ROADWAY STRUCTURE PLAN PREPARATION REQUIREMENTS

This criteria applies to non-bridge structure items included within the set of roadway plans. Number the roadway structure sheets with an "S" prefix. Where custom designs are required, the sheets shall be sealed by a professional engineer registered in South Carolina. The requirements below are supplemental to SCDOT Roadway Design Manual section 22.2.16.

In preliminary roadway plans, show approximate location of anticipated roadway structures as they relate to clear zone requirements. Roadway structure sheets are not required in preliminary plans.

In right-of-way plans, provide sufficient detailing to convey structure type and establish construction limits around roadway structures. Provide alignments for noise barrier walls and retaining walls. Provide the outer concrete outline for walls, barriers, and drainage structures, including wingwalls and apron for culverts. Roadway structure sheets are not required in right-of-way plans.

Shop Drawings may be used to supplement the design and details of roadway structures. However, the design review plans shall contain adequate information to clearly indicate the overall structure type, size, and location, including aesthetic features.

The remaining requirements below apply to roadway structure plans in the final roadway plan set.

1. RETAINING WALLS

Where retaining walls are used as bridge abutment walls, include the wall plans in the bridge plans. For bridge walls that turn back parallel to the roadway and continue as roadway walls, a matchline may be provided and the roadway portion of wall may be included in the roadway plans with the bridge portion provided in the bridge plans.

Include the following information in the wall construction plans:

1.1 Design Information

Indicate the design parameters.

1.2 Plan View

Provide a plan view that includes the following information and details:

- proposed wall location,
- centerline of roadway,
- stationing,
- stations and offsets at beginning of wall, end of wall, and changes in tangent or curving alignments
- length of wall,
- guardrail attachment (if required),
- drainage basins/flumes,
- construction staging (if required),
- north arrow,

- existing structures, features, and utilities in vicinity of the wall if they impact construction,
- temporary shoring (if required), and
- boring locations.

1.3 Elevation View

Provide an elevation view that shows the top of the wall elevations, footing elevations (when applicable), the existing ground line, and the final ground line along the face of wall or layout line. Also show any drainage features located within wall limits.

1.4 Details

Include details of each wall component and requirements of the architectural or finish treatment.

1.5 Typical Sections

Provide section views of the wall.

1.6 Reinforcing Steel Schedule and Quantities

If the construction of the wall includes reinforcing steel, include a reinforcing steel schedule that lists the reinforcing steel required for the wall. In this schedule, include the mark, number of bars required, and dimensions for each reinforcing bar. Also, provide a table of estimated quantities for each wall. For walls requiring stage construction, break the reinforcing steel schedule and quantities down by stage.

1.7 Special Details

Include details for construction of walls around buried foundations, drainage facilities, pipe penetrations, and utilities.

1.8 Boring Logs

Include copies of the boring logs.

2. CONCRETE BARRIERS

Where custom designs are required for Condition B & C concrete median barriers and concrete roadside barriers, include the following information in the wall construction plans:

2.1 Design Information

Indicate the design parameters.

2.2 Plan View

Plan views may be omitted for median barrier walls provided the typical section ties the wall layout to the roadway construction centerline.

Provide a plan view that includes the following information and details:

- proposed barrier location,
- limits of moment slab and/or footing
- centerline of roadway,
- stationing,
- stations and offsets at beginning of barrier, end of barrier, and changes in tangent or curving alignments
- guardrail attachment (if required),
- drainage basins/flumes,
- construction staging (if required),
- north arrow,
- existing structures, features, and utilities in vicinity of the barrier wall if they impact construction,
- temporary shoring (if required), and
- boring locations.

2.3 Elevation View

Elevation views are not required for median barrier walls and concrete roadside barrier walls.

2.4 Details

Include details of each wall component. When applicable to concrete roadside barrier walls, include requirements of the architectural or finish treatment.

2.5 Typical Sections

Provide section views of the barrier wall.

2.6 Reinforcing Steel Schedule and Quantities

Reinforcing steel schedules and quantities are not required for concrete median barrier walls. For concrete roadside barrier walls with moment slabs, include a reinforcing steel schedule that lists the reinforcing steel required for the wall. In this schedule, include the mark, number of bars required, and dimensions for each reinforcing bar. Also, provide a table of estimated quantities for each wall.

2.7 Special Details

Include details for construction of barrier walls around buried foundations, drainage facilities, pipe penetrations, and utilities.

