



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION**

ROADWAY DESIGN GUIDELINES

October 2015

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/27/15

Revised 6-11-12: for IB 12-09 and 12-10
Revised 8-13-12 for IB 12-11, 12-13, 12-14, 12-15, and 12-16
Revised 8-16-12 for IB 12-17 and 12-18
Revised 9-4-12 for IB 12-12
Revised 10-4-12 for IB 19-19
Revised 1-31-13 for IB 13-01 thru 13-06
Revised 2-7-13 for IB 13-07
Revised 2-21-13 for IB 13-08
Revised 4-18-13 for IBs 13-09, 13-10, 13-11
Revised 5-22-13 for IB 13-12
Revised 5-28-13 for IB 13-13
Revised 6-19-13 for IB 13-14
Revised 9-12-13 for IBs 13-15, 13-16, 13-17, 13-18, 13-20, 13-21, 13-22 & 13-23
Revised 11-14-13 for IB 13-24
Revised 12-9-13 for IBs 13-25 and 13-26
Revised 2-10-14 for IBs 14-01 and 14-02
Revised 4-22-14 for IBs 14-03 and 14-04
Revised 6-23-14 for IBs 14-05 and 14-06
Revised 8-18-14 for IBs 14-07 thru 14-11
Revised 12-5-14 for IBs 14-12 thru 14-24
Revised 3-20-15 for IB's 15-01 thru 15-05
Revised 4-15-15 for IB's 15-06 thru 15-07
Revised 7-01-15 for IB's 15-08
Revised 10-15-15 for IB's 15-12 thru 15-13



TDOT Roadway Design Guidelines is approved.



John Schroer, Commissioner
Department of Transportation
Date JUN 20 2012



Paul Degges, Chief Engineer
Department of Transportation
Date 6/14/12



Jeff Jones, Assistant Chief Engineer
Bureau of Engineering
Date 5/29/12



Carolyn Stonecipher, Director
Design Division
Date 5/25/12

FOREWORD

These guidelines establish uniform procedures for roadway design activities within the Tennessee Department of Transportation. The guidelines do not establish any legal or administration interpretations of the Department's contracts. In the event that the terms of a contract and this guide are in conflict, this guide is subordinate to the contract.

Utilization of these guidelines will ensure more uniformity in the design of roadway plans by the Roadway Design Division. These guidelines are not intended to provide an explanation to every design problem encountered by design personnel. The guidelines should not be a substitute for good engineering knowledge, experience, or sound judgment.

As permitted under 23 CFR 625.3 (e), the roadway design procedures herein do not apply for traffic engineering, spot improvements, road safety audit review (RSAR) projects, and safety projects such as signing, marking, signalization, roadway lighting and traffic barriers which include very minor or no roadway work. This will permit implementation of projects addressing safety and operational concerns in a timely manner without requiring design exceptions for those elements of the roadway that are beyond the scope of purpose and funding for these types of projects.

The Roadway Design Guidelines have been prepared for guidance in the preparation of roadway plans and estimates.

All design personnel should make every effort to become familiar with the Guidelines and the format within which they were developed. An explanation of the format of the Guidelines and the manner in which they will be updated is explained on the next page.

These guidelines will be in a state of constant evaluation for any revisions, additions, and deletions to keep Roadway Design personnel current with improved design procedures.

FORMAT OF ROADWAY DESIGN GUIDELINES

The Roadway Design Guidelines have been categorized by the tasks that occur for the development of roadway plans. The breakdown is as follows:

- I. General Roadway Information
- II. Preliminary Plans Information
- III. Right-of-Way Plans Information
- IV. Construction Plans Information
- V. List of Current Standard Drawings Revision Dates
- VI. General Notes and Special Notes
- VII. Index
- VIII. Instructional Bulletins

The Roadway Design Guidelines are categorized by the particular design functions that must take place in the process of plans development. A typical set of roadway plans would first have the Preliminary Plans developed, next the Right-of-Way Plans, and finally the Construction Plans. An item will be listed where it first might occur during plans development. Later references will refer back to that previous listing. On rare occurrences an item might be forward referenced.

The Roadway Design Guidelines will be updated as needed on a yearly basis. Directions to designers throughout the year will be in the form of "Instructional Bulletins". Instructional Bulletins will no longer be distributed in hard copy. Updates are going to be posted on the Roadway Design Division's web site. Notifications for the updates will be sent via email.

