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FIRE PROTECTION HISTORY-PART 236: 1915 (STAIR CAPACITIES)

By Richard Schulte

The nineteenth Annual Meeting of the National Fire Protection Association was held in New York in mid-May, 1915. Among the reports presented at this meeting was the Report of Committee on Safety to Life. A portion of this Committee's report addressed the capacity of exit stairs. The following is portion of the Safety to Life Committee's Report addressing stair capacity:

"***Stair Capacities.***

It is correct in figuring the stair capacity in a high building to assume that all persons must be able to find uncrowded refuge in the stair and hall enclosures. No one would advocate planning to run women employees rapidly down 10 or 15 story high loft building stairs, but to take the other extreme, there is no need of making equal stair requirements in a 2 or 3 story fireproof factory building.

The New York Law, leaving out the question of discretionary powers on the part of the authorities, uses the same yardstick for both situations.

Up to a certain height it should be safe to figure that a portion of the employees at least will be traveling out of the building down the stairs, as others are coming into the stair enclosures. Above a certain height it should be figured that persons must find refuge in the stair enclosures, and practically stand still.

The Wisconsin Building Code places the division line at seven stories.

Assuming that some persons can be leaving the building while exiting from floors is going on, it follows that it is fair to reduce the required stair width. It would also seem as though the character of construction might properly have a bearing upon the required stair width. The chart which is used in the Wisconsin Building Code is as follows:-

In a building not provided with horizontal exits, the total width of stairways shall be not less than the following:

In ordinary or frame buildings, 60 inches per 100 persons.

[TABLE OMITTED]

It will be observed that a minimum width of stairs per 100 persons on the 2d floor is 30 inches for a fireproof sprink[l]*ered building, and 60 inches for an unsprinklered frame building.*

If 100 persons are on the 3d floor, the increase in required stair width is 50 per cent, to 45 and 90 inches respectively.

If there are 100 persons on the 4th and 5th floors also, the stair widths have been increased to 66 and 132 inches respectively.

Finally, for a 7-story or higher building the minimum widths for the best and the poorest buildings are 75 and 150 inches respectively per 100 persons per floor. The 150-inch requirement is substantially that of the New York State Law for new buildings.

Your Committee feels, as stated previously, that the height of the building and its construction should have bearing upon the stair width. Whether or not the allowance for sprinkler protection should go into such a table or be in the nature of an additional percentage allowance is questionable.

No stairs less than 36 inches wide in existing buildings or less than 44 inches wide in new buildings should be permitted, and no credit should be given for increases except in multiples of 18 or 20 inches or more respectively.

While 30 inches per stair per 100 persons is the minimum rate, it does not follow that this small amount would be actually accepted for any building. It is simply a rate. Your Committee also recommends that the increase per stairway be in units of 18 inches for old buildings and 22 inches for new buildings, because we are pretty well convinced that the average person requires, so much space, and if a stair is wide enough for two, adding 6 inches does not make it wide enough for three. It does seem as though it were desirable to have a sliding scale based upon the height of the building primarily, and upon the kind of construction.

The next division is on exits based on the area."

It is interesting to note that the exit capacity factor of "*30 inches per stair per 100 persons*" is the same egress capacity for stairs (0.3 inches per person) utilized in both the Life Safety Code and the International Building Code today.

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Source: "*Proceedings of the Nineteenth Annual* [NFPA] *Meeting*", New York, New York, 1915.