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ICC-ES Evaluation Report

ESR-1667

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Reissued 07/2018
This report is subject to renewal 07/2019.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 53 00—PLASTIC DECKING

REPORT HOLDER:

AZEK BUILDING PRODUCTS, INC.

EVALUATION SUBJECT:

AZEK DECKING SYSTEM



“2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”



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A Subsidiary of the International Code Council®

DIVISION: 06 00 00—WOOD, PLASTICS, AND COMPOSITES

Section: 06 53 00—Plastic Decking

REPORT HOLDER:

AZEK BUILDING PRODUCTS, INC.
801 COREY STREET
SCRANTON, PENNSYLVANIA 18505
(570) 558-8000
www.azek.com

EVALUATION SUBJECT:

AZEK DECKING SYSTEM

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2012, 2009 and 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Structural
- Durability
- Surface-burning Characteristics

1.2 Evaluation to the following green code(s) and/or standards:

- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2015, 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes verified:

- See Section 3.1

2.0 USES

The AZEK Decking Systems, with the exception of the nominally $\frac{5}{4}$ -inch-thick-by- $3\frac{1}{2}$ -inch-wide decking, are used as deck boards for exterior balconies, porches, stair treads and decks of buildings of Type V-B (IBC) construction or buildings constructed in accordance with the IRC.

The nominally $\frac{5}{4}$ -inch-thick-by- $3\frac{1}{2}$ -inch-wide AZEK deck boards are limited to exterior use as deck boards for exterior balconies, porches and decks for buildings of Type V-B (IBC) construction or buildings constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The AZEK Decking Systems are available in uncapped, semi-capped and fully-capped boards.

The attributes of the composite deck boards have been verified as conforming to the provisions of (i) CALGreen Section A5.406.1.2 for reduced maintenance; (ii) ICC 700-2015 and ICC 700-2012 Sections 602.1.6 and 11.602.1.6 for termite-resistant materials and Sections 601.7, 11.601.7, and 12.1(A).601.7 for site-applied finishing materials; and (iii) ICC 700-2008 Section 602.8 for termite-resistant materials and Section 601.7 for site-applied finishing materials. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance. See Section 5.7 for limitations on termite-resistance use.

3.1.1 Uncapped Deck Boards (Harvest Collection):

The uncapped board is produced in a mono extruded process from a solid composite material consisting of cellular vinyl and agrifibre and is available under the Harvest Collection. The uncapped boards are manufactured in profiles of nominally $\frac{5}{4}$ -inch-thick-by- $3\frac{1}{2}$ -inch-wide, $\frac{5}{4}$ -inch-thick-by- $3\frac{1}{2}$ -inch-wide tongue-and-groove porch board and $\frac{5}{4}$ -inch-thick-by-6-inch-wide. The uncapped deck boards are available in 12-, 16-, or 20-foot (3.7, 4.9 and 6.1 m) lengths except for the porch boards which are available in 10-, 12- or 16-foot (3.0, 3.7 or 4.9 m) lengths. The uncapped decking is manufactured in five colors: white, slate, brownstone, clay and ivory. See Figure 1.

3.1.2 Semi-capped and Fully-capped Deck Boards (Arbor Collection, Terra Collection and Harvest Collection):

The semi-capped and fully-capped deck boards are produced in a coextruded process from cellular vinyl and a mineral additive and are available in the Arbor Collection, Terra Collection and Harvest Collection. The capped boards are manufactured in 1-inch-thick-by- $5\frac{1}{2}$ -inch-wide (25.4 mm by 140 mm) boards with a 0.02-inch-thick cap (0.5 mm) covering the top and a 0.01-inch-thickcap (0.25 mm) covering the sides of the semi-cap board and additionally covering the bottom with a 0.01-inch-thickcap (0.25 mm) on the fully-capped deck board. The semi-capped and fully-capped deck boards are available in 12-, 16-, or 20-foot (3.7, 4.9 and 6.1 m) lengths. The Arbor Collection is manufactured in five colors: Acacia, Cobre, Morado, Redland Rose and Silver Oak. The Terra Collection is manufactured in four colors: Fawn, Kona,

Sedona and Tahoe. The semi-capped and fully-capped Harvest Collection boards are manufactured in the colors, Brownstone, Clay, and Slate Gray. The semi-capped Harvest Collection boards are also available in the color Modena. See Figure 1.

