

ICC-ES Evaluation Report

ESR-4688

Reissued June 2024

Revised September 2024

Subject to renewal June 2026


This report also contains:

- LABC and LARC Supplement

- FBC Supplement

ICC-ES Evaluation 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, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2024 ICC Evaluation Service, LLC. All rights reserved.

<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>Q-RAILING USA CO.</p>	<p>EVALUATION SUBJECT:</p> <p>EASY GLASS RAILING SYSTEMS</p>	
--	--	--	---

1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Properties evaluated:

- Structural
- Durability

For evaluation for compliance with codes adopted by [Los Angeles Department of Building and Safety \(LADBS\)](#), see [ESR-4688 LABC and LARC Supplement](#).

2.0 USES

The Easy Glass Railing Systems are intended for use in interior and exterior locations of all construction types.

3.0 DESCRIPTION

The Easy Glass Railing Systems consist of continuous aluminum base shoes, cap rails (if applicable), handrails (if applicable), edge protection (if applicable), glass panels and Wedge or Q-disk dry glaze mechanisms.

3.1 Top Rails: The cap rails (also known as top rails) are manufactured from ASTM A554 304 or 316 stainless steel or ASTM B221 6063-T6 aluminum (See [Table 1](#) and [Figure 4](#)).

3.1.1 Edge Protection: Edge Protection is a non-structural profile placed on the top edge of balustrade glass. Edge protection is manufactured from ASTM A554 316 stainless steel or ASTM B221 6063-T6 aluminum (See [Table 2](#) and [Figure 5](#)).

3.2 Handrails: The handrails are manufactured from ASTM A554 304 or 316 stainless steel. (See [Table 3](#) and [Figure 7](#)).

3.3 Handrail Brackets: The handrail brackets are manufactured from ASTM A276 304 or 316 stainless steel. (See [Table 4](#) and [Figure 6](#)).

3.4 Laminated Glass Panels: The laminated glass panels must comply with ASTM C1172 and Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1. The panels must consist of two lites of glass with an interlayer.

Lites: The lites must be Kind FT tempered glass complying with ASTM C1048 and have a minimum Modulus of Rupture (Fr) ≥ 24,000 psi (165 MPa).

Interlayer: The interlayer must have a minimum shear modulus of 1,653 psi (11.4 MPa) for T ≤ 122°F (50°C).

For nominal laminated glass panel thicknesses of 9/16-inch, 11/16-inch, 13/16-inch, 111/16, 113/32-inch, 11/8-inch, and 15/16-inch (14, 17.5, 20.5, 27, 28, 28.5 or 33 mm), the interlayer thickness and minimum actual thickness of the laminated glass panels must be as shown below:

Nominal Thickness (inch)	Interlayer Thickness (inch)	Minimum Actual Thickness (inch)
9/16	0.060	0.498
11/16	0.060	0.644
13/16	0.060	0.770
111/16	0.060	0.998
113/32	0.090	1.038
11/8	0.105	1.063
15/16	0.060	1.250

3.5 Base Shoe: The Easy Glass base shoes are manufactured from ASTM B221 6063-T6 aluminum (See [Figure 8](#)).

3.6 Dry Glazing Systems:

3.6.1 Wedge System: The wedge system for Easy Glass Slim and Easy Glass Max consists of an ABS plastic L-shape inlay and an ABS plastic wedge. The wedge is tapped in until sufficiently fixed as specified in the manufacturer’s installation instructions using the Easy Glass multi-tool. Easy Glass wedge kits are provided with rubber sets to match selected glass thickness. See [Figure 2](#).

3.6.2 Q-disk System: The Q-disk system for Easy Glass Smart, Easy Glass Prime and Easy Glass Strong consists of an ABS plastic inlay and the ABS plastic Q-disk. The Q-disk is tightened to one pound-foot torque using the specific tool. Glass is adjustable by moving the inlay left-right. Easy Glass Q-disk kits are provided with rubber gaskets to match selected glass thickness. See [Figure 3](#).

3.7 Durability: The Easy Glass materials supplied by Q-railing USA Co. 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 guardrail systems, including the handrails and top rails, must comply with the manufacturer’s published instructions, this report, and the IBC or IRC, as applicable.

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 Top Rails: The maximum spans in [Table 1](#) are based on the capacities of the top rails. At the balustrade end, the top rail must be attached to a structure, wall, or post able to support the code-prescribed loads listed in Section 4.2.1.

4.1.2 Edge Protection: The edge protection in [Table 2](#) may be installed on the top edge of glass where a handrail is used or installation without a top rail is permitted. The edge protection is not designed to carry the code-prescribed loads listed in Section 4.2.1 of this report.

4.1.3 Handrails:

4.1.3.1 General: Handrails must be installed as required per the applicable code.

4.1.3.2 Brackets: The handrail brackets are installed through holes located near the ends of the glass panels. See [Table 4](#) for compatible handrail and bracket combinations.

4.1.3.3 Installation: Handrails are installed to glass panels using the through-glass mounting brackets shown in [Figure 6](#). The mounting brackets are installed at the ends of the glass panels. The holes in the laminated glass panels must comply with Section 4.3 of this report.

4.1.3.4 Spacing: The handrail bracket spacing must be within the limits shown in [Table 4](#).

4.1.4 Dry Glazing Mechanisms:

The wedge supports, used with the Easy Glass Slim and Easy Glass Max base shoes, must be spaced a maximum of 3 inches from the ends of the base shoe and a maximum of 6 inches on center in the base shoe. The Q-disk supports, used with the Easy Glass Smart and Easy Glass Prime base shoes, must be spaced a maximum of 4.92 inches from the ends of the base shoe and a maximum of 9.84 inches on center in the base shoe.

