

Technical Memorandum

From: Candice A. Owen, P.E.; CFM, Stormwater Quality Manager

Subject: Underdrain Pipe Specification Criteria Update

Date: November 20, 2025

Purpose

The purpose of this memorandum is to provide the basis for changing the underdrain specifications in the Urban Storm Drainage Criteria Manual (USDCM), Volume 3, Chapter 4 (V3C4). The change that will be reflected in the USDCM is intended to provide additional flexibility in design and material selection while meeting the needs of the underdrain component.

Background

Following the 2024 update to V3C4, Mile High Flood District (MHFD) received feedback that the revised underdrain specification—particularly the required range of open area per linear foot—may be overly restrictive. This results in difficulty procuring compliant underdrain pipe within Colorado.

To evaluate these concerns, MHFD solicited input from designers and local governments regarding their experience with the underdrain pipe specified in the USDCM prior to the update in 2024. Examples of clogging, poor performance, or other operational issues related specifically to the underdrain were not identified. Both designers and local governments confirmed that sourcing pipe meeting the 2024 specification has been challenging and expressed support for returning to a broader, more flexible specification.

In addition, MHFD reviewed underdrain criteria from other jurisdictions nationwide including North Carolina, Minnesota, New York City, Philadelphia, Portland, Seattle, and Virginia. This review found that the 2024 USDCM specification required a greater open area per linear foot than nearly all other manuals—exceeded by only one.

Updated Specification

The following table summarizes the planned revisions to Table 4-6 and Figure 4-3 in V3C4:



Criteria	Current V3C4	Planned Update to V3C4
Table 4-6 - Number of slots per row	Min = 4, Max = 6	No specification
Table 4-6 - Length of solid wall between slots at inner diameter, inches	Min = 1.0, Max = 2.0	No specification
Table 4-6 - Slot width, inches	Min = 0.060, Max = 0.100	Min = 0.031, Max = 0.100
Table 4-6 - Spacing between rows, inches	Min = 0.25, Max = 1.0	No specification
Table 4-6 - Rows per lineal foot	Min = 11, Max = 36	No specification
Table 4-6 - Open area per linear foot (square inches)	6.0 to 20.0	1.9 to 20.0
Figure 4-3	Graphic	Delete

Note: No changes are being made to the filter sand and gravel drain layers material specifications.

The context of the filtration stormwater control measure should be considered when selecting underdrains including right-of-way installations and larger facilities that may require heavy equipment in the basin for maintenance.

This update specifically allows for the Contech A-2000 pipe that is readily available in Colorado. Additional pipe suppliers that can meet the updated (and previous) specification include but are not limited to Titan (Bakersfield, CA) and Johnson Screens (Nebraska).

Please refer to this memorandum to specify underdrain pipe until the update is made. The remainder of underdrain specifications related to pipe material, orifice sizing, and cleanouts will remain as currently presented in the USDCM.

