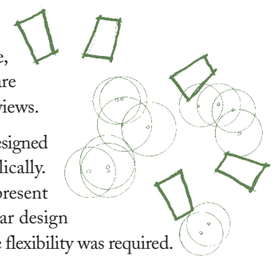
Icicle Creek Music Center

Leavenworth, Washington

Integration of the Green

The design team was committed to the integration of **landscape, ecological design, inhabitant, and context**. The owner challenged the team to design a durable, timeless series of structures and build with **minimal impact to the site**. The response was an integration of site features and an **embrace** of **regional climate and scale**. Structures are placed on the site in response to existing **second growth trees** and **rock formations**. The forms recede into the site, establishing a location in which the inhabitants are intertwined with the forest and distant mountain views.



The inhabitants are musicians. The buildings are designed as sound chambers, both acoustically and symbolically. Non-rectilinear forms perform acoustically but present a challenge to reduce construction waste. Modular design minimized waste, and materials were chosen where flexibility was required.

Working with a client and contractor who brought green building experience to the project led to a construction system that is a hybrid of **site-tested thermal envelope strategies** and **traditional building practices**, applied to a new formal geometry. Holistic aspects of the design, from concept through details, were questioned—**is this the right thing to do? does the design fit the site? does the application fit the need? how can we do this better? is it economical? is it durable?** ***will it last?***

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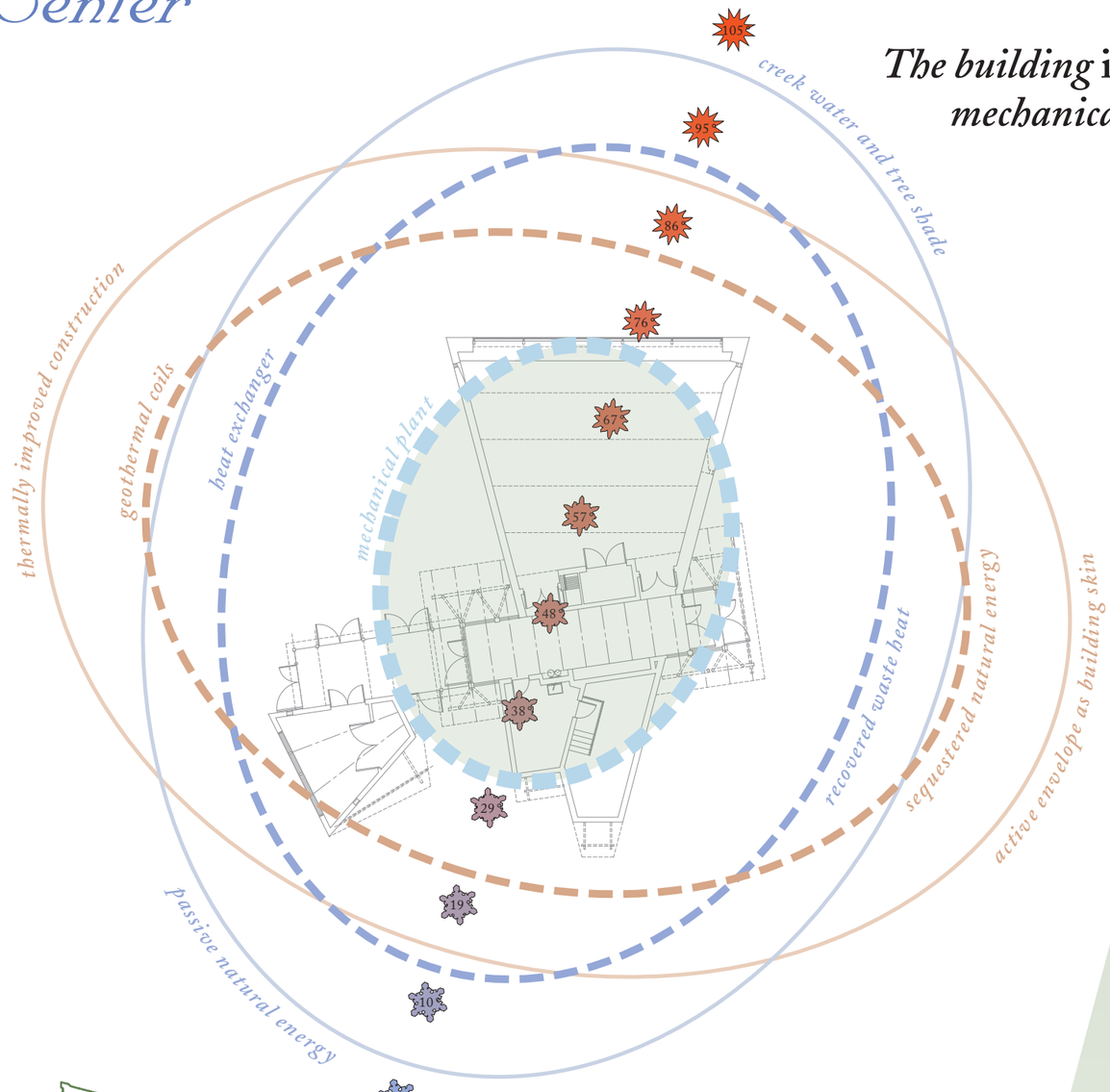
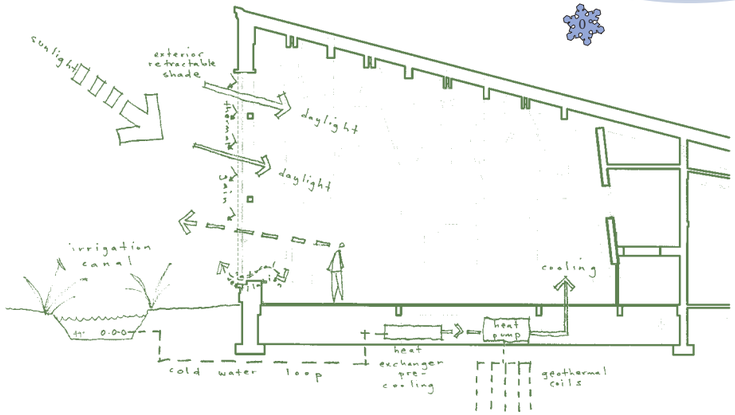


