



# Motion Substantiation

Certified Amending Motion 86-6  
June 2022

1. There does not appear to be a need for removing the 3/16" plate exception for explosion relief. Experience has shown that when there have been deflagration events in an oven or furnace using 3/16" steel plate construction, the plate exterior shell remains intact.
2. On many pieces of equipment, there is not sufficient area available on the oven/furnace shell to place explosion relief. This occurs when the oven/furnace has accessories that require penetration through the wall or roof, or frequent structural members on the exterior of the shell.
3. The NFPA guidelines state that explosion relief panels should not exceed 5 pounds per square foot in weight. For conventional oven designs that utilize sheet metal inner and outer skins with mineral wool insulation, this is achievable. For higher temperature designs, however, heavier construction utilizing 3/16" or thicker exterior plate is required, with insulation thickness of 9" to 12". The weight of these designs can be 15 or 20 pounds per square foot, and can even approach 100 pounds per square foot for cast linings, making them ineffective and potentially dangerous for explosion relief.
4. For the higher temperatures that require plate construction, there are no furnace or oven shell designs available that provide explosion relief and also offer sufficient insulating characteristics. The insulating materials used, such as cast linings, refractory brick, and ceramic modules, cannot be designed with explosion relief, since their weight requires substantial attachment points that would be too stout to break away during deflagration. |
5. For ovens and furnaces operating at 1,200° F or higher, explosion relief panels would pose a serious danger if there is a deflagration event resulting in exposure of the furnace interior

to the factory environment. Bearing in mind that furnaces often operate at 2,000° F or hotter, the radiant heat emanating from the exposed interior could cause spontaneous combustion of nearby materials, ignition of the building, or severe burning of personnel in the area, if explosion relief panels were to release during deflagration.

6. Considering that ignition of flammable fumes or natural gas occurs at temperature below approximately 700° F, ovens or furnaces that operate above this temperature are only vulnerable to a deflagration event for a short period of time while heating up, since after reaching their normal operating temperature, any fumes have been exhausted or consumed, and fume ignition is no longer possible. Ovens and furnaces with 3/16” plate construction nearly always operate above 700° F, and therefore they experience this reduced risk of fume ignition. Ovens designed for lower temperatures (less than 700° F maximum), on the other hand, spend all of their operating time at temperatures for which fume ignition is possible. This makes them better candidates for explosion relief, and indeed their (non-plate style) construction accommodates it.

Summary: Removing the explosion relief exception for 3/16” plate constructed ovens and furnaces would decrease the safety of the equipment, preclude certain oven and furnace models from being offered in the marketplace, causing significant hardship for manufacturers of the equipment and their customers.

Respectfully submitted,

***Michael Grande, Wisconsin Oven***



# Report of the Technical Committee on Ovens and Furnaces

Certified Amending Motion 86-6  
June 2022

The *Report of the Technical Committee on Ovens and Furnaces* is presented as found in the First Draft Report and Second Draft Report for the *Annual 2022* of *NFPA 86, Standard for Ovens and Furnaces*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 86* at [www.nfpa.org/86next](http://www.nfpa.org/86next).

Though it has existed since NFPA 86 was initially issued in 1985, the committee has been unable to substantiate the exemption of explosion relief for ovens and furnaces with a 3/16" steel plate or equivalent strength construction.

The 3/16" thick steel plate was first introduced to the NFPA 86 Standard in the 1985 edition under 2-2.3.1 Exception No. 1, however, there is no mention of it in the Report on Comments from the 1984 Fall Meeting and no substantiation for adding it. The NFPA 86 1985 edition was the first time NFPA 86A and NFPA 86B were combined into a single document (NFPA 86).

Furthermore the requirement to be "reinforced with structural steel beams or buck stays" does not specify an intended strength or spacing. Therefore, the requirement is perceived to have an indeterminate effect on the effectiveness or shell thickness.

Since this standard is not "a design handbook" as stated in A.1.5 it was the committee's position that these requirements be left to the furnace designer to determine, where required.

In addition, the requirement for Class C and Class D furnaces was removed from this section as other requirements for Explosion control are given in areas specific to these furnace types.

Users of NFPA 86 are still able to build ovens and furnaces using their present “proven in practice” designs under the Equivalence provision.

Respectfully submitted,

***Franklin Switzer, Jr.***  
***on behalf of the Ovens and Furnaces***



# Report of the Fixed Guideway Transit and Passenger Rail Systems

Certified Amending Motion 130-9  
June 2022

The *Report of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of *NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 130* at [www.nfpa.org/130next](http://www.nfpa.org/130next).

First, I want to say thank you to Mr. Mammarella for bringing this to our attention.

The action taken by the committee, was to address an apparent discrepancy between the requirements of NFPA 130 for the qualification of the fire performance used in rolling stock and the ASTM standard, ASTM E162, referenced for the development of the radiant panel index.

Section 11.11 of ASTM E162 states that:

*If during the test of one or more of the test specimens, any of the following behaviors occur: (1) molten material flows out of the specimen holder, (2) one or more portions of a test specimen is forcefully displaced from the zone of controlled irradiance (explosive spalling), (3) the test specimen swells sufficiently prior to ignition to touch the burner during combustion, or (4) materials exhibit rapid running or dripping of flaming material due to melting and the steep inclination of the specimen during test; these occurrences shall be noted within the test report and no radiant panel index shall be reported for that test.*

In prior editions of NFPA 130, "Light Diffusers, windows, and transparent windscreens" were exempted from Section 8.4.1.1 of NFPA 130 which required that "(m)aterials tested for surface flammability...not exhibit any flaming running or flaming dripping." This raised an apparent conflict between NFPA 130 and the criteria for a radiant panel index and ASTM E162 and the ability of the test to generate a valid result. The actions by the committee addressed this by extending application of the requirements of Section 8.4.1.1 to "Light diffusers, windows, and transparent windscreens". Voting on this matter by the technical committee was unanimous with respect to returned votes, in that there were 29 eligible voters with 4 not returned and 25 affirmative.

The submitter noted concern that the new language has the "likely unintended effect of eliminating an entire class of materials (transparent lightweight plastics) from consideration. However, such materials would still potentially find application subject to a fire hazard analysis that demonstrates that the "material produces of contribution to fire hazard equal to or less than a material meeting the appropriate criteria." This Is expanded upon In the annex note to Section 8.4.1.1 which address both the unsuitability of ASTM E162 for materials that exhibit flaming running or flaming dripping and the factors that would need to be considered In the fire hazard analysis of such a material, namely that the contribution to the generation of heat and smoke at original Ignition site but also to where the burning material may flow. Accordingly, the committee actions have addressed an apparent enforcement conflict while still making allowance or exception for transparent lightweight plastics, particularly in Instances of functional necessity or preferred mechanical traits.

Respectfully submitted,

***Jarrod Alston***  
***on behalf of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems***



# Motion Substantiation

Certified Amending Motion 130-3  
June 2022

NFPA codes and standards should not contain duplicate information that is presented in a way that it can be potentially misleading. The body of the standard states that the requirements in 8.6.7.1.2 apply to: "Low voltage power and control wires and cables (i.e., less than 100 V ac and 150 V dc)". If the requirements apply to "power and control cables" they clearly do not apply to "communication and Ethernet cables"., since communication and Ethernet cables are neither power nor control cables. The supposed clarification leads to potential confusion because a user might interpret it as stating that communication or Ethernet cables could be power or control cables, which they are not.

The next two sentences in this new annex section are severely misleading: The purported fact that (as the sentence states) "Communication and Ethernet cables use thin insulation and jackets that do not comply with the thickness and performance requirements of the standards listed in 8.6.7.1.2." is of no consequence since (as explained above) such cables are not required to comply with the standards listed in 8.6.7.1.2. The final sentence brings in another purported fact, which is also of no consequence since the cables are not required to comply with 8.6.7.1.2. In addition, this sentence introduces material composition information (about the use of foam insulation) that has no place in the standard: "In addition, some communication cables use foam insulation, which is not addressed by the referenced standards."