An appropriate Easy Glass base shoe and dry glazing system must be used to support the laminated glass panels, based on the nominal thickness of the glass. See [Table 5](#) for nominal glass thicknesses compatible with each base shoe and its associated dry glazing system.

4.1.5 Installation Without a Top Rail or Handrail:

The Easy Glass systems (Wedge or Q-disk) may be installed without a top rail or handrail when using laminated tempered glass panels with an interlayer meeting the requirements of Section 3.4 and dimensions meeting the following:

- $1\frac{1}{16}$ -inch thick (17.5 mm) laminated tempered glass with a height from the top of the base shoe up to $37\frac{1}{2}$ inches (952.5 mm)
- $1\frac{3}{16}$ -inch thick (20.5 mm), $1\frac{1}{16}$ -inch thick (27 mm), $1\frac{3}{32}$ -inch thick (28 mm), $1\frac{1}{8}$ -inch thick (28.5 mm) or $1\frac{5}{16}$ -inch thick (33 mm) laminated tempered glass with a height from the top of the base shoe up to 42 inches (1066.8 mm)

Installation without a top rail or handrail complies with the Exceptions noted in IBC Section 2407.1.2 and IRC Section R308.4.4.1.

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 live load of 50 lb/ft applied in any direction along the handrail or top rail.
- 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).

[Tables 6](#) through [12](#) provide the maximum cantilevered glass height (H_c) based on allowable stress and a 1-inch (25.4 mm) deflection with an applied live load of 50 plf (0.73 kN/m). [Table 13](#) provides the maximum guard height (H_g) based on the allowable capacity of the base shoes with an applied live load of 50 plf (0.73 kN/m). The values in [Table 11](#) do not account for base shoe anchorage – connection of the base shoe to the building substrate must be designed by a registered design professional.

4.2.2 Wind Loads: The allowable stress due to wind loading is 10,200 psi (70.3 MPa). The required wind load must be determined by a qualified 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. [Tables 6](#) through [12](#) provide the allowable wind loads for laminated glass used with the Easy Glass railing systems. [Table 13](#) provides allowable wind loads for the base shoes. The values in [Table 13](#) do not account for base shoe anchorage – connection of the base shoe to the building substrate must be designed by a registered design professional.

4.3 Holes and Notches: Holes and notches are permitted for mounting handrails. Holes and notches must conform to ASTM C1048 and must not exceed 2 inches wide (50.8 mm). Notches or holes must not exceed 1/12 of the glass width. Holes or notches must not be located within the first third of the glass panel (balustrade) height from the shoe.

5.0 CONDITIONS OF USE:

The Easy Glass systems described in this report comply with, or are 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 of the system to the supporting structure is outside of the scope of this report and must be designed by a registered design professional and constructed to support the loads imposed by the guards in accordance with the applicable code.
- 5.3 The systems described in this report must not be used in Wind-borne Debris Regions. Use of the Easy Glass railing systems in Wind-borne Debris Regions is outside the scope of this report.
- 5.4 Drawings and design details for the Easy Glass systems, 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.
- 5.5 When installed where the base shoe anchors are exposed to moisture, the base shoe anchors must be of a material intended for the use and identified by the manufacturer as acceptable for exterior applications.
- 5.6 All metals in contact with aluminum must either be an alloy approved for direct aluminum contact, or isolated from the aluminum by an approved coating.
- 5.7 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 shear load of 200lbs (0.89kN).
- 5.8 Glass sand-blasted or etched on surfaces 1 (outside face) or 4 (inside face) is outside the scope of this report.
- 5.9 Use of the system as a grab bar is outside the scope of this report.
- 5.10 All laminated glass panels must be fully tempered Type II laminated glass, with an interlayer complying with Section 3.4, and fabricated and inspected in accordance with ASTM C1172. The glass fabricator must provide certification of compliance with ASTM C1172 for fully tempered glass. Glass must be procured directly from a qualified glass fabricator and is not produced or supplied by Q-railing USA Co.
- 5.11 The Easy Railing System components, except for the glass panels, are supplied by Q-railing USA Co.

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 ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4688) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

- 7.2 In addition, the Easy Glass Railing System components described in this report are identified by a label on the packaging bearing the product description and/or part number.
- 7.3 The glass panels must be identified as specified in the applicable code.
- 7.4 The report holder's contact information is the following:

Q-RAILING USA CO.
14321 FRANKLIN AVENUE, SUITE A
TUSTIN, CA 92780
(714) 259-1372
www.q-railing.com
sales.us@q-railing.com

TABLE 1—TOP RAIL SPAN LENGTHS
(Based on the top rail spanning over a minimum of three glass panels)

SHAPE	PART NUMBER	MATERIAL	MAXIMUM SPAN (inches) ^{1,2,4}
Round	MOD 6920-042	6063-T6 Aluminum	48- ¹ / ₂
	MOD 6920-042	304/316 Stainless Steel	48- ¹ / ₂
	MOD 6920-048	304/316 Stainless Steel	48- ¹ / ₂
	MOD 6920-060	304/316 Stainless Steel	48- ¹ / ₂
U-Profile	MOD 6960-050	316 Stainless Steel	48- ¹ / ₂
Square	MOD 6924-040	304/316 Stainless Steel	48- ¹ / ₂
Rectangular	MOD 6924-640	304/316 Stainless Steel	48- ¹ / ₂
	MOD 6911-339	6063-T6 Aluminum	48- ¹ / ₂
	MOD 6926-654	6063-T6 Aluminum	48- ¹ / ₂

For **SI**: 1 inch = 25.4 mm.

1. Based on the capacity of the top rail considering the worst case between a 50 plf uniform load and a 200 lb. concentrated load.
2. The maximum middle glass panel widths must not be greater than the maximum middle top rail span.
3. The maximum end glass panel must not be greater than the maximum end top rail span, except as noted in Footnote 5.
4. The glass panels widths must not be less than the minimum glass panel width noted in [Tables 6](#) through [12](#).
5. At the balustrade end, the top rail must be attached to a structure, wall, or post able to support the code-prescribed loads listed in Section 4.2.1.

