

Excerpts, Definitions And Requirements For FHA & VA PERMANENT FOUNDATIONS From

The U. S. HOUSING AND URBAN DEVELOPMENT (HUD) HANDBOOK 7584/7487
PERMANENT FOUNDATION GUIDE FOR MANUFACTURED HOUSING, SEPTEMBER 1996

Chapter 1, 100-1 C.

PERMANENT FOUNDATIONS must be constructed of durable materials, i.e. concrete, mortared masonry, or treated wood and be site built. It shall have attachment points to anchor and stabilize the manufactured home to transfer all loads, herein defined, to the underlying soil or rock. The permanent foundations shall be structurally developed in accordance with this document or be structurally designed by a licensed professional engineer for the following:

1. Vertical stability:
 - a. Rated anchorage capacity to prevent uplift and overturning due to wind or seismic forces, whichever controls. Screw in soil anchors are not considered a permanent anchorage.
 - b. Footing size to prevent overloading the soil bearing capacity and avoids soil settlement. Footing shall be reinforced concrete to be considered permanent.
 - c. Base of footing below maximum frost penetration depth.
 - d. Encloses a basement or crawl space with a continuous wall (whether bearing or non-bearing) that separates the basement or crawl space from the backfill, and keeps out vermin and water.
2. Lateral stability: Rated anchorage capacity to prevent sliding due to wind or seismic forces, whichever controls, in the transverse and longitudinal directions.

Chapter 1, 101-4.

OTHER FOUNDATION DESIGNS. Manufacturers of home designs not covered by this handbook or recommending a foundation system not included in this handbook *shall submit drawings and structural calculations prepared and sealed by a licensed professional to the owner.*

Chapter 1, 102-2.

CODES GOVERNING BUILDINGS AND SITES. Include the following;

ASCE 7-93: Minimum Design Loads for Buildings and Other structures, Additions to CABO (Uniform Building Code) One and two Family Dwelling Code, 1992 and 1993 amendments.

Chapter 2, 201-3. And Chapter 5, 501-1

FROST PENETRATION DEPTH. Verify the frost penetration depth with local building code department. Refer to Maximum Annual Frost Penetration map H-4. The base of the footing must be below the maximum frost penetration depth.

Chapter 5, 503-1.

FOUNDATION REQUIREMENTS. All exterior walls, marriage walls, marriage posts, columns and piers, must be supported on an acceptable foundation system that must be of sufficient design to support safely the loads imposed, as determined from the character of the soil.

Chapter 5, 503-2.

PIER AND COLUMN & WALL FOOTING REQUIREMENTS. Footings for pier foundations shall be reinforced concrete and should be placed level on firm undisturbed soil of adequate bearing capacity and below the frost penetration depth. They can also be placed on engineered, compacted fill, approved by a licensed geotechnical engineer. Minimum thickness for the concrete footing is 8 inches (503-2 B). Chapter 1, 100-1 A 8. "Set on permanent foundation of piers, or of continuous cast in place concrete".

Chapter 5, 503-4.

MASONRY PIERS AND WALLS. All masonry piers and walls shall have mortared bed and head joints. Reinforcing and grouting shall be in accordance with the foundation concept from Appendix A and designed in Appendix C.

SURE SAFE® DESIGN'S APPROACH FOR HUD COMPLIANCE

1. DESIGN: All design and construction elements comply with the HUD handbook and the Uniform Building Code. (see HUD Permanent Foundation Guide excerpts on page 1)
2. FROST DEPTH: Perimeter enclosure walls are always required (see HUD Chapter 1, 100-C, 1, d), in addition to the Sure Safe® Steel Buttress™ interior support system which satisfies all vertical and/or lateral load requirements. The bottom of the concrete footings of the perimeter wall must be below the required extreme frost penetration depth (or 6 inches minimum below ground level) for the locality (Where there is a frost depth requirement).
 - a. SURE SAFE® DESIGN, in keeping with normal, accepted design practice in compliance with the Uniform Building Code, (see HUD Chapter 1, 101-4 & 102 -2) assumes the design position, that the perimeter enclosure wall acts as a barrier to prevent frost from entering the space and affecting the interior support piers. Therefore, the interior support piers are not required to be installed below grade or down to the frost penetration depth.
3. CRAWL SPACE: (Area under home). This element is normally the responsibility of the installers of the home and the installers of the perimeter enclosure wall.
 - a. HEIGHT: Must have a minimum clearance of 18 inches (24 inches where access to mechanical equipment located in the crawl space is required) between the bottom of the floor and ground level. A minimum of 12 inches between bottom of the chassis and ground level.
 - b. ACCESS: Must be provided through the perimeter wall/skirt or a vertical opening of at least 32 inches square, with a sloped permanent cover.
 - c. VENTILATION: Minimum area: 1 square foot for each 150 square foot of floor area.
4. FOOTINGS of ALL SUPPORT PIERS: (Chapter 1, 100-1C, 1, b & c and Chapter 5, 503-2)
 - a. PERIMETER WALL: Must be reinforced concrete.
 - b. INTERIOR SUPPORT PIERS: Must be reinforced concrete.
5. PERIMETER WALLS/SKIRTING: Load Bearing or Non-Load Bearing.
 - a. A continuous concrete footing/wall must satisfy the frost depth requirements noted in 2 (above)
 - b. MASONRY: Must have mortared head and bed joints, reinforced and grouted.
 - c. VINYL: Can be used above ground level only and is allowed, except in the Philadelphia HUD office areas.
 - d. TREATED WOOD: Can be above grade with concrete footings.
 - e. STEEL FRAME ANCHORED IN CONCRETE FOOTINGS: Can be used with a variety of wall surface materials, limited by those materials acceptable for below ground level use.
6. RUNNING GEAR/HITCH removal and proper SITE DRAINAGE are required.

SURE SAFE® STEEL BUTTRESS™ PERMANENT FOUNDATION

THE SYSTEM ...

A fully engineered, tested and patented system, furnished with site specific calculations and drawings for each home, calculating the actual weight of home, wind speed for location and soils conditions. Steel piers with adjustable leveling clamp (Safety Jack) attached to the chassis at top with the bottom embed into a concrete filled geotextile bag footing. The footings are 30" X 30" square and weigh approximately 520 pounds each.

Anchorage not required

The perimeter enclosure wall with a continuous concrete footing, insulated on one face to become a barrier to frost penetration into the crawl space. The bottom of the concrete footing must be below the frost penetration depth for the area, or a minimum of 12" below finished ground level. The wall, above ground level, may be of various approved materials and construction types.

A fully engineered, tested and patented system, furnished with site specific calculations and drawings for each home, calculating the actual weight of home, wind speed for location and soils conditions.

Piers placed up to a maximum of 8'-0 apart, have permanent re-leveling adjustment built in to Safety Jack clamping device. Large concrete footings placed over uneven soil conditions, virtually eliminate settlement. This vertical and lateral load support system is designed to be placed on top of the ground.

The Steel Buttress™ system has ample weight and rigidity to overcome all lateral loads, including sliding and overturning due to wind & seismic forces.

The perimeter enclosure wall and concrete must be provided to insure the vertical and lateral load support system and entire installation is in compliance with HUD requirements.