

# The WHEELER Residence

Collier Construction

TWH ARCHITECTS

51 kWh/day

6 people; 3,200 sq. ft.  
of lived-in space

50% reduction

of average monthly energy costs  
\$.50 / sq. ft. / year

30% more efficient

HERS rating index 70



## Introducing the Wheeler Residence:

# Building Better by Design

... design that asks “what if?” and answers “why not!”

## PLANNING

*When architect Trey Wheeler first hooked up with Ethan Collier, it was to build a 5,100 square foot home that now averages \$150 - \$200/month in energy costs.*

Six months later, Mr. Wheeler began working with Collier to design his family's new home. Wheeler wondered, “What if I could design a highly energy efficient, low maintenance and financially practical home in a kid-friendly location using all traditional materials?”

Wheeler and Collier set out to assemble an integrated project team whose work would be guided by 5 primary goals.

1. That the design respond to the **livability** and efficiency issues that the family experienced in their previous home.
2. That the home be situated (in terms of **location and design**) to accommodate an active family of 6.
3. That every aspect of the design and construction make **energy sense**.
4. That the home promote low maintenance and **durability**.
5. That the finished home be **financially practical**.

## SUSTAINABLE DESIGN

*Combining eco-smart design with durable building materials, Wheeler designed a home that resists obsolescence and energy consumption.*

**Building materials** are not only made of recycled content; they are also highly durable. The home's concrete floor will never need to be replaced, and because there is no crawl space, the Wheelers will never need to repair or perform maintenance underneath the house. The **passive solar orientation, insulated concrete slab-on-grade** and **single story design** promote energy efficiency.

## SUSTAINABLE BUILDING

*From advanced framing techniques to continuous drywall applications, Collier built a home with an optimum thermal capacity.*

Collier Construction's Whole Systems Approach complimented Wheeler's design. **Advanced framing** techniques reduced wall lumber by 50% while nearly doubling the R-value of exterior walls. In conjunction with a **sealed air barrier**, Collier used a **continuous drywall application** which helped completely reduce air infiltration while reinforcing the structural integrity of the home.

## ENERGY EFFICIENCY

*This home incorporates a host of products and methods used to eliminate energy loss and needless energy consumption.*

Building science teaches us that energy is transferred through a home in one of three ways – conduction, radiation and convection. The Wheeler residence is designed and built to resist all three.

**Reduce thermal bridging** – Framing with 2x6 lumber on 24” center allows less opportunity for wood to serve as a bridge for heat to enter or exit the building. In place of lumber, we have used R-19 open-face fiberglass insulation.

**Eliminate radiant heat gain** – Using tech shield sheathing underneath the standing seam metal roof prevents 99% of all radiant heat gain through the roof.

**Prevent air leakage** – Glueing the rigid foam (R-3) exterior sheathing to the framing, using open-cell spray foam insulation around electrical wiring and ductwork, then employing a continuous drywall application to the interior sheathing completely eliminates air infiltration.

*“Our aim has been to deliver a building that substantially outperforms the status quo.”*

– Trey Wheeler  
Vice President of TWH Architects



## PROJECT TEAM

Architect	Trey Wheeler TWH Architects
Builder	Ethan Collier Matthew Layne Collier Construction
HVAC	Kim Ray Conditionaire
Electrician	Jeff Todd Rivermont Electric
Insulation	Jerry Pollard Insulation Unlimited
Plumbing	John Latour Mainline Plumbing
Windows	Les Power Walden Windows