ICC-ES Evaluation Report

ESR-4205

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Subject to renewal January 2025

This report also contains:

- **CA Supplement**
- **FL Supplement**

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DIVISION: 05 00 00 — METALS Section: 05 40 00 — Cold-Formed Metal Framing	REPORT HOLDER: STEEL FRAMING INDUSTRY ASSOCIATION ADDITIONAL LISTEES: CEMCO CONSOLIDATED FABRICATORS CORPORATION FRAMETEK J AND S LIVONIA INC. dba JAIMES INDUSTRIES MILL STEEL FRAMING MRI STEEL FRAMING R & P SUPPLY STATE BUILDING PRODUCTS STEELER, INC.	EVALUATION SUBJECT: STEEL C-STUDS AND TRACKS	

1.0 EVALUATION SCOPE

Compliance with the following code:

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

Property evaluated:

- Structural

2.0 USES

The C-sections, tracks and channels are used for joists, rafters, nonload-bearing interior walls, curtain walls, and load-bearing walls.

3.0 DESCRIPTION

3.1 General:

The C-sections, tracks and channels recognized in this report are factory-formed from coils of steel at the facilities noted in Table 1.

The C-sections are manufactured with and without web punch-outs. When provided, the punch-outs have a width of $1^1/_2$ inches (38 mm) and a length of 4 inches (102 mm) in members with a depth of $3^1/_2$ inches (89 mm) or greater. In C-sections with a depth of $2^1/_2$ inches (64 mm), punch-outs have a width of $^3/_4$ inch (19 mm) and a length of 4 inches (102 mm). The punch-outs are spaced a minimum of 24 inches (610 mm) on center and have a minimum distance between the end of the member and the near edge of the punch-out of 10 inches (254 mm). Tracks and channels are not manufactured with factory punch-outs.

The C-Sections and tracks are detailed in the SFIA "Technical Guide for Cold-Formed Steel Framing Products," copyrighted 2021, which is distributed with this report. The following tables from the catalog are part of this report:

General Product Information	Pages 4-5
Stud Section Properties	Pages 6-10
Track Section Properties	Pages 11-15
Web Depth-to-Thickness Ratio	Page 16
Interior Non-Structural Limiting Heights	Pages 17-21
Curtain Wall Limiting Heights	Pages 22-30
Combined Axial Load and Lateral Loads	Pages 31-47
Floor Joist Span Tables	Pages 48-50
Header Load Tables	Pages 51-53
Web Crippling Load Tables	Pages 54-56
Channel and Hat Section Properties	Pages 57-59

All other pages in the "Technical Guide for Cold-Formed Steel Framing Products" are outside the scope of this report.

3.2 Material:

The metal framing members recognized in this report are cold-formed from galvanized steel coils conforming to ASTM A1003 Non-structural Grade 33 (NS33), ASTM A1003 Non-structural Grade 50 (NS50), ASTM A1003 Structural Grade 50 Type H (ST50H), ASTM A1003 Structural Grade 33 Type H (ST33H), ASTM A653 SS Grade 50 Class I or ASTM A653 SS Grade 33. The steel conforming to ST50H and ST33H has a minimum metallic coating of G60 (ASTM A653), A60 (ASTM A653), AZ50 (ASTM A792), or GF30 (ASTM A875). Steel conforming to ASTM A653 SS Grade 50 Class 1 has a minimum metallic coating designation of G60 or A60. The steel conforming to ASTM A653 SS Grade 33 may have either a minimum metallic coating designation of G60 or A60 or a minimum metallic coating designation of G40.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The section properties for the cold-formed steel framing members recognized in this report have been determined in accordance with the North American Specification for Design of Cold-Formed Steel Members (AISI) [-16 (Reaffirmed 2020) with Supplement 2 under the 2021 IBC; -16 under the 2018 IBC; and -12 under the 2015 IBC]. The allowable moments, as indicated in this report, are for use with Allowable Strength Design (ASD), and are for flexural members with a compression flange continuously braced. For other conditions of compression flange bracing, the allowable moment must be determined in accordance with AISI. The design of flexural members must address combined bending and web crippling, and combined bending and shear, as applicable in accordance with AISI.

