International Code Council

ICC 400-2017 edition
Committee Actions Report

For Committee Actions taken on the Public Input Agenda dated June 2017 at the July 14, 2017Meeting

Input received on the ICC 400-2017 First Draft Standard dated April 2017

IS-LOG 55-17

Tables 302.2(3) and 302.2(6)

Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 02

Revise as follows:

TABLE 302.2(3)—continued
BASE DESIGN VALUES FOR SAWN ROUND AND UNSAWN ROUND TIMBER BEAMS

(No changes to Table)

For SI: 1 lbf/in2 = 6.894 kPa
a. Source Agencies:
1. LHC: Log Home Council, National Association of Home Builders
2. TP: Timber Products Inspection, Inc.

b. The provided design values are to be used only with logs and/or timbers graded and grade marked by the respective grading rules agency or by one of the manufacturers trained, approved and licensed by the grading rules agency to apply grademarks.
c. Compression parallel to the grain values have been increased by 10 percent to account for seasoning. For logs that are unseasoned, the design value for compression parallel to the grain shall be multiplied by 0.91.
d. Values listed represent the typical species or species combination design values. Some species, specie combinations, and/or specie designations are not listed due to limited use. Other species combinations published by accredited grading agencies are permissible.
e. All appropriate adjustment factors shall be applied in accordance with Tables 302.2(4) and 302.2(6).
f. For sawn round timber beams the repetitive member factor, C_r, for bending design values, F_b, shall not apply to sawn round timber beams in any condition or use.
g. Sawn round timber beams shall be installed and protected against end moisture so as to achieve service moisture content ~~in-service~~. Therefore, the Wet Service Factor, C_m, shall not apply.
h. For sawn round timber beams appropriate form adjustment factors, C_f, have already been incorporated in the tabulated design values.

TABLE 302.2(6)
APPLICABILITY OF ADJUSTMENT FACTORS FOR WALL LOGS AND SRTBs

(No changes to Table)

a. *Load Duration Factor*: Values shown within Tables 302.2(3) and (5) are based upon normal load durations.
b. *Wet Service Factor*: Logs are to be installed and protected against moisture so as to achieve service moisture content ~~in-service~~. Therefore, the Wet Service Factor shall not apply.
c. *Temperature Factor*: Per ~~AF&PA~~ AWC NDS.
d. *Beam Stability Factor*: Per ~~AF&PA~~ AWC NDS.
e. *Size Factor (wall logs)*: Bending design values, F_b, shown within Table 302.2(5) are calculated for an inscribed member width of 12 inches (305 mm). For gravity loads, the vertical dimension of the wall log is the width. For lateral loads, the

horizontal dimension of the wall log is the width. The bending design value, F_b, shown with table 302.2(5) shall be multiplied by the size factor,

$C_F = (12/d)^{1/9} < 1.0$,

Where: d = the width of the inscribed rectangle of the wall log relative to the direction of the imposed load being analyzed.

f. *Size Factor (SRTB and USRTB)*: Bending design values, F_b, shown within Table 302.2(3) are calculated for a 2" × 2" (51 mm × 51 mm). Currently ASTM D 3957 does not explicitly require a size reduction for SRTB values. However, this is commonly performed within the industry and the applicability of this factor is at the designer's discretion. Should a size reduction be necessary, the bending design value, F_b, show within Table 302.2(3) shall be multiplied by the size factor,

$C_F = (2.2568/d)^{1/9}$,

Where: d = log diameter

g. *Flat Use Factor*: Not applicable for any use of wall logs or sawn round timbers.
h. *Incising Factor*: Per ~~AF&PA~~ AWC NDS.
i. *Repetitive Member Factor*: Not applicable for any use of wall logs or sawn round timbers.
j. *Buckling Stiffness Factor*: Not applicable for any use of wall logs or sawn round timbers.
k. *Column Stability Factor*: Per ~~AF&PA~~ AWC NDS.

Reason: Editorial change to eliminate redundancy in two footnotes ("**service** moisture content **in service**"). Also, the American Wood Council (AWC) is now a separate entity (though affiliated) from the American Forest & Paper Association (AF&PA) and is the responsible organization for developing the NDS, WFCM, SDPWS, and other wood design standards and aids.

