



COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

REMOTE Walls in Alaska

When it comes to cold climate construction, a wall system must successfully address multiple issues. Heat losses through air flow and conduction must be minimized. Effectively stopping water vapor infiltration into the wall assembly from the heated spaces is another big concern. If humid indoor air is allowed to migrate into an exterior wall during the winter months, it will condense on any components that are below the dew point. Left unchecked without an adequate drying mechanism, this moisture buildup can lead to serious health and structural issues. Properly sealing will reduce these problems, though the number of holes cut in the envelope for heating, plumbing and electrical conduits and the number of different contractors cutting these holes makes it virtually impossible to get a perfect seal.



The REMOTE Wall system (Residential Exterior Membrane Outside-insulation Technique) presents a superior alternative to standard frame construction. A REMOTE Wall differs from a conventionally built wall in that the vapor barrier is applied to the outside of the sheathing, as opposed to the inside of the stud framing. Approximately two thirds of the wall's insulating value is then moved to the outside of the sheathing on top of the vapor barrier, while one third of the insulation remains in the interior of the wall cavity. The reasoning behind this ratio is to be able to install as much extra insulation as possible inside the heated envelope, while still keeping the dew point on the exterior of the vapor barrier. Warm to cold side insulation ratios are determined by the severity of the climate. The REMOTE system solves moisture issues, is cost effective, and provides a super-insulated energy efficient wall.

REMOTE utilizes an exterior insulation approach that was adapted and modified from the older Canadian PERSIST (Pressure Equalized Rain Screen Insulated Structure Technique). PERSIST is, in simple terms, a peel-and-stick impermeable membrane located on the exterior of a framed structure with foam insulation to the exterior of the membrane. This method of construction protects the framing components from precipitation and keeps them on the warm side of the

thermal envelope. In PERSIST, a 'second' roof is required to provide an overhang and protective roofing material.

REMOTE allows more space for insulation in the roof of a structure and eliminates the need for constructing the 'second' roof. This modification allows for more cost effective construction and a higher R-value where it is most needed; in the ceiling. While PERSIST wraps the structure on five sides, REMOTE wraps the structure on four sides and allows more flexibility in handling the ceiling and floor. Research has proven that the REMOTE shell creates a very tight air envelope. This means that very little energy is wasted heating infiltration air, but like any tight wall system, requires a good mechanical ventilation system. Sealed combustion appliances in the living area are required or make-up air must be provided.

The REMOTE system has been tested extensively in several parts of the state of Alaska, including the University of Alaska Southeast in Juneau, and the CCHRC Research and Testing Facility in Fairbanks. The technique has proven to be a solid performer across the Alaskan climate spectrum.