

2024 GROUP A PROPOSED CHANGES TO THE I-CODES

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IBC Structural Code Change Proposals

The following code change proposals are labeled as structural code change proposals because they are proposals for changes to sections in chapters of the International Building Code that are designated as the responsibility of the IBC-Structural Code Development Committee (see page iv of the Introductory pages of this monograph), which meets in the Group B cycle in 2025. However the changes included in this Group A code development cycle are to sections of the code that have been prefaced with a [BF], meaning that they are the responsibility of a different IBC Code Development Committee— the IBC-Fire Safety Committee [BF].

The committee assigned for each code change proposal is indicated in a banner statement near the beginning of the proposal. See the IBC-Fire Safety hearing orders.

S1-24

IBC: [BF] 1505.8

Proponents: Jonathan Roberts, UL Solutions, UL Solutions (jonathan.roberts@ul.com)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Revise as follows:

[BF] 1505.8 Building-integrated photovoltaic (BIPV) systems.

Building-integrated photovoltaic (BIPV) systems installed as the roof covering shall be tested, listed, and labeled, and identified with afor fire classification in accordance with Section 1505.1 UL 7103. Listed systems shall be installed in accordance with the manufacturer's installation instructions and their listing. The fire classification shall comply with Table 1505.1 based on the type of construction of the building.

Reason: UL 7103 is the standard used to test and certify BIPV systems installed as the roof covering. This standard includes the fire tests in UL 790 used to establish a fire classification of Class A, B, or C. This correlates with the fire testing for rooftop mounted PV panel systems in Section 1505.9.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This clarifies the standard used to establish the fire classification for BIPV systems installed as the roof covering.

S2-24

IBC: [BF] 1705.15, [BF] 1705.15.1, [BF] 1705.15.2, [BF] 1705.15.3, [BF] 1705.15.4, [BF] 1705.15.4.1, [BF] 1705.15.4.2, [BF] 1705.15.4.3, [BF] 1705.15.4.4, [BF] 1705.15.4.5, [BF] 1705.15.4.6, [BF] 1705.15.4.7, [BF] 1705.15.4.8, [BF] 1705.15.4.9, [BF] 1705.15.5, [BF] 1705.15.6, [BF] 1705.15.6.1, [BF] 1705.15.6.2, [BF] 1705.15.6.3, ASTM Chapter 35 (New)

Proponents: Bill McHugh, CM Services, National Fireproofing Contractors Association (bill@mc-hugh.us)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Revise as follows:

[BF] 1705.15 Sprayed fire-resistive materials (SFRM).

Special inspections and tests of sprayed fire-resistive materials (SFRM) applied to floor, roof and wall assemblies and structural members shall be performed in accordance with Sections 1705.15.1 through 1705.15.6 and ASTM WK70851. Special inspections shall be based on the fire-resistance design. as designated in the *approved construction documents* The tests set forth in this section shall be based on samplings from specific floor, roof and wall assemblies and structural members. Special inspections and tests shall be performed during construction with an additional visual inspection after the rough installation of electrical, *automatic sprinkler systems*, mechanical and plumbing systems and suspension systems for ceilings, and before concealment where applicable. The required sample size shall not exceed 110 percent of that specified by the referenced standards in Sections 1705.15.4.1 through 1705.15.4.9.

[BF] 1705.15.1 Physical and visual tests.

The special inspections and tests shall include the following to demonstrate compliance with the listing and the fire-resistance rating:

- 1. Condition of substrates.
- 2. Thickness of application.
- 3. Density in pounds per cubic foot (kg/m^3) .
- 4. Bond strength adhesion/cohesion.
- 5. Condition of finished application.

[BF] 1705.15.2 Structural member surface conditions. The surfaces shall be prepared in accordance with the *approved* fire-resistance design and the written instructions of *approved* manufacturers. The prepared surface of structural members to be sprayed shall be inspected by the *special inspector* before the application of the *SFRM*.

Revise as follows:

[BF] 1705.15.3 Application Substrate temperature verification and ventilation. The substrate shall have a minimum ambient temperature before and after application as specified in the written instructions of *approved* manufacturers. The area for application shall be ventilated during and after application as required by the written instructions of *approved* manufacturers.

[BF] 1705.15.4 Thickness.

<u>SFRM</u> thickness shall be no less than allowed by ASTM E605. Not more than 10 percent of the thickness measurements of the SFRM applied to floor, roof and wall assemblies and structural members shall be less than the thickness required by the *approved* fire-resistance design, and none shall be less than the minimum allowable thickness required by Section 1705.15.4.1.

[BF] 1705.15.4.1 Minimum allowable thickness.

For design thicknesses 1 inch (25 mm) or greater, the minimum allowable individual thickness shall be the design thickness minus 1/4 inch (6.4 mm). For design thicknesses less than 1 inch (25 mm), the minimum allowable individual thickness shall be the design thickness minus 25 percent. Thickness shall be determined in accordance with ASTM E605. Samples of the *SFRM* shall be selected in accordance with Sections 1705.15.4.2 and 1705.15.4.3.

[BF] 1705.15.4.2 Floor, roof and wall assemblies.

The thickness of the *SFRM* applied to floor, roof and wall assemblies shall be determined in accordance with ASTM E605, making not less than four measurements for each 1,000 square feet (93 m²) of the sprayed area, or portion thereof, in each *story*.

Revise as follows:

[BF] 1705.15.4.3 Cellular decks.

Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. Not fewer than four measurements shall be made, located symmetrically within the square area.

[BF] 1705.15.4.4 Fluted decks.

Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. Not fewer than four measurements shall be made, located symmetrically within the square area, including one each of the following: valley, crest and sides. The average of the measurements shall be reported.

