

ADOPTED BY THE
MAYOR AND COUNCIL

January 5, 2021

RESOLUTION NO. 23289

RELATING TO THE ADOPTION OF THE “PIMA COUNTY REGIONAL FLOOD CONTROL DISTRICT DESIGN STANDARDS FOR STORMWATER DETENTION AND RETENTION MANUAL” AND TECHNICAL STANDARDS MANUAL TEXT AMENDMENT; AND SETTING AN EFFECTIVE DATE.

WHEREAS, the City of Tucson (“City”) desires to make text amendments to the UDC Technical Standards Manual to adopt the updated “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention Manual” (June 2014 First Edition, Rev. February 2015), with local amendments, to replace the “Pima County Department of Transportation & Flood Control District City of Tucson Stormwater Detention/Retention Manual” (Circa 1987); and

WHEREAS, the current manual has been used by the City of Tucson since 1987 to help regulate drainage discharges from new developments; and

WHEREAS, the Pima County Flood Control District modified this manual in 2014 and has requested that the City adopt this latest version to standardize drainage design requirements for the region; and

WHEREAS, the Mayor and Council acting in its capacity as the Floodplain Board of the City of Tucson consent to the adoption of the revised manual and local amendments.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF TUCSON, ARIZONA, AS FOLLOWS:

SECTION 1. The “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention Manual” (June 2014 First Edition, Rev. February 2015) (located at https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Flood%20Control/Rules%20and%20Procedures/Stormwater%20Detention-Retention/dssdr-final-201406-manual.pdf), with local amendments (Attachment A to Communication), is hereby adopted to reflect the amendments used by Pima County to standardize the drainage requirements for the region.

SECTION 2. The various City officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this Resolution.

SECTION 3. If any provision of this Resolution or the application thereof to any person or circumstance is invalid, the invalidity shall not affect other provisions or applications of this Resolution which can be given effect without the invalid provision or circumstance, and to this end, the provisions of this Resolution are severable.

SECTION 4. This Resolution becomes effective immediately upon its adoption by the Mayor and Council and as soon as available from the City Clerk.

PASSED, ADOPTED AND APPROVED by the Mayor and Council of the City
of Tucson, Arizona, January 5, 2021.

MAYOR

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

REVIEWED BY:

CITY ATTORNEY

CITY MANAGER

PG/tl
12/15/20



***Supplement to the Unified Development Code
Adopted – October 9, 2012
Effective – January 2, 2013
Last Revision – April 23, 2019***

SECTION 1: GENERAL PROVISIONS

- 1-01.1.0 Establishment
- 1-01.2.0 Purpose
- 1-01.3.0 Maintenance and Publication
- 1-01.4.0 Enforcement
- 1-01.5.0 Procedure to Establish or Amend the Technical Standards Manual
- 1-01.6.0 Technical Standards Modification Requests

SECTION 2: EXCAVATING & GRADING

SECTION 3: FLEXIBLE LOT DEVELOPMENT - MAXIMUM DENSITY OPTION

SECTION 4: HYDROLOGY

- 4-01.0.0 Commercial Water Harvesting
- 4-02.0.0 Floodplain, WASH and ERZ Standard
- 4-03.0.0 ~~Stormwater Detention/Retention Manual~~ Design Standards for Stormwater Detention and Retention*, with local amendments
- 4-04.0.0 City of Tucson Standards Manual for Drainage Design and Floodplain Management in Tucson, Arizona*

SECTION 5: LANDSCAPING AND SCREENING STANDARDS

- 5-01.0.0 Landscaping and Screening
- 5-02.0.0 Landscape Plant Materials
- 5-03.0.0 Protected Native Plant List

SECTION 4-03.0.0: ~~STORMWATER DETENTION/RETENTION MANUAL~~ DESIGN

STANDARDS FOR STORMWATER DETENTION AND RETENTION

Due to the size and nature of this manual, it is unable to be accommodated within the Technical Standards Manual. The manual is, ~~therefore, printed and bound as an individual booklet and is available as a separate purchase item from the Pima County Transportation and Flood Control District.~~ available online as the June-2014 version of the Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention, June 2014 version (Last Revised February 2015).

