FLORIDA DEPARTMENT OF TRANSPORTATION
State Materials Office
5007 NE 39th Avenue
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Florida Method of Test
for
TESTING SPECIMENS OF CONCRETE PAVEMENT JOINT SEALANT FOR ADHESIVE STRENGTH

Designation: FM 5-602

1. SCOPE

1.1 This method describes procedures for conducting pull-out tests on 2 inch test sections of concrete pavement joint sealant.

2. APPARATUS

2.1 Hinged Hook – A hinged hook with a 2 inch base similar to the one shown in Figure 1 should be used. The base of the hook should lock into the vertical side of the hook.

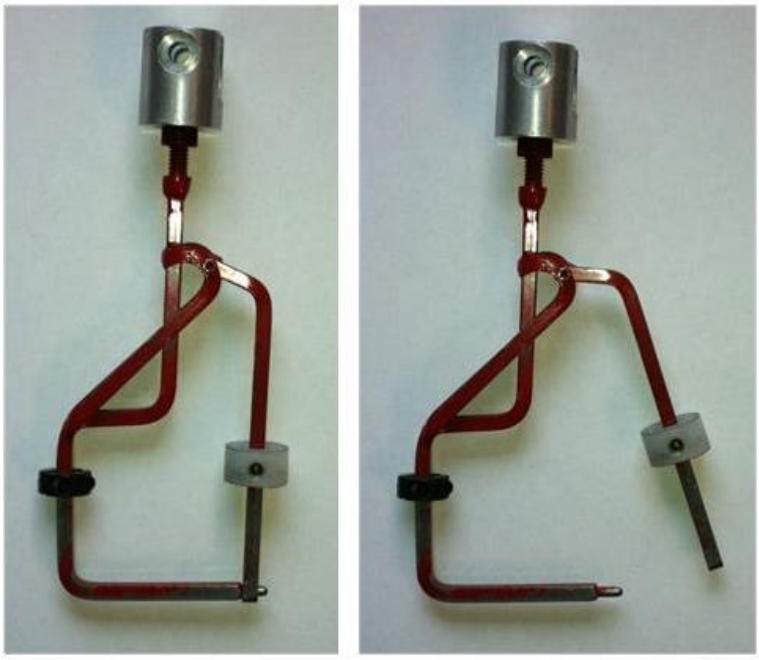

FIGURE 1 Hinged hook

2.2 Load Cell or Load Scale – A load cell or load scale that has been validated/calibrated through a reference source. The load cell/scale will have the capability of recording the peak force. It is recommended that a NIST certified load cell be used. The load cell/scale should include hooks or some other means to connect to a loading source and the hinged hook.

2.3 Test Frame - A test frame capable of applying a uniform vertical upward force. The test frame will apply a vertical force by means of a hand crank or by attaching a drill. The test frame is shown in Figure 2.

FIGURE 2 Test frame

2.4 T-Handle – A T-handle may be used as an alternative method to apply an upward vertical force. A T-handle is shown in Figure 3.

FIGURE 3 T-handle

2.5 Cordless Drill - 18 Volt Cordless Drill and ¼ inch drill bit.

3. TEST PREPARATION

3.1 Using a drill, form a series of three holes using a 0.25 inch diameter drill bit spaced 2 inches apart using a template as illustrated in Figure 4.

