POLICY STATEMENT

TO: Building Division Staff

CC: Paul Langdon, Director of Community Development

FROM: Steve Unser, Chief Building Official

EFFECTIVE DATE: November 1, 2006 (per the City Place 6 High-Rise Building, BP#16889-06)

RE: Fireproofing Structural Attachments to Fireproofed Beams and Columns.

The Building Division has a concern that unprotected structural attachments (steel angles, steel bracing, steel brackets supporting other members, etc.) to fireproofed beams/columns could allow (during a fire condition) an uncontrolled transfer of heat through the beams/columns' fire resistance rated protective covering into the structural element. Such an uncontrolled transfer of heat (heat sink) into a fireproofed beam or column could void the continuity and integrity of their required fire resistance rating.

To date, the Building Division is not aware of any fire test results or studies that quantify how many, how large or what spacing of unprotected structural attachments to fireproofed beams or columns is acceptable. In the absence of such documentation it makes sense to fireproof these attachments.

Rich Walke, an engineer with Underwriters Laboratories Inc., has been consulted regarding this issue. He shares the Building Division’s concern and has suggested that this type of attachment be fireproofed for at least 12 inches beyond its point of connection to the fireproofed beam/column. The type and thickness of fireproofing should be identical to that required for the specified beam or column assembly.

The “12 inch rule” is derived from the Introduction to Volume 1 of the UL Fire Resistance Directory, IV. BEAMS, (5) Unprotected Floors and Roofs, which reads as follows: “The beam ratings in the N Series designs may be used with unprotected steel floor deck assembly designs (D900 Series) or unprotected precast concrete floors provided that the beam fire protection material is oversprayed to the underside of the floor on both sides of the beam for a minimum width of 12 in. beyond the edges of the beam flange. The thickness of the protection material oversprayed to the underside of the floor should be the same as required for the beam.”

Therefore, as a matter of policy, the Building Division shall require that unprotected structural attachments to fireproofed beams/columns shall be fireproofed for 12 inches beyond their points of connection to said beams/columns with the same type and thickness of fireproofing as required for the specified beam/column assembly. Field conditions may warrant equivalencies to this policy being approved.
November 8, 2016

Mr. Paul R. Menard, AIA, Quality Manager  
Capital Program | Operations and Programs Division  
Judicial Council of California  
2860 Gateway Oaks Drive  
Suite 400  
Sacramento, CA 95833-3509


Dear Paul:

This letter confirms that I have received and read the referenced Report, which describes additional structural analysis work performed as a follow-up to our fire resistance report of Sept. 8, 2016. The main conclusion of the latter Jensen Hughes report was that the primary perimeter beams of the New Stockton Courthouse building, which are connected to partially protected secondary tube attachments, would experience locally severe overheating during a fire exposure and, thereby, become non-compliant with the required 3-hour fire resistance rating based on the ASTM E119 standard.

The objective of the additional structural analyses by Thornton-Tomasetti was to evaluate the effect of this localized steel beam overheating on their structural integrity throughout the building. As stated, this was done analytically using the criteria of the ANSI/AISC 360 standard, in particular Appendix 4 “Structural Design for Fire Conditions”. The following provide my general observations and comments on this Thornton-Tomasetti Report.

- Reported methodology is technically sound in extending the thermal results of the Jensen Hughes analyses to structural performance at high temperatures. The structural modeling “pin” assumption to represent total bending capacity loss of the beam section at the tube attachments is conservative.

- It is likewise appropriate to consider that all simply-supported beams with partially protected tube attachments would form an unstable collapse mechanism during a fire, and thus, such tubes would require fire protection remediation.

- The report comprehensively addresses all perimeter beams with tube attachments in the building. It clearly and justifiably identifies those which require fire protection remediation of the tube attachments and those which do not.

- The conclusions and recommendations are well documented.

Respectfully submitted,

JENSEN HUGHES

Nestor Iwankiw, PE, PhD
Senior Engineer
1. HOW DO YOU WANT TO SEARCH?

FIRE-RESISTANCE DESIGN

Fire-resistance Ratings - ANSI/UL 263, BXUV

Guide Information for Fire-resistance Ratings

Design Information Section

The Design Information Section supplements the individual published designs and is organized as follows:

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I. INTRODUCTION

This category covers fire-rating certifications based upon the test method and acceptance criteria in ANSI/UL 263 (ASTM E119), "Fire Tests of Building Construction and Materials." The ratings are expressed in hours and are applicable to floor-ceilings, roof-ceilings, beams, columns, walls and partitions.