As a consequence of what has been stated above, the language in the annex section A.8.6.7.1.2 is both unnecessary and misleading and it introduces material composition information which is inappropriate for a standard that needs to be performance oriented (as it is now).

This CAM is also associated with the text in the standard since, if Annex section A.8.6.7.1.2 is deleted, the "asterisk" in section 8.6.7.1.2 needs to be deleted also as there would be no associated annex section.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Fixed Guideway Transit and Passenger Rail Systems

Certified Amending Motion 130-3  
June 2022

The *Report of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of *NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 130* at [www.nfpa.org/130next](http://www.nfpa.org/130next).

First, I want to say thank you to Dr. Hirschler for bringing this to our attention.

Dr. Hirschler's motion relates informational annex language developed to clarify the application of the requirements of Section 8.6.7.1.2 which pertains to low voltage power and control wires and cables. The additional language Identified a representative list of cable types to which the requirements were not intended to apply to and would not be able to satisfy the requirements. These cables include CAT 5, CAT 5E, CAT 6, CAT 6A, CAT 7, MVB, WTB, CANBUS, and RS-485 communication and ethernet cables. Dr. Hirschler asserts that the Informational language is unnecessary on the basis that the charging statement of Section 8.6.7.1.2 is clear with respect to scope and applicability to low power voltage and control cables. However, the assertion does not acknowledge the reality, shared anecdotally, that Section 8.6.7.1.2 Is indeed being misinterpreted and misapplied to the cable types Identified in the proposed A.8.6.7.1.2. Therefore, it was the majority opinion of the committee that such a clarification would be of value to the rolling stock manufacturing industry in clarifying the extent of the scope and applicability

of Section 8.6.7.1.2. The voting was ... 29 eligible, 5 not returned, 23 affirmative, and 1 negative, that being Dr. Hirschler.

Dr. Hirschler goes further to state that by including the clarifying information could lead to confusion in classifying or characterizing communication and ethernet cables as low voltage power and control wires and cables insomuch that a specific exception is being made. However, it is the intent of the informational annex material to clarify that such cables not be considered as such. In doing so, the committee was attempting to make the interpretation, application and enforcement of the standard clearer as it is utilized and applied by practitioners with a wide range of expertise including systems assurance personnel who may or may not have expertise in wires and cables classification and performance requirements.

The final points to which Dr. Hirschler has taken issue is the additional information relative to why requirements such as those espoused in Section 8.6.7.1.2 do not and can not apply to ethernet and communications cable. While the list is not exhaustive, as is the list of cable types, additional context is provided as to why the attempted enforcement of Section 8.6.7.1.2 would be inappropriate. As evidenced by the near consensus vote, it was the committee's opinion that such information was of value.

Respectfully submitted,

***Jarrold Alston***  
***on behalf of the Technical Committee on Fixed Guideway Transit and Passenger Rail System***



# Motion Substantiation

Certified Amending Motion 130-5  
June 2022

The last sentence of this new proposed annex section contains examples of categories of cables that are potentially used. Whenever a code or standard contains a list of examples, that brings the potential for confusion because such lists are, necessarily, incomplete. The sentence states that those types of cables are "potentially used in rail transportation vehicles".

Questions to be asked:

1. Does this list mean that any cable of that designation must be accepted by the ahj? Clearly not.
2. Does this list mean that other types of cables cannot be used for the application? Again, clearly not.

The technical committee dealt with another annex note with a list of examples by deleting it (PC 17), with the statement: "The addition of exemplary installation instructions is unnecessary and should not be included as not all examples can be added and examples might be misleading." The same concept applies to this list of "potential examples", and it should also be deleted for the same reason as the committee acted on PC 17, and that is what this CAM proposes.

PC 7 and PC11 were accepted as SR 20, which corrects editorially the language in the first sentence of this section. This change is not associated with the present CAM.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Fixed Guideway Transit and Passenger Rail Systems

Certified Amending Motion 130-5  
June 2022

The *Report of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of *NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 130* at [www.nfpa.org/130next](http://www.nfpa.org/130next).

First, I want to say thank you to Dr. Hirschler for bringing this to our attention.

Dr. Hirschler has raised concerns with the inclusion of a list of data and communication cable types within the Informational annex language that has been added to the A.8.6.7.1.3 for the 2020. While it is acknowledged that lists may not be exhaustive, the inclusion of such does inform the user of the standard as to the type of cable that is contemplated by the section itself. The voting for this — 29 eligible, 4 not returned, 25 affirmative (including the submitter) — demonstrate the consensus reached by the technical committee on this matter. With respect to the proffered list, Dr. Hirschler contends that the committee disposed of lists through other actions during the current cycle. However, the example utilized is dissimilar in that the list he was referencing the UL designation for Electrical Circuit Integrity Systems. In such case, and in the usage proposed, the listing was unnecessary as it was redundant to the statement that circuit integrity systems be tested as a complete assembly. The FHIT identifier is associated with the particular cable system and

Identifies the Installation Instructions as would be necessary for any system to comply with Its tested conditions/certification.

Dr. Hirschler also asserts that stating "cables potentially used In rail transportation vehicles" offers a loophole that all cables that may be contemplated for use In rolling stock, that would comply to applicable requirements would forcibly be required to be accepted by the AHJ. However, any such cable would still be subject to the requirements of Section 8.6.7.1.1 of the standard which establishes flame spread and smoke release criteria when tested to one of either of the FT4/IEEE 1202 exposure of ANSI/UL 1685 or in accordance with NFPA 262 for qualification for use on rolling stock.

Respectfully submitted,

***Jarrold Alston***

***on behalf of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems***



# Motion Substantiation

Certified Amending Motion 130-2  
June 2022

FR13 provided two exceptions to the requirements for fire testing of wires and cables in stations and trainways, without presenting a basis for the exceptions. The requirement that wires and cables in stations must meet a fire test has been in NFPA 130 for multiple editions. Normally, any change to increase fire hazard (and eliminating a fire test requirement inevitably increases fire hazard) needs to be based on new evidence. No new evidence was submitted. The public input on which FR13 was based (i.e. PI 58) simply provided an editorial change to correct an omission. PC 6 was rejected with a simple statement as follows: "Cables that are installed in open stations or open trainways do not pose a significant flame spread and smoke release hazard and do not require additional protection."

This CAM simply proposes to reinstate the long-standing requirement that all wires and cables in stations must meet a fire test, in this case the cable tray fire test in IEEE 1202. This is the requirement that applies to all other wires and cables in stations. Evidence has shown that when some products associated with a project need to meet more severe requirements than other products there is the potential for confusion and mix-up of products. That potential is eliminated if all the fire test requirements are the same and that requires that wires and cables in open stations meet the same requirements as wires and cables in any other station.

Respectfully submitted,

**Marcelo M. Hirschler**  
**GBH International**





# Report of the Fixed Guideway Transit and Passenger Rail Systems

Certified Amending Motion 130-2  
June 2022

The *Report of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of *NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 130* at [www.nfpa.org/130next](http://www.nfpa.org/130next).

First, I want to say thank you to Dr. Hirschler for bringing this to our attention and his enthusiastic participation in the standard development. The Issue of wires and cables was an area of significant debate within technical committee and its task groups. Dr. Hirschler has expressed opposition the committee action which was to carve out two exceptions from the requirements of 12.2.1. Section 12.2.1 as of the 2020 edition requires all wires and cables to achieve certain char height and total smoke release criteria when tested to the FT4/IEEE exposure of ANSI/UL 1685 or a certain flame spread distance and optical density requirement when tested to NFPA 262. The two carve outs or exceptions: encasement in concrete and for open stations recognize alternative means for mitigating fire hazards and the different level of risk associated with open versus enclosed stations.

