

ICC-ES Evaluation Report

ESR-4816

Reissued March 2024

This report also contains:

- CRC Supplement

Subject to renewal March 2025

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<p>DIVISION: 05 00 00—METALS</p> <p>Section: 05 52 00—Metal Railings</p> <p>Section: 05 73 13—Glazed Decorative Metal Railings</p> <p>DIVISION: 08 00 00—OPENINGS</p> <p>Section: 08 81 00—Glass Glazing</p> <p>Section: 08 88 00—Special Function Glazing</p>	<p>REPORT HOLDER:</p> <p>ILLUMINATED BALUSTRADE AUSTRALIA</p>	<p>EVALUATION SUBJECT:</p> <p>SPARTAN RAILING</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, and 2015 [International Residential Code® \(IRC\)](#)

Properties evaluated:

- Structural
- Durability

2.0 USES

Spartan Railing is intended for use in exterior or interior applications for use as a handrail and guard system in residential buildings constructed in accordance with IRC.

Use in Wind-borne Debris Regions is outside the scope of this report.

3.0 DESCRIPTION

The Spartan Railing system consists of stainless-steel spigots (surface mount), monolithic tempered glass panels, glass connectors, and top rails. See [Figures 1](#) through [3](#). The stainless-steel spigots, connectors and top rail are available in polished chrome and PVDF coated matte black finishes.

3.1 Spigots:

The spigots are composed of 2205 Duplex Stainless steel, plastic spacers (shims), plastic screw plate with a stainless steel face, spigot cover and (2) 5/8" x 5/32" (8 mm x 16 mm) machine screws. See [Figure 1](#).

3.2 Glass Panels:

The glass must be ½" monolithic fully tempered glass complying with ASTM C1048, ANSI Z97.1 Class A and Category II of CPSC 16 CFR 1201. The glass panels must adhere to the height and width dimensions shown in [Figure 4](#).

3.3 Glass Connectors:

Glass Connectors are available in 180-degree clamps, adjustable clamps (with a range of motion from 42 degrees – 180 degrees) to connect glass panels to glass panels, and end clamps to connect glass to structural items. Glass connectors are manufactured using ASTM A1016 316 Stainless Steel and are available in polished chrome and PVDF matte black finishes. See [Figure 3](#). The structural capacity of the glass connectors is outside the scope of this report.

3.4 Top Rails:

The top rails are required for all installations and are manufactured from ASTM A1016 316 stainless steel. They are available in polished chrome and PVDF matte black finishes. The dimensions of the top rail comply with the graspability requirements for Type I handrails as outlined in 2021 and 2018 IRC Section R311.7.8.5 (2015 and 2012 IRC Section R311.7.8.3). See [Figure 2](#).

3.5 Durability:

The Spartan Railing system materials supplied by Illuminated Balustrade Australia are inherently corrosion-resistant. The material type specified must be appropriate for the environment of the installation. Information verifying the durability must be submitted to the code official, when requested.

4.0 DESIGN AND INSTALLATION

4.1 Installation:

Installation of the Spartan Railing system, including top rails, must comply with the manufacturer's published installation instructions, this report and the IRC.

The manufacturer's published installation instructions must be available at the jobsite at all times during installation. In the event of a conflict between this report and the manufacturer's instructions, this report governs.

4.1.1 Spigots: See [Figure 5](#) for required location of spigots for each panel width.

4.1.2 Top Rails: The top rail shown in [Figure 3](#) must be installed for compliance with this report. The top rail is installed to the glass panel using provided rubber insert and applicable connectors at joints or to ends. See [Figure 3](#). See [Table 1](#) for the maximum rail span. The ends of the top rail must be supported by a wall or post, and design of the attachment to the end support is outside the scope of this report.

4.2 Design:

4.2.1 Live Loads: The following project specific live loads must be identified while limiting stresses within the glass panels to 6,000 psi (41.3 MPa) [modulus of rupture (24,000 psi) divided by a safety factor of 4] and the deflection to 1 inch (25.4 mm) or less:

A single concentrated live load of 200 pounds (0.89 kN) applied in any direction at any point on the top of glass panel.

A horizontally applied normal live load of 50 pounds applied perpendicular to the glass panel on an area not to exceed 12 inches-by-12 inches (305 mm-by-305 mm).

4.2.2 Wind Loads: The allowable stress due to wind loading is 9600 psi (66.2 MPa). The required wind load must be determined by a registered design professional based on the project-specific conditions, taking into account the balustrade location on the structure, and must not exceed the values shown in the tables of this report. The Spartan Railing System allowable wind load capacity is provided in [Table 2](#) of this report.

5.0 CONDITIONS OF USE:

The Spartan Railing 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 product is limited to installation where it is not subject to vehicle impacts.
- 5.2** The supporting structure and anchorage are outside the scope of this report and must be designed by a registered design professional and constructed to support the load imposed by the guards in accordance with the applicable code.

