The Commonwealth of Massachusetts

State Board of Building Regulations and Standards

CODEWORD©

July, 1994

WHY ARE WE HERE ?

A few years ago, a vice-presidential hopeful expressed an amusing thought on national television. The words he spoke that night will probably be used to describe him for years to come. Those words: who am I, and why am I here?

As entertaining as this thought seemed at the time, it is probably something many of us contemplate, at least on occasion. In fact, we may wonder about many seemingly unanswerable questions; such as: why does the phone always ring when we sit down to eat dinner, or why does it always rain right after we wash the car.

Well, we will not attempt to answer these abstract questions. We'll leave that to the philosophers. But, we may be able to shed some light on other issues of interest, such as; just what is the Board of Building Regulations and Standards, what does it do, and where does it get its authority?

In previous issues of **CODEWORD** we have briefly examined these questions but, until now, a full explanation has never been presented.

Therefore, in an attempt to dispel the myths and promulgate the truth, we offer the following information.

THE STATE BOARD OF BUILDING REGULATIONS AND STANDARDS:

REGULATORY AUTHORITY:

The State Board of Building Regulations and Standards (BBRS) is established by **MGL c 143 § 93** and empowered to propose, adopt and amend rules and regulations relating to building construction, renovation, alteration, demolition, fire suppression and alarm systems mechanical systems (excluding plumbing and electrical) and the use and occupancy of all buildings and structures in the Commonwealth. The regulations are collectively known as the Massachusetts State Building Code (the ***Code***) and are applicable throughout the Commonwealth.

Municipalities are specifically prohibited from adopting local regulations which are more restrictive than required under the ***Code***, unless approved by the BBRS.

The ***Code*** is promulgated as Code of Massachusetts Regulation (CMR) 780.

COMPOSITION OF THE BBRS:

The BBRS has a statutory constitution and comprises of 11 members, 9 of which are appointed by the Governor and two of which are ex-officio.

Ex-Officio Members:

- The **State Fire Marshal** or his designee
- The **Chief of Inspections** of the Division of Inspections

Appointed Members:

- Registered **Architect**
- Registered **Structural Engineer**
- Registered **Mechanical Engineer**
- **Building Trades** Representative
- **General Contractor** of Commercial/Industrial Buildings
- **General Contractor** of One and Two Family Dwellings
- Head of a **Local Fire** Department
- **Inspector of Buildings in a Town**
- **Inspector of Buildings in a City**

The current edition of the ***Code*** is the 5th Edition and was promulgated on September 14, 1990. The 5th Edition is modeled after the 1987 version of the Building Official and Code Administrators International (BOCA) National Building Code.

It is the intent of the BBRS to adopt, with specific modifications for Massachusetts, the 1993 BOCA National Building Code in the latter part of 1995. Budgetary constraints however may force a delay into 1996.

ADVISORY COMMITTEES:

In order to assist in the development of areas of significant importance, the BBRS has established five standing committees. The committees are volunteer and are comprised of prominent professionals. Presently the committees are;

- **Seismic** Advisory Committee
- **Geotechnical** Advisory Committee
- **Loads** Advisory Committee
- **Fire** Prevention/Fire Protection
- Standing **Certification** Committee
- **Construction Materials** Safety Board

BUILDING CODE ENFORCEMENT:

Except for State owned buildings the ***Code*** is enforced at the local level by the city or town appointed ***Inspector of Buildings*** or ***Building Commissioner*** . The ***Chief Administrative Officer*** may employ other ***Local Inspectors*** as are reasonably necessary to assist in the discharge of his duties.

The minimum requirements of education or experience for appointment as a building official are defined in **MGL c 143 § 3**.

From 1975 until 1992, the minimum requirements established by law were either five years in the supervision of building construction or design, or a four year degree in a field related to building construction or design. In addition, a general knowledge of building materials, safe exits, light and ventilation and fire prevention were required of a prospective ***Inspector of Buildings*** or ***Building Commissioner***. The level of experience for a ***Local Inspector*** is the same; however, a two year degree in a field relating to building construction or design may be substituted for the required experience.

