



CITY OF PEORIA

STANDARD

INFORMATIONAL

COMMENTS

PROFESSIONAL • ETHICAL • OPEN • RESPONSIVE • INNOVATIVE • ACCOUNTABLE

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ENGINEERING REQUIREMENTS

1. If any pavements less than 3 years are cut for utility installations, a surcharge will apply.
2. At the time Civil Plans are submitted a Final Drainage Report will be required. The basin capacities will be individually analyzed by watershed being served. The Civil Plans will show sections through basins, the volume provided and bottom and high water elevations.
3. Easements for drainage are to be dedicated over all retention basin areas.
4. A Grading and Drainage Report must be submitted with the Site Plan. Note that the City of Peoria has adopted the Maricopa County Uniform Drainage Design Standards, Policies and Procedures and Drainage Design Manual for Maricopa County for drainage criteria. Retention must be provided for the 100-year, 2-hour storm.
5. A separate Grading and Drainage Plan, for Engineering Department review and approval, is required. A plan review fee of \$360.00 per sheet is due on submittal. A separate Grading Permit from the Engineering Department is required prior to issuance of the Building Permit.
6. A separate submittal of Civil Improvement Plans for Engineering Department review and approval is required. A plan review fee of \$360 per sheet is due on submittal. Separate Civil Permits from the Engineering Department are required prior to issuance of the building permits.
7. The Developer will be responsible for off-site improvements to extend streets, sewer, water and drainage, to and from the site, including necessary easements and rights-of-way.
8. A Phase 1 Environmental clearance will be required for **all right-of-way** to be dedicated to the City.
9. Provide plans indicating the approximate location of on-site easements for all utilities, as necessary. The Developer will be responsible to dedicate such utility easements.
10. The Developer will be responsible to dedicate adjacent half-street of right-of-way and provide the adjacent half-street improvements. Street improvements include, but are not limited to, paving, curb, gutter, sidewalk, landscaping, irrigation, street lighting, signing and pavement striping, and traffic signals.

ENGINEERING REQUIREMENTS - Continued

11. The Developer is responsible to provide an Agreement to Install Improvements for the public improvements required by the development. The accompanying financial assurance for Site Plan improvements shall be in accordance with City requirements.
12. The Developer is responsible to comply with the appropriate Federal, State, and County regulations, which include FEMA, NPDES, ADOT, and MAG.
13. The Site Plan boundary and the water and sewer as-builts will be required to be submitted to the City in AutoCAD format before the development is finalized. Please contact the Engineering Department at (623) 773-7210 for additional details. This will be in addition to the as-built photo Mylar normally required.
14. Retention basins shall drain within 36 hours. All drywells must be registered with the Arizona Department of Environmental Quality and drilling logs shall be provided to the City. The percolation rate shall be tested and the results provided to the City before the drywell is accepted. Basins should bleed off into the storm drain system where possible.
15. The water system shall be capable of providing 1500 gpm fire flow in excess of the domestic demand for this Development.
16. Development is responsible to pay all current impact fees.
17. A Wastewater Discharge Permit, through the Public Services Department, may be required with this project based on nature of wastewater discharges.
18. The developer will be responsible to verify that the proposed street improvements are included in the Maricopa Association of Governments, Transportation Improvement Program (MAG TIP)
19. The developer will be responsible to coordinate the design and location of driveway improvements with the City of Peoria. The appropriate traffic control signs will also be required, which accommodate the design.
20. The Developer will be required to construct pavement tapers, terminations and barricades to City of Peoria standards.
21. A preservative seal required for the new streets shall be applied 1-year after completion of the streets. A check for \$0.21/SY will be required at the time of the paving permit.

