

**TITLE** Adaptable Housing in Northern Canada:  
Responding to the environmental and cultural needs of the Inuit in Canada's North

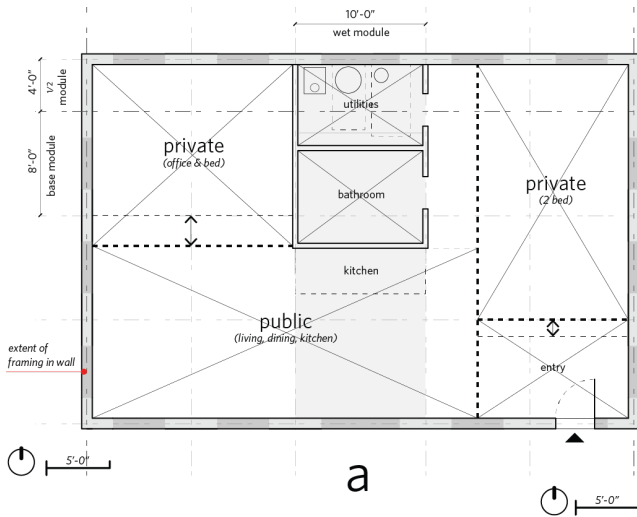
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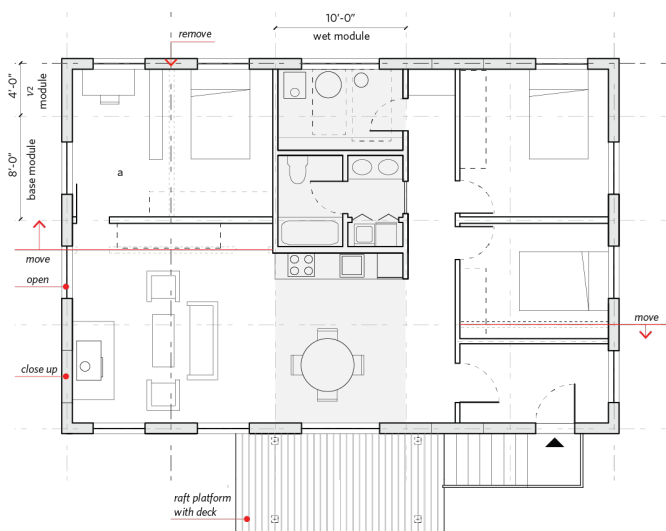
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**Supervisor:** Avi Friedman

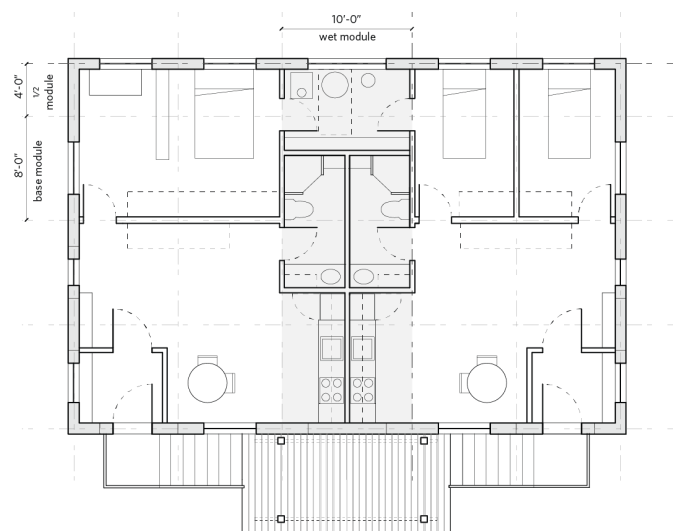
**Partners:** Professor Vikram Bhatt, Council and staff at the N.V. of Kuujjuarapik (Cora Fleming, Mary Hannah Angatookalook, Lucassie Inukpuk, Alice Kokiapik, Raymond Mickpegak, Salamiva Danielle Weetaltuk, Pierre Roussel) Grade 11 class at the Asimauttaq School.



a



b



c

a) Schematic diagram of zones of a three bedroom base unit designed for Umiujaq wind. Used by KMHB local to help customize units.

b) The final plan of the dwelling after consultation with future tenants.

c) Plan of the dwelling after it was converted into a duplex.