The Azek Porch Board is available as a semi-capped or fully-capped tongue-and-groove deck board. It is produced in a coextruded process from cellular vinyl and a mineral additive. The Porch Board is manufactured in five colors (Oyster™, Morado®, Silver Oak®, Slate Gray and Brownstone). The board measures 1-inch thick by 3¹/₄-inch wide (25.4 mm by 82.6 mm). See Figure 1.

3.2 Durability:

When subjected to weathering, insect attack and other decaying elements, the material used to manufacture the AZEK Decking Systems are equivalent in durability to preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. The AZEK Decking Systems have been evaluated for structural capacity when exposed to temperatures between -20°F (-29°C) and 125°F (52°C).

3.3 Surface-burning Characteristics:

When tested in accordance with ASTM E84, the AZEK Decking Systems have a flame-spread index of no greater than 200.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of AZEK decking must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation. When instructions contained in the manufacturer's published installation instructions differ from this report, this report governs.

4.2 Deck Boards:

4.2.1 Structural: The AZEK deck boards have allowable capacity when installed at a maximum center-to-center spacing of the supporting construction as prescribed in Table 1.

4.2.2 Installation: The AZEK deck boards must be installed perpendicular to the supporting construction. The AZEK deck boards that are installed end-to-end must be tight-fitted together when installed at temperatures above 32°F (0°C), and have a 1/16-inch gap (1.6 mm) when installed below 32°F (0°C). The end of each deck board must be supported by a joist. Where decking butt joints occur, double joists must be provided, and/or two screws must be installed a minimum of 1/4 inch (6.3 mm) and a maximum of 1/2 inch (12.7 mm) from ends of each abutted board.

4.2.3 Deck Boards Used as Stair Treads: The AZEK deck boards, when used as stair treads, are satisfactory to resist the code-prescribed concentrated load of 300 lbf (1.33 kN) when installed at a maximum, perpendicular, center-to-center spacing of the supporting construction as given in Table 2. See footnotes to Table 2 and Figure 2 for additional supports required under the deck boards.

4.2.4 Fasteners: The AZEK deck boards must be fastened with two No. 7 by 2¹/₄-inch-long (57.2 mm) stainless steel screws at each supporting wood member having a minimum specific gravity of 0.50; as an alternate, the fastening systems listed in Table 3 may be used. The minimum edge and end distance for fasteners is 1/4 inch (6.3 mm) to 1/2 inch (12.7 mm) from any end of deck board.

5.0 CONDITIONS OF USE

The AZEK deck boards 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 This product is limited to exterior use as deck boards for balconies, porches, decks, stair treads and similar appendages of buildings of Type V-B (IBC) construction and buildings constructed in accordance with the IRC.
- 5.2 Installation must comply with this report, the manufacturer's published instructions and the applicable code. Only those fasteners and fastener configurations described in this report have been evaluated for the installation of the AZEK deck boards.
- 5.3 The use of the deck boards as components of a fire-resistance-rated assembly is outside the scope of this report.
- 5.4 The compatibility of the fasteners with the supporting construction, including chemically treated wood, is outside the scope of this report.
- 5.5 Deck boards must be directly fastened to supporting construction. Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted for approval. The calculations must verify that the supporting construction complies with the applicable building code requirements and is adequate to resist the loads imparted upon it from the products and systems described in this report. The documents must contain details of the attachment to the supporting structure consistent with the requirements of this report. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.6 Adjustment factors outlined in the AF&PA National Design Standard (NDS) and applicable codes do not apply to the allowable capacity and maximum spans for the AZEK Decking System.
- 5.7 The AZEK uncapped deck boards have not been evaluated for use in areas subject to Formosan termite attack.
- 5.8 The AZEK Decking System is produced in Foley, Alabama, and Scranton, Pennsylvania, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with applicable portions of the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174), dated January 2012.

