



CODEWORD®

THE OFFICIAL NEWSLETTER OF THE BOARD OF BUILDING REGULATIONS & STANDARDS

October 1998~

Kentaro Tsutsumi, P.E.
Chairman

David A. Rodham
Secretary

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Governor

Thomas L. Rogers
Administrator

BRRS APPROVES 30 CODE CHANGES

Of the 109 code change proposals submitted at the May 1998 Public Hearing, 30 were approved by the BBRs. A synopsis of the changes appears on pages 4 and 5 of this issue of *Codeword*.

The BBRs has adopted the following policy relative to code changes. Unless the change is made by EMERGENCY action, or is as a result of general law, all new code changes will be filed once a year. Code changes will be effective around the beginning to the middle of October, however, a grace period will be given until the first of January of the following year. This means that the user may elect to use the code prior to amendments or may use the amendments from the October date until January 1 of the next year at which time it will be mandatory that the October changes are used.

BRRS RE-AFFIRMS 3 EMERGENCY AMENDMENTS ENACTED IN JUNE/JULY 1998

At its September 1, 1998 public hearing, the BBRs reaffirmed;

- The 7 second delay prior to activation for swimming pool alarms (§ 421.10.1 (9.1))
- Allowing of modified NFPA 13D sprinkler systems for three dwelling unit buildings (§ 904.7)
- Broadening energy code compliance options for glazed additions to existing low rise residential buildings (§§ 202; 3602.2; Appendix B; Appendix J)

UNIFORMITY OF THE MASSACHUSETTS STATE BUILDING CODE

Question: Can a city or town adopt a regulation or a by-law which is more (or less) restrictive than any provision regulated by the State Building Code.

Answer: No

In 1972 the State legislature was abundantly clear in its intent to promulgate a uniform building code for Massachusetts and was equally clear that only a single state entity (the BBRs) was given the authority to write this code. The legislature went so far as to repeal all other local codes and to repeal the authority of any other State Boards or Commissions, (which may have been previously authorized) to promulgate building code-like regulations.

The following article is reprinted in its entirety from the Attorney General's "Municipal Law Newsletter", Vol. IV, No.1, April 1995. The article does not constitute an opinion of the Attorney General

THE MASSACHUSETTS STATE BUILDING CODE - AN HISTORICAL OVERVIEW

by Brian Gore, P.E., Technical Director,
and

Thomas M. Riley, Code Development Manager,
State Board of Building Regulations and Standards

The Massachusetts State Building Code (the "Building Code"), 780 CMR § 1 et seq., is the building code applicable in all 351 cities and towns of the Commonwealth. No local or regional building code or local regulation or by-law that exceeds, competes or conflicts with any provision of the Building Code has legal effect in Massachusetts⁽¹⁾.



As of January 1, 1995, the Building Code has been in effect for two decades. The Building Code sets the building construction requirements for all buildings in Massachusetts. In addition, the Building Code establishes requirements for the issuance of building permits, construction inspection and administrative appeal provisions, and establishes the criteria for the issuance of the final certificate of use and occupancy necessary to legally occupy a building. At this milestone, it is interesting to revisit both the philosophy and laws that led to its creation.

Prior to January 1, 1975, every municipality could adopt and enforce its own building code within its corporate limits. These local "coders" varied greatly in their scope, complexity and sophistication. Many larger cities adopted building codes based on national model codes, while the smaller communities' building codes primarily addressed single family dwellings and did not provide guidance for larger, more complex buildings.

This lack of uniformity caused confusion in the regulated Community and had the general effect of providing a disparate level of life safety in building construction across the Commonwealth.

The first sweeping legislation necessary in the promulgation of the Building Code was the enactment of Chapter 802 of the Acts of 1972 ("chapter 802"), which created the State Building Code Commission. The Commission was given the following powers and duties:

To formulate, propose, adopt and amend rules and regulations relating to.... the construction, reconstruction, alteration, repair, demolition, removal, inspection, issuance and revocation of permits or licenses, installation of equipment, classification and definition of any building or structures.....

Such rules and regulations, together with any penalties for the violation thereof as hereinafter provided, shall compile and be collectively known as the state building code. (2)

The Commission was authorized to put into effect the following general objectives:

Uniform standards and requirements for construction and construction materials, compatible with accepted standards of engineering and fire prevention practices and public safety. (3)

One of the most powerful sections of Chapter 802 is Section 75 (4), which provides:

All by-laws and ordinances of cities and towns or regulations promulgated by any state boards, commissions, agencies or departments or any

special acts or any specific regulations promulgated by a local official under section twenty-eight of chapter one hundred and forty-eight of the General Laws in conflict with the state building code shall cease to be effective on January first, nineteen hundred and seventy-five.

Section 75 eliminated all local city and town building codes and other local by-laws or ordinances that would compete with the life safety construction requirements of the uniform Building Code.

Chapter 802 granted authority to promulgate building code regulations solely to the Commission; Section 75 of Chapter 802 eliminated building code like regulations promulgated by any other state boards, commissions, agencies or departments, and it even nullified previously passed special acts when such acts conflicted with any of the provisions of the Building Code. Section 75 also eliminated any local building code-like regulations in conflict with any provision of the Building Code that previously had been promulgated by local fire departments acting under authority of G.L. c. 148, § 2B.

The Legislative mandate for a uniform Building Code for the Commonwealth has remained strong for twenty years. Today only a few General Laws exist that empower local communities to adopt life safety construction requirements that exceed those in the Building Code. Generally, these laws are identified as the "twenty-six series." See M.G.L. c. 148 §§ 25-26I. Note that certain of the "twenty-six series" laws are retroactive whereas the Building Code may not be utilized in a retroactive manner. G.L. c. 148, § 92.

Chapter 348 of the Acts of 1984 amended Chapter 802. It redefined the State Building Code Commission as the State Board of Building Regulations and Standards ("BBS"). It established definitive enabling legislation for the BBS. See G.L. c.143, §§ 93-100. The BBS may amend the building code in order to maintain its currency (G.L. c. 143, § 97). A municipality, for demonstrated cause, may petition the BBS for higher local construction standards (G.L. C 143, § 98). This is yet another clear signal that uniformity in construction standards is the ultimate goal of the Legislature.

