



September 18, 2008

Mr. Robert Simon
Gossen Corporation
2030 West Bender Road
Wisconsin, Milwaukee 53209

RE: SNOW LOAD RATING FOR WEATHERREADY™ DECKING

Dear Mr. Simon:

Pursuant to your request, Architectural Testing has analyzed the test data for *WeatherReady™* deck boards to determine the allowable design capacity for snow load at the 16.0 in design span.

Test data from Architectural Testing Report No. 79207.02-119-19 was utilized in the analysis.

The calculation methods of ICC-ES™ AC174 (effective March 1, 2007) *Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails)* were utilized with the exception that the End-Use Adjustment Factors for high temperature were not included. The long term creep effects due to snow load were not addressed in this analysis.

Summary for *WeatherReady™* Decking:

220 psf allowable design snow load at **16.0 in span**

For ARCHITECTURAL TESTING:

David H. Forney, P.E.
Senior Project Engineer
Structural Systems Testing

John A. Runkle, P.E.
Director
Forensic Services

DHF:dhf/alb

cc: 85956.02-119-34

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A - Snow Load Rating Calculations (1)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	09/18/08	N/A	Original report issue

APPENDIX A

Snow Load Rating Calculations



Gossen Corporation *WeatherReady*™ Decking - Rating for Snow Load at 16.0 inch Span

Using calculational methods of ICC-ES AC 174 *Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails)* and based on flexural test data and all end-use adjustment factors (with the exception of high temperature (125°F)) from Architectural Testing Test Report 79207.02-119-19, Sections 9.5 and 8.2.

Equivalent Uniform Load using Equivalent **Bending Moments**:

Average ultimate test load = 1,292 lb

$$1,292 / 2.5 = 517 \text{ lb}$$

5% Nonparametric ultimate test load = 1,182 lb

$$1,182 / 2.1 = 563 \text{ lb} > 517 \text{ lb} \therefore \text{Average governs}$$

For: P = total test load (lb) and W = total load, uniformly distributed load (lb)

$$M(\text{uniform}) = \frac{Wl}{8}, M(3rd - Pt) = \frac{Pl}{6}$$

$$\frac{Wl}{8} = \frac{Pl}{6} \therefore W = \frac{4P}{3}$$

$$W = \frac{4P}{3} = \frac{4(517)}{3} = \mathbf{689 \text{ lb}}$$

Equivalent Uniform Load using Equivalent **Deflections**:

Test load at L/180 deflection:

$$16 \text{ in} / 180 = 0.089 \text{ in}$$

Average test load at 0.089 in Deflection = 105 lb

For: P = total test load (lb) and W = total load, uniformly distributed load (lb)

$$\Delta(\text{uniform}) = \frac{5Wl^3}{384EI}, \Delta(3rd - Pt) = \frac{23Pl^3}{1296EI}$$

$$\frac{5Wl^3}{384EI} = \frac{23Pl^3}{1296EI} \therefore W = \frac{184P}{135}$$

$$W = \frac{184P}{135} = \frac{184(105)}{135} = \mathbf{143 \text{ lb}} < 689 \text{ lb} \therefore \text{Deflection governs}$$

Snow Load Rating:

Convert to lb/ft² (psf):

For W = total load (lb) and w = uniform load (psf),

$w = W / \text{Tributary Area of one deck board including 0.25 in gap}$

$$\text{Tributary Area} = (5.50 + 0.25) \times 16.0 / 144 = 0.64 \text{ ft}^2$$

$$\text{Max uniform load rating for 16.0 in span, } w = \frac{143 \text{ lb}}{0.64 \text{ ft}^2} = 223 \text{ psf}$$

WeatherReady™ Decking Snow Load Rating for a 16.0 in span: **220 psf**