

# IMPLEMENTING A BUILDING REHABILITATION CODE IN MICHIGAN

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Building codes are typically used at the local government level to regulate the design and construction of buildings in order to secure public health and safety. During the last century numerous building codes and regulations were developed to ensure the construction of safer and more reliable buildings. Building codes were generally written for new construction with little emphasis on rehabilitation work. Early building codes were intended to make old buildings unfixable because they were assumed to be inherently unsafe for inhabitance. (footnote #1)

As the existing building stock has improved in quality, it has become advantageous to rehabilitate and reuse old structures. There has been a growing feeling among building professionals that a simplified residential building rehabilitation code could assist the construction industry in its attempts to redevelop existing structures. The State of New Jersey and the U.S. Department of Housing and Urban Development (HUD) have recently introduced similar codes for rehabilitation work. This brief describes the need for and development of a rehabilitation building code, and the potential for implementing such a code in Michigan.

## **History and Development of Building Codes**

Building codes were first used in Babylon around 2000 B.C. These codes were crude instruments used to associate building failures with the death of the builder. There is even a biblical reference that speaks about the need of a parapet on all new houses. (footnote #2) Since that time, a number of different codes have been developed with many of them being spurred on by major tragedies within a society. (footnote #3) The first building code used in the United States was in New Amsterdam, New York, in 1625. It specified the use of certain roofing materials to prevent fires. The first construction code was established in New York City in

1862. It was meant to provide specific exit requirements in building construction. (footnote #4)

Efforts to produce building codes expanded considerably during the early 1900s. A number of model code organizations, which develop building code documents known as model building codes, were founded during this period. Model building codes are used either by themselves or as a basis to develop building regulations by various state and local governments. Currently, the three organizations in the United States that produce model building codes are the Building Officials and Code Administrators (BOCA), the Southern Building Code Conference International (SBCCI), and the International Conference of Building Officials (ICBO). These organizations provide the model building codes used in almost all of the United States. (footnote #5)

In response to technical disparities among the three model building codes, the three model code organizations decided in 1994 to create an International Code Council (ICC). ICC was established with the goal of developing a single set of comprehensive and coordinated national codes. The Council of American Building Officials (CABO), which served as an umbrella organization for the three model code organizations since 1992, was also incorporated in ICC in 1997. ICC published ten model codes in 2000, including the International Building Code. (footnote #6)

## Emergence of Building Codes Specific to Rehabilitation

### *Need For Rehabilitation of Existing Buildings*

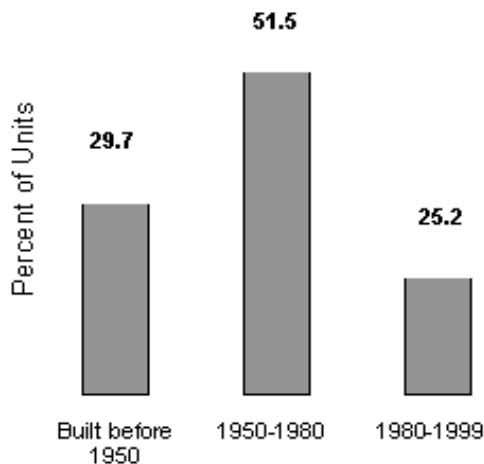


Figure 1. Age of US Housing Stock (Source: NAHBRC, 1999)

The adoption of a particular building code is a decision that is based upon the perceived needs of the community and its governing bodies. For example, codes on the West Coast reflect a need for tough seismic requirements, while codes in the north have requirements dealing with frost depth for foundations. Similarly, many communities with older housing stock have started to look for a code to regulate the rehabilitation of these structures. (footnote #7)

As indicated in Figure 1, the housing stock in the United States is rapidly aging. As the housing stock ages, the need to update and modernize these buildings becomes critical to their survival. In addition, the preference of a typical homeowner has also changed over the years. For example, the average area of a single-family home has increased from 1,525 square feet in 1975 to 1,975 square feet in 1997. In order to keep the existing homes attractive to these owners, there is a need for a considerable amount of rehabilitation. (footnote #8)

