

COMPENDIUM OF RESEARCH

Social, Economic and Technical Research



2007 & 2008



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COMPENDIUM
OF
RESEARCH 2007 & 2008

Issued also in French under the title: ***Compendium de recherche 2007 et 2008***

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INTRODUCTION

Canada Mortgage and Housing Corporation, the federal Government's housing agency, is responsible for administering the *National Housing Act*.

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research. CMHC therefore has a statutory responsibility to make widely available, information which may be useful in the improvement of housing and living conditions.

This Compendium of Research has been compiled to publicize and increase access to the research reports produced under research programs sponsored by the Corporation during 2007 and 2008. A few reports not included in the earlier compendiums have also been added. It is also available on CMHC's web site at

http://www.cmhc-schl.gc.ca/en/corp/li/horetore/horetore_003.cfm

ARRANGEMENT

The abstracts of completed research reports and publications are arranged by broad subject areas. A title index can be found at the end of the Compendium.

AVAILABILITY OF REPORTS

This Compendium provides links to the electronic versions of reports, should they exist. Most research reports are also available from the Canadian Housing Information Centre.

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ABORIGINAL HOUSING

ABORIGINAL HOUSING ASSESSMENT : COMMUNITY DESIGN NEEDS & PREFERENCES AND APPLICATION OF LOCAL MATERIALS

This research report documents a study of the use of local materials in four Aboriginal communities, as well as the housing design needs and preferences as expressed by fourteen communities selected from the major Aboriginal cultural regions of Canada. Benefits and impediments are documented.

Prepared by Lisa Hardess, Rodney C. McDonald, and Darren Thomas, Centre for Indigenous Environmental Resources. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2004. 2 volumes (volume 1: 2595 KB; volume 2: 1425 KB)

Note: No. 05-001 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 63834)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu%20al/Aboriginal%20Part%201%20\(VV\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu%20al/Aboriginal%20Part%201%20(VV).pdf) (Volume 1)
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu%20al/Aboriginal%20Part%202%20\(VV\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu%20al/Aboriginal%20Part%202%20(VV).pdf) (Volume 2)

AUSTRALIAN ABORIGINAL HOUSING

This report is based on a 2003 review of the Aboriginal housing environment. The purpose of the review was to identify Australian aboriginal community planning and economic development policies and practices, particularly with respect to housing that would have relevance in a Canadian context. The purpose of this report is to summarize what was heard and seen during the winter/spring 2003 visit to Australia.

In the course of the visit the national Aboriginal organization, the Aboriginal and Torres Strait Islander Commission (ATSIC), was reviewed in terms of their structure, mandate and their overall effectiveness in aiding the widely dispersed Aboriginal community to solve issues and address their complex needs.

The information gathered during the visit was examined from the Canadian context noting specific applications from Australia that could be implemented in Canada. This report outlines specific recommendations for CMHC to consider, under the Corporation's mandate to improve housing conditions in Canada's First Nations. The concentration of this review was the rural areas of Australia and their indigenous (discreet as they are known) communities.

The recommendations contained in this report focus on those areas that could be considered for the Canadian First Nations environment.

Prepared by Ken Taylor, Canada Mortgage and Housing Corporation and Karen Froman, University of Manitoba. Ottawa: Canada Mortgage and Housing Corporation, 2004. 126 pages

AVAILABILITY : Canadian Housing Information Centre

GIS: A USEFUL TOOL FOR FIRST NATIONS HOUSING MANAGEMENT, PLANNING, MAINTENANCE AND SAFETY

The Cree First Nation of Mistissini, one of the James Bay Cree (JBC) First Nations in northern Quebec, was an early adopter of a Geographic Information System (GIS). A GIS is a computer-based tool for information collection, modification, analysis and output in the form of maps and reports. While the community of Mistissini use their GIS for community housing and public safety needs, most other First Nations with a GIS have limited its use to forestry and natural resource management. This study describes the implementation and ongoing use of GIS in Mistissini. A Geographic Information System helps analyze problems through the visualization and quantification of spatial relationships. Many housing and public safety issues respond particularly well to visual analysis through use of maps.

While the focus of the study is on the use of GIS for housing and related purposes, there are also important lessons to be learned for those communities that do not feel the need or do not yet have the resources to consider implementing a GIS. These lessons include best practices such as: backing up data, organizing, storing, converting and linking housing data. The case study discusses and compares a number of options for organizing information (both for GIS and non-GIS applications such as spreadsheet, database, word processing, graphics and computer-aided drafting programs that are commonly available) that have met many of the information needs of the other JBC communities.

This case study will be of interest to First Nations Councils and staff who oversee or manage housing resources and have responsibility for public safety as well as agencies such as First Nations School Boards, Health Authorities and large First Nations commercial ventures that have housing and building resources.

Prepared by Jeff Sutton, Nusantara Geomatic Services. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 79 pages (2308 KB)

Note: No. 07-005 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65431)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/CHICGISw.pdf

NEIGHBOURHOOD EFFECTS AND LEVELS OF CONCENTRATION FOR ABORIGINAL PEOPLE IN LARGE CITIES IN CANADA

While concerns with the effects of neighbourhoods on life chances have a long history in academic debates, there is no work that specifically considers neighbourhood effects on Aboriginal individuals of living in Aboriginal neighbourhoods in Canadian cities. This paper attempts to provide such a study by investigating the housing patterns of urban Aboriginal people and their relation with socio-economic outcomes, either positive or negative. Housing settlement patterns in the major urban areas of Canada with substantial Aboriginal populations are described statistically, using established indices for spatial distributions of population (evenness, clustering, concentration, centrality and exposure) at different levels of geographic aggregation. The statistics are discussed in terms of the pros and cons of the indices and geographies for each urban centre. The statistics are analysed with a selection of socio-economic census variables chosen for their potential relevance to social and economic outcomes based on research literature.

Prepared by Evelyn J. Peters, Department of Geography, University of Saskatchewan and Oksana Starchenko, Department of Government Relations, Government of Saskatchewan. CMHC Project Manager: Ian Melzer. Ottawa: Canada Mortgage and Housing Corporation, 2008. 75 pages (5867 KB)

Note: No. 08-010 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65674)

ABORIGINAL HOUSING

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Neighbourhood_Effects_and%20Level\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Neighbourhood_Effects_and%20Level(W).pdf)

URBAN ABORIGINAL HOUSEHOLDS: A PROFILE OF DEMOGRAPHIC, HOUSING AND ECONOMIC CONDITIONS IN CANADA'S PRAIRIE AND TERRITORIES REGION

This study of the urban Aboriginal population of the Prairie and Territories Region (PTR) provides a housing and socio-economic profile of Aboriginal persons in 19 communities. Utilizing the most current Statistics Canada census and CMHC data, this study provides a portrait of economic factors and housing conditions among Aboriginal persons of the Prairie and Territories. As well, comparisons of some of these factors are made between Aboriginal and non-Aboriginal populations.

This study was undertaken to provide baseline information for agencies involved in Aboriginal or affordable housing issues. It is hoped that this study will be useful for community discussions on these same topics.

Prepared by Tom Kerwin. Ottawa: Canada Mortgage and Housing Corporation, 2006. 33 pages (1554 KB)

Note: No. 06-024 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 64804).

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/web2.pdf

ACOUSTICS

ÉTUDE DE LA PERFORMANCE ACOUSTIQUE DES CLOISONS ET ENSEMBLES PLANCHERS/PLAFONDS ET DES MURS EXÉRIEURS DU COMPLEXE D'HABITATION, LE CLOS ST-ANDRÉ, MONTRÉAL, QUÉBEC

This report provides information on the evaluation of the IDEAS Challenge technical performance of Le Clos St-André project in Montréal in which a series of acoustics tests were carried out to determine the acoustical performance of the party walls, floor assemblies, and the exterior wall. The original details and testing were carried out by Davidson & Associés inc., acoustical consultants.

The report found that certain recommendations had not been carried out due to financial constraints of the project. The consultant's report indicates how particular acoustical details should be constructed. These include plumbing and ventilation system isolation, and the required details for sound isolated hardwood floors and party walls.

Prepared by Steve Davidson, Davidson & Associés inc. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 1998. 18 pages

AVAILABILITY : On loan from the Canadian Housing Information Centre

ÉTUDE INSONORISATION, LE CLOS ST-ANDRÉ

The project mandate consisted in analyzing the architectural and mechanical plans (ventilation/plumbing/electrical) to ensure that all necessary elements were incorporated in order to obtain an acceptable noise climate in all housing units in this high-rise apartment building. Moreover, theoretical analyses have been conducted to ensure that the operation of certain mechanical equipment does not disrupt the noise climate in the neighbourhood.

During project design and execution, the author made several comments and recommendations. This report contains a summary of all the recommendations that the author submitted during this project.

Prepared by Steve Davidson, Davidson & Associés inc. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 1997. 43 pages

AVAILABILITY : On loan from the Canadian Housing Information Centre

BASEMENTS, FOUNDATIONS & CRAWLSPACES

ECONOMIC ASSESSMENT OF BASEMENT SYSTEM INSULATION OPTIONS

This study updates the 1999 research, the Economic Assessment of Basement Systems, and is part of Performance Guidelines for Basement Envelope Systems and Materials, a joint project of Canada Mortgage and Housing Corporation (CMHC) and the National Research Council's (NRC) Institute for Research in Construction (IRC).

CMHC commissioned this study to update the economic assessment of residential basement insulation options to more accurately reflect the rising costs of basement construction and space-heating energy.

The study's primary objectives were:

1. To update material and labour construction costs for various types of basement systems available in the Canadian housing market;
2. To update energy prices and energy-price escalation rates to take into account expected trends in energy prices;
3. To include a larger basement model to accompany the smaller basement model used in the original study so that the effect of basement size could be compared;
4. To conduct a life-cycle economic assessment taking into account updated construction costs, energy prices and energy-price escalation rates; and
5. To prepare a report on the findings.

Prepared by Ted Kesik of Knowledge Mapping Inc. CMHC Project Manager: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2006. 74 pages (2102 KB)

Note: No. 07-103 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65346)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu al/Economicbasement.pdf

GUIDE TO FIXING YOUR DAMP BASEMENT

Appropriate for homeowners and home inspectors alike, this publication helps diagnose a prevalent problem in housing: damp basements. Damp basements can lead to the development of indoor mold, provoking allergies and other health problems. "A Guide to Fixing Your Damp Basement" provides a quick method for diagnosing moisture problems, and identifying and deciding on the solutions to deal with these problems. The "Guide" assists in diagnosing the problems, provides options for solving these problems, and helps decide on the plan of action required.

Revised edition. Ottawa: Canada Mortgage and Housing Corporation, 2008. v, 71 pages

Order number 65886 **Price: \$9.95 + taxes + shipping charges

Nota : Disponible aussi en français sous le titre : Guide de correction des problèmes d'humidité dans les sous-sols

AVAILABILITY : [CMHC Information Products](#)

BUILDING CODES

CODE REQUIREMENTS AND COST OF INCORPORATING ACCESSORY APARTMENTS IN HOUSES: FINAL REPORT

Accessory apartments are an affordable housing option that meets the needs of many people, including singles, seniors and those with low or fixed incomes, and contributes to optimizing the use of existing housing stock and infrastructure. In order to improve housing affordability, several municipalities have enacted zoning changes that facilitate the provision of accessory apartments. Provincial, Territorial and Municipal building codes have different requirements for this form of housing, with the result that different regulations apply to accessory apartments in many Canadian municipalities.

This research comprises a literature review and consolidation and organization of documents regulating accessory apartments in Canada, evaluates the levels of performance provided by the various building code health and safety requirements and compares them with objectives of the National Building Code, to enable building authorities to assess proposed amendments to building and fire codes. It compares the costs of complying with regulations in different jurisdictions for the construction of a typical basement accessory apartment. Specifically, this research:

1. Lists National Building Code (NBC) and National Fire Code (NFC) provisions governing houses containing one principle residence and one accessory apartment that are distinct from the requirements for a single dwelling. It includes requirements for fire separations, egress, windows, sound control, clearances, heating and ventilation, smoke detection, fire alarms and protected openings;
2. Identifies provincial, territorial and municipal building and fire code requirements that differ from those in the NBC and NFC;
3. Categorizes code requirements in tabular form, with references and exact wording;
4. Evaluates the relative level of performance of the various municipal building and fire code requirements for accessory apartments, compared with the NBC requirements;
5. Proposes means for achieving equivalent levels of performance;
6. Summarizes code requirements in plain English; and
7. Estimates the costs of complying with each code requirement for a typical 60m² basement accessory apartment in existing and new construction.

Prepared by Morrison Hershfield Limited. CMHC Project Officer: Barry Craig. Ottawa: Canada Mortgage and Housing Corporation, 2006. 106 pages (3254 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/codeaccessory.pdf

DEVELOPMENT OF HIGH PERFORMANCE STUCCO FOR DURABLE HOUSING CONSTRUCTION: A PILOT STUDY

This research project, a collaboration between NRC-IRC and CMHC, was conducted in an effort to improve the moisture performance characteristics of stucco cladding by modifying existing stucco design mixes and testing new materials. The experimental work was carried out in two phases. Phase I established the basic moisture-transport properties, water-vapour permeabilities and water-absorption coefficients of four stucco materials currently used in Canada. In phase II, researchers tested four trial high-performance stucco materials having lower water-absorption coefficients but higher water-vapour permeabilities than the base-case stucco materials tested in Phase I.

Authors: P. Mukhopadhyaya; M.K. Kumaran; J. Lackey; N. Normandin. CMHC Project Officer: Silvio Plescia. Ottawa: National Research Council of Canada, Institute for Research in Construction, 2006. 24 pages. (Report no. B-1154.1.)

Note: No. 07-104 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65421)

AVAILABILITY : Canadian Housing Information Centre and CMHC web site
(Highlight) Institute for Research in Construction and
<http://irc.nrc-cnrc.gc.ca/pubs/fulltext/b-1154.1/> (report)

EFFECT OF MESH AND BALE ORIENTATION ON THE STRENGTH OF STRAW BALE WALLS

The objective of this research was to obtain data on the structural performance of straw bale construction to aid prospective home-owners, builders, building inspectors, and engineers. Structural testing of full-scale straw bale walls was carried out in the Structures Lab of the Department of Civil Engineering at Queen's University, Kingston. Test walls were constructed and subjected to compressive loading until failure. The stiffness and strength of each wall was measured, allowing a comparison to be made between various combinations of reinforcement, bale orientation, and plasters. In order to make this research as relevant as possible to the stakeholders, Chris Magwood, a builder and consultant on dozens of straw bale projects in Ontario, was actively involved in defining the most relevant parameter combinations and constructing the wall panels. The Ontario Straw Bale Building Coalition (OSBBC) and other Canadian sources have been consulted.

Prepared by P.I. Colin MacDougall, Department of Civil Engineering, Queen's University. Co-investigators: Chris Magwood, Steve Vardy. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2008. (External Research Program Research Report) 61 pages (4032 KB)

Note: No. 08-107 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 66135)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/EFFECT_of_Mesh\(V\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/EFFECT_of_Mesh(V).pdf)

GYPSUM WALLBOARD CORE STRUCTURE AND EFFECTS ON END USE PERFORMANCE

Gypsum wallboards are used as an interior finishing surface in many Canadian houses. The core structure of gypsum wallboard contributes to the board's end use, fire resistant properties and fastening strength. Commercial boards have core structures which may differ greatly. This research study, funded under CMHC's External Research Program and undertaken by Innogyps Inc., produced laboratory gypsum board samples made from various industry representative chemical foaming agents, produced at various foam densities in order to generate an array of different gypsum core structures to be evaluated. These samples were investigated for 2 major performance parameters; (a) fire resistance (as measured by shrinkage resistance and surface cracking when exposed to high temperatures) and (b) fastening performance (as measured by nail pull testing). In general, it was determined that various core structures at relatively consistent board weights were able to be produced using a lab-scale continuous foam generation system. Average void sizes ranged from 275-750um (as determined by CT scanning). There was no observable affect of core structure on volumetric shrinkage or surface cracking resistance when samples were subjected to 1000 C firing temperatures. Nail pull measurements showed a degree of scatter of results that did not absolutely correlate core structure to nail pull performance but did highlight some potentially strong performing samples.

Prepared by Innogyps Inc. CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2007 (External Research Program Research Report) / CD-ROM

AVAILABILITY : Canadian Housing Information Centre

RELATIONSHIP BETWEEN MOISTURE CONTENT AND MECHANICAL PROPERTIES OF GYPSUM SHEATHING

CMHC sponsored a two-phased research project, the objective of which was to assess the relationship between moisture content (MC) and the mechanical properties of various gypsum-based sheathing products (for example, gypsum panel products intended for use as exterior sheathing on buildings). Specific properties examined included: 1. water absorption; 2. adhesion or delamination of facer material (either glass-fibre mats, treated paper or untreated paper); 3. sheathing's ability to resist fastener pull-through; 4. flexural strength of the sheathing, for seismic considerations and as an index of overall mechanical integrity.

The first phase of the project involved the wetting of the gypsum products to: 1. develop correlations between MC and mechanical properties; and 2. determine maximum acceptable levels for MC of gypsum sheathing as stipulated in the National Building Code for lumber used in construction.

Phase One included also an evaluation of the accuracy of hand-held moisture meters for measuring moisture content of gypsum sheathing and determining the saturation level of moisture content for various types of gypsum sheathing. It contained also a proof-of-concept testing to investigate the performance of gypsum sheathing in situ under controlled environmental conditions.

The objective of Phase Two was to determine whether the mechanical properties of gypsum sheathing could be rehabilitated by drying it out once it had been wetted. Gypsum specimens were wetted to various levels of MC, dried and then tested for flexural strength and resistance to fastener pull-through. Results from the "wetted" samples were then compared to "un-wetted" specimens.

Prepared by Alex McGowan and Martin Gevers, Levelton Consultants Ltd. CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2005-2006. (External Research Program) / CD-ROM (1574 KB)

Note: No. 07-100 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65344)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Moisture_Report_Web.pdf

STRAW BALE CONSTRUCTION IN ATLANTIC CANADA

This report examines the evolution of straw bale construction in Atlantic Canada between the years 1993 and 2006 with the intent of capturing the best straw bale building practices in the region. It is also meant to serve as a general resource for people interested in building with bales, and to strengthen the network of people involved in natural building systems across Canada.

Interviews with thirty-four straw bale owners from Nova Scotia, New Brunswick and Prince Edward Island explore the design and performance of their buildings. They also highlight the decision making processes, particularly those tied to site challenges, that led to their respective designs. Complementing the report is a large format map and a database of the profiled projects, as well as a video documentary of the first Straw Bale Builders Gathering in the region.

While only 34 buildings are documented in this report, more than fifty have been identified in the region (pop. 1,832,000) at the time of writing. As many as ten more will be added to the list in 2007 which underscores the significant concentration of bale building activity in the area, especially in relation to Canada wide statistics i.e. Ontario (population 12,500,000) has approximately 150 bale buildings at this time.

Throughout the report owners comment on remediation strategies, unusual features, and tips they would like to share with other builders. The systems described are typical to those constructed across Canada in recent years, with trends towards non-load bearing walls, less pinning and wiring, and a shift towards more earth and lime plasters and/or rain screens. There are a few examples of bales being used for floor or roof insulation. The majority of buildings in the report average 1,500 - 2,000 sq. ft. (139-185 sq. meters) in size.

Accurate observations on energy consumption were difficult to establish as the majority of the buildings use wood either as a primary or secondary heat source.

Information was gathered on the notorious gang of three: fire, rodents, and rot. None appeared problematic as long as precautions were taken to minimize fire risk, rule out access for critters, and

build in excellent detailing to avoid moisture problems. There are a number of examples where all of the above precautions were not applied, and remediation strategies were employed to address problems that arose. Indicative of the resilience of straw bale building, these strategies have been remarkably successful.

Prepared by Kim Thompson, Straw Bale Projects, Ship Harbour, Nova Scotia. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. ca 62 pages + CD-ROM + DVD (2249 KB)

Note: No. 07-122 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65828)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Straw%20Bale%20Final%20Report\(w\)_july06.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Straw%20Bale%20Final%20Report(w)_july06.pdf)

ETOPIA – CMHC DESIGN CHARRETTE SUMMARY REPORT

In 2004, the partnership of the University of Toronto's Faculty of Architecture, Landscape and Design and ARK Inc., a landscape and architectural firm, organized an urban design charrette as part of the McLuhan International Festival of the Future. Four teams of urban design students, mentored by CMHC staff, University staff and the organizers, proposed interventions on four different sites to envision possible responses to the need of urban densification in the year 2031. The sites considered were: Edwin Ave. Junction Site; Don Mills Shopping Centre Site; Kensington Market Site; and the Docklands Site.

The project brought together multi-disciplinary teams to explore responses to the problems of rapid urban growth and the need for more population density, while considering the influence of Marshall McLuhan's writings on urban and architectural design. Scaled models of the sites were provided, as well as a library of technical materials from CMHC. The final projects were showcased at a panel discussion of experts held as part of a public meeting at the University of Toronto.

Compiled by Mark Chilton and Guela Solow. CMHC Project Officer: Mark Salerno. Toronto: Faculty of Architecture, Landscape and Design, University of Toronto; Architects + Research + Knowledge, Inc. (ARK), Canada Mortgage and Housing Corporation, 2005. 32 pages (1924 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu_al/CHIC_eTOPIA_W.pdf

SOCIAL INCLUSION AND URBAN FORM: AN EXPLORATORY RESEARCH STUDY: FINAL REPORT

Social inclusion has become a topic of growing interest among makers of social policy and researchers. In response, CMHC commissioned research to explore the role that a city's physical attributes, such as the pattern of streets, land use, open spaces, or transportation connections to other neighbourhoods, play in a community's social development. Housing, given its role in the urban landscape, is a major factor for consideration.

This research project explored the link between urban form and social inclusion in a Canadian context. The aim of the study was to review existing research about the impact of urban form and social inclusion; to identify emerging thinking; discover what other research is being done and identify research gaps.