These requirements were expanded from only "vital" circuits to "all" circuits within stations as of the 2010 edition for simplification in interpretation and enforcement, not for a specific safety reason. The substantiation provided for the expanded scope was first given in the

2003 edition and applied only to trainways or tunnels to “refer to all wire in the trainways instead of trying to differentiate between specific wiring for ease in interpretation.” The same requirements were not expanded to stations until 2010, a cycle in which there was significant effort expended to principally harmonize and make consistent requirements between the station, trainways/tunnels, and emergency ventilation chapters, rather than address a specific safety need. Accordingly, the requirements for the fire testing of wires and cables have not "always been In NFPA 130" as Dr. Hirschler contends.

Previously, the fire hazard posed by wire and cable insulation for "all" circuits was addressed through installation methods where all conductors were required to be enclosed in their entirety in noncombustible armor sheaths, conduits, or enclosed raceways. This is an approach that is consistent with the installation requirements of NFPA 70 for wiring in spaces used for environmental air that allows: *Type MI or Type MC cable without a nonmetallic covering, Type AC cable, or other...cable that is listed for use within an air-handling space or other types of cable installed in electrical metallic tubing, flexible metallic tubing, intermediate metal conduit, rigid metal conduit without an overall nonmetallic covering, flexible metal conduit, or, where accessible, surface metal raceway or metal wireway with metal covers.*

Dr. Hirschler contends that the proposal omits any safety requirements for wires and cables in open stations. This is untrue in that all wiring and installations (other than for traction power) are required to comply with NFPA 70 per Section 12.1.2 of NFPA 130. What was vital and considered through much debate within the Technical Committee and respective task groups was the fire risk profile for open versus enclosed stations. An open station is one that is constructed such that it is directly open to the atmosphere and smoke and heat are allowed to disperse directly into the atmosphere without accumulation and without impacting tenability in egress routes. This

dispersal is effectively a natural ventilation control for fire generated heat and smoke. The relative fire risks of open and enclosed facilities are addressed elsewhere in the standard such as with differing requirements for interior finishes in enclosed versus open stations and requirements for emergency ventilation in enclosed stations, noting that open stations are self-venting. This differentiation is also evident in the requirements for open versus enclosed trainways (i.e., tunnels). Therefore, the actions taken by the committee to identify the two exceptions to the Section 12.2.1 flame spread and smoke production requirements of wires and cables were carefully considered, factoring fire risk factors, mitigating measures, and alternative means of protection. The vote on this proposal included 23 affirmative, 1 negative, and 5 not returned out of 29 eligible at First Revision and 25 affirmative and 4 not returned out of 29 eligible at Second Revision.

Respectfully submitted,

***Jarrod Alston***  
***on behalf of the Technical Committee on Fixed Guideway Transit and Passenger Rail Systems***



# Motion Substantiation

Certified Amending Motion 285-7  
June 2022

This motion is made to the proposed new Annex B to NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

## **Background and purpose of proposed Annex B**

NFPA 285 is a very important standard required by building codes to test and qualify exterior wall assemblies containing combustible components. The standard has specific requirements that limit vertical and horizontal fire propagation of interior and/or exterior fire sources that can occur in buildings of all heights including high rise buildings.

Since there are thousands of combinations of building components that can be contained within exterior wall assemblies and the high expense of conducting the test, it is estimated that more than 90% of all exterior wall assemblies constructed in the United States that must comply with NFPA 285 are approved by Authorities Having Jurisdiction and/or Fire Marshalls based on Engineering Judgements written by fire protection engineers and fire protection engineering organizations.

Persons writing such Engineering Judgements have varying knowledge and viewpoints when comparing fire performance characteristics provided by small-scale fire tests to the same tests as products in assemblies that were actually tested in accordance with the NFPA 285 standard. As a result of the need to provide as much uniformity as possible in an initial guidance document, Annex B Guide for Extensions of Results from Assemblies that Meet NFPA 285 Test Requirements is being proposed to the NFPA 285 standard.

## **Use of Annex B**

The introduction of Annex B states “This Annex is not part of the requirements of this NFPA document but is included for informational purposes only.” Because of the lack of uniformity in the knowledge and viewpoints of persons writing the Engineering Judgements, this Annex will undoubtedly be used as the basis and justification for writing such judgements so, in essence, it will be utilized as being an integral part of the standard.

## **Justification for NITMAM No. 7**

The NITMAM Motion is to remove the last four words “within that manufacturer’s brand” in Section B.8.5.1.1.2.

The purpose of Annex B is to compare small-scale fire test data for products used in a proposed assembly to the same small-scale test data of products in assemblies that were actually tested in accordance with NFPA 285.

The proposed wording would limit such comparisons to only data within a manufacturer’s brand. This is not technically justified since it is the fire properties of a specific generic product such as Brand X SPF (spray foam insulation)) compared to Brand Y SPF and not to who manufactures the products being compared.

I have heard from more than one source that the existing wording was originally proposed by one manufacturer who conducted the NFPA 285 test but doesn’t want competitors to obtain Engineering Judgements based on small-scale tests which is the actual purpose of this Annex. Fire performance is a function of physical and chemical properties and not specific brand names.

As such, the proposed wording is not suitable in this proposed Annex to the NFPA 285 standard.

Respectfully submitted,

*John A. Stahl*

President, PREFERRED SOLUTIONS, INC.



# Report of the Fire Test Committee

Certified Amending Motion 285-7

June 2022

The *Report of the Technical Committee on Fire Tests* is presented as found in the First Draft Report and Second Draft Report for the **2023 edition** of *NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 285* at [www.nfpa.org/285next](http://www.nfpa.org/285next).

For many years engineering judgements have been used to extend data from NFPA 285 assembly tests to systems that have not been fully tested. In 2018, the Fire Test Committee developed a task group to come up with guidance for engineers to use when developing these judgements. The task group worked for over 4 years and held dozens of meetings, all of which were open for any observers to attend. They developed multiple drafts and reported back to the full committee at both the First Draft meeting and the Second Draft meeting.

The committee added the language into a new Annex B as non-mandatory guidance during the First Draft. The annex describes when substitutions can be made without compromising the test results and what types of substitutions would cross the line and require the assembly to be tested. It was balloted during First Draft and passed with zero negative votes. One public comment was received to try and move the language to the body of the standard, but the committee did not accept that comment. A Second Revision was developed to further revise the annex and passed.

The three certified amending motions related to 285 involve three sections within the Annex language related to spray polyurethane foam plastic (SPF) insulation. CAM 285-7 involves section B.8.5.1.1.2. This section allows flexibility for the worst case SPF product to be tested and that data to be used to support substitution with other SPF products from the same manufacturer. Similar flexibility is included in the annex for other types of insulation including XPS, Polyiso and EPS.

In summary, the committee has been fully supportive of this annex language. SPF has not been treated differently than other types of insulation. No public comments were received related to SPF. There were many opportunities for participation in the 4 years it took to develop this annex.

Respectfully submitted,

***Barry Badders***  
***on behalf of the Fire Test Committee***



# Motion Substantiation

Certified Amending Motion 285-12  
June 2022

This motion is made to the proposed new Annex B to NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

## **Background and purpose of proposed Annex B**

NFPA 285 is a very important standard required by building codes to test and qualify exterior wall assemblies containing combustible components. The standard has specific requirements that limit vertical and horizontal fire propagation of interior and/or exterior fire sources that can occur in buildings of all heights including high rise buildings.

Since there are thousands of combinations of building components that can be contained within exterior wall assemblies and the high expense of conducting the test, it is estimated that more than 90% of all exterior wall assemblies constructed in the United States that must comply with NFPA 285 are approved by Authorities Having Jurisdiction and/or Fire Marshalls based on Engineering Judgements written by fire protection engineers and fire protection engineering organizations.

Persons writing such Engineering Judgements have varying knowledge and viewpoints when comparing fire performance characteristics provided by small-scale fire tests to the same tests as products in assemblies that were actually tested in accordance with the NFPA 285 standard. As a result of the need to provide as much uniformity as possible in an initial guidance document, Annex B Guide for Extensions of Results from Assemblies that Meet NFPA 285 Test Requirements is being proposed to the NFPA 285 standard.

