

# 3746



NATIONAL HOUSING  
RESEARCH COMMITTEE

COMITÉ NATIONAL DE  
RECHERCHE SUR LE LOGEMENT

**RESEARCH ACTIVITIES  
OF THE MEMBERS**

**ACTIVITÉS DE RECHERCHE  
DES MEMBRES**

October/octobre 1988



Canada Mortgage  
and Housing  
Corporation



Société canadienne  
d'hypothèques et  
de logement

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PERSONNES AGEESQUEBECL'IMPACT DU VIEILLISSEMENT DE LA POPULATION SUR LE LOGEMENT  
ET L'ENVIRONNEMENT RESIDENTIEL

Réalisé par: François Renaud  
Société d'habitation du Québec

Date de réalisation: Janvier 1988

Etude qui vise à dégager la problématique de l'impact du vieillissement de la population sur le logement. Elle fait la revue des interventions de L'Etat en matière de logements pour personnes âgées, aborde le maintien dans le milieu de vie naturel ainsi que les solutions résidentielles alternatives, en faisant référence aux expériences françaises et suédoises en la matière. Les environnements résidentiel et communautaire sont abordés comme éléments essentiels du maintien dans le milieu de vie naturel des personnes âgées. La conclusion dégage quelques pistes de recherche.

THE IMPACT OF POPULATION AGING ON HOUSING AND THE RESIDENTIAL ENVIRONMENT

Produced by: François Renaud  
Quebec Housing Corporation

Completion Date: January 1988

Study which aims at identifying the problem area of the impact of aging of the population on housing. It reviews interventions of the State in housing for the elderly, deals with maintenance in the natural life milieu as well as alternative residential solutions, by referring to the French and Swedish experiences. The residential and community environments are dealt with as essential elements of maintenance in the natural life environment of the elderly. The conclusion points to some research directions.

ELDERLYALBERTAGARDEN SUITES (GRANNY FLATS) DEMONSTRATION PROJECT

Produced by: H. G. Starno  
Manufactured Housing Assoc. of Alberta

This report examines the results of an Alberta demonstration project which gathered public comment on unit design, siting criteria, cost, ownership options, and comparison of this housing form to other forms of senior citizen housing.

The study confirms that garden suites may well represent a cost effective solution to the accommodation needs of some seniors in a residential setting close to their care-giving families.

The garden suite housing form may also have application in small clusters convenient to required services and in mobile home parks that offer appropriate amenities, services and maintenance.

Completed: March 1988  
ISBN: 0-88654-220-0  
Report: 13 pages

OWNERSHIP RETIREMENT HOUSING PROJECTS IN ALBERTA

Produced by: Lorraine Romank, M.Sc.  
Sintra Limited

Order No. 8607282  
Completed: June 1987  
ISBN: 0-88654-188-3  
Report: 168 pages

The purpose of this project was to prepare a report which designers, developers and buyers may utilize to assist in their decisions regarding the design, building, or purchase of owner occupied retirement housing. The study objectives were to (i) identify elderly housing needs, expectations, and preferences, (ii) assess how the 3 Horizon Villages met these, (iii) evaluate how the design might be improved, and (iv) evaluate the impact of this type of housing on seniors independence and self sufficiency

ELDERLY

ALBERTA

OWNERSHIP RETIREMENT HOUSING PROJECTS IN ALBERTA - PART II

Produced by: Lorraine Romank  
Sintra Group Inc.

To evaluate Parkvale Estates and Parkvale Downs in Red Deer, and to compare these projects to the Horizon Village projects. Four Phases: I- Research and Questionnaire Development; II- Questionnaire Survey Data Collection and Interview Guide; III - Interviews and Analysis; IV- Final Report.

Completion Date Spring 1988.

SHARED ACCOMMODATION FEASIBILITY STUDY

Produced by: Alice Henbest

Completion Date: June 30, 1988

To assess the demand among older persons for shared housing and to develop an operational model for a shared housing program which could respond to that demand. Three Phases: I- Research; II- Implementation and Evaluation; III- Final Evaluation and Preparation of Final Reports.

ELDERLY

ONTARIO

Housing Supply Policy Branch, Housing Conservation Unit

EMERGENCY RESPONSE SYSTEMS NEEDS STUDY AND PILOT PROJECT

Completion Date: Needs Study February 1988  
Emergency Response Systems Summer 1989

Determination of need and demand for an emergency call device in Ontario social housing for senior citizens.

- Evaluation of the potential for an emergency response system for seniors/disabled persons in senior citizens social housing projects in Ontario.
- Will include:
  - Cost/benefit analysis,
  - field test of ERS technology including customized prototypes.

RETIREMENT COMMUNITIES DEMONSTRATION

Completion Date: on-going

Demonstration project to encourage municipalities to streamline and accelerate planning and building approvals process for retirement community development:

- consists of incentive grants to municipalities for retirement communities leased or sold in developments;
- first phase which included grants to six successful municipalities has been completed; second phase of municipal grants to be introduced in early February 88;
- monitoring and assessment of streamlining techniques on-going.

PLUS - EVALUATION AND PROGRAM DEVELOPMENT

Contact: Peter Cridland (416-585-6505)

Assessment of Granny Flats demonstration including:

- social assessment
- technological research
- market demand
- planning, regulatory and legal assessment

Completion Date: Winter 1988



THE ELDERLY

RETIREMENT COMMUNITIES: PLANNING CRITERIA STUDY

Housing Supply Policy Branch, Housing Conservation Unit

Contact: Judy Zon (416-585-6252)-Municipal Affairs  
David Spence (416-585-6504)-Housing

Contribution to Ministry of Municipal Affairs Guidelines Study - involves an assessment of:

- the market for retirement communities
- their demand on local health and social services
- their financial impact on the local community, locational and design concerns

Completion Date: Winter 1988

CO-OWNERSHIP MODELS FOR SENIORS HOUSING

Completion Date: On-going

Demonstration Project to determine feasibility of Co-ownership Housing Models (includes both condominium and equity co-operative arrangements):

- will include development of legal contracts for co-ownership housing projects;
- financial assistance for co-ownership demonstration;
- assessment of demonstration findings.

HOME SHARING SEMINAR PROCEEDINGS

Proceedings of a Home-Sharing Seminar held November 1987. Includes discussions on current status of Ontario's home-sharing projects, promotion and marketing techniques, legal and ethical issues, and volunteer recruiting and training.

ELDERLY

CMHC

ACCOMMODATION OPTIONS FOR ELDERLY CANADIANS

Responsibility Centre: Research Division

Contractor: Planning Collaborative Inc.  
Suite 209, 388 King Street West  
Toronto, Ontario M5V 1K2

Develop a comprehensive guide document describing the wide variety of accommodation and support service options that are, or could be, available to elderly Canadians.

SENIORS HOUSING WITH SUPPORT SERVICES- EVALUATION AND COST STUDY

Responsibility Centre: External Research

Contractor: N. Chappell, Centre on Aging, University of Manitoba  
338 Isbister Building  
Winnipeg, Manitoba R3T 2N2

Evaluate and conduct a cost analysis of the provision of housing and supportive services to elderly individuals. Provide a base from which funders can make decisions in relation to supportive and housing services to elderly individuals, taking into account both cost effectiveness and independence of the elderly person.

LES CONDITIONS DE LOGEMENT DES PERSONNES AGEES EN MILIEU RURAL  
PROGRAMME DE SUBVENTIONS DE RECHERCHEContractant: Sokoloff, B.  
Bardat

Comprendre et décrire la situation du logement des personnes âgées en milieu rural et évaluer l'ampleur et les causes des déplacements des personnes âgées vers les villes.

ELABORATION DE GRILLES D'EVALUATION SUR L'ACCESSIBILITE ET LA FONCTIONNALITE DES LOGEMENTS DES PERSONNES AGEES  
PROGRAMME DE SUBVENTIONS DE RECHERCHEContractant: Maltais, D.  
Département de santé communautaire

Développer une liste de contrôle sur l'accessibilité et la fonctionnalité des logements des personnes âgées. Développer une grille d'évaluation de la compétence environnementale. Identifier les principales barrières environnementales du logement nuisibles à la poursuite d'une vie autonome pour les personnes âgées.

ELDERLYCMHCFOCUS GROUP STUDIES ON RETIREMENT HOUSING AND LIFE TENANCIES  
Research Division

Contractor: Simon Fraser University, Gerontology Research Centre.

Complement the information obtained from the telephone survey in evaluating the percentages of elderly people and to obtain greater insight into the factors that will contribute to the foregoing decisions.

MARKET STUDY OF LIFE-TENANCIES  
Research Division

Contractor: Campbell Goodell, Consultants Ltd.

Assess potential markets for resident funded retirement housing and the types of financing that could improve affordability.

RESIDENT FUNDED RETIREMENT HOUSING  
Research Division

Contractor: Sherebrin, D.

Examine the developments in resident funded retirement housing in Britain, Australia, and sector developments. Identify ways in which public and non-profit initiatives have influenced the private sector. Identify problems and impediments encountered in each of the countries and the public and private sector initiatives that have been taken to address them.

SENIOR CONGREGATE HOUSING MODEL  
EXTERNAL RESEARCH PROGRAM

Contractor: Murry, C.  
Iredale Partnership

Assess economic feasibility of congregate housing models entitled Abbeyfield Option to create homes for "Family of Choice" composed of competent old singles living in small groups with a live-in house-keeper. Examine attraction that a congregate model may have among well elderly. Document Abbeyfield movement in Canada & B.C. Study operational/administrative/policy arrangement and criteria in long term welfare of residents.

ELDERLY

ALBERTA

FEASIBILITY OF IMPLEMENTING LIFELINE UNITS IN ALBERTA SENIOR  
CITIZENS' LODGES

Produced by: Mr. B. Wardle  
Lutheran Welfare Society in Alberta

To assess the net benefits and other implications of implementing this electronic contact and emergency call system in seniors' lodges. Four Phases: I-Planning and Preparation; II-Pilot Project, Data Gathering and Data Analysis; III-System Assessment; IV-Final Report.

Estimated project completion date: January 31, 1989

HOMESHARING: AN INTERGENERATIONAL HOUSING ALTERNATIVE FOR  
SENIORS

Produced by: Hazel K. Wilson, President  
Society for the Retired and Semi-Retired

To design, operate and evaluate a pilot Intergenerational Housing Registry (I.H.R.). Three Phases: I-Research; II-Implementation and Evaluation; III-Evaluation and Preparation of Final Report.

Estimated project completion date: December 31, 1988

SHARED ACCOMMODATION FEASIBILITY STUDY

Produced by: Alice Henbest  
Society for the Retired and Semi-Retired

To assess the demand among older persons for shared housing and to develop an operational model for a shared housing program which could respond to that demand. Three Phases: I-Research; II-Implementation and Evaluation; III-Final Evaluation and Preparation of Final Reports.

Estimated project completion date: December 31, 1988

ELDERLYCMHCCONCEPT EVALUATION OF LIFE TENANCIES

Contractor: Campbell Goodell Consultants Ltd., Ottawa

Canada Mortgage and Housing Corporation (CMHC) commissioned a market research study to survey the opinions of seniors regarding their interest in retirement housing held in life tenancy rather than outright ownership. Further information was needed on the types of housing that would be most attractive and the segments of the seniors populations that would be most interested.

The primary objective of the report was to assess how interested seniors were in life tenancies as a housing option. In addition, the report sought to determine what specific features the seniors population would be attracted to; the financial parameters that would make the concept attractive to potential buyers; and significant concerns regarding resident funded retirement housing and alternative tenancies.

The conclusions of the study indicate that a potential market exists for life tenancies. This market features seniors who no longer want to maintain their home and prefer a higher standard of living today rather than leaving an estate for heirs. Findings also show that the demographic characteristics associated with those most interested in life tenancies are male, age 60-64, current income over \$20,000 annually, net worth of \$100,000-\$200,000.

HOUSING NEEDS OF THE ELDERLY IN RURAL AREAS

Responsibility Centre: Research

Contractor: Simon Fraser University  
Gerontology Research Centre  
Burnaby, British Columbia  
V5A 1S6

Design and develop a tool that will assist rural communities across Canada in examining and recording population characteristics and local conditions that will determine the needs and influence the choices of accommodation and support services for the elderly. Provide them with a basis for the comparative evaluation of different options.

ELDERLYCMHCNATIONAL CONFERENCE ON HOUSING FOR THE ELDERLY

Responsibility Centre: Senior Vice President's Office

Contractor: Various/Housing the Elderly Conference

Hold a national conference on housing options for the elderly to focus on new options for the elderly, to provide a forum for debate on housing issues facing the elderly and to broaden and enhance the visibility and profile of CMHC and the federal government as showing leadership and commitment to the concerns of a new generation of elderly.

PAVILLONS-JARDINS: DEMONSTRATION ET EVALUATION DE PETITS LOGEMENTS PREFABRIQUES

Division: Recherche

Contractant: Société québécoise de manufacturiers d'habitation  
5800 boul. Louis-H. Lafontaine  
Anjou, Québec  
H1M 1S7

Démontrer l'application des pavillons-jardins aux occupants potentiels, aux familles d'accueil, aux sociétés d'habitation, aux politiciens et aux représentants des organismes de réglementation et évaluer les possibilités de propagation de cette formule de logement au Québec.

TASK FORCE ON HOUSING FOR OLDER PERSONS

Responsibility Centre: Research

Provide financial support for a task force on housing for older persons to develop appropriate community standards for senior citizens' housing in Canada and identify a mechanism, or process, which will assure the use and maintenance of these standards.



ELDERLY

BRITISH COLUMBIA

B.C. Housing Management Commission

SHELTERED HOUSING (planned for 1988)

OBJECTIVE:

Determine the potential role of government in sheltered or supportive housing for seniors.

TASKS:

1. Examine experience with sheltered housing (SH) and determine an appropriate range of sheltered housing options for B.C.
  - \* Analyze the relative strengths and weaknesses of different types of sheltered or supportive housing. The target population, level of services, and appropriate building forms for each type of SH arrangement should be clearly identified.
  - \* Explore local experience with sheltered housing or seniors' housing with a service component, in some detail. A case study approach of at least three developments should be provided.
  - \* Selectively relate the experience of other jurisdiction (e.g. other provinces, the U.K.) with sheltered housing to B.C. conditions
  - \* Identify a range of sheltered/support choices that are appropriated to B.C. The range does not have to be limited to forms currently in existence.
2. Determine the demand and/or need for SH now and over the next 10 years.
  - \* Identify the size and growth of the target population, province wide and regionally; consider the socio-economic characteristics of this group and their preferences/needs regarding combinations of tenure, building form, and on site services (e.g. rental apartments with homemaker support, congregate housing with on-site meals and so on).
  - \* Examine the current trends of care facility and home support service referrals. Do existing home support services meet the requirements of frail seniors? Conversely, are there persons at home or in facilities receiving more services/care than is required?
  - \* Determine if there is a gap between independent and institutional living that could be filled by SH or other service options. If such a gap exists, what range of options is needed to fill the gap and what is the expected demand for each option? Is such a gap likely to widen over the next decade or remain relatively constant?

SOCIAL HOUSING PROJECTSCMHCNEW, OLD HOUSES

Responsibility Centre: External Research

Contractor: P. Reuber  
77 Berkeley Street  
Toronto, Ontario M5A 2W5

Prove the possibility that both the private sector and CMHC funded bodies can produce new, old housing which is much better and ultimately more affordable than standard new housing. Define the typical elements of the "new, old house" which allow for adaptability using the basic characteristics of house plans.

Completed 1987

DIMENSIONS OF QUALITY IN RESIDENTIAL ENVIRONMENTS

Responsibility Centre: External Research

Contractor: D. Brown,  
School of Urban Planning  
McGill University  
3480 University Street  
Montreal, Quebec H3A 2A7

Examine how well residential environments function as a setting for everyday life. Focus on the perceptual and behavioural patterns which housing settings foster through exterior architectural design and site planning to examine the degree of congruence between people and their immediate environment.

C.M.H.C. FLEXIBLE USE AND TENURE STUDY: SUMMARY REPORT

The objective of this study was to explore the potential for designing and building new residential units with the built-in capability to accommodate a self-contained rental unit at any stage of its occupancy, and to demonstrate that it is viable economically and can be achieved with minimum disruption.

Eighteen "made-to-convert" housing examples were designed with twenty-two different accessory units. The study provides examples of these convertible designs with an economic analysis of their conversion. In addition, the economical viability of seven conversion schemes was assessed within the Metro Toronto market.

SOCIAL HOUSING PROJECTSCHFA BIBLIOGRAPHY OF CO-OPERATIVE HOUSING IN CANADA

Produced by: Co-operative Housing Foundation

Completion date: Fall 1988

CHF's bibliography of co-operative housing in Canada contains almost 700 entries in both English and French. Documents are listed according to topic i.e. history of the co-operative housing sector, management of housing co-operatives, etc. The bibliography references books, reports, journal articles, academic theses and audio/visual materials on co-operative housing in Canada.

SOCIAL HOUSING PROJECTS

CMHC

BARTON STREET PROJECT IN HAMILTON

Responsibility Centre: Ontario Region

Contractor: Hamilton East Kiwanis Non-Profit Homes Inc.  
681 Main Street East  
Hamilton, Ontario  
L8M 1K3

Determine the effect of the Barton Street Project on the functioning of the tenant families, through a program of monitoring their response to skills training and resultant changes in life-style. The Barton Street Project is an attempt to help skills, attitudes and resources to meet the ongoing demands of daily living through the use of a new housing/life-skills program.

ESTABLISHING RENT-TO-INCOME RATIOS IN PUBLIC POLICY

Responsibility Centre: External Research Program

Contractor: Patterson, J.  
97 Robert Street  
Toronto, Ontario  
M5S 2K5

Study the various rent-to-income scales used for publicly-assisted housing and where applicable, recently introduced shelter allowances across the country. Results of the study will provide a basis for establishing rent-to-income scales which would guarantee amongst all households the ability to afford a norm minimum of necessary non-shelter goods and services.

SOCIAL HOUSING PROJECTS

CMHC

COOPERATIVE HOUSING AS NEW LIFE STYLE OPTION FOR SENIORS

Responsibility Centre: External Research Program

Contractor: Sanford, B.  
Simon Associates  
92 Shaftesbury Avenue  
Toronto, Ontario  
M4T 1A5

Delineate the relationship between the demographic and life style characteristics of seniors living in cooperative housing and their participation in and satisfaction with their housing environment.

DESIGN

ALBERTA

HISTORY OF HOUSING IN ALBERTA - STUDY

Produced by: D.G. Wetherell and Associates Ltd.

Completion Date: November 1987

To carry out and document a comprehensive study of the housing types and construction technology in Alberta.

DESIGNCMHCRECLAIMING THE ATTIC

Responsibility Centre: Research Division

Contractor: The Hubert Group  
2429 Marine Drive  
West Vancouver, British Columbia  
V7V 1L3

Carry out an investigation into the potential of reintroducing the usable attic in the mainstream of new low-rise construction. Results will show that the former efficiency and flexibility of the attic space can now be achieved without sacrificing construction speed.

ADVANCES IN BASEMENT TECHNOLOGY

Responsibility Centre: Research Division

Contractor: Various/Research Design

Submit detailed proposals for a study to investigate how to design and build better basements.

PLANNING AND ARCHITECTURAL CONSIDERATIONS FOR NORTHERN HOUSING

Responsibility Centre: Research Division

Contractor: Contract contingency

Develop and produce a comprehensive, clearly written and well illustrated guide to all significant aspects of the various stages in the planning and architectural design of Northern housing. This practical guide will be useful to design professionals, the construction industry, housing agencies, regulatory agencies and agencies representing Northern groups.

DESIGN

CMHC

WINTER CITIES PLANNING AND DESIGN CASEBOOK

Responsibility Centre: Research Division

Contractor: Royal Architectural Institute of Canada  
Chamberlain House  
328 Somerset Street West  
Ottawa, Ontario  
K2P 0J9

Complete a draft of the winter cities planning and design casebook to meet the following objectives: identify ideas and examples of approaches, policies, programs and projects related to the development of urban environments more appropriate to winter living; analyze and document these ideas and examples within a spatial and thematic framework of value to governments, developers and design professionals; and disseminate these findings to a group of interested organizations around the winter-cities world.



RENOVATIONQUEBECMETHODOLOGIE D'EVALUATION DE LA QUALITE DES LOGEMENTS

Réalisé par: Christiane Durand  
Société d'habitation du Québec

Date de réalisation: janvier 1987

Etude portant sur les différentes méthodes qui permettent de caractériser les logements selon leur niveau de qualité et leur degré de conformité à des normes d'habitabilité. L'étude comporte une recherche bibliographique et méthodologique s'étant accompagnée de l'élaboration d'un questionnaire d'enquête, utilisé à titre expérimental dans certains secteurs de recensement des villes de Montréal, Québec et Sherbrooke, au cours de l'été 1985.