ENGINEERING REQUIREMENTS – Continued

22. The pavement sections shall be verified by project soils report. The pavement section shall meet the City of Peoria's minimum requirements.
23. The Developer will be responsible to verify visibility and sight distance triangle for intersections, driveways, and grade separations.
24. Plans are to be sent to utilities for review at the time of first improvement plan submittal. The City requires response letters from each utility prior to approval of the paving plans.
25. The developer will be responsible to hire an electrical engineer to design a street light layout plan for streetlights in the SRP and APS service areas. The street light layout plan must be submitted to and approved by the City. Approved plans will be forwarded to the respective electric company.
26. The developer is responsible to pay for the installation of all streetlights and incidental electrical facilities.
27. City ordinance requires burial of any electrical utilities less than 69kv. Show any existing overhead utilities and indicate that they will be placed underground.
28. The developer is responsible to hire an engineer to prepare a striping and signage plan. The plan must be submitted to and approved by the City. The developer is responsible to install the street signs and stripe the street(s) in accordance with the approved plans.
29. The Water, Sewer, Garbage and Garbage Disposal Service Agreements must be submitted in accordance with the City of Peoria Approval Process.
30. The Developer is responsible to respond to the attached City of Peoria Utilities Department Standard Water and Sewer Review Comments.

Not all Plan deficiencies (items not in compliance with the City Standards) may be identified. Through the plan correction/verification process, the designer may identify and correct additional items prior to return for additional comment and, thus, expedite the process.

UTILITIES DEPARTMENT
GENERAL DESIGN REQUIREMENTS FOR WATERLINES:

1. Provide a water system analysis report that shall conform to the minimum requirements of the City of Peoria Water Master Plan. (See attached references/examples.)
2. Sixteen (16) inch waterlines required along all section lines
3. Twelve (12) inch waterlines required along all North-South mid section lines
4. Eight (8) inch minimum waterline size
5. All of these waterlines shall be public and located in appropriate easements dedicated for that use and shall comply with the City's minimum requirements. (Twenty (20) foot minimum width for water or sewer and thirty-(30) foot minimum width for both water and sewer). Easements shall be dedicated at no cost to the City.
6. The property may be subject to a water repayment agreement.
7. Improvement plans are required to include a copy of the City of Peoria Water notes.
8. All water infrastructure required to serve this development shall conform with the City's minimum standards and shall be consistent with requirements of the City's current Water Master Plan. The developer will be required to provide all infrastructure necessary for water service for the subject property, including but not limited to waterlines and appurtenances, water booster facilities, water storage reservoirs and water production sources.
9. The City of Peoria requires a redundant water supply for areas that are primarily served by a surface water source. The developments will be required to pay all appropriate costs associated with the acquisition of water sources. The redundant water supply shall be equal to 80% of the maximum day water demand for the development as defined in Table 6-1 of the Water Master Plan.

UTILITIES DEPARTMENT
GENERAL DESIGN REQUIREMENTS FOR SEWERLINES:

1. Provide a wastewater system analysis report that shall conform to the minimum requirements of the City of Peoria Wastewater Master Plan. (See attached references/examples)
2. Eight (8) inch minimum sewerline size
3. Cleanouts are not accepted.
4. Public sewerlines shall be located in appropriate easements dedicated for that use and shall comply with the City's minimum requirements. (Twenty (20) foot minimum width for water or sewer and thirty-(30) foot minimum width for both water and sewer). Easements shall be dedicated at no cost to the City.
5. The property may be subject to a sewer repayment agreement.
6. Improvement plans are required to include a copy of the City of Peoria Sewer notes.
7. All sewer infrastructure required to serve this development shall conform with the City's minimum standards and shall be consistent with the requirements of the City's current Wastewater Master Plan. The developer will be required to provide all infrastructure necessary for wastewater service for the subject property, including but not limited to sewerlines, lift stations and appurtenances.

UTILITIES DEPARTMENT
WATER SYSTEM DESIGN REQUIREMENTS:

