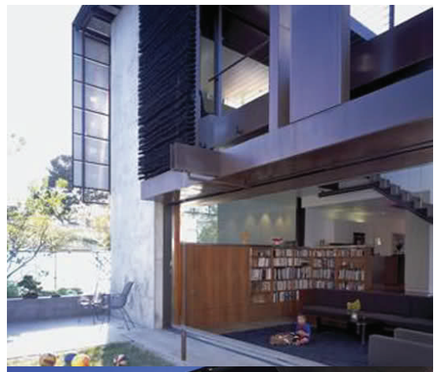
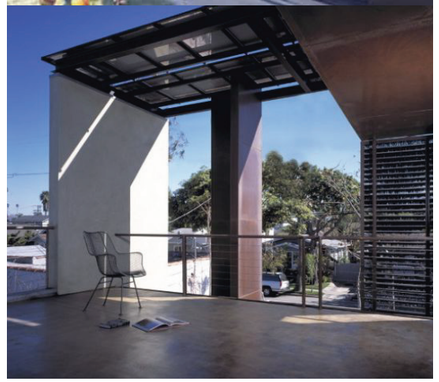
SOLAR UMBRELLA HOUSE
PUGH+SCARPA Architects

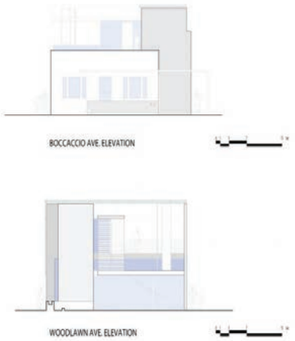




This building is a two story; 1790sq ft residence located in Venice, California and was built in the year 2005. The total cost of the project was $350,000 (land excluded), plus the property cost of $270,000. The surrounding neighborhood has a density of about 14 dwelling units per acre, and most of the lots and houses are very small compared to the national average. This project is located on a block dominated by “thru lots,” which have public streets on two sides of the property. Most houses on the block face Boccaccio Avenue and, as a result, treat Woodlawn Avenue like an alley, which detracts from the homes across the street. The addition to and remodel of the Solar Umbrella creates living spaces and porches on both sides, addressing both streets equally.

The project started from an original house, which tightly had a kitchen, dining, living, two bedrooms and a bath. The new piece is joined to the south, removing only one original wall, including a new entry, living area, master suite accommodations, and utility room for laundry and storage. The kitchen, which once formed the back edge of the residence, opens into a large living area, which in turn, opens out to a spacious front yard. An operable wall of glass at the living area smoothly defines the edge between interior and exterior. What was initially the front and main entrance at the north becomes the back as the new design reorganizes the residence towards the south. This creates a more interesting introduction to the residence and optimizes exposure to energy rich southern sunlight.

The consideration of the human element is key to this house, since the architects and the clients are the same people. Lawrence Scarpa and Angela Brooks designed and built this house for themselves and their young son. They considered the site, and as they state tried to find as many possibilities for “sustainable living” as possible.



This sustainability is reflected in many aspects of the house design. There are solar design strategies that make the house 100% energy neutral, with an annual expense in electricity of $500. The use of recycled, renewable and high performance materials is seen around the entire house. “The solar canopy, the centerpiece of the house’s design, provides 95% of the building's electric load through 89 amorphous solar panels. This array is connected to the power grid through a net meter provided by the City of Los Angeles; this allows the grid to be used as a storage system and eliminates the time-of-use charges associated with traditional electricity use.” These elements become the main formal image of the house.

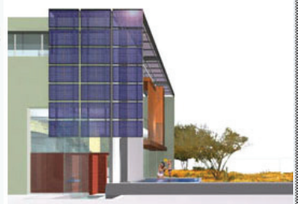
The temperature is regulated and an insulation concept is developed in the house. “Blown-in insulation in the walls and roof and batt insulation under the floor of the existing house greatly improved the house’s thermal performance. The extra insulation combined with the building's tight envelope dramatically reduce energy demand. An integrated, solar heating system in the concrete floors heats the new addition. Radiant heating through the floor is more efficient than forced air heating; since temperatures can be lower, the system uses less energy.”

Revit Fundamentals ARCH 399 BIM Instructor: Leonard Yui	**SOLAR UMBRELLA HOUSE** **PUGH + SCARPA Architects**	Drawings: **Carolina Delgado**	Narrative Final Project Sustainable Building Date June 8, 2011 **M001** Scale N/A

SOLAR UMBRELLA HOUSE

PUGH+SCARPA Architects

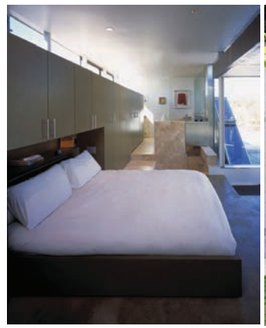
- **Recyclable Materials**
  - Facilitate recycling by avoiding materials with toxic components
- **Plan for Materials Longevity**
  - Use materials and systems with low maintenance requirements
  - Design and build components with constituent parts of equivalent longevity
- **Job Site Recycling**
  - Seek a waste hauler who can separate recyclables out of commingled waste
- **Recycling by Occupants**
  - Design a physical in-house recycling system
- **Resource-Efficient and Biobased Materials**
  - Use engineered wood products in place of large-dimension timbers
  - Use engineered wood products for rough carpentry
- **Post-Consumer Recycled Materials**
  - Specify light-gauge steel framing with highest recycled content
- **Salvaged Materials**
  - Use salvaged wood for rough carpentry
- **Transportation of Materials**
  - Prefer materials that are sourced and manufactured within the local area



Many of the finishes materials are highly unconventional: eco-friendly and cost-effective building materials that are traditionally hidden from view are repositioned here as unusual and aesthetically appealing design elements. Homosote, an acoustical panel made from recycled newspaper is palm-sanded and used as a finish material for custom cabinets. OSB (oriented strand board) a structural grade building material composed of leftover wood chips compressed together with high strength adhesive, becomes the primary flooring material where concrete is not used. Sanded, stained and sealed, the OSB floor paneling provides a cost effective and materially responsible alternative to hardwood. Materials are selected for both performance and aesthetic value. Metal stud construction replaces conventional wood framing. Recycled steel panels, solar powered in-floor radiant heating, high efficiency appliances and fixtures, and low v.o.c. paint replace less efficient materials. Decomposed granite and gravel hardscape, including a stormwater retention basin are used in place of concrete or stone. Unlike their impervious alternatives, these materials allow the ground to absorb water and in turn, mitigate urban run-off to the ocean. Drought tolerant xeriscaping (gardening with less than average water) compliments the textures and palette of the building while providing a low maintenance, aesthetically appealing.

The use of water, glass and real materiality gives the house special qualities for sensory and aesthetic experiences. The exterior space was designed as outdoor rooms. The visual and physical links between inside and outside are strong, the boundary between the two is very soft making the relationship more dynamic. The western corridor entry is designed as a sequence demonstrating this concept.

The pool is a strong element of cast in place concrete and defines the path to the front entry. “Upon reaching the entry, the pool cascades into a lower tier of water that penetrates and interlocks with the geometry and form of the residence. In a move that reinvents the welcome mat, stepping stones immersed in the water create an initiatory rite of passage into the residence as the visitor is invited walk across water. The distinction between outside and inside is once again blurred.” The sustainable concept is present in the underground construction of the water elements. “The pond and the pool pumps are as small as possible and are on timers to conserve energy and utilize nonchemical filtration systems. Rooftop solar hot-water panels heat the pool and preheat the domestic hot water before it reaches the gas-fired water heater. This system halved the house's natural gas use, despite the house’s expansion to 2.5 times its original size.”



