

ICC-ES Evaluation Report

ESR-5479

Issued September 2024

This report also contains:

Subject to renewal September 2025

- CHI Supplement
- LABC Supplement
- OSSC Supplement
- CBC 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>REPORT HOLDER: MASTER HALCO®</p> 	<p>EVALUATION SUBJECT: RAILMASTER STEEL RAILING SYSTEM</p>	
--	--	---	---

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021 and 2018 [International Building Code® \(IBC\)](#)
- 2024, 2021 and 2018 [International Residential Code® \(IRC\)](#)

Property evaluated:

- Structural

2.0 USES

The Master Halco® RailMaster Steel Railing System described in this report has been evaluated for use as a guard for balconies, porches and decks in accordance with the IRC and one- and two-family dwellings under the IBC.

3.0 DESCRIPTION

3.1 General:

The Master Halco® RailMaster Steel Railing System consists of surface mounted posts supporting an infill panel consisting of a top and bottom rail with vertical pickets. The railing system is available in heights up to 42 inches (1067 mm). The posts are available in heights up to 44 inches (1118 mm). The infill panels may be installed in widths of up to 8 feet (2.44 m). The infill panels are available in widths of up to 10 feet (3.05 m), which are intended to be field cut to size to widths less than or equal to 8 feet.

3.2 Material:

The railing system posts are composed of ⁵/₆₄ inch thick (2mm) ASTM A513 grade 1015 square steel tubing measuring either 3 inches x 3 inches (76 mm x 76 mm) or 2 inches x 2 inches (50 mm x 50 mm).

The posts are factory welded to a 3.8 inch x 3.8 inch x ⁵/₁₆ inch thick (96.5 mm x 96.5 mm x 8 mm) steel base plate.

Steel “U” shaped brackets are factory welded to the posts to accommodate the attachment of the infill panels in accordance with the approved quality control documentation. As an option, a similar but different “U” shaped bracket may be attached to the post with a quantity of 2 M4.8x16mm self-tapping fasteners composed of 410 stainless steel in accordance with the approved quality control documentation.

The steel base plates and “U” shaped brackets are manufactured from steel plates complying with the material specifications in the manufacturer’s approved quality control documentation.

The infill panels are fabricated using top and bottom rails consisting of 1¹/₄ inch x 1¹/₄ inch x 5⁵/₆₄ inch thick (32 mm x 32 mm x 2 mm) ASTM A513 grade 1015 square steel tubing and vertical pickets composed of 5⁵/₈ x 5⁵/₈ x 0.05 inch thick (16 mm x 16 mm x 1.2 mm) ASTM A513 grade 1015 square steel tubing; the pickets are factory welded to the top and bottom rails.

The fasteners used to attach the infill panels to the “U” Shaped Brackets are M4.8x16mm self-tapping fasteners composed of 410 stainless steel.

The railing system posts and infill panels contain a G40 galvanized coating with an additional factory powder coating, and are available in multiple colors.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The Master Halco[®] RailMaster Steel Railing System has been found to be capable of resisting the minimum design loads prescribed in Exception 1 of 2024 and 2021 IBC Section 1607.9.1 for one- and two-family dwellings (Exception 1 of 2018 IBC Section 1607.8.1) and IRC Table 301.5 for rail heights up to 42 inches (1067 mm) above the supporting surface with an on-center post spacing of up to 98 inches (2.49 m) for the 2 inch x 2 inch (50 mm x 50 mm) posts or up to 99 inches (2.51 m) for the 3 inch x 3 inch (76 mm x 76 mm) posts:

- A single concentrated live load of 200 lbs (0.89 kN) applied in any direction at any point along the top rail.
- A horizontally applied normal live load of 50 lbs (0.22 kN) applied perpendicular to the infill panel on an area measuring 12 inches x 12 inches (305 mm x 305 mm)

The picket spacing in the infill panels meets the requirements of IBC Section 1015.4 and IRC Section R312.1.3.

4.2 Installation:

4.2.1 General: Installation of the Master Halco[®] RailMaster Steel Railing System must be in accordance with the manufacturer’s published installation instructions, this report, and the guard height and opening limitations outlined in Section 1015 of the IBC and Section R312 of the IRC, as applicable. The manufacturer’s published installation instructions must be available at the jobsite at all times during construction.

4.2.2 Posts: The posts are attached to the building substrate with project specific fasteners. The design of this attachment is outside of the scope of this report.

4.2.3 Infill Panels: The infill panels are attached to U Shaped Brackets on the posts using M4.18x16 410 Stainless Steel screws.

5.0 CONDITIONS OF USE:

- 5.1** The Master Halco[®] RailMaster Steel Railing System is limited to installations in which it is not subject to vehicle impacts.
- 5.2** Installation must comply with this report, the manufacturer’s published installation instructions and the applicable code. When the manufacturer’s published installation instructions differ from this report, this report governs.
- 5.3** The Master Halco[®] RailMaster Steel Railing System must be directly fastened to supporting construction having adequate strength and stiffness. Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted to 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 system discussed in this report. The documents must contain details of the attachment 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.
- 5.4** When installed where the system anchors are exposed to moisture, the system anchors must be of a material intended for the use and identified by the anchor manufacturer as acceptable for exterior applications.
- 5.5** Use of the system as a grab bar is outside of the scope of this report.

