DrJ™ CERTIFICATION

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

Approved. Sealed. Code Compliant.

Technical Evaluation Report

TER 2102-02

CAMO® 5/16" Structural Screw for Use in Deck Ledger Board Applications

National Nail Corporation DBA CAMO®

Products:

5/16" Structural Series Screws

Issue Date:

July 27, 2022

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July 27, 2022

Subject to Renewal:

October 1, 2023

COMPANY INFORMATION:

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 05 23 - Wood, Plastic, and Composite Fastenings

SECTION: 06 11 00 - Wood Framing

SECTION: 06 15 00 - Wood Decking

1 PRODUCT EVALUATED[1]

1.1 5/16" Structural Series Screws

2 APPLICABLE CODES AND STANDARDS[2,3]

2.1 *Codes*

2.1.1 *IBC—15, 18, 21: International Building Code®*

2.1.2 *IRC—15, 18, 21: International Residential Code®*

2.1.3 *FBC-B—17, 20: Florida Building Code – Building*[4]

2.1.4 *FBC-R—17, 20: Florida Building Code – Residential*[4]

2.1.5 *LABC—17, 20: Los Angeles Building Code*[5]

2.1.6 *LARC—17, 20: Los Angeles Residential Code*[5]

2.2 *Standards and Referenced Documents*

2.2.1 *AISI S904: Standard Test Methods for Determining the Tensile and Shear of Screws*

2.2.2 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

2.2.3 *ASTM A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*

2.2.4 *ASTM A510: Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel*

2.2.5 *ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus*

[1] For more information, visit drjcertification.org or call us at 608-310-6748.

[2] Unless otherwise noted, all references in this TER are from the 2021 version of the codes and the standards referenced therein. This material, design, or method of construction also complies with the 2000-2018 versions of the referenced codes and the standards referenced therein.

[3] All terms defined in the applicable building codes are italicized.

[4] All references to the *FBC-B* and *FBC-R* are the same as the 2018 *IBC* and 2018 *IRC*, respectively, unless otherwise noted in the supplement at the end of this TER.

[5] All references to the *LABC* and *LARC* are the same as the 2018 *IBC* and 2018 *IRC*, respectively, unless otherwise noted in the supplement at the end of this TER.

2.2.6 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood*

2.2.7 *ASTM F1575: Standard Test Method for Determining Bending Yield Moment of Nails*

2.2.8 *ASTM G85: Standard Practice for Modified Salt Spray (Fog) Testing*

2.2.9 *ASTM G198: Standard Test Method for Determining the Relative Corrosion Performance of Driven Fasteners in Contact with Treated Wood*

3 Performance Evaluation

3.1 CAMO® 5/16" Structural Series Screws were evaluated to determine:

3.1.1 Use for attachment of deck ledgers to the building structure. This application includes attachments to Spruce-Pine-Fir (SPF) band joists[6] and oriented strand board (OSB) band joists.

3.1.2 Lateral strength of ledger connections to wood-framed walls. This application includes zero, one, or two layers of ⅝″ gypsum wallboard (GWB) between the ledger and the wall studs.

3.2 For conventionally framed buildings, the deck ledger is required to be attached to the band joist in accordance with *IBC* Section 1604.8.3 or *IRC* Section R507.9[7] as applicable.

3.2.1 Where a band joist is not used, as in some truss installations, an engineered design is required.

3.3 Corrosion resistance was evaluated in accordance with *ASTM B117*, *ASTM G85*, and *ASTM G198.*

3.4 Use of fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this TER.

3.5 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

3.6 Any engineering evaluation conducted for this TER was performed within DrJ's ANAB accredited ICS code scope and/or the defined professional engineering scope of work on the dates provided herein.

4 Product Description and Materials

4.1 CAMO® 5/16" Structural Series Screws are threaded fasteners manufactured using standard cold-forming processes and are subsequently heat-treated and coated.

4.2 CAMO® 5/16" Structural Series Screws are available with a proprietary coating system designated as PROTECH™ Ultra 4.

4.3 CAMO® 5/16" Structural Series Screws have a round flat head with a T40 star drive and are partially threaded. The CAMO® 5/16" Structural Series Screws evaluated in this TER are shown in Figure 1.

Figure 1. 5/16″ Flat Head Screw

4.4 *Fastener Material*

4.4.1 CAMO® 5/16" Structural Series Screws are made of hardened carbon steel grade 10B18, 1022, or 10B21 wire conforming to *ASTM A510* and/or Grade 17MnB3 or 19MnB4 wire conforming to DIN 1654.

4.4.2 The CAMO® 5/16" Structural Series Screws evaluated in this TER are set forth in Table 1.

[6] The term "band joist" is used throughout this report. Other regional terms synonymous with band joist include rim board, band board, header board, and header joist.

