Architectural Testing

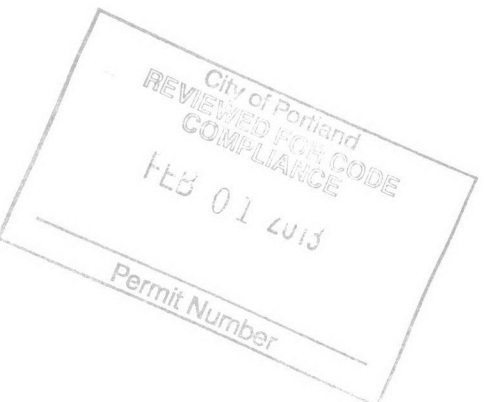
TEST REPORT

Rendered to:

FORTRESS IRON RAILING & FENCE SYSTEMS

For:

93-1/2 in by 42 in *Fe[26] Traditional* Level Railing



Report No: B2564.01-119-19
Report Date: 09/08/12

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Architectural Testing

TEST REPORT

B2564.01-119-19
September 10, 2012

TABLE OF CONTENTS

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TEST REPORT

Rendered to:

FORTRESS IRON RAILING & FENCE SYSTEMS
P.O. Box 831268
Richardson, Texas 75083

Report No:	B2564.01-119-19
Test Date:	09/07/11
Through:	08/08/12
Report Date:	09/10/12

1.0 General Information

1.1 Product

93-1/2 in by 42 in *Fe*^{26} *Traditional* Level Railing

1.2 Project Description

Architectural Testing was contracted by Fortress Iron Railing & Fence Systems to perform material and structural testing on their 93 in by 42 in *Fe*^{26} *Traditional* level railing. The purpose of the testing is code compliance evaluation in accordance with the following criteria:

> ICC-ES™ AC273 (March 1, 2008; Corrected January 2009), *Acceptance Criteria for Handrails and Guards*

ICC-ES™ AC273 was developed by the ICC Evaluation Service, Inc. (ICC-ES™) as acceptance criteria to evaluate compliance with the following building codes:

> 2006 *International Building Code*®, International Code Council
>
> 2006 *International Residential Code*®, International Code Council

1.3 Limitations

All tests performed were to evaluate structural performance of the railing assembly to carry and transfer imposed loads to the supports (posts). The test specimen evaluated included the pickets, rails, rail brackets, post mount, and attachment to the supporting structure. Anchorage of post mounts to the supporting structure is not included in the scope of this testing and would need to be evaluated separately.

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1.3 Limitations (Continued)

Testing is limited to satisfying the IRC - One- and Two-Family Dwellings requirements of ICC-ES™ AC273.

1.4 Qualifications

Architectural Testing has demonstrated compliance with ANS/ISO/IEC Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc. Architectural Testing is accredited to perform all testing reported herein.

1.5 Product Description

The *Fe*^{26} *Traditional* level railing guardrail systems is comprised of pre-galvanized formed steel rails, pickets, and posts. The *Fe*^{26} *Traditional* test specimens consisted of one product color: Antique Bronze. Drawings are included in Appendix A to verify the overall dimensions and other pertinent information of the tested product, its components, and any constructed assemblies.

1.6 Product Sampling

A representative of Architectural Testing visited Fortress Iron Railing & Fence Systems facility in Richardson, Texas, on August 26, 2011, to select the components used for testing. All samples selected for testing were marked for identification and were the samples used for all tests reported herein. See photograph in Appendix B for typical sampling mark.

1.7 Witnessing

There were no witnesses from Fortress Iron Railing & Fence Systems present for testing conducted and reported herein.

1.8 Conditions of Testing

Unless otherwise indicated, all testing reported herein was conducted in a laboratory set to maintain temperature in the range of 68 ± 4°F and humidity in the range of 50 ± 5% RH.

2.0 Reference Standards

ASTM A 500/A 500M-07, *Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes*

ASTM D 1761-06, *Standard Test Methods for Mechanical Fasteners in Wood*

3.0 Tensile Testing

Re: ICC-ES™ AC273 - Section 4.1

3.1 General

Tensile tests were performed on major railing components (top rail, bottom rail and post mount) used in the railing assemblies for the purpose of verifying the material specification.

3.2 Test Specimens

One set of test specimens was taken from tested top and bottom rails, and one set of test specimens was taken from tested post mounts. Each set consisted of at least six tensile test samples.

3.3 Test Procedure

The specimens were tested on 08/07/12 and 08/08/12 using a SATEC Unidrive, Model MII 50 UD, Universal Test Machine with SATEC "T" grips and operating at a uniform cross-head speed of 0.2 in/min. Strain was measured using a SATEC Model T1M snap-on Extensometer with a 2 in gage length. See photograph in Appendix B.

