



The Commonwealth of Massachusetts

STATE BOARD OF BUILDING REGULATIONS AND STANDARDS

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CODEWORD

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LOCAL BUILDING INSPECTOR WINS LAWSUIT

Often times a building official feels unappreciated by his superiors, the community or even his colleagues. Enforcing rules can be a trying experience and sometimes can result in a web of confusion.

William D. Harrop found himself caught in such a web during the winter of 1987. Mr. Harrop, a building inspector for the town of South Hadley, MA was fired from his position in February of that year, he believed, for performing his duties.

The controversy began with the issuance of a permit for the construction of an 80 unit condominium project known as Falls Woods Estates on West Summit Street, South Hadley. After reviewing the construction documents Mr. Harrop issued the permit allowing the contractor to begin work.

Shortly thereafter, however, construction came to a halt. Members of the Planning Board along with two town selectmen, felt the permits were issued illegally. Each claimed that Mr. Harrop had allowed the erection of three story structures within a zone calling for a maximum height limitation of two stories. Mr. Harrop contended the buildings were in compliance in that they consisted of two stories plus a basement. There seems to have been some confusion as to the definition of a building story.

Article 2 of the MA State Code defines a story as: "That portion of a building between the upper surface of a floor and surface of the floor or roof next above." More appropriately referenced, however, is the meaning of a basement which is defined under the same article as: "That portion of a building which is partly below and partly above grade, and at least one-half (1/2) its height above grade."

LAWSUIT - CONTINUED FROM PAGE 1

The dispute, then, was more one of proper zoning than of adherence to the building code. Unfortunately, the parties were unable to resolve the zoning question administratively. Thus, on February 3, 1987 the two selectmen involved in the matter voted to relieve Mr. Harrop of his duties as building inspector claiming incompetence. (A third selectman voted against the action.) Later, however, an agreement between the builder and the town board of appeals was reached which called for changing the top most story of each of the ten structures into attics (nonhabitable spaces) which are not considered stories. The units eventually went on to completion.

Mr. Harrop was not amused by the decision and decided to file suit against both selectmen, the town planners and the town of South Hadley. The \$200,000 law suit was an attempt to regain lost wages between his date of departure and the end of his appointment in April 1987 as well as compensation for severe mental pain.

The week long trial before a jury of eight women and six men was convened on Tuesday, May 30, 1989 with Mr. Harrop awarded a sum of \$34,000 at least six thousand of which to be paid by the selectmen, divided \$4,000 and \$2,000. The jurors proclaimed that the selectmen did not have good reason to fire Mr. Harrop and did so maliciously to cause him great emotional stress.

Mr. Harrop was also granted the opportunity to return to his position as building inspector, but declined to do so. "I am glad that there is justice," he said upon completion of the trial. The jury, he feels, had cleared his name and that is the important thing.

It is unfortunate that such events need take place in our system of government, but with personalities sometimes overcoming professional attitudes it is often unavoidable. We would like to congratulate Mr. Harrop on his perseverance throughout this long and difficult situation. Also, we would like to commend the state building official who testified in Mr. Harrop's behalf during the trial and all those members of the Board who stood behind him at a time of need.

Mr. Harrop's ability to handle the matter in a mature manner proved to be the winning way. We are sure this attitude will see him through to further life's success.

GOODBYE TO BILL AND KATHY

Bill Fitzgerald and Kathy Miethe, both of the Department of Public Safety, have decided to call it quits. Bill, the father of two, began his distinguished career as a clerk in 1946. Throughout many years of hard work and dedicated service came a series of promotions which lead him to his final position as Executive Assistant to the Commissioner of the Department of Public Safety. Bill's talents range from expertise in stenography to technology in fire arms and fingerprinting recording. Bill's service, which spanned the appointments of fourteen different commissioners, has been mainly behind the scenes, but his presence was always felt and will surely be missed.

Although Kathy's career was not quite as lengthy as Bill's her dedication to the department was unending. Kathy takes her leave to pursue further career goals and to enjoy time with her daughter and husband. All who know Kathy are impressed by her professional skills and entertained by her wit and charm. - Best wishes to both.

CODEWORD

This issue's CODEWORD is **fireresistance**. The term is defined under Article 2 as "That property of materials or their assemblies which prevents or retards the passage of excessive heat, hot gases or flames under conditions of use". Or as it is defined in the American Iron and Steel Institute's Fire Protection Through Modern Building Codes, it is the length of time in hours that a particular member will stay in place and maintain its bearing capacity under the influence of fire.

