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Legacy report on the 2000 International Building Code®, the BOCA® National Building Code/1999, the 1999 Standard Building Code®, the 1997 Uniform Building Code™, the 2000 International Residential Code®, the 2002 Accumulative Supplement to the International Codes™, and the 1998 International One- and Two-Family Dwelling Code®

DIVISION 06—WOOD AND PLASTICS
Section 06500—Structural Plastics
Section 06610—Plastic Railing and Guards

**ADVANCED ENVIRONMENTAL
RECYCLING TECHNOLOGIES, INC.**
P.O. BOX 1237
914 N. JEFFERSON STREET
SPRINGDALE, AR 72765

Plant Locations:

8432 E. Ranch Road
FM 2169
Junction, TX 76849

801 N. Jefferson Street
Springdale, AR 72764

1.0 SUBJECT

A.E.R.T. ChoiceDek® Decking and Guardrail (Classic, Plus, Brushed, Premium, Dreamworks®, LifeCycle®, MoistureShield®, A.E.R.T.)

2.0 PROPERTY FOR WHICH EVALUATION IS SOUGHT

- 2.1 Structural
- 2.2 Fire resistive characteristics
- 2.3 Durability

3.0 DESCRIPTION

3.1 General

ChoiceDek® Decking and Guardrail are wood-polymer composite lumber products manufactured in a continuous extrusion process, used as an alternative to preservative treated lumber when used as a flooring, stair tread, guard, or nonstructural trim component for exterior balconies, porches, decks and other walking surfaces. ChoiceDek® Decking and Guardrail are used on structures of combustible construction where such construction is permitted to be unprotected combustible construction.

ChoiceDek® Decking and Guardrail are manufactured at plants located in Junction, Texas and Springdale, Arkansas, and are identified as ChoiceDek®, Classic, Plus, Brushed, Premium, Dreamworks®, LifeCycle®, MoistureShield®, or A.E.R.T.

3.2 ChoiceDek® Decking

ChoiceDek® Decking is produced in nominal cross-sectional sizes of 2 by 6 (actual 38 by 140 mm) and 5/4 by 6 (actual 32 by 140 mm), and is capable of withstanding the maximum allowable live loads and spans as indicated in **Table 1** of this report. When ChoiceDek® Decking is used as a stair tread component, the maximum spacing of the supporting construction (stringers) shall be 18 inches (457 mm) on center, for the 2 by 6 (actual 38 by 140 mm) product, and 12 inches (305 mm) on center, for the 5/4 by 6 (actual 32 by 140 mm) product.

3.3 ChoiceDek® Guardrail

ChoiceDek® Guardrail is composed of top rail, bottom rail and baluster components, which are assembled to form a 42 inches (1067 mm) high guard. ChoiceDek® Guardrail is available in three profiles as indicated in **Figures 1, 2 and 3** of this report. When installed in accordance with this report, ChoiceDek® Guardrail resists the minimum design loads, as required by the applicable code, for guard systems.

3.4 Flame Resistant Characteristics

ChoiceDek® achieved a flame spread rating of 100 and a smoke developed Index of 360 when tested in accordance with ASTM E84.

ChoiceDek® achieved a self ignition temperature of 741 degrees F (386 degrees C) and a Flash ignition temperature of 729 degrees F (387 degrees C) when tested in accordance with ASTM D1929.

4.0 INSTALLATION

ChoiceDek® Decking and Guardrail shall be installed in accordance with the manufacturer's published installation instructions, and this report. The maximum center-to-center spacing of members supporting ChoiceDek® Decking (joists) shall be 18 inches. ChoiceDek® Decking shall be attached to each supporting member with a minimum of two corrosion-resistant 16d casing nails, 8d box nails, or #7 by 2 1/4 inch (57 mm) screws. ChoiceDek® Guardrail shall be installed with the fasteners described in **Figures 1, 2 and 3** of this report. With the exception of the post and connection system specifically identified in **Figure 3**, the design and installation of the vertical posts supporting the ChoiceDek® Guardrail, including the connection of the posts to the supporting construction, are beyond the scope of this report and shall be considered in the design calculations and details described in Section 7.4 of this report.