The average furnace temperature from which these ratings are derived is 1000°F at 5 min., 1400°F at 15 min., 1550°F at 30 min., 1700°F at 60 min., 1850°F at 120 min., 1925°F at 180 min., and 2000°F at 240 min.

When a test assembly complies with the acceptance criteria, a detailed description of the assembly, its performance in the fire test, and other pertinent details such as specification of materials, certification coverage and alternate assembly details are included in a Report for the test sponsor. Sponsors may provide copies of the complete Test Report upon request. The Report also contains a summary of important features of the rated assembly. These summaries are also published in this Directory. Variations from the published specifications should be considered as not being investigated by UL.

NUMBERING SYSTEM FOR FIRE-RATED ASSEMBLIES

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The prefix numbers with an asterisk (*) and the design numbers indicated as "Reserved" in the above table are for future expansion and to cater to new types of systems developed in the future.

1. Rapid-rise Fire Test

Fire-resistance designs for protecting structural members subject to petrochemical exposure fires are investigated to ANSI/UL 1709, "Rapid Rise Fire Tests of Protection Materials for Structural Steel," and are covered under Fire-resistance Ratings - ANSI/UL 1709 (BYBU). Systems complying with these requirements include an "XR" design prefix.

2. Definitions

Definitions of selected terms used to identify the types of protection referenced in the following Numbering System Table are:

**Batts and Blankets** — A category for a group of UL-certified products. The complete description of the products in the category and supplementary requirements for certification are covered under Batts and Blankets (BZJZ).

**Building Units** — A category for a group of UL-certified products. The complete description of the products in the category and supplementary requirements for certification are covered under Building Units (BZXX).
For concrete floors, an equal or greater capacity for heat dissipation exists when the concrete has an equal or greater density range and volume per unit floor area.

**Spray-applied Fire-resistive Materials**

**Application of N Series Designs**

When it is the intent to only maintain the existing Assembly Rating, the beams, steel joists and steel trusses from N Series designs may be substituted for the tested structural member, provided the hourly Unrestrained Beam Rating of the structural member being transferred is at least equal to the Unrestrained Beam Rating of the structural member being replaced. Additionally, for steel joists and steel trusses the Restrained Beam Rating of the joist or truss being transferred should be equal to or greater than the Restrained Assembly Rating of the floor-ceiling assembly into which the joist or truss is being transferred.

When it is the intent to comply with requirements that the structural member's hourly rating be equal to or greater than the assembly's hourly rating, the structural member from the N Series design may be substituted for the tested structural member, provided also that the hourly Beam Rating of the structural member being transferred is at least equal to the hourly rating of the requirement. Additionally, the Restrained Beam Rating of the structural member being transferred should be equal to or greater than the Restrained Assembly Rating of the floor assembly into which the structural member is being transferred.

For applications where the assembly's hourly rating differs from the structural member rating, particular attention should be made to the thickness of fire-protection materials applied to the underside of the floor adjacent to the structural member. The thickness of the fire-protection material required within 12 in. beyond the edges of the structural member should be the lesser of the beam protection thickness or the deck protection thickness as required by the N Series design but not less than the thickness of the fire-protection material required by the assembly.

**Application of S Series Designs**

When it is the intent to only maintain the existing Assembly Rating, the beams, steel joists and steel trusses from the S Series designs may be substituted for the tested structural member, provided the hourly Unrestrained Beam Rating of the structural member being transferred is at least equal to the Unrestrained Beam Rating of the structural member being replaced. Additionally, the Restrained Beam Rating of the structural member being transferred should be equal to or greater than the Restrained Assembly Rating of the roof assembly into which the structural member is being transferred.

When it is the intent to comply with requirements that the structural member's hourly rating be equal to or greater than the assembly's hourly rating, the structural member from the S Series design may be substituted for the tested beam, provided also that...
the hourly Beam Rating of the structural member being transferred is at least equal to the hourly rating of the requirement. Additionally, the Restrained Beam Rating of the structural member being transferred should be equal to or greater than the Restrained Assembly Rating of the roof assembly into which the structural member is being transferred.

For applications where the assembly's hourly rating differs from the structural member rating, particular attention should be made to the thickness of the fire-protection materials applied to the underside of the roof deck adjacent to the structural member. The thickness of the fire-protection material required within 12 in. beyond the edges of the structural member should be the lesser of the beam protection thickness or the deck protection thickness as required by the S Series design but not less than the thickness of the fire-protection material required by the assembly.

Application of A, D, G, J and P Series Designs

When it is the intent to only maintain the existing Assembly Rating, the beams from A, D, G, J and P Series designs may be substituted for the tested beam, provided that:
(1) the Unrestrained Beam Rating of the beam being transferred is equal to or greater than the Unrestrained Beam Rating of the beam being replaced; and (2) the Restrained Assembly Rating of the assembly from which the beam is being transferred is equal to or greater than the Restrained Assembly Rating of the assembly into which the beam is being transferred.