METHODOLOGY OF EVALUATING THE QUALITY OF HOUSING UNITS

Produced by: Christiane Durand  
Quebec Housing Corporation

Completion Date: January 1987

Study dealing with the different methods which enable characterizing housing according to their level of quality and their degree of compliance to standards of livability. The study includes a bibliographical and methodological research which was accompanied by the development of a survey questionnaire utilized on an experimental basis in certain census sectors of Montreal, Quebec and Sherbrooke, during the course of the summer of 1985.

RENOVATION

ALBERTA

RENOVATIONS FOR A SENIOR'S HOME

Produced by: D. Bennet

Completion Date: August 16, 1988

To study the renovation which could be undertaken to facilitate the continuance of seniors in their own homes. Four Phases: I- Research; II- Project Development; III- Evaluation and Strategy Development; IV-Final Report.

RENOVATIONCMHCRENOVATION EXPENDITURES ON LOW DENSITY RENTAL BUILDINGS IN ST. JOHN'S

Responsibility Centre: External Research

Contractor: A. Rowe  
Nordco Ltd., P.O. Box 8833, St. John's, Newfoundland  
A1B 3T2

Further the design of renovation analysis by describing the renovation activities of owners of lower density rental accommodation in St. John's. Describe the expenditures (type and amount), the environment in which they occur, the barriers to expenditures and the effect of public programs.

RENOVATOR'S SEMINARS  
Project Implementation Division

Contractor: Contract Contingency

Train and educate renovators. Poor business skills have been identified as the reason 90% of renovation firms go bankrupt in their first year of operation. Three modules, cost estimates, customer relations, and inspections will be developed for this pilot year.

TRENDS IN HOME RENOVATION: CONSUMER AND PRODUCER PERSPECTIVES  
EXTERNAL RESEARCH PROGRAM

Provide a comprehensive picture of renovation activity in the city of Kitchner which will permit conclusions about the impact of renovation on new housing demand and about the future role of renovation activity as a subsector of the building industry as a whole. Provide a basis from which to forecast estimates relating to such things as labour and supply inputs to the industry.

CMHC

RENOVATION

HOUSE TESTING AND MONITORING METHODS  
Research Division

Contractor: Buchan, Lawton, Parent Ltd.

Identify and describe all testing and monitoring methods currently available and applicable to housing conditions surveys in general and particularly to the proposed national survey of housing conditions.

INVENTAIRE PERMANENT DU PARC RESIDENTIEL CANADIEN PAR PROVINCE  
PROGRAMME DE SUBVENTIONS DE RECHERCHE

Contractor: Verges-Escuin, R.  
Université de Montréal

Construire l'inventaire permanent des logements existants (occupés et vacants mis ensemble) par province.

A CONSULTATION PAPER ON HOUSING RENOVATION

The enormous importance of housing as both a physical and social asset has persuaded the Government of Canada of the need for continuing, broadly based housing policy discussions with individuals and with producer and consumer interest groups. The government is now soliciting the views of Canadians on renovation of the housing stock; first, on the role that government should play in private renovation markets, and second on the extent to which the Residential Assistance Program (RRAP) can be improved.

This background document represents a formal invitation by Canada Mortgage and Housing Corporation to groups and individuals to participate in the consultation process.

Also available in French under the title: Document de consultation sur la restauration des logements.

RENOVATIONCMHCDOCUMENT DE CONSULTATION SUR LA RESTAURATION DES LOGEMENTS

L'énorme importance du logement, actif tant matériel que social, a convaincu le gouvernement du Canada qu'il faut continuer à discuter de la politique dans ce domaine avec tous les intéressés, particuliers, producteurs et associations de consommateurs. Le gouvernement sollicite des avis sur la restauration du parc de logements, d'abord sur le rôle qu'il devrait jouer dans les marchés privés et, en second lieu, sur la question de savoir si le Programme d'aide à la remise en état des logements (PAREL) pourrait être amélioré.

La présente constitue une invitation officielle de la Société canadienne d'hypothèques et de logement aux particuliers désireux de participer au processus de consultation.

Aussi publiée en anglais sous le titre: A Consultation Paper on Housing Renovation.

SYNTHESIS STUDY OF RESEARCH ON RENOVATION

Research Division

CONSULTANT- TEEGA, Ottawa

The study is designed to identify relevant research that has been undertaken in the housing field, to identify what has been done, how well it has been done, what the gaps are, and the key issues in the area.

The project was initiated following discussions at the Housing Research Committee Working Group on Renovation.

Completion Fall 1988

RENOVATIONCMHCEVALUATION DES IMPACTS DE L'INTEGRATION DE L'ACCESSIBILITE  
UNIVERSELLE A DES TRAVAUX DE RESTAURATION MAJEURS, FINANCES PAR LE  
PROGRAMME PARCQ

Division: External Research Program

Contractant: Lanctot, S.  
Société Logique Inc.  
3250, boulevard St-Joseph est  
Montréal (Québec)  
H1Y 3G2

Verifier la pertinence d'une intervention en renovation par l'évaluation d'un projet-pilote élaboré conjointement par le service de l'habitation et du développement urbain de la ville de Montréal et la société d'habitations communautaires logique. Les résultats du projet de recherche permettront d'orienter les interventions et de maximiser les efforts investis dans le développement de logements accessibles.

EVALUATION OF RESEARCH ON RESIDENTIAL RENOVATION

Responsibility Centre: Research Division

Contractor: Teega Research Consultants Inc.  
6 Beechwood Avenue  
Ottawa, Ontario  
K1L 8B4

Identify research undertaken on residential renovation since 1978 in Canada and secondarily in the United States and Great Britain. Categorize and describe the research and assess its quality. Identify, in conjunction with the results of interviews public sectors, of priority areas for future research in residential renovation.

LEGAL

CIPREC, SUPPORTED BY UDI

ENTRENCHMENT OF PROPERTY RIGHTS IN THE CONSTITUTION

Produced by: Mc Carthy & Mc Carthy

Completion Date: April 1987

To assess the impact of amending the Constitution on the operating activities of major real estate developers. Specifically assessing:

1. What practical protection the entrenchment of "property rights" is likely to afford CIPREC members.
2. Aboriginal rights.
3. Impact on other issues such as present erosion of ownership rights through legislation relating to rent controls, heritage buildings, trespass and public use of private space.

LEGALCMHCTITLE INSURANCE IN CANADA

Responsibility Centre: External Research

Contractor: D.Shuler, Shuler & Dickenson,  
Barristers & Solicitors  
Box 1600. Banff, Alberta T0L 0C0

PIDN: 51615  
Central Registry: 6585/S58

Compare the various land title insurance systems and examine the effectiveness of such insurance. Prepare a questionnaire to direct the survey and contact provincial law reform commissions and provincial real property sections of the Canadian Bar Association.

Completion Date: April 1987

LA REGIE DU LOGEMENT...SON INFLUENCE JURIDIQUE EST-ELLE  
MANIFESTE?  
PROGRAMME DE SUBVENTIONS DE RECHERCHE

Contractor: Rousseau-Houle, T.  
Faculté de droit

Determiner le role de la régie du logement dans l'interprétation du droit relatif au contrat réglementé qu'est la bail d'habitation.



MARKET

ONTARIO  
Housing Supply Policy Branch  
Housing Conservation Unit

STARTER HOMES DEMONSTRATION PROJECT

Contact: (416-585-6520)

Monitor, review demonstration projects

Completion Date: 1989/90

STARTER HOMES LITERATURE REVIEW

Contact: (416-585-6520)

Compilation of information and examples of starter homes projects

Completion Date: Fall 1986

CURRENT RENTAL AND OWNERSHIP AFFORDABILITY REVIEW

Contact: (416-585-6520)

- .Rental Housing affordability and related impacts from income security programs and rent review
- .Monitor housing affordability and policy options

Completion Date: Fall 1986

CMHC

HOUSING PROGRESS IN CANADA SINCE 1945

Research Division.

Contractor: University of Toronto.

Develop an integrated housing volume on the evolution of Canadian housing markets and conditions in the post war period, in order to facilitate understanding of current conditions and issues, and the assessment of future needs.

COMPREHENSIVE STUDY OF THE CANADIAN HOUSING INDUSTRY

Research Division.

Contractor: Clayton Research Assoc. Ltd.,

Carry out a comprehensive study of the evolution of the Canadian housing industry since 1945 with emphasis on the industry's structure and production processes, its adaptation to change over the past forty years and the future prospects for the industry.

THE USER COST AND CASH FLOW COST OF HOMEOWNERSHIP

External Research.

Completed 1987

Contractor: M. Steele

This study estimates two alternative concepts of the costs of homeownership.

Both "user cost" and "cash flow cost" are estimated for a standard old house as well as a standard new one and for selected cities as well as for Canada. The user cost is also estimated for three sets of assumptions about the homeowner's equity ratio and marginal tax rate.

MEDIUM AND LONG TERM HOUSING FORECASTS

Research Division

Contractor: Clayton Research Associates Ltd.

Prepare a monograph on medium and long-term housing forecasts for delivery to the United Nations Economic Commission for Europe. Results will be synthesized with other countries to produce a medium to long-term housing forecast for all ECE countries.

MARKET

CHBA

HOUSING AFFORDABILITY STUDY

Contact: J. Kenward: (613) 230-3060

Objective:

The report will have three parts: an examination of the barriers to homeownership, a critical assessment of means of overcoming these problems, and formulation of a strategy for addressing barriers to homeownership in Canada.

OTHER POLICY STATEMENTS AND REPORTS

Objective:

- 1984 Policy Statement
- The Impact of the Past on the Future
- A House Built on Sand - Housing Policy in Canada
- Mortgaging the Future
- A Common Purpose
- Change and Opportunity
- Housing for Hard Times
- The New Realities in 1985
- A Partnership for Renewal in the Canadian Home Building Industry - 1986 Policy Statement
- Renovating Requires a New Attitude
- Marketing for Tomorrow in the New Home Market
- Forward into the Future
- The Residential Construction Outlook in Canada
- 1987 Policy Statement
- A Further Submission - National Consultation Process

ONTARIO

LANDLORD//TENANT EDUCATION PROGRAM

Contact: (416-585-7047) Rent Review Division  
Field Services Branch

"Education Audit" of services presently provided by government, organizations, institutions, etc., in all landlord and tenant matters.

Completion Date: November 30, 1987

DEVELOPMENT OF MUNICIPAL BUILDINGS PROGRAM AND ON-GOING MONITORING

Contact: (416-585-6520) Housing Supply Policy Branch  
Housing Conservation Unit

Development of automated property based information systems to monitor the rental housing stock within participating municipalities.

Completion Date: 1989/1990

RENTAL AND OWNERSHIP HOUSING MARKET SURVEY

Contact: (416-585-6520) Housing Supply Policy Branch

Major resource for analysis internally (Rent Review, Corporate Planning and Evaluation Branch) and externally (Senior Secretariat, Comsoc).

Completion Date: Ongoing (Biennial)

SYNDICATION

Contact: (416-585-6520) Housing Supply Policy Branch

- Review current market
- Analyze existing legislation and regulation
- Assess potential to generate unsubsidized rental limits under new rent review program

Completion Date: Extended

MARCHEQUEBECLEVER LE MORATOIRE: UNE DECISION QUI S'IMPOSE(LIFT THE MORATORIUM: THE ONLY SOLUTION)

Réalisé par: Société d'habitation du Québec

Document de proposition aux fins de consultation sur la levée du moratoire sur la conversion des immeubles locatifs en copropriété divise. Traite en première partie des motifs qui amènent le gouvernement à lever le moratoire ainsi que des objectifs poursuivis par cette démarche. On trouve en deuxième partie toutes les mesures d'encadrement de la conversion qui sont proposées par le gouvernement.

Report from the ministre des Affaires municipales, responsable de l'Habitation, for consultation purposes on the lifting the moratorium on the conversion of rental housing to condominiums. The first part discusses the objectives sought of the operation (promoting access to ownership, protecting existing tenants). The second part discusses the regulatory measures planned by the government.

Date de réalisation: avril 1987

MARKETCMHCFEASIBILITY STUDY OF RESIDENTIAL INTENSIFICATION IN  
SINGLE-INDUSTRY TOWNS: A CASE STUDY OF HEMLO

Responsibility Centre: External Research

Contractor: J. Stafford, B. McMillan, Department of Sociology  
Lakehead University, Thunder Bay, Ont. P7B 5E1

This study examines the flexibility of intensifying the existing stock of housing and serviced land in two Northwestern Ontario resource towns, Marathon and Manitouwadge, currently experiencing rapid population development related to the Hemlo goldfield expansions. The study recognizes the need for special, more flexible housing strategies specifically suited to the unique requirements of "boom/bust communities.

There are surveys with community residents, and interviews with key municipal and community personnel. Data analyses measure the physical potential of existing housing, attitudes of homeowners and tenants, and economic and legal variables. The opportunities for residential intensification are determined and discussed.

It is concluded that the most critical impediments of residential intensification in the two communities are the general unwillingness of homeowners to become landlords, and restrictive by-laws.

Completed 1987

MARCHE

QUEBEC

L'EPARGNE DES MENAGES ET L'HABITATION

Réalisé par: Robert Gaboriault  
 Société d'habitation du Québec

Date de réalisation: août 1987

L'étude fait l'analyse de comportements d'épargnants-investisseurs d'un ménage-type qui a à décider de diriger ou non de ses épargnes dans son lieu de résidence principale. L'analyse a notamment révélé l'existence d'un fonctionnement dichotomique du marché du logement où un biais fiscal en faveur de la propriété serait escompté sur le marché locatif. L'étude rejette d'emblée la notion de "revenu implicite" relié à la propriété résidentielle. Elle conclut plutôt au profit d'un "coût implicite" dépend fondamentalement des qualités intrinsèques d'investisseur de chaque ménage-proprétaire. En ce qui concerne le ménage-locataire, celui-ci se refuse en tous points l'accumulation d'épargne dans son lieu de résidence et présume que le coût pour se loger escompte les avantages fiscaux de la propriété.

THE SAVINGS OF HOUSEHOLDS AND HOUSING

Produced by: Robert Gaboriault  
 Quebec Housing Corporation

Completed: August 1987

The study analysis the behaviour of investors - savers in a typical household which has decided to direct or not, some of its savings into its main place of residence. The analysis has particularly revealed the existence of a functioning dichotomy in the housing market where a fiscal bias in favour of property would be discounted on the rental market. The study rejects straight away the notion of "implicit revenue" linked to the residential property. It concludes rather to the benefit of an "implicit cost" leaving savings in its residential property. This "implicit cost" depends fundamentally on the intrinsic investor qualities of each ownership-household. With respect to the household-tenant, the latter refuses in every respect the accumulation of savings in its place of residence, and presumes that the cost to be lodged discounts the fiscal advantages of the property.

MARCHEQUEBECENQUETE SUR LES ACHETEURS DE MAISONS NEUVES AU QUEBEC EN 1987

Réalisé par: Bernard McCann  
Société d'habitation du Québec  
en collaboration avec  
l'Association provinciale des constructeurs  
d'habitation du Québec

Date de réalisation prévue: été 1988

L'enquête entre dans sa cinquième année de réalisation. Elle a pour but de recueillir un certain nombre de données socio-économiques et de paramètres financiers sur les acheteurs de l'année écoulée en assurant une bonne représentation des modes de propriété (unifamiliales, copropriétés) et des régions (Régions de Montréal et de Québec, reste du Québec).

Cette enquête permet une augmentation de la connaissance générale du comportement des ménages, de l'évolution de leurs caractéristiques socio-économiques ainsi que des tendances affectant le marché de la maison neuve.

SURVEY ON PURCHASES OF NEW HOUSES IN QUEBEC IN 1987

Produced by: Bernard Mc Cann  
Quebec Housing Corporation  
In co-operation with the Quebec Provincial  
Association of House Builders

Completed: Summer 1988

The survey is entering its fifth year of realization. It aims at collecting a certain number of socio-economic data and financial parameters on the purchasers of the past year by ensuring a good representation of the types of property (single family, condominium) and of the regions (Montreal and Quebec Regions, remainder of Quebec).

This summary allows an increase in the general knowledge of the behaviours of households, the evolution of their socio-economic characteristics as well as trends affecting the new house market.



MARKET

ALBERTA

1987 HOUSE COST COMPARISON STUDY

Produced by: Helyar and Associates

To determine 1987 residential construction costs in selected urban centres in Alberta.

LABOUR AND MATERIALS SURVEYS  
JOINT VENTURES/RESEARCH

Contractors: various

Collect labour and materials price data for selected components that are commonly used in residential construction in various cities across Canada. Data collection from sub-contractors will be based on unit rates for a typical development in the survey area.

ECE MONOGRAPH- MEDIUM AND LONG TERM HOUSING FORECASTS  
Research Division

Contractor: Contingency

Prepare a monograph on medium and long term housing forecasts for delivery to the Economic Commission for Europe. Results will be synthesized along with other country monographs to produce a medium to long term housing forecast for all ECE countries.

RESIDENTIAL LAND PRICE TRENDS SINCE 1977 IN TORONTO  
METROPOLITAN AREA  
EXTERNAL RESEARCH PROGRAM DIVISION

Contractor: Qadeer, M.  
School of Urban and Regional Planning

Measure the level of residential lot prices in registered subdivisions of the Toronto Metropolitan area for each year of the 1977-78 period. Identify the factors which determine the yearly variations of prices for the Metropolitan market as a whole and for about 50 real estate sub-markets (districts) within the CMA.

PARTICIPATION DES MUNICIPALITES A LA PRODUCTION DE LOGEMENT  
POUR LE MARCHE  
PROGRAMME DE SUBVENTION DE RECHERCHE

Contractor: Gaudreau, M.

Mesurer l'impact du rôle actif des municipalités dans la production de logement du secteur rentable du marché.

RENT CONTROL: THE INTERNATIONAL EXPERIENCE  
STRATEGIC PLANNING/POLICY

Contractor: John Deutsch Institute for the Study of Economic  
Policy  
Dept. of Economics

Undertake the John Deutsch Institute roundtable entitled "Rent Control: The International Experience". The aim is to take a step towards remedying the debate for or against rent controls. Proceedings will provide Canadian Policy makers with a document that will allow them to draw on the international experience in deciding on the future of rent controls in Canada.

Completion Date: August 1988

HOUSING AS CONSUMPTION AND INVESTMENT: FINAL REPORT

Denton, Frank T.; Robb, A. Leslie and Spencer, Byron G.

The main purpose of this study were (1) to develop a theoretical model of how households make their choices between renting and owning, and how they determine their levels of expenditure on housing and nonhousing goods, (2) to appraise the available statistical data from the point of view of their usefulness in estimating such a model, (3) to estimate a feasible version of the model, using econometric techniques and whatever data seemed most appropriate, and (4) to make suggestions as to the possible acquisition of new data in the future that would permit a more refined version of the model to be estimated.

MANAGEMENT PRACTICES AND PLIGHT OF SMALL AND MEDIUM SIZED  
BUILDING CONTRACTORS  
External Research Program

Contractor: Kryzanowski, L.  
Faculty of Commerce

Study the financial management practices and plight of small and medium sized building contractors since the maintenance, renewal and growth of the stock of housing in Canada at a minimum cost is highly dependent upon the vibrancy and efficiency of the small and medium-sized building contractors.

MARKETCMHCPROJECTIONS A MOYEN ET LONG TERME DES BESOINS EN LOGEMENTS AU CANADA

Cette étude comprend un scénario économique et des projections de la population, de la croissance des ménages et des besoins en nouveaux logements au Canada jusqu'en 2001. A cela s'ajoutent des données sur l'offre de logements, exprimées sous forme de dépenses antérieures et projetées en matière de construction résidentielle et de rénovation du parc de logements existants, et des renseignements sur certaines caractéristiques du parc de logements actuel du Canada.

La monographie se subdivise en six chapitres:

- Tendances économiques et démographiques.
- Projections des ménages.
- Projections des besoins en nouveaux logements.
- Construction résidentielle.
- Rénovation résidentielle.
- Certaines caractéristiques du parc de logements.

A STUDY OF THE CONDOMINIUM MARKET IN NOVA SCOTIA

Contractor: Gardner Pinfold Consulting Limited

This study examines the extent of the condominium market in Nova Scotia, with emphasis on the Halifax-Dartmouth housing market. The study is designed to provide improved information on condominium markets for housing market decision makers. The major aim is to acquire descriptive data on condominium projects, describe the current state of the market and indicate any issues arising from the research.

The condominium market in the Halifax-Dartmouth Metropolitan area consists of an estimated 3,892 existing dwelling units in 108 projects. An additional 1,306 units in 22 projects were either under construction or completed and awaiting registration; the potential number of units in the area totalled 5,198 as of March 31, 1987. Condominium development outside the Halifax-Dartmouth area is limited to 50 units in 4 small projects in communities throughout the province.

