Effective Local Amendments—City of Fresno

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ICBO Policy—Local Amendments

The International Conference of Building Officials has developed a nationally recognized procedure and organization for the development and maintenance of a building code. The procedure allows for the representation of all segments of the industry, i.e., professional engineering groups, manufacturers, material suppliers, and federal, state and local building officials. It still gives the individual an opportunity to participate.

The procedure allows for public hearings and public voting on proposed code changes. Panic legislation, which has been the hallmark of much of the early code development, has been reduced.

The Conference has been an outstanding promoter of fire protection as a science. It has been instrumental in providing a method of putting research and science into a practical code for the use of all communities. It has developed a standard which reflects the major concerns of the public.

The Conference has always made the code available to jurisdictions for adoption at no cost. This is a major service to the country. When the code is adopted, local amendments have been the right and privilege of the adopting jurisdiction. This privilege has existed since the first code was published. These local amendments often have been adopted in one form or another into the Uniform Building Code.

Local jurisdictions have been responsible in exercising this privilege to amend the code. Local conditions, weather and long range plans are usually the basis for the local amendments. In all cases, the framework of the code has been retained.

Since the early sixties the City of Fresno, California, has made local amendments in their adoption of the Uniform Building Code. Some of these have been adopted into the code. In the mid-sixties major changes were made to Sections 508 and 3802. These have not been adopted by ICBO.

These local amendments, along with vigorous code enforcement and extensive redevelopment, have accomplished three major improvements: The fire losses in commercial and industrial buildings have been reduced, the efficiency of the fire stations has been improved and the rating of the city by the Insurance Service Office has been improved and maintained.

Fire Losses in a Large Study Area Reduced by 93.8 Percent

The code changes and the code enforcement programs had an effect on the entire city. However the impact was the greatest in the

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central business district and the West Fresno Projects 2 and 3. Over 96 percent of the 2,100,000 square feet of buildings in the West Fresno Projects were constructed under the local amendments. Instead of the usual 15 to 20 percent of the new building areas being protected by automatic fire sprinklers, 100 percent of the new buildings were so protected.

An in-depth study was made of the fire losses in these two areas between the years 1954-1969 and 1970-1984. By 1970 these two areas had felt the major impact of the code changes and the redevelopment activity.

The two study areas now have a total of 5,787,000 square feet of floor area with over 93 percent protected by automatic fire sprinklers. The central business district today has a total of 3,696,800 square feet of typical downtown business covering 16 blocks, including retail sales, offices, parking garages, hotels, restaurants and banks. The buildings were constructed from 1927 to the present. Nine buildings are from six to 16 stories high.

The West Fresno Projects have a total of over 2,000,000 square feet of warehouses, shops, offices, manufacturing and wholesale produce markets. Over 96 percent of the building floor space was constructed under the local amendments, all of which is protected by automatic fire sprinklers.

The total fire loss for the 15-year period prior to the code changes and redevelopment was $537,988. When this figure is adjusted to the same dollar as for the second 15-year period, the total loss is $1,351,209. This is an average of $90,080 per year. During this period of time 62 fires were reported to the fire department.

The total fire losses after the local amendments had been in effect was $82,573, or an average of $5,504 per year. This incl buildings and contents. The value of the loss was based o claims paid by the insurance companies. The unsprinklered b ings contributed $1,429 per year (26 percent) and the sprink buildings $4,075 per year (74 percent). During this period 67 were reported to the fire department.

The comparison between the fire losses in the two time pe was dramatic—a 93.8 percent reduction.

A factor not reflected in the yearly fire losses is the great incr in potential loss. The fire department estimates that the pote fire loss is two to three* times greater than existed in the earlier period.

Another interesting factor, city councils and the public are c told that antiquated wiring systems, substandard heating and c ing systems, and substandard buildings all are potentially gre sources of ignition than modern, new systems. However the number of fires reported to the fire department during the periods was almost identical—62 vs. 67.