1. A City of Peoria off-site permit is required. The charge for this permit is 3.5% of the contract price plus fifteen (15) dollars. Other permits, as required, shall be secured from the appropriate agency; i.e. County permits for County right-of-way.
2. Acceptable Waterline Materials:
 - a. Ductile Iron Pipe, pressure class 350, is acceptable for waterlines eight (8) through twelve (12) inches in diameter. All Ductile Iron Pipe shall be polywrapped in conformance with Section 610.5 of the MAG Standard Specifications.
 - b. Ductile Iron Pipe, pressure class 350 minimum, is acceptable for waterlines sixteen (16) inches in diameter. All Ductile Iron Pipe shall be polywrapped in conformance with Section of the MAG Standard Specifications.
 - c. PVC Pipe, AWWA C-900 pressure class 200, is acceptable for waterlines eight (8) inches in diameter.
 - d. All water lines outside public roadways in dedicated water easements shall be Ductile Iron Pipe, pressure class 350.
3. Trench excavation, backfilling and compaction shall conform with MAG Standard Specification Section 601 except as modified herein.
4. Bedding and backfill for PVC waterlines shall conform with the minimum requirements of the City of Peoria Standard Detail 406 for Bedding and Backfill for PVC Pipelines.
5. Backfill shall be Type 1 as defined in Section 601 of the MAG Standard Specifications.
6. The Contractor is responsible to notify the Project Engineer before the waterline or fittings are covered, so “as-built” measurements may be taken. The Project Engineer and the CITY must authorize any changes to the approved plans before the change is made in the field.
7. Six (6) and eight (8) inch waterlines located in streets shall have a minimum cover of forty-eight (48) inches over the top of the pipe to finish grade. Six (6) and eight (8) inch waterlines in locations other than streets shall have a minimum cover of thirty-six (36) inches over the top of the pipe to finish grade, unless design conditions warrant additional cover.
8. Twelve (12) inch waterlines located in streets shall have a minimum cover of sixty (60) inches over the top of the pipe to finish grade. Twelve (12) inch waterlines in locations other than streets shall have a minimum cover of forty-eight (48) inches over the top of the pipe to finish grade, unless design conditions warrant additional cover.

WATER SYSTEM DESIGN REQUIREMENTS – Continued

9. Sixteen (16) inch waterlines shall have a minimum cover of sixty (60) inches over the top of the pipe to finish grade, unless design conditions warrant additional cover.
10. All stubouts shall have a two (2) inch brass ball corp stop as a blow-off, left in place with a two (2) inch riser, per MAG Standard Detail 390 “A”, and shall be accessible to use.
11. Fire hydrants shall conform with the minimum requirements of the City of Peoria Standard Detail 360-R or 360-C and be approved by the City of Peoria prior to installation.
12. All valves sixteen (16) inches and under shall be resilient seat AWWA approved gate valves and shall open by turning to the left.
13. Valves shall not be located in sidewalks, gutters, curb or valley gutters.
14. All valve boxes shall conform with MAG Standard Detail 391-1, Type “A”.
15. Contractors shall not operate valves on the existing City system.
16. Waterlines shall be installed in a manner that eliminates dips or high points. Waterlines shall not have horizontal alignment deflections. Waterlines constructed on curvilinear streets shall conform with the manufacturer’s recommendations for deflection at joints.
17. Thrust restraint shall be inspected prior to backfill. Reinforcing steel and form work shall be inspected prior to placing concrete for thrust blocks. Thrust restraint shall conform with MAG Standard Specification 610.4 and MAG Standard Details 301, 380 and 381.
18. Water services two (2) inches and smaller in diameter shall conform with the City of Peoria Detail 325 for Water Meter Box Location and Construction. The minimum service connection shall be one (1) inch, including single family residence service connections. Water service saddle manufacturer and model must be approved by the City of Peoria prior to installation.
19. Water services shall not be located under driveways or under concrete aprons adjacent to driveways.
20. An approved metallic locator tape shall be installed with non-linear PVC waterlines and attached to valve boxes.

WATER SYSTEM DESIGN REQUIREMENTS - Continued

21. All pavement replacement shall conform with MAG Standard Detail 200 with “T-Top” – modified with a one-half (1/2) sack Controlled Low Strength Material (CLSM) which conforms with MAG Standard Specification 728 for trench backfill from one (1) foot above the top of pipe to the existing pavement subgrade.
22. Pressure testing shall not be conducted until after the Contractor has pretested 100% of the lines. Inspection testing must be called twenty-four (24) hours in advance.
23. All mains shall be chlorinated in conformance with Section 611 of MAG Standard Specifications. Samples will be taken on two (2) consecutive days and in conformance with MAG Standard Specification Section 611.
24. The Contractor shall not tie into existing mains without prior approval of the City Off-site Inspector.
25. The following MAG Uniform Standard Details are specifically not approved.
 - No. 345-2 4”, 6” Water Meter
 - No. 360 Fire Hydrant Installation
 - No. 389 Curb Stop with Valve Box & Cover
 - No. 391-1 Valve Box Installation and Grade Adjustment, Types “B” & “C”
26. All waterline connections shall be with a tee connection. The City will not allow taps except for water meter connections.

