



COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Promoting the development and advancement of healthy, durable and economically sound shelter for Alaskans and circumpolar people.

CCHRC QUARTERLY REPORT

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CCHRC

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CCHRC: This Quarter in Review

Two new studies have been added to the CCHRC project list this quarter. The **PERSIST/EIFS Study** and **Improving the AK Warm Design Heat Loss Calculation** are summarized on the next page.

CCHRC has also been meeting regularly with University of Alaska personnel to establish a partnership to design, build, and operate a Cold Climate Housing Research Facility. The University will provide a site for the Facility on land adjacent to the UAF campus and CCHRC will work on locating funding to design and build the Facility. The Facility will include office space for CCHRC, a testing area, and a training delivery area.

The CCHRC website has been updated with a new look and new information. Please take a look and let us know what information you would like to see published on the site.

We are also currently working on a business plan to help us navigate successfully through the busy years ahead. A proposal will be made to include CCHRC membership with ASHBA membership. This will give those benefiting from our testing and research results an easy way to contribute to our mission. Until then, however, we would like to remind you to renew your CCHRC membership for 2002. A renewal form is enclosed for those whose membership has lapsed.

Remember that reports from CCHRC completed projects are available at our office and at ASHBA local offices throughout the state.

We continue to be grateful for operational funding from FannieMae, project funding from Alaska Housing Finance Corporation and the enthusiastic support of many of you in the building industry.

Message from the President/CEO

Your Cold Climate Housing Research Center continues to develop studies to address the challenges the homebuilding industry in Alaska faces. We are listening to the problems identified by you and the regional Research Advisory Committees statewide and making every effort to address these issues. CCHRC has been very successful in our short history in accomplishing our mission. I hope each of you takes the time to go to the web site on a regular

basis to become familiar with the studies in progress, the results of completed work and the proposed studies. This effort on your part or a call to the office will get an immediate response.

Members of the Alaska homebuilding industry established CCHRC. It is important that the industry's support of the Research Center continues to be strong as we approach potential clients and funding sources. This can be accomplished in two primary ways:

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CURRENT RESEARCH PROJECTS

Health House VOC Monitoring:

VOC study in various homes in Fairbanks and Juneau pre- and post-occupancy. Dwellings tested include the Fairbanks Health House and the Juneau Health House. Data collection is scheduled to be completed by August 1, 2002 and a Final Report due by October 15, 2002.

Combustion Air/CO Study:

Combustion air will be evaluated in the Fairbanks area. The purpose of this study is to assess the sufficiency of current practices in combustion air supply for atmospherically vented heating appliances, and the performance of power vented appliances. This study will continue next winter. Robert Maxwell is the project manager and is revising the study to include a garage exhaust component. Scheduled completion date is August 2003.

Infrared Thermography Study:

CCHRC will conduct in-house infrared thermography studies on various types of construction in the Fairbanks area. The purpose of this study is to create a database of temperature maps for a range of building components and assemblies in a severe cold climate. Imaging will be used to evaluate the performance of various building materials, and air sealing. Robert Maxwell is project manager for the study and it is scheduled for completion August 2003.

Strawbale House Monitoring Project:

CCHRC will conduct in-house monitoring of a strawbale house currently under construction in the Fairbanks area. The project consists of measuring temperature and moisture gradients throughout the strawbale insulation of the exterior walls. Monitoring sensors have been placed within the wall cavity with sensor connections surface mounted in the wall. Monitoring will commence in June and continue for one year. Robert Maxwell is project manager.

Evaluating Ventilation Systems with Regard to Indoor Air Quality:

CCHRC has contracted with Alaska Building Science Network (ABSN) to monitor 100 relatively new homes in Anchorage, Juneau, Kenai, and Fairbanks. Monitoring will consist of relative humidity, particulates, and VOC's. The goal of this study is to provide an evaluation of the extent to which various factors, in-

cluding ventilation strategies, house characteristics and location, and occupant usage affect indoor air quality. Identifying homes with elevated indoor pollutants will also help in future studies of mitigation strategies. A draft report is being developed and will be reviewed by Mark LaLiberte. Project is scheduled to complete by the end of July.

Evaluating Residential Heating Systems:

CCHRC has contracted with Arctic Energy Systems (AES) to measure the actual design heat load of houses by monitoring the runtime of the furnace in relation to outdoor temperatures. The goal of this study is to better determine appropriate heating system sizing for the HVAC industry to reduce building costs and improve the efficiency and comfort of homes. 20 houses in the Anchorage area were monitored during very cold weather. A draft report is due June 15, 2002 which Dr. Ron Johnson at UAF will review before a Final Report is made available.

Improving the AK Warm Design Heat Loss Calculation:

CCHRC has contracted with Arctic Energy to develop computer software that calculates the design heating load of a home, so that the home's heating system is properly sized. The software will present the results in an industry-accepted report. The software will be operated via the user's Internet web browser and will be freely accessible to all users across the Internet.

