXTERIOR APPLICATIONS.
 - H. MINIMUM SIZE WELD, UNLESS NOTED OTHERWISE, IS 3/16" FILLET.
4. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS LICENSED BY THE GOVERNING LOCALITY. WELDING ELECTRODES SHALL BE ASTM A233, CLASS E70XX (USE LOW HYDROGEN ELECTRODES FOR A572, GRADE 50 STEEL).
5. GALVANIZE ALL STRUCTURAL STEEL EXPOSED TO WEATHER. SHOP PAINT STEEL MEMBERS NOT ENCASED IN CONCRETE NOR SPRAY FIREPROOFED, AND ALL STEEL MEMBERS AT THE EXTERIOR WALL AND EAVES WITH TNEPEC #99. FIELD PAINT AS PER ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
6. ALL BEAMS EXCEPT CANTILEVER BEAMS SHALL BE FABRICATED WITH NATURAL CAMBER UP. CANTILEVER BEAMS SHALL BE FABRICATED SO THAT NATURAL CAMBER RAISES CANTILEVER END.

STRUCTURAL STEEL (CONT.)

7. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. NO FABRICATION OF STEEL SHALL COMMENCE WITHOUT APPROVED SHOP DRAWINGS.

LEGEND	
	NEW FOOTING
	NEW BRICK MASONRY
	NEW CONCRETE MASONRY (CMU)
	NEW CONCRETE WALL
	NEW WOOD BEARING WALL (2x4 @ 16" INT, 2x6 @ 16" EXT.)
	BEARING WALL ABOVE
	DENOTES LIMIT OF PLYWOOD SHEATHING (3/4" T&G ADVANTECH U.N.O.)
	NEW WOOD JOIST (1 1/2" TJI 110 U.N.O.)
	NEW WOOD RAFTER
	NEW WOOD BEAM
	NEW STEEL BEAM
	INDICATES NEW STEEL POST THRU OR DOWN (HSS 3 1/2 x 3 1/2 x 3/16 U.N.O. ON PLAN)
	INDICATES NEW STEEL POST ABOVE (HSS 3 1/2 x 3 1/2 x 3/16 U.N.O. ON PLAN)
	INDICATES NEW WOOD POST THRU OR DOWN (5/4" SQR PSL U.N.O.). STUD PACK POSTS SUPPORTING LVL BEAMS SHALL BE EQUAL TO OR GREATER THAN BEAM WIDTH AND BEAR ON WALL BOTTOM PLATE U.N.O.)
	INDICATES NEW WOOD POST ABOVE (REFER TO NOTES FOR WOOD POST THRU OR DOWN)
	INDICATES BOTTOM OF FOOTING ELEVATION
	DENOTES CONNECTION REQUIREMENTS (SEE SCHEDULE)



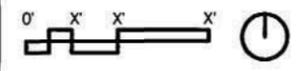
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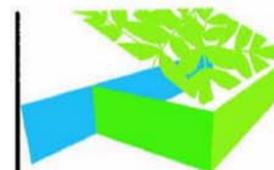
Revisions:
 03.06.07 SD CDS
 07.09.07 PFS TPJP
 07.28.07 PG CO.
 08.07.07 SD CDS
 08.17.07 SD CDS



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STRUCTURAL NOTES
 cad file:
S0.2



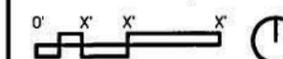
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07.09.07 PFS TPIP
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



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STRUCTURAL
SCHEDULES

cad file:

S0.3

CONNECTION SCHEDULE

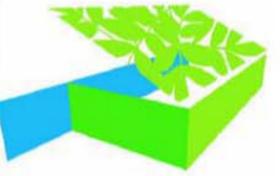
CONNECTION # (SEE PLAN)	CONNECTION DESIGNATION	COMMENTS	CONNECTION # (SEE PLAN)	CONNECTION DESIGNATION	COMMENTS
1	HB5.50/1.25		11		
2	U410		12		
3	CCQ46SDS2.5		13		
4	ECCQ46SDS2.5		14		
5	(2) H2.5A		15		
6	HUS412		16		
7	CCQ66SDS2.5	INVERTED	17		
8	LSSU210-2	@2'-9" (PLANE 1/8" E.S.)	18		
9	CS18-R		19		
10	LSSU210-2		20		

NOTE: CONNECTION DESIGNATIONS AS LISTED REFER TO SIMPSON STRONG-TIE WOOD CONSTRUCTION CONNECTORS. EQUIVALENT CONNECTORS MAY BE SUBSTITUTED WITH ENGINEER'S APPROVAL.

DESIGN LOADS AND FACTORS

DESIGN CODE: IRC 2003
AS MODIFIED BY LOCALITY

LIVE LOAD DATA		ROOF LOAD DATA		WIND LOAD DATA		EARTHQUAKE DESIGN DATA	
FLOOR OR ROOF AREA	LOAD (PSF)	LOAD TYPE	VALUE (PSF)	PARAMETER	VALUE	PARAMETER	VALUE
TYP. FLOOR (U.N.O.)	50	NON-DRIFT SNOW	23	BASIC WIND SPEED	90 MPH	SHORT PERIOD MAP VALUE (S_s)	18.0% g
DECKS	100	DRIFTING SNOW	30	WIND EXPOSURE	C	1.0 SEC PERIOD MAP VALUE (S_1)	6.3% g
STAIRS	100			IMPORTANCE FACTOR	1.0	SOIL FACTOR FOR SITE CLASS D (F_a)	1.60
MEANS OF EGRESS	100	PARAMETER	VALUE			RESIDENTIAL SITE VALUE	19.2% g
MECHANICAL ROOM	100	GROUND SNOW LOAD (P_g)	30			RESIDENTIAL SEISMIC DESIGN CATEGORY	B
		CEILING APPLIED	YES	SHEAR WALL TYPE:			
		ROOF DEAD LOAD	15 TO 20	CONTINUOUS TYPE 3 (U.N.O.)			



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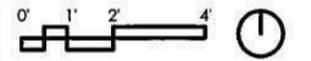


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 - 08.17.07 SD CDS



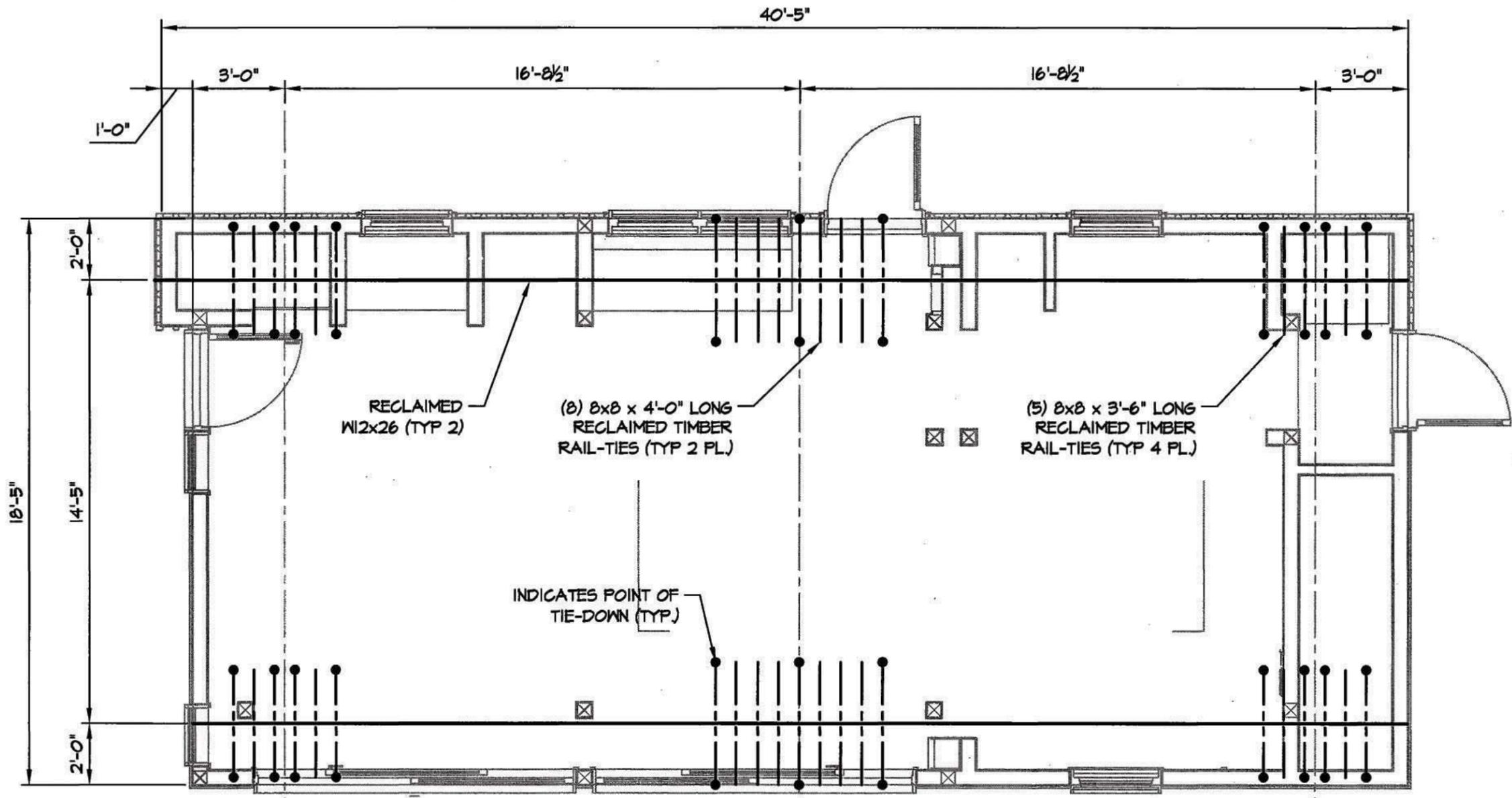
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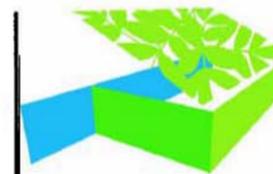


FOUNDATION FRAMING PLAN

cad file:
S1.1



1 FOUNDATION PLAN
 S1.1 SCALE: 1/4" = 1'-0"



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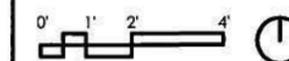


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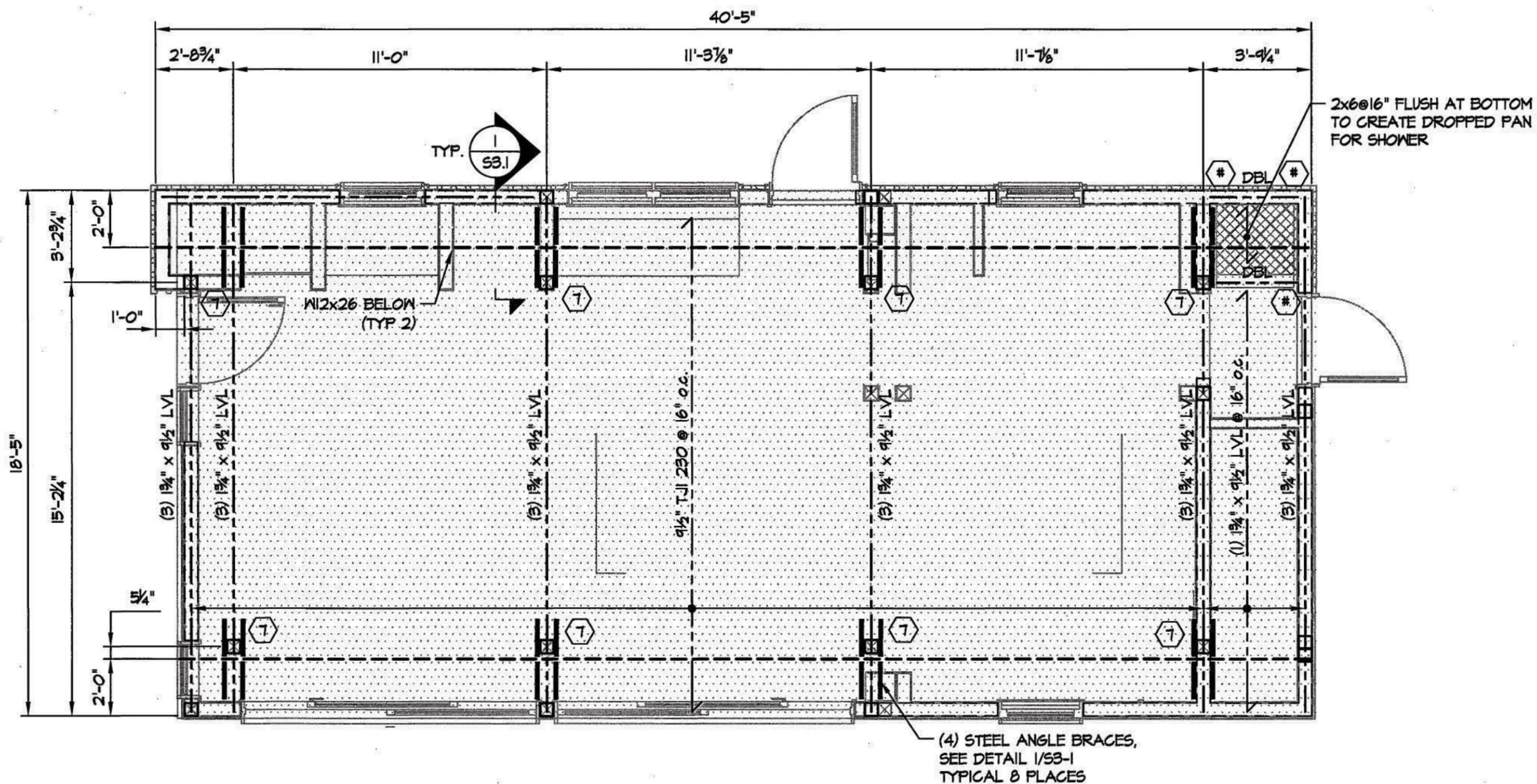
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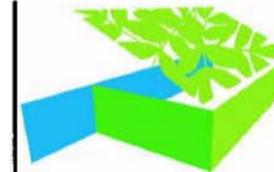
GROUND FLOOR
FRAMING PLAN

cad file:

S1.2



1 GROUND FLOOR FRAMING PLAN
S1.2 SCALE: 1/4" = 1'-0"



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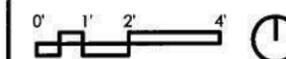


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07.09.07 PFS TPJ
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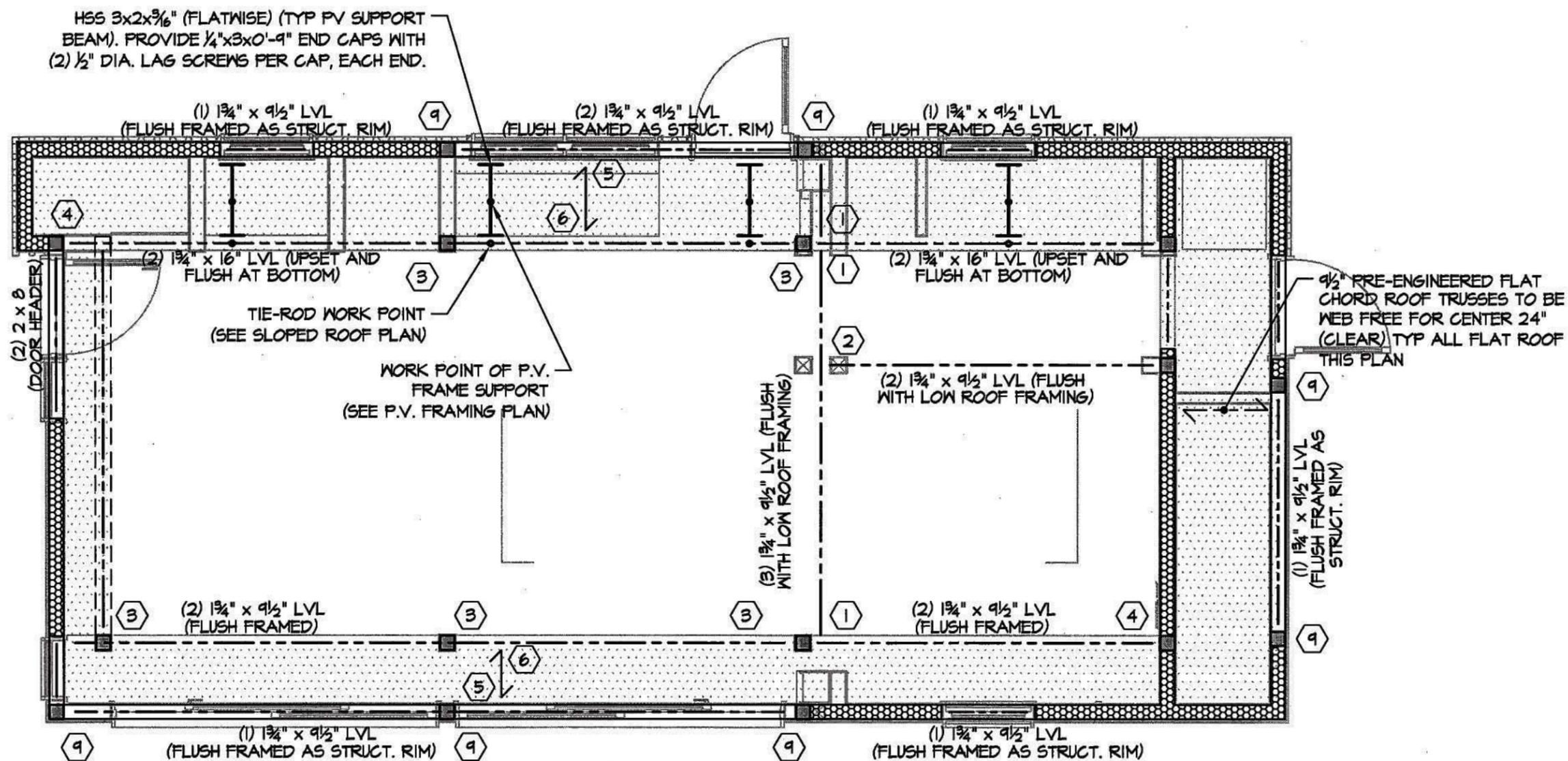
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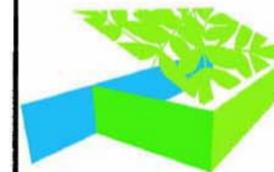
LOW ROOF
FRAMING PLAN

cad file:

S1.3



1 LOW ROOF/CEILING PLAN
S1.3 SCALE: 1/4" = 1'-0"



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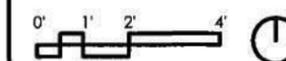


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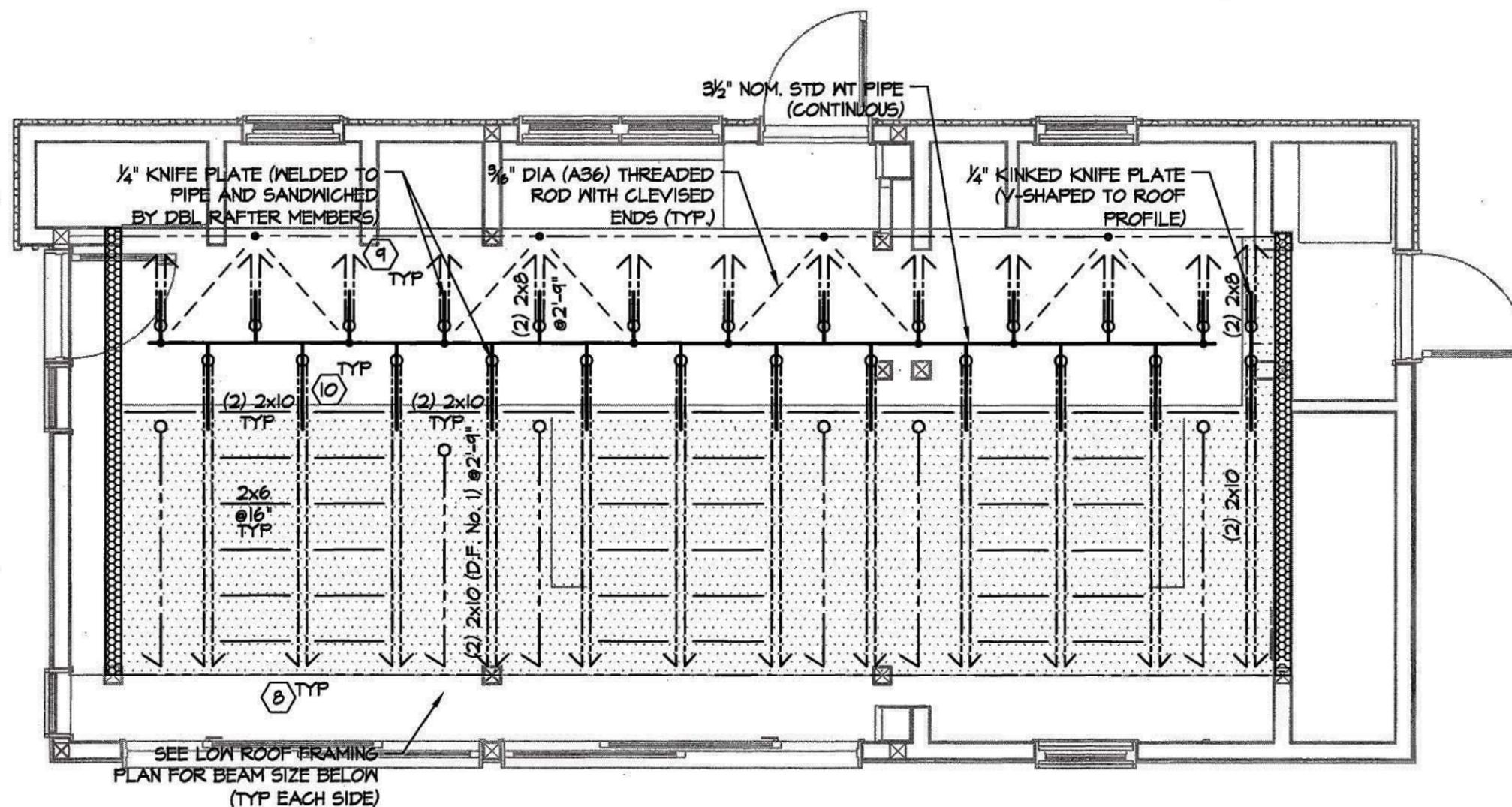
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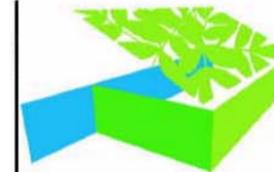
SLOPED ROOF
FRAMING PLAN

cad file:

S1.4



1 SLOPED ROOF PLAN
S1.4 SCALE: 1/4" = 1'-0"



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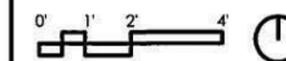


- Revisions:
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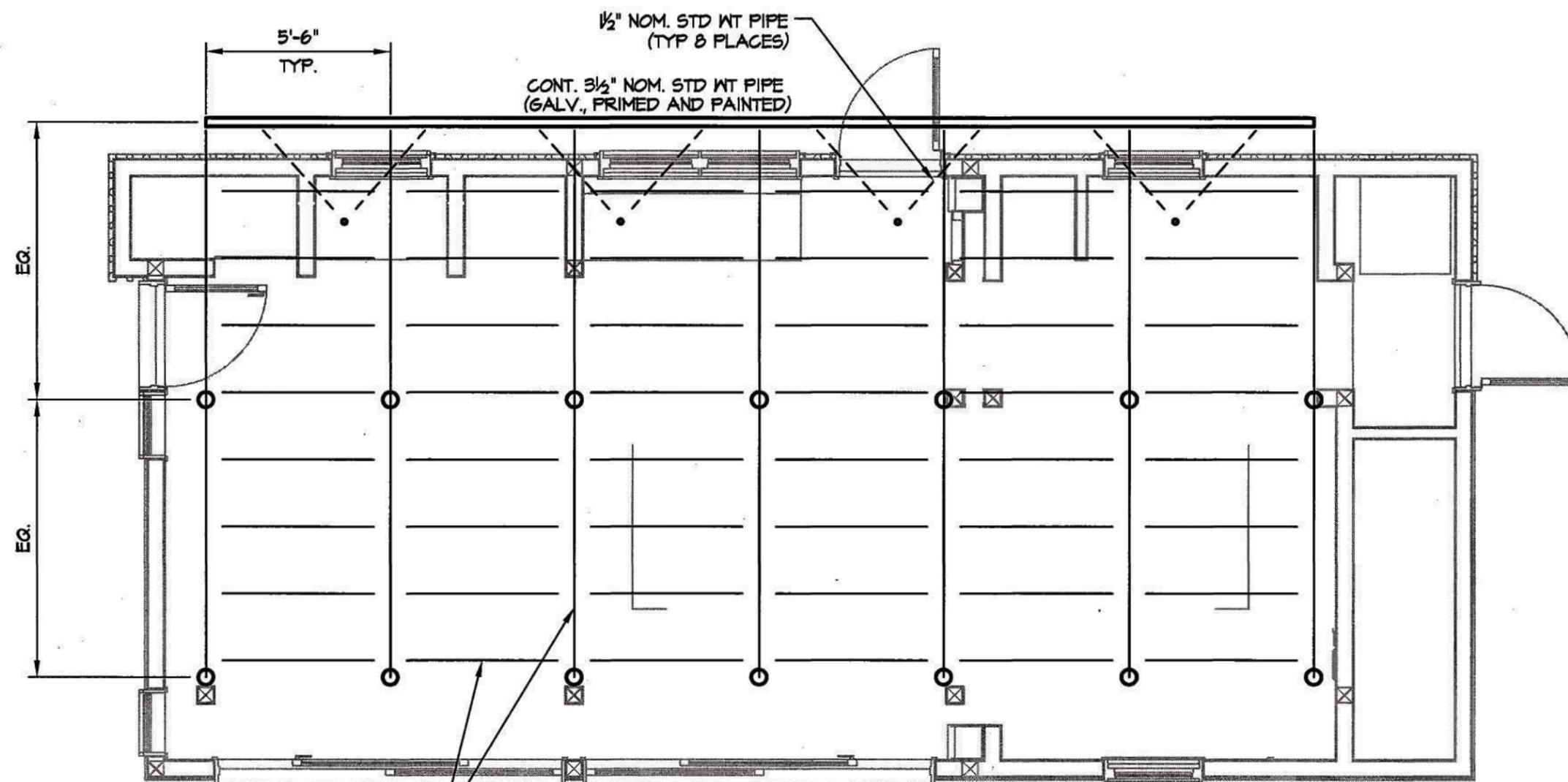
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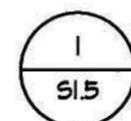
PHOTOVOLTAIC FRAMING PLAN

cad file:

S1.5

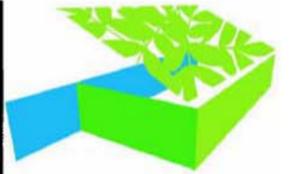
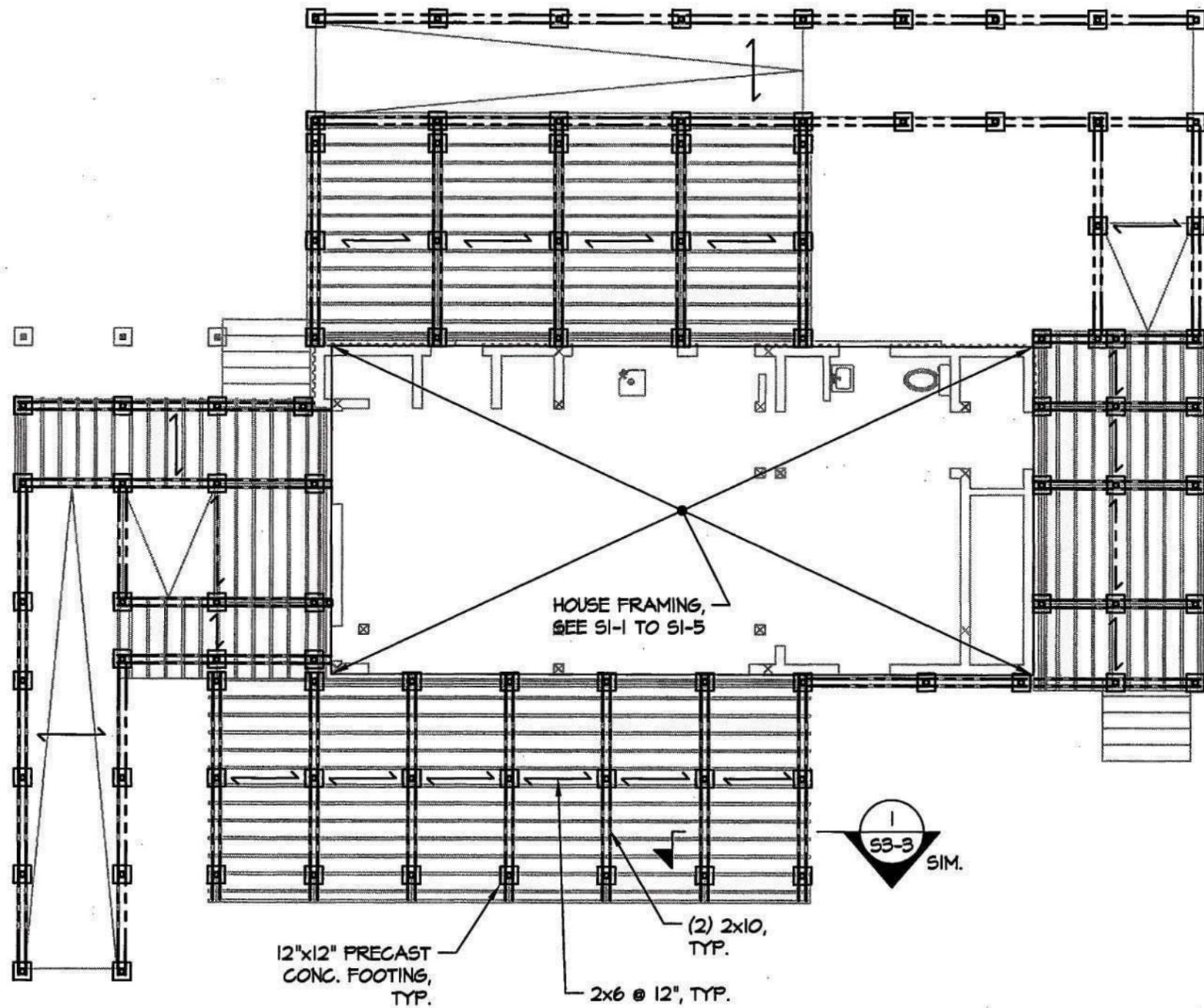


3030 SERIES ALUM EXTRUSIONS BY 80/20 INC.
 WITH STANDARD PIPE SUPPORT BASES.
 PROVIDE (2) 3/8" x 3 1/2" LAG SCREWS INTO
 CENTER OF DBL RAFTERS BELOW (TYP.)



