

TESTING APPLICATION STANDARD (TAS) No. 106

STANDARD PROCEDURE FOR FIELD VERIFICATION OF THE BONDING OF MORTAR OR ADHESIVE SET TILE SYSTEMS AND MECHANICALLY ATTACHED, RIGID, DISCONTINUOUS ROOF SYSTEMS.

1. Scope

- 1.1. This Application Standard is a product application quality control test to confirm: 1) sufficient bonding by the mortar or adhesive to the tile and underlayment in a mortar or adhesive set tile system; or 2) effective mechanical attachment of components within a rigid discontinuous roof system.

2. Definitions

- 2.1 For definitions of terms used in this application standard, refer to ASTM D 1079; and the *Florida Building Code, Building*.

3. Requirements

- 3.1 All field verification and testing shall be performed by a Dade County Approved Testing Agency. All reports, tests, and calculations shall be in compliance with TAS 301.
- 3.2 A minimum of 97% of the roofing tile physically inspected shall be determined to be fully bonded.
- 3.3 A minimum static test uplift load of not less than 35 lbf. per tile shall be applied for mortar or adhesive set tile systems.
- 3.4 For mechanically attached, rigid discontinuous systems, a minimum static test uplift load of not less than 80% of the resistance load (F') or (Mr') as listed in the manufacturer's Product Approval shall be applied.

4. Procedure

- 4.1 Examine the entire area of the roof for loose tile by lifting any tile by hand or with a hand held gripping device. Physically examine not less than one (1) tile in ten (10) of all components in the field area and one (1) tile in five (5) of all tile in per-

imeter and corner areas including hip and ridge tile.

- 4.1.1 Mark each physically tested tile in the field and record all loose tile observed.

- 4.1.2 If more than 3% of the tile in any roof area are determined to be loose. No further testing shall be conducted and the Roof System shall be considered to have failed the testing and be unacceptable.

- 4.1.3 If less than 3% of the tile in any roof area are determined to be loose static up lift tests shall be performed.

- 4.1.4 Mark all tested tile with a "T" using a waterproof marker.

5. Apparatus

- 5.1.1 The test apparatus shall consist of a hook shaped to a 90 degree angle, or other load transfer device capable of sliding underneath the nose of the tile and remaining in place as the loads are applied. The hook or other device shall have sufficient strength to resist applied loads of at least 100 lbf.

- 5.1.2 The hook- or other load transfer device shall be attached to a cable fitted with a load cell with a dial or digital indicator, which displays the load within 0.1 lbf.

6. General

- 6.1 The number of tiles which shall be tested in the field, perimeter and corner areas of the roof shall be as follows:

- 6.1.1 For roof areas less than 5 squares, one (1) uplift test is required.

- 6.1.2 For roof areas five (5) squares or more a minimum of one (1) test per every two (2) squares in the field: one (1) test per square in the perimeter area and (1) in the corner areas including one (1) test per every twenty (20) hip and ridge tiles.

7. Load Application

- 7.1 For mortar or adhesive set tile systems. The operator shall apply an even load by lifting up on the handle until the load cell indicator register 35.0 ± 5 lbf. The load shall be held for 5 seconds.
 - 7.1.1 This test shall be carried out on all mortar and adhesive set applications after final completion of the application at a time as stated in the Product Approval or as specifically approved by the manufacturer of the mortar/adhesive.
 - 7.1.2 For mechanically attached systems, determine the load to be applied by multiplying the minimum characteristic resistance load (F') or (Mr'), listed in the Product Approval by 0.80. The operator shall apply this load by lifting up on the handle until the load cell indicator registers the magnitude of this load $\pm 5\%$. The load shall be held for 5 seconds.

8. Recorded Data shall include the following observations

- 8.1.1 Tile breaks or cracks.
- 8.1.2 Mortar patty or adhesive separates from the underlayment.
- 8.1.3 Tile separates from the adhesive or mortar.
- 8.1.4 The nose of the tile deflects vertically in excess of 2 inches in mechanically attached systems.

9. Acceptance Criteria

- 9.1.1 75% or more of the static up lift tests shall be required to pass the testing criteria.

10. Report

- 10.1 The final test report shall include the following:
 - 10.1.1 A sketch of the test site roof which indicates 1) the field, perimeter and corner areas, with dimensions; and, 2) the location of all components on which a static up-lift test is conducted. Indicate those attachments which were initially tested and, if applicable, those attachments which were tested in the extended testing.
 - 10.1.2 A tabulated set of test results, signed by a Professional Engineer or a Registered Roof Consultant.