



ICC-ES Listing Report ESL-1527

Issued August 2023

This listing is subject to renewal August 2024.

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

Product Certification System:

The ICC-ES product-certification system includes evaluating calculation reports for the standard manufactured product, prepared by a registered design professional, and provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.

Product: NEW CASTLE STEEL DECK SYSTEM

Listee: NEW CASTLE STEEL, INC.

Compliance with the following standard:

- CSA S136-16, North American Specification for the design of cold-formed steel structural members (using the Appendix B provisions applicable to Canada), CSA Group.

Compliance with the following building code:

The framing members of the New Castle Steel Deck System were evaluated based on CSA S136, as referenced in the applicable sections of the following code editions:

- National Building Code of Canada® 2020 (NBCC)
Applicable Section: Volume 1 – Division B: 4.3.4.2.

Description of Product:

General:

The New Castle Steel Deck System is a cold-formed steel structural framing system that is used as the substructure of exterior decks. The system consists of cold-formed steel structural members (joists, tracks, beams and posts), cold-formed steel connectors/brackets, and fasteners as shown in Figure 1 and in the manufacturer's installation guide (V01), dated March 2022. The evaluation scope is limited to the framing members noted in Table 1.

Framing Members:

All structural members are galvanized with minimum G60 coating as described in ASTM A653. Members are manufactured with no punchouts.

Joists are available in two sizes and tracks in one size as shown in Figure 2. Joists and tracks have two layers of proprietary, baked on coating on top of the galvanized surfaces. The 1⁵/₈-inch (41 mm) wide joists are factory formed from steel coils conforming to ASTM A653 Grade 33. The 2-inch (51 mm) wide joists are factory formed from steel coils conforming to ASTM A653 Grade 50 Class 1. The track has a 14Ga thickness and is factory formed steel coils conforming to ASTM A653 Grade 50 Class 1. Posts are available in one size: 6 x 6 x 1¹/₈-inch square posts with inside radius of 0.125 inch (3.2 mm) as shown in Figure 3. Posts comply with ASTM A500 Grade C and are powder coated on top of the galvanized surfaces. Thicknesses of joists, tracks and posts are:

Joist	Nominal Thick.	Minimum Base-Metal Thick. (in.)	Design Thick. (in.)
1 ⁵ / ₈ -inch Joist	18Ga	0.044	0.0451
2-inch Joist	14Ga	0.067	0.0705
Track	14Ga	0.067	0.0705
Post	1/8"	0.110	0.116

For SI: 1 inch = 25.4 mm

The beams are available in two models: single and double box beams. The single box beam is factory assembled from a 2-inch (51 mm) wide joist and a 1¹/₄-inch (31 mm) wide track that are fastened to each other at the top and bottom flanges using #10 self-tapping screws as shown in Figure 4. The screws are spaced at 12 inches (305 mm) on-center. The double box beam is field assembled from two single box beams that are fastened to each other at the middle of joists webs using the same screws as shown in Figure 4.

Fasteners:

The fasteners that are used to form the single box and double box beams are #10-16 X ³/₄" hex-head self-tapping screws (#2 drill point). The screws must be corrosion resistant and must conform to ASTM C1513.

Findings:

Section properties and design values of the framing members are provided in Table 1. The capacities are for use with Limit State Design (LSD) method. The moment capacities are for flexural members installed with the compression flange continuously braced. For other conditions of compression flange bracing, the moment capacity must be determined in accordance with CSA S136. The design of members must address web crippling and combined loading conditions, as applicable, in accordance with CSA S136.

Identification:

1. The ICC-ES mark of conformity, electronic labeling, or the listing report number (ICC-ES ESL-1527), and when applicable the ICC-ES listing mark, along with the name, registered trademark, or registered logo of the listee must be included in the product label.
2. In addition, packaging of the New Castle Steel Deck System carries a label indicating the manufacturer's address, and the product name.
3. At a spacing not exceeding 96 inches (2440 mm) on center, each cold formed steel member is stamped or embossed with the item number as described in Table 1; the minimum uncoated base-metal thickness in mils or decimal inches; the minimum specified yield strength; and the designation of coating.
4. The report holder's contact information is the following:

NEW CASTLE STEEL, INC.
1000 PINE MILL DRIVE
MARIETTA, GEORGIA 30066
(888) 960-0808
www.ncsteel.com
info@ncsteel.com

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 made available at the jobsite at all times.

Conditions of listing:

1. The listing addresses only conformance with the standards and code sections noted above.
2. Approval of the product's use is the sole responsibility of the local code official.
3. The listing applies only to the materials evaluated and as submitted for review by ICC-ES.
4. The minimum uncoated base-metal thickness of the cold-formed steel members as delivered to the jobsite must be as specified in the Description of Product Section of this listing.
5. 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 in accordance with the NBCC and CSA S136-16.
6. The minimum loads of NBCC must be considered by the design professional on the specific occupancy for use, as applicable.
7. The framing members in Table 1 are manufactured under a quality control program with inspections by ICC-ES.

