

## **Wolf Ridge Environmental Learning Center Living-Learning Space Renovation**

Founded in 1971, Wolf Ridge Environmental Learning Center was the first environmental learning center in the nation to be accredited as a K-12 school and is recognized nationally and internationally as a leader in environmental education. During the school year, more than 12,000 middle school children, teachers, and parents head to the campus to have their own weeklong adventure in learning. Students come from throughout the region, drawn to the campus's unique location overlooking Lake Superior and nestled just south of the Boundary Waters Wilderness. The broad spectrum of year-round environmental and outdoor learning programs serve an additional 3,000 people each year, including Summer Youth Camps, Family Programs, Wilderness Trips, Grandparent Grandchild Programs, Naturalist Training, Conferences, and Retreats.

The MAC Lodge works in tandem with Wolf Ridge's overarching mission: to develop a citizenry that has the knowledge, skills, motivation, and commitment to work together for a quality environment. Experiences at Wolf Ridge enable people to learn about natural systems we all depend on, in a manner that creates an understanding of what we must do to interact responsibly with our environment and safeguard natural resources for future generations.

All of the campus's spaces – both interior and exterior – promote learning. While nature is the primary teaching tool at Wolf Ridge - the 2,000 acre campus with its 18 miles of trails is home to a variety of wildlife - the design of the renovated MAC Lodge reinforces the experiential learning cycle. Lodging rooms are small by design thus occupants want to gather in commons rooms where reflection on the experience occurs. Small conversations lead into large room gatherings where abstract thinking and discussion ensue as the entire community considers new actions to initiate.

Now with the first ever renovation project in the world to achieve Living Certification, environmental citizenship for our future generation is born out of lived learned experiences in sustainability at Wolf Ridge.



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## VITAL STATS

Certification Status Living	Certified
Version of LBC	2.1
Location	Finland, MN, USA
Gross Building Area	22,000 SF
Start of Occupancy	May 2018
Owner Occupied	Yes
Visitors Per Year	15,000

## PROJECT TEAM

Owner	Wolf Ridge Environmental Learning Center
Project Manager	HGA
Architect	HGA
Contractor Project Manager	Gardner Builders
MEP Engineer	HGA
Lighting	HGA
Geotechnical	Braun
Commissioning	Hallberg Engineering
Civil	HGA
Landscape	HGA
Structural	HGA
Interior Design	HGA
Code & Specifications	HGA
Existing Building Evaluation	McGough Construction
Cost Estimating	McGough Construction & HGA
Hardware	HGA
Construction & LBC Administration	HGA



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# Site Petal

## 01. Limits to Growth Imperative

Wolf Ridge Environmental Learning Center (WRELC) is one of the premier environmental education centers in the country. It is the largest accredited ELC in the United States. Located on a ridge overlooking Lake Superior, Wolf Ridge's 2,000-acre wilderness property is bordered by the Baptism River and features creeks, two lakes, two high peaks, 18-miles of trail and a mixed forest of maple, birch and spruce. Wildlife is abundant and includes pine marten, eagles, moose, black bear, white-tailed deer, fox, wolves, beaver, peregrine falcons and loons. Several areas of the property are protected from development.

## 02. Urban Agriculture Imperative

Wolf Ridge serves approximately 140,000 meals per year to the students who reside on the site. An on-site 5 acre organic farm supplies fruits and vegetables to the kitchen, providing about 20% of the annual produce needs. Students, adults and children, work and learn at the farm as they harvest and prepare the produce, then later working in the kitchen to serve the produce. All organic waste of the campus and certain paper streams are composted at the onsite farm. Farm to table experiences are integral to the Wolf Ridge community as part of the lived learning experiences at the center.

## 03. Habitat Exchange Imperative

There are 60 FTE employees at Wolf Ridge (14 board members, 35 FTE, and 50 seasonal workers). At 5 hours/FTE, a total of 300 volunteer hours needed to be documented during the project design, construction, and performance period. Since 2015, Wolf Ridge employees have documented a total of 458 hours, well over the exception requirements. There are two main organizations for whom the employees of Wolf Ridge have volunteered, the Institute for Bird Populations (IBP) and the Midwest Peregrine Society (MPS).

