NFPA

225

~~Standard for~~ e

Model Manufactured Home Installation Standard

PASTE UP - SUBJECT TO FURTHER CHANGE / ACTION

2003 Edition

NFPA, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

NFPA 225

~~Standard on/for~~ Model Manufactured Home Installation Standard

2003 Edition

This edition of NFPA 225, ~~Standard on/for~~ Model Manufactured Home Installation Standard, was prepared by the Technical Committee on Manufactured Housing, released by the Technical Correlating Committee on Manufactured Housing, and acted on by NFPA at its November Association Technical Meeting held November 16–20, 2002, in Atlanta, GA. It was issued by the Standards Council on January 17, 2003, with an effective date of February 6, 2003, and supersedes all previous editions.

This edition of NFPA 225 was approved as an American National Standard on January 17, 2003.

Origin and Development of NFPA 225

Bonnie: Pls supply OLD text

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See attached page from ROC

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L225-1aa

(Log #23)
Committee: MAN-ADM

225-6-(1-3.4) :
TCC NOTE: The Manufactured Housing Technical Correlating Committee (MAN-ACC) directs that the action on this comment be changed to Reject. It was determined that this text is not appropriate for inclusion within the document. This text represents general information and is not considered a requirement. It was determined to satisfy the intent of the submitter that this text will be included in the origin and development statement that is included in all NFPA documents.
SUBMITTER: Mark A. Nunn, Manufactured Housing Inst. / Rep. MHI/ MHARR Industry Task Force
COMMENT ON PROPOSAL NO:225-90
RECOMMENDATION: Revise the following section:
1.3.4 This standard ~~is designed to~~ shall be adopted by authorities having jurisdiction over and responsibility for the safety and health of manufactured home users. It is intended to apply to all home installations, whether at new or existing manufactured home sites.
SUBSTANTIATION: This change will require the authority having jurisdiction to adopt the NFPA 225 as the standard for installation of manufactured homes. Thus, it will apply to both new and existing manufactured homes.
COMMITTEE MEETING ACTION: Accept in Principle
Revise 1.3.4 as follows:
1.3.4 This standard is designed to be the model standard to be submitted to the Secretary to meet the requirements of the Manufactured Housing Improvement Act of 2000.
COMMITTEE STATEMENT: The proposed revision is for clarification on the application of this proposed standard and the relationship it will have with the federal legislation related to the Manufactured Housing Improvement Act of 2000. This legislation establishes the adoption procedures and timeline that will be required by the individual states for manufactures homes.
NUMBER OF COMMITTEE MEMBERS:10
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 10

NFPA 225

Model Manufactured Home Installation Standard

2003 Edition

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Origin and Development of NFPA 225

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Technical Correlating Committee on

Manufactured Housing

David Hilton Goins, *Chair*
North Carolina Dept. of Insurance, NC [E]

Spell out circled items

Bill Farish, Fleetwood Homes, CA [M]
William Freeborne, US Dept of Housing and Urban Development, DC [E]
Danny D. Ghorbani, Manufactured Housing Assn for Regulatory Reform, DC [M]
Martin C. Gilchrist, Urban Research and Development Corp., PA [SE]
Mike Mafi, Nat'l Conference of States on Bldg Codes & Standards, VA [E]
John Pabian, Underwriters Laboratories Inc., IL [RT]
Jake Pauls, Jake Pauls Consulting Services in Building Use & Safety, MD [C]
Rep. American Public Health Association
Janet Potter, Manufactured Home Owners Assn. of America, NC [C]
Michael J. Slifka, PFS Corporation, WI [RT]
Nader Tomasbi, Liberty Homes, Inc., IN [M]
Frank Walter, Manufactured Housing Institute, VA [M]

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(Alt. To J. Pauls)
Mark A. Nunn, Manufactured Housing Institute, VA [M]
(Alt. to F. Walter)
John R. Stevens, US Dept of Housing & Urban Development, DC [E]
(Alt. to W. Freeborne)

Nonvoting

John Lake, Marion County Fire/Rescue, FL [E] Chair, MAN-FIR
Richard Mancini, Rhode Island State Building Commission, RI [E] Chair, MAN-PLU
Robert A. McCullough, Ocean County Construction Inspection Dept, NJ [E] Chair, MAN-ELE

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Jerry L. McHale, Federation of Manufactured Home Owners of Florida, FL [C] Chair, MAN-ADM
Raymond F. Tucker, RADCO, CA [RT] Chair, MAN-STR
Michael L. Zieman, RADCO, CA [RT] Chair, MAN-MEC

NFPA
Walter P. Sterling, Staff Liaison

new S.L.?

Committee Scope: This Correlating Committee shall have primary responsibility for documents or portions of documents that provide a safe and healthy environment for the occupant of a manufactured home.

Technical Committee on

Administration for Manufactured Housing ~~(MAN-ADM)~~

Jerry L. McHale, *Chair*
Federation of Manufactured Home Owners of Florida, FL [C]

Danny D. Ghorbani, Manufactured Housing Assn for Regulatory Reform, DC [M]
Martin C. Gilchrist, Urban Research and Development Corp., PA [SE]
David Hilton Goins, North Carolina Dept of Insurance, NC [E]
Doug Gorman, Home-Mart, Incorporated, OK [M]
Rep. Manufactured Housing Association of Oklahoma
Jeffrey T. Inks, National Association of Home Builders, DC [U]
Jake Pauls, Jake Pauls Consulting Services in Building Use & Safety, MD [C]
Rep. American Public Health Association
Dana C. Roberts, State of Oregon, OR [E]
Rep. Council of State Administrative Agencies
Kent Stichter, Fall Creek Housing Corporation, IN [M]
Raymond F. Tucker, RADCO, CA [RT]

Alternates

Stanley C. Harbuck, School of Building Inspection, UT [C]
(Alt. to J. Pauls)
Michael L. Zieman, RADCO, CA [RT]
(Alt. To R. F. Tucker)

Walter P. Sterling, NFPA Staff Liaison

new S.L.?

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on administrative provisions and planning requirements for manufactured homes to assure the adequacy of architectural planning considerations and documentation of compliance for a safe and healthy environment for the occupants of a manufactured home.

Technical Committee on

Electrical for Manufactured Housing

Robert A. McCullough, *Chair*
Ocean County Construction Inspection Dept, NJ [E]
Rep. International Association of Electrical Inspectors

Thomas R. Brandt, Fairmont Homes Inc., IN [M]
C. Edgar Bryant, Champion Enterprises, Inc., MI [M]
Thomas L. Harman, University of Houston/Clear Lake, TX [SE]
Daniel J. Kissane, Pass & Seymour/Legrand, NY [M]
Robert L. LaRocca, Underwriters Laboratories Inc., NY [RT]
~~**Robert E. Moore,** TECO Energy, FL [U]~~
Rep. Edison Electric Institute
Kent Pribyl, Nebraska Public Service Commission, NE [E]
Clifford L. Rediger, Independent Electrical Contractors Training Fund, CO [IM]
Frank Whittaker, Jr., City of Roanoke, Virginia, VA [E]
Michael L. Zieman, RADCO, CA [RT]

Alternates

David R. Keller, Champion Enterprises, Inc., MI [M]
(Alt. to C. E. Bryant)

Jeffrey S. Sargent, NFPA Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on electrical conductors and electrical equipment installed within or on manufactured homes to provide a safe and healthy environment for the occupants of a manufactured home.

Technical Committee on

Fire Safety for Manufactured Housing

John Lake, *Chair*
Marion County Fire/Rescue, FL [E]

Jim Blair, Foremost Corporation of America, MI [I]
Gene B. Endthoff, National Fire Sprinkler Association, IL [M]
Kenneth E. Gaiser, City of Jackson Fire Department, MI [E]
Rep. International Association of Fire Chiefs
William M. Hug, Cavco Industries, LLC, AZ [M]
M. L. "Larry" Maruskin, Federal Emergency Management Agency, MD [C]
Richard A. Mendlen, US Dept of Housing and Urban Development, DC [E]
John Pabian, Underwriters Laboratories Inc., IL [RT]
Dennis L. Pitts, American Forest & Paper Association, TX [M]
James V. Ryan, Self, MD [SE]
Michael J. Slifka, PFS Corporation, WI [RT]
Randy E. Vogt, State of Minnesota, MN [E]
Jerry A. Walker, Gypsum Association, DC [M]
Richard Weinert, State of California, CA [E]
A. Elwood Willey, FIREPRO Incorporated, MA [SE]

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(Alt. to D. L. Pitts)
Pete Vasquez, Jr., State of California, CA [E]
(Alt. to R. Weinert)
Patrick Zeeveld, Underwriters Laboratories Inc., IL [RT]
(Alt. to J. Pabian)

NFPA
Walter P. Sterling, Staff Liaison

new S.L.?

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on fire safety to the occupants of a manufactured home.

Technical Committee on

Mechanical for Manufactured Housing

Michael L. Zieman, *Chair*
RADCO, CA, [RT]

Larry Boyce, NORDYNE, MO [M]
Mervin W. Dizenfeld, VA [SE]
Donald E. Dockray, Southern California Gas Company, CA [U]
John M. Halliwill, Int'l Assn of Plumbing & Mechanical Officials, CA [E]
Jordan Heiman, Jordan L Heiman Inc., MO [SE]
Michael Lubliner, Washington State University Energy Program, WA [U]
Rep. Northwest Energy Efficiency Alliance
John Mikel, Skyline Corporation, IN [M]
John Pabian, Underwriters Laboratories Inc., IL [RT]
Robert (Bobby) Parks, Parks Mobile Air, LLC, LA [IM]
Ivan T. Smith, Greenstone Industries, Inc., FL [M]
John R. Stevens, US Dept of Housing and Urban Development, DC [E]
Elbert D. Stillwaggon, Weaver Gas, NY [IM]
Rep. National Propane Gas Association
Frank Walter, Manufactured Housing Institute, VA [M]
Alan Zimmerman, York International UPG/Evcon, KS [M]

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Robert D. Haden, Blossman Gas, Inc., AL [IM]
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Jeffrey T. Legault, Skyline Corp., IN [M]
(Alt. to J. Mikel)
Mark A. Nunn, Manufactured Housing Institute, VA [M]
(Alt. to F. Walter)
Hari Ramanathan, Int'l Assn of Plumbing & Mechanical Officials, CA [E]
(Alt. to J. M. Halliwill)
Steven E. Younis, NFPA Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on condensation control; air infiltration; thermal insulation; certification for heating and comfort cooling; and heating, cooling, and fuel-burning equipment that is installed within, on, or external to a manufactured home.

Technical Committee on

Plumbing for Manufactured Housing

Richard A. Mancini, *Chair*

Rhode Island State Building Commission, RI [E]

Marguerite E. Carroll, Underwriters Laboratories Inc., CA [RT]
John M. Halliwill, Int'l Assn of Plumbing & Mechanical Officials, CA [E]
William C. Masters, Homes of Merit, Inc., FL [M]
James R. Paschal, NSF International, MI [RT]
Kent Pribyl, Nebraska Public Service Commission, NE [E]
David Viola, Plumbing Manufacturers Institute, IL [M]
Michael L. Zieman, RADCO, CA [RT]

Alternates

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Hari Ramanathan, Int'l Assn of Plumbing & Mechanical Officials, CA [E]
(Alt. to J. M. Halliwill)

NFPA
Theodore C. Lemoff, Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on plumbing systems that provide a safe and healthy environment for the occupants of a manufactured home.

Technical Committee on

Structural for Manufactured Housing

Raymond F. Tucker, *Chair*
RADCO, CA [RT]

John G. Bradfield, Composite Panel Association, MD [U]
Bill Broecker, Foremost Corporation of America, MI [I]
C. Edgar Bryant, Champion Enterprises, Inc., MI [M]
Bill Farish, Fleetwood Homes, CA [M]
Evor F. Johns, Progressive Engineering, Inc., IN [SE]
Michael A. Kinard, Kinro Incorporated, TX [M]
Mike Mafi, Nat'l Conference of States on Bldg Codes & Standards, VA [E]
Harry W. (Hank) Martin, American Iron and Steel Institute, CA [M]
Therese P. McAllister, Greenhorne & O'Mara, Inc., MD [C]
Rep. FEMA/Federal Insurance & Mitigation Div

Nanette Lockwood McElman, Institute for Business and Home Safety, FL [I]
Richard A. Mendlen, US Dept. of Housing and Urban Development, DC [E]
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(Alt. to J. B. Stone)
Robert J. Wills, American Iron and Steel Institute, AL [M]
(Alt. to H. W. Martin)
Patrick Zeeveld, Underwriters Laboratories Inc., IL [RT]
(Alt. to J. Pabian)

Bonnie E. Manley, NFPA Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on materials, products, equipment and workmanship and testing needed to ensure that there is a safe and healthy environment for the occupant of a manufactured home. The Committee shall also have the responsibility associated with the general requirements for designing the structure to fully withstand the adverse effects of transportation shock and vibration on a manufactured home.

