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Legacy report on the BOCA® National Building Code/1999 and the 1998 International One- and Two-Family Dwelling Code®

DIVISION: 06—WOOD AND PLASTICS

Section: 06610—Plastic Railings and Guards

REPORT HOLDER:

EPOCH COMPOSITE PRODUCTS, INC.
A TAMKO COMPANY
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EVALUATION SUBJECT:

TAM-RAIL

EVALUATION SCOPE:

Compliance with the following codes:

BOCA® National Building Code/1999

- Section 106.4 Alternative materials and equipment
- Section 1604.4 Loads on handrails, guards, grab bars, and vehicle barriers
- Section 1606.1 Design live load
- Section 1710.1 General
- Section 1710.3.1 Test procedure
- Section 1704.3 Label
- Section 1021.2 Height
- Section 1021.3 Opening limitations
- Section 106.4 Alternative materials and equipment
- Section 2601.2 Durability

1998 International One- and Two-Family Dwelling Code®

- Section 108.1 Alternative materials, methods, and equipment
- Section 301.4 Live load
- Section 315.3 Guardrail details
- Section 315.4 Guardrail opening limitations
- Section 108.1 Alternative materials, methods, and equipment
- Section 301.2 Climatic and geographic design criteria

DESCRIPTION

The Epoch Composite Products, Inc. Tam-Rail is manufactured from polyvinyl-chloride (PVC) polymers which are extruded into hollow plastic profiles utilizing a three layer technology. The Tam-Rail is manufactured in lengths of 6, 8, 10, and 12 feet (1829, 2438, 3048, and 3656 mm) and a heights of 36 and 42 inches (914 and 1067 mm) above the walking surface when installed. The Tam-Rail is used as a guard for exterior balconies, porches, decks, and similar appendages on structures of combustible construction.

The Tam-Rail system includes components that are manufactured from PVC. The components include a composite post comprised of an extruded hollow PVC post sleeve installed with a 4-by-4-inch (102 x 102 mm) nominal wooden insert, a deluxe top rail (breadloaf shaped) or a 2-by-3¹/₂-inch (51 x 89 mm) rectangular top rail, post and railing support brackets, square or colonial style pickets, and post base attachments.

The 6-foot (1829 mm) lengths of railing are permitted to be supported by 4-by-4 nominal (102 x 102 mm) PVC post sleeve with 0.2-inch-thick (5.1 mm) walls attached to a satisfactory support substrate as outlined in this report and the manufacturer's published installation instructions. The attachment to the substrate is by means of the structural post mount. This application is also permitted for the installation of corner posts only when normal spacing does not exceed 8 feet 4 inches (2540 mm) center-of-post to center-of-post.

Other permitted post installations are as follows:

- The 4-by-4-inch (102 x 102 mm) post sleeve component installed over a 4-by-4-inch (102 x 102 mm) nominal wooden insert consisting of a pressure treated #2 Southern Yellow Pine or better. The wooden insert shall be attached to the support substrate utilizing two 1/2-inch-diameter (12.7 mm) carriage bolts installed along the centerline of the post located at 1³/₄ inches (44 mm) and 5³/₄ inches (140 mm) from the top of the floor surface with a minimum distance of 1³/₄ inches (44 mm) from the lowest installed carriage bolt to the bottom of the post (see Figure 1). The support substrate shall be a minimum of 7¹/₄ inches (185 mm) deep (8-inch (204mm) nominal). This attachment allows for a maximum post spacing of 8 feet 4 inches (2540 mm) center-of-post to center-of-post.

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- The 4-by-4-inch (102 x 102 mm) post sleeve component installed over a 1 1/4-inch (32 mm) ID NP x 34-inch (864 mm) standard (schedule 40) steel pipe insert meeting the requirements of ASTM A53 Type F, Grade A or better with a 1/2-inch (12.6 mm) diameter ID - #13 threaded bushing, inserted in the bottom end of the pipe (see Figure 2), is another permitted post installation method. The pipe is attached by threading the bushing onto the threaded rod provided by the structural post mount. This attachment allows for a maximum post spacing of 8 feet 4 inches (2540 mm) center-of-post to center-of-post.

The 10- and 12-foot (3 048 and 3 658 mm) long guards are permitted only when secured directly to the supporting construction utilizing the PVC rail brackets.

When attaching the Tam-Rail post mount to a wooden substrate, a through-bolted below deck mounting system described in the manufacturer's published installation instruction shall be utilized.

