ET&F FASTENING SYSTEMS, INC.
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ET&F PNEUMATICALLY DRIVEN PINS; AKN-100, AGS-100, and AKN-144 SERIES

CSI Sections:
05 05 23—Metal Fastenings
06 05 23—Wood, Plastic and Composite Fastenings

1.0 RECOGNITION

ET&F pneumatically driven pins recognized in this report have been evaluated for use as fasteners connecting wood structural panel sheathing to steel frame construction. The structural properties of the fasteners were evaluated for compliance with the following codes:

- 2024, 2021, and 2018 International Building Code® (IBC)
- 2024, 2021, and 2018 International Residential Code® (IRC)
- 2022 California Building Code® (CBC) – Supplement attached

2.0 LIMITATIONS

Use of the ET&F pneumatically driven pins described in this report is subject to the following limitations:

2.1 Fasteners shall be manufactured, installed, and identified in accordance with this report and the manufacturer's published installation guidelines. Where conflicts occur, the more restrictive shall prevail.

2.2 Plans and structural calculations shall be submitted to the building official demonstrating compliance with the provisions of this report and applicable code requirements. Construction documents shall be prepared by a registered design professional when required by the statutes of the jurisdiction where the project will be constructed**.**

2.3 The design wind and seismic loads to be resisted by the diaphragm assemblies described in this report shall not exceed the nominal shear values noted in this report in Tables 1, 2, 7, 8, and 9 of this report and reduced by applicable factors shown for allowable (ASD) (Ω) or strength (LFRD) (φ) design.

2.4 Limitations based on deflection of horizontal diaphragms shall be considered in design.

2.5 The design withdrawal and lateral load on individual fasteners used for fastening wood structural panels in general construction assemblies shall not exceed values noted in Tables 3 and 4, respectively, of this report.

2.6 The AKN-100, AGS-100, and AKN-144 series fasteners are manufactured under a quality control program with inspections by Benchmark Holdings LLC.

2.7 The AKN-100, AGS-100, and AKN-144 series fasteners are limited to installation in dry interior locations, which include roof deck with complying weather protection; and that use in exterior or damp environments is outside the scope of this report.

2.8 The use of AKN-100, AGS-100, and AKN-144 series fasteners in contact with preservative- or fire-retardant-treated wood is outside the scope of this report.

2.9 Use of fasteners in vertical shear walls is outside the scope of this report.

2.10 The ET&F pneumatically driven pins are manufactured in Solon, Ohio.

3.0 PRODUCT USE

3.1 ET&F pneumatically driven pins are high carbon, heat-treated, ballistic point knurled fasteners recognized for use in horizontal diaphragms constructed with steel framing and wood structural panels in accordance with Sections 2204, 2206, and 2302.1.5 of the 2024 IBC; and Sections 2210 and 2211 of the 2021 and 2018 IBC, as applicable.

3.2 ET&F pneumatically driven pins are also recognized for the attachment of wood structural panel sheathing to steel framing members in accordance with Sections 2204, 2206, and 2303.1.5 of the 2024 IBC; and Sections 2210 and 2211 of the 2021 and 2018 IBC, as applicable.

3.3 Use under the IRC as an alternative to IRC Sections R505 and R804 is permitted where an engineering design is submitted in accordance with IRC Section R301.1.3.

4.0 PRODUCT DESCRIPTION

4.1 Fasteners: ET&F pneumatically driven pins are manufactured using a standard cold-forming process from steel wire with carbon content ranging from 0.39 percent to 0.66 percent in compliance with the chemistry requirements

in the manufacturer's quality control documentation. The fasteners are heat-treated to a through hardness of RC 52 to 54, as determined in accordance with ASTM E140 and ASTM E384. The fasteners have a ballistic point, knurled shank and are either zinc-plated or coated with a proprietary Aericote® 1000 coating. Types evaluated in this report are the AGS-100, AKN-100, and AKN-144 series pins. AGS-100 series pins have a basic shank diameter of 0.100 inch and a nominal head diameter of $^5/_{16}$ inch.

The AKN-100 series pins have a basic shank diameter of 0.100 inch and nominal head diameter of ¼ inch. The AKN-144 series pins have a basic shank diameter of 0.140 inch and nominal head diameter of $^5/_{16}$ inch.

