

SYSTEM TEST OBSERVATION REPORT

PROJECT:

CLEAR VIEW GLASS RAILINGS
GLASS GUARDRAIL TESTING
737 QUENTIN AVENUE SOUTH
LAKELAND, MN 55043

REPORTED TO:

CLEAR VIEW GLASS RAILINGS
SAME ADDRESS

ATTN: JOHN RUPRECHT

AET PROJECT NO: 05-20608

DATE: April 22, 2020

INTRODUCTION

This report describes physical tests performed on a glass panel that is proposed for use as a guardrail, to confirm that it meets International Building Code (IBC) mandated loading requirements. The testing was performed by Clear View Glass Railings and their agents at 1141 120th Street, Roberts, Wisconsin on April 21, 2020. Chris Hartnett from AET observed the testing and recorded the results.

BACKGROUND INFORMATION

The glass panel measures ½” thick x 37 5/16” tall x 60” wide, it was reported by John Ruprecht to be tempered glass. The panel is supported by stainless steel “spigots” (brackets), each spigot located 12” inside the panel end (36” apart), the spigots raise the top of panel to 42”, as code-mandated for guardrails. The 2015 IBC section 1607.8 requires a 50 plf vertical and horizontal (non-concurrent) line load at the top of the panel, and a 200# vertical and horizontal concentrated (non-concurrent) load at the top of the panel. The concentrated and line load requirements are not concurrent as well. State building codes across the US cite different editions of the IBC, including the 2015 and 2012 editions. The specific loading requirements remain the same for the 2015 IBC and previous code years.

FIELD OBSERVATIONS AND TEST RESULTS

The tests included the following steps:

1. The test load, which consisted of three sacks filled with sand, was weighed on a large commercial scale. The total weight was 302#. See photos 1 & 2.
2. The load was placed vertically on the center of the panel to test the panel vertical load carrying capacity. The panel carried the load successfully. See photo 3.
3. The panel was laid on its side with a 1 ½ inch gap between the panel and the ground, it was supported by a 2x4 running parallel to the panel top edge and located 28” from the top of panel. This created a 28” cantilever, with a second 2x4 at the panel bottom, creating a 14” back-span that was supported by several test personnel standing on the 2x4. See photo 4.
4. The 300# load was placed at the top of the panel and a gap was confirmed visually between the deflected panel and the ground to confirm the panel supported the weight. The panel carried this load successfully. See photo 5.

CONCLUSIONS

1. The vertical load-carrying capacity was measured directly by placing the 300# concentrated load on the panel. This load is larger than the 200# code-mandated concentrated load. When spread out into a line load, it is equivalent to a 60 plf line load, which is larger than the 50 plf requirement. This confirms that the panel meets vertical loading requirements.
2. The horizontal load-test placed the 300# point load at the end of the 28" cantilever, which creates a 8,400 inch-pound bending force. This is equivalent to the code mandated 200# point load on a 42" cantilevered guardrail. This confirms that the panel meets horizontal loading requirements.
3. The two tests confirm that the panel, as tested, meets IBC requirements for a guardrail systems in commercial and residential properties.

LIMITATIONS

Our services were limited to observing the testing, as performed by others, to confirm that the panels have sufficient capacity to support the code-mandated loads. This report does not extend to capacities or performance outside this testing program.

REMARKS

If you have any questions regarding this report, or if we may be of further assistance, please contact us.

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PHOTOGRAPHS
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Photo 1: Three sand-filled sacks on Scale

Photo 2: Scale reading 302#



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Photo 3: Vertical load test

Photo 4: Horizontal load test layout



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Photo 5: Horizontal load test