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## Legacy report on the BOCA® *National Building Code/1999*

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### DIVISION: 06—WOOD AND PLASTICS

### Section: 06510—Structural Plastic Shapes and Plates

### REPORT HOLDER:

**DIGGER SPECIALTIES, INC.**  
**P.O. BOX 241**  
**BREMEN, INDIANA 46506**

### EVALUATION SUBJECT:

### EAGLE AND CARDINAL POLYVINYL RAILING

### EVALUATION SCOPE

Compliance with the following code:

#### **BOCA® *National Building Code/1999***

- Section 106.4 Alternative materials and equipment
- Section 1606.4 Loads on handrails, guards, grab bars and vehicle barriers
- Section 1710.1 General
- Section 1710.3 Load test procedures not specified
- Section 1021.2 Height
- Section 1021.3 Opening limitations
- Section 106.4 Alternative materials and equipment
- Section 1404.2 Durability

### DESCRIPTION

Eagle and Cardinal polyvinyl railings are used as guard systems for exterior balconies, porches and decks, and are capable of resisting the minimum design loads as required in the BOCA® *National Building Code/1999* for guard systems. The differences between the Eagle and Cardinal guard systems are the shape of the top and bottom rails, the shape of the aluminum rail reinforcing and the size and shape of the vertical balusters. The balusters for the Eagle railing are 1-inch (25.4 mm) square. The balusters for the Cardinal railing are 7/8-inch-deep-by-1 1/2-inch-wide (25.4 mm by 38 mm). See Figures 1 and 2 for diagrams of the railings and details of the top and bottom PVC rails and aluminum rail insert.

Eagle and Cardinal railings are comprised of a PVC top rail, bottom rail, vertical balusters, post covers and railing mounts, aluminum top and bottom rail inserts, and stainless steel post mounts. The top and bottom 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 nominally 2 7/8 inch (73 mm).

The aluminum top and bottom rail inserts, which form the structural portion of the rails, are installed within the PVC rail profile and are continuous for the span of the rail. The stainless steel post mount components are nominally 4-inch-wide-by-4-inch-deep-by-24-inch-long (102 by 102 by 610 mm) and are fastened to the supporting construction to accept the bottom rail and corner post components. The design and construction of the connection of the post mount to the supporting construction is beyond the scope of this report. The PVC components are Class 11333 manufactured by Westech Building Products, Inc., as described in ICC-ES legacy report NER-710. The top and bottom rail inserts are manufactured from aluminum alloy 6063T6. The stainless steel post mount components are manufactured from Type T304 steel complying with ASTM A 240.

The connection between the rails and the post covers is formed with the railing mount component. The rails are screwed to the railing mount component, which in turn is screwed to the post cover component. The screws used to secure the railing mount to the post covers are #12 by 1 1/4-inch-long (32 mm), 18-8 stainless steel panhead sheet metal screws. The railing mounts for the top rail of the Eagle railing are secured with two screws each. The railing mounts for the bottom rail of the Eagle railing are secured with four screws each. The railing mounts for the top and bottom rail of the Cardinal railing are secured with four screws each.

### CONDITIONS OF USE

This report is limited to the applications and products as stated in this report. The ICC-ES Subcommittee on National Codes 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:

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*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.*

- Eagle and Cardinal railings shall be limited to use as guard systems for exterior balconies, porches and decks.
  - Supporting construction of Eagle and Cardinal railings, including the connections of the post mount component to the supporting construction, is beyond the scope of this report and shall be designed and constructed in accordance with the BOCA® *National Building Code/1999*.
  - The maximum distance between the inside faces of the post mount components shall be 7 feet 0 inch (2134 mm) for the Eagle railing system.
  - The maximum distance between the inside faces of the post mount components shall be 8 feet 0 inch (2438 mm) for the Cardinal railing system.
  - Eagle and Cardinal railings shall be installed in accordance with the manufacturer's installation instructions dated December 1, 1999, and this report. Where manufacturer's installation instructions differ from this report, this report shall be null and void. Information within the manufacturer's installation instructions that is not specifically evaluated in this report is beyond the scope of this report.
  - This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.
- Manufacturer's guard designation (Eagle or Cardinal).
  - Spacing of vertical post mount components of the guard assembly.
  - Design calculations and details verifying the ability of the construction supporting Eagle and Cardinal railings to carry all superimposed loads placed upon them as required by Chapter 16 of the BOCA® *National Building Code/1999*.

#### PRODUCT IDENTIFICATION

- Eagle and Cardinal product or product containers shall be marked at the plant with the identifying language "See ICC-ES Legacy Report No. 21-42."
- Additionally, the PVC components or component packaging shall be identified with a tracking number, which is traceable to the quality control procedures of the PVC components manufacturer, Westech Building Products, Inc.

