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Planning & Development Department

DRAINAGE REVIEW



LIST OF TOP 10 QUESTIONS ASKED REGARDING PLAN SUBMITTALS

1. What needs to be shown on the plans?

Review the attached requirements for specific project.

2. Where do I obtain a Building Permit or submit my plans?

Building Permits and Plan submittals are to be taken downtown to 501 North 44th St, Suite 200. For questions regarding Building Permit submittals, call (602) 506-3201. Applications and information regarding the submittal of building permits can be obtained from the County's Fax on Demand line at (602) 506-0800.

3. When do I call for a stem inspection?

Prior to pouring the stem walls. Have the contractor set up the height of the stemwalls for our inspector's visit. This should happen after the initial site plan has been approved. Call our inspection line at (602) 506-3692. Inspections for the next day need to be called in prior to 2:30 pm (This is an automated system).

4. When do I call for a final inspection?

After everything has been completed, all the concrete has been poured, all trenches have been filled, stockpiles/berms removed and the site has been rough graded.

5. Do I need a site inspection?

Whether a site inspection is needed or not depends on the location of the site and the potential drainage and flooding hazard for the site. County reviewers will determine if a site inspection is needed at the time of the plan submittal.

6. Am I in a floodplain?

Check the Federal Emergency Management Agency's Flood Insurance Maps or if the property is located in the Unincorporated Areas of Maricopa County you can call the Flood Control District's Floodplain Division at (602) 506-2939 and ask for floodplain determination. Prior to calling, make sure you have the Tax Assessor Number.

7. What will the fees be?

Fees will be determined by County Plan Reviewers at the time of the submittal in conformance with adopted fee schedules.

8. Do I need an engineer to prepare my plans?

An Arizona Registered Engineer is needed if there is extensive grading, a wash is to be rerouted or encroached upon, the proposed house is adjacent to a significant wash, or if the finished floor is to be lower than the allowed finished floor criteria (see requirements for finished floors and grading on-site on the following page).

9. How far away from the wash does my house need to be?

The location on the structure in proximity to a wash is dependent on the size of the wash, the amount of flow the wash carries, and if any bank stabilization is required. County Plan Reviewers will determine if a location is acceptable during the plan review. In general, stay away from all major washes. A good rule for proposed structures within twenty feet would be to provide bank protection and set the footers below the bottom elevation of the wash. For larger washes, a civil engineer will need to determine appropriate erosion control. Erosion control may need to meet Arizona State Standard 5-96.



REQUIREMENTS FOR FINISHED FLOORS AND GRADING ON SITE

Finished Floor Elevation:

Finished floors shall be elevated a minimum of one foot above the high point of the building site, unless the site is within a flood hazard area. In some hillside locations or alluvial flooding areas, the finished floor elevation may be required to be a minimum of 18 inches or two feet above the high point of the building site. A finished floor elevation may be other than the minimum permitted, provided it is determined by technical data and certified by an Arizona Registered Engineer to be safe from inundation by the 100-year peak runoff event. Finished floor elevations shall be referenced to a known benchmark whenever possible, or to a suitable reference elevation.

Building Site:

The area extending laterally a minimum distance of 10 feet beyond the foundation or support of a building.

The High Point of the Building Site:

The finished floor must be elevated a minimum of 12 inches above the highest point of the natural grade within the building site, unless certified by a civil engineer for a lower elevation.

Temporary Bench Mark (TBM):

A reference point established for use by the inspector during stem/finished floor elevation inspection unless referenced to a Benchmark (BM) on-site with a known certified elevation. Sites using the high point of natural grade in the building site to establish finish floor elevation must reference that point. Site TBMs must not be located in sheets and should be located within a reasonable distance of the proposed structure.

Grading On Site:

Grading on a site, unless otherwise stated and approved, shall be limited to the boundaries of the building site for the purpose of building a pad or clearing. This does not include excavating the building site or doing extensive fill.