When attaching the Tam-Rail post mount to a concrete substrate, a Hilti HVA adhesive anchor comprised of a Hilti HVU epoxy capsule and 1/2-inch (12.7 mm) Hilti HAS-E Anchor Rod shall be embedded a minimum of 4 1/4 inches (108 mm), as described in Hilti's published installation instructions. The Hilti HVA Adhesive Anchor is limited to minimum concrete substrate thicknesses of 6 1/4 inches (159 mm) or greater.

CONDITIONS OF USE

This report is limited to the applications and products as stated herein. ICC-ES intends that the report be used by the code official to determine that the report subject complies with the code requirements specifically addressed, provided that this product is installed in accordance with the following conditions:

- The Epoch Composite Products, Inc. 42-inch-high (1067 mm) Tam-Rail shall be limited to use in as a guard rail for exterior balconies, porches, decks and similar appendages, as described in this report and the manufacturer's published installation manual, for buildings of combustible construction.
- The Epoch Composite Products, Inc. 36-inch-high (1067 mm) Tam-Rail shall be limited to use as a guard rail for exterior balconies, porches, decks and similar appendages constructed in accordance with the 1998 *International One- and Two-Family Dwelling Code*, as described in this report and the manufacturer's published installation manual, for buildings of combustible construction.

Exception: The Epoch Composite Products, Inc. 36-inch-high (1067 mm) Tam-Rail is permitted for use as a guard rail for exterior balconies, porches, decks and similar appendages where the height of the walking surface is less than 30 inches (762 mm) above the grade or floor below, for structures constructed in accordance with the *BOCA® National Building Code/1999*, as described in this report and the manufacturer's published installation manual, for buildings of combustible construction.

- The Epoch Composite Products, Inc. Tam-Rail top rail does not meet the dimensional requirements outlined in Section 1022.2.4 of the *BOCA® National Building Code/1999* for graspability. Therefore, the evaluation of the top rail for use as a handrail is outside the scope of this report.
- Installation of The Epoch Composite Products, Inc. Tam-Rail shall comply with this report and the manufacturer's published installation instructions. Where the manufacturer's published installation instructions differ from this report, this report shall be null and void.

- Fasteners used for the installation of the Epoch Composite Products, Inc. Tam-Rail shall be as described in this report. Screws shall be 2 1/2-inch-long (64 mm) stainless steel #3 bugle head TY17 coarse thread deck screws. Other methods of fastening are outside the scope of this report.
- Installation of Hilti HVA Adhesive Anchor in concrete substrates less than 6 1/4 inches thick (159 mm) is outside the scope of this report.
- The 10-foot (3 048 mm) and 12-foot (3 658 mm) long guards shall not be supported by the post installations prescribed in this report. The structure supporting the 10-foot (3 048 mm) and 12-foot (3 658 mm) long guards shall be designed to resist the applicable loads in accordance with this report and the applicable building codes.

ITEMS REQUIRING VERIFICATION

The following items are related to the use of the report subject, but not within the scope of this evaluation. However, these items are related to the determination of code compliance:

- ✓ Construction documents indicating compliance with this report.
- ✓ The design and construction of the supporting substrate construction for the Epoch Composite Products, Inc. Tam-Rail.
- ✓ If the Epoch Composite Products, Inc. Tam-Rail is proposed for use as a handrail, the local building official shall determine its compliance with the graspability requirements of Section 1022.2.4 of the *BOCA® National Building Code/1999*.

INFORMATION SUBMITTED

- Metals & Materials Engineers Report # 10984r2, dated March 25, 2003, titled "*Report of Polymer Guardrail Characterization for Accreditation*", signed and sealed by Scott Lowrie, P.E.
- Metals & Materials Engineers Report # 11130, dated January 6, 2003, titled "*Performance Testing of a Tensile Oriented Guardrail System*", signed and sealed by Scott Lowrie, P.E.
- Omega Point Laboratories Report # 16424-108910, dated May 29, 2001, titled "*Surface Burning Characteristics - Guardrail Sections*."
- Epoch Composite Products, Inc. *Quality Control Manual*, dated March 16, 2006 which includes:
 - *Guardrail Installation Instructions*.

APPLICATION FOR PERMIT

To aid in the determination of compliance with this report, the following represents the minimum level of information to accompany the application for permit:

- The language "See ICC-ES Legacy Report No. 22-22."