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

use updated B.P.s for multiple committees

NFPA 225

Model Manufactured Home Installation Standard

2003 Edition

Chapter 1 Administration

1.1 Scope. This model standard shall cover the installation of manufactured homes, wherever sited in the U.S. and its territories. The manufacturer's installation instructions shall apply:

(1) To items not covered by this standard

(2) Where the manufacturer's approved installation instructions provide a specific method of performing a specific operation or assembly

1.2 Purpose. (Reserved)

1.3 Application. The provisions of this standard shall apply to manufactured homes for use as dwellings units and makes no provisions for other residential occupancies.

1.3.1 This standard shall not apply to manufactured homes used for other than dwelling purposes.

1.3.2 The provisions of this standard shall not apply to recreational vehicles as defined in NFPA 1192, *Standard*

on Recreational Vehicles, or to park trailers as defined in ANSI A119.5, *Recreational Park Trailers.*

1.3.3 The manufactured homes covered by this standard shall comply with the U.S. Department of Housing and Urban Development (HUD)'s federal Manufactured Home Construction and Safety Standards (MHCSS) Program, as set forth in 24 CFR, Parts 3280 and 3282. Mobile homes built prior to June 15, 1976 are also covered by this standard.

1.3.4 This standard is designed to be adopted by authorities having jurisdiction over and responsibility for the safety and health of manufactured home users. It is intended to apply to all home installations, whether at new or existing manufactured home sites.

1.3.5 Flood Hazard Areas. For flood hazard areas, see National Flood Insurance Program (NFIP) and FEMA 85.

1.4 Retroactivity. While this standard provides useful technical data for improvements to existing sites falling within its scope, it is not intended to be applied retroactively to existing sites except where the authority having jurisdiction considers such application essential for the safety and health of the occupants or users of the sites. This standard shall not be construed as relieving the installer of a manufactured home of the responsibility for compliance with the codes and regulations established by

the authorities having jurisdiction that are equal or exceed this standard.

1.5 Term Use. The term *manufactured home* when used in this document shall be permitted to be used interchangeably with *home*.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P. O. Box 9101, Quincy, MA 02269-9101.

NFPA 70, National Electrical Code®, 2002 edition.

NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials,* 2000 edition.

NFPA 501, *Standard on Manufactured Housing,* 2000 edition.

NFPA 501A, *Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities,* 2002 edition.

NFPA 1192, Standard on Recreational Vehicles, 2002 edition.

2.3 Other Publications.

2.3.1 ANSI Publications. American National Standards Institute, Inc., 11 West 42nd Street, 13th floor, New York, NY 10036.

ANSI A119.5, *Recreational Park Trailers,* 1998 edition.

ANSI/ASCE 7-88, *Minimum Design Loads for Buildings and Other Structures.*

2.3.2 ASTM Publications. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM C 90, *Standard Specification for Loadbearing Concrete Masonary Units,* 2001.

ASTM D 3953, *Standard Specification for Stopping, Flat Steel and Seals,* 1997.

2.3.3 AWPA Publications. American Wood-Preservers' Association, P.O. Box 5690, Granbury, Texas 76049.

AWPA C2, *Lumber, Timbers, Bridge Ties and Mine Ties, Pressure Treatment by Pressure Process,* 2000

AWPA C9, *Lumber and Plywood for Permanent Wood Foundations, Preservative Treatment by Process,* 1996.

2.3.4 U.S.Government Publication. U.S. Government Printing Office, Washington, DC 20402

Title 24, *Code of Federal Regulations,* Parts 3280 and 3282.

 Paste up - subject to further change/action

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not included, common usage of the terms shall apply.

3.2 NFPA Official Definitions.

3.2.1 Approved. Acceptable to the authority having jurisdiction.

3.2.2 Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4 Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate

designated standards or has been tested and found suitable for a specified purpose.

3.2.5 Shall. Indicates a mandatory requirement.

3.2.6 Should. Indicates a recommendation or that which is advised but not required.

3.2.7 Standard. A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 Anchor. A device placed at tne manufactured home site designed to transfer home anchoring loads to the ground.

3.3.2 Anchoring Equipment. Ties, straps, cables, turnbuckles, chains and other approved components, including tensioning devices, that are used to secure a manufactured home to anchors.

3.3.3 Anchoring System. A combination of anchoring equipment and anchors that will, when properly designed and installed, resist the uplift, overturning and lateral forces on the manufactured home.

3.3.4 Alteration.

3.3.4.1 Construction Alteration. The replacement, addition, modification, or removal of any equipment or installation that can affect the originally approved design of construction, plumbing, heating, cooling, fuel-burning, or electrical systems.

3.3.4.2 Installation Alteration. The replacement, addition, modification, or removal of any components of the required ground support or anchoring systems.

3.3.5 Crossovers. Utility connections in multisection homes that are located where the sections are joined. Crossover connections include heat ducting, electrical circuits, water pipes, drain plumbing, and gas lines.

3.3.6 Footing. That portion of the support system that transmits loads directly to the soil.

3.3.7 Installation. Assembly, at the site of occupancy, of all portions of the manufactured home, connection of the home to existing utility connections, and installation of support and anchoring systems.

3.3.8 Installation Instructions. Instructions provided by the manufacturer, which accompany each manufactured home and detail the manufacturer's requirements for ground support, anchoring systems, and other work completed on site.

3.3.9 Manufactured Home. A structure, transportable in one or more sections, which, in the traveling mode, is ~~eight~~ 8 body feet (2.4 m) or more in width or ~~forty~~ 40 body feet (12.2

m) or more in length or, when erected on site, is ~~three hundred twenty~~ 320 or more ft^2 (29.7 m^2) and which is built on a permanent chassis and designed to be used as a dwelling, with or without a permanent foundation, when connected therein; except that such terms shall include any structure which meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the regulatory agency. Calculations used to determine the number of square feet in a structure are based on the structure's exterior dimensions, measured at the largest horizontal projections when erected on site. These dimensions include all expandable rooms, cabinets, and other projections containing interior space, but do not include bay windows.

3.3.10 Manufactured Home Accessory Building or Structure. A building or structure that is an addition to or supplements the facilities provided by a manufactured home.

3.3.11 Manufactured Home Gas Supply. A listed connector designed for connecting the manufactured home to the gas supply source. [**501A:** 3.3]

3.3.12 Manufactured Home Site. A designated parcel of land designed for the accommodation of one manufactured home, its accessory buildings or structures, and accessory

equipment, for the exclusive use of the occupants of the home.

3.3.13 Pier. That portion of the support system between the footing and the manufactured home, exclusive of shims. Types of piers include, but are not limited to, the following:

(1) Manufactured steel stands

(2) Pressure-treated wood

(3) Manufactured concrete stands

(4) Concrete blocks

3.3.14 Skirting. A weather-resistant material used to enclose the space from the bottom of the manufactured home to grade.

3.3.15 Stabilizing Devices. All components of the anchoring and support systems, such as piers, footings, ties, anchoring equipment, anchors, or any other materials and methods of construction that support and secure the manufactured home to the ground.

3.3.16 Structure. That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

3.3.17 Support System. Pilings, columns, footings, piers, foundation walls, shims, and any combination thereof, that, when properly installed, support the manufactured home.

3.3.18 Tie. See Anchoring Equipment.

5.5.1 Requirements. To help prevent settling or sagging, the home shall be sited on firm, undisturbed soil or fill compacted to at least 90 percent of its maximum relative density.

5.5.2 Bearing Capacity.

5.5.2.1 The bearing capacity of the soil shall be determined in accordance with 5.2.3 before designing the foundation.

5.5.2.2 If the soil capacity cannot be determined by either local soil records or tests as specified in 5.2.3, but its type can be identified, the foundation bearing pressures shown in Table 5.2.2 shall be permitted to be used.

5.5.2.3 If the bearing capacity of the soil cannot be identified, 7.5.2.4.1 and Table 5.2.2 shall be used unless the soil appears to be composed of peat, organic clays, or uncompacted fill or to have unusual conditions.

5.5.2.4 If the soil appears to be composed of peat, organic clays, or uncompacted fill or to have unusual conditions, a registered professional geologist, a registered professional engineer, or an architect shall be consulted.

Table 5.5.2 General Description of Soils

Soil Class	Soil Type Based on the Unified Classification System	Torque Probe Test Value[1]
1	Rock or hard pan	N/A
2	Sandy gravel and gravel; very dense and/or cemented sands; coarse gravel/cobbles; preloaded silts, clays and coral	550 ~~inch-pounds~~ and up
3	Sand; silty sand; clayey sand; silty gravel; clayey gravel; medium dense coarse sands; sandy gravel; and very stiff silts and clays	350 to 550 ~~inch-pounds~~
4A	Loose to medium dense sands; firm to stiff clays and silts; alluvial fills	275 to 350 ~~inch-pounds~~
4B	Loose sands; firm clays; alluvial fill	175 to 275 ~~inch-pounds~~

in.-lb (4x) SI conv.?

3.3.18.1 Diagonal Tie. A tie intended to resist horizontal or shear forces and to resist vertical, uplift, and overturning forces.

3.3.18.2 Vertical Tie. A tie intended to resist uplifting and overturning forces.

3.3.19 Utility Connection. The connection of the manufactured home to existing utilities that include, but are not limited to, electricity, water, sewer, gas, or fuel oil.

Chapter 4 General

4.1 Preinstallation Considerations. Prior to locating or relocating a manufactured home, the authority having jurisdiction shall be contacted for installation and permitting procedures.

fix #ing

4.2 Alterations. Prior to altering a home, the authority having jurisdiction shall be contacted to determine if plan approval and permit are required.

bf

4.3 Data Plate.

S.L.: add subhead? Data Plate Location

4.3.1 Each manufactured home shall bear a data plate affixed in a permanent manner near the electrical panel or other readily accessible and visible location.

4.3.2 Data Plate Information. The data plate shall state the home's structural, roof load, thermal, and wind design. Specific information about the manufacturer, unit serial

bf

number, date of manufacture, and required information shall be included.

4.4 Installation Considerations. The items listed in [redacted] through [redacted] shall be reviewed prior to installing the manufactured home.

4.4.1 Floor Plan. This document shall be the approved floor plan of the home and shall include information regarding minimum pier capacities for mating line pier (mandatory design perimeter piering), pertinent electrical information, and detailed structural requirements required by NFPA 501; Standard on Manufactured Housing.

4.4.2 Utility Schematics.

4.4.2.1 These documents shall be the approved utility schematics and shall show the configuration of the different utility systems in the home (water, drain, and gas).

4.4.2.2 The drain schematic shall indicate any portion of the drain system that requires site installation for final assembly.

4.4.2.3 Field assembly shall be necessary for any "shipped loose" system parts.

4.4.3 Home Installation Manual Supplements.

Supplemental pages shall be permitted to be included with the home, outlining special features in the home that are not covered or differ from this document.

4.4.4 Design Zone Maps.

Editor: Check that numbering of art. in NFPA 501 doesn't change - it's also in this cycle.

4.4.4.1 The design zone maps shall be those identified in NFPA 501 by Figure 4.5.3.2, Figure 4.5.3.3.1, Figure 6.2.4.4 and Figure 6.6.

4.4.4.2 These maps and the information on the data plate shall be reviewed to determine if the home site is within acceptable boundaries.

Chapter 5 Site Preparation

5.1 Access for Transporter. Before attempting to move a home, it shall be ensured that the transportation equipment and home can be routed to the installation site. Special transportation permits might be required from state, county, or city officials.

5.2 Encroachments and Setback Distances. Local laws regarding encroachments in streets, yards, and courts shall be obeyed, and permissible setback distances from property lines and public roads shall be met.

5.3 Fire Separation Distance. Fire separation distances shall be in accordance with Chapter 4 of NFPA 501A, *Standard for Fire Safety Criteria for Manufactured Home Installation, Sites, and Communities.*

5.4 Issuance of Permits. All necessary local permits shall be obtained and all fees shall be paid.

5.5 Soil Conditions.

N/A	Uncompacted fill	Special Analysis Required (See [redacted])
N/A	Peat or Organic Clays	Special Analysis Required (See [redacted])

1. Torque probe to be read at 1 foot above helix and at the bottom of the anchor.

S.L.: X-refs 5/6
5.5.2.4 ?

