

## Design Manual Revisions

The following Sections in Part I of the Roadway Design Manual have been revised to provide clarification and/or new guidance on current design practice:

Section	Summary of Revision(s)
1.6.3	Updated link to PDN for current NCDOT Project Management website location
2.2	Removed Complete Street Policy guidance as it only refers to related documents. Added a maximum DS of 50mph for curb and gutter facilities.
2.6.1	Provided additional resources to aid the roadway designer in evaluating projects for Complete Street improvements.
2.7.5	QMS Manual link updated. The revised link takes you directly to the Materials & Tests Unit's Website where QMS manuals are located.
3.2.2	Restored missing sentence between Table 3-1 and 3.2.3 subheading: "Refer to GB Chapter 3 Section 3.2.2 and GB Tables 3-1 and 3-2 for more detail on stopping sight distance."
3.3.2	Added additional guidance referring users to the GB to address maximum and Desirable Spiral Lengths
3.5.7	Updated link to the NCDOT Complete Street website for pedestrian considerations.
4.3	Removed reference to the NCDOT Complete Street Policy for guidance on lane widths. Added reference to RDM Part I Chapter 9 Section 9.4.2 for additional guidance on ramp traveled way widths.
4.4.3	Restored missing sentence "Outside shoulder – Use 14 foot desirable, 12 foot minimum (right side of traffic)"
4.14	Removed references to the NCDOT Complete Street Policy for design elements and added a reference pertaining to the selection of pedestrian accommodations.
4.14.1	Removed reference to the NCDOT Complete Street Policy for detailed sidewalk information and warrants. Removed reference to RDM Part I Chapter 6 on placement of GR in relation to sidewalks.
4.14.2	Removed reference to the NCDOT Complete Street Policy for information on grade separated pedestrian crossings.
4.15	Removed reference to the NCDOT Complete Street Policy for information pertaining to bicycle facilities. Reference added to facility selection matrix in the NCDOT Complete Streets Evaluation Methodology.
4.15.5	Removed reference to the NCDOT Complete Street Policy for guidance on separated bicycle lanes.
5.1.1	Updated link to PDN for current NCDOT Project Management website location
5.2.2	Revised reference to reflect the current 2019 AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads.

Section	Summary of Revision(s)
5.3.3.1	Removed reference to the NCDOT Complete Street Policy for guidance pertaining to lateral offsets on structures.
5.3.4.2	Added / updated references to the NCDOT SMU Manual for superstructure depths related to I-Beams and Prestressed Girders.
5.4	Removed reference to the NCDOT Complete Street Policy for guidance on multimodal facilities.
6.2.2.1	Added new content pertaining to Fill Slope Warrants.
6.3.1	Added the steepest slope that guardrail can be placed.
6.3.3	Revised Section title to include both Approach and Trailing End of Fill Slope Warrants.
6.7	Added RDM reference for clarity.
6.8	Added the steepest slope that guardrail can be placed.
8.5	NC General Statute does not allow a WB-67 design vehicle, content revised to follow NC State laws reflecting a WB-62 and WB-62FL design vehicles.
8.10.4	Revised text to refer to that of a WB-62FL in lieu of a modified WB-62. Also, referenced the WB-62 and then WB-62FL as the recommended vehicle for use in NC.
8.11.3	Revised reference to GB Chapter 9.11.4
10.4.2.4	Revised content to clarify business / private development vs. residential driveway treatments. Further clarification surrounding minimum driveway widths for concrete driveways in curb and gutter facilities. NCDOT Roadway Standards reference added.

The following Sections in Part II of the Roadway Design Manual have been revised to provide clarification and/or new guidance on current design practice:

Section	Summary of Revision(s)
1.2	Updated link to PDN for current NCDOT Project Management website location; removed reference to PDN on Integrated Project Delivery website
2.1	Revised content regarding the stationing of mainline alignments to read "from bottom to top (south to north)". Added guidance for -Y- Line stationing
3.1	Updated link to PDN for current NCDOT Project Management website location
3.2	Updated guidance to require logo to include the firm name, address, and license number.
3.2.8	Reference added to the Standard Certification Requirements (21 NCAC 56.1103(c))

