

Little Barn: Building off Legacy

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Abstract

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Abstract: Little Barn: Building off Legacy, is the adaptive reuse of a small 1990s barn on a multigenerational family property. The project transforms the barn into a restorative environment for those caring for aging relatives in a rural setting. By inserting a new interior within the existing structure, the design creates spaces for refuge, creativity, and rest that support the physical and emotional demands of caregiving. Grounded in adaptive reuse strategies and informed by Attention Restoration (ART) and Stress Reduction (SRT) theories, the project explores how existing built environments can enhance well-being and sustain intergenerational living in rural America.



Little Barn : Building off Legacy

How vernacular structures can be reused to support aging-in place caretakers

Chlo Duttry | Tyler Sprague | Chad Robertson

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Aging in-place in America

By 2030, the population of Americans aged 65 and older is expected to double, from 40.3 million in 2010 to 80 million.¹ With baby boomers reaching elderly age, many are wondering how these people are going to be looked after, and the state for available caregivers. According to AARP, 77% of adults aged 50 and older prefer to age in place.² It is becoming a growing trend that elderly people are living with extended family, or live within an hour of a family member who can give intermittent care. The use of nursing homes has decreased while the number of community-dwelling older adults has increased.

Many people seek to age in place for the sake of autonomy, independence, and familiarity. Aging in place often enhances social connections, reduces loneliness, and taken together improves mental health. It may be more cost-effective to age in place than institutional care, and it reduces exposure to healthcare-associated infections.

Currently, only 10% of homes in America are “aging ready” with necessary accessibility features, including a step-free entry, a bedroom, and bathroom on the first floor with at least one accessibility feature.³ Other challenges include the safety and accessibility of one’s neighborhood, including sidewalk conditions, support services, and transportation. Some older folk experience loneliness and isolation if they do not have access to an immediate social life. It is for these and many other reasons that aging-in-place may not be accessible to all.

1. Maggie Ratnayake, Shay Lukas, Sachi Brathwaite, Jessica Neave, and Harshitha Henry, “Aging in Place,” *Delaware Journal of Public Health* 8, no. 3 (2022): 28–31, <https://doi.org/10.32481/djph.2022.08.007>.
2. Michelle R. Davis, “Despite Pandemic, Percentage of Older Adults Who Want to Age in Place Stays Steady,” *AARP*, accessed June 9, 2026, <https://www.aarp.org/home-living/home-and-community-preferences-survey-2021/>.
3. Johnathan Vespa, Jeremy Engleberg, and Wan He, *Old Housing, New Needs: Are U.S. Homes Ready for an Aging Population?* (Washington, DC: United States Census Bureau, 2020), <https://www.census.gov/library/publications/2020/demo/p23-217.html>

Aging in-place in Urban America

The World Health Organization (WHO) launched the Global Age-Friendly Cities project in 2005 to identify features that support active aging. The initiative resulted in the Global Age-Friendly Cities Guide and a Checklist of Essential Features of Age-Friendly Cities. Key features of age friendly cities included, outdoor spaces and buildings, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community and health services.⁴

In urban environments such as Seattle, many who opt for aging in place build ADU’s or DADU’s, accessory dwelling units or detached accessory dwelling units, as granny-pads or for caregivers. In the state of Washington and Seattle, zoning laws have changed to allow for DADUS and ADUs of larger scale, and the city has been promoting these buildings as part of the solution for middle housing.

Fig 1. Shed Architecture Alley Cat DADU.
<https://www.shedbuilt.com/portfolio/alley-cat/>

Fig 2 . Cast Architecture DADU.
<https://www.castarchitecture.com/cast-architecture-blog/tag/DADU>



Fig 3 . Edge House pre-approved DADU, 2021. <https://www.bcj.com/news/edge-house-featured-on-city-of-seattle-aduniverse-website/>

4. Louise Plouffe and Alexandre Kalache, “Towards Global Age-Friendly Cities: Determining Urban Features That Promote Active Aging,” *Journal of Urban Health* 87, no. 5 (2010): 733–39, <https://doi.org/10.1007/s11524-010-9466-0>.



Fig 4. Casita DADU by Johnston Architects (JA). 2021 (photographer Benjamin Drummond) https://www.builderonline.com/design/projects/seattle-firm-creates-ready-to-build-dadus-as-affordable-housing-option_o

Aging in-place in Rural America

“Roughly one in four Americans ages 65 or older lives in a rural area.”⁵ With many elderly people living in rural communities, it is important to consider how these people need support as they continue to age. Instead of moving to a clinical or institutional setting, this project looks to support the continuation of aging in one’s own environment – promoting intergenerational continuity, emotional security, and spatial independence. While aging in place is more cost-effective than institutional care, “an individual’s quality of life seems to benefit from this aging in place, because one’s autonomy is preserved as are one’s social connections.”⁶ Deeply rooted in the Key Peninsula’s community, my grandmother is set to age in place on our family property with the care of my mother, sister, and I. Perhaps the “most essential asset for aging in place is a person who can drop by with groceries or provide daily assistance with everyday routines, such as preparing meals, showering, and taking medicines. To mount such a labor-intensive, place-specific response is a particular challenge in rural areas that have fewer younger adults available to do the work, whether as family members or as paid aides, and where population dispersal can add hours of “windshield time” to a caregiver’s schedule.”⁷ The renovation of the Little Barn is centered around having a studio for my sister and me to stay in to help my grandmother as she ages in place.

5. Alexis Skoufalos, Janice L. Clarke, Dana Rose Ellis, Vicki L. Shepard, and Elizabeth Y. Rula, “Rural Aging in America: Proceedings of the 2017 Connectivity Summit,” *Population Health Management* 20, no. 2 Suppl. (2017), <https://doi.org/10.1089/pop.2017.0177>.
6. Patricia Vanleerberghe, Nico De Witte, Claudia Claes, Robert L. Schalock, and Dominique Verté, “The Quality of Life of Older People Aging in Place: A Literature Review,” *Quality of Life Research* 26, no. 11 (2017): 2899–907, <https://doi.org/10.1007/s11136-017-1651-0>.
7. Suzanne Anarde, “Home Sweet Home: Aging in Place in Rural America,” *Generations* 43, no. 2 (2019): 73–76, <https://www.jstor.org/stable/26760110>

Little Barn

My grandfather had a successful contracting business called WM.C.Flintoff Contractor, where he and his crew would take on logging and tree cutting/trimming jobs, welding jobs, and later in his career, specialty crane jobs. After purchasing the entirely forested property on Dutchers Cove with my grandmother, he began to dream of having large equipment. A year later, he purchased a bulldozer to help with clearing the property. Through the years and the growth of his business, he began purchasing and collecting large and often broken equipment from auctions, including crawler, paders, wheel loaders, and hydraulic cranes. In the late 80’s and early 90’s, he began to think of a new business incentive: repairing broken large equipment and cranes, fixing them, and selling them. He wanted a place where he could pull the equipment inside and work in an enclosed environment, where the exhaust could blow outside. What other building typology would suit this new undertaking other than a barn?

He started conversations with friends, and one man in particular, Andy, helped him build a scale model of a barn design. The idea was to have an open ground floor for working and a lofted office, and a covered carport where the extensions of a large crane could be covered. My grandfather wanted a donkey, but had no place for it, and so he began constructing the Little Barn with timber he milled from the property and local contracting jobs.



Fig 5. Polaroid Picture of Model Barn, 1988. William Flintoff and Andrew Braastad.

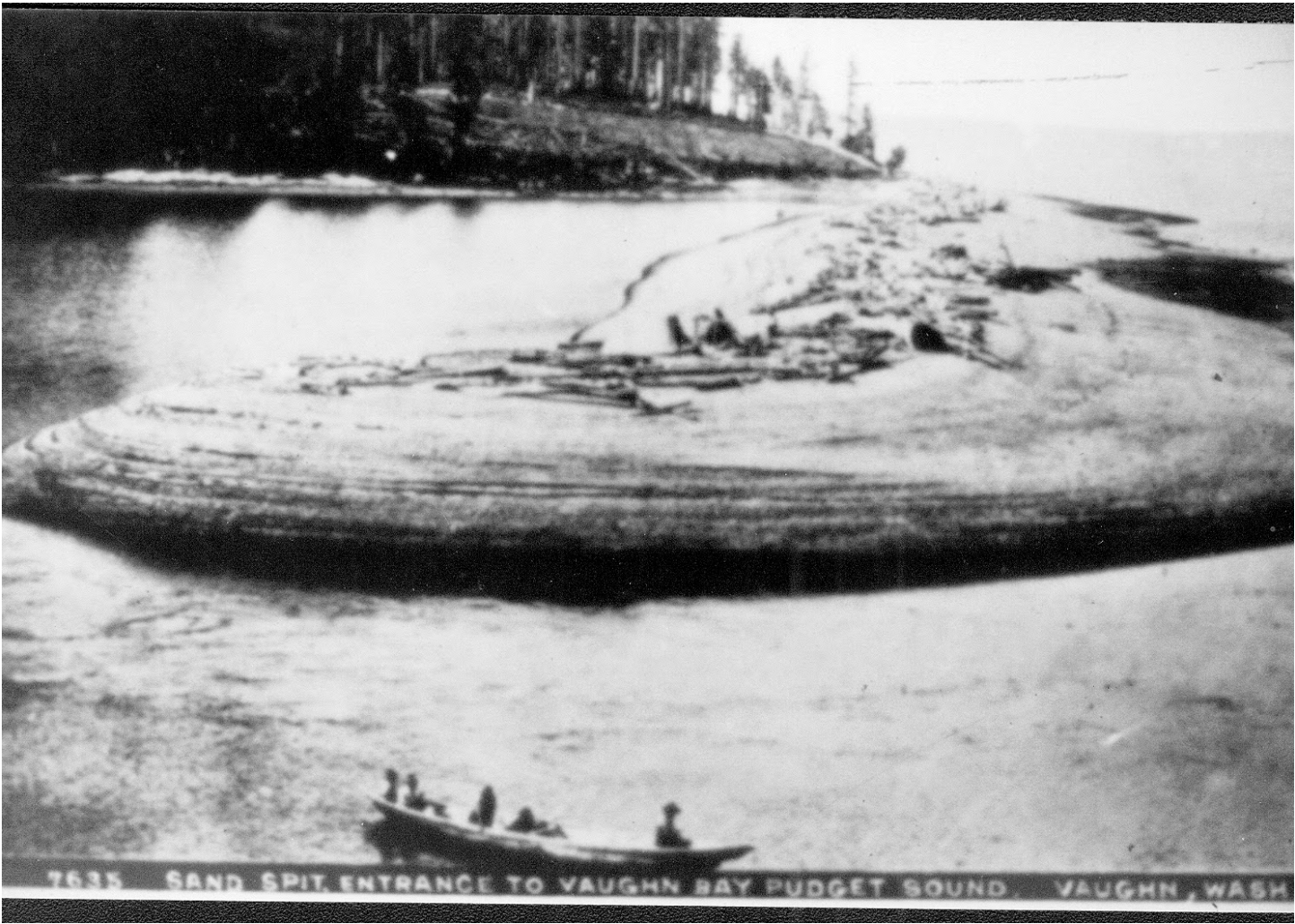
The Key Peninsula

Indigenous Presence

Since the early days of the Key Peninsula, the KP has been a remote place with natural offerings, and has served the Indigenous camping grounds, fur traders, logging industry, and homesteaders. While there was no Indigenous tribal settlement on the Key Peninsula, Squaxin, Nisqually, and Twana people traveled to the key peninsula before 1850, using it’s shores, inlets, and coves for gathering and seasonal fishing. “Natives constructed fishing lines and nets of nettle or milkweed fibers, and they picked up, dug, or trapped in baskets a variety of sea life, including clams, crabs, mussels, oysters, and shrimp.”⁸ Women would often gather blackberries, huckleberries, kinnikinnick, salal, dried roots like skunk cabbage, cattail, and lily, as well as dried seaweed. Coves and inlets were essential locations for Indigenous peoples’ daily diets, full of shellfish and bottom sea life. These Lushootseed-speaking Coast Salish tribes gave names to important traveled parts of the Key Peninsula. Dutchers Cove, where my family’s property sits in the nook of, was known as Wanti’utld-aldn, meaning “world’s house.”

When Hudson Bay Post came to Nisqually, indigenous peoples from the region began to trade their goods from the South Puget Sound with the new settlers, initiating early relationships between the indigenous and the settlers. English people began to travel to the Peninsula, sharing the shores as camping grounds with the Coast Salish. “The arrival of the white men on the Key Peninsula did not change the habits of the natives for several years; they continued to camp in their traditional areas and to hunt , fish, dig clams, and gather berries and plants well into the early 1900s.”⁸ The location for their trading was the Filucy Bay sand-spit. Many indigenous women would sell their baskets woven from western red cedar. The Vaughn store was also located in Filucy Bay, and Native Americans would often buy products after they had traded goods, and spending all their money in one go, as it had no use other than exchange with the white settlers. Indigenous presence and trading had slowly ended in the early 1900s.

Fig 6. Indigenous people in Vaughn Bay.
Key Peninsula Historical Society and Museum Archives.



8. Colleen A. Slater, *Images of America: The Key Peninsula*, Images of America series (Charleston, SC: Arcadia Publishing, 2007), 11.

Settlement and Logging History

When the early settlers came to the Key Peninsula in the 1800s to start their new life they were met with forests from shore to shore. With the desire to build communities, the settlers brought the timber industry with them, in which Indigenous people often took the dangerous positions on the crew with little to no pay. The resourceful coves and inlets became logging camps under Winchester, including Dutchers Cove. Saw mills were being constructed all along the peninsula. Notably, the Vaughn Bay mill was built right beside the Vaughn Store and post office by Alfred Van Slyke. The Vaughn Bay mill was an early supplier to build the dry docks at the U.S. Navy yard in Bremerton. Logging companies helped early settlers clear land for homes and farms, and offered jobs to the community. However, as logging was the first job for many settlers on the peninsula, many of them logged their own property, sliding the logs into bays and coves. At the time, “enough dynamite to obliterate a stump of virgin timber cost \$2.50, which was the cost of an acre of land in the late 1800s.”⁹ Horses were used to skid logs on roads so logs could be transported inland. The peninsula was filled with old-growth logs, ranging up to twenty-two feet in diameter. The oldest log was “figured to be 1,785 years old when cut,”⁹ and these sizable old growths could provide 41,000 board feet in lumber. Due to the Key Peninsula’s isolation and large acreage, logging and clear-cutting of property are still common today.

Fig 7-8. The mill at Vaughn Bay. Key Peninsula Historical Society and Museum Archives.

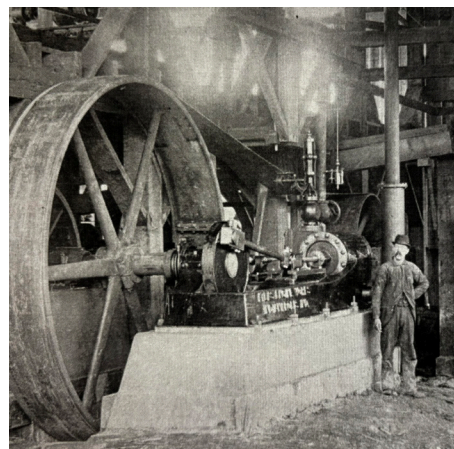


Fig 9. Logging family on the Key Peninsula.
Key Peninsula Historical Society and Museum Archives.

9. Slater, *The Key Peninsula*, 19-62.

The Fleets of the Key Peninsula

The primary mode of transportation was by boat in the early days of the Key Peninsula. This was common in the early settlement across all the Puget Sound, and small boats carried people and freight around the sound until trains, automobiles, and modern ferries were brought to Western Washington. Fleets of the Key Peninsula include the Lorenz-Berntson fleet and the Case and Carr Inlet fleet. Today, the general term for these private transportation companies in the Puget Sound is the Mosquito fleet. The Mosquito fleet was an informal network along the Puget Sound from the 1850's to the 1930's that brought mail, cargo, and passengers through a water highway of hundreds of small boats of the like. These boats provided the essential connections to rural areas like the Key Peninsula, to the larger hubs of Seattle, Tacoma, and Stillecoom before reliable roads existed. Among the cargo, these fleets were essential for moving local timber, agricultural products, and mail.

The Lorenz-Berntson fleet had several boats on the peninsula, connecting people and freight from Longbranch to Stillecoom, Vashon Island, McNeil Island, and Tacoma. The Lorentz brothers were a steam boat family, active in the Puget Sound. They had boats that were passenger-only ferries, to boats specializing in freight delivery. The boats were powered by steam, and they had one stern-wheeler (fig 10). These boats were vital to the communities among the Puget Sound, especially those isolated in rural areas like the Key Peninsula.

Fig 10. Tyconda by Win Bresten from the 1980 Peninsula Historical Society Calendar

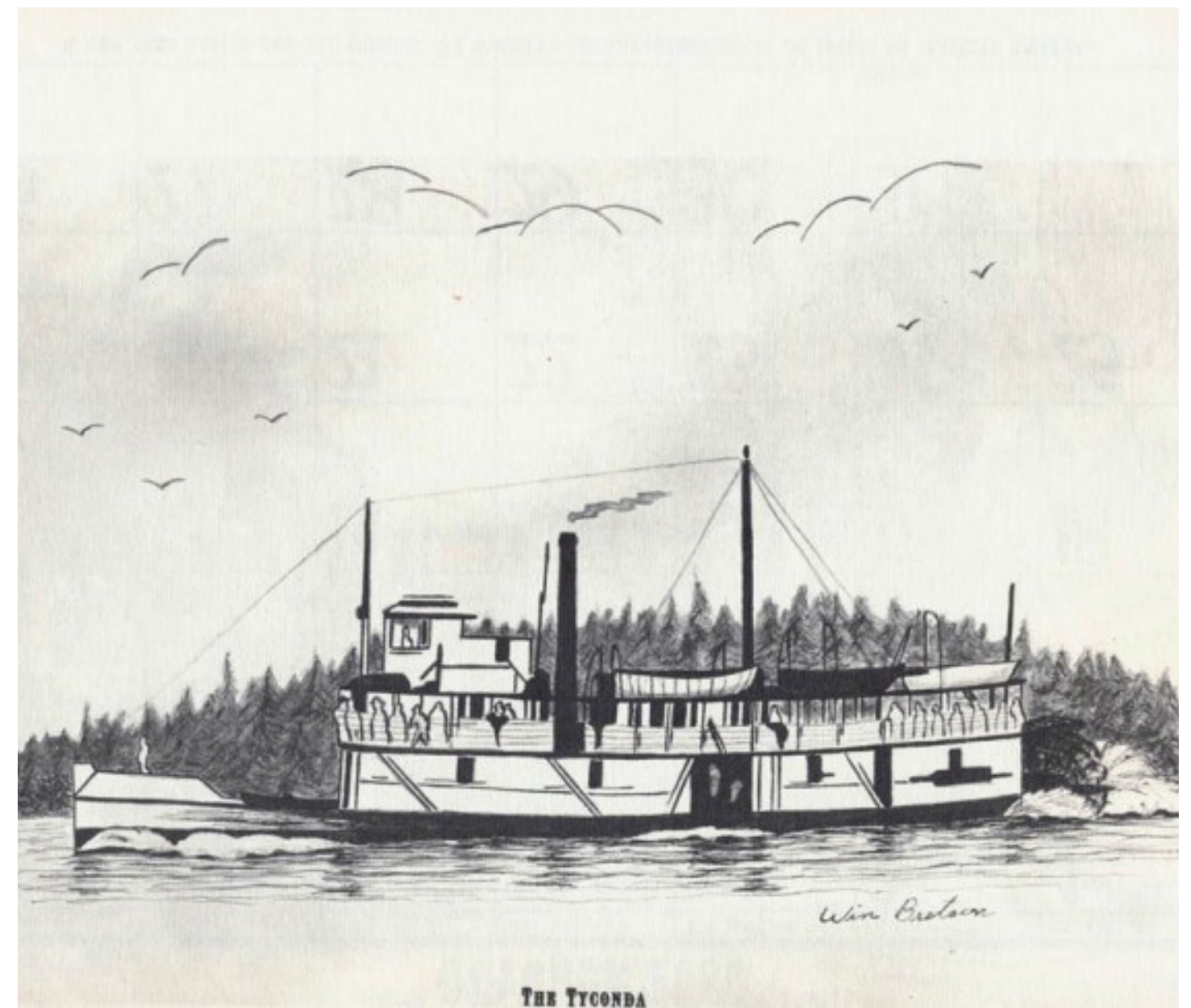




Fig 11. Aerial of Dutchers cove on a foggy winter afternoon. Winter 2026 (photographer Joshua Jones)

Dutchers Cove

Dutchers Cove is located on the Western side of the Key Peninsula and opens into Case Inlet. In the early days of the Key Peninsula, Dutchers Cove was clear-cut, and the logs were lined in the cove for transportation to local mills. This operation was done under Winchester, and logging camps were made along the cove. Boats came in to pick up the logs during high tide and would often take them to the mill a few miles north in Vaughn Bay. Wanti’utld-aldn, meaning “world’s house,” is the Lushootseed name for Dutchers Cove. The Little Barn, located on the family property, sits in the nook of Dutchers Cove on the Key Peninsula.

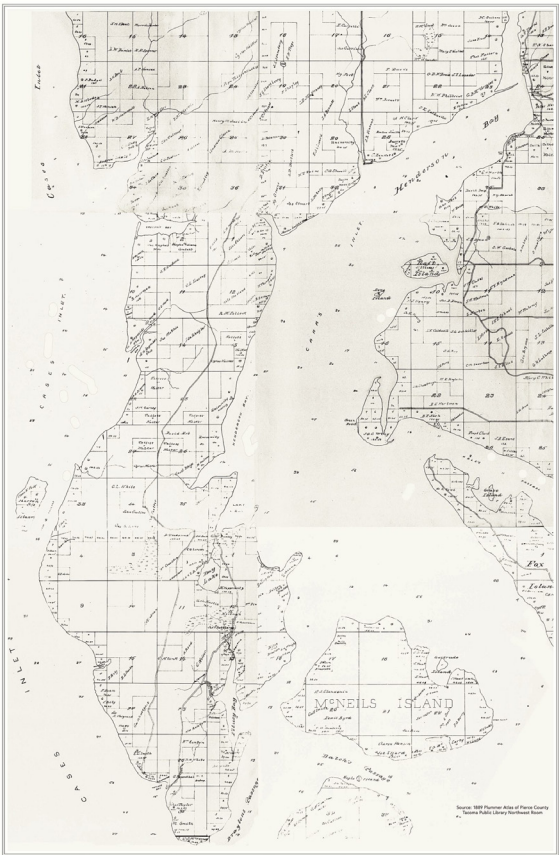


Fig 12. 1889 Plummer Atlas of Pierce County (detail)

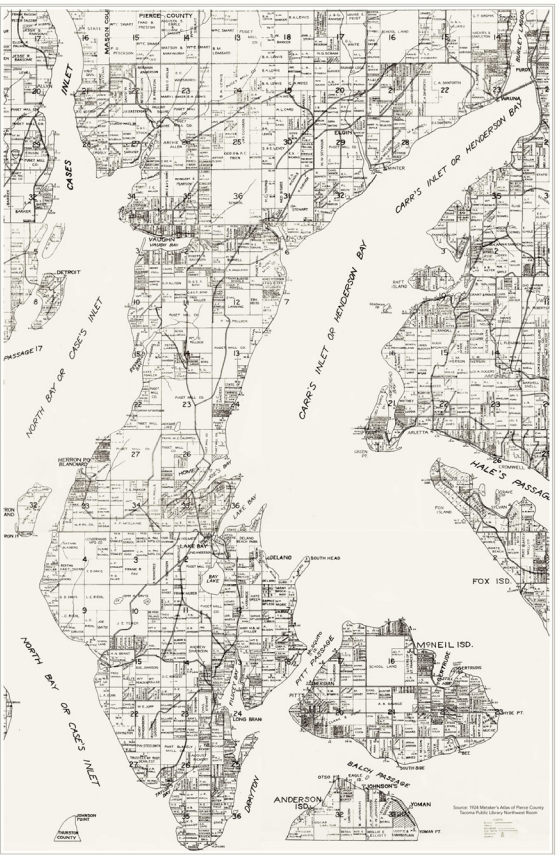


Fig 13. 1924 Metsker Township Atlas of Pierce County (detail)

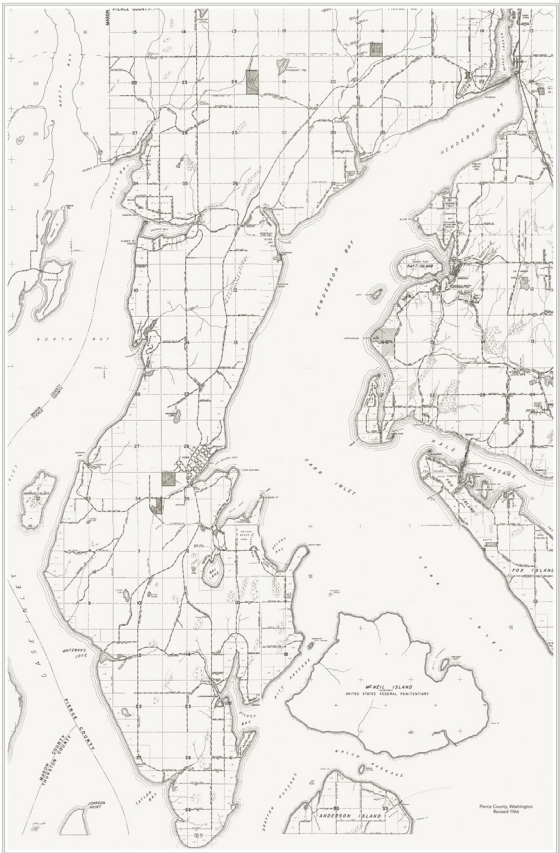


Fig 14. 1966 Pierce County (detail)

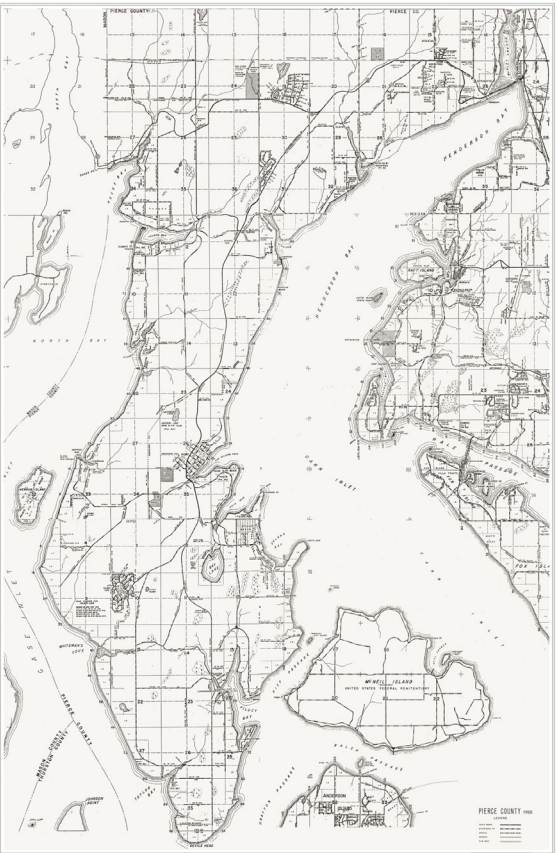


Fig 15. 1988 Pierce County (detail)

Family Property

Property from 1970-1980s

My grandparents bought their property on Dutchers cove in 1975 for ten thousand dollars. My grandmother Molly was twenty two, my grandpa Bill was twenty five, and my Mother Stephanie was three years old. They had been living in Tacoma at the time in a small home from the early 1900s and were looking for property to camp on. Once they found the property on the Key Peninsula, my grandmother started working three jobs, including babysitting, cashier, and front desk person at an animal hospital, to pay the monthly property fee of one hundred dollars. My grandfather was working construction and iron-working at the time, and made a deal with my grandmother; he would pay the down payment if she paid the monthly property bill.

Upon arrival, the property was completely forested. My grandparents would go up to the Key Peninsula every weekend to work on the property and get the road in. Initially, they were interested in making a road clear down to the cove. After about a year, they finally had cleared the road and made a camp down on the water with a small little camper. They spoke about dreams of one day building a house on the property and moving out to the Key Peninsula. The dream became serious when Grandpa Bill bought a used bulldozer to start clearing the top of the hill. After some clearing, they decided to build a garage and had one of their close friends draw up the plans. The garage was to be lived in while they saved and started building a house, so it included a wood-burning stove, a bathroom, and a kitchen. In the process, they put in a well. They moved into the garage in 1981 when my mother was nine. They had sold their house in Tacoma for double what they had gotten it for and put the money towards the house. When they moved, they got pigs, chickens, and made a large garden.

My grandparents returned to their weekend routine of working on the property every weekend, this time starting on the house. The foundation was laid on the hill above the camping spot, overlooking the cove. The design was taken from a magazine with plans and altered to their liking. The house is a three bedroom, three baths that consist of three stories, where the basement is tucked half underground. It took them about three years to build the house.

Fig 16. Molly Flintoff, aged 22, on property after purchase



Fig 17. William Flintoff laying on truck down the driveway to property



Fig 18. Williams bulldozer for clearing land



Fig 19. William Flintoff and brothers framing the garage



Fig 20. William Flintoff working on the roof of the house



Current Day Property

My grandfather had built the Little Barn in the early 90's as a prototype for a larger barn for repairing heavy equipment. The barn was occupied by his donkey that he would take donkey-trekking. The upstairs was used for storing hay, while the downstairs was where the donkey was locked up in the evening.

Bill started building the big barn in the mid 90's, altering the structure from timber to a steel frame, timber joist hybrid. He passed away in 1997, and the barn was left unused. My grandmother had it renovated in 2004 for my mother, sister, and I. We moved in Christmas of 2005, when I was three years old. A long volume on the ground floor was built to have two bedrooms, a volume was built off the carport for a laundry room and potential dark room, a bathroom, and a kitchen were also added to the ground floor. The loft was made into the master bedroom with another bathroom and a large closet. The property became multi-generational, with it's own social dynamics.

Molly, my older sister, brought home a pig when I was eight. At this point, the Little Barn was only an underutilized shed and had been for over ten years. Stanley, the pig, moved into the barn, where he then lived for nine years, until he passed away. The Little Barn became neglected and overgrown by blackberries for five years. My sister moved to Seattle in 2015, and I in 2020, leaving my mother and grandparents to take care of the property themselves. Molly, her fiancé Josh, and I are becoming more responsible for taking care of the property as our grandparents and mother are aging. With different living styles and social dynamics, we have been wanting a detached space, especially as the question of caring for a longer period of time arises.

Fig 21. Aerial of Big and Little Barn. Winter 2026 (photographer Joshua Jones)





Fig 21-22. Big barn under construction 1995. Photographs by William Flintoff





Fig 23. Christmas 1993 in Coeur d’Alene, Idaho (photographer Stephanie Flintoff)

Beginning of William’s Career

My grandfather, William Flintoff, started his career as an ironworker. He went to school and became an apprentice when he was 21 years old. In the early 70s, you had to complete six thousand hours of working as an apprentice on top of being in school to become an ironworker. He went on becoming a journeyman structural welder, working on erecting steel structures, including bridges, high-rises, and radio towers. He was trained on rigging for the job, and was often gone for weeks at a time working in Montana, etc. He worked on erecting several bridges up in Mount Rainier and would stay up in the mountains for weeks at a time.

Bill also worked for Walt Austin, the drag car racer, before and during his apprenticeship, working on the pit crew. He had worked mechanics, and this connection opened up other opportunities for him later in his career.

Bill continued iron-working up until after he and my grandmother built their house on the property. At this time, he was a journeyman who had his own crew. The iron-working union was changing rapidly, and the schooling was becoming less rigorous. Bill was not a fan of these changes and decided he had the skills to slowly start something new.

The Creation of the WM.C. Flintoff Contractor Business

My grandfather started WM.C. Flintoff Contractor shortly after moving into the house he and my grandmother had built. He initially started the company focusing on logging, falling trees, and clearing new roads. Bill had been falling trees on the property and for others, often on his days off from iron-working. He was still iron-working when he started his business until his own work could sustain itself. My grandmother, Molly, was working for Weyerhaeuser as an accountant and began doing the books for Bill’s company.

