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ANSI/ ASCE/EWRI 56-10

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Guidelines for the Physical Security of Water Utilities

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Guidelines for the Physical Security of Wastewater/ Stormwater Utilities

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This document uses both the International System of Units (SI) and customary units

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The following standards have been issued:

ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures

ASCE/EWRI 2-06 Measurement of Oxygen Transfer in Clean Water

ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs

ASCE 4-98 Seismic Analysis of Safety-Related Nuclear Structures

Building Code Requirements for Masonry Structures (ACI 530-02/ASCE 5-02/TMS 402-02) and Specifications for Masonry Structures (ACI 530.1-02/ASCE 6-02/TMS 602-02)

ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures

SEI/ASCE 8-02 Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members

ANSI/ASCE 9-91 listed with ASCE 3-91

ASCE 10-97 Design of Latticed Steel Transmission Structures

SEI/ASCE 11-99 Guideline for Structural Condition Assessment of Existing Buildings

ASCE/EWRI 12-05 Guideline for the Design of Urban Subsurface Drainage

ASCE/EWRI 13-05 Standard Guidelines for Installation of Urban Subsurface Drainage

ASCE/EWRI 14-05 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage

ASCE 15-98 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)

ASCE 16-95 Standard for Load Resistance Factor Design (LRFD) of Engineered Wood Construction

ASCE 17-96 Air-Supported Structures

ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing

ASCE/SEI 19-10 Structural Applications of Steel Cables for Buildings

ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations

ANSI/ASCE/T&DI 21-05 Automated People Mover Standards—Part 1

ANSI/ASCE/T&DI 21.2-08 Automated People Mover Standards—Part 2

ANSI/ASCE/T&DI 21.3-08 Automated People Mover Standards—Part 3

ANSI/ASCE/T&DI 21.4-08 Automated People Mover Standards—Part 4

SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings

ASCE/SEI 24-05 Flood Resistant Design and Construction

ASCE/SEI 25-06 Earthquake-Actuated Automatic Gas Shutoff Devices

ASCE 26-97 Standard Practice for Design of Buried Precast Concrete Box Sections

ASCE 27-00 Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction

ASCE 28-00 Standard Practice for Direct Design of Precast Concrete Box Sections for Jacking in Trenchless Construction

ASCE/SEI/SFPE 29-05 Standard Calculation Methods for Structural Fire Protection

SEI/ASCE 30-00 Guideline for Condition Assessment of the Building Envelope

SEI/ASCE 31-03 Seismic Evaluation of Existing Buildings

SEI/ASCE 32-01 Design and Construction of Frost-Protected Shallow Foundations

EWRI/ASCE 33-09 Comprehensive Transboundary International Water Quality Management Agreement

EWRI/ASCE 34-01 Standard Guidelines for Artificial Recharge of Ground Water

EWRI/ASCE 35-01 Guidelines for Quality Assurance of Installed Fine-Pore Aeration Equipment

CI/ASCE 36-01 Standard Construction Guidelines for Microtunneling

SEI/ASCE 37-02 Design Loads on Structures during Construction

CI/ASCE 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data

EWRI/ASCE 39-03 Standard Practice for the Design and Operation of Hail Suppression Projects

ASCE/EWRI 40-03 Regulated Riparian Model Water Code

ASCE/SEI 41-06 Seismic Rehabilitation of Existing Buildings

ASCE/EWRI 42-04 Standard Practice for the Design and Operation of Precipitation Enhancement Projects

ASCE/SEI 43-05 Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities

ASCE/EWRI 44-05 Standard Practice for the Design and Operation of Supercooled Fog Dispersal Projects

ASCE/EWRI 45-05 Standard Guidelines for the Design of Urban Stormwater Systems

ASCE/EWRI 46-05 Standard Guidelines for the Installation of Urban Stormwater Systems

ASCE/EWRI 47-05 Standard Guidelines for the Operation and Maintenance of Urban Stormwater Systems

ASCE/SEI 48-06 Design of Steel Transmission Pole Structures

ASCE/EWRI 50-08 Standard Guideline for Fitting Saturated Hydraulic Conductivity Using Probability Density Functions

ASCE/EWRI 51-08 Standard Guideline for Calculating the Effective Saturated Hydraulic Conductivity

ASCE/SEI 52-10 Design of Fiberglass-Reinforced Plastic (FRP) Stacks

ASCE/G-I 53-10 Compaction Grouting Consensus Guide
ASCE/EWRI 54-10 Standard Guideline for the Geostatistical Estimation and Block-Averaging of Homogeneous and Isotropic Saturated Hydraulic Conductivity
ASCE/SEI 55-10 Tensile Membrane Structures
ANSI/ASCE/EWRI 56-10 Guidelines for the Physical Security of Water Utilities
ANSI/ASCE/EWRI 57-10 Guidelines for the Physical Security of Wastewater/Stormwater Utilities
ASCE/T&DI/ICPI 58-10 Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways

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FOREWORD

These guidelines were developed as a joint effort between the American Society of Civil Engineers (ASCE) and the American Water Works Association (AWWA) with technical input from the Water Environment Federation (WEF), in accordance with ASCE Rules for Standards Committees, and were published initially as a proposed draft, *Guidelines for the Physical Security of Water Utilities* (ASCE/AWWA/WEF 2006). That consensus process included balloting by a balanced Standards Committee and reviewing during a public comment period. The provisions of this document have been written in permissive language and, as such, offer to the user a series of options or instructions but do not prescribe a specific course of action. Significant judgment is left to the user of these documents.

These guidelines use customary units with the International System of Units (SI) in parentheses. This approach was in the best interest of ASCE, AWWA, and WEF at the time of development of the initial Draft of these guidelines.

PURPOSE OF THE GUIDELINES

These guidelines apply to physical security for facilities used in potable water source, treatment, and distribution systems.

BACKGROUND OF THE DEVELOPMENT

Highlights related to the creation of all the Water Infrastructure Security Enhancements (WISE) guidance documents and/or standards in the early years of the twenty-first century are summarized below:

1. Under the U.S. Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107–188), drinking water utilities serving more than 3,300 customers were required to conduct vulnerability assessments (VAs) of their water systems. The VAs often recommended security improvements to reduce the risk of malevolent acts (such improvements may also reduce the risk associated with natural events). Similar requirements for wastewater utilities have yet to be promulgated, but the protection of wastewater utility facilities using similar approaches has been promoted by the U.S. Environmental Protection Agency (USEPA) and various industry organizations. In addition, ASCE, AWWA, and WEF agreed to work together to develop materials to assist in the implementation of security recommendations and the overall improvement of water and wastewater infrastructure security. The project was funded by USEPA under a cooperative agreement to foster public/private partnership in water and wastewater security. This project was known as the USEPA Water Infrastructure Security Enhancements (WISE) Project.
2. The three organizations each became responsible for a portion of the project: AWWA led the drinking water supply, treatment, and distribution systems effort; WEF led the wastewater and stormwater collection, treatment, and disposal systems effort; and ASCE led the effort concerning the methodology and characteristics pertinent to design of contaminant detection and monitoring systems for both water and wastewater systems.
3. Phase 1 of the USEPA WISE project focused on the creation of Interim Voluntary Security Guidance documents (ASCE/AWWA/WEF 2004a, 2004b, 2004c). The purpose of these documents was to provide a centralized starting point for utilities as they integrate modern security practices into the management, operation, construction, or retrofit of their water, wastewater, and stormwater systems. Training materials were developed in Phase 2 to disseminate the information contained in the Phase 1 guidance documents.
4. Under the direction of USEPA, Phase 3 focused solely on the development of physical security guidelines for water, wastewater, and stormwater facilities. These voluntary consensus guidelines were first developed as the Draft and were published initially as *Guidelines for Physical Security for Water Utilities* (ASCE/AWWA/WEF 2006). The primary reviewers were members of the Water Supply Subcommittee of the ASCE WISE Standards Committee (SC), and the USEPA/ASCE/AWWA/WEF WISE Project Phase 3 Team.
5. The sections compiled in these guidelines are intended to provide direction to water utilities on how to design or retrofit their infrastructure, with consideration given to their unique circumstances and threats. A discussion of the various security threats and incidents that have occurred at water and wastewater utilities is provided in an American Water Works Association Research Foundation report by Welter (2003). This document can provide additional information in the assessment of security measures for utilities.
6. The USEPA Water Security Working Group presented its report *Recommendations of the National Drinking Water Advisory Council to the U.S. Environmental Protection Agency on Water Security Practices, Incentives, and Measures* to the National Drinking Water Advisory Council (NDWAC) on May 18, 2005 (WSWG 2005). Those findings included 18 features of an "active and effective" security program. These guidelines address the following NDWAC recommendations, which discuss physical security:
   a. Establish physical and procedural controls to restrict access to utility infrastructure to only those conducting authorized, official business and to detect unauthorized physical intrusions.
   b. Incorporate security considerations into decisions about acquisition, repair, major maintenance, and replacement of physical infrastructure; this should include consideration of opportunities to reduce risk through physical hardening and the adoption of inherently lower-risk design and technology options.
7. These guidelines should be implemented in concert with the other features and approaches described in the NDWAC report (WSWG 2005).