



● Compliance to International Codes
● Compliance to State/Regional Codes

ICC-ES Evaluation Report ESR-4934

Reissued December 2022

This report is subject to renewal December 2024.

DIVISION: 05 00 00—METALS
Section: 05 40 00—Cold-Formed Metal Framing

DIVISION: 09 00 00—FINISHES
Section: 09 22 16.13—Non-Structural Metal Stud Framing

REPORT HOLDER:

CALIFORNIA EXPANDED METAL PRODUCTS COMPANY (CEMCO)

EVALUATION SUBJECT:

CT SHAFT WALL SYSTEMS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2021, 2018 and 2015 *International Residential Code*® (IRC)

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-4934 LABC and LARC Supplement](#).

For evaluation for compliance with codes adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architects (DSA), see [ESR-4934 CBC and CRC Supplement](#).

Properties evaluated:

- Structural

2.0 USES

The CEMCO CT Shaft Wall System described in this report is used for the framing of interior nonload-bearing shaft walls.

3.0 DESCRIPTION

3.1 General:

The CEMCO CT Shaft Wall System consists of CT Shaft Wall Studs and J-Runners members. These members are roll-formed into their final profile as shown in Figures 1 and 2, respectively. The studs are manufactured with circular punchouts of 1.1-inch (27.9 mm) diameter and punched tabs of 3-inch (76.2 mm) length. Circular punchouts are spaced at 13.31 inches (338 mm) on center with the

centerline of the punchouts 6.3 inches (160 mm) from the bottom of the stud. The last circular punchout is located at a minimum 10 inches (254 mm) from the member's end. Punched tabs are spaced at 13.31 inches (338 mm) on center. Properties of the CT Shaft Wall Studs and J-Runners are in Table 1. The J-Runners do not include punchouts.

3.2 Material:

3.2.1 Steel: CEMCO CT Shaft Wall Studs and J-Runners are cold-formed from steel coils complying with ASTM A1003 Type NS Grade 40. The member design thicknesses are 0.0346 and 0.0451 inches (0.88 mm) specified in Table 1. The members must have a minimum G40, AZ50, or GF30 coating. Other protective coating with an equivalent corrosion resistance may be used and is subject to approval by the building official.

3.2.2 Gypsum: The limiting heights in Table 3 are based on use of Type X gypsum board and liner-panels complying with ASTM C1396 and in accordance with Table 2 for the assemblies in Figure 3.

3.2.3 Fasteners: Fasteners for attaching the gypsum board to the CT Shaft Wall Stud and J-Runners must be No. 6, Type S, fine thread, drywall bugle head screws conforming to ASTM C1002.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Limiting heights for interior, nonload-bearing, composite walls are shown in Table 3. Table 3 use must be limited to engineered structures, in accordance with IRC Section R301.1.3.

4.2 Installation:

Installation of CEMCO CT Shaft Wall System must be in accordance with the applicable code, the approved plans, and this evaluation report. In the event of conflict between the plans submitted for approval and this report, this report governs. The approved plans must be available on the jobsite at all times during installation. See Figure 3 for installation details.

4.2.1 CEMCO CT Shaft Wall Studs must not be spliced. They must be installed full length and one piece. The on center spacing between the studs must be 24 inches (610 mm).

4.2.2 Fastening of studs to tracks is optional. The studs are friction fitted inside the J-Runners at the top and bottom with the longer legs of the J-Runner adjacent to the 1-inch Type

X liner panels. The maximum allowable gap between the stud and the track is $\frac{1}{8}$ inches (3.18 mm).

4.2.3 Gypsum boards and shaft liner panels are to be installed with the long-edge parallel to the framing members (studs). Gypsum liner panels can be stacked at manufactured cut edges. The maximum gap between the liner panel and the track is $\frac{3}{4}$ inches (19 mm). Joints in adjacent panels shall be staggered to prevent a continuous horizontal joint.

4.2.4 Installation and placement of joints in the gypsum board must comply with the requirements of GA-216 (Gypsum Association Application and Finishing of Gypsum Panel Products) or ASTM C840. Horizontal joints are allowed within the top or bottom third of the wall height. The gypsum liner panel edges must engage a minimum of two (2) stud's tabs with minimum 1.5" (38.1 mm) bearing.