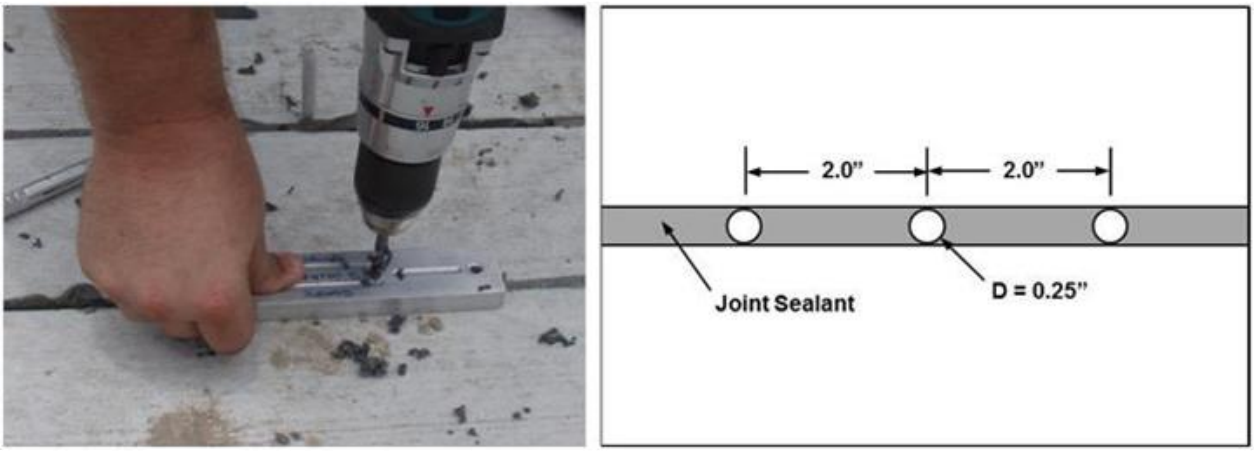

FIGURE 4 Drill three 1/4 inch diameter holes spaced 2 inches apart.

3.2 Cut away sealant between two of the holes to create a 2 inch test section as illustrated in Figure 5.

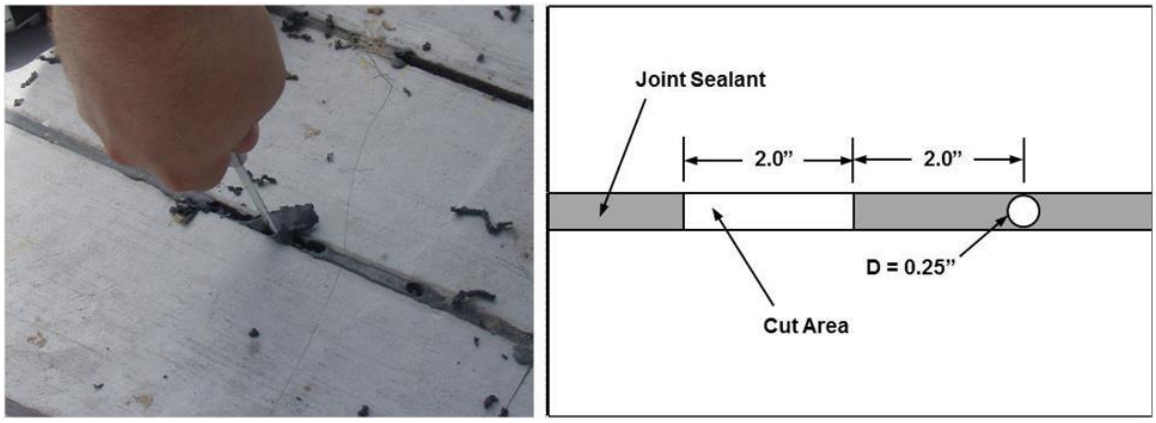

FIGURE 5 Creation of a 2 inch test section.

4. PROCEDURE TO DETERMINE ADHESIVE STRENGTH

4.1 Test for adhesive strength no sooner than 21 days from placement.

4.2 Open the hinged hook and insert the vertical end through the 0.25 inch diameter hole in the sealant. Insert the end of the hook with the 2 inch base through the section of sealant that was previously removed. Close the hook until the ends are locked.

FIGURE 6 Inserting the hook through the sealant

4.3 Connect one end of the load cell or load scale to the hook and the other end to the test frame or T-handle. Apply a consistent upward vertical force by one of the three means shown below. Continue to apply the force until the bond between the sealant and concrete is broken.

(a) T-handle method

(b) Test frame with drill

(c) Test frame with hand crank

Figure 7 – Methods to apply an upward vertical force.

4.4 Record the peak force required to remove the hinged hook from the joint.

5. REPORT

5.1 Adhesive strength – Report the maximum load in pounds required to remove the hinged hook for each joint in a LOT.