[7] 2015 *IRC* Section R507.2

TABLE 1. FASTENER SPECIFICATIONS[1] – PROTECH™ ULTRA 4 COATED

Fastener Designation	Head				Length (in)		Diameter (in)			Bending Yield Strength[4], f_{yb} (psi)	Allowable Steel Strength (lbs)	
	Style	Drive System	Diameter (in)	Height (in)	Fastener[2]	Thread[3]	Shank	Minor	Major		Tensile	Shear[5]
5/16" x 3½"	Flat Head	T40 Star Drive	0.738	0.079	3.500	2.000	0.220	0.197	0.307	175,000	1,580	1,150
5/16" x 4"					4.000	2.370						
5/16" x 5"					5.000	2.752						

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 psi = 0.00689 MPa

1. Tabulated fastener dimensions are measured on uncoated fasteners. Finished dimensions are different due to the proprietary coating added.
2. Fastener nominal length is measured from the underside of the head to the tip.
3. Thread length includes tapered tip.
4. Bending yield strength, F_{yb}, is determined in accordance with *ASTM F1575* using minor thread diameter when fastener is tested in threaded section.
5. Shear strength is determined in accordance with *AISI S904* using minor thread diameter when fastener is tested in threaded section.

4.5 *Corrosion Resistance*

4.5.1 CAMO® Structural Series wood screws may be used where screws are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or in chemically treated wood, which are subject to the limitations of this report, and are alternatives to hot-dipped galvanized screws with a coating weight in compliance with *ASTM A153*, Class D.

4.5.2 The CAMO® Structural Series wood screws having the proprietary PROTECH™ Ultra 4 coatings are equivalent to the protection provided by code-approved hot-dipped galvanized coatings meeting *ASTM A153*, Class D (*IBC* Section 2304.10.6 and *IRC* Section R317.3) when recognized for use by the American Wood Protection Association (AWPA) in untreated wood and Ground Contact – General Use pressure treated wood for exterior, freshwater, general construction applications (e.g., Ground Contact – General Use AWPA UC1-UC4A).

4.5.3 *Fire Retardant Treated (FRT) Wood Applications:*

4.5.3.1 CAMO® Structural Series wood screws having the proprietary PROTECH™ Ultra 4 coatings are recognized for use in FRT lumber, provided the conditions set forth by the FRT lumber manufacturer are met, including appropriate strength reductions.

4.6 *Wood Material*

4.6.1 Wood main and side members must be solid-sawn lumber or boards having an assigned specific gravity as given in the respective tables of this TER.

5 APPLICATIONS

5.1 CAMO® 5/16" Structural Series Screws are used for attaching the deck ledger to the band joist of a building in accordance with *IBC* Section 1604.8.3 and *IRC* Section R507.9[8]. See Section 6 for installation requirements.

5.2 CAMO® 5/16" Structural Series Screws can be used for attaching ledger boards to wall studs with zero, one, or two layers of gypsum wall board (GWB) between the ledger and the wall studs.

5.3 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

[8] 2015 *IRC* Section R507.2

5.4 *General*

5.4.1 CAMO® 5/16" Structural Series Screws are installed without lead holes, as prescribed in *NDS*.

5.4.2 CAMO® 5/16" Structural Series Screws are governed by the applicable code and the provisions for dowel-type fasteners in *NDS*.

5.4.3 CAMO® 5/16" Structural Series Screws may be used where screws are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or in chemically treated wood.

5.4.4 CAMO® 5/16" Structural Series Screws are subject to the limitations of this report and are approved as alternatives to hot-dipped galvanized screws with a coating weight in compliance with *ASTM A153*, Class D.

5.4.5 Screws with the proprietary coating, PROTECH™ Ultra 4 were evaluated for contact with wood chemically treated AWPA UC4 Ground Contact – General Use retention levels.

5.4.6 Unless otherwise noted, adjustment of the design stresses for duration of load shall be in accordance with the applicable code.

5.5 *Reference Design Values for Deck Ledger to Band Joist Attachment*

5.5.1 CAMO® 5/16" Structural Series Screws are designed for attaching the deck ledger to the band joist of a building in accordance with *IBC* Section 1604.8.3 and *IRC* Section R507.9[9]. This connection is shown in Figure 2.