2.8 Boring Logs

For Condition C concrete median barriers and any wall where a global stability analysis is performed by the Geotechnical EOR, include copies of the boring logs

3. BOX CULVERTS AND BOX CULVERT EXTENSIONS

Include the following information in the culvert plans:

3.1 Title Blocks.

In the title blocks of the culvert sheets, include the fill height used to design the culvert, the culvert opening size (span x rise), the station at centerline of culvert, and the slope of fills.

3.2 Location Sketch.

Provide a location sketch that includes the following information and details:

- proposed culvert outline,
- existing culvert outline as a light, dashed line,
- centerline of roadway,
- direction of stationing,
- station of intersection of roadway centerline and culvert centerline,
- dimensions of culvert barrels,
- length of each end of culvert measured from the roadway centerline,
- skew angle,
- construction staging (if required),
- temporary shoring locations (if required for construction),
- permissible types of temporary shoring (if restricted),
- stream name,
- direction of flow,
- limits of riprap or note that riprap is in accordance with SCDOT Standard Drawing No. 804-205-00 (if required),
- north arrow,
- existing structures, features, utilities in vicinity of culvert if they impact culvert construction,
- invert elevations at each end of new culvert or both ends of each side being extended,
- boring locations, and
- hydraulic data.

3.3 Design Information.

Indicate the design specification and live load in the plans.

3.4 Plan View.

Provide a plan view that details the culvert, apron, cut-off wall, wing wall, and footing dimensions; the reinforcing bars, bar callouts, and bar spacing; and the location of any required transverse construction joints.

3.5 Typical Sections

Provide section views of the barrel(s), wing walls, head walls, aprons, cut-off walls, and footings detailing the dimensions; the reinforcing bars, bar callouts, and bar spacing; the weep holes and french drains; and the location of construction joints.

3.6 Reinforcing Steel Schedule and Quantities

For each culvert, include a reinforcing steel schedule that lists the reinforcing steel required for the culvert. In this schedule, include the mark, number of bars required, and dimensions for each reinforcing bar. Immediately below the reinforcing steel schedule, include a list of estimated quantities for the culvert. Include all quantities required for construction of the culvert (e.g., reinforcing steel, concrete, piling, excavation, riprap, geotextile, etc.). For projects requiring stage construction, break the reinforcing steel schedule and quantities down by stage.

3.7 Boring Logs

Include copies of the boring logs in the plans.

3.8 Existing Plans

For culvert extensions, include the existing plans marked for-information-only, if available.

4. NOISE BARRIER WALLS

Include the following information on the noise barrier wall construction plan sheets:

4.1 Design Information

Indicate the design parameters in the plans.

4.2 Plan View

Provide a plan view that includes the following information and details:

- proposed noise barrier wall location,
- centerline of roadway,
- horizontal clearance to edge of adjacent travel lane,
- stationing,
- stations of beginning and end of wall,
- length of noise barrier wall,
- post spacing,
- guardrail or barrier details,
- drainage basins/flumes,
- berm dimensions (if applicable),
- locations and types of openings,
- construction staging,
- north arrow,
- existing structures, features, and utilities in vicinity of the noise barrier wall if they impact construction,
- boring locations

4.3 Elevation View

Provide an elevation view that shows the top of the wall elevations, footing elevations (when applicable), the existing ground line, and the final ground line along the face of wall or layout line. Also show any drainage features located within wall limits.

4.4 Details

Include details of each wall component (concrete panels, panel connections, posts, and foundation elements) and details of the architectural or finish treatment.

4.5 Typical Sections

Provide section views of the wall, posts, and foundations.

4.6 Reinforcing Steel Schedule

For each unique reinforced concrete wall post or panel, provide a reinforcing steel schedule that lists the reinforcing steel required. Include in this schedule the mark, number of bars required, and dimensions for each reinforcing bar.

4.7 Special Details

Include details in the plans for construction of walls around buried foundations, drainage facilities, pipe penetrations, and utilities. Also, include details for special features such as access doors and wall bends.

4.8 Boring Logs

Include copies of the boring logs.

5. MODIFIED DRAINAGE STRUCTURES

Where modifications to drainage structures detailed in the SCDOT Standard Drawings are proposed, provide roadway structure sheets showing the modifications. Modified components requiring roadway structure sheets include but are not limited to concrete boxes and adapter slabs for catch basins, drop inlets, manholes, or junction boxes, headwalls for pipe culverts, pipe collars, and concrete flumes. Provide design parameters, plan, elevation, and section views of each component, and special details as necessary for fabrication and construction. Include concrete and reinforcing steel quantities for individual reinforced concrete components.