#### ITEMS REQUIRING VERIFICATION

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

- U Details, notes and calculations for the design and construction of the supporting construction, as required by the BOCA® *National Building Code/1999*, prepared by a qualified individual as indicated in this report.

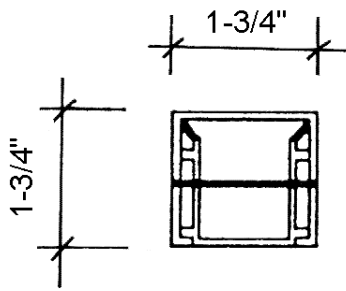
#### INFORMATION SUBMITTED

- NTA Inc. report No. NTA990006, dated June 1, 1999, signed and sealed by David R. Tompos, P.E., containing structural testing of the Eagle railing system.
- NTA Inc. report No. NTA990044, dated August 9, 1999, signed and sealed by John W. Weldy, P.E., containing structural testing of the Cardinal railing system.

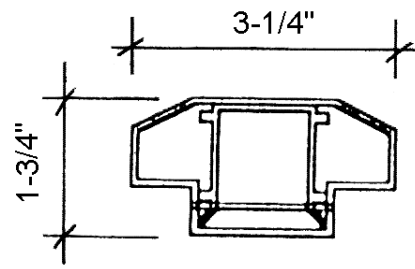
#### APPLICATION FOR PERMIT

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

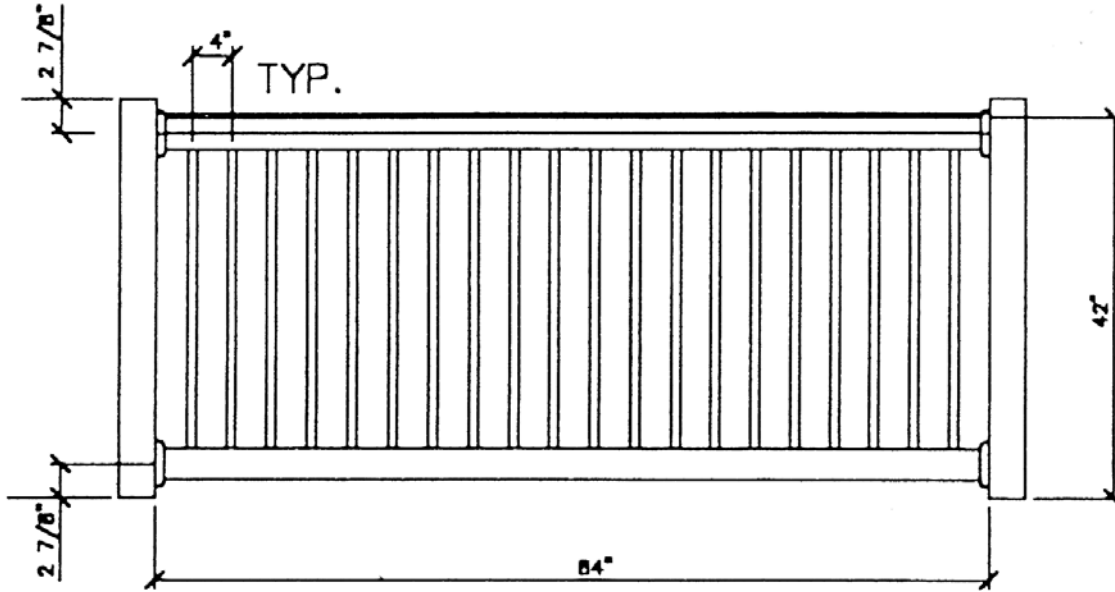
- The language "See ICC-ES Legacy Report No. 21-42" or a copy of this report;
- Construction documents verifying compliance with this report. These documents shall be prepared by an individual competent and qualified in the application of the structural design principles involved. The individual shall possess the registration or license in accordance with the professional registration laws of the state in which the project is constructed. The following items shall be clearly shown on the construction documents:



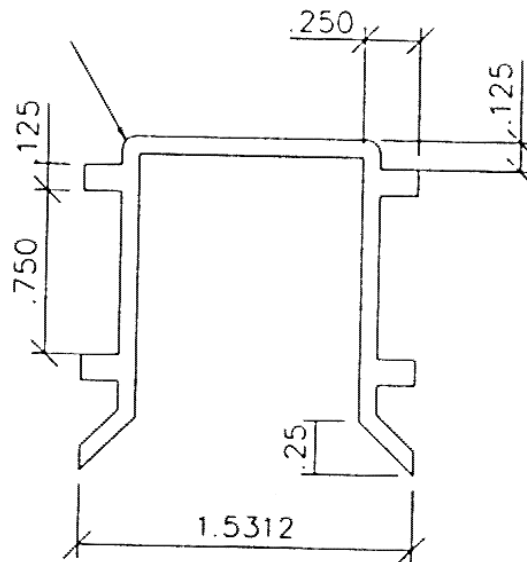
**BOTTOM RAIL WITH REINFORCING**



**TOP RAIL WITH REINFORCING**

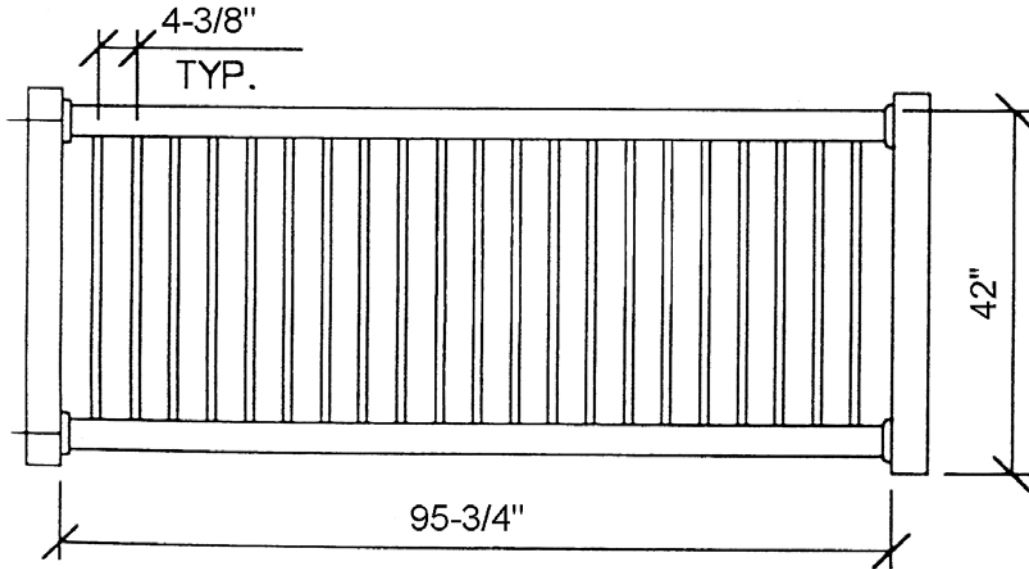


**EAGLE RAILING**

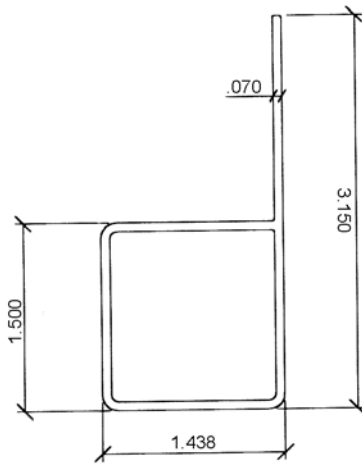


**ALUMINUM RAIL REINFORCING**

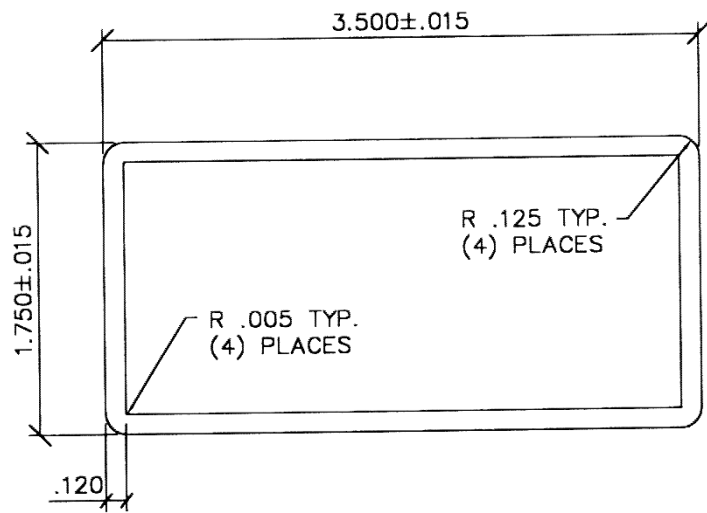
**FIGURE 1\***



**CARDINAL RAILING**



**ALUMINUM RAIL REINFORCING**



**TOP & BOTTOM PVC RAIL**

**FIGURE 2\***

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