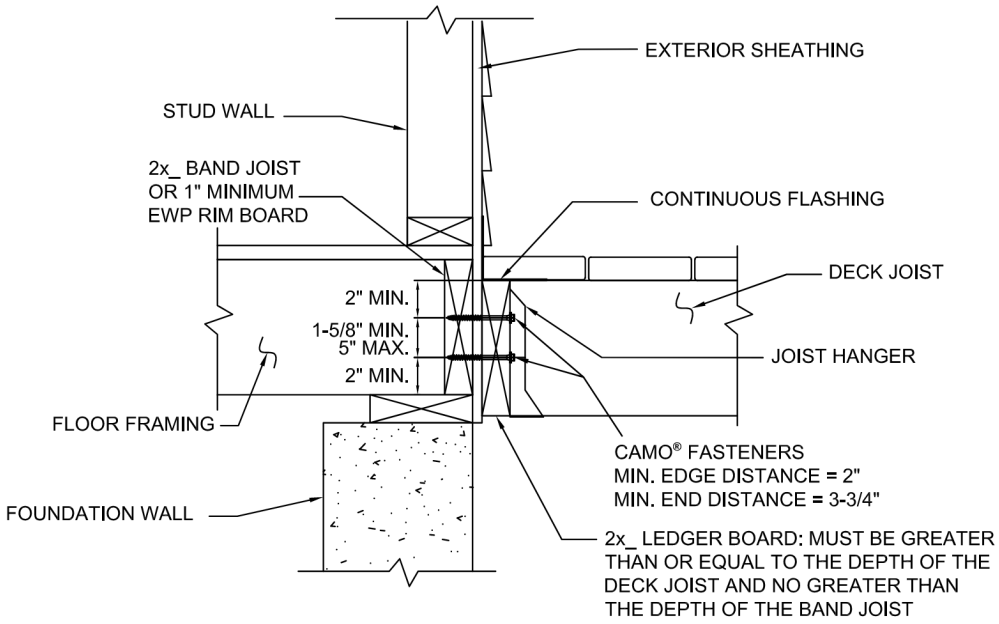

FIGURE 2. CAMO® DECK LEDGER CONNECTION TO BAND JOIST

5.5.2 The *IRC* provides prescriptive fastener spacing for the attachment of a deck ledger to a rim joist with ½″ diameter lag screws or through bolts as shown in *IRC* Table R507.9.1.3(1).[9]

5.5.2.1 Table 2 and Table 3 provide the CAMO® 5/16" Structural Series Screw spacing required to provide performance at least equivalent to the lag screws found in *IRC* Table R507.9.1.3(1)[9] in accordance with *IBC* Section 104.11 and Section 1604.8.3 and *IRC* Section R104.11 and Section R507.9[10] in accordance with generally accepted engineering practice.

[9] 2015 *IRC* Table R507.2

[10] 2015 *IRC* Section R507.2

5.5.2.1.1 Table 2 and Table 3 provide screw spacing for materials found in *IRC* Section R507.9[11], as well as a wider range of materials commonly used for rim joists. Screw spacing values are provided for four loading conditions.

5.5.2.2 When installed in accordance with the spacing requirements of Table 2 or Table 3, the listed CAMO® 5/16" Structural Series Screws provide equivalent performance to *IRC* Table R507.9.1.3(1).[9]

TABLE 2. CAMO® 5/16" X 3½" AND 5/16" X 4" STRUCTURAL SCREW SPACING FOR ITEMS IN *IRC* TABLE R507.9.1.3(1)[11] AND OTHER MATERIALS AND LOADING CONDITIONS[1]

Fastener Designation[2,3]	Load Case[9]	2x Nominal Ledger Species[4,5,6]	Band Joist Material[7,8]	Maximum On-center Spacing of Fasteners (in)						
				Maximum Deck Joist Spans (ft)						
				Up to 6'	Up to 8'	Up to 10'	Up to 12'	Up to 14'	Up to 16'	Up to 18'
5/16" x 3½" Structural and 5/16" x 4" Structural	LL + DL 40 + 10	HF	2x Sawn Lumber	29	21	17	10	8	7	6
			1 1/8" OSB	26	20	16	8	7	6	5
		SP	2x Sawn Lumber	27	20	16	13	11	9	8
			1 1/8" OSB	28	21	17	10	9	8	7
	SL + DL 50 + 10	HF	2x Sawn Lumber	24	18	10	8	7	6	5
			1 1/8" OSB	22	16	8	7	6	5	4
		SP	2x Sawn Lumber	23	17	13	10	9	8	7
			1 1/8" OSB	24	18	10	9	7	6	6
	SL + DL 60 + 10	HF	2x Sawn Lumber	20	11	8	7	6	5	4
			1 1/8" OSB	19	9	7	6	5	4	4
		SP	2x Sawn Lumber	19	14	11	9	8	7	6
			1 1/8" OSB	20	11	9	7	6	5	5
	SL + DL 70 + 10	HF	2x Sawn Lumber	18	9	7	6	5	4	4
			1 1/8" OSB	16	8	6	5	4	4	3
		SP	2x Sawn Lumber	17	12	9	8	7	6	5
			1 1/8" OSB	18	10	8	6	5	5	4

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

1. Based on load duration of 1.0. Spacing may be adjusted by the applicable load duration as specified in *NDS*.
2. Fasteners are required to have full thread penetration into the main member. Excess fastener length extending beyond the main member is not reflected in the table above.
3. Fasteners shall be installed per Section 6 of this TER.
4. Solid-sawn ledgers shall be HF or SP species (specific gravity of 0.43 and 0.55, respectively). Ledgers shall designed by others.
5. Minimum ledger board requirements: 1½" thickness and 7¼" depth.
6. Ledger materials tested in the wet service condition.
7. A maximum ½" structural sheathing may be installed between the ledger and band joist. Up to ½" thickness of stacked washers shall be permitted to substitute for up to ½" on allowable sheathing thickness where combined with wood structural panel or lumber sheathing.
8. Minimum band joist requirements: SPF (specific gravity of 0.42) solid-sawn lumber 1½" thick and 7¼" depth; OSB 1" thick and 7½" depth.
9. Snow load shall not be assumed to act concurrently with live load.