TABLE 2—EDGE PROTECTION¹

SHAPE	PART NUMBER	MATERIAL
Edge Protection	MOD 146940-050-14-12	316 Stainless Steel
	MOD 146940-050-18-12	316 Stainless Steel
	MOD 146940-050-22-12	316 Stainless Steel
	MOD 166944-050-14-18	6063-T6 Aluminum
	MOD 166944-050-18-18	6063-T6 Aluminum
	MOD 166944-050-22-18	6063-T6 Aluminum

1. Edge protection must be used with a handrail and is not a substitute for a top rail.

TABLE 3—HANDRAIL PROFILES

SHAPE	PART NUMBER	MATERIAL
Round	MOD 0900-038	304/316 Stainless Steel
	MOD 0900-248	304/316 Stainless Steel
Square	MOD 4900-040	304/316 Stainless Steel

TABLE 4—HANDRAIL BRACKETS¹

SHAPE	PART NUMBER	MATERIAL	COMPATIBLE HANDRAIL PROFILES	MAXIMUM BRACKET SPACING (inches)
L-shape, adjustable	MOD 0150-000 ²	316 Stainless Steel	MOD 4900-040	42- ¹ / ₂
L-shape, adjustable	MOD 0150-038 ²	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape, adjustable	MOD 0150-048 ²	316 Stainless Steel	MOD 0900-248	42- ¹ / ₂
L-shape, adjustable	MOD 0151-038 ²	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape, adjustable	MOD 0155-000 ²	304/316 Stainless Steel	MOD 4900-040	42- ¹ / ₂
L-shape, adjustable	MOD 0155-038 ²	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape, adjustable	MOD 0155-048 ²	304/316 Stainless Steel	MOD 0900-248	42- ¹ / ₂
L-shape, adjustable	MOD 0156-038 ²	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape, adjustable	MOD 4155-000 ²	304/316 Stainless Steel	MOD 4900-040	42- ¹ / ₂
L-shape, adjustable	MOD 4155-038 ²	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape	MOD 0117-038	304/316 Stainless Steel	MOD 0900-038	42- ¹ / ₂
L-shape	MOD 0117-048	304/316 Stainless Steel	MOD 0900-248	42- ¹ / ₂
L-shape	MOD 9350-038	304 Stainless Steel	MOD 0900-038	42- ¹ / ₂

1. All holes and notches must comply with Section 4.3.
2. Adjustable height of vertical rod measured from centerline of horizontal rod to centerline of circular or square handrail must less than or equal to 2.75 inches. See dimension B in [Figure 1](#) for reference.

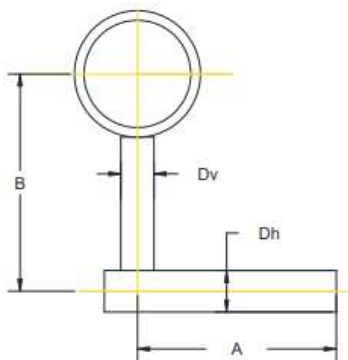


FIGURE 1— ADJUSTABLE HANDRAIL BRACKET

TABLE 5—BASE SHOE / GLASS THICKNESS COMPATIBILITY

BASE SHOE		DRY GLAZING SYSTEM	COMPATIBLE LAMINATED GLASS NOMINAL THICKNESSES
Base Shoe Profile	Part Number		
Easy Glass Slim Top Mount	MOD 8010	Wedge System	9/16"; 11/16"
Easy Glass Slim Fascia Mount	MOD 8030		
Easy Glass Smart Top Mount	MOD 8210	Q-disk System	9/16"; 11/16"
Easy Glass Smart Fascia Mount	MOD 8230		
Easy Glass Smart Top Mount – F Profile	MOD 8220		
Easy Glass Smart Fascia Mount – Y Profile	MOD 8240	Q-disk System	11/16"; 13/16"; 1-1/16"
Easy Glass Prime Top Mount	MOD 8410		
Easy Glass Prime Fascia Mount	MOD 8430		
Easy Glass Prime Top Mount – F Profile	MOD 8420		
Easy Glass Prime Fascia Mount – Y Profile	MOD 8440	Wedge System	13/16"; 1-1/16"; 1-3/32"; 1-1/8"
Easy Glass Max Top Mount	MOD 8510		
Easy Glass Max Top Mount – F Profile	MOD 8520	Q-disk System	13/16"; 1-1/16"; 1-3/32"; 1-1/8"; 1-5/16"
Easy Glass Strong Top Mount	MOD 8610		

TABLE 6—NOMINAL 9/16" (14 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (1/4" – 0.060" – 1/4")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (W _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.					LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		36	42	48	60	72	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G ≥ 1653 psi for T ≤ 122°F									Stress ⁸	1" Defl. ⁹
12	0.364	0.406	3356	56.5	41.5	31.8	20.3	14.1	39.5	31.1
24	0.434	0.461	4331	72.9	53.6	41.0	26.3	18.2	51.0	37.1
36	0.463	0.479	4683	78.8	57.9	44.4	28.4	19.7	55.1	39.6
42	0.470	0.483	4760	*	58.9	45.1	28.8	20.0	56.0	40.2
48	0.477	0.487	4833	*	*	45.8	29.3	20.3	56.9	40.7
60	0.484	0.490	4907	*	*	*	29.7	20.7	57.7	41.3
72	0.488	0.493	4950	*	*	*	*	20.8	58.2	41.7

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

Footnotes to Tables 6-12:

* Allowable load is same as last value in column.

