International Code Council

ICC 400-2017 edition
Committee Actions Report

For Committee Actions taken on the Public Input Agenda dated January 2017 at the February 21/March 13, 2017 Meeting - Teleconference

IS-LOG 01-17
ICC 400 Table 302.2(6)

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 02 Table 302.2(6)

Revise as follows:

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

$F_b' = F_b x$	C_D	C_M	C_t	C_L	C_F	C_{fu}	C_i	C_r	—	—
$F_t' = F_t x$	C_D	C_M	C_t	—	C_F	—	C_i	—	—	—
$F_v' = F_v x$	C_D	C_M	C_t	—	—	—	C_i	—	—	—
$F_c' = F_c x$	—	C_M	C_t	—	—	—	C_i	—	—	—
$F_c' = F_c x$	C_D	C_M	C_t	—	C_F	—	C_i	—	C_P	—
$E' = Ex$	—	C_M	C_t	—	—	—	C_i	—	—	C_T

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 equilibrium moisture content in-service. Therefore, the Wet Service Factor shall not apply.
c. *Temperature Factor:* Per AF&PA NDS.
d. *Beam Stability Factor:* Per AF&PA NDS.
e. *Size Factor (<u>wall logs</u> ~~SRTB and USRTB~~):* Bending design values, F_b, shown within Table 302.2(5) are calculated for an inscribed member width of 12 inches (305mm). 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,

   CF = (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 (wall logs):* Bending design values, F_b, shown within Table 302.2(3) are calculated for a 2"× 2" (51mm × 51mm). 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,

   CF = (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 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 NDS.

Reason: Errata carried over from 2007 edition.

Committee Action: Approved as Modified

Modify the proposal as follows:

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

$F_b' = F_b x$	C_D	C_M	C_t	C_L	C_F	C_{fu}	C_i	C_r	—	—
$F_t' = F_t x$	C_D	C_M	C_t	—	C_F	—	C_i	—	—	—
$F_v' = F_v x$	C_D	C_M	C_t	—	—	—	C_i	—	—	—
$F_c' = F_c x$	—	C_M	C_t	—	—	—	C_i	—	—	—
$F_c' = F_c x$	C_D	C_M	C_t	—	C_F	—	C_i	—	C_P	—
$E' = Ex$	—	C_M	C_t	—	—	—	C_i	—	—	C_T

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 equilibrium moisture content in-service. Therefore, the Wet Service Factor shall not apply.
c. *Temperature Factor:* Per AF&PA NDS.
d. *Beam Stability Factor:* Per AF&PA 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 (305mm). 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,
   CF = (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 (~~wall logs~~ SRTB and USRTB):* Bending design values, F_b, shown within Table 302.2(3) are calculated for a 2"× 2" (51mm × 51mm). 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,
   CF = (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 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 NDS.

Committee Reason: The committee agreed that footnote "e" should be for log walls, which is what Table 302.2(5) addresses. The modification correctly relates footnote "f" to timber beams, which is what Table 302.2(3) addresses.

IS-LOG 02-17

ICC 400 Sections 302.2.3.4.1 (New), 302.2.3.4.2 (New), 302.2.3.4.2.1 (New), 302.2.3.4.2.2 (New) and 302.2.3.1.3 (New)

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 06 302.2.3.4

Revise as follows:

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

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

302.2.3.4.1 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).

302.2.3.4.2 Wall Logs. Section properties for Wall Logs shall be in accordance with the provisions of this section.

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. ~~in accordance with section 302.2.3.5 and 302.2.3.6.~~

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.

302.2.3.1.3 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/dimension.

Reason: The requirement for using the inscribed rectangle is set by ASTM D3957 for the purposes of establishing maximum allowable knot size. The standard does not specify the method for establishing the section properties of wall logs. While the inscribed rectangle does provide a conservative evaluation of section properties, it should be the prescriptive minimum. An engineering analysis option should be permitted.

Committee Action: **Approved as Modified**

Modify as follows:

302.2.3.4.3 ~~302.2.3.1.3~~ 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~~/dimension~~ or by engineering analysis.

Committee Reason: The committee agreed with the proponent's reason statement. The modification renumbers Section 302.2.3.1.3 for clarity and felt that adding an engineering analysis option was appropriate.

IS-LOG 03-17

ICC 400 Sections 305.4.1, Table 305.4.1(1) (New), 305.4.3.1, 305.4.3.2, 305.4.2.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 01 305.4.1

Revise as follows:

SECTION 305
THERMAL ENVELOPE

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 Section 402.2.4 of the *International Energy Conservation Code* and Table 305.4.1 (1).

Table 305.4.1(1)

Specific Gravity (SG)	Minimum Log Thickness W_L (inches)
0.29	9
0.32	8
0.34	7.5
0.37	7
0.39	6.5
0.42	6
0.46	5.5
0.53	5
0.65	4

For SI: 1 inch=25.4 mm

Notes:

1. Heat Capacity = Specific Heat of Wood x Density x Log Thickness
2. Density (lb/ft^3) @ 12% EMC

305.4.2 Test method. Physical testing of the thermal mass shall be in accordance with ASTM C 976.

305.4.3 Calculation method for computer modeling.

305.4.3.1 ~~Weight~~ Density of wall. Calculate the ~~weight~~ density of the wall ~~in pounds per square foot (psf)~~ using the density equation in Section 302.2.3.7 using the service (MC_S) in place of the design (MC_D) moisture content.

305.4.3.2 Heat capacity. Calculate the heat capacity for the thermal mass provision using the following.

$HC = w \times c$

where:

HC = Heat capacity of the exterior wall, Btu/ft^2 × °F [kJ/(m^2 × K)] of exterior wall area.

w = Mass of the exterior wall, lb/ft^2 (kg/m^2) of exterior wall area is the density of the exterior wall material, lb/ft^3 (kg/m^3) multiplied by ~~the thickness of the exterior wall calculated in accordance with section~~ log thickness (W_L) in accordance with Section 302.2.3.6.

c = Specific heat of the exterior wall material, Btu/lb × °F [kJ / (kg × K)] of exterior wall area as determined from Table 305.4.1.3. The moisture content references in Table 305.4.1.3 shall be selected to be less than or equal to MC_S.

~~**305.4.2.2 Determine the mass *Uw*.** Referring to IECC Table 502.2.1.1.2(3), select the column by matching the *Uw* determined in Section 305.4.2.1 to those heading the columns. Select the row according to the design heating degree days. Where the column and row cross provides the *Uw* with thermal mass effect.~~

Reason: This revision coordinates Section 305.4 with the 2015 IRC/IECC and existing sections of ICC400-2012.

- 305.4.1. This section worked with IECC-2006-2012. However, with the 2015, the qualification to 6 Btu/ft2-oF needs to be met. The proposed table provides a prescriptive measure.
- 305.4.3.1 needs to be updated to refer to the density of the log wall in service, as that is the equilibrium moisture content assumed for all thermal evaluation. It is the density that is then used in to develop "w" for use in the equation. "w" is modified for accuracy in reference.
- 305.4.2.2 needs to be deleted as it refers to the 2003 IECC and is not appropriate. It should have been removed in the last update.

Committee Action: N/A **Withdrawn by Proponent**

Committee Reason: N/A

IS-LOG 04-17
ICC 400 Section 305.4.2.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 03 406.1

Revise as follows:

~~**305.4.2.2 Determine the mass *Uw*.** Referring to IECC Table 502.2.1.1.2(3), select the column by matching the *Uw* determined in Section 305.4.2.1 to those heading the columns. Select the row according to the design heating degree days. Where the column and row cross provides the *Uw* with thermal mass effect.~~

Reason: 305.4.2.2 should be deleted as it refers to parts of the 2003 IECC that no longer exist in the 2006 IECC. It should have been removed in the last update.

Committee Action: **As Submitted**

Committee Reason: The committee agreed with the proponent's reason statement.

IS-LOG 05-17
ICC 400 Sections 305.4.3.1, 305.4.3.2

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 04 305.4.3.1

Revise as follows:

305.4.3 Calculation method for computer modeling.

305.4.3.1 Weight of wall. Calculate the weight of the wall in pounds per square foot (psf) ~~using the density equation in Section 302.2.3.7~~ in accordance with Section 302.2.3.8 using the service moisture content (MC_S) in place of design (MC_D) moisture content.

305.4.3.2 Heat capacity. Calculate the heat capacity for the thermal mass provision using the following.

$HC = w \times c$

where:

HC = Heat capacity of the exterior wall, Btu/ft2 × °F [kJ/(m2 × K)] of exterior wall area.

w = Mass of the exterior wall, lb/ft2 (kg/m2) of exterior wall area is the density of the exterior wall material, lb/ft3 (kg/m3) multiplied by ~~the thickness of the exterior wall calculated in accordance with section~~ log thickness (WL) in accordance with Section 302.2.3.6.

c = Specific heat of the exterior wall material, Btu/lb × °F [kJ / (kg × K)] of exterior wall area as determined from Table 305.4.1.3. The moisture content references in Table 305.4.1.3 shall be selected to be less than or equal to MCS.

Reason: 305.4.3.1 needs to be updated to refer to the density of the log wall in service as that is the equilibrium moisture content assumed for all thermal evaluation. It is this density that is then used in to develop “w” for use in the equation. “w” is modified for accuracy in reference.

Committee Action: **As Submitted**

Committee Reason: The committee agreed with the proponent’s reason statement.

IS-LOG 06-17
ICC 400 Chapter 3

Proponent: Mark S. Hope, P.E., Stafford Inspection & Consulting

Hope 01 Chapter 3

Add new text as follows:
(Underline not shown for clarity)

Stafford Inspection and Consulting Services, LLC
Sawn Round Timber Design Values

Species	Grade	Fb	Ft	Fc//	Fv	FcT	MOE X 10^6
Bald Cypress	Unsawn	1850	1000	900	145	615	1.2
	No. 1SR	1500	825	875	145	615	1.2
	No. 2SR	1250	675	725	145	615	1.2
	No. 3SR	725	400	425	145	615	1
Cedar Northern White	Unsawn	1150	650	500	110	370	0.7
	No. 1SR	950	525	475	110	370	0.7
	No. 2SR	800	450	400	110	370	0.7
	No. 3SR	450	250	225	110	370	0.5
Cedar Western Red	Unsawn	1500	800	700	135	385	1
	No. 1SR	1200	650	675	135	385	1
	No. 2SR	1000	550	575	135	385	1
	No. 3SR	575	325	325	135	385	0.8
Cedar Eastern Red	Unsawn	1950	1050	900	185	1035	0.7
	No. 1SR	1600	875	875	185	1035	0.7
	No. 2SR	1300	725	725	185	1035	0.7
	No. 3SR	750	425	425	185	1035	0.5
Douglas Fir	Unsawn	2050	1150	925	160	630	1.5
	No. 1SR	1700	925	900	160	630	1.5
	No. 2SR	1400	775	750	160	630	1.5
	No. 3SR	800	450	425	160	630	1.2
Douglas Fir North	Unsawn	2100	1150	925	165	695	1.6
	No. 1SR	1700	925	875	165	695	1.6
	No. 2SR	1400	775	725	165	695	1.6
	No. 3SR	825	450	425	165	695	1.3
Douglas Fir South	Unsawn	2000	1100	825	165	520	1.2
	No. 1SR	1600	900	800	165	520	1.2
	No. 2SR	1350	750	675	165	520	1.2
	No. 3SR	775	425	375	165	520	0.9
Alpine Fir	Unsawn	1450	775	625	125	315	1.1
	No. 1SR	1150	650	600	125	315	1.1
	No. 2SR	975	525	500	125	315	1.1
	No. 3SR	550	300	275	125	315	0.9
Hemlock Eastern Tamarack	Unsawn	1800	975	775	155	550	1.1
	No. 1SR	1450	800	750	155	550	1.1
	No. 2SR	1200	675	625	155	550	1.1
	No. 3SR	700	375	350	155	550	0.9
Hemlock Western	Unsawn	1800	1000	850	165	410	1.3
	No. 1SR	1500	825	825	165	410	1.3
	No. 2SR	1250	675	675	165	410	1.3
	No. 3SR	700	400	400	165	410	1.1