[11] 2015 *IRC* Table R507.2

TABLE 3. CAMO® 5/16" X 5" STRUCTURAL SCREW SPACING FOR ITEMS IN *IRC* TABLE R507.9.1.3(1)[12] AND OTHER MATERIALS AND LOADING CONDITIONS[1]

Fastener Designation[2,3]	Load Case[9]	2x Nominal Ledger Species[4,5,6]	Band Joist Material[7,8]	Maximum On-center Spacing of Fasteners (in)						
				Maximum Deck Joist Spans (ft)						
				Up to 6'	Up to 8'	Up to 10'	Up to 12'	Up to 14'	Up to 16'	Up to 18'
5/16" x 5" Structural	LL + DL 40 + 10	HF	2x Sawn Lumber	30	23	18	15	10	8	7
			1 1/8" OSB	29	22	17	9	8	7	6
		SP	2x Sawn Lumber	27	20	16	14	12	10	9
			1 1/8" OSB	28	21	17	13	11	10	9
	SL + DL 50 + 10	HF	2x Sawn Lumber	27	20	16	9	8	7	6
			1 1/8" OSB	24	18	9	8	7	6	5
		SP	2x Sawn Lumber	23	17	14	12	10	9	8
			1 1/8" OSB	24	18	13	11	9	8	7
	SL + DL 60 + 10	HF	2x Sawn Lumber	23	17	10	8	7	6	5
			1 1/8" OSB	21	16	8	7	6	5	4
		SP	2x Sawn Lumber	19	15	12	10	8	7	6
			1 1/8" OSB	20	14	11	9	8	7	6
	SL + DL 70 + 10	HF	2x Sawn Lumber	20	11	8	7	6	5	4
			1 1/8" OSB	18	9	7	6	5	4	4
		SP	2x Sawn Lumber	17	13	10	9	7	6	6
			1 1/8" OSB	18	13	10	8	7	6	5

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

1. Based on load duration of 1.0. Spacing may be adjusted by the applicable load duration as specified in *NDS*.
2. Fasteners are required to have full thread penetration into the main member. Excess fastener length extending beyond the main member is not reflected in the table above.
3. Fasteners shall be installed per Section 6 of this TER.
4. Solid-sawn ledgers shall be HF or SP species (specific gravity of 0.43 and 0.55, respectively). Ledgers shall designed by others.
5. Minimum ledger board requirements: 1½" thickness and 7¼" depth.
6. Ledger materials tested in the wet service condition.
7. A maximum ½" structural sheathing may be installed between the ledger and band joist. Up to ½" thickness of stacked washers shall be permitted to substitute for up to ½" on allowable sheathing thickness where combined with wood structural panel or lumber sheathing.
8. Minimum band joist requirements: SPF (specific gravity of 0.42) solid-sawn lumber 1½" thick and 7¼" depth; OSB 1" thick and 7½" depth.
9. Snow load shall not be assumed to act concurrently with live load.

[12] 2015 *IRC* Table R507.2

5.6 *Reference Lateral Design Values for Deck Ledger to Stud Attachment*

5.6.1 *Without GWB Interlayer:*

5.6.1.1 Installation details for ledger to stud connections without GWB for 2″x6″, 2″x8″, and 2″x10″ ledgers are shown in Figure 3, Figure 4, and Figure 5, respectively.

