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ARMSTRONG SINGLE-SPAN CORRIDOR GRID SYSTEM

CSI Section:
05 40 00 – Cold-Formed Metal Framing

1.0 RECOGNITION

Armstrong Single Span Corridor Grid System recognized in this report has been evaluated for use as a ceiling tile grid system. The structural properties, including seismic qualification by testing of architectural components, supports, and attachments comply with the intent of the provisions of the following codes and regulations:

- 2021, 2018, 2015, and 2012 International Building Code® (IBC)
- 2019 California Building Code (CBC) – attached Supplement

2.0 LIMITATIONS

Use of the Armstrong Single Span Corridor Grid System recognized in this report is subject to the following limitations:

2.1 The Armstrong Single Span Corridor Grid System shall be installed in accordance with the applicable code, the manufacturer's published installation instructions, and this report. Where there is a conflict, the most restrictive requirements shall govern.

2.2 Design calculations shall be submitted to the building official for approval at the time of permit application. Calculations shall demonstrate that the seismic demands determined in accordance with Chapter 13 of ASCE/SEI 7 do not exceed the substantiated seismic capacities shown in this report. Calculations shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.3 Armstrong Single Span Corridor Grid System shall have a main beam support wire maximum spacing of 72 inches (1,829 mm) on center and a maximum system weight of 3.51 pounds per square foot (psf) (17.1 kg/m^2).

2.4 Hanger wire attachments shall be attached in accordance with ASTM C636.

2.5 The Armstrong Single Span Corridor Grid System recognized in this report is produced by Worthington Armstrong Venture in Aberdeen, Maryland**.**

3.0 PRODUCT USE

3.1 Material Information

3.1.1 Structural Wall Angle (SWA9854 HRC): The Structural Wall Angle is a 90-degree wall molding with a full fold-over vertical flange. The Structural Wall Angle is formed of 0.024-inch (6 mm)-thick hot-dipped-galvanized, cold-rolled steel complying with ASTM A568 and has a G30 galvanized coating designation in accordance with ASTM A653 and a single steel thickness of 0.024 inches (0.6 mm) on the horizontal flange.

3.1.2 Prelude Peak Plus Main Beam (BP730098HRC, BP730102HRC, BP730144HRC): The Prelude Peak Plus Main Beam has an inverted T-shape, with a rotary stitched double webbing with a painted steel capping along the length of the flange and stacked double Peak Form bulb. Peak Plus Main Beam is $2^{7}/_{16}$ inches (61.9 mm) high with a $^{15}/_{16}$-inch (23.8 mm) face width and is formed of 0.015-inch-thick (0.4 mm) hot-dipped-galvanized, cold-rolled steel complying with ASTM A568 and available in lengths of 98, 102, and 144 inches (2,489 mm, 2,591 mm, and 3,658 mm).

3.1.3 Lateral Support Bar (BPLSB4HRC, BPLSB6HRC, BPLSB8HRC, BPLSB10HRC, and BPLSB12HRC): The Lateral Support Bar is S-shaped with a single web thickness of 0.034 inches (0.9 mm) and Peak Form notches spaced 24 inches on center along the bottom flange. The lateral Support Bar is formed of 0.034-inch-thick (0.9 mm), hot-dipped-galvanized, cold-rolled steel complying with ASTM A568 and has a G30 galvanization coating designation in accordance with ASTM A653 and is available in lengths of 48, 72, 96, 120, and 144 inches (1,219 mm, 1,829 mm, 2,438 mm, 3,048 mm, and 3,658 mm).

3.1.4 Cross Runner (XL7328 and XL7340): The XL7328 and XL7340 are inverted T-shaped cross runners with a rotary stitched double web and painted capped lower exposed flange. XL7328 is 24 inches (610 mm) long and 1⅜ inches (35 mm) high with $^{15}/_{16}$-inch (23.8 mm) face width and is formed of 0.009-inch-thick (0.2 mm) steel. XL7340 is 48 inches (1,219 mm) long, $1^{11}/_{16}$ inches (43 mm) high with a $^{15}/_{16}$-inch (23.8 mm) face width and formed of 0.010-inch-thick (0.3 mm) steel. The steel is hot-dipped-galvanized, cold-rolled steel complying with ASTM A568. Cross Runners connect to a staked-on steel connector clip on each end.

