

# ISLAND COTTAGE ON LAKE SUPERIOR

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## INTRODUCTION

*Built on Madeline Island in Lake Superior in northwestern Wisconsin, this cottage is an experiment: an attempt to create the feeling of a modern-day settler's cabin. Though built for the harsh climate of northern Wisconsin, the cottage appears lightly put together. Through this illusion of rudimentary shelter, one feels more closely connected to the project's powerful natural setting. Both owner and architect were intrigued with the possibility of performance combined with relaxed expression. This formed the conceptual framework for the creation of these little buildings. They embody the values of efficiency and conservation, with a belief in simple amenities.*

## KEYWORDS

small space, simple materials, scale and proportion, thermal envelope, isothermal insulation, solar panels, aging-in-place

## A LOVE OF NATURE

Victoria, a semi-retired physician with one grown daughter, two cats, a dog, and five chickens (who stay in town) came to us through her close friends Barbara and Dan, for whom we had previously designed a home. At the time, she owned a rustic cabin on the island but wanted to be closer to Barbara and Dan's cabin. They had gotten to know each other through their involvement in the Madeline Island Wilderness Preserve and share a love of nature and a commitment to conservation.

Victoria wanted to create a relaxed little cottage, reminiscent of her previous cabin and of her childhood summers spent on the coast of Maine. Her home was an eclectic mix of colors and materials, a theme she wanted to continue. For her, as it is for me, a cabin should be a place where one is not obliged to take off shoes or dress up for dinner. It should simply be a place for friends and family to gather to reflect on the day's experiences while sharing a meal and creating fond memories.

## MADELINE ISLAND

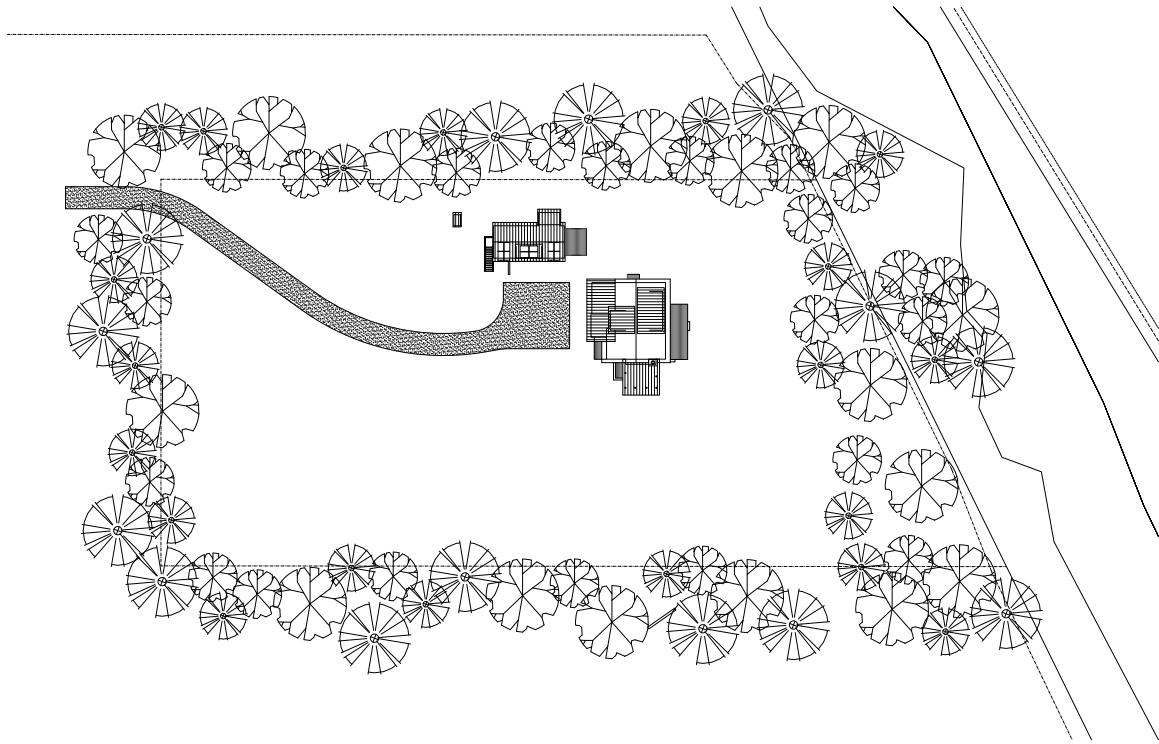
Madeline Island is a special place in Lake Superior. About the size and shape of Manhattan, it is the largest of the Apostle Islands, and the only one that is inhabited. The archipelago is a designated National Seashore and has some of the most beautiful shorelines on Lake Superior.

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Site Plan.



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View of the beach just below the site.