PHOTOVOLTAIC FRAMING PLAN

SCALE: 1/4" = 1'-0"



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 08.07.07 SD CDS
 08.17.07 SD CDS



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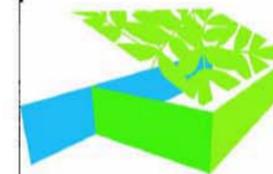
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DECK FRAMING PLAN

cad file:

S1.6



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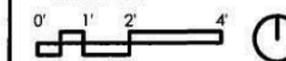


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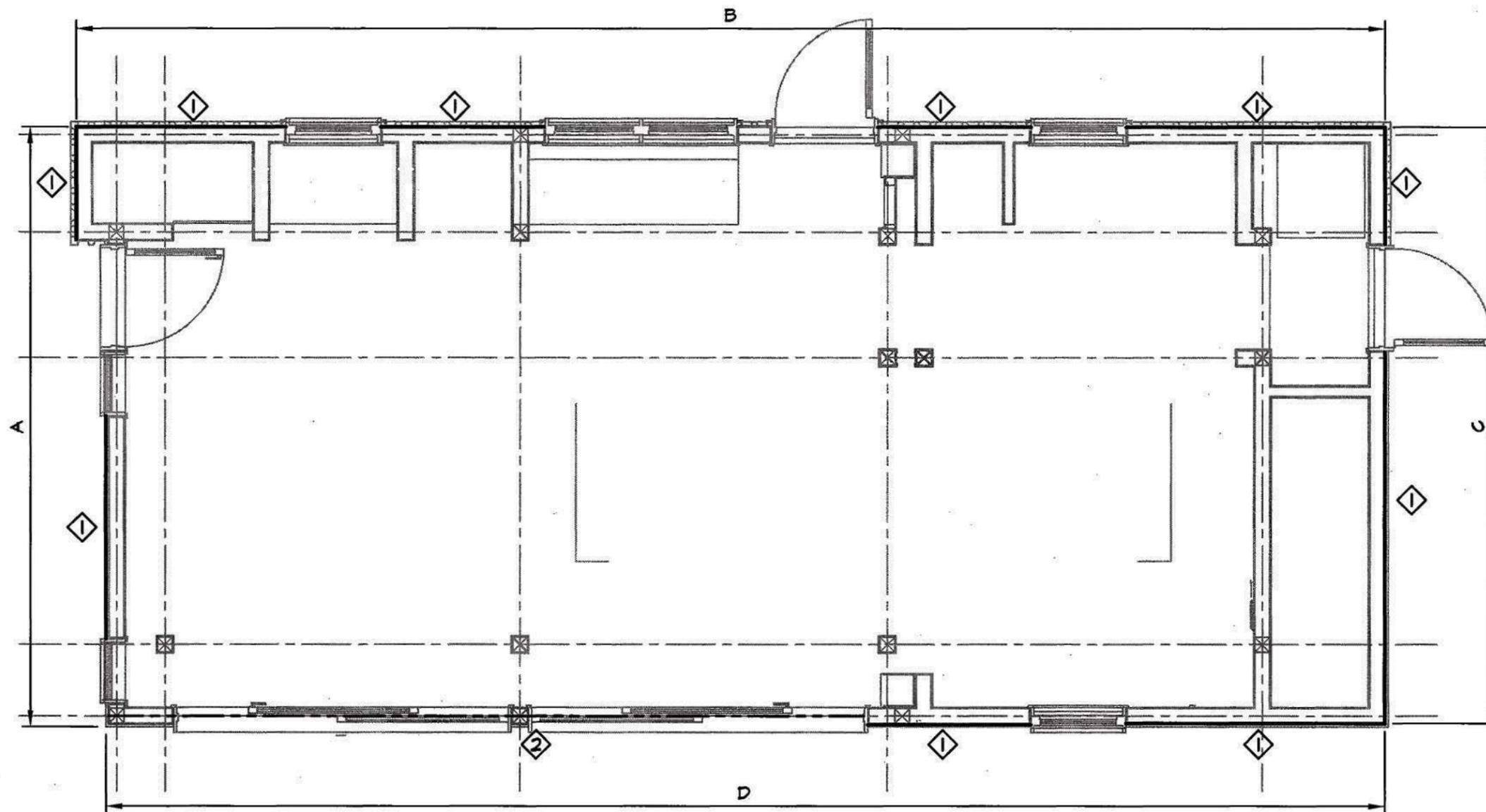
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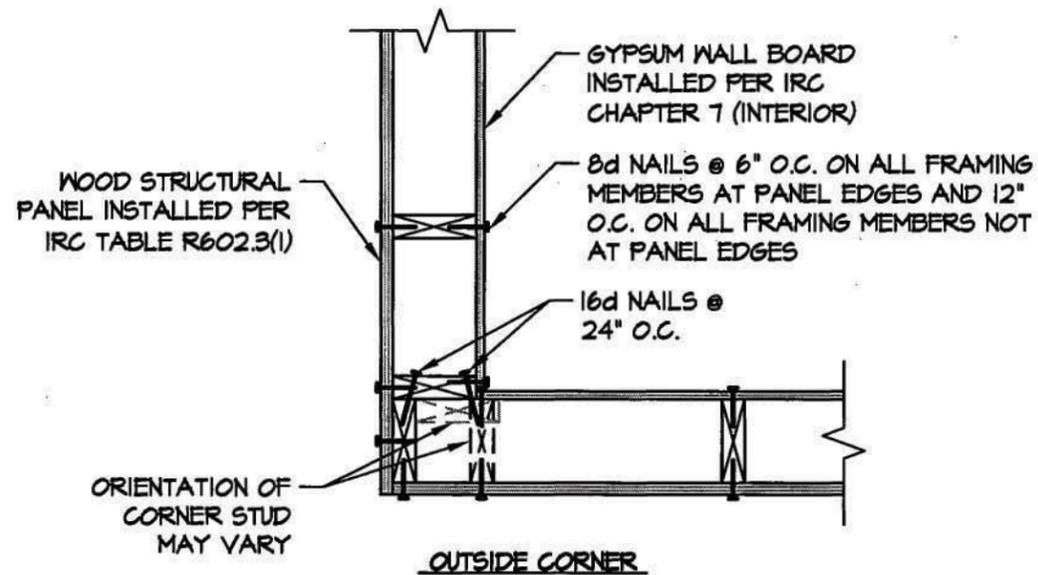
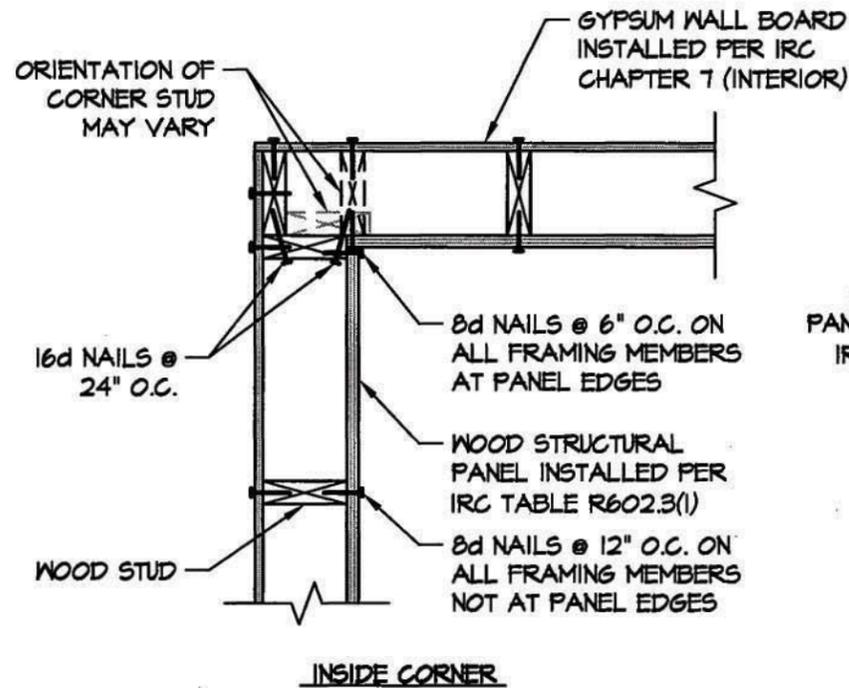
LATERAL
SYSTEM PLAN

cad file:
S2.1



1 FIRST FLOOR SHEAR WALLS
S2.1 SCALE: 1/4" = 1'-0"

LEGEND	
	NEW WOOD BEARING WALL (2x4 @ 16")
	WIDTH OF SHEAR WALL
	COLLECTOR BEAM
	DENOTES SHEAR WALL TYPE



EXTERIOR SHEAR WALL CORNER

2
S2.2 SCALE: 1" = 1'-0"

SHEAR WALL TYPES			
MARK	CONSTRUCTION METHOD (IRC R602.10.3)		ALTERNATE METHOD?
①	3	CONT. PLYWOOD SHEATHING	NO

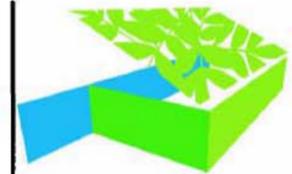
MIN. PANEL LENGTHS			
WALL HEIGHT	MAXIMUM OPENING HEIGHT (% OF WALL)		MINIMUM PANEL LENGTH (IN.)
8'	65%	TYPICAL WINDOW	27
9'	85%	TYPICAL DOOR	36

- NOTES:
- REFER TO IRC 2003 TABLE R602.10.5
 - EXPOSURE CATEGORY: C
 - WIND SPEED: 90 MPH

SHEAR LINE SCHEDULE					
WALL LINE	MARK (SEE SCHED.)	AMOUNT OF BRACING		LOCATED WITHIN 12'-6" OF END?	LOCATED @ 25'-0" O.C.?
		% REQ'D	% PROVIDED		
A	①	16%	72%	YES	YES
B	①	16%	57%	YES	YES
C	①	16%	32%	YES	YES
D	①	16%	39%	NO	YES

GENERAL WIND NOTES

- UNLESS NOTED OTHERWISE IN PLANS OR ELEVATIONS, ALL SHEAR WALL LINES MEET OR EXCEED EITHER
 - PREScriptive REQUIREMENTS OF IRC 2003 R602.10
 - PREScriptive REQUIREMENTS OF APA NARROW WALL BRACING METHOD
- WALLS NOT MEETING THE ABOVE REQUIREMENTS HAVE BEEN ENGINEERED AND DETAILED HEREIN TO RESIST WIND FORCES CALCULATED USING PARAMETERS DEFINED IN THE DRAWINGS.



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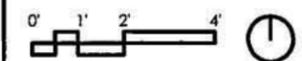


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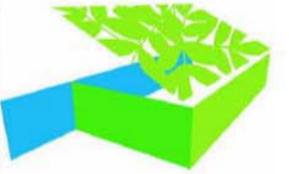
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LATERAL
SYSTEM DETAILS

cad file:

S2.2



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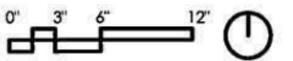


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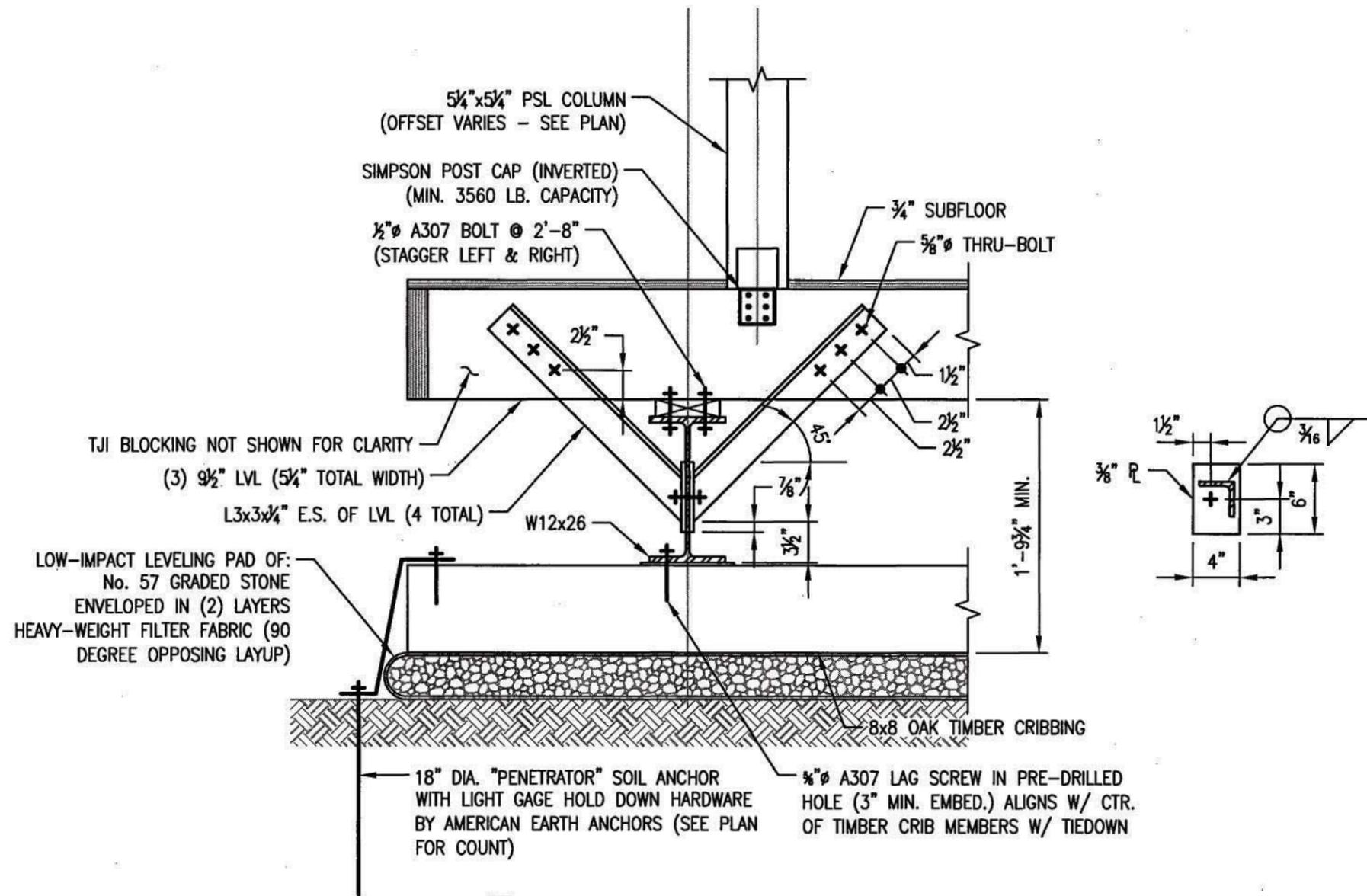
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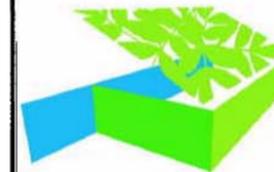
SECTIONS &
DETAILS

cad file:

S3.1



1 SECTION
 S3.1 SCALE: 1" = 1'-0"



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07.28.07 PG CO.
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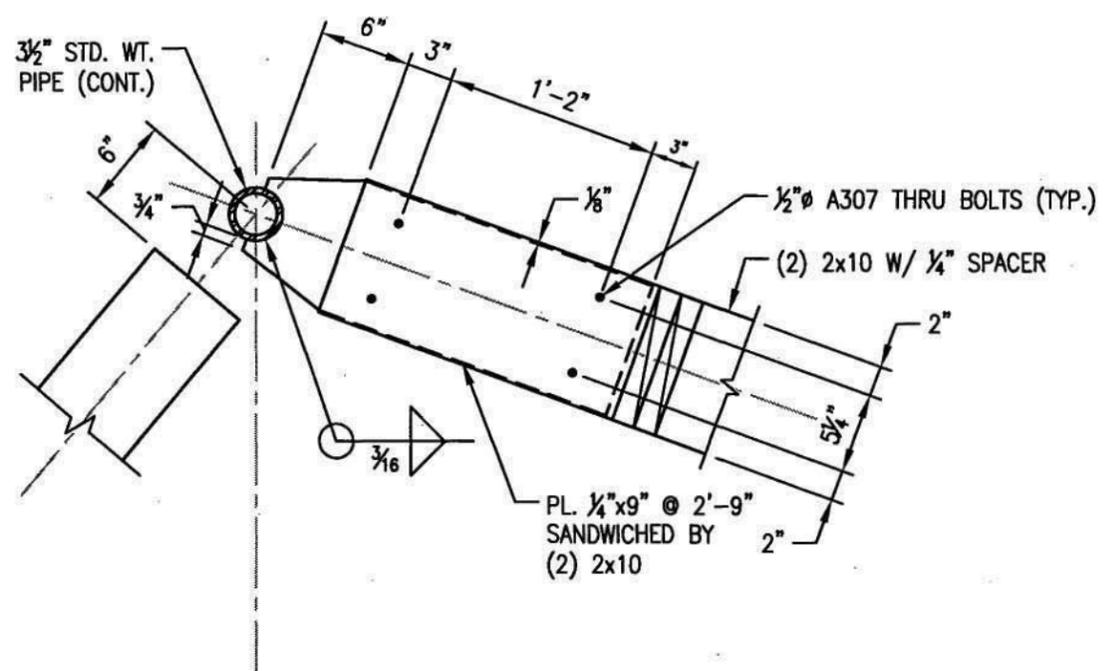
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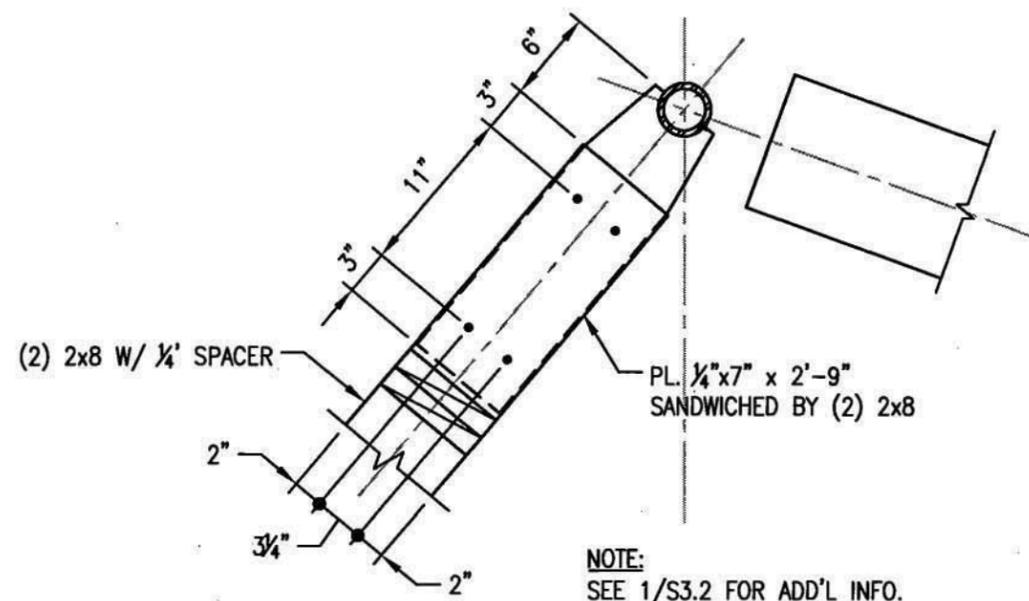
SECTIONS &
DETAILS

cad file:

S3.2

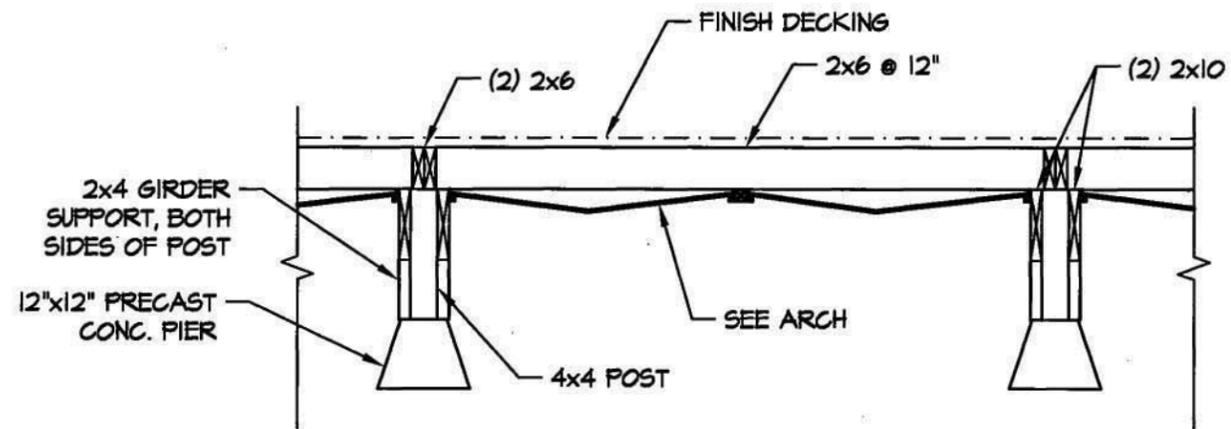


1 SECTION
S3.2 SCALE: 1" = 1'-0"

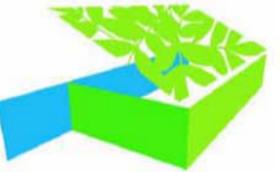


2 SECTION
S3.2 SCALE: 1" = 1'-0"

NOTE:
SEE 1/S3.2 FOR ADD'L INFO.



1 DECK SECTION
 53-3 SCALE: 1/2" = 1'-0"



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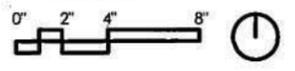


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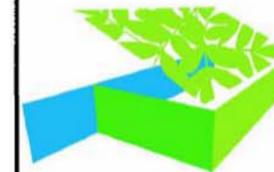
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SECTIONS &
 DETAILS

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S3.3



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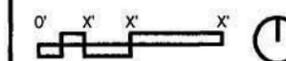


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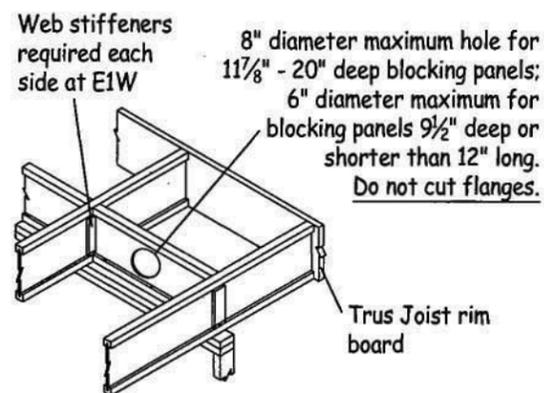
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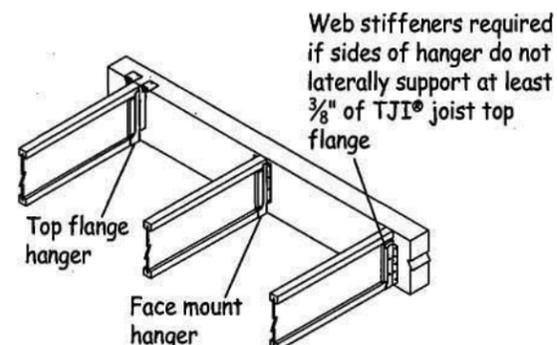
TJI FRAMING
DETAILS

cad file:

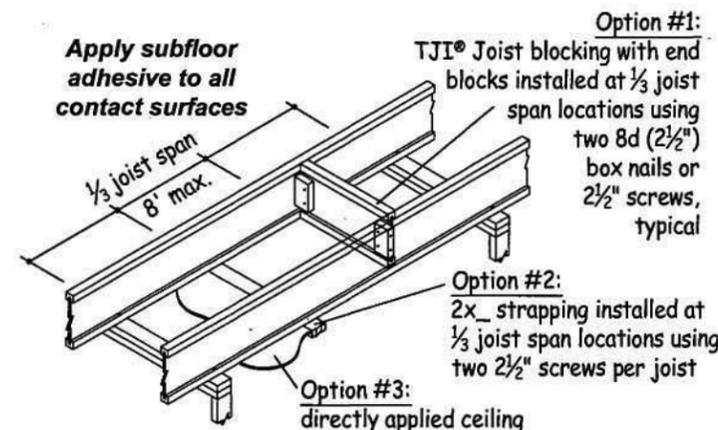
S4.1



E1 E1W



H1



PB1

When specified on the layout,
one or more of the three bracing
options shown must be installed

CONNECTION OF MULTIPLE PIECES OF TOP-LOADED BEAMS (1)

1 3/4" Width Pieces:

- Minimum of 3 rows 10d (3" x 0.128") nails at 12" o.c.
- Minimum of 4 rows 10d (3" x 0.128") nails at 12" o.c. for 14" and deeper beams
- If using 12d (3 3/4") or larger nails, the number of nailing rows may be reduced by one.

3 1/2" Width Pieces:

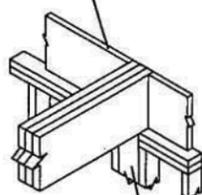
- Minimum of 2 rows 1/2" bolts at 24" o.c. staggered

(1) Load must be applied evenly across entire beam width. Otherwise, use connections for side-loaded beams.

Additional nailing or bolting may be required with side-loaded multiple-member beams. Refer to current product literature.

BEARING AT WALL

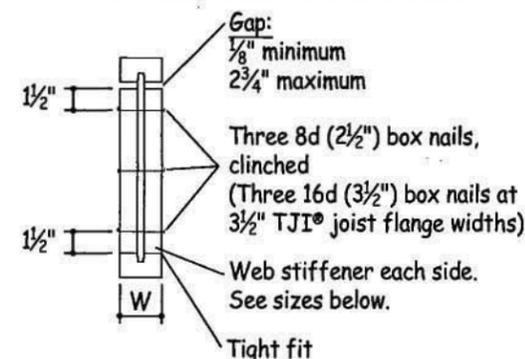
Truss Joist rim board or blocking for lateral support



Parallam® PSL or
TimberStrand® LSL
Column

L1

WEB STIFFENER ATTACHMENT



W

W	Web Stiffener Size	W	Web Stiffener Size
1 1/2"	1/2" x 2 5/16" minimum	2 5/16"	7/8" x 2 5/16" minimum
1 3/4"	5/8" x 2 5/16" minimum	2 1/2"	1" x 2 5/16" minimum
2 1/16"	3/4" x 2 5/16" minimum	3 1/2"	2x4

ALLOWABLE HOLES - TJI® Joists

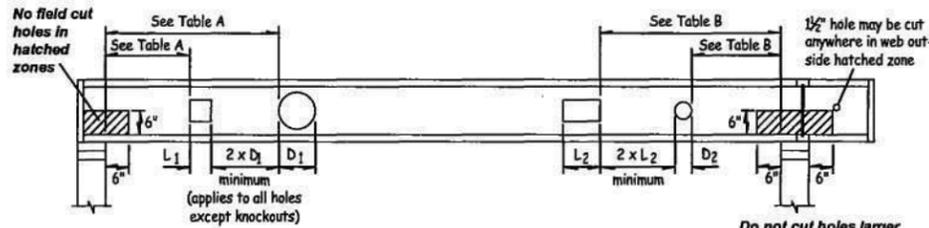


Table A - End Support

Minimum distance from edge of hole to inside face of nearest end support

DEPTH	TJI®	ROUND HOLE SIZE								SQUARE OR RECTANGULAR HOLE SIZE								
		2"	3"	4"	6 1/2"	8 1/4"	11"	13"		2"	3"	4"	6 1/2"	8 1/4"	11"	13"		
9 1/2"	110	1'-0"	1'-6"	2'-0"	5'-0"					1'-0"	1'-6"	2'-6"	4'-6"					
	210	1'-0"	1'-6"	2'-0"	5'-0"					1'-0"	2'-0"	2'-6"	5'-0"					
	230	1'-0"	2'-0"	2'-6"	5'-6"					1'-0"	2'-0"	3'-0"	5'-0"					
	360	1'-6"	2'-0"	3'-0"	6'-0"					1'-6"	2'-6"	3'-6"	5'-6"					
11 1/2"	110	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"				1'-0"	1'-0"	1'-6"	4'-6"	6'-0"				
	210	1'-0"	1'-0"	1'-0"	2'-6"	5'-6"				1'-0"	1'-0"	2'-0"	5'-0"	6'-6"				
	230	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"				1'-0"	1'-0"	2'-0"	5'-6"	7'-0"				
	360	1'-0"	1'-0"	1'-6"	4'-6"	7'-0"				1'-0"	1'-0"	2'-6"	6'-6"	7'-6"				
14"	110	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"				1'-0"	1'-0"	1'-0"	3'-6"	6'-0"	8'-0"			
	210	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"			1'-0"	1'-0"	1'-0"	4'-0"	6'-6"	8'-6"			
	230	1'-0"	1'-0"	1'-0"	1'-6"	3'-6"	6'-6"			1'-0"	1'-0"	1'-0"	4'-0"	7'-0"	9'-0"			
	360	1'-0"	1'-0"	1'-0"	2'-6"	5'-6"	8'-0"			1'-0"	1'-0"	1'-0"	5'-6"	8'-0"	9'-6"			
16"	110	1'-0"	1'-0"	1'-0"	2'-6"	6'-0"	9'-0"			1'-0"	1'-0"	1'-6"	6'-6"	9'-0"	10'-0"			
	210	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	3'-6"	6'-0"		1'-0"	1'-0"	1'-0"	2'-6"	6'-6"	8'-0"	10'-6"		
	230	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	4'-0"	6'-6"		1'-0"	1'-0"	1'-0"	3'-0"	7'-0"	9'-0"	11'-0"		
	360	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"	9'-0"		1'-0"	1'-0"	1'-0"	4'-0"	9'-0"	10'-0"	11'-6"		
18"	360	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	7'-0"	11'-0"		1'-0"	1'-0"	1'-0"	5'-0"	10'-0"	11'-0"	13'-6"		
	560	1'-0"	1'-0"	1'-0"	1'-0"	5'-0"	11'-0"			1'-0"	1'-0"	1'-0"	6'-6"	11'-0"	12'-0"	14'-6"		
	20"	360	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	7'-0"	10'-6"		1'-0"	1'-0"	1'-0"	4'-0"	9'-0"	10'-0"	11'-6"	
		560	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	7'-0"	11'-0"		1'-0"	1'-0"	1'-0"	4'-0"	9'-6"	12'-6"	14'-6"	15'-6"

Table B - Intermediate or Cantilever Support

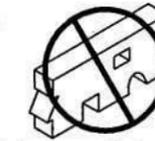
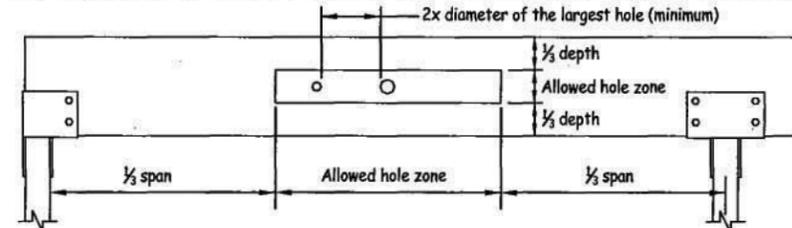
Minimum distance from edge of hole to inside face of nearest intermediate or cantilever support

DEPTH	TJI®	ROUND HOLE SIZE								SQUARE OR RECTANGULAR HOLE SIZE								
		2"	3"	4"	6 1/2"	8 1/4"	11"	13"		2"	3"	4"	6 1/2"	8 1/4"	11"	13"		
9 1/2"	110	1'-6"	2'-6"	3'-0"	7'-6"					1'-6"	2'-6"	3'-6"	6'-6"					
	210	2'-0"	2'-6"	3'-6"	7'-6"					2'-0"	3'-0"	4'-0"	7'-0"					
	230	2'-6"	3'-0"	4'-0"	8'-0"					2'-6"	3'-0"	4'-6"	7'-6"					
	360	3'-0"	4'-0"	5'-6"	9'-0"					3'-0"	4'-6"	5'-6"	8'-0"					
11 1/2"	110	1'-0"	1'-0"	1'-6"	4'-0"	8'-0"				1'-0"	1'-6"	2'-6"	6'-6"	9'-0"				
	210	1'-0"	1'-0"	2'-0"	4'-6"	9'-0"				1'-0"	2'-0"	3'-0"	7'-6"	10'-0"				
	230	1'-0"	2'-0"	2'-6"	5'-0"	9'-6"				1'-0"	2'-6"	3'-6"	8'-0"	10'-0"				
	360	2'-0"	3'-0"	4'-0"	7'-0"	11'-0"				2'-0"	3'-6"	5'-0"	9'-6"	11'-0"				
14"	110	1'-0"	1'-0"	1'-0"	2'-0"	4'-6"	8'-0"			1'-0"	1'-0"	1'-0"	5'-0"	9'-0"	12'-0"			
	210	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"	9'-0"			1'-0"	1'-0"	2'-0"	6'-0"	10'-0"	12'-6"			
	230	1'-0"	1'-0"	1'-0"	3'-0"	5'-6"	10'-0"			1'-0"	1'-0"	2'-6"	6'-0"	10'-6"	13'-0"			
	360	1'-0"	1'-0"	2'-0"	5'-6"	8'-6"	12'-6"			1'-0"	2'-0"	4'-0"	9'-0"	12'-0"	14'-0"			
16"	110	1'-0"	1'-0"	1'-6"	5'-6"	9'-6"	13'-6"			1'-0"	3'-0"	5'-0"	10'-0"	13'-6"	15'-0"			
	210	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	5'-6"	9'-6"		1'-0"	1'-0"	1'-0"	4'-6"	9'-6"	12'-6"	15'-6"		
	230	1'-0"	1'-0"	1'-0"	1'-6"	4'-0"	6'-6"	10'-6"		1'-0"	1'-0"	1'-0"	5'-0"	10'-6"	13'-0"	16'-0"		
	360	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-6"	10'-6"		1'-0"	1'-0"	1'-0"	5'-0"	10'-6"	13'-0"	17'-0"		
18"	360	1'-0"	1'-0"	1'-0"	2'-6"	7'-0"	11'-0"	15'-0"		1'-0"	1'-0"	3'-6"	9'-0"	14'-6"	16'-0"	18'-0"		
	560	1'-0"	1'-0"	1'-0"	2'-0"	6'-0"	10'-0"	16'-6"		1'-0"	6'-0"	11'-6"	16'-6"	18'-0"	20'-0"			
	20"	360	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"	11'-0"	15'-6"		1'-0"	1'-6"	7'-0"	12'-6"	16'-6"	19'-0"	21'-0"	
		560	1'-0"	1'-0"	1'-0"	1'-6"	5'-6"	12'-0"	16'-0"		1'-0"	3'-0"	8'-6"	14'-0"	17'-6"	19'-6"	20'-6"	

Rectangular holes based on measurement of longest side.

- Holes may be located vertically anywhere within the web. Leave 1/8" of web (minimum) at top and bottom of hole.
- Knockouts are located in web at approximately 12" on-center; they do not affect hole placement.
- For simple span (5' minimum) uniformly loaded joists meeting the requirements of current Trus Joist product guides, one maximum size round hole may be located at the center of the joist span provided no other holes occur in the joist.
- Distances are based on the maximum uniform loads shown in current Trus Joist product guides. For other load conditions or hole configurations contact your Trus Joist representative.

ALLOWABLE HOLES - Beams and Headers



Cut only round holes and only in the center of beam.

ROUND HOLE CHART

BEAM DEPTH	MAXIMUM ROUND HOLE SIZE
4 3/8"	1"
5 1/2"	1 1/4"
7 1/4" to 20"	2"

See illustration for Allowed Hole Zone

- For uniformly loaded beams only.
- Rectangular holes are not allowed.
- No holes in cantilevers.
- No holes in headers or beams in plank orientation.

NAILING REQUIREMENTS

TJI® joists at bearings: Two 8d (2 1/2") box nails (1 each side), 1 1/2" minimum from end.

Blocking panels, rim joist or rim board to bearing plate:

TJI® blocking panels or rim joist: 10d (3") box nails at 6" o.c.

Trus Joist rim board: Toenail with 10d (3") box nails at 6" o.c. or 16d (3 1/2") box nails at 12" o.c.

Shear transfer: Connections equivalent to decking nail schedule.

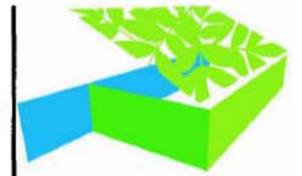
Rim board, rim joist or closure to TJI® joist:

1 3/4" width or less: Two 10d (3") box nails, one each at top and bottom flange.

2 1/16" thru 2 1/2" widths: Two 16d (3 1/2") box nails, one each at top and bottom flange.

3 1/2" width: Toenail joist to rim joist with one 10d (3") box nail each side of joist top flange.

2x4 minimum squash blocks: Two 10d (3") box nails, one each at top and bottom flange.



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at the University of Maryland



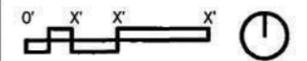
Revisions:
03.06.07 SD CDS
07.09.07 PFS TPPI
07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



date: 03.01.07
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checked by: CC
approved by: KM

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TJI FRAMING
DETAILS

cad file:

S4.2

DO NOT allow workers to walk on joists until braced. INJURY MAY RESULT.

WARNING

Joists are unstable until braced laterally

Bracing Includes:

- Blocking
- Hangers
- Strut Lines
- Sheathing
- Rim Board
- Rim Joist

DO NOT stack building materials on unsheathed joists. Stack only over beams or walls.

WARNING NOTES:

Lack of concern for proper bracing during construction can result in serious accidents. Under normal conditions if the following guidelines are observed, accidents will be avoided.