1. Glass must be supported by an Easy Glass base shoe and dry glazing system which are compatible with the nominal laminated glass thickness. See Table 5 for compatibility.
2. hef;w is the effective thickness for calculating deflection in accordance with ASTM E1300-16 (ASTM E1300-12ae¹ for the 2018 and 2015 IBC).
3. hmin;ef;σ is the effective thickness for calculating stress in accordance with ASTM E1300-16 (ASTM E1300-12ae¹ for the 2018 and 2015 IBC).
4. Based on maximum edge stress of 10,200 psi.
5. Calculated from $w_{all\ wind} = M_{all\ wind} * 12 / (0.55 * H_c^2)$.
6. Glass height above top of base shoe, H_c.
7. Other live loads listed in Section 4.2.1 must be considered.
8. Based on an allowable live load stress of 6,000 psi.
9. Height in which a 50 plf uniform load causes 1-inch deflection at the top of glass.

TABLE 7—NOMINAL 1 1/16" (17.5 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (5/16" – 5/16")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F																Stress ⁸	1" Defl. ⁹
12	0.458	0.512	5345	359.9	202.5	113.9	90.0	66.1	50.6	32.4	22.5	16.5	12.7	10.0	-	62.9	39.2
18	0.509	0.557	6338	426.8	240.1	135.0	107.0	78.4	60.0	38.4	26.7	19.6	15.0	11.9	-	74.6	43.5
24	0.546	0.585	6991	*	264.8	149.0	118.0	86.5	66.2	42.4	29.4	21.6	16.6	13.1	10.6	82.2	46.7
32	0.578	0.607	7510	*	*	160.0	126.0	92.9	71.1	45.5	31.6	23.2	17.8	14.0	11.4	88.3	49.4
36	0.589	0.613	7677	*	*	*	129.0	95.0	72.7	46.5	32.3	23.7	18.2	14.4	11.6	90.3	50.3
42	0.601	0.621	7858	*	*	*	*	97.2	74.4	47.6	33.1	24.3	18.6	14.7	11.9	92.5	51.3
48	0.609	0.626	7985	*	*	*	*	*	75.6	48.4	33.6	24.7	18.9	14.9	12.1	93.9	52.1
60	0.621	0.632	8143	*	*	*	*	*	*	49.4	34.3	25.2	19.3	15.2	12.3	95.8	53.0
72	0.627	0.635	8234	*	*	*	*	*	*	*	34.7	25.5	19.5	15.4	12.5	96.9	53.6

See footnotes under [Table 6](#)

TABLE 8—NOMINAL 1 3/16" (20.5 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (3/8" – 3/8")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F																Stress ⁸	1" Defl. ⁹
12	0.539	0.603	7413	499.2	280.8	157.9	124.8	91.7	70.2	44.9	31.2	22.9	17.5	13.9	11.2	87.2	46.1
18	0.597	0.656	8770	590.5	332.2	186.9	147.6	108.5	83.0	53.1	36.9	27.1	20.8	16.4	13.3	103.2	51.0
24	0.641	0.691	9729	*	368.5	207.3	163.8	120.3	92.1	59.0	40.9	30.1	23.0	18.2	14.7	114.5	54.7
32	0.680	0.718	10530	*	*	224.4	177.3	130.2	99.7	63.8	44.3	32.6	24.9	19.7	16.0	123.9	58.1
36	0.694	0.727	10796	*	*	*	181.7	133.5	102.2	65.4	45.4	33.4	25.6	20.2	16.4	127.0	59.3
42	0.710	0.737	11090	*	*	*	*	137.2	105.0	67.2	46.7	34.3	26.3	20.7	16.8	130.5	60.7
48	0.722	0.744	11297	*	*	*	*	*	107.0	68.5	47.5	34.9	26.7	21.1	17.1	132.9	61.7
60	0.737	0.753	11561	*	*	*	*	*	*	70.1	48.7	35.7	27.4	21.6	17.5	136.0	63.0
72	0.746	0.758	11714	*	*	*	*	*	*	*	49.3	36.2	27.7	21.9	17.7	137.8	63.8

See footnotes under [Table 6](#)

TABLE 9—NOMINAL 1¹/₁₆" (27 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (1/2" – 0.060" – 1/2")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F															Stress ⁸	1" Defl. ⁹	
12	0.684	0.766	11980	806.7	453.8	255.3	201.7	148.2	113.4	72.6	50.4	37.0	28.4	22.4	18.2	140.9	58.5
18	0.751	0.830	14054	946.4	532.4	299.5	236.6	173.8	133.1	85.2	59.2	43.5	33.3	26.3	21.3	165.3	64.2
24	0.806	0.876	15672	*	593.6	333.9	263.8	193.8	148.4	95.0	66.0	48.5	37.1	29.3	23.7	184.4	68.9
32	0.860	0.916	17133	*	*	365.0	288.4	211.9	162.2	103.8	72.1	53.0	40.6	32.0	26.0	201.6	73.5
36	0.880	0.930	17643	*	*	*	297.0	218.2	167.1	106.9	74.3	54.6	41.8	33.0	26.7	207.6	75.2
42	0.904	0.945	18221	*	*	*	*	225.4	172.5	110.4	76.7	56.3	43.1	34.1	27.6	214.4	77.2
48	0.921	0.956	18639	*	*	*	*	*	176.5	113.0	78.4	57.6	44.1	34.9	28.2	219.3	78.7
60	0.945	0.970	19182	*	*	*	*	*	*	116.3	80.7	59.3	45.4	35.9	29.1	225.7	80.7
72	0.959	0.978	19503	*	*	*	*	*	*	*	82.1	60.3	46.2	36.5	29.6	229.4	82.0

See footnotes under [Table 6](#)