WM.C. Flintoff Contractor Late Career

When Bill quit the iron-working union, he began taking on project’s that were challenging, that other contractors had turned away. He had a drive, passion, and, objectively, an obsession with tough jobs that had high risk and big pay. Bill would take jobs falling trees in front of large houses, down embankments, and skilled rigging and crane jobs. He would climb up and top trees, which is considered a specialized skill. Several times, he had hired a helicopter to take down trees on embankments near the water and cut the trees into pieces that the helicopter would take. My father has told me a story of Bill hiring him in his mid twenties to be the eyes on the ground for a high risk crane job. Bill had to drop medicare machinery into a hospital, and in order to do so, had to cut a hole in the roof and position the crane perfectly to drop the expensive equipment into the hospital.

Fig 24. WM.C. Flintoff Contractor Truck (photographer William Flintoff)



My grandfather obtained a passion for heavy equipment when he became a logger, and after purchasing a dozer to clear the property. Once he started his own company, he and my grandmother would travel to auctions, often times in Montana, with the trailer he built and buy broken equipment and parts. Bill would rebuild the equipment and often would flip them if not used regularly for his work. His obsession with heavy machinery is what initially drove him to want to build a barn to repair equipment he would get broken from auctions. Bill realized it could bring in substantial income. He was always looking for challenges, dangerous jobs, that would bring in big money.



Fig 25. WM.C.Flintoff wood chipper



Fig 26. WM.C.Flintoff caterpillar



Fig 27. WM.C.Flintoff boom truck



Fig 28. WM.C.Flintoff timber falling sign

Vernacular Reuse and Materials

03.1

Typology and History

ver.nac.u.lar

noun

- 1. the language or dialect spoken by the ordinary people in a particular country or region
- 2. architecture concerned with domestic and functional rather than public or monumental buildings

Vernacular architecture is often looked at as a type of architecture that is not designed by an architect and is primarily concerned with function, utilizing local forms and material resources. Many believe the term means thatched cottages, mud huts, and ziggurats, connected to their region and people who built and use them as “non-experts”.¹⁰ Whilst this is true, vernacular architecture has been studied by cultural geographers, ethnographers, and material culturalists, where the structures have been more interpreted as artifacts. Architectural writers Amos Rapoport and Paul Oliver argue that traditional buildings include cultural practices and social rituals. While, the cultural impact of a building encapsulates the human activities, values, and artifacts, where vernacular architecture is “complex social and cultural relations that are spatially constituted.”¹¹ Vernacular architecture is characterized by practical responses to environmental and climate conditions, often through shared knowledge. The term was coined in the post-war period, when architects were appropriating these traditional buildings to “legitimize prevalent functionalist theories of design.”¹² The study of vernacular architecture examines these traditional buildings.

Unfortunately, vernacular architecture is often viewed as inferior to contemporary architectural practices. Vernacular architecture is rooted in tradition, modern architecture is focused on modernity. Early modernists had rejected tradition, and institutions had reinforced this theory. In truth, the practices are different, while vernacular architecture is influenced by the tangibility of resources, local buildings, and the relay of information. Architectural study is not entirely confined to the

Fig 29. Palouse schoolhouse.
(photographer Chlo Duttry)

10. Paul Oliver, Built to Meet Needs: *Cultural Issues in Vernacular Architecture*, 1st ed. (Amsterdam: Architectural Press, 2006).
11. John Brinckerhoff Jackson, *Discovering the Vernacular Landscape* (New Haven, CT: Yale University Press, 1984).
12. Robert Brown and Daniel Maudlin, “Concepts of Vernacular Architecture,” in *The SAGE Handbook of Architectural Theory*, ed. C. Greig Crysler, Stephen Cairns, and Hilde Heynen (London: SAGE Publications, 2012), <https://doi.org/10.4135/9781446201756.n21>.



building traditions of the locality, but rather can be influenced more broadly.

Traditional buildings are often looked at as unchanged, and the preservation of traditional buildings often fixes them in time, ignoring their evolving cultural significance. However, architecture is inherently incomplete and subject to change, which challenges traditional modernist theories and notions of fixed design. Traditional buildings are often evolving through their use and adaptation. They are also often changing based on their cultural and social constructs, changing with technology, economics, and politics. The relationship between architecture and vernacular is often dynamic, where each practice continually influences the other over time. Architecture and its relationship to society are deeply shaped by vernacular concepts of time, memory, place, and identity.

Fig 30. *Industrial Facades*, 1970-1992
(photographers Bernd and Hilla Becher
<https://buffaloakg.org/artworks/p199512a-o-industrial-facades>)



Fig 31. Santorini, Greece (photographer Fabrizio Ponchia)



Fig 32. Great Mosque of Djenne, Mali.
(photographer Ruud Zwart)



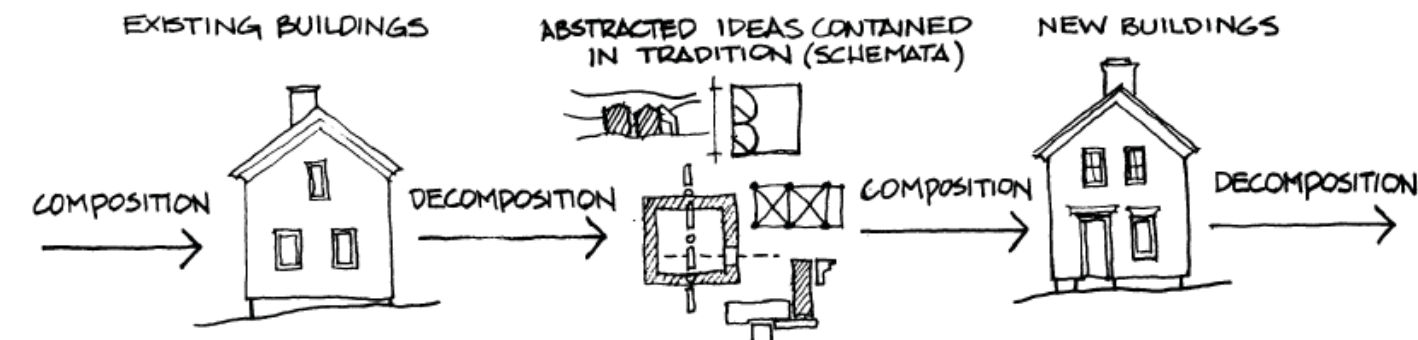
Vernacular Architecture Theories

Vernacular builders are often overlooked as designers, creating misconceptions about their creative processes. Some of these myths include naturalistic determination, historical elitism, and the idea of un self-conscious designers. The misconception of vernacular architecture being primitive suggests stagnation, masking the dynamic nature of folk design. In many cases, the owner is the designer and builder in vernacular architecture, and this often leads to a misunderstanding that diminishes their creative contributions to design.

Vernacular design methods are rooted in tradition and habitat. The designers and builders focus on problem-solving through “design ideas by disassembling or decomposing existing forms and composing new forms out of the abstracted ideas of bits and pieces of existing forms.”¹³ While, architects are free to go beyond building tradition and context, resulting in a limitless design process. Vernacular designers have a narrower field of ideas and rely on existing context. Their designs and ideas also live in their mind, while architects document their ideas through drawings and diagrams.

The method a vernacular designer uses relies on traditional buildings and methods, which often convey problems already solved by other people, leaving the current designer’s focus on what needs to be changed. This results in a faster design exploration than architects, because they utilize a narrower field of information.

Fig 33. Folk building theory diagram.
Thomas Hubka.



13. Thomas Hubka, “Just Folks Designing: Vernacular Designers and the Generation of Form,” *JAE* 32, no. 3 (1979): 27–29, <https://doi.org/10.2307/1424564>

Adaptive Reuse Theories

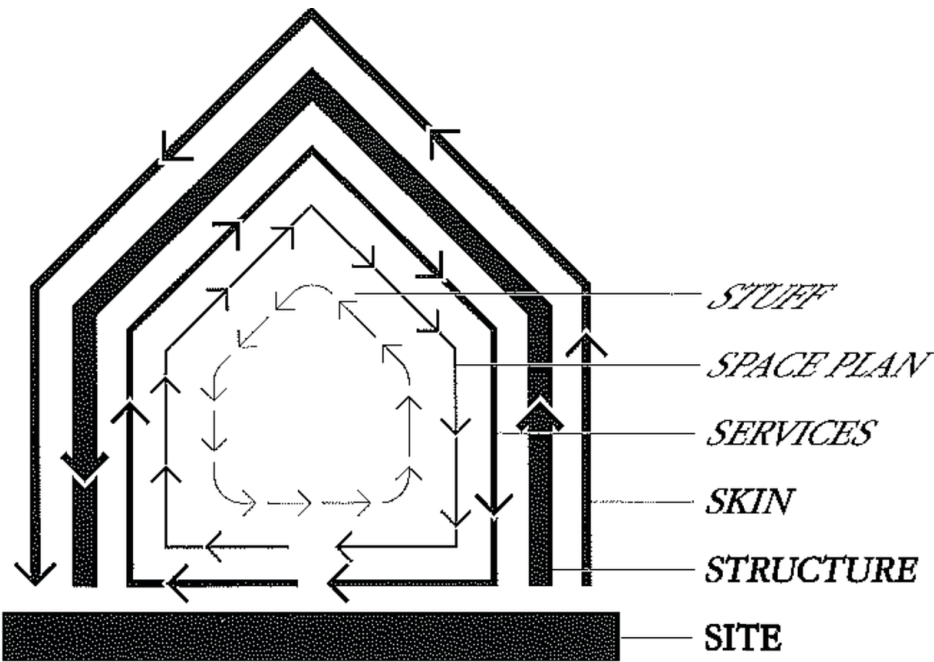


Fig 34. Shearing layers illustration. Stewart Brand.

Adaptive reuse is shaped around the idea that buildings do not last forever, resulting in transformations, restorations, renovations, and other adaptations. Stewart Brand categorized buildings into six different shearing layers, including site, structure, skin, services, space plan, and stuff. Brand argues that buildings layers do not all have the same lifetime, and these layers change at different rates. For instance, the structure would change less than the interior accessories placed in the building, and the planning of that space. Most likely, the services of the building will need to be updated more than the structure. Whether being consistently used over time, or left unused, “is always tearing itself apart.”¹⁴ Each layer is essential in understanding the building’s context to its surroundings, its use, and its age.

An early Italian preservationist, Camillo Boito (1836-1914, argued for conservation over restoration, noting the need for authenticity in historical structures.¹⁵ He critiques romantic restoration methods that obscure the original work, for instance, that of Eugène-Emmanuel Viollet-le-Duc, preferring transparency in interventions. Boito proposes eight methods to ensure new additions are distinguishable from original materials:

1. Difference of style between the new and the old
2. Difference of construction materials between the restored and original parts
3. Suppression of profiles or decorations in the restored sections
4. Exhibition of removed old pieces, installed next to the monument
5. Incision in each restored piece of the date of restoration or a

14. Stewart Brand, *How Buildings Learn: What Happens After They're Built* (New York: Viking, 1994), chap. 1–2.
15. Camillo Boito and Cesare Birignani, “Restoration in Architecture: First Dialogue,” *Future Anterior* 6, no. 1 (2009): 68–83, <https://doi.org/10.1353/fta.0.0026>.



Fig 35. Ionic column between newer brick construction. Rome, Italy (photograph by author)

conventional sign

6. Descriptive epigraph carved on the monument
7. Description and photographs of the different phases of the restoration work placed within the building or nearby, or published in a document
8. Notoriety, ensuring that the restoration is widely known and acknowledged as modern work

These methods aim to maintain the historical integrity of the structure while making restoration work distinguishable from the original. While Boito's restoration theories are focused towards monuments, they can be utilized in approach of restoring, reusing or transforming any structure. Most important is the concept between the old and the new. Steps 4-6 and 8 however are not as relevant for retrofitting a barn from the 1980s, because it is tied to family legacy and not a public monument. Though step 7, Description and photographs, is important to reflect and look back on the building construction as a documented part of history, and tangible information for future adaptations, transformations, and restorations.

On the other hand, John Ruskin, known as a leading art and social critic in the 1800s, believed that restoration was the worst thing you could do to a building. In the chapter his book *The Seven Lamps of Architecture*, Ruskin recalled restoration to be 'the most total destruction which a building can suffer' and called it 'as impossible as to raise the dead, to restore anything that has ever been great or beautiful.'¹⁶ Ruskin believed in the total decay of a building. Ruskin's seven lamps of architecture are:

1. Sacrifice: Dedication of labor and resources to a building's creation
2. Truth: Honesty in materials and construction, avoiding deception
3. Power: The ability of architecture to inspire awe and elevate the spirit
4. Beauty: The aesthetic quality that arises from nature and craftsmanship
5. Life: The vitality and imperfection that comes from hand-craftsmanship
6. Memory: The role of buildings in preserving history and culture
7. Obedience: Adherence to traditional forms and styles

Ruskin's strong emphasis on the importance of hand-made work and imperfection are true to the Little Barn.

16. John Ruskin, *The Seven Lamps of Architecture* (New York: Dover Publications, 1989), 184.

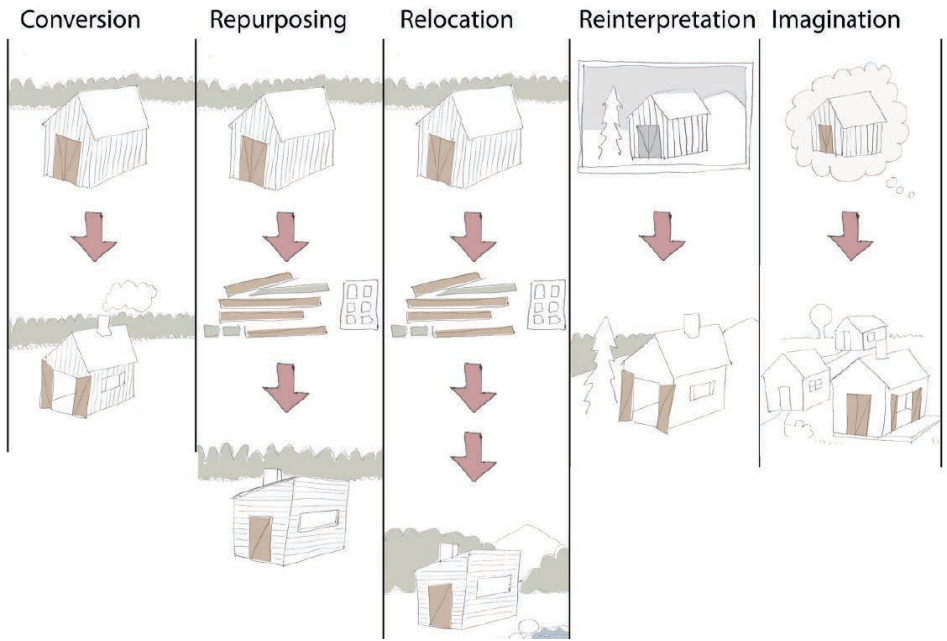
Barn Architecture as Mending

Barn architecture is architecture inspired by vernacular barns and agricultural structures, and is often considered a secondary structure. It often reflects building traditions and cultural landscapes, and serves as an expression of regional identity. These structures can be contemporary or vernacular works of architecture, designed and built by either architects or folk builders. Barn architecture involves learning from agricultural structures to reuse materials, adaptive reuse, or a reinterpretation of these structures.

Sustainability in barn architecture is more so about prolonging the life of the building, materials, culture, and history the structure holds, rather than specific environmental methods. Architects and designers who reinterpret agricultural architecture often value the simplicity, functionality, and adaptability of barns. Marlon Blackwell architects are known for their modern approach of reinterpretation of barn architecture (fig 36). They often abstract the shape of the structure, but utilize traditional building methods and materials.

Mending in barn architecture involves transforming and adapting buildings to a new context and functions. This involves structures that are not in use, which typically are secondary structures. Here, Mending is the act of making something usable again by transforming it, similar to that of mending clothing, but not limiting one to transform the product back to it's original state. It is different than traditional architectural conservation because it focuses on repair and reinterpretation rather than static preservation.¹⁷ Five approaches to barn architecture include conversion, repurposing, relocation, reinterpretation, and imagination. These approaches range from direct reuse of materials to creating new designs inspired by traditional barn aesthetics

Fig 36. Five approaches to barn architecture. Iida Kalakoski and Thorgrimsdottir Sigrun.



17. Iida Kalakoski and Sigrun Thorgrimsdottir, “Learning from the Secondary: Rethinking Architectural Conservation through ‘Barn Architecture,’” *Journal of Material Culture* 28, no. 2 (2023): 199–220, <https://doi.org/10.1177/13591835221123953>.

Fig 38-39. Thaden School Bike Barn. Marlon Blackwell Architects. <https://www.marlonblackwell.com/projects/thaden-school-bike-barn>



Fig 37. Tobacco Barn in Massachusetts. (Photograph by Mark Uchneat <http://www.markuchneatphotography.com/>)



Material Quality and Value

The materials chosen and or present in buildings can indicate history, origin, comfort, and wellbeing. Materials have the ability to communicate a story of a structure. Material theorists and architects, John Ruskin, Christopher Alexander, Donald Judd, John Pawson, and Peter Zumthor speak on these relations of material quality and value.

Donald Judd, known for his art, furniture, and architecture in the 1960’s minimalism movement, was an advocate for material honesty and expression. In his essay *Specific Objects*, Judd argues that art should not imitate, but be a real object in real space, not a representation. He believed that materials should exist as themselves, and are not to be an illusion. Fundamentally, the material is not a vehicle for expression, but rather, it is the work. While he utilizes art, his theories from *Specific Objects* are represented in all his work, including furniture and architecture.

John Ruskin has many theories regarding materials and their value based on his book *The Seven Lamps of Architecture*. The “Lamp of Truth” of Ruskin’s seven lamps of architecture argued that materials must be used truthfully, and that one should never falsify a material, where no material should be imitated, such as painting wood to look like marble. He also believed that there should be no false structure, where decorative features pretend to support weight, such as fake beams. The inherent qualities of materials, such as strength, texture, and color, should inform how they are utilized. The concept of painting, according to Ruskin, can make material more precious if done well and based on traditional practices. “To cover brick with plaster, and this plaster with fresco, is therefore, perfectly legitimate; and as desirable a mode of decoration, as it is constant in the great periods.”¹⁸ The “Lamp of Sacrifice” argues that hand craftsmanship should be valued as the visible effort of workers. Ruskin argued that materials should show the marks of human labor, and that hand-done material alterations are superior to those done with machines. Overall, he believed architecture should reveal the human effort that constructs it. The “Lamp of Memory” proclaims that buildings should be constructed to last for centuries, and the material shows the expression of durability and time. He argued that strong materials such as stone are more ideal for longevity. As well as materials, architecture should age gracefully and record the passage of time, and it should become more beautiful with weathering.

For Christopher Alexander, materials are not primarily about honesty, like Ruskin, or literal object-hood like Judd, but about supporting living structure. He argues that a material is good if it increases the wholeness, coherence, and life in a space. In his first book, *The Nature of Order: The Phenomenon*



Fig 40. Donald Judd Chairs

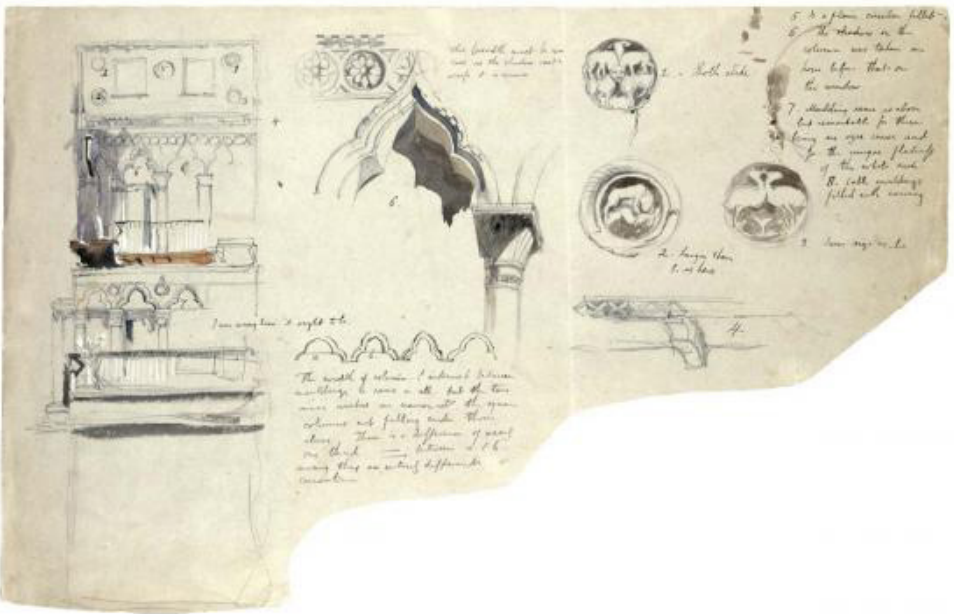


Fig 41. John Ruskin sketch of an architectural detail for the Stones of Venice

18. Ruskin, *Seven Lamps*, 1-66, 176-198.



Fig 42-43. Peter Zumthor Materiality
Expression ,Bruder Klaus Field Chapel,
and Kolumba Museum (photographer
Hélène Binet [https://purestyling.nl/blog/](https://purestyling.nl/blog/architecture/)
architecture/)peter-zumthor/



of Life, his main idea is that materials contribute to the life or wholeness of buildings or objects through structure geometry and adaptation. He argues that slight irregularities or imperfections increase life, such as a hand-finished surface often feels more alive. He believes materials should have gradients and deep interlock, as materials blend through transitions, such as stone meeting the earth, or wood framing embedded in plaster. *In The Nature of Order: The Process of Creating Life*, Alexander states that life emerges through step-by-step adaptive construction processes. He says materials must be chosen through adaptive feedback during construction, and not be predetermined abstractly. He also believes materials should create thickness, like deep window reveals and layered walls. Volume III, *The Nature of Order: A Vision of a Living World's* argues that a living material must be socially and ecologically grounded. Materials should come from local sources that fit the climate and connect culturally to the place.

John Pawson reflects on simplicity as a means for life and order, and in his book *Minimum*, he seeks to analyze simplicity. He argues, “the apparent simplicity of such materials is simplicity only in a purely visual sense.”¹⁹ In Pawson’s approach to materiality, it is not about what the material is, but how it is used. His work reflects this with the simplicity of large seamless pieces, whether it be wide, long floorboards or marble counter tops. He also argues that material in structure should be the “minimum of material needed to perform it’s purpose safely tends to look better than one which is manifestly too big or fat.”¹⁹

Peter Zumthor writes about how material compatibility is what creates sensual spaces in his book *Atmospheres*. Zumthor views architecture similarly to anatomy, like Stewart Brand’s shearing layers, and how some things are covered while others are expressed through materiality. When it comes to creating the material palette, Zumthor is interested in how materials react together. He speaks on the different qualities of singular materials, “take stone: you can saw it, grind it, drill into it, split it, or polish it - it will become a different thing each time.”²⁰ He then takes the metaphor of the stone and speaks on how quantity, light make new qualities in the material, creating endless possibilities. Zumthor also touches on the proximity of materials and how “you can combine different materials in a building, and there’s a certain point where you’ll find they’re too far away from each other to react, and there’s a point too where they’re too close together, and that kills them.”²⁰ He ends by arguing that architects, as master builders, must have a talent for understanding the presence and weight of materials.

19. John Pawson, *Minimum* (London: Phaidon Press, 1996).

20. Peter Zumthor, *Atmospheres: Architectural Environments. Surrounding Objects* (Basel: Birkhäuser, 2006), 24–27.



Fig 44-45. John Pawson's wooden chapel, built from carving 61 stacked logs in Unterliezheim, Germany. (photographer Eckhart Matthäus)



Fig 46. Christopher Alexander's Julian Street Inn, Shelter for the homeless in San Jose

Vernacular Reuse, Folk Builders, Barn Architecture as Mending, Materials, and The Little Barn

The Little Barn, designed and built by my folk builder grandfather, William Flintoff, has the potential to be reused utilizing adaptive reuse, mending, and material principles. First, as this is a personal project, it is important to piece together how my grandparents have designed differently from those who are trained in design. They are considered folk builders, under Hubka’s theories on vernacular designers. When they were designing the garage and their house, they altered plans they had gotten out of magazines to respond to their needs and the location and place of the property. My grandmother has described their process so similarly to Hubka’s theory in how folk designers think differently from architects. This is important to respect when adapting the barn, as showcasing Ruskin’s old and new adaptive reuse theory by mending and honoring the original form and materials, while inserting a new interior volume with different material qualities and construction.

Mending the exterior is important to keep the design consistent with the other structures on the property, as their siding and roofing appearance are similar, while making sure the structure has a continued life. Mending the Little Barn by the process of converting a shed to a studio brings new and extended life to the building. Mending barn architecture is different than traditional building conversion or adaptation, because it’s primary focus is on repair rather than static preservation.

When approaching the mending and transformation of the Little Barn, material value became central to the adaptation and construction principles. Honoring the existing rough-milled cedar siding and upper floor decking is important in the mending process, to showcase my grandfather’s craftsmanship and preserve the original character of the barn. The interior quality can play on Ruskin’s theory of juxtaposing the new and old materials by adding new materials and construction methods next to the exposed original materials. For instance, the limewash ceiling and plywood walls material quality are different enough that the exposed rough milled cedar joists and decking are noticeably original. The materials shall be honest, following Judd, Alexander, Pawson, and Zumthor’s theories, by being what they are in raw, simplistic form, while celebrating the imperfections.

Honesty

Resourceful

Honor

Adaptability

Vernacular Reuse & Barn Architecture Values

Design with honest materials and construction. Showcase the honest character of the barn and celebrate it with contrasting the new elements with the old.

Use what is on site, and simple materials. Reuse scrap or underutilized materials found. Bring new life to what is not used.

Honor grandfathers craftsmanship, use of hand-milled lumber. Preserve original character on exterior.

Design and build with thoughtful consideration of how the barn can continue to adapt to meet the needs of my family.



**WORELL YEUNG
STUDIO BARN**

Westlerly, Rhode Island

Completed - 2024

Square footage - 1,300

Original use - horse barn

Current use - artist studio

Design Team - Max Worell,
Jejon Yeung, Cohen Hudson,
Nico Carmona Guzman

Initially, Worell Yeung approached Studio Barn as a new ground-up building for an artist couple in Rhode Island who wanted a co-working studio detached from their house. The concept was to have a creative place that was an in-between from their studio in the city and their house. The architecture team made it through the initial design phase and got into initial cost analysis. The numbers came back much too high for the clients, and the project was not continued.

The artist couple still needed a detached studio space, and there was an existing barn on the property that they thought could surely be transformed for this new use. The couple contacted Worell Yeung again to look into transforming the barn. The barn was a horse stable from the 1980s, and had a pastiche that gave the structure an older appearance. The siding had a fake patina and the roof was asphalt shingles. This initiated the architecture team to take the structure but give the exterior a newer, more modern appearance.

There were a few initial challenges that the architects had to solve. The existing barn needed foundation work because the inside was primarily dirt. They needed to build the infrastructure for a bathroom and plumbing. Lastly, the barn lacked adequate daylight, and they began to look for opportunities to carve and bring more natural light into the space.

The architects began their concept with adaptive reuse principles, transforming the exterior while celebrating the original exposed structure. They overall were designing a quiet space that would allow the art to be the focus. They transformed the space by adding large door and window openings on the

Fig 47-48. Finished photos of studio barn. (Photographs by Naho Kabota, <https://www.worellyeung.com/home/studio-barn>)



ground floor and carved an opening on the roof to bring light into a double-height space which spans a thoroughfare between the front and back doors. The architects created a plywood core where the staircase, bathroom, mudroom, and storage are confined, and they left the rest of the space open to interpretation.

The materials Worell Yeung used for the project are expressed in their raw forms. They used asphalt roofing sheets as an economical cladding material. The interior has the exposed rafters of the original structure, because the designers insulated the roof above the structure. The interior has a finished unpainted plywood core, polished, unstained concrete floors, and unfinished Homasote walls.

Fig 49-51. 1980s Horse Barn to Studio Barn (Photographs by Naho Kabota, <https://www.worellyeung.com/home/studio-barn>)

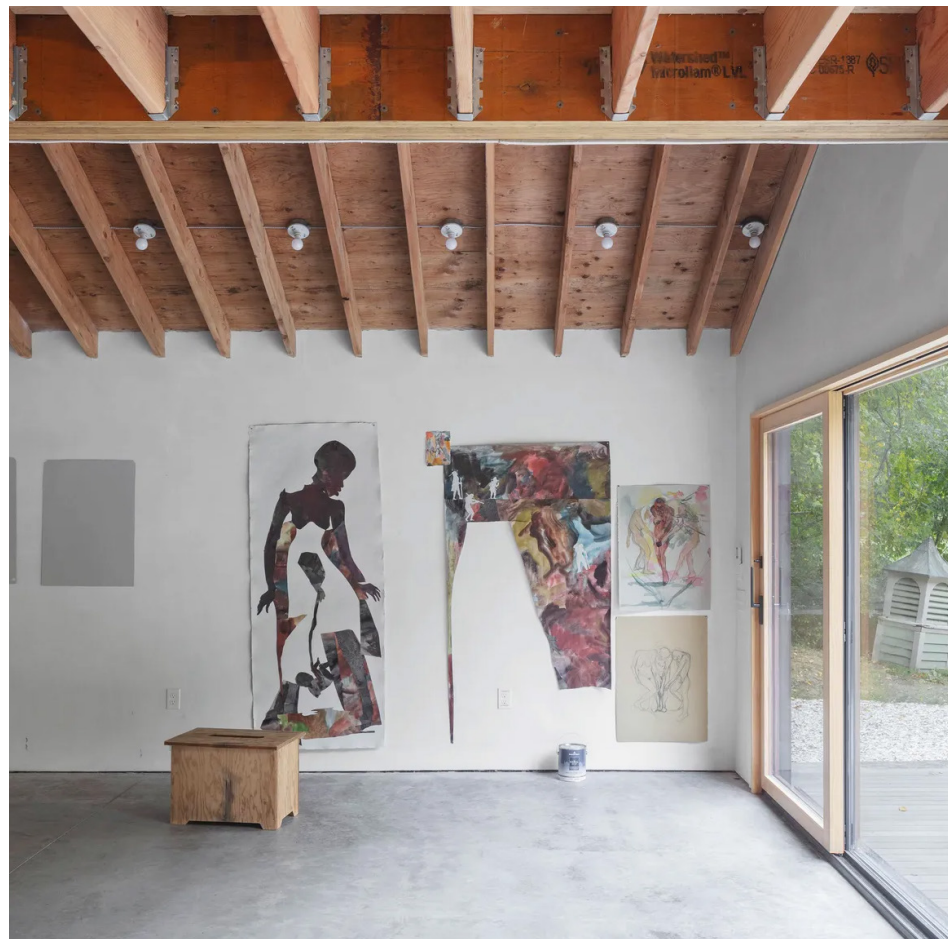
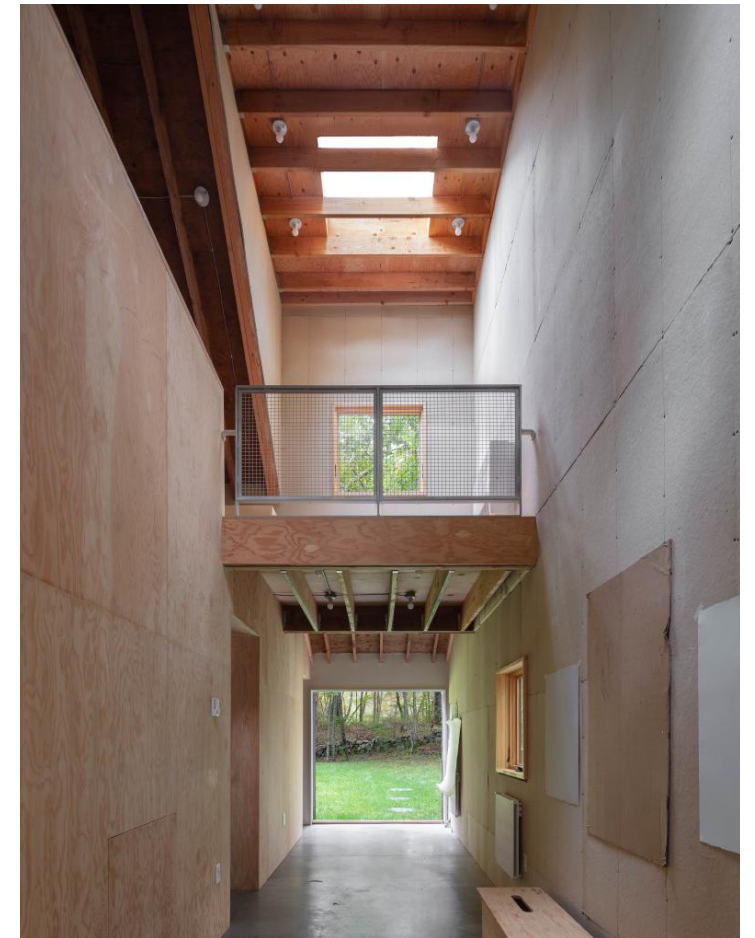


Fig 52- 53. Finished interior of Studio Barn (Photographs by Naho Kabota, <https://www.worellyeung.com/home/studio-barn>)





MWORKS CANYON BARN

East Cascades, Washington

Completed - 2012

Area - 3,875 sq ft

Canyon Barn is a 3,900 square foot renovated barn in the eastern foothills of the Cascades in Washington. The project is a renovated turn-of-the-century barn into a three-bedroom getaway for a family living in Seattle. The architects and family followed principles of retaining the original form and appearance to convey the character and history of the barn. The exterior still presents vernacular, with only a spooky modern curtain wall at the prow of the barn, and a deep covered porch with sliding operable windows and doors.