An analysis of current housing market conditions as well as the factors affecting demand and supply indicate a market imbalance tipped towards over-supply. Two sets of factors affect the demand for condominiums at present: typical economic and demographic factors influencing homeownership demand in general; and, demand for investment property. The primary factors affecting the supply of units are financially related and are mainly related to the tax advantages of investing in a condominium project.

The study concludes that the perceived attractiveness of condominium units as an investment is the primary dividing force in the market at present. The demand for condominiums as an alternate form of housing tenure is secondary to this factor.

**ELDERLY HOMEOWNERS TURNED RENTERS: REASONS FOR MOVE**

Responsibility Centre: External Research Program

Contractor: Leung, H.  
Queen's University  
School of Urban and Regional Planning  
Kingston, Ontario  
K7L 3N6

Investigate the financial, social, physical and health determinants which prompted elderly low-to-moderate income homeowners to move out from their homes and become renters. Identify and discuss factors that could influence elderly homeowners to remain in their own homes.

MARKETCMHCRESIVALU II: MODELE ECONOMETRIQUE DE VALEURS RESIDENTIELLES -  
REGION DE QUEBEC - 1986

Division External Research Program

Contractant: Des Rosiers, F.  
Faculté des sciences de l'administration  
Université Laval  
Ste-Foy, Québec  
G1K 7P4

Elaborer un modèle économétrique de valeurs résidentielles pour la région de Québec et pour l'année 1986. Les données nécessaires à l'élaboration du modèle proviendront de la banque informatisée un service d'évaluation de la communauté urbaine de Québec (CUQ) qui supporte le modèle au plan logistique.

TRADE

ALBERTA

ALBERTA MARKET OPPORTUNITIES: HOUSING AND URBAN DEVELOPMENT IN THE THIRD WORLD

Produced by: Peter Nichols  
Nichols Applied Management

Completion Date: February 15, 1988

To identify the potential market for Alberta services and manufactured products in respect to housing and urban development projects in the Third World. Three Phases: I- Definition of Requirements; II- Agency and Market Identification; III- Final Report.

Status

Contract expiry date February 15, 1988. Project not on schedule. Phase II proceeding.

WOOD FRAME CONSTRUCTION PROMOTIONAL BOOKLET - PRINTING PHASE

To produce a business and government oriented booklet that describes the advantages of using wood frame housing systems and highlights Alberta as the best source of lumber, building products, and expertise. The booklet is intended as a promotional tool for use by Alberta companies pursuing export markets.

Status

The English, Japanese and Spanish versions of this are ready for printing.



CRIME PREVENTIONCMHCCONSUMER INFORMATION SERIES: SECURITY IN THE HOMEProject Implementation Division

Contractor: Zenchuk, J.

Carry out the development of manuscripts for a series of consumer pamphlets on "Security in the Home".

FACTORS IN RESIDENTIAL VANDALISM  
EXTERNAL RESEARCH PROGRAM DIVISION

Contractor: Wiesenthal, D.  
Department of Psychology

Examine existing concepts of predicting which aspects of residential environments are selected for vandalism damage and add new data to this field of knowledge. Analyze vandalised and non-vandalised dwellings in the same general neighbourhood. Develop a simulation measure that will allow for determining which elements may either attract or deter vandalism damage.

"MONITORING URBAN DEVELOPMENT USING LANDSAT TM AND SPOT SATELLITE DATA"

Contractor: Larry R. G. Martin  
School of Urban and Regional Planning

Develop an accurate, cost-effective method of monitoring land conversion in Canadian urban regions. Evaluate the improved capabilities of LANDSAT TM and spot imagery over LANDSAT MSS to discriminate among urban land cover types in both static and dynamic settings. Assess the limitation of computer-based classification and multitemporal image processing techniques applied to high resolution satellite data.

LAND SUPPLY MANAGEMENT IN CANADA

Responsibility Centre: Research Division

Contractor: D.C.H. Consultants Inc.  
200-67A Sparks Street, Ottawa, Ont. K1P 5A5

PIDN: 36343  
Central Registry: 6640-6

Assess Canada's experience in land supply management by completing an examination as follows: analyze literature relevant to Canada concerning land supply management, land market control activities, land market monitoring, adequacy of supply of serviced or planned land and large scale public land developments. Obtain comments from public and private sector specialists on land supply matters.

ONTARIO

INTENSIFICATION STRATEGY

Contact: (416-585-6502) Ann Borooh  
Housing Supply Policy Branch  
Housing Conservation Unit

Development of Comprehensive strategy to promote intensification including:

Municiple Incentives

- . Guidelines under the Planning Act.
- . Enrichment to Municipal Housing Statement Program
- . Enrichment to Community Planning Grant Program
- . Enrichment to PRIDE (Program for Renewal, Improvement and Development).
- . Research into municipal financial impacts.

Communication Strategy

- . Community Outreach (Neighbours).
- . Applicant/Producer assistance (Home Planning Advisory Services)

Direct Production

- . Enrichment Convert-to-Rent.
- . Target to first-time homebuyers.
- . Expanded Home-Sharing.

Completion Date: April 1990

MANITOBA

MANITOBA LAND POLICY STUDY

Contact: (204-945-4760) Manitoba Housing  
(Farley Cates)

Contractor: Institute of Urban Studies

Study examines the objectives behind and role of Manitoba Housing as relates to land banking and short-term land acquisition. In addition, the utility of current land holdings and practices is assessed in light of programming requirements, departmental objectives and future household demand levels. Specific attention is given to inner-city land assembly strategies.

The study contains need/demand projections, detailed examinations of some key holdings and geographic growth areas in Winnipeg, and results of interviews with housing officials and members of the housing industry.

Completed

ANAEROBIC FILTER TREATMENT OF SEPTIC TANK EFFLUENT AT LOW TEMPERATURES

Responsibility Centre: External Research

Contractor: T. Virarghavan, Faculty of Engineering,  
University of Regina,  
Regina, Saskatchewan S4S 0A2

Evaluate the relative performance under laboratory conditions of anaerobic filters treating septic tank effluent at low temperatures using two different media - rock and burnt clay or red draintile clay. Results will help in estimating the efficiency of the anaerobic filter at low temperatures and investigating the effect of different media on anaerobic filter efficiency.

MARKETING OF CANWEL

Responsibility Centre: Research Division

Contractor: Canadian Patents and Development Ltd.  
275 Slater Street, 19th Floor  
Ottawa, Ontario K1A 0R3

PIDN: 56424  
Central Registry: 6786-7

Make the Canwel technology readily available to the public through industry.

SERVICINGALBERTATEMPORARY SANITARY SEWAGE DETENTION SYSTEM

Produced by: Walker, Newby and Associates Ltd.

The purpose of this study was to determine the feasibility of temporarily storing sanitary sewage flows from a 20 acre subdivision proposed for the Lake District in the City of Edmonton. The permanent servicing system for this 20 acre development would not be in place for a number of years. To allow development to proceed, this report was necessary to develop the parameters to establish a Sanitary Sewage Detention System that would store sanitary flows during storm events when the downstream system would not be able to accommodate these flows.

Report: 46 pages  
Date: March 1988  
ISBN: 0-88654-207-3

THE SMART SUBDIVISION: RESIDENTIAL APPLICATIONS OF IVDM TECHNOLOGY

Produced by: Teletronic Communications Ltd.

Order No. 8601301  
Completed: April 1987  
ISBN: 0-88654-187-5  
Report: 95 pages

This study describes an advanced new communications technology which is capable of vastly expanding the range, utility and affordability of electronic services available to the home. In addition to outlining residential applications, the study outlines a servicing arrangement for a trial subdivision, projects costs relative to other technologies, and examines the regulatory context in principal world markets.

The IVDM system is a communications technology which transmits a wide range of signals in two directions simultaneously, enabling integration of voice, video, and data over a single transmission system. It can operate over coaxial or optical fibre cables and is compatible with either analog or digital equipment. It can easily be installed in new housing or incorporated with existing housing. It requires only one servicing operation as opposed to the two now required to bring telephone and cable television services to the home.

SERVICINGALBERTAEVALUATION OF FOAMED ASPHALT ROAD BASES USING LOCAL SANDS OR IN-SITU SOILS

Produced by: W.W. Curtis, P. Eng.

Order No: 8512051  
Completed: March 1987  
ISBN 0-88654-179-4  
Report: 103 pages

The purpose of this study was to evaluate the foamed asphalt process to determine the feasibility of reintroducing foamed asphalt pavements in Alberta. The foamed asphalt process permits production of asphalt pavements utilizing wet and marginal materials with potential significant cost savings.

RESIDENTIAL GUIDELINES FOR FLOODPLAIN CONSTRUCTION

Produced by: Victor Kozak  
Stevens Kozak Architects Ltd.

Report: 121 pages and appendices  
Date: November 1987  
ISBN: 0-88654-198-0

This study gathered, reviewed, and consolidated current knowledge on Flood preventative measures and applied it to the Alberta context. More specifically, the objectives of the study were to:

- 1) review the flood threat in Alberta municipalities;
- 2) recommend urban planning, site development and servicing techniques which are suitable to minimize flood damage in small scale residential developments located in floodplain areas;
- 3) propose retrofit techniques which can be applied to existing residences in order to minimize flood damage;
- 4) propose suitable floodproofing techniques which can be applied to new construction in Alberta communities threatened by flooding; and
- 5) estimate the cost-effectiveness of specific floodproofing measures.

SERVICINGALBERTAPRE-PRODUCTION ENGINEERING AND CERTIFICATION OF FIOVALVE  
BACKWATER VALVE

Produced by: Anderson Associates Consulting Engineers Inc.  
for Fiodrain Ltd.

Report: 30 pages  
Date: August 1987  
ISBN 0-88654-200-6

Sewer backup and resulting basement flooding can cause substantial property damage. The Fiovalve, a patented backwater valve, installs into the main drain line, blocking backflow from entering the home. Its main distinctive feature is that it operates in the open position under normal conditions. However, while proven effective, the original pre-production body casting of the Fiovalve had minor dimensional inaccuracies which precluded full CSA certification and therefore limited marketability. This project enabled Fiodrain to engage Anderson Associates to analyze product attributes, production methods and problem elements, and to secure CSA certification.



SERVICINGCMHCRESULTATS DU CONTROLE DU SYSTEME D'EVACUATION DES EAUX SEPTIQUES  
PAR LES TRANCHEES ISOHYPSES "B" DE PORT MAITLAND

Contractant: Porter Dillon Ltd., Ottawa

Le réseau d'évacuation des eaux-vannes par tranchée isohypse de Port Maitland représente un changement radical dans les systèmes d'absorption par le sol. Conçu pour remédier au fait que les systèmes d'évacuation des eaux-vannes sont fréquemment inadéquats en Nouvelle-Ecosse, vu la mauvaise perméabilité des sols et les caractéristiques géologiques de la province, il englobe le traitement sur place et l'évacuation à l'extérieur de l'agglomération rurale.

RURAL AND NATIVECMHCMANAGEMENT TRAINING NEEDS OF URBAN NATIVE HOUSING PROJECTS

Responsibility Centre: External Research

Contractor: P. Holland, Del Support Centre  
344 Bloor Street West, Suite 600  
Toronto, Ontario M5S 1W9

PIDN: 51268  
Central Registry: 65855/H40

Determine whether there is a need on the part of urban native housing groups for management and/or administrative training.

NATIVE ECONOMIC DEVELOPMENT IN NORTHERN AND RURAL COMMUNITIES

Responsibility Centre: Project Implementation Division

Contractor: Shelter Construction & Development Limited  
9 Lakeshore Drive, Toronto, Ontario M8V 1Y9

PIDN: 44552  
Central Registry: 6794-6-1

Conduct an experiment in alternative means of delivering housing in northern and rural communities. Establish whether local native labour, already possessing some skills, can be assisted by external resources in areas such as bid preparation, site supervision and contract administration.

Completion Date: (Follow-up)

HOUSE CONSTRUCTION/HABITATIONS-CONSTRUCTION  
RURAL AND NATIVE DEMONSTRATION PROGRAM: CONSTRUCTION SYSTEM  
DEVELOPMENT BY ADD-ON BUILDINGS LTD.

Project Implementation Division

Clients under the Rural and Native Demonstration Program are expected to provide the labour required to erect their own houses on a self-help bases. Since their previous experiences in construction is often quite limited, such clients may benefit from the use of simplified housing "kits".

This "Do-It-Yourself Housing Manual" meets the restriction of the Demonstration Program and acts as a guide to the homeowner in building a three-bedroom home from the ADD-On Buildings Ltd.'s self-containing packages.

SHELTER HOUSE: A RURAL AND NATIVE DEMONSTRATION HOUSE DESIGN  
Project Implementation Division

This Rural and Native Demonstration House Design is prepared for the use of the future homeowner who wishes to construct his own house. The basic idea of this house design is to keep it compact and simple, and therefore economical and yet provide comfort and energy efficiency. The high levels of insulation and triple glazed windows keep the heat in. This particular design has several features which make the house well suited for heating with a wood stove.

The design has 4 bedrooms upstairs with an open living -dining-kitchen area on the lower level surrounding the woodstove which heats the house and could be used for cooking. The total living space is 1248 square feet (116m<sup>2</sup>) with 624 square feet (58m<sup>2</sup>) per floor.

CMHC

CROFTER EVALUATION: LORETTE, MANITOBA

Project Implementation Division

The "Crofter" refers to a series of housing designs developed by Gordon Scott (recently retired from CMHC) for use in rural and native housing programs. The Crofter incorporates a number of innovative construction features which aim at reducing foundation movement, condensation problems, energy usage, and air leakage. In 1984-85 a Crofter unit and a standard Manitoba RNH unit were built on adjacent sites in Lorette for monitoring.

The consultant determined that in most cases, the Crofter did not perform significantly better than the standard RNH unit. The consultant made various recommendations regarding improvements to the Crofter, but noted that the quality of Manitoba RNH units is already very high, and that occupant behaviour can often override subtle design differences. Considering the significantly higher costs of the Crofter, it would appear that continued development of certain innovative features would be wiser than wholesale adoption of the Crofter design.

1986 MONITORING OF CMHC'S RNH DEMONSTRATION PROGRAM

This report presents the results of an assessment of 19 projects funded under the Rural and Native Housing Demonstration Program, (RNH), and four projects funded under the Alberta Rural Homeownership Assistance Program (RHAP) or the Northwest Territories Homeownership Assistance Program (HAP).

Analysis of project data has been made on a national basis and comparisons of the three programs have also been carried out.

1987 MONITORING OF THE RURAL AND NATIVE DEMONSTRATION PROGRAM

Project Implementation: RNH DEMO

Contractor: Larsson Consulting

Carry out the collection of field data and analysis for the purpose of producing a monitoring report. The information will allow the RNH demonstration program to be evaluated and compared with conventional rural and native housing programs.

NATIVE/PROJET SOCIAUX

QUEBEC

"PROFIL SOCIO-ECONOMIQUE ET CARACTERISTIQUES DU LOGEMENT DES AUTOCHTONES HORS RESERVES NON INUIT DU QUEBEC EN 1981"

Réalisé par: Monique Boileau  
Société d'habitation du Québec

Date de réalisation: octobre 1987

Ce document présente des compilations spéciales sur la répartition géographique de la population et des ménages hors réserves de façon à pouvoir identifier les comtés et municipalités les plus densément peuplés.

Par ailleurs, des données inédites sur les caractéristiques physiques et économiques des logements de cette population permettent de dégager un portrait statistique des conditions de logement des locataires et propriétaires autochtones habitant hors des réserves du Québec.

L'étude comprend neuf tableaux commentés qui présentent les résultats de compilations spéciales du recensement de 1981.

SOCIO-ECONOMIC AND CHARACTERISTIC PROFILE OF HOUSING THE NON INUIT OFF RESERVE NATIVES OF QUEBEC IN 1981

Produced by: Monique Boileau  
Quebec Housing Corporation

Completion Date: October 1987

This document presents special compilations on the geographic distribution of the population, and of off-reserve households so as to be able to identify the counties and municipalities which are most densely populated.

The unpublished data on the physical and economic characteristics of this population's housing, make it possible to draw a statistical picture of the housing conditions of native tenants and owners living off-reserve in Quebec.

The study comprises nine tables with descriptions which present the results of special compilations in the 1981 census.

RURAL AND NATIVE DEMONSTRATION PROGRAM-VIDEO PRODUCTION  
Project Implementation

Contractor: Contract contingency

Produce an audio visual promotional material for the demo program. It will be approximately ten minutes in length, to be available in English and French. It is to assist field staff in presenting the program, in a consistent manner to local MP's, Municipal Councils.

RURAL & NATIVE

ALBERTA

AFFORDABLE HOUSING FOR RURAL ALBERTA - A NEW APPROACH

Produced by: Gord Bontje  
Laepon Developments Ltd.

To analyze the rural home market and to develop a package of services which combine the needs of owner/builders with the capabilities of professional home builders to achieve an enhanced product. Four Phases: I-Preliminary Analysis; II-The Survey; III-Economic Viability; IV-Final Assessment.

Estimated project completion date: August 31, 1988

NORTH

CMHC

NORTHERN VENTILATION

Responsibility Centre: Project Implementation Division

Contractor: Ferguson, Simek, Clark Ltd.  
4910-53rd Street, P. O. Box 1777  
Yellowknife, N.W.T. X1A 2P4

Implement, in cooperation with the Northwest Territories Housing Corporation, the field testing of alternative approaches to heating and ventilating in extreme Northern conditions. Incorporate technically sound and cost-effective results into the design of CMHC-funded housing units which will improve the quality and extend the life of the housing stock in the North.

REDUCTION OF WINTER-INDUCED DISCOMFORT IN RESIDENTIAL AREAS

Responsibility Centre: External Research

Contractor: N. Pressman, 178 Lincoln Road,  
Waterloo, Ontario N2J 2P1

PIDN: 51474  
Central Registry: 65855/P16-2

Prepare an annotated bibliography on cold climate planning, development policy and design with the major focus placed on reducing winter-induced discomfort in residential areas throughout Canadian urban settlements. Interpret and classify the information collected and investigate the implications for future Canadian residential planning and design.



NORTHCMHCHOUSING AS NORTHERN COMMUNITY DEVELOPMENT: THE FORT GOOD HOPE  
CASE  
EXTERNAL RESEARCH PROGRAM

Contractor: Rees, W.  
School of Community & Regional Planning

Document the apparently successful community based housing program which has been implemented in the hamlet of Fort Good Hope, NWT, since 1982. Results of the case study may contribute toward the development of a general model for community-based housing development north of 60 degrees.

NORTHSPACE FRAME FOUNDATION SYSTEM PERMAFROST:  
FEASIBILITY REPORT #1  
Project Implementation Division

The objective of this project was to develop and monitor a structural framing system that would resist or rather avoid the racking forces that otherwise crack and distort the building envelope in northern house construction.

A three point space frame was designed, developed, and installed in consultation with CMHC, NWTTC and a space frame manufacturer.

The conclusions were that the three-point space frame concept performed as designed and was found to be simple to install. A multiple point system would work equally well at less cost, as the frame was found to be rigid enough if the loads were spread evenly over the entire area of the building, rather than over only three points.

FIREALBERTARESIDENTIAL FIRE PREVENTION

Produced by: John Rockliff

This report documents a research project which investigates and describes residential fires and identified intervention strategies which could reduce fire losses.

The scope of the study covered low rise, wood-frame housing in Alberta, including new construction and renovation of duplexes, town houses and manufactured homes. The main focus of the study was new single-family detached housing.

Based on the evaluation of their findings, the authors concluded that hard-wired, interconnected smoke alarm/detectors and residential sprinklers were the two technologies which offered the greatest potential as fire intervention strategies.

Despite the apparent societal benefits which might accrue from the adoption of residential sprinklers, the authors suggest that there is insufficient evidence, at this time, to justify recommending mandatory adoption of sprinklers in all new residential structures. Instead, they recommend that the implication of community-wide sprinkler applications be studied further.

Report: 58 pages  
Date: March 1988  
ISBN: 0-88654-212-X

SPECIAL NEEDS

CMHC

SYNTHESIS PROJECT ON SPECIAL HOUSING NEED

Contractor: Canadian Council on Social Development

This project was initiated following discussions at the National Housing Research Committee working group on Special Need in June 1987. An advisory group of housing research committee members have assisted in designing the project and establishing direction for the consultant

The objectives are to:

- develop a framework that can be used to organize research undertaken in Canada to date;
- identify key Canadian research that articulates and addresses the accommodation and special service concepts and issues inherent in responding to people with special housing needs;
- identify key issues examined by relevant research, in order to classify the existing literature within the special housing needs framework and identify areas for further research;
- present the issues identified in previous research within a framework that clarifies the state of present knowledge and highlights knowledge gaps; and
- develop recommendations regarding the direction of future research efforts to close these gaps.

