

Town of Thatcher–Public Works Department

DRAINAGE POLICY MANUAL

August 16, 1999

(Revision 0)

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Purpose

The nature of desert storms and the topography in Thatcher necessitate special attention for controlling storm water. Regulatory controls and measures are identified in this Drainage Policy Manual to minimize storm water problems.

Authority

The authority to regulate drainage within the Town of Thatcher comes under Article 29-32, Drainage, of the Town's Ordinance 29: Planning and Zoning.

Contacts

Questions concerning the requirements of this Policy Manual or Ordinance 29 may be addressed to the Town Engineer. Business hours at the Town Hall are from 8:00 a.m. to 5:00 p.m., Monday through Friday. The Town Engineer may be reached by telephone at 520-428-2290, by fax at 520-428-7061, or at the addresses shown below:

Mailing Address

Town of Thatcher
P.O. Box 670
Thatcher, Arizona 85552
Attn: Town Engineer

Physical Address

Town of Thatcher
3700 West Main Street
Thatcher, Arizona 85552
Attn: Town Engineer

General Requirements

Restricted Areas

The Town will not allow builders or developers to construct structures in areas prone to flooding or similar unsuitable areas unless the builder or developer can demonstrate using sound engineering and economic principles that the action is beneficial to the owner and the community.

Retention Required

Retention of onsite flows will be required for all new construction and for improvements exceeding 50% of the market value of the property. The developer may use detention for offsite flows. The Town may require detention of offsite flows depending on circumstances. The Town may allow detention of on-site flows on a case-by-case basis if natural or artificial conveyances capable of accepting flows exist in the vicinity.

No Increase Allowed

Increased flow is permissible in downstream channels within the development boundaries, provided the Developer shall furnish downstream facilities adequate to handle the total flow without adverse effect on other properties. No improvements shall increase the runoff flow rate onto adjoining land.

Easements and Set-asides

Easements must be provided to the satisfaction of the Town. Dedicated service roads may be required to access channels. Green belt set-asides may also be required to preserve natural channels and grades.

Offsite Flows

Unless diversion of water is required to conform to a comprehensive plan for a drainage district, offsite runoff shall be received and discharged approximately at the locations and in the manner which existed prior to development. Should diversion be required, sufficient work shall be done upstream and downstream to provide all affected properties at least the same level of flood protection that existed

prior to the diversion. The developer shall determine any changes in backwater that will be caused by the proposed improvements and any effects the backwater might cause. No work may increase the elevation or velocity of water in channels upstream or downstream of the development.

All drainage facilities other than those accepted for maintenance by the Town shall be maintained by the individual property owner or an entity with assessment powers.

Separation of Flows

Storm drains may not be discharged into irrigation ditches, pipes, or canals. Storm drains may not be discharged into flood relief channels under local and state jurisdiction. Storm drains may not be discharged into sanitary sewers. Storm drains may not be discharged into the wetlands associated with the Gila River without proper permitting under the Army Corps of Engineers and prior approval by the Town Council. Irrigation tail water may not be discharged into storm drains.

Federal Requirements

The engineer shall design drainage and building structures in accordance with local, state, and federal laws related to the National Flood Insurance Program (NFIP). Further, the engineer shall design improvements to be safe from all offsite flows by either designing the first floor of any building to be 12" above an estimated 100-year flood level or alternately by designing berms or walls acting as a levy to protect the development from offsite flows. The first floor levels of manufactured housing shall be designed in accordance with NFIP criteria for manufactured homes.

Owners will provide a copy of the Notice of Intent to the Town when required to apply for a NPDES Storm Water Permit for Construction Activity. Likewise, owners will provide a copy of the Notice of Termination when the work is completed.

Plan Compliance

The builder or developer shall be required to construct all drainage improvements designed by the engineer to comply with the requirements of this section.

Applicability

The requirements of this ordinance apply to both public and private systems for new construction and may be required for substantial improvements.

Storm Model and Design Methodology

All drainage improvements and natural channels to serve onsite and offsite needs will be evaluated and designed according to the Drainage Design Manual for Maricopa County. Rainfall data will be adjusted to reflect the NOAA data presented in the Arizona Department of Transportation (ADOT) Highway Drainage Design Manual for Hydrology for the Thatcher area. A 100 year, 24 hour storm event will be used instead of the 2 hour storm.