## **Use of Annex B**

The introduction of Annex B states “This Annex is not part of the requirements of this NFPA document but is included for informational purposes only.” Because of the lack of uniformity in the knowledge and viewpoints of persons writing the Engineering Judgements, this Annex will undoubtedly be used as the basis and justification for writing such judgements so, in essence, it will be utilized as being an integral part of the standard.

## **Justification for NITMAM No. 12**

The NITMAM Motion is to reject entire Section B.8.5.1.1.3.

The purpose of Annex B is to compare small-scale fire test data for products used in a proposed assembly to the same small-scale test data of products in assemblies that were actually tested in accordance with NFPA 285.

The proposed wording would limit such comparisons to only data within a manufacturer’s brand. This is not technically justified since it is the fire properties of a specific generic product such as Brand X SPF (spray foam insulation)) compared to Brand Y SPF and not to who manufactures the products being compared.

I have heard from more than one source that the existing wording was originally proposed by one manufacturer who conducted the NFPA 285 test but doesn’t want competitors to obtain Engineering Judgements based on small-scale tests which is the actual purpose of this Annex. Fire performance is a function of physical and chemical properties and not specific brand names.

As such, the proposed wording is not suitable in this proposed Annex to the NFPA 285 standard.

Respectfully submitted,

***John A. Stahl***

President, PREFERRED SOLUTIONS, INC.



# Report of the Fire Test Committee

Certified Amending Motion 285-12  
June 2022

The *Report of the Technical Committee on Fire Tests* is presented as found in the First Draft Report and Second Draft Report for the **2023 edition** of *NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 285* at [www.nfpa.org/285next](http://www.nfpa.org/285next).

For many years engineering judgements have been used to extend data from NFPA 285 assembly tests to systems that have not been fully tested. In 2018, the Fire Test Committee developed a task group to come up with guidance for engineers to use when developing these judgements. The task group worked for over 4 years and held dozens of meetings, all of which were open for any observers to attend. They developed multiple drafts and reported back to the full committee at both the First Draft meeting and the Second Draft meeting.

The committee added the language into a new Annex B as non-mandatory guidance during the First Draft. The annex describes when substitutions can be made without compromising the test results and what types of substitutions would cross the line and require the assembly to be tested. It was balloted during First Draft and passed with zero negative votes. One public comment was received to try and move the language to the body of the standard, but the committee did not accept that comment. A Second Revision was developed to further revise the annex and passed.

The three certified amending motions related to 285 involve three sections within the Annex language related to spray polyurethane foam plastic (SPF) insulation. CAM 285-12 involves section B.8.5.1.1.3. This section prohibits substitution of SPF from one manufacturer based on test data from a different manufacturer. Similar requirements are included for other types of insulation including XPS, Polyiso and EPS.

In summary, the committee has been fully supportive of this annex language. SPF has not been treated differently than other types of insulation. No public comments were received related to SPF. There were many opportunities for participation in the 4 years it took to develop this annex.

Respectfully submitted,

***Barry Badders***  
***on behalf of the Fire Test Committee***



# Motion Substantiation

Certified Amending Motion 285-13  
June 2022

This motion is made to the proposed new Annex B to NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

## **Background and purpose of proposed Annex B**

NFPA 285 is a very important standard required by building codes to test and qualify exterior wall assemblies containing combustible components. The standard has specific requirements that limit vertical and horizontal fire propagation of interior and/or exterior fire sources that can occur in buildings of all heights including high rise buildings.

Since there are thousands of combinations of building components that can be contained within exterior wall assemblies and the high expense of conducting the test, it is estimated that more than 90% of all exterior wall assemblies constructed in the United States that must comply with NFPA 285 are approved by Authorities Having Jurisdiction and/or Fire Marshalls based on Engineering Judgements written by fire protection engineers and fire protection engineering organizations.

Persons writing such Engineering Judgements have varying knowledge and viewpoints when comparing fire performance characteristics provided by small-scale fire tests to the same tests as products in assemblies that were actually tested in accordance with the NFPA 285 standard. As a result of the need to provide as much uniformity as possible in an initial guidance document, Annex B Guide for Extensions of Results from Assemblies that Meet NFPA 285 Test Requirements is being proposed to the NFPA 285 standard.

## **Use of Annex B**

The introduction of Annex B states “This Annex is not part of the requirements of this NFPA document but is included for informational purposes only.” Because of the lack of uniformity in the knowledge and viewpoints of persons writing the Engineering Judgements, this Annex will undoubtedly be used as the basis and justification for writing such judgements so, in essence, it will be utilized as being an integral part of the standard.

## **Justification for NITMAM No. 13**

The NITMAM Motion is to reject entire Section B.8.5.1.2.1.

The purpose of Annex B is to compare small-scale fire test data for products used in a proposed assembly to the same small-scale test data of products in assemblies that were actually tested in accordance with NFPA 285.

The proposed wording would limit such comparisons to only data within a manufacturer’s brand. This is not technically justified since it is the fire properties of a specific generic product such as Brand X SPF (spray foam insulation) compared to Brand Y SPF and not to who manufactures the products being compared.

I have heard from more than one source that the existing wording was originally proposed by one manufacturer who conducted the NFPA 285 test but doesn’t want competitors to obtain Engineering Judgements based on small-scale tests which is the actual purpose of this Annex. Fire performance is a function of physical and chemical properties and not specific brand names.

As such, the proposed wording is not suitable in this proposed Annex to the NFPA 285 standard.

Respectfully submitted,

***John A. Stahl***

President, PREFERRED SOLUTIONS, INC.



# Report of the Fire Test Committee

Certified Amending Motion 285-13

June 2022

The *Report of the Technical Committee on Fire Tests* is presented as found in the First Draft Report and Second Draft Report for the **2023 edition** of *NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 285* at [www.nfpa.org/285next](http://www.nfpa.org/285next).

For many years engineering judgements have been used to extend data from NFPA 285 assembly tests to systems that have not been fully tested. In 2018, the Fire Test Committee developed a task group to come up with guidance for engineers to use when developing these judgements. The task group worked for over 4 years and held dozens of meetings, all of which were open for any observers to attend. They developed multiple drafts and reported back to the full committee at both the First Draft meeting and the Second Draft meeting.

The committee added the language into a new Annex B as non-mandatory guidance during the First Draft. The annex describes when substitutions can be made without compromising the test results and what types of substitutions would cross the line and require the assembly to be tested. It was balloted during First Draft and passed with zero negative votes. One public comment was received to try and move the language to the body of the standard, but the committee did not accept that comment. A Second Revision was developed to further revise the annex and passed.

The three certified amending motions related to 285 involve three sections within the Annex language related to spray polyurethane foam plastic (SPF) insulation. CAM 285-13 involves section B.8.5.1.2.1. This section prohibits substitution of SPF from one manufacturer based on test data from a different manufacturer. Similar requirements are included for other types of insulation including XPS, Polyiso and EPS.

In summary, the committee has been fully supportive of this annex language. SPF has not been treated differently than other types of insulation. No public comments were received related to SPF. There were many opportunities for participation in the 4 years it took to develop this annex. I encourage the membership to support the committee and vote against this motion.

Respectfully submitted,

***Barry Badders***  
***on behalf of the Fire Test Committee***



# Motion Substantiation

Certified Amending Motion 502-2  
June 2022

The proposed definition states: “A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat.” That is inconsistent with the requirements already in section 4.8 of NFPA 502 for what constitutes a noncombustible material in this standard. Section 4.8 of NFPA 502 states that noncombustible materials (as intended for use in road tunnels, bridges, and so on) are considered to be ones that meet certain fire test requirements and every one of the fire test requirements used anywhere in the world (including those in NFPA 502) allows a certain amount of temperature increase or mass loss or flaming. That means that materials that do ignite (albeit briefly) or do release flammable vapors are acceptable by NFPA 502 as noncombustible materials by NFPA 502 but would not comply with the proposed definition.