7.0 IDENTIFICATION

- 7.1 The deck boards described in this report are identified by a label, on each individual piece or on the packaging, bearing the AZEK Building Products name, the AZEK Decking System name, the span rating of the deck board, the allowable span of the deck board when used as a stair tread, and the evaluation report number (ESR-1667).
- 7.2 The report holder's contact information is the following:

AZEK BUILDING PRODUCTS, INC.
801 COREY STREET
SCRANTON, PENNSYLVANIA 18505
(570) 558-8000
www.azek.com

TABLE 1—DECK BOARD SPAN RATINGS

| DECK BOARD | BRAND NAMES | MAXIMUM SPAN ¹ (inches) | ALLOWABLE CAPACITY ² (lb/ft ²) |
|--|---|---------------------------------------|--|
| 5/4-inch-by-6 inch uncapped deck board | Harvest Collection | 16 | 100 |
| 5/4-inch-by-3 1/2-inch uncapped deck board | Harvest Collection | 16 | 100 |
| 5/4-inch-by-3 1/2-inch tongue-and-groove uncapped porch board | Harvest Collection | 16 | 100 |
| 1-inch-by- 5 1/2 inch semi-capped and fully-capped deck board | Harvest Collection, Arbor Collection and Terra Collection | 16 | 100 |
| 1-inch-by-3 1/4-inch tongue-and-groove semi-capped porch board | AZEK | 16 | 100 |

For SI: 1 inch = 25.4 mm; 1 lbf/ft² = 47.9 Pa.

¹Maximum span is measured center-to-center of the supporting construction.

²Maximum allowable capacity is adjusted for durability. No further increases are permitted.

TABLE 2—MAXIMUM STAIR TREAD SPANS¹

| DECK BOARDS USED AS STAIR TREADS | MAXIMUM SPAN (inches) |
|--|-----------------------|
| 5/4-inch-by-6 inch uncapped deck board ² | 17.25 |
| 5/4-inch-by-6 inch uncapped deck board ³ | 9 |
| 5/4-inch-by-6 inch uncapped deck board ⁴ | 24 |
| 5/4-inch-by-3 1/2-inch tongue-and-groove uncapped porch board ⁵ | 11 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards ³ | 9 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards ⁴ | 24 |
| 1-inch-by-3 1/4-inch tongue-and-groove semi-capped porch board | 11 |

For SI: 1 inch = 25.4 mm; 1 lbf/ft² = 47.9 Pa.

¹Based on a minimum 2-span installation.

²Maximum span is measured center-to-center of the supporting construction. A treated Southern pine 2-by-6 installed flatwise between the stringers and directly beneath the deck board using Simpson A23 connectors attached with hot dipped galvanized 10d by 1 1/2-inch joist hanger nails.

³Maximum span measured center-to-center of the supporting construction with no additional support.