Code required much of the building to be rebuilt, including the foundation, framing, wall, and roof assembly. The framing and siding of the barn were removed and re-utilized as exposed interior finishes. An entirely new roof assembly was constructed over the original, where the original is left exposed on the interior. The flooring, fixtures, doors, and decorative finishes were either sourced from the original structure, the property, or local salvage yards. A wire bale of fencing found on the property was transformed into a custom lighting fixture above the dining room table. Apple crates that were found on the property were reused to create the paneling for a sliding door behind the stairs. Levers, gears, and wires were transformed into the fireplace damper controls and the dumbwaiter. A cattle holding pen that was inside the barn was removed and reconstructed as casework for the mudroom.

The newer interventions are modern, but utilize raw materials, juxtaposing the original elements of the barn with the newer. Two fireboxes fabricated out of hot-rolled steel were inserted in the living areas of the barn. The

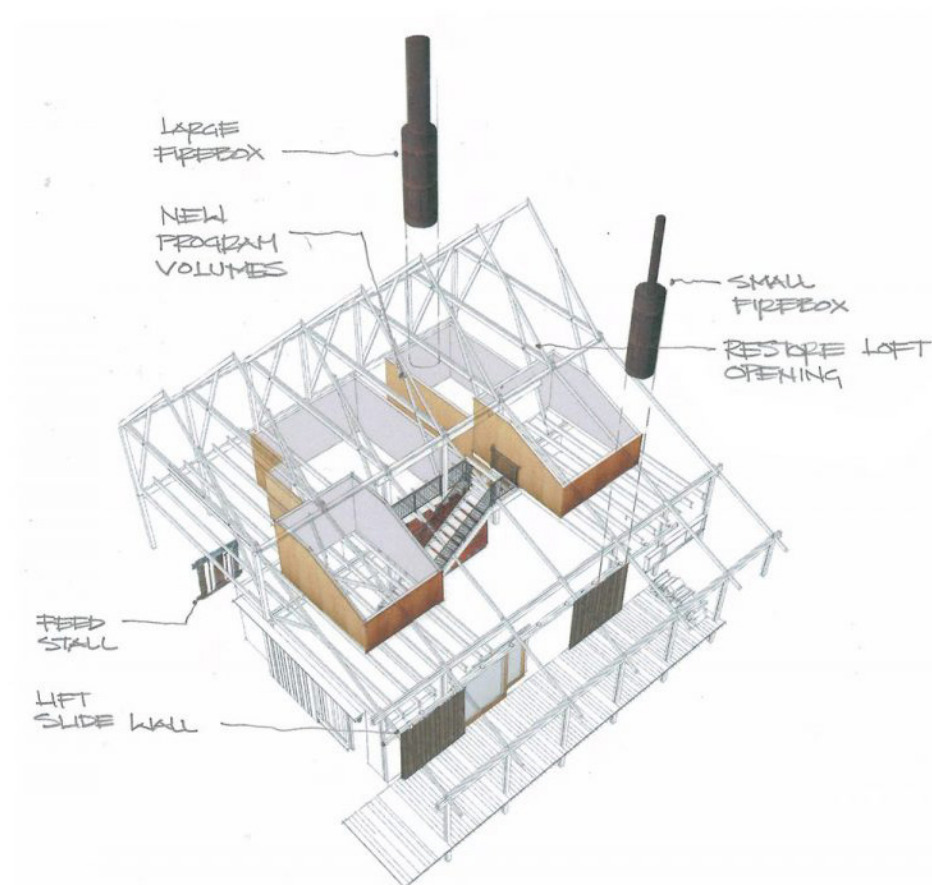
Fig 54-55. Finished photos of MWworks Canyon Barn (photographs by Tim Bies)



upstairs bedrooms were framed in and finished as plywood volumes. The kitchen island was constructed out of hot-rolled steel and an ash butcher block top. The kitchen counters are concrete, the sink re-purposed from a salvage yard. As many barns are poorly daylighted, due to their shape, width, and length and lack of windows, large expanses of glass were added into the living space. This includes the sliding doors onto the newly added patio and the curtain wall system at the barns from the prow.

Canyon Barn introduces many adaptive reuse theories and principles. Mainly, the building's main intent is to keep the historic fabric of the vernacular structure and delicately intertwine modern interventions and designs. The architects respond to barn architecture as mending in this project by not only conversion to a new use, but also repurposing the materials in the structure and found on site. MWworks emphasizes the vernacular nature of the barn, and does not impede on the structure's original characteristics.

Fig 55-60. Finished photos and drawings of MWworks Canyon Barn (photographs by Tim Bies)



Re-purpose old floorboards are resawn, flamed and arranged to form the entry wall





ASHTON PORTER ARCHITECTS UNDERWING WORKSHOP

East Sussex, England

Completed - 2022

The Underwing Workshop is inserted within an English barn from the 15th century. The barn is listed as a Grade II hay barn and is a lean-to oak structure. Ashton Porter architects were hired to add a pottery studio to this historic barn. The architect's main intervention was to remove infill walls that were added in the 19th century to convert the barn to a storage space. The walls were replaced with large structural glazing. Upon construction, the original 15th century oak roof and structure were dilapidated, with infills from the 19th and 20th centuries. Understanding the barn within its heritage listing requirements for codes and policies. They needed to know how much of the old structure needed to be retained due to these policies. The architects had to hire an expert in tree ring dating to know which parts of the structure were of historic relevance.

The retained oak beams are now the workshop's focal point, highlighting the historical significance with the new intervention and materials. The oak beams are rough and imperfect in their nature and are juxtaposed against the minimalist plywood and limewash interior. The oak beams slot into the plywood shelving. These principles align with adaptive reuse principles and theories from Ruskin as to celebrating the new and the old, and barn architecture as a process of mending.

Fig 61-62. Underwing Workshop finished
(photographer Andy Stagg <https://www.archdaily.com/1026324/underwing-pottery-studio-ashton-porter-architects>)





Fig 63-65. Underwing Workshop details
(photographer Andy Stagg <https://www.archdaily.com/1026324/underwing-pottery-studio-ashton-porter-architects>)





NAUMANN ARCHITEKTUR SHOWROOM

Stuttgart, Germany

Completed - 2005

The showroom is a plywood volume inserted into a 1780 structure that had been partly destroyed in WWII. Originally, the project was to be refurbished and transformed into a showroom. Originally, the structure was thought to be used as a pig pen or a shed for a farmer. The physical conditions of the structure made financing the project difficult, and a new project could not be built due to the proximity to the street. Naumann Architektur came up with a creative solution, which has a historic architectural approach to ruins, by inserting a volume into the original structure. This structure, including the roof, does not touch the original ruins. The window openings and entrance were dictated by the original structure, which includes a pig trough, and enhance the wood volume on the interior.

Showroom is a classic example of John Ruskin's theories behind preservation, adaptive reuse, and transformation. The architect left the ruins of the pig pen from the 1700s in their decaying condition, but added the wood volume on the inside without any attachments to the ruin. The architect is showcasing the decay and allowing it to fall into more ruin. Ruskin believed in the total decay of buildings.

Fig 66-67. Naumann Architektur
Showroom (photographer Zooey
Braun <https://www.subtilitas.site/post/101190397924/naumann-architektur-renaissance-of-a-dilapidated>)





Fig 68-69. Naumann Architektur
Showroom (photographer Zooey
Braun [https://www.subtilitas.site/
post/101190397924/naumann-architektur-
renovation-of-a-dilapidated](https://www.subtilitas.site/post/101190397924/naumann-architektur-renovation-of-a-dilapidated))





JOHN PAWSON HOME FARM

Oxfordshire, United Kingdom

Completed - 2013-2019

Home Farm is John Pawson's second home in the Cotswolds of England. He self-designed and converted a farming complex from 1610 into a retreat in the English countryside. Pawson is known for his signature minimalist style, and the Home Farm reflects nothing but this. The buildings on the complex include a farmhouse and barn with a cottage and stables. Pawson joined the disconnected buildings together with glass and layered concrete corridors. Due to the 147-foot-long house, Pawson decided to design a kitchen at both ends. His wife is known for her cooking. The barn cottage is the only building in the property that is disconnected from the rest.

John Pawson emphasized the true original materials, and chose complimentary materials for the new additions to the building. Often neutral, these materials include limewash walls, elm cabinetry, concrete terrazzo floors, and marble counter tops and shelving. The exposed timber elements in the complex are elm from the 17th-century. He made the decision to juxtapose the older, rough, exposed material with newly milled and finished elm floors. The limewash walls act as a neutral textured complementary to the elm structure and floors. Reveals show the separation with a shadow-line between the floors and the walls, unlike common baseboard trim would add another plane and clutter to Pawson's minimalist approach. The interior furnishings include several of Donald Judd's works, including his chairs and daybed, adding to the minimalism in showcasing raw materials in simple forms. Pawson's design approach in this adaptive reuse project follows many principles and theories written by scholars before his time.

Fig 70-71. Home Farm finished exterior and interior (photographer Gilbert McCarragher <https://www.johnpawson.com/works/home-farm>)





Fig 72-73. Home Farm finished interior
(photographer Gilbert McCarragher
<https://www.johnpawson.com/works/home-farm>)





HAWORTH TOMPKINS DOVECOTE STUDIO

Snape, United Kingdom

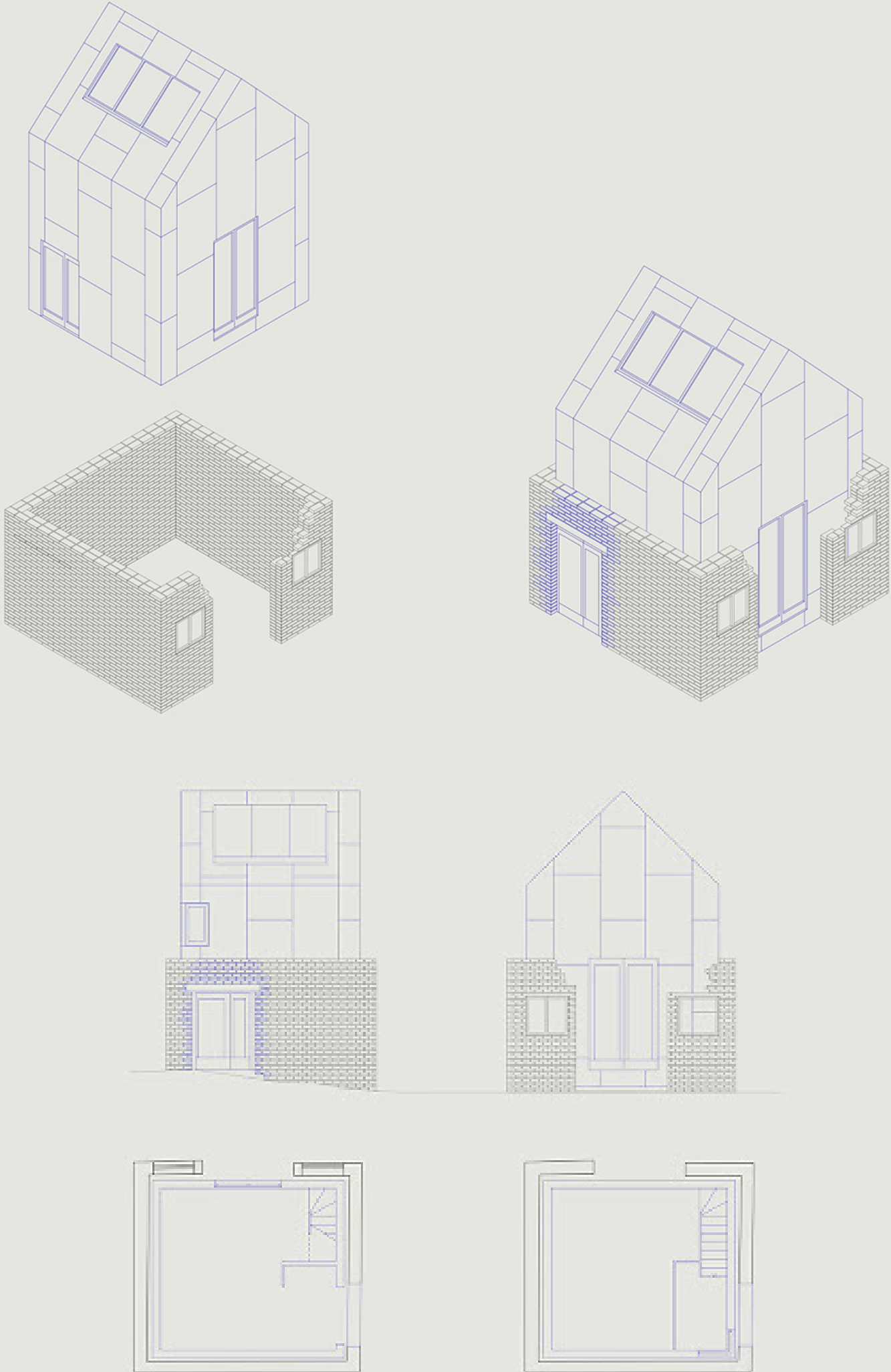
Completed - 2009

Fig 74. Dovecote exterior (photographer Philip Vile https://www.archdaily.com/89980/dovecote-studio-haworth-tompkins/5000596817_a17396ab8a_o)

Fig 75. Dovecote axonometric and plan drawings (drawings Luca Forzi Forzi, Luca. “Dovecote Studio - Snape Maltings - United Kingdom.” http://www.reduce-reuse-recycle.info/Projekt_3_0_id_143.html.)

Dovecote studio is part of the Snape Maltings campus on Suffolk’s east coast. The studio occupies a Victorian dovecote ruin, a structure that was intended to house pigeons or doves. Haworth Tompkins pre-fabricated a Cor-Ten steel structure with a gable roof to fit within the ruin. While the exterior material is meant to blend with the aged brick, the interior is lined with pale spruce plywood. The structure is a single room, with a small loft with a window that gives a view out to the sea. The studio is designed for residents in the school who are artists and writers. The architects designed the space to be open and adaptable, and to be able to be used for music rehearsals, performances, seminars, and exhibitions.

The ruin was left in it’s natural state, other than minimal work to stabilize the brickwork. The existing windows in the front were left in their decaying state, and the architects made the decision not to utilize those openings for windows in the new structure. This shows the stark difference between the ruin and the added structure. With very little intervention necessary for stabilizing the brick, the architect’s transformation principles align similarly to John Ruskin’s. Here, the dovecote is left to continually age with no interruption.



Designing for Family Caregiving

The Past and Typology

Caregivers of the past range from a number of cultures and societies. In ancient Rome, the Nosocomi were male nurses who worked in military hospitals and were some of the earliest recorded male caregivers. In the medieval and Renaissance eras, Monks and Nuns were providers for the poor, sick, and elderly, in monasteries and convents. In many Indigenous cultures, caregiving for children was not only limited to the mother, but often shared by both men and women of the community. During the 1700s to 1900s in colonial South Asia, South Asian nannies and maids provided intimate, long-term care to children and the homes of British imperial families. These are just a few examples of caregivers in history.

Intergenerational living extends back through much of American history. In the 19th century, it was particularly common to live in an intergenerational household, where the majority of the elderly were living with an adult child. Much of this was due to America’s economy relying on agriculture. Often, a child would stay on their parents’ farm in order to inherit the family property and their business while taking care of them as they aged. This was particularly common amongst the pre-industrial lifestyle. Intergenerational living increased significantly beginning in the 1990s, and according to Pew Research Center’s analysis of census data, “in 2016, a record 64 million people, or 20% of the U.S. population, lived with multiple generations under one roof.”²¹ That is not to count the folks living in intergenerational properties.

Today, many caregivers are family members living in multi-generational living conditions. These people tend not to be professionally trained in caretaking and often have professions in other areas. There are many approaches and benefits to intergenerational living, where homes and properties are inhabited by multiple generations of family members.



Fig 76. William J. King home, Longbranch, Washington, early 19th century. Slater, Colleen A. Images of America: The Key Peninsula. Images of America. Arcadia

21. D’Vera Cohn and Jeffrey S. Passel, “A Record 64 Million Americans Live in Multigenerational Households,” *Pew Research Center*, April 5, 2018, <https://www.pewresearch.org/short-reads/2018/04/05/a-record-64-million-americans-live-in-multigenerational-households/>.

Aging in Place Support

Aging populations in the United States are growing, with more people living longer and alone, creating the need for housing that supports aging in place and reduces social isolation. Not only are people suspected to live longer, as life expectancy is projected to rise by approximately five years by 2050, and one-fifth of the U.S. population is expected to be age 65 or older, but the ability for younger adults to afford housing is at risk.²² Intergenerational living has the potential to alleviate economic pressures, improve housing affordability, and provide social benefits like childcare, eldercare, and intergenerational support. While intergenerational living can take place under one roof, it can also take place within secondary units if the land-use code allows.

Secondary Units

Secondary units are separated units that are created in one of the four following ways:

- 1. “from existing space in the primary dwelling;
- 2. from a combination of existing and newly created space;
- 3. from space in an existing accessory building;
- 4. or from the addition of a new accessory building.”²³

Accessory Dwelling Units is a secondary unit typology that can be finished basements, above garage cottages, or even detached dwellings as new builds or in underutilized structures. Many states and cities, including Washington and Seattle, have altered land-use code to support this type of middle housing. In July of 2025, Seattle updated it’s regulations to align with Washington state laws (HB 1337, HB 1110), allowing up to two accessory dwelling units (ADUs) and up to 4-6 residential units per lot citywide, allowing 1,500 sq ft ADUs and condominium subdivision of ADUs to bring more middle housing to the State.²⁴ Accessory Dwelling Units can help the elderly stay within their community, without going to institutional supportive housing, as they can live in the units, or have family caregivers stay in the units. Intergenerational living can also aid aging in place for elders with strong emotional attachments to their homes, while providing affordable housing for younger family members.²⁵ Both the elderly and other relatives living on the property are less anxious about their well-being because they can interact on a face-to-face basis, which overall helps the elderly feel more secure, safe, and socially isolated.²⁶

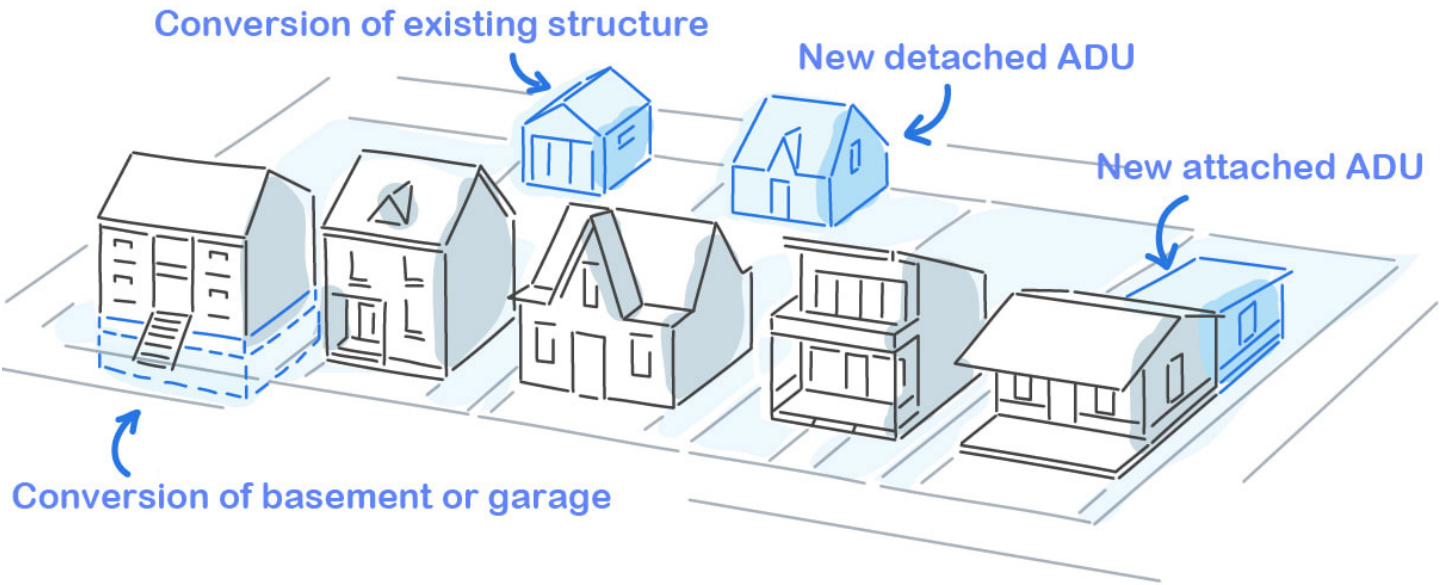
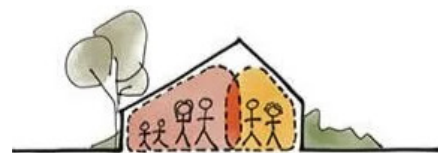
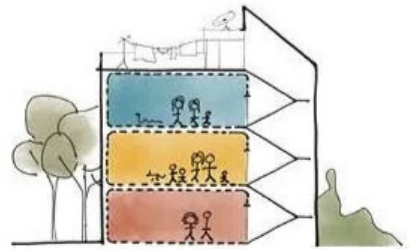


Fig 77. ADU building types. Houseable
<https://www.housable.com/solutions?ref=blog,livenearfriends.com>

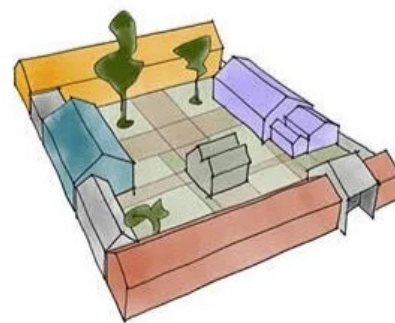
22. Geraldine Gardner and Alexander Nasserjah, *The Future of Multigenerational Housing in Existing Communities* (n.p., n.d.)
23. Peter Uhlenberg, “Integration of Old and Young,” *The Gerontologist* 40, no. 3 (June 2000): 276–79.
24. Doug Trumm, “Seattle Eases Accessory Dwelling Restrictions Just Ahead of State Deadline,” *The Urbanist*, July 1, 2025, <https://www.theurbanist.org/2025/07/01/seattle-eases-accessory-dwelling-restrictions-state-deadline/>.
25. Gellen Martin, *Accessory Apartments in Single-Family Housing* (1985)
26. Patricia Baron Pollak, *Rethinking Zoning to Accommodate the Elderly in Single-Family Housing* (n.p., n.d.)



Multiple generations living under one roof - Kitchen, Laundry and Garden Space are usually shared.



Multiple generations living relatively autonomously within the one building - circulation cores and utilities, often on the roof, are shared.



Multiple generations living within the same compound, with communal buildings for cooking and cleaning, and shared gardens for food production and leisure.

Fig 78. Multigenerational living typologies.
Bent Architecture <https://www.bentarchitecture.com.au/articles/2019/multi-generational-housing-solving-housing-affordability-and-aged-care-in-one>.

Familial Support

Many folks applying for permits for these secondary suites are doing so to support their family. In Calgary, Canada, an analysis of applications for these secondary suites revealed that one in four applicants proposed this building typology for family reasons, including:

1. “Fostering Generational Independence: Providing autonomy while living in close proximity
2. Ease of providing care for family members: supporting aging parents, adult children, and or young children
3. Sharing household tasks and expenses: pooling financial and human resources for mutual benefit
4. Facilitating immigration and accommodating visiting family: Providing housing for immigrant family members or extended family visiting for long periods”²⁷

Secondary suites are generally considered a more affordable housing option for renters. These suites are multipurpose and are a housing solution for intragenerational families as affordable units, addressing both social and economic needs. They can adapt to life changes, for example, an ADU can turn from an office to a dwelling unit if planned open-minded.

Benefits of Intergenerational Living

Aside from the different means of intergenerational living, there are many additional benefits in this living typology. These include economic, social, emotional, and assistance support that can strengthen family ties. In many cases, intergenerational living provides a safety net for family members during periods of need, including when parents are raising children or when grandparents are aging. This living typology also fosters mutual support, with nearly half of those receiving intergenerational assistance also giving support, helping sustain the relationship.²⁸ There is amplified childcare and household assistance within intergenerational living, as grandparents often assist with childcare and household tasks, or adult children assist with household tasks of their parents and grandparents. This type of living offers emotional and moral support, especially regarding advice, guidance, and encouragement, which can strengthen family bonds. Economic benefits are also present in intergenerational living, where the cost of living can be divided. Lastly, intergenerational living can strengthen family ties, fostering a sense of community and family unity.

27. Pernille Goodbrand, Tamara Humphrey, and Jyoti Gondek, “Relatives or Rentals? Secondary Suites through a Multigenerational Family Lens,” *Canadian Geographies / Géographies Canadiennes* 61, no. 4 (2017): 525–39, <https://doi.org/10.1111/cag.12399>.

28. Dennis P. Hogan, David J. Eggebeen, and Clifford C. Clogg, “The Structure of Intergenerational Exchanges in American Families,” *American Journal of Sociology* 98, no. 6 (1993): 1428–58, <https://doi.org/10.1086/230194>.

Restorative and Socio-Physical Environment Theories

The Stress Caregivers Hold

Caregivers, especially non-professional family members, undergo stress, which negatively affects their health. Managing the well-being of caregivers is often unexplored. Caregiver spaces need “restorative attributes to socio-physical residential context of caregiving using three caregiver needs: need for a temporary escape, meaningful social support, and a sense of control.”²⁹ In particular, a major cause of caregiving stress is the inability of the caregiver to rejuvenate and spend time away from their caregiving tasks. Two theories for crafting a restorative atmosphere for caregivers are Attention Restoration Theory (ART) and Stress Reduction Theory (SRT).

Attention Restoration Theory (ART)

Attention Restoration Theory (ART) describes principles from the natural and built environment that relieve directed attention fatigue that is caused by intense work. The four principles for a restorative environment are:

- 1. Being away refers to the feeling that one is disconnected from their work, or everyday current surroundings, in either a physical or psychological distance
- 2. Extent is an environment that is large, immersive, and engaging
- 3. Fascination refers to the engagement of the environment’s features without reflection, or stimuli that are effortless
- 4. Compatibility is whether the environment matches the needs of the individual

ART indicates that being in nature, and or viewing it, can improve mental clarity, reduce stress, and enhance creativity. These principles can be translated into architectural design and planning. For instance, the Little Barn is detached from the other buildings on the family property and therefore has the ability to help a caregiver achieve psychological and physical separation from caregiving responsibilities. Stephan Kaplan, a professor in the Department of Psychology at the University of Michigan, argues, “the sense of being away does not require that the setting be distant. Natural environments that are easily accessible offer an important resource for resting one’s directed attention.”³⁰ The extent of the forest and nature around the barn is vast, and principles such as window placement can improve a caregiver’s engagement. This leads to the fascination aspect of the woods, and the barn’s connection to these views that are stimulating and hold attention effortlessly. Lastly, the barn has the potential to be compatible as a restorative studio where a caregiver can relax, work, and do art. The detached studio, holding curated views to the outdoors,

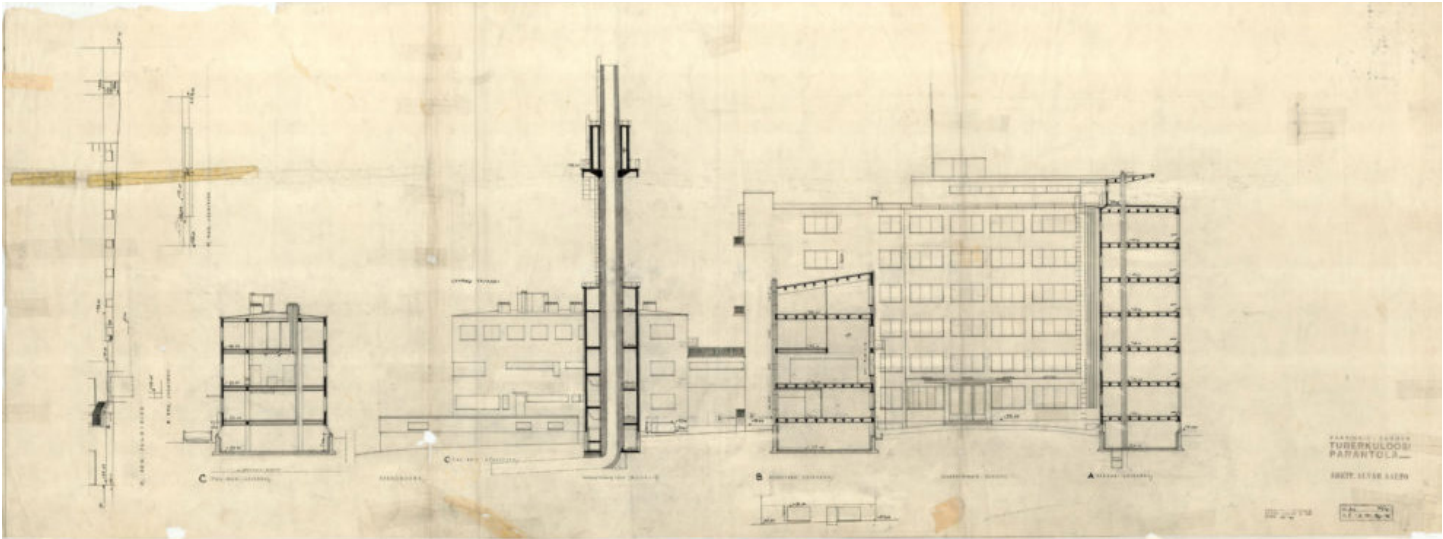


Fig 79-80. Paimio Sanatorium building
Section and rooftop terrace photo. Alvar
and Aino Aalto Foundation <https://www.alvaraalto.fi/en/architecture/paimio-sanatorium/>

29. Gowri Betrabet Gulwadi, “Restorative Home Environments for Family Caregivers,” *Journal of Aging Studies* 23, no. 3 (2009): 197–204, <https://doi.org/10.1016/j.jaging.2007.11.005>.