For example, ASTM E136 states that a material is noncombustible (i.e. it passes the test) if there is a temperature increase of less than 30 degrees C and flaming for less than 30 seconds. This means that in spite of "passing ASTM E136", which makes a material noncombustible according to NFPA 502, section 4.8, the material is not noncombustible according to the definition. That is inconsistent and should not be an NFPA 502 definition. Note that NFPA 130 (a sister standard to NFPA 502) does not have this inconsistency. This CAM proposes to delete the incorrect definition and do the same as is done in NFPA 1, NFPA 101, NFPA 5000, various other NFPA codes and standards, and the companion standard to NFPA 502, namely NFPA 130. A companion CAM is also being placed into section 4.8 to ensure that the "option" of a material that does what the proposed definition requires is acceptable as an option for a noncombustible material, namely a

material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat.

Note also that the proposed definition contains requirements, which NFPA definitions should not have.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Technical Committee on Road Tunnel and Highway Fire Protection

Certified Amending Motion 502-2  
June 2022

The *Report of the Technical Committee on Road Tunnel and Highway Fire Protection* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of *NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways*. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 502* at [www.nfpa.org/502next](http://www.nfpa.org/502next).

First, I want to say thank you to Dr. Hirschler for bringing this to our attention.

Dr. Hirschler made a Public Comment for the first revision to remove annex language related to the definition of "Noncombustible" material (NFPA 502 Section 3.3.44 2020 Edition). The committee agreed with Dr. Hirschler and removed the annex language.

In the process of reviewing the change, the committee determined to remove the reference to NFPA 502 Section 4.8 and to add a definition in NFPA 502 Section 3.3.44: "A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat."

The voting was -- 27 affirmative, 2 no response. A near unanimous decision.

Dr. Hirschler is objecting to the addition of the definition in this location. Part of the justification to reject this motion is the assertion that this language is not consistent with the language in other NFPA documents, such as NFPA 1, 101, 5000 or 130. Upon review of NFPA 101, the stated definition of "Noncombustible (Material)" refers to section 4.6.13 which states:

**4.6.13 \* Noncombustible Material.**

**4.6.13.1**

A material that complies with any one of the following shall be considered a noncombustible material:

- (1)\* The material, in the form in which it is used, and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat.

This definition is identical to the definition inserted by the committee in NFPA 502 Section 3.3.44 and is not considered inconsistent with other NFPA documents such as NFPA 101.

The committees stated substantiation for the addition of the definition follows:

1. The "definition should not be a reference to the main body of the standard therefore definition of noncombustible material was added.

Annex language deleted as the Information Is redundant and the same Information Is required under section 4.8."

**The committee respectfully requests the CAM motion to be rejected.**

Respectfully submitted,

*Norris Harvey*

***on behalf of the Road Tunnel and Highway Fire Protection Committee***



## **Motion Substantiation**

**Certified Amending Motion 502-4  
June 2022**

This CAM is a companion to CAM 502-2, but is also able to be accepted independently. This CAM places the option (from the present edition of NFPA 502) of the requirement for a noncombustible material being one that does not need to be tested but that meets the following requirements back into section 4.8, with the other (test based) requirements: “The material, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat.”

The language proposed by the committee in SR1 has a critical issue, solved by this CAM: The language in this section deletes one option for declaring that a material is a noncombustible material (the option that does not require testing for clearly noncombustible materials such as steel or concrete) and places it in a definition, which is now inconsistent with the requirements in this section (as explained in the associated CAM).

This CAM reinstates the previous first option and renumbers the other options, thus making the section consistent with other NFPA codes and standards, including NFPA 130, a companion standard.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Technical Committee on Road Tunnel and Highway Fire Protection

Certified Amending Motion 502-4  
June 2022

The *Report of the Technical Committee on Road Tunnel and Highway Fire Protection* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of ***NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways***. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for ***NFPA 502*** at [www.nfpa.org/502next](http://www.nfpa.org/502next).

Thank you to Dr. Hirschler for his involvement and for bringing this to our attention.

As established in the previous NITMAM, the committees stated goal and desire is to include a definition in NFPA 502 Section 3.3.44 for Noncombustible material. Language that is in NFPA 502 Section 4.8 2020 Edition "A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat." was therefore moved to the definition of Noncombustible material from NFPA 502 Section 4.8. As stated in the Committee's justification, this move is considered the appropriate location. The specific wording of the justification is:

Item (1) has been relocated in the definition of "noncombustible" as this is the appropriate location. New test method added to allow an alternative.

The annex is expanded to provide further guidance on noncombustibility tests. Old A.4.8(1) is added to 4.8 as section 4.8(1) is deleted from the standard.

The voting was -- 27 affirmative, 2 no response. A near unanimous decision.

The established change does not abrogate the intent of the language in anyway. The requirement for noncombustible material remains clear and enforceable. Further, the intent of the meaning of noncombustible is reinforced by the action of the Committee

Therefore, the committee respectfully disagrees with Dr. Hirschler's NITMAM and requests for a rejection of this CAM.

Respectfully submitted,

*Norris Harvey*

***on behalf of the Road Tunnel and Highway Fire Protection Committee***



# Motion Substantiation

Certified Amending Motion 502-9  
June 2022

This CAM is simple clarification to ensure the correct pass/fail criteria are used. EN 13501-1 (which is the European standard for reaction to fire requirements in Europe) contains two categories of materials that need to meet requirements based on both the ISO 1182 (noncombustibility test) and ISO 1716 (heat of combustion test): they are Class A1 and Class A2. The criteria for Class A1 materials are similar to those used by ASTM E136 to classify a material as a noncombustible material. In fact, they are somewhat milder than those in ASTM E136, but they are relatively similar. On the other hand, the criteria for Class A2 materials are much less severe than those for Class A1 and they represent a much lower level of fire safety. Class A2 materials are not representative of noncombustible materials and might be considered similar to limited combustible materials, which are not permitted in NFPA 502. If the information approved by the committee is approved, that means that NFPA 502 would, in practice, allow materials similar to limited combustible materials for every application where it presently (and in all earlier editions) requires noncombustible materials. That is not safe.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Technical Committee on Road Tunnel and Highway Fire Protection

Certified Amending Motion 502-9  
June 2022

The *Report of the Technical Committee on Road Tunnel and Highway Fire Protection* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of ***NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways***. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for ***NFPA 502*** at [www.nfpa.org/502next](http://www.nfpa.org/502next).

CAM No. 9, NFPA 502 2023 would like to add text to NFPA 502 Section 4.8 (4). The current proposed language is snipped from the NFPA 502 Next Edition website and represents what is currently proposed for the Standard.

#### **4.8\* Noncombustible Material.**

A material that complies with any one of the following shall be considered a noncombustible material:

1. ...
2. ...
3. \*The material is reported as complying with the pass/fail criteria of either of the following:
  - (a) EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*, in relation to ISO 1182, *Reaction to fire tests for products — Non-combustibility test*, and ISO 1716, Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value).
  - (b) ...

The proposed change according to the CAM No. 9 is to add “For Class A1” as shown below :

(3)\* The material is reported as complying with the pass/fail criteria of either of the following:

(a) For Class A1, EN 13501-1, Fire classification of construction products...”

When the committee discussed PC 13 and created of SR-1, the discussion only revolved around the parts of PC 13 concerning the applicable test standards. The committee decided to keep BS 476 in the requirements and created a second revision, updating subsection (3) to split testing requirements to clarify that either BS 476-4 or EN 13501 needs to be met and not both. Inclusion of “For Class A1” was not a focus of discussion.

