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

REPORT HOLDER:

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EVALUATION SUBJECT:

**FALCON RAILING SYSTEM, RAVEN RAILING SYSTEM
AND LXT RAILING SYSTEM**

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2003 *International Building Code*® (IBC)
- 2003 *International Residential Code*® (IRC)

Properties evaluated:

- Structural
- Durability
- Surface-burning characteristics

2.0 USES

The Falcon Railing System, Raven Railing System and LXT Railing System described in this report are limited to exterior use as guardrail systems for balconies, porches, and decks of Group R Occupancy buildings of Type V-B construction (IBC) and structures constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The Falcon Railing System, Raven Railing System and LXT Railing System are fabricated and assembled from poly(vinyl-chloride) (PVC) components, fasteners, injected molded components and an aluminum post insert. The Falcon Railing System, Raven Railing System and LXT Railing System are manufactured in two colors, white and tan.

3.2 Falcon Railing System:

The Falcon Railing System is manufactured with a height of 42 inches (1067 mm) and a center-of-post-to-center-of-post length of 100 inches (2540 mm) [rail length of 96 inches (2438 mm)]. The top rail is a combination of a 2½-by-3½-inch (64 by 89 mm) bread loaf-shaped PVC cover with a wall thickness of 1/8 inch (3.2 mm), and a 1½-by-3¾-inch (37 by

81 mm) 6063-T6 extruded aluminum p-shaped insert with a thickness of 0.070 inch (1.8 mm). The bottom rail is comprised of a 1¾-by-3½-inch (44 by 89 mm) PVC cover with a wall thickness of 0.12 inch (3.0 mm) and the same p-shaped aluminum insert utilized in the top rail. The PVC balusters are 1⅜ inches (35 mm) square with a wall thickness of 0.080 inch (2.0 mm). The post is comprised of a 4-by-4-inch (102 by 102 mm) square PVC cover with a 6061-T6 and 6063-T6 extruded aluminum post-insert assembly. The factory-assembled post-insert is comprised of a series of plates, bolts, and components assembled as described in the quality control manual. See Figures 1 and 6 for typical component cross sections and post insert assembly.

3.3 Raven Railing System:

The Raven Railing System is manufactured with a height of 42 inches (1067 mm) and a center-of-post-to-center-of-post length of 88 inches (2540 mm) [rail length of 84 inches (2438 mm)]. The top rail is a combination of a 3¼-by-1¾-inch (83 by 44 mm) "T" shaped PVC cover with a wall thickness of 0.090 inch (2.3 mm), and an approximate 3-by-1½-inch (80 by 37 mm) 6063-T6 extruded aluminum "T" shaped insert with a thickness of 0.070 inch (1.8 mm). The bottom rail is comprised of a 1¾-by-1¾-inch (44 by 44 mm) PVC cover with a wall thickness of 0.080 inch (2.0 mm) and a 1.525-inch-square (39 mm) U-shaped 6063-T6 extruded aluminum insert with a wall thickness of 0.078 inch (2.0 mm). The PVC balusters measure 7/8 inch by 1½ inches (22.2 by 38 mm) and have a wall thickness of 0.070 inch (2.0 mm). The post sleeve and the post insert assembly are of the same configuration as described for the Falcon Railing System. See Figures 2 and 6 for typical component cross sections and post insert assembly.

3.4 LXT Railing System:

The LXT Railing System is manufactured with a height of 42 inches (1067 mm) and a center-of-post-to-center-of-post length of 100 inches (2540 mm) [rail length of 96 inches (2438 mm)]. The top rail is the same combination of components as described for the top rail of the Raven Railing System. The bottom rail is the same combination of components as described for the bottom rail of the Falcon Railing System. The balusters, the post sleeve and the post insert assembly are the same as described for the Falcon Railing System. See Figures 1, 2 and 6 for typical component cross sections and post insert assembly.

