



Florida Department of Transportation

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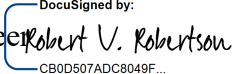
KEVIN J. THIBAUT, P.E.
SECRETARY

STRUCTURES DESIGN BULLETIN 20-07

(FHWA Approved: September 8, 2020)

DATE: September 9, 2020

TO: District Directors of Transportation Operations, District Directors of Transportation Development, District Design Engineers, District Construction Engineers, District Consultant Project Management Engineers, District Structures Design Engineers, District Maintenance Engineers, District Program Management Engineers, District Materials Engineers, Structures Manual Holders

FROM: Robert V. Robertson, P.E., State Structures Design Engineer 

COPIES: Courtney Drummond, Will Watts, Tim Lattner, Dan Hurtado, Rudy Powell, Tim Ruelke, Trey Tillander, Stefanie Maxwell, Scott Arnold, Paul Hiers, Ben Goldsberry, Joe Santos, Rafiq Darji (FHWA)

SUBJECT: Class VII Concrete

This Bulletin implements Class VII (10 ksi) concrete in the *Structures Design Guidelines (SDG)* for the design of precast and prestressed concrete components (other than piles).

The requirements of this Bulletin are listed on the subsequent pages.

REQUIREMENTS

1. Replace *Structures Design Guidelines* Table 1.4.3-1 with the following:

Component or Usage		Environmental Classification		
		Slightly Aggressive	Moderately Aggressive	Extremely Aggressive
Superstructure	Cast-in-Place (other than Bridge Decks)	Class II	Class IV	
	Cast-in-Place Bridge Deck (including Diaphragms)	Class II (Bridge Deck)	Class IV	
	Approach Slabs	Class II (Bridge Deck)		
	Precast or Prestressed	Class III, IV, V, VI or VII	Class IV, V, VI, or VII	
Substructure	Cast-in-Place (except as listed below)	Class II	Class IV	Class IV or V
	Precast or Prestressed (other than piling)	Class III, IV, V, VI or VII	Class IV, V, VI or VII	
	Cast-in-Place Columns located directly in splash zone	Class II	Class IV	
	Piling	Class V (Special) or VI		
	Drilled Shafts	Drilled Shafts		
	Retaining Walls	Class II or III	Class IV	
	Seals	Class III (Seal)		

See Table 1.4.3-2 for minimum 28-day compressive strengths.

2. Replace *SDG* Table 1.4.3-2 with the following:

Class of Concrete	Minimum 28-Day Compressive Strength (ksi)
Class II	3.4
Class II (Bridge Deck)	4.5
Class III	5.0
Class III (Seal)	3.0
Class IV	5.5
Class IV (Drilled Shaft)	4.0
Class V (Special)	6.0
Class V	6.5
Class VI	8.5
Class VII	10.0

3. Replace the first two sentences of **SDG** 1.4.3.C with the following:

Corrosion Protection: Structural components located in Moderately or Extremely Aggressive environments utilize Class IV, V, V (Special), or VI Concrete or Class VII Concrete. These concrete classes use highly reactive pozzolans and/or cement type to reduce permeability.

4. Replace **SDG** 4.3.1.C.4 with the following:

4. The value of f'_{ci} shall not exceed the following:
- i. $0.80 f'_c$ for Class III, IV, V and VI concrete
 - ii. $0.75 f'_c$ for Class VII concrete. Values of f'_{ci} up to $0.80 f'_c$ may be considered for Class VII concrete. Contact precast producers for cost information when considering values of f'_{ci} exceeding $0.75 f'_c$ for Class VII concrete.

Commentary: The limit of $0.75 f'_c$ for Class VII concrete is based on cost feedback obtained from precast producers (2020). Increasing f'_{ci} delays strand release resulting in higher costs.

Modification for Non-Conventional Projects:

Delete **SDG** 4.3.1.C.4 and insert the following:

4. The value of f'_{ci} shall not exceed $0.8 f'_c$.

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BACKGROUND

Class VII concrete was introduced in Section 346 of the January 2019 Standard Specifications; however, it requires implementation in the SDG to allow routine consideration during design, which could potentially result in more economical bridge alternatives.

IMPLEMENTATION

These requirements are effective immediately on all design-bid-build projects at 30% plans or less. These requirements may be implemented immediately on all other design-bid-build projects at the discretion of the District.

These requirements are effective immediately on all design-build projects for which the final RFP has not been released.

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