The Building Code is a very powerful document both in its technical requirements and, as important, in the manner in which such requirements are administered at the local level. Every municipality is required to appoint a Building Commissioner or Inspector of Buildings (the "Building Inspector" - G.L. c. 143 § 3). The municipal Building Inspector administers and enforces the provisions of the Building Code. Chapter 143, section 3, sets the qualifications and certification requirements for Building Inspectors. The Legislature put particular emphasis on the necessity for the



THE STATE BOARD OF
BUILDING REGULATIONS AND
STANDARDS

**"USE OF JOIST AND RAFTER SPAN TABLES IN
ONE & TWO FAMILY DWELLING CONSTRUCTION IN THE
MASSACHUSETTS STATE BUILDING CODE"**

a seminar presented
by
THE STATE BOARD OF BUILDING REGULATIONS
AND STANDARDS

at
the Department of Public Safety Offices
Paul A. Dever State School Campus
Bay Street, Taunton, MA

The Board of Building Regulations and Standards announces a seminar to be held on Wednesday June 3, 1998 and repeated every Wednesday thereafter until and including Wednesday July 29, 1998. Seminars commence promptly at 6:00 pm and are approximately one and a half hours in duration.

Seminar Objectives:

- To provide an overview of the design of simple bending members
- Cutting and Notching Limitations
- Examination of the procedures for the grading and testing of sawn lumber
- Overview of the dead and live load requirements of the building code
- Selection of the appropriate design values from species tables and selection of the appropriate member sizes based on span, use and species of lumber.

Seminar Cost: \$10.00

Instructor: Brian Gore, P.E., Technical Director, BBR5

Complete and clip the coupon below and mail with your check for \$10.00 endorsed to the Commonwealth of Massachusetts (ENCLOSE A SELF ADDRESSED STAMPED ENVELOPE FOR CONFIRMATION) to:

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- Enter the Paul A. Dever State School Campus and proceed approximately 150 yards and turn left onto Avenue B. Proceed to the end of Avenue B (The Department of Public Safety Offices are on your left). Turn left into the parking lot.

Parking is located adjacent to the building and is free of charge.

PLEASE DRIVE SLOWLY THROUGH THE CAMPUS - LIMIT SPEED TO 10 MPH

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One Ashburton Place - Room 1301

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KATHLEEN M. O'TOOLE

Secretary

KENTARO TSUTSUMI

Chairman

THOMAS L. ROGERS

Administrator

TEL: (617) 727-3200 FAX: (617) 227-1754

MEMORANDUM

To: All Building Officials

From: State Board of Building Regulations and Standards

Date: March 10, 1998

Subject: Official Interpretation No. 47-98

At a regular meeting of the Board of Building Regulations and Standards held on Tuesday 10, March, 1998, the Board approved the following interpretation of the application of sections 3408.6.3 (2) and 2305.6.4 of the Sixth Edition of the State Building Code.

Discussion:

Chapter 34, See section 3408.6.3(2), under certain conditions during the renovation of an existing building, requires masonry walls to be connected to floors and/or roofs in order to improve (or affect) lateral support of the walls.

All masonry walls shall be connected to floor or roof diaphragms, or other elements providing their lateral support, so as to conform to the requirements of 780 CMR 1612.7. The design force for the connection shall not be less than 100 pound per linear foot of wall. Connections shall not produce cross-grain bending in wood members.

In existing buildings with wood framed floor and roof systems and masonry loadbearing walls, building codes have traditionally required (based on traditional construction methods) wood floor and roof members framing into masonry walls to be "fire cut".

2305.6.4: Fire Cuts: All wood and other combustible floor, roof and other structural members framing into masonry walls shall be cut to a bevel of three inches (76 mm) in depth and shall project not more than four inches (102 mm) into the wall.

(over page)



Fire cuts are representative of traditional construction detailing methods stemming principally from older "mill" type buildings which, in the event of a fire resulting in the their collapse of a floor or roof are intended to allow the framing members to rotate at supports allowing the floors to collapse without causing the collapse of the wall systems.

Question: Does the seismic requirement for connection of masonry walls to floors override or negate the requirement to preserve existing fire cuts in wood structural members?

Answer: No. The provision for fire cuts and lateral support of masonry walls serve different purposes and are independent requirements. Compliance with both code provisions is required. The designer of the lateral support details requirement must exercise care in the detailing of such connections. The connections must be detailed to allow the framing members at the wall connection to rotate in the event of a fire while additionally providing the lateral support for the walls in the event of an earthquake.

bbbsinterp\47-98

Structural Engineering Dept. 11-88
March 10, 1998
Structural Engineering Dept. 11-88

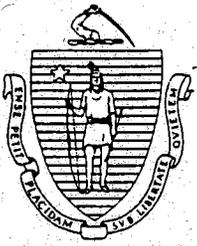
At a regular meeting of the Board of Building Regulation and Standards held on Tuesday, 10th March 1998, the Board considered the following question: "The question of whether fire cuts in wood structural members should be preserved in buildings in which the walls are required to be connected to floors in order to provide lateral support for the walls."

Discussion:
(The Board considered the question of whether fire cuts in wood structural members should be preserved in buildings in which the walls are required to be connected to floors in order to provide lateral support for the walls.)

All masonry walls should be connected to floor or roof beams, or other elements providing lateral support, so as to conform to the requirements of the Building Regulations. The designer for the masonry wall should be aware that the fire cut in the wall should not prevent the wall from being connected to the floor or roof.

In existing buildings with wood framed floor and roof systems and masonry walls, fire cuts are provided to allow the walls to rotate in the event of a fire. It is recommended that fire cuts should be provided in buildings in which the walls are required to be connected to floors in order to provide lateral support for the walls.

Conclusion: Fire cuts in masonry walls should be preserved in buildings in which the walls are required to be connected to floors in order to provide lateral support for the walls. The designer for the masonry wall should be aware that the fire cut in the wall should not prevent the wall from being connected to the floor or roof.



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MEMORANDUM

To: All Building Officials
From: State Board of Building Regulations and Standards
Date: March 10, 1998

Subject: Official Interpretation No. 48-98

At a regular meeting of the Board of Building Regulations and Standards held on Tuesday 10, March, 1998, the Board approved the following interpretation of the application of sections 1012.6 and 101.6 of the Sixth Edition of the State Building Code.

Discussion.

Section 1012.6 of the Sixth edition of the Massachusetts State Building Code (780 CMR) governs the requirements for assembly aisles and aisle accessways. Section 1012.6 specifically addresses the required width of an aisle accessway (row) and states;

1012.6: Row Widths. The minimum clear row width shall not be less than 12 inches (305 mm) measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where chairs have automatic of self rising seats, the measurement shall be made with the seat in the raised position. Where any chair in the row does not have an automatic or self rising seat, the measurement shall be made with the seat in the down position. Where tablet arm seating is used the measurement shall be made with the tablet-arm in the useable position.

The state building code appendix A references the Life Safety Code NFPA 101 (1994), which, in section 8-2.5.7.6, states ;

Rows of seating utilizing tablet-arm chairs shall be permitted only if the clear width of aisle accessways complies with the requirements of 8-2.5.7 where the tablet is in the useable position.