4.2 Framing: Steel framing members shall have the following uncoated minimum base-metal thicknesses:

No. 118 mil (No. 10 gage): 0.1180 inch
No. 97 mil (No. 12 gage): 0.0966 inch
No. 68 mil (No. 14 gage): 0.0677 inch
No. 54 mil (No. 16 gage): 0.0538 inch
No. 43 mil (No. 18 gage): 0.0428 inch
No. 33 mil (No. 20 gage): 0.0329 inch

Minimum flange width for all framing members shall be 1⅝ inches. Steel framing members shall comply with Section 2206.1 of the 2024 IBC and Section 2211.1 of the 2021 and 2018 IBC, as applicable, and are manufactured from steel complying with ASTM A653/A653M and ASTM A1003/A1003M, or an equivalent grade complying with the requirements of AISI S100 and having an elongation greater than or equal to 10 percent. Steel members of 33 mil and 43 mil thicknesses have a minimum yield strength of 33 ksi. Steel members of 54 mil thickness have a minimum yield strength of 50 ksi. Steel members of 68 mil thickness have a yield strength of 36, 40, or 45 ksi. Steel members of 97 mil and 118 mil thicknesses have a yield strength of 36, 40, 45, or 50 ksi. All steels shall have protective coatings complying with AISIS240.

4.3 Wood Structural Panel Sheathing

Wood Structural Panel sheathing shall comply with Section 2303.1.5 of the IBC and be oriented strand board (OSB) or plywood, Exposure 1, complying with U.S. Department of Commerce (DOC) Voluntary Product Standard PS2. Rated sheathing shall be minimum $^7/_{16}$-inch thickness. Structural 1 plywood shall be Exposure 1 and comply with U.S. DOC Voluntary Product Standard PS1. Structural 1 plywood shall be minimum $^{23}/_{32}$-inch thickness.

4.4 Documented Values

ET&F pneumatically driven pins fasten code-complying OSB and plywood wood structural panels (WSP) to steel framing members for horizontal diaphragm assemblies. Nominal shear values for WSP attached with either AKN-100 series or AGS-100 series pins (0.100-inch diameter) are shown in Table 1 of this report. Nominal shear values for WSP attached with AKN-144 series pins (0.144-inch diameter) are shown in Tables 2, 7, 8, and 9 of this report. For available ASD seismic strength, table values shall be divided by Ω = 2.5. For available ASD wind strength, table values shall be divided by Ω = 2.0. For available LRFD seismic strength, table values shall be multiplied by φ = 0.60. For available LRFD wind strength, table values shall be multiplied by φ = 0.65. Panels noted in Tables 1, 2, 7, 8, and 9 of this report shall be capable of supporting vertical loads based on the panel span ratings indicated. Steel framing shall be designed in accordance with the IBC or IRC for the required vertical loads. Where diaphragm blocking is required, it shall be provided in accordance with the applicable code as shown in Figure 1 of this report. The maximum blocked diaphragm span-to-width (aspect) ratio is 4:1.

The mid-span deflection of a simply supported, uniformly loaded, blocked diaphragm shall be computed using Equation 1:

$$\Delta_{mid} = \omega_1 \frac{5vL^3}{8(12)E_s A_c b} + \omega_1 \frac{vL}{12G_v t_v} + \sqrt[4]{\omega_2}\sqrt{\omega_3}\left(\frac{v}{\frac{\beta}{\beta_{f,p}}}\right)^{\alpha} + \frac{\sum_{i=1}^{n}(\Delta_{ci}X_i)}{2b}$$

Equation 1

Where:

A_c = gross cross-sectional area of chord, in^2
b = diaphragm depth parallel to loaded direction, in.
d_p = nominal pin diameter, in.
E_s = modulus of elasticity of chords = 29,500,000 psi
$G_v t_v$ = shear stiffness, lb/in. of panel depth
L = diaphragm length perpendicular to loaded direction, in.
n = number of chord splices
s = maximum fastener spacing at panel edges, in.
t_{joist} = design thickness of framing, in.
v = diaphragm unit shear, plf
X_i = distance between the "ith" chord splice and the nearest support (braced wall line), in.
α = inelastic connection deformation parameter (Table 6 of this report)
β = inelastic connection deformation parameter, plf/in(1/α) (Table 5 of this report)
$\beta_{f,p}$ = pin diameter factor = 0.100/dp

