



Technical Bulletin 2002

LWG Fastener Testing Procedure

Procedure to Conduct pull out testing for LWG fasteners

Revision Date Aug 2022

Materials and equipment required:

1. LWG fasteners of various lengths
2. Variable speed drill or screw gun with adjustable clutch
3. Pull tester with special lifter foot and base designed for use with multiple fasteners (see Fig. 1)
4. Repair materials to patch roof after testing

Typically, these tests are performed by an independent third party such as a fastener manufacturer, however in unusual cases the project timetable requires an alternative solution. When this occurs it is possible to perform and submit pull tests to Mule-Hide to verify the deck is an acceptable substrate for a Mule-Hide roofing system, as long as this procedure is followed and proper documentation is provided. **Until the report is submitted, reviewed and results deemed sufficient to install the proposed system, it is not advisable to begin insulation or membrane installation.** (This procedure is based on **ANSI/SPRI FX-1 2016 Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners**)

Precautions:

1. Fastener(s) should be installed using same method and tools used during actual construction.
2. Fastener(s) are to be installed perpendicular to the roof deck
3. The existing roofing materials shall be removed, exposing the substrate to which the new system will be fastened. We recommend a minimum of a 6" x 6" area be prepared to conduct each test.
4. The substrate must be smooth to allow pullout testing to sit flat on roofing surface.
5. Fastener(s) must be pulled out perpendicular to the roof deck.
6. Fastener(s) must penetrate roof deck a minimum of 2"

Procedure:

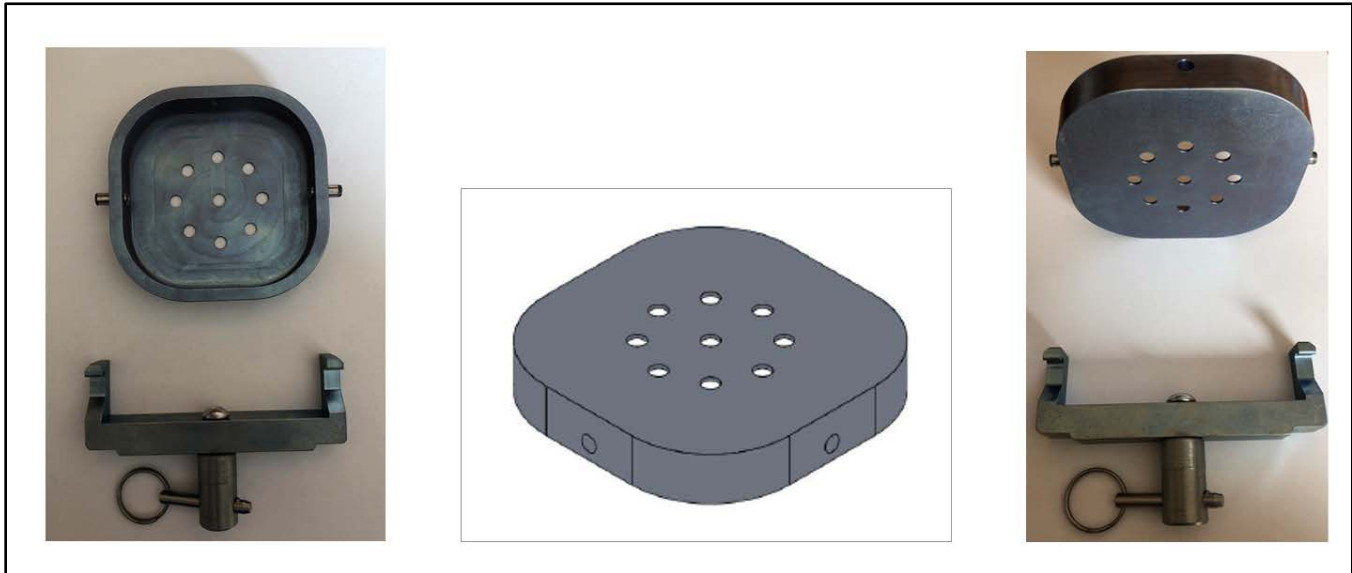
1. Use the lifter foot and base plate specifically designed to accept one or more LWG Fasteners. (Figures below)
2. The LWG Fastener and Plate is unique from other traditional fasteners as the plate can utilize one or more fasteners to achieve the minimum required pullout. Mule-Hide requires a minimum withdrawal resistance of 300# at each test location. Multiple fastener configurations may need to be pulled at the beginning of the testing to determine the appropriate number of fasteners to be used for the remainder of the tests. Values of each combination should be kept on the attached sheet. If a test value does not meet the minimum pullout value, additional fasteners should be added (using the proper pattern and re-tested until the pullout value exceeds the minimum requirement. The various patterns for fastener placement are shown below.
3. Each LWG Fastener requires a minimum of 2" of embedment. For installation, it is recommended that a variable speed power drill or screwdriver tool with an adjustable slip clutch or torque control feature be used. LWG Fasteners shall be installed perpendicular to the deck through the appropriate holes on the pull tester lifter foot. Care shall be taken not to overdrive or strip the fasteners during installation. For each application, determine the correct speed and torque setting required for proper installation. The installer shall consider using the lowest torque setting needed to properly seat the fastener to the plate. Do not overbear on the parts during installation. Common cordless drills used with speed selection number one (or low speed) and low to mid-range torque settings are often sufficient when fastening into light weight insulating concrete and gypsum substrates. Be advised, due to the unique coarse thread design, these fasteners install more quickly than standard threaded fasteners. **Do not use hammer drill setting** (available on certain tools) when installing LWG fasteners.
4. It is not acceptable to test one fastener and extrapolate pullout values using more than one fastener. Example: If 1 fastener pulls at 100#, 5 fasteners may not pull at 500#. Always test using the number of fasteners necessary to obtain desired results.
5. When testing to a Product Approval (Factory Mutual, Florida Product Approval, Miami Dade NOA), the minimum number of fasteners used per plate shall not be less than the number of fasteners per plate required by the assembly approval.