5.5.3 Soil-Bearing Testing Methods and Equipment. A soil test torque probe, or any other methods acceptable to the jurisdiction having authority shall be permitted to be used.

5.6 Removal of Organic Material. Removal of all decayable material, such as grass, roots, twigs, and wood scraps, from beneath the home is required in areas where footings are to be placed, to minimize settling of footings and insect damage.

5.7 Drainage.

5.7 1 Purpose. Drainage shall be provided that prevents water build-up under the home, shifting or settling of the foundation, dampness in the home, damage to siding and bottom board, buckling of walls and floors, and problems with the operation of doors and windows.

5.7.2 Elimination of Depressions.

5.7.2.1 Drainage.

5.7.2.1.1 The home site shall be graded to permit water to drain from under the home.

5.7.2.1.2 All drainage shall be diverted away from the home.

5.7.2.2 Slopes Site Considerations. Sloped sites shall be protected from surface runoff from the surrounding area.

5.7.3 Drainage Structures. Ditches and culverts shall be permitted to be used to drain surface runoff and included in the overall site preparation.

5.7.4 Gutters and Downspouts. When gutters and downspouts are installed, the run off shall be directed away from the home.

5.8 Ground Moisture Control.

5.8.1 Vapor Retarder. If the space under the home is to be enclosed with skirting or other material, a vapor retarder that keeps ground moisture out of the home shall be installed.

5.8.2 Acceptable Types of Ground Cover. A minimum of 6-mil polyethylene sheeting or its equivalent shall be used.

5.8.3 Proper Installation.

5.8.3.1 The entire area under the home shall be covered with the sheeting as noted in [redacted] and it shall be overlapped at least 12 in. (305 mm) at all joints.

5.8.3.2 Where soil and frost conditions permit placement of footings at grade level, the sheeting shall be placed directly beneath the footings.

Chapter 6 Foundations

6.1 General.

6.1.1 Foundations for manufactured homes installations shall be constructed in accordance with Chapter 6.

6.1.2 Installations proposing different detailed specifications other than provided in Chapter 6 (such as block size or loads) shall be verified by engineering data.

6.1.3 Details, plans, and/or test data shall be submitted to the authority having jurisdiction for approval.

6.1.4 Alternate foundation designs that are prepared by a registered professional engineer or architect shall be permitted to be used instead of details shown in Chapter 6 when approved by the authority having jurisdiction.

6.2 Piers.

6.2.1 General. The piers used shall be capable of transmitting the vertical live and dead loads to the foundation below.

6.2.2 Acceptable Piers — Materials Specification.

6.2.2.1 Piers shall be permitted to be concrete blocks, pressure-treated wood having 0.60 pcf retention in accordance with AWPA C9, *Lumber and Plywood for Permanent Wood Foundations, Preservative Treatment by Pressure Process*, or adjustable metal or concrete piers as shown in [redacted] and [redacted].

S.L.: Correct fig. x-refs?

6.2.2.2 Manufactured piers shall be listed or labeled for the required load capacity.

6.2.3 Design Requirements.

6.2.3.1 Load-Bearing Capacity.

bf

6.2.3.1.1 The load that each pier must carry shall depend on such factors as the dimensions of the home, the roof live load, the spacing of the piers, and the way the piers are used to support the home.

6.2.3.1.2 Center beam/marriage wall blocking shall be required for multisection homes.

6.2.3.~~1.3~~ Pier Capacities.

6.2.3.~~1.3~~.1 Table 6.2.3.~~1.3.1~~(a) and Table 6.2.3.~~1.3~~(b) for pier capacities shall be used when the manufacturer's installation instructions are not available.

6.2.3.~~1.3~~.2 Manufactured piers shall be rated at least to the capacities given in [redacted] and Table [redacted], and locally constructed piers shall be designed to transmit these loads safely as required by [redacted]

S. L.: renumber 6.2.3.1.3 → 6.2.3.4 as shown on attached?

Table 6.2.3.~~1.3.1~~(a) Minimum Pier Capacity, Frame Plus Perimeter Blocking (Both Frame and Perimeter Blocking Required)

Section Width (ft)	Roof Live Load (psf)	Pier Location	Minimum Pier Capacity (lb) Maximum Pier Spacing (ft) 4	6	8	10
8	20	Frame	900	1300	1800	2200
		Perimeter	600	800	1100	1400
	30	Frame	900	1300	1800	1200
		Perimeter	700	1100	1400	1800
	40	Frame	900	1300	1800	2200
		Perimeter	900	1300	1800	2200
10	20	Frame	1100	1700	2200	2800
		Perimeter	700	1100	1400	1800
	30	Frame	1100	1700	2200	2800
		Perimeter	900	1400	1800	2300
	40	Frame	1100	1700	2200	2800
		Perimeter	1100	1700	2200	2800
12	20	Frame	1300	1900	2600	3200
		Perimeter	800	1200	1600	2000
	30	Frame	1300	1900	2600	3200
		Perimeter	1100	1600	2100	2600
	40	Frame	1300	1900	2600	3200
		Perimeter	1300	1900	2600	3200
14	20	Frame	1500	2200	3000	3700
		Perimeter	900	1400	1900	2400
	30	Frame	1500	2200	3000	3700

		Perimeter	1200	1800	2400	3000
	40	Frame	1500	2200	3000	3700
		Perimeter	1500	2200	3000	3700
16	20	Frame	1700	2600	3400	4300
		Perimeter	1100	1600	2200	2700
	30	Frame	1700	2600	3400	4300
		Perimeter	1400	2100	2800	3500
	40	Frame	1700	2600	3400	4300
		Perimeter	1700	2600	3400	4300
18	20	Frame	1900	2900	3900	4800
		Perimeter	1200	1800	2500	3100
	30	Frame	1900	2900	3900	4800
		Perimeter	1600	2400	3200	3900
	40	Frame	1900	2900	3900	4800
		Perimeter	1900	2900	3900	48000

Notes:
1. Frame blocking only is the total of the frame weight plus perimeter weight.
2. When using frame and perimeter blocking, the marriage lines of the multisection home are double the perimeter weight.

Table 6.2.3.~~1.3.1~~ 2.1(b) Minimum Pier Capacity, Multisection Pier Loading Under Marriage Line

		Pier Load and Minimum Pier Capacity (lb)						
		Mating Wall Opening (ft)						
Section Width (ft)	**Roof Live Load (psf)**	**5**	**10**	**15**	**20**	**25**	**30**	**35**
8	20	600	1200	1800	2400	3000	3600	4200
	30	800	1600	2400	3200	4000	4800	5600
	40	1000	2000	3000	4000	5000	5000	7000
10	20	800	1500	2300	3000	3800	4500	5300
	30	1000	2000	3000	4000	5000	6000	7000
	40	1300	2500	3800	5000	6300	7500	8800
12	20	900	1800	2600	3500	4400	5300	6100
	30	1200	2300	3500	4700	5800	7000	8200
	40	1500	2900	4400	5800	7300	8800	10200
14	20	1000	2000	3000	4100	5100	6100	7100
	30	1400	2700	4100	5400	6800	8100	9500
	40	1700	3400	5100	6800	8400	10100	11800
16	20	1200	2300	3500	4700	5800	7000	8100
	30	1600	3100	4700	6200	7800	9300	10900
	40	1900	3800	5800	7500	9700	11600	13600

Example:

14-ft section width

30 psf roof live load

18-ft wide mating wall opening

Follow down the "Section Width" column to 14 ft. Follow across to 30 psf in the "Roof Live Load" column. Since the mating wall opening is 18 ft wide, follow across to the column headed "20." (For any opening width that is not shown, use the next highest number on the chart.) The required pier capacity is 5400 pounds.

Sidewall opening pier capacity is one-half the mating wall opening weight of an identical or next larger span. For piers supporting two adjacent openings, the capacity is the combination of the weights from each opening.

6.2.3.~~2~~ 3.1 Configuration.

6.2.3.~~2~~ 3.1.1 Concrete Blocks.

6.2.3.2.1.1 Concrete block piers shall be installed in accordance with Figure 6.2.3.2.1.1(a) and Figure 6.2.3.2.1.1(b).

6.2.3.2.1.2 Load-bearing (not decorative) concrete blocks shall have nominal dimensions of at least 8 in. × 8 in. × 16 in. (205 mm × 205 mm × 410 mm).

6.2.3.2.1.3 The concrete blocks shall be stacked with their hollow cells aligned vertically.

6.2.3.2.1.4 When piers are constructed of blocks stacked side by side, each layer shall be at right angles to the previous one as shown in [redacted] and [redacted].

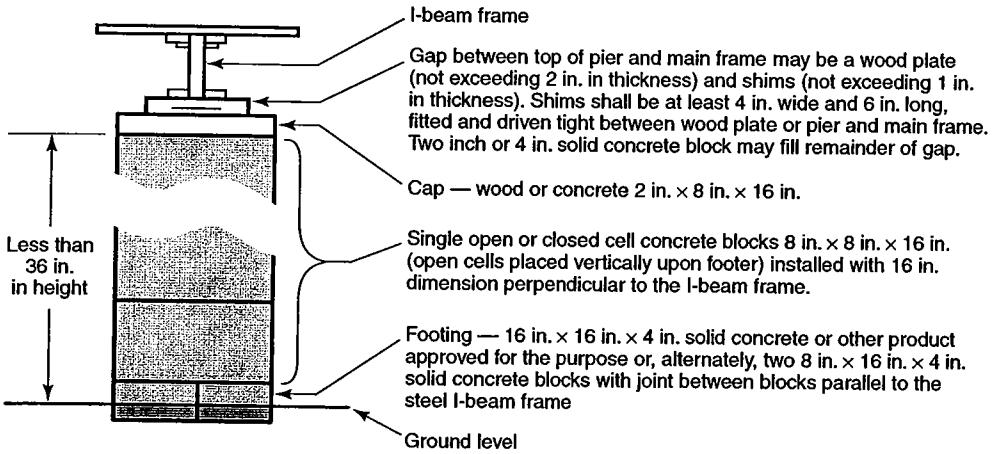
Insert Artwork Here

Figure 6.2.3.2.1.1(a) Typical footing and pier installation.

Figure 6.2.3.2.1.1(b) Typical footing and pier installation.

6.2.3.2.2 Caps.

6.2.3.2.2.1 Structural loads shall be evenly distributed across capped hollow block piers as shown in [redacted] and [redacted].



Footing placed on firm undisturbed soil or on controlled fill free of grass and organic materials compacted to a minimum load-bearing capacity of 2000 lb/ft².

(For conversion to SI units, 1 in. = 25.4 mm)

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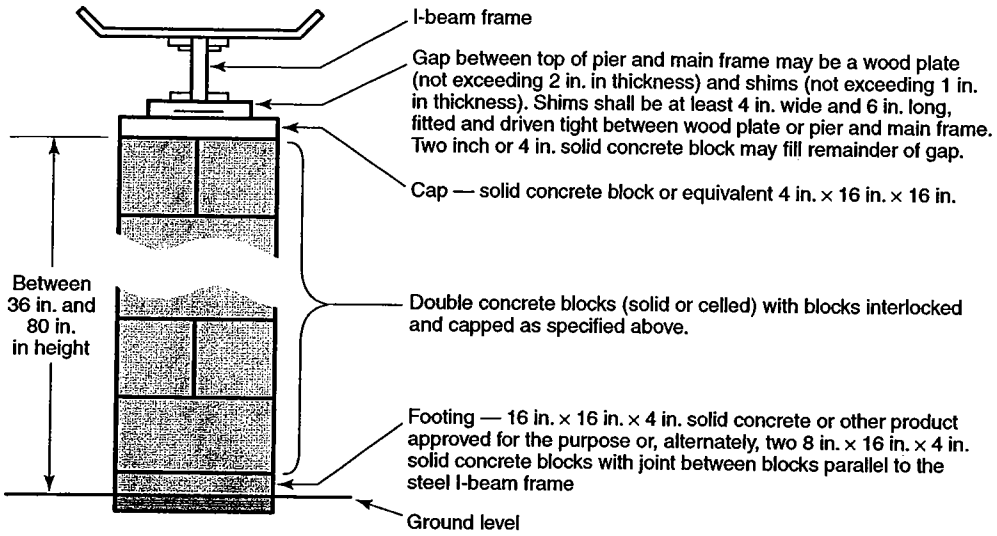

Footing placed on firm undisturbed soil or on controlled fill free of grass and organic materials compacted to a minimum load-bearing capacity of 2000 lb/ft².

(For conversion to SI units, 1 in. = 25.4 mm)

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Paste up - subject to further change/action

6.2.3.2.2.2 Caps shall be of solid masonry of at least 4 in. (100 mm) nominal thickness or dimensional lumber at least 2 in. (51 mm) nominal thickness, or of steel.