[BF] 1705.15.4.5 Structural members.

The thickness of the *SFRM* applied to structural members shall be determined in accordance with ASTM E605. Thickness testing shall be performed in accordance with acceptance criteria in ASTM E605, or on not less than 25 percent of the structural members on each floor , whichever is greater.

[BF] 1705.15.4.6 Beams and girders. At beams and girders thickness measurements shall be made at nine locations around the beam or girder at each end of a 12 inch (305 mm) length.

[BF] 1705.15.4.7 Joists and trusses. At joists and trusses, thickness measurements shall be made at seven locations around the joist or truss at each end of a 12 inch (305 mm) length.

[BF] 1705.15.4.8 Wide-flanged columns. At wide flanged columns, thickness measurements shall be made at 12 locations around the column at each end of a 12 inch (305 mm) length.

[BF] 1705.15.4.9 Hollow structural section and pipe columns. At hollow structural section and pipe columns, thickness measurements shall be made at not fewer than four locations around the column at each end of a 12-inch (305 mm) length.

[BF] 1705.15.5 Density.

The density of the *SFRM* shall be not less than the density specified in the *approved* fire-resistance design. Density of the *SFRM* shall be determined in accordance with ASTM E605. The test samples sample quantities for determining the density of the *SFRM* shall be selected as follows:

- 1. From each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m²) or portion thereof of the sprayed area in each *story*.
- 2. From beams, girders, trusses and columns at the rate of not less than one sample for each type of structural member for each 2,500 square feet (232 m²) of floor area or portion thereof in each *story*.

[BF] 1705.15.6 Bond strength.

The cohesive/adhesive bond strength of the cured *SFRM* applied to floor, roof and wall assemblies and structural members shall be not less than 150 pounds per square foot (psf) (7.18 kN/m²) for buildings with occupied floors up to 75' (22.86 m) above lowest fire department access. For buildings greater with occupied floors equal to or greater than 75' (22.86 m) above lowest fire department access shall be installed in accordance with bond strengths as listed in Table 403.2.3. The cohesive/adhesive bond strength shall be determined in accordance with the field test specified in ASTM E736 by testing in-place samples of the *SFRM* selected in accordance with Sections 1705.15.6.1 through 1705.15.6.3.

[BF] 1705.15.6.1 Floor, roof and wall assemblies. The test samples for determining the cohesive/adhesive bond strength of the SFRM

shall be selected from each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m²) of the sprayed area, or portion thereof, in each *story*.

[BF] 1705.15.6.2 Structural members. The test samples for determining the cohesive/adhesive bond strength of the *SFRM* shall be selected from beams, girders, trusses, columns and other structural members at the rate of not less than one sample for each type of structural member for each 2,500 square feet (232 m²) of floor area or portion thereof in each *story*.

[BF] 1705.15.6.3 Primer, paint and encapsulant bond tests. Bond tests to qualify a primer, paint or encapsulant shall be conducted where the *SFRM* is applied to a primed, painted or encapsulated surface for which acceptable bond-strength performance between these coatings and the *SFRM* has not been determined. A bonding agent approved by the *SFRM* manufacturer shall be applied to a primed, painted or encapsulated surface for under the second by the *SFRM* manufacturer shall be applied to a primed, painted or encapsulated strengths are found to be less than required values.

Add new standard(s) as follows:

ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428 MK70851 New Practice for Standard Practice for the On-Site Inspection of Installed Spray-Applied Fire Resistive Materials

Staff Analysis: A review of the new standard proposed for inclusion in the code, ASTM WK70851 *New Practice for Standard Practice for the On-Site Inspection of Installed Spray-Applied Fire Resistive Materials*, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before March 18, 2024.

Reason: This change deals with Spray Fire-Resistive Material installation special inspections. The proposal's purpose is threefold.

- Introduce a new ASTM document to SFRM Special Inspection, WK70851 Practice for On-Site Inspection of Installed Spray Fire-Resistive Materials.
- 2. Clean up the language so that it speaks more inspection than application.
- 3. Eliminate duplications from IBC 1705.15 code sections and ASTM E605 and E736, standards. Where there was duplicate language from ASTM E605 or ASTM E736, the duplications were deleted from the code. Where the code acceptance criteria is more stringent than the inspection practices/standards, the code requirement language is retained.

The ICC Adhoc Committee on Terrorism Resistant Buildings (ICC TRB) added several items to this section to provide performance of installed SFRM fireproofing during the building life cycle. In preparing this proposal, we respected that legacy and left the increased inspection over and above the ASTM E605 and ASTM E736 alone.

In the interest of making this review easier, we kept several sections in the proposal that had no changes for easy reference and comparison of the code change to existing text. We have also highlighted below the changes and a short reason for each change.

- 1705.15 Inserted new ASTM Work Item, practice for SFRM inspections on jobsites.
- 1705.15.1 No change. It's important charging language.
- 1705.15.2 No change.
- 1705.15.3 Changed title from Application to Substrate temperature verification and ventilation, to reflect that the inspection standard is an inspection standard, not an application standard.
- 1705.15.4 Thickness, added in the charging language that the inspection thicknesses are not less than what is in ASTM E605, and left the rest of the section alone, which is not in E605.
- 1705.15.4.1 Minimum allowable thickness. No change, as the code is more restrictive than the E605.
- 1705.15.4.2 No change, as the code is more restrictive than the E605.
- 1705.15.4.3 Cellular decks, deleted, the section is duplicated in E605.
- 1705.15.4.4 Fluted Decks, deleted, the section is duplicated in E605.
- 1705.15.4.5 Structural Members Slight change, that the measurement is to be in accordance with E605 or the code, whichever is greater. The code is more restrictive than the E605.
- 1705.15.4.6 Beams and girders, deleted, duplicated in E605
- 1705.15.4.7 Joists and trusses, deleted, duplicated in E605
- 1705.15.4.8 Wide Flanged Columns deleted, duplicated in E605...a wide flange column is a column, and all thicknesses for

columns regardless of size are measured the same.

