

WATER SYSTEM DESIGN CRITERIA	
DESCRIPTION	CRITERIA
AVERAGE DAY DEMAND	
Gallons per capita per day (gpcd) ⁽¹⁾	117
Density (people per dwelling unit) ⁽²⁾	3.34
Land Use Category ⁽³⁾	Varies
PEAKING FACTORS	
Maximum Day / Average Day	1.7
Peak Hour / Maximum Day	1.7
Peak Hour / Average Day	2.9
VELOCITY CRITERIA	
Maximum Day Condition	Max Velocity < 5 fps
Peak Hour Condition	Max Velocity ≤ 7 fps
Max Day Plus Fire Flow Condition	Max Velocity ≤ 10 fps
HEAD LOSS CRITERIA	
Maximum Day Condition	2 to 7 feet per 1,000 feet of pipe
Peak Hour Condition	≤ 10 feet per 1,000 feet of pipe
PRESSURE CRITERIA	
Max Day Plus Fire Flow Condition	Min Residual Pressure of 20 psi
Peak Hour Condition	Min System Pressure of 40 psi
FIRE DEMAND CRITERIA	
Single Family Residential	1,500 gpm at 2 hours
All Other Land Uses	3,500 gpm for 4 hours

NOTES:

(1) Average per capita water use per 2012 *Water and Wastewater Master Plan* provided by Wilson Engineers

(2) Persons per household, 2014-2018, per US Census Bureau

(3) Use latest version of City of Phoenix *Design Standards Manual for Water and Wastewater Systems*. Other values may be used with prior approval from the Engineering Division.

WASTEWATER SYSTEM DESIGN CRITERIA	
DESCRIPTION	CRITERIA
AVERAGE DAY DEMAND	
Gallons per capita per day (gpcd) ⁽¹⁾	58.5
Density (people per dwelling unit) ⁽²⁾	3.34
Land Use Category ⁽³⁾	Varies
PEAKING FACTORS	
Dry Weather Peaking Factors (Applied to Average Flows)	Per AAC R18-9-E301.D
Wet Weather Peaking Factors (Applied to Peak Flows)	1.17
VELOCITY CRITERIA	
Gravity Mains	2 fps ≤ Velocity ≤ 8 fps
Force Mains	3 fps ≤ Velocity ≤ 7 fps
FLOW DEPTH CRITERIA (d/D) FOR DRY WEATHER PEAK HOUR FLOWS	
d/D for new sewer with diameter less than 10 inches	0.50
d/D for new sewer with diameter 12 inches and above	0.75 (AAC R18-9-E301.D.e.iii)
FLOW DEPTH CRITERIA (d/D) FOR WET WEATHER PEAK HOUR FLOWS	
d/D for designing new sewer pipe	< 0.90
d/D for evaluating existing pipe in developed areas	< 1.00
HEAD LOSS CRITERIA	
Gravity pipe	Manning's n=0.013
Pressure pipe	Hazen Williams' C=120
MANHOLES	
When smaller pipe joins larger pipe	Match Crowns
Invert drop through manhole	0.20 feet

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