The three-part research strategy consisted of a literature review, interviews with key Canadian informants and a panel discussion. All three approaches tried to answer questions such as:

- What is commonly understood by the term "social inclusion"?
- What are the interactions between urban design and social inclusion and what factors affect them?
- What qualities of physical neighbourhood/community environment and features lead to higher degrees of social inclusion and well-being, and vice versa?
- Are there individual characteristics of community design that play a greater role in contributing to the well-being of the inhabitants, such as parks, public space, mix of housing, other land use and so on?
- What can be learned from existing research about urban form and social integration? What are the main gaps that should be researched? Do those gaps involve quantitative or qualitative research?
- What indicators exist to measure the different dimensions of the relationship between the physical and the social aspects of a neighbourhood or a community?

CITY PLANNING AND HUMAN SETTLEMENTS

Prepared by Margaret Eberle and Luba Serge. CMHC Project Officer: Denis Losier. Ottawa: Canada Mortgage and Housing Corporation, 2007. 95 pages (1158 KB)

Note: No. 07-007 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site. (Order number 65429)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu
al/CHIC_Social_inclusion.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu
al/CHIC_Social_inclusion.pdf)

CONCRETE

STRUCTURAL CONCRETE ASSESSMENT, REPAIR, AND MONITORING TECHNOLOGIES IN CANADA

In March 1997, Canada Mortgage and Housing held a consultative meeting with key individuals in the concrete assessment and repair industry to explore the need to continue to research the repair of structural concrete in multi-unit residential housing in Canada. It was generally agreed at the meeting that there is no consistent approach to assessment and repair, but that a consistent protocol for assessment and repair would be desirable.

While there are guides available to the concrete assessment and repair industry, it is generally recognized that each structural concrete evaluation and repair is unique. Guides include those published by the American Concrete Institute (ACI) in the ACI Manual of Concrete Practice, a five volume set as well as a two-volume set of documents specific to concrete repair. In addition, the Canadian Standards Association (CSA) has published CSA Standard S448.1, "Repair of Reinforced Concrete in Buildings". Moreover, there are numerous refereed technical papers published in Canada and internationally describing techniques, technologies, materials, and methods applicable to concrete assessment and repair. Yet in the face of the plethora of information remains the dilemma of applying the most appropriate repair to the particular structural concrete repair problem.

Ideally, a decision tree would be developed that allowed the assessing consultant to select through an iterative symptom and consequence path, the most appropriate repair. This does not exist in wide circulation. As a first step to that goal, the participants at the March 1997 meeting determined it necessary to establish the current state of the art for concrete assessment and repair. Thus, Canada Mortgage and Housing Corporation initiated this study.

The objective of this study was to report on the most common assessment, repair, and monitoring practices employed by consultants in Canada. This study incorporates the results of a survey of ten consultants across Canada that specialize in concrete assessment and repair.

Prepared by Gerald R. Genge Building Consultants Inc. Principal investigator: Gerald R. Genge. CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2005. 1 CD-ROM

AVAILABILITY : Canadian Housing Information Centre

DEVELOPING A STANDARD SET OF FLEXHOUSING™ / HEALTHY HOUSING™ FLOOR PLANS AND DETAILS FOR NON-PROFIT HOME BUILDERS: FINAL REPORT

The CMHC retained Levitt Goodman Architects to develop a standard set of floor plans, elevations, construction details and specifications for use in the factory production of affordable housing units. The study parameters envisioned that this prototype would be flexible enough to translate into several housing typologies while lending itself to the various techniques of the manufactured housing industry.

A literature review and analysis of selected non-profit projects formed the initial framework for the development of the design. The literature review included designs from a diverse range of examples including Habitat for Humanity's built projects, projects by Dan Hanganu Architect from the early 1980's to 2005 and published material on the Grow Home and Next Home developed by McGill University's Low Cost Housing Program.

Six design principles were established and guided the development of the prototype which addressed all the relevant criteria established at the outset of the study.

No. 1: The prototype is not a fixed set of dimensions.

No. 2: FlexHousing™/Healthy Housing™ concepts incorporated to the maximum extent possible.

No. 3: The prototype should adhere to Universal Design principles wherever possible.

No. 4: The prototype should be adaptable to the full range of manufactured construction processes.

No. 5: The prototype will incorporate conventional construction technology and the typologies will be achievable in combustible construction.

No. 6: The prototype will incorporate energy efficiency beyond code minimums.

The housing typologies envisioned by the study included single family dwellings, semi-detached houses, row houses and small apartment buildings. The prototype module successfully meets the goals of the study, combining to create all of the aforementioned housing types and incorporating established principles of the FlexHousing™ concept developed by the CMHC.

Prepared by Levitt-Goodman Architects Ltd. CMHC Project Officer: Collinda Joseph. Ottawa: Canada Mortgage and Housing Corporation, 2006. 73 pages (4124 KB)

AVAILABILITY : Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu al/FinalFlexHousingReport.pdf

FIN DES ACCORDS D'EXPLOITATION : DÉFIS ET OPPORTUNITÉS POUR LES COOPÉRATIVES D'HABITATION QUÉBÉCOISE

This study deals with the phenomenon of the end of operating agreements for housing co-operatives. An operating agreement is the document signed by the co-operative and a government agency, for example, la Société d'habitation du Québec (SHQ) or Canada Mortgage and Housing Corporation (CMHC). The agreement specifies what form of assistance the co-operative will receive, disbursement procedures for the assistance and the conditions with which the parties must comply—their rights and obligations for the duration of the agreement.

Although there are exceptions, agreements generally run for 25 to 50 years and generally coincide with the duration of the mortgage loan and, depending on the program, with the period of subsidy disbursement. The end of mortgage payments is an opportunity for any homeowner. However, the housing co-operative, because of the nature of its work and because of its clientele, faces several challenges: ensuring that its housing is affordable for its low-income members without relying on operating subsidies or housing assistance; preserving the physical condition of its

COOPERATIVE AND NON-PROFIT HOUSING

dwellings; protecting the collective ownership of its buildings; and, if possible, financing the expansion of its co-operative stock.

The study tries to better define the impacts that the end of operating agreements will have on Quebec's housing co-operatives:

- At the financial level, how will they be positioned at that time? How will they ensure the affordability of their housing without subsidies? Will the amortization of their mortgage loan allow them to balance their budgets while serving their low-income members? Will they be able to maintain the social diversity of their membership?
- At the management level, are the co-operatives well informed and prepared for this eventuality? What decisions must they make now to ensure a smooth transition?
- What will be the state of the co-operative stock once the agreements have expired? Will the co-operatives be able to finance renovations and replacements? Will they be able to contribute to the financing of new housing projects or to expansion?
- In terms of sustainability, is the stock threatened by privatization? How can we preserve the heritage of co-operative housing?

The study tries to assess more precisely the human, financial and legal impacts of this phenomenon, particularly with regard to the housing stock held by Quebec housing co-operatives. After having outlined a profile of the co-operative housing sector, the study presents the content of the operating agreements and their evolution based on the various assistance programs. The first component of the study is a synopsis of the research on operating agreements and their expiration. The study also provides a quantitative description of current agreements and a calendar of their expiration dates, by program category.

The second component is a summary analysis of the impacts that agreement termination will have on social housing stock, as well as the economic, human and legal impacts on housing co-operatives. Economic and human impact analyses are based on two research methods:

- A case study of 25 housing co-operatives that have agreed to inspections of their properties and their financial status;
- A survey of more than a hundred presidents of housing co-operatives.

The study also examines the legal impacts, based on examination of the most recent laws and the original texts of the agreements for the various programs. The study points out obligations stemming from the agreements and obligations that remain after the agreements expire and suggests solutions for the sustainability of co-operative residential stock and its ability to maintain its social contribution.

The third and last component presents opinions collected from experts consulted by the researchers. The study concludes with a summary of the main findings and an attempt to uncover areas that require priority attention.

Study conducted by Confédération québécoise des coopératives d'habitation under the direction of Allan Gaudreault, consulting analyst, Habitation et développement communautaire. CMHC project officer: Jean Gratton. Ottawa: Canada Mortgage and Housing Corporation, 2007 (External Research Program Research Report) ca 138 pages (1307 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/findesaccords_w.pdf

AIR LEAKAGE CONTROL MANUAL FOR EXISTING MULTI-UNIT RESIDENTIAL BUILDINGS

This manual provides guidance to air leakage control (ALC) contractors on how to reduce air leakage in existing high-rise multi-unit residential buildings (MURBs). The objective of the manual is to assist ALC contractors to understand where, how and why MURBs leak so that they can prepare ALC plans that will reduce air leakage.

This Manual provides information on air barrier systems in building envelopes, instructions on how to diagnose air leakage and seal leaks based on currently available materials and technologies. It provides guidance on air sealing measures to reduce air leakage, reduce building energy consumption, improve indoor air quality and occupant comfort in multi-unit residential buildings. Air sealing products and measures are detailed for common air leakage points.

Research Report Housing Technology Series. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2007. 66 pages (3.13 MB) (Order number 65847)

Nota : Disponible aussi en français sous le titre : Guide de réduction des fuites d'air dans les tours d'habitation existantes

AVAILABILITY : Canadian Housing Information Centre and
<http://www.cmhc.ca/od/?pid=65847>

APPROACHING NET ZERO ENERGY IN EXISTING HOUSING

This research project explored the technical feasibility of reducing the energy consumption of existing houses to net zero on an annual basis. The project characterized the energy consumption patterns in existing housing and compiled energy efficiency and energy generation measures. Through this work, the potential for energy reduction, energy storage and renewable energy generation was assessed. The project also considered the trade-offs in comfort, cost, and convenience necessary to attain very low energy consumption in existing housing. This is conceptual

research as the possibility of creating a net-zero-energy house from an existing dwelling is extremely challenging.

The research showed that some houses (e.g. bungalows) and some locations (e.g. Vancouver) had a far better chance of achieving net zero energy usage due to their inherent advantages. Most of the modelled houses were able to attain very low heating energy requirements. The compensating energy production, through solar thermal and photovoltaics, is often limited in effectiveness by roof size and orientation, as well as by high capital costs. The report provides a good background on what is possible for older houses and at what cost. It also provides interesting information on potential wall assemblies for these houses and decision trees on which energy retrofits to select for specific houses.

Prepared by Shawna Henderson, Abri Sustainable Design & Consulting and Chris Mattock, Habitat Design + Consulting. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. 198 pages (4065 KB)

Note: No. 08-104 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 66060)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu al/S60376\(VV\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu al/S60376(VV).pdf)

ENERGY CONSERVATION

ASSESSMENT OF REFLECTIVE INTERIOR SHADES AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY

Past shading experiments at the Canadian Centre for Housing Technology twin-house research facility revealed that opaque exterior shades provide an effective means of reducing air conditioner cooling loads. However, similar trials of interior Venetian blinds provided evidence of only a slight daily savings (<1 per cent) in cooling energy consumption on the clearest days. Unfortunately, exterior shading is not always an option due to location: the exterior of fixed windows on the upper stories of apartment buildings or homes is not easily accessed by residents for temporary shading during summer months. Cost can also be a limiting factor—it is difficult to justify the expense of an elaborate exterior shading system when the cooling season is so short in many parts of Canada. For these reasons, Canada Mortgage and Housing Corporation is interested in finding a simple and inexpensive means of reducing the cooling loads from the interior of the home.

The purpose of this project was to evaluate the potential of a reflective interior shading device to reduce cooling loads, while carefully observing the shade's effect on window temperatures. It was hoped that this device would offer significant savings in cooling consumption, producing energy savings for consumers, and helping to reduce the peak cooling season demands on utilities.

Prepared by M.M. Manning, M.C. Swinton; K. Ruest. CMHC Project Officer: Ken Ruest. Ottawa: Canadian Centre for Housing Technology; Canada Mortgage and Housing Corporation, 2007. 46 pages (1653 KB)

Note: No. 07-102 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65295).

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu_al/Reflective_WEB.pdf

FIRES & FIRE PREVENTION

FIRE PREVENTION IN ABORIGINAL COMMUNITIES - DVD = PRÉVENTION DES INCENDIES DANS LES COLLECTIVITÉS AUTOCHTONES - DVD

Based on CMHC research on the fire prevention in aboriginal communities, this 20 minute DVD addresses the common causes of house fires in Aboriginal communities and suggests how to prevent them. It is intended for use by volunteer firefighters and housing managers to show to members of Aboriginal communities as part of their fire prevention program.

Ottawa: Canada Mortgage and Housing Corporation, 2007. (Order number 65651)

AVAILABILITY : [CMHC Information Products](#)

FIRES & FIRE PREVENTION

FIRE PREVENTION IN ABORIGINAL COMMUNITIES - MANUAL

CMHC developed this Fire Prevention Manual to help volunteer firefighters and housing managers in the effort to establish and improve fire prevention practices in their Aboriginal communities. The research undertaken was prompted by the results of CMHC's 2004 Canadian Housing Fire Statistics Report which presented alarming findings on the incidence of fire and its effects on First Nations communities in Canada. The Manual was developed by speaking with volunteer firefighters in ten different Aboriginal communities. The results of these discussions were then organized into case studies, each describing the prevention efforts of a particular community. Among the many topics discussed in the case studies are candle safety, chimney maintenance, arson prevention, and the beginning and growth of a volunteer firefighting squad. In addition to the ten case studies, the appendices of this Manual contain checklists and tools that volunteer firefighters and housing managers may find useful in planning fire prevention programs and finding more information about fire prevention in general.

Prepared by InterINDigital Entertainment Inc. with the assistance of gordongroup. Ottawa: Canada Mortgage and Housing Corporation, 2007. iii, 46 pages (2..02 MB) (Order number 65310)

Nota: Disponible aussi en français sous le titre : Manuel sur la prévention des incendies dans les collectivités autochtones

Note: No. 07-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65550)

AVAILABILITY : CMHC [Information Products and](http://www.cmhc.ca/od/?pid=65310)
<http://www.cmhc.ca/od/?pid=65310>

GREEN ROOFS

GREEN ROOFS: A RESOURCE MANUAL FOR MUNICIPAL POLICY MAKERS

Green roofs are vegetated roof covers which can improve stormwater management, increase green space in dense urban areas and help reduce a building's contribution to the heat island effect. This Manual is an overview of international and Canadian green roof policies and programs. It features 12 jurisdictions that demonstrate leadership in green roof policy development, and shows how other Canadian and U.S. cities are developing supportive policies. By reviewing the reasons municipalities throughout the world have set green roof policies and programs, policy makers can better determine which policies suit their needs.

Authors: Gail Lawlor, Beth Anne Currie, Hitesh Doshi, Ireen Weiditz. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2006. 146 pages

Nota: Aussi disponible en français sous le titre : Toits verts : Manuel de ressources destiné aux décideurs municipaux

Order number 65255

Note: No. 06-113 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64934)

AVAILABILITY : [CMHC Information Products](#)

GREEN ROOFS

PROGRAMME DE VÉGÉTALISATION DE BÂTIMENT : RAPPORT FINAL

This report is published in two volumes: the final report and a book of appendices to the final report. The report also includes a CD containing the digitized version of the final report and the book of appendices.

The Vivre en ville group is the author of this report, and this group was supported by different financial partners, including CMHC, the City of Québec and the Green Municipal Fund of the Federation of Canadian Municipalities.

The final report examines building greening techniques, including green roofs and walls, as well as green cornices. The report discusses the advantages of greening a building, for example, improving the energy efficiency of the building, reducing runoff water, improving urban air quality, reducing city or air traffic noise and providing additional surfaces.

The authors experimented with new greening technologies using the two buildings of the Centre de la culture et de l'environnement Frédéric Back in the city of Québec. The report presents temperature data and analyzes the energy savings and the reduction in greenhouse gases associated with the greening techniques.

The report establishes a list of indicators, a detailed list of the project costs and a breakdown of the financial contributions. The details of the activities performed are also explained, such as the roofing work, the plumbing work, the planting of the vegetation and the installation of the green cornices and green walls.

Prepared by Vivre en ville, Regroupement québécois pour le développement urbain rural et villageois viable. Québec : Vivre en ville, February 2006. 2 volumes.

Note: No. 07-112 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65302).

AVAILABILITY : On a loan basis only from the Canadian Housing Information Centre

HEATING AND VENTILATION

ASSESSMENT OF NATURAL VENTILATION FOR CANADIAN RESIDENTIAL BUILDINGS

There are generally two types of ventilation in houses: natural infiltration (and exfiltration) produced by stack and wind pressures, and mechanical ventilation by exhaust or intake fans operating across the house envelope. Natural infiltration is variable. This research project used historical data collected in Ottawa by NRC to roughly establish those periods of low natural ventilation - when stack and wind pressures are so low that sufficient natural ventilation does not occur. NRC used modelling and weather data to extend the analysis to other locations in Canada. Tighter houses without window openings in summer were habitually under ventilated. The project results help to establish when and where mechanical systems should be operating to supplement natural infiltration.

Prepared by J.T. Reardon, Institute for Research in Construction, National Research Council Canada. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. 107 p. (2946 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/CHIC_Assessment_Natural\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/CHIC_Assessment_Natural(w).pdf)

ENERGY AND WATER TUNE-UPS FOR MULTI-UNIT RESIDENTIAL BUILDINGS: A GUIDE FOR PROPERTY OWNERS, MANAGERS AND CUSTODIAL STAFF

This manual is a tool to help occupants and property managers to reduce energy and water bills and improve comfort in multi-unit high-rise residential buildings through low-cost and no-cost tune-up measures. It is intended for both rental apartment and condominium buildings (multi-unit residential buildings, or MURBs).

Ottawa: Canada Mortgage and Housing Corporation, 2007. 87 pages (Housing Technology Series)

Nota: Disponible aussi en français sous le titre : Mises au point visant à réduire la consommation d'énergie et d'eau dans les tours d'habitation

AVAILABILITY : Canadian Housing Information Centre and
<http://www.cmhc.ca/od/?pid=65893>

ENQUÊTE DE TERRAIN SUR LA PERFORMANCE DES FILTRES ÉLECTRONIQUES RÉSIDENTIELS

The principal objective of the project was to determine the means by which occupants of a house could easily verify the correct functioning of their electronic filter (e.g., fouling of a white surface), or to make recommendations for the number of times per year that the collecting plates and ionizing wires of an electronic filter should be cleaned. A second objective was to investigate whether heart rate variability, an indicator of cardio respiratory health in a non-resting subject, could be used to establish a link between occupant health and effective domestic air filtration.

Prepared by TN conseil, Conseillers en technologie de l'environnement inc. Principal researcher: Pierre Hosatte. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. 39 pages (3518 KB)

Note: No. 07-117 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65684)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/Enqueteterrain.pdf

BEST PRACTICE GUIDE ON FIRE STOPS AND FIRE BLOCKS AND THEIR IMPACT ON SOUND TRANSMISSION

This Best Practice Guide presents a broad-based consensus on technical solutions relating to the fire resistance and sound transmission aspects of fire stops and fire blocks for those who manufacture, design, specify, install and inspect these systems. The Guide was developed through collaboration of many organizations in the Special Interest Group on Suitable Acoustic and Fire Stop Technologies (SIG-SAFT). The Guide primarily addresses fire stops and fire blocks in the context of Canadian codes and standards. Requirements for fire stops and fire blocks in the National Building Code of Canada (NBCC) are conceptually similar to those in U.S. codes but significant differences between Canadian and American codes, standards, and terminology are identified. The Guide also identifies differences from the NBCC that have been approved in provincial building codes. The Best

Practice Guide is not intended for use as a code document. While the Guide makes extensive reference to the NBCC as the source of requirements for fire stops and fire blocks in Canada, there are situations where best practice may require features beyond the NBCC requirements. These are addressed in many examples in Chapters 7 through 13, which illustrate good practice for fire stops at junctions and penetrations (plumbing, electrical, ventilation), combined with guidance on the corresponding acoustical issues such as noise leaks, plumbing noise, and structure-borne sound transmission. The authority having jurisdiction would decide on acceptance of such solutions, but it is hoped that the Guide will promote more informed and consistent practice across Canada for fire stops and fire blocks.

Prepared for Special Interest Group on Suitable Acoustic and Fire Stop Technologies. Prepared by J.K. Richardson, J.D. Quirt, R. Hlady. CMHC Project Officer: Barry Craig. Ottawa: Institute for Research in Construction, National Research Council of Canada, 2007. 1 volume + CD-ROM

AVAILABILITY : _

<http://irc.nrc-cnrc.gc.ca/pubs/fulltext/nrcc49677/nrcc49677.pdf>

BUILDING ENVELOPE REVIEW GRANDIN GREEN CO-OPERATIVE, EDMONTON, ALBERTA

In 1997 the Communitas Group, a co-operative housing development consulting firm in Edmonton, was in the process of developing and marketing an environmentally friendly, energy efficient high-rise. Communications between Communitas and Canada Mortgage and Housing Corporation confirmed an interest in CMHC providing assistance to Communitas's initiative by way of finding to hire a building envelope consultant. CMHC would in return receive a report on the implementation of the building envelope design, and comments on its preliminary Best Practices Guide for exterior insulation finish systems.

Building Science Engineering Ltd. was retained by the Communitas Group Ltd. to provide consulting engineering services with respect to the building envelope at Grandin Green Housing Co-operative in Edmonton. The work included a computer simulation of the hygro-thermal properties of the proposed exterior walls, commissioning of the air barrier system, site review of the building envelope during construction, verification of construction specifications and details, and a review of the application of the preliminary CMHC Best Practice Guide for exterior insulation finish systems to the Grandin Green project.

Prepared by Building Science Engineering Ltd., The Communitas Group Ltd. Ottawa: Canada Mortgage and Housing Corporation, 2002. 1 volume in various pagings

AVAILABILITY : On loan from Canadian Housing Information Centre

INFRARED THERMOGRAPHIC INSPECTION OF THE EXTERIOR WALLS, LES CLOS CONDOMINIUMS, MONTREAL

This report contains the images of the infrared thermographic inspection of the exterior walls of Les Clos Condominiums. While the images are labeled, there is no additional text.

