

Concepts and Inspiration

The overarching goal of this project was to generate a design that both appealed to the historic memory of the Fox Theater as well as the greater Laramie Main Street community of today. Our design incorporates both a retail and residential component, offering a hub for commerce and community as well as homes for a twelve-unit micro-neighborhood.

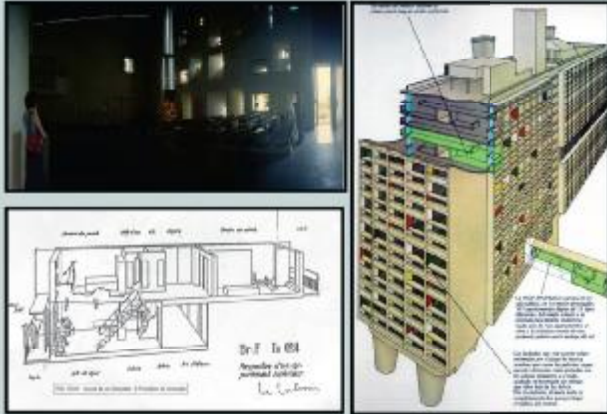
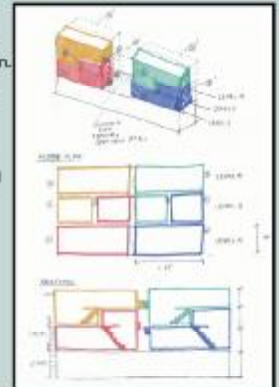
In formulating our design, we chose to break from the historic downtown facade formula and experiment with a modern interpretation of Le Corbusier's *l'Unité d'Habitation* and Church of Notre-Dame-du-Haut at Ronchamp (The Church at Firminy).

Preliminary Sketches

Our initial ideas revolved around taking the notions of open plans, naturally lit spaces, and intelligent circulation from Le Corbusier's designs and morphing them into our own. The individual units that comprise the residential portion of the design lock together, offering each tenant a double height space. An open floor plan allows light to diffuse through each unit. This interlocking L-shape design was inspired in part by Le Corbusier's apartment design for *l'Unité d'Habitation*, as well as the Queensland Courtyard House design by Plazibat & Jemmott Architects. To get light into the main circulation areas, we utilized stained glass cutouts in the walls along the stairways and floors of the main atrium.

Design Development

Once we had a formula for the arrangement of the apartments, we considered implementing the "Four Elements of Architecture" by Gottfried Semper. Juxtaposing the materials of wood, bare concrete, and colored glass, our design offers residents and visitors a feeling of all four elements. The hearth of our building lies in the central stone and glass walkways, while the mound of the building is conveyed through the heavy bare concrete structure. The feeling of enclosure is brought on by the screen created by the stained glass window cutouts along the stairwells, and the roof is comforting but not overpowering, offering natural light and ventilation to enter.



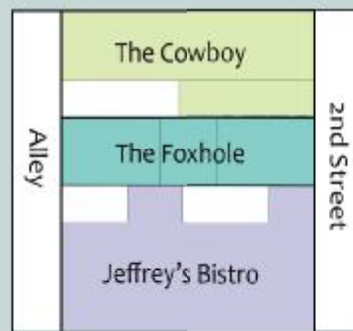
Final Floor Plans and Building Design



To the above is our initial design of the upstairs residences. Playing off of Le Corbusier's puzzle-piece design, we chose to mimic his repetitive modular design. Our spaces used the L-shaped design, also implementing a large central space similar to his wide corridors. Each unit was given a balcony as well as large amounts of windows, offering easy access to natural light.

In developing this original design, we decided to add four more units for a total of twelve. We also decided to cover the courtyard with a large operable skylight, turning the space into more of an atrium. A pair of stairways were added, and we implemented stained glass blocks into the floor of the space, diffusing the light and adding aesthetic architectural detail.

Site Plan and Building Orientation



Our final design incorporates ample common space, as well as an intentional lack of long, cramped hallways. Instead, circulation has been concentrated into two short staircases that empty into the central atrium, an area where tenants on the residential floors and customers on the lower floors can congregate and socialize.

The apartment design was kept simple and modular, while the ground floor was split into two separate retail units with a common gathering space in the middle.