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



5.0 IDENTIFICATION

ChoiceDek® Decking and Guardrail shall be identified with the product manufacturer, product name, manufacturing plant number or location, the name or logo of the third party inspection agency (PFS), and this ICC-ES Legacy report number, NER-596.

6.0 EVIDENCE SUBMITTED

- 6.1 Southwest Research Institute Report No. SwRI 06-7536-271, *Transverse Load Tests of ChoiceDek®*, dated June 1996, prepared by John W. Strybos, P.E., signed by Lawrence J. Goland, P.E. and Edward M. Briggs;
- 6.2 Southwest Research Institute Report No. SwRI 06-6759-515, *Material Property Tests of ChoiceDek®*, dated August 95, prepared by John W. Strybos, P.E., signed by Lawrence J. Goland, P.E. and Edward M. Briggs;
- 6.3 Southwest Research Institute Report No. SwRI 18.03114.01.111, *Creep Recovery Testing of ChoiceDek® Samples*, dated November 22, 1999, signed by Andrew Nagy, Staff Engineer and Peter C. McKeighan, Manager;
- 6.4 *Summary of Structural Testing of ChoiceDek® Decking Material*, dated January 18, 2001, signed and sealed by David S. Gromala, P.E.;
- 6.5 Omega Point Laboratories, Report No. 16331-107976, *Surface Burning Characteristics ChoiceDek® Plus*, date November 29, 2000, signed by Guy A. Haby, and William E. Fitch, P.E.;
- 6.6 Mississippi State University, *Termite Test Results for MoistureShield Composite*, dated January 18, 1994, signed by Dr. Darrell D. Nicholas;
- 6.7 Aspen Research Corporation, *Soil Block Testing of MoistureShield*, dated January 5, 1993, signed by John S. Kroll.
- 6.8 PFS Corporation Report No. 00-00027, *A.E.R.T. ChoiceDek® Classic and ChoiceDek Plus Wood-Plastic Composite Performance Tests Full Size Handrail System Testing*, dated December 27, 2000, signed and sealed by Graham E. McFarland.
- 6.9 PFS Corporation Report No. 00-00017, *A.E.R.T. ChoiceDek® Classic Commercial Profile Wood-Plastic Composite Performance Tests*, dated September 18, 2000, signed and sealed by Graham E. McFarland.
- 6.10 PFS Corporation Report No. 00-00023, *A.E.R.T. ChoiceDek® Classic and ChoiceDek Plus Wood-Plastic Composite Performance Tests ASTM G155-98 2000 Hours Weathering*, dated December 7, 2000, signed and sealed by Graham E. McFarland.
- 6.11 PFS Corporation Report No. 00-00022, *A.E.R.T. ChoiceDek® Classic and ChoiceDek Plus Wood-Plastic Composite Performance Tests*, dated November 24, 2000, signed and sealed by Graham E. McFarland.
- 6.12 PFS Corporation Report No. 00-0008, *A.E.R.T. ChoiceDek® Classic and ChoiceDek Plus Wood-Plastic Composite Performance Tests*, dated June 19, 2000, signed and sealed by Graham E. McFarland.
- 6.13 Southwest Research Institute, Project No. 01.03051.-01.062a (ChoiceDek Classic), dated June 19, 2000, signed by A. Leigh Orvis, Research Scientist, and Alex B. Wenzel, Director.
- 6.14 Southwest Research Institute, Project No. 01.03051.-01.062b (ChoiceDek Plus), dated June 19, 2000, signed by A. Leigh Orvis, Research Scientist, and Alex B. Wenzel, Director.
- 6.15 Quality control manual for the Junction, TX plant dated 9-30-02, signed by representatives of Advanced Environmental Recycling Technologies, Inc. and the third party inspection agency, PFS Corporation.
- 6.16 Quality control manual for the Springdale, AR plant dated 9-30-02, signed by representatives of Advanced Environmental Recycling Technologies, Inc. and the third party inspection agency, PFS Corporation.