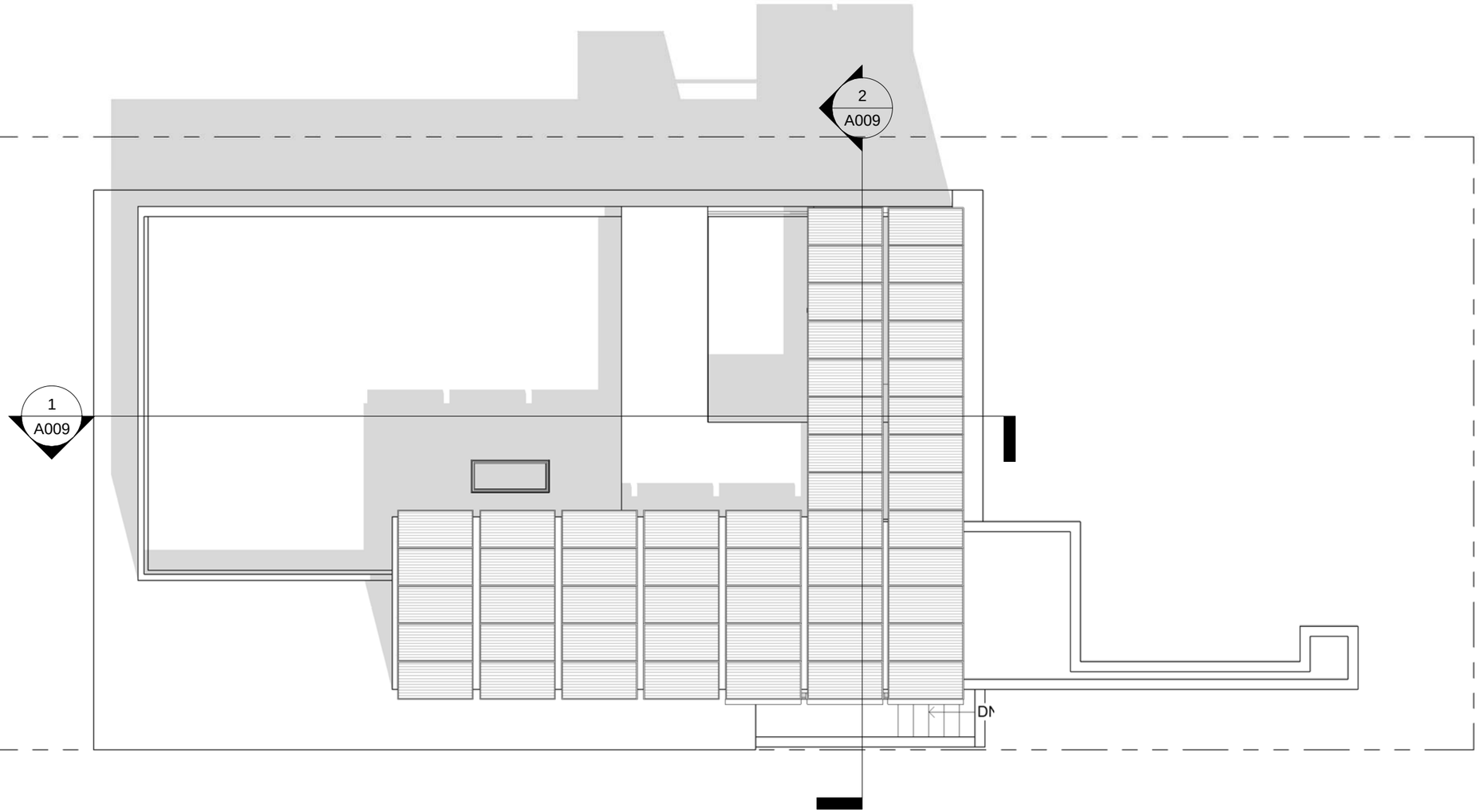
The master suite on the second level reiterates the strategy of interlocking space. Located directly above the new living area, up a set of floating, folded plate steel stairs, the bedroom strategically opens onto a deep covered patio which overlooks the garden. This patio extends the bedroom area outdoors, creating the sensation of a sleeping loft exposed to the exterior. This deep porch carves out an exterior space within the visual bounds of the building envelope and provides the front elevation with a distinctive character. What appears to be a significant area of the second floor is actually never enclosed but rather it is protected by the planes, which wrap around it.

The rule of the house is transparency; this permits views though the house from the outside. The structure seems to sit lightly upon the land. Formal elements along these visual corridors—i.e. stairs, bearing walls, structural columns, guardrails, built-in furniture and cabinetry– vary in density, color and texture. A series of stepped roofs, glazed walls, and clerestory windows broadcast light from multiple directions. Together, all of these components establish an effectively layered composition rich in visual and formal interest.

Bibliography:

•House Variety, a world of architecture, http://housevariety.blogspot.com/2010/11/solar-umbrella-by-brooks-scarpa.html
•Architype Review, http://architypereview.com/4-homes/projects/12-solar-umbrella/description
•The American Institute of Architects, http://www.aiatopten.org/hpb/overview.cfm?ProjectID=561
•Brooks + Scarpa Architects, http://www.pugh-scarpa.com/projects/solar.umbrella
•Open form Architecture,
p://openformarchitecture.wordpress.com/2007/04/25/solar-umbrella-house-pughscarpa-architecture/

Revit Fundamentals ARCH 399 BIM Instructor: Leonard Yui	**PUGH + SCARPA Architects**	Drawings: **Carolina Delgado**	Narrative Final Project Sustainable Building Date June 8, 2011 **M002** Scale N/A



1 SITE
1/8" = 1'-0"

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ARCH 399 BIM

Instructor: Leonard Yui

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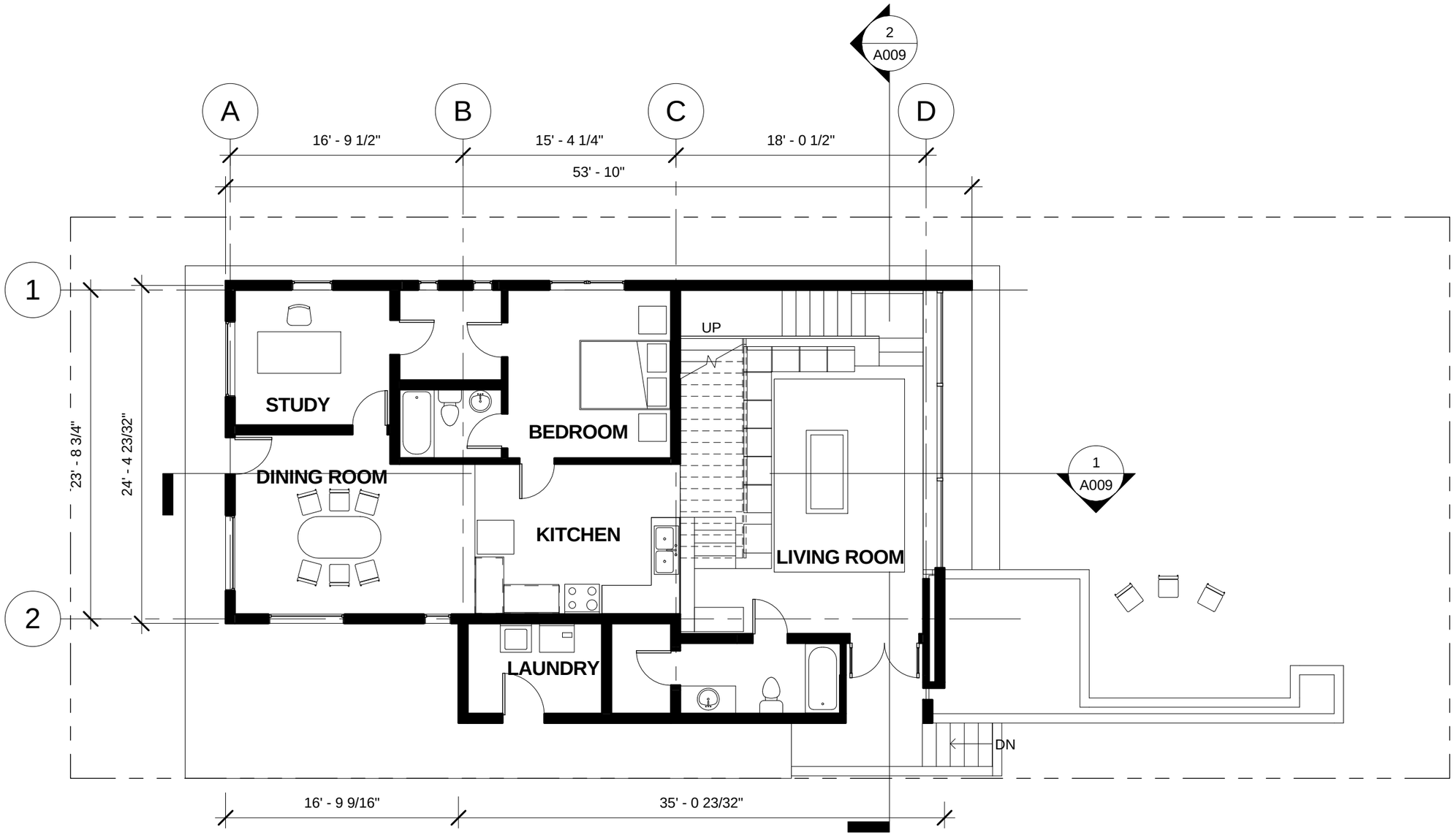
Architects

