

TEST REPORT ON
GERARD ROOFING TECHNOLOGIES'
'J' BRACKET

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TESTING DATES: December 19, 2008
REPORTING DATE: December 28, 2008
ENCON[®] Project C1616-1

TABLE OF CONTENTS

Page Number

SECTION I

1.1	Summary	1
1.2	Test Procedure & Results	1-3
1.3	Test Photos	4-6

APPENDIX

Test Drawing	7
Test Conditions	8-9



SECTION I

1.1 SUMMARY

Tests were conducted to establish the strength of Gerard Roofing Technologies' 'J' Bracket installed over Gerard panels. The tests were performed on December 19, 2008 at the ENCON® Technology, Inc.'s Test Facility, Tulsa, Oklahoma and witnessed by Bala Sockalingam, Ph.D., P.E. The purpose of the test was to determine the maximum gravity load that can be applied on the 'J' Bracket and panel installed with or without Insulfoam.

1.2 TEST PROCEDURE AND RESULTS

Two battens (nom. 2" x 2") were fastened to three counter battens (nom. 4" x 2") with (1) screw per intersection. The Tile panel was fastened with (6) screws each through the nose and back shelf in the first test setup.

In the second setup, the Insulfoam was placed between the battens prior to the fastening of the panel to the battens. Insulfoam is expanded polystyrene sheeting molded to the contour of the Tile panel.

For both setups, three 'J' Brackets were installed over the panel and fastened into the panel and counter battens with (3) screws per bracket.

Loads were applied incrementally with loading jack and load cell. The superimposed load was reduced to zero and the bracket was reloaded to the next load increment, with deflection and residual readings taken each time. Three tests were conducted for each test setup so that a consistent failure mode and an average failure value could be reached.

For the test setup without Insulfoam, the failure mode was the buckling of the Tile panel beneath the 'J' Brackets. The average maximum gravity load from the three tests was 126 lbs. For the test setup with Insulfoam, the failure mode was the bending failure of 'J' Bracket. The average maximum gravity load from the three tests was 223 lbs. The description and result of the two setups are summarized in Tables 1 & 2.

Table 1. J-Bracket Load Test Results

Date: 12.19.2008
Product Name: Gerard Tile over batten
Coverage Area: 14.375" x 43.75"
Gauge: 26 ga.
J Bracket: 17.5" long x 1-7/8" width. Thickness: 0.1"
Installation Description: Battens fastened to counter battens with (1) screw per intersection.
Tile fastened to battens with (6) screws
J Bracket fastened to batten with (3) screws

Applied Load (lb)	J Bracket Deflection (in)		
	Test #1	Test #2	Test #3
0	0.000	0.000	0.000
25	0.023	0.040	0.028
0	0.002	0.000	0.010
50	0.046	0.074	0.052
0	0.003	0.007	0.015
75	0.086	0.115	0.084
0	0.009	0.027	0.016
100	0.131	0.156	0.124
0	0.016	0.043	0.018
125		0.203	0.185
0		0.053	0.032

Failure Mode	Panel Buckled	Panel Buckled	Panel Buckled
Maximum Load (lb)	118	133	127
Average Load (lb)	126		

Table 2. J-Bracket and Insulfoam Load Test Results

Date: 12.19.2008
Product Name: Gerard Tile over batten and Insulform
Coverage Area: 14.375" x 43.75"
Gauge: 26 ga.
J Bracket: 17.5" long x 1-7/8" width. Thickness: 0.1"
Installation Description: Battens fastened to counter battens with (1) screw per intersection.
Insulfoam placed between the battens
Tile fastened to battens with (6) screws.
J Bracket fastened to batten with (3) screws.