Committee Action: Approved as Submitted

Reason: The committee approved this proposal based on the proponent's reason statement.

IS-LOG 56-17

Sections 302.2.3, 302.2.3.4, 302.2.3.4.1, 302.2.3.4.2, 302.2.3.4.2.1, 302.2.3.4.2.2 and 302.2.3.4.3

Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 02

Revise as follows:

302.2.3 Design values and section properties. Elements of log structures shall have design values and section properties as prescribed in this section.

~~**302.2.3.4 Section Properties.** Sections properties shall be determined in accordance with this section.~~

302.2.3.4~~302.2.3.4.1~~ Section properties for Sawn Round and Unsawn Round Timber Beams. Section properties for Sawn Round and Unsawn Round Timber Beams shall be in accordance with Table 302.2(2).

302.2.3.5~~302.2.3.4.2~~ Section properties for Wall Logs. Section properties for Wall Logs shall be in accordance with the prescribed method of Section 302.2.3.4.1 or are permitted to be determined by engineering analysis. ~~provisions of this section.~~

302.2.3.5.1~~302.2.3.4.2.1~~ Prescribed method. Section properties for wall logs shall be determined using the log height and width dimensions of the largest rectangle that can be inscribed with the profile.

Exception: When a square is inscribed within the profile of a round log, the section properties of the inscribed square may be increased by the factors shown in Table 302.2(4).

~~**302.2.3.4.2.2 Engineering analysis.** Section properties for wall logs are permitted to be determined by engineering analysis.~~

302.2.3.6~~302.2.3.4.3~~ Natural taper. Natural taper shall be permitted in posts and wall logs in excess of the grading rules developed per ASTM D-3957. Section properties for a structural log with natural flared butt shall be determined by the tip diameter or by engineering analysis.

(Renumber subsequent sections)

Reason: The original proposal carving up the single paragraph of Section 302.2.3.4 into subsections has merit, but has now created five-level deep subsections, which can also be confusing. This editorial revision attempts to eliminate one level and remove some redundant language. First, it is noted the subsections under Section 302.2.3 cover not just lumber and log design values, but section properties as well. Thus, the section title and charging text of Section 302.2.3 is revised accordingly. The titles of the two subsections for sawn and unsawn round timber beams and for wall logs are revised to indicate they each are about section properties and made independent subsections of the overall Section 302.2.3, not unlike the two different sections for design values (one for sawn lumber and glulam, one for logs) that already exist. The allowance for engineering analysis is pulled up into the charging language for Wall Log section properties. Finally, the natural taper paragraph is moved up a level and the rest of the subsections in 302.2.3 renumbered.

Committee Action: **Approved as Submitted**

Reason: The committee approved this proposal based on the proponent's reason statement.

IS-LOG 57-17
Section 302.2.4.2

Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 03

Revise as follows:

302.2.4.2 Interlocking log notches. Interlocking log notches shall resist the lateral separation of the two log members joined ~~it joins~~, or the two log members shall be joined with ~~have~~ mechanical fasteners that resist separation.

Reason: Suggested editorial revision to improve clarity and readability. In particularly, clarifying what "it" refers to and exactly which element(s) have the mechanical fasteners.

Committee Action: **Approved as Submitted**

Reason: The committee approved this proposal based on the proponent's reason statement.

IS-LOG 58-17
ICC 400 Sections 303.1.1 and 303.1.2

Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 04

Revise as follows:

303.1 Fire resistance. Fire resistance of logs and log assemblies shall be in accordance with the provisions of this section.

303.1.1 Log thickness. For the purposes of Section 303, the log thickness shall be the smallest horizontal dimension from the outside face to the inside face of the log wall. Sealant systems shall not be included in determining the log thickness unless the sealant system is fire-resistance-~~resistive~~-rated.

303.1.2 Sealing system. Sealant systems used to protect joints as part of the fire-resistance ~~resistive~~-rated assembly shall be in accordance with the requirements of either ASTM E 1966 or UL 2079.