Overall, we produced a design that creates a micro-community in the historic downtown of Laramie, Wyoming.



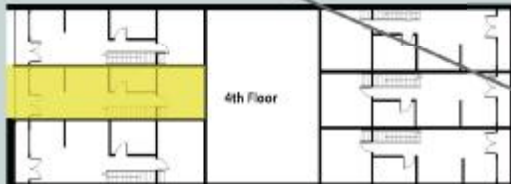
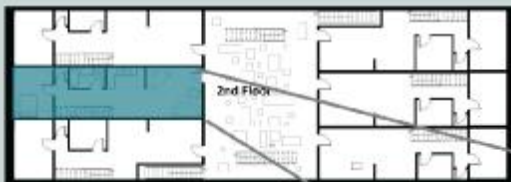
Rendering of Ground Floor Atrium Space



1st Floor Retail Area



Floor Plans for Residential Floors



Floor Plans and Sections for Residential Units Blue Unit



Building Section



Green Rating Systems

A general analysis was conducted to deduce what certification the building would achieve, using LEED New Construction, LEED Neighborhood Development, and Living Building rating systems.

LEED Neighborhood Development

Minimum LEED-ND certification: Silver, with 59 points

As a previously developed infill site with a mixed-use design, many of the points were easy to assign. Unfortunately, with Laramie's low density nature and its lack of public transportation, many of the points were unattainable.

LEED Gold could be attained if:

- ◆ A design charrette were conducted with the downtown community
- ◆ The green infrastructure (solid waste management, energy performance, water efficiency, etc.) exceeds expectations
- ◆ A transit system of any kind (bus or rail) were installed in Laramie within a 1/4 mile of the site.

Sustainable Design

The design of the building also took great care to address several aspects of green building design. Rather than attempting to design the building to fit a specific green building rating system, we let the design evolve and kept several green principles in mind throughout.



LEED New Construction

Minimum LEED-NC certification: Silver, with 56 points

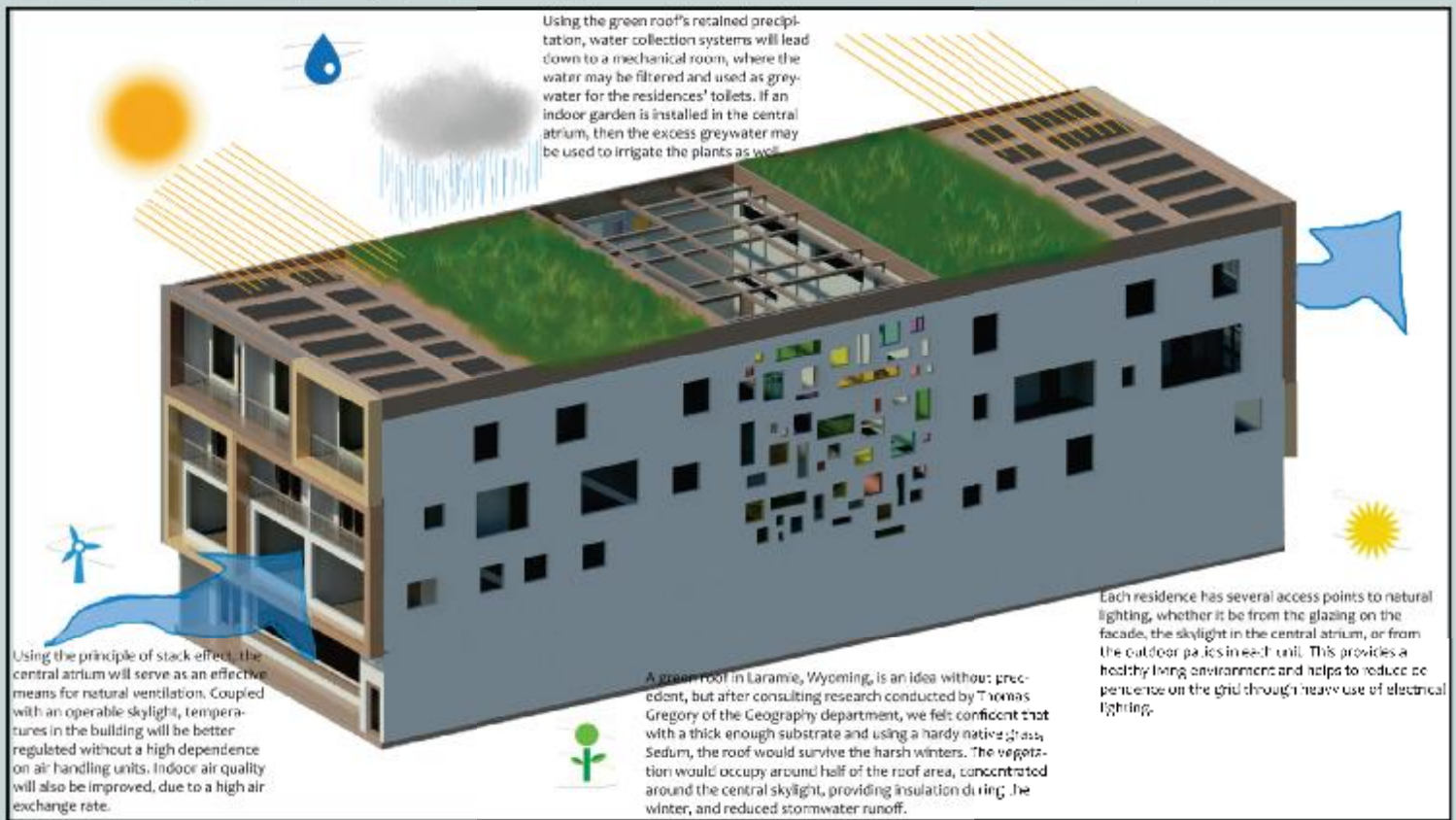
LEED Gold could be attained if:

