S213-07/08
2302, 2303.1, 2303.1.12 (New), Chapter 35 (New)

Proposed Change as Submitted:

Proponent: John Woestman, The Kellen Company, representing Composite Lumber Manufacturers Association

1. Add new text as follows:

SECTION 2302
DEFINITIONS

WOOD PLASTIC COMPOSITE. A composite material made primarily from wood or cellulose-based materials and plastic.

2303.1.12 Wood plastic composites. Wood plastic composites used in exterior deck boards, stair treads, handrails and guardrail systems shall bear a label indicating the required performance levels and demonstrating compliance with the provisions of ASTM D 7032, and shall be installed in accordance with the manufacturer's instructions.

2. Revise as follows:

2303.1 General. Structural sawn lumber; end-jointed lumber; prefabricated wood I-joists; structural glued-laminated timber; wood structural panels, fiberboard sheathing (when used structurally); hardboard siding (when used structurally); particleboard; preservative-treated wood; structural log members; structural composite lumber; round timber poles and piles; fire-retardant-treated wood; hardwood plywood; wood trusses; wood plastic composites, joist hangers; nails; and staples shall conform to the applicable provisions of this section.

3. Add standard to Chapter 35 as follows:

ASTM

D 7032-07	Standard Specification for Establishing Performance Ratings For Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)

Reason: This proposal adds a new requirement to IBC that wood plastic composites increasingly used as exterior decks boards, stair treads, handrails, and guards be rated for performance criteria. This proposal also adds a definition for wood plastic composites and adds the appropriate ASTM reference standard to the code. The IBC is currently silent on these materials despite their growing acceptance for deck construction.

The addition of labeling requirements for wood plastic composites will ensure safe application of these materials in exterior deck systems. The referenced standard, ASTM D7032, includes performance evaluations such as flexural tests, ultraviolet resistance tests, freeze-thaw resistance tests, bio-deterioration tests, fire performance tests, creep recovery tests, mechanical fastener holding tests, and slip resistance tests. The standard also includes considerations of the effects of temperature and moisture, concentrated loads, and fire-propagation tests.

Wood plastic composite material manufacturers who seek to provide quality materials currently demonstrate compliance with the intent of code requirements in the IBC through the use of evaluation reports. Requiring these materials to be approved through testing to the ASTM standard by approved laboratories and labeling by approved quality assurance entities will ensure that the code requirements for structural and fire safety issues are met. This code proposal also provides the industry with additional options for demonstrating compliance.

Text from the scope of ASTM D 7032 is included below for additional background information:

1.1 This specification covers the procedures to establish a performance rating for wood-plastic composite (WPC) deck boards. This specification also defines the procedures to establish a performance rating for WPC guards and handrails. The purpose of this specification is to establish the basis for code recognition of these products or systems in exterior applications where combustible construction is allowed.

1.2 Deck boards, guards, and handrails covered by this specification are permitted to be of any code compliant shape and thickness (solid or non-solid).

1.3 A deck board, and a deck board used as a stair tread, are assigned a span rating indicating its ability to comply with model code specified functions identified for its specific end use. A guard or handrail is recognized for its ability to meet minimum code requirements specified in the appropriate model building code.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: Review of proposed new standard ASTM D 7032-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action: **Disapproved**

Committee Reason: The proposed definition of "wood plastic composite" is overly broad which could lead to misapplication. Another concern is that there is no design method provided for these materials.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

John Woestman, The Kellen Company, representing The Composite Lumber Manufacturers Association (CLMA), requests Approval as Modified by this Public Committee.

Modify proposal as follows:

2303.1.12 Wood plastic composites. Wood plastic composites used in exterior deck boards, stair treads, handrails and guardrail systems shall bear a label indicating the required performance levels and demonstrating compliance with the provisions of ASTM D 7032~~, and shall be installed in accordance with the manufacturer's instructions~~.
(portions of proposal not shown remain unchanged)

Commenter's Reason: The Composite Lumber Manufacturers Association (CLMA) respectfully requests that proposal S213 be approved with the further modification as indicated.

This proposal adds to the IBC essentially the same requirements currently in the IRC for wood plastic composite deck materials. This proposal also adds the appropriate ASTM reference standard (ASTM D7032) to the IBC and includes a definition of "Wood Plastic Composite" consistent with the IRC and consistent with the referenced ASTM standard. Adding this definition to Chapter 23 limits its application to this chapter and to the wood plastic composite deck materials added to this chapter by this proposal.

This proposal, with its reference to ASTM D 7032, requires that wood plastic composite deck boards be labeled with a performance rating (span rating) as a deck board and / or stair tread per load testing defined in ASTM D 7032. D 7032 provides all allowable load and allowable spans for this material's specific end use, thus clearly defining its strength and performance limitations. Similarly, this proposal requires guardrail systems to be labeled with a performance rating per structural load testing defined in ASTM D 7032. . The addition of these labeling requirements will help ensure appropriate selection of these materials to meet required design loads for the deck or guardrail system and allow for faster and easier code enforcement

Regarding the proposed modification, CLMA's position is that wood plastic composite deck boards should be required to be installed in accordance with the manufacturer's instructions. However, when revisiting S213 as proposed, we realized it may be considered inappropriate to include installation requirements in this section of the IBC (Section 2303 Minimum Standards and Quality). This "Approved as Modified by the Public Comment" proposal deletes this possibly inappropriate text.

Final Action: AS AM AMPC____ D

S214-07/08, Part I
2303.2.1 (New), 2303.2.2 (New), 2303.2.3 (New)

Proposed Change as Submitted:

PART I – IBC STRUCTURAL

Proponent: Joseph T. Holland, III, Hoover Treated Wood Products, representing Hoover Treated Wood Products

Add new text as follows:

2303.2 (Supp) Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84 or UL 723, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, 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.

2303.2.1 Pressure process. For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures considerably above atmospheric.

2303.2.2 Other means during manufacture. For wood products produced 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.

2303.2.3 Testing. For wood products produced by other means during manufacture, other than a pressure process, all sides of the wood product shall be tested in accordance with and produce the results required in Section 2303.2. Wood structural panels shall be permitted to test only the front and back faces.

(Renumber subsequent sections)

Reason: Purpose: Clarify the meaning of the phrase "pressure process or other means during manufacture" and provide testing requirements of treatments not impregnated by a pressure process in accordance with 2303.2 (R802.1.3 IRC).

Fire-retardant-treated wood is permitted for applications where noncombustible materials are required. It is a building and life safety issue. It is essential that any product used for such applications meet rigorous requirements insuring it will perform as expected. Equivalent performance from all sides insures installation is not a factor or which direction a fire is supposed to come from does not become an issue.

Cost Impact: The code change proposal will not increase the cost of construction.

PART I – IBC STRUCTURAL
Committee Action: **Disapproved**

Committee Reason: The intent to clarify the methods of fire retardant treatment may be good, but the proposed wording is not appropriate code language. Also enforcers would need some way to identify complying products in the field.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Joseph Holland, Hoover Treated Wood Products, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

2303.2 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84 or UL 723, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, 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.

2303.2.1 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 gage (psig) ~~considerably above atmospheric~~.

2303.2.2 Other means during manufacture. For wood products produced 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.

2303.2.2 Testing. For wood products produced by other means during manufacture, other than a pressure process, all sides of the wood product shall be tested in accordance with and produce the results required in Section 2303.2. Wood structural panels shall be permitted to test only the front and back faces.

Commenter's Reason: The Structural Committee felt the language needed clarifying. This comment eliminates the nontechnical language. The committee also questioned how a code official would enforce the provisions. Section 2303.2.1 requires a label. The label must comply with the provision of Chapter 17. If a product doesn't have a label from an approved agency it does not meet the code.

Final Action: AS AM AMPC____ D

S214-07/08, Part II
IRC R802.1.3.1 (New), R802.1.3.2 (New), R802.1.3.3 (New)

Proposed Change as Submitted:

PART II – IRC BUILDING/ENERGY

Proponent: Joseph T. Holland, III, Hoover Treated Wood Products, representing Hoover Treated Wood Products

Add new text as follows:

R802.1.3 Fire-retardant-treated wood. Fire-retardant treated wood (FRTW) is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84, a listed flame spread index of 25 or less and shows no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the center line of the burners at any time during the test.

R802.1.3.1 Pressure process. For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures considerably above atmospheric.

R802.1.3.2 Other means during manufacture. For wood products produced 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.

R802.1.3.3 Testing. For wood products produced by other means during manufacture, other than a pressure process, all sides of the wood product shall be tested in accordance with and produce the results required in Section R802.1.3. Wood structural panels shall be permitted to test only the front and back faces.

(Renumber subsequent sections)

Reason: Purpose: Clarify the meaning of the phrase "pressure process or other means during manufacture" and provide testing requirements of treatments not impregnated by a pressure process in accordance with 2303.2 (R802.1.3 IRC).

Fire-retardant-treated wood is permitted for applications where noncombustible materials are required. It is a building and life safety issue. It is essential that any product used for such applications meet rigorous requirements insuring it will perform as expected. Equivalent performance from all sides insures installation is not a factor or which direction a fire is supposed to come from does not become an issue.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC B/E
Committee Action: **Disapproved**

Committee Reason: The term "considerable" is ambiguous and unenforceable. There is no definition of the term "other means".

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Joseph Holland, Hoover Treated Wood Products, requests Approval as Modified by this public comment.

Modify proposal as follows:

R802.1.3 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84 or UL 723, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, 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.

R802.1.3.1 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) ~~considerably above atmospheric~~.

R802.1.3.2 Other means during manufacture. For wood products produced 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.

R802.1.3.3 Testing. For wood products produced by other means during manufacture, other than a pressure process, all sides of the wood product shall be tested in accordance with and produce the results required in Section 2303.2. Wood structural panels shall be permitted to test only the front and back faces.

DEFINITIONS
R202

FIRE-RETARDANT-TREATED WOOD. Pressure-treated lumber and plywood that exhibit reduced surface burning characteristics and resist propagation of fire.

Pressure process. A process for treating wood using an initial vacuum followed by the introduction of pressure above atmospheric.
Other means during manufacture. A process where the wood raw material is treated with a fire-retardant formulation while undergoing creation as a finished product.

Commenter's Reason: Revisions are submitted to address the Residential Code Committee's comments. They stated the term "considerable" was ambiguous and felt definitions were needed.

Final Action: AS AM AMPC____ D

S215-07/08, Part II

IRC R502.11, 502.11.1, 502.11.2, 503.11.3, 502.11.4, 502.11.4.1, 502.11.5, 502.11.6, 507.11.7, 502.11.8, 502.10.9, 502.11.10, R802.10

THIS CODE CHANGE WILL BE HEARD ON THE IRC BUILDING PORTION OF THE HEARING ORDER.

NOTE: PART I DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART I IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART II.

Proposed Change as Submitted:

PART II – IRC BUILDING/ENERGY

Proponent: Kirk Grundahl, PE, WTCA, representing the Structural Building Components Industry

1. Revise as follows:

R502.11 Wood trusses.

R502.11.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and ~~approved~~ accepted engineering practice. ~~The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1~~. Members are permitted to be joined by nails, glue, bolts, timber connectors, or other approved connecting devices.

2. Delete without substitution:

~~**R502.11.2 Bracing**. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with the Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.~~

~~**R502.11.3 Alterations to trusses**. Truss members and components shall not be cut, notched, spliced or otherwise altered in anyway without the approval of a registered design professional. Alterations resulting in the addition of load (e.g., HVAC equipment, water heater, etc.), that exceed the design load for the truss, shall not be permitted without verification that the truss is capable of supporting the additional loading.~~

3. Revise as follows:

~~**R502.11.4**~~ **R502.11.2 Truss design drawings**. Truss design drawings~~, prepared in compliance with Section R502.11.1,~~ shall be provided ~~submitted~~ to the building official for ~~and~~ approval ~~approved~~ prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Building code used for design, unless specified on cover/truss index sheet.
2~~1~~. Slope or depth, span and spacing.
3~~2~~. Location of all joints~~.~~ and support locations.
4. Number of plys if greater than one.
5~~3~~. Required bearing widths.
6 ~~4~~. Design loads as applicable, including:
    - 6.1 ~~4.1~~ Top chord live load;
    - 6.2 ~~4.2~~. Top chord dead load;
    - 6.3 ~~4.2~~. Bottom chord live load;
    - 6.4 ~~4.4~~ Bottom chord dead load;
    - 6.5 ~~4.5~~ Additional loads and locations; ~~Concentrated loads and their points of application; and~~
    - 6.6 ~~4.6~~ Environmental load design criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and ~~Controlling wind and earthquake loads.~~
    - 6.7. ~~6.5~~ Other lateral loads, including drag strut loads.

7~~5~~. Adjustments to ~~lumber~~ wood member and ~~joint connector~~ connecting device design values for conditions of use.
8~~6~~. ~~Each~~ Maximum reaction force and direction, including maximum uplift reaction forces where applicable.
9~~7~~. ~~Joint connector~~ Connecting device type, manufacturer, ~~and description, e.g.,~~ size, and thickness or gauge, and the dimensioned location of each ~~joint connector~~ connecting device except where symmetrically located relative to the joint interface.
10~~8~~. ~~Lumber~~ size, species and grade for each wood member.
11~~9~~. Truss-to-truss connection and truss field assembly requirements.
~~Connection requirements for:~~
~~9.1. Truss-to-girder-truss;~~
~~9.2. Truss ply-to-ply; and~~
~~9.3. Field splices~~.
12~~10~~. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection ~~description~~ for live and total load and creep as applicable.
13~~11~~. Maximum axial tension and compression forces in the truss members. ~~to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss drawing or on supplemental documents.~~
14~~12~~. Required permanent individual truss member ~~bracing~~ restraint location and the method of restraint/bracing to be used per Section R502.11.3

4. Add new text as follows:

R502.11.3 Requirements for the permanent member restraint/bracing of truss systems. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with the Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses. The method of permanent individual truss member restraint/bracing and the method of anchoring or restraining to prevent lateral movement of all truss members acting together as a system shall be accomplished by one or more of the following:

1. Standard industry details. Standard industry lateral restraint and diagonal bracing details in accordance with principles contained in BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses of the Building Component Safety Information (BCSI).
2. Substitution with reinforcement. Permanent individual truss member restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).
3. Project specific design. A project specific truss member permanent lateral restraint/bracing design for the roof or floor framing structural system shall be permitted to be specified by any building designer.

R502.11.3.1 Method specified by any building designer. The method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be permitted to be specified by any building designer.

In the absence of specific bracing requirements, trusses shall be braced in accordance with the principles contained in Building Component Safety Information (BCSI ~~1-03~~) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.

R502.11.4 Preparation of truss design drawings. The truss designer is responsible for the preparation of the truss design drawings based on the truss design criteria and requirements set forth in the Construction Documents. The truss design drawings shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

R502.11.4.1 Single truss component design. The truss designer shall be responsible for the single truss component design depicted on the truss design drawing.

R502.11.5 Truss placement diagram. The truss manufacturer, when required by contract, shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

502.11.6 Truss submittal package. Where required by the construction documents or contract, legal requirements or the building official, the truss manufacturer shall provide the appropriate truss submittal package to one or more of the following: building official; building designer and/or contractor for review and/or approval. R502.11.7 Truss to building anchorage. The building designer shall provide the following:

1. All anchorage designs required to resist uplift, gravity, and lateral loads,
2. Adequate truss to structural element connections, but not truss-to-truss connections.
3. Permanent building stability bracing; including truss anchorage to the permanent building stability bracing.

R502.11.8 Alterations to trusses. Truss members and components shall not be cut, notched, spliced or otherwise altered in anyway without the approval of a registered design professional. Alterations resulting in the addition of load i.e. mechanical equipment, piping, additional roofing or insulation, etc.), that exceed the design load for the truss, shall not be permitted without verification that the truss is capable of supporting the additional loading.

R502.11.9 Metal plate connected trusses. In addition to Sections 502.11.1 through R502.11.8, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109 as applicable.

R502.11.10 Truss quality assurance. Where trusses are not part of a manufacturing process in accordance with R502.11.9 or in accordance with a standard listed in Chapter 43, which provides requirements for quality control done under the supervision of a third party quality control agency, the building official shall be permitted to require the owner to employ a special inspector during construction and installation.

5. Add new text as follows:

R802.10.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and with accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, or other approved connection devices.

R802.10.1.1 Applicability limits. The provisions of this section shall control the design of truss roof framing when snow controls for buildings not greater than 60 feet (18 288 mm) in length perpendicular to the joist, rafter or truss span, not greater than 36 feet (10 973 mm) in width parallel to the joist rafter or truss span, not greater than two stories in height with each story not greater than 10 feet (3048 mm) high, and roof slopes not smaller than 3:12 (25-percent slope) or greater than 12:12 (100-percent slope). Truss roof framing constructed in accordance with the provisions of this section shall be limited to sites subjected to a maximum design wind speed of 110 miles per hour (49 m/s), Exposure A, B or C, and a maximum ground snow load of 70 psf (3352 Pa). Roof snow load is to be computed as: 0.7 p_g.

6. Revise as follows:

R802.10.~~1~~2 Truss design drawings. Truss design drawings, ~~prepared in conformance to Section R802.10.1,~~ shall be provided to the building official for ~~and approved~~ approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the jobsite. Truss design drawings shall include, at a minimum, the information specified below. ~~Truss design drawing shall be provided with the shipment of trusses delivered to the jobsite.~~

1. Building Code used for design unless specified on cover/truss Index Sheet.
~~1~~2. Slope or depth, span and spacing.
~~2~~3. Location of all joints and support locations.
4. Number of plys if greater than one.
~~3~~5. Required bearing widths.
4~~6~~. Design loads as applicable~~.~~, including:
   6~~4~~.1. Top chord live load. ~~(as determined from Section R301.6)~~(for roof trusses, this shall be the controlling case of live load or snow load);
   6~~4~~.2. Top chord dead load.
   6~~4~~.3. Bottom chord live load.
   6~~4~~.4. Bottom chord dead load.
   6~~4~~.5. ~~Concentrated loads and their points of application~~ Additional loads and locations.
   6~~4~~.6. ~~Controlling wind and earthquake loads.~~ Environmental load design criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads).
   6.7. Other lateral loads, including drag strut loads.

7~~5~~. Adjustments to ~~lumber~~ wood member and ~~joint connector~~ connecting device design values for conditions of use.
8~~6~~. ~~Each~~ Maximum reaction force and direction~~.~~, including maximum uplift reaction forces where applicable;
9~~7~~. ~~Joint connector~~ Connecting device type, manufacturer, ~~and description (e.g.,~~ size, thickness or gage~~)~~ and the dimensioned location of each connecting device, ~~joint connector~~ except where symmetrically located relative to the joint interface.
10~~8~~. ~~Lumber~~ Size, species and grade for each wood member.
11~~9~~. Truss-to-truss connection and truss field assembly requirements. ~~Connection requirements for:~~
~~9.1. Truss to girder-truss.~~
~~9.2. Truss ply to ply.~~
~~9.3. Field splices.~~
12~~10~~. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection ~~description~~ for live and total load.
13~~11~~. Maximum axial tension and compression forces in the truss members. ~~to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss design drawing or on supplemental documents.~~
14~~12~~. Required permanent individual truss member ~~bracing~~ restraint location and the method of restraint/bracing to be used per section 802.10.3.

