ICC 400-202X edition

Committee Action Report

For Committee Actions taken on the Public Input Agenda based on March 19, 2021 public input and at the meetings held via Webex on March 18, 2021 and April 1, 2021

Matrix for ICC 400 proposals

Proposal #	Section Number	Date of meeting proposal considered	Committee Action	Notes
Chapter 1 ADMINISTRATION PROVISIONS				
Chapter 2 DEFINITIONS				
IS-LOG 02-01-21	202	4/1/21	AM	
Chapter 3 GENERAL REQUIREMENTS				
IS-LOG 03-01-21	302.3	3/18/21	AM	
IS-LOG 03-02-21	303.5	3/18/21	AM	
IS-LOG 03-03-21	304.3.3	3/18/21	AM	Also sec 404.7
IS-LOG 03-04-21	302.2.4.9	3/18/21	A	
IS-LOG 03-05-21	302.3.6	3/18/21	AM	
IS-LOG 03-06-21	302.4.3	3/18/21	A	
IS-LOG 03-07-21	305.2	3/18/21	AM	
IS-LOG 03-08-21	305.3, 305.3.4	3/18/21	AM	
IS-LOG 03-09-21	305.4	3/18/21	AM	
IS-LOG 03-10-21	Fig 304.2.2.3	4/1/21	AM	
IS-LOG 03-11-21	Table 302.2.3.10.1	3/18/21	AM	
IS-LOG 03-12-21	Table 304.2.2.2.2.1	3/18/21	AM	
IS-LOG 03-13-21	Table 305.3.1.1	3/18/21	AM	
IS-LOG 03-14-21	Table 305.3.1.2	3/18/21	AM	
IS-LOG 03-15-21	305.1.1	4/1/21	AM	
IS-LOG 03-16-21	305.1.2	4/1/21	A	
IS-LOG 03-17-21	305.1.4	4/1/21	AM	
IS-LOG 03-18-21	305.1.6	4/1/21	AM	
IS-LOG 03-19-21	305.3.1.2	4/1/21	AM	
IS-LOG 03-20-21	306.1.1.1.1	4/1/21	AM	
IS-LOG 03-21-21	306.1.1.2	4/1/21	AM	
IS-LOG 03-22-21	306.1.1.5	4/1/21	AM	
IS-LOG 03-23-21	306.2	4/1/21	AM	
IS-LOG 03-24-21	306.2.1	4/1/21	AM	
IS-LOG 03-25-21	306.2.2	4/1/21	AM	
IS-LOG 03-26-21	306.2.3	4/1/21	AM	

Proposal #	Section Number	Date of meeting proposal considered	Committee Action	Notes
IS-LOG 03-27-21	306.2.6	4/1/21	D	
IS-LOG 03-28-21	302.2.4	4/1/21	A	
IS-LOG 03-29-21	306.2.6	4/1/21	A	
Chapter 4 STRUCTURAL PROVISIONS				
Chapter 5 REFERENCED STANDARDS				
Multi-chapter proposals				

Revisions to the text are in legislative format – strikeout of what is to be removed, and underlined for new. Revised text in the proposals in red is to highlight the changes that were modified by the committee.

Staff notes located in this document after a proponents reason are provided to indicate proposals that may require coordination; technical information; or terminology that is not good code language (e.g. “may” or “guarantee”, the use of “when” where the use is not a function of time). Staff notes are provided to assist the committee or proponent for possible modification. It is not intended to provide an opinion.

Chapter 1
ADMINISTRATION PROVISIONS

IS-LOG 01-01-21
ICC 400

Proponent:

Revise as follows:

Reason:

Staff note:

Committee Action:

Committee Reason:

Chapter 2
DEFINITIONS

IS-LOG 02-01-21
ICC 400

Proponent: Robert Chambers, self

Revise as follows:

LOG STRUCTURE. A type of construction whose primary structural elements are ~~formed by a system of~~ log~~s~~ walls.

Reason:

A “log structure” must have, as “primary structural elements” some log walls.

A frame house that has a log beam or a log truss is not a “log structure” because a log here or a log there does not ‘form a system….’ ‘System’ requires more than an occurrence or two of logs.

It is clear throughout ICC-400 that log walls are the primary element of this construction system: log walls are the primary thermal envelope, log walls are the primary structural element, log walls are the only cause of settling, and so on.

A structure that has no log walls at all would not be considered a “log structure.”

Staff note:

Committee Action: Approved as modified.

