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

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**SHEERLINE 3250 SERIES PVC RAILING**

**1.0 EVALUATION SCOPE**

**Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

**Properties evaluated:**

- Structural
- Durability
- Surface-burning characteristics

**2.0 USES**

The Sheerline PVC railing system described in this report is used in exterior applications as guards for balconies, porches, decks and stairs in one- and-two family dwellings in buildings of Type V-B (IBC) construction and other types of construction in applications where untreated wood is permitted by IBC Section 1406.3, or in buildings constructed in accordance with the IRC.

**3.0 DESCRIPTION**

**3.1 General:**

The Sheerline guardrail system is made of extruded hollow polyvinyl chloride (PVC) manufactured in white, beige, clay and gray colors. The height of the railing assembly is 36 inches or 42 inches (914 or 1067 mm) above the walking surface.

**3.1.1 Sheerline 3250 Series PVC Guardrail System:** The bottom rail is nominally 3 inches (76 mm) square, while pickets are nominally 1<sup>3</sup>/<sub>4</sub> inch (38 mm) fluted, 1<sup>1</sup>/<sub>2</sub>-inch square (38 mm), or 2-inch square (51 mm) colonial PVC pickets. The top rail is a "T" shaped section, nominally 3<sup>1</sup>/<sub>4</sub> inches wide (82 mm) at the top and nominally 4 inches high (102 mm). The top and bottom rails are supplied in unreinforced lengths of 6 feet (1.8 m). The 8-foot-long (2.4 m) and 10-foot-long (3 m)

sections are supplied with factory-installed aluminum "C" reinforcing channels for the top rail. The post sleeves are 4 inches (102 mm) square and have a wall thickness of 0.12 inch (2.9 mm). See Figure 1 for profile.

**3.2 Durability:**

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

**3.3 Surface-burning Characteristics:**

When tested in accordance with ASTM E 84, the Sheerline railing system has a flame-spread index of no greater than 200.

**4.0 DESIGN AND INSTALLATION**

**4.1 General:**

Installation of railing systems 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 the manufacturer's published installation instructions differ from this report, this report governs.

**4.2 Structural:**

The Sheerline PVC railing system is satisfactory to resist the loads specified in Section 1607.7.1, Exception 1, of the IBC and Table R301.5 of the IRC, when installed at a maximum clear span post spacing as noted in Table 1. When a railing is supported on one or both ends by the supporting construction, the maximum distance must be measured from the inside face of the post to edge-of-structure or edge-of-structure to edge-of-structure, respectively.

**4.3 Installation:**

Top and bottom rails must be attached to PVC-sleeved, pressure-treated, 4-by-4 wood posts via plastic socket brackets. Guardrails that are reinforced with an aluminum insert (i.e., guardrails more than 6 feet long) must be secured to the bracket with two No.8 by 1<sup>1</sup>/<sub>2</sub>-inch-long (38 mm), stainless steel, self-drilling pan-head screws (one on each side of the rail) that penetrate the plastic bracket, PVC railing and aluminum reinforcing insert. Nonreinforced and/or hollow rails must be secured to the bracket with four No.8 by 1<sup>1</sup>/<sub>2</sub>-inch-long (38 mm), stainless steel, self-drilling pan-head screws (two on each side of the rail) that penetrate the plastic bracket and PVC railing. The bracket must be secured to the posts with four No.8 by 1<sup>1</sup>/<sub>2</sub>-inch-long (38 mm), stainless steel, self-drilling pan-head screws.

Balusters are 1<sup>3</sup>/<sub>4</sub> inch (38 mm) fluted, 1<sup>1</sup>/<sub>2</sub> -inch square (38 mm), or 2-inch square (51 mm) colonial hollow PVC pickets that are installed into routed holes in the top and bottom rails. See Figure 2 for assembly drawings.

## 5.0 CONDITIONS OF USE

The Sheerline 3250 Series PVC guardrail system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The use of guardrail system is limited to exterior use as a guard system for balconies and porches for one- and two-family dwellings of Type V-B (IBC) construction and structures constructed in accordance with the IRC.
- 5.2 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. Only those fasteners and fastener configurations described in this report have been evaluated for the installation of the Sheerline guardrail system. When the manufacturer's published installation instructions differ from this report, this report governs.
- 5.3 The use of wood posts, with or without post sleeves, is outside the scope of this report.
- 5.4 The top rail component of the guardrail system must not be permitted to be used as a handrail for stairways or ramps.
- 5.5 The compatibility of the fasteners, metal post mount components and other metal hardware with the supporting construction, including chemically treated wood, is outside the scope of this report.
- 5.6 Adjustment factors outlined in the AF&PA *National Design Standard* and applicable codes must not apply to the allowable capacity and maximum spans for the deck railing system.

