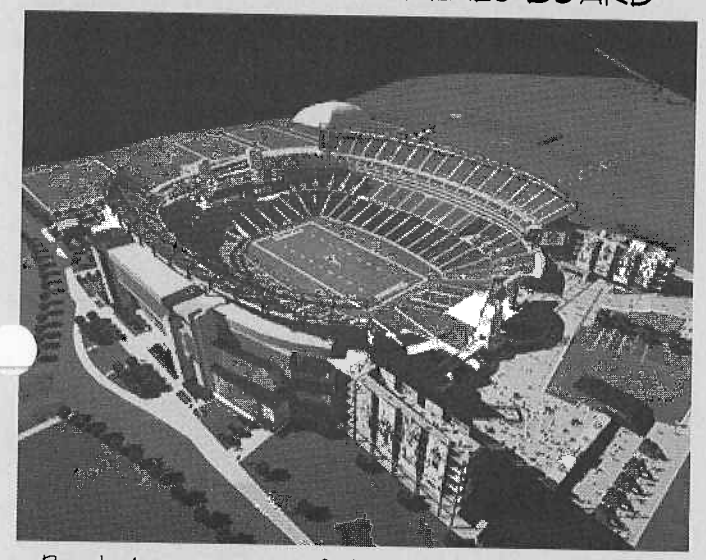
CODEWORD

THE OFFICIAL NEWSLETTER OF THE BOARD OF BUILDING REGULATIONS & STANDARDS

~October 2000~

NEW ENGLAND PATRIOTS STADIUM RECEIVES VARIANCES FROM STATE BUILDING CODE APPEALS BOARD



Rendering courtesy of the New England Patriots

The New England Patriots are gearing up for the construction of a new 68,000 person capacity stadium in Foxboro Massachusetts. During the design phase of the project the Foxboro Building Official determined that variances from the Massachusetts State Building Code would be needed in order for the design to proceed to construction. On August 29, 2000 the BBRS State Building Code Appeal Board (the Appeals Board) held a hearing to determine whether the variance would be granted.

The variance requests included omission of sprinklers in certain areas of the stadium, the omission of fireproofing from portions of the steel structure, the omission of fire-stopping material between pre-cast concrete elements supporting the seating and also modifications to the guardrail requirements between rows of seating.

The Appeals Board granted variances for a portion of the sprinkler exemptions because of the possibility of use of the areas in question. It also granted a waiver from the seating support fire-stopping requirements and the guardrail requirements. The Appeals Board conditioned the variance and required compliance with the intelligibility requirements for occupant emergency notification of NFPA 72 (1999 edition) and the preparation of an evacuation plan approved by the Town of Foxboro Fire Department.

RESPONSIBILITIES OF A LICENSED CONSTRUCTION SUPERVISOR

When you obtain a license as a Construction Supervisor, you also assume many responsibilities under the Massachusetts State Building Code, including ensuring that the building is constructed in accordance with the Massachusetts State Building Code.

The initial license is valid for between 3 and 4 years, depending upon when the licensee's birthday falls. Licenses are then renewed on a TWO-YEAR cycle and EXPIRE on the licensee's birthday. The expiration date is shown on the license. You are currently allowed to renew your license up to 1 year from the expiration date, however if you have not renewed by the expiration date shown on your license YOU CANNOT APPLY FOR A BUILDING PERMIT. It is YOUR responsibility to inform the BBRS in writing if you change your address. The license renewal is always mailed to the last known address on record with the Board. – Don't jeopardize your license by forgetting to inform the BBRS of a change of address.

You should carry a license with you at all times that you are working on the project for which you are the supervisor. You are required to have a current copy of the Massachusetts State Building Code on the project

at all times. You MUST present your license IN PERSON to the Building Official when applying for a building permit. The Building Official will check for the expiration date, the category of license and the picture identification.

As the holder of a Construction Supervisor's License you are responsible for;

- All code related work under your supervision – this includes any sub-contractors work (except for special licensees under other codes such as plumbing, gas, electrical and on site sewage disposal systems).

- Complying with the administrative provisions of the code, including applying for and receiving a building permit prior to commencing any work for which a permit is required.