Chapter 168 of the Acts of 1992 amended **MGL c 143 § 3** which now mandates that all building officials be certified by the BBRS as either an ***Inspector of Buildings/Building Commissioner***, if head of the department, or ***Local Inspector***, if assisting the ***Inspector of Buildings***.

ORDERS, INTERPRETATIONS, ACTION OR INACTION OF A BUILDING OFFICIAL - THE ADMINISTRATIVE APPEAL PROCESS:

Anyone aggrieved by decisions, orders, interpretations, actions or failure to act of a building official may appeal those orders to the State Building Code Appeals Board, or to a local or regional building code (not zoning) appeals board, if one exists.

The State Building Code Appeals Board is a 3 member panel comprised of members of the BBRS. The Appeals Board holds hearings in accordance with **MGL c 30A**. In order to file for a hearing, an aggrieved party must file an appeal application no later than 45 days following the order of the building official or the right to both an administrative hearing and court hearing are forfeit.

Decisions, orders or interpretations of the Building Code Appeals Board do not establish precedent and, upon petition, may be reviewed by a court of competent jurisdiction (**MGL c 30A**).

PROPOSED SIGNIFICANT FUTURE CHANGES TO THE *CODE:*

Of the proposed upcoming changes, perhaps the proposed code change which will have the most effect is relate to seismic upgrading of existing buildings. However, other significant changes relating to Appendix A references for NFiPA Standards (which were adopted by emergency filing on June 14, 1994) are identified in an article further on in this document.

A brief historical development of the proposed change to Article 32 follows.

SEISMICITY IN MASSACHUSETTS:

From colonial times to the present, over 2500 earthquakes have been documented in the New England States. The largest significant earthquake in Massachusetts was epicentered in the Atlantic Ocean off Cape Ann in 1755. This earthquake had an estimated magnitude of 6.0 on the Richter scale.

Massachusetts is considered to be an area of "moderate" seismic risk. The term "moderate" refers to the period of time between major earthquakes, not the magnitude or effects of the earthquake.

Because of the geology of this region the effects of an earthquake will be felt over an area up to 40 times greater than an earthquake of similar magnitude in California. The "built environment" in Massachusetts is particular cause for concern during the next damaging earthquake.

Massachusetts has a large stock of older buildings, constructed prior to the adoption of the first state building code on January 1, 1975. Many of these buildings are constructed of unreinforced masonry, a known poor performer in earthquakes.

Today, good seismic design requirements mandate "ductile" (i.e. not brittle) buildings. Ductile structures are able to accommodate large displacements during earthquakes and in doing so dissipate much of the energy imparted during ground shaking.

THE BOSTON LOSS STUDY:

The Massachusetts Emergency Management Agency (formerly the Massachusetts Civil Defense Agency) commissioned a study to project the effects of an earthquake of Richter Magnitude 6.25 off Cape Ann. The results of this study are chilling. Damage estimates range from $2 to $10 billion in the Boston Metropolitan area due to ground shaking with additional losses due to secondary effects such as soil liquefaction failures, fires and economic interruptions. Hundreds of deaths and thousands of injuries are also predicted. An earthquake of magnitude 6.25 is considered a moderate size and the potential for larger, more powerful earthquakes exists and is real.

Recognizing the potential for serious losses to existing buildings and major life loss and personal injury during an earthquake, the Seismic Advisory Committee has invested four years in developing seismic regulations for the upgrading of existing buildings. The efforts of the committee culminated in proposed amendments to Article 32 which were submitted to the BBRS in September 1992 and heard at the semi-annual public hearing of November 1992.

In February 1993 the BBRS voted to adopt the proposed regulations conditional upon the completion of a review of the proposed changes by an independent structural engineer with particular concern being addressed to the feasibility and economic impact of

the regulations. The study analyzed five existing buildings which had recently been renovated and identified the additional requirements which would be imposed under the proposed regulations. The study was completed on February 17, 1994 and concluded that;

- The provisions effectively achieve the aim of reducing the risk of loss of life by concentrating on specific areas of high risk resulting from seismic weakness or specific occupancy.

- The provisions remove the unusually unreasonable requirement to design [existing] buildings to meet the code for new construction.

- The proposed provisions are much more specific and clearer than the existing provisions.