3.5 Durability:

When subjected to weathering, insect attack, and other decaying elements, material used to manufacture the Falcon Railing System, Raven Railing System and LXT Railing System are equivalent in durability to preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. The products have been evaluated for a temperature range from -20°F (-29°C) to 125°F (52°C).

3.6 Surface-burning Characteristics:

When tested in accordance with ASTM E 84, the Falcon Railing System, Raven Railing System and LXT Railing System have a flame-spread index no greater than 200.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of the Falcon Railing System, Raven Railing System and LXT Railing System shall comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions shall be available at the jobsite at all times during installation.

4.2 Guardrail System:

4.2.1 Falcon Railing System: The post insert and the top and bottom rail inserts of the Falcon Railing System shall be installed as described in the manufacturer's published installation instructions. The reinforced top and bottom rails of the Falcon Railing System shall be attached to the post sleeve (with post insert) utilizing the top and bottom rail bracket mounts. Each mount is fastened to the post with four No. 12 by 1¹/₄-inch-long (32 mm) screws that are provided with the system. An additional two 3³/₄-inch-long (19 mm) screws are installed through the mount into the top and bottom rails as indicated in the manufacturer's published installation instructions. Each baluster is slip-fitted into the routed holes located in the top and bottom rails prior to the attachment of the top rail to the post. Balusters shall be spaced a maximum of 5 inches (127 mm) on center. See Figure 3 for a typical Falcon Railing System assembly.

4.2.2 Raven Railing System: The Raven Railing System is assembled in a similar manner as described for the Falcon Railing System. See Figure 4 for a typical Raven Railing System assembly.

4.2.3 LXT Railing System: The LXT Railing System is assembled in a similar manner as described for the Falcon Railing System. See Figure 5 for a typical LXT Railing System assembly.

4.2.4 Post Insert Assembly: The aluminum post insert assembly is preassembled in the factory with components comprised of material as described in the quality control manual. When fastening the aluminum post insert assembly to supporting construction consisting of concrete, the post base shall be fastened with four corrosion-resistant 1¹/₄-by-3-inch-long (6.4 by 76 mm) self-tapping concrete screws. When fastening the aluminum post insert assembly to supporting construction consisting of wood, the post base shall be fastened with four stainless steel 1¹/₄-inch-diameter (6.4 mm) screws/bolts.

4.2.5 Structural: The Falcon Railing System, Raven Railing System and LXT Railing System will resist the loads specified in the applicable codes when installed at a maximum center-to-center post spacing as prescribed in Table 3 of this report. When a guardrail is supported on one or both ends by the supporting construction other than a post with the aluminum insert, the maximum distance shall be measured from edge-of-structure to edge-of-structure at a maximum distance as indicated in Table 1.

5.0 CONDITIONS OF USE

The Falcon Railing System, Raven Railing System and LXT Railing System described in this report comply with, or are suitable alternatives 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 the Falcon Railing System, Raven Railing System and LXT Railing System shall be limited to

exterior use as a guardrail system for balconies, porches and decks of Group R Occupancy buildings of Type V-B construction (IBC) and structures constructed in accordance with the IRC.

- 5.2** Installation shall 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 Falcon Railing System, Raven Railing System and LXT Railing System. When the manufacturer's published installation instructions differ from this report, this report shall govern.
- 5.3** 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.
- 5.4** The use of the PVC post sleeve installed over inserts other than those described in this report are outside the scope of this report.
- 5.5** The use of the Falcon Railing System, Raven Railing System and LXT Railing System as handrails is outside the scope of this report.
- 5.6** Adjustment factors outlined in the NDS and applicable codes shall not apply to the allowable capacity and maximum spans for the Falcon Railing System, Raven Railing System and LXT Railing System.
- 5.7** The Falcon Railing System, Raven Railing System and LXT Railing System shall be directly fastened to supporting construction. Where required by the code official, engineering calculations and construction documents consistent with this report shall be submitted for approval. The calculations shall 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 shall contain details of the attachment to the supporting structure consistent with the requirements of this report. The documents shall 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 lineal PVC components (top rail, bottom rail, post sleeve and balusters) used in the Falcon Railing System, Raven Railing System and LXT Railing System are manufactured by Westech Fence, under a quality control program evaluated under ICC-ES evaluation report NER-710.
- 5.9** The Falcon Railing System, Raven Railing System and LXT Railing System are fabricated and packaged in Bremen, Indiana, under a quality control program with inspections by NTA, Inc. (AA-682).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174), dated April 2002 (editorially revised July 1, 2004; corrected December, 2004).