TABLE 10—NOMINAL 1³/₃₂" (28 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (1/2" – 0.090" – 1/2")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F															Stress ⁸	1" Defl. ⁹	
12	0.666	0.750	11470	772.4	434.5	244.4	193.1	141.9	108.6	69.5	48.3	35.5	27.2	21.5	17.4	134.9	56.9
18	0.727	0.813	13472	907.2	510.3	287.1	226.8	166.6	127.6	81.7	56.7	41.7	31.9	25.2	20.4	158.5	62.1
24	0.783	0.864	15230	*	576.9	324.5	256.4	188.4	144.2	92.3	64.1	47.1	36.1	28.5	23.1	179.2	66.9
32	0.843	0.913	16992	*	*	362.0	286.1	210.2	160.9	103.0	71.5	52.5	40.2	31.8	25.7	199.9	72.0
36	0.866	0.930	17651	*	*	*	297.2	218.3	167.2	107.0	74.3	54.6	41.8	33.0	26.7	207.7	74.0
42	0.895	0.950	18428	*	*	*	*	227.9	174.5	111.7	77.6	57.0	43.6	34.5	27.9	216.8	76.5
48	0.918	0.965	19011	*	*	*	*	*	180.0	115.2	80.0	58.8	45.0	35.6	28.8	223.7	78.4
60	0.949	0.985	19796	*	*	*	*	*	*	120.0	83.3	61.2	46.9	37.0	30.0	232.9	81.1
72	0.970	0.997	20276	*	*	*	*	*	*	*	85.3	62.7	48.0	37.9	30.7	238.5	82.9

See footnotes under [Table 6](#)

TABLE 11—NOMINAL 1¹/₈" (28.5 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (1¹/₂" – 0.105" – 1¹/₂")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F															Stress ⁸	1" Defl. ⁹	
12	0.661	0.745	11313	761.8	428.5	241.0	190.5	139.9	107.1	68.6	47.6	35.0	26.8	21.2	17.1	133.1	56.4
18	0.719	0.807	13282	894.4	503.1	283.0	223.6	164.3	125.8	80.5	55.9	41.1	31.4	24.8	20.1	156.3	61.5
24	0.775	0.860	15081	*	571.3	321.3	253.9	186.5	142.8	91.4	63.5	46.6	35.7	28.2	22.9	177.4	66.2
32	0.836	0.912	16957	*	*	361.3	285.5	209.7	160.6	102.8	71.4	52.4	40.1	31.7	25.7	199.5	71.4
36	0.861	0.931	17679	*	*	*	297.6	218.7	167.4	107.1	74.4	54.7	41.9	33.1	26.8	208.00	73.6
42	0.892	0.953	18543	*	*	*	*	229.4	175.6	112.4	78.0	57.3	43.9	34.7	28.1	218.2	76.2
48	0.916	0.970	19202	*	*	*	*	*	181.8	116.4	80.8	59.4	45.5	35.9	29.1	225.9	78.3
60	0.952	0.993	20103	*	*	*	*	*	*	121.8	84.6	62.2	47.6	37.6	30.5	236.5	81.3
72	0.975	1.006	20662	*	*	*	*	*	*	*	87.0	63.9	48.9	38.6	31.3	243.1	83.3

See footnotes under [Table 6](#)

TABLE 12—NOMINAL 1⁵/₁₆" (33 mm) LAMINATED TEMPERED GLASS PANEL STRENGTH¹ (5¹/₈" – 0.060" – 5¹/₈")

Glass Panel Width (in.)	Eff. Defl. Thick. (in.)	Eff. Stress Thick. (in.)	M _{all wind} (lb-in./ft) ⁴	ALLOWABLE WIND PRESSURE (w _{all wind} ⁵), psf FOR PANEL HEIGHT (H _c ⁶), in.												LIVE LOAD OF 50 lbs/ft ⁷	
	hef;w ²	hmin;ef;σ ³		18	24	32	36	42	48	60	72	84	96	108	120	Maximum Height (H _c ⁶) inches based on:	
Interlayer Shear Modulus, G >= 1653 psi for T <= 122°F															Stress ⁸	1" Defl. ⁹	
12	0.844	0.946	18264	1230.0	691.8	389.1	307.5	225.9	173	111	76.9	56.5	43.2	34.2	27.7	214.9	72.1
18	0.919	1.019	21190	1427.0	802.6	451.5	356.7	262.1	201	128	89.2	65.5	50.2	39.6	32.1	249.3	78.5
24	0.985	1.077	23662	*	896.3	504.2	398.3	292.7	224	143	99.6	73.2	56.0	44.3	35.9	278.4	84.1
32	1.053	1.130	26054	*	*	555.1	438.6	322.3	246.7	157.9	109.7	80.6	61.7	48.7	39.5	306.5	90.0
36	1.079	1.149	26929	*	*	*	453.4	333.1	255.0	163.2	113.3	83.3	63.8	50.4	40.8	316.8	92.2
42	1.111	1.170	27945	*	*	*	*	345.6	264.6	169.4	117.6	86.4	66.2	52.3	42.3	328.8	95.0
48	1.136	1.186	28698	*	*	*	*	*	271.8	173.9	120.8	88.7	67.9	53.7	43.5	337.6	97.0
60	1.170	1.207	29698	*	*	*	*	*	*	180.0	125.0	91.8	70.3	55.6	45.0	349.4	99.9
72	1.191	1.219	30302	*	*	*	*	*	*	*	127.5	93.7	71.7	56.7	45.9	356.5	101.8

See footnotes under [Table 6](#)