City of Tucson Amendments to the Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention, June 2014 version (Last Revised February 2015)

Section 1.1 Purpose

The following paragraph;

1. Require first-flush retention that should be located throughout the development. The retained volume may also be used to meet all or part of the project's detention volume requirement;

Revise to read;

1. Require first-flush retention that may be located throughout the development. The retained volume may also be used to meet part of the project's detention volume requirement;

Section 1.2 Ordinance Overview and Detention Requirements

Section 1.2.2

The following paragraph;

b. New Development located within a Critical Basin must provide a sufficient combination of retention and detention to reduce the post-develop 2-, 10-, and 100- year peak discharge rates to 90% of the pre-developed peak discharge rates. Other reductions may be specified by the Floodplain Administrator

Revise to read;

b. New Development located within a Critical Basin must provide a sufficient combination of retention and detention to reduce the post-develop 2-, 10-, and 100- year peak discharge rates to 85% of the pre-developed peak discharge rates. Other reductions may be specified by the Floodplain Administrator

Add the following paragraph;

c. Properties within the City of Tucson that are currently in undesignated basins, shall be treated as balanced basins

Section 2.4.1 Stormwater Harvesting Basins

The following paragraph;

The maximum effective retention depth is 9 inches. If the basin is sloped, the depressed area may contain internal berms or check dams to pond water in multiple cells with planting areas on the upstream side of the berm. Each cell shall not retain greater than 9 inches of water.

Revise to read;

Without infiltration testing the maximum depth of retention in detention basins is 9 inches. If the basin is sloped, the depressed area may contain internal berms or check dams to pond water in multiple cells with planting areas on the upstream side of the berm. Retention depths greater than 9” require infiltration testing to verify that the draw down time is in accordance with section 4.5

Section 2.5 Retention within Detention Basins

The following paragraph;

Detention basins with uniform side slopes and no terraces may incorporate retention for a maximum depth of 9” below the lowest outlet elevation. The volume provided below the outlet can be counted as retention volume.

Revise to read;

Detention basins with uniform side slopes and no terraces may incorporate retention for a maximum depth of 9 inches below the lowest outlet elevation. The volume provided below the outlet can be counted as retention volume. If infiltration testing is provided, the retained depth may be increased.

The following paragraph

Terraces may be proposed within a detention basin in order to meet riparian habitat or native plant requirements. When vegetated terraces and bioretention areas are proposed, the maximum retention depth may be increase to 18 inches. Section 5.8 contains standards for retention within detention basins.

Revise to read;

Terraces may be proposed within a detention/retention basin in order to meet riparian habitat or native plant requirements Section 5.8 contains standards for retention within detention basins.

Section 3.1 Peak Discharge Rate Reduction Requirements

The following paragraph;

Within a Critical Basin, post-developed peak discharge rates shall not exceed 90% of pre-developed peak discharge rates at the project boundary, unless a different percentage is specified by the Floodplain Administrator.

Revise to read;

Within a Critical Basin, post-developed peak discharge rates shall not exceed 85% of pre- developed peak discharge rates at the project boundary, unless a different percentage is specified by the Floodplain Administrator.

Section 3.2.1 Pre- Developed Conditions

The following paragraph;

The pre-developed conditions peak discharge rates for each return period(Q_{pre-rp}) shall be established using the modeling methods described in the District’s Technical Policy, TECH-015, Acceptable Methods for Determining Peak Discharges, and Technical Policy, TECH-018, Acceptable Model Parameterization for

Determining Peak Discharges, and any other technical policies as specified by the Floodplain Administrator. The District's Technical Policies are available through the Rules and Procedures page of the District's web page.

Revise to read;

The pre-developed conditions peak discharge rates for each return period(Q_{pre-rp}) may be established using the City of Tucson STANDARDS MANUAL FOR DRAINAGE DESIGN AND FLOODPLAIN MANAGEMENT, modeling methods described in the District's Technical Policy, TECH-015, Acceptable Methods for Determining Peak Discharges, and Technical Policy, TECH-018, Acceptable Model Parameterization for Determining Peak Discharges, and any other technical policies as specified by the Floodplain Administrator. The District's Technical Policies are available through the Rules and Procedures page of the District's web page.

Section 4.9.1 Outlet Structure Standards

Add the following as paragraph 8.

8. A bleed pipe or other outlet may be added to the basin provided that its discharge rate and invert elevation meets the requirements of section 9. Unless a waiver has been granted per Section 9, the bleed pipe shall be capped and for maintenance purposes only.