6.2.3.2.2.3 All caps shall be of the same length and width as the piers upon which they rest.

6.2.3.2.3 Gaps.

S.L.: 4 in. ≠ 51 mm; s/b "2 in." or "100mm"?

6.2.3.2.3.1 Nominal 4-in. × 6-in. (51 mm × 150 mm) shims shall be used to level the home and fill any gaps between the base of the I-beam and the top of the pier cap.

6.2.3.2.3.2 Shims shall be used in pairs as shown in [redacted] and [redacted], and shims shall be driven in tightly so that they do not occupy more than 1 in. (25 mm) of vertical space.

6.2.3.2.3.3 Wood plates no thicker than 2 in. (51 mm) shall be used to fill in any remaining vertical gaps.

6.2.3.2.4 Manufactured pier heights shall be selected so that the adjustable risers do not extend more than 2 in. (51 mm) when finally positioned.

6.2.3.2.5 All piers shall rest on footings as noted in Section [redacted] that extend below the frost line and as noted in [redacted] and are placed on either undisturbed soil or compacted fill.

bf

6.2.3.3 Clearance Under Homes.

6.2.3.3.1 A minimum clearance of 12 in. (305 mm) shall be maintained beneath the lowest member of the main frame (I-beam or channel beam) in the area of utility connections.

6.2.3.3.2 No more than 25 percent of the lowest member of the main frame of the home shall be less than 12 in. (305 mm) above grade.

6.2.3.4 All wood cap and shim materials within 18 in. (455 mm) of the ground shall be pressure treated or equivalent.

6.2.4 Design Procedures.

6.2.4.1 Piers Less Than 36 in. (915 mm) High.

bf

6.2.4.1.1 Piers less than 36 in. (915 mm) high shall be permitted to be constructed of single, open, or closed-cell concrete blocks, 8 in. × 8 in. × 16 in. (205 mm × 205 mm × 410 mm).

6.2.4.1.2 The piers shall be installed so that the long sides are at right angles to the supported I-beam as shown in [redacted] and [redacted].

6.2.4.1.3 Open cells shall be positioned at right angles to the footers.

6.2.4.1.4 Horizontal offsets shall not exceed 1/2 in. (13 mm) top to bottom.

6.2.4.1.5 Mortar shall not normally be required.

6.2.4.1.6 Manufactured piers shall be listed and labeled.

6.2.4.2 Piers 36 in. (915 mm) to 80 in. (2030 mm) High and Corner Piers. All piers between 36 in. (915 mm) and 80 in. (2030 mm) high and all corner piers over three blocks high shall be constructed out of double, interlocked

concrete blocks as shown in [redacted] and in [redacted]

6.2.4.3 Piers over 80 in. (2030 mm) High. Piers over 80 in. (2030 mm) high shall be designed by a registered professional engineer.

6.2.4.4 Elevated Homes. When more than one-fourth of the area of a home is installed so that the bottom of the main frame members are more than 3 ft (915 mm) above ground level, the home stabilizing devices shall be designed by a qualified registered professional engineer.

6.2.5 Location and Spacing.

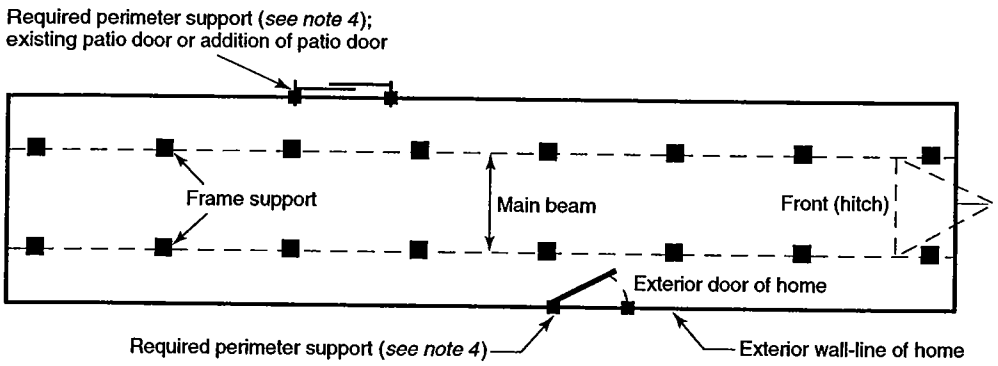
6.2.5.1 The location and spacing of piers shall depend upon the dimensions and weight of the home, the roof load zone, the type of construction (single- or multisection), and such other factors as the location of doors or other openings.

6.2.5.2 In general, piers shall be no more than 1 ft from either end and not more than 8 ft center to center under the main rails.

6.2.5.3 Single-Section Homes. The recommended location and spacing of piers for a single-section home shown in Figure 6.2.5.3 shall be used when the manufacturer's installation instructions are not available.

Insert Artwork Here

Figure 6.2.5.3 Typical blocking diagram for single section.



Notes:

1. See Table 6.1.3.1.3(a) for required pier capacity and spacing.
2. See Table 6.1.3.1.3(b) and Section 6.2 for footing requirements.
3. Piers shall be located at a maximum of 1 ft (305 mm) from both ends.
4. Place piers on both sides of entry doors and at any other openings greater than 4 ft in width, such as patio or atrium doors; under porch posts, fireplaces, and wood stoves; and under those places where heavy pieces of furniture such as pianos, organs, waterbeds, etc., can be placed.

ROC 225-67

ROC 225-68

Place piers on both sides of entry doors and at any other openings greater than 4 ft in width, such as patio or atrium doors; under porch posts, factory installed fireplaces and wood stoves.

(1220 mm)

6.2.5.3

225-6.2.5.1-02
31 x 17

Paste up - subject to further change/action

6.2.5.4 Multisection Homes. The recommended location and spacing of piers for a multisection home shown in Figure 6.2.5.4 shall be used when the manufacturer's installation instructions are not available.

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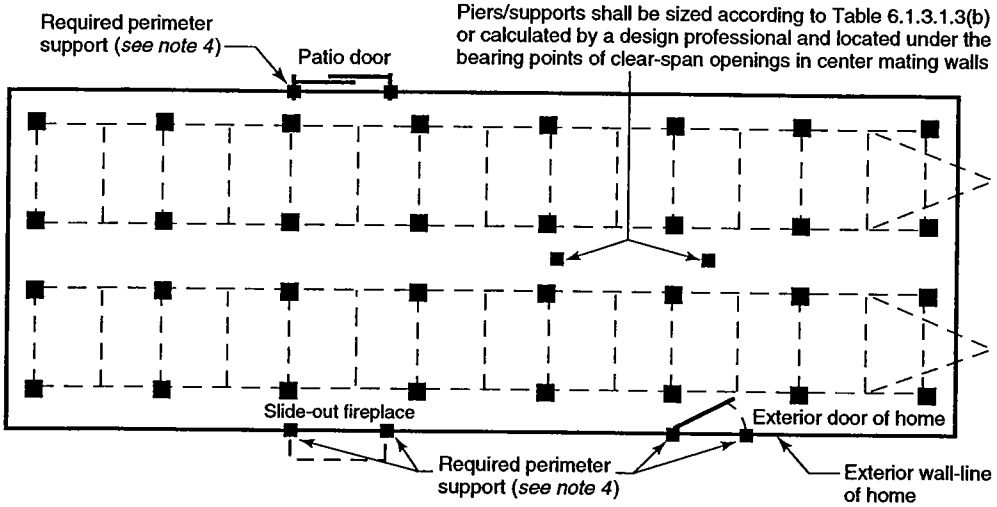
Figure 6.2.5.4 Typical blocking diagram for multisection.

6.2.5.5 Perimeter Blocking. Supports shall be placed on both sides of side wall exterior doors and any other side wall openings greater than 4 ft (1220 mm) (such as entry and sliding glass doors); under porch posts, factory installed fireplaces and wood stoves.

6.3 Footings. Footing materials shall conform to Section [redacted] and other materials approved for footings shall be permitted to be used when approved by the authority having jurisdiction if they provide equal load-bearing capacity and resistance to decay. Footings shall be placed on undisturbed soil or compacted fill. Every pier shall be supported by a footing.

6.3.1 Acceptable Types of Footings.

6.3.1.1 Concrete. Footings shall be permitted to consist of either of the following:



Notes:

1. See Table 6.1.3.1.3(a) for required pier capacity and spacing.
2. See Table 6.1.3.1.3(b) and Section 6.2 for footing requirements.
3. Piers shall be located at a maximum of 2 ft from both ends. 1 (305 mm)
4. Place piers on both sides of entry doors and at any other openings greater than 4 ft in width, such as patio or atrium doors; under porch posts, fireplaces, and wood stoves; and under those places where heavy pieces of furniture such as pianos, organs, waterbeds, etc., can be placed.

ROC 225-67

ROC 225-68

Place piers on both sides of entry doors and at any other openings greater than 4 ft in width, such as patio or atrium doors; under porch posts, factory installed fireplaces and wood stoves.

6.2.5.4

225-6.2.5.2-02
31 x 21.6

(1220 mm)

Paste up - subject to further change/action

(1) 4 in. (100 mm) nominal pre-cast concrete pads meeting or exceeding ASTM C90, *Standard Specification for Loadbearing Concrete Masonry Units,* without reinforcement, with at least a 28-day compressive strength of 3000 psi (2070×10^4 N/m^2)

(2) 6 in. (minimum) poured-in-place concrete pads, slabs, or ribbons with at least a 28-day compressive strength of 3000 psi (2070×10^4 N/m^2)

6.3.1.2 Pressure-Treated Permanent Wood.

6.3.1.2.1 A minimum of two layers of nominal 2-in. (51 mm) thick pressure-treated wood having 0.60 pcf retention in accordance with AWPA C2, *Lumber, Timbers, Bridge Ties and Mine Ties, Pressure Treatment by Pressure Process*, or AWPA C9, *Lumber and Plywood for Permanent Wood Foundations, Preservative Treatment by Pressure Process*, with the long dimensions of the second layer placed under the pier and perpendicular to that of the first layer shall be used.

6.3.1.2.2 Pressure-treated footings shall be permitted to consist of nominal 2-in. (51-mm) thick pressure-treated wood in accordance with AWPA C2, or a single layer of a minimum thickness of $^3/_4$ in. (19 mm) and a maximum size of 16 in. × 16 in. (410 mm × 410 mm), or for larger sizes, two pieces of nominal $^3/_4$ in. thick ($^{22}/_{32}$ actual) (19 mm)

plywood (APA-rated sheathing, exposure 1, PS1) pressure-treated for soil contact in accordance with AWPA C9.

6.3.1.3 ABS Footing Pads.

6.3.1.3.1 ABS footing pads shall be permitted in accordance with pad manufacturer installation instructions.

6.3.1.3.2 ABS footing pads shall be listed or labeled for the required load capacity.

6.3.2 Placement in Freezing Climates.

6.3.2.1 Conventional Footings.

6.3.2.1.1 In areas subject to ground frost heave, footings shall be placed below the frost line.

6.3.2.1.2 Local authorities shall be consulted to determine the depth of the frost line.

6.3.2.1.3 In the absence of a local code, the frost penetration map provided in Figure 6.3.2.1.3 shall be used as a guide.