4.2.5 The $\frac{5}{8}$ -inch (15.88 mm) gypsum boards are attached to the CT Shaft Wall Studs with the screws described in Section 3.2.3 at a maximum spacing of 12 inches (305 mm). The gypsum boards are also attached at the top and bottom edges to the J-Runners flanges with the same screws at a maximum spacing of 16 inches (406 mm). The screws must have sufficient length extend through the steel member's flange a minimum of three exposed threads as shown in Figure 3.

5.0 CONDITIONS OF USE

The CEMCO CT Shaft Wall System 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** Minimum uncoated base-metal thickness of the framing members delivered to the jobsite must be at least 95 percent of the design base-metal thickness noted in Table 1.
- 5.2** Use of the CT Shaft Wall System is limited to interior nonload-bearing wall assemblies where the superimposed axial load is zero pounds. Any other use is outside the scope of this evaluation report.
- 5.3** Design of the attachment of the wall to the surrounding structure is outside the scope of this report.

5.4 Complete construction documents and calculations verifying compliance with this report must be submitted to the code official for each project. The calculations and construction documents must be prepared and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.5 The CT Shaft Wall System is manufactured in Pittsburg, California, under an approved quality control program by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with ICC-ES Acceptance Criteria for Cold-Formed Steel Framing Members—Interior Nonload-Bearing Wall Assemblies (AC86), dated June 2019 (editorially revised October 2021).

7.0 IDENTIFICATION

7.1 At spacing not exceeding 96 inches (2440 mm) on center, each cold-formed steel member is stamped or embossed with the report holder's name or initials [California Expanded Metal Products Company (CEMCO)]; member designation; minimum base-metal thickness (uncoated) in inches or mils; minimum specified yield strength in ksi; the coating designation (if other than G40); the designation "NS"; the ICC-ES mark of conformity; and the evaluation report number (ESR-4934). The evaluation report number, ICC-ES ESR-3470, may be used in lieu of the mark of conformity.

7.2 The report holder's contact information is the following:

**CALIFORNIA EXPANDED METAL PRODUCTS
COMPANY (CEMCO)
13191 CROSSROADS PARKWAY NORTH,
SUITE 325
CITY OF INDUSTRY, CALIFORNIA 91746
(800) 775-2362
www.cemcosteel.com**

TABLE 1—CT SHAFT WALL STUD AND J-RUNNER PROPERTIES

MODEL NO.	MEMBER DESIGNATION		PHYSICAL PROPERTIES						GROSS PROPERTIES OF STUDS	
	CT Shaft Wall Stud	J-Runner	Web Height (in.) ¹	Gauge	Mils	Inner Bend Radius (in.)	Yield Strength (ksi)	Design Thick. (in.)	Weight (lb/ft)	Area (in. ²)
20CT212	250CTS-33	250JR-33	2 1/2	20	33	0.0764	40	0.0346	0.840	0.247
20CT4	400CTS-33	400JR-33	4	20	33	0.0764	40	0.0346	1.016	0.299
20CT6	600CTS-33	600JR-33	6	20	33	0.0764	40	0.0346	1.252	0.368
18CT212	250CTS-43	250JR-43	2 1/2	18	43	0.0712	40	0.0451	1.089	0.320
18CT4	400CTS-43	400JR-43	4	18	43	0.0712	40	0.0451	1.319	0.388
18CT6	600CTS-43	600JR-43	6	18	43	0.0712	40	0.0451	1.625	0.478

For SI: 1 inch = 25.4 mm, 1 lb/ft = 1.49 kg/m, 1 ksi = 6.89 MPa.

¹The provided web height is the full height of the stud including the top and bottom flanges. It is also the clear height of the J-Runner (track) between the flanges.