- Institute for Bird Populations: The IBP works to assess the effects of land management actions, climate change, and other ecological stressors on bird populations, and prescribe practical solutions. Wolf Ridge employees volunteer at two Monitoring Avian Productivity and Survivorship (MAPS) station locations; Sugarloaf and Wolf Ridge.
- Midwest Peregrine Society: The MPS focuses on the reintroduction and revival of the Peregrine Falcon, which used to naturally reside in the Midwest United States, including the Wolf Ridge area, but whose population was decimated by DDT use in the 50's and 60's.

## 04. Human-Powered Living Imperative

The Wolf Ridge campus was designed for and maintains a mostly car-free living environment, where automobiles and buses are left in parking areas at the entrance to campus. More than 70% of the annual visiting students arrive in consolidated transportation, that of large buses. Once on campus with vehicles left behind, students and nearly all workers only engage in walking transportation. The learning experiences for the regular campus occupation of more than 300 students occurs over a range as large as a 1.5 mile radius from the main buildings, all by walking, snowshoeing or skiing.



# Water Petal

## 05. Net Zero Water Imperative

All water at the MAC Lodge is sourced from a drilled well approximately 10-ft from the building and stored in a holding tank in the basement. The water does not require treatment, as verified by an annual test by the State of MN. The holding tanks of the MAC Lodge also service the fresh-water needs of a nearby Classroom Building. The contributing systems for the water balance are: precipitation, domestic water use, and wastewater.

There is no precipitation storage or treatment on site. All precipitation is reintroduced back into the groundwater either by falling directly onto the ground or running off impervious surfaces. The water balance requires precipitation data, which is available for the nearby city of Duluth, MN as well as the site specific Wolf Ridge National Weather Service station.

The building is a renovation project that installed low flow fixtures, reducing the overall water use impacts on the well. Domestic water is used by the plumbing fixtures in the building, including water closets, lavatories, showers, kitchen sinks, washing machines, drinking fountains, and janitor sinks. Based on detailed occupancy and known fixture flow rates, it is the building uses about 116,125 gallons/yr of domestic water. All wastewater is collected onsite, treated, and released



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# Energy Petal

## 05. Net Zero Energy Imperative

Energy conservation is a key part of the mission of the Wolf Ridge Environmental Learning Center. All efforts have been made to minimize the energy consumption of the facilities. A Solar PV array is installed that covers 100% of the electrical load at the building. A building-level solar domestic hot water heating system that can handle 60-80% of the annual load for the building. The electrical utility is Cooperative Light and Power that meters both the West Dorm and Education Building on the same utility meter, while a building specific controls system monitors the MAC Lodge electrical production and use. The PV array is measured through a separate meter (Outdoor lighting and septic system) and connected to the grid. When the system overproduces, the energy returns to the grid.

Space heating is solely provided from the existing wood-pellet-fired boiler plant in the WRELC District Energy Central Heating Plant, the Energy Center. Domestic hot water heating is supported by the district energy system when solar cannot meet the demand. The district energy system fuel source is 100% locally sourced waste stream wood fiber. Space heating is provided by perimeter baseboard radiators. Space temperatures are maintained between 55F and 72F. Heating shall be enabled when outdoor air temperature drops below 55 degrees F. The heating valve in each zone shall modulate to maintain space temperature setpoint. Space temperatures shall be maintained between 65F and 72F. Passive cooling is enabled when outdoor temperature rises above 74 degrees F. No mechanical air conditioning occurs, rather cooling is provided by training occupants to close the tight enveloped and well insulated building on hot days to conserve cool air. In the evening a whole building accelerated chimney effect exhaust system draws in cool evening air and create breezes. Occupants are trained to open and close windows to enable daytime conservation of cool air and enable nighttime cooling. Using the Energy Recovery Ventilator, the building is continually ventilated with airflow varying based upon occupancy and pressure sensors. Outside air preheating coil modulates as required to maintain entering air temperature to the energy recovery ventilator above -5 degrees F. Heating coil modulates to maintain discharge air setpoint of 65 deg F. If outside air temperature is greater than return air temperature, the bypass damper will open to allow OA to bypass heat exchanger.