- 6.17 Engineering calculations and analysis, Weyerhaeuser, David S. Gromala, P.E. Signed and sealed June 3, 2002:

- 6.17.1 Fastening Requirements for ChoiceDek Decking.
- 6.17.2 Fastening Requirements for ChoiceDek End-Baluster to Post Rail Systems #1 and #2.
- 6.17.3 Summary of Testing of Additional ChoiceDek guardrail Systems, System #3.
- 6.18 Test report on structural load testing of System #3, PFS Corporation, Report No. 103-02, January 11, 2002, signed by Graham e. McFarland and J. Robert Nelson.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for the National Evaluation Service finds that ChoiceDek® products as described in this report complies with or are suitable alternates to that specified in the 2000 *International Building Code®*, the BOCA® *National Building Code/1999*, the 1999 *Standard Building Code®*, the 1997 *Uniform Building Code™*, the 2000 *International Residential Code®*, the 2002 *Accumulative Supplement to the International Codes™*, and the 1998 *International One- and Two-Family Dwelling Code®* subject to the following conditions:

- 7.1 ChoiceDek® Decking and Guardrail shall be limited to use as a flooring, stair tread, guard, or nonstructural trim component for exterior balconies, porches, decks and other walking surfaces on structures of combustible construction where the floor/ceiling assemblies are permitted to be unprotected construction.
- 7.2 ChoiceDek® Decking shall be limited to the maximum live loads and spans as indicated in **Table 1** of this report. When ChoiceDek Decking is used as a stair tread component, the maximum spacing of the supporting construction (stringers) shall be 18 in. on center, for the 2 by 6 product, and 12 in. on center, for the 5/4 by 6 product. Other loading conditions are beyond the scope of this report.
- 7.3 ChoiceDek® Guardrail shall be limited to the construction described in **Figures 1, 2 and 3** of this report. Other configurations are beyond the scope of this report.
- 7.4 Design calculations and details for specific applications, which address the ability of the supporting construction to resist all imposed loads required by the applicable code, shall be furnished to the code official verifying compliance with this report and the applicable code. The individual preparing such documents shall possess the necessary credentials regarding competency and qualifications as required by the applicable code and the professional registration laws of the state where the construction is under taken.
- 7.5 The static coefficient of friction of ChoiceDek® Decking has been determined to be 0.62 (static dry) when tested in accordance with ASTM D2394. The appropriateness of the determined static coefficient of friction, with respect to the requirement for slip-resistance in the applicable code is subject to the specific approval of the code official.
- 7.6 This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.

TABLE 1 — ChoiceDek® Decking Maximum Allowable Uniform Live Load (lbf/sq ft)

ChoiceDek® Nominal Member Size (in)	On-center spacing of the supporting construction (joists) (in)		
	12	16	18
$\frac{5}{4}$ by 6 ³	200	150	Not Permitted
2 by 6 ³	200	200	150

Notes to Table 1:

1. Tabular values based on ChoiceDek® Decking spanning a minimum of 3 supporting members (joists).
2. Calculated deflections at the tabular values are less than or equal to L/360.
3. When ChoiceDek® Decking is used as a stair tread component, the maximum spacing of the supporting construction (stringers) shall be 12 in. on center, for the $\frac{5}{4}$ by 6 product, and 18 in. on center, for the 2 by 6 product.
4. 1 in = 25.4 mm, 1 lbf/sq ft = 47.88 Pa

