SCC Update and Requirements

February 7,2019

G/C PCEF

Speaker: Paul Ramsburg

What is SCC and What is High Flow Concrete?

- ACI – Any concrete that can be measured at 20” flow or greater with the slump flow method (ASTM C1611) must be tested as if were SCC.
- This is true whether you vibrate or not. Vibration does not define a mix as SCC or not.
- Modern SCC exists on a spectrum; a balance of flow and viscosity coupled with a range of production methods.

Upcoming PCI Requirement

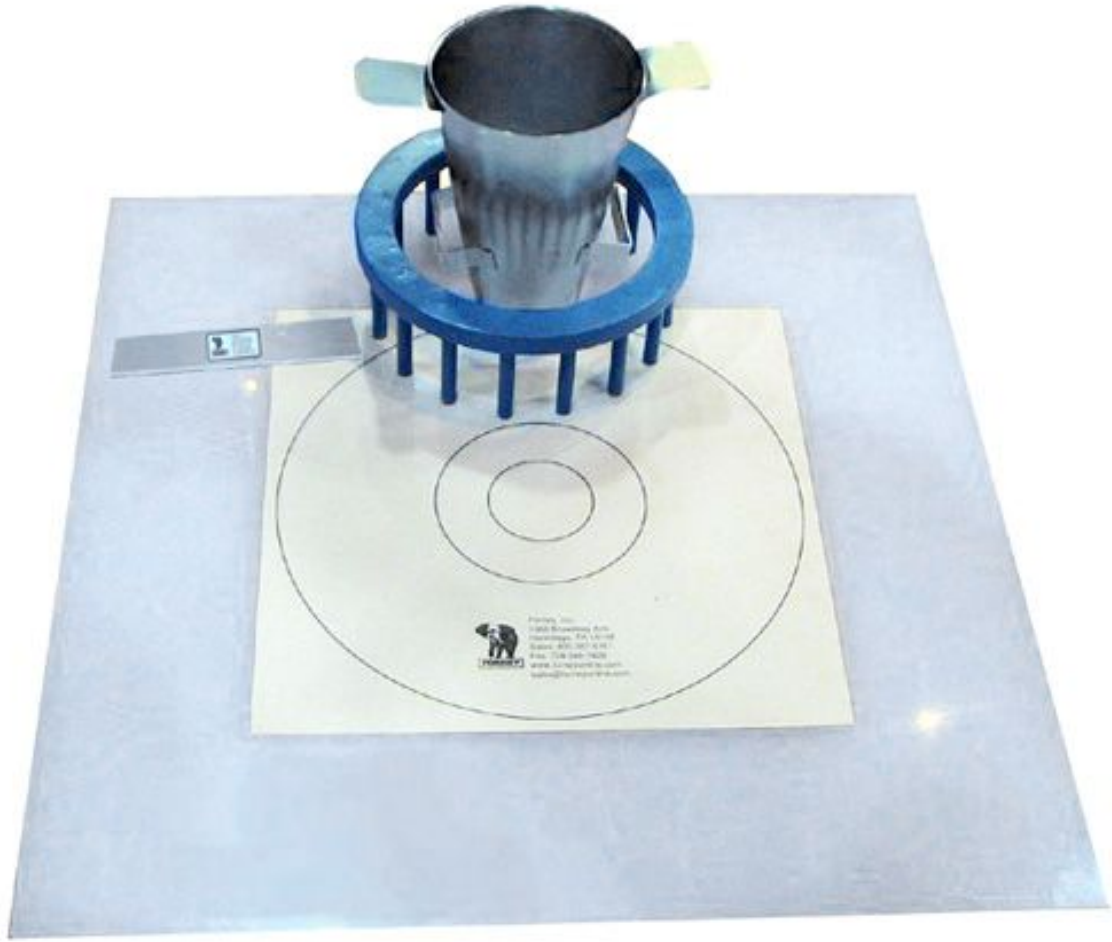
- ACI Self-Consolidating Concrete Testing Technician
  - Evaluates personnel on 5 SCC testing practices (including filling specimens)
  - See local ACI chapter for test schedule

Recommended but not Required

- PCI's Precast Concrete Mix Design Training Program
  - Not a certification
  - Covers a wide range of information on concrete including designing SCC mixes
  - PCI regions can host a class. G/C PCI has hosted 2 in the past
  - Certificate of completion and CEU's provided

SCC Qualification and Testing Frequency

- Slump Flow Range (ASTM C1611)
  - T-20 Range
  - Acceptable VSI
- J-Ring (ASTM C1621)



SCC Qualification and Testing Frequency

- Column Segregation (ASTM C1610)
- Penetration Segregation (ASTM C1712)

- ASTM C1758 – Fabricating Test Specimens with SCC

FAQ -

- Can SCC be used with all concrete delivery systems?
- Yes, PCI membership have successfully placed SCC with: Buckets, Robotic “Bullets”, Tucker Builts, Pumps, and Trucks.

- Is it difficult to switch to and from SCC and conventional mixes?
- It may be for some, but most producers manage this on a daily basis (i.e. Oldcastle, Piedmont Precast, Tindall, Metromont, Gate)

FAQ -

- Can / Should SCC be vibrated?
- SCC is a spectrum of concrete performance, some SCC mixes may benefit from minimal vibration, some mixes may segregate or have increased bugholes because of vibration.
- What determines whether a SCC mix is vibrated and for how long is the viscosity of the mix, density of reinforcement, and the form dimensions and complexity that its being placed within.
- Higher viscosity mixes may need to be vibrated if placed in complex members.

A few comments on SCC specification

- Allow all SCM's including Metakaolin and Calcium Carbonate / Limestone Powder
- Aggregate ratios – allow the producer to develop this but limit the fine aggregate to 43% max
- Slump Flow – Min of 20" and within +/- 2" of target
- VSI – 0-1
- L-Box and U-Box – Not standardized
- J-ring – Difference not to exceed 2"
- Must include both Segregation Tests (1 for qualification, 1 for daily QC)
- T-20 - +/- 2sec from target (can predict pour lines)


Taylor

Thank You

*GA Tech 2017 Concrete Canoe Competition