The building is a living laboratory of learning. An essential component of achieving a net zero energy performance for the building is the learning experience with the occupants through feedback provided via a monitoring and display system in each of the 25 resident rooms and the main lobby. Wolf Ridge engages all the occupants as learners teaching them how to live a net zero energy experience. Through a web based platform and in-room monitors created by the controls contractor the guests of the building are provided with domestic electrical energy, water, and heating energy budgets within which they must live. With a water budget of 6 gallons/person/day, domestic electrical budget of 100W/person/day, and a heat energy budget, each room has an interactive screen providing real time performance toward the net zero goals. In the lobby a large screen provides room-by-room and overall building performance feedback toward achievement of net zero energy and water. Wolf Ridge staff meet daily with resident groups to review performance and help them understand choices and related consequences of behaviors.

# Health + Happiness Petal

## 08. Civilized Environment Imperative

Interior gathering areas remain open and flexible, promoting programs to ebb and flow based on season and number of guests. The MAC Lodge hosts educational classes for K-12 students, family programs, and adult programs such as group yoga sessions or corporate retreats.

The success of the MAC Lodge's built environment is due to the immense efforts of the staff and programming of the Learning Center itself. Each program enlivens the human-centric planning and design of the Dorm; a strong communal bond is fostered in both indoor and outdoor spaces.

## 09. Healthy Air Imperative

Using the Energy Recovery Ventilator, the building is continually ventilated with airflow varying based on a schedule that works in collaboration with pressurization sensors. Outside air preheating coil modulates as required to maintain entering air temperature to the energy recovery ventilator above -5 degrees F. Heating coil modulates to maintain discharge air setpoint of 65 degrees F. If outside air temperature is greater than the return air temperature, the bypass damper will open to allow OA to bypass heat exchanger.

There are 26 bathrooms and 25 showers that are each exhausted at a rate of between 25-75 CFM (as specified by ASHRAE 62.1), based on occupancy schedules, air pressure sensors, and size of the space. This creates a negative pressure that draws ventilation and conditioned air from the adjacent dorm rooms. There are five (5) kitchenettes in the West Dorm, located in the common areas. These spaces are ventilated as specified above and exhausted at a rate of about 0.5 CFM/SF (as specified by ASHRAE 62.1). There are two (2) custodial/janitorial spaces that are exhausted at a rate of 1.0 CFM/SF, as specified by ASHRAE 62.1.

## 10. Biophilia Imperative

**Environmental Features:** The MAC Lodge building on Wolf Ridge's campus hosts visitors while they explore and understand the natural systems around them. Wolf Ridge's location in Northern Minnesota means that the landscape displays the full breadth and beauty of the seasons throughout the year. This building's main biophilic feature is the landscape itself; views to the outdoors are the main "art piece." The interior includes natural materials (wood, stone) that are locally sourced and keep the building feeling one with the site while also providing tactile features that visitors interact with during their stay that support our innate connection to nature.

**Place-Based Relationships:** As a renovation project that maintained the majority of the building's original shell & footprint, the MAC Lodge is rooted within the site. Like the rest of the campus, the building is nestled among the trees and native plant growth – the natural geography closely abuts the built structures. The exterior design aligns with the overall aesthetic of the adjacent buildings, creating a holistic campus experience. The interior of the space features small details that feel inherently Minnesotan, reminiscent of northern cabins: the use of knotty pine for millwork and trim throughout, the natural stone featured on the various fireplaces. The fireplaces themselves, a component retained from the former outfitting of the building, maintain a key aspect of Midwestern vernacular and tradition: the act of human gathering around a hearth. The physical, visual, and emotional warmth that is ignited by a fireplace fosters a sense of community among the students,

families, and visitors that come to Wolf Ridge.

**Light & Space:** With a connection to the outdoors as the forefront of the design approach, the common spaces within the building maximize views to the forest, allowing for as much natural light as possible. The specialty interior lighting creates a playful pattern on the ceiling's surface; in conjunction with the repetition of simple columns, the space begins to take on a forest-like feel, with the round lights above feeling like sunlight poking through gaps in a tree canopy. The effect is strengthened by the carpet underneath which varies in pattern and color – an allusion to the forest floor. The gathering areas of the building remain spacious and flexible, counterbalancing the smaller sleeping rooms that border the wings of the building – offering visitors both prospect & refuge.