3.1.5 Beam End Retaining Clip (BERC2 clip): The BERC2 Clip connects main runners and cross runners to wall molding at the ceiling perimeter and is manufactured from 0.034-inch (0.9 mm)-thick, hot-dipped-galvanized, cold-rolled steel complying with ASTM A568.

3.1.6 Cross Tee Connector Clip (XTAC): The XTAC clip is used for tight wall connection by fastening the Peak Plus main runner to the wall angle and is manufactured from 0.050-inch-thick (1.3 mm), hot-dipped-galvanized, cold-rolled steel complying with ASTM A568.

3.1.7 Standard Heavy Duty Main Beam Assembly SB-12: The Standard Heavy Duty Main Beam Assembly SB-12 is a strong back carrying channel fastened to the heavy-duty main beams shown in Table 2 of this report with No. 8 x $^{9}/_{16}$-inch (14.3 mm)-long truss head SD screws at 24 inches on-center. SB-12 is manufactured from 0.0340-inch (0.9 mm)-thick hot-dipped galvanized, cold-rolled steel complying with ASTM A568.

3.2 Design: The system may be designed for layouts with main beam spacing of either 24 or 48 inches (610 or 1,219 mm) on center. Prelude Peak Plus system and the SB-12 assembly fastened to the heavy-duty main beams designated in Table 2 of this report are qualified for use in seismic design categories C, D, E, and F. Table 1 of this report provides the design criteria.

3.3 Installation:

3.3.1 Installation General:. The ceiling system shall be installed in accordance with this report, the applicable codes, referenced standards, and the manufacturer's published installation instructions. Where conflicts occur, the more restrictive shall govern. Figure 1 of this report illustrates the installation direction.

3.3.2 Structural Wall Angle (SWA9854HRC): The angles shall be mounted on the four walls of the corridor and screw attached at a maximum spacing of 24 inches (610 mm) on center using minimum No. 6 x 1¼ inch (31.8 mm)-long truss head screws to the supporting cold-formed steel wall structure.

3.3.3 Prelude Peak Plus Main Beam (BP730098HRC, BP730102HRC, and BP730144HRC): The main beams shall be installed across the width of corridors up to 102 inches (2,591 mm) wide with support at 72 inches (1,829 mm) on center maximum by a Structural Wall Angle or hanger wire. Prelude Peak Plus main beams are spacing either 24 or 48 inches (610 or 1,219 mm) on center. When the main runner spacing is 48 inches (1,219 mm) on center, 4-foot long cross-runners shall be installed parallel with and between the main runners, spanning between perpendicular cross runners. Prelude Peak Plus main beams greater than 102 inches (2,591 mm) in length are for use in non-seismic installations only.

3.3.4 Lateral Support Bar (BPLSB4HRC, BPLSB6HRC, BPLSB8HRC, BPLSB10HRC, and BPLSB12HRC): The support bars shall be mounted on the clearance wall above the Structural Wall Angle. The Peak Form notches of the Lateral Support Bar shall be aligned to fit over the Peak Plus Main Beam's bulb at 24 inches (610 mm) on center. Lateral Support Bars shall be fastened to the supporting wall structure at a maximum spacing of 24 inches (610 mm) on center in corridors a maximum of 102 inches (2,591 mm) wide.

3.3.5 Beam End Retaining Clip (BERC2): The clips shall be attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding and attached with a minimum of two screws per clip. Clips installed on the walls where they are not fixed to the cross tees shall allow for ¾ inch (19.1 mm) movement both ways in the system. BERC2 clips installed in this manner are an acceptable means of preventing runners from spreading as required in IBC Section 1613. Figure 2 of this report shows the direction.