Inherently, most structural members have some type of resistance against the effects of fire. Some of course, maintain higher levels than others. A W12x10 steel beam, for instance, with a depth of 12.19", flange width of 10.01" and flange thickness of 0.641" naturally is somewhat resistant to fire by sheer virtue of its size. Yet, to accommodate the appropriate level of resistance as specified in Table 214, even a member of this mass needs to be protected to qualify for certain construction type classifications. The methodology of protection now becomes the issue.

Several accredited laboratories produce directories or listings of fire resistance rated construction assemblies. In particular the Underwriters Laboratory Fire Resistance Directory covers many of the accepted methods to properly protect a material from the effects of fire. To become familiar with this guide is to be aware as to how resistance is achieved.

As an example, let us examine the beam mentioned in a previous paragraph as it would need to be handled if it were a structural member of the floor system in a building of Type 2A Construction. According to the code it would need to be rated or protected against fire for a period of 1 1/2 hours. The U.L. Manual under the Fire Resistance Ratings section refers us to design numbers with the prefix N or O indicating Beam Designs - for Floor/Ceiling Assemblies. Turning to this section we discover that Design Number N306 will provide the proper protection given the correct conditions. This design uses mineral or fiber boards to achieve the desired resistance. The boards are cut into various prescribed sizes and installed to form a boxed shaped enclosure around the beam. The material is installed in various thicknesses in order to attain the desired rating. In this instance a minimum of 0.795" is needed to achieve a rating of 1 1/2 hours.

It is important to note and should be something that all building officials are cognizant of in inspecting for structure protection that, as is the case with most things in life, the level of protection under this design is only as good as the method of installation. The U.L. Manual is very explicit as to proper procedure right down to the fasteners and joint compound. If the method of installation is not followed as specified the desired rating may be lost.

As you can see, much effort is afforded to the protection of a structure in the event of fire. As always, however, it is the ultimate intention of the code to maintain the safety of the public. Of course by protecting the structure you do just that.

RECENT STATE BUILDING CODE APPEALS BOARD DECISIONS

Section 127.7.11 (Contents of Decisions) of the code states, "Any decisions shall not be considered by any person or agency as a precedent for future decisions."

Appeal Docket # 88-25

The building official rejected the design of a porch railing for an existing single family home undergoing renovation citing a failure to comply with Section 2101.11.1. The porch is located 4'-0" above grade which would require a 36" rail height. The design called for a height of 24 inches.

The Appellant argued that the building was an architecturally significant structure that, unfortunately, had been badly damaged by fire. Although the home was not registered as an historic monument, the home possesses many fine exterior details indicative of the Victorian era. To require the additional rail height would destroy the original intent of the design which the Appellant has spent much time and money to maintain.

The Board found that the structure would be in violation of Section 2101.11.1. However, realizing the porch does not serve as primary means of egress and that it projects only 4'-0" above a soft, grassy area the Board voted to grant the variance in order to maintain the architectural integrity of the building. The building official, too, agreed that the flavor of the original design should be maintained and that the potential risk to public safety would be virtually undetectable.

Appeal Docket # 88-46

The building official upon review of plans for the addition of a 26,000 square foot employee recreational facility refused to issue a building permit citing nonconformance to the separation of use groups governed by Section 213.0. The structure consists of a lounge/exercise area along with a swimming pool area. The official designated each area as separate use groups calling for a fire separation partition in accordance with Tables 214 and 902. The proposed design showed large glass areas within the separation wall. The official required either a redesign to incorporate a full height wall meeting the fire grading criteria or the installation of fire shutters on the proposed glass areas.

The Appellant argued that the glazed areas were an integral part of the interior design and that they aided in the security and ultimately the safety of the pool user. To resolve the dispute the applicant suggested incorporating wire glass into the design and adding more sprinkler heads directly above the windows to provide greater safety.

The Board voted in support of the interpretation of the building official and further cited that the inclusion of wire glass only would not meet the provisions of Section 917.3. With the additional fire suppression system, however, accompanying the wire glass the Board felt the intent of the code would be maintained. Before granting a variance the Board required the applicant to submit a fire protection plan locating the additional sprinkler heads.

THE TUNNEL TEST - ASTM METHOD E-84

Most of us are familiar with the terms ASTM or ASHRAE, and the hundreds of other groups of initials representing testing or consumer agencies that we encounter on a daily basis as building officials. But, how many of us actually take the time to delve into these standards and to understand their application? Granted this is not the type of thing most of us look forward to - nonetheless, it is important to be familiar with the significance of these tests and organizations and how they affect our profession.