**Natural Patterns & Processes:** A wood feature wall located in the entry & lounge area of the building displays a custom biomorphic pattern. The organic sequence of the pattern and the randomized size and shape of the holes interface with the expressed wood grain on the plain-sliced natural pine. The dual layers of the screen create additional interest with a play of light and shadow. As you move toward and around the screen, you experience the transformation of the dappled light filtering through the holes and reflecting off of the smooth wood surface. The use of solid wood for this screen and all the millwork on this project (rather than hardwood impregnated with acrylic, or a wood-look laminate), allows each millwork piece to take on its own character over time. Based on the level of human interaction with the wood surfaces, or their proximity to sunlight, the wood will age and transform throughout the years – its wear a reflection of the natural passage of time.

**Natural Shapes & Forms:** The textures and patterns of each flooring material are reminiscent of natural textures and patterns found within the landscape. The contrasting blue hues feel like the play of light on a lake's surface. The linear patterns feel bark-like; the varying widths of the yarns similar to the tracks left behind by insects as they meander through tree trunks. The unregimented, organic lines that still embody a form of order and organization hearken back to layers of sediment and rock formations. The colors of these finishes tie them together; earthen tones with a depth to the pigments that works in tandem with the soils, barks, and rocks of the surrounding forest. These finishes work to establish a more seamless transition from the forest floors to the built environment within.

**Evolved Human-Nature Relationships:** The Wolf Ridge campus is completely immersed within its surrounding natural environment. Its location and its mission work in tandem, and are the campus's greatest assets. Each experience during a visiting student's time at Wolf Ridge taps into our inherent inclinations to affiliate with nature. Its remote location allows for a full sensory experience with the living forest: visitors hear the rustle of leaves and snapping of twigs underneath a symphony of bird chirps and trills; the soft weight of snow muffles the hoot of a lone owl; rainfall patters on buds and flowers, filling the air with the rich scent of spring soil. Wolf Ridge is a place "where minds open to the joy & wonder of discovery of our natural world" that encourages understanding & respect of the earth through "direct observation of and participation in the outdoors." The built spaces on the campus continuously work to support that goal where learning now occurs from the moment one wakes to the time they lay their head upon the pillow. The West Dorm building does not seek to disrupt the nature it lives in, but rather to become another teaching tool to help visitors understand their effect on the planet, and ultimately how to become better stewards of the land.





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## **Materials Petal**

### **11. Red List Imperative**

The entire design team (especially the architecture and interior design team members) worked together to specify pre-vetted products, using internal tracking tools/spreadsheets to organize product information and certification documents. Online databases, such as the Declare Label database, C2C Products Program, and UL Spot pointed the team in the direction of materials and products that had health and environmental transparency documentation. The interior design team's close relationships with product reps in the industry was also critical to reaching manufacturers in order to acquire additional information about materials that weren't readily available online.

However, there were still areas that posed challenges when sourcing a compliant product; in these cases, the design team tapped into the expertise of the general contractor. Gardner Builders was empowered and committed to source alternative products that were Materials Petal compliant and also met the performance requirements. This advocacy and education by the GC and their subcontractors was tremendously successful, leading to newly sourced products by the electrician, carpenters, mechanical team, and resulted in newly Declare labeled products as well as diminished packaging from the manufacturers such as the window and door supplier.

Approximately 6 months prior to the start of construction the design team and owner conducted a multi-day, required LBC training session for the construction management company (general contractor) and all the major trades of the project – including their project manager, anyone who would be sourcing materials for them, and their lead site worker.



The primary focus of the meeting was how to achieve compliance with the Materials Petal: an understanding of the Declare certification, red list, appropriate sourcing, and responsible industry. The training session also tackled waste management, landfill diversion, conservation and reuse, and overall understanding of the LBC.

This intensive training ensured that everyone working on the project had their eyes on materials/products throughout the entire process, and most importantly had end-goals in mind. When it came time for product substitutions throughout the Construction Administration phase, trade partner subcontractors knew what to look for in an equivalent material and provided all necessary documentation info for the design team to approve the substitution. Particularly helpful to execution of the materials petal was the assembling of the trades people as a team and the creation of manufacturer relationships through a building construction project that immediately preceded the MAC Lodge project, designed and built to Living Certification but not registered. This “learning project” proved critical to the success of the MAC Lodge project.