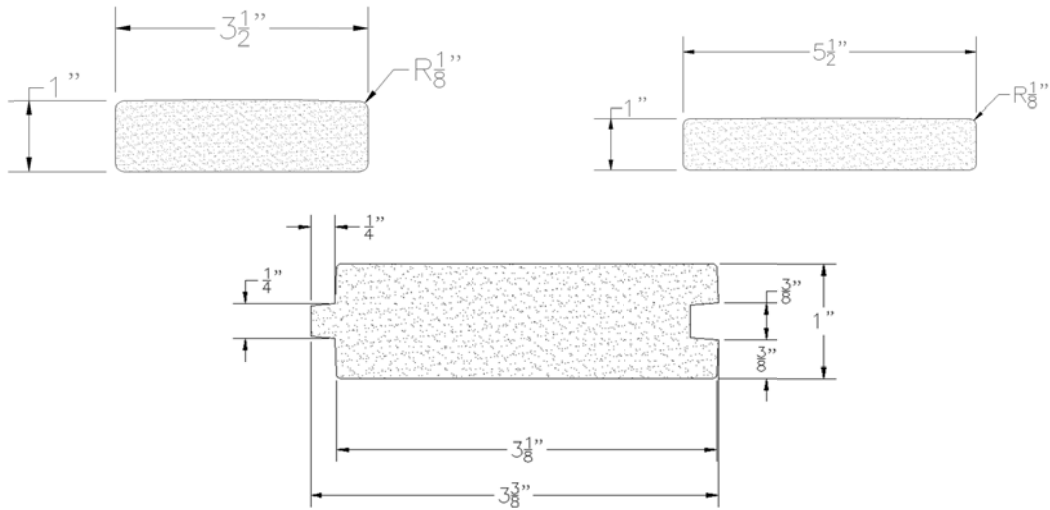
⁴Maximum span measured center-to-center of the supporting construction with a treated 2-by-4 support installed edgewise and centered under each deck board used as a tread attached with two 0.131-inch-diameter-by-3 1/4-inch-long round drive framing nails.

⁵Maximum span measured center-to-center of the supporting construction with no additional support.

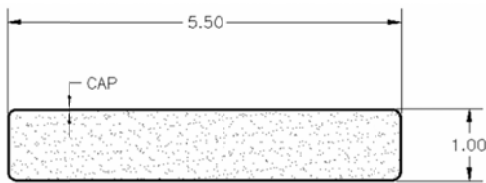
TABLE 3—MAXIMUM UPLIFT LOADS FOR ALTERNATE FASTENING SYSTEMS

| DECK BOARD | FASTENER | ALLOWABLE UPLIFT (lb/ft ²) |
|--|---|--|
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards | #8-by-2 1/2 inch Stainless Steel Trim-Head Headcote® Screw | 100 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards | #10-by-2 1/2 inch Stainless Steel Flat-Head Screw | 100 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards | OMG FastenMaster® Cortex Hidden Fastener System | 100 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards | HIDfast Hidden Fastener System | 100 |
| 1-inch-by-5 1/2 inch semi-capped and fully-capped deck boards | TigerClaw® Proclip Hidden Fastener System | 100 |
| 5/4-inch-by-6 inch uncapped deck board | OMG FastenMaster® Cortex Hidden Fastener System | 100 |
| 5/4-inch-by-6 inch uncapped deck board | HIDfast Hidden Fastener System | 100 |
| 5/4-inch-by-6 inch uncapped deck board | TigerClaw® Proclip Hidden Fastener System | 100 |
| 1-inch-by-3 1/4-inch tongue-and-groove semi-capped porch board | #8-by 2-inch Simpson Strong Tie Wood Stainless Steel Screw | 100 |
| 1-inch-by-3 1/4-inch tongue-and-groove semi-capped porch board | 16 GA x 2-inch Simpson Strong Tie L Series Stainless Steel Flooring Cleat | 63 |

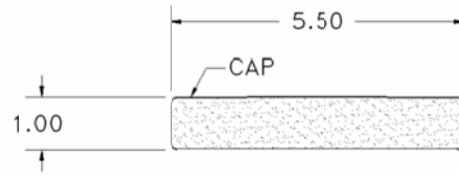
For SI: 1 inch = 25.4 mm; 1 lbf/ft² = 47.9 Pa.