Applied Load (lb)	J Bracket Deflection (in)		
	Test #1	Test #2	Test #3
0	0.000	0.000	0.000
40		0.085	0.057
0		0.019	0.020
80	0.097	0.122	0.090
0	0.007	0.022	0.025
120		0.152	0.130
0		0.027	0.027
160	0.205	0.172	0.180
0	0.012	0.035	0.057
200		0.202	0.233
0		0.043	0.069
Failure Mode	Bracket Bending	Bracket Bending	Bracket Bending
Maximum Load (lb)	207	226	235
Average Load (lb)	223		

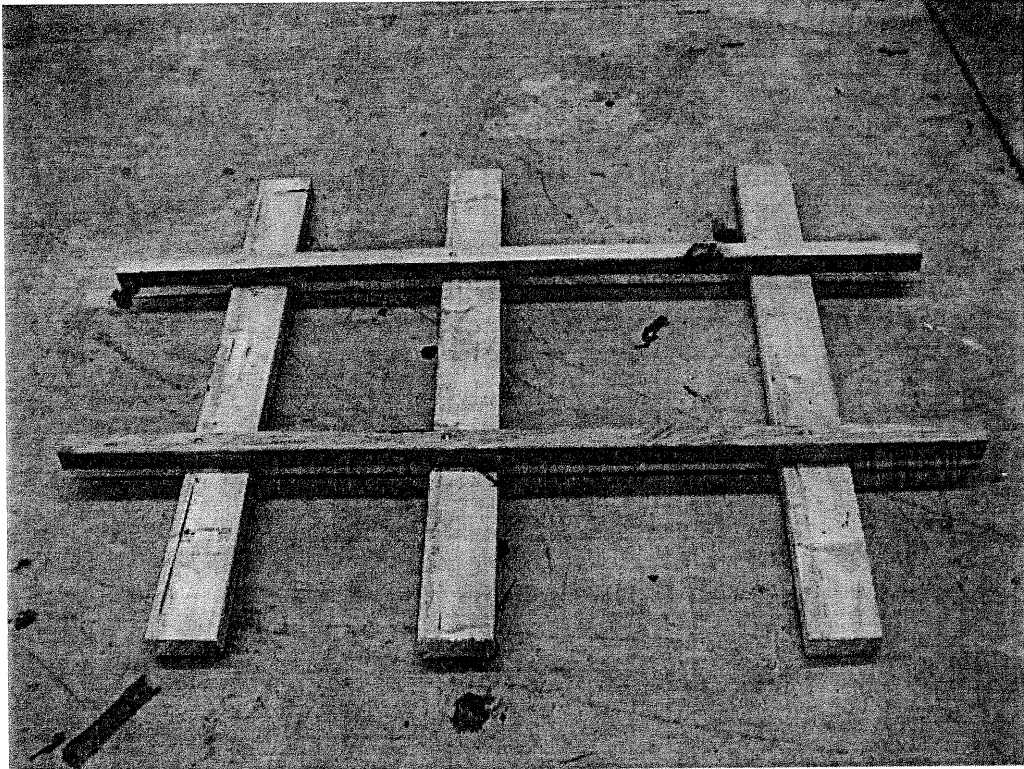


PHOTO 1: Photo showing the batten and counter batten layout .
(DSC00211)