Any excavation or fill outside the limits of the building site, or any extensive fill or excavation of the building site shall require a submittal of engineered grading and drainage plans. This plan must be approved and a description of the proposed work included on the Drainage Clearance. The grading and drainage plan must include existing and proposed contours or spot elevations, and show the drainage methods proposed.

Engineered Grading and Drainage plans may be required on any site work.



Planning & Development Department

ENGINEERED PLAN SUBMITTAL REQUIREMENTS



Please check your plan against the listed items for compliance. The following checklist should be used as a guideline. Additional data may be required based upon complexity of the design and location. Submit the checklist with your revised plan of development.

Cover Sheet

- 1. Project Name & Address
- 2. Legal Description
- 3. Site Location Map
- 4. Engineer's Name, Address, and Phone Number
- 5. Tracking Number
- 6. Bench Mark/On Site Temporary Bench Mark (TBM)
- 7. General Notes/Legend
- 8. Arizona Registered Professional Civil Engineer's Seal and Signature

Site Plan Sheet

- 1. North Direction Arrow & Engineer's Scale
- 2. Property Lines/Dimensions
- 3. Building Envelope/Tracts/Easements/Floodplain Boundaries
- 4. Finished Floor Elevation & Statement, "Finished floors are free from inundation during a 100-year peak run-off event if constructed in accordance with approved plans."
- 5. Contour Lines/Spot Elevations
- 6. Drainage Patterns/Arrows/Grade Breaks
- 7. Washes & Swales
- 8. Perpendicular Cross Sections Through Site
- 9. Driveway Location
- 10. Culvert Cross Section & Profile
- 11. Fences/Block Walls with Type & Location of Drainage Openings
- 12. Septic Tank Location
- 13. On Site Temporary Benchmark (TBM)
- 14. Arizona Registered Professional Civil Engineer's Seal & Signature

Drainage Report

- 1. Drainage Area Map (based on best available data)
- 2. Hydrologic Analysis
- 3. Culvert Analysis
- 4. Channel/Wash Hydraulic Analysis
- 5. Arizona Registered Professional Civil Engineer's Seal & Signature

If you have any questions, please contact _____



Planning & Development Department

PLAN REQUIREMENTS FOR DRAINAGE REVIEW OF SINGLE FAMILY RESIDENCE



A complete Site Plan including a Grading and Drainage Plan, drawn to scale must be submitted for Drainage review and approval.

The Site Plan must include:

1. A title block (name, address and phone number).
2. A location map (How do we get to your property for inspection purposes?).
3. A North direction arrow and scale. (Engineering scaled preferred).
4. The proposed structures included on the permit application and existing structures if any, on site.
5. The dimensions of the property, set back dimensions of side, front and rear yards and locations of easements, if applicable or building envelopes.
6. Any washes, drainage tracts, or drainage channels located on site, or bordering the site, that may involve or affect the drainage of the site to be developed.

The Grading and Drainage Plan should include the following items:

1. Location of streets on the plan and include the name of all streets that border the property.
2. Finished floor elevation (May require a note on the plan by a registered civil engineer certifying the finished floor will be free from inundation during a 100-year peak runoff event).
3. A temporary bench mark (TBM) on site for referencing elevations. (To be used during the stemwall elevation inspection, if one is required).
4. Proposed contours, including existing contours or spot elevations.
5. Flow arrows indicating there is positive conveyance of runoff away from the structure.
6. Means of conveyance of runoff on-site (indicate swales, dips or pipes). Also provide a cross-section of these areas. If culvert pipes are proposed, indicate the size, type, and inlet and outlet elevations. All culverts must be designed by a civil engineer.
7. Indicate direction of flows on site and any off-site flows entering the site (include any grade breaks).
8. All proposed or existing fences or concrete masonry unit (CMU) walls on-site, including any gate openings. (If a CMU wall, indicate where the present or proposed drainage openings are or will be).
9. Cross-sections through both axis of the proposed structure from 50 feet outside of the property line.