Committee Reason: stands on own

Chapter 3
GENERAL REQUIREMENTS

IS-LOG 03-01-21
ICC 400 Section 302.3

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

302.3 Mechanical connections and fasteners. Mechanical connections and fasteners shall be designed and installed in accordance with ~~ANSI/AWC NDS~~ specifications and ~~shall conform to the~~ standards specified in this section.

302.3.1 Prescriptive requirement. Design values for direct withdrawal and lateral shear, adjustment factors, end and edge distance and spacing shall ~~confirm~~ conform to ~~the~~ ANSI/AWC NDS.
~~302.3.1 Bolts. Bolts shall comply with ANSI/ASME B18.2.1.~~
~~302.3.2 Lag screws. Lag screws or lag bolts shall comply with ANSI/ASME B18.2.1.~~
~~302.3.3 Nails. Nails shall comply with ASTM F1667.~~
~~302.3.4 Screws. Screws shall comply with ANSI/ASME B18.6.1.~~

302.3.1.1~~6~~ Wood dowels. [same text and Appendix E].

302.3.1.2~~5~~ Metal connectors. [same text].

303.3.2 Proprietary or non-conforming fasteners. Fasteners that do not conform to the ANSI/AWC NDS shall ~~be verified by a current evaluation report published by an ANSI-ISO/IEC 17065 accredited agency.~~ comply in accordance with Section 104 Compliance Alternatives

302.3.3~~7~~ Testing requirement. ~~Other connectors.~~ Other mechanical connections and fasteners shall demonstrate by analysis based on recognized theory, full scale or prototype loading tests, studies of model analogues, that the material, assembly, structure or design will perform satisfactorily in its intended end use.

Reason: The information provided in this section does not clearly define the requirements for fasteners or the design implications. This modification provides that clarity and provides the alternative compliance path approach used throughout the standard.

Staff note:

Committee Action: Approved as modified

Committee Reason: For large dowel connection Appendix E provides good criteria for bulk tear-out.

IS-LOG 03-02-21
ICC 400 Section 303.5

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

303.5 Fastener protection. Where minimum ~~1-hour~~ fire resistance is required, connectors and fasteners shall be protected from fire exposure by ~~1 1/2 inches (38 mm) of~~ wood~~,~~ or other approved covering or coating ~~for a 1-hour rating~~.

303.5.1 Prescriptive protection. Fasteners used in a 1-hour fire-resistance-rated wall system shall be protected by a minimum of 1-1/2 ~~3/16~~" (38 ~~30~~ mm) of wood. ~~For a 1-hour rating, this distance shall be 1-1/2" (38 mm).~~

303.5.2 Calculated protection. Protection of mechanical fasteners with wood cover in a log wall shall be based on the char depth, a_{char}, calculated in accordance with the ANSI/AWC NDS Chapter 16.

303.5.3 Tested protection. An assemblage of specific materials or products shall be designed, tested and fire-resistance-rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period the passage of fire through joints made in or between fire-resistance-rated assemblies

Reason: Per the IFC, a fire-resistant joint system is "An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies." While this is the intent of the current section, it is not clearly defined in terms of the log wall.

This section also provides compliance path options typical of the standard.

Staff note:

Committee Action: Approved as modified

Committee Reason: More descriptive.

IS-LOG 03-03-21
ICC 400 Sections 304.3.3 & 404.7

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

304.3.3 Settling devices. At point loads, such as at posts ~~of~~ or columns, an ~~engineered,~~ adjustable and accessible device shall be used to accommodate the involved settling height and have an engineered allowable load that meets or exceeds the imposed point load.

404.7 Point loads. At point loads, such as at posts or columns, an adjustable and accessible device shall be used to accommodate the involved settling height and have an ~~certified~~ engineered allowable load that meets or exceeds the imposed point load. Device design and connection to column and support shall resist buckling, twisting, uplift, and lateral forces.

Reason: This proposed change was initiated by Bob Kenel, Great Lakes Log Crafters Association who asked for my assistance in forming the proposal.

The settling device must be designed to match the settling height and the load imposed on it. This involves plate size and thickness, thread design, and bolt diameter.

Staff note:

Committee Action: Approved as modified

Committee Reason: stands on its own

IS-LOG 03-04-21
ICC 400 Section 302.2.4.9

Proponent: Robert Chambers, IS-LOG Structural Work Group

Revise as follows:

302.2.4.9 Net section. The net section properties ~~area~~ shall be used in calculating the load carrying capacity of a structural member. The net section area is obtained by deducting from the gross section area the projected area of all material removed by boring, notching, or other means.