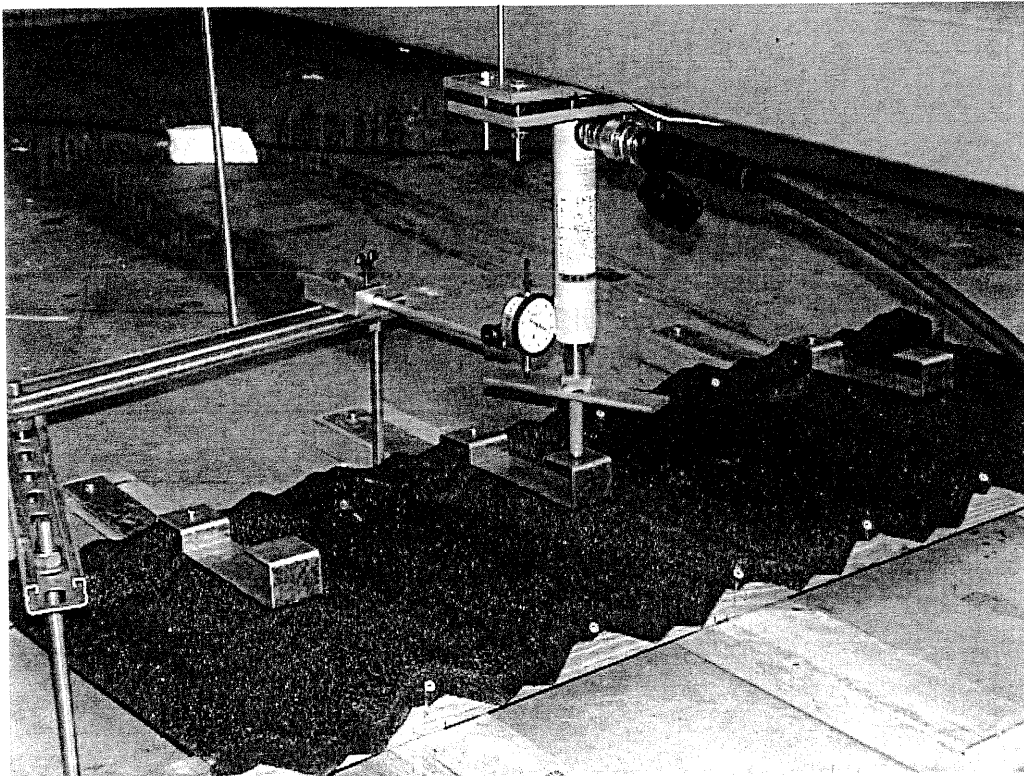


PHOTO 2: View of the loading of the test setup without Insulfoam.
(DSC00214)

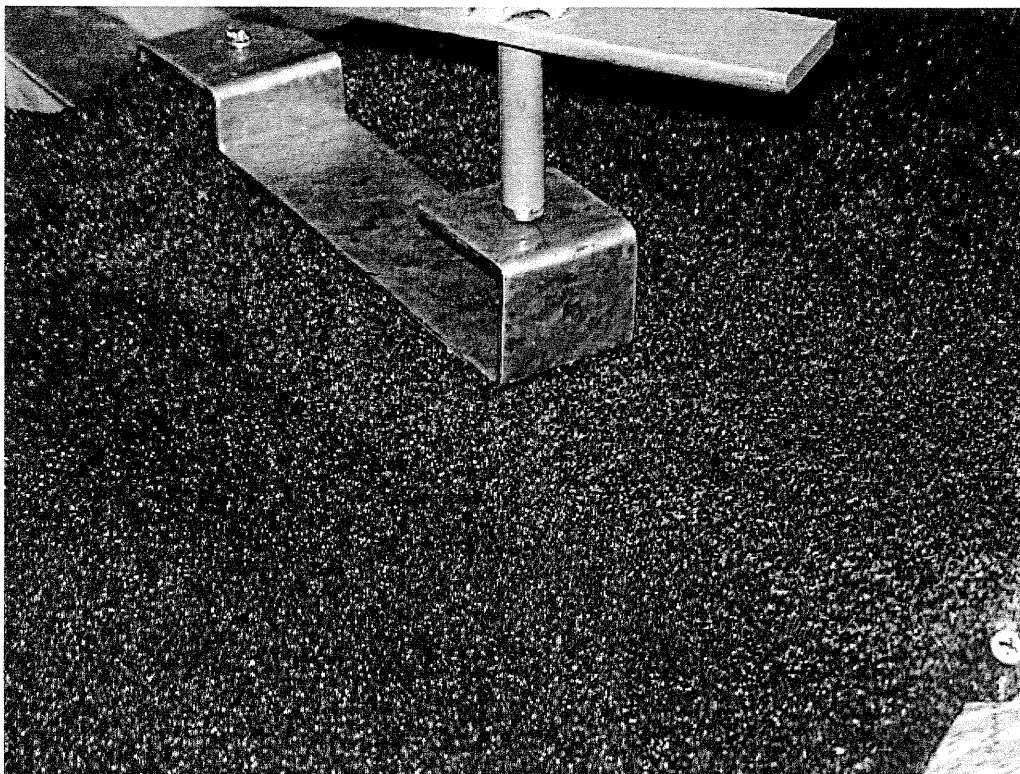


PHOTO 3: View of the buckling failure of panel beneath the bracket.
(DSC00215)