Stafford Inspection and Consulting Services, LLC
Sawn Round Timber Design Values

Species	Grade	Fb	Ft	Fc//	Fv	FcT	MOE X 10^6
Douglas Fir - Larch	Unsawn	2250	1250	1000	170	605	1.5
	No. 1SR	1850	1000	975	170	605	1.5
	No. 2SR	1550	850	825	170	605	1.5
	No. 3SR	875	475	475	170	605	1.2
Hem - Fir	Unsawn	1600	875	725	150	440	1.2
	No. 1SR	1300	725	700	150	440	1.2
	No. 2SR	1100	600	600	150	440	1.2
	No. 3SR	625	350	325	150	440	0.9
Eastern White Pine	Unsawn	1350	750	625	125	360	1
	No. 1SR	1100	600	600	125	360	1
	No. 2SR	925	500	500	125	360	1
	No. 3SR	525	300	275	125	360	0.8
Eastern Woods & Softwoods	Unsawn	1350	750	625	125	360	1
	No. 1SR	1100	600	600	125	360	1
	No. 2SR	925	500	500	125	360	1
	No. 3SR	525	300	275	125	360	0.8
Lodgepole Pine	Unsawn	1500	825	650	125	400	1.1
	No. 1SR	1250	675	625	125	400	1.1
	No. 2SR	1050	575	525	125	400	1.1
	No. 3SR	600	325	300	125	400	0.9
Ponderosa Pine	Unsawn	1400	775	625	130	440	1
	No. 1SR	1150	625	600	130	440	1
	No. 2SR	975	525	500	130	440	1
	No. 3SR	550	300	275	130	440	0.8
Jack Pine	Unsawn	1650	925	750	135	460	1.1
	No. 1SR	1350	750	725	135	460	1.1
	No. 2SR	1150	625	600	135	460	1.1
	No. 3SR	650	350	350	135	460	0.9
Red Pine	Unsawn	1600	875	700	125	410	1.3
	No. 1SR	1300	725	675	125	410	1.3
	No. 2SR	1100	600	550	125	410	1.3
	No. 3SR	625	350	325	125	410	1
Southern Yellow Pine	Unsawn	2000	1100	900	160	515	1.4
	No. 1SR	1650	900	875	160	515	1.4
	No. 2SR	1350	750	725	160	515	1.4
	No. 3SR	775	425	425	160	515	1.1
Mixed Southern Pine	Unsawn	2000	1100	875	160	515	1.2
	No. 1SR	1650	900	825	160	515	1.2
	No. 2SR	1350	750	700	160	515	1.2
	No. 3SR	775	425	400	160	515	1

Stafford Inspection and Consulting Services, LLC
Sawn Round Timber Design Values

Species	Grade	Fb	Ft	Fc//	Fv	FcT	MOE X 10^6
Engelmann Spruce ES-LP-AF	Unsawn	1350	725	525	125	320	1
	No. 1SR	1100	600	500	125	320	1
	No. 2SR	900	500	425	125	320	1
	No. 3SR	525	275	250	125	320	0.8
Eastern Spruce	Unsawn	1400	775	625	120	390	1.2
	No. 1SR	1150	625	600	120	390	1.2
	No. 2SR	950	525	500	120	390	1.2
	No. 3SR	550	300	300	120	390	0.9
MSP / E-Softwoods	Unsawn	1350	750	625	125	350	1
	No. 1SR	1100	600	600	125	350	1
	No. 2SR	925	500	500	125	350	1
	No. 3SR	525	300	275	125	350	0.8
SPF	Unsawn	1350	725	525	125	305	1
	No. 1SR	1100	600	500	125	305	1
	No. 2SR	900	500	425	125	305	1
	No. 3SR	525	275	250	125	305	0.8
Western Woods & White Woods	Unsawn	1300	725	525	125	315	1
	No. 1SR	1100	600	500	125	315	1
	No. 2SR	900	500	425	125	315	1
	No. 3SR	525	275	250	125	315	0.8

Committee Action: **Disapproved**

Committee Reason: The committee indicated there was a lack of identifying Specific Gravity (G) and related information required to populate the table. The tables should be revises to match the format of the other tables in the standard related to design values. Lastly, the committee noted substantial variations in the design values when compared to what is in other tables and requests clarification from the proponent.

IS-LOG 07-17
ICC 400 Chapter 3

Proponent: Mark S. Hope, P.E., Stafford Inspection & Consulting

Hope 02 Chapter 3

Add new text as follows:
(Underline not shown for clarity)

Stafford Inspection and Consulting Services, LLC
Structural Building Log Design Values

Species	Grade	Fb	Ft	Fc//	Fv	Fc⊥	MOE X 10^6
	SSBL	1300	875	1000	150	615	1.3
Bald	No.1SBL	1150	775	900	150	615	1.3
Cypress	No.2SBL	1000	675	775	150	615	1.1
	WL 40	775	525	575	150	615	1
	WL 30	575	375	450	150	615	1
	SSBL	850	575	550	115	370	0.7
Cedar	No.1SBL	750	500	500	115	370	0.7
Northern	No.2SBL	650	425	425	115	370	0.6
White	WL 40	500	325	325	115	370	0.5
	WL 30	375	250	250	115	370	0.5
	SSBL	1050	700	775	140	385	1
Cedar	No.1SBL	925	625	700	140	385	1
Western	No.2SBL	825	550	600	140	385	0.9
Red	WL 40	625	400	450	140	385	0.8
	WL 30	450	300	350	140	385	0.8
	SSBL	1400	925	1000	185	1035	0.7
Cedar	No.1SBL	1250	825	875	185	1035	0.7
Eastern	No.2SBL	1050	725	775	185	1035	0.6
Red	WL 40	800	550	575	185	1035	0.6
	WL 30	600	400	425	185	1035	0.6
	SSBL	1500	1000	1050	165	630	1.6
Douglas	No.1SBL	1300	875	900	165	630	1.6
Fir	No.2SBL	1150	775	800	165	630	1.4
	WL 40	850	575	600	165	630	1.3
	WL 30	650	425	450	165	630	1.3
	SSBL	1500	1000	1000	170	695	1.7
Douglas	No.1SBL	1300	900	900	170	695	1.7
Fir	No.2SBL	1150	775	775	170	695	1.5
North	WL 40	875	575	600	170	695	1.4
	WL 30	650	425	450	170	695	1.4
	SSBL	1400	950	925	165	520	1.2
Douglas	No.1SBL	1250	850	825	165	520	1.2
Fir	No.2SBL	1100	725	700	165	520	1.1
South	WL 40	825	550	525	165	520	1
	WL 30	625	425	400	165	520	1
	SSBL	1050	700	675	125	315	1.1
	No.1SBL	900	600	600	125	315	1.1
Alpine	No.2SBL	800	525	525	125	315	1
Fir	WL 40	600	400	400	125	315	0.9
	WL 30	450	300	300	125	315	0.9
	SSBL	1250	850	875	155	550	1.1
Hemlock	No.1SBL	1150	750	775	155	550	1.1
Eastern	No.2SBL	975	650	675	155	550	1
	WL 40	750	500	500	155	550	0.9
Tamarack	WL 30	550	375	375	155	550	0.9

Stafford Inspection and Consulting Services, LLC
Structural Building Log Design Values

Species	Grade	Fb	Ft	Fc//	Fv	FcT	MOE X 10^6
Hemlock	No.1SBL	1150	775	825	165	410	1.4
Western	No.2SBL	1000	675	725	165	410	1.3
	WL 40	750	500	550	165	410	1.1
	WL 30	575	375	400	165	410	1.1
	SSBL	1600	1100	1150	175	605	1.6
	No.1SBL	1450	950	1000	175	605	1.6
Douglas	No.2SBL	1250	825	875	175	605	1.4
Fir - Larch	WL 40	925	625	650	175	605	1.2
	WL 30	700	475	500	175	605	1.2
	SSBL	1150	775	800	150	440	1.2
Hem - Fir	No.1SBL	1000	675	725	150	440	1.2
	No.2SBL	900	600	625	150	440	1.1
	WL 40	675	450	475	150	440	1
	WL 30	500	325	350	150	440	1
	SSBL	975	650	675	125	350	1.1
Eastern	No.1SBL	875	575	600	125	350	1.1
White Pine	No.2SBL	750	500	525	125	350	1
	WL 40	575	375	400	125	350	0.8
	WL 30	425	275	300	125	350	0.8
	SSBL	975	650	675	125	350	1.1
Eastern	No.1SBL	875	575	600	125	350	1.1
Woods &	No.2SBL	750	500	525	125	350	1
Softwoods	WL 40	575	375	400	125	350	0.8
	WL 30	425	275	300	125	350	0.8
	SSBL	1100	725	725	125	400	1.1
Lodgepole	No.1SBL	975	650	650	125	400	1.1
Pine	No.2SBL	825	550	575	125	400	1
	WL 40	625	425	425	125	400	0.9
	WL 30	475	325	325	125	400	0.9
	SSBL	1000	675	700	130	440	1.1
	No.1SBL	900	600	600	130	440	1.1
Ponderosa	No.2SBL	775	525	525	130	440	1
Pine	WL 40	600	400	400	130	440	0.8
	WL 30	450	300	300	130	440	0.8
	SSBL	1200	800	825	140	460	1.1
	No.1SBL	1050	700	725	140	460	1.1
Jack	No.2SBL	925	625	625	140	460	1
Pine	WL 40	700	475	475	140	460	0.9
	WL 30	525	350	350	140	460	0.9
	SSBL	1150	775	775	125	410	1.4
	No.1SBL	1000	675	675	125	410	1.4
Red Pine	No.2SBL	875	600	600	125	410	1.2
	WL 40	675	450	450	125	410	1.1
	WL 30	500	325	325	125	410	1.1
	SSBL	1450	975	1000	160	515	1.5
Southern	No.1SBL	1250	850	875	160	515	1.5
Yellow	No.2SBL	1100	750	775	160	515	1.3
Pine	WL 40	825	550	575	160	515	1.2
	WL 30	625	425	425	160	515	1.2