## // ABSTRACT .....

Tasked with the responsibility of overseeing house production over an immense territory, housing authorities in Northern Canada use a centralized model of house production, which deploys common house typologies throughout the various communities of Northern Canada. House designs are undertaken by professionals from southern Canada; they reinforce southern living arrangements and prioritize first time use. This paper questions the suitability of this centralized approach to housing. It argues that its short term focus does not acknowledge the needs for housing to respond to its environmental and cultural context. The report presents an adaptable approach to housing that considers how centralized housing can be easily modified to meet particular geographic needs. It is divided into two parts. Part one provides an overview of current processes of design, delivery and management of Government Sponsored Housing in northern Canada. Findings from a literature review and recent field work in the community of Kuujuarapik/Whapmagoostui identify specific environmental and cultural considerations for Government Sponsored Housing in northern Canada. Environmental considerations include a need to design for prevailing winds, the sun and views. Cultural considerations include a need for unpartitioned / unprogrammed spaces, a need to accommodate kinship patterns of living, and a need to design the landscape surrounding a dwelling. Adaptable strategies are drafted to address these needs. Part two uses the above mentioned findings to inform an approach to housing. The approach describes unit design, construction, and the newly imagined roles of the agents involved with Government Sponsored Housing in Nunavik. Two scenario based case studies are used to provide examples of how this approach can play out. They demonstrate how a unit can be adapted to meet environmental and cultural needs during both, the production and management of a dwelling unit. The report demonstrates that adopting such an approach does not require overwhelming capital investment, but rather a change in attitude regarding the way GSH is produced and managed.

## // OBJECTIVES AND CHALLENGES .....

### Objectives

The broad goal of this research is to develop a model of thinking about Government Sponsored Housing that uses principles of adaptability that allow dwelling units to respond to the specific cultural and environmental needs of their respective geographies. Specific objectives and sub-objectives associated with this goal include:

- 1) To obtain a greater understanding of the cultural needs of Inuit of Nunavik, including an understanding of how changing family dynamics and daily cultural practices can be accommodated in rental housing;
- 2) To obtain a greater understanding of how permanent dwelling units respond to the environmental conditions of northern Canada, including exposure to prevailing winds, relationship to ground plane, reactions to freeze thaw cycles and views;
- 3) Explore the new roles of housing authorities as the initiators, and managers of adaptable rental housing in northern Canada;
- 4) Explore the role of Government Sponsored Housing within a housing continuum designed for northern Canada;
- 5) Explore ways of thinking about rental housing that work towards the long term objectives of self determination amongst northern peoples.

### Challenges

#### *Idea of rental housing - a short term project*

Since governments have been involved with the provision of housing in Canada's north, home ownership and the development of a self sustaining private housing market has been the primary long term housing strategy for the region. Under such a model rental housing is seen as a basic provision which works to help individuals in need,

transition towards the goal of market housing. Despite continued efforts to promote home ownership and market housing, the vast majority of housing in Canada's north continues to operate as rental housing (Dyck, Lillian, Patterson, 2017). The concerns with rental housing in such a model, lie in the priorities in which guide their designs. Since rental housing is not understood as a permanent solution for its occupants, it is not designed to meet the long term spatial requirements of its tenants. Instead immediate needs related to dwelling delivery, its construction, maintenance and operating costs predominate. In this model the longer term spatial needs of tenants are assumed to be accommodated through a range of market housing options. The suitability of this approach has yet to be fully questioned. For more than three generations residents in northern Canada have occupied rental units, and it seems that this will be the case in the foreseeable future

#### *Housing and self determination*

Self determination is occurring in different forms throughout all regions of northern Canada. Many see it as a matter of time before native populations have control over their own housing (Abele, 2009)(Strub, 1996). Current understandings of GSH in the North however create an impasse to this end. Rental housing currently borrows from southern ideas of housing and does not currently explore opportunities for self determination. This paper argues that this understanding of rental housing is unnecessarily restricting. Waiting for sufficient market housing options to emerge is working against the goal of native housing autonomy. Ways in which rental housing in the North can contribute to the self determination of native housing priorities need to be explored. Strategies for adapting housing to meet specific needs can help open this discussion.