(over page)



Exception: Tablet arms shall be permitted to be measured in the stored position where the tablet arm automatically returns to the stored position when raised manually to a vertical position in one motion and falls to the stored position by force of gravity.



Question:

Is the life safety code section applicable? Can the exception in NFPA 101 8-2.5.7.6 be utilized?

Answer:

The State Building Code 780 CMR 101.6 explains under what circumstances referenced standards are applicable;

101.6 Referenced Standards: The standards referenced in 780 CMR and listed in Appendix A shall be considered part of the requirements of 780 CMR to the prescribed extent of each such reference. Where differences occur between the provisions of 780 CMR and referenced standards, the provisions of 780 CMR shall apply.....

Therefore the answer to the forgoing questions is in the negative, for the following reasons:

780 CMR 1012.6 provides no direct reference to NFPA 101 and therefore the provisions of NFPA 101 as they relate to the measurement of row widths are inapplicable. It is incorrect to assume that simply because NFPA 101 is referenced in 780 CMR that it is referenced in its entirety, and;

If NFPA 101 were referenced in the subject section, the provisions of NFPA 101, section 8-2.5.7.6 (exception) is in conflict with 780 CMR 1012.6 relative to the measurement of row widths where tablet-arm seating is present (780 CMR contains no such exemption for automatic return of tablets). In such instances 780 CMR 101.6 directs that the provisions of 780 CMR are applicable should a conflict occur between a provision of 780 CMR and a referenced standard.

In order to use this section of NFPA 101, an applicant must apply for and receive a variance from the State Building Code Appeals Board in accordance with 780 CMR 126.

Bbrs/interp\48-98

The state building code references the Life Safety Code NFPA 101 (1999), which in section 8-2.5.7.6 states:

...of seating with tablet-arm seating shall be permitted only if the tablet arm automatically returns to the stored position when raised manually to a vertical position in one motion and falls to the stored position by force of gravity.



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MEMORANDUM

TO: All Building Officials

FROM: State Board of Building Regulations and Standards

DATE: March 23, 1998

**SUBJECT: Official Interpretation No. 49-98
Smoke Detector and Heat Detector Requirements in One- and Two-Family Dwellings - Section 3603.16 of the Sixth Edition of the State Building Code**

At a regular meeting of the State Board of Building Regulations and Standards held on Tuesday, March 10, 1998, the Board approved the following interpretation of the application of Chapter 36, Section 3603.16, "FIRE PROTECTION SYSTEMS" of the Sixth Edition of the Massachusetts State Building Code.

Background / Discussion:

The Sixth Edition of the Massachusetts State Building Code (the Code), Section 3603.16 is titled: "FIRE PROTECTION SYSTEMS" and specifies all required fire protection system requirements for new construction one- and two-family dwellings that are single or two-family detached buildings; additionally, Section 3603.16.13 sets requirements for when smoke detector requirements for new construction will apply to additions, alterations and/or repairs.

The Sixth Edition One- and Two-Family fire protection system requirements, differ from those of the Fifth Edition Code in several ways.

The Sixth Edition reflects the philosophy of NFPA 72-1996¹, "National Fire Alarm Code" in that:

1. Household fire warning systems may consist of either ac primary powered single and multiple station smoke detectors complying with ANSI/UL 217, or;



2. Household fire warning systems (note that these household fire warning systems could be referred to as "a fire alarm panel with low voltage connection to detectors, etc."), may consist of a listed control unit complying with UL 864 or UL 985 with automatic smoke detectors complying with UL 268 and occupant notification appliances complying with UL 464 or UL 1971 if such notification appliances incorporate strobe lights - if supplementary visual signals are utilized they should comply with UL 1638, and;
3. All household fire warning systems shall have secondary power supplied from monitored batteries, and;
4. Massachusetts provisions require the use of photo electric smoke detectors, rather than the ionization type smoke detectors when such smoke detectors are on the same floor and within twenty (20) feet of a kitchen or bathroom containing a tub or shower (to prevent nuisance false alarms characteristic of ionization type smoke detectors in proximity to kitchens and tub or shower areas), and;
5. Electrical compatibility (listed for intended purpose - see Section 3603.16.2) between smoke detectors and/or notification appliances to ensure that all portions of the household fire warning system will operate properly, and;
6. In addition to smoke detector requirements, the Sixth Edition of the Code has been structured to address heat detector requirements but at this time, and until Section 3603.16.4 is otherwise amended, HEAT DETECTORS ARE NOT REQUIRED IN ONE- AND TWO-FAMILY DWELLINGS, and;
7. Section 3603.16.8.1 addresses "non-required" alarm notification appliances and non-required smoke or heat detectors and requires that such are to be installed so that the actuation of any non-required detector shall cause the alarm in all required and non-required detectors in the dwelling unit to sound, and;
8. Section 3603.16.13 requires fire warning systems for new construction throughout an existing dwelling when one or more sleeping rooms are added or created in an existing dwelling.

ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS ABOUT SMOKE DETECTORS AND HEAT DETECTORS

Question 1:

Are ionization type smoke detectors still allowed in new construction one- and two-family dwellings?

Answer 1:

Yes, provided such smoke detectors satisfy the applicable general listing requirements of Section 3603.16 and are not located (on the same floor) within 20 feet of a kitchen or a bathroom containing a tub or shower (Section 3603.16.11). Ionization smoke detectors that otherwise satisfy the general requirements of Section 3603.16 shall be allowed within 20 feet of a kitchen or bathroom containing a tub or shower when the ionization detector is on a different floor than the subject kitchen or bathroom.

Question 2:

Would ionization smoke detectors be allowed in bedrooms when the bedrooms are separated from the kitchen or bath by both a bedroom door and a kitchen or bath door, even if such ionization smoke detectors are within twenty (20) feet of a kitchen or bath door?

Answer 2:

No. Once the smoke detector is within twenty (20) feet of a kitchen or bath, then a photo-electric type smoke detector must be utilized.

Question 3:

How does one measure the 20 foot distance from a kitchen or from a bathroom containing a tub or shower?

Answer 3:

Refer to the attached sketches at the end of this Formal Interpretation and note that the 20 foot rule applies to smoke detectors only on the same floor as kitchens or bathrooms containing a tub or shower and that the 20 foot distance from the smoke detector (ceiling or wall mounted) to the kitchen or bath shall be "true length", measured from:

the centerline of the smoke detector to the nearest edge, front face of the doorway separating the kitchen or bath from the area in which the smoke detector is located (in "two room" layouts), and;

in "open plan" areas where no doorway separates the kitchen from the detector, the twenty (20) foot rule shall be the shortest, "true length" twenty (20) foot distance measured from centerline of ceiling-mounted or wall-mounted smoke detector to nearest edge of fixed smoke-producing appliance (stove, oven, broiler, etc.--note that movable appliances and/or microwave ovens are not to be considered relative to the 20 foot distance).

