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FIRE PROTECTION HISTORY-PART 229: 1910 (FIRE PROTECTION FOR DOOR AND WINDOW OPENINGS)

By Richard Schulte

The fourteenth Annual Meeting of the National Fire Protection Association was held in Chicago, Illinois in mid-May 1910. Among the subjects discussed at this meeting was a report of the Committee responsible for developing a standard on fire door and fire window assemblies. The following is a transcript of this report:

"*The next report is upon Fire Protecting Coverings for Window and Door Openings, Mr. Robinson, Chairman.*

REPORT OF COMMITTEE ON FIRE PROTECTING COVERINGS FOR WINDOW AND DOOR OPENINGS.

Your Committee has continued its investigations of various fire protecting coverings for window and door openings during the past year, and has given further consideration to the question of possible improvement in the present method of placing information relative to this important subject in the hands of the public.

As mentioned in previous reports, any tendency to devote too much time to the perfection of details of construction for the various fire retardants which will result in the neglect of important questions relating to their practical application is to be avoided. The more important devices employed for the protection of openings in walls, although still susceptible to much improvement, have been fairly well standardized, and it would seem that more practical results can now be obtained by the perfection of the details relative to their installation in the field, by furnishing reliable comprehensive information regarding their actual value as fire retardants and the conditions of exposure where they can be most effectually utilized.

It may safely be assumed that the manufacturers of the various devices are both willing and anxious to meet all requirements, which may, after careful consideration, be adopted as standard. They cannot, however, always be responsible for misdirected effort to obtain proper protection by means of devices often wholly unsuited for the purpose, nor for the proper installation of devices sold to parties over whom they have no control.

The owner, the architect, the engineer, the contractor and the insurance man should be in possession of far more information relative to the suitability, effectiveness and details of installation of the various devices used in the protection of openings in walls against fire, and our efforts should now be directed toward the elaboration of the present standards in these particulars.

Further study of the method of classification used in the present rules on Fire Doors and Shutters would seem to indicate the desirability of classifying doors according to the degree of fire protection they are capable of furnishing, rather than according to the particular form of construction employed or kind of materials of which they are made, as is the case at present.

Conditions of exposure are such that the requirements covering the protection of openings in walls by fire doors may be modified to apply to the following situations:–

First, All openings in division walls between separate buildings or sections of the same building.

Second, All openings into stair and elevator enclosures and enclosures to vertical openings through buildings.

Third, All door openings in exterior walls.

Fourth, All openings in corridor and room partitions.

The great importance of division walls in preventing the spread of fire makes it essential that the protection of necessary openings be of the highest order, and fire doors which are qualified to meet this situation would naturally be placed in the first class.

While the enclosures to vertical shafts through buildings are also of the greatest importance in preventing the spread of fire, effective fire protection at necessary openings into such shafts can be accomplished by the use of doors which have a lower value as fire retardants than is necessary for the protection of openings in division walls. The more important factors influencing this are as follows : The failure of two doors always located some considerable distance apart is necessary to permit the passage of fire from one section to another or from story to story. The effect of the transmission of heat through or the passage of flame around the edges of a door is relatively unimportant for the same reason. It is possible to mount doors in a more sheltered position.

For these reasons fire doors for the protection of enclosures to vertical shafts through buildings can be placed in the second class.

The exposure from the exterior of buildings is generally less severe than the conditions on the interior, and doors qualified to meet this situation would fall in the third class.

Corridor and room partitions are used in the sub-division of the same fire section, and doors at openings in such divisions can be considered more as barriers to the rapid spread of fire than as absolute fire stops. They need not, therefore, be required to fulfill the qualifications for the three preceding situations, and can be placed in a separate class.

Recent progress in the development of fire doors and shutters not contemplated in the present rules clearly indicates that the time is fast approaching when the present standard must be broadened and made more comprehensive. Your committee recommends that when the standard is next reissued it be amplified as suggested, and that the classification of fire doors be in accordance with their fire retardant values along the lines indicated.

With the exception of certain features covered in the standard for Skylights and in Uniform Requirements, the rules for the construction of metallic frames for wired and prism glass constitute the only other published standard coming within the scope of the work of this committee. The extension of the standard covering the use of wired and prism glass to include necessary information regarding the actual value of these materials as fire retardants, and the details covering their installation would also seem advisable.