In order to help expedite the review process, it is important that all inclusions be made prior to submittal of plans for review and approval.

A minimum of seven (7) site plans, including the grading and drainage plan must be submitted to start the review process.



Planning & Development Department

DRAINAGE REVIEW REQUIREMENTS FOR PRECISE PLAN



A detailed drainage report with respect to hydrology and hydraulics in conjunction with grading, drainage and paving plans will need to be submitted. The final drainage plan needs to be signed and sealed by an Arizona Registered Professional Civil Engineer and should address the following:

1. **Offsite Hydrology** – Need to determine the quantity, the entrance and exit points, and how the flow is to be routed through the site.
2. **Onsite Hydrology** – Need to show how the flows are to be routed to retention basins.
3. **Onsite Retention** – Need to retain water for the 100-year, 2-hour storm for the developed site. Determine volume needed and the size and location of basins.
4. **Onsite Hydraulic Calculations** – Need to show hydraulic analysis for any channels, culverts, storm drains, or street drainage.
5. **Cross Sections** – Need to show perpendicular cross-sections through the site indicating property lines, swales, retention areas, finished floors, and street details.
6. **Finished Floor Elevations** – Need to show finished floor elevation and certification note.
7. **Topography** – Need to show natural and proposed contour elevations or spot elevations.
8. **Dry Wells** – If applicable, need to submit a copy of the dry well registration before issuance of a permit.
9. **Floodplains** – Need to show the delineated floodplain boundaries if the site is within a Federal Emergency Management Agency's (FEMA) special flood hazard area. Will also need to apply for Floodplain Use Permit.
10. **Erosion Setbacks** – For washes and other watercourse channels an erosion setback will need to be determined, which meets Arizona State Standard 5-96.

11. Fill out the following table:

Miles/Acres of Protected Natural Watercourse ¹		
Miles of Improved Watercourse or Storm Drain ²		
Acres of Retention or Detention Areas ³		

- ¹Miles/Acres of watercourse that is preserved in a natural state.
- ²Miles of watercourse that is altered by bank stabilization, channelization, and storm drain installation, or grading. Curb and gutter does not qualify as watercourse
- ³Acres of Retention/Detention to be constructed as drainage infrastructure.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

FEE INFORMATION:

New Development
 \$1,000 + \$200/Acre \$10,000 Maximum
 With TAC Hearing – Total & Additional \$75
 With Public Meeting – Total & Additional \$75

Accessory structure on previously developed site (see Regulation for restrictions) - \$650



Planning & Development Department

DRAINAGE REVIEW REQUIREMENTS FOR SPECIAL USE



The drainage information required depends on the type of use and the size of the project. For commercial/industrial uses, the requirements for precise plan will need to be submitted. For residential and other uses, the following minimum drainage information will be needed:

1. Show direction of onsite flow on the plan.
2. Show retention calculations, the location, and size of the basin.
3. Show any washes that flow through the site.
4. Show finished floor elevation if buildings are to be built.
5. Show elevation contours or spot elevations on the site plan.
6. Fill out the following Table:

Miles/Acres of Protected Natural Watercourse ¹		
Miles of Improved Watercourse or Storm Drain ²		
Acres of Retention or Detention Areas ³		

¹ Miles/Acres of watercourse that are preserved in a natural state by Open Space

² Miles of watercourse that is altered by bank stabilization, channelization, and storm drain installation, or grading. Curb and gutter does not qualify as watercourse.