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

- The manufacturer's guard railing system component/kit designation.
- Type and location of fasteners to secure Tam-Rail to the supporting construction.
- The center-of-post to center-of-post spacing of the guard-rail post installation and specific type of post base attachment to the support structure. When the guard is sup-

ported by direct connection to the supporting construction other than the methods prescribed in this report, design calculations and details shall be provided to establish the ability of the supporting construction to support the required loads as described below.

- For jurisdictions adopting the BOCA® *National Building Code/1999* or the 1998 *International One- and Two-Family Dwelling Code*®, design calculations and details verifying the ability of the construction supporting the Epoch Composite Products, Inc. Tam-Rail, including but not limited to the posts, beams, joists and associated connections to carry all superimposed loads placed upon them shall be provided. These documents shall be prepared by an individual qualified in the application of the structural design principles involved. The individual preparing such documents shall possess the registration or license in accordance with the professional registration laws of the state in which the project is constructed.

PRODUCT IDENTIFICATION

The Epoch Composite Products, Inc. Tam-Rail, manufactured in accordance with this report, shall bear the following identification:

- "See ICC-ES Legacy Report No. 22-22".
- Additionally, each piece of Tam-Rail or the product packaging shall bear a permanent label that identifies the product and company name, manufacturing plant location or number and a means for establishing a date of manufacture.