Reason: Load carrying capacity must consider all net section properties (eg section modulus and moment of inertia), not just net section “area.”

Staff note:

Committee Action: Approved

Committee Reason:

IS-LOG 03-05-21
ICC 400 Section 302.3.6

Proponent: Robert Chambers, IS-LOG Structural Work Group

Revise as follows:

302.3.1.1~~6~~ Wood dowels. Wood dowels shall be permitted in connection design using NDS yield limit equations I, II, III, ~~and~~ IV, NDS Appendix E and ASTM D 8023. Bending yield strength, F_{yb}, for wood dowels shall be taken as $22{,}200G_p$. ~~derived from the modulus of rupture (MOR, avg.) in Table 2 of ASTM D2555~~. ~~Listed MOR values shall be permitted to be adjusted to 12 percent moisture content using the ratios provided in Table X1.1 of ASTM D2555.~~

An additional yield mode V shall be determined as follows:

Allowable shear stress, F_{vp} in a wood dowel = ~~$1{,}365G_p\ 0.926G_t^{0.778}$~~ $1{,}365G_pG_t^{0.75}$

where:
Gt = Specific gravity for the timber.
Gp = Specific gravity for the dowel, and $G_p \geq 0.57$.
Gp > *Gt*

Allowable lateral design value (*Z*) for a doweled connection shall be the lesser of yield modes I, II, III, and IV from the NDS, and yield mode *V* determined as follows:

Zv = *Fvp* ~~(pD2)~~ $(\pi D^2)/4$_Single Shear [note that one space is added between "4" and "Single"]

Zv = *Fvp* ~~(pD2)~~ $(\pi D^2)/2$_Double_Shear [note the spaces added between "2" and "Double" and "Shear"]

where:
D = Diameter of a dowel; 1.5 inches (38 mm) ≥ D ≥ 0.75 inch (19 mm).

Reason: Corrects errors in formulas for yield mode V : "p" should be the Greek symbol for "pi" and "D2" should be "D^2" (D squared). Also, there are missing spaces immediately following the formulas, and this is corrected above.

Allowable shear stress is corrected and simplified to match recent peer-reviewed research results.

Having G_p greater than or equal to 0.57 ensures that softwood dowels will not be used.

Reference document ASTM D 8023 controls quality of wood dowels (pegs).

Staff note:

Committee Action: Approved as modified

Committee Reason: 03-01-21 same reason statement

IS-LOG 03-06-21
ICC 400 Section 302.4.3

Proponent: Robert Chambers, IS-LOG Structural Work Group

Revise as follows:

302.2.4.3 Kerfing. Where kerfing is provided in logs used in walls the depth of the kerf shall be no deeper than 50% of log stack height (*HL*/2). The sum of the depths of the kerf and cope shall not exceed *HL*/2. Where beams have a vertical kerf wider than 1/2 inch (12.7 mm), ~~are kerfed~~ the net section properties shall be used to determine the section capacity.

Reason: The existing standard requires specific engineering analysis for any and all kerfed beams. The PE's in the Structural Work Group think this is too conservative, and that a vertical kerf of not more than ½ inch width should be prescriptively allowed. A kerf wider than ½ inch will require the calculation path on net section properties.

Staff note:

Committee Action: Approved

Committee Reason:

IS-LOG 03-07-21
ICC 400 Section 305.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

305.2 Procedural requirements. Buildings shall comply with the requirements of the *International Energy Conservation Code*.

Exception: Compliance with Section 305.3 of this Standard shall be permitted to satisfy the requirements of Sections R402.1 or C402.1 of the *International Energy Conservation Code* as applicable.

Reason: The Commercial and Residential sections of the IECC present two different criteria for mass walls. The Commercial code has lower maximum U-Factors in warmer climate zones and a lower heat capacity definition, benefitting mass walls in colder climates.

Staff note:

Committee Action: Approved as modified

Committee Reason: more specific

IS-LOG 03-08-21
ICC 400 Sections 305.3.2 & 305.3.4

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

305.3.2 Test Method. Physical testing of thermal performance shall be done ~~in accordance~~ with ~~ASTM C177, ASTM 1363, or ASTM C518~~ ~~ASHRAE 55 and~~ ASTM C1363 on wall assemblies modeling changes in indoor and outdoor conditions.