3.3.6 Cross Tee Connector Clip (XTAC): The clips shall be installed to attach the main runner and or cross runner to the fixed wall(s). XTAC shall be fastened to the main runner and structural wall molding with four No. 8 self-drilling truss head screws. As an alternative, an aluminum ⅛ inch (3.2 mm) diameter pop rivet may be used to attach the clip to cross runners.

3.3.7 Lighting Fixtures: Lighting Fixtures shall be independently supported from the ceiling system to the structure above in accordance with ASTM E580.

3.3.8 Standard Heavy Duty Main Beam Assembly with SB-12: The main beam assembly may be installed as a substitution for the Prelude Peak Plus Main Beam and is qualified for 24 or 48 inches (610 or 1,219 mm) on center main beam spacing with a maximum system weight of 3.5 pounds per square foot (PSF). This installation varies from the standard Prelude Peak Plus Main Beam layout by use of a heavy-duty main runner screw-fastened with a pair of No. 8 x $^{9}/_{16}$-inch-long truss head SD screws at 24 inches on-center (610 mm) to the Strong Back (SB-12) carrying channel assembly. The SB-12 is one foot shorter than the main runner with the ends of the SB-12 6-inches (152 mm) from the ends of the main runner. Table 2 of this report lists recognized heavy-duty main runners and Figure 3 of this report provides details.

3.4 Special Inspection

Suspended ceilings in Seismic Design Categories D, E, and F are subject to periodic special inspection during the installation of suspended ceiling grids in accordance with the requirements of 2012 IBC Section 1705.11 and Section 11A.1.3.9 of ASCE/SEI 7-10; 2015 IBC Section 1705.12 and Section 11A.1.3.9 of ASCE/SEI 7-10; 2018 IBC Section 1705.12; or 2021 IBC Section 1705.13, as applicable. The

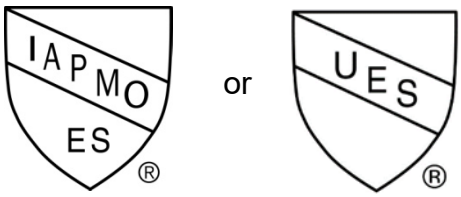
special inspector shall verify that the ceiling grid system is constructed in accordance with this report and the manufacturer's installation instructions.

4.0 PRODUCT DESCRIPTION

Armstrong Single Span Corridor Grid System allows for the construction of lay-in type ceilings in commercial corridors where access to the supporting structure above is limited due to congestion of HVAC ducts, electrical, plumbing lines, or other similar obstructions. The system is permitted in accordance with Sections 808 and 1613 of the IBC.

5.0 IDENTIFICATION

A label shall be affixed on at least one of the following: product, packaging, installation instructions, or descriptive literature. The label shall include the company name or trademark, model number, and the Evaluation Report Number (ER-244) to identify the products recognized in this report. A die-stamp label may also substitute for the label. Either IAPMO UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-244

6.0 SUBSTANTIATING DATA

6.1 Testing and data analysis in accordance with AC156 - Seismic Certification by Shake-Table Testing of Nonstructural Components approved October 2010 (Editorially revised December 2020).

6.2 Test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Worthington Armstrong Venture's Armstrong Single Span Corridor Grid System to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.5 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

Definitions:

Supported Span – Space between vertical supports of the ceiling grid. For example span from hanger wire to wall molding or span between two hanger wires.

Fixed Wall – One of two adjacent walls where the terminal ends of main runners or cross runners are mechanically attached to either the perimeter (structural) molding or the structure. (ASTM E580, Section 5.2.3.)