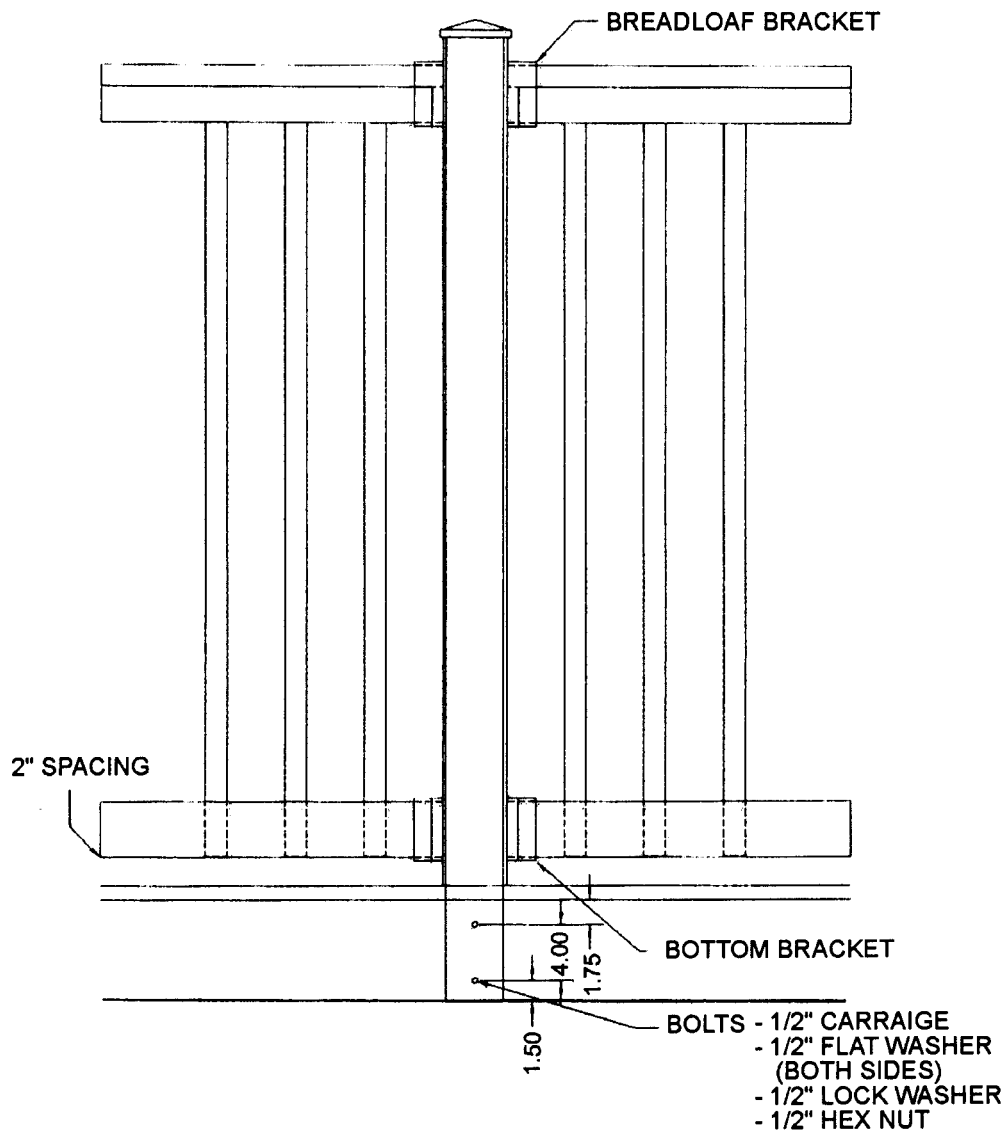


FIGURE 1*—STANDARD POST SLEEVE/WOOD INSERT INSTALLATION

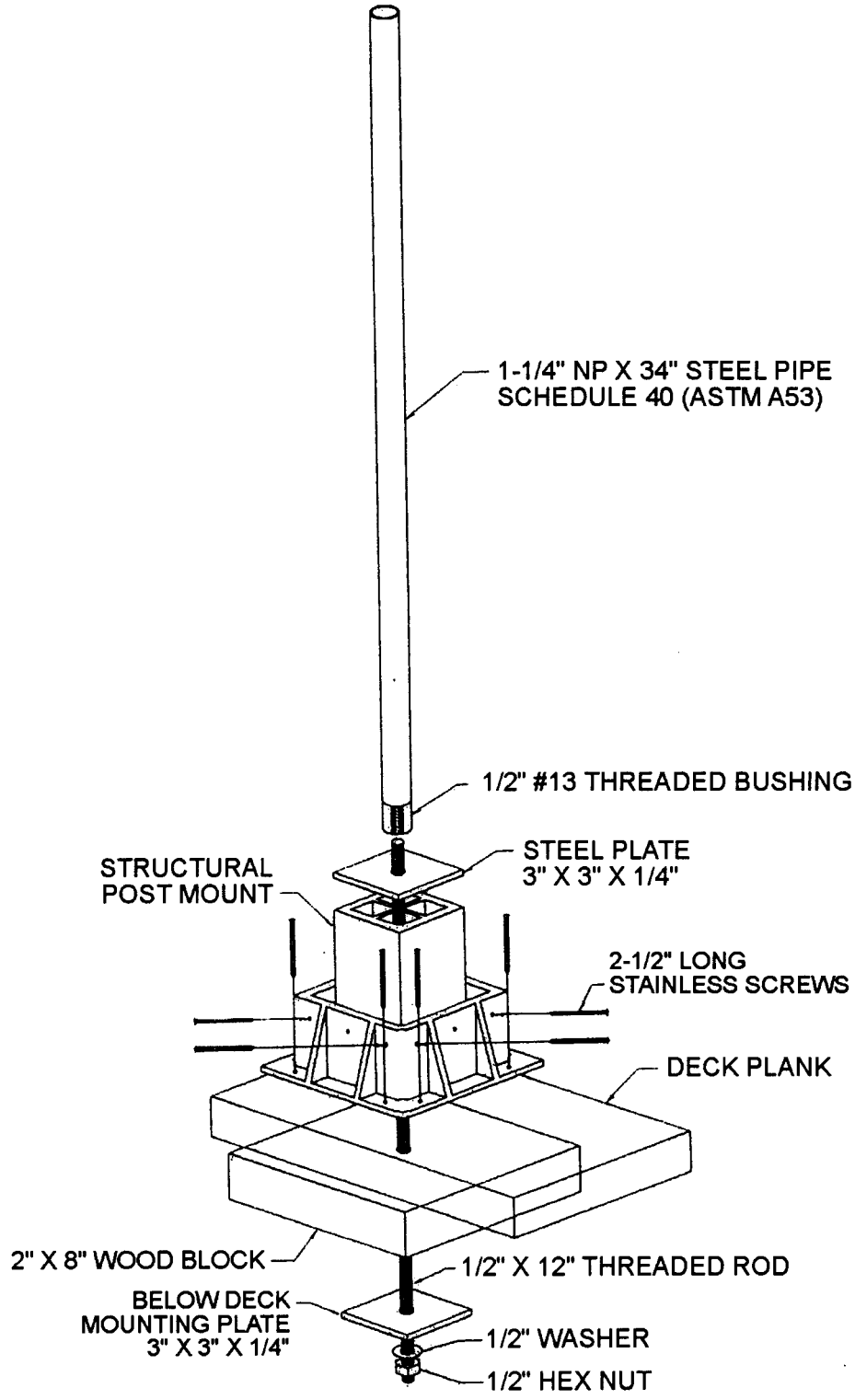


FIGURE 2*—STANDARD POST SLEEVE WITH PIPE INSERT INSTALLATION

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