# BARRIER FENCE
## 2” FENCE SYSTEM
## WIND TESTING
## APRIL, 2022

# WIND TESTING

Tolerance to harsh weather conditions, including wind is a frequently discussed topic around all products exposed to weather. Barrier Fence conducts tests to ensure our products meet our customer expectations. While no guarantee can be made given a variety of weather factors, install methods, soil conditions etc. This document contains our research and recommendations on building a Barrier Fence.

## TESTING METHODS

- Testing and reporting were conducted in accordance with: ASTM E330-14 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- The pine buck was attached to a rigid wall and the specimen was covered with a 2-mil plastic film to create a pressurizable volume behind the fence. Loads were applied for 10 seconds. The reported net deflection of the horizontal panel member is B2 minus the average of B1 and B3. The reported net deflection of the vertical post is A1 minus A2.

## INSTALLATION

The specimen was installed into a 2x10 pine buck with a 1/4" perimeter joint. The vertical posts were restrained 1" below the bottom edge of the fence on both sides using 3" x 3" x 3/16" steel angles attached to the buck using 1/4 x 1-1/2" lag screws.

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## FRAME CONSTRUCTION

The fence panels consisted of EPS bead board insulation with a steel skin. Six panels were interlocked vertically. The perimeter of the fence was captured by steel U-channels attached to the panels on the interior and exterior using #10 x 1-1/2" screws spaced 1" from ends and 30" on center at top and bottom and 1" from ends and at center of each panel at the sides. The side channels were attached to the vertical posts using 1/4-14 x 1-1/4" Teks screws. The vertical posts were 2- 1/2" x 2-1/2" x 0.095" thick steel tubes.

### Uniform Proof Load per ASTM E330-14

2-mil plastic film was used to prevent air leakage during testing. It is the opinion of the test technician that this film did not influence the results of the test.

# WIND TESTING

**Specimen #1**

| | | |
|---|---|---|
| Applied Load: | 2080 Pa (43.5 psf)* | |
| **Vertical Post Above Anchorage** | **PASS** | |
| Span(L): | 1905 mm (75 in) | |
| Net Deflection: | 119.4 mm (4.70 in) | No permanent |
| Net Permanent Set: | 16.3 mm (0.64 in) | damage |
| **Horizontal Panel Member** | **PASS** | |
| Span (L): | 2261 mm (89 in) | |
| Net Deflection: | 12.6 mm (0.50 in) | No permanent |
| Net Permanent Set: | 0.4 mm (0.02 in) | damage |

*Fence panel passed laboratory simulated wind speed testing of 210 kph.

*The specimen passed a 44 psf load. Failure occured during a 48 psf load. The vertical posts yielded at the anchorage interface.

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## Uniform Design Load per ASTM E330-14

2-mil plastic film was used to prevent air leakage during testing. It is the opinion of the test technician that this film did not influence the results of the test.

**Specimen #1**

| | | |
|---|---|---|
| Applied Load: | 1390 Pa (29.0 psf) | |
| **Vertical Post Above** | **PASS** | |
| Span(L): | 1905 mm (75 in) | No permanent damage |
| Net Deflection: | 68.1 mm (2.68 in) | |
| **Horizontal Panel Member** | **PASS** | |
| Span (L): | 2261 mm (89 in) | No permanent damage |
| Net Deflection: | 7.7 mm (0.31 in) | |