

Revisions to SCDOT Seismic Design Specifications for Highway Bridges March 2019

The revisions included herein shall apply to the SCDOT Seismic Design Specification for Highway Bridges.

Table 3.4 of the SDS is revised as follows:

Note 3 is revised to “Include Bent Caps, Footings and their foundation elements, and Oversized Shafts”

Add note 6 which reads: “Note 6. Significant damage to end bent piles is allowed only with permission of SCDOT’s Regional Production Group (RPG) Structural Engineer, in consultation with the Structural Design Support Engineer.”

SDS 5.1.8 Load Combinations second paragraph is revised as follows:

50% of Live load without impact shall be included in the load combination. The Live load shall be distributed evenly along the bridge center line to analyze the seismic response of foundation.

SDS 5.6.2 Backwall/Wingwall Modeling is revised as follows:

Backwall and wingwall stiffnesses shall be modeled to account for the mobilized passive resistance due to soil-structure interaction per the GDM.

SDS 8.4 Ductile Member Design Requirements For SDC B, C and D is revised as follows:

“The provisions of this section are applicable only to bridges designated SDC B to SDC D with the exception of the minimum detailing requirements for SDC A bridges as shown in Figures 8.2 , 8.3 and 8.4”

SDS 8.4.11 revised as follows:

“The spacing of transverse reinforcement detailed outside of a column or non-oversized drilled shaft plastic hinge region shall not be more than twice that placed in the plastic hinge region”

SDS 8.4.12 last sentence revised as follows:

“The maximum spacing for transverse reinforcement outside the plastic hinge region for columns and non-oversized drilled shafts shall not exceed 12 inches”

SDS 8.4.14 first sentence revised as follows:

“The volumetric ratio of lateral confinement in an oversized drilled shaft shall be 50% of the confinement at the base of the column provided that the shaft is designed for a loading case with the expected nominal flexural capacity equal to 1.25 times the moment demand generated by the overstrength moment of column acting at the base of the column.”

The following sentence is added to the beginning of SDS 8.6:

“Seismic Shear capacity shall be based on the nominal material strengths, not the expected material strengths”

SDS 8.6 is revised as follows:

Line 7 and 8, delete “or 8.6.2”

SDS 8.6 is revised as follows:

Line 10, replace “8.6.3” with “8.6.2”

SDS 8.6.1 is revised as follows:

Delete Equation (8-12b). Delete definition for A_{sp} ; add “ ρ_s Volumetric ratio of transverse reinforcement (Eq. 6-44)” the definition of μ_d is revised to “Maximum local displacement demand ductility of member, as defined by Equation (7-2)”

SDS 8.7.2 is revised as follows:

Replace “ f_c ” with “ f_{ce} ” in Equations 8-23 and 8-24. Revise definition under Equation 8-23 and 8-24 to define “ f_{ce} ” as “Expected maximum concrete compressive strength (ksi)”

SDS 8.7.3 is revised as follows:

“When the principal tension stress is less than the limit established by Equation (8-25), a minimum amount of joint shear reinforcement in the form of column hoops as determined by Equation (8-26) shall be detailed, otherwise the provisions of Sections 8.7.5 through 8.7.7 shall apply.”

SDS 8.7.7 is revised as follows:

Definition of “ l_{ac} ” is changed to: “Provided anchorage length for longitudinal column reinforcement (in)”

SDS 9.2.2 is revised as follows:

The last paragraph is revised to: “Shear keys shall be proportioned so that the height of the shear key, or distance to top of load application shall not exceed 0.3 times the length

of the shear key parallel to the centerline of bridge. If for any reason the 0.3 ratio limit cannot be satisfied, the shear key shall be designed with adequate moment resistance no matter if the shear key is designed to take the shear load or fail in shear depending on the seismic design strategy. Expansion joint filler can be used to reduce the height of this contact region, where compressible joint material is used above.”