Reason: The most recent editions IBC and IRC use “fire-resistance-rated” consistently, even though some of the reference standards continue to use “fire-resistive”. This change correlates with the current terms in the I-Codes.

Committee Action: **Approved as Submitted**

Reason: The committee approved this proposal based on the proponent’s reason statement.

IS-LOG 59-17
ICC 400 Table 304.2(2)

Proponent: Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 05

Revise as follows:

TABLE 304.2(2)
SHRINKAGE COEFFICIENTS
(portions of table not shown remain unchanged)

Species	Shrinkage* (%) from green to ~~ovendry~~ oven dry moisture content: Radial	Tangential
Softwoods		
Baldcypress	3.8	6.2
Cedar		
Alaska	2.8	6.0
Atlantic white	2.9	5.4
Eastern ~~redcedar~~ red cedar	3.1	4.7
Incense	3.3	5.2
Northern white	2.2	4.9
Port-Orford	4.6	6.9
Western ~~redcedar~~ red cedar	2.4	5.0
Douglas-fir		
Coast[b]	4.8	7.6
Interior north[b]	3.8	6.9
Interior west[b]	4.8	7.5

Reason: Editorial revision to correct terms that should be two words. In the latter two cases, the USDA plant database lists the wood species as two words, which should be considered authoritative over Wikipedia or wood distributors' websites that use one word.

Committee Action: **Approved as Modified**

Modify the proposal as follows:

TABLE 304.2(2)
SHRINKAGE COEFFICIENTS
(portions of table not shown remain unchanged)

Species	Shrinkage* (%) from green to ~~ovendry~~ moisture content (Oven-dry)	
	Radial	Tangential
Softwoods		
Baldcypress	3.8	6.2
Cedar		
Alaska	2.8	6.0
Atlantic white	2.9	5.4
Eastern red cedar	3.1	4.7
Incense	3.3	5.2
Northern white	2.2	4.9
Port-Orford	4.6	6.9
Western red cedar	2.4	5.0
Douglas-fir		
Coast[b]	4.8	7.6
Interior north[b]	3.8	6.9
Interior west[b]	4.8	7.5

Reason: The committee agreed with the change in terminology from “redcedar” to “red cedar” as it is consistent with the term in the standards that are referenced in the current I-Codes. The modification changes “oven dry” to “oven-dry”, again for consistency in terminology with the standards referenced in the current I-Codes.

IS-LOG 60-17
ICC 400 Section 304.3.3

Proponent: Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 06

Revise as follows:

304.3.3 Settling devices. At point loads, including but not limited to support posts, an engineered, adjustable and accessible device shall be used to accommodate the involved settling height ~~and are including but not limited to support posts~~.

Reason: Editorial revision so the sentence makes grammatical sense.

Committee Action: **Approved as Modified**

Modify the proposal as follows:

304.3.3 Settling devices. At point loads, such as at posts and columns ~~including but not limited to support posts~~, an engineered, adjustable and accessible device shall be used to accommodate the involved settling height.

Reason: The committee agreed with the intent of the proposal, but modified the language to further clarify the point loads.

IS-LOG 61-17
Section 405.8

Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 07

Revise as follows:

405.8 Floor openings. Framing around floor openings shall be designed to transfer loads to adjacent framing members that are designed to support the additional concentrated loads. Fasteners, connections, and stiffeners shall be designed for the loading conditions. Where the edge of the opening is less than 2 feet (610 mm) from a bearing wall, the bearing wall adjacent to the opening shall be designed to resist applicable gravity, lateral, and uplift loads.

Reason: The Committee Action Report for IS-LOG 52-17 shows that the reference to "lateral and uplift loads" should have been retained. Otherwise, the paragraph as shown in the public comment draft reads "…designed to resist applicable gravity." Unless Congress has repealed the law of gravity, gravity always applies!

Staff Note: The committee does not need to act on this item as it is considered errata based on the committees original actions. The language as shown above will be reflected in the next standard draft.

IS-LOG 62-17
Section 405.8

Gary Ehrlich, representing the National Association of Home Builders

Ehrlich 08

Revise as follows:

406.2 Corners and intersecting log walls. At corners and intersecting~~ion~~ log walls, logs shall be connected by mechanical fastening or interlocking joinery, and shall resist and transfer applicable lateral loads to the roof or floor diaphragm.

