



...Featuring a state of the art Yoga Studio, Wellness Center & Kitchen

Project Location: The Breathe Building is located at 2350 SE 50th, one block North of Division Street in SE Portland, OR.





Background: The project is a major renovation of a former general contractor's office. The facility was comprised three unreinforced masonry structures with at-grade concrete slabs and wood roof structures. The three structures straddle the South and West property lines.

- The building at the SE is a brick and clay tile superstructure with a wood bow-truss roof structure built in the early 1960s.
- The center building is a solid grouted CMU structure with a wood mezzanine and flat, wood roof structure constructed in the mid1970s.
- The building along the West property line was deconstructed and replaced with a new masonry building. The entire property is approximately 20,000 sf and the portion that was not covered by building was paved with concrete.

Two of the existing buildings were retained and seismically retrofitted. The SE building received new footings, an additional CMU wall and structural foam and roof reinforcements. The center building received all new footings and columns for the roof structure, a second floor and extensive roof reinforcements. The new West building is a CMU structure built to modern seismic standards with a portion of the slab suspended over the basement area. The concrete paving on the balance of the site was removed and a huge drywell was installed to accept all the roof drainage plane. No storm water leaves the site.

Building Uses: The renovated project contains approximately 10,000sf of rentable area including an 800 square foot commercial kitchen and dining room for Fern Kitchen, 750 square foot basement, two yoga studios, locker rooms and child care facility on the main floor, and a 2,500 sf wellness center. The area above the main yoga studio in the West building includes a 1800 sf roof terrace, storage, elevator foyer and unisex bathroom. A 7000 kw solar array was installed on the roof. The entire facility is ADA accessible. The project received Commercial Certification - Silver from Earth Advantage.



Above: Main studio wood wall and ceiling made from lumber re-used from the former buildings



Above: The project includes a small studio decorated by local artist Cobb Hoelzer



Above: The reception desk is made with copper pipe, glulam beams and lumber all re-used from the demolition of the previous buildings.

Merit as a DJC Top Project: The project deserves a Top Projects designation for several reasons:

1. The project was purpose-built to accommodate a state-of-the-art yoga studio, comprehensive wellness center and health food kitchen. No other facility enables these uses to seamlessly collaborate to achieve healing and health.
2. Every material used in the project was vetted against The Living Future's Institute Living Building Challenge's Materials "Red List". Many typical but toxic materials such as PVC were almost entirely avoided. See Vetting Process section below for a detailed list of achievements.
3. The project contained a substantial element of volunteer installations. The project deconstruction, rooftop pavers, courtyard benches, landscape planting, sauna installation and much of the reclaimed wood trim were largely constructed by volunteer staff.
4. The project includes incredible murals from three local artists with international acclaim, including Dana Lynn Louis, Cobb Hoelzer and Samantha Fisher.
5. The project balances functional and energy efficiency requirements beautifully. The project achieves an overall electrical use 34% below what current codes allow despite providing hot yoga functionality.
6. The project retains all storm water on site and generates 9.9kw of power.



Above: Dana Lynn Louis decorated the West and North elevations with a beautiful mural.

7. The project salvaged and re-used significant portions of the previous project's construction. Salvaged lumber and glulam beams were beautifully repurposed in the main studio ceiling and feature walls, wood trim and base, three flights of stairs, the reception desk and tables and counters in the kitchen.
8. The Owner served as its own General Contractor and it was the Owner's first commercial construction project.
9. The site and building footprint, allowable height of the facility, structural constraints, sustainability commitments and strict programming requirements required incredible levels of creativity and dedication for the staff and Owner to achieve.
10. Zero lot lines at the South and West property lines prevented exterior openings windows but most areas still receive natural light via skylights and access to generous, operable windows at the North and East elevations.
11. The envelope was insulated beyond code requirements and a liquid membrane was applied to the exterior wood walls to reduce air intrusion and leakage of conditioned air.
12. The drywall materials called Air Renew from CertainTeed used are designed to actually absorb VOC's.

13. The HVAC system is extensive. A high efficiency boiler was installed to heat the floors of the main yoga studio, locker rooms and provide hot water for the yoga studio. Two rooftop HRV split systems provide heating and cooling to the various facilities. Mitsubishi City Multi heat exchangers condition each of the wellness center spaces individually. The system includes a humidifier to reduce the energy demand of the hot yoga facility. Heat recovery systems are used to reduce the lost energy from substantial ventilation systems in the main yoga studio, locker rooms and kitchen. The mechanical design and installation are especially impressive when considering the constraints on available equipment locations and extremely limited shaft space.
14. The exterior courtyard is constructed of permeable pavers and benches made from the concrete pavement.

Budget Challenge: The Breathe Building project had significant budget and schedule challenges. The building was essentially a build-to-suit project for three tenants (kitchen, yoga studio and naturopath doctor's clinic) but the requirements from these tenants were not fully defined and documented until the last four months of construction remained. Since the scope was not nailed down early, the budget was in constant flux as each element of construction approached. Compounding this dynamic were strong attachments to the environmental, functional and equity beliefs that each of the stakeholders held closely. Managing this real time budget / construction dynamic was a huge challenge.