Prepared by Tony Colantonio, Technology Architecture and Engineering Services, Real Property Services Branch, National Capital Office, Public Works and Government Services Canada. CMHC Project Officer: Sandra Marshall. Ottawa: Public Works and Government Services Canada, 2000. 20 pages

AVAILABILITY : For consultation at the Canadian Housing Information Centre

MONITORAGE DE L'ENVELOPPE THERMIQUE DU CLOS ST-ANDRÉ : RAPPORT FINAL

The Clos St-André won the IDEAS Challenge for the Quebec Region. The IDEAS Challenge was an initiative by the Canada Mortgage and Housing Corporation and Natural Resources Canada in collaboration with several participants from the Canadian construction industry. The objective of the Challenge was to submit plans for high-rise apartment buildings with higher standards for the construction and integration of systems that optimize energy efficiency, interior air quality, the building envelope, accessibility and environmental protection.

The project involved comparing the in-situ performance of two walls constructed at the Clos St-André, on a seasonal basis from April 1996 to March 1997; one wall was covered in brick and the other had a metal frame. More specifically, the first wall was built with clay brick, an air space, semi-rigid insulation, exterior gypsum, 92-mm metal studs with insulation batts, aluminum foil insulation (vapour barrier), metal furring, an interior air space and interior gypsum. The second wall was similar, with the exception of the insulation batts and aluminum foil. These were replaced by an air space (void) and a thin aluminum membrane (Thermo-Foil). The first wall was called the Model Wall and the second wall, the Thermo-Foil Wall.

This report evaluates the performance of the two walls by analyzing monitoring data from data acquisition systems installed and managed by the Société d'informatique et de recherche pour l'industrie de la construction (SIRCON), a member of the Clos St-André team. It summarizes, in three chapters, the description of the experimental walls, the monitoring equipment, the observations recorded at the Clos St-André and an analysis of the results. Chapter 2, "Location of the Monitoring Site," describes the location of the building and the wall sections studied. It also explains how compartments were put in place during construction. Chapter 3, "Monitoring," identifies the equipment and the objectives being pursued and presents the various performance indexes and indicators to be analyzed. Moreover, one section comments on the installation of the onsite probes during construction. Lastly, Chapter 4, "Results," tabulates the data obtained over the course of the project and evaluates the performance of the walls based on air movement parameters (controlling air leaks), thermal resistance and condensation (migration of water vapour and rain).

Prepared by PFA Ltée. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2002. ca. 102 pages

AVAILABILITY : On loan from Canadian Housing Information Centre

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

MONITORED PERFORMANCE OF AN INSULATING CONCRETE FORM MULTI-UNIT RESIDENTIAL BUILDING: FINAL REPORT

A research project was undertaken to study the thermal and air leakage performance of an apartment building constructed with an insulated concrete forming system. Temperature sensors were installed in the walls on all elevations and at varying heights of the building during construction so that temperature profiles across the wall sections could be monitored. Additionally, airtightness testing was undertaken to assess the air leakage characteristics of the completed building. A thermographic survey of the ICF wall system was also undertaken to assess the system for thermal bridging. The research project found that while ICF walls offer a relatively well-insulated building envelope system, there was no apparent benefit of the thermal mass of the concrete that could be described in terms of an effective insulating value. However, the ICF wall system produced a remarkably airtight building and was highly effective at isolating exterior conditions from interior conditions.

Prepared by Enermodal Engineering Limited. Prepared for Canada Mortgage and Housing Corporation, Ready Mix Concrete Association of Ontario, Premier Project Consultants and Jamesway Construction Corporation. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2006. 74 pages (7797 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Monitored_Performance\(w\)_dec12.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Monitored_Performance(w)_dec12.pdf)

HOMELESSNESS

EXITS AND RETURNS: AN EXPLORATORY LONGITUDINAL STUDY OF HOMELESS PEOPLE IN WINDSOR-ESSEX COUNTY

Research indicates that a significant number of homeless people have experienced multiple episodes of homelessness. The 'homeless career' of an episodically homeless person is characterized by a recurring pattern of exits and returns to homelessness interspersed with periods of housing. Thus, for episodically homeless people, the issue is not only getting housing and exiting homelessness but staying housed or if there is a need to move, making a transition to new housing without returning to homelessness. The theoretical and research literature on homelessness suggests that a complex interaction of multiple factors determine exits and returns to homelessness.

This study, an exploratory longitudinal study, attempted to understand the dynamics that underlie such exits and returns. The study set out to accomplish the following four interrelated research objectives: (1) examine exits and returns to homelessness among homeless people in Windsor over a one year period; (2) examine the relationship between various factors and exits and returns to homelessness; (3) using a qualitative research methodology, illuminate the nature and dynamics underlying exits and returns to homelessness over time in order to better understand factors that facilitate exits from homelessness and inhibit a return to homelessness; and (4) map and document a longitudinal research strategy that can be used to explore and understand the 'homeless careers' of people who have experienced multiple episodes of homelessness.

Prepared by Uzo Anucha, Lisa Smylie, Colleen Mitchell and Francisca Omorodion. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2007. 101 pages (673 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/CHIC_Study_Homeless_PeopleMay24.pdf

HOMELESSNESS

HOUSING OPTIONS UPON DISCHARGE FROM CORRECTIONAL FACILITIES: FINAL REPORT

This study examined current programs that assist offenders in finding suitable housing at the time of release from provincial and federal correctional facilities in Canada. The research focused mainly on British Columbia, Ontario and Quebec.

The research was guided by the following questions:

- (1) What services are available for re-housing on release from federal and provincial facilities?
- (2) For three selected provinces, what services are available for men, women and youth for re-housing on release (federal and provincial facilities)?
- (3) Which interventions are believed to be most effective (e.g., release planning, parole, halfway houses)?
- (4) What services are missing?
- (5) What assistance is available to people entering correctional facilities in different provinces to retain their housing?
- (6) How do services vary for men, women and youth? How do they vary for other groups (e.g., Aboriginals, other cultural groups)?

Prepared by Rochelle Zorzi ... et al., Cathexis Consulting Inc. CMHC Project Officer: Anna Lenk. Co-funded by Canada Mortgage and Housing Corporation and the National Homelessness Initiative. Ottawa: Canada Mortgage and Housing Corporation, 2006. 142 pages (1927 KB)

Note: No. 07-001 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65340)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu_al/HousingOptionsw.pdf

HOUSE CONSTRUCTION

LET'S CLIMB ANOTHER MOLEHILL: AN EXAMINATION OF CONSTRUCTION, DEMOLITION AND RENOVATION (CRD) WASTE DIVERSION IN CANADA AND ASSOCIATED GREENHOUSE GAS EMISSION IMPACTS

This report examines the composition, generation and management practices of construction, renovation and demolition (CRD) wastes and activities as well as the regulations and markets that affect them. Research was completed in collaboration with project and site stakeholders from 15 case studies. Objectives included testing the application of on-site Waste Management Action Plans (WMAPs) to determine their affects on project management, as it relates to waste diversion. An important outcome of the project is progress towards the development of an "on-site" tool, targeted at stakeholders who are involved in managing CRD activities.

Prepared by the Recycling Council of Ontario. With funding support from Region of Peel, Canada Mortgage and Housing Corporation, Public Works and Government Services Canada, New West Gypsum Recycling, Walker Industries and the Enhanced Recycling Program of the Government of Canada Action Plan 2000 on Climate Change (managed by the Minerals and Metals Sector of Natural Resources Canada). CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2005. ca. 155 pages

AVAILABILITY : On a loan basis from Canadian Housing Information Centre

MANUAL FOR SCREENING OF BUILDINGS FOR SEISMIC INVESTIGATION

This manual presents a rapid screening procedure for ranking buildings in an inventory for more detailed seismic evaluations. The procedure is intended to precede and be compatible with the NRC document "Guidelines for Seismic Evaluation of Existing Buildings" which is compatible to the National Building Code of Canada. The methodology adopted in this manual is based on identifying the main features of any building affecting risk of seismic hazards and the importance of the building as determined by its use and occupancy. A numerical scoring system is used which is related to the earthquake requirements of the National Building Code of Canada. It must be emphasized that this method is not an evaluation for seismic adequacy, but merely a screening procedure to rank buildings that should be evaluated in more detail.

A seismic screening procedure is presented which is based on a rapid inspection of each building or its drawings. Information for each building is collected on a standard seismic screening form, which is used to obtain a score for a seismic priority index for each building. The scores are then used to rank all buildings of the inventory for detailed seismic evaluation, screening out those which require further consideration. This manual provides the inspector with background information and data required to complete the form.

Prepared by Institute for Research in Construction, National Research Council of Canada. Funded by Department of National Defence, Canada Mortgage and Housing Corporation, City of Vancouver, British Columbia Building Corporation, Institute for Research in Construction. Ottawa: Institute for Research in Construction, National Research Council of Canada, 1992. 95 pages

Note: Issued also in French under the title: Manuel de sélection des bâtiments en vue de leur évaluation sismique

AVAILABILITY : On a loan basis from Canadian Housing Information Centre

SEISMIC PERFORMANCE OF WOOD-FRAME RESIDENTIAL CONSTRUCTION IN BRITISH COLUMBIA

The Earthquake 99 Project was a major research initiative undertaken at University of British Columbia. The main objective of this multi-year project was to evaluate and assess earthquake damage for residential wood frame construction by means of full-scale shaking table earthquake simulation tests. The goal of the project was to develop cost-effective guidelines and recommend changes to be made to current design and construction practices that would result in safe and better performance of residential construction during severe earthquakes.

The Earthquake 99 Project was supported by the following organizations: Simpson Strong-Tie Co., Inc., Forest Renewal BC, Natural Science and Engineering Research Council of Canada, Canada Customs and Revenue Agency, Canada Mortgage and Housing Corporation, National Research Council of Canada, British Columbia Ferry Corporation, the Advanced Systems Institute of BC and the UBC Department of Civil Engineering.

A financial grant from Canada Mortgage and Housing Corporation allowed Dr. Carlos Ventura and Dr. Timothy White both from the Earthquake Engineering Research Facility, Department of Civil Engineering, University of British Columbia, to analyse and evaluate in detail all the shake table data obtained during the experimental part of the Earthquake 99 project and use this information to calibrate and refine computer models of wood frame residential construction, which can be used to

determine the expected seismic performance of British Columbia construction during severe earthquakes.

The CD-ROM includes selected videos, photos, the report appendices and the following documents:

- The Earthquake 99 Project: Seismic Shake-Table Testing of Wood-Framed Residential Construction. Prepared by Carlos E. Ventura and Graham W. Taylor (2003)

HOUSE CONSTRUCTION

- Earthquake 99 Project: Laboratory Test Results Volume I Edition I Overview Report. Prepared by TBG Seismic Consultants Ltd. (2002)
- Static and Dynamic Earthquake Testing of Rainscreen Stucco Systems for British Columbia Residential Wood Frame Construction. Prepared by G.W. Taylor, H.G.L. Prion, C.E. Ventura and M. Kharrazi. Revised. (2003)
- Vibration Characteristics of Single-Family Woodframe Buildings. Prepared by Mehdi Hadj Karim Kharrazi (2001)
- Report: Soil Hazard Map of the Lower Mainland of British Columbia for Assessing the Earthquake Hazard Due to Lateral Ground Shaking. Prepared by Patrick A. Monahan.
- Seismic Performance of Wood-Frame Residential Construction in British Columbia EERF Report no. 06-02 Suggested Minimum Strength Requirements. Prepared by Dr. Timothy White and Dr. Carlos Ventura (2006)
- Seismic Performance of Wood-Frame Residential Construction in British Columbia EERF Report no. 06-03 Technical Report. Prepared by Dr. Timothy White and Dr. Carlos Ventura (2006)
- Static and Dynamic Testing of Shear Wall Panels for Typical Wood Frame Residential Construction in British Columbia. Prepared for TBG Seismic Consultants Ltd. by Jachym Rudolf, Dr. Carlos Ventura and Dr. Helmut Prion
- Seismic Performance of Rainscreen Stucco. Prepared by Graham W. Taylor ... et al.
- Report: Soil Hazard Map of Greater Victoria for Assessing the Earthquake Hazard Due to Lateral Ground Shaking. Prepared by Patrick A. Monahan.

CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2007. 1 CD-ROM

AVAILABILITY : Canadian Housing Information Centre

HOUSING

INDIVIDUALISATION DES COMPORTEMENTS ET MODES D'HABITER

The second half of the last century was strongly marked by a change in living options, and the strong wind of individualization that is blowing over developed societies has generated a proliferation of one-person households. Without any distinction, this phenomenon is affecting all members of society and being felt throughout Canada. After reviewing the situations prevailing in Toronto, Vancouver and Montréal, the study focuses on the housing conditions and residential mobility of single persons aged from 25 to 54 years in the Montréal metropolitan area.

Prepared by Daniel Gill and François Charbonneau, Institut d'urbanisme, Université de Montréal. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 166 pages (2658 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/FREjan10.pdf

HOUSING

INNOVATIVE APPROACHES TO HOUSING AND COMMUNITY PLANNING IN JAPAN

This report is based on research in Japan during the summer of 1999, while the author was a Visiting Scholar at the Science University of Tokyo. The report responds to CMHC's request to document a range of innovative approaches to housing and community planning in Japan that might have practical application in Canada. The report focuses on:

- Planning and land use regulations specifically in relation to the issues of sustainability and climate change (i.e. reduction in greenhouse gas emissions).
- The application of building codes and standards including the role of inspections and codes of quality assurance, liability and the encouragement of innovation.
- Financing mechanisms and support in home ownership and rental housing.
- Approaches to addressing the housing needs of seniors, homeless persons and persons with disabilities.

Prepared by David Gurin. Ottawa: Canada Mortgage and Housing Corporation, 1999. 25 pages

AVAILABILITY : On loan from the Canadian Housing Information Centre

HOUSING AFFORDABILITY

AFFORDABLE HOUSING INITIATIVE EVALUATION PLAN

The Affordable Housing Initiative (AHI) was announced in 2001 as a collaborative initiative between the federal and the provincial and territorial governments. The Initiative was implemented under The Framework for Bilateral Agreements Aimed at Affordable Housing (November, 2001). This is a multilateral framework agreed to by federal, provincial and territorial housing ministers that sets out the parameters of bilateral F/P and F/T Affordable Housing Program Agreements (AHPAs). Under these agreements, the provinces and territories determine priorities for funding and design and deliver the programs within agreed parameters.

The federal government has allocated \$1 billion in funding for the AHI, and provincial and territorial housing agencies and other contributors are expected to bring total expenditures to at least \$2 billion.

The accountability frameworks attached to the bilateral Affordable Housing Program Agreements stated that CMHC is responsible for leading a Canada-wide evaluation of the AHI, and that the provinces and territories will be invited to participate in the design and conduct of the evaluation. In Quebec, the SHQ will evaluate its affordable housing activities and provide related information to CMHC for the Canada-wide evaluation report.

The two key purposes for this evaluation are: (1) to report on the relevance, success, and cost-effectiveness of the two phases of AHI expenditure and (2) to inform decisions about whether to continue or modify the initiative or to let it lapse.

The evaluation plan provides a description of the AHI and its logic and outlines evaluation issues, data sources and analytical methods to be used. An evaluation timetable is included.

Ottawa: Audit and Evaluation Services, Canada Mortgage and Housing Corporation, 2008. 41 p.ages (1730 KB)

Disponible aussi en français sous le titre : Plan d'évaluation de l'initiative en matière de logement abordable

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/hResearch_Reports-Rapports_de_recherche/eng_unilingual/Initiative_evaluation_plan\(w\)_jan08.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/hResearch_Reports-Rapports_de_recherche/eng_unilingual/Initiative_evaluation_plan(w)_jan08.pdf)

AFFORDABLE HOUSING STUDY FOR THE CITY OF ST. JOHN'S

The City of St. John's, through its Planning and Housing Standing Committee, sponsored an Affordable Housing Study. An Advisory Committee, chaired by Councillor Shannie Duff, was established to oversee the study. The purpose of the study was to:

1. identify the current supply and scope of affordable housing in St. John's;
2. consider the changing demand for affordable housing based on demographic and other trends with forecasts of housing requirements;
3. comment on the capacity of the City and that of other stakeholders to respond to this demand;
4. define the role of the City and its responsibilities in the development and delivery of affordable housing along with that of other stakeholders; and
5. develop an Action Plan for Affordable Housing for the period to 2016.

This report and Action Plan for affordable housing in St. John's arises from the information collected during the study phase including the assessment of the existing portfolio as contained in the separate Background Report, interviews and consultations with clients and stakeholders, research and analysis. This report was undertaken in partnership with the City of St. John's, Service Canada, and CMHC.

Submitted by the Institute for the Advancement of Public Policy, Inc. in collaboration with Auspex Consulting, Inc. Submitted to: Planning and Housing Standing Committee, City of St. John's. CMHC Project Officer: Brian R. Martin. St. John's, Newfoundland and Labrador: Institute for the Advancement of Public Policy, Inc., 2007. 2 volumes: Volume 1: Project Report and Action Plan (2.24 MB); Volume 2: Background Report: Affordable Housing Stock, Gaps, Trends, & Key Issues (904.52 KB)

AVAILABILITY : _

<http://www.stjohns.ca/cityhall/pdfs/Housing%20Study%20Project%20Report-20071125.pdf>

[Http://www.stjohns.ca/cityhall/pdfs/Housing%20Study%20Background%20Report-20070725.pdf](http://www.stjohns.ca/cityhall/pdfs/Housing%20Study%20Background%20Report-20070725.pdf)

GROWTH MANAGEMENT AND AFFORDABLE HOUSING IN GREATER TORONTO

This research explored 3 hypotheses:

- 1) Housing stock characteristics are large contributors to emerging Greater Toronto Area patterns of poverty in inner suburbs and lack of social mix in outer suburbs.
- 2) These patterns are distinctly different from the Greater Toronto Area a generation ago and are becoming similar to those in comparable city-regions.
- 3) Other cities' efforts to address such issues through growth management point to making affordable housing a part of regional growth management in Toronto.

The following research questions were addressed:

- 1) To what extent in Greater Toronto are the two trends of lack of income and housing diversity and concentration of lower-income households in inner older suburbs a) occurring in ways different from a generation ago; b) associated with housing stock trends; and c) related to each other?
- 2) What are the main causes and implications of such patterns in Toronto and other comparable cities in key dimensions such as income, migration, housing production and neighbourhood change?
- 3) What are the salient concepts, experience and lessons from the U.S. and other research on growth management vis-a vis these trends and challenges and affordable housing?
- 4) What does all this imply for the need, the potential and the limitations for affordable housing as an aspect of regional growth management for Greater Toronto?

Prepared by Greg Suttor. CMHC Project Officer: Doug Pollard. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Research Report) 271 pages (3980 KB)

Note: No. 07-011 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65560)

AVAILABILITY : Canadian Housing Information Centre and

[ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingu al/Growth_Management\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingu al/Growth_Management(W).pdf)

BARRIERS AND OUTCOMES IN THE HOUSING SEARCH FOR NEW IMMIGRANTS AND REFUGEES: A CASE STUDY OF BLACK AFRICANS IN TORONTO'S RENTAL MARKET

While Toronto is Canada's traditional main "port of entry" for new immigrants as well as the country's largest and most culturally diverse city, it is also one of the most expensive housing markets in Canada. Studies have found that new immigrants to Canada are likely to face the greatest affordability problems in this housing market.

This study looked at three groups of Black, Portuguese-speaking immigrants and refugees – from the former Portuguese African colonies of Angola, Mozambique and the Cape Verde Islands – who arrived in Toronto between 1990 and 2006. The key questions in this study were: What barriers do these groups face in the private rental housing market? Does race or skin colour matter in looking for and locating rental housing in Toronto?

The two-part research strategy consisted of a literature review and a questionnaire survey that was administered in Toronto to immigrants and refugees who were born in Angola, Mozambique and Cape Verde Islands.

Prepared by Carlos Teixeira. Ottawa: Canada Mortgage and Housing Corporation, 2007. (External Research Program Research Report) 97 pages (904 KB)

AVAILABILITY : [Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Barriers_and_Outcomes_\(W\).pdf](http://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Barriers_and_Outcomes_(W).pdf)

HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE MONTRÉAL METROPOLITAN AREA

This report is part of a larger project on the housing situation and needs of new immigrants in the Montréal, Toronto and Vancouver metropolitan areas, jointly funded by Canada Mortgage and Housing Corporation and the National Homelessness Initiative, as part of their contribution to the Metropolis Project.

Drawing on a wealth of new information about the housing situation of immigrants, the authors examine four topics. The report begins with a review of the history of immigration in the Montréal metropolitan area and recent trends in the Montréal housing market. The aim is to set the context for understanding the social and housing circumstances that immigrants encounter in Montréal upon arrival.

The next section reviews the housing conditions of immigrants currently living in the metropolitan area. In this section, the authors emphasize the effects of immigrant status, period of arrival, and ethnic and visible minority status on immigrants' housing. Drawing on special tabulations from the 2001 census (made available by Statistics Canada to researchers affiliated with the Metropolis Project), and where possible invoking comparisons with 1996 census data, they examine how the housing situations of immigrants differ from those of their children and other Canadian-born. They investigate the impact of period of arrival on tenure, housing costs, and income. Further disaggregating the immigrant population in Montréal, they also explore differences in housing situations across visible minority subgroups and ethnic origins.

The description of immigrants' access to homeownership is followed by a detailed analysis of Montréal residents who are experiencing affordability problems. Following conventions developed by Canada Mortgage and Housing Corporation, the authors describe the housing costs and household incomes of immigrant households spending at least 30 percent of total pre-tax income on housing, as well as those of a smaller group of immigrant households spending at least 50 percent of total income on housing. Again, the immigrants are disaggregated by immigrant status, period of arrival, visible minority subgroups and ethnic origins.