7.0 IDENTIFICATION

The Falcon Railing System, Raven Railing System and LXT Railing System described in this report shall be identified on each package by a stamp bearing the manufacturer's name (Digger Specialties, Inc.), the product type, the name of the third-party inspection agency (NTA Inc.) and the ICC-ES evaluation report number (ESR-1324).

TABLE 1—MAXIMUM GUARDRAIL SYSTEM SPANS^{3,4}

| PRODUCT NAME/COMPONENT | APPLICABLE BUILDING CODE ⁵ | | MAXIMUM SPAN (ft-in) ¹ | |
|------------------------|---------------------------------------|-----|-----------------------------------|---------------------------|
| | IBC | IRC | With Post ¹ | Without Post ² |
| Falcon Railing System | Yes | Yes | 8'-4" | 8'-0" |
| Raven Railing System | Yes | Yes | 7'-4" | 7'-0" |
| LXT Railing System | Yes | Yes | 8'-4" | 8'-0" |

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

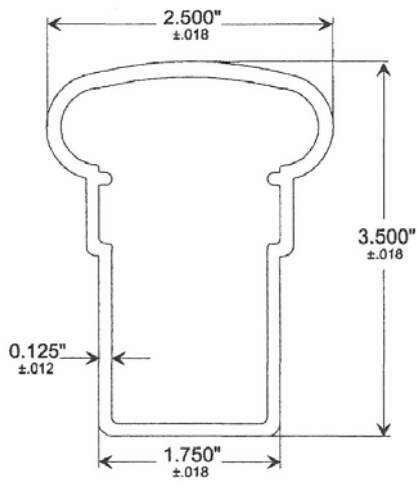
¹Maximum span is measured center-to-center of the posts or edge-of-structure to the center of the post.

²Maximum span is measured from edge-of-structure to edge-of-structure.

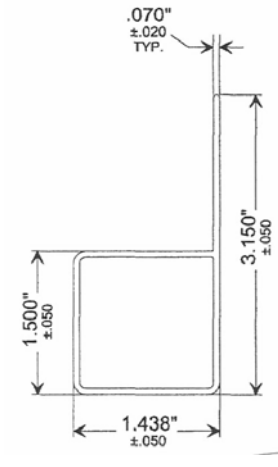
³Maximum allowable span is adjusted for durability. No further increases are permitted.

⁴The ability of the supporting construction to resist the reactionary loads shall be confirmed by the code official.

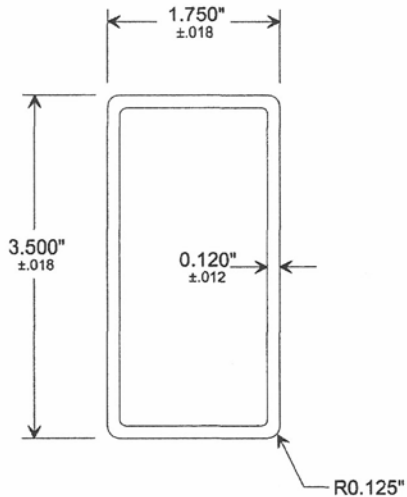
⁵Indicates compliance with the respective building codes.