30. Stephen Kaplan, “The Restorative Benefits of Nature: Toward an Integrative Framework,” *Journal of Environmental Psychology* 15, no. 3 (1995): 169–82, [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)

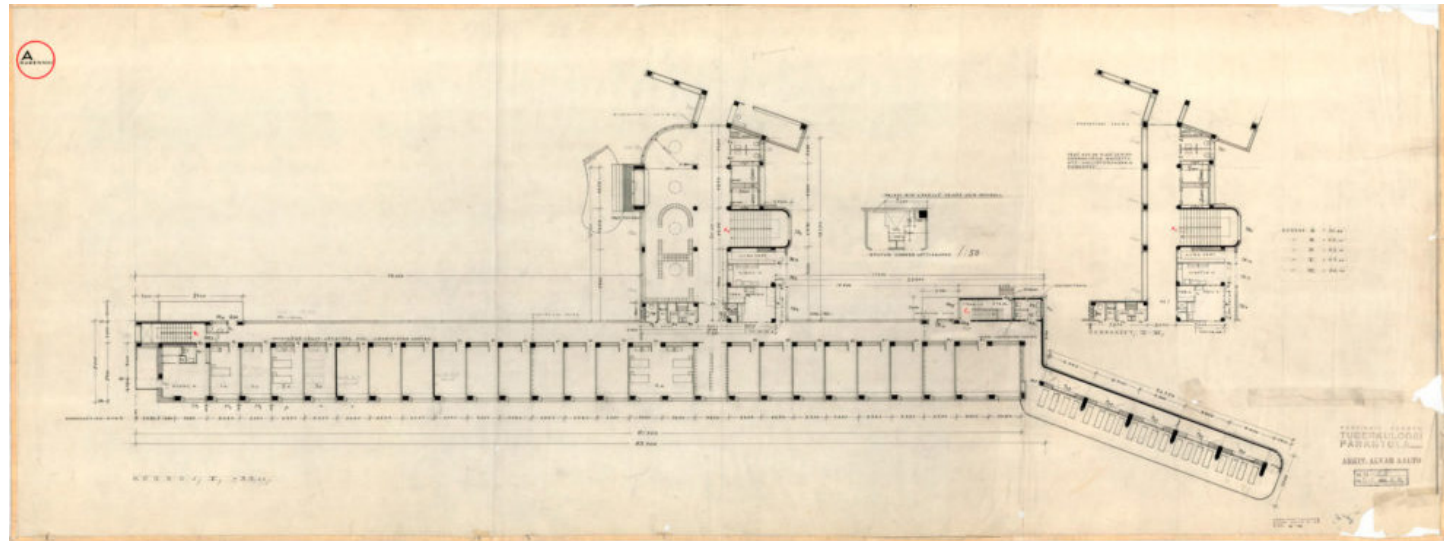


Fig 81-83 . Paimio Sanatorium building
Section and rooftop terrace photo. Alvar
and Aino Aalto Foundation <https://www.alvaraalto.fi/en/architecture/paimio-sanatorium/>

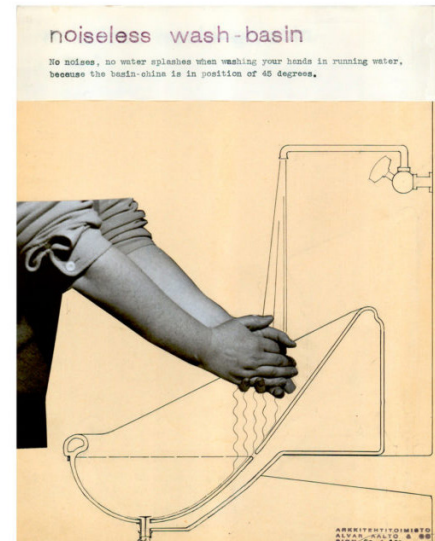
has the ability to lower stress and enhance creativity. A modern architectural example that reflects this theory is Alvar and Aino Aalto's Paimio Sanatorium in Finland (fig 82). Paimio Sanatorium was a tuberculosis hospital and a revolutionary project showcasing architecture potential to promote healing. Aalto integrated natural light, ventilation, and connection to the outdoors through balconies and windows, reflecting the restorative qualities of nature.

Stress Reduction Theory (SRT)

Roger Ulrich's 1991 theory of supportive design is similar to Attention Restoration Theory, but hypothesizes that social and physical environments impact a person's mental health and cognitive function. It is different from ART, because it is fostered toward healthcare design and healing through therapeutic, natural, calm spaces that have natural elements that foster healing, recovery, and wellbeing. Unlike "Attention Restoration Theory, SRT contends that increased cognitive performance and attention restoration are effects of stress reduction, and that cognitive performance gains are mediated primarily by affect, not attention."³¹ While the theory of supportive design is focused on hospital and healthcare architecture, it is also relevant in designing for caregivers. Ulrich argues that traditional design focuses on functional efficiency, often neglecting psychological needs of patients and staff. He argues that supportive design should foster coping with stress by enhancing control, social support, and positive distractions. The key components of this theory being:

1. Sense of control over surroundings
2. Access to social support from family and friends
3. Positive Distractions in Physical Environments

Ulrich urges that a sense of control is important in regulating stress levels and well-being. Whether it be caused by illnesses or physical-social environments, design approaches that give a sense of control can include access to visual privacy, grounds that are accessible, a setting that allows personal interests and hobbies, control of room temperature, and "workstations designed and located to avoid frequent, unnecessary interruption by visitors."³² The second component of Ulrich's theory focuses on social support. and how contact from family friends who are supportive have benefits to the level of stress and wellness in patients. Ulrich states that "studies indicate that the interior designer can considerably increase social interaction among patients by specifying comfortable, movable furniture that can be arranged in small, flexible groups."³¹ The third and last component of Ulrich's theory is positive distractions in physical environments. Environmental psychology suggests that physical surroundings with positive stimulation support well-being. Views of nature through windows, animals, and caring faces are among the distractions Ulrich touches on. In essence, integrating psychological support into design can positively impact one's wellness and stress levels beyond just healthcare design.



Alvar Aalto went to the extent to design a noiseless wash-basin as part of the Paimio Sanatorium building. It adds to his dedicated craftsmanship and his keen ability to design for wellbeing and recovery.

31. Roger S. Ulrich, "Stress Reduction Theory," in *100 Key Concepts in Environmental Psychology*, n.d., https://www.researchgate.net/profile/Roger-Ulrich-2/publication/377281012_Ulrich_RS_2023_Stress_reduction_theory/links/659e9458c77ed940476dab17/Ulrich-RS-2023-Stress-reduction-theory.pdf.

32. Roger S. Ulrich, "Effects of Interior Design on Wellness: Theory and Recent Scientific Research," February 1997, https://www.researchgate.net/publication/12761803_A_theory_of_supportive_design_for_healthcare_facilities.

Restorative Design Beyond Healthcare

Gowri Betrabet Gulwadi, a professor of interior design from University of Northern Iowa with a Ph.D in Architecture: Environment-Behavior Studies from the University of Wisconsin-Milwaukee, advocates that Attention Restoration Theory and Stress Reduction Theory are in fact beneficial for caregivers. Caregivers undergo much stress and are often thought of as second to those they are caring for. They are often unprofessional family members with careers in fields not related to caregiving, and undergo much stress, juggling their career with caregiving. These theories can be applied to designing for caregivers, whether it be in the space they are caring for an individual or a secondary detached one. Gulwadi discusses three caregiver needs that are under the restorative attribute umbrella:

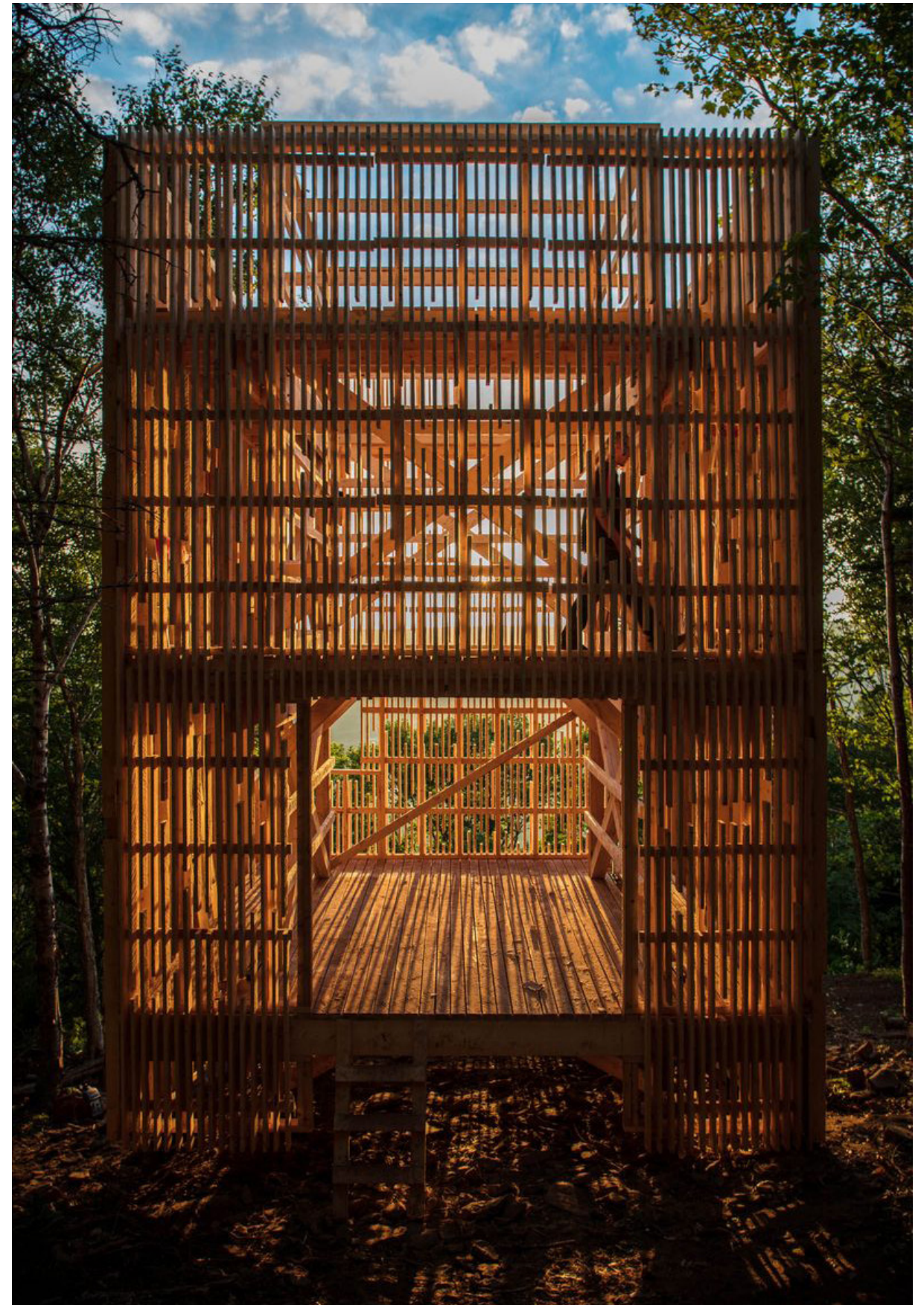
1. The need for a temporary escape
2. The need for meaningful social support
3. The need for a sense of control

She argues that architectural interventions can have the potential to reflect current advances in home adaptations for respite services. Arguably, these restorative attributes can go beyond health care, but reflect all architectural spaces, especially those targeted at self care, refuge, and respite (figs 83-84).

Fig 84. DW Arquitectos yoga studio interior (photographer Pablo Blanco) <https://www.dezeen.com/2015/11/28/dx-arquitectos-ashtanga-yoga-chile-teachers-house-extension-blackened-timber-studio-santiago/>



Fig 85. MacKay-Lyons Sweetapple prospect (photographer Shane Hauser) <https://www.mlsarchitects.ca/ghost/prospect>



Intergenerational Living, Restorative and Socio-Physical Theories, and The Little Barn

The Little Barn has the potential to be a restorative retreat for caregivers, like my sister and myself, to take care of our family on an intergenerational property. Due to the barns location, about one hundred feet from my mothers house, and a few hundred feet from my grandparents, it allows for a point of refuge while still being in close proximity.

Secondary Structure on an Intergenerational Property

The structure itself has the ability to be a secondary structure or accessory dwelling unit, as it is merely a building shell with no current use. With this, it can be utilized to distant the caregiver from the family they are caring for, leaving both parties with independence and autonomy while still being in close proximity. Living, or part-time caring, within an intergenerational property can lower the burden of tasks and expenses, creating a more economical living condition for all. The barn also has the potential to facilitate family members for a long extended period of time. The adaptation has the potential to benefit many individuals, and with room for future adaptations, can continue to fit the needs of my family.

Attention Restoration and Stress Reduction Theory

The Little Barn inherently has many Attention Restoration and Stress Reduction theory qualities:

1. The barn is “away” from the other structures, including my mothers, and grandparents houses, allowing one to be disconnected from their work of helping with caregiving , and property tasks.
2. The barn was built against a ravine to the East and an open pasture to the West. Due to it’s placement, the extent of the environment around the barn is vast and diverse, making it immersive and engaging, especially with careful space planning.
3. The barn, with further planning, has the potential to be more immersive with it’s environmental surroundings, with the addition of windows, to be engaging without being a distraction.
4. The Little Barn has to potential to be compatible with the needs of my family with adaptation to a new use of a studio to support my family as they age, and help maintain the property.
5. The barn can offer different members of the intergenerational property to have a sense of control over their surrounds by allowing the members to be close enough to have their eyes on each other, but have their own space.
6. With proper space planning, the barn can have space for social connections with family and friends.
7. The Little Barn can allow for distraction in the physical environment, due to it’s disconnection from other structures and continuity with the riven and pasture landscapes.

Restorative Values

Refuge

Create a place away from stress and anxiety, to rest, recharge, and be creative.

Engaging

Connection to the natural landscape, adaptability, creative use of space to explore ideas, be creative, and recharge.

Caring

Create a safe place of care, both caring for the past and the present.



JIM & HANNAH CUTLER STUDIO BUNKHOUSE

Bainbrige Island, Washington

Completed - 2012

Area - 80 sq ft

Studio bunkhouse is a father-daughter project designed and built by Jim and Hannah Cutler, of Cutler Anderson Architects. There were initially three motives for the project. For Jim to have an office space with a view, for Hannah to have a bunkhouse for sleepovers, and for Jim to teach Hannah “that she can learn that she can make things.” They framed the structure in the garage with locally milled lumber, and then wrapped the framing in cedar ship-lap, rigged foam insulation, and then cut out two foot shingles from a 22-gauge cor-ten steel sheet for the siding and the roof. The front glazing was the only part of the project that Jim and his daughter did not install. They worked nearly every weekend, finishing the cabin in eight months.

The studio, located on Bainbridge Island and thirty feet from the Cutlers’ house, is lined by the forest with a view of the Puget Sound. It’s building pad is just eight by ten feet. The plan is simple, featuring a long desk against the front corner glazed facade, a small wood-burning stove built up on a platform with storage for wood and a mini fridge below, and two fold down beds on the back wall.

The project has design principles that align with socio-physical theories regarding caregivers needs in space planning and design. Studio bunkhouse is both a restorative environment that routes are based in Attention Restoration Theory (ART), and an environment that supports health based in the theory of Supportive Environment (SE). Intended for work privacy and detached sleepovers, the project immediately correlates with a retreat that has stress-reducing qualities.

Fig 86-87. Cutler Anderson Studio Bunkhouse finished images. <https://www.dezeen.com/2018/07/17/cutler-anderson-designs-studio-bunkhouse-working-sleepovers-waterfront-site-washington>



First and foremost, the studio is detached and in close proximity to the main house. Being away is the first principle in ART, and while being detached, the design allows for mental separation of the activities and responsibilities in the main house. Fostering a sense of control and access to privacy is a principle in the SE theory, while one has a sense of control over their stress in a space that is distant to the one giving them the stress.

Studio bunkhouse has several qualities to learn from a design-build perspective. The materials are raw in form and allow for slight imperfections. The wood is locally rough sawn cedar, and the siding is Cor-Ten steel, which offers a similar quality of wear. The space has simple and clean built-ins, a desk, two beds hung from the wall, and a storage platform for the stove.

This project has many qualities that can be present in the Little Barn. The project is connected to the land, and offers a place of refuge while being disconnected from the main house. The material honesty of the project, particularly the finish and simple construction of the locally milled lumber, is honorable. These qualities equate to an intimate space that reflects self-care.

Fig 88-89. Plan and section drawings by Jim Cutler and Culter Anderson Architects
<https://www.dezeen.com/2018/07/17/cutler-anderson-designs-studio-bunkhouse-working-sleepovers-waterfront-site-washington/>

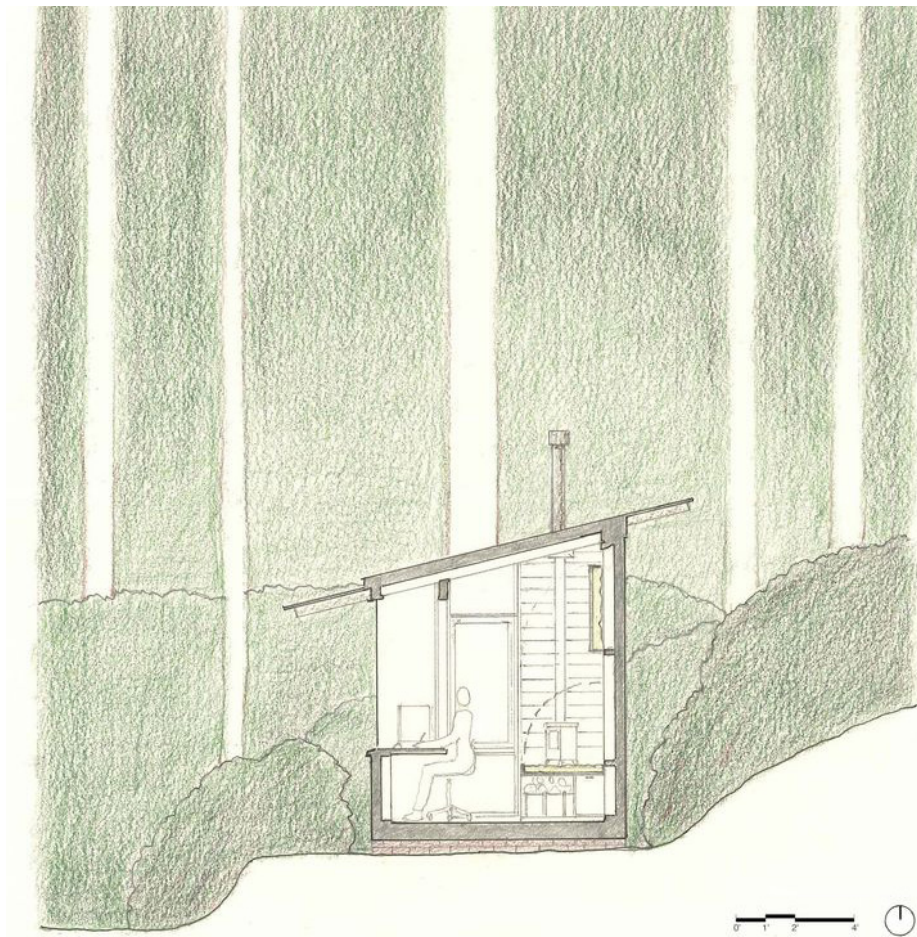
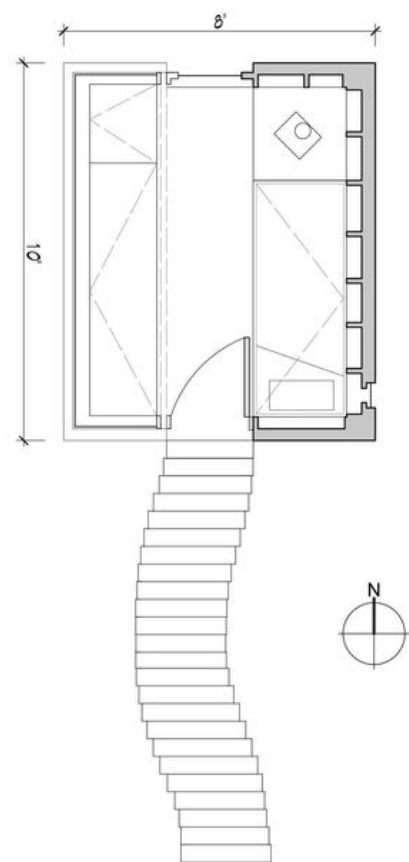


Fig 90. Studio view of the Puget Sound by Jim Cutler and Culter Anderson Architects
<https://www.dezeen.com/2018/07/17/cutler-anderson-designs-studio-bunkhouse-working-sleepovers-waterfront-site-washington/>



OLSON KUNDIG MAXON STUDIO

Carnation, Washington

Completed - 2022

Area - 300 sq ft

Olson Kundig's Maxon studio in Carnation, Washington, is a movable studio on rail tracks that is attached to the primary house. What makes this project so unique is it's ability to detach from the house. The client, Lou Maxon, was the general contractor on the project, which opened up possibilities. On top of it's mechanics, the two-story studio was designed after a caboose. The first floor is a work place office, and the second is a "calmer zone for creative exploration and restoration"³³ The material pallet is an Olson Kundig classic and simple and industrial in nature, featuring plywood and steel. Both stories have expansive built-ins with uninterrupted open spaces.

Maxon studio has many Attention Restoration and Stress Reduction theory principles embedded in the design. First, the studio has the ability to be away from the main house and gives the owner a sense of control of his environment due to it's move ability. Second, the extent, fascination, and positive distraction of the environment can be viewed with unobstructed views from both floors anywhere it moves. The studio reflects the needs of the owner and offers ample space on the interior for social support if needed. Arguably, the upstairs of the studio is where refuge is, where one can be creative, recharge, and restore mental health.

Fig 91-93. Olson Kundig's Maxon Studio finished. (photographer Aaron Leitz)

33. Ben Dreith, "Olson Kundig Places Movable Studio on Rail Tracks in Washington State," *Dezeen*, April 26, 2023, <https://www.dezeen.com/2023/04/26/olson-kundig-maxon-studio-washington-rails/>.





ESTUDIO DIAGONAL 3X3

La Union, Chile

Completed - 2019

Area - 161 sq ft

The architects Estudio Diagonal were asked to design a retreat that provided a distraction from work, which is used semi-regularly. Their goal was not to disturb the natural surroundings but to enhance them through the architecture. The structure is located in a rain forest near La Union city in southern Chile, and is nestled on the shore of Radimadi river. The structure is roughly 3 by 3 meters in width and length, and 4.8 meters high. The architects and clients found a semi flat ground of land that was small and free of trees, which ended up being the selection for the site. The structure is lifted off the ground, and the program is split into three acts. The terrace on the same plane that protrudes from the ground floor of the studio gives a connection between the indoors and outdoors and is a place for outdoor gathering and cooking. The first floor serves as a kitchen, dining room, and living room. There is a wood stove and a double-height window that overlooks the river that gives a sense of refuge and connection to the outdoor environment. The second floor, the loft, serves as a place to rest and a bathroom. The materials include standard pre-dimensioned pine framing and plywood. They utilized construction techniques that were common to the local labor industry of La Union. The interior structure is exposed to showcase the intentionality.

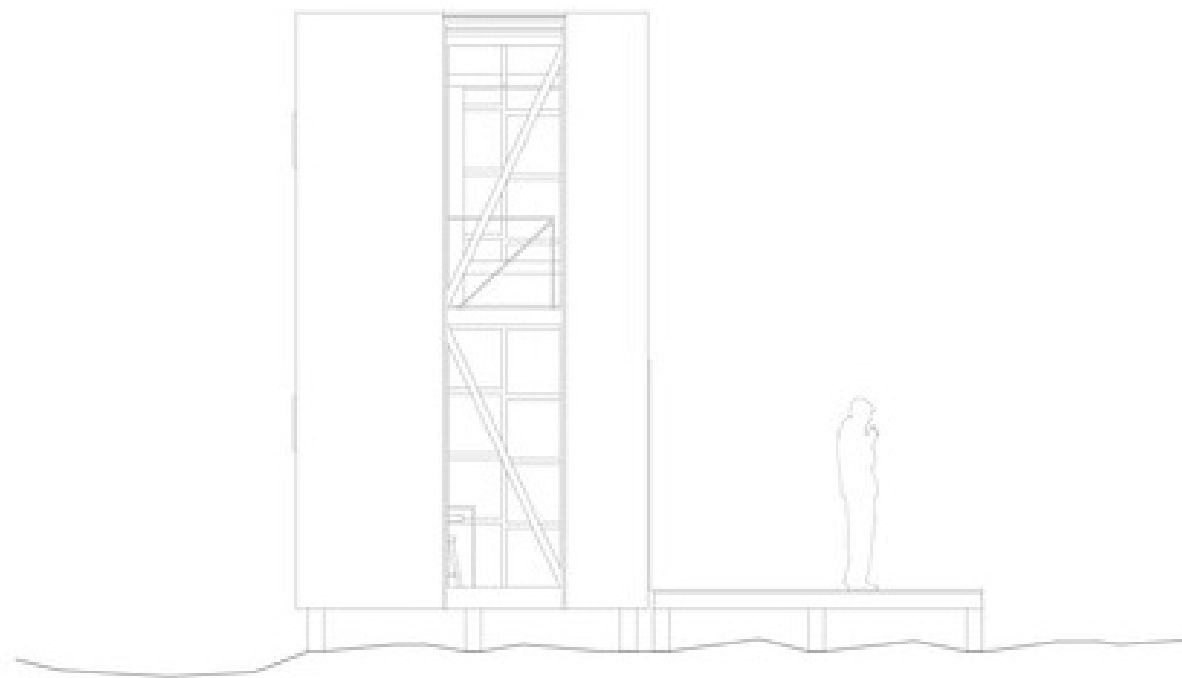
Fig 94-95. 3x3 finished interior and exterior by Estudio Diagonal <https://www.archdaily.com/964443/3x3-retreat-estudio-diagonal>

3x3 Studio is similar in context to the Little Barn in size, connection to the environment, operations, and refuge. The project explores very similar objectives to the Little Barn to serve as a place of refuge in the natural environment. The large double-height window overlooking the river acts as a fascination



based on the Attention Restoration Theory, where it allows the inhabitants to engage with the environment without distraction. The project is also away or detached from their daily work and profession, offering a place of refuge to relieve stress. Being off-grid and the simplicity of materials and construction, this project also looks to bring affordability into the picture.

Fig 96-97. 3x3 Elevation and section by
Estudio Diagonal <https://www.archdaily.com/964443/3x3-retreat-estudio-diagonal>





STEVEN HOLL ROUND LAKE HUT

Rhinebeck, New York

Completed - 2001

Area - 80 sq ft

In 2000, Steven Holl designed his off-grid Round Lake Hut in Rhinebeck, New York, as a place to practice watercoloring. He started the process of the design on 5-by-7 watercolor paper, which is his preferred method of design exploration. He chose to have the hut overlook a lake because he had grown up in the Puget Sound, where he was used to the reflections and colors of light in a body of water, where he could feel grounded and connected to land. The project is on a 28 acre site with three buildings, a gallery, an artists' residency, and the round hut. The structure is made of 2 by 6's, plywood, and black tar paper. There is no plumbing, electrical, heating, or even insulation.

The separation of the Round Lake Hut from Steven's everyday life and work allows him to be away and be creative. The Openings towards the lake, with the sides only having small openings near the floor, allow for no distractions when Steven is working on a painting. The hut is truly a restorative refuge, following Attention Restoration and stress reduction theories.

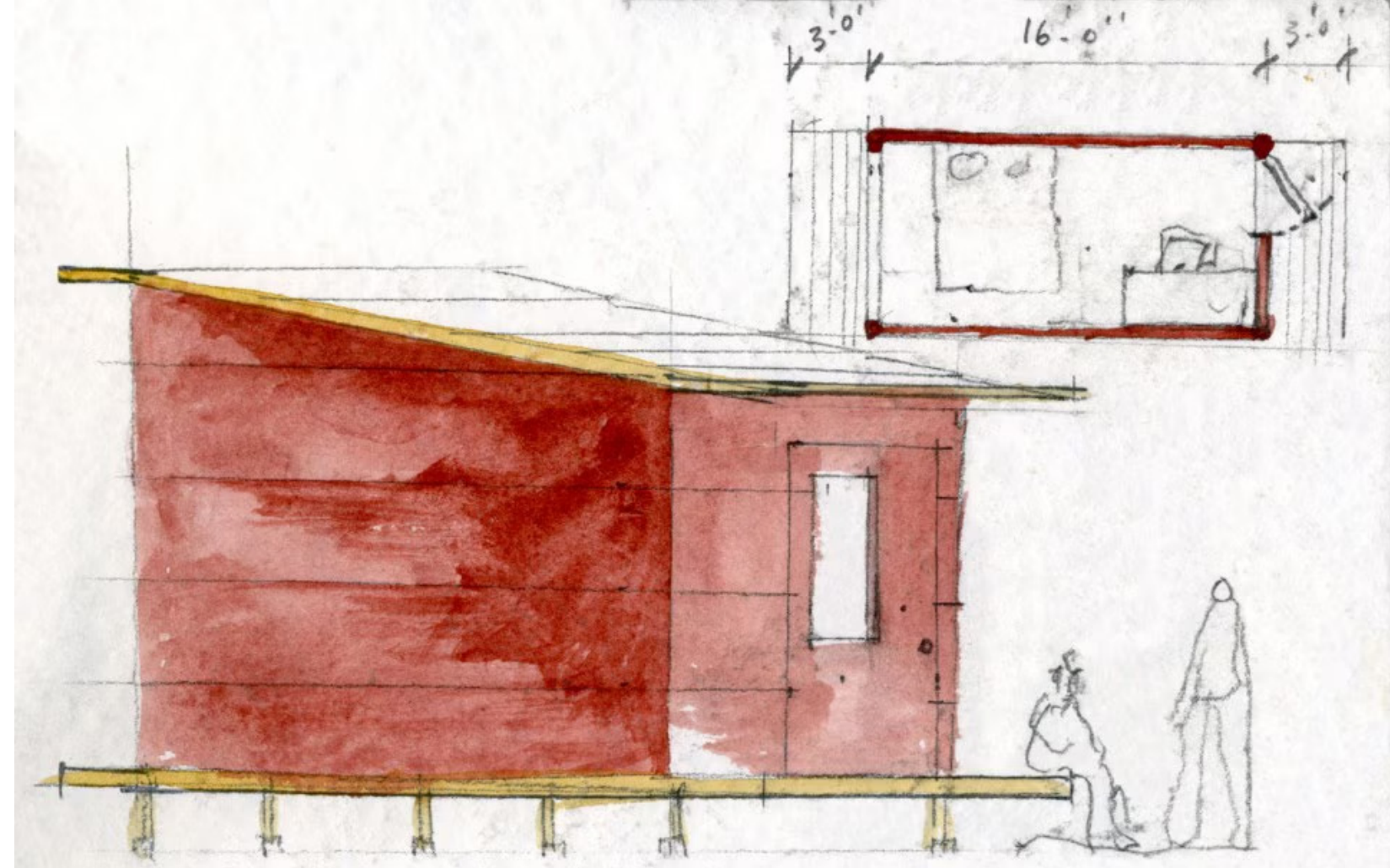


Fig 98-100. Round Lake Hut Finished photos and concept drawings. <https://www.stevenholl.com/project/round-lake-hut/>



**MACKAY-LYONS
SWEETAPPLE
ARCHITECTS
REFUGE ON THE BAY
OF FUNDY**

Burlington, Nova Scotia

Completed - 2014

Developed as part of a
design-build program at
Dalhousie University's School of
Architecture

Located in Burlington, Nova Scotia, Refuge on the Bay of Fundy is designed to be a multi-purpose space for resting and gathering. The project was developed as part of a design-build program at Dalhousie University's School of Architecture, and the structure was built over three summers by architecture students who were guided by local craftsman and professors. The students' objective was to create a refuge utilizing wood building practices unique to the Minas Basin region of Nova Scotia. They studied local vernacular agricultural building types and construction techniques. In the end, resulting in a structurally entirely constructed from wood, including the walls, roof, floors, and structural system. The project acts as a resting place along an existing trail to serve the local community, and has a series of sleeping nooks and a central table for gathering.

Refuge on the Bay of Fundy responds to Attention Restoration and Stress Reduction theory principles. The project is connected to the land, detached from society, and acts as a place of refuge and rest. Particularly, the students have designed sleeping nooks, which offer a private connection to the land, acting as the main places of refuge in the project.

Fig 101-102. Finished Refuge on the Bay
of Fundy (photographer William Green)
[https://www.mlsarchitects.ca/ghost/ref-
uge-on-the-bay-of-fundy](https://www.mlsarchitects.ca/ghost/refuge-on-the-bay-of-fundy)



Refuge

Create a place away from stress and anxiety, to rest, recharge, and be creative.

Honesty

Design with honest materials and construction. Showcase the honest character of the barn and celebrate it with contrasting the new elements with the old.

Resourceful

Use what is on site, and simple materials. Reuse scrap or underutilized materials found. Bring new life to what is not used.

Honor

Honor grandfathers craftsmanship, use of hand-milled lumber. Preserve original character on exterior.

Beauty

Design and build with thoughtful detail.

Caring

Create a safe place of care, both caring for the past and the present.