Information from the first wave of the Longitudinal Survey of Immigrants to Canada (LSIC), conducted by Statistics Canada and Citizenship and Immigration Canada on a representative sample of immigrants who landed in Canada between October 2000 and September 2001, allows the authors to explore how very recently-arrived immigrants find housing and the extent to which their initial housing situations are affordable, adequate and suitable. The LSIC data also enable us to distinguish immigrants on the basis of their immigration class—information not collected for the census. Previous research, based on single case studies or surveys in a single city (Renaud 2003; Rose and Ray 2001; Murdie 2005; Bezanson 2003), has suggested that refugees and refugee claimants have more difficulty than other classes of immigrants finding appropriate housing. The LSIC sample includes refugees selected overseas, but not refugee claimants or others whose immigration papers were processed from within Canada. The LSIC information allows us to explore how immigration class at landing affects housing outcomes in a single metropolitan area, to relate these findings to the local housing market, about which we have detailed information, and to situate the results in a comparative context.

Prepared by Damaris Rose, Annick Germain, Virginie Ferreira, INRS-Urbanisation, Culture et Société, Institut national de la recherche scientifique. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 96 pages (928 KB)

Nota : Disponible en français sous le titre : La Situation résidentielle et les besoins en logement des immigrants récents dans la région métropolitaine de Montréal

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_bilingual/MontrealWV.pdf

HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE MONTRÉAL, TORONTO, AND VANCOUVER CMAS: AN OVERVIEW

This overview provides a synopsis of the findings of a large comparative study of immigrants in the housing markets of Canada's largest metropolitan centres, Montréal, Toronto, and Vancouver. It describes the changing trajectories of immigrants within the housing markets of these three cities, summarizes the housing characteristics of the immigrant population compared with the Canadian born, then focuses on households that are in vulnerable circumstances. Finally, an analysis of the Longitudinal Survey of Immigrants to Canada (LSCIC) provides insight into the experience of immigrants in the housing market within their first few months of settlement.

Prepared by Daniel Hiebert, Annick Germain, Robert Murdie, Valerie Preston, Jean Renaud, Damaris Rose, Elvin Wyly, Virginie Ferreira, Pablo Mendez, and Ann Marie Murnaghan. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2007, c2006. (Research Report - Distinct Housing Needs Series) 48 pages (Order no. 65319)

Note: No. 07-018 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65682)

Nota : Publié aussi en français sous le titre : Aperçu de la situation et des besoins en matière de logement des immigrants récents dans les RMR de Montréal, Toronto et Vancouver

AVAILABILITY : CMHC Information Products and
<http://www.cmhc.ca/od/?pid=65319>

RESEARCH REPORT ON MARKET OPPORTUNITIES IN CHINA

This report:

- provides an overview and an analysis of China's real estate market;
- outlines challenges and difficulties for the Canadian housing industry in the China market;
- describes the factors that have lead some Canadian companies to be successful in the Chinese market;
- lists key issues to remember when doing business in China;
- lists Canadian housing products that have the best opportunity for success and outlines specific business opportunities for Canadian manufacturers in the Chinese real estate market.

*Prepared by Gary Liu, ACICC Trading International Co., Ltd. CMHC Project Officer: Tulio Conejeros.
Ottawa: CMHC International, c2007. 16 pages*

Nota : Publié aussi en français sous le titre : Rapport de recherche sur les débouchés commerciaux en Chine

AVAILABILITY : Product is available on the web at

http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/RR_Market_Opportunities_china_en.pdf

RESIDENTIAL GREEN BUILDING INDUSTRY IN THE U.S.A. AND OPPORTUNITIES FOR CANADIAN MANUFACTURERS

The Canadian industry requires better intelligence on the green building movement in the USA to assist in making export business decisions. The research provides a description of the main factors driving the construction of green buildings, criteria for defining green products and buildings, identification of the main organizations involved in this area, explanation of the major programs and product rating systems, and recommendations on how best to take advantage of this rapidly growing area of the construction industry in the USA.

Ottawa: CMHC International, c2007. 37 pages (1.38 MB)

Nota : Disponible aussi en français sous le titre: Secteur de la construction résidentielle écologique aux États-Unis et occasions d'affaires pour les fabricants canadiens

AVAILABILITY : CMHC [International and](http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Green_Report_EN.pdf)

http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Green_Report_EN.pdf

CANADA MORTGAGE BONDS PROGRAM EVALUATION: FINAL REPORT

This is a detailed evaluation report on CMHC's Canada Mortgage Bond (CMB) program. Under this program, bonds are issued to investors by the Canada Housing Trust (CHT), with the guarantee of the Government of Canada, as provided through CMHC, of the full and timely payment of the bonds' interest and principal.

The report found that the CMB program has benefited financial institutions and home buyers across Canada by lowering the cost of mortgages, and has played a stabilizing role in the Canadian housing market.

Overall, the CMB program evaluation found that the original reasons for starting the CMB program are still valid and that the objectives during its first five years have been met. From 2001 to the end of 2006, \$97.6 billion in CMB were issued. By the end of 2006, the program was saving Canadian mortgage borrowers up to \$174 million per year, and from 2001 to 2006, the savings have been as much as \$400 million.

Other key findings of the evaluation report show the CMB program:

- provided lower cost mortgage funding to financial institutions;
- resulted in savings to mortgage borrowers;
- increased the availability of mortgage funding to smaller lenders; and
- provided a way for investors to access capital markets for residential mortgage funding.

The evaluation was conducted by CMHC in consultation with Department of Finance, the Bank of Canada and Treasury Board and with the assistance of external consultants.

Prepared by KPMG LLP. Ottawa: Audit and Evaluation Services, Canada Mortgage and Housing Corporation, 2008. 123 pages.

Nota : Disponible aussi en français sous le titre : Évaluation du Programme des obligations hypothécaires du Canada : rapport final

AVAILABILITY : The evaluation report can be found on CMHC's website at:
<http://www.cmhc.ca/en/hoficlincl/in/camobo/upload/CMB-Evaluation-Jun08.pdf>

DEVELOPMENT OF A HOUSING POLICY SIMULATION MODEL: A REVIEW OF A REGIONAL CGE MODEL FOR HOUSING POLICY ANALYSIS IN CANADA

The purpose of this project was to assess the feasibility of creating a housing policy simulation model for Canada based on Rainer vom Hofe's 2002 PhD dissertation entitled "A Regional Computable General Equilibrium (CGE) Model for Housing Policy Analysis: The Case of New York State". It reviewed vom Hofe's dissertation, with a view to understanding the workings of the CGE model. It assessed the potential applications of the CGE model, with and without modification, in simulating Canadian policy with housing implications. Finally, it discussed the feasibility, in terms of benefits, costs, data and timing, of developing a housing policy simulation model for Canada.

Prepared by Regionomics. CMHC Project Officer: Kamal Gupta. Ottawa: Canada Mortgage and Housing Corporation, 2007. 194 pages

AVAILABILITY : On a loan basis only from the Canadian Housing Information Centre

CANADIAN HOUSING OBSERVER

CMHC's flagship publication, the Canadian Housing Observer, presents a detailed review of housing trends in Canada and the key factors behind them, combining national coverage with provincial and metropolitan detail. The Observer is published annually and is available in print and electronic formats.

The 2007 Observer's feature article discusses approaches, such as CMHC's EQUilibrium housing initiative, for improving the sustainability of housing, particularly through increased energy efficiency and reduced water consumption. There is also a discussion of housing conditions based on the annual Statistics Canada Survey of Labour and Income Dynamics (SLID).

The 2008 Observer's feature article focusses on Housing Need and also provides a look at northern housing and how those living in Canada's north are addressing the unique challenges through innovations in design and materials.

The print publication of the Observer is complemented by a broad range of online housing market and housing conditions statistical information on the CMHC website.

Ottawa: Canada Mortgage and Housing Corporation, 2007-2008.

Nota : Disponible aussi en français sous le titre : L'Observateur du logement au Canada

AVAILABILITY : CMHC Information Products and
<http://www.cmhc.ca/od/?pid=65704> (Canadian Housing Observer 2007)
[Http://www.cmhc.ca/od/?pid=66137](http://www.cmhc.ca/od/?pid=66137) (Canadian Housing Observer 2008)

HOUSING MARKET

ANALYSE DE LA STRUCTURE DU MARCHÉ IMMOBILIER DE MONTRÉAL

The housing market across Quebec and in the Montréal metropolitan area has been exceptionally dynamic for the past few years. In the mid-1990s, there were fewer than 8,000 housing starts annually in the Montréal metropolitan area. Since 2002, this number has reached more than 20,000 units annually. In addition to the rise in housing starts, housing prices have also increased significantly in recent years.

There are more and more articles on this issue in newspapers and trade magazines. Some talk about real estate bubbles. Others point out that the pressure exerted in Montréal just represents a normal recovery, after some difficult years. For other stakeholders, the current situation is due to structural changes that will affect the market for several more years. What is happening exactly? This question is justified in that a better understanding of this phenomenon will provide a better grasp of housing market trends.

Canada Mortgage and Housing Corporation, in cooperation with the Société d'habitation du Québec, wanted to document this phenomenon.

This study aims to:

- determine if the trends observed on the housing market in the Montréal area are attributable to structural or cyclical changes;
- identify these changes and their scope and assess whether they are temporary or permanent; and
- define the impacts of these changes on the housing market in the coming years.

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These analyses are completed through a survey of market stakeholders to gather their perceptions. The reflection is then extended to the other metropolitan areas across Quebec, namely, Gatineau, Sherbrooke, Québec, Trois-Rivières and Saguenay, in order to analyze the market conditions.

Prepared by Daniel Arbour & Associés. CMHC Project Manager: Bruno Duhamel in cooperation with the Quebec Market Analysis Centre and the Société d'habitation du Québec. Ottawa: Canada Mortgage and Housing Corporation, 2006. 236 pages (2913 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/S90009jan12_07.pdf

HOUSING RESEARCH

HOUSING ISSUES OF SEASONAL WORKERS IN CANADA: AN ANALYSIS REPORT

Using existing data and interviews with industry sector councils, this study documents the nature of the housing issues seasonal workers face across Canada. First, it provides a description of the seasonal work force, identifying the most highly seasonal occupational and industry groups. It then describes the demographics and characteristics of seasonal workers themselves with regards to age, gender, education, skill levels and other relevant factors. Finally, this study provides an in-depth look at the housing issues seasonal workers face, with a special focus on the role of employers in addressing these issues.

Prepared by Praxis Research & Consulting Inc. CMHC Project Officer: Bruno Duhamel. Ottawa: Canada Mortgage and Housing Corporation, 2007. 231 pages (1633 KB)

Note: No. 07-010 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65553)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/HousingissuesseasonalIV.pdf

INDOOR ENVIRONMENT

OIL-FIRED APPLIANCE DEPRESSURIZATION SPILLAGE TESTING

It has been impossible to find oil-fired equipment designed to work in houses with negative pressures. House depressurization can cause combustion, which creates objectionable odours and may have health implications. This research report relates how one manufacturer of oil appliances investigated solutions for spillage and odours.

Spillage from combustion appliances in Canadian homes is a complex problem. The frequency and severity of combustion spillage is affected by the airtightness level of the house, the way the equipment is installed and the use of other air-exhausting equipment in the home. Other air-exhausting equipment can overpower the appliance venting system and cause combustion spillage.

Existing Canadian codes and standards have attempted to deal with combustion spillage by such strategies as requiring makeup air supplies for installations that may not have sufficient air leakage to support the proper operation of the combustion appliances.

Manufacturers have also developed appliances that are more spillage resistant. However, there is no standard protocol to directly test and rate products for resistance to combustion spillage.

Manufacturers have not had an accepted way to notify consumers, builders or other stakeholders of the rated spillage resistance of their appliances, or to indicate which of their products perform better under reduced pressure conditions that might cause spillage in other products. The depressurization-spillage test was developed by Canada Mortgage and Housing Corporation, Natural Resources Canada and other stakeholders as a key instrument in addressing this gap.

Kerr Heating Products of Parrsboro, N.S., partnered with CMHC and NRCan to develop its in-house capabilities for evaluating the spillage resistance of oil-fired appliances. During the project, Kerr installed, commissioned and used an in-house depressurization spillage test facility.

The facility, the test procedure and calculations were similar to those that were used for natural gas appliances in an earlier CMHC project. This project is the first time that any Canadian HVAC (heating, venting and air conditioning) manufacturer has expanded its product development capabilities by building and using in-house depressurization-spillage testing tools. It was also the first time that the test had been used with appliances intended for vertical (chimney) venting. The Kerr team updated the calculations from the earlier gas-fired project to incorporate the correct fuel composition for oil-fired equipment. Kerr evaluated several design alternatives and instrumentation choices for the test room. The full project report explains the decisions and provides full details for the updated test procedure and its associated calculations. Performance measurements for some residential oil-fired combustion appliances are provided at different depressurization levels. Kerr provided a template to enable other appliance manufacturers to readily deploy their own in-house depressurization testing capabilities.

This research project focused on identifying challenges for a manufacturer implementing the spillage test. The manufacturer has to overcome these barriers and take the test from a laboratory setting (where it has already been proven to work) to its own product development environment. This project also produced test results on the combustion-spillage performance of some oil-fired heating products with a range of different vent configurations and components.

Prepared by Kerr Heating Products. Project Team: William Spencer, Janusz Pawlus, Peter Edwards (Peter Edwards Co.) CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2006. 31 pages (775 KB)

Note: No. 07-109 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65365)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Oil_Fired.pdf

RADON MITIGATION PLANNING INSPECTION AND MITIGATION SYSTEM INSTALLATION

The Radiation Protection Bureau of Health Canada (HC) released a new, lower radon guideline (200 Bq/m³) and is planning to increase public awareness of radon risks. HC has also had drafted a protocol for radon remediation in houses to help homeowners and contractors solve radon problems. Before general release of the protocol, HC piloted its use on a high-radon house to ensure that the recommendations and sequencing are appropriate for Canadian conditions. CMHC managed the research field work and provided building science and other technical support to the testing, remediation work, analysis and reporting.

The house selected was a two year old, two storey suburban house in the west end of Ottawa. It had initial radon concentrations of about 1400 Bq/m³, despite having polyethylene under the slab and no apparent holes in the foundation. A common radon mitigation measure, sub-slab depressurization, worked well at reducing indoor radon concentrations to under 50 Bq/m³.

Prepared by Arthur Scott and Associates on behalf of Health Canada and CMHC. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2008. 33 pages (6784 KB)

INDOOR ENVIRONMENT

Note: No. 08-105 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 66063)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/eng_unilingu/Al/Radon_Mitigation\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/eng_unilingu/Al/Radon_Mitigation(W).pdf)

DEPRESSURIZATION SPILLAGE TESTING OF TEN RESIDENTIAL GAS-FIRED COMBUSTION APPLIANCES

CMHC and NRCan have been co-operating in the development of a test protocol for determining the spillage resistance of residential combustion appliances. There was initial testing of both gas and oil appliances. The test protocol and structure is relatively simple and robust. Some appliances are able to operate under high levels of depressurization better than others. The current research project extended the results through supplemental testing of 10 additional gas appliances. The results are promising and have been published under the title: Depressurization Spillage Testing of Ten Residential Gas-Fired Combustion Appliances. As in the earlier research, most of the "spillage resistant" appliances did pass the 50 Pa depressurization test. The eventual goal is to integrate such depressurization testing into appliance standards, and a CSA committee is being set-up to examine this issue. CMHC was not able to locate appropriate vertically-vented, mid-efficiency oil furnaces with improved spillage resistance for the proposed parallel study on oil appliances.

Note: No. 08-103 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65961)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/eng_unilingu/Al/Depressurization%20Spillage_W2.pdf

INFRASTRUCTURE

LIFE CYCLE COSTING TOOL FOR COMMUNITY INFRASTRUCTURE PLANNING

There has been much debate in recent years about the costs of development, both in terms of the true costs of different development forms as well as how the costs of development are shared between the public, the private sector and the environment. There is mounting evidence that more compact, mixed-use development is a more cost-efficient and environmentally sustainable form of development than low-density suburban development. However, there are very few readily available tools to demonstrate the degree to which this is true or to effectively compare different types of development.

This research resulted in the development of a user friendly "Life Cycle Costing Tool for Community Infrastructure Planning" (the Tool) as a method for establishing the long-term costs of alternative planning approaches. The Tool was created to allow a user to estimate the major costs of community development, particularly those that change with different forms of development (for example, linear infrastructure), and to compare alternative development scenarios. The Tool is geared towards estimating planning level costs and revenues associated with the residential component of a development, although financial impacts of commercial and other types of development can be incorporated provided that infrastructure requirements are specified correctly. The Tool is well suited to assessing development projects ranging in size from a collection of houses to a block-by-block infill development to an entire subdivision. A good measure of the applicability of the Tool to a given project is whether or not alternatives can be conceived that would result in significantly different densities or infrastructure requirements, or make use of different green infrastructure alternatives. The Tool is only available as a free download from CMHC's website at:
<http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/licycoto/index.cfm>

INFRASTRUCTURE

A User Guide provides guidance on all aspects of Tool operation from installation, to development of scenarios, to outputting results, to viewing internal calculations and conducting further analysis. The Guide can be read from cover to cover or can be referred to as specific questions arise. This product is only available as a free PDF download from CMHC's website [at http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/licycoto/index.cfm](http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/licycoto/index.cfm)

Prepared by IBI Group and Dillon Consulting. CMHC Project Manager: Doug Pollard. Ottawa: Canada Mortgage and Housing Corporation, 2008.

Note: No. 08-001 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65933)

Nota : Disponible aussi en français sous le titre : Outil de calcul des coûts du cycle de vie pour la planification d'infrastructures

AVAILABILITY : Product is available on the web

MOISTURE AND MOLD

DEVELOPMENT AND ASSESSMENT OF CRAWL SPACE REMEDIATION STRATEGIES

This External Research Project investigated the performance of 8 Prairie crawl spaces that have been retrofitted in the last several years to deal with moisture problems. The series of case studies included the nature of the initial problem, a description of the remedial measures applied, and an analysis of the success (or failure) of these measures following a site investigation. To a large degree, the retrofits have proven successful at ensuring dry, healthy crawl spaces in these Saskatchewan buildings.

Prepared by Figley Consulting Associates Ltd. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. (External Research Program Research Report) 1 CD-ROM (13144 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Dev%20and%20Asses_crawlspac\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Dev%20and%20Asses_crawlspac(W).pdf)

DRAINAGE AND RETENTION OF WATER BY CLADDING SYSTEMS

CMHC proposed that a series of drainage tests of exterior cladding assemblies be undertaken to produce data to quantify the ability of several types of cladding and methods of application on wall systems to manage and evacuate water that has intruded behind them. The original request was that the study focus on the drainage characteristics of the tested systems. However, it was clear that the primary focus should be the amount of water that is retained and how it might dissipate.

The reports are organized by the wall types tested and with additional supplementary tests done in support of the work. The different "Parts" of reporting in this project are:

- Part 1 – Experimental Approach and Plan: details the experimental plan devised;
- Part 2 – Testing and Measurement Methodologies: details the testing and methodologies employed;
- Part 3 – Drainage Testing of EIFS Wall Systems: details the testing and analysis of the EIFS reports;
- Part 4 – Drainage Testing of Vinyl Siding Test Walls: provides the results of tests on vinyl clad siding systems;
- Part 5 – Drainage Testing of Wood and Fibre-Based Siding Wall Systems: provides the results of tests on wood based siding and fibre-cement board testing;

Part 6 – Air Flow Characteristics of Drainage Cavities: provides the results of air flow testing of the walls with drainage cavities to characterize the air flow resistance of those cavities both in the main portion as well as at the exit;

Part 7 – Air Tightness and Vapour Permeance of Joints in Siding Systems: provides the results of air flow testing and water vapour transmission tests of joints in large siding samples constructed for this purpose;

Part 8 – Summary Report: represents a summary and concluding analysis of testing and results that have been reported on separately for different wall systems and is an overview of the findings of the entire project.

Reporting was compartmentalized into this series of “Parts” because of the extensive detail involved in reporting on the many wall variants that have been included. Comparisons were considered more manageable for the reader to face by providing the details separately in each segment of the work.

Part 1 – 6 prepared by Donald M. Onysko and Constance Thivierge; Part 7 prepared by Donald M. Onysko and Marcin Pazera; Part 8 prepared by Donald M. Onysko. Forintek Canada Corp., Building Systems Department. CMHC Project Officer: Barry Craig. Ottawa: Canada Mortgage and Housing Corporation, 2007. 8 parts contained on 1 CD-ROM

AVAILABILITY : Canadian Housing Information Centre

UNDERSTANDING VAPOUR PERMEANCE AND CONDENSATION IN WALL ASSEMBLIES

This research investigated the significance/insignificance of potential moisture problems due to plastic sheeting as a vapour barrier in above-grade and basement wall assemblies. The research aimed to outline cases where performance can be improved, and changes that could reduce inappropriate use. Finally, the research looked at the benefits/risks with polyethylene sheeting with clearer delineation of the situations in which it is necessary, potentially damaging, or unimportant.

This report presents key findings from the research work and field tests within the following framework:

- A literature review;
- Field testing of four common basement wall assemblies (with and without polyethylene sheeting) in a southern Ontario home;
- Field testing of six common above-grade wall assemblies (with and without polyethylene sheeting) in the University of Waterloo test exposure facility (BEGHut);
- Comparison of the field testing data and computer models, to provide validation of the model against this installation;
- Extending the test results to broader practice across Canada through computer modeling.

Field testing and simulation results show that low permeance layers make sense in some situations and not others. Moisture issues could arise in certain situations with low or high permeance interior vapour control layers. This research gives guidance on the situations where polyethylene sheeting is or is not a problem, and regarding appropriate vapour permeance levels for walls in different geographical areas.