~~**305.3.4 Field Study**. Accredited home energy rating systems may be used to demonstrate compliance.~~

Reason: Improved thermal comfort can be demonstrated by ASHRAE Standard 55, DIN EN 7730, and DIN SPEC 91420. This permits reductions in demand on heating and/or cooling systems. A study
performed for 80 mass wood buildings in Finland showed up to a 50% lower measured actual heating demand than the calculated heating demand. The proposed 305.3.4 provides a field study method that is supported by IECC R406 Energy Rating Index.

Staff note:

Committee Action: Approved as modified

Committee Reason: One test for wall systems, Field Study in IECC. ASHRAE 55 does not contain criteria for wall mass. Design temp is well established in the IECC.

in 305.3.1.2 strike out "and this section" and replace with "or Sections R402.1 or C402.1 of the IECC as applicable."

IS-LOG 03-09-21
ICC 400 Sections 305.4, 305.4.1 & 305.4.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

305.4 Thermal mass effect of log walls. The thermal mass benefit of log walls shall be determined in accordance with this section.

305.4.1 Prescribed method. Log walls shall be evaluated as mass walls in accordance with Sections R402.2.5 or C402.2.2 of the *International Energy Conservation Code* as applicable.

~~**305.4.1.1** Solid wood walls having a mass greater than or equal to 20 lb/ft2 ((98 kg/m2) of exterior wall area have heat capacities equal to or exceeding 6 Btu/ft2.oF [1.06 kJ/(m2.K)].~~

305.4.2 Test method. Physical testing of the thermal mass shall be in accordance with ~~ASTM C1363.~~ ASTM E1269-11(2018). ~~Standard Test Method for Determining Specific Heat Capacity by Differential Scanning Calorimetry or ASTM E1461-13, Standard Test Method for Thermal Diffusivity by the Flash Method.~~

Reason: The proposed 305.4.1.1 is a clarifying note taken from the 2003 IECC 502.2.1.1.2. The referenced standards pertain to establishing heat capacity while C1363 is the hot box test that measures heat flow through an assembly.

Staff note:

Committee Action: Approved as modified

Committee Reason: 305.4.1.1 based on old version of IECC, No criteria to base thermal diffusivity against.

IS-LOG 03-10-21
ICC 400 Figure 304.2.2.3

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:

Replace Figure 304.2.2.3 CLIMATE ZONE MAP with the latest climate zone map and table of climate zones, moisture regimes, and warm-humid designations by state, county and territory is available from ASHRAE Standard 169 and IECC-R 2021. Table 301.1 from IECC included.

OLD - NEW --

Reason: The most current climate information should be presented for proper guidance in designing new log structures.

Staff note: Pending ASHRAE approval to use figure (color, yes)

Committee Action: Approved as modified.

Committee Reason: The table is integral to the figure.

IS-LOG 03-11-21
ICC 400 Table 302.2.3.10.1

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows: See public comment form for image.

Reason: The development of values for log properties such as density and weight are presented in section 302.2.3.10. This table is presented as a time-saving tool for designers for structural purposes. For this reason, the Design Moisture Content is used to approximate the assembled weight of the wall for at least the first year of the structure. Uses equation from 302.2.3.10: Average Width WL/12 * Density (lbs./cu ft). Density is calculated per 302.2.3.9 with Design Moisture Content, MCD at 21%.

Staff note:

Committee Action: Approved as modified

Committee Reason: Necessary to add an example.

IS-LOG 03-12-21
ICC 400 Table 304.2.2.2.2.1

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows: See public comment form for image.

Reason This table is intended to save time in satisfying continuous load path and compaction. It applies to the required length of bearing of a log header past the edge of an opening or to a point load from a beam or post in/above the wall. In combination with Table 302.2.3.10.1 Weight of Log Walls, it assists in determining appropriate support of the sill/bottom plate log.

Staff note:

Committee Action: Approved as modified

Committee Reason: Values are not adjusted for bearing edges.

IS-LOG 03-13-21
ICC 400 Table 305.3.1.1

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows: See public comment form for image. ~~Average Width~~ to become Log Thickness

For SI: 1 inch =25.4 mm.

