



# Eco House Design

In collaboration: DES 286.01, Advanced Computer Aided Design, and DES 284.01, Residential Design

Rachel Manzo - Spring 2020



# The Spruce Family

Clyde, 34, and Victoria, 29, met in Chicago, Illinois nearly a decade ago while both attending college. They have been married 8 years and have a 7 year old daughter, Luciana. Victoria works as a freelance artist and Clyde is a Geologist. Luciana is homeschooled. The family pet is Picasso, the painted turtle. They want to make sure Picasso's new home is incorporated into the design. Luciana's Uncle James, who is a 35 year old videogame developer and also in a wheelchair, visits the family frequently so he must have an ADA accessible bathroom and bedroom

The design of this house is focused on linear elements and natural materials. There are many angles and edges incorporated and not so many curves. Special attention was given to the material choices to be sure they are environmentally friendly.



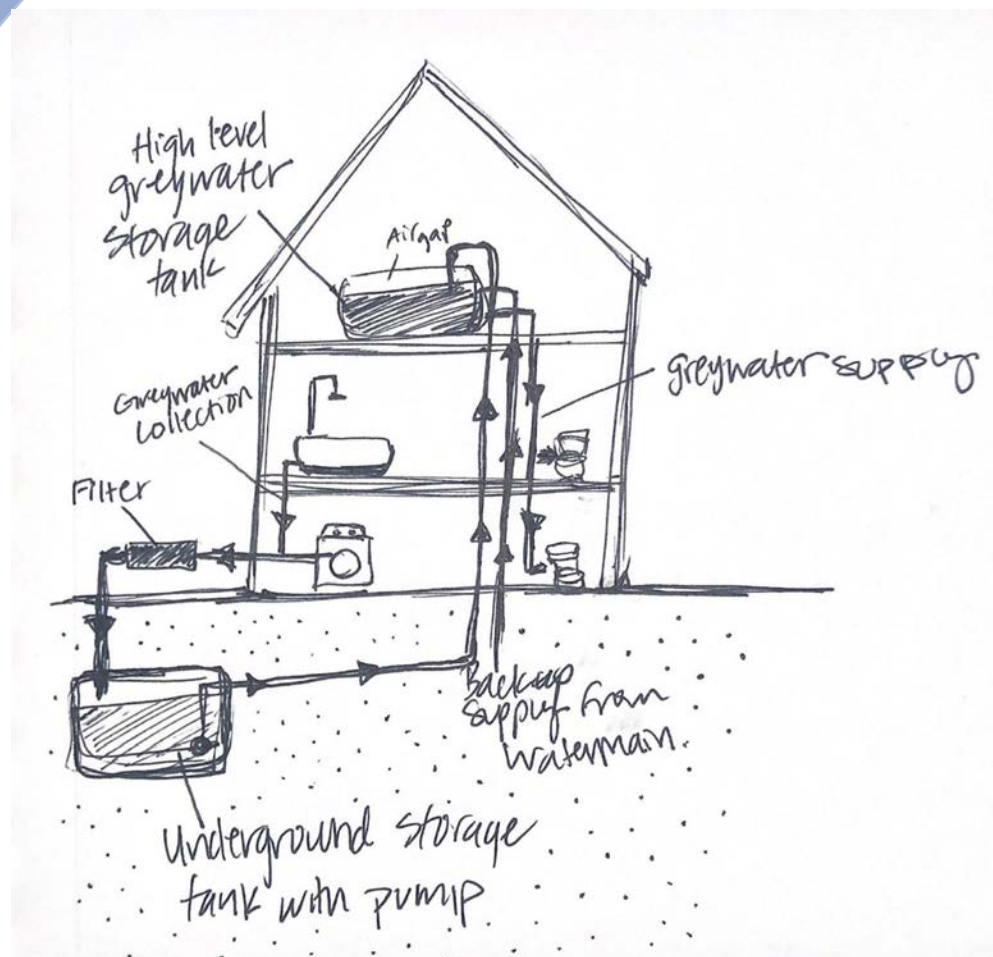


# Grey Water System And Solar Panels



## Solar Energy Panels:

- Save \$1000's over several years, \$100+ per month
- Federal Solar Tax Credit- Receive 30% of total system costs back
- 20-25 year Warranty for guaranteed performance – 80% performance after 25 years
- The average residential solar system offsets 100,000 lbs. of carbon dioxide in 20 years (equivalent to driving a car 100K miles)

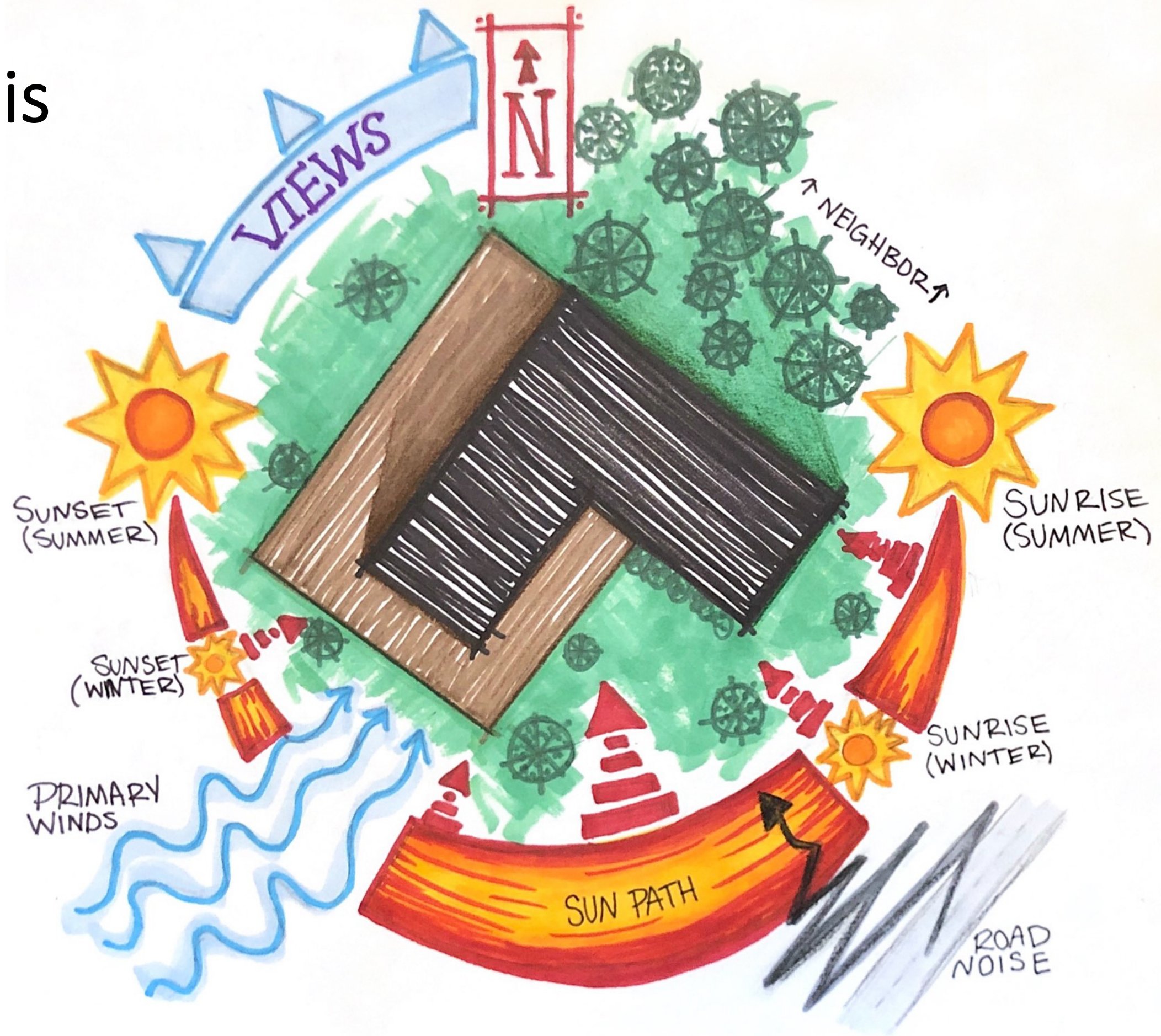


## Grey Water System:

- Makes use of 50-80% of all wastewater
- Comes from domestic sources; washer, bathroom sink, shower.
- System of filters, pumps, sensors, timers, valves, and tanks which are connected to existing plumbing to catch and recycle the water.
- Can redirect back into the house or outside to gardens
- After filtration, the majority of the Spruce's grey water is redirected to their greenhouse and Picasso's waterfall.

