

ICC-ES Evaluation Report

ESR-1309

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This report is subject to re-examination in two years.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings
Section: 06 05 23.13—Nails
REPORT HOLDER:

TRIM INTERNATIONAL, INC.
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EVALUATION SUBJECT:
NAILS AND STAPLES
1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Property evaluated:

Structural

2.0 USES

The nails described in this report are used for engineered and non-engineered connections. Staples described in this report are limited to use in non-engineered connection.

3.0 DESCRIPTION
3.1 Nails:

3.1.1 General: Descriptions and sizes of nails are as noted in Tables 1 and 2. Nails are collated and cohered into strips or coils for loading into a power driving tool.

3.1.1.1 Smooth Shank: Smooth shank nails are manufactured from either carbon steel or Type 304 stainless steel wire. Carbon steel nails have either full round or modified heads. When hardened, the full round head carbon steel nails have a minimum Rockwell C Hardness of 48. Yellow chromate-galvanized coatings may be applied to carbon steel nails. Stainless steel nails have full round heads. Nail heads are illustrated in Figure 1.

3.1.1.2 Deformed Shank: Deformed shank nails are manufactured from carbon steel and have full round heads.

When hardened, deformed nails have a minimum Rockwell C Hardness of 48.

3.1.2 Nail Bending Yield Strength (F_{yb}): Nails with a nominal diameter of 0.142 inch (3.61 mm) or less have a minimum average bending yield strength (F_{yb}) of 100,000 psi (689 MPa). Nails with nominal diameters greater than 0.142 inch (3.61 mm) and up to 0.162 inch (4.11 mm) have a minimum average bending yield strength (F_{yb}) of 90,000 psi (620 MPa).

3.2 Staples:

Staples are manufactured from SAEJ403, No. 1008 carbon steel wire having a regular zinc coating complying with ASTM A 641. Regular coatings have full surface coating but do not have a minimum coating weight. Staple descriptions and sizes are as described in Table 3.

3.3 Fastener Tolerances:

The nails and staples described in this report conform to the tolerances specified in ASTM F 1667 (Standard Specification for Driven Fasteners: Nails, Spikes, and Staples).

4.0 DESIGN AND INSTALLATION
4.1 Design:

4.1.1 Nails: Allowable lateral and withdrawal loads for nailed connections must be determined in accordance with Part 11 of the ANSI/AF&PA NDS (NDS) for nails having the same dimensions. The NDS is referenced in Section 2306.1 of the IBC and Sections R502.2, R602.3 and R802.2 of the IRC.

Fasteners that are larger than specified for the intended use may be used for shear and diaphragm applications, provided consideration is given to avoiding wood splitting, in addition to restrictions on edge distance and spacing of the large-diameter fasteners.

4.1.2 Staples: Recognition in this report limits the use of staples to non-engineered uses described in the referenced codes for staples having the same dimensions.

4.2 Installation:

Nail edge distances, end distances and spacings must be sufficient to prevent splitting of the wood as specified in Part 11.1.5.6 of the NDS. Placement of nails must also conform to Part 11.6 of the NDS. Nails and staples must be installed in accordance with Table 2304.9.1 of the IBC or Tables R602.3(1) and R602.3(2) of the IRC.

5.0 CONDITIONS OF USE

The Trim International, Inc., nails and staples 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** Use of the fasteners must be in accordance with this report and the applicable code.
- 5.2** The fasteners must conform to the sizes and dimensions specified in this report.
- 5.3** Recognition in this report of fasteners required to be corrosion-resistant or installed in preservative-treated or fire-retardant-treated wood is limited to smooth shank stainless steel nails.
- 5.4** When required by the code official, calculations demonstrating that the applied loads are less than the design values in this report must be submitted for approval. Calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with the ICC-ES Acceptance Criteria for Nails and Spikes (AC116), dated October 2006.
- 6.2** Data in accordance with the ICC-ES Acceptance Criteria for Staples (AC201), dated July 2005.

7.0 IDENTIFICATION

- 7.1** Individual package and shipping containers for nails have labels bearing the report holder's name (Trim International, Inc.); part-identifying number and type; the nail size (length and diameter); the production date; the quantity or net weight; and the evaluation report number (ESR-1309).
- 7.2** Individual package and shipping containers for staples have labels bearing the report holder's name (Trim International, Inc.); part-identifying number and type; staple dimensions; production date; the quantity or net weight; and the evaluation report number (ESR-1309).