Notes to Table:

1. The tabulated values assume MCS to = 12 percent.

2. Conversion of nominal size to average width can be approximated using the following factors:

a. Flat inside and outside 97.50%

b. Flat inside, profiled outside 88.00%

c. Diameter, notched/coped 83.60%

d. Full round or round inside and outside 78.50%

3. To adjust from 12% MCs to specific climate zone, multiply the U-factor by the respective factor.

~~Example: 7" WL @ Gu-0.35, 0.097~~

Climate Zone	MCs	Adjustment factor	~~Resulting U-Factor~~
Dry	10%	0.9807	~~0.095~~
Moist	13%	1.0087	~~0.098~~
Warm-Humid	14%	1.0186	~~0.099~~
Marine	15%	1.0269	~~0.100~~

4. Linear interpolation is permitted.

Reason: This proposal revises the table to expand the information presented in this prescriptive path option. The purpose is to reduce confusion regarding the use of this table as opposed to nominal dimensions (natural tapered round or milled uniform).

Revisions include adding average widths for ½" increments up to 12", 1" increments from 12" to 16", and then 18".

Notes 2 and 3 are added for clarification. Nominal size to average width adjustments can be used when specific documentation is not available. Climate zone impacts the Moisture Content in Service, which affects the U-factor of the wood. The conversion adjusts the 12% MCs to the actual climate condition.

Staff note:

Committee Action: Approve as modified

Committee Reason: Linear interpolation adds flexibility to table. Example is desirable.

IS-LOG 03-14-21
ICC 400 Table 305.3.1.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC, Log & Timber Homes Council, NAHB

Revise as follows:


Book1.xlsx

Reason:

Staff note:

Committee Action: Approve as modified

Committee Reason: Reason pending….

IS-LOG 03-15-21
ICC 400 Section 305.1.1

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 305.1.1 Joint design. Joint designs and applied sealants shall be capable of maintaining the weather resistive seal between logs in exterior walls as individual logs reach service moisture content.

Reason: This change is to add the word “resistive” to this section of code. Without adding this word, the code is stating that under all conditions the weather seal must keep out the elements of weather at all times, and in all conditions. Even if there is a major storm creating extreme weather conditions that are beyond the design of the building, built in compliance with the code requirements. This is unreasonable to expect the building to go beyond the requirements of the code for these extreme conditions. Without adding this word to the code, it will create opportunities for lawsuits in areas affected by major storms and create legal issues for the builders and building officials alike.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Better clarification.

IS-LOG 03-16-21
ICC 400 Section 305.1.2

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 305.1.2 **Moisture control and air leakage.** The joint design shall resist air and moisture infiltration in accordance with Section 306.

Reason: This is a change to provide guidance to the user of the code to the correct section of the code for code language on his leakage.

Staff note:

Committee Action: Approved.

Committee Reason:

IS-LOG 03-17-21
ICC 400 Section 305.1.4

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 305.1.4 Kerfs. Kerfs shall comply with Section 302.2.4.3 and be protected from weather by being fully covered by the joint ~~patter~~ pattern of the log above (e.g., cope, tongue and groove), or by a notch or sealant.

Reason: The intent is to tie the thermal requirements for a kerf/kerfing to the requirements previously stated in the standard.

Staff note:

Committee Action: Approved as modified.

Committee Reason: editorial

IS-LOG 03-18-21
ICC 400 Section 305.1.6

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 305.1.6 Sealant. Sealant materials shall be applied in accordance with the sealant manufacturer's ~~recommendations~~ written installation instructions and Section 306. Sealants shall be compatible with all materials in contact with the sealant.

Reason: This is a change to provide enforceable code language to the users of the code. The term "recommendations" is too vague and is not enforceable language for the building officials, and therefore should not pe part of this section.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Adds more detail to instructions

IS-LOG 03-19-21
ICC 400 Section 305.3.1.2

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 305.3.1.2 Thermal envelope. The thermal envelope shall be compliant with the requirements of Table 305.3.1.2 ~~and this section~~ or Sections R401.2 or C401.2 of the *International Energy Conservation Code* as applicable.

Reason: Table 305.3.1.2 serves as a prescriptive option for the building thermal envelope with log wall integrated.
The section change provides flexibility by allowing designers to comply with the IECC and not also need to comply with Table 305.1.2.

Staff note:

Committee Action: Approved as modified.

Committee Reason: allows flexibility for designers to use the IECC as a compliance path.

IS-LOG 03-20-21
ICC 400 Section 306.1.1.1.1

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.1.1.1.1 Patterned sheathing or decking penetrating through or passing over log walls. Methods shall be employed to ~~restrict~~ resist air flow between the interior and exterior of the building, where patterned sheathing or decking (e.g., tongue and groove decking with a v-groove pattern exposed to view) ~~connections~~ penetrate ~~to the exterior of~~ the ~~building~~ thermal envelope.