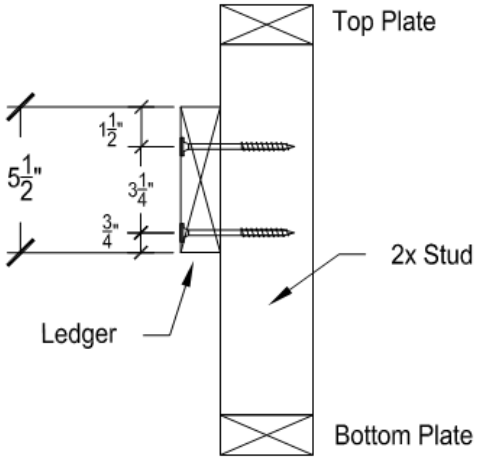

FIGURE 3. 2″X6″ LEDGER DIRECTLY ATTACHED TO STUD

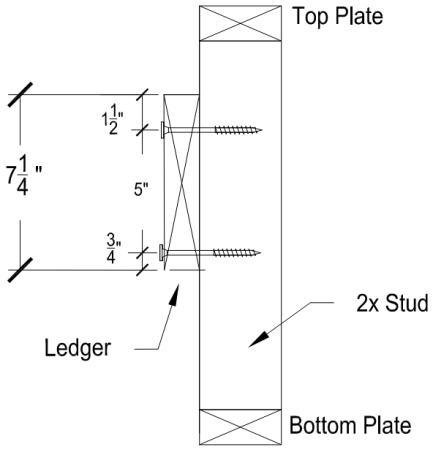

FIGURE 4. 2″X8″ LEDGER DIRECTLY ATTACHED TO STUD

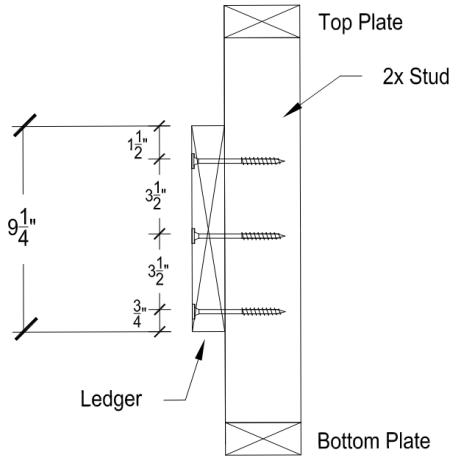

FIGURE 5. 2″X10″ LEDGER DIRECTLY ATTACHED TO STUD

5.6.2 *With One Layer GWB Interlayer:*

5.6.2.1 Installation details for ledger to stud connections with a single layer of GWB for 2″x6″, 2″x8″, and 2″x10″ ledgers are shown in Figure 6, Figure 7, and Figure 8, respectively.

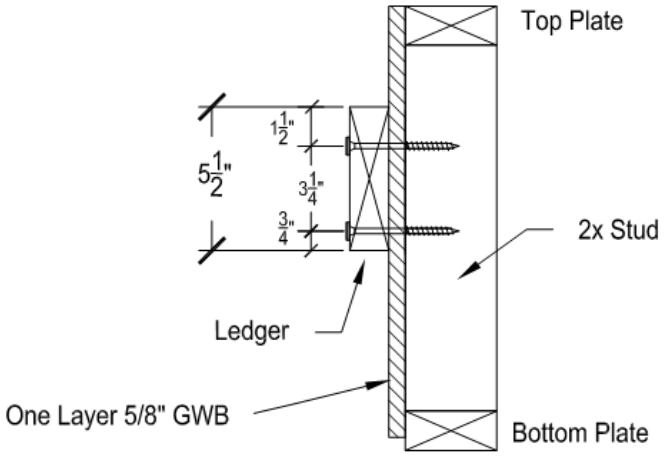

FIGURE 6. 2″X6″ LEDGER ATTACHED TO STUD THROUGH ONE LAYER OF GWB

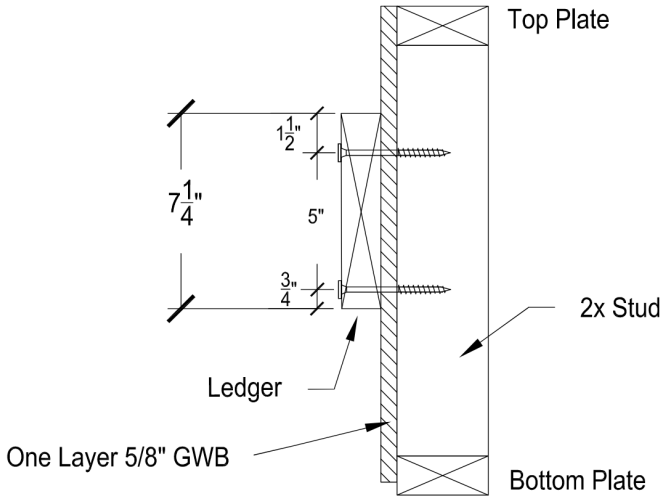

FIGURE 7. 2″X8″ LEDGER ATTACHED TO STUD THROUGH ONE LAYER OF GWB

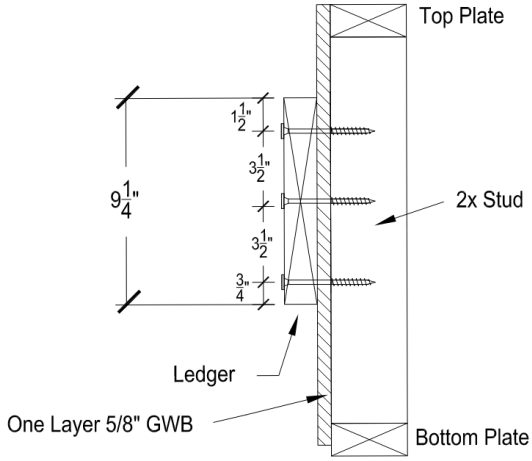

FIGURE 8. 2″X10″ LEDGER ATTACHED TO STUD THROUGH ONE LAYER OF GWB

5.6.3 *With Two Layers GWB Interlayer:*

5.6.3.1 Installation details for ledger to stud connections with a double layer of GWB for 2″x6″, 2″x8″, and 2″x10″ ledgers are shown in Figure 9, Figure 10, and Figure 11, respectively.