Drawings:
Carolina Delgado

Site Plan

Final Project	Sustainable Building	**A001**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 FIRST FLOOR
1/8" = 1'-0"

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Architects

Drawings:
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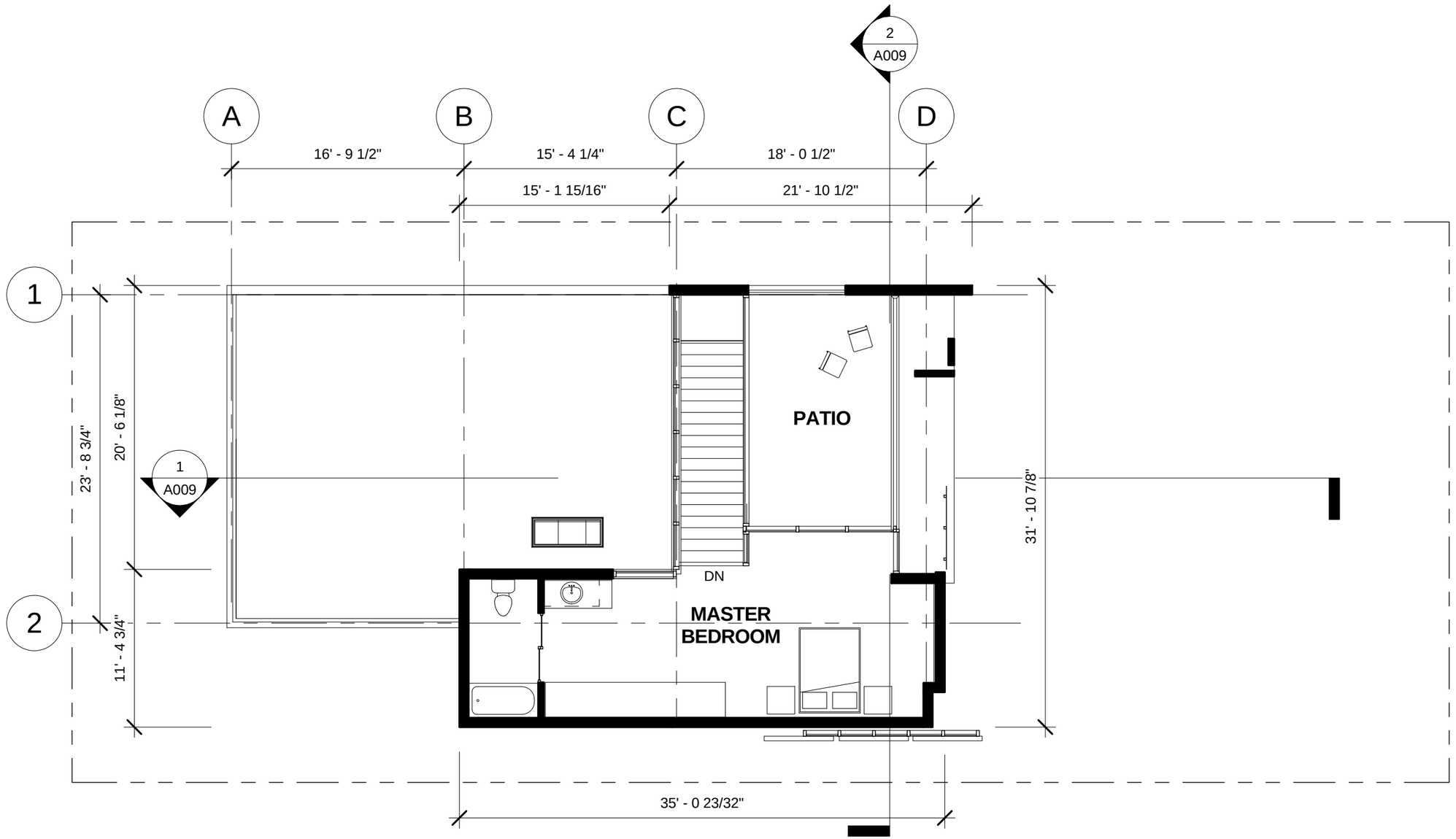
First Floor Plan

Final Project	Sustainable Building	**A002**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 SECOND FLOOR
1/8" = 1'-0"

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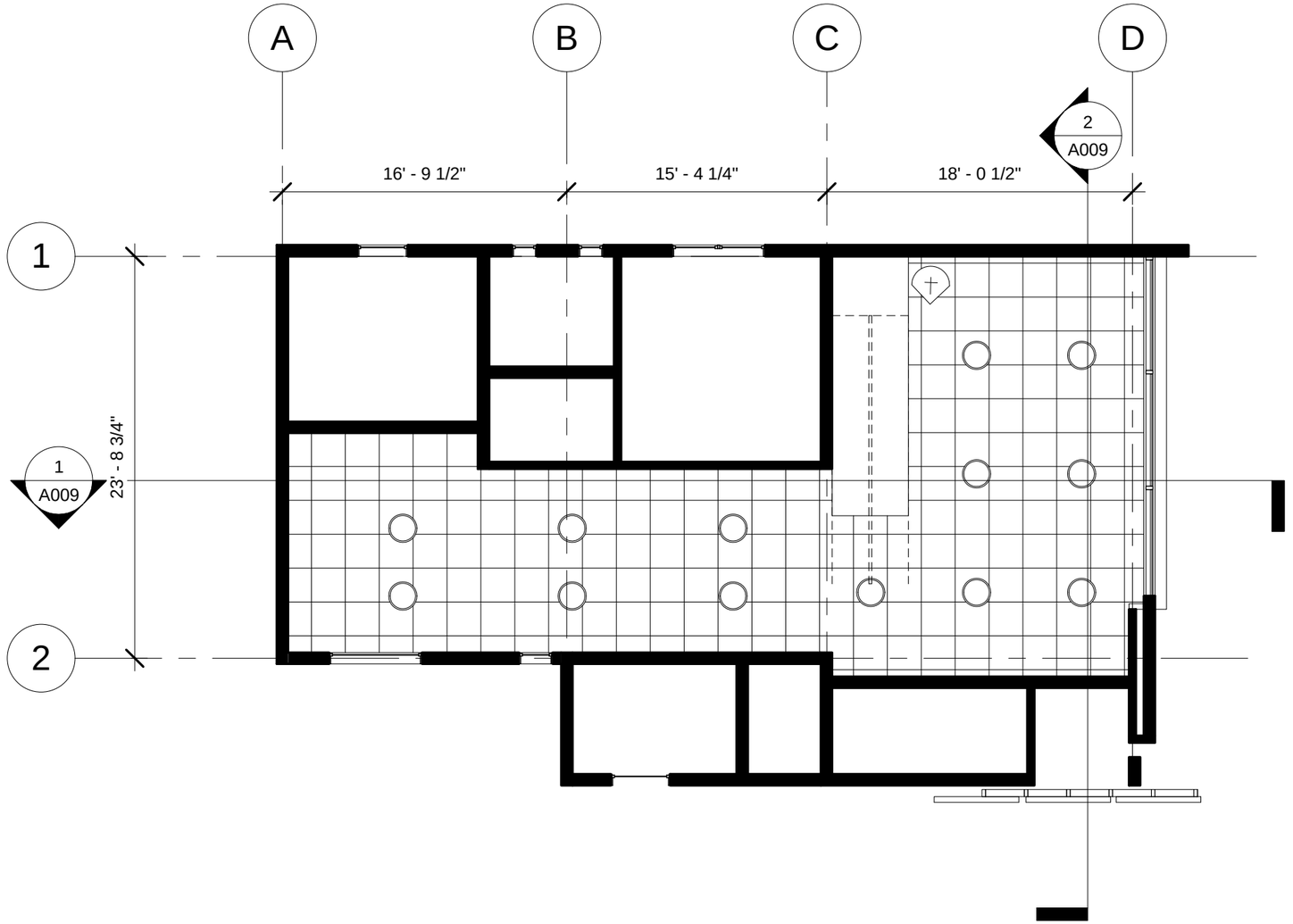
Second Floor Plan

