



STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

DESIGN DIVISION  
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JOHN C. SCHROER  
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DESIGN DIVISION DRAINAGE MANUAL  
REVISION 12-01

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Ali R. Hangul, PE  
C.E. Manager 1  
Design Standards and Guidelines Office

**DATE:** August 21, 2012

**SUBJECT:** Revision to the Drainage Manual to Comply with the 2012 Construction General Permit

**Chapter 1**

Chapter 1 – Added reference to Chapter 11 in chapter Introduction  
Chapter 1 – Miscellaneous minor edits and formatting revisions  
Section 1.05 – Revised and updated Design Guidelines reference to 2012

**Chapter 2**

Chapter 2 – Miscellaneous minor edits and formatting revisions to Chapter 2 & Appendix  
Section 2.01.1 – Minor edit to last sentence  
Section 2.01.2 – Minor edit to first paragraph  
Section 2.02.2.2 – Minor edit to Item Number 2, first sentence  
Section 2.02.2.4.1 – Minor edit to last paragraph of section  
Section 2.02.2.7.1 – Corrected section title spelling  
Section 2.02.3.4 – Corrected misspelled word in first paragraph  
Section 2.03 – Added entire second paragraph to this section  
Section 2.04.1 – Revised and updated Design Guidelines reference to 2012

**Chapter 3**

Chapter 3 – Miscellaneous minor edits and formatting revisions to Chapter 3  
Section 3.06.1.3 – Miscellaneous minor edits to first paragraph  
Section 3.06.1.5 – Miscellaneous minor formatting edits  
Section 3.06.3.3 – Miscellaneous minor edits to first paragraph. Added Chapter 11 reference  
Section 3.06.3.4 – Minor updates and revisions to first paragraph  
Section 3.06.3.8 – Added items 8 and 9 to list  
Section 3.07.2 – Revised and updated Design Guidelines reference to 2012

**Chapter 6**

Chapter 6 – Miscellaneous minor edits and formatting revisions to Chapter 6  
Chapter 6 Table of Contents – Revised titles for Sections 6.04.3.1, 2, 3 & 5  
Chapter 6 Table of Contents – Updated page numbers for Section 6.03.3 & 6.05.2.2.1  
Section 6.04.3.1.1 – Revised Section title & updated section for new endwall Standards  
Section 6.04.3.1.2 – Revised Section title & updated section for new endwall Standards  
Section 6.04.3.1.3 – Revised Section title & updated section for new endwall Standards  
Section 6.04.3.1.5 – Revised Section title & updated section for new endwall Standards

Section 6.07.1 – Revised Table 6A-1: Revised fill heights, updated and modified various notes, added SRTRP to table

Section 6.07.1 – Revised Table 6A-2, Table 6A-3, Table 6A-4, Table 6A-5 for new endwall Standards

Section 6.07.4 – Revised and updated Design Guidelines reference to 2012

Section 6.07.5 – Added SRTRP, Steel Reinforced Thermoplastic Ribbed Pipe to Abbreviations

## **Chapter 7**

Chapter 7 – Miscellaneous minor edits and formatting revisions to Chapter 7

Chapter 7 Table of Contents – Revised titles for Sections 7.04.6, 7.04.6.2.2, & 7.04.6.2.3

Chapter 7 Table of Contents – Updated page numbers for Section 7.03.3 & 7.03.5.7 to 7.05.2

Section 7.04.1.1 – Minor revision to TDOT terminology in paragraph 5

Section 7.04.5.1 – Added n-value for SRTRP to Table 7-9

Section 7.04.6.2.1 – Changed figure reference in Step 2 from 7A-12 to 7A-10.

Section 7.06.4 – Revised and updated Design Guidelines reference to 2012

## **Chapter 10**

Chapter 10 – Miscellaneous minor edits and formatting revisions to chapter

Chapter 10 Table of Contents – Revised titles for Section 10.04.6

Chapter 10 Table of Contents – Revised Section 10.05.2.1 title, added new Section 10.05.2.2 and 10.06.2.2, other miscellaneous minor revisions, updated most page numbers,

Section 10.04.6.2 – Terminology revision. Changed ROW to disturbed acreage.

