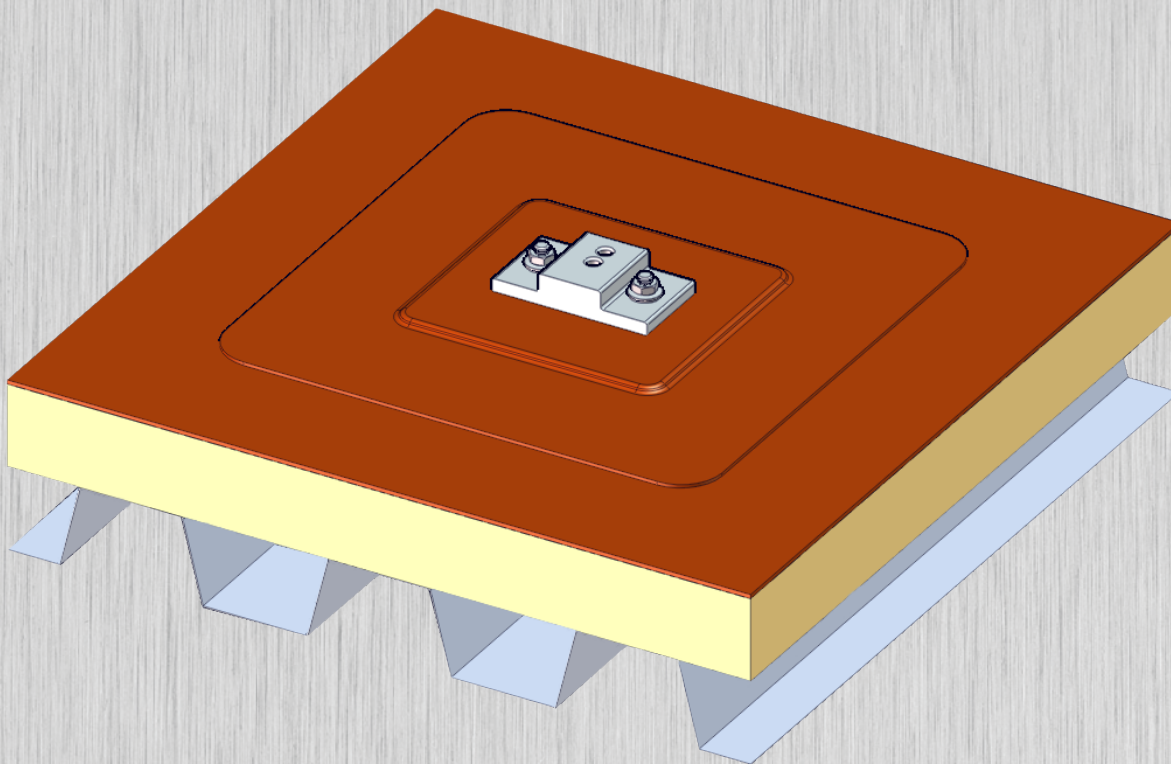


LOW-SLOPE APPLICATIONS

Eco-65 PRODUCT GUIDE – FERRULES

Load Test Report



EcoFasten Solar®

Committed to the Support of Renewable Energy





B-Deck Lateral Load Test

Objective

These tests determine the maximum lateral load an EcoFasten base plate (Appendix B) will sustain before failure when it's loaded 2-5/8" above the plate in any direction parallel to the plate and is fastened to 20 gauge steel b-deck with OMG XHD screws (Appendix C) through 2" of insulation. These tests also determine the displacement of the bracket at the point of load given a specific load up to the point of failure.

Procedure

For each test, a new EcoFasten base plate (Appendix B) was fastened to a 12"x12" square galvanized steel b-deck with eight new OMG XHD screws (Appendix C) on top of ferrules spacing the plate 2" from the top of the deck (Figure 1). The whole assembly was securely fastened to a welded steel structure which was bolted to the base of the testing machine. Insulation was omitted from the test because properties can vary significantly between different types of insulation.

To determine the maximum load the plate would sustain from any direction parallel to the base plate, three tests were conducted loading the plate vertically (Figure 2), and three tests were conducted loading the plate horizontally (Figure 3). These two conditions represent the two extremes of the range of possible directions the plate could be loaded. Custom brackets were fabricated for the two test configurations to connect the base plate to the load cell 2-5/8" above the plate. Loads were measured by an ASTM E74 calibrated load cell and display. Deflection was measured with an electronic digital indicator accurate to .0005" 2-5/8" above the plate.

For each test, loads were applied slowly in approximate 100lb increments until failure; deflection was recorded at each increment.

Results

Ultimate loads were recorded as follows:

Test	Vertical	Horizontal
1	1337	1348
2	1383	1265
3	1214	1228
Mean	1311	1280

Typical failure was the bottom middle screw pulling out of the steel deck. The rest of the screws loosened as the deck deformed (Figure 4). Deformation of the base plate was almost nonexistent.



