

# Plan Preparation Guide

## Chapter 11

### Cross Sections

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## 1. Existing Cross Sections

Cross Section data files are sent to the appropriate directory for each Design Group on Smpserv 3. The highway cross section is a view of the transverse section of a roadway.

Cross Section sheets are reference files that already have the scale on them. You will need to use the appropriate sheet found in G:/rd\_std or G:/met\_std according to which scale you plot your cross sections. Cross sections are generated from a tin file created by the CADD user. (See CADD Users Guide).

Cross Sections are usually taken at increments of every 50 feet along horizontal curves, 100 feet along tangent sections, and other points where there is a radical change in terrain or edge of pavements. For secondary projects, cross sections are usually plotted two columns on the sheets, approximately 3" to 4" apart. This will allow approximately 5 to 6 cross sections in each column. Where it is anticipated that there will be deep cuts or fills, it may be necessary to space cross sections further apart. These cross sections should be plotted on a scale of 1" = 5' both vertical and horizontal. On major or primary projects, usually, cross sections are taken 75' to 100' left and right of the centerline. This will make it necessary to place cross sections up the center of the page. Also, if cross sections go out more than 75' each side it will be necessary to change the scale to 1" = 5' vertical and 1" = 10' horizontal. Scale should be shown in lower right hand corner in 1" square block, one 1" square block from the bottom of the page and one 1" square block from the right edge of the paper by drawing a diagonal line from corner to corner of the 1" square block. Then show the proper scale along vertical and horizontal line.

The designated station number should be shown horizontal approximately 1" below the cross section on the centerline. The existing ground line elevation should be shown vertically on the centerline approximately 1/2" to 1" above the cross section with the finished grade elevation shown vertically one line below the existing ground line elevation. The end area will be shown horizontal on the 10' line (1" = 5' scale) or 20' line (1" = 10' scale) with the cut shown on the left and the fill on the right. This will be shown at the same level as the station number. The volume should be shown vertically on the 15' line (1" = 5' scale) or 30' line (1" = 10' scale) and placed between the stations. The volume for the first cross section on the first page should be shown below that cross section and volumes for the first cross section on the following pages will be shown at the top of the preceding page. Volumes are also accepted using the GEOPAK format.

All dimensioning for station, existing elevation, proposed elevation are controlled within the criteria file used to layout the cross sections on sheets. Existing ground lines on cross sections and profiles will be shown with a dashed line. When existing base and surfacing is in place, diagonal lines will be shown under existing base and surfacing.

Cross Sections can be plotted at any given point by using Tin Files in GEOPAK.

## 2. Proposed New Construction

A beginning note shall be shown under the first cross section and the ending note shall be shown after the last cross section. An example of the beginning note is:

Survey Sta. 0+10.0 Begin  
File 40.168 – Road S-1028

Berm and swale ditches should show a note at the beginning of each ditch. Example:

Construct swale ditch Lt. Sta. 1+25.0 to Sta. 7+50.0

These ditches must have a grade and elevation of ditch and should be shown above each section on the front edge line of the ditch. Special ditches 300' or longer require a note, grade and elevations as described for swale and berm ditches. Front ditch slopes may be steepened or extended further out to obtain positive drainage without grades and elevations when less than 300' in length.

Show a note for Begin and End superelevation and Begin and End Maximum superelevation.

Note on 1<sup>st</sup> sheet of cross section (C&G) – Cross slope may vary due to minor adjustments to top of curb elevation.

Use CADD Users Guide and appropriate levels, weights, etc. for existing and proposed cross sections.

The proposed template should reflect the desired roadway cross section of the appropriate station. The designer must show pavement breaks, shoulder breaks, front slopes, back slopes and ditches. Identify all slopes beyond the shoulder that are non-standard (varies from the typical section). It is also necessary to show the bottom of the subgrade and proposed curbs, gutters, sidewalks, retaining walls, and major drainage structures.

Each project should be thoroughly reviewed to insure positive drainage, that templates and existing ground lines are plotted at the correct elevation, and that templates are plotted accurately according to the Typical Sections.

Cross sections and templates are very important and should be plotted as neatly and accurately as possible.

See the following sheet for cross section examples.

FED. RD. DIV. NO.	STATE	COUNTY	FILE NO.	ROAD NO.	SHEET NO.
3	S.C.	CHESTERFIELD		S-113	X-7