- ◆ Commit to writing several plans, including commissioning, Indoor Air Quality (IAQ), and Measurement & Verification (M&V).
- ◆ Commit to working with a commissioning authority over time to continue to monitor building performance
- ◆ Conduct thermal comfort assessments, energy system performance monitoring, and IAQ tests over the course of the building's life

Living Building Challenge

Our building's site is on a previously developed site that lies in Laramie's most condensed spaces. Our highest sights are set on having the building constructed with no "red list" products, with as much of the building materials as possible coming from local sources, with high recycled content, and/or certified by appropriate organizations. The majority of the building's spaces have operable windows and healthy IAQ is a priority of ours.

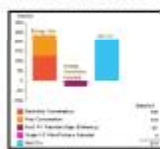
The biggest hurdles to achieving LBC certification are the net zero water and net zero energy requirements. Our building would also have to be entirely ADA accessible, including the residences. We would also have to assure that 100% of stormwater would be captured and credits would have to be purchased to offset the embodied carbon footprint of every single building material utilized in the design. It is also debatable whether Laramie would ever be able to achieve the "Car Free Living" requirement, considering the small area of downtown and the reality that Laramie is a car-dependent city.



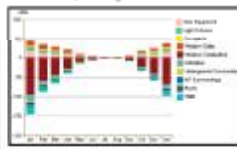
Baseline Building Performance

The following charts and graphs come from an Autodesk Revit Conceptual Energy Analysis of our building. The baseline energy consumption values shown here could be reduced with committed implementation of LEED and/or Living Building principles by the building's owners.

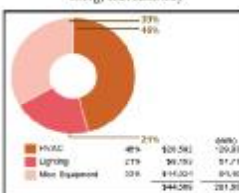
Annual Carbon Emissions



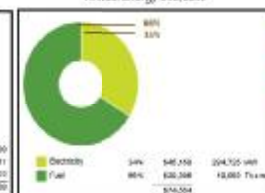
Monthly Heating Breakdown



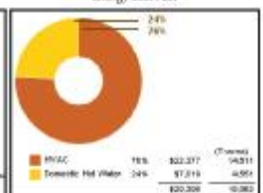
Energy Use Electricity



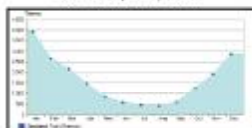
Annual Energy Use/Cost



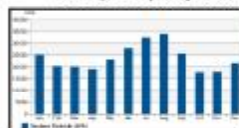
Energy Use Fuel



Fuel Consumption by Month



Electricity Consumption by Month



Monthly Cooling Breakdown