Question 4:

Are bedrooms now the only areas in which smoke detectors are required to be located?

Answer 4:

No. Section 3603.16.10 defines all required smoke detector locations.

Question 5:

Section 3603.16.7 titled "Secondary electric power" states that all household fire warning systems shall have secondary (standby) power supplied from monitored batteries in accordance with the household fire warning equipment requirements of NFPA 72. Does this mean that all smoke detector systems must have a battery room providing standby power?

Answer 5:

No. Single and multiple station, hard-wired smoke detectors that are ac primary powered are now available with attached, replaceable battery and similar to battery-only single station smoke detectors, the battery is monitored via the detector circuitry.

Answer 5, continued:

For "alarm panel systems" (listed control unit with automatic detectors and occupant notification appliances), the monitored battery schemes tested and listed via the manufacturer's compliance to NFPA 72, suffice.

Question 6:

Section 3603.16.10 (5) states that fixed temperature heat detectors shall be installed in accordance with the requirements of Section 3603.16.4. Does this mean that as of March 1, 1998, heat detectors are required in one- and two-family dwellings controlled by the requirements of Chapter 36 of the Sixth Edition of the Code?

Answer 6:

No. As of March 1, 1998, heat detectors are still not required by Chapter 36 of the Sixth Edition of the Code as Section 3603.16.4 is currently "RESERVED", thus, at this time and until 780 CMR 3603.16.4 is otherwise amended, heat detectors are not required by Chapter 36 of the Sixth Edition of the Code.

Question 7:

Section 3603.16.13 requires that an existing one- or two-family dwelling be provided with a household fire warning system for new construction when one or more sleeping rooms are added or created in the existing dwelling. What constitutes a *bedroom* under this Section?

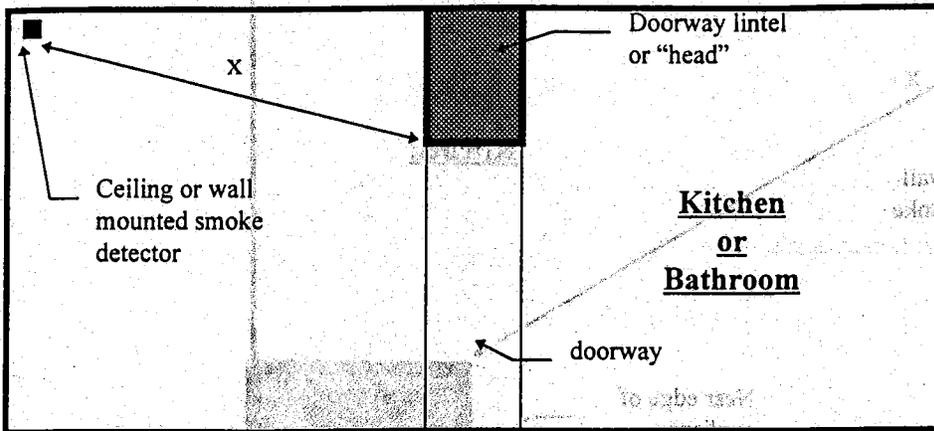
Answer 7:

The State Board of Building Regulations and Standards (BBRS), as the Agency promulgating the Massachusetts State Building Code, is the "AUTHORITY HAVING JURISDICTION" (AHJ) regarding the interpretation of regulations of the State Building Code and has determined that it is the responsibility of the building owner or the agent of the building owner to identify any new or newly created *bedrooms or other space USES*. If submitted plans and/or narratives that describe the work intended identify such new additions or newly created spaces as other than *bedrooms* then Section 3603.16.13 does not apply (note that it is the "REGULATED COMMUNITY" and not the "REGULATOR" who identifies, on plans and/or narratives submitted as part of the building permit application to the Building Department, if a *bedroom* is being added or created).

¹ Note that although NFPA 72-1996 is titled the "National Fire Alarm Code", NFPA 72 is a national reference standard and where Massachusetts State Building Code regulations explicitly differ from the requirements set forth in the reference standard, the requirements of the State Building Code govern.

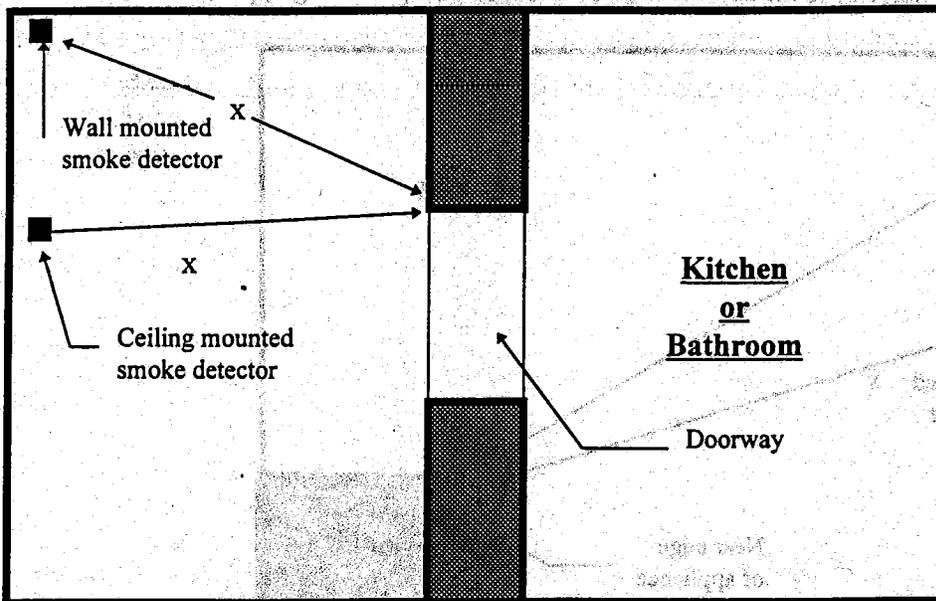
**PLEASE, ALSO REFER TO SKETCHES ON THE FOLLOWING PAGES THAT
SUPPLEMENT ANSWER NO. 3 ABOVE**