PERSIST/EIFS Study:

CCHRC will conduct a study to determine the efficacy of a modified PERSIST (Pressure Equalized Rain Screen Insulation Structure Technique) building envelope due to industry interest in both the dry and wet climates of Alaska. The modification relates to the roof structure. Whereas the PERSIST Homes in Alberta, Canada have incorporated the roof into the same type of design as the walls, the Alaskan models will use a conventional energy truss and tie the wall membrane to the interior ceiling air/vapor barrier. The PERSIST type design is an attempt to eliminate moisture intrusion or condensation from degrading the structural components of a building. The test homes are currently under construction with pictures and video recording the process. EIFS walls from previously constructed homes will also be tested as a comparison. Robert Maxwell is project manager.

Above Projects received funding through Alaska Housing Finance Corporation

CURRENT RESEARCH PROJECTS (continued)

Healthy Homes in Alaska:

AHFC will partner with CCHRC on this HUD sponsored project to conduct activities in Noorvik and Fairbanks. The Healthy Homes in Alaska Program is designed to: (1) Identify homes where intervention would be appropriate; (2) Identify and evaluate cost effective methods of hazard abatement and risk reduction; (3) Develop and deploy appropriately-scaled and efficient intervention strategies; (4) Develop local capacity to operate sustainable programs to prevent and control housing-based hazards, especially in low income residences; and (5) Mobilize public and private resources and organizations.

This is a two-year project involving the University of

Alaska, state weatherization agencies, medical personnel and experts in the field of indoor air quality. A project coordination meeting involving all the participants is scheduled for July 10th at the CCHRC office in Fairbanks. Identification, IAQ testing, and physical assessment of homes selected to participate in the study will take place this year. Homes will be selected on the basis of housing children with known respiratory problems. In 2003, data analysis and mitigation strategies will be discussed and followed up by remediation and re-testing of study homes. A final analysis and report will be available in 2004.

Phil Kaluza will be working with CCHRC as the project manager for this study.

Other Projects - Proposed or Under Consideration:

Cold Climate Housing Research Facility:

CCHRC and the University of Alaska at Fairbanks (UAF) are working to establish a partnership for the purpose of planning, designing and constructing a Cold Climate Housing Research Facility. The proposed building will be located on University property, adjacent to the campus. It will include office space for CCHRC in addition to: a testing lab with sufficient space and a controlled environment to conduct research and testing structural components and materials used in the housing industry. Jack Hébert just returned from a trip to Washington DC where he discussed funding with Senator Stevens for this joint endeavor. Research and testing will be cooperatively managed for the benefit of both parties and all peoples of circumpolar regions. Current efforts are focused on a formalized agreement between the parties, a preliminary design, and a business plan.



Integrated Forced Air/Ventilation System:

CCHRC is proposing to initiate the design of a heating and ventilation system that would be targeted to

South Central Alaska's climate and natural gas availability. The goal is to develop a forced air heating and ventilation system that is affordable, efficiently sized, meets heating and ventilation requirements and will be embraced by the building industry. CCHRC is working on an RFP to address this study to send out in July.

Egress Window:

A prototype window to address egress problems in rural housing in has been on view at the CCHRC office since last summer. Northerm is building another window after receiving input on the prototype from CCHRC and will have it tested by AAMA/NFRC.

Test Modules for Southeast & Interior Alaska:

CCHRC has submitted a proposal to DOE for a 2002 Building America grant that includes monitoring the Building America in Alaska homes completed last year, construction of a mobile facility to test various wall and roof systems in a controlled environment, and actual testing of such systems in Juneau, Alaska. Successful applicants for the DOE grant will be notified by the end of July.

Foundation Behavior:

One of the priorities identified by CCHRC's Research Advisory Committee (RAC) is to conduct a study on foundation approaches in the adverse soil conditions found in much of Alaska. Foundations must be protected from ground and surface water and from damage due to ground freezing and thawing.



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Message from the President/CEO

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1. The active involvement of building industry professionals in Alaska. The Research Advisory Committees serve for this purpose, but your involvement in this process is critical. Alaska has many regional concerns that the Research Center may be unaware of due to the distances, climatic differences, local economies and markets. It is your opportunity to let us know what testing, analysis or research would benefit your business.
2. The demonstration of industry financial commitment. I will be proposing at the ASHBA convention this fall that every member of the association be as well a member of CCHRC. This is easily accomplished by adding a small increase to the dues for membership to ASHBA and having ASHBA make an annual contribution to CCHRC from these funds. This would demonstrate a much clearer commitment to those that ask me, "If the Research Center is doing all this work for the industry, where is their contribution to CCHRC?"

Your involvement in the Cold Climate Housing Research Center is a good investment for your businesses, your clients and the quality of your life in this beautiful but climatically severe land.

My best to all of you.

The CCHRC Quarterly Report is sent to our members, CCHRC funding agencies, and those requesting information about CCHRC. The most recent Quarterly Report is also available at our website. Response to this report is welcome.

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