



March 11, 2022

Washington State Building Code Council
1500 Jefferson Street SE
P.O. Box 41449
Olympia, WA 98504

Subject: Alternate Proposal to Code Change 21-GP1-020, NFPA 13R Sprinkler Systems, Section 903.3.1.2

To: State Building Code Council Members

Thank you for the opportunity to submit written testimony regarding Proposed Change 21-GP1-020, pertaining to NFPA 13R Sprinkler Systems. My name is Shamim Rashid-Sumar. I am a professional fire protection engineer representing the National Ready Mixed Concrete Association (NRMCA).

I am providing this written testimony regarding fire safety concerns related to the proposed amendments to the International Building Code Section and the International Fire Code Sections 903.3.1.2 on the topic of NFPA 13R sprinkler systems.

This proposed amendment will roll back previous changes made to the International Building Code during the 2018 code development cycle to limit the use of NFPA 13R sprinkler systems to buildings where the floor level of highest level is 30 feet or less above the level of fire department vehicle access. The intent of these changes was to address the more recent fire history in residential occupancies, particularly podium style developments, all over the country. There have been similar files here in the State of Washington, in multifamily residential structures in Bothell, Lynwood and Olympia.

There are distinct differences in the level of protection provided by NFPA 13 versus 13R sprinkler systems. NFPA 13 requires sprinkler protection in attics, closets and bathrooms, while NFPA 13R does not. NFPA 13R also allows for a shorter duration of water supply, and also allows for a lesser water discharge demand.

In light of these concerns, NRMCA proposes an alternate proposal to this code section that was approved as part of the 2021 IBC code development cycle. This alternate proposal and technical justification are attached for reference and is identified as Public Comment 3 to F72-21.

During the IBC 2021 code cycle, this change was approved and considers a different approach modeled after the provisions to address attic protection in NFPA 13R buildings in Section 903.3.1.2.3 in the 2018 edition. In the change, NFPA 13 systems are still required where the floor level of the highest story is more than 30 feet above the lowest level of fire department access. However, a 13R system can be used for Group R2 occupancies where the roof assembly is less than 45 feet above the lowest level of fire department access.

The approach of this code change was to trigger NFPA 13 protection based on the height of the attic, set at a threshold of 45 feet to reasonably allow a typical 4-story apartment building with 9-foot ceilings and 1-foot floor ceiling assemblies, and an additional 5 feet to accommodate the height of a grade-level slab and downward slope away from a building.

In considering this alternate proposal, the code will still strictly limit the permissible use of NFPA 13R to R2 occupancies that do not exceed 4 stories, and which cannot include a combination of tall ceilings and upper-level mezzanines. The proposal has been limited to R2 occupancies recognizing the different operational, occupant and architectural attributes of R2 versus R1 occupancies.

We ask for your consideration of this code change that will appear in the new 2024 edition of the International Building Code as an alternate to the amendment currently proposed for Washington State Building Code.

Please do not hesitate to contact me at 917-484-1960 or ssumar@nrmca.org should you have any questions. Thank you again for the opportunity to submit testimony regarding this proposed code change.

Respectfully,

A handwritten signature in black ink that reads "Shamim Rashid-Sumar". The signature is written in a cursive, flowing style.

Shamim Rashid-Sumar
Vice President, Fire Codes and Standards

Enclosure

ATTACHMENT

IBC PROPOSAL F72-21 PUBLIC COMMENT 3

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. Requiring a NFPA 13R system instead of a 13 system for a multifamily building can save over \$2,100/unit. (*Home Innovation Research Labs, Cost Analysis of Proposed Group A Code Changes (2018-2019 ICC Code Development Cycle) – October 2018*). This would have a substantial impact on both tenant rental rates and owner-occupied units.

A detailed cost analysis is included with the original proposal.