SKETCHES THAT SUPPLEMENT ANSWER NO. 3



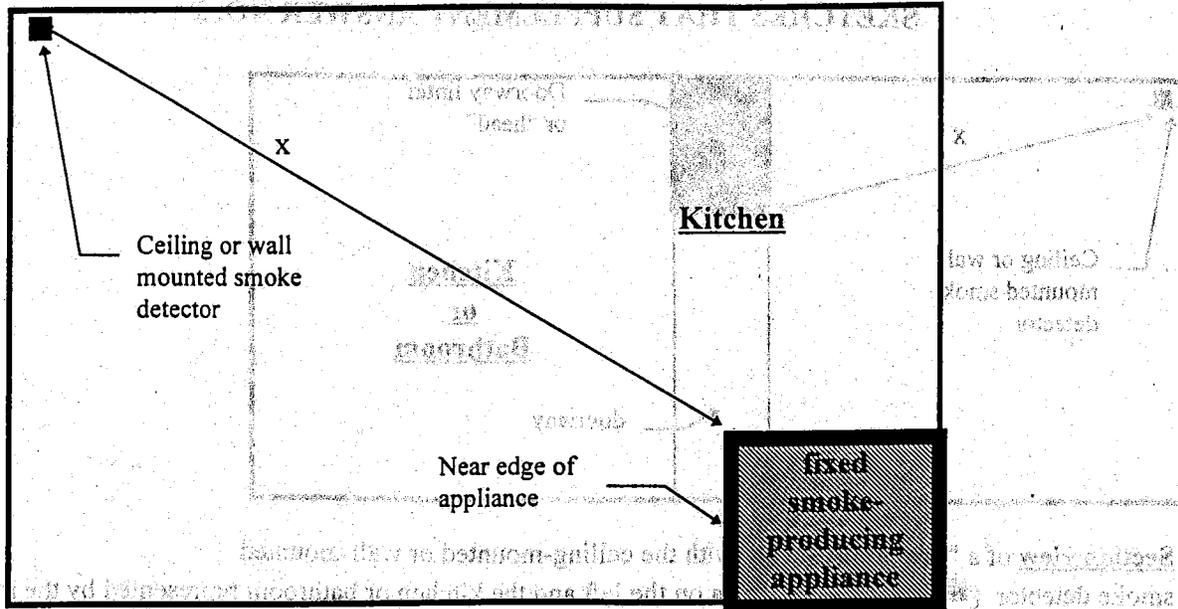
Section view of a “two room” layout with the ceiling-mounted or wall-mounted smoke detector (■) shown in the room on the left and the kitchen or bathroom represented by the room on the right.

If true length of “x” is less than or equal to twenty (20) feet, then a photo electric smoke detector must be utilized. The true length of “x” is the actual distance from the centerline of the ceiling-mounted or wall-mounted smoke detector to the nearest edge of detector-side, front face of doorway.



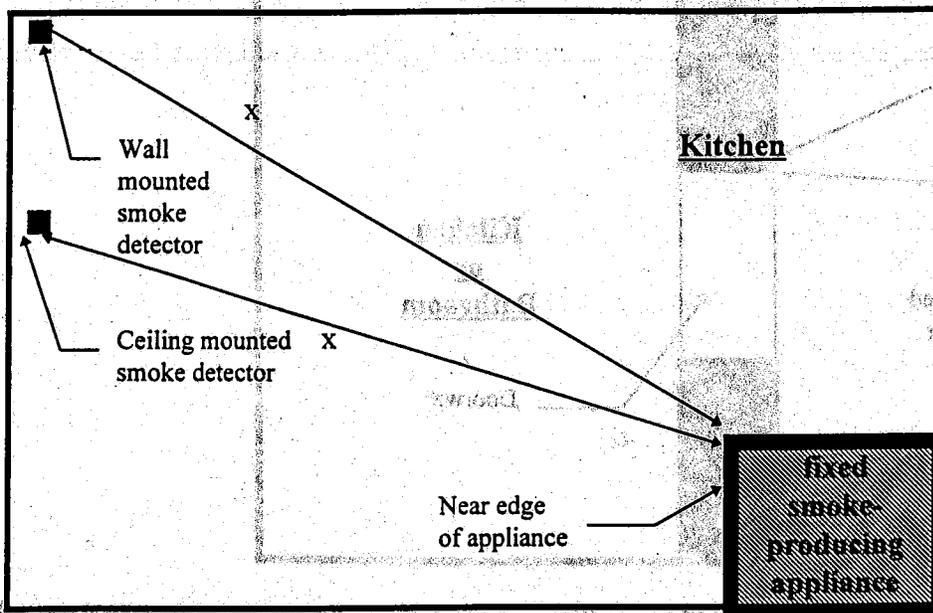
Plan view of a “two room” layout with either a ceiling-mounted or a wall-mounted smoke detector (■) shown in the room to the left and the kitchen or bathroom represented by the room on the right.

If true length of “x” is less than or equal to twenty (20) feet, then a photo electric smoke detector must be utilized. The true length of “x” is the actual distance from the centerline of the ceiling-mounted or wall-mounted smoke detector to the nearest edge of detector-side, front face of doorway.



Section view of an "open plan" layout with the ceiling-mounted or wall-mounted smoke detector (■) shown on the left and the kitchen represented to the right.

If true length of "x" is less than or equal to twenty (20) feet, then a photo electric smoke detector must be utilized. The true length of "x" is the actual distance from the centerline of the ceiling-mounted or wall-mounted smoke detector to the nearest edge of fixed, smoke-producing appliance.



Plan view of an "open plan" layout with the ceiling-mounted or wall-mounted smoke detector (■) shown on the left and the kitchen represented to the right.

If true length of "x" is less than or equal to twenty (20) feet, then a photo electric smoke detector must be utilized. The true length of "x" is the actual distance from the centerline of the ceiling-mounted or wall-mounted smoke detector to the nearest edge of fixed, smoke-producing appliance.

Building Inspector to have: at least five years of experience in the supervision of building construction or design or in the alternative a four year undergraduate degree in a field related to building construction or design. ⁽⁵⁾. In addition, such person shall have had a general knowledge of the quality and strength of building materials; a general knowledge of the accepted requirements for building construction, fire prevention, light, ventilation, safe exits....

In 1992 the Legislature required that building officials be certified by the BBRs in accordance with rules and regulations promulgated by it. (G.L. c. 143, § 3)

The life-safety, structural safety, and other construction regulations of the Building Code encompass a litany of requirements including, but not limited to: limitations on a building's height and area, building construction type, ventilation, safe egress, fire resistive construction, fire protection systems (fire suppression and fire alarm systems), structural loading, flood-resistant construction, safety glazing, mechanical equipment and HVAC systems and energy conservation.