- 1705.15.4.9 Hollow Structural section and pipe columns not in E605, no change.
- 1705.15.5 Density slight edit, 'sample quantities', and left sample quantity at the more stringent code mandated amount.
- 1705.15.6 Bond Strength Added reference to table 403.2.3 for inspection, highlighting differences of bond strength for buildings between 0-74', 75'-420' and 420'+ in height. The bond strength issue was found by the ICC TRB to be a significant factor in SFRM being able to stay on substrates for the life of the building, hence the 430 PSF and 1,000 PSF that exists in the code today.
- 1705.15.6.1 Floor, roof and wall assy. No change, code more stringent than E736 standard.
- 1705.15.6.2 Structural members No change, code more stringent than E736 standard.
- 1705.15.6.3 Primer, paint and encapsulant bond strength No change, this section is not in E736.

As the ASTM SFRM inspection practice evolves and creates more duplications between the code and the standards, we'll propose more deletions at that time.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal is not a change in requirements to SFRM Special Inspection procedures. The new WK 70851 Practice for the On-Site Inspection of Installed Spray Fire-Resistive Materials actually adds text making the administration of the inspection easier for jurisdictions.

The result of the code change should be that the inspection requirements are easier to handle for all involved, inspection agency, building official and contractors involved with inspections.

S3-24

IBC: [BF] 1705.15

Proponents: Bill McHugh, CM Services, National Fireproofing Contractors Association (bill@mc-hugh.us)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Revise as follows:

[BF] 1705.15 Sprayed fire-resistive materials (SFRM).

Special inspections and tests of sprayed fire-resistive materials (SFRM) applied to floor, roof and wall assemblies and structural members shall be performed in accordance with Sections 1705.15.1 through 1705.15.6. Special inspections shall be based on the fire-resistance design as designated in the approved construction documents and manufacturers installation instructions. The tests set forth in this section shall be based on samplings from specific floor, roof and wall assemblies and structural members. Special inspections and tests shall be performed during construction with an additional visual inspection after the rough installation of electrical, automatic sprinkler systems, mechanical and plumbing systems and suspension systems for ceilings, and before concealment where applicable. The required sample size shall not exceed 110 percent of that specified by the referenced standards in Sections 1705.15.4.1 through 1705.15.4.9.

Reason: The reason for this proposal is to be consistent with what is stated in Chapter 7 - in two sections - 703.12.1 and 703.12.2 clearly. SFRM installation to achieve a fire-resistance-rating is in accordance with the listing (704.12.2) and the manufacturers installation instructions 704.12.2).

The inspection needs to be in accordance with both the listing and manufacturers instructions as well. Many details needed for installation and inspection are found on the manufacturers installation instructions. Surface preparation, temperature, ventilation air changes per hour, and much more is found in the manufacturers instructions and not in the listings.

In Section 1705.15,3, there is a directive to check ambient temperatures and air changes per hour. That information is found on the manufacturers installation instructions, not the listing.

The manufacturers installation instructions need to be listed in the charging language of this section to be consistent with Chapter 7 and Chapter 17 requirements.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal is meant to clarify what's required in the code so it matches what is done in the field. That's why there is no impact on the cost of construction.

S4-25

IBC: 1705.17 (New), ASTM Chapter 35 (New)

Proponents: Bill McHugh, CM Services, National Fireproofing Contractors Association (bill@mc-hugh.us)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Add new text as follows:

<u>1705.17</u> Board and Wrap Fire-Resistive Materials. Special inspections and tests for board and wrap fire-resistive materials applied to structural elements and decks shall be performed in accordance with ASTM WK70807. Special inspections and tests shall be based on the fire-resistance design as designated in the approved construction documents and the manufacturers installation instructions. Special inspections and tests shall be performed during construction. Additional visual inspection shall be performed after the rough installation and, where applicable, prior to the concealment of electrical, automatic sprinkler, mechanical and plumbing systems.

Add new standard(s) as follows:

ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428 WK70807 New Practice for the On-Site Inspection of Installed Board and Wrap Type Fireproofing

Staff Analysis: A review of the new standard proposed for inclusion in the code, ASTM WK70807 *New Practice for the On-Site Inspection of Installed Board and Wrap Type Fireproofing*, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before March 18, 2024.

Reason: For decades, there has been special inspection for Spray Fire-Resistive Materials (SFRM) and Intumescent Fire-Resistive Materials (IFRM). However, board and wrap materials used for fireproofing structural building elements and assemblies have not been specifically named in their own section. The only place to find where special inspection for these materials might be is in section 1705.1 General. In 1705.1, General, it seems to assume that these items would get special inspections.

1705.1.1 Special cases. Special inspections and tests shall be required for proposed work that is, in the opinion of the building official, unusual in its nature, such as, but not limited to, the following examples:

1. Construction materials and systems that are alternatives to materials and systems prescribed by this

code.

2. Unusual design applications of materials described in this code.

3. Materials and systems required to be installed in accordance with additional manufacturer's instructions

that prescribe requirements not contained in this code or in standards referenced by this code

In section 1705.1.1(1) the IBC states 'alternatives to materials and systems prescribed in the code' should also get special inspections. Boards and wraps come in various types.