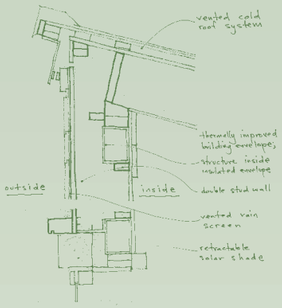
The building* is *the mechanical system…



Energy—Conservation or Creation

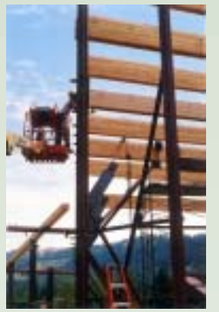
The possibility for **borrowing energy** from existing sources inspired the project team to look for **"no-tech"** as well as **innovative technological solutions**. Natural ventilation, geothermal source heat pumps, a thermally broken building envelope, and interstitial zones permit the buildings to **retain energy while expending as little as possible**.

- **Screen doors** and operable windows permit spring and fall breezes to enter the buildings.
- Practice rooms are sited within stands of mature **trees that shade the buildings** in the summer and eliminate the need for air conditioning.



- The constant temperature of **geothermal source heat pumps** provides cooling to the Recital Hall during summer and heat through the winter at **minimal energy consumption** and **zero exhaust**.
- Intake air is **pre-cooled** by coils connected to an **irrigation canal** that travels across the site.
- Air-to-air **heat exchangers** pre-condition fresh air makeup with exhausted tempered air.
- Zoning the mechanical system allows a greater temperature fluctuation in the **interstitial spaces** of the lobby and covered walkway, reducing the infiltration of cold winter or hot summer air.

