Manual of Water Supply Practices

M22

Sizing Water Service Lines and Meters

Fourth Edition

American Water Works Association

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Contents

Figures

Tables

Preface

The American Water Works Association published the first edition of M22, *Sizing Water Service Lines and Meters*, in 1975. The manual was the first effort to provide guidance to the water industry on sizing water meters and service lines to meet the objectives of water utilities and their customers. The AWWA Distribution and Plant Operations Division recognized that the manual needed an update to incorporate changes in water demands that had occurred over the past 10 years and to offer a method for sizing dedicated irrigation meters that aligns with practices used by the Irrigation Association. In 1995, a manual revision subcommittee was established to review the existing manual and begin the process of developing an updated version and incorporating the impacts of existing technology into this sizing process. The efforts of that subcommittee resulted in the second edition (2004) of the meter and service-line sizing manual. In 2010, the Customer Metering Practices Committee formed a subcommittee to begin work on the third edition (2014) of M22. The subcommittee regrouped in 2020 to begin work on the fourth edition and met regularly over a three-year period to complete this most recent update.

This manual provides guidance on sizing water meters and service lines to meet the objectives of water utilities and their customers. The information in this manual can be used to estimate customer demand and maximum expected flow at a site, and this can be used to appropriately size a new service line and meter. This manual includes a useful field method called *demand profiling* that can be used to evaluate actual customer use patterns and help optimize meter size selection.

The data presented in the manual were obtained using a variety of methods including field measurements, utility surveys, technical publications, and hydraulic design calculations. This information has been condensed into a simplified format to assist readers in addressing most common service conditions. However, water and building systems are unique, and there may be complex meter and service line sizing situations that are beyond the scope of this manual.

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Chapter 1

Introduction

OVERVIEW

The physical interface between water providers and their individual customers begins and ends at the water meter, service connection, and service line. Ownership and responsibility for the meter and service line vary by utility and jurisdiction, but this connection is often understood as the place where utility-maintained infrastructure ends and customer-maintained infrastructure begins. This is where customer usage is measured and where utility revenue is determined.

Service connections and water meters are sized first and foremost to provide peak water demand at adequate pressure under all anticipated customer demand requirements, which may include fire protection. The size of the service connection and meter is important for other reasons as well. Connection fees are paid whenever a new service is established or when a customer requires additional capacity at an existing service. Volume-based utility revenue is determined from metered consumption, and meter accuracy is affected by flow rates and usage. Properly sizing water meters ensures revenue can be collected for all water that is delivered to end users.

This is the fourth edition of AWWA Manual M22, *Sizing Water Service Lines and Meters*. AWWA aims to produce manual updates every 10 years to keep current with industry changes. The first edition was printed in 1975, the second edition in 2004, and the third edition in 2014. This fourth edition includes a new approach for sizing meters for single-family and many multifamily residential buildings and includes results from recent research on measured peak demands. This fourth edition includes improved guidance on the sizing of water service lines and new approaches and data for the sizing of water meters.

M22 TARGET AUDIENCE

This manual is intended for use by:

- water utility managers,