Expected completion      Summer 1988.

SPECIAL NEEDSCMHC/ONTARIOEVALUATION OF 90 SHUTER STREET, TORONTO: FINAL REPORT

Responsibility Centre: Research Division

Contractor: Allan Etherington & Associates  
Municipality of Metro Toronto,  
East Tower, City Hall  
Toronto, Ontario M5H 2N1

The 90 Shuter Street housing project provides accommodation for low income single people. The building is designed as a "stack of rooming houses" and is made up of 17 self-contained apartments.

In 1985 CMHC, the Municipality of Metropolitan Toronto, the Ontario Ministry of Housing and Ontario Ministry of Community and Social Services agreed to fund and evaluation of this project. Specifically, the objectives of this evaluation were to:

1. Assess the success of 90 Shuter Street in relation to its objectives and its impacts upon residents;
2. Examine the costs of Shuter Street and of other accommodation in which its residents might otherwise reside;
3. Identify the key components of the model and its transferability; and
4. Review the policies and programs of funders to recommend ways to coordinate program and funding criteria such that they are complementary and thereby facilitate the development of innovative projects.

NON-PROFIT HOUSING FOR SINGLE PARENTS

Responsibility Centre: External Research

Contractor: G. Wekerle, Faculty of Environment  
York University, 4700 Keele Street,  
Downsview, Ontario M3J 1P3

PIDN: 43786  
Central Registry: 6585/W7-1

Document the development process and operation of non-profit housing projects in Canada designed for single parents and assess whether they meet the needs of single parents as identified in the literature.

SPECIAL NEEDSCHF

Produced by: Co-operative Housing Foundation

Completion date: late 1988

AN INVENTORY OF SPECIAL NEEDS HOUSING

The purpose of CHF's special needs housing survey is to take inventory of special needs housing development in the co-operative housing sector in order to identify gaps in service and problem areas which must be remedied. The report will present project/unit data on both a national and provincial scale, highlight special needs groups served, and document special arrangements which have contributed to the success of projects or problems which have hindered development.

SPECIAL NEEDSCMHCAN ASSESSMENT OF PROVINCIAL LEGISLATION, BUILDING REGULATIONS,  
PUBLIC HEALTH REGULATIONS AND BYLAWS AS A BARRIER TO HOUSING PEOPLE  
WITH DISABILITIES

Responsibility Centre: External Research Program

Contractor: Holt, M.  
c/o Humanite Services Planning Ltd.  
203 - 260 St. Albert Road  
St. Albert, Alberta  
T8N 5H6

Investigate to determine the extent to which the building code, other provincial regulations and legislation, and municipal bylaws impede discharge from an institution to a normal residential community setting for people with disabilities in Alberta.

HOUSING ALZHEIMER'S DISEASE AT HOME

Responsibility Centre: External Research Program

Contractor: Gnaedinger, N.  
901 - 175 Bronson Avenue  
Ottawa, Ontario  
K1R 6H2

Undertake research to provide needed information on physical strategies to accommodate people with Alzheimer's disease in their own homes. Results will be recommendations for members of lay public in need of practical solutions in accommodating patients at home, recommendations for design prof. and recommendations for policy-makers with regard to cost of actually modifying domestic environments with a view to having these facts included in future policy deliberations.

HOMELESSCCSDHOMELESSNESS IN CANADA: A NATIONAL INQUIRY

Contractor: Mary Ann McLaughlin  
(613-728-1865)

An International Year of Shelter for the Homeless (IYSH) project, partially funded by CMHC.

Main Objectives:

1. To focus attention on the extent of homelessness and the problems faced by homeless people in Canada.
2. To identify innovative shelter programs and methods of dealing with problems encountered in establishing and running these programs.
3. To develop recommendations for changes in federal, provincial, and local legislation and regulations which affect the homeless and provision of shelter for the homeless.

Method:

A two-phase approach including a national "Snapshot Survey" of agencies providing temporary and emergency shelter and related services, followed by a consultation in each province.

Completion Date: September 30, 1987

SOLUTIONS TO HOUSING THE HOMELESS IN CANADA (IYSH)

Responsibility Centre: Strategic Planning/Policy Division

Contractor: University of B.C., Centre for Human Settlements,  
2206 East Mall, Vancouver, B.C. V6H 1W5

Identify, analyze and prepare for presentation to the United Nations, a selection of successful solutions to housing the homeless in Canada as demonstration projects within IYSH guidelines as a contribution to Canada's program for the International Year of Shelter for the Homeless 1987.

HOMELESSCREASYMPOSIUM TO DEVELOP AND RECOMMEND IMPROVED COOPERATION BETWEEN PRIVATE AND PUBLIC SECTORS TO MEET THE NEEDS OF LOW-INCOME HOUSEHOLDS

Participants: CREA, York University, CMHC

Contact: David Humphreys, Ottawa (613-234-3372)

Six papers especially commissioned for this symposium identified problems and opportunities and contain recommendations for improving collaboration between the public and private sectors.

SYMPOSIUM VISANT A ELABORER ET RECOMMANDER UNE MEILLEURE COLLABORATION ENTRE LES SECTEURS PRIVE ET PUBLIC POUR REPENDRE AUX BESOINS DES MENAGES A FAIBLE REVENU

Participants: L'Association canadienne de l'immeuble  
La SCHL  
L'Université York

Informateur: David Humphreys, Ottawa (613-234-3372)

Six documents, commandés spécialement pour ce symposium, abordent une série de problèmes et de possibilités et contiennent des recommandations en vue d'améliorer la collaboration entre les secteurs public et privé. Dans le cas où l'intervention du public est recommandée, des étiquettes indiquant le prix estimatif sont accolées.



HOMELESS

CMHC

ATLANTIC WOMEN AND HOUSING CONFERENCE IN SUPPORT OF IYSH  
STRATEGIC PLANNING/POLICY DIVISION

Contractor: Nova Scotia Association of Social Workers

Provide financial support to the Nova Scotia Association of Social Workers to organize and hold an "Atlantic Women and Housing Conference" in support of the International Year of Shelter for the Homeless in 1987.

FILM ENTITLED "HOLDING OUR GROUND" FOR 1987 IYSH  
STRATEGIC PLANNING/POLICY DIVISION

Contractor: National Film Board of Canada

Provide financial support to the National Film Board of Canada for the preparation of a film entitled "Holding our Ground" to highlight the problems which Canadian and Third World women face with respect to their housing needs and to promote discussion and interest in housing issues as they relate to women around the world.

HOMELESS IN CANADA, US AND UK: ROLE OF PUBLIC AND PRIVATE  
AGENCIES  
EXTERNAL RESEARCH PROGRAM

Contractor: Daly, G.  
Faculty of Environment Studies

Examine the homelessness issue in Canadian cities, comparing recent public and private sector responses to those programs which have evolved over a longer period in Britain and the United States. Develop a cleared definition of roles of public and private agencies with respect to homelessness. Evaluate existing programs and determine if a long-term strategy for dealing with homelessness in Canada can be developed.

HOMELESS

CMHC

HOUSING NEEDS OF LOW INCOME HOUSEHOLDS (IYSH)  
STRATEGIC PLANNING/POLICY DIVISION

Contractor: Canadian Real Estate Association

Carry out a symposium at which six specially commissioned papers addressing problems related to the housing needs of low income households will be presented and discussed, in support of the International Year of Shelter for the Homeless 1987.

1987 IYSH CONFERENCE: "NEW PARTNERSHIPS: BUILDING FOR THE FUTURE"  
STRATEGIC PLANNING/POLICY DIVISION

Contractor: International Conference on Social Development  
1987 Canadian Conference

Provide financial support to the International Conferences on Social Development to carry out a Canadian Conference in recognition of the International Year of Shelter for the Homeless 1987 entitled "New Partnerships: Building for the Future".

PANEL DISCUSSIONS ON SHELTER FOR THE HOMELESS  
STRATEGIC PLANNING/POLICY DEVELOPMENT

Contractor: National Council of Women in Canada

Organize and carry out panel discussions in 33 local communities on the topic of shelter for the homeless. Reports will be prepared to summarize the proceedings of these discussions.

PRINCIPLES AND RECOMMENDATIONS FROM CANADIAN CONFERENCE ON THE INTERNATIONAL YEAR OF SHELTER  
STRATEGIC PLANNING/POLICY DEVELOPMENT

Document case histories of projects designed by Canadian professionals to provide affordable shelter. Results will be part of the contribution to the International Year of Shelter for the Homeless 1987.

HOMELESS

CMHC

SHELTER NEEDS OF THE HOMELESS  
STRATEGIC PLANNING/POLICY

Contractor: Rooftops Canada Foundation

Carry out a project to enhance the contribution of Canadian non-governmental, professional and private organizations in meeting the shelter needs of the homeless.

1987 IYSH HALIFAX METRO DEMONSTRATION PROJECT

Responsibility Centre: Project Implementation Division

Contractor: Various contractors

Provide financial support for the Halifax Metro Demonstration Project as an initiative in support of the International Year of Shelter for the Homeless. The project will involve the provision of 250 housing units in diverse forms - emergency shelters for the homeless, boarding house accommodation for singles, as well as housing for seniors, for single parents and for families in Halifax, Dartmouth, Bedford and Halifax County.

HOMELESS

CMHC

A COMPARATIVE ASSESSMENT OF PROGRAMS DEALING WITH THE HOMELESS  
POPULATION IN THE UNITED STATES, CANADA AND BRITAIN

Responsibility Centre: External Research Program

Contractor: Gerald Daly

This paper summarizes an examination of programs for homeless individuals and families in the United States, Canada, and Britain. Its primary objective is to describe and compare the strategies and the types of programs which have been developed in the three countries. It suggests that a variety of projects and services, including permanent housing, are required to address the complex and pervasive problems associated with homelessness.

PROJETS SOCIAUX

QUEBEC

ETUDE SUR L'ACCESSIBILITE AU LOGEMENT DURANT LA PERIODE  
1972-1986

Réalisé par: Bernard McCann  
Pierre Rouleau  
Société d'habitation du Québec

Date de réalisation prévue: été 1988

L'étude qui vient à peine de débiter a pour objectif de tracer le portrait de l'évolution de la consommation du logement par les ménages québécois durant la période de 1972 à 1986. L'accessibilité financière y sera examinée sous trois angles: la proportion du revenu consacré au logement, les ménages aux prises avec des problèmes de logement et , enfin, l'accession à la propriété.

STUDY ON THE ACCESSIBILITY TO HOUSING DURING THE PERIOD  
1972-1986

Produced by: Bernard McCann  
Pierre Couleau  
Quebec Housing Corporation

Completion Date: Summer 1988

The study aims at tracing the evolution of housing consumption by Quebec households during the period 1972 to 1986. The financial accessibility will be examined in three aspects: the proportion of income devoted to housing, households with problems in housing and finally, home ownership.

PROJETS SOCIAUX

QUEBEC

ANALYSE DE L'IMPACT DE L'IMPLANTATION  
D'UN HLM EN MILIEU RURAL

Réalisé par: Madeleine Perreault  
Société d'habitation du Québec

Date de réalisation: Septembre 1987

Etude d'impact de l'implantation d'HLM pour personnes âgées dans sept municipalités rurales de moins de 2 500 habitants, et ce, sur l'offre que sur la demande de logements. Pour rendre compte de cette réalité, l'étude fait état de la vocation économique de ces municipalités, des caractéristiques socio-économiques de la population et des ménages dont les déplacements sont directement reliés du parc de logements dans son ensemble comparativement à celles des logements libérés par les résidents du HLM.

ANALYSIS OF THE IMPACT OF ESTABLISHING A L.R.H. IN A RURAL  
MILIEU

Produced by: Madelaine Perrault  
Quebec Housing Corporation

Completion Date: September 1987

Study of the impact of establishing L.R.H. for senior citizens in seven rural municipalities with less than 2,500 inhabitants and on the supply and demand for housing. To give an account of this reality, the study outlines the economic basis of these municipalities, the socio-economic characteristics of the population and households whose movements are directly linked to the arrival of the L.R.H., the quality of the environment and the characteristics of the housing stock on the whole in comparison to that of housing released by L.R.H. residents.

PROJET SOCIAUX

QUEBEC

RAPPORT D'EVALUATION DU PROGRAMME D'AIDE  
AUX GROUPES DE RESSOURCES TECHNIQUES

Réalisé par: Madeleine Perreault  
Anne Roberge  
Société d'habitation du Québec

Date de réalisation: février 1987

Etude ayant pour objet, dans un premier temps, d'évaluer la capacité des GRT d'atteindre les objectifs fixés par le programme d'aide, soit, la promotion, l'élaboration et la mise en oeuvre de projets coopératifs et sans but lucratif, et, dans un deuxième temps, d'évaluer leur capacité d'atteindre ces objectifs au moindre coût en analysant leur viabilité financière et leur niveau d'autofinancement. Cette évaluation conduit à la formulation de propositions de rationalisation du réseau des GRT basées sur leur regroupement.

EVALUATION REPORT OF THE ASSISTANCE PROGRAM TO TECHNICAL  
RESOURCES GROUPS

Produced by: Madelaine Perrault  
Anne Roberge  
Quebec Housing Corporation

Completion Date: February 1987

The object of the study being at first, to evaluate the capacity of the TRG's to reach the objectives set by the assistance programme, that is, the promotion, the development and the implementation of co-operation and non-profit projects and secondly to evaluate their capacity to reach these objectives at the least cost by analysing their financial viability and their level of self-financing. This evaluation leads to the formulation of rationalization proposals of the network of TRG's based on regrouping.

EVALUATION OF PUBLIC PROGRAMS...VERNACULAR AND INFORMAL  
ECONOMY  
EXTERNAL RESEARCH PROGRAMS

Contractor: Deromana, A.

Conduct an exploratory evaluation of existing program's applicability to self-organized construction, and delimitation of the scope and extent of the eventual improvement, corrective or supplementary mechanisms required.

DOWNTOWN EASTSIDE VANCOUVER HOUSING SURVEY  
BRITISH COLUMBIA AND YUKON REGION

Contractor: Downtown Eastside Residents Association

Obtain up-to-date- and comprehensive information on the residents and housing stock in the downtown eastside of Vancouver in order that the federal/provincial partnership can develop appropriate plans in response to identified housing needs.



HOUSING NEEDS

NEWFOUNDLAND

PROVINCIAL HOUSING NEEDS ASSESSMENT

Initiated in 1987 to determine the nature and extent of social housing needs on a province-wide basis. This assessment was intended to establish a foundation for the ongoing evaluation of housing need so that the allocation of resources could be based upon current, objective data collected and analyzed for this purpose.

Phase

- I. Development of Needs Identification System  
Contractor: Ekos Research Associates, Ottawa, Ontario
  
- II. Public Consultation Process
  - A. Public Forums, June and July 1987
  - B. Special Needs Study  
Contractor: D.W. Knight and Associates,  
St. John's, Newfoundland
  - C. Development of a Multi-Year Housing Strategy
  - D. Implementation of a Corporate Communications Strategy

Completion date: 1988

Contact: Colleen Hanrahan  
Director, Corporate Planning and Research  
Newfoundland and Labrador Housing Corporation

NEW BRUNSWICK/CMHC

NEW BRUNSWICK HOUSING NEEDS STUDY

Contractor: New Brunswick Housing Corporation  
P.O. Box 611  
Fredericton, New Brunswick E3B 5B2

Undertake a detailed study of the past and future evolution of housing conditions in the province of New Brunswick. Identify the range, types and extent of social housing needs which exist or are likely to arise in future, with particular emphasis on low income households. Results of the study will provide supporting documentation and analyses to enhance the development of provincial social housing policies and strategies.

YUKON HOUSING NEEDS STUDY

Responsibility Centre: Statistical Services Division

Contractor: Various contractors

Undertake a detailed study to identify the nature of housing needs problems for the Yukon and communities therein. The study will identify the range, types and extent of current housing needs in the Yukon. Supporting documentation and analyses from the study will enhance housing policies and ensure effective housing program delivery.

Completion Date: Follow-up

HOUSING NEEDS

CMHC

CHARRETTE ON MARKET HOUSING ISSUES

Responsibility Centre: Strategic Planning & Policy Development

Contractor: Toronto Home Builders' Association  
5218 Yonge Street  
Willowdale, Ontario  
M2N 5P6

Develop strong recommendations for a solution to the problem of affordable housing by gathering together a group of industry leaders along with various groups that have a direct interest in this issue.

MANUFACTURED HOUSING

ALBERTA

MANUFACTURED HOUSING CODE ANALYSIS

Produced by: Mfg. Hsg. Assoc. of Alberta and Sask.

Completion Date: June 30, 1988

To employ Alberta labour and goods to manufactured housing units for export to the U.S. Two Phases: I- Information Collection and Comparison; II- Analysis.

MANUFACTURED HOUSING

ALBERTA

CARIBBEAN EXPORT HOME

Produced by: Sid Tissington  
Seven S Structures

To manufacture, ship, deliver and erect two demonstration houses in Antigua. Upon satisfactory completion 2000 Seven S homes will be exported over the next two years to Amicus Corporation and the Government of Antigua. Three Phases: I-Planning; II-Production and Site Erection; III-Final Report.

Estimated project completion date: September 2, 1988

MANUFACTURED HOUSING

CMHC

R-2000 ALBERTA NORTH/HOUSE

Responsibility Centre: Research Division

Contractor: Manufactured Housing Association  
Alberta and Saskatchewan  
Riverside Office Plaza  
#131, 4919 - 59th Street  
Red Deer, Alberta  
T4N 6C9

Demonstrate the feasibility of construction, transporting and installing a manufactured housing unit which meets the climatic, logistic and economic constraints of the extreme north.

ALBERTA

MANAGEMENT

CONDOMINIUM MANAGEMENT PROCEDURES

Produced by: Douglas McNeil  
National Chairman  
Canadian Condominium Institute

Report: 194 pages  
Date: September 1987  
ISBN 0-88654-195-6

This report brings together a variety of papers assembled by the Canadian Condominium Institute on the occasion of the First Alberta Condominium Conference. It provides information on a number of issues of concern to the condominium community and it is intended by the Institute to serve as a reference manual on condominium management procedures. The intent of the report is to provide practical information on the wide range of matters with which a condominium board member or association might deal.



MANAGEMENT

CMHC

TENANT PARTICIPATION IN THE MANAGEMENT OF PUBLIC HOUSING: A  
SYNOPSIS OF U.S. EXPERIENCE

Responsibility Centre: Professional Standards Division

As part of the background research toward establishing a policy on regeneration, tenant management is being investigated as one possible approach toward improving operational efficiency and quality of life in Canadian public housing.

A number of tenant managed public housing initiatives have been undertaken in the United States over the past decade. This paper attempts to provide an overview of the practicality of tenant management in terms of net public expenditures and in terms of potential benefits based on the results of the American experience.

When costs were assessed in terms of benefits, the initial monetary outlays required to fund a Tenant Management Corporation certainly merited the investment. The evaluation of tenant management in terms of benefits revealed dramatically increased occupancy rates, a reduction in delinquent rents, a marked increase in maintenance worker productivity, extensive job creation, diminished crime rates and a noticeable improvement in community spirit. In conclusion, when benefits were considered, tenant management of public housing in the United States, proved to be a viable and cost-effective alternative to conventional public housing management.

TAXATION

ONTARIO

DEVELOP AND ANALYZE TAX POLICY OPTIONS ON RENTAL HOUSING

Contact: (416-585-6520) Housing Supply Policy Branch

- .Computer simulation model
- .How will different depreciation schedules affect rental investment
- .Impact of new partnership rules

Completion Date: Extended to September 1988

MONITOR AND EVALUATE TAX REFORM IN CANADA AND U.S.

Contact: (416-585-6520) Housing Supply Policy Branch

- .Review of U.S. tax reforms
- .Focus on real-estate
- .Michael Wilson's tax return proposal

POLITIQUE DE TAXATIONQUEBECEVOLUTION DE L'EVALUATION FONCIERE RESIDENTIELLE  
ET DE LA TAXATION FONCIERE A MONTREAL, 1981-1987

Réalisé par: Louise Richard  
Société d'habitation du Québec

Date de réalisation: Décembre 1987

Cette étude basée sur les données de l'évaluation foncière permet de suivre l'évolution des valeurs des immeubles résidentiels sur une base spatiale, les quartiers et sur la base des types d'immeubles. Elle permet d'identifier les zones en ascension et d'autre en déclin au niveau de la valeur. Elle ne comporte pas de données socio-économiques sur les ménages. Nous avons également estimé l'évolution de la taxation foncière et son impact sur les propriétaires et les locataires.

L'étude se penche également sur les conséquences du plafonnement ou de l'établissement des comptes de taxes.