Reason: The Committee Action Report for IS-LOG 53-17 shows the approved text of Section 406.2.should refer to “intersecting” log walls rather than “intersection”.

Staff Note: The committee does not need to act on this item as it is considered errata based on the committees original actions. The language as shown above will be reflected in the next standard draft.

Revised proposals based on comments received on the CAR dated March 2017.

Original Comment

IS-LOG 10-17
ICC 400 Section 302.2.1.3

Proponent: Robert W. Chambers

Revise as follows:

302.2.1.3 Grade marks. Grade marks or Certificates of Inspection shall include the following information:

(Items 1 through 4 to remain without change)

5. Moisture content at time of grading. ~~, i~~ If moisture content is other than green, then in conformance with Section 302.2.2.1.

Reason: Unclear as written. These changes make it clear that graded logs will always report the moisture content of the logs -- whether logs are green, are deemed to be green, or are measured and found to be drier than green. As currently written, this appears to require moisture content be recorded only if moisture content is other than green.

This change ensures that the inspector will know the moisture content of logs (information that is necessary for many other determinations that follow in this Standard).

Committee Action: **Disapproved**

Committee Reason: The intent of the standard is that moisture content is deemed to be at fiber saturation unless certified by an accredited grading agency. The proposed language is not clear with respect to this intent.

CAR Comment

IS-LOG 10.1-17
Section 302.2.1.3

Proponent: Robert W. Chambers

Revise as follows:

302.2.1.3 Grade marks. Grade marks or Certificates of Inspection shall include the following information:

1. Name or registered trade mark of the accredited grading agency.

2. Name or identification number of the manufacturer.
3. Species of logs.

4. Grade name or designation.

5. Moisture content at time of grading~~, if moisture content is other than green in conformance with Section 302.2.2.1.~~

5.1 If moisture content is greater than or equal to fiber saturation point, moisture content is taken to be the fiber saturation point (MC_{FSP}), in conformance with Section 302.2.2.1.1

5.2 If moisture content is less than fiber saturation point (MC_{FSP}), then in conformance with Section 302.2.2.1.2.

Reason: Clarifies what MC is to be reported when grading logs. This change ensures that the inspector will know the moisture content of logs (information that is necessary for many other determinations that follow in this Standard).

Committee Action: **Approved as Modified**

Modify the proposal as follows:

Replace proposal as follows:

302.2.1.3 Grade marks. Grade marks or Certificates of Inspection shall include the following information:

1. Name or registered trade mark of the accredited grading agency.

2. Name or identification number of the manufacturer.
3. Species of logs.

4. Grade name or designation.

5. Labeled moisture content at time of grading~~, if moisture content is other than green in conformance with Section 302.2.2.1.~~

302.2.2.1.2 ~~Certified~~ Labeled specification. The design moisture content shall be equal to the moisture content determined ~~and certified~~ by methods prescribed by an accredited third-party grading agency.

Reason: The committee agreed with the intent of the proposal, but modified the language to further clarify the requirements for moisture content on grade marks.

Original Comment

IS-LOG 11-17
ICC 400 General

Proponent: Robert W. Chambers

General Comment:

Add the definition for “outlookers” and / or “overhang outlookers” -- a term used in 404.6.4; 404.6.7; 407.6 – and not appearing in Chapter 2 Definitions.

Committee Action: **Disapproved**

Committee Reason: There was no proposed text provided. Sections mentioned in comment need to be edited for clarity with respect to the terms “outlookers” or “overhang outlookers.” The committee questions whether or not the terms should be eliminated or replaced with different terms.

CAR Comment

IS-LOG 11.1-17
Sections 404.6.4, 404.6.7, 407.6

Proponent: Robert W. Chambers

Revise as follows:

404.6.4 ~~Uplift~~ Loads on exterior log wall assemblies. Log walls that support log rake overhang purlins (outlookers, or lookout blocks) shall be designed to resist ~~the uplift~~ all calculated loads. Log walls that do not support the roof assembly need only resist the uplift load.