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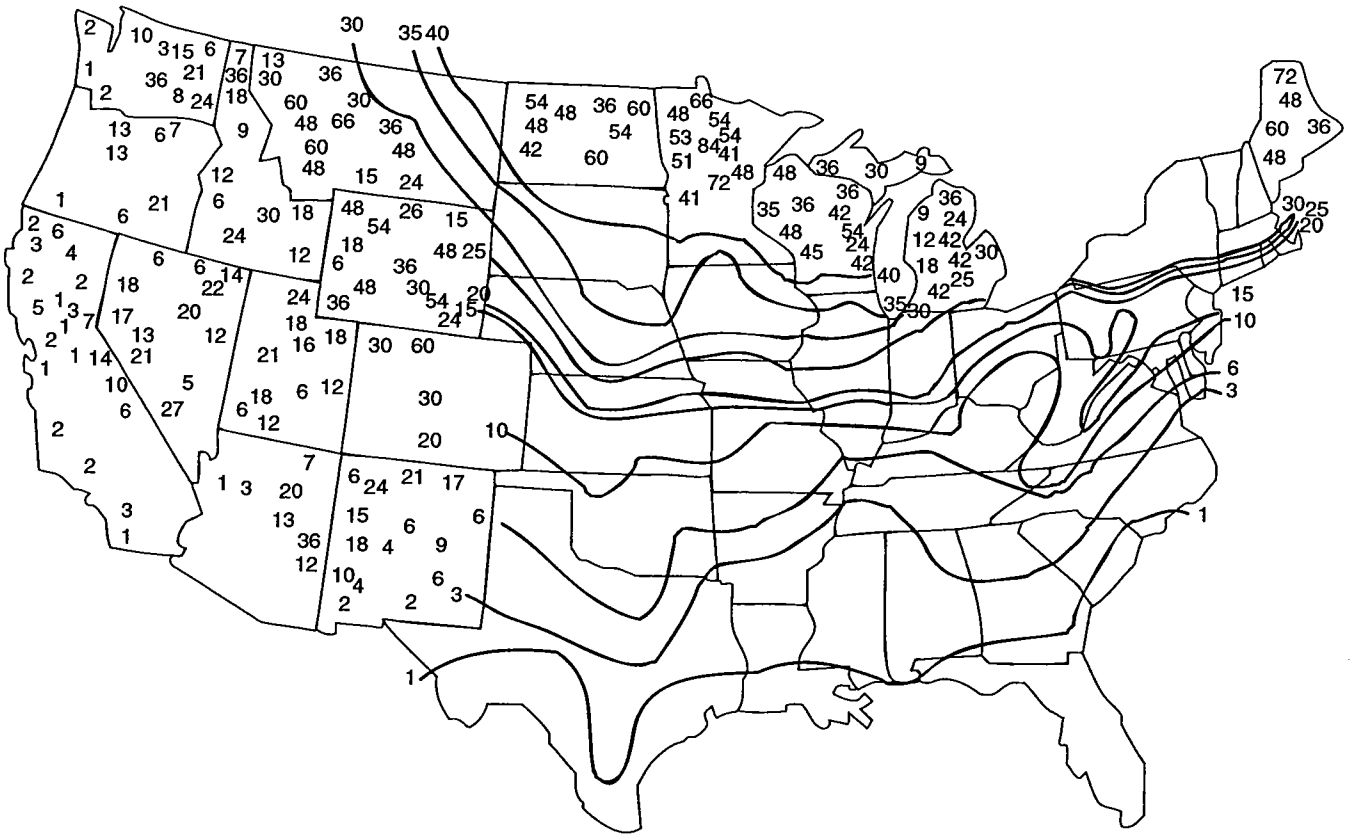
Figure 6.3.2.1.3 Frost penetration map.

bf

6.3.2.2 Floating Slab Systems.

6.3.2.2.1 When properly designed by a registered professional engineer, a "floating slab system" shall be permitted to be used above the frost line.

6.3.2.2.2 The design shall accommodate the anchorage requirements identified in Chapter 7



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6.3.2.3 Insulated Foundations.

6.3.2.3.1 Footings shall be permitted to be placed above the frost line when the home is provided with a perimeter foundation or skirting having insulation properties sufficient to prevent freezing of the soil under or adjacent to every load-bearing component of the foundation and acceptable for this purpose to the authority having jurisdiction.

6.3.2.3.2 Insulation systems shall be compatible with the requirement to cross-ventilate the entire space under the home.

6.3.3 Sizing of Footings. Sizing of footings depends upon the load-bearing capacity of both the piers and the soil. See ~~Figure~~ 6.3.3 and Table 6.3.3 for recommended footing sizes

6.3.4 Combination Systems. Support systems which combine both load-bearing capacity and uplift resistance shall also be sized for the applicable design loads.

~~***INSERT ART***~~

~~Figure~~ **6.3.3 Footing Size**

S.L.: Add to Fig caption: "Based on the Load-Bearing Capacity of the Pier"?

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FOOTING SIZE

Pier Capacity (lb)	Footing Thickness	Minimum Footing Size or Equal Area (in.) Soil Capacity			
		1,000 psf*	1,500 psf*	2,000 psf*	4,000 psf*
600	6 in.	10 × 10	8 × 8	7 × 7	5 × 5
800		12 × 12	9 × 9	8 × 8	5 × 5
1,000		13 × 13	10 × 10	9 × 9	6 × 6
1,500		16 × 16	13 × 13	11 × 11	7 × 7
2,000		18 × 18	15 × 15	12 × 12	9 × 9
2,500		20 × 20	16 × 16	14 × 14	10 × 10
3,000		22 × 22	18 × 18	15 × 15	11 × 11
3,500		24 × 24	19 × 19	16 × 16	11 × 11
4,000	8 in.	26 × 26	21 × 21	18 × 18	12 × 12
4,500		27 × 27	22 × 22	19 × 19	13 × 13
5,000		29 × 29	23 × 23	20 × 20	14 × 14
5,500		30 × 30	24 × 24	21 × 21	14 × 14
6,000		32 × 32	25 × 25	22 × 22	15 × 15
6,500		33 × 33	26 × 26	22 × 22	16 × 16
7,000		34 × 34	27 × 27	23 × 23	16 × 16
7,500	10 in.	35 × 35	28 × 28	24 × 24	17 × 17
8,000		36 × 36	29 × 29	25 × 25	17 × 17
8,500		38 × 38	30 × 30	26 × 26	18 × 18
9,000		39 × 39	31 × 31	26 × 26	18 × 18
9,500		40 × 40	32 × 32	27 × 27	19 × 19
10,000		41 × 41	33 × 33	28 × 28	19 × 19
11,000	12 in.	43 × 43	34 × 34	29 × 29	20 × 20
12,000		45 × 45	36 × 36	30 × 30	21 × 21
13,000		46 × 46	37 × 37	32 × 32	22 × 22
14,000		48 × 48	38 × 38	33 × 33	23 × 23
15,000		50 × 50	40 × 40	34 × 34	24 × 24
16,000	15 in.	N/A	41 × 41	35 × 35	24 × 24
17,000		N/A	42 × 42	36 × 36	25 × 25
18,000		N/A	44 × 44	37 × 37	26 × 26
19,000		N/A	45 × 45	38 × 38	27 × 27
20,000		N/A	46 × 46	39 × 39	27 × 27

[1] The footing sizes shown are for square pads and are based on the area (in.^{2}) required for the load. Other footing configuration, such as a rectangular configuration, can be used, provided the area (in.^{2}) is equal to or greater than the area of the square footing shown in the table. For example, a 12-in. × 12-in. (264-in.^{2}) footing can be used in place of a 16-in. × 16-in. (256-in.^{2}) footing. Also, two 12-in. × 24-in. pads can be used in place of one 24-in. × 24-in. pad.

[2] Local regulations can require design verification by a registered professional engineer.

* psf = pounds per square foot.

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Paste up - subject to further change/action

S.L.: Table Title — "Footing Size Based on the Load-Bearing Capacity of the Soil".

Table 6.3.3

Soil Capacity (psf)	Minimum Footing Size	Single Stack Pier (8x16 in)		Double Stack Pier (16x16 in)	
		Max. Footing Capacity (lbs)	Unreinforced cast-in-place Min. thickness (in)	Max. Footing Capacity (lbs)	Unreinforced cast-in-place Min. thickness (in)
1000	16 × 16	1600	6	1600	6
	20 × 20	2600	6	2600	6
	24 × 24	3700	6	3700	6
	30 × 30	5600	8	5800	6
	36 × 36	7900	10	8100	8
	42 × 42	10100	12	10700	10
	48 × 48	13000	15	13600	12
1500	16 × 16	2500	6	2500	6
	20 × 20	4000	6	4000	6
	24 × 24	5600	8	5700	6
	30 × 30	8600	10	8900	6
	36 × 36	12200	12	12600	8
	42 × 42	16100	15	16500	12
	48 × 48	20400	18	21000	15
2000	16 × 16	3400	6	3400	6
	20 × 20	5300	6	5300	6
	24 × 24	7600	8	7700	6
	30 × 30	11600	10	11900	8
	36 × 36	16300	15	16900	10
	42 × 42	21700	18	22700	12
2500	16 × 16	4300	6	4300	6
	20 × 20	6700	6	6700	6
	24 × 24	9600	8	9700	6
	30 × 30	14700	12	15000	8
	36 × 36	20800	15	21400	10
3000	16 × 16	5200	6	5200	6
	20 × 20	8100	8	8100	6
	24 × 24	11500	10	11700	6
	30 × 30	17800	12	18100	8
	36 × 36	25000	18	25700	12
4000	16 × 16	7000	6	7000	6
	20 × 20	10800	8	10900	6
	24 × 24	15500	10	15600	8
	30 × 30	23800	15	24200	10

STET Table

~~Table~~ Notes:

1. The footing sizes shown are for square pads and are based on the area (in^2), shear and bending required for the loads shown. Other configurations, such as rectangular configurations, can be used, provided the area is equal to or greater than the area of the square footing shown in the table and the distance from the edge of the pier to the edge of the footing is not exceeded.

2. 4" unreinforced precast concrete footings can use the 6" cast-in-place value.

3. The capacity value listed has been reduced by the dead load of the concrete footing.

stet

6.4 Permanent Foundations.

6.4.1 Designs for permanent foundations (such as basements, crawlspaces, or load-bearing perimeter foundations) shall be permitted to be obtained from the home manufacturer, designed by a registered professional engineer, and constructed in accordance with local codes.

6.4.2 When no such design is available from the home manufacturer or covered in the state building code, a registered professional engineer shall be consulted in order to obtain a design to satisfy the house support requirements.

6.5 Special Considerations. The provisions of [redacted] shall be required when the conditions in [redacted] exist at the home installation site.

6.5.1 Special Snow Load Conditions. Homes designed for and located in areas with roof live loads greater than 40 psi (1.9 kPa) shall be installed according to the home manufacturer's installation instructions or designed by a registered professional engineer.

Chapter 7 Installation Procedures

7.1 Moving Manufactured Home to Location. The following items shall be completed or verified before placing the manufactured home:

(1) The site is prepared in accordance with Chapter 5.

(2) All support system work necessary for setting the home is complete.

(3) Utilities are available.

(4) Any trenching, for crossover drain lines or for wheels that will be left in place, is complete.

7.2 Positioning Home. The home shall be installed and leveled by qualified installation personnel who are acceptable to the authority having jurisdiction.

7.3 Interconnection of Multisection Homes. The following items shall be completed during the interconnection of multisection homes when the manufacturer's installation instructions are not available:

(1) Provide an air infiltration barrier on the mating edges of the floor, end walls, and ceilings.

(2) Contact the home manufacturer or obtain the manufacturer's installation instructions for joining the transportable sections. If the original manufacturer's method of roof and marriage wall closure cannot be determined by examination, such as factory drilled bolt holes or roof lag bolts, then the roof should be closed with 30 gauge × 9 in. (230 mm) wide galvanized steel cap continuing for the length of the home. This cap shall be

fastened with #10 screws or 1 in. × 1-1/4 in. (25 mm × 32 mm), 16 gauge staples, 6 in. (150 mm) on center each side. Secure end walls and any marriage wall openings with #10 × 6 in. wood screws, at a minimum of 6 in. on center staggered intervals. Fasten the floor with 3/8 in. × 6 in. (9.5 mm × 150 mm) lag screws installed at a maximum of 36 in. on center staggered and at a 45-degree angle. Pilot holes for lag screws should be pre-drilled with a 1/4-in. (6.4 mm) drill (maximum) before installing lag screws.

(3) Firestop mating walls in accordance with NFPA 501.

7.4 Crossover Connections for Multisection Manufactured Homes.

7.4.1 Utility Crossovers. Water, drainage, gas, electricity, and telephone utility crossovers shall be connected as outlined in [redacted]

7.4.2 Duct-Work Crossovers.

7.4.2.1 Metal plumber tape, galvanized metal straps, or plastic tape shall be used around the duct collar and secured tightly.

7.4.2.2 If metal straps are used, they shall be secured with sheet metal screws.

7.4.2.3 The duct shall be fastened to the collar with a minimum of three sheet metal screws equally spaced around the collar.

7.4.2.4 The flexible air conditioing or heating ducts shall be installed in accordance with duct manufacturer's instructions.

7.4.2.5 The duct shall be suspended/supported above the ground and arranged under the floor to minimize compression or kinking in any location as shown in Figure 7.4.2.5(a) and Figure 7.4.2.5(b).

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Figure 7.4.2.5(a) Crossover duct installation (Option 1).

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Figure 7.4.2.5(b) Crossover duct installation (Option 2).