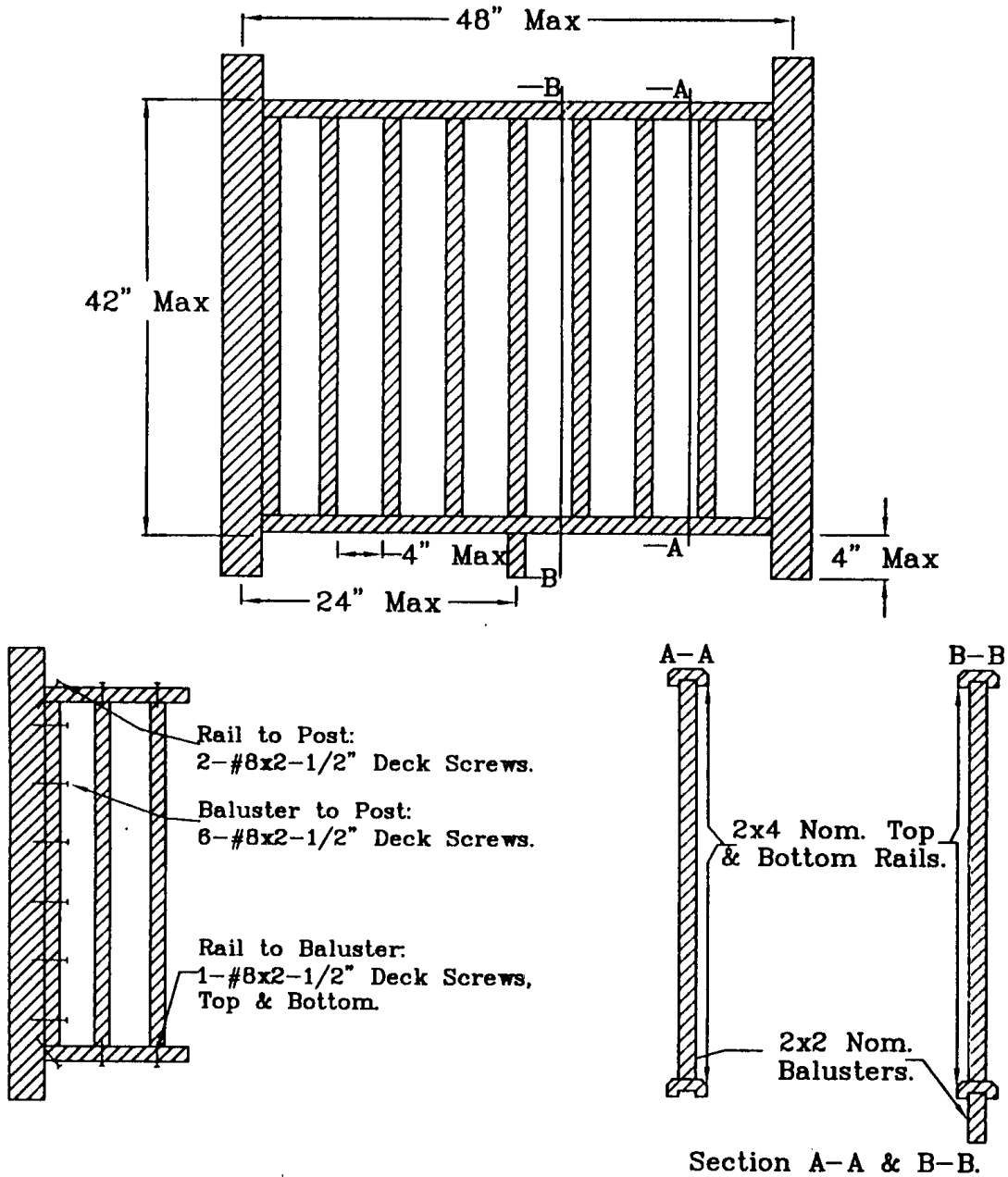


Figure 1* ChoiceDek Guardrail System #1

*THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.