Stafford Inspection and Consulting Services, LLC
Structural Building Log Design Values

Species	Grade	Fb	Ft	Fc//	Fv	FcT	MOE X 10^6
Mixed	No.1SBL	1250	850	850	160	515	1.3
Southern	No.2SBL	1100	750	750	160	515	1.2
Pine	WL 40	825	550	550	160	515	1
	WL 30	625	425	425	160	515	1
	SSBL	950	650	600	125	320	1.1
Engelmann	No.1SBL	850	575	525	125	320	1.1
Spruce	No.2SBL	750	500	450	125	320	1
	WL 40	550	375	350	125	320	0.9
ES-LP-AF	WL 30	425	275	250	125	320	0.9
	SSBL	1000	675	700	125	390	1.2
	No.1SBL	900	600	625	125	390	1.2
Eastern	No.2SBL	775	525	525	125	390	1.1
Spruce	WL 40	575	400	400	125	390	1
	WL 30	450	300	300	125	390	1
	SSBL	975	650	675	125	350	1.1
MSP /	No.1SBL	875	575	600	125	350	1.1
E-Softwoods	No.2SBL	750	500	525	125	350	1
	WL 40	575	375	400	125	350	0.8
	WL 30	425	275	300	125	350	0.8
	SSBL	950	650	600	125	305	1.1
	No.1SBL	850	575	525	125	305	1.1
SPF	No.2SBL	750	500	450	125	305	1
	WL 40	550	375	350	125	305	0.9
	WL 30	425	275	250	125	305	0.9
	SSBL	950	650	600	125	315	1
Western	No.1SBL	850	575	525	125	315	1
Woods &	No.2SBL	725	500	450	125	315	0.9
White	WL 40	550	375	350	125	315	0.8
Woods	WL 30	425	275	250	125	315	0.8

Stafford Inspection and Consulting Services, LLC
Structural Building Log Design Values

Hardwood Design Values

Species	Grade	Fb	Ft	Fc//	Fv	Fc⊥	MOE X 10^6
Red Oak	SSBL	1250	850	775	155	820	1.2
	No.1SBL	1100	750	675	155	820	1.2
	No.2SBL	975	650	600	155	820	1.1
	WL 40	725	500	450	155	820	1
	WL 30	550	375	325	155	820	1
White Oak	SSBL	1450	975	875	205	800	1.2
	No.1SBL	1300	875	775	205	800	1.2
	No.2SBL	1100	750	675	205	800	1
	WL 40	850	575	525	205	800	0.9
	WL 30	625	425	375	205	800	0.9
Mixed Oak	SSBL	1250	850	775	155	820	1.2
	No.1SBL	1100	750	675	155	820	1.2
	No.2SBL	975	650	600	155	820	1.1
	WL 40	725	500	450	155	820	1
	WL 30	550	375	325	155	820	1
Yellow Poplar	SSBL	1100	725	675	130	420	1.3
	No.1SBL	950	650	600	130	420	1.3
	No.2SBL	825	550	525	130	420	1.2
	WL 40	625	425	400	130	420	1
	WL 30	475	325	300	130	420	1

Committee Action: **Disapproved**

Committee Reason: The committee indicated there was a lack of identifying Specific Gravity (G) and related information required to populate the table. The tables should be revises to match the format of the other tables in the standard related to design values. Lastly, the committee noted substantial variations in the design values when compared to what is in other tables and requests clarification from the proponent.

IS-LOG 08-17

ICC 400 Sections 406.1, 406.1.1 (New), 406.1.1.1 (New), 406.1.1.2 (New), Table 406.1.1.2.4 (New)

Proponent: Rob Pickett, Rob Pickett & Associates, LLC

Pickett 05 406.1

Revise as follows:

SECTION 406
LOG WALLS

406.1 Load resistance. Log walls shall be designed to resist wind and seismic loads, gravity loads, and uplift loads in accordance with applicable load standards. ~~The maximum shear wall aspect ratio shall be 1:1 for walls used in the design of shear walls to resist wind and seismic loads.~~

Add new text as follows:

406.1.1 Log shear walls. Log shear walls shall comply with this section.

406.1.1.1 Prescriptive requirement. The maximum shear wall aspect ratio shall be 1:1 for walls used in the design of shear walls to resist wind and seismic loads. Maximum fastener spacing shall be 48” on center.

406.1.1.2 Engineering analysis. Engineering analysis for log shear walls shall comply with this section.

406.1.1.2.1 Dowel-type fasteners. Dowel-type threaded fasteners shall be designed and installed with the full shank diameter at the shear plane.

406.1.1.2.1.1 Design values. Design capacities shall be calculated using the National Design Specification for Wood Construction (NDS) or as provided by evaluation reports on proprietary fasteners published by accredited sources.

406.1.1.2.1.2 Installation. Fasteners shall be installed to meet NDS provisions for installation or as provided by evaluation reports on proprietary fasteners. Fastener installation shall follow edge, end and spacing criteria in the NDS or proprietary reports to minimize splitting.

406.1.1.2.1.3 Schedule. For shear walls with aspect ratio of 1:1 or less, divide the design load for the log shear wall by the lateral resistance value of the fastener to find the number of fasteners to be evenly spaced over the length of the wall.

406.1.1.2.1.4 Response Modification Coefficient (R). The R value used varies with log bearing width and fastening schedule as per Table 406.1.1.2.1.4.

TABLE 406.1.1.2.1.4			
Bearing width of the log provide (B_{LP})	$B_{LP} \leq$ 3inches	3 inches < $B_{LP} \leq$ 5 inches	5 inches< B_{LP}
Thru-bolt at corners, openings, and 6 feet 8 inches on center as applicable. Without pinned connections	2.2	2.5	2.8
Pinned at 12-24 inches on center[a]	4.5	5.0	5.5
Pinned at 30-48 inches on center[a]	4.0	4.5	5.0

For SI: 1 inch=25.4 mm

Notes to Table 406.1.1.2.1.4

a. With or without thru-bolts used to resist tension loads.

Reason: Testing and analyses were conducted to provide a basis for making recommendations to building designers regarding methods for estimating seismic design coefficients used to determine earthquake loads on buildings, which are lacking in current building codes.

Supporting research is provided by the following:
1. Graham, Drew Abram, "PERFORMANCE OF LOG SHEAR WALLS AND LAG SCREW CONNECTIONS SUBJECTED TO MONOTONIC AND REVERSE-CYCLIC LOADING,"
A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE IN CIVIL ENGINEERING, WASHINGTON STATE UNIVERSITY, Department of Civil and Environmental Engineering, MAY 2007
2. Beaudette Consulting Engineers Inc., "SEISMIC DESIGN – LOG WALLS JUSTIFICATION - RESPONSE MODIFICATION COEFFICIENT (R)"

Staff Note: To view supporting research go to the end of this document.

Committee Action: **Approve as Modified**

Modify as follows:

SECTION 406
LOG WALLS

406.1 Load resistance. Log walls shall be designed to resist wind and seismic loads, gravity loads, and uplift loads in accordance with applicable load standards.

~~**406.1.1 Log shear walls.** Log shear walls shall comply with this section.~~

406.1.1.1 Prescriptive requirement. The maximum shear wall aspect ratio shall be 1:1 for walls used in the design of shear walls to resist wind and seismic loads. Maximum fastener spacing shall be 48" on center.

406.1.1.2 Engineering analysis. Engineering analysis for log shear walls shall comply with this section.

406.1.1.2.1 Dowel-type fasteners. Dowel-type threaded fasteners shall be designed and installed with the full shank diameter at the shear plane.

406.1.1.2.1.1 Design values. Design capacities shall be calculated using the National Design Specification for Wood Construction (NDS) or as provided by evaluation reports on proprietary fasteners published by accredited sources.

406.1.1.2.1.2 Installation. Fasteners shall be installed to meet NDS provisions for installation or as provided by evaluation reports on proprietary fasteners. Fastener installation shall follow edge, end and spacing criteria in the NDS or proprietary reports to minimize splitting.

406.1.1.2.1.3 Schedule. For shear walls with aspect ratio of 1:1 or less, divide the design load for the log shear wall by the lateral resistance value of the fastener to find the number of fasteners to be evenly spaced over the length of the wall.

406.1.1.2.1.4 Response Modification Coefficient (R). The R value used varies with log bearing width and fastening schedule as per Table 406.1.1.2.1.4.

TABLE 406.1.1.2.1.4

Bearing width of the log provide (B_{LP})	$B_{LP} \leq$ 3inches	3 inches < $B_{LP} \leq$ 5 inches	5 inches< B_{LP}
Thru-bolt at corners, openings, and 6 feet 8 inches on center as applicable. Without pinned connections	2.2	2.5	2.8
Pinned at 12-24 inches on center[a]	4.5	5.0	5.5
Pinned at 30-48 inches on center[a]	4.0	4.5	5.0

For SI: 1 inch=25.4 mm

Notes to Table 406.1.1.2.1.4

~~a. With or without thru-bolts used to resist tension loads.~~

Committee Reason: The committee agreed that the 1:1 aspect ratio should be removed for Section 406.1. The modification removes suggested new language for lack of justification. Further substantiation is required.

IS-LOG 09-17
ICC 400 General

Proponent: Mark Mize, Chad Stewart & Associates, Inc.

Mize 01 302.2.3.4

General Comment: (paraphrased from original comment)

A single-story log home has multiple bearing and non-bearing walls that are out of plumb up to 3” (all walls are log). The NAHB Residential Construction Performance Guildelines have a performance guideline in section 4-1-1 that limits wood-framed walls to 3/8” out-of-plumb for every 32” of height. However, since log homes are stacked members, this guideline likely would not be suitable for a log home application. This committee should consider having a provision guiding the alignment and plumbness of stacked log walls included in the next ICC 400.

A capacity analysis of the walls in their out-of-plumb state may be performed in order to determine their ability to resist the code-required design loads. The proponent has expressed interest in sharing these results with the committee.

Committee Action: **Disapproved**

Committee Reason: The committee disapproved this item as no prescriptive language was proposed. Defining plumb in a variety of log wall types is needed. Also, not clear on where the proponent suggests the language to go in the standard. The committee is interested in reviewing results discussed in the proponent’s 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.

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.

IS-LOG 12-17
ICC 400 Section 202

Proponent: Robert W. Chambers

Revise as follows:

CHAPTER 2 DEFINITIONS

SILL LOG. A horizontal log resting on, and anchored to the foundation

Reason: ICC-400 considers a “Bottom Plate” log and a “Sill Log” to be different in one regard: a Bottom Plate log rests on a subfloor; while a Sill Log rests on the foundation.

The distinguishing feature of a Sill Log is not that it is anchored to the foundation (as it is currently defined), the distinguishing feature is that a Sill Log does not rest on a subfloor. See 406.3.

Committee Action: **Approve as Modified**

CHAPTER 2 DEFINITIONS

SILL LOG. A horizontal log ~~resting~~ bearing on, and anchored to the foundation.