- 5.3 Drawings and design details for the Spartan Railing system, using the information noted in this report, must be included on construction plans submitted to the code official for approval. The drawings and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4 When installed where the spigots are exposed to moisture, the spigot anchors must be of a material intended for the use and identified by the manufacturer as acceptable for exterior applications.
- 5.5 Both ends of the top rails must be supported by a wall or post, and the attachment must be capable of supporting a concentrated horizontal load of 200 lbs (0.89 kN).
- 5.6 Use of the system as a grab bar is outside the scope of this report.
- 5.7 All glass must be fully tempered, fabricated, and inspected in accordance with ASTM C1048. The glass fabricator must provide certification of compliance with Section R308.1 of the IRC. Glass must be procured directly from a qualified glass fabricator.
- 5.8 The Spartan Railing system components, except for the glass panels and anchors are supplied by Illuminated Balustrade Australia.

6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Glass Railing and Balustrade Systems \(AC439\)](#) dated April 2019 (editorially revised August 2020).

7.0 IDENTIFICATION

- 7.1 The Spartan Railing system components described in this report are identified by a label on the packaging bearing the manufacturer's name; product description and/or part number; the ICC-ES evaluation report number (ESR-4816).
- 7.2 The report holder's contact information is the following:

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TABLE 1—TOP RAIL SPAN LENGTHS⁴

PART NUMBER	MATERIAL	MAXIMUM PANEL SPAN (inches) ^{1,2,3}
SC-A05	316 Stainless Steel	54

For SI: 1 inch = 25.4 mm.

- Based on the capacity of the top rail considering a 200 lb. concentrated load.
- The maximum middle glass panel widths must not be greater than the maximum middle top rail span.
- The glass panels widths must be as noted in [Table 2](#).
- The ends of the top rail must be attached to a wall or post.

TABLE 2—NOMINAL 1/2" (12MM) MONOLITHIC FULLY TEMPERED GLASS PANEL STRENGTH¹

Glass Panel Width (in.)	Panel Thickness (in.)	Number Spigots ⁴	ALLOWABLE WIND PRESSURE ($w_{all\ wind}^3$), psf FOR SPARTAN RAILING HEIGHT ² (H_c), in.	
			36	42
24	1/2	2	62.1	42.6
30		2	51.4	34.3
36		2	49.4	31.1
42		2	37.2	27.0
48		2	35.5	25.3
54		3	31.2	22.5

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm; 1 lb = 4.45 N

1. An allowable live load stress of 6000 psi and an allowable deflection of 1-inch when a 200 lb concentrated live load or 50 lb concentrated live load is applied in accordance with Section 301.5 of the IRC have been considered.
2. Total Spartan Railing (glass panel plus spigot) height above mounting surface.
3. $w_{all\ wind}$ is based on an allowable wind load stress of 9600 psi.
4. See [Figure 5](#) for spigot locations.