Complaints:

Complaints, when filed with the BBRS follow a structured process of investigation by a District State Building Inspector of the Department of Public Safety. If the inspector recommends a disciplinary hearing, a hearing will be held to determine whether or not the licensee should be subject to disciplinary action, which can include REVOCATION OR SUSPENSION of your license. If this occurs, your license must be surrendered and the BBRS database will show that the license has been suspended or revoked. (See "Construction Supervisor License Disciplinary Actions" in this and previous issues of Codeword). The BBRS currently receives approximately 15 to 20 complaints per month against Licensed Construction Supervisors.

Categories of Licensure.

Licenses are issued either for the supervision of construction of 1 and 2 family detached dwellings (1G restriction); Masonry only or, Unrestricted. AN unrestricted license permits the license holder to supervise the construction of any type of building up to 35,000 CUBIC FEET OF ENCLOSED SPACE. Any building over 35,000 CF is subject to Construction control Section 116 and must be overseen by a Registered Architect and/or Registered Professional Engineer.

WHAT IS MEANT BY 95% COMPACTION?

Sometimes it is necessary to place fill beneath the foundations of buildings in order to provide adequate support. Engineers and Architects will often spec that the fill must be 95% compacted. What exactly does this mean?

The 95% refers to a property of the material called the maximum dry density (MDD). In order to determine the MDD a laboratory test must be performed on the actual fill material to be used in order to determine its MDD. MDD is measured in pounds per cubic foot (pcf).

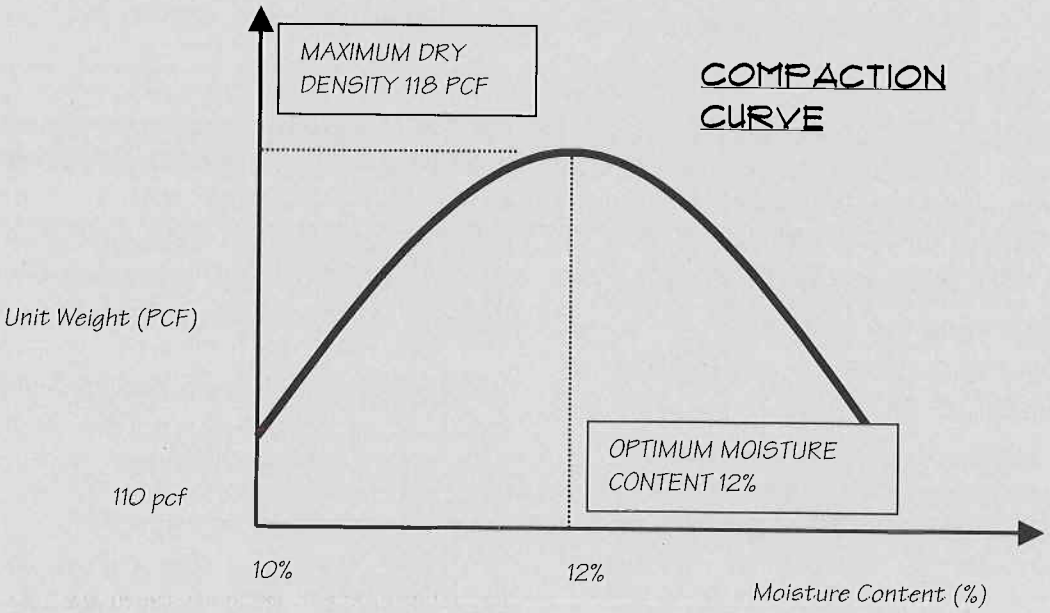
In order to be able to use fill as support, the material must be adequately compacted (or densified) to ensure adequate soil strength and to minimize possible settlement of the structure. How does the engineer know when the fill has been adequately compacted? When fill is compacted it must be done in conjunction with the amount of moisture which will facilitate compaction. Too much moisture will tend to cause the soil particles to separate, too little will not allow complete compaction. The correct amount provides sufficient lubrication between soil particles to allow them to "fit" together tightly during compaction. The MDD can be more readily achieved therefore at moisture content which will facilitate this consolidatio... This moisture content is known as the "OPTIMUM MOISTURE CONTENT" (OMC). THE OMC and MDD will be different for different fill materials.

Both the MDD and OMC are obtained by laboratory testing in accordance with a specific test method of ASTM D 1557 (referenced in Appendix A). Prepared fill is required to be compacted to a minimum of 95% of the MDD in accordance with 780 CMR 1804.3.2.