3.4 Test Results

***Fe^{26} Traditional* - Top and Bottom Rail**

Sample ID	Width (in)	Thickness (in)	MOE (10^6 psi)	Yield (10^3 psi)	Tensile (10^3 psi)	Elongation (%)	Max Load (lbf)
1	0.502	0.056	31,136,200	70,506	75,895	24.4	2,137
2	0.499	0.057	27,605,900	69,157	76,282	22.9	2,170
3	0.500	0.058	30,288,900	68,588	73,830	19.8	2,137
4	0.500	0.057	30,969,000	65,459	72,799	22.0	2,075
5	0.498	0.057	29,763,900	67,263	74,313	24.0	2,098
6	0.500	0.060	33,787,500	73,527	77,033	20.1	2,292
		Minimum:	27,605,900	65,459	72,799	19.8	2,075
		Maximum:	33,787,500	73,527	77,033	24.4	2,292
		Average:	30,591,900	69,083	75,025	22.2	2,152
		Standard Deviation:	2,017,100	2,774	1,628	1.9	76.4
		Coefficient of Variation:	6.6%	4.0%	2.2%	8.7%	3.6%

3.4 Test Results (Continued)

***Fe^{26} Traditional* - Post Mount**

Sample ID	Width (in)	Thickness (in)	MOE (10^6 psi)	Yield (10^3 psi)	Tensile (10^3 psi)	Elongation (%)	Max Load (lbf)
1	0.505	0.102	29,110,100	60,080	67,899	29.8	3,491
2	0.504	0.101	29,386,500	60,802	68,395	26.2	3,475
3	0.503	0.099	28,875,600	60,146	67,277	27.8	3,354
4	0.502	0.102	29,842,900	63,144	68,900	26.0	3,535
5	0.500	0.099	29,462,700	60,954	68,366	27.6	3,394
6	0.502	0.099	38,105,200	61,592	68,897	25.8	3,510
		Minimum:	28,875,600	60,080	67,277	25.8	3,354
		Maximum:	38,105,200	63,144	68,900	29.8	3,535
		Average:	30,797,200	61,120	68,289	27.2	3,460
		Standard Deviation:	3,595,200	1,138	622	1.5	70.6
		Coefficient of Variation:	11.7%	1.9%	0.9%	5.6%	2.0%

3.5 Analysis of Test Results

Per Fortress Iron Railing & Fence Systems, the material used in their guardrail system tested and reported herein was specified as ASTM A 500, seamless Grade A metal tubing with at least a G60 zinc coating. The following criteria are listed under ASTM A 500/A500M, Table 2, *Tensile Requirements*, for Grade A Shaped Structural Tubing:

- Tensile strength, min, psi - 45,000
- Yield strength, min, psi - 39,000
- Elongation in 2 in., min, % - N/A (applies only to tests performed prior to shipment)

	Min. Tensile Strength (psi)	Min. Yield Strength (psi)
ASTM A 500	45,000	39,000
Top and Bottom Rail Samples	75,025	69,083
Post Mount Samples	68,289	61,120

4.0 Assembly Fastener Testing

Re: ICC-ES™ AC273 - Section 4.2.7

4.1 General

The purpose of this testing was to simulate a 90 degree bracket loading condition, which addresses a situation when the guardrail system is to be installed with the top rails in a corner condition.

4.2 Test Specimens

Short sections of the top rail were attached in accordance with Fortress Iron Railing & Fence Systems' installation instructions to short sections of posts. Specimens were assembled by an Architectural Testing technician. Rail brackets were secured to the post and to the rail as described in Section 5.4 Fastening Schedule.

4.3 Test Setup

The testing machine was fitted with the post sections at the top and bottom to accommodate anchorage of the rail and brackets. The top post section was attached to the test machine's crosshead with a swivel mechanism, and the bottom post section was attached rigidly to the base of the test machine. See photograph in Appendix B for test setup.

4.4 Test Procedure

Testing was performed in accordance with ASTM D 1761 and by using a computer-monitored and -controlled SATEC Unidrive, Model MII 50 UD Universal Testing Machine. Tests were run at a crosshead speed of 0.05 in/min, and each specimen was tested in tension to its ultimate load capacity. Testing was conducted on 09/07/12.