TABLE 2—GYPSUM SPECIFICATIONS¹

MANUFACTURER	GYPSUM BOARDS		GYPSUM LINER-PANELS	
	Min. Thick. (in.)	Product Name	Thick. (in.)	Product Name
CertainTeed	5/8	N/A	1	CertainTeed, ShaftLiner Type X
Georgia Pacific	5/8	Georgia-Pacific Fireguard Type X	1	Georgia-Pacific Type DGUSL Liner
National Gypsum	5/8	National Gypsum Fire-Core Type X	1	National Gypsum, Exp Shaftliner Type II Grade X
PABCO	5/8	N/A	1	PABCO PABCORE Type X Liner
USG	5/8	USG Firecode X, Type X	1	USG Mold Tough, Type X Liner
American Gypsum	5/8	American Gypsum, FIREBLOC, Type X	1	American Gypsum, M-Bloc Shaftliner

For SI: 1 inch = 25.4 mm.

"N/A": Not Applicable.

¹Different combinations of gypsum boards and gypsum liner-panels may be used for the listed manufacturers.

TABLE 3—VERTICAL LIMITING HEIGHTS (L)^{1, 2, 3, 5}

MODEL NO.	SERVICE TRANSVERSE PRESSURE = 5 psf (Maximum Deflection ⁴)				SERVICE TRANSVERSE PRESSURE = 7.5 psf (Maximum Deflection ⁴)			
	(L/120)	(L/180)	(L/240)	(L/360)	(L/120)	(L/180)	(L/240)	(L/360)
Assembly 1								
20CT212	16' 0"	14' 1"	12' 10"	11' 2"	13' 11"	12' 4"	11' 2"	9' 8"
20CT4	20' 10"	18' 5"	16' 10"	14' 8"	18' 2"	16' 1"	14' 8"	12' 10"
20CT6	27' 8"	24' 6"	22' 4"	19' 5"	24' 2"	21' 5"	19' 6"	17' 0"
18CT212	16' 2"	13' 11"	12' 5"	10' 5"	14' 2"	12' 2"	10' 10"	9' 1"
18CT4	23' 7"	20' 10"	18' 11"	16' 7"	20' 7"	18' 1"	16' 6"	14' 6"
18CT6	30' 1"	26' 2"	23' 7"	20' 6"	26' 4"	22' 11"	20' 7"	17' 11"
Assembly 2								
20CT212	16' 11"	15' 1"	13' 11"	12' 4"	14' 10"	13' 2"	12' 2"	10' 8"
20CT4	21' 8"	19' 5"	17' 10"	15' 8"	19' 0"	16' 11"	15' 6"	13' 8"
20CT6	27' 7"	25' 4"	23' 1"	20' 2"	24' 2"	22' 1"	20' 2"	17' 7"
18CT212	17' 0"	14' 11"	13' 6"	11' 6"	14' 11"	13' 0"	11' 10"	10' 0"
18CT4	24' 8"	21' 10"	20' 0"	17' 8"	21' 7"	19' 1"	17' 6"	15' 6"
18CT6	31' 2"	27' 5"	24' 11"	21' 11"	27' 2"	23' 11"	21' 10"	19' 1"
Assembly 3								
20CT4	21' 10"	19' 4"	17' 8"	15' 8"	19' 1"	16' 11"	15' 6"	13' 8"
20CT6	29' 4"	25' 10"	23' 8"	20' 11"	25' 7"	22' 6"	20' 8"	18' 2"
18CT4	24' 2"	21' 6"	19' 8"	17' 4"	21' 1"	18' 8"	17' 2"	15' 2"
18CT6	31' 1"	27' 5"	25' 2"	22' 2"	27' 2"	23' 11"	22' 0"	19' 5"