When it is the intent to comply with requirements that the beam's hourly rating be equal to or greater than the assembly's hourly rating, the beams from A, D, G, J and P Series designs may be substituted for the tested beam, provided also that the hourly Unrestrained Rating of the beam being transferred is at least equal to the hourly rating of the requirement.

Mastic and Intumescent Coatings

Application of N Series and S Series Designs

The beams, steel joists and steel trusses from N Series designs may be substituted for the tested structural member, provided the hourly Unrestrained Beam Rating of the structural member being transferred is at least equal to the Unrestrained Beam Rating of the structural member being replaced, and the Restrained Beam Rating of the structural member being transferred is equal to or greater than the Restrained Assembly Rating of the floor-ceiling assembly into which the structural member is being transferred.

5. Unprotected Floors and Roofs

The Unrestrained Beam Ratings in the N400, N600, N700 and N800 Series designs with spray-applied fire-protection material on the steel floor decks may be used with unprotected steel floor deck assembly designs (D900 Series) or unprotected precast
704.6 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

Add new text as follows:

704.6.1 Secondary (non-structural) attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating as required for the structural member. The protection shall extend from the structural member a distance of not less than 12 inches. An open tubular attachment shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.

Reason:
Primary structural frame members shall comply with Table 601 for fire resistance rating. Secondary (non-structural) steel tubes provide support for a building’s exterior curtain wall and are thereby considered to be unrated members that do not require any fire protection. The connection of non-structural tubes to primary structural members has potentially adverse thermal effects on the required fire resistance rating of the primary steel frame members.

Building attachments for miscellaneous non-structural items (hangers, braces, framing tracks, erection lifting lugs, wall supports, etc.) are typically not required to be individually fire protected. In addition, fire resistance rated assemblies are tested without attachments, and with a homogeneous and continuous protection system or material. Thus, rated assemblies are explicitly limited to only the tested or approved components given in the published listing, which does not include bare steel attachments or discontinuous member protection. If such secondary steel attachments are connected to a fire resistance rated steel assembly, they may jeopardize the assembly’s rating and protection system by the introduction of “thermal shorts”, which can cause unexpected and excessive heat conduction, convection, or radiation through the attachment or its connection to the primary assembly.

The proposal to require a 12-inch extension of fireproofing on all non-structural attachments is based on a general industry practice as described in ANSI/UL 263 BXUV (exhibit C). Attached in the documentation is exhibit A, a letter from Steve Unser, a chief building official from the City of Creve Coeur, MO stating a policy to address the “12-inch rule” of fireproofing structural attachments to fireproofed beams and columns.

Moreover, in cases where an open tubular steel connection is utilized it is vital that the interior surfaces of the tube walls are fireproofed and the bottom ends of the tubes are closed. Without this protection, this condition results in bare (unprotected) steel areas at the attachment that could be directly exposed to radiant and convective heat from a fire source.

Attached (exhibit B1 and B2) is a modeling analysis of a high-rise project in Stockton, CA prepared by Jensen Hughes Senior Engineers Nestor Iwankiw and Thomas Forsythe. Their analysis further supports the proposed code change that would require fire proofing of secondary non-structural attachments.

Under the current code, fire-proofing requirements for non-structural attachments and their connections remain ambiguous. This lack of clarity makes fire protection enforcement difficult due to increased construction costs for contractors, builders and owners. Furthermore, special inspectors, fire and building officials are not taught to look for these deficiencies, resulting in numerous buildings with unprotected steel that can potentially have serious implications on public safety and welfare.

The proposal establishes a legal basis for requiring the additional fire protection as described herein.

The 'attached' documentation can be viewed at this link established 2/21/18
https://www.dropbox.com/sh/t0hlmrx63gejfh/AABEvqgYih_QPK928kuUwazKa?dl=0

Cost Impact
The code change proposal will increase the cost of construction.

This code change will increase the cost of construction; however, without additional fire protection the structural integrity of the building may be compromised.

Internal ID: 1476
Proposed Change as Submitted

Proponent: Crystal Sujeski, representing Crystal Sujeski (crystal.sujeski@fire.ca.gov)

2018 International Building Code

704.6 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

Add new text as follows

704.6.1 Secondary (non-structural) attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating as required for the structural member. The protection shall extend from the structural member a distance of not less than 12 inches. An open tubular attachment shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.