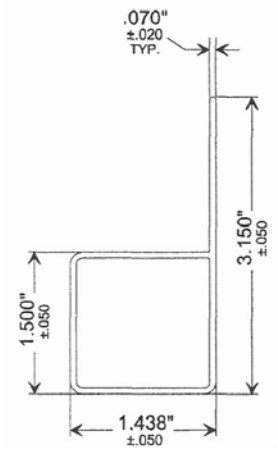
**TOP RAIL
(FALCON SYSTEM ONLY)**



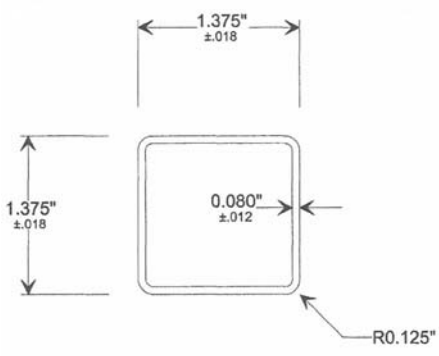
**TOP RAIL INSERT
(FALCON SYSTEM ONLY)
Shown in inverted orientation**



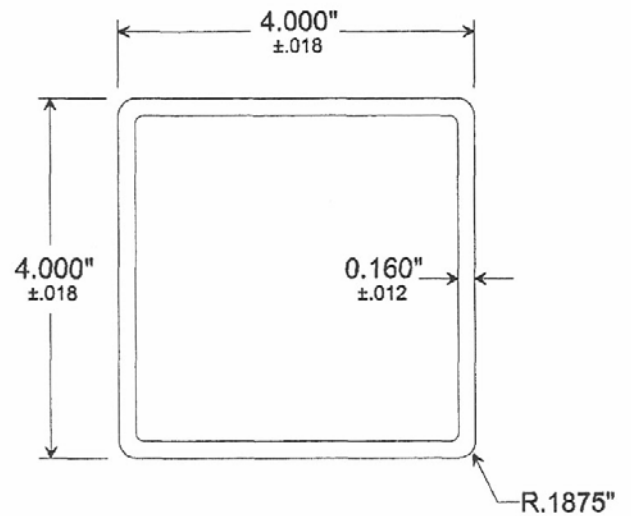
BOTTOM RAIL



BOTTOM RAIL INSERT



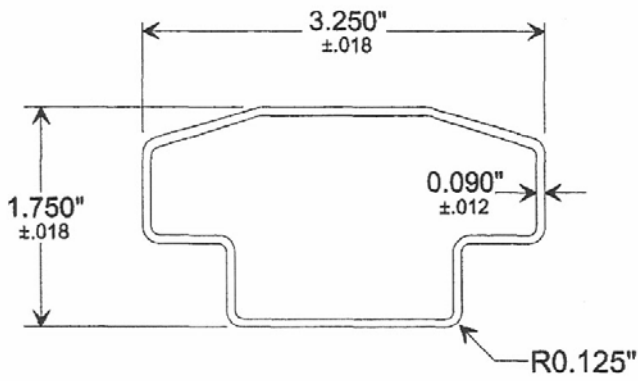
BALUSTER POST



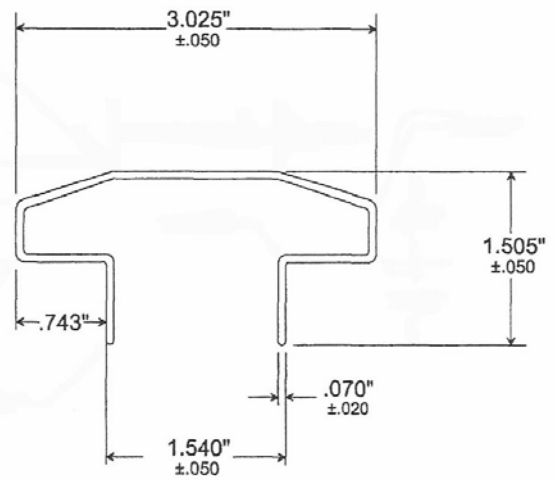
POST SLEEVE

For SI: 1 inch = 25.4 mm.

