Image courtesy of BNIM Architects

CASE STUDY

VESTERHEIM COMMONS

PROJECT OVERVIEW

Vesterheim Norwegian-American Museum in Decorah, Iowa, houses over 33,000 artifacts in 12 historic buildings. This stands as one of the most extensive collections of Norwegian-American culture in the world. Vesterheim Commons, a new 8,000 square foot building, serves as the museum's entry and includes spaces for lectures, exhibitions and folk art programs.

Sustainability was a key focus in the design of Vesterheim Commons. The locally sourced mass timber structure and wood finishes reflect low embodied carbon. Advanced technology like temperature, humidity and occupancy sensors enhance efficiency. Stormwater is managed by directing rainwater into the landscape to nourish native plants and reduce strain on the storm sewer system.

ENERGY EFFICIENCY STRATEGIES

The building employed several energy efficiency strategies, including:

- A **heat recovery variable refrigerant volume** system that optimizes energy use by transferring heat between areas of the building.
- A **fully electric heating system** that leverages Iowa's renewable energy sources.
- A **dedicated outdoor air system** with an internal energy recovery system to provide ventilation.
- **Daylighting strategies** including carefully placed glazing, a large south-facing canopy and daylight harvesting controls that reduce lighting needs by 55% while protecting museum artifacts.

CNC PROGRAM SUPPORT

"The CNC program helped the design team and owner identify multiple potential design strategies for energy savings. In addition to just identifying the strategies, the energy modeling provided potential cost savings for these strategies, which was critical information the owner used for decision making. The saving potential allowed the owner to make decisions that were best for the life of the building instead of based solely on first cost." – Jonathan Ramsey, Principal, Architecture, BNIM

ENERGY SAVINGS

37% annual utility cost savings compared to baseline

44,544 kWh in electric savings – equivalent to:

- Electricity used by six homes in one year
- Avoiding the CO_2 emissions from 3,502 gallons of gas consumed
- Carbon sequestered from 515 tree seedlings grown over 10 years

PROJECT TEAM

- **Project team owner/s:** Vesterheim Museum
- **Architect(s):** Snøhetta, BNIM Architects
- **Engineering team:** Morrissey Engineering, Inc.
- **General contractor:** McGough Construction

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