RESEARCH HIGHLIGHTS

Technical Series 99-104

HIGH-RISE APARTMENT REPAIR NEEDS ASSESSMENT IN THE FORMER CITIES OF TORONTO AND YORK

Introduction

This survey was initiated by Canada Mortgage and Housing Corporation with the former cities of Toronto and York to determine the state of repair of multi-unit high-rise rental properties in the Toronto area and to establish the costs required to extend their longevity. A prior Apartment Conservation Study in 1992 by Hemson et al identified emerging issues of an aging and deteriorating stock, some acute problems in bringing this stock up to good condition, and several buildings too costly to repair. Seventy-seven percent of apartments in Toronto are 20 years old or older.

One objective was to generate a cost-effective assessment methodology that could be applied in future to other regions as well. CMHC's interest is also to develop a better understanding of the condition of existing high-rise buildings in order to determine what more cost-effective repair methods are needed and to identify potential research priorities. The sponsors also want to use the results to work with landlords and tenants to ensure long-term conservation of the housing stock.

The survey protocol, developed by Gerald R. Genge Building Consultants Inc., was used by experienced building auditors from the firms of Brook Van Dalen & Associates, Thomas A. Fekete Ltd. and KJA Consultants Inc. to evaluate the conditions and costs for repair of residential rental properties over 10 years. The sample was selected randomly to represent the high-rise housing stock of Central Toronto. The 63 properties reviewed represented approximately 10 per cent of the sample universe of Toronto and York and included social-housing and private-rental properties. One important aspect of the project, the voluntary participation by the building owners and managers, was assisted by the Fair Rental Policy Organization of Ontario. Owners who participated in the survey received a free building audit as an incentive.

Research Program

The inspection protocol and terms of reference of the audit work were developed in the first phase of the project. During the second phase, the potential property pool from which the buildings were randomly chosen was developed. The buildings eliminated were those that were less than five storeys, mixed use or condominiums, dormitories, nursing homes, or constructed prior to 1930. The study attempted to select the buildings by vintage according to their approximate frequency in the sample universe. The age groupings were pre-1960s, 1960s, 1970s, and post-1970s, to give a total of 63 buildings out of a universe of 546 buildings. The sample selected representative percentages of social-housing and private-rental stock.

During the course of 1997, the 63 buildings were assessed under seven physical parameters (divided into 21 subsystems), which include:

1. Site
2. Building Structure
3. Building Envelope
4. Mechanical
5. Electrical
6. Life Safety
7. Elevators

For each parameter, the cost of building repair or replacement was determined over the next 10 years on a per-unit basis (See Figure1). A rating system was calculated for each building to gauge its condition in terms of repair urgency and safety/usability. Costing methodology (most cost-effective repair) and sampling procedures were also elaborated and pre tested.

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Figure 1:
Comparison of Unit Costs by Subsystem and Time Frame

