



Terwilliger Five Star Home & Health House

“Energy Efficiency Project”

Description

This home, constructed by Terwilliger Homes and located in Davison, is one of five residences which received a Five Star Home Grant from the Energy Office in 1997. Funding for the grants came from the U.S. Department of Energy. Home energy ratings, offered by the Energy Office, indicate the energy efficiency of a home by modeling the home's energy performance against an ideal. This home achieved a five star plus rating, the highest rating available, on the Home Energy Rating Scale.

Not only is this home energy efficient, but it is a showcase of healthy choices for new construction. The American Lung Association, in partnership with Terwilliger Homes and numerous other donors, utilized the "Health House" as a demonstration project of features that can be implemented to improve indoor air quality and respiratory health.

Healthy Home Features

- **Continuous Fresh Air Supply:** An air to air heat exchanger continuously expels stale air from the house and brings in fresh air from the outside. Air is completely changed every three hours. The Kitchen and Bath ventilation exhaust air is also vented through the air to air heat exchanger.
 - **Hepa Air Filter:** A High Efficiency Particulate Arrestant filter is installed beside the furnace. Approximately 60% of incoming air is filtered regularly through the HEPA filter (this can be adjusted to filter 100% of the incoming air)
- **High Efficiency Gas Heating System:** The furnace has a 96.6% AFUE (Annual Fuel Utilization Efficiency) rating. The furnace also has a sealed combustion system, providing more effective combustion, reducing the chance of carbon monoxide exposure and eliminating drafts and discomfort from cold air infiltration.
- **Carbon Monoxide Detectors**
- **Non-toxic building materials:** Low toxic sealers, carpet, paints and caulks were used in the home. Solid wood cabinetry was used wherever possible. Where the use of particle board was unavoidable, the composite was covered by a protective low-VOC sealer.

Energy Savings Features

- **Wood Framing:** The Health House has 8" thick exterior walls constructed from "side by side" double 2x4 uprights. This allows the house to gain strength, minimize twisting and the off-set design reduces conductivity of moisture and heat.
- **"Plastic Bubble":** The Health House is completely sealed from the elements as well as from outdoor pollution and allergens. Continuous wrap 4 mil thick plastic seals the exterior of the home and 9 mil plastic is tucked, taped and super-sealed around all joints. This keeps out the cold and prevents interior moisture from damaging the structural members of the home and/or conducting humidity through the walls in either direction.
- **Energy Trusses:** A 12" barrier between the interior uprights of the home and the roof trusses prevents the cold spots that occur when the trusses come in direct contact with the roof by providing space for additional insulation.
- **Wood Foundation:** An energy-efficient alternative to traditional foundations, Permanent Wood Foundations (PWFs) are constructed like the lumber framed walls of the rest of the home. Wood has a natural thermal value and the stud wall design allows for ready installation of economical batt insulation. It is easy to achieve ratings between R-11 and R-19 with PWF.

- **Insulation:** Fiberglass roll insulation was used in the basement only. Dry blown cellulose was used in all other areas. Ratings are R-25 in the walls and R-60 in the ceiling.
- **Windows:** Low E double pane glass windows were used in the home.
- **Plumbing:** Low flow fixtures were used.



For more information regarding this particular Energy Project contact:

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Feel free to contact us if you have any ideas for case studies or other questions :

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