Definitions of symbols for use with Table 1:

- F_y : Yield Strength
- K_ϕ : Distortional buckling moment (ϕM_{nd}) is calculated without the beneficial effect of sheathing to rotational stiffness, $K_\phi = 0$.
- A : The cross-sectional area of the full cross-section.
- WT : The weight per foot of the cross-section of the member.
- t : Design base-metal thickness without coating.
- I_x : Moment of inertia of the gross section about the strong axis (X-X).
- S_x : Elastic section modulus of the gross section about the strong axis (X-X)
- I_{ex} : Effective moment of inertia about the strong axis (X-X).
- KL : Effective unbraced length of post.
- ϕP_n : Limit State (LSD) axial compression capacity.
- ϕM_{nl} : Limit State (LSD) bending moment based on local buckling.
- ϕM_{nd} : Limit State (LSD) bending moment based on distortional buckling, assuming $K_\phi = 0$.
- ϕV_n : Limit State (LSD) strong axis shear.

TABLE 1—SECTION PROPERTIES AND DESIGN VALUES OF FRAMING MEMBERS¹

MEMBER		F_y (ksi)	WT (lb/ft)	GROSS SECTION PROPERTIES				CAPACITIES (LSD)				
Descrip.	Item No.			t (in.)	A (in. ²)	I_x (in. ⁴)	S_x (in. ³)	Axial Compression		Moment		Shear
								KL (ft)	ϕP_n (lbs)	ϕM_{nl} (ft-lb)	ϕM_{nd} (ft-lb)	ϕV_n (lbs)
1 ⁵ / ₈ " Joist	NCS202204, NCS202205, or NCS202206	33	1.81	0.0451	0.53	4.51	1.13	---	---	2,300	2,310	1,390
2" Joist	NCS202207, NCS202208, or NCS202209	50	3.37	0.0705	0.91	8.09	2.02	---	---	7,210	6,650	5,320
Track	NCS202201, NCS202202, or NCS202203	50	2.43	0.0705	0.73	5.67	1.39	---	---	4,370	---	5,210
Single Box Beam		---	5.57	---	1.63	13.76	3.41	---	---	11,580	---	10,530
Double Box Beam		---	11.14	---	3.26	27.52	6.82	---	---	23,160	---	21,060
6 x 6 Post	NCS202225, NCS202226, NCS202228, or NCS202229	50	9.2	0.116	2.69	15.44	5.15	0.0	85,870	17,120	---	30,820
								6.0	82,230			
								12.0	72,160			

For SI Units: 1 inch = 25.4 mm, 1 pound = 4.448 N

¹For serviceability, the effective moment of inertia for deflection, $I_{ex} = I_x$