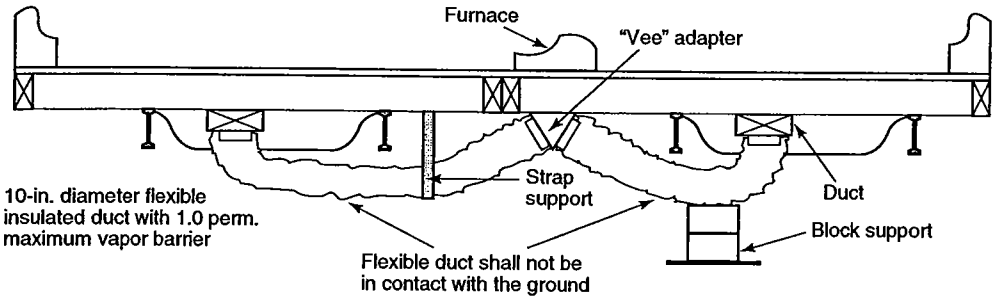
7.4.2.6 Exposed crossover ducts shall be insulated with materials having a minimum R-8 value.

7.4.2.7 The in-floor crossover duct connection shall be permitted to be installed per the manufacturer's installation instructions or sealed with foam tape prior to joining sections of the home.

7.5 Anchoring Instructions.

7.5.1 Security Against the Wind.

7.5.1.1 After blocking and leveling, the installer shall secure the manufactured home against the wind, unless the authority having jurisdiction permits otherwise.



Note: This system is utilized when a cross-over duct has not been built into the floor, and the furnace is outside the I-beam. With this type of installation, it is necessary for two flexible ducts to be installed.

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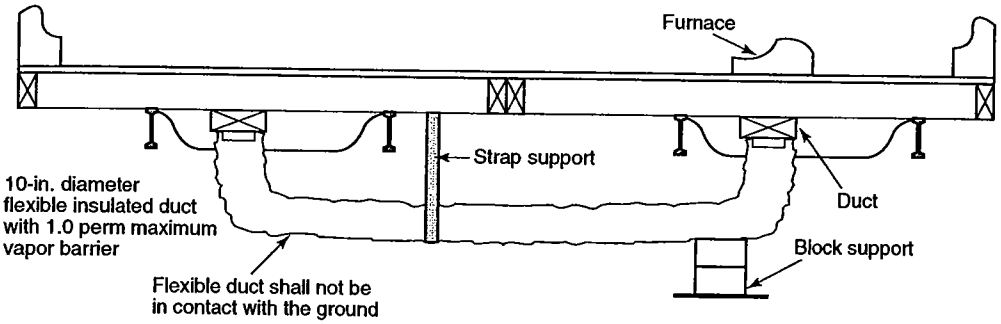

Note: This system is used when a cross-over duct has not been built into the floor, and the furnace is situated directly over the main duct in one section of the home. A single flexible duct is then used to connect the two sections to each other.

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7.5.1.2 The type of installation shall be the determining factor in deciding how the manufactured home shall be secured against the wind as described in [redacted] through [redacted]

7.5.2 Normal Installations.

7.5.2.1 The anchoring or foundation system shall be capable of meeting the loads required by NFPA 501, *Standard on Manufactured Housing*.

7.5.2.2 When using another type of installation, which is not listed in accordance with [redacted], a registered professional engineer shall be consulted.

7.5.2.3 Specifications for Tie Down Straps and Anchors.

7.5.2.3.1 Anchors. Anchors shall be capable of resisting a minimum total load capacity of 4725 lb (2143 kg) and a working capacity of 3150 lb (1429 kg). The resistance capability of anchors and anchoring equipment shall be certified by a registered professional engineer, architect, or nationally recognized testing laboratory.

7.5.2.3.2 Tie Down Straps. A minimum of 1-1/4 in. × 0.035 in. (32 mm × 0.9 mm) zinc coating (0.30 ounces per square foot of surface area) steel strapping conforming to ASTM D 3953, *Standard Specification for Stopping, Flat Steel and Seals*, Type 1, Grade 1, Finish B with a minimum total capacity of 4725 lb and a working capacity of 3150 lb

shall be used. Slit or cut edges of coated strapping shall not be required to be zinc coated.

7.5.2.4 Number and Location of Anchors.

7.5.2.4.1 The number and location of anchors and anchor straps for installation of single-section and multi-section manufactured homes shall conform to ~~the ma~~nufacturer's installation instructions. When relocating the home ad the manufacturer's installation instructions are not available, the number and location of ground anchors and anchor straps shall conform to Table 7.5.2.4.1 and Figure 7.5.2.4.1.

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Table 7.5.2.4.1 Diagonal Tiedown Strap Spacing Table for Manufactured Homes

Strap Method	Anchor Minimum Ultimate Load Capacity	Maximum Anchor Spacing		
		Zone I	Zone II[3]	Zone III[3]
Single Strap	4725 pounds	11' – 0"	6' – 0"	4' – 6"
Double Strap	4725 pounds[1]	11' – 0"[2]	6' – 0"[2]	4' – 6"[2]

[1] Unless listed for a higher capacity.
[2] Unless reduced spacing is specified by AHJ.
[3] All homes located in Wind Zone II and III shall have a vertical tie installed at each diagonal tie location.

Note: Table 7.5.2.4.1 is applicable to single story homes with roof slopes less than 20 degrees, maximum sidewall height of 8 ~~feet~~ and a maximum pier height of 4 ~~feet~~.

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Figure 7.5.2.4.1 Anchor locations and Spacing

7.5.2.4.2 Anchor Installation. The requirements in 7.5.2.4.2.1 shall be used to determine the spacing of anchors and their accompanying anchor straps based on the soil classification determined in accordance with [redacted] and if

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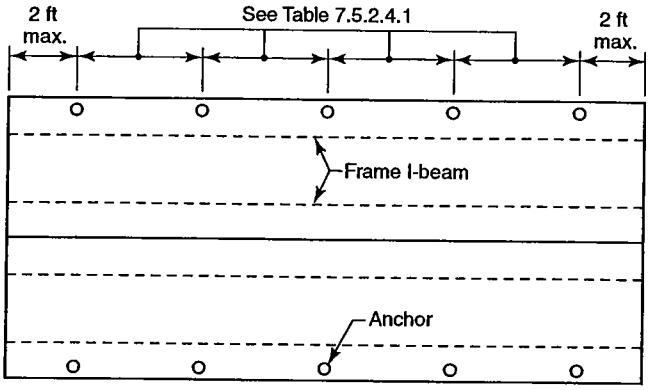

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soil testing was performed using either a soil torque probe, or locally accepted values approved by the authority having jurisdiction.

7.5.2.4.2.2 The installed anchor size (length) shall be for soil class for which they are listed and approved by the authority having jurisdiction.

7.5.2.4.2.3 All anchors shall be installed with the stabilizer plates in accordance with their listing and anchor manufacturer's installation instructions.

7.5.2.4.3 Each anchor shall be manufactured and installed in accordance with its listing by a nationally recognized testing agency, which shall list the anchor for use in a classified soil ([redacted]) based on a nationally recognized testing protocol.

7.5.3 Sidewall or Over-the-Roof Straps. If sidewall or over-the-roof straps are installed on the home, they shall be connected to an anchoring device, or an alternate method shall be provided that enables the home to meet this standard.

7.5.4 Severe Climatic Conditions.

7.5.4.1 Freezing Climates. In frost susceptible soils or high water table locations, anchor augers shall be installed below the frost line.

7.5.4.2 Severe Wind Zones.

7.5.4.2.1 Before a home is installed within 1500 ft (457 m) of a coastline in Wind Zones II or III, the manufacturer's installation instructions shall be used.

7.5.4.2.2 When the manufacturer's installation instructions are not available, the design shall be by a registered professional engineer.

7.5.4.3 Flood Hazard Areas. See [redacted].

7.6 Installation of On-Site Structures.

7.6.1 All buildings and structures shall be designed to support all of their own live and dead loads.

7.6.2 Fire separation distance shall be provided, as the authority having jurisdiction requires, for occupancy.

7.6.3 Expanding Rooms.

7.6.3.1 Expanding rooms shall be installed in accordance with the manufacturer's instructions.

7.6.3.2 When the manufacturer's instructions are not available, perimeter blocking shall be installed in accordance with [redacted] and anchors shall be installed in accordance with [redacted].

7.6.4 Garages and Carports.

7.6.4.1 A garage or carport shall be installed according to the manufacturer's instructions and the requirements of the authority having jurisdiction.

7.6.4.2 The garage or carport shall be supported independently of the factory-built portion of the manufactured home.

7.6.4.3 Electrical circuits in a garage shall be provided with ground-fault circuit protection.

7.6.5 Porches. Site-constructed porches shall be constructed and inspected according to applicable building codes.

7.6.6 Steps, Stairways, and Landings. Steps, stairways, and landings shall be constructed and inspected according to applicable building codes.

7.7 Installation Close-Up/Finishing.

7.7.1 Single and Multisection Exterior and Interior Close-Up.

7.7.1.1 Prior to installing the siding, the polyethylene sheeting covering exterior walls for in transit shall be completely removed.

7.7.1.2 Holes in the roof made in transit or set-up shall be sealed with exterior sealant.

7.7.2 Exterior Siding Close-Up.

7.7.2.1 Exterior siding shall be installed according to the siding manufacturer's installation instructions.

7.7.2.2 Exterior close-up strips/trim shall be fastened securely and sealed with exterior sealant.

7.7.3 Interior Close-Up.

7.7.3.1 All shipping blocking, strapping, or bracing shall be removed from appliances, windows, and doors.

7.7.3.2 All loose items packaged or shipped with the home shall be installed.

7.7.3.3 All ship loose wall paneling shall be installed using a $^{1}/_{4}$-in. (6.3 mm) bead of PVA adhesive on all framing members.

7.7.3.4 Panels shall be fastened with minimum 1 in. (125 mm) long staples or nails at 6-in. on center panel edges and 12 in. (305 mm) on center in the field.

7.7.4 Unfinished Gypsum Wallboard.

7.7.4.1 Homes shipped with unfinished gypsum wallboard and/or ceiling shall be finished on site.

7.7.4.2 The interior finishes shall have the following maximum flame spread ratings measured in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*:

(1) Ceilings — 75

(2) Walls — 75

(3) General — 200

(4) Adjacent to cooking range — 50

(5) Adjacent to or enclosing a furnace or water heater — 25

7.7.5 Bottom Board Repair.

7.7.5.1 The bottom board covering shall be inspected for any loosening or areas that might have been damaged or torn during installation or transportation.

7.7.5.2 Any splits, tears, or openings around the perimeter of the floor covering or around pipes or pipe hangers shall

be resealed with approved tape or patches specifically designed for repairs of the bottom covering.

7.7.5.3 Plumbing p-traps shall be checked to be sure they are well insulated and covered.

7.7.5.4 All edges of patches shall be taped.

Chapter 8 Optional Features

8.1 Installation of Optional Features. Where applicable and specific to the manufacturer's product, the optional features shall be permitted to be installed.

8.2 Hinged Roofs and Eaves.

8.2.1 The manufacturer's installation instructions shall be consulted when erecting and securing in place hinged roofs or hinged eaves.

8.2.2 Site installations of vent stacks, including furnaces, water heaters, plumbing stacks, fireplaces, and powered exhaust fans shall conform with the manufacturer's installation instructions.

8.3 Garden and Bay Windows. Shipped-loose items such as garden or bay windows shall be installed in accordance with the manufacturer's installation instructions.

8.4 Awnings and Ramadas. Only freestanding products shall be chosen with support columns.

SL: Correct that "ramada" not to be defined in Chap. 3?

8.5 Miscellaneous Lights and Fixtures.

8.5.1 Exterior lights, ceiling-suspended (paddle) fans, and chain-hung fixtures shall be permitted to be installed when the home is delivered.

8.5.2 Grounding Fixtures.

8.5.2.1 All of the installed exterior lights and ceiling fans per [redacted] shall be grounded by a fixture-grounding screw or by a fixture-grounding wire.

8.5.2.2 For chain-hung fixtures, both a fixture-grounding screw and a fixture-grounding wire shall be used.

8.5.3 When fixtures are mounted on combustible surfaces such as hardboard, a noncombustible ring shall be installed to completely cover the combustible surface exposed between the fixture canopy and the wiring outlet box.

8.5.4 Siding.

8.5.4.1 If siding has not been installed at a fixture location, the outlet box shall be removed, and the siding shall be installed with a hole for the outlet box.

8.5.4.2 The outlet box shall be reinstalled and the same process followed as for other fixtures, which shall be installed according to their listings.

8.5.5 Exterior Lights.

8.5.5.1 The junction box covers shall be removed and wire-to-wire connections shall be made using wire nuts.

8.5.5.2 General practice shall be to connect wires black-to-black, white-to-white, and ground-to-ground.

8.5.5.3 The wires shall be pushed into the box, and the light fixture shall be secured to the junction box.

8.5.5.4 Around the base of the light fixture shall be caulked to ensure a water-tight seal to the side wall.

8.5.5.5 The light bulb shall be installed and the globe shall be attached, as shown in Figure 8.5.5.5.

Figure 8.5.5.5 Installation of exterior lights.

