

702-R-691 STRUCTURAL CONCRETE

(Revised 06-18-20)

The Standard Specifications are revised as follows:

SECTION 702, BEGIN LINE 7, INSERT AS FOLLOWS:

702.02 Classes of Concrete

The following classes of concrete shall be used where specified.

Class of Concrete	A	B	C
Cement content in lbs/cu yd	564	470	658
Maximum water/cement ratio in lbs of water per lbs of cement	0.450	0.620	0.443
<i>Minimum water/cement ratio in lbs of water per lbs of cement*</i>	<i>0.380</i>	<i>0.400</i>	<i>0.380</i>
<i>*The minimum water/cement ratio for all slipformed railings shall be 0.360.</i>			

SECTION 702, BEGIN LINE 34, DELETE AND INSERT AS FOLLOWS:

Fabric for Waterproofing.....~~918.01~~918.06

SECTION 702, BEGIN LINE 99, DELETE AND INSERT AS FOLLOWS:

~~Blended portland pozzolan cements, fly ash, and ground granulated blast furnace slag used as a pozzolan may only be used in concrete bridge decks between April 1 and October 15 of the same calendar year.~~ Slag cement or silica fume in accordance with 709.05(c) shall be used in all bridge decks and reinforced concrete bridge approaches.

Blended portland pozzolan cements, fly ash, and slag cement may be used in concrete when the ambient temperature is above 50°F during the entire placement period. Immediately following placement, the average ambient temperature shall be above 50°F for the entire curing period. The average temperature shall be calculated based on hourly temperature measurements taken at the jobsite or from published weather station data within 10 miles of the jobsite. If the temperature restrictions are not met during placement or during the required curing period, curing shall continue and the element shall not be put into service until the strength requirements in accordance with 702.24 are met. If no test specimens are available to determine the concrete strength, curing shall continue and the concrete will be adjudicated as failed material. In no case shall the curing period be reduced below the minimum number of days specified for the element.

SECTION 702, BEGIN LINE 116, DELETE AND INSERT AS FOLLOWS:

Class A concrete shall contain a water-reducing admixture. Class C concrete shall contain either a water-reducing admixture or both a water-reducing admixture and a retarding admixture. The types used shall not be changed during any individual contiguous pour. For class C concrete, the types of admixtures to be used, shall be selected based on the expected concrete or air temperature. When either temperature is expected to be 65°F or above, both a water-reducing admixture and a retarding admixture shall be used. A water-reducing admixture shall be used when both temperatures are

expected to be below 65°F unless retardation is required due to the structure design or the proposed pour sequence such as the requirements for floor slab pours set out in 704.04. If class C concrete contains ground granulated blast furnace slag, the producer may propose an alternate temperature threshold for including a retarding admixture. *If either class A concrete or class C concrete is used in slipformed railings, the requirement to use a water reducing admixture is waived.* Air-entraining cements will not be allowed in class C concrete.

SECTION 702, BEGIN LINE 237, INSERT AS FOLLOWS:

Concrete that is not within the specified slump limits at time of placement shall not be used. Except as required in 702.05 for *class A and class C* concrete, chemical admixtures type A, type B, type D, type F, and type G, may be used in the concrete. Chemical admixtures type C and type E will be allowed only with prior written permission.

SECTION 702 BEGIN LINE 477, DELETE AND INSERT AS FOLLOWS:

702.11 Cold Weather Concrete

When it is necessary to place concrete at or below an atmospheric temperature of 35°40°F, or whenever it is determined that the temperature may fall below 35°40°F within the curing period, the water, aggregates, or both shall be heated and suitable enclosures and heating devices provided. Cold weather concrete shall be placed at the risk of the Contractor and shall be removed and replaced with no additional payment if it becomes frozen or otherwise damaged.

SECTION 702, BEGIN LINE 528, DELETE AND INSERT AS FOLLOWS:

702.12 Consistency

Slump will be measured in accordance with 505 and shall be no less than 1 in. and no more than 46 in. except for concrete placed in foundation seals.

SECTION 702, BEGIN LINE 1286, INSERT AS FOLLOWS:

702.24 Application of Loads to and Acceptance of New Concrete

Except as otherwise hereinafter provided, application of loads to new concrete shall be in accordance with the following:

- (a) Equipment or traffic will not be allowed on structures until test beams representing all concrete required to carry live loads have attained a flexural strength of 550 psi for third-point loading.
- (b) Unbalanced backfill will not be allowed until test beams representing the concrete required to resist it have attained a flexural strength of 440 psi for third-point loading. The unbalanced height shall not exceed 10 ft until test beams representing the concrete have attained a flexural strength of 480 psi for third-point loading.
- (c) The dead weight of steel or precast concrete superstructure shall not be placed on concrete until test beams representing the concrete have attained a flexural strength of 400 psi for third-point loading. A dead load shall not be placed on hammer-head piers until test beams representing have attained a flexural strength of at least 480 psi for third-point loading. The

concrete floor, if to be placed thereon, shall not be poured until test beams representing the concrete supporting the superstructure have attained a flexural strength of at least 440 psi for third-point loading.

- (d) Test beams representing concrete anchoring inserts to support falsework shall attain a flexural strength of a minimum of 480 psi for third-point loading, before a dead load of concrete is applied.
 - (e) *When blended portland pozzolan cements, fly ash, or slag cement are used in bridge railings or concrete barrier and the temperature limitations in accordance with 702.05 are not met, the bridge railings or concrete barrier may be put into service when flexural strength testing performed on test specimens indicate a modulus of rupture of 500 psi has been attained.*
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