How do you know what has been achieved in the field? The only way is to test the material in the field to ensure that the same material tested in the lab is being used in the field and also that the degree of compaction (as measured by the percentage of the MDD) is achieved. It is important to note that water may need to be added to achieve the desired degree of compaction economically. As shown by the compaction curve (page 3) the soil weight is plotted against moisture content. The MDD is achieved at a specific moisture content (the OMC). Water, if added must be carefully controlled, order to achieve the desired compaction results. Ensuring that 95% MDD or greater has been achieved

will ensure that the soil will support the foundation system as designed.

A recent incident reported to the BBRS described a single family dwelling which had been constructed on fill which had been poorly compacted resulting in a two inch settlement of the basement floor slab. Soils investigations revealed that up to 2 feet of loose fill had been placed under the slab and had settled causing major cracking of the slab and damage to the interior walls of the finished basement space



HOME IMPROVEMENT CONTRACTOR DISCIPLINARY ACTIONS

Name	Registration #	Disciplinary Action Taken
Gaetano Scarpaci 30 Hammond Avenue Cohassett, MA 02025	120674	Assessed $500 administrative penalty. Registration suspended 2-20-00 through 8-20-00. Must submit new contract for approval.
Gregory Ernst 299 Centre Street Holbrook, MA 02343	1159865	Defaulted. Registration Revoked. Assessed $1000 administrative penalty.
Eric Vaughan 2 Maple Ave #67 144 Shelbourne Road Greenfield, MA 01301	129155	Registration suspended. Must demonstrate ability to comply with Home Improvement Contractor Program prior to reinstatement.
John Ludvigsen 3381 Washington Street Jamaica Plain MA 02130	117959	Registration suspended effective6-29-00 until contractor complies with Arbitration Award and pays any other pending complaints.
Neil Haggerty 10 Mount Vernon Street Winchester, MA 01890	115852	Registration suspended effective 6-29-00 until both Guaranty Fund and homeowner are reimbursed in full and contractor must submit new contract for approval.

LICENSED CONSTRUCTION SUPERVISOR DISCIPLINARY ACTIONS

Licensee	CSL #	Disciplinary Action Taken
Michael T. Rogers 110 Seneca Street Lowell, MA 01852	69236	License Revoked effective August 28, 2000. May apply for reinstatement of license after 1 year and must re-take Construction Supervisor License Examination in order to regain license.
Thomas Dixon 9 Ice Pond Road Attleboro, MA 02703	75037	License Revoked effective August 28, 2000. May apply for reinstatement of license after 1 year and must re-take Construction Supervisor License Examination in order to regain license.
Len Gibely 149 Main Street Peabody, MA 01960	59482	Letter of Reprimand issued and placed on licensee's file.

Contact the Board of Building Regulations and Standards at 617-727-7532 if you have a complaint against a licensed construction supervisor. Complaints must be limited to building code-related issues. The BBRS cannot review contractual or other issues unrelated to the State Building Code

BBRS BEGINS CONSIDERATION OF THE SEVENTH EDITION OF THE STATE BUILDING CODE (780 CMR) - REQUEST FOR PUBLIC COMMENT

The State Board of Building Regulations and Standards (BBRS) is empowered to revise and amend the State Building Code in accordance with the requirements set forth in MGL c.143 § 94.

Historically, the BBRS has utilized the BOCA National Building Code as a "shell" document from which 780 CMR is created. This approach is utilized to ensure that the laws of the Commonwealth are properly reflected in 780 CMR and that technical requirements, unique to the region, are also appropriately addressed.

Although the current Sixth Edition of the Building Code (Code) is based on the 1993 edition of the National Building Code, because of the BBRS extensive upgrading of the BOCA 1993 "shell" document, the Insurance Services Organization (ISO), through its BUILDING CODE EFFECTIVENESS GRADING SCHEDULE, has recently informed the BBRS that "the Massachusetts State Building Code, Sixth Edition as amended, will be given maximum credit..." (i.e., ISO views 780 CMR as equivalent or better than equivalent to the most current versions of National Model Building Codes - see the July 2000 Codeword article).

The BBRS has traditionally relied on a Technical Advisory Committee consensus process to guide the Board in its technical modifications to the baseline National Building Code and based on the positive response of ISO, this process has proven effective.