Committee Reason: The committee agreed with the premise of the proponent’s reason statement. Modification replaces *resting* with *bearing* as bearing seemed more appropriate.

IS-LOG 13-17
ICC 400 Section 202

Proponent: Robert W. Chambers

Revise as follows:

CHAPTER 2 DEFINITIONS

BOTTOM PLATE, LOG (STARTER LOG). The first log course in a log wall resting on, and anchored to, the subfloor.

Reason: ICC-400 considers a “Bottom Plate” log and a “Sill Log” to be different in one regard: a Bottom Plate log rests on a subfloor; while a Sill Log rests on the foundation. Section 406.3 requires that a Bottom Plate be anchored to the subfloor. Adding this to the definition also makes it easier to understand the difference between a Bottom Plate Log and a Sill Log, and is consistent with this Standard.

Committee Action: **Approve as Modified.**

Modify as follows:

BOTTOM PLATE, LOG (STARTER LOG). The first log course in a log wall bearing ~~resting~~ on, and anchored to, the subfloor.

Committee Reason: The committee agreed with the premise of the proponent’s reason statement. Modification replaces *resting* with *bearing* as bearing seemed more appropriate.

IS-LOG 14-17
ICC 400 Section 202

Proponent: Robert W. Chambers

Revise as follows:

CHAPTER 2 DEFINITIONS

CHECK(ING). A radial crack in the log that occurs as the wood is seasoning; separation of wood cells along the grain as a result of uneven shrinkage (differential tension and compression stresses in the wood structure); a natural ~~and unpredictable~~ result of the seasoning process that generally does not affect the structural integrity of the log

Reason: "Unpredictable" is not true. It is possible to predict with considerable accuracy where a kerfed log will check—in fact, the exact purpose of kerfing is to reliably cause the location of the check.

It is also possible to predict with considerable accuracy where an un-hewn, un-kerfed log will check: namely the closest distance to the log's pith (center of growth rings).

Furthermore, "unpredictable" adds nothing that assists with understanding or applying this Standard.

Committee Action: **As Submitted**

Committee Reason: The committee agreed with the proponent's reason statement.

IS-LOG 15-17
ICC 400 Section 202

Proponent: Robert W. Chambers

Revise as follows:

CHAPTER 2 DEFINITIONS

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

Reason: A log post and beam structure or a log pole barn structure are examples of a type of construction whose primary structural elements are formed by a system of logs, but log post and beam and log pole barn is not covered by ICC-400. This editorial change makes it clear that we are dealing here with structures that have log walls, and not just "logs."

Committee Action: **Disapproved**

Committee Reason: The scope of the standard is not intended to be limited to log structures formed by log walls. Currently log posts are not appropriately addressed in the standard and should be considered for the standard and are critical to continuous load path issues.

IS-LOG 16-17
ICC 400 Section 203

Proponent: Robert W. Chambers

Revise as follows:

SECTION 203
SYMBOLS

Add new text as follows:

$\underline{\mathbf{R_o}}$ = overall R-value of wall assembly

Reason: Symbols that appear in the Standard should be on this list. R_o is used in 305.3.3

Committee Action: Editorial

Committee Reason: The committee agreed with the proponent's reason statement and that this should be considered as editorial.

IS-LOG 17-17
ICC 400 Section 203

Proponent: Robert W. Chambers

Revise as follows:

SECTION 203 SYMBOLS

MC_S = Service moisture content (Equilibrium Moisture Content)

Reason: Equilibrium Moisture Content is an important term that is used throughout this Standard: 306.1.1.3; Table 302.2(3) note G; 304.2.2.3.3; 304.3.6.2; 304.3.6.3; 305.1.1. This change helps users of the Standard understand that MC_S and EMC are interchangeable.

"Equilibrium Moisture Content" is used in at least 7 places in this Standard, and should be defined.

Committee Action: **Approved as Modified**

MC_S = Service moisture content (Equilibrium moisture content)

1. Revise footnote g to Table 302.2(3) as follows:

SECTION 302
MATERIALS

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 ~~equilibrium 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.

2. Revise footnote b to Table 302.2(6) as follows:

SECTION 302
MATERIALS

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 ~~equilibrium moisture content~~ in-service. Therefore, the Wet Service Factor shall not apply.
c. *Temperature Factor*: Per AF&PA NDS.
d. *Beam Stability Factor*: Per AF&PA NDS.
e. *Size Factor (SRTB and USRTB)*: 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 (wall logs)*: 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 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 NDS.

3. Revise as follows:

SECTION 304
PROVISIONS FOR SETTLING IN LOG STRUCTURES

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.

304.2.2.3 Settling due to dimensional change. Settling of log walls due to shrinkage (dimensional change in cross-section, Δ_S) shall be determined in accordance with the provisions of this section.

304.2.2.3.3 Prescribed, Method C. Select prescribed shrinkage (Δ_S) from Table 304.2(4) by climate zone, initial moisture content (M_I), and shrinkage coefficient. Refer to the Climate Zone Map included in Figure 304.2.2.3 for a representation of geographic variation in outside service moisture content ~~equilibrium moisture content~~.

4. Revise as follows:

SECTION 304
PROVISIONS FOR SETTLING IN LOG STRUCTURES

304.3 Accommodating settling. Log structures shall accommodate calculated settling. Calculated settling accommodation shall be stated in the construction documents for each location of involved settling height.

304.3.6 Fasteners/connections. Installation of fasteners and connections shall conform to the requirements of this section.

304.3.6.2 Fasteners installed vertically. Where a fastener is installed vertically [plus or minus 5 degrees (0.0875 rad) from vertical] within the wall, it shall accommodate settling.

Exception: Wall systems fastened in such a way that the fastening system holds each log at or close to its original elevation in the wall as the logs dry to service moisture content ~~equilibrium moisture content~~.

5. Revise as follows:

SECTION 305
THERMAL ENVELOPE

305.1 Weather protection. Exterior walls shall comply with the applicable code and the provisions of this section.

305.1.1 Joint design. Joint design and applied sealants shall be capable of maintaining the weather seal between logs in exterior walls as individual logs reach service moisture content ~~equilibrium moisture content~~.

6. Revise as follows:

SECTION 306
INFILTRATION

306.1 Log Walls. Log walls shall comply with this Section.

306.1.1 Air Leakage. The building thermal envelope shall comply with Sections 306.1.1.1 through 306.1.1.4.

306.1.1.3 Structural components passing over or through log walls. Where structural roof or floor members pass beyond the weather protection provided by the joint design, the penetration shall be capable of maintaining the weather seal between wall and structural members as the logs reach <u>service moisture content</u> ~~equilibrium moisture content~~.

Committee Reason: The committee agreed with the proponent's reason statement. The modification inserts "Service Moisture Content" to replace "Equilibrium moisture content" wherever it occurs in the standard.

Further, Table 304.2(4) the MCS should be MC_S (Editorial format issue).

Lastly, replace Figure 304.2.2.3 "Climate Zone Map" with the updated Figure in 2015 IECC to be consistent with the update of the IECC within this standard (Editorial).

IS-LOG 18-17
ICC 400 Figure 302.2.3.6

Proponent: Robert W. Chambers

Revise as follows:

FIGURE 302.2.3.6

"LOG ~~THICKNESS~~ STACK HEIGHT"

Reason: This Table is referred to only in 302.2.3.5 "Log Stack Height" and so should be labeled as such.

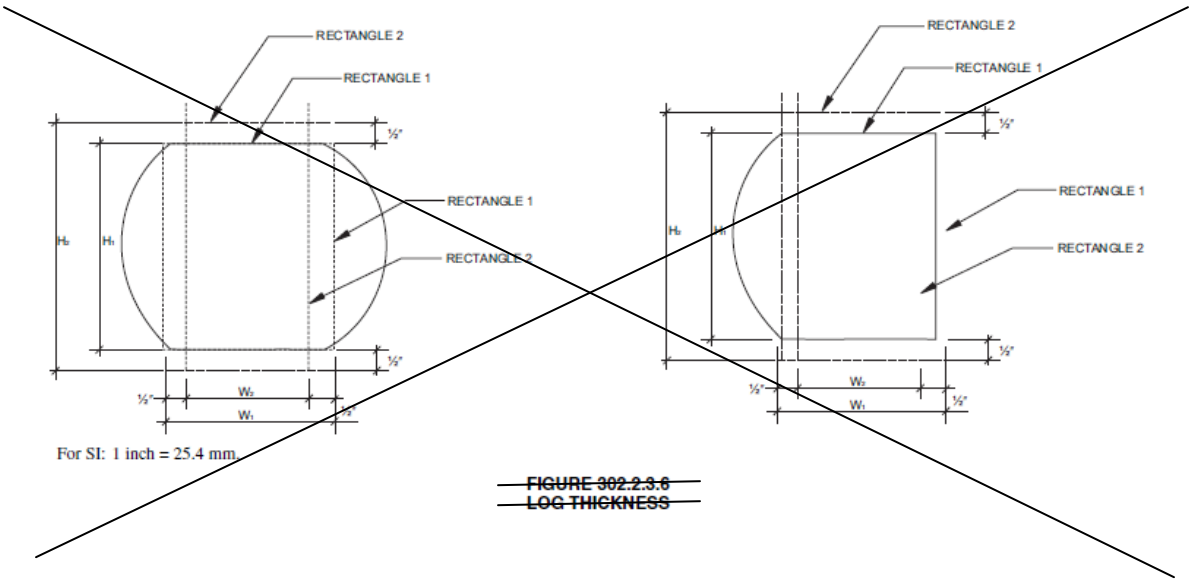
Of more importance, Figure 302.2.3.6 contains only unusable information: Rectangle 1 and 2 are not defined. The ½" additions to rectangle dimensions are not explained or described. W_1, W_2, H_1 and H_2 are shown, but there is no explanation for what these dimensions are, or how they are used.

Stack Height H_L , which is the purpose of 302.2.3.5, does not appear in Figure 302.2.3.6.

Is the Key, and perhaps other information, missing from this Figure?

Committee Action: **Approve as Modified**

1. Delete Figure as follows:



~~FIGURE 302.2.3.6~~
~~LOG THICKNESS~~

2. Revise as follows:

302.2.3.5 Log stack height. For calculation purposes, the log stack height in inches (H_L) shall equal the average vertical dimension of the log at time of manufacture ~~as described in Figure 302.2.3.6~~ as follows:

1. For logs profiled with horizontal bearing surfaces, H_L is the dimension between bearing surfaces.
2. For all other log profiles, the manufacturer shall provide the dimension for H_L.

Committee Reason: The committee agreed with the proponent's reason in that the Figure contains no information related to the requirements in the standard. The modification is therefore to delete the entire figure and the single reference to it in Section 302.2.3.5.

IS-LOG 19-17
ICC 400 Section 302.2.4.2

Proponent: Robert W. Chambers

Revise as follows:

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

Reason: As currently written, this would require interlocking notches to also resist vertical separation. Adding “lateral” specifies that it is horizontal (lateral) separation that interlocking log notches shall resist.