7. Delete without substitution:

~~**R802.10.2 Design**. Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.~~

~~**R802.10.2.1 Applicability limits**. The provisions of this section shall control the design of truss roof framing when snow controls for buildings not greater than 60 feet (18 288 mm) in length perpendicular to the joist, rafter or truss span, not greater than 36 feet (10 973 mm) in width parallel to the joist span or truss, not greater than two stories in height with each story not greater than 10 feet (3048 mm) high, and roof slopes not smaller than 3:12 (25-percent slope) or greater than 12:12 (100-percent slope). Truss roof framing constructed in accordance with the provisions of this section shall be limited to sites subjected to a maximum design wind speed of 110 miles per hour (49 m/s), Exposure A, B or C, and a maximum ground snow load of 70 psf (3352 Pa). Roof snow load is to be computed as: 0.7 p_g.~~

8. Revise as follows:

R802.10.3 ~~Bracing~~ Requirements for the permanent member restraint/bracing of truss systems. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. ~~In the absence of specific bracing requirements, trusses shall be braced in accordance with the Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.~~ The method of permanent individual truss member restraint/bracing and the method of anchoring or restraining to prevent lateral movement of all truss members acting together as a system shall be accomplished by one or more of the following:

1. Standard industry details. Standard industry lateral restraint and diagonal bracing details in accordance with principles contained in BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses of the Building Component Safety Information (BCSI).
2. Substitution with reinforcement. Permanent individual truss member restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).
3. Project Specific Design. A project specific truss member permanent lateral restraint/bracing design for the roof or floor framing structural system shall be permitted to be specified by any building designer.

9. Add new text as follows:

R802.10.3.1 Method specified by any building designer. The method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be permitted to be specified by any building designer.

In the absence of specific bracing requirements, trusses shall be braced in accordance with the principles contained in Building Component Safety Information (BCSI) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.

R802.10.4 Preparation of truss design drawings. The truss designer is responsible for the preparation of the truss design drawings based on the truss design criteria and requirements set forth in the construction documents. The truss design drawings shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

R802.10.4.1 Single truss component design. The truss designer shall be responsible for the single truss component design depicted on the truss design drawing.

R802.10.5 Truss placement diagram. The truss manufacturer, when required by contract, shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

R802.10.6 Truss submittal package. Where required by the construction documents or contract, legal requirements or the building official, the truss manufacturer shall provide the appropriate truss submittal package to one or more of the following: building official; building designer and/or contractor for review and/or approval.

R802.10.7 Truss to building anchorage. The building designer shall provide the following:

1. All anchorage designs required to resist uplift, gravity, and lateral loads,
2. Adequate truss to structural element connections, but not truss-to-truss connections.
3. Permanent building stability bracing; including truss anchorage to the permanent building stability bracing.

10. Revise as follows:

R802.10.84 Alterations to trusses. Truss members shall not be cut, notched, drilled, spliced or otherwise altered in any way without the approval of a registered design professional. Alterations resulting in the addition of load (~~e.g., HVAC equipment, water heater~~ i.e mechanical equipment, piping, additional roofing or insulation, etc.) that exceeds the design load for the truss shall not be permitted without verification that the truss is capable of supporting such additional loading.

11. Delete without substitution:

~~**R802.10.5 Truss to wall connection**. Trusses shall be connected to wall plates by the use of approved connectors having a resistance to uplift of not less than 175 pounds (779 N) and shall be installed in accordance with the manufacturer's specifications. For roof assemblies subject to wind uplift pressures of 20 pounds per square foot (960 Pa) or greater, as established in TableR301.2(2), adjusted for height and exposure per Table R301.2(3), see section R802.11.~~

12 Add new text as follows:

R802.10.9 Metal plate connected trusses. In addition to Sections R802.10.1 through R802.10.8, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section R109 as applicable

R802.10.10 Truss quality assurance. Where trusses are not part of a manufacturing process in accordance with R802.10.9 or in accordance with a standard listed in Chapter 43, which provides requirements for quality control done under the supervision of a third party quality control agency, the building official shall be permitted to require, the owner to employ a special inspector during construction and installation.

Reason: Part I - IBC. The goal of this proposed code change is to update the language in 2303.4 to be harmonized with the current language that is being used in most recent ANSI/TPI 1 consensus standard. There is a great deal of value to have common and uniform terminology in 2303.4, ANSI/TPI 1 and within the standard industry bracing details. Consistency in approach will lead to better understanding, design, application and life-safety. By implementing this code language, we believe this change will markedly improve the construction process as it relates to trusses.

This code change will update the language to the most current and technically comprehensive language being used within the truss industry today. Please see appendix A for an easy to follow comparison to the 2007 IBC Supplement and ANSI/TPI 1 Chapter 2.

ANSI/TPI 1 Chapter 2 Provisions	2007 2303.4 MPC Trusses	2009 IBC Code Change Proposal for 2303.4 MPC Trusses
	2303.4 Trusses.	2303.4 Trusses.
	2303.4.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved framing devices.	2303.4.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved ~~framing~~ connecting devices.
Truss Design Drawing: Written, graphic and pictorial depiction of an individual Truss that includes the information required in Sections 2.3.5.5 and 2.4.5.4.	2303.4.1.1 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:	2303.4.1.1 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:
2.3.5.5 Information on Truss Design Drawings. Truss Design Drawings shall include, at a minimum, the information specified below:		
(a) Building Code used for Design, unless specified on Cover/Truss Index Sheet.		1. Building Code used for Design, unless specified on Cover/Truss Index Sheet.
(b) Slope or depth, span and spacing.	1. Slope or depth, span and spacing;	2. ~~1.~~ Slope or depth, span and spacing;
(c) Location of all joints and support locations.	2. Location of all joints;	3. ~~2.~~ Location of all joints and support locations;
(d) Number of plys if greater than one.		4. Number of plys if greater than one.
(e) Required bearing widths.	3. Required bearing widths;	5. ~~3~~. Required bearing widths;
(f) Design loads as applicable, including:	4. Design loads as applicable;	6. ~~4.~~ Design loads as applicable, including;
(1) Top chord live load (for roof trusses, this shall be the controlling case of live load or snow load);	4.1. Top chord live load (including snow loads);	6.~~4.~~ 1. Top chord live load (for roof trusses, this shall be the controlling case of live load or snow load); ~~(including snow loads);~~
(2) Top chord dead load;	4.2. Top chord dead load;	6.~~4.~~ 2. Top chord dead load;
(3) Bottom chord live load;	4.3. Bottom chord live load;	6.~~4.~~ 3. Bottom chord live load;
(4) Bottom chord dead load;	4.4. Bottom chord dead load;	6.~~4.~~ 4. Bottom chord dead load;
(5) Additional loads and locations;	4. 5. Concentrated loads and their points of application as applicable; and	6.~~4.~~ 5. Additional loads and locations; ~~Concentrated loads and their points of application as applicable; and~~
(6) Environmental Load Design Criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and	4. 6.Controlling wind and earthquake loads as applicable.	6.~~4.~~ 6. Environmental load design criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and ~~Controlling wind and earthquake loads as applicable.~~
(7) Other lateral loads, including drag strut loads.		6.7 Other lateral loads, including drag strut loads.
(g) Adjustments to wood member and metal connector plate design values for conditions of use.	5. Adjustments to wood member and metal connector plate design value for conditions of use;	7. ~~5.~~ Adjustments to wood member and ~~metal connector plate~~ connecting device design values for conditions of use;

(h) Maximum reaction force and direction, including maximum uplift reaction forces where applicable.	6. Each reaction force and direction;	8. ~~6. Each~~ Maximum ~~-~~reaction force and direction, including maximum uplift reaction forces where applicable;
(i) Metal connector plate type, manufacturer, size, and thickness or gauge, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface.	7. Metal connector plate type, size, and thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface;	9. ~~7. Metal connector plate~~ Connecting device type, size, and thickness or gage, and the dimensioned location of each ~~metal~~ connecting device ~~or plate~~ except where symmetrically located relative to the joint interface;
(j) Size, species and grade for each wood member.	8. Size, species and grade for each wood member;	10. ~~8.~~ Size, species and grade for each wood member;
(k) Truss-to-Truss connection and Truss field assembly requirements.	9. Specific connection capacities or connection capacities required for: 9.1. Truss to truss girder; 9.2. Truss ply to ply; and 9.3. Field assembly of a truss when the truss shown on the individual truss design drawing is supplied in separate pieces that will be field connected.	11. Truss-to-truss connection and truss field assembly requirements. ~~9. Specific connection capacities or connection capacities required for:~~ ~~9.1. Truss to truss girder;~~ ~~9.2. Truss ply to ply; and~~ ~~9.3. Field assembly of a truss when the truss shown on the individual truss design drawing is supplied in separate pieces that will be field connected.~~
(l) Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and K_{CR} as applicable.	10. Calculated deflection ratio and maximum vertical and horizontal deflection for live and total load as applicable;	12~~0~~. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and creep as applicable;
(m) Maximum axial tension and compression forces in the Truss members.	11. Maximum axial tension and compression forces in the truss members; and	13~~1~~. Maximum axial tension and compression forces in the truss members; and
(n) Fabrication Tolerance per Section 6.4.10. (o) Required Permanent Individual Truss Member Restraint location and the method of Restraint/Bracing to be used per Section 2.3.3.	12. Required permanent individual truss member restraint and method per Section 2303.4.1.2, unless a specific truss member permanent bracing plan for the roof or floor structural system is provided by a registered design professional.	14~~2~~. Required permanent individual truss member restraint location and the method of restraint/bracing to be used per Section 2303.4.1.2, ~~unless a specific truss member permanent bracing plan for the roof or floor structural system is provided by a registered design professional.~~
2.3.3 REQUIREMENTS FOR THE PERMANENT MEMBER RESTRAINT/ BRACING OF TRUSS SYSTEMS 2.3.3.1 Method of Restraint. The method of Permanent Individual Truss Member Restraint/Bracing and the method of anchoring or restraining to prevent lateral movement of all Truss members acting together as a system shall be accomplished by: 2.3.3.1.1 Standard Industry Details. Standard industry Lateral Restraint and Diagonal Bracing details in accordance with BCSI-B3:	Permanent individual truss member restraint. Where permanent restraint of truss members is required on the truss design drawings, it shall be accomplished by one of the following methods: 1. The trusses shall be designed so that the buckling of any individual truss member is resisted internally by the individual truss through suitable means (i.e., buckling reinforcement by T-reinforcement or L-reinforcement, etc.). The buckling reinforcement of individual members of the trusses shall be installed as shown on the truss design drawing or on supplemental truss member buckling reinforcement details provided by the truss designer. 2. Permanent individual truss member restraint and diagonal bracing shall be installed using standard industry lateral restraint and diagonal bracing details in accordance with generally accepted	2303.4.1.2 Requirements for the permanent member restraint/bracing of truss systems 2303.4.1.2.1 Method of restraint. The method of permanent individual truss member restraint/bracing and the method of anchoring or restraining to prevent lateral movement of all truss members acting together as a system shall be accomplished by one or more of the following: 1. Standard industry details. Standard industry lateral restraint and diagonal bracing details. 2 Substitution with reinforcement. Permanent individual truss member restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.). 3 Project specific design. A project specific truss member permanent lateral restraint/bracing design for the roof or floor framing structural system shall be

Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses of the Building Component Safety Information (BCSI).

2.3.3.1.2 Substitution with Reinforcement. Permanent Individual Truss Member Restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).

2.3.3.1.3 Project Specific Design. A project specific Truss member permanent lateral restraint/bracing design for the roof or floor Framing Structural System shall be permitted to be specified by any Registered Design Professional.

2.3.3.2 Method Specified by any Registered Design Professional. The method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be permitted to be specified by any Registered Design Professional.

2.3.3.3 Absence of Truss Restraint/Bracing Method or Details. If a specific Truss member permanent bracing design for the roof or floor Framing Structural System is not provided by the Owner or any Registered Design Professional, the method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be in accordance with BCSI-B3 or BCSI-B7.

2.3.3.4 Trusses Spanning 60 Feet (18 m) or Greater. For trusses with clear spans 60 ft. (18 m) or greater, see Section 2.3.1.6.

2.3.1.6 Long Span Truss Requirements.

2.3.1.6.1 Restraint/Bracing Design. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional for the design of the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing.

2.3.1.6.2 Special Inspection. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional to provide special inspections to assure that the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing are installed properly.

engineering practice. Locations for lateral restraint shall be identified on the truss design drawing.

permitted to be specified by any registered design professional.

2303.4.1.2.2 Method specified by any registered design professional. The method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be permitted to be specified by any registered design professional.

2303.4.1.2.3 Absence of truss restraint/bracing method or details. If a specific truss member permanent bracing design for the roof or floor framing structural system is not provided by the owner or any registered design professional, the method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be in accordance with standard industry lateral restraint and diagonal bracing details.

2303.4.1.2.4 Trusses spanning 60 feet (18 m) or greater. Trusses with clear spans 60 ft. (18 m) or greater, shall:

1. Restraint/Bracing design. In all cases where a truss clear span is 60 ft. (18 m) or greater, the owner shall contract with any registered design professional for the design of the temporary installation restraint/bracing and the permanent individual truss member restraint and diagonal bracing.

2 Special inspection. In all cases where a truss clear span is 60 ft. (18 m) or greater, the owner shall contract with any registered design professional to provide special inspections to assure that the temporary installation restraint/bracing and the permanent individual truss member restraint and diagonal bracing are installed properly.

~~Permanent individual truss member restraint. Where permanent restraint of truss members is required on the truss design drawings, it shall be accomplished by one of the following methods:~~
~~1. The trusses shall be designed so that the buckling of any individual truss member is resisted internally by the individual truss through suitable means (i.e., buckling reinforcement by T-reinforcement or L-reinforcement, etc.). The buckling reinforcement of individual members of the trusses shall be installed as shown on the truss design drawing or on supplemental truss member buckling reinforcement details provided by the truss designer.~~

~~2. Permanent individual truss member restraint and diagonal bracing shall be installed using standard industry lateral restraint and diagonal bracing details in accordance with generally accepted~~

		engineering practice. Locations for lateral restraint shall be identified on the truss design drawing.
	2303.4.1.3 Truss designer. The individual or organization responsible for the design of trusses.	2303.4.1.3 Truss designer. Person responsible for the preparation of the truss design drawings. The individual or organization responsible for the design of trusses.
Truss Designer: Person responsible for the preparation of the Truss Design Drawings.	2303.4.1.3.1 Truss design drawings. Where required by the registered design professional, the building official, or the statutes of the jurisdiction in which the project is to be constructed, each individual truss design drawing shall bear the seal and signature of the truss designer.	2303.4.1.3.1 Truss design drawings seal & signature. Where required by the registered design professional, the building official, or the statutes of the jurisdiction in which the project is to be constructed, each individual truss design drawing shall bear the seal and signature of the truss designer.
2.3.5.3 Truss Design Drawing Seal and Signature. Each individual Truss Design Drawing shall bear the seal and signature of the Truss Design Engineer.	Exceptions: 1. Where a cover/ sheet and truss index sheet are combined into a single sheet and attached to the set of truss design drawings, the single cover/truss index sheet is the only document required to be signed and sealed by the truss designer.	Exceptions: 1. Where When a cover/ sheet and truss index sheet is used it are combined into a single sheet and attached to the set of truss design drawings, the single cover/truss index sheet is the only document required to be signed and sealed by the truss designer.
Exception: When a Cover/Truss Index Sheet is used, it is the only document required to be signed and sealed by the Truss Design Engineer.	2. When a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings, the cover sheet and the truss index sheet are the only documents required to be signed and sealed by the truss designer.	2. When a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings, the cover sheet and the truss index sheet are the only documents required to be signed and sealed by the truss designer.
	2303.4.2 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.	2303.4.2 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.
2.3.5.4 Truss Placement Diagram. When the Truss Placement Diagram serves only as a guide for Truss installation, it does not require the seal of the Truss Design Engineer. Exception: When the Truss Placement Diagram is prepared by or under the responsible charge of any Registered Design Professional, it is required to be signed and sealed.	Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.	Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.
2.3.6.4 Truss Placement Diagram. Where required by the Construction Documents or Contract, the Truss Manufacturer shall prepare the Truss Placement Diagram that identifies the assumed location for each individually designated Truss and references the corresponding Truss Design Drawing. The Truss Placement Diagram shall be permitted to include identifying marks for other products including Structural Elements, so that they may be more easily identified by the Contractor during field erection. When the Truss Placement Diagram serves only as a guide for Truss installation and requires no engineering input, it does not require the seal of any Truss Design Engineer or Registered Design Professional.	2303.4.3 Truss submittal package. The truss submittal package shall consist of each individual truss design drawing,	2303.4.3 Truss submittal package. Package consisting of each individual truss design drawing, and, as applicable, the truss placement diagram, the cover/truss index sheet, lateral restraint and diagonal bracing

Exception: When the Truss Placement Diagram is prepared by or under the responsible charge of any Registered Design Professional, it is required to be signed and sealed.

Truss Submittal Package: Package consisting of each individual Truss Design Drawing, and, as applicable, the Truss Placement Diagram, the Cover/Truss Index Sheet, Lateral Restraint and Diagonal Bracing details designed in accordance with generally accepted engineering practice, applicable BCSI defined Lateral Restraint and Diagonal Bracing details, and any other structural details germane to the trusses.

2.3.2.4 Required Information in the Construction Documents. The Registered Design Professional for the Building, through the Construction Documents, shall provide …….:

(e) All anchorage designs required to resist uplift, gravity, and lateral loads,
(f) Truss to Structural Element connections, but not Truss-to-Truss connections.
(g) Permanent Building Stability Bracing; including Truss anchorage connections to the Permanent Building Stability Bracing.

2.3.4.6 Pre-Installation Check. The Contractor shall examine the Trusses delivered to the job site for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.4.7 Post-Installation Check. The Contractor shall examine the Trusses after they are erected and installed for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.6.10 Manufacturer Quality Criteria: The Truss Manufacturer shall manufacture the Trusses in accordance with the final Truss Design Drawings, using the quality criteria required by this Standard unless more stringent quality criteria is provided by the Owner in writing or through the Construction Documents.

2.3.6.11 In-Plant Truss Inspections. Truss inspections, as required by the Jurisdiction, shall be performed at the manufacturer's facility using the manufacturer's in-plant quality control program monitored by an inspection agency approved by the Jurisdiction.

the truss placement diagram, the truss member permanent individual truss member bracing details and, as applicable, the cover/truss index sheet.

2303.4.4 Anchorage. Transfer of loads and anchorage of each truss to the supporting structure is the responsibility of the registered design professional.

2303.4.5 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.

2303.4.6 Metal-plate-connected trusses. In addition to Sections 2303.4.1 through 2303.4.5, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109 .4 as applicable.

details designed in accordance with generally accepted engineering practice, standard industry lateral restraint and diagonal bracing details, and any other structural details germane to the trusses. ~~The truss submittal package shall consist of each individual truss design drawing, the truss placement diagram, the truss member permanent individual truss member restraint bracing details and, as applicable, the cover/truss index sheet.~~

2303.4.4 Anchorage. The design for the ~~T~~ transfer of loads and anchorage of each truss to the supporting structure is the responsibility of the Registered Design Professional.

2303.4.5 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (i.e. mechanical equipment, piping, additional roofing or insulation, etc.) ~~e.g., HVAC equipment, water heater)~~ shall not be permitted without verification that the truss is capable of supporting such additional loading.

2303.4.6 Metal-plate-connected trusses. In addition to Sections 2303.4.1 through 2303.4.5, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109 ~~.4~~ as applicable.

2303.4.7 Truss quality assurance. Trusses not part of a manufacturing process in accordance with 2303.4.6 or in accordance with a standard, listed in Chapter 35, which provides requirements for quality control done under the supervision of a third party quality control agency, shall be manufactured in compliance with Section 1704.2 and 1704.6 as applicable.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC B/E
Committee Action: **Disapproved**

Committee Reason: This proposal needs more work, especially in the area of who is responsible for the entire building roof system. The proponent should rework and include definitions.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Larry Wainright, WTCA, representing the Structural Building Components Industry, requests Approval as Modified by this Public Comment.

