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

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

EVALUATION SUBJECT:

Brock Deck™ and Triple Crown® Fence

REPORT HOLDER:

ROYAL OUTDOOR PRODUCTS
P.O. BOX 360
MILFORD, IN 46542-0360

1.0 SUBJECT

Brock Deck™ and Triple Crown® Fence

2.0 PROPERTIES

- 2.1 Structural
- 2.2 Fire resistive characteristics
- 2.3 Durability

3.0 DESCRIPTION

3.1 General

Brock Deck™ and Triple Crown® Fence are composed of PVC Class 13344, manufactured in accordance with ASTM D 1784, which is factory formed into prefinished flooring and guard components. Brock Deck™ and Triple Crown® Fence are used as flooring, stair treads and guards for exterior balconies, porches, stairs and decks, in combustible construction where such assemblies are permitted to be unprotected construction.

3.2 Brock Deck™

Brock Deck™ flooring components, which form the walking surface, are nominally 1½ in. (38 mm) deep and 6 in. (140 mm) wide and are held in place by aluminum clip strips, which are formed from material meeting the requirements of *The Aluminum Association* Standard 6063 T-6. Each clip strip is nominally 1½ in. (38 mm) wide and 6 in. (140 mm) long. The clips are installed side by side for the length of each supporting member (joist) and are secured with two No. 8 x 1¼ in.-long (32mm) washer head stainless steel screws. The plank is installed onto the clips by positioning the plank over the clip and pressing down. Brock Deck™ also includes end cap and C-channel

trim components, which form a nonstructural covering for the end and edges of the flooring components (planks).

3.3 Triple Crown® Fence

Triple Crown® Fence is available in six styles: Hampton, Hampton XR, Camelot, Camelot XR, Vanderbilt and Vanderbilt XR. The Triple Crown Fence components are assembled to form a guard with a height of 42 in. (1067 mm).

Hampton, Camelot, and Vanderbilt are comprised of a top rail, a bottom rail, vertical balusters, post covers, post caps, galvanized steel top and bottom rail inserts, nylon rail locks and galvanized steel post mounts.

Hampton XR, Camelot XR, and Vanderbilt XR are comprised of the same components described above plus an intermediate rail component.

Top, bottom and intermediate rails are manufactured with openings to accept the vertical balusters. The openings are spaced such that the clear distance between vertical balusters, when they are installed in each opening, is less than 4 in. (102 mm).

Galvanized steel top and bottom rail inserts, which form the structural portion of the rails, are installed within the rail profile and are continuous for the span of the rail. The galvanized steel post mount components are nominally 4 in. wide by 4 in. deep by 29 in. (102 x 102 x 737 mm) long and are bolted through predrilled holes to the supporting construction with a minimum of four ¼ in. (6.4 mm)-dia.-A307 bolts and nuts, such that the post mount extends above the deck surface approximately 18 in. (457 mm) to accept the bottom rail and corner post components. The steel inserts and steel post mount components are manufactured in accordance with ASTM A 653, Type B, with a minimum yield strength of 40,000 lbf/in² (275 790 kPa) and are galvanized in accordance with ASTM G 90.

The post cover component contains openings to allow for the installation of the top, bottom and intermediate rails. The connection between the rails and the post is formed with the nylon rail locks. Post caps are nonstructural and are intended to form a decorative cap trim on top of the post covers.

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4.0 INSTALLATION

4.1 General

4.1.1 Brock Deck™ and Triple Crown® Fence shall be installed in accordance with the manufacturer's published installation instructions, subject to the conditions of use in this report. A copy of these instructions shall be available on the job site during installation.

4.1.2 Construction supporting Brock Deck™ and Triple Crown® Fence, including but not limited to the posts, beams, joists, stringers, and associated connections shall be designed and constructed in accordance with the applicable code.

4.1.3 The compatibility of the fasteners, steel post mount component and aluminum clip strip component with the supporting construction material is subject to the specific approval of the code official.

4.2 Brock Deck™

4.2.1 Brock Deck™ flooring components shall be limited to the maximum design loads indicated in Table 1 of this evaluation report.

4.2.2 When Brock Deck™ flooring components are used as stair treads, the supporting construction (stringers) shall be limited to a maximum spacing of 16 in. (406 mm) on center.

4.2.3 When Brock Deck™ flooring components decking is perpendicular to the supporting construction, the supporting members shall be limited to a maximum spacing of 24 in. (51 mm) on center.

4.3 Triple Crown® Fence

4.3.1 Post mount components shall be spaced a maximum of 8 ft. (2.4 m) on center.

5.0 IDENTIFICATION

Brock Deck™ and Triple Crown® Fence as described in this report shall be marked at the plant with the manufacturer name and the identification of the third party inspection agency, RADCO.

6.0 EVIDENCE SUBMITTED

6.1 Manufacturer's published installation instructions titled *Residential Fence, Decking and Deck Railing Installation Instructions*, Publication Identification No. RCB108/698 .

6.2 SGS U.S. Testing Company Inc., Report No. 117456A, dated May 10, 1999, containing results of low-temperature structural performance testing.

6.3 Center for Applied Engineering, Inc., MTS Job Nos. 257319B, 25319C and 25319D, dated August 10, 1995, containing results of accelerated weather structural performance testing.

6.4 South Florida Test Service Test No. TCFI-1-X-1489, dated April 18, 1994, signed by Dennis J. Dietz, containing evidence of accelerated aging.