Clearance Wall – One of two adjacent walls where the terminal ends of main runners or cross runners are not attached to either the perimeter molding or the structure and are free to move laterally, up to ¾ inch. (ASTM E580, Section 5.2.3)

TABLE 1 -- Design Criteria

Main Beam	Spacing in. o.c.[1]	Allowable System Weight[2] (Grid + Tile), PSF	Maximum S_S[3]	Wall Attachment (Figure 1)
Prelude Peak Plus	24	3.51	2.25	B, C
	48	3.51	2.25	B, C
Standard Heavy Duty Main Beam/SB-12	24	3.51	2.5	B, C
	48	3.51	2.0	B, C
CA OSHPD Requirements	24	3.51	2.25	A, C

1. The spacing shown is inches on center.
2. Allowable system weight includes the supporting ceiling grid system and the ceiling tiles.
3. S_S = the mapped Maximum Considered Earthquake (MCE_R) spectral response acceleration parameter at short periods as determined in accordance with Section 11.4.1 of ASCE/SEI 7-10 or 11.4.2 of ASCE/SEI 7-16, as applicable.

TABLE 2 -- Heavy Duty Main Beams Used With SB-12 (Strong Back) Assemblies

Heavy Duty Main Beam	Item Number
SupraFine HD Main Beam	7501
Silhouette HD Main Beam, ¼" reveal	7601
Silhouette HD Main Beam, 1/8" reveal	76018
Interlude HD Main Beam	6101
Prelude HD Main Beam	7301