Respectfully submitted,

*Norris Harvey*

*on behalf of the Road Tunnel and Highway Fire Protection Committee*



# Motion Substantiation

Certified Amending Motion 502-7

June 2022

This CAM addresses time-temperature curves. The time-temperature curve in the RWS Efectis report was developed specifically for fire safety of tunnels and has been in NFPA 502 for multiple editions. It is not just any curve, but it is the only standard time-temperature curve that is severe enough to make it suitable for tunnels; as stated before, it has been the required curve for many editions of NFPA 502. Recently, ASTM committee E05 developed ASTM E3134, which is a consensus standard that is based on using the RWS time-temperature curve. The standard is entitled "Standard Specification for Transportation Tunnel Structural Components and Passive Fire Protection Systems" and it contains the exact same time-temperature curve as the RWS test and the same acceptance criteria, the critical one being the requirements for transmission of heat and spalling. By referencing ASTM E3134, NFPA 502 references a consensus standard rather than a proprietary test method. The technical committee already deleted the reference, in the first draft, to the (now unnecessary) RWS curve and the Efectis report from section 2. Therefore, retaining the reference to the RWS curve in this section is incorrect and inconsistent with the referenced standard sections. It needs to be deleted from this section. And it is necessary to reference ASTM E3134 (dated 2020), which has already been added into the section on informational references, and also needs to be added into section 2 on referenced ASTM standards.

This CAM also deletes any reference to a potential alternate test and that is a safety measure, because it has been shown that the RWS curve (or the alternate curve in ASTM E3134) is the most severe fire resistance test curve available and it was specifically developed for fire resistance in tunnels. Therefore, it should not be acceptable to offer a less suitable alternative (with lower fire

safety), unless an engineering analysis is done (which is consistent with existing language also).

This CAM maintains the requirement for an engineering analysis.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***



# Report of the Technical Committee on Road Tunnel and Highway Fire Protection

Certified Amending Motion 502-7  
June 2022

The *Report of the Technical Committee on Road Tunnel and Highway Fire Protection* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of ***NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways***. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for ***NFPA 502*** at [www.nfpa.org/502next](http://www.nfpa.org/502next).

Thank you to Dr. Hirschler for his involvement and for bringing this to our attention.

Dr. Hirschler would like the acceptance of Public Comment No. 18 which has the following recommended changes:

7.3.2\*

The structure shall ~~be capable of withstanding the temperature exposure represented by the Rijkswaterstaat (RWS) time temperature curve or other recognized standard time temperature curve that is acceptable to the AHJ, following an engineering analysis~~ comply with the transmission of heat and spalling requirements from applying the time-temperature curve in ASTM E3134, unless an engineering analysis, as required in Chapter 4, that is acceptable to the AHJ, demonstrates that an alternate time-temperature curve is suitable.

The Committee disagrees with Dr. Hirschler's recommendation with the following justification:

"The proposed change restricts the scope of the clause to specific sub-elements of structural fire durability which is contrary to the current language. Standard already contains specific requirements for compliance under clause 7.3.3, 7.3.4 and 7.3.6. With the proposed language requires an engineering analysis to demonstrate that the curve was applicable which is restricting the AHJ. This requirement is not the same as AHJ accepting a curve and an engineering analysis."

The voting was -- 27 affirmative, 2 no response.

The Committee disagrees with Dr. Hirschler's recommendation for the stated reason and recommends this CAM to be Rejected.

Respectfully submitted,

*Norris Harvey*

***on behalf of the Road Tunnel and Highway Fire Protection Committee***



# Motion Substantiation

Certified Amending Motion 502-5  
June 2022

This CAM addresses the exposure time during fire resistance testing. The required exposure time of 2 hours (120 min) has been in the standard until the 2017 edition and represents a clear demarcation of fire safety. An exposure time of 120 minutes means a fire resistance rating of 2 hours. Clearly, if the exposure time is permitted to be shorter (meaning that a lower fire resistance rating is allowed), fire safety is lowered. The change that was made for the 2020 edition was intended to correlate with section 7.3.2 which requires that an engineering analysis be made for any deviations from the 2 hour exposure time. Clearly no engineering analysis is required to increase the exposure time, because a higher exposure time (or a higher fire resistance rating) will clearly improve fire safety. However, the use of a lower exposure time (as would be permitted by the approved language) is a lowering of fire safety and the language approved for section 7.3.3 does not require an engineering analysis. Thus, it forces the ahj to determine whether a lower exposure time (and lower fire safety) is acceptable without any associated guidance, or any information on how much lower the exposure time would be acceptable. Is a fire exposure time of 1 minute acceptable? Clearly not, but the standard does not say that it is not and provides no information to the ahj as to what minimal exposure time is needed. This CAM requires that the exposure time in the fire resistance test must be no less than 2 hours (120 minutes), meaning that the fire resistance rating must be two hours.

Respectfully submitted,

***Marcelo M. Hirschler***  
***GBH International***





# Report of the Technical Committee on Road Tunnel and Highway Fire Protection

Certified Amending Motion 502-5  
June 2022

The *Report of the Technical Committee on Road Tunnel and Highway Fire Protection* is presented as found in the First Draft Report and Second Draft Report for the **2023 Edition** of **NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways**. The revisions were submitted to letter ballot of the responsible Technical Committees and Correlating Committee in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for **NFPA 502** at [www.nfpa.org/502next](http://www.nfpa.org/502next).

Thank you to Dr. Hirschler for his involvement and for bringing this to our attention.

Dr. Hirschler is objecting to a potential reduction of the minimum fire exposure time of 120-minutes.

The Committee disagrees with Dr. Hirschler's position. The Committee views the Standard NFPA 502 as a performance standard augmented with prescriptive elements. All highway tunnels are bespoke and the Committee's intent is to provide flexibility to the Authority-Having-Jurisdiction (AHJ) for fit for purpose applications.

The language in the Standard provides the ability for a change via an approval process which directly involves the AHJ, if a change is established.

The Committee's substantiation for rejecting the motion is:

The proposed PI does not improve the existing language and removes the option of AHJ approval for shorter time periods for special cases therefore is rejected

The voting was -- 27 affirmative, 2 no response

The committee respectfully disagrees with Dr. Hirschler's NITMAM and requests for a rejection of this CAM.

Respectfully submitted,

*Norris Harvey*

*on behalf of the Road Tunnel and Highway Fire Protection Committee*



# Report of the Technical Committee on Energy Storage Systems

Certified Amending Motion 855-3  
June 2022

The *Report of the Technical Committee on Energy Storage Systems* is presented as found in the First Draft Report and Second Draft Report for the *Annual 2022* of *NFPA 855, Standard for the Installation of Stationary Energy Storage Systems*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 855* at [www.nfpa.org/855next](http://www.nfpa.org/855next).

Mr. Buckley has proposed a change to the scope of NFPA 855 that would exclude an Energy Storage System from the requirements of the standard if it is "under the exclusive control of an electric utility and installed in accordance with IEEE ANSI C.2- National Electrical Safety Code".

The Technical Committee believes that the current scope effectively describes what is covered by the standard and that there should be no differentiation of application of the standards based upon what type of entity owns or controls the operation of the energy storage system. This proposal and others to limit the scope of NFPA 855 have been discussed, debated and voted on by the Technical Committee during the development of both the current and prior conditions and the Technical Committee has consistently held that a sufficient case has not been made exclude electric utility-controlled Energy Storage Systems from the applicable requirements of the standard.

Furthermore, the Technical Committee also believes that as NFPA 855 is the installation standard for Energy Storage Systems, it does not have the authority to exclude installations from

meeting the minimum requirements set forth in the standard based only on the entity that controls or operates the system.

Respectfully submitted,

***James B. Biggins***  
***on behalf of the Technical Committee on Energy Storage Systems***



# Report of the Technical Committee on Energy Storage Systems

Certified Amending Motion 855-4  
June 2022

The *Report of the Technical Committee on Energy Storage Systems* is presented as found in the First Draft Report and Second Draft Report for the *Annual 2022* of *NFPA 855, Standard for the Installation of Stationary Energy Storage Systems*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 855* at [www.nfpa.org/855next](http://www.nfpa.org/855next).

