

Beyond the Checklist: Lessons in Holistic Design

By Bryan Anderson, [SALA Architects](#)

As residents and recreational users of the St. Croix River and Valley and readers of this publication, you know how important these wondrous features are to your environment. Though a Minneapolis resident, I have enjoyed hiking the treacherous cliffs at Taylors Falls and canoeing more docile stretches of the St. Croix many times. I understand the allure of water, and so when contacted at SALA Architects by Jeff and Shelly Zierdt in January of 2007 to help them determine what to do with their home and property along the Mississippi River, near Monticello, I was eagerly swept into their adventure.

The Zierdt's wanted to honor and protect the features that had attracted them to the 3.5 acre site with whatever work they undertook, but were understandably puzzled by how to proceed. Increasingly, homeowners are subject to a barrage of products and solutions advertising themselves as "green" without necessarily having the education or experience to determine the place for these solutions in a broader context. For Jeff and Shelly this uncertainty began immediately with the question of whether or not to tear down the existing house. Eager to move to the site from their home in central Wisconsin, they moved into the existing home, despite its inefficient additions, dysfunctional layout, and precarious relationship to the bluff. They did what they could to make it work, including sawing the bottom off an interior door to make the home accessible to the family's cat and spraying patches of foam insulation between warped boards of cedar siding. Though industrious, they knew these were not long-term solutions.

The difficult decision to demolish the house became definitive when we discovered the attached garage was sitting on a floating slab rather than a frost footing, causing the garage to move separately from the house during freeze-thaw cycles and explaining the pronounced air infiltration and structural warping between the two. Extensive remodeling work that affects structural components and building envelope often exceeds the cost of new construction. The unfortunate result of this reality is the abundance of material waste from the demolition of existing structures. But proper planning can help minimize this quantity. In this case, large high-end windows were designed into the new project, and appliances and flooring were removed by the [Reuse Center](#). Deconstruction and recycling companies are creating more opportunity for reuse on a daily basis, which is a great way to [minimize the impact of demolition](#).

With our focus set on new construction, there was still a question of whether or not we could use a portion of the existing basement and foundation that was dry and relatively new. We created a schematic design for each scenario: one that retained the foundation of the existing home and one that scrapped it, allowing us to respond solely to the site. Using less energy fundamentally begins with orienting your house to the sun. As a general rule, at least for those of us 44 degrees north of the equator, the ideal orientation for your home is stretched along an east-west axis with most of the window area facing south. The amount of light and heat allowed to enter your home are most easily controlled from there. East and west are hardest to control, and west is most subject to heat gain. The north side is rarely exposed to the sun suggesting an increased need for

insulation. For Jeff and Shelly, this meant to incorporate the existing foundation was to create a floor plan that was deep north to south and forced a decision between view (of the river to the north) and light (to the south). The scheme that started from scratch allowed us to stretch a narrow floor plan along the approved setback from the river in a mostly east-west orientation, giving rooms views to the north and light from the south.

Form provides equal opportunity when considering the principles of sustainable building. For their home, Jeff and Shelly wanted to live on one floor, but have some additional room to accommodate visiting children and guests. This meant less square footage upstairs on a separate mechanical zone. It also meant unrestricted ceiling/roof opportunities for much of the main level. The result is a living space with a simple shed roof and south-facing clerestory that allows sunlight to pour into the house and passively heat the polished concrete slab in the winter. In summer, the direct sun is shaded, but indirect light is bounced off the flat roof and into the living space. On the north side, the roof slopes down to create less exposure and a focused view of the river. Inside, this slope facilitates cross-ventilation and passive cooling when needed.

The need to provide temporary housing during construction created another opportunity for improved quality of life. The property contained a dilapidated barn that the Zierdts first imagined could be their temporary home during construction. Though intending to stabilize and refinish it, they were not wishing to condition or provide plumbing to it, which ruled out living in it through a winter. Because Jeff and Shelly were clearly attached to the barn, I asked if they would consider a detached garage, conjuring the image of a multi-roofed farmstead. Detaching the garage increases the indoor air quality in your home by eliminating the connection for harmful fumes and vapors to travel, but few homeowners are willing to entertain the notion of exposure to the elements anymore. However, the Zierdts' adventurous spirit outweighed convention, and the solution was laid out. The conditioned garage would be constructed first, sited for the future attachment of solar panels and designed to highlight windows from the existing house.

The Zierdts were well into the design of their home when Minnesota Greenstar expanded its program to include new homes in a pilot program. Because many architectural principles are founded on regionally sustainable, environmental design, few modifications had to be made to the design of the home to be accepted into the pilot program. [Minnesota Greenstar](#) is one of two local programs that have been created and lauded for expanding the accessibility to sustainable design. Both Minnesota Greenstar and [Wisconsin's Green Built](#) Home recognize site impact, energy, material, and water efficiencies, indoor air quality, and reduced waste as critical components to sustainable building. Program checklists are fundamentally prescriptive, making proven recommendations to homeowner, architect and contractor alike, which can be especially beneficial to homeowners if an architect is not involved or if a contractor is only familiar with a less efficient practice. Additional benefits to program enrollment include energy modeling which can assist in mechanical system selection and budgeting, and energy testing to ensure air-tight construction and performance.

We were thrilled to have the Zierdt house certified with a Silver rating from Minnesota Greenstar, but more important to the overall success of the project was the holistic process in which so many choices were critically analyzed and selected to minimize the impact on the site, the river, and the environment. This process was essential to creating beauty and function beyond the quantitative requirements of the checklist, because for something to last, it must be treasured.