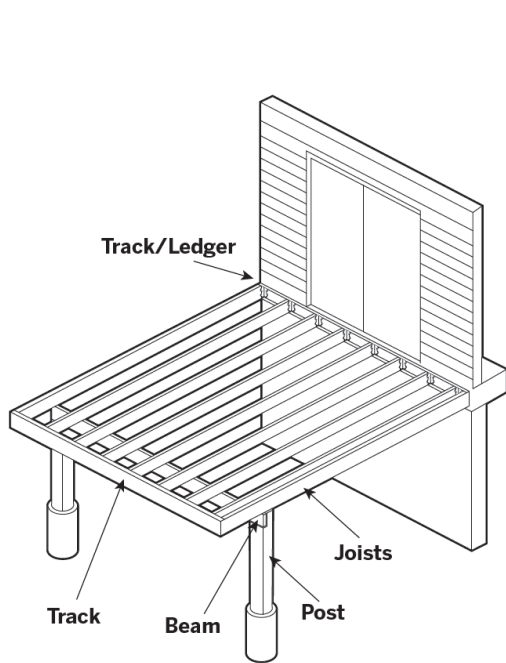


FIGURE 1—NEW CASTLE FRAMING SYSTEM

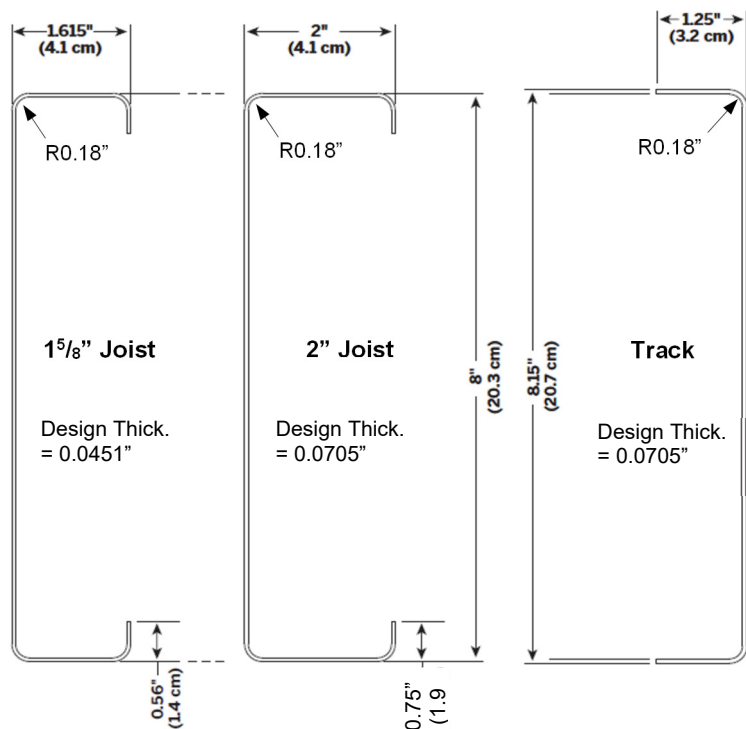


FIGURE 2—NEW CASTLE FRAMING JOISTS AND TRACKS

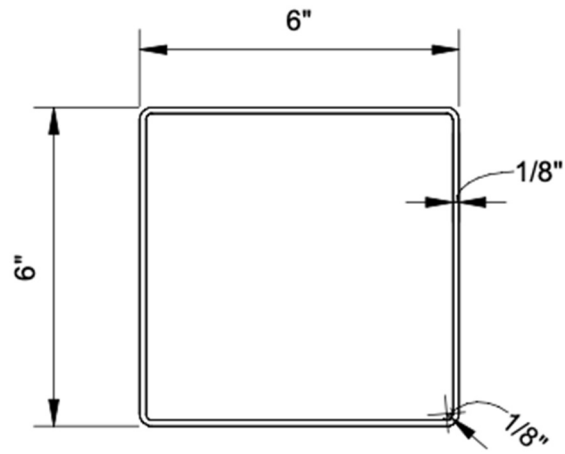


FIGURE 3—NEW CASTLE SUPPORT POST

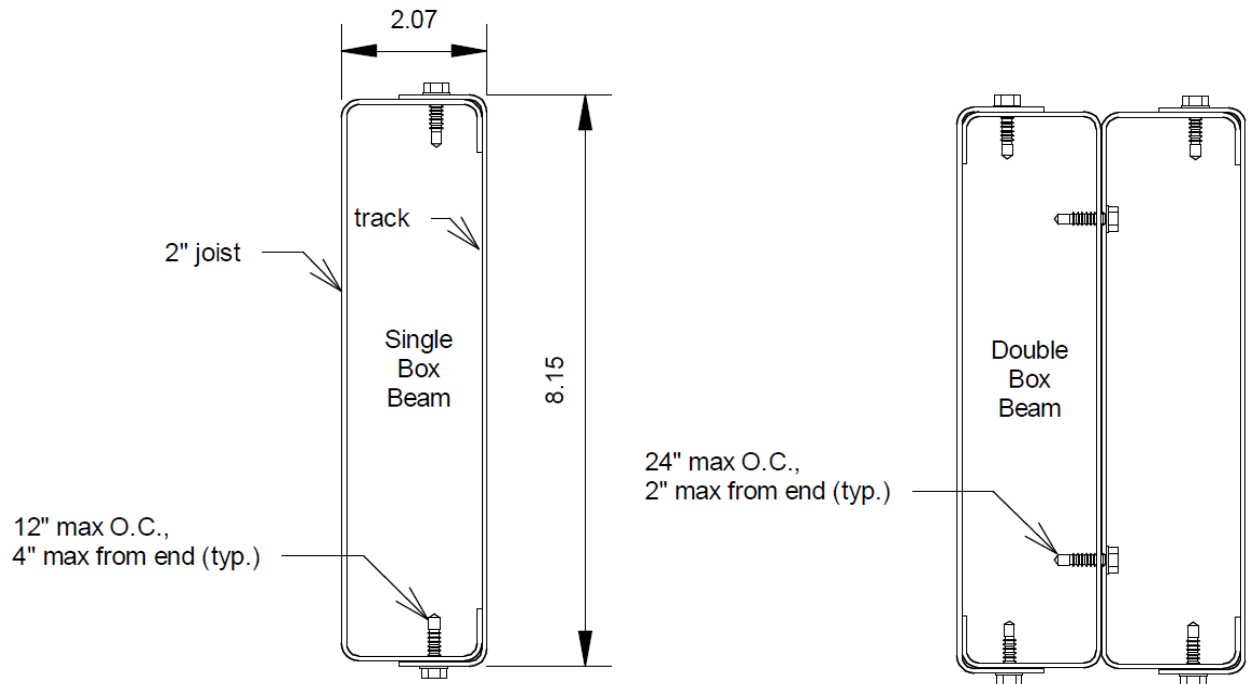


FIGURE 4—NEW CASTLE FRAMING BEAMS