#### *The bottom line*

The challenges of meeting an ever increasing demand for housing has never been fully met in the context of the Canadian north (Collings, 2005). Increasing populations paired with incredibly costly operations and limited funding have seen regional housing authorities in a constant battle to maintain their housing markets. This crisis scenario has left little space to really question the suitability of house designs (Debicka, 2008). Over the past 60 years people of the North have been asked to adapt their traditional ways of living to fit in houses designed around mainstream Canadian priorities. Recently attention has been given to these adaptations, highlighting both important cultural differences between mainstream Canada, and spatial implications of these differences. The spatial requirements of a house and kinship relationships, traditional hunting practices and food preparation are some examples that have been highlighted over the years. House designs need to begin to respond to these identified cultural needs.

#### In text citations

Abele, Frances. "Northern Development: Past, Present and Future." *Northern Exposure: Peoples, Powers and Prospects in Canada's North*. Montreal: Institute for Research on Public Policy, 2009. 19-65. Print.

Collings, Peter. "Housing Policy, Aging, and Life Course Construction in a Canadian Inuit Community." *Arctic Anthropology*. 42.2 (2011): 50-65. Print.

Debicka, Elizabeth. *From Policies to Housing: The Historical Evolution of Public Housing in Canada's Eastern Arctic*. , 2008. Print.

Dyck, Lillian Eva, and Dennis Glen Patterson. *We can do better: Housing in Inuit Nunangat*. Rep. no. Report of the Standing Senate Committee on Aboriginal Peoples. Digital: n.p., 2017. Print.

Strub, Harold. *Bare Poles: Building Design for High Latitudes*. Ottawa: Carleton UP, 1996. Print.

## // CONTEXT AND COLLABORATORS .....

### **Context**

This report will look at Government Sponsored Housing (public Housing) in Nunavik, Quebec. The primary housing authority in Nunavik is the Kativik Municipal Housing Bureau (KMHB). It works with various other agencies, including Makivik construction, the Society D'habitation du Quebec, the province of Quebec and various municipalities, to deliver housing. The approach, which this project puts forward, intends to work within the limits of this existing infrastructure.

### Collaborators

As part of a studio based study the author was part of group that did field work in the N.V. of Kuujuarapik in December 2016. This field trip, allowed the author to present material and hold discussions with the town council and staff including, Cora Fleming, Mary Hannah Angatookalook, Lucassie Inukpuk, Alice Kokiapik, Raymond Mickpegak, Salamiva Danielle Weetaltuk, and Pierre Roussel. A discussion with grade 11 students at the Asimauttaq School in Kuujuarapik was also undertaken as part of this trip in December 2016. Finally feedback at various stages of the report was provided by professor Vikram Bhatt from the McHill School of architecture.

## // RESULTS AND SOLUTIONS .....

Findings reveal: that current rental housing has never been adequately designed to accommodate specific wind, sun, and view patterns of the North; that current processes of management have created a conflicting “landlord / tenant” dynamic which has prohibited peoples of the North from influencing the organization of their houses; and that housing does not yet fully address the spatial lifestyle needs of northern peoples. This report intends to bring attention to these issues, highlighting their often under-stated role in the longstanding housing crisis in northern Canada. The ideas put forward in this report present a way of thinking about social housing that can help balance long and short term needs of social housing in northern Canada. It argues that current ideas of rental housing need to consider processes of change throughout the entire lifecycle of a house. Designing around change processes can provide opportunities for dwellings to better “fit” into their environmental contexts, and adapt to meet particular needs of their residents. The first part of this report identified various ways in which people of the North have adapted their traditional ways of living to fit into houses designed around mainstream Canadian priorities. The approach presented in this report intends to flip this dynamic. The second part of the report describes an approach that outlines a variety of strategies that facilitate the adaptation of a dwelling to specific contextual needs. Strategies are drafted at various stages of a dwelling’s lifecycle, and work to create a framework from which to understand different ways that housing can adapt to its context. Examples describing how this approach can play out are described with two case studies at the end of the report. The report demonstrates that adopting such an approach does not require overwhelming capital investment, but rather a change in attitude regarding the way Government Sponsored Housing is produced and managed.

The larger ambitions of the proposed approach is to provide a means of opening up a dialogue between housing authorities, and house tenants. As Strub and others have highlighted, suitable housing in the context of northern Canada will only begin to emerge when people of the North are involved in the processes of making mature design decisions for northern housing (Strub, 1996). The current approach to housing does not have mechanisms in place that allow for this. The approach presented in this report addresses a way of thinking and a series of change strategies in the hope to start this conversation. It is amidst this conversation that discussions on the role of social housing, and ideas on a suitable continuum for housing in northern communities can emerge. Lessons learned from future housing adaptations can be used to design better, more suitable housing in the future.