The State of New Jersey took the lead in bringing the building rehabilitation issue to the forefront. Almost half of existing 3.1 million housing units in New Jersey were built before 1959, and nearly half the estimated costs associated with statewide building permits in 1996 were for additions and alterations of existing structures. The need for rehabilitation work is even greater in older cities such as Newark, where almost 75% of the cost associated with building permits was for work on existing houses. Similarly, in the city of Trenton, New Jersey, the ratio between the costs of housing rehabilitation and new construction was more than 14 to 1. These numbers are representative of all older cities and communities in the state. In 1996, an estimated \$7 billion was spent on rehabilitation work in New Jersey. Based on a fifty-year life cycle, about half of all New Jersey houses will be candidates for possible rehabilitation within the next ten years. (footnote #9)

The volume of rehabilitation work for residential buildings is growing throughout the United States. Since 1962 the Census Bureau has been providing reports on expenditures for residential improvements and repairs. As shown in Figure 2, rehabilitation expenditures have steadily increased, from \$11.4 billion in 1962 to over \$120 billion in 1998. (footnote #10) These numbers clearly indicate the need to develop a nationwide building strategy that includes a focus on rehabilitation.

### *Regulatory Environment Before the 1970s*

Until the late 1970s, the three model building codes used a formula, called the 25/50 rule, to determine the acceptability of proposed rehabilitation work. By

this rule, the estimated cost of rehabilitation work was calculated as a percentage of the total value of the building. If the Percentage of Value (PV) was lower than 25%, the local building official had the flexibility to determine the extent to which rehabilitation work must conform to building codes. If the PV was between 25% and 50%, then the entire scope of the rehabilitation work had to conform to building codes. If the PV was greater than 50%, then the entire building had to be brought up to current building codes. (footnote #11)

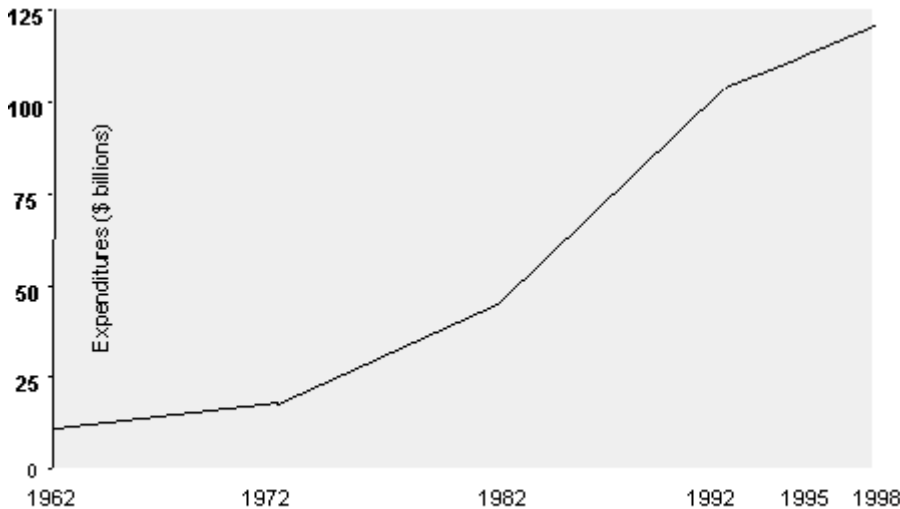


Figure 2. Expenditures for Residential Improvements and Repairs, 1962-1998 (Source: US Bureau of the Census)

The 25/50 rule allowed a considerable amount of latitude to local building officials for making changes to a proposed plan. This latitude was considered by many building professionals as an obstacle to rehabilitation work. Without knowing the exact scope of work and associated requirements, rehabilitation projects could not be estimated accurately. As a result, estimators were forced to apply additional safety factors to their estimates and the resulting estimated costs were usually so high as to discourage rehabilitation. The building industry strongly believed that by developing rules that could be accurately applied, potential rehabilitation projects could have more realistic cost estimation. (footnote #12)

Many states had stipulated additional requirements in addition to the 25/50 rule. For example, New Jersey imposed an additional rule stating that if rehabilitation work in an existing building went over 5% of the floor area, the entire building would have to be brought into full compliance for light, ventilation, egress, and fire safety provisions.