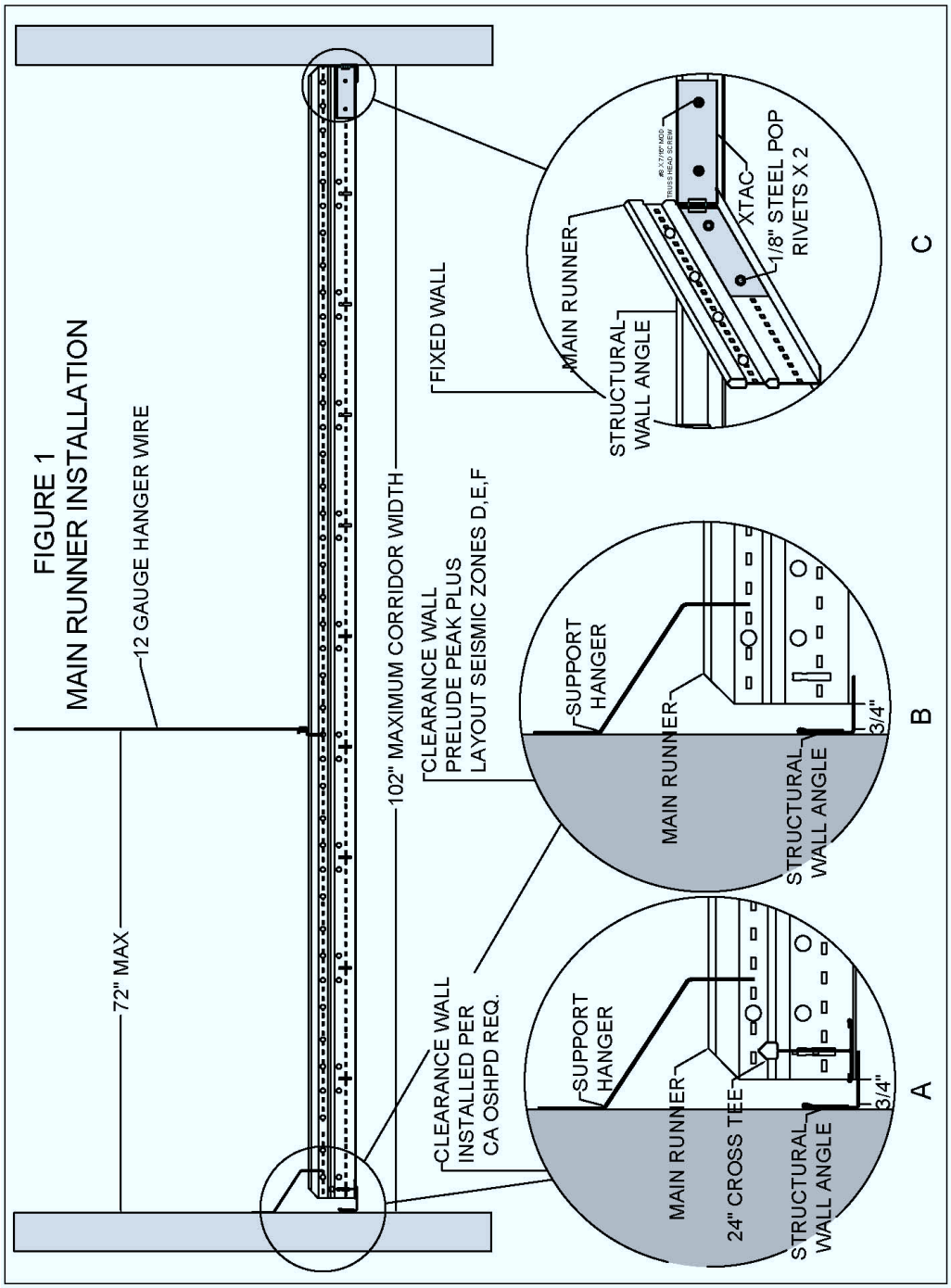


FIGURE 1
MAIN RUNNER INSTALLATION
12 GAUGE HANGER WIRE
72" MAX
102" MAXIMUM CORRIDOR WIDTH
FIXED WALL
CLEARANCE WALL
PRELUDE PEAK PLUS
LAYOUT SEISMIC ZONES D,E,F
CLEARANCE WALL
INSTALLED PER
CA OSHPD REQ.
MAIN RUNNER
STRUCTURAL
WALL ANGLE
XTAC
1/8" STEEL POP
RIVETS X 2
C
SUPPORT
HANGER
MAIN RUNNER
STRUCTURAL
WALL ANGLE
3/4"
B
SUPPORT
HANGER
MAIN RUNNER
24" CROSS TEE
STRUCTURAL
WALL ANGLE
3/4"
A