Finally, the ideas that this report advocates for are not restricted to new build. As chapter 5 of the report works to demonstrate, many strategies for change can be applied to existing buildings. In this light, the ways of thinking, which this approach puts forward, can be applied to a range of scales, and building typologies.

### In text citation

Strub, Harold. *Bare Poles: Building Design for High Latitudes*. Ottawa: Carleton UP, 1996. Print.

## OTHER IMAGES OF THE PROJECT

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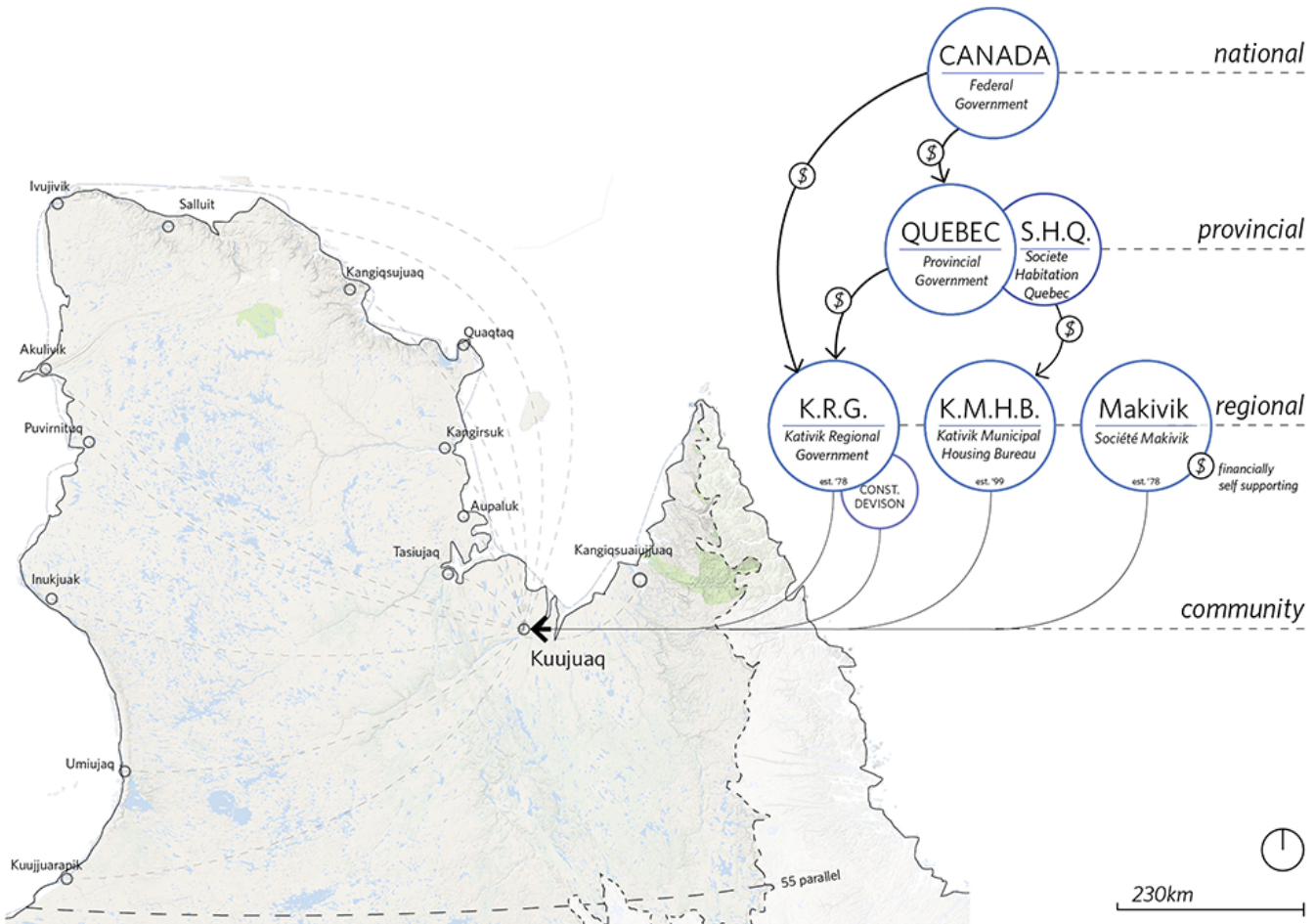
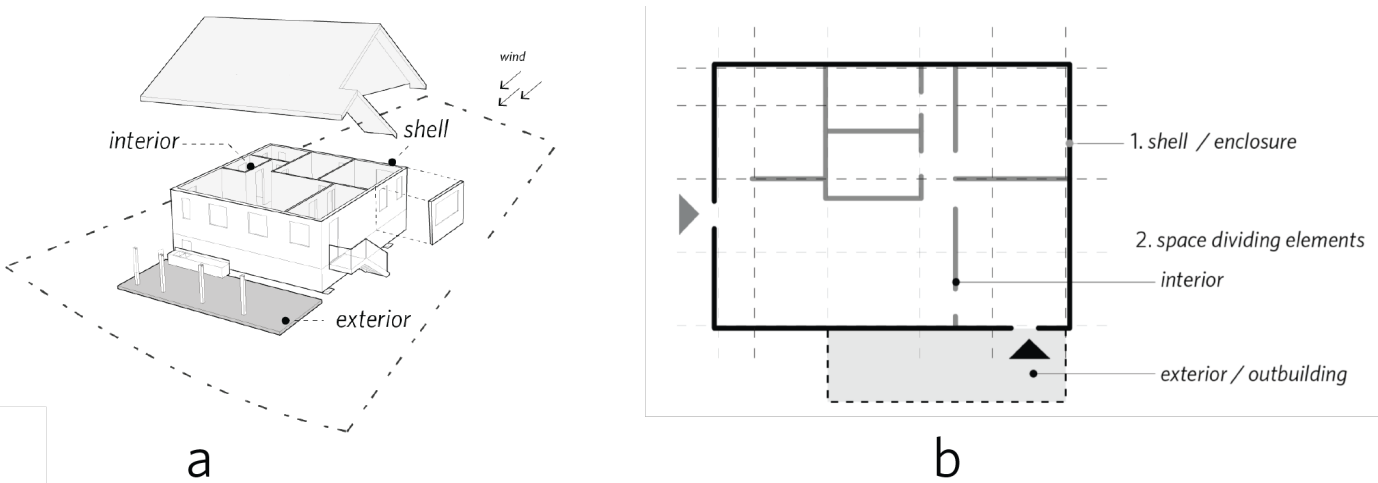
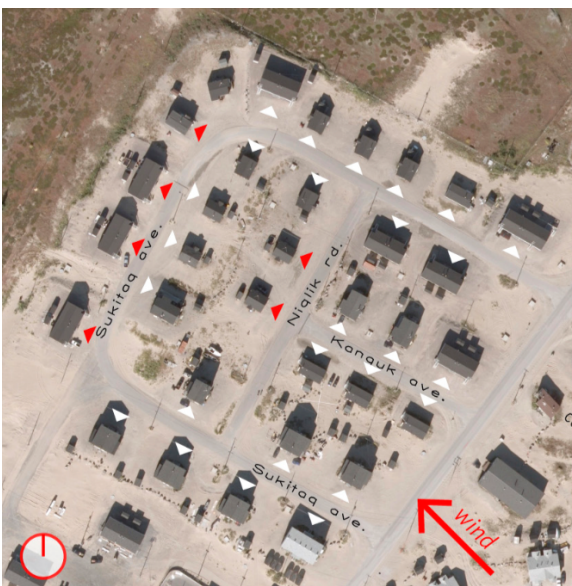
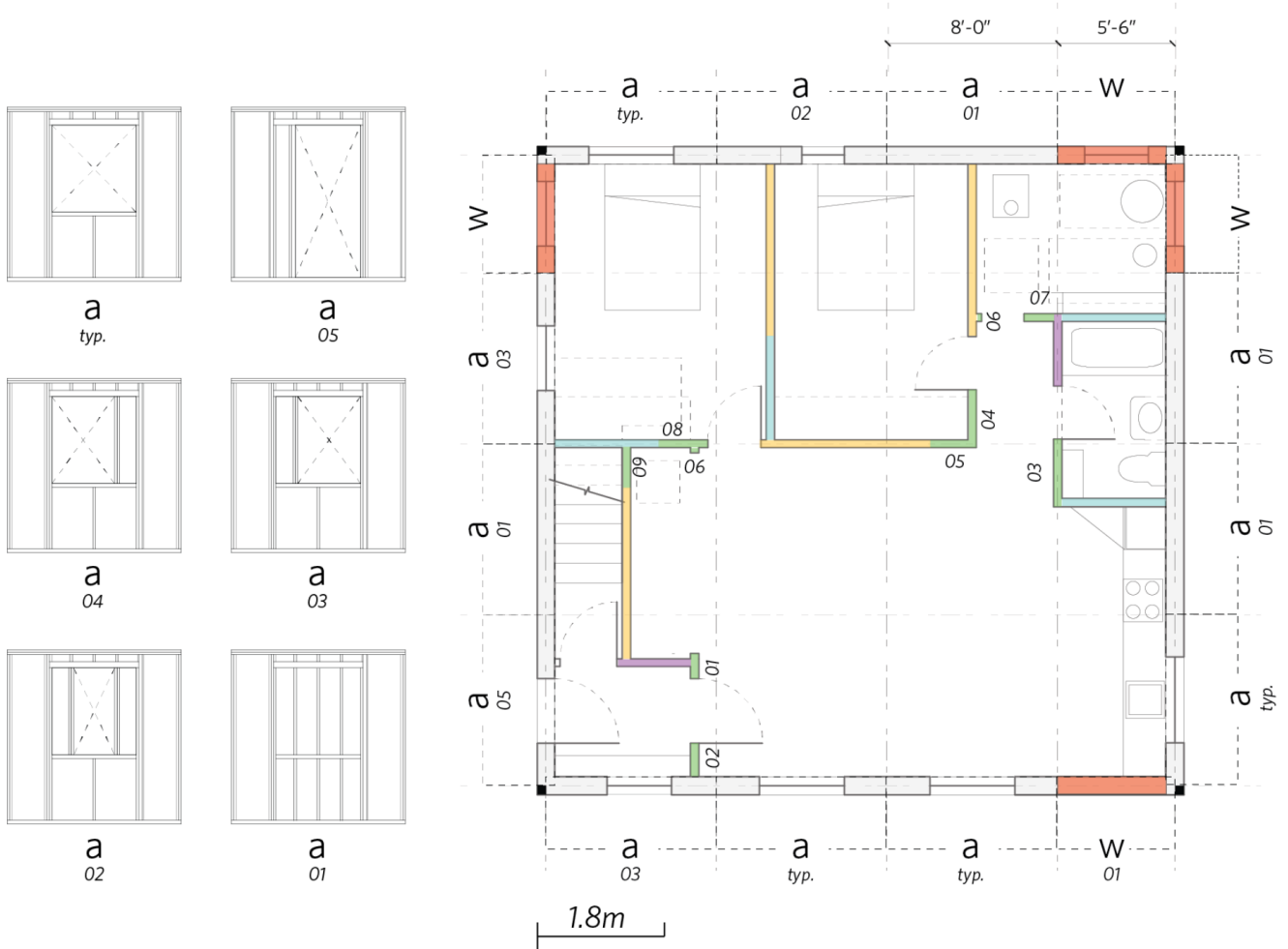