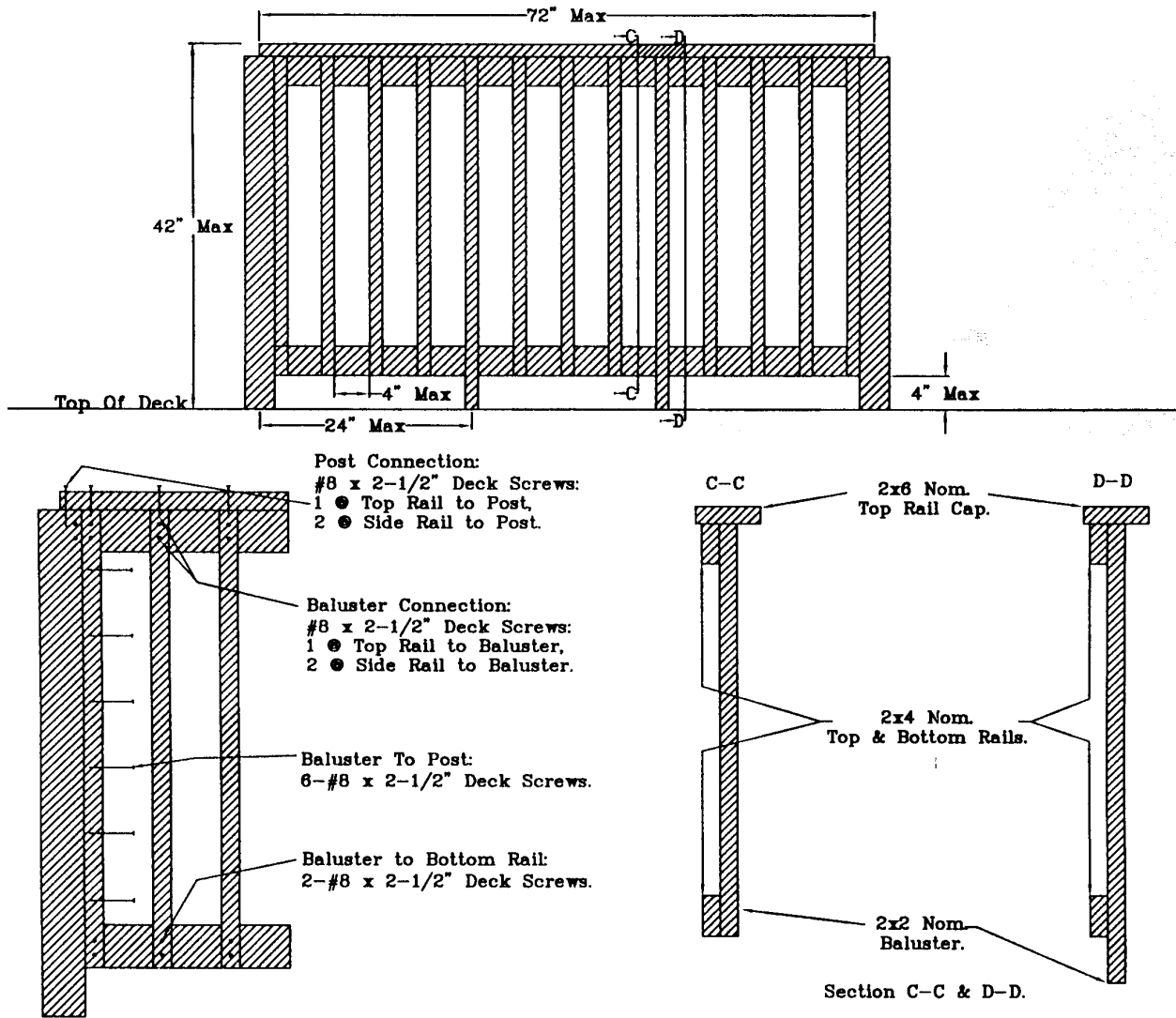