Final Project	Sustainable Building	**A003**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 FIRST FLOOR CEILING
1/8" = 1'-0"

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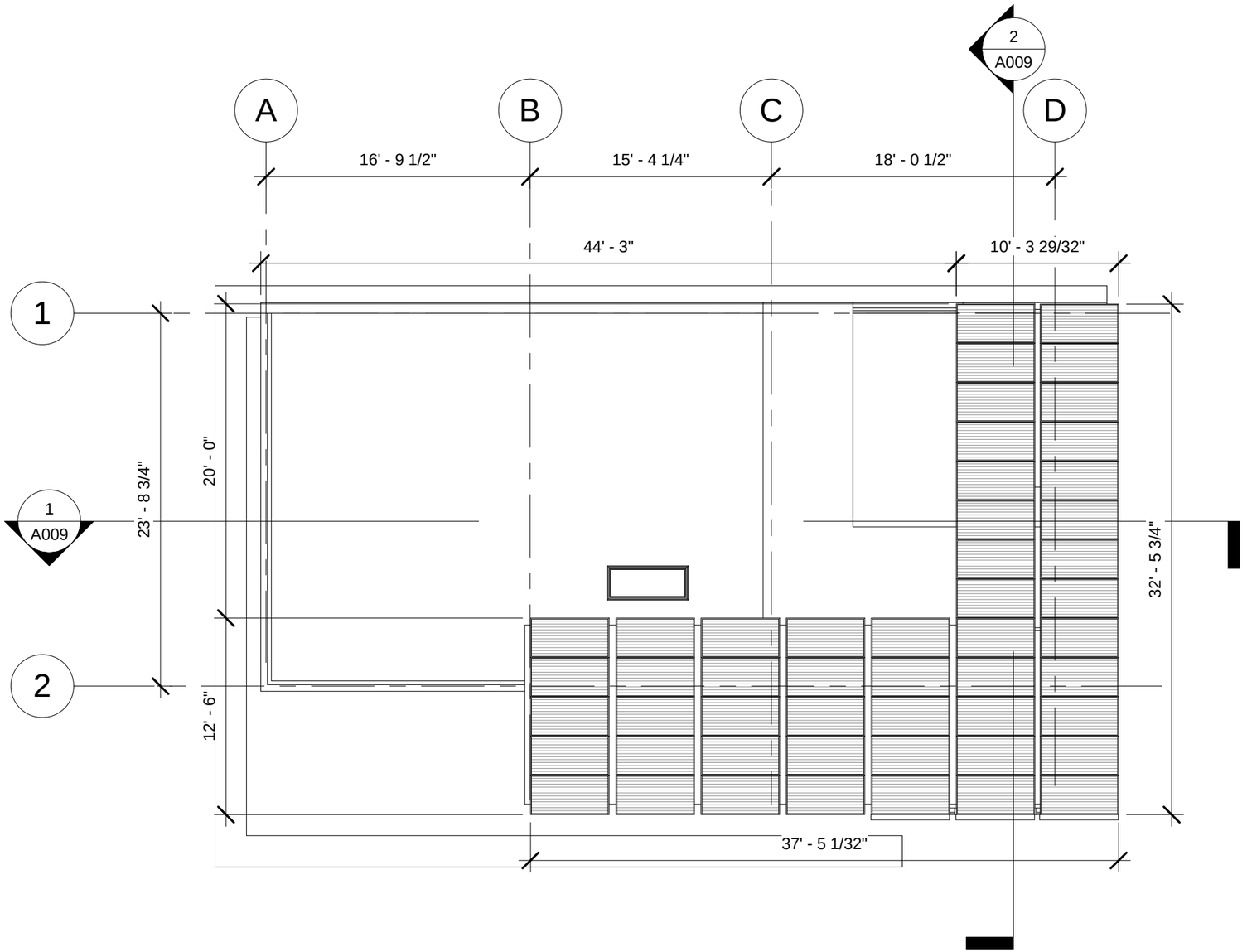
Ceiling Plan

Final Project	Sustainable Building	**A004**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 ROOFS
1/8" = 1'-0"

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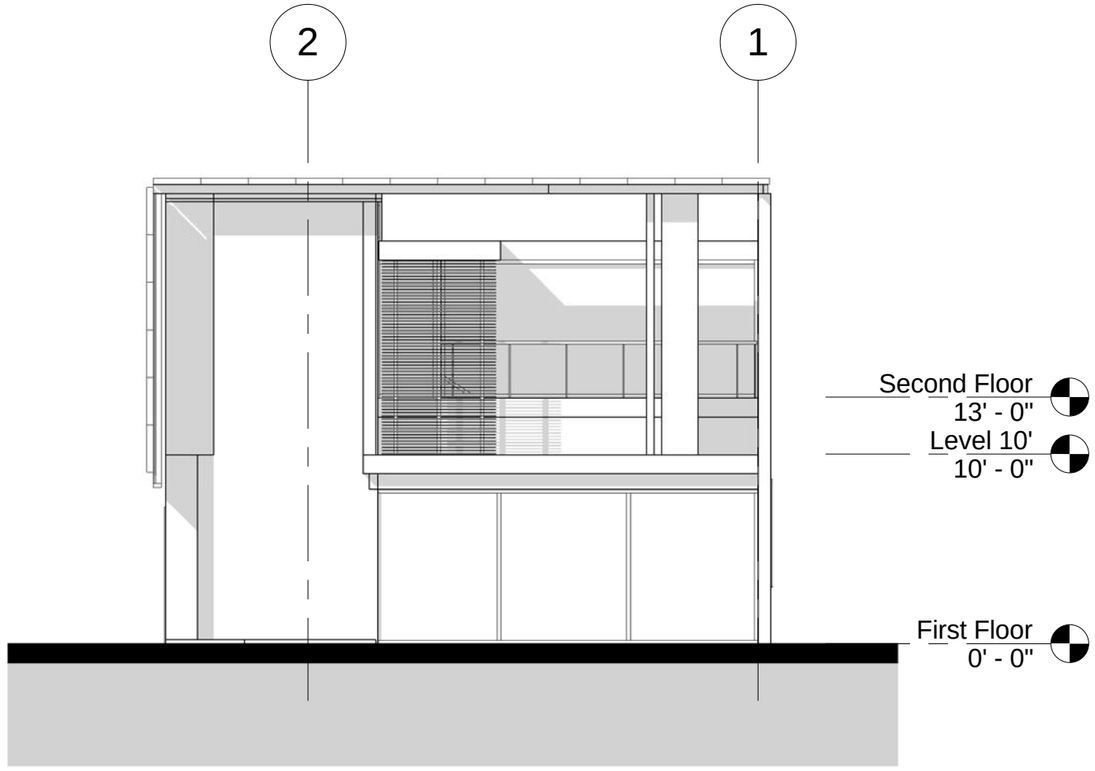
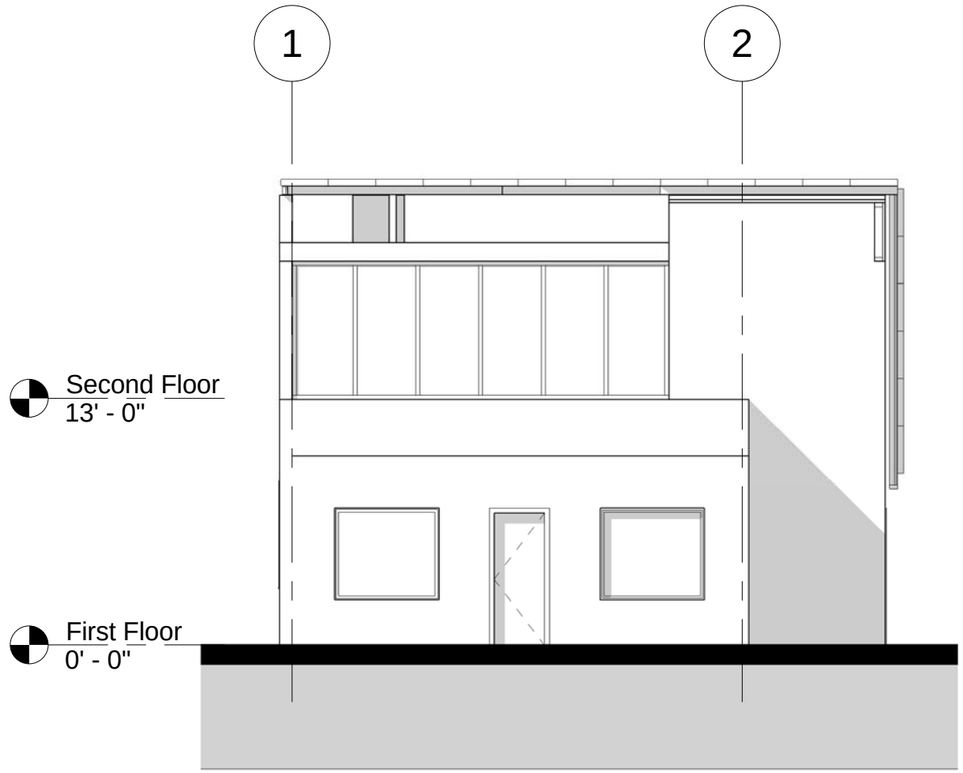
Roof Plan