³ Acres of Retention/Detention to be constructed as drainage infrastructure.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

Fee:	\$1,000.00 + \$200.00/acre	maximum \$10,000.00
With TAC Hearing – total and additional	\$75.00	
With Public Meeting – total and additional	\$75.00	



Planning & Development Department

DRAINAGE REVIEW REQUIREMENTS FOR CONCEPT PLAN



The concept plan must have a preliminary drainage report/plan that will show that the site has enough space allocated for drainage features (retention basins, channels, swales, and pipes). The conceptual drainage report needs to be signed and sealed by an Arizona Registered Professional Civil Engineer and should address the following:

1. **Offsite Hydrology** – Need to determine the quantity, the entrance and exit points, and how the flow is to be routed through the site.
2. **Onsite Hydrology** – Need to show how the flows are to be routed to retention basins.
3. **Onsite Retention** – Need to retain water for the 100-year, 2-hour storm for the developed site. Determine volume needed and the size and location of basins.
4. **Contours** – Need to show natural and proposed contours or spot elevations on the plans.
5. **Floodplains** – Need to show the delineated floodplain boundaries if the site is within a Federal Emergency Management Agency's (FEMA) special flood hazard area. Will also need to apply for Floodplain Use Permit.
6. **Erosion Setbacks** – For washes and other watercourse channels an erosion setback will need to be determined, which meets Arizona State Standard 5-96.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

FEE INFORMATION: \$500 +\$100/Acre \$5,000 Maximum



Planning & Development Department

DRAINAGE REVIEW REQUIREMENTS FOR PRELIMINARY PLAT



A drainage plan and report needs to accompany a preliminary plat submittal. The drainage plan/report shall be developed in accordance with Chapter 6 of the Maricopa County Drainage Policies and Standards Manual and signed and sealed by an Arizona Registered Professional Civil Engineer and should address the following at a minimum:

- 1. Offsite Hydrology – Need to determine the quantity, the entrance and exit points, and how the flow is to be routed through the site without adverse impacts.
2. Onsite Hydrology – Need to show how the flows are to be routed to retention basins.
3. Onsite Retention – Need to retain water for the 100-year, 2-hour storm for the developed site. Determine volume needed and the size and location of the basins.
4. Contours – Need to show natural and proposed contours or spot elevations on the plans.
5. Layout – Need to show drainage tracts, easements, building envelopes, and typical lot drainage.
6. Floodplains – Need to show the delineated floodplain boundaries if the site is within a Federal Emergency Management Agency's (FEMA) special flood hazard area. Will also need to apply for a Floodplain Use Permit. Delineate all floodplains (non-FEMA) of 50 cfs or greater. All Floodplain delineations must be shown on the preliminary plat.
7. Erosion Setbacks – For washes and other watercourse channels an erosion setback will need to be determined, which meets Arizona State Standard 5-96.

8. Fill out the following Table:

Table with 3 rows and 2 columns: Miles/Acres of Protected Natural Watercourse, Miles of Improved Watercourse or Storm Drain, Acres of Retention or Detention Areas.

1 Miles/Acres of watercourse that are preserved in a natural state by Open Space
2 Miles of watercourse that is altered by bank stabilization, channelization, storm drain installation, or grading. Curb and gutter does not qualify as watercourse.
3 Acres of Retention/Detention to be constructed as drainage infrastructure.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

FEE: \$1,000.00 + \$100.00/acre maximum \$15,000.00



Planning & Development Department

DRAINAGE REVIEW REQUIREMENTS FOR FINAL PLAT



A final drainage report in conjunction with grading, drainage and paving plans will need to be submitted with the final plat. The final drainage report needs to be developed in accordance with the County's Drainage Policies and Standards Manual and signed and sealed by an Arizona Registered Professional Civil Engineer and to include the following:

1. **Offsite Hydrology** – Need to determine the quantity, the entrance and exit points, and how the flow is to be routed through the site.
2. **Onsite Hydrology** – Need to show how the flows are to be routed to retention basins.
3. **Onsite Retention** – Need to retain water for the 100-year, 2-hour storm for the developed site. Determine the volume needed and the size and location of basins.
4. **Onsite Hydraulic Calculations** – Need to show hydraulic analysis for any channels, culverts, storm drains, or street drainage.
5. **Cross Sections** – Need to show perpendicular cross-sections through the site indicating property lines, swales, retention areas, existing and proposed grades, finished floors and street details.
6. **Finished Floor Elevations** – Need to show finished floor elevation and certification note.
7. **Topography** – Need to show natural and proposed contour elevations or spot elevations.
8. **Layout** – Need to show drainage tracts, easements, building envelopes, and typical lot drainage.
9. **Access** – Need to show a 100-year all weather access route throughout the subdivision.
10. **Dry Wells** – If applicable, need to submit a copy of the dry well registrations before issuance of a permit.
11. **Floodplains** – Need to show the delineated floodplain boundaries if the site is within a Federal Emergency Management Agency's (FEMA) special flood hazard area. Will also need to apply for a Floodplain Use Permit. Delineate all floodplains (non-FEMA) of 50 cfs or greater. All Floodplain delineations must be shown on the preliminary plat.
12. **Erosion Setbacks** – For washes and other watercourse channels an erosion setback will need to be determined, which meets Arizona State Standard 5-96.
13. **Fill out the following Table:**

Miles/Acres of Protected Natural Watercourse ¹		
Miles of Improved Watercourse or Storm Drain ²		
Acres of Retention or Detention Areas ³		

¹ Miles/Acres of watercourse that is preserved in a natural state by drainage tract, drainage easement, or building setbacks.

² Miles of watercourse that is altered by bank stabilization, channelization, storm drain installation, or grading. Curb and gutter does not qualify as watercourse.

³ Acres of Retention/Detention to be constructed as drainage infrastructure.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

FEE: (Final Plat fee shall be in assessed in accordance with the drainage fee schedule and are separate and additional to a Preliminary Plat fee.)



Planning & Development Department

DRAINAGE REQUIREMENTS FOR MASTER PLAN



The master plan needs to be signed and sealed by an Arizona Registered Civil Engineer. The following information will need to be provided for the Master Drainage Plan:

1. **Offsite Hydrology-** Need to determine the quantity, the entrance and exit points, and how the flow is to be routed through the site.
2. **Onsite Hydrology-** Need to show how the flows are to be routed to retention basins. Need to determine quantity for pre and post development conditions.
3. **Onsite Retention-** Need to retain water for the 100-year, 2-hour storm for the developed site. Determine volume needed and the size and location of basins.
4. **Contours-** Need to show natural and proposed contours or spot elevations on the plans.
5. **Streets-** Need to show the layout of major streets.
6. **Floodplains-** Need to show the delineated floodplain boundaries if the site is within a Federal Emergency Management Agency's (FEMA) special flood hazard area. Will also need to apply for a floodplain use permit. Delineation of floodplains (non-FEMA) for major washes is required.
7. **Erosion Setbacks-** For washes and other water course channels an erosion setback will need to be determined, which meets Arizona State Standard 5-96.
8. **Fill out the following Table:**

Miles/Acres of Protected Natural Watercourse ¹		
Miles of Improved Watercourse or Storm Drain ²		
Acres of Retention or Detention Areas ³		

¹ Miles/Acres of watercourse that are preserved in a natural state by Open Space

² Miles of watercourse that is altered by bank stabilization, channelization, and storm drain installation, or grading. Curb and gutter does not qualify as watercourse.

³ Acres of Retention/Detention to be constructed as drainage infrastructure.

Since complex drainage systems may require more detailed information, a meeting should be arranged with personnel from Drainage Review.