Reason: Primary structural frame members shall comply with Table 601 for fire resistance rating. Secondary (non-structural) steel tubes provide support for a building's exterior curtain wall and are thereby considered to be unrated members that do not require any fire protection. The connection of non-structural tubes to primary structural members has potentially adverse thermal effects on the required fire resistance rating of the primary steel frame members.

Building attachments for miscellaneous non-structural items (hangers, braces, framing tracks, erection lifting lugs, wall supports, etc.) are typically not required to be individually fire protected. In addition, fire resistance rated assemblies are tested without attachments, and with a homogeneous and continuous protection system or material. Thus, rated assemblies are explicitly limited to only the tested or approved components given in the published listing, which does not include bare steel attachments or discontinuous member protection. If such secondary steel attachments are connected to a fire resistance rated steel assembly, they may jeopardize the assembly’s rating and protection system by the introduction of “thermal shorts”, which can cause unexpected and excessive heat conduction, convection, or radiation through the attachment or its connection to the primary assembly.

The proposal to require a 12-inch extension of fireproofing on all non-structural attachments is based on a general industry practice as described in ANSI/UL 263 BXUV (exhibit C). Attached in the documentation is exhibit A, a letter from Steve Unser, a chief building official from the City of Creve Coeur, MO stating a policy to address the “12-inch rule” of fireproofing structural attachments to fireproofed beams and columns.

Moreover, in cases where an open tubular steel connection is utilized it is vital that the interior surfaces of the tube walls are fireproofed and the bottom ends of the tubes are closed. Without this protection, this condition results in bare (unprotected) steel areas at the attachment that could be directly exposed to radiant and convective heat from a fire source.

Attached (exhibit B1 and B2) is a modeling analysis of a high-rise project in Stockton, CA prepared by Jensen Hughes Senior Engineers Nestor Iwankiw and Thomas Forsythe. Their analysis further supports the proposed code change that would require fire proofing of secondary non-structural attachments.

Under the current code, fire-proofing requirements for non-structural attachments and their connections remain ambiguous. This lack of clarity makes fire protection enforcement difficult due to increased construction costs for contractors, builders and owners. Furthermore, special inspectors, fire and building officials are not taught to look for these deficiencies, resulting in numerous buildings with unprotected steel that can potentially have serious implications on public safety and welfare.

The proposal establishes a legal basis for requiring the additional fire protection as described herein.

The 'attached' documentation can be viewed at this link established 2/21/18

https://www.dropbox.com/sh/t0hlmrxf63gejfh/AABEvqgYih_QPK928kuUwazKa?dl=0

Cost Impact: The code change proposal will increase the cost of construction
This code change will increase the cost of construction; however, without additional fire protection the structural integrity of the building may be compromised.
Public Hearing Results

Committee Action: As Modified

Committee Modification: 704.6.1 Secondary (non-structural) attachments to structural members.
Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When the ends are open, the fire resistive material and thickness shall be applied to both exterior and interior of the tubular steel attachment. shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.

Committee Reason: The modification refines the language to better reflect the intent of the proposal. The change clarifies an area of framing and the appropriate level of protection. Structural tubing has been a question of the years and there is evidence of heat transferring into the structure from such tubing. Perhaps a public comment expanding this solution to other attachments of shapes other than tubular. (Vote 11-3)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Crystal Sujeski, representing Crystal Sujeski (crystal.sujeski@fire.ca.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

704.6.1 Secondary attachments to structural members. Where primary and secondary structural members require fire protection, secondary tubular steel attachments to those structural members shall be protected with the same fire resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When an attachment is hollow and the ends are open, the fire resistive material and thickness shall be applied to both the exterior and interior of the tubular hollow steel attachment.

Commenter's Reason: This public comment has modified the proposal FS-8 to address the committee comments to expand the requirements for fire protection to be all inclusive of secondary steel attachments and not just limited to tubular steel.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The cost of construction will be increased minimally, however without additional fire protection the structural integrity of the building may be compromised.
FLOOR MODIFICATION

FS8-18-SUJESKI-1
Proponent of Floor Modification: Crystal Sujeski, representing Crystal Sujeski

2018 International Building Code

Modify proposal as follows:

704.6.1 Secondary (non-structural) attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating as required for the structural member. The protection shall extend from the structural member a distance of not less than 12 inches. An open tubular attachment shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.
FLOOR MODIFICATION

FS8-18-SUJESKI-3

Proponent of Floor Modification: Crystal Sujeski, representing Crystal Sujeski (crystal.sujeski@fire.ca.gov)

2018 International Building Code

Modify proposal as follows:

704.6.1 Secondary (non-structural) attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When the ends are open, the fire resistive material and thickness shall be applied to both exterior and interior of the tubular steel attachment. shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.
2018 International Building Code

Modify proposal as follows:

704.6.1 Secondary (non-structural) attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary (non-structural) tubular steel attachments to those structural members shall be protected with the same fire resistive rating material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When the ends are open, the fire resistive material and thickness shall be applied to both exterior and interior of the tubular steel attachment. It shall be filled with an equivalent fire protection method for a distance of 12-inch length from the structural member, or the entire length of the open tube, whichever is less.
tions based on such tests that satisfactorily demonstrate that the assembly has the required fire resistance.