Final Project	Sustainable Building	**A005**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 EAST Woodlawn Ave
1/8" = 1'-0"



2 WEST Boccaccio Ave
1/8" = 1'-0"

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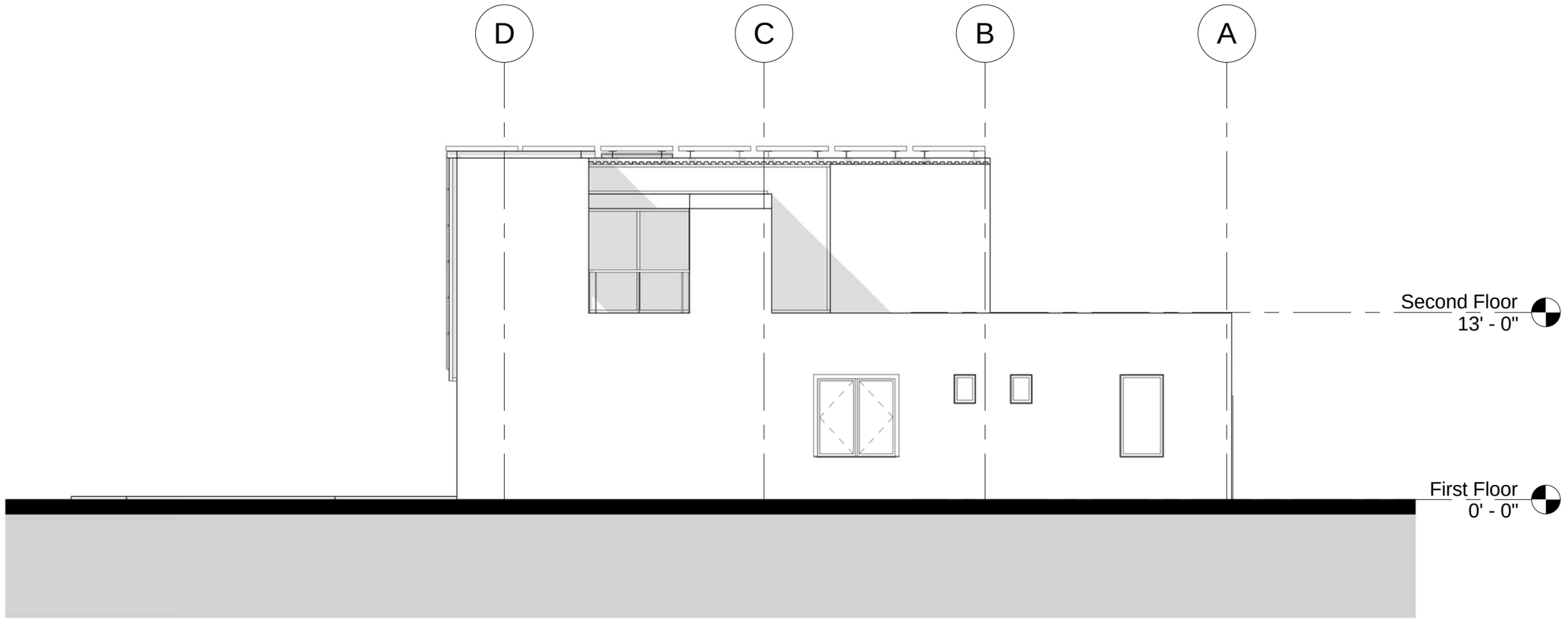
Elevations

Final Project	Sustainable Building	**A006**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 NORTH
1/8" = 1'-0"

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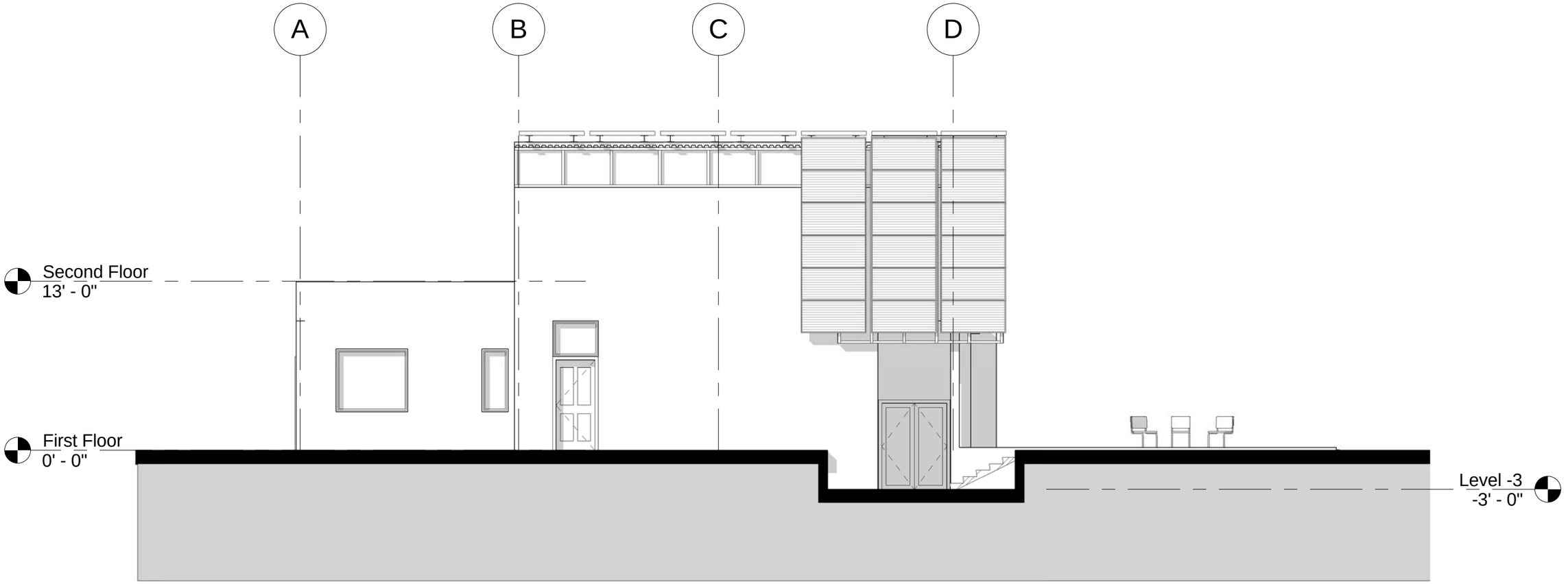
Elevations