Replace proposal as follows:

R802.10.1.1 Applicability limits. The provisions of this section shall control the design of truss roof framing when snow controls for buildings not greater than 60 feet (18 288 mm) in length perpendicular to the joist, rafter or truss span, not greater than 36 feet (10 973 mm) in width parallel to the joist rafter or truss span, not greater than two stories in height with each story not greater than 10 feet (3048 mm) high, and roof slopes not smaller than 3:12 (25-percent slope) or greater than 12:12 (100-percent slope). Truss roof framing constructed in accordance with the provisions of this section shall be limited to sites subjected to a maximum design wind speed of 110 miles per hour (49 m/s), Exposure A, B or C, and a maximum ground snow load of 70 psf (3352 Pa). For consistent loading of all truss types, Roof snow load is to be computed as: 0.7 p_g.

Commenter's Reason: The purpose of this code change is to provide consistency in the application of snow loads to trusses. This is an area where there is a great deal of confusion. This change clearly states that all truss types should be designed in a consistent manner.

Final Action: AS AM AMPC____ D

NOTE: PART I REPRODUCED FOR INFORMATIONAL PURPOSES ONLY – SEE ABOVE

S215-07/08, PART I – IBC STRUCTURAL

1. Revise as follows:

2303.4.1.1 (Supp) Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Building Code used for Design, unless specified on Cover/Truss Index Sheet.
~~1.~~ 2. Slope or depth, span and spacing;
~~2~~ .3. Location of all joints and support locations;;
4. Number of plys if greater than one.
~~3.~~ 5. Required bearing widths;
~~4.~~ 6. Design loads as applicable, including;
   - ~~4.1.~~ 6.1. Top chord live load (for roof trusses, this shall be the controlling case of live load or snow load); ~~(including snow loads);~~
   - ~~4.2.~~ 6.2. Top chord dead load;
   - ~~4.3.~~ 6.3. Bottom chord live load;
   - ~~4.4.~~ 6.4. Bottom chord dead load;
   - ~~4.5.~~ 6.5. Additional loads and locations; ~~concentrated loads and their points of application as applicable; and~~
   - ~~4.6.~~ 6.6. Environmental load design criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and ~~Controlling wind and earthquake loads as applicable.~~
   - 6.7. Other lateral loads, including drag strut loads.

~~5.~~ 7. Adjustments to wood member and ~~metal connector plate~~ connecting device design value for conditions of use;
~~6~~ .8. ~~Each~~ Maximum reaction force and direction, including maximum uplift reaction forces where applicable;
~~7~~ .9. ~~Metal connector plate~~ Connecting device type, size, and thickness or gage, and the dimensioned location of each ~~metal~~ connecting device ~~connector plate~~ except where symmetrically located relative to the joint interface;
~~8.~~ 10. Size, species and grade for each wood member;
11. Truss-to-truss connection and truss field assembly requirements.
~~9. Specific connection capacities or connection capacities required for:~~
~~9.1. Truss to truss girder;~~
~~9.2. Truss ply to ply; and~~
~~9.3. Field assembly of a truss when the truss shown on the individual truss design drawing is supplied in separate pieces that will be field connected.~~

~~10.~~ 12. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and creep as applicable;
~~11.~~ 13. Maximum axial tension and compression forces in the truss members; and
~~12.~~ 14. Required permanent individual truss member restraint location and the method of restraint/bracing to be used per Section 2303.4.1.2~~, unless a specific truss member permanent bracing plan for the roof or floor structural system is provided by a registered design professional~~.

2. Delete and substitute as follows:

~~2303.4.1.2 (Supp) Permanent individual truss member restraint. Where permanent restraint of truss members is required on the truss design drawings, it shall be accomplished by one of the following methods:~~

~~1. The trusses shall be designed so that the buckling of any individual truss member is resisted internally by the individual truss through suitable means (i.e., buckling reinforcement by T-reinforcement or L-reinforcement). The buckling reinforcement of individual members of the trusses shall be installed as shown on the truss design drawing or on supplemental truss member buckling reinforcement details provided by the truss designer.~~
~~2. Permanent individual truss member restraint and diagonal bracing shall be installed using standard industry lateral restraint and diagonal bracing details in accordance with generally accepted engineering practice. Locations for lateral restraint shall be identified on the truss design drawing.~~

2303.4.1.2 Requirements for the permanent member restraint/bracing of truss systems

2303.4.1.2.1 Method of restraint. The method of permanent individual truss member restraint/bracing and the method of anchoring or restraining to prevent lateral movement of all truss members acting together as a system shall be accomplished by one or more of the following:

1. Standard industry details. Standard industry lateral restraint and diagonal bracing details.
2. Substitution with reinforcement. Permanent individual truss member restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).
3. Project specific design. A project specific truss member permanent lateral restraint/bracing design for the roof or floor framing structural system shall be permitted to be specified by any registered design professional.

2303.4.1.2.2 Method specified by any registered design professional. The method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be permitted to be specified by any registered design professional.

2303.4.1.2.3 Absence of truss restraint/bracing method or details. If a specific truss member permanent bracing design for the roof or floor framing structural system is not provided by the owner or any registered design professional, the method of permanent individual truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be in accordance with standard industry lateral restraint and diagonal bracing details.

2303.4.1.2.4 Trusses spanning 60 feet (18 m) or greater. Trusses with clear spans 60 ft. (18 m) or greater, shall:

1. Restraint/Bracing design. In all cases where a truss clear span is 60 ft. (18 m) or greater, the owner shall contract with any registered design professional for the design of the temporary installation restraint/bracing and the permanent individual truss member restraint and diagonal bracing.
2. Special inspection. In all cases where a truss clear span is 60 ft. (18 m) or greater, the owner shall contract with any registered design professional to provide special inspections to assure that the temporary installation restraint/bracing and the permanent individual truss member restraint and diagonal bracing are installed properly.

3. Revise as follows:

2303.4.1.3 (Supp) Truss designer. Person responsible for the preparation of the truss design drawings. ~~The individual or organization responsible for the design of trusses.~~

2303.4.1.3.1 (Supp) Truss design drawings seal and signature. Where required by the registered design professional, the building official, or the statutes of the jurisdiction in which the project is to be constructed, each individual truss design drawing shall bear the seal and signature of the truss designer.

Exception~~s~~:

~~1. Where~~ When a cover/ ~~sheet and~~ truss index sheet is used it ~~are combined into a single sheet and attached to the set of truss design drawings, the single cover/truss index sheet~~ is the only document required to be signed and sealed by the truss designer.
~~2. When a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings, the cover sheet and the truss index sheet are the only documents required to be signed and sealed by the truss designer.~~

2303.4.2 (Supp) Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

~~Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.~~

2303.4.3 (Supp) Truss submittal package. ~~The truss submittal package shall consist of each individual truss design drawing, the truss placement diagram, the truss member permanent bracing details and, as applicable, the cover/truss index sheet~~. Package consisting of each individual truss design drawing, and, as applicable, the truss placement diagram, the cover/truss index sheet, lateral restraint and diagonal bracing details designed in accordance with generally accepted engineering practice, standard industry lateral restraint and diagonal bracing details, and any other structural details germane to the trusses.

2303.4.4 (Supp) Anchorage. The design for the transfer of loads and anchorage of each truss to the supporting structure is the responsibility of the registered design professional.

2303.4.5 (Supp) Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (i.e. mechanical equipment, piping, additional roofing or insulation, etc.) ~~(e.g., HVAC equipment, water heater)~~ shall not be permitted without verification that the truss is capable of supporting such additional loading.

2303.4.6 (Supp) Metal-plate-connected trusses. In addition to Sections 2303.4.1 through 2303.4.5, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109.4 as applicable.

4. Add new text as follows:

2303.4.7 Truss quality assurance. Trusses not part of a manufacturing process in accordance with 2303.4.6 or in accordance with a standard, listed in Chapter 35, which provides requirements for quality control done under the supervision of a third party quality control agency, shall be manufactured in compliance with Sections 1704.2 and 1704.6 as applicable.

Part II – IRC. The goal of this proposed code change is to update the language in 502.11 to be harmonized with the current language that is being used in most recent ANSI/TPI 1 consensus standard and the proposed language in IBC 2303.4. There is a great deal of value to have common and uniform terminology in 502.11, IBC 2303.4, ANSI/TPI 1 and within BCSI (Building Component Safety Information) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses. Consistency in approach will lead to better understanding, design, application and life-safety. By implementing this code language, we believe this change will markedly improve the construction process as it relates to trusses

This code change will update the language to the most current and technically comprehensive language being used within the truss industry today. Please see appendix A for an easy to follow comparison to the proposed IRC section 502.11, 2006 IRC 502.11, 2303.4 and ANSI/TPI 1 Chapter 2.

The goal of this proposed code change is to update the language in 802.10 to be harmonized with the current language that is being used in most recent ANSI/TPI 1 consensus standard and the proposed language in IBC 2303.4. There is a great deal of value to have common and uniform terminology in 802.10, IBC 2303.4, ANSI/TPI 1 and within BCSI (Building Component Safety Information) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses. Consistency in approach will lead to better understanding, design, application and life-safety. By implementing this code language, we believe this change will markedly improve the construction process as it relates to trusses

This code change will update the language to the most current and technically comprehensive language being used within the truss industry today. Please see appendix A for an easy to follow comparison to the proposed IRC section 802.10, 2006 IRC 802.10, 2303.4 and ANSI/TPI 1 Chapter 2.

ANSI/TPI 1 Chapter 2 Provisions	2009 IBC Code Change Proposal for 2303.4 MPC Trusses	2006 and 2007 Supplement IRC 502.11 IRC Floor Section	2009 IRC Proposed R502.11
	2303.4 Trusses.	R502.11 Wood trusses.	R502.11 Wood trusses.
	2303.4.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved ~~framing~~ connecting devices.	R502.11.1 Design. Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1	R502.11.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and ~~approved~~ accepted engineering practice. ~~The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.~~ Members are permitted to be joined by nails, glue, bolts, timber connectors, or other approved connecting devices.
2.3.5.5 Information on Truss Design Drawings. Truss Design Drawings shall include, at a minimum, the information specified below:	2303.4.1.1 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:	R502.11.4 Truss design drawings. Truss design drawings, prepared in compliance with Section R502.11.1, shall be submitted to the building official and approved prior to installation. Truss design drawings shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:	R502.11.~~4.~~2 Truss design drawings. Truss design drawings~~, prepared in compliance with Section R502.11.1,~~ shall be ~~submitted~~ provided to the building official for ~~and~~ approval ~~ed~~ prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:
(a) Building Code used for Design, unless specified on Cover/Truss Index Sheet.	1. Building Code used for Design, unless specified on Cover/Truss Index Sheet.	1. Slope or depth, span and spacing.	1. Building code used for design, unless specified on cover/truss index sheet.
(b) Slope or depth, span and spacing.	2. ~~1.~~ Slope or depth, span and spacing;	2. Location of all joints.	2~~1~~. Slope or depth, span and spacing.
(c) Location of all joints and support locations.	3. ~~2.~~ Location of all joints and support locations;		3~~2~~. Location of all joints~~.~~ and support locations.
(d) Number of plys if greater than one.	4. Number of plys if greater than one.	3. Required bearing widths.	4. Number of plys if greater than one.
(e) Required bearing widths.	5. ~~3~~. Required bearing widths;	4. Design loads as applicable:	5~~3~~. Required bearing widths.
(f) Design loads as applicable, including:	6. ~~4.~~ Design loads as applicable, including;	4.1. Top chord live load;	6 ~~4.~~ Design loads as applicable, including:
(1) Top chord live load (for roof trusses, this shall be the controlling case of live load or snow load);	6.~~4.~~ 1. Top chord live load (for roof trusses, this shall be the controlling case of live load or snow load); ~~(including snow loads);~~	4.2. Top chord dead load;	6.1 ~~4.1~~ Top chord live load;
		4.3. Bottom chord live load;	
	6.~~4.~~ 2. Top chord dead load;	4.4. Bottom chord dead load;	6.2 ~~4.2~~. Top chord dead load;
	6.~~4.~~ 3. Bottom chord live load;		6.3 ~~4.2~~. Bottom chord live load;
(2) Top chord dead load;	6.~~4.~~ 4. Bottom chord dead load;	4.5. Concentrated loads and their points of application;	6.4 ~~4.4~~ Bottom chord dead load;

(3) Bottom chord live load; (4) Bottom chord dead load;	6. ~~4.~~ 5. Additional loads and locations; ~~Concentrated loads and their points of application as applicable; and~~	and 4.6. Controlling wind and earthquake loads.	6.5 ~~4.5~~ Additional loads and locations; ~~Concentrated loads and their points of application; and~~
(5) Additional loads and locations; (6) Environmental Load Design Criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and	6. ~~4.~~ 6. Environmental Load Design Criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and ~~Controlling wind and earthquake loads as applicable.~~ 6.7 Other lateral loads, including drag strut loads.	5. Adjustments to lumber and joint connector design values for conditions of use.	6.6 ~~4.6~~ Environmental load design criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the truss loads); and ~~Controlling wind and earthquake loads.~~ 6.7. ~~6.5~~ Other lateral loads, including drag strut loads.
(7) Other lateral loads, including drag strut loads. (g) Adjustments to wood member and metal connector plate design values for conditions of use.	8. ~~5.~~ Adjustments to wood member and metal connector plate design value for conditions of use; 9. ~~6. Each~~ Maximum reaction force and direction, including maximum uplift reaction forces where applicable;	6. Each reaction force and direction. 7. Joint connector type and description, e.g., size, thickness or gauge, and the dimensioned location of each joint connector except where symmetrically located relative to the joint interface.	7 5. Adjustments to ~~lumber~~ wood member and ~~joint connector~~ connecting device design values for conditions of use. 8~~6~~. ~~Each~~ Maximum reaction force and direction, including maximum uplift reaction forces where applicable. 9~~7~~. ~~Joint connector~~ Connecting device type, manufacturer, ~~and description, e.g.,~~ size, and thickness or gauge, and the dimensioned location of each ~~joint connector~~ connecting device except where symmetrically located relative to the joint interface.
(h) Maximum reaction force and direction, including maximum uplift reaction forces where applicable. (i) Metal connector plate type, manufacturer, size, and thickness or gauge, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface.	10. ~~7.~~ Metal connector plate type, size, and thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface; 11. ~~8.~~ Size, species and grade for each wood member; 12. Truss-to-Truss connection and Truss field assembly requirements. ~~9. Specific connection capacities or connection capacities required for:~~ ~~9.1. Truss to truss girder;~~ ~~9.2. Truss ply to ply; and~~ ~~9.3. Field assembly of a truss when the truss shown on the individual truss design drawing is supplied in separate pieces that will be field connected.~~	8. Lumber size, species and grade for each member. 9. Connection requirements for: 9.1. Truss-to-girder-truss; 9.2. Truss ply-to-ply; and 9.3. Field splices.	10~~8~~. ~~Lumber~~ Size, species and grade for each wood member. 11~~9~~. Truss-to-truss connection and truss field assembly requirements. ~~Connection requirements for:~~ ~~9.1. Truss to girder-truss;~~ ~~9.2. Truss ply to ply; and~~ ~~9.3. Field splices~~.
(j) Size, species and grade for each wood member. (k) Truss-to-Truss connection and Truss field assembly requirements.	13~~9~~. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load as applicable; 14~~1~~. Maximum axial tension and compression forces in the truss members; and	10. Calculated deflection ratio and/or maximum description for live and total load. 11. Maximum axial compression forces in the truss members to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss drawing or on supplemental documents.	12~~10~~. Calculated span to deflection ratio and/or maximum vertical and horizontal deflection ~~description~~ for live and total load and creep as applicable. 13~~11~~. Maximum axial tension and compression forces in the truss members. ~~to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be~~

		12. Required permanent truss member bracing location.	~~shown on the truss drawing or on supplemental documents.~~
(l) Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and K_{CR} as applicable.	1~~5~~2. Required permanent individual truss member restraint location and the method of restraint/bracing to be used per Section 2303.4.1.2, ~~unless a specific truss member permanent bracing plan for the roof or floor structural system is provided by a registered design professional.~~		1~~4~~12. Required permanent individual truss member ~~bracing~~ restraint location and the method of restraint/bracing to be used per Section R502.11.3
(m) Maximum axial tension and compression forces in the Truss members.		R502.11.2 Bracing. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings.	
(n) Fabrication Tolerance per Section 6.4.10. Not used	2303.4.1.2 Requirements for the permanent member restraint/bracing of truss systems		R502.11.3~~2~~ ~~Bracing.~~ Requirements for the permanent member restraint/bracing of truss systems Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings.
(o) Required Permanent Individual Truss Member Restraint location and the method of Restraint/Bracing to be used per Section 2.	2303.4.1.2.1 Method of Restraint. The method of Permanent Individual Truss Member Restraint/Bracing and the method of anchoring or restraining to prevent lateral movement of all Truss members acting together as a system shall be accomplished by one or more of the following: 1. Standard Industry Details. Standard industry Lateral Restraint and Diagonal Bracing details.		The method of permanent individual truss member restraint/bracing and the method of anchoring or restraining to prevent lateral movement of all truss members acting together as a system shall be accomplished by one or more of the following: 1. Standard industry details. Standard industry lateral restraint and diagonal bracing details in accordance with principles contained in BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses of the Building Component Safety Information (BCSI).
2.4.3 REQUIREMENTS FOR THE PERMANENT MEMBER RESTRAINT/ BRACING OF TRUSS SYSTEMS			
	2 Substitution with Reinforcement. Permanent Individual Truss Member Restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).		2 Substitution with reinforcement. Permanent individual truss member restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).
2.4.3.1 Method of Restraint. The method of Permanent Individual Truss Member Restraint/Bracing and the method of anchoring or restraining to prevent lateral movement of all Truss members acting together as a system shall be accomplished by:	3 Project Specific Design. A project specific Truss member permanent lateral restraint/bracing design for the roof or floor Framing Structural System shall be permitted to be specified by any Registered Design Professional.		3 Project specific design. A project specific truss member permanent lateral restraint/bracing design for the roof or floor framing structural system shall be permitted to be specified by any building designer.
2.4.3.1.1 Standard Industry Details. Standard industry	2303.4.1.2.2 Method Specified		R502.11.3.1 Method specified by any building designer. The method of permanent individual

Lateral Restraint and Diagonal Bracing details in accordance with BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses of the Building Component Safety Information (BCSI).

2.4.3.1.2 Substitution with Reinforcement. Permanent Individual Truss Member Restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).

2.4.3.1.3 Project Specific Design. A project specific Truss member permanent lateral restraint/bracing design for the roof or floor Framing Structural System shall be permitted to be specified by any Building Designer.

2.4.3.2 Method Specified by any Building Designer. The method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be permitted to be specified by any Building Designer.

2.4.3.3 Absence of Truss Restraint/Bracing Method or Details. If a specific Truss member permanent bracing design for the roof or floor Framing Structural System is not provided by the Owner or any Building Designer, the method of Permanent

by any Registered Design Professional. The method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be permitted to be specified by any Registered Design Professional.

2303.4.1.2.3 Absence of Truss Restraint/Bracing Method or Details. If a specific Truss member permanent bracing design for the roof or floor Framing Structural System is not provided by the Owner or any Registered Design Professional, the method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be in accordance with Standard industry Lateral Restraint and Diagonal Bracing details.

2303.4.1.3.1 Truss design drawing~~s~~ seal & signature. Where required by the registered design professional, the building official, or the statutes of the jurisdiction in which the project is to be constructed, each individual truss design drawing shall bear the seal and signature of the truss designer.

Exception~~s~~:

~~1. Where~~ When a cover~~ sheet and~~ truss index sheet is used it ~~are combined into a single sheet and attached to the set of truss design drawings, the single cover/truss index sheet~~ is the only document required to be signed and sealed by the truss designer.

~~2. When a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings, the cover sheet and the truss index sheet are the only documents required to be signed and sealed by the truss designer.~~

2303.4.2 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

In the absence of specific bracing requirements, trusses shall be braced in accordance with the Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

R502.11.1 Design. Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

truss member restraint and diagonal bracing for the truss top chord, bottom chord, and web members shall be permitted to be specified by any building designer.

