

Four Digits Which Will Revolutionize Construction!

As Alan and I were going through old archive boxes, we ran across a press release from 1975 containing two bold predictions: “Four Digits Which Will Revolutionize Construction” and “New Standard ... Will Conserve Huge Amount of Fuel”. The one about conserving a *Huge* amount of fuel” was especially engaging and entertaining. These documents were in a file folder labeled “ASHRAE Standard 90-75 Seminar”.

A little research tells me that development of Standard 90 came after the 1973 oil embargo. Gas prices going up almost 50% in one year and stations rationing fuel certainly turned people’s attention toward energy production, but then also to consumption and conservation. This focus prompted a lot of change in the country. 1974 was the year that the 55 mph speed limit was implemented. ASHRAE membership, knowing they had little control over the production of energy, knew that they could make a difference by way of education on how to conserve energy in buildings.

The original title of Standard 90 was “Energy Conservation in New Building Design.” Revisions to Standard 90 came in 1980, 1989, 1999, 2001, and then every three years afterward under the Chapter’s “Continuous Maintenance” process. In 1992, Standard 90.1 became Federal Law as part of the Energy Policy Act. Back in 1975, however, ASHRAE knew even then the significance of the document they produced. Our own Bill Collins, then sitting Society President, made a big push for local Chapters to hold seminars to educate members on what the Standard contained. Bill Frankfurt, our Chapter President at that time, followed through in organizing an all-day seminar on the new Standard 90-75.

A scan of the original 1975 Society press release, a letter by Bill Frankfurt to the DRC of Region VIII, and the flyer announcing the seminar are attached.

Dusty Stoabs, PE, CPMP, LEED AP BD+C, ASHRAE Member

ASHRAE Central Oklahoma Chapter Historian

FROM: Amos Landman - (212) 593-6421
and
Susan Wilson - (212) 593-6387
RUDER & FINN INCORPORATED
110 East 59th Street
New York, New York 10022

FOR: American Society of Heating, Refrigerating
And Air-Conditioning Engineers, Inc. (ASHRAE)
345 East 47th Street, NYC 10017

FOR: Release: Tuesday,
July 29, 1975

NEW STANDARD DESIGNED TO SAVE ENERGY IN NEW BUILDINGS CLOSE
TO FINAL APPROVAL; WILL CONSERVE HUGE AMOUNT OF FUEL

The Standards Committee of American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) has approved a far-reaching standard for energy conservation in new buildings. Formerly known as Standard 90P, (the "P" standing for "proposed,") it will become Standard 90-75, upon approval of the ASHRAE Board of Directors. It will have a profound effect on local building codes from coast-to-coast.

The Board will act on the standard in the next month. Approval is expected.

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The Standards Committee, acting on the recommendation of the Society's 90P project committee, approved a standard of 11 sections. They have been in preparation 19 months and have undergone two broad reviews by thousands of persons with professional interest in the subject.

Action on a proposed Section 12, which will establish a method of evaluating energy at its source and not at the building line, is now going through ASHRAE's customary review procedures. If and when it is approved, it will be considered for addition to Standard 90-75. In June the ASHRAE Board declared its intent to make such an addition.

Standard 90-75 will ultimately save the nation millions of gallons of petroleum or equivalent a year, according to William J. Collins, Jr., ASHRAE president. Even before it was finalized, he said, various communities, eager to save energy, had incorporated previous drafts of the standard into their building codes. The standard covers everything from a towering hi-rise to a newlywed's modest first house.

Mr. Collins estimated that the standard will save at least 10 to 20% of the energy now used in residential structures and possibly twice as much in industrial, commercial, governmental, and institutional buildings. The Federal Energy Administration has commissioned a study to determine exactly how much.

"The technology to conserve vast amounts of energy is here, crying to be used," Mr. Collins declared. "Standard 90-75 could require owners, builders, and others to apply it to new buildings. The next step

is to develop an energy conservation standard for existing buildings.

We are working on it. "

Jack Tumilty, consulting engineer of Tulsa, Okla. , and chairman of the project committee, said the group included 122 experts in the fields of design, construction and manufacturing as well as in oil, gas, coal, electricity, and other forms of energy. He said:

"In the days of not so long ago when energy was cheap, builders slapped together structures with little or no insulation and single sheets of window glass. One thermostat controlled the temperature of a two- or three-story house. One switch controlled the lights on an entire floor of an office building. Among other things, the new standard is aimed at eliminating such waste. "

The document is highly technical. Here are some of its major provisions:

The building envelope, or shell, must be constructed to a maximum "U-value," according to the climate. U-value is a measurement of insulating effectiveness which varies with the materials and combinations of materials utilized. The Standard 90-75 requirement becomes more stringent as one moves North.

However, in the South, any new structure which includes built-in air-conditioning will also have to have better walls, ceiling, and floors.

Unless windows are double glazed (or even triple glazed in northern areas), and perhaps tinted with a reflective coating as well, as much as

25% less glass may be used in the buildings of the future so that they meet new U-factor requirements for exterior surfaces.