- All blocking, hangers, rim boards and rim joists at the end supports of the TJI® joists must be completely installed and properly nailed.
- Lateral strength, like a braced end wall or an existing deck, must be established at the ends of the bay. This can also be accomplished by a temporary or permanent deck (sheathing) fastened to the first 4 feet of joists at the end of the bay.
- Safety bracing lines of 1x4 (minimum) must be nailed to a braced end wall or sheathed area as in note 2 and to each joist. Without this bracing, buckling sideways or rollover is highly probable under light construction loads - like a worker or one layer of unnailed sheathing.
- Sheathing must be totally attached to each TJI® joist before additional loads can be placed on the system.
- Ends of cantilevers require safety bracing on both the top and bottom flanges.
- The flanges must remain straight within a tolerance of 1/2" from true alignment.



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- Revisions:
- 03.06.07 SD CDS
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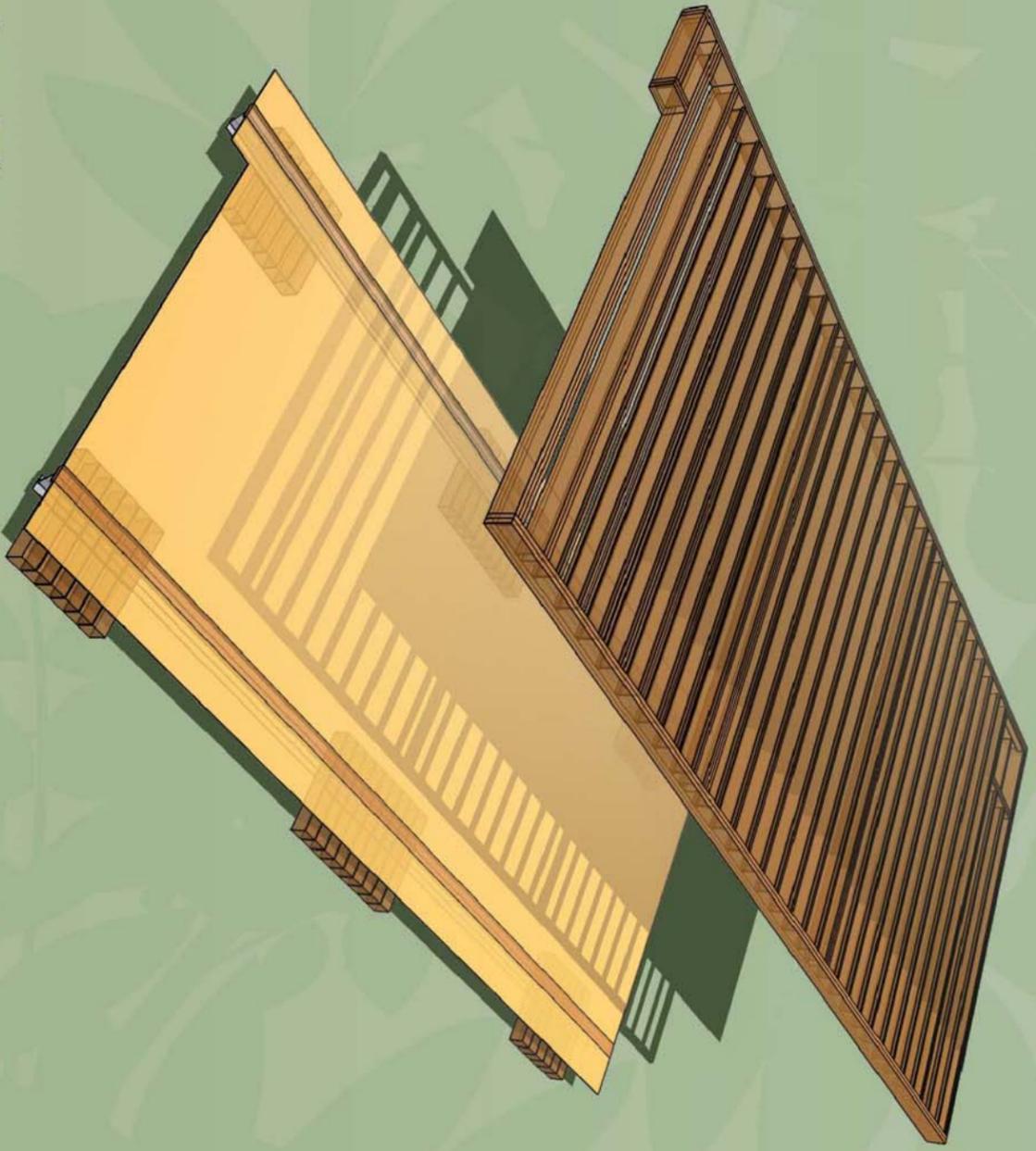
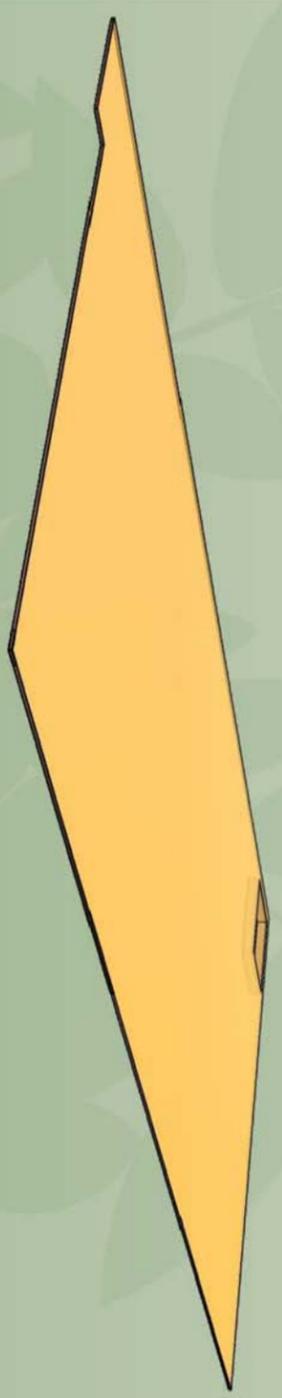
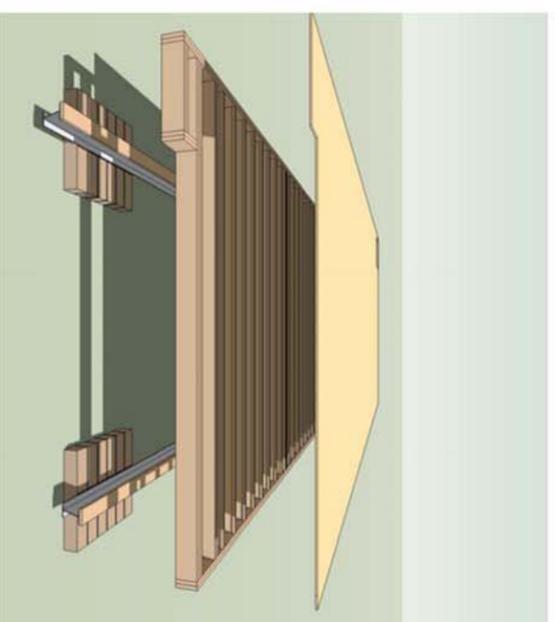
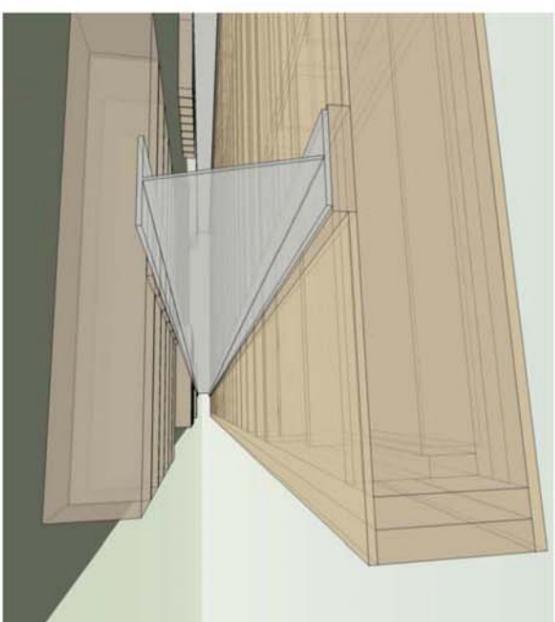
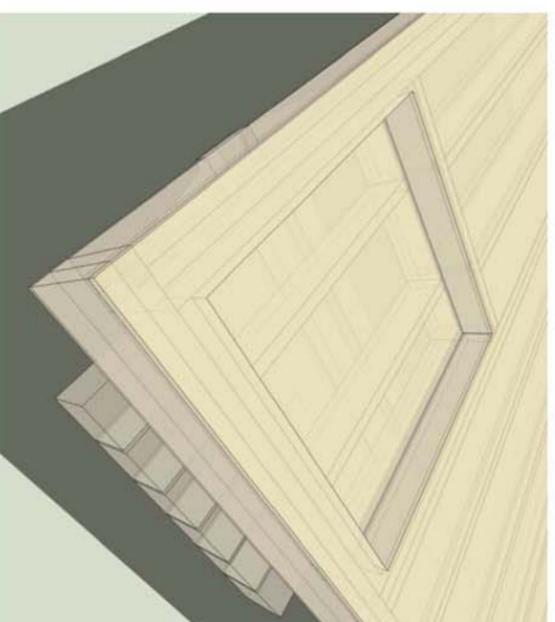
NIS
Foundation

AS1.01

To be built in a national park like the National Mall, the foundation for LEAFHOUSE had to meet restrictions predicated on limited site disturbance. However, leaving a light footprint on the sites on which we build is a responsibility of sustainable design more than it is a restriction.

The University of Maryland design team has elected to make this restriction an opportunity. The first layer of our foundation is composed of reclaimed railroad ties used as cribbing, allowing us the flexibility to level our house on slightly irregular grades without the use of mechanical devices. The design also lightens the house's footprint on the site by spreading the weight of the house over a wider surface area than mechanical "point" support alternatives.

The keys to transferring this weight to the cribbing are the two steel hoisting beams running the length of the house. Necessary for transporting the house to the National Mall and it's future owner, these beams also afford us the opportunity to use a 9 1/2" dimension in our floor framing, due to the reduction in span length between bearing points.



A
NTS
Foundation



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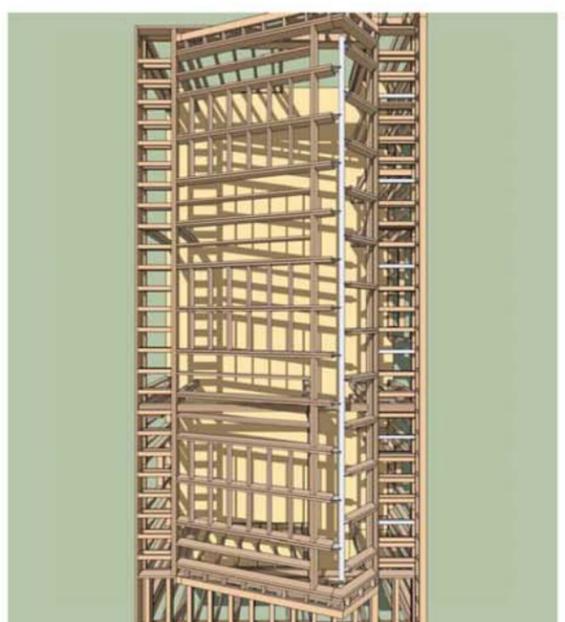
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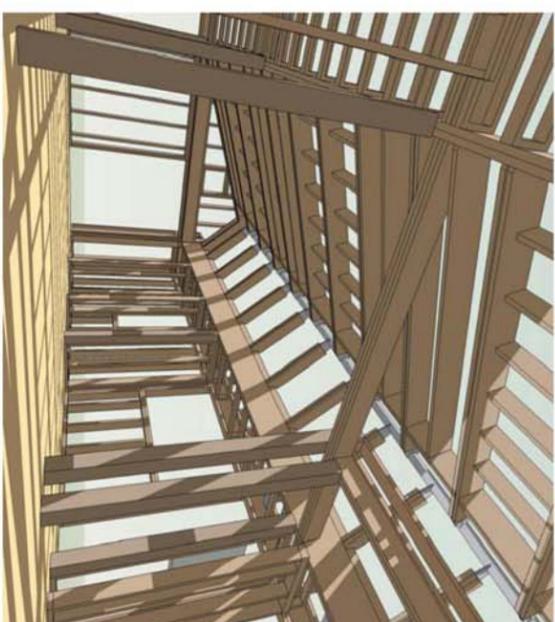


Framing

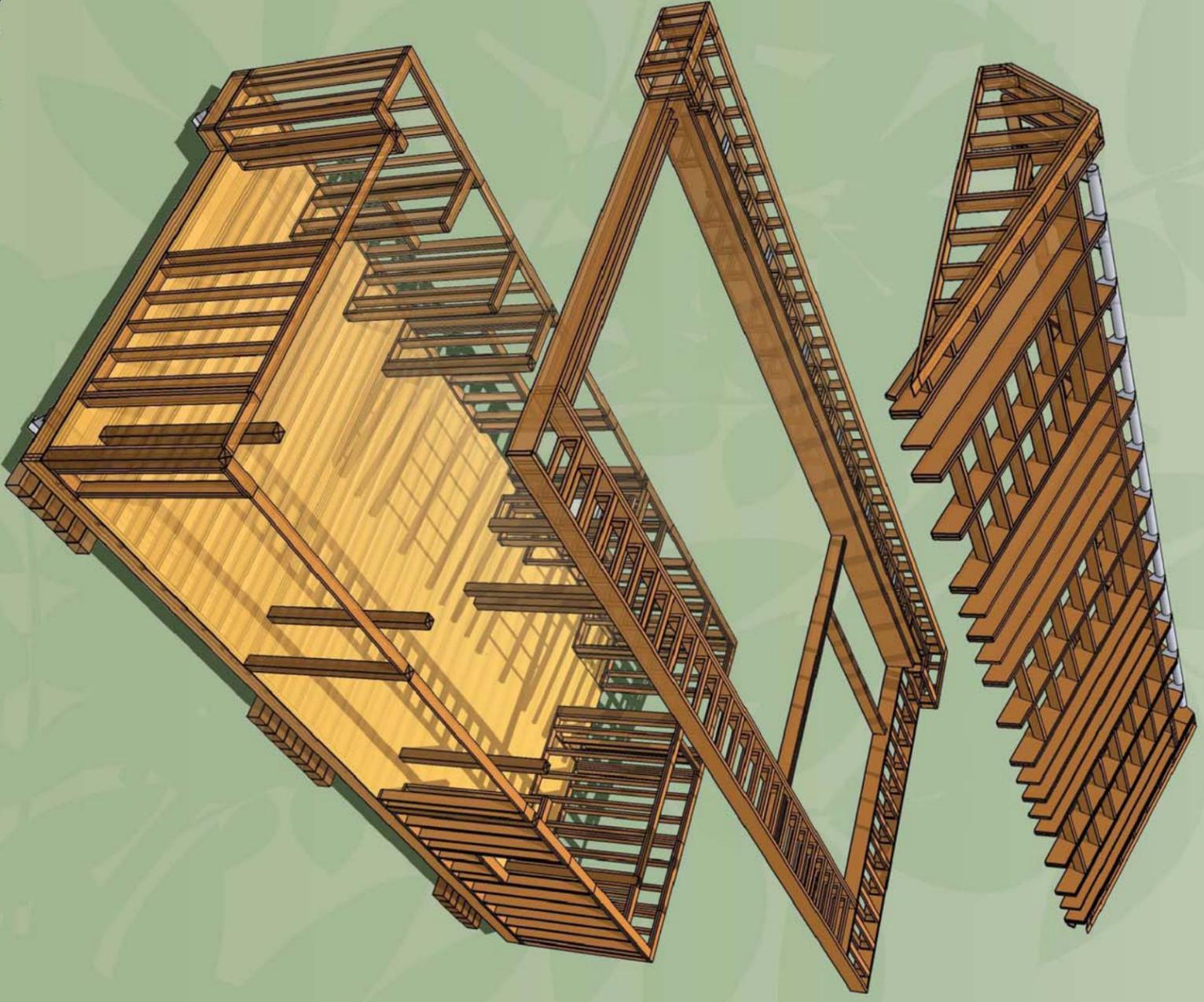
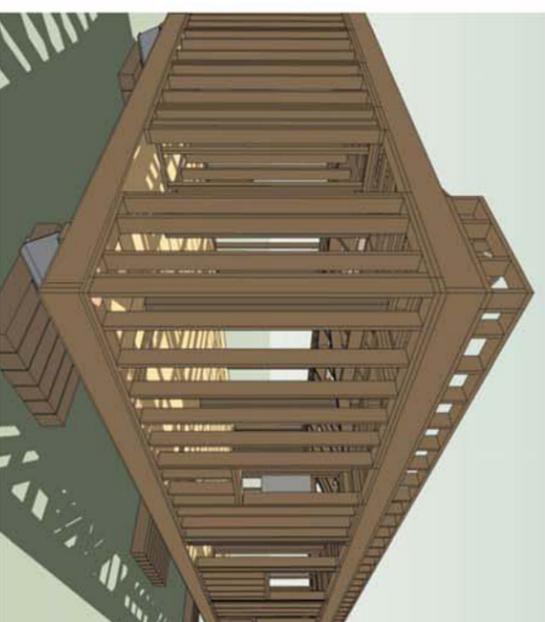
AS1.02



Framing for the walls of LEAFHOUSE was a percolating topic for much of the design process. While traditional stick framing with spray foam insulation was selected due to it's advantages for this specific competition (i.e. flexibility, thickness, and strong thermal performance), alternatives are being put to the test to determine their viability in different site conditions.



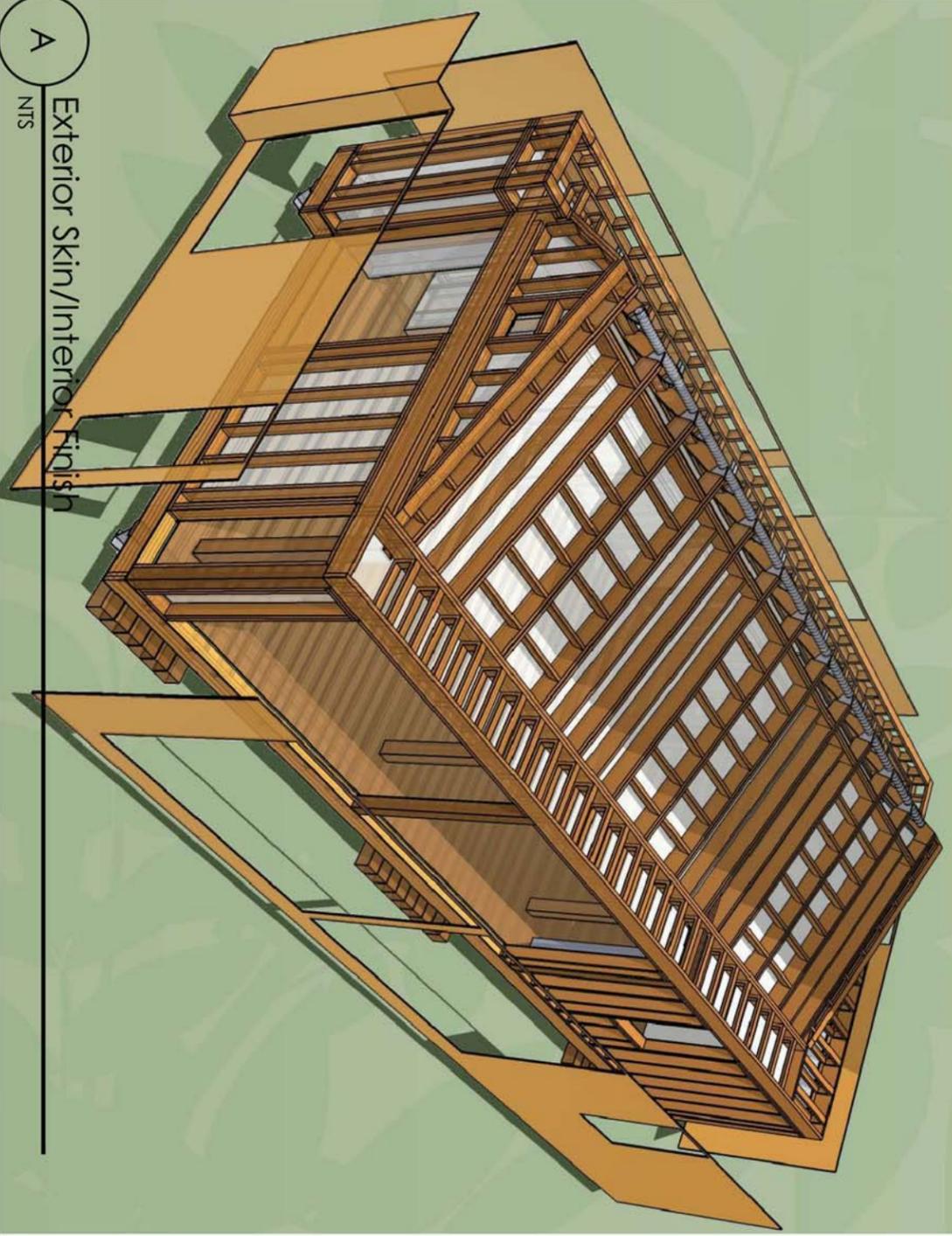
While the framing of the walls was practically driven, the framing of the roof was a bit of the opposite. In order to make the solar panel array appear more intergrated with the design of the house, we designed the volume of our living room to reflect the angle at which our panels would be mounted. The unique shape that resulted allowed us to enhance the expressive character of our structure, eventually leading to the use of the structural bent members and pipe beam depicted in these photos.



A
NTS
Framing



Surface articulation and materials are typically a thin skin. However, the surfaces designed for LEAFHouse are very much a working organism in themselves. Within the ceiling and floor surfaces are radiant heating and cooling systems so efficient that they are the sole artificial means of heating and cooling needed to condition all of LEAFHouse. Dig one inch deeper and one will find a copper fin tube dehumidification system in our ceiling and a desiccant dehumidification system in our west wall, both critical for relieving one of the greatest burdens of the Chesapeake Bay watershed region. Perspiration very much became our inspiration.



A
NTS
Exterior Skin/Interior Finish



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at the University of Maryland



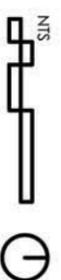
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- 08.07.07 SD CDS
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Exterior Skin
Interior Finish

AS1.03



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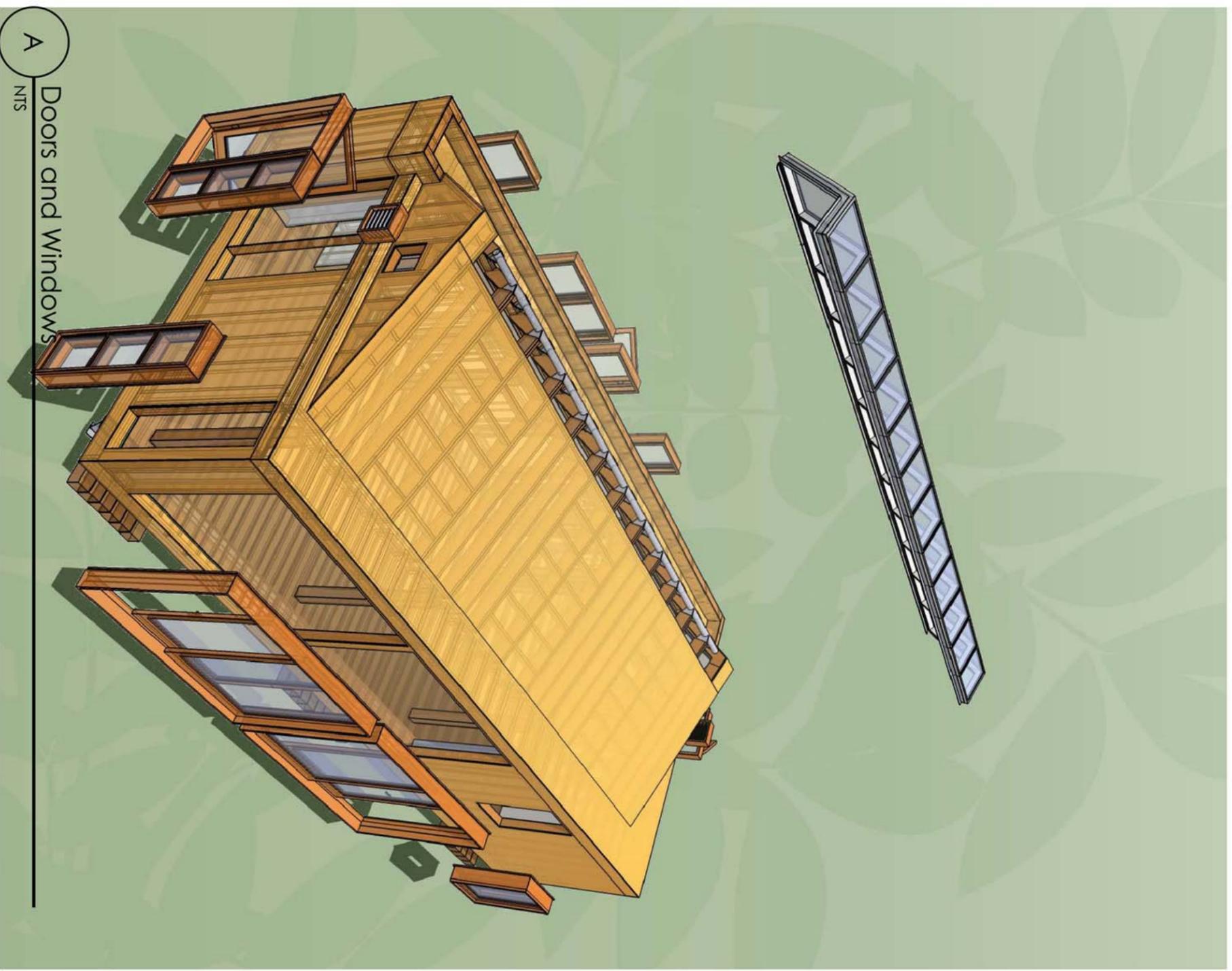


Doors and
 Windows

AS1.04

To a homeowner, much of the site on which their home is borrowing space is experienced through doors and windows, particularly in the climate of the Chesapeake Bay watershed. Hot, humid summers quickly become cold, unpredictable winters, with little respite between springtime rains. Whatever the weather condition, the LEAFHOUSE's expansive 22'-0" wide lift-and-slide door system, comprising more than half of the south wall, will allow the homeowner to connect to the outside world.

While the doors and windows are limited to the horizontal, the translucent skylight allows this interaction with nature vertically. It softly allows both the sun and moon to be present in the home. Its presence is also very architectural. The skylight diagrammatically acts as the spine to LEAFHOUSE, marks the zone of circulation, and also gives our "leaf" literal veins stretching out behind a translucent skin.



A
 NTS
 Doors and Windows



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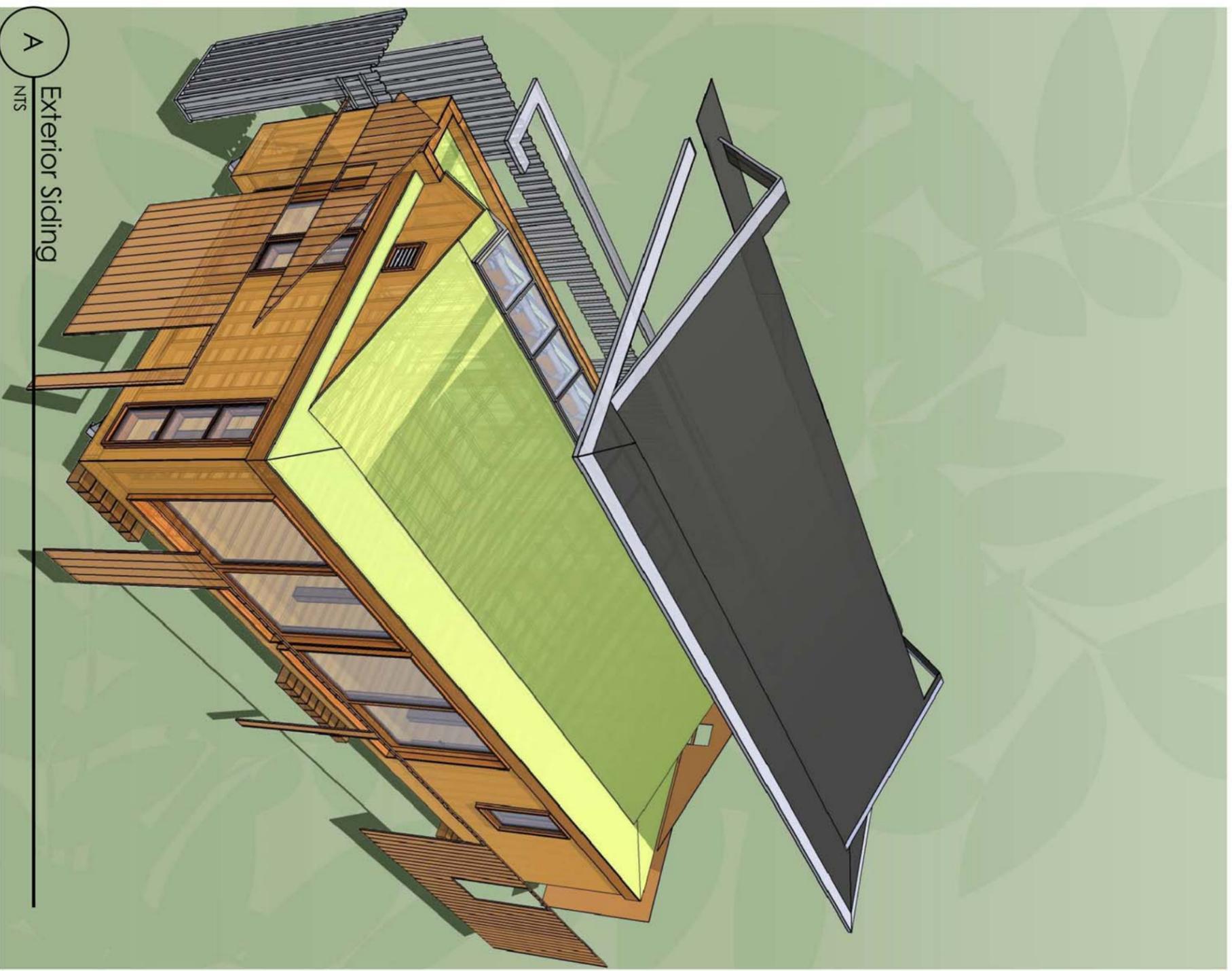
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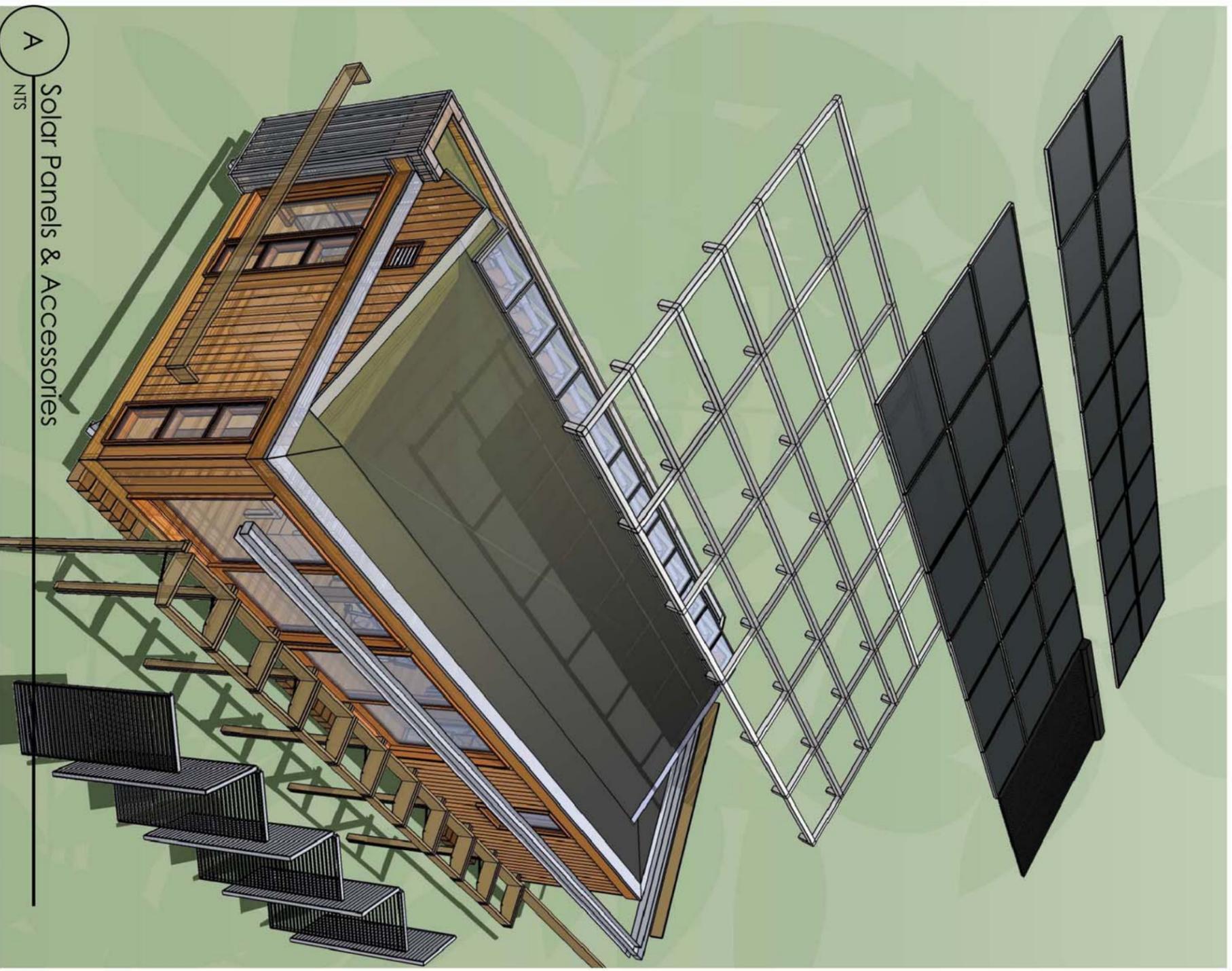
Exterior Siding

AS1.05

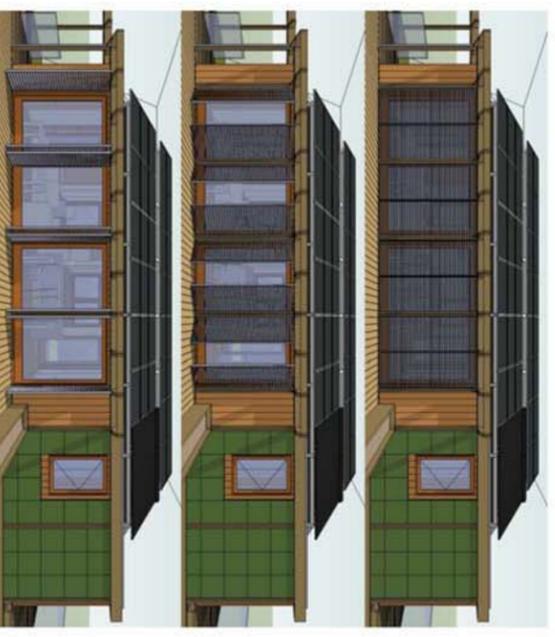
The exterior siding of LEAFHOUSE has been reduced through many iterations to a simple and unassuming composition of wood, glass, vegetation, and corrugated metal, each one clarifying the architectural spaces within. The bar of service spaces (Kitchen, toilet, laundry, combiner boxes on roof) are wrapped in corrugated metal and defined with a parapet wall at the roof level. The living room is visually shown by the glass, the one departure from this language being the location of the desiccant wall (Even here, the glazing language is continued internally in the plastic shield of the desiccant wall). Our "green wall", a system of vegetation plantings mounted vertically, evidences the bedroom beyond and also brings the site and our building together as a single body. Ship-lapped cypress plank siding mounted against a breathable drainage mat keeps out the elements from the remaining areas.