4.2 Installation:

The framing members must be installed in accordance with the code, the approved plans, and this report. If there is a conflict between the plans submitted for approval and this report, this report governs. The approved plans must be available at the jobsite at all times during construction.

5.0 CONDITIONS OF USE

The cold-formed metal shapes 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 cold-formed steel members are installed in accordance with the applicable code, the approved plans, and this report.

5.2 Minimum uncoated steel thickness of the cold-formed steel members as delivered to the jobsite must be at least 95 percent of the design base-metal thickness. (See Page 4 of the SFIA "Technical Guide for Cold-Formed Steel Framing Products").

5.3 Complete plans and calculations verifying compliance with this report must be submitted to the code official for each project at the time of permit application. The calculations and drawings 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.

5.4 Framing members having a minimum metallic coating designation of G40 must be limited to use as nonstructural framing as defined in AISI S220.

5.5 Framing members with a height-to-thickness (h/t) ratio of more than 200 must be provided with web stiffeners in accordance with Section B4.1 of AISI S100-16 (Reaffirmed 2020) with Supplement 2, Section B4.1 of AISI S100-16, or Sections B1.2 and C3.6.1 of AISI S100-12). Holes or punch-outs in the web for members with a h/t ratio of more than 200 are outside the scope of this report.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Cold-formed Steel Framing Members (AC46), dated October 2019 (editorially revised December 2020).

7.0 IDENTIFICATION

7.1 Product labeling shall include the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-4205) may be used in lieu of the mark of conformity. At a spacing not exceeding 96 inches (2440 mm) on center, each cold-formed steel member is stamped with the name of the manufacturer, the section name, the evaluation report number (ESR-4205), the minimum uncoated base-metal thickness in mils or decimal inches. For structural applications, the minimum yield strength, and the metallic coating designation (CP60 or CP90, as defined by AISI S200 of ASTM C955) are included. For nonstructural applications, the minimum yield strength if over 33 ksi (230 MPa); the metallic coating type and weight of other than ASTM A653 G40; and the designation "NS" are included.

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

STEEL FRAMING INDUSTRY ASSOCIATION
513 WEST BROAD STREET, SUITE 210
FALLS CHURCH, VIRGINIA 22046
(703) 538-1613
www.cfsteel.org

7.3 For the additional listees' contact information, see Table 2.

TABLE 1—MANUFACTURING LOCATIONS

LISTEE	LOCATION
CEMCO	City of Industry, California Denver, Colorado Pittsburg, California Fort Worth, Texas
Consolidated Fabricators Corporation	Galt, California Fontana, California
Frametek	Riverside, California
J and S Livonia dba Jaimes Industries	Livonia, Michigan
Mill Steel Framing	Jeffersonville, Indiana Birmingham, Alabama Houston, Texas
MRI Steel	Gary, Indiana
R & P Supply	Las Vegas, Nevada
State Building Products	Warren, Michigan
Steeler, Inc.	Newark, California Seattle, Washington