4.5 Test Results

***Fe*[26] *Traditional* Top Rail with UB04 Bracket Attached to Steel Post**

Sample No.	Ultimate Load (lb)	Deviation From Average	Mode of Failure
1	1831	1.1%	Deformation of brackets
2	1780	1.7%	
3	1824	0.7%	
Average:	**1812**		
Allowable Capacity [1]:	**604**	**≥ 200 lb ∴ OK**	

[1] *Average ultimate load divided by a factor of safety of three (3.0)*

4.5 Test Results (Continued)

***Fe*[26] *Traditional* Top Rail with UB04 Bracket Attached to Wood Post**

Sample No.	Ultimate Load (lb)	Deviation From Average	Mode of Failure
1	1429	0.4%	Disengagement beginning to occur
2	1435	0.8%	
3	1405	1.3%	Deformation of bracket
Average:	**1423**		
Allowable Capacity [1]:	**474**	**≥ 200 lb ∴ OK**	

[1] *Average ultimate load divided by a factor of safety of three (3.0)*

4.6 Summary and Conclusions

The maximum design load rating required for guardrail systems for use in IRC - One- and Two-Family Dwellings and for rail lengths up to and including 8 ft for use in IBC - All Use Groups is 200 lb. Therefore, fasteners / connectors reported herein meet the performance requirements of ICC-ES™ AC273 for use in corner conditions.

5.0 Structural Performance Testing of Assembled Railing Systems

Re: ICC-ES™ AC273 - Section 4.2.1

5.1 General

Railing assemblies were tested in a self-contained structural frame designed to accommodate anchorage of a rail assembly and application of the required test loads. The specimen was loaded using an electric winch mounted to a rigid steel test frame. High strength steel cables, nylon straps, and load distribution beams were used to impose test loads on the specimen. Applied load was measured using an electronic load cell located in-line with the loading system. Deflections were measured to the nearest 0.01 in using electronic linear displacement transducers.

5.2 Railing Assembly Description

The *Fe*[26] *Traditional* railing systems consisted of pre-galvanized steel top and bottom rails with spaced pickets between the rail members. The railing systems had an overall top rail length (inside of post to inside of post) of 93-1/2 in with an overall rail height (top of top rail to bottom of bottom rail) of 42 in. *Traditional* top and bottom rails attached to a pre-galvanized steel post mount and a 4 in by 4 in wood post via metal universal brackets (UB04), respectively. See Section 5.4 Fastening Schedule for connection details. As a worse-case scenario, no support block on the bottom rail was used for testing. See drawings in Appendix A and photographs in Appendix B for additional details.

5.3 Series / Model

The test specimen components were supplied by Fortress Iron Railing & Fence Systems and were assembled by a representative of Architectural Testing.

Fe[26] *Traditional* Top Rail: 1 in square (OD) by 0.06 in wall by 93.5 in long pre-galvanized steel tube

Universal Brackets: 1.305 in wide by 1.275 in deep cast steel bracket with 0.125 in wall thickness

Fe[26] *Traditional* Pickets: 0.64 in square (OD) by 0.05 in wall by 38 in long with 3.84 in clear space between pickets - pickets have welded connection points to top and bottom rails

Steel Post Mount: 2 in square by 0.10 in wall, pre-galvanized and powder-coated outside surface steel tube post welded to nominal 4 in square, nominal 1/4 in thick base plate with four nominal 1/2 in diameter holes located approximately 1/2 in on-center in from each edge and approximately 2-3/4 in apart on-center and one 0.90 in diameter hole located in the center of the base plate – a continuous 3/16 in fillet weld connected the tube to the base plate - the base plate was attached to the surface of a rigid steel test surface (simulated concrete) as described in Section 4.4 Fastening Schedule.

Wood Post: Nominal 4x4 preservative treated, Grade No. 2, Southern Pine wood post

See drawings in Appendix A and photographs in Appendix B for additional details.

5.4 Fastening Schedule

Connection	Fastener
Rail Bracket to Steel Post Mount*	Two #14-12 by 1 in Torx Drive, flat-head, self-drilling sheet metal screws
Rail Bracket to Wood Post	Two #12-10 by 2-1/2 in Torx Drive, flat-head, sheet metal screws
Rail Bracket to Rail*	One #14-12 in by 1 in Torx Drive, flat-head, self-drilling sheet metal screw
Post Mount to Substructure	Four 3/8 in Grade 8 hex-head bolts with washers and nuts

** 5/32 in diameter pre-drill used*

5.5 Test Setup

The railing assembly was installed and tested as a single railing section by directly securing (surface-mounting) the base of the post mount to a rigid steel test frame and the wood post to a rigid steel stanchion. The railing was assembled by an Architectural Testing technician. Transducers mounted to an independent reference frame were located to record movement of reference points on the railing system components (ends and mid-point) to determine net component deflections. See photographs in Appendix B for test setups.