EVOLUTION OF THE RESIDENTIAL REAL ESTATE EVALUATION AND OF REAL  
ESTATE TAXATION IN MONTREAL, 1981-1987

Produced by: Louise Richard  
Quebec Housing Corporation

Completion Date: December 1987

This study based on the data of land evaluation makes it possible to follow the evolution of values of residential buildings on a spatial basis, neighbourhoods, and on the basis of types of buildings. It makes it possible to identify the ascending zones and others which are declining at the level of value. It does not include socio-economic data on households. We have also estimated the evolution of land taxation and its impact on owners and tenants.

The study also looks into the consequences of the levelling off or the establishment of tax accounts.

TAXATION

CIPREC

ANALYSIS OF FEDERAL TAX REFORM

Produced by: W. Anderson, Tax Partner, KPMG

Date of Completion: November 1986

To analyse the impact of Phase 1 and 2 of Federal Tax Reform on the real estate development industry. A summary of Phase 1 Tax Reform Proposals affecting the real estate development is attached.

Analysis of the tax measures continues to determine their impact on the industry and on federal tax revenues. The following are some specific items that will be monitored and analysed:

1. Deductibility of soft costs,
2. Curtailing of CCA deductibility for MURBS,
3. Anti Avoidance rules.

REG REFORM

FCM/CAHRO/CHBA  
(CMHC funding)

REGULATORY REFORM PROGRAM

Responsibility Centre: Research Division

Contractor: Federation of Canadian Municipalities/CHBA/CAHRO  
c/o 24 Clarence Street, Ottawa, Ontario K1N 5P3

Develop a research program to address the rationalization of planning and building regulations, as applied to residential projects, and streamline the approval processes.

Project ongoing

REG REFORM

ONTARIO

REGULATORY REFORM AND CODE DEVELOPMENT

Contact: (416-585-6667) Ontario  
Buildings Branch

Various projects including:

- .Streamlining the regulatory system
- .Consolidation of building related legislation
- .Socio-economic implications of regulatory reform
- .Impact on Liability
- .Computerization of the building code
- .Integrated inspection services
- .Code requirements for the disabled

REG REFORM

FCM/CAHRO/CHBA

REG REFORM Ontario,

ONTARIO

REVIEW OF NEW MORTGAGE AND FINANCIAL INSTRUMENTS

Contact: (416-585-6520) Housing Supply Policy Branch

- Technical analysis of MBS, ILM, VRM, SAM, GPM
- Monitoring consumer choices (prepayment options)
- Identify impacts

Completion Date: Ongoing

FINANCECIPRECRECOMMENDED ACCOUNTING PRACTICES HANDBOOK FOR REAL ESTATE COMPANIES

Produced by: Price Waterhouse

Completion Date: June 1987

Since 1972, CIPREC has prepared an Accounting Handbook for real estate companies. It is MANDATORY for public companies that are CIPREC members to follow the recommendations of the Handbook and to so indicate in their annual report and financial statements. The majority of the Associate members (approximately 80%) also follow the recommendations. Approximately 1,500 copies of the Handbook are in use across Canada and it is considered by industry members to be the definitive authority on accounting for real estate companies.

In mid 1987 CIPREC retained Price Waterhouse to (1) research the various accounting issues facing the industry, (2) review present handbook recommendations to see if they are current, (3) redevelop the Handbook to provide more background and case history information to make the book more relevant, and to clarify the principles underlying the recommendations.

METHODOLOGY

The research is guided by CIPREC's Accounting Committee. A questionnaire has been distributed to some 200 companies, over 70 replies have been received from large and small developers, accounting and legal firms, real estate analysts, etc. These responses will form the data base for the research and analysis.

An advisory committee of experts, Accounting, Legal, Academic has been appointed to provide an independent perspective on the work. Close contact has been maintained with the CICA.

It is anticipated the new handbook will be completed by December, 1988 and available for distribution in early 1989.

TECHNICALCMHCPROJECT MANAGEMENT FOR THE SMALL HOUSING CONTRACTOR

Responsibility Centre: External Research

Contractor: E. Triassi, Developpement Residentiel Gendev  
12, 652 24th Avenue, Montreal, Quebec H1E 1V6

Tailor the micro computer technology to the planning and control of low-rise housing construction by small building contractor which is defined as a one to three men firm involved in the development and renovation of housing projects. Results will make use of existing software as much as possible.

ADVANCED PLANNING AND CONTROL TECHNOLOGIES FOR HOUSING CONSTRUCTION

Responsibility Centre: External Research

Contractor: A. Russell, Dept. of Civil Engineering,  
University of B.C., 2324 Main Hall,  
Vancouver, B.C. V6T 1W5

Contribute towards the national goal of producing affordable housing by improving the tools used for managing the construction process. Results will be used by the general contractor and others (owners, developers, construction managers) who engage in the construction of high-rise rental housing. Residential builders and developers will be contacted to solicit their views and reactions.

BINDERLESS PROCESS FOR MAKING WAFERBOARDS

Responsibility Centre: Research Division

Contractor: Various contractors

Develop a process that will produce exterior grade waferboard at a lower cost with better quality as well as without the use of synthetic resin binder.



TECHNICALCMHCPERFORMANCE EVALUATION OF THE DYNAMIC WALL HOUSE  
Project Implementation Division

Contractor: J. Seskus, A.L. and Lio, M.

This paper reports the findings of a demonstration project called the University of Toronto Dynamic Wall House. This project demonstrates the concept and operation of a building ventilated by dynamic insulation during several winter months in Central Ontario.

Results obtained from the monitoring of temperatures, pressures, and moisture levels have shown that this dynamic wall house performed well in a cold and windy environment.

Computer simulation of seasonal heating requirements indicate that there would be energy savings for a dynamic wall house when compared to a similar conventional house.

HIGH-RISE APARTMENT BUILDINGS/IMMEUBLES D'HABITATION EN  
HAUTEUR  
Research Division

Consultants: Masonry Veneer in Highrise Buildings

This study analyzes a wall system consisting of a brick veneer wythe connected to a steel-framed backup wall by several rows of brick ties.

Maximum external and internal wind/pressures which are caused by wind gusts have been determined. The maximum pressures in the cavity (between the brick veneer wythe and the backup wall) are determined as a function of the external and internal pressures and the degree of air leakage through the brick wythe and the backup wall.

The effect of several parameters on bending moments in the brick wythe and the backup wall, on the brick tie loads, on wall's end reactions and of the deflections was investigated.

CMHC

CMHC 2 MARKET EVALUATION

Responsibility Centre: Research Division

Contractor: Information Systems Group  
Suite 606, 255 Albert St., Ottawa, Ont. K1P 6A9

Evaluate the marketing opportunities of the CMHC 2 (CMHC's computer model for heating cost-effectively) to assess the volume of sales, pricing, promotion, distribution, support and licencing aspects of delivering the system.

Completion Date: January 1987

HYBRID HEATING SYSTEM

Responsibility Centre: Project Implementation Division

Contractor: Ferguson, Simek, Clark Ltd., 4910-53rd Street,  
P. O. Box 1777, Yellowknife, N.W.T. X1A 2P4

Integrate the advantages of both the hydronic and forced air heating systems presently in use in the north into an economical and simple hybrid system so that the disadvantages of each are eliminated or reduced.

MASONRY VENEER ON STEEL STUD

Responsibility Centre: Project Implementation Division

Contractor: SuterKeller Inc., 1390 Prince of Wales Drive,  
Ottawa, Ontario K2C 3N6

Produce two advisory documents which would address all important design and construction issues for the masonry veneer/steel stud system. Establish past and present masonry veneer/steel stud building practices. Identify field problems and summarize these findings in a technical report. Undertake lab tests with industry, design and government reps.

TECHNICAL

ONTARIO

FEASIBILITY STUDY FOR AN ONTARIO BUILDING CENTER

Contact: Chris Ryter (416-585-7592) Building Industry  
Secretariat

To undertake a comprehensive feasibility study for a self supporting building center for Ontario which would ultimately serve as a permanent domestic and foreign marketing vehicle for the building construction industry.

Scheduled Completion 1988

UNDERGROUND PARKING GARAGES

Contact: (416-585-6531) Social Housing  
Technical Support

To evaluate the effectiveness of repair methods used on OHC underground garages

Completion Date: June 1987

\$ 33,585

TECHNICALCIPREC, CMHC, PW-C, ONTARIO MINISTRY OF HOUSINGDETERIORATION OF PARKING STRUCTURES

Produced by: G.G. Litvan  
Institute for Research and Construction

Completion Date: May 1987

To determine cost effective systems and products for repair and maintenance of "existing" concrete parking structures by evaluating current repair systems and materials. Specifically the following objectives are proposed:

- to evaluate the effectiveness of current repair procedures and product types;
- to identify possible new materials and technologies that could be used to advantage in repairs;
- to develop an improved understanding of the effect and importance of such parameters as design type, micro-environment, type of usage, etc.
- to evaluate the merits and limitations of the various repair strategies in terms of technical and economical aspects, servicability and tax considerations; and
- to provide a basis for the evaluation of the current requirements for new construction, which are at the present not yet proven.

METHODOLOGY

- A. Sample of 80-100 repaired garages will be monitored over 3-5 years.
- B. Laboratory tests of sealers, membranes and other products will be carried out.
- C. Systems and protocols for evaluating concrete conditions will be investigated.
- D. Micro climate environments will be examined by instrumentation.

TECHNICAL

ALBERTA

DEVELOPMENT OF AN EXTERIOR WALL OPENING COVER

Produced by: Alfred Arbter  
Endura Siding Ltd.

Completion Date: Summer 1988

To design and develop a plastic box which will allow leakproof openings in building walls for various services. Four Phases: I- Feasibility, Literature Search, Engineering Design; II- Prototype Construction and Testing; III- Product Certification; IV- Final Report.

OPTIMUM VALUE ENGINEERING

Produced by: Richard Vanderwell  
Richard J. Vanderwell Architect Ltd.

Completion Date: Spring 1988

To research, analyze and evaluate innovative and cost-effective construction techniques to achieve cost savings in single family construction. Three Phases: I- Data and Information Collection; II- Assessment; III- Final Report.

TECHNICALALBERTAPRESERVED WOOD FOUNDATION RESEARCH AND STUDY

Produced by: Terry A. Brown, Brown Engineering

Completion Date: Spring 1988

To assess by field and laboratory measurements an analysis of the performance of preserved wood foundations as constructed between 1970 and 1984. Four Phases: I- Literature Review and Industry Survey; II- Field investigations and Laboratory Testing; III- Analysis and Final Report; IV- Dissemination.

DEVELOPMENT OF THE ABACUS ESTIMATING, JOB COST AND ACCOUNTING SYSTEM

Produced by: Dwayne Kushniruk, Comsoft Inc.

Completion Date: November 30, 1988

To enhance the Abacus estimating module, develop the Abacus job costing and bill of material tracking system, link both to the Abacus accounting system and develop a user manual.

Five Phases: I-System Design; II-Job Costing and Budgetting System; III-Labour Material and Service Tracking System; IV-Accounts Receivable Interface; V-Job Est. Module and Report.

STRUCTURAL TESTING OF THE NASCOR II R20 WALL SYSTEM FOR UNITED STATES PRODUCT ACCEPTANCE

Produced by: David Burnes, P. Eng., Cano Structures Inc.

Cano Structures has successfully marketed their NASCOR II R20 wall system in Canada since 1984. The company is interested in marketing the system in the U.S., but to do so it first has to demonstrate its compliance with relevant U.S. regulations. This project consisted of testing and evaluating the NASCOR II R20 system against these requirements. The report on the project describes the system, outlines the testing objectives and procedures, and discusses the test results and regulatory acceptance.

The testing of the NASCOR II R20 wall system confirmed all of Cano Structures' expectations regarding the structural performance of the wall system and resulted in ICBO acceptance of the product. Warnock Hersey Professional Services Ltd., who performed all the testing, concluded that the NASCOR II R20 wall system is equivalent to and slightly better than conventional 38mm x 89mm (2"x4") wood stud wall systems in structural capacity. In fact, the axial load tests determined that a NASCOR II R20 column has more than twice the allowable capacity of a single 38mm x 89mm (2"x4") wood stud.

Report: 24 pages & Appendices

Date: May 1988

ISBN: 0-88654-218-9

TECHNICALALBERTAFORMULA OPTIMIZATION OF CANDORA

Produced by: Steve Katyal, IMC Canada

Completion Date: Spring 1988

To develop a prototype plastic counter top material. Four Phases: I- Planning and Formula Development; II- Formula Trials; III- Testing and Evaluating; Iv- Final Report.

PRE-PRODUCTION ENGINEERING AND CERTIFICATION OF FIOVALVE  
BACKWATER VALVE

Production by: Anderson Associates Consulting Engineers Inc. for  
Fiodrain Ltd.

The objectives of the project were: i) to review the Fiovalve design and production process and to correct any problems; ii) obtain CSA certification for the Fiovalve; and iii) to develop and document quality control procedures to help ensure production of a consistent and reliable product.

The Fiovalve, a patented backwater valve, installs into the main drain line, blocking backflow from entering the home.

This report documents the elements of the research and steps taken to improve the product and obtain CSA certification.

Report: 30 pages  
Date: August 1987  
ISBN: 0-88654-200-6

PRODUCTION AND MARKET FEASIBILITY OF MANUFACTURING PVC RESIN  
RESIDENTIAL BUILDING PRODUCTS

Produced by: Roger Lefrancois, HLC Consultants

Completed: March 1988

This study reviews the types of building products made from PVC and reviews product characteristics, existing manufacturers, market characteristic and production requirements for the largest current end uses of PVC. Alberta production opportunities are noted for PVC windows and siding.

Report: 72 pages  
Date: March 1988  
ISBN: 0-88654-216-2



TECHNICALALBERTARESEARCH AND DEMONSTRATION DESIGN FOR A DYNAMIC WALL  
DEMONSTRATION PROJECT

Produced by: Lewis Nakatsui  
Residential Construction Group Inc.

Completion Date: Summer 1988

To conduct a feasibility study regarding the applicability of the dynamic wall concept to Alberta tract housing.

STRUCTURAL TESTING OF THE NASCOR I PRESERVED WOOD FOUNDATION  
WALL SYSTEM

Produced by: David Burnes, P. Eng., Cano Structures Inc.

This project consisted of the testing and evaluation of a proprietary wood foundation panel system called the NASCOR I PWF. The report describes the testing procedures, analyzes the findings in terms of prevailing standards, and discusses efforts to obtain acceptance of the system by Canada Mortgage and Housing Corporation and the Building Standards Branch of Alberta Labour.

The test results show that the NASCOR I PWF performs comparably to the systems outlined in CSA CAN 3-S406 and complies with that standard.

The NASCOR I PWF system was reviewed by CMHC and accepted as a preserved wood foundation system. The system is described in "CMHC - Evaluation Report No. 1/608."

Report: 22 pages and Appendices

Date: November 1987

ISBN: 0-88654-204-9



TECHNICALALBERTADEVELOPMENT OF A TESTING PROCEDURE FOR PAINTS USED AS VAPOUR  
DIFFUSION RETARDERS

Produced by: Alberta Research Council  
Industrial Technologies Department

Report: 44 pages  
Date: September 1987  
ISBN 0-88654-197-2

Recent studies have indicated that polyethylene vapour diffusion retarders and polyethylene air/vapour barriers may deteriorate prematurely due to chemical degradation caused by loss of the anti-oxidants and accelerated aging. In addition, these polyethylene air/vapour barriers may not be able to withstand the air pressure imposed on them by wind or stack pressures within the building envelope.

A demonstration project of the Airtight Drywall Approach in 1984 indicated that the use of paints as a replacement for polyethylene vapour diffusion retarders found little support from the building inspection departments. This was largely due to the lack of appropriate technical information and standards.

This study addresses these issues by developing a testing method to determine the water vapour permeance of paints and primers applied to gypsum wallboard and by providing a range of permeance values of common paints and primers used in the residential construction industry.

This study concludes that the developed testing procedure provides precise and reproducible results, is easy to use and relatively inexpensive.

Alkyd sealers and enamels are effective water vapour diffusion retarders but latex primers and paints cannot be considered adequate vapour diffusion retarders.

TECHNICAL

ALBERTA

DEVELOPMENT OF A PRE-APPRENTICESHIP MANUAL FOR WOOD FRAME  
CONSTRUCTION

Produced by: Alberta Homes' Builders Association

To produce a training manual for wood frame construction at the pre-apprenticeship level. Three Phases: I- Planning and Preliminary Design of the Manual; II- Development of Draft Manual; III- Final Product.

Expected completion end of 1988.

CMHC

TECHNICAL

TECHNICAL

CMHC

DEFINE THE MOST COST EFFECTIVE CLADDING SYSTEM

Research Division

Contractor: Contingency

Define most popular cladding systems for various regions across Canada and contact major owners as well as consultants specializing in this area to obtain repair and maintenance data. For new systems, data will be examined to determine performance to date. Once data is collected, review in terms of actual and anticipated life, maintenance performance, cost and conformity with codes and standards. Data will be used in a lifecycle cost model to determine the most cost-effective systems.

EXTENSION OF CROFTER EVALUATION

Project Implementation

Contractor: G.K. Yuill and Associates Ltd.

Monitor the "Crofter" which is a prototypical dwelling designed by CMHC for use in rural and remote areas which incorporates a number of innovative features to reduce foundation failures, prevent moisture problems, reduce air leakage, ensure good ventilation and obtain maximum benefit from wood heating. Undertake minor adjustments to the unit's ventilation system and other repair work.

FIELD MONITORING OF CELLULOSE IN WALLS-EDMONTON

Project Implementation

Contractor: Building Envelope Engineering

Monitor the use of wet sprayed cellulose in a new home constructed in Edmonton in order to determine the impact of framing lumber moisture contents and general airtightness.

TECHNICALCMHCINVESTIGATION INTO PRESERVED WOOD FOUNDATION FAILURES  
Research Division

Contractor: Contract contingency

Produce a detailed proposal that will include dimensional and other measurements of the structure, characterization of the geology and hydrology and recording of the history of the design, construction and occupancy.

MULTIPOINT SPACE FRAME FOUNDATION HAY-RIVER  
Project Implementation

Contractor: Triodetic Building

Provide the design specifications and a reproduceable set of engineering shop drawings and specifications for a multi-bearing point space-frame foundation system for use as the foundation of a new 28ft X 46ft residential one storey structure to be erected in Hay River, N.W.T.

RACK RESISTANT FOUNDATIONS  
Project Implementation

Contractor: Contract contingency

Undertake further development of rack resistant foundation structures that can cope with large differential displacements. Monitor three installations in Fort Franklin, develop and monitor a multi-point space frame under a new house in Hay River in cooperation with EMR and develop and test monocoque plywood framing structures on three points. Results will be 2 new foundation designs that will be cost-competitive with traditional foundation designs, but will be superior in performance and reliability.

TECHNICAL

CMHC

BUILDERS' TECHNICAL INFORMATION ANALYSIS  
Project Implementation

Contractor: Scanada Consultants Limited

Analyze, select and catalogue construction reference material for home builders and tradesmen.

CYCLICAL AND SEASONAL DEFLECTION OF COMPOSITE TRUSS JOINTS IN RESIDENTIAL BUILDINGS  
Research Division

Contractor: Morrison Hershfield

Determine cyclical and seasonal deflections of composite truss joists used in residential buildings. Unload the trusses, measure the residual deflections, test to failure and prepare the final report.

MASONRY VENEER ON STEEL STUD  
Project Implementation

Contractor: Suter Keller Inc.

Undertake a series of laboratory tests on the masonry veneer and steel stud form of construction used in high rise and commercial buildings in consultation with industry, design professionals and government representatives.

MASONRY VENEER ON STEEL STUD WORKSHOP  
Project Implementation

Contractor: Contract contingency

Conduct workshops on masonry on steel stud research being carried out by CMHC to enable technology transfer to occur and to allow consultations with a wide spectrum of private sector representatives regarding progress of present work. Result in the interchange of views between private sector reps., researchers and CMHC Project Managers.

TECHNICAL

CMHC

1987 TECHNICAL DETAIL/CONSTRUCTION SYSTEM DEVELOPMENT

Project Implementation: RNH DEMO

Contractor: ADI Limited

Undertake preparation of a simplified house construction manual for use of clients assisted through the rural and native demonstration program. Select standard details and develop a step-by-step construction manual using text and extensive illustrations to show clients how to build their own houses. The details selected will be based on CMHC standards and experience, ease of construction, efficiency of building materials and performance characteristics of selected materials.

TESTING OF DOOR JAMB/WALL STIFFNESS FOR RESISTANCE TO SPREADING

Project Implementation

Contractor: Contract contingency

Acquire and test door jamb/walls for resistance to spreading with ASTM F476-76 "Standard Test Methods for Security of Swinging Door Assemblies". Results will provide conclusions and recommendations.