Section	Summary of Revision(s)
3.5.1	Added new content clarifying the use of an inset or graphic cell for the typical sections which require aggregate subgrade. Also included in this revision are pavement schedule changes when aggregate subgrade is required.
3.5.2	Updated link to PDN for current NCDOT Project Management website location.
3.8.2	Added new content reflecting undercut excavation to be shown on profile sheets when specified in the Geotechnical Recommendations. Also added a note that shallow undercut is not to be shown on profile sheets.
3.9.2	Added a clarifying note giving the Division the ability to modify the note which appears on the first cross section summary sheet or the first cross section template sheet when the lump sum grading pay item is not included in the final construction estimate.
3.10	Added a hyperlink for accessing the checklist for Coordination of Roadway and Structure Plans. Removed duplicate reference pertaining to Section 200 Letter from the Right of Way Unit.
4.1	Updated link to PDN for current NCDOT Project Management website location; removed reference to PDN on Integrated Project Delivery website.
5.2	Updated link to PDN for current NCDOT Project Management website location.
5.4.1.1	Added Clarification statement in applying shrinkage factors to weathered rock. Also provided additional information on when it's appropriate to use a swell factor and shrinkage factors.
5.4.5.3	Revised content refers to the usage of details in lieu of standards to obtain the special detail for 25foot clear span guardrail.
5.4.5.5	Added new content from the legacy roadway design manual for guardrail anchor deductions.
5.4.8.1	Added new content to provide roadway designer with some basic information to estimate quantities for Rip Rap provided hydraulics has not yet provided quantities as is the case in early stages of design.
5.4.10	Added new clarifying content (incl. subsections) related to structures and what the roadway designer's responsibility or involvement is with regards to retaining walls and sound / noise barrier walls for estimating.
5.4.11	Added new content to provide guidance on combining the hydraulic and roadside environmental engineers PSRM quantities.
7.7.3	Added clarification statement that crash rate comparisons are not typically needed on bridge replacement projects.

The following Part I Roadway Design Manual Tables have been revised:

Table	Summary of Revision(s)
2-1	Restored missing table note "Source: 2008 FHWA Pedestrian Safety Guide for Transit Agencies"

Table	Summary of Revision(s)
3-2	Revised note “c” to correct reference to GB Chapter 7 in lieu of Chapter 3. Restored missing table note “b. Preferably, usable shoulders on arterials in rural areas should be paved; however, where volumes are low or a narrow section is needed to reduce construction effects, the paved shoulder width may be a minimum of 2 feet provided bicycle use is not intended to be accommodated on the shoulder.”
3-3	Restored missing table note “b. Consider using lane width of 24 feet where substantial truck volumes are present or agricultural equipment frequently use the road. “b Consider using traveled way width of 24 feet where substantial truck volumes are present or agricultural equipment frequently uses the road.”
3-4	Restored missing table note “b. Consider using lane width of 24 feet where substantial truck volumes are present or agricultural equipment frequently use the road. “b Consider using traveled way width of 24 feet where substantial truck volumes are present or agricultural equipment frequently uses the road.”
3-5	Restored missing table note “1. Refer to GB Chapter 3 Section 3.3.5 for particular design superelevation tables the designer should use.”
4-5	Revised note “c” to replace references to the GB with the RDG.
6-1	Revised reference to guidelines for “Embankment” obstacles (RDG Figure 5-1 revised to RDG Figure 5-1(b)).

The following Part II Roadway Design Manual Tables have been revised:

Table	Summary of Revision(s)
3-2	Revised code letter L to be that of “Stabilizer aggregate” in lieu of “Stabilized subgrade”.
5-2	Added a table reflecting guardrail anchor deductions.

The following Part I Roadway Design Manual Figures have been revised:

Figure	Summary of Revision(s)
2-1	Restored missing figure note: “Note: The percentages above reflect only adults who have stated an interest in bicycling.”
2-4	Restored missing figure note: “Note: The detail above serves as an example of what a roadway designer may receive from the Pavement Design Unit upon being notified that shoulder drains should be included in the plans.”
8-3	Added note 5 which identifies a maximum taper length of 180 feet. This allows for a variable taper in lieu of the required 6:1, so as not to exceed 180 feet in length.

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Figure	Summary of Revision(s)
8-7	Revised figure to reflect the 15' offset from edge of travel for identifying line of sight origin.
8-16	Revised figure title to reflect a WB-62FL design vehicle.
9-5	Revised note 5(b) to reflect the correct formula for taper lengths "L" based on speeds less than 45 mph.

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