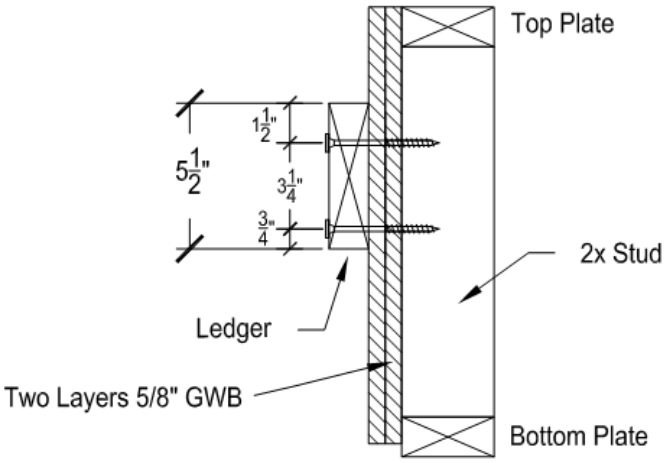

FIGURE 9. 2″X6″ LEDGER ATTACHED TO STUD THROUGH TWO LAYERS OF GWB

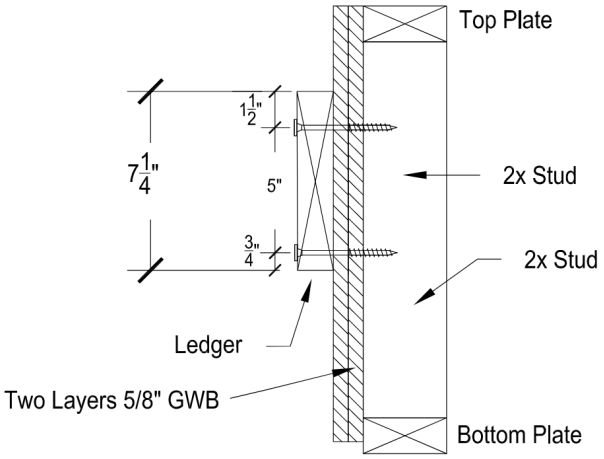

FIGURE 10. 2″X8″ LEDGER ATTACHED TO STUD THROUGH TWO LAYERS OF GWB

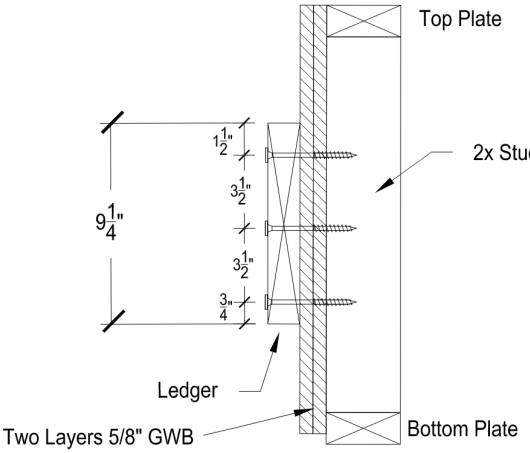

FIGURE 11. 2″X10″ LEDGER ATTACHED TO STUD THROUGH TWO LAYERS OF GWB

5.6.4 Reference lateral design values for the deck ledger to stud connections detailed in Figure 3 through Figure 11 are provided in Table 4. The values in Table 4 apply where the ledger is applied either directly over the studs or with up to two layers of 5/8" GWB between the ledger and studs.

TABLE 4. DESIGN VALUES FOR LEDGER TO STUD ATTACHMENT

Fastener Designation	Minimum Thread Penetration into Main Member (in)	Layers of GWB[8]	Allowable Load per Stud Connection[3,4,5,6,7] (lb)		
			Ledger Size[1,2]		
			2x6	2x8	2x10
5/16" x 3½" 5/16" x 4"	2	0	580	580	840
	1 3/8	1	600	600	890
5/16" x 5"	3½	0	1015	1015	1485
	2 7/8	1	895	895	1255
	2¼	2	750	750	1175

