CODEWORD ©

THE OFFICIAL NEWSLETTER OF THE BOARD OF BUILDING REGULATIONS & STANDARDS

~OCTOBER 2002~

Thomas Gatzunis, P.E Chairman | James Jajuga Secretary | Jane Swift Governor | Thomas L. Rogers Administrator

BBRS TO HOLD PUBLIC HEARING ON THE 7th EDITION OF THE ONE AND TWO FAMILY RESIDENTIAL BUILDING CODE

The Board of Building Regulations and Standards Public Hearing on the New One and Two Family Residential Building Code will be held in Boston on November 12, 2002 at 1:00 pm at Minehan Hall on the 6th Floor of the Hurley Building at 19 Staniford Street. The BBRS will take testimony on the proposed new code.

The 7th edition of the State Building Code for One and Two Family Dwellings is based in the 2000 International Residential Code including supplements through 2002.

The new One and Two Family Residential Code is anticipated to take effect early 2003.

FAREWELL DAVID WEITZ

The BBRS bids a fond farewell and its thanks and gratitude to Energy Code Coordinator David Weitz. David has done exemplary work for the five years he has been associated with the BBRS.

During David's tenure he has become the extraordinarily dynamic educator of the Building Code's energy conservation requirements for all new construction as well as for existing buildings.

David's stellar work ethic and his commitment to energy conservation have ensured that essentially all Building Officials and literally thousands of architects, engineers, designers and contractors have had the benefit of his direct and/or indirect training efforts.

To appreciate David's legacy, one has only to log onto the BBRS Energy Conservation web site at: www.state.ma.us/bbrs/energy.htm and marvel at the quality and quantity of educational training tools for both the RESIDENTIAL and COMMERCIAL energy conservation requirements of the Building Code.

No one needs to be reminded of David's teaching skills, in particular his timing and delivery, but as David is now leaving the BBRS it's time to let a bit of the cat out of the bag. Until recently only a handful of people at the BBRS knew that David's teaching skills were in actual fact a part of his earlier vocational pursuits as an actor. Yes! David was once a professional actor and at one time appeared in the Soap Opera "General Hospital" (we understand the role had something to do with energy conservation). Instead of waiting tables between acting jobs, David put his time to better use and working for a number of years in the energy conservation field amassed great building science knowledge as such relates to energy conservation and air and vapor movement throughout structures. David finally found a place to showcase his extraordinary talents at the BBRS and as anyone who attended David's seminars can attest, David's presentations literally command the audience's attention.

On a more serious note, the BBRS has lost an amazingly vibrant and knowledgeable member of its staff and on behalf of all of the BBRS it has been truly an honor and pleasure to work with David. Everyone at the BBRS wishes David all success for the future. David will be sorely missed for his technical expertise, management and teaching skills, his

ever-present up beat attitude, his wit and humor, his constant smile and, not the least, his dedication, passion and (dare we say) energy for his work, which, if we could bottle, would solve all of our energy problems.

We will miss you Dave.

- BBRS Staff

ENERGY CORNER

Farewell Message from David Weitz, Energy Code Coordinator

I write this message with a mixture of satisfaction and sadness to let you know that after five years with BBRS, I am leaving the agency this fall. The US Department of Energy grant which has funded my position is expiring, and shrinking federal and state budgets mean that such funding is harder and harder to obtain.

It was my utmost pleasure to work with BBRS staff over this time, and the support of Chief Rogers, Deputy Administrator Anderson and Commissioner Lalli have been greatly appreciated. The state's Division of Energy Resources was key in finding ways to create and fund the work. I would also like to acknowledge the generous support of the state's gas and electric utilities, without which much of the outreach and training we were able to accomplish would have been impossible. My thanks to the Board members for their commitment to energy efficiency as a significant part of their work. The advances to our Code would have been impossible without their openness to new ideas and approaches. Finally, Brian Gore and Tom Riley have been tremendous colleagues, and it was my privilege to have them available so close at hand. I especially thank Tom for his supervision: he did a masterful job of balancing oversight and autonomy, and his understanding of technical and procedural details guided me greatly.

To the degree that the new residential and commercial energy codes have been successful in reducing fuel consumption, limiting pollution, decreasing our dependence on energy, and providing better buildings, I offer my greatest thanks to the building officials, builders, and designers with whom I have worked over the past five years. The great majority of you that I've met have shown a genuine interest in the science behind energy efficiency, and have taken your responsibilities seriously. I've been especially impressed with the professionalism that building officials bring to their very difficult jobs. I applaud all your efforts, and sincerely hope that your good work becomes business as usual in Massachusetts.

