**Attachment B: Specific Reference Data**

**Superstructure Depth:**

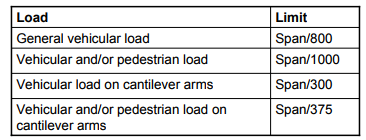
SCDOT BDM Section 12.2.2

12.2.2.1 General: The LRFD Specifications states that the traditional live-load deflection criteria is optional for bridges both with and without sidewalks because static live-load deflection is not a good measure of dynamic excitation. Nonetheless, in the absence of a better criterion and because of concerns on durability, SCDOT has determined that it is appropriate to limit live-load deflections.

12.2.2.2 Criteria Live-load deflections shall be limited based upon the span-length-based criteria of LRFD Article 2.5.2.6.2 with consideration to either the presence or the absence of pedestrian traffic. The minimum superstructure depth limits of LRFD Article 2.5.2.6.3 shall also be met.

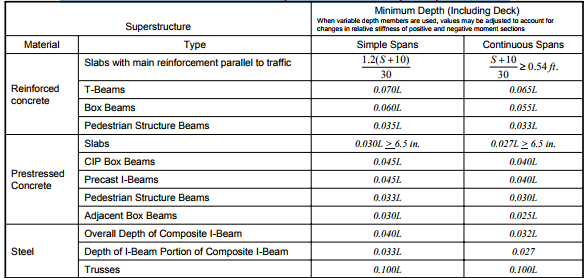
AASHTO Article 2.5.2.6.2

In the absence of other criteria, these limits may be applied to steel, aluminum and/or concrete bridges:



AASHTO Article 2.5.2.6.3

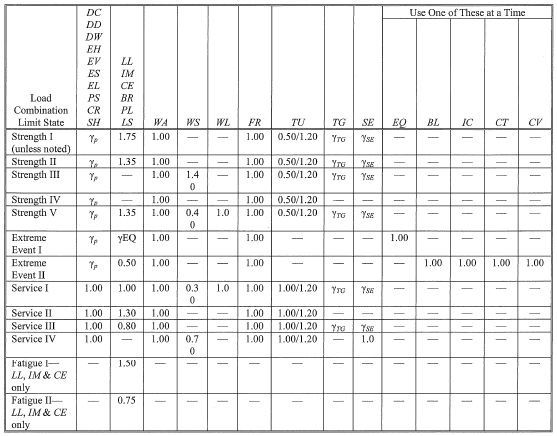
Table 2.5.2.6.3-1 Traditional Minimum Depths for Constant Depth Superstructures



SCDOT BDM Section 15.5.5

Standard prestressed concrete cored slab cross sections are 3′-0″ by 1′-9″ or 3′-0″ by 2′-0″. Prestressed concrete cored slab bridges of 30-ft, 40-ft, 50-ft, and 60-ft span lengths are presented in the SCDOT Bridge Design Drawings and Details (available at the SCDOT website) which provide typical plans, elevations, sections, and details.

AASHTO Table 3.4.1-1



**Bridge Length:**

SCDOT HDS Section 1.1.1

The design discharge for establishing bridge location and bridge geometry for secondary roads is the 25-year discharge. For primary and interstate routes, the design discharge is the 50-year discharge. All stream crossings are to be analyzed for the 100-year flood to insure that one (1) foot or less of backwater is caused by the proposed bridge when compared to unrestricted or natural conditions.

SCDOT HDS Section 1.2

1.2 Level 1: Qualitative and Geomorphic Analysis The qualitative and geomorphic analysis is the first step in a logical progression of analysis in bridge design that moves from the general descriptive to the detailed quantitative design. This approach first defines the design problem and then evaluates the stream and its geomorphic responses over time. It evaluates qualitatively the possible stream responses to the proposed or existing highway structures.

SCDOT HDS Section 1.2.1

The standard Level 1 procedure is done in a series of steps. A flow diagram of the procedure is presented in Figure No. 1, Section 1.6.4. (See Chapter 3 of HEC-20 for full details on this procedure.) Determine if the stream contains a designated floodway. If it does, obtain a copy of the original computer program data files used to establish the floodway boundaries. If a floodway is present, go to Level 2 analysis.

The hydraulic study for the bridges is currently underway and will include the following:

Step 1 Stream Characteristics

Step 2 Land Use Changes

Step 3 Overall Stability

Step 4 Lateral Stability

Step 5 Vertical stability

Step 6 Debris Potential

Step 7 Stream Response

SCDOT HDS Section 1.3.1- Level 2 Procedures for Riverine Bridges – Slopes for Bridge End Fills

2:1 end slope requirement: “…project the end fill slopes from the finished grade elevation at the end of proposed spans, using 2:1 slopes perpendicular to skew.”

SCDOT HDS - Section 1.3.1 -Level 2 Procedures for Riverine Bridges – Bridge End Fills

“A projection of the bridge fills should not extend into the channel and should be at least 5.0 feet behind the channel banks.”

**Bridge Width:**

SCDOT RDM Section 3.4.1.1 – Functional Classification – Relationship to Design

Partial information form this section is included here:

“The functional classification concept is one of the most important determining factors in highway design. In this concept, highways are grouped by the character of service they provide. Functional classification recognizes that the public highway network in South Carolina serves two basic and often conflicting functions — travel mobility and access to property. Each highway or street will provide varying levels of access and mobility, depending upon its intended service. In the functional classification scheme, the overall objective is that the highway system, when viewed in its entirety, will yield an optimum balance between its access and mobility purposes. If this objective is achieved, the benefits to the traveling public will be maximized.

The functional classification system provides the guidelines for determining the geometric design of individual highways and streets. Once the function of the highway facility is defined, the designer can select an appropriate design speed, roadway width, roadside safety elements, amenities and other design values. The SCDOT Highway Design Manual is based upon this systematic concept to determine geometric design.

Road Data Services has functionally classified all public roads and streets within South Carolina that are maintained by the Department. For highway design, it is necessary to identify the predicted functional class of the road or street for the selected design year (e.g., 20 years beyond the project completion date). Road Data Services will provide this information to the designer.

There are three general categories within the functional classification system — arterials, collectors, and local roads and streets. The following sections provide brief definitions for these categories. The AASHTO A Policy on Geometric Design of Highways and Streets provides detailed information on functional classification.”

SCDOT RDM Chapter 14 – Local Roads and Streets

This information is available at:

<https://www.scdot.org/business/pdf/roadway/2017_SCDOT_Roadway_Design_Manual.pdf>

Excerpt:

“Local roads and streets primarily serve as access roads to farms, residences, businesses and other abutting properties. They distribute traffic to highways in the higher functional classification network.

This chapter discusses the criteria used in the design of local roads and streets. Information that is also applicable to the design of local rural roads and local urban streets is included in the following chapters:…”

SCDOT RDM Figure 14.3-A – Geometric Design Criteria for Local Rural Roads

See Attachment C

SCDOT RDM Figure 14.3-B – Alignment Criteria for Local Rural Roads

See Attachment C

SCDOT BDM Section 12.6.1.4 - Bridge Roadway Widths

“In general, bridge widths should match the approach roadway widths (traveled way plus shoulders). Figure 12.6-1 provides guidelines for bridge widths. However, in determining the width for major water crossings, consider the cost of the structure, traffic volumes, and potential for future width requirements.”

SCDOT BDM Figure 12.6-1 – Guidelines for Bridge Roadway Widths