404.6.7 Log rake overhang purlins ~~outlookers~~. Connections of log rake overhang purlins (outlookers) to the gable end wall shall be designed to resist the calculated uplift loads.

407.6 Rake overhangs. Log rake overhang purlins (outlookers), used as framing members shall use ~~continuous~~ purlins designed to be structural cantilevers and shall be connected in accordance with Section 404.6.7.

Reason: For Section 404.6.4: "Outlookers" are purlins. If the purlins are supported by log walls, then the log walls must support ALL loads, not just uplift loads. For Section 404.6.7: "Lookout blocks" (Wood Frame Construction Manual, WFCM 2015) are ladder rafters that never go inside the building. In a log home they cannot resist uplifts loads—they are decorative only in a log home. Usually called "fake purlins" or "decorative purlins."For Section 407.6: Only structural purlin logs need to be continuous / designed as cantilevers. Decorative purlins (ie "lookout blocks") are not cantilevers. Continuous is too vague. Structural cantilever is better and means designed for the actual loads.

Committee Action: **As Submitted**

Reason: The committee approval is based on the proponent's reason statement.

Original Comment

IS-LOG 24-17
ICC 400 Section 304.2.1

Proponent: Robert W. Chambers

Revise as follows:

304.2.1 Prescriptive requirement: Total settling shall be equal to ~~or greater than~~ 6 percent of the involved height.

Reason: As currently written, this allows the prescribed total settling to be an amount more than 6% (for example, 35%). A prescription must identify a specific amount, not a range from 6% to infinity.

Additional comment: “Involved height” is not defined in this Standard. It first appears in 304.2.1, and appears many times after. Involved height is perhaps the most important factor to correctly determine settling allowance for each settling situation. We should be providing the builder and the inspector with a definition, and information how to apply the concept of involved height.

Committee Action: **Approved as Modified**

Modify as follows:

304.2 Determining total settling. Total settling shall be determined by the provisions of either Section 304.2.1, 304.2.2, 304.2.3, 304.2.4 or 304.2.5.

> **304.2.1 Prescriptive requirement:** Total settling shall be ~~equal to~~ taken as 6 percent of the involved height.

Committee Reason: The committee agreed with premise of the proponent’s reason statement. The committee believes that the modification more clearly addresses the intent of the measurement. The committee also thought this might be an opportunity for a work group to define “involved height.”

CAR Comment

IS-LOG 24.1-17
Sections 202, 304.3, 304.3.1

Proponent: Robert W. Chambers

Involved Height is the vertical height of the portion of a log wall that contributes to each instance of settling. The required settling allowance gap at each occurrence of settling is calculated as equal to Δt (total settling) times the involved height at this occurrence. Examples of instances of involved height include and are not limited to: the rough opening height of a door or a window cutout; the floor to ceiling height at an interior frame wall; the total rise of a staircase; and for a roof, the total height of the log wall.

Revise as follows:

304.3 Accommodating settling. Log structures shall accommodate ~~calculated~~ settling. ~~Calculated~~ Settling accommodation shall be calculated and stated in the construction documents for each ~~location or~~ occurrence of involved settling height. Involved Height is the vertical height of the portion of a log wall that contributes to each instance of settling. Examples of involved height include and are not limited to: the rough opening height of a door or a window cutout; the floor to ceiling height at an interior frame wall; the total rise of a staircase; and for a roof, the total height of the log wall.

304.3.1 Settling gap. The settling gap must accommodate the involved settling height of materials as they settle. Trim or other measures used to conceal settling gaps in walls shall be ~~treated~~ constructed as sliding joints. The required settling allowance gap at each occurrence of settling is calculated as equal to Δt (total settling) times the involved height at this occurrence.

Reason: For definition: Involved height is not defined anywhere in ICC-400. For Section 304.3: Removed first “calculated” because the builder can use either the *calculated* total settling or the *prescribed* total settling. It is calculating settling *accommodation* that we are talking about here – not calculating (total) settling. Changed “location” to “occurrence” to match wording in definition and 304.3.1. For Section 304.3.1: Settling gap calculation is helpful.