Final Project	Sustainable Building	**A007**
Date	June 8, 2011	Scale 1/8" = 1'-0"



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

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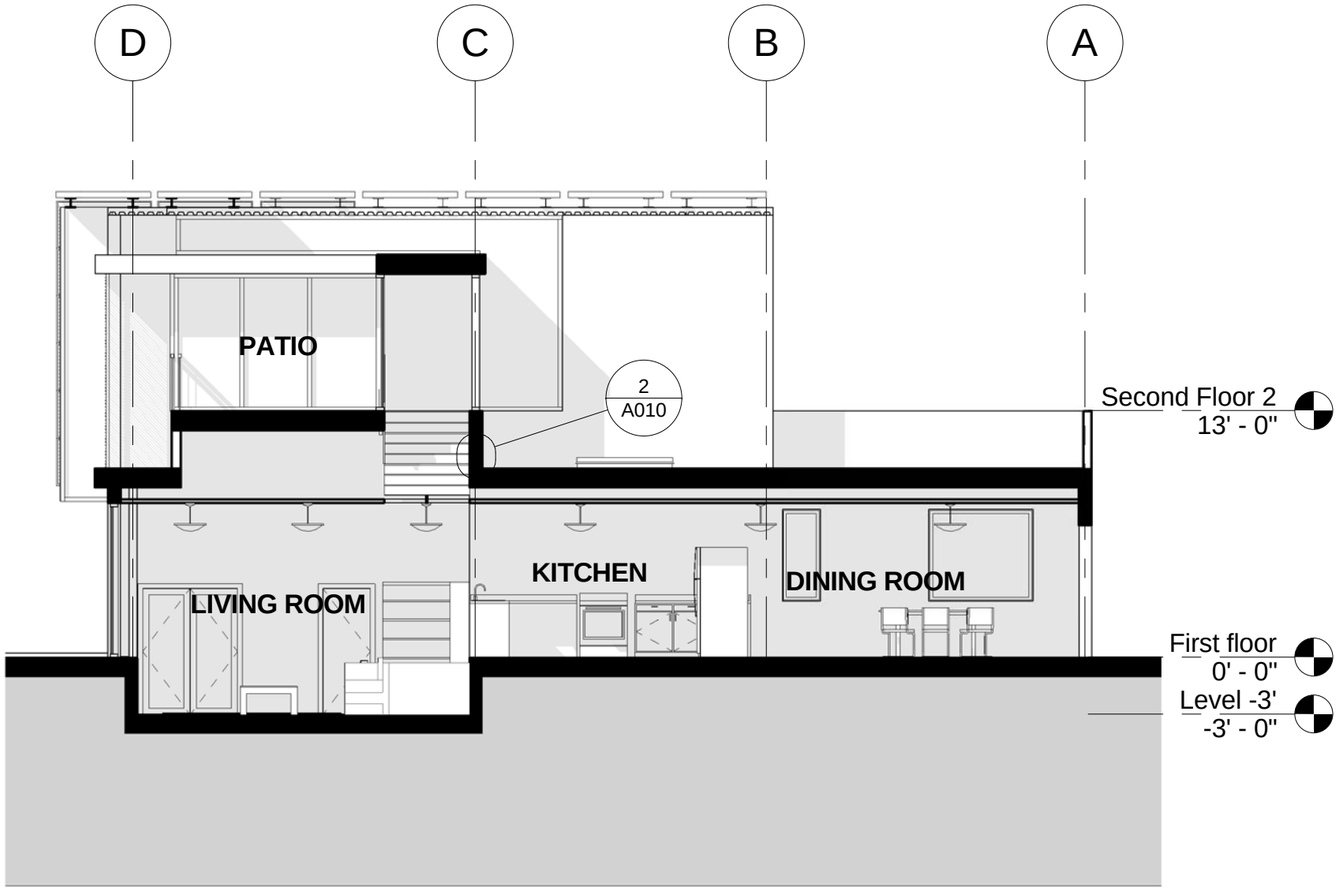
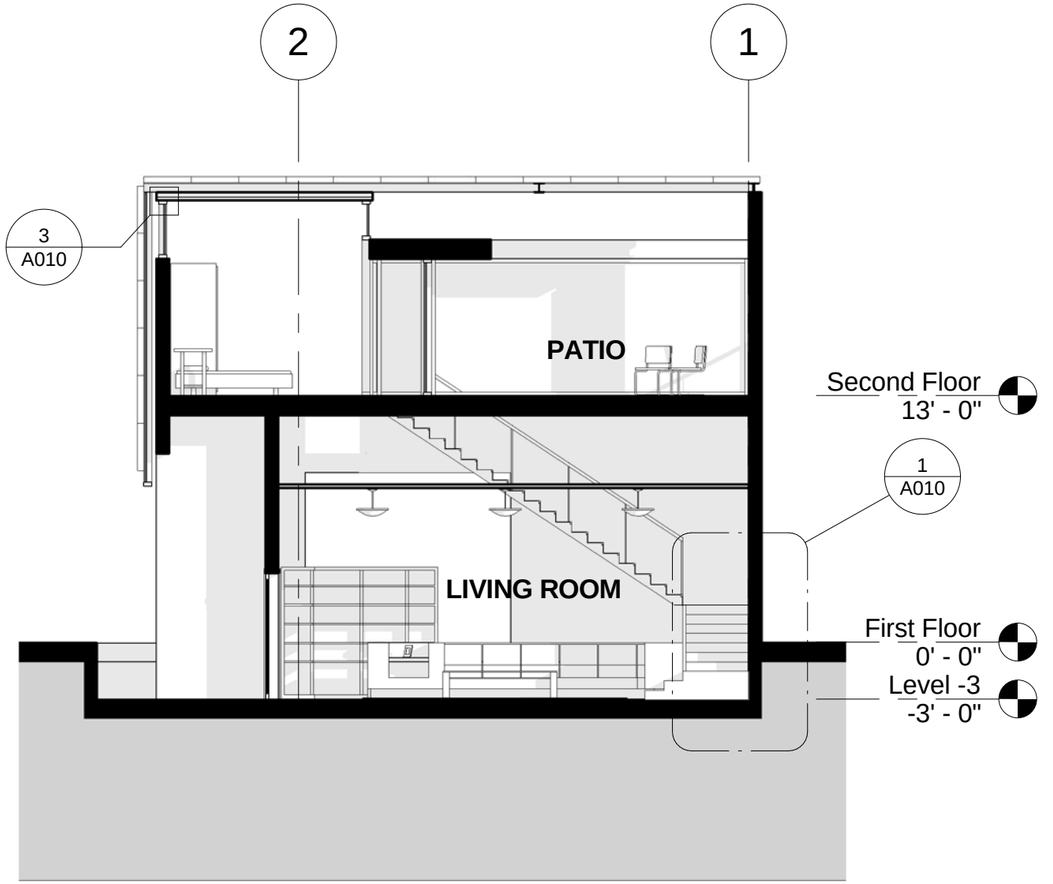
Elevations

Final Project	Sustainable Building	**A008**
Date	June 8, 2011	Scale 1/8" = 1'-0"