HARVEST COLLECTION UNCAPPED DECK BOARDS

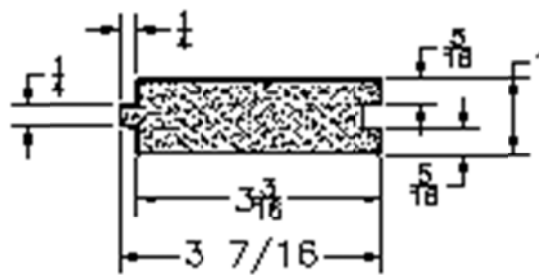


ARBOR COLLECTION™ AND TERRA COLLECTION™ FULLY CAPPED DECK PROFILE



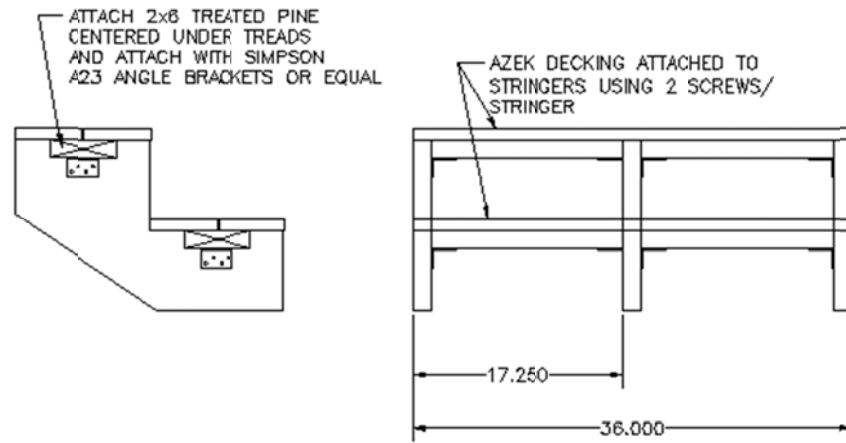
ARBOR, TERRA COLLECTION , AND HARVEST MODENA SEMI-CAPPED BOARD

CAPPED DECK BOARDS



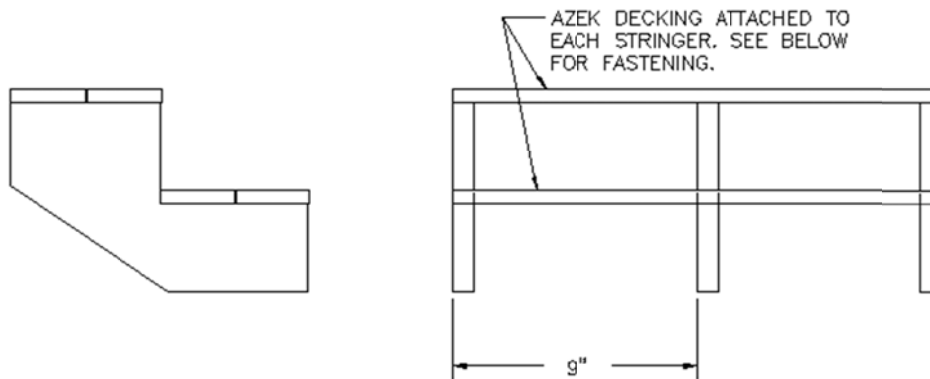
PORCH BOARD

FIGURE 1—AZEK DECK BOARD PROFILES



| BOARD TYPE | MAX. SPAN | FASTENING |
|--------------------|--------------|--|
| 1x5-1/2 DECK BOARD | 17.25 INCHES | ATTACH SUPPORT USING SIMPSON A23 (OR EQUAL) BRACKET W/10d x 1-1/2" JOIST HANGER NAILS. |