SAMPLE WATER SYSTEM ANALYSIS REPORT

- The proposed “SAMPLE” DEVELOPMENT contains eighty-five (85) Lots
 - LOCATION: NE ¼, NE ¼, SECTION 2, T4N, R1E, Gila and Salt River Meridian;
Southwest corner of Jomax Road and 75th Avenue
 - ZONING: Zoning is currently R1 and has not changed since January 1995*
- * - A statement of complete zoning history from current back to Jan 1995 is required in this analysis

DOMESTIC (RESIDENTIAL)* WATER DEMAND CALCULATIONS

(* COMMERCIAL WATER DEMAND CALCULATIONS MUST USE “BEST ENGINEERING JUDGEMENT” AND REFERENCE ALL SOURCE(S) USED FOR BASIS OF DESIGN)

Average Daily Demand per Dwelling Unit:

1. The average daily demand is 200 gallons per day capita (200 gpcd)*
2. The lost and unaccounted water factor is 0.90*
3. The average population per dwelling unit is 2.8 persons*
4. The average daily demand per dwelling unit is therefore:
$$[(200 \text{ gal/capita/day}) \times (2.8 \text{ persons/du})] / (0.90) = 622 \text{ gal/day/du}$$

Maximum Daily Demand per Dwelling Unit:

1. The maximum day demand is equal to 1.8 times the average day demand*
2. The maximum daily demand per dwelling unit is therefore:
$$(622 \text{ gal/day/du}) \times (1.8) = 1120 \text{ gal/day/du}$$
3. The maximum daily demand for “Sample” Development is therefore:
$$(85 \text{ du}) \times (1120 \text{ gal/day/du}) = 95,200 \text{ gal/day}$$

Peak Hour Demand per Dwelling Unit:

1. The peak hour demand is equal to 1.7 times the maximum day demand*
2. The peak hour demand per dwelling unit is therefore:
$$1.7 \times (1120 \text{ gal/day/du}) \times (\text{day}/24 \text{ hour}) \times (\text{hour}/60\text{min}) = 1.32 \text{ gal/min/du}$$

THE MAXIMUM HOUR DOMESTIC WATER DEMAND FOR “SAMPLE” DEVELOPMENT IS THEREFORE: (85du) x (1.32 gal/min/du) = 112 gal/min

* - Source: City of Peoria Water Master Plan, September 2001, Table 10-1

- In addition to the maximum hour *Domestic* Water Demand, the system will be required to provide for *Fireflow* requirements as determined by the Peoria Fire Department, Fire Prevention Division.
- ALL DOMESTIC AND FIREFLOW WATER SYSTEM ANALYSIS REPORTS REQUIRE A QUALIFIED PROFESSIONAL’S SEAL & SIGNATURE.

UTILITIES DEPARTMENT

WASTEWATER SYSTEM DESIGN REQUIREMENTS:

1. A City of Peoria off-site permit is required. The charge for this permit is 3.5% of the contract price plus fifteen (15) dollars. Other permits, as required, shall be secured from the appropriate agency; i.e. County permits for County right-of-way.
2. Sewerline and grade stakes shall be set by a qualified Arizona Registered Professional and/or their representative prior to the construction of sewerlines. The qualified Arizona Registered Professional and/or his representative shall verify that the grades conform with the approved construction plans, and provide cut sheets to the Contractor and Off-site Inspector. After installation and prior to the Department of Public Works and Engineering acceptance, the Project Engineer shall certify that sewer installation conforms with the approved construction plans.
3. Acceptable Sewerline Materials:
 - a. Vitrified Clay Pipe that conforms with Section 743 of the MAG Standard Specifications is acceptable for sewerlines eight (8) through fifteen (15) inches in diameter. Bedding and backfill shall conform with the manufacturer's requirements.
 - b. PVC SDR 35 Sewer Pipe that conforms with Section 745 of the MAG Standard Specifications is acceptable for sewerlines eight (8) through fifteen (15) inches in diameter. Bedding and Backfill shall conform with City of Peoria Standard Detail #406 for Bedding and Backfill for PVC Pipelines.
4. The Contractor shall uncover all existing lines to be connected and verify grades before any other construction.
5. All utility installations in conflict with these plans shall be removed or relocated at the Contractor's expense. The governing municipality or agency must approve all utility removals or relocations.
6. Trench excavation, backfilling and compaction shall conform with MAG Standard Specification Section 601 except as modified herein.
7. Backfill shall be Type 1 as defined in Section 601 of the MAG Standard Specifications.
8. The Contractor is responsible to notify the Project Engineer before the sewerline is covered, so "as-built" measurements may be taken. The Project Engineer and the City must authorize all changes to the approved plans before the change is made in the field.
9. Service line connections to the sewer main shall have a "Y" fitting. Saddles are not acceptable.