There are other places, and other ways, to resist vertical separation of logs, and these are often applied at locations other than the interlocking corners.

Committee Action: **Approve as Submitted**

Committee Reason: The committee agreed with the proponent’s reason statement.

IS-LOG 20-17
ICC 400 Figure 302.2.4

Proponent: Robert W. Chambers

Revise as follows:

FIGURE 302.2.4
NOTCHING AND BORING

Reason: "In" appears once as a dimension, when In (with a script "I") is intended. (Lower right of Figure.)

Change "In" to script lowercase "L" subscript "n"

Committee Action: **Approve as Submitted**

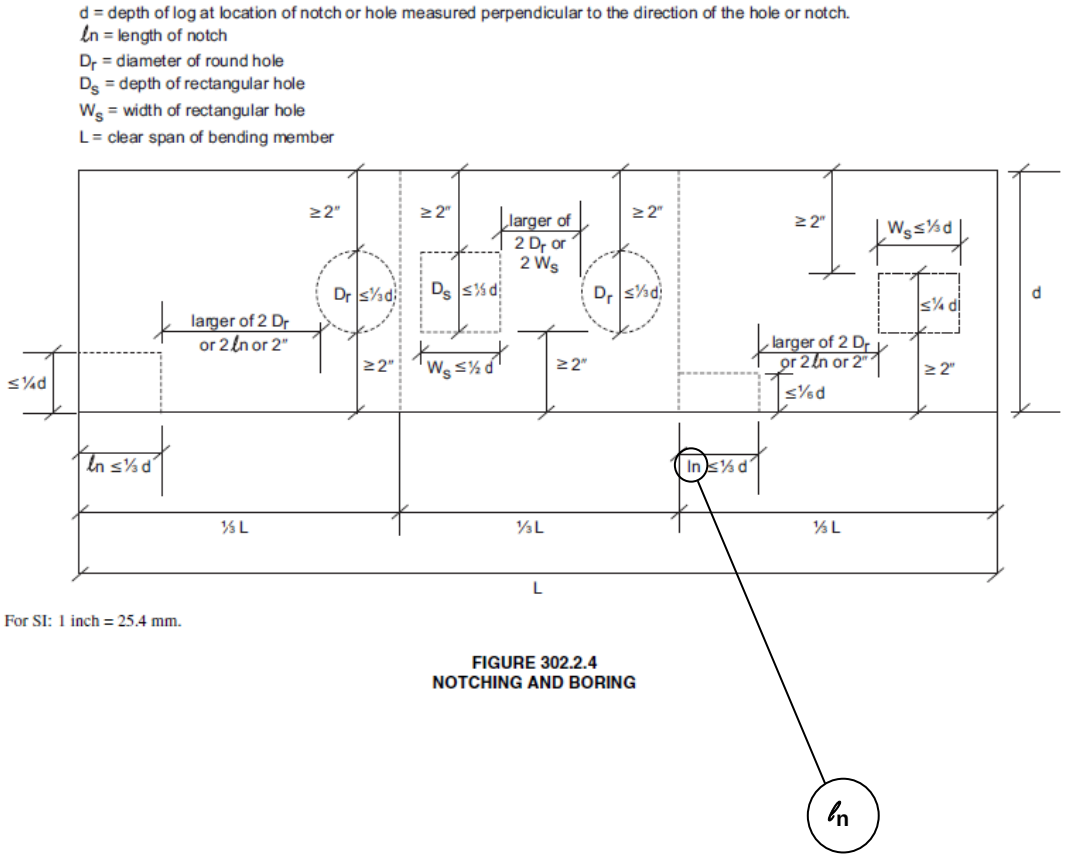


FIGURE 302.2.4
NOTCHING AND BORING

Committee Reason: Revision is an editorial formatting issue.

IS-LOG 21-17
ICC 400 General

Proponent: Robert W. Chambers

General Comment:

302.2.4.4 Notches. Notches on the 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.

Reason: How do we define the “edges” of a round log bending member that has no bottom edges?

The “edge of the log” also appears in 302.2.4.5 and 302.2.4.6 as important places to measure from - - but no guidance about how to measure if the surface is round, and there is no edge.

Committee Action: **Disapproved**

Committee Reason: The committee disapproved this as there was no suggested language to approve. The committee thought this might be an opportunity for a work group to more completely address round log sections.

IS-LOG 22-17
ICC 400 Section 302.3.6

Proponent: Robert W. Chambers

Revise as follows:

302.3.6 Wood dowels. Wood dowels shall be permitted in connection design using NDS yield limit equations I, II, III, and IV. Bending yield strength, ~~Fyb~~ F_{yb}, for wood dowels shall be derived from the modulus of rupture . . .

Reason: Should be subscript “yb”

Committee Action: **Approved as submitted**

Committee Reason: This is an appropriate editorial revision.

IS-LOG 23-17
ICC 400 Sections 303.1, 303.4, 303.5, 303.1.1 (new), 303.1.2 (new)

Proponent: Robert W. Chambers

General Comment:

303.4 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-resistive rated.

Comment: This would be more useful if it appeared near the start of Section 303, since it applies to sub-standards that are above and below its current location (in the middle of this Section).

Committee Action: **Approve as Modified**

Modify as follows:

SECTION 303
FIRE-RESISTANCE RATINGS OF LOGS AND LOG ASSEMBLIES

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

> **303.1.1 ~~303.4~~ 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-resistive rated.
>
> **303.1.2 ~~303.5~~ Sealing system.** Sealant systems used to protect joints as part of the fire-resistive-rated assembly shall be in accordance with the requirements of either ASTM E 1966 or UL 2079.

(renumber subsequent sections as follows)

303.4 ~~303.6~~ Fire blocking.

303.5 ~~303.7~~ Fastener protection.

303.6 ~~303.8~~ Penetrations.

303.6.1 ~~303.8.1~~ Fire-resistance-rated assemblies.

303.6.2 ~~303.8.2~~ Through-penetration fireblocking system.

Committee Reason: The committee agreed that Section 303.4 should be relocated to the beginning of Section 303. The modification changes section 303.4 to 303.1.1 as a subsection of 303.1 and renumbers Section 303.5 to 303.1.2.

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."

IS-LOG 25-17
ICC 400 Section 302.2.5.2

Proponent: Robert W. Chambers

General Comment:

302.2.5.2 Logs required to be preservative treated. Logs required by the applicable code to be preservative treated shall be treated using processes and preservatives in accordance with AWPA Standards and shall bear the quality mark or certificate of treatment issued by an accredited third party agency.

Comment: In my work as an expert witness for log home lawsuits, I have found that second floor log joists are frequently cantilevered outside the structure to support balconies. I have never seen a preservative-treated log used in this application, and I have seen many examples of decayed structural log members.

Part of the problem is that it is not possible to buy a log that has one end pressure-treated (for the exposed balcony) and the other end not treated (where it is an interior floor or ceiling joist).

Naturally-decayed-resistant logs (like Western Red Cedar) are 'wrapped' in easy-to-decay sapwood, and therefore provide inadequate defense against balcony decay.

To protect the safety of homeowners (collapse of balconies) I think we should attempt to adopt a provision to help avoid the frequent problem of untreated logs being used for balconies.

Committee Action: **Approved as Modified**

Modify as follows:

302.2.5.2 Logs required to be preservative treated. Logs required by the applicable code to be preservative treated shall be treated using processes and preservatives in accordance with AWPA Standards <u>and AWPA Use Categories</u> and shall bear the quality mark or certificate of treatment issued by an accredited third party agency.

Committee Reason: The modification adds AWPA Use Categories as they describe the type of treatments required for the details of the use of the log. The committee also thought this might be an opportunity for a work group to address the issues raised in the reason statement.

IS-LOG 26-17
ICC 400 Table 304.2(2)

Proponent: Robert W. Chambers

Revise as follows:

TABLE 304.2(2)
SHRINKAGE COEFFICIENTS

Shrinkage* (%) from green to ovendry moisture content	
Species	
Softwoods	
Pine	
Eastern white ~~pine~~	
Jack	
Lodgepole	

(remainder of table to remain unchanged)

Reason: The correct common name for this tree is “Eastern white pine.” (see the USDA *Wood Handbook: Wood as an Engineering Material*, Table 4-3, page 4-6), FPL-GTR-190.

Committee Action: **Approved as submitted**

Committee Reason: The committee felt this was an appropriate editorial change.

IS-LOG 27-17

Proponent: Robert W. Chambers

ICC 400 Section 304.2.2.1.1

Revise as follows:

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

> **304.2.2.1.1 Prescribed slumping.** Prescribed slumping shall be 3/16 inch ~~(1.5 percent)~~ per foot (4.8 mm per ~~304~~ 305 mm) (1.5 percent) of involved log wall height.

Reason:

1) As written this can say '1.5% per foot', which is incorrect. (For example, as written this would mean prescribed slumping = 6% in 4-feet; = 15% in 10-feet.) (Compare with 304.2.2.2.1, which is written correctly.)
2) 305 mm is the correct conversion, and it appears as 305 mm everywhere else in this Standard.

Committee Action: **Approved as submitted**

Committee Reason: The committee agreed with the proponent's reason statement.

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.

IS-LOG 29-17

Proponent: Robert W. Chambers

ICC 400 Table 304.2(4)

Revise as follows:

TABLE 304.2(4)
PRESCRIBED SETTLING ALLOWANCE DUE TO SHRINKAGE

Replace all "MC_D" with "MC_I"

TABLE 304.2(4)
PRESCRIBED SETTLING ALLOWANCE DUE TO SHRINKAGE

Climate Zone[2]	Service Moisture Content (MCS)		Radial Shrinkage Coefficient = 2.5 for Cedar, Redwood			Radial Shrinkage Coefficient = 4 for White Woods			Radial Shrinkage Coefficient = 4.7 for Oak, Maple		
			MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC
	Dry	Ranging from 8% to 13%; averaging 10%	3/32-in. per ft. or 0.8% of involved height	1/8-in. per ft. or 1% of involved height	13/64-in per ft. or 1.7% of involved height	9/64-in. per ft. or 1.2% of involved height	13/64-in. per ft. or 1.7% of involved height	5/16-in. per ft. or 2.6% of involved height	11/64-in.per ft. or 1.4% of involved height	1/4 -in. per ft. or 2.1% of involved height	3/8 -in. per ft. or 3.1% of involved height
	Moist	Ranging from 12% to 15%; averaging 13%	1/16-in. per ft. or 0.5% of involved height	3/32-in. per ft. or 0.8% of involved height	11/64-in. per ft. or 1.4% of involved height	3/32-in. per ft. or 0.8% of involved height	5/32-in. per ft. or 1.3% of involved height	17/64-in. per ft. or 2.2% of involved height	7/64-in. per ft. or 0.9% of involved height	3/16-in. per ft. or 1.6% of involved height	5/16-in. per ft. or 2.6% of involved height
	Warm-Humid	Ranging from 13% to 15%; averaging 14%	3/64-in. per ft. or 0.4% of involved height	3/32-in. per ft. or 0.8% of involved height	5/32-in. per ft. or 1.3% of involved height	5/64-in. per ft. or 0.7% of involved height	9/64-in. per ft. or 1.2% of involved height	1/4 -in. per ft. or 2.1% of involved height	3/32-in. per ft. or 0.8% of involved height	11/64-in. per ft. or 1.4% of involved height	19/64-in. per ft. or 2.5% of involved height
	Marine	Ranging from 13% to 17%; averaging 15%	3/64-in. per ft. or 0.4% of involved height	5/64-in. per ft. or 0.7% of involved height	5/32-in. per ft. or 1.3% of involved height	1/16-in. per ft. or 0.5% of involved height	1/8 -in. per ft. or 1% of involved height	15/64-in. per ft. or 2% of involved height	5/64-in. per ft. or 0.7% of involved height	5/32-in. per ft. or 1.3% of involved height	9/32-in. per ft. or 2.3% of involved height

Reason: 304.2.2.3.3 is the section that refers to this Table. And it refers only to "Initial moisture content (M_I)" and it does not refer to MC_D

Committee Action: **Approve as Modified**

Modify as follows:

1. No change to MC_D in Table 304.2(4)

2. Revise as follows:

304.2.2.3 Settling due to dimensional change. Settling of log walls due to shrinkage (dimensional change in cross-section, Δ_S) shall be determined in accordance with the provisions of this section.

