



CVGR RAILING SYSTEM VERSUS FORTRESS RAILING SYSTEM

Comparing ClearView Glass Railings to Fortress Glass Railings is like comparing apples to oranges. ClearView Glass Railings meet and exceed current IBC/International Building Code. Test data attached. Fortress falls short of meeting current IBC/International Building Code based on their own testing data.

Outlined below are a few of the major differences between ClearView Glass Railings and Fortress Glass Railings. Please remember your total cost is an installed cost not just the cost of the product.

	ClearView Glass Railings Laminated Tempered Hercules Glass	Fortress Glass Railing in Metal Framework
Type of Glass	13.5mm tempered laminate	6mm tempered
Meets IBC International Building Code	Yes	No
Materials of Construction	316 stainless steel solid core spigots	Anodized hollow aluminum
Free-fall Dead Weight Impact Test	300 lbs. from 36". Code is 250 lbs.	No test data
Vertical Load Test	2,520 lbs. Code is 800 lbs.*	200 lbs.
Meets Florida Hurricane Specifications	Yes	No
Number of Parts to Assemble	32 Panels	32 Panels
	64 Spigots	34 Aluminum railing posts at a minimum
	No Clips	68 Evolve Cups at a minimum
	No Caps	68 Evolve Caps at a minimum
	No Ball Caps	34 Ball Caps at a minimum
	No Foot Supports	34 PV FGP I-Supports at a minimum
	No holes to pre-drill in railing post.	128 holes to pre-drill in Aluminum rails at a minimum
	No Top Rails	32 Top Rails at a minimum
	No Bottom Rails	32 Bottom Rails at a minimum
View	A Clear View (just like the names says) with no obstruction.	View is obstructed view by numerous posts and rails.
Installation Comments	Simple. Took two people only two days to finish job!	Complex. Many parts. On-site fabrication required. Took many days.

*IBC 1607.8 bumps up the vertical load by a factor of four to 200Lbs/foot line load and 800# point load

The ClearView Glass Railings system installs in a very short period of time as compared to their railing systems. We recently heard from a customer who chose a cable railing system over CVGRailings. He commented, "We ended up installing horizontal cables across the openings. The cable system was just about as much as your glass panels but installation was remarkably labor intensive with all the piece parts, drilling, threading, etc. I wish I would have gone with CVGRailings instead."

HOW STRONG IS YOUR GLASS?

The International Building Code (IBC) and International Residential Code (IRC) are “model codes” created by the International Code Council, intended to be used by states and municipalities as they publish their own building codes. Section 1607.8 of the IBC requires that “handrails and guards shall be designed to resist a linear load of 50 plf.” It also requires the system to resist a 200 lb. concentrated load that produces the “maximum load effect” on any element within the system. The 2018 IRC Table R201.5 extends this requirement into residential construction. It is understood within the building design industry that lateral loads applied to the top of the panel create the maximum load effect; structural design assumes this loading condition.



Section 1607.8 of the IBC also refers to IBC section 2407 Glass in Handrails and Guards that adds a requirement for all-glass handrails and guards to “be laminated glass constructed of fully tempered or heat-strengthened glass”; this requirement was added in the 2015 IBC code cycle. Section 2407.1.1 adds the significant requirement: “a design factor of four shall be used for safety”. This addition bumps up the linear load to 200 plf and the concentrated load to 800 lbs.

Exterior glass guardrail panels are designed to resist two load types: wind loads, and “live” loads such as a person or object pushing on or striking the panel from the side or from above. Wind loading on a panel can vary greatly based on location, terrain (wooded vs open) and elevation above ground; these are governed by publication ASCE 7 (American Society of Civil Engineers) Minimum Design Loads for Buildings and Other Structures.

Wind speeds of 115 psf are used to calculate wind pressures against the glass, which generally vary from 17 psf (2nd story in wooded area) to 35 psf (30 stories tall in open terrain). The wind speeds required to match the stresses created by the 800# point load are 192 mph for the 42” tall panel and 215 mph for the 36” tall panel; these are only seen in a Category 5 hurricane or a tornado. Therefore, the 800 lb. horizontal point load requirement is the worst-case scenario for the panels. Calculation methods to arrive at these values include computer modeling using finite element analysis.

WHICH VIEW DO YOU PREFER?



ClearView Glass Railings

A Clear View (just like the names says) with no obstruction!

OR



Fortress Glass Railing in Metal Framework

View is obstructed view by numerous posts and rails.