Δ_{ci} = deformation parameter associated with the "ith" chord splice, in.
ω_1 = $0.825(s/6)$
ω_2 = $(t_{joist}/0.0346)$
ω_3 = $(L/b)/2$

For unblocked diaphragms, the maximum diaphragm aspect ratio shall not exceed 3:1 and the mid-span deflection given in Equation 1 shall be multiplied by 2.5. In addition, the diaphragm length and width shall be limited by one of the following: engineering mechanics; applied loads; shear capacity of the diaphragm; diaphragm shear deflection limited by the requirements of ASCE 7 in Sections 12.8.6 entitled, "Story Drift Determination"; or Section 12.12 entitled, "Drift and Deformation". ET&F pneumatically driven pins are also permitted to be used to fasten wood-based structural panels for general purposes. Fastener information, attachment dimensions, required penetrations and nominal strengths are set forth in Tables 3 and 4 of this report for withdrawal and shear/lateral loads, respectively.

4.5 Installation

ET&F pneumatically driven pins shall be installed using the pneumatic tools recommended by ET&F. The fasteners shall pierce the wood structural panel being fastened and shall protrude through the steel framing member a minimum ¼ inch. The heads of the fasteners shall be flush with the wood panel without overdriving. The minimum distance of the fasteners from the edge of the wood panel is ⅜ inch. The minimum distance of the fasteners from the edge of the steel framing shall comply with AISI S100-16, AISI S100-16 (2020) w/S2-20, or AISI S100-16 (2020) w/S3-22, Chapter J, Section J4.2, as applicable. The maximum spacing of the pins used in horizontal diaphragms is as noted in Tables 1 through 8 of this report.

5.0 IDENTIFICATION

The pins are identified by printing or labels on their containers or cartons bearing the ET&F Fastening Systems, Inc. name, address and logo, fastener part number, size and description, quantity, manufacturing lot number, recommended ET&F pneumatic tool for installation, and the Evaluation Report number (ER-335). Each fastener head is stamped with the "E" head logo shown in Figure 2 of this report. Either IAPMO UES Mark of Conformity may also be used as shown below:

or

IAPMO UES ER -335

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the Evaluation Criteria for Composite Steel Sheet and Noncombustible Sheathing Panels (EC-012), Revised January 2025.

6.2 Data in accordance with the ICC-ES AC262, approved June 2016, editorially revised April 2024.

6.3 Comparative analysis white paper, reports of full-scale horizontal diaphragm tests and small-scale fastener tests, descriptive details, and structural calculations.

6.4 Quality control manual.

6.5 Test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on ET&F Fastening Systems, Inc. ET&F pneumatically driven pins to assess its conformance to the codes and standards shown in Section 1.0 of this report and documents the product's certification. The products are manufactured at the location noted in Section 2.10 of this report under a quality control program with periodic inspections under the supervision of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.100-INCH DIAMETER PIN FASTENERS

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **33 mil (20 ga.) framing** and ET&F 0.100-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.					
				6	4	2 1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	7/16	24/16	1.625	**286**	**429**	**687**	**859**	**286**	**215**
	15/32	32/16		**326**	**489**	**783**	**979**	**326**	**245**
	19/32	40/20		359	538	861	1077	359	269
	23/32	48/24		376	565	904	1129	376	282

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 33 ksi. Minimum tensile strength of steel framing = 45 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **43 mil (18 ga.) framing** and ET&F 0.100-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.					
				6	4	2 1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	7/16	24/16	1.625	**373**	**560**	**896**	**1119**	**373**	**280**
	15/32	32/16		**425**	**638**	**1021**	**1276**	**425**	**319**
	19/32	40/20		468	702	1123	1403	468	351
	23/32	48/24		491	736	1178	1472	491	368

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 33 ksi. Minimum tensile strength of steel framing = 45 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

TABLE 1 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING
0.100-INCH DIAMETER PIN FASTENERS

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **54 mil (16 ga.) framing** and ET&F 0.100-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Unblocked diaphragms [7]	
				6	4	2 1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	7/16	24/16	1.625	**602**	**903**	**1444**	**1806**	**602**	**451**
	15/32	32/16		**686**	**1029**	**1646**	**2058**	**686**	**515**
	19/32	40/20		740	1110	1777	2221	740	555
	23/32	48/24		901	1352	2163	2704	901	676