Fig. 1

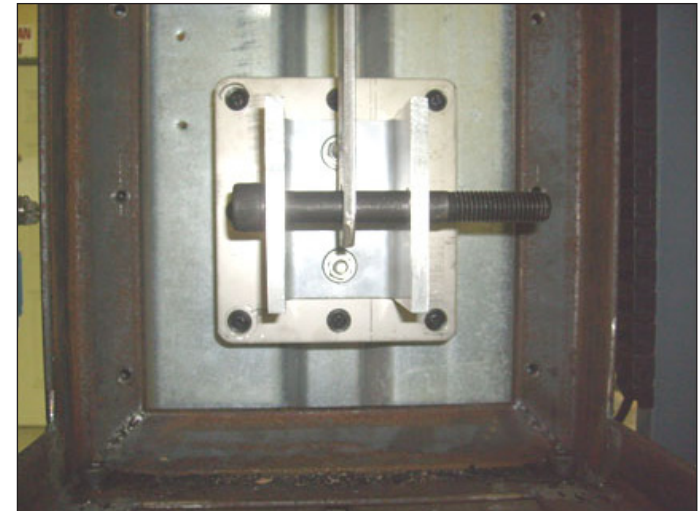


Fig. 2

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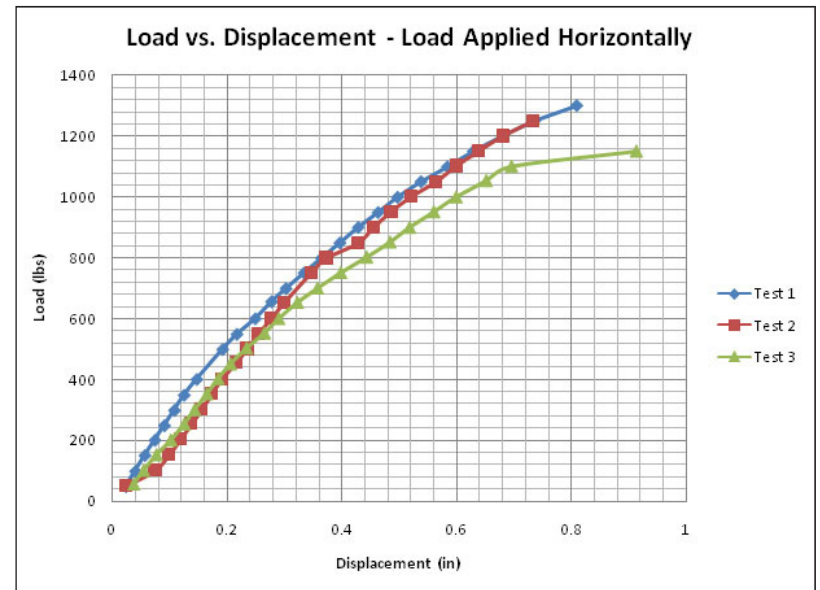
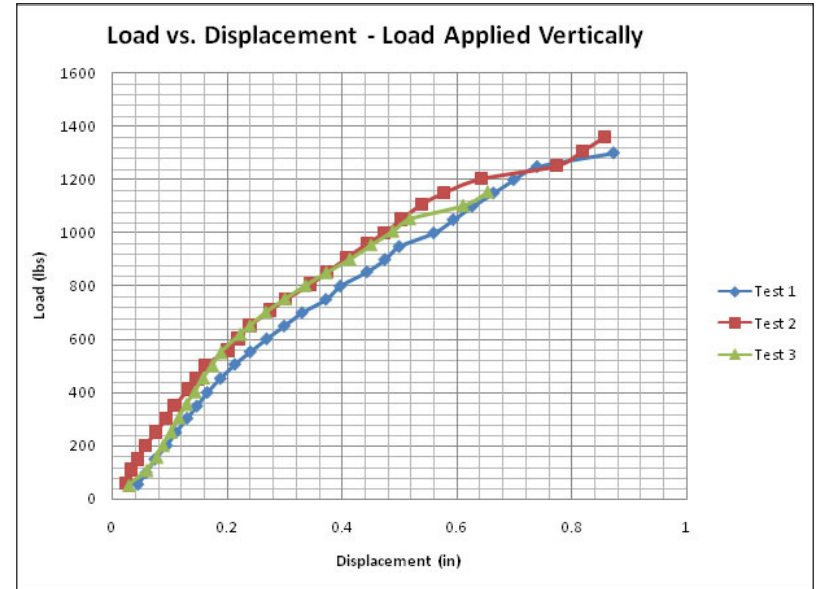
B-Deck Lateral Load Test



Fig. 3



Fig. 4



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