

Chapter 11

Special Profiles

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Chapter 11

Special Profiles

11.1 General

The special profiles sheet shows profiles of pavement edges or gutter flow lines. Special profiles occur at street intersections, ramp termini, curb returns, railroad crossings and roadway or bridge sections requiring special superelevation details. Vertical transitions between roadways and bridges may also require special profiling. All of these areas require special analysis and design to ensure a safe, efficient, well drained, and smooth roadway/bridge system. The special profiles sheet must show details at close intervals and at a scale large enough to clearly identify all construction details within these areas.

11.2 Intersections

In addition to normal profile grade lines, supplemental profiles and sections at intersections may be necessary to define edge of pavement profiles. Include sections showing pavement surface elevations for nose points and other critical locations. It is important to develop accurate profiles and sections at locations of curbed channelization to ensure proper drainage.

When plan-profile format is used for intersection details, the profile's horizontal scale must be the same as that for the plan portion. A vertical scale of 1" = 2' for the profile portion is recommended as it enables intermediate elevations to be determined from the profile with reasonable accuracy. The existing ground line and/or curb line must be as called for in the FDOT **CADD Manual**.

For intersections detailed on a plan only format, show the profile and sections on a separate grid sheet. The standard cross section sheet, available in the FDOT Engineering/CADD Systems Software, should be used. This sheet features a standard grid of five lines per inch, both in the vertical and horizontal. The vertical scale can be altered to ten lines per inch by utilizing a toggle feature in the CADD software.

For street intersections of municipal projects, a scale of 1" = 20' horizontally and 1" = 2' vertically, or 1" = 50' horizontally and 1" = 5' vertically is recommended.

11.3 Curb Returns

Curb return profiles show the profiles of the gutter flow line from the PC to the PT point of the return at an intersection.

Show curb return profiles on a grid format. They must be included in the plans set if the required information cannot clearly be shown on the plan-profile sheet or intersection detail sheet, or if extreme grades are involved, rendering the standard curb return profiles (*Design Standards, Index 303*) inadequate.

Standard scale used should be 1" = 20' horizontally and 1" = 2' vertically. Other scales may be used provided all construction details are clearly and legibly shown. Identify each return profile and its PC and PT stations shown. Elevations should be shown at appropriate intervals and low and high spots must be identified by location and elevation.

11.4 Ramps

Develop ramp profile grades along the baseline of each ramp. A profile of the edge of the pavement opposite the baseline must also be shown. Show these profiles on a grid format. Data required to be shown is similar to that required for roadway profile (*Chapter 10* of this Volume).

Recommended scales for ramp profiles are: 1" = 20' horizontally and 1" = 2' vertically, or 1" = 40' or 50' horizontally and 1" = 4' or 5' vertically.

Sections at nose points are required. They may be shown using a scale of 1" = 20' horizontally and 1" = 2' vertically.

11.5 Spline Grade

Intersections of ramp pavement with mainline pavement and other sections of pavement within special superelevated zones need special attention, not only during the design phase of the project, but also during construction. Hence, all construction details pertaining to these areas should be clearly and accurately shown in the plans.

Spline grades are often used to show the interconnection and interrelation of the edges of pavement with the mainline edge of pavement. This profile proves to be especially

helpful if the mainline pavement is superelevated or within the superelevation transition zone.

A spline grade must show the elevations at intervals of 20 to 100 feet, depending on the scale. Show elevations for the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas.

Show grades of the three pavement edges on a grid format. Recommended scales are: 1"=20' horizontally, 1"=2' vertically, or 1"= 40' or 50' horizontally and 1"= 4' or 5' vertically.

Join the grades of each pavement edge by smooth splines or simple curves. The three grade profiles must be clearly labeled and all equality stations indicated. Flag and label nose stations. Place the scale in close proximity of the profile and ensure that it is clearly visible.

11.6 Superelevation

The standard superelevation details (*Design Standards, Indexes 510 and 511*) may be used for projects which include simple curves. For projects which include reverse curves, or compound curves, or any other situation requiring special superelevation not covered in the standards, show the superelevation diagram in the plans. Special profile details may be used to design superelevation on multilane facilities, when a simple diagram will not be sufficient.

Show complete profile grade line and right and left edges of pavement within the superelevation zone on the grid format. A scale of 1"= 20' horizontally and 1"= 2' vertically is recommended for clarity. Label the begin and end superelevation stations with a solid vertical line at the appropriate station. Use a horizontal dimension line to indicate a section in full superelevation.

11.7 At-Grade Railroad Crossings

In addition to normal profile grade lines, supplemental profiles for at-grade railroad crossings may be necessary to define lane lines, edges of pavement, and/or gutter flow lines. It is important to develop accurate profiles to ensure proper drainage.

For at-grade railroad crossings that cannot be adequately detailed on the plan-profile sheets, show the profiles on a separate grid format. A horizontal scale of 1" = 20' and a vertical scale of 1" = 2' are recommended.