TABLE 1—FULL-ROUND HEAD NAILS

DIMENSIONS ¹ (in.)			DESCRIPTION
Shank Diameter	Head Diameter	Length	
0.099	0.229	1.496	Smooth shank stainless steel nails
0.099	0.229	1.732	Smooth shank stainless steel nails
0.099	0.229	1.969	Smooth shank stainless steel nails
0.099	0.229	2.244	Smooth shank stainless steel nails
0.099	0.229	2.323	Smooth shank stainless steel nails
0.099	0.229	2.480	Smooth shank stainless steel nails
0.099	0.229	2.598	Smooth shank stainless steel nails
0.099	0.229	2.756	Smooth shank stainless steel nails
0.099	0.229	2.874	Smooth shank stainless steel nails
0.099	0.229	2.953	Smooth shank stainless steel nails
0.099	0.229	3.110	Smooth shank stainless steel nails
0.099	0.229	3.228	Smooth shank stainless steel nails
0.099	0.229	3.465	Smooth shank stainless steel nails
0.099	0.256	1.496	Deformed shank, hardened nails
0.099	0.256	1.732	Deformed shank, hardened nails
0.099	0.256	1.969	Deformed shank, hardened nails
0.099	0.256	2.244	Deformed shank, hardened nails
0.099	0.256	2.488	Deformed shank, hardened nails
0.099	0.256	2.756	Deformed shank, hardened nails
0.099	0.256	2.953	Deformed shank, hardened nails
0.113	0.280	1.496	Smooth shank stainless steel nails
0.113	0.280	1.732	Smooth shank stainless steel nails
0.113	0.280	1.969	Smooth shank stainless steel nails
0.113	0.280	2.244	Smooth shank stainless steel nails
0.113	0.280	2.323	Smooth shank stainless steel nails
0.113	0.280	2.480	Smooth shank stainless steel nails
0.113	0.280	2.598	Smooth shank stainless steel nails
0.113	0.280	2.756	Smooth shank stainless steel nails
0.113	0.280	2.874	Smooth shank stainless steel nails
0.113	0.280	2.953	Smooth shank stainless steel nails
0.113	0.280	3.110	Smooth shank stainless steel nails
0.113	0.280	3.228	Smooth shank stainless steel nails
0.113	0.280	3.465	Smooth shank stainless steel nails
0.113	0.280	1.496	Smooth shank, yellow chromate galvanized nails
0.113	0.280	1.732	Smooth shank, yellow chromate galvanized nails
0.113	0.280	1.969	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.244	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.323	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.480	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.598	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.756	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.874	Smooth shank, yellow chromate galvanized nails
0.113	0.280	2.953	Smooth shank, yellow chromate galvanized nails
0.113	0.280	3.110	Smooth shank, yellow chromate galvanized nails
0.113	0.280	3.228	Smooth shank, yellow chromate galvanized nails
0.113	0.280	3.465	Smooth shank, yellow chromate galvanized nails
0.113	0.277	1.496	Ring shank nails
0.113	0.277	1.732	Ring shank nails
0.113	0.277	1.969	Ring shank nails
0.113	0.277	2.244	Ring shank nails
0.113	0.277	2.323	Ring shank nails
0.113	0.277	2.480	Ring shank nails
0.113	0.277	2.598	Ring shank nails
0.113	0.277	2.756	Ring shank nails

(Continued)

TABLE 1—FULL-ROUND HEAD NAILS (Continued)

