

# ERRATA

## ***Nebraska Department of Transportation Drainage Design and Erosion Control Manual***

### **Appendix C: Pipe Material Policy**

July 2017  
① April 2018

② August 2018

The Drainage Design and Erosion Control Manual (*Drainage Manual*) was issued in August 2006 with Chapter Three and Appendices L through R being issued in September 2013. In the intervening years some design guidance has become obsolete, new/updated guidance has become available, offices of responsibility have changed, design procedures have been streamlined, etc. The NDOT is in the process of updating the *Drainage Manual* but, in the interim, the obsolete/incorrect guidance is being addressed through this document and a re-issued *Drainage Manual*. Page numbers cited in this document are referenced to the August 2018 Errata Drainage Manual. Deleted text in the August 2018 Errata Drainage Manual is in green with a strike through (~~errata~~) and new/corrected text is in red (**correct**). The following chapters have already been addressed:

- ② Contents (updated in August 2018)
- ② List of Exhibits (updated in August 2018)
- ① Chapter Three: Stormwater Treatment (updated on April 20, 2018)
- ② Index (updated in August 2018)

The following items pertain to the entire manual:

- July 2017 and all subsequent changes – Chapter and EXHIBIT citations have been updated to the latest edition of the *Drainage Manual*
- All references to the **Nebraska Department of Roads (NDOR)** have been changed to the **Nebraska Department of Transportation (NDOT)**
- Slope designation has been changed from horizontal to vertical (3:1) to vertical to horizontal (1:3)
- All references to Treatment Best Management Practices (BMPs) are now Stormwater Treatment Facilities (STFs)
- Links to web sites have been updated as required

Page	Existing Text	Corrected Text
Appendix C	<b>Updated to the FHWA Approved 4/18/14 version</b>	
C1	<b>PIPE MATERIAL POLICY</b> – “Policy: This policy will replace all previous policies regarding the selection of pipe material for cross drains, drive pipe, drop pipe, storm sewers, and railroad pipe (refer to the Commentary on page A-7 for supplementary information).”	“Policy: This policy will replace all previous policies regarding the selection of pipe material for cross drains, drive pipe, drop pipe, storm sewers, and railroad pipe.”
C-2	<b>HDPE</b> - “HDPE-SI (Smooth Interior)”	“HDPE-SI (Smooth Interior), including Steel Reinforced Ribbed Pipe”
C-3	<b>MINIMUM AND MAXIMUM FILL HEIGHTS</b> – “Refer to Attachment 2, along with the appropriate Special Plans, for guidelines in specifying various types of pipe.”	“Refer to Attachment 2, along with the appropriate Standard Plans, for guidelines in specifying various types of pipe.”
C-3	<b>EXCAVATION, BEDDING, AND BACKFILL REQUIREMENTS</b> – “Refer to Special Plan 4110, “Bedding and Backfill Requirements for Concrete Pipe” for installation details. Special Plan 4110, Sheet 4, “Bedding and Backfill Requirements for MCCMP, PCCMP, and Plastic Pipe”, shows details for installing flexible pipe.”	“Refer to Standard Plan 4110e00 (4110), “Bedding and Backfill Requirements for Concrete Pipe” (add web site) for installation details. Standard Plan 4110, Sheet 4, “Bedding and Backfill Requirements for MCCMP, PCCMP, and Plastic Pipe”, shows details for installing flexible pipe.”
C-4	<b>EXCAVATION, BEDDING, AND BACKFILL REQUIREMENTS</b> – “On trench installations, the trench width depends on the outside diameter of the pipe and the side clearance requirement on each side of the pipe as shown on the Special Plans.”	“On trench installations, the trench width depends on the outside diameter of the pipe and the side clearance requirement on each side of the pipe as shown on the Standard Plans.”

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C-4	<b>EXCAVATION, BEDDING, AND BACKFILL REQUIREMENTS</b> – “On embankment installations, where the flowline of the pipe is above the natural ground, the culvert contractor is required to raise the ground along the centerline of the pipe to an appropriate elevation above the flowline (See Special Plan 4110).”	“On embankment installations, where the flowline of the pipe is above the natural ground, the culvert contractor is required to raise the ground along the centerline of the pipe to an appropriate elevation above the flowline (See Standard Plan 4110).”
C-4	<b>TEMPORARY PIPE</b> – “Granular backfill for temporary structures Type 3, 4 or 5 is not required.”	“Granular backfill for temporary structures Type 3, 4 or 5 is not required, unless called for in the plans.”
C-6	<b>Table: Maximum Fill Heights (feet) for Round Concrete Pipe</b> – Type 7 HDPE -SI = 36; Type 8 - PVC =36	Type 7 HDPE -SI = 60; Type 8 - PVC =48
C-6	<b>Installation Type Table</b> – “The Type 3 Installation (shaded) is the NDOT Standard. See Special Plan 4110 (Bedding and Backfill for Concrete Pipe) for additional information about table development and usage.”	“The Type 3 Installation (shaded) is the NDOT Standard. See Standard Plan 4110 (Bedding and Backfill for Concrete Pipe) for additional information about table development and usage.”
C-6	<b>Maximum Fill Heights for Flexible Pipe</b> – “The maximum dead load fill height for HDPE, PVC, and CMP is set at 40 feet, using the bedding and backfill requirements as shown in Special Plan 4110.”	“The maximum dead load fill height for HDPE, PVC, and CMP is set at 40 feet, using the bedding and backfill requirements as shown in Standard Plan 4110 (add web site).”