Section 10.05.3.4 – Replaced Figures 10-11 and 10-12 with updated versions. Removed reference to stream being an classed as an outfall

Section 10.06 – Updated terminology regarding phase and stage

Section 10.08.1 – Updated terminology regarding phase and stage

Section 10.08.2 – Updated terminology regarding phase and stage

Section 10.08.3 – Minor edit to 2<sup>nd</sup> paragraph

Section 10.08.3.1.3 – Added second paragraph to section

Section 10.08.3.2.4 – Minor terminology edit in first paragraph

Section 10.08.3.3.4 – Edits to design criteria in 3<sup>rd</sup> paragraph

Section 10.08.3.3.5 – Minor terminology edits in 2<sup>nd</sup> paragraph and Step 2

Section 10.08.3.4 – Miscellaneous minor edits to section

Section 10.09.3 – Updated terminology regarding phase and stage

Section 10.02 – Minor edits to paragraph 1 and 2

Section 10.03.1 – Minor edits to paragraph 3 and 4

Section 10.03.1.1 – Minor edits to paragraph 1

Section 10.03.3.1 – Minor edits to paragraph 2

Section 10.03.4.3 – Minor edits to paragraph 2

Section 10.03.6 – Minor edits to paragraph 1

Section 10.04.2.3 – Added 2<sup>nd</sup> paragraph

Section 10.04.4.2 – Added paragraph 4

Section 10.04.4.3 – Edits to paragraph 2

Section 10.04.5 – Edits to paragraph 3

Section 10.04.6.2 – Edits to paragraph 1 and 2

Section 10.05.1 – Edits to paragraph 2

Section 10.05.1.1 – Edits to paragraph 1 and 2

Section 10.05.1.3 – Edits to paragraph 1

Section 10.05.2 – Additional paragraph added to item 3 and edits to item 5

Section 10.05.2.1 – Added entire section

Section 10.05.2.2 – Added entire section

Section 10.05.03 – Edits to paragraph 1

Section 10.05.3.2 – Edits to paragraph 2 and 4

Section 10.05.3.4 – Edits to entire section

Section 10.06 – Edits to entire section

Section 10.06.1 – Edits to paragraph 1

Section 10.06.2 – Added paragraphs throughout section

Section 10.06.2.1 – Edits to paragraph 1 and 2

Section 10.06.2.2 – Added entire section

Section 10.06.2.3 – Edits to paragraph 1 and 3, added paragraph 2

Section 10.06.2.4 – Edits to paragraph 2  
Section 10.07 – Edits to paragraph 1  
Section 10.08 – Edits to paragraph 2  
Section 10.08.1.1.2 – Minor edits to paragraph 1  
Section 10.08.1.1.4 – Minor edits to paragraph 2, 8, and 9 and bullet in last paragraph  
Section 10.08.1.1.5 – Added sentence to last paragraph  
Section 10.08.1.2.3 – Edits to paragraph 1 and 2  
Section 10.08.1.2.4 – Minor edits to paragraph 4  
Section 10.08.1.2.5 – Added sentence to Step 3  
Section 10.08.1.3.1 – Edits to both paragraphs  
Section 10.08.1.3.2 – Edits and added paragraph  
Section 10.08.1.3.4 – Minor edits to paragraph 3 and 6  
Section 10.08.1.4.3 – Edits to paragraph 2  
Section 10.08.1.4.4 – Minor edits to paragraph 4  
Section 10.08.1.5.3 – Added sentence to make paragraph 2  
Section 10.08.1.5.4 – Minor edits to paragraph 2  
Section 10.08.1.6.2 – Edits to paragraph 1 and added paragraph 4  
Section 10.08.1.6.4 – Minor edits to paragraph 4 and 5  
Section 10.08.1.7.2 – Added paragraph 3  
Section 10.08.1.8.4 – Minor edits to paragraph 1  
Section 10.08.1.9.1 – Minor edits to paragraph 1  
Section 10.08.1.9.4 – Edits to paragraph 2,3,5,8, and 9  
Section 10.08.1.10.4 – Edits to paragraph 1,2,5,8,12, and 14  
Section 10.08.1.11.2 – Edits to paragraph 1  
Section 10.08.1.11.3 – Added paragraph 2  
Section 10.08.1.11.4 – Added information to paragraph 2, edits to paragraph 7  
Section 10.08.1.12.2 – Edits to paragraph 1 and 2  
Section 10.08.1.12.3 – Added sentence to make paragraph 2  
Section 10.08.1.12.4 – Minor edits to items E and F and paragraph 7  
Section 10.08.1.12.5 – Minor edits to paragraphs 1 and 8  
Section 10.08.1.14.1 – Minor edits to paragraphs 1 and 2  
Section 10.08.1.14.2 – Minor edits to paragraph 2  
Section 10.08.1.14.3 – Added first sentence and edits to paragraph 3  
Section 10.08.1.14.4 – Edits to paragraph 1, 3, and 12  
Section 10.08.1.14.5 – Edits to paragraph 1, and 4  
Section 10.08.1.16.2 – Added information to paragraph 1  
Section 10.08.1.18.4 – Minor edits to paragraph 1  
Section 10.08.1.18.5 – Minor edits to paragraph 1  
Section 10.08.2 – Minor edits to paragraph 2  
Section 10.08.2.1.3 – Added paragraph 2  
Section 10.08.2.1.4 – Additional info added to paragraph 11  
Section 10.08.2.2 – Added caption  
Section 10.08.2.2.3 – Added info to paragraph 1 and 3  
Section 10.08.2.2.4 – Added paragraph 9  
Section 10.08.2.3.4 – Edits to paragraphs 2, 3, and 4  
Section 10.08.2.4.1 – Minor edits to paragraph 1  
Section 10.08.2.4.4 – Minor edits to paragraphs 4, 5, and 6  
Section 10.08.2.4.5 – Minor edits to paragraph 2  
Section 10.08.2.6.2 – Minor edits to paragraph 2  
Section 10.08.2.6.3 – Edits to paragraph 1  
Section 10.08.2.6.4 – Edits to paragraphs 2, 3, 10, and 12  
Section 10.08.2.6.5 – Added sentence to Step 3  
Section 10.08.2.7.3 – Minor edits to paragraph 1  
Section 10.08.2.8.2 – Minor edits to paragraph 2  
Section 10.08.2.8.4 – Minor edits to paragraph 15  
Section 10.08.2.8.5 – Added sentence to end of section  
Section 10.08.2.9.4 – Minor edits to paragraph 3 and 8  
Section 10.08.2.9.5 – Added sentence to end of section  
Section 10.08.2.10.3 – Edits to paragraphs 1 and 2  
Section 10.08.2.10.5 – Added sentence to end of section  
Section 10.08.2.11.1 – Minor edits to paragraph

