

State of Nevada
Department of Transportation
Materials Division

**METHOD OF TEST FOR FLOWABILITY AND PASSING ABILITY OF HYDRAULIC-CEMENT
SELF-CONSOLIDATING CONCRETE USING THE L-BOX APPARATUS**

SCOPE

This test method covers the determination of the flowability and passing ability of fresh hydraulic-cement self-consolidating concrete using the L-Box. The flow heights ratio is a measure of the passing ability of self-consolidating concrete (SCC). The flow times T_{20} and T_{40} are a measure of the flowability of SCC.

APPARATUS

1. L-Box, inside walls shall be a smooth, rigid, nonabsorbent material (See Figure 1).
2. Trowel and hand scoop.
3. Measuring tape, having a minimum gradation of 10 mm (0.5 in.).
4. Stop watch, accurate to the nearest .01 second.

SAMPLING

Sampling shall be performed in accordance with Test Method Nev. T416.

PROCEDURE

1. Dampen the L-Box. Wipe away any excess water with a moist cloth or damp sponge.
2. Place the L-Box on level, stable ground.
3. Ensure the sliding gate is closed. Using a hand scoop, fill the vertical portion of the L-Box in one lift without vibrating, rodding or tamping.
4. Using a trowel, strike off the surface of the concrete level with the top of the L-Box.
5. Allow the test specimen to stand for 1 minute.
6. Open the sliding gate.

7. Determine the time in seconds that it takes for the concrete flow to travel 200 mm (8 in.) and 400 mm (16 in.), as measured from the time the sliding gate is lifted. These are the T_{20} and T_{40} times, respectively (See Figure 2).
8. When the concrete has stopped flowing, measure the height of the resulting flow at the sliding gate (H1) and at the end of the horizontal (H2).

Complete the entire test from filling the vertical portion of the L-Box through the opening of the sliding gate without interruption, and within 5 minutes.

CALCULATIONS

Calculate the blocking ratio as follows:

$$\text{Blocking Ratio} = \frac{H2}{H1} \times 100$$

REPORT

1. Report the filling heights, H1 and H2, to the nearest 5 mm (0.25 in.).
2. Report the blocking ratio, H2/H1, to the nearest percent.
3. Report observations of bleeding and/or air popping on the surface of the concrete flow.
4. Report the T_{20} and T_{40} flow times to the nearest 0.2 second.

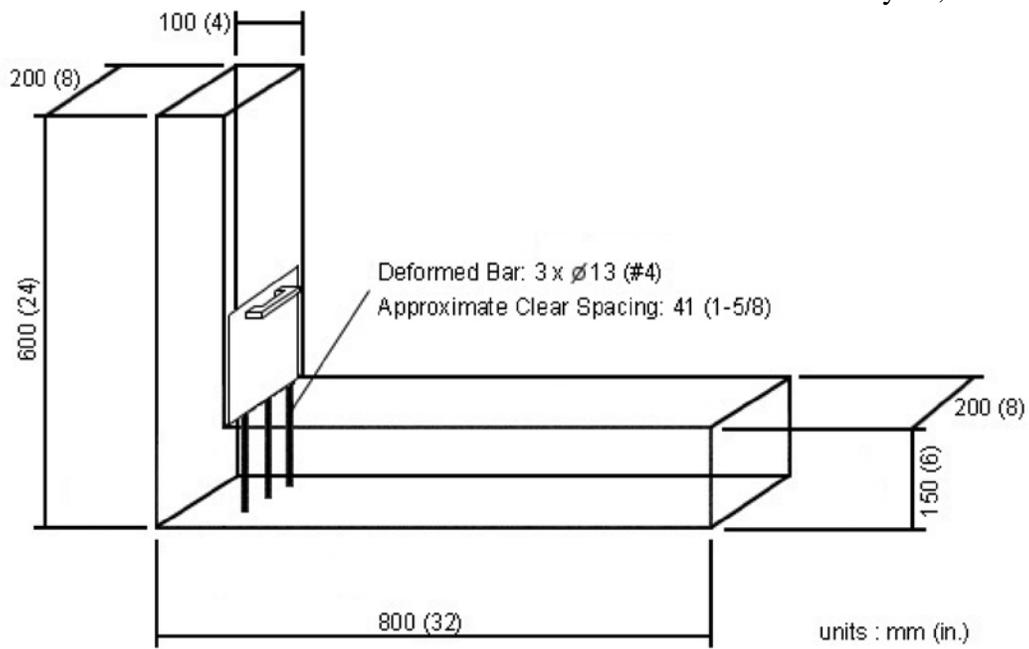


Figure 1. L-Box Apparatus

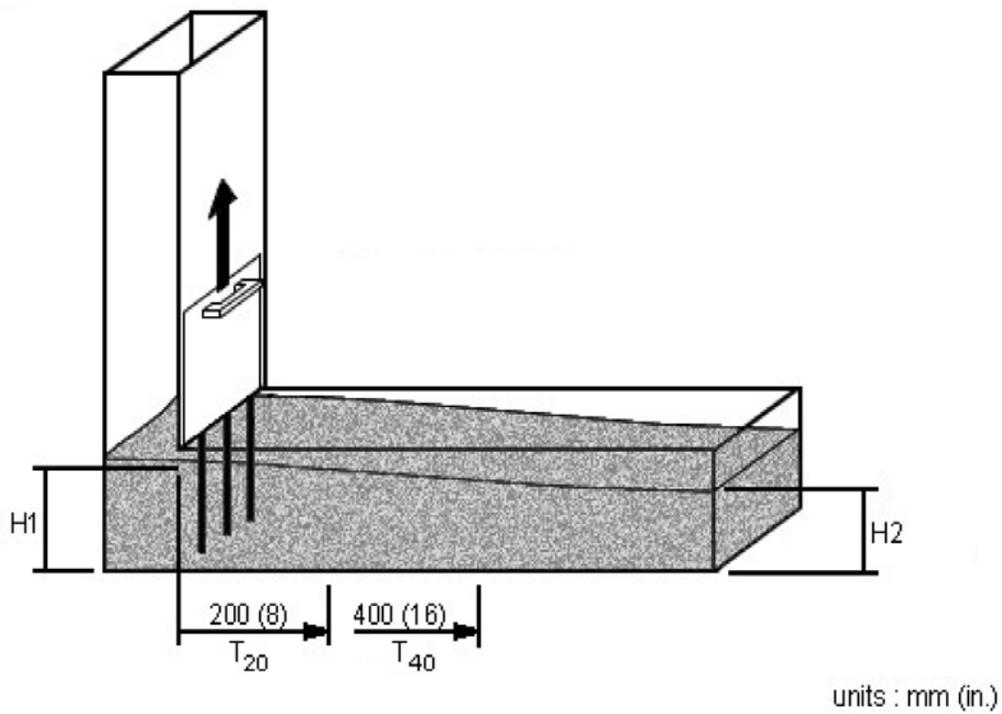


Figure 2. L-Box Test