5.6 Test Procedure

Testing and evaluation was performed in accordance with Section 4.2.1 of ICC-ES™ AC273. The test specimen was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed. One specimen was used for all load tests which were performed in the order reported. Each design load test was performed using the following procedure:

1. Zeroed transducers and load cell at zero load;
2. Increased load to specified test load in no less than ten seconds; and
3. Held test load for no less than one minute.

5.7 Test Results

Unless otherwise noted, all loads and displacement measurements were normal to the rail (horizontal). The test results apply only to the railing assembly between supports and anchorage to the support.

Key to Test Results Tables:

Load Level: Target test load

Test Load: Actual applied load at the designated load level (target). Where more than one value is reported, the test load was the range (min. - max.) that was held during the time indicated in the test.

Elapsed Time (E.T.): The amount of time into the test with zero established at the beginning of the loading procedure. Where more than one value is reported, the time was the range (start-end) that the designated load level was reached and sustained.

5.7 Test Results (Continued)

Test Series No. 1
93-1/2 in by 42 in *Fe[26] Traditional Railing*
with UB04 Bracket Attached to Steel Post Mount and Wood Post
Limited to Use in IRC - One- and Two-Family Dwellings / ICC-ES™ AC273
Specimen No. 1 of 3

Test No. 1 - Test Date: 09/12/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Center of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	131	01:01 - 02:05	Sustained load equal to or greater than 125 lb for one full minute without failure

Test No. 2 - Test Date: 09/12/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Bottom of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	127	01:12- 02:17	Sustained load equal to or greater than 125 lb for one full minute without failure

Test No. 3 - Test Date: 09/12/11 **Design Load: 200 lb Concentrated Load at Mid-Span of Top Rail**						
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**			
			End	**Mid**	**End**	**Net** [1]
200 lb (D.L.)	201	0:51	0.44	2.64	0.24	2.30
500 lb (2.50 x D.L.)	507	01:54- 02:58	**Result**: Sustained load equal to or greater than 500 lb for one full minute without failure			
Deflection Evaluation: Maximum rail deflection at 201 lb = 2.30 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72"> 2.30" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50"> 2.30" \therefore ok$						

[1] *Each end displacement was measured at the center of the support. Net displacement was the rail displacement relative to the supports.*

5.7 Test Results (Continued)

Specimen No. 1 of 3 (Continued)

Test No. 4 – Test Date: 09/12/11 **Design Load: 200 lb Concentrated Load at Both Ends of Top Rail (Brackets)**			
Load Level [1]	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
1000 lb (2.50 x D.L.) x 2	1005	02:04 - 03:06	Each end withstood load equal to or greater than 500 lb for at least one minute without failure

[1] *Load was imposed on* both *ends of rail using a spreader beam; therefore, loads were doubled.*

Test No. 5 - Test Date: 09/12/11 **Design Load: 200 lb Concentrated Load at Top of Steel Post Mount**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**
200 lb (D.L.)	200	1:11	0.87
500 lb (2.50 x D.L.)	501	02:17 - 03:15	**Result**: Withstood load equal to or greater than 500 lb for one full minute without failure
Deflection Evaluation: Maximum post deflection at 200 lb = 0.87 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72"> 0.87" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50"> 0.87" \therefore ok$			

Specimen No. 2 of 3

Test No. 1 - Test Date: 09/13/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Center of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	126	00:51 – 01:55	Withstood load equal to or greater than 125 lb for one full minute without failure

5.7 Test Results (Continued)

Specimen No. 2 of 3 (Continued)

Test No. 2 - Test Date: 09/13/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Bottom of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	126	00:45 - 01:49	Withstood load equal to or greater than 125 lb for one full minute without failure

Test No. 3 - Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Mid-Span of Top Rail**						
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**			
			End	**Mid**	**End**	**Net** [1]
200 lb (D.L.)	200	0:46	0.41	2.62	-- [2]	2.42
500 lb (2.50 x D.L.)	501	01:52 - 02:56	**Result**: Withstood load equal to or greater than 500 lb for one full minute without failure			
Deflection Evaluation: Maximum rail deflection at 200 lb = 2.42 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72" > 2.42" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50" > 2.42" \therefore ok$						

[1] *Each end displacement was measured at the center of the support. Net displacement was the rail displacement relative to the supports.*

[2] *Deflection was not captured due to malfuction of the linear transducer; therefore net deflection was conservatively based on the deflection at one end.*