Instructional Bulletins will be issued as the need arises throughout the year. They will have a number that designates the year and the sequence of bulletins for that year (for example 08-01). The practice or principle is to remain in effect for an extended period of time then the bulletin will contain the necessary pages to insert into the guidelines. If the instructions are no longer needed then the bulletin will be voided.

With this approach to updates, the designers shall be able to learn about where the guidelines are contained, and be able to find a particular item more easily.

The Roadway Design Division will no longer be updating or revising existing Metric Roadway Design Guidelines, General Notes, and Standard Drawings. As a result of this decision, these documents will no longer be distributed in hard copy or posted on TDOT web site. Designers needing access to metric documents should contact the Roadway Design Division, Standards Office at (615)741-0840 to obtain guidance for preparing metric plans.

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/27/15

REVISIONS SINCE THE 2010 EDITION

SECTION	REASON
All of Section I has been updated	Incorporates and voids IB 10-14
1-100.00 and Table 1-1 has been revised	Incorporates and voids IB 13-16
1-115.00 has been added	Addresses the procedure for archiving plans on to FileNet. Incorporates and voids IB 11-08
1-115.00, Table 1-1, and Figure 1-2 has been revised	Incorporates and voids IB 13-11
Table 1-2 has been revised	Incorporates and voids IB 13-12
1-115.10 has been added	Addresses the standard pdf size for FileNet plans. Incorporates and voids IB 12-02
1-115.15 has been added	Incorporates IB 14-16
1-115.20 has been added	Addresses plan phase stamps to be placed on plans. Incorporates and voids IB 09-08
1-115.20 and Table 1-1 have been revised and 1-120.01 added	Incorporates and voids IB 13-02
1-120.23 has been added	Incorporates and voids IB 14-11
1-200.11 and 1-200.17 has been revised	Incorporates and voids IB 13-04
1-216.00 has been added	Incorporates IB 14-17
1-120.00 has been added	Addresses field review procedure and FileNet distribution. Incorporates and voids IB 11-09 and IB 11-10
1-200.11, 1-200.12, 1-200.15, 1-200.17, and Figures 1-6, 1-6A, 1-6B, and 1-6C have been revised	Incorporates IB 15-01
1-200.18 has been added	Incorporates and voids IB 13-03
1-220.00 has been voided	Incorporates and voids IB 12-16
Section I- Chapter 3 has been moved	Is now Section II-Chapter 4
All of Section I has been updated	Changed links and staff information.
All of Section II has been updated	Incorporates and voids IB 11-17
2-115.01 has been revised	Incorporates and voids IB 13-24
2-115.01 has been revised	Incorporates IB 15-02
2-120.00 and Figure 2-6 has been revised	Incorporates IB 14-21
2-127.00 has been revised	Incorporates and voids IB 12-16
2-132.00 has been added	Addresses procedure for checking sight distance at intersections. Incorporates and voids IB 08-13
2-136.00 has been revised	Incorporates IB 14-19
2-136.00 has been added	Addresses landscaping and voids Standard Drawings EL-P-10 and EL-P-11
2-155.00 has been revised	Clarified procedure for showing wetlands on the plans.
2-175.00 has been revised	Minor wording change
2-175.00 and Figure 2-24 has been revised	Incorporates and voids IB 12-16
2-175.00 has been revised	Incorporates and voids IB 13-11
2-175.01 has been revised and 2-175.02 has been added	Incorporates and voids IB 14-03
2-315.00 has been revised	Revised procedure for sending files to Signal