DIMENSIONS ¹ (in.)			DESCRIPTION
Shank Diameter	Head Diameter	Length	
0.113	0.277	2.874	Ring shank nails
0.113	0.277	2.953	Ring shank nails
0.113	0.277	3.110	Ring shank nails
0.113	0.277	3.228	Ring shank nails
0.113	0.277	3.465	Ring shank nails
0.113	0.278	1.496	Smooth shank, hardened nails
0.113	0.278	1.732	Smooth shank, hardened nails
0.113	0.278	1.969	Smooth shank, hardened nails
0.113	0.278	2.244	Smooth shank, hardened nails
0.113	0.278	2.323	Smooth shank, hardened nails
0.113	0.278	2.480	Smooth shank, hardened nails
0.113	0.278	2.598	Smooth shank, hardened nails
0.113	0.278	2.756	Smooth shank, hardened nails
0.113	0.278	2.874	Smooth shank, hardened nails
0.113	0.278	2.953	Smooth shank, hardened nails
0.113	0.278	3.110	Smooth shank, hardened nails
0.113	0.278	3.228	Smooth shank, hardened nails
0.113	0.278	3.465	Smooth shank, hardened nails
0.113	0.280	1.496	Smooth shank nails
0.113	0.280	1.732	Smooth shank nails
0.113	0.280	1.969	Smooth shank nails
0.113	0.280	2.244	Smooth shank nails
0.113	0.280	2.323	Smooth shank nails
0.113	0.280	2.480	Smooth shank nails
0.113	0.280	2.598	Smooth shank nails
0.113	0.280	2.756	Smooth shank nails
0.113	0.280	2.874	Smooth shank nails
0.113	0.280	2.953	Smooth shank nails
0.113	0.280	3.110	Smooth shank nails
0.113	0.280	3.228	Smooth shank nails
0.113	0.280	3.465	Smooth shank nails
0.120	0.276	1.496	Smooth shank nails
0.120	0.276	1.732	Smooth shank nails
0.120	0.276	1.969	Smooth shank nails
0.120	0.276	2.244	Smooth shank nails
0.120	0.276	2.323	Smooth shank nails
0.120	0.276	2.480	Smooth shank nails
0.120	0.276	2.598	Smooth shank nails
0.120	0.276	2.756	Smooth shank nails
0.120	0.276	2.874	Smooth shank nails
0.120	0.276	2.953	Smooth shank nails
0.120	0.276	3.110	Smooth shank nails
0.120	0.276	3.228	Smooth shank nails
0.120	0.276	3.465	Smooth shank nails
0.120	0.276	1.496	Ring shank nails
0.120	0.276	1.732	Ring shank nails
0.120	0.276	1.969	Ring shank nails
0.120	0.276	2.244	Ring shank nails
0.120	0.276	2.323	Ring shank nails
0.120	0.276	2.480	Ring shank nails
0.120	0.276	2.598	Ring shank nails
0.120	0.276	2.756	Ring shank nails
0.120	0.276	2.874	Ring shank nails
0.120	0.276	2.953	Ring shank nails

(Continued)

TABLE 1—FULL-ROUND HEAD NAILS (Continued)

DIMENSIONS ¹ (in.)			DESCRIPTION
Shank Diameter	Head Diameter	Length	
0.120	0.276	3.110	Ring shank nails
0.120	0.276	3.228	Ring shank nails
0.120	0.276	3.465	Ring shank nails
0.128	0.282	1.496	Smooth shank nails
0.128	0.282	1.732	Smooth shank nails
0.128	0.282	1.969	Smooth shank nails
0.128	0.282	2.244	Smooth shank nails
0.128	0.282	2.323	Smooth shank nails
0.128	0.282	2.480	Smooth shank nails
0.128	0.282	2.598	Smooth shank nails
0.128	0.282	2.756	Smooth shank nails
0.128	0.282	2.874	Smooth shank nails
0.128	0.282	2.953	Smooth shank nails
0.128	0.282	3.110	Smooth shank nails
0.128	0.282	3.228	Smooth shank nails
0.128	0.282	3.465	Smooth shank nails
0.128	0.282	1.496	Ring shank nails
0.128	0.282	1.732	Ring shank nails
0.128	0.282	1.969	Ring shank nails
0.128	0.282	2.244	Ring shank nails
0.128	0.282	2.323	Ring shank nails
0.128	0.282	2.480	Ring shank nails
0.128	0.282	2.598	Ring shank nails
0.128	0.282	2.756	Ring shank nails
0.128	0.282	2.874	Ring shank nails
0.128	0.282	2.953	Ring shank nails
0.128	0.282	3.110	Ring shank nails
0.128	0.282	3.228	Ring shank nails
0.128	0.282	3.465	Ring shank nails
0.131	0.279	1.496	Smooth shank, stainless steel nails
0.131	0.279	1.732	Smooth shank, stainless steel nails
0.131	0.279	1.969	Smooth shank, stainless steel nails
0.131	0.279	2.244	Smooth shank, stainless steel nails
0.131	0.279	2.323	Smooth shank, stainless steel nails
0.131	0.279	2.480	Smooth shank, stainless steel nails
0.131	0.279	2.598	Smooth shank, stainless steel nails
0.131	0.279	2.756	Smooth shank, stainless steel nails
0.131	0.279	2.874	Smooth shank, stainless steel nails
0.131	0.279	2.953	Smooth shank, stainless steel nails
0.131	0.279	3.110	Smooth shank, stainless steel nails
0.131	0.279	3.228	Smooth shank, stainless steel nails
0.131	0.279	3.465	Smooth shank, stainless steel nails
0.148	0.291	1.496	Deformed shank, hardened nails
0.148	0.291	1.732	Deformed shank, hardened nails
0.148	0.291	1.969	Deformed shank, hardened nails
0.148	0.291	2.244	Deformed shank, hardened nails
0.148	0.291	2.488	Deformed shank, hardened nails
0.148	0.291	2.756	Deformed shank, hardened nails
0.148	0.291	2.953	Deformed shank, hardened nails
0.148	0.297	1.496	Smooth shank nails
0.148	0.297	1.732	Smooth shank nails
0.148	0.297	1.969	Smooth shank nails
0.148	0.297	2.244	Smooth shank nails
0.148	0.297	2.323	Smooth shank nails