MONOCOQUE TECHNOLOGY FOR ARTIC RESIDENTIAL STRUCTURES

Project Implementation

Contractor: Gower, Young & Associates Ltd.

Conduct a feasibility study on monocoque technology for application and implementation in the Arctic and other poor soil bearing conditions. Develop a monitoring methodology for field demonstration and testing. Review accessories and details that could be used in monocoque construction.

TECHNICALCMHCTAKLA CONTOUR TRENCH MONITORING  
Project Implementation/HTIP

Contractor: Novatec Consultants Inc.

Design, construct and install effluent and groundwater sampling equipment, monitor and report on the performance of the Takla contour trench effluent disposal systems.

TRUSS UPLIFT VIDEO  
JOINT VENTURES/Project Implementation

Contractor: Forintek Canada Corp.

Prepare an educational video targetted to builders and trades on solutions to truss uplift problems.

DETERMINE POTENTIAL OF CARBONATION OF CONCRETE IN CANADA:  
STATE-OF-THE-ART LITERATURE REVIEW

In recent years widespread and often premature deterioration of concrete structures has caused professional attention to be focussed on all aspects of the corrosion of concrete. The deleterious effects of de-icing salts, freeze-thaw cycles, and alkali-aggregate reactions are the dominant factors which have preoccupied cement and concrete technologists internationally. The National Standards Committees in Canada and elsewhere are devoting much of their time to re-drafting durability requirements for concrete.

This literature review is a first step in assessing the potential for the deterioration of Canadian structures due to the carbonation of concrete. This review seeks to assess if, in time, carbonation induced damage may become significant in Canadian structures.

TECHNICAL

ALBERTA

EVALUATION AND DEMONSTRATION OF TECHNOLOGY FOR  
SINGLE POUR BASEMENTS FOR TRACT HOUSING

Produced by: J.W. Telford  
TELCAN Management Consultants Inc.

To research, design, demonstrate and evaluate a uni-pour, single-family home foundation system. The objective is to cut costs by concluding all the foundation concrete work in one trip. Four Phases: I-Information Gathering; II-Technology Development; III-Demonstration; IV-Final Report.

Estimated project completion date: November 4, 1988

OBTAINING C.G.S.B. APPROVALS FOR A NEW STANDARD PAINT TEST METHOD

Produced by: Lewis Nakatsui  
C.G.S.B. - Technical Research Committee

To ratify a proposed method for testing the water permeability of paints as a national C.G.S.B. standard. Three Phases: I-C.G.S.B. Review and Assessment; II-Preparing and circulating the Letter Ballot; III-C.G.S.B. Second Level Review and Final Report.

Estimated project completion date: November 10, 1988

ALL ALBERTA HOME - EDMONTON

Produced by: Edmonton Northlands

To exhibit a single family residence that is constructed, finished and furnished almost entirely of Alberta products. The vehicle selected for this demonstration home is the 1988 Klondike Dream Home. Two Phases: I-Investigation; II-Final Design and Detailed Planning.

Estimated project completion date: September 9, 1988



TECHNICAL

ALBERTA

BETTER GYPSUM BOARD (GYP-ROCK) AT LOWER COST

Produced by: R.C. Joshi  
 Dept. of Civil Eng., Univ. of Calgary

To reduce the cost of manufacturing Gypsum wallboard by partially substituting gypsum with fly-ash, an industrial by-product. Four Phases: I-Literature Review and Material Analysis; II-Sample Preparation and Preliminary Testing; III-Testing to CSA Requirements; IV-Economic Analysis and Final Report.

Estimated project completion date: December 15, 1989

RESIDENTIAL MEDIUM AND HIGH-RISE BUILDING ENVELOPE STUDY

Produced by: Colin H. Campbell  
 Campbell Woodall & Associates

To identify building envelope failure and associated rectification costs in order to avoid repetitions on future projects. Three Phases: I-Problem Assessment; II-Data Analysis; III-Final Report.

Estimated project completion date: December 6, 1988

SHELTER 88

Produced by: 143660 Canada Inc.  
 Shelter 88

To develop and design a modular, easy-to-erect, stressed skin panel structure intended for a low-cost market in Central America. Four Phases: I-Design and Performance Requirements and Criteria; II-Design Development; III-Business Plan; IV-Final Report.

Estimated project completion date: August 15, 1988

TECHNICAL

ALBERTA

REDESIGN, TESTING AND CERTIFICATION OF THE "COPPER MATE" PLUMBING MACHINE

Produced by: Walter Romaniuk  
Wil Mechanical Ltd.

To redesign the "Copper Mate" multifunctional plumbing machine and produce a fully market-ready product. Three Phases: I-Design Finalization and Prototype Construction; II-Field Testing and Market Feasibility; III-Final Report.

Estimated project completion date: March 3, 1989

DEVELOPMENT OF THE 7S-3000 STRESSED SKIN PANEL BUILDING SYSTEM

Produced by: Henry J. Scheunhage, P. Eng.  
Seven S Structures Inc.

This project consisted of the testing and evaluation of a proprietary panel system called the 7S-3000 Stressed Skin Panel System. The 7S-3000 Stressed Skin Panel System is a composite oriented strand board (OSB) and polyurethane foam panel system (See Figure below).

7S - Structures wishes to market their system in Canada and the U.S. and therefore decided to seek approval or acceptance from agencies relevant to each country.

Report: 42 pages  
Date: March 1988  
ISBN: 0-88654-214-6

TECHNICALCMHCDEFINE BETTER CLADDING SYSTEMS: THEORETICAL WORK

Responsibility Centre: Research Division

Contractor: Drysdale Engineering and Associated Ltd.  
258 Harmony Road  
Lancaster, Ontario  
L9E 2T2

Undertake a comprehensive review and update of all published and unpublished research and design work. Undertake a theoretical study of the total loads within the wall system and resulting forces in the components of the wall system. Identify all loading systems and ranges and typical values. Develop a methodology/procedure when they have to be taken into account, organize a mid project seminar to provide an opportunity for participation by interested parties.

FAILURE OF CONCRETE FOUNDATIONS IN ATLANTIC CANADA HOUSING  
CONSTRUCTED IN THE 1980'S

Responsibility Centre: External Research Program

Contractor: Hale, R.  
c/o Professional Project Engineering Limited  
Lord Nelson Arcade  
South Park Street  
P.O. Box 2401  
Halifax, Nova Scotia  
B3J 3E4

Study, by site inspection, a number of reported problem housing units in the Halifax, Dartmouth, Sackville and Bedford areas of Nova Scotia which have, or had, water intrusions or structural problems due to cracking of the concrete foundation walls and/or basement floor slab. Determine what causes problem, what has been the type and cost of remedy, how effective have been repairs and what steps could be taken during construction to limit and control cracking and prevent water and foundation damage.

TECHNICALCMHCINVESTIGATION OF PRESERVED WOOD FOUNDATION FAILURES IN REGINA

Responsibility Centre: Research Division

Contractor: Brown Engineering  
#234, 9738 - 51st Avenue  
Edmonton, Alberta  
T6E 0A6

Conclude why there are preserved wood foundation structures in Regina which are failing. Identify differences between actual construction and that required by code or by-laws at the time of construction and as now apply.

COST/PERFORMANCE DATABASE FOR LOW-RISE HOUSING

Responsibility Centre: Research Division

Contractor: Datakinetics Ltd.  
97 Norman  
Ottawa, Ontario  
K1S 3K5

Enhance the CMHC-2 system cost performance data to facilitate comparative analysis and dissemination of cost performance information on competing standards for residential construction.

INTEGRATED PROGRAM FOR CONTROL OF EASTERN TERMITE IN THE URBAN COMMUNITY

Responsibility Centre: Research Division

Contractor: University of Toronto  
Faculty of Forestry  
Toronto, Ontario  
M5S 1A1

Undertake the work for year two in a multi-year development of an "Integrated Program for Control of the Eastern Termite in the Urban Environment".

TECHNOLOGY TRANSFER

ALBERTA

TECHNOLOGY TRANSFER

To investigate technology transfer and related factors affecting innovation in the residential construction industry.

CMHC

TECHNOLOGY TRANSFER IN CANADIAN RESIDENTIAL CONSTRUCTION INDUSTRY  
Research Division

Contractor: James F. Hickling Mgt. Consultants

This project will examine the process of technology transfer in the Canadian residential construction industry. Through the use of case studies, the impediments and the factors conducive to the process will be identified. On the basis of the investigation, the potential for government and industry action to facilitate the process will be assessed. This project will be coordinated with Albertas study on the topic.

CHBA

CHBA R-2000 PROGRAM

Contact: (613-563-3512)

TECHNICAL REQUIREMENTS FOR R-2000 MULTIPLE

Objective: To recommend modification to existing R-2000 detached house technical requirements to provide basis for accepting multiple unit low rise buildings into the Program, and prepare advisory materials for builders.

Method: Analysis using HOT 2000, research in area of multiple unit construction and report writing.

Ongoing.

DESIGN EVALUATOR GUIDELINES

Objective: To develop guide to users of HOT 2000 computerized energy analysis program.

Method: In consultation with senior design evaluators and technical department staff, prepare manuscript for guide.

Summary: Document is a teaching aid.

Completed

ASSESSMENT OF FLOW MEASURING STATIONS

Objective: To recommend an appropriate instrument for field measurement of ventilation system and flow.

Method: Laboratory testing of range of instruments to determine accuracy at varying and flows versus price and ease of use.

Summary: The least expensive instrument provided acceptable levels of accuracy, ease of use and ability to accept field use.

Completed

CHBAAIRTIGHTNESS TESTING

Objective: To develop an inexpensive airtightness testing apparatus using the HRV duct opening.

Method: Laboratory testing and calibration of prototype. Analysis of range of application and report preparation.

Summary: Laboratory testing indicates viability using readily available floor monitoring devices and common furnace fans. Suitable for all except very large (over 300 m.sq.) R-2000 houses and convention houses with higher airtightness.

Completed

FIELD PERFORMANCE OF HEAT RECOVERY

Objective: To compare field performance of HRV's to laboratory test results.

Method: Installation and monitoring of HRV in an occupied test house in Edmonton.

Completed

ANALYSIS OF HOT 2000 ENERGY BUDGET

Objective: To determine the appropriateness of the HOT 2000 energy budget in the regions of Canada.

Method: Using a case study method, to analyze the appropriateness of the energy budget based on regional climate, construction costs, energy costs and building practice.

Completed

HOUSING RESEARCH INSTITUTE

Objective: To determine the feasibility of establishing a CHBA Research Institute focussing on technology development and technical information transfer.

Method: Through interviews and examination of other industry associations in Canada and elsewhere, determine the conditions of feasibility, and, if feasible, develop an implementation plan.

Ongoing.

CHBA

ONTARIO ADVANCED HOUSE PROJECT

Objective: To demonstrate the viability of emerging technologies in the areas of energy efficiency and house performance.

Method: Build and monitor a demonstration house using the following technologies: super windows, integrated space & water/heating & storage system, improved envelopes, improved masonry fireplaces, and applications of "smart technologies". (report not available).

Ongoing- Builder selected, some components designed.  
Construction to start July 1988.

REPORT ON CONSTRUCTION PRACTICE

Objective: To identify the impact of R-2000 technology on the housing industry, in particular uptake of R-2000 technical advances in conventional house building industry and any issues which may arise therefrom.

Method: Poll of regional managers. Underway.

TECHNICAL ADVISORY PUBLICATIONS

Objective: To facilitate technical information transfer.

Method: Development of technical advisory publications "Builder's Notes" on various topics.

Builder's Notes Completed and available:

- #1 CGSB Standard for Polyethylene
- #2 Radon
- #3 Formaldehyde
- #4 Handling Asbestos
- #5 Windows
- #6 Low Cost Air Tightness
- #7 CHBA Air Tightness Testing Method
- #8 Housing Option for Seniors

MEASURES FOR R-2000 HOUSES

Objective: To facilitate enrollment with R-2000 Program.

Method: Develop a set of prescriptive measures for R-2000 houses in each region that would permit pre-approval.

Completed



CHBAREQUIREMENTS FOR MANUFACTURED HOUSING

Objective: To establish technical requirements for acceptance of manufactured housing units in the R-2000 Program.

Method: Research and field work to identify particular aspects of the manufacturing process having impact on acceptance. Development of particular technical requirements to address any obstacles.

REQUIREMENTS FOR MOBILE HOMES

Objective: To establish technical requirements for acceptance of manufactured housing units in the R2000.

Method: As with manufactured housing (see above).

MULTIPLE UNITS HIGH AND LOW RISE

Objective: Further development work on the technical basis for acceptance of multiple unit buildings into the R-2000 Program.

Method: Computer modelling, field measurement and report preparation.

Ongoing.

ACCEPTANCE OF R-2000 TECHNOLOGY

Objective: To determine the impact of R-2000 technology on conventional building practice, in particular adoption of technology.

Method: Survey of R-2000 and non-R-2000 builders. Analysis and report preparation.

DIFFUSION STUDY OF R2000

Consultant: Clayton Research Associates.

This study will compare the amount of residential energy savings in Canadian locations based on construction practice in pre 1981 and in present day units and compare this with the savings achieved over the same period in comparable U.S. locations. The study will also consider how these savings were achieved.

Status: A pilot study has been completed comparing London, Ontario and Flint, Michigan. After acceptance of the methodology, other locations in Canada and the U.S. will be studied.

EMR

RESIDENTIAL TECHNOLOGY AND INDUSTRY DEVELOPMENT

PROGRAM ACTIVITIES

The following is a general summary of activities currently underway:

1. General Coordination, Technical Support and Industry Development
  - support for a Technical Advisory Committee, Technical Requirements Committee, Technical Issues Committee and Monitoring Task Group;
  - establishment of a steering committee at HRAI to support commercialization of mechanical ventilation equipment;
  - general technical support for program delivery and training programs;
  - general liaison with government, agencies, utilities and manufacturers including industry consultation workshops;
  - establishment of CSA steering committee for housing technologies.
2. Technical Requirements and Standards
  - extensive survey and review of the initial R-2000 technical requirements and development of revised technical requirements for R-2000 homes that take into account the efficiency of heating equipment in meeting R-2000 energy consumption targets;
  - development of comprehensive guidelines and commentary for the installation of mechanical ventilation systems in R-2000 homes;
  - development of measures for energy-efficient house construction in the North;
  - support for the revision of standards on polyethylene vapour barrier materials and certification procedures;
  - initiation of activities to develop or refine national consensus standards for installation of ventilation equipment in homes, testing and installation of heat recovery ventilators in homes, revisions to fan and ventilator standards, revision of window standards, and revisions of standards for solid fuel appliances used in energy-efficient homes;
  - support for the development of standards for airtightness testing equipment and certification requirements for contractors;
  - support for the development of standard for the energy evaluation and labelling of homes.
3. Analytical Tools for Industry
  - extensive enhancements to the Hot-2000 computer energy analysis program to improve accuracy, to respond to changes

in technical requirements and requests from users and to accommodate new systems and equipment;

- validation and testing of all elements of the Hot-2000 energy analysis program;
- development of a new user's manual and data input forms and assistance in the development of a plans examiner's manual;
- development of an enhanced economic model including return on investment, years to positive cash flow, maximum investment for a given energy saving;
- comparison of CMHC Grapheat procedure with Hotcan 3.0.

#### 4. Technical Documentation, Monitoring and Quality Assurance

- implementation, through EMR regional offices, of a comprehensive, general field monitoring to examine general issues of energy performance, air quality, homeowner satisfaction and the ability of the industry to construct energy-efficient homes on a commercial basis;
- development of an intensive monitoring program for a small sample of homes to validate the technical assumptions made regarding the performance of R-2000 homes and various components and systems;
- establishment of a comprehensive data base of technical, cost and performance characteristics of R-2000 homes;
- preparation of initial monitoring reports on the energy performance and air quality in R-2000 homes;
- establishment of specific monitoring requirements for new technologies and equipment such as developmental homes (Fiberglass system, cellulose house) and Flair Homes demonstration project;
- implementation of special monitoring activities such as retesting the airtightness of a sample of initial R-2000 homes and monitoring ventilation rates in a sample of homes;
- joint monitoring activities with CMHC to examine ventilation systems for the far North.

#### 5. Product and Equipment Assessment

- extensive testing of heat recovery ventilators with manufacturers, testing of exhaust air heat pump ventilators (e.g. Habitair) and testing of improved gas heating equipment with particular emphasis on water heaters;
- testing and selection of sensors used to measure and confirm airflows in homes with mechanical ventilation;
- testing of polyethylene materials used for air-vapour barriers and testing of sealants used to seal air-vapour barriers;
- testing of polyurethane foams for chemical off-gasing and potential for overheating from electrical wiring;
- establishment of testing requirements to evaluate the performance of new improved windows;
- testing of CO and CO2 warning devices; and
- joint testing with CMHC to evaluate the performance of different types of walls in moist Maritimes climates.

#### 6. Research, Development and Demonstration

- support for the demonstration and assessment of innovative

- technologies such as the Flair Homes Demonstration Project.
- field testing of new products and equipment including the establishment of the developmental category of R-2000 homes;
  - joint support for the development of improved gas and oil water heating equipment and oil space heating equipment with CANMET.

EMREDUCATION AND TRAINING ACTIVITIESCURRENT/RECENT ACTIVITIES

## A) Institutionalization

- development of an institutionalization strategy paper for R-2000 training for all identified target groups;
- development of policies and procedures for the institutionalization of R-2000 training;
- produce, in concert with MENy and TVO, a series of 20-15 minute training videos entitled "R-2000 - The Better Built House", for use in direct delivery and institution delivered training courses.
- develop and produce in concert with MENy and TVO a Master Facilitators Guide and Learners Guide to compliment the training videos.
- develop and produce in concert with MENy and TVO, a series of "how to" fact sheets aimed at carpenters, drywallers, electricians and plumbers.
- initiation of several pilot courses with educational institutions across Canada for the adoption of SEE techniques into their existing courses in apprenticeship and diploma course programs;
- develop and provide training for R-2000 Course instructors, other than CHBA direct delivery Registered R-2000 Instructors;
- Negotiations underway with MENy to expand the Ontario R-2000 Student Design Challenge concept to include other appropriate educational institutions across Canada;
- Development and implementation of procedures to evaluate the delivery of R-2000 Training Courses by educational institutions to ensure that courses meet the established training objectives;
- provide assistance to the Regional Education and Training Committees in order to support institutionalization goals.

## B) HRAI Training Activities

- conduct a needs analysis to verify the training requirements of the HRV industry;
- develop and deliver in concert with HRAI, courses to ensure the proper design and installation of HRV Systems to meet R-2000 Program requirements;
- develop and deliver courses to ensure that HRAI HRV Course Instructors are adequately trained to deliver the courses to meet our training objectives;
- develop and implement a strategy to ensure that HRAI's courses become self-sustaining and funded, and that their R-2000 activities are coordinated with those of CHBA to ensure smooth administration of workshops and accreditation lists;

- establishment and maintenance of a ventilation industry Education and Training Steering Committee to provide direction on HRAI R-2000 activities;
- conduct a needs analysis to determine the training requirements for the design and installation of heating and ventilation systems in R-2000 homes.

#### C) CHBA Training Activities

- ongoing monitoring of CHBA education and training activities;
- ongoing evaluation of the delivery of CHBA delivered training courses;
- reviewing and commenting on CHBA produced training materials;
- reviewing and approving CHBA training workshops, RFP's, task requests, and deliverables;
- providing advice, as requested, on training issues and activities of mutual concern.

#### D) Other Activities

- development and maintenance of a data base to track and evaluate instructor performance, course session performance and to record the profile of, course attendees for all R-2000 Training courses delivered by CHBA, HRAI and institutions;
- development of a National Builder Survey to determine the profile of Canadian builders and their knowledge with respect to energy efficient housing;
- development of an accreditation framework for selected R-2000 Program quality assurance personnel;
- development of an Incremental Cost Study to determine the incremental costs of constructing R-2000 homes by experienced R-2000 Builders.



R & D PROJECT, ENERGY-EFFICIENT HOUSING  
FROBISHER BAY

Responsibility Centre: Buildings Div., Tech Svcs., DIAND

Contractor: Edward Ross (997-8134)

1. To coordinate energy conservation technology;
2. To develop recommendations for Northern Residential Standards;
3. To develop more comfortable living conditions;

Method: The 2 houses were monitored for the following date:

- (a) careful consumption;
- (b) power and water consumption;
- (c) ambient air-temperature and humidity;
- (d) ventilation rates;
- (e) air gravity and comfortable levels;
- (f) air-to-air heat exchange and recovery;
- (g) solar domestic hot water heating.

Findings:

- (a) thermal performance as anticipated due to close quality control;
- (b) thermal insulation at 8" and 10" near optimum, not cost-effective to increase;
- (c) air-to-air heat exchange saved approximately 1/3 oil; but was substantially regulated by electrical costs;
- (d) solar water heating worked but not cost-effective.