Public Comment# 2711

Public Comment 3:

IFC: 903.3.1.2; IBC: [F] 903.3.1.2

Proponents: Jeffrey Shapiro, representing Self (jeff.shapiro@intlcodeconsultants.com) requests As Modified by Public Comment

Replace as follows:

2021 International Fire Code

903.3.1.2 NFPA 13R sprinkler systems . *Automatic sprinkler systems* in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:

1. Four stories or less above *grade plane*.
2. For other than Group R-2 occupancies, ~~F~~ the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.

For Group R-2 occupancies, the roof assembly is less than 45 feet (13716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.

3. The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the International Building Code shall be measured from *grade plane*.

2021 International Building Code

[F] 903.3.1.2 NFPA 13R sprinkler systems . *Automatic sprinkler systems* in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:

1. Four stories or fewer above *grade plane*.
2. For other than Group R2 occupancies, ~~F~~ the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.

For Group R-2 occupancies, the roof assembly is less than 45 feet (13716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.

3. The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from grade plane.

Commenter's Reason: When Proposal F117-18 was considered and approved last cycle, changing the limit for NFPA 13R systems to the current 30-foot value, the justification provided in the proponent's reason statement was entirely oriented towards addressing concerns with pedestal style buildings, and the chosen 30-foot threshold for triggering NFPA 13 protection was justified based on correlation with the trigger value for requiring standpipes. The logic offered was that standpipes require larger supply and riser piping, so the cost of upgrading to NFPA 13 protection would already be partially offset. While that's true, the piping cost offset versus the overall cost of increasing to NFPA 13 protection is insignificant. No specific life-safety or property protection basis or loss data justified the 30-foot threshold versus a few feet in either direction. Nevertheless, the approach of simply changing the current value to 35 feet doesn't address a bigger issue with the current provisions.

What was overlooked in selecting the current threshold is the common use of mezzanines in upper levels of Group R2 occupancies. From the

exterior, a mezzanine level in the 4th story would appear to be a 5th story, and such mezzanines often include a sleeping area. Yet, the current threshold would allow a NFPA 13R system to be used if the floor level of the 4th floor does not exceed the 30-foot limit. Meanwhile, a building not having mezzanine levels with a slightly higher 4th floor level, perhaps due to a slightly sloping lot and a lower fire-department access road, would be forced into using NFPA 13. The requirement to use a higher level of fire protection for a lesser risk condition makes no sense and is not justified.

This public comment offers a different approach modeled after what has already been approved by the ICC membership to address attic protection in NFPA 13R buildings in Section 903.3.1.2.3 in the 2018 edition. The approach triggers NFPA 13 protection based on the height of the attic, set at a threshold of 45 feet to reasonably allow a typical 4-story apartment building with 9-foot ceilings and 1-foot floor ceiling assemblies. The additional 5 feet accommodates the height of a grade-level slab and downward slope away from a building on a nearly-flat lot to accommodate drainage in the distance between the building and a fire access road, from which the lowest level of fire department vehicle access is measured.

In summary, this public comment will close the loophole that currently exists in the text that was added to the code in the 2021 edition, permitting a 13R protected building to have a 55-foot attic height with a tall 4th floor mezzanine without attic protection as long as the floor level of the highest occupied floor isn't over 30 feet above the lowest level of fire department vehicle access. In approving this proposal, the code will still strictly limit the permissible use of NFPA 13R to R2 occupancies that don't exceed 4 stories and which cannot include a combination of tall ceilings and upper level mezzanines. The proposal has been limited to R2 occupancies recognizing the different operational, occupant and architectural attributes of R2 vs. R1 occupancies.

Although I am a consultant to NFSA and NFSA supported the original proposal, this public comment is my own, based on having been involved in developing ICC's fire protection requirements for multifamily buildings for over 20 years, and it is not submitted on NFSA's behalf.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This proposal cannot be specifically tied to increasing or decreasing the cost of construction, as its application is dependent on architectural choices that may or may not lead to a change in cost vs. the cost of compliance with the 2021 edition. In some cases, such as tall buildings with mezzanines, a cost increase could be experienced. In other cases, a cost reduction could be experienced, the proposal may have no impact on cost.

Public Comment# 2976