Committee Action: **Approved as Modified**

Modify as follows:

Involved Height ~~is~~ The vertical height of the portion of a log wall that contributes to each instance of settling, such as but not limited to. ~~The required settling allowance gap at each occurrence of settling is calculated as equal to Δt (total settling) times the involved height at this occurrence. Examples of instances of involved height include and are not limited to:~~ the rough opening height of a door or a window cutout; the floor to ceiling height at an interior frame wall; the total rise of a staircase; and for a roof, the total height of the log wall.

304.3 Accommodating settling. Log structures shall accommodate ~~calculated~~ settling. Settling accommodation shall be calculated and stated in the construction documents for each occurrence of involved settling height. ~~Involved Height is the vertical height of the portion of a log wall that contributes to each instance of settling. Examples of involved height include and are not limited to: the rough opening height of a door or a window cutout; the floor to ceiling height at an interior frame wall; the total rise of a staircase; and for a roof, the total height of the log wall.~~ The required settling allowance at each occurrence of settling is calculated as equal to Δt (total settling) times the involved height at this occurrence.

304.3.1 Settling space ~~gap~~. The settling ~~gap~~ space must accommodate the involved settling height of materials as they settle. Trim or other measures used to conceal settling ~~gaps~~ space in walls shall be constructed as sliding joints. ~~The required settling allowance gap at each occurrence of settling is calculated as equal to Δt (total settling) times the involved height at this occurrence.~~

Reason: The committee agreed with the intent of the proposal, but modified the language to further clarify the requirements for involved height as it relates to settling.

Original Comment

IS-LOG 28-17
ICC 400 General

Proponent: Robert W. Chambers

General Comment:

304.2.2.1 Settling due to slumping. Settling due to slumping (Δ_{SL}) shall be in accordance with the requirements of this section.

> **304.2.2.1.2 Nonslumping conditions.** Δ_{SL} = 0 when one of the following conditions exists.
>
> > **304.2.2.1.2.3 Noncontact.** Where logs are separated by bearing devices and joinery such that contact between logs is prevented.

Comment: (Regarding Section 304.2.2.1.2.3) First, does this refer only to “chinked” log walls (with no cope in the logs)? If “yes”, then is there a way we could make this easier for builders of chinked homes to find this? It seems like a very round-a-bout way of avoiding saying “chinked, with no copes.” Why leave builders and inspectors wondering what we mean?

Committee Action: **Disapproved**

Committee Reason: The committee disapproved this item as there was no suggested language to approve. The committee also thought this might be an opportunity for a work group to clarify what noncontact is.

CAR Comment

IS-LOG 28.1-17
Sections 304.2.2.1.2.3, 304.2.2.1.2.4

Proponent: Robert W. Chambers

~~**304.2.2.1.2.3 Noncontact.** Where logs are separated by bearing devices and joinery such that contact between logs is prevented.~~

304.2.2.1.2.3 Chink gaps that have no lengthwise copes. Where bearing devices (blocks) keep wall logs separated with a lengthwise gap. Note that lengthwise gaps that have non-continuous copes shall be in accordance with 304.2.2.1.2.2.

304.2.2.1.2.4 Noncontact and nonsettling. Where wall logs have no copes and are held apart by engineered devices that prevent log-to-log contact lengthwise, and prevent settling.

Reason: Chinked logs are not "noncontact" because the wall logs always touch each other at the corners, and often contact each other lengthwise with short sections of cope that are standard practice in the industry. Any log that has a cope, even only a partial length cope, can check (crack) and therefore can slump.

It is not the presence of bearing blocks that eliminates slumping. It is the elimination of copes that eliminates slumping. So, in a chinked building that has partial copes, you've got to calculate—as controlled by 304.2.2.1.2.2. (Or, you have the choice to kerf the chinked logs that have partial copes.)

The word "chink" is common in the industry.