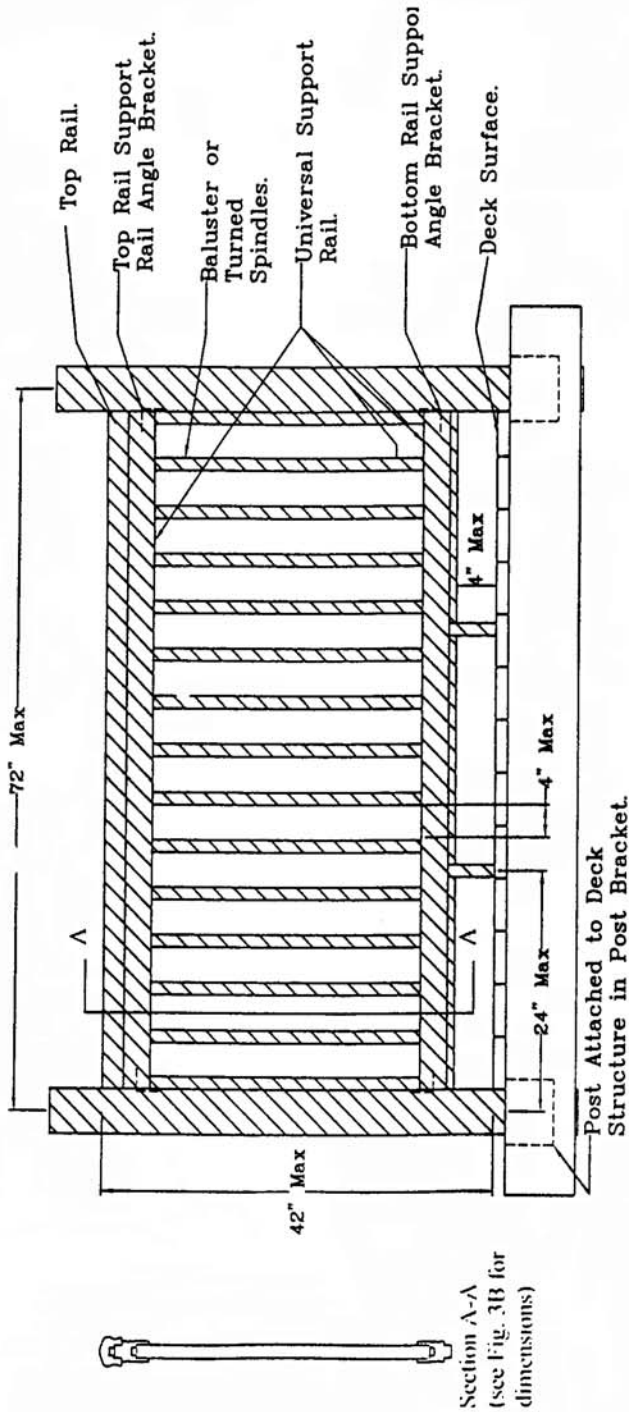