TABLE 2—LISTEES

CEMCO **13191 CROSSROADS PARKWAY NORTH** **SUITE 325** **CITY OF INDUSTRY, CALIFORNIA 91746** **(800) 775-2362** **www.cemcosteel.com**	**MRI STEEL FRAMING** **1225 MARTIN LUTHER KING DRIVE** **GARY, INDIANA 46402** **(630) 616-1850** **www.mristeelframing.com**
CONSOLIDATED FABRICATORS CORPORATION **8584 MULBERRY AVENUE** **FONTANA, CALIFORNIA 92335** **(909) 770-8920** **www.confabbpd.com**	**R & P SUPPLY** **2642 EAST LONE MOUNTAIN ROAD** **LAS VEGAS, NEVADA 89081** **(702) 247-9500** **www.rpsupplyinc.com**
FRAMETEK **1495 COLUMBIA AVENUE, BUILDING 4** **RIVERSIDE, CALIFORNIA 92507** **(951) 369-5204** **www.frameteksteel.com**	**STATE BUILDING PRODUCTS** **21751 SCHMEMAN AVENUE** **WARREN, MICHIGAN 48089** **(586) 772-8878** **www.statebp.com**
J AND S LIVONIA INC. **dba JAIMES INDUSTRIES** **12658 RICHFIELD COURT** **LIVONIA, MICHIGAN 48150** **(734) 793-9000** **www.jaimesind.com**	**STEELER, INC.** **10023 MARTIN LUTHER KING JR WAY SOUTH** **SEATTLE, WASHINGTON 98178** **(206) 725-2500** **www.steeler.com**
MILL STEEL FRAMING **2105 LUCERNE DRIVE SOUTH EAST** **GRAND RAPIDS, MICHIGAN 49546** **(616) 977-9105** **www.millsteel.com/framing/**	

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

REPORT HOLDER:

STEEL FRAMING INDUSTRY ASSOCIATION

EVALUATION SUBJECT:

STEEL C-STUDS AND TRACKS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that steel C-studs and Tracks, described in ICC-ES evaluation report ESR-4205, have also been evaluated for compliance with the code noted below.

Applicable code edition:

2019 *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 Architects (DSA), see Sections 2.1 and 2.2 below.

2.0 CONCLUSIONS

The C-studs and Tracks, described in Sections 2.0 through 7.0 of the evaluation report ESR-4205, 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 the 16, 17, and 22, as applicable.

2.1 OSHPD:

The C-studs and Tracks, described in Sections 2.0 through 7.0 of the evaluation report ESR-4205, comply with CBC amended Sections in 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, as applicable, noted in the evaluation report, and the additional requirements in Sections 2.1.1 to 2.1.3 of this supplement:

2.1.1 Conditions of Use:

1. All loads applied to the cold-formed steel members shall be determined by the registered design professional and shall comply with applicable loads from CBC amended sections in Chapter 16 and Chapter 16A.
2. Cold-formed steel members shall not be part of the lateral resisting elements in light-framed wall with shear panels of all other materials and cold-formed steel-special bolted moment frames, unless allowed by the exceptions, in accordance with Section 1617A1.4 [OSHPD 1 & 4].
3. Prescriptive framing is not permitted in accordance with Section 2211A.1.2 [OSHPD 1 & 4].
4. Cold formed steel structures shall be designed and detailed in accordance with the requirements of AISI S100 and AISI S400 [OSHPD 1R, 2 and 5].
5. The design of cold-formed steel light-frame construction to resist seismic forces in Seismic Design Categories B and C shall be in accordance with the requirements of AISI S400, with the exception of “Steel systems not specifically detailed for seismic resistance, excluding cantilever columns” as designated in ASCE 7, Table 12.2-1, in which design and detailing in accordance with AISI 240 is permitted [OSHPD 1R, 2 & 5].
6. In accordance with Section 2211A.1.1.1, the design of cold-formed steel light-frame construction to resist seismic forces in Seismic Design Categories B and C is not permitted [OSHPD 1 & 4].

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7. In accordance with Section 2211.1.1.2 and 2211A.1.1.2, the design of cold-formed steel light-frame construction to resist seismic forces in Seismic Design Categories D through F, shall be designed and detailed in accordance with AISI S400 and comply with the following requirements [OSHPD 1, 1R, 2, 4 and 5]:
   - Cold-formed steel stud foundation plates or sills shall be bolted or fastened to the foundation or foundation wall in accordance with Section 2304.3.4, Item 2.
   - Shear wall assemblies in accordance with Sections E5, E6 and E7 of AISI 400 are not permitted within the seismic force-resisting system of the buildings.
8. In accordance with 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 220, the design and installation of nonstructural members and connections, shall be in accordance with AISI S240 or S100 [OSHPD 1, 1R, 2, 4 and 5].