As the Board considers the development of the Seventh Edition of the Code, several possible development paths have been identified, including, but not necessarily limited to:

- Utilizing the latest (1999) BOCA National Building Code (NBC) as a "shell" and with the current Advisory Committee process, further refine the legal/technical content of the "shell" NBC to create the Seventh Edition of 780 CMR (essentially a continuation of the Massachusetts development/promulgation process utilized for the past 25 years);

- Adopt a completely unmodified NBC, save for the necessity to recognize Massachusetts legal uniqueness and completely ignore any technical modifications;

- Utilizing the new International Building Code (ICC) as a "shell" and with the current Advisory Committee process, further refine the legal/technical content of the "shell" ICC to create the Seventh Edition of 780 CMR (essentially a continuation of the Massachusetts development/promulgation process utilized for the past 25 years);

- Adopt a completely unmodified ICC, save for the necessity to recognize only Massachusetts legal

uniqueness and completely ignore any technical modifications;

- Consider adoption of the yet to be completed National Fire Prevention Association NFPA Building Code (Standard NFPA 5000) with or without technical modification - given that the NFPA 5000 Standard is still in DRAFT form, it may not lend itself to Seventh Edition development.

With any of the approaches identified above, there exist certain contractual issues between the State of Massachusetts and the Model Code-writing bodies – such issues could cause the adoption of a non-modified Model Code with "front-end" amendment only, rather than culling into the detailed body of the document, the unique Massachusetts technical requirements.

The BBRS and its staff have historically viewed the "front-end" amending of a Model Code to be non-user friendly, given the potential for cumulative amendments given that State Law (MGL c.143 § 97) requires that 780 CMR be opened for Public Hearing Code Change, twice every year.

These "thoughts" on Seventh Edition development are presented for the reader's information and all are encouraged to provide comment to this office relative to this important issue.

BBRS CHAIRMAN APPOINTS NEW MEMBERS AND NEW CHAIRMAN TO LOADS ADVISORY COMMITTEE

Chairman Tsutsumi has also appointed Rubin Zallen, P.E. of Zallen Engineering as the Chairman of the Loads Advisory Committee in addition to the following new members

Mysore Ravindra, P.E. -	LeMessurier Consultants
Richard Croswell, P.E. -	Symmes, Maini and McKey
Paul Kelley, P.E. -	Simpson Gumpertz & Heger, Inc.

The BBRS and Staff extend congratulations and a warm welcome to all new appointees

ENERGY CORNER

Reminder that the New Chapter 13 "Energy Conservation Requirements" will be in full force and effect as of JANUARY 1, 2001.

BBRS MEMBER PROFILE - KEITH HOYLE

This issue of Codeword profiles Amherst Fire Chief Keith Hoyle who represents the Head of a Local Fire Department.

Keith is the Head of the Amherst Fire Department where he initially began his professional fire-fighting career in 1970. Keith earned a BS in Fire Science from the University of Massachusetts, Amherst and an MS in Fire Administration from the University of New Haven.

Keith is affiliated with many professional fire fighting institutions including: the Fire Marshal's Association of North America, the International Association of Fire Chiefs; the International Association of Arson Investigators and the Massachusetts Association of Fire Chiefs to name a few. In addition to his regular duties as a BBRS member, Keith also serves on the State Building Code Appeals Board.

Keith is married and has two children.

WHEN IS EMERGENCY POWER OR OTHER BACK-UP POWER REQUIRED FOR ELECTRIC-MOTOR-DRIVEN FIRE PUMPS?

(THIS ARTICLE ALSO PRESENTS FINDINGS AND OBSERVATIONS OF A TECHNICAL CODE COUNCIL CONVENED TO DISCUSS THIS ISSUE)

When should either emergency power or some form of back up power be required for fire pumps? This is always an interesting question.

The State Building Code (780 CMR, Sixth Edition), Chapter 9, Section 924.3, titled "Emergency Power", sets the "where required" criteria for when emergency power is required for fire pumps and is otherwise explicitly silent on requiring any other form of back-up power to fire pumps.

Relative to emergency power requirements, Section 924.3, in part states: All fire pumps shall be provided with emergency power when installed in…

(1) High-rise buildings as defined by MGL c.148 26A and 780 CMR;
(2) Buildings and structures of Use Group A, with a total occupant load of more than 300 occupants;

(3) Buildings and structures of Use Group E, with a total occupant load of more than 300 occupants;
(4) Buildings and structures of Use Group H;
(5) Buildings and structures of Use Group I, having surgery or treatment areas.