FIGURE 1

CROSS TEE ATTACHMENT INSTALLATION

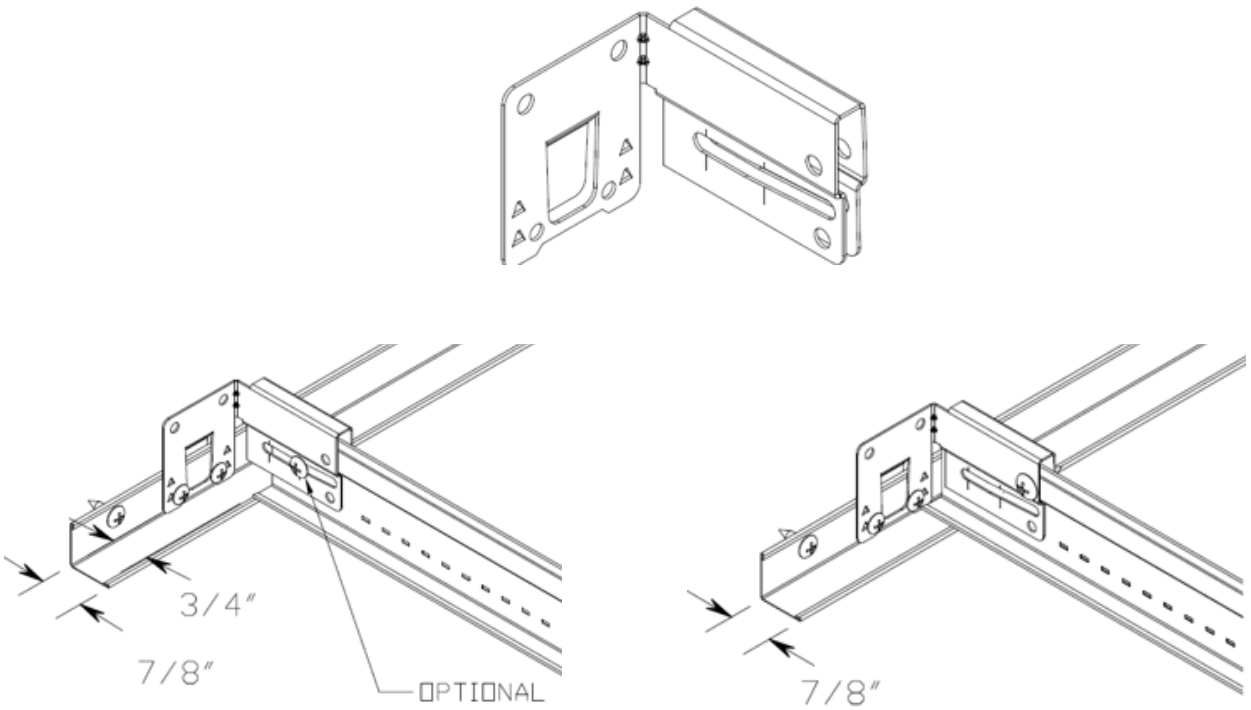