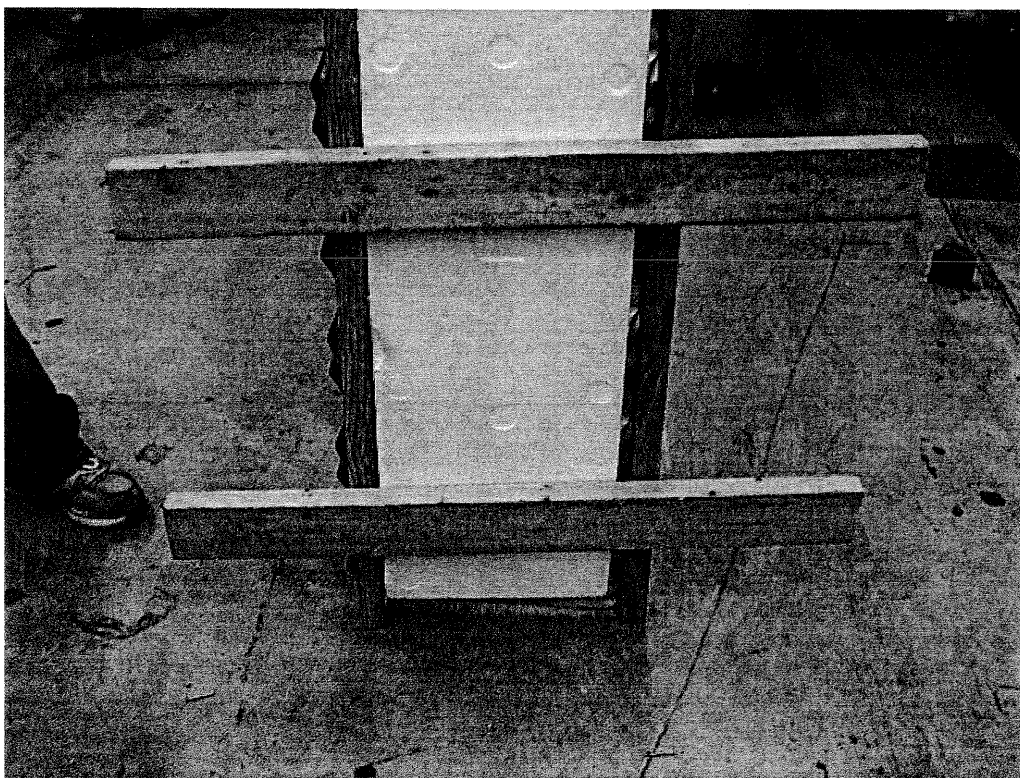


PHOTO 4: View of the test setup with Insulfoam.
(DSC00218)