A summary of these two studies is as follows:

Years	Total Loss	Loss/Year	No. of Fir
1954-69	$1,351,209*	$90,080	62
1970-84	82,573*	5,504	67
Results:	93.8% Reduction		8% Increa

*Adjusted to the 1976 dollar

Fire Station Coverage Extended

In 1954 three fire stations were located within one-half mi

Local Amendment to U.B.C. Section 508

SECTION 13-120.508. FIRE-RESISTIVE SUBSTITUTIONS. Where an approved automatic fire-extinguishing system is provided in buildings, the following substitutions shall be approved by the building official.

(1) Occupancy separations may be reduced by one hour but in no case shall such separation be less than thirty-minute fire-resistive construction. Opening protection for such thirty-minute fire-resistive construction shall be not less than the equivalent of one-and-three-fourths-inch solid wood core door, self-closing or automatic closing and glazed openings shall be wired glass not less than one-fourth-inch thick.

(2) Vertical shaft enclosures may be reduced by one hour, but in no case shall they be less than one hour in buildings three or more stories in height.

(3) Corridor protection shall not be required for one-story Group B, Division 2 Occupancies. This exception shall not be construed to delete corridor walls necessary to maintain an obstructed and uninterrupted exit way. Opening protection in such corridor walls shall be not less than one-and-three-eighths-inch hollow core wood doors, and glazed openings may be of plain glass, unlimited in area. Door closers will not be required.

All other occupancies less than three stories in height may reduce corridor protection to thirty-minute fire-resistive construction. Opening protection for such thirty-minute fire-resistive construction shall be not less than the equivalent of one-and-three-fourths-inch solid core wood doors, with closers, and glazed openings shall be wired glass not less than one-fourth-inch thick. Glazed opening shall not be limited in area.

(4) Party walls for adjacent property may be approved by th building official subject to the following conditions:

(a) Both buildings are equipped with approved automatic fir extinguishing systems.

(b) The party wall is a minimum of a two-hour fire-rated wall.

(c) The area of the combined buildings is within the allowabl area for a single building.

(d) A party wall agreement approved by the building official an signed by both property owners is recorded in the Count Recorder's Office.

(5) Fire protection for exit enclosures or exterior smokeproo enclosures may be reduced by fifty percent but in no case less tha one hour.

(6) Exit courts and passageways may be constructed with thirty minute fire protection and twenty-minute labeled assemblies in al openings.

(7) Fire protection for exterior walls, floors, and ceilings may b reduced by fifty percent.

(8) When one-hour construction is required throughout, th sprinklers may be substituted in lieu of that requirement in additio to the above substitutions.

EXCEPTION: These substitutions shall not apply to building covered by Title 19 of the California Administrative Code unles approved by the fire marshal. (Am. Ord. 81-154, § 1, eff. 12-11-81)

ese two high-value districts. In 1966 one of the three was relo-ted, and in 1975 a second station was relocated. In 1984, at the d of the 30-year study period, only one of the original stations mained.

In 1984 the fire department budget for 14 stations was 6,599,900. Assuming 20 percent for administration and fire evention, the cost per station is $948,500.

e Rating Improved and Maintained

In the sixties a number of substandard buildings were removed im the principal business district, and many of the existing build-gs were equipped with automatic fire sprinklers. All of the new ildings in this district erected after 1967 were equipped with tomatic fire sprinklers. In 1970 the rating of the City of Fresno by Insurance Service Office was improved from Class III to Class II. e greatest gains were in the structural conditions and the bonus ints granted because of the high percentage of buildings uipped with automatic fire sprinklers.