304.2.2.3.3 Prescribed, Method C. Select prescribed shrinkage (Δ_S) from Table 304.2(4) by climate zone, ~~initial~~ design moisture content (MC_D) ~~(MI)~~, and shrinkage coefficient. Refer to the Climate Zone Map included in Figure 304.2.2.3 for a representation of geographic variation in outside equilibrium moisture content.

Committee Reason: The committee determined that MC_D was the appropriate term and therefore modified the proposal to revise Section 304.2.2.3.3 to replace "initial" with "design" and (M_I) with (MC_D).

IS-LOG 30-17
ICC 400 Table 304.2(4)

Proponent: Robert W. Chambers

Add new text as follows:

TABLE 304.2(4)
PRESCRIBED SETTLING ALLOWANCE DUE TO SHRINKAGE

Climate Zone[2]	Service Moisture Content (MCS)		Radial Shrinkage Coefficient = 2.5 for Cedar, Redwood			Radial Shrinkage Coefficient = 4 for White Woods			Radial Shrinkage Coefficient = 4.7 for Oak, Maple		
			MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC
	Dry	Ranging from 8% to 13%; averaging 10%	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^1/_8$-in. per ft. or 1% of involved height	$^{13}/_{64}$-in per ft. or 1.7% of involved height	$^9/_{64}$-in. per ft. or 1.2% of involved height	$^{13}/_{64}$-in. per ft. or 1.7% of involved height	$^5/_{16}$-in. per ft. or 2.6% of involved height	$^{11}/_{64}$-in.per ft. or 1.4% of involved height	$^1/_4$ -in. per ft. or 2.1% of involved height	$^3/_8$ -in. per ft. or 3.1% of involved height
	Moist	Ranging from 12% to 15%; averaging 13%	$^1/_{16}$-in. per ft. or 0.5% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^{11}/_{64}$-in. per ft. or 1.4% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^{17}/_{64}$-in. per ft. or 2.2% of involved height	$^7/_{64}$-in. per ft. or 0.9% of involved height	$^3/_{16}$-in. per ft. or 1.6% of involved height	$^5/_{16}$-in. per ft. or 2.6% of involved height
	Warm-Humid	Ranging from 13% to 15%; averaging 14%	$^3/_{64}$-in. per ft. or 0.4% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^9/_{64}$-in. per ft. or 1.2% of involved height	$^1/_4$ -in. per ft. or 2.1% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^{11}/_{64}$-in. per ft. or 1.4% of involved height	$^{19}/_{64}$-in. per ft. or 2.5% of involved height
	Marine	Ranging from 13% to 17%; averaging 15%	$^3/_{64}$-in. per ft. or 0.4% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^1/_{16}$-in. per ft. or 0.5% of involved height	$^1/8$ -in. per ft. or 1% of involved height	$^{15}/_{64}$-in. per ft. or 2% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^9/_{32}$-in. per ft. or 2.3% of involved height

Notes to Table 304.2(4):

(no change to footnotes 1 and 2)

3. Within an RSC group, choose one of the 3 possible M_I: 19%, or 23%, or 30%.

(renumber subsequent footnotes)

Reason: Adding this Note will make this Table significantly easier to use correctly.

Committee Action: **Approved as Modified**

Modify as follows:

TABLE 304.2(4)
PRESCRIBED SETTLING ALLOWANCE DUE TO SHRINKAGE

Climate Zone[2]	Service Moisture Content (MCS)		Radial Shrinkage Coefficient = 2.5 for Cedar, Redwood			Radial Shrinkage Coefficient = 4 for White Woods			Radial Shrinkage Coefficient = 4.7 for Oak, Maple		
			MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC	MC_D = 19% MC	MC_D = 23% MC	MC_D = 30% MC
	Dry	Ranging from 8% to 13%; averaging 10%	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^1/_8$-in. per ft. or 1% of involved height	$^{13}/_{64}$-in per ft. or 1.7% of involved height	$^9/_{64}$-in. per ft. or 1.2% of involved height	$^{13}/_{64}$-in. per ft. or 1.7% of involved height	$^5/_{16}$-in. per ft. or 2.6% of involved height	$^{11}/_{64}$-in.per ft. or 1.4% of involved height	$^1/_4$ -in. per ft. or 2.1% of involved height	$^3/_8$ -in. per ft. or 3.1% of involved height
	Moist	Ranging from 12% to 15%; averaging 13%	$^1/_{16}$-in. per ft. or 0.5% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^{11}/_{64}$-in. per ft. or 1.4% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^{17}/_{64}$-in. per ft. or 2.2% of involved height	$^7/_{64}$-in. per ft. or 0.9% of involved height	$^3/_{16}$-in. per ft. or 1.6% of involved height	$^5/_{16}$-in. per ft. or 2.6% of involved height
	Warm-Humid	Ranging from 13% to 15%; averaging 14%	$^3/_{64}$-in. per ft. or 0.4% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^9/_{64}$-in. per ft. or 1.2% of involved height	$^1/_4$ -in. per ft. or 2.1% of involved height	$^3/_{32}$-in. per ft. or 0.8% of involved height	$^{11}/_{64}$-in. per ft. or 1.4% of involved height	$^{19}/_{64}$-in. per ft. or 2.5% of involved height
	Marine	Ranging from 13% to 17%; averaging 15%	$^3/_{64}$-in. per ft. or 0.4% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^1/_{16}$-in. per ft. or 0.5% of involved height	$^1/8$ -in. per ft. or 1% of involved height	$^{15}/_{64}$-in. per ft. or 2% of involved height	$^5/_{64}$-in. per ft. or 0.7% of involved height	$^5/_{32}$-in. per ft. or 1.3% of involved height	$^9/_{32}$-in. per ft. or 2.3% of involved height

Notes to Table 304.2(4):

(no change to footnotes 1 and 2)

3. Within ~~an RSC~~ a Radial Shrinkage Coefficient group, choose a column associated with the appropriate MC_D ~~one of the 3 possible M_I~~: 19%, or 23%, or 30%.

(renumber subsequent footnotes)

Committee Reason: The committee felt the modification clarifies the language and the usability of the table.

IS-LOG 31-17
ICC 400 General

Proponent: Robert W. Chambers

General Comment:

Comment: Add "MC_I = Initial Moisture Content" in the appropriate locations of the standard based on pervious proposals.

Committee Action: None – Withdrawn by Proponent.

IS-LOG 32-17
ICC 400 Section 304.2.2.2.2

Proponent: Robert W. Chambers

Revise as follows:

304.2.2.2.2 Noncompaction conditions. = 0 when ~~*B = Br*~~ $\underline{B \geq B_r}$

Reason: Corrects an error.

Committee Action: **Approve as Submitted**

Committee Reason: The committee agreed that *B* can be greater than or equal to B_r

IS-LOG 33-17
ICC 400 Section 304.2.2.3

Proponent: Robert W. Chambers

Revise as follows:

304.2.2.3 Settling due to dimensional change. Settling of log walls due to shrinkage (dimensional change in cross-section, Δs) shall be determined in accordance with one of the provisions of this section.

Reason: Several options are listed. Only one of the options needs to be used. As written, the text implies that all 3 options must be satisfied.

Committee Action: **Approved as Submitted**

Committee Reason: The committee agrees that the proposal clarifies that not all requirements apply; only whichever one the user chooses.

IS-LOG 34-17
ICC 400 Section 304.2.2.3.1

Proponent: Robert W. Chambers

Revise as follows:

304.2.2.3.1 Prescribed, Method A. Prescribed shrinkage (□ s) shall be 3/8 inch ~~(3 percent)~~ per foot (9.5 mm per 305 mm) (3 percent) of involved log wall height.

Reason: As written this says '3% per foot', which is incorrect. (For example, as written this would mean prescribed shrinkage = 6% in 2-feet; = 15% in 5-feet.) (Compare with 304.2.2.2.1, which is written correctly.)

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed that this proposal provides clarification on what the 3 percent applies to.

IS-LOG 35-17
ICC 400 Section 304.2.2.3.2

Proponent: Robert W. Chambers

Revise as follows:

304.2.2.3.2 Prescribed, Method B. Prescribed shrinkage (∆s) shall be 1 percent change in dimension <u>of involved wall height</u> per 4 percent change in moisture content (~~*MC*$_S$ – *MC*$_D$~~ <u>*MC*$_I$ - *MC*$_S$</u>) ~~per foot of involved log wall height.~~

Reason: Errors. It is the total involved wall height (not per foot) that should be used when applying a percentage. Only fractional inches can be used per foot; and only percentages should be used per total involved height. Percentages do not apply per foot.

MC_I is used elsewhere in this Standard, and should be used here—it is the change from initial to in-service MC that determines settling from shrinkage. Also note that MC_I and MC_D are put into correct order – initial moisture content minus in-service moisture content. Initial MC is larger than In-Service MC in about 100% of log structures. (As written, this would always be a negative number.)

Committee Action: **Approved as Modified**

Modify as follows:

304.2.2.3.2 Prescribed, Method B. Prescribed shrinkage (∆s) shall be 1 percent change in dimension of involved wall height per 4 percent change in moisture content (<u>*MC*$_D$</u> ~~*MC*$_I$~~ - *MC*$_S$).

Committee Reason: The committee agrees with the premise of the proponent's reason statement. The modification changing *MC*$_I$ to *MC*$_D$ is consistent with previous actions.

IS-LOG 36-17
ICC 400 Section 304.3

Proponent: Robert W. Chambers

Revise as follows:

304.3 Accommodating settling. Log structures shall accommodate ~~calculated~~ settling. The ~~calculated~~ settling accommodation shall be calculated ~~stated in the construction documents~~ for each location of involved settling height, and also stated in the construction documents.