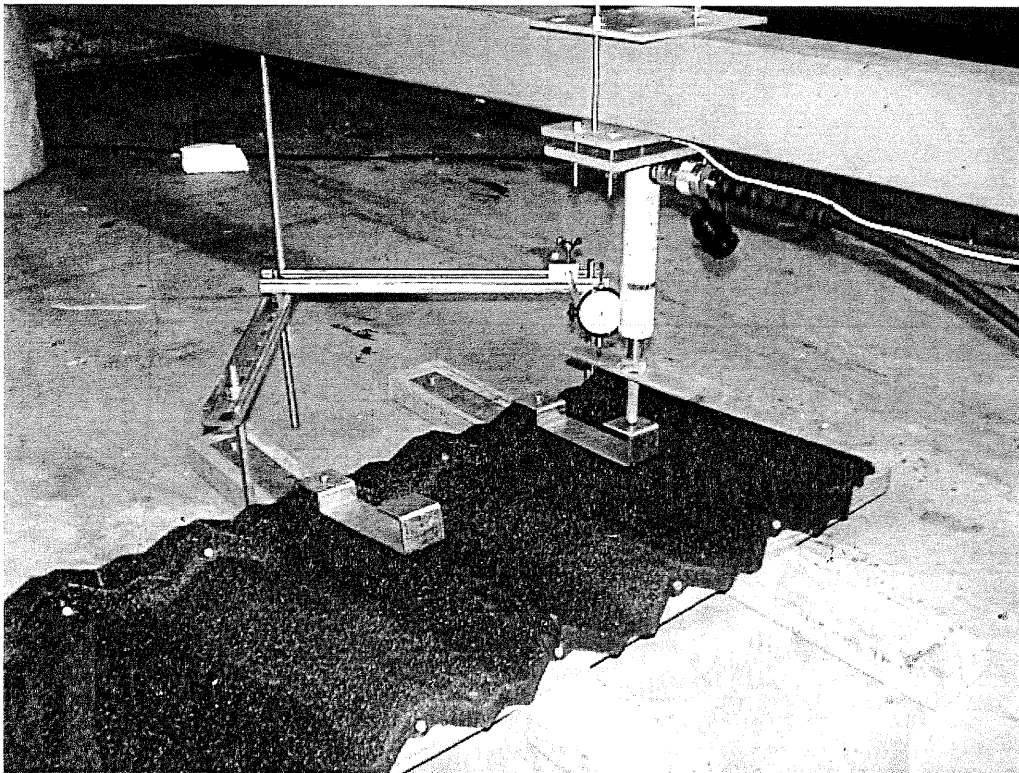


PHOTO 5: View of the loading of the test setup with Insulfoam.
(DSC00219)