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 50 ksi. Minimum tensile strength of steel framing = 65 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **68 mil (14 ga.) framing** and ET&F 0.100-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Unblocked diaphragms [7]	
				6	4	2 1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	7/16	24/16	1.625	**619**	**928**	**1485**	**1856**	**619**	**464**
	15/32	32/16		**705**	**1058**	**1693**	**2116**	**705**	**529**
	19/32	40/20		826	1239	1982	2478	826	619
	23/32	48/24		990	1484	2375	2969	990	742

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 50 ksi. Minimum tensile strength of steel framing = 65 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

TABLE 1 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING
0.100-INCH DIAMETER PIN FASTENERS

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **97 mil (12 ga.) framing** and ET&F 0.100-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in. 6	4	2 1/2	2	Unblocked diaphragms [7]	
				Pin spacing at all other panel edges: 6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated	7/16	24/16	1.625	672	1007	1612	2015	672	504
	15/32	32/16		765	1148	1837	2296	765	574
sheathing or	19/32	40/20		885	1328	2125	2656	885	664
Structural I OSB	23/32	48/24		1048	1572	2515	3144	1048	786

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 40 ksi. Minimum tensile strength of steel framing = 50 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

TABLE 2
HORIZONTAL DIAPHRAGM CONSTRUCTION USING
0.1440-INCH DIAMETER PIN FASTENERS

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **68 mil (14 ga.) framing** and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in. 6	4	2 1/2	2	Unblocked diaphragms [7]	
				Pin spacing at all other panel edges: 6	6	4	3	Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	19/32	40/20	1.625	1086	1629	2606	3258	1086	814
	23/32	48/24		1243	1865	2984	3730	1243	932
	1 1/8	48 oc		1507	2261	3617	4521	1507	1130
Structural I Plywood	23/32	24 oc		1430	2145	3431	4289	1430	1072
	1 1/8	48 oc		1733	2600	4159	5199	1733	1300

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 50 ksi. Minimum tensile strength of steel framing = 65 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

TABLE 2 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.1440-INCH DIAMETER PIN FASTENERS

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **97 mil (12 ga.) framing** and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in. 6	4	2 1/2	2	Blocked diaphragms: Pin spacing at all other panel edges 6	6	4	3	Unblocked diaphragms [7] Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	19/32	40/20	1.625		1193	1789	2863	3579				1193	895
	23/32	48/24			1475	2212	3540	4425				1475	1106
	1 1/8	48 oc			1773	2659	4255	5319				1773	1330
Structural I Plywood	23/32	24 oc			1630	2445	3912	4891				1630	1223
	1 1/8	48 oc			2025	3038	4861	6076				2025	1519

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 40 ksi. Minimum tensile strength of steel framing = 50 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with **118 mil (10 ga.) framing** and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms: Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in. 6	4	2 1/2	2	Blocked diaphragms: Pin spacing at all other panel edges 6	6	4	3	Unblocked diaphragms [7] Case 1	Cases 2 - 6
OSB/Plywood rated sheathing or Structural I OSB	19/32	40/20	1.625		1247	1871	2993	3741				1247	935
	23/32	48/24			1418	2126	3402	4253				1418	1063
	1 1/8	48 oc			1761	2642	4227	5283				1761	1321
Structural I Plywood	23/32	24 oc			1630	2445	3912	4891				1630	1223
	1 1/8	48 oc			2025	3038	4861	6076				2025	1519

[1] Maximum fastener spacing at panel interiors shall be 6 in. for support framing at 48 in. on center and 12 in. for closer support framing.

[2] Minimum fastener edge distance = 3/8 in.

[3] Minimum yield strength of steel framing = 40 ksi. Minimum tensile strength of steel framing = 50 ksi.

[4] Values are for loads imposed by wind or earthquake and must be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 in.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.

For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 in. fastener spacing at diaphragm boundaries and supporting members.