(Continued)

TABLE 1—FULL-ROUND HEAD NAILS (Continued)

DIMENSIONS ¹ (in.)			DESCRIPTION
Shank Diameter	Head Diameter	Length	
0.148	0.297	2.480	Smooth shank nails
0.148	0.297	2.598	Smooth shank nails
0.148	0.297	2.756	Smooth shank nails
0.148	0.297	2.874	Smooth shank nails
0.148	0.297	2.953	Smooth shank nails
0.148	0.297	3.110	Smooth shank nails
0.148	0.297	3.228	Smooth shank nails
0.148	0.297	3.465	Smooth shank nails
0.162	0.334	1.496	Smooth shank nails
0.162	0.334	1.732	Smooth shank nails
0.162	0.334	1.969	Smooth shank nails
0.162	0.334	2.244	Smooth shank nails
0.162	0.334	2.323	Smooth shank nails
0.162	0.334	2.480	Smooth shank nails
0.162	0.334	2.598	Smooth shank nails
0.162	0.334	2.756	Smooth shank nails
0.162	0.334	2.874	Smooth shank nails
0.162	0.334	2.953	Smooth shank nails
0.162	0.334	3.110	Smooth shank nails
0.162	0.334	3.228	Smooth shank nails
0.162	0.334	3.465	Smooth shank nails

For SI: 1 inch = 25.4 mm.

¹All dimensions nominal.

TABLE 2—MODIFIED ROUND HEAD NAILS

DIMENSIONS ¹ (in.)		HEAD STYLE DESCRIPTION ²
Shank Diameter	Length	
0.113	1.496	Style 1
0.113	1.496	Style 2
0.113	2.323	Style 1
0.113	2.323	Style 2
0.113	2.48	Style 1
0.113	2.48	Style 2
0.113	2.756	Style 1
0.113	2.756	Style 2
0.113	2.953	Style 1
0.113	2.953	Style 2
0.113	3.228	Style 1
0.113	3.228	Style 2
0.113	3.465	Style 1
0.113	3.465	Style 2
0.120	1.496	Style 1
0.120	1.496	Style 2
0.120	2.323	Style 1
0.120	2.323	Style 2
0.120	2.48	Style 1
0.120	2.48	Style 2
0.120	2.756	Style 1
0.120	2.756	Style 2
0.120	2.953	Style 1
0.120	2.953	Style 2
0.120	3.228	Style 1
0.120	3.228	Style 2
0.120	3.465	Style 1
0.120	3.465	Style 2
0.131	1.496	Style 1
0.131	1.496	Style 2
0.131	2.323	Style 1
0.131	2.323	Style 2
0.131	2.48	Style 1
0.131	2.48	Style 2
0.131	2.756	Style 1
0.131	2.756	Style 2
0.131	2.953	Style 1
0.131	2.953	Style 2
0.131	3.228	Style 1
0.131	3.228	Style 2
0.131	3.465	Style 1
0.131	3.465	Style 2

For **SI**: 1 inch = 25.4 mm.

