

4. Holes shall have a web hole width not greater than 0.5 times the member depth, or 1-1/2 inches (38 mm);
5. Holes shall have a web hole length not exceeding 4-1/2 inches (114 mm); and
6. Holes shall have a minimum distance between the edge of the bearing surface and the edge of the web hole of not less than 10 inches (254 mm).

Framing members with web holes not conforming to the above requirements shall be reinforced in accordance with Section R603.2.5.2, patched in accordance with Section R603.2.5.3, or designed in accordance with accepted engineering practices.

R603.2.5.2 Web hole reinforcing. Web holes in gable endwall studs not conforming to the requirements of Section R603.2.5.1 shall be permitted to be reinforced if the hole is located fully within the center 40 percent of the span and the depth and length of the hole does not exceed 65% of the flat width of the web. The reinforcing shall be a steel plate or C-shape section with a hole that does not exceed the web hole size limitations of Section R603.2.5.1 for the member being reinforced. The steel reinforcing shall be the same thickness as the receiving member and shall extend at least 1 inch (25.4 mm) beyond all edges of the hole. The steel reinforcing shall be fastened to the web of the receiving member with No.8 screws spaced no greater than 1 inch (25.4 mm) center-to-center along the edges of the patch with minimum edge distance of 1/2 inch (12.7 mm).

R603.2.5.3 Hole patching. Web holes in wall studs and other structural members not conforming to the requirements in Section R603.2.5.1 shall be permitted to be patched in accordance with either of the following methods:

1. Framing members shall be replaced or designed in accordance with accepted engineering practices when web holes exceed the following size limits:
 - 1.1. The depth of the hole, measured across the web, exceeds 70 percent of the flat width of the web; or
 - 1.2. The length of the hole measured along the web exceeds 10 inches (254 mm) or the depth of the web, whichever is greater.
2. Web holes not exceeding the dimensional requirements in Section R603.2.5.3, Item 1 shall be patched with a solid steel plate, stud section, or track section in accordance with Figure R603.2.5.3. The steel patch shall, as a minimum, be the same thickness as the receiving member and shall extend at least 1 inch (25 mm) beyond all edges of the hole. The steel patch shall be fastened to the web of the receiving member with No. 8 screws spaced no more than 1 inch (25 mm) center-to-center along the edges of the patch with a minimum edge distance of 1/2 inch (13 mm).

3. Revise as follows:

R603.3 Wall construction. All exterior cold-formed steel framed walls and interior load-bearing cold-formed steel framed walls shall be constructed in accordance with the provisions of this section and Figure R603.3.

R603.3.1 Wall to foundation or floor connection. Cold-formed steel framed walls shall be anchored to foundations or floors in accordance with Table R603.3.1 and Figure R603.3.1(1), or R603.3.1(2) or R603.3.1(3). Anchor bolts shall be located not more than 12 inches (305 mm) from corners or the termination of bottom tracks. Anchor bolts shall extend a minimum of 15 inches (381 mm) into masonry or 7 inches (178 mm) into concrete. Foundation anchor straps shall be permitted, in lieu of anchor bolts, if spaced as required to provide equivalent anchorage to the required anchor bolts and installed in accordance with manufacturer's requirements.

4. Add new text as follows:

R603.3.1.1 Gable endwalls. Gable endwalls with heights greater than 10 feet (3050 mm) shall be anchored to foundations or floors in accordance with Tables R603.3.1.1(1) or R603.3.1.1(2).

5. Revise as follows:

R603.3.2 Minimum stud sizes~~Load-bearing walls.~~ Cold-formed steel walls shall be constructed in accordance with Figures R603.3.1(1), R603.3.1(2), or R603.3.1(3), as applicable. Exterior wall stud size and thickness shall be determined in accordance with the limits set forth in Tables R603.3.2(2) through R603.3.2(31). Interior load-bearing wall stud size and thickness shall be determined in accordance with the limits set forth in Tables R603.3.2(2) through R603.3.2(31) based upon an 85 mph (137 km/hr) Exposure A/B wind value and the building width, stud spacing and snow load as appropriate. Fastening requirements shall be in accordance with Section R603.2.4 and Table R603.3.2(1). Top and bottom tracks shall have the same minimum thickness as the wall studs.

Exterior wall studs shall be permitted to be reduced to the next thinner size, as shown in Tables R603.3.2(2) through R603.3.2(31), but not less than 33 mils (0.84 mm), where both of the following conditions exist:

1. Minimum of 1/2 inch (13 mm) gypsum board is installed and fastened in accordance with Section R702 on the interior surface.
2. Wood structural sheathing panels of minimum 7/16 inch (11 mm) thick oriented strand board or 15/32 inch (12 mm) thick plywood is installed and fastened in accordance with Section R603.9.1 and Table R603.3.2(1) on the outside surface.

Interior load-bearing walls shall be permitted to be reduced to the next thinner size, as shown in Tables R603.3.2(2) through R603.3.2(31), but not less than 33 mils (0.84 mm), where a minimum of 1/2 inch (13 mm) gypsum board is installed and fastened in accordance with Section R702 on both sides of the wall.

The tabulated stud thickness for load-bearing walls shall be used when the attic load is 10 psf (0.48 kN/m²) or less. A limited attic storage load of 20 psf (0.96 kN/m²) shall be permitted provided that the next higher snow load column is used to select the stud size from Tables R603.3.2(2) through R603.3.2(31).

For two-story buildings, the tabulated stud thickness for walls supporting one floor, roof and ceiling shall be used when second floor live load is 30 psf (1.44 kN/m²). Second floor live loads of 40 psf (1.92 kN/m²) shall be permitted provided that the next higher snow load column is used to select the stud size from Tables R603.3.2(2) through R603.3.2(21).

For three-story buildings, the tabulated stud thickness for walls supporting one or two floors, roof and ceiling shall be used when the third floor live load is 30 psf (1.44 kN/m²). Third floor live loads of 40 psf (1.92 kN/m²) shall be permitted provided that the next higher snow load column is used to select the stud size from Tables R603.3.2(22) through R603.3.2(31).

Steel studs shall comply with Tables R603.3.2(2) through R603.3.2(21) For attic storage the tabulated thickness for walls shall be used when the attic load is 10 psf (0.48 kPa) or less. When an attic storage load is greater than 10 psf (0.48 kPa) but less than or equal to 20 psf (0.96 kPa), the next higher snow load column value from Tables R603.3.2(2) through R603.3.2(21) shall be used to select the stud size. The tabulated stud thickness for structural walls supporting one floor, roof and ceiling shall be used when the second floor live load is 30 psf (1.44 kPa) but less than or equal to 40 psf (1.92 kPa) the design value in the next higher snow load column from Table R603.2(2) through R603.3.2(21) shall be used to select the stud size.

Fastening requirements shall be in accordance with Section R603.2.4 and Table R603.3.2(1). Tracks shall have the same minimum thickness as the wall studs. Exterior walls with a minimum of 1/2 inch (13 mm) gypsum board installed in accordance with Section R702 on the interior surface and wood structural panels of minimum 7/16 inch thick (11 mm) oriented strand board or 15/32 inch thick (12 mm) plywood installed in accordance with Table R603.3.2(1) on the outside surface shall be permitted to use the next thinner stud from Tables R603.3.2(2) through R603.3.2(13) but not less than 33 mils (0.84 mm). Interior load-bearing walls with a minimum 1/2 inch (13 mm) gypsum board installed in accordance with Section R702 on both sides of the wall shall be permitted to use the next thinner stud from Tables R603.3.2(2) through R603.3.2(13) but not less than 33 mils (0.84 mm).

6. Add new text as follows:

R603.3.2.1 Gable endwalls. The size and thickness of gable endwall studs with heights less than or equal to 10 feet (3.05 m) shall be permitted to be determined in accordance with the limits set forth in Tables R603.3.2.1(1) or R603.3.2.1(2). The size and thickness of gable endwall studs with heights greater than 10 feet (2.94 m) shall be determined in accordance with the limits set forth in Tables R603.3.2.1(3) or R603.3.2.1(4).

7. Revise as follows:

R603.3.3 Stud bracing. The flanges of cold-formed steel studs shall be laterally braced in accordance with one of the following:

1. Gypsum board on both sides, structural sheathing on both sides, or gypsum board on one side and structural sheathing on the other side of load-bearing walls with Gypsum board installed with minimum No. 6 screws in accordance with Section R702 or and structural sheathing installed in accordance with Section R603.9.1 and Table R603.3.2(1).
2. Horizontal steel straps installed fastened in accordance with Figure R603.3.3(1) on both sides at mid-height for 8-foot (2438 mm) walls, and at one-third points for 9-foot and 10-foot (2743mm and 3048 mm) walls. Horizontal teel straps shall be at least 1.5 inches in width and 33 mils in thickness (38 mm by 0.84 mm). Straps shall be attached to the flanges of studs with at least one No. 8 screw. In-line blocking shall be installed between studs at the termination of all straps and at 12 foot (3.33m) intervals along the strap. Straps shall be fastened to the blocking with at least two No. 8 screws.

3. Sheathing on one side and strapping on the other side fastened in accordance with Figure R603.3.3(2). Sheathing shall be installed in accordance with Method #1 above. Steel straps shall be installed in accordance with Method #2 above.

R603.3.4 Cutting and notching. Flanges and lips of cold-formed steel studs and headers shall not be cut or notched.

8. Delete without substitution:

~~**R603.3.5 Hole patching.** Web holes violating the requirements in Section R603.2 shall be designed in accordance with one of the following:~~

- ~~1. Framing members shall be replaced or designed in accordance with accepted engineering practices when web holes exceed the following size limits:
 - 1.1. The depth of the hole, measured across the web, exceeds 70 percent of the flat width of the web; or
 - 1.2. The length of the hole measured along the web exceeds 10 inches (254 mm) or the depth of the web, whichever is greater.~~
- ~~2. Web holes not exceeding the dimensional requirements in R603.3.5(1) shall be patched with a solid steel plate, stud section, or track section in accordance with Figure R603.3.5. The steel patch shall be as a minimum the same thickness as the receiving member and shall extend at least 1 inch (25 mm) beyond all edges of the hole. The steel patch shall be fastened to the web of the receiving member with No. 8 screws spaced no more than 1 inch (25 mm) center to center along the edges of the patch with a minimum edge distance of 1/2 inch (13 mm).~~

9. Revise and renumber as follows::

~~**R603.3.6**~~ **R603.3.5 Splicing.** Steel studs and other structural members shall not be spliced. Tracks shall be spliced in accordance with Figure ~~R603.3.6~~ R603.3.5.

10. Revise as follows:

R603.4 Corner framing. In exterior walls, ~~C~~corner studs and the top tracks shall be installed in accordance with Figure R603.4.

R603.5 Exterior wall covering. The method of attachment of exterior wall covering materials to cold-formed steel stud wall framing shall conform to the manufacturer's installation instructions.

R603.6 Headers. Headers shall be installed above all wall openings in ~~a~~ exterior walls and interior load-bearing walls. Box beam headers and back-to-back headers each shall be formed from two equal sized C-shaped members in accordance with Figures R603.6(1) and R603.6(2), respectively, and Tables R603.6(1) through R603.6(24)(8), or, L-shaped headers shall be permitted to be constructed in accordance with AISI S230. Alternately, headers shall be permitted to be designed and constructed in accordance with AISI S100, Section D4 ~~the AISI Standard for Cold-formed Steel Framing - Header Design (COFS/Header Design).~~

11. Add new text as follows:

R603.6.1 Headers in gable endwalls: Box beam and back-to-back headers in gable endwalls shall be permitted to be constructed in accordance with Section R603.6 or with the header directly above the opening in accordance with Figures R603.6.1(1) and R603.6.1(2) and the following provisions:

1. Two 362S162-33 for openings less than or equal to 4 feet (122 mm).
2. Two 600S162-43 for openings greater than 4 feet (1220 mm) but less than or equal to 6 feet (1830 mm).
3. Two 800S162-54 for openings greater than 6 feet (1830 mm) but less than or equal to 9 feet (2740 mm).

12. Revise and renumber as follows:

~~**R603.6.1**~~ **R603.7 Jack and king studs, and head track.** The number of jack and king studs, installed on each side of a header, shall comply with Table ~~R603.6(9)~~ R603.7(1). King, ~~and jack,~~ and cripple studs shall be of the same dimension and thickness as the adjacent wall studs. Headers ~~constructed of C-shape framing members~~ shall be connected to king studs in accordance with Table ~~R603.6(10)~~ R603.7(2) and the following provisions:

1. For box beam headers, one-half of the total number of required screws shall be applied to the header and one half to the king stud by use of C-shaped or track member in accordance with Figure R603.6(1). The track or C-shape sections shall extend the depth of the header minus 1/2 inch (13 mm) and shall have a minimum thickness not less than the wall studs.
2. For back-to-back headers, ~~One-half~~ one-half of the total number of screws shall be applied to the header and one-half to the king stud by use of a minimum 2-inch-by-2-inch (51 mm x 51 mm) clip angle in accordance with Figure R603.6(2) or 4-inch-wide (102 mm) steel plate. The clip angle shall extend the depth of the header minus 1/2 inch (13 mm) and shall have a minimum thickness ~~of the header members or not less than~~ the wall studs, ~~whichever is thicker.~~ Jack and king studs shall be interconnected with structural sheathing in accordance with Figures R603.6(1) and R603.6(2).

13. Add new section as follows:

R603.8 Head and sill track. Head track spans, above door and window openings, and sill track spans, beneath window openings, shall comply with Table R603.1(11) R603.8 and shall be in accordance with Figures R603.3 and R603.6. Increasing the head track tabular value shall not be prohibited when in accordance with one of the following:

1. For openings less than 4 feet (1219 mm) in height that have both a head track and a sill a top and bottom head track, the spans in Table R603.8 shall be permitted to be multiplied y the tabular value by 1.75; or
2. For openings less than or equal to 6 feet (1829 mm) in height that have both a head track and a sill a top and bottom head track, the spans in Table R603.8 shall be permitted to be multiplied y the tabular value by 1.50.

14. Delete without substitution:

R603.7 Structural sheathing. In areas where the basic wind speed is less than 110 miles per hour (49 m/s), wood structural panel sheathing shall be installed on all exterior walls of buildings in accordance with this section. Wood structural panel sheathing shall consist of minimum 7/16-inch (11 mm) oriented strand board or 15/32-inch thick (12 mm) plywood and shall be installed on all exterior wall surfaces in accordance with Section R603.7.1 and Figure R603.3. The minimum length of full height sheathing on exterior walls shall be determined in accordance with Table R603.7, but shall not be less than 20 percent of the braced wall length in any case. The minimum percentage of full height sheathing in Table R603.7 shall include only those sheathed wall sections, uninterrupted by openings, which are a minimum of 48 inches (1220 mm) wide. The minimum percentage of full height structural sheathing shall be multiplied by 1.10 for 9-foot-high (2743 mm) walls and multiplied by 1.20 for 10-foot-high (3048 m) walls. In addition, structural sheathing shall:

1. Be installed with the long dimension parallel to the stud framing and shall cover the full vertical height of studs, from the bottom of the bottom track to the top of the top track of each story.
2. Be applied to each end (corners) of each of the exterior walls with a minimum 48-inch-wide (1221 mm) panel.

15. Add new text as follows:

R603.9 Structural sheathing. Structural sheathing shall be installed on all exterior wall surfaces in accordance with Figure R603.9 and Section R603.9.1. Structural sheathing panels shall consist of minimum 7/16-inch (11 mm) thick oriented strand board or 15/32-inch (12 mm) thick plywood. The minimum length of full height sheathing on each exterior wall shall be determined by multiplying the values obtained from Table R603.9(1) by the plan aspect ratio adjustment factors in Table R603.9(2). The minimum length of full height sheathing shall not be less than 20 percent of the wall length.

For hip roofed homes the minimum percentage of full height sheathing in Table R603.9(1), based upon wind, shall be permitted to be multiplied by a factor of 0.95 for roof slopes not exceeding 7:12 and a factor of 0.9 for roof slopes greater than 7:12.

Structural sheathing shall extend, full height, from the bottom to the top of the wall without interruption by openings. The minimum percentages of full height sheathing in Table R603.9(1) shall include only those sheathed wall sections, uninterrupted by openings, which are a minimum of 48 inches (1220 mm) wide. The minimum percentage of full-height structural sheathing shall be multiplied by 1.10 for 9 foot (2.74 m) high walls and multiplied by 1.20 for 10 foot (3.05 m) high walls. In addition, structural sheathing shall comply with all of the following requirements:

1. Be installed with the long dimension parallel to the stud framing (i.e. vertical orientation) and shall cover the full vertical height of wall from the bottom of the bottom track to the top of the top track of each story. It shall be permitted to install the long dimension perpendicular to the stud framing or to use shorter segments provided that the horizontal joint is blocked as described in Item 2 below.
2. Be blocked when the long dimension installed perpendicular to the stud framing (i.e. horizontal orientation). Blocking shall be a minimum of 33 mil (0.84 mm) thickness. Each horizontal structural sheathing panel shall be fastened with No.8 screws spaced at 6 inches (152 mm) on center to the blocking at the joint.
3. Be applied to each end (corners) of each of the exterior walls with a minimum 48 inch (1220 mm) wide panel.

16. Revise and renumber as follows:

R603.7.1 R603.9.1 Structural sheathing fastening. All edges and interior areas of wood structural sheathing panels shall be fastened to a framing members and tracks in accordance with Figure R603.9 and Table R603.3.2(1). Screws for attachment of structural sheathing panels shall be bugle-head, flat-head, or similar head style with a minimum head diameter of 0.29 inches (8 mm). The percentages of full height sheathing, in Table R603.9(1), shall be permitted to be multiplied by 0.72 for 4-inch (102 mm) edge screw spacing.

R603.7.2 R603.9.2 Hold-down requirements. In conditions where wind speeds are in excess of 100-mph (161 km/hr) exposure C, hold-down brackets shall be provided in accordance with Table 603.3.1. ~~Multiplying the percentage of structural sheathing required in Table R603.7 R603.9(1) shall be permitted to be multiplied by 0.6 is permitted~~ where a hold-down anchor with a capacity of 4,300 pounds (19 kN) is provided at each end of exterior walls. A single hold down anchor, installed in accordance with Figure R603.9.2, shall be permitted at the corners of buildings. ~~Installations of a single hold-down anchor at wall corners is permitted.~~

17. Revise table as follows:

**TABLE R603.2(2)
MINIMUM THICKNESS OF COLD-FORMED STEEL MEMBERS STUDS**

DESIGNATION THICKNESS (mils)	MINIMUM BASE STEEL UNCOATED THICKNESS (inches)	REFERENCE GAGE NUMBER
33	0.03293	20
43	0.04283	18
54	0.05384	16
68	0.06778	14
97	0.0966	

For SI: 1 inch = 25.4 mm, 1 mil = 0.0254 mm.

18. Delete existing table and substitute as follows:

**TABLE R603.3.1
WALL TO FOUNDATION OR FLOOR CONNECTION REQUIREMENTS^{a,b}**

FRAMING CONDITION	WIND SPEED (MPH) & EXPOSURE					
	85 A/B	90 A/B	100 A/B 85 C	110 A/B 90 C	100 C	< 110 C
<u>Wall bottom track to floor per Figure R603.3.1(1)</u>	<u>1-No.8 screw at 12" o.c.</u>	<u>1-No.8 screw at 12" o.c.</u>	<u>1-No.8 screw at 12" o.c.</u>	<u>1 – No.8 screw at 12" o.c.</u>	<u>2 – No.8 screw at 12" o.c.</u>	<u>2 – No.8 screw at 12" o.c.</u>
<u>Wall bottom track to foundation per Figure R603.3.1(2)^c</u>	<u>1/2" minimum diameter anchor bolt at 6' o.c.</u>	<u>1/2" minimum diameter anchor bolt at 6' o.c.</u>	<u>1/2" minimum diameter anchor bolt at 4' o.c.</u>	<u>1/2" minimum diameter anchor bolt at 4' o.c.</u>	<u>1/2" minimum diameter anchor bolt at 4' o.c.</u>	<u>1/2" minimum diameter anchor bolt at 4' o.c.</u>
<u>Wall bottom track to wood sill per Figure R603.3.1(3)</u>	<u>Steel plate spaced at 4' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>	<u>Steel plate spaced at 4' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>	<u>Steel plate spaced at 3' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>	<u>Steel plate spaced at 3' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>	<u>Steel plate spaced at 2' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>	<u>Steel plate spaced at 2' o.c., with 4-No.8 screws and 4-10d or 6-8d common nails</u>
<u>Wind uplift connector strength for 16" stud spacing^c</u>	N/R	N/R	N/R	N/R	N/R	65 lbs per foot of wall length
<u>Wind uplift connector strength for 24" stud spacing^c</u>	N/R	N/R	N/R	N/R	N/R	100 lbs per foot of wall length

^aor SI: 1 inch = 25.4 mm, 1 mph = 1.61 km/hr, 1 foot = 0.305 m, 1 lb = 4.45 N.

^bAnchor bolts are to be located not more than 12 inches (305 mm) from corners or the termination of bottom tracks (e.g. at door openings or corners).

^cBolts are to extend a minimum of 15 inches (381 mm) into masonry or 7 inches (178 mm) into concrete.

All screw sizes shown are minimum.

N/R = uplift connector not required

Foundation anchor straps are permitted, in lieu of anchor bolts, if spaced as required to provide equivalent anchorage to the required anchor bolts and installed in accordance with manufacturer's requirements.

19. Add new table as follows:

TABLE R603.3.1.1(1)
GABLE ENDWALL TO FLOOR CONNECTION REQUIREMENTS^{a, b, c}

BASIC WIND SPEED (MPH)		WALL BOTTOM TRACK TO FLOOR JOIST OR TRACK CONNECTION		
Exposure		STUD HEIGHT, h (ft)		
A/B	C	10 < h ≤ 14	14 < h ≤ 18	18 < h ≤ 22
85	-	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.
90		1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.
100	85	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.
110	90	1-No.8 screw @ 12" o.c.	1-No.8 screw @ 12" o.c.	2-No.8 screws @ 12" o.c.
-	100	1-No.8 screw @ 12" o.c.	2-No.8 screws @ 12" o.c.	1-No.8 screw @ 8" o.c.
-	110	2-No.8 screws @ 12" o.c.	1-No.8 screw @ 8" o.c.	2-No.8 screws @ 8" o.c.

For SI: 1 inch = 25.4 mm, 1 mph = 1.61 km/hr, 1 foot = 0.305 m, 1 lb = 4.45 N.

^a Refer to Table R603.3.1.1(2) for gable endwall bottom track to foundation connections.

^b Where attachment is not given, special design is required.

^c Stud height, h, is measured from wall bottom track to wall top track or brace connection height.

TABLE R603.3.1.1(2)
GABLE ENDWALL BOTTOM TRACK TO FOUNDATION CONNECTION REQUIREMENTS^{a, b, c}

BASIC WIND SPEED (MPH)		MINIMUM SPACING FOR 1/2" DIAMETER ANCHOR BOLTS^d		
Exposure		STUD HEIGHT, h (ft)		
A/B	C	10 < h ≤ 14	14 < h ≤ 18	18 < h ≤ 22
85	-	6'-0" o.c.	6'-0" o.c.	6'-0" o.c.
90		6'-0" o.c.	5'-7" o.c.	6'-0" o.c.
100	85	5'-10" o.c.	6'-0" o.c.	6'-0" o.c.
110	90	4'-10" o.c.	5'-6" o.c.	6'-0" o.c.
-	100	4'-1" o.c.	6'-0" o.c.	6'-0" o.c.
-	110	5'-1" o.c.	6'-0" o.c.	5'-2" o.c.

For SI: 1 inch = 25.4 mm, 1 mph = 1.61 km/hr, 1 foot = 0.305 m, 1 lb = 4.45 N.

^a Refer to Table R603.3.1.1(1) for gable endwall bottom track to floor joist or track connection connections.

^b Where attachment is not given, special design is required.

^c Stud height, h, is measured from wall bottom track to wall top track or brace connection height.

^d Foundation anchor straps are permitted, in lieu of anchor bolts, if spaced as required to provide equivalent anchorage to the required anchor bolts and installed in accordance with manufacturer's requirements.

20. Revise as follows:

TABLE R603.3.2(1)
WALL FASTENING SCHEDULE^a

Description Of Building Element	Number And Size Of Fasteners^a	Spacing Of Fasteners
Structural sheathing to wall studs	No. 8 screws ^b	6" o.c. on edges and 12" o.c. at intermediate supports

For SI: 1 inch = 25.4 mm.

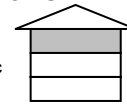
a. All screw sizes shown are minimum.

b. Screws for attachment of structural sheathing panels are to be bugle-head, flat-head, or similar head styles with a minimum head diameter of 0.29 inches (8 mm).

(Portions of table not shown remain unchanged)

21. Delete Tables R603.3.2(2) through Table R603.3.2(21) and replace with new tables as follows:

TABLE R603.3.2(2)
24-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
33 ksi STEEL

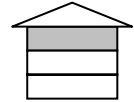


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	33	43	33	33	33	43	33	33	43	43	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	33	33	33	33	33	33	33	33	33	33
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	33	43	33	33	33	43	33	33	43	43	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	33	33	33	33	33	33	33	33	33	33
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	33	43	33	33	33	43	43	43	43	43	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	33	43	43	43	43	43	43	43	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	43	43	43	43	43
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	43	43	43	43	
			24	43	43	43	43	43	43	43	43	54	54	54	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	43	43	43	43	43	43	43	43	43
-	110 mph	350S162	16	33	33	33	33	43	43	43	43	43	43	43	43	
			24	43	43	43	43	54	54	54	54	68	68	68	68	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	43	43	43	43	43	43	43	43	43	43	43	43	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf.
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(3)
24-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
50 ksi STEEL

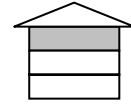


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	33	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	33	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	33	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	43	43	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	43	43	43	43	43	43	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
-	110 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	43	43	43	43	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(4)
28-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
33 ksi STEEL

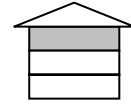


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	33	33	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	33	33	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	43	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	110 mph	350S162	16	33	33	33	33	43	43	43	43	43	43	43	43
			24	43	43	43	54	54	54	54	54	68	68	68	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(5)
28-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
50 ksi STEEL

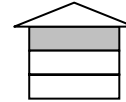


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	43	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	43	43	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	43	43	43	43	43	43	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33
-	110 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	43	43	43	43	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(6)
32-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
33 ksi STEEL

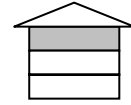


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	33	33	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	43	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	33	33	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	43	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	54	43	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	43	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	43	43	43	54	43	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	43	33	33	43	43
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	43	43
-	110 mph	350S162	16	33	33	33	43	43	43	43	43	43	43	43	43	43
			24	43	43	43	54	54	54	54	54	68	68	68	68	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	33

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(7)
32-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
50 ksi STEEL

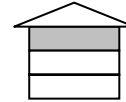


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	43	33	33	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	33	43	33	33	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	33	43	43	33	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	43
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	110 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	43	43	43	43	43	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(8)
36-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
33 ksi STEEL

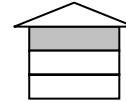


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	33	33	43	54	33	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	33	33	43	54	33	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	33	33	43	54	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	43	43	43	43	43	43	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
-	110 mph	350S162	16	33	33	33	43	43	43	43	43	43	43	43	43
			24	43	43	54	54	54	54	54	54	68	68	68	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(9)
36-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
50 ksi STEEL

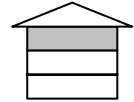


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	43	43	33	33	43	43	33	33	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	43	43	33	33	43	43	33	33	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	43	43	33	33	43	43	33	33	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	
			24	33	33	43	54	33	33	43	43	43	43	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43	
			24	33	33	43	54	43	43	43	43	43	43	43	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	110 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	43	
			24	33	33	43	54	43	43	43	54	54	54	54	54	
		550S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(10)
40-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
33 ksi STEEL

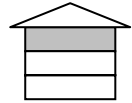


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	33	33	43	54	43	43	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	54	33	33	43	43	33	33	43	43	54
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	33	43	54	33	33	43	54	43	43	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	54	33	33	43	43	33	33	43	43	54
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	43	43	54	33	43	43	54	43	43	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	33
		24	33	33	43	54	33	33	43	43	33	33	43	43	54
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	33	43	43	54	43	43	43	54	43	43	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	43
		24	33	33	43	54	33	33	43	43	33	33	43	43	54
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43
			24	43	43	54	68	43	43	54	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	43
		24	33	33	43	54	33	33	43	54	33	33	43	43	54
-	110 mph	350S162	16	33	33	43	43	43	43	43	43	43	43	43	54
			24	43	43	54	68	54	54	54	68	68	68	68	68
550S162		16	33	33	33	43	33	33	33	33	43	33	33	33	43
		24	33	33	43	54	33	33	43	54	43	43	43	43	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(11)
40-FOOT-WIDE BUILDING SUPPORTING ROOF AND CEILING ONLY ^{a,b,c}
50 ksi STEEL

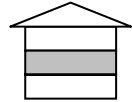


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)													
				8-Foot Studs				9-Foot Studs				10-Foot Studs					
Exp. A/B	Exp. C			Ground Snow Load (psf)													
				20	30	50	70	20	30	50	70	20	30	50	70		
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	33	33	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	33	43	33	33	33	43	33	33	33	33	33	43	
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	33	33	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	33	43	33	33	33	43	33	33	33	33	33	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	54	33	33	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	33	43	33	33	33	43	33	33	33	33	33	43	
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	54	43	43	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	33	43	33	33	33	43	33	33	33	33	33	43	
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	33	33	43
			24	33	33	43	54	43	43	43	54	43	43	43	54	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	33	43	33	33	33	33	43	43	
-	110 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	33	33	43
			24	33	33	43	54	43	43	43	54	54	54	54	54	68	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(12)
24-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

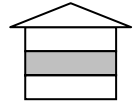


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	43	33	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	43	43	43	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	43	43
			24	43	43	43	43	43	43	43	43	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	43	43	43	43	43
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43
			24	43	43	43	54	43	43	54	54	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	43	43	43	43	43	43	43	43	43
-	110 mph	350S162	16	33	33	33	43	43	43	43	43	43	43	43	43
			24	43	43	43	54	54	54	54	54	68	68	68	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	43	43	43	43	43	43	43	43	43	43	43	43	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(13)
24-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

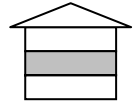


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	33	43	33	33	43	43
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33	33
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	33	33	43	43	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33	33
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	33	43	33	33	33	43	43	43	43	43	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33	33
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	43	43	43	43	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	33	33	33	33	33	33	33	33	33	33	33
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	43	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	33	43
-	110 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43	43
			24	43	43	43	43	43	43	43	43	54	54	54	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	33	33	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(14)
28-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

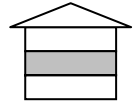


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	43	43	33	33	43	43	
-	100 mph	350S162	16	33	33	33	43	33	33	43	43	43	43	43	43
			24	43	43	43	54	54	54	54	54	54	54	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	43	43	43	43	43	43	43	43	43
-	110 mph	350S162	16	33	33	43	43	43	43	43	43	43	43	43	54
			24	43	43	54	54	54	54	54	54	68	68	68	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	43	43	43	43	43	43	43	43	43	43	43	43	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(15)
28-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

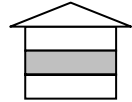


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	33	33	33	33	33	33	33	33	33
			24	33	33	43	43	33	33	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	43	33	33	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	33	33	43	43	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	100 mph	350S162	16	33	33	33	33	33	33	33	33	33	33	33	43
			24	43	43	43	54	43	43	43	43	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43
-	110 mph	350S162	16	33	33	33	43	33	33	33	33	43	43	43	43
			24	43	43	43	54	43	43	43	43	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	33	43	33	33	33	43	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(16)
32-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

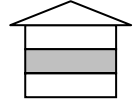


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	43	33	33	33	33	43	33	33	43	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	43	33	33	33	33	43	33	33	43	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	43	33	33	43	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	
110 mph	90 mph	350S162	16	33	33	43	43	33	33	33	43	43	43	43	43
			24	43	43	54	54	43	43	54	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	43	33	33	43	43
		24	33	43	43	54	33	33	43	43	43	43	43	43	54
-	100 mph	350S162	16	33	33	43	43	43	43	43	43	43	43	43	43
			24	43	43	54	54	54	54	54	54	54	54	68	68
550S162		16	33	33	33	43	33	33	33	33	43	33	33	43	43
		24	33	43	43	54	43	43	43	43	43	43	43	43	54
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	54	54
			24	54	54	54	68	54	54	54	68	68	68	68	68
550S162		16	33	33	33	43	33	33	33	43	33	33	33	43	43
		24	43	43	43	54	43	43	43	43	43	43	43	43	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(17)
32-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

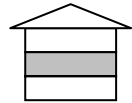


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43
90 mph	-	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	43
			24	33	33	43	54	33	33	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	43	43	43
-	110 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
		24	33	33	43	43	33	33	33	43	33	33	33	33	33	43

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(18)
36-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

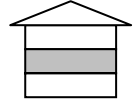


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	43	43	33	33	43	43	33	33	43	43
			24	43	43	54	54	43	43	54	54	43	43	54	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
90 mph	-	350S162	16	33	33	43	43	33	33	43	43	33	33	43	43
			24	43	43	54	54	43	43	54	54	43	43	54	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
100 mph	85 mph	350S162	16	33	33	43	43	33	33	43	43	43	43	43	43
			24	43	43	54	68	43	43	54	54	43	43	54	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
110 mph	90 mph	350S162	16	33	33	43	43	33	33	43	43	43	43	43	54
			24	43	43	54	68	54	54	54	54	43	43	54	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
-	100 mph	350S162	16	33	33	43	43	43	43	43	43	43	43	43	54
			24	54	54	54	68	54	54	54	68	54	68	68	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	43	54	54	54
			24	54	54	54	68	54	54	54	68	68	68	68	68
		550S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	43	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(19)
36-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

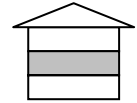


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	33	33	43	54	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	33	33	43	54	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	33	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	
-	100 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	43
			24	43	43	43	54	43	43	43	54	54	54	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	
-	110 mph	350S162	16	33	33	43	43	33	33	33	43	43	43	43	43
			24	43	43	54	54	43	43	54	54	54	54	54	68
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	33	33	43	43	33	33	43	43	33	33	43	43	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(20)
40-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING ^{a,b,c}
33 ksi STEEL



WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	43	43	33	33	43	43	43	43	43	54
			24	43	43	54	68	43	43	54	68	54	54	54	68
550S162		16	33	33	33	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	
90 mph	-	350S162	16	33	33	43	43	33	33	43	43	43	43	54	
			24	43	43	54	68	43	43	54	68	54	54	54	68
550S162		16	33	33	33	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	
100 mph	85 mph	350S162	16	33	33	43	43	33	33	43	43	43	43	54	
			24	43	43	54	68	43	43	54	68	54	54	54	68
550S162		16	33	33	33	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	
110 mph	90 mph	350S162	16	33	33	43	43	43	43	43	43	43	43	54	
			24	43	43	54	68	54	54	54	68	54	54	54	68
550S162		16	33	33	43	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	
-	100 mph	350S162	16	43	43	43	54	43	43	43	54	43	43	54	54
			24	54	54	54	68	54	54	54	68	68	68	68	97
550S162		16	33	33	43	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	
-	110 mph	350S162	16	43	43	43	54	43	43	43	54	54	54	54	54
			24	54	54	54	68	54	54	68	68	68	68	68	97
550S162		16	33	33	43	43	33	33	33	43	33	33	33	43	
		24	43	43	54	54	43	43	43	54	43	43	43	54	

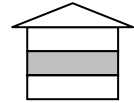
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(21)

40-FOOT-WIDE BUILDING SUPPORTING ONE FLOOR, ROOF & CEILING
50 ksi STEEL

a,b,c



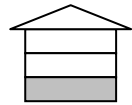
WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
Exp. A/B	Exp. C			8-Foot Studs				9-Foot Studs				10-Foot Studs			
				Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	33
		24	33	43	43	54	33	33	43	43	33	33	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	43	54	43	43	43	54	43	43	54	54
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	33
		24	33	43	43	54	33	33	43	43	33	33	43	43	
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	43	33	33	43	43
			24	43	43	54	54	43	43	43	54	43	43	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	33
		24	33	43	43	54	33	33	43	43	33	33	43	43	
110 mph	90 mph	350S162	16	33	33	43	43	33	33	33	43	33	33	43	43
			24	43	43	54	54	43	43	43	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	
-	100 mph	350S162	16	33	33	43	43	33	33	33	43	43	43	43	43
			24	43	43	54	54	43	43	54	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	
-	110 mph	350S162	16	33	33	43	43	33	33	43	43	43	43	43	54
			24	43	43	54	68	54	54	54	54	54	54	54	68
550S162		16	33	33	33	43	33	33	33	33	33	33	33	33	43
		24	33	43	43	54	33	33	43	43	33	33	43	43	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Second floor live load is 30 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

22. Add new table as follows:

TABLE R603.3.2(22)
24-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

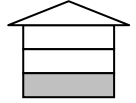


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	54	54	54	54	54	54	
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54
90 mph	-	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	54	54	54	54	54	54	
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54
100 mph	85 mph	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	54	54	54	54	54	54	54	68	
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54
110 mph	90 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	54	54	54	54	54	54	54	54	68	68
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54
-	100 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	43	54
			24	54	54	54	54	54	54	54	54	68	68	68	68	68
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	43	54	54	54	54
			24	54	54	54	68	54	54	68	68	68	68	68	68	97
		550S162	16	33	33	43	43	33	33	33	33	33	33	33	33	43
			24	43	43	54	54	43	43	43	43	43	43	43	43	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 - Top and middle floor dead load is 10 psf.
 - Top floor live load is 30 psf.
 - Middle floor live load is 40 psf.
 - Roof/ceiling dead load is 12 psf.
 - Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(23)
24-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

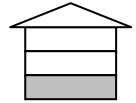


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	33	33	33	43	33	33	33	33	33	33	33	33
			24	43	43	54	54	43	43	43	43	43	43	43	54
550S162		16	33	33	33	33	33	33	33	33	33	33	33	33	
		24	43	43	43	43	43	43	43	43	43	43	43	43	
90 mph	-	350S162	16	33	33	33	43	33	33	33	33	33	33	33	
			24	43	43	54	54	43	43	43	43	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33		
		24	43	43	43	43	43	43	43	43	43	43	43		
100 mph	85 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	
			24	43	43	54	54	43	43	43	43	43	43	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33		
		24	43	43	43	43	43	43	43	43	43	43	43		
110 mph	90 mph	350S162	16	33	33	33	43	33	33	33	33	33	33	33	
			24	43	43	54	54	43	43	43	43	54	54	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33		
		24	43	43	43	43	43	43	43	43	43	43	43		
-	100 mph	350S162	16	33	33	33	43	33	33	33	33	43	43	43	
			24	43	43	54	54	43	43	54	54	54	54	54	
550S162		16	33	33	33	33	33	33	33	33	33	33	33		
		24	43	43	43	43	43	43	43	43	43	43	43		
-	110 mph	350S162	16	33	33	33	43	33	33	33	43	43	43	43	
			24	54	54	54	54	54	54	54	54	54	54	68	
550S162		16	33	33	33	33	33	33	33	33	33	33	33		
		24	43	43	43	43	43	43	43	43	43	43	43		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(24)
28-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

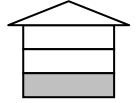


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	
		24	54	54	54	54	54	54	54	54	54	54	54	54	
90 mph	-	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	54	54	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
100 mph	85 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	54	54	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
110 mph	90 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
-	100 mph	350S162	16	43	43	43	43	43	43	43	43	43	54	54	
			24	54	54	54	68	54	54	68	68	68	68	97	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	54	54	54	
			24	54	68	68	68	68	68	68	68	68	97	97	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(25)
28-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

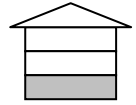


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)												
				8-Foot Studs				9-Foot Studs				10-Foot Studs				
Exp. A/B	Exp. C			Ground Snow Load (psf)												
				20	30	50	70	20	30	50	70	20	30	50	70	
85 mph	-	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	43	54	54	54	54	54	
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	33
			24	43	43	43	54	43	43	43	43	43	43	43	43	43
90 mph	-	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	54	54	54	54	54		
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	
			24	43	43	43	54	43	43	43	43	43	43	43	43	
100 mph	85 mph	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	54	54	54	54	54		
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	
			24	43	43	43	54	43	43	43	43	43	43	43	43	
110 mph	90 mph	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	43	43	54	54	54	54	54		
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	
			24	43	43	43	54	43	43	43	43	43	43	43	43	
-	100 mph	350S162	16	43	43	43	43	33	33	33	43	43	43	43	43	
			24	54	54	54	54	54	54	54	54	54	54	54	68	
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	
			24	43	43	43	54	43	43	43	43	43	43	43	43	
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	54	54	54	54	54	68	68	68	68	
		550S162	16	33	33	33	43	33	33	33	33	33	33	33	33	
			24	43	43	43	54	43	43	43	43	43	43	43	43	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(26)
32-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
33 ksi STEEL

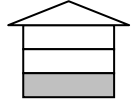


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	43	43	43	54	43	43	43	43	43	43	43	54
			24	68	68	68	68	54	54	68	68	68	68	68	68
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54
90 mph	-	350S162	16	43	43	43	54	43	43	43	43	43	43	43	54
			24	68	68	68	68	54	54	68	68	68	68	68	68
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54
100 mph	85 mph	350S162	16	43	43	43	54	43	43	43	43	43	43	43	54
			24	68	68	68	68	54	54	68	68	68	68	68	68
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54
110 mph	90 mph	350S162	16	43	43	43	54	43	43	43	43	43	43	54	54
			24	68	68	68	68	54	54	68	68	68	68	68	68
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54
-	100 mph	350S162	16	43	43	43	54	43	43	43	43	54	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	97	97
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54
-	110 mph	350S162	16	43	43	43	54	43	43	54	54	54	54	54	54
			24	68	68	68	68	68	68	68	68	97	97	97	97
		550S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(27)
32-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

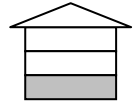


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	43	43	43	43	43	43	43	43	43	43	43	43
			24	54	54	54	68	54	54	54	54	54	54	54	68
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	
90 mph	-	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	54	54	68	
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	
100 mph	85 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	54	54	68	
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	
110 mph	90 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	54	54	68	
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	
-	100 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	68	68	68	68
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	
-	110 mph	350S162	16	43	43	43	43	43	43	43	43	43	43	43	
			24	54	54	54	68	54	54	54	54	68	68	68	68
550S162		16	43	43	43	43	33	33	33	43	33	33	43	43	
		24	54	54	54	54	43	43	43	54	43	43	54	54	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(28)
36-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
33 ksi STEEL



WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph		350S162	16	54	54	54	54	43	43	43	54	54	54	54	
			24	68	68	68	97	68	68	68	68	68	68	97	
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68
90 mph		350S162	16	54	54	54	54	43	43	43	54	54	54	54	
			24	68	68	68	97	68	68	68	68	68	68	97	
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68
100 mph	85 mph	350S162	16	54	54	54	54	43	43	43	54	54	54	54	
			24	68	68	68	97	68	68	68	68	68	68	97	
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68
110 mph	90 mph	350S162	16	54	54	54	54	43	43	43	54	54	54	54	
			24	68	68	68	97	68	68	68	68	68	68	97	
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68
-	100 mph	350S162	16	54	54	54	54	43	43	54	54	54	54	54	
			24	68	68	68	97	68	68	68	68	97	97	97	97
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68
-	110 mph	350S162	16	54	54	54	54	54	54	54	54	54	54	54	
			24	68	68	68	97	68	68	68	97	97	97	97	
		550S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	54	54	68	68

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

a. Deflection criteria: L/240.

b. Design load assumptions:

Top and middle floor dead load is 10 psf.

Top floor live load is 30 psf.

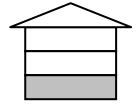
Middle floor live load is 40 psf.

Roof/ceiling dead load is 12 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(29)
36-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
50 ksi STEEL

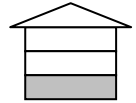


WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	43	43	43	54	43	43	43	43	43	43	43	43
			24	68	68	68	68	54	54	54	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	
		24	54	54	54	54	54	54	54	54	54	54	54	54	
90 mph	-	350S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
100 mph	85 mph	350S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
110 mph	90 mph	350S162	16	43	43	43	54	43	43	43	43	43	43	43	
			24	68	68	68	68	54	54	54	68	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
-	100 mph	350S162	16	43	43	43	54	43	43	43	43	43	43	54	
			24	68	68	68	68	54	54	54	68	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		
-	110 mph	350S162	16	43	43	43	54	43	43	43	43	43	54	54	
			24	68	68	68	68	54	54	68	68	68	68	68	
550S162		16	43	43	43	43	43	43	43	43	43	43	43		
		24	54	54	54	54	54	54	54	54	54	54	54		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(30)
40-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
33 ksi STEEL



WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	54	54	54	54	54	54	54	54	54	54	54	54
			24	97	97	97	97	68	68	68	97	97	97	97	97
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	
90 mph	-	350S162	16	54	54	54	54	54	54	54	54	54	54	54	
			24	97	97	97	97	68	68	68	97	97	97	97	
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	
100 mph	85 mph	350S162	16	54	54	54	54	54	54	54	54	54	54	54	
			24	97	97	97	97	68	68	68	97	97	97	97	
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	
110 mph	90 mph	350S162	16	54	54	54	54	54	54	54	54	54	54	54	
			24	97	97	97	97	68	68	68	97	97	97	97	
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	
-	100 mph	350S162	16	54	54	54	54	54	54	54	54	54	54	54	
			24	97	97	97	97	68	68	68	97	97	97	97	
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	
-	110 mph	350S162	16	54	54	54	54	54	54	54	54	54	68	68	
			24	97	97	97	97	68	68	97	97	97	97	97	
550S162		16	54	54	54	54	43	43	54	54	43	43	54	54	
		24	68	68	68	68	68	68	68	68	68	68	68	68	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

a. Deflection criteria: L/240.

b. Design load assumptions:

Top and middle floor dead load is 10 psf.

Top floor live load is 30 psf.

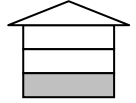
Middle floor live load is 40 psf.

Roof/ceiling dead load is 12 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2(31)
40-FOOT-WIDE BUILDING SUPPORTING TWO FLOORS, ROOF & CEILING ^{a,b,c}
50 ksi STEEL



WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	MINIMUM STUD THICKNESS (mils)											
				8-Foot Studs				9-Foot Studs				10-Foot Studs			
Exp. A/B	Exp. C			Ground Snow Load (psf)											
				20	30	50	70	20	30	50	70	20	30	50	70
85 mph	-	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54
90 mph	-	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54
100 mph	85 mph	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54
110 mph	90 mph	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54
-	100 mph	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	68
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54
-	110 mph	350S162	16	54	54	54	54	43	43	43	43	43	54	54	54
			24	68	68	68	68	68	68	68	68	68	68	68	97
550S162		16	43	43	43	43	43	43	43	43	43	43	43	43	43
		24	54	54	54	68	54	54	54	54	54	54	54	54	54

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s,
 1 pound per square foot = 0.0479 kPa, 1 ksi = 1000 psi = 6.895 MPa.

- a. Deflection criteria: L/240.
- b. Design load assumptions:
 Top and middle floor dead load is 10 psf.
 Top floor live load is 30 psf.
 Middle floor live load is 40 psf.
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

22. Add new Tables R603.3.2.1(1) through R603.3.2.1(4) as follows:

TABLE R603.3.2.1(1)
ALL BUILDING WIDTHS
GABLE ENDWALLS 8, 9 or 10 FEET IN HEIGHT ^{a,b,c}
33 ksi STEEL

WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	Minimum Stud Thickness (Mils)		
Exp. A/B	Exp. C			8-Foot Studs	9-Foot Studs	10-Foot Studs
85 mph		350S162	16	33	33	33
			24	33	33	33
		550S162	16	33	33	33
			24	33	33	33
90 mph		350S162	16	33	33	33
			24	33	33	33
		550S162	16	33	33	33
			24	33	33	33
100 mph	85 mph	350S162	16	33	33	33
			24	33	33	43
		550S162	16	33	33	33
			24	33	33	33
110 mph	90 mph	350S162	16	33	33	33
			24	33	33	43
		550S162	16	33	33	33
			24	33	33	33
-	100 mph	350S162	16	33	33	43
			24	43	43	54
		550S162	16	33	33	33
			24	33	33	33
-	110 mph	350S162	16	33	43	43
			24	43	54	54
		550S162	16	33	33	33
			24	33	33	43

For SI: 1 inch = 25.4, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. Deflection criteria L/240.

b. Design load assumptions:

Ground snow load is 70 psf.

Roof and ceiling dead load is 12 psf.

Floor dead load is 10 psf.

Floor live load is 40 psf.

Attic dead load is 10 psf.

c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2.1(2)
ALL BUILDING WIDTHS
GABLE ENDWALLS 8, 9 or 10 FEET IN HEIGHT ^{a,b,c}
50 ksi STEEL

WIND SPEED		MEMBER SIZE	STUD SPACING (inches)	Minimum Stud Thickness (Mils)		
Exp. A/B	Exp. C			8-Foot Studs	9-Foot Studs	10-Foot Studs
85 mph		350S162	16	33	33	33
			24	33	33	33
		550S162	16	33	33	33
			24	33	33	33
90 mph		350S162	16	33	33	33
			24	33	33	33
		550S162	16	33	33	33
			24	33	33	33
100 mph	85 mph	350S162	16	33	33	33
			24	33	33	33
		550S162	16	33	33	33
			24	33	33	33
110 mph	90 mph	350S162	16	33	33	33
			24	33	33	43
		550S162	16	33	33	33
			24	33	33	33
-	100 mph	350S162	16	33	33	33
			24	33	33	43
		550S162	16	33	33	33
			24	33	33	33
-	110 mph	350S162	16	33	33	33
			24	33	43	54
		550S162	16	33	33	33
			24	33	33	33

For SI: 1 inch = 25.4, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. Deflection criteria L/240.

b. Design load assumptions:

Ground snow load is 70 psf.

Roof and ceiling dead load is 12 psf.

Floor dead load is 10 psf.

Floor live load is 40 psf.

Attic dead load is 10 psf.

c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE 603.3.2.1(3)
ALL BUILDING WIDTHS
GABLE ENDWALLS OVER 10 FEET IN HEIGHT ^{a,b,c}
33 ksi Steel

WIND SPEED		MEMBER SIZE	STUD SPACING (inch)	MINIMUM STUD THICKNESS (Mils)					
Exp. A/B	Exp. C			Stud Height, h (feet)					
				10 < h ≤ 12	12 < h ≤ 14	14 < h ≤ 16	16 < h ≤ 18	18 < h ≤ 20	20 < h ≤ 22
85 mph	-	350S162	16	33	43	54	97	-	-
			24	43	54	97	-	-	
		550S162	16	33	33	33	43	43	54
			24	33	33	43	54	68	97
90 mph		350S162	16	33	43	68	97	-	-
			24	43	68	97	-	-	
		550S162	16	33	33	33	43	54	54
			24	33	33	43	54	68	97
100 mph	85 mph	350S162	16	43	54	97	-	-	-
			24	54	97	-	-	-	
		550S162	16	33	33	43	54	54	68
			24	33	43	54	68	97	97
110 mph	90 mph	350S162	16	43	68	-	-	-	-
			24	68	-	-	-	-	
		550S162	16	33	43	43	54	68	97
			24	43	54	68	97	97	-
-	100 mph	350S162	16	54	97	-	-	-	-
			24	97	-	-	-	-	
		550S162	16	33	43	54	68	97	-
			24	43	68	97	97	-	-
-	110 mph	350S162	16	68	97	-	-	-	-
			24	97	-	-	-	-	
		550S162	16	43	54	68	97	97	-
			24	54	68	97	-	-	

For SI: 1 inch = 25.4, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. Deflection criteria L/240.

b. Design load assumptions:

Ground snow load is 70 psf.

Roof and ceiling dead load is 12 psf.

Floor dead load is 10 psf.

Floor live load is 40 psf.

Attic dead load is 10 psf.

c. Building width is in the direction of horizontal framing members supported by the wall studs.

TABLE R603.3.2.1(4)
ALL BUILDING WIDTHS
GABLE ENDWALLS OVER 10 FEET IN HEIGHT ^{A,B,C}
50 ksi Steel

WIND SPEED		MEMBER SIZE	STUD SPACING (inch)	MINIMUM STUD THICKNESS (Mils)							
Exp. A/B	Exp. C			Stud Height, h (feet)							
				10 < h ≤ 12	12 < h ≤ 14	14 < h ≤ 16	16 < h ≤ 18	18 < h ≤ 20	20 < h ≤ 22		
85 mph	-	350S162	16	33	43	54	97	-	-		
			24	33	54	97	-	-			
		550S162	16	33	33	33	33	43	54		
			24	33	33	33	43	54	97		
		90 mph	-	350S162	16	33	43	68	97	-	-
					24	43	68	97	-	-	
550S162	16			33	33	33	33	43	54		
	24			33	33	43	43	68	97		
100 mph	85 mph	350S162	16	33	54	97	-	-	-		
			24	54	97	-	-	-	-		
		550S162	16	33	33	33	43	54	68		
			24	33	33	43	54	97	97		
		110 mph	90 mph	350S162	16	43	68	-	-	-	-
					24	68	-	-	-	-	-
550S162	16			33	33	43	43	68	97		
	24			33	43	54	68	97	-		
-	100 mph	350S162	16	54	97	-	-	-	-		
			24	97	-	-	-	-	-		
		550S162	16	33	33	43	54	97	-		
			24	43	54	54	97	-	-		
		-	110 mph	350S162	16	54	97	-	-	-	-
					24	97	-	-	-	-	-
550S162	16			33	43	54	68	97	-		
	24			43	54	68	97	-	-		

For SI: 1 inch = 25.4, 1 foot = 304.8 mm, 1 mil = 0.0254 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

- a. Deflection criteria L/240.
- b. Design load assumptions:
Ground snow load is 70 psf.
Roof and ceiling dead load is 12 psf.
Floor dead load is 10 psf.
Floor live load is 40 psf.
Attic dead load is 10 psf.
- c. Building width is in the direction of horizontal framing members supported by the wall studs.

23. Delete Table R603.6(1) through Table R603.6(8) and replace with Table R603.6(1) through Table R603.6(24) as follows:

TABLE R603.6(1)
BOX-BEAM HEADER SPANS
Headers Supporting Roof and Ceiling Only (33 ksi steel) ^{a, b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	<u>3'-3"</u>	<u>2'-8"</u>	<u>2'-2"</u>	-	-	<u>2'-8"</u>	<u>2'-2"</u>	-	-	-
<u>2-350S162-43</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-7"</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-7"</u>	<u>2'-2"</u>
<u>2-350S162-54</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>3'-0"</u>
<u>2-350S162-68</u>	<u>5'-7"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-3"</u>	<u>3'-10"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-10"</u>	<u>3'-5"</u>
<u>2-350S162-97</u>	<u>7'-1"</u>	<u>6'-6"</u>	<u>6'-1"</u>	<u>5'-8"</u>	<u>5'-3"</u>	<u>6'-7"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>5'-3"</u>	<u>4'-11"</u>
<u>2-550S162-33</u>	<u>4'-8"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-6"</u>	<u>4'-1"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-6"</u>	-
<u>2-550S162-43</u>	<u>6'-0"</u>	<u>5'-4"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-5"</u>
<u>2-550S162-54</u>	<u>7'-0"</u>	<u>6'-4"</u>	<u>5'-9"</u>	<u>5'-4"</u>	<u>4'-10"</u>	<u>6'-5"</u>	<u>5'-9"</u>	<u>5'-3"</u>	<u>4'-10"</u>	<u>4'-5"</u>
<u>2-550S162-68</u>	<u>8'-0"</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-3"</u>	<u>5'-10"</u>	<u>7'-5"</u>	<u>6'-9"</u>	<u>6'-3"</u>	<u>5'-9"</u>	<u>5'-4"</u>
<u>2-550S162-97</u>	<u>9'-11"</u>	<u>9'-2"</u>	<u>8'-6"</u>	<u>8'-0"</u>	<u>7'-6"</u>	<u>9'-3"</u>	<u>8'-6"</u>	<u>8'-0"</u>	<u>7'-5"</u>	<u>7'-0"</u>
<u>2-800S162-33</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-10"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-3"</u>
<u>2-800S162-43</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>5'-11"</u>	<u>5'-4"</u>	<u>4'-10"</u>	<u>6'-7"</u>	<u>5'-11"</u>	<u>5'-4"</u>	<u>4'-9"</u>	<u>4'-3"</u>
<u>2-800S162-54</u>	<u>8'-10"</u>	<u>8'-0"</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-2"</u>	<u>8'-1"</u>	<u>7'-4"</u>	<u>6'-8"</u>	<u>6'-1"</u>	<u>5'-7"</u>
<u>2-800S162-68</u>	<u>10'-5"</u>	<u>9'-7"</u>	<u>8'-10"</u>	<u>8'-2"</u>	<u>7'-7"</u>	<u>9'-8"</u>	<u>8'-10"</u>	<u>8'-1"</u>	<u>7'-6"</u>	<u>7'-0"</u>
<u>2-800S162-97</u>	<u>13'-1"</u>	<u>12'-1"</u>	<u>11'-3"</u>	<u>10'-7"</u>	<u>10'-0"</u>	<u>12'-2"</u>	<u>11'-4"</u>	<u>10'-6"</u>	<u>10'-0"</u>	<u>9'-4"</u>
<u>2-1000S162-43</u>	<u>7'-10"</u>	<u>6'-10"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-11"</u>	<u>4'-6"</u>
<u>2-1000S162-54</u>	<u>10'-0"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>9'-2"</u>	<u>8'-4"</u>	<u>7'-7"</u>	<u>6'-11"</u>	<u>6'-4"</u>
<u>2-1000S162-68</u>	<u>11'-11"</u>	<u>10'-11"</u>	<u>10'-1"</u>	<u>9'-4"</u>	<u>8'-8"</u>	<u>11'-0"</u>	<u>10'-1"</u>	<u>9'-3"</u>	<u>8'-7"</u>	<u>8'-0"</u>
<u>2-1000S162-97</u>	<u>15'-3"</u>	<u>14'-3"</u>	<u>13'-5"</u>	<u>12'-6"</u>	<u>11'-10"</u>	<u>14'-4"</u>	<u>13'-5"</u>	<u>12'-6"</u>	<u>11'-9"</u>	<u>11'-0"</u>
<u>2-1200S162-54</u>	<u>11'-1"</u>	<u>10'-0"</u>	<u>9'-2"</u>	<u>8'-5"</u>	<u>7'-9"</u>	<u>10'-1"</u>	<u>9'-2"</u>	<u>8'-4"</u>	<u>7'-7"</u>	<u>7'-0"</u>
<u>2-1200S162-68</u>	<u>13'-3"</u>	<u>12'-1"</u>	<u>11'-2"</u>	<u>10'-4"</u>	<u>9'-7"</u>	<u>12'-3"</u>	<u>11'-2"</u>	<u>10'-3"</u>	<u>9'-6"</u>	<u>8'-10"</u>
<u>2-1200S162-97</u>	<u>16'-8"</u>	<u>15'-7"</u>	<u>14'-8"</u>	<u>13'-11"</u>	<u>13'-3"</u>	<u>15'-8"</u>	<u>14'-8"</u>	<u>13'-11"</u>	<u>13'-2"</u>	<u>12'-6"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(2)
BOX-BEAM HEADER SPANS
Headers Supporting Roof and Ceiling Only (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	4'-4"	3'-11"	3'-6"	3'-2"	2'-10"	3'-11"	3'-6"	3'-1"	2'-9"	2'-5"
<u>2-350S162-43</u>	5'-6"	5'-0"	4'-7"	4'-2"	3'-10"	5'-0"	4'-7"	4'-2"	3'-10"	3'-6"
<u>2-350S162-54</u>	6'-2"	5'-10"	5'-8"	5'-3"	4'-10"	5'-11"	5'-8"	5'-2"	4'-10"	4'-6"
<u>2-350S162-68</u>	6'-7"	6'-3"	6'-0"	5'-10"	5'-8"	6'-4"	6'-1"	5'-10"	5'-8"	5'-6"
<u>2-350S162-97</u>	7'-3"	6'-11"	6'-8"	6'-5"	6'-3"	7'-0"	6'-8"	6'-5"	6'-3"	6'-0"
<u>2-550S162-33</u>	6'-2"	5'-6"	5'-0"	4'-7"	4'-2"	5'-7"	5'-0"	4'-6"	4'-1"	3'-8"
<u>2-550S162-43</u>	7'-9"	7'-2"	6'-7"	6'-1"	5'-8"	7'-3"	6'-7"	6'-1"	5'-7"	5'-2"
<u>2-550S162-54</u>	8'-9"	8'-5"	8'-1"	7'-9"	7'-3"	8'-6"	8'-1"	7'-8"	7'-2"	6'-8"
<u>2-550S162-68</u>	9'-5"	9'-0"	8'-8"	8'-4"	8'-1"	9'-1"	8'-8"	8'-4"	8'-1"	7'-10"
<u>2-550S162-97</u>	10'-5"	10'-0"	9'-7"	9'-3"	9'-0"	10'-0"	9'-7"	9'-3"	8'-11"	8'-8"
<u>2-800S162-33</u>	4'-5"	3'-11"	3'-5"	3'-1"	2'-10"	3'-11"	3'-6"	3'-1"	2'-9"	2'-6"
<u>2-800S162-43</u>	9'-1"	8'-5"	7'-8"	6'-11"	6'-3"	8'-6"	7'-8"	6'-10"	6'-2"	5'-8"
<u>2-800S162-54</u>	10'-10"	10'-2"	9'-7"	9'-0"	8'-5"	10'-2"	9'-7"	8'-11"	8'-4"	7'-9"
<u>2-800S162-68</u>	12'-8"	11'-10"	11'-2"	10'-7"	10'-1"	11'-11"	11'-2"	10'-7"	10'-0"	9'-6"
<u>2-800S162-97</u>	14'-2"	13'-6"	13'-0"	12'-7"	12'-2"	13'-8"	13'-1"	12'-7"	12'-2"	11'-9"
<u>2-1000S162-43</u>	7'-10"	6'-10"	6'-1"	5'-6"	5'-0"	6'-11"	6'-1"	5'-5"	4'-11"	4'-6"
<u>2-1000S162-54</u>	12'-3"	11'-5"	10'-9"	10'-2"	9'-6"	11'-6"	10'-9"	10'-1"	9'-5"	8'-9"
<u>2-1000S162-68</u>	14'-5"	13'-5"	12'-8"	12'-0"	11'-6"	13'-6"	12'-8"	12'-0"	11'-5"	10'-10"
<u>2-1000S162-97</u>	17'-1"	16'-4"	15'-8"	14'-11"	14'-3"	16'-5"	15'-9"	14'-10"	14'-1"	13'-6"
<u>2-1200S162-54</u>	12'-11"	11'-3"	10'-0"	9'-0"	8'-2"	11'-5"	10'-0"	9'-0"	8'-1"	7'-4"
<u>2-1200S162-68</u>	15'-11"	14'-10"	14'-0"	13'-4"	12'-8"	15'-0"	14'-0"	13'-3"	12'-7"	11'-11"
<u>2-1200S162-97</u>	19'-11"	18'-7"	17'-6"	16'-8"	15'-10"	18'-9"	17'-7"	16'-7"	15'-9"	15'-0"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(3)
BOX-BEAM HEADER SPANS
Headers Supporting Roof and Ceiling Only (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	2'-4"	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	3'-1"	2'-8"	2'-3"	-	-	2'-1"	-	-	-	-
<u>2-350S162-68</u>	3'-7"	3'-2"	2'-8"	2'-3"	-	2'-6"	-	-	-	-
<u>2-350S162-97</u>	5'-1"	4'-7"	4'-3"	3'-11"	3'-7"	4'-1"	3'-8"	3'-4"	3'-0"	2'-8"
<u>2-550S162-33</u>	2'-2"	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	3'-8"	3'-1"	2'-6"	-	-	2'-3"	-	-	-	-
<u>2-550S162-54</u>	4'-7"	4'-0"	3'-6"	3'-0"	2'-6"	3'-3"	2'-8"	2'-1"	-	-
<u>2-550S162-68</u>	5'-6"	4'-11"	4'-5"	3'-11"	3'-6"	4'-3"	3'-8"	3'-1"	2'-7"	2'-1"
<u>2-550S162-97</u>	7'-3"	6'-7"	6'-1"	5'-8"	5'-3"	5'-11"	5'-4"	4'-11"	4'-6"	4'-1"
<u>2-800S162-33</u>	2'-7"	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	4'-6"	3'-9"	3'-1"	2'-5"	-	2'-10"	-	-	-	-
<u>2-800S162-54</u>	5'-10"	5'-1"	4'-6"	3'-11"	3'-4"	4'-3"	3'-6"	2'-9"	-	-
<u>2-800S162-68</u>	7'-2"	6'-6"	5'-10"	5'-3"	4'-8"	5'-7"	4'-10"	4'-2"	3'-7"	2'-11"
<u>2-800S162-97</u>	9'-7"	8'-9"	8'-2"	7'-7"	7'-0"	7'-11"	7'-2"	6'-7"	6'-0"	5'-7"
<u>2-1000S162-43</u>	4'-8"	4'-1"	3'-6"	2'-9"	-	3'-3"	2'-2"	-	-	-
<u>2-1000S162-54</u>	6'-7"	5'-10"	5'-1"	4'-5"	3'-9"	4'-10"	4'-0"	3'-2"	2'-3"	-
<u>2-1000S162-68</u>	8'-3"	7'-5"	6'-8"	6'-0"	5'-5"	6'-5"	5'-7"	4'-9"	4'-1"	3'-5"
<u>2-1000S162-97</u>	11'-4"	10'-5"	9'-8"	9'-0"	8'-5"	9'-5"	8'-6"	7'-10"	7'-2"	6'-7"
<u>2-1200S162-54</u>	7'-3"	6'-5"	5'-7"	4'-10"	4'-2"	5'-4"	4'-4"	3'-5"	2'-5"	-
<u>2-1200S162-68</u>	9'-2"	8'-2"	7'-5"	6'-8"	6'-0"	7'-1"	6'-2"	5'-4"	4'-6"	3'-9"
<u>2-1200S162-97</u>	12'-10"	11'-9"	10'-11"	10'-2"	9'-6"	10'-7"	9'-8"	8'-10"	8'-2"	7'-6"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(4)
BOX-BEAM HEADER SPANS
Headers Supporting Roof and Ceiling Only (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width^c					Building Width^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	<u>2'-7"</u>	<u>2'-2"</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2-350S162-43</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-6"</u>	<u>2'-1"</u>	<u>2'-8"</u>	<u>2'-3"</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2-350S162-54</u>	<u>4'-8"</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-9"</u>	<u>2'-5"</u>	<u>2'-0"</u>
<u>2-350S162-68</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>4'-7"</u>	<u>4'-1"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-10"</u>
<u>2-350S162-97</u>	<u>6'-2"</u>	<u>5'-11"</u>	<u>5'-8"</u>	<u>5'-6"</u>	<u>5'-4"</u>	<u>5'-8"</u>	<u>5'-5"</u>	<u>5'-3"</u>	<u>4'-11"</u>	<u>4'-7"</u>
<u>2-550S162-33</u>	<u>3'-11"</u>	<u>3'-4"</u>	<u>2'-10"</u>	<u>2'-4"</u>	<u>-</u>	<u>2'-7"</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2-550S162-43</u>	<u>5'-4"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-5"</u>	<u>4'-2"</u>	<u>3'-7"</u>	<u>3'-1"</u>	<u>2'-7"</u>	<u>2'-1"</u>
<u>2-550S162-54</u>	<u>6'-11"</u>	<u>6'-3"</u>	<u>5'-9"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>5'-6"</u>	<u>4'-11"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-5"</u>
<u>2-550S162-68</u>	<u>8'-0"</u>	<u>7'-6"</u>	<u>6'-11"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>6'-9"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-7"</u>
<u>2-550S162-97</u>	<u>8'-11"</u>	<u>8'-6"</u>	<u>8'-2"</u>	<u>7'-11"</u>	<u>7'-8"</u>	<u>8'-1"</u>	<u>7'-9"</u>	<u>7'-6"</u>	<u>7'-1"</u>	<u>6'-7"</u>
<u>2-800S162-33</u>	<u>2'-8"</u>	<u>2'-4"</u>	<u>2'-1"</u>	<u>1'-11"</u>	<u>1'-9"</u>	<u>2'-0"</u>	<u>1'-9"</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2-800S162-43</u>	<u>5'-10"</u>	<u>5'-2"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-10"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-6"</u>
<u>2-800S162-54</u>	<u>8'-0"</u>	<u>7'-3"</u>	<u>6'-8"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>6'-5"</u>	<u>5'-9"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-0"</u>
<u>2-800S162-68</u>	<u>9'-9"</u>	<u>9'-0"</u>	<u>8'-3"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>8'-0"</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>6'-0"</u>	<u>5'-6"</u>
<u>2-800S162-97</u>	<u>12'-1"</u>	<u>11'-7"</u>	<u>11'-2"</u>	<u>10'-8"</u>	<u>10'-2"</u>	<u>11'-0"</u>	<u>10'-4"</u>	<u>9'-9"</u>	<u>9'-2"</u>	<u>8'-7"</u>
<u>2-1000S162-43</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-6"</u>	<u>2'-3"</u>
<u>2-1000S162-54</u>	<u>9'-1"</u>	<u>8'-2"</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>6'-0"</u>	<u>7'-0"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-6"</u>
<u>2-1000S162-68</u>	<u>11'-1"</u>	<u>10'-2"</u>	<u>9'-5"</u>	<u>8'-8"</u>	<u>8'-1"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-6"</u>	<u>6'-10"</u>	<u>6'-3"</u>
<u>2-1000S162-97</u>	<u>13'-9"</u>	<u>12'-11"</u>	<u>12'-2"</u>	<u>11'-7"</u>	<u>11'-1"</u>	<u>11'-11"</u>	<u>11'-3"</u>	<u>10'-7"</u>	<u>9'-11"</u>	<u>9'-4"</u>
<u>2-1200S162-54</u>	<u>7'-8"</u>	<u>6'-9"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>5'-10"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-1"</u>	<u>3'-9"</u>
<u>2-1200S162-68</u>	<u>12'-3"</u>	<u>11'-3"</u>	<u>10'-4"</u>	<u>9'-7"</u>	<u>8'-11"</u>	<u>10'-1"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-6"</u>	<u>6'-10"</u>
<u>2-1200S162-97</u>	<u>15'-4"</u>	<u>14'-5"</u>	<u>13'-7"</u>	<u>12'-11"</u>	<u>12'-4"</u>	<u>13'-4"</u>	<u>12'-6"</u>	<u>11'-10"</u>	<u>11'-1"</u>	<u>10'-5"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
Roof/ceiling dead load is 12 psf.
Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(5)
BOX-BEAM HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	<u>2'-2"</u>	-	-	-	-	<u>2'-1"</u>	-	-	-	-
<u>2-350S162-54</u>	<u>2'-11"</u>	<u>2'-5"</u>	-	-	-	<u>2'-10"</u>	<u>2'-4"</u>	-	-	-
<u>2-350S162-68</u>	<u>3'-8"</u>	<u>3'-2"</u>	<u>2'-9"</u>	<u>2'-4"</u>	-	<u>3'-7"</u>	<u>3'-1"</u>	<u>2'-8"</u>	<u>2'-3"</u>	-
<u>2-350S162-97</u>	<u>4'-11"</u>	<u>4'-5"</u>	<u>4'-2"</u>	<u>3'-8"</u>	<u>3'-5"</u>	<u>4'-10"</u>	<u>4'-5"</u>	<u>4'-0"</u>	<u>3'-8"</u>	<u>3'-4"</u>
<u>2-550S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	<u>3'-5"</u>	<u>2'-9"</u>	<u>2'-1"</u>	-	-	<u>3'-3"</u>	<u>2'-7"</u>	-	-	-
<u>2-550S162-54</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-2"</u>	<u>2'-7"</u>	<u>2'-1"</u>	<u>4'-3"</u>	<u>3'-7"</u>	<u>3'-1"</u>	<u>2'-6"</u>	-
<u>2-550S162-68</u>	<u>5'-3"</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>5'-2"</u>	<u>4'-7"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-1"</u>
<u>2-550S162-97</u>	<u>7'-0"</u>	<u>6'-5"</u>	<u>5'-10"</u>	<u>5'-5"</u>	<u>5'-0"</u>	<u>6'-11"</u>	<u>6'-4"</u>	<u>5'-9"</u>	<u>5'-4"</u>	<u>4'-11"</u>
<u>2-800S162-33</u>	<u>2'-1"</u>	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	<u>4'-2"</u>	<u>3'-4"</u>	<u>2'-7"</u>	-	-	<u>4'-0"</u>	<u>3'-3"</u>	<u>2'-5"</u>	-	-
<u>2-800S162-54</u>	<u>5'-6"</u>	<u>4'-9"</u>	<u>4'-1"</u>	<u>3'-5"</u>	<u>2'-9"</u>	<u>5'-5"</u>	<u>4'-8"</u>	<u>3'-11"</u>	<u>3'-3"</u>	<u>2'-8"</u>
<u>2-800S162-68</u>	<u>6'-11"</u>	<u>6'-2"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-3"</u>	<u>6'-9"</u>	<u>6'-0"</u>	<u>5'-4"</u>	<u>4'-8"</u>	<u>4'-1"</u>
<u>2-800S162-97</u>	<u>9'-4"</u>	<u>8'-6"</u>	<u>7'-10"</u>	<u>7'-3"</u>	<u>6'-8"</u>	<u>9'-2"</u>	<u>8'-4"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-7"</u>
<u>2-1000S162-43</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>2'-11"</u>	-	-	<u>4'-3"</u>	<u>3'-8"</u>	<u>2'-9"</u>	-	-
<u>2-1000S162-54</u>	<u>6'-3"</u>	<u>5'-5"</u>	<u>4'-7"</u>	<u>3'-11"</u>	<u>3'-2"</u>	<u>6'-1"</u>	<u>5'-3"</u>	<u>4'-6"</u>	<u>3'-9"</u>	<u>3'-0"</u>
<u>2-1000S162-68</u>	<u>7'-11"</u>	<u>7'-0"</u>	<u>6'-3"</u>	<u>5'-6"</u>	<u>4'-10"</u>	<u>7'-9"</u>	<u>6'-10"</u>	<u>6'-1"</u>	<u>5'-4"</u>	<u>4'-9"</u>
<u>2-1000S162-97</u>	<u>11'-0"</u>	<u>10'-1"</u>	<u>9'-3"</u>	<u>8'-7"</u>	<u>8'-0"</u>	<u>10'-11"</u>	<u>9'-11"</u>	<u>9'-2"</u>	<u>8'-5"</u>	<u>7'-10"</u>
<u>2-1200S162-54</u>	<u>6'-11"</u>	<u>5'-11"</u>	<u>5'-1"</u>	<u>4'-3"</u>	<u>3'-5"</u>	<u>6'-9"</u>	<u>5'-9"</u>	<u>4'-11"</u>	<u>4'-1"</u>	<u>3'-3"</u>
<u>2-1200S162-68</u>	<u>8'-9"</u>	<u>7'-9"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-4"</u>	<u>8'-7"</u>	<u>7'-7"</u>	<u>6'-9"</u>	<u>5'-11"</u>	<u>5'-3"</u>
<u>2-1200S162-97</u>	<u>12'-4"</u>	<u>11'-5"</u>	<u>10'-6"</u>	<u>9'-8"</u>	<u>9'-0"</u>	<u>12'-3"</u>	<u>11'-3"</u>	<u>10'-4"</u>	<u>9'-6"</u>	<u>8'-10"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Second floor dead load is 10 psf.

Roof/ceiling dead load is 12 psf.

Second floor live load is 30 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(6)
BOX-BEAM HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	<u>2'-4"</u>	-	-	-	-	<u>2'-3"</u>	-	-	-	-
<u>2-350S162-43</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-6"</u>	<u>2'-1"</u>	-	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-5"</u>	<u>2'-0"</u>	-
<u>2-350S162-54</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>4'-3"</u>	<u>2'-9"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>2'-8"</u>
<u>2-350S162-68</u>	<u>5'-0"</u>	<u>4'-9"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>4'-11"</u>	<u>4'-8"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-9"</u>
<u>2-350S162-97</u>	<u>5'-6"</u>	<u>5'-3"</u>	<u>5'-1"</u>	<u>4'-11"</u>	<u>2'-9"</u>	<u>5'-5"</u>	<u>5'-2"</u>	<u>5'-0"</u>	<u>4'-10"</u>	<u>4'-8"</u>
<u>2-550S162-33</u>	<u>3'-6"</u>	<u>2'-11"</u>	<u>2'-4"</u>	-	-	<u>3'-5"</u>	<u>2'-10"</u>	<u>2'-3"</u>	-	-
<u>2-550S162-43</u>	<u>5'-0"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-0"</u>	<u>4'-11"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-4"</u>	<u>2'-11"</u>
<u>2-550S162-54</u>	<u>6'-6"</u>	<u>5'-10"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>6'-4"</u>	<u>5'-9"</u>	<u>5'-2"</u>	<u>4'-8"</u>	<u>4'-3"</u>
<u>2-550S162-68</u>	<u>7'-2"</u>	<u>6'-10"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>5'-6"</u>	<u>7'-0"</u>	<u>6'-9"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-4"</u>
<u>2-550S162-97</u>	<u>7'-11"</u>	<u>7'-7"</u>	<u>7'-3"</u>	<u>7'-0"</u>	<u>6'-10"</u>	<u>7'-9"</u>	<u>7'-5"</u>	<u>7'-2"</u>	<u>6'-11"</u>	<u>6'-9"</u>
<u>2-800S162-33</u>	<u>2'-5"</u>	<u>2'-2"</u>	<u>1'-11"</u>	<u>1'-9"</u>	-	<u>2'-5"</u>	<u>2'-1"</u>	<u>1'-10"</u>	<u>1'-8"</u>	-
<u>2-800S162-43</u>	<u>5'-5"</u>	<u>4'-9"</u>	<u>4'-3"</u>	<u>3'-9"</u>	<u>3'-5"</u>	<u>5'-3"</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>3'-5"</u>
<u>2-800S162-54</u>	<u>7'-6"</u>	<u>6'-9"</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-0"</u>	<u>7'-5"</u>	<u>6'-8"</u>	<u>6'-0"</u>	<u>5'-5"</u>	<u>4'-11"</u>
<u>2-800S162-68</u>	<u>9'-3"</u>	<u>8'-5"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-6"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>6'-5"</u>
<u>2-800S162-97</u>	<u>10'-9"</u>	<u>10'-3"</u>	<u>9'-11"</u>	<u>9'-7"</u>	<u>9'-3"</u>	<u>10'-7"</u>	<u>10'-1"</u>	<u>9'-9"</u>	<u>9'-5"</u>	<u>9'-1"</u>
<u>2-1000S162-43</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>2'-9"</u>	<u>4'-3"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-11"</u>	<u>2'-8"</u>
<u>2-1000S162-54</u>	<u>8'-6"</u>	<u>7'-6"</u>	<u>6'-8"</u>	<u>6'-0"</u>	<u>5'-5"</u>	<u>8'-4"</u>	<u>7'-4"</u>	<u>6'-6"</u>	<u>5'-10"</u>	<u>5'-4"</u>
<u>2-1000S162-68</u>	<u>10'-6"</u>	<u>9'-7"</u>	<u>8'-9"</u>	<u>8'-0"</u>	<u>7'-5"</u>	<u>10'-4"</u>	<u>9'-5"</u>	<u>8'-7"</u>	<u>7'-11"</u>	<u>7'-3"</u>
<u>2-1000S162-97</u>	<u>12'-11"</u>	<u>12'-4"</u>	<u>11'-8"</u>	<u>11'-1"</u>	<u>10'-6"</u>	<u>12'-9"</u>	<u>12'-2"</u>	<u>11'-6"</u>	<u>10'-11"</u>	<u>10'-5"</u>
<u>2-1200S162-54</u>	<u>7'-1"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-5"</u>
<u>2-1200S162-68</u>	<u>11'-7"</u>	<u>10'-7"</u>	<u>9'-8"</u>	<u>8'-11"</u>	<u>8'-2"</u>	<u>11'-5"</u>	<u>10'-5"</u>	<u>9'-6"</u>	<u>8'-9"</u>	<u>8'-0"</u>
<u>2-1200S162-97</u>	<u>14'-9"</u>	<u>13'-9"</u>	<u>13'-0"</u>	<u>12'-4"</u>	<u>11'-9"</u>	<u>14'-7"</u>	<u>13'-8"</u>	<u>12'-10"</u>	<u>12'-3"</u>	<u>11'-8"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Second floor dead load is 10 psf.

Roof/ceiling dead load is 12 psf.

Second floor live load is 30 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(7)
BOX-BEAM HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-68</u>	2'-8"	2'-3"	=	=	=	=	=	=	=	=
<u>2-350S162-97</u>	4'-0"	3'-7"	3'-3"	2'-11"	2'-7"	3'-4"	2'-11"	2'-6"	2'-2"	=
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	2'-0"	=	=	=	=	=	=	=	=	=
<u>2-550S162-54</u>	3'-1"	2'-6"	=	=	=	=	=	=	=	=
<u>2-550S162-68</u>	4'-1"	3'-6"	2'-11"	2'-5"	=	3'-1"	2'-5"	=	=	=
<u>2-550S162-97</u>	5'-10"	5'-3"	4'-10"	4'-5"	4'-0"	4'-11"	4'-5"	3'-11"	3'-6"	3'-2"
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	2'-6"	=	=	=	=	=	=	=	=	=
<u>2-800S162-54</u>	4'-0"	3'-3"	2'-6"	=	=	2'-8"	=	=	=	=
<u>2-800S162-68</u>	5'-5"	4'-8"	4'-0"	3'-4"	2'-8"	4'-2"	3'-4"	2'-6"	=	=
<u>2-800S162-97</u>	7'-9"	7'-1"	6'-6"	5'-11"	5'-5"	6'-7"	5'-11"	5'-4"	4'-10"	4'-4"
<u>2-1000S162-43</u>	2'-10"	=	=	=	=	=	=	=	=	=
<u>2-1000S162-54</u>	4'-7"	3'-8"	2'-9"	=	=	3'-0"	=	=	=	=
<u>2-1000S162-68</u>	6'-2"	5'-4"	4'-7"	3'-10"	3'-1"	4'-9"	3'-10"	2'-11"	=	=
<u>2-1000S162-97</u>	9'-3"	8'-5"	7'-8"	7'-1"	6'-6"	7'-10"	7'-1"	6'-5"	5'-9"	5'-2"
<u>2-1200S162-54</u>	5'-0"	4'-0"	3'-1"	=	=	3'-4"	=	=	=	=
<u>2-1200S162-68</u>	6'-10"	5'-11"	5'-0"	4'-3"	3'-5"	5'-3"	4'-3"	3'-2"	=	=
<u>2-1200S162-97</u>	10'-5"	9'-6"	8'-8"	8'-0"	7'-4"	8'-10"	8'-0"	7'-3"	6'-6"	5'-10"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(8)
BOX-BEAM HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	2'-6"	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	3'-5"	3'-0"	2'-7"	2'-2"	-	2'-8"	2'-2"	-	-	-
<u>2-350S162-68</u>	4'-6"	4'-1"	3'-8"	3'-3"	2'-11"	3'-9"	3'-3"	2'-10"	2'-5"	2'-1"
<u>2-350S162-97</u>	5'-1"	4'-10"	4'-8"	4'-6"	4'-5"	4'-10"	4'-7"	4'-4"	4'-0"	3'-8"
<u>2-550S162-33</u>	2'-4"	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	3'-10"	3'-4"	2'-9"	2'-3"	-	2'-11"	2'-3"	-	-	-
<u>2-550S162-54</u>	5'-3"	3'-8"	4'-1"	3'-8"	3'-2"	4'-3"	3'-8"	3'-1"	2'-7"	2'-0"
<u>2-550S162-68</u>	6'-5"	5'-10"	5'-3"	4'-9"	4'-4"	5'-5"	4'-9"	4'-3"	3'-9"	3'-4"
<u>2-550S162-97</u>	7'-4"	7'-0"	6'-9"	6'-6"	6'-4"	6'-11"	6'-8"	6'-3"	5'-10"	5'-5"
<u>2-800S162-33</u>	1'-11"	1'-8"	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	4'-2"	3'-8"	3'-4"	2'-9"	2'-2"	3'-5"	2'-9"	-	-	-
<u>2-800S162-54</u>	6'-1"	5'-5"	4'-10"	4'-3"	3'-9"	4'-11"	4'-3"	3'-8"	3'-0"	2'-5"
<u>2-800S162-68</u>	7'-8"	6'-11"	6'-3"	5'-9"	5'-2"	6'-5"	5'-9"	5'-1"	4'-6"	4'-0"
<u>2-800S162-97</u>	9'-11"	9'-6"	9'-2"	8'-10"	8'-3"	9'-5"	8'-10"	8'-2"	7'-7"	7'-0"
<u>2-1000S162-43</u>	3'-4"	2'-11"	2'-7"	2'-5"	2'-2"	2'-8"	2'-5"	2'-2"	-	-
<u>2-1000S162-54</u>	6'-7"	5'-10"	5'-3"	4'-9"	4'-3"	5'-4"	4'-9"	4'-1"	3'-5"	2'-9"
<u>2-1000S162-68</u>	8'-8"	7'-10"	7'-2"	6'-6"	5'-11"	7'-4"	6'-6"	5'-9"	5'-1"	4'-6"
<u>2-1000S162-97</u>	11'-7"	10'-11"	10'-3"	9'-7"	9'-0"	10'-5"	9'-7"	8'-10"	8'-2"	7'-8"
<u>2-1200S162-54</u>	5'-6"	4'-10"	4'-4"	3'-11"	3'-7"	4'-5"	3'-11"	3'-6"	3'-2"	2'-11"
<u>2-1200S162-68</u>	9'-7"	8'-8"	7'-11"	7'-2"	6'-6"	8'-1"	7'-2"	6'-4"	5'-8"	5'-0"
<u>2-1200S162-97</u>	12'-11"	12'-2"	11'-6"	10'-8"	10'-0"	11'-8"	10'-9"	9'-11"	9'-2"	8'-6"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(9)
BOX-BEAM HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (33 ksi steel) ^a,

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-68</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-97</u>	<u>3'-1"</u>	<u>2'-8"</u>	<u>2'-3"</u>	-	-	<u>3'-1"</u>	<u>2'-7"</u>	<u>2'-2"</u>	-	-
<u>2-550S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-54</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-68</u>	<u>2'-9"</u>	-	-	-	-	<u>2'-8"</u>	-	-	-	-
<u>2-550S162-97</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-9"</u>	<u>4'-7"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-8"</u>
<u>2-800S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-54</u>	<u>2'-1"</u>	-	-	-	-	-	-	-	-	-
<u>2-800S162-68</u>	<u>3'-8"</u>	<u>2'-9"</u>	-	-	-	<u>3'-7"</u>	<u>2'-8"</u>	-	-	-
<u>2-800S162-97</u>	<u>6'-3"</u>	<u>5'-6"</u>	<u>4'-11"</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>6'-2"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-3"</u>	<u>3'-9"</u>
<u>2-1000S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-1000S162-54</u>	<u>2'-5"</u>	-	-	-	-	<u>2'-3"</u>	-	-	-	-
<u>2-1000S162-68</u>	<u>4'-3"</u>	<u>3'-2"</u>	<u>2'-0"</u>	-	-	<u>4'-2"</u>	<u>3'-1"</u>	-	-	-
<u>2-1000S162-97</u>	<u>7'-5"</u>	<u>6'-7"</u>	<u>5'-10"</u>	<u>5'-2"</u>	<u>4'-7"</u>	<u>7'-4"</u>	<u>6'-6"</u>	<u>5'-9"</u>	<u>5'-1"</u>	<u>4'-6"</u>
<u>2-1200S162-54</u>	<u>2'-7"</u>	-	-	-	-	<u>2'-6"</u>	-	-	-	-
<u>2-1200S162-68</u>	<u>4'-8"</u>	<u>3'-6"</u>	<u>2'-2"</u>	-	-	<u>4'-7"</u>	<u>3'-5"</u>	<u>2'-0"</u>	-	-
<u>2-1200S162-97</u>	<u>8'-5"</u>	<u>7'-5"</u>	<u>6'-7"</u>	<u>5'-10"</u>	<u>5'-2"</u>	<u>8'-3"</u>	<u>7'-4"</u>	<u>6'-6"</u>	<u>5'-9"</u>	<u>5'-1"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 40 psf.
 Third floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(10)
BOX-BEAM HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	<u>2'-5"</u>	=	=	=	=	<u>2'-4"</u>	=	=	=	=
<u>2-350S162-68</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-6"</u>	<u>2'-1"</u>	=	<u>3'-5"</u>	<u>2'-11"</u>	<u>2'-6"</u>	<u>2'-0"</u>	=
<u>2-350S162-97</u>	<u>4'-9"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>4'-8"</u>	<u>4'-5"</u>	<u>4'-0"</u>	<u>3'-8"</u>	<u>3'-4"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>2'-7"</u>	=	=	=	=	<u>2'-6"</u>	=	=	=	=
<u>2-550S162-54</u>	<u>3'-11"</u>	<u>3'-3"</u>	<u>2'-8"</u>	<u>2'-0"</u>	=	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-7"</u>	=	=
<u>2-550S162-68</u>	<u>5'-1"</u>	<u>4'-5"</u>	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>5'-0"</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-3"</u>	<u>2'-9"</u>
<u>2-550S162-97</u>	<u>6'-10"</u>	<u>6'-5"</u>	<u>5'-10"</u>	<u>5'-5"</u>	<u>4'-11"</u>	<u>6'-9"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-4"</u>	<u>4'-11"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>3'-1"</u>	<u>2'-3"</u>	=	=	=	<u>3'-0"</u>	<u>2'-2"</u>	=	=	=
<u>2-800S162-54</u>	<u>4'-7"</u>	<u>3'-10"</u>	<u>3'-1"</u>	<u>2'-5"</u>	=	<u>4'-6"</u>	<u>3'-9"</u>	<u>3'-0"</u>	<u>2'-4"</u>	=
<u>2-800S162-68</u>	<u>6'-0"</u>	<u>5'-3"</u>	<u>4'-7"</u>	<u>3'-11"</u>	<u>3'-4"</u>	<u>6'-0"</u>	<u>5'-2"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-3"</u>
<u>2-800S162-97</u>	<u>9'-2"</u>	<u>8'-4"</u>	<u>7'-8"</u>	<u>7'-0"</u>	<u>6'-6"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>6'-5"</u>
<u>2-1000S162-43</u>	<u>2'-6"</u>	<u>2'-2"</u>	=	=	=	<u>2'-6"</u>	<u>2'-2"</u>	=	=	=
<u>2-1000S162-54</u>	<u>5'-0"</u>	<u>4'-4"</u>	<u>3'-6"</u>	<u>2'-9"</u>	=	<u>4'-11"</u>	<u>4'-3"</u>	<u>3'-5"</u>	<u>2'-7"</u>	=
<u>2-1000S162-68</u>	<u>6'-10"</u>	<u>6'-0"</u>	<u>5'-3"</u>	<u>4'-6"</u>	<u>3'-10"</u>	<u>6'-9"</u>	<u>5'-11"</u>	<u>5'-2"</u>	<u>4'-5"</u>	<u>3'-9"</u>
<u>2-1000S162-97</u>	<u>10'-0"</u>	<u>9'-1"</u>	<u>8'-3"</u>	<u>7'-8"</u>	<u>7'-0"</u>	<u>9'-10"</u>	<u>9'-0"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>7'-0"</u>
<u>2-1200S162-54</u>	<u>4'-2"</u>	<u>3'-7"</u>	<u>3'-3"</u>	<u>2'-11"</u>	=	<u>4'-1"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-10"</u>	=
<u>2-1200S162-68</u>	<u>7'-7"</u>	<u>6'-7"</u>	<u>5'-9"</u>	<u>5'-0"</u>	<u>4'-2"</u>	<u>7'-6"</u>	<u>6'-6"</u>	<u>5'-8"</u>	<u>4'-10"</u>	<u>4'-1"</u>
<u>2-1200S162-97</u>	<u>11'-2"</u>	<u>10'-1"</u>	<u>9'-3"</u>	<u>8'-6"</u>	<u>7'-10"</u>	<u>11'-0"</u>	<u>10'-0"</u>	<u>9'-2"</u>	<u>8'-5"</u>	<u>7'-9"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Second floor dead load is 10 psf.

Roof/ceiling dead load is 12 psf.

Second floor live load is 40 psf.

Third floor live load is 30 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(11)
BOX-BEAM HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-68</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-97</u>	<u>2'-11"</u>	<u>2'-5"</u>	<u>2'-0"</u>	=	=	<u>2'-7"</u>	<u>2'-2"</u>	=	=	=
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-68</u>	<u>2'-5"</u>	=	=	=	=	=	=	=	=	=
<u>2-550S162-97</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-4"</u>	<u>2'-10"</u>	<u>2'-5"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-7"</u>	<u>2'-2"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-68</u>	<u>3'-3"</u>	<u>2'-3"</u>	=	=	=	<u>2'-8"</u>	=	=	=	=
<u>2-800S162-97</u>	<u>5'-11"</u>	<u>5'-2"</u>	<u>4'-6"</u>	<u>4'-0"</u>	<u>3'-5"</u>	<u>5'-6"</u>	<u>4'-10"</u>	<u>4'-3"</u>	<u>3'-8"</u>	<u>3'-2"</u>
<u>2-1000S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-1000S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-1000S162-68</u>	<u>3'-9"</u>	<u>2'-7"</u>	=	=	=	<u>3'-1"</u>	=	=	=	=
<u>2-1000S162-97</u>	<u>7'-0"</u>	<u>6'-2"</u>	<u>5'-5"</u>	<u>4'-9"</u>	<u>4'-2"</u>	<u>6'-6"</u>	<u>5'-9"</u>	<u>5'-1"</u>	<u>4'-5"</u>	<u>3'-10"</u>
<u>2-1200S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-1200S162-68</u>	<u>4'-2"</u>	<u>2'-10"</u>	=	=	=	<u>3'-5"</u>	<u>2'-0"</u>	=	=	=
<u>2-1200S162-97</u>	<u>7'-11"</u>	<u>7'-0"</u>	<u>6'-2"</u>	<u>5'-5"</u>	<u>4'-8"</u>	<u>7'-4"</u>	<u>6'-6"</u>	<u>5'-9"</u>	<u>5'-0"</u>	<u>4'-4"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
Second floor dead load is 10 psf.
Roof/ceiling dead load is 12 psf.
Second floor live load is 40 psf.
Third floor live load is 30 psf.
Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(12)
BOX-BEAM HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	<u>2'-2"</u>	=	=	=	=	=	=	=	=	=
<u>2-350S162-68</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>2'-3"</u>	=	=	<u>2'-11"</u>	<u>2'-5"</u>	=	=	=
<u>2-350S162-97</u>	<u>4'-6"</u>	<u>4'-3"</u>	<u>3'-10"</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>4'-3"</u>	<u>4'-0"</u>	<u>3'-7"</u>	<u>3'-3"</u>	<u>3'-0"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>2'-3"</u>	=	=	=	=	=	=	=	=	=
<u>2-550S162-54</u>	<u>3'-7"</u>	<u>2'-11"</u>	<u>2'-3"</u>	=	=	<u>3'-3"</u>	<u>2'-7"</u>	=	=	=
<u>2-550S162-68</u>	<u>4'-9"</u>	<u>2'-1"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-5"</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-2"</u>	<u>2'-8"</u>	<u>2'-1"</u>
<u>2-550S162-97</u>	<u>6'-5"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>5'-1"</u>	<u>4'-8"</u>	<u>6'-3"</u>	<u>5'-10"</u>	<u>5'-4"</u>	<u>4'-10"</u>	<u>4'-5"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>2'-8"</u>	=	=	=	=	<u>2'-2"</u>	=	=	=	=
<u>2-800S162-54</u>	<u>4'-3"</u>	<u>3'-5"</u>	<u>2'-8"</u>	=	=	<u>3'-9"</u>	<u>3'-0"</u>	<u>2'-3"</u>	=	=
<u>2-800S162-68</u>	<u>5'-8"</u>	<u>4'-11"</u>	<u>4'-2"</u>	<u>3'-7"</u>	<u>2'-11"</u>	<u>5'-3"</u>	<u>4'-6"</u>	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-7"</u>
<u>2-800S162-97</u>	<u>8'-9"</u>	<u>8'-0"</u>	<u>7'-3"</u>	<u>6'-8"</u>	<u>6'-2"</u>	<u>8'-4"</u>	<u>7'-7"</u>	<u>6'-11"</u>	<u>6'-4"</u>	<u>5'-10"</u>
<u>2-1000S162-43</u>	<u>2'-4"</u>	<u>2'-0"</u>	=	=	=	<u>2'-2"</u>	=	=	=	=
<u>2-1000S162-54</u>	<u>4'-8"</u>	<u>3'-11"</u>	<u>3'-1"</u>	<u>2'-2"</u>	=	<u>4'-3"</u>	<u>3'-5"</u>	<u>2'-7"</u>	=	=
<u>2-1000S162-68</u>	<u>6'-5"</u>	<u>5'-7"</u>	<u>4'-9"</u>	<u>4'-1"</u>	<u>3'-4"</u>	<u>5'-11"</u>	<u>5'-1"</u>	<u>4'-5"</u>	<u>3'-8"</u>	<u>2'-11"</u>
<u>2-1000S162-97</u>	<u>9'-6"</u>	<u>8'-8"</u>	<u>7'-11"</u>	<u>7'-3"</u>	<u>6'-8"</u>	<u>9'-0"</u>	<u>8'-3"</u>	<u>7'-6"</u>	<u>6'-11"</u>	<u>6'-4"</u>
<u>2-1200S162-54</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-0"</u>	<u>2'-4"</u>	=	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-10"</u>	=	=
<u>2-1200S162-68</u>	<u>7'-1"</u>	<u>6'-2"</u>	<u>5'-3"</u>	<u>4'-6"</u>	<u>3'-8"</u>	<u>6'-6"</u>	<u>5'-8"</u>	<u>4'-10"</u>	<u>4'-0"</u>	<u>3'-3"</u>
<u>2-1200S162-97</u>	<u>10'-8"</u>	<u>9'-8"</u>	<u>8'-10"</u>	<u>8'-1"</u>	<u>7'-5"</u>	<u>10'-1"</u>	<u>9'-2"</u>	<u>8'-5"</u>	<u>7'-9"</u>	<u>7'-1"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 40 psf.
 Third floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(13)
BACK-TO-BACK HEADER SPANS
Headers Supporting Roof and Ceiling Only (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	<u>2'-11"</u>	<u>2'-4"</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>2'-5"</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2-350S162-43</u>	<u>4'-8"</u>	<u>3'-10"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-0"</u>	<u>2'-8"</u>	<u>2'-4"</u>
<u>2-350S162-54</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>4'-0"</u>	<u>3'-8"</u>	<u>3'-4"</u>
<u>2-350S162-68</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-10"</u>	<u>4'-6"</u>	<u>5'-8"</u>	<u>5'-3"</u>	<u>4'-10"</u>	<u>4'-6"</u>	<u>4'-2"</u>
<u>2-350S162-97</u>	<u>7'-3"</u>	<u>6'-10"</u>	<u>6'-5"</u>	<u>6'-0"</u>	<u>5'-8"</u>	<u>6'-11"</u>	<u>6'-5"</u>	<u>6'-0"</u>	<u>5'-8"</u>	<u>5'-4"</u>
<u>2-550S162-33</u>	<u>4'-5"</u>	<u>3'-9"</u>	<u>3'-1"</u>	<u>2'-6"</u>	<u>-</u>	<u>3'-9"</u>	<u>3'-2"</u>	<u>2'-6"</u>	<u>-</u>	<u>-</u>
<u>2-550S162-43</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-0"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>5'-7"</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-8"</u>
<u>2-550S162-54</u>	<u>7'-5"</u>	<u>6'-9"</u>	<u>6'-3"</u>	<u>5'-9"</u>	<u>5'-4"</u>	<u>6'-10"</u>	<u>6'-3"</u>	<u>5'-9"</u>	<u>5'-4"</u>	<u>4'-11"</u>
<u>2-550S162-68</u>	<u>6'-7"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-10"</u>	<u>6'-5"</u>	<u>8'-0"</u>	<u>7'-4"</u>	<u>6'-10"</u>	<u>6'-5"</u>	<u>6'-0"</u>
<u>2-550S162-97</u>	<u>10'-5"</u>	<u>9'-8"</u>	<u>9'-0"</u>	<u>8'-6"</u>	<u>8'-0"</u>	<u>9'-9"</u>	<u>9'-0"</u>	<u>8'-6"</u>	<u>8'-0"</u>	<u>7'-7"</u>
<u>2-800S162-33</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-4"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-3"</u>	<u>-</u>
<u>2-800S162-43</u>	<u>7'-7"</u>	<u>6'-10"</u>	<u>6'-2"</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>6'-11"</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-1"</u>	<u>4'-7"</u>
<u>2-800S162-54</u>	<u>9'-3"</u>	<u>8'-7"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-10"</u>	<u>8'-8"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-3"</u>
<u>2-800S162-68</u>	<u>10'-7"</u>	<u>9'-10"</u>	<u>9'-4"</u>	<u>8'-10"</u>	<u>8'-5"</u>	<u>9'-11"</u>	<u>9'-4"</u>	<u>8'-10"</u>	<u>8'-4"</u>	<u>7'-11"</u>
<u>2-800S162-97</u>	<u>13'-9"</u>	<u>12'-9"</u>	<u>12'-0"</u>	<u>11'-3"</u>	<u>10'-8"</u>	<u>12'-10"</u>	<u>12'-0"</u>	<u>11'-3"</u>	<u>10'-7"</u>	<u>10'-0"</u>
<u>2-1000S162-43</u>	<u>7'-10"</u>	<u>6'-10"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-11"</u>	<u>4'-6"</u>
<u>2-1000S162-54</u>	<u>10'-5"</u>	<u>9'-9"</u>	<u>9'-0"</u>	<u>8'-4"</u>	<u>7'-9"</u>	<u>9'-10"</u>	<u>9'-0"</u>	<u>8'-4"</u>	<u>7'-9"</u>	<u>7'-2"</u>
<u>2-1000S162-68</u>	<u>12'-1"</u>	<u>11'-3"</u>	<u>10'-8"</u>	<u>10'-1"</u>	<u>9'-7"</u>	<u>11'-4"</u>	<u>10'-8"</u>	<u>10'-1"</u>	<u>9'-7"</u>	<u>9'-1"</u>
<u>2-1000S162-97</u>	<u>15'-3"</u>	<u>14'-3"</u>	<u>13'-5"</u>	<u>12'-9"</u>	<u>12'-2"</u>	<u>14'-4"</u>	<u>13'-5"</u>	<u>12'-8"</u>	<u>12'-1"</u>	<u>11'-6"</u>
<u>2-1200S162-54</u>	<u>11'-6"</u>	<u>10'-9"</u>	<u>10'-0"</u>	<u>9'-0"</u>	<u>8'-2"</u>	<u>10'-10"</u>	<u>10'-0"</u>	<u>9'-0"</u>	<u>8'-1"</u>	<u>7'-4"</u>
<u>2-1200S162-68</u>	<u>13'-4"</u>	<u>12'-6"</u>	<u>11'-9"</u>	<u>11'-2"</u>	<u>10'-8"</u>	<u>12'-7"</u>	<u>11'-10"</u>	<u>11'-2"</u>	<u>10'-7"</u>	<u>10'-1"</u>
<u>2-1200S162-97</u>	<u>16'-8"</u>	<u>15'-7"</u>	<u>14'-8"</u>	<u>13'-11"</u>	<u>13'-3"</u>	<u>15'-8"</u>	<u>14'-8"</u>	<u>13'-11"</u>	<u>13'-2"</u>	<u>12'-7"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(14)
BACK-TO-BACK HEADER SPANS
Headers Supporting Roof and Ceiling Only (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
2-350S162-33	4'-2"	3'-8"	3'-3"	2'-10"	2'-6"	3'-8"	3'-3"	2'-10"	2'-5"	2'-1"
2-350S162-43	5'-5"	5'-0"	4'-6"	4'-2"	3'-10"	5'-0"	4'-7"	4'-2"	3'-10"	3'-6"
2-350S162-54	6'-2"	5'-10"	5'-8"	5'-4"	5'-0"	5'-11"	5'-8"	5'-4"	5'-0"	4'-8"
2-350S162-68	6'-7"	6'-3"	6'-0"	5'-10"	5'-8"	6'-4"	6'-1"	5'-10"	5'-8"	5'-6"
2-350S162-97	7'-3"	6'-11"	6'-8"	6'-5"	6'-3"	7'-0"	6'-8"	6'-5"	6'-3"	6'-0"
2-550S162-33	5'-10"	5'-3"	4'-8"	4'-3"	3'-9"	5'-3"	4'-9"	4'-2"	3'-9"	3'-3"
2-550S162-43	7'-9"	7'-2"	6'-7"	6'-1"	5'-8"	7'-3"	6'-7"	6'-1"	5'-8"	5'-3"
2-550S162-54	8'-9"	8'-5"	8'-1"	7'-9"	7'-5"	8'-6"	8'-1"	7'-9"	7'-5"	6'-11"
2-550S162-68	9'-5"	9'-0"	8'-8"	8'-4"	8'-1"	9'-1"	8'-8"	8'-4"	8'-1"	7'-10"
2-550S162-97	10'-5"	10'-0"	9'-7"	9'-3"	9'-0"	10'-0"	9'-7"	9'-3"	8'-11"	8'-8"
2-800S162-33	4'-5"	3'-11"	3'-5"	3'-1"	2'-10"	3'-11"	3'-6"	3'-1"	2'-9"	2'-6"
2-800S162-43	9'-1"	8'-5"	7'-8"	6'-11"	6'-3"	8'-6"	7'-8"	6'-10"	6'-2"	5'-8"
2-800S162-54	10'-10"	10'-2"	9'-7"	9'-1"	8'-8"	10'-2"	9'-7"	9'-0"	8'-7"	8'-1"
2-800S162-68	12'-8"	11'-10"	11'-2"	10'-7"	10'-1"	11'-11"	11'-2"	10'-7"	10'-0"	9'-7"
2-800S162-97	14'-2"	13'-6"	13'-0"	12'-7"	12'-2"	13'-8"	13'-1"	12'-7"	12'-2"	11'-9"
2-1000S162-43	7'-10"	6'-10"	6'-1"	5'-6"	5'-0"	6'-11"	6'-1"	5'-5"	4'-11"	4'-6"
2-1000S162-54	12'-3"	11'-5"	10'-9"	10'-3"	9'-9"	11'-6"	10'-9"	10'-2"	9'-8"	8'-11"
2-1000S162-68	14'-5"	13'-5"	12'-8"	12'-0"	11'-6"	13'-6"	12'-8"	12'-0"	11'-5"	10'-11"
2-1000S162-97	17'-1"	16'-4"	15'-8"	14'-11"	14'-3"	16'-5"	15'-9"	14'-10"	14'-1"	13'-6"
2-1200S162-54	12'-11"	11'-3"	10'-0"	9'-0"	8'-2"	11'-5"	10'-0"	9'-0"	8'-1"	7'-4"
2-1200S162-68	15'-11"	14'-10"	14'-0"	13'-4"	12'-8"	15'-0"	14'-0"	13'-3"	12'-7"	12'-0"
2-1200S162-97	19'-11"	18'-7"	17'-6"	16'-8"	15'-10"	18'-9"	17'-7"	16'-7"	15'-9"	15'-0"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(15)
BACK-TO-BACK HEADER SPANS
Headers Supporting Roof and Ceiling Only (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	<u>2'-6"</u>	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-8"</u>	<u>2'-4"</u>	<u>2'-0"</u>	<u>2'-7"</u>	<u>2'-1"</u>	=	=	=
<u>2-350S162-68</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>3'-7"</u>	<u>3'-3"</u>	<u>2'-11"</u>	<u>3'-5"</u>	<u>3'-0"</u>	<u>2'-8"</u>	<u>2'-4"</u>	<u>2'-1"</u>
<u>2-350S162-97</u>	<u>5'-5"</u>	<u>5'-0"</u>	<u>4'-8"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>4'-6"</u>	<u>4'-2"</u>	<u>3'-10"</u>	<u>3'-6"</u>	<u>3'-3"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>2'-2"</u>	=	<u>2'-6"</u>	=	=	=	=
<u>2-550S162-54</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>2'-11"</u>	<u>2'-6"</u>	<u>2'-0"</u>
<u>2-550S162-68</u>	<u>6'-2"</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>4'-5"</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>3'-4"</u>
<u>2-550S162-97</u>	<u>7'-9"</u>	<u>7'-2"</u>	<u>6'-8"</u>	<u>6'-3"</u>	<u>5'-11"</u>	<u>6'-6"</u>	<u>6'-0"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-10"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>4'-10"</u>	<u>4'-1"</u>	<u>3'-6"</u>	<u>2'-11"</u>	<u>2'-3"</u>	<u>3'-3"</u>	<u>2'-5"</u>	=	=	=
<u>2-800S162-54</u>	<u>6'-6"</u>	<u>5'-10"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-4"</u>	<u>2'-10"</u>
<u>2-800S162-68</u>	<u>8'-1"</u>	<u>7'-5"</u>	<u>6'-10"</u>	<u>6'-4"</u>	<u>5'-11"</u>	<u>6'-8"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-7"</u>
<u>2-800S162-97</u>	<u>10'-3"</u>	<u>9'-7"</u>	<u>8'-11"</u>	<u>8'-5"</u>	<u>7'-11"</u>	<u>8'-8"</u>	<u>8'-0"</u>	<u>7'-6"</u>	<u>7'-0"</u>	<u>6'-7"</u>
<u>2-1000S162-43</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>2'-8"</u>	<u>3'-6"</u>	<u>2'-10"</u>	=	=	=
<u>2-1000S162-54</u>	<u>7'-5"</u>	<u>6'-8"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>5'-10"</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-4"</u>
<u>2-1000S162-68</u>	<u>9'-4"</u>	<u>8'-7"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-10"</u>	<u>7'-8"</u>	<u>7'-0"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-4"</u>
<u>2-1000S162-97</u>	<u>11'-9"</u>	<u>11'-0"</u>	<u>10'-5"</u>	<u>9'-11"</u>	<u>9'-5"</u>	<u>10'-3"</u>	<u>9'-7"</u>	<u>8'-11"</u>	<u>8'-4"</u>	<u>7'-10"</u>
<u>2-1200S162-54</u>	<u>7'-8"</u>	<u>6'-9"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>5'-10"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-1"</u>	<u>3'-9"</u>
<u>2-1200S162-68</u>	<u>10'-4"</u>	<u>9'-6"</u>	<u>8'-10"</u>	<u>8'-2"</u>	<u>7'-7"</u>	<u>8'-7"</u>	<u>7'-9"</u>	<u>7'-1"</u>	<u>6'-6"</u>	<u>6'-0"</u>
<u>2-1200S162-97</u>	<u>12'-10"</u>	<u>12'-1"</u>	<u>11'-5"</u>	<u>10'-10"</u>	<u>10'-4"</u>	<u>11'-2"</u>	<u>10'-6"</u>	<u>9'-11"</u>	<u>9'-5"</u>	<u>9'-0"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Roof/ceiling dead load is 12 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(16)
BACK-TO-BACK HEADER SPANS
Headers Supporting Roof and Ceiling Only (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	<u>2'-3"</u>	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-6"</u>	<u>2'-2"</u>	<u>2'-8"</u>	<u>2'-3"</u>	-	-	-
<u>2-350S162-54</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>4'-0"</u>	<u>3'-8"</u>	<u>3'-8"</u>	<u>3'-10"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-5"</u>
<u>2-350S162-68</u>	<u>5'-7"</u>	<u>5'-4"</u>	<u>5'-2"</u>	<u>4'-11"</u>	<u>4'-7"</u>	<u>5'-1"</u>	<u>4'-8"</u>	<u>4'-3"</u>	<u>3'-11"</u>	<u>3'-8"</u>
<u>2-350S162-97</u>	<u>6'-2"</u>	<u>5'-11"</u>	<u>5'-8"</u>	<u>5'-6"</u>	<u>5'-4"</u>	<u>5'-8"</u>	<u>5'-5"</u>	<u>5'-3"</u>	<u>5'-0"</u>	<u>4'-11"</u>
<u>2-550S162-33</u>	<u>3'-6"</u>	<u>2'-10"</u>	<u>2'-3"</u>	-	-	<u>2'-0"</u>	-	-	-	-
<u>2-550S162-43</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>4'-2"</u>	<u>3'-8"</u>	<u>3'-2"</u>	<u>2'-8"</u>	<u>2'-3"</u>
<u>2-550S162-54</u>	<u>7'-2"</u>	<u>6'-6"</u>	<u>6'-0"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>5'-10"</u>	<u>5'-3"</u>	<u>4'-10"</u>	<u>4'-5"</u>	<u>4'-0"</u>
<u>2-550S162-68</u>	<u>8'-0"</u>	<u>7'-8"</u>	<u>7'-3"</u>	<u>6'-11"</u>	<u>6'-6"</u>	<u>7'-2"</u>	<u>6'-7"</u>	<u>6'-1"</u>	<u>5'-8"</u>	<u>5'-4"</u>
<u>2-550S162-97</u>	<u>8'-11"</u>	<u>8'-6"</u>	<u>8'-2"</u>	<u>7'-11"</u>	<u>7'-8"</u>	<u>8'-1"</u>	<u>7'-9"</u>	<u>7'-6"</u>	<u>7'-2"</u>	<u>6'-11"</u>
<u>2-800S162-33</u>	<u>2'-8"</u>	<u>2'-4"</u>	<u>2'-1"</u>	<u>1'-11"</u>	-	<u>2'-0"</u>	-	-	-	-
<u>2-800S162-43</u>	<u>5'-10"</u>	<u>5'-2"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-10"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>2'-9"</u>
<u>2-800S162-54</u>	<u>8'-4"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-7"</u>	<u>6'-1"</u>	<u>6'-10"</u>	<u>6'-3"</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>4'-9"</u>
<u>2-800S162-68</u>	<u>9'-9"</u>	<u>9'-2"</u>	<u>8'-8"</u>	<u>8'-3"</u>	<u>7'-10"</u>	<u>8'-6"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-10"</u>	<u>6'-5"</u>
<u>2-800S162-97</u>	<u>12'-1"</u>	<u>11'-7"</u>	<u>11'-2"</u>	<u>10'-8"</u>	<u>10'-2"</u>	<u>11'-0"</u>	<u>10'-4"</u>	<u>9'-9"</u>	<u>9'-3"</u>	<u>8'-10"</u>
<u>2-1000S162-43</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>2'-8"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>3'-6"</u>	<u>10'-1"</u>	<u>2'-9"</u>	<u>2'-6"</u>	<u>2'-3"</u>
<u>2-1000S162-54</u>	<u>9'-3"</u>	<u>8'-2"</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>6'-0"</u>	<u>7'-0"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-6"</u>
<u>2-1000S162-68</u>	<u>11'-1"</u>	<u>10'-5"</u>	<u>9'-10"</u>	<u>9'-4"</u>	<u>8'-11"</u>	<u>9'-8"</u>	<u>9'-1"</u>	<u>8'-5"</u>	<u>7'-10"</u>	<u>7'-4"</u>
<u>2-1000S162-97</u>	<u>13'-9"</u>	<u>12'-11"</u>	<u>12'-2"</u>	<u>11'-7"</u>	<u>11'-1"</u>	<u>11'-11"</u>	<u>11'-3"</u>	<u>10'-7"</u>	<u>10'-1"</u>	<u>9'-7"</u>
<u>2-1200S162-54</u>	<u>7'-8"</u>	<u>6'-9"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>5'-10"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-1"</u>	<u>3'-9"</u>
<u>2-1200S162-68</u>	<u>12'-3"</u>	<u>11'-6"</u>	<u>10'-11"</u>	<u>10'-4"</u>	<u>9'-11"</u>	<u>10'-8"</u>	<u>10'-0"</u>	<u>9'-2"</u>	<u>8'-4"</u>	<u>7'-7"</u>
<u>2-1200S162-97</u>	<u>15'-4"</u>	<u>14'-5"</u>	<u>13'-7"</u>	<u>12'-11"</u>	<u>12'-4"</u>	<u>13'-4"</u>	<u>12'-6"</u>	<u>11'-10"</u>	<u>11'-3"</u>	<u>10'-9"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Roof/ceiling dead load is 12 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(17)
BACK-TO-BACK HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	<u>2'-2"</u>	=	=	=	=	<u>2'-1"</u>	=	=	=	=
<u>2-350S162-54</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>2'-5"</u>	<u>2'-0"</u>	=	<u>3'-2"</u>	<u>2'-9"</u>	<u>2'-4"</u>	=	=
<u>2-350S162-68</u>	<u>4'-4"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-11"</u>	<u>2'-8"</u>	<u>4'-0"</u>	<u>3'-7"</u>	<u>3'-2"</u>	<u>2'-11"</u>	<u>2'-7"</u>
<u>2-350S162-97</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>5'-1"</u>	<u>4'-8"</u>	<u>4'-4"</u>	<u>4'-0"</u>	<u>3'-9"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>3'-6"</u>	<u>2'-10"</u>	<u>2'-3"</u>	=	=	<u>3'-5"</u>	<u>2'-9"</u>	<u>2'-2"</u>	=	=
<u>2-550S162-54</u>	<u>4'-9"</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>3'-3"</u>	<u>2'-10"</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-2"</u>	<u>2'-9"</u>
<u>2-550S162-68</u>	<u>5'-10"</u>	<u>5'-3"</u>	<u>4'-10"</u>	<u>4'-5"</u>	<u>4'-1"</u>	<u>5'-9"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>4'-0"</u>
<u>2-550S162-97</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-4"</u>	<u>5'-11"</u>	<u>5'-6"</u>	<u>7'-3"</u>	<u>6'-9"</u>	<u>6'-3"</u>	<u>5'-10"</u>	<u>5'-5"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>4'-4"</u>	<u>3'-8"</u>	<u>2'-11"</u>	<u>2'-3"</u>	=	<u>4'-3"</u>	<u>3'-6"</u>	<u>2'-10"</u>	<u>2'-1"</u>	=
<u>2-800S162-54</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>6'-0"</u>	<u>5'-4"</u>	<u>4'-9"</u>	<u>4'-3"</u>	<u>3'-9"</u>
<u>2-800S162-68</u>	<u>7'-8"</u>	<u>7'-0"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>5'-5"</u>	<u>7'-7"</u>	<u>6'-11"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-4"</u>
<u>2-800S162-97</u>	<u>9'-10"</u>	<u>9'-1"</u>	<u>8'-5"</u>	<u>7'-11"</u>	<u>7'-5"</u>	<u>9'-8"</u>	<u>8'-11"</u>	<u>8'-4"</u>	<u>7'-10"</u>	<u>7'-4"</u>
<u>2-1000S162-43</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>2'-8"</u>	=	<u>4'-3"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-6"</u>	=
<u>2-1000S162-54</u>	<u>6'-11"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-5"</u>	<u>6'-10"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-4"</u>
<u>2-1000S162-68</u>	<u>8'-10"</u>	<u>8'-1"</u>	<u>7'-5"</u>	<u>6'-10"</u>	<u>6'-4"</u>	<u>8'-8"</u>	<u>7'-11"</u>	<u>7'-3"</u>	<u>6'-8"</u>	<u>6'-2"</u>
<u>2-1000S162-97</u>	<u>11'-3"</u>	<u>10'-7"</u>	<u>9'-11"</u>	<u>9'-5"</u>	<u>8'-10"</u>	<u>11'-2"</u>	<u>10'-5"</u>	<u>9'-10"</u>	<u>9'-3"</u>	<u>8'-9"</u>
<u>2-1200S162-54</u>	<u>7'-1"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-5"</u>
<u>2-1200S162-68</u>	<u>9'-10"</u>	<u>9'-0"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>9'-8"</u>	<u>8'-10"</u>	<u>8'-1"</u>	<u>7'-6"</u>	<u>6'-11"</u>
<u>2-1200S162-97</u>	<u>12'-4"</u>	<u>11'-7"</u>	<u>10'-11"</u>	<u>10'-4"</u>	<u>9'-10"</u>	<u>12'-3"</u>	<u>11'-5"</u>	<u>10'-9"</u>	<u>10'-3"</u>	<u>9'-9"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(18)
BACK-TO-BACK HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-6"</u>	<u>2'-2"</u>	-	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-5"</u>	<u>2'-1"</u>	-
<u>2-350S162-54</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>4'-5"</u>	<u>4'-0"</u>	<u>3'-7"</u>	<u>3'-3"</u>	<u>2'-11"</u>
<u>2-350S162-68</u>	<u>5'-0"</u>	<u>4'-9"</u>	<u>4'-7"</u>	<u>4'-5"</u>	<u>4'-3"</u>	<u>4'-11"</u>	<u>4'-8"</u>	<u>4'-6"</u>	<u>4'-4"</u>	<u>4'-2"</u>
<u>2-350S162-97</u>	<u>5'-6"</u>	<u>5'-3"</u>	<u>5'-1"</u>	<u>4'-11"</u>	<u>4'-9"</u>	<u>5'-5"</u>	<u>5'-2"</u>	<u>5'-0"</u>	<u>4'-10"</u>	<u>4'-8"</u>
<u>2-550S162-33</u>	<u>3'-1"</u>	<u>2'-5"</u>	-	-	-	<u>3'-0"</u>	<u>2'-3"</u>	-	-	-
<u>2-550S162-43</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>4'-11"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>3'-0"</u>
<u>2-550S162-54</u>	<u>6'-8"</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>6'-6"</u>	<u>6'-0"</u>	<u>5'-6"</u>	<u>5'-1"</u>	<u>4'-8"</u>
<u>2-550S162-68</u>	<u>7'-2"</u>	<u>6'-10"</u>	<u>6'-7"</u>	<u>6'-4"</u>	<u>6'-1"</u>	<u>7'-0"</u>	<u>6'-9"</u>	<u>6'-6"</u>	<u>6'-3"</u>	<u>6'-0"</u>
<u>2-550S162-97</u>	<u>7'-11"</u>	<u>7'-7"</u>	<u>7'-3"</u>	<u>7'-0"</u>	<u>6'-10"</u>	<u>7'-9"</u>	<u>7'-5"</u>	<u>7'-2"</u>	<u>6'-11"</u>	<u>6'-9"</u>
<u>2-800S162-33</u>	<u>2'-5"</u>	<u>2'-2"</u>	<u>1'-11"</u>	-	-	<u>2'-5"</u>	<u>2'-1"</u>	<u>1'-10"</u>	-	-
<u>2-800S162-43</u>	<u>5'-5"</u>	<u>4'-9"</u>	<u>4'-3"</u>	<u>3'-9"</u>	<u>3'-5"</u>	<u>5'-3"</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>3'-5"</u>
<u>2-800S162-54</u>	<u>7'-11"</u>	<u>7'-2"</u>	<u>6'-7"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>7'-9"</u>	<u>7'-1"</u>	<u>6'-6"</u>	<u>6'-0"</u>	<u>5'-6"</u>
<u>2-800S162-68</u>	<u>9'-5"</u>	<u>8'-9"</u>	<u>8'-3"</u>	<u>7'-9"</u>	<u>7'-4"</u>	<u>9'-3"</u>	<u>8'-8"</u>	<u>8'-2"</u>	<u>7'-8"</u>	<u>7'-3"</u>
<u>2-800S162-97</u>	<u>10'-9"</u>	<u>10'-3"</u>	<u>9'-11"</u>	<u>9'-7"</u>	<u>9'-3"</u>	<u>10'-7"</u>	<u>10'-1"</u>	<u>9'-9"</u>	<u>9'-5"</u>	<u>9'-1"</u>
<u>2-1000S162-43</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>2'-9"</u>	<u>4'-3"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-11"</u>	<u>2'-8"</u>
<u>2-1000S162-54</u>	<u>8'-6"</u>	<u>7'-5"</u>	<u>6'-8"</u>	<u>6'-0"</u>	<u>5'-5"</u>	<u>8'-4"</u>	<u>7'-4"</u>	<u>6'-6"</u>	<u>5'-10"</u>	<u>5'-4"</u>
<u>2-1000S162-68</u>	<u>10'-8"</u>	<u>10'-0"</u>	<u>9'-5"</u>	<u>8'-11"</u>	<u>8'-4"</u>	<u>10'-7"</u>	<u>9'-10"</u>	<u>9'-4"</u>	<u>8'-9"</u>	<u>8'-3"</u>
<u>2-1000S162-97</u>	<u>12'-11"</u>	<u>12'-4"</u>	<u>11'-8"</u>	<u>11'-1"</u>	<u>10'-6"</u>	<u>12'-9"</u>	<u>12'-2"</u>	<u>11'-6"</u>	<u>10'-11"</u>	<u>10'-5"</u>
<u>2-1200S162-54</u>	<u>7'-1"</u>	<u>6'-2"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>6'-11"</u>	<u>6'-1"</u>	<u>5'-5"</u>	<u>4'-10"</u>	<u>4'-5"</u>
<u>2-1200S162-68</u>	<u>11'-9"</u>	<u>11'-0"</u>	<u>10'-5"</u>	<u>9'-10"</u>	<u>9'-1"</u>	<u>11'-8"</u>	<u>10'-11"</u>	<u>10'-3"</u>	<u>9'-9"</u>	<u>8'-11"</u>
<u>2-1200S162-97</u>	<u>14'-9"</u>	<u>13'-9"</u>	<u>13'-0"</u>	<u>12'-4"</u>	<u>11'-9"</u>	<u>14'-7"</u>	<u>13'-8"</u>	<u>12'-10"</u>	<u>12'-3"</u>	<u>11'-8"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(19)
BACK-TO-BACK HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
2-350S162-33	-	-	-	-	-	-	-	-	-	-
2-350S162-43	-	-	-	-	-	-	-	-	-	-
2-350S162-54	2'-4"	-	-	-	-	-	-	-	-	-
2-350S162-68	3'-3"	2'-10"	2'-6"	2'-2"	-	2'-7"	2'-2"	-	-	-
2-350S162-97	4'-4"	4'-0"	3'-8"	3'-4"	3'-1"	3'-9"	3'-4"	3'-1"	2'-9"	2'-6"
2-550S162-33	-	-	-	-	-	-	-	-	-	-
2-550S162-43	2'-2"	-	-	-	-	-	-	-	-	-
2-550S162-54	3'-8"	3'-2"	2'-8"	2'-3"	-	2'-10"	2'-3"	-	-	-
2-550S162-68	4'-9"	4'-4"	3'-11"	3'-6"	3'-2"	4'-0"	3'-6"	3'-1"	2'-9"	2'-4"
2-550S162-97	6'-3"	5'-9"	5'-4"	5'-0"	4'-8"	5'-6"	5'-0"	4'-7"	4'-3"	3'-11"
2-800S162-33	-	-	-	-	-	-	-	-	-	-
2-800S162-43	2'-11"	2'-0"	-	-	-	-	-	-	-	-
2-800S162-54	4'-9"	4'-2"	3'-7"	3'-1"	2'-7"	3'-9"	3'-1"	2'-5"	-	-
2-800S162-68	6'-4"	5'-9"	5'-3"	4'-9"	4'-4"	5'-4"	4'-9"	4'-3"	3'-10"	3'-4"
2-800S162-97	8'-5"	7'-9"	7'-3"	6'-9"	6'-4"	7'-4"	6'-9"	6'-3"	5'-10"	5'-5"
2-1000S162-43	3'-4"	2'-5"	-	-	-	-	-	-	-	-
2-1000S162-54	5'-6"	4'-10"	4'-2"	3'-7"	3'-0"	4'-4"	3'-7"	2'-11"	2'-2"	-
2-1000S162-68	7'-4"	6'-8"	6'-1"	5'-7"	5'-1"	6'-3"	5'-7"	5'-0"	4'-5"	4'-0"
2-1000S162-97	9'-11"	8'-3"	8'-7"	8'-1"	7'-7"	8'-9"	8'-1"	7'-6"	7'-0"	6'-6"
2-1200S162-54	5'-6"	4'-10"	4'-4"	3'-11"	3'-5"	4'-5"	3'-11"	3'-3"	2'-6"	-
2-1200S162-68	8'-2"	7'-5"	6'-9"	6'-3"	5'-8"	6'-11"	6'-3"	5'-7"	5'-0"	4'-6"
2-1200S162-97	10'-10"	10'-2"	9'-8"	9'-2"	8'-7"	9'-9"	9'-2"	8'-6"	7'-11"	7'-5"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(20)
BACK-TO-BACK HEADER SPANS
Headers Supporting One Floor, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	<u>2'-6"</u>	<u>2'-0"</u>	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-11"</u>	<u>2'-7"</u>	<u>2'-3"</u>	<u>3'-0"</u>	<u>2'-7"</u>	<u>2'-2"</u>	=	=
<u>2-350S162-68</u>	<u>4'-7"</u>	<u>4'-5"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>3'-6"</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-10"</u>
<u>2-350S162-97</u>	<u>5'-1"</u>	<u>4'-10"</u>	<u>4'-8"</u>	<u>4'-6"</u>	<u>4'-5"</u>	<u>4'-10"</u>	<u>4'-7"</u>	<u>4'-5"</u>	<u>4'-3"</u>	<u>4'-1"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>2'-11"</u>	<u>2'-5"</u>	=	<u>3'-0"</u>	<u>2'-5"</u>	=	=	=
<u>2-550S162-54</u>	<u>5'-7"</u>	<u>5'-0"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-9"</u>	<u>4'-8"</u>	<u>4'-2"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>2'-11"</u>
<u>2-550S162-68</u>	<u>6'-7"</u>	<u>6'-4"</u>	<u>5'-11"</u>	<u>5'-6"</u>	<u>5'-1"</u>	<u>6'-0"</u>	<u>5'-6"</u>	<u>5'-0"</u>	<u>4'-7"</u>	<u>4'-3"</u>
<u>2-550S162-97</u>	<u>7'-4"</u>	<u>7'-0"</u>	<u>6'-9"</u>	<u>6'-6"</u>	<u>6'-4"</u>	<u>6'-11"</u>	<u>6'-8"</u>	<u>6'-5"</u>	<u>6'-2"</u>	<u>6'-0"</u>
<u>2-800S162-33</u>	<u>1'-11"</u>	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>4'-2"</u>	<u>3'-8"</u>	<u>3'-4"</u>	<u>3'-0"</u>	<u>2'-6"</u>	<u>3'-5"</u>	<u>3'-0"</u>	<u>2'-4"</u>	=	=
<u>2-800S162-54</u>	<u>6'-7"</u>	<u>5'-11"</u>	<u>5'-5"</u>	<u>4'-11"</u>	<u>4'-6"</u>	<u>5'-6"</u>	<u>4'-11"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-6"</u>
<u>2-800S162-68</u>	<u>8'-3"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-8"</u>	<u>6'-2"</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>5'-2"</u>
<u>2-800S162-97</u>	<u>9'-11"</u>	<u>9'-6"</u>	<u>9'-2"</u>	<u>8'-10"</u>	<u>8'-7"</u>	<u>9'-5"</u>	<u>9'-0"</u>	<u>8'-7"</u>	<u>8'-2"</u>	<u>7'-9"</u>
<u>2-1000S162-43</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-7"</u>	<u>2'-5"</u>	<u>2'-2"</u>	<u>2'-8"</u>	<u>2'-5"</u>	<u>2'-2"</u>	<u>1'-11"</u>	=
<u>2-1000S162-54</u>	<u>6'-7"</u>	<u>5'-10"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>5'-4"</u>	<u>4'-9"</u>	<u>4'-3"</u>	<u>3'-10"</u>	<u>3'-6"</u>
<u>2-1000S162-68</u>	<u>9'-4"</u>	<u>8'-9"</u>	<u>8'-1"</u>	<u>7'-7"</u>	<u>7'-1"</u>	<u>8'-3"</u>	<u>7'-7"</u>	<u>6'-11"</u>	<u>6'-5"</u>	<u>5'-11"</u>
<u>2-1000S162-97</u>	<u>11'-7"</u>	<u>10'-11"</u>	<u>10'-4"</u>	<u>9'-10"</u>	<u>9'-5"</u>	<u>10'-5"</u>	<u>9'-10"</u>	<u>9'-3"</u>	<u>8'-10"</u>	<u>8'-5"</u>
<u>2-1200S162-54</u>	<u>5'-6"</u>	<u>4'-10"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>3'-7"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>2'-11"</u>
<u>2-1200S162-68</u>	<u>10'-4"</u>	<u>9'-8"</u>	<u>8'-8"</u>	<u>7'-11"</u>	<u>7'-2"</u>	<u>8'-11"</u>	<u>7'-11"</u>	<u>7'-1"</u>	<u>6'-5"</u>	<u>5'-10"</u>
<u>2-1200S162-97</u>	<u>12'-11"</u>	<u>12'-2"</u>	<u>11'-6"</u>	<u>11'-0"</u>	<u>10'-6"</u>	<u>11'-8"</u>	<u>11'-0"</u>	<u>10'-5"</u>	<u>9'-10"</u>	<u>9'-5"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
 Second floor dead load is 10 psf.
 Roof/ceiling dead load is 12 psf.
 Second floor live load is 30 psf.
 Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(21)
BACK-TO-BACK HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-68</u>	<u>2'-5"</u>	-	-	-	-	<u>2'-4"</u>	-	-	-	-
<u>2-350S162-97</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>2'-10"</u>	<u>2'-6"</u>	<u>2'-3"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-6"</u>	<u>2'-3"</u>
<u>2-550S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-54</u>	<u>2'-6"</u>	-	-	-	-	<u>2'-5"</u>	-	-	-	-
<u>2-550S162-68</u>	<u>3'-9"</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>2'-4"</u>	-	<u>3'-8"</u>	<u>3'-2"</u>	<u>2'-9"</u>	<u>2'-4"</u>	-
<u>2-550S162-97</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>3'-8"</u>	<u>5'-2"</u>	<u>4'-8"</u>	<u>4'-3"</u>	<u>3'-11"</u>	<u>3'-7"</u>
<u>2-800S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-54</u>	<u>3'-5"</u>	<u>2'-8"</u>	-	-	-	<u>3'-4"</u>	<u>2'-7"</u>	-	-	-
<u>2-800S162-68</u>	<u>5'-1"</u>	<u>4'-5"</u>	<u>3'-11"</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>5'-0"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-4"</u>	<u>2'-10"</u>
<u>2-800S162-97</u>	<u>7'-0"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>5'-5"</u>	<u>5'-0"</u>	<u>7'-0"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-5"</u>	<u>5'-0"</u>
<u>2-1000S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-1000S162-54</u>	<u>3'-11"</u>	<u>3'-1"</u>	<u>2'-3"</u>	-	-	<u>3'-10"</u>	<u>3'-0"</u>	<u>2'-2"</u>	-	-
<u>2-1000S162-68</u>	<u>5'-10"</u>	<u>5'-2"</u>	<u>4'-6"</u>	<u>4'-0"</u>	<u>3'-5"</u>	<u>5'-9"</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-4"</u>
<u>2-1000S162-97</u>	<u>8'-5"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-6"</u>	<u>6'-1"</u>	<u>8'-4"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>6'-6"</u>	<u>6'-0"</u>
<u>2-1200S162-54</u>	<u>4'-2"</u>	<u>3'-6"</u>	<u>2'-7"</u>	-	-	<u>4'-1"</u>	<u>3'-5"</u>	<u>2'-6"</u>	-	-
<u>2-1200S162-68</u>	<u>6'-6"</u>	<u>5'-9"</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>6'-6"</u>	<u>5'-8"</u>	<u>5'-0"</u>	<u>4'-5"</u>	<u>3'-10"</u>
<u>2-1200S162-97</u>	<u>9'-5"</u>	<u>8'-8"</u>	<u>8'-0"</u>	<u>7'-5"</u>	<u>6'-11"</u>	<u>9'-5"</u>	<u>8'-7"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-10"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Second floor dead load is 10 psf.

Roof/ceiling dead load is 12 psf.

Second floor live load is 40 psf.

Third floor live load is 30 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(22)
BACK-TO-BACK HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (20 psf)					GROUND SNOW LOAD (30 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-43</u>	=	=	=	=	=	=	=	=	=	=
<u>2-350S162-54</u>	<u>2'-9"</u>	<u>2'-3"</u>	=	=	=	<u>2'-8"</u>	<u>2'-3"</u>	=	=	=
<u>2-350S162-68</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>2'-10"</u>	<u>2'-6"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-6"</u>
<u>2-350S162-97</u>	<u>4'-9"</u>	<u>4'-6"</u>	<u>4'-4"</u>	<u>4'-1"</u>	<u>3'-10"</u>	<u>4'-8"</u>	<u>4'-6"</u>	<u>4'-4"</u>	<u>4'-1"</u>	<u>3'-9"</u>
<u>2-550S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-550S162-43</u>	<u>2'-9"</u>	<u>2'-0"</u>	=	=	=	<u>2'-8"</u>	=	=	=	=
<u>2-550S162-54</u>	<u>4'-5"</u>	<u>3'-10"</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-5"</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-5"</u>
<u>2-550S162-68</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>4'-8"</u>	<u>4'-3"</u>	<u>3'-11"</u>	<u>5'-8"</u>	<u>5'-1"</u>	<u>4'-8"</u>	<u>4'-3"</u>	<u>3'-10"</u>
<u>2-550S162-97</u>	<u>6'-10"</u>	<u>6'-6"</u>	<u>6'-3"</u>	<u>6'-0"</u>	<u>5'-7"</u>	<u>6'-9"</u>	<u>6'-5"</u>	<u>6'-3"</u>	<u>5'-11"</u>	<u>5'-6"</u>
<u>2-800S162-33</u>	=	=	=	=	=	=	=	=	=	=
<u>2-800S162-43</u>	<u>3'-2"</u>	<u>2'-7"</u>	=	=	=	<u>3'-1"</u>	<u>2'-6"</u>	=	=	=
<u>2-800S162-54</u>	<u>5'-2"</u>	<u>4'-7"</u>	<u>4'-0"</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>5'-2"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>2'-11"</u>
<u>2-800S162-68</u>	<u>6'-11"</u>	<u>6'-3"</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>6'-10"</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-8"</u>
<u>2-800S162-97</u>	<u>9'-3"</u>	<u>8'-8"</u>	<u>8'-3"</u>	<u>7'-9"</u>	<u>7'-4"</u>	<u>9'-2"</u>	<u>8'-8"</u>	<u>8'-2"</u>	<u>7'-9"</u>	<u>7'-4"</u>
<u>2-1000S162-43</u>	<u>2'-6"</u>	<u>2'-2"</u>	<u>2'-0"</u>	=	=	<u>2'-6"</u>	<u>2'-2"</u>	<u>1'-11"</u>	=	=
<u>2-1000S162-54</u>	<u>5'-0"</u>	<u>4'-4"</u>	<u>3'-11"</u>	<u>3'-6"</u>	<u>3'-2"</u>	<u>4'-11"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-6"</u>	<u>3'-2"</u>
<u>2-1000S162-68</u>	<u>7'-10"</u>	<u>7'-2"</u>	<u>6'-6"</u>	<u>5'-11"</u>	<u>5'-6"</u>	<u>7'-9"</u>	<u>7'-1"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>5'-5"</u>
<u>2-1000S162-97</u>	<u>10'-1"</u>	<u>9'-5"</u>	<u>8'-11"</u>	<u>8'-6"</u>	<u>8'-0"</u>	<u>10'-0"</u>	<u>9'-5"</u>	<u>8'-10"</u>	<u>8'-5"</u>	<u>7'-11"</u>
<u>2-1200S162-54</u>	=	=	=	=	=	=	=	=	=	=
<u>2-1200S162-68</u>	<u>7'-4"</u>	<u>6'-8"</u>	<u>6'-1"</u>	<u>5'-6"</u>	<u>5'-1"</u>	<u>7'-3"</u>	<u>6'-7"</u>	<u>6'-0"</u>	<u>5'-6"</u>	<u>5'-0"</u>
<u>2-1200S162-97</u>	<u>9'-5"</u>	<u>8'-8"</u>	<u>8'-1"</u>	<u>7'-6"</u>	<u>7'-1"</u>	<u>9'-4"</u>	<u>8'-8"</u>	<u>8'-0"</u>	<u>7'-6"</u>	<u>7'-0"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
Second floor dead load is 10 psf.
Roof/ceiling dead load is 12 psf.
Second floor live load is 40 psf.
Third floor live load is 30 psf.
Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(23)
BACK-TO-BACK HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (33 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-68</u>	<u>2'-2"</u>	-	-	-	-	-	-	-	-	-
<u>2-350S162-97</u>	<u>3'-3"</u>	<u>3'-0"</u>	<u>2'-8"</u>	<u>2'-4"</u>	<u>2'-1"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-6"</u>	<u>2'-2"</u>	-
<u>2-550S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-54</u>	<u>2'-2"</u>	-	-	-	-	-	-	-	-	-
<u>2-550S162-68</u>	<u>3'-6"</u>	<u>3'-0"</u>	<u>2'-6"</u>	<u>2'-1"</u>	-	<u>3'-2"</u>	<u>2'-9"</u>	<u>2'-3"</u>	-	-
<u>2-550S162-97</u>	<u>5'-0"</u>	<u>4'-6"</u>	<u>4'-1"</u>	<u>3'-9"</u>	<u>3'-5"</u>	<u>4'-8"</u>	<u>4'-3"</u>	<u>3'-11"</u>	<u>3'-7"</u>	<u>3'-3"</u>
<u>2-800S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-54</u>	<u>3'-0"</u>	<u>2'-3"</u>	-	-	-	<u>2'-7"</u>	-	-	-	-
<u>2-800S162-68</u>	<u>4'-9"</u>	<u>4'-2"</u>	<u>3'-7"</u>	<u>3'-1"</u>	<u>2'-7"</u>	<u>4'-5"</u>	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-9"</u>	<u>2'-3"</u>
<u>2-800S162-97</u>	<u>6'-9"</u>	<u>6'-1"</u>	<u>5'-7"</u>	<u>5'-2"</u>	<u>4'-9"</u>	<u>6'-4"</u>	<u>5'-10"</u>	<u>5'-4"</u>	<u>4'-11"</u>	<u>4'-7"</u>
<u>2-1000S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-1000S162-54</u>	<u>3'-6"</u>	<u>2'-8"</u>	-	-	-	<u>3'-1"</u>	<u>2'-2"</u>	-	-	-
<u>2-1000S162-68</u>	<u>5'-6"</u>	<u>4'-10"</u>	<u>4'-2"</u>	<u>3'-7"</u>	<u>3'-1"</u>	<u>5'-1"</u>	<u>4'-6"</u>	<u>3'-10"</u>	<u>3'-4"</u>	<u>2'-9"</u>
<u>2-1000S162-97</u>	<u>8'-0"</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-3"</u>	<u>5'-9"</u>	<u>7'-7"</u>	<u>7'-0"</u>	<u>6'-5"</u>	<u>5'-11"</u>	<u>5'-6"</u>
<u>2-1200S162-54</u>	<u>3'-11"</u>	<u>3'-0"</u>	<u>2'-0"</u>	-	-	<u>3'-5"</u>	<u>2'-6"</u>	-	-	-
<u>2-1200S162-68</u>	<u>6'-2"</u>	<u>5'-5"</u>	<u>4'-9"</u>	<u>4'-1"</u>	<u>3'-6"</u>	<u>5'-9"</u>	<u>5'-0"</u>	<u>4'-4"</u>	<u>3'-9"</u>	<u>3'-2"</u>
<u>2-1200S162-97</u>	<u>9'-1"</u>	<u>8'-4"</u>	<u>7'-8"</u>	<u>7'-1"</u>	<u>6'-7"</u>	<u>8'-8"</u>	<u>7'-11"</u>	<u>7'-4"</u>	<u>6'-9"</u>	<u>6'-3"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

a. Deflection criteria: L/360 for live loads, L/240 for total loads.

b. Design load assumptions:

Second floor dead load is 10 psf.

Roof/ceiling dead load is 12 psf.

Second floor live load is 40 psf.

Third floor live load is 30 psf.

Attic live load is 10 psf

c. Building width is in the direction of horizontal framing members supported by the header.

TABLE R603.6(24)
BACK-TO-BACK HEADER SPANS
Headers Supporting Two Floors, Roof and Ceiling (50 ksi steel) ^{a,b}

MEMBER DESIGNATION	GROUND SNOW LOAD (50 psf)					GROUND SNOW LOAD (70 psf)				
	Building Width ^c					Building Width ^c				
	24'	28'	32'	36'	40'	24'	28'	32'	36'	40'
<u>2-350S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-43</u>	-	-	-	-	-	-	-	-	-	-
<u>2-350S162-54</u>	<u>2'-6"</u>	<u>2'-1"</u>	-	-	-	<u>2'-3"</u>	-	-	-	-
<u>2-350S162-68</u>	<u>3'-9"</u>	<u>3'-4"</u>	<u>2'-11"</u>	<u>2'-7"</u>	<u>2'-4"</u>	<u>3'-6"</u>	<u>3'-1"</u>	<u>2'-9"</u>	<u>2'-5"</u>	<u>2'-2"</u>
<u>2-350S162-97</u>	<u>4'-6"</u>	<u>4'-4"</u>	<u>4'-2"</u>	<u>3'-11"</u>	<u>3'-8"</u>	<u>4'-4"</u>	<u>4'-2"</u>	<u>4'-0"</u>	<u>3'-9"</u>	<u>3'-6"</u>
<u>2-550S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-550S162-43</u>	<u>2'-5"</u>	-	-	-	-	-	-	-	-	-
<u>2-550S162-54</u>	<u>4'-1"</u>	<u>3'-7"</u>	<u>3'-1"</u>	<u>2'-7"</u>	<u>2'-2"</u>	<u>3'-10"</u>	<u>3'-3"</u>	<u>2'-10"</u>	<u>2'-4"</u>	-
<u>2-550S162-68</u>	<u>5'-5"</u>	<u>4'-11"</u>	<u>4'-5"</u>	<u>4'-0"</u>	<u>3'-8"</u>	<u>5'-1"</u>	<u>4'-7"</u>	<u>4'-2"</u>	<u>3'-10"</u>	<u>3'-5"</u>
<u>2-550S162-97</u>	<u>6'-5"</u>	<u>6'-2"</u>	<u>5'-11"</u>	<u>5'-9"</u>	<u>5'-4"</u>	<u>6'-3"</u>	<u>6'-0"</u>	<u>5'-9"</u>	<u>5'-6"</u>	<u>5'-2"</u>
<u>2-800S162-33</u>	-	-	-	-	-	-	-	-	-	-
<u>2-800S162-43</u>	<u>2'-11"</u>	<u>2'-2"</u>	-	-	-	<u>2'-6"</u>	-	-	-	-
<u>2-800S162-54</u>	<u>4'-11"</u>	<u>4'-3"</u>	<u>3'-8"</u>	<u>3'-2"</u>	<u>2'-8"</u>	<u>4'-6"</u>	<u>3'-11"</u>	<u>3'-5"</u>	<u>2'-11"</u>	<u>2'-4"</u>
<u>2-800S162-68</u>	<u>6'-7"</u>	<u>5'-11"</u>	<u>5'-4"</u>	<u>4'-11"</u>	<u>4'-6"</u>	<u>6'-2"</u>	<u>5'-7"</u>	<u>5'-1"</u>	<u>4'-8"</u>	<u>4'-3"</u>
<u>2-800S162-97</u>	<u>8'-9"</u>	<u>8'-5"</u>	<u>7'-11"</u>	<u>7'-6"</u>	<u>7'-0"</u>	<u>8'-5"</u>	<u>8'-1"</u>	<u>7'-9"</u>	<u>7'-3"</u>	<u>6'-10"</u>
<u>2-1000S162-43</u>	<u>2'-4"</u>	<u>2'-1"</u>	-	-	-	<u>2'-2"</u>	<u>1'-11"</u>	-	-	-
<u>2-1000S162-54</u>	<u>4'-8"</u>	<u>4'-1"</u>	<u>3'-8"</u>	<u>3'-3"</u>	<u>3'-0"</u>	<u>4'-4"</u>	<u>3'-10"</u>	<u>3'-5"</u>	<u>3'-1"</u>	<u>2'-9"</u>
<u>2-1000S162-68</u>	<u>7'-6"</u>	<u>6'-9"</u>	<u>6'-2"</u>	<u>5'-8"</u>	<u>5'-2"</u>	<u>7'-1"</u>	<u>6'-5"</u>	<u>5'-10"</u>	<u>5'-4"</u>	<u>4'-11"</u>
<u>2-1000S162-97</u>	<u>9'-9"</u>	<u>9'-2"</u>	<u>8'-7"</u>	<u>8'-2"</u>	<u>7'-8"</u>	<u>9'-5"</u>	<u>8'-10"</u>	<u>8'-5"</u>	<u>7'-11"</u>	<u>7'-5"</u>
<u>2-1200S162-54</u>	-	-	-	-	-	-	-	-	-	-
<u>2-1200S162-68</u>	<u>7'-0"</u>	<u>6'-4"</u>	<u>5'-9"</u>	<u>5'-3"</u>	<u>4'-9"</u>	<u>6'-7"</u>	<u>6'-0"</u>	<u>5'-5"</u>	<u>5'-0"</u>	<u>4'-6"</u>
<u>2-1200S162-97</u>	<u>9'-1"</u>	<u>8'-4"</u>	<u>7'-9"</u>	<u>7'-3"</u>	<u>6'-9"</u>	<u>8'-8"</u>	<u>8'-0"</u>	<u>7'-6"</u>	<u>7'-0"</u>	<u>6'-7"</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

- a. Deflection criteria: L/360 for live loads, L/240 for total loads.
- b. Design load assumptions:
Second floor dead load is 10 psf.
Roof/ceiling dead load is 12 psf.
Second floor live load is 40 psf.
Third floor live load is 30 psf.
Attic live load is 10 psf
- c. Building width is in the direction of horizontal framing members supported by the header.

24. Revise as follows:

TABLE 603.6(9)-R603.7(1)
TOTAL NUMBER OF JACK AND KING STUDS REQUIRED AT EACH END OF AN OPENING

(Portions of table not shown remain unchanged)

TABLE R603.6(10)-R603.7(2)
HEADER TO KING STUD CONNECTION REQUIREMENTS ^{a,b,c,d}

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound = 4.448 N.

- a. (No change)

- b. ~~For headers located on the first floor of a two-story building, the total number of screws may be reduced by two screws, but the total number of screws shall be no less than four. For headers located on the first floor of a two-story building or the first or second floor of a three story building, the total number of screws is permitted to be reduced by 2 screws, but the total number of screws shall be no less than 4.~~
- c. and d. (No change)

(Portions of table and footnotes not shown remain unchanged)

25. Delete and substitute as follows:

TABLE R603.6(11)
HEAD AND TRACK SPAN (33 ksi Steel)

TABLE R603.8
HEAD AND SILL TRACK SPAN
 $F_y = 33$ ksi

BASIC WIND SPEED (mph)		ALLOWABLE HEAD AND SILL TRACK SPAN ^{a,b,c} (ft-in.)					
EXPOSURE		TRACK DESIGNATION					
A/B	C	350T125-33	350T125-43	350T125-54	550T125-33	550T125-43	550T125-54
85		5'-0"	5'-7"	6'-2"	5'-10"	6'-8"	7'-0"
90		4'-10"	5'-5"	6'-0"	5'-8"	6'-3"	6'-10"
100	85	4'-6"	5'-1"	5'-8"	5'-4"	5'-11"	6'-5"
110	90	4'-2"	4'-9"	5'-4"	5'-1"	5'-7"	6'-1"
120	100	3'-11"	4'-6"	5'-0"	4'-10"	5'-4"	5'-10"
130	110	3'-8"	4'-2"	4'-9"	4'-1"	5'-1"	5'-7"
140	120	3'-7"	4'-1"	4'-7"	3'-6"	4'-11"	5'-5"
150	130	3'-5"	3'-10"	4'-4"	2'-11"	4'-7"	5'-2"
	140	3'-1"	3'-6"	4'-1"	2'-3"	4'-0"	4'-10"
	150	2'-9"	3'-4"	3'-10"	2'-0"	3'-7"	4'-7"

For SI: 1 inch = 25.4 mm, 1 foot = 0.305 m

- a. Deflection Limit: L/240
- b. Head and sill track spans are based on components and cladding wind speeds and 48 inch (1.22 m) tributary span.
- c. For openings less than 4 feet (1.22 m) in height that have both a head track and a sill track, the above spans are permitted to be multiplied by 1.75. For openings less than or equal to 6 feet (1.83 m) in height that have both a head track and a sill track, the above spans are permitted to be multiplied by a factor of 1.5.

TABLE R603.7
MINIMUM PERCENTAGE OF FULL HEIGHT STRUCTURAL SHEATHING ON EXTERIOR WALLS^{a, b, c, d, e}

TABLE R603.9(1)
MINIMUM PERCENTAGE OF FULL HEIGHT
STRUCTURAL SHEATHING ON EXTERIOR WALLS ^{a,b}

<u>WALL SUPPORTING</u>	<u>ROOF SLOPE</u>	<u>BASIC WIND SPEED (MPH) AND EXPOSURE</u>					
		<u>85 A/B</u>	<u>90 A/B</u>	<u>100 A/B</u>	<u><110 A/B</u>	<u>100 C</u>	<u><110 C</u>
				<u>85 C</u>	<u>90 C</u>		
<u>Roof & Ceiling Only</u> <u>(One Story or Top</u> <u>Floor of Two or Three Story Building)</u>	<u>3:12</u>	<u>8</u>	<u>9</u>	<u>9</u>	<u>12</u>	<u>16</u>	<u>20</u>
	<u>6:12</u>	<u>12</u>	<u>13</u>	<u>15</u>	<u>20</u>	<u>26</u>	<u>35</u>
	<u>9:12</u>	<u>21</u>	<u>23</u>	<u>25</u>	<u>30</u>	<u>50</u>	<u>58</u>
	<u>12:12</u>	<u>30</u>	<u>33</u>	<u>35</u>	<u>40</u>	<u>66</u>	<u>75</u>
<u>One Story, Roof & Ceiling</u> <u>(First Floor of a Two-Story Building or Second</u> <u>Floor of a Three Story Building)</u>	<u>3:12</u>	<u>24</u>	<u>27</u>	<u>30</u>	<u>35</u>	<u>50</u>	<u>66</u>
	<u>6:12</u>	<u>25</u>	<u>28</u>	<u>30</u>	<u>40</u>	<u>58</u>	<u>74</u>
	<u>9:12</u>	<u>35</u>	<u>38</u>	<u>40</u>	<u>55</u>	<u>74</u>	<u>91</u>
	<u>12:12</u>	<u>40</u>	<u>45</u>	<u>50</u>	<u>65</u>	<u>100</u>	<u>115</u>
<u>Two Story, Roof & Ceiling</u> <u>(First Floor of a Three Story Building)</u>	<u>3:12</u>	<u>40</u>	<u>45</u>	<u>51</u>	<u>58</u>	<u>84</u>	<u>112</u>
	<u>6:12</u>	<u>38</u>	<u>43</u>	<u>45</u>	<u>60</u>	<u>90</u>	<u>113</u>
	<u>9:12</u>	<u>49</u>	<u>53</u>	<u>55</u>	<u>80</u>	<u>98</u>	<u>124</u>
	<u>12:12</u>	<u>50</u>	<u>57</u>	<u>65</u>	<u>90</u>	<u>134</u>	<u>155</u>

For SI: 1 mile per hour = 0.447 m/s.

- a. Linear interpolation shall be permitted.
- b. or hip roofed homes the minimum percentage of full height sheathing, based upon wind, is permitted to be multiplied by a factor of 0.95 for roof slopes not exceeding 7:12 and a factor of 0.9 for roof slopes greater than 7:12.

26. Add new table as follows:

TABLE R603.9(2)
EXTERIOR WALL LENGTH ADJUSTMENT FACTORS

<u>PLAN ASPECT RATIO</u>	<u>LENGTH ADJUSTMENT FACTORS</u>	
	<u>SHORT WALL</u>	<u>Long Wall</u>
<u>1:1</u>	<u>1.0</u>	<u>1.0</u>
<u>1.5:1</u>	<u>1.5</u>	<u>0.67</u>
<u>2:1</u>	<u>2.0</u>	<u>0.50</u>
<u>3:1</u>	<u>3.0</u>	<u>0.33</u>
<u>4:1</u>	<u>4.0</u>	<u>0.25</u>

27. Add new figure as follows:

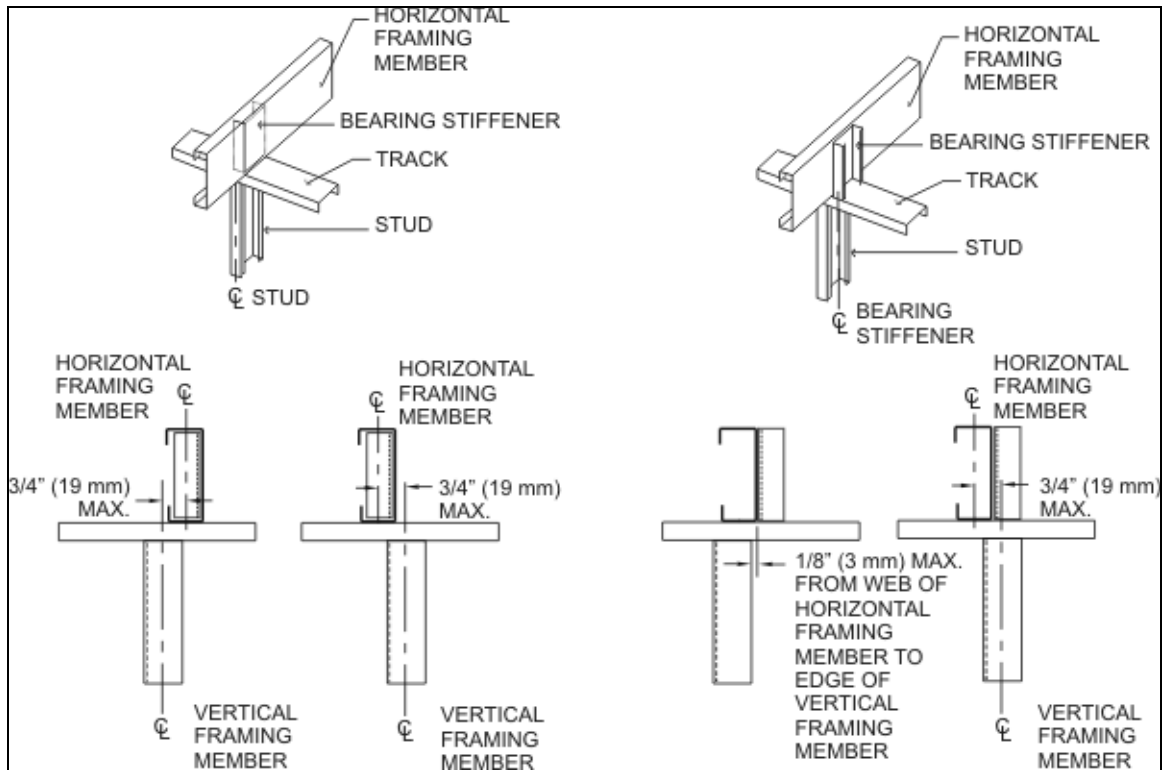


FIGURE R603.1.2
IN-LINE FRAMING

28. Revise figures as follows:

FIGURE R603.2(1)
C-SHAPED SECTION

(Portion of figure not shown remains unchanged)

FIGURE ~~R603.2(3)~~ R603.2.5.1
WEB HOLES

(Portion of figure not shown remains unchanged)

29. Add new figure as follows:

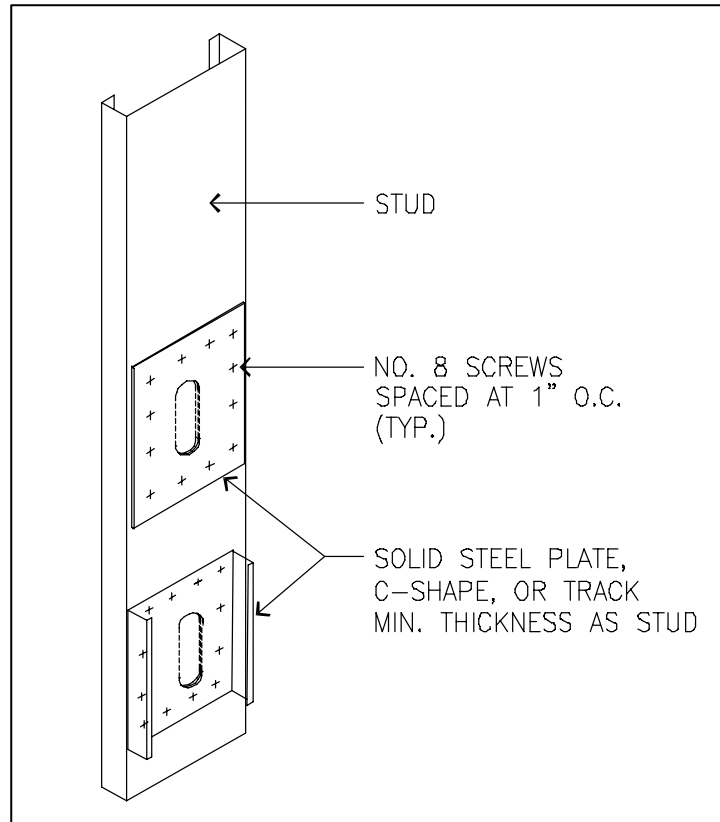


FIGURE R603.2.5.3
STUD WEB HOLE PATCH

30. Delete figure without substitution:

~~**FIGURE R603.3**~~
~~**STEEL WALL CONSTRUCTION**~~

31. Delete existing Figure R603.3.1(1) and replace as follows:

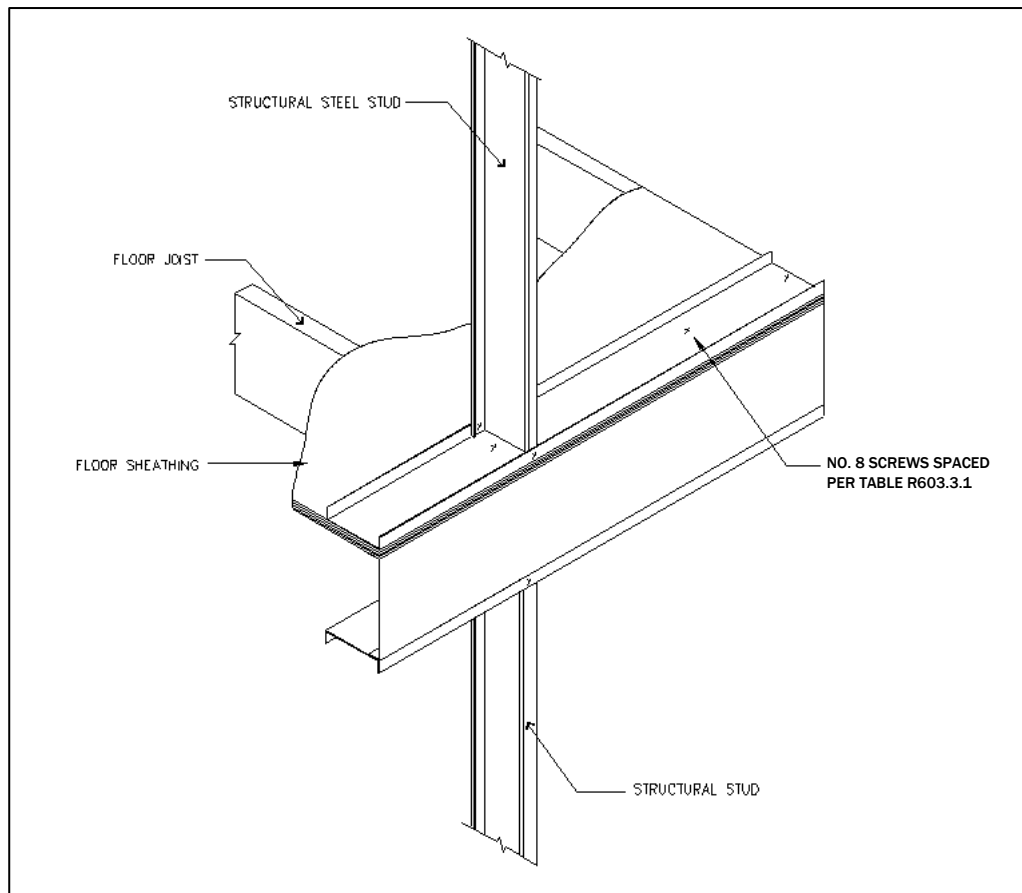


FIGURE R603.3.1(1)
WALL TO FLOOR CONNECTION FOUNDATION CONNECTION

32. Delete existing Figure R603.3.1(2) and substitute as follows:

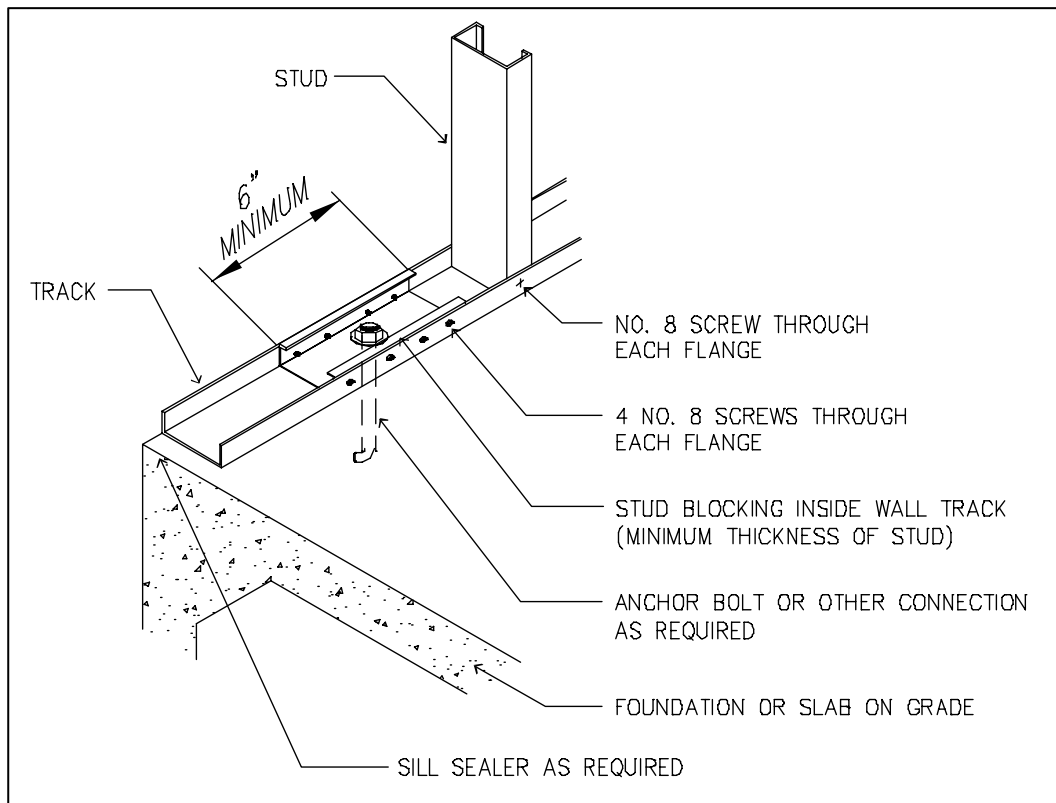


FIGURE R603.3.1(2)
WALL TO FOUNDATION CONNECTION ~~WOOD SILL CONNECTION~~

32. Add new figures follows:

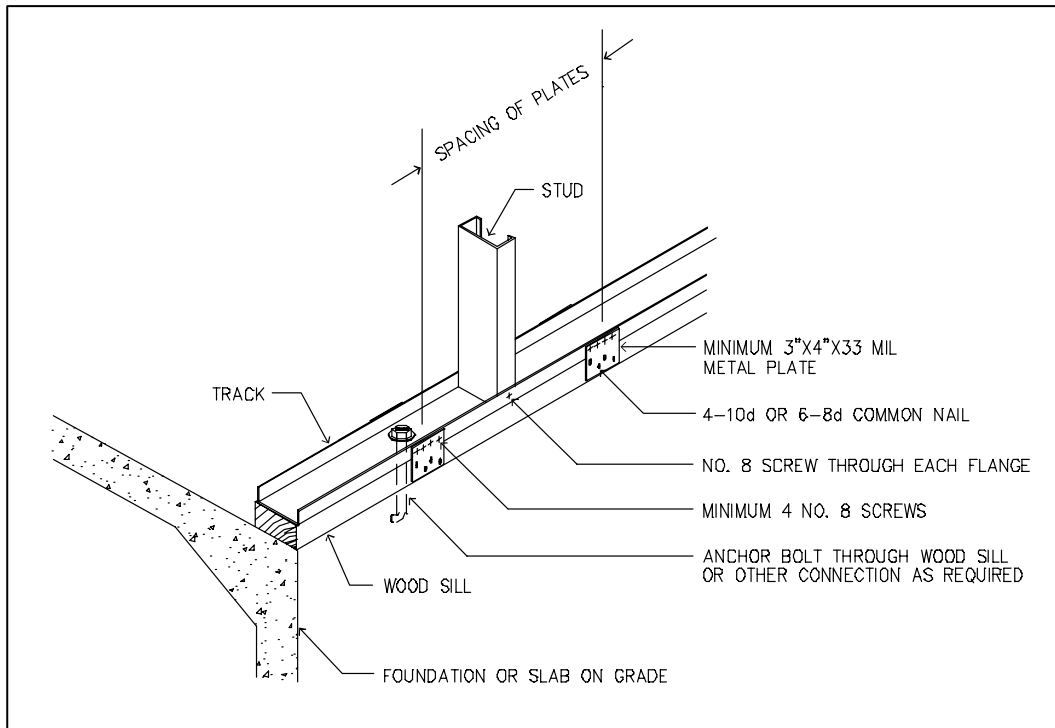


FIGURE R603.3.1(3)
WALL TO WOOD SILL CONNECTION

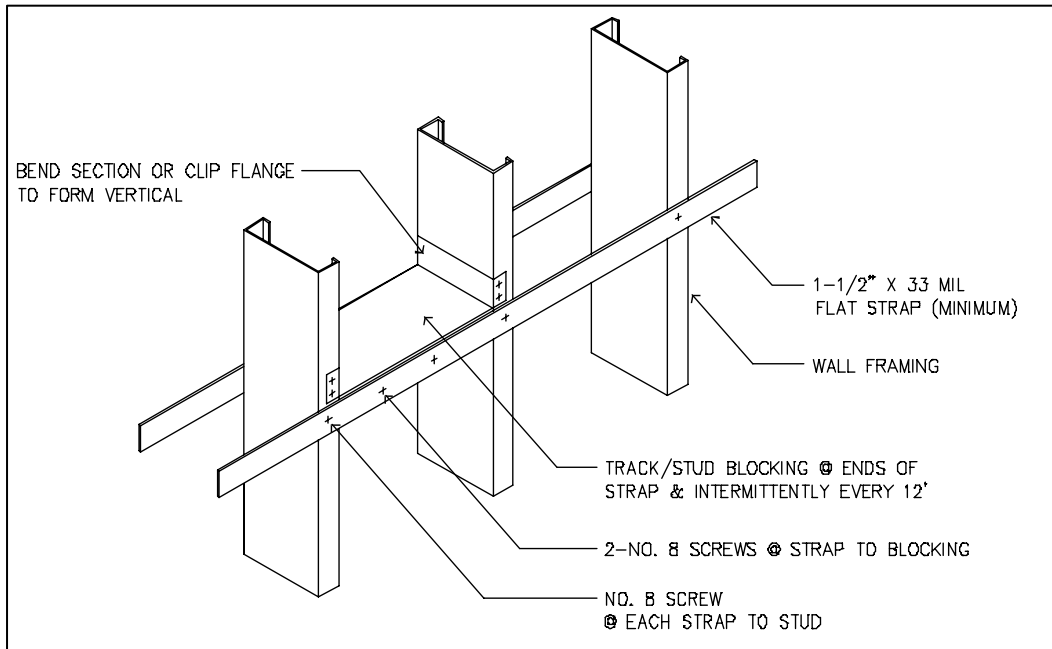


FIGURE R603.3.3(1)
STUD BRACING WITH STRAPPING ONLY

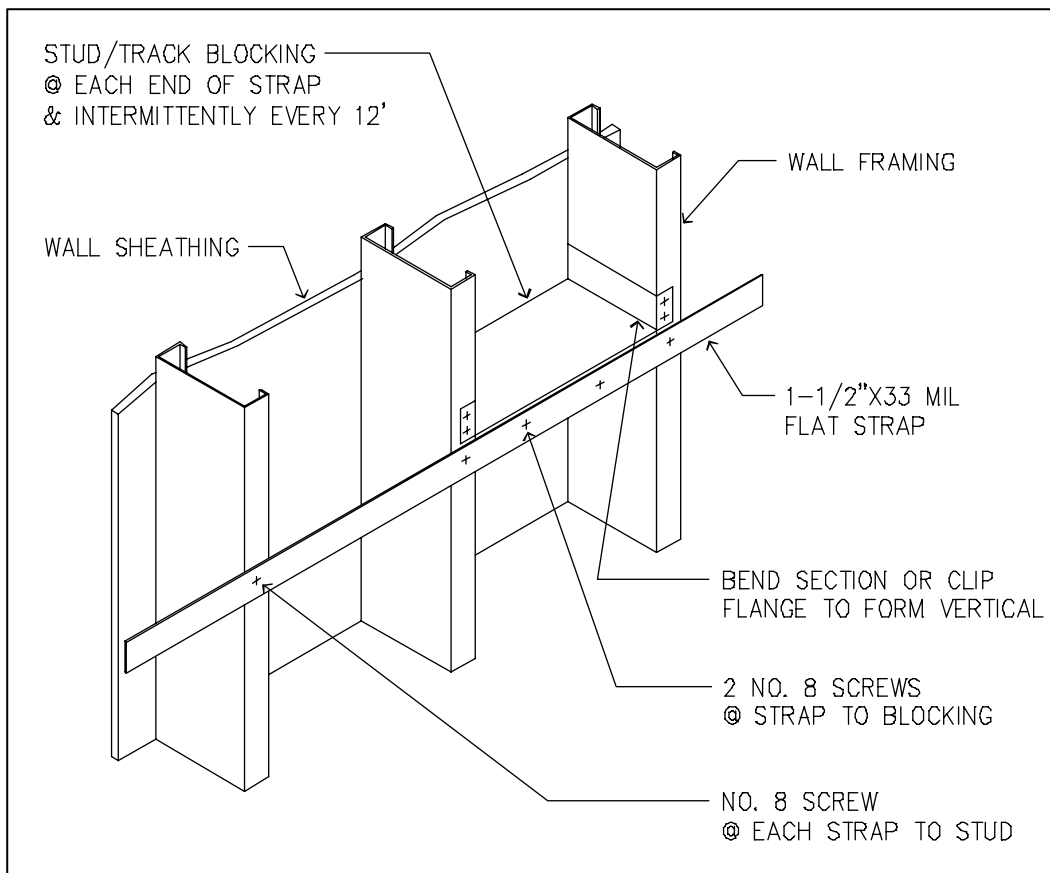
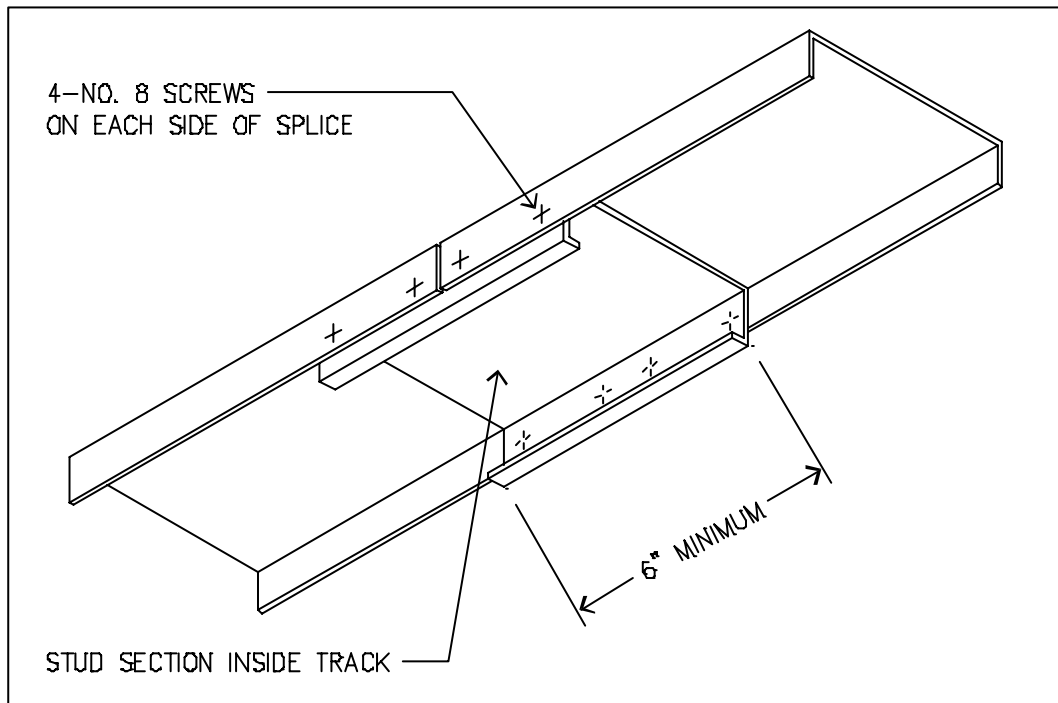


FIGURE R603.3.3(2)
STUD BRACING WITH STRAPPING AND SHEATHING MATERIAL

34. Delete figure without substitution:

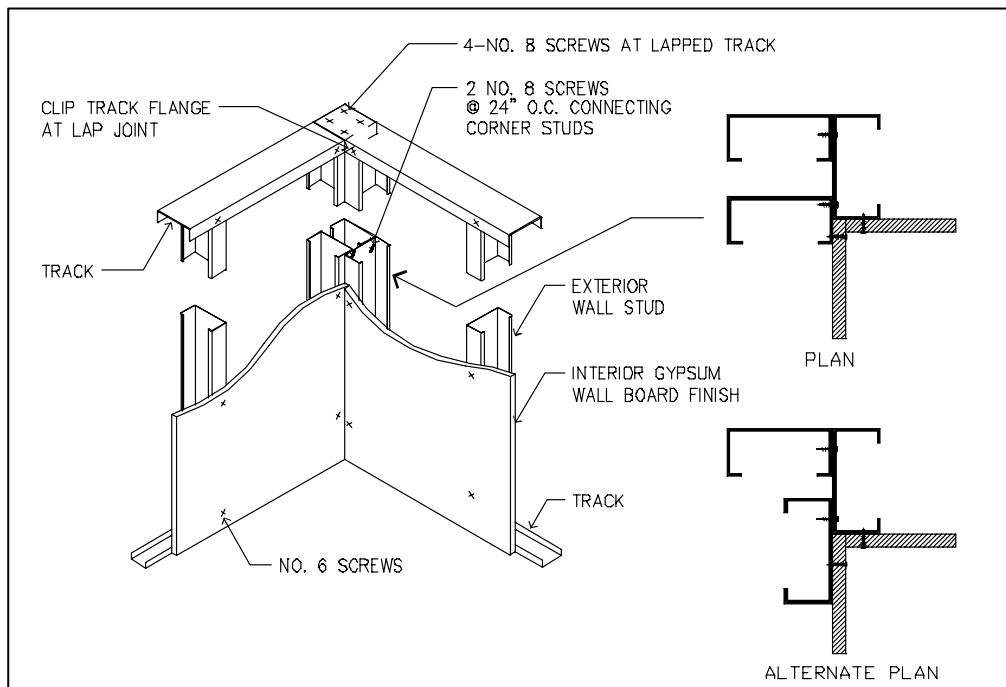
**FIGURE R603.3.5
HOLE PATCH**

35. Delete existing Figure R603.3.6, add new figure and renumber as R603.3.5 as follows:



**FIGURE R603.3.5
TRACK SPLICE**

36. Delete figure and substitute as follows:



**FIGURE R603.4
CORNER FRAMING**

37. Delete existing Figure R603.6 HEADER DETAIL and replace as follows:

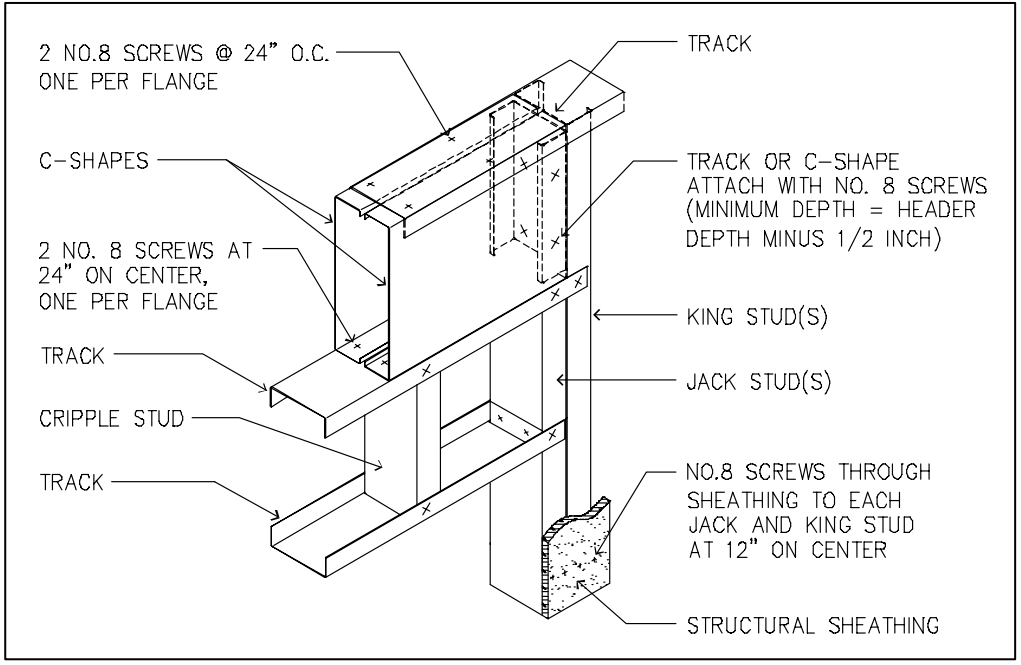


FIGURE R603.6(1)
BOX BEAM HEADER

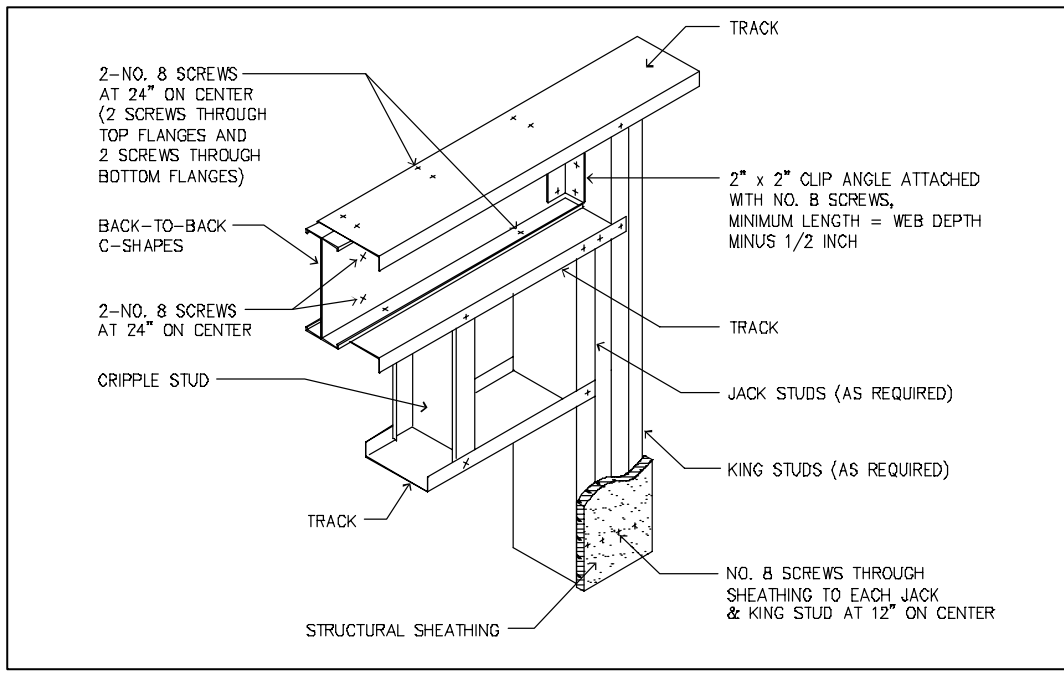


FIGURE R603.6(2)
BACK-TO-BACK HEADER

38. Add new figures as follows:

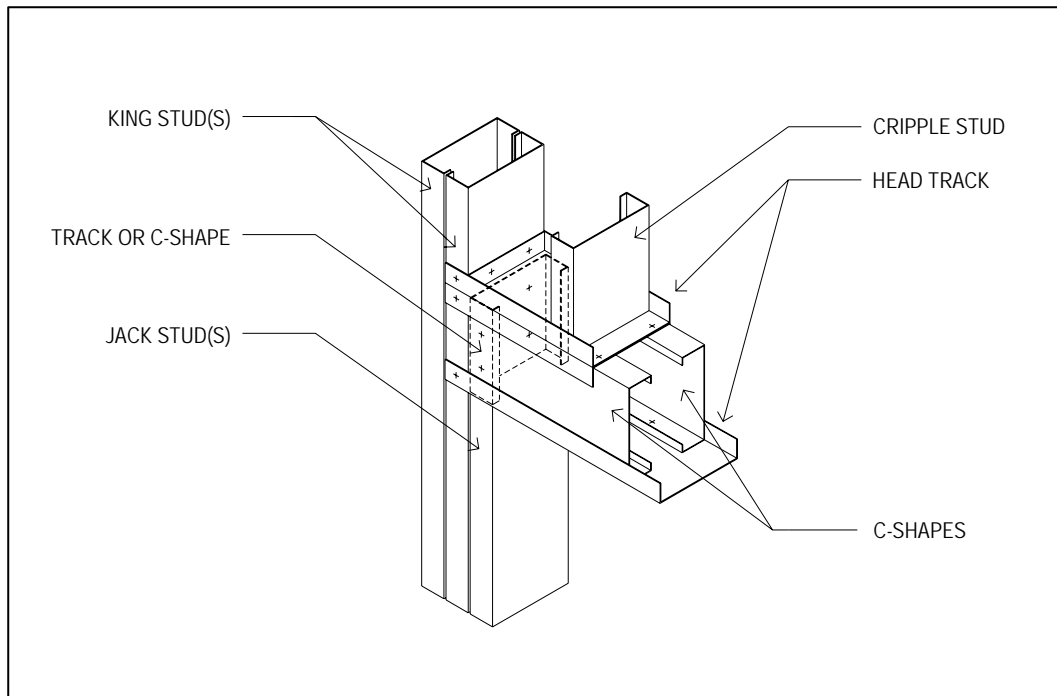


FIGURE R603.6.1(1)
BOX BEAM HEADER IN GABLE ENDWALL

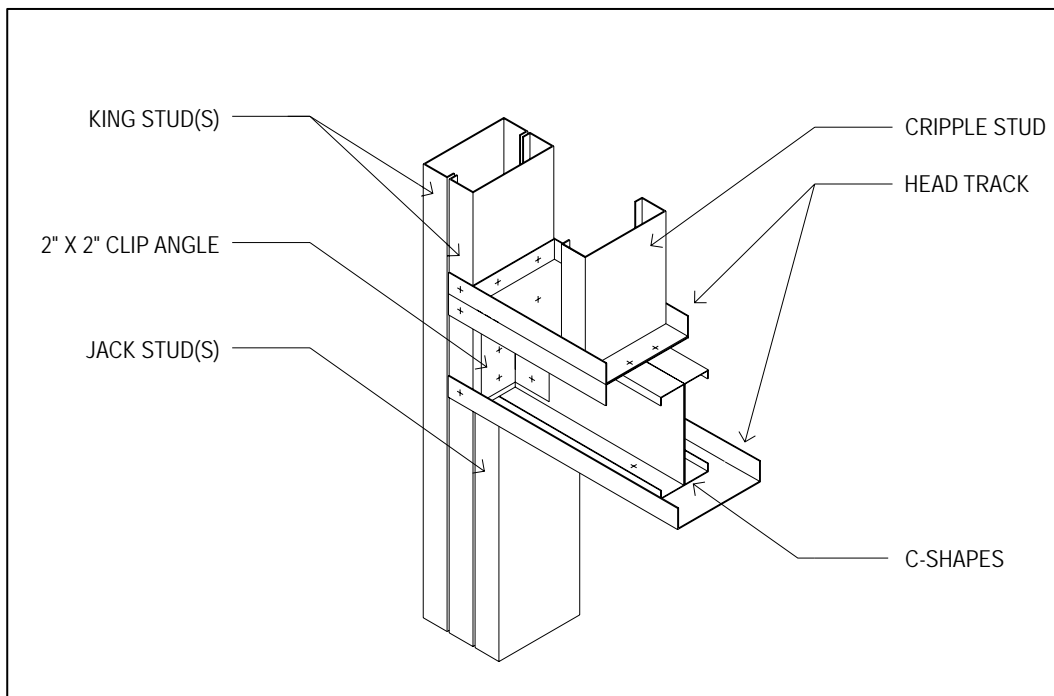


FIGURE R603.6.1(2)
BACK-TO-BACK HEADER IN GABLE ENDWALL

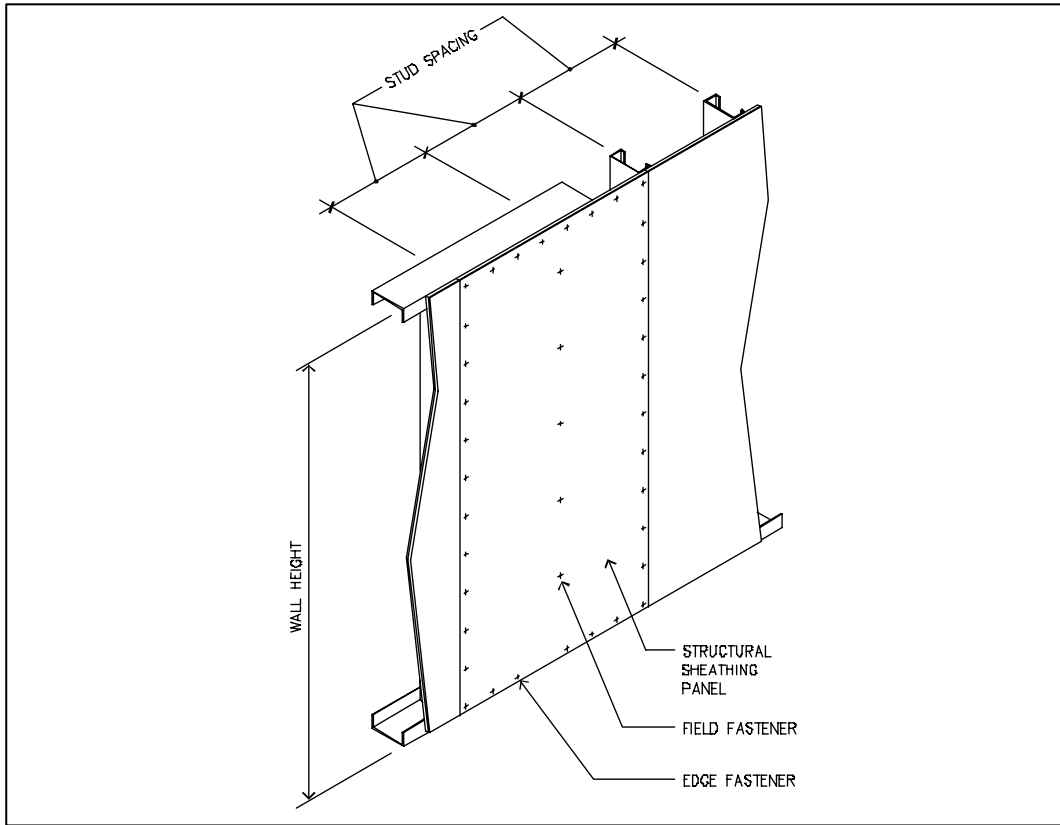


FIGURE R603.9
STRUCTURAL SHEATHING FASTENING PATTERN

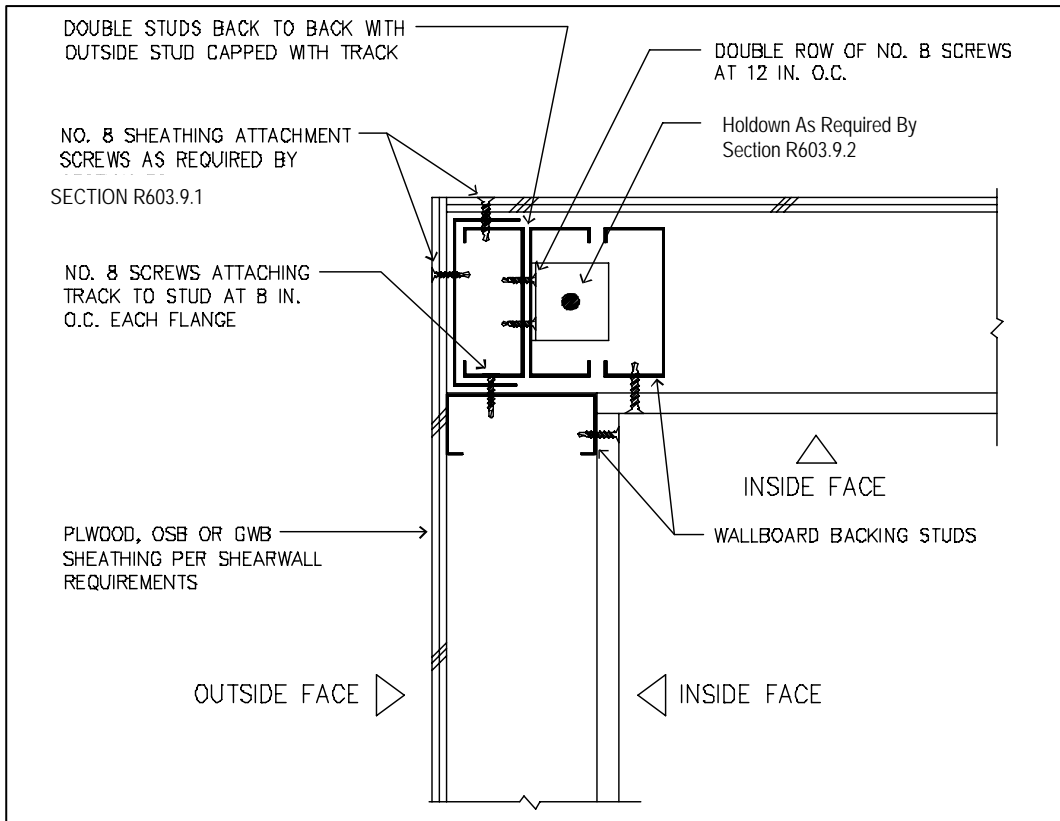


FIGURE R603.9.2
CORNER STUD HOLD-DOWN DETAIL

39. Add standards to Chapter 43 as follows:

AISI

S100 North American Specification for the Design of Cold-Formed Steel Structural Members

ASTM

C1513-04 Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections

Reason: This code change updates the prescriptive requirements of IRC Section R603 to reflect the 2007 edition of AISI S230, *Standard for Cold-Formed Steel Framing -- Prescriptive Method for One- and Two-Family Dwellings*. The following changes have been made:

PART 1, SECTION 603

Section R603.1.1: The 2007 edition of AISI S230 (*Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings*) increases the allowable number of stories from two to three stories. This modification is intended to coordinate with AISI S230.

Section R603.1.2: The 2007 edition of AISI S230 references the 2007 edition of AISI S200 (*North American Standard for Cold-Formed Steel Framing—General Provisions*) which has revised the in-line framing tolerance to account for the special case of the bearing stiffener located on the back-side of the joist. This was based on research at the University of Waterloo (Reference: Fox, S.R. (2003), "The Strength of Stiffened CFS Floor Joist Assemblies with Offset Loading," American Iron and Steel Institute, Washington, D.C.)

Figure R603.1.2: This new figure contains a greater number of configurations for in-line framing and the permitted tolerances.

Section R603.2: Table R603.2(2) has been corrected to reflect industry standardized thicknesses for structural members. Additionally, a line has been added for 97 mils, since it is used extensively throughout the IRC. The column on Reference Gage Number has been deleted, since gage is no longer used by industry in referencing structural members. Finally, the topic of holes has been relocated to a new Section R603.2.5 on web holes, web hole reinforcement, and web hole patching. Accordingly, the associated Figure R603.2(3) has been renumbered to Figure R603.2.5.1.

Section R603.2.1: This section has been modified to coordinate with the 2007 edition of AISI S230, which now recognizes ASTM A 1003 as the primary standard for cold-formed steel light frame construction (via a reference to AISI S200). References to the ASTM A 1003 grades have been corrected to specify Structural Type H. Further, references to Grades 37 and 40 have been deleted, since these grades are not used in the IRC. Finally, the references to ASTM A 653 and ASTM A792 have been retained, since AISI S230 still considers them deemed-to-comply with ASTM A 1003. However, reference to ASTM A875 has been deleted, since it is no longer used in the construction marketplace.

Section R603.2.2: This section has been modified to reflect the change in terminology in Table R603.2(2) from "uncoated steel thickness" to "base steel thickness."

Section R603.2.3: This section has been modified to coordinate with the 2007 edition of AISI S230, which now recognizes ASTM A1003 as the primary standard for cold-formed steel light frame construction (via a reference to AISI S200). The reference to ASTM A875 has been deleted, since it is no longer used in the construction marketplace.

Section R603.2.4: This section has been modified to coordinate with the 2007 edition of AISI S230, which now recognizes ASTM C 1513 (via a reference to AISI S200) in lieu of SAE J78. ASTM C1513 is the more appropriate consensus standard, which continues to charge SAE J78. The reference to ASTM B 633 has been deleted in favor of the substituted language from AISI S230.

Section R603.2.5.1: Section R603.2.5.1 has been created using existing IRC Section 603.2 with minor modifications in order to improve the clarity and usability of the code by locating all requirements concerning web holes and web hole adjustments in one central location. In addition, Figure R603.2(3) has been renumbered as Figure R603.2.5.1, with no other changes to the figure, as part of the coordination effort.

Section R603.2.5.2: New to the 2007 edition of AISI S230, this language permits the reinforcing of web holes, thus allowing the utility to remain, as long as the finished web hole meets the requirements of this subsection and that of Section R603.2.5.1. The provisions are based on engineering judgment and have been confirmed by preliminary testing.

Section R603.2.5.3: This language has been relocated from Section R603.3.6 in order to improve the clarity and usability of the code. Modifications have been made to the charging language to reflect the fact that the user now has the choice to reinforce non-conforming holes, patch non-conforming holes, or design non-conforming holes with accepted engineering practice per Section R603.2.5.1. Additionally, Figure R603.2.5.3 has been added as an update to the old Figure R603.3.6 in order to coordinate with AISI S230-07.

Section R603.3: The associated figure has been deleted since it is outdated.

Section R603.3.1: This section has been modified to reflect the requirements from AISI S230, which includes new figures and additional language on the use of anchor bolts and anchor straps.

Figures R603.3.1(1), R603.3.1(2) and R603.3.1(3): These figures illustrate wall to foundation connections and are replacements to the existing figures now in the IRC-2006. New information is related primarily to the identification of screw types.

Section R603.3.1.1: This new section, taken from AISI S230-07, addresses concerns from our previous work by including provisions for gable endwalls.

Section R603.3.2: This section has been substantially changed from two perspectives. First, the section has been expanded to include not only provisions for one and two story dwellings, but also three story dwellings. Information to support this increase in building height has come from both testing and engineering analysis using the latest standards – including ASCE 7-05. Second, the section has been re-formatted for easier use. In this case each paragraph has a subject specific item, rather than having them all combined into one paragraph as is currently shown in the 2006 edition of the IRC. All material used to update this section was taken from AISI 230-07.

Tables 603.3.2(1) through R603.3.2(21) on wall spans have been revised with new tabular values. In addition Tables R603.3.2(22) through R603.3.2(31) have been added as a result of the overall provisions now encompassing dwellings up to three stories.

Section R603.3.2.1: This new section, taken from AISI S230-07, addresses concerns from our previous work by including provisions for gable endwalls.

Tables R603.3.2.1(1) through R603.3.2.1(4) represent new gable endwalls header tables which correspond to the new provisions.

Section R603.3: Relatively minor modifications have been made to this section to reflect the latest requirements from AISI S230-07.

Section R603.3.5(old): This section has been relocated to a new Section R603.2.5 on web holes, web hole reinforcement, and web hole patching. Figure R603.3.5 is outdated and has been substituted with a new Figure R603.2.5.3, which coordinates with AISI S230-07.

Figure R603.3.6(old): This figure has been updated to coordinate with AISI S230-07.

Section R603.4: This modification clarifies that the corner details apply to all exterior walls.

Figure R603.4 This new figure is intended to replace the current figure. New information is the illustration of the second configuration for a corner detail.

Section R603.6: This section has modified by changes to the tables, changes in the underlying reference material, and the addition of provisions for headers located in gable endwalls. The change in scope of the cold-formed steel provisions from a two story limit to a three story limit increased the number of tables necessary in order to adequately address headers located in the various configurations in a one, two or three story building.

Additionally, the AISI reference standards have change also. Provisions for L-headers are available to users in AISI S230-07. If the user would rather design their own header, they may do so using the provisions of AISI S100, Section D4. In 2007, the scope of AISI S100, *North American Specification for the Design of Cold-Formed Steel Structural Members*, Section D4 on Wall Studs and Wall Stud Assemblies was broadened to cover Cold-Formed Steel Light-Frame Construction. This was done in order to properly recognize the growing use of cold-formed steel framing in a broader range of residential and light commercial framing applications and to provide the appropriate charging language for the various ANSI approved standards that have been developed by the AISI Committee on Framing Standards. This proposal corrects the charging language and changes the reference from the too specific AISI Header Design document (2004) to the more general, and correct, AISI S100, Section D4, which picks up the reference to the whole library of AISI cold-formed steel light frame construction.

Finally, the new header tables for gable endwalls are intended to coordinate with the new gable endwalls provisions in Section R603.3.2.

Tables 603.6(1) through R603.6(24): Correspondingly, the header tables R603.6(1) through R603.6(24) have also been expanded and revised to reflect the changes to the span sections and table for buildings up to three stories.

Figures R603.6.1(1) and R603.6.1(2): These figures compliment the addition of the header provisions for gable endwalls in Section R603.6.1.

Section R603.7 (new): Modifications to this section include a re-numbering of the section and table numbers. Additionally, provisions on the connection of box beam headers to king studs were added to reflect the provisions of AISI S230-07.

Section R603.8 (new): Modifications to this section include a re-numbering of the section and table numbers. Additionally, provisions for sill tracks were added and the associated table was updated.

Section R603.9 (new): This section has been changed substantially to reflect the latest provisions from AISI S230-07.

Tables R603.9(1) and R603.9.1(2): These tables have been revised to cover structural sheathing requirements for one, two and three story buildings.

PART 2, CHAPTER 43

Chapter 43: The modifications to add, delete or update reference standards in Chapter 43 are coordinated with changes made to Section R603.

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

Analysis: A review of the standards proposed for inclusion in the code, AISI S100 and ASTM C1513-04, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

RB169-07/08

R603.2.1 (New)

Proponent: Bill Towson, Arch Wood Protection

Add new text as follows:

R603.2.1 Protection of wood and wood based products from termites and decay. In areas subject to damage from termites as indicated by Table R301.2(1), protection of wood and wood based products from termites and decay when used in combination with cold formed steel materials in wall and floor assemblies shall be provided when required in accordance with Section R319 and R320.

Reason: A new sub-section for cold formed steel framing R320.6 should be added to require protection of wood and wood based products when they are used in combination with cold formed steel framing. When cold formed steel framing is used in combination with wood and wood based products for wall and floor assemblies, the wood and wood based products must be protected from termites and decay when required in accordance with Sections R319 and R320.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

RB170-07/08

R606.4.2

Proponent: Charles B. Clark, Jr., Brick Industry Association

Revise as follows:

R606.4.2 (Supp) Support at foundation. Cavity wall or masonry veneer construction may be supported on an 8-inch (203 mm) foundation wall, provided the 8-inch (203 mm) wall is corbeled to the width of the wall system above with masonry constructed of solid masonry units or masonry units filled with mortar or grout to the width of the wall system above. The total horizontal projection of the corbel shall not exceed 2 inches (51 mm) with individual corbels projecting not more than one-third the thickness of the unit or one-half the height of the unit. The hollow space behind the corbeled masonry shall be filled with mortar or grout.

Reason: To clarify that a masonry unit filled with mortar or grout can be corbeled.

This code change allows cavity wall or masonry veneer construction to be supported by corbeled masonry. The corbeling can be done with either solid masonry units or masonry units filled with mortar or grout. This code change is consistent with Section R606.3.1 which allows corbels to be constructed using solid masonry units or masonry units filled with mortar or grout.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

RB171-07/08

R611, R301.2.2.2.4, R301.2.2.3.4, Chapter 43

Tables – (New) R611.3, R611.5.4(1), R611.5.4(2), R611.6(1) to R611.6(4), R611.7(1)A to R611.7(1)C, R611.7(2), R611.7(3), R611.7(4), R611.8(1) to R611.8(10) and R611.9(1) to R611.9(12)

Figures – (New) R611.3(1) to R611.3(3), R611.5.4(1) to R611.5.4(3), R611.6(1) to R611.6(4), R611.7(1), R611.7(2), R611.8(1) to R611.8(4) and R611.9(1) to R611.9(12)

Proponent: Stephen V. Skalko, PE, Portland Cement Association

1. Revise R611.1 as follows:

**SECTION R611
INSULATING EXTERIOR CONCRETE FORM
WALL CONSTRUCTION**

R611.1 General. ~~Insulating Exterior Concrete Form (IECF) walls shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of PCA 100 or ACI 318. When PCA 100, ACI 318 or the provisions of this section are used to design insulating concrete form walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.~~

R611.1.1 Interior construction. ~~These provisions are based on the assumption that interior walls and partitions, both loadbearing and non-loadbearing, floors and roof/ceiling assemblies are constructed of light-framed construction complying with the limitations of this code and the additional limitations Section R611.2. Design and construction of light-framed assemblies shall be in accordance with the applicable provisions of this code. Where second-story exterior walls are of light-framed construction, they shall be designed and constructed as required by this code.~~

~~Aspects of concrete construction not specifically addressed by this code, including interior concrete walls, shall comply with ACI 318.~~

R611.1.2 Other concrete walls. ~~Exterior concrete walls constructed in accordance with this code shall comply with the shapes and minimum concrete cross-sectional dimensions of Table R611.3. Other types of forming systems resulting in concrete walls not in compliance with this section shall be designed in accordance with ACI 318~~

2. Revise R611.2 as follows:

R611.2 Applicability limits. ~~The provisions of this section shall apply to the construction of insulating exterior concrete form walls for buildings not greater than 60 feet (18 288 mm) in plan dimensions, and floors with clear spans not greater than 32 feet (9754 mm) or and roofs with clear spans not greater than 40 feet (12 192 mm) in clear span. Buildings shall not exceed 35 feet in mean roof height or two stories in height above-grade. Floor/ceiling dead loads shall not exceed 10 psf (479 Pa), roof/ceiling dead loads shall not exceed 15 psf (720 Pa) and attic live loads shall not exceed 20 psf (958 Pa). Roof overhangs shall not exceed 2 feet (610 mm) of horizontal projection beyond the exterior wall and the dead load of the overhangs shall not exceed 8 psf (383 Pa). ICF walls shall comply with the requirements in Table R611.2.~~

~~Walls constructed in accordance with the provisions of this section shall be limited to buildings subjected to a maximum design wind speed of 150 miles per hour (67 m/s), 130 miles per hour (58 m/s) Exposure B, 110 miles per hour (49 m/s) Exposure C, and 100 miles per hour (45 m/s) Exposure D. Walls constructed in accordance with the provisions of this section shall be limited to detached one- and two-family dwellings and townhouses assigned to Seismic Design Category A or B, and detached one- and two-family dwellings assigned to Seismic Design Category C, D₀, D₁ and D₂. The provisions of this section shall not apply to the construction of ICF walls for buildings or portions of buildings considered irregular as defined in Section R301.2.2.2.2.~~

These provisions do not apply to buildings or portions thereof subject to flood loads, including those built along the coast in hurricane-prone regions subjected to storm surge.

Buildings that are not within the scope of this section shall be designed in accordance with PCA 100 or ACI 318. For townhouses in Seismic Design Category C and all buildings in Seismic Design Category D₀, D₁ or D₂, the provisions of this section shall apply only to buildings meeting the following requirements:

1. ~~Rectangular buildings with a maximum building aspect ratio of 2:1. The building aspect ratio shall be determined by dividing the longest dimension of the building by the shortest dimension of the building.~~
2. ~~Walls are aligned vertically with the walls below.~~
3. ~~Cantilever and setback construction shall not be permitted.~~
4. ~~The weight of interior and exterior finishes applied to ICF walls shall not exceed 8 psf (380 Pa).~~
5. ~~The gable portion of ICF walls shall be constructed of light frame construction.~~

3. Delete Table R611.2 without substitution:

**TABLE R611.2
REQUIREMENTS FOR ICF WALLS^b**

4. Revise Sections R611.3, R611.4, R611.5 and R611.6 as follows:

(Underlining of tables omitted for clarity)

R611.3 Concrete wall systems. Concrete walls constructed in accordance with these provisions shall comply with the shapes and minimum concrete cross-sectional dimensions of Table R611.3.

R611.3.1 Flat insulating concrete form wall systems. Flat ICF concrete wall systems shall comply with Table R611.3 and Figure R611.3(1) and have a minimum nominal thickness of 4 inches (102 mm). ~~reinforcement in accordance with Tables R611.3(1) and R611.3(2) and Section R611.7.~~

R611.4.3.2 Waffle-grid insulating concrete form wall systems. Waffle-grid wall systems shall comply with Table R611.3 and Figure R611.4 3(2), and shall have a minimum nominal thickness of 6 inches (152 mm) for the horizontal and vertical concrete members (cores). ~~reinforcement in accordance with Tables R611.3(1) and R611.4(1) and Section R611.7.~~ The minimum core and web dimensions shall comply with Table R611.2 3. The maximum weight of waffle-grid walls shall comply with Table R611.3.

R611.5.3.3 Screen-grid insulating concrete form wall systems. Screen-grid ICF wall systems shall comply with Table R611.3 and Figure R611.5.3(3) and shall have a minimum nominal thickness of 6 inches (152 mm) for the horizontal and vertical concrete members (cores). ~~reinforcement in accordance with Tables R611.3(1) and R611.5 and Section R611.7.~~ The minimum core dimensions shall comply with Table R611.2 3. The maximum weight of screen-grid walls shall comply with Table R611.3.

**TABLE R611.3
DIMENSIONAL REQUIREMENTS FOR WALLS^{a,b}**

Wall Type and Nominal Thickness	Maximum Wall Weight ^c (psf)	Minimum Width, W, of Vertical Cores (in.)	Minimum Thickness, T, of Vertical Cores (in.)	Maximum Spacing of Vertical Cores (in.)	Maximum spacing of Horizontal Cores (in.)	Minimum Web Thickness (in.)
4" Flat ^d	50	N/A	N/A	N/A	N/A	N/A
6" Flat ^d	75	N/A	N/A	N/A	N/A	N/A
8" Flat ^d	100	N/A	N/A	N/A	N/A	N/A
10" Flat ^d	125	N/A	N/A	N/A	N/A	N/A
6" Waffle-Grid	56	8 ^e	5.5 ^e	12	16	2
8" Waffle-Grid	76	8 ^f	8 ^f	12	16	2
6" Screen-Grid	53	6.25 ^g	6.25 ^g	12	12	N/A

For SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kPa

^a Width "W", thickness "T", spacing and web thickness, refer to Figures R611.3(2) and R611.3(3).

^b N/A indicates not applicable

^c Wall weight is based on a unit weight of concrete of 150 pcf (23.55 kN/m³). For flat walls the weight is based on the nominal thickness. The tabulated values do not include any allowance for interior and exterior finishes.

^d Nominal wall thickness. The actual as-built thickness of a flat wall shall not be more than ½-inch (13 mm) less or more than ¼-inch (6 mm) more than the nominal dimension indicated.

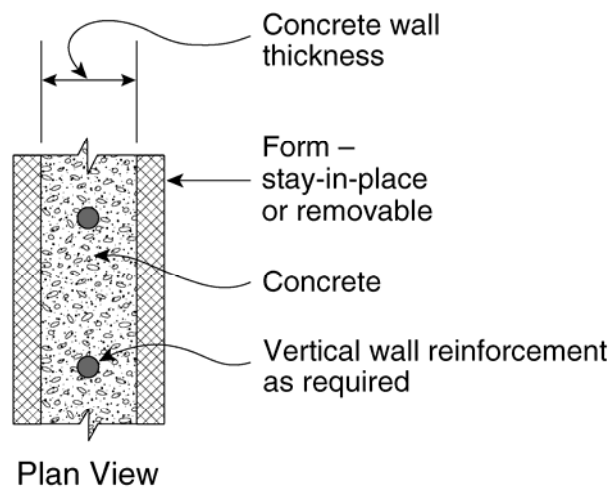
^e Vertical core is assumed to be elliptical-shaped. Another shape core is permitted provided the minimum thickness is 5 inches (127 mm), the moment of inertia, I , about the centerline of the wall (ignoring the web) is not less than 65 in^4 ($2.706 \times 10^7 \text{ mm}^4$), and the area, A , is not less than 31.25 in^2 ($21\,161 \text{ mm}^2$). The width used to calculate A and I shall not exceed 8 inches (203 mm).

^f Vertical core is assumed to be circular. Another shape core is permitted provided the minimum thickness is 7 inches (178 mm), the moment of inertia, I , about the centerline of the wall (ignoring the web) is not less than 200 in^4 ($8.325 \times 10^7 \text{ mm}^4$), and the area, A , is not less than 49 in^2 ($31\,613 \text{ mm}^2$). The width used to calculate A and I shall not exceed 8 inches (203 mm).

^g Vertical core is assumed to be circular. Another shape core is permitted provided the minimum thickness is 5.5 inches, the moment of inertia, I , about the centerline of the wall is not less than 76 in^4 ($3.163 \times 10^7 \text{ mm}^4$), and the area, A , is not less than 30.25 in^2 ($19\,516 \text{ mm}^2$). The width used to calculate A and I shall not exceed 6.25 inches (159 mm).

Delete without substitution Table R611.3(1) and R611.3(2).

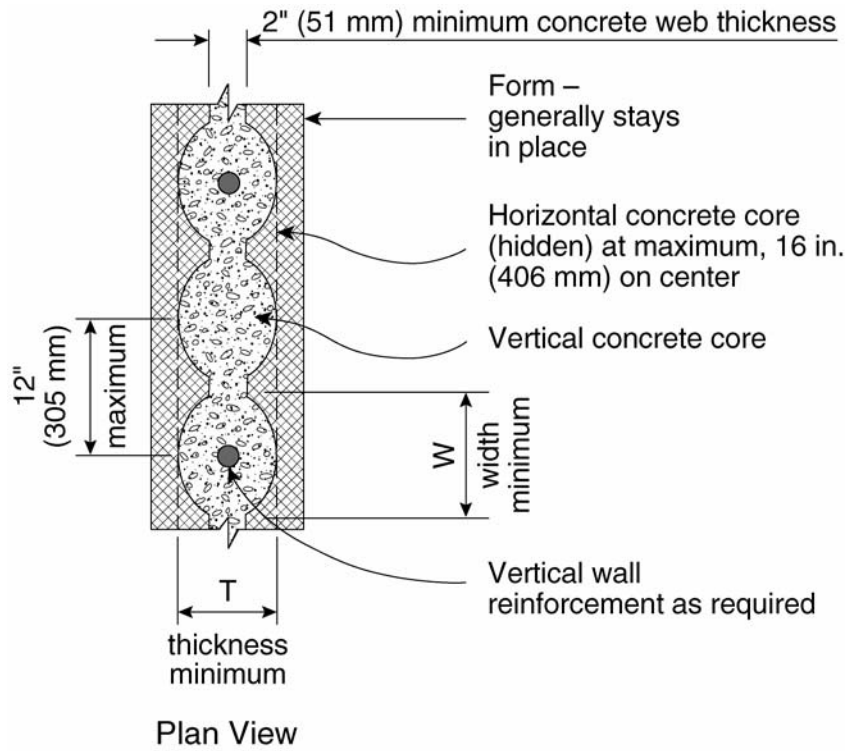
Delete Figure R611.3 and substitute with Figure R611.3(1) as follows:



See Table R611.3 for minimum dimensions.

FIGURE R611.3(1)

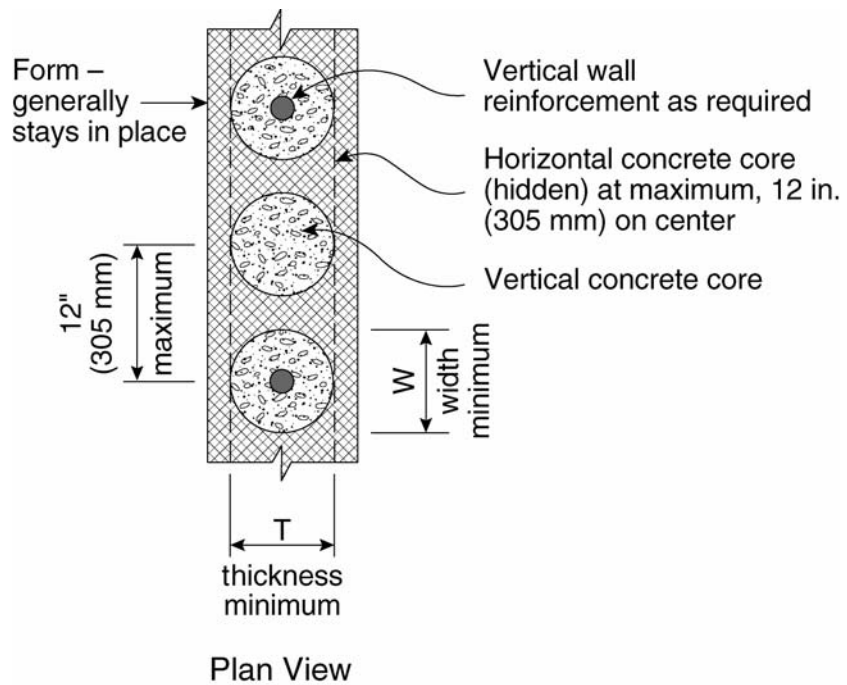
Delete Figure R611.4 and substitute with Figure R611.3(2) as follows:



See Table R611.3 for minimum dimensions.

FIGURE R611.3(2)

Delete Figure R611.5 and substitute with Figure R611.3(3) as follows:



See Table R611.3 for minimum dimensions.

FIGURE R611.3(3)

R611.4 Stay-in-place forms. Stay-in-place concrete forms shall comply with this section

R611.4.1 Surface Burning Characteristics. The flame-spread classification and smoke-developed index of forming material, other than foam plastic, left exposed on the interior shall comply with Section R315. The surface burning characteristics of foam plastic used in insulating concrete forms shall comply with Section R314.3.

R611.4.2 Interior covering. Stay-in-place forms constructed of rigid foam plastic shall be protected on the interior of the building as required by Section R314.4 and Section R702.3.4. Where gypsum board is used to protect the foam plastic, it shall be installed with a mechanical fastening system. Adhesives are permitted to be used in addition to mechanical fasteners.

R611.4.3 Exterior wall covering. Stay-in-place forms constructed of rigid foam plastics shall be protected from sunlight and physical damage by the application of an approved exterior wall covering complying with this code. Exterior surfaces of other stay-in-place forming systems shall be protected in accordance with this code. Requirements for installation of masonry veneer, stucco and other finishes on the exterior of concrete walls and other construction details not covered in this section shall comply with the requirements of this code.

R611.65 Materials. Insulating concrete form wall m Materials used in the construction of concrete walls shall comply with this section.

R611.65.1 Concrete and materials for concrete. Materials used in concrete, and the concrete itself shall conform to requirements of this section, or ACI 318. ~~Ready-mixed concrete for insulating concrete form walls shall be in accordance with Section R402.2. Maximum slump shall not be greater than 6 inches (152 mm) as determined in accordance with ASTM C 143. Maximum aggregate size shall not be larger than ¾ inch (19 mm).~~

~~**Exception:** Concrete mixes conforming to the ICF manufacturer's recommendations. In Seismic Design Categories D₀, D₁ and D₂, the minimum concrete compressive strength shall be 3,000 psi (20.5 MPa).~~

R611.5.1.1 Concrete mixing and delivery. Mixing and delivery of concrete shall comply with ASTM C 94 or ASTM C 685.

R611.5.1.2 Maximum aggregate size. The nominal maximum size of coarse aggregate shall not exceed one-fifth the narrowest distance between sides of forms, or three-fourths the clear spacing between reinforcing bars or between a bar and the side of the form.

Exception: When approved, these limitations shall not apply where removable forms are used and workability and methods of consolidation permit concrete to be placed without honeycombs or voids.

R611.5.1.3 Proportioning and slump of concrete. Proportions of materials for concrete shall be established to provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding. Slump of concrete placed in removable forms shall not exceed 6 inches (152 mm).

Exception: When approved, the slump is permitted to exceed 6 inches (152 mm) for concrete mixtures that are resistant to segregation, and are in accordance with the form manufacturer's recommendations.

Slump of concrete placed in stay-in-place forms shall exceed 6 inches (152 mm). Slump of concrete shall be determined in accordance with ASTM C 143.

R611.5.1.4 Compressive strength. The minimum specified compressive strength of concrete, f'_c , shall comply with Section R402.2 and shall be not less than 2,500 psi (17.2 MPa) at 28 days.

R611.5.1.5 Consolidation of concrete. Concrete shall be consolidated by suitable means during placement and shall be worked around embedded items and reinforcement and into corners of forms. Where stay-in-place forms are used, concrete shall be consolidated by internal vibration.

Exception. When approved, self-consolidating concrete mixtures with slumps equal to or greater than 8 inches (203 mm) that are specifically designed for placement without internal vibration need not be internally vibrated.

R611.5.2 Steel reinforcement and anchor bolts

R611.6.5.2.1 Steel reinforcement Reinforcing steel. Reinforcing steel shall meet the requirements of comply with ASTM A615, A706, or A996. ASTM A 996 bars produced from rail steel shall be Type R. Except in Seismic Design Categories D0, D1 and D2, the minimum yield strength of reinforcing steel shall be 40,000 psi (Grade 40) (276 MPa). In Seismic Design Categories D0, D1 and D2, reinforcing steel shall meet the requirements of ASTM A 706 for low alloy steel with a minimum yield strength of 60,000 psi (Grade 60) (414 Mpa).

R611.5.2.2 Anchor bolts. Anchor bolts for use with connection details in accordance with Figures R611.9(1) through R611.9(12) shall be bolts with heads complying with ASTM A 307 or ASTM F 1554. ASTM A 307 bolts shall be Grade A (i.e., with heads). ASTM F 1554 bolts shall be Grade 36 minimum. In lieu of using bolts with heads, it is permissible to use rods with threads on both ends fabricated from steel complying with ASTM A 36. The threaded end of the rod to be embedded in the concrete shall be provided with a hex or square nut.

R611.5.2.3 Sheet steel angles and tension tie straps. Angles and tension tie straps for use with connection details in accordance with Figures R611.9(1) through R611.9(12) shall be fabricated from sheet steel complying with ASTM A 653 SS, ASTM A 792 SS, or ASTM A 875 SS. The steel shall be minimum Grade 33 unless a higher grade is required by the applicable figure.

R611.6.5.3 Insulation Form materials and form ties. Forms shall be made of wood, steel, aluminum, plastic, a composite of cement and foam insulation, a composite of cement and wood chips, or other approved material suitable for supporting and containing concrete. Forms shall provide sufficient strength to contain concrete during the concrete placement operation.

~~Insulating concrete forms material shall meet the surface burning characteristics of Section R314.3. A thermal barrier shall be provided on the building interior in accordance with Section R314.2 or Section R702.3.4.~~

Form ties shall be steel, solid plastic, foam plastic, a composite of cement and wood chips, a composite of cement and foam plastic, or other suitable material capable of resisting the forces created by fluid pressure of fresh concrete.

R611.5.4 Reinforcement installation details

R611.5.4.1 Support and cover. Reinforcement shall be secured in the proper location in the forms with tie wire or other bar support system such that displacement will not occur during the concrete placement operation. Steel reinforcement in concrete cast against the earth shall have a minimum cover of 3 in. (75 mm). Minimum cover for reinforcement in concrete cast in removable forms that will be exposed to the earth or weather shall be 1-1/2 in. (38 mm) for No. 5 bars and smaller, and 2 in. (50 mm) for No. 6 bars and larger. For concrete cast in removable forms that will not be exposed to the earth or weather, and for concrete cast in stay-in-place forms, minimum cover shall be 3/4-inch (19 mm). The minus tolerance for cover shall not exceed the smaller of one-third the required cover and 3/8-inch (10 mm). See Section R611.5.4.4 for cover requirements for hooks of bars developed in tension.

R611.5.4.2 Location of reinforcement in walls. For location of reinforcement in foundation walls and above-grade walls, see Sections R404.1.2.3.7.2 and R611.6.5, respectively.

R611.5.4.3 Lap splices. Vertical and horizontal wall reinforcement required by Sections R611.6 and R611.7 shall be the longest lengths practical. Where splices are necessary in reinforcement, the length of lap splice shall be in accordance with Table R611.5.4(1) and Figure R611.5.4 (1). The maximum gap between noncontact parallel bars at a lap splice shall not exceed the smaller of one-fifth the required lap length and 6 inches (150 mm). See Figure R611.5.4(1).

R611.5.4.4 Development of bars in tension. Where bars are required to be developed in tension by other provisions of this code, development lengths and cover for hooks and bar extensions shall comply with Table R611.5.4(1) and Figure R611.5.4 (2). The development lengths shown in Table R611.5.4(1) also apply to bundled bars in lintels installed in accordance with Section R611.8.2.2.

R611.5.4.5 Standard hooks. Where reinforcement is required by this code to terminate with a standard hook, the hook shall comply with Figure R611.5.4(3).

R611.5.4.6 Webs of waffle-grid walls. Reinforcement, including stirrups, shall not be placed in webs of waffle-grid walls, including lintels. Webs are permitted to have form ties.

R611.5.4.7 Alternate grade of reinforcement and spacing. Where tables in Sections R404.1.2 and R611.6 specify vertical wall reinforcement based on minimum bar size and maximum spacing, which are based on Grade 60 (420 MPa) steel reinforcement, different size bars and/or bars made from a different grade of steel are permitted provided an equivalent area of steel per linear foot of wall is provided. Table R611.5.4(2) is permitted to be used to determine the maximum bar spacing for different bar sizes than specified in the tables and/or bars made from a different grade of steel. Bars shall not be spaced less than one-half the wall thickness, or more than 48 inches (1.2 m) on center.

R611.5.5. Construction joints in walls. Construction joints shall be made and located so as not to impair the strength of the wall. Construction joints in plain concrete walls, including walls required to have not less than No. 4 bars at 48 inches (1.2 m) on center by Section R611.6, shall be located at points of lateral support, and a minimum of one No. 4 bar shall extend across the construction joint at a spacing not to exceed 24 inches (610 mm) on center. Construction joint reinforcement shall have a minimum of 12 inches (305 mm) embedment on both sides of the joint. Construction joints in reinforced concrete walls shall be located in the middle third of the span between lateral supports, or located and constructed as required for joints in plain concrete walls.

Exception: Vertical wall reinforcement required by this code is permitted to be used in lieu of construction joint reinforcement, provided the spacing does not exceed 24 inches (610 mm), or the combination of wall reinforcement and No. 4 bars described above does not exceed 24 inches (610 mm).

TABLE R611.5.4(1)
LAP SPLICE AND TENSION DEVELOPMENT LENGTHS

	Bar size No.	Yield strength of steel, f_y - psi (MPa)	
		40,000 (280)	60,000 (420)
Splice length or tension development length – in.			
Lap splice length - tension	4	20	30
	5	25	38
	6	30	45
Tension development length for straight bar	4	15	23
	5	19	28
	6	23	34
Tension development length for: a. 90° and 180° standard hooks with not less than 2-1/2 inches (64 mm) of side cover perpendicular to plane of hook, and b. 90° standard hooks with not less than 2 inches (51 mm) of cover on the bar extension beyond the hook.	4	6	9
	5	7	11
	6	8	13
Tension development length for bar with 90° or 180° standard hook having less cover than required above	4	8	12
	5	10	15
	6	12	18

For SI: 1 inch = 25.4 mm

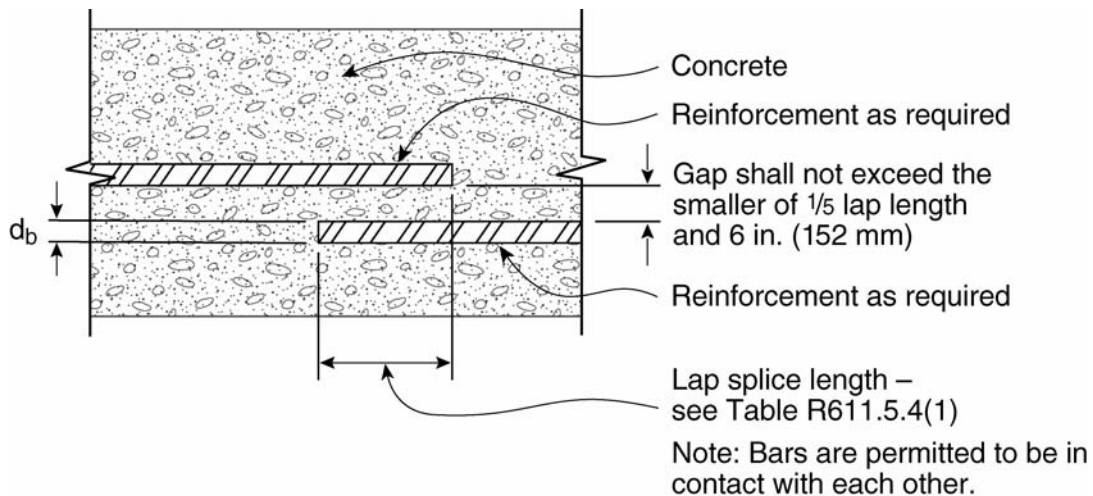


FIGURE R611.5.4(1)

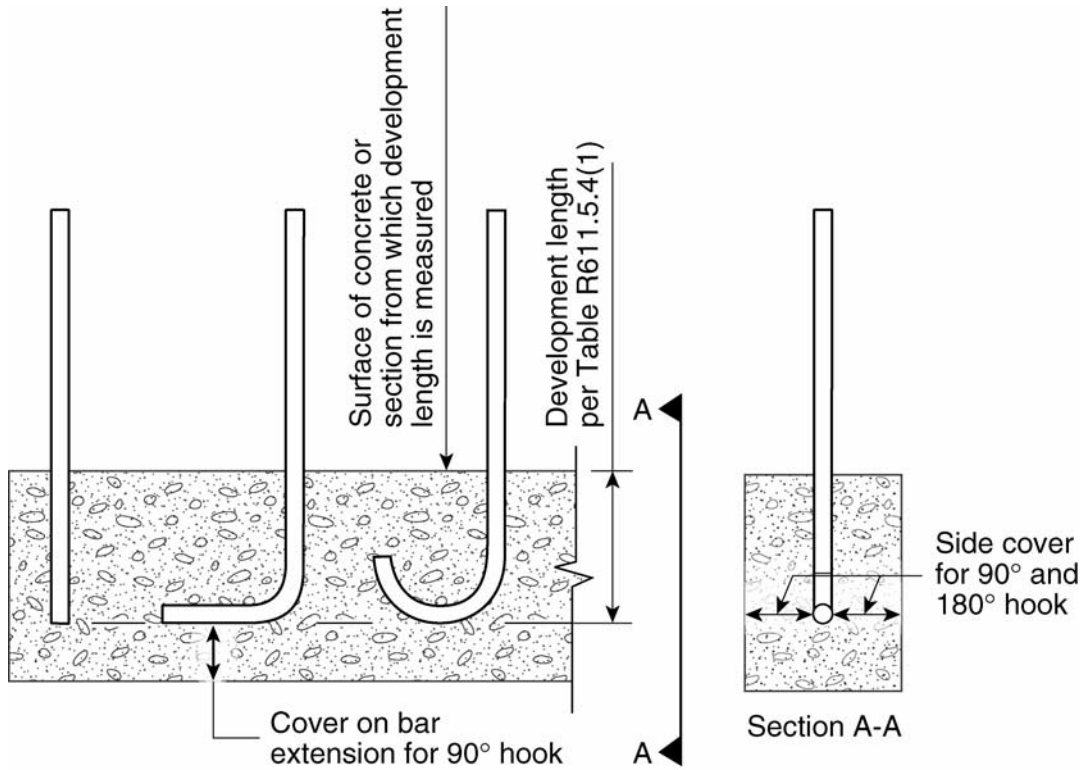
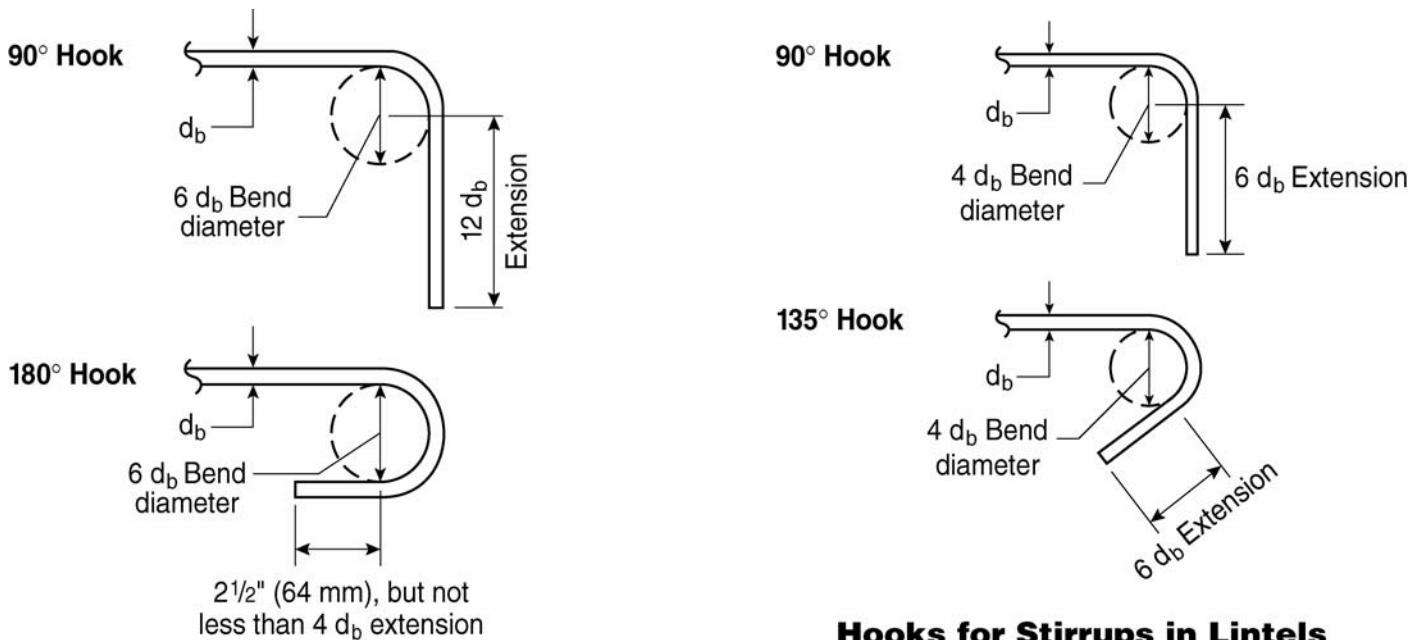


FIGURE R611.5.4(2)



Hooks for Stirrups in Lintels

Hooks for Reinforcement in Walls and Foundations

FIGURE R611.5.4(3)

Above-grade concrete walls shall be constructed in accordance with this section and Figure R611.6(1), R611.6(2), R611.6(3), or R611.6(4). Above-grade concrete walls that are continuous with stem walls and not laterally supported by the slab-on-ground shall be designed and constructed in accordance with this section. Concrete walls shall be supported on continuous foundation walls or slabs-on-ground that are monolithic with the footing in accordance with Section R403. The minimum length of solid wall without openings shall be in accordance with Section R611.7. Reinforcement around openings, including lintels, shall be in accordance with Section R611.8. Lateral support for above-grade walls in the out-of-plane direction shall be provided by connections to the floor framing system, if applicable, and to ceiling and roof framing systems in accordance with Section R611.9. The wall thickness shall be equal to or greater than the thickness of the wall in the story above.

R611.6.2 Wall reinforcement for wind. Vertical wall reinforcement for resistance to out-of-plane wind forces shall be determined from Table R611.6(1), R611.6(2), R611.6(3) or R611.6(4). Also, see Sections R611.7.2.2.2 and R611.7.2.2.3. There shall be a vertical bar at all corners of exterior walls. Unless more horizontal reinforcement is required by Section R611.7.2.2.1, the minimum horizontal reinforcement shall be four No. 4 bars (Grade 40 (280 MPa)) placed as follows: top bar within 12 inches (305 mm) of the top of the wall, bottom bar within 12 inches (305 mm) of the finish floor, and one bar each at approximately one-third and two-thirds of the wall height.

R611.6.3 Continuity of wall reinforcement between stories. Vertical reinforcement required by this section shall be continuous between elements providing lateral support for the wall. Reinforcement in the wall of the story above shall be continuous with the reinforcement in the wall of the story below, or the foundation wall, if applicable. Lap splices, where required, shall comply with Section R611.5.4.3 and Figure R611.5.4(1). Where the above-grade wall is supported by a monolithic slab-on-ground and footing, dowel bars with a size and spacing to match the vertical above-grade concrete wall reinforcement shall be embedded in the monolithic slab-on-ground and footing the distance required to develop the dowel bar in tension in accordance with Section R611.5.4.4 and Figure R611.5.4(2) and lap-spliced with the above-grade wall reinforcement in accordance with Section R611.5.4.3 and Figure R611.5.4(1).

Exception: Where reinforcement in the wall above cannot be made continuous with the reinforcement in the wall below, the bottom of the reinforcement in the wall above shall be terminated in accordance with one of the following:

1. Extend below the top of the floor the distance required to develop the bar in tension in accordance with Section R611.5.4.4 and Figure R611.5.4(2).
2. Lap-spliced in accordance with Section R611.5.4.3 and Figure R611.5.4(1) with a dowel bar that extends into the wall below the distance required to develop the bar in tension in accordance with Section R611.5.4.4 and Figure R611.5.4(2).

Where a construction joint in the wall is located below the level of the floor and less than the distance required to develop the bar in tension, the distance required to develop the bar in tension shall be measured from the top of the concrete below the joint. See Section R611.5.5.

R611.6.4 Termination of reinforcement. Where indicated in items 1 through 3 below, vertical wall reinforcement in the top-most story with concrete walls shall be terminated with a 90-degree standard hook complying with Section R611.5.4.5 and Figure R611.5.4(3).

1. Vertical bars adjacent to door and window openings required by Section R611.8.1.2.
2. Vertical bars at the ends of required solid wall segments. See Section R611.7.2.2.2.
3. Vertical bars (other than end bars – see item 2) used as shear reinforcement in required solid wall segments where the reduction factor for design strength, R_3 , used is based on the wall having horizontal and vertical shear reinforcement. See Section R611.7.2.2.3.

The bar extension of the hook shall be oriented parallel to the horizontal wall reinforcement and be within 4 inches (102 mm) of the top of the wall.

Horizontal reinforcement shall be continuous around the building corners by bending one of the bars and lap-splicing it with the bar in the other wall in accordance with Section R611.5.4.3 and Figure R611.5.4(1).

Exception: In lieu of bending horizontal reinforcement at corners, separate bent reinforcing bars shall be permitted provided that the bent bar is lap-spliced with the horizontal reinforcement in both walls in accordance with Section R611.5.4.3 and Figure R611.5.4(1).

In required solid wall segments where the reduction factor for design strength, R_3 , is based on the wall having horizontal and vertical shear reinforcement in accordance with Section R611.7.2.2.1, horizontal wall reinforcement shall be terminated with a standard hook complying with Section R611.5.4.5 and Figure R611.5.4(3) or in a lap-splice, except at corners where the reinforcement shall be continuous as required above.

R611.6.5 Location of reinforcement in wall. Except for vertical reinforcement at the ends of required solid wall segments which shall be located as required by Section R611.7.2.2.2, the location of the vertical reinforcement shall not vary from the center of the wall by more than the greater of 10% of the wall thickness and 3/8-inch (10 mm). Horizontal and vertical reinforcement shall be located to provide not less than the minimum cover required by Section R611.5.4.1.

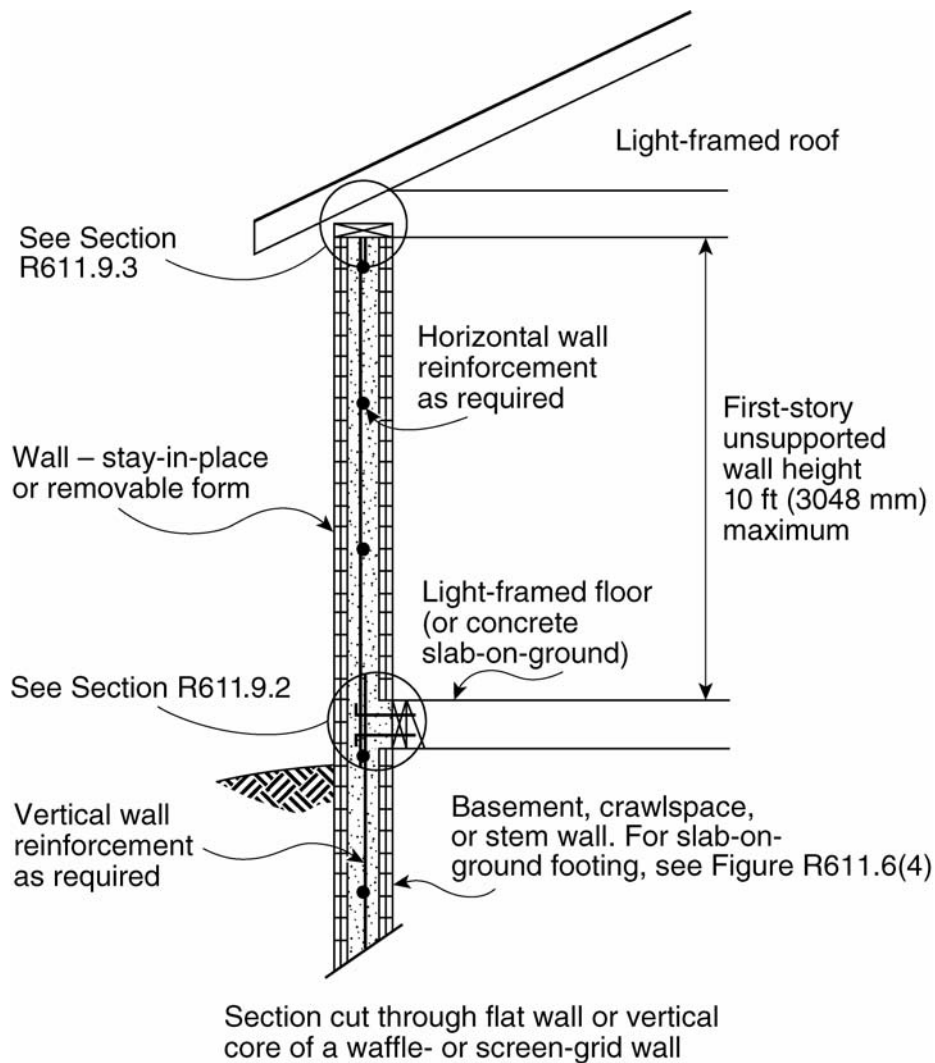
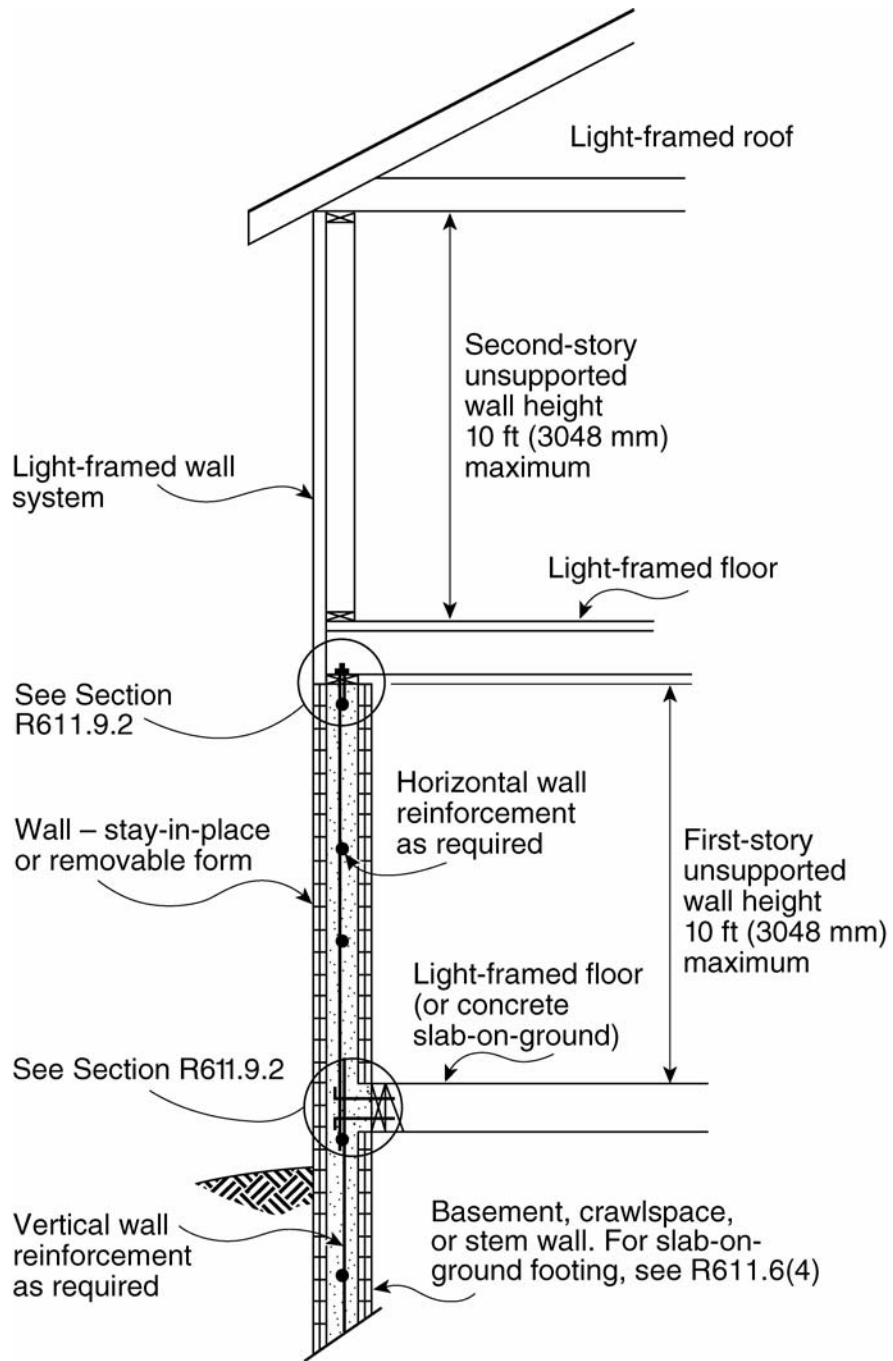


FIGURE R611.6(1)



Section cut through flat wall or vertical core of a waffle- or screen-grid wall

FIGURE R611.6(2)

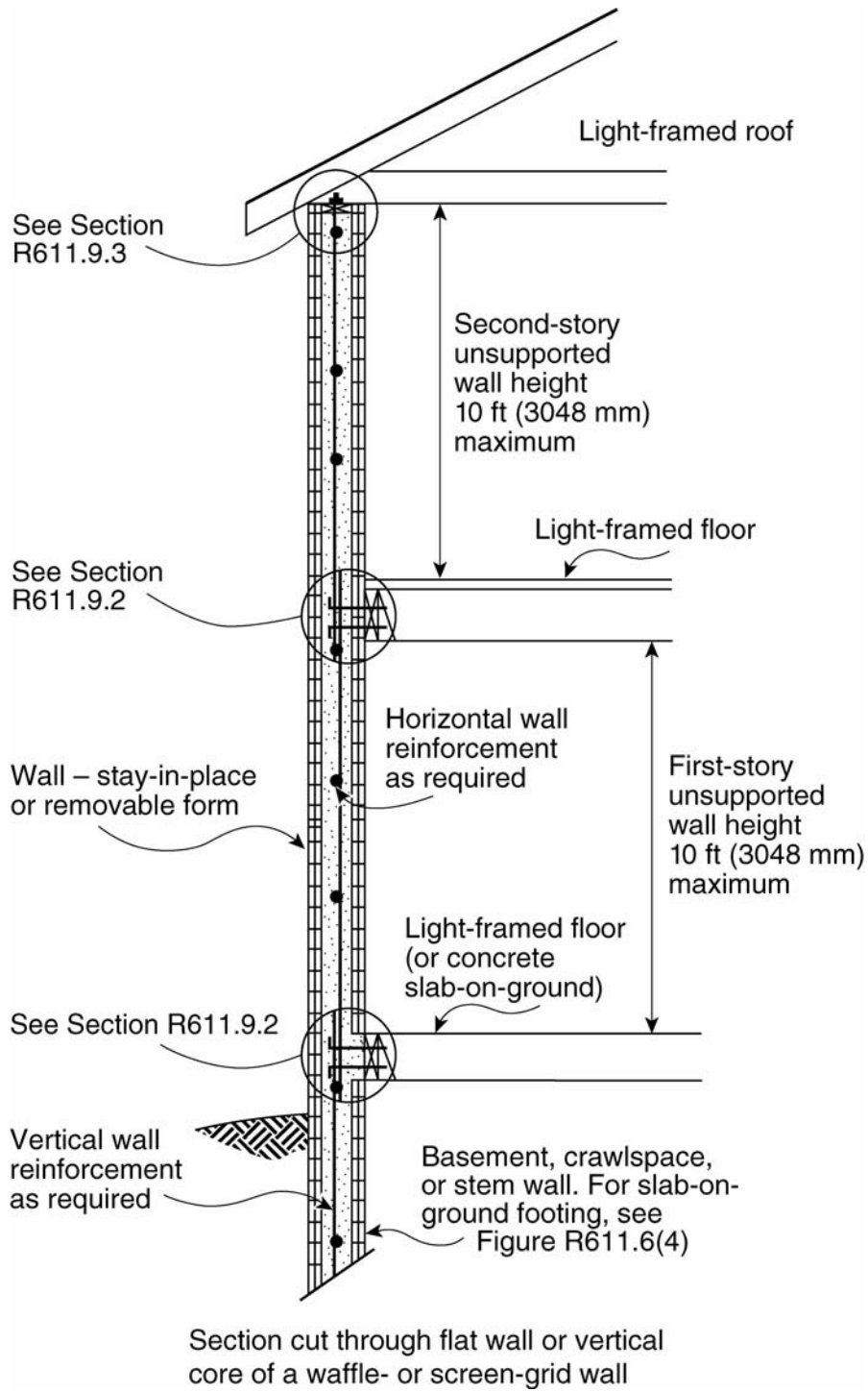
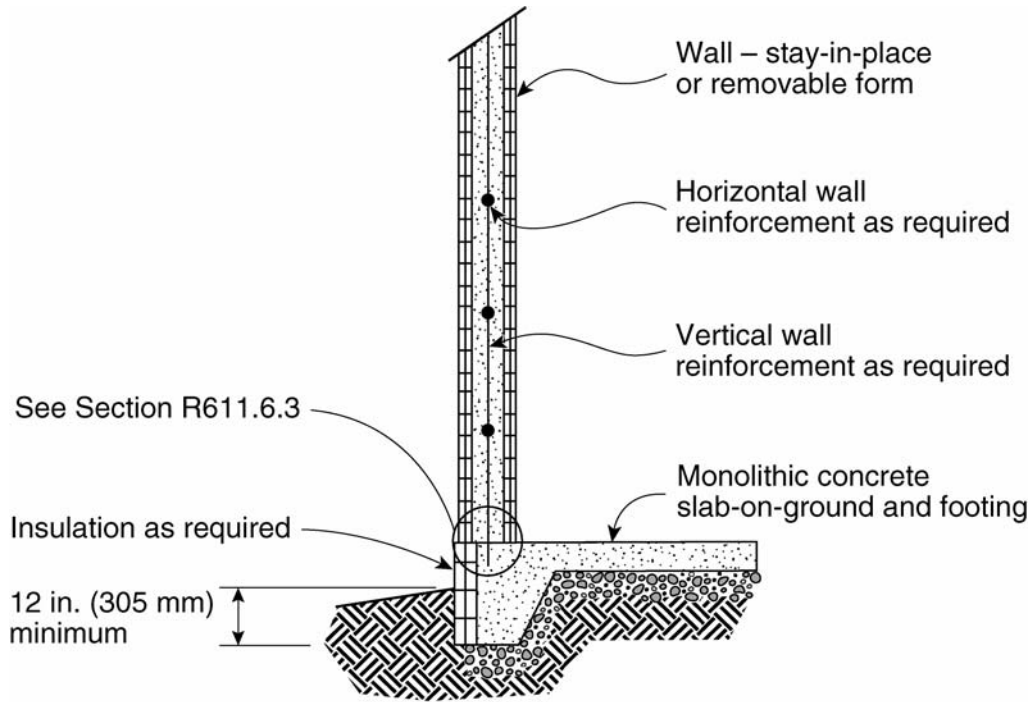


FIGURE R611.6(3)



Section cut through flat wall or vertical core of a waffle- or screen-grid wall

FIGURE R611.6(4)

TABLE R611.6(1)
MINIMUM VERTICAL REINFORCEMENT FOR FLAT ABOVE-GRADE WALLS ^{a,b,c,d,e}

Basic Wind Speed (mph)			Maximum Unsupported Wall Height Per Story (ft.)	Minimum Vertical Reinforcement – Bar Size and Spacing – in. ^{f,g}							
				Nominal ^h wall thickness (inches)							
Exposure Category				4		6		8		10	
B	C	D		Top ⁱ	Side ⁱ	Top ⁱ	Side ⁱ	Top ⁱ	Side ⁱ	Top ⁱ	Side ⁱ
85			8	4@48	4@48	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@48	4@43	4@48	4@48	4@48	4@48	4@48	4@48
			10	4@47	4@36	4@48	4@48	4@48	4@48	4@48	4@48
90			8	4@48	4@47	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@48	4@39	4@48	4@48	4@48	4@48	4@48	4@48
			10	4@42	4@34	4@48	4@48	4@48	4@48	4@48	4@48
100	85		8	4@48	4@40	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@42	4@34	4@48	4@48	4@48	4@48	4@48	4@48
			10	4@34	4@34	4@48	4@48	4@48	4@48	4@48	4@48
110	90	85	8	4@44	4@34	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@34	4@34	4@48	4@48	4@48	4@48	4@48	4@48
			10	4@34	4@31	4@48	4@37	4@48	4@48	4@48	4@48
120	100	90	8	4@36	4@34	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@34	4@32	4@48	4@38	4@48	4@48	4@48	4@48
			10	4@30	4@27	4@48	5@48	4@48	4@48	4@48	4@48
130	110	100	8	4@34	4@34	4@48	4@48	4@48	4@48	4@48	4@48
			9	4@32	4@28	4@48	4@33	4@48	4@48	4@48	4@48
			10	4@26	4@23	4@48	5@43	4@48	4@48	4@48	4@48

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mph = 0.447 m/s

^a Table is based on ASCE 7 components and cladding wind pressures for an enclosed building using a mean roof height of 35 ft (10.7 m), interior wall area 4, an effective wind area of 10 ft² (0.9 m²), and topographic factor, K_z , and importance factor, I , equal to 1.0.

^b Table is based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa).

^c See Section R611.6.5 for location of reinforcement in wall.

^d Deflection criterion is $L/240$, where L is the unsupported height of the wall in inches.

^e Interpolation shall not be permitted.

^f Where No. 4 reinforcing bars at a spacing of 48 inches (1219 mm) are specified in the table, bars with a minimum yield strength of 40,000 psi (280 MPa) or 60,000 psi (420 MPa) are permitted to be used.

^g Other than for No. 4 bars spaced at 48 inches (1219 mm) on center, table values are based on reinforcing bars with a minimum yield strength of 60,000 psi (420 MPa). Vertical reinforcement with a yield strength of less than 60,000 psi (420 MPa) and/or bars of a different size than specified in the table are permitted in accordance with Section R611.5.4.7 and Table R611.5.4(2).

^h See Table R611.3 for tolerances on nominal thicknesses.

ⁱ **Top** means gravity load from roof and/or floor construction bears on top of wall. **Side** means gravity load from floor construction is transferred to wall from a wood ledger or cold-formed steel track bolted to side of wall. Where floor framing members span parallel to the wall, the **top** bearing condition is permitted to be used.

TABLE R611.6(2)
MINIMUM VERTICAL REINFORCEMENT FOR WAFFLE-GRID ABOVE-GRADE WALLS ^{a,b,c,d,e}

Basic Wind Speed (mph)			Maximum Unsupported Wall Height Per Story (ft.)	Minimum Vertical Reinforcement – Bar Size and Spacing – in. ^{f,g}			
				Nominal ^h wall thickness (inches)			
Exposure Category			6		8		
B	C	D	Top ⁱ	Side ⁱ	Top ⁱ	Side ⁱ	
85			8	4@48	4@36, 5@48	4@48	4@48
			9	4@48	4@30, 5@47	4@48	4@45
			10	4@48	4@26, 5@40	4@48	4@39
90			8	4@48	4@33, 5@48	4@48	4@48
			9	4@48	4@28, 5@43	4@48	4@42
			10	4@31, 5@48	4@24, 5@37	4@48	4@36
100	85		8	4@48	4@28, 5@44	4@48	4@43
			9	4@31, 5@48	4@24, 5@37	4@48	4@36
			10	4@25, 5@39	4@24, 5@37	4@48	4@31, 5@48
110	90	85	8	4@33, 5@48	4@25, 5@38	4@48	4@38
			9	4@26, 5@40	4@24, 5@37	4@48	4@31, 5@48
			10	4@24, 5@37	4@23, 5@35	4@48	4@27, 5@41
120	100	90	8	4@27, 5@42	4@24, 5@37	4@48	4@33, 5@48
			9	4@24, 5@37	4@23, 5@36	4@48	4@27, 5@43
			10	4@23, 5@35	4@19, 5@30	4@48	4@23, 5@36
130	110	100	8	4@24, 5@37	4@24, 5@37	4@48	4@29, 5@45
			9	4@24, 5@37	4@20, 5@32	4@48	4@24, 5@37
			10	4@19, 5@30	4@17, 5@26	4@23, 5@36	4@20, 5@31

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mph = 0.447 m/s

^a Table is based on ASCE 7 components and cladding wind pressures for an enclosed building using a mean roof height of 35 ft (10 668 mm), interior wall area 4, an effective wind area of 10 ft² (0.9 m²), and topographic factor, K_{zt} , and importance factor, I , equal to 1.0.

^b Table is based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa).

^c See Section R611.6.5 for location of reinforcement in wall.

^d Deflection criterion is $L/240$, where L is the unsupported height of the wall in inches.

^e Interpolation shall not be permitted.

^f Where No. 4 reinforcing bars at a spacing of 48 inches (1219 mm) are specified in the table, bars with a minimum yield strength of 40,000 psi (280 MPa) or 60,000 psi (420 MPa) are permitted to be used.

^g Other than for No. 4 bars spaced at 48 inches (1219 mm) on center, table values are based on reinforcing bars with a minimum yield strength of 60,000 psi (420 MPa). Maximum spacings shown are the values calculated for the specified bar size. Where the bar used is Grade 60 (420 MPa) and the size specified in the table, the actual spacing in the wall shall not exceed a whole-number multiple of 12 inches (i.e., 12, 24, 36 and 48) that is less than or equal to the tabulated spacing. Vertical reinforcement with a yield strength of less than 60,000 psi (420 MPa) and/or bars of a different size than specified in the table are permitted in accordance with Section R611.5.4.7 and Table R611.5.4(2).

^h See Table R611.3 for minimum core dimensions and maximum spacing of horizontal and vertical cores.

ⁱ **Top** means gravity load from roof and/or floor construction bears on top of wall. **Side** means gravity load from floor construction is transferred to wall from a wood ledger or cold-formed steel track bolted to side of wall. Where floor framing members span parallel to the wall, the **top** bearing condition is permitted to be used.

TABLE R611.6(3)
MINIMUM VERTICAL REINFORCEMENT FOR 6-INCH SCREEN-GRID ABOVE-GRADE WALLS ^{a,b,c,d,e}

Basic Wind Speed (mph)			Maximum Unsupported Wall Height Per Story (ft.)	Minimum Vertical Reinforcement – Bar Size and Spacing – in. ^{f,g}	
Exposure Category				Nominal ^h wall thickness (inches)	
B	C	D		6	
			Top ⁱ	Side ⁱ	
85			8	4@48	4@34, 5@48
			9	4@48	4@29, 5@45
			10	4@48	4@25, 5@39
90			8	4@48	4@31, 5@48
			9	4@48	4@27, 5@41
			10	4@30, 5@47	4@23, 5@35
100	85		8	4@48	4@27, 5@42
			9	4@30, 5@47	4@23, 5@35
			10	4@24, 5@38	4@22, 5@34
110	90	85	8	4@48	4@24, 5@37
			9	4@25, 5@38	4@22, 5@34
			10	4@22, 5@34	4@22, 5@34
120	100	90	8	4@26, 5@41	4@22, 5@34
			9	4@22, 5@34	4@22, 5@34
			10	4@22, 6@34	4@19, 5@26
130	110	100	8	4@22, 5@35	4@22, 5@34
			9	4@22, 5@34	4@20, 5@30
			10	4@19, 5@29	4@16, 5@25

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mph = 0.447 m/s

^a Table is based on ASCE 7 components and cladding wind pressures for an enclosed building using a mean roof height of 35 ft (10 668 mm), interior wall area 4, an effective wind area of 10 ft² (0.9 m²), and topographic factor, K_{zt} , and importance factor, I , equal to 1.0.

^b Table is based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa).

^c See Section R611.6.5 for location of reinforcement in wall.

^d Deflection criterion is $L/240$, where L is the unsupported height of the wall in inches.

^e Interpolation shall not be permitted.

^f Where No. 4 reinforcing bars at a spacing of 48 inches are specified in the table, bars with a minimum yield strength of 40,000 psi (280 MPa) or 60,000 psi (420 MPa) are permitted to be used.

^g Other than for No. 4 bars spaced at 48 inches (1219 mm) on center, table values are based on reinforcing bars with a minimum yield strength of 60,000 psi (420 MPa). Maximum spacings shown are the values calculated for the specified bar size. Where the bar used is Grade 60 (420 MPa) and the size specified in the table, the actual spacing in the wall shall not exceed a whole-number multiple of 12 inches (i.e., 12, 24, 36 and 48) that is less than or equal to the tabulated spacing. Vertical reinforcement with a yield strength of less than 60,000 psi (420 MPa) and/or bars of a different size than specified in the table are permitted in accordance with Section R611.5.4.7 and Table R611.5.4(2).

^h See Table R611.3 for minimum core dimensions and maximum spacing of horizontal and vertical cores.

ⁱ **Top** means gravity load from roof and/or floor construction bears on top of wall. **Side** means gravity load from floor construction is transferred to wall from a wood ledger or cold-formed steel track bolted to side of wall. Where floor framing members span parallel to the wall, the **top** bearing condition is permitted to be used.

R611.7.1.1 Length of solid wall for wind. All buildings shall have solid walls in each exterior endwall line (the side of a building that is parallel to the span of the roof or floor framing) and sidewall line (the side of a building that is perpendicular to the span of the roof or floor framing) to resist lateral in-plane wind forces. The site-appropriate basic wind speed and exposure category shall be used in Tables R611.7(1)A through C to determine the unreduced total length, UR , of solid wall required in each exterior endwall line and sidewall line. For buildings with a mean roof height of less than 35 feet (10.7 m), the unreduced values determined from Tables R611.7(1)A through C are permitted to be reduced by multiplying by the applicable factor, R_1 , from Table R611.7(2); however, reduced values shall not be less than the minimum values in Tables R611.7(1)A through C. Where the floor-to-ceiling height of a story is less than 10 feet (3.1 m), the unreduced values determined from Tables R611.7(1)A through C, including minimum values, are permitted to be reduced by multiplying by the applicable factor, R_2 , from Table R611.7(3). To account for different design strengths than assumed in determining the values in Tables R611.7(1)A through C, the unreduced lengths determined from Tables R611.7(1)A through C, including minimum values, are permitted to be reduced by multiplying by the applicable factor, R_3 , from Table R611.7(4). The reductions permitted by Tables R611.7(2), R611.7(3) and R611.7(4) are cumulative.

The total length of solid wall segments, TL , in a wall line that comply with the minimum length requirements of Section R611.7.2.1 (see Figure R611.7(1)) shall be equal to or greater than the product of the unreduced length of solid wall from Tables R611.7(1)A through C, UR , and the applicable reduction factors, if any, from Tables R611.7(2), R611.7(3) and R611.7(4) as indicated by Eq. R611-1.

$$TL \geq R_1 * R_2 * R_3 * UR \quad \text{Equation R611-1}$$

Where

TL = total length of solid wall segments in a wall line that comply with Section R611.7.2.1 (see Figure R611.7(1)), and

R_1 = 1.0 or reduction factor for mean roof height from Table R611.7(2),

R_2 = 1.0 or reduction factor for floor-to-ceiling wall height from Table R611.7(3),

R_3 = 1.0 or reduction factor for design strength from Table R611.7(4), and

UR = unreduced length of solid wall from Tables R611.7(1)A through C.

The total length of solid wall provided in a wall line, TL , shall not be less than that provided by two solid wall segments complying with the minimum length requirements of Section R611.7.2.1.

To facilitate determining the required wall thickness, wall type, number and grade of vertical bars at the each end of each solid wall segment, and whether shear reinforcement is required, Eq. R611-2 is permitted to be used.

$$R_3 \leq \frac{TL}{R_1 * R_2 * UR} \quad \text{Equation R611-2}$$

After determining the maximum permitted value of the reduction factor for design strength, R_3 , in accordance with Eq. R611-2, select a wall type from Table R611.7(4) with R_3 less than or equal to the value calculated.

R611.7.2 Solid wall segments. Solid wall segments that contribute to the required length of solid wall shall comply with this section. Reinforcement shall be provided in accordance with Section R611.7.2.2 and Table R611.7(4). Solid wall segments shall extend the full story-height without openings, other than openings for the purpose of utilities and other building services passing through the wall. In flat walls and waffle-grid walls, such openings shall have an area of less than 30 square inches (19,355 mm²) with no dimension exceeding 6.25 inches (159 mm), and shall not be located within 6 inches (152 mm) of the side edges of the solid wall segment. In screen-grid walls, such openings shall be located in the portion of the solid wall segment between horizontal and vertical cores of concrete and opening size and location are not restricted provided no concrete is removed.

R611.7.2.1 Minimum length of solid wall segment and maximum spacing. Only solid wall segments equal to or greater than 24 inches (610 mm) in length shall be included in the total length of solid wall required by Section R611.7.1. In addition, no more than two solid wall segments equal to or greater than 24 inches (610 mm) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall. The maximum clear opening width shall be 18 feet (5.5 m). See Figure R611.7(1).

R611.7.2.2 Reinforcement in solid wall segments

R611.7.2.2.1 Horizontal shear reinforcement. Where reduction factors for design strength, R_3 , from Table R611.7(4) based on horizontal and vertical shear reinforcement being provided are used, solid wall segments shall have horizontal reinforcement consisting of minimum No. 4 bars. Horizontal shear reinforcement shall be the same grade of steel required for the vertical reinforcement at the ends of solid wall segments by Section R611.7.2.2.2.

The spacing of horizontal reinforcement shall not exceed the smaller of one-half the length of the solid wall segment, minus 2 inches (51 mm), and 18 inches (457 mm). Horizontal shear reinforcement shall terminate in accordance with Section R611.6.4.

R611.7.2.2.2 Vertical reinforcement. Vertical reinforcement applicable to the reduction factor(s) for design strength, R_3 , from Table R611.7(4) that is used, shall be located at each end of each solid wall segment in accordance with the applicable detail in Figure R611.7(2). The No. 4 vertical bar required on each side of an opening by Section R611.8.1.2 is permitted to be used as reinforcement at the ends of solid wall segments where installed in accordance with the applicable detail in Figure R611.7(2). There shall be not less than two No. 4 bars at each end of solid wall segments located as required by the applicable detail in Figure R611.7(2). One of the bars at each end of solid wall segments shall be deemed to meet the requirements for vertical wall reinforcement required by Section R611.6.

The vertical wall reinforcement at each end of each solid wall segment shall be developed below the bottom of the adjacent wall opening (see Figure R611.7(3)) by one of the following methods:

1. Where the wall height below the bottom of the adjacent opening is equal to or greater than 22 inches (559 mm) for No. 4 or 28 inches (711 mm) for No. 5 vertical wall reinforcement, reinforcement around openings in accordance with Section R611.8.1 shall be sufficient, or
2. Where the wall height below the bottom of the adjacent opening is less than required by Item 1 above, the vertical wall reinforcement adjacent to the opening shall extend into the footing far enough to develop the bar in tension in accordance with Section R611.5.4.4 and Figure R611.5.4(2), or shall be lap-spliced with a dowel that is embedded in the footing far enough to develop the dowel-bar in tension.

R611.7.2.2.3 Vertical shear reinforcement. Where reduction factors for design strength, R_3 , from Table R611.7(4) based on horizontal and vertical shear reinforcement being provided are used, solid wall segments shall have vertical reinforcement consisting of minimum No. 4 bars. Vertical shear reinforcement shall be the same grade of steel required for the vertical reinforcement at the ends of solid wall segments by Section R611.7.2.2.2. The spacing of vertical reinforcement throughout the length of the segment shall not exceed the smaller of one third the length of the segment, and 18 inches (457 mm). Vertical shear reinforcement shall be continuous between stories in accordance with Section R611.6.3, and shall terminate in accordance with Section R611.6.4. Vertical shear reinforcement required by this section is permitted to be used for vertical reinforcement required by Table R611.6(1), R611.6(2), R611.6(3) or R611.6(4), whichever is applicable.

R611.7.2.3 Solid wall segments at corners. At all interior and exterior corners of exterior walls, a solid wall segment shall extend the full height of each wall story. The segment shall have the length required to develop the horizontal reinforcement above and below the adjacent opening in tension in accordance with Section R611.5.4.4. For an exterior corner, the limiting dimension is measured on the outside of the wall, and for an interior corner the limiting dimension is measured on the inside of the wall. See Section R611.8.1. The length of a segment contributing to the required length of solid wall shall comply with Section R611.7.2.1.

The end of a solid wall segment complying with the minimum length requirements of Section R611.7.2.1 shall be located no more than 6 feet (1.8 m) from each corner.

TABLE R611.7(1)A
UNREDUCED LENGTH, *UR*, OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND
PERPENDICULAR TO RIDGE ONE STORY OR TOP STORY OF TWO-STORY^{a,c,d,e,f,g}

Sidewall length - ft.	Endwall length - ft.	Roof slope	Unreduced length, <i>UR</i> , of solid wall required in endwalls for wind perpendicular to ridge - ft.						
			85B	90B	100B	110B	120B	130B	Minimum ^b
					85C	90C	100C	110C	
						85D	90D	100D	
15	15	≤ 1 in 12	0.90	1.01	1.25	1.51	1.80	2.11	0.98
		5 in 12	1.25	1.40	1.73	2.09	2.49	2.92	1.43
		7 in 12	1.75	1.96	2.43	2.93	3.49	4.10	1.64
		12 in 12	2.80	3.13	3.87	4.68	5.57	6.54	2.21
	30	≤ 1 in 12	0.90	1.01	1.25	1.51	1.80	2.11	1.09
		5 in 12	1.25	1.40	1.73	2.09	2.49	2.92	2.01
		7 in 12	2.43	2.73	3.37	4.08	4.85	5.69	2.42
		12 in 12	4.52	5.07	6.27	7.57	9.01	10.58	3.57
	45	≤ 1 in 12	0.90	1.01	1.25	1.51	1.80	2.11	1.21
		5 in 12	1.25	1.40	1.73	2.09	2.49	2.92	2.59
		7 in 12	3.12	3.49	4.32	5.22	6.21	7.29	3.21
		12 in 12	6.25	7.00	8.66	10.47	12.45	14.61	4.93
60	≤ 1 in 12	0.90	1.01	1.25	1.51	1.80	2.11	1.33	
	5 in 12	1.25	1.40	1.73	2.09	2.49	2.92	3.16	
	7 in 12	3.80	4.26	5.26	6.36	7.57	8.89	3.99	
	12 in 12	7.97	8.94	11.05	13.36	15.89	18.65	6.29	
30	15	≤ 1 in 12	1.61	1.80	2.23	2.70	3.21	3.77	1.93
		5 in 12	2.24	2.51	3.10	3.74	4.45	5.23	2.75
		7 in 12	3.15	3.53	4.37	5.28	6.28	7.37	3.12
		12 in 12	4.90	5.49	6.79	8.21	9.77	11.46	4.14
	30	≤ 1 in 12	1.61	1.80	2.23	2.70	3.21	3.77	2.14
		5 in 12	2.24	2.51	3.10	3.74	4.45	5.23	3.78
		7 in 12	4.30	4.82	5.96	7.20	8.57	10.05	4.52
		12 in 12	7.79	8.74	10.80	13.06	15.53	18.23	6.57
	45	≤ 1 in 12	1.61	1.80	2.23	2.70	3.21	3.77	2.35
		5 in 12	2.24	2.51	3.10	3.74	4.45	5.23	4.81
		7 in 12	5.44	6.10	7.54	9.12	10.85	12.73	5.92
		12 in 12	10.69	11.98	14.81	17.90	21.30	25.00	9.00
60	≤ 1 in 12	1.61	1.80	2.23	2.70	3.21	3.77	2.56	
	5 in 12	2.24	2.51	3.10	3.74	4.45	5.23	5.84	
	7 in 12	6.59	7.39	9.13	11.04	13.14	15.41	7.32	
	12 in 12	13.58	15.22	18.82	22.75	27.07	31.77	11.43	
60	15	≤ 1 in 12	2.99	3.35	4.14	5.00	5.95	6.98	3.83
		5 in 12	4.15	4.65	5.75	6.95	8.27	9.70	5.37
		7 in 12	5.91	6.63	8.19	9.90	11.78	13.83	6.07
		12 in 12	9.05	10.14	12.54	15.16	18.03	21.16	8.00
	30	≤ 1 in 12	2.99	3.35	4.14	5.00	5.95	6.98	4.23
		5 in 12	4.15	4.65	5.75	6.95	8.27	9.70	7.31
		7 in 12	7.97	8.94	11.05	13.36	15.89	18.65	8.71
		12 in 12	14.25	15.97	19.74	23.86	28.40	33.32	12.57
	45	≤ 1 in 12	3.11	3.48	4.30	5.20	6.19	7.26	4.63
		5 in 12	4.31	4.84	5.98	7.23	8.60	10.09	9.25
		7 in 12	10.24	11.47	14.19	17.15	20.40	23.94	11.35
		12 in 12	19.84	22.24	27.49	33.23	39.54	46.40	17.14
60	≤ 1 in 12	3.22	3.61	4.46	5.39	6.42	7.53	5.03	
	5 in 12	4.47	5.01	6.19	7.49	8.91	10.46	11.19	
	7 in 12	12.57	14.09	17.42	21.05	25.05	29.39	13.99	
	12 in 12	25.61	28.70	35.49	42.90	51.04	59.90	21.71	

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mile per hour = 0.447 m/s

^aTabulated lengths were derived by calculating design wind pressures in accordance with Figure 6-10 of ASCE 7 for a building with a mean roof height of 35 feet (10 668 mm). For wind perpendicular to the ridge, the effects of a 2-foot (610 mm) overhang on each endwall are included. The design pressures were used to calculate forces to be resisted by solid wall segments in each endwall (Table R611.7(1)A or R611.7(1)B or sidewall (Table R611.7(1)C), as appropriate. The forces to be resisted by each wall line were then divided by the default design strength of 840 pounds per linear foot (12.26 kN/m) of length to determine the required solid wall length. The actual mean roof height of the building shall not exceed the least horizontal dimension of the building.

^bTabulated lengths in the “minimum” column are based on the requirement of Section 6.1.4.1 of ASCE 7 that the main wind-force resisting system be designed for a minimum service level force of 10 psf (0.48 kPa) multiplied by the area of the building projected onto a vertical plane normal to the assumed wind direction. Tabulated lengths in shaded cells are less than the “minimum” value. Where the minimum controls, it is permitted to be reduced in accordance with Notes c, d and e. See Section R611.7.1.1.

^c For buildings with a mean roof height of less than 35 feet (10.7 m), tabulated lengths are permitted to be reduced by multiplying by the appropriate factor, R_1 , from Table R611.7(2). The reduced length shall not be less than the "minimum" value shown in the table.

^d Tabulated lengths for "one story or top story of two-story" are based on a floor-to-ceiling height of 10 feet (3048 mm). Tabulated lengths for "first story of two-story" are based on floor-to-ceiling heights of 10 feet (3048 mm) each for the first and second story. For floor-to-ceiling heights less than assumed, use the lengths in Table R611.7(1)A, B or C, or multiply the value in the table by the reduction factor, R_2 , from Table R611.7(3).

^e Tabulated lengths are based on the default design shear strength of 840 pounds per linear foot (12.26 kN/m) of solid wall segment. The tabulated lengths are permitted to be reduced by multiplying by the applicable reduction factor for design strength, R_3 , from Table R611.7(4).

^f The reduction factors, R_1 , R_2 , and R_3 , in Tables R611.7(2), R611.7(3), and R611.7(4), respectively, are permitted to be compounded, subject to the limitations of Note b. However, the minimum number and minimum length of solid walls segments in each wall line shall comply with Sections R611.7.1 and R611.7.2.1, respectively.

^g For intermediate values of sidewall length, endwall length, roof slope and basic wind speed, use the next higher value, or determine by interpolation.

TABLE R611.7(1)B
UNREDUCED LENGTH, U_R , OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE FIRST STORY OF TWO-STORY^{a,c,d,e,f,g}

Sidewall length - ft.	Endwall length - ft.	Roof slope	Unreduced length, U_R , of solid wall required in endwalls for wind perpendicular to ridge - ft.							
			85B	90B	100B	110B	120B	130B	Minimum ^b	
					85C	90C	100C	110C		
						85D	90D	100D		
			Velocity pressure - psf							
			11.51	12.90	15.95	19.28	22.94	26.92		
15	15	≤ 1 in 12	2.60	2.92	3.61	4.36	5.19	6.09	2.59	
		5 in 12	3.61	4.05	5.00	6.05	7.20	8.45	3.05	
		7 in 12	3.77	4.23	5.23	6.32	7.52	8.82	3.26	
		12 in 12	4.81	5.40	6.67	8.06	9.60	11.26	3.83	
	30	≤ 1 in 12	2.60	2.92	3.61	4.36	5.19	6.09	2.71	
		5 in 12	3.61	4.05	5.00	6.05	7.20	8.45	3.63	
		7 in 12	4.45	4.99	6.17	7.46	8.88	10.42	4.04	
		12 in 12	6.54	7.33	9.06	10.96	13.04	15.30	5.19	
	45	≤ 1 in 12	2.60	2.92	3.61	4.36	5.19	6.09	2.83	
		5 in 12	3.61	4.05	5.00	6.05	7.20	8.45	4.20	
		7 in 12	5.14	5.76	7.12	8.60	10.24	12.01	4.83	
		12 in 12	8.27	9.27	11.46	13.85	16.48	19.34	6.55	
	60	≤ 1 in 12	2.60	2.92	3.61	4.36	5.19	6.09	2.95	
		5 in 12	3.61	4.05	5.00	6.05	7.20	8.45	4.78	
		7 in 12	5.82	6.52	8.06	9.75	11.60	13.61	5.61	
		12 in 12	9.99	11.20	13.85	16.74	19.92	23.37	7.90	
	30	15	≤ 1 in 12	4.65	5.21	6.45	7.79	9.27	10.88	5.16
			5 in 12	6.46	7.24	8.95	10.82	12.87	15.10	5.98
			7 in 12	6.94	7.78	9.62	11.62	13.83	16.23	6.35
			12 in 12	8.69	9.74	12.04	14.55	17.32	20.32	7.38
		30	≤ 1 in 12	4.65	5.21	6.45	7.79	9.27	10.88	5.38
			5 in 12	6.46	7.24	8.95	10.82	12.87	15.10	7.01
			7 in 12	8.09	9.06	11.21	13.54	16.12	18.91	7.76
			12 in 12	11.58	12.98	16.05	19.40	23.08	27.09	9.81
45		≤ 1 in 12	4.65	5.21	6.45	7.79	9.27	10.88	5.59	
		5 in 12	6.46	7.24	8.95	10.82	12.87	15.10	8.04	
		7 in 12	9.23	10.35	12.79	15.46	18.40	21.59	9.16	
		12 in 12	14.48	16.22	20.06	24.25	28.85	33.86	12.24	
60		≤ 1 in 12	4.65	5.21	6.45	7.79	9.27	10.88	5.80	
		5 in 12	6.46	7.24	8.95	10.82	12.87	15.10	9.08	
		7 in 12	10.38	11.63	14.38	17.38	20.69	24.27	10.56	
		12 in 12	17.37	19.47	24.07	29.10	34.62	40.63	14.67	
60		15	≤ 1 in 12	8.62	9.67	11.95	14.45	17.19	20.17	10.30
			5 in 12	11.98	13.43	16.61	20.07	23.88	28.03	11.85
			7 in 12	13.18	14.78	18.27	22.08	26.28	30.83	12.54
			12 in 12	16.32	18.29	22.62	27.34	32.53	38.17	14.48
		30	≤ 1 in 12	8.62	9.67	11.95	14.45	17.19	20.17	10.70
			5 in 12	11.98	13.43	16.61	20.07	23.88	28.03	13.79
			7 in 12	15.25	17.09	21.13	25.54	30.38	35.66	15.18
			12 in 12	21.52	24.12	29.82	36.05	42.89	50.33	19.05
	45	≤ 1 in 12	8.97	10.06	12.43	15.03	17.88	20.99	11.10	
		5 in 12	12.46	13.97	17.27	20.88	24.84	29.15	15.73	
		7 in 12	17.67	19.80	24.48	29.59	35.21	41.32	17.82	
		12 in 12	27.27	30.56	37.79	45.68	54.35	63.78	23.62	
	60	≤ 1 in 12	9.30	10.43	12.89	15.58	18.54	21.76	11.50	
		5 in 12	12.91	14.47	17.90	21.63	25.74	30.20	17.67	
		7 in 12	20.14	22.58	27.91	33.74	40.15	47.11	20.46	
		12 in 12	33.19	37.19	45.99	55.59	66.14	77.62	28.19	

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mile per hour = 0.447 m/s; 1 psf = 0.0479 kPa
 For Notes see Table R611.7(1)A.

TABLE R611.7(1)C
UNREDUCED LENGTH, UR, OF SOLID WALL REQUIRED IN EACH
EXTERIOR SIDEWALL FOR WIND PARALLEL TO RIDGE^{a,c,d,e,f,g}

Sidewall length - ft.	Endwall length - ft.	Roof slope	Unreduced length, <i>UR</i> , of solid wall required in sidewalls for wind parallel to ridge - ft.							Minimum ^b
			85B	90B	100B	110B	120B	130B		
					85C	90C	100C	110C		
					85D	90D	100D			
One story or top story of two-story										
≤ 30	15	≤ 1 in 12	0.95	1.06	1.31	1.59	1.89	2.22	0.90	
		5 in 12	1.13	1.26	1.56	1.88	2.24	2.63	1.08	
		7 in 12	1.21	1.35	1.67	2.02	2.40	2.82	1.17	
		12 in 12	1.43	1.60	1.98	2.39	2.85	3.34	1.39	
	30	≤ 1 in 12	1.77	1.98	2.45	2.96	3.53	4.14	1.90	
		5 in 12	2.38	2.67	3.30	3.99	4.75	5.57	2.62	
		7 in 12	2.66	2.98	3.69	4.46	5.31	6.23	2.95	
		12 in 12	3.43	3.85	4.76	5.75	6.84	8.03	3.86	
	45	≤ 1 in 12	2.65	2.97	3.67	4.43	5.27	6.19	2.99	
		5 in 12	3.98	4.46	5.51	6.66	7.93	9.31	4.62	
		7 in 12	4.58	5.14	6.35	7.68	9.14	10.72	5.36	
		12 in 12	6.25	7.01	8.67	10.48	12.47	14.63	7.39	
60	≤ 1 in 12	3.59	4.03	4.98	6.02	7.16	8.40	4.18		
	5 in 12	5.93	6.65	8.22	9.93	11.82	13.87	7.07		
	7 in 12	6.99	7.83	9.69	11.71	13.93	16.35	8.38		
	12 in 12	9.92	11.12	13.75	16.62	19.77	23.21	12.00		
60	45	≤ 1 in 12	2.77	3.11	3.84	4.65	5.53	6.49	2.99	
		5 in 12	4.15	4.66	5.76	6.96	8.28	9.72	4.62	
		7 in 12	4.78	5.36	6.63	8.01	9.53	11.18	5.36	
		12 in 12	6.51	7.30	9.03	10.91	12.98	15.23	7.39	
	60	≤ 1 in 12	3.86	4.32	5.35	6.46	7.69	9.02	4.18	
		5 in 12	6.31	7.08	8.75	10.57	12.58	14.76	7.07	
		7 in 12	7.43	8.32	10.29	12.44	14.80	17.37	8.38	
		12 in 12	10.51	11.78	14.56	17.60	20.94	24.57	12.00	
First story of two-story										
≤ 30	15	≤ 1 in 12	2.65	2.97	3.67	4.44	5.28	6.20	2.52	
		5 in 12	2.83	3.17	3.92	4.74	5.64	6.62	2.70	
		7 in 12	2.91	3.26	4.03	4.87	5.80	6.80	2.79	
		12 in 12	3.13	3.51	4.34	5.25	6.24	7.32	3.01	
	30	≤ 1 in 12	4.81	5.39	6.67	8.06	9.59	11.25	5.14	
		5 in 12	5.42	6.08	7.52	9.09	10.81	12.69	5.86	
		7 in 12	5.70	6.39	7.90	9.55	11.37	13.34	6.19	
		12 in 12	6.47	7.25	8.97	10.84	12.90	15.14	7.10	
	45	≤ 1 in 12	6.99	7.83	9.69	11.71	13.93	16.35	7.85	
		5 in 12	8.32	9.33	11.53	13.94	16.59	19.47	9.48	
		7 in 12	8.93	10.01	12.37	14.95	17.79	20.88	10.21	
		12 in 12	10.60	11.88	14.69	17.75	21.13	24.79	12.25	
	60	≤ 1 in 12	9.23	10.35	12.79	15.46	18.40	21.59	10.65	
		5 in 12	11.57	12.97	16.03	19.38	23.06	27.06	13.54	
		7 in 12	12.63	14.15	17.50	21.15	25.17	29.54	14.85	
		12 in 12	15.56	17.44	21.56	26.06	31.01	36.39	18.48	
60	45	≤ 1 in 12	7.34	8.22	10.17	12.29	14.62	17.16	7.85	
		5 in 12	8.72	9.77	12.08	14.60	17.37	20.39	9.48	
		7 in 12	9.34	10.47	12.95	15.65	18.62	21.85	10.21	
		12 in 12	11.08	12.41	15.35	18.55	22.07	25.90	12.25	
	60	≤ 1 in 12	9.94	11.14	13.77	16.65	19.81	23.25	10.65	
		5 in 12	12.40	13.89	17.18	20.76	24.70	28.99	13.54	
		7 in 12	13.51	15.14	18.72	22.63	26.92	31.60	14.85	
		12 in 12	16.59	18.59	22.99	27.79	33.06	38.80	18.48	

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mile per hour = 0.447 m/s; 1 psf = 0.0479 kPa
 For Notes see Table R611.7(1)A.

TABLE R611.7(2)
REDUCTION FACTOR, R_1 , FOR BUILDINGS WITH MEAN ROOF HEIGHT LESS THAN 35 FEET ^a

Mean roof height - ft. ^{b,c}	Reduction factor, R_1 , for mean roof height		
	Exposure category		
	B	C	D
≤ 15	0.96	0.84	0.87
20	0.96	0.89	0.91
25	0.96	0.93	0.94
30	0.96	0.97	0.98
35	1.00	1.00	1.00

For SI: 1 foot = 304.8 mm

^a See R611.7.1.1 and note (c) to Table R611.7(1)A for application of reduction factors in this table. This reduction is not permitted for "minimum" values.

^b For intermediate values of mean roof height, use the factor for the next greater height, or determine by interpolation.

^c Mean roof height is the average of the roof eave height and height of the highest point on the roof surface, except that for roof slopes of less than or equal to 2.12 in 12 (10 degrees), the mean roof height is permitted to be taken as the roof eave height.

TABLE R611.7(3)
REDUCTION FACTOR, R_2 , FOR FLOOR-TO-CEILING WALL HEIGHTS LESS THAN 10 FEET ^{a,b}

Story under consideration	Floor-to-ceiling height - ft. ^c	Endwall length - ft.	Roof slope	Reduction factor, R_2
Endwalls – for wind perpendicular to ridge				
One story or top story of two-story	8'	15	≤ 5 in 12	0.83
			7 in 12	0.90
			12 in 12	0.94
		60	≤ 5 in 12	0.83
			7 in 12	0.95
			12 in 12	0.98
First story of two-story	16' combined first and second story	15	≤ 5 in 12	0.83
			7 in 12	0.86
			12 in 12	0.89
		60	≤ 5 in 12	0.83
			7 in 12	0.91
			12 in 12	0.95
Sidewalls – for wind parallel to ridge				
One story or top story of two-story	8'	15	≤ 1 in 12	0.84
			5 in 12	0.87
			7 in 12	0.88
		60	12 in 12	0.89
			≤ 1 in 12	0.86
			5 in 12	0.92
			7 in 12	0.93
			12 in 12	0.95
			First story of two-story	16' combined first and second story
5 in 12	0.84			
7 in 12	0.85			
60	12 in 12	0.86		
	≤ 1 in 12	0.84		
	5 in 12	0.87		
	7 in 12	0.88		
	12 in 12	0.90		

For SI: 1 foot = 304.8 mm

^a See R611.7.1.1 and note (d) to Table R611.7(1)A for application of reduction factors in this table.

^b For intermediate values of endwall length, and/or roof slope, use the next higher value, or determine by interpolation.

^c Tabulated values in Table R611.7(1)A and C for "one story or top story of two-story" are based on a floor-to-ceiling height of 10 feet (3048 mm). Tabulated values in Table R611.7(1)B and C for "first story of two-story" are based on floor-to-ceiling heights of 10 feet (3048 mm) each for the first and second story. For floor to ceiling heights between those shown in this table and those assumed in Table R611.7(1)A, B or C, use the solid wall lengths in Table R611.7(1)A, B or C, or determine the reduction factor by interpolating between 1.0 and the factor shown in this table.

TABLE R611.7(4)
REDUCTION FACTOR FOR DESIGN STRENGTH, R_3 , FOR FLAT, WAFFLE- AND SCREEN-GRID WALLS ^{a,c}

Nominal thickness of wall – in.	Vertical bars at each end of solid wall segment		Vertical reinforcement layout detail – see Figure R611.7(2)	Reduction factor, R_3 , for length of solid wall				
	Number of bars	Bar size		Horizontal and vertical shear reinforcement provided?				
				No		Yes ^d		
				40,000 ^b	60,000 ^b	40,000 ^b	60,000 ^b	
Flat Walls								
4	2	4	1	0.74	0.61	0.74	0.50	
	3	4	2	0.61	0.61	0.52	0.27	
	2	5	1	0.61	0.61	0.48	0.25	
	3	5	2	0.61	0.61	0.26	0.18	
6	2	4	3	0.70	0.48	0.70	0.48	
	3	4	4	0.49	0.38	0.49	0.33	
	2	5	3	0.46	0.38	0.46	0.31	
	3	5	4	0.38	0.38	0.32	0.16	
8	2	4	3	0.70	0.47	0.70	0.47	
	3	4	5	0.47	0.32	0.47	0.32	
	2	5	3	0.45	0.31	0.45	0.31	
	4	4	6	0.36	0.28	0.36	0.25	
	3	5	5	0.31	0.28	0.31	0.16	
10	4	5	6	0.28	0.28	0.24	0.12	
	2	4	3	0.70	0.47	0.70	0.47	
	2	5	3	0.45	0.30	0.45	0.30	
	4	4	7	0.36	0.25	0.36	0.25	
	6	4	8	0.25	0.22	0.25	0.13	
Waffle-Grid Walls ^e	4	5	7	0.24	0.22	0.24	0.12	
	6	5	8	0.22	0.22	0.12	0.08	
	6	2	4	3	0.78	0.78	0.70	0.48
		3	4	4	0.78	0.78	0.49	0.25
2		5	3	0.78	0.78	0.46	0.23	
3		5	4	0.78	0.78	0.24	0.16	
8	2	4	3	0.78	0.78	0.70	0.47	
	3	4	5	0.78	0.78	0.47	0.24	
	2	5	3	0.78	0.78	0.45	0.23	
	4	4	6	0.78	0.78	0.36	0.18	
	3	5	5	0.78	0.78	0.23	0.16	
	4	5	6	0.78	0.78	0.18	0.13	
Screen-Grid Walls ^e	6	2	4	3	0.93	0.93	0.70	0.48
		3	4	4	0.93	0.93	0.49	0.25
		2	5	3	0.93	0.93	0.46	0.23
		3	5	4	0.93	0.93	0.24	0.16

For SI: 1 inch = 25.4 mm; 1,000 psi = 6.895 MPa

^a See note (e) to Table R611.7(1)A for application of adjustment factors in this table.

^b Yield strength in pounds per square inch of vertical wall reinforcement at ends of solid wall segments.

^c Values are based on concrete with a specified compressive strength, f'_c , of 2,500 psi (17.2 MPa). Where concrete with f'_c of not less than 3,000 psi (20.7 MPa) is used, values in shaded cells are permitted to be decreased by multiplying by 0.91.

^d Horizontal and vertical shear reinforcement shall be provided in accordance with Section R611.7.2.2.

^e Each end of each solid wall segment shall have rectangular flanges. In the through-the-wall dimension, the flange shall not be less than 5.5 inches (140 mm) for 6-inch (152 mm) nominal waffle- and screen-grid walls, and not less than 7.5 inches (191 mm) for 8-inch (203 mm) nominal waffle-grid walls. In the in-plane dimension, flanges shall be long enough to accommodate the vertical reinforcement required by the layout detail selected from Figure R611.7(2) and provide the cover required by Section R611.5.4.1. If necessary to achieve the required dimensions, form material shall be removed or flat wall forms are permitted to be used.

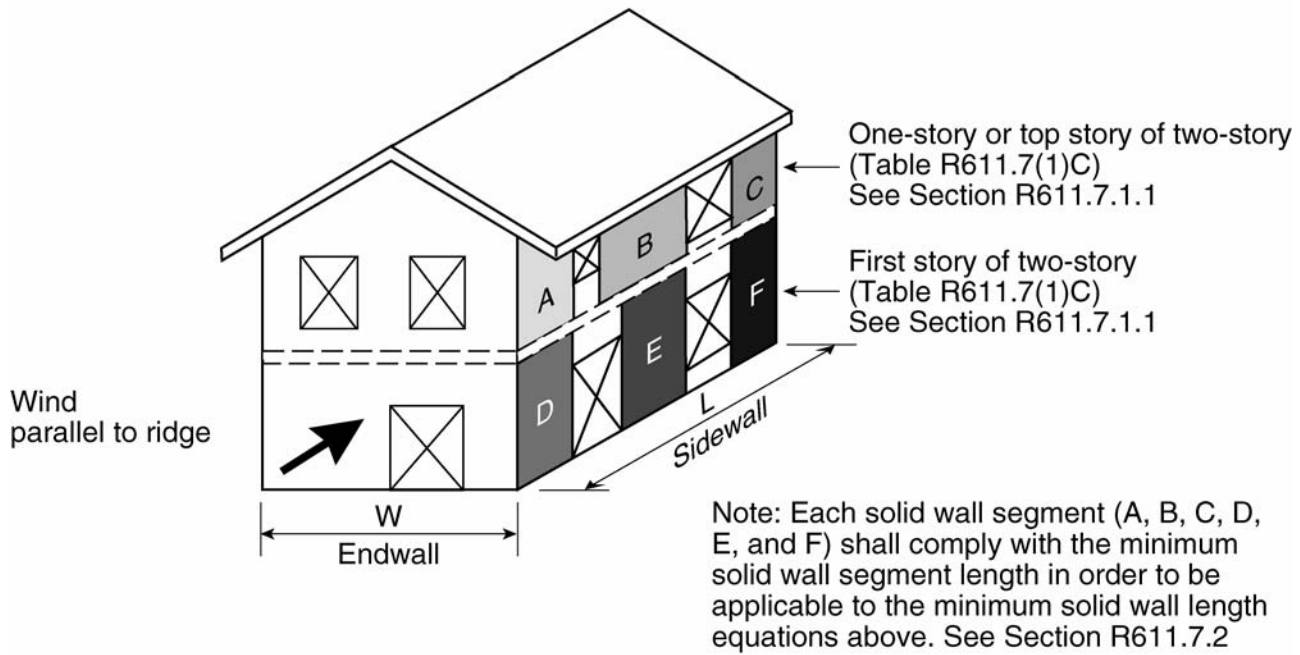
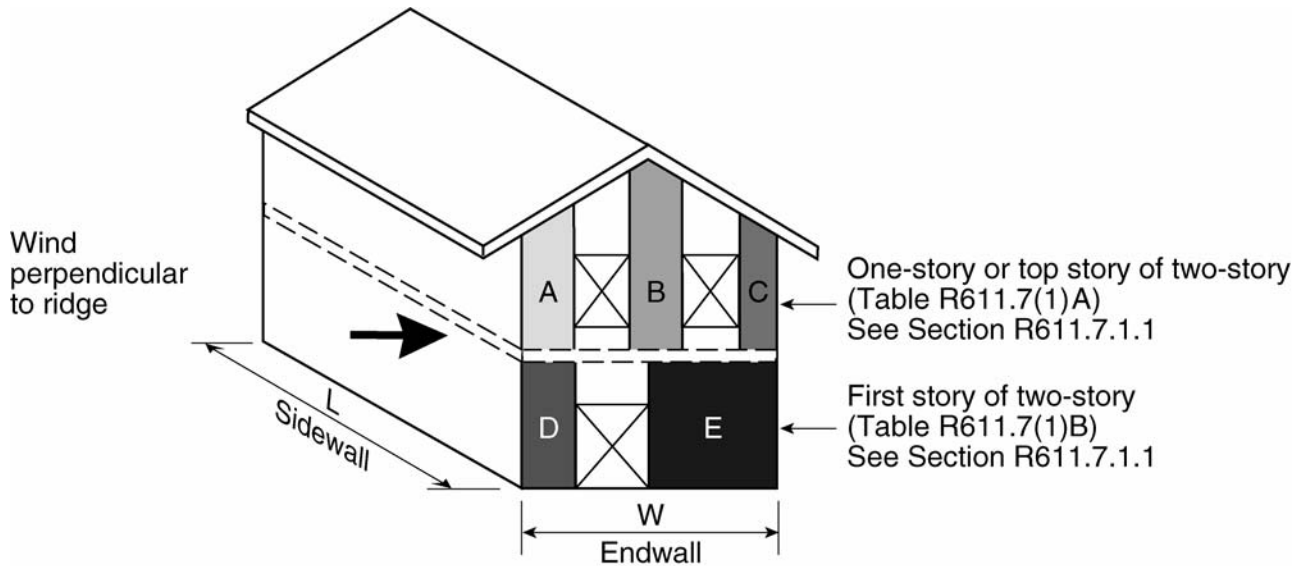


FIGURE R611.7(1)

Detail No.	Nom. wall thickness, in.	Reinforcement layout at ends of solid wall segments	Notes
1	4		<p>For SI: 1" = 25.4 mm</p> <ol style="list-style-type: none"> See Table R611.7(4) for use of details. Minimum length of solid wall segment, and size and grade of reinforcement in each end of each solid wall segment shall be determined from Table R611.7(4). For minimum cover requirements, see Section R611.5.4.1. For details 3 – 8 where two or more bars are in the same row parallel to the end of the segment, place bars so that corner bars are as close to the sides of the wall segments as minimum cover requirements of Section R611.5.4.1 will permit. For waffle- and screen-grid walls, each end of each solid wall segment shall have rectangular flanges. In the through-the-wall dimension, the flange shall not be less than 5.5 inches for 6-inch nominal waffle- and screen-grid forms, and not less than 7.5 inches for 8-inch nominal waffle-grid forms. In the in-plane dimension, flanges shall be long enough to accommodate the vertical reinforcement required by the layout detail selected and provide the cover required by Section R611.5.4.1. If necessary to achieve the required dimensions, form material shall be removed or flat wall forms are permitted to be used. See Table R611.7(4), Note e.
2	4		
3	6 8 10		
4	6		
5	8		
6	8		
7	10		
8	10	<p>* For minimum cover see Section R611.5.4.1</p>	

FIGURE R611.7(2)

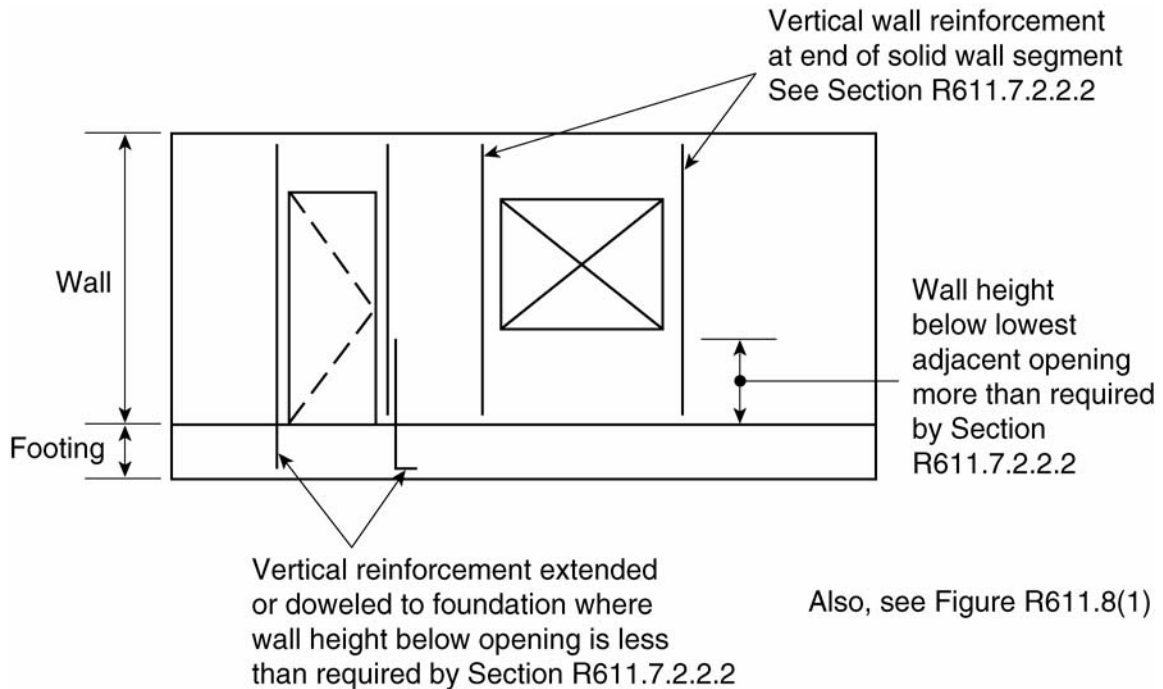


FIGURE R611.7(3)

R611.8 Requirements for lintels and reinforcement around openings

R611.8.1 Reinforcement around openings. Reinforcement shall be provided around openings in walls equal to or greater than 2 feet (610 mm) in width in accordance with this section and Figure R611.8(1), in addition to the minimum wall reinforcement required by Sections R404.1.2, R611.6 and R611.7. Vertical wall reinforcement required by this section is permitted to be used as reinforcement at the ends of solid wall segments required by Section R611.7.2.2.2 provided it is located in accordance with Section R611.8.1.2. Wall openings shall have a minimum depth of concrete over the width of the opening of 8 inches (203 mm) in flat walls and waffle-grid walls, and 12 inches (305 mm) in screen-grid walls. Wall openings in waffle-grid and screen-grid walls shall be located such that no less than one-half of a vertical core occurs along each side of the opening.

R611.8.1.1 Horizontal reinforcement. Lintels complying with Section R611.8.2 shall be provided above wall openings equal to or greater than 2 feet (610 mm) in width.

Exception: Continuous horizontal wall reinforcement placed within 12 (305 mm) inches of the top of the wall story as required in Sections R404.1.2.2 and R611.6.2 is permitted to be used in lieu of top or bottom lintel reinforcement required by Section R611.8.2 provided that the continuous horizontal wall reinforcement meets the location requirements specified in Figures R611.8(2), R611.8(3), and R611.8(4) and the size requirements specified in Tables R611.8(2) through R611.8(10).

Openings equal to or greater than 2 feet (610 mm) in width shall have a minimum of one No. 4 bar placed within 12 inches (305 mm) of the bottom of the opening. See Figure R611.8(1).

Horizontal reinforcement placed above and below an opening shall extend beyond the edges of the opening the dimension required to develop the bar in tension in accordance with Section R611.5.4.4.

R611.8.1.2 Vertical reinforcement. Not less than one No. 4 bar (Grade 40 (280 MPa)) shall be provided on each side of openings equal to or greater than 2 feet (610 mm) in width. The vertical reinforcement required by this section shall extend the full height of the wall story and shall be located within 12 inches (305 mm) of each side of the opening. The vertical reinforcement required on each side of an opening by this section is permitted to serve as reinforcement at the ends of solid wall segments in accordance with Section R611.7.2.2.2, provided it is located as required by the applicable detail in Figure R611.7(2). Where the vertical reinforcement required by this section is used to satisfy the requirements of Section R611.7.2.2.2 in waffle- and screen-grid walls, a concrete flange shall be created at the ends of the solid wall segments in accordance with Table R611.7(4), footnote e. In the top most story, the reinforcement shall terminate in accordance with Section R611.6.4.

R611.8.2 Lintels. Lintels shall be provided over all openings equal to or greater than 2 feet (610 mm) in width. Lintels with uniform loading shall conform to Sections R611.8.2.1, and R611.8.2.2, or Section R611.8.2.3. Lintels supporting concentrated loads, such as from roof or floor beams or girders, shall be designed in accordance with ACI 318.

R611.8.2.1 Lintels designed for gravity load-bearing conditions. Where a lintel will be subjected to gravity load condition 1 through 5 of Table R611.8(1), the clear span of the lintel shall not exceed that permitted by Tables R611.8(2) through R611.8(8). The maximum clear span of lintels with and without stirrups in flat walls shall be determined in accordance with Tables R611.8(2) through R611.8(5), and constructed in accordance with Figure R611.8(2). The maximum clear span of lintels with and without stirrups in waffle-grid walls shall be determined in accordance with Tables R611.8(6) and R611.8(7), and constructed in accordance with Figure R611.8(3). The maximum clear span of lintels with and without stirrups in screen-grid walls shall be determined in accordance with Table R611.8(8), and constructed in accordance with Figure R611.8(4).

Where required by the applicable table, No. 3 stirrups shall be installed in lintels at a maximum spacing of $d/2$ where d equals the depth of the lintel, D , less the cover of the concrete as shown in Figures R611.8(2) through R611.8(4). The smaller value of d computed for the top and bottom bar shall be used to determine the maximum stirrup spacing. Where stirrups are required in a lintel with a single bar or two bundled bars in the top and bottom, they shall be fabricated like the letter "c" or "s" with 135-degree standard hooks at each end that comply with Section R611.5.4.5 and Figure R611.5.4(3) and installed as shown in Figures R611.8(2) through R611.8(4). Where two bars are required in the top and bottom of the lintel and the bars are not bundled, the bars shall be separated by a minimum of 1 inch (25 mm). The free end of the stirrups shall be fabricated with 90- or 135-degree standard hooks that comply with Section R611.5.4.5 and Figure R611.5.4(3) and installed as shown in Figures R611.8(2) and R611.8(3). For flat, waffle-grid and screen-grid lintels, stirrups are not required in center distance, A , portion of spans in accordance with Figure R611.8(1) and Tables R611.8(2) through R611.8(8). See Section R611.8.2.2, item 5, for requirement for stirrups throughout lintels with bundled bars.

R611.8.2.2 Bundled bars in lintels. It is permitted to bundle two bars in contact with each other in lintels if all of the following are observed:

1. Bars no larger than No. 6 are bundled.
2. Where the wall thickness is not sufficient to provide not less than 3 inches (76 mm) of clear space beside bars (total on both sides) oriented horizontally in a bundle, the bundled bars shall be oriented in a vertical plane.
3. Where vertically oriented bundled bars terminate with standard hooks to develop the bars in tension beyond the support (see Section R611.5.4.4), the hook extensions shall be staggered to provide a minimum of one inch (25 mm) clear spacing between the extensions.
4. Bundled bars shall not be lap spliced within the lintel span and the length on each end of the lintel that is required to develop the bars in tension.
5. Bundled bars shall be enclosed within stirrups throughout the length of the lintel. Stirrups and the installation thereof shall comply with Section R611.8.2.1.

R611.8.2.3 Lintels without stirrups designed for nonload-bearing conditions. The maximum clear span of lintels without stirrups designed for nonload-bearing conditions of Table R611.8(1).1 shall be determined in accordance with this section. The maximum clear span of lintels without stirrups in flat walls shall be determined in accordance with Table R611.8(9), and the maximum clear span of lintels without stirrups in walls of waffle-grid or screen-grid construction shall be determined in accordance with Table R611.8(10).

TABLE R611.8(1)
LINTEL DESIGN LOADING CONDITIONS^{a,b,d}

Description of loads and openings above influencing design of lintel		Design loading condition ^c	
Opening in wall of top story of two-story building, or first story of one-story building			
Wall supporting loads from roof, including attic floor, if applicable, and	top of lintel equal to or less than W/2 below top of wall	2	
	top of lintel greater than W/2 below top of wall	NLB	
Wall not supporting loads from roof or attic floor		NLB	
Opening in wall of first story of two-story building where wall immediately above is of concrete construction, or opening in basement wall of one-story building where wall immediately above is of concrete construction			
LB ledger board mounted to side of wall with bottom of ledger less than or equal to W/2 above top of lintel, and	top of lintel greater than W/2 below bottom of opening in story above	1	
	top of lintel less than or equal to W/2 below bottom of opening in story above, and	opening is entirely within the footprint of the opening in the story above	1
		opening is partially within the footprint of the opening in the story above	4
LB ledger board mounted to side of wall with bottom of ledger more than W/2 above top of lintel		NLB	
NLB ledger board mounted to side of wall with bottom of ledger less than or equal to W/2 above top of lintel, or no ledger board, and	top of lintel greater than W/2 below bottom of opening in story above	NLB	
	top of lintel less than or equal to W/2 below bottom of opening in story above, and	opening is entirely within the footprint of the opening in the story above	NLB
		opening is partially within the footprint of the opening in the story above	1
Opening in basement wall of two-story building where walls of two stories above are of concrete construction			
LB ledger board mounted to side of wall with bottom of ledger less than or equal to W/2 above top of lintel, and	top of lintel greater than W/2 below bottom of opening in story above	1	
	top of lintel less than or equal to W/2 below bottom of opening in story above, and	opening is entirely within the footprint of the opening in the story above	1
		opening is partially within the footprint of the opening in the story above	5
LB ledger board mounted to side of wall with bottom of ledger more than W/2 above top of lintel		NLB	
NLB ledger board mounted to side of wall with bottom of ledger less than or equal to W/2 above top of lintel, or no ledger board, and	top of lintel greater than W/2 below bottom of opening in story above	NLB	
	top of lintel less than or equal to W/2 below bottom of opening in story above, and	opening is entirely within the footprint of the opening in the story above	NLB
		opening is partially within the footprint of the opening in the story above	1
Opening in wall of first story of two-story building where wall immediately above is of light framed construction, or opening in basement wall of one-story building, where wall immediately above is of light framed construction			
Wall supporting loads from roof, second floor and top-story wall of light-framed construction, and	top of lintel equal to or less than W/2 below top of wall	3	
	top of lintel greater than W/2 below top of wall	NLB	
Wall not supporting loads from roof or second floor		NLB	

^a **LB** means load bearing, **NLB** means non-load bearing, and **W** means width of opening.

^b **Footprint** is the area of the wall below an opening in the story above, bounded by the bottom of the opening and vertical lines extending downward from the edges of the opening.

^c For design loading condition "NLB" see Tables R611.8(9) and R611.8(10). For all other design loading conditions see Tables R611.8(2) through R611.8(8).

^d A NLB ledger board is a ledger attached to a wall that is parallel to the span of the floor, roof or ceiling framing that supports the edge of the floor, ceiling or roof.

stirrups, the top and bottom reinforcement shall be equal to or greater than that required for a lintel of the same depth and loading condition that has an allowable clear span that is equal to or greater than that of the lintel without stirrups that has been increased.

^k Center distance, A, is the center portion of the clear span where stirrups are not required. This is applicable to all longitudinal bar sizes and steel yield strengths.

^l Where concrete with a minimum specified compressive strength of 3,000 psi (20.7 MPa) is used, center distance, A, shall be permitted to be multiplied by 1.10.

^m The maximum clear opening width between two solid wall segments shall be 18 feet (5486 mm). See Section R611.7.2.1. Lintel clear spans in the table greater than 18 feet (5486 mm) are shown for interpolation and information purposes only.

TABLE R611.8(3)
MAXIMUM ALLOWABLE CLEAR SPANS FOR 6-INCH NOMINAL THICK
FLAT LINTELS IN LOAD-BEARING WALLS ^{a,b,c,d,e,f,m}
ROOF CLEAR SPAN 40 FEET AND FLOOR CLEAR SPAN 32 FEET

Lintel Depth, D ^g (in.)	Number of bars and bar size in top and bottom of lintel	Steel yield strength ⁿ , f _y (psi)	Design Loading Condition Determined from Table R611.8(1)									
			1		2		3		4		5	
			Maximum ground snow load (psf)									
			30		70		30		70		30	
Maximum Clear Span of Lintel (ft - in)												
8	Span without stirrups ^{l,j}		4-2	4-8	3-1	3-3	2-10	2-6	2-3	2-0	2-0	
	1-#4	40,000	5-1	5-5	4-2	4-3	3-10	3-6	3-3	2-8	2-7	
		60,000	6-2	6-7	5-0	5-2	4-8	4-2	3-11	3-3	3-2	
	1-#5	40,000	6-3	6-8	5-1	5-3	4-9	4-3	4-0	3-3	3-2	
		60,000	7-6	8-0	6-1	6-4	5-8	5-1	4-9	3-8	3-6	
	2-#4	40,000	7-0	7-6	5-8	5-11	5-3	4-9	4-5	3-8	3-6	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	
Center distance A ^{k,l}		1-7	1-10	1-1	1-2	0-11	0-9	0-8	0-5	0-5		
12	Span without stirrups ^{l,j}		4-2	4-8	3-5	3-6	3-2	2-11	2-9	2-5	2-4	
	1-#4	40,000	5-7	6-1	4-8	4-10	4-4	3-11	3-8	3-0	2-11	
		60,000	7-9	8-6	6-6	6-9	6-1	5-6	5-1	4-3	4-1	
	1-#5	40,000	7-11	8-8	6-8	6-11	6-2	5-7	5-2	4-4	4-2	
		60,000	9-7	10-6	8-0	8-4	7-6	6-9	6-3	5-2	5-1	
	2-#4	40,000	8-11	9-9	7-6	7-9	6-11	6-3	5-10	4-10	4-8	
		60,000	10-8	11-9	8-12	9-4	8-4	7-6	7-0	5-10	5-8	
	2-#5	40,000	10-11	12-0	9-2	9-6	8-6	7-8	7-2	5-6	5-3	
		60,000	12-11	14-3	10-10	11-3	10-1	9-0	8-1	6-1	5-10	
	2-#6	40,000	12-9	14-0	10-8	11-1	9-7	8-1	7-3	5-6	5-3	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	
	Center distance A ^{k,l}		2-6	3-0	1-9	1-10	1-6	1-3	1-1	0-9	0-8	
	16	Span without stirrups ^{l,j}		5-7	6-5	4-9	4-11	4-5	4-0	3-10	3-4	3-4
		1-#4	40,000	6-5	7-2	5-6	5-9	5-2	4-8	4-4	3-7	3-6
			60,000	7-10	8-9	6-9	7-0	6-3	5-8	5-3	4-4	4-3
1-#5		40,000	7-11	8-11	6-10	7-1	6-5	5-9	5-4	4-5	4-4	
		60,000	11-1	12-6	9-7	9-11	8-11	8-0	7-6	6-2	6-0	
2-#4		40,000	10-3	11-7	8-10	9-2	8-3	7-6	6-11	5-9	5-7	
		60,000	12-5	14-0	10-9	11-1	10-0	9-0	8-5	7-0	6-9	
2-#5		40,000	12-8	14-3	10-11	11-4	10-2	9-2	8-7	6-9	6-6	
		60,000	15-2	17-1	13-1	13-7	12-3	11-0	10-3	7-11	7-7	
2-#6		40,000	14-11	16-9	12-8	13-4	11-4	9-8	8-8	6-9	6-6	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	
Center distance A ^{k,l}		3-3	4-1	2-5	2-7	2-1	1-9	1-6	1-0	1-0		
20		Span without stirrups ^{l,j}		6-11	8-2	6-1	6-3	5-8	5-2	4-11	4-4	4-3
		1-#5	40,000	8-9	10-1	7-9	8-0	7-3	6-6	6-1	5-1	4-11
			60,000	10-8	12-3	9-5	9-9	8-10	8-0	7-5	6-2	6-0
	2-#4	40,000	9-11	11-4	8-9	9-1	8-2	7-4	6-10	5-8	5-7	
		60,000	13-9	15-10	12-2	12-8	11-5	10-3	9-7	7-11	7-9	
	2-#5	40,000	14-0	16-2	12-5	12-11	11-7	10-6	9-9	7-11	7-8	
		60,000	16-11	19-6	15-0	15-6	14-0	12-7	11-9	9-1	8-9	
	2-#6	40,000	16-7	19-1	14-7	15-3	13-1	11-3	10-2	7-11	7-8	
		60,000	19-11	22-10	17-4	18-3	15-6	13-2	11-10	9-1	8-9	
	Center distance A ^{k,l}		3-11	5-2	3-1	3-3	2-8	2-2	1-11	1-4	1-3	
	24	Span without stirrups ^{l,j}		8-2	9-10	7-4	7-8	6-11	6-4	5-11	5-3	5-2
1-#5		40,000	9-5	11-1	8-7	8-10	8-0	7-3	6-9	5-7	5-5	
		60,000	11-6	13-6	10-5	10-9	9-9	8-9	8-2	6-10	6-8	
2-#4		40,000	10-8	12-6	9-8	10-0	9-0	8-2	7-7	6-4	6-2	
		60,000	12-11	15-2	11-9	12-2	11-0	9-11	9-3	7-8	7-6	
2-#5		40,000	15-2	17-9	13-9	14-3	12-10	11-7	10-10	9-0	8-9	
		60,000	18-4	21-6	16-7	17-3	15-6	14-0	13-1	10-4	10-0	
2-#6		40,000	18-0	21-1	16-4	16-11	14-10	12-9	11-8	9-2	8-11	
		60,000	21-7	25-4	19-2	20-4	17-2	14-9	13-4	10-4	10-0	
Center distance A ^{k,l}		4-6	6-2	3-8	4-0	3-3	2-8	2-3	1-7	1-6		

For SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kN/m²; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa
 See Table R611.8(2) for notes.

TABLE R611.8(4)
MAXIMUM ALLOWABLE CLEAR SPANS FOR 8-INCH NOMINAL THICK
FLAT LINTELS IN LOAD-BEARING WALLS a,b,c,d,e,f,m
ROOF CLEAR SPAN 40 FEET AND FLOOR CLEAR SPAN 32 FEET

Lintel Depth, D ^g (in.)	Number of bars and bar size in top and bottom of lintel	Steel yield strength ^h , f _y (psi)	Design Loading Condition Determined from Table R611.8(1)									
			1	2		3		4		5		
			Maximum ground snow load (psf)									
			30	70	30	70	30	70	30	70		
Maximum Clear Span of Lintel (ft - in)												
8	Span without stirrups ^{l,j}		4-4	4-9	3-7	3-9	3-4	2-10	2-7	2-1	2-0	
	1-#4	40,000	4-4	4-9	3-7	3-9	3-4	2-11	2-9	2-3	2-2	
		60,000	6-1	6-7	5-0	5-3	4-8	4-0	3-9	3-1	3-0	
	1-#5	40,000	6-2	6-9	5-2	5-4	4-9	4-1	3-10	3-2	3-1	
		60,000	7-5	8-1	6-2	6-5	5-9	4-11	4-7	3-9	3-8	
	2-#4	40,000	6-11	7-6	5-9	6-0	5-4	4-7	4-4	3-6	3-5	
		60,000	8-3	9-0	6-11	7-2	6-5	5-6	5-2	4-2	4-1	
	2-#5	40,000	8-5	9-2	7-0	7-3	6-6	5-7	5-3	4-2	4-0	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	
	Center distance A ^{k,l}		2-1	2-6	1-5	1-6	1-3	0-11	0-10	0-6	0-6	
12	Span without stirrups ^{l,j}		4-10	5-8	4-0	4-2	3-9	3-2	3-0	2-7	2-6	
	1-#4	40,000	5-5	6-1	4-8	4-10	4-4	3-9	3-6	2-10	2-10	
		60,000	6-7	7-5	5-8	5-11	5-4	4-7	4-3	3-6	3-5	
	1-#5	40,000	6-9	7-7	5-9	6-0	5-5	4-8	4-4	3-7	3-6	
		60,000	9-4	10-6	8-1	8-4	7-6	6-6	6-1	5-0	4-10	
	2-#4	40,000	8-8	9-9	7-6	7-9	7-0	6-0	5-8	4-7	4-6	
		60,000	10-6	11-9	9-1	9-5	8-5	7-3	6-10	5-7	5-5	
	2-#5	40,000	10-8	12-0	9-3	9-7	8-7	7-5	6-11	5-6	5-4	
		60,000	12-10	14-5	11-1	11-6	10-4	8-11	8-4	6-7	6-4	
	2-#6	40,000	12-7	14-2	10-10	11-3	10-2	8-3	7-6	5-6	5-4	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	
	Center distance A ^{k,l}		3-2	4-0	2-4	2-6	2-0	1-6	1-4	0-11	0-10	
	16	Span without stirrups ^{l,j}		6-5	7-9	5-7	5-10	5-2	4-5	4-2	3-7	3-6
		1-#4	40,000	6-2	7-1	5-6	5-8	5-1	4-5	4-2	3-5	3-4
60,000			7-6	8-8	6-8	6-11	6-3	5-5	5-1	4-2	4-0	
1-#5		40,000	7-8	8-10	6-10	7-1	6-4	5-6	5-2	4-3	4-1	
		60,000	9-4	10-9	8-4	8-7	7-9	6-8	6-3	5-2	5-0	
2-#4		40,000	8-8	10-0	7-8	8-0	7-2	6-2	5-10	4-9	4-8	
		60,000	12-0	13-11	10-9	11-2	10-0	8-8	8-1	6-8	6-6	
2-#5		40,000	12-3	14-2	11-0	11-4	10-3	8-10	8-3	6-9	6-7	
		60,000	14-10	17-2	13-3	13-8	12-4	10-8	10-0	7-11	7-8	
2-#6		40,000	14-6	16-10	13-0	13-5	12-1	10-1	9-2	6-11	6-8	
		60,000	17-5	20-2	15-7	16-1	14-6	11-10	10-8	7-11	7-8	
Center distance A ^{k,l}		4-1	5-5	3-3	3-6	2-10	2-1	1-10	1-3	1-2		
20		Span without stirrups ^{l,j}		7-10	9-10	7-1	7-5	6-7	5-8	5-4	4-7	4-6
		1-#5	40,000	8-4	9-11	7-8	8-0	7-2	6-3	5-10	4-9	4-8
	60,000		10-2	12-1	9-5	9-9	8-9	7-7	7-1	5-10	5-8	
	2-#4	40,000	9-5	11-3	8-8	9-0	8-1	7-0	6-7	5-5	5-3	
		60,000	11-6	13-8	10-7	11-0	9-11	8-7	8-0	6-7	6-5	
	2-#5	40,000	11-9	13-11	10-10	11-2	10-1	8-9	8-2	6-8	6-7	
		60,000	16-4	19-5	15-0	15-7	14-0	12-2	11-4	9-3	9-0	
	2-#6	40,000	16-0	19-0	14-9	15-3	13-9	11-10	10-10	8-3	8-0	
		60,000	19-3	22-11	17-9	18-5	16-7	13-7	12-4	9-3	9-0	
	Center distance A ^{k,l}		4-10	6-10	4-1	4-5	3-7	2-8	2-4	1-7	1-6	
	24	Span without stirrups ^{l,j}		9-2	11-9	8-7	8-11	8-0	6-11	6-6	5-7	5-6
		1-#5	40,000	8-11	10-10	8-6	8-9	7-11	6-10	6-5	5-3	5-2
			60,000	10-11	13-3	10-4	10-8	9-8	8-4	7-10	6-5	6-3
		2-#4	40,000	10-1	12-3	9-7	9-11	8-11	7-9	7-3	6-0	5-10
60,000			12-3	15-0	11-8	12-1	10-11	9-5	8-10	7-3	7-1	
2-#5		40,000	12-6	15-3	11-11	12-4	11-1	9-7	9-0	7-5	7-3	
		60,000	17-6	21-3	16-7	17-2	15-6	13-5	12-7	10-4	10-1	
2-#6		40,000	17-2	20-11	16-3	16-10	15-3	13-2	12-4	9-7	9-4	
		60,000	20-9	25-3	19-8	20-4	18-5	15-4	14-0	10-7	10-3	
Center distance A ^{11,12}		5-6	8-1	4-11	5-3	4-4	3-3	2-10	1-11	1-10		

For SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kN/m²; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa

Top and bottom reinforcement for lintels without stirrups shown in shaded cells shall be equal to or greater than that required for a lintel of the same depth and loading condition that has an allowable clear span that is equal to or greater than that of the lintel without stirrups. See Table R611.8(2) for additional notes.

TABLE R611.8(6)
MAXIMUM ALLOWABLE CLEAR SPANS FOR 6-INCH THICK WAFFLE-GRID
LINTELS IN LOAD-BEARING WALLS ^{a,b,c,d,e,f,o}

MAXIMUM ROOF CLEAR SPAN OF 40 FEET AND MAXIMUM FLOOR SPAN OF 32 FEET

Lintel Depth, D ^g (in.)	Number of bars and bar size in top and bottom of lintel	Steel yield strength ⁿ , f _y (psi)	Design Loading Condition Determined from Table R611.8(1)								
			1	2		3		4		5	
			Maximum ground snow load (psf)								
			30	70	30	70	30	70	30	70	
Maximum Clear Span of Lintel (ft - in)											
8 ⁱ	Span without stirrups ^{k,l}		2-7	2-9	2-0	2-1	2-0	2-0	2-0	2-0	2-0
	1-#4	40,000	5-2	5-5	4-0	4-3	3-7	3-3	2-11	2-4	2-3
		60,000	5-9	6-3	4-0	4-3	3-7	3-3	2-11	2-4	2-3
	1-#5	40,000	5-9	6-3	4-0	4-3	3-7	3-3	2-11	2-4	2-3
		60,000	5-9	6-3	4-0	4-3	3-7	3-3	2-11	2-4	2-3
	2-#4	40,000	5-9	6-3	4-0	4-3	3-7	3-3	2-11	2-4	2-3
	1-#6	60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR
Center distance A ^{m,n}		0-9	0-10	0-6	0-6	0-5	0-5	0-4	STL	STL	
12 ⁱ	Span without stirrups ^{k,l}		2-11	3-1	2-6	2-7	2-5	2-4	2-3	2-1	2-0
	1-#4	40,000	5-9	6-2	4-8	4-10	4-4	4-1	3-9	3-2	3-1
		60,000	8-0	8-7	6-6	6-9	6-0	5-5	4-11	3-11	3-10
	1-#5	40,000	8-1	8-9	6-8	6-11	6-0	5-5	4-11	3-11	3-10
		60,000	9-1	10-3	6-8	7-0	6-0	5-5	4-11	3-11	3-10
	2-#4	40,000	9-1	9-9	6-8	7-0	6-0	5-5	4-11	3-11	3-10
	1-#6	60,000	9-1	9-9	6-8	7-0	6-0	5-5	4-11	3-11	3-10
Center distance A ^{m,n}		1-3	1-5	0-10	0-11	0-9	0-8	0-6	STL	STL	
16 ⁱ	Span without stirrups ^{k,l}		4-0	4-4	3-6	3-7	3-4	3-3	3-1	2-10	2-10
	1-#4	40,000	6-7	7-3	5-6	5-9	5-2	4-10	4-6	3-9	3-8
		60,000	8-0	8-10	6-9	7-0	6-3	5-11	5-5	4-7	4-5
	1-#5	40,000	8-2	9-0	6-11	7-2	6-5	6-0	5-7	4-8	4-6
		60,000	11-5	12-6	9-3	9-9	8-4	7-7	6-10	5-6	5-4
	2-#4	40,000	10-7	11-7	8-11	9-3	8-3	7-7	6-10	5-6	5-4
	1-#6	40,000	12-2	14-0	9-3	9-9	8-4	7-7	6-10	5-6	5-4
		60,000	12-2	14-2	9-3	9-9	8-4	7-7	6-10	5-6	5-4
	2-#5	40,000	DR	DR	DR	DR	DR	DR	DR	DR	DR
	60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR
	Center distance A ^{m,n}		1-8	2-0	1-2	1-3	1-0	0-11	0-9	STL	STL
20 ⁱ	Span without stirrups ^{k,l}		5-0	5-6	4-6	4-7	4-3	4-1	4-0	3-8	3-8
	1-#4	40,000	7-2	8-2	6-3	6-6	5-10	5-6	5-1	4-3	4-2
		60,000	8-11	9-11	7-8	7-11	7-1	6-8	6-2	5-2	5-0
	1-#5	40,000	9-1	10-2	7-9	8-1	7-3	6-10	6-4	5-4	5-2
		60,000	12-8	14-2	10-11	11-3	10-2	9-6	8-9	7-1	6-10
	2-#4	40,000	10-3	11-5	8-9	9-1	8-2	7-8	7-1	6-0	5-10
	1-#6	40,000	14-3	15-11	11-9	12-5	10-8	9-9	8-9	7-1	6-10
		60,000	14-6	16-3	11-6	12-1	10-4	9-6	8-6	6-11	6-8
	2-#5	40,000	DR	DR	DR	DR	DR	DR	DR	DR	DR
	60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR
	Center distance A ^{m,n}		2-0	2-6	1-6	1-7	1-3	1-1	1-0	STL	STL
24 ⁱ	Span without stirrups ^{k,l}		6-0	6-8	5-5	5-7	5-3	5-0	4-10	4-6	4-5
	1-#4	40,000	7-11	9-0	6-11	7-2	6-5	6-0	5-7	4-8	4-7
		60,000	9-8	10-11	8-5	8-9	7-10	7-4	6-10	5-9	5-7
	1-#5	40,000	9-10	11-2	8-7	8-11	8-0	7-6	7-0	5-10	5-8
		60,000	12-0	13-7	10-6	10-10	9-9	9-2	8-6	7-2	6-11
	2-#4	40,000	11-1	12-7	9-8	10-1	9-1	8-6	7-10	6-7	6-5
	1-#6	40,000	15-6	17-7	13-6	14-0	12-8	11-10	10-8	8-7	8-4
		60,000	15-6	17-11	12-8	13-4	11-6	10-7	9-7	7-10	7-7
	2-#5	40,000	DR	DR	DR	DR	DR	DR	DR	DR	DR
	60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR
	Center distance A ^{m,n}		2-4	3-0	1-9	1-11	1-6	1-4	1-2	STL	STL

For SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kN/m²; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa

^a Where lintels are formed with waffle-grid forms, form material shall be removed, if necessary, to create top and bottom flanges of the lintel that are not less than 3 inches (76 mm) in depth (in the vertical direction), are not less than 5 inches (127 mm) in width for 6-inch (152 mm) nominal waffle-grid forms and not less than 7 inches (178 mm) in width for 8-inch (203 mm) nominal waffle-grid forms. See Figure R611.8(3). Flat form lintels shall be permitted to be used in lieu of waffle-grid lintels. See Tables R611.8(2) through R611.8(5).

^b See Table R611.3 for tolerances permitted from nominal thicknesses and minimum dimensions and spacing of cores.

^c Table values are based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa). See notes l and n. Table values are based on uniform loading. See Section R611.8.2 for lintels supporting concentrated loads.

^d Deflection criterion is L/240, where L is the clear span of the lintel in inches, or ½-inch (13 mm), whichever is less.

^e Linear interpolation is permitted between ground snow loads.

^f DR indicates design required STL – stirrups required throughout lintel

^g Lintel depth, D, is permitted to include the available height of wall located directly above the lintel, provided that the increased lintel depth spans the entire length of the lintel.

^h Stirrups shall be fabricated from reinforcing bars with the same yield strength as that used for the main longitudinal reinforcement.

TABLE R611.8(8)
MAXIMUM ALLOWABLE CLEAR SPANS FOR 6-INCH THICK SCREEN-GRID
LINTELS IN LOAD-BEARING WALLS^{a,b,c,d,e,f,p}
ROOF CLEAR SPAN 40 FEET AND FLOOR CLEAR SPAN 32 FEET

Lintel Depth, D ^g (in.)	Number of bars and bar size in top and bottom of lintel	Steel yield strength ^h , f _y (psi)	Design Loading Condition Determined from Table R611.8(1)								
			1	2		3		4		5	
			Maximum ground snow load (psf)								
			30	70	30	70	30	70	30	70	
Maximum Clear Span of Lintel (ft - in)											
12 ^{l,j}	Span without stirrups		2-9	2-11	2-4	2-5	2-3	2-3	2-2	2-0	2-0
16 ^{l,j}	Span without stirrups		3-9	4-0	3-4	3-5	3-2	3-1	3-0	2-9	2-9
20 ^{l,j}	Span without stirrups		4-9	5-1	4-3	4-4	4-1	4-0	3-10	3-7	3-7
24 ^k	Span without stirrups ^m		5-8	6-3	5-2	5-3	5-0	4-10	4-8	4-4	4-4
	1-#4	40,000	7-11	9-0	6-11	7-2	6-5	6-1	5-8	4-9	4-7
		60,000	9-9	11-0	8-5	8-9	7-10	7-5	6-10	5-9	5-7
	1-#5	40,000	9-11	11-2	8-7	8-11	8-0	7-7	7-0	5-11	5-9
		60,000	12-1	13-8	10-6	10-10	9-9	9-3	8-6	7-2	7-0
	2-#4	40,000	11-2	12-8	9-9	10-1	9-1	8-7	7-11	6-8	6-6
		60,000	15-7	17-7	12-8	13-4	11-6	10-8	9-8	7-11	7-8
	2-#5	40,000	14-11	18-0	12-2	12-10	11-1	10-3	9-4	7-8	7-5
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	DR
		Center distance, A ^{n,o}		2-0	2-6	1-6	1-7	1-4	1-2	1-0	STL

For SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kN/m²; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa

^a Where lintels are formed with screen-grid forms, form material shall be removed if necessary to create top and bottom flanges of the lintel that are not less than 5 inches (127 mm) in width and not less than 2.5 inches (64 mm) in depth (in the vertical direction). See Figure R611.8(4). Flat form lintels shall be permitted to be used in lieu of screen-grid lintels. See Tables R611.8(2) through R611.8(5).

^b See Table R611.3 for tolerances permitted from nominal thickness and minimum dimensions and spacings of cores.

^c Table values are based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa). See notes m and o. Table values are based on uniform loading. See Section R611.7.2.1 for lintels supporting concentrated loads.

^d Deflection criterion is L/240, where L is the clear span of the lintel in inches, or ½-inch (13 mm), whichever is less.

^e Linear interpolation is permitted between ground snow loads.

^f DR indicates design required. STL indicates stirrups required throughout lintel

^g Lintel depth, D, is permitted to include the available height of wall located directly above the lintel, provided that the increased lintel depth spans the entire length of the lintel.

^h Stirrups shall be fabricated from reinforcing bars with the same yield strength as that used for the main longitudinal reinforcement.

ⁱ Stirrups are not required for lintels less than 24 inches (610 mm) in depth fabricated from screen-grid forms. Top and bottom reinforcement shall consist of a No. 4 bar having a yield strength of 40,000 psi (280 MPa) or 60,000 psi (420 MPa).

^j Lintels between 12 (305) and 24 inches (610 mm) in depth with stirrups shall be formed from flat-walls forms (see Tables R611.8(2) through R611.8(5)), or form material shall be removed from screen-grid forms so as to provide a concrete section comparable to that required for a flat wall. Allowable spans for flat lintels with stirrups shall be determined from Tables R611.8(2) through R611.8(5).

^k Where stirrups are required for 24-inch (610 mm) deep lintels, the spacing shall not exceed 12 inches (305 mm) on center.

^l Allowable clear span without stirrups applicable to all lintels of the same depth, D. Top and bottom reinforcement for lintels without stirrups shall not be less than the least amount of reinforcement required for a lintel of the same depth and loading condition with stirrups. All other spans require stirrups spaced at not more than 12 inches (305 mm).

^m Where concrete with a minimum specified compressive strength of 3,000 psi (20.7 MPa) is used, clear spans for lintels without stirrups shall be permitted to be multiplied by 1.05. If the increased span exceeds the allowable clear span for a lintel of the same depth and loading condition with stirrups, the top and bottom reinforcement shall be equal to or greater than that required for a lintel of the same depth and loading condition that has an allowable clear span that is equal to or greater than that of the lintel without stirrups that has been increased.

ⁿ Center distance, A, is the center portion of the span where stirrups are not required. This is applicable to all longitudinal bar sizes and steel yield strengths.

^o Where concrete with a minimum specified compressive strength of 3,000 psi (20.7 MPa) is used, center distance, A, shall be permitted to be multiplied by 1.10.

^p The maximum clear opening width between two solid wall segments shall be 18 feet (5486 mm). See Section R611.7.2.1. Lintel spans in the table greater than 18 feet (5486 mm) are shown for interpolation and information purposes only.

TABLE R611.8(9)
MAXIMUM ALLOWABLE CLEAR SPANS FOR FLAT LINTELS
WITHOUT STIRRUPS IN NON-LOAD-BEARING WALLS^{a,b,c,d,e,g,h}

Lintel Depth, D ^f (in.)	Number of bars and bar size	Steel yield strength, f _y (psi)	Nominal Wall Thickness (inches)								
			4		6		8		10		
			Lintel Supporting ...								
			Concrete wall	Light framed gable	Concrete wall	Light framed gable	Concrete wall	Light framed gable	Concrete wall	Light framed gable	
Maximum Clear Span of Lintel (ft - in)											
8	1-#4	40,000	10-11	11-5	9-7	11-2	7-10	9-5	7-3	9-2	
		60,000	12-5	11-7	10-11	13-5	9-11	13-2	9-3	12-10	
	1-#5	40,000	12-7	11-7	11-1	13-8	10-1	13-5	9-4	13-1	
		60,000	DR	DR	12-7	16-4	11-6	14-7	10-9	14-6	
	2-#4	40,000	DR	DR	12-0	15-3	10-11	15-0	10-2	14-8	
		60,000	DR	DR	DR	DR	12-2	15-3	11-7	15-3	
	2-#5	40,000	DR	DR	DR	DR	12-7	16-7	11-9	16-7	
		60,000	DR	DR	DR	DR	DR	DR	13-3	16-7	
	2-#6	40,000	DR	DR	DR	DR	DR	DR	13-2	17-8	
		60,000	DR	DR	DR	DR	DR	DR	DR	DR	
	12	1-#4	40,000	11-5	9-10	10-6	12-0	9-6	11-6	8-9	11-1
			60,000	11-5	9-10	11-8	13-3	10-11	14-0	10-1	13-6
1-#5		40,000	11-5	9-10	11-8	13-3	11-1	14-4	10-3	13-9	
		60,000	11-5	9-10	11-8	13-3	11-10	16-0	11-9	16-9	
2-#4		40,000	DR	DR	11-8	13-3	11-10	16-0	11-2	15-6	
		60,000	DR	DR	11-8	13-3	11-10	16-0	11-11	18-4	
2-#5		40,000	DR	DR	11-8	13-3	11-10	16-0	11-11	18-4	
		60,000	DR	DR	11-8	13-3	11-10	16-0	11-11	18-4	
16		1-#4	40,000	13-6	13-0	11-10	13-8	10-7	12-11	9-11	12-4
			60,000	13-6	13-0	13-8	16-7	12-4	15-9	11-5	15-0
		1-#5	40,000	13-6	13-0	13-10	17-0	12-6	16-1	11-7	15-4
			60,000	13-6	13-0	13-10	17-1	14-0	19-7	13-4	18-8
	2-#4	40,000	13-6	13-0	13-10	17-1	13-8	18-2	12-8	17-4	
		60,000	13-6	13-0	13-10	17-1	14-0	20-3	14-1		
	2-#5	40,000	13-6	13-0	13-10	17-1	14-0	20-3	14-1		
		60,000	DR	DR	13-10	17-1	14-0	20-3	14-1		
	20	1-#4	40,000	14-11	15-10	13-0	14-10	11-9	13-11	10-10	13-2
			60,000	15-3	15-10	14-11	18-1	13-6	17-0	12-6	16-2
		1-#5	40,000	15-3	15-10	15-2	18-6	13-9	17-5	12-8	16-6
			60,000	15-3	15-10	15-8	20-5	15-9		14-7	20-1
2-#4		40,000	15-3	15-10	15-8	20-5	14-11		13-10		
		60,000	15-3	15-10	15-8	20-5	15-10		15-11		
2-#5		40,000	15-3	15-10	15-8	20-5	15-10		15-11		
		60,000	15-3	15-10	15-8	20-5	15-10		15-11		
24		1-#4	40,000	16-1	17-1	13-11	15-10	12-7	14-9	11-8	13-10
			60,000	16-11	18-5	16-1	19-3	14-6	18-0	13-5	17-0
		1-#5	40,000	16-11	18-5	16-3	19-8	14-9	18-5	13-8	17-4
			60,000	16-11	18-5	17-4		17-0		15-8	
	2-#4	40,000	16-11	18-5	17-4		16-1		14-10		
		60,000	16-11	18-5	17-4		17-6		17-1		
	2-#5	40,000	16-11	18-5	17-4		17-6		17-4		
		60,000	16-11	18-5	17-4		17-6		17-8		

For SI: 1 inch = 25.4 mm; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa

^a See Table R611.3 for tolerances permitted from nominal thickness.

^b Table values are based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa). See note e.

^c Deflection criterion is L/240, where L is the clear span of the lintel in inches, or 1/2-inch (13 mm), whichever is less.

^d Linear interpolation between lintels depths, D, is permitted provided the two cells being used to interpolate are shaded.

^e Where concrete with a minimum specified compressive strength of 3,000 psi (20.7 MPa) is used, spans in cells that are shaded shall be permitted to be multiplied by 1.05.

^f Lintel depth, D, is permitted to include the available height of wall located directly above the lintel, provided that the increased lintel depth spans the entire length of the lintel.

^g DR indicates design required

^h The maximum clear opening width between two solid wall segments shall be 18 feet (5486 mm). See Section R611.7.2.1. Lintel spans in the table greater than 18 feet (5486 mm) are shown for interpolation and information purposes only.

TABLE R611.8(10)
MAXIMUM ALLOWABLE CLEAR SPANS FOR WAFFLE-GRID AND SCREEN-GRID LINTELS
WITHOUT STIRRUPS IN NON-LOAD-BEARING WALLS^{c,d,e,f,g}

Lintel Depth ^h , D (in.)	Form Type and Nominal Wall Thickness (inches)					
	6-inch Waffle-Grid ^a		8-inch Waffle-Grid ^a		6-inch Screen-Grid ^b	
	Lintel Supporting ...					
	Concrete wall	Light framed gable	Concrete wall	Light framed gable	Concrete wall	Light framed gable
Maximum Clear Span of Lintel (ft - in)						
8	10-3	8-8	8-8	8-3	--	--
12	9-2	7-6	7-10	7-1	8-8	6-9
16	10-11	10-0	9-4	9-3	--	--
20	12-5	12-2	10-7	11-2	--	--
24	13-9	14-2	11-10	12-11	13-0	12-9

For SI: 1 inch = 25.4 mm; 1 ft = 304.8 mm; Grade 40 = 280 MPa; Grade 60 = 420 MPa

^a Where lintels are formed with waffle-grid forms, form material shall be removed, if necessary, to create top and bottom flanges of the lintel that are not less than 3 inches (76 mm) in depth (in the vertical direction), are not less than 5 inches (127 mm) in width for 6-inch (152 mm) waffle-grid forms and not less than 7 inches (178 mm) in width for 8-inch (203 mm) waffle-grid forms. See Figure R611.8(3). Flat form lintels shall be permitted to be used in lieu of waffle-grid lintels. See Tables R611.8(2) through R611.8(5).

^b Where lintels are formed with screen-grid forms, form material shall be removed if necessary to create top and bottom flanges of the lintel that are not less than 5 inches (127 mm) in width and not less than 2.5 inches (64 mm) in depth (in the vertical direction). See Figure R611.8(4). Flat form lintels shall be permitted to be used in lieu of screen-grid lintels. See Tables R611.8(2) through R611.8(5).

^c See Table R611.3 for tolerances permitted from nominal thickness and minimum dimensions and spacing of cores.

^d Table values are based on concrete with a minimum specified compressive strength of 2,500 psi (17.2 MPa). See Note g.

^e Deflection criterion is $L/240$, where L is the clear span of the lintel in inches, or 1/2-inch (13 mm), whichever is less.

^f Top and bottom reinforcement shall consist of a No. 4 bar having a minimum yield strength of 40,000 psi (280 MPa).

^g Where concrete with a minimum specified compressive strength of 3,000 psi (20.7 MPa) is used, spans in shaded cells shall be permitted to be multiplied by 1.05.

^h Lintel depth, D , is permitted to include the available height of wall located directly above the lintel, provided that the increased lintel depth spans the entire length of the lintel.

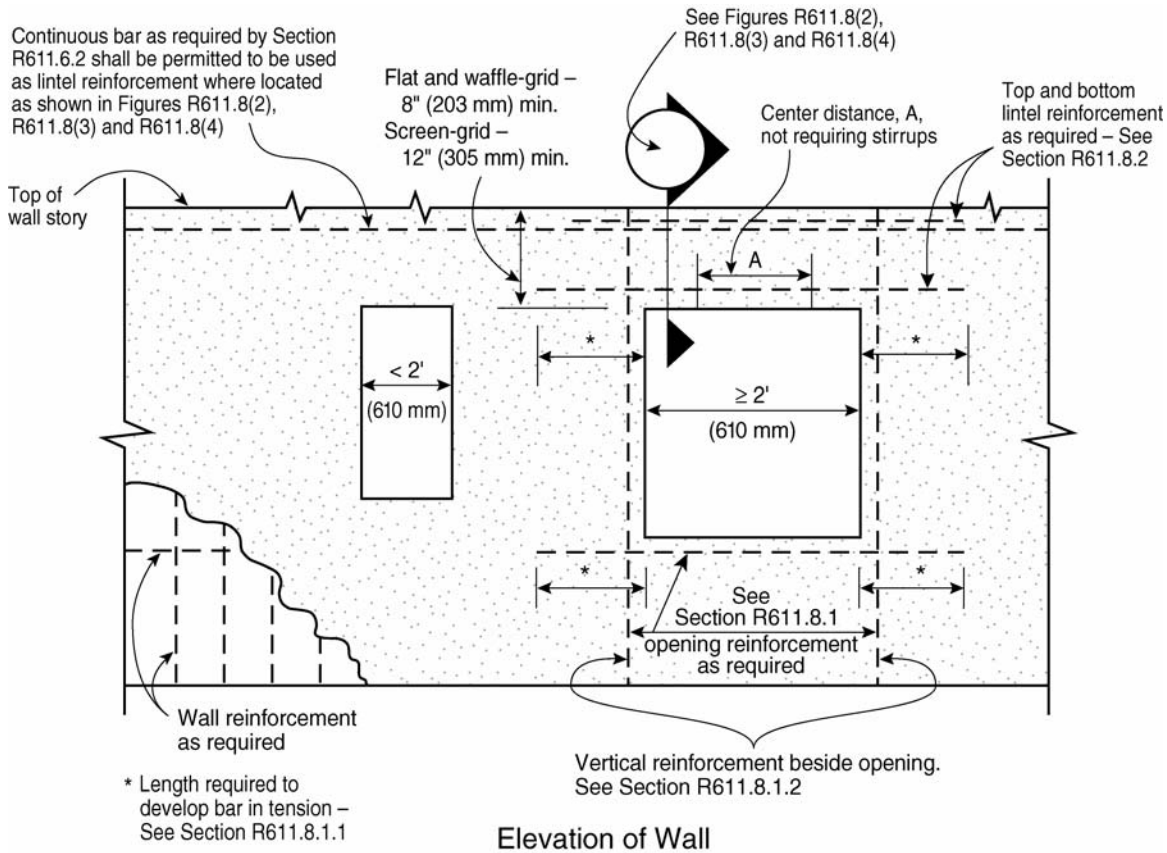
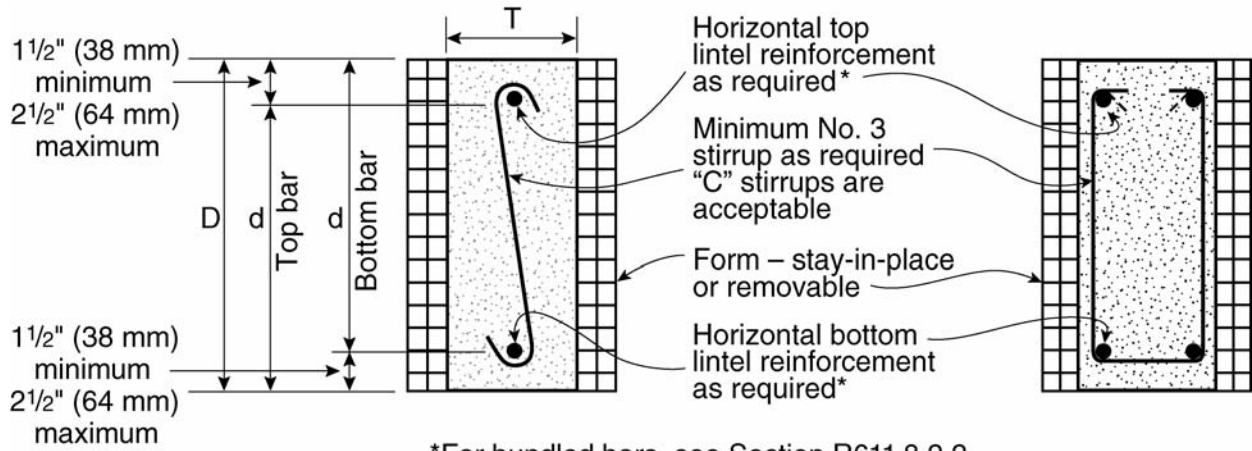


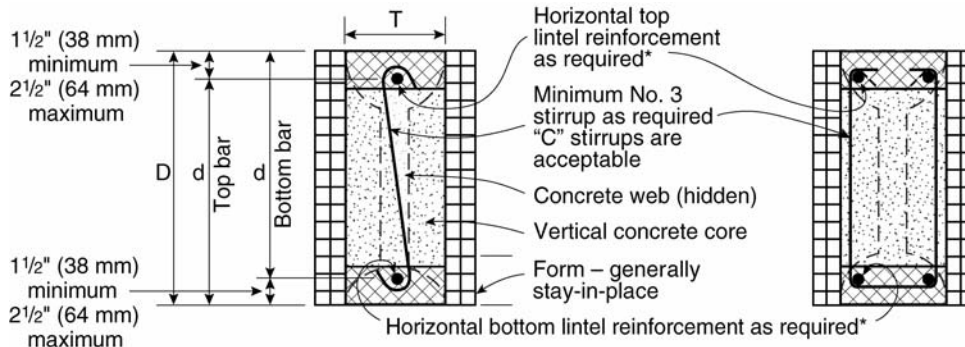
FIGURE R611.8(1)



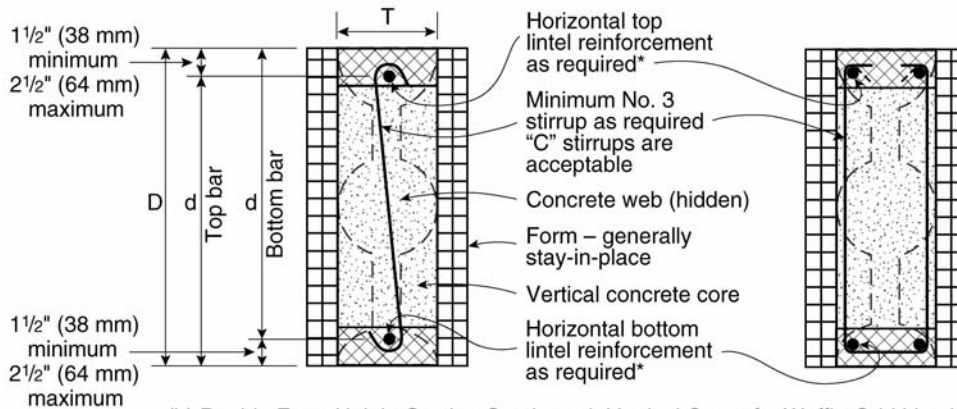
*For bundled bars, see Section R611.8.2.2.

Section Cut through Flat Wall Lintel

FIGURE R611.8(2)



(a) Single Form Height Section Cut through Vertical Core of a Waffle-Grid Lintel

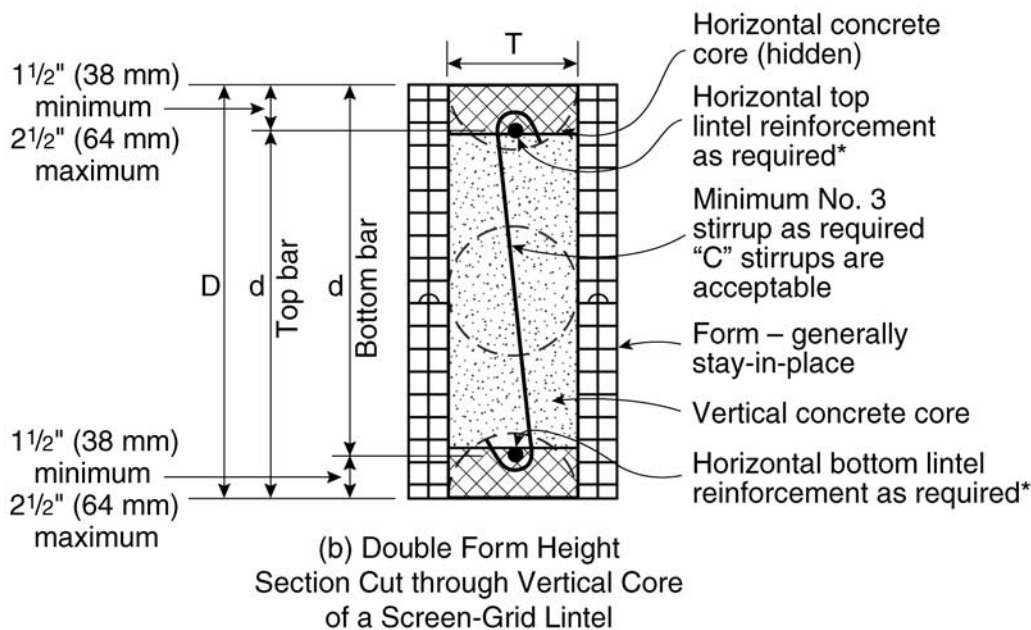
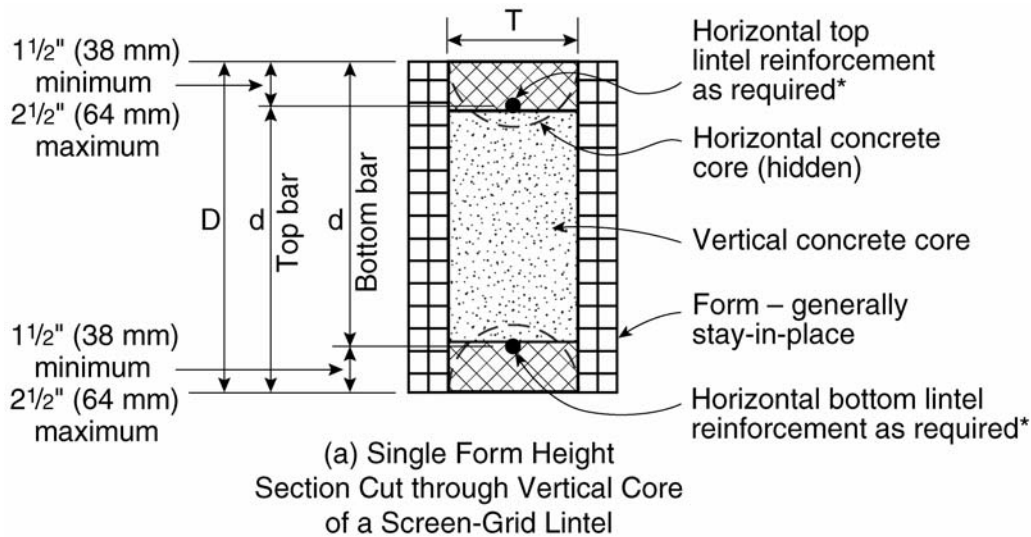


(b) Double Form Height Section Cut through Vertical Core of a Waffle-Grid Lintel

*For bundled bars, see Section R611.8.2.2.

Note: Cross-hatching represents the area in which form material shall be removed, if necessary, to create flanges continuous the length of the lintel. Flanges shall have a minimum thickness of 3", and a minimum width of 5" and 7" in 6" nominal and 8" nominal waffle-grid walls, respectively. See note a to Tables R611.8(6) and R611.8(10)

FIGURE R611.8(3)



*For bundled bars, see Section R611.8.2.2.

Note: Cross-hatching represents the area in which form material shall be removed, if necessary, to create flanges continuous the length of the lintel. Flanges shall have a minimum thickness of 2.5" and a minimum width of 5". See note a to Tables R611.8(8) and R611.8(10).

FIGURE R611.8(4)

611.9 Requirements for connections – general. Concrete walls shall be connected to footings, floors, ceilings and roofs in accordance with this section.

R611.9.1 Connections between concrete walls and light-framed floor, ceiling and roof systems. Connections between concrete walls and light-framed floor, ceiling and roof systems utilizing the prescriptive details of Figures R611.9(1) through R611.9(12) shall comply with this section and Sections R611.9.2 and R611.9.3.

R611.9.1.1 Anchor bolts. Anchor bolts used to connect light-framed floor, ceiling and roof systems to concrete walls in accordance with Figures R611.9(1) through R611.9(12) shall have heads, or shall be rods with threads on both ends with a hex or square nut on the end embedded in the concrete. Bolts and threaded rods shall comply with Section R611.5.2.2. Anchor bolts with J- or L-hooks shall not be used where the connection details in these figures are used.

R611.9.1.2 Removal of stay-in-place form material at bolts. Holes in stay-in-place forms for installing bolts for attaching face-mounted wood ledger boards to the wall shall be a minimum of 4 inches (102 mm) in diameter for forms not greater than 1-1/2 inches (38 mm) in thickness, and increased one inch (25 mm) in diameter for each 1/2-inch (13 mm) increase in form thickness. Holes in stay-in-place forms for installing bolts for attaching face-mounted cold-formed steel tracks to the wall shall be a minimum of 4 inches (102 mm) square. The wood ledger board or steel track shall be in direct contact with the concrete at each bolt location.

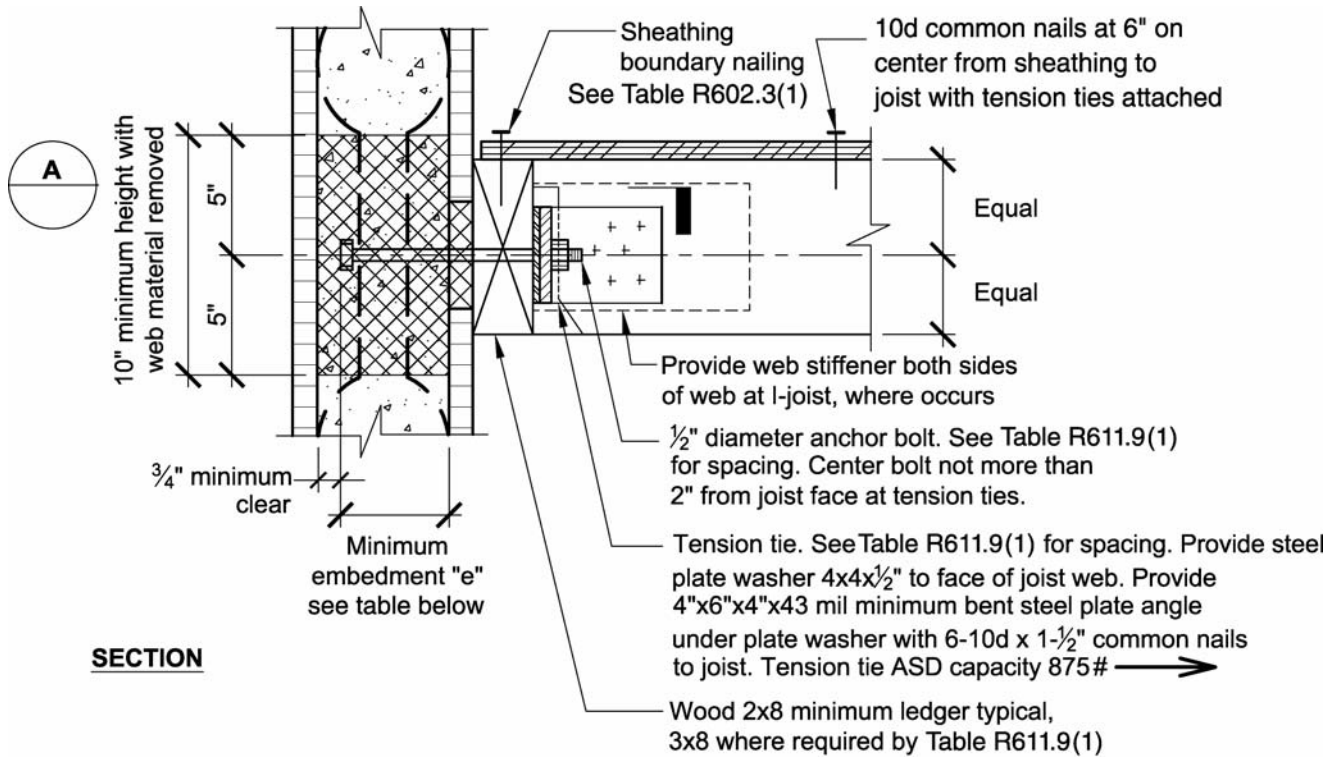
Exception: A vapor retarder or other material less than or equal to 1/16-inch (1.6 mm) in thickness is permitted to be installed between the wood ledger or cold-formed track and the concrete.

R611.9.2 Connections between concrete walls and light-framed floor systems. Connections between concrete walls and light-framed floor systems shall be in accordance with one of the following:

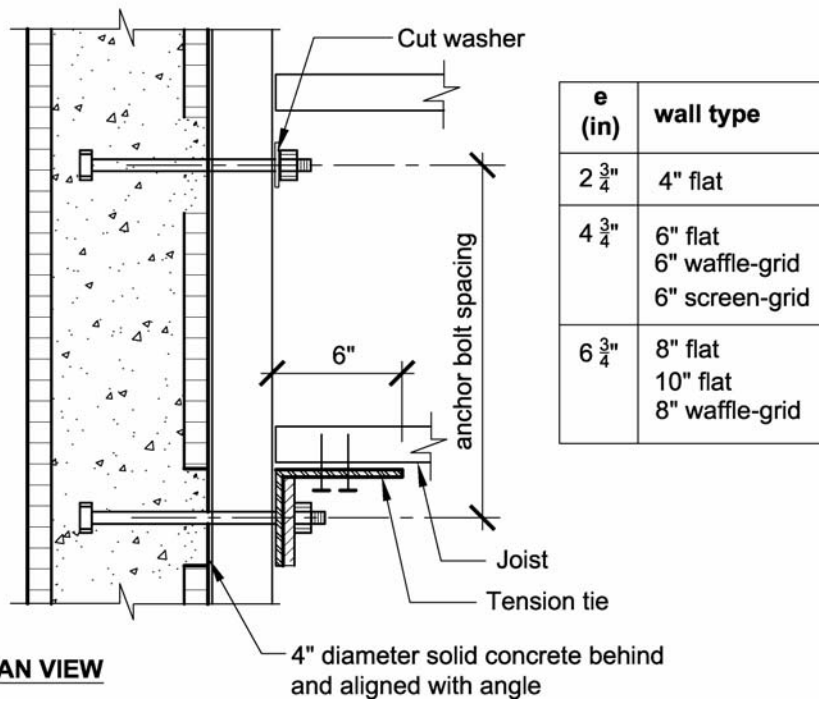
1. For floor systems of wood frame construction, the provisions of Section R611.9.1 and the prescriptive details of Figures R611.9(1) through R611.9(4), where permitted by the figure tables. Portions of connections of wood framed floor systems not noted in the figures shall be in accordance with Section R502, or AF&PA/WFCM, if applicable.
2. For floor systems of cold-formed steel construction, the provisions of Section R611.9.1 and the prescriptive details of Figures R611.9(5) through R611.9(8), where permitted by the figure tables. Portions of connections of cold- formed steel framed floor systems not noted in the figures shall be in accordance with Section R505, or AISI/PM, if applicable.
3. Proprietary connectors selected to resist loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of PCA 100.
4. An engineered design using loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of PCA 100.
5. An engineered design using loads and material design provisions in accordance with this code, or in accordance with ASCE 7, ACI 318, and AF&PA/NDS for wood frame construction or AISI/NAS for cold-formed steel frame construction.

R611.9.3 Connections between concrete walls and light-framed ceiling and roof systems. Connections between concrete walls and light-framed ceiling and roof systems shall be in accordance with one of the following:

1. For ceiling and roof systems of wood frame construction, the provisions of Section R611.9.1 and the prescriptive details of Figures R611.9(9) and R611.9(10), where permitted by the figure tables. Portions of connections of wood framed ceiling and roof systems not noted in the figures shall be in accordance with Section R802, or AF&PA/WFCM, if applicable.
2. For ceiling and roof systems of cold-formed steel construction, the provisions of Section R611.9.1 and the prescriptive details of Figures R611.9(11) and R611.9(12), where permitted by the figure tables. Portions of connections of cold-formed steel framed ceiling and roof systems not noted in the figures shall be in accordance with Section R804, or AISI/PM, if applicable.
3. Proprietary connectors selected to resist loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of PCA 100.
4. An engineered design using loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of PCA 100.
5. An engineered design using loads and material design provisions in accordance with this code, or in accordance with ASCE 7, ACI 318, and AF&PA/NDS for wood frame construction or AISI/NAS for cold-formed steel frame construction.



SECTION



DETAIL A - PLAN VIEW

FIGURE R611.9(1)
WOOD FRAMED FLOOR TO SIDE OF CONCRETE WALL, FRAMING PERPENDICULAR

TABLE R611.9(1)
WOOD FRAMED FLOOR TO SIDE OF CONCRETE WALL,
FRAMING PERPENDICULAR^{a,b,c}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						
12	48						
16	16					a	a
16	32						
16	48						
19.2	19.2	a	a	a	a	a	
19.2	38.4	a	a	a			

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in R611.9(1). Use of this detail is permitted where cell is not shaded and prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c Letter "a" indicates that a minimum nominal 3x8 (76 x 152) ledger is required.

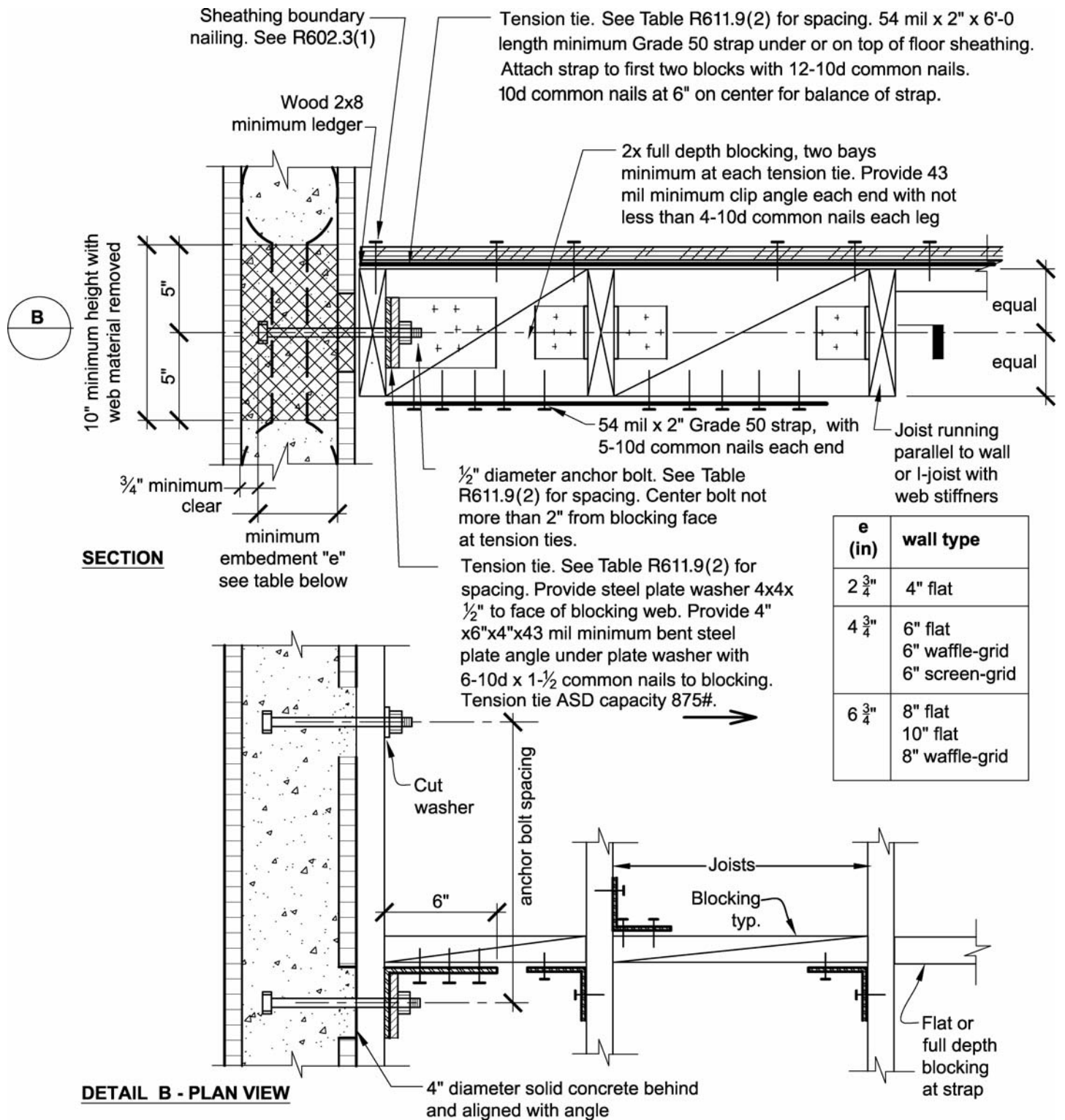


FIGURE R611.9(2)
WOOD FRAMED FLOOR TO SIDE OF CONCRETE WALL, FRAMING PARALLEL

TABLE R611.9(2)
WOOD FRAMED FLOOR TO SIDE OF CONCRETE WALL, FRAMING PARALLEL ^{a,b}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						
12	48						
16	16						
16	32						
16	48						
19.2	19.2						
19.2	38.4						
24	24						
24	48						

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(2). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

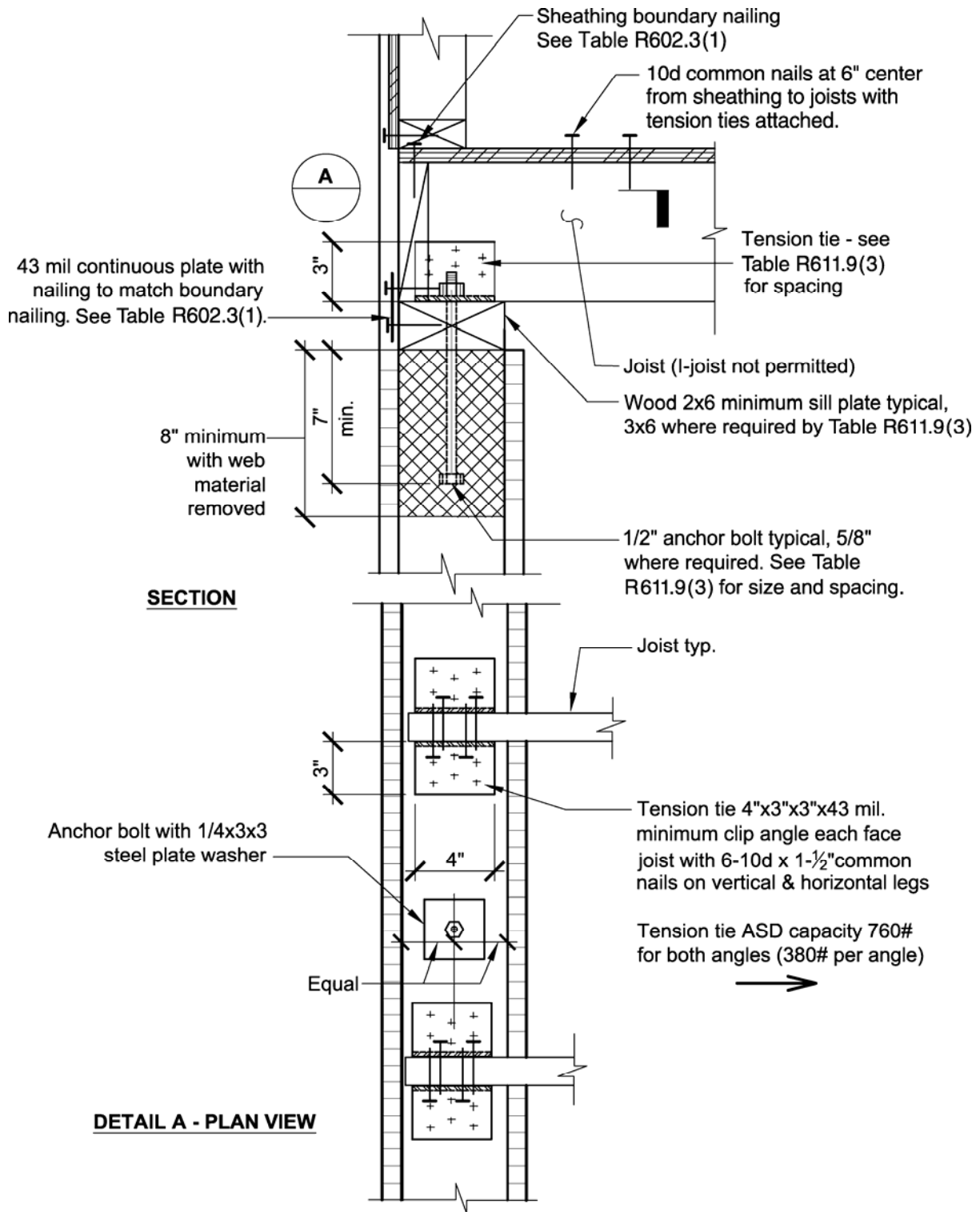


FIGURE R611.9(3)
WOOD FRAMED FLOOR TO TOP OF CONCRETE WALL, FRAMING PERPENDICULAR

TABLE R11.9(3)
WOOD FRAMED FLOOR TO TOP OF CONCRETE WALL, FRAMING PERPENDICULAR^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						
12	48						
16	16					6	6
						a	b
16	32					6	6
						a	b
16	48						
19.2	19.2				6	6	6
					a	a	b
19.2	38.4				6	6	
					a	a	
24	24			6	6	6	
				a	b	b	
24	48			6			
				a			

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(3). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions in Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(3). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (76 mm x 152 mm) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimal nominal 3x6 (76 mm x 152 mm) sill plate are required.

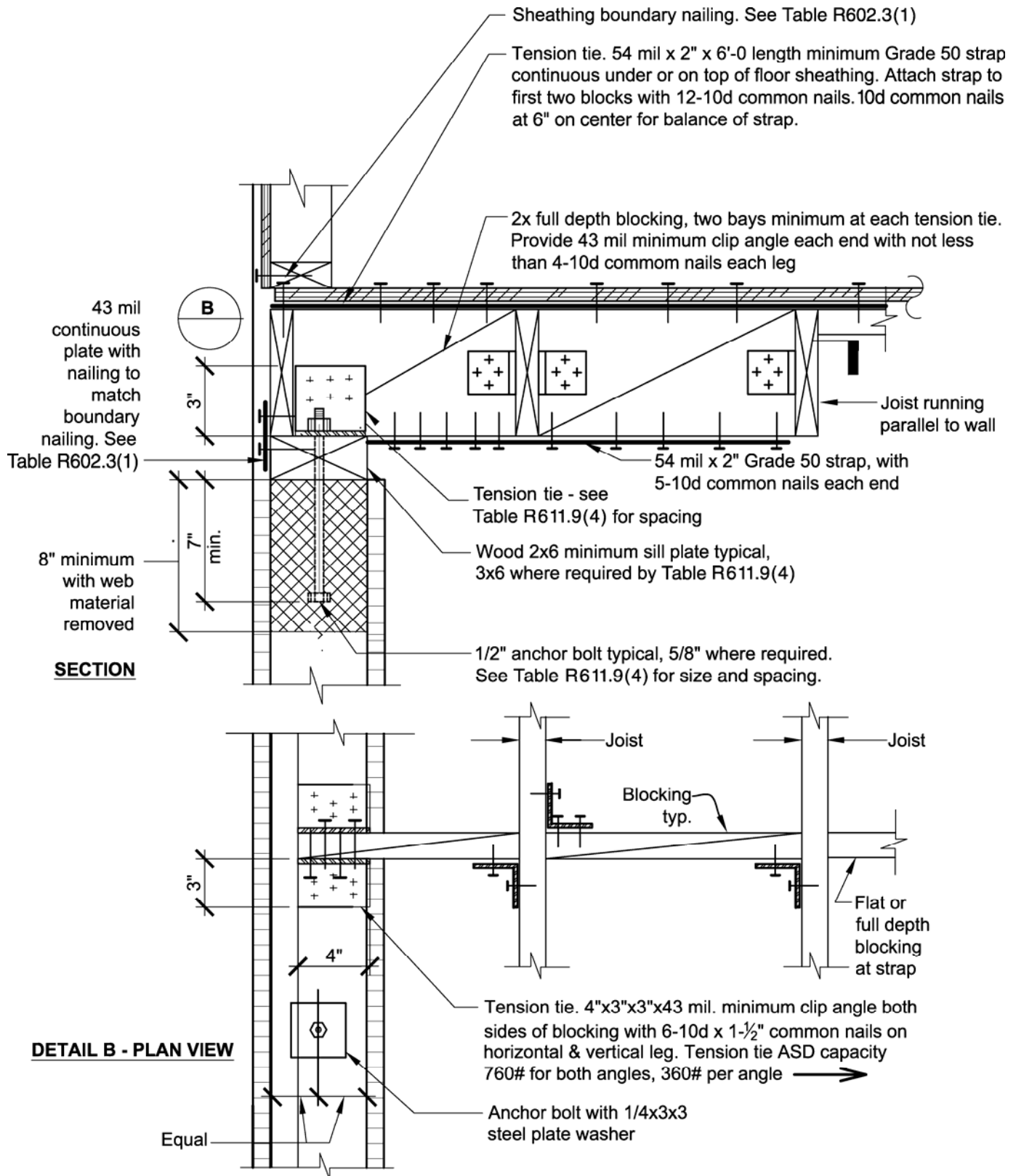


FIGURE R611.9(4)
WOOD FRAMED FLOOR TO TOP OF CONCRETE WALL, FRAMING PARALLEL

TABLE R611.9(4)
WOOD FRAMED FLOOR TO TOP OF CONCRETE WALL, FRAMING PARALLEL ^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						
12	48						
16	16					6 a	6 b
16	32					6 a	6 b
16	48						
19.2	19.2				6 a	6 a	6 b
19.2	38.4				6 a	6 a	
24	24			6 a	6 b	6 b	
24	48			6 a			

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(4). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(4). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (76 mm x 152 mm) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimal nominal 3x6 (76 mm x 152 mm) sill plate are required.

