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ESR-3957P

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DIVISION: 05 00 00—METALS

SECTION: 05 40 00—COLD-FORMED METAL FRAMING

SECTION: 05 41 00—STRUCTURAL METAL STUD FRAMING

SECTION: 05 42 00—COLD-FORMED METAL JOIST FRAMING

DIVISION: 09 00 00—FINISHES

SECTION: 09 22 16.13—NON-STRUCTURAL METAL STUD FRAMING

REPORT HOLDER:

CRACO MANUFACTURING, INC.

**1122 JOHNSON ROAD
YORK, SOUTH CAROLINA 29745**

EVALUATION SUBJECT:

C-SHAPES AND TRACKS



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Section: 05 41 00—Structural Metal Stud Framing

Section: 05 42 00—Cold-Formed Metal Joist Framing

DIVISION: 09 00 00—FINISHES

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

REPORT HOLDER:

CRACO MANUFACTURING, INC.
1122 JOHNSON ROAD
YORK, SOUTH CAROLINA 29745
(803) 389-4425
www.cracometals.com

EVALUATION SUBJECT:

C-SHAPES AND TRACKS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)

Property evaluated:

Structural

2.0 USES

The CRACO Manufacturing (CRACO) C-shapes and tracks are used for framing of nonload-bearing interior walls, curtain walls, and load-bearing walls, floors and roofs.

3.0 DESCRIPTION

3.1 General:

CRACO C-shapes and tracks described in this report are cold-formed steel framing members which are factory-formed from coils of steel at the CRACO Manufacturing, Inc. facilities York, South Carolina. The cold-formed framing members include C-shapes (S-sections) and tracks (T-sections). The S-sections are manufactured with and without web punch-outs. The T-sections are manufactured without punch-outs. When provided, the punch-outs have a width of 1½ inches (38 mm) and a length of 4 inches (102 mm) in S-sections with a depth of 3½ inches (89 mm) or greater. In S-sections with a depth between 1⅝ inches (41 mm) and

2½ inches (64 mm), punch-outs have a width of ¾ 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).

The CRACO S-sections and T-sections are detailed in CRACO's catalogue entitled "Framing System Product Catalog," copyrighted 2016, effective January 23, 2016, which is distributed with this report. The following tables, figures, and pages from the catalogue are part of this report:

General Product Information Pages 1-2

Note: In Note #9 on page 1, replace "must be approved by a design professional" with "are outside the scope of this report."

Structural Properties – Stud (S-Sections) Pages 3-4

Note: Holes in the web of members with a web height-to-thickness ratio in excess of 200 are outside the scope of this report.

Members with a web height-to-thickness ratio in excess of 260 or a flange width-to-thickness ratio in excess of 60 are outside the scope of this report.

Structural Properties – Track (T-Sections) Pages 5–6

Note: Members with a web height-to-thickness ratio in excess of 260 or a flange width-to-thickness ratio in excess of 60 are outside the scope of this report.

Nonstructural Stud & Track Properties Page 7

Note: Holes in the web of members with a web height-to-thickness ratio in excess of 200 are outside the scope of this report.

All other items and pages in the "CRACO Framing System Product Catalog" are outside the scope of this report.

3.2 Material:

The C-shapes and tracks are cold-formed from steel coils conforming to ASTM A1003 Structural Grade 50 Type H (ST50H); ASTM A1003 Structural Grade 33 Type H (ST33H); ASTM A653 SS Grade 33; ASTM A653 SS Grade 50 Class 1; or ASTM A1003 Nonstructural Grade 33 (NS33).

The steel conforming to ASTM A653 must have a minimum metallic coating designation of G60 or A60 in accordance with ASTM A653 for applications other than

interior nonload-bearing walls. The steel conforming to ASTM A653 may have a minimum metallic coating designation of G40 or A40 in accordance with ASTM A653 for interior nonload-bearing wall applications.

The steel conforming to ASTM A1003 ST50H or ST33H must have a minimum metallic coating designation of G60, A60, AZ50, GF30, T1-25, or T2-100 in accordance with ASTM A1003.