Reason: This change is to remove the word “restrict” and add the word “resistive” to this section of code. Without removal of and adding this word, the code is stating that under all conditions the weather seal must keep out the elements of weather at all times, and in all conditions. Even if there is a major storm creating extreme weather conditions that are beyond the design of the building, built in compliance with the code requirements. This is unreasonable to expect the building to go beyond the requirements of the code for these extreme conditions. Without adding this word to the code, it will create opportunities for lawsuits in areas affected by major storms and create legal issues for the builders and building officials alike.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Thermal envelope is the exterior boundary.

IS-LOG 03-21-21
ICC 400 Section 306.1.1.2

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.1.1.2 Patterned sheathing or decking seams, joints and connections ~~at ceiling areas~~. Methods shall be employed to ~~restrict~~ resist air flow and moisture migration through the joined edges of patterned sheathing or decking at the interface to the exterior wall.

Reason: This change is to remove the word “restrict” and add the word “resistive” to this section of code. Without removal of and adding this word, the code is stating that under all conditions the weather seal must keep out the elements of weather at all times, and in all conditions. Even if there is a major storm creating extreme weather conditions that are beyond the design of the building, built in compliance with the code requirements. This is unreasonable to expect the building to go beyond the requirements of the code for these extreme conditions. Without adding this word to the code, it will create opportunities for lawsuits in areas affected by major storms and create legal issues for the builders and building officials alike.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Important clarification for both thermal and durability issues.

IS-LOG 03-22-21
ICC 400 Section 306.1.1.5

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.1.1.5 Sill logs and Bottom plate logs Methods and materials shall ~~be employed to~~ provide a continuous weather resistive seal ~~The area~~ below sill logs and bottom plate logs~~, there shall be provided with a continuous air sealant. that is capable of maintaining the weather seal~~.

Reason: The Language Change here simply clarifies in the Code what is required without using language that is not enforceable by the code official.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Better clarity and enforceability.

IS-LOG 03-23-21
ICC 400 Section 306.2

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: The continuous exterior water resistive plane shall ~~effectively~~ shed water from precipitation and shall comply with Sections 306.2.1 through 306.2.7.

Reason: This change is to add the word “resistive” to this section of code. Without adding this word, the code is stating that under all conditions the weather seal must keep out the elements of weather at all times, and in all conditions. Even if there is a major storm creating extreme weather conditions that are beyond the design of the building, built in compliance with the code requirements. This is unreasonable to expect the building to go beyond the requirements of the code for these extreme conditions. Without adding this word to the code, it will create opportunities for lawsuits in areas affected by major storms and create legal issues for the builders and building officials alike.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Better code language

IS-LOG 03-24-21
ICC 400 Section 306.2.1

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.2.1 Water Plane ~~The exterior water resistive plane is shall be formed by the contiguous log surfaces on which a water resistive film may shall form extending to the point of the weather resistive protection provided by the joint design in accordance with Section 305.1~~

The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly.

Reason: This change is just to clean up the language and make it enforceable for use by the code official.

This section was seen as redundant and confusing. Renumbering of following sections required.

Staff note: 703.1.1 IRC first sentence stop after “within the wall assembly”

Committee Action: Approved as modified.

Committee Reason: 703.1.1 IRC first sentence verbatim

IS-LOG 03-25-21
ICC 400 Section 306.2.2

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.2.~~2~~1 Water Collection. Wall surfaces shall be designed and constructed to ~~promote~~ provide positive ~~drain~~ drainage of water to the exterior. ~~to eliminate the potential for the collection of moisture on or in the log wall~~

Reason: This change is just to clean up the language and make it enforceable for use by the code official.

The last phrase of the section was removed for clarity.

Staff note:

Committee Action: Approved as modified.

Committee Reason: The last phrase of the section was removed for clarity.

IS-LOG 03-26-21
ICC 400 Section 306.2.3

Proponent: Donald Sivigny, State of Minnesota

Revise as follows: 306.2.3 Wall penetrations and joints. The log wall shall be protected by a roof overhang, flashing or other method to divert water away from the seams, joints, edges of penetrations, chink and settling spaces. Such protection shall ~~be capable of maintaining~~ maintain the weather resistive seal between the wall and the structural members as the logs reach service moisture content.

Reason: This change is just to clean up the language and make it enforceable for use by the code official.

Staff note:

Committee Action: Approved as modified.