Section 10.08.2.11.4 – Added information to paragraph 2  
Section 10.08.2.11.5 – Minor edits to paragraph 1 and added sentence to end of section  
Section 10.08.2.12 – Re-worked and reorganized significant portion of entire section for new NPDES requirements including new requirement for floating outlet structure.  
Section 10.08.2.13.5 – Added sentence to Step 2  
Section 10.08.2.14.1 – Minor edits to paragraph 1  
Section 10.08.2.14.4 – Minor edits to paragraph 6  
Section 10.08.2.14.5 – Added sentence to Step 3  
Section 10.08.2.15.4 – Miscellaneous edits throughout section  
Section 10.08.2.17.4 – Miscellaneous edits throughout section  
Section 10.08.2.17.5 – Miscellaneous edits throughout section  
Section 10.08.2.18.5 0 Minor edits in paragraph 1  
Section 10.09.1.1 Appendix – Minor edits in Figure 10A-3 Sediment Control Measures table  
Section 10.09.3 Appendix – Added items and miscellaneous edits throughout Glossary  
Section 10.09.4 Appendix – Added items to References  
Section 10.09.5 Appendix – Added items to Abbreviations

## **Chapter 11**

Chapter 11 Table of Contents – Updated page numbers for Section 11.08.1.4 thru 11.08.1.8  
Section 11.04.1.2 – Minor terminology change in last section  
Section 11.06.2.3 – Minor terminology changes to paragraph 2, on page 11-81  
Section 11.08.1.7.4 – Revised dimension locations in Figure 11HC-12  
Section 11.08.2.7.4 – Minor edits to first paragraph  
Section 11.09.3 Appendix – Added Exceptional Tennessee Waters to Glossary

ARH:mwc



**STATE OF TENNESSEE  
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NASHVILLE, TENNESSEE 37243-1402**

**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 11-01**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Ali R. Hangul, C.E. Manager 1  
Standards and Guidelines Section

**DATE:** May 25, 2011

**SUBJECT:** Addition of Chapter 11 and Revision to Chapter 5 of the Design Division Drainage Manual

Chapter 11, Natural Stream Design, has been added to the Design Division Drainage Manual and is effective as of the date of this memo.

Chapter 5 of the Design Division Drainage Manual was revised on May 15, 2010 and is effective as of the date of this memo. The revisions are as follows:

- Chapter 5
  - Section 5.01 – Added reference to Chapter 11 & updated terminology
  - Section 5.02 – Updated terminology
  - Section 5.03 – Updated terminology
  - Section 5.03.1 – Updated terminology
  - Section 5.03.4 – Updated terminology
  - Section 5.03.4.1 – Updated terminology
  - Section 5.04 – Added reference to Chapter 11 & updated terminology
  - Section 5.04.1 – Updated slope data for low volume roads terminology
  - Section 5.04.5 – Updated terminology
  - Section 5.04.6.3 – Updated terminology
  - Section 5.04.7.1.1.2 – Updated Section Name and terminology. Revised description of ECB types
  - Section 5.04.7.1.1.3 – Updated Section Name and terminology
  - Section 5.04.7.1.1.4 – Updated terminology
  - Section 5.04.7.1.1.5 – Updated terminology
  - Section 5.04.7.1.2 – Updated terminology
  - Section 5.04.7.2 – Revised shear stress for sod, seeded grasses, and turf reinforcement mats and updated terminology
  - Section 5.05 & all subsections – Updated Section Name and terminology. Added reference to Chapter 11
  - Section 5.06 - Updated terminology
  - Section 5.06.1.2 - Updated terminology
  - Section 5.06.1.3.2 - Updated terminology
  - Section 5.06.1.3.6 - Updated terminology
  - Section 5.06.2 – Updated Section Name and terminology. Added reference to Chapter 11
  - Section 5.08.1 – Revised Figure 5A-1, Table 5A-6, Table 5A-7, Table 5A-13, Table 5A-14, Table 5A-15, Table 5A-16, Table 5A-17, Table 5A-18

ARH:jbs



**STATE OF TENNESSEE  
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NASHVILLE, TENNESSEE 37243-0348**

**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 10-01**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Ali R. Hangul, C.E. Manager 1  
Standards and Quality Assurance Section

**DATE:** June 21, 2010

**SUBJECT:** Revision to Chapters 2, 4, 5, 6, 7, 9, 10 of the Design Division Drainage Manual

Chapters 2, 4, 5, 6, 7, 9, and 10 of the Design Division Drainage Manual were revised on January 1, 2010 and are effective as of the date of this memo. The chapters have been revised as follows:

- Chapter 2
  - Section 2.02.3.1 – Added evaluation “for the potential to impact downstream systems” to the drainage design process
- Chapter 4
  - Section 4.04.2.1 – Removed TDOT Regression Equations, Updated the USGS Regression Equations
  - Section 4.04.2.2 – Minor Revisions
  - Section 4.04.2.2.1 – Added Section
  - Section 4.04.2.2.2 – Added Section
  - Section 4.04.5.3 – Revised TR-20 to TR-55
  - Section 4.05 – Removed reference to HYDRAIN, Added TDOTV203 and Stream stat USGS WRIR03-4176, and Revised TR-20 to TR-55
  - Section 4.06.2.1.1 – Revised table numbers
  - Section 4.06.2.1.2 – Revised table numbers
  - Section 4.06.2.1.3 – Removed reference to HYDRAIN
  - Section 4.06.2.2.1 – Revised table numbers
  - Section 4.06.4 – Removed reference to HYDRAIN
- Chapter 5
  - Section 5.07 – Removed reference to HYDRAIN
  - Section 5.07.2 – Deleted section
  - Section 5.07.3 – Renamed to 5.07.2
- Chapter 6
  - Section 6.03.2.1 – Added evaluation “for the potential to impact downstream systems” to the drainage design process
  - Section 6.04.2 – Added PVC Pipe
  - Section 6.04.2.4.3 – Added PVC Pipe
  - Section 6.04.3.1.3 – Added PVC Pipe