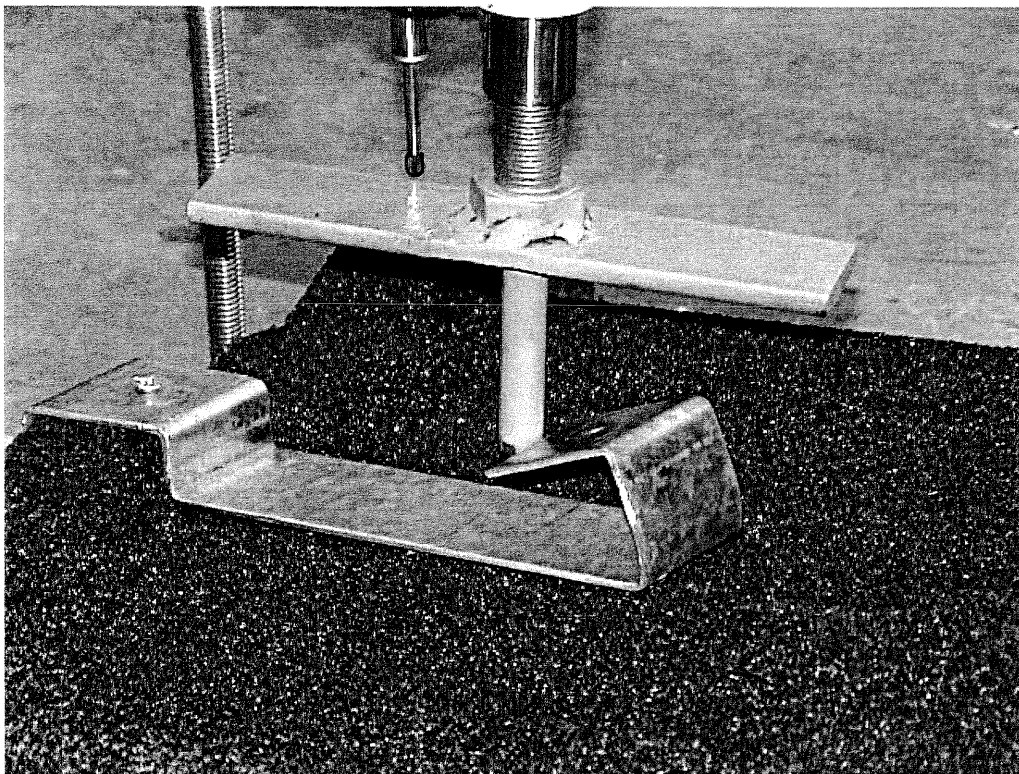


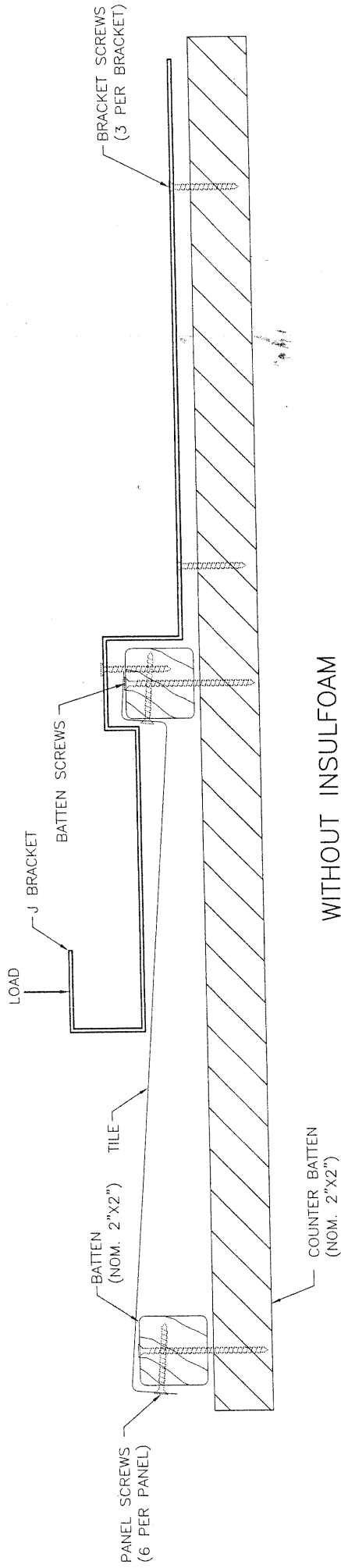
PHOTO 6: View of the bending failure of 'J' bracket.
(DSC00222)

APPENDIX

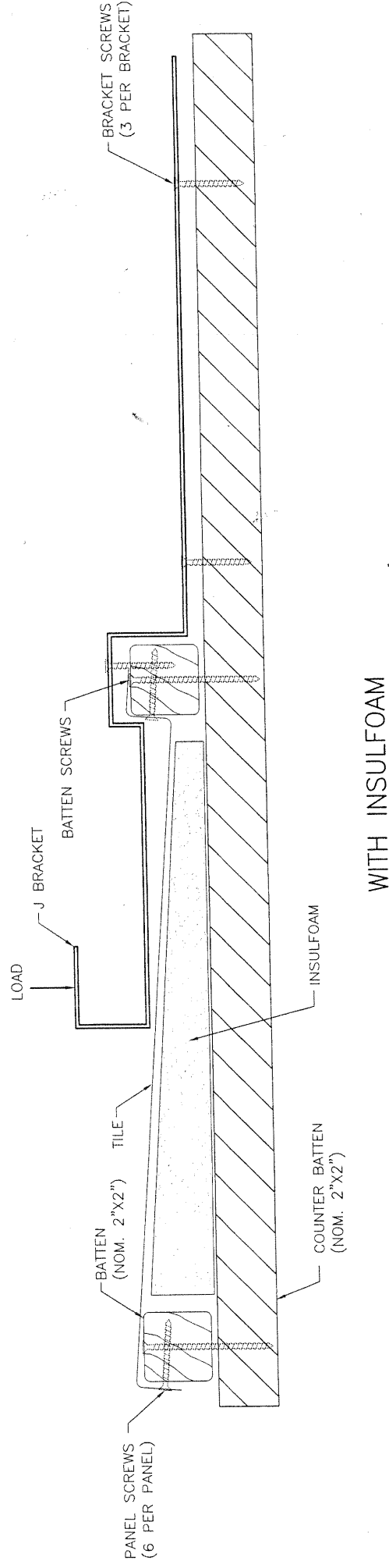
GERARD 'J' BRACKET TEST DETAILS

7/9

LOAD TEST



WITHOUT INSULFOAM



WITH INSULFOAM

TYPICAL PANEL INSTALLATION X-SECTION

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