Thanks to you all for having made my job exciting and rewarding. Keep up the good work!

- David

EXECUTIVE ORDER #438
THE STATE SUSTAINABILITY PROGRAM

In matters related to energy consumption, conservation and sustainability, on July 23, 2002 Governor Jane Swift signed Executive Order #438 (EO #438) establishing the State Sustainability Program, the purpose of which is to establish, for State Government, sustainability goals, including but not limited to: the reduction of greenhouse gas emissions; minimization of solid waste and removal of mercury waste streams; promotion of environmentally sound siting, design and construction of state facilities; the reduction of energy consumption through energy efficiency and conservation; initiation and expansion of integrated pest management practices; decreased water consumption through conservation; increase the purchase and use of environmentally preferable products and services and innovative technologies; continued clean-up of hazardous waste sites and prompt mitigation of all environmental violations; implement programs and policies that are consistent with regulations and guidelines governing natural resource conservation, protection of open space, habitat protection and restoration, and preservation or natural biodiversity, and; ensure that planning efforts are consistent with EO # 385, Planning for Growth, and support the goals of EO #418, Assisting Communities in Addressing the Housing Shortage.

GOVERNOR SWIFT SIGNS EXECIUTIVE ORDER NUMBER 440 ESTABLISHING "CODE CO-ORDINATING COUNCIL"

On September 25, 2002, Governor Swift has signed Executive Order number 440 establishing a Coordinating Code Council. The council is made up of representatives from various regulatory agencies which promulgate regulations that affect construction, including the BBRS, Board of Fire Prevention Regulations, and others. The council is established to ensure that the respective codes are not duplicated Code duplication has the effect of allowing multiple agencies to enforce the same construction regulations. The result can sometimes be different interpretations of the same code provisions and redundant appeals processes.

The major tasks for this committee are as follows:

- To establish a process for the review of amendments to the State Building and Specialty Codes in order to eliminate redundancy and multiple jurisdictional enforcement.
- To review the appeals procedures currently in place in order to make them consistent and timely.
- To develop a statewide protocol for permitting and licensing and to develop a guidebook for communities.
- To recommend to the Governor specific legislative and regulatory changes to ensure the co-ordination and promulgation of a unified and consistent building code.

"NARRATIVE REPORT" REQUIREMENTS ASSOCIATED WITH THE ENERGY CONSERVATION REGULATIONS OF CHAPTER 13 OF THE STATE BUILDING CODE

Building officials, engineers, and contractors should be aware that the current version of Chapter 13 (Energy Conservation) of the State Building Code, now in full effect since July of 2002, sets requirements for Plans, Specifications and Construction Documents. The "Approval and Acceptance" provisions (1301.8.4) describe documentation that must be submitted at various stages of a project. Similar to long-standing requirements in Chapter 9 which address fire protection systems, an energy conservation narrative report describing the energy-consuming systems (mechanical and electrical) must be filed with the building department prior to issuance of the Building Permit. Additional documentation confirming the proper installation of those systems must be delivered to the building official before a final Certificate of Use and Occupancy can be issued. These requirements are necessary and mandatory: they are not optional. More detail on the Approval and Acceptance provisions is available on the Energy pages of the BBRS website at:

www.state.ma.us/bbrs/commntry/planspec.htm.

Application forms and Completion Forms can be downloaded at:

www.state.ma.us/bbrs/text_download_page_ch_13.htm.

STATUS OF THE TEMPORARY MORATORIUM ON SPRINKLERING OF SPACES ASSOCIATED WITH ELEVATORS

In May of 2002, the BBRS, in conjunction with the Board of Elevator Regulations and with support of both the Office of the State Fire Marshal and the Professional Firefighters Association of Massachusetts, promulgated an EMERGENCY AMENDMENT to Chapter 9, Section 904.1 of the State Building Code that established a Moratorium on the sprinklering of spaces where elevator machinery and control equipment is located.

Although the original Moratorium language exempted all elevator machine rooms, including the machine rooms of dumbwaiters from sprinklering (as well as elevator hoistways and pits) the AMENDED version of the Moratorium simply eliminates machine rooms of dumbwaiters from the sprinkler Moratorium (i.e., with this amending of the Moratorium and where the State Building Code currently requires

sprinklering of dumbwaiter machine rooms, such sprinklering is required provided).