- Section 6.04.3.3 – Revised HEC-14 reference
- Section 6.06 – Removed reference to HYDRAIN and HYCULV
- Section 6.06.3 – Removed reference to HYDRAIN
- Section 6.06.4 – Deleted section
- Section 6.06.5 – Renamed to 6.06.4. Update for HY-8 version 7.1
- Section 6.07.1 – Added PVC to Tables 6A-3, 6A-4, 6A-5, and 6A-6
- Section 6.07.2.2 – Revised Example Problem #2 for HY-8 version 7.1
- Section 6.07.2.4 – Revised Example Problem #4 for HY-8 version 7.1
- Section 6.07.2.5: Deleted section
- Chapter 7
  - Section 7.03 – Minor Revisions and Added Footnote 4 to Table 7-1
  - Section 7.03.4.1 – Minor Revisions
  - Section 7.03.4.2 – Minor Revisions
  - Section 7.03.6 – Minor Revisions, Added PVC
  - Section 7.04.5.1 – Minor Revisions, Added PVC to Table 7-9
  - New Section – Added Section 7.04.6
  - New Section – Added Section 7.04.6.1
  - New Section – Added Section 7.04.6.1.1
  - New Section – Added Section 7.04.6.2
  - New Section – Added Section 7.04.6.2.1
  - New Section – Added Section 7.04.6.2.2
  - New Section – Added Section 7.04.6.2.3
  - New Section – Added Section 7.04.6.3
  - New Section – Added Section 7.04.6.3.1
  - New Section – Added Section 7.04.6.3.2
  - New Section – Added Section 7.04.6.3.2.1
  - New Section – Added Section 7.04.6.3.2.2
  - New Section – Added Section 7.04.6.3.2.3
  - New Section – Added Section 7.04.6.3.3
  - Section 7.04.6 – Renamed to 7.04.7
  - Section 7.04.6.1 – Renamed to 7.04.7.1
  - Section 7.04.6.2 – Renamed to 7.04.7.2
  - Section 7.04.6.3 – Renamed to 7.04.7.3
  - Section 7.04.6.4 – Renamed to 7.04.7.4
  - Section 7.04.6.5 – Renamed to 7.04.7.5
  - Section 7.04.7 – Renamed to 7.04.8
  - Section 7.05 - Removed reference to HYDRA
  - Section 7.05.1 – Deleted Section
  - Section 7.05.2 – Renamed to 7.05.1
  - Section 7.05.3 – Renamed to 7.05.2. Removed reference to operating systems
- Chapter 9
  - Section 9.03.3.2 – Minor Revisions
  - Section 9.04.2.2.1 – Minor Revisions
  - Section 9.04.2.2.5 – Minor Revisions
  - Section 9.05.1 – Removed reference to HYDRAIN, Removed version number for Windows based HY-8
  - Section 9.05.2 – Deleted Section
  - Section 9.06.1 – Deleted Figure 9A-8
  - Section 9.06.1 – Renamed Figure 9A-9 to 9A-8
  - Section 9.06.2.2 – Revised based on updated procedures in HEC-14
- Chapter 10
  - Section 10.04.3.1 – Minor Revisions
  - Section 10.04.3.2 – Minor Revisions

- Section 10.04.4.1 – Minor Revisions
- New Section - Added Section 10.04.6.2
- Section 10.05.1 – Minor Revisions
- Section 10.05.1.2 – Minor Revisions
- Section 10.05.1.3 – Minor Revisions
- Section 10.05.2 – Minor Revisions
- Section 10.05.3 – Minor Revisions, Replace Figure 10-9
- Section 10.05.3.1 – Rearranged Section, Added paragraph for “EPSC Utility Relocation Notes”, Replaced Figure 10-10
- Section 10.05.3.2 – Minor Revisions
- Section 10.05.3.3 – Minor Revisions
- New Section – Added Section 10.05.3.4
- Section 10.06.2.1 – Minor Revisions
- Section 10.08.1.1 – Minor Revision, Added reference to EC-STR-4B
- Section 10.08.1.1.4 – Replaced Figure 10EP-1
- Section 10.08.1.4.5 – Minor Revisions
- Section 10.08.1.12.4 – Minor Revisions
- New Section – Added Section 10.08.1.17
- New Section – Added Section 10.08.1.18
- Section 10.08.2.2.4 – Replaced Figure 10SC-1a and Figure 10SC-1b



**STATE OF TENNESSEE**  
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NASHVILLE, TENNESSEE 37243-0348

**DESIGN DIVISION DRAINAGE MANUAL**  
**REVISION 08-02**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Ali R. Hangul, C.E. Manager 1  
Quality Assurance and Standards Office

**DATE:** May 14, 2008

**SUBJECT:** Revision to Chapter 10

Effective immediately, the entirety of the Design Division Drainage Manual Chapter 10, "Erosion Prevention and Sediment Control", is revised as follows:

- Revision Date April 1, 2008
- Revised Section Titles, Section Numbers and Page Numbers
- Section 10.01 – Minor revisions
- Section 10.02 – Minor revisions
- Section 10.03 – Minor revisions
- Section 10.04 – Minor revisions
- Section 10.05 – Clarification on format of EPSC Plans
- Section 10.06 – Minor revisions
- Section 10.07 – Minor revisions
- Section 10.08.1 –
  - Revised EPSC Device Names
  - Revisions for clarification
  - Revisions of Data to be added to EPSC Plans for each EPSC Device
  - Removed "Temporary Straw or Hay Bale Erosion Check (EC-STR-5)
- Section 10.08.2 –
  - Revised EPSC Device Names
  - Revisions for clarification
  - Revisions of Data to be added to EPSC Plans for each EPSC Device
  - Removed "Temporary Filter Barrier (EC-STR-3A)
  - Removed "Rock Silt Screen" (EC-STR-11)
  - Removed "Temporary Sediment Trap with Gabion Check Dam (EC-STR-60)
  - Added Section 10.08.2.6 "Enhanced Rock Check Dam" (EC-STR-6A)
  - Added Section 10.08.2.8 "Filter Sock" (EC-STR-8)
  - Added Section 10.08.2.9 "Culvert Inlet Protection" (EC-STR-11 & 11A)
- Section 10.08.3 –
  - Revisions for clarification
  - Revisions of Data to be added to EPSC Plans for each EPSC Device
  - Revised Section 10.08.3.2.5 Example Application
  - Added Section 10.08.3.3 "Level Spreader" (EC-STR-61)
- Section 10.09 –
  - Revised Figure 10A-2
  - Revised Figure 10A-3
  - Revised Figure 10A-4
  - Minor Edits to Table 10A-3 thru Table 10A-12
  - Minor Edits to Section 10.09.3 Glossary
  - Minor Edits to Section 10.09.4 References



