The Guide to Implementing SCC – An Update

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Recently, the NPCA Technical Committee wrapped up a revision to the Guide to Implementing SCC to reflect current standards and practices. The original document was written in 2006 to assist precast producers through the process of investigating and implementing self-consolidating concrete (SCC) in their operations. Since then, the use of SCC has spread (excuse the pun).

Ed Mansky with Grace Construction Products and member of the Technical Committee said that DOTs across the country not only are accepting SCC but specifying its use in critical applications such as pre-stressed bridge girders. Arizona DOT adopted its use earlier this year, and Illinois DOT is expected to include SCC in its specifications this fall. He also added that more and more private specifying agencies are requiring SCC in architectural products to help ensure “bug hole-free concrete.”

Jamie Gentoso with Sika Corp. and member of the Technical Committee calls SCC “a mix that is optimized for flow characteristics.” The negative stigma that once existed about how complicated and daunting the process of working with SCC was has gone away. “It must be properly mixed, placed and cured, just as you would with conventional concrete,” she said. She also sees widespread use in the northeast region of the United States, noting that engineers are becoming much more open to the use of SCC.

What is SCC?

SCC is a highly flowable yet stable concrete that can spread readily into place, fill formwork with little to no consolidation and without undergoing significant separation. This type of concrete can be ideal for use in precast given the many advantages, but as with conventional

concrete, SCC mixes should be carefully designed to achieve the required performance characteristics, and properly placed and cured.

SCC was developed in Japan in the late 1980s due to a lack of skilled concrete laborers. The goal was to create a new type of concrete that required no vibration or additional energy to place and compact. Lack of an adequate work force, highly congested reinforcement and formwork that was difficult to work around were some of the complications that led to the introduction of SCC. To be classified as an SCC, three primary components must exist:

1. **Flow ability –** The ability to flow into and completely fill all intended spaces in a form under its own weight and without external energy

2. **Passing ability –** The ability to flow through and around reinforcement and openings without the development of aggregate blockage

3. **Stability –** The ability for SCC to remain a uniform, homogeneous mix during all phases of transportation and placement

Advantages of SCC

SCC is known for having several advantages. Some of these include:

• Reduced labor and energy to place and consolidate

• Reduced noise from consolidation

• Reduced maintenance of vibrators and forms

• Improved finish with fewer voids

• Decreased re-work on finished product

• Improved safety by eliminating personnel standing on forms to vibrate

• Decreased energy to pour densely reinforced members

What to consider when looking to implement SCC

The process of investigating and implementing SCC into your operation can be broken into three components:

1. Examine your current materials and equipment. Determine what changes may need to be made or equipment purchased in order to produce quality SCC.

2. Begin a trial batch and training process. A company should allow enough time for experimentation and factor in a learning curve.

3. Perform a cost/benefit analysis for your plant and products to determine the overall impact of making a switch.

SCC is believed by many to be the future of the concrete industry. With each passing year, it becomes more affordable and easier to use, while the number of facilities manufacturing with SCC continues to grow.

If you are considering the use of SCC and want to view the updated Guide to Implementing SCC, visit www.precast.org and click on Precast Possibilities to access the Technical Services section