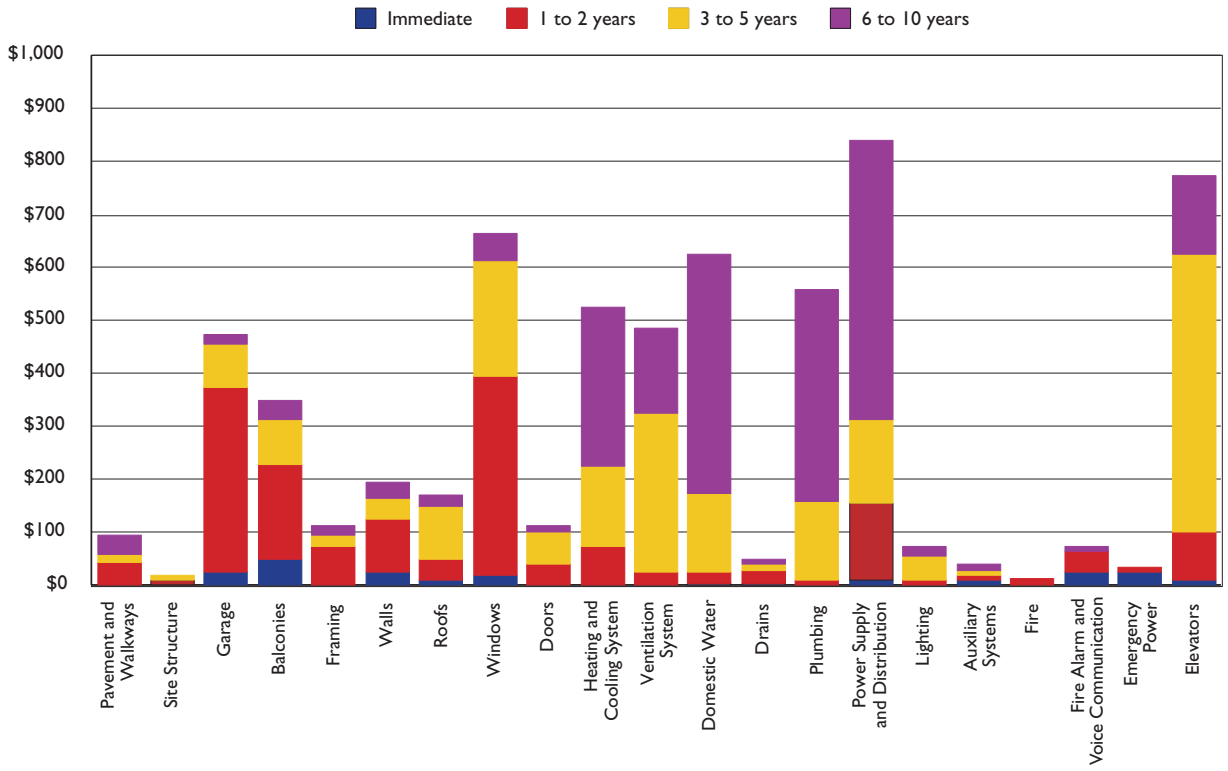
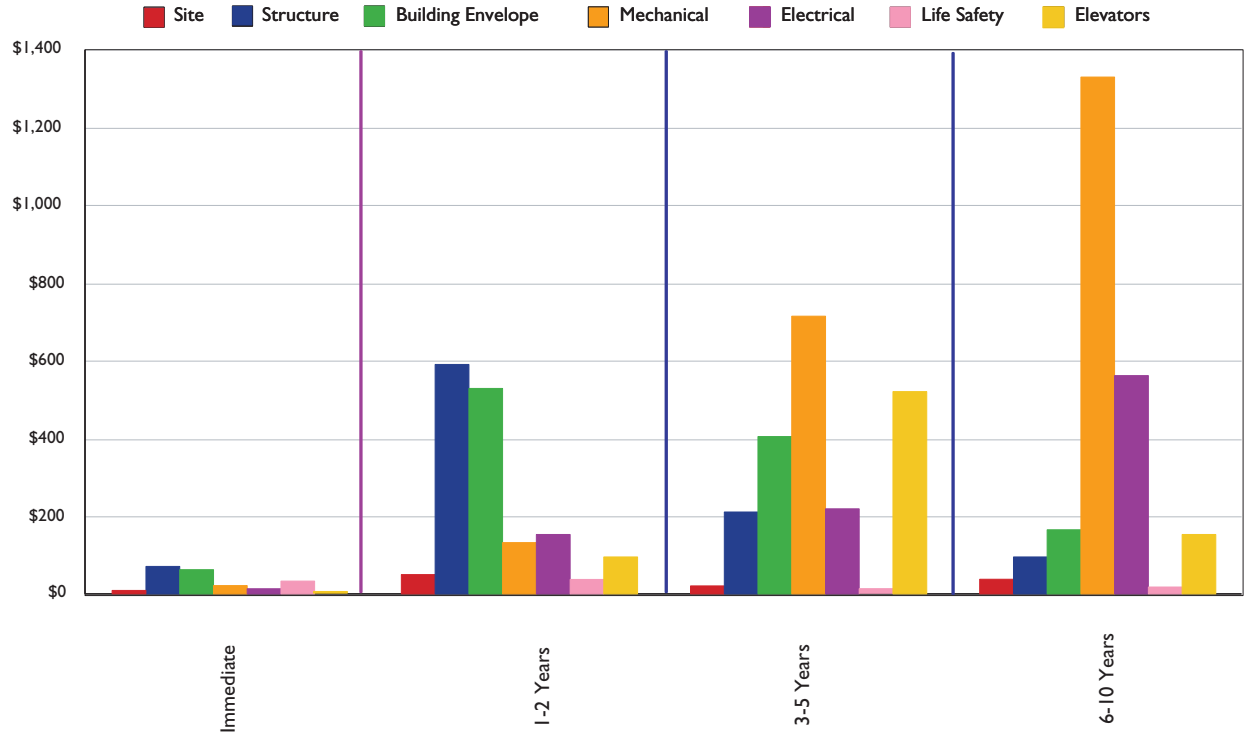