FIGURE 2

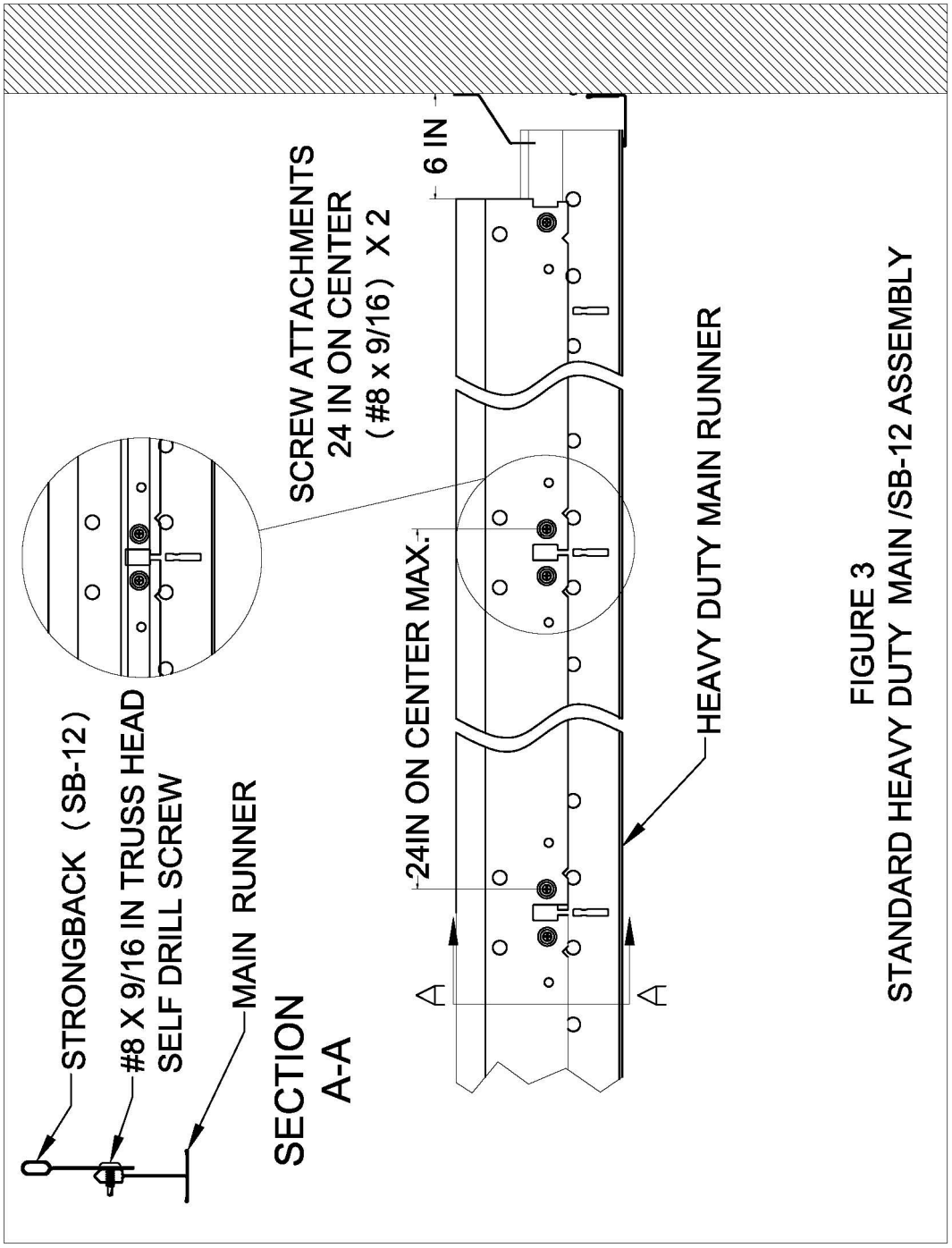
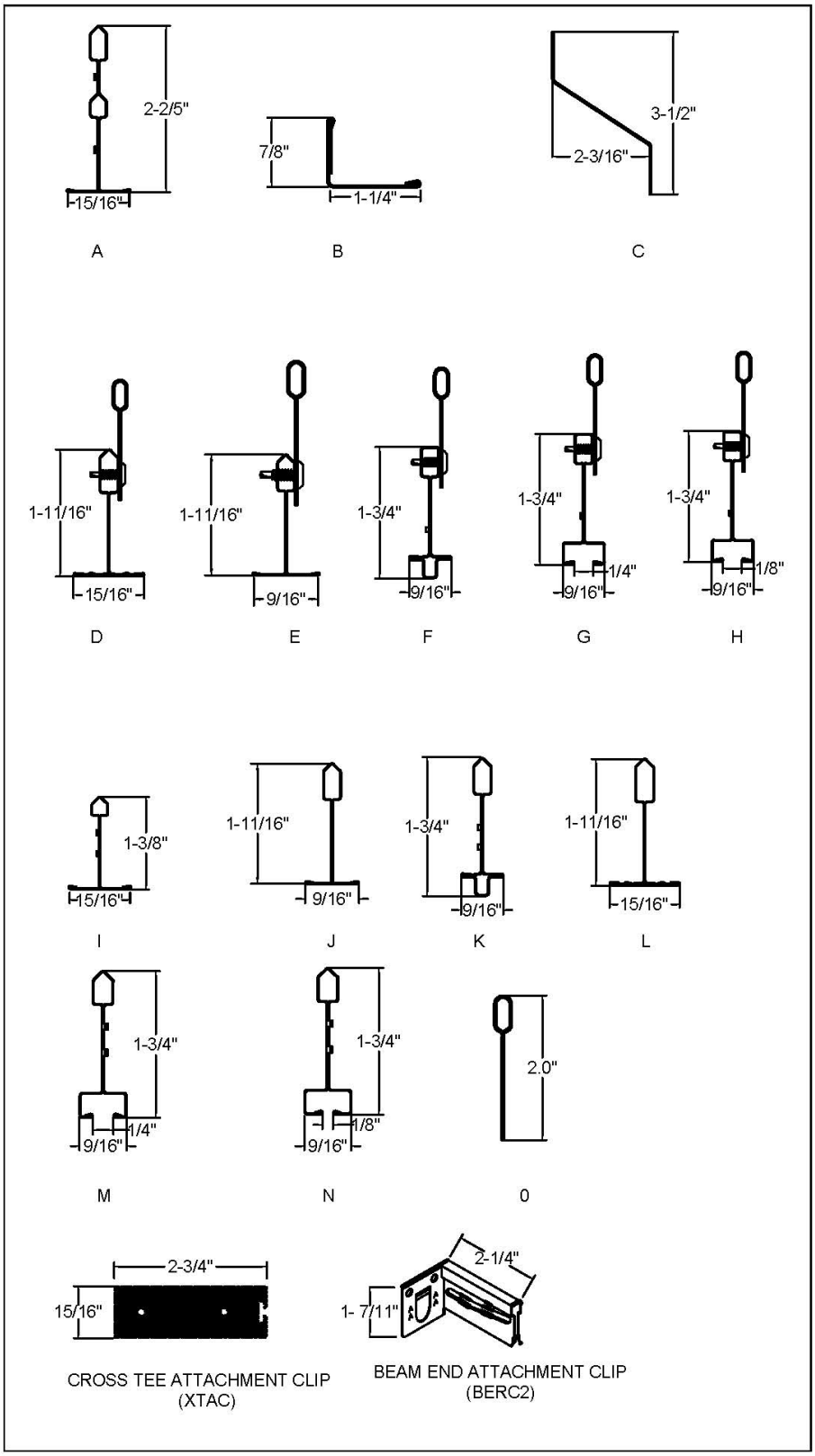