Frame construction in residential housing generally provides excellent insulation capabilities, so it will probably increase in use, particularly in northern climates, Mr. Tumilty said. For example, frame construction with 3 5/8" of insulation in the walls and 6" under the roof easily meets the requirements of the standard for maximum U-factor.

The standard will compel builders and owners of all kinds of structures to keep in mind the insulating capabilities (U value) of the various building materials.

More attention will be given to the fact that cube-shaped buildings are most efficient from the energy standpoint, and buildings of extreme configuration are least efficient.

Skylights may become less popular, as they, too, are generally unsatisfactory from a thermal efficiency standpoint, unless there is a double layer of glass or plastic.

Initial costs of a new building or home may go up, but the buyer will receive better quality; the long-term operating costs of these new structures will be lower compared to their energy-wasteful counterparts of today.

The popularity of the heat pump, which is a more efficient device for heating with electricity, may increase in situations where electric heat is used. Where the heating and cooling loads of structures are about equal, according to Mr. Tumilty, the use of heat pumps may grow.

In other areas of the country heat pumps could conserve energy during the spring and fall where people choose to heat with electricity.

Heating, air-conditioning, and ventilating systems will have to meet higher standards of performance. The provision is similar to the current requirement for window air-conditioning units which must list the energy efficient ratio (EER) for today's consumer.

Systems will be designed so that indoor temperature should not exceed 72° in the winter at maximum capacity or fall below 78° in the summer.

Engineers will be encouraged to provide systems which use outdoor air as a cooling medium whenever possible.

Insulation will be required on all HVAC (heating, ventilating, and air-conditioning) pipes and ducts.

More control zones for each HVAC system will be required so that heating or cooling can be reduced or eliminated where not needed. Each floor of a residence and each apartment of a multi-family dwelling will be required to have at least one thermostat. Commercial space will also enjoy much more localized control.

Areas on the sunny side of the building won't receive as much heat as those in the shade in the winter, while in the summer this may be reversed.

Greater efficiency and superior controls will be required for equipment such as water heaters, which will have to be better insulated, and include automatic or manual controls to turn them off when not needed. Unless there is a special need, water will not be heated to as high a temperature as presently.

Domestic hot water systems will require use of a flow control device to cut down on the amount of hot water used in taking a shower. Similarly, hot water for washing hands in public washrooms will be limited.

The standard provides that outdoor pools cannot be heated with depletable sources of energy when the outdoor temperature goes below 60^o. This means that those luxurious outdoor heated swimming pools at winter resorts will have to find alternate heating methods.

Individual electric meters for each unit in a multi-family dwelling and each tenant of commercial space should make users more aware of the need to conserve energy.

Lighting levels will vary throughout a space according to function. No longer will they be uniformly high throughout the structure. For example, a work area in a home or office may call for 100 ft. candles of direct overhead lighting, but 50 ft. candles may be quite adequate elsewhere; the lighting system will reflect this. More individual light switches will provide energy in accordance with real needs.

Hallway and reception areas of commercial offices will not be as bright as they are now. There will be less outdoor illumination of buildings. Greater use of fluorescent lighting (which is more efficient) and natural light instead of incandescent light will be the order of the day.

The standard also makes provision for the use of solar, geothermal, wind, and other non-depleting energy sources in heating and cooling systems. Orientation of the building to the sun will be a more important consideration than ever.

There are various exceptions to the rules where special considerations are involved. For example, where unusually hot water is needed for therapeutic purposes, this will be permissible. And the lighting levels prescribed for homes and offices will not apply to theaters or other special installations.

Mr. Collins said he expects that Standard 90-75 will be revised and modified from time to time in accordance with actual experience.

3 November 1975

Mr. Emil E. Friberg
Director & Regional Chairman VIII
c/o Love, Friberg & Associates, Inc.
1414 Oil & Gas Building
Fort Worth, Texas 76102

RE: ASHRAE 90-75 Seminar

Dear Mr. Friberg:

The Central Oklahoma Chapter and the Tulsa Chapter are going to hold their ASHRAE 90-75 Seminars on December 16 (Tulsa) and December 17 (Oklahoma City). This will allow people who cannot attend the seminar in their area to travel to the alternate city.

We are working on putting together quite a broad mailing list and will mail out a joint flyer with the Tulsa Chapter announcing both meetings. Neither our chapter nor the Tulsa Chapter has tax exempt status so we need your assistance in selecting the appropriate chapter for our joint mailing. Let me know as soon as possible how we handle this.

The Oklahoma City Seminar will be held at the Hilton Inn West located at W. Interstate 40 and Meridian Avenue. We have made arrangements for an attendance of 150.

As further details are firmed up I will advise you.

Sincerely,

William Frankfurt
President
Central Oklahoma Chapter ASHRAE

cc: Charles Callahan

90-75

FOUR DIGITS WHICH WILL REVOLUTIONIZE CONSTRUCTION.

Last summer ASHRAE adopted Standard 90-75 "Energy Conservation in New Building Design," after nearly two years of intensive work. This standard will have enormous impact on building codes from coast to coast. Before long virtually every structure that is erected in the United States—whether a modest one-family home or a 50-story skyscraper—will be affected by this sweeping document.

