

Coventry Senior Living



Minnesota facility brings a new level of energy efficiency and comfort to assisted living residents

Building on years of experience in multifamily housing design, DBA Architects is pioneering a new breed of assisted living facilities—energy-efficient buildings designed around a small house concept meant to imbue the institutional facility with a residential feel. By incorporating advanced technologies like structural insulated panels (SIPs) and radiant heating, DBA succeeded in reducing operating costs while creating a more comfortable, home-like environment for Coventry's senior residents.



**Structural Insulated
Panel Association**

PROJECT AT A GLANCE

LOCATION: **Mahtomedi, MN**

SQUARE FOOTAGE: **41,600, 48 units**

ARCHITECT: **DBA Architects**

BUILDER: **Stone Construction**

SIP MANUFACTURER: **Energy Panel Structures**

Designing for Energy Efficiency

Located in Mahtomedi, Minnesota, Coventry Senior Living offers a resident-centered assisted living and memory care environment for those suffering from Alzheimer's or other memory-related impairments. During Minnesota's cold winters, heating costs are a considerable expense for the 41,600 sq. ft. facility.

"Energy efficiency was a major priority for the client," said Don Baker, President of DBA Architects. "We've been looking at SIPs for a long time and looking for an opportunity with an owner that was willing to try something like that."

Baker connected with Energy Panel Structures, a supplier of SIPs throughout the Midwest. Consisting of rigid insulating foam faced with oriented strand board (OSB) sheathing, SIPs provide structure and insulation in a single, prefabricated building component. Coventry's 6-inch SIP walls and 10-inch SIP roof deliver continuous insulation, without the thermal bridging common in wood-frame assemblies.

Six-inch-thick SIP walls helped DBA Architects reduce energy costs on the three-story, 48-unit building.



“I like the fact that it is a good solid wall, it is not a hollow wall,” said Baker. “The insulation is more continuous, and there are fewer interruptions for studs and framing.”

Framing crews sealed between the large panel sections as they were assembled, minimizing opportunities for air leakage. Air leakage is a major source of heat loss, and can cause drafts, cold spots or condensation. Unlike traditional wood-frame construction, SIPs have a solid core of insulating foam that is fully enclosed in a code-compliant air barrier to virtually eliminate air movement.

For space heating, Baker specified a hydronic radiant heating system with a 96 percent efficient natural gas boiler. The system pumps heated water through tubing in the floor for a consistent and comfortable temperature. This is supplemented with a central air source heat pump for common areas and individual air handlers in each unit so residents can adjust their room temperature and use air conditioning if needed.

Maintaining good indoor air quality for Coventry’s chemically-sensitive patients was another top priority for Baker and his design team. All paints and carpets used in the building were low VOC. The airtight SIP construction allowed better control over indoor air quality by limiting incoming air to controlled sources, while whisper-quiet exhaust fans helped provide continuous ventilation.

For Coventry’s residents, the SIP building enclosure, radiant heating system, mechanical ventilation, and in-room air handlers resulted in a healthier and more agreeable living environment.

Creating a Small House

DBA Architects designed Coventry Senior Living with three distinct interior “neighborhoods,” each with their own common areas and dining rooms. This

Residential-inspired finishes inside and out create a home-like feel for residents.



small house concept encourages interaction between residents and diminishes the institutional feel common in large assisted living facilities. It also limits travel between living quarters and daily activities for elderly residents.

Baker worked to instill the home-like feel throughout the building's design, making the interior spaces and the building's façade reminiscent of a residential setting.

"We tried to scale down the building in terms of living areas and public spaces to make it more intimate and not institutional," said Baker. "The finishes, decorating, and furnishings are like those you would find in a home."

"The outside of the building is also a residential scheme, with finishes of siding and brick veneer, a large outdoor porch area on each floor, and architectural detailing and trim around the windows," Baker added.

Rather than design the facility as a simple box shape, Baker added a number of bump-outs and shingled overhangs to make the exterior more interesting and blend in with the residential neighborhood. Although these complex features would have added time and labor to a conventionally-framed building, the framing process went quickly with prefabricated SIPs.

"It is very efficient when all the panels are pre-cut, and it is probably easier to set those panels than framing the walls onsite when you consider all the ins and outs of the design," said Baker. "From what the contractor experienced during the first few panels, to the end of the construction process, it was a night and day difference in terms of speed of erection. It really flew once they got the handle on what they were doing."

With a residential-inspired design inside and out, along with a comfortable and healthy indoor environment, Coventry Senior Living offers an attractive living option for seniors and their families. The building's exceptional energy efficiency and innovative design earned the 2012 SIPA Building Excellence Award for Multifamily Housing.



Structural insulated panels, in-floor hydronic heating, and individual air handlers in each unit combined to produce a more comfortable indoor environment.



Structural Insulated
Panel Association

www.sips.org
P.O. Box 39848, Fort Lauderdale, FL 33339
253.858.7472
info@sips.org

Copyright © 2013 Structural Insulated Panel Association (SIPA). All rights reserved.