Additionally, the GUIDELINES of this AMENDED MORATORIUM provide clarification regarding the possible omission of sprinklers in elevator spaces where construction projects have already committed to such installation of sprinklers in such elevator spaces Such GUIDELINES remind the reader that at this time, the decision to seek omission of sprinklers from such spaces where construction was permitted before the Moratorium, is a permissive event i.e. a choice made by the Building Owner and not the Regulator.

The following is the actual Amended EMERGENCY LANGUAGE voted by the BBRS at its September 10, 2002 monthly meeting:

AMENDED EMERGENCY CODE CHANGE LANGUAGE
(Code Change 780CMR904.1- 9-02-E1)

(I) Amend 780 CMR, Chapter 9, Section 904.1 to read:

904.1 Where required: Automatic fire suppression systems shall be installed where required by 780 CMR and in the locations indicated in 780 CMR 904.2 904.1 through 904.9

(II) Add an Exception 3. to the list of Exceptions in 780 CMR 904.1 to read:

(III) By Moratorium*, effective May 14, 2002 to December 31, 2002, inclusive: automatic sprinkler protection is precluded in: (a) all new construction elevator machine rooms of traction/drum elevators; (b) all new construction elevator machine rooms of hydraulic elevators; (c) all new construction elevator hoistways and elevator pits. *(Note that capped, inactive sprinkler piping would be allowed to be installed pending the Moratorium outcome).

Note also that new construction machine rooms of dumbwaiters are no longer subject to this sprinkler Moratorium.

Such elevator machine rooms and hoistway/pit enclosures shall be constructed to afford at least the fire resistance rating specified in Table 602 and otherwise as required/allowed by the applicable portions of 780 CMR Chapter 7 (typically, but not always, the hoistway/pit and machine room will have a minimum fire resistance rating of 2 hours with elevator opening protectives rated at 1 1/2 hours but ratings of 1 hour for hoistway/pit and machine rooms and 3/4 hours for elevator opening protectives may be allowed).

Where Table 602 requires a higher fire resistance rating for elevator machine rooms, hoistways and/or pits, such rating must be provided unless such ratings are governed by other Building Code Sections.

For elevator installation within atriums also see 780 CMR 404 for additional fire resistance rating guidance.

Where the elevator machine room is determined to be a true penthouse roof structure, also refer to 780 CMR 1510 for additional fire resistance rating requirements.

OBITUARIES

The BBRS is saddened to announce the death of three people who had close ties with the board and its staff.

PASQUALE (PAT) PIZZANO

Former State Inspector Pat Pizzano served the Commonwealth for over 40 years as a District State Inspector. Pat was very active in his district and was the consummate professional whether dealing with municipal inspections, contractors engineers or architects. Pat was the first recipient of the Massachusetts Building Commissioners and Inspectors Association "Inspector of the Year" award.

JOHN PAUL PROSSER, PE

John Prosser passed away on August 29, 2002 at the age of 70. John was founder and CEO of in the firm of JP Prosser and Associates, an engineering firm specializing in Codes and Standards. John was a constant fixture at the BBRS Public Hearings and recently served on the BBRS Chapter 34 Advisory Committee,

where John's insight, realism and technical knowledge will be missed.

ASAF QAZILBASH, PE

Asaf Qazilbash was a registered professional geotechnical engineer who served the BBRS for many years as a member of the Geotechnical Advisory Committee, recently serving as its Chairman.

The BBRS and its Staff extend their condolences to the families of Pat, John and Asaf.

PLACING CONCRETE IN COLD WEATHER

As the winter months approach the BBRS wishes to remind all contractors of the need for adequate measures which should be taken to protect concrete when placement occurs in cold weather conditions. This article is reprinted from the January 2001 edition of *Codeword*

Properly followed procedures can result in concrete placed in cold weather having sufficient strength and durability to satisfy intended service requirements. Concrete placed during cold weather will develop these qualities only if properly produced, placed and protected. The necessary degree of protection increases as the ambient temperature decreases.

Definition:
Cold weather is defined as a period when, for more than 3 consecutive days, the following conditions exist.

1. The average daily air temperature is less than 40 F (5C)
2. The air temperature is not greater than 50 F (10 C) for more than one-half of any 24-HR period.

The average daily air temperature is the average of the highest and lowest occurring during the period from midnight to midnight. Cold weather by this definition usually starts during fall and continues until spring.