- The new provisions will increase both design and construction costs by a small amount.

- In four of the five buildings studied, the total cost of lateral load retrofit work was 3% or less of the total construction cost. The fifth building incurred 12% costs associated with lateral load retrofit, but this was already required by existing code provisions. Additionally this building was seismically very weak.

- The majority of buildings will incur additional construction costs of 1% over present costs without the new regulations in place.

- Design fees will increase between 10% and 25% depending on the project overall size.

When promulgated, these regulations will make Massachusetts the first state in the union to promulgate regulations relating to the seismic upgrading of existing buildings. The regulations are scheduled to the promulgated in September/October, 1994.

All municipal building officials will receive a copy of the amendments via US mail as soon as they become available. All other interested parties may obtain a copy from the State House Bookstore (617) 727-2834. Again, the amendments will not be available until September or October.

QUESTIONS AND ANSWERS ON THE REQUIREMENTS FOR THE SEISMIC UPGRADING OF EXISTING BUILDINGS:

1. Will the proposed regulations applied retroactively in a similar manner to **MGL 148 § 26A1/2** ?

No. **MGL c 143 § 92** prohibits the application of *the Code* retroactively. Special legislation would be required (e.g. **MGL c 148 § 26A$^{1/2}$**) in order to require new code provisions to be applied to lawfully existing buildings.

2. Under what circumstances do the proposed regulations require an existing building to be seismically upgraded ?

(a) Additions:

(i) **Additions which are structurally separate** from the existing building must meet the code for new construction, including ductility requirements.

(ii) **Additions which are not structurally separate from the existing building;**

If both weight and area of the addition are less than 10% of the original building - lateral load capacity cannot be altered without a structural analysis.

If either the weight or area are increased in the range 10% to 100% - investigate for special earthquake hazards (parapets masonry walls not tied into floors; pre-cast concrete elements; analyze the building and strengthen structural systems where necessary on a sling scale depending upon the height or weight of the addition. Modified "K" factors may be used to account for buildings which do not meet the ductility requirements for new construction.

If the weight or area is greater than the existing building, the building must be seismically upgraded to meet new construction requirements, including ductility requirements.

(b) Changes in Use: When a building is changed from one use group to another, the increase (or decrease) in the **Seismic Hazard Category** must be ascertained. Seismic hazard category is based on factors such as increase in occupancy of more than 25% or total cost of alterations greater or less than 50% of the assessed value of the building. Seismic Hazard Categories range from 1 to 3 (1 being the lowest 3 being the highest).

(i) **Seismic Hazard Category 1:** Alterations to existing lateral load capacity subject to structural analysis.

(ii) **Seismic Hazard Category 2:** As Seismic Hazard Category 1, additionally investigate special seismic hazards.

(iii) **Seismic Hazard Category 3:** Full compliance with seismic requirements except if building is not ductile, modified "K" factors may be utilized.

OTHER SIGNIFICANT FUTURE CHANGES TO THE MASSACHUSETTS STATE BUILDING CODE:

MGL c 143 § 94(h) mandates that the ***Code*** be amended at least every five years. The 5th Edition of the Code was promulgated on September 14, 1990. Presently, the Board, its Staff and its Advisory Committees are studying the 1993 BOCA International Uniform Building Code with a view of adopting a modified version in 1995/1996.

We hope that the above narrative has answered some of the questions you may have had concerning the Board, its composition and its powers and duties, and just why we are here.

OTHER ACTIVITIES OF INTEREST

CERTIFICATION:

SEISMIC SEMINAR:
Many of you were able to attend the first seminar applicable towards certification maintenance. The seismic seminar, sponsored by the Board of Building Regulations and Standards and presented by the Massachusetts Emergency Management Agency (MEMA) and New England States Earthquake Consortium (NESEC) was a great success. The Board hopes to follow with one or two more seminars in calendar year 1994.

For those who have not received a certificate of attendance for this seminar, don't worry, they will be sent out before the end of the summer.

OTHER COURSES APPLICABLE TOWARDS CERTIFICATION MAINTENANCE:
The *Standing Certification Committee* has been busy reviewing courses and seminars that have been submitted for credit towards certification maintenance.