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Two fasteners are required for 2x6 and 2x8 ledger connections. Three fasteners are required for 2x10 ledger connections. Additional fasteners prohibited.
2. SPF ledger with minimum specific gravity of 0.42.
3. The tabulated values apply where the ledger is installed either directly over the studs or with up to two layers of 5/8" gypsum between the ledger and studs.
4. Allowable loads shall be limited to parallel-to-grain loaded solid sawn main members (minimum 2" nominal). Wood side members shall be loaded perpendicular to grain.
5. Allowable loads are shown at the wood load duration factor of C_D = 1.00. Loads may be increased for load duration as permitted by the building code up to a C_D = 1.60. All adjustment factors shall be applied per *NDS*. For in-service moisture content greater than 19%, use Wet Service Factor (C_M) = 0.70.
6. For LRFD values, the reference connection design values shall be adjusted in accordance with *NDS* Section 11.3.
7. Fasteners shall be centered in the stud and spaced as shown in Figure 3 through Figure 11. The stud minimum end distance is 6¾" when loaded toward the end and 4" when loaded away from the end. The ledger end distance is 6" for full values. For ledger end distances under 6", the reference connection design values shall be adjusted in accordance with *NDS* Section 12.5.
8. Gypsum wall board (GWB) must be attached as required per the building code.

6 INSTALLATION

6.1 Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.

6.2 Fasteners shall be installed with a ½" (12.7 mm), low rpm/high torque electric drill (450 rpm).

6.3 Fasteners shall be installed with manufacturer's supplied bits.

6.4 Fasteners shall not be struck with a hammer during installation.

6.5 Lead holes are not required but may be used where lumber is prone to splitting.

6.6 Installer shall use appropriate/required personal protection equipment during installation and must not place fastener in mouth.

6.7 Install CAMO® 5/16" Structural Series Screws such that the threads fully engage the band joist material and the fastener tip extends beyond the back face of the band joist material when fully seated against the installed ledger. Do not overdrive fasteners.

6.8 For deck ledger connections, stagger the CAMO® 5/16" Structural Series Screws from the top to the bottom of the ledger along its length while maintaining the required edge and end distances.

6.8.1 Figure 2 provides a deck ledger installation detail, including minimum required spacing, end, and edge distances.

6.9 For ledger to stud connections, fasteners shall be centered in the stud and spaced as shown in Figure 3 through Figure 11.

6.9.1 The stud minimum end distance is 6¾″ when loaded toward the end and 4″ when loaded away from the end.

6.9.2 The fasteners shall be installed with a minimum 6" end distance on the ledger.

7 SUBSTANTIATING DATA

7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

7.1.1 Ledger assembly testing in accordance with *ASTM D1761*

7.1.2 Corrosion resistance testing in accordance with *ASTM B117*, *ASTM G85*, and *ASTM G198*

7.2 Properties for CAMO® 5/16" Structural Series Screws from TER 2102-01.

7.3 Information contained herein is the result of testing and/or data analysis by sources which conform to *IBC* Section 1703 and/or professional engineering regulations. DrJ relies upon accurate data to perform its ISO/IEC 17065 evaluations.

7.4 Where appropriate, DrJ's analysis is based on provisions that have been codified into law through state or local adoption of codes and standards. The providers of the codes and standards are legally responsible for their content. DrJ analysis may use code-adopted provisions as a control sample. A control sample versus a test sample establishes a products as being equivalent to that prescribed in this code in quality, *strength*, effectiveness, *fire resistance*, durability, and safety. Where the accuracy of the provisions provided herein is reliant upon the published properties of materials, DrJ relies upon the grade mark, grade stamp, mill certificate, and/or test data provided by material suppliers to be minimum properties. DrJ analysis relies upon these properties to be accurate.

8 FINDINGS

8.1 When used and installed in accordance with this TER and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:

8.1.1 To provide a connection equivalent to the connection required by the *IBC* Section 1604.8.3 and *IRC* Section R507.9.[13]

8.1.2 To connect ledger boards to studs through zero, one, or two layers of gypsum.

8.2 Building codes require data from valid *research reports* be obtained from *approved sources* (i.e., licensed *registered design professionals* [RDPs]).

8.2.1 Building official approval of a licensed RDP is performed by verifying the RDP and/or their business entity is listed by the licensing board of the relevant *jurisdiction*.

8.3 Agencies who are accredited through ISO/IEC 17065 have met the code requirements for approval by the *building official*. DrJ is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131 and employs RDPs.

8.4 Through ANAB accreditation and the IAF MLA, DrJ certification can be used to obtain products approval in any *jurisdiction* or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – "certified once, accepted everywhere."

8.5 *IBC* Section 104.11 (*IRC* Section R104.11 and *IFC* Section 104.10[14] are similar) states:

> **104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code…Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.

[13] 2015 *IRC* Section R507.2

[14] 2018 *IFC* Section 104.9

9 Conditions of Use

9.1 CAMO® 5/16" Structural Series Screws covered by this TER shall be installed in accordance with this report and the manufacturer's installation instructions.

9.2 CAMO® 5/16" Structural Series Screw spacing in ledger to band joist applications shall not exceed those listed in Table 2 and Table 3.