Requirements and Guidelines

- The minimum temperature for concrete placed in cold weather is 50 F (10 C) as measured by the use of an appropriate thermometer.
- Aggregates and water should be heated sufficiently to eliminate snow and ice lumps. Concrete materials should be heated uniformly since considerable variation in their temperature will significantly reflect on the water requirement, air entertainment, rate of setting and slump.
- The minimum temperature for any concrete form, reinforcement steel, or sub grade is 35 F (2 C). An external heat source such as hot air jets most often must be used during cold weather concrete placements.
- Concrete shall not be placed on frozen sub grade material. Sub grade may be thawed by the use of a thermal blanket, but in most cases an external heat source must be applied. Sub grade material may have to be re-compacted.
- All snow and ice must be removed so that it does not occupy space intended to be filled with concrete. Hot air maybe used for this purpose.
- Concrete placements must be protected with insulating materials immediately and kept in place for a minimum of 3 days (72 hrs) during cold weather. Commonly used insulating materials include: polystyrene foam sheets, urethane foam, foamed vinyl blankets, mineral wool or cellulose fibers, straw, and blanket or batt insulation.
- During cold weather concrete placements an accelerant may be used to decrease setting time of concrete for the promotion of heat retention. These chemical additives may equal no greater that 2% of the total cement weight of the approved concrete mix design. This information is found on the concrete ticket which in most cases is delivered by the concrete supplier to the contractor and can be used by the building inspector to calculate admix ratios.
- To lower the likelihood of cracking due to thermal stresses, precautions should be taken to assure the gradual cooling of

concrete surfaces at the termination of the protection period. If an extreme weather change is imminent protection of the placement should continue until a less rapid cooling to the ambient temperate will occur. Concrete placed in cold weather that does not attain 500 psi compressive strength must be REMOVED. It has been shown through data analysis that if concrete freezes it will not continue to gain strength in a manner consistent with normal concrete performance.

- The Building Official in each district shall have authority to enforce these regulations.
- R-values should be on insulating materials or made available to Building Official by the contractor.

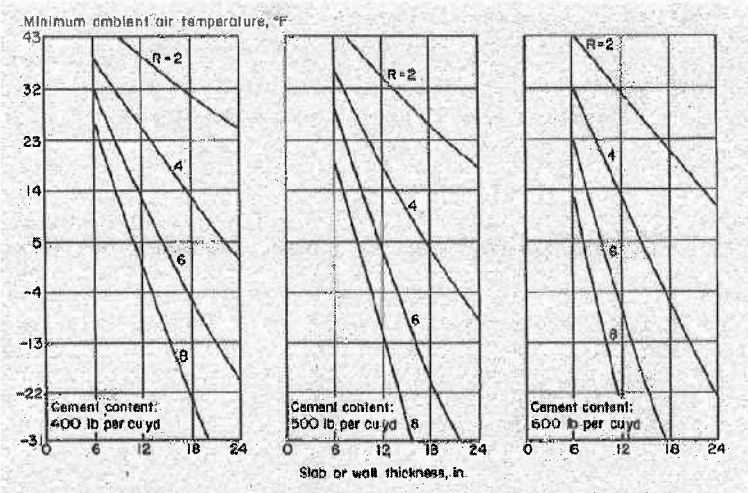


Fig. 12-16. Thermal resistance (R) of insulation required to maintain the concrete surface temperature of walls and slabs aboveground at 50°F or above for 3 days. Concrete temperature as placed: 50°F. Maximum wind velocity: 15 mph. Reference 12-13.

RECENT CONSTRUCTION SUPERVISOR DISCIPLINARY CASE

State Board of Building Regulations and Standards v William G. Whelan (Licensed Construction Supervisor # 5480)

A recent case which came before the license review committee involved some serious structural issues during the construction of a single family dwelling. Amongst other cited code violations, the most serious allegations were that the Licensed Construction Supervisor:

1. Failed to adequately compact structural fill which supported the garage floor resulting in settlement of the floor up to 8½ inches.

2. Omitted a footing for a column which supported a steel beam resulting in the column falling over.

3. Failed to provide lateral restraint at either end of a column resulting in the column falling over.

During the course of the hearing the Licensed Construction Supervisor admitted:

1. That he did not construct a footing to support the column and did nothing to rectify the violation.

2. That he used more than 6 feet of structural fill for the support of the column and the garage floor itself. When questioned about the fill operations the contractor was unaware of the control requirements necessary to adequately compact the fill material and stated that he used a small plate compactor, did not know the physical properties the fill did not attempt to utilize soils test procedure to establish the maximum dry density, optimum moisture content and did not perform on site tests as fill proceeded. Consequently the supporting fill settled up to 8½ inches causing the floor and the column to settle.