A conventional submittals process was used for reviewing documentation. Both the design team and construction manager created specific positions on their team – a person who was trained and knowledgeable in LBC and the materials requirements. The design team specialists from respective departments supported the contractor specialist who in turn supported the respective tradespeople who sourced materials. The GC wrote and supplied advocacy letters, with support from the design team as needed depending on the manufacturer it was to be sent to, or what material it addressed. Working from a template format ensured that each letter would properly communicate why the letter was being sent and highlight the main goal of Declare compliance from the manufacturer.

The design team maintained a Material Tracker master spreadsheet for documentation of all sourced materials that included information for sourcing zone, radius distance, general product information and manufacturer contact information, red list compliance, notation of additional documentation required, etc. The vetting process was successful due to a commitment and collaboration by the design team, owner, and construction manager that began years in advance of construction, inclusive the collaborative construction “learning project” that preceded the MAC Lodge. The construction team, at all levels of trades people, brought forth creative solutions to materials sourcing.

## **12. Embodied Carbon Footprint**

As a renovation project, Wolf Ridge’s MAC Lodge is already the second phase of life for this building. The project team conducted extensive studies throughout the Schematic Design phase to determine the best course of action (in terms of return on investment, cost implications, sustainability considerations, and energy use & operational considerations) and to reach a decision on a new build or a renovation of the existing building, previously named the West Dorm. By proceeding with a renovation & upgrade of the West Dorm instead of a full demolition and rebuild, the project team essentially established a case study or model of how to responsibly demolish, reuse, and recycle various building components throughout a renovation project. This knowledge can be applied when the MAC Lodge reaches the end of its current life as a residence hall for Wolf Ridge.

### **13. Responsible Industry Imperative**

By design, each space is simple, nothing is unnecessarily additive or excessive – stemming from a basic principal that this building should only take from the earth what is required. This principal is rooted by the fact that this project is a renovation that includes a small addition), adapting the building to operate even farther into the future, rather than demolishing the existing structure or adding an entirely new building to the campus. The elements that are innate or required of the space – flooring, window trim & wall base, storage – became canvasses for interest and variety, balancing out the overall simplicity of the interiors. The flooring provides color and pattern; the natural wood trim is left unpainted, its exposed knots adding

### **14. Appropriate Sourcing Imperative**

The design team and owner began years in advance of construction to approach the challenge of sourcing compliant materials for the project's remote location of northeastern Minnesota. More than 2 years in advance of construction the team began researching and identifying compliant products, and vetting for products of known concern. Those major items of concern pointed the team toward manufacturers (sometimes multiple different manufacturers for one product) who embraced the opportunity for changes to their processes or products. The team built relationships and found partners who would step up to create or modify their products for compliance with the Materials Petal, examples of newly created products include: Interior and exterior paint, windows and doors, wood trusses, siding, and floor and wall coverings. Some of the newly created products became Declare labeled. That early action and the commitments made during the learning construction project that preceded the registered LBC project were critical to execution of successful interior and exterior finishes on this MAC Lodge project.

### **15. Conservation + Reuse Imperative**

Throughout the programming & design process, careful attention was paid to the multifunctional quality of the project. These spaces needed to strike a careful balance between feeling home-like and welcoming as it functions as a dorm, yet at the same time be durable enough to stand up to decades of high-use (from both adults and middle school children). Recycling is always at the forefront of any environmentally friendly project, however, a common occurrence with any Living Building Challenge project is ensuring that all recycling issues are addressed. The efforts and careful planning of Lloyd's Construction earned them the National Demolition Association Top Project of 2017 Award for the demolition, salvage, and recycling of the West Dorm Renovation. Wolf Ridge is proud to have partnered with Lloyds; after three other local company leaders said this couldn't be done, John Lloyd of Lloyd's Construction stepped up to achieve:

- 100% reuse of all windows
- 100% reuse of all lumber
- 100% recycling of all metals

Trades people of the project helped to source, separate, and recycle all metal and cardboard. All of the reused materials were donated to a local school in Finland, MN, Habitat for Humanity, or to local residents – thereby positively impacting the local Northern Minnesota Community. The contractors assisted local organizations receiving materials with support that included materials sorting, transportation, loading, and load securement.

