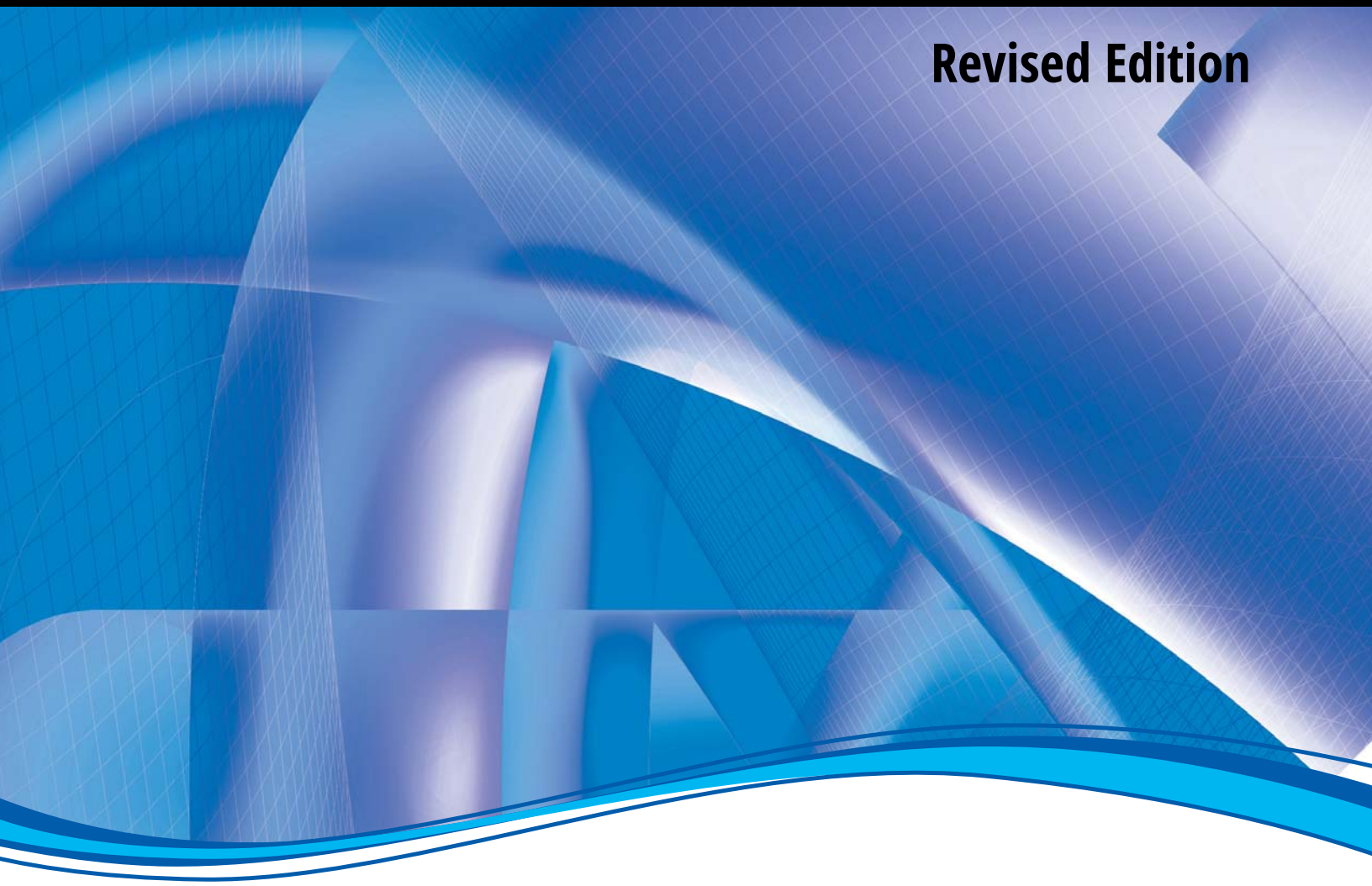
M42

Steel Water-Storage Tanks

Revised Edition



American Water Works Association

Steel Water-Storage Tanks

AWWA MANUAL M42

Revised Edition

American Water Works Association

Manual of Water Supply Practices — M42, Revised Edition

Steel Water-Storage Tanks

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Preface

The purpose of this manual is to provide the water distribution system manager, operator, contractor, and consultant with information concerning steel tanks used for the storage of water during water production, treatment, and distribution. The manual covers the planning, specification, construction, operation, and maintenance of steel tanks of riveted, welded, and bolted construction.

This manual is not intended to be a technical commentary on American Water Works Association (AWWA) standards dealing with steel water-storage tanks; reference is made to those standards to make the reader aware of their existence and application. ANSI/AWWA D101, Standard for Inspecting and Repairing Steel Water Tanks, Standpipes, Reservoirs, and Elevated Tanks for Water Storage, was last reaffirmed in 1986 and withdrawn as a standard in 1998, the year this manual was first published. That standard is included in this manual as appendix C.

While the scope of this edition of the manual remains largely unchanged, updates have been made to the content throughout. This revised edition includes several new and many revised figures and tables, information on composite elevated tanks, recommended steel tank guidelines, water quality assurance, references to AWWA standards, and current steel water tank industry sources and organizations.

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Acknowledgments

The Standards Committee on Steel Elevated Tanks, Standpipes, and Reservoirs, which reviewed and approved this manual, had the following personnel at the time of approval:

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The AWWA Standards Committee on Steel Elevated Tanks, Standpipes, and Reservoirs would like to dedicate this manual to Robert E. Vansant, past chairperson of the Standards Committee on Steel Elevated Tanks, Standpipes, and Reservoirs, who initiated work on this manual.

The following organizations and companies generously provided photos and illustrative materials for use in this manual: A.O. Smith Harvestore Products Inc., Cathodic Protection Services Company, Chicago Bridge and Iron Company, GPE Controls, Harco Waterworks CP, Mid Atlantic Storage Systems Inc., North Consumer Products, PDM Hydrostorage, Peabody TecTank Inc., Resource Development Company, Steel Plate Fabricators Association, and Tank Industry Consultants Inc.

Introduction

More than 100,000 steel water-storage tanks have been constructed within the last 100 years, a value that far exceeds the number of large water-storage vessels of any other type of construction material. Many steel water tanks have service histories in excess of a century and are still in service today (Figure F-1). Whereas early tanks were riveted, modern practice uses welded or bolted design and construction, which provide the advantage of a zero leakage tolerance.

To further increase their potential service life, steel tanks can be dismantled and re-erected in new locations. A tank that was originally in an optimal location can become useless if a factory relocates or there is a shift in housing patterns. However, a steel tank can be dismantled and then erected and coated at a new location.

This manual provides information on the selection, design, construction, maintenance, inspection, and repair of steel tanks for potable water storage. The manual will assist in tank sizing, configuration, site selection, design, operation, and maintenance.

Source: Tank Industry Consultants Inc.

Figure F-1 A tank constructed in 1902 is still serving Wabash, Ind., with practically no metal loss