The board materials used can include gypsum panels, calcium silicate, mineral wool, composite metals with ceramic filling, or ceramic fiber type board protection. Wraps include ceramic fiber insulation, endothermic wraps. The common element of these is that they are installed in accordance with a listing and manufacturer's installation instructions to result in a fire-resistance-rated building element or assembly.

This new section is needed to assure fire-resistance and structural integrity is maintained during fire conditions regardless of material type.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This code change is adding a standard practice to the code that regulates how the inspection is conducted - that is already done. Based on section 1705.1.1, Special Cases, the materials are alternatives to materials and systems prescribed in the code.

S5-24

IBC: [BF] 1705.16, ASTM Chapter 35 (New)

Proponents: Bill McHugh, CM Services, National Fireproofing Contractors Association (bill@mc-hugh.us)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Revise as follows:

[BF] 1705.16 Intumescent fire-resistive materials.

Special inspections and tests for intumescent fire-resistive materials applied to structural elements and decks shall be performed in accordance with <u>ASTM WK70852</u> AWCI 12 B. Special inspections and tests shall be based on the fire-resistance design as designated in the approved construction documents. Special inspections and tests shall be performed during construction. Additional visual inspection shall be performed after the rough installation and, where applicable, prior to the concealment of electrical, automatic sprinkler, mechanical and plumbing systems.

Add new standard(s) as follows:



Staff Analysis: A review of the new standard proposed for inclusion in the code, ASTM WK70852 *New Practice for the On-Site Inspection of Installed Intumescent Fire Resistive Materials*, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before March 18, 2024.

Reason: For decades, there has been special inspection required in IBC's Chapter 17 for Intumescent Fire-Resistive Materials (IFRM). A new industry consensus standard is being balloted at E06 Main Committee, on its last few negatives. The consensus standard, ASTM, WK 70852, Practice for On-Site Inspection of Installed Intumescent Fire-Resistive Material, has been collaboratively developed with input from many stakeholders. When the standard is approved, we will submit a floor modification to insert the new standard number.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This code change will have no effect on the cost of construction. The methods used are similar to what is currently written in the code.

S6-24

IBC: [BF] 1705.18, [BF] 1705.18.1, [BF] 1705.18.2 (New)

Proponents: William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

[BF] 1705.18 Fire-resistant penetrations and joints.

In *high-rise buildings*, in *buildings* assigned to *Risk Category* III or IV, or in *fire areas* containing Group R occupancies with an *occupant load* greater than 250, *special inspections* for *through-penetrations*, *membrane penetration firestops*, *fire-resistant joint systems* and perimeter fire containment systems that are tested and *listed* in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3.1 and 715.4 shall be in accordance with Section 1705.18.1 or 1705.18.2.

[BF] 1705.18.1 Penetration firestops.

Inspections of *penetration firestop* systems that are tested and *listed* in accordance with Sections 714.4.1.2 and 714.5.1.2 shall be conducted by an *approved agency* in accordance with ASTM E2174.

Add new text as follows:

[BF] 1705.18.3 Qualifications. Special inspectors who perform *special inspections* of *penetration firestop systems* and *fire-resistant joint* systems shall have expertise in listings and manufacturer's installation instructions, demonstrated by passing a firestop examination conducted by a Nationally Recognized Testing Laboratory, trade-association, or an *approved* equivalent.

Reason: Special inspections for fire-resistant penetrations, joints, and voids have been required by the IBC since the 2012 version of the Code. Firestopping used to protect breaches in penetrations or joints is complex to install and inspect. Firestopping installations are typically installed in accordance with listings from nationally recognized testing laboratories and manufacturer's installation instructions. It is very different from other construction disciplines in that the listings dictate and there are no deviations allowed.

Firestop installation contractors understand listings and manufacturers installation instructions. Therefore, it is critical that the approved inspection agency's inspectors have exceptional knowledge of the same systems being installed. There are firestop exams offered by Nationally Recognized Testing Laboratories, trade-associations and states.

It is important that the firestopping be installed in accordance with the listing and manufacturer's instructions to protect people in buildings. This proposal provides assurance that the inspector has proven, quantified knowledge to efficiently analyze the firestop installation contractor's work – and judge it acceptable or unacceptable.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

Many special inspectors for fire-resistant penetrations and joints have already passed an examination and many design professionals and code officials are requiring some documentation that the special inspector. If anything, competent special inspectors may decrease the cost of construction by avoiding remediation actions that have been required by special inspectors who are not competent.

S6-24

S7-24

IBC: [BF] 2303.2, [BF] 2303.2.1, 2303.2.2 (New), [BF] 2303.2.2, [BF] 2303.2.3, [BF] 2303.2.4, [BF] 2303.2.5, 2303.2.6, 2303.2.6.1, 2303.2.6.2, 2303.2.6.3, [BF] 2303.2.7, 2303.2.8, 2303.2.9, 2303.2.10

Proponents: Marcelo Hirschler, GBH International, GBH International (mmh@gbhint.com)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

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[BF] 2303.2 Fire-retardant-treated wood.

Fire-retardant-treated wood is any wood product that, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E84 or UL 723, a *listed flame spread index* of 25 or less. The ASTM E84 or UL 723 test shall be continued for an additional 20-minute period and the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

[BF] 2303.2.1 Alternate fire testing.

Fire-retardant-treated wood is also any wood product that, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E2768, a *listed flame spread index* of 25 or less and where the flame front does not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

Add new text as follows:

2303.2.2 Specimen preparation and mounting. When testing a wood product for compliance with Section 2303.2 or with Section 2303.2.1, specimen preparation and mounting shall be in accordance with ASTM E2579.