Figure 2* ChoiceDek Guardrail System #2

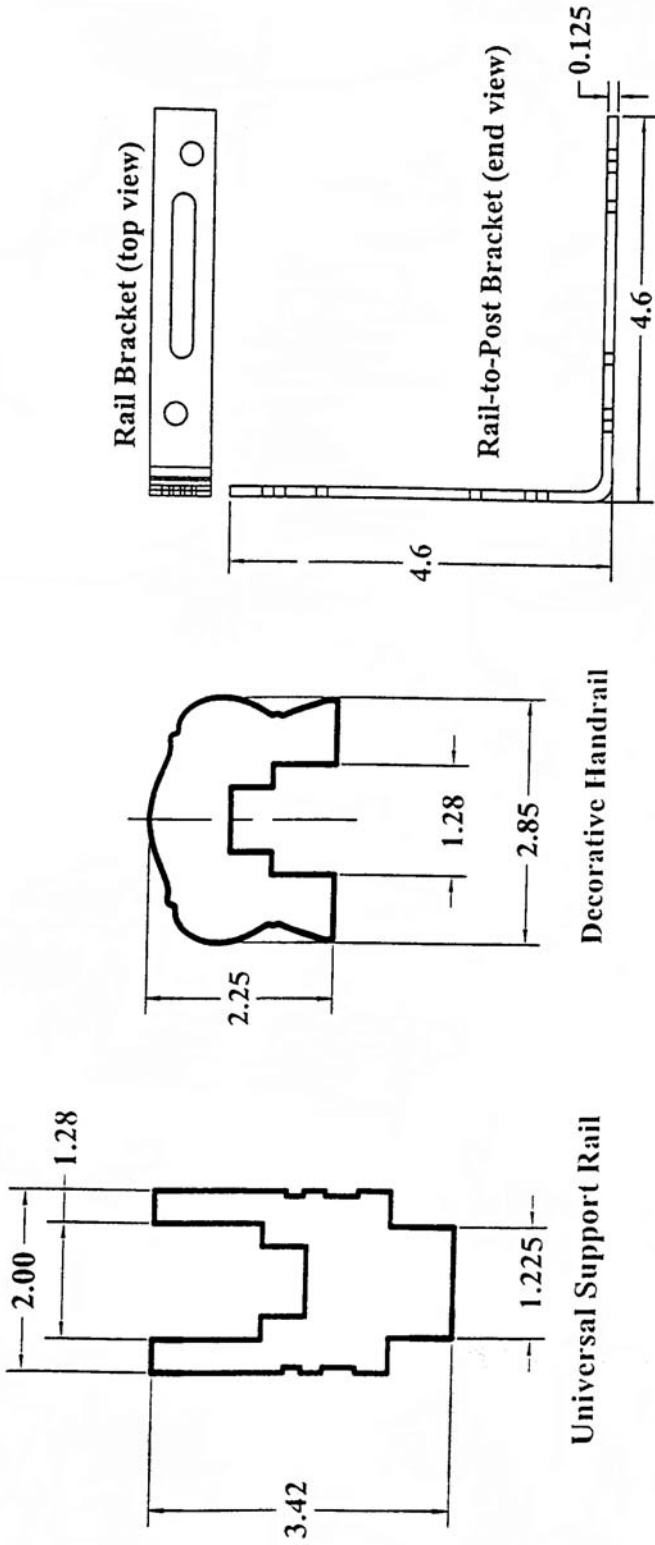
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ChoiceDek Railing System #3 Fastener Requirements Listed on order of typical assembly. Note: UR = Universal Railing	
Connections	Fastening
Post bracket (2 pc.), for the line posts	Bolt together using 2 - 3/8" x 1" bolts (provided)
Post bracket to rim joist	Bolt together using 4 - 3/8" x 2-1/2" bolts (provided)
Post to Post Bracket	Install 3 - 1/4" x 1" lag screws (not provided)
UR bracket to Bottom UR	Use 2 - 1-5/8" screws (provided)
UR bracket to Post (bottom)	Use 2 - 1" screws (provided)
UR bracket to Top UR	Use 2 - 1-5/8" screws (provided)
End baluster to Post	Use 2 - 1" screws (provided)
Bottom UR fillets	Use 4 - #7 x 3" trim head finish screws (available from dealer)
Baluster to Bottom UR	Place in USR groove, no connection required
Top UR fillets	Use 4 - #7 x 1" trim head finish screws (available from dealer)
Baluster to Top UR	Use 1 - #7 x 1" trim head finish screws (available from dealer) Or, use 1 - #7x3" screw (available from dealer)
2 hand rail options:	Use 1 - #7 x 1" trim head finish screws (available from dealer) Or, use 1 - #7x3" screw (available from dealer)
Decorative hand rail to Top UR	Use 1 - #7x1" trim head finish screw every 12" (available from dealer)
Flat top hand rail to Top UR	Use 1 - #7x1" trim head finish screw every 12" (available from dealer)

