

The Aging-in-Place Laneway Housing Research Project

Project Overview, September 2016

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artist rendering of prototype exterior

Context

Calgary's population is getting older. Seniors currently comprise 10% of Calgary's population. This will increase to 20% by 2026. Unfortunately, most houses are designed for healthy young families. As a result they are often ill-suited for the specific needs of older people and can be difficult, isolating and even dangerous places for seniors to live. Many of these people end up having to move into dependent living facilities before it is medically necessary. Research indicates that 20-50% of older individuals currently waiting for beds could continue to live in the community if an appropriate independent housing option were available.

To meet this challenge, an interdisciplinary research team at the University of Calgary led by Professor John Brown is developing an innovative aging-in-place laneway housing option. The 460 sq.ft. one bedroom prefabricated unit is designed to be temporarily located in the backyard of a typical Calgary residential lot. It would be provided on a lease basis to older individuals and allow them to live independently in a safe and accessible purpose-built, age friendly home located in close proximity to family members. In addition to providing a high quality place to live that is both safe and

accessible for seniors to use, the Aging-in-Place Laneway House will incorporate advanced medical monitoring technology and chronic disease management equipment that will allow the elderly and frail to remain living well in their home, and close to family, for as long a period as possible.



artist rendering of prototype interior

Who is involved?

The Aging-in-Place Laneway Housing Research Project is part of a unique collaboration between the U of C's Faculty of Environmental Design and Cumming School of Medicine that brings together architecture researchers with physicians and medical researchers from the O'Brien Institute for Public Health. External partners include the Alberta Real Estate Foundation, Canadian Mortgage and Housing Corporation (CMHC), the Calgary Foundation, The City of Calgary, Section 23, and DIRTT Environmental Solutions. The project is strengthened by regular consultations with various levels of Alberta Health Services. No additional funding is required from The City of Calgary.

Pilot project and research objectives

In 2015, the first prototype of the unit received the first ever Mayor's Urban Design Award (MUDA) for Housing Innovation. The second generation prototype, consisting of a full scale mock-up of the unit's interior including the age friendly design features and medical technology, was completed in spring 2016 and is currently undergoing evidence based testing. Construction of Prototype 3 will commence in fall 2016. This will be a fully functional unit suitable for real use testing.

In January 2017, a series of in-situ testing is scheduled to commence. The goal is to place the unit in two different communities for 3-4 month periods of live-in testing. Information will be collected from

the older individuals temporarily residing in the unit, their family, and their team of health care providers in order to determine how well the architectural and medical features of the unit perform. Information will also be collected from neighbours and the surrounding community to gauge the impact of a temporary aging-in-place laneway house on the surrounding neighbourhood. The study will provide some preliminary insight into the feasibility and desirability of using this type of unit as a possible housing option for Calgary seniors.

As of Fall 2016 the U of C research team is seeking applications from homeowners interested in participating in the study.

Description of the Aging-in-Place Laneway House

The aging in place laneway house has the following features:

- Single-storey, prefabricated construction
- In-floor heating and active heat recovery ventilation system
- Smart home system with senior-friendly controls and wheelchair ready interior
- Appliance safety protocols
- Wheelchair ready interior
- Modular interior that can be customized to the functional needs and health requirements of the resident. The interior can be adjusted as these change over time.
- Integrated mobility aids and safety features
- Medical monitoring equipment
- Bright open plan living space.

How it will work

The prototype aging-in-place unit will be fabricated on the University campus. It is approximately 12' wide and 35'-42' long and will be transported to and from the site by truck in two 20' segments. The unit will be lifted into place by crane and will sit slightly above grade on a series of adjustable legs. A site-built ramp/stair will provide access. The unit is designed to be located on lots both with and without lanes. At the completion of the test, the unit will be disassembled into the two segments and removed.

The key services including water, sewage, gas, electricity and telecom can be provided through a combination of on-board storage tanks serviced from the lane or street and above grade connections to the primary house. Final decisions about the servicing connections will be made when the site selections are determined; the best options will be identified for each site.

Proposed Timeline

1. Design development of the V3 prototype will be complete in October 2016. Construction to commence in November and be complete by January 2017.
2. University Ethics Board application to be submitted in September 2016.
3. Participant selection for the first test site will be complete by Oct 31, 2016. First site is expected to be in an R-C2 established community.
4. Development permit application for first test to be submitted in early November 2016.

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5. Building and trade permits to be issued in conjunction with the construction process.
6. First test to commence in January 2017 for a period of 3-4 months.
7. City of Calgary to assist in collecting information from neighbours and community association.
8. Second participant and site to be selected by January 2017.
9. Applications for necessary approvals for second test to be submitted in 2017 for Q2 or Q3 occupancy.