In 1977 the city was rated. Extensive growth was experienced tween 1970 and 1977 without a comparable increase in fire partment personnel. The city under the new rating rules still ceived a Class II rating.

c. 3802—Historically Amended

The City of Fresno has long recognized the value of automatic e sprinklers. A 1938 local amendment required that all commer-al laundries be equipped with automatic fire sprinklers. In 1964 a cal amendment required all markets over 10,000 square feet be uipped with automatic fire sprinklers. This was much earlier than e 12,000 square feet requirement of the Uniform Building Code. ese amendments were effective in reducing the large fire losses at had been experienced in these occupancies.

The requirement of automatic fire sprinklers over all buildings thin a specific area was first introduced with the Central Business strict Project and the West Fresno Projects 2 and 3. Later this quirement was extended to all of the number one fire zone.

In 1978 all buildings except single-family dwellings and apart-nts over 5,000 square feet were required to be equipped with tomatic fire sprinklers. This requirement has also been adopted the neighboring cities of Clovis and Sanger.

These local amendments were based on the excellent experi-ce in the City of Fresno with automatic fire sprinklers. The local cord is reflected in published reports in the United States and ier parts of the world.

c. 508—Local Amendments—Life Safety

Three of the local amendments to Section 508 of the Uniform ilding Code reduce the requirements for fixed passive fire pro-tion in corridors, exit enclosures, exit courts and exit passage-ys. See Exceptions 3, 5 and 6 of the local amendment on the ing page.

The record of automatic fire sprinklers in the field of life safety is perfect. It has been described as near perfect. The 80-year study H.W. Marryatt of the Australian Fire Protection Association ws only six deaths in sprinklered buildings. Eighty-four percent he fires were in nonrated buildings.

Two types of fires which result in deaths in all types of buildings, inklered or unsprinklered, are cases where people light their n clothes on fire and fires which are caused by or accompanied explosions.

t could be reported that no fire deaths occurred in the study area he last 15 years. This is misleading, since no deaths in commercial or industrial buildings have occurred in Fresno since records have been maintained. However, it can be pointed out that the local amendments have not marred this perfect record.

Sec. 508—Local Amendments—Property Protection

Four of the local amendments to Section 508 reduce the amount of fixed passive fire protection which primarily protects property. See Exceptions 1, 4, 7 and 8 of the local amendments at the end of this article. These include reductions in fire-resistive requirements to occupancy separations, vertical shafts, property line walls and interior walls and ceilings.

Studies and statistics which show the effectiveness of automatic fire sprinklers in protecting property have been published for many years. Probably the outstanding and most complete record is that published by the Australian Fire Protection Association and written by Mr. Marryatt. It includes over 99 percent of the fires in buildings protected by automatic fire sprinklers over almost 80 years. This is a detailed study of 5,734 fires and shows a 99.6 percent success rate. It is interesting that 84 percent of these fires were in nonrated buildings. The range of occupancies is extensive, and over 99 percent of the fires were reported. This eliminates the chance of sampling errors which occur in other statistics.

Other studies with different sampling methods and, in some cases, narrow occupancy groups show success rates lower than Mr. Marryatt's 99.6 percent. For example, NFPA's study of 79,544 fires between 1925 and 1969 shows only a 96.2 percent success rate. A study of New York high-rise buildings from 1969-1978 with 1,364 fires shows a 98.8 percent success rate. An excellent treatise of these various studies can be found in the November, 1982, issue of *Fire Prevention* magazine.

Studies of the effectiveness of fixed passive fire-resistive systems are difficult to find. There is no question that in the laboratory this type of fire protection will meet the tests established. The question is, what is its reliability in the field?

Fire investigations and field inspections of existing buildings show many failures and potential failures of this type of protection. Because it has been in the code since 1927 should not make it exempt from the requirement to prove its reliability.

This study shows a 93.8 percent reduction in fire loss when the local amendments were made. The exceptions granted by these local amendments still do not give adequate credit for the effectiveness of automatic fire sprinklers to protect life and property.

Local building officials can make a great reduction in fire losses. The method is simple, logical and available. Is it possible, to paraphrase Pogo, that in the war against fire "we have met the enemy and it is us"?

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