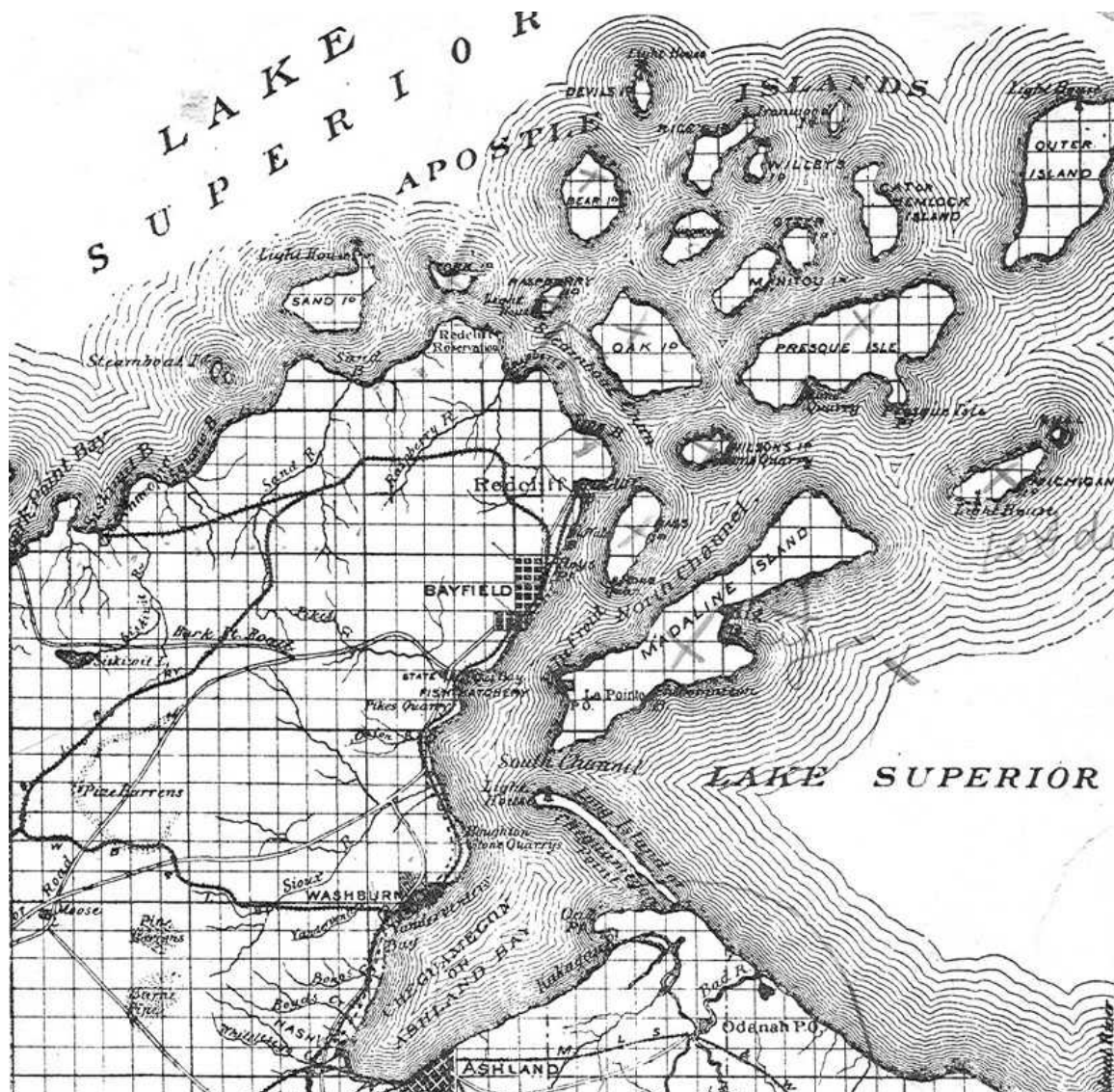


The only access to Madeline is by ferry, except for in the winter when one can drive over the ice to reach it. The island's gentle forests and meadows, alternating rocky shoreline and long sandy beaches, make it a place apart, a place to experience the beauty of the wild upper Midwest.

### ***Built on Community***

Barbara's family owns a large parcel of land on the far end of the island, which was originally purchased by her grandmother. A visionary of sorts, Barbara's grandmother was widowed rather young, and had the insight to buy a farm on the island in the 1920s. She brought her children there from Chicago to spend summers raising food and learning to be close to the land before heading back to the city for the winter. Barbara's father, an architect, cemented that connection for the next generation by creating a miniature village of concrete fairy houses scattered throughout the woods. Each child in the family has a little building dedicated to them, and these fairy houses have become island legends.

Map of the Apostle Islands, ca. 1900.



Barbara and her husband Dan had worked with our firm several years previously to design a new home for them in St. Paul, MN, that met their special accessibility needs, as Barbara has a medical condition that has impacted her mobility. The two families wanted to live closer together on the island so they will more readily be able to help each other as they age, so the family sold 10 acres to Victoria.

### ***Creating a Meadow***

Though originally the site was completely wooded, Victoria always imagined a house in a meadow. So all of us worked as a group to decide on the ideal size and shape of the clearing. The concepts of the house were being developed as we were determining the size and location of the clearing. Mark Tambornino, my longtime colleague at Albertsson Hansen Architecture, and I looked very closely at how to bring in a new driveway and from which position we wanted the space to unfold as one arrived in a vehicle. We settled on an entry point from the northeast corner so that the field would be revealed in a three quarter view, providing vistas towards Michigan Island on the horizon. The county required a 40' wide band of trees to be maintained along the top of the bluff, resulting in the view of the lake being obscured as one approached. This contributed to our feeling that it was important to enter the field as far back as we could, where the elevation of the ground allowed better vistas towards Lake Superior. We then brought in a local logger to harvest the trees.