TABLE 13—BASE SHOES LIVE LOAD AND WIND LOAD STRENGTHS¹

Base Shoe		Allowable Moment (in-lbs/ft)	ALLOWABLE WIND PRESSURE ($w_{all\ wind}$), psf FOR GUARD HEIGHT (H_g^2), in.										LIVE LOAD OF 50 lbs/ft ²
Base Shoe Profile	Part Number		36	42	48	60	72	84	96	108	120	Max Guard Height (H_g^2), in.	
Easy Glass Slim – Top Mount	MOD 8010	4621	84.3	61.9	47.4	30.3	21.1	15.5	11.9	-	-	91.0	
Easy Glass Slim – Fascia Mount	MOD 8030	4635	84.5	62.1	47.6	30.4	21.1	15.5	11.9	-	-	91.3	
Easy Glass Smart – Top Mount	MOD 8210	5176	94.7	69.6	53.3	34.1	23.7	17.4	13.3	10.5	-	102.3	
Easy Glass Smart – Fascia Mount	MOD 8230	7113	130.4	95.8	73.3	46.9	32.6	23.9	18.3	14.5	11.7	140.8	
Easy Glass Smart – Top Mount F	MOD 8220	6578	120.4	88.4	67.7	43.3	30.1	22.1	16.9	13.4	10.8	130.0	
Easy Glass Smart – Fascia Mount Y	MOD 8240	8775	161.0	118.3	90.5	57.9	40.2	29.6	22.6	17.9	14.5	173.8	
Easy Glass Prime – Top Mount	MOD 8410	8710	159.7	117.3	89.6	57.5	39.9	29.3	22.5	17.7	14.4	172.5	
Easy Glass Prime – Fascia Mount	MOD 8430	7143	130.8	96.1	73.6	47.1	32.7	24.0	18.4	14.5	11.8	141.3	
Easy Glass Prime – Top Mount F	MOD 8420	7381	135.4	99.5	76.2	48.7	33.9	24.9	19.0	15.0	12.2	146.2	
Easy Glass Prime – Fascia Mount Y	MOD 8440	10898	199.9	146.9	112.5	72.0	50.0	36.7	28.1	22.2	18.0	215.9	
Easy Glass Max – Top Mount	MOD 8510	13205	242.5	178.2	136.4	87.3	60.6	44.5	34.1	26.9	21.8	261.9	
Easy Glass Max – Top Mount F	MOD 8520	9334	171.4	126.0	96.4	61.7	42.9	31.5	24.1	19.0	15.4	185.2	
Easy Glass Strong – Top Mount	MOD 8610	15151	278.6	204.7	156.7	100.3	69.7	51.2	39.2	31.0	25.1	300.9	

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

1. Values in this table are based on the capacity of the base shoes only, calculated based on the strength of the base shoe vertical legs supporting the guards and assuming the base shoe is fully braced against the supporting structure along its length, and do not account for base shoe anchorage. Connection of the base shoe to the supporting structure, including interaction between the anchor heads and base shoe, must be designed to support the loads imposed by the guards in accordance with the applicable code.
2. Height from bottom of base shoe to top of glass.
3. Other live loads listed in Section 4.2.1 must be considered.

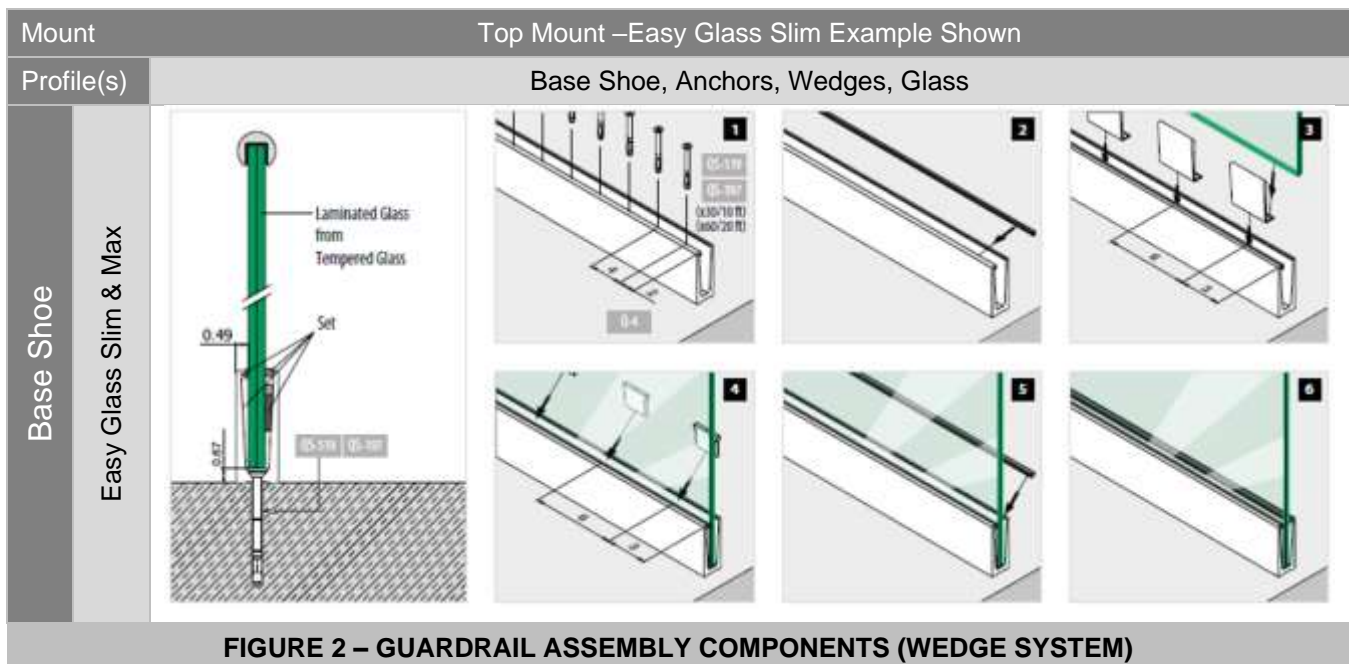


FIGURE 2 – GUARDRAIL ASSEMBLY COMPONENTS (WEDGE SYSTEM)