Section 4.13.2 Underground Storage Prohibitions

The following paragraph;

3. Providing first flush retention underground is prohibited

Revise to read;

3. Providing first flush retention underground is prohibited, without prior approval of the Floodplain Administrator

Section 5.8 Retention within a Detention Basin

The following paragraph;

3. A maximum of 9 inches of retention is allowed, unless designed as describe below. The depth is measured from the lowest elevation on the basin floor to the lowest outlet invert elevation

a. The retention depth of up to 18 inches may be allowed if the following conditions are met. See Figure 5.5

Revise to read;

3. A maximum of 9 inches of retention is allowed, unless designed as described below. The depth is measured from the lowest elevation on the basin floor to the lowest outlet invert elevation

a. A retention depth of greater than 9 inches may be allowed if the following conditions are met. See Figure 5.5

The following paragraph;

iv. The remaining 50% of the basin area may be constructed so that the maximum retention depth is 18 inches. This area shall meet the construction requirements of part 1 of this Section.

Revise to Read;

iv. The remaining 50% of the basin shall meet the construction requirements of Part 1 of this section

Section 9 DETENTION WAIVER REQUEST AND PAYMENT OF IN-LIEU FEE

The following section Title;

Section 9 DETENTION WAIVER REQUEST AND PAYMENT OF IN-LIEU FEE

Revise to read;

Section 9 DETENTION/RETENTION WAIVER REQUEST AND PAYMENT OF IN-LIEU FEE

Add the following as the first paragraph;

A waiver for retention may be requested for situations where the volume of retention cannot be contained within the development property or where tests show that the soils have poor infiltration. The waiver may request a reduction in retention volume or the transference of design consideration from retention to detention with a maximum discharge rate of 1-cfs for sites in critical basins or 3-cfs for sites in balanced basins. These maximum discharge rates may be achieved by using a bleed pipe or weir in which the invert of the bleed pipe or weir is a maximum of 6 inches above the basin floor. The waiver may be granted by the engineering reviewer as part of the development review process. The approved waiver request will be included in the Drainage Report or Drainage Statement for the project.

Section 11.2.2 General and Permitting Notes

The following paragraphs;

3. When a project has drainage and grading improvements that are required to mitigate off-site adverse impacts to the proposed development, an As-Built Certification or plan shall be prepared and submitted to the Floodplain Administrator. The As-Built Certification or plan requires approval prior to the issuance of any building permits, except for model home permits and any permits necessary to build drainage infrastructure.

Provide the following Permitting Note to disclose this requirement:

“Prior to issuance of any building permits an As-Built Certification(Plan) of the drainage and grading improvements that are required to mitigate off-site adverse impacts to the project shall be prepared and submitted to the Floodplain Administrator. Upon approval of the as-built plan by the Floodplain Administrator, the hold to issuance of building permits can be removed.”

Revise to read;

3. When a project has drainage and grading improvements that are required to mitigate off-site adverse impacts to the proposed development, an As-Built Certification or plan shall be prepared and submitted to the Floodplain Administrator.

Provide the following Permitting Note to disclose this requirement:

“An As-Built Certification (Plan) of the drainage and grading improvements that are required to mitigate off-site adverse impacts to the project shall be prepared and submitted to the Floodplain Administrator.”

~~For your information, the Table of Contents is included.~~

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SECTION 4-04.0.0: CITY OF TUCSON STANDARDS MANUAL FOR DRAINAGE DESIGN AND FLOODPLAIN MANAGEMENT IN TUCSON, ARIZONA

Due to the size and nature of this manual, it is unable to be accommodated within the Technical Standards Manual. The manual is available online; therefore, ~~printed and bound as an individual booklet and is available as a separate purchase item from the City of Tucson Engineering Division.~~

~~For your information, the Table of Contents is included.~~

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MEMORANDUM

Subject: Adoption of the “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” Technical Standards Manual Text Amendment (Citywide)

Page: 1 of 3

Issue – This is a proposal on a draft text amendment to the Technical Standards Manual to adopt the updated “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” (June 2014 First Edition Rev February 2015), with local amendments, to replace the “Pima County Department of Transportation & Flood Control District City of Tucson Stormwater Detention/Retention Manual” (Circa 1987).

Staff Recommendation – Staff recommends approval of the Technical Standards Manual Text Amendment to adopt the “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” (June 2014 First Edition Rev February 2015), with local amendments (Attachment A).