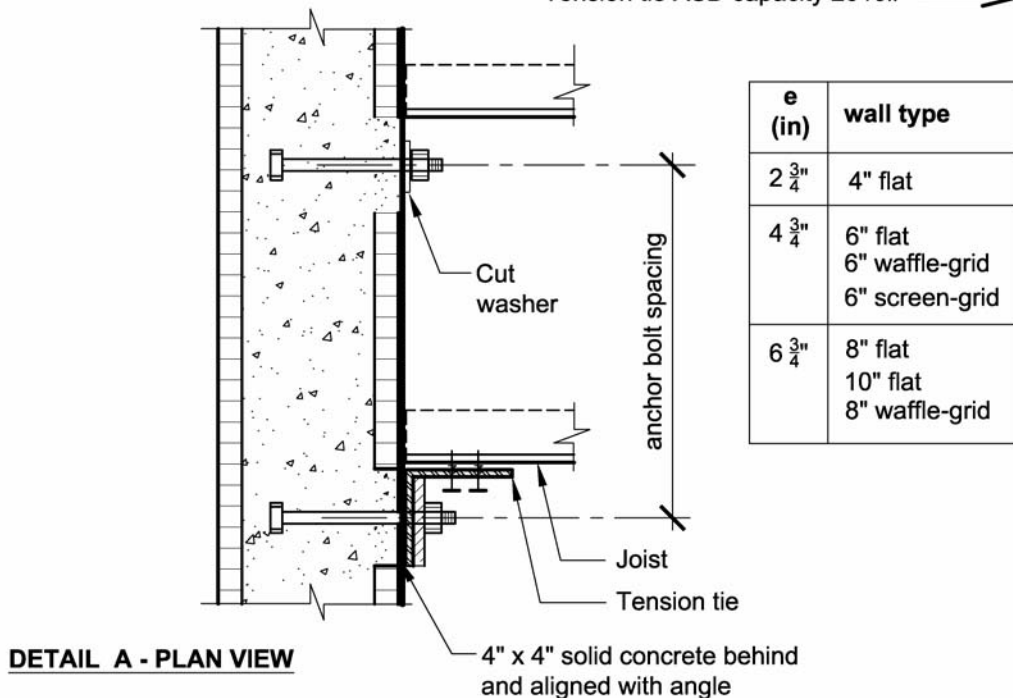
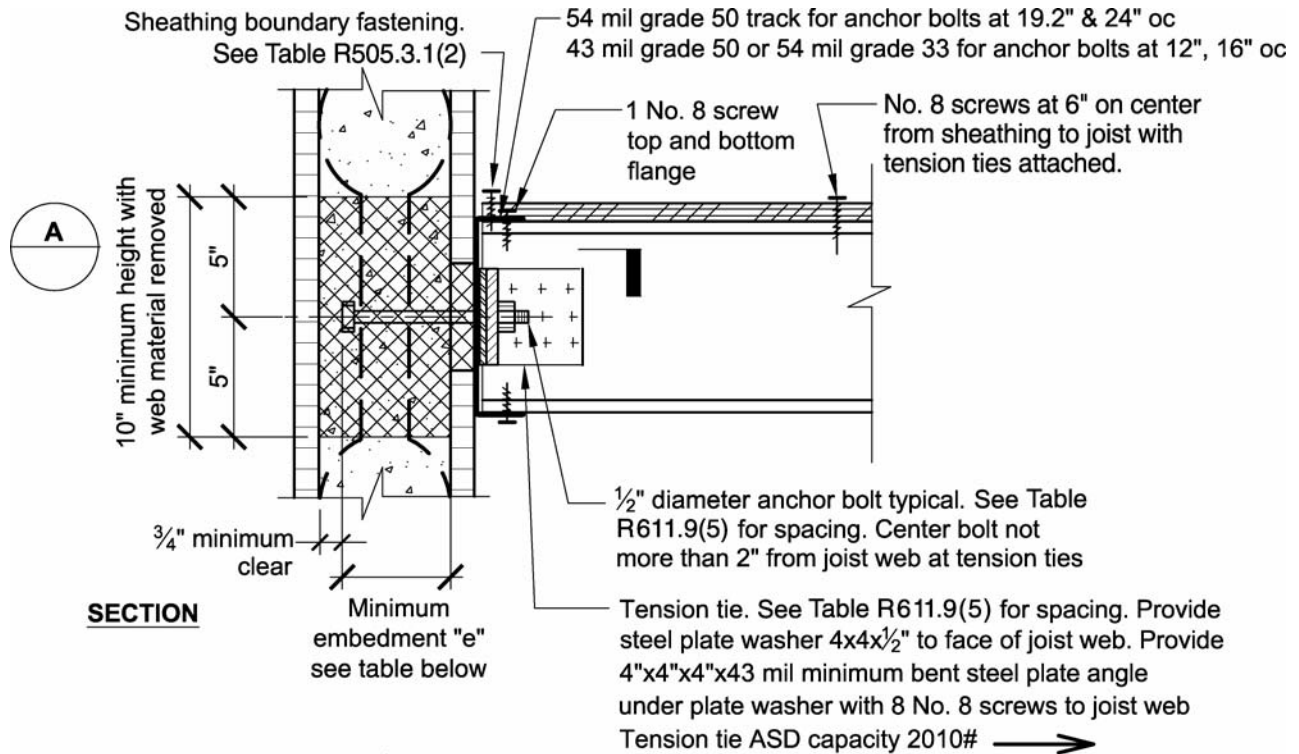


FIGURE R611.9(5)
COLD-FORMED STEEL FLOOR TO SIDE OF CONCRETE WALL, FRAMING PERPENDICULAR

TABLE R611.9(5)
COLD-FORMED STEEL FRAMED FLOOR TO SIDE OF CONCRETE WALL
FRAMING PERPENDICULAR^{a,b,c,d}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
					85D	90D	100D
12	12						
12	24						
12	36						6
12	48					6	6
16	16						
16	32						
16	48					6	6
19.2	19.2						
19.2	38.4						6
24	24						
24	48					6	6

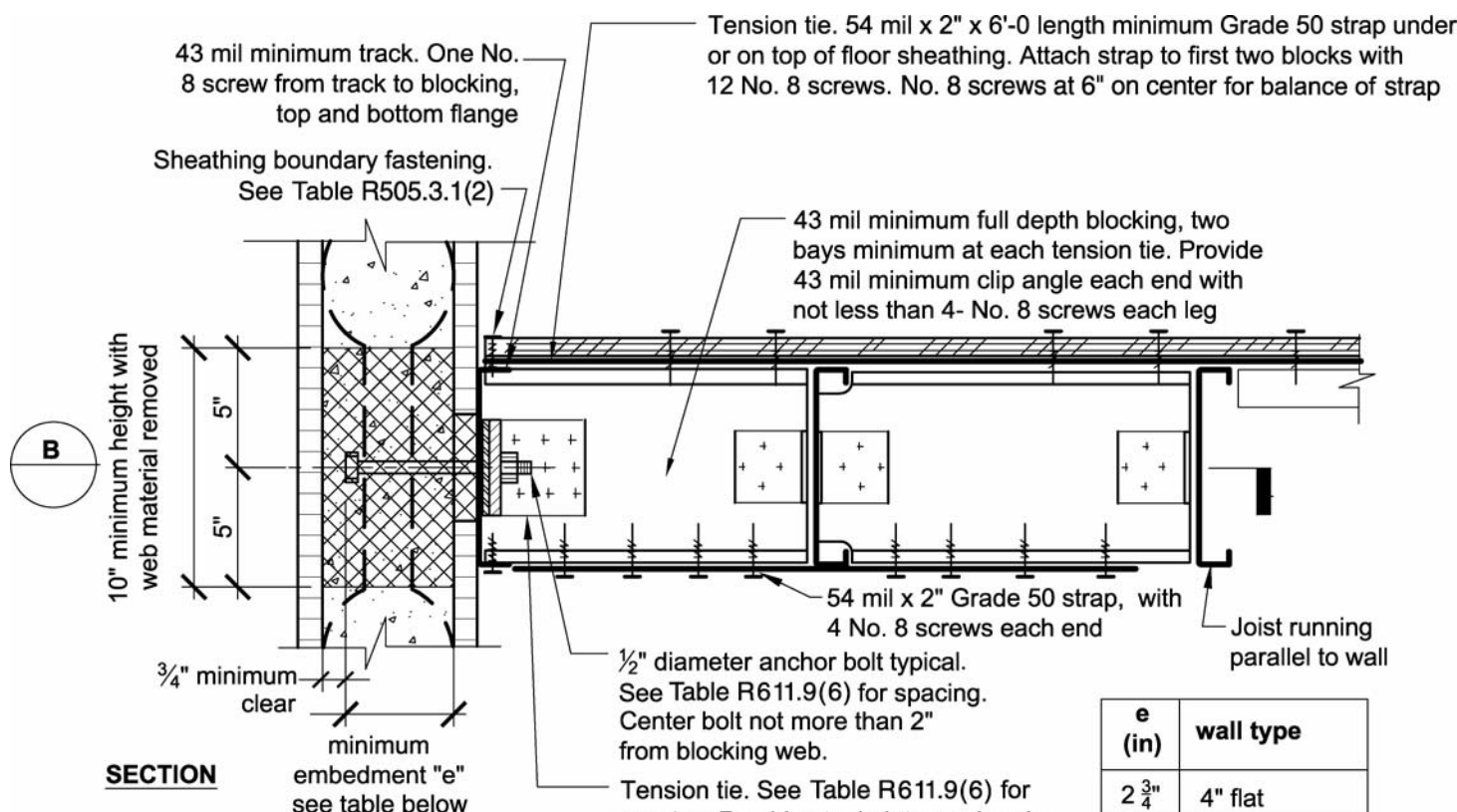
For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(5).

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(5). For the remainder of the wall, see Note b.



e (in)	wall type
2 3/4"	4" flat
4 3/4"	6" flat 6" waffle-grid 6" screen-grid
6 3/4"	8" flat 10" flat 8" waffle-grid

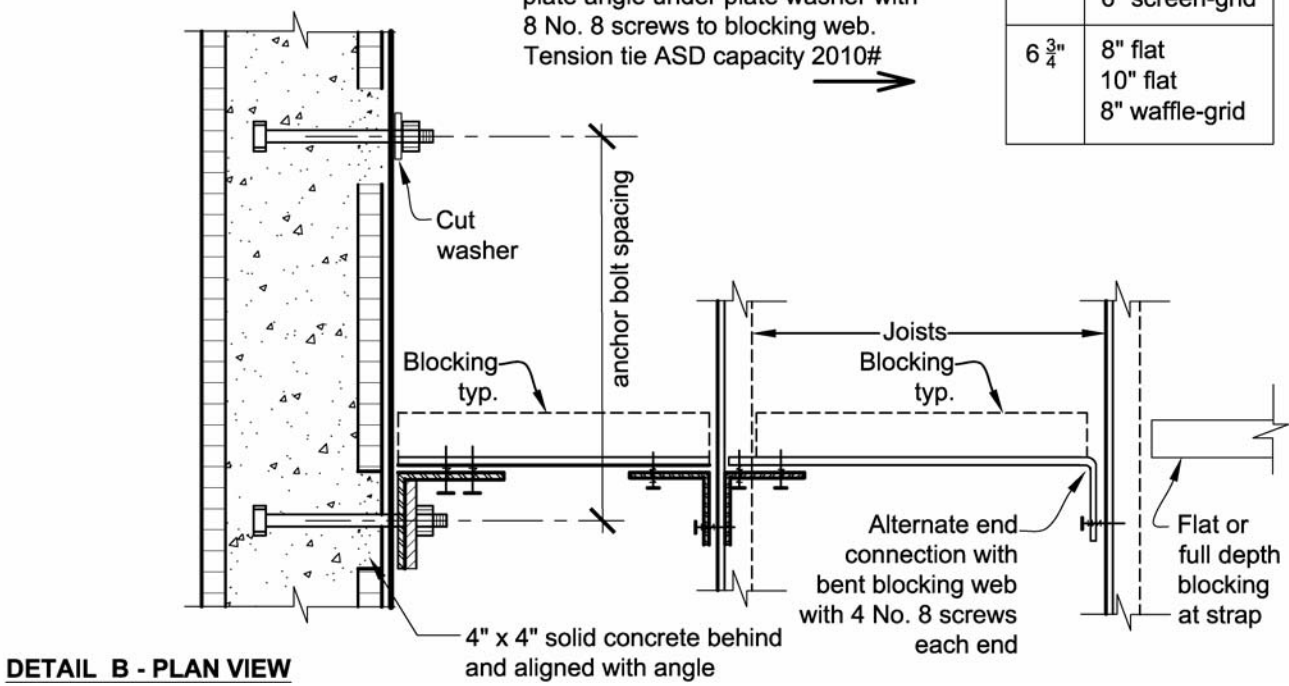


FIGURE R611.9(6)
COLD-FORMED STEEL FLOOR TO SIDE OF CONCRETE WALL, FRAMING PARALLEL

TABLE R611.9(6)
COLD-FORMED STEEL FRAMED FLOOR TO SIDE OF CONCRETE WALL
FRAMING PARALLEL^{a,b,c,d}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						6
12	48					6	6
16	16						
16	32						
16	48					6	6
19.2	19.2						
19.2	38.4						6
24	24						
24	48					6	6

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(6).

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(6). For the remainder of the wall, see Note b.

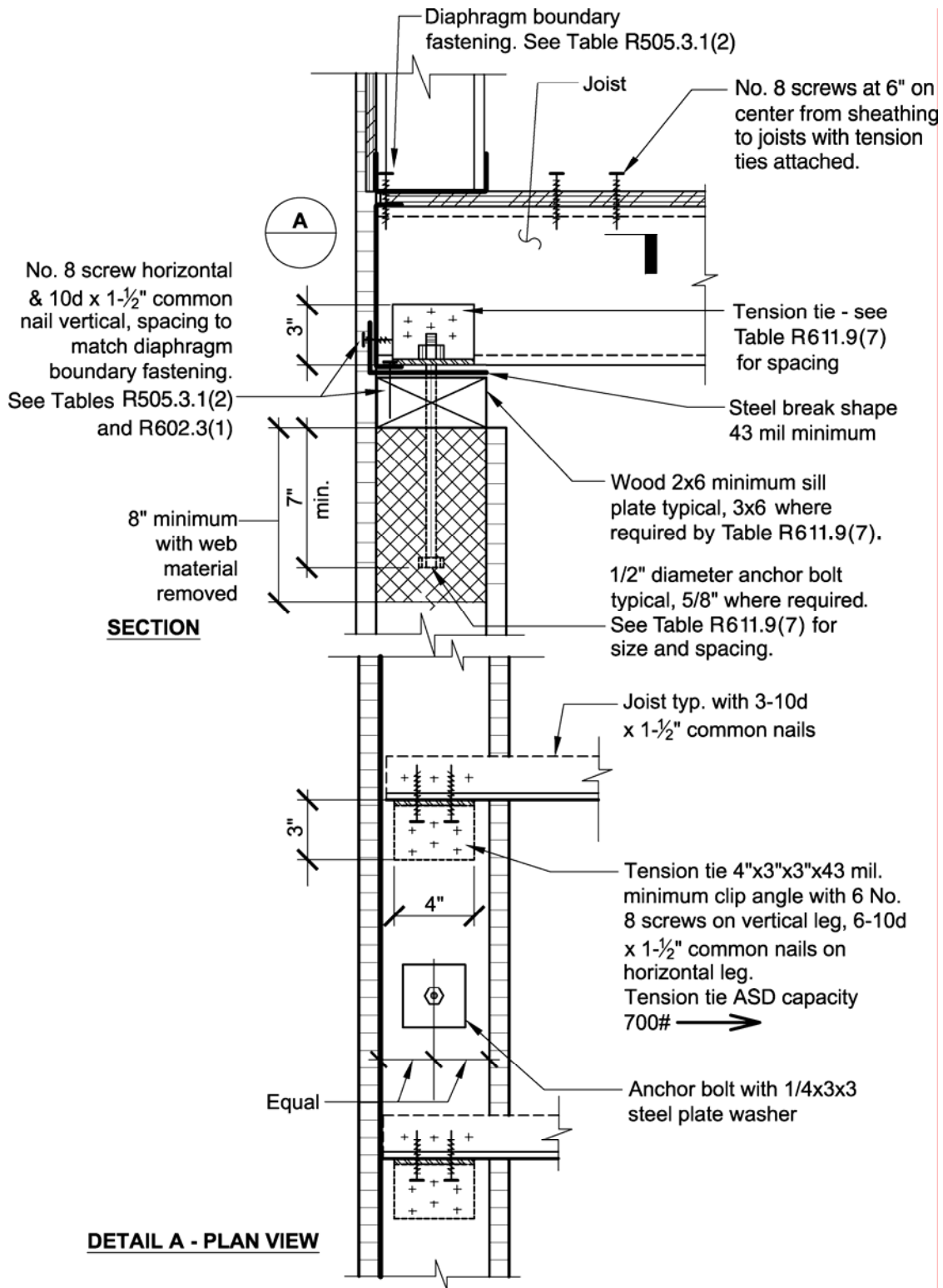


FIGURE R611.9(7)
COLD-FORMED STEEL FLOOR TO TOP OF CONCRETE WALL, FRAMING PERPENDICULAR

TABLE R611.9(7)
COLD-FORMED STEEL FRAMED FLOOR TO TOP OF CONCRETE WALL
FRAMING PERPENDICULAR ^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
16	16					6 a	6 b
16	32					6 a	6 b
19.2	19.2				6 a	8 b	8 b
19.2	38.4				6 a	8 b	8 b
24	24			6 a	8 b	8 b	

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(7). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Numbers 6 (152) and 8 (203) indicate minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(7). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (72 X 152) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimum nominal 3x6 (72 x 152) sill plate are required.

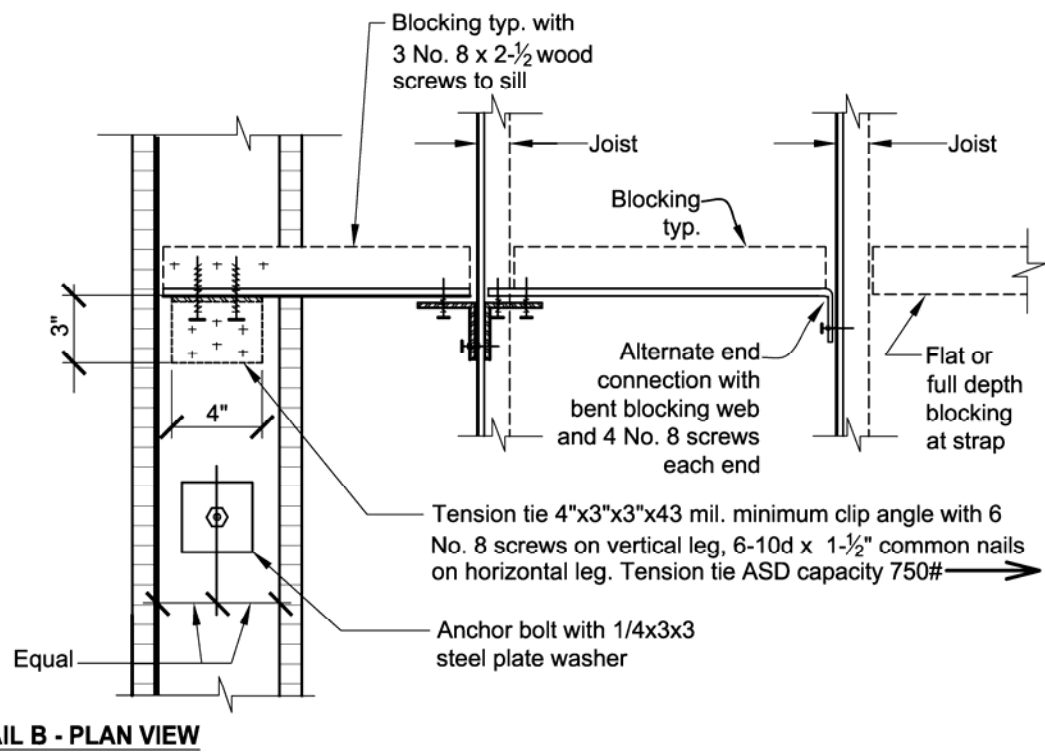
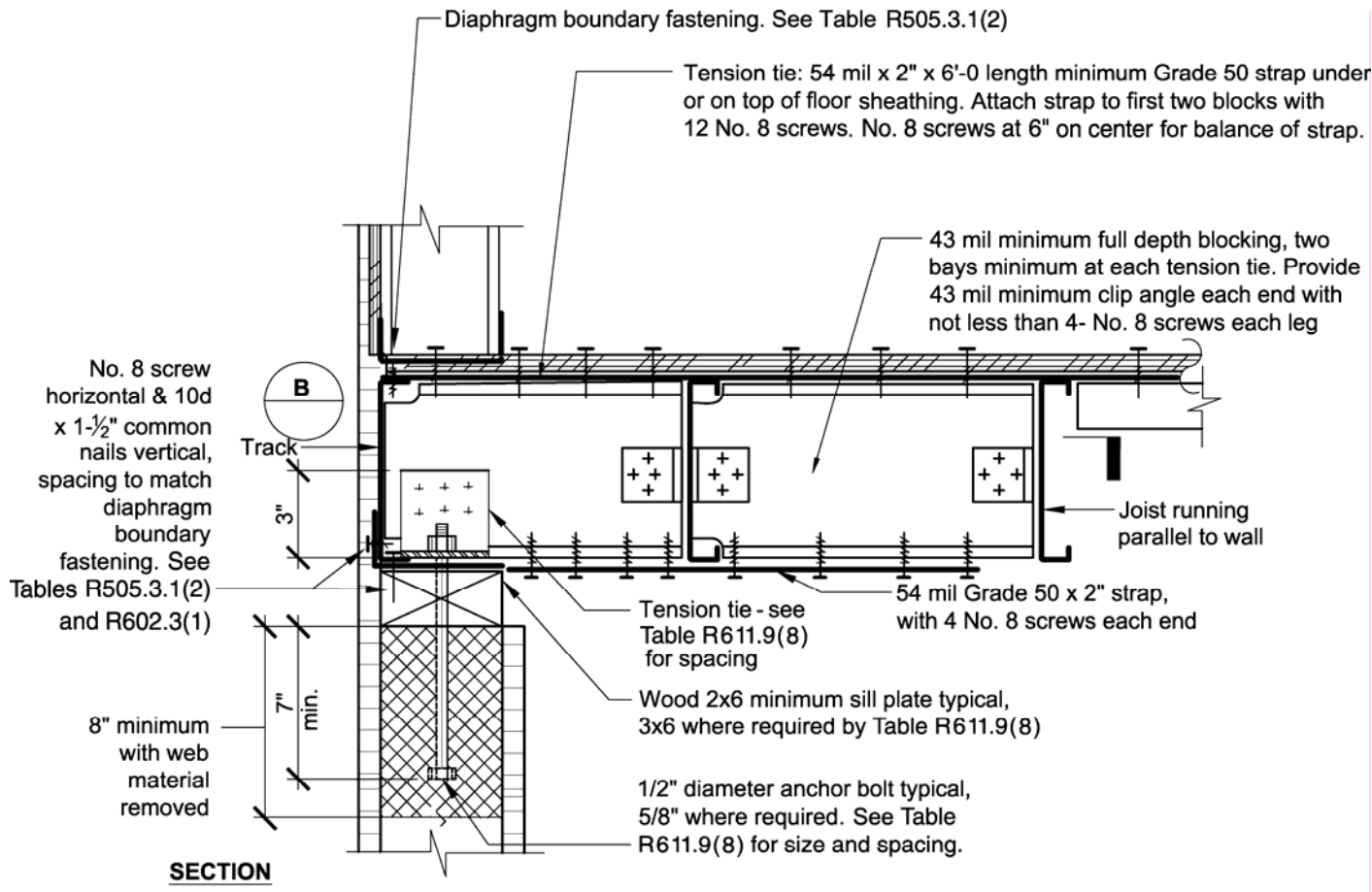


FIGURE R611.9(8)
COLD-FORMED STEEL FLOOR TO TOP OF CONCRETE WALL, FRAMING PARALLEL

TABLE R611.9(8)
COLD-FORMED STEEL FRAMED FLOOR TO TOP OF CONCRETE WALL
FRAMING PARALLEL^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
16	16					6 a	6 b
16	32					6 a	6 b
19.2	19.2				6 a	8 b	8 b
19.2	38.4				6 a	8 b	8 b
24	24			6 a	8 b	8 b	

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(8). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Numbers 6 (152) and 8 (203) indicate minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(8). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (72 X 152) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimum nominal 3x6 (72 x 152) sill plate are required.

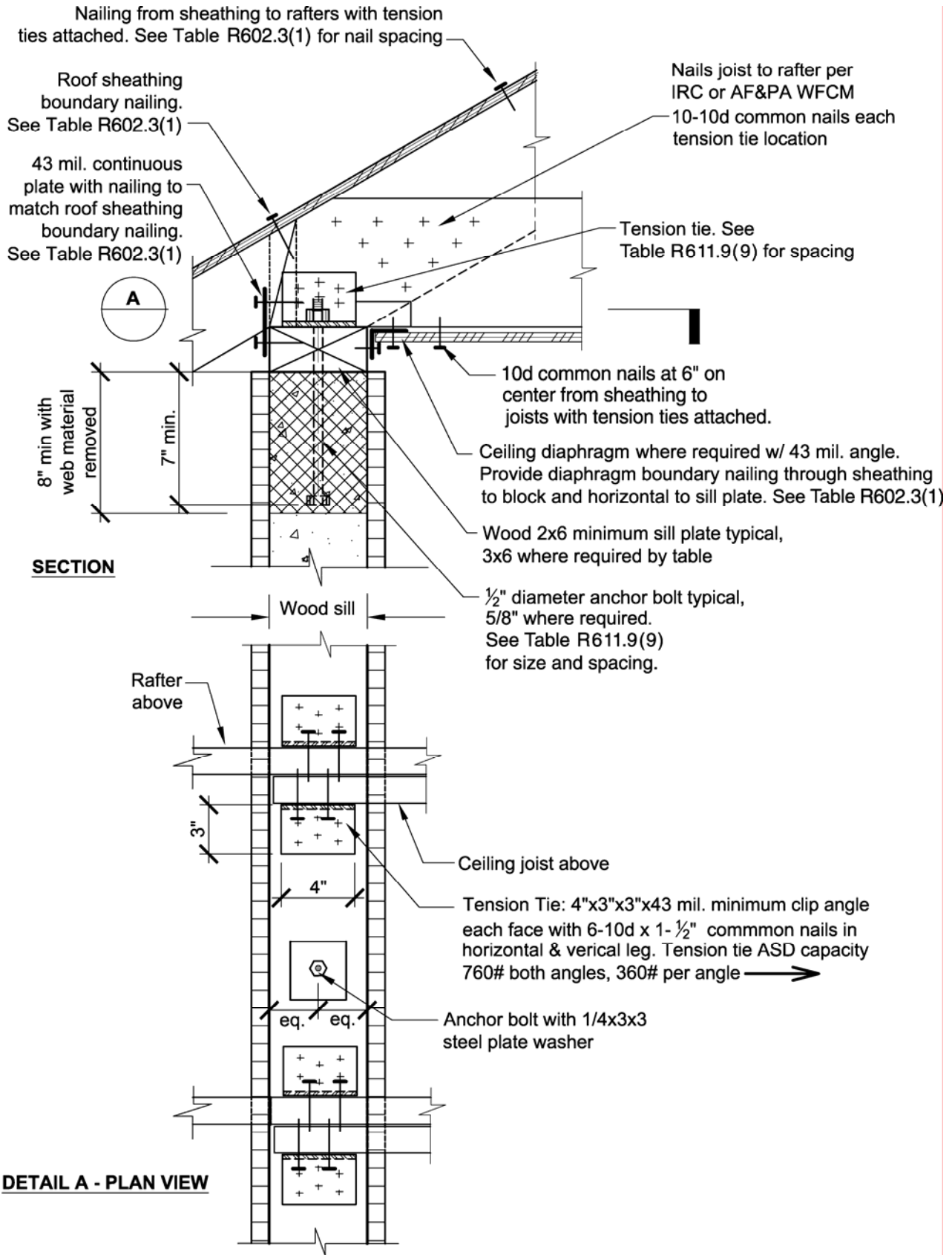


FIGURE R611.9(9)

WOOD FRAMED ROOF TO TOP OF CONCRETE WALL, FRAMING PERPENDICULAR

TABLE R611.9(9)
WOOD FRAMED ROOF TO TOP OF CONCRETE WALL
FRAMING PERPENDICULAR ^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
					85D	90D	100D
12	12						
12	24						
12	36						
12	48						
16	16						6
16	32						6
16	48						
19.2	19.2					6	6 a
19.2	38.4					6	
24	24				6 a	6 a	6 b
24	48						

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(9). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(9). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (72 X 152) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimum nominal 3x6 (72 x 152) sill plate are required.

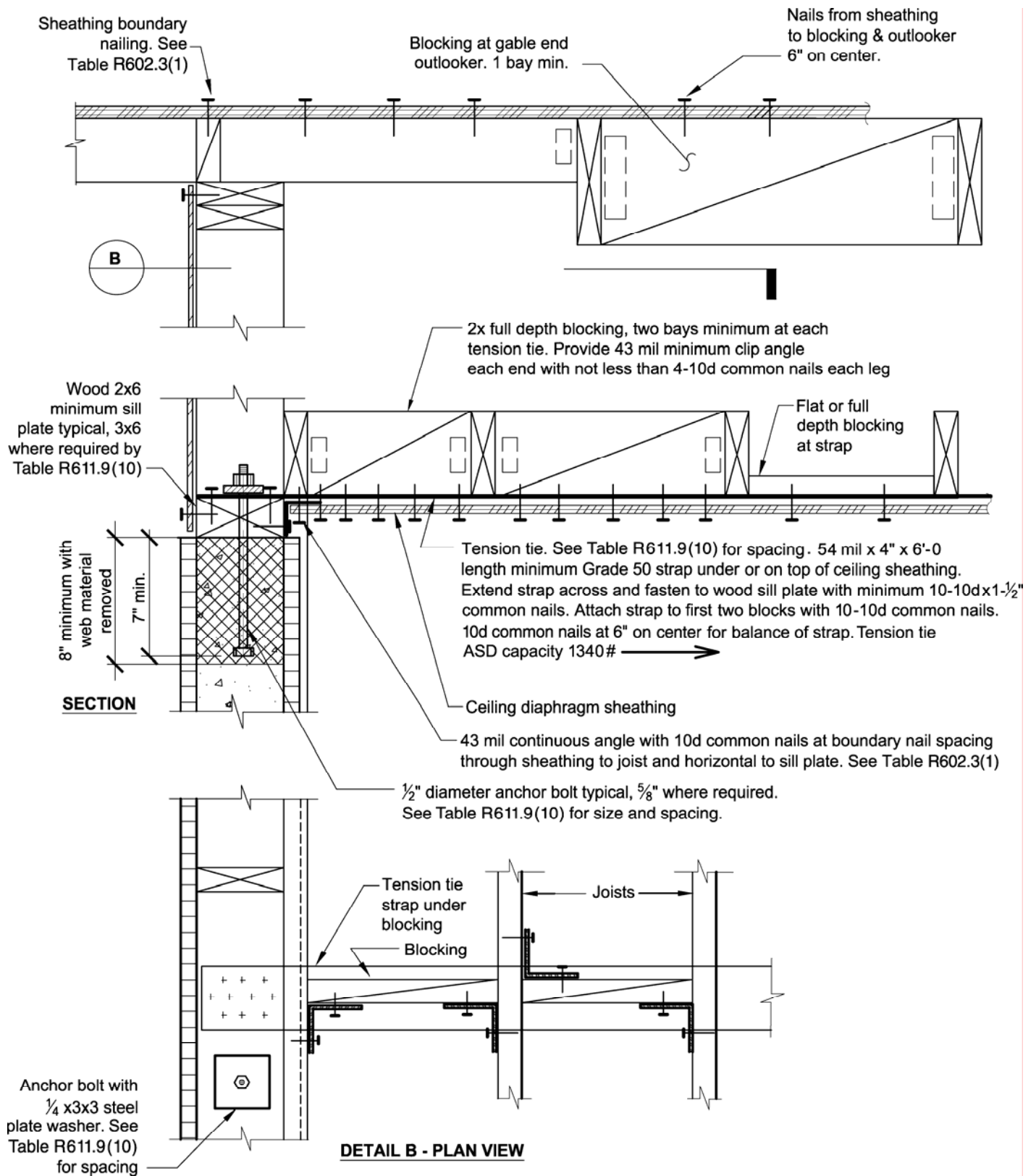


FIGURE R611.9(10)
WOOD FRAMED ROOF TO TOP OF CONCRETE WALL
FRAMING PARALLEL

TABLE R611.9(10)
WOOD FRAMED ROOF TO TOP OF CONCRETE WALL
FRAMING PARALLEL^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
12	36						
12	48						
16	16					6	6
16	32					6	6
16	48					6	6
19.2	19.2				6	6	6
19.2	38.4				6	6	6
24	24			6	6	6	6
24	48			6	6	6	6
					a	a	b

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(10). Use of this detail is permitted where cell is not shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in cells with no number.

^d Number 6 (152) indicates minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(10). For the remainder of the wall, see Note b.

^e Letter "a" indicates that a minimum nominal 3x6 (72 X 152) sill plate is required. Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimum nominal 3x6 (72 x 152) sill plate are required.

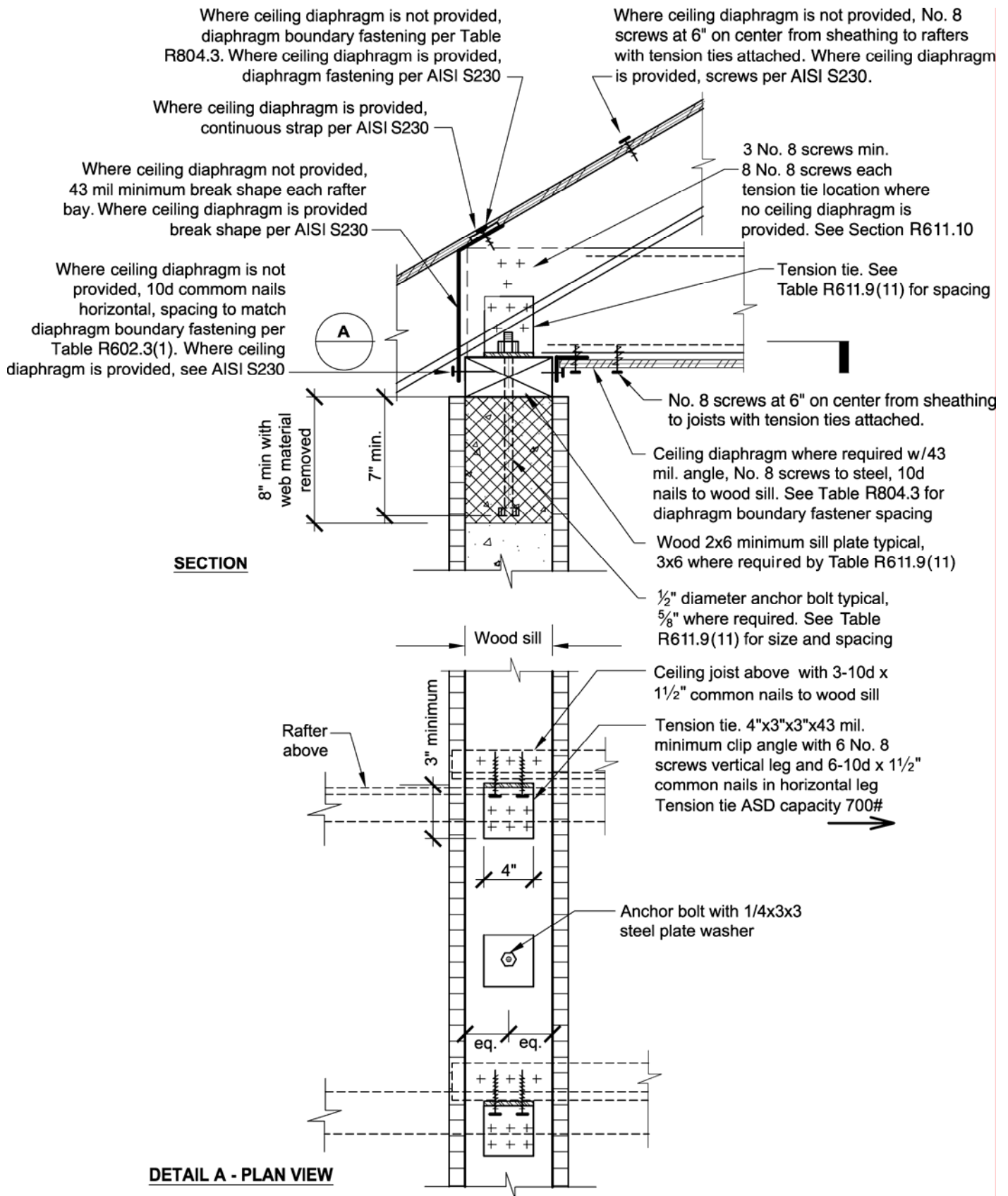


FIGURE R611.9(11)
COLD-FORMED STEEL ROOF TO TOP OF CONCRETE WALL
FRAMING PERPENDICULAR

TABLE R611.9(11)
COLD-FORMED STEEL ROOF TO TOP OF CONCRETE WALL
FRAMING PERPENDICULAR ^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
16	16					6	6
16	32					6	6
19.2	19.2				6	6	8 b
19.2	38.4				6	6	8 b
24	24			6	6	8 b	

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(11). Use of this detail is permitted where cell is not shaded, prohibited where shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in unshaded cells with no number.

^d Numbers 6 (152) and 8 (203) indicate minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(11). For the remainder of the wall, see Note b.

^e Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt and a minimum nominal 3x6 (72 x 152) sill plate are required.

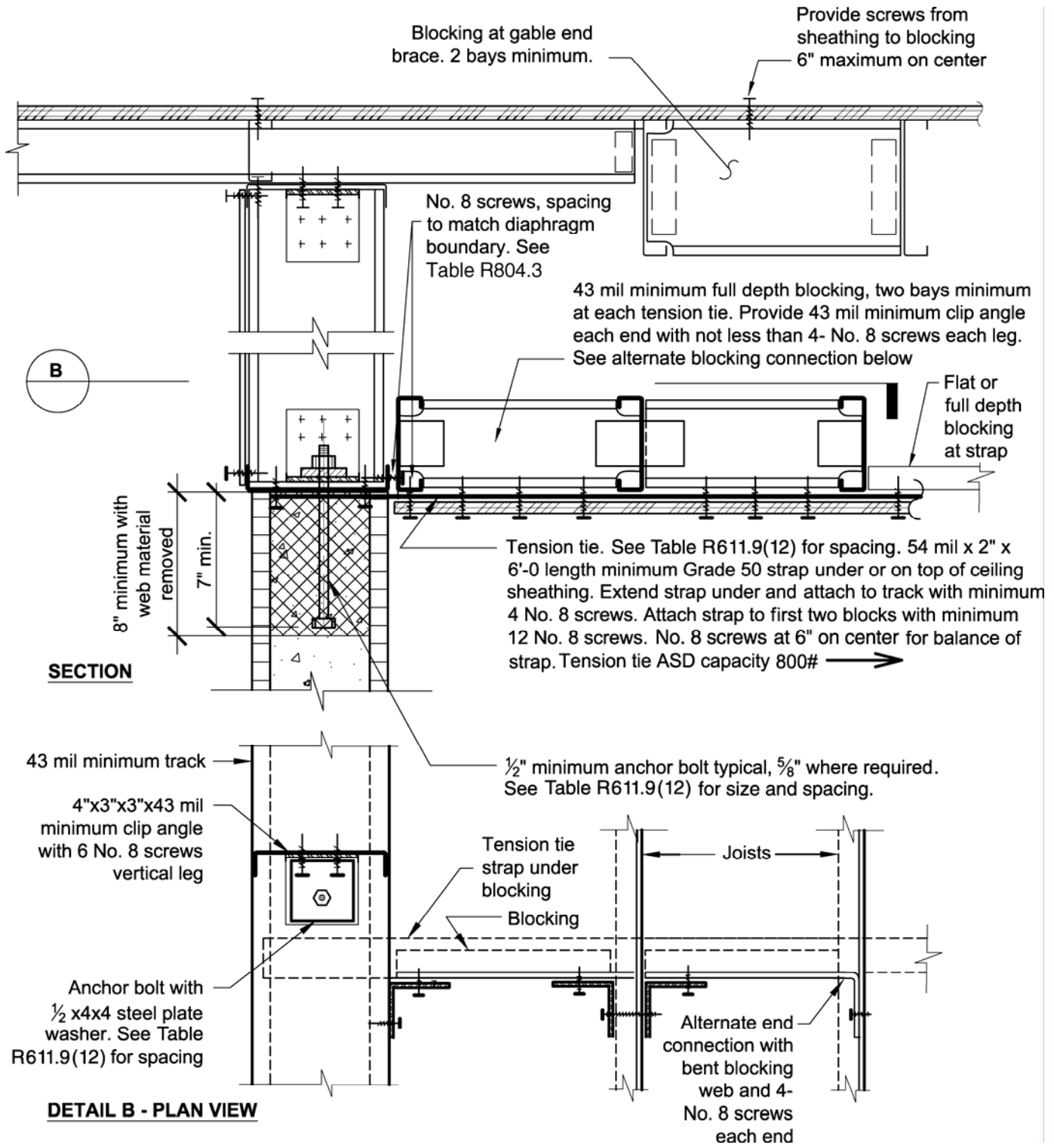


FIGURE R611.9(12)
COLD-FORMED STEEL ROOF TO TOP OF CONCRETE WALL
FRAMING PARALLEL

TABLE R611.9(12)
COLD-FORMED STEEL ROOF TO TOP OF CONCRETE WALL
FRAMING PARALLEL^{a,b,c,d,e}

Anchor Bolt Spacing (in)	Tension Tie Spacing (in)	Basic Wind Speed (mph) and Wind Exposure Category					
		85B	90B	100B	110B	120B	130B
				85C	90C	100C	110C
			85D	90D	100D		
12	12						
12	24						
16	16						
16	32						
19.2	19.2					6	6
19.2	38.4					6	6
24	24			6	6	8	8
						b	b

For SI: 1 inch = 25.4 mm; 1 mph = 0.4470 m/s

^a This table is for use with the detail in Figure R611.9(12). Use of this detail is permitted where cell is not shaded.

^b Wall design per other provisions of Section R611 is required.

^c For wind design, minimum 4-inch (102 mm) nominal wall is permitted in cells with no number.

^d Numbers 6 (152) and 8 (203) indicate minimum permitted nominal wall thickness in inches (mm) necessary to develop required strength (capacity) of connection. As a minimum, this nominal thickness shall occur in the portion of the wall indicated by the cross-hatching in Figure R611.9(12). For the remainder of the wall, see Note b.

^e Letter "b" indicates that a 5/8" (16 mm) diameter anchor bolt is required.

R611.10 Floor, roof and ceiling diaphragms. Floors and roofs in all buildings with exterior walls of concrete shall be designed and constructed as diaphragms. Where gable-end walls occur, ceilings shall also be designed and constructed as diaphragms. The design and construction of floors, roofs and ceilings of wood framing or cold-formed steel framing serving as diaphragms shall comply with the applicable requirements of this code, or AF&PA/WFCM or AISI/PM, if applicable.

6. Revise R301.2.2.2.4 and R301.2.2.3.4 as follows and delete Section R612 without substitution:

R301.2.2.2.4 (Supp) Concrete construction. ~~Concrete construction~~ Detached one and two family dwellings with exterior above-grade concrete walls shall comply with the requirements of Section R611 or Section R612 PCA 100 or shall be designed in accordance with ACI 318. Townhouses with above-grade exterior concrete walls shall comply with the requirements of PCA 100 or shall be designed in accordance with ACI 318.

R301.2.2.3.4 (Supp) Concrete construction. Buildings with exterior above-grade concrete walls shall be in accordance with Section R611, R612, PCA 100 or shall be designed in accordance with accepted engineering practice ACI 318.

7. Add standards to Chapter 43 as follows:

AISI

NAS -01 North American Specification for the Design of Cold-formed Steel Structural Members, including 2004 Supplement

ASTM

A 307 - 04e1 Specification for Carbon Steel Bolts and Studs, 6000 psi Tensile Strength
C 94 - 04 Specification for Ready-Mixed Concrete

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

100 -07 Prescriptive Design of Exterior Concrete Walls for One- and Two-Family Dwellings (Pub. No. EB241)

Reason: This proposal will revise the above-grade concrete wall provisions based on provisions in *Prescriptive Design of Exterior Concrete Walls for One and Two Family Dwellings* (PCA 100), a consensus standard developed by the Portland Cement Association's National Standards Development Committee (PCA NSDC) in accordance with ANSI-approved procedures. This new standard replaces PCA publication *Prescriptive Method for Insulating Concrete Forms in Residential Construction* which served as the basis for most of the concrete foundation wall provisions in Section R611.

This proposal is coordinated with a companion proposal to revise portions of Section R404 on concrete foundation walls.

These changes can be summarized as follows:

Part 1 – This portion of the code change revises the general provisions to Section R611 of the IRC. These changes include revisions to permit the provisions to apply to all dwellings constructed under the IRC using exterior concrete walls with typical forming systems including Insulating Concrete Forms (ICFs). The new PCA 100 Standard is referenced in Section R611.1 as another option for alternate design of above-grade concrete walls.

Part 2 & 3 – These are revisions to the applicability limits of present Section R611.2 to reflect the limitations consistent with PCA 100. As part of these revisions the provisions for above-grade exterior concrete walls will be limited to buildings where the maximum design wind speed is 130 miles per hour (58 m/s) Exposure B, 110 miles per hour (49 m/s) Exposure C, and 100 miles per hour (45 m/s) Exposure D. Also the provisions will be limited to detached one- and two-family dwellings and townhouses in Seismic Design Category A or B, and detached one- and two-family dwellings in Seismic Design Category C. One and two family dwellings located in higher design wind speed regions and requiring seismic design will be required to be designed in accordance with PCA 100 or ACI 318. This will reduce the volume of provisions in the IRC and simplify use of the code of most areas of the country.

Part 4 – This part changes the prescriptive provisions to include revised figures and tables for constructing flat, waffle-grid and screen-grid wall systems. As part of these revisions, additional provisions are included for constructing these concrete walls based on materials used (i.e. concrete (R611.5.1), aggregate (R611.5.1), steel reinforcement (R611.5.2), etc.). Additionally provisions are given for location and cover for the reinforcement, continuity of the reinforcement (R611.5.4) and installation of construction joints (R611.5.5).

Part 5 – Part 5 completely replaces the prescriptive technical provisions for exterior concrete walls (R611.6). The new provisions reflect changes made to ACI 318 and ASCE 7 since the provisions in the existing code were developed. The new provisions cover horizontal and vertical reinforcement, reinforcement and shear wall (solid walls) requirements for wind loads (R611.6 & R611.7) and revised reinforcement requirements around openings and lintels over openings (R611.8). Additionally, the provisions provide revised details for connecting wood frame assemblies (floors, ceilings and roofs) to exterior concrete walls and add details for connecting cold-formed steel framing assemblies to the exterior concrete walls (R611.9).

Part 6 – The changes in R301.2.2.2.4 and R301.2.2.3.4 are needed to clarify that detached dwellings in Seismic Design Category C are covered by revised Section R611 and townhouses in Seismic Design Category C and all buildings in Seismic Design Category D must meet the requirements in proposed PCA Standard 100 or be designed in accordance with ACI 318. In addition, Section R612 is deleted since the revised provisions in Section R611 also cover conventionally formed concrete wall construction.

Part 7 – This part enumerates the changes needed to Chapter 43 to reflect the addition of needed ASTM standards and the new PCA 100 Standard.

Cost Impact: In some case the cost of concrete construction will decrease and in some cases the costs will increase.

Analysis: A review of the standards proposed for inclusion in the code, AISI NAS-01, ASTM C307-04e1, ASTM C94-04, ASTM C685-01, ASTM F1554-04e1 and PCA 100-07, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

RB172-07/08

R613.1

Proponent: Gerald Anderson, City of Overland Park, KS, representing himself

Revise as follows:

R613.1 (Supp) General. This section prescribes performance and construction requirements for exterior window and door systems installed in wall systems. Windows and doors shall be installed ~~and flashed~~ in accordance with the fenestration manufacturer's written installation instructions and flashed in accordance with ASTM E 2112. Window and door openings shall be flashed in accordance with Section R703.8. Written installation instructions shall be provided by the fenestration manufacturer for each window or door.

Reason: This code change would mandate that windows be flashed in accordance with a nationally recognized standard, ASTM E 2112. In our jurisdiction, we have been doing a flashing inspection for a couple of years now. What we have seen is that the instructions provided by manufactures for flashing windows, are often times lacking in detail and direction. As everyone knows the flashing of windows is a critical component for keeping water out of the walls of buildings. It is critical that it is done correctly. This standard gives clear direction, in a step by step method for flashing windows. It is my opinion that all parties, (contractors, manufactures, inspectors, designers, and homeowners) would be better served if this standard would be adopted utilized.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

RB173-07/08

R613.2, R613.3, R613.4, R613.4.1, R613.4.2 (New), Chapter 43 (New); IBC 1405.12.2, 1405.12.3 (New), 1405.12.4 (New), 1405.12.4.1 (New), 1405.12.4.2 (New), Chapter 35 (New)

Proponent: Paul Heilstedt, Chair for the Code Technology Committee

THESE PROPOSALS ARE ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC FIRE SAFETY CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

1. Revise as follows:

R613.2 Window sills. In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches (610 mm) shall be fixed or have openings through which a 4-inch-diameter (102 mm) sphere cannot pass.

Exceptions:

1. Windows whose openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices ~~guards~~ that comply with R613.3 ASTM F 2006 or F 2090.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section R613.4.

R613.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

R613.4 Window opening limiting devices. When required elsewhere in this code, window opening limiting devices shall comply with the provisions of this section.

R613.4.1 General requirements. Window opening limiting devices shall be self acting and shall be positioned so as to prohibit the free passage of a 4.0-in. (102-mm) diameter rigid sphere through the window opening when the window opening limiting device is installed in accordance with the manufacturer's instructions.

(Renumber subsequent sections)

2. Add new text as follows:

R613.4.2 Operation for Emergency Escape. Window opening limiting devices shall be designed with release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special knowledge. Window opening limiting devices shall comply with all of the following:

1. Release of the window opening-limiting device shall require no more than 15 lbf (66 N) of force.
2. The window opening limiting device release mechanism shall operate properly in all types of weather.
3. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency.
4. The window opening limiting device shall not reduce the minimum net clear opening area of the window unit below what is required by Section R310.1.1 of the code.

3. Add standard to Chapter 43 as follows:

SMA 6001-2002 Specifications for Metal Protection Screens

PART II – IBC FIRE SAFETY

1. Revise as follows:

1405.12.2 Window sills. In Occupancy Groups R-2 and R-3, one- and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches (1829 mm) above the finished grade or other surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches (610 mm) shall be fixed or have openings such that a 4-inch (102 mm) diameter sphere cannot pass through.

Exceptions:

1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices guards that comply with 1405.12.3 ASTM F 2006 or F 2090.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section 1405.12.4.

2. Add new text as follows:

1405.12.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

1405.12.4 Window opening limiting devices. When required elsewhere in this code, window opening limiting devices shall comply with the provisions of this section.

1405.12.4.1 General requirements. Window opening limiting devices shall be self acting and shall be positioned so as to prohibit the free passage of a 4.0-in. (102-mm) diameter rigid sphere through the window opening when the window opening limiting device is installed in accordance with the manufacturer's instructions.

1405.12.4.2 Operation for emergency escape. Window opening limiting devices shall be designed with release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special knowledge. Window opening limiting devices shall comply with all of the following:

1. Release of the window opening-limiting device shall require no more than 15 lbf (66 N) of force.
2. The window opening limiting device release mechanism shall operate properly in all types of weather.
3. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency.
4. The window opening limiting device shall not reduce the minimum net clear opening area of the window unit below what is required by Section R310.1.1 of the code.

3. Add standard to Chapter 35 as follows:

SMA 6001-2002 Specifications for Metal Protection Screens

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as “areas of study”. Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html> Since its inception in April/2005, the CTC has held twelve meetings - all open to the public.

This proposed change is a result of the CTC’s investigation of the area of study entitled “Child Window Safety”. The scope of the activity is noted as:

To study the incidence and mechanisms of falls from open windows by children and to investigate the necessity and suitability of potential safeguards and/or revisions to the current codes.

The CTC established a study group to review available materials on the issue of child falls through windows. It became readily apparent that public education is a key consideration in reducing the number of falls by children through windows. As far as the code is concerned, the group focused on two possible means of addressing this issue. The two being:

- Window screens
- Window fall prevention devices

This proposal provides both options, in the form of exceptions to the minimum sill height requirements in the code.

Window screens: ANSI/SMA 6001 is a standard entitled “Specifications for Metal Protection Screens. ”.As noted in Section 2.1 of the standard, “This specification provides, definitions, methods of test, and performance requirements for metal protection screens designed and manufactured primarily for installation in window openings for the purpose of providing security for the building occupants by restraining of deterring forced entry and by protecting the window from vandalism”. While not specifically noting the screens use as a barrier to restrain a child, the study group concluded that they key considerations is that of providing some type ob barrier. Screens designed in accordance with this standard are classified under the following classes:

Light: Load resistance between 30 – 75 pounds

Medium: Load resistance between 75 - 150 pounds.

Heavy: Load resistance between 150 – 300 pounds.

Window fall prevention devices: ASTM F 2090 is a standard entitled “Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms”. As noted in Section 1.1 of the standard, “This specification establishes requirements for devices intended to address the risk of injury and death associated with accidental falls from windows by children five years old and younger. The key operational constraint of devices which comply with this standard is compliance with Section 4.1, which states: “Window fall prevention devices shall be constructed so as to prohibit the free passage of a 4.0 in diameter rigid sphere at any point, during or after testing as specified in Section 8, when the window fall prevention device is installed in accordance with the manufactures instructions.

Proposed Section R 613.4 and 1405.12.4.2, including Items 1 – 3, is a codified version of Sections 4.1, 4.3.2, 4.3.4 of ASTM F 2090. Item 4 is primarily a reminder that full compliance with Section R 310.1.1 is required for all emergency escape and rescue openings of the window serves such purpose.

Cost Impact: The code change will increase the cost of construction if the devices are used.

Analysis: A review of the standard proposed for inclusion in the code, ANSI/SMA 6001-2002, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

PART I – IRC

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

PART II – IBC FIRE SAFETY

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

RB174–07/08

613.2; IBC 1405.12.2

Proponent: Michael D. Fischer, The Kellen Company, representing the Window and Door Manufacturers Association

THESE PROPOSALS ARE ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC FIRE SAFETY CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

Delete and substitute as follows:

~~**R613.2 Window sills.** In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches (610 mm) shall be fixed or have openings through which a 4-inch diameter (102 mm) sphere cannot pass.~~