# Equity Petal

## 16. Human Scale + Humane Places Imperative

From the original planning of the campus to the interior gathering areas, Wolf Ridge's buildings operate at a human-centered, approachable scale. The campus buildings seek to leave the landscape as undisturbed as possible, each maintaining no more than 2 – 3 levels to avoid dominating the landscape. Throughout the campus, it's the monumental pines that tower above you, keeping you fully immersed in a natural setting.

## 17. Democracy + Social Justice Imperative

Each building on the Wolf Ridge campus follows all ADA guidelines, ensuring the built spaces are accessible regardless of physical ability. The Margaret A. Cargill Lodge (West Dorm) can house up to 187 people with each dorm room sleeping 4-8 students with in-suite bathrooms & showers. ADA-Accessible rooms are available on both floors of the building. The accessible communal deck is nestled among mature maple and spruce trees, overlooking bird feeders and Sawmill Creek Valley. Paths throughout the campus are designed to be ADA accessible in slopes and surfaces, are kept free of debris, and are plowed and sanded to enable year-round use.

Wolf Ridge is the eighth largest employer in Lake County, and as such holds a level of responsibility and stewardship to be an active participant in uplifting our broader community. The center provides all benefit-earning employees with four Community Service days per year, during which they can volunteer in their child's school, on the Volunteer Fire Department, participate in community theater programs, etc. This impact goes beyond the individual employees to encompass partnerships and to support our all-important local organizations – including Lake Superior Community Theater, both public and private local schools, senior support services, and regional organic farms. To further support these partnerships, Wolf Ridge donates free-of-charge visits for all local elementary schools every year; hosts an annual free Open House for program offerings to all area residents; and all local schools and non-profit organizations receive a 50% discount on all Wolf Ridge programs.

Wolf Ridge creates environmental learners and leaders of the next generation. In addition to the 12,000+ students that visit the center each year (for an average of 4 full days of learning per student), the center also trains individuals for environmental leadership. Annually 20+ students come to live and learn from faculty at WRELC in a college graduate school program for which they receive Masters credits in the field of environmental education. They train at Wolf Ridge for 1 – 3 years; after which students have gone on to develop and lead environmental education programs of their own (based in Wolf Ridge's pedagogy) within other states around the country, and even internationally.

## 18. Rights to Nature Imperative

The project's scope did not include extensive site work, and given the existing building's location in relation to nearby waterways, no public access to waterways has been impacted by this project. Only 4 trees of small size were removed because of the project, needed for recycling processing during deconstruction of many elements of the existing building. Eight trees were planted on the site, more climate-adaptable trees, at the conclusion of construction.



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## **Beauty Petal**

### **19. Beauty + Spirit Imperative**

The spirit of Wolf Ridge is sparked by creating memories in the outdoors that change people, their behavior, and their community: connect, in order to care. The spirit within the MAC Lodge building itself thrives on the mission to put nature first, becoming a support system for the visitors that come to WRELC for quality time with the great outdoors. The inherent bond we feel with nature can lead to meaningful experiences with the land, deepened by understanding & respect.

There is a spiritual need that is inexplicably met by simply spending time in nature. The campus is pocketed between Lake Superior and the Boundary Waters Canoe Area Wilderness, providing vibrant opportunities for visitors to learn by direct engagement with the landscapes and water-scapes. The land speaks for itself – Wolf Ridge teaches you how to listen.

The acreage of the campus is minimally impacted by built structure; leaving the earth's systems as wild as possible is how its beauty thrives, providing the clearest opportunity for us to understand those systems and the gravity of our role within them. Lake Superior alone equates to 10% of the earth's surface fresh water. Wolf Ridge's proximity to and with an outpost field station on the shoreline, the lake is a cornerstone of its pedagogy, a gateway to understanding our commitment to the earth's water systems, and to each other.