Revise as follows:

[BF] 2303.2.2 <u>2303.2.3</u> Pressure process.

For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures not less than 50 pounds per square inch gauge (psig) (345 kPa).

[BF] 2303.2.3 2303.2.4 Other means during manufacture.

For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatments is not an *approved* method of protection as required in this section.

[BF] 2303.2.4 2303.2.5 Fire testing of wood structural panels.

Wood structural panels shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm).

[BF] 2303.2.5 <u>2303.2.6</u> Labeling.

In addition to the labels required in Section 2303.1.1 for sawn lumber and Section 2303.1.5 for *wood structural panels*, each piece of fireretardant-treated lumber and *wood structural panels* shall be *labeled*. The *label* shall contain the following items:

- 1. The identification *mark* of an *approved agency* in accordance with Section 1703.5.
- 2. Identification of the treating manufacturer.
- 3. The name of the fire-retardant treatment.
- 4. The species of wood treated.
- 5. Flame spread and smoke-developed index.
- 6. Method of drying after treatment.

- 7. Conformance with appropriate standards in accordance with Sections 2303.2.6 through 2303.2.9 2303.2.7 through 2303.2.10.
- 8. For *fire-retardant-treated wood* exposed to weather, damp or wet locations, include the words "No increase in the *listed* classification when subjected to the Standard Rain Test" (ASTM D2898).

2303.2.6 2303.2.7 Design values.

Design values for *fire-retardant-treated wood*, including connection design values, shall be subject to all adjustments applicable to untreated wood as specified in this chapter and shall be further adjusted to account for the effects of the fire-retardant treatment. Adjustments to design values for the effects of the fire-retardant treatment shall be based on an *approved* method of investigation that takes into consideration the anticipated temperature and humidity to which the *fire-retardant-treated wood* will be subjected, the type of treatment and redrying procedures. Adjustments to flexural design values for fire-retardant-treated plywood shall be determined in accordance with Section <u>2303.2.7.1</u> 2303.2.6.1. Adjustments to flexural, tension, compression and shear design values for fire-retardant-treated lumber shall be determined in accordance with Section <u>2303.2.7.3</u> 2303.2.6.1. Adjustments to flexural be determined in accordance with Section <u>2303.2.7.3</u> 2303.2.6.3.

2303.2.6.1 2303.2.7.1 Fire-retardant-treated plywood.

The effect of treatment and redrying after treatment, and any treatment-based effects due to exposure to high temperatures and high humidities on the flexure properties of fire-retardant-treated softwood *plywood* shall be determined in accordance with ASTM D5516. The test data developed in accordance with ASTM D5516 shall be used to develop treatment adjustment factors in accordance with ASTM D6305. Each manufacturer shall publish the allowable maximum *loads* and spans for service as floor and roof sheathing for its treatment based on the adjusted design values and taking into account the climatological location.

2303.2.6.2 2303.2.7.2 Fire-retardant-treated lumber.

For each species of wood that is treated, the effect of treatment and redrying after treatment and any treatment-based effects due to exposure to high temperatures and high humidities on the allowable design properties of fire-retardant-treated lumber shall be determined in accordance with ASTM D5664. The test data developed in accordance with ASTM D5664 shall be used to develop treatment adjustment factors for use at or near room temperature and at elevated temperatures and humidity in accordance with ASTM D6841. Each manufacturer shall publish the treatment adjustment factors for service at maximum temperatures of not less than 80 °F (27 °C) and for roof framing. The roof framing modification factors shall take into consideration the climatological location.

2303.2.6.3 2303.2.7.3 Fire-retardant-treated laminated veneer lumber.

The effect of treatment and redrying after treatment and any treatment-based effects due to exposure to high temperatures and high humidities on the allowable design properties of fire-retardant-treated laminated veneer lumber shall be determined in accordance with ASTM D8223. Each manufacturer shall publish reference design values and treatment-based design value adjustment factors in accordance with ASTM D8223, taking into account the climatological location.

[BF] 2303.2.7 2303.2.8 Exposure to weather, damp or wet locations.

Where *fire-retardant-treated wood* is exposed to weather, or damp or wet locations, it shall be identified as "Exterior" to indicate there is no increase in the *listed flame spread index* as defined in Section 2303.2 when subjected to ASTM D2898.

2303.2.8 2303.2.9 Interior applications.

Interior *fire-retardant-treated wood* shall have moisture content of not over 28 percent when tested in accordance with ASTM D3201 procedures at 92-percent relative humidity. Interior *fire-retardant-treated wood* shall be tested in accordance with Section <u>2303.2.7.1 or</u> <u>2303.2.6.1 or 2303.2.6.2</u>. Interior *fire-retardant-treated wood* designated as Type A shall be tested in accordance with the provisions of this section.

2303.2.9 2303.2.10 Moisture content.

Fire-retardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for *wood structural panels* before use. For wood kiln-dried after treatment (KDAT), the kiln temperatures shall not exceed those used in kiln drying the lumber and *plywood* submitted for the tests described in Section <u>2303.2.7.1</u> 2303.2.6.1 for *plywood* and <u>2303.2.7.2</u> 2303.2.6.2 for lumber.

2303.2.10 2303.2.11 Types I and II construction applications.

See Section 603.1 for limitations on the use of fire-retardant-treated wood in buildings of Type I or II construction.

Reason: It is important to clarify the method by which ASTM E84 or ASTM E2768 FRTW specimens are to be prepared and mounted as this has been an item of debate and clarifying this is consistent with the way such mounting practices are referenced in other code locations. ASTM E2579 is the appropriate standard practice for specimen preparation and mounting of wood products, including fire-retardant treated wood. It has been shown that different testing labs have been using different mounting methods for this purpose. Note that ASTM E2579 is a mounting practice that is already referenced in the IBC in chapter 8 (section 803.11) for testing laminated products factory produced with a wood substrate.