### ***Creating a Road***

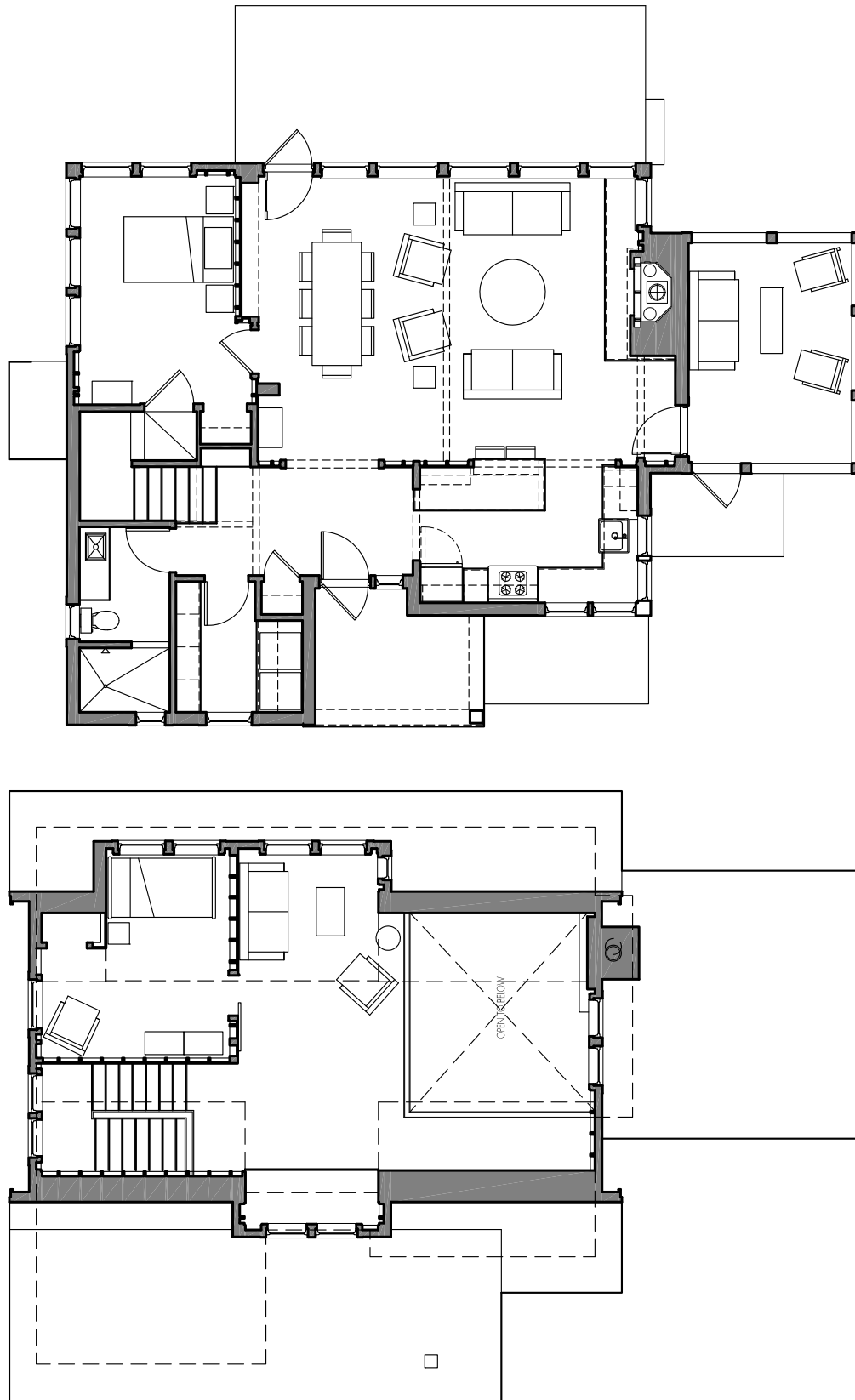
The original parcel owned by Barbara's family is now used by several families who visit throughout the summer. The first problem we had to solve was to provide access to Victoria's lot while also improving the access to the pre-existing ones. Victoria's new parcel straddled the original driveway—an unimproved dirt road. Very charming, but not entirely practical. The families worked together to develop a new shared driveway to access both Victoria's lot and her neighbors'. The new road gently curves through the woods until it reaches Victoria's drive, past the entrance to the new drive.

## **DEVELOPING THE CONCEPT OF THE HOUSE**

When Victoria first asked us to design her a house here, she considered new construction to be a bit of a compromise. So often, newly built buildings lack the qualities of simplicity and durability frequently characterized by older buildings. It was very important to the client that the cabin feel like it had always been there in the old meadow, though both house and meadow are new.

A simple cottage was the goal from the outset, with a central room, roughly square, with a fireplace at its heart. We used Wisconsin Chilton as the veneer around a wood burning metal firebox, with Indiana Limestone slabs used for the hearth. Just steps away would be the kitchen and screened porch, with the latter serving as a secondary entrance for guests arriving from the neighboring property. Victoria's former cabin had had an open sleeping loft, which she wanted to recreate. She also thought it important to have a large dining space within the main living area, as well as a main floor bedroom. The upper level was designed with two principal rooms, a bedroom and a loft, in which there is an extra sleeping nook. There is no bathroom upstairs.