Municipalities should exercise caution when considering proposed local by-laws that may, inadvertently, compete, exceed or otherwise conflict with any provision of the Building Code. In this regard, note that G.L. c. 40A, § 3, states:

No zoning ordinance or by-law shall regulate or restrict the use of materials, or methods of construction of structures regulated by the state building code.

To ensure that "building code-like" by-laws are not adopted at the local level, the Attorney General reviews town by-laws, in accordance with G.L. c. 40, § 32, and G.L. c. 40A, § 5, for conformity with the Building Code. While city ordinances are not reviewed by the Attorney General, such ordinances may not violate the Building Code. G.L. c. 40, § 32, last sentence.

Having a single, uniform, Building Code for the Commonwealth ensures that the design, construction and enforcement communities, as well as building and property owners and managers, have both clear guidance on the life-safety requirements expected in building construction and a guarantee of a "level playing field." For these reasons alone, the uniformity of the Building Code should be respected and preserved.

Footnotes:

1 The Attorney General has disapproved several by-laws recently that conflicted with the State Building Code. Please see the By-law Review section of this Newsletter. (EDITORS NOTE: refers to the by law section of the Attorney General's newsletter and not Codeword). Such conflicts have been the source of a steady stream of disapprovals over the years. We

hope that this article, and the opportunity to call the State Board of Building Regulations and Standards, will lessen the number of by-laws requiring disapproval. This article does not constitute an opinion of the Attorney General

2 St. 1972, c. 802; now G.L. c. 143, § 94 (a).

3 G.L. c. 143, § 95.

4 As amended by St. 1974, c. 541.

5 G.L. 143 § 3 was amended to provide for a combination of experience and education for individual applicants.

SHOULD I USE 4-2x8's, 3-2x10's or 2-2x12's?

For a given species and grade of lumber, which of the sizes of visually graded, sawn, dimension lumber shown below provides the greater strength in bending when used as a beam? (ignore deflections).

Four - 2 x 8's.....

Three - 2 x 10's.....

Two - 2 x 12's.....

Check your answer on page 6

BBRS MEMBER PROFILE- TOM GATZUNIS, P.E.

This issue of Codeword profiles BBRs Tom Gatzunis, P.E. Tom was appointed to the BBRs as "Building Official from a Town" in 1997. Tom is currently employed by the Town of Belmont as Building Commissioner and Town Engineer. Tom also serves the BBRs as a member of the Building Code Appeals Board, Fire Prevention/Fire Protection Advisory Committee and the Construction Supervisor License Review Committee.

Tom graduated from the University of Lowell in 1983 with a B.Sc. in Civil Engineering and in 1988 earned the qualification of Registered Professional Engineer (P.E.)

Tom is a member and former secretary of the Massachusetts Municipal Engineers Association and a member of the Massachusetts Building Commissioners and Inspectors Association; the American Public Works Association and The National Society of Professional Engineers. Tom is a partner in a small remodeling and general contracting company, which affords him the unique opportunity of viewing building code issues from both sides of the counter.

SYNOPSIS OF CODE CHANGES EFFECTIVE OCTOBER 16, 1998

(See article on page 1 for details of effective dates)

The changes are summarized below and do not substitute for the actual changes as a filled with the Secretary of State Regulations Division. Contact the State Bookstore to purchase the amendments.

Section #	Summary of Code Change
Table 106 (note f)	Add the following to the end of note f ".... except that three (3) family dwelling units shall be exempt from such fees".
110.3	At the end of 110.3 sub section 4 add the following; "....also see 780 CMR 903.1 (exceptions 1 and 2)"
111	Add new section entitled HAZARDS TO AIR NAVIGATION to read as follows: "Application for building new structures or adding to existing structures within airport approaches as defined in Chapter 90 section 35B of the Massachusetts General Laws and any amendments thereto or language substituted therefor, must include a certification by the applicant that: 1. Either a permit from the Massachusetts Aeronautics Commission is not required because the structure is, or will be; a) in an area subject to airport approach regulations adopted pursuant to Chapter 90, Sections 40 A through 40 I of the Massachusetts General Laws, or; b) in an approach to Logan International Airport, or; c) less than thirty (30) feet above ground level, or; 2) a permit from the Massachusetts Aeronautics Commission is required pursuant to MGL c 90, section 35B and a copy of said permit is enclosed with the application. Applications for permits to build a new structure or add to an existing structure requiring the filing of a Notice of Proposed Construction or Alteration (FAA Form 7460-1) with the Federal Aviation Commission shall mail a copy of the completed FAA Form 7460-1 to the Massachusetts Aeronautic Commission within three (3) business days after submitting said form to the FAA".
124	Amends the membership of the Fire Prevention Fire Protection Advisory Committee by the addition of one member representing, jointly, the Mass Burglar and Fire Alarm Association and the Automatic Fire Alarm Association of New England.
202	Add to the end of the definition of "Repairs, ordinary....." the following; "(also see 780 CMR 903.1, exceptions 1 and 2)" Add the following new definition; "Smoke Detector, System Type: See 780 CMR 902.0)
310.5	Definition of lodging or boarding house revised (not more than four lodgers or boarders) to be consistent with MGL c 140 S 22.
424.4.5	Change the note following exception #2 to indicate that the note only applies to exception #2. Also change 424.4.4 to 424.4.5
427.3.6	Change section as follows; In the third line, delete the phrase, "....or 913.0" In the fourth line change "72A" to "72".
427.3.8	Delete section and substitute with the following " Supervision: All automatic and manual fire alarm systems shall be supervised in accordance with 780 CMR 923.1 or 923.2"
428.12	In the third line, following the section reference 917.0 add the following; "and 913.0"
428.12	Exception #2 deleted.
428.12.1	Delete section and replace with the following; " Supervision: All automatic and manual fire alarm systems shall be supervised in accordance with 780 CMR 923.1 or 923.2"
504.2	Delete the following language from section 504.2 "The building height limitations for buildings with an occupancy in use group R specified in table 502 shall be increased one story and 20 feet (6096mm) but not to exceed a height of four stories and 60 feet (18288mm) where the building is equipped throughout with an automatic sprinkler system installed in accordance with 780 CMR 906.2.2 and the system is supervised in accordance with 780 CMR 923.1, method 1, 2 or 3" Delete sections 504.6 and 504.7 in their entirety.
507.1	Delete exception #5 and add sentence in first paragraph to read; "Bulk Merchandising Retail Buildings designed, constructed and operated in accordance with 780 CMR 426 shall be permitted to be constructed of unlimited area".
902	Add new definition to read; "Smoke detector system type: A smoke detector designed to be connected to a fire alarm control panel"
903.1	Re number present exception as #1. Add exception #2 to read as follows; "Exception 2; Modifications alterations, additions or deletions which do not affect system performance or compatibility; No building permit required, unless otherwise directed by the building official (note: Also refer to MGL c 148S 27A)".