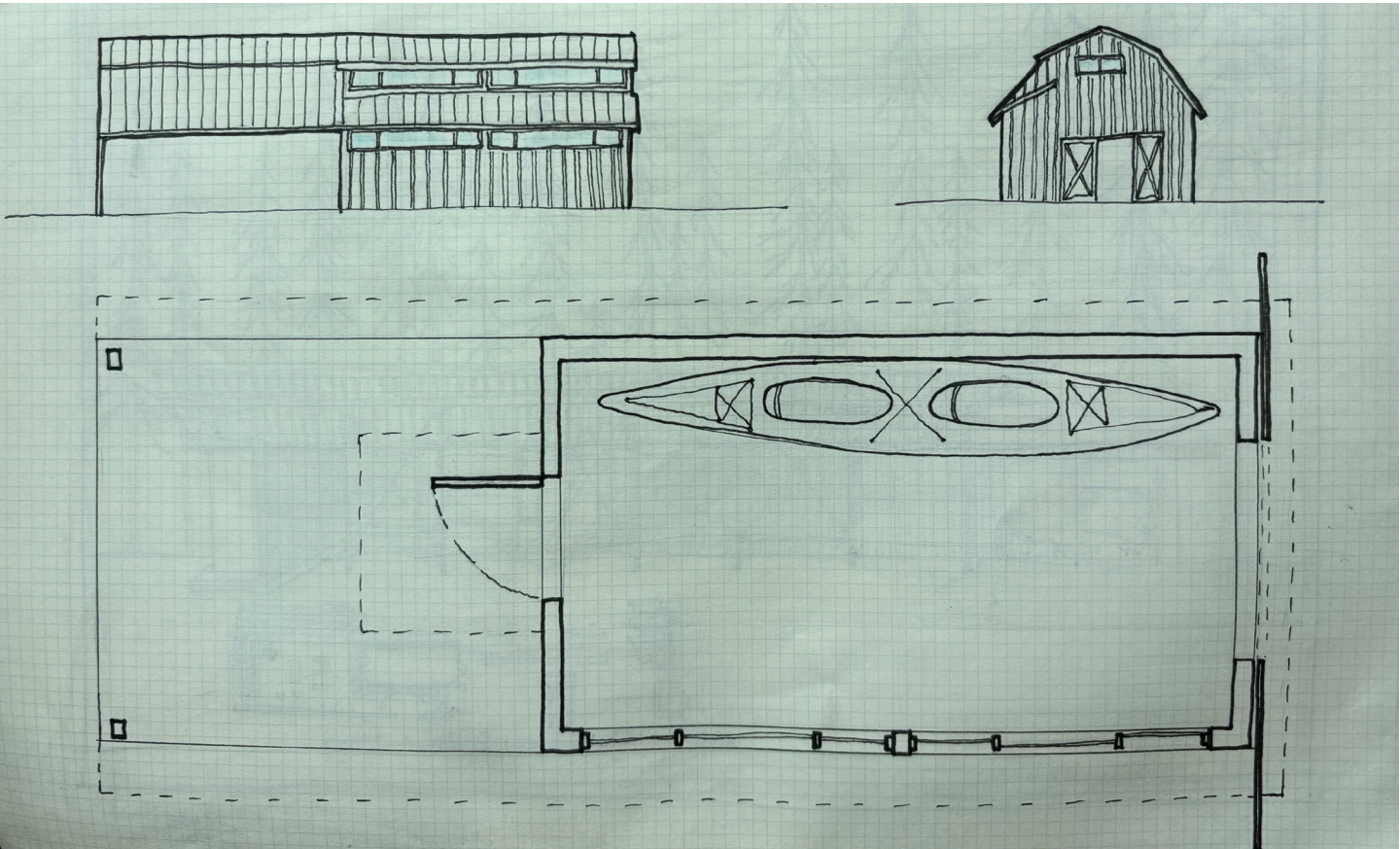
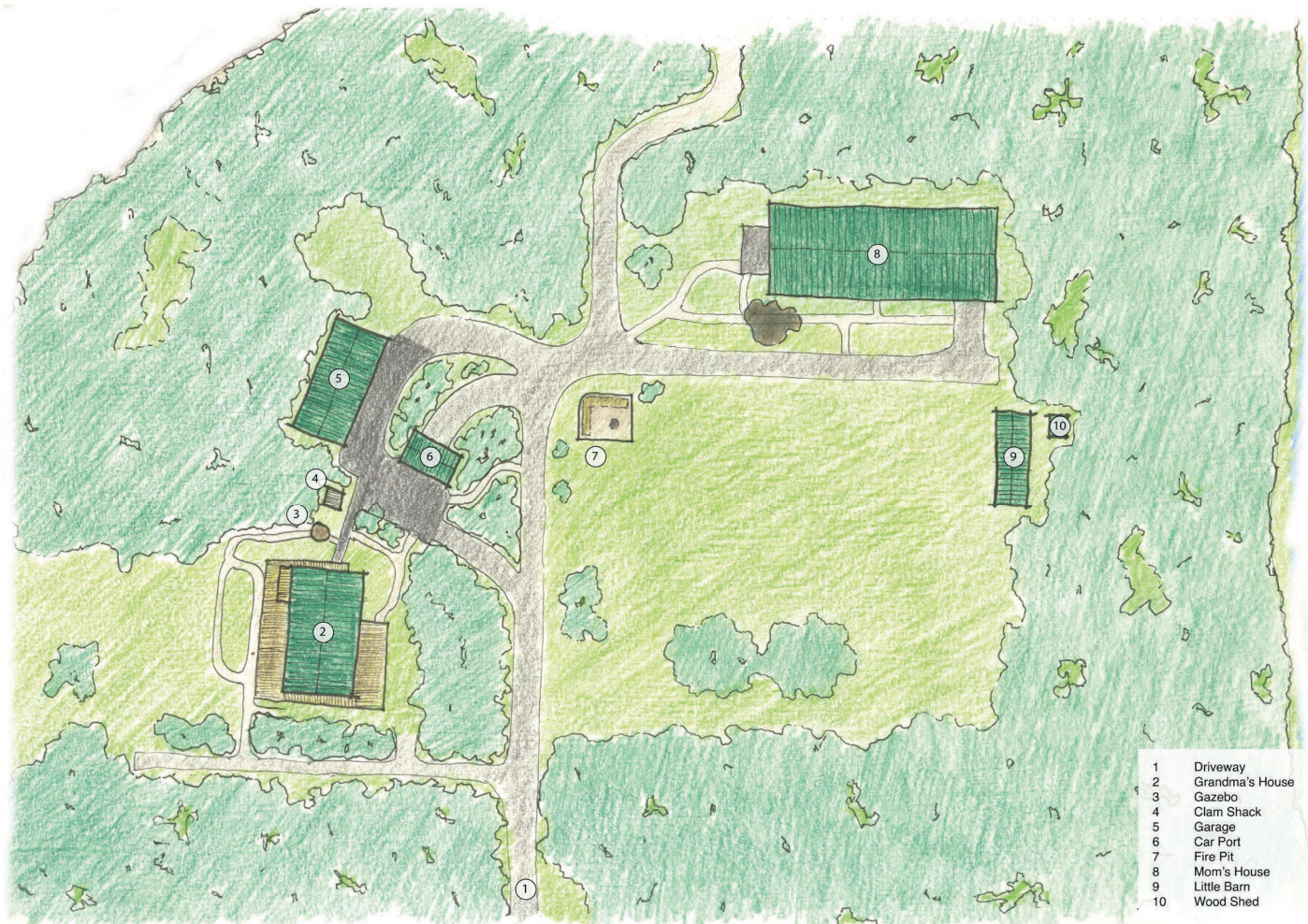
Adaptability

Design and build with thoughtful of how the barn can continue to adapt to meet the needs of my family.

Little Barn Conditions

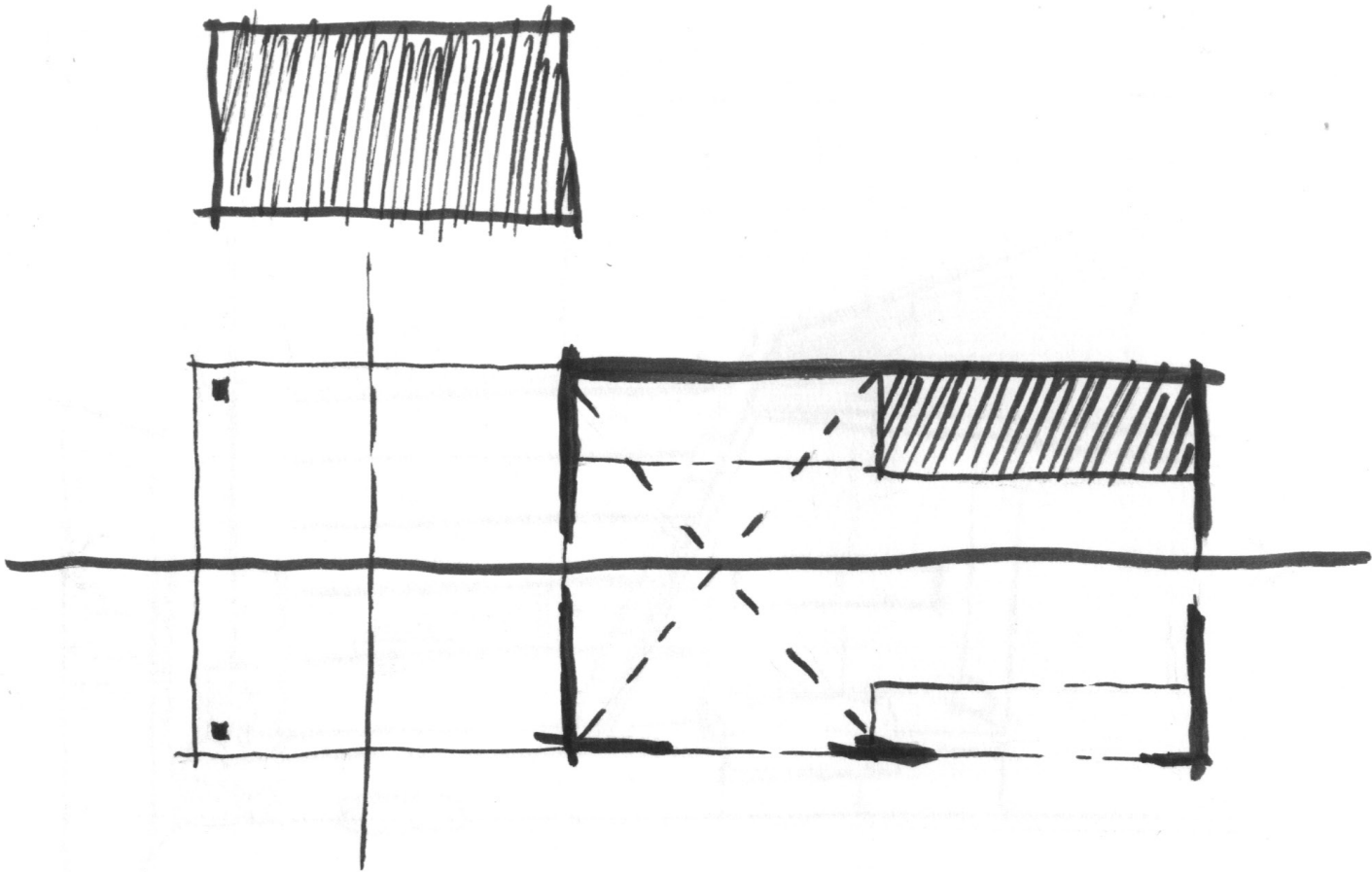
The Little Barn is located on my family property. The property is pinched between Dutchers cove and a revine with a creek. The entrance into the site comes from the South in which connects to my grandparents house, their gazebo, clam-shack, garage and carport, as well as the fire pit, the big barn, Little Barn, and wood shed. There is a large pasture that my grandfather clearcut in the 80's that the Little Barn's Western facade opens up to. The majority of the remaining land of the property is forested. The exterior covered porch of the Little Barn on the Northern facade is faced toward the big barn. This porch is also connected to the wood shed to the East. The Eastern facade of the Little Barn looks out to the riven forest.

The Little Barn of summer 2025 when this project started, was surrounded by overgrown blackberries. The structure was dirty and unused, and the Eastern board and batten was rotten due to improper storage leaning on the wall. The structure itself is post and beam and had board and batten directly installed to the framing. Exploration of an adaptive reuse insertion began, looking primarily how to enclose the structure, and the space planning around the offerings of the structure and site.

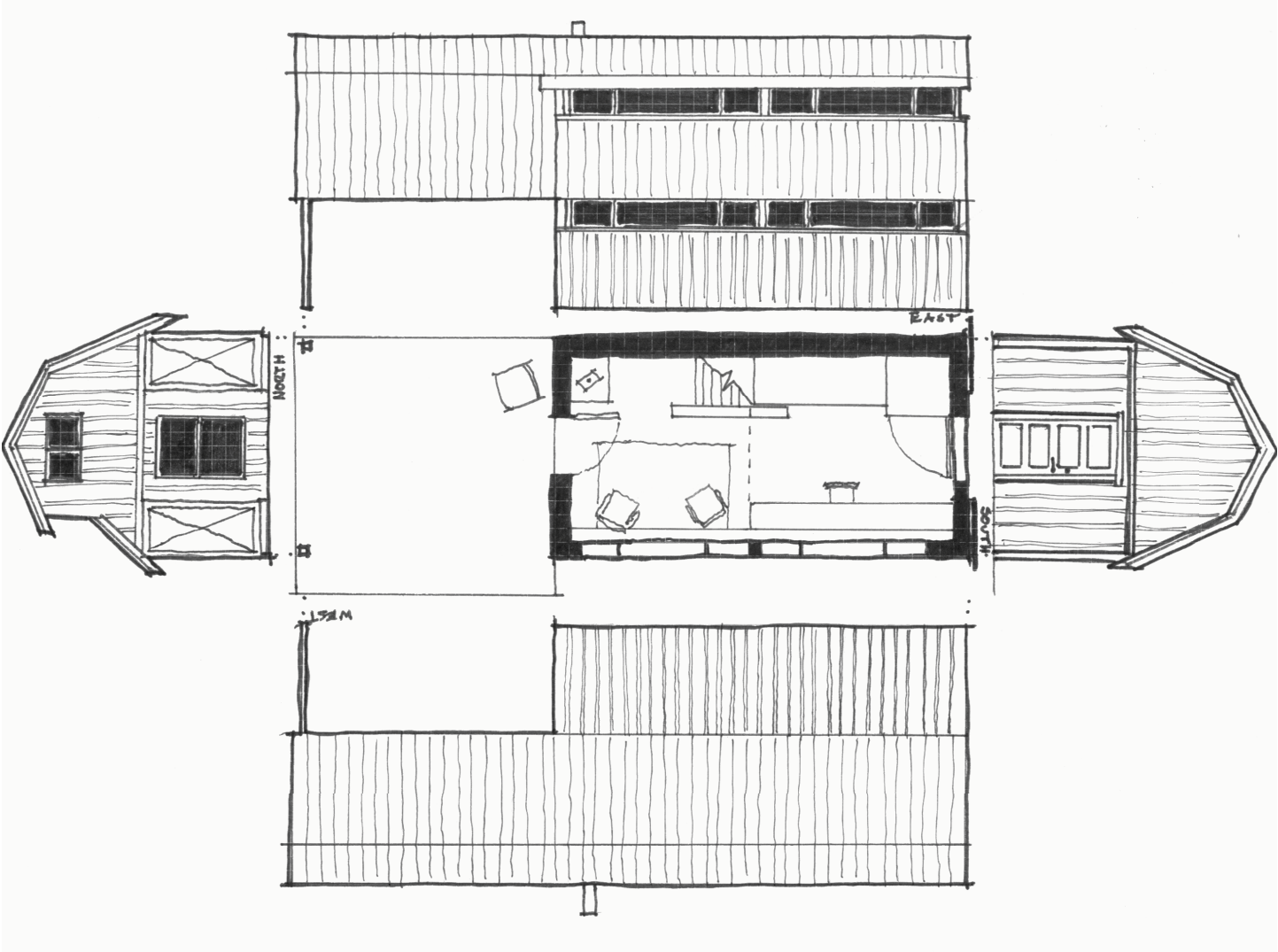


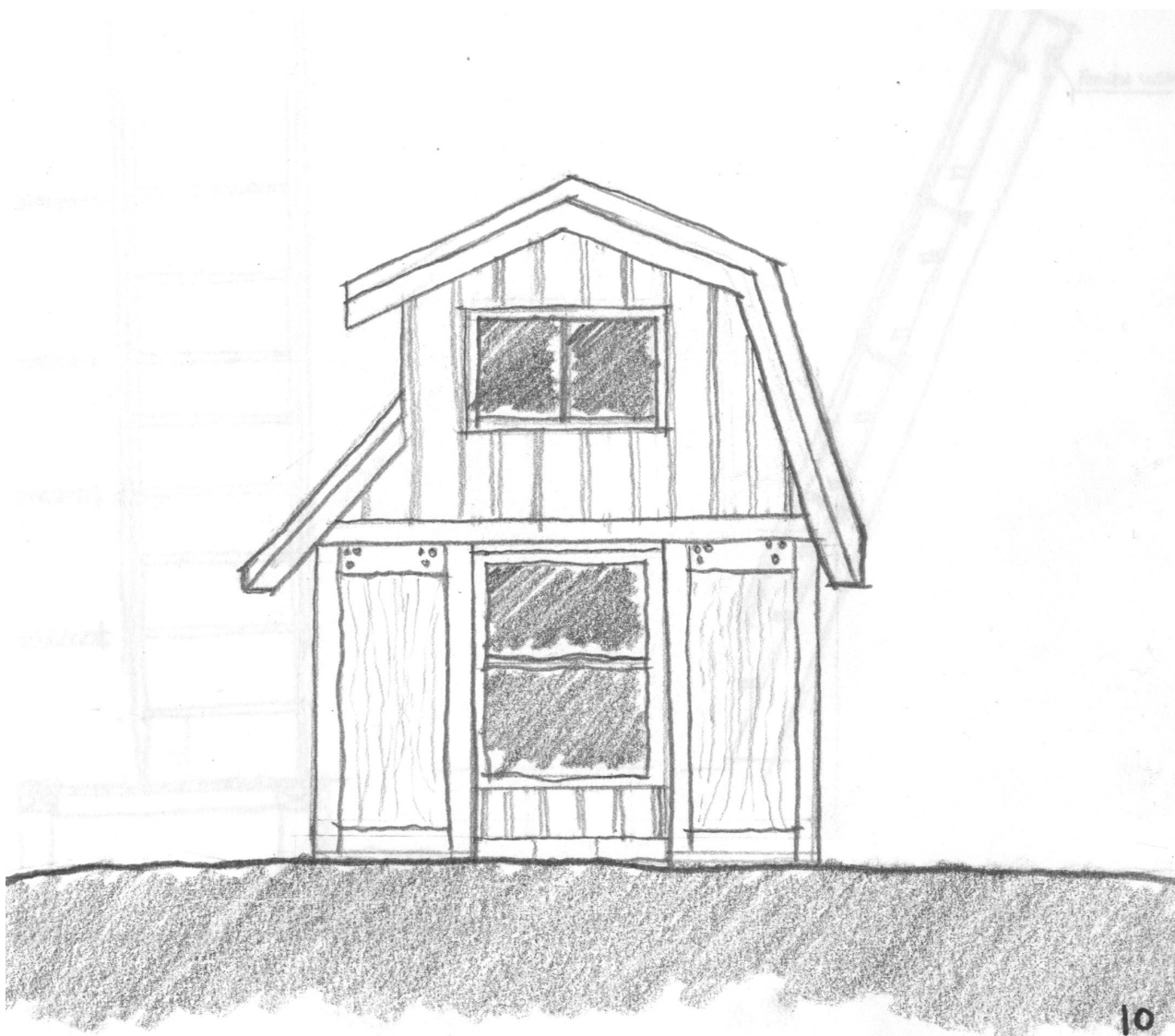
The Little Barn aims to be a place of creative solitude and refuge within an intergenerational property. The project looks to be based around the site and project’s existing conditions, especially the connection to the big barn and wood shed through the covered porch. Due to the proximity to the big barn, the Little Barn does not consider plumbing, but rather looks to sustaining itself off the grid to rely on the big barn for bathrooms and cooking. Therefore the necessities for the program reflect the concept of designing for caregivers, that reflect Attention Restoration and Stress theories:

- + Built in daybed
- + Flexible seating area
- + Desk/Workspace
- + Bed
- + Storage
- + Stove for heating

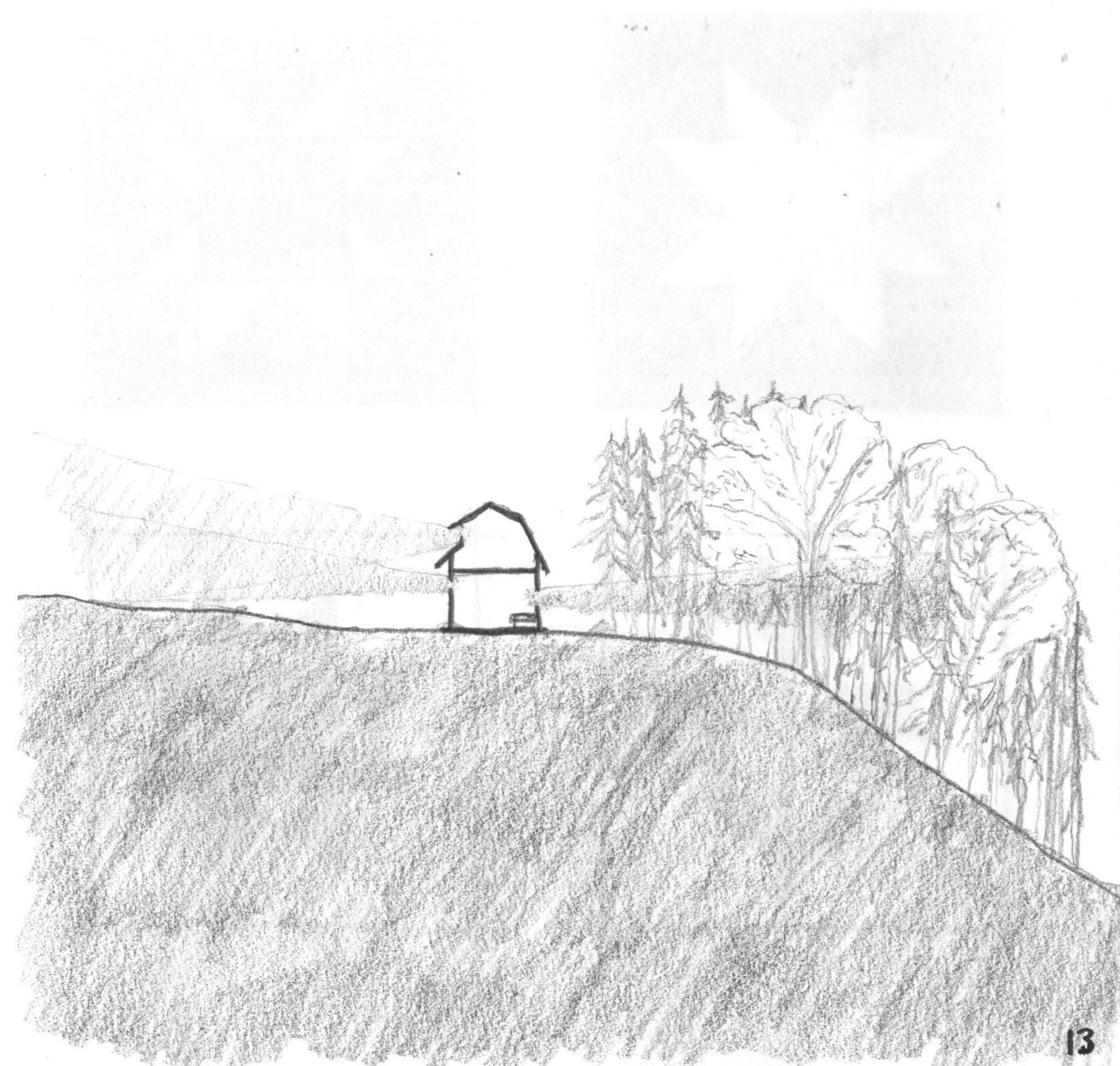


The conceptual Design of the Little Barn seemed to have continued until the primary construction was done. However, over the course of a year before construction started ideas were already being developed. The given 8-by-19 foot space was challenging to cohesively tie elements together, while still leaving breathable and adaptable space. Initially, the design just focused on the ground level with budget concerns. Later, realizing that many challenges came from that and it was necessary to connect the levels if they were to be weatherproofed and enclosed. The diagram to the right shows an iteration where the desk was on the ground floor and there were multiple built-ins across the back wall. Daylight in the location where the desk is on the ground floor would be a challenge for working, and would add more clutter to the space. Fundamentally, the design kept evolving with frequent visits to the space and realizations of reality.

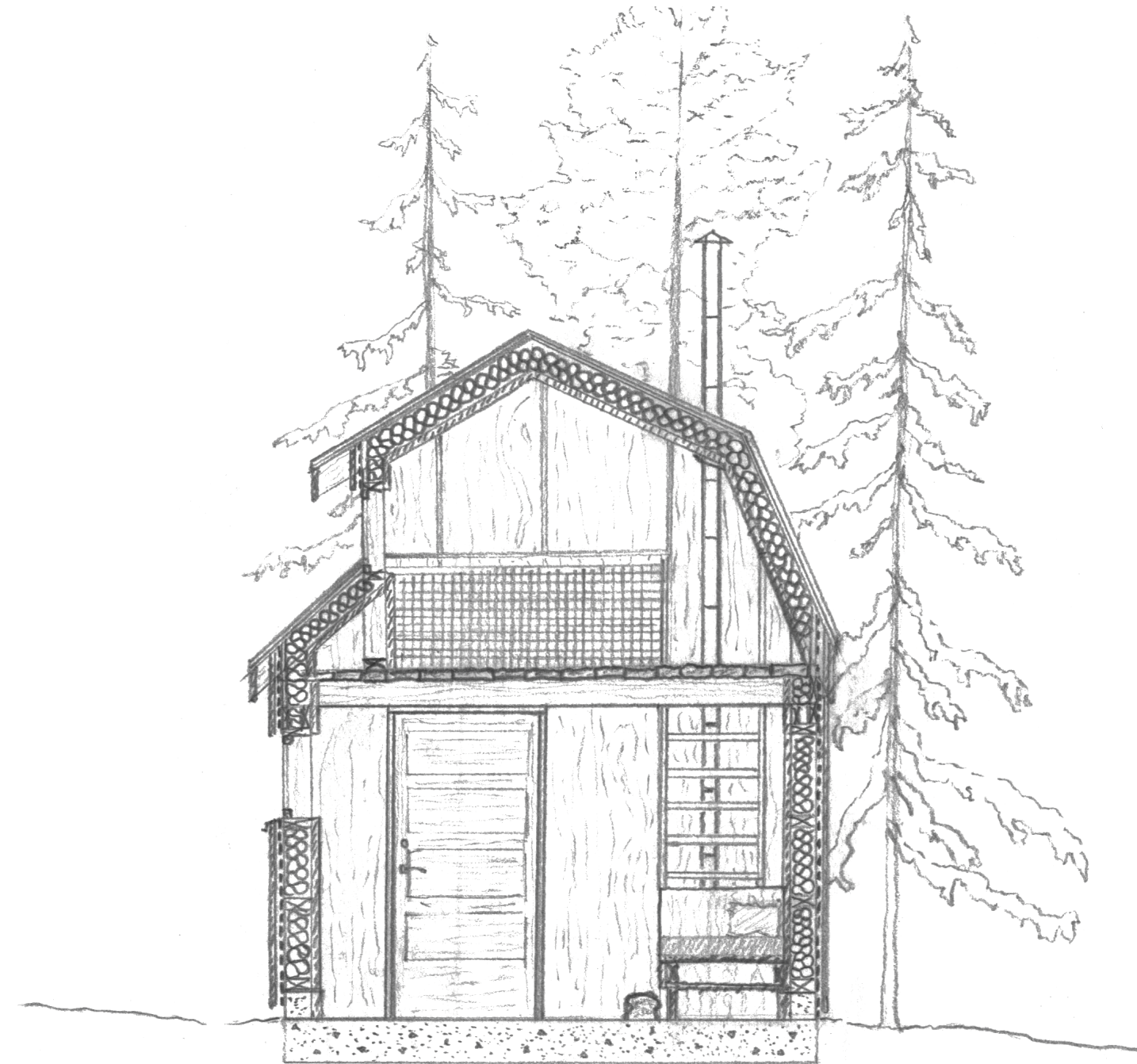
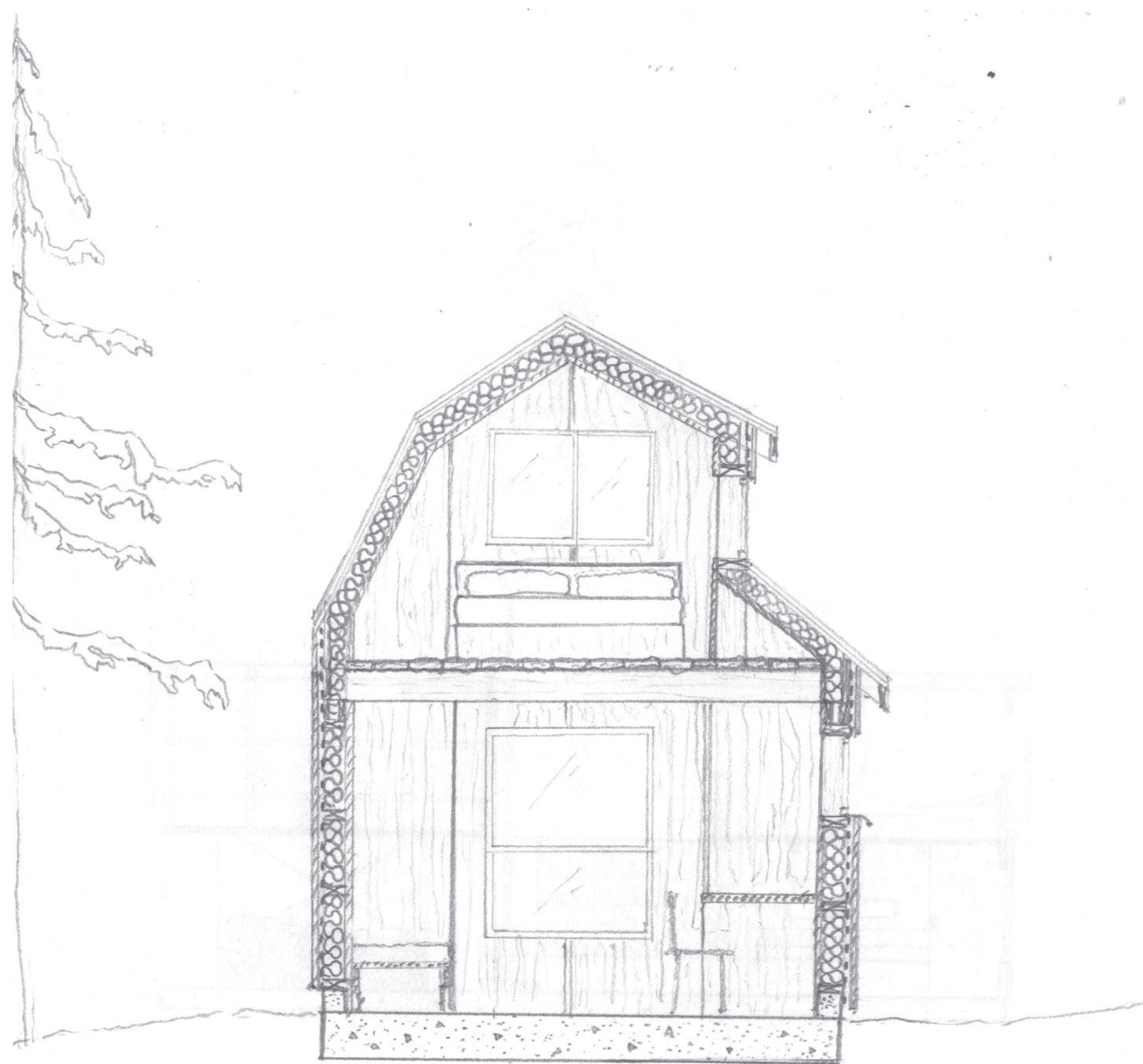