Design Criteria and Supplemental Policy

General

Canal crossings must also be permitted by the canal company owning and operating the canal.

The practice of mingling offsite and onsite waters is discouraged; however, if the developer desires to pursue this avenue he must communicate this in the preliminary drainage report to the Town Engineer.

The Town may require the developer to collect runoff from outside the development; if so, the Town will compensate the Developer.

Two or more Developers may join together to provide common facilities. A Letter of Agreement by all Developers participating in the facilities must be presented to the Planning Department and the plan shall indicate which facilities are joint in nature. Joint facilities must meet the same criteria as those singly developed.

Some areas drain towards existing facilities owned by the Town of Thatcher or towards privately owned facilities. If these facilities have unused capacity, the developer may request permission to drain to these facilities to their design limits. The Town Engineer will review the request and inform the developer of the design requirements.

Maintaining Minimum Elevations

All new residential and commercial construction must leave the main structure with a finished floor elevation at least 12" above the crown of the street. Carports and garages must be at least 8" above the crown of the street. Basement structures shall be provided with flood protection to the elevations determined for finish floor elevations. The provisions of this subsection shall not apply to existing buildings or structures, or additions and expansions to a building or structure, provided that the existing building or structure does not have a history of flooding. Substantial improvements to buildings or structures with a history of flooding must comply with these requirements.

The evaluation of drainage structures shall show that all adjacent improvements shall be at least 6" above any flood hazards due to the design storm.

Infrastructure

Paved streets with curb and gutter are required for all streets to be dedicated to the Town and are required on private streets and commercial alleys when the grade is flatter than 0.50%. Rolled curb may be used on local streets; vertical curb and gutter must be used in all other cases. Street gutter grades flatter than 0.30% will not be accepted by the Town for maintenance.

Levees are undesirable but may be permitted if special conditions require them.

The Town will not permit public storm water lift stations. Private lift stations are discouraged but will be considered on a case by case basis.

A nominal diameter of 12" or larger will be used for all pipe and culvert work. Manhole covers will state STORM in raised letters.

Detention and Retention Basins

Public basin and developer-constructed basin landscaping will be addressed on a case by case basis.

Basins to be dedicated to the Town will be deeded over to the Town. The basins shall be designated as easement areas for storm water purposes and shall have a recorded restrictive covenant requiring perpetual maintenance.

All basins to be accepted by the Town for maintenance shall be constructed with a minimum of 4:1 side slopes (6:1 preferable). All ponding of water inside basins exceeding 2' feet shall be fenced in unless all side slopes are 4:1 or flatter. All basins shall be fenced in when the maximum depth exceeds 3.5'. The maximum permitted depth of water in any basin as measured from the spillway elevation is 8'.

Onsite flows typically will be completely retained in basins constructed for that purpose. These flows include the run-off generated from that portion of the street fronting the property, even if the street is an existing one. Retention basins shall be constructed to contain the onsite flows generated from the ultimate design, post-development conditions (fully built subdivision, fully paved commercial lot, etc.).

Detention basins may be used to control offsite flows and occasionally for onsite flows. The outlet pipe must be designed so that water from the receiving ditch or storm sewer does not back up into the basin during the storm event. The outlet structure shall have an orifice designed to slowly release the captured storm water to a peak outflow no greater than the pre-developed rate based on the design storm when the basin is filled to the depth of the spillway.

Although discouraged, up to 25% of a private parking lot may be used for retention or detention purposes. Parking lot area serving as such will be in the more remote areas to minimize vehicle and pedestrian inconvenience. Publically-owned parking lots may not be used for these purposes.

All basins must be provided with an emergency spillway designed to allow flood waters to be released to a location minimizing downstream damage.

The Developer must provide the Town a copy of the required ADEQ dry well permit if one is constructed.

It shall be unlawful for any person owning or controlling a basin to allow storm water to stand therein longer than permitted. In addition to any penalty provided by law, should the person owning or controlling any privately owned and maintained basin fail, neglect or refuse to drain the basin, it shall be the right of the Town to enter and take such action as may reasonably be necessary to drain the basin. The cost of draining the basin will be charged to the owner or person controlling such basin. This expense shall include all costs related to draining the basin including legal fees.

Materials of Construction

The Town Engineer will review and approve the proposed materials of construction as part of the Drainage Permit application process.

