

# ASCE STANDARD

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American Society of Civil Engineers

## Design and Construction of Frost-Protected Shallow Foundations

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# Design and Construction of Frost-Protected Shallow Foundations

This document uses both **Système International (SI)** and customary units.



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## ABSTRACT

This standard addresses the design and construction of frost-protected shallow foundations in areas subject to seasonal ground freezing. Foundation insulation requirements to protect heated and unheated buildings from frost heave are presented in easy-to-follow steps with reference to design tables, climate maps, and other necessary data to furnish a complete frost-protection design. The advantages of this technology include improved construction efficiency over conventional practices, increased energy efficiency, minimized site disturbance, and enhanced frost protection. A commentary is included to provide background information and important technical insights.

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# STANDARDS

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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
- ANSI/ASCE 2-91 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 530-99/ASCE 5-99/TMS 402-99) and Specifications for Masonry Structures (ACI 530.1-99/ASCE 6-99/TMS 602-99)
- ASCE 7-98 Minimum Design Loads for Buildings and Other Structures
- ANSI/ASCE 8-90 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
- ANSI/ASCE 12-91 Guideline for the Design of Urban Subsurface Drainage
- ASCE 13-93 Standard Guidelines for Installation of Urban Subsurface Drainage
- ASCE 14-93 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 and 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 19-96 Structural Applications of Steel Cables for Buildings
- ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations
- ASCE 21-96 Automated People Mover Standards—Part 1
- ASCE 21-98 Automated People Mover Standards—Part 2
- SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings
- SEI/ASCE 24-98 Flood Resistant Design and Construction
- ASCE 25-97 Earthquake-Actuated Automatic Gas Shut-Off 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
- EWRI/ASCE 33-01 Comprehensive Transboundary International Water Quality Management Agreement
- EWRI/ASCE 34-01 Standard Guidelines for Artificial Recharge of Ground Water

# FOREWORD

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of the standard began in 1995 and incorporates information from several sources, as noted in the document.

This Standard was prepared through a consensus standards process by balloting in compliance with procedures of the ASCE Structural Engineering Institute. Those individuals who serve on the Frost-Protected Shallow Foundations Standard Committee are:

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# CONTENTS

1. Scope and Limitations .....	1
2. References .....	1
3. Symbols, Units, and Definitions .....	1
3.1 Symbols and Units .....	1
3.2 Definitions .....	1
4. Design Principles .....	3
4.1 General .....	3
4.1.1 Bearing Capacity .....	3
4.1.2 Drainage .....	3
4.1.3 Compaction .....	3
4.1.4 Insulation Protection .....	3
4.1.5 Termite Protection .....	3
4.2 Foundations on Non–Frost-Susceptible Ground or Fill Material .....	4
4.3 Foundations with Insulation to Prevent Ground Freezing .....	4
5. Simplified FPSF Design Method for Heated Buildings with Slab-On-Ground Foundations .....	4
6. FPSF Design Method for Heated Buildings .....	6
6.1 Slab-on-Ground Foundations .....	6
6.2 Unvented Crawlspace Foundations .....	7
6.3 Walk-Out Basements .....	8
7. FPSF Design Method for Unheated Buildings .....	8
7.1 Slab-on-Ground Foundation .....	8
7.2 Continuous Foundation Wall .....	11
7.3 Column Foundation .....	11
8. Special Design Conditions for FPSF .....	11
8.1 Small Unheated Areas in Otherwise Heated Buildings .....	11
8.2 Large Unheated Areas in Heated Buildings .....	12
8.3 Semi-Heated Buildings .....	12
8.4 Cold-Bridges .....	14
Appendix A: Design Data .....	15
Commentary .....	25
Index .....	35