Mr. Buckley has proposed a change to the scope of NFPA 855 that would exclude an Energy Storage System from the requirements of the standard if it is "under the exclusive control of an electric utility" and meets other criteria related to the location of the energy storage system.

The Technical Committee believes that the current scope effectively describes what is covered by the standard and that there should be no differentiation of application of the standards based upon what type of entity owns or controls the operation of the energy storage system or where that system is located. This proposal and others to limit the scope of NFPA 855 have been discussed, debated and voted on by the Technical Committee during the development of both the current and prior conditions and the Technical Committee has consistently held that a sufficient case has not been made to exclude electric utility-controlled Energy Storage Systems, regardless of where they are installed, from the applicable requirements of the standard.

Furthermore, the Technical Committee also believes that as NFPA 855 is the installation standard for Energy Storage Systems, it does not have the authority to exclude installations from

meeting the minimum requirements set forth in the standard based only on the entity that controls or operates the system or where the systems are installed.

Respectfully submitted,

***James B. Biggins***  
***on behalf of the Technical Committee on Energy Storage Systems***



# Report of the Technical Committee on Energy Storage Systems

Certified Amending Motion 855-5  
June 2022

The *Report of the Technical Committee on Energy Storage Systems* is presented as found in the First Draft Report and Second Draft Report for the *Annual 2022* of *NFPA 855, Standard for the Installation of Stationary Energy Storage Systems*. The revisions were submitted to letter ballot of the responsible Committee(s) in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 855* at [www.nfpa.org/855next](http://www.nfpa.org/855next).

Mr. Tanner has proposed a change to add an additional section to NFPA 855 would allow energy storage systems to be installed on roofs without needing to meet specified rooftop requirements provided each is less than 20 kWh in size and demonstrate through fire testing that the ESS will demonstrate no flaming outside of the Energy Storage System.

The Technical Committee believes that systems greater than 20 kWh (in aggregate) connected to a rooftop PV system are covered through changes made to Section 1.3 addressing application of the standard to include threshold quantities for outdoor areas. Also, the Technical Committee was concerned that there might be other requirements in the standard impacted by the proposed revision.

Respectfully submitted,

**James B. Biggins**  
*on behalf of the Technical Committee on Energy Storage Systems*



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-10  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The proposed CAM seeks to remove new section 4.1.3 on nonmetallic sprinkler pipe. This section was added to make the owner or their representatives aware of the compatibility challenges between nonmetallic pipe and other components and material that may intentionally or unintentionally come in contact with nonmetallic sprinkler pipe. It is the position of the committee that it is the owner or their representative's responsibility to know what is taking place in their building and to identify changes. New section 4.1.3 also let's the owner know that this needs to be considered before they do something that may affect the sprinkler system. New section 4.1.3 passed ballot with only 4 negative votes.

Respectfully submitted,

**Brad Cronin**

*on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems*





# Motion Substantiation

Certified Amending Motion 25-2  
June 2022

CAM 25-2 supports the position of the Technical Committee that was established during the Second Draft Meeting. However, the Second Revision failed ballot by one vote (26-14) and there were erroneous comments made in the ballot comments. But first, let me address the need for the change and the technical documentation that supports the change.

**Need:** Depending on which year one references, this is one of the top survey findings and at times, has been the number one survey finding in hospitals accredited by The Joint Commission. Furthermore, the language in NFPA 25 does not correlate with the language in NFPA 13 which restricts sprinkler piping and hangers from being used to support of non-system components. The NFPA 25 language goes further to restrict items from even touching the sprinkler pipe, even if those items are not being supported from the sprinkler pipe or hangers.

**Technical Substantiation:** A research report prepared by ASHE was submitted to the Technical Committee which noted that the issue of items in contact with sprinkler pipe, but not being supported by sprinkler piping or hangers, was only a concern associated with nonmetallic pipe. There were no incidents identified and no technical rationale to address items touching sprinkler pipe other than certain electrical wires, such as grounding wires. These latter items are addressed elsewhere in NFPA 13 or NFPA 70.

**Ballot Comments:** Some ballot comments indicated that it was not easy to identify materials that are not compatible with non-metallic sprinkler pipe and that the databases are ever changing. Those are true statements. With a minimal amount of training, individuals can be trained to look for incompatible materials, to use databases maintained by pipe manufacturers, and to ask questions where there is any

uncertainty. Admittedly, some additional testing or laboratory analysis may be required. Once it is verified that the questionable material is compatible, proper recording keeping would result in interested parties not needing to do further analysis on that particular location.

Furthermore, with respect to the issue of this being a difficult task and requiring an inspection that is not otherwise required, by a vote of 36-4 the Committee added very similar language to this Second Revision in Chapter 4 (see 4.1.3). In other words, most of the same people who voted against adding the language as a generic requirement that does not assign responsibility to any specific party to perform a task and is supposedly too difficult to complete, is now added in a section that an owner, who may know nothing about sprinkler systems, is supposed to perform.

However, when incompatible products are in contact with non-metallic sprinkler pipe the consequences can be severe. As one example, we are currently involved in a \$7.5 million remediation project in a high-rise building where multiple sprinkler system leaks have occurred within a 3-year period of occupancy. All of the leaks have been identified as associated with incompatible products in contact with CPVC sprinkler pipe and existing pipe is being replaced in those instances where the integrity of the pipe is being compromised based upon the contact with incompatible materials. A standard that addresses the reliability of sprinkler systems cannot overlook this serious issue.

Some ballot comments indicate that sprinkler contractors will be required to inspect pipe they are not currently required to inspect. This simply is not a true statement. First, and foremost, NFPA 25 does not assign any specific inspection task to any specific entity. NFPA 25 identifies the tasks that need to be performed and at what frequency to provide a reliable water-based fire protection system. Who performs the task is determined by the contractual agreement between an owner and a contractor.

Lastly, some ballot comments identify exactly why this provision is needed to address the reliability of water-based fire protection systems. While I concur that this issue needs to be addressed during the installation of the system and NFPA 13 contains language that should result in proper operations the ballot comments identify why periodic evaluation is also required. Some ballot comments refer to

modifications. There are instances in which walls are added to a building post-occupancy and without requiring any changes to the sprinkler system. When such changes are made, an evaluation should be made to verify that the new work does not create a problem with the existing sprinkler pipe. Other ballot comments indicate that the databases maintained by pipe manufacturers change. While one pipe manufacturer has told me they only add things to the list, I am aware of at least one instance in which a previously approved product was subsequently deleted from a manufacturer's database. In fact, that is one of the products that was involved in the previously referenced remediation product. If conditions can change in a building that render a fire protection system unreliable or if future testing of a product determines that it is not compatible with a non-metallic, then periodic evaluation is required to maintain the reliability of the water-based fire protection system.

In summary, when considering the two actions taken by the Technical Committee it is inconsistent that the Committee would determine that this is the responsibility of an owner who may know nothing about sprinkler systems, pipe materials, and incompatible materials that could be in contact with the pipe but that when an owner hires a qualified person that person is not capable of doing what may be necessary to maintain the reliability of a water-based fire protection system. Furthermore, due to the nature of the problem, both in terms of the number of situations being unnecessarily cited by Accrediting Organizations, the fact that the existing language in NFPA 25 exceeds the requirements in NFPA 13, and the risk to the reliability of the water-based fire protection systems, I cannot support returning to the previous edition language in Chapter 5 and delegating the responsibility to the building owner.