Background – The “Pima County Department of Transportation & Flood Control District City of Tucson Stormwater Detention/Retention Manual” has been used by the City of Tucson since 1987 to help regulate drainage discharges from new developments. Pima County Flood Control District modified this manual in 2014 (2014 Manual) and has requested that the City adopt this latest version to standardize drainage design requirements for the region. The 2014 manual provides more on-site design guidance for low impact development (LID) practices such as rainwater harvesting. This includes an easier hydrology calculation that describes the “first flush” rainfall as the first half inch of a storm event to be retained on site for use in landscapes areas. First flush retention would be required on all new development and complements the existing rainwater harvesting guidelines.

The development and engineering community have been involved in discussions regarding the adoption of the 2014 manual. Stakeholder meetings occurred as follows;

- 03/21/2019; PDS Technical Stakeholder Committee
- 10/31/2019; PDS Technical Stakeholder Committee
- 05/19/2020; Southern Arizona Home Builders Association
- 06/22/2020; PDS Technical Stakeholder Committee

The primary stakeholder concern was that retention depths over 9” are not allowed in the 2014 manual and that development would therefore need to dedicate a larger area to stormwater requirements. To alleviate this concern, retention depths over 9” will be allowed provided it can be

Adoption of the “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” Technical Standards Manual Text Amendment (Citywide)

shown that the water will infiltrate within a designated time frame. If retention is not possible due to poor infiltration or site constraints, retention requirements may be waived. The waiver may occur as part of the development review process.

Present Consideration(s) – The adoption of the “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” (June 2014 First Edition Rev February 2015), along with additional local amendments to the manual, in order to address stakeholder concerns, keep existing standard reductions at current levels, and allow for design flexibility. The following is summary of those amendments:

- 1) Undesignated basins shall be considered balanced basins. Currently the City has 3 different types of watersheds, critical, balanced and undesignated. In undesignated basins retention may or may not be required depending on the existing parcel size. Removing undesignated basins would require first flush retention for all new development.
- 2) For critical basins, the City currently requires, through detention, a 15% reduction in discharge from pre-developed conditions. The 2014 manual only requires 10%. Given the condition and nature of the existing drainage infrastructure within the City the 15% reduction requirement will be kept for critical basins.
- 3) A waiver may be requested for situations where the volume of retention cannot be contained within the development property or if the soils have poor infiltration. The waiver may request a reduction in retention volume, the transference of design consideration from retention to detention with maximum discharge rate of 1-cfs or 3-cfs depending if the site is located in a critical or balanced basin respectively.
- 4) Areas, including landscaping, used for retention may have depths greater than 9” provided that drawdown times can be met.
- 5) Underground retention is allowed with the approval of the Floodplain Administrator.

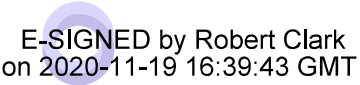
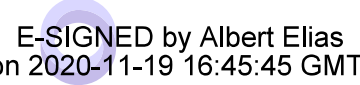
These changes are documented by way of modification to the City’s Unified Development Code, Technical Standards Manual, Section 4 - Hydrology. The 2014 manual complements existing on-site water harvesting standards, contains more consistent requirements, encourage LID and is largely compatible with existing drainage requirements. This update would also be supported in general by the following policies;

- 1) WR3- Expand effective water efficiency and conservation programs for City operations and for the residential, commercial, and industrial sectors
- 2) WR4- Ensure an adequate amount of water to meet the needs of riparian ecosystems
- 3) WR5- Protect groundwater, surface water, and stormwater from contamination.
- 4) WR6- Integrate land use and water resources planning
- 5) WR7- Collaborate on multi-jurisdictional and regional water planning and conservation efforts
- 6) WR8- Integrate the use of green infrastructure and low impact development for stormwater management in public and private development and redevelopment projects

Adoption of the “Pima County Regional Flood Control District Design Standards for Stormwater Detention and Retention” Technical Standards Manual Text Amendment (Citywide)

The full list of specific amendments to the 2014 manual and the Technical Standards Manual are located in Attachment A.

In order to reduce the potential impact this will have on projects currently under design it is recommended that this update effect projects submitted for review after June 1st 2021. With the concurrence of the City of Tucson Planning and Development Services Director and the City of Tucson City Manager, the proposed amendments will be forwarded to the Mayor and Council for their consideration.

Authorized:	 <hr/> Director, PDSD	<hr/> Date
Authorized:	 <hr/> City Manager	<hr/> Date

MO/SC/JVW

PDSD

Attachments:

Attachment A – TSM Detention Retention Manual Updates 07-15-2020