First Floor Plan (top) and Second Floor Plan (bottom).



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View of project as one enters the site.



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View of living room.



The old cabin had been completely off the grid and had only limited heat and running water. The idea for the new cabin was to recreate the same feeling of a very rudimentary building that had characterized the other cabin. Our discussions brought us to the idea of a cabin with exposed framing. Mark and I hoped that this would give the feeling of an extremely simple shelter that we were after. Given that the cabin was not intended for year-round use, a super-insulated wall was not a priority and we could therefore place the insulation on the outside of the wall.

### ***The Boathouse***

In addition to the house, Victoria wanted an outbuilding for storage and overflow sleeping. There she would keep kayaks and lifejackets, a mower, gardening tools and hoses, and various other necessities. The upper level would be a sleeping loft with painted plywood floors, accessed via a stair on the exterior. Dubbed “the Boathouse”, the roof of this useful little building also became the support for a small solar array, which is tied to the utility grid. There are frequent power outages on the island, so in addition to furthering the goal of building sustainably, the solar panels provide some independence from the vagaries of the local electrical service. As opposed to an overhead garage door, large swinging double doors open towards the lake. A manually operated roll-down screen behind them allows the boathouse to be used as a workshop or entertainment space with protection from the bugs. The boathouse was built first, thereby providing the contractor with a place to securely store building materials during the construction of the house, as well as serving as a job site office.

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The completed boathouse during construction of the cottage



### ***Placing the House***

Once the parameters of the meadow were in place, there was much discussion regarding the placement of the cottage and outbuilding. We considered various orientations and placements but in the end we chose the north side of the meadow, to maximize sun exposure throughout the day. The original orientation proposed was at an angle to the shape of the meadow, but after staking out the house on site, we decided to align the two buildings more closely with the shape of the field. Our objective was to create an outdoor courtyard with the two buildings. With their ridgelines perpendicular to one another, the two buildings form an L, which creates a sheltered place to arrive. The driveway is gravel, only a step above the meadow grass. A covered entry porch faces the driveway. It has both steps and a ramp, so that Barbara can easily enter the house when she comes for tea.

It was not important to Victoria to place the building as close to the lake as possible, as people so often do, pushing the building right to the setback. Had we done this, the house would have felt off to the edge of the meadow as opposed to in the meadow. Instead, we pulled the house back about 50' from the setback to give a comfortable margin between the house and the trees. This not only allowed for a generous amount of front yard space for outdoor activities, but also for more room to observe the birds on the edge of the meadow.

### ***Scale***

In order to make a building feel like a cottage one must know how to control the scale throughout the project. Had the structure been too tall or too grand, the feeling of modesty that characterizes such settlers' cottages would have been lost. We therefore paid very close attention to keeping the building low to maintain a feeling that is not imposing. The ceilings on both floors are relatively low, with the main level at 8'-4" and the upper level at 8'-0".

The head-to-eave relationship at the dormer windows is as tight as possible to allow for both a header and an adequate amount of insulation. The spacing of windows and their relationship to interior and exterior casings is also carefully controlled, so that all components will come together as an integrated system. The head height of the windows and doors on the first floor is standard 6'-8", but on the upper levels we lowered the head height slightly to 6'-6" to make it feel smaller. The overall exterior width of each building is equally important to consider as the height is when determining the ideal scale. In this case, the outbuilding, at 15' wide, is the right size to allow its roof form to remain subordinate to that of the main house.



The sleeping loft.

The main house, at 27'-6" wide, mimics the scale of typical New England cottages of the 19th and early 20th centuries. The roof pitches also play an important role in establishing the desired scale. At 10 in 12, the peak is generous, but not too tall, and allows adequate space for a loft, while keeping the building under 22' high.

### ***Composing the Forms***

In order to develop a hierarchy in the building forms, we used a variety of exterior building materials. The porches and dormers have lower roof pitches and are clearly secondary to the main roof forms. These shed roofs, at their 4 and 3 in 12 pitches, are clad in standing seam metal making them more durable, but also making it feel as though the building has been added on to over time.

### ***Interior Organization***

We always try to measure the furniture that will be used in our buildings and draw it accurately on our plans so that the space of the house can be tightly organized around how it will actually be furnished. We balance this against an understanding of how the space may be used in the future as well, so as not to be overly prescriptive. Considering these two opposing ideas, we often arrive at very simple, smallish spaces. This idea is seen throughout the house in the small bedroom, lack of television, and ample opportunity for looking out of the windows.

### ***Placing the Windows***

We believe that for the interior and exterior of a building to truly come together, much care has to be used when placing windows. In order to make the house handicapped accessible without a very long ramp, we placed the building low to the ground. At the same time, we needed to consider that the views to the lake are downwards, as the house sits up on a bluff. This complicated our control of the sightlines to the lake. We solved this by setting our windowsills at 18", which is low, but not excessively, so that the ground does not dominate the view. As a result, one can comfortably see out to the lake and the trees when seated, without too much of the deck on the lakeside dominating the view.