These rules generally discouraged rehabilitation work. In many instances, the property owners wanted to rehabilitate certain aspects of the building but had to abandon their plans because the 25/50 rule would have forced them to rehabilitate the entire building. In many cases owners found it impossible to mount such an effort, and as a result, these buildings remained unused and deteriorated over time. Clearly, an effect of the rules that governed rehabilitation before the 1970s was to encourage new construction rather than reuse of the existing building stock. (footnote #13)

#### *Federal Government Action, 1975-1995*

During the 1970s there was a growing awareness that changes were needed to address the impact of building codes on rehabilitation, and efforts were made to replace the system that linked rehabilitation work to the codes for new construction. Congress deliberated on the issue and asked the U.S. Department of Housing and Urban Development (HUD) to provide leadership in this regard. In the late 1970s HUD introduced a set of guidelines to streamline and simplify the approval of building rehabilitation work. These guidelines were intended to supplement the rehabilitation approval process within the framework of the three existing model building codes. (footnote #14)

The HUD rehabilitation guidelines went a long way toward removing barriers to rehabilitation. These guidelines influenced the model building codes to adopt three definitions of reconstruction: Repair, Alteration, and Change of Occupancy. Based on these definitions, most rehabilitation related work was placed inside the "Alteration" category. Within this category, local building officials were given the flexibility to decide to what extent new construction codes would be applied to a rehabilitation project.

The HUD guidelines were initially welcomed as a helpful tool but reports of dissatisfaction with these guidelines started to emerge from building officials and the building industry. In 1995, HUD organized a symposium to assess the effectiveness of these guidelines. It was concluded that the enforcement of the rehabilitation guidelines around the nation was not consistent. Based on this information, HUD asked the University of Illinois in Urbana-Champaign to conduct a thorough study of the guidelines and their enforcement. The final analysis of the data indicated that the guidelines were insufficient to approve and encourage rehabilitation work and they needed further modifications. (footnote #15)

#### *New Jersey's Model Rehabilitation Subcode*

Based on their long-felt need and the information released by the HUD-University of Illinois study, the State of New Jersey decided to develop a rehabilitation subcode independent of the model building codes. The Center for Urban Policy Research at Rutgers University and several professional groups including code officials, fire officials, architects, historic preservationists, advocates for people with disabilities, and government representatives, participated in the subcode development. (footnote #16) The subcode document was approved as a statewide rehabilitation code and was released in January 1998. (footnote #17)

The rehabilitation subcode developed by New Jersey served as the basis for the development of a national version of the subcode. At the request of HUD, the National Association of Home Builders' Research Center (NAHBRC) developed the national version by following the details developed in the New Jersey subcode. (footnote #18)

In the New Jersey and the subsequent HUD rehabilitation subcodes, the "Alteration" definition was further divided into three separate categories of Renovation, Alteration, and Reconstruction. Definitions of the five categories provided in the subcodes are:

*Repair – the restoration to a good or sound condition of materials, systems and/or components that are worn, deteriorated or broken using materials or components identical to or closely similar to the existing.*

*Renovation – the removal and replacement or covering of existing interior or exterior finish, trim, doors, windows, or other materials with new materials that serve the same purpose and do not change the configuration of space. Renovation shall include the replacement of equipment or fixtures.*

*Alteration – the rearrangement of any space by the construction of walls or partitions or by a change in ceiling height, the addition or elimination of any door or window, the extension or rearrangement of any system, the installation of any additional equipment or fixtures, and any work which reduces the loadbearing capacity of or which imposes additional loads on a primary structural component.*

*Reconstruction – any project where the extent and nature of the work is such that the work area cannot be occupied while the work is in progress and where a new certificate of occupancy is required before the work area can be reoccupied. Reconstruction may include repair, renovation, alteration or any combination thereof.*

*Change of Occupancy – a change in the purpose or level of activity within a structure that involves a change in application of the requirements of the Building Code or of these provisions.*

The original definitions of Repair and Change of Occupancy along with the three new definitions provide building officials with a better defined set of regulations to implement. <sup>(footnotes #19,20)</sup>

HUD’s rehabilitation subcode provides detailed description of the work scope related to building rehabilitation work. Using this subcode removes most of the ambiguity from the rehabilitation work scope, enabling the development of more accurate estimates for rehabilitation projects.