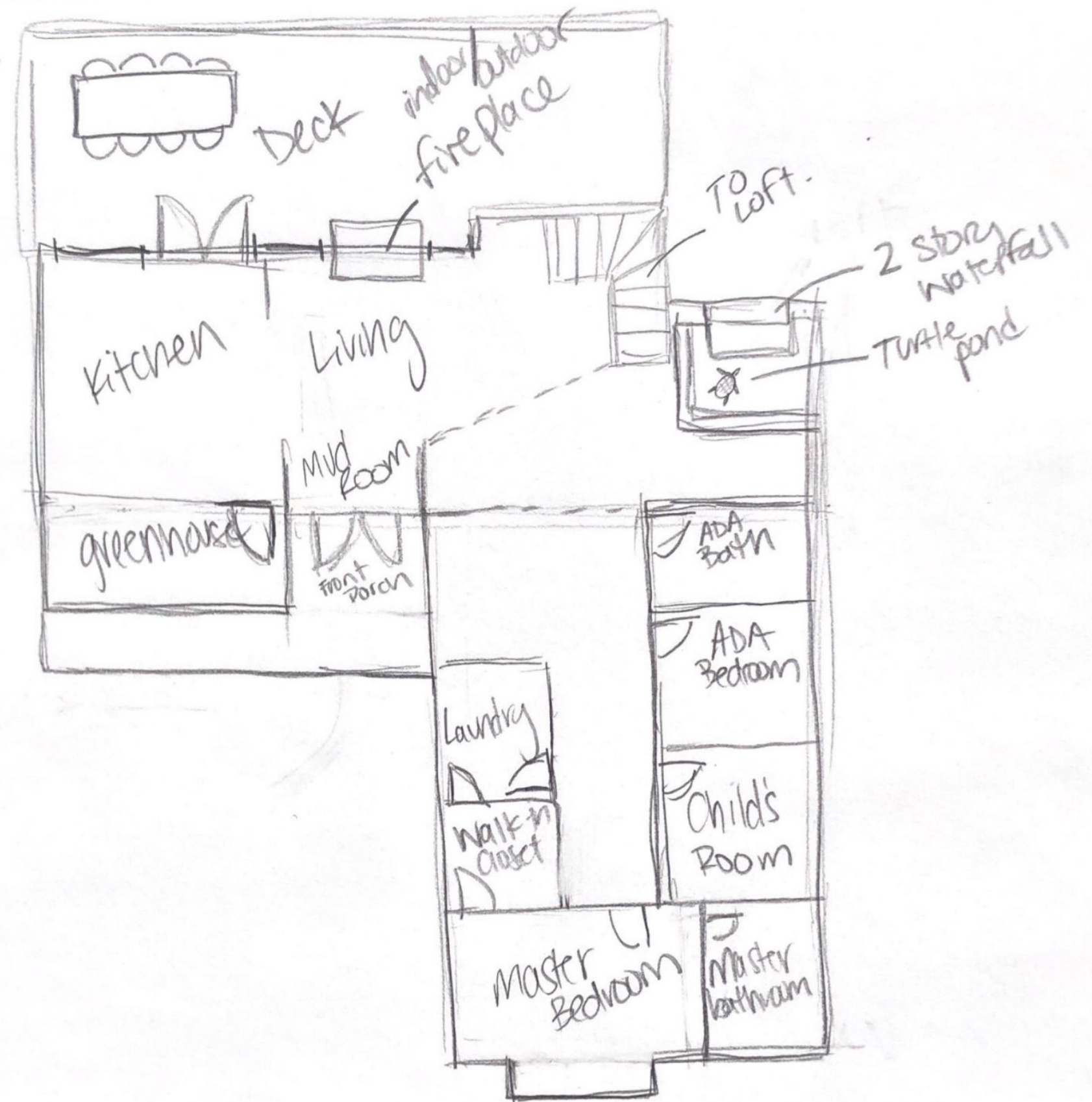


# Site Analysis





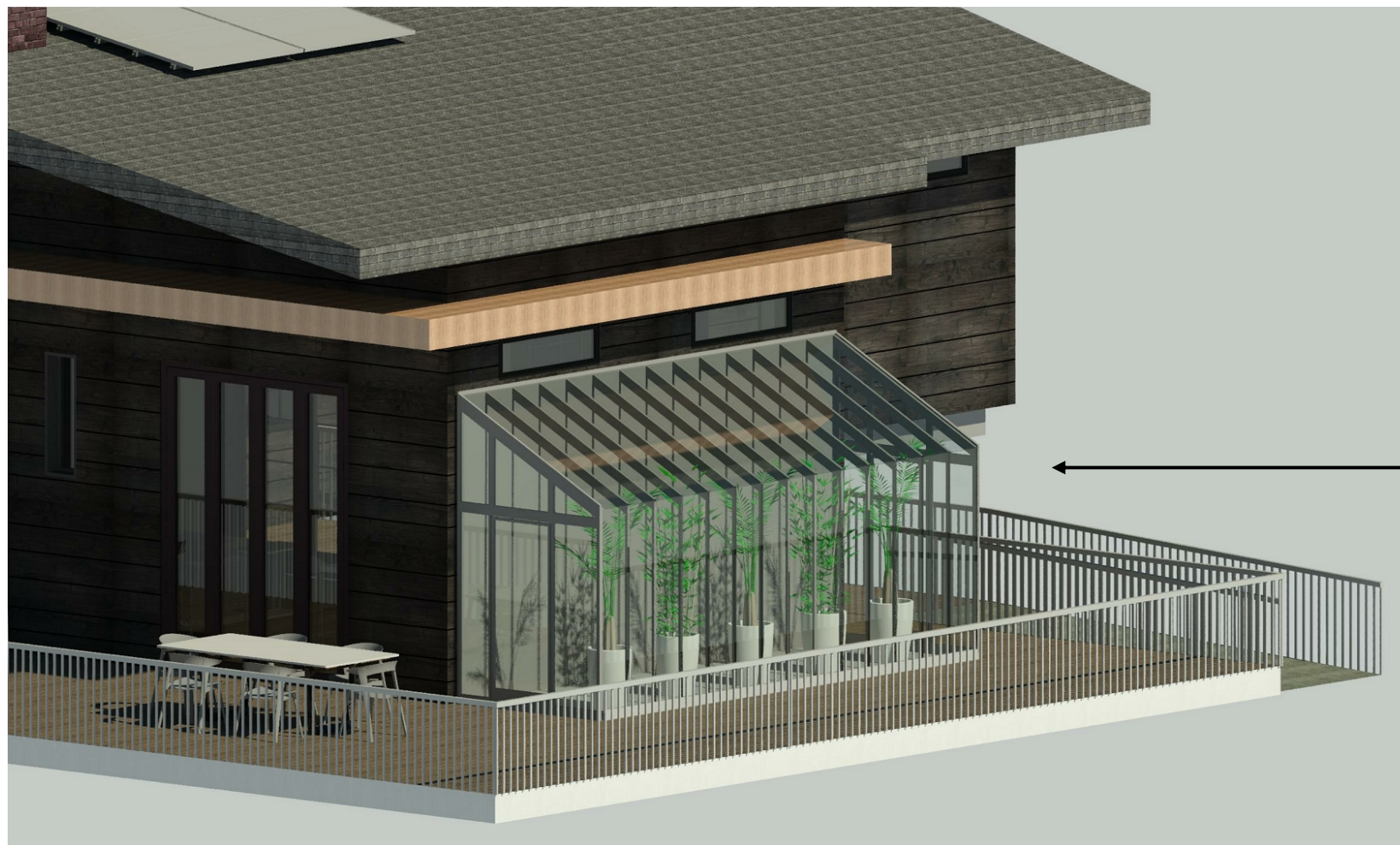
# Blocking Diagram



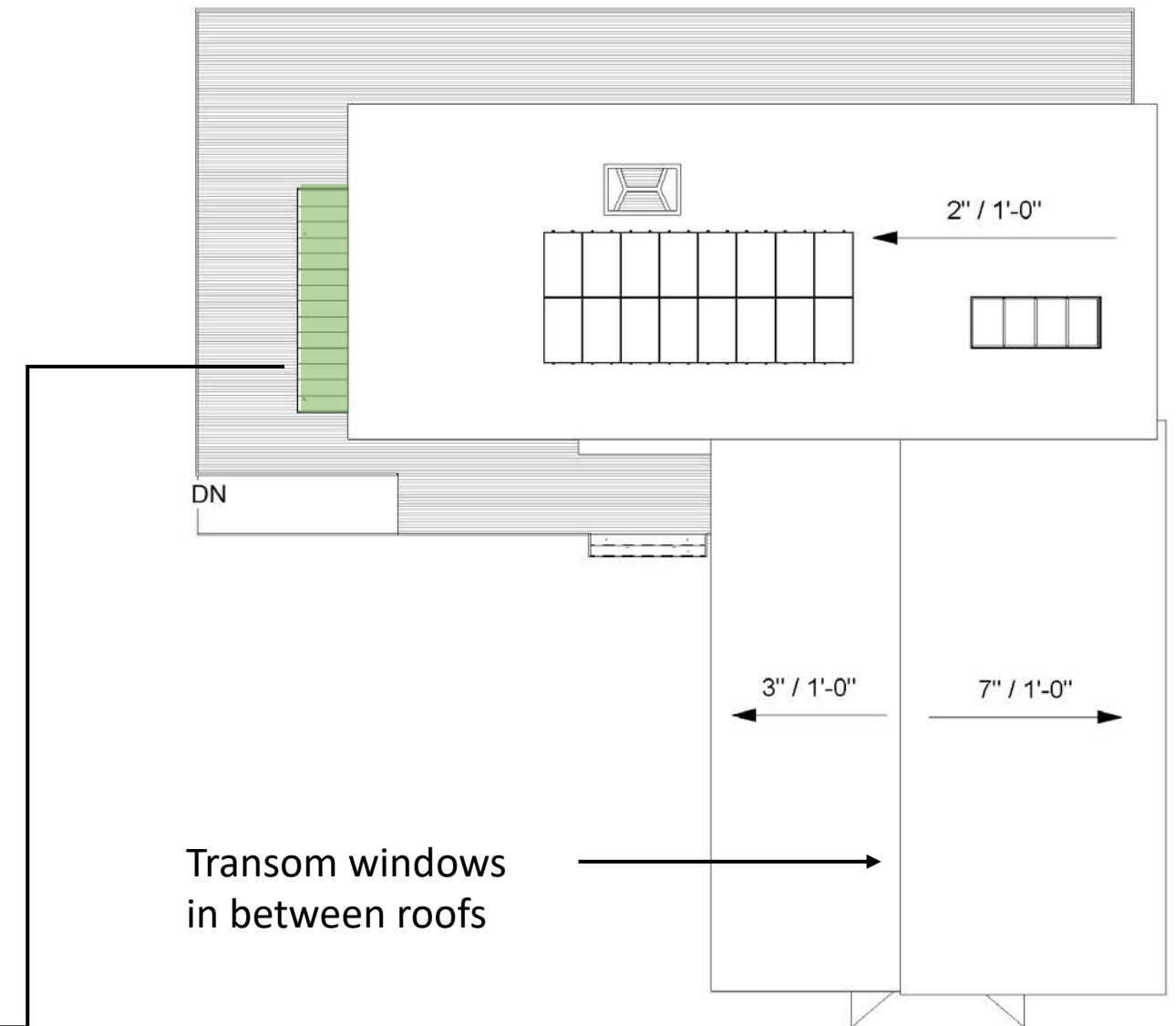
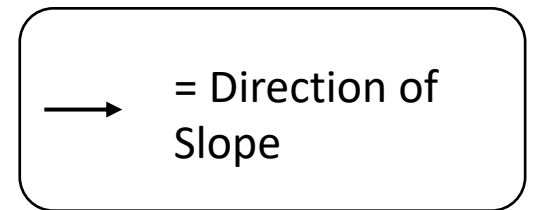


# Greenhouse

- Facing South/South West for optimal sunlight
- Watered by greywater collection system
- Can be used year-round for growing food