Following the hearing, the hearings officer found that the Licensed Construction Supervisor violated the State Building Code insofar as he did not adequately compact structural fill; failed to provide a footing for the support of a column and failed to provide lateral restraint for the column (in addition to other violations). The hearings officer issued a reprimand to the licensed construction supervisor and ordered that he attend a course on the proper methods in the use of engineered fill within six months of the date of the hearing. Failure to attend the course will result in suspension of the license until such time as the order is complied with.
The decision was issued on August 16, 2002.

The following article on compacted fill is issued as a reminder to contractors and building officials with projects which involve the use of engineered fill.

ENGINEERED FILL
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 specify that the fill must be 95% compacted. What exactly does this mean?

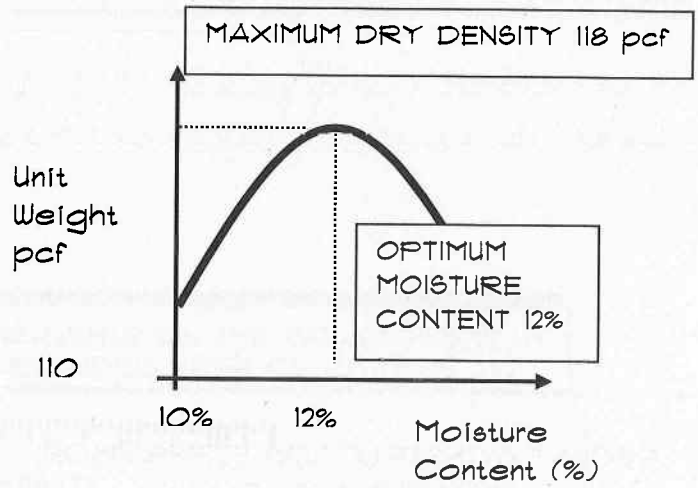
The 95% refers to a property of the material called the maximum dry density (MDD). In order to determine the MDD a laboratory test must be performed on the actual fill material to be used in order to determine its MDD. MDD is measured in pounds per cubic foot (pcf).

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 a moisture content which will facilitate this consolidation. 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, in 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.



COMPACTION CURVE

ATTENTION BUILDING OFFICIALS
NOTIFICATION OF LICENSE FRAUD

Do not issue any permits to applicant's using the name and license number of Jonathan W. Ladner (CSL Number 073711). Mr. Ladner passed away in June 2002 and the BBRS has been made aware that someone may be using Mr. Ladner's license illegally.

ATTENTION BUILDING OFFICIALS
CHANGE TO THE PUBLIC RECORDS LAW

The following exemption from the Public Records law 26th clause of MGL c 4 s. 7 has been made (see Chapter 313 of the Acts of 2002) as a measure to provide protections against terrorism):

> *"(n) records including, but not limited to blueprints, plans, policies, procedures and schematic drawings, which relate to internal layout and structural elements, security measures, emergency preparedness, threat or vulnerability assessments, or any other records relating to the security or safety of persons or buildings, structures, facilities, utilities, transportation or other infrastructure located within the commonwealth. . ."*

Building Officials are advised to confer with legal counsel for the correct application of this law.

In This Issue of *Codeword:*

- BBRS to Hold Public Hearing on 7th Edition of the One and Two Family Dwelling Building Code
- Farewell David Weitz
- Energy Corner
- Executive Order Number 438 - State Sustainability Program
- Governor Swift Signs Executive Order Number 440 Establishing the Code Co-ordinating Council
- Narrative Report Requirements for Energy Conservation (Chapter 13)
- Status of the Temporary Moratorium of Sprinklers and Elevators
- Obituaries: Pat Pizzano; John Paul Prosser and Asaf Qazilbash
- Placing Concrete in Cold Weather
- Recent Licensed Construction Supervisor Disciplinary Case
- Engineered Fill
- Notification of Possible License Fraud
- Protection Against Terrorism Amendment to the Public Records Law

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

AS A PUBLIC SERVICE, CODEWORD IS PROVIDED FREE OF CHARGE TO ALL MUNICIPAL BUILDING AND FIRE DEPARTMENTS OF THE COMMONWEALTH

**********ALL FOR AADC 028
19
Anderson Rob
Deputy Administrator
PO BOX 871
TAUNTON MA 02780-0871

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

PRSRTD STANDARD
POSTAGE & FEES
PAID
Permit No. 52342
Braintree, MA