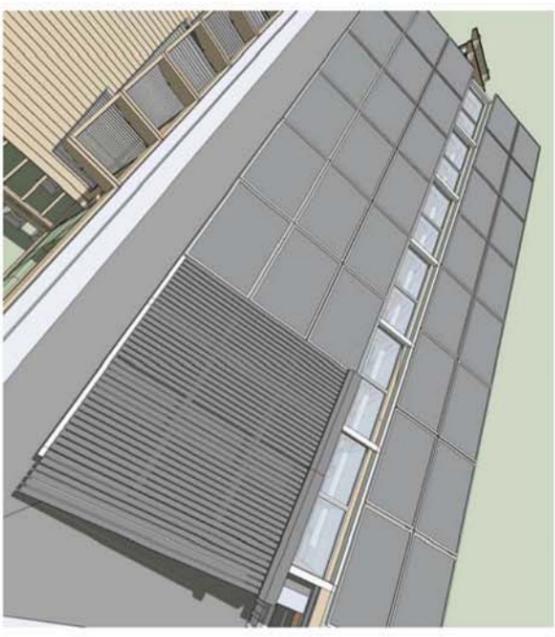
A
NTS
Exterior Siding



A
NTS
Solar Panels & Accessories



Rainwater retention at LEAFHouse is a multi-layered system. At the roof level, downspouts collect rainwater that, at the post-competition site of LEAFHouse, will be directed to a cistern from which the water will be used for garden irrigation. The green wall will likewise act as its own downspout, directing water from the roof down to a rain garden. Lastly, our decks are equipped to catch the rainwater that passes through it and direct it to be stored for use in the non-potable water needs of the house.



Solar collection will be accomplished by hot water tubes and photovoltaic modules. The hot water tubes will, as the name suggests, use solar energy to heat water for use in the house. The solar panel system is not so self-evident, because it is not merely modules on commercial racking standoffs. By using an industrial erector set product to make a racking grid, we created a system that is can be not only photovoltaic, but also photosynthetic. The homeowner can use the grid to its full solar potential with PV modules, or replace the panels with vegetation in planters similar to the green wall. The grid could also be left void, allowing for variety in the appearance of the soaring solar plane. In our iteration, we've chosen to extend the grid beyond the ridge of the house while keeping the grid area above the skylight free of panels. This allowed us to architecturally create a dominant feature visible from the exterior and also make two rows of PV panels appear to float.



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at the University of Maryland

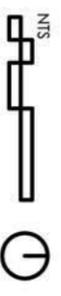


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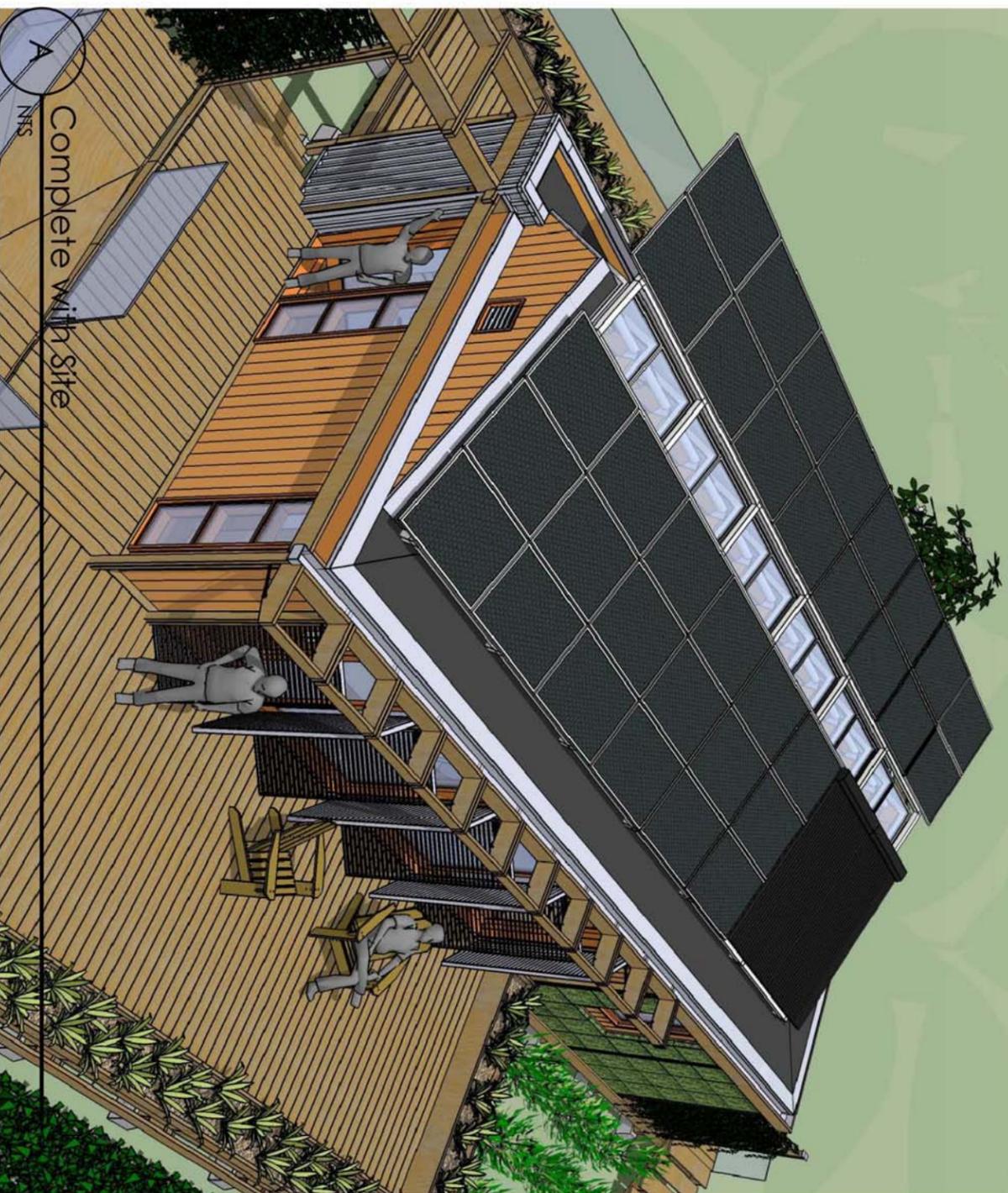


Solar Panels
& Accessories

AS1.06



The LEAFhouse is a holistic design venture. Similar to our model, the leaf, our house incorporates elements of water use, energy production through solar energy, air transpiration, and simplicity and delight in form. But a leaf does not exist on its own. It is part of a system. Likewise, our house can demonstrate elements of sustainability on its own, but it must become a part of a system with the site on which it sits. We have used a number of elements to accomplish this during the competition, including decks, plantings, pergolas, and gardens. In its future setting, we will further explore the integration of our prototype into the Chesapeake Bay watershed region and climate with the final goal being an architecture that leads everyone to an abundant future through sustainable design.



Complete with Site



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at the University of Maryland

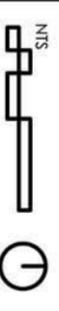


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Complete with
Site

AS1.07

DUCTWORK, AIR DISTRIBUTION

	SINGLE	DOUBLE
RECTANGULAR DUCT		
ROUND DUCT		
FLAT OVAL DUCT		
DUCT WITH ACOUSTIC LINING		
SUPPLY GRILLE OR REGISTER		
RETURN/EXHAUST GRILLE OR REGISTER		
CEILING DIFFUSER - SQUARE (ROUND SIMILAR) (FLOW ARROWS INDICATE DIRECTION OF THROW FOUR WAY FLOW IF NO ARROWS SHOWN)		
RETURN/EXHAUST GRILLE OR REGISTER		
SUPPLY DUCT UP		
SUPPLY DUCT DOWN		
RETURN/EXHAUST DUCT UP		
RETURN/EXHAUST DUCT DOWN		
CHANGE OF ELEVATION RISE (R) DROP (D)		
TRANSITION - RECTANGULAR OR ROUND		
TRANSITION - RECTANGULAR TO ROUND		
BRANCH DUCT - STANDARD (45° ENTRY)		
BRANCH DUCT WITH SPLITTER		
BRANCH DUCT WITH AIR EXTRACTOR		
BRANCH DUCT, STRAIGHT LATERAL, ROUND		
BRANCH DUCT, STRAIGHT TEE, ROUND		
BRANCH DUCT, LO-LOSS TEE, ROUND		
BRANCH DUCT, CONICAL TEE, ROUND		
BRANCH DUCT, CONICAL TEE, FLEX TAKE OFF, SPIN-IN COLLAR W/ DAMPER		

FLEXIBLE DUCT

WATERTIGHT DUCT	
CONTROL DAMPER (MOD OR MVD)	
SAFETY DAMPER (FDR OR SDR)	
SQUARE ELBOW WITH TURNING VANES	
FLEXIBLE DUCT CONNECTION	

PIPING - GENERAL

DIRECTION OF FLOW	
DIRECTION OF SLOPE DOWN	
PIPE TURNING UP	
PIPE TURNING DOWN	
BRANCH CONNECTION - TOP	
BRANCH CONNECTION - BOTTOM	
BRANCH CONNECTION - SIDE	
PIPE ANCHOR	
PIPE ALIGNMENT GUIDE	
SERVICE VALVE (GATE, BALL OR BUTTERFLY)	
GLOBE VALVE	
CHECK VALVE	
BALANCING COCK	
UNION	
VALVE IN RISER	
PIPE CAP OR BLIND FLANGE	
OUTLETS (G, A, V, OX, CW, HW)	
EXPANSION JOINT	
PRESSURE REDUCING VALVE	
PRESSURE RELIEF VALVE	
PRESSURE GAUGE	

THERMOMETER	
FLEXIBLE PIPE CONNECTION OR JOINT	
STRAINER	
CLEANOUT PLUG	
FLOOR CLEANOUT	
WALL CLEANOUT	
FLOW SWITCH	
PRESSURE SWITCH	

PIPING - HVAC

STEAM (NUMBER DENOTES PRESSURE)	
STEAM CONDENSATE RETURN (SCR)	
BOILER BLOWDOWN	
PUMPED CONDENSATE	
COLD WATER	
DRIP STATION	
THERMOSTATIC TRAP	
FLOAT AND THERMOSTATIC TRAP	
BUCKET TRAP	
HEATING WATER SUPPLY	
HEATING WATER RETURN	
CHILLED WATER SUPPLY	
CHILLED WATER RETURN	
CONDENSER WATER SUPPLY	
CONDENSER WATER RETURN	
CONDENSATE DRAIN	
CONTROL VALVE (2-WAY)	
CONTROL VALVE (3-WAY)	
AUTOMATIC FLOW CONTROL VALVE	
CALIBRATED BALANCING VALVE	

TRIPLE DUTY VALVE (PUMP DISCHARGE)	
PRESSURE/TEMPERATURE FITTING	
REFRIGERANT SUCTION	
REFRIGERANT DISCHARGE	
REFRIGERANT LIQUID	
HEAT PUMP WATER SUPPLY	
HEAT PUMP WATER RETURN	
DUAL TEMP SUPPLY	
DUAL TEMP RETURN	

PIPING - SPECIAL

GAS	
-----	--

MISCELLANEOUS

DIFFUSER NOMENCLATURE	
CONNECT NEW TO EXISTING	
ELECTRIC THERMOSTAT (OR SENSOR)	
PNEUMATIC THERMOSTAT	
DIAMETER	
FLAT OVAL	
HUMIDISTAT	
FAN SPEED SWITCH	
DUCT-MOUNTED SMOKE DETECTOR	
PIPE AND DUCT RISER REFERENCE	
AQUASTAT	
GAS COCK	
BACKFLOW PREVENTOR	

GENERAL NOTES :

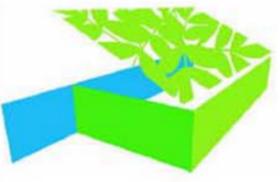
1. SYMBOLS AND ABBREVIATIONS LISTS ARE COMPOSITE. ALL SYMBOLS AND ABBREVIATIONS MAY NOT BE USED ON THIS PROJECT.
2. DUE TO SMALL SCALE OF MECHANICAL DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES, WHICH MAY AFFECT THE INSTALLATION OF THE WORK.
3. WORK INDICATED ON DRAWINGS IS DIAGRAMMATIC AND SHOULD NOT BE SCALED TO ESTABLISH LOCATION OF WORK. THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENTS OF ENGINEERED SYSTEMS. FIELD VERIFY CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO COMPLETE THE WORK.
4. CLEAN UP ALL WASTE AND DEBRIS AT THE END OF EACH WORKING DAY AND AS REQUIRED TO KEEP ALL BUILDING AREAS CLEAN, CLEAR AND UNOBSTRUCTED.
5. MATERIALS AND EQUIPMENT OF THE SAME TYPE AND USE SHALL BE FROM A SINGLE MANUFACTURER.
6. STORE MATERIALS AND PROTECT FROM WEATHER.
7. IF HVAC EQUIPMENT IS OPERATED DURING CONSTRUCTION, PROVIDE TEMPORARY FILTERS TO PROTECT AIR HANDLING EQUIPMENT.

HVAC NOTES :

1. ALL WORK SHALL BE INSTALLED IN COMPLIANCE WITH LOCAL CODES AND PROJECT SPECIFICATIONS.
2. DUCTWORK INSTALLATION, CONNECTIONS, AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE SMACNA STANDARDS UNLESS OTHERWISE INDICATED.
3. EQUIPMENT INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS UNLESS OTHERWISE INDICATED.
4. DUCT CONNECTIONS TO SIDE WALL REGISTERS AND GRILLES SHALL BE WITH RIGID DUCT. DUCT CONNECTIONS TO CEILING-MOUNTED DIFFUSERS, REGISTERS, AND GRILLES MAY BE WITH RIGID OR FLEXIBLE DUCT (CONTRACTOR OPTION). PROVIDE SMOOTH BENDS IN FLEXIBLE DUCT.
5. THERMOSTATS AND TEMPERATURE SENSORS SHALL BE MOUNTED AT A CENTERLINE HEIGHT OF 4'-6" ABOVE FINISHED FLOOR. NON-ADJUSTABLE SENSORS SHALL BE MOUNTED AT 5'-0" ABOVE FINISHED FLOOR. WHERE SENSORS ARE LOCATED NEAR DOORWAYS, LOCATE IN ACCORDANCE WITH ELEVATION DETAIL ON DRAWING E0.1. SENSORS IN CORRIDORS AND GANG TOILETS SHALL BE MOUNTED 8' AFF.
6. DUCT CONNECTIONS TO AIR HANDLING UNITS SHALL BE MADE USING FLEXIBLE DUCT CONNECTION UNLESS UNIT FANS ARE INTERNALLY ISOLATED.
7. ALL PIPE PENETRATIONS THRU FIRE-RATED ROOF, FLOORS, OR WALLS SHALL BE IN ACCORDANCE WITH AN APPROVED U.L. THROUGH-PENETRATION FIRESTOP SYSTEM FOR THE EXACT CONDITIONS ENCOUNTERED AS DEFINED IN THE U.L. BUILDING MATERIALS DIRECTORY.
8. ALL SUPPLY DUCTWORK SHALL BE EXTERNALLY INSULATED EXCEPT FOR ACOUSTIC LINED DUCTWORK.
9. ALL DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS 'A'.
10. LOCATE AND INSTALL EQUIPMENT SUCH THAT MINIMAL WORKING CLEARANCES ARE MAINTAINED IN FRONT OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. THIS INCLUDE, BUT NOT BE LIMITED TO UNIT-MOUNTED STARTERS, ADJUSTABLE FREQUENCY DRIVES, CONTROL PANELS AND ELECTRIC HEATER CABINETS OF AIR TERMINAL UNITS.
11. VENTILATION RATES HAVE BEEN CALCULATED USING SECTION 403 OF THE I.M.C. AND ASHRAE STANDARD 62.1-2004.

ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	LWT	LEAVING WATER TEMPERATURE
AD	ACCESS DOOR	MAY	MANUAL AIR VENT
AE	AIR EXTRACTOR	MBH	BTU PER HOUR (THOUSANDS)
AFCV	AUTOMATIC FLOW CONTROL VALVE	MOD	MOTOR OPERATED DAMPER
APD	AIR PRESSURE DROP, IN. WG.	MPR	MEDIUM PRESSURE STEAM RETURN
AQ	AQUASTAT	MPS	MEDIUM PRESSURE STEAM SUPPLY
ATD	AIR TRANSFER DUCT	MVD	MANUAL VOLUME DAMPER
BG	BOTTOM GRILLE	NC	NOISE CRITERIA
BHP	BRAKE HORSEPOWER	OED	OPEN END DUCT
BOD	BOTTOM OF DUCT	OFD	OVERFLOW DRAIN
BR	BOTTOM REGISTER	OA	OUTSIDE AIR
BTU	BRITISH THERMAL UNIT	OBD	OPPOSED BLADE DAMPER
BTUH	BRITISH THERMAL UNIT/HOUR	OT	OVERRIDE TIMER
CD	CEILING DIFFUSER, CONDENSATE DRAIN	OTCP	OPEN TO CEILING PLENUM
CFM	CUBIC FEET PER MINUTE	PIV	POST INDICATOR VALVE
CG	CEILING GRILLE	PRV	PRESSURE REDUCING VALVE
CO	CLEANOUT	PSI	POUNDS PER SQUARE INCH
CR	CEILING REGISTER	RA	RETURN AIR
CW	COLD WATER	RC	RAIN CONDUCTOR
CWR	CHILLED WATER RETURN	RD	ROOF DRAIN
CWS	CHILLED WATER SUPPLY	RH	RELATIVE HUMIDITY
DB	DRY BULB °F	RPM	REVOLUTIONS PER MINUTE
DG	DOOR GRILLE	SA	SUPPLY AIR
DL	DRUM LOUVER	SD	SHOWER DRAIN, SPLITTER DAMPER, STORM DRAIN
DWD	DOUBLE WALLED DUCT	SDR	SMOKE DAMPER
EA	EXHAUST AIR	SMD	SMOKE DETECTOR
EAT	ENTERING AIR TEMPERATURE	SP	STATIC PRESSURE
ESA	EQUIPMENT SERVICE AREA	SS	SANITARY SEWER
EWT	ENTERING WATER TEMPERATURE	S/S	STAINLESS STEEL
FD	FLOOR DRAIN	SV	SERVICE VALVE
FOR	FIRE DAMPER	SW	SWITCH
FG	FLOOR GRILLE	TC	TIME CLOCK
FR	FROM	TEMP	TEMPERATURE
GAL	GALLON	TD	TEMPERATURE DIFFERENTIAL
GD	GALLONS PER DAY	TG	TOP GRILLE, TRANSFER GRILLE
GPH	GALLONS PER HOUR	TR	TOP REGISTER, TONS OF REFRIGERATION
GPM	GALLONS PER MINUTE	TSTAT	THERMOSTAT
HB	HOSE BIBB	V	VOLT, VENT
HP	HORSEPOWER	VAC	VACUUM
HPR	HIGH PRESSURE STEAM RETURN	VAV	VARIABLE AIR VOLUME
HPS	HIGH PRESSURE STEAM SUPPLY	VTR	VENT THROUGH ROOF
HW	HOT WATER	W	WASTE, WATTS
HWR	HEATING/HOT WATER RETURN	WB	WET BULB °F
HWS	HEATING WATER SUPPLY	WG	WATER GAUGE (FEET OR INCHES)
HZ	FREQUENCY (CYCLES/SECOND)	WH	WALL HYDRANT
KW	KILOWATT	WHA	WATER HAMMER ARRESTOR
KWH	KILOWATT HOUR	WPD	WATER PRESSURE DROP, FT. WG.
LAT	LEAVING AIR TEMPERATURE	WS	WATER STOP
LB/HR	POUNDS PER HOUR	WTD	WATER TEMPERATURE DROP, °F
LBG	LINEAR BAR GRILLE	WTR	WATER TEMPERATURE RISE, °F
LBR	LINEAR BAR REGISTER	WWM	WOVEN WIRE MESH
LD	LINEAR DIFFUSER	Z	ZONE
LG	LINEAR GRILLE		
LFG	LINEAR FLOOR GRILLE		
LR	LINEAR RETURN		



Leafhouse
at the University of Maryland



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NTS

Mech. Legend
& Gen. Notes

M0.00

LIQUID DESICCANT HUMIDITY CONTROL SYSTEM

Desiccant humidity control is a process that has been around for years and employed at one time or another by every person that has ever bought a brand new pair of shoes. The packet that comes with new shoes is a desiccant material called silica that absorbs moisture from the air in the box to prevent mold from forming. The humidity control in the LEAFhouse works on the same principle except that instead of solid desiccant we use a liquid form.

Calcium Chloride (CaCl) is used in our system as the medium for removing the moisture in the air. It has the same basic chemical properties as common sea salt. We are using a liquid form of CaCl mixed with water at a 40-60% ratio of desiccant to water. The desiccant liquid is first pumped through a chiller to cool it down because a colder desiccant is more effective. It is then fed into a basin 7ft above the floor; when the basin fills up the desiccant overflows on one side creating a waterfall effect. Air is blown in the direction opposite the flow of the liquid so that interaction between the humid air and the desiccant is maximized. The desiccant then collects in a tank at the bottom of the waterfall to await reuse.

After many cycles, the concentration of desiccant to water begins to decrease as the water is removed from the air. When the liquid in the tank reaches a low concentration, it must be regenerated to remove some of the water that has been collected. A reservoir tank below the house will hold approximately 50 gallons of desiccant liquid at the proper concentration. A density/buoyancy sensor in the waterfall tank will open a valve and activate a pump to exchange the old desiccant liquid with the reserve liquid. That liquid will then be regenerated outside during the daylight hours.

To remove water from a chemical mixture it must be evaporated. This can only occur with our system during the day because that is when the sun is out and the outside air temperature is the hottest. Also the liquid must be at the highest temperature possible so that the regeneration process occurs as rapidly as possible. To accomplish this, on the path between the reservoir tank and the end of the regeneration process, the liquid will pass through two heat exchangers. The first is a set of concentric pipes placed within each other extending between the reservoir tank and the regenerator. The smaller pipe will be 1/4" titanium tubing that will flow liquid from the regenerator to the reservoir tank. The outer pipe will be 1 1/4" CPVC that will flow water from the reservoir tank to the regenerator. The reservoir tank sits on the ground while the regenerator tank is propped up 3 inches. The 1 1/4" pipe connecting the two tanks will be fixed at a level with no grade to it. This is to allow liquid to flow from the reservoir to the regenerator freely and without a pump. The inner tube is connected to a pump that will force high temperature liquid from the regenerator to the reservoir while at the same time exchanging heat with the cooler liquid traveling in the larger CPVC pipe coming from the reservoir tank. The next heat exchanger is one of more conventional means. A loop will be run off of our solar hot water line to the regenerator tank. This loop will enter and exit the tank near the bottom of the basin. The water traveling through this line will be near 180 degrees F and will heat the liquid desiccant to an ideal temperature for regeneration.

Once the liquid is heated it will then be pumped from the bottom of the basin to a point midway up one of three 6 ft tall, 8 inch wide towers and sprayed over a material. This material is to have large surface area while at the same time allow air and liquid to move freely through the tower. The point is to spread the liquid out into a thin film so that evaporation can easily occur. The larger the surface it can spread out on, the thinner the film. At the same time this occurs air will be blown through the towers, across the liquid to increase evaporation. The top of the towers is open to allow air to escape; there is a covering however a few inches above the opening to prevent rain or any other material from entering the regenerator. The spray nozzle is fixed only midway up the tower so that when the air is blown across the liquid, it doesn't spray any droplets out of the tower. The regeneration process continues until another buoyancy sensor in the reservoir tank reads that the desiccant liquid is at a proper concentration. The system then shuts off and waits to exchange the reservoir liquid with the inside waterfall liquid.

A large indoor waterfall that removes humidity from the air is a feature that is quiet, energy efficient and adds a nice aesthetic to a home. With increasing energy prices, the conventional methods of cooling a space will have to change. In a climate such as Maryland's, where humidity is high in the summer months, removing the latent load (humidity) takes away a large portion of the job from the air conditioner. A conventional air conditioner coupled with a desiccant water fall will run a shorter cycle and can be sized smaller to accommodate for the lighter cooling load. Both of these aspects can save thousands of dollars in energy over time. Smart and innovative methods of cooling are needed now, not 20 years down the road.



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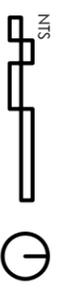
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Desiccant
Narrative

MO.01a

DUCTLESS MINI-SPLIT SYSTEM

This system cools the air within the space and functions as an auxiliary heat pump. The Ductless Mini-Split System is comprised of a condensing unit located on the roof of the mechanical room which serves two fan coil units located on the bedroom wall of the mechanical room and on the south-facing wall of the kitchen. The fan coil units are separately connected to the condensing unit by a set of refrigerant lines. The fan coil units receive their electrical power from the condensing unit. FCU-A is a ¾ ton unit and FCU-B is a 1 ton unit to provide a total capacity of 1.75 tons.

Each fan coil unit is controlled by a remote that can be used to control power, timer, auto/cool/dry/fan/heat pump modes, and high/medium/low/quiet/auto fan modes. The set point for the fan coil units will be 74°F. When the fan coil unit senses when the temperature rises above or drops below 74°F and turns on to cool or heat the space.

The Ductless Mini-Split System is vital to cooling the air within the space. It also follows the vision of the LEAFhouse with its use of innovative and energy efficient technology. The system has a Seasonal Energy Efficiency Ratio (SEER) of 16.5. In comparison, the Department of Energy enforces a 13 SEER standard for residential air conditioners. The System employs inverter technology which controls the compressor rotation speed to adjust capacity in order to meet demand. The refrigeration cycle runs on R410a. This refrigerant is an HFC based refrigerant which does not contain ozone-depleting chlorine. Ductless split systems also reduce energy usage. Because there are no ducts, there is no heat gain/ heat loss to the environment. This allows for lower capacity compressors. Because the air does not need to travel through ducts, smaller fans may be used.

VENTILATION SYSTEM

The Ventilation System consists of an UltimateAir Recoupaerator® Whole House Unit (200 DX) Energy Recovery Ventilator (ERV). The ERV is designed to supply fresh air and exhaust stale air while ventilating the space with conditioned and filtered outside air. The ERV draws fresh air from outdoors through a rotary heat exchange core for distribution throughout the home. Stale air is exhausted through the ERV and ducted to the outdoors after transferring heat and moisture to the incoming air stream. At the low speed setting, (70cfm) the ERV blocks 92% of the sensible load and 40-50% of the latent load due to the outside air.

The ERV equipped with a variable speed control knob. This allows adjustment of the airflow as needed. In this application, it will be adjusted to provide 70cfm which exceeds the 2000 IMC 403.3 standard. The ERV is compatible with a SmartHouse system so that it can be controlled remotely or using any 0-10 VDC control signal. When needed, the airflow can be increased to handle greater requirements in the space.

The use of an ERV allows fresh air to be supplied to the space while removing some of the latent and sensible heat from the outside air before it enters the space. This reduces the amount of energy that the Ductless Mini-Split System will have to consume to meet its set point. The ERV will also allow us to take advantage of free cooling when applicable.

HYDRONIC RADIANT FLOOR HEATING

Hot water from our solar heating tubes is pumped to a hot water tank in our mechanical room. From there hot water (about 150°F) is moved to three different zones in the house depending on the heating needs.

This is controlled by a manifold system in the mechanical room that automatically controls valves and pumps that regulate the flow of water. When the space drops below the set point, the system is activated. Hot water flows out through these pumps through a closed loop in the floor and then back to the manifold to be reheated.

The amount of energy used to heat the house with this system is extremely more efficient than using natural gas, oil, or a heat pump because there is no need to heat the air in the space. The major source of energy consumption is from pumps and valve controls which makes it leaps and bounds above conventional systems.

The hydronic radiant floor heating system is a modern version of an old technology that has only been seen in the heating and cooling industry within the last 10 years. Homes that heat the air with heat pumps and furnaces use convection as the main method of heating. A radiant floor system heats by conduction and radiation allowing for a more comfortable feeling environment in a home.



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Revisions:

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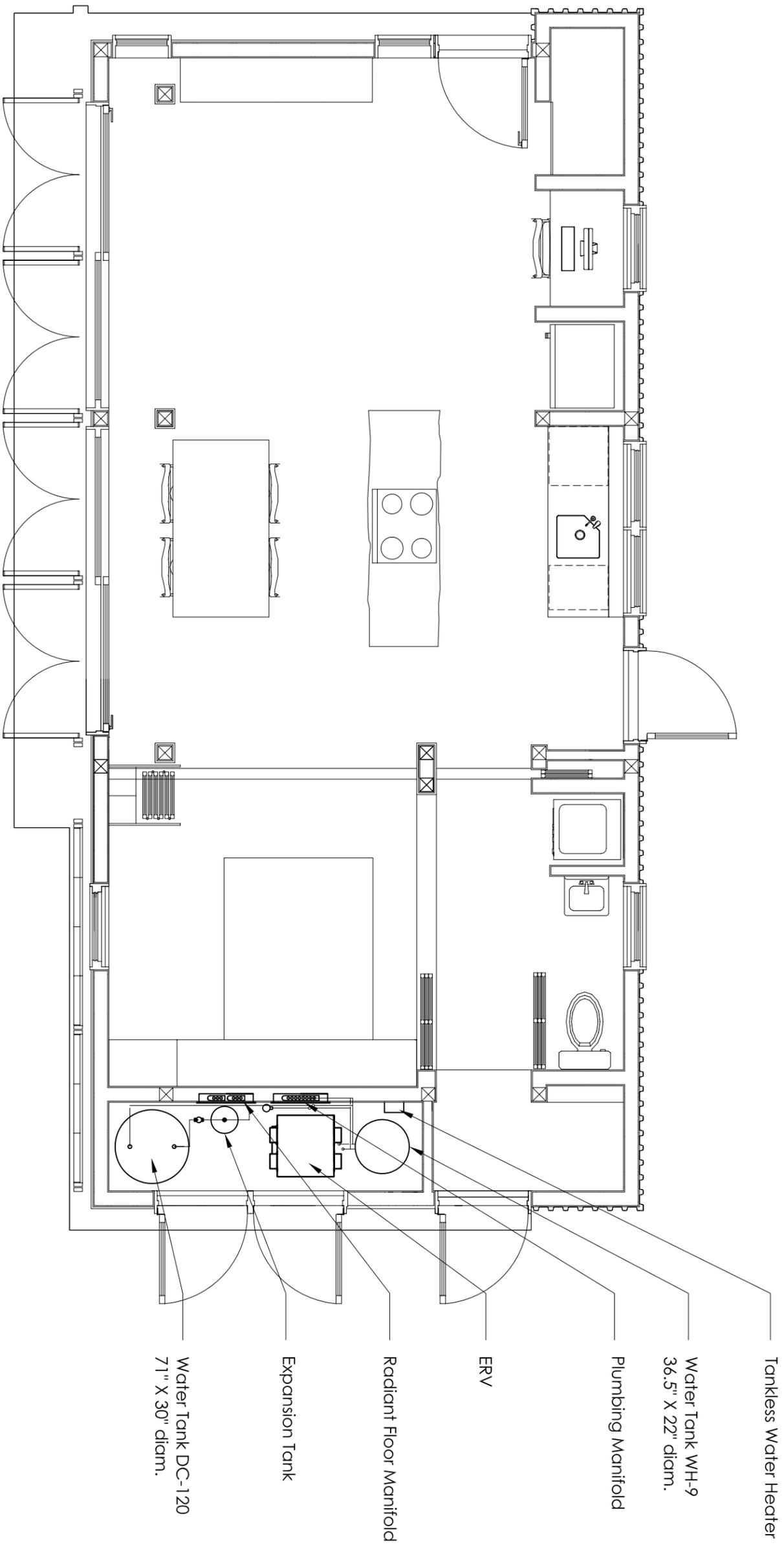
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Comfort Zone
Narrative

MO.01b



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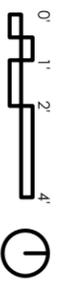
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Mech. Rm
Plan

M1.01



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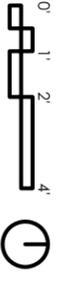


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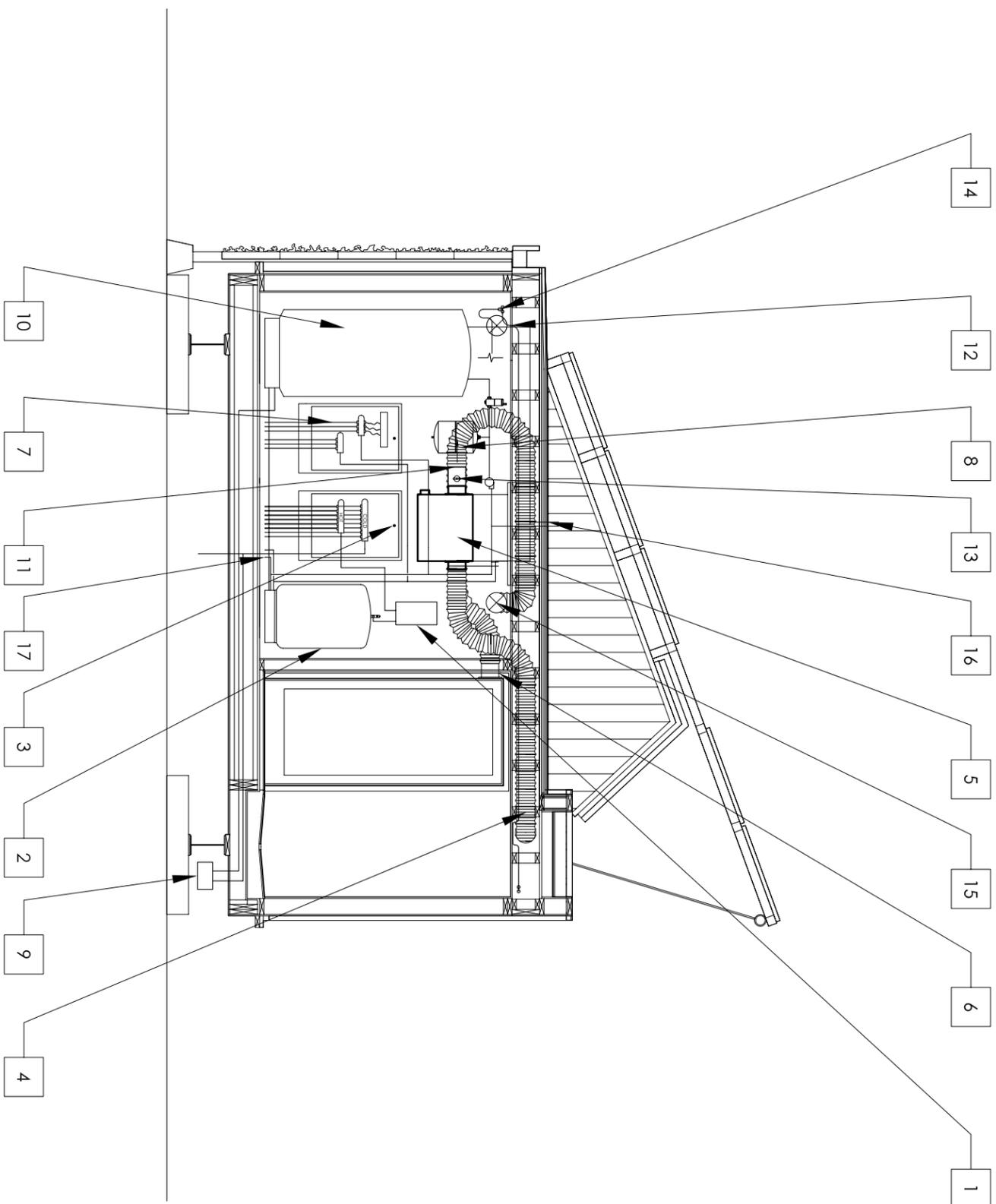
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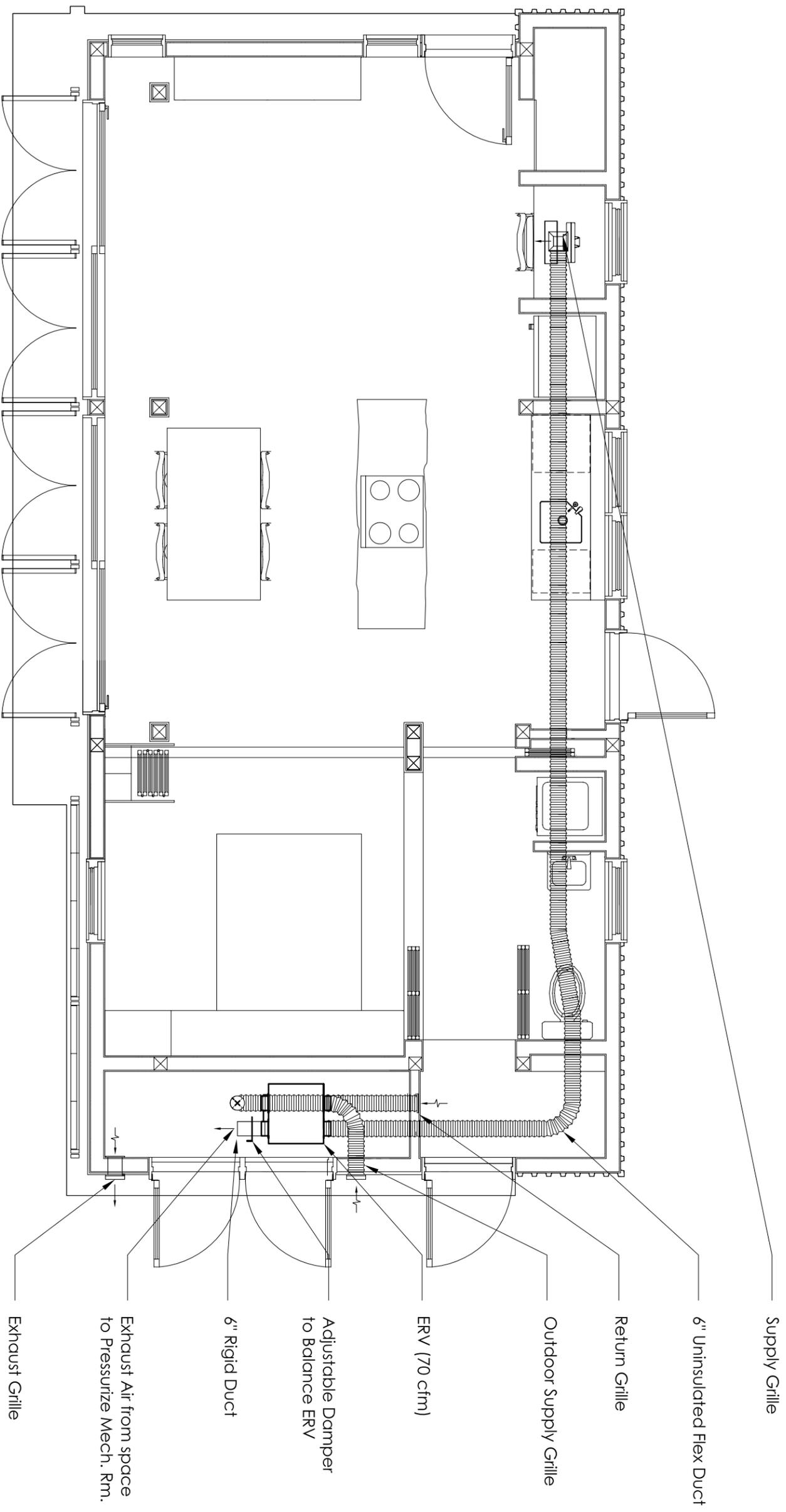


Mech. Rm
Elevation

M1.02



1. Tankless Water Heater
2. Water Tank WH-9
3. Plumbing Manifold
4. 6" Uninsulated Flex Duct
5. ERV
6. Return Grille
7. Radiant Floor Manifold
8. Expansion Tank
9. GFX
10. Water Tank DC-120
11. Exhaust Air
12. Exhaust Louver
13. Damper
14. Condensate
15. To Outdoor Intake
16. To Solar Thermal Collectors
17. To Liquid Desiccant Regenerator



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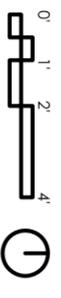
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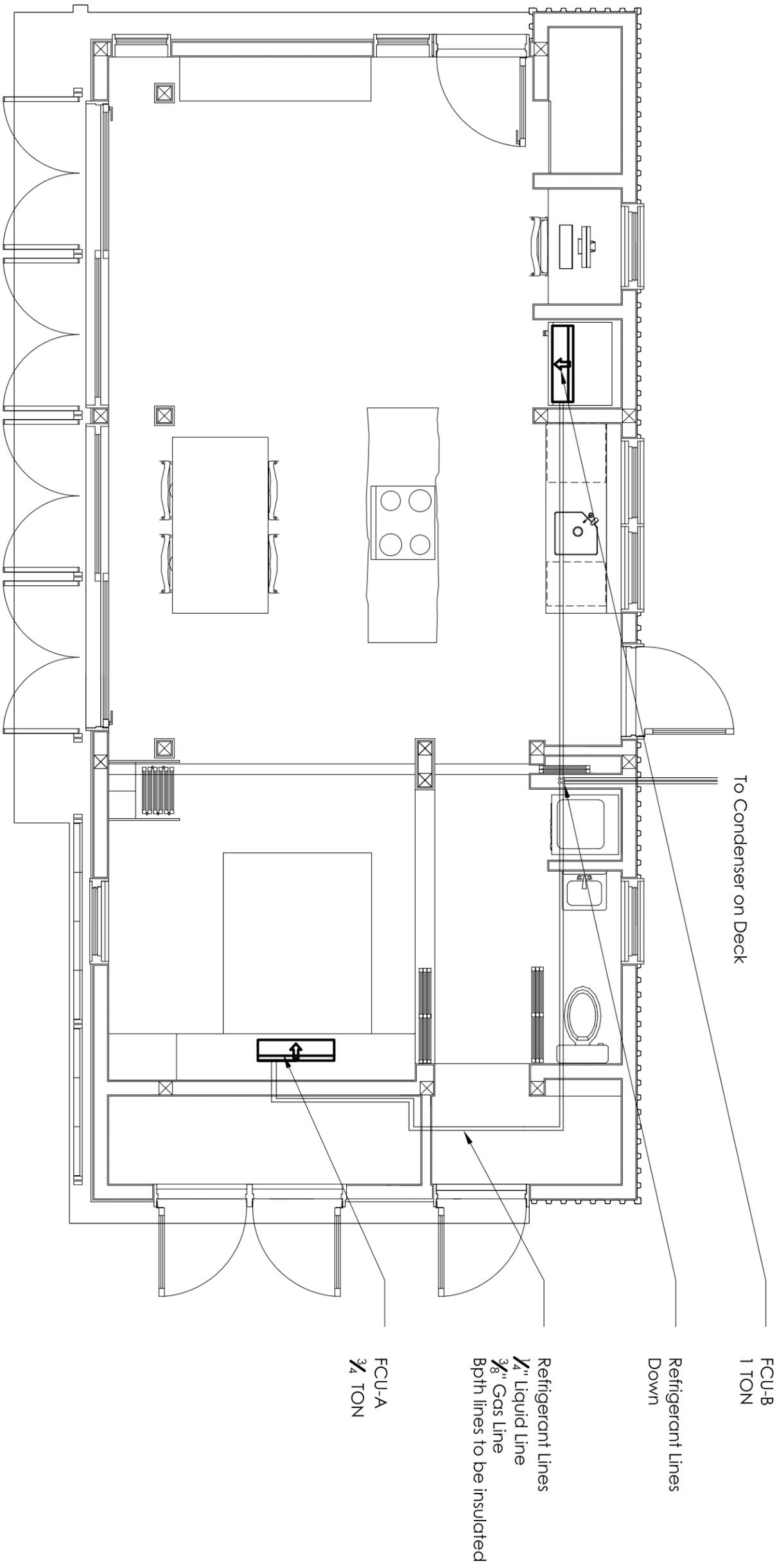
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Ventilation
System

M2.01



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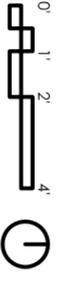
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Ductless AC
System

M3.01



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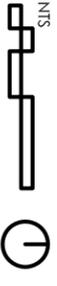
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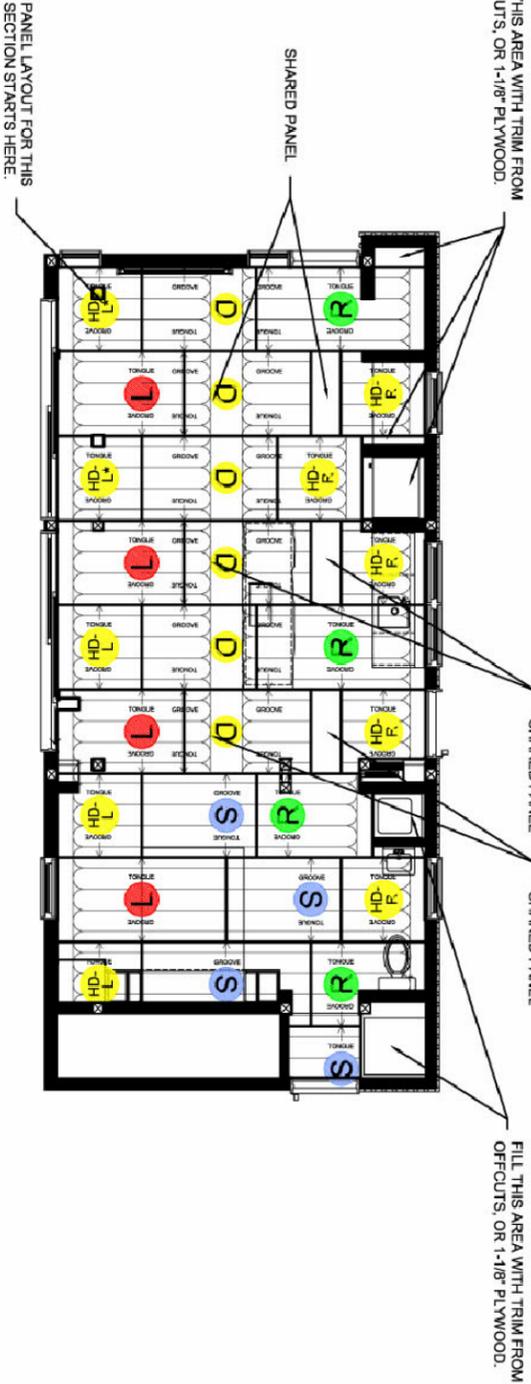
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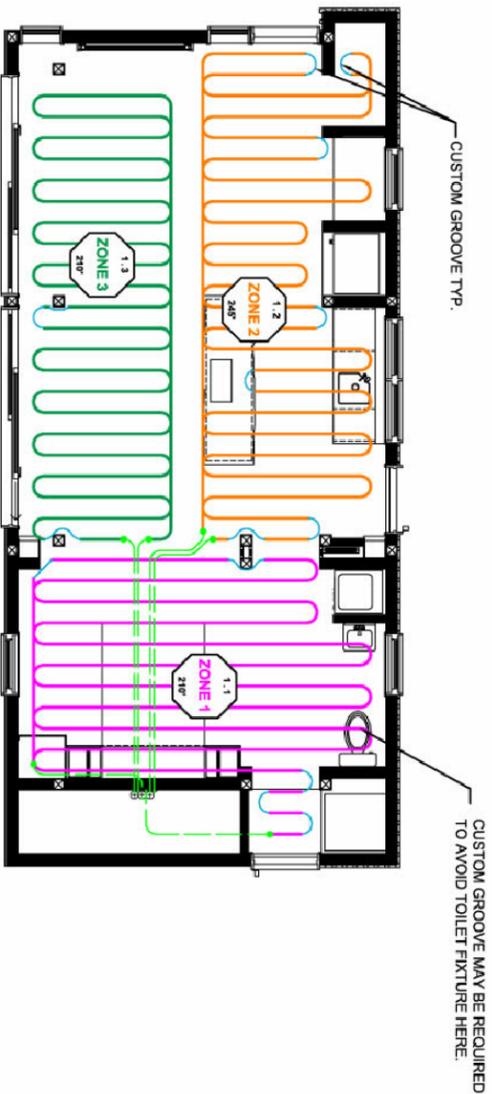
NTS
Radiant Flr.
System

M4.01



PANEL PLAN

Scale: 1/4"=1'-0"



TUBING PLAN

Scale: 1/4"=1'-0"

PANEL SCHEDULE			
TYPE	QUANTITY	COMMENTS	
S	4	(1)	
L	4	(1)	
R	4	(1)	
D	11	(1) (2)	
P	0	(3)	

ANY PANELS IN THE DRAWING THAT ARE MARKED WITH AN ASTERISK (*) INDICATE A PANEL THAT IS TO BE TRIMMED. A GENERAL WARNING SHOULD BE MADE TO GUARANTEE DOUBLE PANELS WILL CONSIST OF A HALF DOUBLE LEFT-PANEL AND A HALF DOUBLE RIGHT-PANEL. ON THE PANEL LAYOUT, YOU MAY SEE A PANEL MARKED AS "H.C." DOUBLE PANELS IN HALF AND USE THE APPROPRIATE SIDE AS MARKED FOR THE INSTALLATION.
 (1) CONVENTIONAL, TONGUE AND GROOVE PLYWOOD MANIFOLD MAY NOT BE APPROPRIATE.
 (2) PANELS USED TO FILL IN EMPTY SPACES WHERE MANIFOLD MAY NOT BE APPROPRIATE.
 (3) PANELS USED TO FILL IN EMPTY SPACES WHERE MANIFOLD MAY NOT BE APPROPRIATE.

LOOP SCHEDULE			
ZONE	MANIFOLD	LOOP	LENGTH
ZONE 1	1	1	185'
ZONE 2	1	2	210'
ZONE 3	1	3	210'
		TOTAL	605'

ESTIMATED CUSTOM ROUTES	
TURNS	16
TOTAL LINEAR LENGTH OF STRAIGHT ROUTES	0

WARMBOARD LEGEND

- S STRAIGHT PANEL
- L LEFT TURN PANEL
- R RIGHT TURN PANEL
- D DOUBLE TURN PANEL
- H-D HALF DOUBLE PANEL-RIGHT TURN
- H-L HALF DOUBLE PANEL-LEFT TURN
- P CONVENTIONAL PLYWOOD PANEL

- TUBING
- BURIED TUBING
- JOIST
- CUSTOM GROOVE

MANIFOLD

LOOP

SUPPLY

RETURN

IMPORTANT NOTE:

INSULATION BELOW WARMBOARD IS MANDATORY FOR PROPER PERFORMANCE.

AN ASTERISK "*" DENOTES A TRIMMED PANEL.

MANDATORY

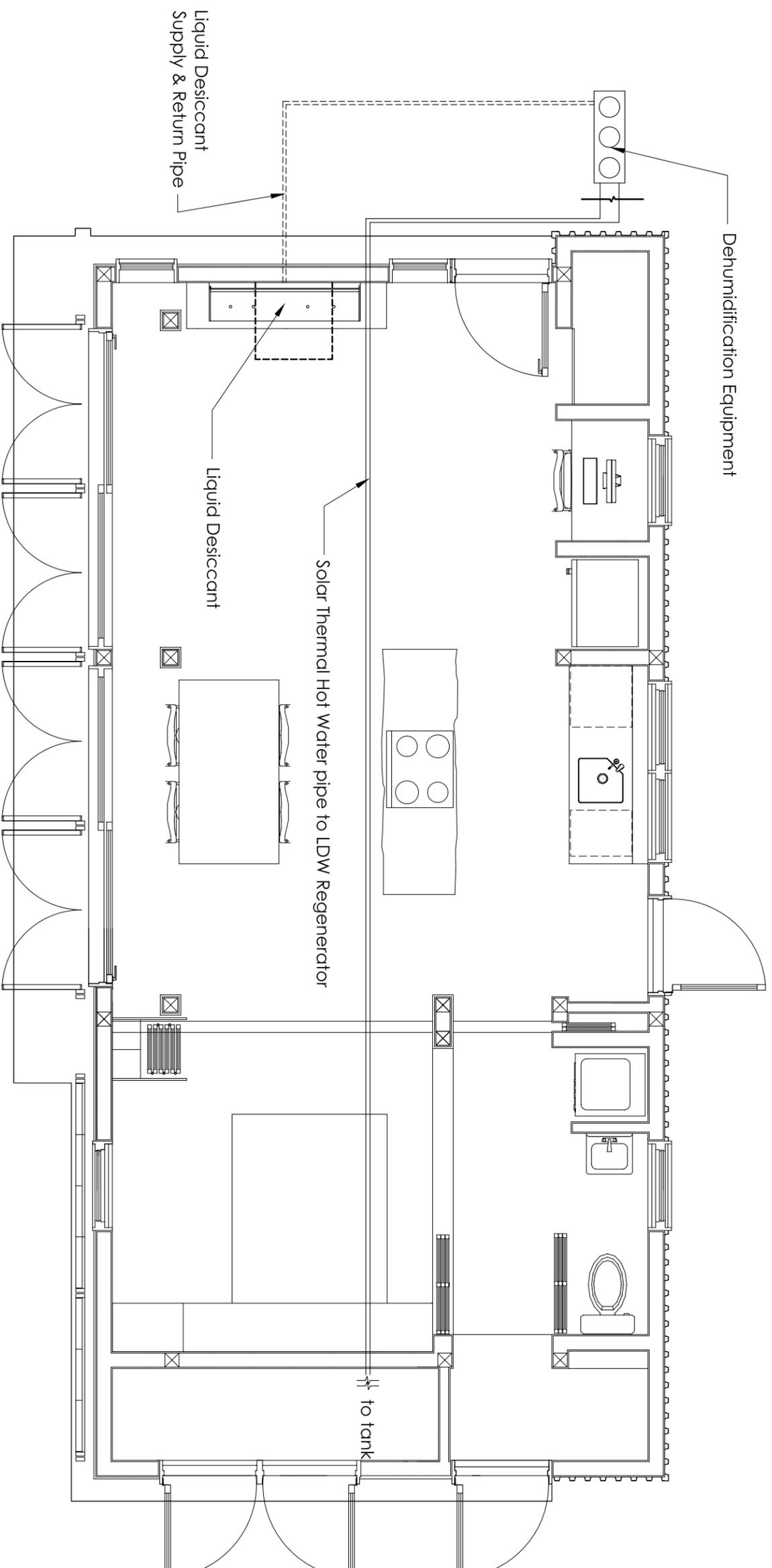
INSTALLING CONTRACTOR IS RESPONSIBLE TO VERIFY ALL MEASUREMENTS PRIOR TO ANY WARMBOARD INSTALLATION.

FOLLOW ALL WARMBOARD INSTALLATION INSTRUCTIONS AND RPA GUIDELINES.

USE ONLY WARMBOARD APPROVED TUBING.

USE AN APPROPRIATELY WEIGHTED ROLLER TO PRESS TUBING INTO CHANNELS.

QUESTIONS? FOR IMMEDIATE ASSISTANCE 1-877-338-5493 (8am - 5pm PST)



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Revisions:

- 03.06.07 SD CDS
- 07.09.07 PFS TPIP
- 07.28.07 PG CO.
- 08.07.07 SD CDS
- 08.17.07 SD CDS



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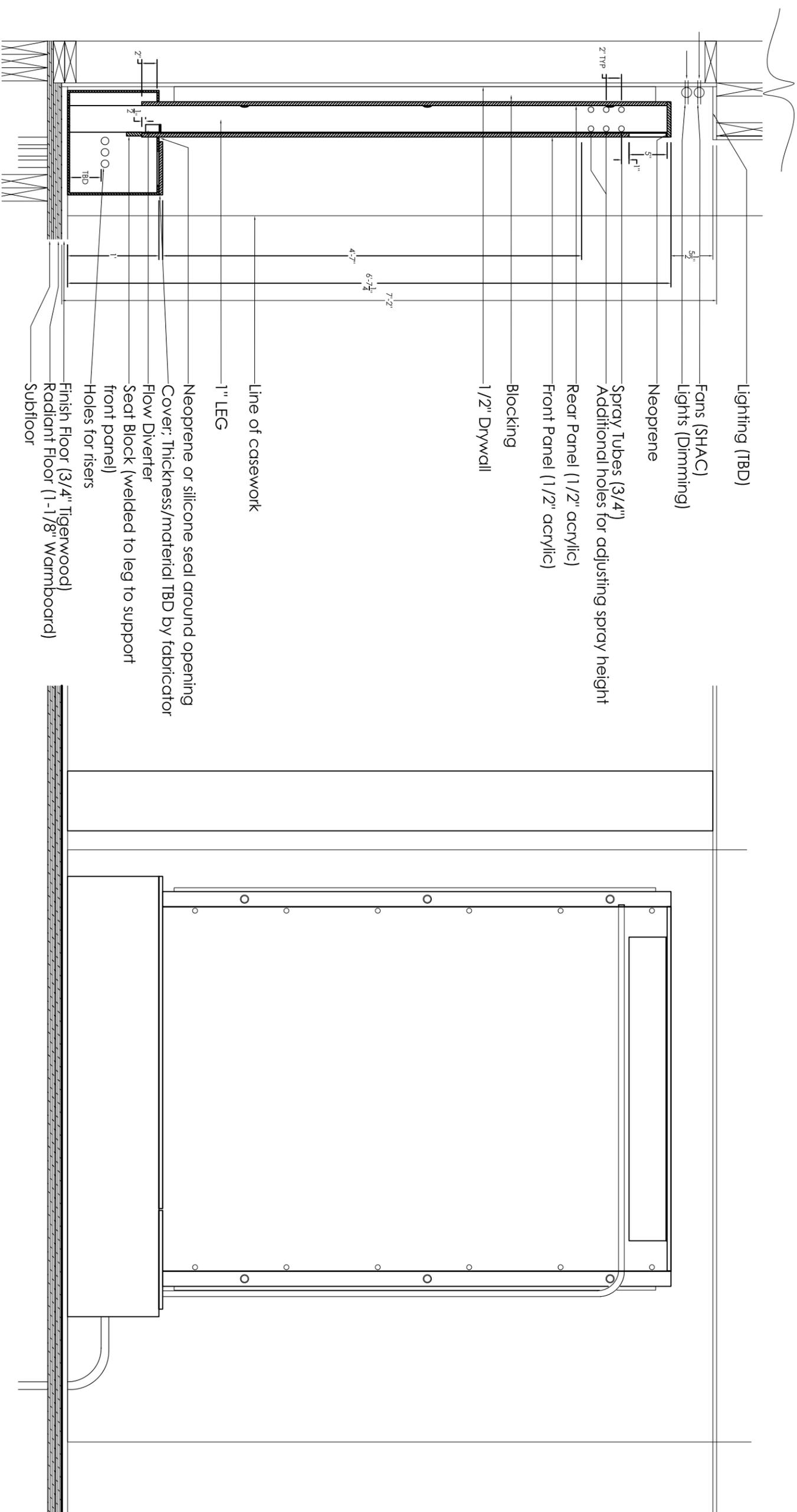
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Desiccant
System Plan

M5.01



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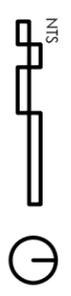


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 - 08.07.07 SD CDS
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Desiccant
Diagram

M5.02



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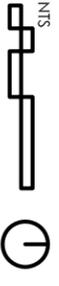


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07.28.07 PG CO.
08.07.07 SD CDS
08.17.07 SD CDS



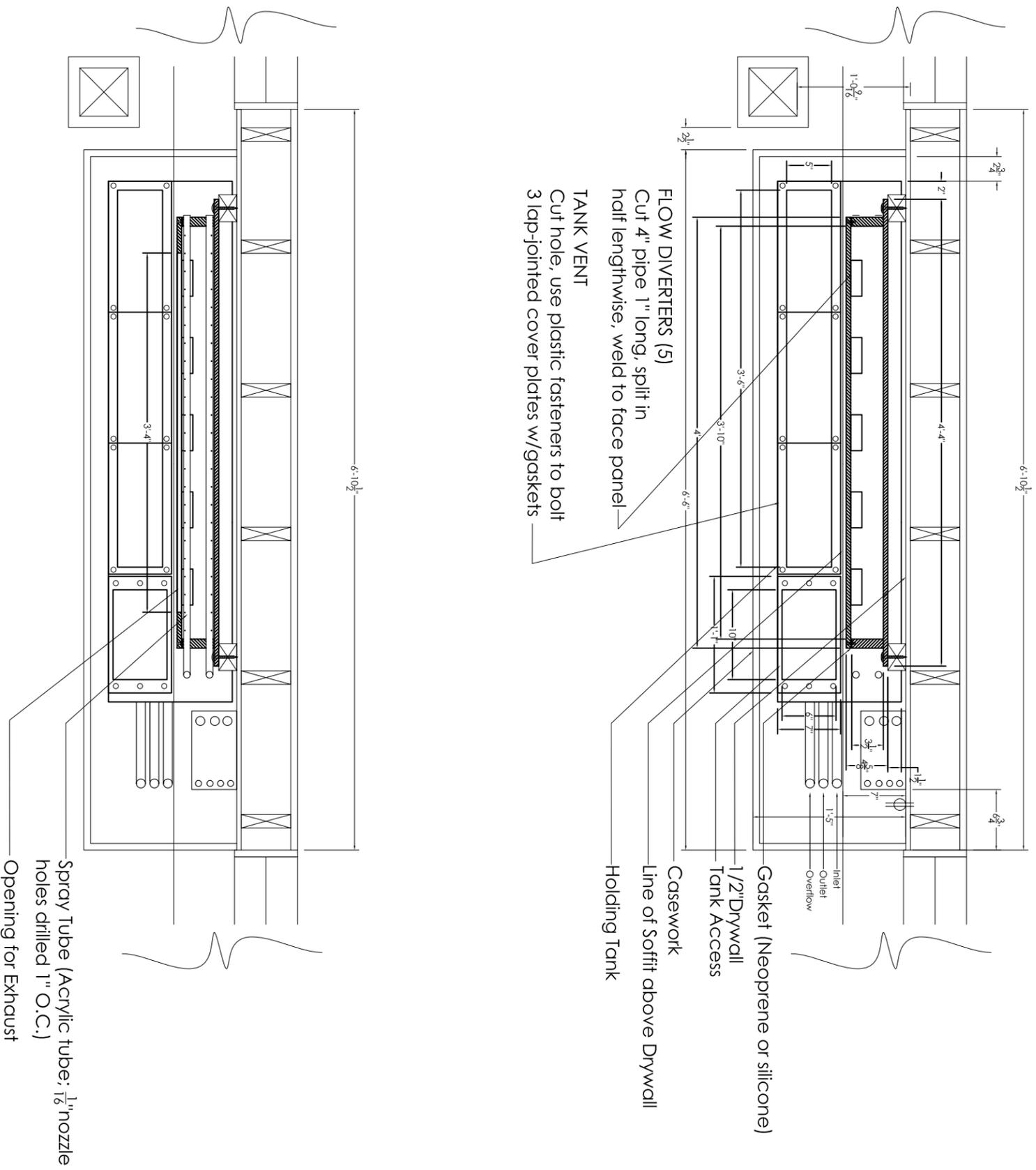
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Desiccant
Diagram

M5.03



Smart House /Adaptive Controls, or simply, "SHAC" (Shack), is a home-automation package that emphasizes the efficient use of energy. The SHAC system is being developed by an interdisciplinary team of students and professional mentors.

Americans are growing increasingly concerned about the impact their excessive energy consumption is having on the environment and on their energy bills. Most people, however, lack the time and technical knowledge necessary to monitor and control their homes effectively, to achieve both comfort and efficiency. The SHAC system is being developed to provide this service with an automation package that efficiently manages resources in the house such as lighting, air conditioning, etc. SHAC uses a simulation of the house and its systems to predict the energy that will be generated (by the solar array for example) and consumed each day. It automatically explores strategies for reducing consumption, especially during those days when solar income is limited. Over time, it builds a profile of house performance and resident preferences (SHAC learns) in order to optimize the balance between energy conservation and comfort. SHAC provides a user-friendly graphic interface to help people become aware of their energy consumption patterns and strategies to reduce waste. SHAC also monitors the operation of the house systems, detects problems that impact reliability and efficiency, reports these problems to the residents and to the technicians who help service and maintain the house.

The Model Based Strategizer (MBS)

The core of the SHAC engineering logic is the house simulation, or model. As input, it uses sensor data from the house and conditions outside, databases of past behavior, weather forecasts downloaded from the Internet, and information about resident preferences (comfort ranges, etc.). It outputs predictions of energy generation and consumption for the day (and even the week) and looks for an optimum balance. If its predictions indicate that there will be an energy shortfall, it interacts with the residents, presenting strategies for balancing the house's energy budget and helping them select the best options to meet their needs. In time, SHAC learns what strategies work best for the individuals living in the house, reducing the demand on the users for feedback. Throughout the day, as weather forecasts and actual conditions change, the SHAC adapts its operating strategy as needed.

SHAC Architecture

The system uses a combination of a reliable dedicated controller hardware and sophisticated decision making software. The hardware architecture is hierarchical; low level tasks are performed quickly and reliably by hardware running very simple firmware (SHAC.Embedded). Each lower-level controller will be capable of providing some degree of energy management if the PC running the house's high-level reasoning functions was to stop working. This hierarchical network allows integrated holistic control from the top while providing superior fault tolerance overall.

The high-level reasoning and interaction between SHAC and the LEAF House residents is performed by a laptop PC; no specialized hardware is required here. The LEAFHouse.Monitor is a kiosk-like application with touch-screen interface located in the study area of the house. The Monitor provides an intuitive view of the house operational status, and doubles as a user guide to the house; its systems and appliances. Residents and maintenance technicians can get more detailed data on any system or sensor in the house by selecting it from an on-screen house plan. The Monitor interface will be web-based as well, allowing residents to interact with SHAC remotely using their PC at work, their mobile laptop, PDA or cell-phone.

The LEAF House project is a public demonstration that solar living is possible today. The SHAC is an important part of that demonstration, showing how computer automation makes management of the systems and resources manageable by anyone.



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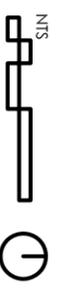
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08.07.07 SD CDS
08.17.07 SD CDS



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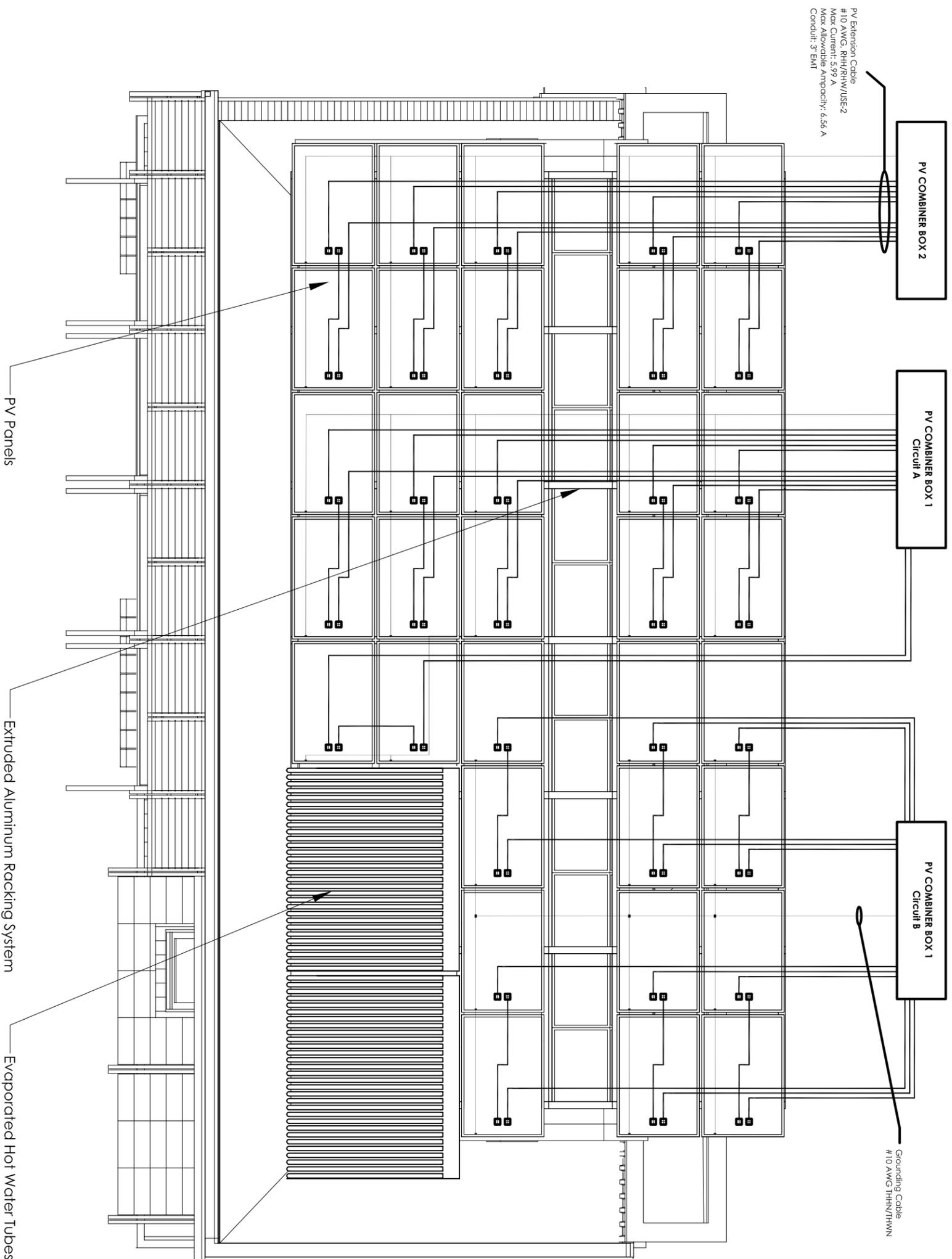
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SH/AC
Narrative

E0.01



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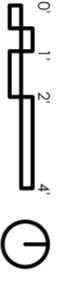
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PV System
Diagram

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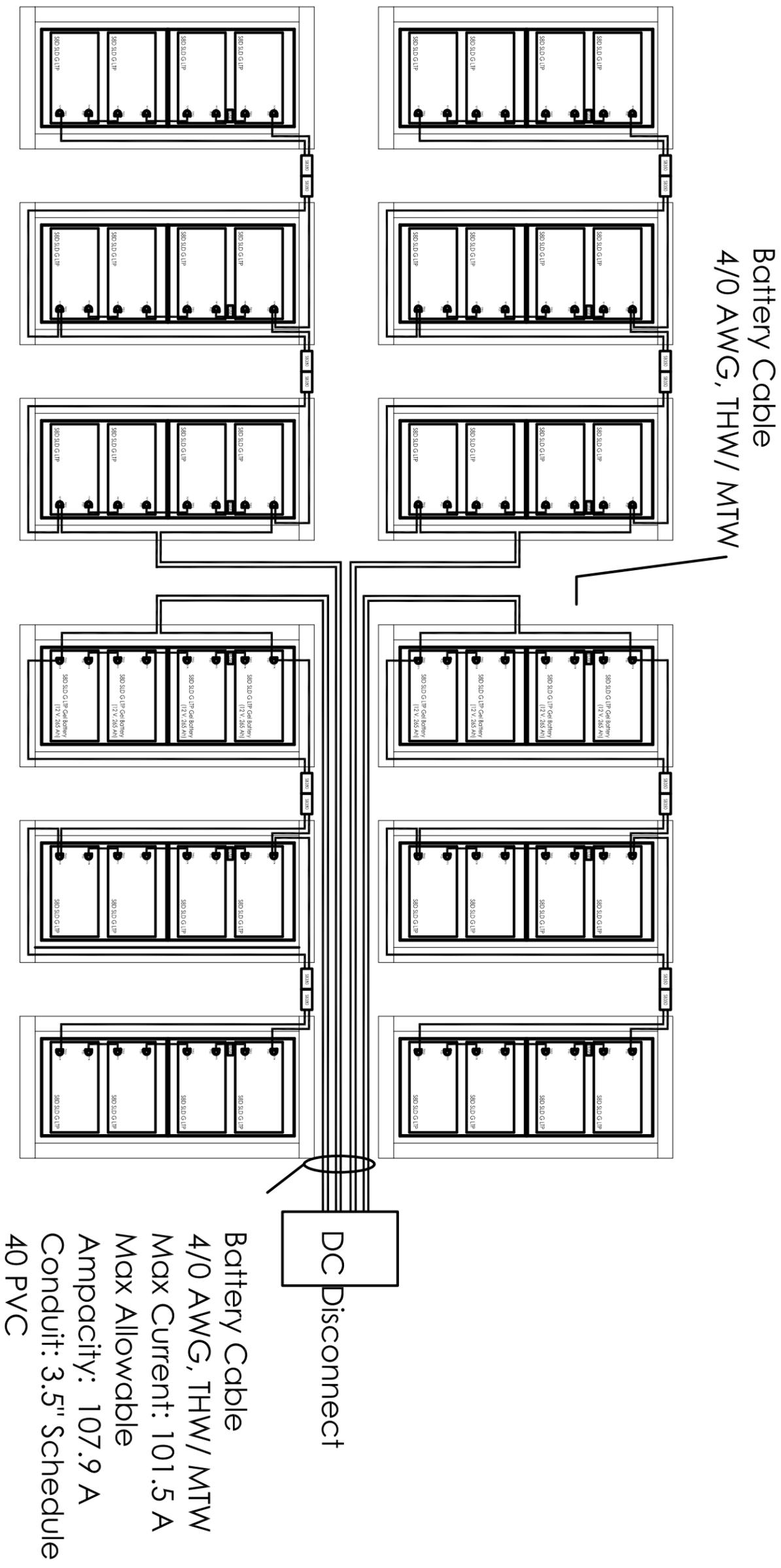
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Battery
Wiring Diag.

E1.03





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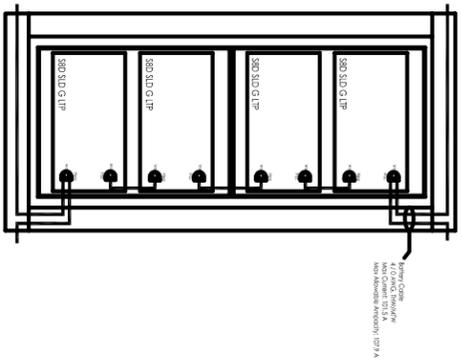
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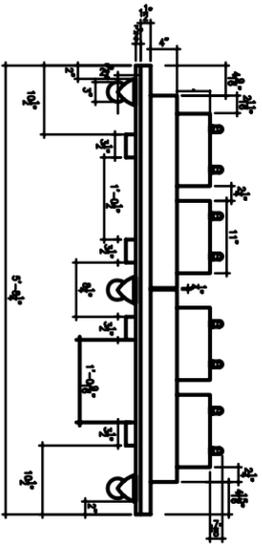
Battery
Racks

E1.04

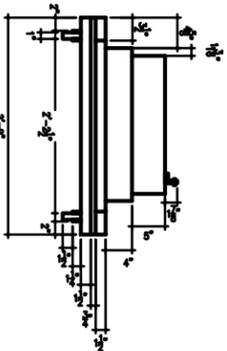
BATTERY RACK



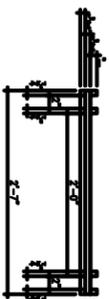
Top View



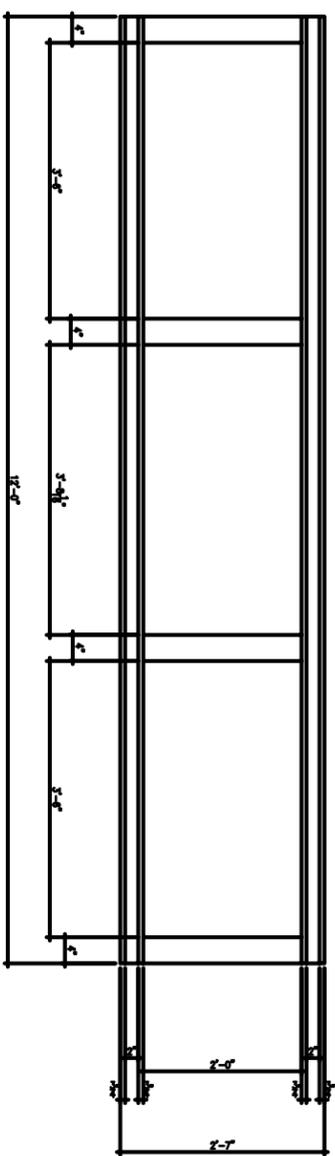
Front View



Side View



Front View



Top View



Side View



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07.28.07 PG CO.
08.07.07 SD CDS
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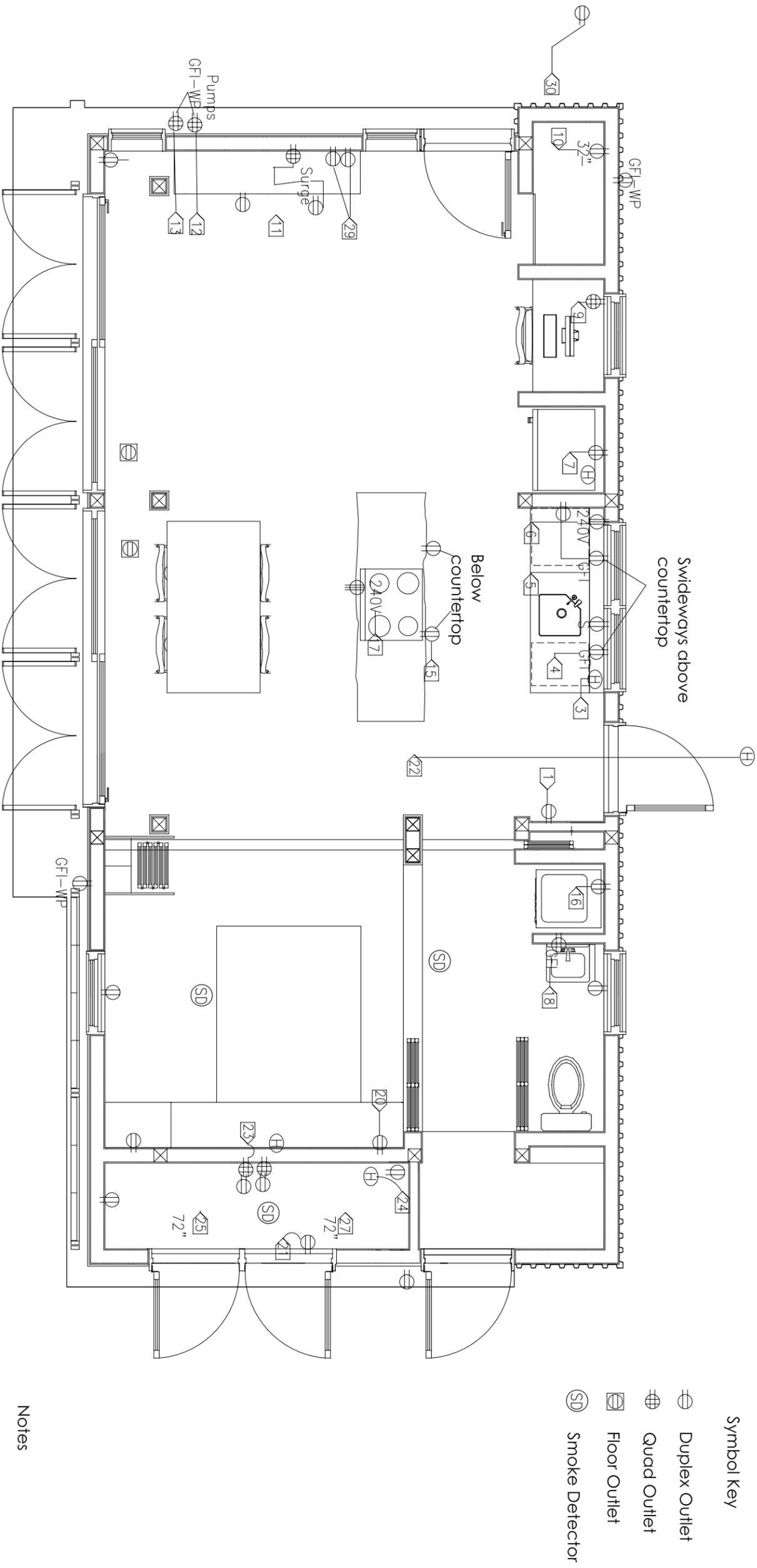
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Receptacle
Diagram

E2.01



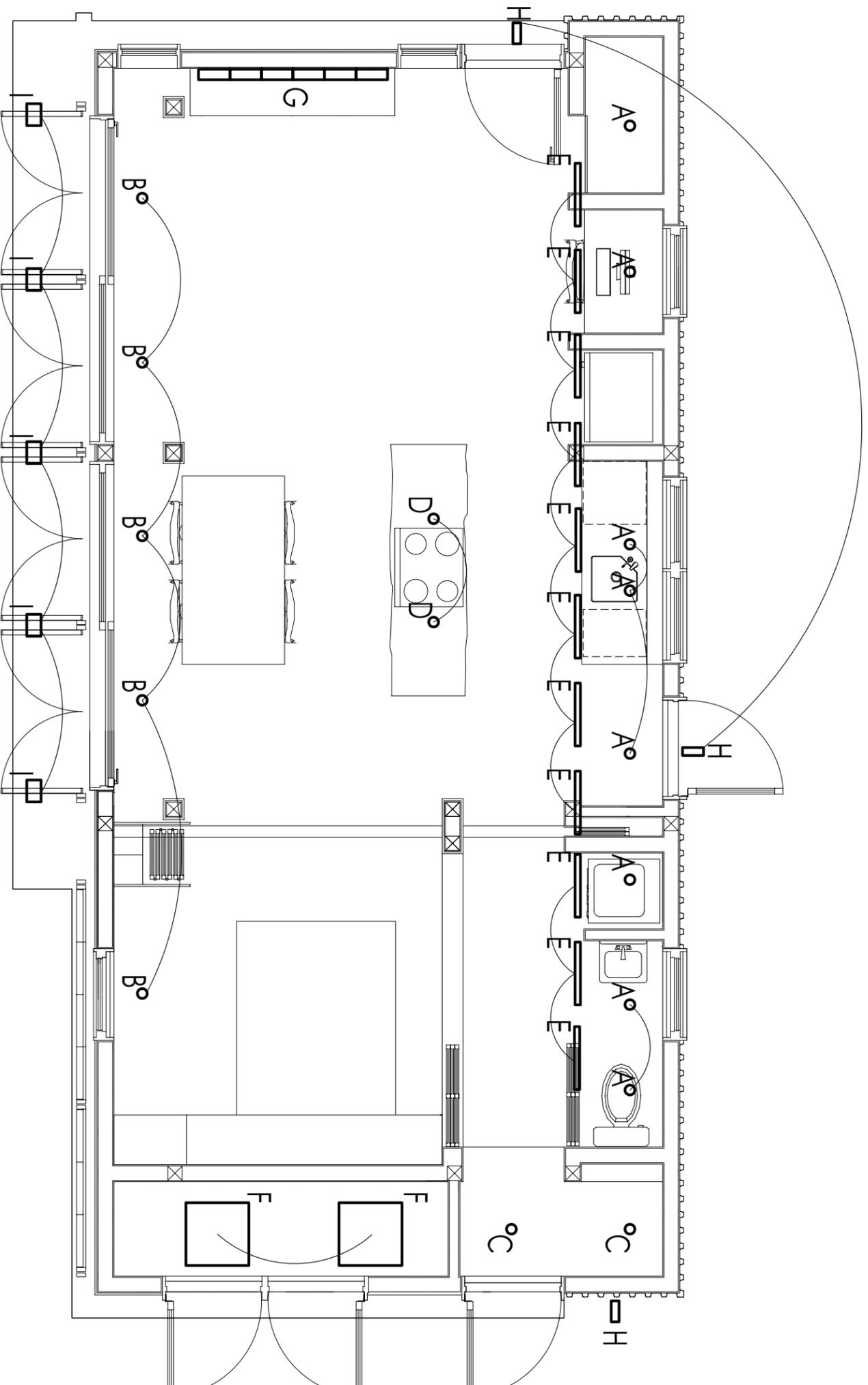
Symbol Key

- ⊖ Duplex Outlet
- ⊕ Quad Outlet
- ⊖ Floor Outlet
- ⊖ Smoke Detector

Notes

- 240V 240 Volt Outlet
 - GFI GFI Outlet
 - GFI-WP GFI Outdoor Outlet
 - Surge Surge Protection Outlet
- Outlet heights are 16" off the floor, unless otherwise noted.

All three smoke detectors will be hardwired together, and each will have its own internal battery backup. The installation of the smoke detectors will be done in accordance with NFPA 72.



Note: For Switching see E5.01, SHAC Wiring Diagram (Description of whole house switching control).



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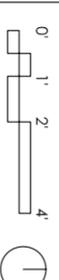
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Lighting
Plan

E3.01



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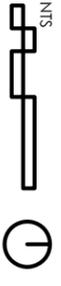


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07.28.07 PG CO.
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08.17.07 SD CDS



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Light Fixture
Schedule

E3.02

E3.20-LIGHT FIXTURE SCHEDULE

ROOM	FIXT INDICATOR	TOTAL QTY	TYPE	MANUFACTURER & MODEL NO.	HOUSING / FRAME-IN KIT	WET OR DAMP LOCATION?	LAMPS			REFLECTOR / TRIM KIT	TRANSFORMER	CONTROLS	COMMENTS
							QUANTITY	WATTS	TYPES				
North Ceiling	A	8	Recessed	Halo H38LVCAT	H38LVCAT	No	8	37W	12V MR16	3011 Satin Nickel			
South Ceiling	B	6	Recessed	Halo H38LVCAT	H38LVCAT	No	6	37W	12V MR16	3011 Antique Bronze			
Shower	C	2	Recessed	Halo H38LVCAT	H38LVCAT	Yes	2	37W	12V MR16	3012 Satin Nickel			
Kitchen Island	D	2	Pendant	Tealighting TRC 700FJRBS		No	2	50W	Halogen	Cobalt Blue Satin Nickel	Yes		
North (under supports)	E	11	Flourescent	Elipptpar Style 301	Style 301	No	11		T6-1/2 Incandescent	Style 301 Reflector	Yes		Two 1x1' Panels
Mechanical Room	F	2	LED	LED Folio Panelux P25-11-5500-5M- 110V-RD	Die Cast Aluminum	No	2	32W	HEW-LED	None	Yes		
Liquid Desecant Wall	G	6	LED	LED Folio Linearlux L29-5500-110V-RD	Die Cast Aluminum	Yes	6	53W	HEW-LED	None	Yes		
North, West and East Exterior Wall (Door Lights)	H	3	Exterior	Lumiere 904-50MR16-12-NISS	Westwood 904	Yes	3	50	12V MR16	N35 Stainless Steel	Yes		
South Overhang	I	5	Exterior LED	Lighting FX	ILPW230	Yes	5	3W	4-LED Cluster	N/A	Yes		



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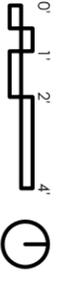
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AV Wiring
Diagram

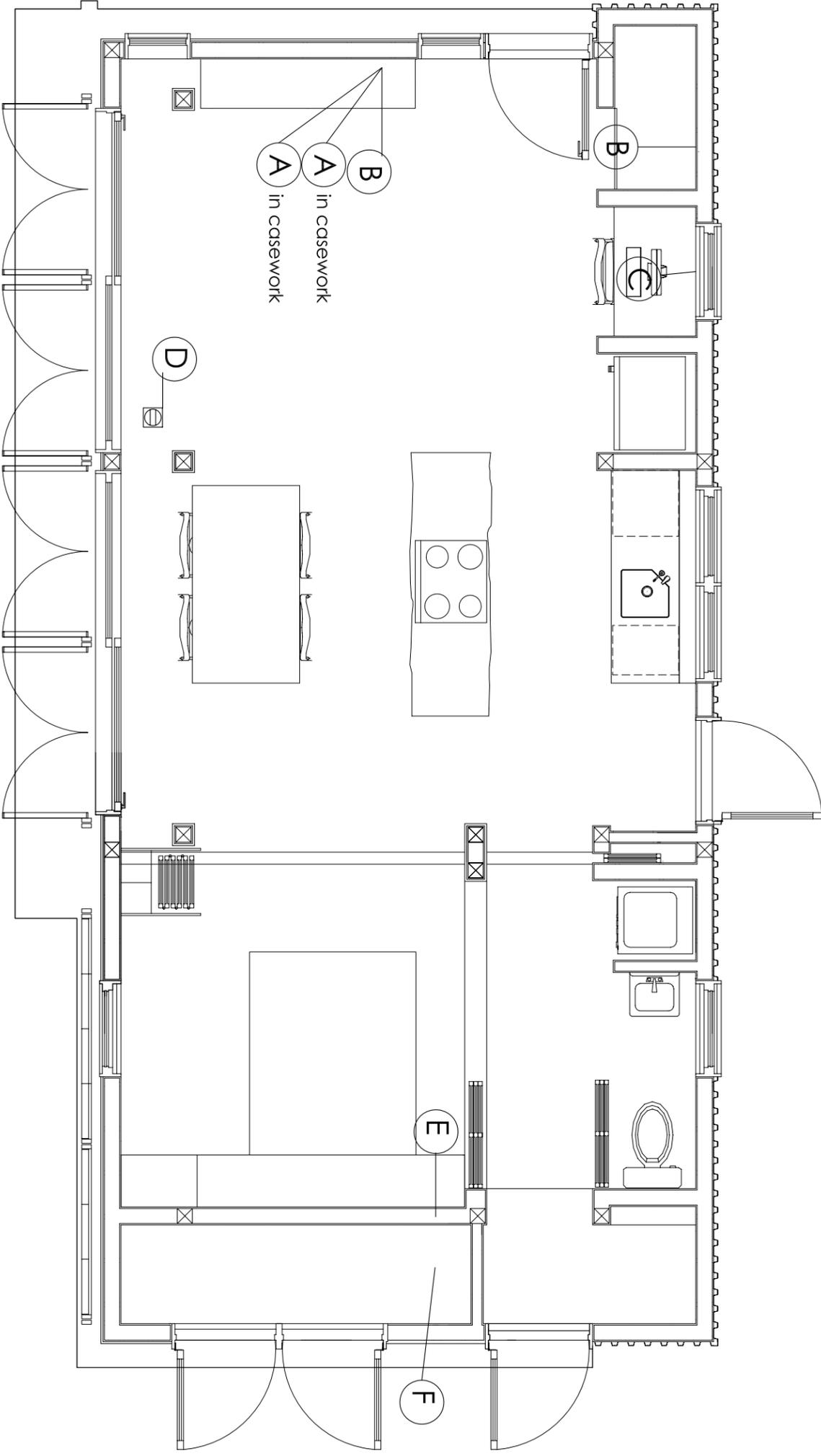
E4.01

Key

- A** Contains 6 RCA for component Video
 - B** Contains 2-Coax, 1-Data, 1-Voice, and 1-S Video
 - C** Contains 2-Coax, 1-Data, and 1-Voice
 - D** Contains 1-Data and 1-Voice for floor Outlet
 - E** Contains 1-Coax, 1-Data, and 1-Voice
 - F** Contains 1-Data and 1-Voice
- Data: CAT5
Video: RG6
- The S Video for A in the closet is connected to the A on the west wall. The B in the closet is connected to the B on the west wall.

QTY

- 12 - RCA Inserts
- 8 - Cabel Inserts
- 8 - Data Inserts
- 7 - Voice Inserts
- 1 - 8 Way cable splitter
- 1 - 8 Port Data Hub
- 1 - 7 Port Voice Hub





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08.07.07 SD CDS
08.17.07 SD CDS



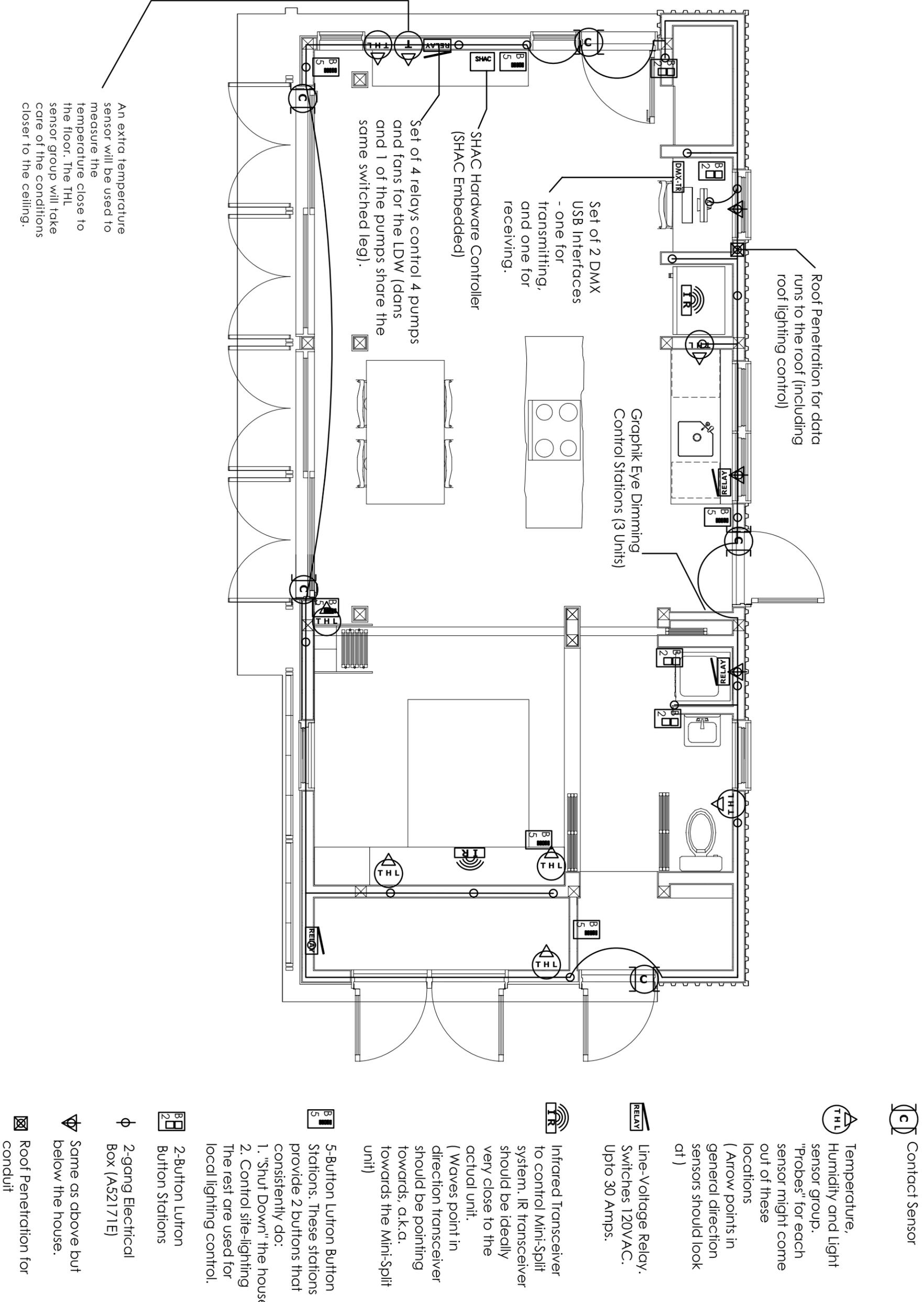
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SH/AC
Wiring Diag.

E5.01



Contact Sensor

Temperature, Humidity and Light sensor group. "Probes" for each sensor might come out of these locations (Arrow points in general direction sensors should look at)

Line-Voltage Relay. Switches 120VAC. Upto 30 Amps.

Infrared Transceiver to control Mini-Split system. IR transceiver should be ideally very close to the actual unit. (Waves point in direction transceiver should be pointing towards, a.k.a. towards the Mini-Split unit)

5-Button Lutron Button Stations. These stations provide 2 buttons that consistently do:
1. "Shut Down" the house
2. Control site-lighting
The rest are used for local lighting control.

2-Button Lutron Button Stations

2-gang Electrical Box (A52171E)

Same as above but below the house.

Roof Penetration for conduit



leafhouse.**monitor**
smart house adaptive controls

Overview

Control

Help



Wednesday July 11th
09:13 AM



99% / 3 days



Statistics



87°F
20% RH

Now



78°F
40% RH

Later



34 Days
Running v1.34

Uptime

9:00-11:00am

Warm Shower

11:00am-3:00pm

Dishwasher
Cook Lunch

4:00pm-6:00pm

Washer/Dryer
Cook Dinner
Hot Shower

8:00-10:00pm

Today's Recommended Schedule



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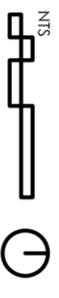
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SH/AC Dtl's.
& Diagrams

E5.02

PIPING – GENERAL

DIRECTION OF FLOW	
DIRECTION OF SLOPE DOWN	
PIPE TURNING UP	
PIPE TURNING DOWN	
BRANCH CONNECTION – TOP	
BRANCH CONNECTION – BOTTOM	
BRANCH CONNECTION – SIDE	
PIPE ANCHOR	
PIPE ALIGNMENT GUIDE	
SERVICE VALVE (GATE, BALL OR BUTTERFLY)	
GLOBE VALVE	
CHECK VALVE	
BALANCING COCK	
UNION	
VALVE IN RISER	
PIPE CAP OR BLIND FLANGE	
OUTLETS (G, A, V, OK, CW, HW)	
EXPANSION JOINT	
PRESSURE REDUCING VALVE	
PRESSURE RELIEF VALVE	
PRESSURE GAUGE	
THERMOMETER	
FLEXIBLE PIPE CONNECTION OR JOINT	
STRAINER	
CLEANOUT PLUG	
FLOOR CLEANOUT	
WALL CLEANOUT	
FLOW SWITCH	
PRESSURE SWITCH	

GENERAL NOTES :

1. SYMBOLS AND ABBREVIATIONS LISTS ARE COMPOSITE. ALL SYMBOLS AND ABBREVIATIONS MAY NOT BE USED ON THIS PROJECT.
2. DUE TO SMALL SCALE OF MECHANICAL DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES, WHICH MAY AFFECT THE INSTALLATION OF THE WORK.
3. WORK INDICATED ON DRAWINGS IS DIAGRAMMATIC AND SHOULD NOT BE SCALED TO ESTABLISH LOCATION OF WORK. THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENTS OF ENGINEERED SYSTEMS. FIELD VERIFY CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO COMPLETE THE WORK.
4. CLEAN UP ALL WASTE AND DEBRIS AT THE END OF EACH WORKING DAY AND AS REQUIRED TO KEEP ALL BUILDING AREAS CLEAN, CLEAR AND UNOBSTRUCTED.
5. MATERIALS AND EQUIPMENT OF THE SAME TYPE AND USE SHALL BE FROM A SINGLE MANUFACTURER.
6. STORE MATERIALS AND PROTECT FROM WEATHER.
7. IF HVAC EQUIPMENT IS OPERATED DURING CONSTRUCTION, PROVIDE TEMPORARY FILTERS TO PROTECT AIR-HANDLING EQUIPMENT.

PIPING – HVAC

STEAM (NUMBER DENOTES PRESSURE)	
STEAM CONDENSATE RETURN (SCR)	
BOILER BLOWDOWN	
PUMPED CONDENSATE	
COLD WATER	
DRIP STATION	
THERMOSTATIC TRAP	
FLOAT AND THERMOSTATIC TRAP	
BUCKET TRAP	
HEATING WATER SUPPLY	
HEATING WATER RETURN	
CHILLED WATER SUPPLY	
CHILLED WATER RETURN	
CONDENSER WATER SUPPLY	
CONDENSER WATER RETURN	
CONDENSATE DRAIN	
CONTROL VALVE (2-WAY)	
CONTROL VALVE (3-WAY)	
AUTOMATIC FLOW CONTROL VALVE	
CALIBRATED BALANCING VALVE	
TRIPLE DUTY VALVE (PUMP DISCHARGE)	
PRESSURE/TEMPERATURE FITTING	
REFRIGERANT SUCTION	
REFRIGERANT DISCHARGE	
REFRIGERANT LIQUID	
HEAT PUMP WATER SUPPLY	
HEAT PUMP WATER RETURN	
DUAL TEMP SUPPLY	
DUAL TEMP RETURN	

PLUMBING NOTES :

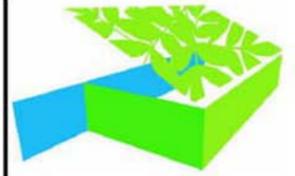
PIPING – SPECIAL

GAS	
MISCELLANEOUS	
DIFFUSER NOMENCLATURE	CFM INLET SIZE
CONNECT NEW TO EXISTING	
ELECTRIC THERMOSTAT (OR SENSOR)	
PNEUMATIC THERMOSTAT	
DIAMETER	
FLAT OVAL	
HUMIDISTAT	
FAN SPEED SWITCH	
DUCT-MOUNTED SMOKE DETECTOR	
PIPE AND DUCT RISER REFERENCE	
AQUASTAT	
GAS COCK	
BACKFLOW PREVENTOR	



ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	LIFT	LEAVING WATER TEMPERATURE
AD	ACCESS DOOR	MAV	MANUAL AIR VENT
AE	AIR EXTRACTOR	MBH	BTU PER HOUR (THOUSANDS)
AFCV	AUTOMATIC FLOW CONTROL VALVE	MOD	MOTOR OPERATED DAMPER
APD	AIR PRESSURE DROP, IN. WG.	MFR	MEDIUM PRESSURE STEAM RETURN
AQ	AQUASTAT	MPS	MEDIUM PRESSURE STEAM SUPPLY
ATD	AIR TRANSFER DUCT	MVD	MANUAL VOLUME DAMPER
BG	BOTTOM GRILLE	NC	NOISE CRITERIA
BHP	BRAKE HORSEPOWER	OED	OPEN END DUCT
BOD	BOTTOM OF DUCT	OFD	OVERFLOW DRAIN
BR	BOTTOM REGISTER	OA	OUTSIDE AIR
BTU	BRITISH THERMAL UNIT	OBD	OPPOSED BLADE DAMPER
BTUH	BRITISH THERMAL UNIT/HOUR	OT	OVERIDE TIMER
CD	CEILING DIFFUSER/CONDENSATE DRAIN	OTCP	OPEN TO CEILING PLENUM
CFM	CUBIC FEET PER MINUTE	PN	POST INDICATOR VALVE
CG	CEILING GRILLE	PRV	PRESSURE REDUCING VALVE
CO	CLEANOUT	PSI	POUNDS PER SQUARE INCH
CR	CEILING REGISTER	RA	RETURN AIR
CW	COLD WATER	RC	RAIN CONDUCTOR
CWR	CHILLED WATER RETURN	RD	ROOF DRAIN
CWS	CHILLED WATER SUPPLY	RH	RELATIVE HUMIDITY
DB	DRY BULB °F, DECIBEL	RPM	REVOLUTIONS PER MINUTE
DG	DOOR GRILLE	SA	SUPPLY AIR
DL	DRUM LOWER	SD	SHOWER DRAIN, SPLITTER DAMPER, STORM DRAIN
DWD	DOUBLE WALLED DUCT	SDR	SMOKE DAMPER
EA	EXHAUST AIR	SMD	SMOKE DETECTOR
EAT	ENTERING AIR TEMPERATURE	SP	STATIC PRESSURE
ESA	EQUIPMENT SERVICE AREA	SS	SANITARY SEWER
EWT	ENTERING WATER TEMPERATURE	S/S	STAINLESS STEEL
FD	FLOOR DRAIN	SV	SERVICE VALVE
FD	FIRE DAMPER	SW	SWITCH
FG	FLOOR GRILLE	TC	TIME CLOCK
FR	FROM	TEMP	TEMPERATURE
GAL	GALLON	TD	TEMPERATURE DIFFERENTIAL
QPD	GALLONS PER DAY	TG	TOP GRILLE, TRANSFER GRILLE
GPH	GALLONS PER HOUR	TR	TOP REGISTER, TONS OF REFRIGERATION
GPM	GALLONS PER MINUTE	T'STAT	THERMOSTAT
HB	HOSE BIBB	V	VOLT, VENT
HP	HORSEPOWER	VAC	VACUUM
HPR	HIGH PRESSURE STEAM RETURN	VAV	VARIABLE AIR VOLUME
HPS	HIGH PRESSURE STEAM SUPPLY	VTR	VENT THROUGH ROOF
HW	HOT WATER	W	WASTE, WATTS
HWR	HEATING/HOT WATER RETURN	WB	WET BULB, °F
HWS	HEATING WATER SUPPLY	WG	WATER GAUGE (FEET OR INCHES)
HZ	FREQUENCY (CYCLES/SECOND)	WH	WALL HYDRANT
KW	KILOWATT	WHA	WATER HAMMER ARRESTOR
KWH	KILOWATT HOUR	WPD	WATER PRESSURE DROP, FT. WG.
LAT	LEAVING AIR TEMPERATURE	WS	WATER STOP
LB/HR	POUNDS PER HOUR	WTD	WATER TEMPERATURE DROP, °F
LBG	LINEAR BAR GRILLE	WTR	WATER TEMPERATURE RISE, °F
LBK	LINEAR BAR REGISTER	WWM	WOVEN WIRE MESH
LD	LINEAR DIFFUSER	Z	ZONE
LG	LINEAR GRILLE		
LFG	LINEAR FLOOR GRILLE		
LR	LINEAR RETURN		



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- Revisions:
- 03.06.07 SD CDS
 - 07.09.07 PFS TPPI
 - 07.28.07 PG CO.
 - 08.07.07 SD CDS
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NTS

Plumbing
Notes & Lgnd

P0.00



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Eqpm. & Fixt.
Schedule

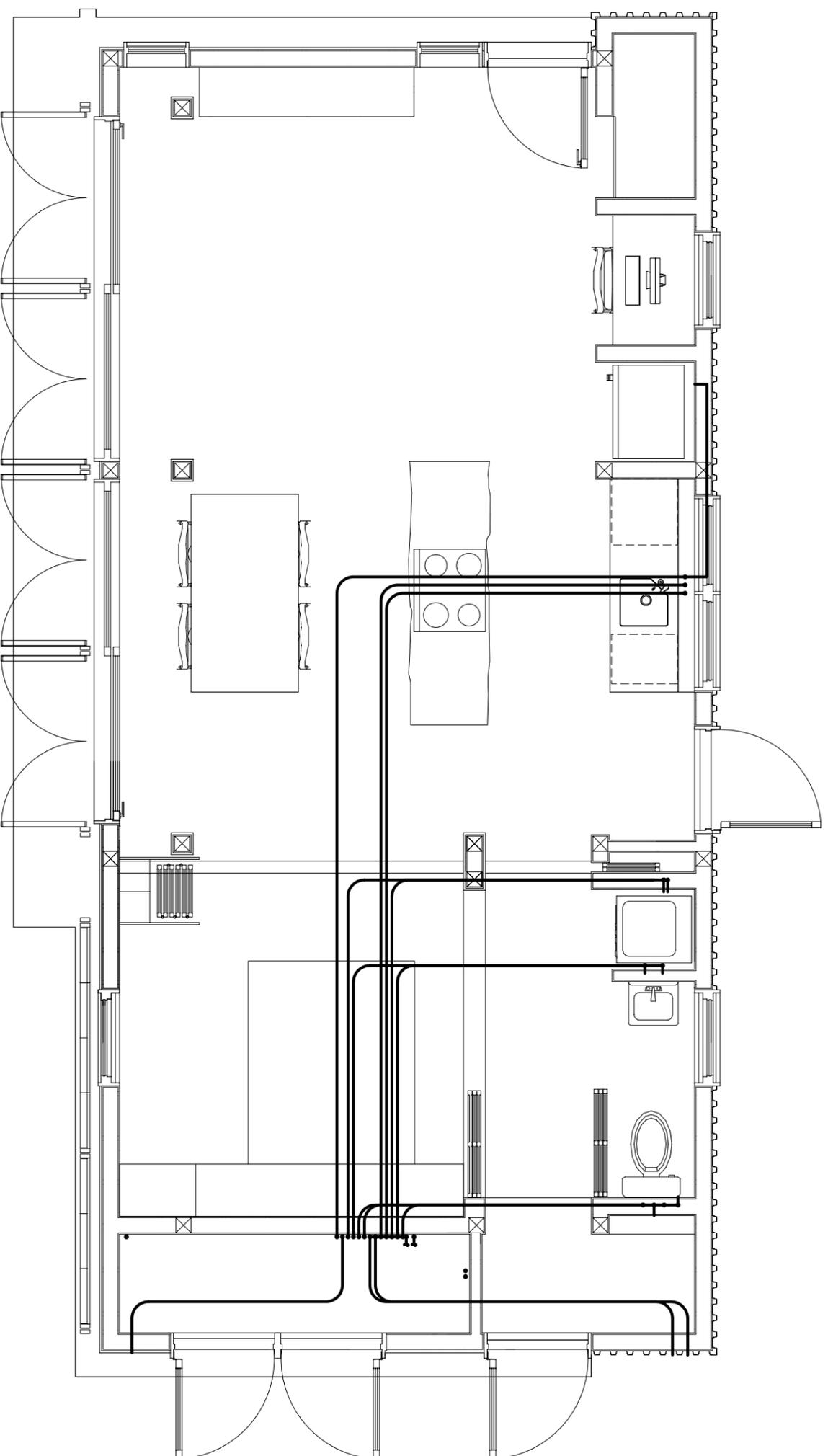
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PLUMBING FIXTURE SCHEDULE

MARK	NAME	MANUFACTURER	MODEL	DRAINAGE		SUPPLY		STORAGE (GAL)
				WASTE	VENT	HOT	COLD	
P-1	REFRIGERATOR	KENMORE	42800	-	-	1/2"	1/2"	-
P-2	KITCHEN SINK	KOHLER	K-3099	2"	2"*	-	-	-
P-3	KITCHEN FAUCET	KOHLER	K-8761	-	-	1/2"	1/2"	-
P-4	DISHWASHER	BOSCH	800 SRV53C03UC	2"	-	1/2"	-	-
P-5	CLOTHES WASHER	LG	WMA3431	2"	2"	1/2"	1/2"	-
P-6	LAVATORY FAUCET	KOHLER	K-14404	-	-	1/2"	1/2"	-
P-7	LAVATORY SINK	KOHLER	K-19033	2"	2"	-	-	-
P-8	WATER CLOSET	KOHLER	K-402040	3"	3"	-	1/2"	-
P-9	SHOWER MIXING VALVE	KOHLER	K-305	-	-	1/2"	1/2"	-
P-10	SHOWER HEAD	KOHLER	K-1-14421-4	-	-	1/2"	-	-
P-11	SHOWER DRAIN	KOHLER	K-9132	2"	1-1/2"	-	-	-
P-12	FREEZE-PROOF HOSE BIBB	LEGEND	MSF61-9	-	-	1/2***	1/2***	-
P-13	HEAT EXCHANGER	REIHERM	S3-60	3"	-	3/4"	3/4"	-
ST-1	DOMESTIC SUPPLY TANK	INTERSTATE PRODUCTS		4****	-	-	3/4****	620
ST-2	WASTE WATER TANK	INTERSTATE PRODUCTS		4****	-	-	1-1/2****	615
WH-1	DOMESTIC WATER HEATER	JOHN WOOD	GSW-27	-	-	-	3/4"	27
WH-2	SOLAR THERMAL STORAGE TANK	STIEBEL ELTRON	SBB400 PLUS	-	-	-	3/4"	108
WH-3	TANKLESS WATER HEATER	STIEBEL ELTRON	TEMPRA 20	-	-	-	3/4"	0

NOTES:

- *. PROVIDE STUDOR VENT TO KITCHEN SINK.
- *. PROVIDE ONE (1) HOSE BIBB TO BE USED FOR OUTDOOR SHOWER WITH HOT WATER SUPPLY. REMAINING HOSE BIBBS TO BE PROVIDED WITH COLD SUPPLY
- ***. DOMESTIC SUPPLY AND WASTE TANKS TO BE PROVIDED WITH 4" FILL/RAIN PORTS LOCATED AT THE TOP OF THE TANK AND SIZED SUPPLY PORTS LOCATED ON THE SIDE WALL OF THE TANK.



- Notes:
1. All supply lines to be cross-linked polyethylene (PEX) unless otherwise noted.
 2. See risers, schedules, sections and schematics for additional information.
 3. Provisional diagram; to be updated for final site.
 4. Install valves, fittings, water hammer arrestors, etc... as necessary to ensure proper installation in accordance with applicable codes.
 5. Supply line to water closet to be shut off and water closet to be capped for competition.



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Supply
Diagram

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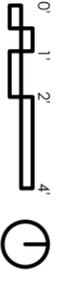


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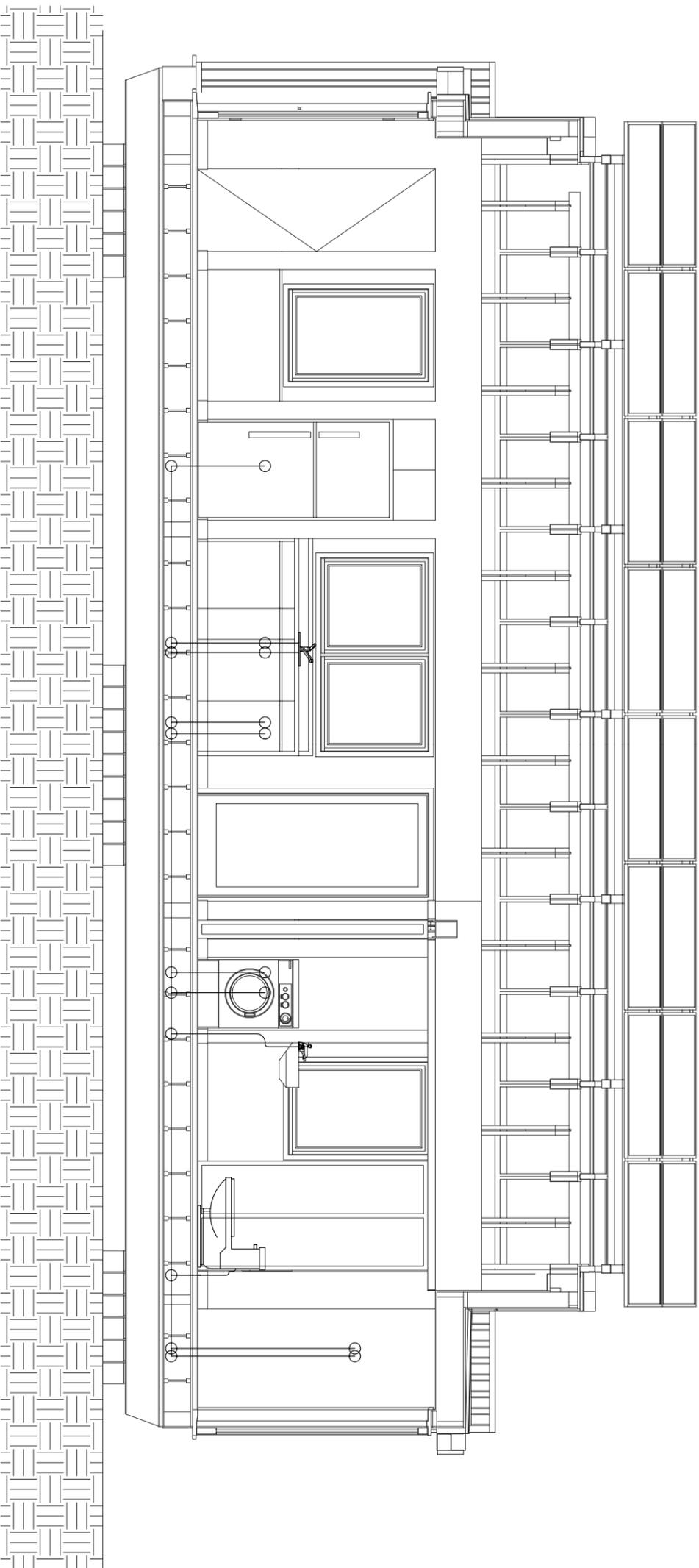
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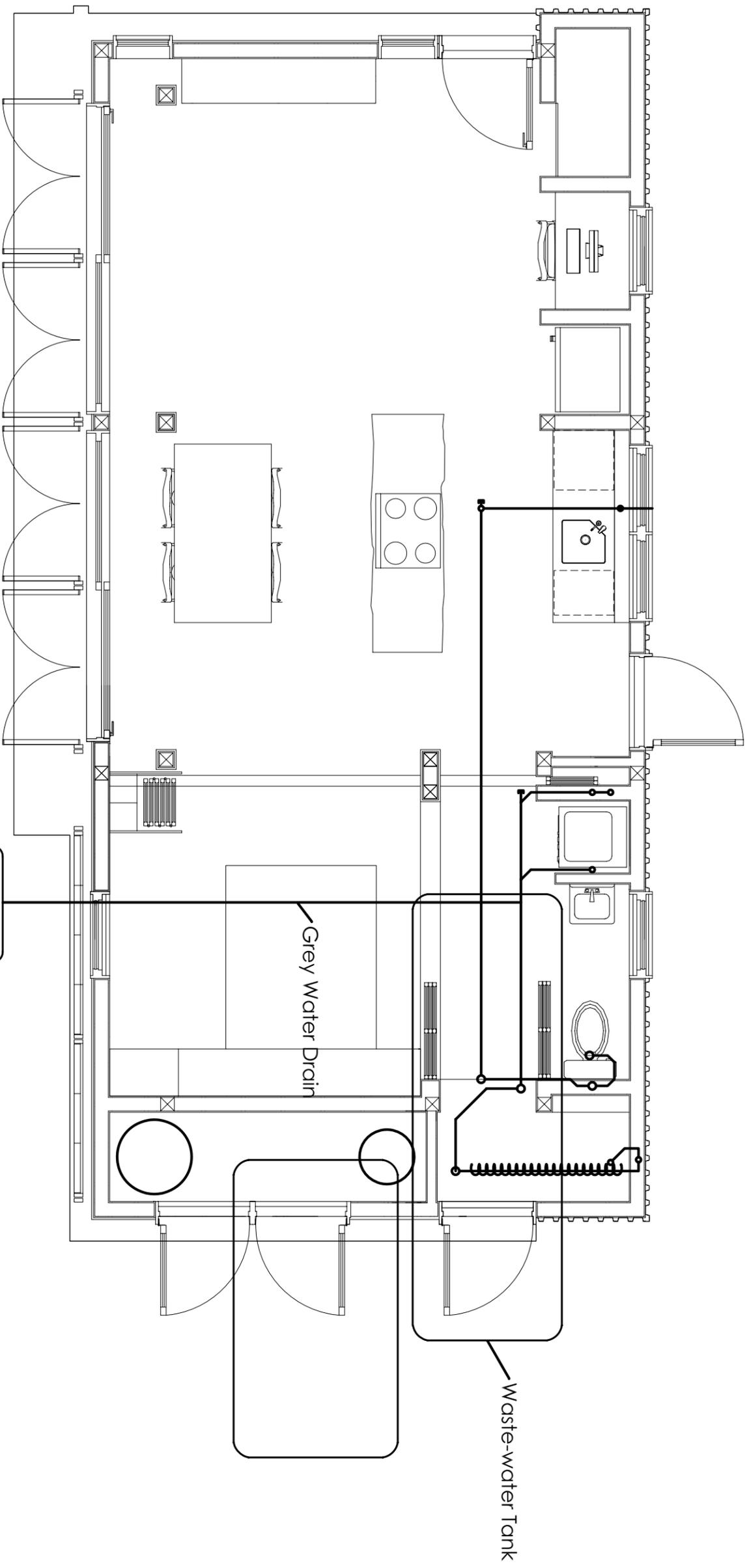
Supply Riser
Diagram

P1.02



NOTES:

1. All Supply lines to be Cross-linked Polyethylene (PEX) unless otherwise noted.
2. Refer to layouts, schematics and schedules for additional information.



Notes:

1. Sanitary piping to be Schedule 40 PVC unless otherwise noted.
2. Maintain at least $\frac{1}{4}$ " slope on all sanitary lines.
3. Provisional drawing; to be updated for final site.
4. See Schedules and risers for additional information.

Contained Grey Water Garden Reservoir

Grey Water Drain

Waste-water Tank



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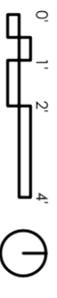
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Return
Diagram

P1.03



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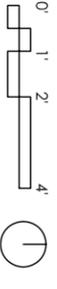


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08.07.07 SD CDS
08.17.07 SD CDS



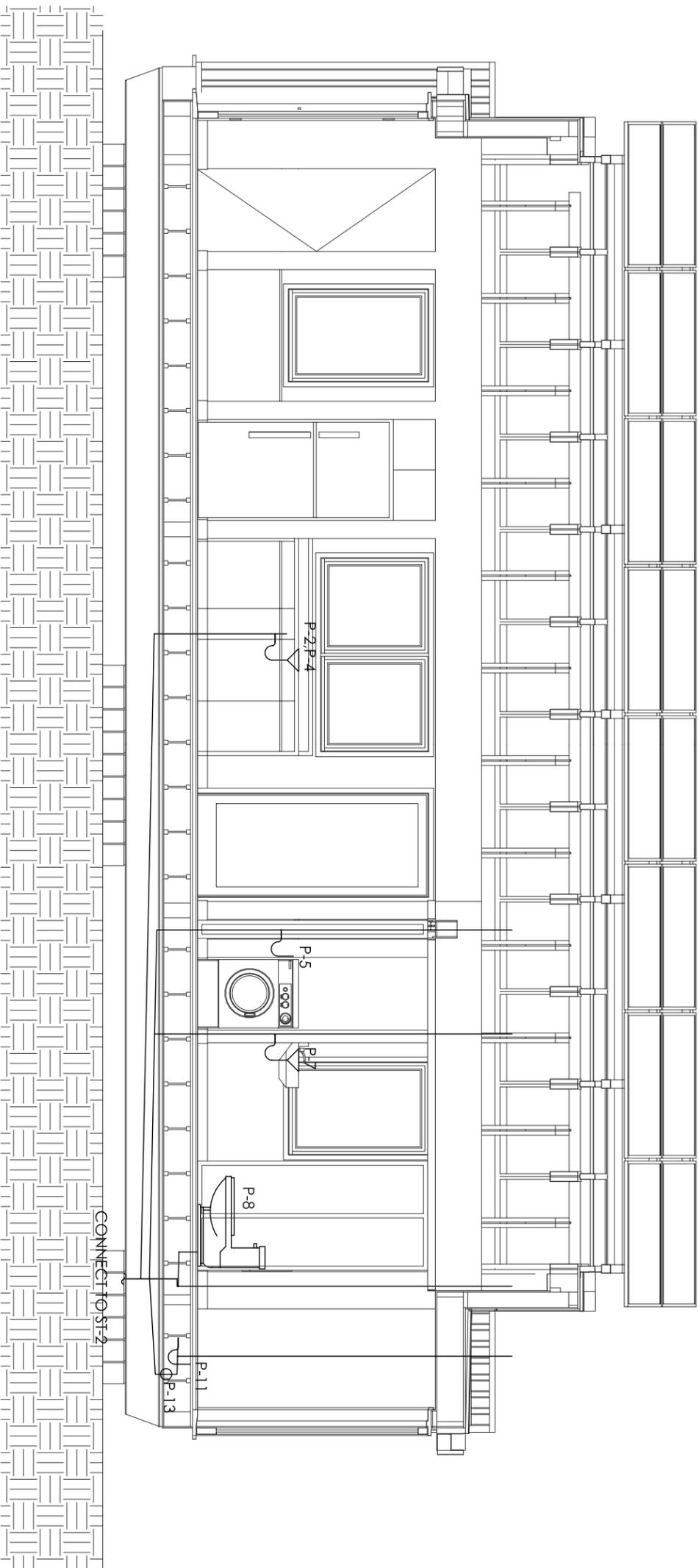
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Return Riser
Diagram

P1.04



NOTES:

1. PROVIDE STUDOR VENT FOR KITCHEN SINK VENTING.
2. ALL SANITARY AND VENT PIPE TO BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED.
3. PROVISIONAL DRAWING; TO BE REVISED FOR FINAL LOCATION.
4. SANITARY PIPING INSTALLED TO ALLOW FOR USE OF GREYWATER SYSTEM.
5. REFER TO LAYOUTS, SCHEMATICS, AND SCHEDULES FOR ADDITIONAL INFORMATION.



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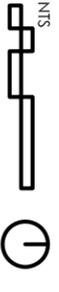
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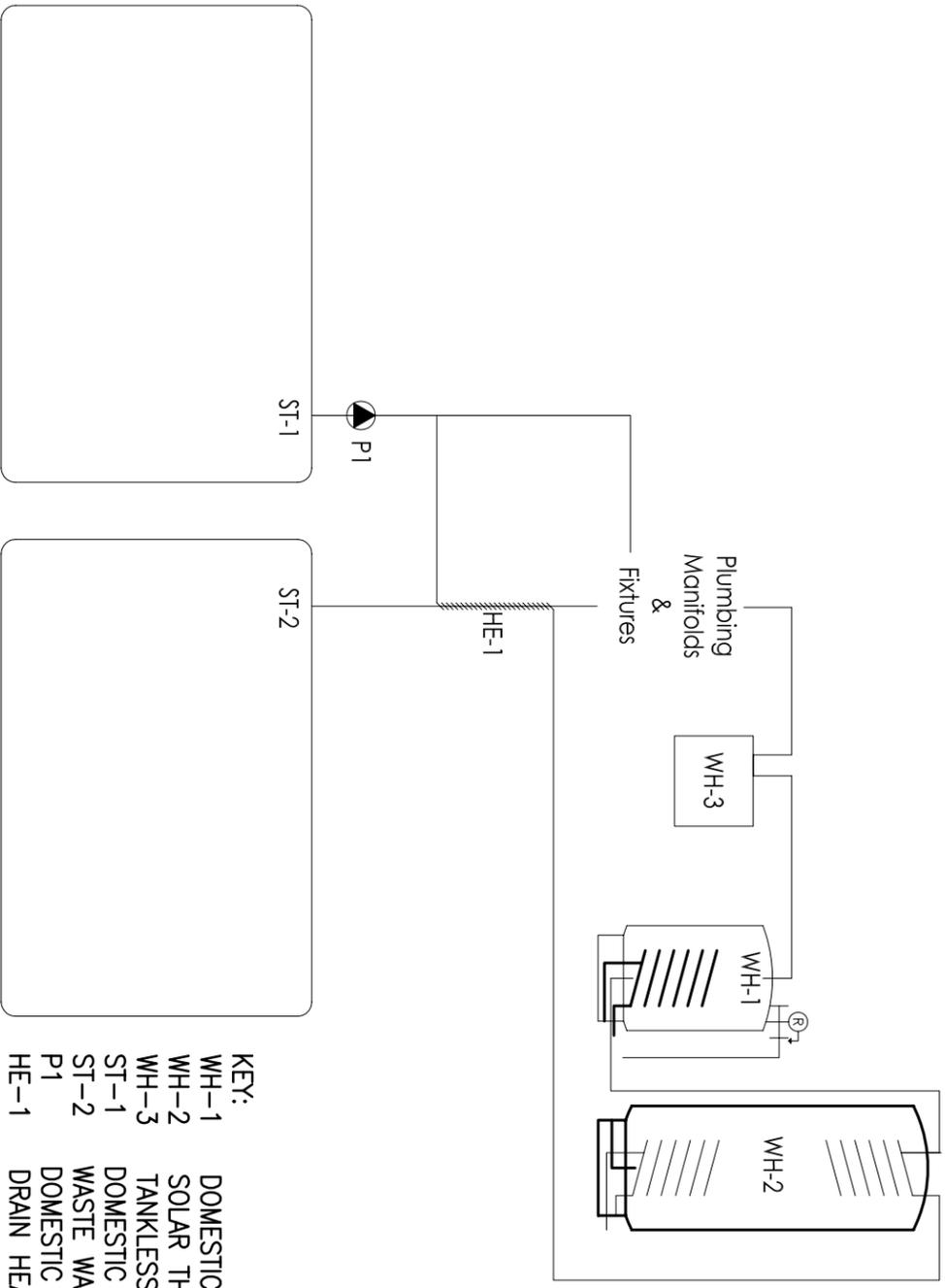
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Domestic
Plmbyg. Sch.

P1.05



KEY:
WH-1 DOMESTIC HOT WATER TANK
WH-2 SOLAR THERMAL STORAGE TANK
WH-3 TANKLESS WATER HEATER
ST-1 DOMESTIC SUPPLY TANK
ST-2 WASTE WATER STORAGE TANK
P1 DOMESTIC WATER SUPPLY PUMP
HE-1 DRAIN HEAT RECOVERY EXCHANGER

NOTES:

1. SCHEMATIC SHOWS MAIN, PIPING, TANKS, CONTROL VALVES AND PUMPS. INSTALL ADDITIONAL COMPONENTS AS NECESSARY TO ACHIEVE PROPER INSTALLATION.
2. PIPING CONNECTIONS TO TANK ARE FOR ILLUSTRATIVE PURPOSES ONLY AND DO NOT NECESSARILY REFLECT ACTUAL LOCATIONS OF TANK CONNECTIONS.
3. ALL PIPING IN DOMESTIC PLUMBING LOOP TO BE CROSS-LINKED POLYETHYLENE (PEX) UNLESS OTHERWISE NOTED.
4. FOLLOW ALL MANUFACTURERS' INSTRUCTIONS FOR PROPER INSTALLATION.
5. INSTALL ALL SYSTEM COMPONENTS IN ACCORDANCE WITH RELEVANT CODES, REGULATIONS AND/OR STANDARDS.
6. WORKING FLUID IN ALL CLOSED SYSTEMS TO BE POLYPROPYLENE GLYCOL SOLUTION.
7. SEE RELEVANT MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION REGARDING INDIVIDUAL SYSTEMS.