In the absence of specific bracing requirements, trusses shall be braced in accordance with the principles contained in Building Component Safety Information (BCSI ~~1-03~~) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.

R502.11.4 Preparation of truss design drawings. The truss designer is responsible for the preparation of the truss design drawings based on the truss design criteria and requirements set forth in the Construction Documents. The truss design drawings shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

R502.11.4.1 Single truss component design. The truss designer shall be responsible for the single truss component design depicted on the truss design drawing.

R502.11.5 Truss placement diagram

The truss manufacturer, when required by contract, shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

Individual Truss Member Restraint and Diagonal Bracing for the Truss top chord, bottom chord, and web members shall be in accordance with BCSI-B3 or BCSI-B7.

2.4.5.1 Preparation of Truss Design Drawings. The Truss Designer is responsible for the preparation of the Truss Design Drawings based on the Truss design criteria and requirements set forth in the Construction Documents or as otherwise set forth in writing by the Building Designer as supplied to the Truss Designer by the Truss Manufacturer.

2.4.5.2 Single Truss Component Design. The Truss Designer shall be responsible for the single Truss component design depicted on the Truss Design Drawing.

2.4.5.3 Truss Placement Diagram. When the Truss Placement Diagram serves only as a guide for Truss installation, it does not require the seal of the Truss Design Engineer.

Truss Submittal Package: Package

E~~xception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.~~

2303.4.3 Truss submittal package. Package consisting of each individual Truss Design Drawing, and, as applicable, the Truss Placement Diagram, the Cover/Truss Index Sheet, Lateral Restraint and Diagonal Bracing details designed in accordance with generally accepted engineering practice, Standard industry Lateral Restraint and Diagonal Bracing details, and any other structural details germane to the trusses. ~~The truss submittal package shall consist of each individual truss design drawing, the truss placement diagram, the truss member permanent individual truss member restraint bracing details and, as applicable, the cover/truss index sheet.~~

2303.4.4 Anchorage. The design for the ~~T~~ transfer of loads and anchorage of each truss to the supporting structure is the responsibility of the registered design professional.

2303.4.5 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional.

502.11.6 Truss submittal package. Where required by the construction documents or contract, legal requirements or the building official, the truss manufacturer shall provide the appropriate truss submittal package to one or more of the following: building official; building designer and/or contractor for review and/or approval.

R502.11.7 Truss to building anchorage. The building designer shall provide the following:
(1) All anchorage designs required to resist uplift, gravity, and lateral loads,

(2) Adequate truss to structural element connections, but not truss-to-truss connections.

(3) Permanent building stability bracing; including truss anchorage to the permanent building stability bracing.

R502.11.3 Alterations to trusses. Truss members and components shall not be cut, notched, spliced or otherwise altered in anyway without the approval of a registered design professional. Alterations resulting in the addition of load (e.g., HVAC equipment, water heater, etc.), that exceed the design load for the truss, shall not be permitted without verification that the truss is capable of supporting the additional loading.

R502.11.8 ~~3~~ Alterations to trusses. Truss members and components shall not be cut, notched, spliced or otherwise altered in anyway without the approval of a registered design professional. Alterations resulting in the addition of load (~~e.g., HVAC equipment, water heater, etc~~. i.e mechanical equipment,

consisting of each individual Truss Design Drawing, and, as applicable, the Truss Placement Diagram, the Cover/Truss Index Sheet, Lateral Restraint and Diagonal Bracing details designed in accordance with generally accepted engineering practice, applicable BCSI defined Lateral Restraint and Diagonal Bracing details, and any other structural details germane to the trusses.

2.4.6.7 Truss Submittal Packages. Where required by the Construction Documents or Contract, Legal Requirements or the Building Official, the Truss Manufacturer shall provide the appropriate Truss Submittal Package to one or more of the following: Building Official; Building Designer and/or Contractor for review and/or approval per Section 2.4.4.2.

2.4.2.4 Required Information in the Construction Documents. The Building Designer, through the Construction Documents, shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and other information for developing the design of the Trusses for the Building, and shall provide the following:……..

(e) All anchorage designs required to resist uplift, gravity, and lateral loads,

(f) Adequate Truss to Structural Element connections, but not Truss-to-Truss connections.

(g) Permanent Building

Alterations resulting in the addition of loads to any member (i.e. mechanical equipment, piping, additional roofing or insulation, etc.) ~~e.g., HVAC equipment, water heater)~~ shall not be permitted without verification that the truss is capable of supporting such additional loading.

2303.4.6 Metal-plate-connected trusses. In addition to Sections 2303.4.1 through 2303.4.5, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109~~.4~~ as applicable.

2303.4.7 Truss Quality Assurance. Trusses not part of a manufacturing process in accordance with 2303.4.6 or in accordance with a standard, listed in Chapter 35, which provides requirements for quality control done under the supervision of a third party quality control agency, shall be manufactured in compliance with Section 1704.2 and 1704.6 as applicable.

piping, additional roofing or insulation, etc.), that exceed the design load for the truss, shall not be permitted without verification that the truss is capable of supporting the additional loading.

R502.11.9 Metal plate connected trusses. In addition to Sections 502.11.1 through R502.11.8, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Job-site inspections shall be in compliance with Section 109 as applicable.

R502.11.10 Truss quality assurance. Where trusses are not part of a manufacturing process in accordance with R502.11.9 or in accordance with a standard listed in Chapter 43, which provides requirements for quality control done under the supervision of a third party quality control agency, the building official shall be permitted to require the owner to employ a special inspector during construction and installation.

Stability Bracing; including Truss anchorage to the Permanent Building Stability Bracing.

2.3.4.6 Pre-Installation Check. The Contractor shall examine the Trusses delivered to the job site for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.4.7 Post-Installation Check. The Contractor shall examine the Trusses after they are erected and installed for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.6.11 In-Plant Truss Inspections. Truss inspections, as required by the Jurisdiction, shall be performed at the manufacturer's facility using the manufacturer's in-plant quality control program monitored by an inspection agency approved by the Jurisdiction, and shall satisfy any quality control/quality assurance requirements for the Trusses, and shall satisfy any designated in-plant special inspection requirements for the Trusses.

PART I – IBC STRUCTURAL
Committee Action: **Disapproved**

Committee Reason: Disapproval was requested by the proponent.

Assembly Action: **None**

S218-07/08
2303.4.2

Proposed Change as Submitted:

Proponent: R. Scott Douglas**,** DCI Engineers, representing himself

Revise as follows:

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, and timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

> **Exception:** Fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment need not be hot dipped galvanized.

Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

Reason: There is no documented evidence of any detrimental fastener corrosion when plain steel fasteners are used in SBX/DOT or zinc borate preservative treated wood in interior, dry environments; particularly when compared to other preservative wood treatments in identical environments. Tests by Simpson Strong-Tie have verified this field performance.

Cost Impact: The code change proposal will not increase the cost of construction.

Committee Action: **Approved as Modified**

Modify proposal as follows:

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, and timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

> **Exception:** Plain carbon steel fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted ~~need not be hot dipped galvanized~~.

Committee Reason: This proposal allows an additional option for fasteners in limited locations. The modification rewords the exception to better state the proponent's intent.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

David Rochester, Plating Systems and Technologies, Inc., representing Mechanical Galvanizers, requests Approval as Modified by this Public Comment.

Further modify proposal as follows:

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, and timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

> **Exception:** Plain carbon steel, mechanically deposited or hot-dipped zinc fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted.

Commenter's Reason: If carbon steel fasteners are allowed here, does it not make sense that both mechanical and hot-dip should also be allowed. It may be excessive based on the environment, but should still be acceptable**.**

Final Action: AS AM AMPC____ D

S219-07/08, Part I
2304.9.5, 2304.9.5.5 (New)

Proposed Change as Submitted:

PART I – IBC STRUCTURAL

Proponent: Greg Greenlee, PE, USP Structural Connectors, representing himself

Revise as follows:

2304.9.5 (Supp) Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners and connectors ~~for~~ in contact with preservative treated and fire-retardant-treated wood shall be in accordance with Sections 2304.9.5.1 through 2304.9.5.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153. Connectors in contact with preservative-treated wood that are used in exterior applications shall be in accordance to the manufacturer's recommendations. In the absence of manufacturer's recommendation a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

2304.9.5.2 (Supp) Fastenings for wood foundations. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

2304.9.5.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

2304.9.5.4 (Supp) Fasteners for fire-retardant-treated wood used in interior applications. Fasteners for fire-retardant treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of manufacturer's recommendations, Section 2304.9.5.3 shall apply.

2304.9.5.5 Fasteners and connectors subject to exposure and located within 300 feet of the shoreline. Fasteners and connectors used in exterior applications that are located within 300 feet (91440 mm) of the shoreline shall be stainless steel grade 304 or 316 or an approved alternative.

Reason: The added language in this proposal will accomplish two things. First, it will clarify the minimum coating requirements for connectors used in exterior applications and in contact with preservative treated wood. Currently connector manufacturers are recommending at a minimum a G185 coating for connectors in contact with preservative treated wood in exterior applications. This recommendation is based on accelerated corrosion testing conducted by USP Structural Connectors and others in the industry. Second, it will add specific requirements for connectors and fasteners in costal areas. Both of these items were proposed during the last code cycle, but needed to be coordinated further with the proponents. As stated in the last code cycle, the extra hazard to fasteners and connectors installed in an environment of regular exposure to salt spray has been seen to promote their premature failure leading to the collapse of the decks constructed with currently code compliant fasteners and connectors. By requiring grade 304 or 316 stainless steel or an equivalent approved by the building official the usable expectant life of these fasteners and connectors will be extended to equal those installed in less hazardous environments.

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

PART I – IBC STRUCTURAL
Committee Action: **Disapproved**

Committee Reason: The committee does not feel that this proposal is ready for the code. There was a particular concern over the appropriate relationship between a manufacturer's recommendations and the referenced ASTM standard.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Greg Greenlee, PE, USP Structural Connectors, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

2304.9.5 (Supp) Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners and connectors in contact with preservative treated and fire-retardant-treated wood shall be in accordance with Sections 2304.9.5.1 through 2304.9.5.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153. ~~Connectors in contact with preservative-treated wood that are used in exterior applications shall be in accordance to the manufacturer's recommendations. In the absence of manufacturer's recommendation a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.~~

2304.9.5.1 (Supp) Fasteners and connectors for preservative-treated wood. Fasteners ~~for~~ in contact with preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum. Connectors that are used in exterior applications and in contact with preservative treated wood shall have coating types and weights in accordance with the treated wood or connector manufacturer's recommendations. In the absence of manufacturer's recommendation a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

2304.9.5.2 (Supp) Fastenings for wood foundations. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

2304.9.5.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

2304.9.5.4 (Supp) Fasteners for fire-retardant-treated wood used in interior applications. Fasteners for fire-retardant treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of manufacturer's recommendations, Section 2304.9.5.3 shall apply.

~~**2304.9.5.5 Fasteners and connectors subject to exposure and located within 300 feet of the shoreline.** Fasteners and connectors used in exterior applications that are located within 300 feet (91440 mm) of the shoreline shall be stainless steel grade 304 or 316 or an approved alternative.~~

Commenter's Reason: At the hearings in Palm Springs this modification was disapproved because of the numerous floor modifications proposed. This public comment addresses the concerns of interested parties and includes their suggested modifications into a single public comment. The changes themselves add needed language to the code to clarify the minimum coating requirements for connectors used in exterior applications. Currently connector manufacturers are recommending at a minimum a G185 coating for connectors in contact with preservative treated wood in exterior applications. This public comment also includes some minor editorial changes to clarify the intent of the original submittal. Finally, this proposal is necessary to make the IBC language coordinate with the IRC language approved at the hearings in Palm Springs.

Final Action: AS AM AMPC____ D

S219-07/08, Part II
IRC R319.3, R319.3.5 (New)

Proposed Change as Submitted:

PART II – IRC BUILDING/ENERGY

Proponent: Greg Greenlee, PE, USP Structural Connectors, representing himself

Revise as follows:

R319.3 (Supp) Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners and connectors in contact with preservative-treated wood and fire-retardant-treated wood shall be in accordance with this section. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153.

Connectors in contact with preservative-treated wood that are used in exterior applications shall be in accordance to the manufacturer's recommendations. In the absence of manufacturer's recommendation a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

R319.3.1 (Supp) Fasteners for preservative treated wood. Fasteners for preservative-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper.

Exceptions:

1. One-half-inch (12.7 mm) diameter or greater steel bolts.
2. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

R319.3.2 (Supp) Fastenings for wood foundations. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

R319.3.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper.

R319.3.4 (Supp) Fasteners for fire-retardant-treated wood used in interior applications. Fasteners for fire-retardant treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of the manufacturer's recommendations, Section R319.3.3 shall apply.

R319.3.5 Fasteners and connectors subject to exposure and located within 300 feet of the shoreline. Fasteners and connectors used in exterior application that are located within 300 feet (91440mm) of the shoreline shall be stainless steel grade 304 or 316 or an approved alternative.

Reason: The added language in this proposal will accomplish two things. First, it will clarify the minimum coating requirements for connectors used in exterior applications and in contact with preservative treated wood. Currently connector manufacturers are recommending at a minimum a G185 coating for connectors in contact with preservative treated wood in exterior applications. This recommendation is based on accelerated corrosion testing conducted by USP Structural Connectors and others in the industry. Second, it will add specific requirements for connectors and fasteners in costal areas. Both of these items were proposed during the last code cycle, but needed to be coordinated further with the proponents. As stated in the last code cycle, the extra hazard to fasteners and connectors installed in an environment of regular exposure to salt spray has been seen to promote their premature failure leading to the collapse of the decks constructed with currently code compliant fasteners and connectors. By requiring grade 304 or 316 stainless steel or an equivalent approved by the building official the usable expectant life of these fasteners and connectors will be extended to equal those installed in less hazardous environments.

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

PART II – IRC B/E

Committee Action: **Approved as Modified**

Modify the proposal as follows:

R319.3 (Supp) Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners and connectors in contact with preservative-treated wood and fire-retardant-treated wood shall be in accordance with this section. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153.

R319.3.1 (Supp) Fasteners for preservative treated wood. Fasteners for preservative-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Coating types and weights for connectors in contact with preservative-treated wood ~~that are used in exterior applications~~ shall be in accordance with the connector manufacturer's recommendations. In the absence of manufacturer's recommendations a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

Exceptions:

1. One-half-inch (12.7 mm) diameter or greater steel bolts.
2. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

R319.3.2 (Supp) Fastenings for wood foundations. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

R319.3.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper.

R319.3.4 (Supp) Fasteners for fire-retardant-treated wood used in interior applications. Fasteners for fire-retardant treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of the manufacturer's recommendations, Section R319.3.3 shall apply.

~~**R319.3.5 Fasteners and connectors subject to exposure and located within 300 feet of the shoreline**. Fasteners and connectors used in exterior application that are located within 300 feet (91440mm) of the shoreline shall be stainless steel grade 304 or 316 or an approved alternative.~~

Committee Reason: The proposal as modified serves to clarify the minimum coating requirements for fasteners and connectors in contact with preservative treated wood. By requiring the proper coating for fasteners and connectors the usable expectant life will be extended. The committee felt the modification was necessary to eliminate the restrictive language that specifically addressed fasteners and connectors used in exterior locations and subject to exposure within 300 feet of a shoreline as it was too restrictive.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Greg Greenlee, PE, USP Structural Connectors, requests Approval as Modified by this Public Comment.

Further modify proposal as follows:

R319.3 (Supp) Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners and connectors in contact with preservative-treated wood and fire-retardant-treated wood shall be in accordance with this section. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153.

R319.3.1 (Supp) Fasteners <u>and connectors</u> for preservative treated wood. Fasteners <u>in contact with</u> ~~for~~ preservative-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. ~~Coating types and weights for connectors~~ <u>Connectors that are used in exterior applications and</u> in contact with preservative-treated wood shall <u>have coating types and weights</u> ~~be~~ in accordance with the <u>treated wood or</u> connector manufacturer's recommendations. In the absence of manufacturer's recommendations a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

Exceptions:

1. One-half-inch (12.7 mm) diameter or greater steel bolts.
2. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

R319.3.2 (Supp) Fastenings for wood foundations. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7.

R319.3.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper.

R319.3.4 (Supp) Fasteners for fire-retardant-treated wood used in interior applications. Fasteners for fire-retardant treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of the manufacturer's recommendations, Section R319.3.3 shall apply.

Commenter's Reason: The public comments include minor clarification and editorial changes to the floor modification approved at the hearings in Palm Springs.

Final Action: AS AM AMPC____ D

S220-07/08
2304.9.5.1, 2304.9.5.3

Proposed Change as Submitted:

Proponent: David Rochester, Plating Systems & Technologies, Inc., representing Mechanical Galvanizers

Revise as follows:

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails~~,~~ <u>and</u> timber rivets~~, wood screws and lag screws~~ shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

2304.9.5.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails~~,~~ and timber rivets~~, wood screws and lag screws~~ shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

Reason: The IRC (R319.3) only excludes nails and timber rivets, at a minimum that is all that should be excluded by the IBC. Since many of the powder actuated pins being used in preservative treated lumbers are mechanically galvanized (Example: Remington), and Desa has done a significant amount of work getting approved by the ICC-ES, the restriction should be deleted. After all, one (1) ounce per square foot of zinc coating is a weighted coating and when it is applied by either the mechanical galvanizing process or the hot-dip galvanizing process, yields the same amount of zinc coating. In theory, both should provide equal amounts of corrosion protection, but in actuality, mechanical galvanizing provides significantly more corrosion protection in neutral salt spray testing. A true measure of a coating's viability should be the coating thickness followed by the corrosion protection given from such coating. Since mechanical galvanizing can equal hot-dip galvanizing in coating weight, and can exceed it in corrosion protection, the "wood screws" and "lag screws" exception should be removed. By making this change both versions of the Code – IBC and IRC will be the same.
Cost Impact: The code change proposal will not increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: A similar proposal in the last code development cycle was disapproved and thus far no additional technical data has been provided to justify allowing wood screws and lag screws with mechanical galvanizing.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

David Rochester, Plating Systems and Technologies, Inc, representing Mechanical Galvanizers, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

2304.9.5.1 (Supp) Fasteners for preservative-treated wood. Fasteners for preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than ~~nails, and~~ timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

2304.9.5.3 (Supp) Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than ~~nails, and~~ timber rivets shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

Commenter'sReason: The reason that the Committee Disapproved this request in February/March 2008 in Palm Springs was due to a lack of additional technical data to support the request. A summary of test results, from an independent laboratory, submitted with this change are listed below:

Hot-Dip Galvanized Sample #1 (HDG #1)	24 hours to white corrosion 264 hours to red corrosion (failure under ASTM B117) Average Thickness 0.942 mils (taken from average of means)
Hot-Dip Galvanized Sample #2 (HDG #2)	24 hours to white corrosion 192 hours to red corrosion (failure under ASTM B117) Average Thickness 0.9908 mils (taken from average of means)
Mechanically Galvanized Sample #1 (MG #1)	24 hours to white corrosion 672 hours to red corrosion (failure under ASTM B117) Average Thickness 1.3294 mils (taken from average of means)
Mechanically Galvanized Sample #2 (MG #2)	24 hours to white corrosion 696 hours to red corrosion (failure under ASTM B117) Average Thickness 1.5594 mils (taken from average of means)

Each of these coatings should have gone 300-330 hours to red corrosion failure under ASTM B117. The mechanically galvanized nails had better uniformity and less part-to-part variability than the hot-dip galvanized nails. If we discount this factor and just look at the number of hours per mil of coating of sacrificial protection, we would find that hot-dip would have yielded 280 hours (best case), whereas the mechanically galvanized nails yielded 672 hours (worst case). Bottom-line is that mechanically galvanized nails went longer in salt spray than hot-dip galvanized and clearly demonstrated that the mechanical coating provides a sufficient level of sacrificial protection.