COURSES - CONTINUED

The following is a list of approved courses with the assigned credit value. All certified building code enforcement officials are reminded that their certification status **must be maintained** in accordance with regulations promulgated by the Board. Refer to the ***Standing Certification Committee's Policy for Maintenance of Certification Status*** for exact details.

COURSES AND SEMINARS APPROVED FOR CREDIT AS OF JUNE, 1994

NAME OF COURSE OR SEMINAR	CONTACT HOUR CREDIT
BBRS SPONSORED:	
"Seismic Seminar '94" as presented in Chicopee, Falmouth, Bridgewater and Tewksbury - January .through March, 1994	5.0 Hours
BOCA SPONSORED:	
"Solving Means of Egress Problems in Commercial Structures"	5.0 Hours
"BOCA National Building Code Update\1993"	5.0 Hours
"BOCA National Mechanical Code Update\1993"	2.5 Hours
"BOCA National Residential Mechanical Code Update\1993"	3.5 Hours
"BOCA National Fire Prevention Code Update\1993"	3.5 Hours
"Non structural Pan Review\1993"	10.0 Hours
"Structural Plan Review\1993"	10.0 Hours
"Hazardous Materials Code Requirements\1993"	5.0 Hours
"Chapter 9 - Fire Protection Systems\1993"	5.0 Hours
"Special and Mixed Uses\1993"	5.0 Hours
"Three Options for Mixed Uses"	2.5 Hours
"Earthquake Design Requirements"	5.0 Hours
"Wind Load Review for Commercial Buildings\1993"	2.5 Hours
"Sprinkler Plan Review\1993"	10.0 Hours
"Creative Effective Oral Presentations"	2.5 Hours
"CABO One and Two Family Dwelling Code"	10.0 Hours
"Special and Mixed Uses" As presented at Albert's Restaurant, Stoughton - January 27, 1994	4.5 Hours
Other Courses (Various Sponsors):	
"Understanding the Massachusetts State Building Code" as offered at Northeastern University	10.0 Hours
"New England Municipal Building Officials Seminar" as offered at the University of Massachusetts, Amherst campus - October 4-7, 1993	10.0 Hours
"Americans With Disabilities and the Massachusetts Architectural Access Board's Regulations" as presented at the Holiday Inn, Worcester - December 15-16, 1993	5.0 Hours

COURSES AND SEMINARS APPROVED FOR CREDIT AS OF JUNE, 1994

"What Managers Do" and "Communication Skills for Managers" as offered at Middlesex Community College	10.0 Hours (Total)
"Energy Crafted Homes" as offered at the Eastern Utility Plant, W. Bridgewater - June 22-23, 1993	2.0 Hours
"Solid Flue Chimney Savers" as offered at the Ramada Inn, Portsmouth, RI - February 24, 1994	3.5 Hours
"Fire Alarm Systems" as offered by NFPA	10.0 Hours
"Automatic Fire Alarm Sprinkler Systems" as offered by NFPA	10.0 Hours
"Eastern States Building Officials Federation - Forty-Fifth Annual School"	10.0 Hours
"Hurricane Design and Emergency Response Planning" as offered at the Sturbridge Host Hotel, Sturbridge - May 20, 1994	6.0 Hours
"Principals of Means of Egress" as offered at the Seacrest Conference Center, North Falmouth - May 18, 1994	6.0 Hours
"Public Safety Roundtable Discussion" as offered at the Casa DiFiore, Wilmington - April 28, 1994	2.0 Hours

HOME IMPROVEMENT CONTRACTOR REGISTRATION

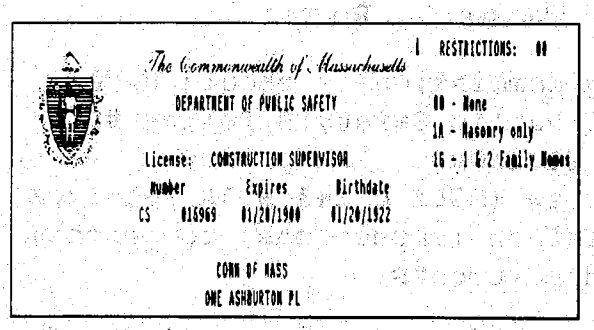
The Home Improvement Contractor Registration (HIC) program is entering into its first renewal cycle. The Board expects to receive approximately 12,000 renewal applications over the summer. Presently, we are slightly behind schedule in issuing renewed registrations, but we expect to catch up as the summer progresses.