WASTEWATER SYSTEM DESIGN REQUIREMENTS – Continued

10. Sewer services shall not be located under driveways.
11. An approved metallic locator tape shall be installed on all sewer services.
12. Manholes that exceed ten (10) feet in depth shall be five (5) feet in diameter, without steps, and shall have a “T-Lock” PVC Liner.
13. All PVC sewer manhole connections shall have an approved water stop.
14. All pavement replacement shall conform with MAG Standard Detail 200 with “T-Top” – modified with a one-half (1/2) sack Portland Cement ABC slurry which conforms with MAG Standard Specification 728, (modified for one-half (1/2) sack Portland Cement), for trench backfill from one (1) foot above the top of pipe to the existing pavement subgrade.
15. Manholes that are located in a paved area shall be adjusted to the finish grade upon the completion of pavement work.
16. Prior to acceptance, the Contractor shall lamp 100% of the sewerlines. The Contractor shall provide a closed circuit video inspection of the sewerline. Any additional inspections required, due to failure of the initial inspection, shall be paid for by the Contractor. The Contractor shall perform air pressure tests on 100% of the sewerlines.
17. Line shall be “plugged” at all connections to existing lines until the “Final Letter of Acceptance” for the whole project is signed off by the Off-site Inspector.
18. The Contractor shall not make a tie-in to existing mains until after all tests have been passed and approved by the City Off-site Inspector.
19. The following MAG Uniform Standard Details are specifically **NOT** approved:

No. 425	24” aluminum manhole frame and cover
No. 428	Manhole steps – “Cast Iron”
No. 440	Sewer building connection – Type “B”
No. 441	Sewer cleanout – sewer tap with C.O.
20. The owner will be responsible for the sewer service line from the main to service facility.
21. The City will only allow drop manhole connections where the velocities or slopes would be exceeded with a standard connection.

UTILITIES DEPARTMENT
SAMPLE WASTEWATER SYSTEM ANALYSIS REPORT

- The proposed “SAMPLE” DEVELOPMENT contains eighty-five (85) Lots
 - LOCATION: NE ¼, NE ¼, SECTION 2, T4N, R1E, Gila and Salt River Meridian; Southwest corner of Jomax Road and 75th Avenue
 - ZONING: Zoning is currently R1 and has not changed since January 1995*
- * - A statement of complete zoning history from current back to Jan 1995 is required in this analysis

DOMESTIC (RESIDENTIAL)* WASTEWATER FLOW CALCULATIONS

(* - **COMMERCIAL WASTEWATER FLOW CALCULATIONS MUST USE A.A.C. TITLE 18, CHAPTER 9, TABLE 1 – UNIT DAILY DESIGN FLOWS**)

Average Daily Flow per Dwelling Unit:

1. The average daily flow is 100 gallons per day per capita (100 gpcd)*
2. The average population per dwelling unit is 2.8 persons*
3. The Average daily flow per dwelling unit is therefore:
 $(100 \text{ gal/capita/day}) \times (2.8 \text{ persons/du}) = 280 \text{ gal/day/du}$

* - Source: City of Peoria 2002 Wastewater Master Plan.

Maximum Daily Flow per Dwelling Unit:

1. The maximum day is equal to 4.0 times the average day flow
2. The maximum daily flow per dwelling unit is therefore:
 $(280 \text{ gal/day/du}) \times (4.0) = 1120 \text{ gal/day/du}$

THE MAXIMUM DAILY FLOW FOR “SAMPLE” DEVELOPMENT IS THEREFORE: (85 DU) x (1120 GAL/DAY/DU) = 95,200 GAL/DAY

ALL WASTEWATER SYSTEM ANALYSIS REPORTS REQUIRE A QUALIFIED PROFESSIONAL’S SEAL & SIGNATURE.