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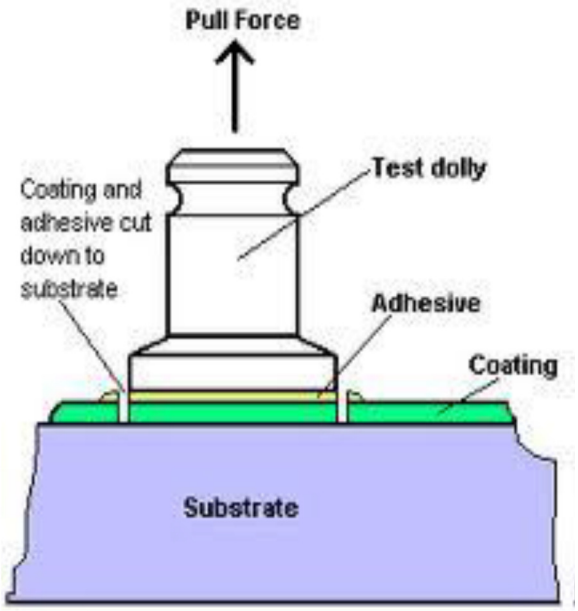
Technical Service Communication

Technical Bulletin PEC184A
Pecora-Deck Field Inspection and Test Procedure

Quantitative Test Method – ASTM D4541 Pull Off Adhesion Strength

1. The purpose of this test is to measure the adhesive strength of a material to determine whether the installation has been completed properly. Release or separation during the test will occur along the weakest part of the material, or bond between the material and the substrate.
2. Poor adhesion may be caused by poor substrate preparation, the surface being contaminated by water or dirt, not properly cured or improper primer application just to name a few. For a traffic coating to function properly there must be proper adhesion.
3. The most common cause of failure is a low/high pressure on the material over a long period of time. To determine whether proper adhesion has been achieved, on site testing needs to be conducted. The basic principle is very simple- attach a steel or plywood disc to the coating material, cut around the material so you are pulling on a specific area of the material to not damage more material around the area of the test.



4. When attaching the adhesion tester (test dolly) to the coating material (coating) with the recommended adhesive[1], ensure that the specimen is not being pre-stressed by bumping or bending.
5. You may slightly abrade the surface of the material to remove any surface film that could interfere with the adhesion to the material. Make sure you clean the abraded area with Pecora recommended cleaning agent as to not affect the material or leave residue.
6. Before conducting your pull test make sure that the material is fully cured (min 48 hours). It is very important the material be flat as to achieve proper adhesion to the disk.

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7. Apply the adhesive to the dolly and the surface of the coating material, removing any excess adhesive from the sides of the dolly. Allow the adhesive to cure in accordance to the manufactures instructions.
8. During the initial cure of the adhesive apply constant pressure using either your hands or a clamping system. Do not twist or move the dolly as that could result in incorrect values during testing.
9. When a bearing ring is required place it evenly around the dolly so there is equal support being applied to the tester.
10. To ensure the correct amount of force is being used apply it in a smooth, continuous manner. The force shall be applied to the dolly by turning the handle not more than one revolution per minute (rpm) in accordance with ASTM D4541, method B. The gauge will display the force being applied and the limit stop dial will register the peak force just before there is a separation.
11. Once the test is complete you will need to analyze the material for maximum force achieved, the type of release, the surface in which the release occurred and the percentage of release on each surface. This information should be noted in a test report using lbs. from the gauge.

Pull off value calculation:

- Use table provided by test apparatus manufacturer.
- In the absence of test jig calculation recommendations use the following:
    - Measure diameter of disc utilized.
    - Record lbs. force from dial indicator at failure.
    - Use the following calculation to determine max pull off value in PSI
        - Max force from dial indicator / (3.14 * (diameter/2)^2 = force in PSI

    NOTE: A minimum of 200 psi is required for warranty purposes.

12. Any errors in the test should be examined to find its cause. If you discover that this error was caused from improper test procedures, do not include it on your report and perform another test. Any material that was damaged in the pull test needs to be replaced in accordance to Pecora's instructions.

[1]*The recommended adhesive is Gorilla® brand Super Glue (clear).*