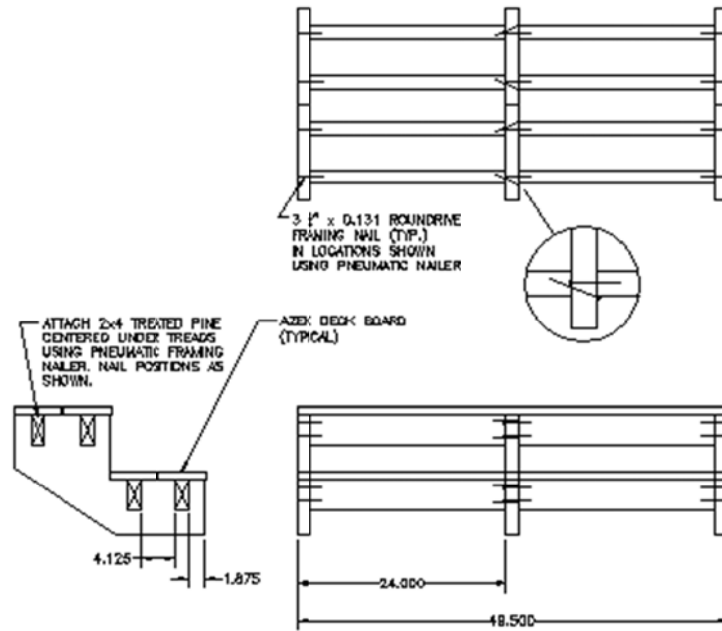
STAIR TREAD INSTALLATION WITH ADDITIONAL SUPPORT (MINIMUM TREAD LENGTH IS 36")



| BOARD TYPE | MAX. SPAN | FASTENING |
|--------------------|-----------|---|
| 1x5-1/2 DECK BOARD | 9 INCHES | TWO #7 x 2 1/4" DECK SCREWS EACH STRINGER |

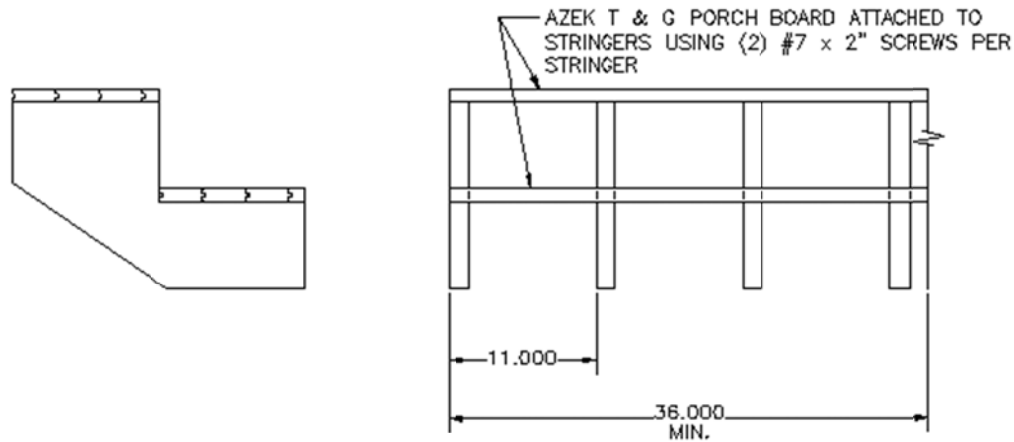
STAIR TREAD INSTALLATION WITH NO ADDITIONAL SUPPORT (MINIMUM TREAD LENGTH IS 36")

FIGURE 2—STAIR CONSTRUCTION DETAILS



| BOARD TYPE | MAX. SPAN | FASTENING |
|--------------------|-----------|---|
| 1x5-1/2 DECK BOARD | 24 INCHES | ATTACH SUPPORTS W/ 3-3/4" x 0.131 ROUNDRIE FRAMING NAILS. |

STAIR TREAD INSTALLATION WITH NO ADDITIONAL SUPPORT
(MINIMUM TREAD LENGTH IS 36")



| BOARD TYPE | MAX. SPAN | FASTENING |
|---------------------|-----------|---|
| 1x3-1/2 PORCH BOARD | 11 INCHES | ONE #7 x 2" TRIM HEAD SCREW THRU TONGUE. END BOARDS RECEIVE AN EXTRA SCREW THRU FACE. |

STAIR TREAD INSTALLATION WITH NO ADDITIONAL SUPPORT
(MINIMUM TREAD LENGTH IS 36")

FIGURE 2—STAIR CONSTRUCTION DETAILS (Continued)