Note that this proposal adds a new section while not deleting any existing sections.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The code is silent on the mounting method and clarification is important.

S8-24

IBC: [BF] 2510.6, [BF] 2510.6.1, [BF] 2510.6.2, TABLE 2510.6 (New)

Proponents: Michael Gardner, MGardnerServices, LLC, Wall and Ceiling Conference (michael@mgardnerservices.com); Don Allen, Association of the Wall and Ceiling Industry (AWCI) (allen@awci.org)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Revise as follows:

[BF] 2510.6 Water-resistive barriers.

Water-resistive barriers shall be installed as required in Section 1403.2 <u>and shall comply with one of the methods in Table 2510.6 as</u> prescribed by the appropriate climate regime. A means of drainage shall be installed with the *water-resistive barrier* where required by <u>Table 2510.6.Section 2510.6.1 or 2510.6.2</u>.

Exception:<u>Table 2510.6</u> Sections 2510.6.1 and 2510.6.2 shall not apply to construction where accumulation, condensation or freezing of moisture will not damage the materials.

Delete and substitute as follows:

[BF] 2510.6.1 Dry climates.

One of the following shall apply for dry (B) climate zones:

- 1. The water resistive barrier shall be two layers of 10 minute Grade D paper or have a water resistance equal to or greater than two layers of *water resistive barrier* complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing, installed in accordance with Section 1404.4 and intended to drain to the *water resistive barrier*, is directed between the layers.
- 2. The water resistive barrier shall be 60 minute Grade D paper or have a water resistance equal to or greater than one layer of water resistive barrier complying with ASTM E2556, Type II. The water resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing or other nonwater absorbing layer, or a drainage space or means of drainage complying with Section 2510.6.2. Flashing installed in accordance with Section 1404.4 and intended to drain to the water resistive barrier.

[BF] 2510.6.1 .

Installation. Where 2-layer *water-resistive barrier* systems are installed in compliance with Table 2510.6 without a supplemental material or drainage space, the individual layers shall be installed such that each layer creates a separate continuous plane and any flashing installed, in accordance with Section 1404.4 and intended to drain to the *water-resistive barrier*, is directed between the layers. Where a drainage space is incorporated in the assembly, flashing installed in accordance with Section 1404.4 and intended to drain to the *water-resistive barrier*, is directed between the layers. Where a drainage space is incorporated in the assembly, flashing installed in accordance with Section 1404.4 and intended to drain to the *water-resistive barrier*.

Delete without substitution:

[BF] 2510.6.2 Moist or marine climates.

In moist (A) or marine (C) climate zones, water resistive barrier shall comply with one of the following:

1. In addition to complying with Item 1 or 2 of Section 2510.6.1, a space or drainage material not less than 3/16 inch (4.8 mm) in depth shall be applied to the exterior side of the *water resistive barrier*.

2. In addition to complying with Item 2 of Section 2510.6.1, drainage on the exterior side of the *water resistive barrier* shall have a minimum drainage efficiency of 90 percent as measured in accordance with ASTM E2273 or Annex A2 of ASTM E2925.

Add new text as follows:

TABLE 2510.6 WATER-RESISTIVE BARRIER METHODS FOR CEMENT PLASTER (STUCCO)

CLIMATE	METHOD	WATER-RESISTIVE BARRIER (WRB)	SUPPLEMENTAL MATERIAL REQUIRED	MEANS OF DRAINAGE
REGIME			OVER WRB	
DRY(B)	<u>D1</u>	2 layers 10-minute Grade D paper or 2-layers ASTM E2556	No supplemental material required	No drainage space required
		Type I material or equivalent		
DRY(B)	D2	One layer 60-minute grade D paper or one layer ASTM	Foam plastic insulated sheathing or other non-	No drainage space required
		E2556 Type II material or equivalent	water absorbing material	
DRY (B)	<u>D3</u>	One layer 60-minute grade D paper or one layer ASTM	No supplemental material required	Drainage space required
		E2556 Type II material or equivalent		
DRY (B)	<u>D4</u>	One layer 60-minute grade D paper or one layer ASTM	No supplemental material required	Designed drainage system with drainage efficiency of not less than 90% per
		E2556 Type II material or equivalent		ASTM E2273 or Annex A2 of ASTM E2925
MOIST (A) OR	<u>M1</u>	2 layers 10-minute Grade D paper or 2-layers ASTM E2556	No supplemental material required	Drainage space or drainage material not less than 3/16 in. (4.6mm) in depth
MARINE (C)		Type I material or equivalent		
MOIST (A) OR	<u>M2</u>	One layer 60-minute grade D paper or one layer ASTM	Foam plastic insulated sheathing or other non-	Drainage space or drainage material not less than 3/16 in. (4.6mm) in depth
MARINE (C)		E2556 Type II material or equivalent	water absorbing material	
MOIST (A) OR	<u>M3</u>	One layer 60-minute grade D paper or one layer ASTM	Foam plastic insulated sheathing or other non-	Designed drainage system with drainage efficiency of not less than 90% per
MARINE (C)		E2556 Type II material or equivalent	water absorbing material	ASTM E2273 or Annex A2 of ASTM E2925

Staff Analysis: CC# S8-24 and CC# S9-24 addresses requirements in a different or contradicting manner. The committee is urged to make their intentions clear with their actions on these proposals.