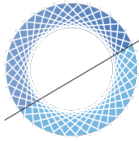
Diagram depicting the hierarchical relationships between various organizations related to Government Sponsored Housing in Nunavik



a) Perspective diagram depicting three parts of an adaptable dwelling unit.  
b) Plan diagram depicting three main parts of an adaptable dwelling unit.



Construction diagram identifying different types of wall panels and their location for installation. Left) A subdivision in Kuujuarapik. Arrows represent the primary entry to a dwelling. Right) An image of a makeshift windbreak, protecting an entry from prevailing winter winds.



- tires
- wood pallets
- oil cans
- plywood
- ski-doo windshield
- water tank
- shipping container
- jerry can
- plastic tarp
- satelite dish
- buckets
- garden hose
- moose antlers
- gravel
- aluminum siding
- PVC piping
- ski-doo track
- wood pallet
- vapour barrier
- bug screen
- fishing net
- corrugated metal sheats
- used car door
- asphalt shingles
- wooden crate
- rope
- vapour barrier
- OSB sheets
- canvas
- bungee cord
- rigid insulation
- heavy gauge chain
- vinyl flooring
- water boiler
- metal pile
- shelving
- milk crate
- hose

*Collage of various waste materials often found in villages of Nunavik. Many of these materials can be repurposed for exterior modifications to a house.*