The doors and windows both have a head height of 6'-8", allowing us to gang together Marvin Windows' exterior door with a bank of their double-hungs along the lakeside which wrap the corner by the fireplace. This group of five windows is not all the same size, as the three center windows are larger than the flanking ones. This asymmetry creates a level of tension: one's expectation of order is not met; yet the body does not experience this as imbalance. It also creates an illusion of depth, as the windows appear to bow out towards the lake.

In the kitchen we again grouped the windows around a corner and paid very close attention to the sill height, so as not to place the windows too high over the counter. Often the sills are set 8 to 10 inches above the counter to provide space for electrical outlets, but this interferes with the view to the outside, especially for shorter people. Here, the windows are spaced farther apart to allow for the low sills while leaving room for electrical outlets in the vertical mullions.

### ***Exterior Materials***

To create a feel of one building having been built before the other, we chose to use different materials and colors on the exterior of the two buildings. The barn, which was built first, received the less expensive fiber-cement panels, with every fifth cedar batten covering a seam

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West elevation.



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South elevation.



View of living/dining room from kitchen.



between two panels. We chose red for the exterior paint color, as it creates continuity with early Scandinavian settlers of the area, who used red paint made from iron oxide to preserve the siding of their structures. This reference to iron is also very fitting for the area, as the rock around lake superior has a very high iron content. Taconite mining persists in the region and the looming infrastructure of ore loading docks dominates the landscape in nearby Superior, Wisconsin. We chose cedar shakes for the house's exterior, which will be allowed to weather to their natural grey color. Many original buildings on the island show evidence of having used this material, as cedar was abundant at the time the region was settled. It is also reminiscent of the family cottage in Maine where Victoria still spends time each year with her family.

The windows for both buildings are Marvin Ultimate Double-hungs, with a split color of dark bronze on the sashes and white on the clad frames. This technique allows the parts of the window that are operable to stand out from those that are fixed. The less expensive composite exterior casings are painted a carefully selected white to match the Marvin clad color. Aluminum windows reduce maintenance on the building and thereby increase its life significantly. Though there is no such thing as a maintenance-free structure, should a building fall into a period of disrepair, the windows are often one of the first things to deteriorate. With a good quality window, the hope is that the building will be better equipped to survive a few decades of neglect should that fate befall it.

### ***The Stair***

A carefully designed stair that is pleasurable to go up and down is very important to the overall experience of any house. In this project, the stair is quite simple, with a generous run

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North elevation.



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East elevation.



and shallow rise, and good natural and artificial lighting. The stair windows are placed in the wall to reflect the two experiences of ascending and descending, as well as to accommodate the outdoor shower, which is placed just below. The lower stair run ascends under the eave, so as one climbs, the presence of the roof coming closer is felt. The railing is an extension of the wall paneling in the entry hall, which are painted  $1 \times 8$  medium density fiberboard panels with floorboard nosings projecting into the openings between them. The mechanical equipment is hidden under the stair in a shallow pit that is accessed from the bedroom, which also doubles as a retreat for the cats.

### **Millwork**

The railing in the upstairs loft is inspired by the skirt boards seen on the exterior of porches throughout the Lake Superior region, and has its origins in Scandinavia: flat boards arranged vertically often with decorative cut-out negative shapes.

Exterior window casings are  $1 \times 6$  flat composite boards, with wider boards forming the corners. We added a drip cap at the top of the head casing, while a traditional window stool was used under the windows and wraps the corners of the house along with the windows. On the interior, the windowsills and aprons are within the frame of the exposed studs, giving the windows an object-like appearance in the wall. These are of pine, painted white, which helps to amplify the amount of natural light in the house. We used a narrow section of frame and panel between the windowsills and the floor to give the appearance of an entire wall of windows. We try to avoid composite materials on our interiors as much as possible to protect the quality of the indoor air, as they give off harmful chemicals. The painted paneling on the walls and the ceilings on some of the first floor rooms are all of locally sourced pine, which takes paint well, smells pleasant, and does not give off harmful chemicals.

### **Lighting**

Light fixtures fit best into a simple space when they are thought of as mechanical objects serving a functional role, as opposed to being continuous with the “style” of the house. We aimed for an instrument-like approach for the lighting on this project, selecting fixtures that were modern and elemental, with the exception of the antler sconces, which we felt added some whimsy. To keep installation costs down and the wiring simple, we also chose to use very few recessed lights, the only ones being in the kitchen. All fixtures have A-lamp type bases so that compact florescent and eventually LED blubs can be used as the price becomes more accessible, while making the lighting simpler for a homeowner to maintain.

View of stair from loft.



Paneling in entry hall.



View of entry hall from kitchen.