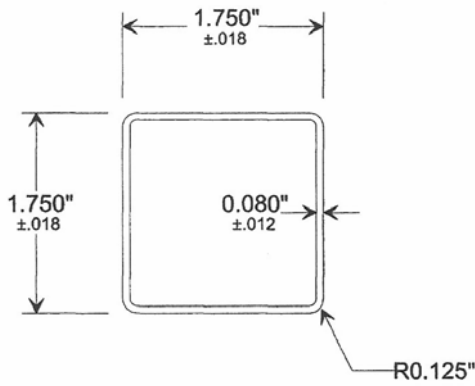
FIGURE 1—FALCON AND LXT GUARDRAIL SYSTEM COMPONENT PROFILES



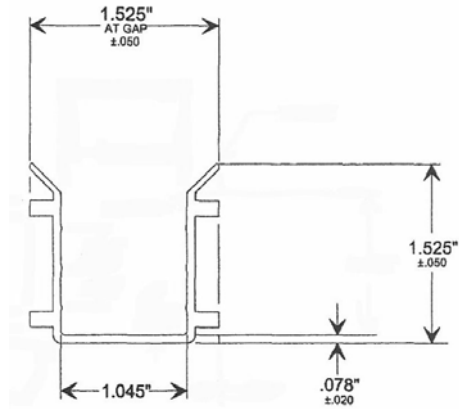
TOP RAIL



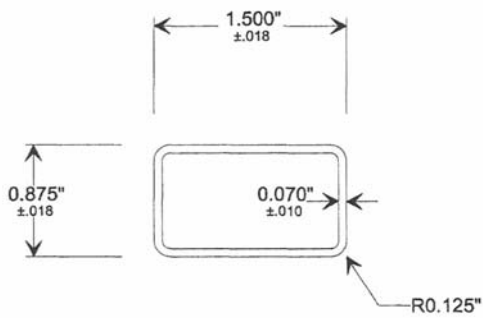
TOP RAIL INSERT



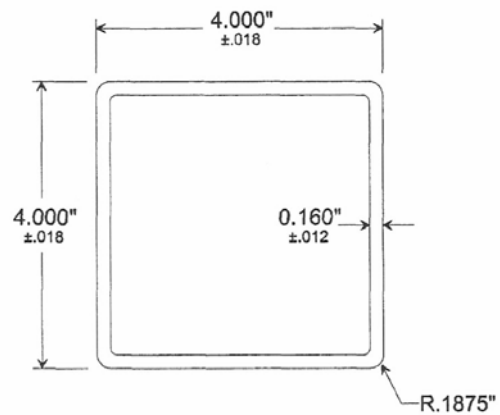
**BOTTOM RAIL
(RAVEN SYSTEM ONLY)**



**BOTTOM RAIL INSERT
(RAVEN SYSTEM ONLY)**



**BALUSTER
(RAVEN SYSTEM ONLY)**



POST SLEEVE

For SI: 1 inch = 25.4 mm.