Test No. 4 – Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Both Ends of Top Rail (Brackets)**			
Load Level [1]	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
1000 lb (2.50 x D.L.) x 2	1003	01:45 - 02:50	Each end withstood load equal to or greater than 500 lb for at least one minute without failure

[1] *Load was imposed on* both *ends of rail using a spreader beam; therefore, loads were doubled.*

5.7 Test Results (Continued)

Specimen No. 2 of 3 (Continued)

Test No. 5 - Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Top of Steel Post Mount**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**
200 lb (D.L.)	200	01:03	0.80
500 lb (2.50 x D.L.)	502	01:37 – 02:40	**Result**: Withstood load equal to or greater than 500 lb for one full minute without failure
Deflection Evaluation: Maximum post deflection at 200 lb = 0.80 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72"> 0.80" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50"> 0.80" \therefore ok$			

Specimen No. 3 of 3

Test No. 1 - Test Date: 09/13/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Center of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	126	00:26 – 01:29	Withstood load equal to or greater than 125 lb for one full minute without failure

Test No. 2 - Test Date: 09/13/11 **Design Load: 50 lb / 1 Square ft of In-Fill at Bottom of Two Pickets**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
125 lb (2.50 x D.L.)	125	00:28 - 01:27	Withstood load equal to or greater than 125 lb for one full minute without failure

5.7 Test Results (Continued)

Specimen No. 3 of 3 (Continued)

Test No. 3 - Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Mid-Span of Top Rail**						
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**			
			End	**Mid**	**End**	**Net** [1]
200 lb (D.L.)	200	0:51	0.42	2.57	0.05	2.34
500 lb (2.50 x D.L.)	501	01:52 - 02:55	**Result**: Withstood load equal to or greater than 500 lb for one full minute without failure			
Deflection Evaluation: Maximum rail deflection at 200 lb = 2.34 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72" > 2.34" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50" > 2.34" \therefore ok$						

[1] *Each end displacement was measured at the center of the support. Net displacement was the rail displacement relative to the supports.*

Test No. 4 – Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Both Ends of Top Rail (Brackets)**			
Load Level [1]	**Test Load (lb)**	**E.T. (min:sec)**	**Result**
1000 lb (2.50 x D.L.) x 2	1002	01:50 - 02:51	Each end withstood load equal to or greater than 500 lb for at least one minute without failure

[1] *Load was imposed on* both *ends of rail using a spreader beam; therefore, loads were doubled.*

5.7 Test Results (Continued)

Specimen No. 3 of 3 (Continued)

Test No. 5 - Test Date: 09/13/11 **Design Load: 200 lb Concentrated Load at Top of Steel Post Mount**			
Load Level	**Test Load (lb)**	**E.T. (min:sec)**	**Displacement (in)**
200 lb (D.L.)	200	01:06	0.79
500 lb (2.50 x D.L.)	501	01:47 – 02:51	**Result**: Withstood load equal to or greater than 500 lb for one full minute without failure
Deflection Evaluation: Maximum post deflection at 200 lb = 0.79 in on an 8 ft rail (93.5 in) Limits per AC273: $\left(\frac{h}{24}+\frac{l}{96}\right)=\left(\frac{42}{24}+\frac{93.5}{96}\right)=2.72"> 0.79" \therefore ok$ and $\frac{h}{12}=\frac{42}{12}=3.50"> 0.79" \therefore ok$			

5.8 Summary and Conclusions

When installed between adequate supports, the railing assemblies reported herein meet the structural performance requirements of Section 4.2.1 of ICC-ES™ AC273 for use in One- and Two-Family Dwellings (IRC).

Model / Series	**Guardrail Type**	**Support Posts**	**Code Occupancy Classification**
93-1/2 in by 42 in *Fe[26] Traditional* Railing	Level / In-Line Condition	Steel Post Mount (Simulated Concrete Application) or Preservative Treated (Southern Pine) 4x4 Wood Posts	IRC – One- and Two-Family Dwellings

Anchorage of support posts to the supporting structure is not included in the scope of this testing and would need to be evaluated separately.

6.0 Closing Statement

Detailed drawings, data sheets, representative samples of test specimens, a copy of this test report, and all other supporting evidence will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period, said materials shall be discarded without notice, and the service life of this report by Architectural Testing shall expire. Results obtained are tested values and were secured using the designated test methods. This report neither constitutes certification of this product nor expresses an opinion or endorsement by this laboratory; it is the exclusive property of the client so named herein and relates only to the tested specimens. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

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Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A - Drawings (4)
Appendix B - Photographs (5)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	09/10/12	N/A	Original report issue