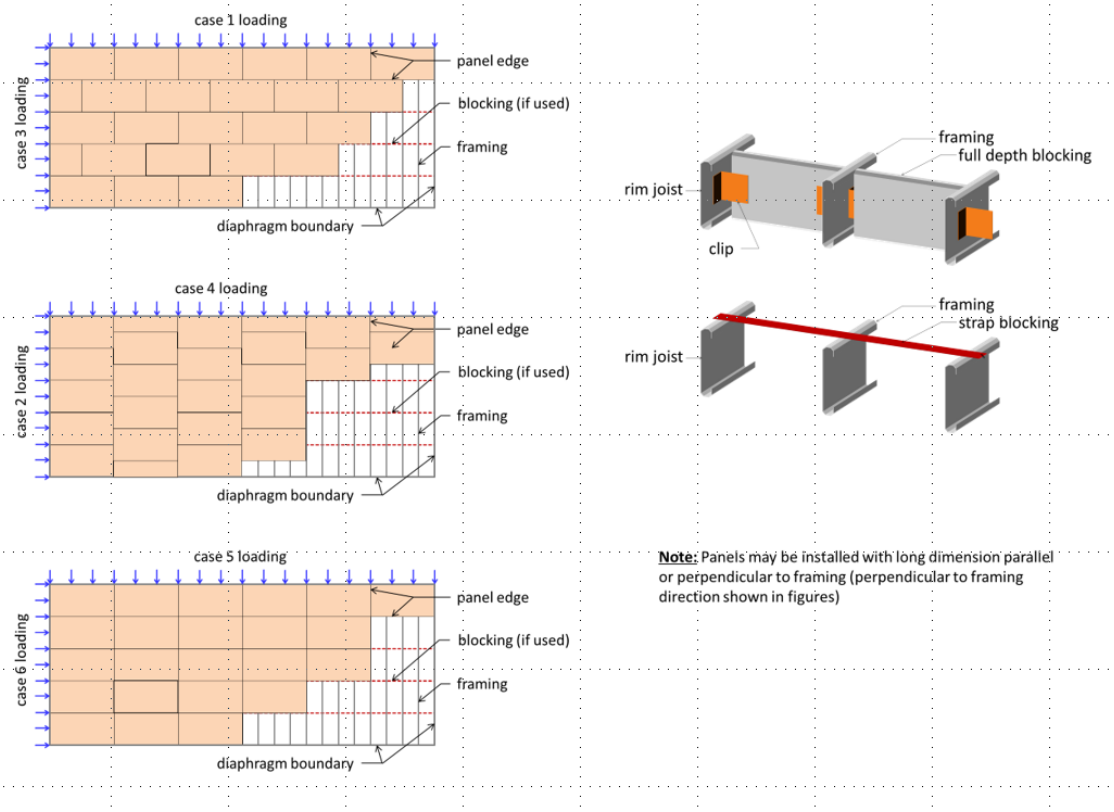

FIGURE 1
HORIZONTAL DIAPHRAGM CONSTRUCTION DETAILS

TABLE 3
NOMINAL FASTENER WITHDRAWAL STRENGTH[1,2,3,4]

ET&F Pin Type	Framing		Material properties		Nominal Withdrawal Strength, lb. Sheathing Thickness and Grade						
	Designated Thickness, mils	Gage Thickness	Minimum Yield Strength, ksi	Minimum Tensile Strength, ksi	7/16-in. OSB Rated Sheathing and Structural I	15/32-in. OSB Rated Sheathing and Structural I	19/32-in. OSB Rated Sheathing and Structural I	23/32-in. OSB Rated Sheathing and Structural I	1 1/8-in. OSB Rated Sheathing and Structural I	23/32-in. Structural I PWD	1 1/8-in. Structural I PWD
AKN-100 or AGS-100 series	33	20	33	45	66	68	85	90			
	43	18	33	45	86	88	111	118			
	54	16	50	65	148	157	202	213			
	68	14	50	65	148	157	224	263			
	97	12	40	50	148	157	224	263			
AKN-144 series	68	14	50	65			344	454	485	434	485
	97	12	40	50			344	498	532	434	532
	118	10	40	50			344	573	650	434	650

1. Tabulated values are for short-term loading and shall be reduced 25 percent for normal loading and 33 percent for permanent loading.
2. For allowable strength design (ASD), tabulated values shall be divided by Ω = 2.23.
3. For strength design (LRFD), tabulated values shall be multiplied by ϕ = 0.72.
4. Minimum panel edge distance is 0.375 inch.