Mechanical also has better uniformity and consistency on threaded fasteners. I hope that these results, from an independent lab, will demonstrate to the committee that mechanical should be allowed for nails, wood screws and lag screws.

The IRC (R319.3) only excludes nails and timber rivets, at a minimum that is all that should be excluded by the IBC. After all, one (1) ounce per square foot of zinc coating is a weighted coating and when it is applied by either the mechanical galvanizing process or the hot-dip galvanizing process, yields an equivalent zinc coating and sacrificial protection.

TEST REPORT -343

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CERT 2012.01

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Test Report No: 343

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 0.812 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 2.098 mils*			
05-Aug-04	385	Coating Thickness				*Minimum = 0.34 mils*			
HDG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 0.773 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.833 mils*			
05-Aug-04	385	Coating Thickness				*Minimum = 0.208 mils*			
HDG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.192 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 3.02 mils*			
05-Aug-04	385	Coating Thickness				*Minimum = 0.415 mils*			

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Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 0.904 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 2.005 mils*			
05-Aug-04	385	Coating Thickness				*Minimum = 0.237 mils*			
HDG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.029 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 3.461 mils*			
05-Aug-04	385	Coating Thickness				*Minimum = 0.409 mils*			

Danielle Schatz

End Of Report

TEST REPORT -344

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Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS		CYCLES	
PART DESCRIPTION						REQ	COMP	REQ	COM
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 0.85 mils*			
05-Aug-04	386	Coating Thickness				*Maximum = 1.632 mils*			
						Minimum = 0.328 mils			
HDG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 0.94 mils*			
05-Aug-04	386	Coating Thickness				*Maximum = 1.693 mils*			
						Minimum = 0.427 mils			
HDG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 1.069 mils*			
05-Aug-04	386	Coating Thickness				*Maximum = 3.738 mils*			
						Minimum = 0.435 mils			

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Test Report No: 344

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 0.917 mils*			
05-Aug-04	386	Coating Thickness				*Maximum = 1.392 mils*			
						Minimum = 0.377 mils			
HDG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 1.178 mils*			
05-Aug-04	386	Coating Thickness				*Maximum = 2.596 mils*			
						Minimum = 0.207 mils			

Danielle Schatz

End Of Report

TEST REPORT -345

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Ph: 517-783-4776

Test Report No: 345

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 1.368 mils*			
05-Aug-04	387	Coating thickness				*Maximum = 2.063 mils*			
						Minimum = 0.646 mils			
MG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 1.381 mils*			
05-Aug-04	387	Coating thickness				*Maximum = 1.747 mils*			
						Minimum = 0.729 mils			
MG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails									
1/20040805	4825	UNDEFINED				*Mean value = 1.358 mils*			
05-Aug-04	387	Coating thickness				*Maximum = 1.914 mils*			
						Minimum = 0.848 mils			

TEST REPORT -345

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CLIENT **CLIENT** **CERT 2012.01**

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Plating Systems & Technologies	Plating Systems & Technologies
317 N. Mechanic Street	317 N. Mechanic Street
Jackson MI 49201	Jackson MI 49201
USA Supplier Code	USA Supplier Code
Attn: Ph: 517-783-4776	Attn: Ph: 517-783-4776

Test Report No: 345

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS		CYCLES	
PART DESCRIPTION						REQ	COMP	REQ	COMP
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.287 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.953 mils*			
05-Aug-04	387	Coating thickness				*Minimum = 0.506 mils*			
MG#1	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.253 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.812 mils*			
05-Aug-04	387	Coating thickness				*Minimum = 0.457 mils*			

Danielle Schatz

End Of Report

TEST REPORT -346

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USA Supplier Code	USA Supplier Code
Attn: Ph: 517-783-4776	Attn: Ph: 517-783-4776

Test Report No: 346

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.535 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.947 mils*			
05-Aug-04	388	Coating Thickness				*Minimum = 0.693 mils*			
MG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.609 mils*			
1/20040805	4825	UNDEFINED				*Maximum =1.866 mils*			
05-Aug-04	388	Coating thickness				*Minimum = 0.875 mils*			
MG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.512 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.850 mils*			
05-Aug-04	388	Coating thickness				*Minimum = 0.981 mils*			

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Test Report No: 346

Test Entry Date: Tuesday, August 17, 2004

Test Contact Name: David Rochester

Test Remarks: ***Coating thickness was measured using a Fischer MMS Permascope. 10 measurements were taken on various locations on the nail. Report reflects the average thickness and the minimum and maximum values.***

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.616 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 2.055 mils*			
05-Aug-04	388	Coating Thickness				*Minimum = 0.818 mils*			
MG#2	4825	17-Aug-04	17-Aug-04	1	0	0	0	0	0
Nails						*Mean value = 1.525 mils*			
1/20040805	4825	UNDEFINED				*Maximum = 1.917 mils*			
05-Aug-04	388	Coating thickness				*Minimum = 0.987 mils*			

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End Of Report

TEST REPORT -347

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Test Report No: 347

Test Entry Date: Thursday, August 05, 2004

Test Contact Name: David Rochester

Test Remarks:

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#1	4825	05-Aug-04	16-Aug-04	5	0	264	264	0	0
Nails						*Parts has white corrosion at 24 hours and red rust present at the end of 264 hours.*			
1/20040805	4825	UNDEFINED							
05-Aug-04	385	Salt Spray Testing Per ASTM B117-02							

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End Of Report

TEST REPORT -348

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USA
Attn: Supplier Code
Ph: 517-783-4776

Test Report No: 348
Test Entry Date: Thursday, August 05, 2004
Test Contact Name: David Rochester
Test Remarks:

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS REQ	HOURS COMP	CYCLES REQ	CYCLES COMP
PART DESCRIPTION									
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
HDG#2	4825	05-Aug-04	13-Aug-04	5	0	192	192	0	0
Nails									
1/20040805	4825	UNDEFINED				*Parts had white corrosion present at 24 hours and red rust present at 192 hours.*			
05-Aug-04	386	Salt Spray Testing Per ASTM B117-02							

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End Of Report

TEST REPORT -371

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Test Report No: 371
Test Entry Date: Thursday, August 05, 2004
Test Contact Name: David Rochester
Test Remarks:

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS		CYCLES	
PART DESCRIPTION						REQ	COMP	REQ	COMP
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#1	4825	05-Aug-04	02-Sep-04	5	0	672	672	0	0
Nails						*One part had trace of red rust at 672 hours of exposure.*			
1/20040805	4825	UNDEFINED							
05-Aug-04	387	Salt Spray Testing Per ASTM B117-02							

Danielle Schatz

End Of Report

TEST REPORT -372

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Test Report No: 372
Test Entry Date: Thursday, August 05, 2004
Test Contact Name: David Rochester
Test Remarks:

Client Information		Part Test Information							
PART NUMBER	PO NUMBER	INDATE	OUTDATE	TESTCNT	RETCNT	HOURS		CYCLES	
PART DESCRIPTION						REQ	COMP	REQ	COMP
LOT NUMBER	WO-REL#	TEST SPECIFICATION NAME				TEST STATUS			
RECEIVED DATE	OURJOBID	TEST PROCEDURE NAME							
MG#2	4825	05-Aug-04	03-Sep-04	5	0	696	696	0	0
Nails						*One part had a trace of red rust at 696 hours of exposure.*			
1/20040805	4825	UNDEFINED							
05-Aug-04	388	Salt Spray Testing Per ASTM B117-02							

Danielle Schatz

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End Of Report

Final Action: AS AM AMPC____ D

S225-07/08

2308.12.6, 2308.3.2. 2308.3.2.1 (New), 2308.3.2.2 (New)

Proposed Change as Submitted:

Proponent: Robert W. Rice, Josephine County, OR, representing Josephine County Building Safety and Southern Oregon Chapter of ICC

1. Revise as follows:

2308.12.6 Irregular structures. Conventional light-frame construction shall not be used in irregular portions of structures in Seismic Design Category D or E. Such irregular portions of structures shall be designed to resist the forces specified in Chapter 16 to the extent such irregular features affect the performance of the conventional framing system. A portion of a structure shall be considered to be irregular where one or more of the conditions described in Items 1 through 6 below are present.

1. Where exterior braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required, the structure shall be considered to be irregular [see Figure 2308.12.6(1)].

   Exception: Floors with cantilevers or setbacks not exceeding four times the nominal depth of the floor joists [see Figure 2308.12.6(2)] are permitted to support braced wall panels provided:

   1. Floor joists are 2 inches by 10 inches (51mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) o.c.
   2. The ratio of the back span to the cantilever is at least 2:1.
   3. Floor joists at ends of braced wall panels are doubled.
   4. A continuous rim joist is connected to the ends of cantilevered joists. The rim joist is permitted to be spliced using a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 11/2 inches (38 mm) wide fastened with six 16d common nails on each side. The metal tie shall have a minimum yield of 33,000 psi (227 MPa).
   5. Joists at setbacks or the end of cantilevered joists shall not carry gravity loads from more than a single story having uniform wall and roof loads, nor carry the reactions from headers having a span of 8 feet (2438 mm) or more.

2. Where a section of floor or roof diaphragm is not connected to and laterally supported by braced wall lines on all edges in accordance with 2308.3.2, the structure shall be considered to be irregular [see Figure 2308.12.6(3)].

   Exception: Portions of roofs or floors that do not support braced wall panels above are permitted to extend up to 6 feet (1829 mm) beyond a braced wall line [see Figure 2308.12.6(4)].

3. Where the end of a required braced wall panel extends more than 1 foot (305 mm) over an opening in the wall below, the structure shall be considered to be irregular. This requirement is applicable to braced wall panels offset in plane and to braced wall panels offset out of plane as permitted by the exception to Item 1 above in this section [see Figure 2308.12.6(5)].

   Exception: Braced wall panels are permitted to extend over an opening not more than 8 feet (2438 mm) in width where the header is a 4-inch by 12-inch (102 mm by 305 mm) or larger member.

4. Where portions of a floor level are vertically offset such that the framing members on either side of the offset cannot be lapped or tied together in an approved manner, the structure shall be considered to be irregular [see Figure 2308.12.6(6)].

   Exception: Framing supported directly by foundations need not be lapped or tied directly together.

5. Where braced wall lines are not perpendicular to each other, the structure shall be considered to be irregular [see Figure 2308.12.6(7)].
6. Where openings in floor and roof diaphragms having a maximum dimension greater than 50 percent of the distance between lines of bracing or an area greater than 25 percent of the area between orthogonal pairs of braced wall lines are present, the structure shall be considered to be irregular [see Figure 2308.12.6(8)].

2308.3.2 Braced wall panel connections. Lateral ~~F~~forces shall be transferred from the roofs and floors to braced wall panels and from the braced wall panels in upper stories to the braced wall panels in the story below ~~by the following:~~
in accordance with Sections 2308.3.2.1 and 2308.3.2.2.

2308.3.2.1 Braced wall panel connections to floors and ceilings. Braced wall panels shall be connected to floor framing as follows:

1. Braced wall panel top and bottom plates shall be fastened to joists, rafters or full-depth blocking. Braced wall panels shall be extended and fastened to roof framing at intervals not to exceed 50 feet (15 240 mm) between parallel braced wall lines.

   ~~**Exception:** Where roof trusses are used, lateral forces shall be transferred from the roof diaphragm to the braced wall by blocking of the ends of the trusses or by other approved methods.~~

2. Bottom plate fastening to joist or blocking below shall be with not less than 3-16d nails at 16 inches (406 mm) o.c.
3. Blocking shall be nailed to the top plate below with not less than 3-8d toenails per block.
4. Joists parallel to the top plates shall be nailed to the top plate with not less than 8d toenails at 6 inches (152mm) o.c.

In addition, top plate laps shall be nailed with not less than 8-16d face nails on each side of each break in the top plate.

2. Add new text as follows:

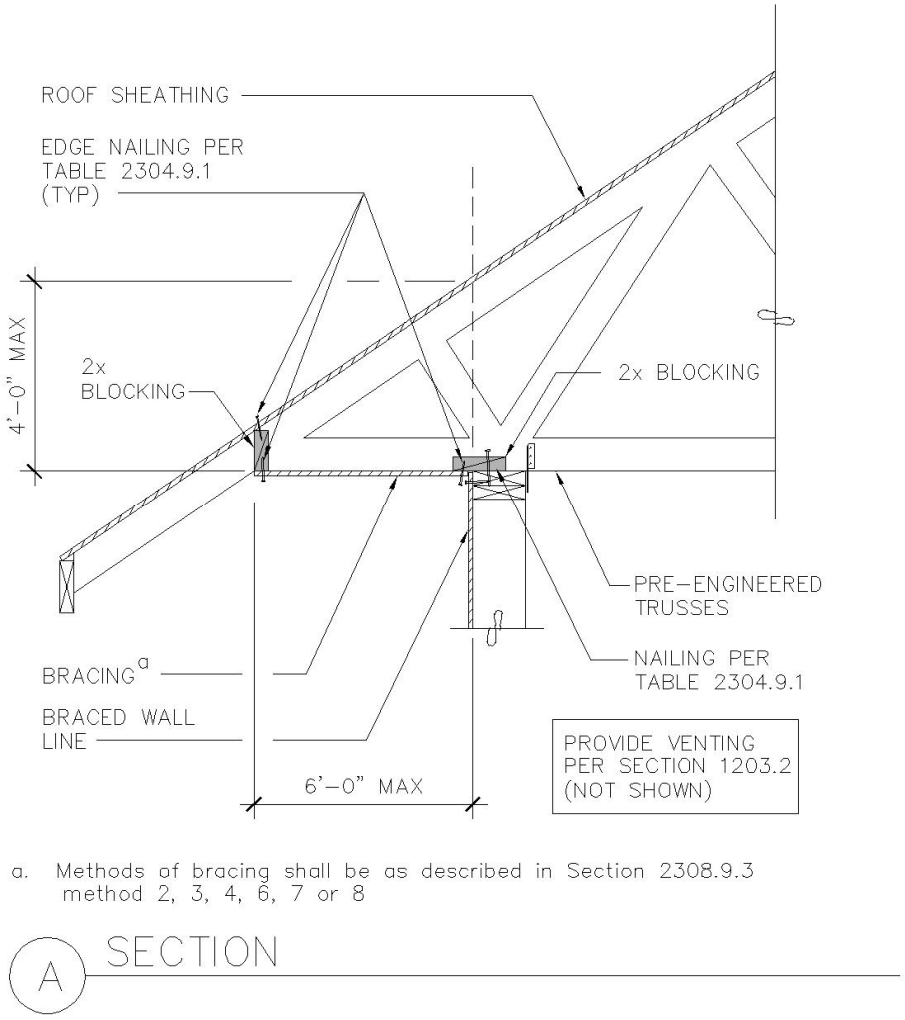
2308.3.2.2 Braced wall panel connections to roof framing. Braced wall panels shall be connected to roof framing as follows:

1. A parallel framing member or partial-height solid blocking between perpendicular trusses or rafters shall be provided and extend from the top plate to within 2 inches of the bottom side of the roof sheathing. Blocking shall be nailed to the top plate below with not less than 3-8d toenails per block.

   Exceptions:

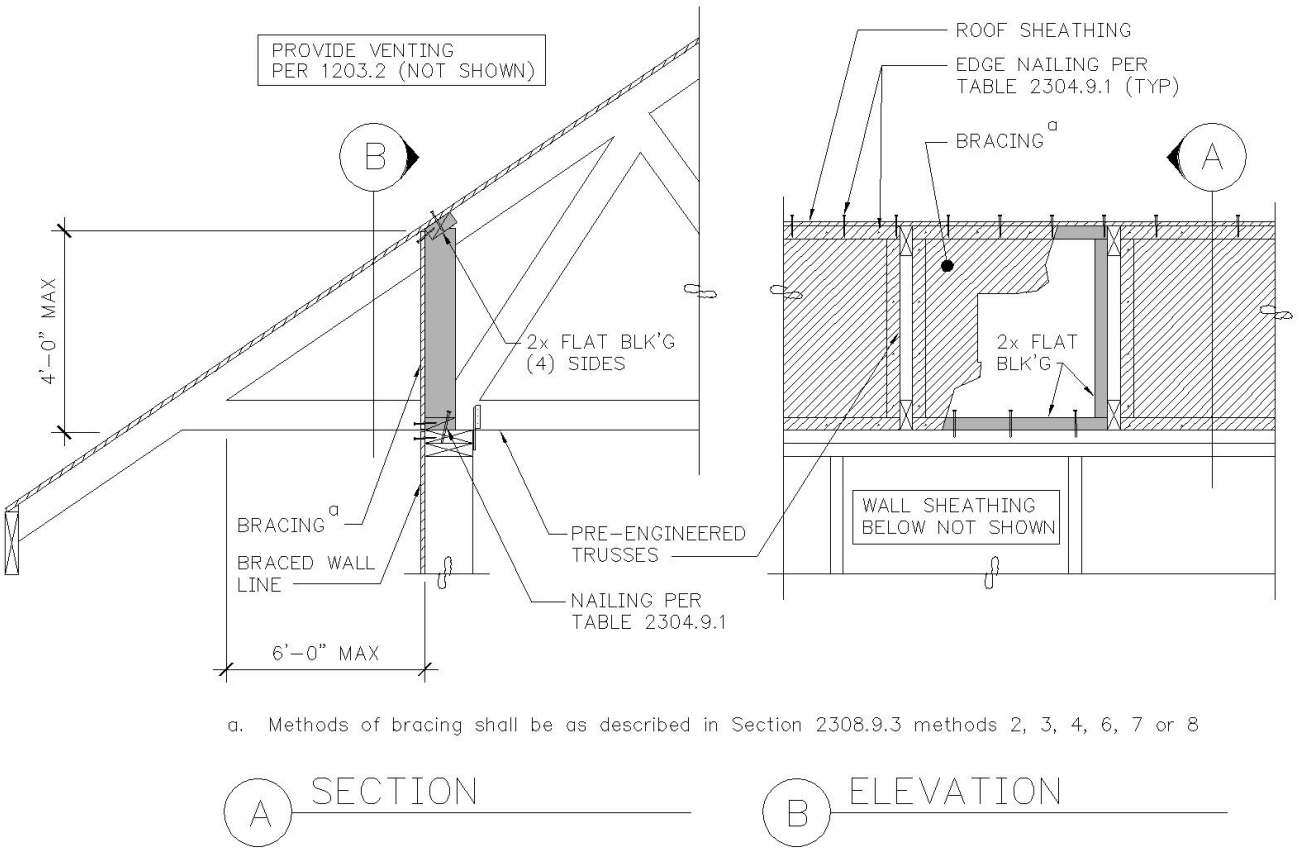
   1. In buildings assigned to Seismic Design Category C and where the basic wind speed is less than 100 mph;
      Where the framing members are perpendicular to the wall line below solid, full-height blocking need not be provided when the perpendicular framing members or a parallel member such as a continuous rim joist or header is attached to the wall line in accordance with Table 2304.9.1
   2. Where the roof sheathing is greater than 9-1/4 inches (235 mm) above the top plate exterior braced wall panel top plates are to be connected in accordance with one of the following methods:
      2.1. In accordance with Figure 2308.3.2 (1)
      2.2. In accordance with Figure 2308.3.2 (2)
      2.3. With full height engineered blocking panels designed for values listed in American Forest and Paper Association (AF&PA) *Wood Frame Construction Manual for One- and Two-Family Dwellings* (WFCM). Roof or floor sheathing above shall be attached to the blocking panels and the blocking panels shall be attached to top of wall in accordance with Table 2304.9.1
      2.4. Designed in accordance with accepted engineering methods.

In addition, top plate laps shall be nailed with not less than 8-16d face nails on each side of each break in the top plate.



For SI: 1 inch = 25.4 mm

FIGURE 2308.3.2 (1)
BRACED WALL PANEL TOP PLATE CONNECTION.



