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Carolina Crossroads Phase 3  
South Carolina  
*Construction Access Design Criteria*

CONSTRUCTION ACCESS DESIGN  
CRITERIA

May 2, 2023

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# Carolina Crossroads Phase 3

## South Carolina

*Construction Access Design Criteria*

### 1.0 INTENT OF CONSTRUCTION ACCESS DESIGN CRITERIA

The Project consists of all work necessary to complete the design and reconstruction of new interchanges at I-20 with I-26, I-26 with I-126, St. Andrews Road (S-36) with I-26, and Bush River Road (S-273) with I-20 and associated interstate widening and ramp construction in Richland and Lexington Counties. Construction vehicle access will be allowed during allowed times operations without I-26, I-20, or I-126 lane closure(s) with the usage of the construction access design criteria. The Resident Construction Engineer (RCE) has the right to remove the construction access from operation at any time the RCE deems necessary. Design criteria were derived primarily from:

- 2021 SCDOT Roadway Design Manual with updates effective as of the Final RFP release date and supplemented with AASHTO A Policy on Geometric Design of Highways and Streets, 2018
- AASHTO “A Policy on Design Standards Interstate Systems”, 2016
- SCDOT Procedure and Guidelines for Work Zone Traffic Control Design

### 2.0 WORK ZONE SPEED

#### 2.1 INTERSTATE

I-20 (Design)	60 mph
I-20 (Posted)	60 mph
I-26 (Design)	60 mph
I-26 (Posted)	55 mph
I-126 (Design)	60 mph
I-126 (Posted)	60 mph

### 3.0 WORK ZONE PAVEMENT AND SHOULDER WIDTH

#### 3.1 INTERSTATE

Construction Travel Lane	12 ft
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### 4.0 WORK ZONE HORIZONTAL CURVES

#### 4.1 CONSTRUCTION TRAVEL LANES

I-20 Radius	Match existing
Superelevation (I-20)	Match existing

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I-26 Radius	Match existing
Superelevation (I-26)	Match existing
I-126 Radius	Match existing
Superelevation (I-126)	Match existing

### 5.0 WORK ZONE GRADES

#### 5.1 INTERSTATE

Allowable Maximum                      4% (additional 1% allowed per TP 200.3.1.4)

### 6.0 WORK ZONE LANE LENGTH

#### 6.1 CONSTRUCTION TRAVEL LANE

Assume “STOP” as design speed for Entrance Curve Design Speed (acceleration) and 60 MPH as “Highway Design Speed”.

##### 6.1.1 Acceleration Lane – SCDOT RDM Figure 10.4-L

Highway Design Speed (mph) (V)	Speed Reached (mph) (V <sub>a</sub> )	L <sub>a</sub> = Acceleration Length (ft)						
		For Entrance Curve Design Speed (mph)						
		Stop	15	20	25	30	35	40
		For Average Running Speed (mph) (V <sub>a</sub> )						
		0	14	18	22	26	30	36
55*	38	700	600	575	550	500	425	200
60	42	1300	1200	1175	1150	1100	1025	800
65	45	2100	2000	1975	1950	1900	1825	1600
70	48	2800	2700	2675	2650	2600	2525	2300

*\*For 55 miles per hour, the minimum lengths for passenger cars in Figure 10.4-J will apply.*

Notes:

1. The acceleration lengths are calculated from the distance needed for a 200-pound per horsepower truck to accelerate from the average running speed of the entrance curve to reach a speed (V<sub>a</sub>) that is 10 miles per hour below the average running speed on the mainline.
2. The taper entrance ramp is generally not applicable where trucks govern the design.

**LENGTHS FOR ACCELERATION**  
(200-Pound per Horsepower Truck)  
Figure 10.4-L

##### 6.1.2 Deceleration Lane 700 ft

#### 6.2 TAPER LENGTH

Interstate 300'

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**7.0 WORK ZONE TRAFFIC CONTROL DEVICES**

**7.1 PERMANENT**

Traffic Control Barriers (TCB) shall be placed parallel to the lane for the entire distance of the construction travel lane and taper at the edge of the paved shoulder. TCB shall overlap a minimum of 20' at openings.

**7.2 TEMPORARY**

When construction travel lanes and tapers are not in use, drums shall be placed per standard drawing 601-010-00 in the unused lanes.

**7.3 END TREATMENT**

A Portable Terminal Impact Attenuator for the appropriate design speed shall be used at all exposed ends of TCB per Std Dwg 605-425-00.

**8.0 WORK ZONE PAVEMENT MARKING**

**8.1 LANE LINE**

Between Travel Lanes	10' x 30' skip
Between Travel Lane & Shoulder	6 in. Solid Yellow Lane Lines
In Construction Travel Lane	24 in. Yellow Diagonals at 20' Spacing Supplemented with 4" Yellow Fast Dry Paint

**8.2 RAISED PAVEMENT MARKERS**

(Between Travel Lane and Construction Travel Lane) two yellow 4" x 4" Mono-Directional side by side at 20' intervals along ingress/egress areas

**9.0 WORK ZONE SIGNING**

Signing shall follow MUTCD requirements and be placed on both the outside and inside lanes. Signing shall differentiate between Exiting and Entering vehicles from the left lane at the 0', 500', 1000' and 2000' intervals from the beginning of the travel lane exit taper or travel lane entrance merge point (end of temporary barrier wall). When construction travel lane is closed the signs shall be bagged. Final signing plans shall be submitted to the SCDOT

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for approval prior to implementation. See PIP 600-1 for example inside shoulder construction access design.

### **10.0 WORK ZONE RESTRICTIONS**

#### **10.1 TIME**

##### 10.1.1 I-20, I-26, I-126

Construction access without a lane closure and in accordance with these design criteria maybe utilized outside of the time for single lane closure prohibitions listed in TP 600.3.5.

#### **10.2 SPACING OF CONSTRUCTION ACCESS POINTS** 1 MI

#### **10.3 WEAVE LANE**

A weave lane is not permitted. This is when an acceleration and deceleration lane is directly upstream or downstream of one another and use the same construction travel lane.

#### **10.4 SPACING TO INTERCHANGES**

##### 10.4.1 Ingress Access Point

Any part of the ingress access construction travel lane and taper is prohibited 1000' prior to any interchange exit ramp taper to 2500' downstream of any interchange entrance ramp taper.

##### 10.4.2 Egress Access Point

Any part of the egress access construction travel lane and taper is prohibited 2500' prior to any interchange exit ramp taper to 2000' downstream of any interchange entrance ramp taper.