### **Building Rehabilitation in Michigan**

The size and age of the housing stock in Michigan is roughly similar to that of New Jersey. According to 1990 Census figures, Michigan has a total of 3.85 million housing units. About half of these units were built before 1960; approximately 1.23 million units are over 50 years old and may be candidates for rehabilitation. <sup>(footnote #21)</sup>

Although specific information detailing the scale of new construction and rehabilitation work is not available for the whole state, comparing the number of building permits in Detroit for new residential building construction with those for demolition suggests the statewide importance of rehabilitation work in the urban areas of Michigan. According to the Southeast Michigan Council of Governments, the City of Detroit issued 1,920 building permits for new residential building construction (single and multifamily) over the last five years, while during the same period issuing 27,798 permits for the demolition of residential buildings. <sup>(footnote #22)</sup> Data compiled by the Buildings and Safety Engineering Department of the City of Detroit clearly indicate the importance of rehabilitation related work in the city (see Table 1).

	New Construction Permits	Cost (millions)	Additions & Alterations Permits	Cost (millions)	Demolition Permits
One Family Dwellings	163	16.94	4,808	42.99	1,914
Two Family Dwellings	2	0.01	479	4.54	566

Total	165	16.95	5,287	47.53	2,480
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Table 1. New Construction, Rehabilitation, and Demolition for One and Two Family Dwellings in the City Of Detroit

(Source: Detroit, 1999)

The unusually large number of demolition permits is a source of concern for many community-based organizations. One can argue that even if a small percentage of these buildings could have been saved by rehabilitation, it would have made a huge difference in the availability of affordable housing in the city. In any case, the data on housing age indicates that housing units in the urban areas of Michigan will continue to become candidates for rehabilitation in large numbers. As discussed below, by implementing the rehabilitation code, Michigan can follow New Jersey’s lead and possibly increase the number of housing units that can be rehabilitated, while reducing the cost of rehabilitating these units.

**Implementation of Rehabilitation Codes**

*Implementation in New Jersey*

To date, the primary initiators of the rehabilitation subcodes have been the State of New Jersey, the City of Wilmington, Delaware, and the U.S. Department of Housing and Urban Development. A number of local and state government agencies in United States and Canada are considering future implementation of a rehabilitation subcode, including the State of Maryland and the cities of Dubuque, Iowa, and Vancouver, British Columbia.

The rehabilitation subcode was received enthusiastically by the governmental agencies and the building industry in New Jersey. There has been a surge of rehabilitation work in New Jersey since the new subcode was implemented. The first year of implementation of the subcode resulted in a 60% increase in rehabilitation related spending in New Jersey’s five biggest cities, compared with a 1.6 % rise the year before. Rehabilitation related spending jumped from \$179 million in 1997 to \$287 million in 1998, whereas it had shown only a minimal increase of \$3 million in the previous year. Projecting these numbers across the entire state, where about \$7 billion was spent on building rehabilitation related work in 1996, the effect of this subcode is staggering. (footnote #23,24)



The large increase in rehabilitation spending in New Jersey is being attributed to many aspects of the rehabilitation subcode. These include the perception of a pro-rehabilitation stance among state and local government officials, shortening and simplifying the plan review process, and cost savings due to rehabilitation subcode provisions.