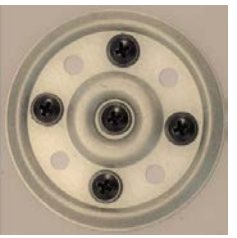
LWG Fastener Testing Procedure

Documentation of tests performed on a roof:

1. Complete "Tested Fastener Configuration" sheet as found on page 3. Also provide photographs for each test.
2. Minimum requirements are 6 tests per project based on substrate type; provide additional tests per substrate change.
3. Forward Configuration sheet and photographs to Mulehidewarranties@mulehide.com
4. Include contractor name, project name, city and state of project and date test performed.
5. Final determination of whether tests pass or fail will be provided after review by the Mule-Hide Technical Department.

Figure 1



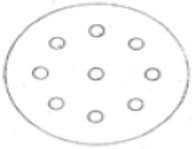
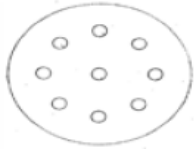
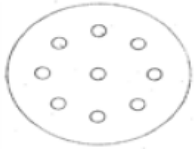
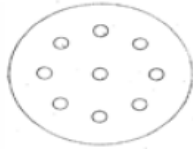
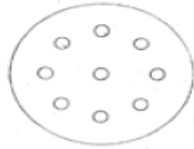
Approved Fastening Patterns for Multiple Fasteners In LWG Plates				
				
Single Fastener	Two Fasteners	Three Fasteners	Four Fasteners	Five Fasteners

The information given in this Technical Bulletin is subject to change without notice. Always check the Mule-Hide website at www.mulehide.com for the latest information, changes and updates or contact Mule-Hide Products Company at 800-786-1492.

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Tested Fastener Configuration
(fill in the location of fastener(s))

TEST LOCATION					
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