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**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 08-01**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Ali R. Hangul, C.E. Manager 1  
Quality Assurance and Standards Office

**DATE:** March 31, 2008

**SUBJECT:** Revision to Chapter 7

Effective immediately, the entirety of Chapter 7, "Storm Drainage Systems", is revised to include section 7.03.3.4 "**Use of Longitudinal Drains**". Please refer to the IB 08-05 for the new standard drawing D-TD-1, "Trench Drain".

Attachment



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
DESIGN DIVISION  
NASHVILLE, TENNESSEE 37243-0350**

**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 07-01**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Mr. Ali Hangu  
CE Manager I

**DATE:** March 15, 2007

**SUBJECT:** Revisions to Chapter 6, 7 and 8.

Effective March 15, 2007, the subject chapters of the drainage manual are revised to include the use of HDPE Pipe as a drainage structure. Chapter 8 is revised to include the requirements for detention pond criteria.

Attachment

**LOCATIONS WHERE UPDATES HAVE BEEN MADE TO THE TDOT DESIGN  
DIVISION DRAINAGE MANUAL:**

**CHAPTER 6**

CHANGES MADE TO INCLUDE HDPE PIPE CRITERIA:

- 6.04.1.1.1.4 NON-LINEAR "BROKEN BACK" ALIGNMENTS
- 6.04.1.2 MULTIPLE OPENINGS
- 6.04.3.1.3 END TREATMENTS FOR CULVERTS UNDER PRIVATE DRIVES

Appendix, Table 6A-1  
Appendix, Table 6A-3  
Appendix, Table 6A-6

OTHER CHANGES:

- 6.01 INTRODUCTION
- 6.03.1 WATERWAY DATA
- 6.04.1.1.1.5 NON-LINEAR ALIGNMENTS FOR VELOCITY CONTROL
- 6.04.2.1 DESIGN FLOOD FLOW RATES
- 6.04.2.2 PIPE SELECTION CRITERIA
- 6.04.2.4.4 ALLOWABLE HEADWATER ELEVATION
- 6.04.3.1.1 END TREATMENTS FOR CULVERTS UNDER MAINLINE
- 6.04.3.4 DEBRIS CONTROL
- 6.05.2 CULVERT SIZING PROCESS
- 6.05.2.2 DETERMINE THE OUTLET CONTROL HEADWATER DEPTH,  $HW_o$
- 6.06 ACCEPTABLE SOFTWARE

Appendix, Table 6A-2  
Appendix, Table 6A-4

**CHAPTER 7**

CHANGES MADE TO INCLUDE HDPE PIPE CRITERIA:

- 7.03.3.4 USE OF LONGITUDINAL DRAINS
- 7.03.4.1 PIPE TYPE AND COVER CRITERIA

OTHER CHANGES:

- 7.03.5.5 PIPE CONNECTIONS TO STRUCTURES
- 7.03.9.2 STORM DRAIN INFORMATION BY PLAN SHEET
- 7.04.5.1 MANNINGS' N-VALUES FOR PIPE MATERIALS

## **CHAPTER 8**

### CHANGES MADE TO INCLUDE REQUIREMENTS FOR DETENTION:

- 8.04.1 INTRODUCTION (GUIDELINES AND CRITERIA)
- 8.04.2 HYDROLOGIC AND HYDRAULIC CONSIDERATIONS (New Title)
- 8.04.2.1 EVALUATION CRITERIA (New Section)
- 8.04.2.2 RELEASE RATE AND TIMING (Section Re-Numbered)