Section 924.1, titled "General", in part states that: fire pumps shall be designed and installed in accordance with 527 CMR 12.00 and NFPA 20...

Design/installation compliance with the requirements of 527 CMR 12.00 ensures that all electrical work will conform to the requirements of the Massachusetts Electrical Code.

Design/installation requirements of NFPA 20-1996 (Standard for the Installation of Centrifugal Fire Pumps) are interesting relative to the question of whether or not back up power (not emergency power because 780 CMR – the State Building Code – dictates when emergency power is required) may be needed for the fire pump.

For electric-motor-driven fire pumps, NFPA 20, Chapter 6, Section 6-2.3.1, in part, states: For pumps driven by electric-motors **where reliable power cannot be obtained from a private power station or utility service** (emphasis added), one or more of the following shall also be provided:
(a) A secondary private power station or utility service;
(b) An on-site generator;
(c) A redundant diesel-engine-driven fire pump complying with other portions of NFPA 20;
(d) A redundant steam-turbine-driven fire pump complying with other portions of NFPA 20.

Note that unless the State Building Code is requiring emergency power to the fire pump, NFPA 20 essentially allows the engineer of record to make an assessment and arrive at a technically defendable determination as to whether or not **reliable power** exists at the proposed site of the fire pump. If the engineer of record determines that reliable power to the site does exist, then NFPA 20, Section 6-2.3.1, as discussed above, would not be expected to be invoked.

Problems, however, arising in the field, involve the legitimate concern of Regulators that the engineer of record's reliable power assessment is inaccurate and consequently some form of back-up power is required for the fire pump. It is this singular issue that caused the convening of a Technical Code Council. (TCC).

Regulators that are jurisdictionally involved in the design and construction of buildings and their required systems include Building Officials, Fire Officials, Wiring Inspectors and others.

Although the Building Official and the Fire Official are involved <u>early</u> in the review of a proposed fire pump design (which would address the issue of **reliable power**), the Wiring Inspector is typically not involved early in the Regulatory review process. He may, at the time of inspection of the installation of the electric-motor-driven pump (for conformance to 527 CMR 12.00), legitimately question/challenge an engineer of record's position that power to a site is **reliable**. The Wiring Inspector could then require some form of back-up power, based on his/her interpretation of 527 CMR 12.00. Such a requirement, coming late in the construction process can have a serious negative impact on cost and building and fire pump system layout.

For such reasons it is recommended that the Wiring Inspector of the jurisdiction be brought into the Regulatory review process early if the engineer of record has determined that due to electric power reliability, no back-up power to the fire pump is required.

Close attention should be paid to the commentary to NFPA 20 Section 6-2.3 and 6-3 relative to the issue of providing reliable power

APPLICATION OF SPRINKLER STANDARDS REFERENCED IN THE STATE BUILDING CODE

This article is excerpted from a recent letter to the Massachusetts Fire Chiefs from the Department of Fire Services.

The Sixth edition of the Massachusetts State Building Code sets criteria for the installation of automatic sprinkler systems. How do you know which edition of the standard to use and when are the provisions of NFPA 231 or NFPA 231C applied to a storage arrangement?

The answer to the first question is simple. The State Building Code references the 1996 edition of NFPA 13, the 1995 editions of NFPA 231 and 231C in Appendix A. Quite simply, these are the standards, which

should be complied with until the BBRS adopts other standards by amending the building code.

The answer to the second question is found in section 5-2.3.2.2 of the 1996 edition of NFPA 13 (see the following table)

Commodity Classes I through IV		
Commodity Classification	Palletized & Bin Storage*	Rack Storage *
Class I	OH-1	OH-1
Class II (up to 8 ft)	OH-1	OH-1
Class II (over 8 ft to 12 ft)	OH-2	OH-2
Class III	OH-2	OH-2
Class IV (up to 10 ft)	OH-2	OH-2
Class IV (over 10 ft up to 12 ft)	OH-2	EH-1

* OH-1: Ordinary Hazard Group I
OH-2: Ordinary Hazard Group 2
OH-1: Extra Hazard Group I