Prepared by Halsall Associates Ltd. and University of Waterloo. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2007. 1 CD-ROM

Note: No. 07-123 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65843)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu_al/Vapour_Permeance_Volume_1_Web_sept5.pdf (Volume 1 - 2695 KB)
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu_al/Volume_2_Appendix_Web_sept5.pdf (Volume 2 - 18469 KB)

MOISTURE AND MOLD

WIND-RAIN RELATIONSHIPS IN SOUTHWESTERN BRITISH COLUMBIA : FINAL REPORT

Building envelope failures in Southwestern British Columbia have brought to light the strong influence of wind-driven rain on building envelopes. This study examines wind and rainfall data collected throughout the year from 12 meteorological stations: four on Vancouver Island and eight in the Lower Mainland. Results indicate that prominent wind directions during rain, as well as maximum wind speed, vary with location. Furthermore, all stations exhibited a marked difference in the wind direction and frequency of higher wind speeds for wet hours versus all hours.

Prepared by Levelton Engineering Ltd.; R.G. Humphries; M. Furberg; C. Koscher; A. McGowan. CMHC Project Officer: Sylvio Plescia. Ottawa : Canada Mortgage and Housing Corporation, 2004. 1 CD-ROM

Note: No. 07-114 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65546)

AVAILABILITY : Canadian Housing Information Centre

NORTHERN HOUSING

NORTHERN SUSTAINABLE HOUSE : AN INNOVATIVE DESIGN PROCESS

Unique environmental, cultural and economic challenges prevail in northern Canada. In an effort to create housing that is highly energy efficient and, at the same time, culturally acceptable to its inhabitants, Canada Mortgage and Housing Corporation (CMHC) partnered with the Nunavut Housing Corporation (NHC) in Nunavut and the Tr'ondek Hwech'in First Nation of the Yukon in 2006 to design two versions of the Northern Sustainable House. The ultimate aim of the project was to promote the construction of culturally appropriate, energy-efficient housing across the north; the project hoped to achieve an energy performance level 50 percent better than the Model National Energy Code for Houses (MNECH).

Following the model of the Integrated Design Process, house design charrettes were held in Arviat, Nunavut, and Dawson City, Yukon, in late autumn 2006. These multidisciplinary workshops brought

together townspeople and technical experts to explore the social and environmental factors that influence the effectiveness of housing in each community. In initiating the Northern Sustainable House project, CMHC proposed to organize design charrettes in each community; carry out the house designs, including energy efficient construction details; analyze the performance of the houses; and cover the incremental costs of features required to meet the energy conservation goals of the project. In each location, a CMHC-led design and review team explored design options and developed alternative construction systems. As part of the design process, the energy performance of proposed wall systems for each house was modelled.

The design process took participant comments into account, with designs developed for two models of the Northern Sustainable House: one for Inuit communities in the eastern arctic (above the tree line), and one for the western arctic (below the tree line). One Northern Sustainable House is now under construction in Dawson City, and two models of the Arviat design are planned for construction in 2008. This report focuses on the discussion and design process and is based on interviews with some of the participants in the charrettes that were held in Arviat and Dawson City.

CMHC Project Officer: Bill Semple. Ottawa: Canada Mortgage and Housing Corporation, 2007. 109 pages (5.11 MB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Northern%20Sustainable%20w.pdf

SUSTAINABLE NORTHERN COMMUNITY DEVELOPMENT CHARRETTE IN YELLOWKNIFE, N.T.

A charrette (design workshop) sponsored by Canada Mortgage and Housing Corporation, was held May 17 to 19, 2005 in Yellowknife, NT. The objective was to explore the issues of northern community development and to suggest specific solutions to achieve a sustainable and high quality of life.

This charrette focused on the particular challenges and opportunities of sustainable development for Negus Point, a 100-acre city-owned property in Yellowknife. The integrated design teams explored the potential of on-site wastewater treatment and geothermal water-sourced district heat; pedestrian, bike and ski trails in low-lying areas; and protection of the fragile northern ecosystem in a development that would include various forms of housing to meet the needs of the growing population, with small commerce, community services and research demonstration facilities.

Research Consultants: Guy Architects. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2007. 47 pages (3494 KB)

Note: No. 07-113 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65322)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu/CHIC_Sustainable_Northern_W.pdf

WHISTLE BEND PLANNING STUDY

Whitehorse's 2002 Official Community Plan identified the Whistle Bend area as the next logical location for large-scale residential development, to be developed over the next 20 years, for as many as 10,000 new residents. Drawing on lessons learned from public reaction to infill proposals, the City of Whitehorse chose a charrette to generate an innovative design solution to address multiple objectives and divergent interests, all in the spirit of sustainability.

The Whistle Bend Planning and Design Charrette was held in partnership with CMHC from November 5 to 9, 2006, and attracted 70 participants. The charrette set a new standard for public consultation in Yukon by inspiring broad-based community participation and involvement of multi-disciplinary expertise in development of a smart growth design concept for Whistle Bend. The plan developed is based firmly on the principles of smart growth including mixed land use, densities to support transit and pedestrians, diverse housing forms, and the protection of green space. This report is the story of how that was done.

Prepared by the City of Whitehorse Planning Development Services. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2007. 57 pages (6846 KB)

Note: No. 07-115 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65649)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu/CHIC_Whistley_study\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu/CHIC_Whistley_study(w).pdf)

EVALUATION OF CEILING TRACK AND LIFT SYSTEMS

This study researched difficulties experienced by people who have Ceiling Track and Lift Systems (CTLS) installed in their homes and best solutions to those difficulties. CTLS make it easier to move an individual safely from one room to another. In particular, as children get older parents have increasing difficulty carrying and moving their children. Caretakers of adults with severe physical disabilities also have the same difficulties. Using a CTLS eases many of the problems parents and caretakers face. While a CTLS is useful and practical, there are a number of existing and potential problems about the safety, user satisfaction and other aspects of a system.

Prepared by Ryan Kanigan, Peak Research, Inc. CMHC Project Officer: Collinda Joseph. Ottawa: Canada Mortgage and Housing Corporation, 2007. 71 pages (2219 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Ceiling%20tracksMay08.pdf

EVALUATION OF PHYSICAL ADAPTATIONS AND HOME AUTOMATION FEATURES IN FOUR HOUSING UNITS LOCATED IN VILLE ST-LAURENT : FINAL REPORT

This study was carried out jointly by the Ministère de l'industrie, du commerce et de la technologie du Québec, the Société d'habitation du Québec and Canada Mortgage and Housing Corporation.

Through observations and surveys of 10 residents in a low-rental housing project, this study evaluated the level of use and the suitability of physical adaptations and home automation features. Architectural accessibility features were integrated into the interior and exterior common areas of the building. In addition, 4 of the 48 units in the building were adapted to meet the specific needs of persons with disabilities. One of these four units was equipped with a home automation system and other specialized equipment allowing for a better control of the environment. This home automation system was combined with a universal infrared remote control. This housing unit, located on the ground floor, is occupied by a quadriplegic person. Six other residents also took part in the study. These persons are seniors, some of whom have mobility problems, and they live in traditional units.

Presented to Pierre Girardin, Société d'habitation du Québec and to Sandra Marshall, Canada Mortgage and Housing Corporation by Société d'habitations communautaires Logique Inc. Ottawa: Canada Mortgage and Housing Corporation, 1994. 2 volumes

Note: No. 97-108 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

Nota : Disponible aussi en français sous le titre : La Domotique au service des personnes handicapées : évaluation des adaptations dans quatre logements situés à ville St-Laurent : rapport final

AVAILABILITY : Canadian Housing Information Centre

PERSONS WITH DISABILITIES

HOW EFFECTIVE ARE BATH GRAB BARS FOR STOPPING A FALL WHEN YOU LOSE YOUR BALANCE? FINAL REPORT

Falls are among the leading causes of fatal and non-fatal injuries, hospitalizations and functional disabilities among seniors. Encouraging the use of bathroom aids, such as grab bars, for safe and independent bathing and toileting has been an important objective of some recent fall prevention programs. Bathroom aids are expected to minimize the effects of many age-related deficits such as impaired balance, co-ordination, range of motion, muscular strength, and endurance. Nevertheless, no study to date has actually examined the effectiveness of bath grab bars and their degree of usefulness in helping individuals regain stability or in preventing falls when balance is lost while getting in or out of the bathtub.

The general objectives of this study were to: a) examine how individuals who had lost their balance used four different bathtub grab bar configurations; b) investigate the effectiveness of these grab bar configurations in preventing falls; and c) identify barriers to the acceptance and use of grab bars.

The specific objectives of the study were to: a) determine whether, and how, study participants used grab bars following an experimentally-induced perturbation of balance; b) determine which grab bar configuration most prevented a fall following a perturbation of balance; c) determine whether the phase of the task performed (such as getting in/out of the bathtub) had an influence on which grab bars were used; and d) study the influence that a loss of balance experienced by participants had on their acceptance of grab bars.

*Prepared by Paulette Guitard, Heidi Sveistrup, Donna Lockett, Nancy Edwards, University of Ottawa.
CMHC Project Manager: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2007.
(External Research Program Research Report) 103 pages (5236 KB)*

Note: No. 07-016 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65670)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/BathGrabBars\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/BathGrabBars(w).pdf)

RENOVATION AND INSPECTION

FEDERAL GOVERNMENT RENOVATION ASSISTANCE EVALUATION PLAN

CMHC renovation programs provide financial assistance to homeowners and landlords to preserve affordable housing and ensure that housing occupied by low-income households meets basic health and safety standards. These programs also assist with home modifications and adaptations to enable low-income seniors and persons with disabilities to live independently in their own home. Thirdly, they help with funding to improve or create shelters for victims of family violence and preserve or create, via conversions from non-residential properties, housing for people who are at risk of homelessness.

Federal investments in renovation programs are delivered by CMHC or via provincial and territorial governments, and are available in all regions of Canada, including First Nations communities. As of the time of program renewal in late 2006, more than 750,000 households had benefited from assistance through the renovation programs since 1973. Indian and Northern Affairs Canada (INAC) delivers renovation programs on-reserve, in addition to CMHC's programs.

The suite of CMHC renovation programs in this evaluation plan are as follows:

- Residential Rehabilitation Assistance Program (RRAP) for Homeowners;
- Rental/Rooming House RRAP;
- Conversion RRAP;
- Emergency Repair Program;

- RRAP for Persons with Disabilities; and
- Home Adaptations for Seniors' Independence.

The evaluation plan provides background information on the programs; reasons for the evaluation; outlines the scope of the evaluation, the issues and methods to be used; and presents a summary of evaluation data sources.

Ottawa: Audit and Evaluation Services, Canada Mortgage and Housing Corporation, 2008. 24 pages (1232 KB)

Disponible aussi en français sous le titre : Programmes d'aide à la rénovation du gouvernement fédéral : plan d'évaluation

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/Fedral_RRAP\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/Fedral_RRAP(W).pdf)

URBAN ACUPUNCTURE: A METHODOLOGY FOR THE SUSTAINABLE REHABILITATION OF 'SOCIETY BUILDINGS' IN VANCOUVER'S CHINATOWN INTO CONTEMPORARY HOUSING

One of the consequences of Vancouver's explosive real estate market is the pressure to find housing development opportunities within the urban core, a pressure being felt by Vancouver's Chinatown.

There is a need for careful and thoughtful research into the limitations and potentials of Chinatown's unique urban fabric. Without thoughtful research, Chinatown could face one of two fates: First, Chinatown could be replaced with standard, podium-point, tower condominiums. Second, redevelopment of Chinatown would retain only historic facades as cladding on new buildings, which would result in the loss of the cultural substance of one of Vancouver's oldest neighbourhoods.

This study proposes an economically, environmentally and culturally sustainable approach to the sustainable rehabilitation of four Chinatown "society buildings"—buildings built by benevolent societies and family clan associations that offered housing and assistance to community members—as contemporary housing.

Prepared by Kelti Miyoshi McKinnon and Inge Roecker. CMHC Project Officer: Brian Eames. Ottawa: Canada Mortgage and Housing Corporation, 2007. (External Research Program Research Report) 177 pages (10740 KB)

Note: No. 07-008 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65644)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Urban_acupuncture\(w\)_dec12.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Urban_acupuncture(w)_dec12.pdf)

ADAPTER LE LOGIS POUR PROLONGER L'AUTONOMIE : ÉTUDE DE CAS DE 13 AÎNÉS FRAGILISÉS EN BANLIEUE DE QUÉBEC

This qualitative research examined the process and experience of adapting the homes of frail seniors living in suburban houses. The researchers looked at the technical and financial assistance received by the senior residents and their perception of the adaptation experience. They also sought the viewpoints of the professionals, such as occupational therapists, architects, architectural technicians and builders, involved in the home adaptation process.

This research project attempted to answer the following questions:

1. What are the factors that trigger home adaptations?
2. What financial and technical assistance is available for home adaptations?
3. What are the steps involved in a typical adaptation project under the province of Quebec universal assistance program?
4. What are the most common adaptations for single-family houses?
5. What is the perception of frail seniors and their relatives of the home adaptation process?
6. How satisfied are the individuals with the adaptations?

Senior residents were unanimous in saying that the adaptations improved the comfort and quality of life for themselves and their family members. They felt safer, with the risks of falls and injuries considerably reduced.

Prepared by Geneviève Vachon and Carole Després with the collaboration of Sébastien Lord. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2007 (External Research Program Research Report) 39 pages (5828 KB)

Note: No. 08-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66004)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/Adapter_le_logis\(V\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/Adapter_le_logis(V).pdf)

ADAPTING YOUR HOME TO LIVING WITH DEMENTIA

An estimated 364,000 Canadians over the age of 65 have some form of dementia. Each person experiencing dementia faces challenges that potentially compromise their safety and quality of life at home. This study provides information about dementia, its symptoms, and common problems that impact every day activities of people with dementia and their caregivers. The study also suggests strategies that can help people with dementia to continue to live safely in their home for as long as possible.

Prepared by Nancy Rushford. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2008. 2 volumes (External Research Program Research Report)

Volume 1 Final Research Report; Volume 2 A Resource Book for Living at Home & Guide to Home Adaptations

Note: No. 08-017 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66206)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_bilingual/Adapting_Vol1.pdf (volume 1 - 559.7 KB)
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_bilingual/Adapting_Vol2.pdf (volume 2 - 643.6 KB)

EXAMINATION OF LIFE LEASE HOUSING ISSUES: FINAL REPORT

A life lease is a legal agreement that permits purchasers to occupy a home for life in exchange for an initial lump sum payment and subsequent monthly payments to cover the ongoing project management fees and maintenance and operating expenses. Because this is a new form of tenure, there exist consumer protection issues related to life lease housing. The purpose of this study is to provide target audiences, including prospective residents, sponsors, development consultants, lenders, researchers and provincial, territorial and municipal governments, with the information they need to better understand and respond to a number of issues related to life lease housing. Manitoba is the only province with specific legislation.

Prepared by GGA Management Consultants. CMHC Project Manager: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2007. 70 pages (668 KB)

Note: No. 07-006 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 65427).

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Life%20lease%20housing%20issues%20-%20Final%20report%20March_07_VV.pdf

SMART GROWTH, LIVABLE AND SUSTAINABLE COMMUNITIES FOR SENIORS

This research investigated the relationship between smart growth concepts and the creation of livable and sustainable communities that would facilitate aging in place. Based on the findings of a literature review and focus groups with seniors, the researchers developed a set of indicators to measure the extent to which a community's built environment benefits seniors' health, quality of life, and well-being. The researchers interviewed 30 planners and other experts who provided feedback on the indicators and helped to refine them. After conducting a pilot test with two communities to gather feedback on the utility of the indicators and the availability of the data required to support their use, the researchers incorporated this information to develop a revised set of indicators. Local planners can use these indicators as a tool for setting goals related to the built environment needs of an aging population and for tracking progress against those goals.

Prepared by Industrial Economics, Incorporated in collaboration with Gloria Gutman. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2008. 2 parts (Part 1: Final Research Report, 115 pages (1619 KB); Part 2: Phase Reports, 201 pages (1686 KB))

Note: No. 08-014 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66099)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/part1\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/part1(w).pdf) (Part 1)
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/part2\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/part2(w).pdf) (Part 2)

SENIORS

SUPPORTIVE HOUSING FOR HOMELESS AND HARD-TO-HOUSE SENIORS: AN IN-DEPTH CASE STUDY OF FAIRWAY WOODS: FINAL REPORT

This document is an in-depth case study of Fairway Woods, a supportive housing project for formerly homeless or hard-to-house seniors. It is located in Langford, near Victoria, BC. Research methods included a review of documents, records and floor plans; one-to-one interviews, walk-and-talk interviews and group interviews; a quality of life survey of tenants; participant observation and photographs. This report includes detailed information about: the location, site, building, dwelling units, tenants, services, service providers, and development of Fairway Woods; an evaluation of the built environment; illustrations of the impact of moving to Fairway Woods on tenants' lives; and numerous lessons learned by the housing sponsor and service providers. It concludes with recommendations from study informants, addressed to people who work in the fields of homelessness, supportive housing, mental health, community-based support services, architecture and building.

Prepared by Nancy Gnaedinger. CMHC Project Managers: Anna Lenk and Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2007. (External Research Program Research Report) ca 153 pages (4068 KB)

Note: No. 07-017 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65672)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Housing_Homeless_HH_Seniors\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Housing_Homeless_HH_Seniors(w).pdf)

SOCIAL HOUSING

CRESCENT VALLEY: A COMMUNITY IN MOTION: REPORT TO CANADA MORTGAGE AND HOUSING CORPORATION, SAINT JOHN, NB.

The objective of this project was to undertake a face-to-face survey interview of residents of the Crescent Valley Housing Program in Saint John, NB, using a tool developed specifically for the neighbourhood and with resident input. Crescent Valley is a 388-unit public housing project located in Saint John, New Brunswick. The housing project, owned by the Province of New Brunswick and managed by the Department of Family and Community Services, was constructed in the late 1950s.

Submitted by Gail Taylor, Community Coach and Colleen Grattan Gick, Project Manager, Vibrant Communities Saint John. Ottawa: Canada Mortgage and Housing Corporation, 2006. 10 pages

STATUS : Completed Report

AVAILABILITY : On a loan basis from Canadian Housing Information Centre

CRITERIA AND METHOD FOR EVALUATING SUBDIVISION PLANS FOR LIVABILITY AND SUSTAINABILITY

Many observers have noted that we have much talk about urban sustainability in Canada, but few examples of sustainable development exist on the ground. The reasons for this are complex, but one reason that is often put forward is that we lack a system of criteria to define what a sustainable project would look like, how it would function, and what impacts it would have on key parameters. This limits the ability of sustainability advocates in the community, on council, municipal staff or within the development industry to articulate an alternative to existing development practices and designs or to objectively evaluate proposals being put forward under the rubric of sustainability.

This study serves as the first phase of a larger project that is intended to create a sustainable subdivision evaluation system (SSES). Such a system would provide a method or model that planning practitioners, developers and other stakeholders in communities across Canada could use to assess subdivision plans for their livability and sustainability features. The current report is focused on describing the state of the art in evaluating subdivision plans from a livability and sustainability perspective and making recommendations for proceeding with the next stages of the overall project.

Prepared by Ray Tomalty (Co-operative Research and Policy Services), Diana Butler (Urban Aspects Consulting Group Ltd.), and David Bruce (Mount Allison University) with the assistance of Blaire Chisholm (Co-operative Research and Policy Services). CMHC Project Officer: Fanis Grammenos. Ottawa: Canada Mortgage and Housing Corporation, 2006. 182 pages (1161 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research Reports-Rapports de recherche/eng_unilingual/CHIC Criteria Method w.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research%20Reports-Rapports%20de%20recherche/eng_unilingual/CHIC_Criteria_Method_w.pdf)

DEVELOPMENT AND DEMONSTRATION OF A LIFE CYCLE COSTING TOOL APPLIED TO GREEN TECHNOLOGIES

For the residential building industry, the cost of constructing green buildings or incorporating green technologies, combined with the difficulty of marketing these higher performance homes and technologies, remains an issue that has effectively slowed the use of green building technologies in the residential market segment. The diffusion barrier arises on both sides of the equation – with the prospective buyer, and the developer/builder.

In order to aid the adoption of greener technologies, Canada Mortgage and Housing Corporation retained the Athena Institute in association with Morrison Hershfield Limited to develop a simple Excel® spreadsheet-based life cycle costing (LCC) calculator tool (and users' guide) to help builders and developers estimate the viability of green technologies applicable to single family homes and mid-size multi-unit residential buildings (MURBS). To further demonstrate the tool, the project team identified a set of 14 green technologies and prepared illustrative life cycle cost assessments of these technologies using the LCC calculator.

The overall intent of the project is to help builders and developers conduct life cycle costing evaluations of various green technologies, so they better understand and can better communicate these results to prospective clients. LCC is an economic method for evaluating project investment alternatives over a selected period of time. It is particularly suited to determining whether the higher initial cost of an investment is justified by reductions in future costs (e.g., operating, maintenance, repair or replacement costs). It can also be used to compare alternative investments with different initial and future costs.

The accompanying LCC users' guide documents each field to be completed by the user, provides sources for various data elements, and describes each of the results in simple terms to make LCC more accessible to the building community. The users' guide also contains an example LCC calculation, complete with the various inputs and results indicated by a screen capture of the tool.

Prepared by Athena Sustainable Materials Institute and Morrison Hershfield Ltd. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2006. 74 pages (680 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/LifeCycle_WEB.pdf

REVIEW OF AGENDA 21 CHAPTERS 7 AND 28

The United Nations Conference on Environment and Development was held in Rio de Janeiro in June, 1992. One of the main products of this conference was a document entitled "Agenda 21", which is a plan for achieving sustainable development and maintaining it into the 21st century. The two chapters that CMHC was concerned with were Chapter 7 (Promoting Human Settlement Development) and Chapter 28 (Local Authorities' Initiatives and Support of Agenda 21).