MODEL NO.	SERVICE TRANSVERSE PRESSURE = 10 psf (Maximum Deflection ⁴)				SERVICE TRANSVERSE PRESSURE = 15 psf (Maximum Deflection ⁴)			
	(L/120)	(L/180)	(L/240)	(L/360)	(L/120)	(L/180)	(L/240)	(L/360)
Assembly 1								
20CT212	12' 8"	11' 2"	10' 2"	8' 7"	10' 0"	9' 8"	8' 7"	-
20CT4	16' 6"	14' 7"	13' 4"	11' 8"	10' 10"	10' 10"	10' 10"	10' 2"
20CT6	21' 8"	19' 6"	17' 8"	15' 5"	9' 8"	9' 8"	9' 8"	9' 8"
18CT212	12' 11"	11' 1"	9' 10"	8' 4"	9' 10"	9' 7"	8' 7"	-
18CT4	18' 8"	16' 6"	15' 0"	13' 0"	9' 10"	9' 10"	9' 10"	9' 10"
18CT6	22' 7"	20' 10"	18' 10"	16' 4"	9' 10"	9' 10"	9' 10"	9' 10"
Assembly 2								
20CT212	13' 5"	12' 0"	11' 1"	9' 7"	10' 1"	10' 1"	9' 6"	8' 1"
20CT4	17' 2"	15' 5"	14' 1"	12' 5"	10' 1"	10' 1"	10' 1"	10' 1"
20CT6	21' 11"	20' 1"	18' 4"	16' 0"	10' 1"	10' 1"	10' 1"	10' 1"
18CT212	13' 6"	11' 10"	10' 8"	9' 1"	9' 10"	9' 10"	9' 2"	-
18CT4	19' 7"	17' 4"	15' 11"	14' 0"	9' 10"	9' 10"	9' 10"	9' 10"
18CT6	22' 7"	21' 8"	19' 10"	17' 5"	9' 10"	9' 10"	9' 10"	9' 10"
Assembly 3								
20CT4	17' 4"	15' 4"	14' 1"	12' 6"	12' 0"	12' 0"	12' 0"	10' 11"
20CT6	23' 2"	20' 6"	18' 10"	16' 7"	14' 8"	14' 8"	14' 8"	14' 5"
18CT4	19' 2"	17' 0"	15' 7"	13' 8"	15' 0"	14' 11"	13' 7"	11' 10"
18CT6	24' 2"	21' 8"	20' 0"	17' 7"	14' 8"	14' 8"	14' 8"	14' 8"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

¹Studs are spaced at 24-inch (610 mm) on-center.

²Standard J-Runners are used as tracks at both top and bottom of the wall assembly.

³The provided limiting height are for Type X gypsum boards oriented vertically for the assemblies in Figure 3.

⁴The maximum deflection is function of the provided wall heights, L.

⁵Assemblies installation and details are in accordance with Section 4.2 of this report.