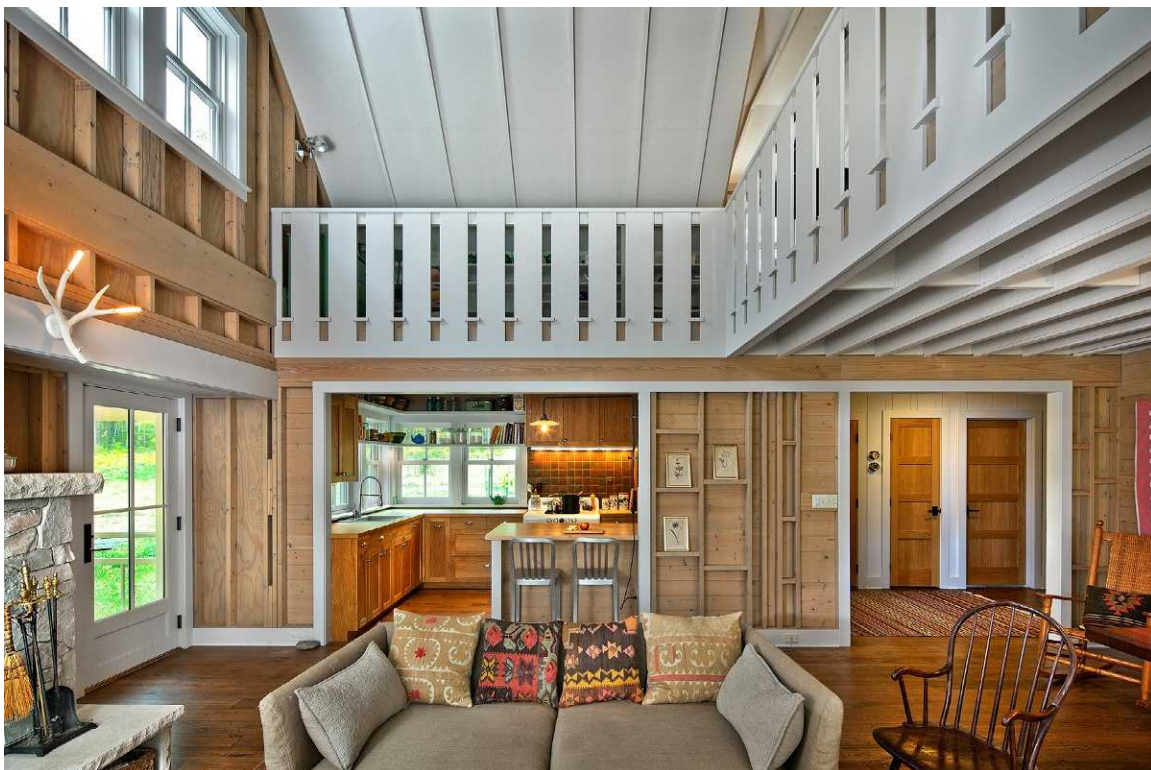
## Kitchen

The corner windows dominate the kitchen with sills that nearly rest on the countertop. There is no microwave and no dishwasher, though space was provided for a potential dishwasher in the future. Victoria normally prepares vegetarian dishes, though on occasion she will grill meat outside, therefore a hood was not considered necessary. The shelf over the windows allows favorite objects to be prominently displayed in the light, while enlivening the window space. We avoided using shiny stone countertops and instead used plastic laminate with a wooden edge at the perimeter to keep the feeling of the space simple and not expensive. The cabinets are a mix of IKEA stainless steel and locally-made white oak. The greyish-green backsplash tile is handmade in Minneapolis. The range is an antique from the 1950s that Victoria had been keeping in storage for many years, and had had refurbished for the project. We used Butcher block at the peninsula, and the light fixture there can be adjusted vertically as well as horizontally for optimum task lighting.

## Bedrooms and Loft

The bedrooms are small, sized for the specific beds that Victoria has. The upper level bed is an antique, which is smaller than standard size and fits comfortably in the space of the dormer. We set the windowsill height to align with the top of the bed so one can enjoy the view while lying down. The loft serves as a movie-watching lounge with a sofa and table to set up a laptop. For the bedroom door, we used a surface-mounted track, which allowed us to maintain the exposed studs in the wall and avoid conflicting with the furniture in the tight spaces of the upper floor. There is also a full-sized built-in daybed in the loft with drawers below.