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/27/15

	Design.
2-315.01 has been added	Incorporates and voids IB 13-15
Section II- Chapter 4	New location of former Section I-Chapter 3
All of Section II has been updated	Changed links and staff information.
All of Section III has been updated	Incorporates and voids IB 11-18
3-110.02 and Figure 3-1 has been revised	Incorporates and voids IB 13-23
3-125.01 has been revised and Figure 3-3A added	Incorporates and voids IB 12-14
3-400.00 has been revised	Incorporates and voids IB 12-07
3-400.15 has been revised	Incorporates and voids IB 12-16
3-400.05 has been revised	Incorporates and voids IB 12-07
3-400.15 has been revised	Incorporates and voids IB 12-07
3-400.17 has been added	Incorporates and voids IB 12-07
3-400.20 has been revised	Incorporates and voids IB 12-07
3-400.25 and Figure 3-5 have been revised	Incorporates and voids IB 12-07 Added email notification for railroad involved projects, incorporates IB 09-13
3-400.30 has been deleted	Incorporates and voids IB 12-07
3-405.00 has been revised	Incorporates and voids IB 12-07
3-405.00 has been revised	Incorporates and voids IB 12-16
3-405.00 has been revised	Incorporates and voids IB 13-12
3-410.00 and all figures therein have been revised	Revised for changes to the new Construction General Permit requirements
3-410.03 has been added	Incorporates and voids IB 13-21
3-411.00 has been added	Incorporates and voids IB 13-07
All of Section III has been updated	Changed links and staff information.
All of Section IV has been updated	Incorporates and voids IB 11-19
3-412.00 and 3-413.00 has been added and Section VI has been updated	Incorporates IB 14-17
4-112.01 has been revised	Revised to reflect the addition of 1-115.10
4-414.05 has been revised	Incorporates and voids IB 12-14
4-115.10 has been revised	Incorporates and voids IB 12-07
4-416.00 has been added	Incorporates and voids IB 12-14
4-126.00 has been added	Incorporates and voids IB 12-11
4-136.00 and Figure 4-4 has been added	Addresses Project Commitments Sheet. Incorporates and voids IB 11-11
4-137.00 has been revised	Incorporates and voids IB 12-07
Section	Reason
4-138.00 and 4-139.00 has been added and Figures 1-1 and 4-2 revised	Incorporates and voids IB 12-09
4-140.00 and Figure 4-8 have been revised	Incorporates and voids IB 12-07
4-140.00 has been revised	Incorporates and voids IB 13-14
4-140.00 has been revised	Incorporates IB 14-13
4-140.01 has been deleted	No longer required due to digital distribution
4-140.02 has been revised	Incorporates and voids IB 12-07
4-140.02 has been revised	Incorporates and voids IB 12-16
4-140.02 has been revised	Incorporates and voids IB 13-12
4-140.06 has been revised	Incorporates and voids IB 12-07

TDOT - ROADWAY DESIGN GUIDELINES

English	Revised: 10/27/15
4-140.06 has been revised	Incorporates and voids IB 12-16
4-150.00 has been revised	Incorporates and voids IB 12-16
4-150.00 has been revised	Incorporates and voids IB 13-12
4-150.00 has been revised	Incorporates IB 14-14
4-150.00 has been revised	Incorporates and voids IB 12-07
4-203.02 has been revised	Clarified definition of Transitional Materials.
4-203.35 has been deleted	All excavation for culverts to now be considered culvert excavation
4-204.05, 4-205.00 and Figure 4-14 have been revised	Incorporates and voids IB 12-16
4-204.05 and Figure 4-14 have been revised	
4-303.00 (Item 303-10.01) has been revised	Revised for new barrier wall standard drawings
4-403.00 (Item 403-01) has been revised	Application fate for Item 403-01 has been modified
4-403.00 has been revised	Incorporates and voids IB 13-10
4-411.03 has been revised	Revised to include standard drawings RP-CS-1 and RP-CS-2
4-414.05 (item No 403-01) has been revised	Item No 403-01.01 has been created to differentiate between typical tack coat application and micro-surfacing application
4-115.10 has been revised	Revised for digital signature requirement
4-115.11 has been added	Incorporates and voids IB 13-5
4-115.12 has been added	Incorporates and voids IB 13-26
4-133.00 has been revised	Added SWPPP Sheets to Index
4-138.00, 4-139.00, and Figure 4-2 has been revised	Incorporates and voids IB 13-22
4-139.00 has been revised	Incorporates IB 14-18
4-140.00 has been revised	Incorporates and voids IB 14-07
4-403.05 has been added	Incorporates and voids IB 13-06
4-411.00 has been revised	Incorporates IB 15-07
4-416.00 has been deleted	Incorporates and voids IB 12-17
4-604.35 has been deleted	Excavation at Culverts to no longer include Channel Excavation
4-650.00 has been added	Incorporates IB 14-15
4-705.05 has been moved to 4-706.20 Section 4-706.XX has been added	Addresses guardrail end treatments. Incorporates and voids IB 12-03
4-705.00 through 4-706.39	Incorporates and voids IB 14-02
4-712.00 has been revised	Incorporates IB 14-13
4-712.01 has been added	Incorporates and voids IB 13-17
4-712.15 has been revised	Revised to match 4-712.00
4-712.20 has been deleted	Redundant section removed, same information is provided in 4-712.25
4-712.25 has been revised	Incorporates and voids IB 13-17
4-713.00 has been added	Incorporates and voids IB 12-13
4-713.05 and 4-713.10 has been deleted	Incorporates IB 15-05
4-713.15 has been revised	Incorporates IB 15-05
4-716.05	Added guidance concerning striping on OGFC pavements