6.5 SGS U.S. Testing Company Inc., Report No. 117436-2, dated March 1, 1996, prepared by Steve Caldarola and witnessed by David H. Mangnall, P.E., containing results of rate of burn testing.

6.6 SGS U.S. Testing Company Inc., Report No. 117436-1, dated March 1, 1996, prepared by Steve Caldarola and witnessed by David H. Mangnall, P.E., containing results of ignition testing.

6.7 Progressive Engineering, Inc., Report No. 94-1070, dated June 20, 1996, signed and sealed by Ned C. Meyers, P.E., containing results of structural performance testing.

6.8 Progressive Engineering, Inc., Report No. 95-2172, dated June 20, 1994, signed and sealed by Ned C. Meyers, P.E., containing results of structural performance testing.

6.9 Progressive Engineering, Inc., Report No. 95-356, dated August 9, 1995, signed and sealed by Evor F. Johns, P.E., containing results of structural performance testing.

6.10 Progressive Engineering, Inc., Report Nos. 95-1124, dated September 6, 1995, and 95-1890, dated January 15, 1996, signed and sealed by Ned C. Meyers, P.E., containing results of structural performance testing.

6.11 Progressive Engineering, Inc., Report 96-590, dated October 18, 1996, signed and sealed by Ned C. Meyers, P.E., containing results of structural performance testing.

6.12 Progressive Engineering, Inc., Evaluation of Deck System and Guard Rail, dated September 27, 1996, signed and sealed by Ned C. Meyers, P. E., containing structural performance calculations.

6.13 *Material Tracking Procedures*, dated November 23, 1998, prepared by David S. Meade of Royal Crown Limited, containing quality control and assurance procedures.

6.14 Architectural Testing Inc., Report No. 01-35524.01, dated November 23, 1999, expiration dated August 27, 2003, prepared by Todd D. Burroughs, containing results of slip resistance testing.

6.15 Architectural Testing Inc., Report entitled *Slip Resistance Testing on Southern Yellow Pine*, dated February 14, 2000, prepared by Todd D. Burroughs, containing results of slip resistance testing.

6.16 Progressive Engineering, Inc., Report No. 99-2578, dated November 1, 1999, prepared and signed by Evor F. Johns, P.E., containing results of structural performance testing.

6.17 Royal Group Technologies, Ltd., calculations, dated July 11, 2001, addressing the deflection of the Brock Deck™ plank under a concentrated load of 300 lbs applied at the mid-span of a 16 in. span, signed by Jeffrey R. Walton, Jr., P.E.

6.18 Progressive Engineering, Inc., report, dated September 26, 2003, indicating the baseline flexural performance test, signed and sealed by Timothy A. Baldrige, P.E.

6.19 Royal Crown Limited's Integrated Management Systems Manual, dated 10/21/03, revised.

6.20 Progressive Engineering, Inc., report, dated May 12, 2003, indicating the impact resistance test, signed and sealed by Timothy A. Baldrige, P.E.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for the National Evaluation Service finds that the Brock Deck™ and Triple Crown® Fence as described in this report is comply with the 2000 *International Building Code*®, the 2000 *International Residential Code*®, and the 2002 *Accumulative Supplement to the International Codes™*, the BOCA® *National Building Code/1999*, the 1999 *Standard Building Code*®, the 1997 *Uniform Building Code™*, and the 1998 *International One and Two Family Dwelling Code*®, subject to the following conditions:

- 7.1** Brock Deck™ and Triple Crown® Fence shall be installed in accordance with the manufacturer's published installation instructions, engineering drawings and this Evaluation Report.
- 7.2** Brock Deck™ has been determined to have a slip index of 1.0 parallel and perpendicular to the plank length, in both dry and wet conditions of use. Appropriateness of the determined slip index, with respect to the requirements for slip resistance in Section 1005.4 of the applicable code, is subject to the specific approval of the code official.
- 7.3** Stairways shall be designed and constructed in accordance with the applicable code.

7.4 Construction documents consistent with this report shall be provided with permit applications. The following items, at minimum, shall be provided on the construction documents:

- 7.4.1** On center spacing of the supporting construction.
- 7.4.2** Design live load imposed on Brock Deck™ flooring components.
- 7.4.3** Type and location of fasteners to secure the Brock Deck™ and Triple Crown® Fence to the supporting construction.
- 7.4.4** Design calculations and details for specific applications shall be furnished to the code official verifying compliance with this report, the applicable code, and which address the ability of the supporting construction, and all connections between the Brock Deck™ and Triple Crown® Fence to the supporting construction, to resist all imposed loads required by the applicable code. The individual preparing such documents shall possess the necessary credentials regarding competency and qualifications as required by the applicable code and professional registration laws of the state where the construction is undertaken.
- 7.5** This report is subject to re-examination on a periodic basis. For information on the current status of this report, contact the ICC-ES.

TABLE 1—BROCK™ DECK ALLOWABLE DESIGN LOADS

Deflection	Deck Span (in.)	Uniform Load (lb/ft ²)
L/180	12	448
	16	182
	18	126
	24	53
L/240	12	320
	16	142
	18	101
	24	40
L/360	12	192
	16	81
	18	63

Notes to Table 1:

L = span of decking product,
 1 in. = 25.4 mm,
 1 lb/ft² = 47.88 Pa,
 1 lb. = 0.453 kg