5.7 The guardrail system 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 discussed 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.

5.8 The Sheerline guardrail system is produced in Mooresville, North Carolina, under a quality control program with inspections by Architectural Testing Inc. (AA-676).

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174), dated February 2008.

## 7.0 IDENTIFICATION

The Sheerline 3250 Series PVC guardrail system described in this report is identified by a stamp on each individual piece or on the packaging bearing the manufacturer's name (L. B. Plastics, Inc.), the product type, the name of the inspection agency (Architectural Testing Inc.) and the ICC-ES evaluation report number (ESR-2465). The label must also include the phrase "For Use in One-and Two-Family Dwellings Only."

TABLE 1—MAXIMUM GUARDRAIL SYSTEM SPANS<sup>1</sup>

PRODUCT NAME/COMPONENT	APPLICABLE BUILDING CODE <sup>2</sup>		MAXIMUM SPAN (ft-in) <sup>4, 5</sup>
	IBC <sup>3</sup>	IRC	
The 10-foot-long Sheerline 3250 Series PVC guardrail system with aluminum "C" channel reinforcing insert	Yes	Yes	10-0
The 8-foot-long Sheerline 3250 Series PVC guardrail system with aluminum "C" channel reinforcing insert	Yes	Yes	8-0
The 6-foot-long Sheerline 3250 Series PVC guardrail system	Yes	Yes	6-0

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm.

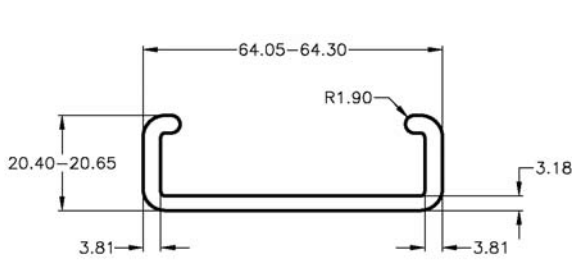
<sup>1</sup>The ability of the supporting construction to resist the reactionary loads must be confirmed by the code official.

<sup>2</sup>Indicates compliance with the respective building codes.

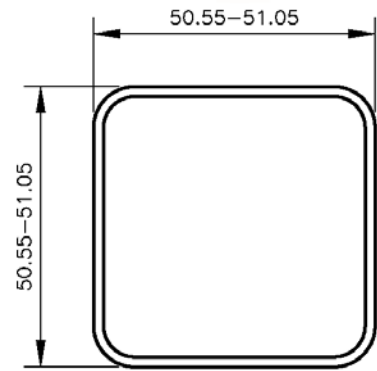
<sup>3</sup>All rail assemblies meet only the one- and two-family dwelling requirements of Section 1607.7.1 Exception 1 of the IBC.

<sup>4</sup>Maximum span is measured from inside face of the posts to edge-of-structure or from edge-of-structure to edge-of-structure where the rail is supported directly by the building.

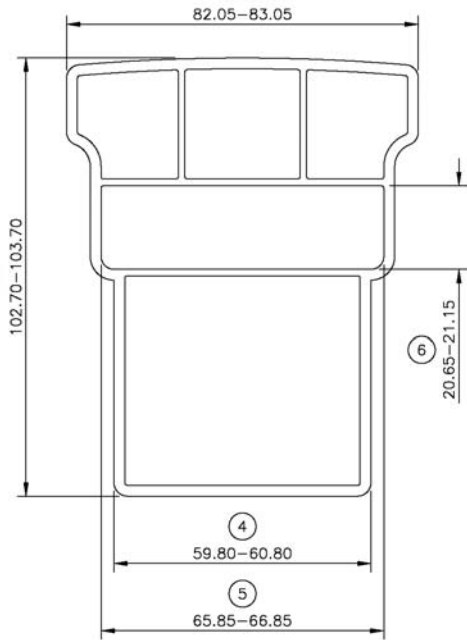
<sup>5</sup>Maximum allowable span is adjusted for durability. No further increases are permitted.