The steel conforming to ASTM A1003 NS33 must have a minimum metallic coating designation of G40, A40, AZ50, GF30, T1-25, or T2-100 in accordance with ASTM A1003.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 IBC Method: The section properties for the cold-formed steel framing members recognized in this report have been determined in accordance with the applicable edition of the North American Specification for Design of Cold-Formed Steel Structural Members. The moments listed in this report are allowable moments and are used with Allowable Strength Design (ASD) for flexural members with the compression flange fully braced. For other conditions of compression flange bracing, the allowable moment must be determined in accordance with the applicable edition of the North American Specification for Design of Cold-Formed Steel Structural Members. The design of flexural members must address combined bending and web crippling, and combined bending and shear, as applicable in accordance with the applicable edition of the North American Specification for Design of Cold-Formed Steel Structural Members.

4.1.2 IRC Method: The S-sections listed in Table 1 of this report qualify for use with prescriptive requirements of the IRC. T-sections with flange width of 1.250 inches (31.75 mm) or greater qualify for use with the prescriptive requirements of the IRC. For use of all other sections under the IRC, the cold-formed steel framing members must be limited to engineered structures, in accordance with IRC Section R301.1.3.

When the framing members are used to construct buildings that do not conform to the applicable requirements of IRC Sections R505.1, R603.1 or R804.1.1, and for framing members not identified in Table 1 of this report, the structural analysis and design must be in accordance with the IBC, as described in Section 4.1.1 of this report

4.2 Installation:

The framing members must be installed in accordance with the applicable 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 installation.

5.0 CONDITIONS OF USE

The CRACO C-shapes and tracks 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 must be installed in accordance with the applicable code, the approved plans and this report.
- 5.2** Minimum uncoated base-metal thickness of the cold-formed steel members as delivered to the jobsite must be at least 95 percent of the design base-metal thickness.
- 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 cold-formed from NS33 steel are limited to use in interior nonload-bearing walls subject to a maximum 10 psf (478 Pa) transverse load. Framing members without the steel classification designated must be considered NS33 steel (see Section 7.0).
- 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 Sections B1.2 and C3.2.2 of AISI S100, as applicable. Holes or punch-outs in the web 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 June 2012 (editorially revised April 2015).

7.0 IDENTIFICATION

At a spacing not exceeding 96 inches (2440 mm) on center, each cold-formed steel member is stamped, stenciled or embossed with the company name (CRACO); the evaluation report number (ESR-3957P); the minimum uncoated base-metal thickness in mills or decimal inches; the minimum specified yield strength if over 33 ksi (230 MPa); and the metallic coating designation (if G60, A60, AZ50, or GF30 or greater).

TABLE 1—C-SHAPES (STUDS) FOR USE WITH THE IRC

IRC MEMBER DESIGNATION	EQUIVALENT SSMA MEMBER DESIGNATION				
	t = 33	t = 43	t = 54	t = 68	t = 97
350S162-t	350S162-33	350S162-43	350S162-54	350S162-68	---
	350S200-33	350S200-43	350S200-54	350S200-68	---
550S162-t	550S162-33	550S162-43	550S162-54	550S162-68	550S162-97
	550S200-33	550S200-43	550S200-54	550S200-68	550S200-97
800S162-t	800S162-33	800S162-43	800S162-54	800S162-68	800S162-97
	800S200-33	800S200-43	800S200-54	800S200-68	800S200-97
1000S162-t	---	1000S162-43	1000S162-54	1000S162-68	1000S162-97
	---	1000S200-43	1000S200-54	1000S200-68	1000S200-97
1200S162-t	---	---	1200S162-54	1200S162-68	1200S162-97
	---	---	1200S200-54	1200S200-68	1200S200-97

ICC-ES Evaluation Report

ESR-3957P FBC Supplement

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EVALUATION SUBJECT:

C-SHAPES AND TRACKS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that C-shapes and tracks, recognized in ICC-ES master report ESR-3957P, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2014 *Florida Building Code—Building*
- 2014 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The C-shapes and tracks, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3957P, comply with the *Florida Building Code—Building* and the *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code*® (IBC) provisions noted in the master report.

Use of the C-shapes and tracks have also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential*.

Exception: On pages 3 through 7, of the CRACO Framing System Product Catalog (Attached to ESR-3957P), members noted with Footnote 2 include cold work of forming and have not been evaluated for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential*.

For products falling under Florida Rule 9N-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).

This supplement expires concurrently with the master report, reissued April 2017.