The objectives of this study were three-fold:

1. To identify and describe the environmental and socio-economic implications for Canada of Chapters 7 and 28 of Agenda 21;
2. To describe those major Canadian activities which were currently either underway or proposed and which were consistent with the recommended activities of these Chapters; and
3. To make recommendations as to how CMHC and Canada can best proceed towards the implementation of Chapters 7 and 28.

Prepared by Consulting and Audit Canada. Ottawa: Canada Mortgage and Housing Corporation, 1994. 32 pages

AVAILABILITY : Canadian Housing Information Centre

SITE CONTROL FOR SUSTAINABLE COMMUNITY DEVELOPMENT: FINAL REPORT

Communities are increasingly turning to sustainable development frameworks as a means of integrating planning priorities, improving public participation, leveraging resources, and as a way of generating creative and practical solutions to shared economic, environmental and social problems (Roseland, 2005). Much of the research and practice related to sustainable community development has focused on incorporating sustainability principles into existing planning processes. However, there remains a significant gap between sustainable community development planning and implementation. Local land use decisions and real estate development is one area that is of critical importance to communities and provides a tangible example of this gap, suggesting that new thinking is required about the land development process, the role of site control and its relationship to sustainable community development.

This paper investigates case studies in Nelson and Victoria, BC where site control and ownership played a significant role in ensuring that land use and development outcomes were aligned with the community's vision for the site and were supportive of sustainability principles. The results of this research suggest while improvements to the land use planning process are important, site control actors are required that can play a proactive role in land use development to promote and demonstrate the tangible benefits of sustainable community development.

Prepared by Simon Fraser University, Centre for Sustainable Community Development. Mark Roseland, Principal Investigator; Sean Connelly, Senior Researcher; Chris Lindberg, Researcher; and David Hendrickson, Researcher. CMHC Project Officer: Fanis Grammenos. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 44 pages (883 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/SiteControl_WEB.pdf

SOUTHEAST FALSE CREEK INTEGRATED DESIGN PROCESS WORKSHOP: FINAL REPORT

The development of Vancouver's Southeast False Creek (SEFC) is a project of substantial scope that includes construction of the 2010 Olympic Village. With a tight schedule and high profile for the Olympic event, the City of Vancouver, in partnership with Canada Mortgage and Housing Corporation, hired consultants to organize and facilitate a kick-off Integrated Design Process (IDP) workshop to develop synergies and build consensus within the development team around the project vision and goals. The pre-design activity also allowed key concepts to be incorporated into all aspects of the design, construction and commissioning process. Participants generated a schedule of defined priorities and delegated tasks to move the project forward.

Prepared by Sustainable Building Centre. Sponsors: City of Vancouver, Canada Mortgage and Housing Corporation, Natural Resources Canada, BC Hydro PowerSmart. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2006. 2 volumes

Note: No. 07-107 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65350)

AVAILABILITY : On a loan basis from the Canadian Housing Information Centre

WEST HILLS SUBDIVISION SUSTAINABLE DESIGN CHARRETTE, FREDERICTON, NEW BRUNSWICK 2004

A 2.5 day charrette was held in Fredericton to develop practical and realistic options for integrating sustainable development strategies into the design of the proposed West Hills subdivision. The charrette provides an example of a developer leading the way to a more environmentally sustainable development that would be appealing to the public and provided the developer with new ideas for the design of the subdivision.

Prepared by Jacques Whitford Limited. CMHC Project Officer: Cynthia Rattle. Ottawa: Canada Mortgage and Housing Corporation, 2005. 37 pages (1510 KB)

Note: No. 07-004 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65424)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/West_Hill_Charrette\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/West_Hill_Charrette(W).pdf)

URBAN TRANSPORTATION

ASSESSMENT OF THE TRANSPORTATION IMPACTS OF CURRENT FUSED GRID LAYOUTS: FINAL REPORT

Recognizing that conventional approaches to suburban development are not sustainable, municipalities are re-examining neighbourhood layout and land-use concepts with the goal of replacing car trips with walking, cycling or public transit. This study looks at street layouts and plans needed to facilitate both walkability and the smooth flow of vehicular traffic. It highlights the Fused Grid model, which blends desirable elements of conventional and grid-based street layouts and gives priority to walking and cycling at the neighbourhood scale, while, at the same time, achieves an efficient movement of cars for the longer destinations.

Prepared by IBI Group. CMHC Project Officer: Fanis Grammenos. Ottawa: Canada Mortgage and Housing Corporation, 2007. 145 pages (7153 KB)

Note: No. 08-012 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66071)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Assessment_of_Transportation\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Assessment_of_Transportation(W).pdf)

WATER CONSERVATION, REUSE & MANAGEMENT

ACTION PLAN FOR SUSTAINABLE PRACTICES: IMPLEMENTATION STRATEGIES FOR THE RESIDENTIAL AND BUSINESS SECTORS IN THE GREATER TORONTO AREA

Watersheds in metropolitan areas across Canada are suffering degradation as a result of urbanization. Loss of natural vegetative cover, an increase in the area of paved and other impervious surfaces, and storm sewer systems in older urban areas that route stormwater to streams and rivers, greatly increase the stormwater loading in watersheds and disrupt the natural water balance.

The Greater Toronto Area (GTA) is a case in point. Education and awareness campaigns to encourage the adoption of “lot level” and “at source” practices for stormwater management have yet to achieve widespread success. Uptake of sustainable practices by residents and business owners/managers is seen as a key part of implementing GTA-wide watershed management plans and creating sustainable watershed communities.

The goal of the study was to determine the marketing opportunities and barriers to improving uptake of lot level stormwater management and other sustainable practices amongst residents of single-family dwellings and business owners/managers of commercial/light industrial facilities in the GTA, and to develop strategies and mechanisms to drive uptake of such practices.

Prepared by Freeman Associates. Prepared for: Toronto and Region Conservation Authority, Canada Mortgage and Housing Corporation, Environment Canada, City of Toronto, Regional Municipality of York, Region of Peel, the Regional Municipality of Durham. CMHC Project Officer: Sandra Baynes. Ottawa: Canada Mortgage and Housing Corporation, 2006. 229 pages (3470 KB)

Note: No. 07-110 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65378)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/SOCIAL\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/SOCIAL(W).pdf)

IMPACT OF WATER SOFTENERS ON SEPTIC TANKS: FIELD EVALUATION STUDY: FINAL REPORT

A field study of septic tank performance was conducted in order to determine whether water softener backwash addition to the septic tank had a significant effect upon tank performance. The sample group consisted of septic tanks receiving water softener backwash (n=27) and tanks not receiving water softener backwash (n=48). This study does not address impacts upon the performance of leaching fields.

Significant differences ($P < 0.05$) in the sodium and chloride concentrations in tank sludges were found between the two groups with mean chloride concentrations increasing from 146 to 1515 mg/L and mean sodium concentrations increasing from 239 to 548 mg/L in tanks receiving water softener backwash. No significant differences ($P > 0.05$) were found for indicators of tank performance including: septic tank effluent COD, CBOD5, TSS, and E.coli, sludge VSS and the sludge and scum accumulation rate. The results from this study indicate that water softener backwash discharged to septic tanks has no significant effect upon the biological or physical functioning of the septic tank; however, elevated chloride concentrations from water softener backwash may accelerate the corrosion of reinforced concrete tanks.

Submitted by Ontario Rural Wastewater Centre, Collège d'Alfred – University of Guelph. Authors: Chris Kinsley, Anna Crolla, Doug Joy. Ottawa: Canada Mortgage and Housing Corporation, 2006. 36 pages (2078 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Water%20Softener\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/Water%20Softener(W).pdf)

WOMEN AND HOUSING

SHELTER ENHANCEMENT PROGRAM 2007 EVALUATION PLAN

Canada Mortgage & Housing Corporation (CMHC) has been involved in the development of Canada's shelters to address family violence since the mid-1970s. Many of the earliest shelters were established with financing from CMHC's National Housing Act (NHA) Non-Profit Programs (Special Purpose housing). Since 1988, CMHC has played a key role in the federal Family Violence Initiative (FVI) by significantly expanding the number of shelters across Canada, developing an integrated system of first- and second-stage housing, and enhancing the quality of shelters for abused women and their children through its Project Haven, Next Step and Shelter Enhancement Program (SEP).

The 2007 SEP Evaluation is intended to meet CMHC's reporting requirements under the federal FVI and accountability requirements related to the CMHC Special Initiatives (Renovation) funding. It will provide an updated assessment of the program following revised funding guidelines in 2003. The 2007 evaluation will cover the time period since the previous SEP evaluation (2001/02) up to 2006/07. It will examine SEP funding for both new shelters and for renovations, and all types of projects (for women and their children, youth and men) totalling \$105.7M in federal funding since 2001/02. The 2007 Evaluation will examine the rationale, success and impacts, and cost effectiveness of the Program including assessment of funding for youth and men's shelters as well as for First Nations.

The evaluation plan provides a description of the Shelter Enhancement Program, outlines evaluation issues, methods, indicators and data sources to be used. An evaluation timetable is included.

Ottawa: Audit and Evaluation Services, Canada Mortgage and Housing Corporation, 2008. 25 pages (173 KB)

Disponible aussi en français sous le titre : Programme d'amélioration des maisons d'hébergement : plan d'évaluation de 2007

WOMEN AND HOUSING

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/Shelter%20Enhancement%20Program%202007%20Evaluation%20Plan%20_Eng.pdf

YOUTH AND HOUSING

YOUTH SHELTER PILOT SURVEY: FEASIBILITY & SELECTED FINDINGS REPORT

In 2006, Canada Mortgage and Housing Corporation (CMHC) funded a pilot survey of youth shelters in Canada conducted by the Canadian Centre for Justice Statistics (CCJS) at Statistics Canada.

Since 1999, CMHC has provided funding to youth shelters through its Shelter Enhancement Program (SEP) that also funds shelters for women and their children. CMHC evaluated its program in 2002, including a total of 15 youth shelters that had been funded up until that time. However, lack of quantitative information about the universe of youth shelters in Canada and youth homelessness generally, makes it difficult to assess the impacts of programs like SEP.

The objectives of the Youth Shelter Pilot Survey (YSPS) were to test methods for collecting facility and client information from youth shelters, and to assess the feasibility of a national youth shelter survey.

Prepared by Andrea Taylor-Butts, Canadian Centre for Justice Statistics, Statistics Canada. CMHC Project Officer: Ed Nera. Ottawa: Canada Mortgage and Housing Corporation, 2007. 56 pages (2618 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Youth_Shelter\(web\)_july_12.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Youth_Shelter(web)_july_12.pdf)

CMHC RESEARCH REPORT LISTINGS

To provide quick and comprehensive access to CMHC research published on a given topic, the Canadian Housing Information Centre compiles comprehensive listings of housing research produced over a number of years on certain topics. Topics chosen are those for which there is ongoing client interest and/or for which CMHC has published considerable research. To obtain an electronic, faxed or mailed copy of any of the lists below, contact the Canadian Housing Information Centre at: 1-800-668-2642 or e-mail us at: chic@cmhc.gc.ca

Listings available at this time include:

| | |
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| ♦ Indoor Air Pollution | ♦ Infrastructure |
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| ♦ Straw Bale Housing | ♦ Sustainable Development |
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ABOUT YOUR HOUSE SERIES

Fact sheets on common housing questions, issues and problems.

These documents are available in HTML and Adobe Acrobat format (pdf) on the CMHC [web site at:](http://www.cmhc.ca/en/co/co_001.cfm)
http://www.cmhc.ca/en/co/co_001.cfm

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| 62031 | CE 5A | Understanding Window Terminology This factsheet offers helpful guidance on buying the right type of window for your home. Terminology commonly used in the window industry is also presented. Aussi disponible en français sous le titre : Comprendre la terminologie des fenêtres |
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ABOUT YOUR HOUSE SERIES

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| 60516 | CE 8 | Fighting Mold: The Homeowner's Guide Mold can cause allergies or respiratory disease. Learn how to identify and eliminate mold from your home. Aussi disponible en français sous le titre : Combattre la moisissure -- Guide pour les propriétaires-occupants |
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| 60339 | CE 10 | Wood Heat Safety in an Emergency Whether you often use a wood stove or a fireplace, or are coping with an emergency loss of electricity, learn how to safely use wood to heat your home. Aussi disponible en français sous le titre : Le chauffage au bois en toute sécurité lors d'une situation d'urgence |
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| 60360 | CE 12 | Helping Your Trees Survive Storm Damage Practical pruning advice to restore the health and shape of trees damaged by ice or wind storms. Aussi disponible en français sous le titre : Soins à donner aux arbres endommagés par une tempête |
| 62034 | CE 13 | Attic Venting, Attic Moisture, and Ice Dams How do you deal with a leak in the ceiling? How should an attic be properly vented? How do you eliminate ice dams? This fact sheet will answer these and other attic related questions. Aussi disponible en français sous le titre : Ventilation du vide sous toit, humidité dans le vide sous toit et formation de barrières de glace |

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| 62041 | CE 22 | Your Furnace Filter <p>To reduce exposure to airborne particles, choose the furnace filter that best suits your needs.</p> <p>Aussi disponible en français sous le titre : Le filtre de votre générateur d'air chaud</p> |