TABLE 4
NOMINAL FASTENER SHEAR/LATERAL STRENGTH[1,2,3,4,5]

ET&F Pin Type	Framing		Material properties		Nominal Shear/Lateral Strength, lb. Sheathing Thickness and Grade						
	Designated Thickness, mils	Gage Thickness	Minimum Yield Strength, ksi	Minimum Tensile Strength, ksi	7/16-in. OSB Rated Sheathing and Structural I	15/32-in. OSB Rated Sheathing and Structural I	19/32-in. OSB Rated Sheathing and Structural I	23/32-in. OSB Rated Sheathing and Structural I	1 1/8-in. OSB Rated Sheathing and Structural I	23/32-in. Structural I PWD	1 1/8-in. Structural I PWD
AKN-100 or AGS-100 series	33	20	33	45	143	166	176	185			
	43	18	33	45	181	210	223	234			
	54	16	50	65	296	344	364	382			
	68	14	50	65	336	390	414	434			
	97	12	40	50	315	371	418	459			
AKN-144 series	68	14	50	65			596	625	699	719	804
	97	12	40	50			601	662	828	761	952
	118	10	40	50			671	739	924	849	1063

1. Tabulated values are for short-term loading and shall be reduced 25 percent for normal loading and 33 percent for permanent loading.
2. Connection strength values are limited to OSB panels with specific gravity G = 0.56 and plywood panels with G = 0.53.
3. For allowable strength design (ASD), tabulated values shall be divided by Ω = 2.03.
4. For strength design (LRFD), tabulated values shall be multiplied by ϕ = 0.79.
5. Minimum panel edge distance is 0.375 inch.

Table 5. β values for estimating diaphragm deflection in accordance with Equation 1

(a) For applications with AKN-100 series pins $\beta = F_1\beta^*$

Designated framing thickness, mil	β* OSB/Plywood rated sheathing or Structural I OSB			
	7/16 in.	15/32 in.	19/32 in.	23/32 in.
33 and 43	735	735	735	735
54 and 68	1025	1025	1179	1333
97 and 118	1550	1550	1783	2015

$$F_1 = \left(\frac{s}{6}\right)^{-0.889}$$

(b) For applications with AKN-144 series pins $\beta = F_1\beta^*$

Designated framing thickness, mil	β* OSB/Plywood rated sheathing or Structural I OSB			β* Structural I Plywood	
	19/32 in.	23/32 in.	1 1/8 in.	23/32 in.	1 1/8 in.
68	1150	1323	1495	1540	1740
97 and 118	1850	2128	2405	2477	2800

$$F_1 = \left(\frac{s}{6}\right)^{-0.889}$$

Table 6. α values for estimating diaphragm deflection in accordance with Equation 1

(a) For applications with AKN-100 series pins $\alpha = G\alpha^*$

Designated framing thickness, mil	α*			
	OSB/Plywood rated sheathing or Structural I OSB			
	7/16 in.	15/32 in.	19/32 in.	23/32 in.
33 and 43	3.102	3.102	4.033	4.963
54 and 68	2.200	2.200	2.398	2.596
97 and 118	4.300	4.300	4.300	4.300

For 33 and 43 mil framing: $G = \left(\frac{s}{6}\right)^{0.551}$

For 54 through 118 mil framing: $G = \left(\frac{s}{6}\right)^{0.131}$

(b) For applications with AKN-144 series pins $\alpha = G\alpha^*$

Designated framing thickness, mil	α*				
	OSB/Plywood rated sheathing or Structural I OSB			Structural I Plywood	
	19/32 in.	23/32 in.	1 1/8 in.	23/32 in.	1 1/8 in.
68	2.813	2.672	2.532	2.939	2.785
97 and 118	4.759	4.178	3.617	4.590	3.979

For 68 through 118 mil framing: $G = \left(\frac{s}{6}\right)^{0.131}$

TABLE 7 (continued on next 2 pages)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 36 FRAMING

(a) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 68 mil (No. 14 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1,063	1,594	2,550	3,188	1,063	797
	23/32	48/24		1,115	1,672	2,675	3,344	1,115	836
	1-1/8	48 oc		1,247	1,870	2,992	3,740	1,247	935
Structural I Plywood	23/32	24 oc		1,282	1,923	3,076	3,845	1,282	961
	1-1/8	48 oc		1,434	2,151	3,441	4,301	1,434	1,075

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 36 ksi. Minimum tensile strength of steel framing = 58 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$. For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 7 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 36 FRAMING

(b) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 97 mil (No. 12 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1395	2092	3347	4184	1395	1046
	23/32	48/24		1534	2302	3682	4603	1534	1151
	1-1/8	48 oc		1920	2879	4607	5759	1920	1440
Structural I Plywood	23/32	24 oc		1764	2647	4235	4554	1764	1323
	1-1/8	48 oc		2208	3311	5298	6336	2208	1656