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/27/15

Table 4-3 has been revised	Incorporates and voids IB 14-04
4-730.12 and 4-730.13 has been added	Incorporates IB 14-23
All of Section IV has been updated	Changed links and staff information.
All of Section V has been updated	Incorporates and voids IB 11-07, IB 12-06, IB 12-08
Section V Chapter 1 has been revised	Incorporates and voids IB 12-12
Section V Chapter 1 has been revised	Incorporates and voids IB 12-15
Section V Chapter 1 has been revised for D-CB-14RB	Incorporates and voids IB 12-18
Section V Chapter 1 revised D-CB-series drawings	Incorporates and voids IB 13-01
Section V Chapter 1 has been revised	Incorporates and voids IB 13-08
Section V Chapter 1 has been revised	Incorporates and voids IB 13-13
Section V Chapter 1 has been revised	Incorporates and voids IB 13-18
Section V Chapter 1 has been revised	Incorporates and voids IB 13-20
Section V Chapter 1 has been revised	Incorporates and voids IB 13-25
Section V Chapter 1 has been revised	Revised guardrail and safety Roadway Standard Drawings. Incorporates and voids IB 14-01
Section V Chapter 1 has been revised	Incorporates and voids IB 14-05
Section V Chapter 1 has been revised	Revised catch basin Roadway Standard Drawings. Incorporates and voids IB 14-06
Section V Chapter 1 has been revised	Incorporates and voids IB 14-08
Section V Chapter 1 has been revised	Deleted brick catch basins. Incorporates IB 14-10
Section V has been revised. Revises Chapter 1 & 2. Adds Chapter 3	Incorporates IB's 15-03, 15-04, and 15-06
Section V has been revised. Revises Chapter 1 & 2.	Incorporates IB 15-08
All of Section V has been updated	Revised standard drawings to reflect website.
6-150.00 is revised to include note 3	Incorporates and voids IB 12-14
6-150.00 is revised to include note 3	Incorporates and voids IB 12-17
6-160.00 has been revised	Revised to include Class A-3 in the exception note.
6-190.xx has been revised (various notes)	Revised to revise, add, and deleted various general and special notes. Incorporates and voids IB 14-22
6-190.xx has been revised (various notes)	Revised to reflect changes in the new Construction General Permit
6-240.00 has been added	Incorporates and voids IB 14-03
6-250.03 has been revised	Revised to reflect sign changes in the MUTCD
6-265.00 has been added	Incorporates and voids IB 12-13
6-270.00 note 2 has been added	Incorporates and voids IB 11-14
6-290.xx has been revised (various notes)	Revised to reflect changes in the new Construction General Permit
Section VI has been revised (various notes)	Revised to reflect name change of the Design Division to the Roadway Design Division. Incorporates and voids IB 13-09

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/27/15

Section VI has been revised (various notes)	Revised to reflect name change of the Design Division to the Roadway Design Division.
---	---

The following IBs have been previously voided.

08-13, 09-08, 09-13, 10-14, 11-07, 11-08, 11-09, 11-10, 11-11, 11-14, 11-17, 11-18, 11-19, 11-20, 12-01, 12-02, 12-03, 12-04, 12-05, 12-06, 12-07, 12-08, 12-09, 12-10, 12-11, 12-12, 12-13, 12-14, 12-15, 12-16, 12-17, 12-18, 12-19, 13-01, 13-02, 13-03, 13-04, 13-05, 13-06, 13-07, 13-08, 13-09, 13-10, 13-11, 13-12, 13-13, 13-14, 13-15, 13-16, 13-17, 13-18, 13-20, 13-21, 13-22, 13-23, 13-24,

The following IBs have been voided by this update:

13-19, 13-25, 13-26, 14-01, 14-02, 14-03, 14-04, 14-05, 14-06, 14-07, 14-08, 14-10, 14-11