Respectfully submitted,

***William E. Koffel, P.E., FSFPE, SASHE***



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-2  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The proposed CAM seeks to add a requirement for those performing the inspection to identify the incompatibility of components or materials that may be touching nonmetallic pipe. The subject of incompatibility is addressed in the installation standards, such as NFPA13, and should be addressed at the time of installation. It would be very difficult if not impossible for an inspector performing a visual Inspection from the ground to determine if a component or material that is touching nonmetallic pipe is compatible or not. For example, an Inspector may observe fire stop material sealing a penetration around a nonmetallic pipe, however, it would be very difficult for the Inspector to determine compatibility without knowing what type of fire stop material was used during installation and reviewing manufactures compatibility data sheets. It is also unrealistic to expect an inspector to know all the different materials that are or are not compatible with nonmetallic pipe. Additionally, to perform this type of task would add a significant amount of time to the inspection. As such, the committee decided that it was not practical to require an inspector to perform this task. Also, the CAM seeks to remove the language "subject to external loads by

materials either resting on this pipe or hung from the pipe," language that has been in the standard for a couple decades and has remained unchanged. This language provides inspectors with a task that can be accomplished during a visual inspection from the ground. This Issue was considered as a second revision but failed ballot.

Respectfully submitted,

***Brad Cronin***  
***on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems***



# Motion Substantiation

Certified Amending Motion 25-3  
June 2022

During the first draft stage, Committee Input 116 proposed changes to sections 5.2.2.2 and 5.2.2.3 with a Committee Statement of “Clarifying, that what is in contact with the metallic pipe must be subjecting the pipe to weight to be an issue.”

During the second draft stage, Committee Comment 3 proposed text in 5.2.2.2.1 (renumbered from 5.2.2.3) referencing “incompatible components or material in contact with the pipe” with a Committee Statement of “The subsection is addressing non-metallic pipe and incompatibility was added to address other building features that may be in contact with the pipe, intentionally or unintentionally.”

The American Society of Healthcare Engineering is seeking for a portion of Committee Comment 3 to enter the Standard to address non-sprinkler system components which are in contact with sprinkler pipe. The health care industry continues to spend an enormous amount of money relocating minor items (e.g. duct insulation, flex conduit, IT cables) in contact with sprinkler pipe as detailed in the American Society of Healthcare Engineering’s Sprinkler System Support Analysis whitepaper published in 2020.

The code change appeared to fail committee ballot due to the language in 5.2.2.2.1 addressing incompatible materials in contact with the pipe which is not part of this motion.

Respectfully submitted,

*Lennon Peake*



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-3  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The CAM seeks to remove the language "subject to external loads by materials either resting on this pipe or hung from the pipe," language that has been in the standard for a couple decades and has remained unchanged. This language provides inspectors with a task that can be accomplished during a visual inspection from the ground. This Issue was considered as a second revision but failed ballot.

Respectfully submitted,

**Brad Cronin**  
*on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems*



# **Motion Substantiation**

**Certified Amending Motion 25-17**  
**June 2022**

The 18” clearance to storage is a transitory issue that needs to be continually managed. A once a year inspection of this issue does not add any value to the NFPA 25 sprinkler inspection.

Respectfully submitted,

*James Peterkin*



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-17  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The proposed CAM seeks to remove the line "Sprinklers clearance to storage" from Table 5.1.1.2. The table was updated to align with the requirements and changes made to Chapter 5 during the revision cycle. For clearance to storage the table points to 5.2.1.2 which is correct, however, section 5.2.1.2 does not specifically mention an annual frequency. The requirement is continuous, in that it uses the term "maintained," this means someone should be continually monitoring it and making sure the clearance is not exceeded. The committee added a frequency to the table to make sure someone was at least looking at it during the annual inspection. This passed ballot with no negative comments.

Respectfully submitted,

**Brad Cronin**

*on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems*



# Motion Substantiation

Certified Amending Motion 25-16  
June 2022

No technical substantiation was provided to warrant the additional inspection requirements. There have not been any issues identified with concealed sprinklers being inoperable or deficient. Currently, the concealed heads are inspected to verify the concealed plates are in good shape (undamaged) and not painted or sealed to the ceiling.

Respectfully submitted,

*James Peterkin*



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-16  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The proposed CAM seeks to remove new section 5.2.1.1.1 and its subset on a new inspection requirement for concealed sprinklers. This requirement was added based on anecdotal data provide around the failure of concealed sprinklers in the field. The anecdotal data stated that sprinklers showing no signs of degradation either on the coverplate or the surrounding ceiling of the concealed sprinkler were prematurely discharging. The technical committee realizes that this Inspection request goes beyond the normal visual inspection from the ground and may require the use of ladders or lifts in some installations. Due to the possible need for ladders or lifts the inspection frequency was set at 5 years, the same frequency for other ITM activities that may require ladders or lifts. The requirement also limits the inspection to a sample area versus trying to remove and inspect the sprinkler under every coverplate. New section 5.2.1.1.1 and its subset passed ballot with 8 negative votes.

Respectfully submitted,

***Brad Cronin***

***on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems***



# Motion Substantiation

Certified Amending Motion 25-15  
June 2022

Second Revision No. 60 is to add Section 8.3.5.8 which indicates the annual flow testing requirements for Water Mist Positive Displacement Pumps, see below for section language:

## 8.3.5.8 Annual Activation Test for Water Mist Positive Displacement Pumping Units

### 8.3.5.8.1

Annually, an automatic activation test for systems with automatic nozzles shall be conducted using a test connection that simulates the smallest system nozzle in the hydraulically most remote area discharged at system maintenance pressure/standby pressure.

This requirement creates undo prejudice against water mist systems by subjecting water mist positive displacement pumps to multiple annual flow tests. All positive displacement fire pumps are required to be tested in accordance with section 8.3.3.1 as referenced by section 8.3.5.1. The testing requirements of section 8.3.5.8 are specific to water mist positive displacement pumps and does not supersede the testing requirements of section 8.3.3.1.

It is important to note that subjecting a fire pump to multiple annual flow test does not increase the likely hood of the system operating as designed. All other positive displacement fire pumps are only required to undergo a full forward flow test annually per Section 8.3.3.1. The failure of any fire pump, centrifugal, positive displacement, or water mist positive displacement, can result in failure of the system to operate as designed.

Respectfully submitted,

***Dennis Sullivan, P.E.***  
Marioff North America



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-15  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The CAM seeks to remove new section 8.3.5.8 which is an annual activation test for water mist positive displacement pumping units. Water mist positive displacement pumping units were added to the 2013 edition of NFPA 20, however, ITM requirements had not been added to NFPA 25 until this revision cycle. The new requirements align with the acceptance test criteria established by the NFPA 750 and NFPA 20 technical committees. It is the position of the committee that this establishes a best practice for ensuring the proper operation of water mist positive displacement units. New section 8.3.5.8 passed ballot with only 1 negative vote.

Respectfully submitted,

**Brad Cronin**  
*on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems*



# Motion Substantiation

Certified Amending Motion 25-18  
June 2022

Both the connected water supply and the fire pump need to be tested, but each need to be evaluated independently to verify that no degradation has occurred to either component. The acceptable performance of the pump assembly should continue to be based on the “Net” flow test results.

Respectfully submitted,

*James Peterkin*



# Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems

Certified Amending Motion 25-18  
June 2022

The *Report of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems* is presented as found in the First Draft Report and Second Draft Report for the *A2022 cycle of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. The revisions were submitted to letter ballot of the responsible Technical Committees in accordance with the *Regulations Governing the Development of NFPA Standards*. The reports and ballot results can be found on the next edition tab of the Document Information page for *NFPA 25* at [www.nfpa.org/25next](http://www.nfpa.org/25next).

The proposed CAM seeks to remove "and connected water supply" from the requirement of 8.3.7.1.1.1. The text was added to the requirement during the second draft to clarify that the gross flow test is not only indicating the performance of the fire pump but also the attached water supply. In practical application the removal of the text would not change the fact that if a fire pump passed the net flow test but failed the gross flow test, there is likely an issue with the water supply. This passed ballot with only two negative votes.

Respectfully submitted,

**Brad Cronin**  
*on behalf of the Committee on Inspection, Testing, and Maintenance of Water-Based Systems*