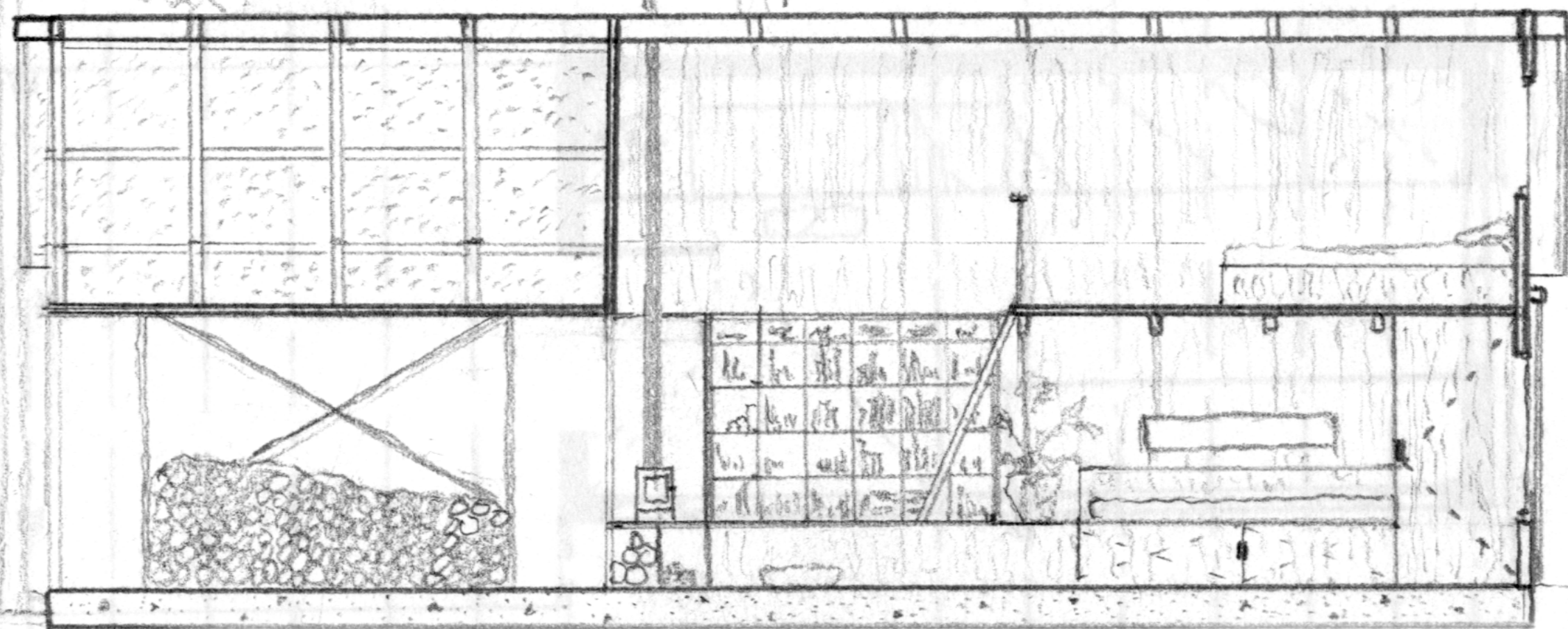
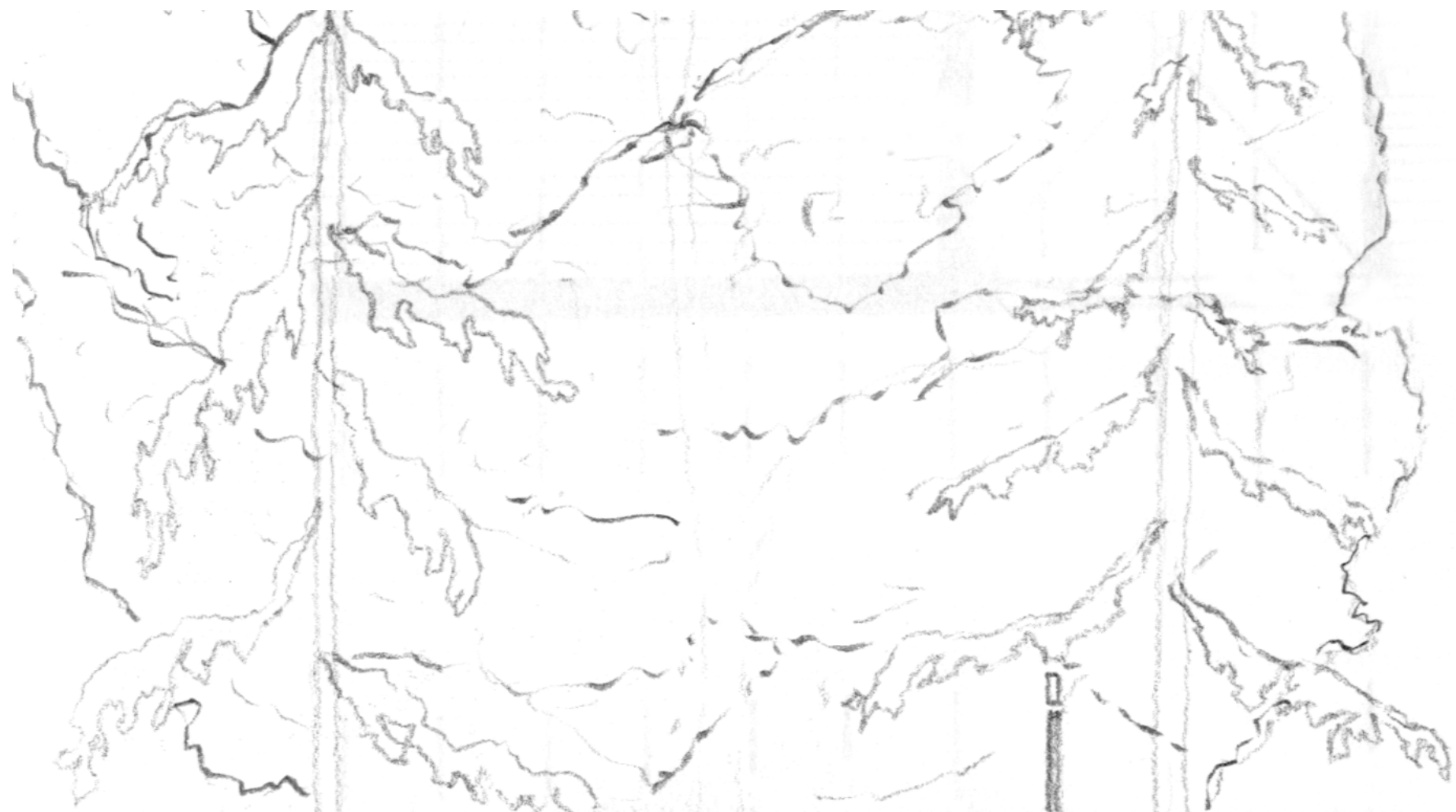


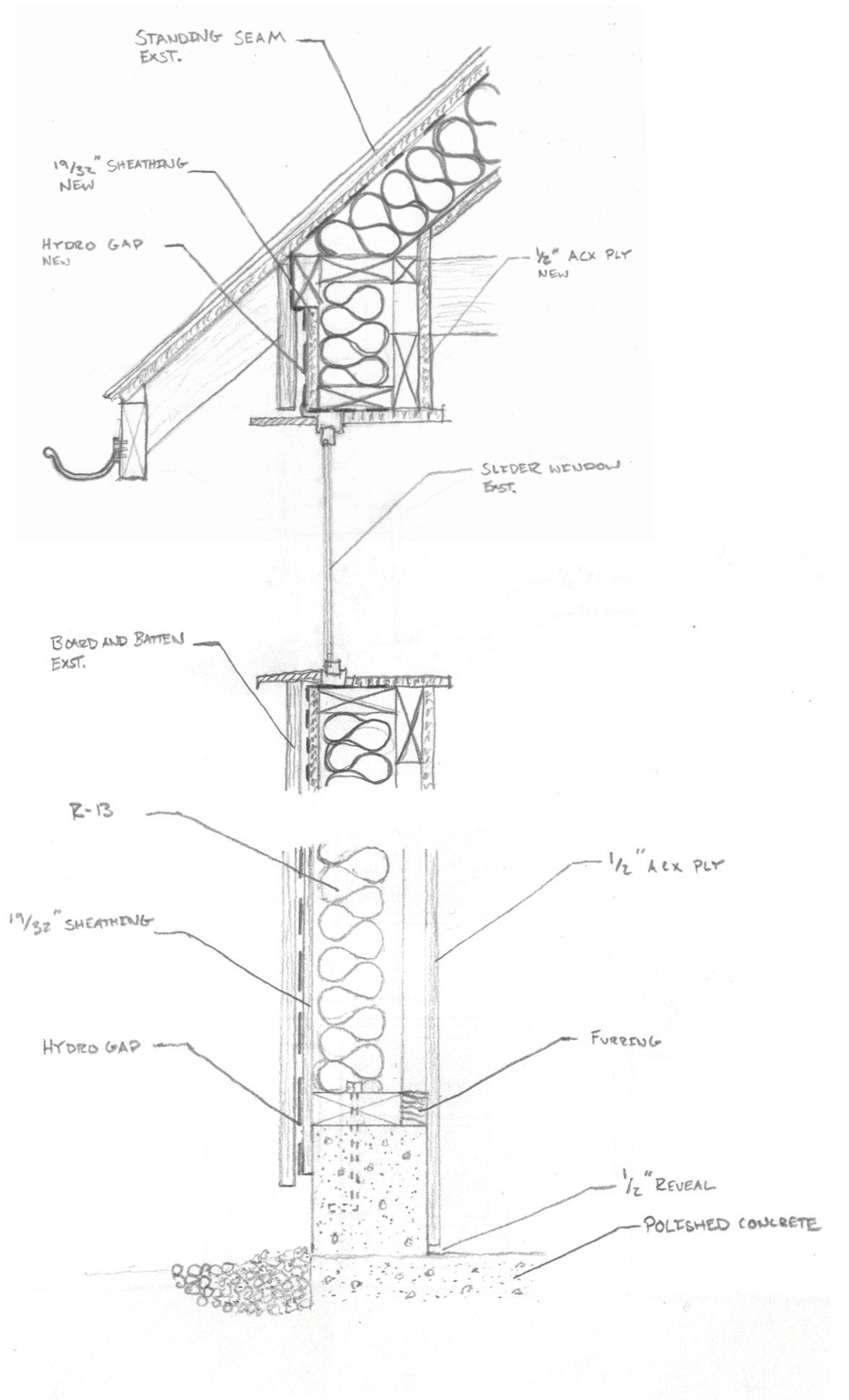
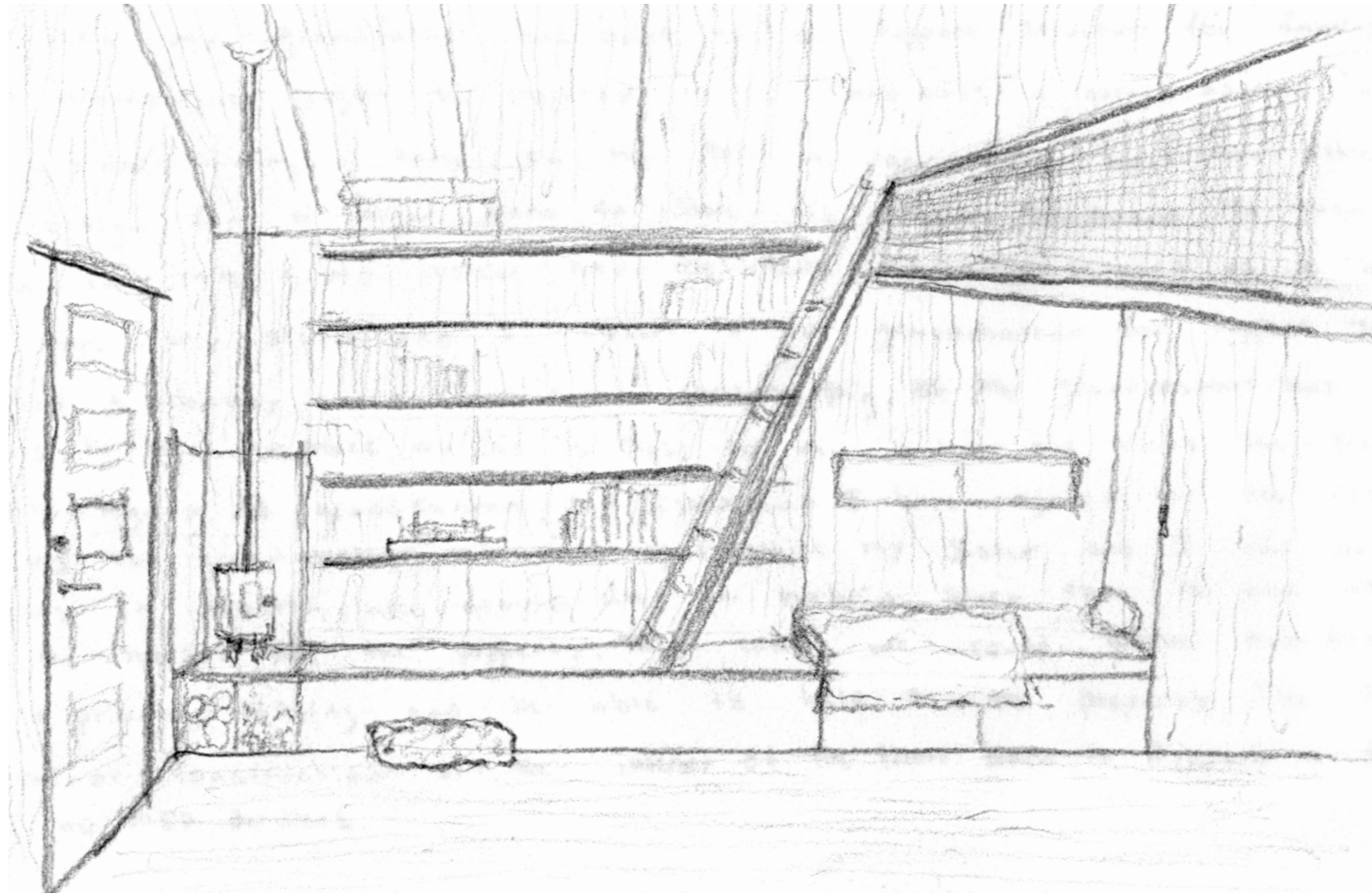
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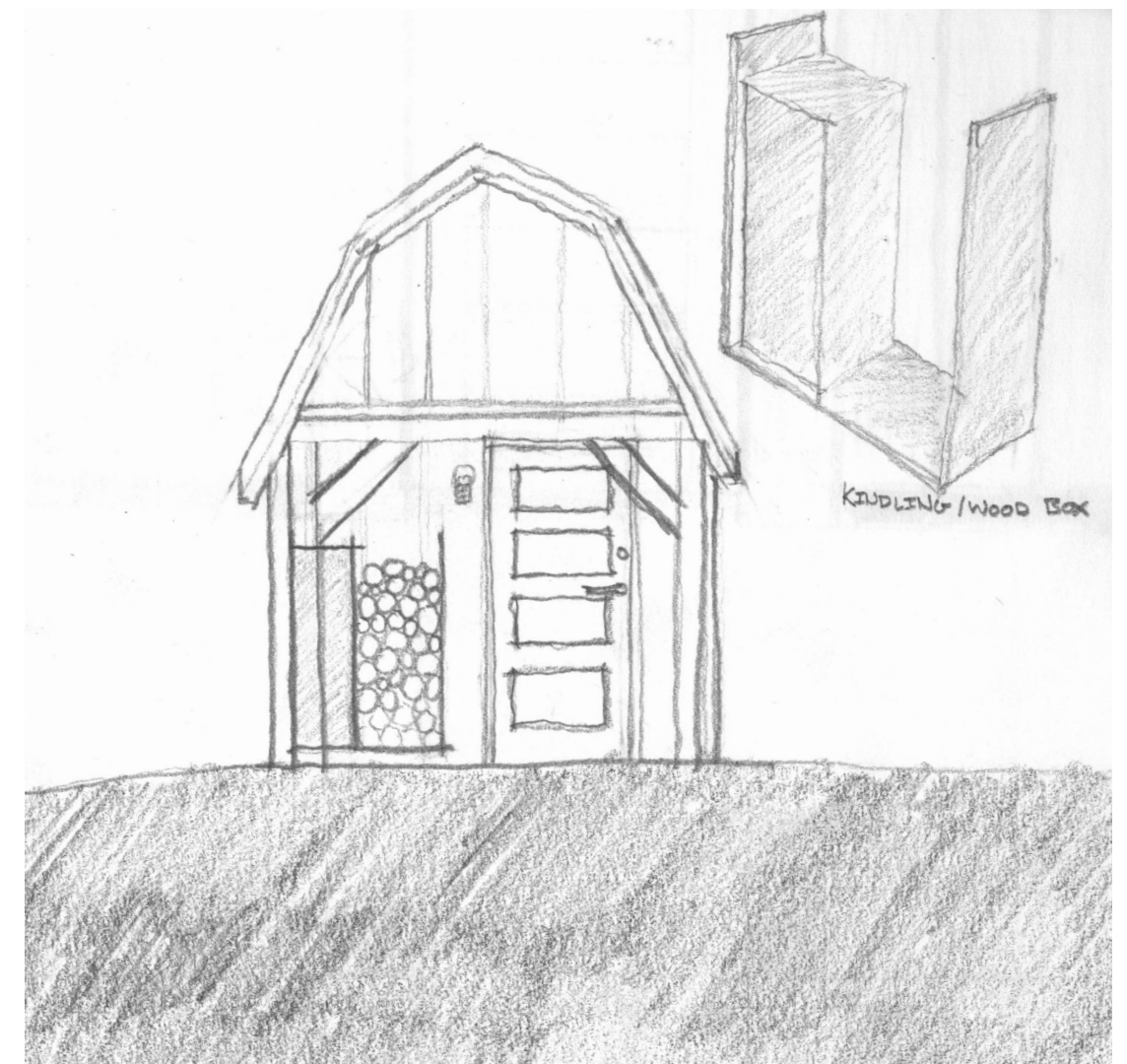
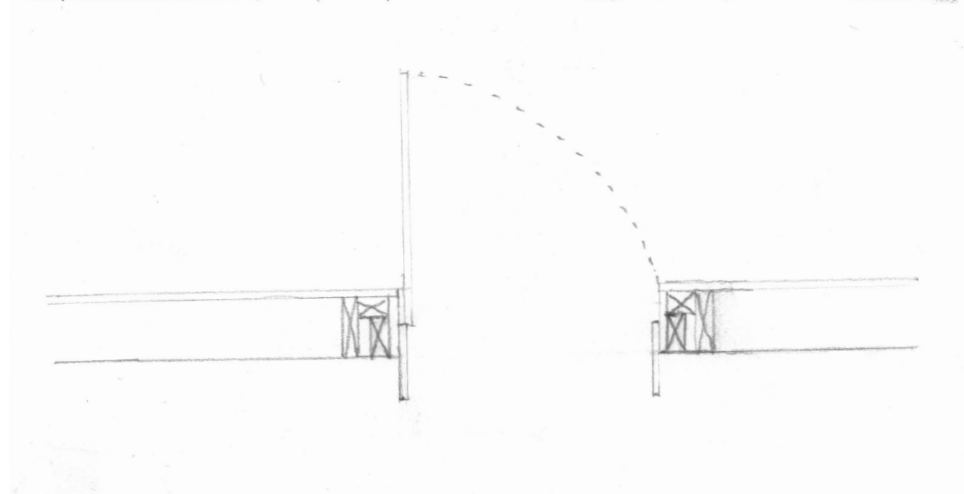
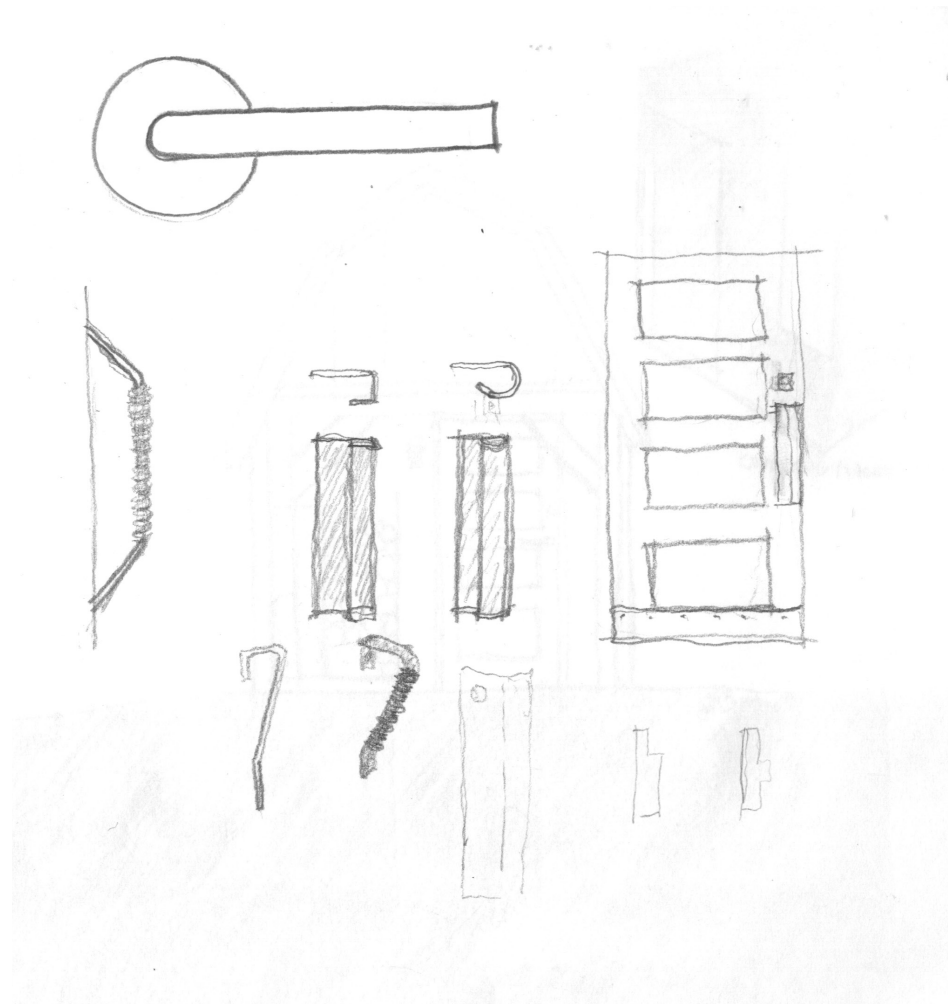


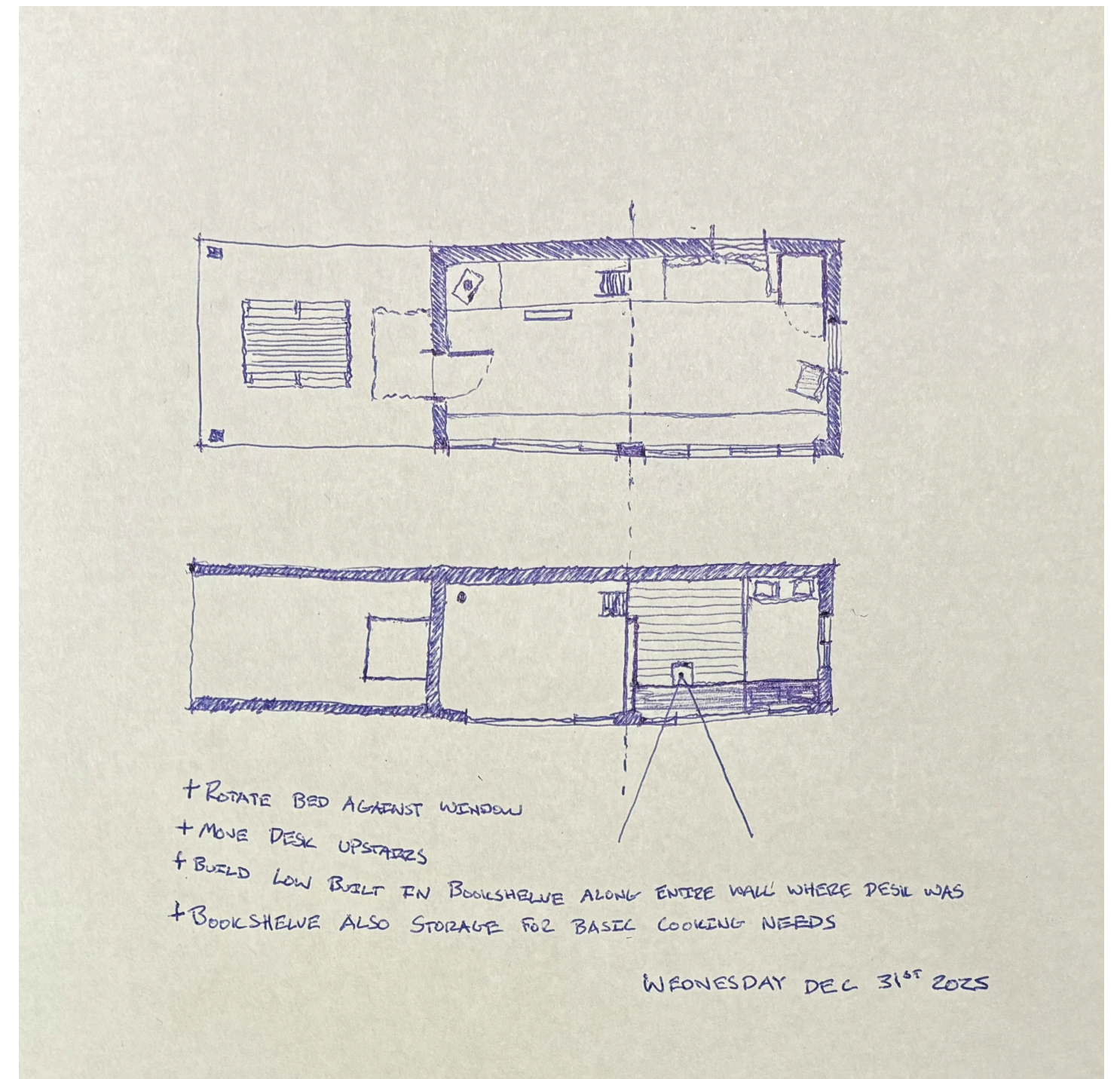
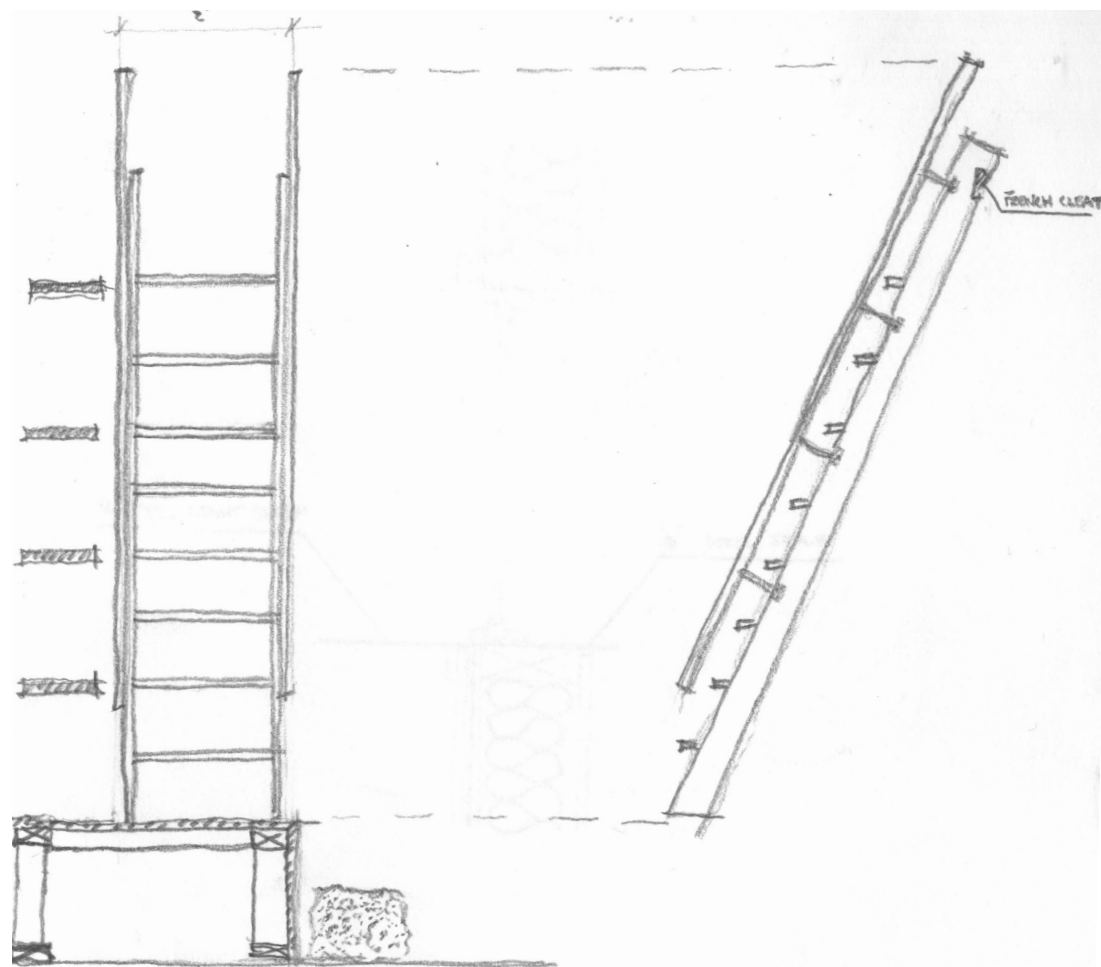
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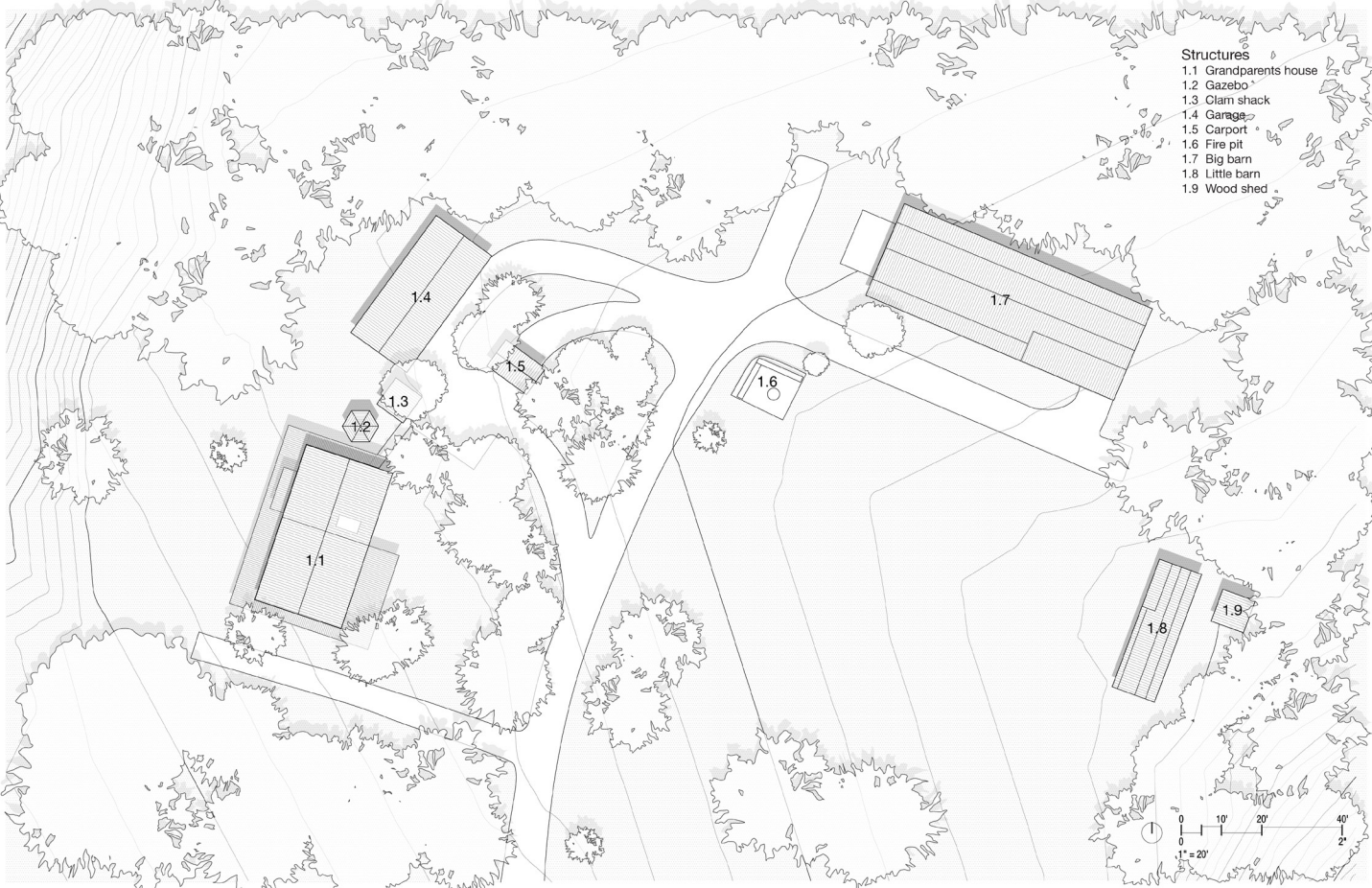