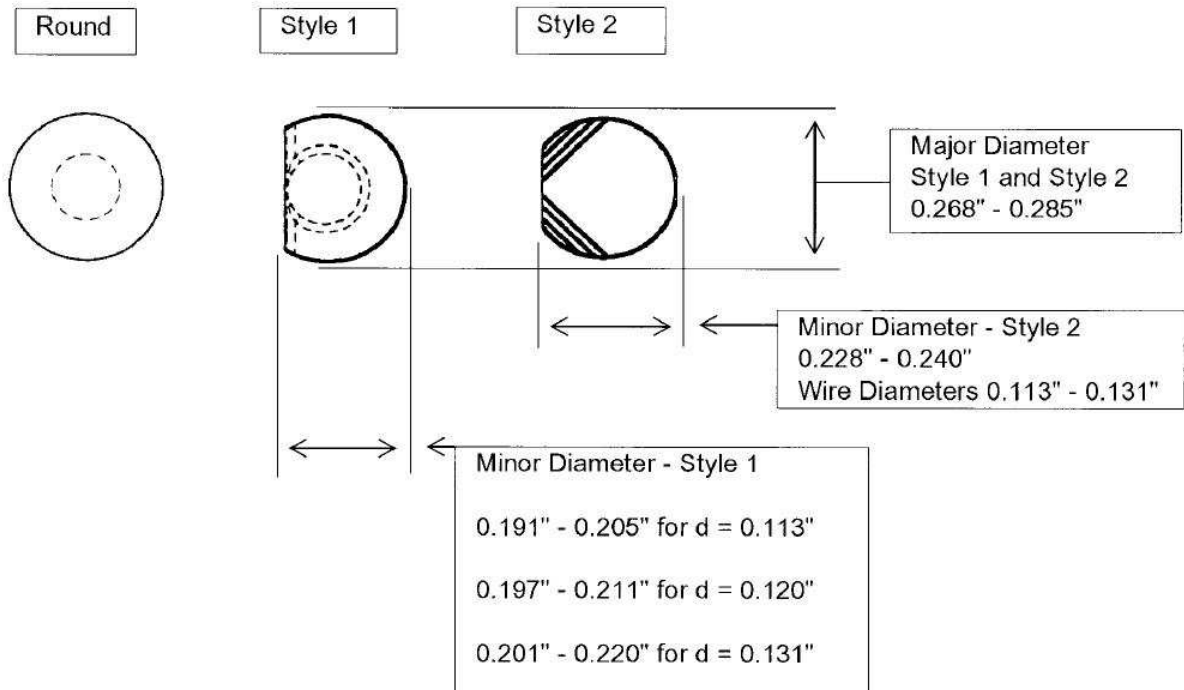
¹All dimensions nominal.

²Refer to Figure 1 for definitions of head styles.

TABLE 3—STAPLES

STAPLE GAGE	DIMENSIONS ¹ (in.)		
	Length	Crown Width	Leg Thickness and Width
15	³ / ₄	⁷ / ₁₆	0.068 × 0.074
15	1	⁷ / ₁₆	0.068 × 0.074
15	1 ¹ / ₂	⁷ / ₁₆	0.068 × 0.074
15	1 ³ / ₄	⁷ / ₁₆	0.068 × 0.074
15	2	⁷ / ₁₆	0.068 × 0.074
15	2 ¹ / ₂	⁷ / ₁₆	0.068 × 0.074
16	³ / ₄	⁷ / ₁₆	0.055 × 0.062
16	1	⁷ / ₁₆	0.055 × 0.062
16	1 ¹ / ₄	⁷ / ₁₆	0.055 × 0.061
16	1 ¹ / ₂	⁷ / ₁₆	0.055 × 0.062
16	1 ³ / ₄	⁷ / ₁₆	0.055 × 0.062
16	2	⁷ / ₁₆	0.055 × 0.062
16	2 ¹ / ₂	⁷ / ₁₆	0.055 × 0.062
16	³ / ₄	¹ / ₂	0.055 × 0.062
16	1	¹ / ₂	0.055 × 0.062
16	1 ¹ / ₄	¹ / ₂	0.055 × 0.062
16	1 ¹ / ₂	¹ / ₂	0.055 × 0.062
16	1 ³ / ₄	¹ / ₂	0.055 × 0.062
16	2	¹ / ₂	0.055 × 0.062
16	³ / ₄	¹⁵ / ₁₆	0.055 × 0.062
16	1	¹⁵ / ₁₆	0.055 × 0.062
16	1 ¹ / ₄	¹⁵ / ₁₆	0.055 × 0.062
16	1 ¹ / ₂	¹⁵ / ₁₆	0.055 × 0.062
16	³ / ₄	1	0.055 × 0.062
16	1	1	0.055 × 0.062
16	1 ¹ / ₄	1	0.055 × 0.062
16	1 ¹ / ₂	1	0.055 × 0.062

For SI: 1 inch = 25.4 mm.



For SI: 1 inch = 25.4 mm.

FIGURE 1—NAIL HEAD STYLES