TABLE OF CONTENTS

SECTION I.	GENERAL	
CHAPTER	1. PROJECT RECORDS.....	1-100.00
	2. DESIGN PROCEDURES	1-200.00
SECTION II.	PRELIMINARY PLANS	
CHAPTER	1. DESIGN GUIDELINES.....	2-100.00
	2. DRAINAGE.....	2-200.00
	3. RIGHT-OF-WAY.....	2-300.00
	4. GUIDELINES FOR DESIGN OF ROUNDABOUTS.....	2-400.00
SECTION III.	RIGHT-OF-WAY PLANS	
CHAPTER	1. GENERAL GUIDELINES	3-100.00
	2. DRAINAGE.....	3-200.00
	3. PLANS DEVELOPMENT AND CALCULATIONS	3-300.00
	4. PLANS SUBMITTALS	3-400.00
SECTION IV.	CONSTRUCTION PLANS	
CHAPTER	1. GENERAL PROVISIONS.....	4-100.00
	2. EARTHWORK.....	4-200.00
	3. BASES AND SUBGRADE TREATMENT	4-300.00
	4. FLEXIBLE SURFACES.....	4-400.00
	5. RIGID PAVEMENT.....	4-500.00
	6. STRUCTURES.....	4-600.00
	7. INCIDENTAL CONSTRUCTION.....	4-700.00
	8. ROADSIDE DEVELOPMENT	4-800.00
	9. MATERIALS.....	4-900.00
SECTION V.	LIST OF CURRENT STANDARD DRAWINGS REVISION DATES	
CHAPTER	1. STANDARD ROADWAY DRAWINGS.....	5-100.00
	2. STANDARD TRAFFIC OPERATIONS DRAWINGS.....	5-200.00
	3. STANDARD STRUCTURE DRAWINGS	5-300.00
SECTION VI.	GENERAL NOTES AND SPECIAL NOTES	
CHAPTER	1. GENERAL NOTES	6-100.00
	2. SPECIAL NOTES	6-200.00
	3. RIGHT-OF-WAY/UTILITY NOTES	6-300.00
SECTION VII.	INDEX	
SECTION VIII.	INSTRUCTIONAL BULLETINS	

LIST OF FIGURES

SECTION I.	GENERAL	SECTION NO.
FIGURE 1-1	SAMPLE EMAIL NOTICATION.....	1-120.21
FIGURE 1-2	SAMPLE FIELD REVIEW NOTIFICATION MEMORANDUM.....	1-120.21
FIGURE 1-3	EXAMPLE COVER LETTER.....	1-130.00
FIGURE 1-4	EXAMPLE HEARING NOTICE	1-130.00
FIGURE 1-5	EXAMPLE HEARING NOTICE	1-130.00
FIGURE 1-6	RESURFACING SAFETY REVIEW CHECKLIST.....	1-200.15
FIGURE 1-6A	RESURFACING SCOPE OF WORK CERTIFICATION MEMO.....	1-200.11
FIGURE 1-6B	RESURFACING SCOPE OF WORK ADDENDUM MEMO.....	1-200.11
FIGURE 1-7	EXAMPLE CROSS SECTION LOCATIONS.....	1-210.00
FIGURE 1-8	METHOD OF SHOWING "EASEMENT" FOR R/R CROSSING.....	1-210.00
FIGURE 1-9	METHOD OF SHOWING RIGHT-OF-WAY AT AN AT-GRADE RAILROAD CROSSING.....	1-210.05
FIGURE 1-10	EXAMPLE FOR PREPARATION OF RIGHT-OF-WAY DETAILS WHEN ENCROACHMENT IS PARALLEL TO THE RAILROAD	1-210.10
FIGURE 1-11	SKETCH SHOWING THE MINIMUM REQUIREMENT FOR RAILROAD TYPICAL ROADBED SECTION TO BE USED AS A REFERENCE FOR DESIGNERS WORKING INSIDE RAILROAD RIGHT-OF-WAY.....	1-210.10
 SECTION II. PRELIMINARY PLANS		
FIGURE 2-1A	TITLE SHEET IDENTIFICATION FORMAT FOR CONSULTANT DESIGNED RIGHT-OF-WAY	2-115.00
FIGURE 2-1B	TITLE SHEET IDENTIFICATION FORMAT FOR TDOT DESIGNED RIGHT-OF-WAY.....	2-115.00
FIGURE 2-2	TITLE SHEET SPECIAL NOTES FORMAT	2-115.01
FIGURE 2-3	EQUATION BLOCK FORMAT	2-115.05
FIGURE 2-4	TRAFFIC BLOCK FORMAT.....	2-115.15
FIGURE 2-5A	TYPICAL TITLE SHEET PROJECT DESCRIPTION	2-115.20