Final Design

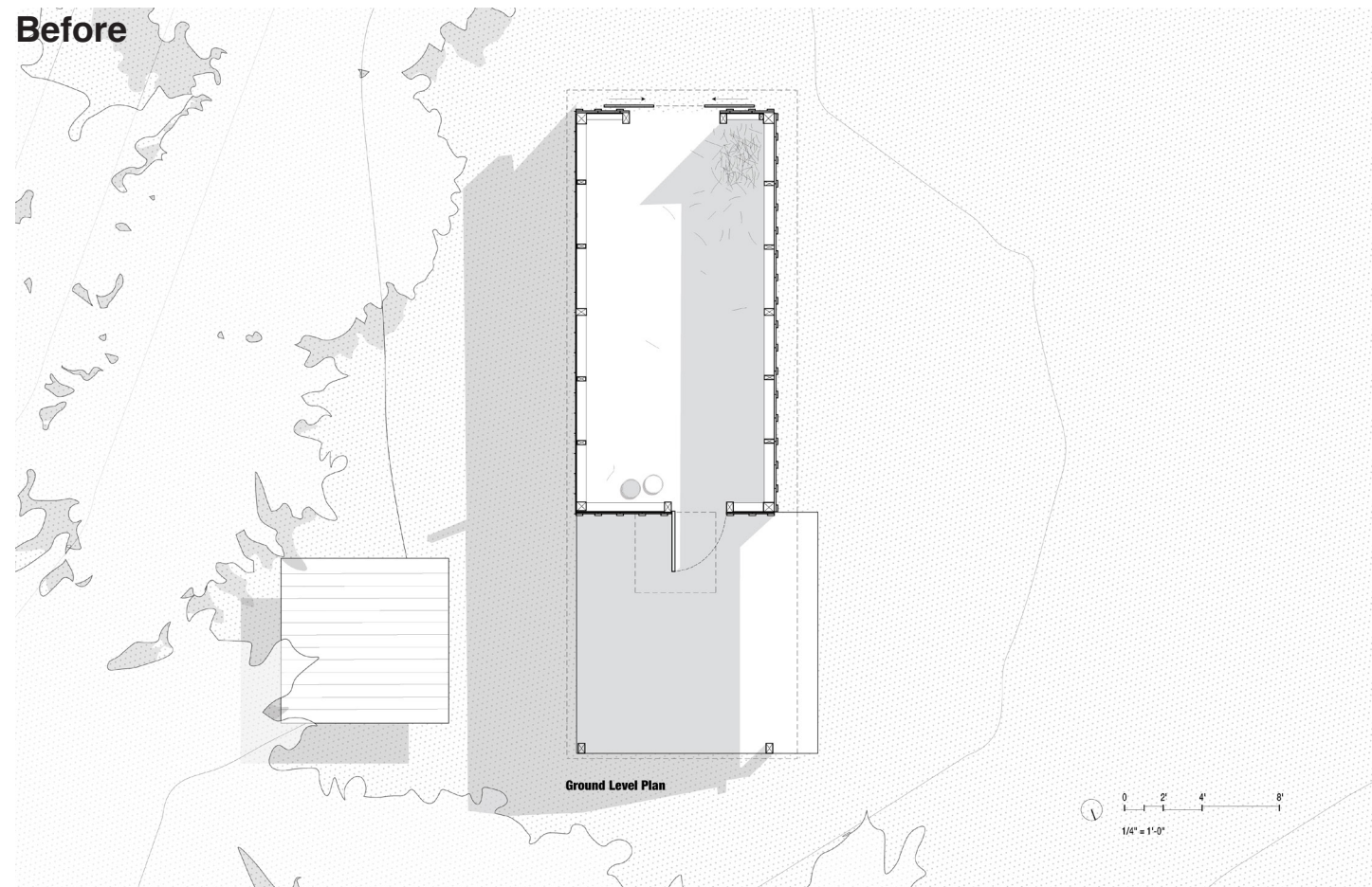
When you enter the property you are welcomed by my grandparent’s house to the West, and a large pasture with the two barns along the edges. The Little Barn, located on the South East of the property and overlooks the pasture and all of the buildings. It is nestled along a forested ravine to the East.

This history of gradual building, adaptation, and self-construction became central to the project. Rather than treating the barn as a preserved artifact, the Little Barn is approached as part of an evolving intergenerational landscape.

After a year of conceptual design, with changes after visiting the space after experiencing the space, before and after changes, the final design emerged. The design is a cultivation of ergonomic movement through the space. The ground floor features a long built-in platform that organizes the program with the wood-burning stove, the ship ladder, the daybed, and closet all existing on one plane. This allows the remaining space to be flexible, and overall keeps the space feeling open and organized. The built-ins continue in the loft space, with a desk with open book shelves that doubles as a railing, shelving in the wall cavity, and a bed thats structure is hidden in the wall asembly.



Before



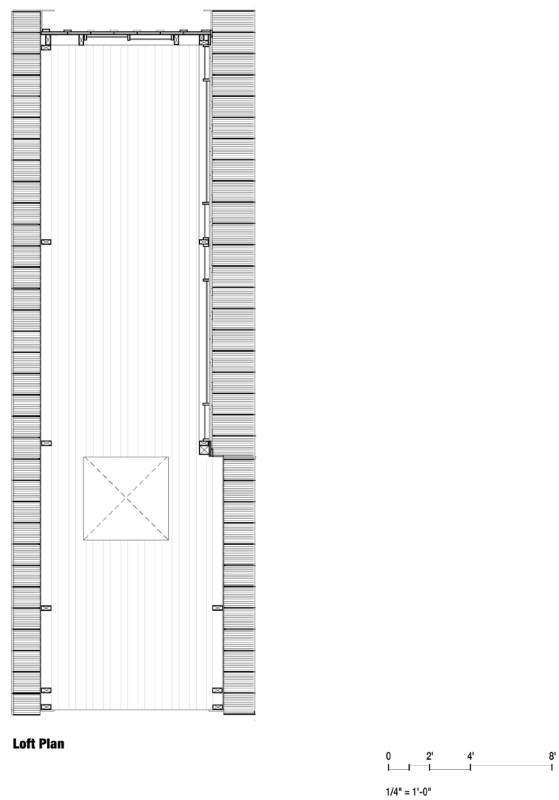
The original lower enclosed level had limited daylight and low ceilings. Here, the Little Barn is illustrated as what is was throughout my childhood. The home of our pig Stanley.

After



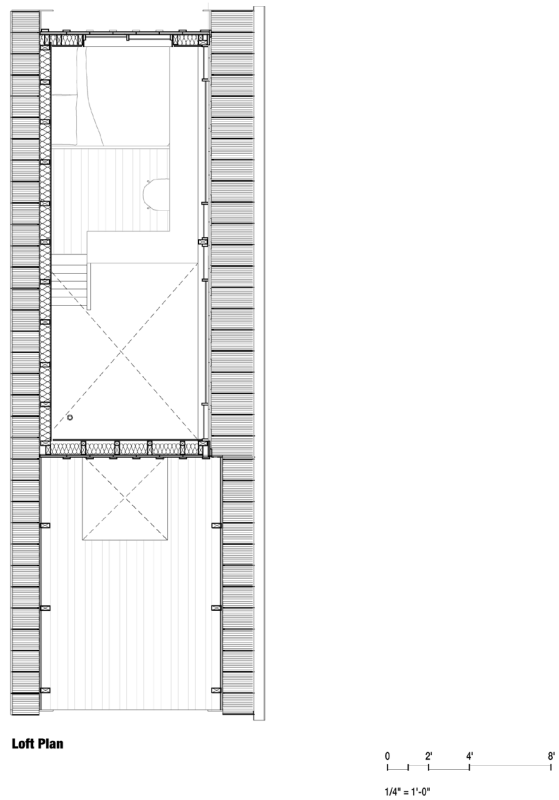
The design centers around a long built-in element along the eastern wall. This single intervention organizes the project by incorporating storage, the stove, ladder access, a daybed, and seating into one continuous architectural element. In contrast, the open central floor area remains flexible and supports gathering, conversation, and shared occupation.

Before



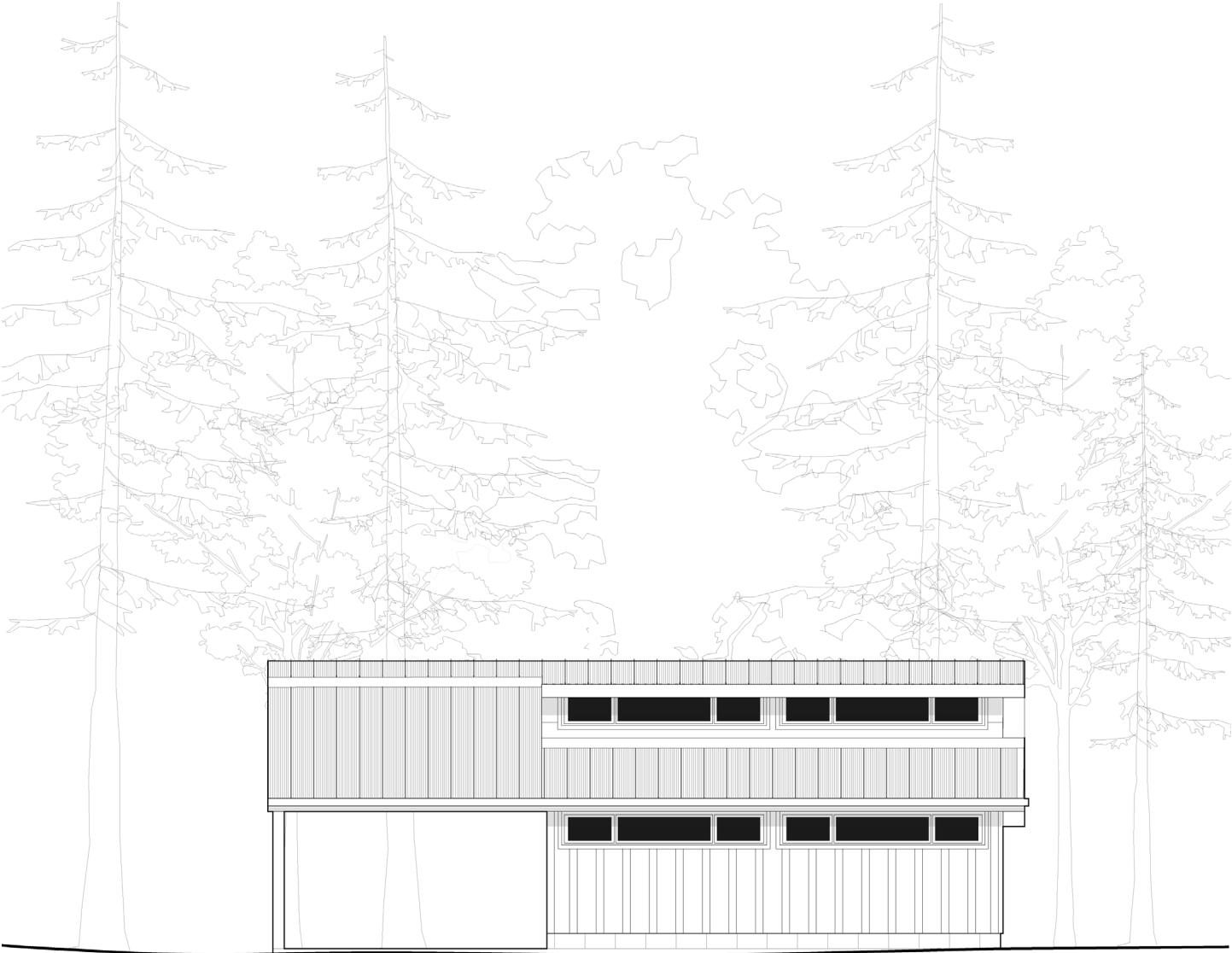
The original loft was one long space, accessible by a hole in the decking or out the Northern end. The space was disconnected to what was below.

After

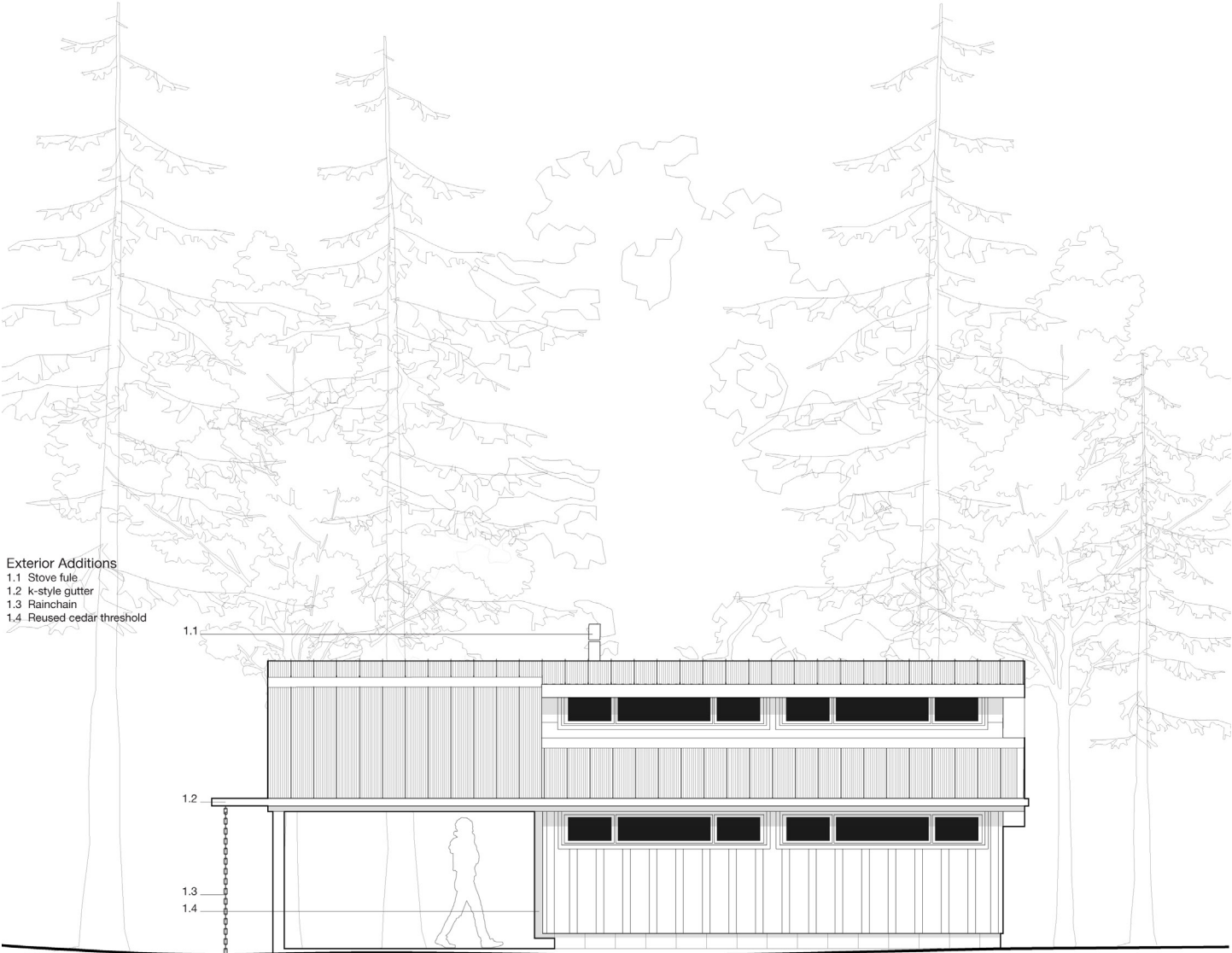


The loft was selectively cut open to create a double-height space, as well as allow for a connected space. This intervention brought more daylight, and completely changed the feeling inside the space. The end of the loft was also enclosed to allow for the remaining of the loft to be storage while creating a weatherproof enclosed structure.