### CHANGES RELATED TO HDPE PIPE:

- 8.04.6.3.1 MATERIALS
- 8.04.6.3.2 CONSTRUCTION CONSIDERATIONS
- 8.04.6.4.1 ANTI-SEEP COLLARS

### OTHER CHANGES:

- 8.01 INTRODUCTION
- 8.02.1 MAINTENANCE NOTE ON PLANS (New Section)
- 8.04.4 GRADING AND DEPTH
- 8.04.4.1 GENERAL RECOMMENDATIONS (GRADING AND DEPTH)
- 8.04.4.3 DETENTION REQUIREMENTS
- 8.04.4.4 RETENTION REQUIREMENTS
- 8.04.5.1 GENERAL CONSIDERATIONS (EMBANKMENTS)
- 8.04.5.3 EMBANKMENT HEIGHT AND FREEBOARD
- 8.04.5.4 TOP WIDTH
- 8.04.5.6 EMBANKMENT SEEPAGE
- 8.04.6.4.2 FILTER AND DRAINAGE DIAPHRAGMS
- 8.04.6.5 DEBRIS CONTROL AND SAFETY GRATES
- 8.04.6.7 OUTLET PROTECTION
- 8.04.7.3 COMPONENT LAYOUT AND CROSS SECTION
- 8.04.7.5 PERMISSIBLE VELOCITIES
- 8.05.5.1 NATURAL BASIN VOLUMES
- 8.05.6 STAGE-DISCHARGE CURVE
- 8.05.7.2.2 BROAD-CRESTED WEIRS
- 8.05.8 MULTI-STAGE RISER DESIGN
- 8.05.9.1 STORAGE INDICATION METHOD
- 8.06.4 CONTROL STRUCTURES
- 8.06.6 INSECT AND ODOR CONTROL



STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
Nashville, Tennessee 37243-0348

**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 06-03**

**To:** TDOT Design Division Drainage Manual Users  
**From:** *MA* Michael Agnew, Assistant Director, Design Division  
**Date:** August 1, 2006  
**Subject:** Revisions to Chapter 10 (Erosion Prevention and Sediment Control)

**Comments:** Dates of all sheets in Chapter 10 revised to August 1, 2006. The Design Division Drainage Manual is revised as follows:

**Index**

1. Added Chapter 10 and Chapter 10 Appendix to index. (4 sheets)

**Chapter 10**

1. Added sections 10.08.2.13.1 through 10.08.2.15.5.
2. Added sections 10.08.2.18 through 10.08.2.18.5.

**Chapter 10 Addendix**

1. Revised Figure 10A-3 (2of3) and (3of3).

MA:ma



STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
Nashville, Tennessee 37243-0348

**DESIGN DIVISION DRAINAGE MANUAL  
REVISION 06-02**

**To:** TDOT Design Division Drainage Manual Users  
**From:**  Jeff C. Jones, Civil Engineering Director, Design Division  
**Date:** June 1, 2006  
**Subject:** Addition of Chapter 10 (Erosion Prevention and Sediment Control)

**Comments:** Revision date June 1, 2006. The Design Division Drainage Manual is revised as follows:

**Chapter 10**

1. Added chapter to the manual.

**Chapter 10 Appendix**

1. Added appendix to the manual.

JCJ:MA:ma



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
NASHVILLE, TENNESSEE 37243-0350**

**MENORANDUM**

**TO:** TDOT Design Division Drainage Manual Users

**FROM:** Mr. Ali R. Hangul, P.E., CE Manager I  
Design Office

**DATE:** February 1, 2006

**SUBJECT:** Revised TDOT DESIGN DIVISION DRAINAGE MANUAL

**Comments:** Effective date January 1, 2006. The Drainage Manual is revised as follows:

**Title Sheet**

Updated Manual date to January 1, 2006.

**Master Table of Contents**

Revised page numbers where necessary for all revisions noted herein. Updated date in header.

**Chapter 1**

Performed minor text edits and formatting changes to make chapter more consistent with later chapters. Updated date in header.

**Chapter 2**

Performed minor text edits and formatting changes to make chapter more consistent with later chapters. Updated date in header.

**Chapter 3**

Performed minor text edits and formatting changes to make chapter more consistent with later chapters. Updated date in header.

## **Chapter 4**

Performed minor text edits and formatting changes to make chapter more consistent with later chapters. Updated date in header. The Table of Contents has been modified to reflect the changes noted below.

Section 4.04.1.1: Minor revisions to both paragraphs in this section.

Section 4.04.1.1: Revised the paragraph in this section to reflect the new IDF zones and curves developed and placed in the chapter Appendix.

Section 4.04.2.1: Revisions to text in both paragraphs of this section. The equations in Table 4-4 have been updated to the 2000 USGS Rural Regression Equations, adopted in 2003. The drainage area limitations in Table 4-5 have been modified to reflect the latest USGS recommendations. There are now two sets of equations for Hydrologic Area 3; one for areas less than 30.2 square miles, and one for areas larger. Only the equations for areas less than 30.2 square miles have been incorporated into the Manual.

Section 4.05: The reference to the National Flood Frequency (NFF) program has been updated to reflect it is no longer a part of the HYDRAIN software package. Revised parts of Table 4-11.