704.6 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

704.6.1 Secondary attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary attachments to those structural members shall be protected with the same fire-resistant material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When an attachment is hollow and the ends are open, the fire-resistant material and thickness shall be applied to both exterior and interior of the hollow steel attachment.

704.7 Reinforcing. Thickness of protection for concrete or masonry reinforcement shall be measured to the outside of the reinforcement except that stirrups and spiral reinforcement ties are permitted to project not more than 0.5-inch (12.7 mm) into the protection.

704.8 Embedments and enclosures. Pipes, wires, conduits, ducts or other service facilities shall not be embedded in the required fire protective covering of a structural member that is required to be individually encased.

704.9 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.

Exception: Corner protection is not required on concrete columns in parking garages.

704.10 Exterior structural members. Load-bearing structural members located within the exterior walls or on the outside of a building or structure shall be provided with the highest fire-resistance rating as determined in accordance with the following:

1. As required by Table 601 for the type of building element based on the type of construction of the building.
2. As required by Table 601 for exterior bearing walls based on the type of construction.
3. As required by Table 602 for exterior walls based on the fire separation distance.

704.11 Bottom flange protection. Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches (1931 mm) whether part of the primary structural frame or not, and from the bottom flange of lintels, shelf angles and plates not part of the structural frame, regardless of span.

704.12 Seismic isolation systems. Fire-resistance ratings for the isolation system shall meet the fire-resistance rating required for the columns, walls or other structural elements in which the isolation system is installed in accordance with Table 601. Isolation systems required to have a fire-resistance rating shall be protected with approved materials or construction assemblies designed to provide the same degree of fire resistance as the structural element in which the system is installed when tested in accordance with ASTM E119 or UL 263 (see Section 703.2).

Such isolation system protection applied to isolator units shall be capable of retarding the transfer of heat to the isolator unit in such a manner that the required gravity load-carrying capacity of the isolator unit will not be impaired after exposure to the standard time-temperature curve fire test prescribed in ASTM E119 or UL 263 for a duration not less than that required for the fire-resistance rating of the structure element in which the system is installed.

Such isolation system protection applied to isolator units shall be suitably designed and securely installed so as not to dislodge, loosen, sustain damage or otherwise impair its ability to accommodate the seismic movements for which the isolator unit is designed and to maintain its integrity for the purpose of providing the required fire-resistance protection.

704.13 Sprayed fire-resistant materials (SFRM). Sprayed fire-resistant materials (SFRM) shall comply with Sections 704.13.1 through 704.13.5.

704.13.1 Fire-resistance rating. The application of SFRM shall be consistent with the fire-resistance rating and the listing, including, but not limited to, minimum thickness and dry density of the applied SFRM, method of application, substrate surface conditions and the use of bonding adhesives, sealants, reinforcing or other materials.

704.13.2 Manufacturer’s installation instructions. The application of SFRM shall be in accordance with the manufacturer’s installation instructions. The instructions shall include, but are not limited to, substrate temperatures and surface conditions and SFRM handling, storage, mixing, conveyance, method of application, curing and ventilation.

704.13.3 Substrate condition. The SFRM shall be applied to a substrate in compliance with Sections 704.13.3.1 and 704.13.3.2.

704.13.3.1 Surface conditions. Substrates to receive SFRM shall be free of dirt, oil, grease, release agents, loose scale and any other condition that prevents adhesion. The substrates shall be free of primers, paints and encapsulants other than those fire tested and listed by a nationally recognized testing agency. Primed, painted or encapsulated steel shall be allowed, provided that testing has demonstrated that required adhesion is maintained.

704.13.3.2 Primers, paints and encapsulants. Where the SFRM is to be applied over primers, paints or encapsulants other than those specified in the listing, the material shall be field tested in accordance with ASTM E736. Where testing of the SFRM with primers, paints or encapsulants demonstrates that required adhesion is maintained, SFRM shall be permitted to be applied to primed, painted or encapsulated wide flange steel shapes in accordance with the following conditions:

1. The beam flange width does not exceed 12 inches (305 mm); or