Committee Reason: Better code language for enforceability

IS-LOG 03-27-21
ICC 400 Section 306.2.6

Proponent: Rob Pickett, on behalf of Thermal/Infiltration Work Group

Revise as follows: 306.2.6 Flashing. Where roof logs, floor logs or log posts are not protected by roof overhang and are exposed to weather, they shall be flashed to shed water and prevent water from passing through the exterior water resistive plane. Approved corrosion-resistant flashings shall be installed at all of the following locations in a manner to prevent entry of water, and to protect structural members:

Reason: This change is consistent with the effort to provide clarity and enforceability**.**

Staff note:

Committee Action: Disapproved.

Committee Reason: Due to action taken of 306.2.1

IS-LOG 03-28-21

ICC 400 Sections 302.2.4, 302.2.4.4, 302.2.4.4.1, 302.2.4.4.2, 302.2.4.4.3, 302.2.4.5, 302.2.4.5.1, 302.2.4.5.2, 302.2.4.6, 302.2.4.6.1, 302.2.4.6.2, 302.2.4.7, 302.2.4.7.1, 302.2.4.7.2, 302.2.4.8, 302.2.4.9

Proponent: Robert Chambers, on behalf of the Structural Work Group

Revise as follows: 302.2.4 Notching and boring. Notching and boring of logs used in structural applications shall be in accordance with this section and Figures 302.2.4.1 and 302.2.4.2. [The new figures are in a separate public comment form]

> **Exception:** When specific engineering analysis is provided by a registered design professional. [no change]
>
> **302.2.4.1 Wall logs.** Wall logs that are fully supported throughout their length shall be permitted to have up to two-thirds the cross-section removed to accommodate joints, corners, notches, bored holes, and intersecting walls.
>
> **302.2.4.2 Interlocking log notches.** [no changes to this paragraph]

302.2.4.3 Kerfing. [no changes to this paragraph … stands as recently revised by IS-LOG].

302.2.4.4 Notches in beams. Notches on the top and bottom of beams shall comply with this section and Figures 302.2.4.1 and 302.2.4.2. ~~edges of bending members shall not be located in the middle one-third of the span. Notches in the outer thirds of the span shall not exceed one-sixth of the actual member depth and shall not be longer than one-third of the depth of the member. Where notches are made at the supports, they shall not exceed one-fourth the actual log depth.~~

> ~~Exception: Notches exceeding the limits above shall be permitted where the net section has been designed to be sufficient to bear the anticipated loads.~~
>
> **302.2.4.4.1 Prescribed method for end-notches.** Where end-notches are made on the bottom of a beam for bearing on a support, the depth of notches shall not exceed one-fourth the depth of the beam at each notch ($d_n \leq d/4$). The re-entrant corner of notches shall be relieved by a linear or concave taper with

length at least 6 times the depth of the notch (taper length ≥ $6d_n$), or shall comply with Section 302.2.4.4.3.

302.2.4.4.2 Prescribed method for other notches. Where notches are made on the bottom of a beam for bearing on a support that is not at the end of a beam, the depth of notches shall not exceed one-sixth the beam depth at each notch ($d_n \leq d/6$). The re-entrant corner of notches shall be relieved by a linear or concave taper with length at least 6 times the depth of the notch (taper length ≥ $6d_n$), or shall comply with Section 302.2.4.4.3.

Non-bearing notches on the tension side of a beam shall be in accordance with Section 302.2.4.4.3.

The depth of notches in the top of a beam (compression side) shall not exceed one-sixth the depth of the beam ($d_n \leq d/6$), and the notch length shall not exceed one-third the depth of the beam ($l_n \leq d/3$). Such notches shall not be positioned in the middle one-third of any span of a beam.

302.2.4.4.3 Calculated method. For bending members that are notched, the notch depth, width, and shape shall be designed, and the allowable shear and bending capacity shall be calculated, in accordance with the ANSI/AWC NDS and Section 302.2.4.8.

302.2.4.5 Round holes in beams. Round holes in beams shall comply with this section. ~~bending members shall be limited in diameter to one-third the minimum log dimension at the location of the hole. The edge of the round hole shall not be closer than 2 inches (51 mm) to the edge of the log. Edges of round holes shall not be located closer than 2 inches (51 mm) to the edge of a notch.~~

302.2.4.5.1 Prescribed method. Round holes bored horizontally in a beam shall be limited in diameter to one-sixth the depth of the beam ($D_r \leq d/6$), and the holes shall intersect the centroidal axis of the log beam at the location of the holes.