1 SECTION 1
1/8" = 1'-0"



2 SECTION 2
1/8" = 1'-0"

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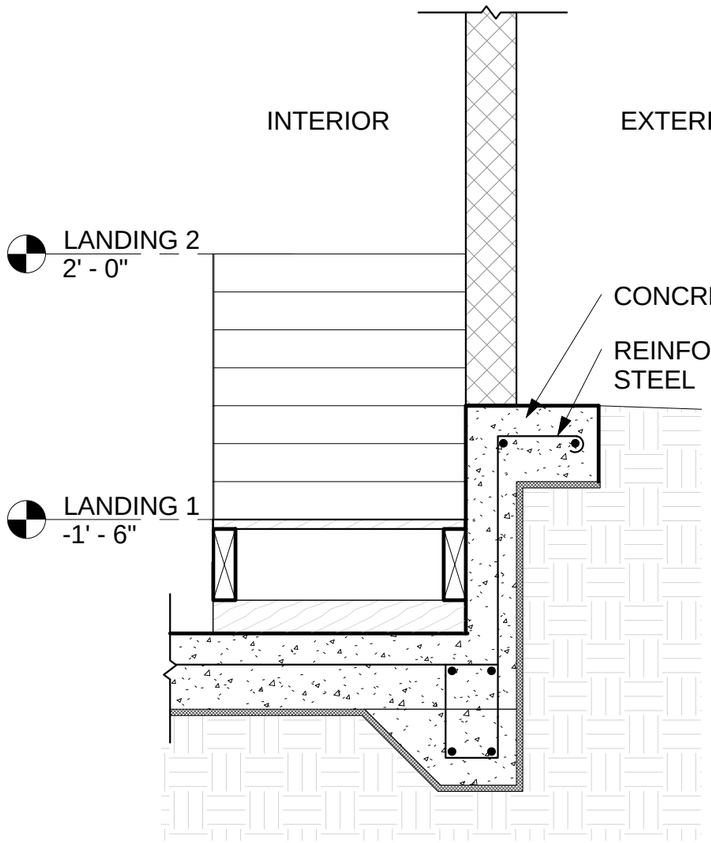
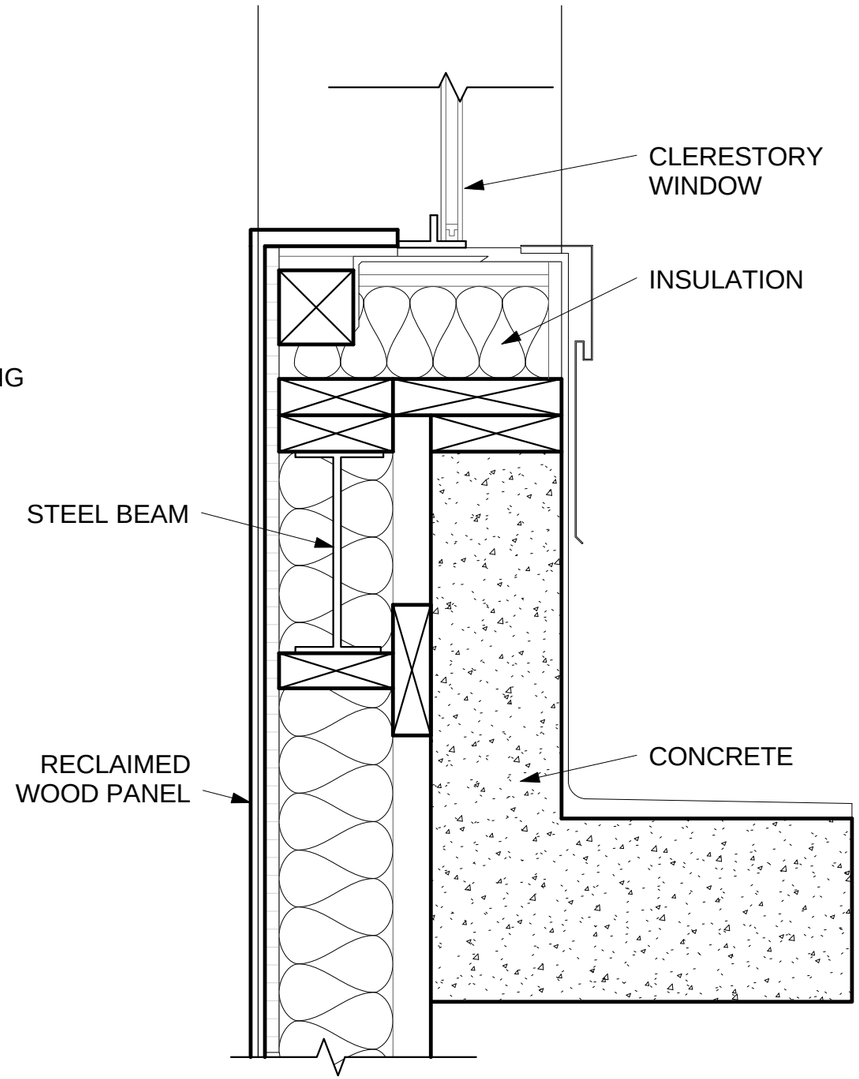
Sections

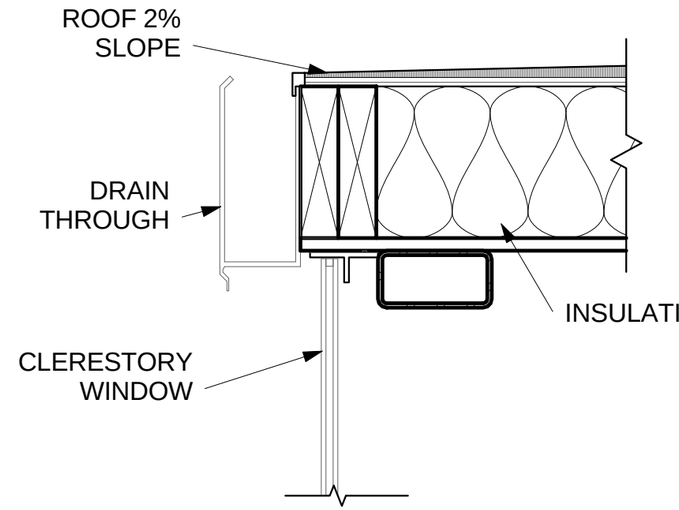
Final Project	Sustainable Building	**A009**
Date	June 8, 2011	Scale 1/8" = 1'-0"



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



2 DETAIL 1
3" = 1'-0"



3 DETAIL 2
3" = 1'-0"

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Wall Section and Details

Final Project	Sustainable Building	**A010**
Date	June 8, 2011	Scale As indicated

1 ROOMS FIRST FLOOR
1" = 10'-0"

2 ROOMS SECOND FLOOR
1" = 10'-0"

Room Legend

- BATHROOM
- BEDROOM
- CLOSET
- DINING ROOM
- KITCHEN
- LAUNDRY
- LIVING ROOM
- MASTER BATHROOM
- MASTER BEDROOM
- PATIO
- STORAGE
- STUDY

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Drawings:
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Room designations

Final Project	Sustainable Building	**A011**
Date	June 8, 2011	Scale 1" = 10'-0"

Room Schedule

Level	Name	Area	Count
First floor	STUDY	109 SF	1
First floor	BATHROOM	37 SF	1
First floor	BEDROOM	143 SF	1
First floor	DINING ROOM	212 SF	1
First floor	LAUNDRY	63 SF	1
First floor	LIVING ROOM	435 SF	1
First floor	KITCHEN	161 SF	1
First floor	BATHROOM	59 SF	1
First floor	STORAGE	28 SF	1
First floor	STORAGE	48 SF	1
Second Floor 2	MASTER BEDROOM	324 SF	1
Second Floor 2	PATIO	174 SF	1
Second Floor 2	BATHROOM	51 SF	1

Window Schedule

Level	Count	Height	Width	Sill Height	Head Height
First floor	1	4' - 10"	5' - 6"	2' - 5"	7' - 3"
First floor	1	4' - 10"	5' - 6"	2' - 5"	7' - 3"
First floor	1	4' - 10"	5' - 6"	3' - 0"	7' - 10"
First floor	1	2' - 0"	1' - 6"	6' - 8 3/4"	8' - 8 3/4"
First floor	1	2' - 0"	1' - 6"	6' - 8 3/4"	8' - 8 3/4"
First floor	1	5' - 8 3/4"	3' - 0"	3' - 0"	8' - 8 3/4"
First floor	1	4' - 10"	2' - 0"	3' - 0"	7' - 10"
First floor	1	2' - 9"	3' - 6"	7' - 3"	10' - 0"
First floor	1	5' - 6"	5' - 6"	3' - 0"	8' - 6"
Level 10'	1	2' - 0"	5' - 0"		