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/21/15

FIGURE 2-5B	TYPICAL TITLE SHEET PROJECT DESCRIPTION	2-115.20
FIGURE 2-6	REQUEST FOR TRAFFIC DATA FORM.....	2-120.00
FIGURE 2-7	GRADING QUANTITIES SHEET IDENTIFICATION FORMAT	2-145.07
FIGURE 2-8	CRITICAL LENGTHS OF GRADE FOR DESIGN.....	2-150.03
FIGURE 2-9	MEASUREMENT FOR LENGTH OF GRADE	2-150.03
FIGURE 2-10	CRITICAL LENGTH OF GRADE CALCULATIONS.....	2-150.03
FIGURE 2-11	PERFORMANCE CURVES FOR TRUCKS.....	2-150.04
FIGURE 2-12	TRUCK SPEED PROFILE	2-150.06
FIGURE 2-13	CHANNEL CHANGES	2-155.05
FIGURE 2-14	MINIMUM LENGTH (X) THROUGH LANE EXTENSIONS.....	2-160.00
FIGURE 2-15	TURNING LANE TERMINOLOGY	2-170.00
FIGURE 2-16	LEFT-TURN LANE ALIGNMENT	2-170.00
FIGURE 2-17	WARRANT FOR LEFT-TURN STORAGE LANES ON FOUR-LANE HIGHWAYS.....	2-170.00
FIGURE 2-18A	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 5%	2-170.00
FIGURE 2-18B	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 10% ..	2-170.00
FIGURE 2-18C	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 15% ..	2-170.00
FIGURE 2-18D	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 20% ..	2-170.00
FIGURE 2-18E	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 30% ..	2-170.00
FIGURE 2-18F	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 40 MPH, PERCENTAGE OF LEFTS, L = 40% ..	2-170.00
FIGURE 2-19A	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 5%	2-170.00
FIGURE 2-19B	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE	

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/21/15

	HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 10%..	2-170.00
FIGURE 2-19C	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 15%..	2-170.00
FIGURE 2-19D	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 20%..	2-170.00
FIGURE 2-19E	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 30%..	2-170.00
FIGURE 2-19F	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 50 MPH, PERCENTAGE OF LEFTS, L = 40%..	2-170.00
FIGURE 2-20A	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 5%....	2-170.00
FIGURE 2-20B	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 10%..	2-170.00
FIGURE 2-20C	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 15%..	2-170.00
FIGURE 2-20D	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 20%..	2-170.00
FIGURE 2-20E	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 30%..	2-170.00
FIGURE 2-20F	WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAYS, SPEED 60 MPH, PERCENTAGE OF LEFTS, L = 40%..	2-170.00
FIGURE 2-21	FLOW CHART FOR DETERMINING AND PROPOSING A RETAINING WALL	2-175.00
FIGURE 2-21A	EXAMPLE OF RETAINING WALL TYPICAL SECTIONS FOR CUT OR FILL SECTIONS	2-175.00
FIGURE 2-21B	EXAMPLE OF RETAINING WALL LAYOUT DETAILS	2-175.00
FIGURE 2-21C	EXAMPLE RETAINING WALL PROFILE	2-175.00
FIGURE 2-21D	EXAMPLE RETAINING WALL DETAIL SHEET	2-175.00
FIGURE 2-21E	RETAINING WALL COST EVALUATION REQUEST LETTER	2-175.00
FIGURE 2-21F	NOTICE TO PROCEED WITH RETAINING WALL DESIGN LETTER	2-175.00
FIGURE 2-22	RURAL TYPE PROJECTS TYPICAL DRIVEWAY NOTATION.....	2-300.05

