

State of Nevada
Department of Transportation
Materials Division

**METHOD OF TEST FOR PASSING ABILITY OF HYDRAULIC-CEMENT
SELF-CONSOLIDATING CONCRETE BY J-RING AND SLUMP CONE**

SCOPE

This test method covers the determination of the flowability and stability of fresh hydraulic-cement self-consolidating concrete using the j-ring and slump cone. The diameter of the unobstructed slump flow versus the obstructed slump flow passing through the j-ring is a measure of the passing ability of self-consolidating concrete (SCC).

APPARATUS

1. J-Ring, (See Figure 1).
2. Slump cone mold and tamping rod, shall conform to Test Method Nev. T438.
3. Base plate, smooth, rigid, nonabsorbent sealed or laminated plywood, rigid plastic or steel, and be at least 914 mm (36 in.) in diameter.
4. Trowel and hand scoop.
5. Measuring tape, have a minimum gradation of 10 mm (0.5 in.).

SAMPLING

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

PROCEDURE

1. Dampen the j-ring, slump cone mold and base plate. Wipe away any excess water with a moist cloth or damp sponge.
2. Place the base plate on level, stable ground. Center the j-ring on the base plate. The slump cone mold shall be centered within the j-ring with the smaller diameter opening facing down (See Figure 2).
3. Using a hand scoop, fill the slump cone mold in one lift without vibrating, rodding or tamping.

4. Strike off the surface of the concrete level with the top of the slump cone mold using a trowel or by means of a screeding or rolling motion using a tamping rod. Remove excess concrete from around the base of the slump cone mold and base plate.
5. Raise the slump cone mold vertically to a distance of 225 ± 75 mm (9 ± 3 in.) in 3 ± 1 second without any lateral or torsional motion. Complete the test procedure from filling the slump cone mold to removal of the slump cone mold, without any interruption, and within 2.5 minutes.
6. When the concrete has stopped flowing, measure the maximum diameter of the resulting slump flow and then measure the diameter perpendicular to the maximum diameter. If the difference between the two slump flow diameters is more than 50 mm (2 in.), verify the base plate is level, then start the test over.

CALCULATIONS

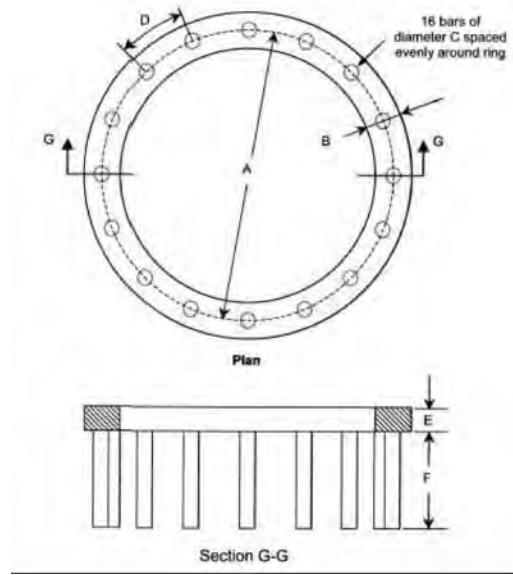
1. Calculate the average of the two measured diameters. This is the j-ring flow.
2. Calculate the difference between the j-ring flow and the unobstructed slump flow (as determined in accordance with Test Method Nev. T417), of the same representative sample. This is the j-ring value. Rate the passing ability of SCC using the criteria in Table 1.

Table 1 - Passing Ability Rating

<u>J-Ring Value</u>	<u>Passing Ability Rating</u>	<u>Remarks</u>
0 to 25 mm (0 to 1 in.)	0	High passing ability
> 25 to 50 mm (> 1 to 2 in.)	1	Moderate passing ability
> 50 mm (> 2 in.)	2	Low passing ability

REPORT

1. Report the unobstructed slump flow and j-ring flow to the nearest 10 mm (0.5 in.).
2. Report the j-ring value and corresponding passing ability rating.



<u>Dimension</u>	<u>mm</u>	<u>in.</u>
A	300 ± 3.3	12.0 ± 0.13
B	38 ± 1.5	1.5 ± 0.06
C	16 ± 3.3	0.625 ± 0.13
D	58.9 ± 1.5	2.36 ± 0.06
E	25 ± 1.5	1.0 ± 0.06
F	200 ± 1.5	4.0 ± 0.06

Figure 1. J-Ring

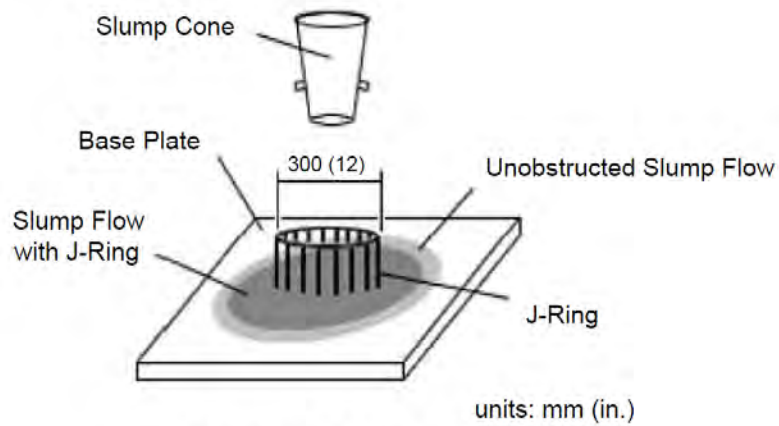


Figure 2. J-Ring Test