

TO: All Design Section Staff
FROM: Bijan Khaleghi
DATE: October 17, 2013
SUBJECT: Self-Consolidating Concrete for Bridges and Structures

This design memorandum describes WSDOT policy for use of Self-Consolidating Concrete (SCC) for bridge and Structures. This memorandum supersedes memorandum issued on May 23, 2013 and BDM Article 5.1.1-I on Self-Consolidating Concrete.

Self-consolidating concrete (SCC) may be used in structural members such as precast noise wall panels, barriers, three-sided structures, etc. as described in Standard Specification Section 6-02.3(27), and may be used in prestressed concrete girders in accordance with Sections 6-02.3(25)B and 9-19.1.

SCC could be used in cast-in-place applications where the use of conventional concrete could be challenging and problematic. Examples are where new concrete is being cast up against the existing soffit, or in members with very dense/congested reinforcing steel. Use of SCC for primary structural components such as columns, crossbeams, slabs, etc. needs the approval of the Bridge Design Engineer.

Background:

WSDOT has previously imposed limitation on the use of SCC for prestressed girders due to the concerns on mechanical and visco-elastic properties including lower modulus of elasticity, higher creep coefficient, higher shrinkage strain, longer bond transfer and development lengths of strands, flexural and shear strengths, etc. Recent WSDOT research projects with the University of Washington bridge projects in Washington, NCHRP research projects, SCC production in PCI plants in other states, and WSDOT bridge projects have demonstrated that SCC could successfully be used in precast concrete members and some CIP applications. The Standard Specification Sections mentioned above will be revised to acknowledge the use of SCC per this memorandum.

If you have any questions regarding these issues, please contact Bijan Khaleghi at 360-705-7181 (khalegb@wsdot.wa.gov).

cc: Mark Gaines, Bridge Construction - 47354

BDM Revisions

BDM Article 5.1.1-I on Self Consolidating Concrete is being revised as follows

- I. **Self-Consolidating Concrete (SCC)** – ~~Self-consolidating concrete (SCC) shall not be used in structural members. SCC may be used for other applications such as precast noise wall panels, barriers, three-sided structures, etc. as described in Standard Specifications 6-02.3(27).~~

~~Designers shall consider potential effects on mechanical and visco-elastic properties including lower modulus of elasticity, higher creep coefficient, higher shrinkage strain, longer bond transfer and development lengths of strands, flexural and shear strengths, etc.²⁵~~

Self-consolidating concrete (SCC) may be used in structural members such as precast noise wall panels, barriers, three-sided structures, etc. as described in Standard Specification Section 6-02.3(27), and may be used in prestressed concrete girders in accordance with Sections 6-02.3(25)B and 9-19.1.

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