COST AND ENERGY EFFICIENT SUBDIVISION DESIGN

Responsibility Centre: External Research

Contractor: F. Curtis, Faculty of Engineering,  
University of Regina,  
Regina, Saskatchewan S4S 0A2

PIDN: 51235

Central Registry: 65855/C19-1

Revise and expand the capabilities of the residential area cost analysis model (RACAM) using an IBM PC to design physical services and calculate annual and present worth costs for alternative sub-division designs. Demonstrate RACAM to a sample of practitioners.

ENERGY PERFORMANCE MEASUREMENT METHOD FOR MULTIPLE HOUSING

Responsibility Centre: Research Division

Contractor: Peter Favot Consultants, 170 Booth Street,  
Ottawa, Ontario K1R 7W1

PIDN: 27714

Central Registry: 6760-7

Develop a method of measuring the actual energy performance of multiple dwelling units.



ENERGY

ALBERTA

SPRAY APPLIED CELLULOSE INSULATION FOR WALLS

Produced by: Ken Manning, Can Cell Industries Inc.

Can-Cell Industries Inc. has been producing WEATHERSHIELD cellulose insulation at its Edmonton and Calgary plants for fifteen years. This material has traditionally been used as an attic loose-fill where its void free, blanket coverage has been recognized as an effective means of reducing heat loss through air leakage. The objective of this study was to develop a method for extending use of this material to exterior wall systems where air leakage is known to be a difficult problem to control using conventional methods.

Several field installations were undertaken successfully. One installation is currently being monitored for air leakage and moisture dissipation by an engineering firm under a contract from CMHC.

It has been determined that the installation procedure is practical, that air leakage is substantially reduced, and that builders aiming at R2000 criteria can use this system cost effectively.

Report: 32 pages  
Date: March 1988  
ISBN: 0-88654-210-3

ENERGYALBERTAHEATING AND VENTILATION OF MODERN HOUSING

Produced by: Anthony J. Newton, P. Eng.

Order No. 8502041  
Completed: March 1987  
ISBN: 0-88654-181-6  
Report: 112 pages

We know that increased airtightness can create problems such as backdrafting of combustion appliances, poor indoor air quality and excessive condensation on windows. This study examines these issues and makes for better heating and ventilation systems in modern housing.

The study examines the following issues related to heating and ventilation of modern housing:

- a) indoor air quality
- b) moisture control
- c) backdrafting of combustion appliances
- d) natural and forced ventilation
- e) cost effectiveness of energy conservation measures

The study started with a computerized database search to identify published information on the subject. In addition major government organizations were consulted to locate additional references. Relevant reports were reviewed and summarized. The literature identified a number of issues which were assessed by the application of standard engineering analysis. Based on the literature review and quantitative assessment, a number of guidelines for the design of heating and ventilation systems were developed.

CMHC

ENERGY

ENERGY PERFORMANCE MEASUREMENT METHOD FOR MULTIPLE HOUSING  
Research Division

Contractor: Peter Favot Consultants Inc.

Develop a method of measuring the actual energy performance of multiple dwelling units.

AIR QUALITY IMPACT OF RESIDENTIAL COMBUSTION SPILLAGE  
RESEARCH: PANEL ON ENERGY R&D DIVISION

Contractor: Buchan Lawton Parent Ltd.

Monitor sixteen houses with combustion venting spillage problems to establish patterns of spillage in the houses, relate the spillage incidents to the house conditions recorded and determine the indoor air quality degradation due to spillage in half of the sample. Analyze and report the monitoring results. Return the houses to satisfactory condition after the sampling is complete.

DEVELOPMENT AND EVALUATION OF SOIL GAS SAMPLING TECHNIQUES  
Research Division: PANEL OF ENERGY OF R&D

Contractor: Ontario Research Foundation

Develop and evaluate procedures suitable for taking samples of undiluted soil gas in the vicinity of residential basements. The procedure obtained would ideally be low-cost, easy to perform and non-destructive. Results of the study shall establish an efficiency analysis procedure to detect most gases at a reasonable cost.

SEALED COMBUSTION FIREPLACES  
PANEL ON ENERGY R&D RESEARCH

Contractor: Ontario Research Foundation  
Energy Systems Centre

Conduct a literature search and laboratory testing of existing and modified prefabricated (metal) fireplaces. Results will depend on the outcome of the testing. Results may become guidelines and would show how to design, test and choose safe fireplaces, especially for houses where depressurization of the house air is a possibility.

ENERGY

CMHC

HYBRID HEATING SYSTEM  
Project Implementation

Contractor: Ferguson, Simek, Clark Ltd.

Integrate the advantages of both the hydronic and forced air heating systems presently in use in the north into an economical and simple hybrid system so that the disadvantages of each are eliminated or reduced.

SOLAR HOUSES/MAISON SOLAIRES  
GRAPHSHADE: A GRAPHICAL METHOD TO ESTIMATE THE EFFECTS OF  
SHADING IN THE DESIGN OF LOW ENERGY/PASSIVE SOLAR HOUSING

Consultants: Okins, Leipziger, Cuplinskas, Kaminker and Assoc.

This manual presents a simple graphical method for quickly estimating the impact of a wide range of shading elements on space heating demand and on comfort levels for low energy passive solar residential buildings. The manual is written for designers of such housing, and is primarily intended for use at the conceptual stage of design.

The manual first briefly reviews the principles of solar gain in housing design and the influence that shading may have on design and thermal performance. A wide range of shading elements is explained and the impact of these elements on energy and comfort is illustrated for three different locations across Canada. The calculation method is then explained in a series of steps. In addition, a worksheet and monogram are used in each step. A worked example is presented. Climatic data for 23 Canadian cities are provided.

ENERGY

CMHC

EVALUATION OF SMALL SCALE SOLAR SYSTEM FOR DOMESTIC HOT WATER  
Project Implementation

Contractor: Solcan Limited

Monitor the performance of a small domestic hot water solar package for one year and produce a financial analysis on the payback of the system.

PARAMETERS AFFECTING OIL FURNACE START-UP SPILLAGE  
RESEARCH: PANEL ON ENERGY R&D

Contractor: G.K. Yuill and Associates Ltd.

Determine through the use of the CMHC computer program flue simulator, the spillage and condensation potential of oil furnaces under a variety of conditions.

ENERGYCMHCIMPROVED COMFORT AND THERMAL PERFORMANCE

Responsibility Centre: Joint Ventures/Research

Contractor: Allen Associates  
33 Madison Avenue  
Toronto, Ontario  
M5R 2S2

Carry out the preparation of a prepublication draft to the final manuscript of a planned CMHC publication which will serve as a guide for the design of housing with improved comfort and thermal performance. Results will reflect the training and conservation objectives of EMR.

CMHC

MOISTURE SOURCE STRENGTH: MEASUREMENTS IN SELECTED CANADIAN CITIES

Project Implementation Division

The objectives of this study were to broaden the base of moisture source strength data, and to further verify test procedures, by undertaking moisture source strength tests in the Prairie and Atlantic regions.

The Consultant carried out a total of 35 moisture source strength tests in 22 houses in Regina, Winnipeg, Halifax and St. John's, representing a range of age and type of construction. One house in each city was selected for multiple testing.

RESIDENTIAL COMBUSTION SPILLAGE MONITORING

Research Division

Sixteen homes were continuously monitored to determine the frequency and duration of combustion product spillage from the furnaces and DHW systems. In the houses which did show spillage activity, event-controlled sampling was used to determine levels of air contaminants attributable to the spillage. Additional testing of the sample houses included: air tightness testing, air change rate testing and "forced spillage" contaminant testing.

RESIDENTIAL COMBUSTION VENTING FAILURE: A SYSTEMS APPROACH

Research Division

14 Volumes (Summary report and 13 final technical reports)

This project expands on previous studies of the problem of incomplete venting of combustion products from heating appliances, in order to approach a more comprehensive understanding of the extent and nature of the problem in the Canadian housing stock. The work was subdivided into seven separate but closely coordinated sub-projects.

A highlight of this project is the appendix entitled "Chimney Safety Tests: Users' Manual". This manual describes a series of procedures for testing the performance of residential chimney systems.

STUDIES ON INDOOR AIR QUALITY IN CANADIAN HOMES  
Research Division

- vol. 1 Legislation, Regulations and Standards
- vol. 2 Research and Information Base
- vol. 3 Exploring Low-Pollution Design

Volume one deals with legislation, regulations and standards in Canada which are relevant to the study of indoor air quality.

Volume two describes the research and information base in Canada for addressing problems relating to indoor air quality in Canadian housing.

Volume three explores potential indoor air quality problems in Canada and ways of designing homes to avoid such problems.



AIR/MOISTURE

ALBERTA

AIR TIGHTNESS OF THREE STOREY STRUCTURES

Produced by: John Vlooswyk  
Building Envelope Engineering

Completion February 1988

To study the air tightness and consequent moisture migration over time into the load bearing walls of a three story wood framed structure. Four Phases: I- Problem Assessment; II- Construction Experience and Instrumentation; III- Monitoring; IV- Final Report.

AIR/MOISTUREALBERTADEMONSTRATION AND EVALUATION OF RECENT AIR-SEALING TECHNIQUES  
IN HOUSING

Produced by: William J. Mayhew, P. Eng.  
Howell Mayhew Engineering

Report: 54 pages  
Date: September 1987  
ISBN: 0-88654-192-1

The objectives of this project were to:

1. evaluate current air-sealing and vapour diffusion retarder construction practises and develop refined techniques;
2. to incorporate refined Airtight drywall techniques and polyethylene techniques into the construction of a two dwelling research and demonstration residential building referred to as the Cold Climate Demonstration House (CCDH);
3. to compare and assess the different approaches to providing an air/vapour barrier.

In addition, the project involved the incorporation of a range of electronic monitoring equipment into the CCDH to assess not only the different sealing techniques but also to meet the monitoring requirements of a number of future research projects planned.

"THE POLY AIR DAM" A NEW PLASTIC GASKET TO IMPROVE AIRTIGHTNESS

Produced by: William L. Powis

Report: 85 pages  
Date: November 1987  
ISBN 0-88654-202-2

This study facilitated the development and testing of a proprietary air- barrier gasket called the Poly Air Dam (P.A.D.). The report focusses on development of the P.A.D. profile, the cooperative testing of the profile against common air-sealing techniques, and an analysis of its commercial viability on the job site. The report also discusses the applicability of P.A.D. in various building standards and certification scenarios although no certifications were sought.

The Poly Air Dam is an "L" shaped semi-rigid polyvinylchloride extrusion.

AIR/MOISTURECMHCDEVELOPMENT OF VAPOUR PERMEABILITY DATA FOR WAFERBOARD  
Research Division

Contractor: Forintek Canada Corporation

Develop and test apparatus to satisfactorily carry out "inverted" wet-cup tests on waferboard. Carry out a range of wet-cup/dry-cup tests and provide a report detailing findings.

ELABORATION D'UNE METHODE DESTINEE A ETABLIR LA PERMEABILITE A  
L'AIR DES MATERIAUX DE CONSTRUCTIONDIVISION DE MISE EN OEUVRE DES PROJETS

Contractant: Air-Ins Inc.

Elaborer une méthode d'essai destinée à établir la perméabilité à l'air des matériaux de construction. Démontrer la valeur de la méthode d'essai. Valider la méthode en coopération avec l'IRC. Etablir les caractéristiques de perméabilité à l'air des quarante matériaux de construction.

CANADIAN GENERAL STANDARDS BOARD COMMITTEES - INDOOR AIR  
QUALITY  
Research Division

Contractor: Canadian General Standards Board  
Standards and Specifications Branch

To provide financial support to the Canadian General Standards Board (CGSB) to set up and operate three standards committees which will have a mandate to produce consensus-developed standards for: (1) "test methods for indoor air quality assessment", (2) "methods for determining compliance with exposure guidelines for residential indoor air quality", and (3) "combustion system safety standards".

AIR/MOISTURE

CMHC

CONSUMER INFORMATION SERIES: AIR QUALITY IN THE HOME  
Project Implementation

Contractor: Hewson Bridge and Smith Ltd.

Carry out the development of manuscripts for a series of consumer pamphlets on "Air Quality in the Home".

IMPACT OF COMBUSTION GAS SPILLAGE ON HOUSE AIR QUALITY  
Research Division

Contractor: Contract Contingency

Examine the indoor air quality degradation of the houses surveyed due to combustion gas spillage. Results will provide a view of the range of effects that are observed in the field, and could be used as a basis for the medical review of health effects.

METHOD TO MEASURE AND QUANTIFY FUNGAL CONTAMINATION IN INDOOR  
AIR  
PROJECT IMPLEMENTATION

Develop a simple and cost effective method to assess fungal contaminations in indoor air in Canadian housing to provide a tool for the diagnosis and analysis of suspected problem houses.

AIR/MOISTURE

CMHC

AIR/MOISTURE

CMHC

RANDOM EXPOSURES IN FREDERICTON AREA HOUSES AND WELLS  
EXTERNAL RESEARCH PROGRAMS

Contractor: Freidman, S.

Determine random levels in 200 homes and 50 private wells in the Fredericton area, using earlier grab sample data as a guide, and employing passive integrative sampling techniques (small charcoal packets) not requiring the on-the-scene presence of highly trained personnel using expensive equipment. Report will include information correlating measured values with various construction and geological techniques.

WINNIPEG INDOOR AIR QUALITY SURVEY  
JOINT VENTURES/RESEARCH

Contractor: G.K. Yuill & Associates

Investigate seventy-eight Winnipeg houses over the summer months by the following tests: airtightness, tracer gas air change, air quality and exhaust fan noise measurements. Results will be a database to provide detailed information on house characteristics and indoor air quality.

DEVELOPMENT OF MOISTURE-PROOF WALL DESIGNS USING "WALLDRY"- A  
COMPUTER ANALYSIS PROGRAM"  
CONTINGENCY

Develop a user friendly PC-based computer program for use by builders and CHBA organizations based on the walldry computer analysis program to investigate the influence of different materials and material properties on the moisture performance of walls in deffering climates.

TECHNICALCMHCTESTING OF BUILDING MATERIALS TO DETERMINE THEIR AIR PERMEABILITY AND SUITABILITY FOR USE IN AIR BARRIER SYSTEMS PROJECT IMPLEMENTATION

Contractor: Contract contingency

Testing of common building materials to determine their air permeability characteristics in order to determine their suitability to being used in air barrier assemblies.

BASEMENT CONDENSATION-WINNIPEG PROJECT IMPLEMENTATION

Contractor: UNIES Ltd.

Carry out field investigations of excessive basement condensation in new homes in Winnipeg. Recommend appropriate remedial action and recommend construction practices which will avoid or reduce such problems.

CONTROL OF SUBSURFACE MOISTURE AROUND BASEMENTS PROJECT IMPLEMENTATION

Contractor: GE Ground Engineering Ltd.

Undertake a research project on the effectiveness of sand-bentonite backfill in controlling subsurface moisture around residential basements.

DEVELOP AND TEST NEW ASSEMBLIES FOR MOISTURE CONTROL (PART II)  
Research Division

Contractor: Rowan Williams Davies & Irwin Inc.

Determine the drying performance of wall systems, develop a mathematical model to provide an estimated drying performance of chosen wall systems and present the preferred options for field testing.

CMHC

DRYING OF WALLS PHASE II - ATLANTIC  
PROJECT IMPLEMENTATION

Contractor: Oboe Engineering Ltd.

Continue the existing study and modify some test wall panels to allow study of other aspects of moisture retention and migration and data gathering on the new arrangement.

FIELD INVESTIGATION INTO THE DRYING OF WALLS PHASE II  
PROJECT IMPLEMENTATION

Contractor: Oboe Engineering Ltd.

Dismantle and construct 32 wall panels in two test huts in Atlantic Canada (Halifax & St. John's) to be instrumented, monitored and analyzed for the study entitled "Field Investigation into the Drying of Walls Phase II". Results will determine possible solutions to correct moisture problems in wood-base exterior sidings and the drying capability of the reconstructed wall assemblies.

MOISTURE INVESTIGATION NORTHWEST TERRITORIES  
PROJECT IMPLEMENTATION

Contractor: Harold Orr

Advice CMHC and Northwest Territories Housing Corporation of the potential for serious moisture problems in NWT housing in consideration of the non vented design and the evidence of moisture found in the building envelope. Result is an investigation and diagnostic report on the presence of moisture in floors, walls and roofs in four houses in NWT.

AIR/MOISTURE

CMHC

TEST NEW TIMBER FRAME WALL ASSEMBLIES FOR MOISTURE CONTROL  
Research Division

Contractor: Timusk, J.

Review the terms of reference for the project entitled "Development and testing of new timber frame wall assemblies for moisture control". Review and analyse submissions from the consultants. Assist in the selection of a winnipeg candidate. Provide technical support to a steering committee on the project subject matter.

COORDINATION OF RESIDENTIAL COMBUSTION VENTING FORUM  
JOINT VENTURES/RESEARCH

Contractor: Resource Integration Systems

Carry out the coordination of a residential combustion venting forum to discuss issues, implications and problems to help in the development of a plan for implementation of the steps needed to resolve the problems of residential combustion venting failures. The forum will be co-chaired by the Canadian Gas Association (CGA), The Heating, Refrigerating and Air-Conditioning Institute (HRAI) and CMHC.

DUCT TEST DEVICE  
Research Division

Contractor: Sheltair Scientific Ltd.

Research Division

Contractor: Sheltair Scientific Ltd.

Design and construct a device suitable for making airflow and heat loss measurements in residential ducting, venting and chimneys ensuring that it is accurate and easy to use. Calibrate device on installations with known characteristics and validate performance in field tests to provide an indication of the variation found in ducts and chimney systems. Results will be a research tool, the duct test device, along with a manual for operations and calibration details.



CMHC

FURTHER DEVELOPMENT OF THE WOODSIM ANALYSIS METHOD  
Research Division

Contractor: Scanada Consultants Ltd.

Improve the accuracy of the analysis of the existing prototype version of WOODSIM by amplifying the air inlet, glass door, masonry and structure surround, combustion and venting analysis procedures. Extend the amount of information produced. Improve the ease of use of the WOODSIM through input screens as were developed for FLUESIM. Develop a verification test program.

PRAIRIE MOISTURE PROBLEMS: CRAWL SPACE INVESTIGATIONS IN NORWAY  
HOUSE, MANITOBA  
Project Implementation Division

An unacceptable percentage of housing units in northern Prairie communities suffer from moisture related problems. Some researchers have proposed that one of the major sources of moisture may be damp crawl spaces caused by problem soil conditions and poor construction practices. The objective of this research project was to implement and evaluate various crawl space remedial measures in order to assess their effectiveness in reducing moisture problems.

The consultant made several recommendations regarding both new construction and the retrofitting of existing units. The most satisfactory solutions would appear to be a raised dwelling with a heated crawl space at grade level or a post foundation with the crawl space left open.

IMPROVED COMFORT AND THERMAL PERFORMANCE  
JOINT VENTURES/Research Division

Contractor: Allen Associates

Carry out the preparation of a prepublication draft to the final manuscript of a planned CMHC publication which will serve as a guide for the design of housing with improved comfort and thermal performance. Results will reflect the training and conservation objectives of EMR.

AIR/MOISTURE

CMHC

AIR/MOISTURE

CMHC

POTENTIAL IMPACTS OF PROPOSED CSA STANDARD ON RESIDENTIAL VENTILATION REQUIREMENTS PROJECT IMPLEMENTATION

Contractor: Contract Contingency

Review the potential impact including cost of the standard on three vital groups; building contractors, residential heating and venting contractors and the manufacturing sector. Develop test methods for evaluating the performance of residential ventilation systems.

RESIDENTIAL COMBUSTION VENTING FAILURE JOINT VENTURES/Research Division

Contractor: Ashton & Associates

Carry out research and review work in technology transfer and communications on residential combustion venting failure.

MANAGE COMBUSTION VENTING FAILURE RESEARCH PROJECTS Research Division

Contractor: Ashton and Associates Ltd.

Assist in the definition of the terms of reference, prepare and negotiate contracts and manage the selected projects funded by EMR-TIG for 1986-87. Assist in the definition of terms of reference and prepare proposal calls for projects for 1987-88.

RESIDENTIAL EXHAUST FANS Research Division

Contractor: HRAI Technical Services Division Inc.

Conduct equipment and literature search on household exhaust fan usage and performance. Carry out lab tests on the components of exhaust systems. Examine ducting systems on construction sites and perform flow vs pressure tests to compare to lab tests. Results will describe the results of the literature search and tests. Develop a builders guide to efficient and acceptable exhaust fan specifications and installation procedures.