The engineered non-settling method (**304.2.2.1.2.4)** of building definitely has no slumping, but it is not at all like chinked logs, so I separated that special exception out to its own section 304.2.2.1.2.4

Committee Action: **Approved as Modified**

Modify as follows:

304.2.2.1.2.3 Chink spaces ~~gaps that have no lengthwise copes~~. Settling due to slumping (Δ) shall be permitted to be taken as 0 where bearing devices (blocks) keep wall logs separated ~~with~~ within a lengthwise space ~~gap~~. ~~Note that~~ Lengthwise spaces ~~gaps~~ that have non-continuous copes shall be in accordance with 304.2.2.1.2.2.

304.2.2.1.2.4 Noncontact and nonsettling. Settling due to slumping (Δ) shall

be permitted to be taken as 0 where wall logs ~~have no copes and~~ are held apart by engineered devices that prevent log-to-log contact lengthwise, and prevent settling.

Reason: The committee agreed with the intent of the proposal, but modified the language to further clarify the requirements for settling at chink spaces, and noncontact and nonsettling instances.

Original Comment

IS-LOG 44-17
ICC 400 Sections 306.2.2.1 and 306.2.4 (new)

Proponent: Robert W. Chambers

Revise as follows:

306.2.2 Water collection. Wall surfaces shall be designed and constructed to promote positive drain of water to exterior to eliminate potential for collection of moisture on or in the log wall.

> **306.2.2.1 Seams and joints.** Seams and joints occurring in the log surface shall not ~~interupt~~ interrupt the water plane.

306.2.3 Wall penetrations. All penetrations of the log wall shall be protected by roof overhang, flashing or other method to divert water away from the seams, joints and bottom edges of penetrations.

306.2.4 Trim and log projections from the wall. All trim and projections of the log wall, including and not limited to the top log of gable walls, and door and window head trim, shall be protected by roof overhang, by flashing or by other method to divert water away from the seams, joints and top edges of projections and trim.

Reason: IRC 2000 (R703.8) requires flashing to be installed in seven locations / conditions; but of course the list does not include where wooden beams or logs exit, or are exposed on and project from, the exterior surface of a wall. The closest analog is number four in this list, which requires flashing "above all projecting wood trim." The goal of the IRC is obvious: prevent exterior water from being directed past or through the exterior water plane. But IRC and ICC-400 do not adequately protect the place where the gable wall covering meets the top log of the gable end. This should be flashed or otherwise protected, and force the water to remain on the exterior water plane.

I serve as an expert witness for log home lawsuits, and it is common for me to see water leaking through these areas – at the top of the gable plate log, where the plate log meets the water plane of the gable frame wall, and at the door and window head trim / settling boards. Caulk and chinking have not been sufficient to avoid this hazard.

Comment: IRC 2012 R703.8 requires pan flashings for windows, and this is the direction we should be headed for log construction. The goal of that Standard is to protect structural members (eg 2x6's). We should be protecting our structural members (ie logs) at window openings. I have seen way too many rotted window sill logs.

Committee Action: **None (Withdrawn by Proponent)**

CAR Comment

IS-LOG 44.1-17
Sections 306.2.2.1, 306.2.3, 306.2.5 (new), 306.2.6 (new)

Proponent: Robert W. Chambers

Revise as follows:

306.2 Moisture Protection. The exterior water plane shall effectively shed water from precipitation and shall comply with Sections 306.2.1 through 306.2.~~4~~6

306.2.1 Water plane. The exterior water plane is formed by the contiguous log surfaces on which a water film may form extending to the point of weather protection provided by joint design in accordance with Section 305.1.

306.2.2 Water collection. Wall surfaces shall be designed and constructed to promote positive drain of water to exterior to eliminate potential for collection of moisture on or in the log wall.

306.2.2.1 Seams and joints. Seams and joints occurring in the log surface shall not ~~interupt~~ interrupt the water plane.

306.2.3 Wall Penetrations and joints. All penetrations of the log wall shall be protected by roof overhang, flashing or other method to divert water away from the seams, joints and ~~bottom~~ edges of penetrations, and shall be capable of maintaining the weather seal between wall and structural members as the logs reach equilibrium moisture content.

306.2.4 Protective treatments. Wood treatment shall be applied to log surfaces in accordance with manufacturer's instructions specific to the condition of the logs (e.g., green, dry, weathered). Treatments shall be selected and applied to ensure that moisture drawn from within the log to the log surface will not be trapped against an impervious film.