FIGURE 2—RAVEN AND LXT GUARDRAIL SYSTEM COMPONENT PROFILES

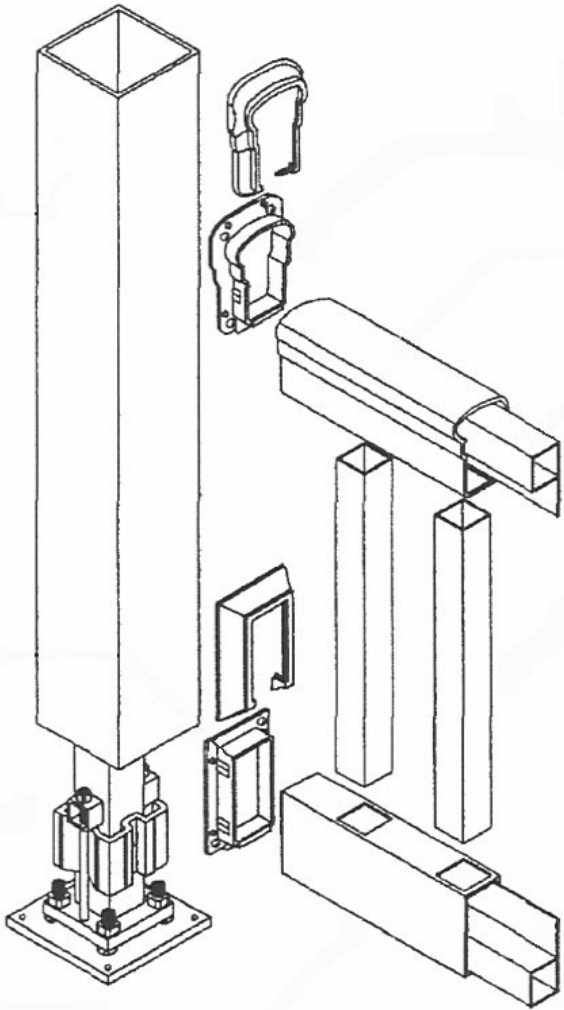


FIGURE 3—FALCON GUARDRAIL SYSTEM ASSEMBLY

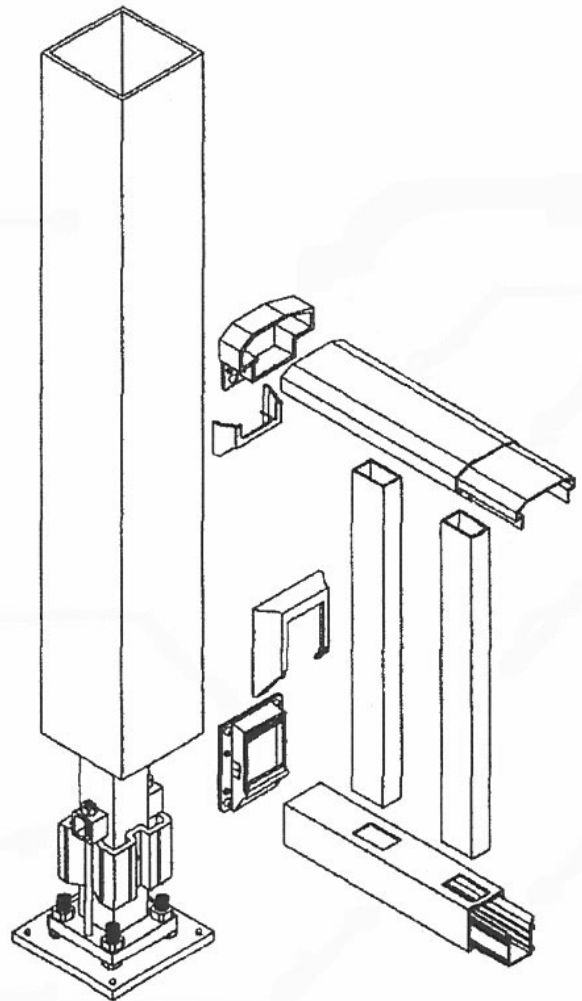