Figure 3*. ChoiceDek Guardrail System #3

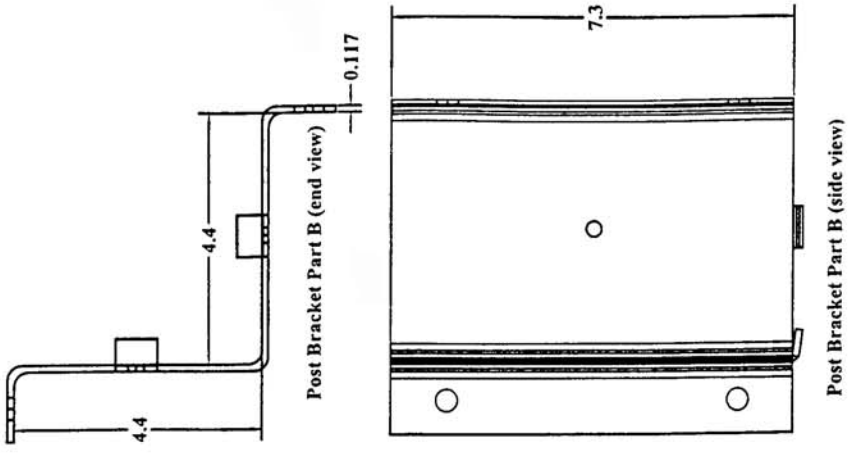
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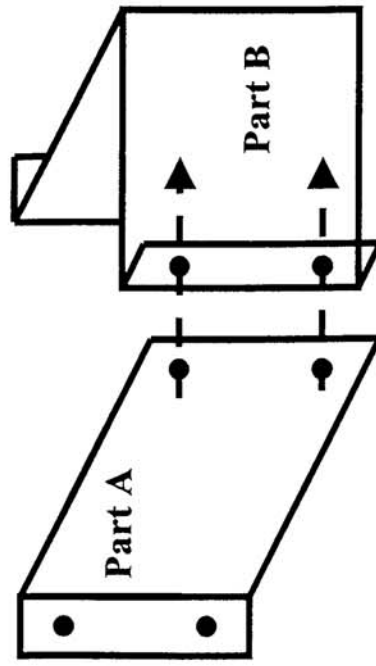
Note: All dimensions in inches.

Figure 3B*. Parts for ChoiceDek Guardrail System #3

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Bolt Part A to Part B



Note: All dimensions in inches.

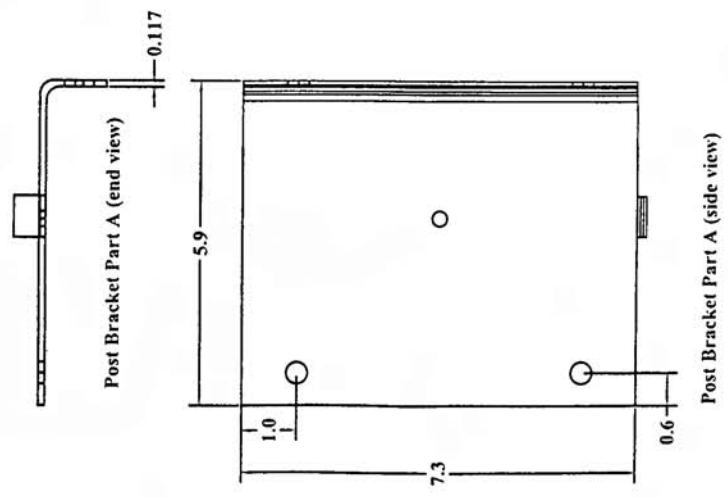


Figure 3C*. Post Bracket for ChoiceDek Guardrail System #3

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