Non-horizontal round holes in a beam shall be limited in diameter to the lesser of 3/4 inch (19 mm) or one-twelfth the depth of the beam ($D_r \leq d/12$), and the holes shall intersect the centroidal axis of the beam at the location of the holes.

302.2.4.5.2 Calculated method. Round holes in a bending member shall be in accordance with Section 302.2.4.8.

302.2.4.6 Rectangular holes in beams. Rectangular holes in beams shall comply with this section. ~~Depth of rectangular holes in bending members located in the outer thirds of the span shall not exceed one-fourth the member depth at the location of the hole. Depth of rectangular holes located in the middle one-third of the span shall not exceed one-third the member depth at the location of the hole. Width of rectangular holes in the outer thirds of the span shall not exceed one-third the member depth at the location of the hole. Width of rectangular holes in the middle third of the span shall not exceed one-half the member depth at the location of the hole. The edge of the rectangular hole shall not be closer than 2 inches (51 mm) to the edge of the log. Edges of rectangular holes shall not be located closer than 2 inches (51 mm) to the edge of a notch.~~

302.2.4.6.1 Prescribed method. Rectangular holes in beams shall be horizontal; and shall be limited in depth to $D_S \leq d/6$ and limited in width to $W_S \leq d/3$. Rectangular holes shall intersect the centroidal axis of the beam at the location of the holes.

302.2.4.6.2 Calculated method. Rectangular holes in a bending member shall be in accordance with Section 302.2.4.8.

302.2.4.7 Spacing of notches and holes. In beams, ~~S~~spacing between holes, and spacing between notches and holes, shall comply with this section. ~~notches and holes in bending members shall be limited to the greater of at least twice the hole diameter or twice the notch width, using the larger diameter or width of the two.~~

302.2.4.7.1 Prescribed method. Within any 12-inch (305 mm) length of a beam the sum of the diameters of the round holes shall not exceed one-quarter of the beam depth (d/4).

Spacing between notches and holes shall be a minimum of 12-inches (305 mm). Spacing shall be measured parallel to the length of the beam and shall be measured from the edges of holes and the corners of notches.

302.2.4.7.2 Calculated method. Spacing between holes, and between holes and notches in bending members shall be provided by design professional.

~~**302.2.4.8 Shear design.** For bending members with circular cross-section and notched on the tension face in accordance with the limits of this section, the allowable design shear shall be calculated in accordance with the ANSI/AWC NDS.~~

302.2.4.~~9~~.8 Net section. [no changes to text previously adopted].

Reason: Now provides both prescribed and calculated paths for many requirements, making construction easier, and inspection more reliable.

Now provides a prescription for notching multiple-span beams: a common occurrence for multi-span beams in log homes.

Now allows vertical holes in beams, previously not mentioned in the standard.

Moves spacing of holes and notches out of 302.2.4.5 for clarity…now all spacing requirements are in one section (302.2.4.7)

Hole sizes and hole spacing are now based on grading rules and ASTM D245 (especially Table 3) and D3957. Using a 12-inch length of beam and limiting the sum of all round holes in any such portion follows from D245.

Horizontal holes that pass through the centroidal axis of a beam do less to decrease the strength characteristics of a beam than a vertical hole of the same diameter.

Slopes on the sides of support notches is based on the 1:6 allowable slope of grain for beams.

Adopts and follows the NDS (Figure 4A) prescription of not allowing compression-side notches in the middle one-third of the span of a beam.

Staff note:

Committee Action: Approved.

Committee Reason:

IS-LOG 03-29-21
ICC 400 Section 306.2.6, new item 7

Proponent: Robert Chambers, self

Revise as follows:

306.2.6 Flashing [no changes to #1 through #6, but add]

> 7. Continuously where floor decking or sheathing passes over or through a log wall to the exterior.

Reason: 306.1.1.1.1 requires air infiltration resistance at this location (decking or sheathing passing over or through a log wall), but we have no requirement that this location also resist water penetration.

I have inspected log houses that leaked water at this location because there was no flashing.

Staff note:

Editorial : Take first sentence and make it number 8

Committee Action: Approved. 6 yes – 1 no 1 abstain , 1 no vote

Committee Reason:

Chapter 4
STRUCTURAL PROVISIONS

IS-LOG 04-01-21
ICC 400 Section

Proponent:

Revise as follows:

Reason:

Staff note:

Committee Action:

Committee Reason:

Chapter 5
REFERENCED STANDARDS

IS-LOG 05-01-21
ICC 400 Section

Proponent:

Revise as follows:

Reason:

Staff note:

Committee Action:

Committee Reason: