

# ICC-ES Evaluation Report

ESR-1289

Reissued October 2024

This report also contains:


- [City of LA Supplement](#)

Subject to renewal October 2025

- [CA Supplement w/ DSA and OSHPD](#)

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<p><b>DIVISION: 09 00 00 — FINISHES</b></p> <p><b>Section: 09 22 26 — Suspension Systems</b></p>	<p><b>REPORT HOLDER:</b></p> <p><b>WORTHINGTON ARMSTRONG VENTURE (WAVE)</b></p> <p><b>ADDITIONAL LISTEE:</b></p> <p><b>ARMSTRONG WORLD INDUSTRIES</b></p>	<p><b>EVALUATION SUBJECT:</b></p> <p><b>FRAME ALL™ FIRE-RESISTANCE-RATED AND NONFIRE-RESISTANCE-RATED SUSPENDED CEILING DRYWALL GRID SYSTEMS</b></p>	
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## 1.0 EVALUATION SCOPE

### Compliance with the following code:

- 2024, 2021, 2018, and 2015 [International Building Code® \(IBC\)](#)
- 2013 *Abu Dhabi International Building Code (ADIBC)*<sup>†</sup>

<sup>†</sup>The ADIBC is based on the 2009 IBC as referenced in ADIBC.

### Properties evaluated:

- Exterior and interior finish
- Fire-resistance
- Structural

## 2.0 USES

The FrameAll™ suspended ceiling framing systems described in this report are suspended or direct-hung, concealed framing, ceiling assemblies used in fire-resistance-rated and nonfire-resistance-rated construction for both exterior and interior applications.

## 3.0 DESCRIPTION

### 3.1 General:

The 8900 series ceiling system is designed for screw-attached wood panels (complying with DOC PS 1 or PS 2) of nonfire-resistance-rated or screw-attached gypsum wall board (complying with ASTM C36 or ASTM C1396) ceiling panels of fire-resistance-rated, interior roof and/or floor-ceiling assemblies.

The 7900 Series ceiling system is designed for nonfire-resistance-rated screw-attached wood panels (complying with DOC PS 1 or PS 2) or screw-attached gypsum board (complying with ASTM C36 or ASTM C1396) ceiling panels of interior roof and/or floor-ceiling assemblies.

The XL 7936 series ceiling system is designed for interior or exterior nonfire-resistance-rated roof-ceiling and/or floor-ceiling assemblies. For exterior ceilings without weather-exposed surfaces, as defined in IBC Section 2502, the system is designed for screw-attached gypsum sheathing (complying with ASTM C79 or ASTM C1396). For exterior weather-exposed surfaces, the system is designed for screw-attached metal lath (complying with ASTM C847) with three coats of cement (Type I or II portland cement complying with ASTM C150) plaster finish.

The S7700 Series, ShortSpan ceiling system extends from wall to wall, and provides support for screw-attached gypsum boards. The system consists of cross tees that extend from wall to wall and are supported on angle moldings that are attached to gypsum wallboard-faced steel wall framing. Supports for cross tees are provided by angle moldings, StrongBack Supports or QuikStix Locking Pocket Mains. The StrongBack Supports or QuikStix Locking Pocket Mains are attached to supporting construction using QuikStix Uptight Clips. This system is for use in interior applications in non-fire-resistance-rated construction. Fire-resistance-rated construction is outside the scope of this evaluation report.

### 3.2 Components:

**3.2.1 8900 and 7900 Series Main Runners:** The main runner used in the 7900 series ceiling systems is the HD7940 Main Runner. Main runners used in both the 8900 series ceiling systems and XL 7936 series ceiling systems are the 8900 (Drywall Stucco and Plaster System) series main runners. All main runners are tested for uniform load capacity in accordance with ASTM C1925. The main runners have an inverted T-shape and double web. The double web section is rotary-stitched together with a knurled lower flange for screw penetration and is reverse-folded over for screw retention along the entire length of the bottom flange. The runners are cold-formed from 0.018-inch-thick (0.457 mm), ASTM A653, CS Type B steel, having a hot dipped, galvanized G-40 coating for interior ceilings in accordance with ASTM A653, ASTM A1003 and ASTM C645 or a G-90 coating for exterior ceilings. [Table 1](#) and [Figure 1](#) specify the dimensions, lengths, and allowable uniform loads.

The HD 8906, HD8906IIC and HD890610 main runners for fire-resistance-rated systems have an added end-coupling for temperature expansion relief, and additional routs for added cross-runner spacing to accommodate field assembly of NEMA Type F lighting in nonfire-rated installations.

The SP-135 main runners for stucco systems are non-fire-resistance-rated systems. SP-135 main runner rout spacing is designed for cross-runner spacing of 13<sup>1</sup>/<sub>2</sub> inches (343 mm) on center to accommodate stucco lathing.

The main runner has lengths and routing that allow the ceiling framing system to be assembled in the field without field-cutting or screw fastening.

The SSLU Simple Soffit suspended ceiling grid system is a nonfire-resistance-rated prefabricated drywall and soffit framing system that will click into shape and install quickly.

**3.2.2 8900 and 7900 Series Cross Tees:** Cross tees include the XL 7936 (Stucco System) series, the 8900 and the 7900 (Drywall Stucco and Plaster System) series. All cross tees are tested for uniform load capacity in accordance with ASTM C1925.

The XL 7936 (Stucco System) cross runners have an inverted T-shaped double web. The cross runners are cold-formed from 0.018-inch-thick (No. 26 MSG) steel that conforms to ASTM A653, CS Type B, and have a hot-dipped galvanized G-40 coating for interior ceilings in accordance with ASTM A1003, and ASTM C645 or a G-90 coating for exterior ceiling. The double web section is rotary-stitched together with a knurled lower flange for screw penetration, and a reverse-folded over for screw retention along the entire length of the bottom flange.

The 8900 and 7900 (Drywall Stucco and Plaster System) series cross runners have an inverted T-shape and a double web. The cross runners are cold-formed from 0.018-inch-thick (No. 26 MSG) and 0.015-inch-thick steel that conforms to ASTM A653, CS Type B, and have a hot-dipped galvanized G-40 coating for interior ceilings or a G-90 coating for exterior ceilings. The double web section is rotary-stitched together with a knurled lower flange for screw penetration, and a reverse-folded hem for screw retention along the entire length of the bottom flange. [Table 2](#) and [Figure 1](#) specify dimensions, lengths, and allowable transverse loads.

The XL 8947, XL 8947P, XL 8925 and XL 7918 cross runners are used to accommodate NEMA Type F lighting fixtures. These cross runners have factory-knurled reverse hems at the lower flange to receive screws.

The 8900 (Drywall Stucco and Plaster System) series include cross runners for both fire-resistance-rated and nonfire-resistance-rated drywall ceiling assemblies. The 8900 (Drywall Stucco and Plaster System) Series includes cross runners for fire-resistance-rated drywall ceiling assemblies: XL 8965, XL 8947, XL 8947P, XL 8945, XL 8945P, XL 8341, XL 8925, XL 8926, and XL 7918 cross tees. The 8900 and 7900 (Drywall Stucco and Plaster System) series include cross runners for nonfire-rated drywall ceiling assemblies: XL 8947, XL 8947P, XL 8926, XL 8925, XL 7961, XL 7930, XL 7925, XL 7920, and XL 7918 cross tees are used in nonfire-resistance-rated assemblies. The cross tees have additional routs to accommodate a full flange opening for NEMA Type F lighting fixtures. The additional routs allow field assembly of the gypsum board ceiling framing without cutting or fastening.

**3.2.3 7700 Series ShortSpan Cross Tee:** The ShortSpan Cross Tee has an inverted T-shape, a rotary-stitched double web and a knurled lower flange that has a reverse hem along the entire length of the bottom flange. The steel used to form the cross tee is 0.0179-inch-thick (0.455 mm) complies with ASTM A568 Designation 1010, and has a minimum G40 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645. [Table 3](#) and [Figure 2](#) specify the part numbers, dimensions and lengths.

**3.2.4 7700 Series ShortSpan Low Profile Cross Tee:** The ShortSpan Low Profile Cross Tee has an inverted T-shape, a large triangular shaped bulb, a rotary-stitched double web and a knurled lower flange that has a reverse hem along the entire length of the bottom flange. The steel used to form the cross tee is 0.0179-inch-thick (0.455 mm) complies with ASTM A568 Designation 1010 and has a minimum G40 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645. [Table 3](#) and [Figure 2](#) specify the part numbers, dimensions and lengths

**3.2.5 Angle Moldings:** The angle moldings are provided as either Locking Angle Molding (LAM-12) or as Knurled Angle Molding (KAM-10 or KAM-12). The steel used to form the angle moldings is 0.0179-inch-thick (0.455 mm) complies with ASTM A568 Designation 1010 and has a minimum G40 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645. The angle moldings have 1.25-inch-by-1.25-inch-wide (32 by 32 mm) flanges. Both flanges have knurled surfaces and reverse hems along the edges. The angle moldings have locking tabs punched into the bottom flange at 8 inches (203 mm) on center. [Table 3](#) and [Figure 2](#) specify the part numbers, dimensions and lengths.

**3.2.6 StrongBack Support:** The StrongBack support is notched along the bottom edge at 8 inches (203 mm) on center to allow connections with ShortSpan Cross Tees. The steel used to form the StrongBack support is 0.0340-inch-thick (0.864 mm), complies with ASTM A568 Designation 1008 or 1010, and has a minimum G40 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645. [Table 3](#) and [Figure 2](#) specify the part numbers, dimensions and lengths.

**3.2.7 QuikStix Locket Pocket Main:** The QuikStix Locking Pocket Main Runner has an inverted T-shape, and locking tabs punched into the bottom flanges at 8 inches (203 mm) on center. The steel used to form the members is 0.018-inch-thick (0.457 mm), complies with ASTM A568 Designation 1010, and has a minimum G40 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645. [Table 3](#) and [Figure 2](#) specify the part numbers, dimensions and lengths.

**3.2.8 Gypsum Board:** Gypsum panel products must comply with ASTM C36 or C1396, and must have a maximum thickness of  $\frac{5}{8}$  inch (15.9 mm) and a maximum weight of 2.5 pounds per square foot (12.3 kg/m<sup>2</sup>). Multiple layers of gypsum panel products may be installed.

**3.2.9 Screws:** Screws used to fasten angle moldings to cold-formed steel wall framing, and QuikStix Uptight Clips to cross tees, StrongBack or QSLPM members, must be No. 8, steel-framing, self-piercing/ self-tapping screws of sufficient length to extend through the steel framing a minimum of three threads, and complying with SAE J78 and ASTM C1002, and must be recognized in a current ICC-ES evaluation report.

**3.2.10 Hanger Wire:** Hanger wire for suspended ceilings other than plaster, and any fixtures, must comply with IBC Section 2506.2.1. Hanger wires for plaster ceiling framing systems must comply with ASTM C1063 for use under the IBC. For exterior applications, corrosion-resistant hanger wires, fasteners and accessories must be used.

**3.2.11 QuikStix Uptight Clip:** The QuikStix Uptight Clip is a 1.75-inch-wide (44.4 mm) L-shaped clip, with a 1.42-inch (36 mm) short leg and a 4.42-inch (112 mm) long leg. The clip is used to fasten StrongBack Support members and QuikStix Locking Pocket Main members to structural support members. The steel used to form the QuikStix Uptight Clip is 0.0480-inch-thick (1.22 mm) complies with ASTM A568 Designation 1008 or 1010, and has a G90 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645.

**3.2.12 Accessories:** Each system has accessory items that include support angles and corner caps. Steel for accessory items complies with ASTM A568 designation 1008 or 1010, and has a G40, or G90 galvanization coating designation in accordance with ASTM A653, ASTM A1003, and ASTM C645.

### **3.3 The 8900 (Drywall System) Series Two-hour Fire-resistance-rated Suspended Ceiling System:**

The 8900 series concealed grid system is part of a two-hour, fire-resistance-rated roof-ceiling or floor-ceiling assembly. The rating applies to restrained and unrestrained assemblies as described in IBC Section 703.2. [Figure 3](#) shows assembly details. General requirements in IBC Section 711 must be observed.

## 4.0 DESIGN AND INSTALLATION

**4.1 Design:** The FrameAll™ suspended ceiling framing systems described in this report are designed to receive screw-attached gypsum panel products and/or plaster products and must not exceed the allowable loads of the system components as shown in [Tables 1, 2, 4 and 5](#) of this report. The minimum ultimate tension and compression capacity of main runner to cross tees and main runner splice is 180 pound (800 N). The minimum vertical wire and splay wire ultimate load capacity is 200 lbs and 250 lbs, respectively. Suspended ceilings constructed of lath and plaster or gypsum boards, screw or nail attached to suspended members that are surrounded by and connected to walls or soffits that are laterally braced to the structure above, are exempt from the provisions found in Section 13.5.6 of ASCE 7 (-22 under the 2024 IBC, -16 under the 2021 and 2018 IBC and -10 under 2015 IBC), as applicable, as referenced in IBC Section 1613, and must be designed and installed to support the lateral loads determined in accordance with Section 13.3 of ASCE 7 (-22 under the 2024 IBC, -16 under the 2021 and 2018 IBC and -10 under 2015 IBC), as applicable.

**4.2 Partitions:** The partitions must be laterally supported as required by Section 13.5.8 of ASCE 7 as referenced in IBC Section 1613.

### 4.3 Installation:

#### 4.3.1 General:

The suspended ceiling system must be installed in accordance with this report and the manufacturer's published installation instructions and must not exceed the allowable loads listed in [Tables 1, 2, 4 and 5](#) of this report. For gypsum construction, the suspended ceiling system must be installed in accordance with IBC Section 2508. For plaster ceilings, the suspended ceiling system must be installed in accordance with IBC Sections 2510 and 2511.

#### 4.3.2 8900 and 7900 Series Main Runners:

Main runners must be installed and leveled to within  $\frac{1}{4}$  inch in 10 feet (6.4 mm in 3048 mm), with the supporting wire taut. Vertical support hanger wire must be installed within 6 inches (152 mm) of the main runner fire expansion relief. The design loads for main runners must be less than or equal to the capacities allowed in [Table 1](#) of this report. Supports for the main runners that consist of vertical hangers, perimeter hangers, and lateral force bracing must be installed in accordance with the applicable code.

#### 4.3.3 8900 and 7900 Series Cross Tees:

Main runners, or other cross tees, must support cross tees to within  $\frac{1}{32}$  inch (0.80 mm) of the required center-to-center spacing. This tolerance must be noncumulative beyond 12 feet (3658 mm). Intersecting runners must be installed to form a right angle to the supporting members.

The maximum design loads for cross tees must be less than or equal to the capacities allowed in [Table 2](#) of this report. A cross tee that supports another cross-tee member must have a minimum uniformly distributed load capacity of 12 pounds per linear foot (175 N/m).

#### 4.3.4 Angle Moldings for 7700 Series Cross Tees:

The angle moldings used with 7700 Series cross tees must be fastened to supporting walls with fasteners appropriate for the given wall substrate as determined by registered design professional. When attaching to steel framing, moldings must be fastened to minimum No. 25 gage steel wall studs spaced a maximum of 24 inches (610 mm) on center, with the No. 8, wafer-head, steel-framing, self-piercing/self-tapping screws described in Section 3.2.9.

#### 4.3.5 7700 Series ShortSpan Cross Tee:

**4.3.5.1 Part Nos. S7708, S7710, S7712 and S7714:** ShortSpan Tees must be installed to span between angle moldings, StrongBack support or QuickStix Locking Pocket Main members, as applicable. The tees must be cut within  $\frac{1}{4}$  inch (6.4 mm) of the vertical leg of the molding, and both ends must be fixed in the locking tabs of either the Angle Moldings or the QuickStix Locking Pocket Main members. ShortSpan Tees must be installed at a maximum of 24 inches (610 mm) on center, and leveled to within  $\frac{1}{4}$  inch in 10 feet (6.4 mm in 3048 mm). The maximum unsupported length of the ShortSpan tees supported by clips, angle moldings, StrongBack support or QuickStix Locking Pocket Main members must not exceed the spans shown in [Tables 4 and 5](#) of this report.

**4.3.5.2 Part Nos. S7708P, S7710P, S7712P and S7714P:** ShortSpan Cross Tees must be installed to span between angle moldings or QuickStix Locking Pocket Main members, as applicable. The cross tees must be cut within ¼ -inch (6.4 mm) of the vertical leg of the molding, and both ends must be fixed in the locking tabs of either the Angle Moldings or the QuickStix Locking Pocket Main members. ShortSpan Cross Tees must be installed at a maximum of 24 inches (610 mm) on center, and leveled to within ¼ inch in 10 feet (6.4 mm in 3048 mm). The maximum unsupported length of the ShortSpan Cross Tees supported by clips, hanger wires, angle moldings, StrongBack support or QuickStix Locking Pocket Main members must not exceed the spans shown in [Tables 4](#) and [5](#) of this report.

**4.3.6 7700 Series ShortSpan Low Profile Cross Tees:** ShortSpan Low Profile Cross Tees must be installed to span between angle moldings, QuickStix Locking Pocket Main members, or Main Runners (described in Section 4.2.2 of this report), as applicable. The cross tees must be cut within ¼ -inch (3.2 mm) of the vertical leg of the molding or main runner, and both ends must be fixed in the locking tabs of either the Angle Moldings or the QuickStix Locking Pocket Main members. In lieu of locking tabs, ShortSpan Low Profile Cross Tees must be cut within ¼ inch (6.4 mm) of the vertical leg of the molding or main runner and must be screw attached to the flange of the molding or main runner with the appropriate fastener. ShortSpan Low Profile Cross Tees must be installed at a maximum of 24 inches (610 mm) on center and leveled to within ¼ inch in 10 feet (6.4 mm in 3048 mm). The maximum unsupported length of the ShortSpan Low Profile Cross Tees supported by clips, angle moldings, QuickStix Locking Pocket Main members, or Main Runners must not exceed the spans shown in [Tables 4](#) and [5](#) of this report. The installed ceiling system weight must not exceed the published allowable uniform load capacity in [Tables 4](#) and [5](#) of this report.

**4.3.7 StrongBack Support (SB12 and SB12P):** When used, the StrongBack support must be installed by opening the lock tabs and sliding the support over the bulb of the ShortSpan Cross Tees, then closing the lock tab to the original position. The StrongBack support must be leveled to within ¼-inch in 10 feet (6.4 mm in 3048 mm). Vertical supports for the StrongBack Support that consist of vertical hangers and perimeter hangers must be designed and installed in accordance with the code. The maximum span of the StrongBack support between vertical supports must not exceed the spans shown in [Table 5](#) of this report.

**4.3.8 QuickStix Locking Pocket Main Runners (QSLPM):** When used, the QuickStix Locking Pocket Main members must be installed parallel to the braced walls. The members must be cut within 1/8 inch (3.2 mm) of the vertical leg of the end supports, and both ends must be fixed in the locking tabs. ShortSpan Cross Tees must be installed as described in Section 4.2.5. Vertical supports for the QSLPM members that consist of vertical hangers and perimeter hangers must be designed and installed in accordance with the code. The maximum span of a QSLPM member between vertical supports must not exceed the spans shown in [Table 5](#) of this report.

**4.3.9 QuikStix Uptight Clip (QSUTC):** When used, the QuikStix Uptight Clip must be fastened to StrongBack and QuickStix Locking Pocket Main members, as applicable, at a maximum spacing to not exceed the spans in [Table 5](#) of this report, with four No. 8, steel-framing screws described in Section 3.2.9. The opposite end of the clip must be fastened to the supporting structure in accordance with the approved construction documents, prepared by a registered design professional where required by statutes of the jurisdiction in which the project is to be constructed.

**4.3.10 Gypsum Board Attachment:** Gypsum board must be installed and fastened to the ceiling framing system (cross tees, main members and angle moldings, as applicable) in accordance with IBC Section 2508.

**4.3.11 Lighting Fixtures:** Lighting fixtures, when used, must be independently supported by the structure.

#### **4.3.12 Plaster Attachment:**

For suspended ceiling framing systems permitted to support plaster, metal plaster bases must be installed in accordance with ASTM C1063. To attach the lath, minimum 1-inch-long, No. 8, Type S, oval head screws per ASTM C1002 must be used. These screws must secure the metal lath to the runners and perimeter members at 6 inches (305 mm) on center in accordance with IBC Section 2510.

## **5.0 CONDITIONS OF USE:**

The FrameAll Suspended Ceiling Framing 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 framing members must be fabricated, and installed in accordance with, this report and the manufacturer's published installation instructions. In the event of a conflict, this report governs.

- 5.2 The connection of the ceiling system to supporting construction has not been evaluated and is outside the scope of this report. The code official must approve the floor, wall and/or roof construction supporting the ceiling system.
- 5.3 Installation in this evaluation report has only been evaluated to dry, interior conditions. Exterior installation is outside the scope of this report.
- 5.4 The ceiling framing system must not be used to provide lateral support to walls or partitions, except as provided for in ASCE 7, Section 13.5.8.1.
- 5.5 The ceiling system is limited to ceilings not considered accessible in accordance with Item 30 (2024 IBC), Item 29 (2021 IBC) or Item 28 (2018, 2015 IBC) of IBC Table 1607.1.
- 5.6 The framing members are produced under an approved quality control program with inspections by ICC-ES.

**6.0 EVIDENCE SUBMITTED**

- 6.1 Data in accordance with [ICC-ES Acceptance Criteria for Suspended Ceiling Framing Systems \(AC368\)](#), Approved February 2024 (editorially revised August 2024).
- 6.2 Reports of fire-resistance tests in accordance with ASTM E119 (UL 263).

**7.0 IDENTIFICATION**

- 7.1 The ICC-ES mark of conformity, electronic labelling, or the evaluation report number (ICC-ES ESR-1289) along with the name, registered trademark, or registered logo of the report holder (WAVE) or listee (Armstrong World Industries, Inc.) must be included in the product label.
- 7.2 In addition, bundles/cartons of framing members are identified with the part number
- 7.3 The report holder’s contact information is the following:

**WORTHINGTON ARMSTRONG VENTURE (WAVE)**  
**101 LINDENWOOD DRIVE, SUITE 350**  
**MALVERN, PENNSYLVANIA 19355**  
**(610) 722-1218**  
[www.armstrongceilings.com](http://www.armstrongceilings.com)  
[jrameen@armstrongceilings.com](mailto:jrameen@armstrongceilings.com)

- 7.4 The additional listee’s contact information is the following:

**ARMSTRONG WORLD INDUSTRIES**  
**POST OFFICE BOX 3001**  
**LANCASTER, PENNSYLVANIA 17604**  
**(610) 725-5846**

**TABLE 1—DIMENSIONS AND ALLOWABLE LOADS FOR 8900 AND 7900 SERIES FRAMEALL™ MAIN RUNNERS<sup>1</sup>**

CATALOG NUMBER	TYPE	LENGTH		ALLOWABLE LOADS					
		(inches)	(mm)	Simple Span Uniform Load (lb/ft)					
				L/240 DEFLECTION			L/360 DEFLECTION		
				SPAN (ft)			SPAN (ft)		
				2	3	4	2	3	4
HD 8901	A	144	-	-	-	-	-	-	16.5
HD 8906	C	144	-	105	45.5	28.5	56.7	45.5	19.0
HD7940	C	-	3600	105	45.5	28.5	56.7	45.5	19.0
HD8906 IIC	C	144	-	105	45.5	28.5	56.7	45.5	19.0
HD890610	C	120	-	105	45.5	28.5	56.7	45.5	19.0
SP 135	C	135	-	105	45.5	28.5	56.7	45.5	19.0
SS--36--	E	12 - 144	-	-	47.4	-	-	31.9	-
SS--48--	E	12 - 144	-	-	-	20.4	-	-	13.7

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 plf = 14.59 N/m, 1 lbf = 4.448 N.

<sup>1</sup>Tabulated load values apply only to main runner spanning horizontally and simply supported. The allowable load at midspan deflection is shown.

TABLE 2—DIMENSIONS AND ALLOWABLE LOADS FOR 8900 and 7900 SERIES CROSS RUNNERS<sup>1</sup>

CATALOG NUMBER	TYPE	LENGTH		SPAN		ALLOWABLE LOADS	
		(inches)	(mm)	(feet)	(meters)	Simple Span Uniform Load (lb/ft)	
						L/240 DEFLECTION	L/360 DEFLECTION
XL 8947	C	49.75	-	4.14	-	-	16.4
XL 8947P	D	49.75	-	4.14	-	18.2	12.8
XL 8945	C	48	-	4	-	-	17.8
XL 8945P <sup>2</sup>	F	48	-	4	-	21.3	14.3
XL7930	F	-	1200	-	1.200	21.3	14.3
XL 7936	F	36	-	3	-	45.3	31.3
XL7925	F	-	900	-	0.900	45.3	31.3
XL 8925	F	25.75	-	2.14	-	-	76.1
XL 8926	F	24	-	2	-	113.5	90.2
XL7920	F	-	600	-	0.600	113.5	90.2
XL 7918	F	13.75	-	1.14	-	-	31.3
XL 8341	B	48	-	4	-	-	16.1
XL7961	F	-	1600	-	1.600	6.9	4.6
XL 8965 <sup>1</sup>	F	72	-	6	-	6.9	4.6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 plf = 14.59 N/m, 1 lbf = 4.448 N.

<sup>1</sup>Tabulated load values apply only to cross runner spanning horizontally and simply supported. The allowable load at midspan deflection is shown.

<sup>2</sup>Cross tee recognized for use in the fire-resistance-rated assembly described in [Figure 3](#) of this report.

TABLE 3—DESCRIPTION OF SHORTSPAN CEILING FRAMING SYSTEM COMPONENTS

PART NUMBER	LENGTH (in)
Locking Angle Molding/Knurled Angle Molding	
KAM-10	120
KAM-12	144
LAM-12	144
ShortSpan Tee <sup>1</sup>	
S7708 or S7708P	96
S7710 or S7710P	120
S7712 or S7712P	144
S7714 or S7714P	168
ShortSpan Low Profile Tee	
SLP7704	48
SLP7705	60
SLP7706	72
StrongBack Support <sup>1</sup>	
SB12 or SB12P	144
Locking Pocket Main	
QSLPM12	144
QuikStix Uptight Clip	
QSUTC	4.5

For SI: 1 inch = 25.4 mm.

- Where required, ShortSpan tees with a "P" designation after part number must use StrongBack support with a "P" designation after part number and ShortSpan tees without "P" designation must use StrongBack support without "P" designation.

**TABLE 4—MAXIMUM ALLOWABLE LOADS FOR SHORTSPAN TEES AND SHORTSPAN LOW PROFILE TEES SUPPORTING SCREW-ATTACHED GYPSUM PANEL PRODUCTS**

PART NUMBER	SPAN (FT)	ALLOWABLE UNIFORM LOAD OF SHORT SPAN TEE (PLF)		ALLOWABLE LOAD OF CEILING ASSEMBLY SUPPORTED BY SHORT SPAN TEES (PSF)					
		L/240	L/360	L/240 DEFLECTION			L/360 DEFLECTION		
				SHORT SPAN TEE SPACING (IN)			SHORT SPAN TEE SPACING (IN)		
				8	16	24	8	16	24
S7708-S7714	5	-	8.48	-	-	-	-	-	4.24
	6	-	4.33	-	-	-	-	3.25	2.14
	7	-	2.65	-	-	-	3.98	1.99	1.33
S7708P-S7714P	6	10.49	7.02	-	5.00	5.00	-	5.00	3.51
	7.5	5.54	3.9	-	4.16	2.77	5.00	2.93	1.95
	8	4.43	2.96	-	3.32	2.22	4.44	2.22	1.48
	8.5	3.37	2.40	5.00	2.53	1.69	3.60	1.80	1.20
SLP7704-SLP7706	4	6.72	4.48	5.00	5.00	3.36	5.00	3.36	2.24
	5	3.41	2.27	5.00	2.56	1.71	3.40	1.71	1.14
	6	2.00	1.34	3.00	1.50	1.00	2.01	1.00	0.67

1. ShortSpan tees must be supported as indicated in Sections 4.3.5.1 and 4.3.5.2 of this report.
2. ShortSpan Low Profile tee must be supported as indicated in Section 4.3.6 of this report.

**TABLE 5—MAXIMUM ALLOWABLE LOADS FOR STRONG BACK SUPPORT AND LOCKET POCKET MAIN**

PART NUMBER	SPAN (FT)	ALLOWABLE UNIFORM LOAD OF SUPPORTING MEMBER (PLF)	ALLOWABLE LOAD OF CEILING ASSEMBLY SUPPORTED BY SUPPORTING MEMBER (psf)					
			L/360	L/360 DEFLECTION				
		TRIBUTARY AREA, WIDTH (FT)						
		5		6	7	7.5	8	8.5
SB12	3	31.44	5.00	5.00	4.49	4.19	3.93	3.70
	4	17.76	3.55	2.96	2.54	2.37	2.22	2.09
SB12P	2.67	34.75	5.00	5.00	4.96	4.63	4.34	4.09
	4	23.2	4.64	3.87	3.31	3.09	2.90	2.73
QSLPM	3	33.5	5.00	5.00	4.79	4.47	4.19	3.94
	4	14.3	2.86	2.38	2.04	1.91	1.79	1.68

1. SB12, SB12P and QSLPM members must be supported as indicated in Sections 4.3.7 and 4.3.8, as applicable. The spacing of the supports must not exceed the spans shown in the table.



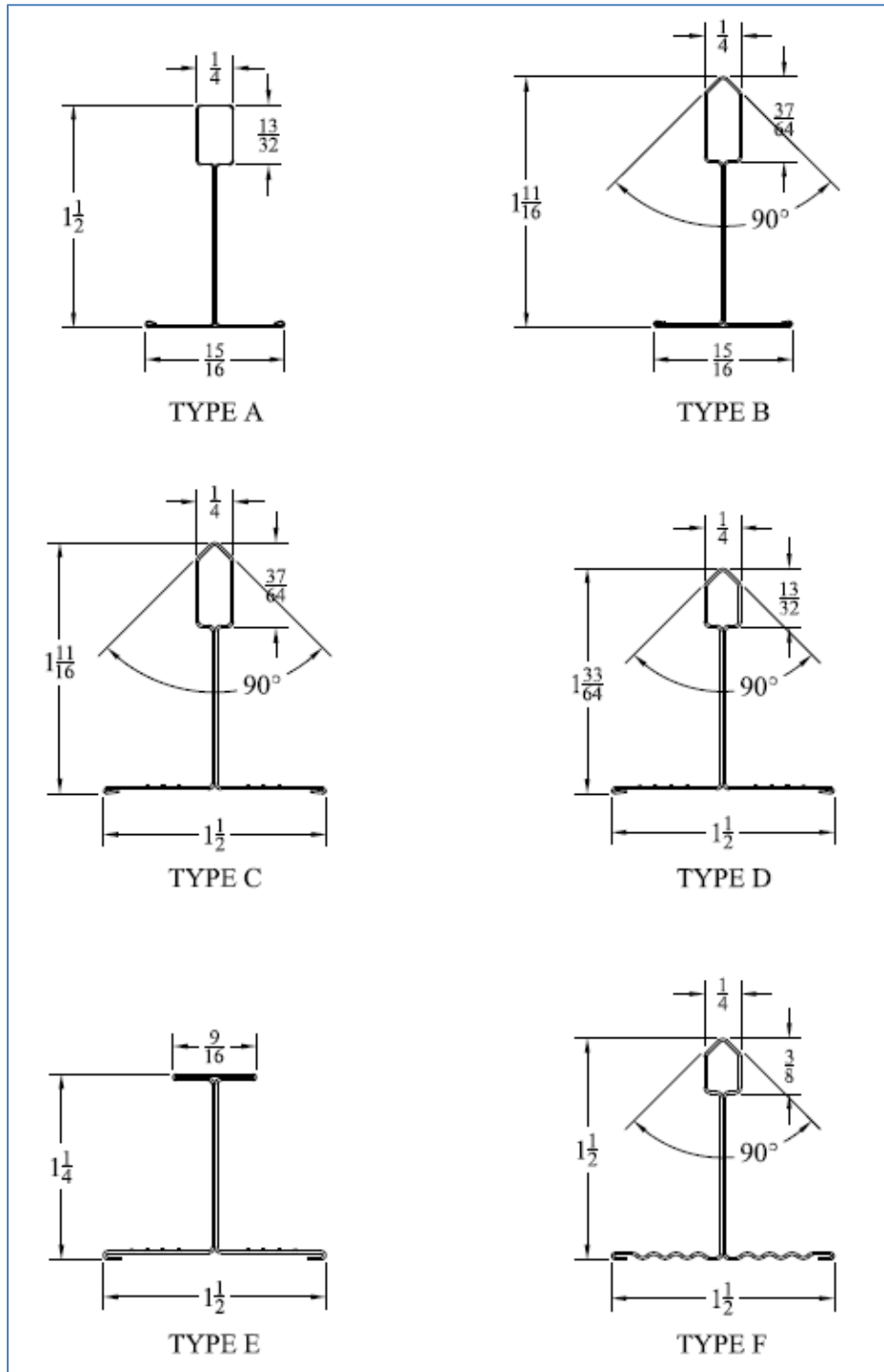


FIGURE 1

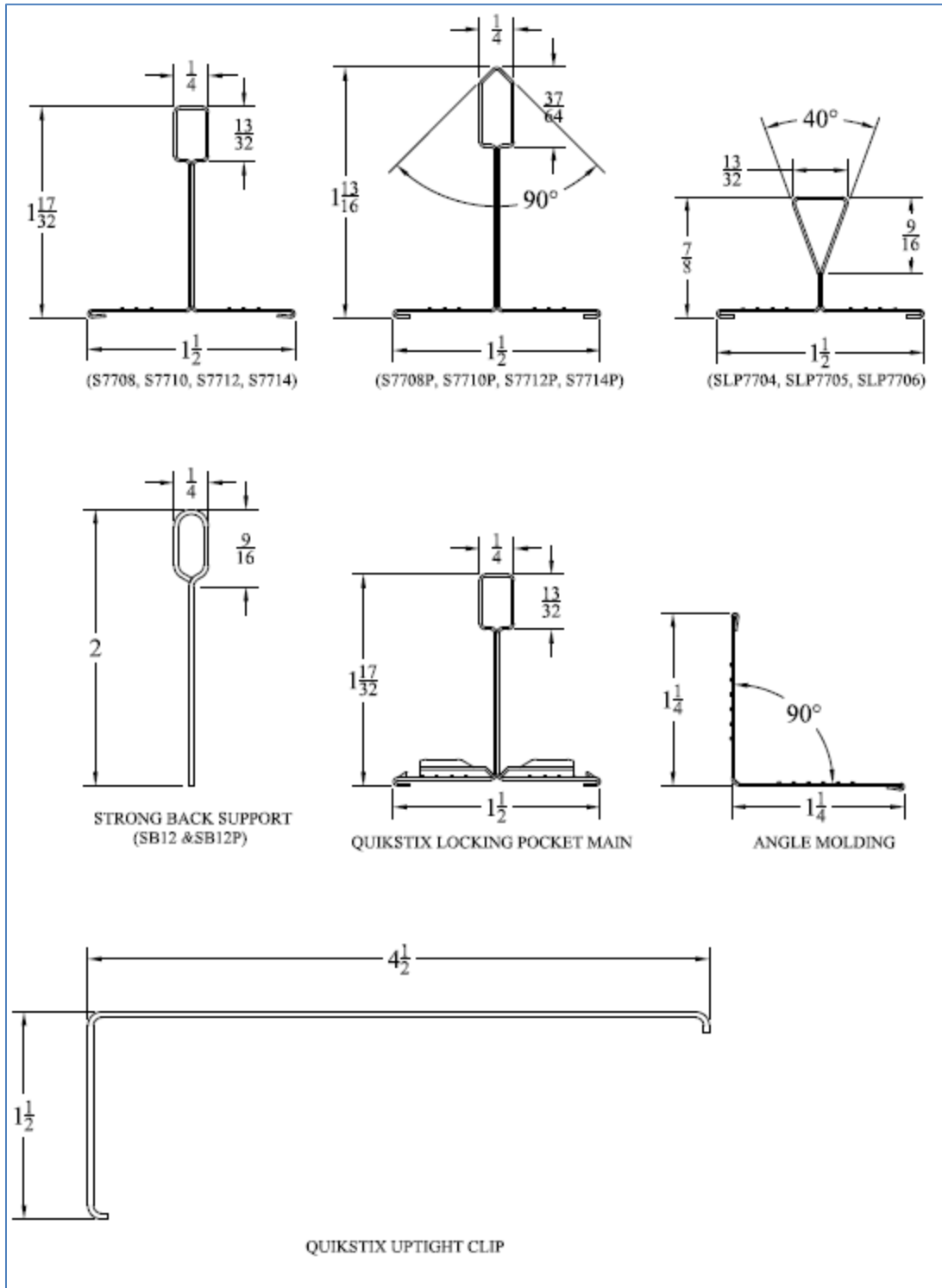
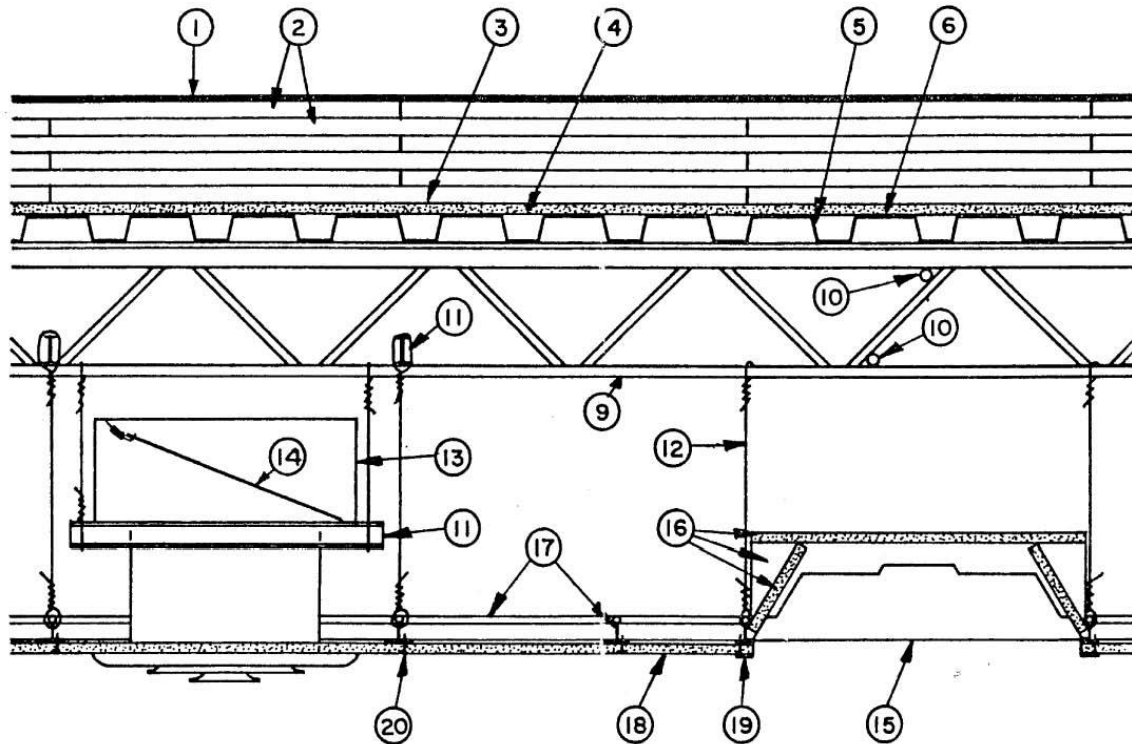


FIGURE 2



**FIGURE 3—SERIES 8900 TWO-HOUR-FIRE-RESISTANCE-RATED ASSEMBLY**

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 4.88 kg/m<sup>2</sup>, 1 gallon = 3.8 L, 1 sq. ft. = 0.0929 m<sup>2</sup>, 1 psi = 6.89 kPa, 1 lbm = 0.45 kg, 1 sq. in. = 645.16 mm<sup>2</sup>.

1. **Roof Covering:** Roof covering consisting of hot-mopped or cold-application materials compatible with insulation(s) described in Item 2 that provide Class A, B or C coverings.
2. **Roof Insulation—Mineral and Fiber Boards:** The boards must comply with ASTM C612, Type IA or IB. Nominal 1-inch-thick minimum, 24-inch-by-48-inch or larger. To be applied in six layers as follows:
  - A. May be loosely laid on top of gypsum sheathing (Item 4).
  - B. May be fastened to steel roof deck (through gypsum sheathing) with mechanical fasteners (Item 7).
  - C. May be bonded to gypsum sheathing with adhesive.
  - D. Individual layers of mineral and fiber boards above the mechanical fasteners, if used, may be bonded to the bottom layer and to each other with adhesive or hot asphalt.

First layer to be installed perpendicular to gypsum sheathing direction, with end joints staggered 2 feet in adjacent rows. Each layer of boards must be offset, in both directions, from layer below a minimum of 12 inches in order to lap all joints.
3. **Sheathing Material (Optional):** Vinyl film or paper scrim vapor barrier, applied with adhesive to the gypsum sheathing. Adjacent sheets overlapped 2 inches.
4. **Gypsum Sheathing:** Water-resistant core gypsum sheathing complying with ASTM C79. Supplied in sheets nominally 2 by 4 feet to 4 by 12 feet, by nominal 5/8 inch thick. Minimum weight is 2.0 psf. Applied perpendicular to the steel roof deck direction, with or without adhesive or mechanical fasteners through the insulation. End joints to occur over crests of steel roof deck, with end joints staggered 1 foot or more in adjacent rows.
5. **Steel Roof Deck:** Minimum 1 1/2-inch-deep, nominal 36-inch-wide fluted units, minimum 0.029-inch-thick (No. 22 gage) galvanized steel. Welded to supports with 1/2-inch puddle welds, through welding washers. Side lap joints of adjacent units are welded or secured together with No. 8 by 3/4-inch-long, self-drilling, self-tapping steel screws midway between steel joists.
6. **Adhesive (Optional):** Applied to the crest of the steel roof deck in 1/2-inch-wide ribbons at a rate of 0.4 gallon per 100 square feet (approximately 6 inches on center). Applied in 1/2-inch-wide ribbons at 0.4 gallon per 100 square feet between the vapor barrier and the gypsum sheathing, and between the sheathing and the first layer of roof insulation.
7. **Mechanical Fasteners (Optional):** (Not shown) Insulation clips with discs may be used to secure roof insulation to the steel roof deck (through gypsum sheathing). Clips are 3 1/4 inches long, having a shank diameter of 0.203 inch. Clips designed so that their tips "lock" against the underside of the steel roof deck. Steel discs are 2 1/8 inches in diameter, and 0.030 inch thick. Fastener spacing is per manufacturer's specifications.
8. **Hot Asphalt or Coal Tar Pitch (Optional):** (Not shown) May be applied between layers of roof insulation when applied at a rate not exceeding 25 lbs./100 sq. ft.
9. **Steel Joists:** Type 8H3 or 10K1, minimum size; spaced 48 inches on center, welded to end supports. NOTE: Design load must stress 8H3 joists to maximum bending stress of 22,000 psi.
10. **Bridging:** Minimum 1/2-inch-diameter steel rods are welded to top and bottom chords of each joist.

FIGURE 3—SERIES 8900 TWO-HOUR FIRE-RESISTANCE-RATED ASSEMBLY (Continued)

11. **Cold-rolled Channels:** Minimum 0.060-inch-thick (No. 16 gage) cold-rolled steel channels, 1 $\frac{1}{2}$  inches deep with  $\frac{9}{16}$ -inch flanges. Two channels are tied together back-to-back with 16 SWG galvanized steel wire and are then wire-tied to top of joist lower chord with minimum 16 SWG galvanized steel wire, spaced as required to provide attachment provision for ceiling hanger wires between steel joists.
12. **Hanger Wire:** Number 12 SWG galvanized steel wire, twist-tied to bottom chord of joists or cold-rolled steel channels. Hanger wires are spaced 48 inches on center along main runners (at every other main runner/cross tee intersection). Hanger wires also to occur at all four corners of light fixtures, at midspan of cross tees adjacent to light fixtures and air-duct outlets, and adjacent to each main runner splice.
13. **Air Duct:** Number 22 MSG (minimum) galvanized steel. Total area of duct opening not to exceed 225 square inches per 100 square feet of ceiling area. Total area of individual duct openings is not to exceed 225 square inches. Maximum opening dimension is 18 inches. Inside and outside faces of duct throat must be protected with  $\frac{1}{16}$ -inch-thick ceramic fiber paper, laminated to the metal. Duct supported by 1 $\frac{1}{2}$ -inch-deep, No. 16 MSG cold-rolled steel channels spaced not over 48 inches on center, suspended by No. 12 SWG galvanized steel wire.
14. **Damper:** Number 16 MSG minimum galvanized steel, sized to overlap duct opening 2 inches, minimum. Protected on both sides with  $\frac{1}{16}$ -inch-thick ceramic fiber paper, laminated to the metal and held open with a fusible link.
15. **Fixtures, Recessed Light:** Fluorescent-lamp-type steel housing, 2-by-4-foot size. Fixtures must be spaced so their total area does not exceed 24 square feet per each 100 square feet of ceiling area and wired in conformance with the National Electrical Code.
16. **Fixture Protection—Gypsum Wallboard:** Same as Item 18. Cut to form a five-sided enclosure, trapezoidal in cross section, at least 1 $\frac{1}{4}$  inches higher than the light fixture housing. The fixture protection consists of a 23 $\frac{3}{4}$ -inch-by-49-inch top piece, two 47 $\frac{3}{4}$ -inch-long side pieces and two 23 $\frac{3}{4}$ -inch-long end pieces. The top edge of each fixture protection side piece may be notched 1 inch deep by 10 inches long near its midpoint.
17. **Steel Framing Members—Armstrong World Industries, Inc.:** Type 8900 Drywall stucco and plaster system main runners are nominally 12 feet long and are spaced 48 or 72 inches on center. Ends of main runners at walls to rest on wall angle, and screw-attached to wall angle. Primary cross tees (1 $\frac{1}{2}$  inches wide across flange) or cross channels, nominally 4 or 6 feet long, are installed perpendicular to main runners and spaced 24 inches on center. Additional primary cross tees or cross channels are required at each wallboard end joint, 8 inches from, and on each side of, the wallboard end joint, and 8 inches from each side of light fixtures. When light fixtures are used in combination with 6 foot long cross tees to create modules to accommodate nominal 1 foot by 2 foot, 1 foot by 4 foot, 2 foot by 2 foot and 2 foot by 4 foot light fixtures, additional lengths of cross tee to be installed between the 6 foot long cross tees at each end of each nominal 14 inch, 26 inch or 50 inch long cross tee forming a light fixture module. Ends of these additional lengths of cross tee are to engage cross tee routs at end of fixture and are to be screwed or riveted to nominal 6 foot long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near center of nominal 50 inch long cross tee on each side of 1 foot by 4 foot or 2 foot by 4 foot light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage rout of main runner at one end and are to be screwed or riveted to nominal 50 inch long cross tee at opposite end.
18. **Wallboard, Gypsum:** Five-eighths inch-thick, Certainteed Gypsum Inc. Type C, 4-foot-wide gypsum wallboard is installed with the long dimension perpendicular to the cross tees, with side joints beneath or between main runners and end joints staggered minimum 4 feet and centered between cross tees which must be spaced 8 inches on center. Prior to installation of the gypsum wallboard sheets, backer strips consisting of nominal 7.75-inch-wide pieces of gypsum wallboard are to be laid atop the cross-tee flanges and centered over each butted end joint location. The backer strips must be secured to the flanges of the cross tees at opposite corners of board sheets. Gypsum wallboard is fastened to each cross tee with 1-inch long Type S drywall screws spaced 1 inch and 4 inch from the side joints and maximum 8 inches on center in the field of the board when 6 foot long cross tees are used or 12 inches on center in the field of the board when 4 foot long cross tees are used. The butted end joints must be secured to the backer strip with No. 10 by 1.5-inch long type G laminating screws located 1 inch from each side of the butted end joint and spaced 1 inch and 4 inches from the side joints and spaced maximum 8 inches on center in the field of the board. End joints of adjacent wallboard sheets must be staggered not less than 4 feet on center. Gypsum wallboard is fastened to leg of wall angle with 1-inch long Type S drywall screws spaced 12 inches on center. Joints to be covered with paper tape and joint compound.
19. **Metal Trim Molding:** Number 25 MSG galvanized steel, measuring  $\frac{5}{8}$  inch deep, with  $\frac{1}{2}$ - and 1-inch-long legs. Placed over and against wallboard edges around light fixtures, with the 1-inch leg facing down and fastened to the cross tees and main runners with 1 $\frac{5}{16}$ -inch-long screws. Spacing of screws approximately 8 inches on center along 4-foot side, and 10 inches on center along 2-foot side, of light fixtures.
20. **Screw, Wallboard:** Number 6, Type S, 1- and 1 $\frac{5}{16}$ -inch-long, self-drilling and self-tapping screws.
21. **Finishing System:** (Not shown) Paper tape embedded in joint compound over joints and covered with additional compound with edges feathered out. Wallboard screw heads covered with two layers of compound.
22. **Wall Angle:** (Not shown) Number 24 MSG painted steel with 1 $\frac{7}{16}$ -inch legs. Nailed to walls around perimeter of ceiling to support steel framing member ends and to permit screw attachment of the gypsum wallboard.

DIVISION: 09 00 00—FINISHES  
Section: 09 22 26—Suspension Systems

**REPORT HOLDER:**

WORTHINGTON ARMSTRONG VENTURE (WAVE)

**EVALUATION SUBJECT:**

FRAME ALL™ FIRE-RESISTANCE-RATED AND NONFIRE-RESISTANCE-RATED SUSPENDED CEILING DRYWALL GRID SYSTEMS

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that FrameAll™ suspended ceiling framing drywall grid systems, described in ICC-ES evaluation report [ESR-1289](#), have also been evaluated for compliance with the code noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

**Applicable code edition:**

2023 City of Los Angeles Building Code ([LABC](#))

**2.0 CONCLUSIONS**

The FrameAll™ suspended ceiling framing drywall grid systems, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1289](#), comply with the LABC Chapters 7, 8, 16 and 25 and are subject to the conditions of use described in this supplement.

**3.0 CONDITIONS OF USE**

The FrameAll™ suspended ceiling framing drywall grid systems described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1289](#).
- The design, installation, conditions of use and identification of the Worthington Armstrong Venture (WAVE) Suspended Ceiling Framing Systems are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-1289](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Main runners shall be identified by indentation or by nontransferable decal with letters not less than 1/4-inch high, and shall include the company name, runner designation and load rating.

This supplement expires concurrently with the evaluation report, reissued October 2024.

DIVISION: 09 00 00—FINISHES

Section: 09 22 26—Suspension Systems

## REPORT HOLDER:

WORTHINGTON ARMSTRONG VENTURE (WAVE)

## EVALUATION SUBJECT:

FRAME ALL™ FIRE-RESISTANCE-RATED AND NONFIRE-RESISTANCE-RATED SUSPENDED CEILING DRYWALL GRID SYSTEMS

## 1.0 REPORT PURPOSE AND SCOPE

## Purpose:

The purpose of this evaluation report supplement is to indicate that FrameAll™ suspended ceiling framing drywall grid systems, described in ICC-ES evaluation report ESR-1289, have also been evaluated for compliance with the code noted below.

## Applicable code edition:

2022 California Building Code® (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

## 2.0 CONCLUSIONS

## 2.1 CBC:

The FrameAll™ suspended ceiling framing drywall grid systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1289, comply with CBC Chapters 7, 8, 16, and 25, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 7, 8, 16, 17 and 25, as applicable.

## 2.1.1 OSHPD:

The FrameAll™ suspended ceiling framing drywall grid systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1289, comply with CBC Chapters 8, 16, 17, 25 and applicable amendments and Chapters 16A and 17A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements in Sections 2.1.1.1 and 2.1.1.2 of this supplement:

## 2.1.1.1 Conditions of Use:

1. All loads applied shall be determined by a registered structural engineer and shall comply with applicable loads from CBC Chapter 16 and its amendments, and Chapter 16A.
2. Design and installation shall comply with requirements of OSHPD Preapproved Details (OPD) OPD-0003-13, as applicable.

## 2.1.1.2 Special Inspection Requirements:

1. Periodic special inspection is required, in accordance with Section 1705A.12.5 of CBC [OSHPD 1 & 4].
2. Where gypsum wallboard is used in suspended ceiling installations, additional inspection shall be in accordance with CBC Section 2503.2 [OSHPD 1, 1R, 2, 4, & 5].

**2.1.2 DSA:**

The FrameAll™ suspended ceiling framing drywall grid systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1289, comply with CBC Chapters 8, 16, 25 and applicable amendments, and Chapters 16A and 17A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements in Sections 2.1.2.1 and 2.1.2.2 of this supplement:

**2.1.2.1 Conditions of Use:**

1. All loads applied shall be determined by a registered structural engineer and shall comply with applicable loads from CBC Chapter 16 and its amendments, and Chapter 16A.
2. Design and installation shall comply with the requirements of DSA Interpretation of Regulations (IR) DSA IR 25-3.13, as applicable.

**2.1.2.2 Special Inspection Requirements:**

1. Periodic special inspection is required, in accordance with Section 1705A.12.5 of the CBC [DSA-SS & DSA-SS/CC].
2. Where gypsum wallboard is used in suspended ceiling installations, additional inspection shall be in accordance with CBC Section 2503.2 [DSA-SS, DSA-SS/CC].

This supplement expires concurrently with the evaluation report, reissued October 2024.