Reason: The text in Section 2510.6.2. overlays on the concepts in Section 2510.6.1. The migration between the two sections is, unfortunately, not fully clear in every instance. As an example, when Section 2510.6.1. option 2 refers to Section 2150.6.2., it creates a scenario that permits a drainage space to be used as a means of drainage but does not clearly define the size of the drainage space, permitting both an undefined and a specifically width-defined drainage space. That is not the intent of the original language.

In addition, three years of experience with the current text has revealed issues with user understanding of the progressive nature of the text format, so a clearer presentation incorporating a table is suggested.

This proposal clarifies the existing language as noted and places the specific water-resistant barrier and drainage requirements in existing Sections 2510.6.1. and 2510.6.2. into a table, so that the requirements for compliance are more easily understood. It retains specific language not appropriate for a table in Section 2510.6.1. while moving specific requirements from that section into the table. All of the existing language in Section 2510.6.2. is moved into the same table. The proposal does not intend to add any new concepts to Section 2510.6.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The proposal clarifies some prescriptive language requirements and re-formats the text into a table. It makes no technical changes to the content.

S8-24

S9-24

IBC: SECTION 202 (New), [BF] 2510.6, [BF] 2510.6.1, [BF] 2510.6.2, 2510.6.1 (New), 2510.6.2 (New), 2510.6.3 (New), TABLE 2510.6 (New)

Proponents: Jay Crandell, P.E., ABTG / ARES Consulting, Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

THIS CODE CHANGE WILL BE HEARD BY THE IBC - FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2024 International Building Code

Add new definition as follows:

STUCCO BOND BREAK. A substantially nonwater-absorbing layer placed directly behind stucco to prevent adhesion of the stucco to the surface of the *water-resistive barrier*, to serve as a protective layer over the *water-resistive barrier*, to provide a capillary break, and to promote drainage; examples include 10-min Grade D paper, No.15 felt, foam plastic insulating sheathing, polymeric building wraps, and other similar materials.

DRAINAGE PLANE. A continuous surface within a building assembly, such as created by a *water-resistive barrier* and flashing, installed in a manner that is capable of draining water by gravity flow downward and to the exterior.

DRAINAGE SPACE. A cavity in an *exterior wall* assembly, located between the *water-resistive barrier* and other exterior materials such as cladding or *stucco bond break*, used to enhance the drainage performance of the *drainage plane*.Examples include cavities formed by a furred gap, channels, a porous material or matrix, or other means to enhance drainage performance.

Revise as follows:

[BF] 2510.6 Water-resistive barriers.

<u>A w</u>Water-resistive barriers, a stucco bond break, and a means of drainage shall be provided in accordance with one of the methods in Table 2510.6 or an approved design complying with Section 1402.2. shall be installed as required in Section 1403.2 and shall comply with Section 2510.6.1 or 2510.6.2.

Exception: Sections 2510.6.1 and 2510.6.2 shall not apply to cConstruction where accumulation, condensation or freezing of moisture will not damage the materials.

Delete without substitution:

[BF] 2510.6.1 Dry climates.

One of the following shall apply for dry (B) climate zones:

- 1. The water resistive barrier shall be two layers of 10 minute Grade D paper or have a water resistance equal to or greater than two layers of water resistive barrier complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing, installed in accordance with Section 1404.4 and intended to drain to the water resistive barrier, is directed between the layers.
- 2. The water resistive barrier shall be 60 minute Grade D paper or have a water resistance equal to or greater than one layer of water resistive barrier complying with ASTM E2556, Type II. The water resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing or other nonwater absorbing layer, or a drainage space or means of drainage complying with Section 2510.6.2. Flashing installed in accordance with Section 1404.4 and intended to drain to the water resistive barrier.

[BF] 2510.6.2 Moist or marine climates.

In moist (A) or marine (C) climate zones, water resistive barrier shall comply with one of the following:

- 1. In addition to complying with Item 1 or 2 of Section 2510.6.1, a space or drainage material not less than $\frac{3}{16}$ inch (4.8 mm) in depth shall be applied to the exterior side of the *water resistive barrier*.
- 2. In addition to complying with Item 2 of Section 2510.6.1, drainage on the exterior side of the *water resistive barrier* shall have a minimum drainage efficiency of 90 percent as measured in accordance with ASTM E2273 or Annex A2 of ASTM E2925.

Add new text as follows:

2510.6.1 Installation. The water-resistive barrier shall be installed in accordance with Section 1403.2. The water-resistive barrier, stucco bond break, and means of drainage as required by Table 2510.6 shall be installed such that a continuous drainage plane is maintained. Water shall be directed to the exterior at the base of the stucco application and at any transition between building stories or other conditions where the drainage plane or drainage space terminates.

<u>2510.6.2</u> <u>Combination of materials</u>. <u>Materials or systems that create a continuous plane and combine functions of *water-resistive*</u> <u>barrier</u>, <u>stucco bond break</u>, or <u>drainage space</u> shall be permitted.

2510.6.3 Flashing. Flashing installed in accordance with Section 1404.4 and intended to drain to the water-resistive barrier, shall be directed to the drainage plane on the exterior side of the water-resistive barrier.