Door Schedule

Level	Count	Width	Height	Function	Head Height	Type
Level -3	1	2' - 6"	6' - 8"	Interior	6' - 8"	Single-Flush
Level -3	1	5' - 0"	6' - 8"	Exterior	6' - 8"	Double-Glass 1
First floor	1	2' - 8"	7' - 0"	Exterior	7' - 0"	Single-Flush
First floor	1	2' - 6"	7' - 0"	Interior	7' - 0"	Single-Flush
First floor	1	2' - 6"	6' - 8"	Interior	3' - 8"	Single-Flush
First floor	1	2' - 6"	7' - 0"	Interior	7' - 0"	Single-Flush
First floor	1	2' - 6"	7' - 0"	Interior	7' - 0"	Single-Flush
First floor	1	2' - 6"	7' - 0"	Interior	7' - 0"	Single-Flush
First floor	1	2' - 6"	7' - 0"	Interior	7' - 0"	Single-Flush
First floor	1	3' - 0"	7' - 0"	Interior	7' - 0"	Single-Panel 2
Second Floor 2	1	5' - 0"	6' - 8"	Interior	6' - 8"	Sliding-2 panel

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Architects

Drawings:
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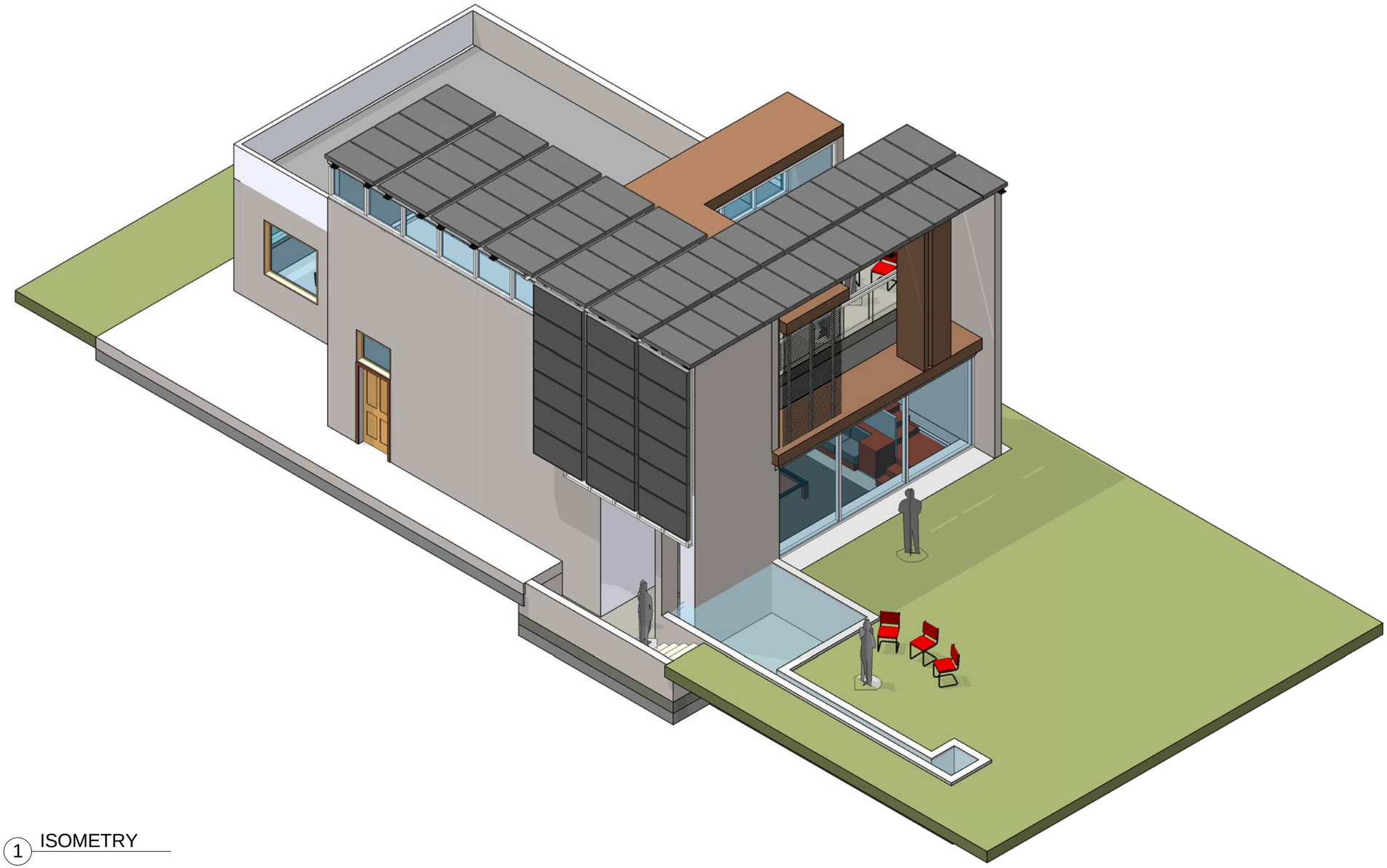
Schedules

Final Project Sustainable Building

Date June 8, 2011

A012

Scale



1 ISOMETRY

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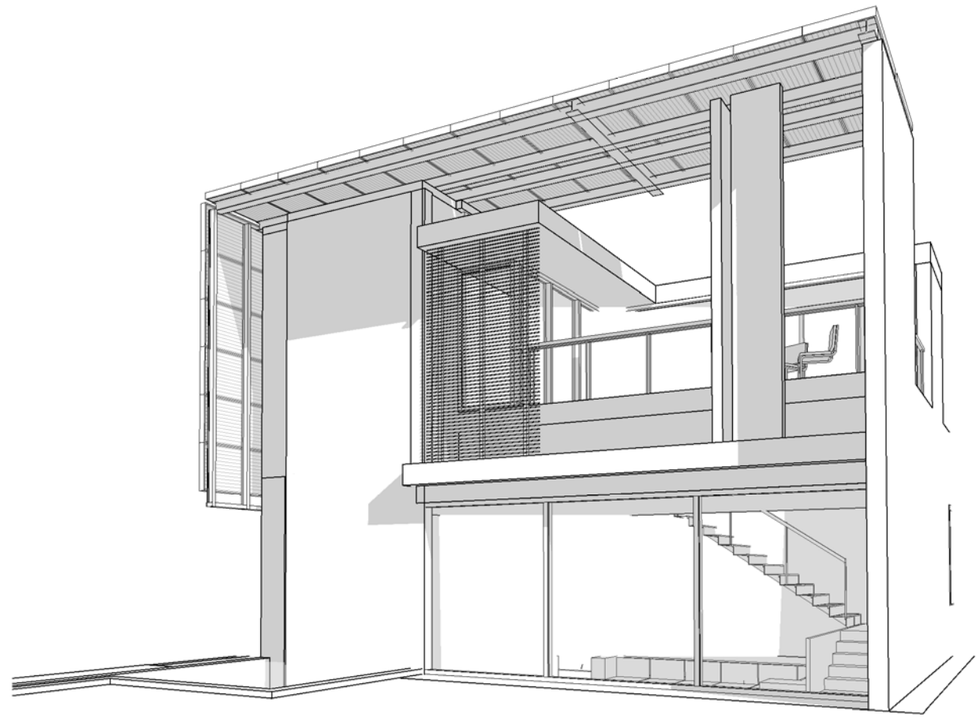
Perspective Renderings

Final Project	Sustainable Building	**A013**
Date	June 8, 2011	Scale



1 SOLAR UMBRELLA HOUSE

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PUGH + SCARPA
Architects

Drawings:
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Perspective Renderings

Final Project	Sustainable Building	**A014**
Date	June 8, 2011	Scale

VIEW FROM WOODLAWN AVENUE

LIVING ROOM

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Perspective Renderings

Final Project	Sustainable Building	**A015**
Date	June 8, 2011	Scale

PATIO

FRONT WINDOW

Revit Fundamentals
ARCH 399 BIM

Instructor: Leonard Yui

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PUGH + SCARPA
Architects

Drawings:
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Perspective Renderings

Final Project	Sustainable Building	**A016**
Date	June 8, 2011	Scale