FIGURE 4—RAVEN GUARDRAIL SYSTEM ASSEMBLY

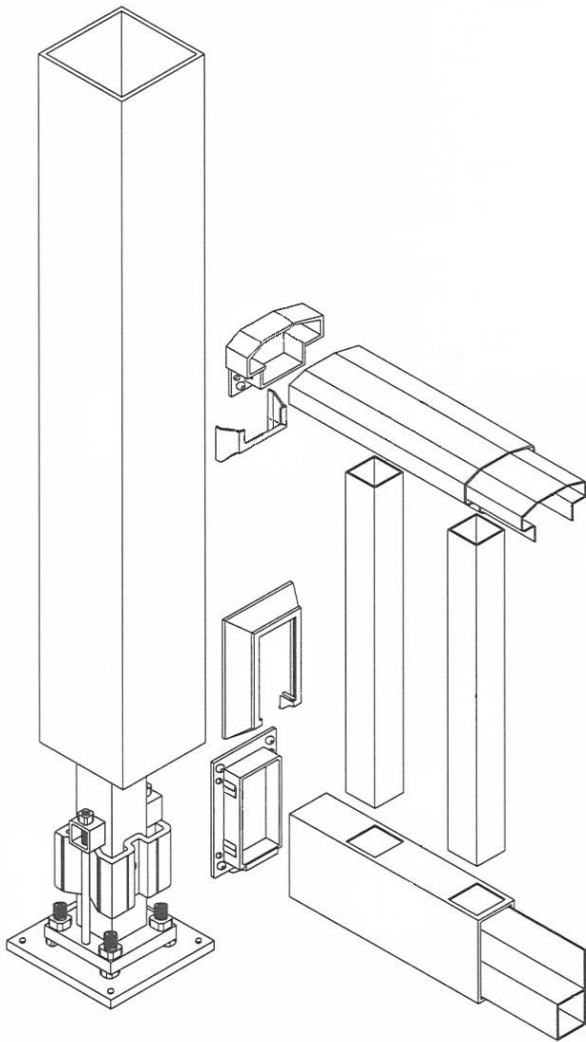


FIGURE 5—LXT GUARDRAIL SYSTEM ASSEMBLY

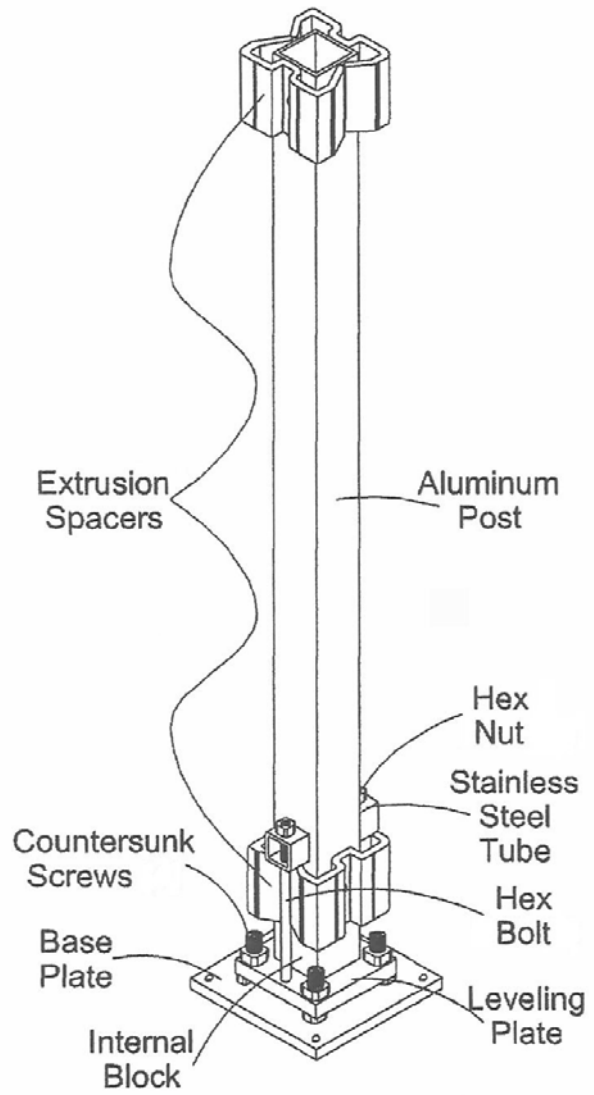


FIGURE 6—POST INSERT ASSEMBLY