LINEAR FORCE TEST PROCEDURE FOR CLAMPING DEVICES SECURED TO METAL PANEL ROOFS

PART 1 – Introduction

1.1 The Linear Force Test Procedure is intended to measure the force necessary to cause the clamp to slip along the panel seam.

1.2 The objective of this test is to provide a realistic method of evaluating the holding force of a clamp when secured on a specific roof assembly.

1.3 The test method is applicable, but not limited to any metal roof system incorporating a roof panel, clip, liner panel, insulations and proprietary fastening system.

PART 2 - Test Method

2.1 The Linear Force Test consists of a tensile tester which will accommodate a roof panel sample and provide sufficient linear force to dislodge the clamp from the roof panel.

2.2 The test specimen fixture, including the roof panel sample is placed on the tensile tester and secured firmly without distorting the roof panel specimen.

2.3 The tensile tester load cell shall be fixed to the Clamp in such as way that the force, when applied, will be parallel to the plane of the roof panel sample.

PART 3 - Sample

4.1 The components for a test panel are assembled to the desired specification (gauge of metal, application method, assembly per manufacturer's specifications).

4.2 The width of the test sample shall be at least 10", but no more than 16".

4.3 The sample length shall be at least 12" long. If the tensile tester will accommodate a longer sample, a sample length of 15" can be used for two tests and a sample length of 18" can be used for three tests (assuming that the test panel has not been damaged or distorted during any phase of the testing).

4.4 The seam, if normally machine crimped on site, will be furnished in a similarly seamed condition for testing.

4.5 The Clamp is then installed to the roof panel sample seam in accordance with the Clamp manufacturer's specifications. The torque to tighten the retaining hex fasteners shall be recorded and reported with the test results.

4.6 When ready for testing, the test sample is secured firmly to the test fixture without distorting the test sample and then the fixture and sample are secured within the tensile tester. The load cell is secured to the Clamp being tested.

PART 4 - Operation

5.1 Mark the location of the Clamp on the roof panel seam so that any movement of the Clamp during the test can be monitored.

5.2 Load the clamp and pull at 2.0 inch / minute, parallel to the seam, until failure[1] .

PART 5 - Results

6.1 Record the tensile force (Lbs.) at the point of failure and note the observed mode of failure.

6.2 A minimum of three separate tests will be performed and the results for each test reported. Record any observations noted during the testing.

6.3 Record the Tests performed, date of test, sample description, persons in attendance observing the tests.

Note 1. Failure – For the purpose of this test, any of the following shall be considered a "Failure":

- *Clamp displacement of more than 8 mm.*
- *Disengagement of Clamp from seam.*
- *Breakage of any component of the Clamp*
- *Fracture of any portion of the panel seam*
- *Buckling, tearing or any severe damage to the panel seam.*