With this in mind, CODEWORD will address certain test methods and procedures periodically in an attempt to stay current with the happenings of the world inside the testing laboratory. The topic for this issue is ASTM Standard Test Method E84 "Surface Burning Characteristics of Building Materials".

Throughout history fire has been both a friend and foe of man. No one is more aware of how ominous an enemy it can be than the code official. Unfortunately, it has been through events such as the Coconut Grove and Winescoff Hotel disasters in which hundreds of people lost their lives that we have come to learn the devastating effects of a rapidly spreading fire. Reducing the potential spread of fire through the control of finish materials is one method used by modern building codes to prevent such disasters from recurring. ASTM E84 is one such tool for accomplishing this important task.

Testing of this type actually began as early as 1922, but it was not until August of 1950 that the Underwriters' Laboratories (UL) published formal results as UL Standard 723. The UL procedure was coined the Steiner Tunnel Test in honor of Albert J. Steiner who fathered its development. ASTM also adopted the procedure in 1950 as a tentative standard but did not formally adopt the method until 1961. As the title indicates, the test involves the measure of the spread of fire as it is observed on various building materials under controlled conditions. In determining this relationship, the method allows us to classify materials comparatively in terms of high and low flame spread, as well as to make comparative measures of the level of smoke density. To the designer or code official, this information is invaluable.

Our State Building Code recognizes the importance of such information and requires the application of ASTM E-84 test data under various sections within Article 9. To better understand the test as it relates to the code, however, a brief description of the procedure is in order.

First, the sample material is mounted in an inverted position within the 25' long tunnel apparatus. It is then exposed to a moderately severe fire exposure in the form of flame from gas jets mounted at one end of the tunnel. The experimenter watches closely to record the progress of the flame front, from which the flame spread index is determined. A smoke developed index is also computed based on readings obtained from a photocell in the exhaust stack at the far end of the apparatus. The flame spread and smoke developed ratings are dimensionless numbers, and are based on the performance of the material relative to that of the control specimens, red oak flooring and inorganic reinforced-cement board. Red oak is assigned an index of 100, and the cement board is given an index of 0. These numbers have been established arbitrarily to provide a numerical index by which the performance of other materials may be judged. It is important to note that the results can only be used as comparative values.

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These ratings in and of themselves do not have much meaning, but when related to the requirements set forth within Article 9, a valuable relationship is established. Table 904 tells us that a material is considered a Class I finish when it maintains a flame spread index no greater than 25. Materials with flame spread ranging between 26 and 75 are considered Class II, while those with flame spreads of 76 to 200 are designated Class III. Table 920 of the Code specifies the maximum allowable class of material permitted for use as wall or ceiling finishes, based upon the function of the building space and its use group. Section 920.3 contains a further limitation - it states that: "Interior finish materials shall not be permitted that have a smoke developed factor greater than 450...". The building official should require that classification of each finish intended for use is properly documented in writing.

In examining test results from ASTM Method E-84, the building official should be aware that it is particularly good in distinguishing comparative levels of one type of hazard (surface flame spread) with respect to finish materials, but it is not necessarily intended to be used to determine combustibility, or other aspects of fire hazard or fire endurance of building materials. Other test methods such as ASTM E-136, Method of Testing for Noncombustibility of Elementary Materials (see July 1988 CODEWORD), or ASTM E-119, Fire Tests of Building Construction and Materials, have been developed and are better suited for these purposes. Also, although almost every material can be tested to rate its level of flame spread and smoke developed, there are some substances that pose problems in terms of mounting methods, or for which the geometry of the test apparatus is not suitable. In fact, for some substances, the test is so poor a predictor of actual fire hazard that the testing laboratory is compelled to note a disclaimer when reporting these results.

Thankfully, concern for the dangers of fire has prompted us to learn more about fire growth and spread. Unfortunately, we are all painfully aware that most fires are started accidentally. There is little that can be done on the part of the building official to prevent these mishaps. However, we can limit the spread of flame and limit the level of resultant smoke once fire occurs through application of these building code requirements during construction. The classifications as determined by this test method establish one line of defense against the hazards of rapid fire spread. As building officials it is vital that we understand the ASTM E84 test method, and see to the enforcement of flame spread requirements contained in the building code. These methods, like the code itself are the tools of our trade. They are as essential to modern, safe construction as the hammer or the saw.