306.2.5 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 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:

1. Continuously above all exterior window or door openings in accordance with the flashing design of a registered design professional or other approved methods.
2. Continuously above all wood trim that projects beyond the water plane.
3. Continuously on top of all exterior floor, balcony, or deck structural members.
4. Continuously on top of all exterior roof members where they project beyond the roof drip edge.
5. On top of the top wall log of gable walls.
6. Continuously below the sill log or bottom plate log.

306.2.6 Wall Openings. Rough openings in walls shall be designed and constructed to protect the opening from water infiltration as well as accommodate calculated settling.

Reason: Separates water control (306.2) from air infiltration (306.1) because air and water control require different materials and different methods.

For 306.2.3 -- We already require that air infiltration must be controlled throughout shrinkage, and we should also ensure moisture infiltration is adequate during shrinkage. The top of a floor joist must resist water entry, so I removed "bottom" edges so we'd control all around that penetration. I see more leaks at the top of a penetrating floor joist than I do at the bottom.

For 306.2.5 -- I started with the "Flashing" section from IRC 703.8 and then adapted that list for log structures.

For 306.2.6 -- we already require openings to resists air infiltration thru settling (306.1.1.4), and I moved the water control of openings out of our air control section and into our water control section (306.2).

Committee Action: **Approved as Modified**

Modify as follows:

306.2 Moisture Protection. The exterior water plane shall effectively shed water from precipitation and shall comply with Sections 306.2.1 through 306.2.~~4~~6

306.2.1 Water plane. The exterior water plane is formed by the contiguous log surfaces on which a water film may form extending to the point of weather protection provided by joint design in accordance with Section 305.1.

306.2.2 Water collection. Wall surfaces shall be designed and constructed to promote positive drain of water to exterior to eliminate potential for collection of moisture on or in the log wall.

306.2.2.1 Seams and joints. Seams and joints occurring in the log

surface shall not interrupt the water plane.

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

306.2.4 Protective treatments. Wood treatment shall be applied to log surfaces in accordance with manufacturer's instructions specific to the condition of the logs (e.g., green, dry, weathered). Treatments shall be selected and applied to ensure that moisture drawn from within the log to the log surface will not be trapped against an impervious film.

306.2.5 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 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:

1. Continuously above all exterior window or door openings in accordance with the fenestration manufacturer's installation and flashing instructions, the flashing design of a registered design professional or other approved methods.
2. Continuously above all wood trim that projects beyond the water plane.
3. Continuously on top of all exterior floor, balcony, or deck structural members.
4. Continuously on top of all exterior roof members where they project beyond the roof drip edge.
5. ~~On top of the top wall log of gable walls.~~ Continuously at the interface of the log wall and the non-log wall above.
6. Continuously below the sill log or bottom plate log.

306.2.6 Wall Openings. Rough openings in walls shall be designed and constructed to protect the opening from water infiltration as well as accommodate calculated settling.

Reason: The committee agreed with the intent of the proposal, but modified the language to further clarify the requirements for moisture protection and flashing.

CAR Comment

IS-LOG 44.2-17
Sections 306.1.1.5 (new)

Proponent: Robert W. Chambers

Revise as follows:

306.1.1.4 Wall Openings. Rough openings in walls shall be designed and constructed to protect the opening from air ~~and water~~ infiltration as well as accommodate settling.

306.1.1.5 Sill Logs and Bottom Plate Logs. Below sill logs and bottom plate logs there shall be a continuous air sealant that is capable of maintaining the weather seal.

Reason: For 306.1.1.5 -- Scientific studies, and the many blower-door reports that we all have seen, clearly show that the two places of highest air infiltration in a log home are 1) below the bottom wall log, and 2) above the top wall log.

We already cover most air infiltration above the top wall log in 306.1.1; so this adds restricting the air leaks under the bottom of the log walls, which is currently missing from ICC-400.

For 304.1.1.4 -- I moved the water infiltration out of air infiltration section (306.1) and into water infiltration section (306.2), where it belongs.

Committee Action: **As Submitted**

Reason: The committee approval is based on the proponent's reason statement.