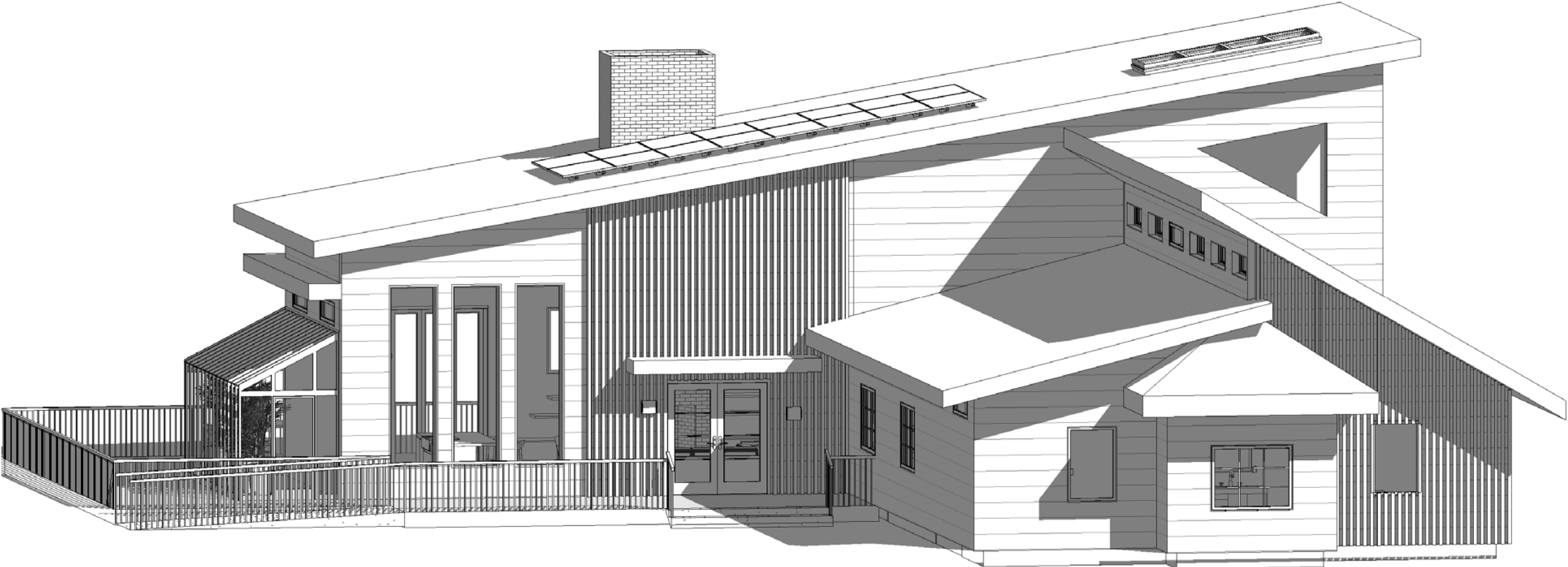
## Roof Plan



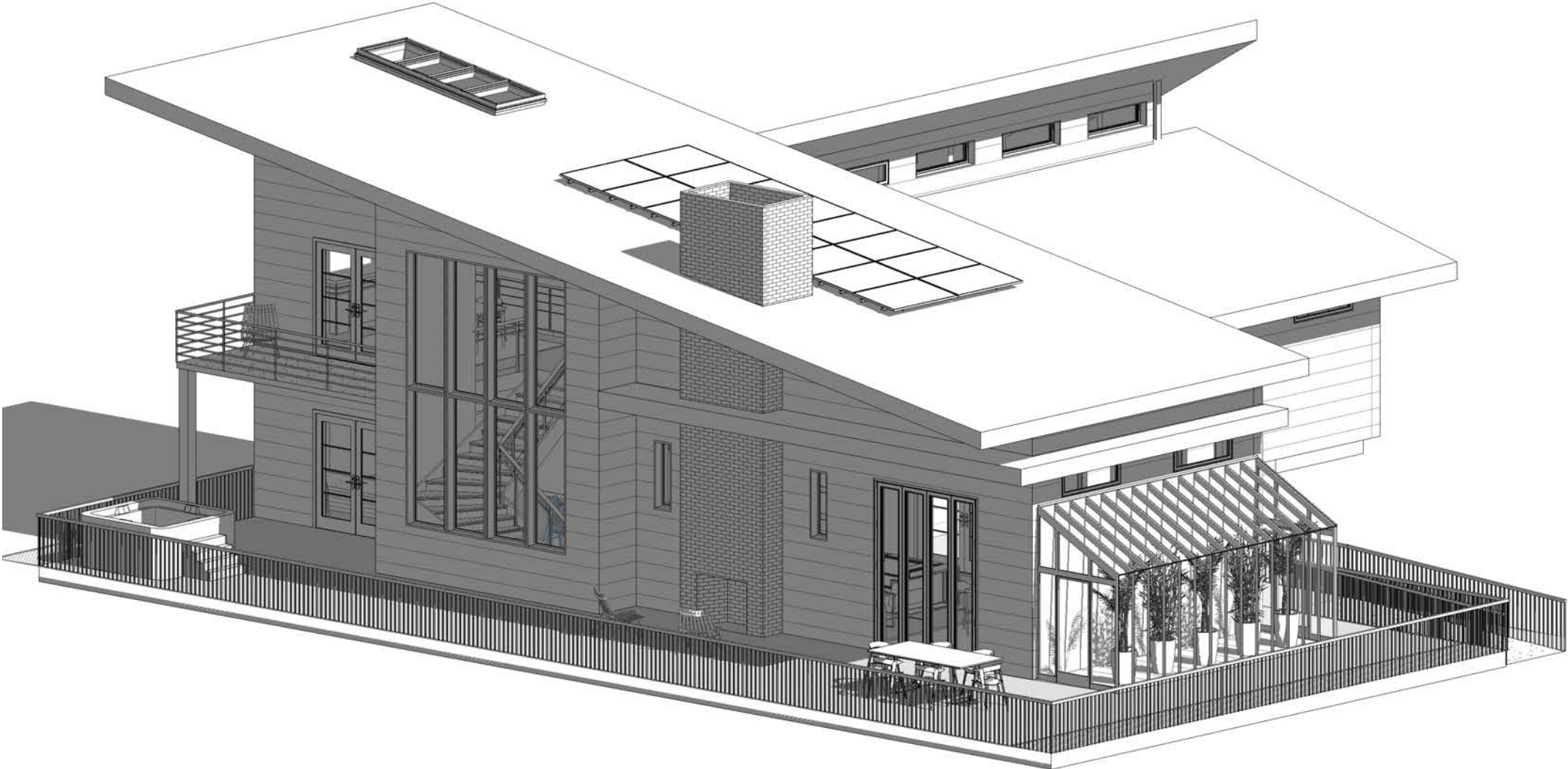
Transom windows  
in between roofs



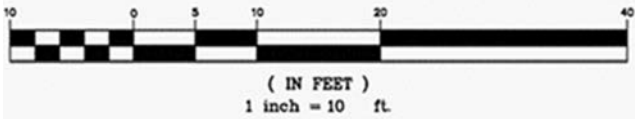
3-D Views



Front

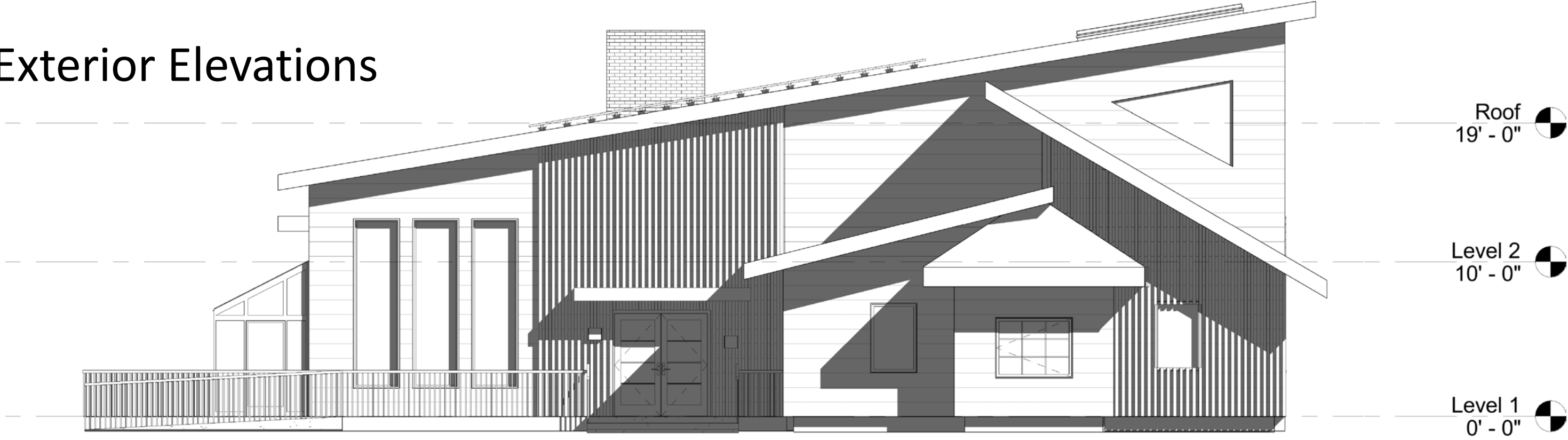


Back

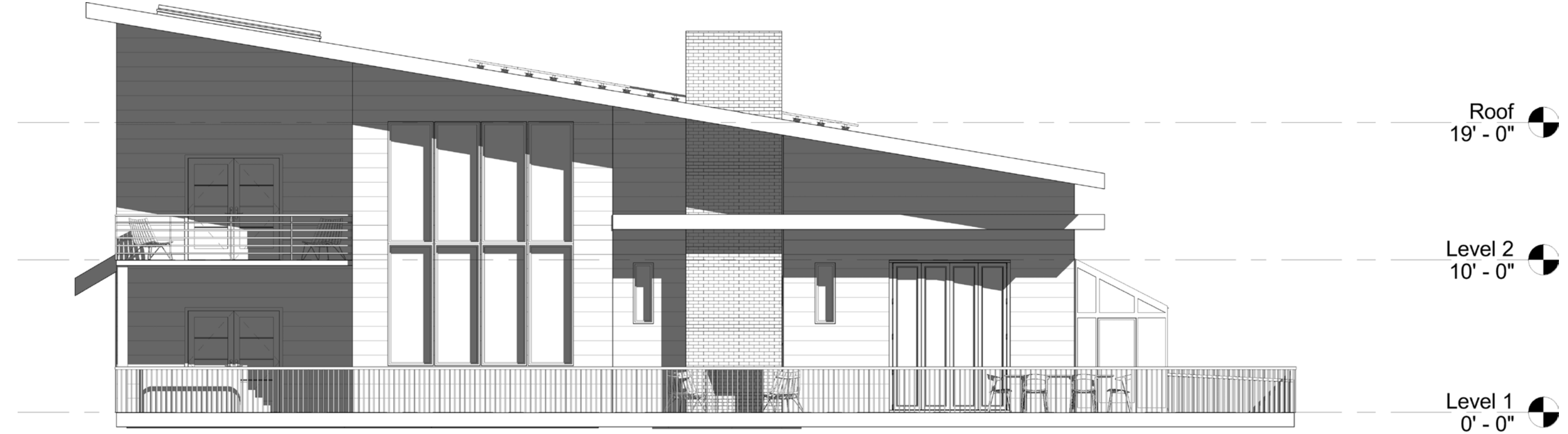




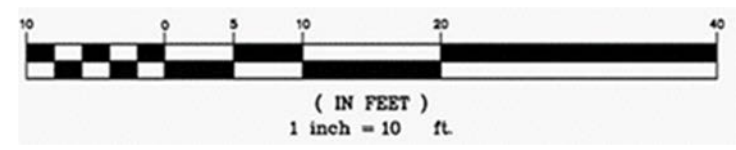
# Exterior Elevations



South Elevation



North Elevation





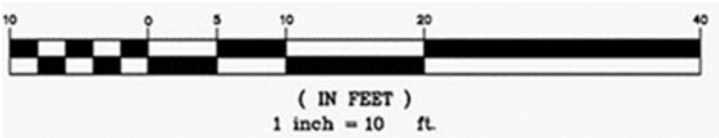
# Exterior Elevations



West Elevation



East Elevation





# Exterior Finishes & Entry Design



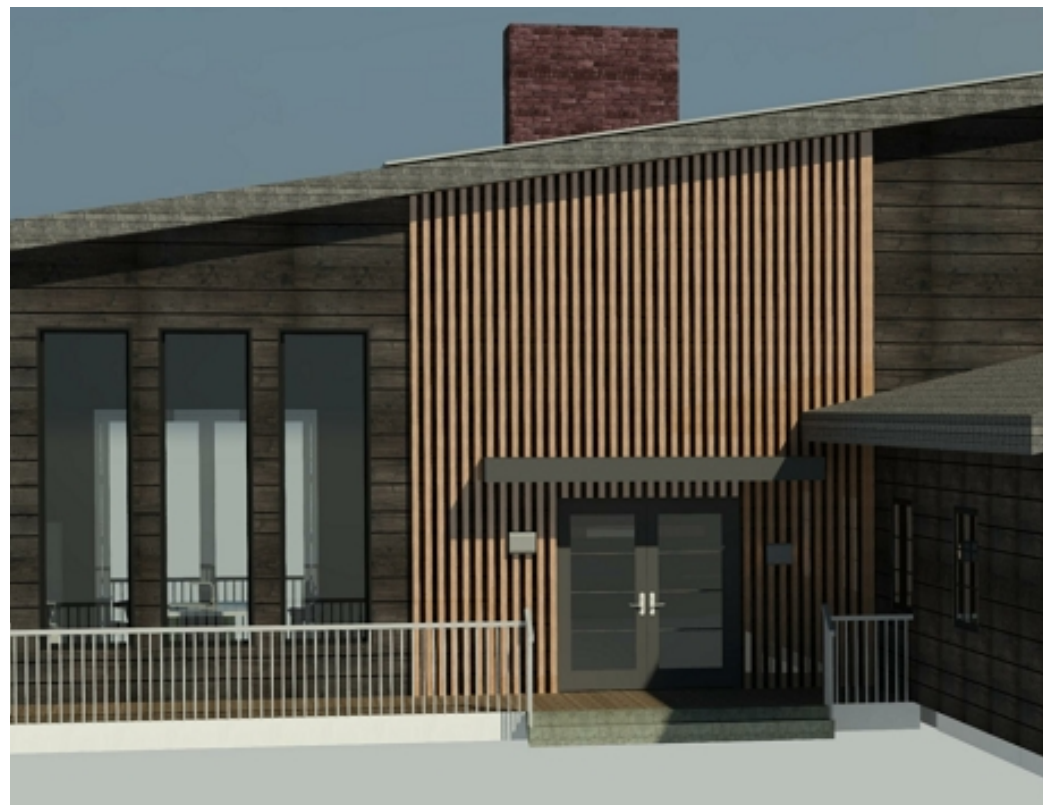
## Slate Roofing Shingles:

- Slate is a metamorphic rock derived from a shale-type sedimentary rock which is composed of clay or volcanic ash.
- Millions of years old.
- Incredibly durable- can last several hundred years with little to no maintenance.
- Requires no paint or sealant



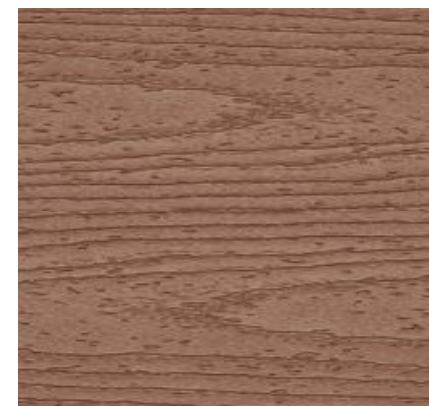
## Shou-Sugi-Ban: Ancient Japanese carbonized wood finish created by charring the outer layer of the wood.

- No chemicals, paints, or other toxic surface treatments are used
- Very low maintenance
- Water, fire, and insect resistant



## Birch wood louvers:

Birch is an abundant and fast-growing species which causes little environmental impact when cut down.



## Transcend Composite Decking

- Made from 95% recycled composite board
- Fade, Stain, Scratch, Mold resistant
- Hassle free –no sanding, staining, or painting

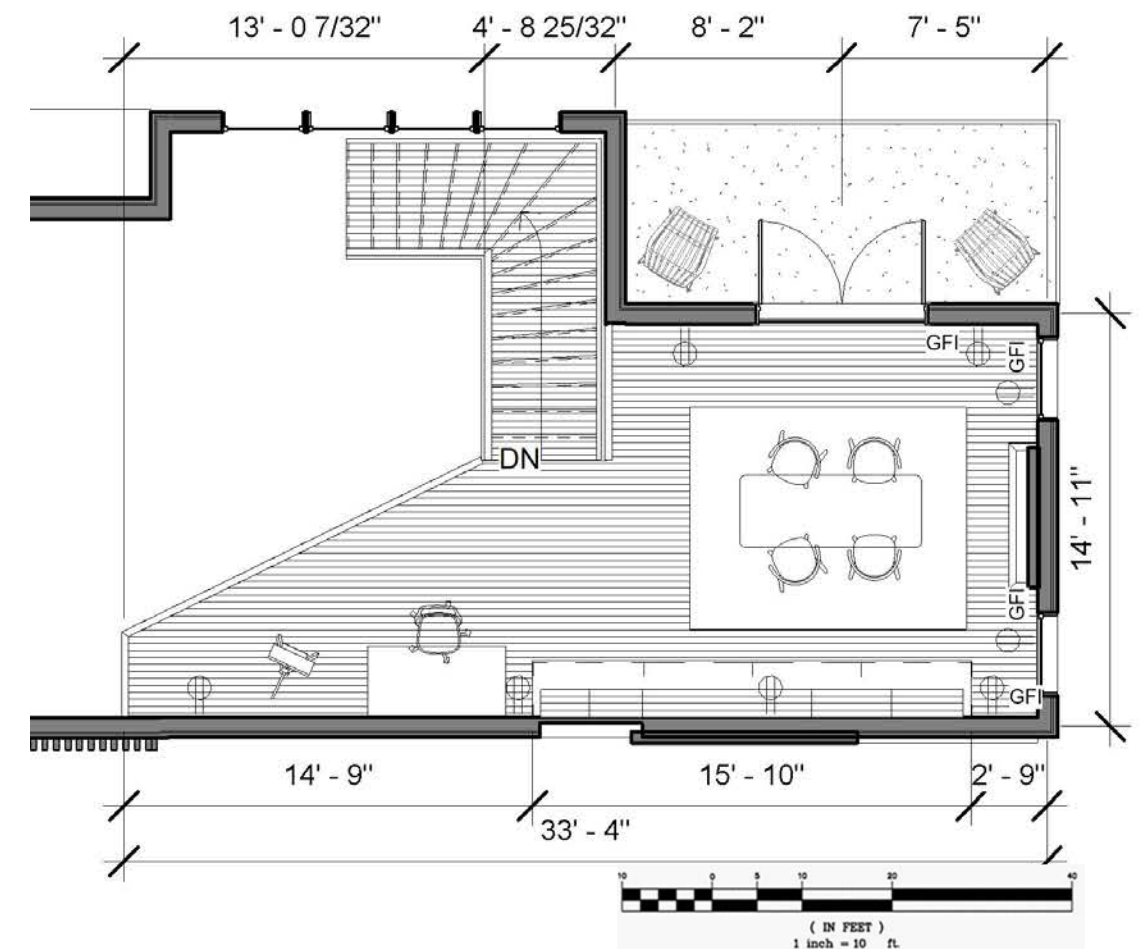




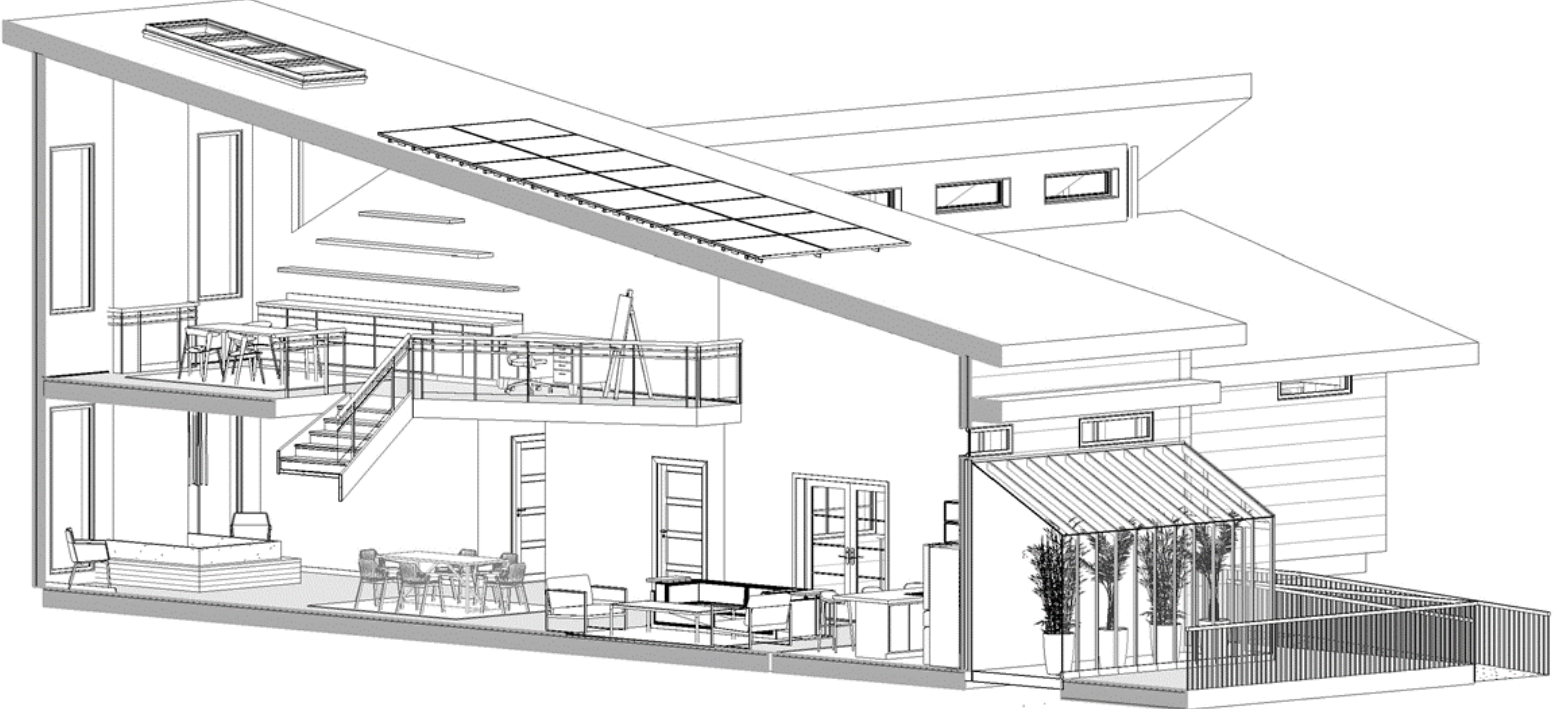
**Level 1**

# Dimensioned Floorplans

**Level 2  
(Zoomed and Cropped)**

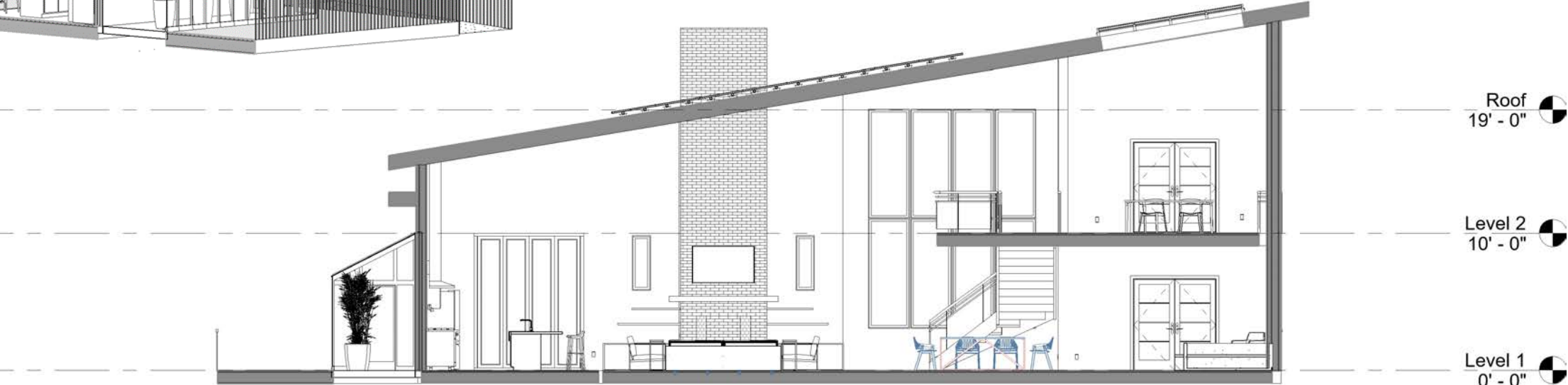






Isometric Section

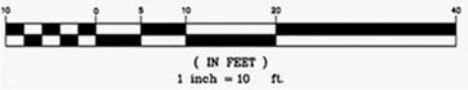
# Section Views



East/West Section



North/South Section



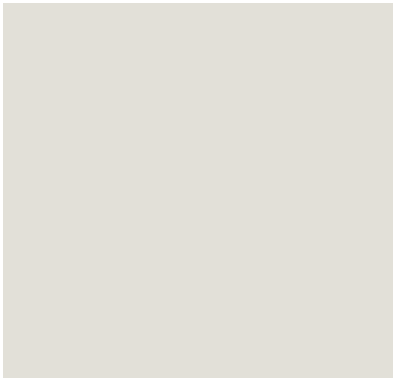


# Living Room

Wood-Look Cork in Macca Oak  
-Used throughout  
-Sustainable  
-Water resistant  
-Sound absorbing



Eider White  
SW Paint



Black Painted  
Brick



Techno Grey  
SW Paint



Zermeno Chandelier



Harcourt Velvet Sofa



Conkling Armchair



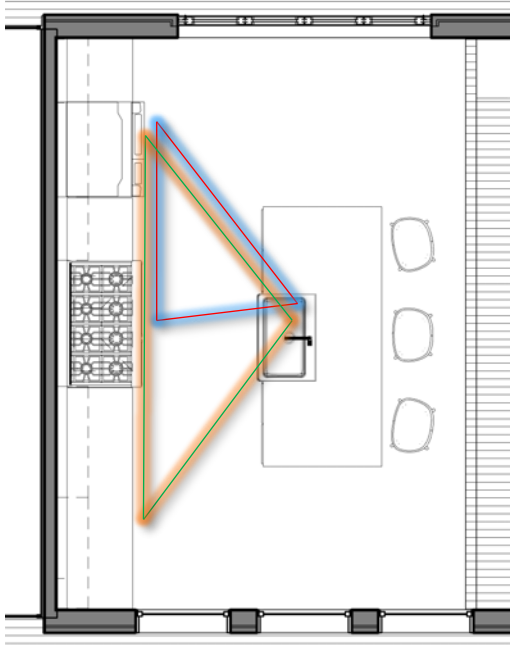
Nowak Coffee Table



Cuddington C Table



# Kitchen

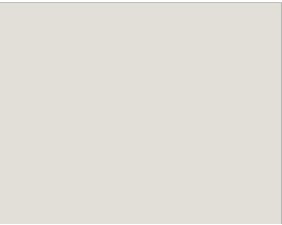


Kitchen Triangles:  
- Primary  
- Secondary



Lindquist Swivel Bar Stool

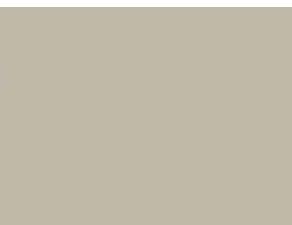
Eider White SW Paint



Wood Herringbone Inlay Floor



Techno Grey SW Paint



Arugula SW Paint



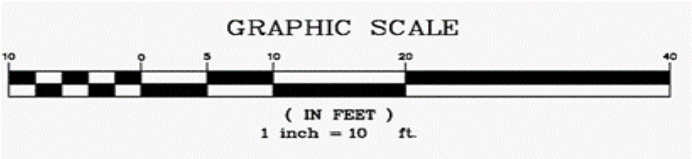
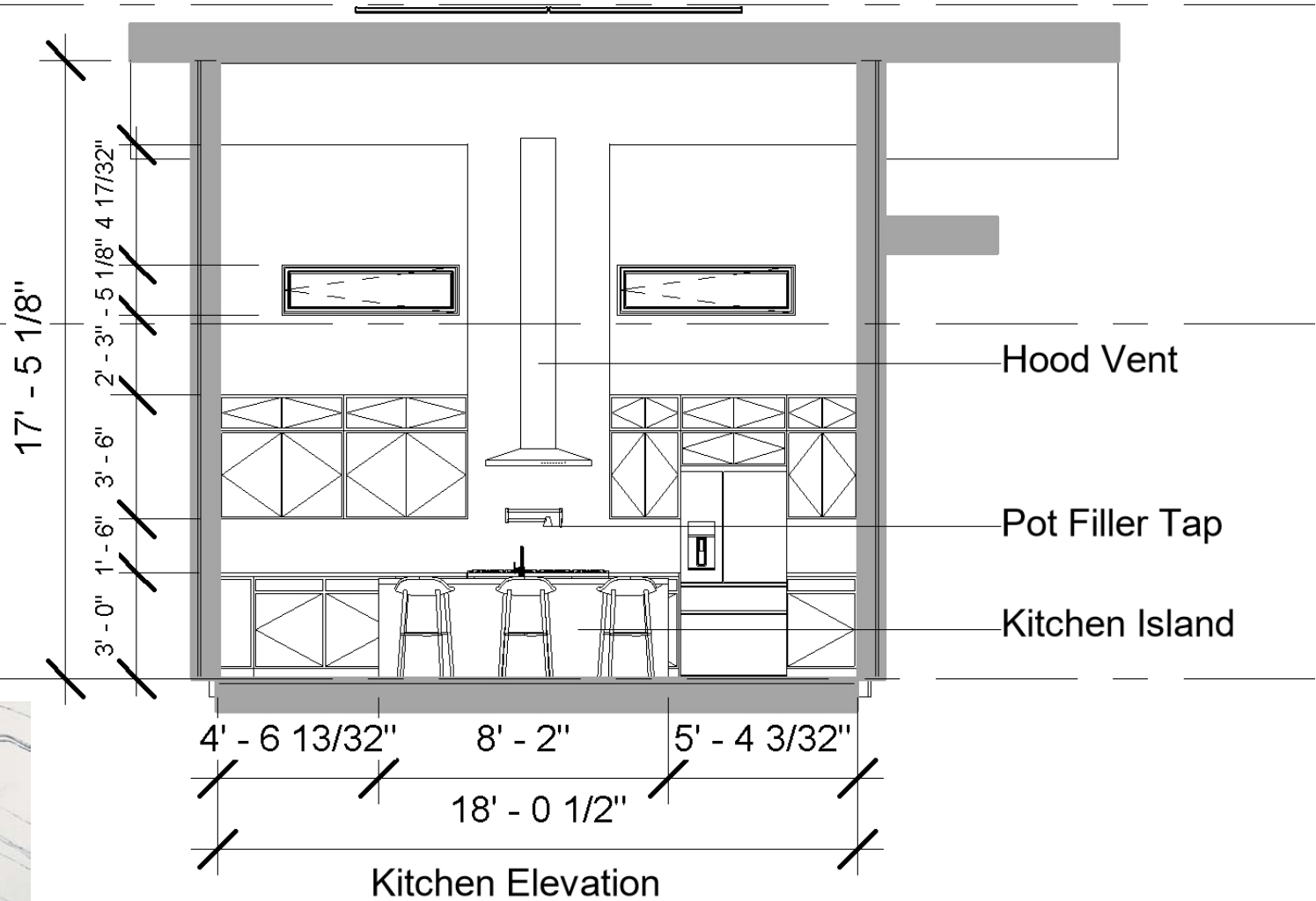
Terrazzo in Classic Black



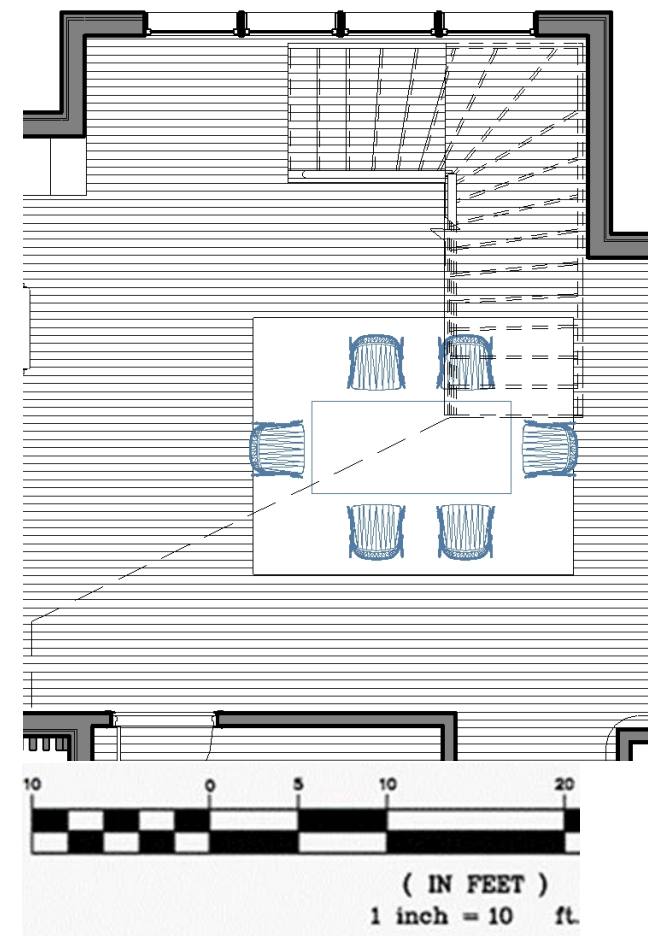
Agate Green SW Paint



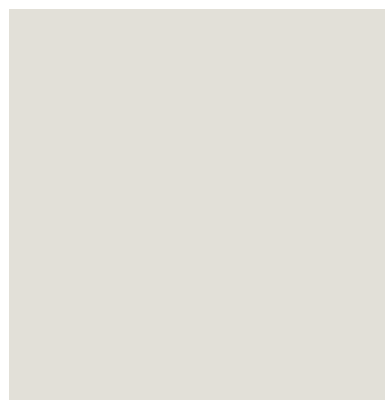
Cambria Quartz Slab in Portrush



# Dining Room



Macca Oak Cork  
Floor



Eider White  
SW Paint



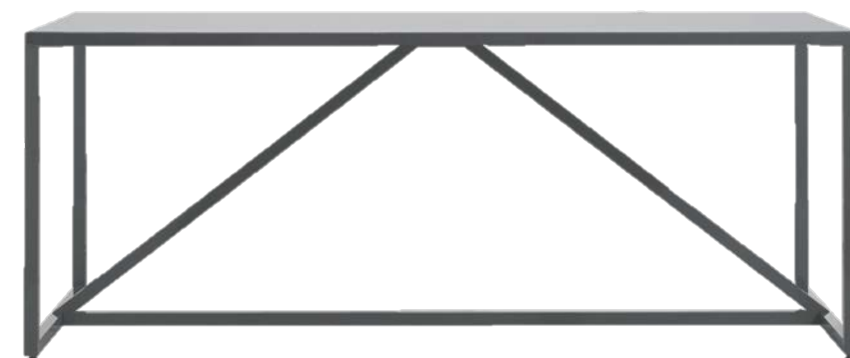
Veropeso Cotton Rug



Clutch Dining Chair



Orlando Sputnik  
Chandelier



Strut Large Dining Table





# Picasso's Waterfall



Macca Oak  
Cork Floor



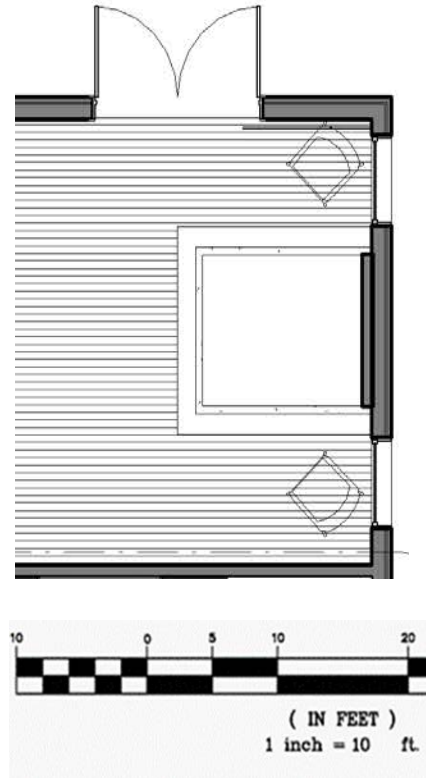
Aquarium-Safe  
Poured  
Concrete



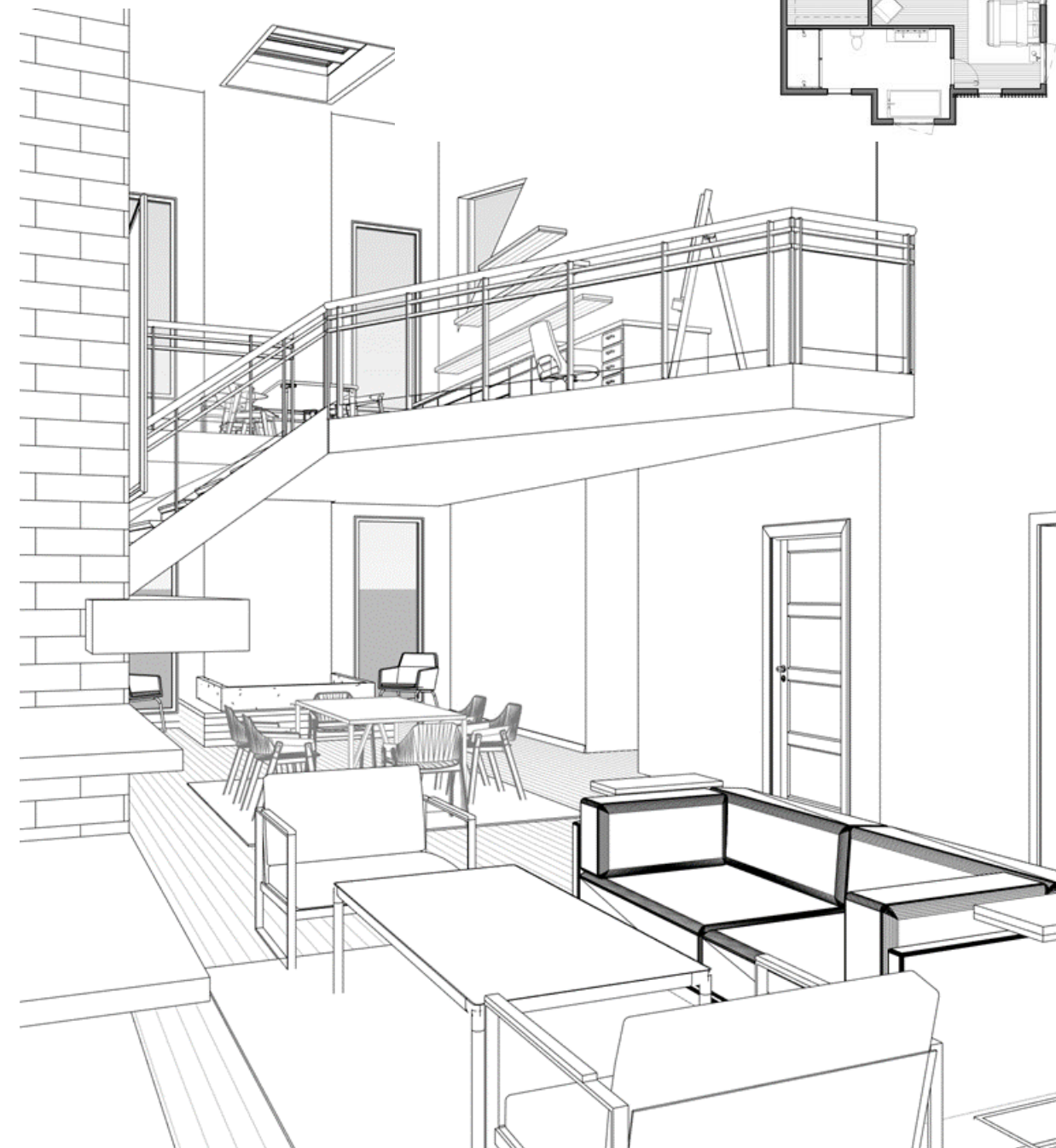
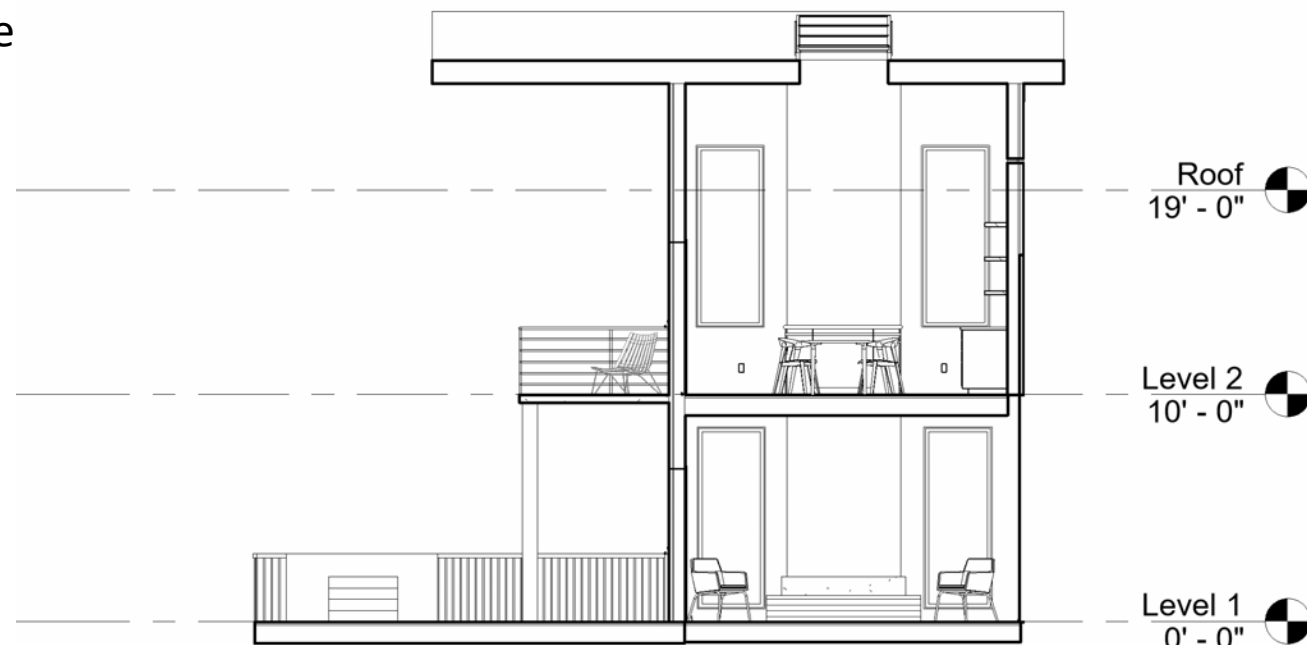
Birch  
Plywood



Hemisphere  
Stacked Pebbles



Elaina Barrel Chair

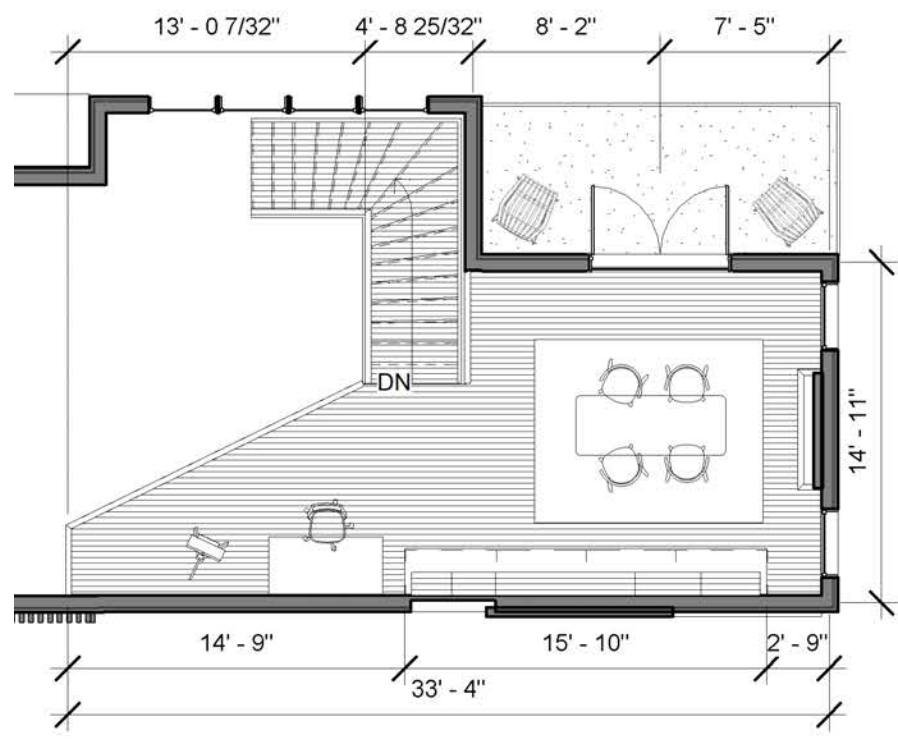




# Loft



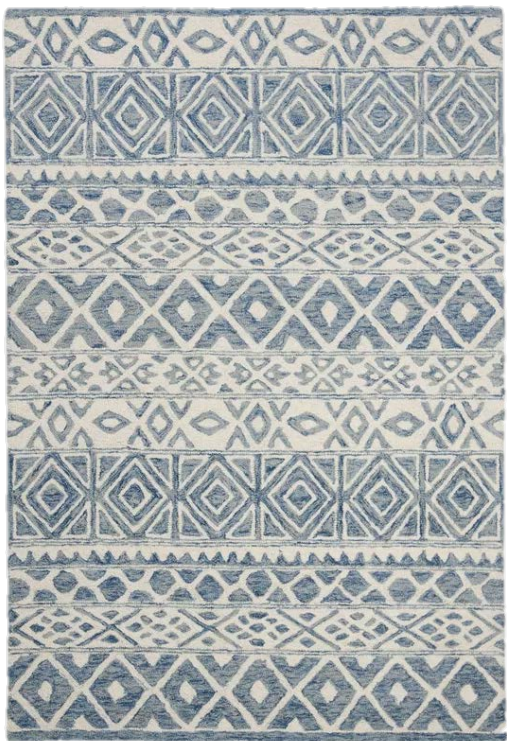
Bandelier Chair



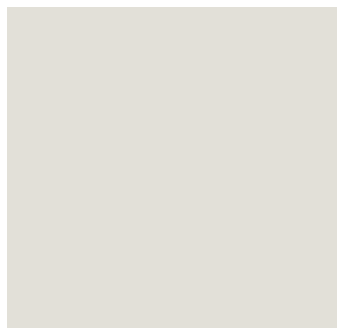
Santa Maria Table



Bonney Task Chair



Prestige Executive Desk



Eider White



Hemisphere  
Stacked  
Pebbles



Macca Oak Cork  
Flooring



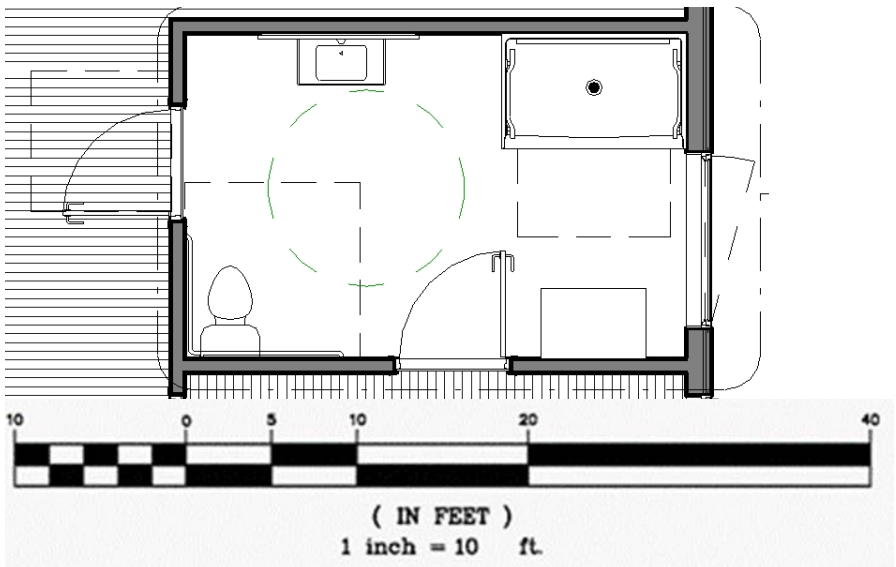
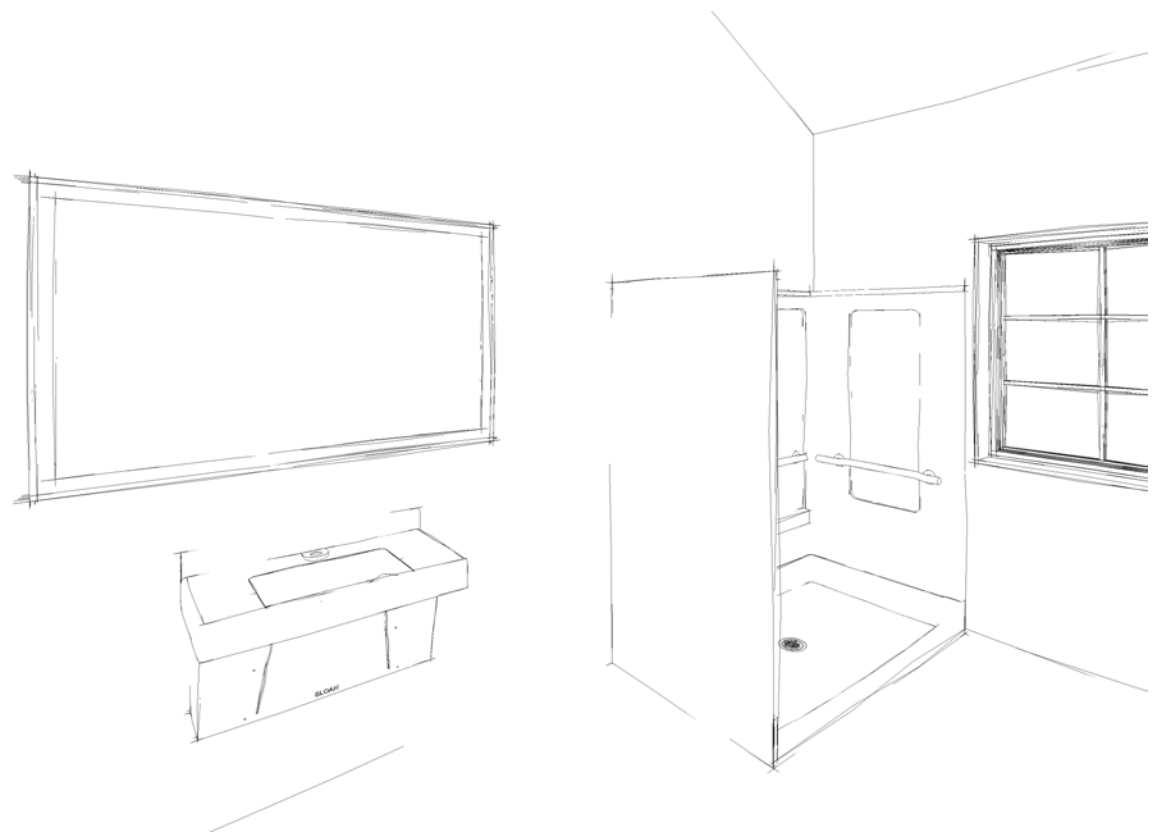
Clear Blue  
Terrazzo



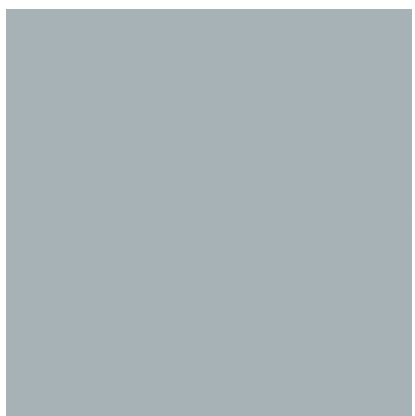
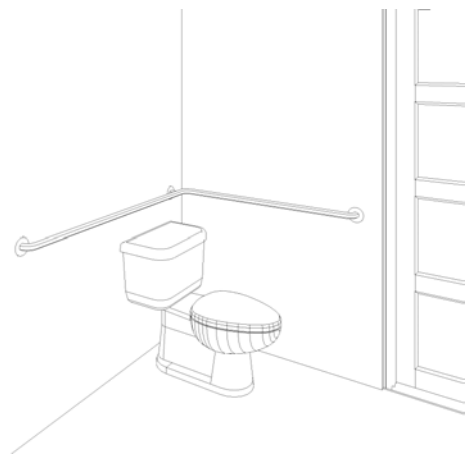
Midnight Black  
Cabinets  
SW Paint



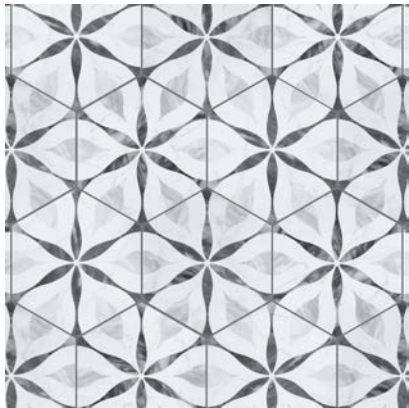
# Guest Bathroom



Marsha Traditional  
Beveled Mirror



Stardew



Karra Hexagon  
Porcelain Tile

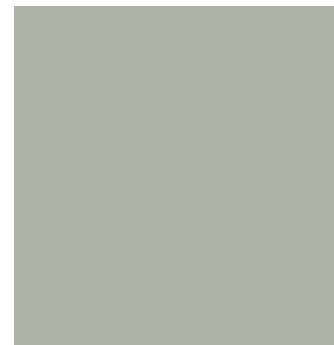
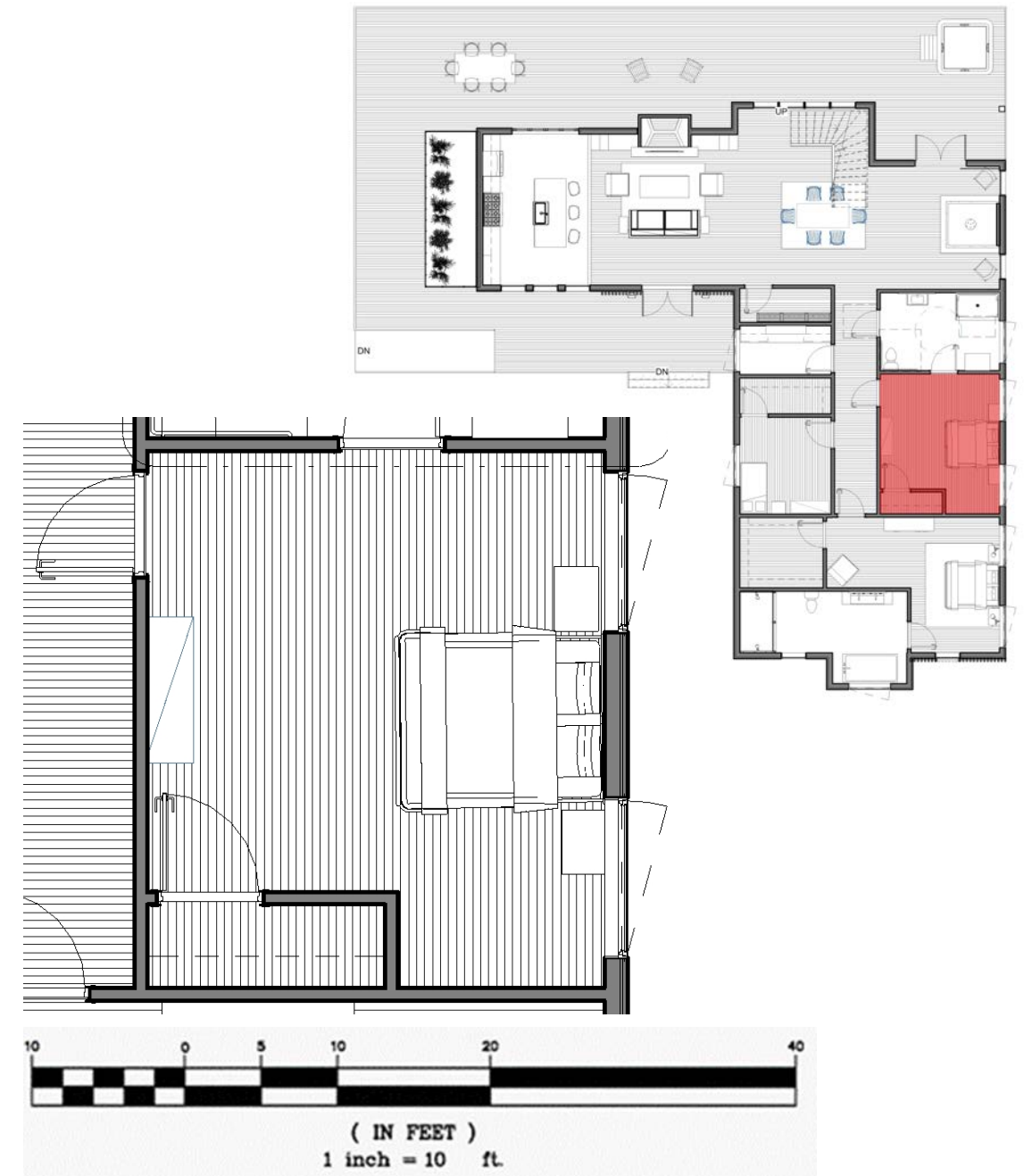


Shade Shower  
Curtain



Herringbone Storage  
Cabinet

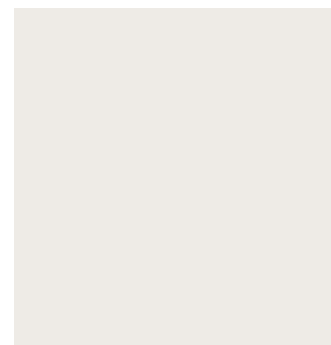
# Guest Bed



Oyster Bay  
SW Paint



Macca Oak  
Cork Floor



Snowbound  
SW Paint



Shale Wall-Mounted Cabinet



Tidwell Reversible Quilt Set



Wyche Table  
Lamp



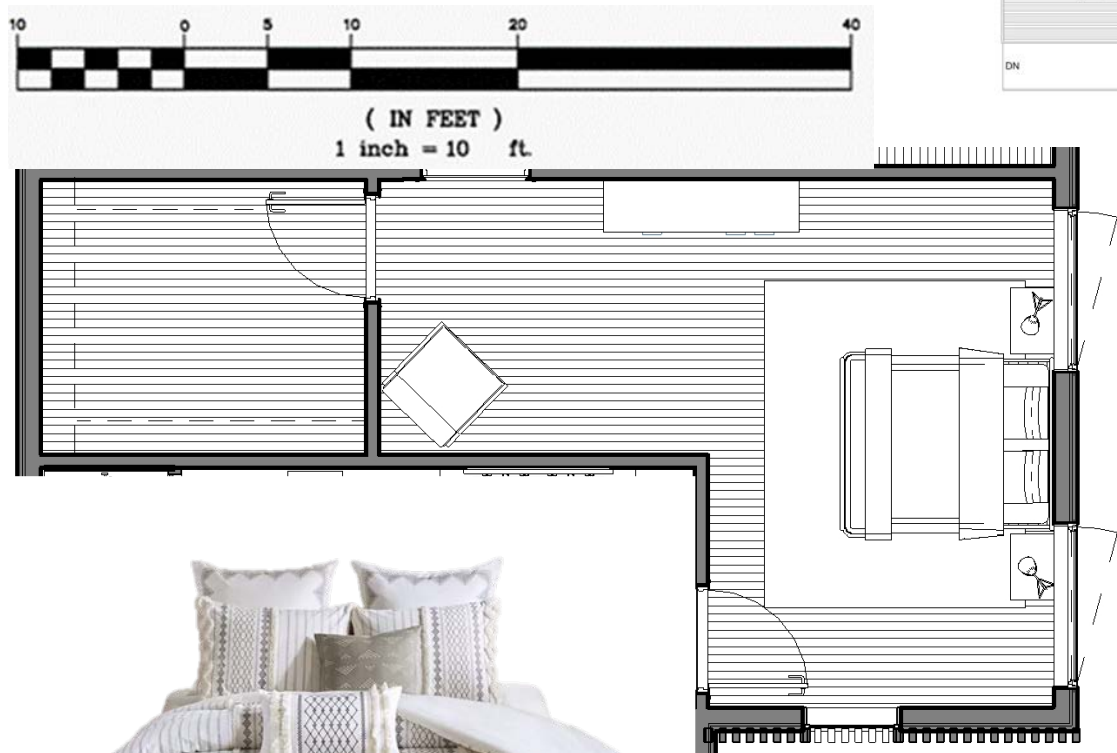
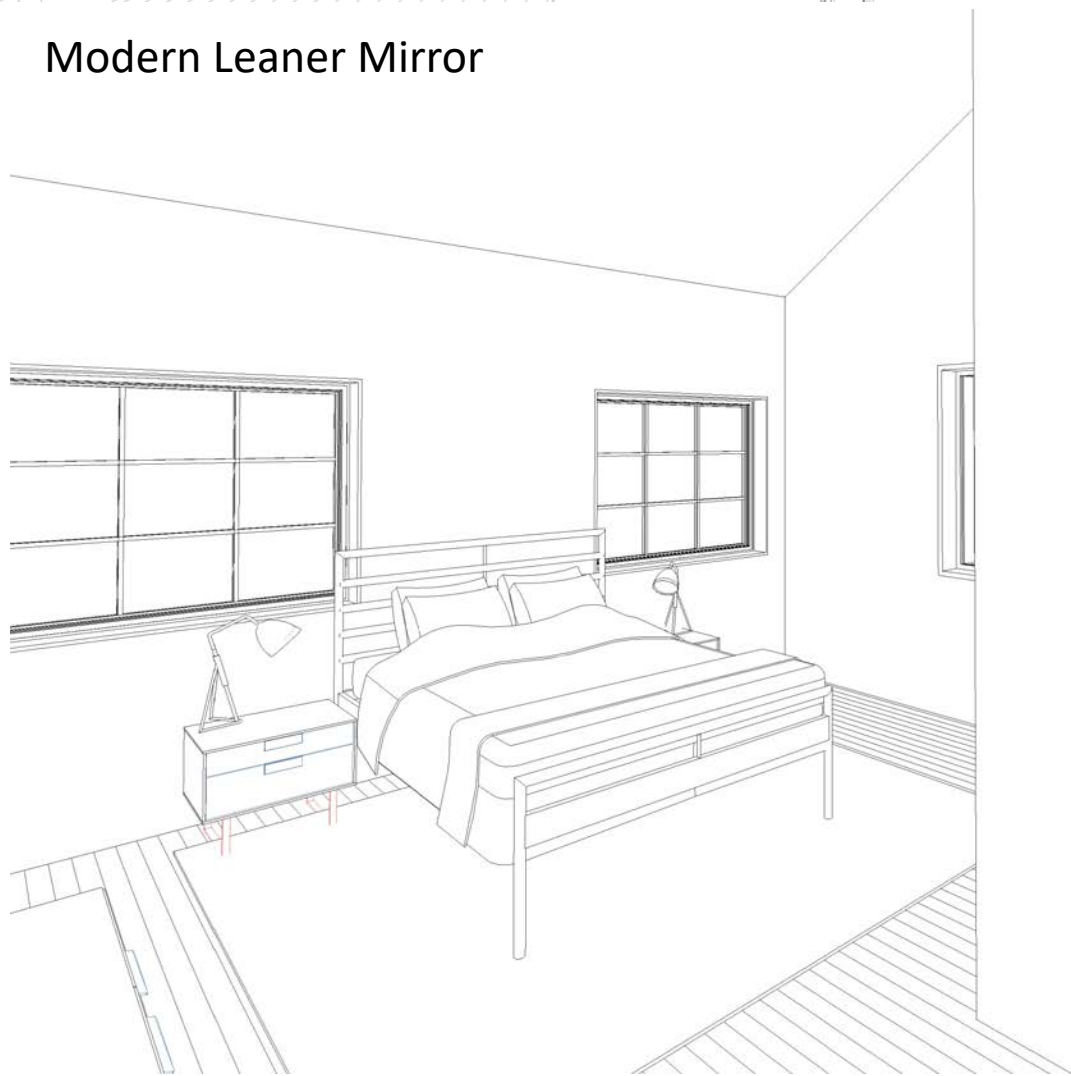
Gemma Bedside  
Table



# Master Bedroom



Modern Leaner Mirror



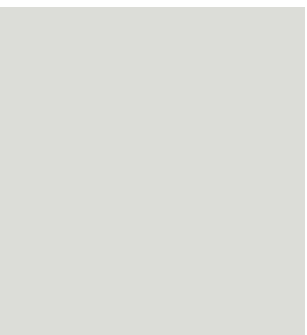
Jenkinsburg Comforter Set



Criss Armchair



Onyx Oak  
Cork Floor



Snowbound  
SW Paint

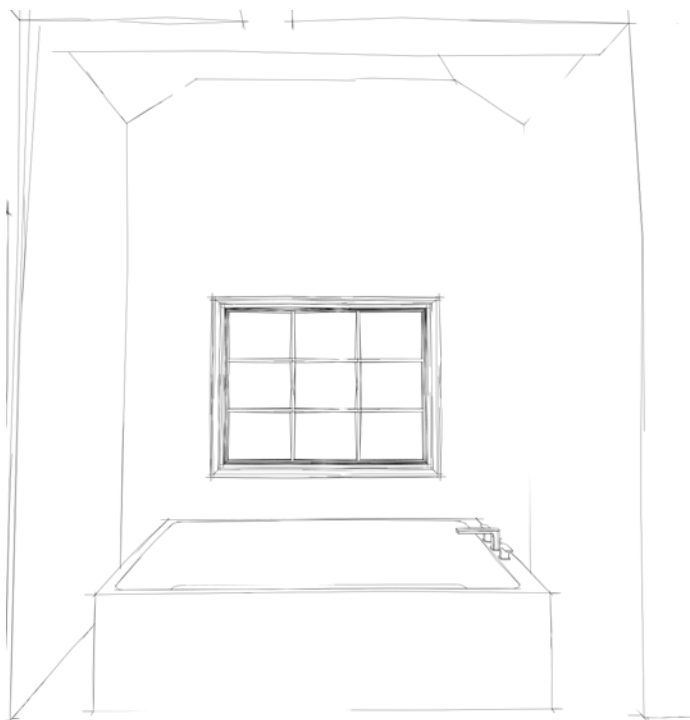
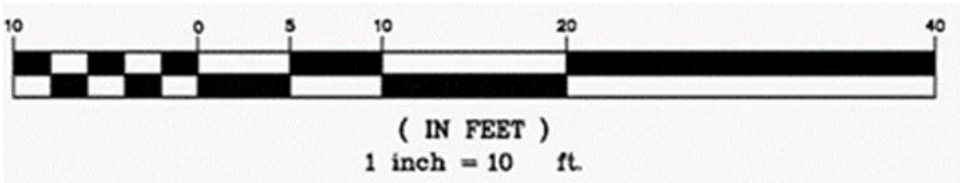
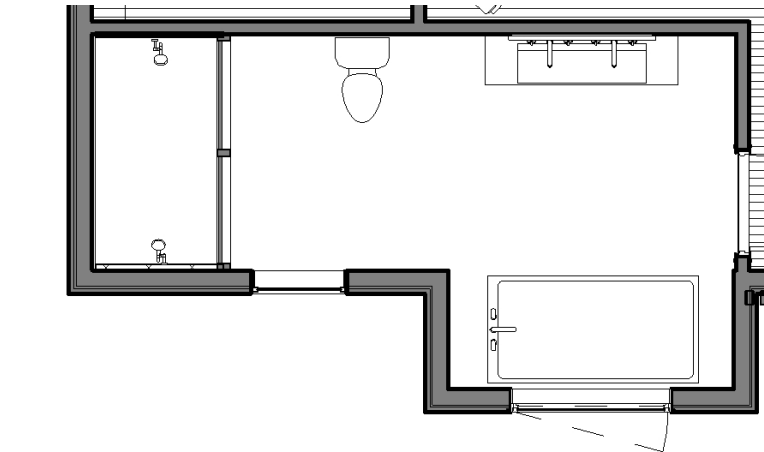
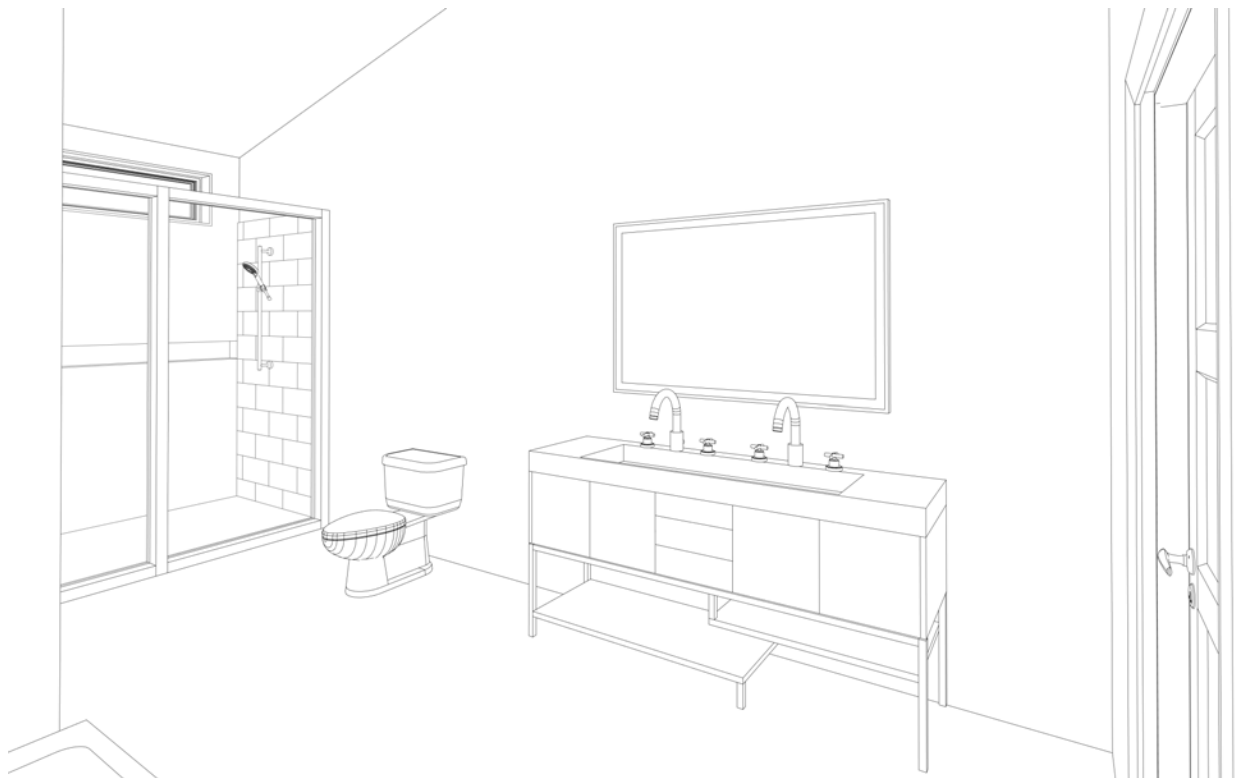


Swanky Grey  
SW Paint



Burwood Table  
Lamp

# Master Bathroom



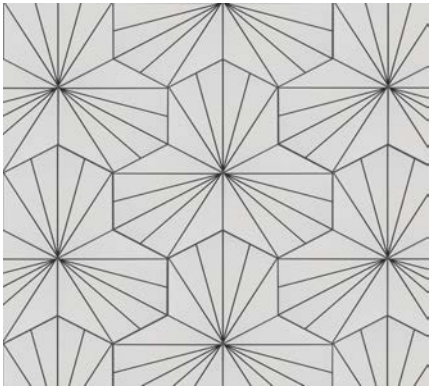
Windows are finished with a one-way mirror film to protect privacy



March Wind



Puccio Geometric Chandelier



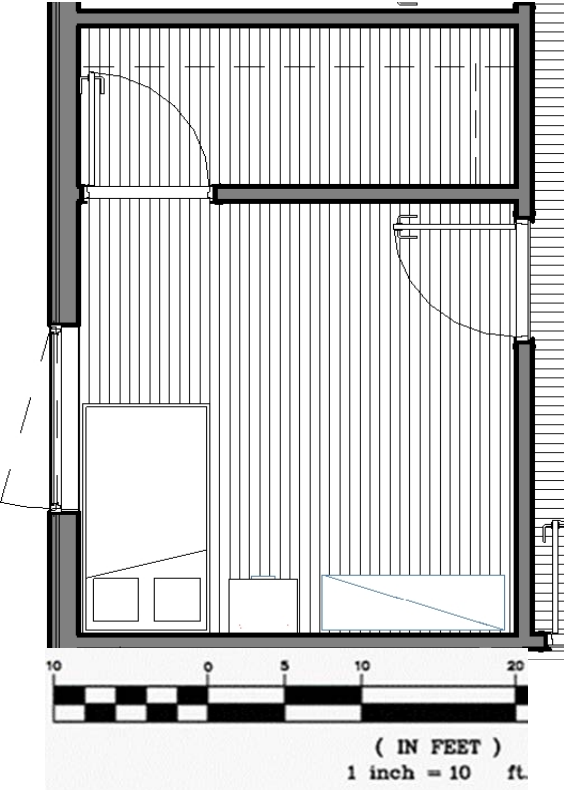
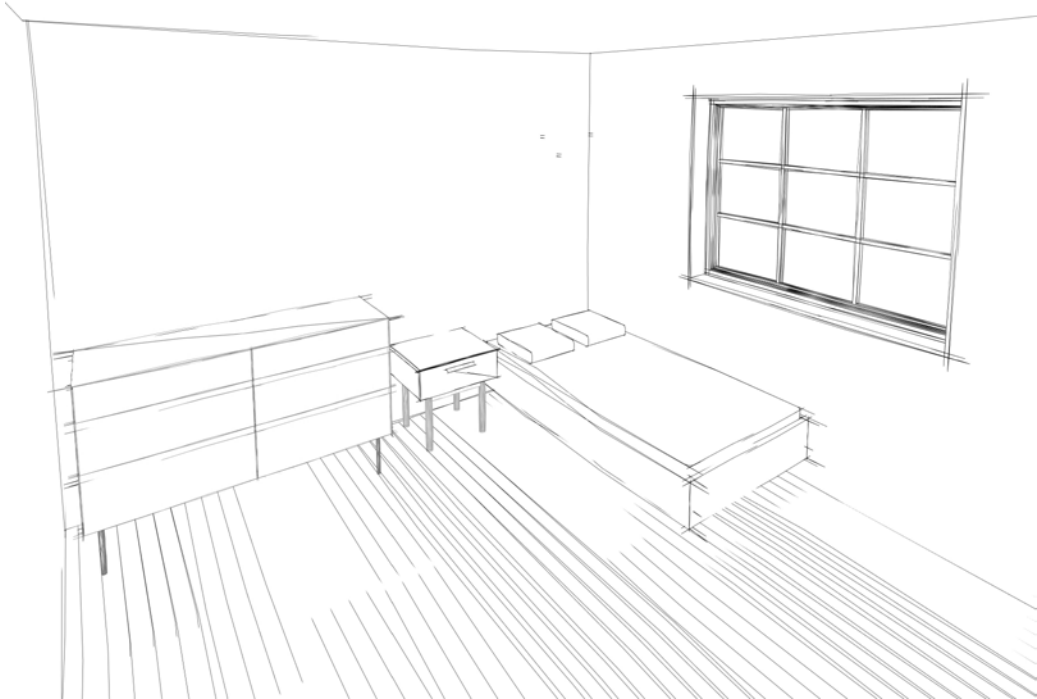
Karra Hexagon Porcelain Tile