Above: The Fern Kitchen offers full-service, healthy and gourmet eating options

Schedule Challenge: Planning and maintaining the construction schedule was challenging for many of the same reasons. Pressure to continue with construction without fully vetted and agreed to details forced designers to produce multiple versions of the design to accommodate the constant influx of new information. Further, the structural design was complex and dynamic due to the space constraints as well as the fact that we were essentially stitching two aged structures to a new structure that was designed to look like a single structure. The Breathe Building project team experienced every type of challenge from weather to poor soils, no staging areas and frustrated consultants, vendors and subcontractors. Completing this project in spite of these challenges was a herculean task that required everyone's best technical, strategic and personal skills.



Above: Prema Health is a full-service naturopath and alternative medicine treatment center.

Uncommon Material and Contractor Vetting Process: The Breathe Building staff included a full-time sustainability engineer that rigorously evaluated prospective materials and equipment in an effort to:

- ✓ Identify and avoid potential toxins
- ✓ Incorporate high efficiency equipment and assemblies
- ✓ Utilize local manufacturers, suppliers, and contractors

Below is a list of strategies we have incorporated into the design and construction project:

- Active Transportation
 - There is great access to bikeways and sidewalks – the Breathe Building has a walk score of 89 (“very walkable”) and a bike score of 89 (“very bikable”).

- Two frequent-service bus lines are available within 0.1 mile, earning the Breathe Building a transit score of 52 (“good transit”).
- We have installed bike parking and provided shower facilities for bike commuters.
- Through Zipcar there are two shared vehicle parking spots within ½ mile of the project (one of them just 0.16 miles away!)
- Below-Grade Waterproofing
 - The Tremco Paraseal bentonite waterproofing used for our basement walls uses clay (instead of toxic alternatives) to protect the building from water intrusion.
- Casework & Countertops
 - Our casework was manufactured with formaldehyde-free medium-density fiberboard, which uses recycled wood products. Many of our countertops are made from bamboo, a rapidly-renewable material. The Breathe Building also has quartz countertops in areas with sinks since quartz countertops are very durable.
- Drywall
 - Throughout the Breathe Building we have used CertainTeed’s AirRenew drywall, which helps improve indoor air quality by trapping VOCs and is listed in the Declare database (the Living Building Challenge’s list of Red List Compliant products).
- Elevator
 - We have installed a TyssenKrupp elevator, which is free of toxic ingredients listed on the Living Building Challenge Red List.
- Energy-Efficiency
 - State-of-the-art HVAC system that uses an efficient boiler to deliver hydronic (water source) heating in the concrete slab of the locker rooms and hot yoga studio and HRV forced-air heating and cooling for the rest of the building.
 - Robust ventilation, operable windows, and energy recovery units ensure an energy-efficient system.
- Energy Production
 - The project includes a 7000 kw solar array from Synchro Solar on the roof to reduce our need for electrical power from the grid.
 - The solar panels are expected to generate enough electricity each year to offset the greenhouse gas emissions of 11, 493 miles by an average passenger car, the CO2 emissions from 5, 185 pounds of coal burned, or the carbon sequestered by 124 tree seedlings grown for 10 years.
- Flooring
 - Our ceramic tile, linoleum, concrete, and bamboo flooring selections are manufactured from sustainably-harvested, durable, rapidly-renewable, and non-toxic natural materials.
- Framing
 - Whenever possible, we utilize salvaged lumber from the existing building. Over 85% of our dimensional lumber and beams are Forest Stewardship Council (FSC) Certified and most lumber was supplied by local companies Sustainable Northwest Wood and Precision Truss and Lumber.

- Insulation
 - CMU walls are insulated using a combination of 2" Expanded Polystyrene (EPS) foam insulation and 5 ½" blown-in dense pack cellulose insulation for a total for a total U-Value of the assembly of U=0.036.
 - The roof has two layers of 3" polyisocyanurate foam insulation for a total U-Value of the assembly of U=0.029.
 - Concrete slabs are poured over 3" of rigid Expanded Polystyrene (EPS) insulation for a total U-Value of the assembly of U=0.073.



Above, The main studio features a beautiful mural by Samantha Fisher of Stella Artwork

- Lighting
 - We used LED lights throughout the project and several of the lights fixtures are Energy Star rated.
 - Lights are controlled with dimmers and occupancy sensors to save energy while providing appropriate light levels.
 - We will eliminate unshielded outdoor lighting to reduce light pollution and allow for dark skies.
- Low-Emitting Finishes
 - All interior paints, coatings, sealants, carpets, and carpet pads will comply with Earth Advantage VOC limits.
- Low-Flow Water Fixtures
 - Our faucets and showerheads are Water Sense low-flow fixtures.
 - Most of our faucets are automatic to reduce water consumption.
 - Our high-efficiency flushing fixtures use very little water for each flush.
- Masonry
 - The project utilized masonry block "seconds" from Willamette Greystone in the basement walls, which kept these materials from going to the landfill.

