

Renewal of Potable Water Pipes

Pipeline Infrastructure Committee

Edited by

Mohammad Najafi, Ph.D., P.E.; and Mario Perez, Ph.D.

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PREFACE

The purpose of this manual is to provide engineers, water agencies, consultants, pipeline owners, and municipalities with a resource to use when considering a trenchless water pipe renewal project. This manual focuses specifically on renewing potable water pipes. The reader is referred to *Pipe-Bursting Projects*, ASCE Manual of Practice No. 112, for consideration of trenchless pipe-bursting and replacement approaches. The objective is to provide an updated and comprehensive review of the trenchless pipeline renewal methodologies for potable water pipeline applications, with emphasis on planning and construction operation. A set of references and standards is provided so that the reader can obtain further details on a particular subject. This document is organized to reflect the order in which a trenchless potable water renewal project is typically carried out.

This manual covers such topics as planning and construction requirements, cleaning and pre-renewal inspection, lining operation, safety, certification, and final inspection. Trenchless renewal methods applicable to potable water pipes are described in Chapter 5. In this chapter, important topics, such as background information, installation procedures, design considerations, and special installation requirements, are presented. The topic of condition assessment of host pipelines will be covered in a future ASCE Manual and Report on Engineering Practice.

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CHAPTER 1

GENERAL INFORMATION

1.1 OVERVIEW

Several good textbooks and manuals describe pipe renewal techniques. However, this Manual of Practice (MOP) addresses a gap in the literature and provides a resource for design engineers, municipalities, federal and state government agencies, consultants, and others who are not familiar with or need a refresher course on *potable water pipeline renewal technologies*. At the same time, this MOP is intended as a reference document for those who engage in pipeline renewal on a daily basis, such as water pipeline owners, engineers, technicians, and operators responsible for the implementation of water pipeline renewal projects.

This manual provides background information on water pipeline renewal design and describes technologies with enough detail to provide assistance in selecting the right technique for a given set of specific project conditions and requirements. It should be noted that the terms “renewal,” “rehabilitation,” and “relining” are used interchangeably in this manual; however, they do not include pipe bursting and replacement. Renewal and rehabilitation include all aspects of upgrading performance of a host pipeline with an improved or new design life. Pipe bursting can be used to replace water pipelines and is used particularly to upsize the capacity of a host pipe. Pipe bursting can also be used in situations where open-cut (OC) techniques on the entire stretch of the pipeline are not possible or where excavation is very expensive and social costs of using the open-cut method or installing a parallel line are high. ASCE MOP No. 112 presents pipe bursting and replacement methods using trenchless technology in detail, and the reader is referred to this manual for more information on these techniques.