FIGURE 3
STANDARD HEAVY DUTY MAIN /SB-12 ASSEMBLY

TABLE 3 -- SINGLE SPAN CORRIDOR SYSTEM COMPONENTS

PROFILE (see Figure 4)	PART NUMBER	LENGTH (inches)	STEEL THICKNESS (inches)
STRUCTURAL WALL MOLDING			
B	SWA9854HRC	120	0.024
LATERAL SUPPORT BAR			
C	BPLSB4	48	0.034
C	BPLSB6	72	0.034
C	BPLSB8	96	0.034
C	BPLSB10	120	0.034
C	BPLSB12	144	0.034
PRELUDE PEAK PLUS MAIN RUNNER			
A	BP730098	98	0.015
A	BP730102	102	0.015
A	BP730144	144	0.015
STRONGBACK/HD MAIN RUNNER ASSEMBLY			
O	SB-12	144	0.034
E	7501/SB-12	144	0.019
G	7601/SB-12	144	0.018
H	76018/SB-12	144	0.018
D	7301/SB-12	144	0.015
F	6101/SB-12	144	0.0175
CROSS TEES			
L	XL7340	48	0.010
L	XL7341	48	0.015
J	XL7540	48	0.010
J	XL7541	48	0.013
J	XL7549	48	0.019
K	48XL6140	48	0.013
M	XL7645	48	0.014
N	XL76458	48	0.014
M	XL7640	48	0.014
N	XL76408	48	0.014
I	XL7328	24	0.009
J	XL7520	24	0.010
M	XL7620	24	0.014
N	XL76208	24	0.014
K	XL6120	24	0.013

FIGURE 4 -- Armstrong Single Span Corridor Grid System Components



CALIFORNIA SUPPLEMENT

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1.0 RECOGNITION

The Armstrong Single Span Corridor Grid System as evaluated and represented in IAPMO UES Evaluation Report ER-244 and with changes as noted in this supplement is a satisfactory alternative for use in buildings built under the following codes (and regulations):

- 2019 California Building Code (CBC)

2.0 FINDINGS

Design and Installation shall be in accordance with ER-244 and Chapters 8, 16, and 17 of the CBC. Supplemental requirements in Sections 1617.11.16 and 1617A.1.21 of the CBC shall apply as applicable.

ADDITIONAL REQUIREMENTS

1. **CBC OSHPD Requirements:** CBC HCAI (formerly OSHPD) required layout is qualified for 24-inch spacing of the Prelude Peak Plus main beam along with a maximum system weight of 3.51 pounds per square foot (PSF). This layout is designed for areas where the maximum spectral acceleration (S_s) is greater than 1.75 (g) up to and including 2.25 (g). This installation varies from the standard Prelude Peak Plus layout by use of 24-inch-long cross runners mounted along the wall containing the Lateral Support Bar and resting on the structural wall angle. Figure 1 of this report illustrates the direction.

2. Detailed construction documents and detailed drawings and analysis assuring for the specific installation with the CBC, ER-244, and this supplement shall be prepared by a Structural Engineer registered in the State of California and submitted to the enforcement agency for approval.

3.0 This supplement expires concurrently with ER-244.