- **Thermally improved** wall, window, and roof assemblies limit the **heat loss and gain** of the buildings.
- Ceiling height windows flood the spaces with **natural light**, while a **retractable transparent shade** cloth **inhibits thermal gain**. The cloth can be retracted during winter to achieve passive solar gain.



- **Lighting zones** permit scaled activity use of the spaces and dimmers, while motion sensors and timers minimize the potential for wasted light.
- **LED** path lights are tripped with **motion detectors**, reducing energy consumption and **preserving the night sky**.

Site—Preserving Water and Ecosystems Quality

By designing **around the existing trees**, the buildings are engaged with the existing features of the site and maintain the **continuity** of the adjacent second growth pine forest. Siting the buildings within the mature trees **reduces initial landscaping and irrigation costs**, as well as limits thermal gain by shading summer sun and **retaining the hydric character** of the soil. The Sleeping Lodges are placed on the site of a dismantled log building, reducing the amount of new building footprint on the site. **Low volume fixtures** are specified throughout. Stormwater will travel off the roof of the Recital Hall, through a vegetated swale to a **vernal pond**.

Icicle Creek Music Center

Leavenworth, Washington

Project Team
owner: Harriett Bullitt, Werner Janssen
contractor: Tiedeman Construction
structural engineers: Ira Gross
mechanical engineer: de Montigny Engineering
electrical: Atkinson Associates
acoustical: Michael Yantis Associates

Waste—Limiting During Construction

Modular dimensions allow for minimal sheathing waste and increased labor efficiency. Concrete forms will be recycled as window headers. Blown-in cellulose insulation is specified, as it conforms to any cavity shape, thus eliminating waste. The **cellulose insulation** supplied will be comprised of **reclaimed gypsum wallboard paper** and shipped in bulk, using reusable bags. All scrap wood and demolition waste will be recycled with a **tub grinder** and **composted** on site. The finished compost will be used in the landscaping to increase water retention. Windows are modular and ganged, reducing the amount of **shipping waste**. Overly dark siding will be culled and manufactured into casement screens for the windows. Geothermal source heat pumps generate **no exhaust by-products** beyond the electricity of the fan unit.

wood waste grinder


vented rain screen walls

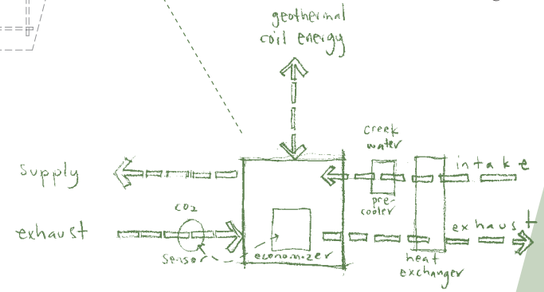

operable windows

Indoor Air Quality

Durable, natural materials are specified, **reducing** the presence of **glues or synthetics** that may off gas or fume. Wood casework, ceilings, and floors will be coated with low VOC water-based finishes. Exposed steel and walls will be finished with a low VOC paint. **Operable windows** and **screen doors** will allow the visitors access to outside air. CO_2 sensors attached to the **economizer** cycle of the mechanical system will respond accordingly with fresh air makeup to the number of occupants in the buildings.

Materials—Recycled or Reused

Structural members are a combination of triangulated steel, wood beams, and steel frame. The **composite system** minimizes the depth of large span structural timbers and reduces the quantity of framing lumber by permitting **24 inch stud spacing**. Large wood structural members are **composite or engineered wood products**. TJI and glued-laminated timbers are used to reduce the amount and size of wood throughout the project. Large boards, door lumber, and interior trim are sourced through a **windfall reclamation mill** or **salvaged from local projects**. The buildings are clad with a horizontal **rain screen** wall that will retain the finish and **durability** of the cedar siding, thus extending the life of the material and **stretching maintenance periods**.



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