

ICC-ES Evaluation Report**ESR-3336**

Issued January 1, 2013

This report is subject to renewal January 1, 2014.

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A Subsidiary of the International Code Council®

DIVISION: 09 00 00—FINISHES
Section: 09 22 26—Suspension Systems
Section: 09 53 00—Acoustical Ceiling Suspension Assemblies

REPORT HOLDER:

CERTAINTEED CEILINGS CORPORATION
750 EAST SWEDES FORD ROAD
VALLEY FORGE, PENNSYLVANIA 19428
(215) 274-2412
www.certainteed.com
monika.mathur@saint-gobain.com

EVALUATION SUBJECT:

SUSPENDED CEILING FRAMING SYSTEMS AND SEISMIC PERIMETER CLIP

1.0 EVALUATION SCOPE**Compliance with the following codes:**

- 2012, 2009 and 2006 *International Building Code*® (IBC)

Properties evaluated:

- Structural
- Interior finish

2.0 USES

The CertainTeed suspended ceiling framing systems described in this report are exposed framing systems for use with lay-in acoustical tile suspended ceiling assemblies used in interior construction as noted in this report. The CertainTeed Seismic Perimeter Clip is used to connect main runners and cross tees to a wall angle.

3.0 DESCRIPTION**3.1 Suspended Ceiling Systems:**

The ¹⁵/₁₆" Classic Stab (CS), ¹⁵/₁₆" Classic Aluminum Capped Stab (ACS), ¹⁵/₁₆" Classic Environmental Stab (EVS) and ⁹/₁₆" Elite Narrow Stab (ES) acoustical suspended ceiling framing systems consist of main runners and cross tees for use with acoustical tile. Profiles of framing members are shown in Figure 1.

3.2 Seismic Perimeter Clip:

The Seismic Perimeter Clip as shown in Figure 2 is used to connect main runners and cross tees to the wall angle at the ceiling perimeter. The clip is manufactured from 0.030-inch-thick (0.76 mm), hot-dipped galvanized to G30, cold-rolled steel complying with ASTM A653.

3.3 Materials:

3.3.1 Framing Members: Main runners and cross tees are roll-formed from steel conforming to ASTM A653 and having a hot-dipped galvanized coating of G30 or higher. The bottom, exposed flange of both main runners and cross tees is covered with a painted capping made from steel or aluminum. Table 1 lists the profile shapes, lengths, allowable loading and, for main runners, the classification as either intermediate- or heavy-duty according to ASTM C635.

3.3.2 Hanger Wire: Hanger wire for suspended ceiling framing members and fixtures must comply with ASTM C636 as referenced in IBC Section 808.1.1.1 (2006 IBC Section 803.9.1.1) and Section 13.5.6 of ASCE 7 as referenced in IBC Section 2506.2.1.

4.0 DESIGN AND INSTALLATION**4.1 Suspended Ceiling Systems for Acoustical Tiles:**

4.1.1 General: The suspended ceiling framing system must be installed in accordance with this report and the manufacturer's published installation instructions. The suspended ceiling framing system must be installed in accordance with Section 13.5.6 of ASCE 7 as referenced in IBC Section 1613. The minimum ultimate tension and compression capacity of framing member connections is 180 pounds (800 N).

4.1.2 Main Runners: The maximum design loads for main runners must be less than or equal to the allowable capacities listed in Table 1 of this report.

4.1.3 Cross Tees: The maximum design load for cross tees must be less than or equal to the allowable capacities listed in Table 1.

4.2 Seismic Design Requirements:

4.2.1 General: Seismic design and installation details of the ceiling system, including lighting fixtures and mechanical services, must be in accordance with Section 13.5.6 of ASCE 7 as referenced in IBC Section 1613, except as noted in Section 4.2.2 of this report, for systems not exceeding 4 lb/ft² (19.5 kg/m²). Main runners classified as intermediate-duty can only be used in Seismic Design Categories A, B and C.

Partitions must be laterally supported as required by Section 13.5.8 of ASCE 7, as referenced in IBC Section 1613.

4.2.2 Seismic Perimeter Clip:

4.2.2.1 Alternate Installation for Seismic Design Categories D, E and F: In this installation, the main runners and cross tees must be those described in

Section 3.3.1. The main runner must be classified as Heavy Duty in Table 1 of this report. The maximum total ceiling weight permitted is 2.57 lb/ft² (12.56 kg/m²). The Seismic Perimeter Clip is used to connect main runners and cross tees to the perimeter wall angle. The Seismic Perimeter Clip must be fixed to the framing member on two adjacent orthogonal walls and allow for free movement on the two opposing walls. Figure 3 shows the fixed wall setup and Figure 4 shows the free wall setup. As an alternate to the perimeter runner being fixed through the Seismic Perimeter Clip, the perimeter runner may be fastened through the wall angle with a 1/8-inch-diameter (3.2 mm) pop (blind) rivet, as shown in Figure 3. A minimum 15/16-inch-wide (23.4 mm) wall angle is used in lieu of the 2-inch-wide (51 mm) wall angle required by ASTM E580 as referenced in Section 13.5.6.2.2 of ASCE 7-10 and Section 13.5.6.2.2 of ASCE 7-05 for Seismic Design Categories D, E and F. The ceiling system must be installed as prescribed by the applicable code except for the use of the Seismic Perimeter Clip, the 15/16-inch-wide (23.4 mm) wall angle and the elimination of the stabilizer bars.

The Seismic Perimeter Clip is installed by pushing the back tabs of the clip over the vertical hem of the wall angle. On the two adjacent fixed walls, the perimeter clip must be attached to the framing member by a sheet metal screw fastened into the bulb or web of the runner and provide no clearance between the terminal runner end and the wall angle. On the free walls, the clips must allow for a minimum 3/4-inch (19.1 mm) movement of the terminal runner end towards and away from the wall. Seismic Perimeter Clips installed in this manner are used in lieu of the stabilizer bars required in Section 5 of ASTM E580 and CISCA 3-4. ASTM E580 is referenced in ASCE 7-10, Section 13.5.6.2.2; and CISCA 3-4 is referenced in ASCE 7-05, Section 13.5.6.2.2, which are referenced in IBC Section 1613. The assembly described in this section is equivalent to that required by CISCA 3-4 and Section 5 of ASTM E580.

4.2.2.2 Alternate Installation for Seismic Design Categories A, B and C: The Seismic Perimeter Clip may be used in lieu of stabilizer bars in suspended ceiling installations regulated by Section 4 of ASTM E580 and CISCA 0-2. The Seismic Perimeter Clips are placed at the intersections of main runners and wall angle and cross tees and wall angle. The Seismic Perimeter Clip is installed by pushing the back tabs of the clip over the vertical hem of the wall angle. Two adjacent walls are fixed with a sheet metal screw through the bulb or web of the framing member. The two opposing walls are free and the installation of the clips must allow for minimum 3/8-inch (9.5 mm) movement of the terminal runner end towards and away from the wall. The maximum ceiling weight permitted is 2.28 lb/ft² (11.12 kg/m²). Seismic Perimeter Clips installed in this manner are used in lieu of stabilizer bars required by Section 4 of ASTM E580 and CISCA 0-2. The ceiling system must be installed as prescribed by the applicable code except for the use of the Seismic Perimeter Clip and the elimination of the stabilizer bars. The assembly described in this section is equivalent to that required by CISCA 0-2 and Section 4 of ASTM E580.

4.3 Special Inspection:

Suspended ceilings in Seismic Design Categories C, D, E and F, as applicable, are subject to periodic special inspections during the installation of the suspended ceiling systems and their anchorage in accordance with the requirements of IBC Section 2506.2.1; 2012 IBC Sections 1704.3, 1705.11.4 and 1705.12, Item 3 [2009 IBC Section 1708.1, Item 3, and Section 13.5.6.2.2 (h) of

ASCE 7-05 (for the 2009 and 2006 IBC); 2009 IBC Section 1705.3.4, Item 3; and 2006 IBC Section 1705.3, Item 4.3, and Section 1708.2, Item 3]. The special inspector must verify that the ceiling system is as described in this report, and complies with installation instructions presented in this report.

5.0 CONDITIONS OF USE

The CertainTeed suspended ceiling systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The ceiling suspension main runners and cross tees, and the Seismic Perimeter Clip, must be manufactured and installed in accordance with this report and the manufacturer's published installation instructions. This report governs in the event of any conflict with the manufacturer's installation instructions.
- 5.2 Design loads and span lengths for main runners and cross tees must be as listed in Table 1 of this report.
- 5.3 Suspended ceiling systems must be designed in accordance with ASCE 7, Section 13.5.6, as referenced by IBC section 1613. The documents must be prepared by a registered design professional where required by statutes of jurisdiction in which the project is to be constructed.
- 5.4 For Seismic Design Category C, D, E or F, a quality assurance plan complying with ASCE 7, Appendix 11A, must be submitted to the code official.
- 5.5 Periodic special inspections must be provided in accordance with Section 4.3 of this report. A statement of special inspection must be provided as required in 2012 IBC Section 1704.3 (2009 IBC Section 1705.3.4, Item 3, and 2006 IBC Section 1705.3, Item 4.3). A statement of special inspection must be provided for use in Seismic Design Categories C, D, E, and F, where suspended ceiling systems are installed in accordance with Section 4.2.2 of this report, as applicable, as required by 2012 IBC Section 1705.11.4 and Section 1705.12, Item 3 (2009 IBC Section 1708.1, Item 3, and 2006 IBC Section 1708.2, Item 3).
- 5.6 The ceiling framing system must not be used to provide lateral support for walls or partitions except as provided for in ASCE 7, Section 13.5.8.1, as referenced in IBC Section 1613.
- 5.7 The ceiling system must be braced to resist seismic forces as determined from Section 1613 of the IBC.
- 5.8 The supporting construction for the ceiling system has not been evaluated and is outside the scope of this report. The code official must approve the floor or roof construction supporting the suspended ceiling system.
- 5.9 The ceiling systems are limited to ceilings not considered accessible in accordance with Item 28 of 2012 IBC Table 1607.1 (Item 31 of 2009 IBC Table 1607.1, or Item 32 of 2006 IBC Table 1607.1).
- 5.10 The ceiling systems are limited to interior applications. Exterior ceiling installations are outside the scope of this report.
- 5.11 Lay-in ceiling panels must be justified to the satisfaction of the code official as complying with the interior finish requirements of Chapter 8 of the IBC.
- 5.12 Lighting fixtures and mechanical services must be as described in Section 4 of this report.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Suspended Ceiling Framing Systems (AC368), dated February 2012.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Seismic Certification by Shake-table Testing of Nonstructural Components (AC156), dated October 2010.

7.0 IDENTIFICATION

Cartons of ceiling suspension system framing members, Seismic Perimeter Clips and accessories are identified with the name of CertainTeed Ceilings and the evaluation report number (ESR-3336).

TABLE 1—DIMENSIONS AND ALLOWABLE LOADS FOR SUSPENDED CEILING FRAMING MEMBERS

ITEM NUMBER	MEMBER	LOAD CLASSIFICATION	NOMINAL LENGTH OF MEMBER (inches)	HEIGHT OF MEMBER (inches)	METAL THICKNESS (inch)	MAXIMUM SPAN (inches)	ALLOWABLE UNIFORM LOAD (plf)	ALLOWABLE CONCENTRATED LOAD AT MIDSPAN (lbf) ¹
⁹/₁₆" Elite Narrow Stab System								
ES 12-12-18	Main Runner	Intermediate Duty	144	1.5	0.018	48	13.15	32.88
ES 2-12-12	Cross Tee	—————	24	1.5	0.012	24	27.97	34.96
ES 4-12-12	Cross Tee	—————	48	1.5	0.012	48	8.44	21.09
ES 4-12-18	Cross Tee	—————	48	1.5	0.012	48	8.44	21.09
¹⁵/₁₆" Classic Stab System								
CS 12-12-15	Main Runner	Intermediate Duty	144	1.5	0.015	48	13.56	33.9
CS 12-12-20	Main Runner	Heavy Duty	144	1.5	0.020	48	16.58	41.45
CS 1-12-12	Cross Tee	—————	12	1.5	0.012	12	63.1	39.44
CS 2-12-12	Cross Tee	—————	24	1.5	0.012	24	34.8	43.51
CS 4-12-12	Cross Tee	—————	48	1.5	0.012	48	9.67	24.16
CS 5-12-12	Cross Tee	—————	60	1.5	0.012	60	6.00	18.75
CS 8-12-12	Cross Tee	—————	96	1.5	0.012	48	10.48	26.19
¹⁵/₁₆" Classic Aluminum Capped Stab System (Foot Note)²								
ACS 12-12-15	Main Runner	Intermediate Duty	144	1.5	0.015	48	12.05	30.13
ACS 2-12-12	Cross Tee	—————	24	1.5	0.012	24	36.14	45.18
ACS 4-12-12	Cross Tee	—————	48	1.5	0.012	48	8.98	22.44

For **Sl**: 1 inch=25.4 mm; 1 lbf = 4.45 N, 1 plf = 14.6 N/m.

¹Concentrated load at midspan calculated analytically per AC368 Section 3.2. The concentrated load must not be combined with the uniform load.

²The ¹⁵/₁₆" Classic Aluminum Capped Stab System can be found as the ¹⁵/₁₆" Classic Environmental Stab System with a G60 hot-dipped galvanized coating and item numbers EVS 12-12-15-G60, EVS 2-12-12-G60, EVS 4-12-12-G60.

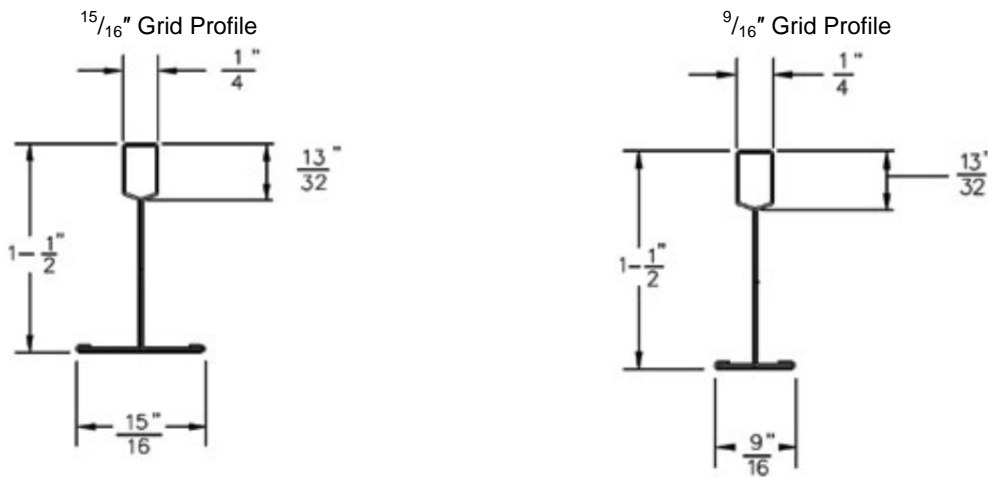


FIGURE 1—FRAMING MEMBER PROFILES

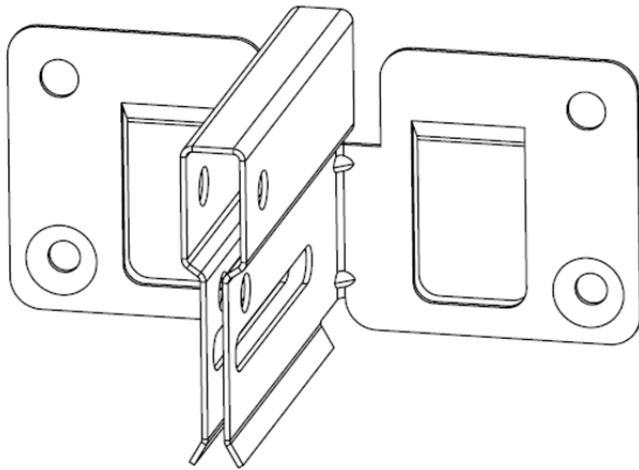
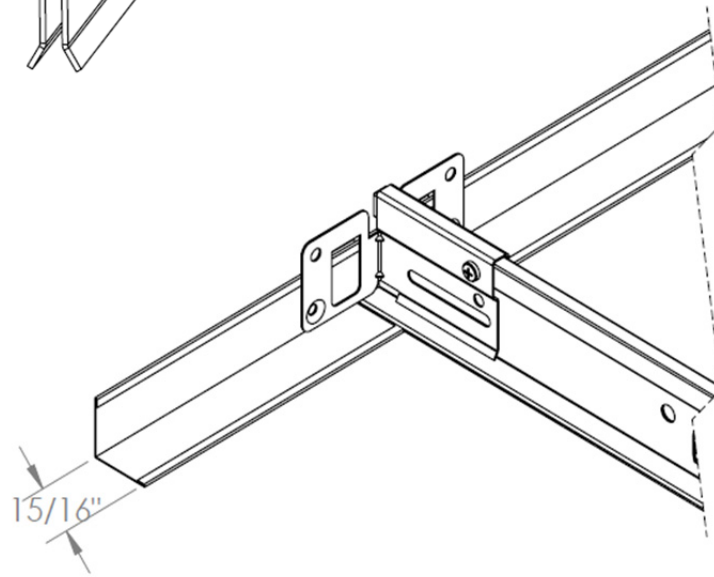
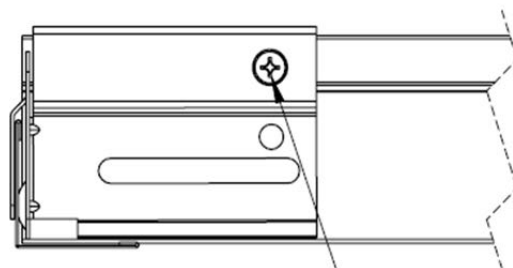


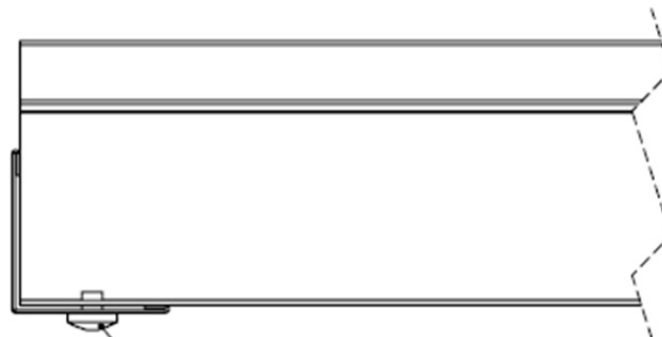
FIGURE 2—SEISMIC PERIMETER CLIP



15/16"



Tight screw through main runner body



Pop Rivet

FIGURE 3—SEISMIC PERIMETER CLIP FIXED WALL ASSEMBLY

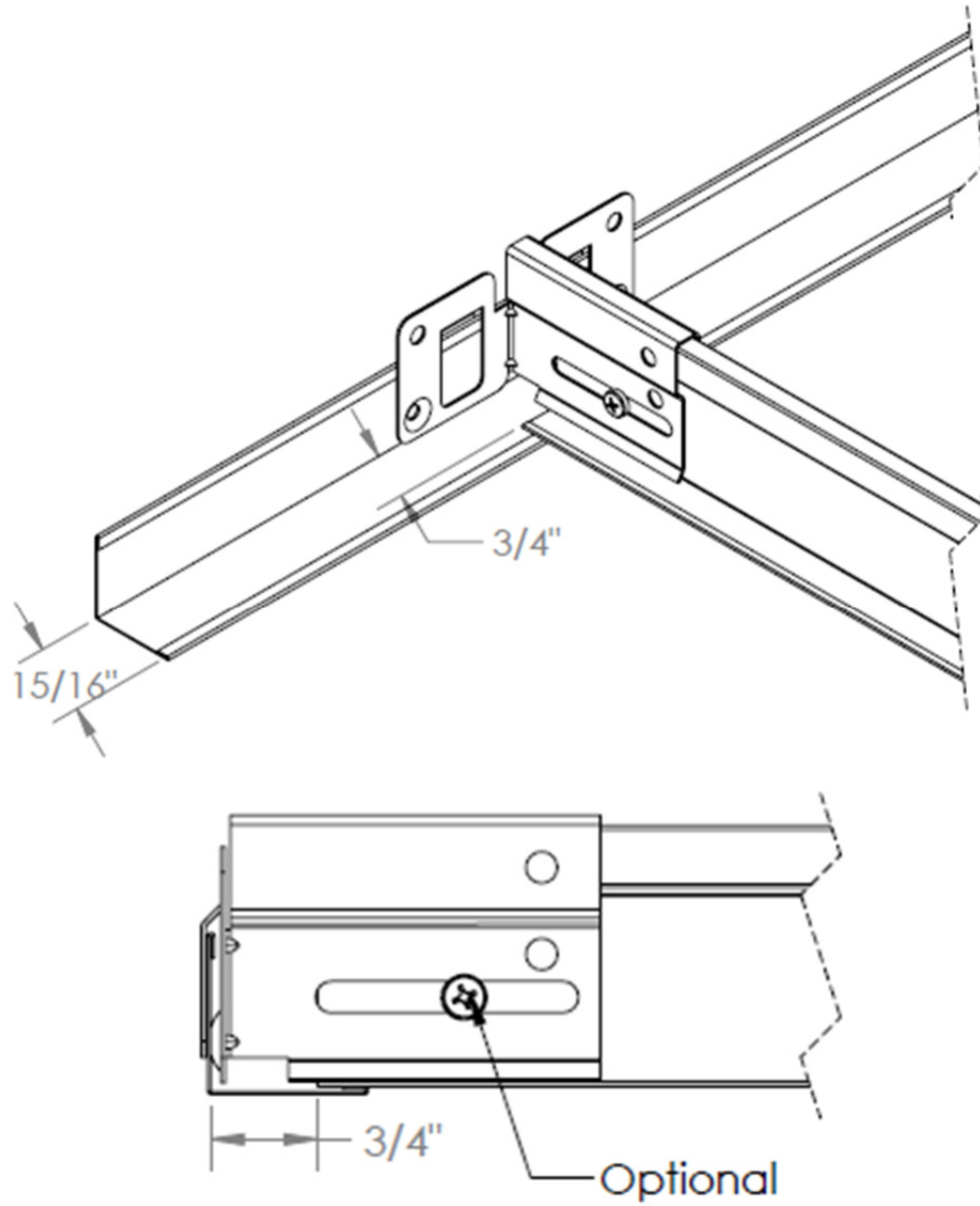


FIGURE 4—SEISMIC PERIMETER CLIP FREE WALL ASSEMBLY

ICC-ES Evaluation Report**ESR-3336 CBC Supplement**

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750 EAST SWEDES FORD ROAD
VALLEY FORGE, PENNSYLVANIA 19428
(215) 274-2412

www.certainteed.com
monika.mathur@saint-gobain.com

EVALUATION SUBJECT:**SUSPENDED CEILING FRAMING SYSTEMS AND SEISMIC PERIMETER CLIP****1.0 EVALUATION SCOPE****Compliance with the following code:**

- 2010 California Building Code (CBC)

Properties evaluated:

- Interior finish
- Structural

2.0 PURPOSE OF THIS SUPPLEMENT

This supplement is issued to indicate that the suspended ceiling framing systems described in master report ESR-3336 comply with the CBC, when design and installation are in accordance with the master evaluation report with modifications as follows:

Modify Section 3.3.2 (Hanger Wire) as follows: Hanger wire for suspended ceiling framing members, and fixtures, must comply with ASTM C636 as referenced in CBC Sections 808, 1615.10.13 and 1615A.1.16; and with Section 13.5.6 of ASCE 7 as referenced in CBC Sections 1613, 1615.10.13, 1615A.1.16 and 2506.2.1; and with ASTM E580 as referenced in CBC Sections 1615.10.13 and 1615A.1.16, as applicable.

Modify Section 4.1.1 (General) as follows: The suspended ceiling framing system must be installed in accordance with this report and the manufacturer's published installation instructions. The suspended ceiling framing system must be installed in accordance with Section 13.5.6 of ASCE 7 as referenced by CBC Sections 1613 and 1613A, and CBC Section 808.1, and modified by CBC Sections 1615.10.13 and 1615A.1.16, as applicable. The minimum ultimate tension and compression capacity of framing member connections is 180 pounds (800 N).

Modify Section 4.2.1 (Seismic Design Requirements under the CBC) as follows: Seismic design and installation details of the ceiling system, including lighting fixtures and mechanical services, must be in accordance with Section 13.5.6 of ASCE 7 as referenced in CBC Sections 1613 and 1613A, and modified by CBC Sections 1615.10.13 and 1615A.1.16, as applicable, except as noted in Section 4.2.2 of this report, for systems not exceeding 4 pounds per square foot (19.5 kg/m²). Main runners classified as intermediate-duty can only be used in Seismic Design Categories A, B and C. Partitions must be laterally supported as required by Section 13.5.8 of ASCE 7, as referenced by CBC Sections 1613, 1613A, 1615.10.13 and 1615A.1.16, as applicable.

Modify Section 4.2.2.1 (Alternate Installation for Seismic Design Categories D, E and F) as follows: In this installation, the main runners and cross tees must be those described in Section 3.3.1. The main runner must be classified as Heavy Duty in Table 1 of the evaluation report. The maximum ceiling weight permitted is 2.57 pounds per square foot (12.56 kg/m²).

The Seismic Perimeter Clip is used to connect main runners and cross tees to the perimeter wall angle. The Seismic Perimeter Clip must be fixed to the runners on two orthogonal adjacent walls and allow for free movement on the two opposing walls. Figure 3 shows the fixed wall setup and Figure 4 shows the free wall setup. As an alternate to the perimeter runner being fixed through the Seismic Perimeter Clip, the perimeter runner may be fastened through the wall angle with a $\frac{1}{8}$ -inch-diameter (3.2 mm) pop (blind) rivet, as shown in Figure 3. A minimum $\frac{15}{16}$ -inch-wide (23.4 mm) wall angle is used in lieu of the 2-inch-wide (51 mm) wide wall angle required by ASTM E580 as referenced in Section 13.5.6.2.2 of ASCE 7-10 and Section 13.5.6.2.2 of ASCE 7-05 for Seismic Design Categories D, E and F. The ceiling system must be installed as prescribed by the applicable code except for the use of the Seismic Perimeter Clip, the $\frac{15}{16}$ -inch-wide (23.4 mm) wall angle and the elimination of the stabilizer bars. The Seismic Perimeter clip is installed by pushing the back tabs of the clip over the vertical hem of the wall angle. On the two adjacent fixed walls, the perimeter clip must be attached to the framing member by a sheet metal screw fastened into the bulb or web of the runner, and provides no clearance between the terminal runner end and the wall angle. On the free walls, the clips must allow for a minimum of $\frac{3}{4}$ -inch (19.1 mm) movement of the terminal runner end towards and away from the wall. Seismic Perimeter Clips installed in this manner are used in lieu of the stabilizer bars required in Section 5 of ASTM E580 and CISCA 3-4. ASTM E580 is referenced in ASCE 7-10, Section 13.5.6.2.2, which is referenced in CBC Sections 1615.10.13 and 1615A.1.16. CISCA 3-4 is referenced in ASCE 7-05, Section 13.5.6.2.2, which is referenced in CBC Sections 1613 and 1613A. The assembly described in this section is equivalent to that required by CISCA 3-4 and Section 5 of ASTM E580.

Modify Section 4.2.2.2 (Alternate Installation for Seismic Design Category C) as follows: Seismic Perimeter Clips may be used in lieu of stabilizer bars in suspended ceilings installations regulated by Section 4 of ASTM E580 and CISCA 0-2. The Seismic Perimeter Clips are placed at the intersections of main runners and wall angle and cross tees and wall angle. The Seismic Perimeter Clip is installed by pushing the back tabs of the clip over the vertical hem of the wall angle. Two adjacent walls are fixed with a sheet metal screw through the bulb or web of the framing member. The two opposing walls are free and the installation of the clips must allow for minimum $\frac{3}{8}$ -inch (9.5 mm) movement of the terminal runner end towards and away from the wall. The maximum ceiling weight permitted is 2.28 lb/ft² (11.12 kg/m²). Seismic Perimeter Clips installed in this manner are used in lieu of stabilizer bars required by Section 4 of ASTM E580 and CISCA 0-2. The ceiling system must be installed as prescribed by the applicable code except for the use of the Seismic Perimeter Clip and the elimination of the stabilizer bars. The assembly described in this section is equivalent to code-prescribed construction for Seismic Design Categories A, B and C. CISCA 0-2 is referenced in ASCE 7-05, Section 13.5.6.2.1, which is referenced in CBC Sections 1613 and 1613A. ASTM E580 is referenced in CBC Sections 1615.10.13 and 1615A.1.16. The assembly described in this section is equivalent to that required by CISCA 0-2 and Section 4 of ASTM E580.

Modify Section 4.3 (Special Inspection) as follows: Suspended ceilings in Seismic Design Categories C, D, E, and F, as applicable, are subject to periodic special inspections during the installation of the suspended ceiling systems and their anchorage in accordance with the requirements of CBC Section 2506.2.1, Section 13.5.6.2.2 (h) of ASCE 7-05, and CBC Sections 1705.3.4 and 1705A.3.4, Item 3, and CBC Sections 1708.1 and 1708A.1, Item 3. The special inspector must verify that the ceiling system is as described in this report, and complies with the installation instructions in this report, and with the approved construction documents.

Modify Section 5.3 as follows: Suspended ceiling systems must be designed in accordance with Section 13.5.6 of ASCE 7 as referenced by CBC Sections 1613 and 1613A, and modified by CBC Sections 1615.10.13 and 1615A.1.16, as applicable. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

Modify Section 5.4 as follows: For Seismic Design Category C, D, E or F, a quality assurance plan complying with CBC Chapters 17 and 17A, as applicable, must be submitted to the code official for approval.

Modify Section 5.5 as follows: Periodic special inspections must be provided in accordance with Section 4.3 of this report. A statement of special inspection must be provided as required in CBC Section 1705.3.4 and CBC Section 1705A.3.4, Item 3. A statement of special inspection must be provided for use in Seismic Design Categories C, D, E, and F, where suspended ceiling systems are installed in accordance with Section 4.2.2 of this report, as required by CBC Section 1708.1 and CBC Section 1708A.1, Item 3.

Modify Section 5.6 as follows: The ceiling systems must not be used to provide lateral support for walls or partitions, except as provided for in ASCE 7, Section 13.5.8.1, as referenced in CBC Sections 1613 and 1613A, and must comply with applicable code provisions referenced in Section 4.2.1 of this report.

Modify Section 5.7 as follows: The ceiling systems must be braced to resist seismic forces as determined from Sections 1613 and 1613A of the CBC, and modified by CBC Sections 1615.10.13 and 1615A.1.16, as applicable.

Modify Section 5.9 as follows: The ceiling systems are limited to ceilings not considered accessible in accordance with Item 31 of CBC Tables 1607.1 and 1607A.1.

Modify Section 5.11 as follows: Lay-in ceiling panels must be justified to the satisfaction of the code official as complying with the interior finish requirements of Chapter 8 of the CBC.

This supplement expires concurrently with the master evaluation report issued January 1, 2013.