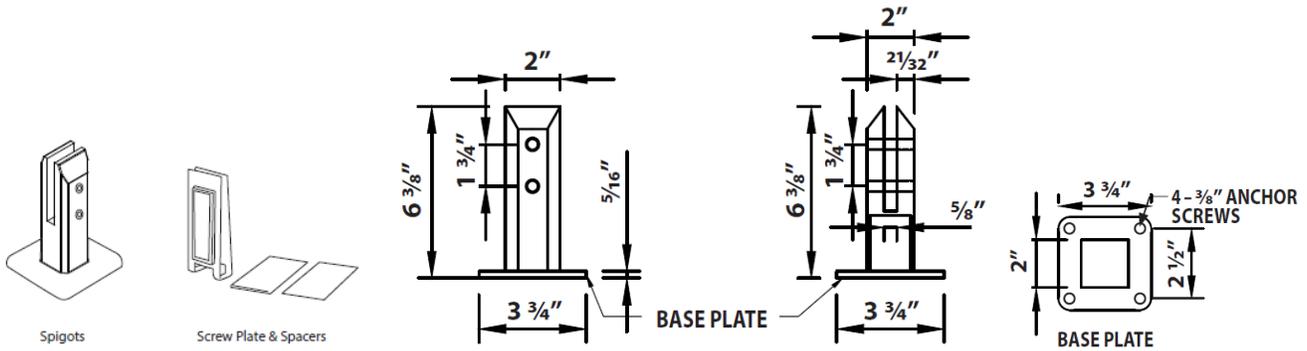


FIGURE 1—SPIGOTS AND SCREW PLATES

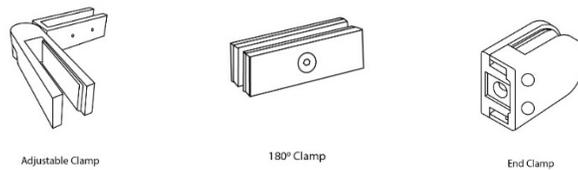


FIGURE 2—GLASS CONNECTORS

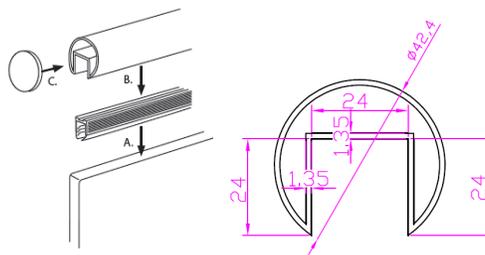


FIGURE 3—TOP RAIL CONNECTION

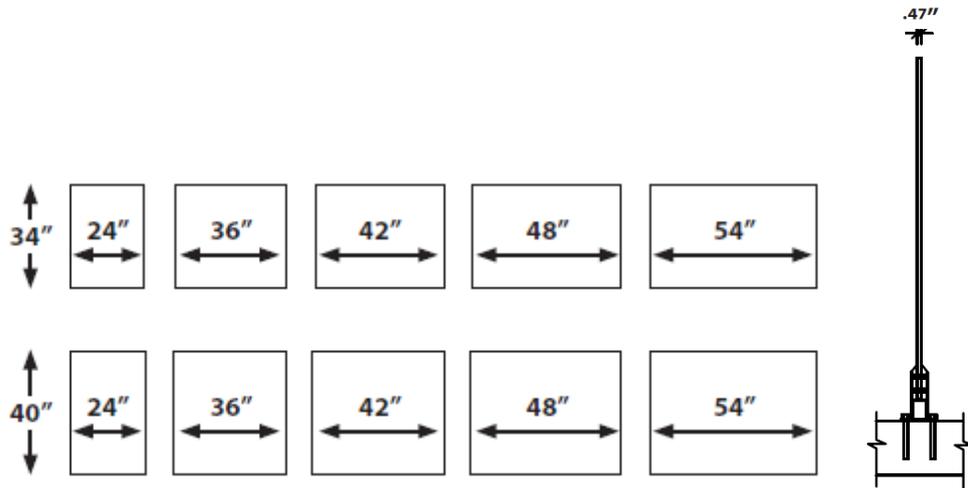
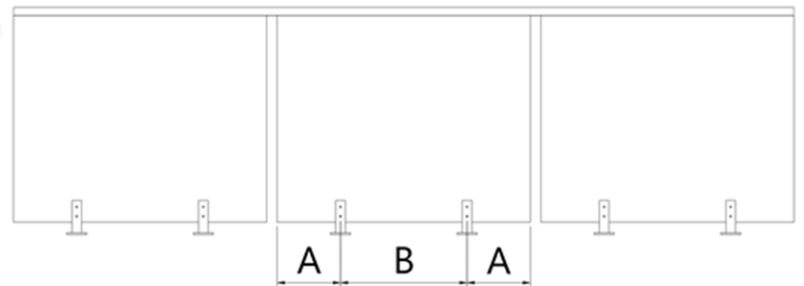


FIGURE 4—GLASS PANEL HEIGHTS AND WIDTHS

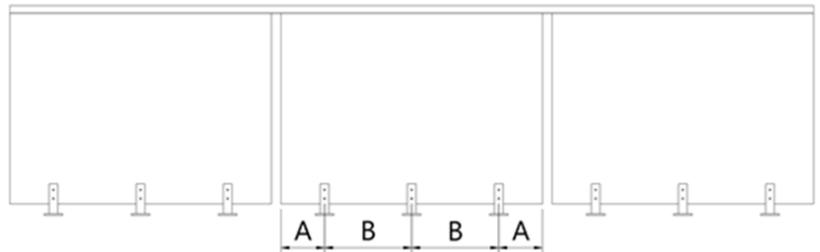
SPIGOT LOCATION DIMENSIONS

Glass Panel Width (in)	Spigots	Dist A (in)	Dist B (in)
24	2	6	12
36	2	9	18
42	2	10.5	21
48	2	12	24
54	3	9	18

For SI: 1 inch = 25.4 mm.



ASSEMBLY WITH TWO SPIGOTS



ASSEMBLY WITH THREE SPIGOTS

FIGURE 5—SPARTAN RAILING ASSEMBLY SPIGOT LOCATIONS

DIVISION: 05 00 00—METALS
Section: 05 52 00—Metal Railings
Section: 05 73 13—Glazed Decorative Metal Railings

DIVISION: 08 00 00—OPENINGS
Section: 08 81 00—Glass Glazing
Section: 08 88 00—Special Function Glazing

REPORT HOLDER:

ILLUMINATED BALUSTRADE AUSTRALIA

EVALUATION SUBJECT:

SPARTAN RAILING

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Spartan Railing, described in ICC-ES evaluation report ESR-4816, has also been evaluated for compliance with the code noted below.

Applicable code edition:

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CRC:

The Spartan Railing, described in Sections 2.0 through 7.0 of the evaluation report ESR-4816, complies with CRC Chapter 3, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Chapter 3, as applicable.

This supplement expires concurrently with the evaluation report, reissued March 2024.