9.3 CAMO® 5/16" Structural Series Screw loading in ledger to stud applications shall not exceed those listed in Table 4.

9.4 Use of fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this evaluation report.

9.5 Where required by the *building official*, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of *permit* application.

9.6 Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.

9.7 Design loads shall be determined in accordance with the building code adopted by the *jurisdiction* in which the project is to be constructed and/or by the building designer (e.g., *owner* or RDP).

9.8 At a minimum, this products shall be installed per Section 6 of this TER.

9.9 This products has an internal quality control program and a third-party quality assurance program in accordance with *IBC* Section 104.4 and Section 110.4 and *IRC* Section R104.4 and Section R109.2.

9.10 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the *owner* or the owner's authorized agent.

9.11 This TER shall be reviewed for code compliance by the AHJ in concert with *IBC* Section 104.

9.12 The implementation of this TER for this products is dependent on the design, quality control, third-party quality assurance, proper implementation of installation instructions, inspections required by *IBC* Section 110.3, and any other code or regulatory requirements that may apply.

10 Identification

10.1 The products listed in Section 1.1 are identified by a label on the board or packaging material bearing the manufacturer’s name, product name, TER number, and other information to confirm code compliance.

10.2 Additional technical information can be found at camofasteners.com and nationalnail.com.

11 Review Schedule

11.1 This TER is subject to periodic review and revision. For the most recent version, visit drjcertification.org.

11.2 For information on the current status of this TER, contact DrJ Certification.

Issue Date: July 27, 2022
Subject to Renewal: October 1, 2023

FBC Supplement to TER 2102-02

REPORT HOLDER: National Nail Corporation DBA CAMO®

1 Evaluation Subject

1.1 5/16" Structural Series Screws

2 Purpose and Scope

2.1 *Purpose*

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show 5/16" Structural Series Screws, recognized in TER 2102-02, has also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B—17, 20: Florida Building Code – Building*

2.2.2 *FBC-R—17, 20: Florida Building Code – Residential*

3 Conclusions

3.1 5/16" Structural Series Screws, described in TER 2102-02, complies with the *FBC-B* and *FBC-R* and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the *IBC* and *IRC* and the *FBC-B* and *FBC-R* applicable to this TER, they are listed here.

3.2.1 *FBC-B* Section 104.4 and Section 110.4 are reserved.

3.2.2 *FBC-R* Section R104 and Section R109 are reserved.

3.2.3 *FBC-R* Section R507.8 replaces *IRC* Section R507.9.

3.2.4 *FBC-R* Table R507.8.1.3(1) replaced *IRC* Table R507.9.1.3(1).

4 Conditions of Use

4.1 5/16" Structural Series Screws, described in TER 2102-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 2102-02.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of *FBC-B* Chapter 16 and Chapter 17, as applicable.

Issue Date: July 27, 2022
Subject to Renewal: October 1, 2023

LABC and LARC Supplement to TER 2102-02

REPORT HOLDER: National Nail Corporation DBA CAMO®

1 Evaluation Subject

1.1 5/16" Structural Series Screws

2 Purpose and Scope

2.1 *Purpose*

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show 5/16" Structural Series Screws, recognized in TER 2102-02, has also been evaluated for compliance with the codes listed below as adopted by the Los Angeles Department of Building and Safety (LADBS).

2.2 *Applicable Code Editions*

2.2.1 *LABC—17, 20: Los Angeles Building Code*

2.2.2 *LARC—17, 20: Los Angeles Residential Code*

3 Conclusions

3.1 5/16" Structural Series Screws, described in TER 2102-02, complies with the LA*BC* and *LARC* and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the *IBC* and *IRC* and the *LABC* and *LARC* are applicable to this TER, they are listed here.

3.2.1 *LABC* Section 91.104.2.6 and *LARC* Section 91.104.2.6 replace *IBC* Section 104.11 and *IRC* Section R104.11, respectively.

3.2.2 *LABC* Section 91.104.2.2 and *LARC* Section 91.104.2.2 replace *IBC* Section 104.4 and *IRC* Section R104.4, respectively.

3.2.3 *LABC* Section 91.108 and *LARC* Section 91.108 replace *IBC* Section 110.4 and *IRC* Section R109.2, respectively.

3.2.4 *LABC* Section 91.104 replaces *IBC* Section 104

3.2.5 *LABC* Section 91.108.5 replaces *IBC* Section 110.3.

4 Conditions of Use

4.1 5/16" Structural Series Screws, described in TER 2102-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 2102-02.

4.1.2 The design, installation, conditions of use, and identification of 5/16" Structural Series Screws are in accordance with the 2018 *International Building Code* (*IBC*) provisions noted in TER 2102-02.

4.1.3 The design, installation, and inspections are in accordance with additional requirements of *LABC* Chapter 16 and 17, as applicable.