As a reminder, all building officials should always examine the registration card of a Home Improvement Contractor along with a picture I.D. before issuing a permit for work covered by the program. For details regarding the program, reference 780 CMR-6, *"Rules and Regulations for Registration and Enforcement of Home Improvement Contractor Program"*.

CONSTRUCTION SUPERVISORS LICENSE

The construction supervisors license will soon be sporting a new look. The new license card will be smaller in size for a better wallet fit. Also, the license will be more easily laminated. An example of the new card is illustrated on the following page.

SUPERVISORS LICENSE - CONTINUED


The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY

License: CONSTRUCTION SUPERVISOR

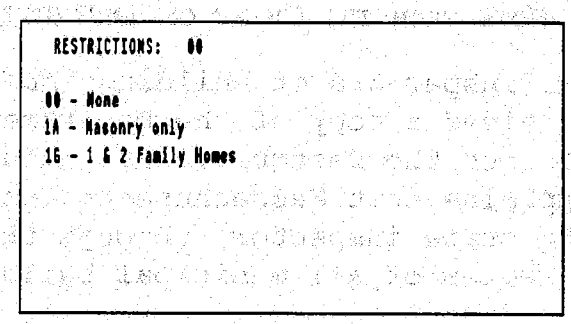
Number	Expires	Birthdate
CS 015969	01/20/1900	01/20/1922

CORN OF MASS
ONE ASHBURTON PL

RESTRICTIONS: 00

00 - None
1A - Masonry only
1G - 1 & 2 Family Homes

FRONT


RESTRICTIONS: 00

00 - None
1A - Masonry only
1G - 1 & 2 Family Homes

BACK

As with the HIC registration card, a building official should always take care to examine an individual's construction supervisors license along with a picture I.D before issuing a permit for work covered by the program.

CONSTRUCTION SUPERVISOR LICENSING AND BUILDING CODE ENFORCEMENT OFFICIAL CERTIFICATION - TEST DATES

The following is a list of dates for upcoming construction supervisor licensing examinations:

Registration Deadline	Test Date	Scores Mailed
August 12, 1994	September 10, 1994	October 7, 1994
November 11, 1994	December 10, 1994	January 6, 1995

The following is a list of dates for upcoming certification examinations:

BOCA TEST DATES FOR CERTIFICATION AS A LOCAL INSPECTOR:

Registration Deadline	Test Date
July 14, 1994	August 20, 1994
October 13, 1994	November 19, 1994
March 16, 1995	April 22, 1995

CABO TEST DATES FOR CERTIFICATION AS AN INSPECTOR OF BUILDINGS\BUILDING COMMISSIONER:

Registration Deadline	Test Date
September 22, 1994	November 5, 1994

MUNICIPAL BUILDING DEPARTMENT REVIEW

A NOTE FROM THE CHIEF OF INSPECTIONS - THOMAS L. ROGERS

All inspectors of buildings\building commissioners should have received a copy of the Department of Public Safety's Policy #94-01 with the December, 1993 issue of **CODEWORD**. The policy explains that Massachusetts General Law (MGL) **c 143 s 3A** requires the state inspector, through the chief of inspections, to perform a review of all municipal building departments.

In the aftermath of the devastation caused by Hurricane "Andrew" in 1992 during which 375,000 people are reported to have lost their homes, many of South Florida's municipal departments were criticized for lax code enforcement. In addition to the misfortune suffered by homeowners, insurance carriers also incurred large financial losses.

In response to this and other disasters resulting in large property and life loss, the insurance industry of America is implementing programs whereby all municipal building departments are assessed and graded.

MGL c 143 s 3A establishes a similar inspection process for use in the Commonwealth. The Chief of Inspections hopes to examine the activities of each department in order to develop criteria in which to prescribe adequate staffing levels for building departments, offer methods of improving building permit and inspection procedures, and suggest alternatives for records keeping procedures.

