November 7, 2018

REVISION OF SECTION 601
SELF CONSOLIDATING CONCRETE

**NOTICE**

This is a standard special provision that revises or modifies CDOT’s *Standard Specifications for Road and Bridge Construction.* It has gone through a formal review and approval process and has been issued by CDOT’s Project Development Branch with formal instructions for its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions unless such use is first approved by CDOT’s Standards and Specifications Unit. The instructions for use on CDOT construction projects appear below.

Other agencies which use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

**Instructions for use on CDOT construction projects:**

Use on projects having any type of concrete construction.

Section 601 of the Standard Specifications is hereby revised for this project as follows:

Subsection 601.02 shall include the following:

The Contractor may elect to modify Class B, Class BZ, Class D, S35, S40 and S50 concrete to be Self Consolidating Concrete (SCC) with the following requirements:

(1) SCC shall have a slump flow of 20 to 26 inches when tested in accordance with ASTM C1611 using an inverted slump cone.

(2) SCC shall have a maximum blocking assessment of 2.0 inches when tested in accordance with ASTM C1621.

(3) SCC shall have a maximum static segregation of 10 percent when tested in accordance with ASTM C1610.

(4) For SCC, deviations from the Standard Class B, Class BZ, Class D, S35, S40 and S50 concrete requirements may be made as long as the non-standard concrete requirements are met. ASTM C672 testing is not required for SCC that exceeds the maximum pozzolan substitution in subsection 601.05.

Subsection 601.05 shall include the following in the second paragraph:

(9) SCC concrete shall include ASTM C1611 Standard Test Method for Slump Flow of Self-Consolidating Concrete. Slump flow shall be measured using an inverted slump cone.

(10) SCC concrete shall include ASTM C1621 Standard Test Method for Passing Ability of Self-Consolidating Concrete by J-Ring.

(11) SCC concrete shall include ASTM C1610 Standard Test Method for Static Segregation of Self-Consolidating Concrete Using Column Technique.

Subsection 601.09(a) shall include the following:

When SCC is used, forms shall be designed for loads as defined in ACI 347. Design calculations and form details shall be provided to the Engineer per Working Drawing requirements as defined in subection 105.02.

Subsection 601.09(b) shall include the following:

When SCC is used, forms shall be constructed and maintained to meet any aesthetic or smoothness criteria for the project. Form material other than plywood may be required.

Subsection 601.10(e) shall include the following:

When SCC is used, vibration shall not be used to consolidate the concrete.

Subsection 601.12(e) shall include the following:

When SCC is used, vibrators shall not be used to consolidate the concrete.

Subsection 601.12(g) shall include the following:

When SCC is used, concrete should be placed in one layer for the full depth of the formwork. No maximum layer thickness applies.

Subsection 601.17 shall include the following:

When SCC is used, the Contractor shall test the first load of SCC prior to placement for Slump Flow (ASTM C1611) and Blocking Assessment (ASTM C1621). The Contractor shall take a sample from the first portion of the load and complete the slump flow and blocking assessment prior to depositing any portion of the load. The tests shall not be performed more than 15 minutes prior to placement. The slump flow shall be 20 to 26 inches. The blocking assessment shall be less than or equal to 2.0 inches. The Contractor will be allowed to make adjustments to the load with admixtures. After adjustments have been made, the slump flow and blocking assessment shall be retested. Each subsequent load of SCC shall be tested for Slump Flow. If the slump flow differs from the first load by more than 2.0 inches, the load shall be adjusted to have a slump flow within 2.0 inches of the first load, or the load may be tested for Blocking Assessment (ASTM C1621). If the load is tested for and meets the requirements for Blocking Assessment (ASTM C1621), the load’s slump flow will be used for the acceptance of the following loads. When concrete placement is halted for more than 15 minutes, the slump flow and blocking assessment shall be retested prior to resuming placement. When the slump flow exceeds 26 inches, the concrete may be placed if the depth of penetration is less than 11 millimeters when tested using ASTM C1712 Test Method for Static Segregation Resistance of Self-Consolidating Concrete. If a load of concrete has a slump flow greater than 26 inches and a depth of penetration less than 11 inches, the next load shall be tested for slump flow and blocking assessment to establish a new slump flow target.

When SCC is used, subsection 601.17(b) does not apply.

When SCC is used, the test methods for fabricating specimens for 601.17(a) and 601.17(c) acceptance shall be modified to use ASTM C1758, Practice for Fabricating Test Specimens with SCC, for filling the test specimens with concrete.