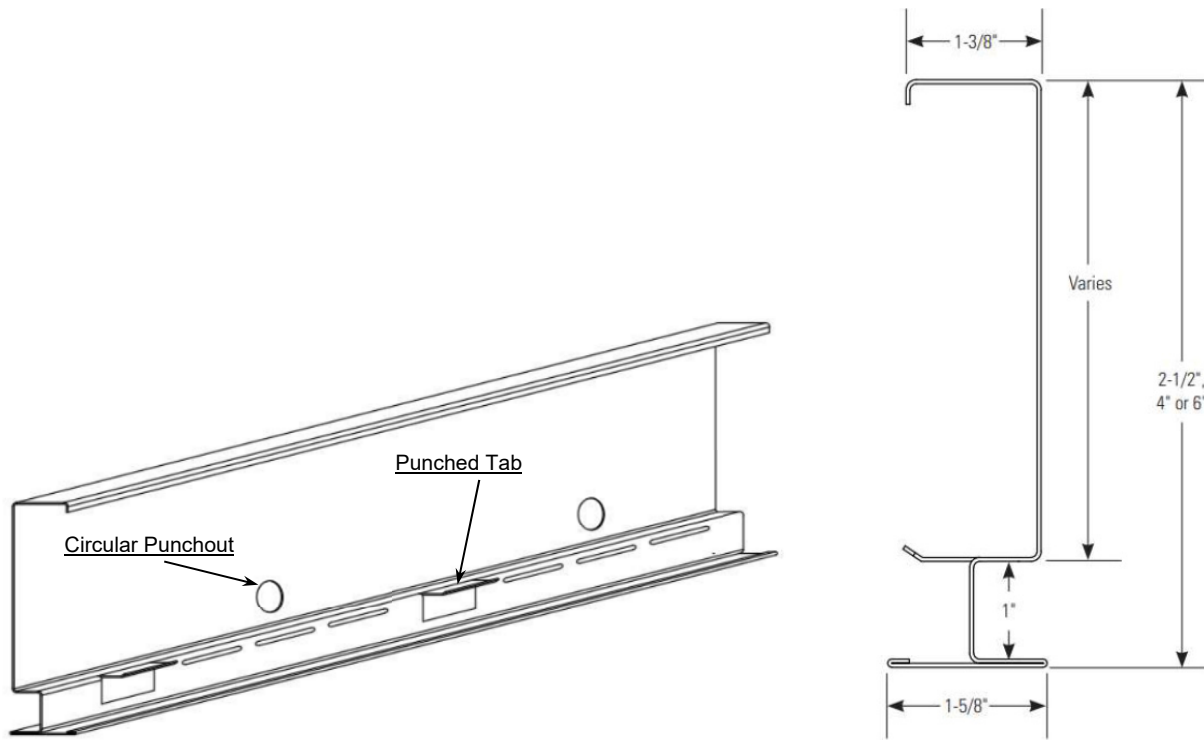


FIGURE 1—STUD CONFIGURATION

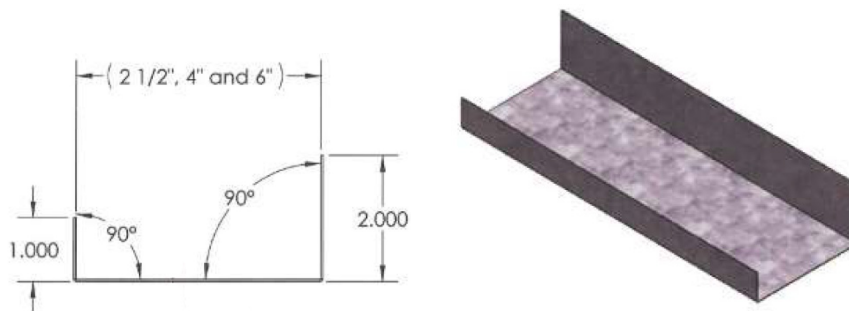


FIGURE 2—J-RUNNER (TRACK) CONFIGURATION
 (Note: The long flange is installed on the side of the liner-panel)