Mount

Top Mount – Easy Glass Smart Example Shown

Profile(s)

Base Shoe, Anchors, Q-discs, Glass

Base Shoe
Easy Glass Smart, Prime & Strong

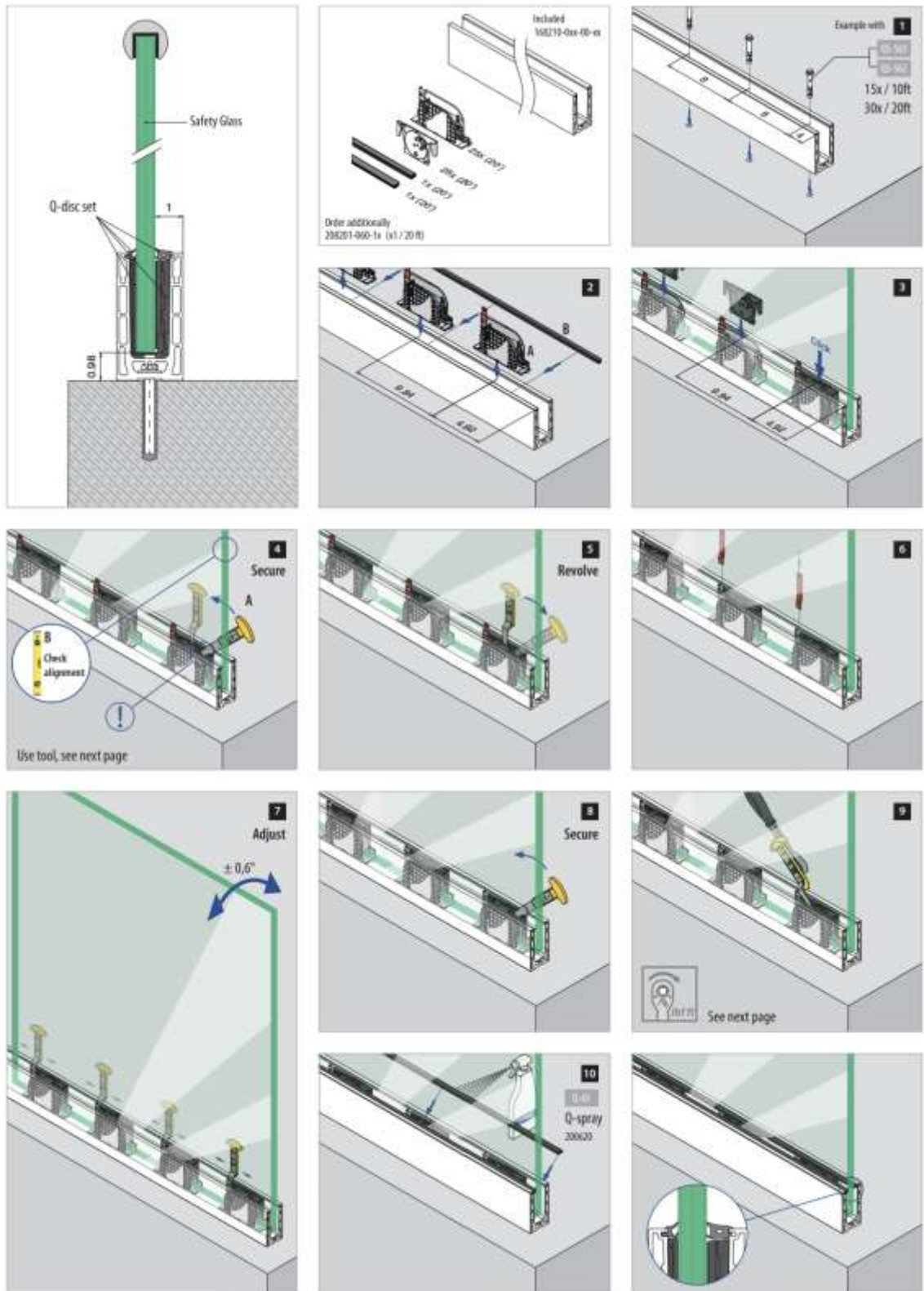


FIGURE 3 – GUARDRAIL ASSEMBLY COMPONENTS (Q-DISC SYSTEM)

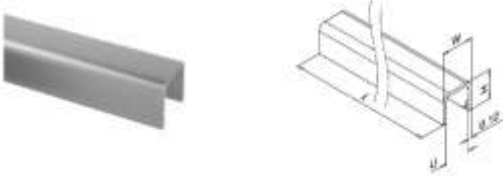








Mount		Glass Mount	
Profile	Square / Rectangular Top Caps	Round Top Caps	
Top Caps	304 / 316 SS	 <p>MOD 6960</p>	 <p>MOD 6920-042 - Ø 1.66 in.</p>
	304 / 316 SS	 <p>MOD 6924 - 1.57" x 1.57"</p>	 <p>MOD 6920-048 - Ø 1.9 in.</p>
	304 / 316 SS	 <p>MOD 6924 - 2.36" x 1.57"</p>	 <p>MOD 6920-060 - Ø 2.37 in.</p>
	Aluminum	 <p>MOD 6911</p>	 <p>MOD 6920 - Ø 1.66 in.</p>
	Aluminum	 <p>MOD 6926 - 2.56" x 1.57" (LED Compatible)</p>	

FIGURE 4 – TOP CAPS

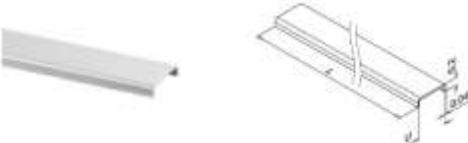

Mount		Glass Mount	
Profile	Flat	Square	
Edge Protection	SS / Aluminum	 <p>MOD 6940</p>	 <p>MOD 6944</p>