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| 60417 | CE 24 | Backup Power for Your Home The top ten tips in choosing the appropriate backup system to provide electricity to your home in the event of a prolonged power failure. Aussi disponible en français sous le titre : Alimentation de secours pour votre maison |
| 62046 | CE 25 | Carbon Monoxide A list of questions and answers dealing with keeping Carbon Monoxide out of your home and to help you choose the right CO detector. Aussi disponible en français sous le titre : Le monoxyde de carbone |
| 62277 | CE 26a | Hiring a Contractor How do you find the "right" contractor for you? What should go in a contract? What are liens, holdbacks and completion certificates? Make sure you get what you want and pay for when hiring a contractor. Aussi disponible en français sous le titre : Le Choix d'un entrepreneur |
| 62351 | CE 26b | Sample Renovation Contract A detailed written contract between you and the contractor you hire is essential to any renovation or home repair project, no matter its size. Aussi disponible en français sous le titre : Modèle de contrat de rénovation |
| 62045 | CE 27 | Choosing a Dehumidifier Air that is too damp can cause condensation on windows, water damage to materials, mold and even wood rot. Choose the right dehumidifier to regulate the humidity in your home. Aussi disponible en français sous le titre : Le Choix d'un déshumidificateur |
| | CE 28 | The Renovation Project (12 parts) |
| | | This series will assist you in making informed decisions before you renovate. Each easy-to-read fact sheet helps you ask the key questions, reviews the available options and discusses the consequences if certain aspects of the renovation are overlooked. Advance planning is the key to successful renovations. These fact sheets help you plan, assess, and avoid surprises. Achieve the results you want by doing your renovation right the first time. |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 62246 | CE 28a | <p>Assessing the Renovation Project</p> <p>Before renovating, it's important to assess your home's current condition to determine if there are significant problems that you must deal with before or during the renovation project.</p> <p>Aussi disponible en français sous le titre : Évaluation des travaux de rénovation</p> |
| 62248 | CE 28b | <p>Renovating your Basement - Structural Issues and Soil Conditions</p> <p>Renovating a basement can add value and extra living space to a home. Fixing foundation problems before renovating is essential to preserve the durability and structure of the house.</p> <p>Aussi disponible en français sous le titre : Rénovation du sous-sol - Aspects structuraux et conditions du sol</p> |
| 62250 | CE 28c | <p>Renovating Your Basement - Moisture Problems</p> <p>Is there condensation on the basement windows? Are there white chalky stains on the foundation? Do the carpets smell musty? Creating a clean, dry and healthy living space is a critical first step.</p> <p>Aussi disponible en français sous le titre : Avant de rénover votre sous-sol - Problèmes d'humidité</p> |
| 62252 | CE 28d | <p>Renovating Your Kitchen</p> <p>The kitchen is often the most used room in the house and kitchen renovations typically have the highest financial payback. Conduct a pre-renovation inspection and prioritize the most desirable features for your new kitchen.</p> <p>Aussi disponible en français sous le titre : Avant de rénover votre cuisine</p> |
| 62254 | CE 28e | <p>Renovating Your Bathroom</p> <p>Bathroom renovations offer the second highest financial payback rate and are one of the most common home improvement projects. Use this fact sheet to check for problems before you renovate.</p> <p>Aussi disponible en français sous le titre : Rénovation de la salle de bains</p> |
| 62256 | CE 28f | <p>Window and Door Renovations</p> <p>Do you want more natural light in your living area? Are you concerned about security? Before repairing or replacing windows and doors, consider all of the factors outlined in this fact sheet.</p> <p>Aussi disponible en français sous le titre : Nouvelles portes et fenêtres</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 62258 | CE 28g | <p>Repairing or Replacing Roof Finishes</p> <p>Regular maintenance and periodic roof inspections will identify problems before they cause costly damage to your home. Learn about the key factors that will determine whether you should repair or replace your roof.</p> <p>Aussi disponible en français sous le titre : Avant de réparer ou remplacer le revêtement du toit</p> |
| 62260 | CE 28h | <p>Repairing and Replacing Materials - Exterior Walls</p> <p>Exterior finish materials must prevent rain and snow from penetrating the building and causing moisture damage. Repairing or replacing exterior wall finishes will protect and preserve the durability and structure of the home.</p> <p>Aussi disponible en français sous le titre : Avant de réparer ou remplacer des matériaux - les murs extérieurs</p> |
| 62262 | CE 28i | <p>Energy Efficient Retrofit - Mechanical Systems</p> <p>Upgrading the heating, cooling and ventilation (HVAC) equipment is the best way to create a healthy, comfortable and less expensive home to operate. Before altering these, it is important to understand how the overall performance of the house will be affected.</p> <p>Aussi disponible en français sous le titre : Avant d'améliorer l'efficacité énergétique de votre maison - installations mécaniques</p> |
| 62264 | CE 28j | <p>Energy Efficient Retrofit - The Building Envelope</p> <p>The envelope, or outer layer, of your house separates living space from the outdoor elements. Improving it can result in a better insulated, more airtight home that is easier to heat.</p> <p>Aussi disponible en français sous le titre : Améliorer l'efficacité énergétique - L'enveloppe du bâtiment</p> |
| 62266 | CE 28k | <p>Assessing the Comfort and Safety of Mechanical Systems</p> <p>The heating, ventilating and air conditioning (HVAC) systems are a vital part of your home. Ensure that your mechanical systems are operating safely and efficiently.</p> <p>Aussi disponible en français sous le titre : Évaluation de vos installations mécaniques - confort et sécurité</p> |
| 62268 | CE 28L | <p>A New Addition</p> <p>Before building an addition, clearly identify the features you need and inspect the current structure and mechanical systems to be sure they can support the new addition.</p> <p>Aussi disponible en français sous le titre : Avant de construire une annexe</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 62044 | CE 29 | <p>Should you get your Heating Ducts Cleaned?</p> <p>Should you get your heating ducts cleaned? Will clean ducts result in improved air quality? When is duct cleaning most appropriate? This fact sheet separates fact from fiction.</p> <p>Aussi disponible en français sous le titre : Doit-on faire nettoyer les conduits de chauffage?</p> |
| 63322 | CE 30 | <p>Water Damage, Mold and House Insurance</p> <p>You've had water damage in your house due to a burst pipe, a roof leak, or a heavy summer storm. You hope that your insurance will cover the damage. What to do?</p> <p>Aussi disponible en français sous le titre : Moisissure, dommages causés par l'eau et assurance habitation</p> |
| 62226 | CE 31 | <p>Understanding and Dealing with Interactions Between Trees, Sensitive Clay Soils and Foundations</p> <p>Is the size, type or siting of a tree affecting your foundation? Understanding the interactions between trees, soils and the foundation can help you avoid foundation shifting, cracks and other damage.</p> <p>Aussi disponible en français sous le titre : Comprendre l'interaction des arbres, du sol d'argile sensible et des fondations et agir en conséquence</p> |
| 65329 | CE 32 | <p>Setback Thermostats</p> <p>There are many claims about the energy savings due to setback thermostats. This document quantifies the savings but also describes houses or conditions where setback thermostats are not recommended.</p> <p>Aussi disponible en français sous le titre : Les thermostats programmables</p> |
| 62288 | CE 33 | <p>CMHC Garbage Bag Airflow Test</p> <p>This simple test uses an ordinary garbage bag to help you estimate airflow from your furnace registers, bathroom exhaust fan or clothes dryer exhaust.</p> <p>Aussi disponible en français sous le titre : Essai de mesure du débit d'air à l'aide d'un sac à ordures</p> |
| 62795 | CE 34 | <p>Your Septic System</p> <p>A primer on the components, operation and proper maintenance of an in-ground septic tank and system.</p> <p>Aussi disponible en français sous le titre : Votre installation d'assainissement</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 62839 | CE 35 | Hiring a Home Inspector One of the best ways to understand about a home's condition, habitability and safety is to hire a professional home inspector. Aussi disponible en français sous le titre : Le Choix d'un inspecteur en bâtiment |
| 62341 | CE 36 | The Condominium Owners' Guide to Mold Special advice for identifying and removing mold in a condo, and solving the problems that cause it. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des copropriétaires |
| 63902 | CE 37 | The Tenant's Guide to Mold This guide provides tenants of apartment buildings or rental houses with information to understand why mold grows and what they can do if they find mold growing in their unit. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires |
| 64066 | CE 38 | How to Reduce Chemical Contaminants in Your Home This guide focuses on reducing exposure to chemical contaminants in the home, and will help you identify and avoid household products and materials which are sources of chemical contaminants. Aussi disponible en français sous le titre : Réduire les contaminants chimiques dans votre maison |
| 62935 | CE 39 | Buying a Toilet Advice and tips on what to look for when buying a toilet. Aussi disponible en français sous le titre : L'achat de toilettes |
| 63319 | CE 40 | Buying a House with a Well and Septic System Information on what to inspect and test if a property has a well and/or septic system. Includes checklists for potential buyers. Aussi disponible en français sous le titre : L'achat d'une maison avec un puits et une installation septique |
| 62953 | CE 41A | UV Water Treatment Describes the ultra-violet light water treatment process, and the pros and cons of using such a system. Aussi disponible en français sous le titre : Traitement de l'eau aux rayons ultraviolets (UV) |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 62898 | CE 41B | Water Distillers Everything you ever wanted to know about water distillers from how they work to how to install and maintain them. Aussi disponible en français sous le titre : La distillation de l'eau |
| 62896 | CE41C | Water Filters Consumer series of household water treatment options. Water filters are an inexpensive method of additional water treatment. Some filters can remove certain contaminants such as lead. Aussi disponible en français sous le titre : Filtres à eau |
| 62946 | CE 41D | Water Softeners Find out how a water softener works and obtain information on whether you should consider installing one. Aussi disponible en français sous le titre : Les adoucisseurs d'eau |
| 62962 | CE 41E | Reverse Osmosis Water Treatment Describes the reverse osmosis water treatment process, and provides the pros and cons of using such a system. Aussi disponible en français sous le titre : Filtration de l'eau par osmose inverse |
| 62966 | CE 42 | Canada's Construction System The purpose of this document is to foster understanding of the elements of the system of construction and operation of buildings and houses in Canada. Aussi disponible en français sous le titre : Système de construction canadien |
| 63890 | CE 43 | Photovoltaics (PVs) Consumer information piece presenting information on solar electric (photovoltaic) systems for housing Aussi disponible en français sous le titre : Les systèmes photovoltaïques |
| 63134 | CE 44 | Painting: Walls, Ceilings and Floors This fact sheet provides general information on: selecting paints, e.g. latex (water based) or alkyd (oil based); types of paint and paint finishes, e.g. low or high sheen, sealer, primer, melamine; estimating quantity of paint required; preparing for painting; and painting tips. Aussi disponible en français sous le titre : La peinture : murs, plafonds et planchers. |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 63144 | CE 45 | Flooring Choices <p>A quick summary of the advantages, considerations, installation, maintenance, and costs to think about when choosing resilient, laminate, and wood flooring, as well as carpet and ceramic tile.</p> <p>Aussi disponible en français sous le titre : Les revêtements de sol</p> |
| 63349 | CE 46 | Fighting Asthma in Your House <p>Practical tips to help people with asthma improve the indoor air quality of their home.</p> <p>Aussi disponible en français sous le titre : Combattre l'asthme à la maison</p> |
| 63218 | CE47 | Home Maintenance Schedule <p>This fact sheet provides a listing of the regular home maintenance tasks which should be done at various times throughout the year to protect the condition of your house.</p> <p>Aussi disponible en français sous le titre : Calendrier d'entretien de votre maison</p> |
| 63227 | CE48 | Replacing Your Furnace <p>This fact sheet provides information for consumers who are replacing their existing furnace with a new one. It deals with fuel choice, furnace selection, and furnace sizing.</p> <p>Aussi disponible en français sous le titre : Le remplacement d'un générateur de chaleur</p> |
| 63235 | CE 49 | Getting Your House Ready to Sell <p>Tips for homeowners who wish to get their house ready to sell.</p> <p>Aussi disponible en français sous le titre : Ce qu'il faut faire avant de mettre votre maison en vente</p> |
| 63436 | CE50 | Avoiding Basement Flooding <p>Basement flooding leads to damage of the finishing material and possible growth of mold. This document reviews why basements flood and how to prevent floods from occurring.</p> <p>Aussi disponible en français sous le titre : Comment prévenir les inondations de sous-sol</p> |
| 63486 | CE51 | Get to Know Your Soil <p>This fact sheet provides practical tips on how to analyse soil so that you can select the plants that are suited to the soil you have on your property. Once you have determined the soil conditions, it provides tips on how to amend it, if needed.</p> <p>Aussi disponible en français sous le titre : Apprenez à connaître votre sol</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 63488 | CE52 | <p>Low-Maintenance Lawns</p> <p>Low-maintenance lawns help to reduce the time, costs, water, pesticides, fertilizer and energy used to maintain lawns. This fact sheet describes the benefits and provides practical tips on how to install and maintain low maintenance lawns, including species selection.</p> <p>Aussi disponible en français sous le titre : Les pelouses à faible entretien</p> |
| 63490 | CE53 | <p>Rain Gardens: Improve Stormwater Management in Your Yard</p> <p>Rain gardens are landscaped areas designed to receive stormwater and allow it to infiltrate into the soil. This fact sheet describes the benefits and provides practical tips on how to install and maintain gardens.</p> <p>Aussi disponible en français sous le titre : Un jardin pluvial pour mieux gérer les eaux de ruissellement dans votre cour</p> |
| 63492 | CE54 | <p>Understanding Your New Home Sales Contract</p> <p>This fact sheet provides information on some of the terms and provisions that you may find in a new home sales agreement to illustrate what a contract can cover and an explanation why.</p> <p>Aussi disponible en français sous le titre : Comprendre le contrat de vente de votre maison neuve</p> |
| 63495 | CE55 | <p>Selecting A New Home Builder</p> <p>This fact sheet provides information on how to find and what to look for and consider when searching for the right builder to build your new home.</p> <p>Aussi disponible en français sous le titre : Le choix d'un constructeur d'habitations</p> |
| 63637 | CE56 | <p>Preventing Falls on Stairs</p> <p>This fact sheet tells you about some of the ways you can reduce the risk of falling on or from residential stairs.</p> <p>Aussi disponible en français sous le titre : Comment prévenir les chutes dans les escaliers</p> |
| 63730 | CE57 | <p>Efficient, Convenient Wood Heating</p> <p>This is a short guide to the proper use of woodburning appliances in homes: what appliances to choose, how to operate them efficiently, what wood to burn, how to cut and store it, etc.</p> <p>Aussi disponible en français sous le titre : Le chauffage au bois pratique et efficace</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 63683 | CE58 | <p>The ABC's of Windows</p> <p>This document will help consumers understand and select window performance levels with respect to airtightness, rain penetration and wind resistance appropriate for their climatic (and geographical) location and exposure conditions.</p> <p>Aussi disponible en français sous le titre : L'ABC des fenêtres</p> |
| 63911 | CE59 | <p>Should You Test the Air in Your Home for Mold?</p> <p>Testing the air in their home or apartment for mold is usually the first thing many people ask for when they suspect the presence of mold or have discovered mold growth. This fact sheet explains why air testing is not recommended, why an investigation by a trained professional is more useful and what to do if testing is deemed necessary.</p> <p>Aussi disponible en français sous le titre : Faut-il faire analyser l'air de la maison pour déceler la présence de moisissures?</p> |
| 63822 | CE60 | <p>What to Do After a Fire</p> <p>Protect your health and prevent further damage to your home by following this detailed guide on the steps to restore your home after a fire.</p> <p>Aussi disponible en français sous le titre : Que faire après un incendie</p> |
| 64092 | CE61 | <p>Renovating Your Basement for Livability</p> <p>This About Your House describes how renovating a full-height basement can be a relatively easy and cost-effective way to add new living space to your house.</p> <p>Aussi disponible en français sous le titre : Rénovation du sous-sol - objectif d'habitabilité</p> |
| 64064 | CE62 | <p>Lead in Older Homes</p> <p>This About Your House describes where lead is found in older homes and who is at risk to lead exposure. It also describes procedures for testing lead in soil, water, paint, and dust.</p> <p>Aussi disponible en français sous le titre : Le plomb dans les vieilles maisons</p> |
| 65023 | CE63a | <p>Accessible Housing by Design - Ramps (Large Print)</p> <p>For anyone who needs to make their house accessible to someone who uses a wheelchair or other mobility device, this About Your House sheds light on the design and construction of ramps for the home. After reading this publication, you will understand how a ramp should be built, the materials that should be used and things to take into consideration before building a ramp for your home.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Les rampes d'accès (à gros caractères)</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 65080 | CE63b | <p>Accessible Housing by Design - Appliances (Large Print)</p> <p>The design of an appliance can make it very easy or very difficult to use. If you have a disability, limitations in an appliance's design can make it almost impossible to use. Using the principles of Universal Design, this About Your House will help you select an appliance by outlining important design considerations, making helpful suggestions and explaining the safety features of appliances.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception—les appareils (à gros caractères)</p> |
| 65542 | CE63c | <p>Accessible Housing by Design - Lifts & Residential Elevators</p> <p>Residential lifts and elevators can benefit many people— particularly seniors who want to remain in their homes despite a loss of mobility, strength or agility. This About Your House tells you about the types of residential lifts and elevators that are commonly available in Canada. It also tells you about some of the things you should consider when you choose and install an elevator or lift in your home.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - élévateurs et ascenseurs résidentiels</p> |
| 65544 | CE63d | <p>Accessible Housing by Design - Residential Hoists and Ceiling Lifts</p> <p>A residential hoist or ceiling lift can help people who have difficulty safely moving themselves or others in or out of bed, or in or out of a bathtub. This About Your House tells you about the types of residential hoists and ceiling lifts that are commonly available in Canada. It also tells you about some of the issues you should consider when you choose and install a hoist or ceiling lift in a house, condominium or apartment.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les lève-personnes résidentiels</p> |
| 65588 | CE63e | <p>Accessible Housing by Design - Kitchens</p> <p>A home designed and constructed to reflect the principles of Universal Design is safer and more accommodating to the diverse range of ages and abilities of people who live in and visit this home. This About Your House discusses the Universal Design kitchen, which considers efficient design, efficiency of effort, adaptability, ease of cleaning, audibility and safety in order to provide a comfortable and safe space for all family members.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les cuisines</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|--|
| 65686 | CE63f | <p>Accessible Housing by Design: Bathrooms</p> <p>A bathroom designed and constructed according to the principles of universal design should be comfortable and safe for all family members, regardless of age or ability. This About Your House outlines the design considerations and elements of a universally designed bathroom, from manoeuvring space and ease of cleaning to grab bars and walk-in bathtubs and showers.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - salle de bains</p> |
| 65889 | CE63g | <p>Accessible Housing by Design: Home Automation</p> <p>The use of technology and automation in the home can help create living spaces that are convenient and energy efficient, that minimize the potential for accidents, and result in a house that is able to adapt to life's changes. Home automation provides many benefits to people with physical, sensory and mental disabilities, allowing them to live more independently. This AYH describes systems and devices that can control elements of your home environment . lighting, appliances, telephones, home security and mechanical, entry and safety systems . resulting in an environment that is more accommodating to everyone who lives there or visits, regardless of age or physical ability.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Domotique</p> |
| 66091 | CE63h | <p>Accessible Housing by Design: Fire Safety for You and Your Home</p> <p>People with disabilities and seniors are more likely to be injured in a fire than the general population as they are often unable to evacuate independently and quickly, and are not prepared with a fire safety plan. This About Your House provides many quick and easy steps that you can take to prevent fires in your home and plan for fire and emergency situations and minimize accidents ensuring that your home occupants, especially people with disabilities and seniors family are safe.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - la sécurité-incendie pour assurer votre protection et celle de votre habitation</p> |
| 65009 | CE65 | <p>Garden Suites</p> <p>With municipal approval, a garden suite is a self-contained unit, set on relative's property with an existing single family house. This publication provides introductory information on garden suites for seniors or persons with disabilities.</p> <p>Aussi disponible en français sous le titre : Les pavillons-jardins</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 65527 | CE66A | <p>How to Lock Out Crime - Home Security 101</p> <p>This fact sheet walks you through an assesment of your home's current security; includes a checklist that can help you assess what needs to be improved.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile 101</p> |
| 65529 | CE66B | <p>How to Lock Out Crime - Home Security - Exterior</p> <p>This fact sheet gives you suggestions on how to improve security from the exterior of your home through lighting strategies and home visibility.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - L'extérieur</p> |
| 65531 | CE66C | <p>How to Lock Out Crime - Home Security—Alarms</p> <p>This fact sheet gives you information to help you decide whether an installed burglar alarm is the right choice for you. Two types of systems are discussed, the perimeter alarm system and the area alarm system.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les avertisseurs</p> |
| 65533 | CE66D | <p>How to Lock Out Crime - Home Security - Doors</p> <p>This fact sheet suggests ways you can improve your door security.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes</p> |
| 65535 | CE66E | <p>How to Lock Out Crime - Home Security - Windows</p> <p>This fact sheet suggests ways to improve the security performance of your windows.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les fenêtres</p> |
| 65537 | CE66F | <p>How to Lock Out Crime - Home Security - Patio Doors</p> <p>This fact sheet suggests ways to improve the security of one of the favourite targets of burglars: patio doors.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes-fenêtres</p> |
| 65539 | CE66G | <p>How to Lock Out Crime: Home Security -- Common Sense</p> <p>Even if all the required bolts, hinges, latches and alarms have been installed, good home security cannot be achieved without first adopting the common-sense precautions outlined in this fact sheet.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Une affaire de bon sens</p> |

ABOUT YOUR HOUSE SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 65548 | CE70 | <p>EQilibrium: Healthy Housing for a Healthy Environment</p> <p>CMHC's EQilibrium housing initiative is a powerful new movement in sustainable housing. It can help homeowners reduce their energy bills, protect their families' health, reduce greenhouse gas emissions, and keep the environment clean for generations to come.</p> <p>Aussi disponible en français sous le titre : Equilibrium : maison saine pour un environnement sain</p> |

ABOUT YOUR APARTMENT SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 63419 | AE1 | <p>Solving Odour Transfer Problems in Your Apartment</p> <p>One of the most common problems experienced by the occupants of apartment buildings is the transfer of objectionable odours from one apartment to another. Tobacco smoke and cooking odours top the list of complaints. This fact sheet explains how odours are transferred, and offers a number of potential solutions. Some are very easy to implement and others should be done with the agreement of the building management. Some are trial and error. Solving the problem can take perseverance.</p> <p>Aussi disponible en français sous le titre : Enrayez la transmission d'odeurs dans votre appartement</p> |
| 63904 | AE2 | <p>Reducing Noise in Your Apartment</p> <p>This article provides basic information about the behaviour of sound and noise and suggests ways to improve the peace and tranquility in your apartment or condominium.</p> <p>Aussi disponible en français sous le titre : Atténuation du bruit dans votre appartement</p> |
| 65013 | AE3 | <p>Dealing with Power Outages</p> <p>Lengthy power outages rarely occur in Canada, but when they do, they can affect your comfort and safety. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you plan ahead for, and deal with, power outages in your apartment building. Topics include, amongst others, contents of an emergency kit, use of alternate power, and summer and winter power failures.</p> <p>Aussi disponible en français sous le titre : Les pannes de courant</p> |

ABOUT YOUR APARTMENT SERIES

| Order no. | Series no. | Title |
|-----------|------------|---|
| 65050 | AE4 | <p>Fire Safety</p> <p>Each year, many Canadians are injured or die in house or apartment fires. This fact sheet, intended specifically for occupants of multi-unit residential buildings, offers practical fire prevention tips and important information regarding smoke alarms. It will also help you create an escape plan for you and your family, and instruct you on what to do should a fire occur in your apartment.</p> <p>Aussi disponible en français sous le titre : La sécurité-incendie</p> |
| 65041 | AE5 | <p>Improving Your Security and Safety</p> <p>This About Your Apartment fact sheet, intended specifically for occupants of multi-unit residential buildings, provides practical advice on how to protect yourself, your family, and your belongings. It highlights the types of security and safety features you may have in your building and how to use them effectively. Topics include, amongst others, proper locks for windows and doors, neighbourhood security, preventing falls from windows and balconies, combustion safety, and carbon monoxide.</p> <p>Aussi disponible en français sous le titre : Pour une meilleure sécurité chez soi</p> |
| 65297 | AE6 | <p>Dealing with Pests</p> <p>Most people can relate to the surprise, shock and revulsion of coming across pests in their homes. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you prevent and reduce infestations in your apartment by describing how insects enter homes and what they need to survive. Topics include pest proofing your apartment, Integrated Pest Management (IPM), and health concerns associated with pests and pesticides.</p> <p>Aussi disponible en français sous le titre : La lutte contre les parasites</p> |
| 66002 | AE7 | <p>The Tenant's Guide to Mold</p> <p>This fact sheet is intended for people living in rented apartments and offers practical information on mold problems beginning with an overview of mold and its causes, why it is a concern, and how to identify a mold problem and estimate its severity. Since it was written with renters in mind, this guide discusses tenants' versus landlord's responsibilities when a mold problem is discovered, and whether you should call on professional help or insist that your landlord do so. Other topics addressed include cleaning up mold, preventing mold, mold-proofing different rooms and selecting an apartment that is not moldy.</p> <p>Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires</p> |

ABOUT YOUR HOUSE SERIES

ABOUT YOUR HOUSE - **NORTH SERIES**

VOTRE MAISON - **DOSSIER DU NORD**

The North About Your House series is a series specifically designed around day to day northern solutions as well as innovative northern models of building practices which work under cold climate conditions. In this series you will find examples of how to use structural panels in the high arctic, means to cleanse wastewater in the North as well as demonstrated ways of constructing a roof which can withstand northern conditions and how to choose a foundation system which will work in any of the northern communities.

| Order no. | Series no. | Title |
|-----------|-------------------|--|
| 62303 | North Series 1 | Building with Structural Panels -- Repulse Bay |
| 62304 | Dossier du Nord | Maison à panneaux isolants de construction à Repulse Bay |
| 62295 | North Series 2 | On-site Wastewater Reclamation Systems for the North |
| 62297 | Dossier du Nord 2 | Installations de recyclage sur place des eaux usées dans le nord |
| 62329 | North Series 3 | Snowshoe Inn, Fort Providence Co-generation Model |
| 62330 | Dossier du Nord 3 | Modèle de cogénération du Snowshoe Inn, Fort Providence |
| 62298 | North Series 4 | Residential Foundation Systems for Permafrost Regions |
| 62299 | Dossier du Nord 4 | Fondations pour les bâtiments résidentiels construits sur le pergélisol |
| 62154 | North Series 5 | Eagle Lake Healthy House |
| 62155 | Dossier du Nord 5 | La maison saine d'Eagle Lake |
| 62313 | North Series 6 | Arctic Hot Roof Design |
| 62314 | Dossier du Nord 6 | Conception de toits chauds pour climat arctique |
| 63050 | North Series 8 | How to Prevent Plumbing and Heating Vent Stack Freeze-up |
| 63051 | Dossier du Nord 8 | Prévenir le gel des colonnes de ventilation de plomberie et des conduits d'évacuation de l'appareil de chauffage |
| 63394 | North Series 9 | Fancoil Integrated Combination Heat and Domestic Hot Water Systems |
| 63395 | Séries du Nord 9 | Installation de chauffage des locaux et de l'eau intégrée à un ventilo-convecteur |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Brief descriptions of CMHC research papers you may wish to obtain. These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at:

<http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html>

Print copies can be obtained by calling **1-800-668-2642**

| Order no. | Series no. | TITLE |
|-----------|------------|--|
| 66135 | 08-107 | Effect of Mesh and Bale Orientation on the Strength of Straw Bale Walls |
| 66063 | 08-105 | Fixing Houses with High Radon -A Canadian Demonstration |
| 66060 | 08-104 | Approaching Net-Zero Energy in Existing Housing |
| 65961 | 08-103 | Laboratory Depressurization Test for Residential Gas Appliances - Part 2 |
| 65916 | 08-102 | Development and Assessment of Crawl Space Remediation Strategies |
| 65830 | 08-101 | Benchmarking Home Energy Savings from Energy-Efficient Lighting |
| 65903 | 08-100 | Assessment of Natural Ventilation for Canadian Residential Buildings |
| 65861 | 07-124 | Residential Solar Mass Wall Analysis for Canada |
| 65843 | 07-123 | Understanding Vapour Permeance and Condensation in Wall Assemblies |
| 65828 | 07-122 | Straw Bale Construction in Atlantic Canada |
| 65834 | 07-120 | The Effects of Programmable Fan Controllers on Ventilation, Air Distribution and Energy Use |
| 65863 | 07-119 | Monitored Thermal Performance of ICF Walls in MURBs |
| 65891 | 07-118 | Preserved Wood as a Potential Source of Arsenic and Fungi in the Foundation Walls of Homes |
| 65684 | 07-117 | Investigation of the Performance of Residential Electronic Filters in Actual Use |
| 65680 | 07-116 | Drainwater Heat Recovery Performance Testing at CCHT |
| 65649 | 07-115 | Whistle Bend Planning and Design Charrette |
| 65546 | 07-114 | Wind-Rain Relationships in Southwestern British Columbia |
| 65322 | 07-113 | Sustainable Northern Development Charrette in Yellowknife |
| 65302 | 07-112 | Research on Green Rooftops and Walls in Québec City |
| 65417 | 07-111 | Field Testing of Valved Soffit Vent Performance in Protecting Roof and Attic in Strong Winds |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

| Order no. | Series no. | TITLE |
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| 65378 | 07-110 | Action Plan for Sustainable Practices - Implementation Strategies for the Residential and Business Sections in the Greater Toronto Area |
| 65365 | 07-109 | Testing Oil-fired Appliance Depressurization Spillage |
| 65352 | 07-108 | Boiler Piping Study |
| 65350 | 07-107 | Southeast False Creek Integrated Design Process Workshops |
| 65375 | 07-106 | Evaluation of Water-Efficient Toilet Technologies to Carry Waste in Drainlines |
| 65033 | 07-105 | Performance Evaluation of Retrofitted Solid Masonry Exterior Walls |
| 65421 | 07-104 | High-Performance Stucco for Housing |
| 65346 | 07-103 | Economic Assessment of Residential Basement System Insulation Options |
| 65295 | 07-102 | The Effects of Reflective Interior Shades on Cooling Energy Consumption at the CCHT Research Facility |
| 65336 | 07-101 | A Discussion Paper: Indoor Air Quality Investigations of Houses used for Marijuana Grow Operations |
| 65344 | 07-100 | Relationship Between Moisture Content and Mechanical Properties of Gypsum Sheathing |
| 65104 | 06-114 | Old North End, Saint John, New Brunswick Community Planning and Housing Charrette |
| 65187 | 06-113 | Green Roofs: A Resource Manual for Municipal Policy Makers |
| 65100 | 06-112 | Arviat Community and Housing Design Charrette |
| 65259 | 06-111 | Validation of an Onsite Wastewater Risk Assessment Model |
| 65257 | 06-110 | Impact of Water Softeners on Septic Tanks - Field Evaluation Study |
| 65092 | 06-109 | Occupancy-based Classification System for Design and Construction of Residential Basements |
| 65243 | 06-108 | Field Assessment of a NuAir AIMS eKOCOMFORT™ Unit |
| 65245 | 06-107 | The eKOCOMFORT Field Assessment Program |
| 65274 | 06-106 | West Coast Green Roof Performance at BCIT's Green Roof Research Facility |
| 65035 | 06-104 | Household Environmental Monitoring - A Strategy to Help Homeowners Reduce Their Environmental Impact |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

| Order no. | Series no. | TITLE |
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| 64994 | 06-103 | Identifying and Removing Pollutants from Heat Recovery Ventilators |
| 65002 | 06-102 | Evaluation of Air Leakage Control Measures to Compartmentalize Newly Constructed Suites in a High- Rise Residential Building |
| 64934 | 06-101 | Green Phoenix Integrated Design Charrette for Sustainable Affordable Housing |
| 64958 | 06-100 | Performance Evaluation of the Almon Street Multi-Unit Residential Building |
| 64942 | 05-120 | Investigating Moisture in Seasonal Housing |
| 64940 | 05-119 | Energy and Water Consumption Load Profiles in Multi-Unit Residential Buildings |
| 64911 | 05-117 | Predicting Time to Fogging of Insulated Glass Units |
| 64913 | 05-116 | Nunavut Research 2003-2005 |
| 64908 | 05-115 | Study of Poured-in Place Concrete Wall Assemblies in Coastal British Columbia |
| 64855 | 05-114 | Reduction of Airborne Particles in Houses with Occupants Having Respiratory Ailments |
| 64904 | 05-113 | Duct Leakage Tests in Small Diameter Ducting System |
| 64853 | 05-112 | Assessment of Suite Compartmentalization and Depressurization in New High-rise Residential Buildings |
| 64806 | 05-111 | Laboratory Depressurization Test for Residential Gas Appliances |
| 64843 | 05-110 | Remote Monitoring and Control of On-site Wastewater Treatment, Recycling, and Reuse Systems |
| 63928 | 05-109 | Initial Material Characterization of Straw Light Clay |
| 63945 | 05-107 | Fire Experience, Smoke Alarms and Sprinklers in Canadian Homes: CMHC Research to 2005 |
| 63669 | 05-106 | "The Land We Live on is our Home" The 'Gameti Ko' Project Second Community-led Workshop |
| 63876 | 05-105 | Testing the Adhesion of Air- Barrier Membranes in Wall Assemblies |
| 63848 | 05-104 | Ice Damming Field Research |
| 63836 | 05-103 | Assessment of the Energy Performance of Two Gas Combo-Heating Systems |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

| Order no. | Series no. | TITLE |
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| 63838 | 05-102 | Development of Micro-CHP Technology Assessment Capability at CCHT |
| 63818 | 05-101 | Effects of ECPM Furnace Motors on Electricity and Gas Use |
| 63816 | 05-100 | Effects of Thermostat Setting on Energy Consumption |
| 63745 | 04-131 | Water Reuse Standards and Verification Protocol |
| 63741 | 04-130 | Dry and Comfortable Floors in Existing Basements |
| 63733 | 04-128 | Dynamic Buffer Zone (DBZ) System Performance |
| 63728 | 04-127 | Comparison of Under-Floor Insulation Systems |
| 63726 | 04-126 | Update of Roof Truss Designs with Nailing Schedules |
| 63641 | 04-125 | Residential Sources of Lead |
| 63677 | 04-124 | Summary of Research on Water Resistive Barriers |
| 63675 | 04-123 | Assessing the Impact of Thickness on the Performance of Stucco Cladding |
| 63673 | 04-122 | Comparison and Analysis of Provincial Builder and Renovator Industry Programs |
| 63635 | 04-121 | Field Testing of "Spillage- Resistant" Appliances |
| 63465 | 04-119 | Diagnosing Attic Performance by Snow- and Frost-Melt Patterns |
| 63620 | 04-118 | Performance of Sprayed Polyurethane Foam on Indoor Foundation Walls |
| 63615 | 04-117 | Analysis of Ventilation System Performance in New Ontario Houses |
| 63612 | 04-116 | Energy Needs and Availability in Housing |
| 63571 | 04-115 | Building Canada: Phase One |
| 63555 | 04-114 | Investigating Claims Against Home and Property Inspectors |
| 63557 | 04-113 | Installation Guide for Residential Wood I-Joist Floor Systems |
| 63547 | 04-112 | Canadian Home Inspectors and Building Officials National Initiative Phase II: Development of National Certification and Accreditation Models |
| 63528 | 04-111 | Characterizing the Condominium Population of the Greater Ottawa Area, 1969-2002 |
| 63540 | 04-110 | Strategies for Reducing Building Energy Use Via Innovative Building Envelope Technologies |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

| Order no. | Series no. | TITLE |
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| 63511 | 04-109 | Maximum Performance Testing of Popular Water-Efficient Toilet Models |
| 63542 | 04-108 | Garage Performance Testing |
| 63503 | 04-107 | Survey of In-Suite Space and Domestic Hot Water Heating Systems In Multi-Residential Buildings |
| 63400 | 04-105 | Field Testing of an Integrated Ventilation Space Conditioning System for Apartments |
| 63413 | 04-104 | Practical Measures for the Prevention of Basement Flooding Due to Municipal Sewer Surcharge |
| 63407 | 04-103 | House Dust: A Useful Tool To Assess Microbial Contamination In Homes |
| 63390 | 04-102 | Calgary Integrated Design and Sustainable, Affordable Housing Charrette |
| 63365 | 04-101 | Residential Combustion Spillage Monitoring |
| 63376 | 04-100 | Improved Make-up Air Supply Techniques |
| 63382 | 03-134 | Safe Housing for Lightly Contaminated Lands |
| 63370 | 03-133 | Residential Combustion Venting Failure - A Systems Approach |
| 63374 | 03-131 | The Canadian Residential Duct and Chimney Survey |
| 63326 | 03-129 | Monitoring the Performance of a Retrofitted Preserved Wood Foundation |
| 63333 | 03-128 | Review of Hygrothermal Models for Building Envelope Retrofit Analysis |
| 63328 | 03-127 | Static and Dynamic Earthquake Testing of Rainscreen Stucco Systems for B.C. Residential Wood-Frame Construction |
| 63339 | 03-125 | Water Penetration Resistance of Windows - Study of Codes, Standards, Testing and Certification |
| 63367 | 03-124 | Water Penetration Resistance of Windows: Study of Manufacturing, Building Design, Installation and Maintenance Factors |
| 63315 | 03-123 | Integrated Community Solutions: Regina's Affordable, Sustainable Housing Design Charrette |
| 63294 | 03-122 | The Impact of Requiring HVAC System Design Submittal on System Performance |
| 63280 | 03-121 | Ventilation Systems for Multi-Unit Residential Buildings: Performance Requirements and Alternative Approaches |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

| Order no. | Series no. | TITLE |
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| 63243 | 03-119 | Reduction of Air Intake Contamination in High-Rise Residential Buildings |
| 63257 | 03-118 | Investigation of a Ground-Source Heat Pump Retrofit to an Electrically Heated Multi-Family Building |
| 63237 | 03-117 | Influence of an Electronic Air Cleaner on Indoor Ozone |
| 63225 | 03-116 | Qualification of the Degree of Acoustic Comfort Provided by Multi-Family Buildings - Phase II |
| 63233 | 03-115 | Case Studies of Major Energy Retrofits |
| 63208 | 03-114 | Technology Roadmap for Intelligent Buildings |
| 63223 | 03-113 | Dawson City Demonstration Monitoring Northern Ventilation |
| 63206 | 03-112 | Guidelines for On-Site Measurement of Moisture in Wood Building Materials |
| 63204 | 03-111 | Comparison of Modeled and Monitored Performance of a Wall Insulation Retrofit in a Solid Masonry Building |
| 63214 | 03-110 | Integrated Design Charrette for a Sustainable UniverCity Community |
| 63200 | 03-109 | Proper Retrofit Furnace Sizing |
| 63188 | 03-108 | Re-Sale of Leaky Condos: Did the Buyer Know? |
| 63194 | 03-107 | Design of Durable Joints Between Windows and Walls |
| 63192 | 03-106 | Cooling Rates of Houses During Extended Power Failures |
| 63190 | 03-105 | Penetration of Outdoor Particles Into a Residence |
| 63186 | 03-104 | Indoor Particulate and Floor Cleaning |
| 63182 | 03-103 | Incompatible Building Materials |
| 63175 | 03-102 | Seville Theatre Redevelopment Project: Integrated Design Process |
| 63172 | 03-101 | Mandatory Home Inspections on Resale Homes in Ontario |
| 63132 | 03-100 | Rain Water Harvesting and Grey Water Reuse |
| 63102 | 02-137 | Multi-Residential High Efficiency Clothes Washer Pilot Project |
| 63065 | 02-135 | Monitored Performance of an Innovative Multi-Unit Residential Building |
| 62637 | 02-133 | Positive Pressure Ventilation for High-Rise Buildings |
| 63035 | 02-132 | Alternative Wall Systems for Low-Rise Housing |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

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| 63053 | 02-130 | Evaluation of Vapour Diffusion Ports on Drying of Wood-Frame Walls Under Controlled Conditions |
| 63044 | 02-129 | Investigation Protocol for Evaluation of Post-Tensioned Buildings |
| 63019 | 02-128 | “Northern Landscaping: A Guide to Restoring Plants and Soil in Northern Communities” |
| 63015 | 02-127 | LeBreton Flats District Heating System Performance Assessment |
| 63017 | 02-125 | Healthy Indoors: Achieving Healthy Indoor Environments in Canada |
| 62995 | 02-124 | Dual-Flush Toilet Testing |
| 62997 | 02-123 | Green Roof Infrastructure Workshop |
| 63022 | 02-120 | Study of High-Rise Envelope Performance in the Coastal Climate of British Columbia |
| 62976 | 02-118 | Compliance of Ventilation Systems Installed to Meet Proposed Changes to the 1995 NBCC |
| 63104 | 02-117 | Research Project on the Noise Produced by DWV Pipes Made of Cast Iron, PVC and ABS |
| 62894 | 02-116 | Wood Usage in Straw Bale House Construction |
| 62892 | 02-115 | Energy Use in Straw Bale Houses |
| 62890 | 02-114 | Defining the Convective Driving Force for Soil Gas Intrusion into Houses |
| 63116 | 02-112 | Community Energy Management – Foundation Paper |
| 62881 | 02-109 | Composite Masonry Wall Ties |
| 62888 | 02-108 | Noise Isolation Provided by Gypsum Board Partitions |
| 62955 | 02-105 | Achieving Healthy Indoor Environments: A Review of Canadian Options |
| 62944 | 02-104 | Technology Dissemination: Triggering Innovation Adoption in Canada’s Home Construction Industry |
| 62950 | 02-103 | Moldy Houses: Why They Are and Why We Care & Additional Analysis of Wallaceburg Data: the Wallaceburg Health and Housing Studies |
| 62968 | 02-102 | Transforming Your Practice: Integrated Design Charrettes for Sustainable Buildings |
| 62876 | 02-101 | Healthy High-Rise: A Guide to Innovation in the Design and Construction of High-rise Residential Buildings |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

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| 62960 | 02-100 | Final Assessment of Conservation Co-op's Greywater System |
| 62747 | 01-142 | Analysis of the Annual Energy and Water Consumption of Apartment Buildings in the CMHC HiSTAR database |
| 62745 | 01-141 | The Sustainable Home Water System |
| 62743 | 01-140 | 2001 Building Failures Study |
| 62741 | 01-139 | The Envelope Drying Rates Analysis Study |
| 62739 | 01-138 | Innovative On-Site Wastewater Treatment |
| 62737 | 01-137 | Evaluation of Urban Drainage for Basement Flood Proofing |
| 62735 | 01-136 | Protection of Basements Against Flooding Trends and Impacts of Drainage Regulations |
| 62731 | 01-134 | Technical Impediments to Use of the Existing On-Site Sewage System of Host House to Service Garden Suite on Same Property |
| 62729 | 01-133 | Lower Cost Alternative for Municipal Sewer Inspection and Maintenance |
| 62727 | 01-132 | Assessment of the Takla Landing Contour Trench Wastewater Disposal System |
| 62723 | 01-130 | The Ontario Wall Drying Project Phase 2 |
| 62721 | 01-129 | The Ontario Wall Drying Project (1991) |
| 62715 | 01-126 | Monitoring of Cavity Humidity Levels at Canada Life Building |
| 62713 | 01-125 | A Commissionable Air Barrier System for the Building Envelope |
| 62709 | 01-123 | Air Leakage Characteristics, Test Methods and Specifications for Large Buildings |
| 62707 | 01-122 | Air Infiltration from Attached Garages in Canadian Houses |
| 62705 | 01-121 | Canadian Municipal Water Conservation Initiatives |
| 62701 | 01-119 | The BREEAM Green Leaf Environmental Assessment Protocol for Multi-Residential Buildings |
| 62699 | 01-118 | Quality Assurance Protocol Test Drive by CMHC and Polygon Construction Management Ltd |
| 62697 | 01-117 | Stormwater Management Alternatives |
| 62693 | 01-115 | Commissioning Guide for the Toronto Healthy Houses Water Systems |
| 62691 | 01-114 | Peak-Day Irrigation Demand Reduction Monitoring |
| 62689 | 01-113 | Evaluating the Performance of On-Site Sewage Disposal Systems |

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

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| 62687 | 01-112 | Advancing the "Light Grey Option": Making Residential Greywater Use Happen |
| 62685 | 01-111 | Estimation of the Contribution of Phosphorus From On-Site Sewage Disposal Systems to Lakes |
| 62679 | 01-108 | Domestic Cold Water Booster Pump Control Monitoring Pilot Program |
| 62677 | 01-107 | Impact of Added Insulation on Air Leakage Patterns |
| 62675 | 01-106 | Thermostat Settings in Houses with In-floor Heating |
| 62673 | 01-105 | Case Study on Basement Renovations |
| 62671 | 01-104 | Monitoring the Performance of an EIFS Retrofit on a 15-Storey Apartment Building |
| 62669 | 01-103 | Energy Use Patterns in Off-Grid Houses |
| 62667 | 01-102 | "Plex" Housing: A Renewed Tradition |
| 62663 | 01-100 | WATERSAVE: Water Reclamation System Design Tool |

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Brief descriptions of CMHC research papers you may wish to obtain.

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| Order no. | Series no. | TITLE |
|-----------|------------|---|
| 66206 | 08-017 | Adapting Your Home to Living with Dementia |
| 66139 | 08-015 | City of Dryden-Sustainable Waterfront Development Plan |
| 66099 | 08-014 | Community Indicators for an Aging Population |
| 66086 | 08-013 | Giving Pedestrians an Edge—Using Street Layout to Influence Transportation Choice |
| 66071 | 08-012 | Taming the Flow — Better Traffic and Safer Neighbourhoods |
| 65959 | 08-011 | Understanding the Status of Visitability in Canada |
| 65674 | 08-010 | Neighbourhood Effects and Concentration Levels of Aboriginal People in Large Canadian Cities |
| 66004 | 08-009 | Adapting Homes to Extend Independence - Case Study of 13 Frail Seniors in Quebec City Suburbs |
| 65935 | 08-008 | The Role of Housing in Aboriginal Student Success - Post-Secondary Institutions in Vancouver |
| 65590 | 08-006 | Feasibility of Risk Management as a Subject for Capacity Building in First Nations Communities |
| 65845 | 08-004 | 2006 Census Housing Series Issue I: Demographics and Housing Construction |
| 65913 | 08-003 | Impacts of the Aging of the Canadian Population on Housing and Communities |
| 65901 | 08-002 | The Dynamics of Housing Affordability |
| 65933 | 08-001 | Life Cycle Costing Tool for Community Infrastructure Planning |
| 65836 | 07-022 | 2001 Census Housing Series Issue II: Profile of the Housing Conditions of Persons with Disabilities |
| 65682 | 07-018 | Housing Situation and Needs of Recent Immigrants in Montreal, Toronto, and Vancouver |
| 65672 | 07-017 | Supportive Housing for Homeless and Hard-to-House Seniors: An In-Depth Case Study |
| 65670 | 07-016 | How Effective Are Bathtub Grab Bars for Stopping a Fall When You Lose Your Balance? |

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

| Order no. | Series no. | TITLE |
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| 65660 | 07-015 | The Old Grace Hospital Site Charrette |
| 65658 | 07-013 | A Plan for Rainy Days: Water Runoff and Site Planning |
| 65560 | 07-011 | Growth Management and Affordable Housing in Greater Toronto |
| 65553 | 07-010 | Housing Issues Facing Seasonal Workers |
| 65550 | 07-009 | Fire Prevention in Aboriginal Communities Manual and DVD |
| 65644 | 07-008 | Urban Acupuncture - A Methodology for the Sustainable Rehabilitation of "Society Buildings" in Vancouver's Chinatown into Contemporary Housing |
| 65429 | 07-007 | Urban Form and Social Inclusion |
| 65427 | 07-006 | An Examination of Life Lease Housing Issues |
| 65431 | 07-005 | Case Study: A Geographic Information System (GIS) as a Tool for First Nations Housing Management, Planning and Safety |
| 65424 | 07-004 | West Hills Subdivision Sustainable Development Charrette |
| 65361 | 07-003 | Wood Buffalo Affordable Housing Project Charrette |
| 65348 | 07-002 | Establishing the National Council on Self-Help Housing |
| 65340 | 07-001 | Housing Options Upon Discharge from Correctional Facilities |
| 64804 | 06-024 | Urban Aboriginal Households: A Profile of Demographic, Housing and Economic Conditions in Canada's Prairie and Territories Region |
| 65308 | 06-023 | Senior's Housing for seniors: A Feasibility Study |
| 65293 | 06-022 | Impact of the 2010 Winter Olympic Games on the Vancouver and Sea-to-Sky Housing Markets |
| 65253 | 06-021 | Structural Analysis of Montreal's Real Estate Market |
| 65231 | 06-020 | Requalification of Suburbs and Regulatory Frameworks: Current Situation and Easing Measures |
| 65235 | 06-019 | Profile of Rooming House Residents |
| 65233 | 06-018 | Establishing On-reserve Housing Authorities |
| 65220 | 06-017 | Profile and Prospects of the Factory-built Housing Industry in Housing |
| 65185 | 06-016 | Gaining Community Acceptance of Affordable Housing Projects and Homeless Shelters |
| 65218 | 06-015 | Brownfield Redevelopment for Housing: Case Studies |

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

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| 65216 | 06-014 | Impacts of Ethnic Changes on the Housing Market in the Rivière-des-Prairies District of Montréal |
| 65183 | 06-013 | Saline Creek Plateau Sustainable Community Design Charrette |
| 65291 | 06-012 | Renovation and Repair Referral and Advisory Service for Seniors and Others Who Are Homeowners |
| 65086 | 06-011 | Housing Allowance Options for Canada |
| 65096 | 06-010 | Housing Discrimination Against Victims of Domestic Violence |
| 65048 | 06-009 | The Economic Impact of Residential Construction on Reserves |
| 65011 | 06-008 | Housing for Adults with Intellectual Disabilities |
| 65017 | 06-007 | The Transferability of the "Safe in the City" Approach to Youth Homelessness Prevention in Canada |
| 65025 | 06-006 | Accessory Apartment Regulations in Census Metropolitan Areas in Canada |
| 64990 | 06-005 | Estimates of the Private and Societal Costs and Benefits of Homeownership in Selected Canadian Cities |
| 64984 | 06-004 | Issues, Impediments and Opportunities to Using Designated Land On-reserve for Affordable Housing |
| 65006 | 06-003 | Household Income, Net Worth and Housing Affordability in Canada |
| 64981 | 06-002 | The Rutland Transit Centre Design Workshop - Kelowna, British Columbia |
| 64992 | 06-001 | 2001 Census Housing Series Issue 10: Aging, Residential Mobility and Housing Choices |
| 64944 | 05-038 | A Framework for Cost-Benefit Analysis of HASI and RRAP-D |
| 64936 | 05-037 | Student Housing in Canada: Developing a Methodology to Collect Data and Information |
| 64931 | 05-036 | Smart Growth in Canada: A Report Card |
| 64906 | 05-035 | Cost Effectiveness of Eviction Prevention Programs |
| 64900 | 05-034 | An Exploration of Housing Options for Aboriginal People in Edmonton, Alberta and Winnipeg, Manitoba |
| 64903 | 05-033 | Life Lease Supportive Housing: Combining the Best Aspects of Housing and Complex Care |
| 64897 | 05-032 | Sustaining the Non-Profit Housing Sector in British Columbia |
| 64863 | 05-031 | Searchable Database of Supportive Housing for Seniors in Canada |

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

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| 64861 | 05-030 | Architecture for Elder Health in Remote British Columbia: A Nisga'a-led Research |
| 64851 | 05-029 | Issues and Strategies for Shared Accommodation |
| 64031 | 05-027 | Homelessness, Housing and Harm Reduction: Stable Housing for Homeless People with Substance Use Issues |
| 64845 | 05-026 | Temporary Supportive Housing for Aboriginal People and Their Families |
| 63931 | 05-024 | Case Study on the Carma Centre for Excellence in Home Building and Land Development |
| 64126 | 05-023 | Costing Mechanism to Facilitate Sustainable Community Planning - Background Research and Costing Framework |
| 64062 | 05-022 | Sustainability, Planning Practice, Housing Form and Environmental Protection in the Toronto Region's Oak Ridges Moraine |
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