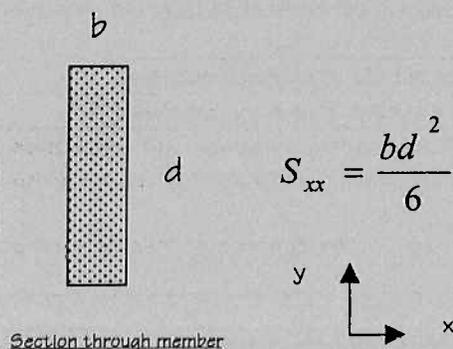
SYNOPSIS OF CODE CHANGES (continued)

Section #	Summary of Code Change
917.5	Add the following to the end of section 917.5; "For fire alarm systems employing automatic fire detection or water flow devices, at least one manual fire alarm box shall be provided to initiate a fire alarm signal. This manual fire alarm box shall be located where required by the Head of the Fire department or his or her designee." Add the following language to the beginning of exception #2; "Except as provided in 917.5,....."
919.4.6	Change exception #2 in its entirety to read as follows: "Guest rooms or dwelling units single or multiple station smoke detectors required by 780 CMR 919.3.1 shall also be annunciated by guest room or dwelling units at a constantly attended location from which the fire protective signalling system is capable of being manually activated. Detector annunciation shall be capable of operation from stand-by battery or be connected to an emergency electrical system. System smoke detectors shall be permitted providing they operate as follows; 1. Provide unit occupant notification, 2. Annunciate at a constantly attended location from which the fire protective signalling system is capable of being manually activated. 3.Does not automatically activate the building notification appliances. 4. Does not automatically activate the supervision requirements of 780 CMR 923.2. 5. Be capable of operation including the required annunciation from stand-by battery."
1023.2	Add the words "or green" to the first line of section 1023.2 to read; "Exit signs shall have red or green letters....."
1023.4	Change line 4 of section 1023.4 to read; ".....not less than 1½ hours in case of primary power loss,....."
1024.4	Change line 8 of section 1024.4 to read; ".....not less than 1½ hours in case of primary power loss,....."
1507.3	Delete first sentence and replace with the following; "Low-slope roof covering materials and installation shall conform to roofing material/roofing system manufacturer's installation and warranty requirements and otherwise comply with 780 CMR 1507.3.1 through 1507.3.7." Add the following phrase to the beginning of the second sentence;" In the absence of manufacturer's written installation and warranty requirements,....."
Appendix A	Change reference to Life Safety Code from NFPA 104 to NFPA 101
Appendix A	Update reference for the National Design Specification for Wood Construction and supplement from NDS-91 to NDS 97.
R5.2.1	Add a new second sentence to read as follows: " Successful completion of a three (3) or four (4) year vocational high school or other vocational school program in the field of building construction shall be deemed as satisfying one (1) year of the required three (3) years experience as cited above. (The BERS shall determine when vocational training other than in building construction, satisfies a portion of the three (3) year experience criteria".
R5.2.9.01	Add the following at the end of the existing paragraph; "The committee may, at its discretion, determine that instead of suspension or revocation, the actions of the license holder warrant a letter of warning be placed on file with the BERS. Said letter of warning will be referenced in the event of future complaints against the license holder. Future complaints against a license holder who has received letter of warning may result in a suspension or revocation of the license after a hearing before the License Review Committee. The Committee may, at its discretion, vote to order the license holder to take the license examination or re-examination. Votes for examination or re-examination may be rendered even if the Committee has voted to suspend, revoke or issue a letter of warning against the license holder."
R5.2.9.0	Revise section title to read: "Notice of Suspension, Revocation, Letter of Warning or Order of Examination" Delete first sentence and replace with the following; "In the event that the committee votes to suspend, revoke or issue a warning against said license holder pursuant to this hearing or, if the Committee votes to have the license holder to take an examination or re-examination, the license holder, upon notice of the decision, shall immediately comply with said orders."
R6.3.4.1.3	Replace the phrase ".....within 14 working days....." with the phrase ".....within 30 working days....."
R6.5.2.1 (2)	Amend (2) (first sentence to read as follows; "(2) The full names, federal I.D. number if applicable (exclusive of social security number), addresses....."
Appendix I.	Add fee schedule for BERS training seminars. Delete building permit fee for the Division of Capital Asset Management (formerly the Division of Capital Planning and Operations) projects.

ANSWER TO QUESTION ON PAGE 3

Strength in bending is dependent upon the allowable stress in bending F_b , and the Section Modulus, S . The allowable strength in bending depends upon the species and grade of lumber and the depth of the member involved. The larger the section modulus the stronger the member in bending. The value of F_b , however must also be modified by a size factor C_F , which depends upon the depth of the lumber. (See the National Design Specification For Wood Construction (NDS) section 4.3.2 listed in Appendix A of the Code). When using the span tables in Chapter 36 of the code, the size factor modifier is already built into the tables

For a rectangular bending member ($b \times d$) the Section Modulus, S_{xx} is given by:



Member Size	b (in)*	d (in)*	S_{xx} (in ³) actual	S_{xx} (in ³) adjusted**
4-2 x 8's	6	7.5	56.25	67.5
3-2 x 10's	4.5	9.25	64.17	70.59
2-2 x 12's	3	11.25	63.28	63.28

ANSWER 3-2 X 10's

Notes:

* Actual (net) dimensions

** Adjusted for size factor as required by section 4.3.2 of the National Design Specification for Wood Construction (NDS-91 referenced in Appendix A).

Size factors are as follows:

- 2 x 12 multiply by 1.0
- 2 x 10 multiply by 1.1
- 2 x 8 multiply by 1.2

In the next issue of Codeword - what about deflection ?

BUILDING OFFICIAL CERTIFICATION REVOCATIONS

Following the first three year renewal period for certification, the following 3 building officials failed to maintain their continuing education requirements as required by 780 CMR R-7. A total of 45 hours of continuing education credit per 3 years is required to maintain certification as a building official. Following public hearings the certification committee recommended that the Board of Building Regulations and Standards revoke their certifications as building officials. At a regular meeting of the BBRs on August 11, 1998 the BBRs voted, unanimously, to revoke the certifications of the following building officials:

Name	Town	Certificate #
Steven Potash	Lanesborough	92-11-270
Charles Powers	Newbury	92-11-372
Amos Souza	Acushnet	92-11-005

See the related articles in the January, April and July, 1998 editions of Codeword for other revocations.