Before



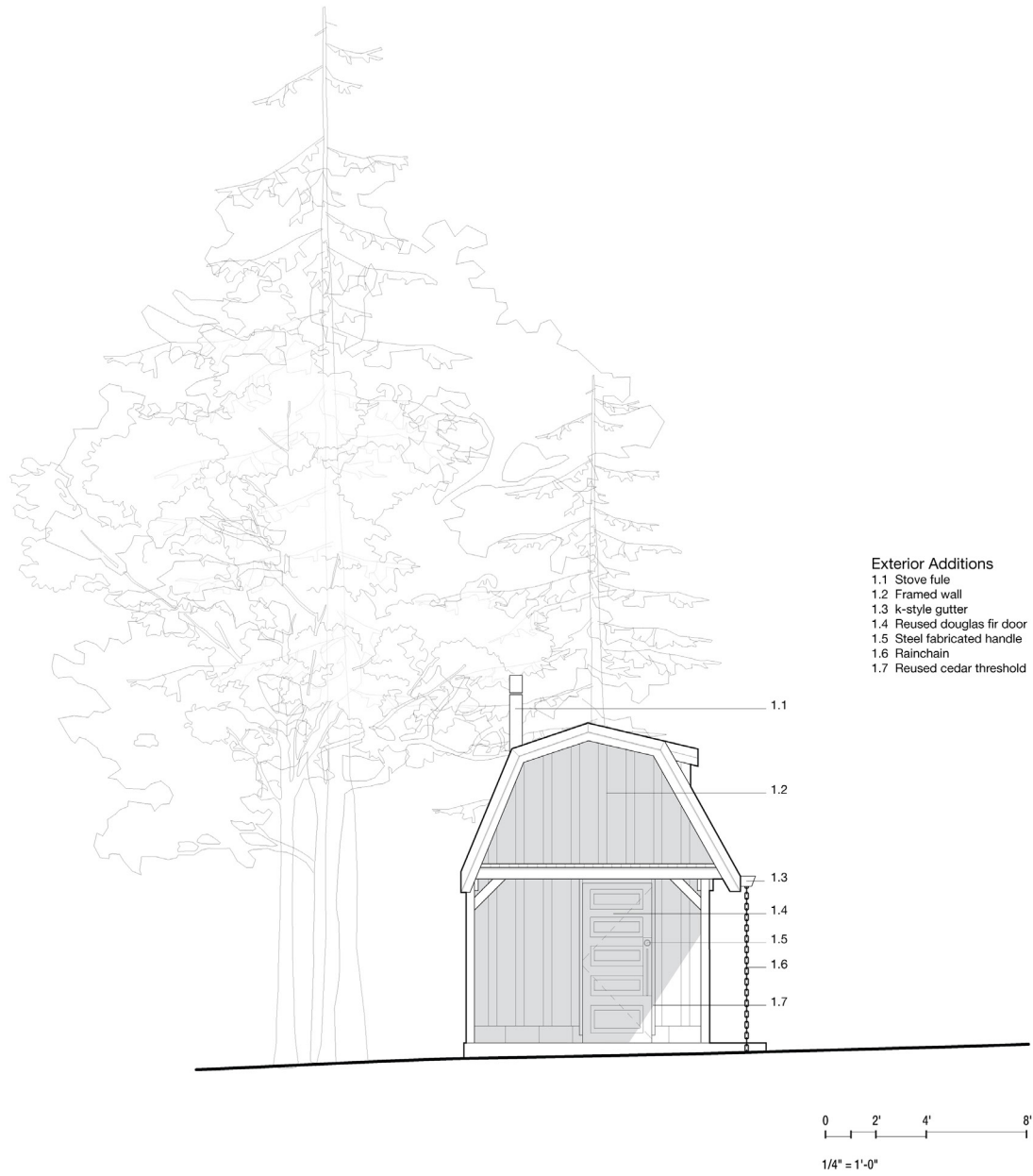
After



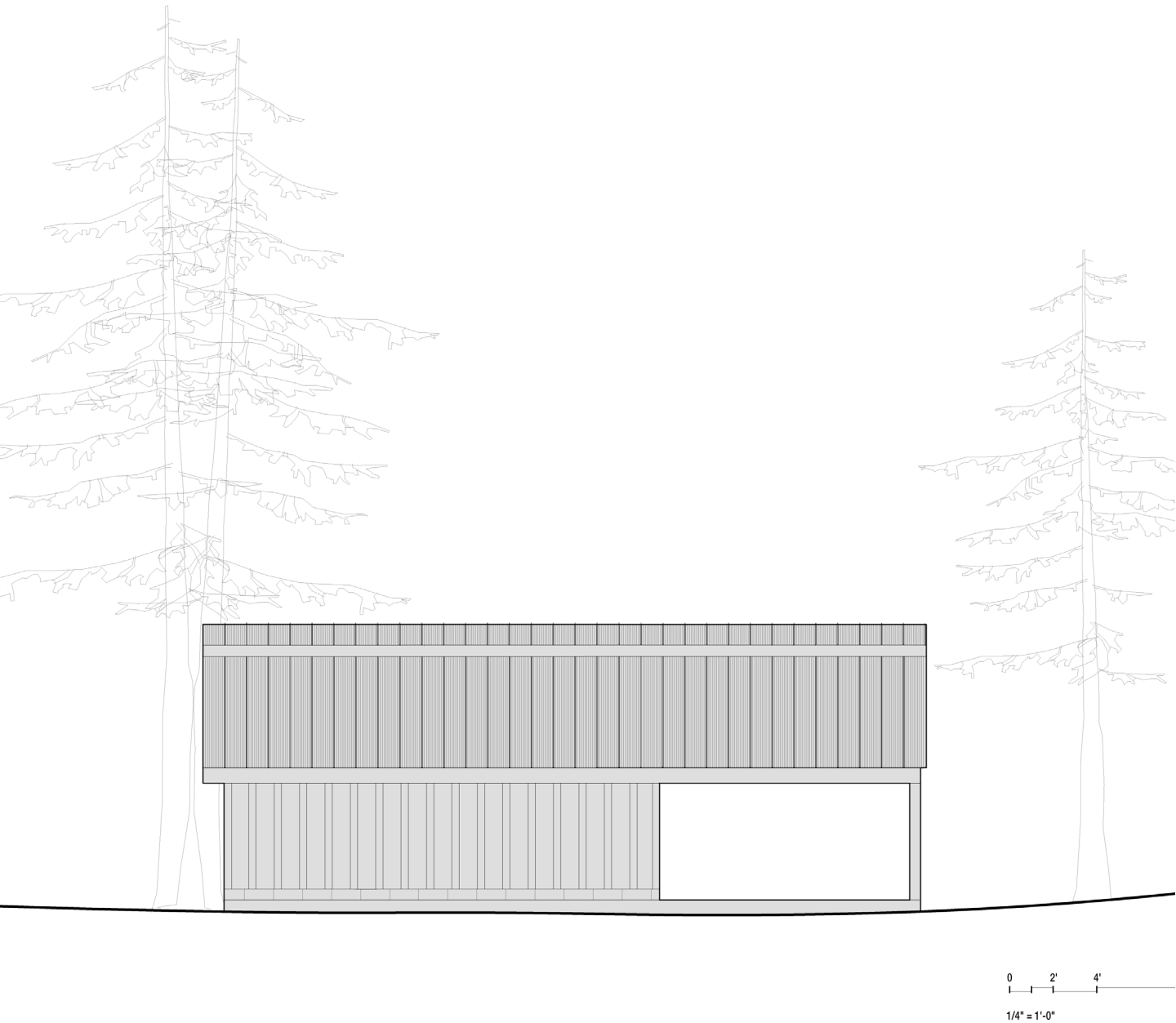
Before



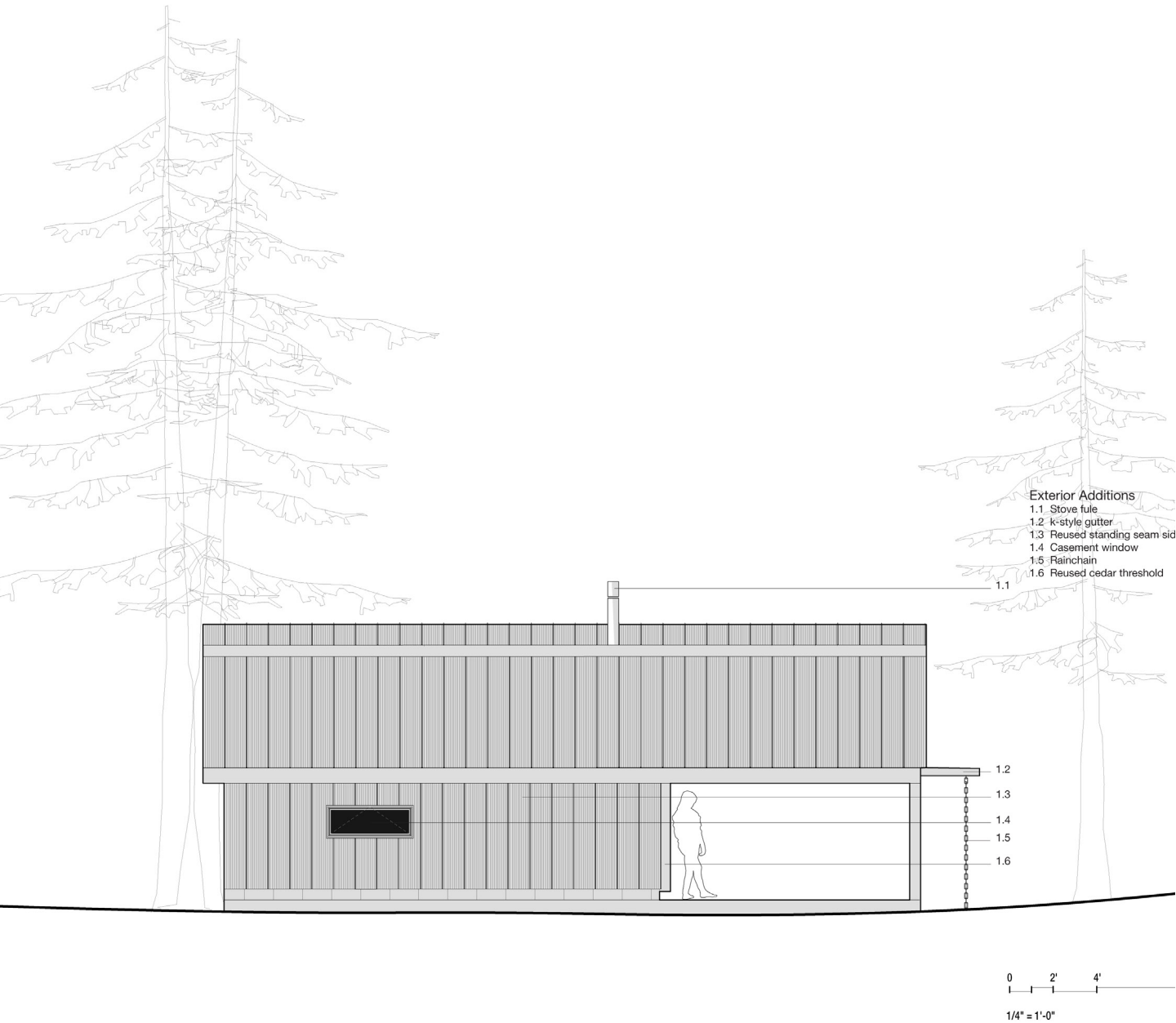
After



Before



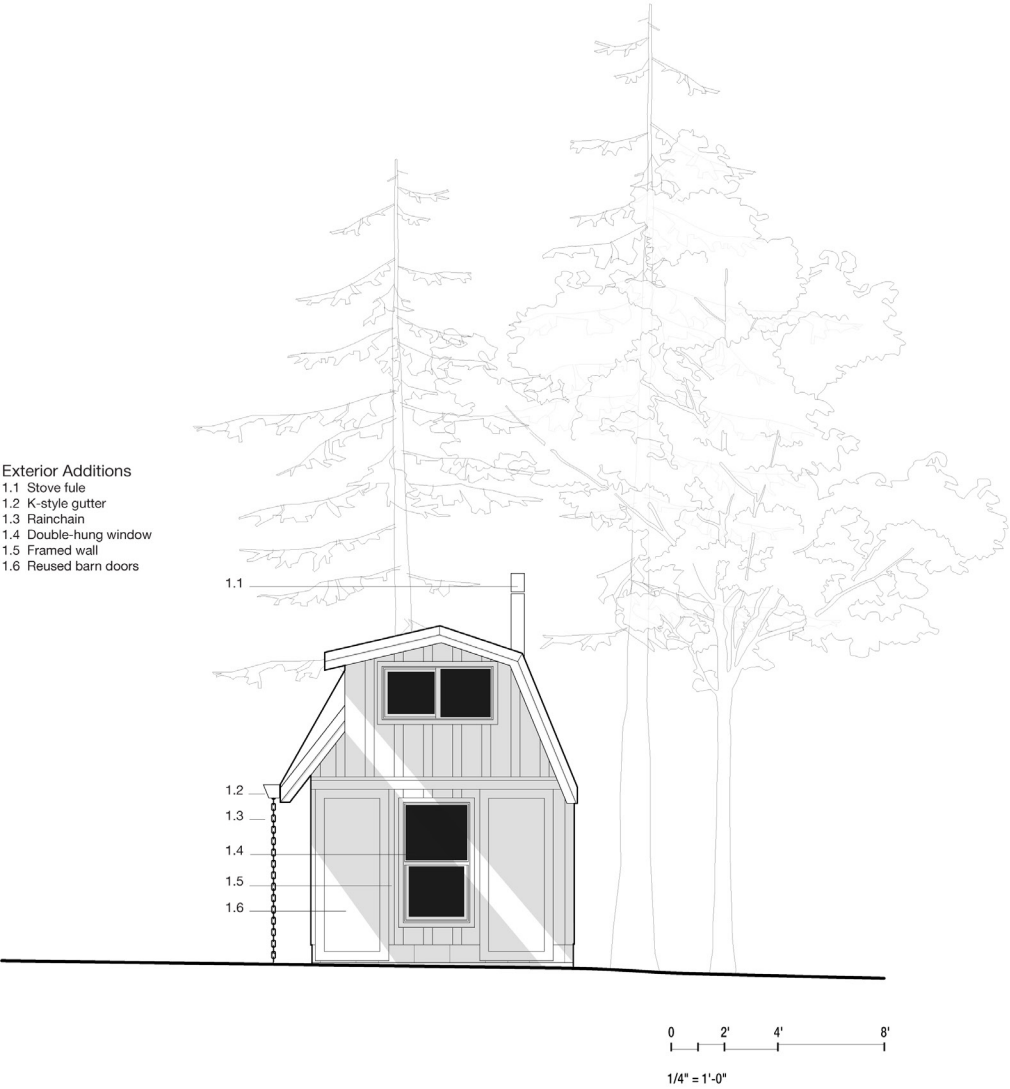
After



Before



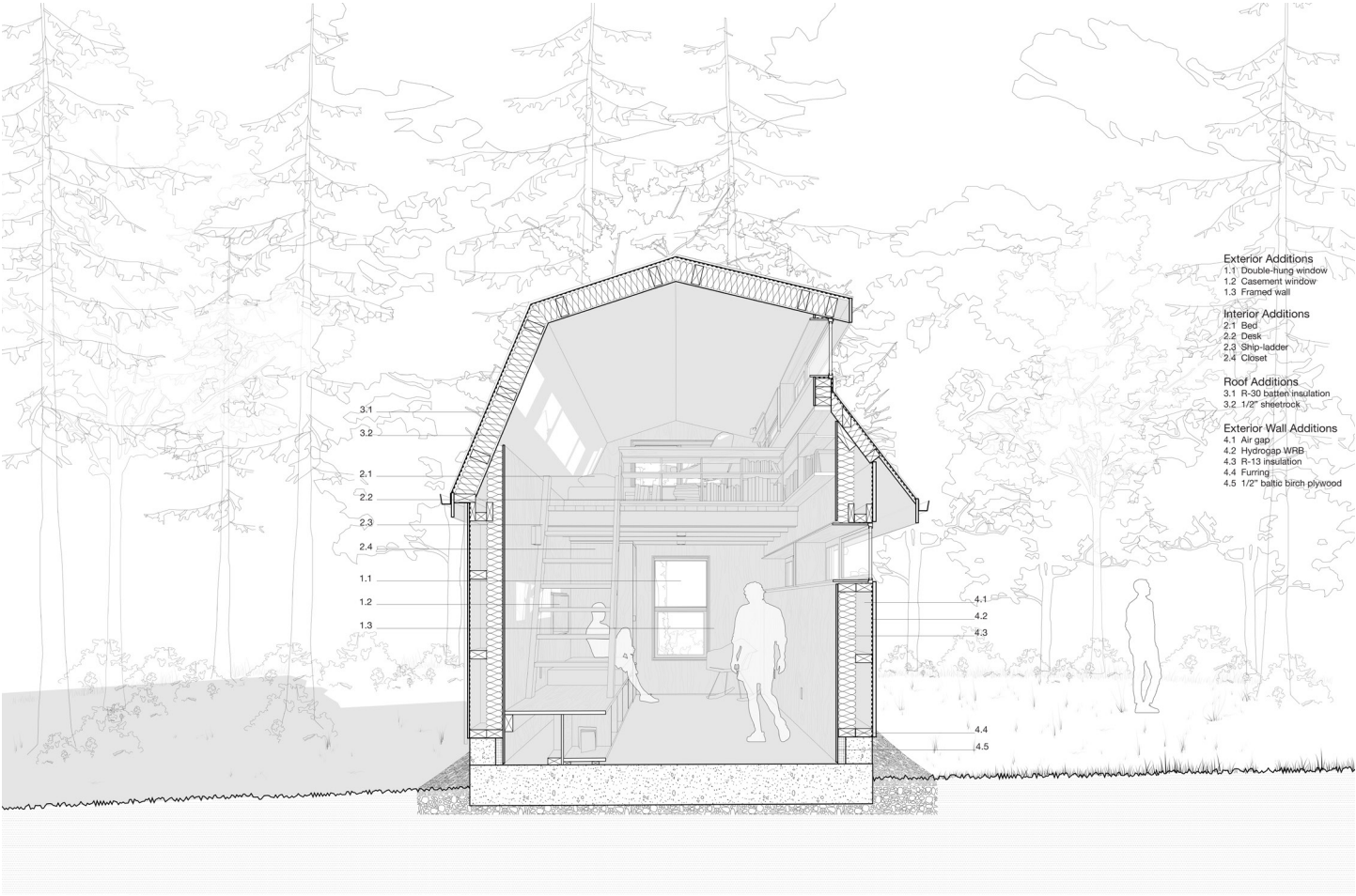
After



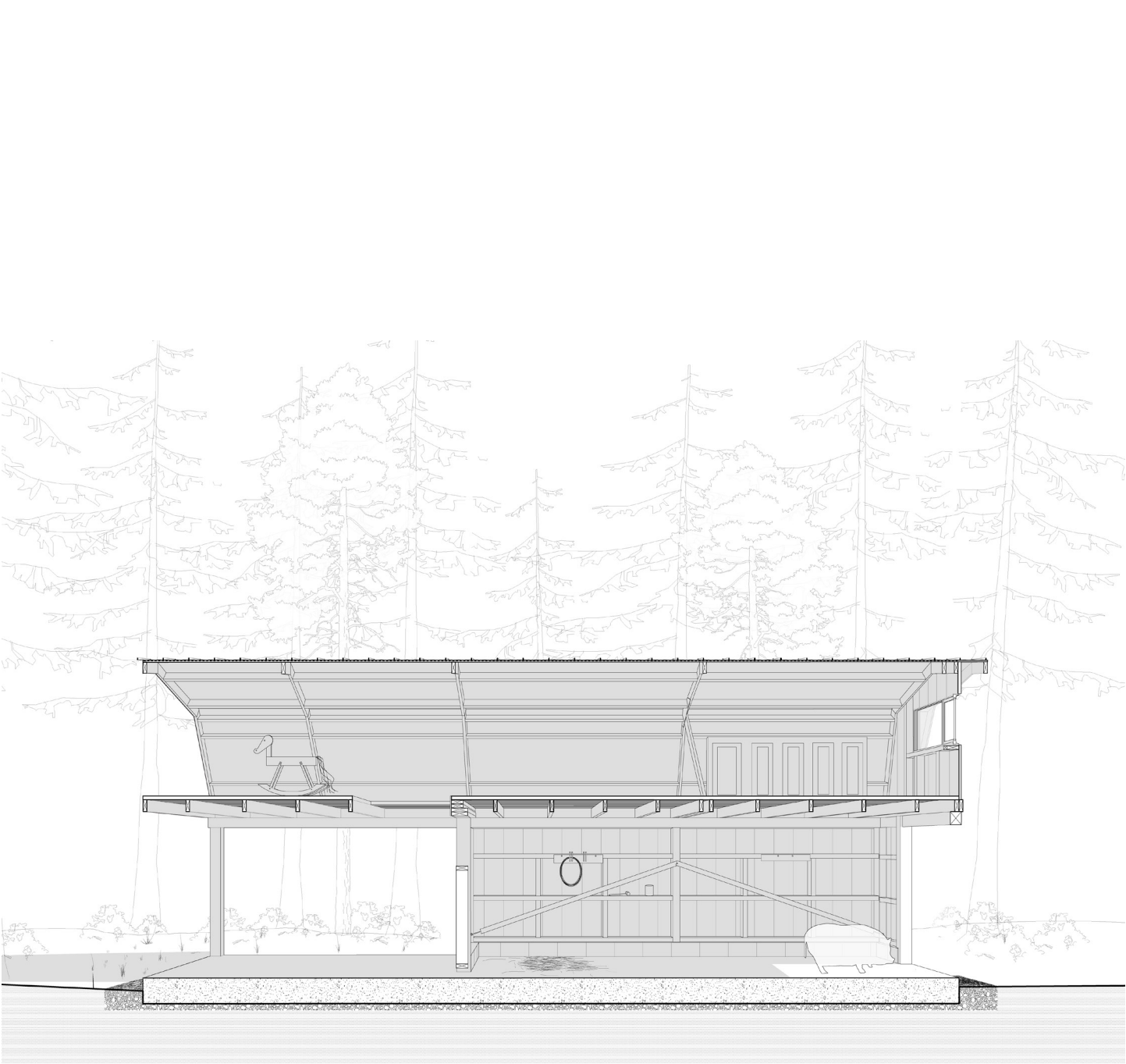
Before



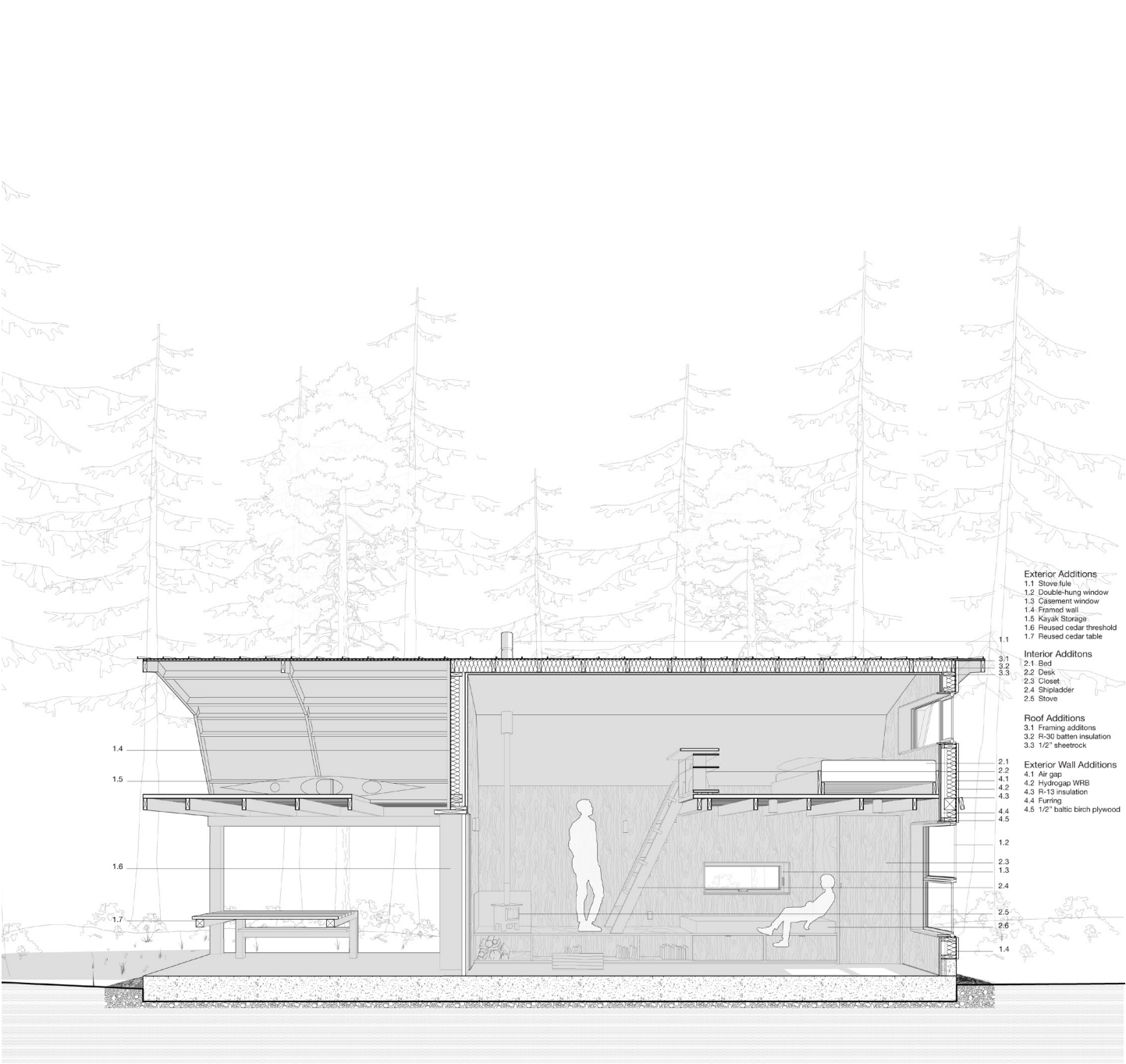
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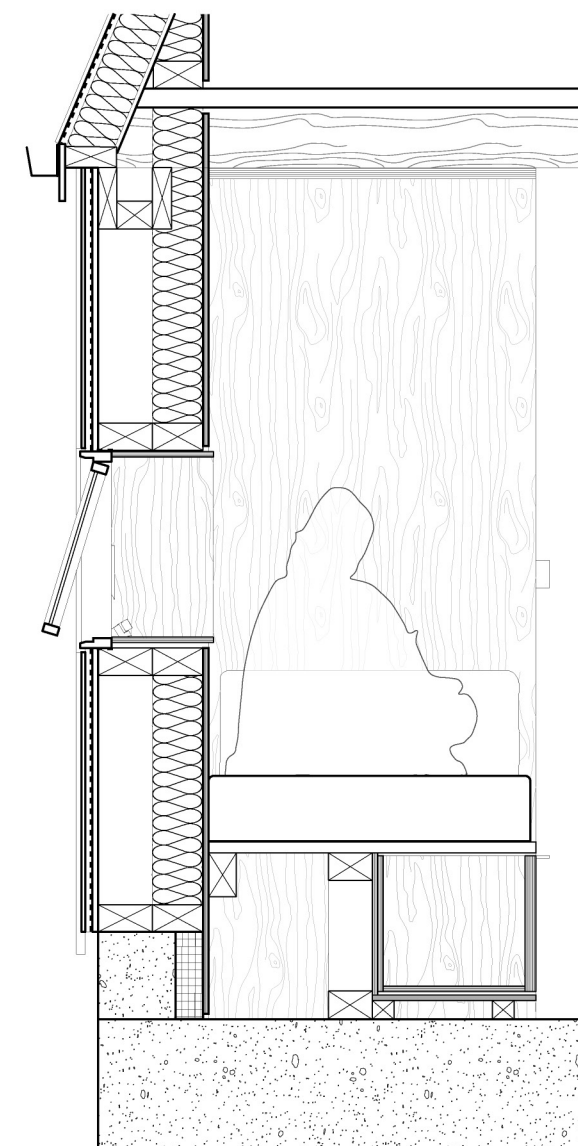
Before



After







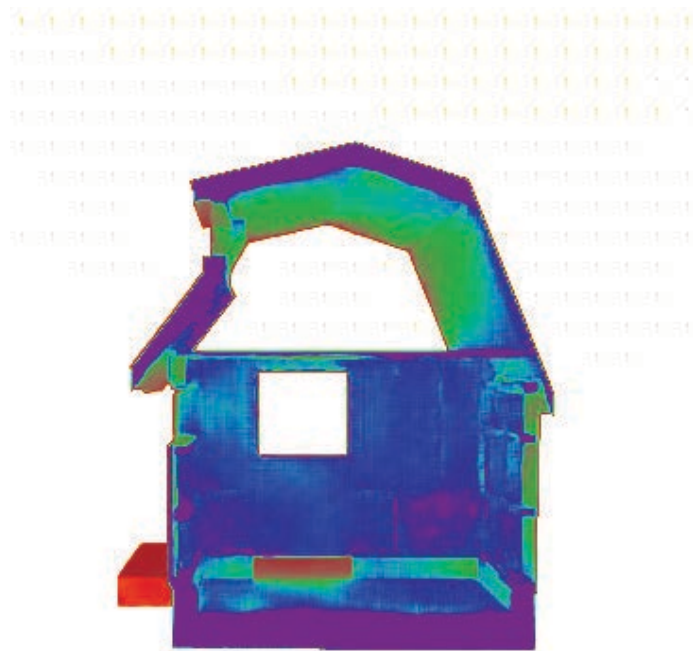
Daylighting Analysis of As-Built

Reflecting Attention Restoration and Stress Reduction theories, natural daylight is crucial. This study during the extremes, December 21st and June 21st, and the baseline, March 21st, looks at the cd/m2 in the original spaces at noon.

- + Target range 100-500 cd/m2 - green/red
- + Max luminance should be below 1,500 - 2,500 cd/m2 - yellow
- + Low 0 cd/m2 - purple



December 21st Clear @ Noon



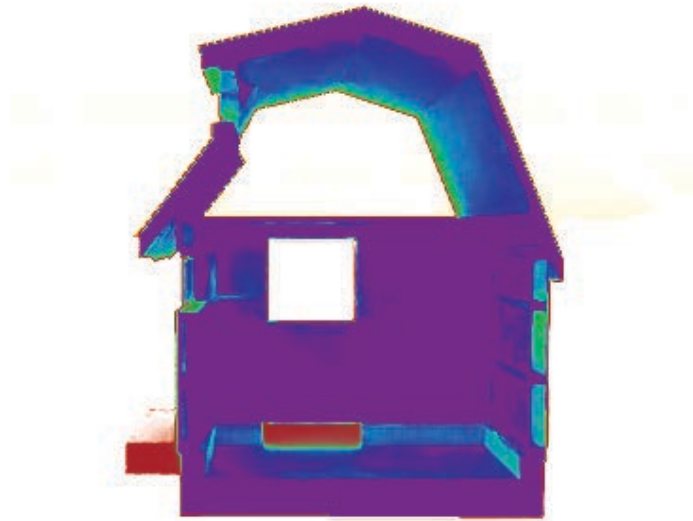
March 21st Clear @ Noon



June 21st Clear @ Noon



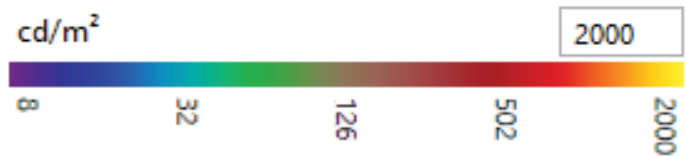
December 21st Overcast @ Noon



March 21st Overcast @ Noon



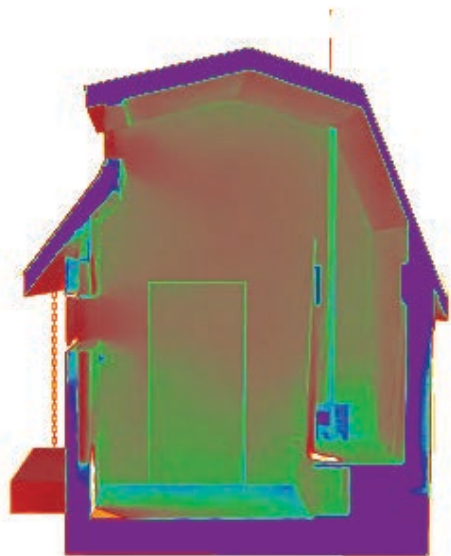
June 21st Overcast @ Noon



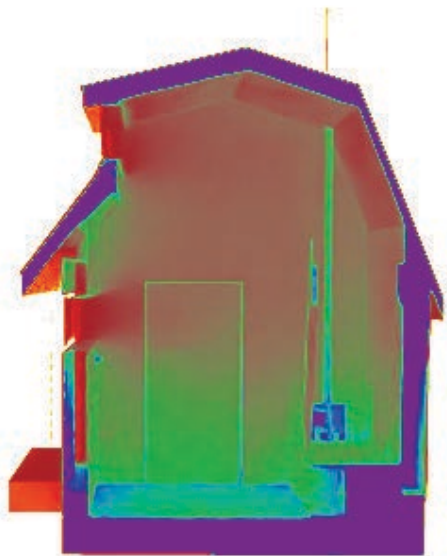
Daylighting Analysis of Reuse

Reflecting Attention Restoration and Stress Reduction theories, natural daylight is crucial. This study during the extremes, December 21st and June 21st, and the baseline, March 21st, looks at the cd/m2 in the spaces at noon.

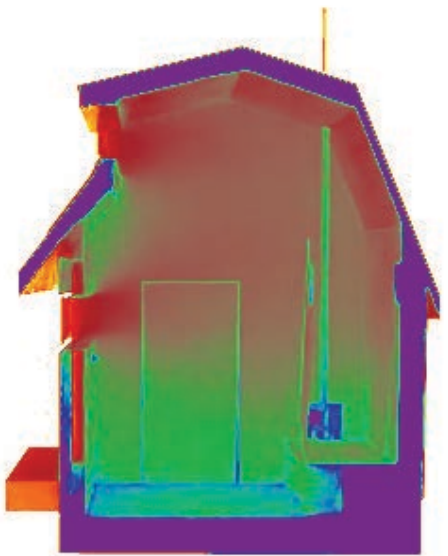
- + Target range 100-500 cd/m2 - green/red
- + Max luminance should be below 1,500 - 2,500 cd/m2 - yellow
- + Low 0 cd/m2 - purple



December 21st Clear @ Noon



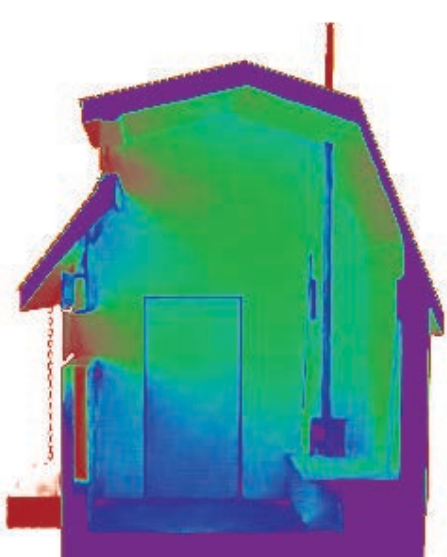
March 21st Clear @ Noon



June 21st Clear @ Noon



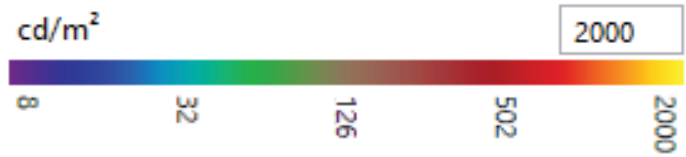
December 21st Overcast @ Noon



March 21st Overcast @ Noon



June 21st Overcast @ Noon



Limitations and Future Adaptations

There were many limitations of this thesis. A majority of the limitations occurred around financial reasons, experience, and time. The design evolved around financial and experience feasibility, depending on lower cost materials, and simple construction techniques. The research for the thesis focused on adaptive reuse theories and socio-physical theories around well-being. Due to the reality of a design-build thesis, the research could have expanded upon many other ideas , but with limited time, the thesis revolved around two areas of research.

Following the adaptive reuse research and Stewart Brand’s shearing layerstheory, this thesis represents this current moment in time. The Little Barn will continue to evolve in the future, and the minimalist design approach keeps this in mind. The project remains intentionally open to future adaptation. The barn is intended to evolve through ongoing adaptation and maintenance. The exterior siding has yet to be trimmed, and the wood-burning stove remains to be installed. The interior plywood walls were left exposed to accommodate future adaptation, whether through the addition of electrical wiring or the expansion of the bathroom and kitchen. More important than reaching a final state is ensuring the barn remains actively used. In its current form, it provides a place of refuge while supporting wellbeing, with the capacity to adapt to future needs.



06.1

Existing Structure

After Stanley the pigs passing in 2020, the barn was no longer in use. It stowed old tools, a kayak, and many spiders. Blackberries were growing up the West facade, and into the covered patio. The structure was at risk to being overgrown and completely unusable due to the overgrowth. The interior had two levels, the top only accessible by a hole above the barn door. The framing is post and beam with a non typical framing pattern between. CMU blocks tie the walls and structure to the foundation through ties, and 2 by 6's hold the second level. The board and batten acts as the sheathing and is tied directly to the wall framing.











The siding was removed, partly due to some panels rotting, and to re-assemble that wall envelop to be weatherproof and more structurally sound. Plywood sheathing was placed on the walls, which framing 16” on center was added. The loft was cut open and two walls were constructed, one on the far end of the barn, and one closing the loft off above the door. Two windows were added, and framing was adjusted to accommodate them. The windows were removed and house wrap was installed. The windows were put back in and were sealed with seam tape and caulking. Pressure treated furring strips were installed to create an air gap between the sheathing and board and batten, creating a rain screen. The interior was furred out to create a single level plane, and allowed for insulating all the way to the concrete slab.

















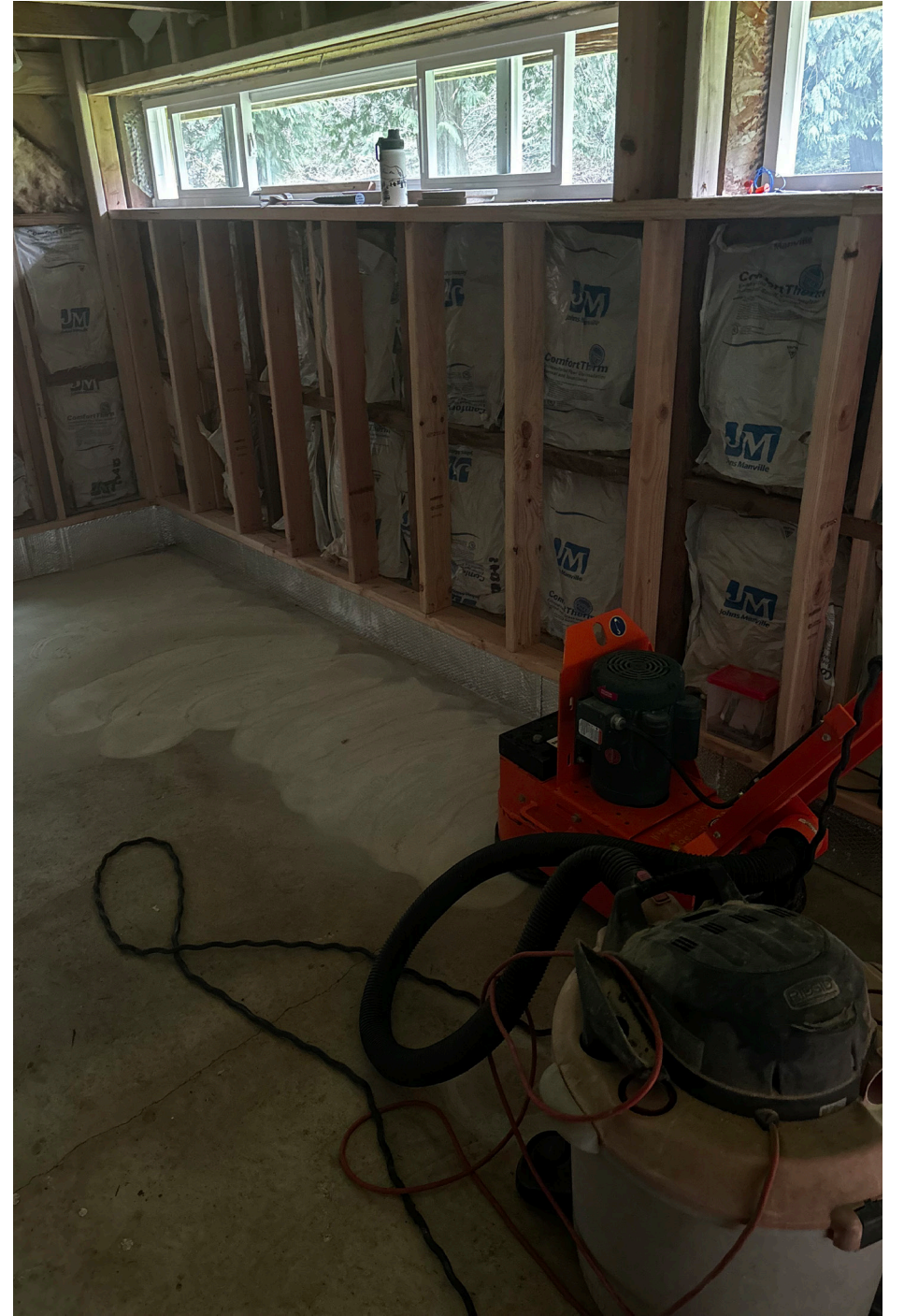
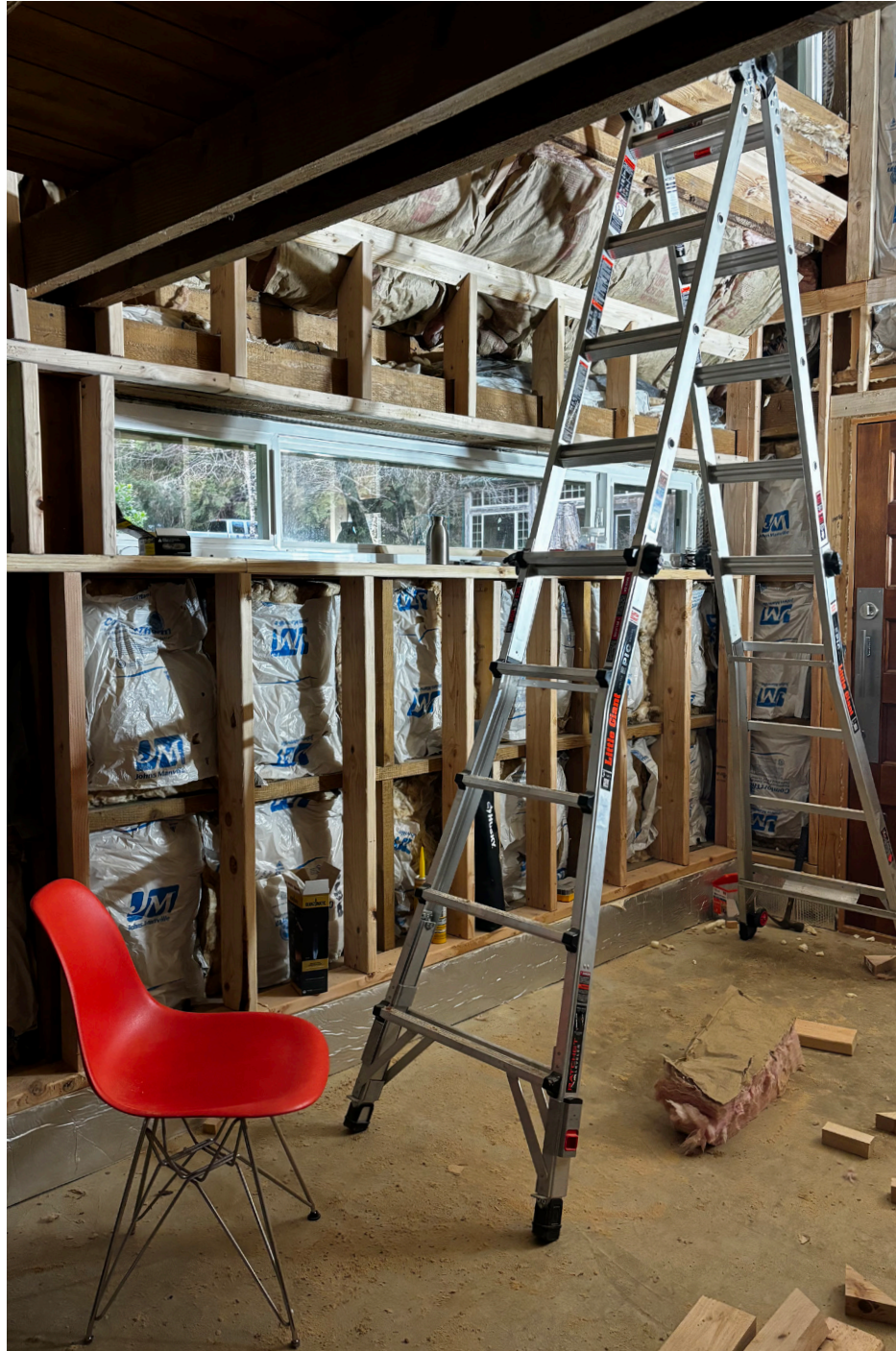


Re-purpose: door is re-surfaced and finished















The project has not only been a design-build experience, but also a spiritual connection and living memory of my late grandfather. The difference in the cedar he milled vs SPF from the hardware store, his handprint that was revealed when I grinded the concrete, and the markings he left when he built the barn. At its core, the project became an act of continuation, carrying forward the life of the barn, the property, and the legacy my grandparents have built over decades.





The ship ladder leads to the loft, which contains both the bed and workspace. Between the two is a built-in bookshelf integrated into the wall. The desk overlooks the property and surrounding landscape, reinforcing a sense of orientation and control over one's surroundings — an important principle within Stress Reduction Theory. The loft bed was designed to read as a single floating plane. Its supports extend directly into the wall framing, allowing the structure to visually disappear and creating a calmer, less visually cluttered sleeping environment.







Behind the ladder is the daybed, which became the primary space of retreat within the project. Positioned toward the forest, it creates a quieter condition focused on temporary escape — reflecting ideas from Attention Restoration Theory



The closet incorporates a friction-fit basket drawer system assembled through routed dado's, allowing storage to remain flexible and integrated within the built-in closet system.



Small spaces can carry big meaning, providing a connection to family that transcends the specific materials of construction

The process of reusing the Little Barn has truly been an experience of and for my family. Family helped with construction, and at times, connection to my late grandfather was revealed through the construction of the barn. It became a process of learning the building and construction before designing and making changes. Wholeheartedly, the Little Barn is a representation of my intergenerational family property and the progression of time.

Adaptive reuse in a rural context requires re-thinking on how to reuse space in flexible ways, but can still be designed to be ‘restorative’

Designing in a space that is already built involves tremendous creativity. The Little Barn was limited to a 8-by-19 foot enclosure, where flexibility remained important. This led to a large built-in that acts as one architectural element, with different functions and uses. The minimalist approach was important when designing the built-in to enhance the interior to be a restorative environment that follows Attention Restoration and Stress Reduction Theories. Focusing on the already built elements that respond to these theories while adding additions based on the theories was key.

Buildings, like families, are always changing and require care

Following the adaptive reuse research and Stewart Brand’s shearing layers theory, this thesis represents this current moment in time. The Little Barn will continue to evolve in the future, and the minimalist design approach keeps this in mind. The project’s core is centered around the notion of care. Care of the barn, legacy, and for family. The Little Barn was neglected and required mending and restoration, and will continue to. At the same time, the use of the Little Barn will continue to be of care for my family, Whether it be for my sister and I to help care for our family or it be used for a period of time by a family member or friend.

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