Reason: "Calculated settling" refers to the equation in 304.2.2.3.4. But settling can be determined for involved heights using other methods (prescribed A, prescribed B, prescribed C, Engineering, Test, or Field survey), and so calculated settling for each involved height should not be limited to the method "304.2.2.3.4 Calculated".

It is the settling "accommodation" that needs to be calculated, the Standard does not require that only the Calculated Settling method be used to do this. This change corrects, clarifies, and removes ambiguity.

Committee Action: **Approved as Modified**

Modify as follows:

304.3 Accommodating settling. Log structures shall accommodate settling in accordance with this section. The settling accommodation shall be ~~and also~~ stated in the construction documents.

SECTION 202
DEFINED TERMS

CONSTRUCTION DOCUMENTS. Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*. Construction drawings shall be drawn to an appropriate scale.

Committee Reason: The committee agreed with the premise of the proponent's reason statement. The modifications further clarify the settling requirements. Further, the committee modified the proposal to insert the IRC definition of construction documents into Chapter 2 of the standard.

IS-LOG 37-17
ICC 400 Sections 304.3, 304.3.1, 304.3.2 and 304.3.3

Proponent: Robert W. Chambers

Revise as follows:

304.3

Exception<u>s</u>: Log wall systems where Δt is less than or equal to 0.5 percent of the involved settling height (H_D) ~~to~~ <u>or where Δt</u> is a maximum of 1/2 inch (12.7 mm).

304.3.1 Settling gap. <u>There shall be a settling gap and it</u> ~~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 as sliding joints.

304.3.2 Sliding joint. Vertical joints shall not restrict settling ~~at log wall interface~~ <u>and shall accommodate settling</u>. Examples include but are not limited to the buck system installed at the sides of log wall openings, frame-wall intersections, cabinet installation, trim application, fireplaces and chimneys.

304.3.3 Settling devices. <u>At point loads</u> an adjustable and accessible device shall be used to accommodate the involved settling height ~~at point loads~~. Examples include and are not limited to support posts ~~and horizontal structural framing member to non-settling structures~~.

Reasons: There are two Exceptions: 1) where total settling is not more than 0.5% and 2) where total settling is less than ½ inch. This change makes that clear. We must first require that a settling gap be provided, and then we can specify how it is constructed and trimmed. It is not just walls that require settling gaps, trim, and sliding joints. Freestanding posts, for example, need them. Some stairs do. Many interior 2x4 walls never 'interface a log wall,' and yet they require a vertical slip joint to the ceiling above them. So, it is incorrect to require these only at a log wall interface. It is important to not restrict settling, but it is also important to accommodate settling (for example, providing weatherproof trim and/or seals). "Not restricting" and "accommodating" are not equivalent terms. "Examples include and are not limited to . . . horizontal structural framing member to non-settling structures" I have struck through this passage, but only because I have tried, and cannot understand, what it means. It seems to be only a partial sentence. Needs to be written clearly.

Committee Action: **Approved as Modified**

Modify as follows:

304.3 Accommodating settling. Log structures shall accommodate calculated settling. Calculated settling accommodation shall be stated in the construction documents for each location of involved settling height.

> **Exceptions:** Log wall systems where Δt is less than or equal to 0.5 percent of the involved settling height (H_D) to or where Δt is a maximum of 1/2 inch (12.7 mm).
>
> **304.3.1 Settling space gap.** There shall be a settling space and it must that accommodates the involved settling height of all materials as they settle. Trim or other measures used to conceal settling spaces gaps shall be treated as sliding joints.
>
> **304.3.2 Sliding joint.** Vertical joints shall accomodate not restrict settling and shall accommodate settling. Examples include including but are not limited to the buck system installed at the sides of log wall openings, frame-wall intersections, cabinet installation, trim application, fireplaces and chimneys.
>
> **304.3.3 Settling devices.** At point loads, an engineered, an adjustable and accessible device shall be used to accommodate the involved settling height Examples include and are including but not limited to support posts.
>
> > **304.3.7.2 Pipes through log walls.** A plumbing pipe shall only travel through a log wall perpendicular to the long horizontal axis of the logs, shall be level or nearly level, and shall be fitted with flexible connections at each end or be provided with a sufficient settling gap space to accommodate the involved setting height.

Committee Reason: The committee agreed with the premise of the proposal. The modifications replace “gap” with “space” as a more appropriate term. Another modification was to require the settling devices to be engineered to ensure performance. The committee felt the other modifications provided more clarity to the requirements.

IS-LOG 38-17
ICC 400 Section 304.3.5

Proponent: Robert W. Chambers

General Comment:

304.3.5 Counter-flashing. Counter-flashing shall be installed at all penetrations of the building exterior to allow appropriate movement due to settling.

Reason: This is incorrect. Yes, all roof penetrations require counterflashings, but many wall penetrations to the exterior do not require counterflashing. Kitchen and bathroom exhaust vents that penetrate walls rarely require counterflashings. Electric service and telecommunications penetrations through exterior walls almost never require counterflashings. Many doors and windows do not require both flashings and counterflashings. Plumbing penetrations (for exterior faucets) are never counterflashed.

Committee Action: **Approved as Modified**

Modify as follows:

304.3.5 Counter-flashing. Counter-flashing shall be installed at ~~all~~ penetrations of the building exterior <u>where necessary</u> to allow appropriate movement due to settling.

Committee Reason: The committee felt that the proposed modification clarifies that not all penetrations had to be counter-flashed.

IS-LOG 39-17
ICC 400 Section 304.3.6.2

Proponent: Robert W. Chambers

General Comment:

304.3.6.2 Fasteners installed vertically. Where a fastener is installed vertically [plus or minus 5 degrees (0.0875 rad) from vertical] within the wall, it shall accommodate settling.

Comment: This says that a fastener installed at 6 degrees from vertical does not have to accommodate settling. But a fastener installed at 6 degrees will have as many settling problems as the same fastener installed at 5 degrees. (This sort of standard is why some builders shake their heads in disbelief at a few of the code requirements—let's find a better way to get at what concerns us here.)

Committee Action: **Approved as Modified**

Modify as follows:

304.3.6.2 Dowel-type fasteners installed vertically. Dowel-type fasteners shall be installed with the length vertical within the wall to accommodate settling. ~~Where a fastener is installed vertically [plus or minus 5 degrees (0.0875 rad) from vertical] within the wall, it shall accommodate settling~~.

Committee Reason: The committee felt the proposed modification addressed the issues raised by the proponent.

IS-LOG 40-17

ICC 400 Section 304.3.6.3

Proponent: Robert W. Chambers

Revise as follows:

304.3.6.3 Fasteners installed horizontally. Fasteners installed horizontally through, or attached into, a log wall that attach non-settling abutments to the log wall shall be installed with an oversized washer under the head of the fastener and located near the top of an oversized vertically slotted hole such that the involved settling at that location is accommodated. The washer shall be able to turn under the fastener head.

Reason: This method would be required whether the fastener is installed “through a log wall” or only “into” a log wall.

Committee Action: **Approved as Modified**

Modify as follows:

304.3.6.3 Fasteners installed horizontally. Fasteners installed horizontally ~~through, or attached into, a log wall that~~ to attach non-settling abutments to the log wall shall be installed with an oversized washer under the head of the fastener and located near the top of an oversized vertically slotted hole such that the involved settling at that location is accommodated. The washer shall be able to turn under the fastener head. The resulting connection shall be in compliance with Section 404.

Committee Reason: The committee agreed with the premise of the proponents reason statement. They felt the modifications more clearly addressed fastener attachments to log walls.

IS-LOG 41-17
ICC 400 Section 305.1.2

Proponent: Robert W. Chambers

Revise as follows:

305.1.2 Moisture control and air leakage. The joint design shall resist air and moisture infiltration.

Reason: The adjacent sections (305.1.1 , 305.1.3, 305.1.4, 305.1.5, and 305.1.6) all apply to joint design, but as written this seems to indicate that it applies to design of the structure itself. I believe this was meant to apply only to joints.

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed with the proponent's reason statement.

IS-LOG 42-17
ICC 400 Section 305.3.3

Proponent: Robert W. Chambers

Revise as follows:

305.3.3 Calculation method. Calculate the Coefficient of Transmission (*u*) of the log wall using the equation:

U = 1 / (inside air film + $\underline{R_o}$ ~~*Ro*~~ + outside air film)
where:

Inside Air Film = An *R*-value of 0.68 for still air at a vertical surface and horizontal heat flow.

Outside Air Film = An *R*-value of 0.17 for a 15 mph (6.6 m/s) wind moving air in any direction during the winter.

$\underline{R_o}$ ~~*Ro*~~ = [(A_L x R_L) + (A_N x R_N)] / A_T = The overall *R*-value of the wall assembly found by weighted average of areas of the assembly for respective variations in the cross-section of the wall. If the entire wall assembly consists only of logs, $\underline{R_o}$ ~~*Ro*~~ = R_L.

Reason: In 3 places, should be "R_o" (subscript "o") not "Ro"

Committee Action: **Approved as submitted**

Committee Reason: The committee agreed that these were appropriate editorial corrections.

IS-LOG 43-17
ICC 400 Table 305.3.1.1

Proponent: Robert W. Chambers

Revise as follows:

TABLE 305.3.1.1
U-Factor of Log Wall (U_w) by ~~Average Width~~ Log Thickness (W_L) and Specific Gravity

Specific Gravity (Gu)	~~Average Width~~ Log Thickness

(No changes to the remainder of the Table)

Reason: Definitions (p. 5) identify W_L as "W_L = Log thickness for calculation purposes" not as "Average Width." The Standard must be consistent in use of technical terms.

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed that the proposed changes in terminology were appropriate and consistent.

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)**

Committee Reason: N/A

IS-LOG 45-17
ICC 400 Section 402.1

Proponent: Robert W. Chambers

General Comment:

402.1 Prescriptive provisions. Log structures not requiring engineering design in accordance with Section 403 shall be permitted to use prescriptive provisions as approved by the building official.

Comment: Is this a 'catch-all' that allows a building official to create their own prescriptive provisions for engineering? Isn't this usually done at ICC by saying "in accordance with other approved methods," – which means that the local inspector says it's okay. But it may be a step beyond to give 'prescriptive authority' to the local inspector.

Committee Action: **Approved as Modified**

Modify as follows:

402.1 Prescriptive provisions. Log structures ~~not requiring engineering design in accordance with~~ constructed within the limitations established by Section 403 shall not require engineering ~~be permitted to use prescriptive provisions as approved by the building official~~.

Committee Reason: The committee agreed with the premise of the proponent's reason statement. The proposed modification more directly ties the allowance to the limitations established by Section 403.

IS-LOG 46-17
ICC 400 Section 403.1

Proponent: Robert W. Chambers

General Comment:

SECTION 403
ENGINEERED PROVISIONS

403.1 Applicability. If the building geometry, or loads related to the log structure, exceed any of the following limitations, then the building shall be designed using the provisions of Sections 403 through 407. If portions of building geometry, or loads related to those portions, exceed any of the following limitations, then the affected portions shall be designed using the provisions of Sections 403 through 407. The limitations are:

(no change to item 1)

2. Building dimensions

a. Greater than three stories or a mean roof height of 33 feet, (10.06 m) measured from average grade to average roof elevation.
b. The building aspect ratio (L/W) less than 1:4 or greater than 4:1.
c. The building dimension, length (L) or width (W), greater than 80 feet (24.38 m).
d. Floor to floor story height greater than 10 feet (3.0 m).