Having drafted 90-75, ASHRAE now feels an

obligation to help government officials, builders, architects, planners, and others involved in building design and construction to apply the new standard. To do so, ASHRAE is conducting a series of one-day seminars in some 50 cities across the country. These seminars will tell you everything you have to know about 90-75.

The fee is modest: \$35 for ASHRAE members and \$70 for others. Rarely has so much vital and timely information been offered for so little.

STANDARD 90-75 SEMINAR LOCATIONS AND DATES ASHRAE - REGION VIII

Texas	Houston	Austin	Dallas-Ft. Worth	Oklahoma City	Tulsa	Arkansas	Little Rock
Houston Marriott Hotel	Joe C. Thompson Conference Center - University of Texas at Austin	Dallas-Ft. Worth DFW Airport Marina Hotel	Hilton Inn - West	Sheraton Inn - Skyline East	Worthen Bank Building Auditorium - 4th Floor		
1/15/76	1/14/76	12/10/75	12/17/75	12/16/75	12/11/75		
Date							

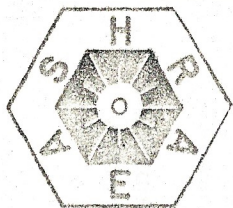
P. O. BOX 871
TULSA, OK 74102

To register, please fill in the form below and mail it to the address for the city where you wish to attend.

Yes—I'll attend the seminar on Standard 90-75 ☐ I am ☐ I am not as ASHRAE member. My number is _____
☐ Tulsa, December 16 ☐ Oklahoma City, December 17

I enclose \$_____, my registration fee. Make check payable to ASHRAE Standard 90-75 Seminar. I understand that the fee includes a full day's instruction, copy of 90-75, workbook, coffee breads, and luncheon.

Name _____
 Affiliation & Title _____
 Phone _____
 Address _____
 State _____ Zip _____ City _____



ASHRAE
STANDARD
90 - 75

The American Society of Heating,
Refrigerating, and Air Conditioning
Engineers, Inc.

Presents

Two one day seminars
on

The Contents and Application
of Standard 90 - 75
Energy Conservation
in New Building
Design

TIME: 9:00 a.m. - 4:30 p.m.

TULSA

Tuesday, December 16, 1975
Sheraton Inn Skyline East
6333 East Skelly Drive

*Send reservations for Tulsa seminar to Joe
Tucker, P. O. Box 871, Tulsa, Oklahoma 74102.

OKLAHOMA CITY

Wednesday, December 17, 1975
Hilton Inn West
Interstate-40 & Meridian Avenue

*Send reservations for Oklahoma City seminar to Bob Estep, c/o Oklahoma Air Filter Sales, 4355 N. Santa Fe, Oklahoma City, Oklahoma 73118.

Standard 90 - 75 and the seminar will contain sections on

1. Exterior Envelope
2. HVAC Systems
3. HVAC Equipment
4. Service Water Heating
5. Electrical Distribution Systems
6. Lighting Power Budget Determination Procedure
7. Energy Requirements for Building Designs Based on Systems Analysis
8. Requirements for Building Utilizing Solar, Wind, or Non-Depleting Energy Sources

REGISTRATION INFORMATION

Enrollments

Enrollments may be made by returning the registration form to the city in which you plan to attend. Enrollments must be mailed one week prior to the seminar.

Hotel Accommodations

Hotel accommodations are not included in the registration fee. If you desire overnight accommodations, arrangements should be made directly with the motels in which the seminars are held.

Course Fee

ASHRAE members - \$35
Non members - \$70

This includes a copy of Standard 90-75, a workbook, lunch, and coffee. Checks should be made to ASHRAE Standard 90-75 Seminar.

Cancellations

Cancellations made less than three (3) working days prior to the seminar are subject to a \$10 cancellation fee.

For Further Information Call

Tulsa - Joe Tucker - 918-583-6161
Oklahoma City - Bob Estep - 405-521-9918

PURPOSE

The purpose of this Standard is to provide design requirements which will improve utilization of energy in new buildings.

The requirements of this Standard are directed toward the design of building envelopes with adequate thermal resistance and low air leakage and toward the design and selection of mechanical, electrical, service, and illumination systems and equipment which will enable the effective use of energy in new buildings.

It is intended that this Standard be flexible in order that designers be encouraged to use innovative approaches and techniques to achieve effective utilization of energy. More effective use of energy may be achieved by the use of alternate design solutions, which follow the specific requirements.

SCOPE

This Standard sets forth requirements for the design of new buildings as enumerated below, covering their exterior envelopes and selection of their HVAC, service water heating, electrical distribution and illuminating systems and equipment for effective use of energy.

This Standard covers new buildings that provide facilities or shelter for public assembly, educational business, mercantile, institutional, warehouse and residential occupancies, as well as those portions of factory and industrial occupancies which are used primarily for human occupancy, such as office space. Unless otherwise stipulated, the term building, as used in this Standard, includes mobile homes and manufactured buildings.