AIR/MOISTURE

ALBERTA

PRACTICAL VENTILATION SYSTEMS FOR NEW ALBERTA HOUSES

Produced by: Doug Hoffman, Chairman  
E.H.B.A. - Builder Council

To design, install and test up to four new single-family heating and ventilation systems to develop a cost-effective system which meets ABC '85 ventilation requirements. Four Phases: I-Organization and Design Development; II-Preparation for Demonstration; III-Demonstration and Verification; IV-Documentation.

Estimated project completion date: October 31, 1988

CELLULOSE INSULATION AS AN AIR BARRIER

Produced by: Ken Manning  
Can-Cell Industries Inc.

To advance construction technology related to achieving airtightness and condensation control by using low permeability cellulose insulation as the principal air barrier and moisture diffusion retarder. Three Phases: I-Development; II-Implementation and Analysis; III-Final Report.

Estimated project completion date: December 15, 1989

AIRTIGHTNESS OF THREE STOREY STRUCTURES

Produced by: John Vlooswyk  
Building Envelope Engineering

To study the airtightness and consequent moisture migration over time into the load bearing walls of a three story wood framed structure. Four Phases: I-Problem Assessment; II-Construction Experience and Instrumentation; III-Monitoring; IV-Final Report.

Estimated project completion date: June 30, 1988

AIR/MOISTURECMHCADDITIONAL SOIL GAS SAMPLING PROCEDURES

Responsibility Centre: Research: Panel on Energy R&D

Contractor: Ontario Research Foundation  
Sheridan Park Research Community  
Mississauga, Ontario  
L5K 1B3

Assist CMHC in the selection of possible sampling techniques suggested by contractors. Construct test devices and undertake preliminary evaluations on Toronto test house. Test refined techniques in Toronto and Ottawa and provide a progress report describing a completion of tests. Undertake analysis of sampling techniques based on field testing and lab results. Provide details on soil gas sampling technique suitable for soil gas survey in Canada.

INDOOR AIR QUALITY IN CANADIAN HOUSING

Responsibility Centre: Research Division

Contractor: Bruce M. Small and Associates  
R.R. #1  
Goodwood, Ontario  
LOC 1A0

Determine extent Canadians adversely affected by higher concentration of hazardous contaminants in indoor air. Document building technology and produce an updatable user's guide to construct and rehabilitate housing for low pollution indoor environments. Establish a technical information source on indoor air quality. Document regulations and jurisdictions that influence indoor air quality.

INVESTIGATION OF THE IONN HOUSE SUSPECTED CARBON MONOXIDE POISONING INCIDENT

Responsibility Centre: Research: Panel on Energy R&D

Investigate the suspected carbon monoxide spillage incident at the Ionn house in Winnipeg using the skills and techniques acquired during the CMHC theoretical and field studies of combustion spillage.

AIR/MOISTURECMHCRADON REMEDIAL MEASURES - PUBLICATION

Responsibility Centre: Project Implementation

Contractor: Contingency

Adapt material prepared by the Environmental Protection Agency in the U.S. for radon mitigation courses.

DEVELOPMENT OF A COMPUTER-AIDED RESIDENTIAL DUCT SIZING PROGRAM

Responsibility Centre: Research Division

Contractor: Hrai Technical Services Division Inc.  
5468 Dundas Street West  
Suite 224  
Islington, Ontario  
M9B 6E3

Coordinate the funding and scheduling of a project to develop a computer program capable of determining the sizing of ducting to be used in residential ventilation systems.

SURVEY OF VENTILATION SYSTEMS FOR NEW HOUSING

Responsibility Centre: External Research Program

Contractor: Mattock, C.  
c/o Habitat Design and Consulting Ltd.  
3683 West 4th Avenue  
Vancouver, British Columbia  
V6R 1P2

Undertake a survey of ventilation systems for new housing with respect to new building code requirements and the CSA draft ventilation standard F326-M. Emphasize the approaches, systems and hardware in current use. Assess cost effectiveness, compatibility and probable performance of systems. Identify information and technology gaps and field installation problems.

AIR/MOISTURE

CMHC

WEST COAST VENTILATION STRATEGIES

Responsibility Centre: Project Implementation

Contractor: Environmental Investigations Research Ltd.  
418 - 200 Dallas Road  
Victoria, British Columbia  
V8V 1A4

Submit detailed proposals for the project for the documentation and control of moisture problems on the west coast and Edmonton.

**TECHNICAL****NRC****ACOUSTICS SECTION**

Contractor: Dr. A.C.C. Warnock, Section Head (613-993-2305)

**OBJECTIVES**

To provide Canadian industry with comprehensive acoustical research, evaluation and advisory services in the areas of sound propagation within and around buildings and structure-borne transmission of noise.

**SUB-OBJECTIVES**

**Sound Transmission:** to predict the acoustical performance of complicated building systems and enclosures.

Improve reliability of sound transmission measurements at low frequencies (1990). Assemble authenticated machine-retrievable database on sound transmission of building components (1990). Develop prediction model for sound transmission in untested constructions (1990). Develop design procedures for noise reducing enclosures (1990).

**Sound Propagation:** to evaluate and predict the acoustics of large and small interior spaces and factory spaces.

Enter research areas related to HVAC noise and noise in factories (1990). Enhance capabilities for advanced acoustical measurements in performance spaces (1992). Develop and verify computer program for three-dimensional modelling of room acoustics (1992). Produce calculation procedure for predicting effects of connections between elements (1995+).



TECHNICALNRCBUILDING PERFORMANCE

*(Formerly Building Services Section)*

Contractor: R.P. Bowen - Section Head (613-993-9580)

OBJECTIVES

To provide a knowledge base for: the delivery and assessment of indoor environments; the building envelope in the control of heat, air and moisture.

SUB-OBJECTIVES

**Building Envelope:** to develop the knowledge, information, and techniques necessary to provide industry with the technical foundation for the design, construction, commissioning and operation of building envelopes to meet the requirements of thermal and hygric performance and durability.

Analytical method to predict long term performance of gas filled insulation (1989). Method for analysing hygrothermal behaviour of building systems (1990). Procedure for field assessment of building envelopes (1991).

**Indoor Environment:** as it relates to office and commercial buildings: to develop an understanding of the relationship between measurable physical attributes of the indoor environment and occupant satisfaction and productivity; to develop a prototype of a practical indoor environment analysis system that measures specific physical characteristics and specific occupant reactions along with analysis techniques for determining acceptability.

Prototype visibility meter; transfer to manufacturer (1989). Subjective evaluation of interior spaces: lighting component (1990). Air infiltration models for energy conservation retrofit industry (1989). Procedures for assessing HVAC operation in large buildings (1989). Establish project steering committees (1989). Establish IAQ component of project (1990). Incorporate existing and new information on air and smoke movement into computer models (1992). Publish text on design of smoke control systems (1992).

**Knowledge Based Expert Systems:** to develop the knowledge and techniques for creating computer-based tools used during the design, construction, operation and maintenance of buildings.

User-oriented procedures for writing knowledge bases (1989). Knowledge representation schemas for specific building practice areas (1992). Prototype systems: window diagnostician (1990); roof diagnostician (1992); roof designer (1993); envelope designer (1994).



TECHNICALNRCCODES SECTION

Contractor: J.F. Berndt, Section Head (613-993-9960)

OBJECTIVES

The objectives of the Section within its overall mission of improving construction efficiency and public safety through uniform, up-to-date and progressive building and fire safety regulations across Canada are:

SUB-OBJECTIVES

**Code Development:** To facilitate development of the National Building Code, National Fire Code and associated code documents by providing technical and administrative support to the code Associate Committees.

Conduct public review of final code changes (1988); present Code Change Forums in 13 cities (1988). Publish new editions of National Codes (1990). Begin work on 1995 Codes (1989). Publish guidelines for rehabilitation of buildings (1991). Make decisions on major code changes such as building height, use of sprinkler systems or limits on combustible materials (on-going).

**Code Adoption:** To promote the adoption of NRC's model codes by all provincial and municipal regulatory authorities.

Develop Memorandum of Understanding with provincial governments (1988). Reduce the number of provincial or municipal changes from National Codes (on-going). Cooperate with provincial activities to reduce administrative complexities of code enforcement (on-going).

**Code Application:** To facilitate the knowledgeable application of codes to real buildings by communicating code information to users and through development of computer aids.

Publish additional code commentaries (1990, 1991). Conduct seminars on new Codes with associations and provinces (1990, 1991). Continue evolution of code-on-computer (on-going). Maintain technology transfer/communications program (on-going).

**Construction Economics:** To identify problems, opportunities and strategies for the construction sector and for IRC through economic analysis.

Complete collaborative work with provinces on Code Assessment Framework (1991). Identify construction sector problems, opportunities and strategies (1989, 1990).

**TECHNICAL**

**NRC**

**PRAIRIE REGIONAL STATION**

Contractor: Dr. C.P. Hedlin, Section Head (1-306-975-4200)

**OBJECTIVES**

To provide the construction industry in the Prairie provinces with technical information and applied research services pertinent to the special needs of the region; to provide Western Canada with access to IRC services.

**SUB-OBJECTIVES**

To carry out research and field studies with emphasis on aspects of the building envelope and the interior environment including situations unique to Prairie conditions and climate.

Document practical information about construction and maintenance procedures for flat roofs (1990). Conclude transfer to industry of computer program for residential energy analysis (1990). Develop and market capability for assessing building envelope assemblies for conformance to air barrier system requirements (1990). Develop superior capability for field assessment of ventilation parameters and air pollutant sources (1993).

TECHNICALNRCBUILDING MATERIALS SECTION

Contractor: Dr. V.S. Ramachandran, Section Head (613-993-1596)

OBJECTIVES

To support Canadian industry in developing and manufacturing effective and durable materials and products for construction and using them properly, to produce and disseminate information on the properties and in-service performance of construction materials.

SUB-OBJECTIVES

**Structural Products and Systems:** to produce information on sound practices in the manufacture and application of concrete and unit masonry products; to develop optimum concrete mix design procedures and superior mixes; to develop ultra high strength cementitious systems.

Unit Masonry. Extend Brick Fellowship (1988). Develop expertise on durability testing of clay products, especially with respect to freeze-thaw attack; produce data for improving design and installation practices (1992). Apply clay brick expertise to concrete block industry (1994).

Concrete Co-organize two international conferences: waste products in concrete, concrete in marine environment (1989). Construct dynamic loading apparatus (1990). Admixtures for improving properties and performance (1991). Methods for field evaluation and predicting in-service performance (1992). Explore ultra strength cementitious systems and apply knowledge to practical concrete (1992). Develop very-long-life concrete for nuclear industry applications (1993).

**Non-Structural Materials:** to develop improved materials; to develop techniques for predicting and assessing the performance and durability of adhesives, sealants, coatings, composite materials and repair materials; to produce criteria for assessing performance and durability of roofing and waterproofing materials; to develop new roofing and waterproofing materials, systems and techniques.

Adhesives, sealants and coatings. Staff the project; prepare work statement; initiate research (1988). Review and focus project (1990).

Repair and Composite Materials. Complete recruiting; initiate work on carbonation effects in concretes; commence parking garage contract (1988). Seek support/contracts from USA: Federal Highway Administration and Strategic Highway Research Program. Technology Transfer on carbonation effects (1991). Industry collaborative projects on polymer blends (1992).

Roofing and Waterproofing Materials. Complete study of waterproofing membranes in parking garages; transfer the technology (1991). Collaborate with IDRC on study re asphalt roofing in Costa Rica (1991).

TECHNICAL

NRC

BUILDING STRUCTURES SECTION

Contractor: Dr. A.C.C. Warnock, Section Head (613-993-2305)

OBJECTIVES

To aid all sectors of the building industry in the production of safe, economical and reliable structures.

SUB-OBJECTIVES

**Structural Loads:** to predict the magnitude of snow, wind, earthquake and other live loads.

Incorporate static and dynamic earthquake resistance design methods into unified approach (1989). Transfer technology on sliding snow on sloping roofs (1989). Wind-induced internal and external pressures in buildings (1990); transfer the technology (1991). Transfer technology on snow loads on roofs (1992).

**Structural Performance:** to improve masonry and cladding design.

Transfer technology on temperature and movement in brickwork cladding (1989). Criteria for seismic evaluation of existing buildings (1990). Develop limit states version of Canadian masonry design standard (1990).

**Structural Vibrations:** to solve the structural vibration problems of designers and building owners.

Acquire electro-hydraulic or rotational inertia shaker (1990). Develop devices to dampen floor vibrations (1991).

TECHNICALNRCGEOTECHNICAL SECTION

Contractor: Dr. J.H.L. Palmer, Section Head (613-993-1466)

OBJECTIVES

To support the Canadian construction industry by conducting research in the geotechnical area and by providing specialized technical services.

SUB-OBJECTIVES

**Foundations:** to develop more economical and safer foundation design and construction techniques in soil and permafrost.

Performance of dams. Complete multipartner projects to develop technology for assessing safety performance under earthquake conditions of dams constructed on soft clay and silty soils (1989).

Permafrost. Develop field test procedures for piles in permafrost; transfer the technology (1991). Evaluate field installations of heat-pump chilled foundations in thaw-sensitive permafrost (1992). Complete field evaluation of new materials and passive devices for protecting permafrost terrain adjacent to civil engineering structures (1993).

**Ground Heat Source/Storage:** to improve the efficiency and economy of ground heat exchangers for heat pumps.

Conduct field trials of direct-expansion ground source heat pump system in multinational collaborative program under auspices of International Energy Agency (1993).

**Ice Forces:** to solve problems of industry and governments on ice properties and behaviour, and ice forces on structures.

Complete development of low cost ice force sensor (1990). Report ice ridge study (1991).

**Avalanche Engineering:** to predict and control avalanches, define safe zones for construction in mountainous terrain, and to predict expected forces on structures.

Procedures for modelling nonlinear creep effects in snow masses (1991). Prediction methods for avalanche runout (1991). Shovel shear test (1991)

TECHNICALNRCFIRE RESEARCH SECTION

Contractor: J.K. Richardson, Section Head (993-2204)

OBJECTIVES

To respond to the fire research needs and provide a knowledge base in fire for the Canadian construction industry, regulatory officials and fire services; to build up the technical foundations necessary for converting from the present regulation-based fire safety system to a knowledge-based system.

SUB-OBJECTIVES

**Fire Resistance:** to advance understanding and modelling capability of the behaviour of building elements and assemblies in fire; to improve test techniques for fire resistance.

Complete experimental work on columns (1989); transfer the technology (1992). Complete theoretical studies of floor-beam assemblies (1990); commence laboratory program (1991). Improve facilities for measuring thermal properties of materials (1990). Complete collaborative work with Tianjin Fire Research Institute of the People's Republic of China (1991).

**Residential Fire Hazards:** to identify, assess and control fire hazards in residential buildings.

Hazard assessment. Develop fire growth computer model (1990); validate experimentally (1991); deliver to market (1992). Develop life-safety and economic impact assessment computer model (1990); verify (1991); develop applications (1992).

Hazard control Participate in international (ASTM and ISO) round-robin test program on room linings (1988). Acquire flow visualization equipment for laser doppler anemometer (1989). Complete experimental investigation of fire retardant mechanism (1988); develop fire retardant systems in cooperation with industry (1989). Complete investigation of impact of wood studs on building fire safety (1989). Develop very early fire detection systems for electronic facilities in joint industry/NRC program (1992).

**Fire Spread:** to develop design methodologies and standard tests to prevent fire spread via exterior walls of buildings either on the building of fire origin or to adjacent buildings.

Develop a standard test method for exterior flame spread on combustible exterior walls (1989). Produce and transfer technology on fire spread to adjacent structures (1991). Develop and verify theoretical model of glass failure under fire exposure (1992).

GENERAL

ALBERTA

AN EDUCATIONAL PROGRAM FOR ALBERTA HOME BUILDERS

Produced by: Larry T. Kelly, President  
Alberta Home Builders Graduate Institute

To produce a consultative document which can be used to guide the development and implementation of a training and education program for Alberta's home builders. Four Phases: I-Needs Assessment; II-Review of Existing Programs; III-Developing a Strategy for Alberta; IV-Final Report.

Estimated project completion date: December 29, 1988

ANNUAL CONFERENCE - ALBERTA HOME BUILDERS' ASSOCIATION

Produced by: Dr. Bill Forbes  
Alberta Home Builders' Association

To hold a conference to provide information on new challenges and opportunities facing the housing industry and to provide a venue for presenting the Alberta Awards of Excellence in Affordable Housing. Four Phases: I-Organization; II-Coordination; III-Implementation; IV-Follow-up and Dissemination.

Estimated project completion date: October 31, 1988

SECOND ALBERTA CONDOMINIUM CONFERENCE AND EXHIBITION

Produced by: Ron Clarke, President  
S. Alberta Chapter, Can. Condo. Inst.

To hold a conference to address a range of issues of concern to the condominium community from management to development trends and legal issues. Four Phases: I-Conference Planning and Organization; II-Conference Delivery; III-Issues and Technology; IV-Proceedings.

Estimated project completion date: February 28, 1989



GENERAL

CMHC

CANADIAN RESIDENTIAL CONSTRUCTION INDUSTRY: PERSPECTIVE AND PROSPECTIVE: EXECUTIVE SUMMARY (DRAFT)

Responsibility Centre: Research Division

In the more than 40 years since the end of the Second World War, Canadians have become one of the best housed peoples in the world. A number of inter-related factors have contributed to this enviable record. One of the most significant has been the evolution of a capable and mature housing industry.

This study examines the housing industry and its four components (single-family homebuilders, residential land developers, apartment developers and residential renovators) in terms of the industry's characteristics and production processes. It highlights the history of the housing industry in the 40 years following the Second World War and how the industry is expected to change in the period from the mid 1980s to the end of the 1990s.

CONFERENCES SUR LA POLITIQUE DU LOGEMENT AU CANADA: PREMIER EXPOSE. "DES PROGRAMMES EN QUETES D'UN ORGANISME: L'ORIGINE DE LA POLITIQUE CANADIENNE DU LOGEMENT 1917-1946"

Ce discours au sujet de l'origine de la politique canadienne du logement 1917-1946 était présenté par M. George Anderson, le président de la Société canadienne d'hypothèques et de logement, au Centre pour l'étude des établissements humains, Université de Colombie-Britannique, le 5 novembre 1987.

L'HABITAT AU CANADA: TENDANCES ET POLITIQUES 1981-1986

Préparé par: Hussein Rostum  
TEEGA Research Consultants

Le présent document sur les tendances et les politiques de l'habitat au Canada a été préparé pour la session annuelle du Comité de l'habitation, de la construction et de la planification de la Commission économique des Nations Unies pour l'Europe (CEE).

Le document se divise en quatre parties, selon le plan indiqué par le secrétariat de la CEE. La première partie est une introduction qui présente des données de base sur les tendances démographiques et socio-économiques, et les trois autres traitent des questions, politiques et tendances relatives aux domaines suivants: habitat et aménagement du territoire; habitation; construction au Canada. Le document puise ses informations dans un large éventail de sources tant fédérales que provinciales.



GENERALCMHCHOUSING POLICY IN CANADA LECTURE SERIES: NUMBER 1. PROGRAMS IN SEARCH OF A CORPORATION: THE ORIGINS OF CANADIAN HOUSING POLICY 1917-1946

This lecture, delivered by Mr. George Anderson, President of Canada Mortgage and Housing Corporation at the Centre for Human Settlement Studies, University of British Columbia on November 5, 1987 describes the early history of federal housing policy in Canada from 1917-1946.

L'INDUSTRIE DE LA CONSTRUCTION RESIDENTIELLE AU CANADA: PERSPECTIVES ET PROSPECTIVES: RESUME (BROUILLON)

Division de la recherche

Au cours des quarante ans qui ont suivi la Seconde Guerre mondiale, les Canadiens sont devenus l'un des peuples les mieux logés de la terre. Cette situation enviable résulte d'un certains nombres de facteurs interreliés, l'un des plus importants étant l'essor d'une industrie de l'habitation pleine de ressources.

L'étude examine les quatre composantes du secteur du logement (constructeurs de maisons individuelles, promoteurs résidentiels, constructeurs d'appartements et entrepreneurs en rénovation) du point de vue des caractéristiques et des méthodes de production de l'industrie. Elle fait l'histoire du logement au cours des 40 années qui ont suivi la Seconde Guerre mondiale et trace un tableau de ce que devrait être l'évolution de ce secteur d'ici la fin des années 1990.

LES SOCIETES ACHETEUSES AU QUEBEC

Division: Programme de subventions de recherche

Contractant: Malo, M.  
Centre de gestion des coopératives  
3535, chemin de la Reine-Marie  
Suite 508  
Montréal, Québec  
H3V 1H8

Identifier le mode d'intervention des sociétés acheteuses dans les activités d'acquisition, de gestion et de transfert d'immeubles à usage d'habitation. Préciser le rôle des sociétés acheteuses dans le champ spécifique de l'habitation coopérative.