For SI: 1 inch = 25.4 mm

FIGURE 2308.3.2 (2)
BRACED WALL PANEL TOP PLATE CONNECTION.

Reason: The current code text (IBC) states the intention of connecting the braced wall line to the roof or floor diaphragm above in section 2308.3.2 but, it is not clearly stated in 2308.12.6. This proposal adds a couple words to 2308.12.6 to clarify the intent.

In addition to the re-wording of 2308.12.6, Section 2308.3.2 is re-formatted. The existing text of modified to address floors and ceilings. Item 1, Exception (roof framing connections) is deleted and the roof connection provisions are placed in the new section 2308.3.2.2. This new section provides options for accomplishing the connection without engineering when solid blocking is not possible

This proposal interjects language into the existing description of an "irregular" condition to more clearly state the intention of the text. Per accepted engineering practice for lateral design loads, the floor and roof diaphragms transmit wind and seismic loads into the braced walls (engineered shearwalls or prescriptive braced panels). The fact that the diaphragm needs to be connected to the braced wall line is often not fully understood by plans examiners, inspectors and contractors. The typical requirement that is intended by the code is that full height solid blocking occur at this connection with edge nailing to the blocking and the blocking connected to the top plate of the wall to transfer the diaphragm (plf) force to the wall top plates. This is evidenced in the IBC by the exception to irregular structures stating, ". Lateral forces shall be transferred from the roof diaphragm to the braced wall by blocking of the ends of the trusses..". In order for the forces to be transferred there has to be a connection capable of transferring the diaphragm shear evenly to the top plates.

The condition that occurs at an increasing rate that brings this issue up is with cantilevered or stub-heel trusses. At this condition, solid blocking (either with 2x or engineered wood products) is often not possible due to the height of the diaphragm above the top plate of the wall.

Without this clarification of the text it is a connection that may or may not occur based on what I have seen in the field and have discussed with code officials. The blocking that is called for in the code serves three functions. It provides closure to prevent animals, birds, etc. from entering the attic space, it prevents the trusses or rafters from "rolling over" and it transfers the diaphragm forces to the wall. Most code officials, inspectors and contractors understand the first two objectives. However, the latter is a concept that is not often fully understood. This needs to be perceived, understood and implemented in a uniform way.

In addition, rather than identify a problem without providing a solution, my proposal includes two ways to simply accomplish this connection. The solutions are, in principle, fundamentally extending the roof diaphragm sheathing to the wall top plates either vertically in the truss bays or horizontally through the soffit. No engineering or testing is required since it is just completing the load path with the already defined sheathing and nailing.

Without prescriptive provisions in the current code this condition would require engineering or, as stated in 2308.3.2, Exception to item 1 "by other approved methods." would be left up to the Authority Having Jurisdiction to determine what is acceptable without any guidance or uniformity between jurisdictions.

Typically, the engineering solution would provide details similar to those included in this proposal. Currently, without a prescriptive provision to accomplish load path, engineering would be required. This proposal would provide a prescriptive solution without requiring engineering costs and delays. This would result in reduced costs.

Cost Impact: The code change proposal will not increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: The intent to clarify requirements for connecting braced wall panels to diaphragms, is a good concept, but the committee believes this proposal is not ready to be added to the code, due to technical problems with the diagrams and proposed wording.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Robert Rice, Josephine County Building Safety, representing Josephine County Building Safety and Southern Oregon Chapter of ICC, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

2308.12.6 Irregular structures. Conventional light-frame construction shall not be used in irregular portions of structures in Seismic Design Category D or E. Such irregular portions of structures shall be designed to resist the forces specified in Chapter 16 to the extent such irregular features affect the performance of the conventional framing system. A portion of a structure shall be considered to be irregular where one or more of the conditions described in Items 1 through 6 below are present.

1. Where exterior braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required, the structure shall be considered to be irregular [see Figure 2308.12.6(1)].

   Exception: Floors with cantilevers or setbacks not exceeding four times the nominal depth of the floor joists [see Figure 2308.12.6(2)] are permitted to support braced wall panels provided:

   1. Floor joists are 2 inches by 10 inches (51mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) o.c.
   2. The ratio of the back span to the cantilever is at least 2:1.
   3. Floor joists at ends of braced wall panels are doubled.
   4. A continuous rim joist is connected to the ends of cantilevered joists. The rim joist is permitted to be spliced using a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 11/2 inches (38 mm) wide fastened with six 16d common nails on each side. The metal tie shall have a minimum yield of 33,000 psi (227 MPa).
   5. Joists at setbacks or the end of cantilevered joists shall not carry gravity loads from more than a single story having uniform wall and roof loads, nor carry the reactions from headers having a span of 8 feet (2438 mm) or more.

2. Where a section of floor or roof diaphragm is not connected to and laterally supported by braced wall lines on all edges in accordance with 2308.3.2, the structure shall be considered to be irregular [see Figure 2308.12.6(3)].

   Exception: Portions of roofs or floors that do not support braced wall panels above are permitted to extend up to 6 feet (1829 mm) beyond a braced wall line [see Figure 2308.12.6(4)].

3. Where the end of a required braced wall panel extends more than 1 foot (305 mm) over an opening in the wall below, the structure shall be considered to be irregular. This requirement is applicable to braced wall panels offset in plane and to braced wall panels offset out of plane as permitted by the exception to Item 1 above in this section [see Figure 2308.12.6(5)].

   Exception: Braced wall panels are permitted to extend over an opening not more than 8 feet (2438 mm) in width where the header is a 4-inch by 12-inch (102 mm by 305 mm) or larger member.

4. Where portions of a floor level are vertically offset such that the framing members on either side of the offset cannot be lapped or tied together in an approved manner, the structure shall be considered to be irregular [see Figure 2308.12.6(6)].

   Exception: Framing supported directly by foundations need not be lapped or tied directly together.

5. Where braced wall lines are not perpendicular to each other, the structure shall be considered to be irregular [see Figure 2308.12.6(7)].

6. Where openings in floor and roof diaphragms having a maximum dimension greater than 50 percent of the distance between lines of bracing or an area greater than 25 percent of the area between orthogonal pairs of braced wall lines are present, the structure shall be considered to be irregular [see Figure 2308.12.6(8)].

2308.3.2 Braced wall panel connections. Lateral forces shall be transferred from the roofs and floors to braced wall panels and from the braced wall panels in upper stories to the braced wall panels in the story below in accordance with Sections 2308.3.2.1 and 2308.3.2.2.

2308.3.2.1 Braced wall panel connections to floors and ceilings. Braced wall panels shall be connected to floor framing as follows:

1. Braced wall panel top and bottom plates shall be fastened to joists, rafters or full-depth blocking. ~~Braced wall panels shall be extended and fastened to roof framing at intervals not to exceed 50 feet (15 240 mm) between parallel braced wall lines.~~
2. Bottom plate fastening to joist or blocking below shall be with not less than 3-16d nails at 16 inches (406 mm) o.c.
3. Blocking shall be nailed to the top plate below with not less than 3-8d toenails per block.
4. Joists parallel to the top plates shall be nailed to the top plate with not less than 8d toenails at 6 inches (152mm) o.c.

In addition, top plate laps shall be nailed with not less than 8-16d face nails on each side of each break in the top plate.

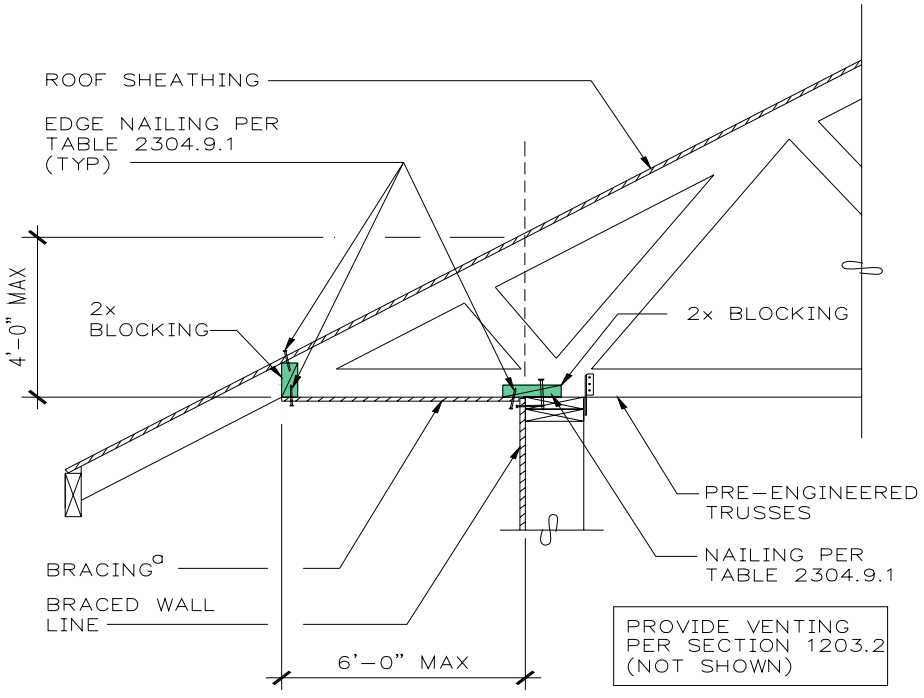
2308.3.2.2 Braced wall panel connections to roof framing. Braced wall panels shall be extended and fastened to roof framing at intervals not to exceed 50 feet (15 240 mm) between parallel braced wall lines. Braced wall panels shall be connected to roof framing as follows:

1. A parallel framing member or partial-height solid blocking between perpendicular trusses or rafters shall be provided and extend from the top plate to within 2 inches of the bottom side of the roof sheathing. Blocking shall be nailed to the top plate below with not less than 3-8d toenails per block.

   Exceptions:

   1. In buildings assigned to Seismic Design Category C and where the basic wind speed is less than 100 mph; Where the framing members are perpendicular to the wall line below solid, full-height blocking need not be provided when the perpendicular framing members or a parallel member such as a continuous rim joist or header is attached to the wall line in accordance with Table 2304.9.1
   2. Where the roof sheathing is greater than 9-1/4 inches (235 mm) above the top plate exterior braced wall panel top plates are to be connected in accordance with one of the following methods:
      2.1. In accordance with Figure 2308.3.2 (1)
      2.2. In accordance with Figure 2308.3.2 (2)
      2.3. With full height engineered blocking panels designed for values listed in American Forest and Paper Association (AF&PA) Wood Frame Construction Manual for One- and Two-Family Dwellings (WFCM). Roof or floor sheathing above shall be attached to the blocking panels and the blocking panels shall be attached to top of wall in accordance with Table 2304.9.1
      2.4. Designed in accordance with accepted engineering methods.

In addition, top plate laps shall be nailed with not less than 8-16d face nails on each side of each break in the top plate.

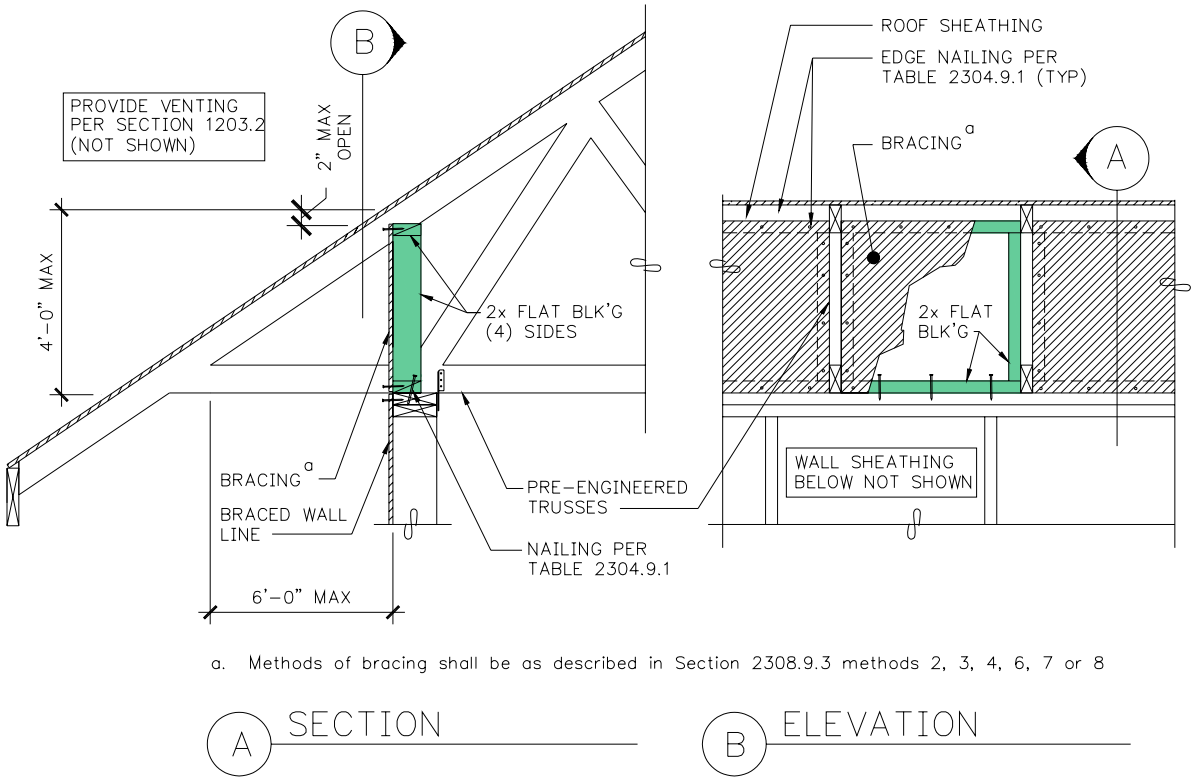


a. Methods of bracing shall be as described in Section 2308.9.3 method 2, 3, 4, 6, 7 or 8

A SECTION

For SI: 1 inch = 25.4 mm

FIGURE 2308.3.2 (1)
BRACED WALL PANEL TOP PLATE CONNECTION.



For SI: 1 inch = 25.4 mm

FIGURE 2308.3.2 (2)
BRACED WALL PANEL TOP PLATE CONNECTION.

Commenter's Reason: This IBC proposal is similar to the IRC proposal RB164. The IRC proposal was introduced in Orlando. Due to mis-communication, the IBC version did not get on the schedule for that code cycle. Since Orlando, Rochester and Palm Springs, the IRC has been developed through much conversation and input of industry professionals. The IRC version has wide-spread support.

Fortunately, the IBC already has clear wording that the diaphragms need to be connected to the braced wall line. This proposal merely provides prescriptive methods to accomplish the connection whether with solid blocking or when solid blocking doesn't work.

Purpose

The current code text (IBC) states the intention of connecting the braced wall line to the roof or floor diaphragm above in section 2308.3.2. The connection of the roof diaphragm to the braced wall line is already required. The code states,

Where roof trusses are used, lateral forces shall be transferred from the roof diaphragm to the braced wall by blocking of the ends of the trusses, or shall be designed in accordance with accepted engineering practice.

This proposal does not add additional requirements to the code. This proposal clarifies that the connection needs to occur and provides prescriptive solutions.

In addition to the re-wording of 2308.12.6, Section 2308.3.2 is re-formatted. The existing text of modified to address floors and ceilings. Item 1, Exception (roof framing connections) is deleted and the roof connection provisions are placed in the new section 2308.3.2.2. This new section provides options for accomplishing the connection without engineering when solid blocking is not possible

This proposal interjects language into the existing description of an "irregular" condition to more clearly state the intention of the text. Per accepted engineering practice for lateral design loads, the floor and roof diaphragms transmit wind and seismic loads into the braced walls (engineered shearwalls or prescriptive braced panels). The fact that the diaphragm needs to be connected to the braced wall line is often not fully understood by plans examiners, inspectors and contractors. The typical requirement that is intended by the code is that full height solid blocking occur at this connection with edge nailing to the blocking and the blocking connected to the top plate of the wall to transfer the diaphragm (plf) force to the wall top plates. This is evidenced in the IBC by the exception to irregular structures stating, "..lateral forces shall be transferred from the roof diaphragm to the braced wall by blocking of the ends of the trusses..". In order for the forces to be transferred there has to be a connection capable of transferring the diaphragm shear evenly to the top plates.

The condition that occurs at an increasing rate that brings this issue up is with cantilevered or stub-heel trusses. At this condition, solid blocking (either with 2x or engineered wood products) is often not possible due to the height of the diaphragm above the top plate of the wall.

Without this clarification of the text it is a connection that may or may not occur based on what I have seen in the field and have discussed with code officials. The blocking that is called for in the code serves three functions. It provides closure to prevent animals, birds, etc. from entering the attic space, it prevents the trusses or rafters from "rolling over" and it transfers the diaphragm forces to the wall. Most code officials, inspectors and contractors understand the first two objectives. However, the latter is a concept that is often not fully understood. This needs to be perceived, understood and implemented in a uniform way.

In addition, rather than identify a problem without providing a solution, my proposal includes two ways to simply accomplish this connection. The solutions are, in principle, fundamentally extending the roof diaphragm sheathing to the wall top plates either vertically in the truss bays or horizontally through the soffit. No engineering or testing is required since it is just completing the load path with the already defined sheathing and nailing.

Without prescriptive provisions in the current code this condition would require engineering or, as stated in 2308.3.2, Exception to item 1 "..by other approved methods." would be left up to the Authority Having Jurisdiction to determine what is acceptable without any guidance or uniformity between jurisdictions.

Typically, the engineering solution would provide details similar to those included in this proposal. Therefore, the solution and construction costs would not change. Costs would be reduced by eliminating additional costs for engineering where these prescriptive solutions work.

Final Action: AS AM AMPC____ D

S227-07/08, Part I
2308.9.1

Proposed Change as Submitted:

PART I – IBC STRUCTURAL

Proponent: Robert Rice, Josephine County, OR, representing Josephine County Building Safety and Southern Oregon Chapter International Code Council.

Revise as follows:

2308.9.1 Size, height and spacing. The size, height and spacing of studs shall be in accordance with Table 2308.9.1 except that utility-grade studs shall not be spaced more than 16 inches (406 mm) o.c., or support more than a roof and ceiling, or exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior nonload-bearing walls. Studs shall be continuous from a support at the bottom to a support at the top to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Reason: The prescriptive provisions of the IBC intentionally parallel the prescriptive provisions of the IRC. The prescriptive provisions of the IRC are based on platform or balloon framing as stated in section, "**R301.1.2 Construction Systems**. The requirements of this code are based on platform and balloon-frame construction……"

With platform or balloon framing, the walls are supported at top and bottom to resist wind or seismic loads that are applied to the face of the wall ("out of plane loads"). The bottom is fastened to the floor system (diaphragm) or directly to the foundation. The top of the wall is supported by ceiling or roof diaphragms. The diaphragm is the ceiling or roof sheathing and defined in the code as

IBC: *"A horizontal or sloped system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems.*"

IRC:*"A horizontal or nearly horizontal system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems."*

In the common condition where vaulted trusses are used, the gable end truss should be vaulted as well and the wall should be framed up to the bottom of the vaulted truss. Another option would be to not install a truss at the end-wall and frame the exterior wall up to the roof sheathing (i.e. "Balloon Framed"). In either case, the studs are supported at top and bottom.

This is consistent with BCSI 1-03, **"Guide to good practice for handling, installing & bracing of metal plate connected wood trusses"**, by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003 which states,

"Important Note: Scissor truss applications must not be framed with flat bottom chord gable end frames as this creates a hinge in the wall/gable interface that is below the bottom chord plane diaphragm. Adequate bracing of this condition is difficult and sometimes impossible."

An article in the December 2004 Building Safety Journal, by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E. titled "Evaluating Tall Residential Walls for Code Conformance" addresses the issue of tall gable end walls. The article speaks in detail about the condition that my proposal addresses. In the article they state,

"DON'T create a hinge with stacked framing. The use of platform framing without a diaphragm for support results in a hinge at the center …."