8.5.6 Ceiling Fans.

8.5.6.1 To reduce the risk of injury, ceiling fans shall be installed with the trailing edges of the blades at least 6 ft 4 in. (1930 mm) above the floor.

8.5.6.2 The wiring shall be connected as shown in Figure 8.5.6.2(a) and Figure 8.5.6.2(b), and the manufacturer's instructions shall be followed.

Figures 8.5.6.2(a) Paddle fan installation.

Figures 8.5.6.2(b) Paddle fan installation.

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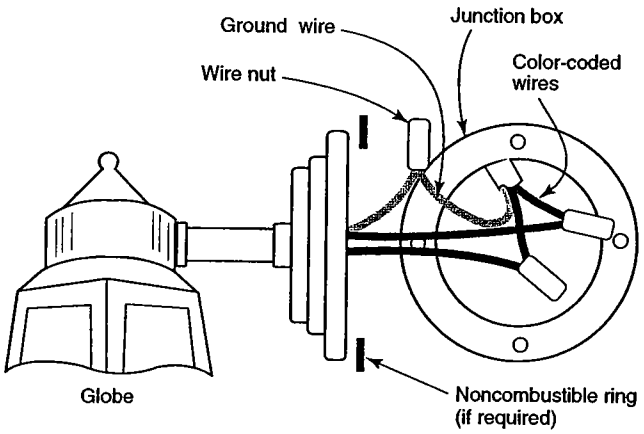
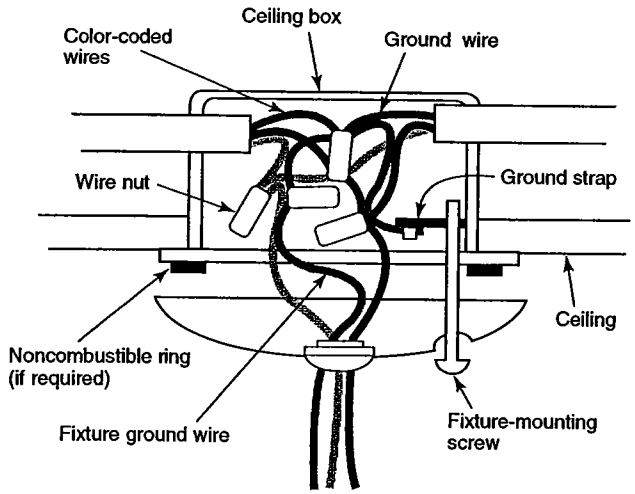
(a) Exterior Light Fixture



(b) Chain-Hung Fixture or Ceiling Fan



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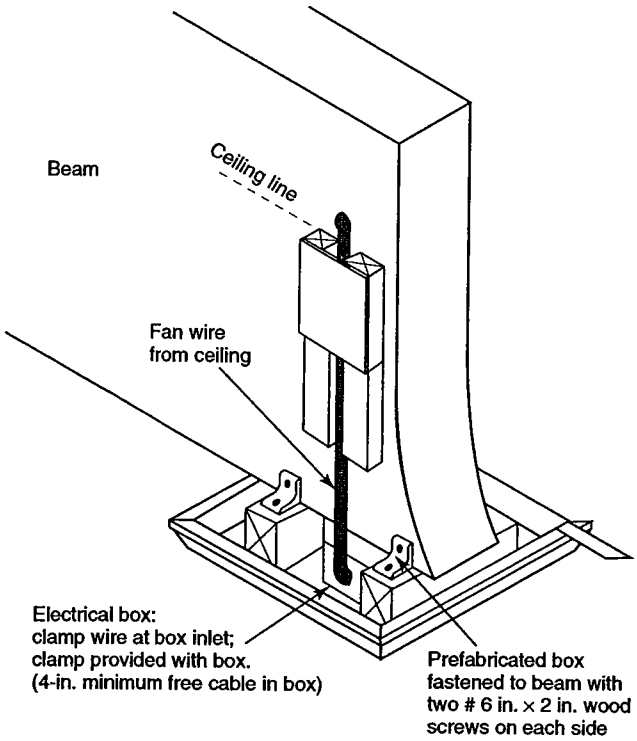

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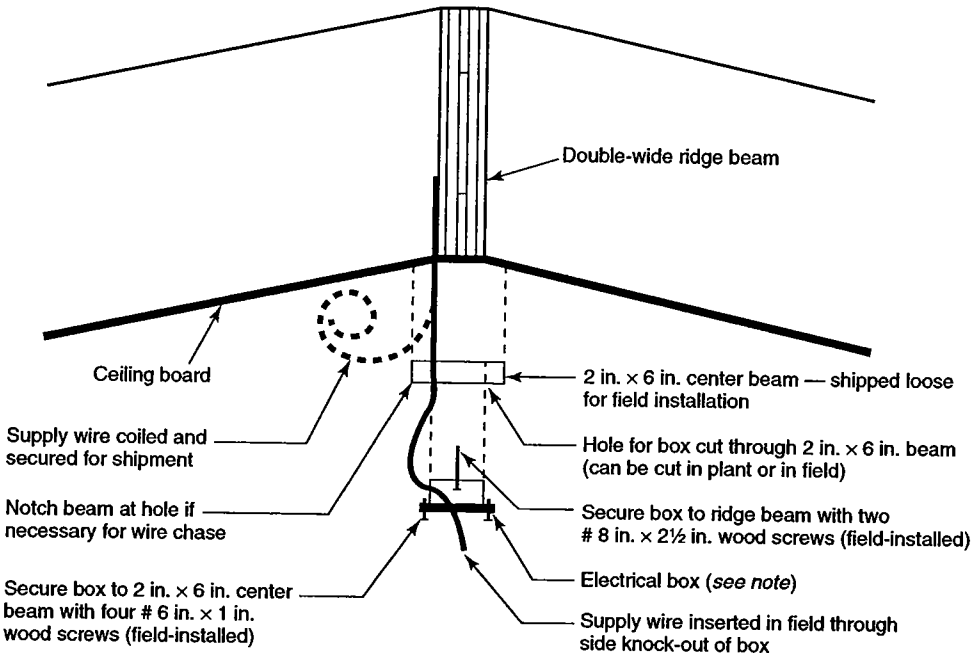

Note: Applicable to U.L.-listed paddle fan with a swivel-type mounting bracket.

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8.6 Ventilation Options. The component manufacturer's instructions shall be followed.

8.7 Optional Panels, Siding, and Moulding. If the home is equipped with optional panels, siding, or moulding, Figure 8.7(a), Figure 8.7(b), and Figure 8.7(c) shall be referred to for the proper installation procedures.

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Figure 8.7(a) Installation of Field-Applied Interior End-Wall Panel.

Insert Artwork here

Figure 8.7(b) Installation of Field-Applied Wood Siding at End Wall.

Insert Artwork here

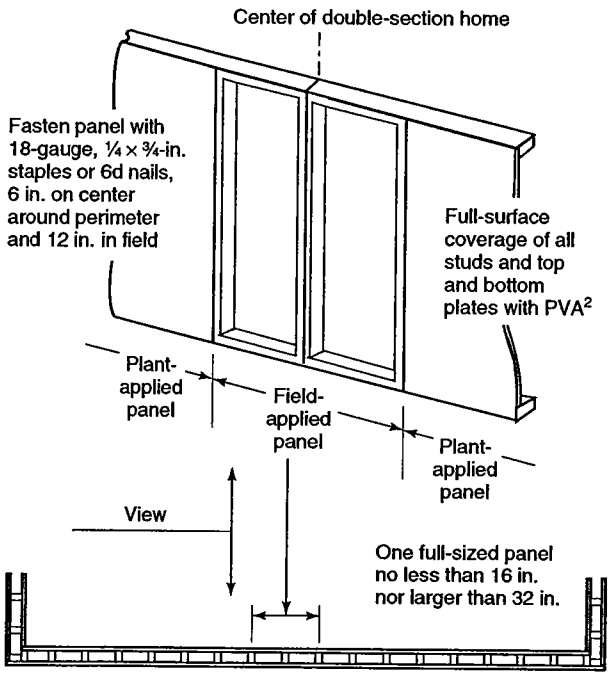
Figure 8.7(c) Installation of Field-Applied Horizotal Lap Siding.

8.8 Skirting.

8.8.1 Construction.

8.8.1.1 Skirting, if used, shall be of weather-resistant materials.

8.8.1.2 Skirting shall not be attached in a manner that can cause water to be trapped between the siding or trim, or forced up into the wall cavities trim to which it is attached.



Notes:
1. Specific designs shown must be approved by a DAPIA (Design Approval Primary Inspection Agency).
2. PVA – polyvinyl acetate.

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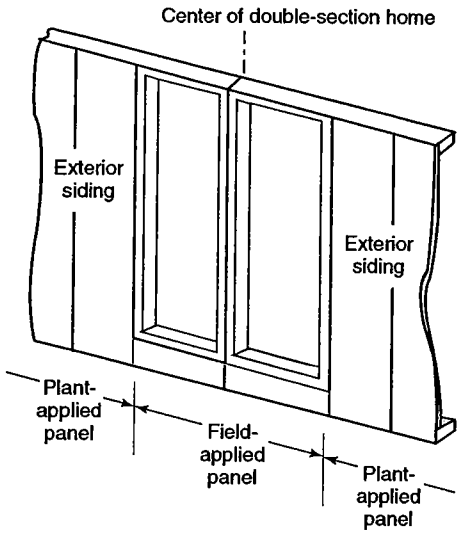

Notes:

1. One full-sized panel no less than 16 in. nor larger than 32 in.
2. Fasten exterior panel to the studs in accordance with the siding manufacturer's installation instructions.

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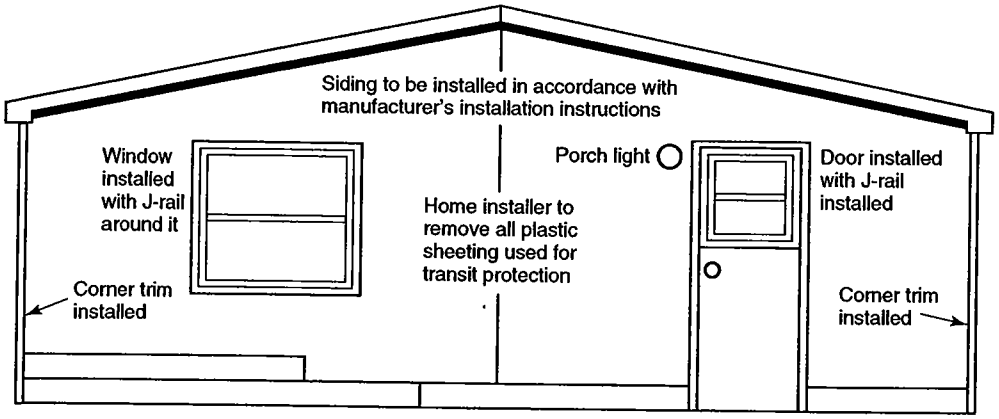

Notes:

1. Double-section homes with horizontal-lap siding can be shipped with no siding on the front and rear end walls.
2. The manufacturer will install doors/windows trimmed with J-rail and corner trim and will cover with plastic sheeting for transit. All siding, starter trim, fasteners, and vents will be shipped loose in the home for installation on set-up.
3. Home installer to complete installation after home is set-up, including the installation of roof vents if required.

225-8.7(c)-02
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8.8.1.3 All wood skirting within 6 in. of the ground shall be pressure treated or naturally resistant to decay and termite infestations.

8.8.2 Ventilation.

8.8.2.1 Ventilation shall be provided for the crawlspace with skirting as follows:

(1) At a minimum of 1 ft^2 (0.1 m^2) of free area for every 150 ft^2 (14 m^2) of the home's floor area

(2)* Except in arid regions with dry soil conditions the following shall be permitted:

(a) A uniform 6-mil polyethylene sheet material or other acceptable vapor barrier material shall be permitted to be installed on the ground surface beneath the home to further reduce moisture.

(b) Where an acceptable ground vapor barrier is installed and one such ventilation opening is within 3 ft of each corner of the home, the total area of ventilation openings shall be permitted to be reduced to 1 ft^2 (0.1 m^2) for every 1500 ft^2 (140 m^2) of the home's floor area.

8.8.2.2 Ventilation openings shall be placed at or near each corner of the home and as high as practicable.

8.8.2.3 Openings shall be located to provide cross-ventilation on at least two opposite sides.

8.8.3 Access opening(s) not less than 18 in. (455 mm) in any dimension and not less than 3 ft^2 (278,700 mm^2) in area shall be provided and shall be located so that any water

supply and sewer drain connections located under the home are accessible for inspections.