Figure 2:
Comparison of Unit Costs by Time Frame and Building Component



Buildings were grouped and analyzed according to age categories (pre-1960s, 1960s, 1970s and post-1970s) as well as according to the time frame of repair needs: immediate, 1 to 2 years, 3 to 5 years and 6 to 10 years. The usefulness of the data was somewhat lessened with regard to the impact of previous maintenance by the lack of information available as to previous repair work undertaken. The auditors had to rely on their experience and knowledge of the systems to evaluate these aspects. The samples did not show significant differences between social-housing and privately owned rental stock. Histograms of the data were developed both for costs of repair and for the rating of all the systems assessed.

Findings

The survey indicated that the average cost/unit for repairs over 10 years was $7,474 for all work, excluding regular maintenance items such as interior finishes. This amount is approximately equal to one month's rent per year. There was significant variation from this average, both in the highest repair-building, cost at $21,258/unit, and in the lowest repair-cost building, at $124/unit. Given this variation, the average unit cost can be misleading. Quartile data is a more useful way of evaluating the range of costs.

The three major subsystems requiring the largest investment are the electrical power supply and distribution, the elevators, and the windows. All these systems, as well as mechanical systems in general, are major expenses for buildings built prior to the 1970s. From the point of view of urgency, windows and garages have the greatest repair need within two years.

Mechanical and electrical systems are the priority costs in the three- to ten-year periods. Elevator costs will peak in three to five years. Most life safety repairs have already been done, since these are the object of regulatory controls.

Over the next 10 years, the pre-1960s buildings have the highest per-unit costs: $5,500/unit at the 25th quartile to roughly $17,000/unit at the 75th quartile level. Several 1930s buildings need substantial work, with a maximum cost of $21,000/unit.

Buildings built in the 1970s have similar typology to 1960s buildings, and so can expect similar repair costs in the future. Over 10 years, the repair cost range is $2,500 at 25th quartile to $4,500 at the 75th quartile, with a maximum of $6,000/unit.

Most of the post-1970s buildings in the sample are social-housing buildings. Over 10 years, the costs range from $500/unit to roughly $3,500/unit at the 25th and 75th quartiles respectively. Maximum cost is estimated at $7,000/unit over 10 years for post-1970s buildings.

Should the data of this study be extended to other areas, the typology of the systems—design and construction—must be confirmed as similar to those of the study. The data should not be extended across age groups since age is a primary trigger for repair.

Implications for the Housing Industry

Several initiatives are suggested as a result of the information gathered in this Condition Survey. These include:

- Evaluation of the impacts of these future costs on owners' capital planning. It would be important to investigate the exceptional buildings with a high-repair-cost burden in particular.
- The evaluation protocol and assessment parameters could be used as guides for smaller owners wanting to plan future expenditures. Results for other buildings can be compared using the rating system that was developed.
- Best-practice case studies would be invaluable educational tools in showing the advantage of using consistent maintenance worksheets and capital-planning procedures in maintaining rental property and its value. CMHC is currently producing several mechanical and electrical maintenance and repair guides for owners and managers, which could become part of an educational curriculum.
- The report also shows that the technical problems of window construction, selection, repair, and replacement also need to be clarified for owners, managers, design professionals, and builders. Elevators, another high-cost system, could also receive similar consideration. Cost-effective and durable solutions for the design and repair of these systems would provide the basis for further best-practice case studies.
- Garage and balcony repairs also remain a concern in1970s and even in post-1970s buildings. Best practice in their design and maintenance should be promoted.

Project Manager: Sandra Marshall

Research Report: *High-rise Apartment Repair Needs Assessment in the Former Cities of Toronto and York, 1998*

Research Consultant: G.R. Genge, Gerald R. Genge Building Consultants Inc.

A full report on this project is available from the Canadian Housing Information Centre at the address below.

Housing Research at CMHC

Under Part IX of the *National Housing Act,* the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research report.

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For a complete list of **Research Highlights**, or for more information on CMHC housing research and information, please contact:

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