- 5.6 Use of the coating consisting of G40 Pre-Galvanized Steel, zinc phosphate, zinc primer, and powder coating for exterior use is outside of the scope of this report and is subject to the approval of the building official.
- 5.7 Use of the system with post spacing greater than 98 inches (2.49 m) for the 2 inch x 2 inch (50 mm x 50 mm) posts greater than 99 inches (2.51 m) for the 3 inch x 3 inch (76 mm x 76 mm) posts is outside of the scope of this report.
- 5.8 The Master Halco[®] RailMaster Steel Railing System is manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Handrails and Guards \(AC273\)](#), dated June 2017 (editorially revised May 2024).

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5479) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 The Master Halco[®] RailMaster Steel Railing System is also labeled “For Use in One- and Two-Family Dwellings Only”.
- 7.3 The report holder’s contact information is the following:

MASTER HALCO INC.
3010 LBJ FREEWAY
SUITE 800
DALLAS, TX 75234
(800) 883-8384
www.masterhalco.com

DIVISION: 05 00 00—METALS
Section: 05 52 00—Metal Railings

REPORT HOLDER:

MASTER HALCO®

EVALUATION SUBJECT:

RAILMASTER STEEL RAILING SYSTEM

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that RailMaster Steel Railing System, described in ICC-ES evaluation report [ESR-5479](#), has also been evaluated for compliance with the Chicago Construction Codes (Title 14 of the Chicago Municipal Code) as noted below.

Applicable code editions:

- 2019 *Chicago Building Code* (Title 14B)

2.0 CONCLUSIONS

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5479](#), complies with Title 14B, and is subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The RailMaster Steel Railing System described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-5479](#).
- The design, installation, conditions of use and identification of the RailMaster Aluminum Railing System are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-5479](#).
- The RailMaster Steel Railing System is limited to use in Group R-5 occupancies and within individual dwelling units as outlined in Exception 1 of CBC Title 14B Section 1607.8.1.
- The design, installation and inspection are in accordance with additional requirements of Chapters 16 and 17 of Title 14B, as applicable.

This supplement expires concurrently with the evaluation report, issued September 2024.

DIVISION: 05 00 00—METALS

Section: 05 52 00—Metal Railings

REPORT HOLDER:

MASTER HALCO®

EVALUATION SUBJECT:

RAILMASTER STEEL RAILING SYSTEM

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that RailMaster Steel Railing System, described in ICC-ES evaluation report [ESR-5479](#), has 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 RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5479](#), complies with the LABC Chapters 10 and 16, and the LARC, and is subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The RailMaster Steel Railing System described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-5479](#).
- The design, installation, conditions of use and identification of the RailMaster Steel Railing System are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-5479](#).
- 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, issued September 2024.

DIVISION: 05 00 00—METALS
Section: 05 52 00—Metal Railings

REPORT HOLDER:**MASTER HALCO®****EVALUATION SUBJECT:****RAILMASTER STEEL RAILING SYSTEM****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that RailMaster Steel Railing System, described in ICC-ES evaluation report ESR-5479, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2022 Oregon Structural Specialty Code (OSSC)

2.0 CONCLUSIONS

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the ICC-ES evaluation report ESR-5379, complies with the OSSC Chapters 10 and 16, and is subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The RailMaster Steel Railing System described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-5479.
- The design, installation, conditions of use and identification of the RailMaster Steel Railing System are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the ICC-ES evaluation report ESR-5479.
- The design, installation and inspection are in accordance with additional requirements of OSSC Chapters 10, 16, and 17, as applicable.

This supplement expires concurrently with the evaluation report, issued September 2024.

DIVISION: 05 00 00—METALS
Section: 05 52 00—Metal Railings

REPORT HOLDER:

MASTER HALCO®

EVALUATION SUBJECT:

RAILMASTER STEEL RAILING SYSTEM

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that RailMaster Steel Railing System, described in ICC-ES evaluation report ESR-5479, has also been evaluated for compliance with the code(s) noted below.

Applicable code edition(s):

- 2022 California Building Code (CBC)

For evaluation of applicable Chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report ESR-5479, complies/comply with CBC Chapters 10 and 16, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 10 and 16, as applicable.

2.1.1 OSHPD:

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report ESR-5479, complies with CBC amended Chapters 10 and 16, and Chapter 16A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report.

Condition of Use:

All loads applied shall be determined by a registered structural engineer and shall comply with applicable loads from CBC Chapter 16 [OSHPD 3] and its applicable amendments [OSHPD 1R, 2 and 5], and Chapter 16A [OSHPD 1 and 4].

2.1.2 DSA:

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report ESR-5479, complies with CBC amended Chapters 10 and 16, and Chapter 16A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report.

Condition of Use:

When used with means of egress under CBC Section 1014 [DSA-AC], the Shoe Glass Panel Railing System must comply with Section 11B-505 of the IBC.

All loads applied shall be determined by a registered structural engineer and shall comply with applicable loads from applicable sections of CBC Chapter and its applicable amendments [DSA-SS/CC], and Chapter 16A [DSA-SS].

2.2 CRC:

The RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of the evaluation report ESR-5479, comply 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.

This supplement expires concurrently with the evaluation report, issued September 2024.

DIVISION: 05 00 00—METALS
Section: 05 52 00—Metal Railings

REPORT HOLDER:**MASTER HALCO®****EVALUATION SUBJECT:****RAILMASTER STEEL RAILING SYSTEM****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that RailMaster Steel Railing System, recognized in ICC-ES evaluation report ESR-5479, has 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 RailMaster Steel Railing System, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-5479, comply with the 2023 Florida Building Code—Building and 2023 Florida Building Code—Residential. The design requirements must be in accordance with the Florida Building Code—Building or Florida Building Code—Residential, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-5479 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 RailMaster Steel Railing System has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building or the Florida Building Code—Residential.

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, issued September 2024.