Dark Night



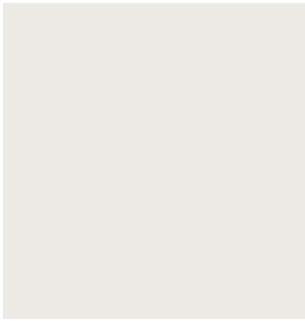
# Luciana's Room



Silverpointe  
SW Paint



Macca Oak  
Cork Floor



Snowbound  
SW Paint



Clad 6-Drawer Dresser



Briarden Table Lamp



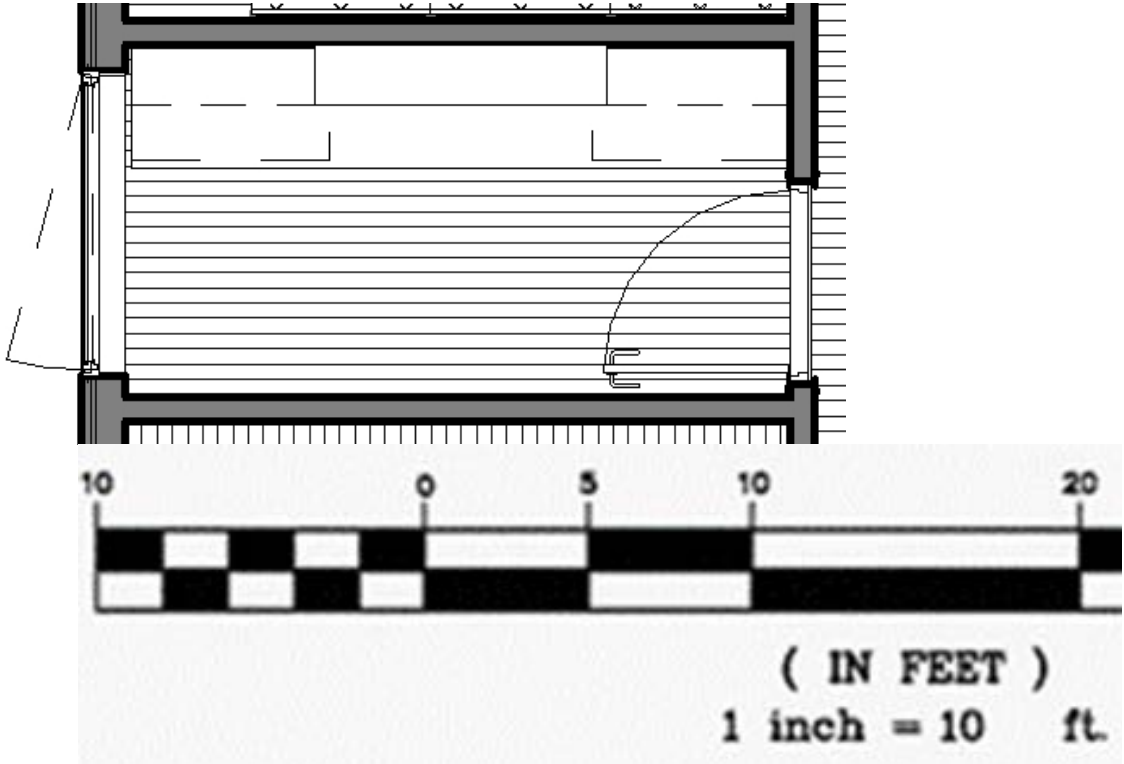
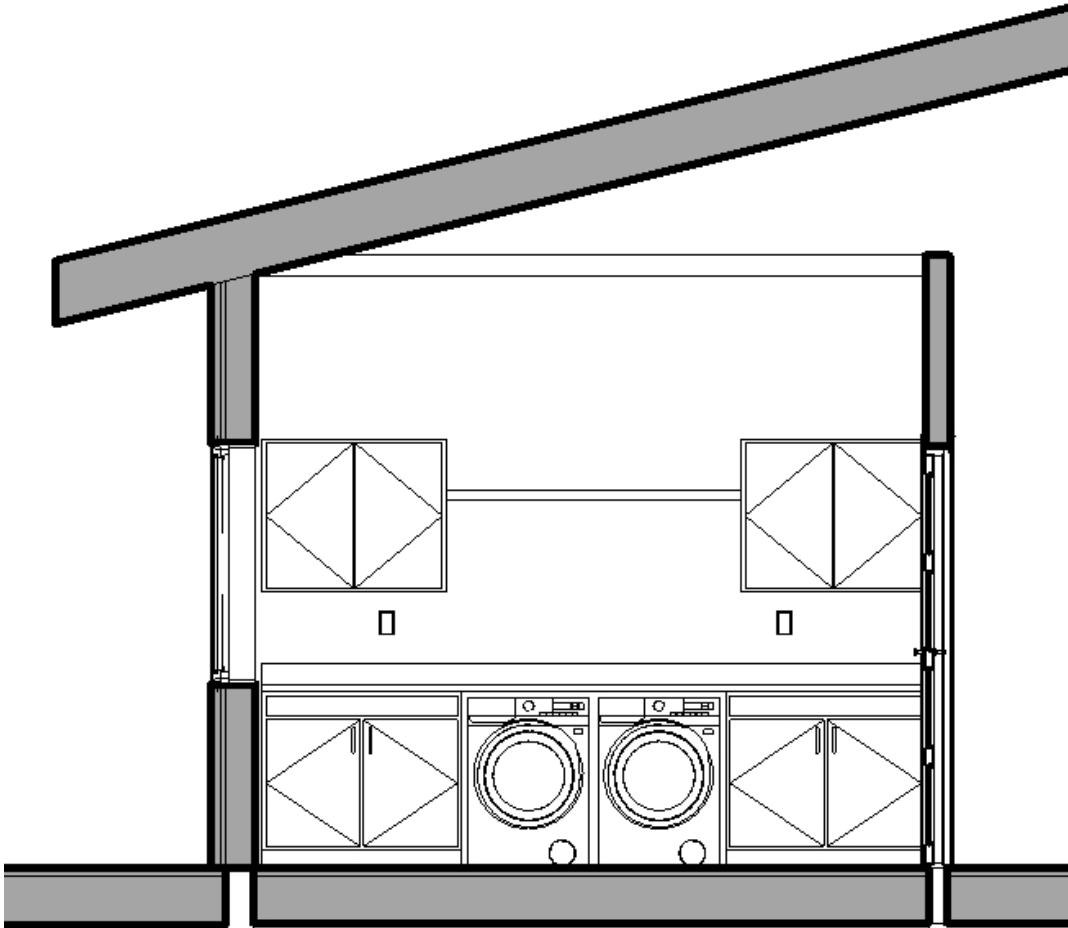
Clad Nightstand



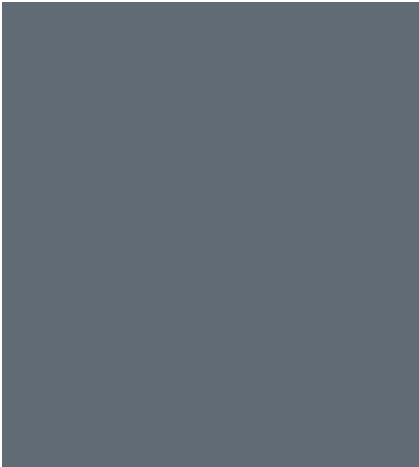
# Laundry Room



Smart wi-fi Enabled  
Electric Washer and  
Dryer



Quartz Oak Cork  
Floor



Granite Peak  
SW Paint






Stardew  
SW Paint



Fixtures and Appliances

Image	Location	Description	Specifications	Manufacturer
	Dining Room	Orlando 12-Light Sputnik Modern Linear Chandelier	Gold plated metal. 11”H x 42.5”W x 42.5”D Height Range: 6”-60”	AllModern
	Kitchen	Tappahannock 1-Light Single Cone Pendant	Metal 14.5”H x 12”W x 12” D Wire Length 144”	AllModern
	Master Bathroom	Puccio 6-Light Geometric Chandelier in Rustic Zinc	Metal and Glass 25”H x 24”W x 24”D Height Range: 32”-85”	AllModern
	Laundry Room	Smart wi-fi Enabled Electric Washer and Dryer	7.4 cu. Ft.	LG
	Guest Bathroom	Rectangular Ceramic Wall Mounted Sink	5.6”H x 31.9”W x 17.4”D	The Bath Outlet
	Living Room	Zermeno 10-Light Candle Style Chandelier	Frosted Glass and Metal	

Image	Location	Description	Specifications	Manufacturer
	Guest Bedroom	Wyche Table Lamp	Marble Base, Fabric Shade 30”H x 16”W x 16”D	Mercury Row
	Luciana’s Room	Briarden Table Lamp	Metal Base, Fabric Shade 30”H x 15”W x 15”D	Wade Logan
	Master Bedroom	Burwood Table Lamp	Metal Base, Fabric Shade 29”H x 17”W x 17”D	Brayden Studio



Furnishings

Image	Location	Description	Specifications	Manufacturer
	Loft	Prestige Executive Desk	Manufactured Wood and Particle Board 30.4”H x 71.1”W x 29.8”D	Bestar
	Kitchen	Lindquist Swivel Bar Stool	Metal, Solid and Manufactured Wood 31.5”H x 16.5”W x 16”D	Mercury Row
	Living Room	Conkling Armchair	Faux Leather, Polyester, Solid Wood 32.5”H x 33”W x 29”D	Mercury Row
	Living Room	Harcourt Velvet Rolled Arm Sofa in Teal	Velvet, Manufactured Wood, Foam 32”H x 84”W x 34”D	Willa Arlo Interiors
	Living Room	Cuddington C Table	Manufactured Wood and Metal 24.8”H x 17.72”W x 9.84”D	Brayden Studio
	Living Room	Nowak Coffee Table in Dark Walnut	Tempered Glass, Manufactured Wood, Metal 18”H x 40”W x 20”D	Williston Forge


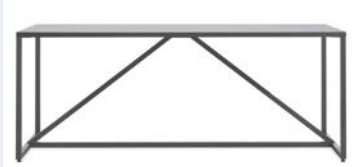











Image	Location	Description	Specifications	Manufacturer
	Dining Room	Clutch Chair in Walnut/Edwards Light Grey	Solid Walnut Legs, Molded Plywood Seat, Upholstered Back: Wool, Acrylic, Nylon Blend 30”H x 22”W x 20”D	Blu Dot
	Dining Room	Strut Large Table in Slate	Engineered Wood Substrate, Powder-Coated Steel Legs 29”H x 75”W x 35”D	Blu Dot
	Picasso’s Nook	Elaina Barrel Chair	Birchwood, Mahogany, Cotton 31.25”H x 22.3”W x 23”D	Joss & Main
	Master Bedroom	Modern Full Length Mirror in Black	Wood Composite, Laminate, Mirror 78”H x 39”W	Brayden Studio
	Master Bedroom	Criss Armchair	Birch and Manufactured Wood, High-Density Foam 30.1”H x 24.8”W x 29.5”D	Brayden Studio
	Master Bedroom	Rule Large Dresser	Engineered Wood with Veneers and Powder-Coated Steel Base 43”H x 58”W x 20”D	Blu Dot
	Guest Bedroom	Gemma Nightstand With USB Port	Metal, 1 Door 24”H x 19”W x 13”D	Picket House Furnishings



Image	Location	Description	Specifications	Manufacturer
	Luciana's Room	Clad 6 Drawer Dresser in Hickory/White	Solid Wood and Powder-Coated Steel 35''H x 55''W x 18''D	Blu Dot
	Guest Bedroom	Shale Wall-Mounted Cabinet in Smoke	Ash Veneers over Engineered Wood, Leather Pulls 18''H x 72''W x 20''D	Blu Dot
	Luciana's Room	Monarch Hill Clementine Twin Canopy Bed	Steel 81.5''H x 41.5''W x 77.5''L	Little Seeds
	Loft	Bonney Task Chair	Manufactured Wood and Metal 21''W x 19''D Height Range: 29''-34''	Langley Street
	Loft	Santa Maria Dining Table	Solid Walnut and Walnut Veneer 30''H x 71''W x 36''D	Langley Street
	Loft	Bandelier Armchair	Solid Wood 30.9''H 25''W x 20.9''D	Mistana
	Guest Bathroom	Mariam Storage Cabinet	Manufactured Wood 72''H x 35''W x 16''D	Joss and Main

Finishes

Image	Location	Description	Specifications	Manufacturer
	Roof	Semi-Weathering Gray Slate Roofing Tiles	Natural Slate from Vermont Quarries	North Country Slate
	Exterior	Kebony Shou Sugi Ban	Burned Timber 1x6 Planks, Random Lengths	Delta Millworks
	Exterior and Interior	Birch	Cut to desired size	Lowe’s
	Master Bathroom	Misha Hex Porcelain Field Tile	Porcelain 9” x 10”	Elite Tile
	Kitchen Backsplash	Quartz Slab in Portrush	Natural Quartz with Navy, Gray, and Black veins, Gold Flakes	Cambria
	Kitchen Countertops	Terrazzo in Classic Black	Recycled glass and resin	Vetrazzo
	Master Bedroom	Onyx Oak Cork	Wood-Look Natural Cork Flooring	Green Building Supply



Image	Location	Description	Specifications	Manufacturer
	Deck	Transcend Composite Decking in Tree House	95% recycled composite board	Trex
	Loft	Terazzo in Clear	Recycled Glass and Resin	Vetrazzo
	Waterfall	Hemisphere Stacked Pebble in Black	Natural Stone	BFK Décor Solutions
	Guest Bathroom	Karra Hexagon Porcelain Tile	Porcelain-Slip Resistant 7"W x 8"L	Wayfair
	Various Rooms	Macca Oak Cork	Wood-Look Natural Cork Flooring	Green Building Supply
	Laundry Room	Quartz Oak Cork	Wood-Look Natural Cork Flooring	Green Building Supply
	Kitchen and Living Room	Techno Grey	Interior Paint	Sherman Williams

Image	Location	Description	Specifications	Manufacturer
	Laundry Room	Granite Peak	SW Interior/Exterior Paint	Sherwin Williams
	Laundry Room, Guest Bedroom	Stardew	SW9138 Interior/Exterior Paint	Sherwin Williams
	Kitchen	Agate Green	SW7742 Interior/Exterior Paint	Sherwin Williams
	Kitchen	Arugula	SW6446 Interior/Exterior Paint	Sherwin Williams
	Guest Bedroom	Oyster Bay	SW6206 Interior/Exterior Paint	Sherwin Williams
	Master Bathroom	March Wind	SW 7668 Interior/Exterior Paint	Sherwin Williams
	Luciana's Room	Silverpointe	SW7653 Interior/ Exterior Paint	Sherwin Williams



Image	Location	Description	Specifications	Manufacturer
	Luciana's Room	Snowbound	SW7004 Interior/Exterior Paint	Sherwin Williams
	Master Bedroom	Swanky Gray	SW6261 Interior/Exterior Paint	Sherwin Williams
	Various Rooms/Open Living Space	Eider White	SW7014 Interior/Exterior Paint	Sherwin Williams
	Master Bathroom	Dark Night	SW6237 Interior/Exterior Paint	Sherwin Williams