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C-7	<b>Cross Drain and Intersection Footnotes:</b>	Add new first bullet <ul style="list-style-type: none"> <li>• “Corrugated metal pipe will not be permitted in the southeast counties of Gage, Nemaha, Richardson, Pawnee, Johnson, Otoe or any other locations that are designated by M&amp;R as unsuitable for corrugated metal pipe.”</li> </ul>
C-8	<b>COMMENTARY</b> – “Following is a summary of the major changes, additions and improvements incorporated in the 1997 Pipe Material Policy.”	Remove this text.
C-8	<b>Plastic Pipe</b> – “Past policy and Specifications limited the use of plastic primarily for driveway, underdrain and sewer applications. As a result of research and field testing, the use of plastic pipe (HDPE and PVS) has been broadened to include roadway cross drain as well as other drainage applications. The new Special Plans for flexible pipe show: installation, material, and backfill requirements.”	“Plastic pipe (HDPE and PVC) may be used for driveway, underdrain, sewer and roadway cross drain as well as other drainage applications. The Standard Plans for flexible pipe show: installation, material, and backfill requirements.”
C-8	<b>Pipe Installations under Pavement</b> – “In order to extend the design life (by improving structural performance, reducing settlement and joint movement etc.) of surfaced roadways, improved cross section details for all pipes (concrete, metal and plastic) have been developed.”	“In order to extend the design life (by improving structural performance, reducing settlement and joint movement etc.) of surfaced roadways, cross section details for all pipes (concrete, metal and plastic) have been developed.”

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C-8	<p><b><u>Pipe Installations under Pavement</u></b> – “In order to extend the design life (by improving structural performance, reducing settlement and joint movement etc.) of surfaced roadways, improved cross section details for all pipes (concrete, metal and plastic) have been developed.”</p>	<p>“In order to extend the design life (by improving structural performance, reducing settlement and joint movement etc.) of surfaced roadways, cross section details for all pipes (concrete, metal and plastic) have been developed.”</p>
C-8	<p><b><u>Pipe Installations under Pavement</u></b> – “New Special Plans for concrete pipe installations have been developed in order to provide more options for the designer, contractor, and pipe manufacturer in regard to pipe class selection and installation. Under this policy, the contractor will be allowed to select the type of installation, and class of pipe based upon available fill height information shown on the plans. Previous specifications required the culvert contractor to place concrete pipe upon a carefully shaped trench bottom. The new plans provide more options for bedding and backfill in order to utilize different classes of pipe, or to reduce labor during installation.”</p>	<p>Remove this text</p>

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C-8	<p><b><u>Pipe Installations under Pavement</u></b> – “NDOR concrete pipe design procedures are currently being upgraded in order to take advantage of concrete pipe computer programs such as SIDD and PIPECAR. These programs are already being used by the concrete pipe industry, and are acceptable programs developed through the efforts on ANSI, FHWA, and the Concrete Pipe Association. The new Special Plans for concrete pipe incorporate detailing to support and complement these industry accepted programs.”</p>	Remove this text.
C-8	<p><b><u>Pipe Installations under Pavement</u></b></p>	<p>Added text: “Standard Plans for concrete pipe installations have been developed using computer programs such as SIDD and PIPECAR (<i>such programs have been created through the efforts of organizations as ANSI, FHWA and the Concrete Pipe Association</i>). These plans provide options for the designer, contractor, and pipe manufacturer in regard to pipe class selection and installation. Under this policy the contractor will be allowed to select the type of installation and class of pipe based upon available fill height information shown on the plans. In addition, the requirements shown for bedding and backfill eliminate previous requirements for shaping the trench bottom to fit the contour of the pipe”</p>
C-9 to C-12	Remove Exhibits	Use Standard Plan 4110 as found on the NDOT web site