"Hinges in tall walls caused by inappropriate platform framing, lack of continuous vertical members or a gable end truss profile different from the adjacent roof trusses create structural instabilities."

In summary, if the wall is not supported at the top by a ceiling or roof diaphragm it is not prescriptive and an engineered design should be provided describing adequate support through multiple top plates, horizontal beam at top of wall, perpendicular interior walls, or other approved methods to resist out-of-plane lateral loads.

Bibliography:

BCSI 1-03, "Guide *to good practice for handling, installing & bracing of metal plate connected wood trusses*", by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003

Evaluating Tall Residential Walls for Code Conformance, *December 2004* Building Safety Journal, *by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E.*

Cost Impact: The code change proposal will not increase the cost of construction.

PART I – IBC STRUCTURAL
Committee Action: **Approved as Modified**

Modify proposal as follows:

2308.9.1 Size, height and spacing. The size, height and spacing of studs shall be in accordance with Table 2308.9.1 except that utility-grade studs shall not be spaced more than 16 inches (406 mm) o.c., or support more than a roof and ceiling, or exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior nonload-bearing walls. Studs shall be continuous from a support at the bottom to a support at the top to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Exception: Jack studs, trimmer studs and cripple studs at openings in walls that comply with Table 2308.9.5.

Committee Reason: This code change clarifies the intent of the code by requiring studs to be continuous which eliminates possible hinges in walls. The modification adds an appropriate exception which addresses conditions at wall openings.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Larry Wainwright, WTCA, representing the Structural Building Components Industry, requests Approval as Modified by this Public Comment.

Further modify proposal as follows:

2308.9.1 Size, height and spacing. The size, height and spacing of studs shall be in accordance with Table 2308.9.1 except that utility-grade studs shall not be spaced more than 16 inches (406 mm) o.c., or support more than a roof and ceiling, or exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior nonload-bearing walls. Studs shall be continuous from a support at the ~~bottom~~ sole plate to a support at the top plate to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Exception: Jack studs, trimmer studs and cripple studs at openings in walls that comply with Table 2308.9.5.

Commenter's Reason: This is an editorial change to more clearly communicate the intent of the proponent. The terms "top" and "bottom" are replaced with "sole plate" and "top plate", which are used in the referenced table 602.3(1).

Final Action: AS AM AMPC____ D

S227-07/08, Part II
IRC R602.3

Proposed Change as Submitted:

PART II – IRC BUILDING/ENERGY

Proponent: Robert Rice, Josephine County, OR, representing Josephine County Building Safety and Southern Oregon Chapter International Code Council.

Revise as follows:

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.

Studs shall be continuous from a support at the bottom to a support at the top to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Reason: The prescriptive provisions of the IBC intentionally parallel the prescriptive provisions of the IRC. The prescriptive provisions of the IRC are based on platform or balloon framing as stated in section, "**R301.1.2 Construction Systems**. The requirements of this code are based on platform and balloon-frame construction……"

With platform or balloon framing, the walls are supported at top and bottom to resist wind or seismic loads that are applied to the face of the wall ("out of plane loads"). The bottom is fastened to the floor system (diaphragm) or directly to the foundation. The top of the wall is supported by ceiling or roof diaphragms. The diaphragm is the ceiling or roof sheathing and defined in the code as

IBC: *"A horizontal or sloped system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems.*"

IRC:*"A horizontal or nearly horizontal system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems."*

In the common condition where vaulted trusses are used, the gable end truss should be vaulted as well and the wall should be framed up to the bottom of the vaulted truss. Another option would be to not install a truss at the end-wall and frame the exterior wall up to the roof sheathing (i.e. "Balloon Framed"). In either case, the studs are supported at top and bottom.

This is consistent with BCSI 1-03, **"Guide to good practice for handling, installing & bracing of metal plate connected wood trusses"**, by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003 which states,

"Important Note: Scissor truss applications must not be framed with flat bottom chord gable end frames as this creates a hinge in the wall/gable interface that is below the bottom chord plane diaphragm. Adequate bracing of this condition is difficult and sometimes impossible."

An article in the December 2004 Building Safety Journal, by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E. titled "Evaluating Tall Residential Walls for Code Conformance" addresses the issue of tall gable end walls. The article speaks in detail about the condition that my proposal addresses. In the article they state,

"DON'T create a hinge with stacked framing. The use of platform framing without a diaphragm for support results in a hinge at the center …."

"Hinges in tall walls caused by inappropriate platform framing, lack of continuous vertical members or a gable end truss profile different from the adjacent roof trusses create structural instabilities."

In summary, if the wall is not supported at the top by a ceiling or roof diaphragm it is not prescriptive and an engineered design should be provided describing adequate support through multiple top plates, horizontal beam at top of wall, perpendicular interior walls, or other approved methods to resist out-of-plane lateral loads.

Bibliography:

BCSI 1-03, "Guide *to good practice for handling, installing & bracing of metal plate connected wood trusses*", by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003

Evaluating Tall Residential Walls for Code Conformance, *December 2004* Building Safety Journal, *by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E.*

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC B/E

Committee Action: **Disapproved**

Committee Reason: This proposal would permit an unlimited height stud at maximum stud spacing from a floor to a three story ceiling. This would also permit stacking of panelized construction.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Robert Rice, Josephine County Building Safety, representing Josephine County and Southern Oregon Chapter of ICC, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.

Studs shall be continuous from a support at the bottom to a support at the top to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Exception: Jack studs, trimmer studs and cripple studs at openings in wall that comply with Tables R502.5(1) and R502.5(2).

Commenter's Reason: For reference, the IBC version of this proposal, S227-07/08 Part I, was approved by committee As Modified by the exception as shown for wall openings. The committee reason states,

"This code change clarifies the intent of the code by requiring studs to be continuous which eliminates possible hinges in wall. The modification adds an appropriate exception which addresses conditions at wall openings."

At the IRC hearings a member of the committee asked two questions that were not able to be addressed at the microphone during Code Development Hearings due to timing. The committees reason states,

"This proposal would permit an unlimited height stud at maximum stud spacing from a floor to a three story ceiling. This would also permit stacking of panelized construction."

The two concerns raised by the committee member can be answered as follows;

1. Stud height and spacing is already defined and regulated in the IRC in Section R602.3.1 and Tables R602.3(5) and Table R602.3.1. I have included it in the proposal above for reference. This proposal does not change the limitations on height & spacing that are currently in the code.
2. Panelized construction, such as Structural Insulated Panels (SIPS), would be a designed system. This would certainly be true if the panels were stacked. This concern is already addressed in the proposal by the statement, "or shall be designed in accordance with accepted engineering practice."

I urge your support of this proposal.

Purpose

The prescriptive provisions of the IRC are based on platform or balloon framing as stated in section, "R301.1.2 Construction Systems. The requirements of this code are based on platform and balloon-frame construction……"

With platform or balloon framing, the walls are supported at top and bottom to resist wind or seismic loads that are applied to the face of the wall ("out of plane loads"). The bottom is fastened to the floor system (diaphragm) or directly to the foundation. The top of the wall is supported by ceiling or roof diaphragms. The diaphragm is the ceiling or roof sheathing and defined in the code as

"A horizontal or nearly horizontal system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems."

In the common condition where vaulted trusses are used, the gable end truss should be vaulted as well and the wall should be framed up to the bottom of the vaulted truss. Another option would be to not install a truss at the endwall and frame the exterior wall up to the roof sheathing (i.e. "Balloon Framed"). In either case, the studs are supported at top and bottom.

This is consistent with BCSI 1-03, "Guide to good practice for handling, installing & bracing of metal plate connected wood trusses", by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003 which states,

"Important Note: Scissor truss applications must not be framed with flat bottom chord gable end frames as this creates a hinge in the wall/gable interface that is below the bottom chord plane diaphragm. Adequate bracing of this condition is difficult and sometimes impossible."

An article in the December 2004 Building Safety Journal, by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E. titled "Evaluating Tall Residential Walls for Code Conformance" addresses the issue of tall gable end walls. The article speaks in detail about the condition that my proposal addresses. In the article they state,

"DON'T create a hinge with stacked framing. The use of platform framing without a diaphragm for support results in a hinge at the center …."

"Hinges in tall walls caused by inappropriate platform framing, lack of continuous vertical members or a gable end truss profile different from the adjacent roof trusses create structural instabilities.

In summary, if the wall is not supported at the top by a ceiling or roof diaphragm it is not prescriptive and an engineered design should be provided describing adequate support through multiple top plates, horizontal beam at top of wall, perpendicular interior walls, or other approved methods.

Bibliography

BCSI 1-03, "Guide to good practice for handling, installing & bracing of metal plate connected wood trusses", by the Wood Truss Council of America and the Truss Plate Institute, October 1, 2003

Evaluating Tall Residential Walls for Code Conformance, December 2004 Building Safety Journal, by Gregg Shea, P.E., Ted Osterberger, P.E. and Frank E Woeste, PhD, P.E.

Public Comment 2:

Larry Wainwright, WTCA, representing the Structural Building Components Industry, requests Approval as Modified by this Public Comment.

Modify proposal as follows**:**

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.

Studs shall be continuous from a support at the ~~bottom~~ sole plate to a support at the top plate to resist loads perpendicular to wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Commenter's Reason: To maintain consistency, the terms "top" and "bottom" are replaced with "sole plate" and "top plate", which are used in the referenced table 602.3(1).

Final Action: AS AM AMPC____ D

S228-07/08
2308.9.2.3

Proposed Change as Submitted:

Proponent: Frank J. Linhart, SE, representing California Building Officials Association - Seismic Safety Committee

Revise as follows:

2308.9.2.3 Nonbearing walls and partitions. In nonbearing walls and partitions, studs shall be spaced not more than ~~28~~ 24 inches (~~711~~ 609 mm) o.c. ~~and are permitted to be set with the long dimension parallel to the wall~~. Interior nonbearing partitions shall be capped with no less than a single top plate installed to provide overlapping at corners and at intersections with other walls and partitions. The plate shall be continuously tied at joints by solid blocking at least 16 inches (406 mm) in length and equal in size to the plate or by 1/2-inch by 11/2-inch (12.7 mm by 38 mm) metal ties with spliced sections fastened with two 16d nails on each side of the joint.

> **Exception**: In nonbearing walls and partitions, 2x4 studs shall be permitted to be oriented with their long dimension parallel to the wall provided the stud height is limited to 10 feet (3048 mm) in height and the spacing does not exceed 16" (406 mm) o.c.

Reason: In previous versions of the Uniform Building Code, section 1605 indicated that non-bearing partitions should be able to withstand a uniform pressure of 5.0 psf perpendicular to the surface of the wall. This is still the industry standard.

Assuming 28" o.c. spacing and 14' wall height with the long dimension of the stud perpendicular to the wall the moment from 5 psf of pressure is computed to be 286 lb-ft. With a section modulus of 3.5 in^3 the stress f'b is found to be 976 psi. If we use DF#1 we can use an allowable stress F'b of 900 psi which is less than the required f'b value. Rarely will we find anything as good as DF No. 2 used even in tall studs.

The deflection of this member is .91" under this loading and this yields a ratio of L/184. Combining this with the fact that a 2x4 studs that are 14' long will rarely be straight this real deflection (or out of plane bowing) can easily be over 1.5".

If the stud is oriented with its long direction parallel to the wall there is no way to justify this wall construction for bending stresses or actual deflections.

Looking at the gypboard spanning 28 inches we perceive additional problems. On a practical level I have observed many cases where gypsum walls that have large holes in them caused by minor scuffles between family members as one person is pushed into the partition walls where studs are 16 inches on center. Increasing this spacing to 28 inches will greatly increase this potential for damage.

Taking a more quantitative look the Gypsum Association tests indicate that gypboard has an approximate allowable bending stress of 58 psi (even though we all call this a non-structural material). The moment derived from a 28" simple span is 3.4 lb-ft which will induce a bending stress of 57 psi. This is dangerously close to the allowable bending stress. The gypsum association also indicates the E*I value of 1/2" thick gypboard is as ranging from 1500 lb-in^2 to 3500 lb-in^2 per inch of width. This would become 18,000 lb-in^2 per foot of width at the lower end. Using this value in the deflection equation would yield deflection at mid span of 0.20 inches. They also state that this predicted value of E*I will be lower in high humidity areas.

In conclusion it is not prudent to allow studs to be 28" on center even in non-bearing walls. This will be an even worse situation where the studs are not perpendicular to the surface of the wall.

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

Committee Action: **Disapproved**

Committee Reason: The intent of clarifying the stud spacing and orientation in nonbearing walls is good, but there was some difficulty following the proponent's reason. Also the justification for the 16 inch spacing in the exception was not clear.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Edwin Huston, National Council of Structural engineers Association (NCSEA), representing NCSEA Code Advisory Committee – General Engineering Subcommittee, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

2308.9.2.3 Nonbearing walls and partitions. In interior nonbearing walls and partitions, studs shall be spaced not more than 24 inches (609 mm) o.c.. Interior nonbearing partitions shall be capped with no less than a single top plate installed to provide overlapping at corners and at intersections with other walls and partitions. The plate shall be continuously tied at joints by solid blocking at least 16 inches (406 mm) in length and equal in size to the plate or by 1/2-inch by 11/2-inch (12.7 mm by 38 mm) metal ties with spliced sections fastened with two 16d nails on each side of the joint.

Exception: In nonbearing walls and partitions, 2x4 studs shall be permitted to be oriented with their long dimension parallel to the wall provided the stud height is limited to 10 feet (3048 mm) in height and the spacing does not exceed 16" (406 mm) o.c.

Commenter's Reason: The ICC Structural Committee liked the idea of the California Building Officials Association - Seismic Safety Committee's Code Change Proposal S228-07/08 but thought it was unclear. NCSEA proposed a Floor Modification to S228 to address what we say as a potential safety concern, not for seismic loading, but for wind loading. Section 2308.9.2.3 allows 2x studs to be placed flat wise in a wall and be spaced at up to 28" oc. Table 2308.9.1 limits the height of edge wise studs in such a wall to 14 feet for 2x4 nonbearing walls, for example. Our Floor Modification was aimed at limiting this construction to interior walls. Tall flat wise stud construction is not appropriate for exterior walls which are subject to wind loads.

We are also recommending that the 28" spacing in Section 2308.9.2.3 should be changed to 24" oc. Table 2308.9.1 limits the height of edge wise studs in all non-bearing walls to 24". Turning the stud and using it flat wise in the wall, should not let the stud spacing increase. We also note that in modern construction almost all wall framing is based on modules which fit within dimensions of 48" or 96". A spacing of 24" oc is a module of 48" and 96" but a spacing of 28" oc is not.

Final Action: AS AM AMPC____ D

S231-07/08
2409

Proposed Change as Submitted:

Proponent: William E. Koffel, PE, Koffel Associates, Inc., representing Glazing Industry Code Committee

1. Revise as follows:

SECTION 2409
GLASS IN ELEVATOR HOISTWAYS AND ELEVATOR CARS

2409.1 Glass in elevator hoistway enclosures. Glass in elevator hoistway enclosures and hoistway doors shall be laminated glass conforming to ANSI Z97.1 or 16 CFR Part 1201. ~~Markings as specified in the applicable standard shall be on each separate piece of glass and shall remain visible after installation.~~

2. Add new text as follows:

2409.1.1 Fire-rated hoistways. Glass installed in hoistways and hoistway doors where the hoistway is required to have a fire resistance rating shall also comply with Section 715.

2409.1.2 Glass hoistway doors. The glass in glass hoistway doors shall be not less than 60 percent of the total visible door panel surface area as seen from the landing side.

2409.2 Glass visions panels. Glass in vision panels in elevator hoistway doors shall be permitted to be any transparent glazing material not less than 0.25 inches (0.64 mm) in thickness conforming to ANSI Z97.1 or 16CFR Part 1201. The area of any single vision panel shall not be less than 24 square inches (15484 mm^2) and the total area of one or more vision panels in any hoistway door shall be not more than 85 square inches (54839 mm^2).

2409.3 Glass in elevator cars. Glass in elevator car enclosures, glass elevator car doors, and glass used for lining walls and ceilings of elevator cars shall be laminated glass conforming to ANSI Z97.1 or 16CFR Part 1201.

Exception: Tempered glass shall be permitted to be used for lining walls and ceilings of elevator cars provided:

1. The glass is bonded to a nonpolymeric coating, sheeting, or film backing having a physical integrity to hold the fragments when the glass breaks.
2. The glass is not subjected to further treatment such as sandblasting; etching; heat treatment; or painting that could alter the original properties of the glass.
3. The glass is tested to the acceptance criteria for laminated glass as specified in ANSI Z97.l or 16CFR Part 1201.

The glass in glass elevator car doors shall be not less than 60 percent of the total visible door panel surface area as seen from the car side of the doors.

Reason: The intent of Section 2409 was to include the requirements of ASME A17.1 in the Building Code. However, only a portion of the glass requirements contained in ASME A17.1 are currently included in the IBC. As such, there is considerable confusion regarding the glass requirements for elevator cars and elevator hoistways. The purpose of this proposal is to more fully incorporate the provisions of ASME A17.1 in the IBC. The proposed revisions are consistent with ASME A17.1 except as follows:

1. ASME A17.1 permits wired glass to be installed in visions panels in hoistway doors. The proposal does not permit the use of wired glass consistent with the requirements for glazing in hazardous locations.
2. ASME A171 permits the use of Type 3C film reinforced silvered mirror glass that conforms to a Canadian standard to be used in jurisdictions enforcing the National Building Code of Canada.

The language regarding marking of the glass has been deleted since Section 2406 already contains requirements for marking safety glazing. If the text proposed to be deleted is retained, the text will also need to be added in about five locations of the proposed text.

Cost Impact: The code change proposal will not increase the cost of construction.

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason which indicates that some confusion over glass requirements can be eliminated by including a more complete set of requirements for elevator cars and hoistways in Section 2409.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

William E. Koffel, P.E. Koffel Associates, Inc, representing Glazing Industry Code Committee, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

SECTION 2409
GLASS IN ELEVATOR HOISTWAYS AND ELEVATOR CARS

2409.1 Glass in elevator hoistway enclosures. Glass in elevator hoistway enclosures and hoistway doors shall be laminated glass conforming to ANSI Z97.1 or 16 CFR Part 1201.

2409.1.1 Fire-rated hoistways. Glass installed in hoistways and hoistway doors where the hoistway is required to have a fire resistance rating shall also comply with Section 715.

2409.1.2 Glass hoistway doors. The glass in glass hoistway doors shall be not less than 60 percent of the total visible door panel surface area as seen from the landing side.

2409.2 Glass visions panels. Glass in vision panels in elevator hoistway doors shall be permitted to be any transparent glazing material not less than 0.25 inches (0.64 mm) in thickness conforming to Class A in accordance with ANSI Z97.1 or Category II in accordance with 16CFR Part 1201. The area of any single vision panel shall not be less than 24 square inches (15484 mm^2) and the total area of one or more vision panels in any hoistway door shall be not more than 85 square inches (54839 mm^2).

2409.3 Glass in elevator cars.

2409.3.1 Glass types. Glass in elevator car enclosures, glass elevator car doors, and glass used for lining walls and ceilings of elevator cars shall be laminated glass conforming to Class A in accordance with ANSI Z97.1 or Category II in accordance with CPSC 16CFR Part 1201.

Exception: Tempered glass shall be permitted to be used for lining walls and ceilings of elevator cars provided:

1. The glass is bonded to a nonpolymeric coating, sheeting, or film backing having a physical integrity to hold the fragments when the glass breaks.
2. The glass is not subjected to further treatment such as sandblasting; etching; heat treatment; or painting that could alter the original properties of the glass.
3. The glass is tested to the acceptance criteria for laminated glass as specified ~~in~~ for Class A in accordance with ANSI Z97.I or Category II in accordance with CPSC 16CFR Part 1201.