2.1.2 Verification Test Requirements: In accordance with Section 2213A.2 and Section 2213.2, end-welded studs shall be tested in accordance with the requirements of the AWS D1.1, Sections 7.7 and 7.8 [OSHPD 1, 1R, 2, 4 & 5] as applicable.

2.1.3 Special Inspection Requirements:

1. In accordance with Section 1704.2 Exception 3, special inspection is required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.1.2 [OSHPD 1R, 2 & 5].
2. Periodic special inspections shall be required in accordance with Sections 1705A.12.3 and 1705A.12.5 [OSHPD 1 & 4].

2.2 DSA:

The C-studs and Tracks, described in Sections 2.0 through 7.0 of the evaluation report ESR-4205, comply with CBC amended Sections in 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 2.2.1 to 2.2.3 of this supplement:

2.2.1 Conditions of Use:

1. All loads applied to the cold-formed steel members shall be determined by the registered design professional and shall comply with applicable loads from CBC amended sections in Chapters 16, and Chapter 16A.
2. Cold-formed steel members shall not be part of the lateral resisting elements in light-framed wall with shear panels of all other materials and cold-formed steel-special bolted moment frames, unless allowed by the exceptions, in accordance with Section 1617.11.3 [DSA-SS/CC] and 1617A.1.4 [DSA-SS].
3. In accordance with Sections 2212.5.2 [DSA-SS/CC], cold-formed steel stud foundation plates or sills shall be bolted or fastened to the foundation or foundation wall in accordance with CBC Section 2304.3.4, Item 2.
4. In accordance with Section 2212.5.3, cold-formed steel stud shear wall assemblies in accordance with Sections E5, E6 and E7 of AISI-400 are not permitted within the seismic force resisting system of buildings or structures assigned to Occupancy Category II, III, IV, or buildings designed to be relocatable [DSA-SS/CC].
5. In accordance with Section 2211A.1.1.1, the design of cold-formed steel light-frame construction to resist seismic forces in Seismic Design Categories B and C is not permitted [DSA-SS].
6. In accordance with Section 2211A.1.1.2, the design of cold-formed steel light-frame construction to resist seismic forces in Seismic Design Categories D through F, shall be designed and detailed in accordance with AISI S400 and comply with the following requirements [DSA-SS]:
   - Cold-formed steel stud foundation plates or sills shall be bolted or fastened to the foundation or foundation wall in accordance with Section 2304.3.4, Item 2.
   - Shear wall assemblies in accordance with Sections E5, E6 and E7 of AISI 400 are not permitted within the seismic force-resisting system of the buildings.
7. Prescriptive framing is not permitted in accordance with Section 2211A.1.2 [DSA-SS].
8. In accordance with 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 220, the design and installation of nonstructural members and connections, shall be in accordance with AISI S240 or S100 [DSA-SS].

2.2.2 Verification Test Requirements: In accordance with Sections 2212.6.2 [DSA-SS/CC] or 2213A.2 [DSA-SS], end-welded studs shall be tested in accordance with the requirements of the AWS D1.1, (Sections 7.7 and 7.8 [DSA-SS]).

2.2.3 Special Inspection Requirements: Periodic special inspections shall be required in accordance with Sections 1705A.12.3 and 1705A.12.5 [DSA-SS/CC].

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

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

REPORT HOLDER:

STEEL FRAMING INDUSTRY ASSOCIATION

EVALUATION SUBJECT:

STEEL C-STUDS AND TRACKS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the steel C-studs and Tracks, described in ICC-ES evaluation report ESR-4205, have also been evaluated for compliance with the code noted below.

Applicable code edition:

2020 *Florida Building Code—Building*

2.0 CONCLUSIONS

The steel C-studs and Tracks, described in Sections 2.0 through 7.0 of the evaluation report ESR-4205, comply with the *Florida Building Code—Building.* The design requirements must be determined in accordance with the *Florida Building Code—Building*. The installation requirements noted in ICC-ES evaluation report ESR-4205 for the the 2018 *International Building Code®* meet the requirements of the *Florida Building Code—Building*.

Use of the steel C-studs and tracks for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* has not been evaluated and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

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