
15 December 2023

SP 5.1-003 (2013)

**Standard Specifications for Construction
City of Waco 2013
Special Provision Section 5.1 Concrete and Reinforcement**

The Standard Specifications for Construction City of Waco 2013
Section 5.1 Concrete and Reinforcement

Part 2: Product

A. Materials

13. Mortar for Application

and

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Section 5.1 Concrete and Reinforcement

Part 2: Product

B. Material Testing

and

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Section 5.1 Concrete and Reinforcement

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B. Quality of Concrete

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and

Table 2 – Classes of Concrete

and

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Section 5.1 Concrete and Reinforcement

Part 4: Measurement and Payment

A. Measurement and Payment

1. Concrete -

are hereby revised as follows effective for all Developer projects submitted to the City February 1, 2024 and thereafter; for all City projects with bid opening date of February 1, 2024 and thereafter; and for right-of-way permit requests received December 18 and thereafter:

PART 2: PRODUCT

A. MATERIALS

13. Mortar for Application –

Mortar for application shall consist of one part hydraulic cement as specified in Section 5.1 Concrete and Reinforcement Part 2: Product A. Materials 2. Cement mixed with two parts fine aggregate as specified in Section 5.1 Concrete and Reinforcement Part 2: Product A. Materials 1. Aggregates for Portland Cement Concrete b. Fine Aggregates, and thereafter mixed with water as specified in Section 5.1 Concrete and Reinforcement Part 2: Product A. Materials 5. Water in proportion to provide correct consistency for long-term performance of application.

PART 3: EXECUTION

B. QUALITY OF CONCRETE

Refer to Section 5.10 5.6, Materials Testing.

PART 3: EXECUTION

B. QUALITY OF CONCRETE

2. Other Concrete Qualities –

Entrained air will not be required for concrete including bridge slabs, top slabs of direct traffic culverts, concrete pavement, dense and regular concrete overlays, piers, bents, precast piling (non-prestressed), drilled shafts placed in water, bridge railing, concrete traffic barrier, and for other items of work unless specified on the plans including other specifications.

When entrained air is required, unless otherwise shown on the plans, target an entrained air content of 4.0% for Class A concrete when used for paving in accordance with Section 3.6 Portland Cement Concrete Pavement. When entrained air is required, unless otherwise shown on the plans, target an entrained air content of 5.5% for Class A concrete when not used for paving and for all other classes of concrete. Use an approved air-entraining admixture when air-entrained concrete is specified, or when an air-entraining admixture is used at the Contractor's option. Unless otherwise shown on the plans, acceptance of concrete loads will be based on a tolerance of $\pm 1.5\%$ from the target air content. If the air content is more than 1.5 but less than 3.0% above the target air, the concrete may be accepted based on strength tests. For specified concrete strengths above 5,000 psi, a reduction of 1% entrained air content is permitted.

TABLE 2 – CLASSES OF CONCRETE

Footnote to entrained air is removed and not replaced.

Maximum water cement ratio values are hereby revised as follows: Decimal point is moved one place to the left for all classes of concrete and a preceding zero is added for all values less than 1.

PART 4: MEASUREMENT AND PAYMENT

A. MEASUREMENT AND PAYMENT

1. Concrete -

Excluding work done under *Section 3.6 Portland Cement Concrete Pavement*, the following procedure will be used to evaluate concrete where one or more project acceptance test specimens fail to meet the required design strength specified in this Item or shown on the plans.

The concrete for a given placement will be considered structurally adequate and accepted at full price if the average of 28-day or 56-day set of specimens made at the time of placement meets the required design strength, provided no single specimen test result is less than 85% of the required design strength.

The Engineer will perform a structural review of the concrete to determine its adequacy to remain in service if the average 28-day or 56-day set of specimens made at the time of placement is less than the required design strength or if any single specimen test result is less than 85% of the required design strength. If the concrete is determined to be structurally adequate, the Engineer will determine the limits of the payment adjustment using the formula below.

If the in situ concrete strength is needed for the structural review, take cores at locations designated by the Engineer in accordance with Tex-424-A. The Contractor shall have the cores tested by an approved laboratory designated by the Engineer under the supervision of the Engineer. The coring and testing will be at the Contractor's expense.

If all the tested cores meet the required design strength, the concrete will be paid for at full price.

If any of the tested cores do not meet the required design strength, but the average strength attained is determined to be structurally adequate, the Engineer will determine the limits of the payment adjustment using the following formula.

$$A = B_p \left[-5.37 \left(\frac{S_a}{S_s} \right)^2 + 11.69 \left(\frac{S_a}{S_s} \right) - 5.32 \right]$$

where:

A = Amount to be paid per unit of measure for the entire placement in question.

S_a = Actual average strength from cylinders or cores. Use values from cores, if taken.

S_s = Minimum required strength (specified).

B_p = Unit bid price.

If the structural review determines the concrete is not adequate to remain in service, the Engineer will determine the limits of the concrete to be removed.

The decision to reject structurally inadequate concrete or to apply the payment adjustment factor will be made no later than 7 business days after 28-day or 56-day design strength specimens, cores, if taken, are tested.

Sincerely,



Thomas M. Dahl, P.E.