It is estimated that the subcode has resulted in an overall average cost savings of ten percent; on certain projects it has saved up to half of the cost. In an example provided by the New Jersey Department of Community Affairs, an apartment and retail complex building that had been vacant for eight years was rehabilitated as a result of the subcode implementation. The total cost of the project was \$1,145,000 – an estimated \$391,000 less than it would have been without the subcode. Details of these savings are illustrated in Table 2. (footnote #25)

Building Element	Cost Without Subcode	Cost With Subcode	Savings
Doors: replacements and widths	\$ 80,000	\$ 44,000	\$ 36,000
Stairs: dimensions and enclosures	86,300	26,300	60,000
Room size	120,000	-0-	120,000
Structural design	200,000	50,000	150,000
Window size	41,119	31,119	10,000
Vestibule: stairs/dimensions	15,000	-0-	15,000
Total	\$ 542,419	\$ 151,419	\$ 391,000

Table 2. Breakdown of Cost Savings on a New Jersey Example Project (Source: Forest, 1999)

Based upon their development of the rehabilitation subcode, the State of New Jersey was named an "Innovations in American Government" award winner for 1999. The Innovations Program was established by Harvard University's John F. Kennedy School of Government and the Ford Foundation in 1986 to identify and celebrate outstanding examples of creative problem-solving in the public

sector. The New Jersey award was only one of ten presented out of a pool of 1,600 candidates. (footnote #26)

### *Potential Implementation In Michigan*

Local governments in Michigan historically have had the ability to adopt and enforce any nationally recognized model building code. In 1999 the State of Michigan amended the process of code adoption under the State Construction Code Act (Act 230). This Act now requires municipalities to administer and enforce the statewide codes, including the International Building Code, International Plumbing Code, International Mechanical Code, and International Residential Building Code developed by the International Code Council (ICC), and the National Electric Code published by the National Fire Protection Association. The language does not permit local communities to modify the state codes. (footnote #27)

The International Code Council (ICC) has recently announced that it has undertaken the development of an Existing Building Code, which will address rehabilitation provisions. This Existing Building Code is scheduled to be released in 2003. An ICC committee has already been appointed to deliberate on the scope, form and content of the proposed code. For the 1st edition of the International Building Code, released in March 2000, the ICC organization has adopted as its rehabilitation guidelines the existing Chapter 34 in BOCA Model Building Code. The new code will be developed as a stand-alone code known as the International Existing Buildings Code.

As a result, the rehabilitation chapter in the first edition of the International Building Code may be eliminated from the future editions of the International Building Code, and its contents relocated to the Existing Buildings Code. Rehabilitation provisions from other codes, such as mechanical, plumbing, etc., will also be incorporated in the new ICC Existing Buildings Code. This new Code will cover rehabilitation and other code requirements for existing buildings. (footnote #28)

As currently in force, Chapter 34 of the International Building Code defines the rehabilitation provisions in Michigan. When the International Existing Building Code is released in 2003, it will be referenced in the future editions of the International Buildings Code and other codes. As a result, its adoption in Michigan will require some action on the part of the State government. Based on the need of comprehensive rehabilitation provisions in Michigan and the success

of such a code in New Jersey, we recommend that this code should be adopted expeditiously via administrative action by the related state government agencies.

In the meanwhile, Michigan Association of Homebuilders have recently asked the state government to consider the immediate implementation of the HUD rehabilitation code in Michigan. The office of Policy and Legislative Affairs of the Michigan Department of Consumer and Industry Services has formed a committee to discuss this issue. This committee is expected to release its recommendation in Spring-Summer 2001. (footnote #29)

## **Summary**

Due to the aging housing stock, there is a growing need to develop and implement rehabilitation building codes in many parts of the United States. Model building codes began to include rehabilitation provisions as a result of U.S. Department of Housing and Urban Development (HUD) guidelines introduced in late 1970s.

In 1995, it was determined that the HUD guidelines were not being consistently implemented and that further clarification was required. The state of New Jersey took the lead in developing a stand-alone rehabilitation subcode, which HUD later used to develop a national version of the subcode. The rehabilitation subcode has shown to be very effective in encouraging rehabilitation of existing buildings throughout New Jersey. The subcode is currently being studied or implemented within several governmental agencies around the United States and Canada.

Recently, the International Code Council (ICC) decided to focus on rehabilitation and is developing an International Existing Building Code, to be released in 2003. The provisions for rehabilitation being considered for inclusion in this code are based on the guidelines that were established in the New Jersey subcode and further refined by the HUD subcode.