The buildings themselves are an important aspect to the campus – acting as a teaching tool for how our built environments impact the earth around us – while providing shelter, comfort, and much-needed programming space. However, the most impactful move that the buildings make to spark beauty and joy is that they ultimately take a backseat to the true purpose of



Wolf Ridge: hands-on experiences with nature. There is beauty in earth's growth and decay, in its consistency and its impermanence; we as human beings are not disparate from those parallels of nature, instead we are intrinsically linked with them. The programs at Wolf Ridge help us grow and change for the better, unifying ourselves more closely with the world around us. The campus buildings are designed to sit lightly on the land. Vegetation is encouraged to grow throughout the campus, right up to the edges of the buildings; you almost miss the buildings among the 2,000 acres of trees. The indoor & outdoor programming and activities that take place in the MAC Lodge building are aided by the broad views to the outside, showcasing the lush summer forest and the bold outlines of tree trunks against a stark Minnesota winter. One of the most breath-taking aspects of its Midwestern location is that the surrounding land displays the varied and cyclical beauty of all four seasons.

The interior spaces are warm, approachable, and welcoming, but ultimately simple – they complement the bountiful complexities of the building's natural surroundings. The patterns and textures of the interior spaces embody the organic order of the natural world, a balance of repetition and haphazardness. The countertops throughout building are from granite sustainably sourced 20 miles away, bringing an enduring and earthly connection into all aspects of life in the MAC Lodge. The original fireplaces were maintained in the renovation as they play a key role in cultivating a welcoming, anchored environment. Previously trees were cut from the forest for fuel yet now the fireplaces have been upgraded to burn wood fiber pellets sourced exclusively from waste wood diverted from landfills. A cherished midwestern staple, a fireplace taps into the beautiful sense of community among all who gather around it. The natural, irregular outlines of the stones, with the undulating mortar between them, provide an organic character to the interior spaces; the stone is locally sourced, rooting the material within its surrounding context.

Humans are drawn to biophilic forms and processes such as the natural stone on the fireplaces. Those natural materials, along with the design of custom screens, the flooring selections, the lighting integration, and the soft palette leave visitors with a universal sense of calm.

The staff and visitors all play an important role within these spaces – they are not static rooms meant to be left untouched; instead they are living, breathing teaching tools that rearrange and flex with the people that inhabit them. Their grand, open spaces will continue to welcome visitors season after season.



*Photo courtesy of Wolf Ridge and HGA, photo credit Chad Holder*

## 20. Inspiration + Education Imperative

Wolf Ridge connected with this petal's intent of recognizing "the need for beauty as a precursor to caring enough to preserve, conserve, and serve the greater good." At WRELC, nature has always been the teacher and constant source of inspiration. The design of the remodel focused on broad views to the outdoors, to showcase the beauty of the surrounding campus, and minimal site impact, allowing the mature growth around the existing building to be maintained. Establishing this connection of humans to nature is maintained throughout the entire day, even on a moonlit night the daylighting brings moonlight into occupied spaces. The result is that the interior space feels at one with the nature blanketing its borders.

The design team, construction team, and Wolf Ridge team learned about holistic, ambitious sustainability throughout the LBC process and learned from each other while undergoing the renovation. All the details of the West Dorm and the LBC effort were reflected within the building design and therefore wove seamlessly into the campus's programs and student experiences.

Throughout the design and construction processes, Wolf Ridge shared the experience through onsite experiences with their students as well as the online and local Finland communities. By the time Opening Day rolled around, the entire town understood the amount of effort and care it took to achieve such a feat. Opening Day itself set the tone for how WRELC would continue to educate each program attendee and camper that comes to the campus. Building tours, showcasing the design features, are a staple for Wolf Ridge. This extends beyond the MAC Lodge and includes the surrounding campus through its holistic water systems, waste/compost systems, and solar panels.

The interior of the West Dorm highlights aspects of the building's systems that continuously impact the environment. Realtime energy usage is displayed on a screen for each sleeping room, so visitors can see the direct impact of their behavior and choices. The long corridors are canvases for diagrams with bold graphics and illustrations – catching the eyes of children and adults alike. These diagrams explain how a building comes together, and the choices we can all make each day to leave a smaller footprint on our earth. diagrams explain

### Website

<https://wolf-ridge.org/livingbuilding/>