Structural Work

Structural work at major crossings must be constructed according to plans designed and stamped by a registered engineer based on American Association of State Highway Transportation Officials (AASHTO) design methods and for appropriate loadings.

Standard Specifications and Details

Engineers, builders, and developers will use Pima County/City of Tucson Standard Specifications for Public Improvements and Standard Details for Public Improvements for their work. ADOT Standard Specifications and Details may be used when Pima County/City of Tucson information is silent or where long span structures are involved. The engineer may develop special details, special specifications, and special provisions as needed. However, all plans and specifications must be submitted to the Town Engineer prior to construction for compliance review as part of the Drainage Permit application process.

Integrating Drainage with Landscaping

All new construction is required to incorporate appropriate landscaping (Ordinance No. 29, Section 29-3-15). Builders of single homes in residential areas have the opportunity to incorporate retention basins with other landscaping features and are encouraged to do so.

Developers constructing basins serving many homes also have the opportunity to landscape these facilities and use them as parks or other common areas. Staff, the Planning and Zoning Commission, and the Council will consider the developer's landscaping concepts on a case by case basis.

Permit and Plan Requirements

Drainage Permits Required

Drainage permits are required for all new construction and substantial improvements. Substantial improvements are defined as those worth 50% or more of the market value of the property. The Building Official will not issue a building permit until the Town Engineer first issues a drainage permit. No building permit shall be issued unless the building's proposed finish floor elevation is in compliance with this Ordinance. The Building Official shall not issue an occupancy permit until he has received a certificate bearing the stamp of an Registered Land Surveyor that the builder or developer has complied with the conditions of the drainage permit.

The failure to construct, improve, develop, maintain, or repair drainage improvements necessary to comply with the approved drainage plan and drainage permit shall constitute a violation of Ordinance No. 29 with penalties per Article 29-25 imposed upon conviction.

Drainage Plan

A drainage plan is required as part of the drainage permit. The owner must submit a storm water collection and handling plan with any preliminary plat or site development plan to be approved by Staff and the Planning Commission. The plan must be prepared by a civil engineer registered in the State of Arizona.

The plan will include drainage concepts as necessary to outline the solutions to foreseen drainage problems and ensure that the proper amount of land within the development or split has been reserved for handling storm water. In the case of proposed subdivision work, the Town Council must subsequently approve the plan and tentatively accept the facilities in the form of an approved preliminary plat.

The drainage plan shall include sufficient information (surface and street grades, curbs, gutters, catch basins, storm sewers, and drainage structures) to explain the operation of all surface and sub-surface drainage systems. A report will be submitted along with the plan supporting the plan, based on the criteria listed in this Ordinance.

The engineer shall design all facilities to comply with this drainage ordinance, summarizing the design calculations and assumptions in the report. The report will include maps showing the boundaries of watersheds for offsite flows. The plan will show the drainage boundaries for onsite flows. The report shall give peak 10, 50, and 100-year flows for the onsite drainage structures (ditches, gutters, culverts, and retention basins) as well as offsite drainage structures related to the development (channels, washes, detention basins). The calculations shall document depths of flow and ponding for all structures, ditches, gutters, pipes and basins related to the development. A backwater analysis of major washes and channels will be performed to show that property upstream and downstream of the proposed development as well as in the development will not be negatively impacted. A major channel is one that passes more than 500 cfs during the controlling storm event. The purpose of the report is to demonstrate how onsite and offsite flows will conform to the drainage ordinance.

Single Small Lot Development

When the owner of a single lot or parcel that is zoned residential, and where the owner proposes to build one single family residence on this parcel, or on public property adjacent to such lot for driveway purposes, plans and calculations prepared by a professional engineer will not be required. The property owner shall submit a sketch showing the proposed work. The Town Engineer is authorized to assist the property owner in preparing such a sketch and making any computations which may be required so that a drainage permit may be issued.

Inspection of Drainage Improvements

The Town Engineer is authorized to inspect all drainage improvements, public and private, and shall notify the owner of conditions not complying with this Drainage Ordinance or the accepted drainage plan and drainage permit.

Revisions

The following summarizes of this manual's revisions as to the date and a brief synopsis of the change:

<u>No.</u>	<u>Date</u>	<u>Change</u>
P1	13 Jul 99	Draft for public review
P2	16 Aug 99	Draft for Council review

Appendix 1: Drainage Permit for Developments

Appendix 2: Drainage Permit for Single Family Dwelling