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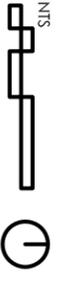
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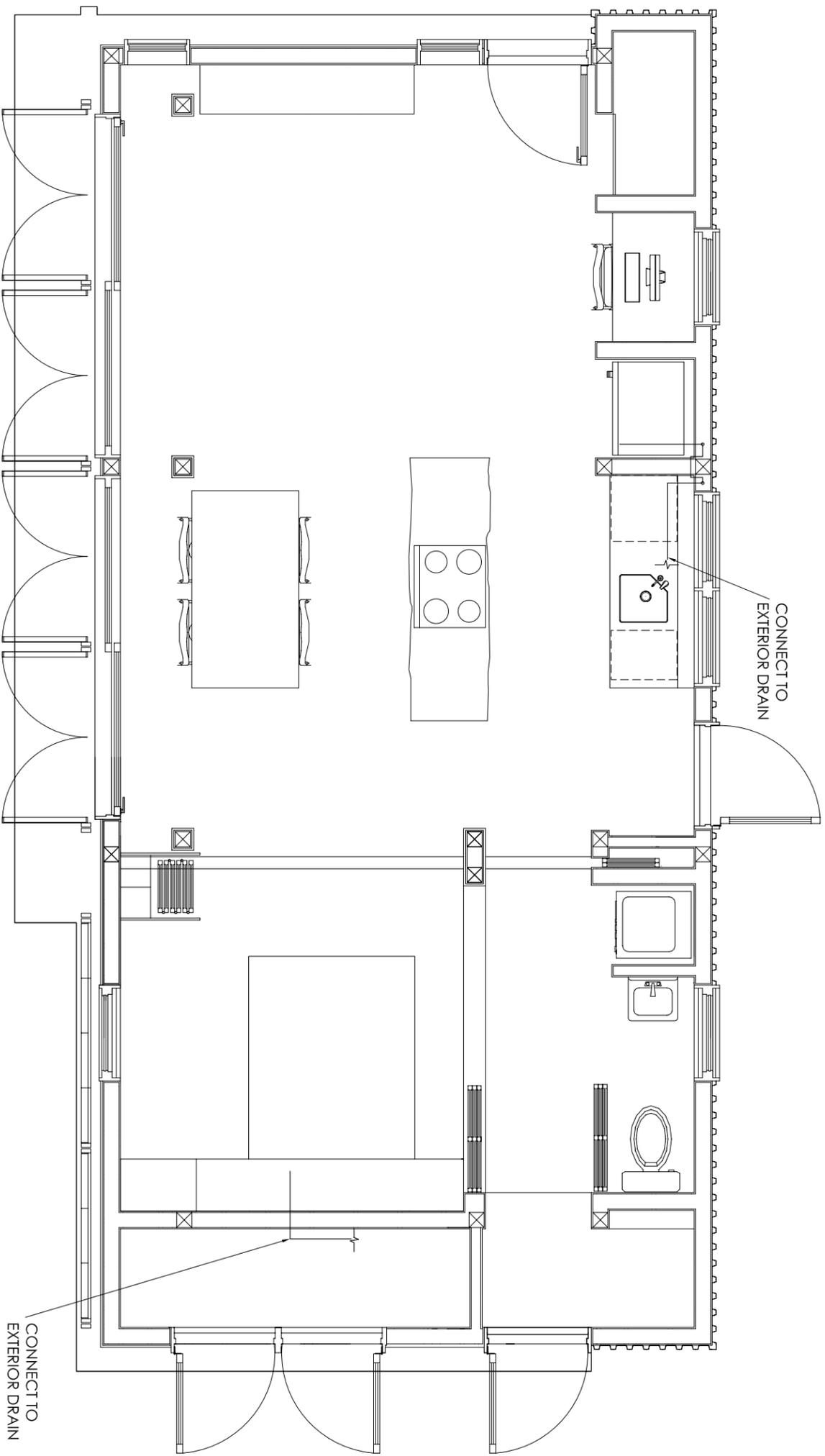
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Condensate
 Plan

P3.01





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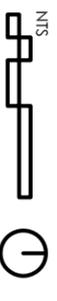
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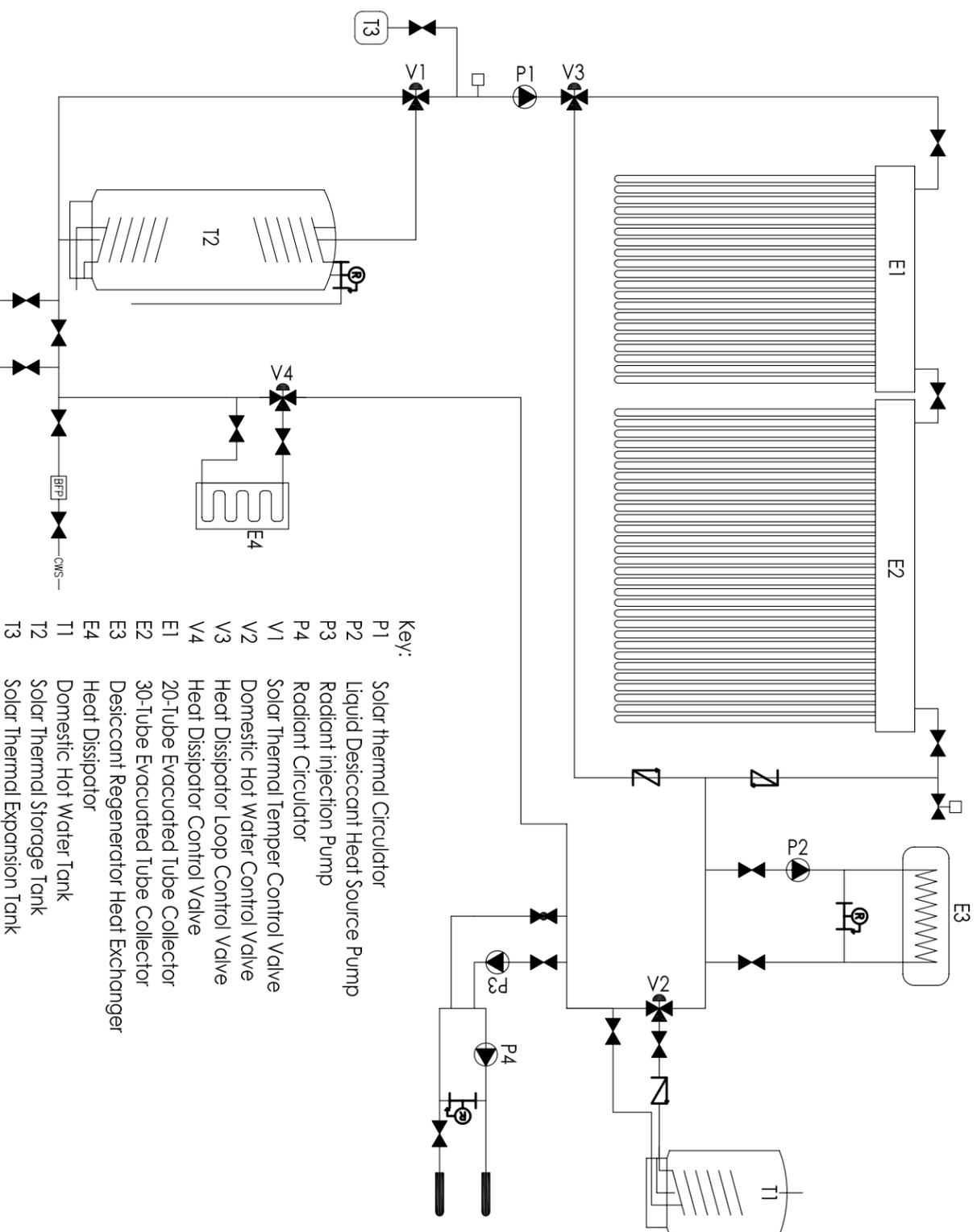
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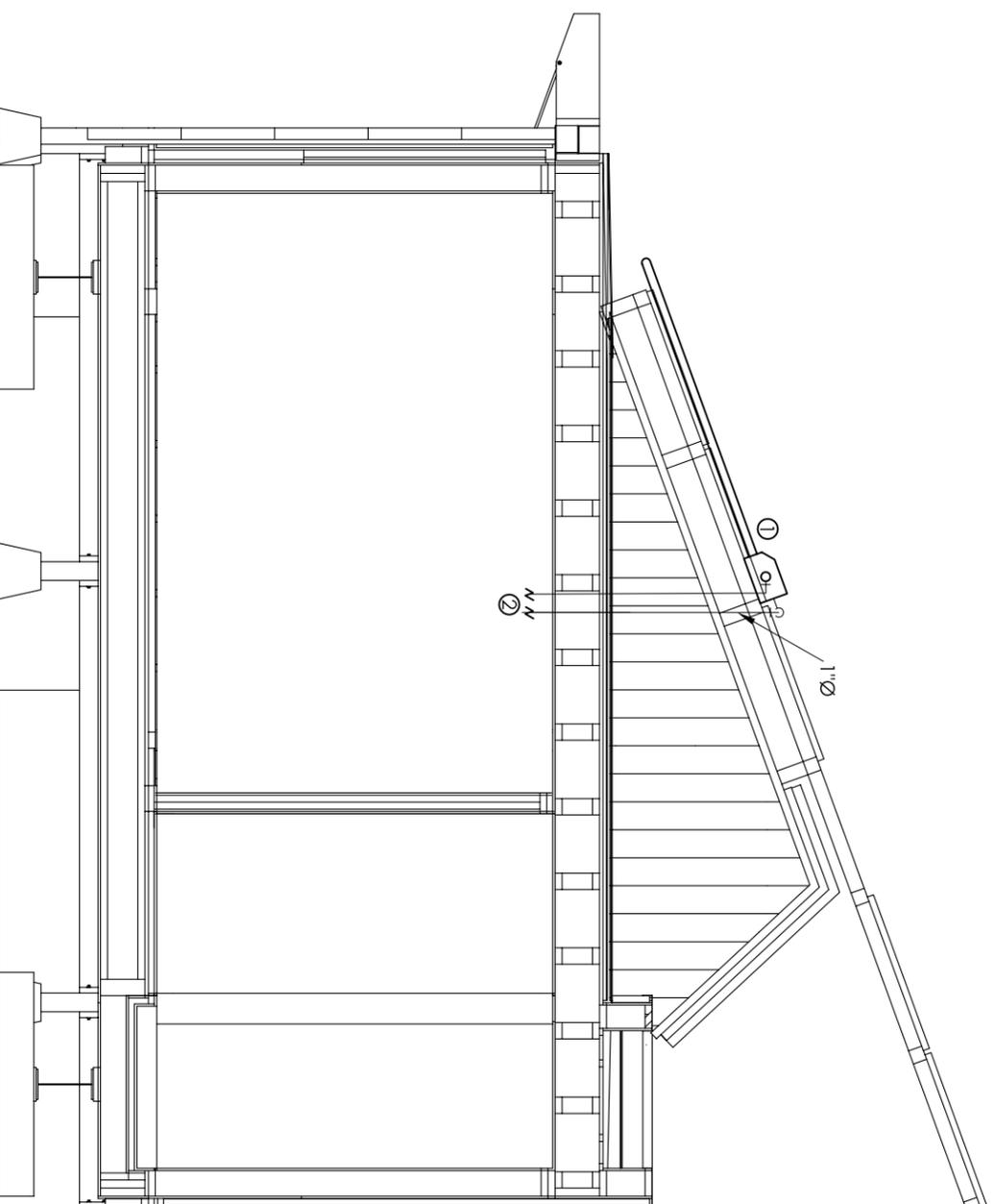
Solar Thermal
System

P4.01



NOTES:

1. PIPING CONNECTIONS TO TANK ARE FOR ILLUSTRATIVE PURPOSES ONLY AND DO NOT NECESSARILY REFLECT ACTUAL LOCATIONS OF TANK CONNECTIONS.
2. ALL PIPING IN SOLAR THERMAL HOT WATER LOOP TO BE COPPER TUBE UNLESS OTHERWISE NOTED..
3. FOLLOW ALL MANUFACTURERS' INSTRUCTIONS FOR PROPER INSTALLATION.
4. INSTALL ALL COMPONENTS OF EACH SYSTEM IN ACCORDANCE WITH RELEVANT CODES, REGULATIONS AND/OR STANDARDS.
5. WORKING FLUID IN ALL CLOSED SYSTEMS TO BE POLYPROPYLENE GLYCOL SOLUTION.
6. SEE RELEVANT MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.



Notes:

- 1) ONE (1) APRICUS AP-20 EVACUATED TUBE SOLAR COLLECTOR and ONE (1) APRICUS AP-30 EVACUATED TUBE SOLAR COLLECTOR
- 2) PIPING TO SOLAR THERMAL LOOP
- * OUTSIDE ARRAY PIPING INSULATION SHOULD BE CAPABLE OF WITHSTANDING 250°F, EXCEPT THAT PIPING INSULATION WITHIN 1.5' OF COLLECTOR CONNECTIONS SHALL BE CAPABLE OF WITHSTANDING 400°F
- * THE APRICUS HD-25 HEAT DISSIPATOR IS INSTALLED ON THE RETURN LINE FROM THE SOLAR COLLECTORS
- * THE LENGTHS OF PIPE TO AND FROM THE APRICUS HEAT DISSIPATOR SHOULD BE CAPABLE OF WITHSTANDING 250°F
- * ALL COPPER PIPE TO BE 1" DIAMETER



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Solar Thermal
Elevation

P4.02



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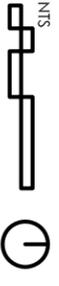


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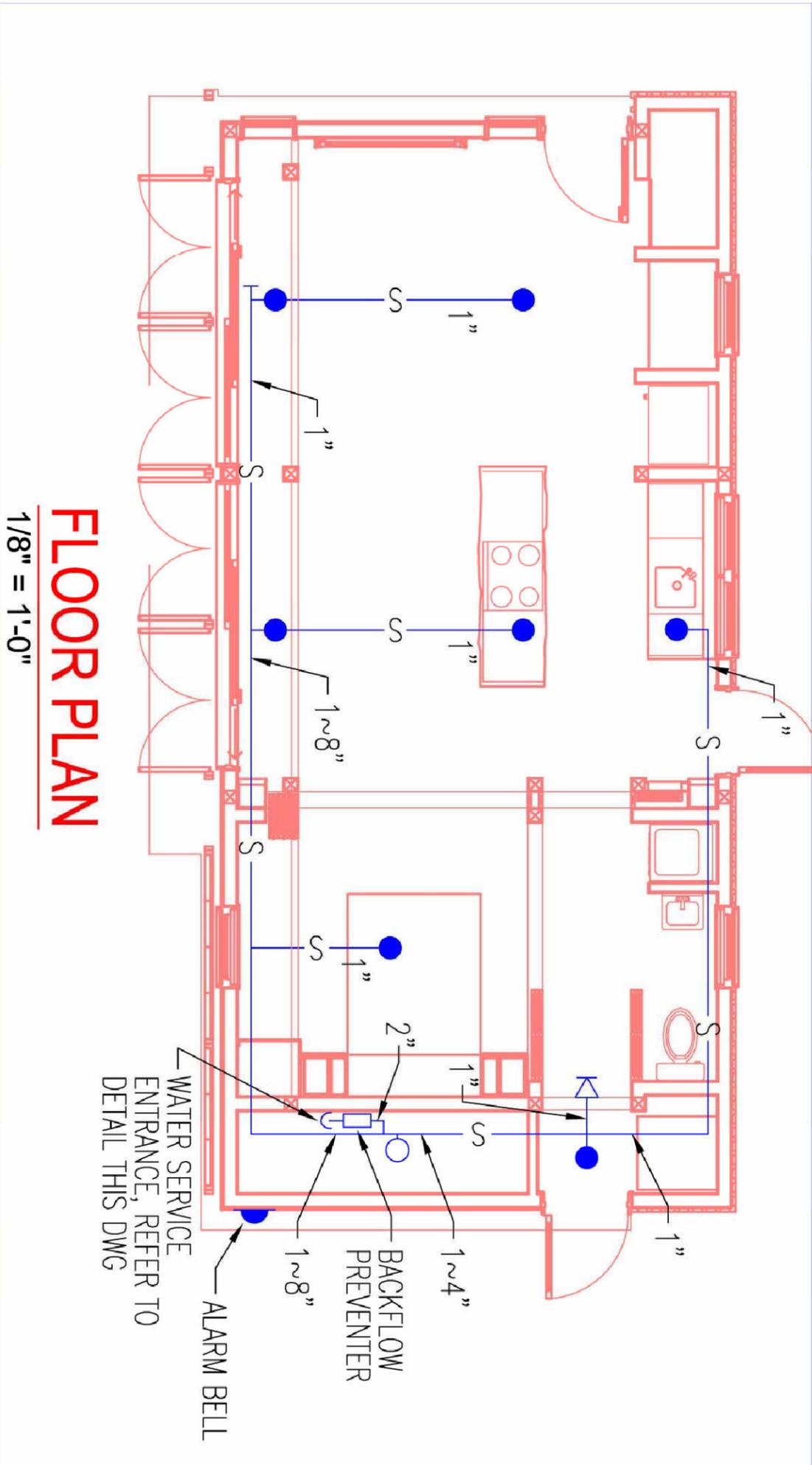
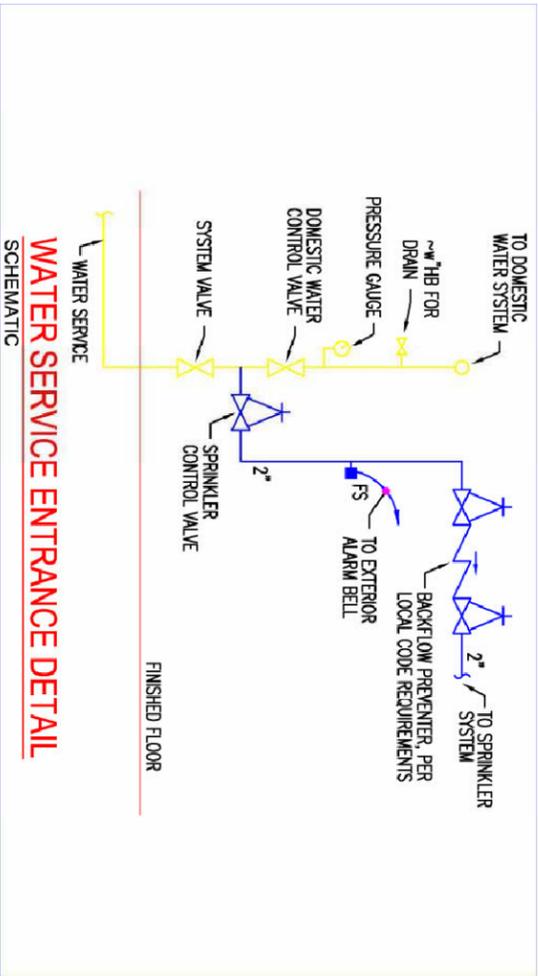
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Springler
System

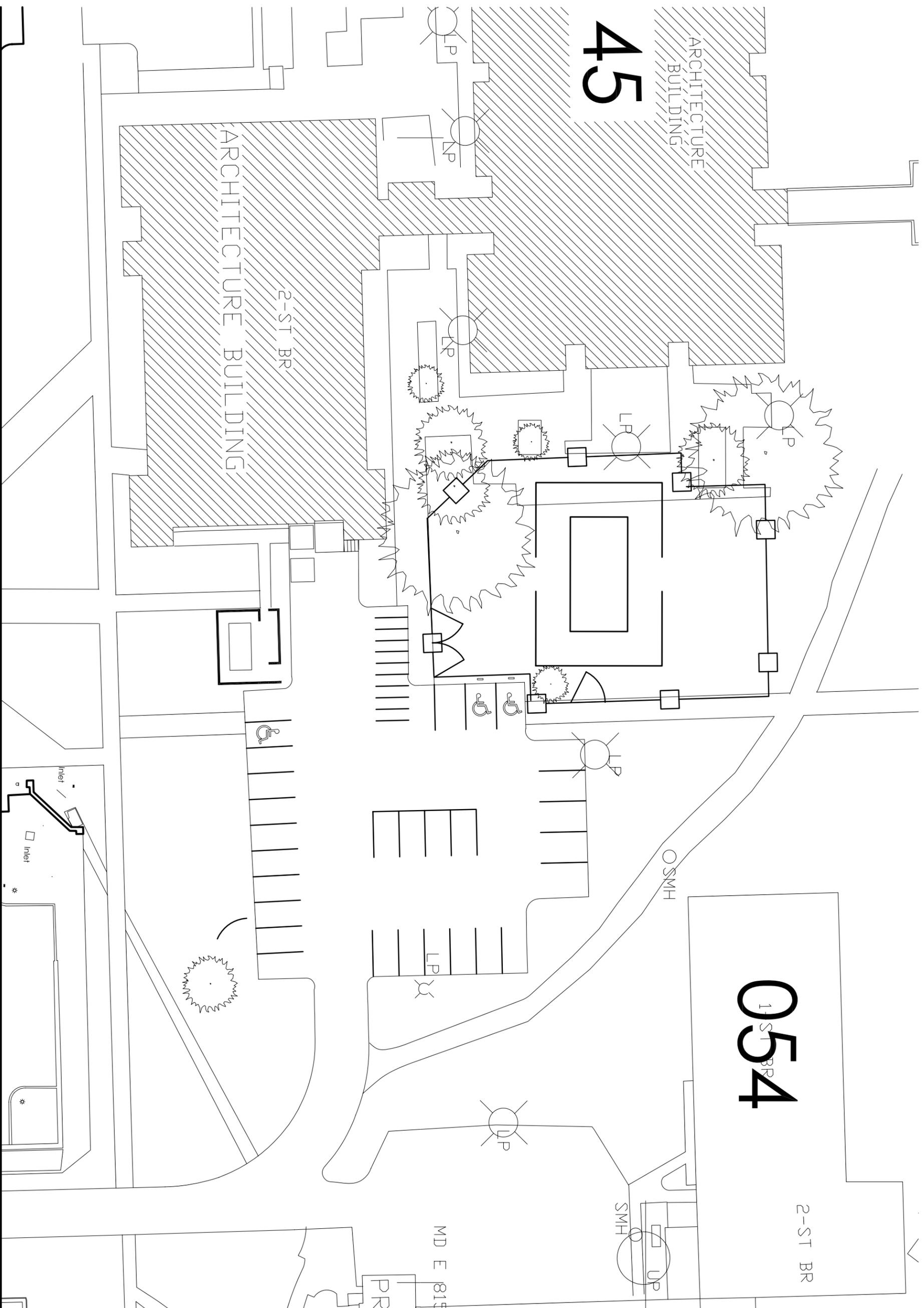
P5.01



LEGEND		SYMBOLS AND ABBREVIATIONS	
SPRINKLER PIPING	— S —		
FLOW SWITCH	— FS —		
SPRINKLER HEAD - CONCEALED PENDANT	●		
SPRINKLER HEAD - UPRIGHT OR PENDANT	○		
SPRINKLER HEAD - SIDEWALL	◻		
EXTERIOR ALARM BELL	▲		
FS - FLOW SWITCH	S		- SPRINKLER
HB - HOSE BIBB			

DESIGN CRITERIA

1. FIRE PROTECTION SYSTEMS SHALL BE HYDRAULICALLY DESIGNED PER THE LATEST EDITION OF NFPA-13R, AND IS SUBJECT TO REVIEW BY THE AUTHORITIES HAVING JURISDICTION.
2. THE BUILDING SYSTEM SHALL PROVIDE A DISCHARGE OF NOT LESS THAN 18 GPM TO ANY OPERATING SPRINKLER AND NOT LESS THAN 13 GPM PER SPRINKLER TO THE NUMBER OF DESIGN SPRINKLERS, BUT THE DISCHARGE SHALL NOT BE LESS THAN THE LISTING OF THE SPRINKLER.
3. THE NUMBER OF DESIGNED SPRINKLERS SHALL INCLUDE ALL SPRINKLERS WITHIN A COMPARTMENT UP TO A MAXIMUM OF FOUR SPRINKLERS. FOR COMPARTMENTS CONTAINING TWO OR MORE SPRINKLERS, THE CALCULATIONS SHALL BE PROVIDED TO VERIFY THE SINGLE OPERATING SPRINKLER CRITERIA AND THE MULTIPLE OPERATING SPRINKLER CRITERIA. REFER TO NFPA-13R FOR COMPARTMENT DEFINITION.
4. A COMMON WATER SUPPLY MAIN TO THE BUILDING, SERVING BOTH THE DOMESTIC WATER AND THE FIRE SPRINKLER SYSTEM SHALL BE PERMITTED WHERE THE DOMESTIC DESIGN IS ADDED TO THE SPRINKLER SYSTEM DEMAND AND THE TOTAL DEMAND FLOW DOES NOT EXCEED THE MAXIMUM ALLOWABLE FLOW OF THE SYSTEM COMPONENTS.
5. ALLOW FIVE PSI PRESSURE LOSS SAFETY FACTOR FOR REDUCTION OR FLUCTUATION OF WATER PRESSURE.
6. THE LOCATION OF ALL SPRINKLER HEADS AND PIPING SHALL BE COORDINATED WITH LIGHTING FIXTURES, ELECTRIC PANELBOARDS, HVAC EQUIPMENT, DUCTS, GRILLES, HEATING AND PLUMBING PIPING, ETC. FULL ACCESS AND CLEARANCE REQUIREMENTS AROUND ALL EQUIPMENT SHALL BE MAINTAINED.
7. SPRINKLERS AND PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE IN EXPOSED AREAS.
8. ALL SPRINKLER PIPING SHALL BE INSTALLED WITHIN THE BUILDING ENVELOPE.



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Const. Site
Pre-Mall

T1.01



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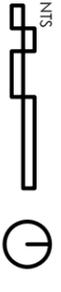


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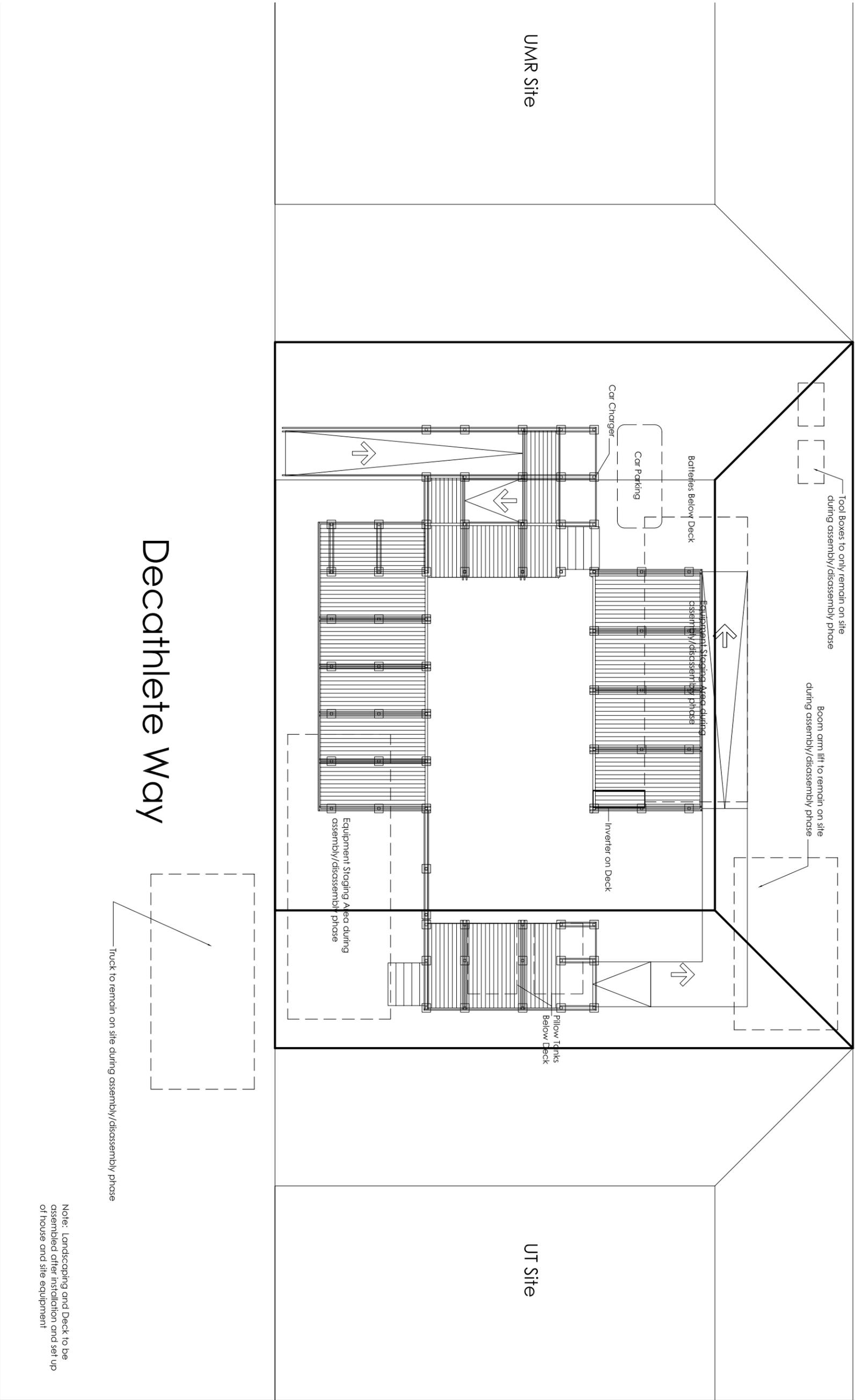
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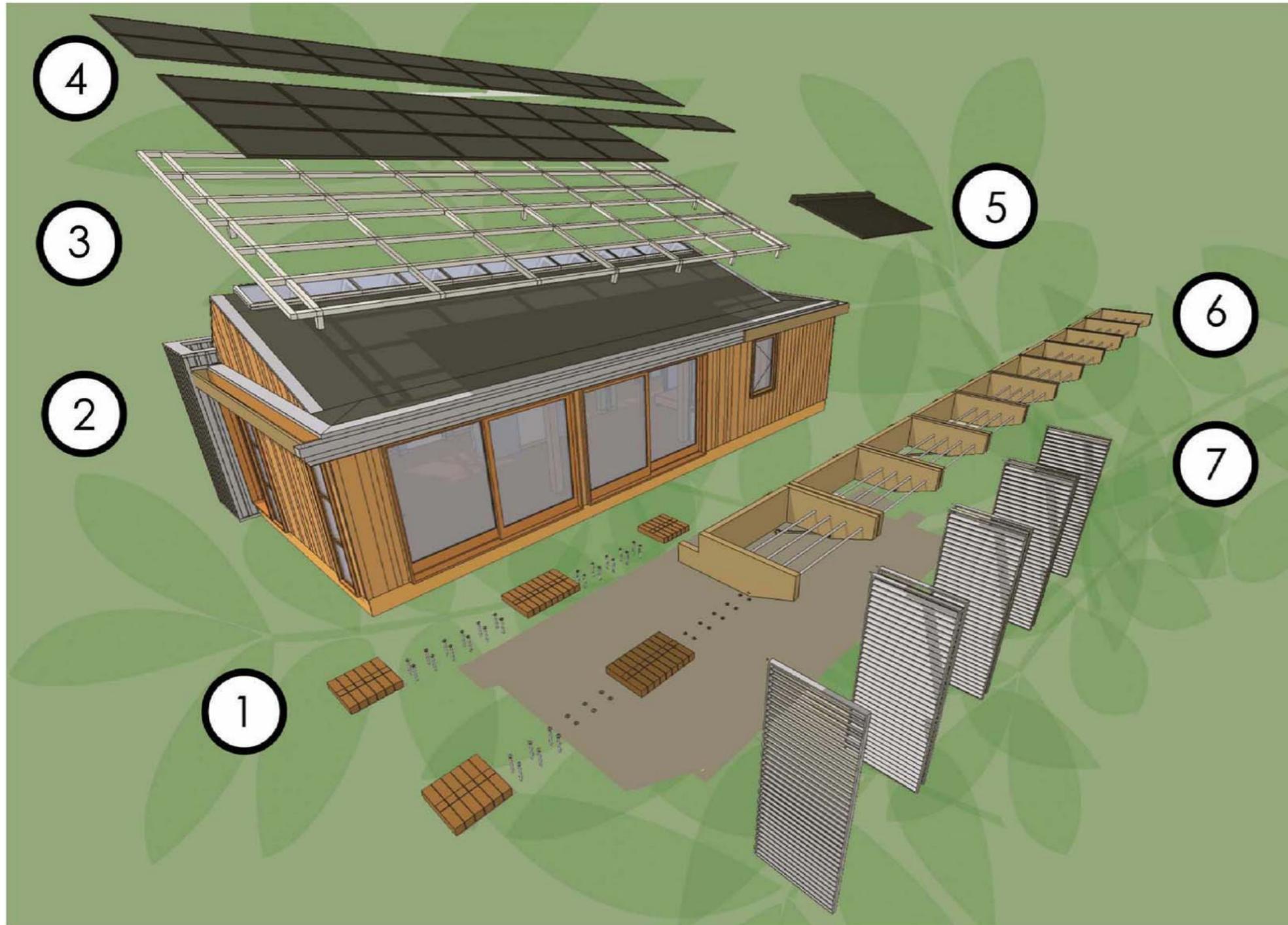
Const. Site
On the Mall

T1.02



Decathlete Way

Note: Landscaping and Deck to be assembled after installation and set up of house and site equipment



1 - FOUNDATION

After surveying mall and laying out site boundaries, 18" soil anchors will be sunk flush with the ground. These anchors may be driven over if needed.

2 - SETTING THE HOUSE

After the moving vehicle has been positioned, 8x8 cribbing will be set under six predetermined points. Lifting jacks will also be positioned to lift the house off of the truck. The house will be lowered onto the cribbing to pre-load the 8x8 members, then lifted again. Shims will be added, and the house will be re-lowered.

3 - SOLAR PANEL SUPPORT

Ladder-shape sections of preassembled extruded aluminum beams will be lifted into place and fastened by workers onto the roof. Sections will be joined with individual 8020 beams.

4 - SOLAR PANELS

Individual solar panels will be lifted and clamped to the racking system beams. Wiring along the support system to a rooftop outlet will also take place.

5 - EVACUATED TUBES

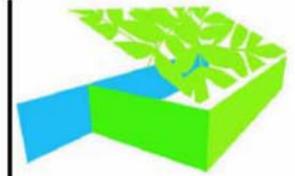
The rack and manifold for the hot water system will be lifted and clamped into place. Tubes will be lifted and installed individually by hand.

6 - OVERHANG

Sections of overhang will be bolted to the house and to each other.

7 - SHUTTERS

Shutters will be hung on pre-mounted hinge assembly.



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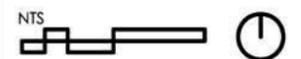


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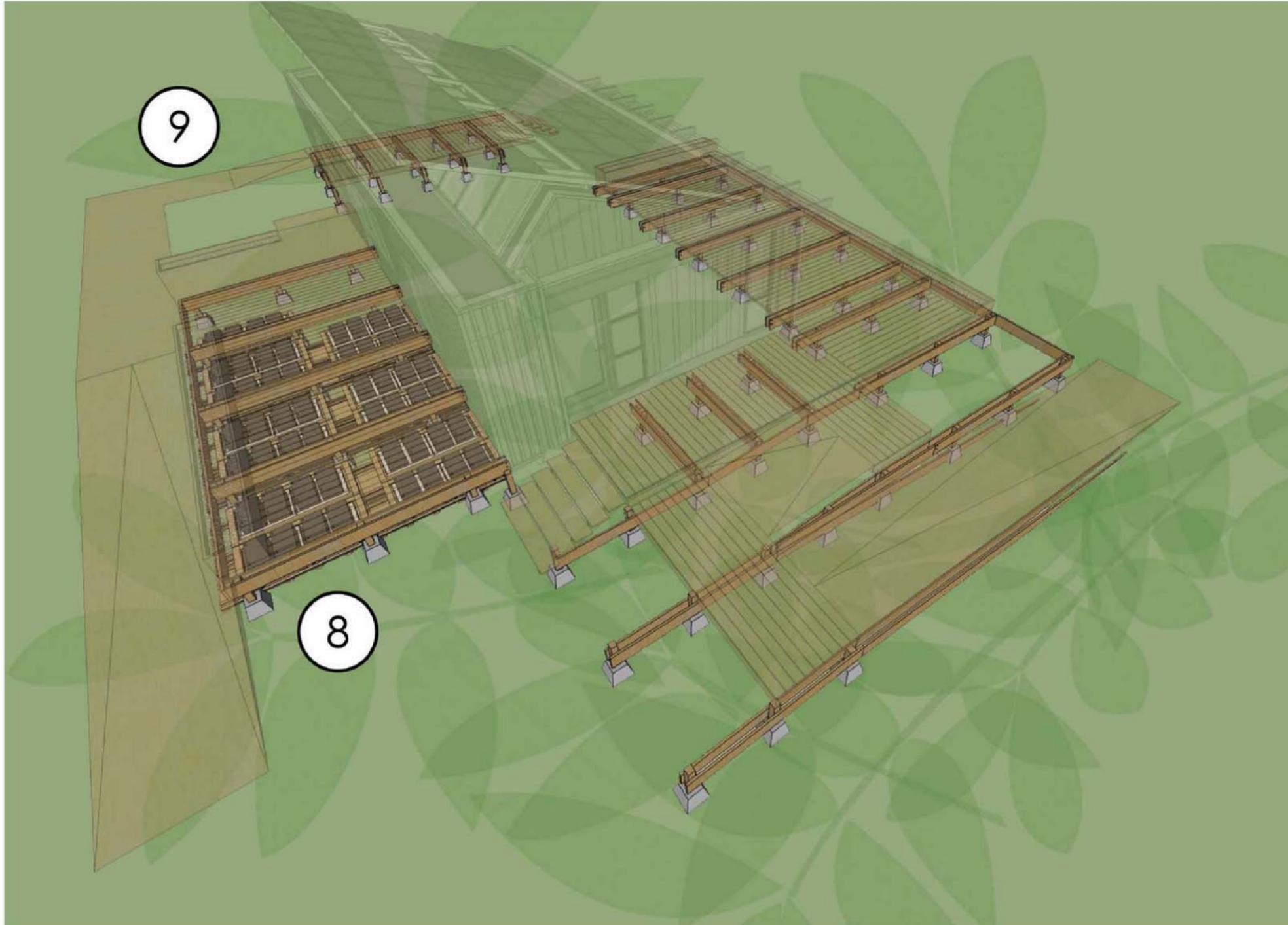
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Assembly

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T2.01

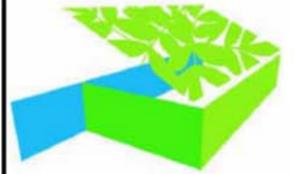


8 - POST ANCHORS, DECK SUPPORTS, AND BATTERY CARTS

Deck post anchors and posts will be placed around the site to determine the deck location. Battery carts will be lifted onto rails and slid into place. Finally, deck support members will be strung between deck posts.

9 - DECK PANELS

Deck panels will be dropped onto the posts. Ramp elements will be adjusted to fit terrain.



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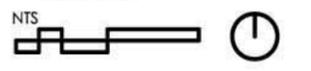


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Assembly

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