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 36 ksi. Minimum tensile strength of steel framing = 58 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$. For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 7 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 36 FRAMING

(c) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 118 mil (No. 10 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1557	2335	3736	4670	1557	1168
	23/32	48/24		1713	2569	4111	5139	1713	1285
	1-1/8	48 oc		2143	3214	5143	6429	2143	1607
Structural I Plywood	23/32	24 oc		1970	2955	4554	4554	1970	1477
	1-1/8	48 oc		2464	3697	5914	6336	2464	1848

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 36 ksi. Minimum tensile strength of steel framing = 58 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.
For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 8 (continued on next 2 pages)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 45 FRAMING

(a) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 68 mil (No. 14 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1099	1649	2638	3298	1099	824
	23/32	48/24		1153	1730	2767	3459	1153	865
	1-1/8	48 oc		1290	1934	3095	3869	1290	967
Structural I Plywood	23/32	24 oc		1326	1989	3182	3978	1326	994
	1-1/8	48 oc		1483	2225	3559	4449	1483	1112

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 45 ksi. Minimum tensile strength of steel framing = 60 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$. For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 8 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 45 FRAMING

(b) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 97 mil (No. 12 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1443	2164	3462	4328	1443	1082
	23/32	48/24		1587	2381	3809	4762	1587	1190
	1-1/8	48 oc		1986	2979	4766	5957	1986	1489
Structural I Plywood	23/32	24 oc		1825	2738	4381	4554	1825	1369
	1-1/8	48 oc		2284	3425	5481	6336	2284	1713

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 45 ksi. Minimum tensile strength of steel framing = 60 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$. For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 8 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 45 FRAMING

(c) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 118 mil (No. 10 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1610	2416	3865	4831	1610	1208
	23/32	48/24		1772	2658	4253	5316	1772	1329
	1-1/8	48 oc		2217	3325	5320	6650	2217	1663
Structural I Plywood	23/32	24 oc		2038	3057	4554	4554	2038	1528
	1-1/8	48 oc		2549	3824	6118	6336	2549	1912

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 45 ksi. Minimum tensile strength of steel framing = 60 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.
For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 9 (continued on next page)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 50 FRAMING

(a) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 97 mil (No. 12 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width,in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1563	2344	3751	4689	1563	1172
	23/32	48/24		1720	2579	4127	5159	1720	1290
	1-1/8	48 oc		2151	3227	5163	6454	2151	1613
Structural I Plywood	23/32	24 oc		1977	2966	4554	4554	1977	1483
	1-1/8	48 oc		2474	3711	5938	6336	2474	1855

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 50 ksi. Minimum tensile strength of steel framing = 65 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.
For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

TABLE 9 (continued)
HORIZONTAL DIAPHRAGM CONSTRUCTION USING 0.144-INCH DIAMETER PIN FASTENERS AND GRADE 50 FRAMING

(b) Nominal unit shear values in lb/ft. for wood structural-use panel diaphragms with 118 mil (No. 10 ga.) framing and ET&F 0.144-in. diameter pin fasteners [1, 2, 3, 4, 5, 6]

Sheathing grade	Nominal sheathing thickness, in.	Span rating (roof/floor)	Minimum joist flange width, in.	Blocked diaphragms				Unblocked diaphragms [7]	
				Pin spacing at (a) diaphragm boundaries (DB), (b) continuous panel edges parallel to load, and (c) continuous panel edges perpendicular to load, in.				Case 1	Cases 2 - 6
				6	4	2-1/2	2		
				Pin spacing at all other panel edges					
				6	6	4	3		
Rated sheathing	19/32	40/20	1.625	1745	2617	4187	5234	1745	1309
	23/32	48/24		1920	2879	4607	5759	1920	1440
	1-1/8	48 oc		2402	3602	5764	7205	2402	1801
Structural I Plywood	23/32	24 oc		2208	3311	4554	4554	2208	1656
	1-1/8	48 oc		2762	4143	6336	6336	2762	2071

[1] Maximum fastener spacing at panel interiors shall be 6 inches for support framing at 48 inches on center and 12 inches for closer support framing.

[2] Minimum fastener edge distance = 3/8 inch.

