

# **CITY OF CHARLOTTE/MECKLENBURG COUNTY/NCDOT**

## **Cross-section Guidelines**

Cross-sections are required for any proposed thoroughfare and/or existing road improvements/widening at 50-foot maximum station intervals (25-foot intervals will be required where longitudinal street slope is 1% or less and curb/gutter is required, and for curb/gutter sections that are less than 200 feet in length), with a scale of 1" = 5' in both vertical and horizontal dimensions. Cross-sections at this scale need to be included in all submittals for the full length of the proposed thoroughfare and/or existing road improvements/widening, with a 50' station before and after the construction limits. These cross-sections should match the same design elements that can be found in [North Carolina Department of Transportation \(NCDOT\) standards](#) and [Mecklenburg County Land Development Standards \(MCLDS\)](#) or [Charlotte Land Development Standards Manual \(CLDSM\)](#), including, but not limited to:

- a) Label the road name on the cross-sections.
- b) Label the proposed and existing cross-slopes. Cross-slopes of the proposed widening need to be in the range of  $\frac{1}{4}$  to  $\frac{3}{8}$  inch per foot (2% to 3%) for normal crown, (tangent and curves that do not require super elevation) road sections and match existing slopes when in a super elevated curve sections if possible, however there may be cases the super elevation would require some cross slope adjustment, based on *A Policy on Geometric Design of Highways and Streets*, AASHTO reference book.
- c) Label the ditch slopes on the cross-sections with a 3:1 (max.) front slope and a 2:1 (max.) back slope.
- d) Label the shoulder width and its cross-slope. Normal crown roadway sections need to have a 1 inch per foot cross-slope on the shoulder. A maximum rollover from the pavement to shoulder is 6% for super elevated sections.
- e) Label the sidewalk width and its cross-slope of  $\frac{1}{4}$  inch per foot directed towards the road.
- f) Label the planting strip width and its cross-slope.
- g) Label the 1-foot minimum bench on both sides of the sidewalk with the slope beginning after the bench. Minimum slopes are 3:1 for fill sections and 2:1 for cut sections. Note: When handrails are required, a 2-foot minimum bench needs to be provided on the backside of the sidewalk.
- h) If curb and gutter is installed, paving under the gutter pan needs to be shown on the cross-sections for all applicable typical sections and roadway classifications.
- i) Label all existing and proposed drainage structures/utilities as relocated, protected, replaced, or installed.
- j) An additional cross-section is needed for the centerline of each cross-over pipe and need to include the appropriate stationing and elevation.
- k) The existing right-of-way must be labeled as maintenance right-of-way or recorded right-of-way. In addition label new right-of-way as proposed, dedicated, or reserved, along with any necessary temporary construction easements or permanent easements for storm drainage, sidewalk, etc.
- l) Provide spot elevations for the centerline and edge of pavement, both existing and proposed.
- m) Label and dimension the lane widths of the existing pavement and proposed widening.
- n) The overlay for the entire width of the street being widened and/or improved on all NCDOT maintained streets and where applicable on city maintained streets needs to be shown.
- o) An additional cross-section is needed at each proposed and impacted driveway entrance accessing a public street.
- p) Label elevation centerline of ditch bottom when using shoulder section roadways.
- q) Label invert elevations of proposed storm drain pipes that show up in x-sections.