**Notice**

The Standard Special Provision (SSP) on the following page revises or modifies CDOT’s Standard Specifications for Road and Bridge Construction. The Construction Engineering Services Branch has reviewed, approved, and issued it. Use as written without change. Do not use modified versions of it on CDOT construction projects. Do not use the following special provision on CDOT projects in a manner other than specified in the instructions without approval by CDOT’s Standards and Specifications Unit. The instructions for use appear below.

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

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

Use the following standard special provision on all projects with concrete.

**Revise Section 601 of the Standard Specifications for this project as follows:**

**Delete Sub-Sections 601.17 (c) and 601.17 (d) and replace with the following:**

*(c) Strength (When Specified).*

The concrete will be considered acceptable when the running average of three consecutive strength tests per mix design for an individual structure is equal to or greater than the specified strength and no single test falls below the specified strength by more than 450 psi. A test is defined as the average strength of three test cylinders cast in plastic molds from a single sample of concrete and cured under standard laboratory conditions before testing. If the compressive strength of any one test cylinder differs from the average by more than 10 percent, that compressive strength will be deleted and the average strength will be determined using the compressive strength of the remaining two test cylinders.

When the average of three consecutive strength tests is below the specified strength, the individual low tests will be used to determine the pay factor per Table 601-3. If less than three strength tests are available the individual low tests, if any, will be used to determine the pay factor per Table 601-3. The pay factor will be applied to the quantity of concrete represented by the individual low test.

When the compressive strength test is below the specified strength by more than 450 psi but not more than 1,000 psi, the concrete represented will be evaluated by the Department for removal, corrective action, or acceptance at a reduced price. All costs of the evaluation shall be at the Contractor's expense.

When the compressive strength test is below the specified strength by more than 1,000 psi, the concrete represented will be rejected.

The Contractor may take cores at its own expense and per Colorado Procedure 65 within 10 working days of being notified of a price reduction or up to 45 days after placement, whichever is later, to provide an alternative determination of strength. When cored, price reduction for strength will be based on the corresponding cores’ strength. If the core compressive strength is at least 90 percent of the specified field compressive strength, the concrete represented by the cores will be accepted with no price reduction.

When the Contractor fails to provide proper curing or cold weather protection, the Engineer may use cores to determine acceptance or rejection of a part of the structure instead of acceptance cylinders with the following procedure:

1. The Engineer will notify the Contractor in writing that CDOT will core the structure. The location of the coring will be directed by the Engineer. Coring and testing will be performed at the expense of the Department regardless of the result. Cores will be taken and tested per AASHTO T24 between 28 days and 45 days after concrete placement. Cores will be a minimum of 4 inches in diameter unless otherwise approved by the Engineer. A minimum of three cores in a two-square-foot area will be obtained for locations of the structure that are suspect. If the compressive strength of any one core differs from the average by more than 10 percent, that compressive strength will be deleted and the average strength will be determined using the compressive strength of the remaining two cores. If the compressive strength of more than one core differs from the average by more than 10 percent, the average strength will be determined using all three compressive strengths of the cores. If the average core compressive strength is greater than or equal to 85 percent of the specified 28-day compressive strength, the concrete represented by the cores will be accepted.
2. If the average core compressive strength is less than 85 percent of the specified 28-day compressive strength, the structure will be evaluated by the Department according to subsection 105.03 for removal and replacement. Pay factors will not be based on cores taken by the Engineer. If the concrete represented by the cores is accepted, all costs associated with the repair of the core holes, including preparation and submittal of the repair method, will be measured, and paid for separately.
3. After the Department performs additional core testing as described above, the Contractor may make one request that the structure be cored by the Contractor, tested, and re-evaluated by the Department within 45 days after concrete placement. Coring and testing costs will be at the expense of the Contractor regardless of the result. Cores shall be taken at the same area of the structure as those obtained by the Engineer. The Engineer will approve the location of the cores before the Contractor coring the structure. All costs associated with the repair of these core holes including preparation and submittal of the repair method, will not be measured, and paid for separately but shall be included in the work.

If the concrete in the structure is found to be sufficient resulting time delays will be considered excusable. If the concrete in the structure is still found to be deficient, resulting time delays will be considered non-excusable for this evaluation. Compensation for time delays will be evaluated by the Engineer per subsection 108.08.

The Contractor shall submit a proposed repair method for the core holes for approval before coring. The method shall use an approved non-shrink concrete patching material with a minimum compressive strength of 4,500 psi. The Contractor shall submit the manufacturer’s recommendations along with the repair method. The Engineer will review and approve the proposed methodology before patching.

The Engineer will distribute electronically to the concrete supplier all compressive strength Owner Acceptance (OA) data for the concrete supplied to the project. The Engineer will distribute the OA compressive strength data within two business days of the 7-day and 28-day compressive strength testing. The data will include the compressive strength and batch ticket number at a minimum. The Contractor shall not have a valid dispute or claim as a result of any action or inaction by the Department related to the distribution of test results.

*(d) Pay Factors.* The pay factor for concrete that is allowed to remain in place at a reduced price shall be determined according to Table 601-3 and shall be applied to the unit price bid for the Item.

If deviations occur in air content and strength within the same batch, the pay factor for the batch shall be the product of the individual pay factors.

Table 601-3

PAY FACTORS FOR DEVIATIONS ON

CONCRETE AIR CONTENT AND STRENGTH

| **Below Specified Strength (psi)** | **Pay Factor (Percent)** \*See Note |
| --- | --- |
| 1 – 100 | 98 |
| 101 – 200 | 96 |
| 201 – 300 | 92 |
| 301 – 400 | 84 |
| 401 – 450 | 75 |
| 451-1000 | Evaluate by Department |
| 451 – 600 | 65\*\*\* |
| 601 – 700 | 54\*\*\* |
| 701 – 800 | 42\*\*\* |
| 801 – 900 | 29\*\*\* |
| 901 – 1000 | 15\*\*\* |
| Over 1000\*\* | Reject |

| **Deviations From Specified Air (Percent)** | **Pay Factor (Percent)** \*See Note |
| --- | --- |
|  |
| 0.0 – 0.2 | 98 |  |
| 0.3 – 0.4 | 96 |  |
| 0.5 – 0.6 | 92 |  |
| 0.7 – 0.8 | 84 |  |
| 0.9 – 1.0 | 75 |  |
| Over 1.0 | Reject |  |

\* Concrete represented by out-of-spec tests will only be priced reduced with the lowest pay factor, not for each pay factor.

\*\* After coring.

\*\*\* Concrete represented by this set is rejected for being more than 450 psi below specification. The concrete represented by this set can only be price reduced and left in place if a structural evaluation by the Structural Engineer of Record is completed and the structural evaluation indicates the structure is structurally sound.