- Materials
 - We utilized a Materials Purchasing Plan to guide our decision-making process; focused on sourcing locally or regionally produced, non-toxic, recycled, recyclable, rapidly renewable, and salvaged materials.
 - Via Earth Advantage, we highlight environmentally preferable materials.
 - We have attempted to eliminate polyvinyl chloride (PVC) and chlorinated (CPVC) via our Vinyl Reduction Plan.
- Paint
 - We used paint that does not contain any volatile organic compounds (VOCs).



- Reuse of Existing Buildings & Materials
 - The project re-used major components of two existing buildings.
 - For the portions of the existing buildings that needed to be demolished, the team opted for a deconstruction process so that as many salvaged materials as possible could be repurposed in the building.
 - Construction debris was recycled or donated whenever possible.
 - The project is located in an existing neighborhood, so it's an adaptive re-use site rather than a site that will displace existing vegetation and habitat.
 - We are redeveloping a greyfield site, which had 100% impervious surface prior to our project. By introducing approximately 35% pervious surface via the courtyard, we will decrease our impervious surfaces to around 65%.

Above: One of 9 treatment rooms in the Prema Health wellness center



Above: Exterior courtyard featuring permeable pavers & benches made with re-used concrete spoils

- Roofing
 - We installed a CertainTeed roofing system with a 25-year labor and material warranty.
 - We utilized a light-colored top cap to reduce the building's heat-island effect.
- Salvage
 - We repurposed salvaged beams as benches for the project.
 - We created retail slat walls using salvaged lumber.
 - We installed a suspended wood ceiling and teaching wall using salvaged lumber.
 - We repurposed 2" x 12" joists for door trim and wall base.
- Sealants
 - Whenever possible we utilized eco-friendly, low-VOC sealants, caulking, etc.
- Siding
 - Our fiber cement siding uses pre-consumer recycled wood and local cement to make a durable, low-maintenance siding material.
- Waste Reduction
 - We are actively managing a jobsite recycling, compost, and garbage system that diverts approximately 85% of our "waste" material away from the landfill.
 - We are working with a local metal scrapper to recycle any un-used metal.
 - When we excavated our site for the basement and footings, we delivered soils to a handful of local homes for use in their landscaping projects.
 - Each tenant space will have a recycling center that allows for site-separation into four categories: mixed recycling, glass, compost, and landfill.

- Water Heating
 - Our high-efficiency boiler and water heater requires less energy to produce hot water for our kitchen, showers, and treatment rooms.
- Water-Resistant Barrier
 - Prosecco R-guard liquid membrane on the exterior sheathing provides a robust air barrier, which reduces air infiltration to minimize wasted energy for heating or cooling.
- Windows & Skylights
 - Our windows are manufactured in the Pacific Northwest by Cascadia.
 - The windows are produced without Red List toxins and are listed in the Declare database.
 - The double-paned windows have a U-value of 0.26 and use low-e coatings to reduce heat gain.
 - 60% of the project's windows are operable, providing tenants and guests with fresh air, natural light, and views.
 - 2' x 4' skylights and solar tubes provide natural light to occupied spaces that cannot have windows.
 - All skylights have insulated curbs to reduce heat loss and increase performance.
- Appliance Efficiency
 - We used Energy Star rated equipment for appliances and computers and implemented power management strategies.
 - We used preferable refrigerants, free of CFC and CDFC refrigerants.



Above: The rooftop terrace includes an ADA unisex bathroom and is served by the elevator

- Education
 - The project contains informative signage throughout to educate occupants about sustainable features of the building.
- Entryway Systems
 - All primary entrances will have walk-off mats to reduce tracking and improve indoor air quality.
 - The yoga studios, Kids' Gym, and locker rooms will be shoes-off areas.
- Landscaping
 - Our courtyard provides quality, accessible open space for social interaction.
 - We utilized at least 25% native and climate-adaptive plants.
 - We utilized high-efficiency irrigation systems for courtyard and rooftop terrace plantings to reduce water consumption.



Above: The rooftop terrace is constructed for entertaining and hosting outdoor yoga classes

The Breathe Building Owner, construction staff, volunteers, contractors and suppliers collaborated to achieve an uncommon balance of functional, energy efficient, sustainable, fiscal, compassionate and aesthetic objectives. We are honored to be considered for the designation as one of DJC's Top Projects in 2015.

Breathe Building Project Team: The construction team includes (from upper left to right) Chris Calarco – Owner, Chris Humphries – Owner’s Rep / Project Manager, Lina Menard – Project Engineer, Angela Ramseyer – Project Administrator, Jackson Humphries – hungry youth, Michael Schuster – Project Superintendent, (lower left to right) Gabriel Hendricks – Carpenter, Evan Krogh – Carpenter.



The extended project team includes Alex Boetzel and Erica Dunn with Greenhammer, Michelle Chavez with Miller Consulting Engineers and Brienne Wasmer with 2Yoke Design

END OF PROJECT DESCRIPTION