## **Chapter 4 Appendix**

Performed minor text edits and formatting changes to make the Appendix more consistent with later chapters. Updated date in header. The page numbers in the Table of Contents have been modified to reflect the changes noted below.

- Figure 4A-1 has been updated to show the new IDF zones.
- Previous Figures 4A-2 through 4A-5 have been replaced with 10 new IDF curves as Figures 4A-2 through 4A-11. The numbers of the other figures in the Appendix have been adjusted accordingly.
- Previous Figure 4A-6 has been replaced with new Figure 4A-12.
- The Time of Concentration and Curve Number worksheets have been updated and recreated.
- Previous Figure 4-4 was moved to the Appendix as Figure 4A-15.
- Figure 4A-16, Tennessee Physiographic Regions, was added to the document for reference.
- The previous 24-hour rainfall curves presented as Figures 4A-25 through 4A-31 have been replaced with Tables 4A-5 through 4A-10, which are now County specific.
- New Table 4A-11 has been added to the chapter Appendix and is referenced in Section 4.04 of the chapter text.

Section 4.06.2.1.1: The sample problem has been updated to reflect the new IDF curves.

Section 4.06.2.1.2: The sample problem has been updated to reflect the new IDF curves.

Section 4.06.2.1.3: The sample problem has been updated to reflect the new IDF curves. The reference has been corrected to show the new publication data. The HYDRO computer program run has been re-run with the new IDF values.

Section 4.06.2.2.1: The regression equations used in the sample problem have been updated along with the result. Also, the NFF computer program run has been updated and revised using the new Windows-based program published by USGS.

Section 4.06.2.2.2: The 2-yr/24-hr rainfall depth used in the regression equation has been updated. The NFF run was also converted to the new version of the program.

Section 4.06.2.2.3: The sample problem has been deleted since the Regression Equations developed specific to Shelby County are no longer acceptable on TDOT projects.

Section 4.06.4: A number of corrections and updates were made to the references. Additionally, a Glossary of Terms has been added to the chapter Appendix.

## **Chapter 5**

Performed minor formatting edits. Updated date in header. The page numbers in the chapter Table of Contents and MASTER Table of Contents have been modified to reflect the changes noted below.

The following general additions, updates and/or revisions were made to Chapter 5:

- Added Channel Liner Selection Methodology to text
- Update and Additions to miscellaneous other Sections
- Added/Updated Figure 5A-1 Flow Chart of Selection Process
- Added new Tables 5A-13 thru 5A-21. Rearranged and renumbered others.
- Updated entire Chapter and Appendix text to reflect the revised figure and table numbers
- Updated Table of Contents and Sample Problems to reflect all of these changes
- Added TRM information and selection guide

Section 5.04.3 Ditch Grade: 3<sup>rd</sup> Paragraph revised

Section 5.04.7.1.2 RIPRAP: Added a 3<sup>rd</sup> paragraph & deleted part of 4<sup>th</sup> paragraph

Section 5.04.7.1.5 WIRE-ENCLOSED STONE (GABIONS):

Minor edits to the 2<sup>nd</sup> of 2 paragraphs.

Section 5.04.7.2 REQUIRED ANALYSIS LOCATIONS:

Minor edit to the 2<sup>nd</sup> paragraph.

Section 5.05.7.1.3 PRECAST CONCRETE FORMS:

Significant Overhaul of 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs in this section.

Section 5.06.1.2 GENERAL DITCH DESIGN AND ANALYSIS PROCEDURE, Step 9:

Significant overhaul of this step to conform to previously edited section.

Performed minor formatting edits. Updated date in header.

**Chapter 6**

Performed minor formatting edits. Updated date in header.

**Chapter 7**

Performed minor formatting edits. Updated date in header.

Section 7.06.2.1 (Sample Problem 1): The sample problem has been updated to reflect the new IDF data in chapter 4. In addition, Figures 7A-15 and 7A-16 were updated to reflect the new results.

Section 7.06.2.2 (Sample Problem 2): The sample problem has been updated to reflect the new IDF data in chapter 4. In addition, Figures 7A-17 was updated to reflect the new results.

Section 7.06.2.3 (Sample Problem 3): The sample problem has been updated to reflect the new IDF data in chapter 4. In addition, Table 7A-13, as well as Figures 7A-20 and 7A-21 were updated to reflect the new IDF data and results.

**Chapter 8**

Performed minor formatting edits. Updated date in header.

Section 8.06.2.1 (Sample Problem 1): All of the computations, as well as the associated tables and figures were updated to reflect the new IDF data in chapter 4.

**Chapter 9**

Performed minor formatting edits. Updated date in header. No further changes were necessary.