The housing data strongly supports the need to adopt and implement a building rehabilitation code in Michigan, especially in older communities with aging housing stocks. In order to apply the 2003 International Existing Buildings Code to Michigan, the State will need to act on its implementation, either by administratively adopting the future editions of codes that are part of the current amendment, or by further amending the Michigan Construction Code Act. Meanwhile, interim efforts are underway in Michigan to consider replacing

## Chapter 34 of the International Building Code with the HUD Rehabilitation Model Code.

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1

Yatt, B. 1998. *Cracking the Codes*. John Wiley and Sons: New York.

2

*Deuteronomy*, 22:8 [<http://www.tagnet.org/bible/kjv/4/21.html>].

3

Harmon, S. K. 1994. *The Codes Guidebook for Interiors*. John Wiley and Sons, New York.

4

Willenbrock, J. H., Manbeck, H. B., and Suchar, M.G. 1998. *Residential Building Design and Construction*. Prentice Hall: NJ.

5

Ibid.

6

International Code Council. 1999. "Single Family of Codes Complete." [<http://www.intlcode.org/newsrel/nr100699.html>].

7

National Association of Home Builders Research Center (NAHBRC). 1999. *Innovative Rehabilitation Provisions – A Demonstration of the Nationally Applicable Recommended Rehabilitation Provisions*. NAHBRC: Upper Marlboro, MD.

8

Ibid.

9

Connolly, W., 1998. *Rehabilitation Subcode: Guidance for the Code User*. Department of Community Affairs, Division of Codes and Standards, NJ.

10

U.S. Census Bureau, 1999. [<http://www.census.gov/pub/const/>].

11

National Association of Home Builders Research Center (NAHBRC). 1999. *Innovative Rehabilitation Provisions – A Demonstration of the Nationally Applicable Recommended Rehabilitation Provisions*. NAHBRC: Upper Marlboro, MD.

12

Ibid.

13

Ibid.

14

*National Survey of Rehabilitation Enforcement Practice*. 1998. Housing Research and Development, School of Architecture, University of Illinois at Urbana-Champaign. Urbana-Champaign.

15

Ibid.

16

Connolly, W., 1998. *Rehabilitation Subcode: Guidance for the Code User*. Department of Community Affairs, Division of Codes and Standards, NJ.

17

New Jersey Department of Community Affairs. 1998. "Uniform Construction Code-Rehabilitation Subcode," *New Jersey Administrative Code*, Title 5, Chapter 23, Subchapter 6.

18

National Association of Home Builders Research Center (NAHBRC). 1999. *Innovative Rehabilitation Provisions – A Demonstration of the Nationally Applicable Recommended Rehabilitation Provisions*. NAHBRC: Upper Marlboro, MD.

19

U.S. Department of Housing and Urban Development. 1997. *Nationally Applicable Recommended Rehabilitation Provisions*. Washington, D.C.

20

New Jersey Department of Community Affairs, op. cit.

21

State of Michigan Housing Characteristics, 040 Michigan - 1990 Census of Population and Housing. [<http://www.state.mi.us/webapp/dmb/mic/>].

22

Southeast Michigan Council of Governments. 1999. Building Permit Database. [<http://www.semecog.org/cgi-bin/data/buildper.cfm>].

23

Connolly, W., 1998. *Rehabilitation Subcode: Guidance for the Code User*. Department of Community Affairs, Division of Codes and Standards, NJ.

24

Forest, B., 1999. "New Jersey Revs Up Its Rehabs - A New Housing Code is Saving Renovation Costs and Buildings," *Planning*, 65:8, 10-12.

25

Ibid.

26

State of New Jersey, Department of Community Affairs. [<http://www.state.nj.us/dca/codes/rehab/pressrel.htm>].

27

Henry Green, Code Commissioner, State of Michigan. (517) 241-9302. Interview conducted in person, December 1999.

28

Ken Schoonover, Vice President, BOCA. (708) 799-2300. Interview conducted by telephone, December 1999.

29

Schwartz, L. 2000. "Rebuilding our Neighborhoods," *Michigan Builder*. Michigan Association of Homebuilders, Sept 2000, p. 8.

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