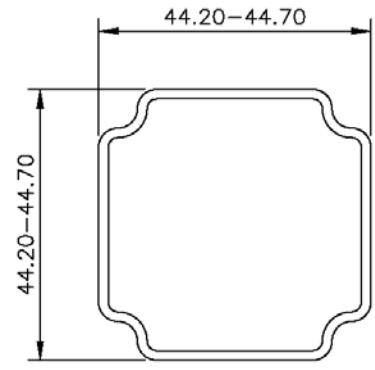
ALUMINUM INSERT



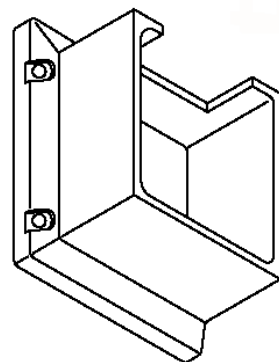
BALUSTER



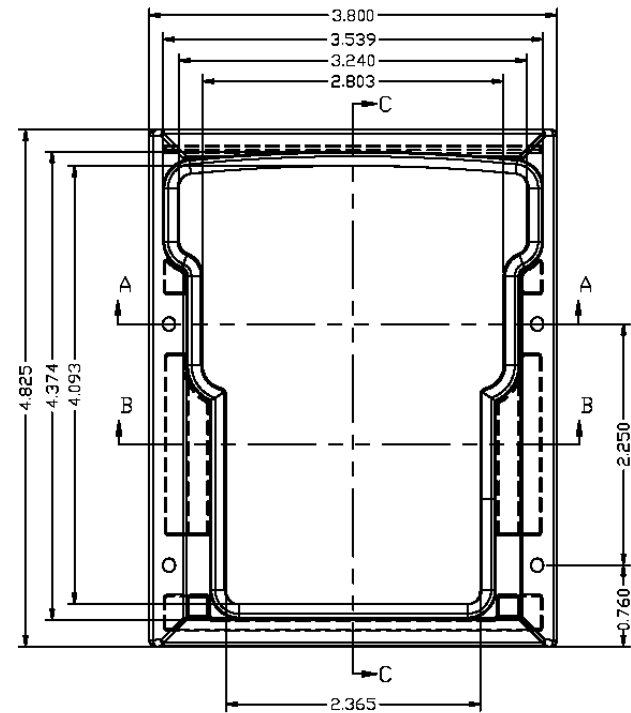
TOP RAIL



BALUSTER



MOUNTING BRACKET



MOUNTING BRACKET

FIGURE 1—GUARDRAIL SYSTEM COMPONENT PROFILE  
(Dimensions are in millimeters)

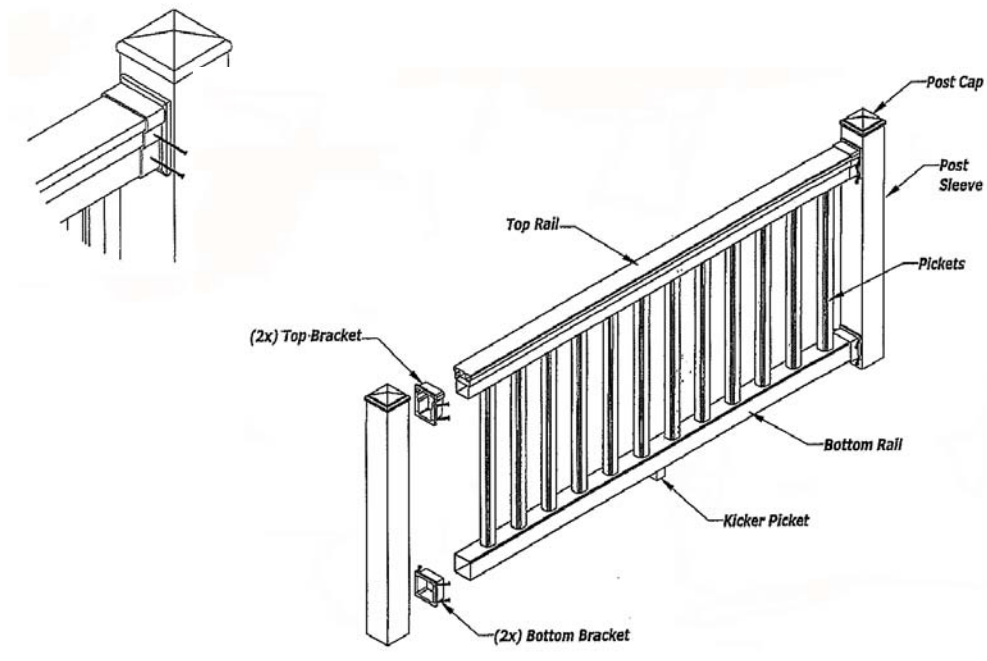


FIGURE 2—GUARDRAIL ASSEMBLY DRAWING