

EXPECTED IMPLEMENTATION JULY 2024 (FY 2024-25)

346 STRUCTURAL PORTLAND CEMENT CONCRETE. (REV 10-5-23) (FA 11-17-23) (FY 2024-25)

SUBARTICLE 346-3.3 is deleted and the following substituted:

346-3.3 Acceptance Requirements: The specified minimum 28-day strengths, maximum water to cementitious materials ratio (w/cm), and target slumps for each class of concrete are given in Table 346-3. For lightweight concrete, acceptance requirements also include the hardened density specified in the Contract Documents.

The calculation of the water to cementitious materials ratio (w/cm) is based on the total mass of cementitious materials including portland cement and any SCMs used in the mix.

Table 346-3
Compressive Strength, w/cm, and Slump of Concrete Classes

Class of Concrete	28-day Specified Minimum Compressive Strength (f'c) (psi)	Maximum Water to Cementitious Materials Ratio (pounds per pounds)	Target Slump Value (inches)
I (Seal)	3,000	0.53	8
I (Pavement) ⁽¹⁾⁽⁵⁾	3,000	0.50	1.5 or 3
II ⁽³⁾	3,400	0.53	3 ⁽²⁾
II (Bridge Deck)	4,500	0.44	3 ⁽²⁾
III	5,000	0.44	3 ⁽²⁾
IV	5,500	0.41 ⁽⁴⁾	3 ⁽²⁾
IV (Drilled Shaft)	4,000	0.41	8.5
V	6,500	0.37 ⁽⁴⁾	3 ⁽²⁾
VI	8,500	0.37 ⁽⁴⁾	3 ⁽²⁾
VII	10,000	0.37 ⁽⁴⁾	3 ⁽²⁾

Notes:

(1) Meet the requirements of Section 350.

(2) For increased slump concrete, flowing concrete, SCC and slip form concrete meet the requirements of 346-3.1.

(3) For precast three-sided culverts, box culverts, endwalls, inlets, manholes and junction boxes, the target slump value and air content will not apply. The maximum allowable slump is 6 inches, except as noted in (2). The Contractor is permitted to use concrete meeting the requirements of ASTM C478 (4,000 psi) in lieu of the specified Class II concrete for precast endwalls, inlets, manholes and junction boxes.

(4) When silica fume or metakaolin is required, the maximum water to cementitious material ratio will be 0.35. When ultrafine fly ash is used, the maximum water to cementitious material ratio will be 0.30.

(5) If 28-day strength is 2,500 or greater, concrete may be accepted if 28-day compressive strength is reached by 56 days.

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SUBARTICLE 346-11.3 is deleted and the following substituted:

346-11.3 Calculating Pay Adjustments: The Engineer will determine payment reductions for low strength concrete accepted by the Department. The 28-day strength is represented by either cylinders or correlated cores strength test results in accordance with 346-11.2.

Reduction in Pay is equal to the reduction in percentage of concrete compressive strength below the specified minimum strength:

$$\text{Reduction in Pay (\%)} = \left(\frac{f'_c - 28 \text{ day Strength}}{f'_c} \right) 100$$

For the elements that payments are based on the per foot basis, the Engineer will adjust the price reduction from cubic yards basis to per foot basis, determine the total linear feet of the elements that are affected by low strength concrete samples and apply the adjusted price reduction accordingly.

Use the concrete compressive strength data at 56 days in lieu of the 28 days when the acceptance of concrete is at 56 days.

For 28-day Class I pavement concrete, if the 56-day strength meets or exceeds the 28-day strength requirement, no reduction in pay will be made. If the 56-day strength is less than the 28-day strength requirement, but is at least within 500 psi of the 28-day strength requirement, reduction in pay is equal to the reduction in percentage of concrete compressive strength below the specified minimum strength:

$$\text{Reduction in Pay (\%)} = \left(\frac{f'_c - 56 \text{ day Strength}}{f'_c} \right) 100$$