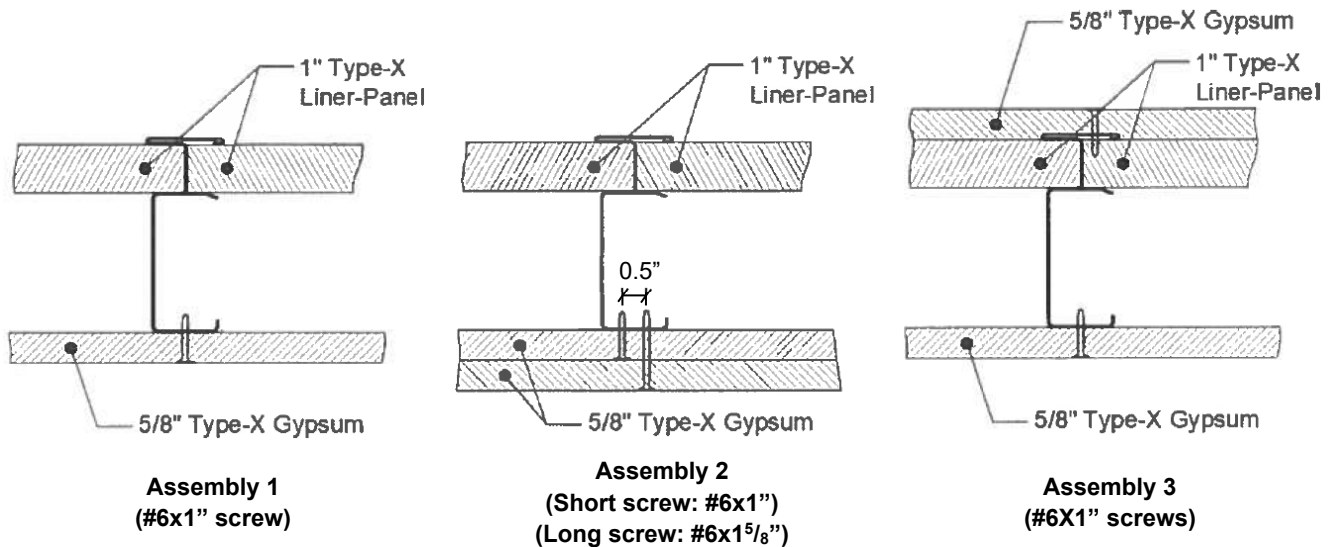


FIGURE 3—INTERIOR WALL COMPOSITE ASSEMBLIES

DIVISION: 05 00 00—METALS

Section: 05 40 00—Cold-Formed Metal Framing

DIVISION: 09 00 00—FINISHES

Section: 09 22 16.13—Non-Structural Metal Stud Framing

REPORT HOLDER:

CALIFORNIA EXPANDED METAL PRODUCTS COMPANY (CEMCO)

EVALUATION SUBJECT:

CT SHAFT WALL SYSTEMS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that CT Shaft Wall Systems, described in ICC-ES evaluation report [ESR-4934](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The CT Shaft Wall Systems, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4934](#), comply with the LABC Chapter 22, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The CT Shaft Wall Systems described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4934](#).
- The design, installation, conditions of use and identification of the CT Shaft Wall Systems are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-4934](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and 22, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued December 2022.

DIVISION: 05 00 00—METALS

Section: 05 40 00—Cold-Formed Metal Framing

DIVISION: 09 00 00—FINISHES

Section: 09 22 16.13—Non-Structural Metal Stud Framing

REPORT HOLDER:

CALIFORNIA EXPANDED METAL PRODUCTS COMPANY (CEMCO)

EVALUATION SUBJECT:

CT SHAFT WALL SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that CT Shaft Wall Systems, described in ICC-ES evaluation report ESR-4934, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *California Building Code (CBC)*

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

- 2019 *California Residential Code (CRC)*

2.0 CONCLUSIONS

2.1 CBC:

The CT Shaft Wall Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4934, comply with CBC Chapter 22, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 22, as applicable.

2.1.1 OSHPD: The CT Shaft Wall Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4934, comply with CBC amended Chapters 16, 17 and 22, and Chapters 16A, 17A and 22A, provided the design and installation are in accordance with the 2018 *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. In accordance with CBC Section 2211.2 and 2211A.2, for cold-formed steel light-frame construction, the design and installation of nonstructural members and connections shall be in accordance with AISI S220 for noncomposite assembly design. Where nonstructural members do not qualify for design under AISI S220, the design and installation of nonstructural members and connectors shall be in accordance with AISI S240 or AISI S100 [OSHPD 1, 1R, 2, 4 and 5].
2. Storage racks and wall-hung cabinet loading per Table 1607.1 [OSHPD 1R, 2 and 5] and Table 1607A.1 [OSHPD 1 and 4] is excluded from this supplement.

2.1.1.2 Special Inspection Requirements:

1. Periodic special inspections shall be required in accordance with CBC Section 1705A.12.5 [OSHPD 1 and 4].

2.1.2 DSA: The CT Shaft Wall Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4934, comply with CBC amended Chapters 16 and 22, and Chapters 16A, 17A and 22A, provided the design and installation are in

accordance with the 2018 *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. In accordance with CBC Section 2211A.2, for cold-formed steel light-frame construction, the design and installation of nonstructural members and connections shall be in accordance with AISI S220 for noncomposite assembly design. Where nonstructural members do not qualify for design under AISI S220, the design and installation of nonstructural members and connectors shall be in accordance with AISI S240 or AISI S100 [DSA-SS].
2. Storage racks and wall-hung cabinet loading per Table 1607A.1 [DSA-SS] is excluded from this supplement.
3. Storage racks and wall-hung cabinet loading per Section 1617.5.1.5 [DSA-SS/CC] is excluded from the supplement.

2.1.2.2 Special Inspection Requirements: Periodic special inspections shall be required in accordance with CBC Section 1705A.12.5 [DSA-SS/CC].

2.2 CRC:

The CT Shaft Wall Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4934, comply with the 2019 CRC, provided the design and installation are in accordance with the 2018 *International Residential Code*[®] (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued December 2022.