[3] Minimum yield strength of steel framing = 50 ksi. Minimum tensile strength of steel framing = 65 ksi.

[4] Values are for loads imposed by wind or earthquake and shall be reduced 25 percent for normal loading or 33 percent for permanent loading.

[5] The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch.

[6] For available ASD seismic strength, table values shall be divided by $\Omega = 2.5$. For available ASD wind strength, table values shall be divided by $\Omega = 2.0$.
For available LRFD seismic strength, table values shall be multiplied by $\phi = 0.60$. For available LRFD wind strength, table values shall be multiplied by $\phi = 0.65$.

[7] 6 inch fastener spacing at diaphragm boundaries and supporting members.

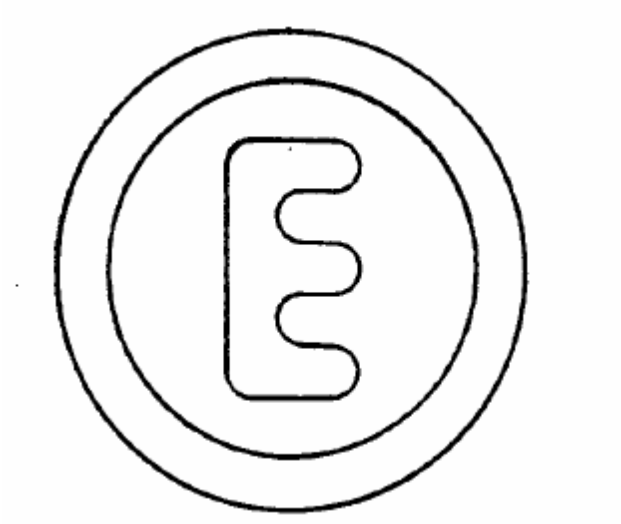

FIGURE 2
ET&F PIN HEAD LOGO

CALIFORNIA SUPPLEMENT

ET&F FASTENING SYSTEMS, INC.
29019 Solon Road
Solon, Ohio 44139
800-248-2376
www.etf-fastening.com

ET&F FASTENING SYSTEMS, INC. ET&F PNEUMATICALLY DRIVEN PINS; AKN-100, AGS-100, and AKN-144 series

CSI Sections:
05 05 23—Metal Fastenings
06 05 23—Wood, Plastic and Composite Fastenings

1.0 SCOPE OF EVALUATION

1.1 Compliance with the following codes:

- 2022 California Building Code (CBC)

1.2 Evaluated in Accordance With:

- EC-012, revised January 2025
- ICC-ES AC262, approved June 2016, editorially revised June 2024

1.3 Properties Evaluated:

- Structural

ADDITIONAL REQUIREMENTS

2.0 USES

Uses are as set forth in Section 2.0 of ER-335. Additionally, the pins are used in horizontal diaphragms constructed with steel framing and wood structural panels in accordance with CBC Sections 2210 and 2211 and recognized for the attachment of wood structural panel sheathing to steel framing members in accordance with CBC Sections 2210 and 2211.

3.0 DESCRIPTION

The description of the pins and other components are as set forth in Sections 4.1 through 4.3 of ER-335.

4.0 DESIGN AND INSTALLATION

The design and installation shall be as set forth in Sections 4.4 and 4.5 of ER-335.

5.0 LIMITATIONS

The ET&F pneumatically driven pins, described in this report, comply with the codes listed in Section 1.0 of this supplement, subject to the following limitations:

5.1 The limitations in Section 2.0 of ER-335 shall apply.

5.2 For applications regulated by DSA or OSHPD, structural calculations shall comply with CBC Section 1603A.3.

5.3 The AKN-100, AGS-100, and AKN-144 series fasteners are limited to installation in dry interior locations, which include roof deck with complying weather protection; and that use in exterior or damp environments is outside the scope of this report.

5.4 The use of AKN-100, AGS-100, and AKN-144 series fasteners in contact with preservative- or fire-retardant-treated wood is outside the scope of this report.

5.5 This supplement expires concurrently with ER-335.

6.0 SUBSTANTIATING DATA

Data in accordance with the IAPMO-UES Evaluation Criteria for Composite Steel Sheet and Noncombustible Sheathing Panels (EC-012), Revised January 2025; ICC-ES AC262, approved June 2016, editorially revised June 2024; comparative analysis white paper, and an IAPMO ES approved quality control manual.