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/21/15

FIGURE 2-23	URBAN TYPE PROJECTS TYPICAL DRIVEWAY NOTATION	2-300.05
FIGURE 2-24	TYPICAL SECTION PRIVATE DRIVE TO BUSINESS, FIELD, OR RESIDENTIAL PROPERTY.....	2-300.05
FIGURE 2-25	TYPICAL R.O.W. ACQUISITION TABLE.....	2-320.05
FIGURE 2-26	GUIDE FOR SHOWING VARIOUS EASEMENTS IN PLANS.....	2-320.05
FIGURE 2-27	SPIRALS FOR MULTILANE ROUNDABOUTS	2-410.00
FIGURE 2-28	TYPICAL RIGHT-TURN BYPASS LANE	2-410.00
FIGURE 2-29	FASTEST PATH FOR THROUGH MOVEMENT AT SINGLE LANE ROUNDABOUT	2-420.00
FIGURE 2-30	CRITICAL PATH RADII AT A ROUNDABOUT	2-420.00
FIGURE 2-31	SPEED-RADIUS RELATIONSHIP	2-420.00
FIGURE 2-32	EXAMPLE OF VEHICLE PATH OVERLAP	2-420.00
FIGURE 2-33	GOOD PATH ALIGNMENT INTO MULTI-LANE ROUNDABOUT	2-420.00
FIGURE 2-34	TYPICAL ROUNDABOUT DESIGN PROCEDURE.....	2-420.00

SECTION III. RIGHT-OF-WAY PLANS

FIGURE 3-1	DESIGN EXCEPTION AND JUSTIFICATION FORM.....	3-110.02
FIGURE 3-2	REQUEST FOR SOILS SURVEY FORM	3-110.05
FIGURE 3-3	REQUEST FOR PAVEMENT DESIGN FORM.....	3-125.00
FIGURE 3-3A	REQUEST FOR PAVEMENT DESIGN REVIEW	3-125.01
FIGURE 3-4	RIGHT-OF-WAY FUNDING APPROVAL REQUEST TRANSMITTAL LETTER EXAMPLE.....	3-400.20
FIGURE 3-5	RIGHT-OF-WAY "APPRAISALS AND ACQUISITION" TRANSMITTAL LETTER EXAMPLE.....	3-400.25
FIGURE 3-6	PERMITTING PROCESS FLOW CHART.....	3-410.00
FIGURE 3-7	EXAMPLE PERMIT ASSESSMENT	3-410.00
FIGURE 3-8	EXAMPLE VICINITY MAP	3-410.00

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/21/15

FIGURE 3-9	EXAMPLE TABLE OF IMPACTS	3-410.00
FIGURE 3-10	EXAMPLE LOCATION MAP	3-410.00
FIGURE 3-11	EXAMPLE CHANNEL CHANGE PERMIT SKETCHES.....	3-410.00
FIGURE 3-12	EXAMPLE PERMIT SKETCHES FOR STREAM LOCATION WITH STRUCTURE	3-410.00
FIGURE 3-13	EXAMPLE PERMIT SKETCH FOR STREAM ENCAPSULATION OR STRUCTURE EXTENSION.....	3-410.00
FIGURE 3-14	EXAMPLE PERMIT SKETCHES FOR WETLAND IMPACTS	3-410.00
FIGURE 3-15	EXAMPLE PERMIT SKETCH FOR SCENIC RIVER IMPACTS.....	3-410.00
FIGURE 3-16	EXAMPLE APPROVED APPLICATION FOR PERMITS NOTIFICATION EMAIL	3-410.00
FIGURE 3-17	GREEN SHEET CERTIFIACATION LETTER.....	3-411.00
SECTION IV. CONSTRUCTION PLANS		
FIGURE 4-1A	TITLE SHEET IDENTIFICATION FORMAT FOR CONSULTANT DESIGNED CONSTRUCTION	4-115.00
FIGURE 4-1B	TITLE SHEET IDENTIFICATION FORMAT FOR TDOT DESIGNED CONSTRUCTION	4-115.00
FIGURE 4-2	TYPICAL INDEX OF SHEETS	4-133.00
FIGURE 4-3	EXAMPLE OF GENERAL AND SPECIAL NOTES PAGE.....	4-135.05
FIGURE 4-4	EXAMPLE OF PROJECT COMMITMENTS SHEET	4-136.00
FIGURE 4-5	TYPICAL UTILITIES INDEX.....	4-137.00
FIGURE 4-6	TYPICAL FORMAT FOR UTILITY OWNER INFORMATION	4-137.00
FIGURE 4-7	UPPER RIGHT HAND CORNER BOX	4-137.00
FIGURE 4-8	EXAMPLE CONSTRUCTION PLANS TRANSMITTAL LETTER.....	4-140.00
FIGURE 4-9	ESTIMATE REVISION FORM.....	4-140.02
FIGURE 4-10	CONSTRUCTION QUANTITIES ESTIMATE DATA FILE TEMPLATE	4-140.05
FIGURE 4-11	REMOVAL OF BUILDINGS AND OBSTRUCTIONS DESCRIPTION BLOCK.....	4-202.10