WE ALL MAKE MISTAKES

Yes, as incredible as it may seem even we at CODEWORD make an occasional blunder. So in our most humble manner we would like to take this opportunity to revise a statement which appears in the November, 1988 issue. Part 1.C. line 3 of the page 8 article entitled "Local Building Inspectors Checklist - Modular Buildings" reads: "Seal of Registration of Massachusetts Registered Architect". This, of course, should read: "...Registered Massachusetts Architect or Professional Engineer". We thank the alert official who spotted the error and apologize for any inconvenience or confusion this may have created.

SCHOOL AGE CHILD CARE PROGRAMS

We have had many inquiries as to the proper classification of School Age Child Care Programs as licensed by the Office for Children. The Code at present does not address the matter specifically. Thus, according to section 212, Doubtful Use Classification, we must identify the "... use group which it most nearly resembles in respect to the existing or proposed life and fire hazard..."

Many feel that the facility should be governed by the requirements for a Day Care Center. The Code separates this use group into two categories, I-2 for the care of those 2 years and 9 months and younger, and A-4 for those greater than 2 years and 9 months in age. The regulations as set forth by the Office for Children defines a school age child as one who is enrolled in kindergarten, approximately 5 years of age, up to a child enrolled in a higher grade who is not more than the age of 14. (Special needs children shall not be more than 16 years of age.)

Seemingly, these age requirements are consistent with those for Day Care Centers of use group A-4. However, the average age of a child attending day care is approximately 7 years of age and the programs set forth by the organization are arranged to cater to this young group. Conversely, the programs established for school age children are designed for a more mature youngster.

Further, use group A-4 encompasses those structures used as "...churches, schools, colleges and for similar educational and religious purposes". Again, in referencing the Office for Children regulations we find that the program is designed to provide "...planned daily activities to promote the individual child's physical, intellectual, emotional and social well being and growth". This definition implies a far greater scope of activities than those intended under use group A-4.

With this information in hand, we have determined that the most appropriate use group classification is A-3. The Code states under section 203.4, Use group A-3 structures, that "...all buildings with or without an auditorium in which persons assemble for amusement, entertainment or recreation... and principally used without permanent seating facilities..." shall be classified within use group A-3. The definition encompasses all that is intended within the School Age Child Care Program and does not limit its occupants on the basis of age.

NEW CSL APPLICATIONS AVAILABLE

By the time you read this article, new applications should be available for the Construction Supervisors License (CSL) examination. The new **CANDIDATE BULLETINS OF INFORMATION** contain useful information on test dates, exam content, administration, sample questions and score information of the exam, as well as providing the test application. The new "Bulletin" is blue in color - applications on the old (tan) forms will no longer be accepted by Educational Testing Service (ETS). Interested parties may pick up their copy (**we cannot mail the Bulletin**) at the Board's Boston office, at the State Bookstore in Boston, or at Department of Public Safety site offices in Springfield, Worcester, Tewksbury and Fall River - only one copy per party please! Persons seeking multiple copies of the Bulletin should contact the Board's office in Boston. The new application fee is \$65.00.

CONSTRUCTION SUPERVISOR'S LICENSES REVOCATIONS AND SUSPENSIONS

On April 18, 1989 the Board of Examiners of the State Board of Building Regulations and Standards convened to hear testimony and to vote on the recommendations of the Board of Survey on four cases. The results are as follows:

License number	Name of Supervisor	Action
004936	Louis Roy	License revoked until Mr. Roy takes and passes a Construction Supervisor's examination.

027965	Joseph Lobosco	License suspended for six months from April 18, 1989 to October 18, 1989. (Note: The decision is currently under appeal.)
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043830	Richard Hodge	License revoked until further notice.
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BOARD CONSIDERS ACTION ON FRT PLYWOOD

In response to growing concern about the performance of fire retardant treated plywood, the Board of Building Regulations and Standards has written to producers and treaters of fire retardant treated (FRT) plywood, and to related industry and trade associations, seeking information on the composition and performance of their FRT plywood products. The Board's action was prompted by reports of premature degradation of FRT plywood. While complete data on the cause of the problem is not yet available, it is thought that the problem is the result of chemical reactions which occur with certain fire retardant chemicals after exposure to conditions of high temperature and high humidity. One common usage of FRT plywood is as a roof sheathing in areas adjacent to fire walls in combustible roof construction. The State of New Jersey has already requested similar information and is also considering taking various actions. Fairfax County, Virginia has recently set interim procedures which require submittal of additional information from treaters, testing laboratories and/or trade associations for various uses of FRT plywood (see May/June 1989 issue of The Building Official and Code Administrator Magazine). We will keep you posted as to further information on FRT plywood and any subsequent Board action in future issues of CODEWORD.