As Defined by NFPA 13 Figure 5-2.3 And Section 1-4.7.2.1 through 1-4.7.3.2

Further, Table 1-4.7.4.2 covers the protection by various classification of miscellaneous storage which is defined by NFPA 13, 1996, in section 1-4, Definitions

APPROVED CONCRETE TESTING LABORATORIES - 2000

Advanced Testing Company 22 Sarah Wells Trail Campbell Hall, NY 10916 CTL# 055	Allied Testing Laboratories, Inc. 115 St. George Road Springfield, MA 01104 CTL# 018	American Engr. & Testing, Inc. 14 Rock Sam Park Road Braintree, MA 02184 CTL# 017	PK Associates, Inc. d/b/a Briggs Engineer & Testing 100 Weymouth Street-Unit B1 Rockland, MA 02370 CTL# 012
PK Associates, Inc. d/b/a Briggs Engineer & Testing 190 Tafts Avenue Winthrop, MA 02152 CTL# 040	Central Artery/Tunnel Testing Laboratory 400 D Street South Boston, MA 02210 CTL# 042	CME Associates, Inc. Building 3 - Suite A Yatrano Road Albany, NY 12205 CTL# 057	Geotechnical Consultants, Inc. 201 Boston Post Road West Marlborough, MA 01752 CTL# 052
Geotechnical Consultants, Inc. 18 Cote Avenue – Unit 11 Goffstown, NH 03045 CTL# 056	Geisser Engineering Corp. 227 Wampanoag Trail Riverside, RI 02915 CTL# 045	The Haller Test. Labs of MA, Inc PO Box 1191 11A Walkup Drive Westborough, MA 01581 CTL# 003	Independent Mtls. Testing Labs PO Box 745 57 N. Washington Street Plainville, CT 06062 CTL# 049
Jaworski Geotech, Inc. 150 Zachary Road Manchester, NH 03109 CTL# 046	MDC Materials Field Lab 148 Newton Street Waltham, MA 02454 CTL# 006	Miller Engineering & Testing PO Box 4776 100 Sheffield Road Manchester, NH 03108 CTL# 008	Miller Engineering & Testing PO Box 11 130 East Main Street Northborough, MA 01532 CTL# 023
Special Testing Laboratories, Inc 21 Henry Street Bethel, CT 06081 CTL# 043	The Thompson & Lichtner Co. 111 First Street Cambridge, MA 02141 CTL# 001	Tibbetts Engineering Corp. 716 County Street Taunton, MA 02780 CTL# 014	UTS of Mass., Inc. 5 Richardson Lane Stoneham, MA 02180 CTL# 009
Yankee Engineering & Testing 10 Mason Street Worcester, MA 01609 CTL# 032	Summit, LTD. 7 Charlton Street Everett, MA 02149 CTL# 050	R.J. Kenney Associates, Inc. PO Box 1748 72 Washington Street Plainville, MA 02762 CTL# 002	PSI Associates, Inc. 905 Turnpike – Suite H Canton, MA 02021 CTL# 024
Soil & Material Testing, Inc. 57 South Main Street Castleton, NY 12033 CTL# 033			

Testing of concrete is restricted to those laboratories approved by the Board of Building Regulations and Standards. Approval of laboratories is regulated by 780 CMR R-1. Above is a current list of approved laboratories for Massachusetts.

CONSTRUCTION SUPERVISOR LICENSE EXAMINATION SCHEDULES

Registration Deadline	Examination Date
November 10, 2000	December 9, 2000
February 9, 2001	March 10, 2001
May 11, 2001	June 9, 2001
August 10, 2001	September 8, 2001
November 9, 2001	December 8, 2001

See related article on page 1 of this issue of Codeword.
See also Construction Supervisor disciplinary actions on page 4 of this edition of Codeword,

CONGRATULATIONS HEATHER & FRANK

Best wishes to Heather McEwan and her fiancé Frank Mandosa who were married on 12 August. Heather and Frank honeymooned in Hawaii. Heather has a B.A in English Literature from St. Anselm College, Manchester N.H. and is currently is studying for a Masters Degree in Education at Cambridge College. Heather is personal assistant to Chief of Inspections and BBRS Administrator Thomas L. Rogers.

BBRS NOVEMBER PUBLIC HEARING

BBRS public hearing is scheduled for November 14, 2000 at 1:00 pm at One Ashburton Place, Boston.

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