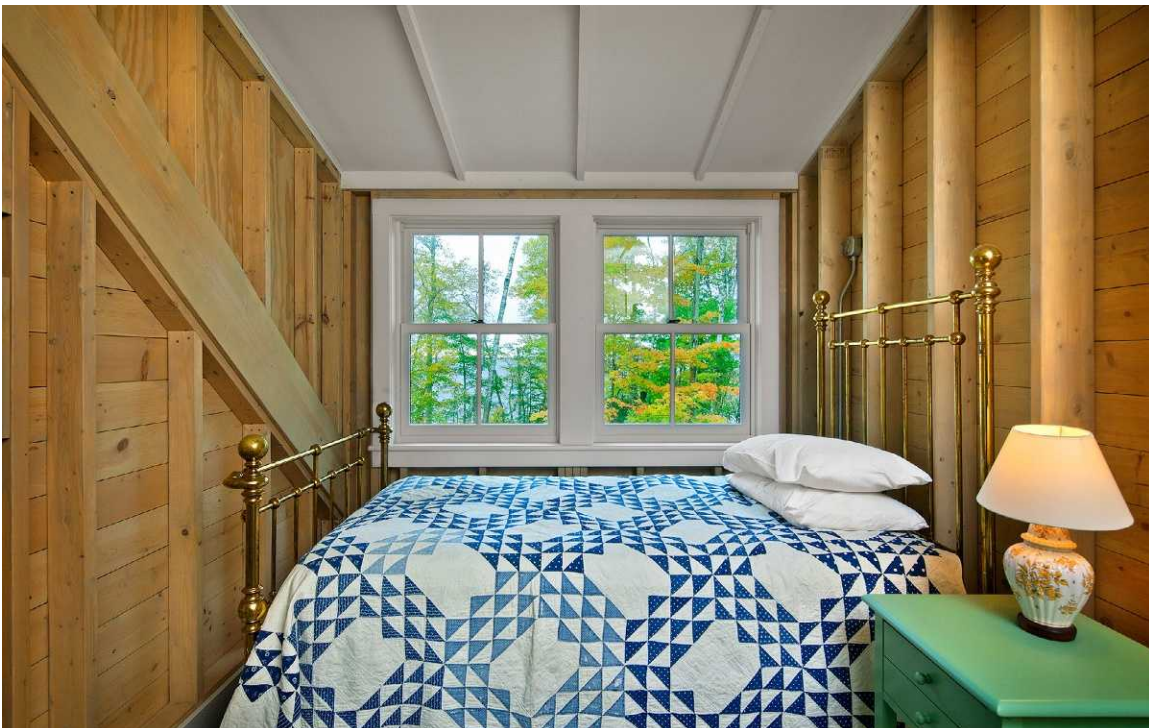
View kitchen from living room



View kitchen facing south.



Upper level bedroom.



Upper level bedroom.



View of the upstairs loft.



View of the upstairs loft.



The walkway above the kitchen serves as a project room, with shelving under the eaves and a sewing machine at the far end.

### ***Bathroom***

The bathroom is simple and functional with a single sink on an open vanity with space for towel storage below. The toilet is in the same room as the vanity and there is no tub, just a walk-in shower. The shower is spacious and is tiled in uncoated slate so that one can smell the stone when it gets wet, which makes it smell wonderfully like the outdoors. Additionally, there is an outdoor shower (which I mentioned earlier) which is used when coming in from using the beach, or by those heartier types who enjoy showering outside. The wall paneling in the bathroom, entry hall, and utility space is painted white. The ceilings are blue, which gives the feeling of these spaces being a transition zone. The wood flooring of the main level extends into the bathroom, with the exception of the shower space, which, of course, is tiled.

### ***Utility/Laundry space***

A set of side-by-side laundry machines sits under a countertop providing space to sort and fold laundry. We left a little empty space for hamper storage and simple utility shelves were used to provide a home for supplies and linens, dry goods, pet food, and overflow gear and coats. The space is immediately adjacent to the entry hall and can easily double as a mudroom, though hooks are provided in the front entry for day-to-day use. Though utilitarian, this space deserved a blue ceiling, and access to natural light: we placed a window to the front yard side of the house so that trips to the utility space would give pleasant views to the meadow, birds, and other wildlife.

The bathroom.



The utility room.



### ***Screened Porch***

Situated on the south side, this is one of the most important spaces in the house. The north woods swarm with mosquitoes. But in a screened porch, you are safe. You can be inside and outside at the same time, listening to the waves crashing below or bird watching. Lake Superior is part of an important flyway for migratory birds, especially warblers and raptors. The screen of young trees between the porch and the lake is an ideal habitat for many of these birds, and allows them to be prominently seen from the cabin.

### ***Wall Section***

2 × 4 framing forms the exterior and interior walls of the cabin and are left exposed on the interior. The outside sheathing is half-inch plywood, on top of which we placed two layers of 1½" thick extruded polystyrene insulation. The outer layer of insulation is occasionally interrupted at each stud by a 2 × 3 piece of framing on its side, which

Screened porch.



provides blocking for the attachment of another layer of  $\frac{1}{2}$  inch plywood, which in turn forms the substrate for the wood shakes that were used as siding. A 10 mm drainage plane between the outermost plywood sheathing and the shingles manages condensation and moisture that may build up behind the wood shingles. The resulting wall depth in terms of a framing dimension is 7" overall, which allowed for deeper than standard windowsills in the interior, as the window is installed in the outer portion of the wall in the plane of the insulation.