(no changes to remainder of items)

Comments: This Standard does not provide instructions for determining the “mean roof height” of a structure, and so makes it impossible to apply this requirement.

Example: If a structure has two ridges, and one ridge is 34-feet high and the other is 32-feet high, is the mean roof height of this structure = 33-feet? Now, what if the 34-foot peak is 70-feet long, and the 32-foot peak is a dormer 4-feet long? Still 33-feet mean roof height?

In “a” and “d” we should identify if heights are to be measured before, or after, settling.

Committee Action: **Approved as Modified**

Modify as follows:

Insert new text as follows:

SECTION 202
DEFINED TERMS

MEAN ROOF HEIGHT. The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angle of less than or equal to 10 degrees (0.18 rad).

Committee Reason: The committee felt that adding this definition from the 2018 IRC would address the issues brought forth by the proponent.

IS-LOG 47-17
ICC 400 Section 403.1

Proponent: Robert W. Chambers

Revise as follows:

403.1 Applicability. If the building geometry, or loads related to the log structure, exceed any of the following limitations, then the building shall be designed using the provisions of Sections 403 through 407. If portions of building geometry, or loads related to those portions, exceed any of the following limitations, then the affected portions shall be designed using the provisions of Sections 403 through 407. The limitations are:

(no change to items 1 and 2)

3. Log floor systems

d. Log floor joist cantilevers ~~supporting non-load-bearing walls which are not shear walls~~ greater than one-quarter of the span, L/4, that support non-load-bearing walls which are not shear walls.

(no changes to remainder of items)

Reason: Clarity. As written, poor sentence structure with misplaced modifying clause. As written it says "… shear walls greater than one-quarter of the span" – but it is not the shear walls that are greater than one-quarter of the span, it is the cantilever that is greater than one-quarter of the span.

This editorial change makes it clear what can, or cannot, be greater than one-quarter of the span. This editorial change does not change the meaning, and makes it less likely that this will be misunderstood.

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed with the proponent's reasoning.

IS-LOG 48-17

Proponent: Robert W. Chambers

ICC 400 Section 403.1

Revise as follows:

403.1 Applicability. If the building geometry, or loads related to the log structure, exceed any of the following limitations, then the building shall be designed using the provisions of Sections 403 through 407. If portions of building geometry, or loads related to those portions, exceed any of the following limitations, then the affected portions shall be designed using the provisions of Sections 403 through 407. The limitations are:

(no change to items 1, 2 and 3)

4. Log walls

a. Load bearing and non-load-bearing log walls greater than 20 feet (6.1 m) in unsupported height.
b. Offsets greater than 4 feet (1219 mm) in a log shear wall line within a story ~~greater than 4 feet (1219 mm~~).

(no changes to remainder of items)

Reason: Clarity. Misplaced modifying clause. As written it says "… within a story greater than 4 feet" – but it is not the story that is greater than 4 feet, it is the offset that is greater than 4 feet.

This editorial change makes it clear what can, or cannot, be greater than 4 feet. This editorial change does not change the meaning, and makes it less likely to be misunderstood.

Committee Action: **Approved as submitted**

Committee Reason: The committee agreed with the proponent's reasoning.

IS-LOG 49-17
ICC 400 General

Proponent: Robert W. Chambers

General Comment:

403.1 Applicability. If the building geometry, or loads related to the log structure, exceed any of the following limitations, then the building shall be designed using the provisions of Sections 403 through 407. If portions of building geometry, or loads related to those portions, exceed any of the following limitations, then the affected portions shall be designed using the provisions of Sections 403 through 407. The limitations are:

(no change to items 1, 2 and 3)

4. Log walls

d. Log shear wall segment aspect ratios greater than 1:1.

(no changes to remainder of items)

Comment: Is this ratio width:length or length:width ? This section, and the Definition for "Shear Wall Segment" do not specify.

Committee Action: **Approved as Modified**

Modify as follows:

403.1 Applicability. If the building geometry, or loads related to the log structure, exceed any of the following limitations, then the building shall be designed using the provisions of Sections 403 through 407. If portions of building geometry, or loads related to those portions, exceed any of the following limitations, then the affected portions shall be designed using the provisions of Sections 403 through 407. The limitations are:

(no change to items 1, 2 and 3)

4. Log walls

d. Log shear wall segment aspect ratios greater than 1:1 (h:l).

(no changes to remainder of items)

Committee Reason: The committee felt that the modification addressed the concerns of the proponent.

IS-LOG 50-17
ICC 400 Section 405.9

Proponent: Robert W. Chambers

Revision as follows:

405.9 Sheathing and decking spans. Floors shall be ~~fully~~ sheathed with materials capable of resisting and transferring the applied gravity loads to the floor framing members.

Reason: It is common for second floors in log homes to be only partially sheathed, not “fully” sheathed. A common example are log floor joists for a second-floor loft. The log joists extend and are supported by two log walls, but only one end of the joists are sheathed with flooring (ie the loft floor). This leaves portions of the joists not sheathed, and they are simply exposed beams.

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed with the proponent’s reason statement.

IS-LOG 51-17
ICC 400 Section 405.11

Proponent: Robert W. Chambers

Revise as follows:

405.11 Floor diaphragm bracing. Framing and connections shall be designed~~,~~ in accordance with the calculated loads to transfer the lateral wind loads from the exterior wall to the floor diaphragm assembly ~~in accordance with the calculated loads~~.

Reason: Misplaced modifying clause. This editorial change does not change the meaning, and makes it less likely to be misunderstood. Remove comma.

Committee Action: **Approved as Modified**

Modify as follows:

405.11 Floor diaphragm bracing. Framing and connections shall be designed ~~in accordance with the calculated loads~~ to transfer the lateral wind loads from the exterior wall to the floor diaphragm assembly.

Committee Reason: The committee modified the proposal to remove calculated loads as they felt they are not needed.

IS-LOG 52-17
ICC 400 Section 405.8

Proponent: Robert W. Chambers

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 an exterior wall, the exterior wall adjacent to the opening shall be designed to resist gravity, lateral, and uplift loads ~~at~~ that may apply to that location.

Reason: Clarifies that the adjacent log wall needs to be capable of supporting floor loads only if any floor loads are being applied to the log wall. As currently written, this passage could be mis-interpreted to apply to log walls that receive no floor loads. This revision could be considered an editorial revision.

Committee Action: **Approved as Modified**

Modify 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~~n~~ bearing ~~exterior~~ wall, the bearing ~~exterior~~ wall adjacent to the opening shall be designed to resist applicable gravity, lateral, and uplift loads ~~that may apply to that location~~.

Committee Reason: The committee agreed with the premise of the proponent's reason statement. The modification further clarifies what the adjacent log wall is to support at floor openings.

IS-LOG 53-17
ICC 400 Section 406.2

Proponent: Robert W. Chambers

Revise as follows:

406.2 Corners and intersecting log walls. Logs ~~walls~~ shall be connected by mechanical ~~fastening~~ fasteners or by interlocking log joinery at corners, ~~and~~ at intersecting walls and at beams ~~to~~ and such connections shall resist and transfer applicable lateral loads to the roof or floor diaphragm. ~~Wall logs shall be continuous within a single course between openings, or have designed fastening at splices between logs to resist lateral loading.~~

> **406.2.1 Logs between openings.** To resist lateral loading, wall logs between openings shall be continuous within a single course, or shall have fasteners at the splices that join non-continuous logs.

Reason: For clarity, split this into two separate sections - - one dealing with connections between logs at corners and beams; and another section that deals with the strength of spliced and un-spliced logs between wall openings. These are separate issues that are not closely related to each other, and each deserves its own section.

The term used throughout this Standard is “mechanical fasteners” not “mechanical fastening”.

In 406.2, “log walls” are not fastened to “log walls” – it is logs that are fastened to logs. The industry approaches this as joining log–to-log; and I know of no log builder who instead fastens entire log walls to other log walls. The construction unit is log, not log wall.

I am not sure what the difference is between “designed fasteners” and “fasteners”, and I do not think that “designed” is needed here (I recommend removal). The term “designed fastener” or “designed fastening” appears no where else in this Standard.

Committee Action: **Approved as modified**

Modify as follows:

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

> **406.2.1 Logs between openings.** To resist lateral loading, wall logs

between openings shall be continuous within a single course, or shall have fasteners at the splices that join non-continuous logs.

Committee Reason: The committee agreed with the premise of the proponent's reason statement. They felt the modification further simplified the requirements.

IS-LOG 54-17
ICC 400 Section 406.5

Proponent: Robert W. Chambers

Revise as follows:

406.5 Window sill log. Window sill logs shall be designed to resist lateral loads. Window sill logs shall be continuous and shall extend beyond the edge of the window opening to provide connection to the wall assembly.

Reason: To resist lateral loads it is a safe practice that sill logs be continuous, not spliced. I have seen instances of log wall bowing that I attribute to spliced header and sill logs above and below window openings.

Committee Action: **Approved as modified**

Modify as follows:

406.5 Window sill log. Window sill logs shall be designed to resist lateral loads. Window sill logs shall be continuous and shall extend beyond the edge of the window opening to provide connection to the wall assembly equal to or greater than the length of the header log.

Committee Reason: The committee agreed with the proponent's reason statement. Further the committee felt defining a minimum length of header log was also important, which the modification addresses.

IS-LOG 54-17
ICC 400 Section 302.4, 306.2.5 (new)

Proponent: IS-LOG Committee

Revise as follows:

SECTION 306
INFILTRATION

306.2.5 ~~302.4~~ Roof overhangs. Roof overhangs shall extend horizontally a minimum of OH/8, but not less than 12 inches (305 mm), beyond the lowest exposed wall surface, where OH is the wall height measured from the bottom of the sill log or bottom plate or from a projection from the exterior of the log wall such as a porch roof, balcony, deck, or any individual log member. The extension of the roof overhang shall be measured horizontally from the face of the exterior wall to the drip line at the edge of the overhang.

Exceptions: Roof overhangs shall be permitted to be a minimum of 12 inches (305 mm), regardless of the wall height where any of the following conditions apply:

1. Logs within 24 inches (610 mm) of a lower horizontal surface such as the finished grade, a bulkhead cover, deck, balcony or roof are treated in compliance with Section 302.2.5.

2. A gutter and downspout or other means are used to divert roof water discharge and the bottom of the sill log or bottom plate log is at least 18 inches (457 mm) above an adjacent horizontal surface.

3. Decks adjacent to the log wall have structural grating or other means to deter backsplash equal in width to the overhang to allow water to pass unimpeded to the finished grade.

Committee Reason: Section 302 deals with materials. Section 306 is a design requirement that more appropriately belongs in Section 306.