For a listing of certified building officials visit the BBRs web site @ <http://www.state.ma.us/bbrs>

If you are interested in becoming certified as a building official see section 105 and Regulation R-7 of the State Building Code and the July 1998 issue of Codeword for the required qualifications.

BBRS MEETING SCHEDULE FOR THE REMAINDER OF CALENDAR YEAR 1998

The BBRs meeting schedule for the remainder of calendar year 1998 is as follows:

Meeting Date	Meeting Location
October 6, 1998	Wellesley ⁽¹⁾
November 17, 1998	Boston ⁽²⁾ PUBLIC HEARING
December 8, 1998	Wellesley ⁽¹⁾

Notes:

(1) National Guard Armory, Minuteman Lane, Wellesley.

(2) One Ashburton Place, Boston.

All meetings are open to the public

To view the agenda visit the BBRs Web Page @ www.state.ma.us/bbrs and click on "schedule of 1998 meetings and public hearings"

ARE YOU INTERESTED IN HOSTING A SEMINAR ON THE USE OF THE SPAN TABLES?

If you are a member of a builders' group or other professional organization; if you are a builder, building official or a building materials supplier and are interested in hosting a 2 hour seminar entitled "How to Use the Span Tables", please contact Brian Gore, P.E., Technical Director at the BBRB (617) 727-7532 (x604)

The BBRB subsidizes this seminar and the cost is ten dollars per person.

ENERGY CODE SOFTWARE TRAINING

FREE Training on MAScheck will be offered throughout the state in October and November. The one-hour sessions will give a complete introduction to the software, and will also be an opportunity for current users to have any questions answered. Diskettes and User's Guides will be distributed. All sessions will run from 9-10 a.m. at the sites listed below. Registration is required, and can be made through the toll-free energy code hotline at 1 - 800-689-7953.

Norwood	Oct 13	Eastham	Nov 5
Hyannis	Oct 14	Stockbridge	Nov 6
Phillipston	Oct 15	North Adams	Nov 9
Westboro	Oct 20	Westboro	Nov 10
W. Springfield	Oct 21	Wareham	Nov 12
Greenfield	Oct 22	Fitchburg	Nov 16
Danvers	Oct 23	Concord	Nov 17
Taunton	Nov 4	W. Bridgewater	Nov 19

Download a copy of the free software and user guide from the BBRB Web page @ www.state.ma.us/bbrb

ENERGY CODE ENFORCEMENT AUDIT BEGINS

As reported in the July 1998 issue of *Codeword*, an audit of Building Department records relating to Appendix J criteria (energy conservation requirements for new construction of and additions to low-rise residential buildings has now commenced. State Building Inspectors are visiting all building departments and auditing of building permit records to ensure that Appendix J regulations are being enforced.

As noted in the July version of *Codeword*, it is critical that both building officials and builders/designers abide by all of the requirements of the State Building Code (including energy conservation requirements) to assure

a "level playing field" for design, bid, construction and state policy purposes. Without such a "level playing field" those complying with mandated Code minimum requirements, via the bid process, lose out to those who choose not to comply - truly the worst of all regulatory situations!

READER FEEDBACK

Section 3603.16.3 of the 6th edition of the State Building Code requires existing 1 and 2 family detached dwellings be equipped throughout with a fire alarm system which meets the code for new construction, if any new bedrooms are added through addition or renovation. Such a system requires the installation of hard-wired interconnected smoke detectors in each bedroom, in addition to other locations as required by section 3603.16.10. In developing new provisions such as this, the BBRB is required to consider cost implications on the construction community. That task becomes particularly onerous when costs are compared to life safety improvements. At the code change public hearings, much debate and testimony was centered on this very issue. Massachusetts currently is the life safety leader of any of the current "model" building codes, in this, and most other fire safety regards.

The BBRB recently received a letter from Mr. Tony Patillo, the City of Northampton Building Commissioner (the letter is reprinted below, in edited form):

September 8, 1998

Recently, the Northampton Fire Department called my home at 11:45pm requesting my assistance at a single-family dwelling structure fire in progress.

The building involved was an existing single family, single story wood framed dwelling. The owner had recently applied for a building permit to add a second floor, which included the addition of a new bedroom. The building was being occupied during the addition/renovation. Under this circumstance the current sixth edition of the Massachusetts State Building Code requires that the entire existing building smoke detection system be upgraded to meet the requirements for new construction. This was a difficult pill to swallow for the electrical contractor at the building permit application stage where he bemoaned the additional cost to the homeowner. The system prior to the renovation comprised single station (non-interconnected) battery operated smoke detectors. The new system, which was operational at the time of the fire, comprised of hard wired interconnected detectors in

each bedroom, outside of the sleeping areas and at the stairways, as required by the building code.

At the fire scene, the homeowner described to me how the family went to bed for the evening leaving the clothes dryer running. The family was awakened by the smoke detectors system. The fire department arrived at the scene within 3 minutes of receiving the call and used only 50 gallons of water to suppress the fire. More importantly everyone escaped from the building unharmed. The scenario could have been entirely different had the new smoke detector system not been in place at the time of the fire. Damage to the property could have been more extensive and worse, lives could have been lost. The cause of the fire was determined to be due to ignition of lint, which had built-up in the electric clothes dryer vent.

The National Fire Protection Association reports that there were 65 fatalities in structure fires last year and smoke detectors provide inexpensive insurance. So this is to the Board of Building Regulations and Standards, you got this right and it's the right thing for the citizens of the Commonwealth. By the way, the homeowner thanked me that evening.

Anthony Patillo
Building Commissioner, City of Northampton



In This Issue of Codeword:

- BBRs Approves 30 Code Changes
- BBRs Re-affirms 3 Emergency Code Changes
- Uniformity of the Massachusetts State Building Code
- Should I use 4-2 x 8's, 3-2 x 10's or 2 - 2 x 12's ?
- BBRs Member Profile - Tom Gatzunis, P.E.
- Synopsis of Latest Code Changes
- Answer to Structural Question
- Certification of 3 Building Officials Revoked
- BBRs Meeting Schedule for remainder of 1998
- Are You Interested in Hosting a Seminar?
- Energy Code Software Training
- Energy Code Enforcement Audit Begins
- Reader Feedback - Anthony Patillo

Editor in Chief:	Thomas L. Rogers
Supervising Editor:	Brian Gore, P.E.
Graphic Design & Layout:	Brian Gore, P.E.
Subscriptions Accountant:	Anne Marie Rose

Codeword

Board of Building Regulations and Standards
One Ashburton Place, Room 1301
Boston, MA. 02108



ERNEST WOJCIECHOWICZ
STATE INSPECTOR
1380 BAY ST - CERC BUILDING
TAUNTON MA 02780