FEE: \$3,100.00 + \$500.00/sqm maximum \$20,000.00

SUBMIT 2 COPIES

DRAINAGE REGULATIONS FOR MARICOPA COUNTY

Chapter 16 – Fee Schedule

Fee Schedule	
Drainage Regulations for Maricopa County, Arizona	
The following fees shall be charged for the processing of plan reviews, drainage clearances, appeals, drainage variances, and performance bonds with no provision for refund. For simultaneous review (as example, a submittal for an RUPD and Preliminary Plat), the higher single fee will be charged.	
SECTION 1601. PLAN REVIEW	
Area Master Plans (1 square mile)	\$3,100
+\$500/square mile; maximum (18 square miles)	\$20,000
SECTION 1602. PLANNING AND DEVELOPMENT	
Case Review (Zoning, Board of Adjustment and Compliance Review)	\$150
Development Review (Abandoned Easements, Adm. Approvals, and Amendment)	\$300
+\$50/acre; max	\$8,000
With Public Meeting	+\$75
With Plans/Drainage Report	+\$175
Conceptual Plans	\$500+\$100/acre
Max (45 acres)	\$5,000
SECTION 1603. SUBDIVISIONS	
IUPD/RUPD/CUPD, Preliminary & Final Plats (based on 28-acre subdivisions)	\$1,000+\$100/acre
Max (Based on 140/acres)	\$15,000
SECTION 1604. PRECISE PLAN OF DEVELOPMENT	
Commercial//Industrial, Multi-family, Special Uses, Schools, Golf Courses, Municipal, Special Districts, Churches, and all other precise plans	\$1,000+\$200/acre
Max (Based on 45 acres)	\$10,000
With TAC Hearing – total and additional	+\$75
With Public Meetings – total and additional	+\$75
Minor Accessory Construction On Precise Plans*	\$650
SECTION 1605. SITE/DRAINAGE PLANS	
*Subdivision lots, Custom lots, Rural Single Family	\$400
With Eng. Grading & Drainage Plan/Hydrology Report	+\$130
With Requested Site Inspection by Supervisor	\$150
Max	\$680
*Non-approved subdivisions or non-engineered subdivisions	+\$50/acre
Max	\$5,000
SECTION 1606. OTHER SITE PLANS	
Drainage Clearances and other plans NOT requiring:	

DRAINAGE REGULATIONS FOR MARICOPA COUNTY

Chapter 16 – Fee Schedule

A drainage report/plan	\$45
With site investigation	+\$110
Total	\$155

1607. APPROVED SUBDIVISION LOTS	
Drainage Clearance for:	
1 – 5 lots	\$45/lot
6 – 10 lots	\$35/lot
11 or more	\$25/lot
Approved subdivisions with certified pad elevations on file	\$20/each
Approved subdivisions with certified pad elevations & final grading as-builts on file	\$15/each
Amended Drainage Reports to Approved Plans, Plan Revisions & Additions	\$200
+\$50/lot; Max	\$5,000
1608. OTHER FEES	
Appeals/Variances (Drainage Review Board and Board of Supervisors)	\$450
Appeals sent to Drainage Administrator	
FR (Single Family Residence)	\$100
All Others	\$200
Continuance of Hearing (Applicant's Request)	\$50
When New Posting Required	\$200
Special Inspections	
Re-inspection Fee (site not ready, no show, etc.)	\$75
Additional Inspections (due to applicant)	\$150
On-site Consultation (citizen request)	\$150
Set Reference Point for FFE	\$50
Retention calculations for small site with less than 2 gross acres	\$200
Pipe culverts for small washes	\$75/hour
Max	\$1,500
Drainage reports for floor elevations of site with 5 acres or less of watershed	\$500

***SITES MUST HAVE AN ESTABLISHED PRIMARY USE, BE DEVELOPED IN SUBSTANTIAL CONFORMANCE WITH THE DRAINAGE REGULATIONS, AND THE CONSTRUCTION ACTIVITY MUST DISTURB LESS THAN ONE ACRE. MINOR ACCESSORY CONSTRUCTION INCLUDES, BUT IS NOT LIMITED TO, SIGNS, ADA ACCESSIBILITY RAMPS, PROPANE TANKS, TRASH ENCLOSURES, NON-LIVEABLE AND ACCESSORY BUILDINGS, AS DEFINED IN SECTION 301.**

DRAINAGE REGULATIONS FOR MARICOPA COUNTY

Chapter 16 – Fee Schedule

Date of Revisions		
Δ 1	January 28, 2009	TA2008010