FIGURE 5 – EDGE PROTECTION












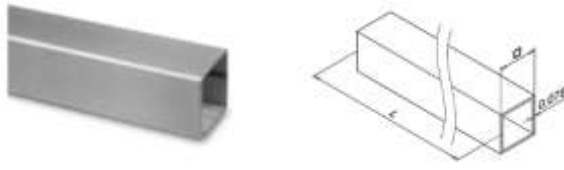

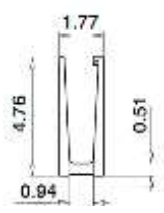
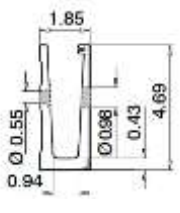
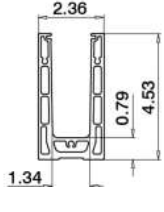
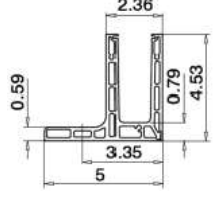
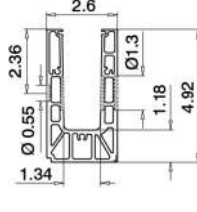
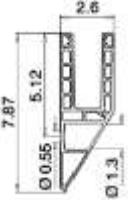
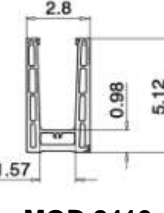
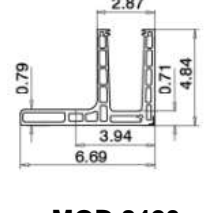
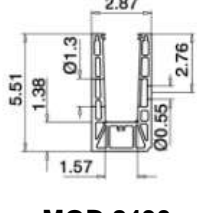
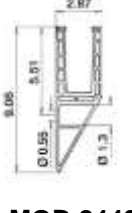
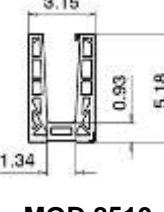
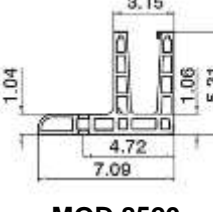
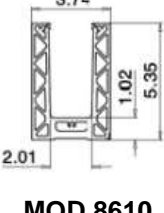
Mount		Glass Mount	
Profile	Square / Rectangular Handrail	Round Handrail	
Handrail Brackets	Fixed	 <p>MOD 0117 (SQ 40x40 & 60x20 Handrail)</p>	 <p>MOD 0117 (1 1/2" & 1.9" Handrail)</p>
	1-Way Adjustable	 <p>MOD 0150 (SQ 40x40 & 60x20 Handrail)</p>	 <p>MOD 0150 (1 1/2" & 1.9" Handrail)</p>
	2-Way Adjustable	 <p>MOD 0155 (SQ 40x40 & 60x20 Handrail)</p>	 <p>MOD 0155 (1 1/2" & 1.9" Handrail)</p>
	2-Way Adjustable	 <p>MOD 4155 (SQ 40x40 & 60x20 Handrail)</p>	 <p>MOD 4155 (1 1/2" Handrail)</p>
	1-Way Adjustable		 <p>MOD 0151 (1 1/2" Handrail)</p>
	2-Way Adjustable		 <p>MOD 0156 (1 1/2" Handrail)</p>
	Fixed		 <p>MOD 9350 (1 1/2" Handrail)</p>

FIGURE 6 – HANDRAIL BRACKETS

Mount		Bracket / Floor / Wall Mount	
Profile	Square Handrail	Round Handrail	
Handrails	304 / 316 SS	 <p>MOD 4900 - 1.57" x 1.57"</p>	 <p>MOD 0900 - Ø 1.5 in. & Ø 1.9 in.</p>
		FIGURE 7 – HANDRAILS	

Mount		Top Mount		Fascia Mount		
Profile	Standard	F-Profile	Standard	Y-Profile		
Base Shoe System	Easy Glass Slim	 <p>MOD 8010</p>		 <p>MOD 8030</p>		
	Easy Glass Smart	 <p>MOD 8210</p>	 <p>MOD 8220</p>	 <p>MOD 8230</p>	 <p>MOD 8240</p>	
	Easy Glass Prime	 <p>MOD 8410</p>	 <p>MOD 8420</p>	 <p>MOD 8430</p>	 <p>MOD 8440</p>	
	Easy Glass Max	 <p>MOD 8510</p>	 <p>MOD 8520</p>			
	Easy Glass Strong	 <p>MOD 8610</p>				
FIGURE 8 – BASE SHOE PROFILES						

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:

Q-RAILING USA CO.

EVALUATION SUBJECT:

EASY GLASS RAILING SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Easy Glass Railing Systems, described in ICC-ES evaluation report [ESR-4688](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The Easy Glass Railing Systems, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4688](#), comply with the LABC Chapters 10 and 24, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Easy Glass Railing Systems described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4688](#).
- The design, installation, conditions of use and identification of the Easy Glass Railing Systems are in accordance with the 2021 *International Building Code*® (IBC) and 2021 *International Residential Code*® (IRC) provisions, as applicable, noted in the evaluation report [ESR-4688](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued June 2024 and revised September 2024.

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:

Q-RAILING USA CO.

EVALUATION SUBJECT:

EASY GLASS RAILING SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Easy Glass Railing Systems, described in ICC-ES evaluation report ESR-4688, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 Florida Building Code—Building
- 2023 Florida Building Code—Residential

2.0 CONCLUSIONS

The Easy Glass Railing Systems, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4688, comply with the *Florida Building Code—Building* or the *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4688 for the 2021 *International Building Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the Easy Glass Railing Systems for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report. —

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued June 2024 and revised September 2024.