Much information relative to the various fire retardants used for the protection of wall openings is being brought out each year as a result of experience, and it only remains to demonstrate its actual practical worth and suitability for our standards.

The tin-clad fire door continues to be used to the greatest extent, and the increasing number of applications for approval at the laboratories indicates a desire on the part of the manufacturers to meet the demand for doors built in strict accordance with the standard. Over one hundred manufacturers have submitted doors of this kind to demonstrate their ability to manufacture them in accordance with the standard. Eighty-two have received approval for their product.

The demand continues for wired glass windows whose fire retardant value has been demonstrated by actual test. Sixty-seven manufacturers have received approval and 22 distinct types of windows have been submitted to the laboratories, the largest number of separate types approved for any one manufacturer being 18. Considerable progress has also been made in compiling the necessary data for improvement in the present standard covering these devices.

Marked progress in the development of the so-called art metal door has been made during the past year. When properly constructed, doors of this character are well adapted to the protection of openings into stair and elevator enclosures, and if provided with greater insulation properties there would seem to be no good reason why they cannot be safely used for the protection of openings in fire walls, at least for ordinary sizes.

The most difficult problems in the development of these doors relates to the hardware necessary to properly secure them in position when mounted, and in providing suitable wall frames which will be consistent in design and offer the necessary resistance to fire. Several manufacturers have been very successful in overcoming these difficulties, and others are making marked progress in the development of their devices. A standard containing full information regarding the use of doors of this pattern is now being prepared.

The work of formulating a more comprehensive standard covering the construction and use of the various forms of steel rolling shutters has been continued during the past year, and it is confidently expected that this standard will be ready for your consideration during the coming year.

A number of manufacturers of counterbalanced elevator doors have submitted detailed drawings of their devices during the past year, and full size samples have been mounted and are awaiting examination. The results of tests of several doors of this type are available as well as considerable field experience, and a proper standard covering the type can probably soon be formulated.

Sufficient additional information has not been obtained relative to the various special forms of hardware and devices for closing doors automatically to warrant any definite recommendations covering these subjects at this time. Your committee has been somewhat embarrassed by the lack of detailed information covering the field experience with automatic devices, but it is expected that the desired information can be secured during the coming year.

Generally speaking, the present standards are apparently being well received and more rigidly enforced. Only one important criticism relative to their practical application has reached your committee. This relates to the limitation of sizes specified for several retardants. The present standards on fire doors and wired glass windows restrict the size of these devices to openings not exceeding 80 square feet in area for the former and to 5 by 9 feet for the latter. The limitation specified for wired glass windows seems to cause the most embarrassment. While it is recognized that the efficiency of fire retardants for the protection of wall openings rapidly decreases with their increase in size, and that it is necessary to provide against this deficiency, the desired results are apparently not being accomplished by the present requirements, and your committee is of the opinion that some different solution of the problem must be found.

In many buildings the wall openings are made considerably larger than the limits for size specified in the standards. This is often necessary on account of certain requirements of the business or structural features of the building. It is probably more often due to ignorance of the fact that the large openings are difficult to protect against fire.

Examination of oversized doors and windows made to meet this demand develops the fact that the construction employed by many manufacturers for this portion of their output is very much inferior to that employed for the sizes receiving approval. This practice is undoubtedly caused by competition and results in rendering fire retardants, which are already weak on account of their size, still weaker. The best solution of this difficulty is not clear to your committee at this time, but the provision of greater structural strength in the various fire retardants would appear to be most likely to prove satisfactory.

Your committee regrets that the progress in the development of the various standards covering this general subject is slow, but feels that during the coming year the present standards can be amplified and a number of new standards placed in such condition that they can be recommended for approval.

Respectfully submitted,

W. C. Robinson, Chairman.

The Chair: Gentlemen, you have heard the report of the Committee on Window and Door Openings. Mr. Robinson calls attention to the recommendation in the report regarding the reclassification of fire doors in the next publication of the standard. What is your pleasure?

The report was accepted, and its recommendations adopted."

Of particular interest in the transcript of this Committee Report is the discussion on the protection of openings in floor opening enclosures. This discussion includes the basis for permitting reduced protection of openings in floor opening enclosures.

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