2409.3.2 Surface area. The glass in glass elevator car doors shall be not less than 60 percent of the total visible door panel surface area as seen from the car side of the doors.

Commenter's Reason: The original proposal did not specify the category or classification of safety glazing required.

Final Action: AS AM AMPC____ D

S236-07/08
Chapter 35

Proposed Change as Submitted:

Proponent: David P. Tyree, P.E., C.B.O., American Forest & Paper Association, representing American Forest & Paper Association

Revise as follows:

CHAPTER 35
REFERENCED STANDARDS

American Forest and Paper Association

ANSI/AF&PA SDPWS-~~05~~ 08 AF&PA Supplement Special Design Provisions for Wind and Seismic

Reason: This is an update to an existing AF&PA/ANSI Standard. The new supplement is scheduled to be approved as an AF&PA standard by June 2008. The supplement will further be approved as an ANSI consensus standard by August 2008. *ANSI / AF&PA SDPWS-2008 - Special Design Provisions for Wind and Seismic standard with Commentary* covers materials, design and construction of wood members, fasteners, and assemblies to resist wind and seismic forces. Engineered design of wood structures to resist wind or seismic forces is either by allowable stress design (ASD); or load and resistance factor design (LRFD). Criteria for proportioning, design, and detailing of engineered wood systems, members, and connections in lateral force resisting systems is provided. Nominal shear capacities of diaphragms and shear walls are provided for reference assemblies.

Cost Impact: The code change proposal will not increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: Disapproved at the proponent's request, because the updated standard is not complete. The standard is needed and the committee is hopeful that a public comment will be submitted.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

David P. Tyree, PE, CBO, American Forest & Paper Association, requests Approval as Submitted.

Commenter's Reason: This proposal updated an existing AF&PA/ANSI Standard referenced in the IBC - ANSI / AF&PA SDPWS-2008 - Special Design Provisions for Wind and Seismic standard with Commentary is scheduled to be available on 7/31/08. The ICC Structural Committee felt there was a need for this updated standard to be referenced in the 2009 IBC, but could not recommend approval without the standard being completed. The reason statement in their findings also stated that they hoped for a public comment. This standard (when completed) will be posted on our website for free download for all users. www.awc.org.

Final Action: AS AM AMPC____ D

S238-07/08
Chapter 35

Proposed Change as Submitted:

Proponent: Standards writing organizations as listed below.

Revise standards as follows:

AA

The Aluminum Association
1525 Wilson Blvd., Suite 600
Arlington, VA 22209

Standard reference number	Title
ADM~~1~~ 2005	Aluminum Design Manual: Part I-A Specification for Aluminum Structures - Allowable Stress Design; and Part I-B Specification for Aluminum Structures - ~~Building~~ Load and Resistance Factor Design

AAMA

American Architectural Manufacturers Association
1827 Waldon Office Square, Suite 550
Schaumburg, IL 60173

Standard reference number	Title
AAMA/WDMA/CSA 101/I.S.2/A440-08 ~~05~~	North American Fenestration Standard/Specifications for Windows, Doors and ~~Unit~~ Skylights

AISI

American Iron and Steel Institute
1140 Connecticut Avenue, Suite 706
Washington, DC 20036

Standard reference number	Title
~~General 04~~ AISI S200-07	North American Standard for Cold-formed Steel Framing—General Provisions
~~Header—04~~ AISI S212-07	North American Standard for Cold-formed Steel Framing—Header Design
~~Lateral—04~~ AISI S213-07	North American Standard for Cold-formed Steel Framing—Lateral Design
~~NAS—01~~ AISI S100-07	North American Specification for the Design of Cold-formed Steel Structural Members~~, including 2004 Supplement~~
~~PM—01~~ AISI S230-07	Standard for Cold-formed Steel Framing—Prescriptive Method for One- and Two-family Dwellings~~, including 2004 Supplement~~
~~Truss—04~~ AISI S214-07	North American Standard for Cold-formed Steel Framing—Truss Design
~~WSD—04~~ AISI S211-07	North American Standard for Cold-formed Steel Framing—Wall Stud Design

AITC

American Institute of Timber Construction
7012 S. Revere Parkway, Suite 140
Englewood, CO 80112

Standard reference number	Title
ANSI/AITC A 190.1— 07 ~~02~~	Structural Glued Laminated Timber

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard reference number	Title
A 6/A 6M-07 ~~05~~	Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
A 185/A 185M-06E01 ~~05a~~	Specification for Steel Welded Wire Reinforcement, Plain for Concrete
A 240/A 240M-07 ~~05a~~	Standard Specification for Chromium and Chromium-nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications
A 307-04E01	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
A 416/A 416M— 06 ~~02~~	Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
A 435/A 435M—90(2007~~1~~)	Specification for Straight-beam Ultrasonic Examination of Steel Plates
A 463/A 463M – 05 ~~02a~~	Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot Dip Process
A 480A/A 480M—06b ~~05~~	Specification for General Requirements for Flat-rolled Stainless and Heat-resisting Steel Plate, Sheet and Strip
A 497 A 497M-06e01 ~~05a~~	Specification for Steel Welded Reinforcement Deformed, for Concrete
A 510—06 ~~03~~	Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
A 568/A 568M-06a ~~05a~~	Specification for Steel, Sheet, Carbon, Structural and High-Strength, Low-Allow, Hot-rolled and Cold-rolled, General Requirements for
A 572/A 572M—07 ~~04~~	Specification for High-Strength Low-alloy Columbium-Vanadium Structural Steel
A 653/A 653-07 ~~06~~	Specification for Steel Sheet, Zinc-Coated Galvanized or Zinc-Iron Alloy-Coated Galvannealed by the Hot-Dip Process
A 690/A 690M-07 ~~05~~	Standard Specification for High Strength Low-Alloy Nickel, Copper, Phosphorus Steel H-Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments
A 722/A 722M-07 ~~05~~	Specification for Uncoated High-Strength Steel Bar for Prestressing Concrete
A 775/A 775M-07 ~~04a~~	Specification for Epoxy-coated Steel Reinforcing Bars
A 792A 792M-06a ~~05~~	Specification for Steel Sheet, 55% Aluminum-zinc Allow-coated by the Hot-dip Process
A 875/A 875M- 06 ~~05~~	Standard Specification for Steel Sheet Zinc-5 percent, Aluminum Allow-Coated by the Hot-dip Process
A 884-A884M-06 ~~04~~	Specification for Epoxy-coated Steel Wire and Welded Wire Fabric ~~for~~ Reinforcement
A 898/A 898M— 07 ~~91 (2001)~~	Specification for Straight Beam Ultrasonic Examination of Rolled Steel Shapes
A 924/A924M—07 ~~04~~	Standard Specification for General Requirements for Steel Sheet, Metallic-coated by the Hot-dip Process
A 951—06 ~~02~~	Specification for Steel Wire Masonry Joint Reinforcement
A 992/A 992M-06a ~~04a~~	Standard Specification for Structural Shapes
A 996/A 996M-06a ~~05a~~	Specification for Rail-steel and Axle-steel Deformed Bars for Concrete Reinforcement
A 1008/A 1008M-07 ~~05b~~	Specification for Steel, Sheet, Cold-rolled, Carbon, Structural, High-strength Low-allow and High-strength Low-alloy with Improved Formability
B 209— 06 ~~04~~	Specification for Aluminum and Aluminum Alloy Steel and Plate
C 31/31M-06 ~~03a~~	Practice for Making and Curing Concrete Test Specimens in the Field
C 55—06e01 ~~03~~	Specification for Concrete Building Brick
C 61/C 61M—00(2006)	Specification for Gypsum Keene's Cement
C 67-07 ~~05~~	Test Methods of Sampling and Testing Brick and Structural Clay Tile

C 90-06b	Specification for Loadbearing Concrete Masonry Units
C 150-07 ~~05~~	Specification for Portland Cement
C 212—00(2006)	Specification for Structural Clay Facing Tile
C 216-07 ~~05a~~	Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)
C 270-07 ~~05a~~	Specification for Mortar for Unit Masonry
C 315—02	Specification for Clay Flue Liners ~~ings~~ and Chimney Pots
C 406-06e01 ~~05~~	Specification for Roofing Slate
C 473-06a ~~05~~	Test Methods for Physical Testing of Gypsum Panel Products
C 474—05 ~~02~~	Test Methods for Joint Treatment Materials for Gypsum Board Construction
C 475—05 ~~01~~	Specification for Joint Compound and Joint Tape for Finishing Gypsum ~~Wall~~ Board
C 557—03e01	Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing
C 578-07 ~~05a~~	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
C 595-07 ~~05~~	Specification for Blended Hydraulic Cements
C 636/C36M—06 ~~04~~	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
C 645-07-04~~a~~	Specification for Nonstructural Steel Framing Members
C 836-06 ~~05~~	Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
C 840-07 ~~05~~	Specification for Application and Finishing of Gypsum Board
C 842—05 ~~99~~	Specification for Application of Interior Gypsum Plaster
C 843—99(2006) ~~e01~~	Specification for Application of Gypsum Veneer Plaster
C 847—06 ~~00~~	Specification for Metal Lath
~~C 931/C 931M—04~~	~~Specification for Exterior Gypsum Soffit Board~~
C 932-06 ~~05~~	Specification for Surface-Applied Bonding Compounds Agents for Exterior Plastering
C 955—06 ~~03~~	Standard Specification for Load-bearing Transverse and Axial Steel Studs, Runners Tracks, and Bracing or Bridging, for Screw Application of Gypsum Panel Products and Metal Plaster Bases
C 957- 06 ~~05a~~	Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface
C1032—06 ~~04~~	Specification for Woven Wire Plaster Base
C1063—06 ~~03~~	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement Based Plaster
C 1072-06 ~~05b~~	Standard Text Method for Measurement of Masonry Flexural Bond Strength
C 1088—07a ~~02~~	Specification for Thin Veneer Brick Units Made from Clay or Shale
C 1177/C 1177M-06 ~~04e01~~	Specification for Glass Mat Gypsum Substrate for Use as Sheathing
C 1178/C 1178M-06 ~~04e01~~	Specification for Coated ~~Glass~~ Mat Water-Resistant Gypsum Backing Panel
C 1186—07 ~~02~~	Specification for Flat Non Asbestos Fiber Cement Sheets
C 1261-07 ~~05~~	Specification for Firebox Brick for Residential Fireplaces

C 1278/C 1278M-06 ~~03e01~~	Specification for Fiber-Reinforced Gypsum Panels
C 1283—07 ~~03e01~~	Practice for Installing Clay Flue Lining ~~ers~~
C1314—07 ~~03b~~	Test Method for Compressive Strength of Masonry Prisms
C1386— 07 ~~98~~	Specification for Precast Autoclaved Aerated Concrete (~~P~~AAC) Wall Construction Units
C1396/1396M—06a ~~02~~	~~Standard~~ Specification~~s~~ for Gypsum ~~Wall~~ Board
C 1405-07 ~~0a05a~~	Standard Specification for Glazed Brick (Single Fired, Solid Brick Units)
D 225-04 ~~05~~	Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules
D 226-06 ~~05~~	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
D 312—00(2006)	Specification for Asphalt Used in Roofing
D 422—63 (2002)e01	Test Method for Particle-size Analysis of Soils
D 450—07 ~~96 (2000)e01~~	Specification for Coal-tar Pitch Used in Roofing, Dampproofing and Waterproofing
D 635—06 ~~03~~	Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position
D1143/D1143M—07 ~~(1994) E01~~	Test Method for Piles Under Static Axial Compressive Load
D 1227—95(2007)~~2000~~	Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
D1761—06 ~~88 (2000) e01~~	Test Method for Mechanical Fasteners in Wood
D 2166-06 ~~00e01~~	Test Method for Unconfined Compressive Strength of Cohesive Soil
D 2487—06 ~~00~~	Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D 2822—05 ~~91 (97)e01~~	Specification for Asphalt Roof Cement
D 3019—94(2007) ~~e01(Supp)~~	Specification for Lap Cement Used with Asphalt Roll Roofing, Nonfibered, Asbestos Fibered and Nonasbestos Fibered
D3201— 07 ~~94 (2003)~~	Test Method for Hygroscopic Properties of Fire-retardant-treated Wood and Wood-based Products
D 3161—06 ~~03b~~	Test Method for a Wind Resistance of Asphalt Shingles (Fan Induced Method)
D 3462—07 ~~04~~	Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
D 3468—99(2006)e01	Specification for Liquid-Applied Neoprene and Chlorosulfonated Polyethylene Used in Roofing and Waterproofing
~~D3689—90 (1995)~~	~~Method for Testing Individual Piles Under Static Axial Tensile Load~~
D 3737-07 ~~05~~	Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)
D 3747— 79 (2007~~0e01~~)	Specification for Emulsified Asphalt Adhesive for Adhering Roof Insulation
D 3957— 06 ~~03~~	Standard Practices for Establishing Stress Grades for Structural Members Used in Log Buildings
D 4022—07 ~~94 (2000)e01~~	Specification for Coal Tar Roof Cement, Asbestos Containing
D 4434—06 ~~04~~	Specification for Poly (Vinyl Chloride) Sheet Roofing
D 4479—07 ~~00~~	Specification for Asphalt Roof Coatings—Asbestos-free
D 4829— 07 ~~03~~	Test Method for Expansion Index of Soils
D 4869—05e01 ~~04~~	Specification for Asphalt-Saturated (Organic Felt) Underlayment Used in Steep Slope Roofing
D 5019—07 ~~96e01~~	Specification for Reinforced Nonvulcanized Polymeric Sheet Used in Roofing Membrane
D 5643—06 ~~94 (2000)e01~~	Specification for Coal Tar Roof Cement, Asbestos-free

D 5665—99a(2006)	Specification for Thermoplastic Fabrics Used in Cold-applied Roofing and Waterproofing
D 6694—07 ~~01~~	Standard Specification for Liquid-applied Silicone Coating Used in Spray Polyurethane Foam Roofing
D 6757— 07 ~~02~~	Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products
D 6878—06a ~~03~~	Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing
D 7158—07 ~~05~~	Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method
E 518— 03e01	Standard Test Methods for Flexural Bond Strength of Masonry
E 519—07 ~~02~~	Standard Test Method for Diagonal Tension (Shear) in Masonry Assemblages
E 1996-06 ~~05b~~	Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems ~~Storm Shutters~~ Impacted by Windborne Debris in Hurricanes
G 152— 06 ~~04~~	Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

AWPA

American Wood Protection Association
P. O. Box 361784
Birmingham, AL 35236-1784

Standard reference number	Title
U1-07 ~~06~~	USE CATEGORY SYSTEM: User Specification for Treated wood except Section 6 Commodity Specification H

DASMA

Door and Access Systems Manufacturers Association International
1300 Summer Avenue
Cleveland, OH 44115-2851

Standard reference number	Title
108-05 ~~02~~	Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference
115-05 ~~03~~	Standard Method for Testing Sectional Garage doors and Rolling Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure

DOC

U.S. Department of Commerce
National Institute of Standards and Technology
100 Bureau Drive Stop 3460
Gaithersburg, MD 20899

Standard reference number	Title
PS-1— 07 ~~95~~	~~Construction and Industrial~~ Structural Plywood

GA

Gypsum Association
810 First Street, NE #510
Washington, DC 20002-4268

Standard reference number	Title
GA 216—07 ~~04~~	Application and Finishing of Gypsum ~~Board~~ Panel Products

PTI

Post-Tensioning Institute
8601 N. Black Canyon Hwy., Suite 103
Phoenix, AZ 85021

Standard reference number	Title
PTI—2007 ~~2004~~	Standard Requirements for Analysis of Shallow Concrete Foundations on Expansive Soils, ~~First~~ Third Edition

PTI— 2007 ~~2004~~	Standard Requirements for Design of Shallow Post-tensioned Concrete Foundation on Expansive Soils, Second Edition

SPRI

Single Ply Roofing Institute
77 Rumford Avenue, Suite 3-B
Waltham, MA 02453

Standard reference number	Title
ANSI/SPRI/FM4435-ES-1~~03~~	Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems

TIA

Telecommunications Industry Association
2500 Wilson Boulevard
Arlington, VA 22201-3834

Standard reference number	Title
222-G—2005	Structural Standard for Antenna Supporting Structures and Antennas, including Addendum 1, 222-G-1 dated 2007.

TPI

Truss Plate Institute
218 North Lee Street, Suite 312
Arlington, VA 22314

Standard reference number	Title
TPI 1— 2007 ~~2002~~	National Design Standards for Metal Plate Connected Wood Truss Construction

UL

Underwriters Laboratories
333 Pfingsten Road
Northbrook, IL 60062

Standard reference number	Title
580—2006 ~~94~~	Test for Uplift Resistance of Roof Assemblies~~—with Revisions through February 1998~~
1258-02	**Fire Test of Roof Deck Construction – with Revisions through January 2007**
2390—2003 ~~04~~	Test Method for ~~Measuring the~~ Wind Resistant ~~Uplift Coefficients for~~ Asphalt Shingles with Sealed Tabs with Revisions through January 2004

WDMA

Window and Door Manufacturers Association
1400 East Touhy Avenue #470
Des Plaines, IL 60018

Standard reference number	Title
AAMA/WDMA/CSA101/I.S.2 /A440—08 ~~05~~	Specifications for Windows, Doors and Unit Skylights

Reason: The *CP 28 Code Development Policy*, Section 4.5* requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Change Proposal. In May 2007, a letter was sent to each developer of standards that are referenced in the International Codes, asking them to provide ICC with a list of their standards in order to update to the current edition. Above is the received list of the referenced standards that are under the maintenance responsibility of the IBC Structural Committee.

***4.5 Updating Standards:** The updating of standards referenced by the Codes shall be accomplished administratively by the appropriate code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal.

Committee Action: **Approved as Submitted**

Committee Reason: Approval of this code change assures that the IBC will reflect the latest updates from these standards developing organizations.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Bonnie Manley, American Iron and Steel Institute, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

AISI S230-07 Standard for Cold-formed Steel Framing—Prescriptive Method for One- and Two-family Dwellings, with Supplement 2, dated 2008\

(Portions of proposal not shown remain unchanged)

Commenter's Reason: AISI S230-07 w/ S2-08 -: This modification adopts the recently completed Supplement 2 to AISI S230-07 (Standard for Cold-Formed Steel Framing – Prescriptive Method for One- and Two-family Dwellings, 2007 Edition). This supplement was issued in June 2008 and is available for download from the AISI website: www.steel.org. (Click on "Construction" link and then click on "Codes and Standards" link.) It completely replaces Supplement 1 to AISI S230-07, and is intended to revise and clarify provisions related to low wind and low seismic wall bracing.

Please note, to fully integrate AISI S230-07, Supplement 2 into the ICC Codes, public comments have also been submitted on Proposals RB11-07/08 and RB168-07/08.

Public Comment 2:

Bonnie Manley, American Iron and Steel Institute, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

AISI S214-07 North American Standard for Cold-formed Steel Framing – Truss Design, with Supplement 2, dated 2008

(Portions of proposal not shown remain unchanged)

Commenter's Reason: AISI S214-07 w/ S2-08 This modification adopts the recently completed Supplement 2 to AISI S214-07 (North American Standard for Cold-Formed Steel Framing – Truss Design, 2007 Edition). This supplement was issued in June 2008 and is available for download from the AISI website: www.steel.org. (Click on "Construction" link and then click on "Codes and Standards" link.) It completely replaces Supplement 1 to AISI S214-07, and revises and clarifies provisions related to design responsibilities, loading, quality criteria and bracing for greater consistency with building codes and industry practice. Specifically, the purpose of this supplement is to better harmonize with the provisions desired by involved industry groups, including NCSEA and WTCA, which were initially documented in IBC Proposal S209-07/08.

Please note, to fully integrate AISI S214-07, Supplement 2 into the IBC, a public comment has also been submitted on Proposal S209-07/08.

Final Action: AS AM AMPC____ D