The goal of the inspection is to establish a uniform process under which all building departments may function. With this standardization, citizens of the Commonwealth will be better served, building departments will operate more efficiently and the safety of the public will be better protected.

The process will be lengthy, but the benefits will be vast. The Chief looks forward to working with each department, and expects to learn as much from the process as anyone.

With this process in place, each building department should fare well during the upcoming insurance industry review.

EMERGENCY ACTION

Earlier in this document we described the amendment process and explained that a series of amendments will be issued towards the end of the summer with respect to seismic retrofit issues. These amendments were developed through normal public hearing

EMERGENCY ACTION - CONTINUED

procedures. However, there is another method by which amendments may be adopted. It is known as emergency action procedures.

As the title may indicate, amendments developed and issued under emergency action are considered extremely important measures that must be immediately enacted in order to ensure the public good. The amendments issued here pertain to Appendix A of the code; specifically, the NFiPA reference standards.

Reference standards are an integral part of the code. Since the code is prescriptive in nature, it tells us what to do, not how to do it. For instance, Section 1002.2 specifies that a fire suppression system is required to be installed in all buildings of Use Group A-1, but it does not speak to how the system is to be installed. In order to learn this, one must refer to the applicable NFiPA standard (NFiPA 13) identified in Appendix A. However, many of the NFiPA standards identified are out of date and sometimes unavailable.

Consequently, in attempting to layout a sprinkler system, a designer is faced with a dilemma; do I use the latest NFiPA 13 standard, violating the provisions of the building code; or do I hunt down the standard referenced in the appendix and design the system in accordance with a potentially antiquated method?

Obviously, this caused a great deal of confusion among design professionals. In an effort to rectify this situation, the Board, at its May, 1994 meeting, voted to amend all NFiPA reference standards; updating them to the latest edition.

Enclosed, all municipal building and fire official will find a copy of the changes. Other interested parties may obtain a copy of the changes from the State House Bookstore (617) 727-2834.

OPINIONS OF THE BOARD

This is a new feature of **CODEWORD**, called ***Opinions of the Board***. It will be a regular part of future issues, and will attempt to answer some of the many questions we receive on a day to day basis. Although it cannot be considered an *Official Interpretation* of the Board, it should be taken for what its is; good advice. (Municipal building and fire officials will find recent copies of Official interpretations rendered by the Board. Other interested parties may request copies by contacting the office. A fee must be assessed in order to cover printing and mailing.)

Question: Is it the intent of Section 3401.11 of the Fifth Edition of the code to require ***both*** handrails and guardrails on the open side of stairs in single and two family dwellings.

Answer: No. The language of this section states (in part) that a stair shall have ". . . Handrails having minimum and maximum height of thirty (30) inches and thirty-four (34) inches, respectively, measured vertically from the nosing of the treads [and] . . . Open sides of all stairs shall be ***similarly*** [emphasis added] protected by guards.

It is the opinion of the Board that the word similarly refers to the handrail description. Therefore, in erecting a set of egress stairs in a single or two family home, one needs only to provide a guardrail\handrail on the open side conforming to the stated dimensions. It is ***not*** necessary to provide a guard set at thirty-six (36) inches with an additional handrail set between thirty (30) and thirty-four (34) inches.

FINALLY

The Executive Office of Public Safety has announced that Secretary Thomas C. Rapone has decided to leave state government. Mr. Rapone has served the Commonwealth admirably for three (3) years as Secretary. His work has been widely complimented by members of both the public and private sectors. He is leaving to pursue a career in consulting.

All at the Board of Building Regulations and Standards (Board) and the Department of Public Safety (Department) wish Mr. Rapone great success in his future endeavors.

The Governor's Office has also announced the successor to Secretary Rapone; Ms. Kathleen M. O'Toole, Lieutenant Colonel of the Massachusetts State Police.

Ms. O'Toole has worked as a law-enforcement official for fifteen (15) years, including service as Superintendent with the Metropolitan Police and service with the Boston Police Department.

Ms. O'Toole is also a practicing attorney. Her education includes a Juris Doctor degree from the New England School of Law, and a Bachelor of Arts degree from Boston College.

All at the Board and the department welcome Ms. O'Toole to the agency and look forward to working with her.

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