TABLE 2510.6 WATER-RESISTIVE BARRIER, STUCCO BOND BREAK, AND MEANS OF DRAINAGE FOR EXTERIOR PLASTER (STUCCO)

MOISTURE	METHOD	WATER-RESISTIVE BARRIER (WRB)	STUCCO BOND BREAK (SBB)	MEANS OF DRAINAGE
BEGIME ^a				
Dry (B)	D1	10-minute Grade D paper or WRB with water resistance equal	10-minute Grade D paper or any material meeting definition of	Drainage plane is located between adjacent WRB and SBB layers.
		to or greater than one layer of ASTM E2556, Type I	a stucco bond break	Drainage space separating the layers not required
	D2	60-minute Grade D paper or WRB with water resistance equal	Foam plastic insulating sheathing or other nonwater-absorbing	2 randgo opaco coparaling the layers her required
		to or greater than one layer of ASTM E2556, Type II	material meeting definition of a stucco bond break	
	D3		Not Required	Drainage space with means to separate stucco from direct contact
				with WRB
Moist (A) and	M1	10-minute Grade D paper or WRB with water resistance equal	10-minute Grade D paper or any material meeting definition of	Drainage space with min 3/16-inch (4.6 mm) depth
Marine (C) ^b		to or greater than one layer of ASTM E2556, Type I	a stucco bond break	
	M2	60-minute Grade D paper or WRB with water resistance equal	Foam plastic insulating sheathing or other nonwater-absorbing	
		to or greater than one layer of ASTM E2556, Type II	material meeting definition of a stucco bond break	
	M3		Not Required	Drainage space with min. 3/16-inch (4.6 mm) depth and means to
				separate stucco from direct contact with WRB
	M4	60-minute Grade D paper or WRB with water resistance equal	Foam plastic insulating sheathing or other nonwater-absorbing	Drainage plane or drainage space with drainage efficiency of at
		to or greater than one layer of ASTM E2556, Type II	material meeting definition of a stucco bond break	least 90% per ASTM E2273 or Annex A2 of ASTM E2925

a. The appropriate moisture regime shall be selected in accordance with Chapter 3 of the International Energy Conservation Code.

b. Requirements for Moist (A) and Marine (C) moisture regimes shall be permitted to be applied in the Dry (B) moisture regime.

Staff Analysis: CC# S8-24 and CC# S9-24 addresses requirements in a different or contradicting manner. The committee is urged to make their intentions clear with their actions on these proposals.

Reason: The previous two code cycles resulted in technical improvements to Section 2510.6 to address water management of conventional 3-coat stucco installations in moist (A) and marine (C) climate regimes. However, these changes brought about increased complexity of the provisions that vary based on wall assembly conditions and climate conditions with options and requirements that are cross-referenced between the two subsections (existing 2510.6.1 and 2510.6.2 shown as deleted). This formatting approach made determining a particular solution difficult and confusing. Therefore, this proposal clarifies the existing technical requirements and options by making them more "visual" in a table format without changing the technical intent of the code. The multiple requirements and interrelated options of Sections 2510.6.1 and 2510.6.2 (deleted) are now incorporated in Table 2510.6 in a straightforward manner. Also, new definitions for "STUCCO BOND BREAK", "DRAINAGE PLANE", and "DRAINAGE SPACE" are provided to facilitate clarity and

accuracy in code reading and understanding of different components (and their functions) currently required for 3-coat stucco applications but vaguely described within the code text. The drainage plane and drainage space definitions can also be used for other exterior wall covering applications in the code.

Beyond the overall formatting changes and definitions described above, some specific clarifications addressed by this proposal are as follows:

Section 2510.6 Water-resistive barriers.

New Table 2510.6 is referenced for requirements instead of the existing two subsections (proposed for deletion). The ability to use an approved design is also provided as a clarification that other solutions than identified in this section and Table 2510.6 are possible.

Section 2510.6.1 Installation. This new subsection consolidates installation requirements that were not addressed consistently across the existing code subsections 2510.6.1 and 2510.6.2. Also, a sentence is added to require drainage to the exterior at the base of the stucco application and at transitions between stories or other conditions where the drainage plane or drainage space terminates. This was based on stucco performance field research in Florida (see Bibliography).

Section 2510.6.2 Combination of Materials. This new subsection clarifies that materials which combine the required functions into a single product can be used rather than having to provide each of the required functions by separate materials. While this may be implied, the intent is to clarify it for transparency and to avoid different interpretations on this matter.

Section 2510.6.3 Flashing. This new subsection simply captures existing code content related to installation of flashing and its integration with the intended drainage plane.

Table 2510.6. This new table replaces the inter-twined and cross-referenced requirements of existing subsections 2510.6.1 and 2510.6.2 (shown as deleted). The requirements of these subsections are now mapped in Table 2510.6 as distinctly different solutions or methods for combining the various required components and options for those components (one combination of components is shown for each row of the table). Therefore, the user simply determines the correct climate "moisture regime" (see footnote a) and then selects an appropriate (or preferred) method and follows the required combination of components in that row of the table. This eliminates the need for a user to decipher the existing code text and cross-referenced requirements between different subsections of code to determine what is required. Finally, a footnote 'b' is added to the table to clarify that the more stringent moist/marine solutions can also be applied to the less stringent dry climate moisture regime (something the code inadvertently did not enable but which was intended to be permitted).

Bibliography: Lstiburek, J.W. (2005). Rainwater Management Performance of Newly Constructed Residential Building Enclosures During August and Septemeber 2004. Prepared for Home Builders Association of Metro Orlando and the Florida Home Builders Association by: Building Science Corporation, Westord, MA. January 11, 2005

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal strives to make no technical changes to the requirements in 2510.6 and focuses on formatting improvements and clarifications to better convey the various inter-related requirements and options in 2510.6 and particularly the cross-referenced requirements in subsections 2510.6.1 and 2510.6.2 for dry and moist/marine climates. The primary change is to reformat the subsections to address topics that apply regardless of the climate moisture regime and to place specific requirements and options (methods) in a table format where they can be easily visualized and selected without having to decipher the logic of the current code language.