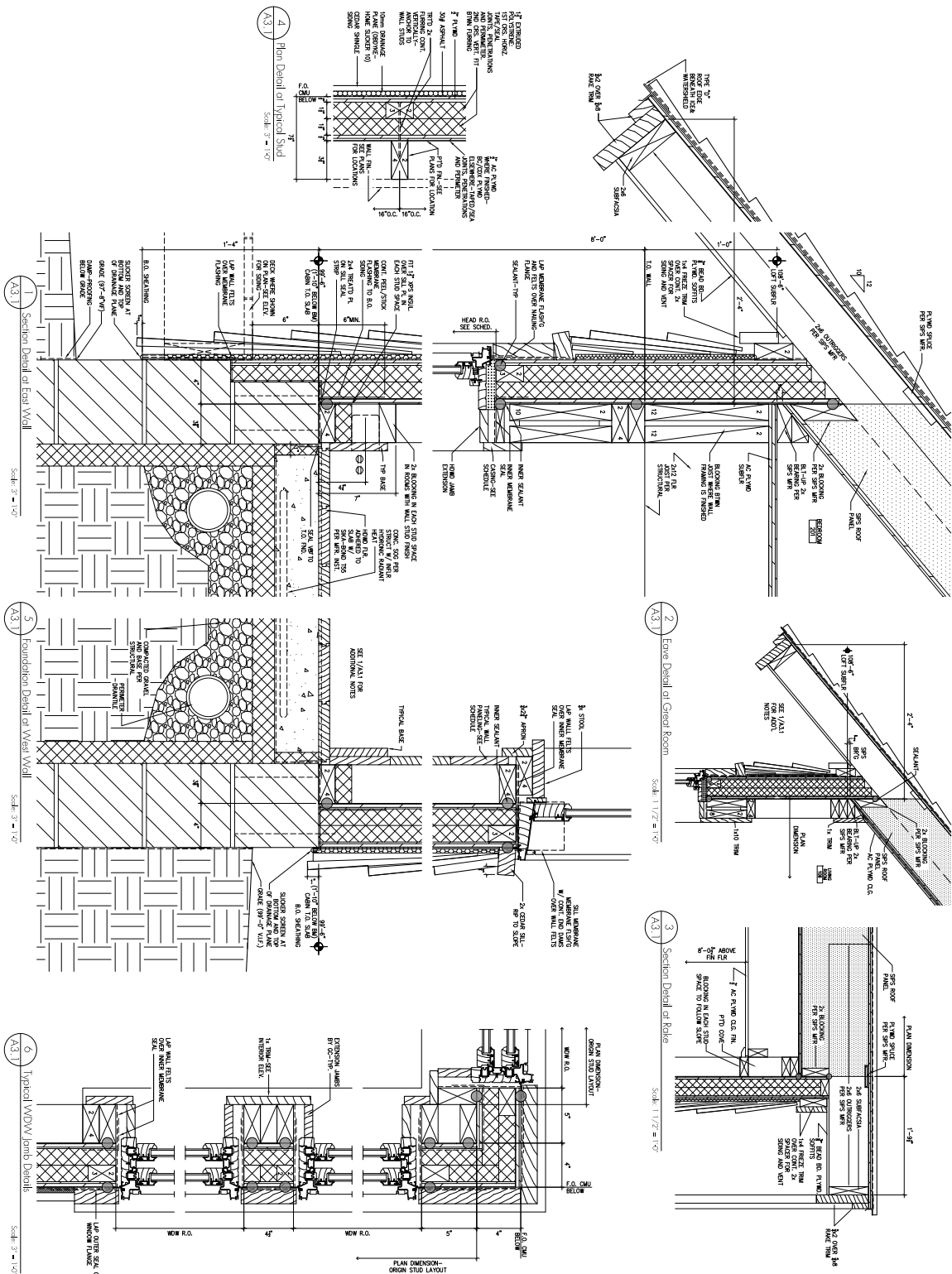
### ***The window installation***

A  $2 \times 3$  frame was built around each opening in the plane of the outmost layer of insulation, to provide support for the window installation itself and for the attachment of the flashing. The inner layer of insulation extends all the way to the window frame itself, providing a reduction in the thermal bridging at the wall around the window. An extra  $2 \times 4$  is used at the level of the sill framing, to allow the window stool to reach the top of the parting strip at the base of the lower sash of the double-hung, a standard detail we use in our office to achieve a more traditional feel for the glass to sill relationship.

### ***The Foundation***

A perimeter concrete block wall with a continuous strip footing was used as the foundation system, with a slab on grade at the first floor. This allowed us to reduce the overall amount on excavation and keep the building very close to the ground, which helped us provide handicapped access without the use of an excessively long ramp. Rigid insulation was used at the inside of the wall and underside of the slab, atop the sill plate of the  $2 \times 4$  wall, and between

# Wall Section



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the slab and the top course of block, allowing for a very near complete separation of exterior cold from interior warm at the sill plate only. Radiant in-floor heat was selected as the primary heat source. The cottage has no air conditioning.

### ***The Roof Section***

SIPS panels were used for the roof section, at a thickness of 10" resting on a dropped 18" deep LVL ridge beam running through the central gable. This proved to be somewhat of a challenging thinking to install on the island, as a crane was needed to be brought to the site, but this was achieved by . . . The SIPS panels meant that we were not able to have a similar set of exposed framing members at the roof plane, so the decision was made to use a sold paint on the underside of the panels on the plywood and then tie that material into the rest of the interior by use of painted wall paneling in other spaces.

### **CONCLUSION**

The term Sustainable Design should not be necessary. Rather, it should go without saying: when one builds well, one builds sustainably. Building takes great investment and thought, and the need to create the term "sustainable design" comes from our legacy of hubris and lack of regard for the land and our resources. True sustainability is built on a deep respect for the quality of what we create, its longevity and its ability to capture our imagination, now and in the future. Truly sustainable design is quiet enough to allow changes in fashion to wash over it, children to climb on it, and water to shed from its roof effectively. It allows light to play over its surfaces and fade its color slowly. It allows feet to slowly wear grooves into its floorboards, and to then be repaired in 50 years not replaced. It is created from an understanding and careful observation of both what has worked well, and what has not. Truly sustainable design is built on that understanding, and it is precisely that which we have explored in the creation of this project. To create a simple place that gives great delight, while resting lightly on the land and using resources sparingly. Sustainable design is not only built for our momentary pleasure, but also has an obligation to provide for the delight of future generations. It makes its own case for not being replaced and therefore endures.