TDOT - ROADWAY DESIGN GUIDELINES

English

Revised: 10/21/15

FIGURE 4-12	EXAMPLE OF ESTIMATED QUANTITIES FOR ROADWAY APPROACHES BLOCK	4-203.25
FIGURE 4-13A	ESTIMATED GRADING QUANTITIES BLOCK (MATERIALS COMPOSITION KNOWN).....	4-203.55
FIGURE 4-13B	ESTIMATED GRADING QUANTITIES BLOCK (MATERIALS COMPOSITION UNKNOWN).....	4-203.55
FIGURE 4-14	QUANTITIES OF CULVERT EXCAVATION FOR SLAB TYPE AND BOX CULVERTS AND BRIDGES	4-204.05
FIGURE 4-15	POTENTIAL GUARDRAIL ENCROACHMENT	4-604.20
FIGURE 4-16	BOX BRIDGE OR CULVERT ELEVATION DETAILS	4-604.20
FIGURE 4-17	TYPICAL CROSS-SECTION INFORMATION FOR BOX AND SLAB TYPE CULVERTS AND BRIDGES.....	4-604.20
FIGURE 4-18	TYPICAL CONCRETE BOX OR SLAB TYPE CULVERT OR BRIDGE MODIFICATION	4-604.20
FIGURE 4-19	CRASH CUSHION SELECTION FLOWCHART	4-706.35
FIGURE 4-20	TYPICAL LIMITS OF CROWN VETCH.....	4-801.07

LIST OF TABLES

		SECTION NO.
SECTION I.	GENERAL	
TABLE 1-1	FILE NET PROJECT DELIVERABLES AND PLAN SETS.....	1-115.00
TABLE 1-2	FIELD REVIEW EMAIL DISTRIBUTION LIST.....	1-120.21
TABLE 1-3	FIELD REVIEW MAILED DISTRIBUTION LIST.....	1-120.21
SECTION II.	PRELIMINARY PLANS	
TABLE 2-1	DESIGN CRITERIA FOR TRUCK-CLIMBING LANES	2-150.04
TABLE 2-2	GUIDELINES FOR ADVANCE PLACEMENT OF WARNING SIGNS..	2-160.00
TABLE 2-3	APPROXIMATE TOTAL LENGTHS NEEDED FOR DECELERATION TO A STOP FROM DESIGN SPEED	2-170.00
TABLE 2-4	FUTURE TRAFFIC SIGNAL WARRANTS.....	2-170.00
TABLE 2-5	STORAGE LENGTH TO BE ADDED TO CHART VALUES OF LEFT-TURN LANE STORAGE LENGTHS	2-170.00
TABLE 2-6	RECOMMENDED ENTRY DESIGN SPEED (R1) FOR ROUNDBOUTS	2-405.05
SECTION III.	RIGHT-OF-WAY PLANS	
TABLE 3-1	COUNTY SOIL GROUPINGS.....	3-125.05
TABLE 3-2	PAVEMENT DESIGN NUMBER	3-125.05
TABLE 3-3	PAVEMENT DESIGN.....	3-125.05
TABLE 3-4	TYPICAL GRADE AND DRAIN PROJECT TIMELINE INCLUDING PERMIT ACTIVITIES	3-410.00
TABLE 3-5	TYPICAL BRIDGE AND APPROACH PROJECT TIMELINE INCLUDING PERMIT ACTIVITIES	3-410.00
TABLE 3-6	TYPICAL PLAN DISTRIBUTION.....	3-410.00

SECTION IV. CONSTRUCTION PLANS

TABLE 4-1	ADJUSTMENT FACTOR FOR ESTIMATING ADDITIONAL REINFORCING STEEL QUANTITIES IN THE VERTICAL WALLS OF CONCRETE BOX OR SLAB TYPE CULVERTS OR BRIDGES.....	4-604.20
TABLE 4-2	NON-GATING RE-DIRECTIVE CRASH CUSHION CLASSIFICATION.....	4-706.32
TABLE 4-3	PERMANENT PAVEMENT MARKINGS, RAISED PAVEMENT MARKERS, RUMBLE STRIP AND RUMBLE STRIPE GUIDELINES.....	4-716.15