# Water Design Report
## Guidelines

In accordance with Arizona Administrative Code Title 18, Chapter 4-505, all proposed additions or extensions to a public water system require a water design report. The report should describe the proposed construction and basis of design, provide design data and other pertinent information that defines the work to be done, and establish the adequacy of the design to meet the system demand.

In accordance with this state requirement, the city of Phoenix now requires a water design report be submitted for all proposed water distribution systems within the city. The design report shall include a description of the project, the basis of the design, calculations for project design, any modeling, and other information needed to gain a clear understanding of the project. The design report shall be signed and sealed by an Arizona registered engineer. The following is a general guideline for information to include in the report:

- Water main design on peak flow plus fire flow. Peak day flow shall be 2.0 times the average day flow and the peak hour shall be 1.7 times the peak day flow.

- Water main designed to 1) maintain between 50 and 100 psi during peak hour conditions at a flow velocity of less than or equal to five (5) fps, and 2) maintain a pressure greater than or equal to 25 psi at a point of maximum fire draft, at a flow velocity of less than or equal to 10 fps. The pipe diameter shall be sized based on the largest diameter calculated from the two conditions above.

- Reminder – these design parameters supersedes the minimum requirements in the Design Standards Manual for Water and Wastewater Systems Section 3.4.3, “Pipe-sizing” in which it states the prescribed minimum requirement of 12-inch in major streets, 8-inch mains in collector streets, and 6-inch mains in local streets in case of conflict regarding design minimums.

- The professional engineer should provide flow calculations and any necessary computer models for the two scenarios described above to provide documentation for the basis of design. The professional engineer should provide a clear, understandable schematic of the system showing the junction nodes, pipes, etc., for any computer modeling. The professional engineer should also provide input data which shows the pipe diameter, pipe lengths, system demands, pipe flows AND output data which shows pressures, velocities, head loss and flow rates.

For additional information refer to the *Design Standards Water/Wastewater Systems Manual*, pages 16 – 19, for discussion about water demand and an example of how to determine the design flows.





P:\Water Design Report Guidelines
EXTERNAL
Web\dsd_trt_pdf_00805
TRT/DOC/00805
New 12/12