8.8.4 Dryer vents, air-conditioning condensation drains, and combustion air inlets shall pass through the skirting to the outside.

8.9 Telephone and Cable TV. Telephone and cable TV wiring shall be installed in accordance with the acceptable wiring practices.

8.10 Joints and Seams. Where appropriate, all joints and seams that were disturbed during relocation of the home shall be weatherproof.

Chapter 9 Preparation of Appliances

9.1 Clothes Dryer Vent. The clothes dryer shall exhaust to the exterior of the home, or beyond any perimeter skirting installed around it, as shown in Figure 9.1.

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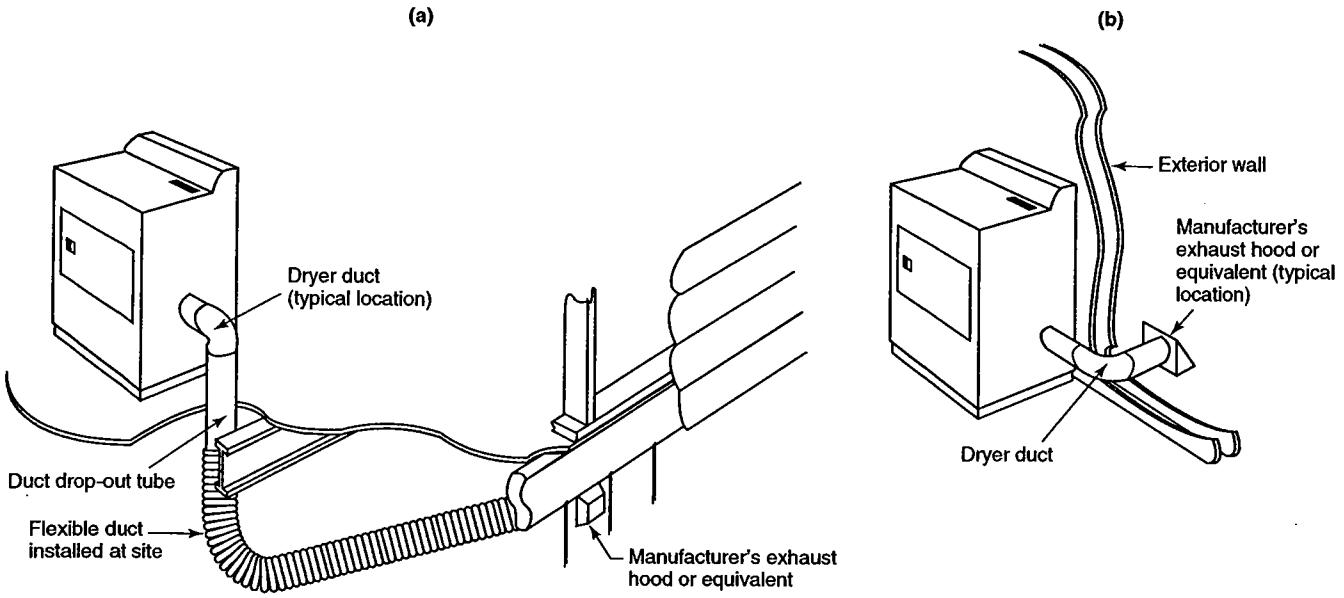
Figure 9.1 Dryer exhaust system.

9.2 Comfort Cooling Systems. Comfort cooling systems shall be installed per the manufacturer installation instructions and applicable regulations.

9.2.1 Air-Conditioners.



Notes:
1. Installation of the exhaust system must be in accordance with the dryer manufacturer's instructions.
2. This exhaust system must not terminate under the home.

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9.2.1.1 An installed central air-conditioning system shall not exceed the rating shown on the home's compliance certificate.

9.2.1.2 Circuit Rating.

9.2.1.2.1 The home's electrical distribution panel shall be permitted to contain optional factory-installed circuits for air-conditioning.

9.2.1.2.2 The maximum full-load ampere draw for the desired air-conditioning unit shall not exceed the circuit rating shown.

9.2.1.3 "A"-Coil Units.

9.2.1.3.1 "A"-coil air-conditioning units shall be compatible and listed for use with the furnace in the home.

9.2.1.3.2 The air conditioner manufacturer's instructions shall be followed.

9.2.1.3.3 All condensation shall be directed beyond the perimeter of the home by means specified by the equipment manufacturer.

9.2.2 Heat Pumps. Heat pumps shall be installed according to the heat pump manufacturer's instructions.

9.2.3 Evaporative Coolers.

9.2.3.1 Install a roof-mounted cooler by following the appliance manufacturer's instructions.

9.2.3.2 Before installing a roof-mounted cooler, it shall be ensured that the roof will support the weight of the cooler.

9.2.3.3 A rigid base shall be provided to evenly distribute the cooler's weight over several rafters.

9.3 Fireplace and Wood-Stove Chimneys and Air Inlets.

9.3.1 Fireplaces and wood stoves shall be permitted to require on-site installation of additional section(s) of approved, listed chimney pipe, a spark arrestor, and a rain-cap assembly.

9.3.2 Fireplace and wood-stove chimneys and air inlets shall be installed in accordance with their listings and Figure 9.3.2.

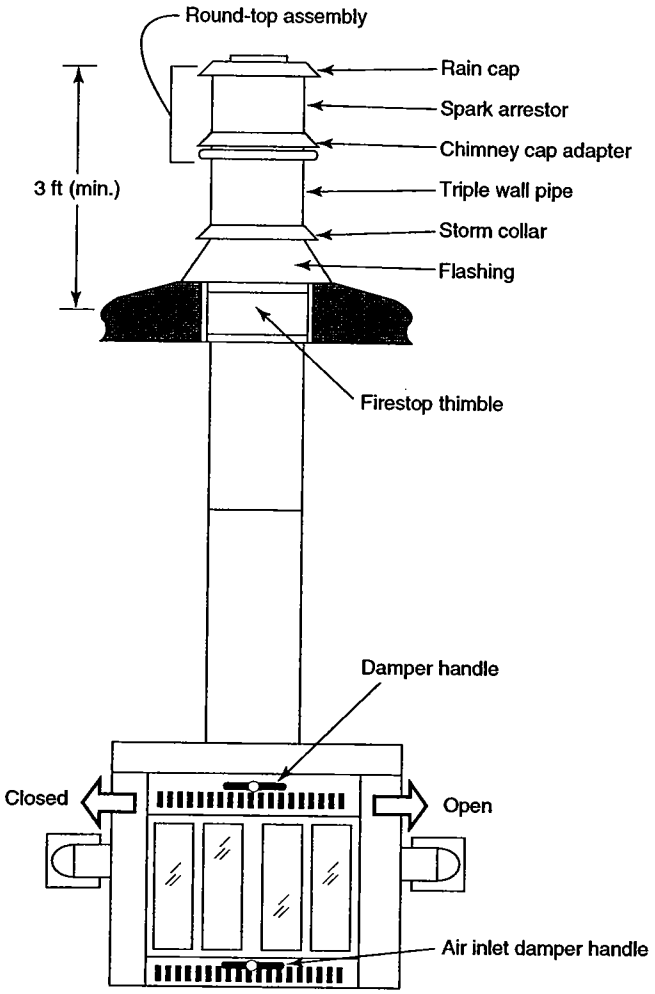
Insert Artwork here

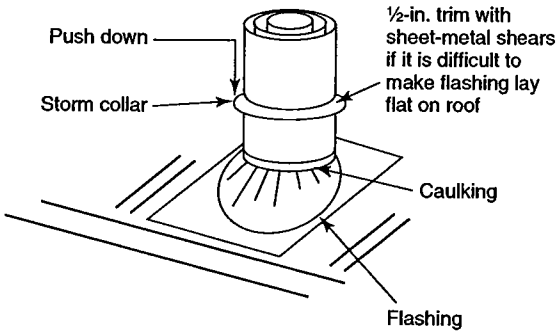
Figure 9.3.2 Fireplace or wood stove chimney.

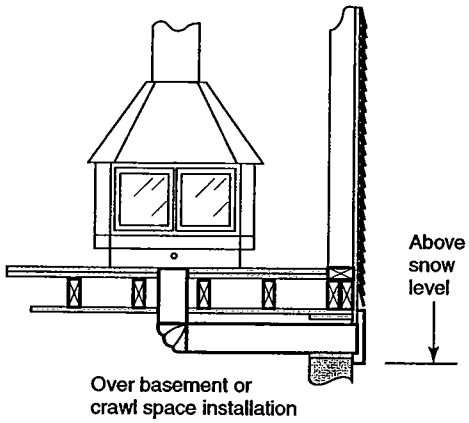
9.3.3 All fireplaces and wood stoves installed shall be listed for use in manufactured housing.

9.3.4 For field installation, approval from the manufacturer and the authority having jurisdiction shall be required to ensure compliance with the required standards.

9.3.5 Minimum Extensions Above Roof. The finished chimney shall be extended at least 3 ft (915 mm) above the highest point at which it penetrates the roof and at least 2 ft (610 mm) higher than any building or other obstruction located within a horizontal distance of 10 ft (3050 mm).







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9.3.6 Required Components. The required components of a correctly-installed chimney shall be as shown in [redacted]

9.3.7 Combustion Air Duct Inlets.

9.3.7.1 Combustion air-intake ducts shall end just below the bottom covering of the floor.

9.3.7.2 The ducts shall be extended to the outside when the home has a basement or crawlspace.

9.3.7.3 The air intake ducts shall not be installed in a garage.

9.3.7.4 The combustion air inlet shall not be allowed to drop material from the hearth to the area beneath the home.

9.3.7.5 The inlet damper shall be located above the expected snow level, as shown in [redacted]

9.4 Range, Cook-Top, and Oven Venting.

9.4.1 If the home is equipped with a combination range (cook-top)/grill or oven that contains its own exhaust system, the vent shall exhaust to the exterior of the home.

9.4.2 When the vent exhausts through the floor and if perimeter skirting is installed, the vent shall extend through the exterior perimeter of the home.

Chapter 10 Utility System Connection and Testing

10.1 Proper Procedures.

bf

10.1.1 The authority having jurisdiction shall be consulted before connecting any utilities.

10.1.2 Where required, only qualified personnel familiar with local codes shall be permitted to make utility connections and conduct tests.

10.2 Water Supply.

10.2.1 Maximum Supply Pressure and Reduction. When the local water supply pressure exceeds 80 psi (0.6 mPa) to the manufactured home, a pressure-reducing valve of a by-pass type shall be installed.

10.2.2 Connection Procedures.

10.2.2.1 Mandatory Shut-Off Valve.

10.2.2.1.1 An accessible shut-off valve shall be installed between the water supply and the inlet, as shown in Figure 10.2.2.1.1.

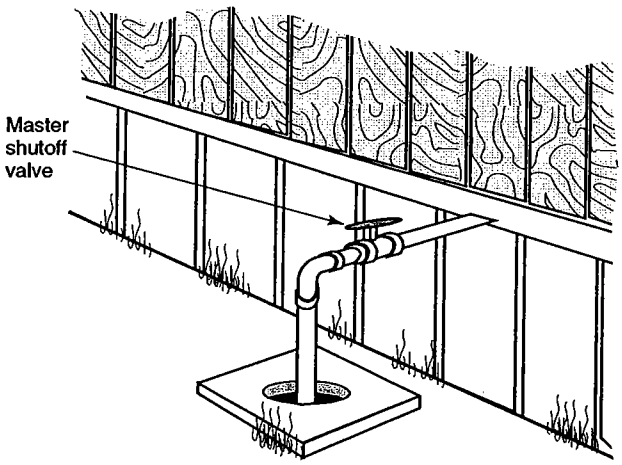
10.2.2.1.2 The water riser for the shutoff valve connection shall be permitted to be located underneath or adjacent to the home.

10.2.2.1.3 The shut-off valve shall be a full-flow gate or ball valve.

Insert Artwork here

Figure 10.2.2.1.1 Typical water connection.

10.2.2.2 Crossovers.



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Wally, there are two files for this art. Which should be used?

they are the same use this one

There is another one just like this but it has a snake wrapped around the pipe - A.10.2.3.2

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10.2.2.2.1 Multisection homes with plumbing in both sections shall require water-line cross-connections, as shown in Figure 10.2.2.2.1.

10.2.2.2.2 The shipping caps shall be removed from the water lines, and the crossover connectors provided with the home shall be installed.

10.2.2.2.3 If freezing could occur, the water connectors shall be wrapped with insulation.

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Figure 10.2.2.2.1 Typical water-line cross over.

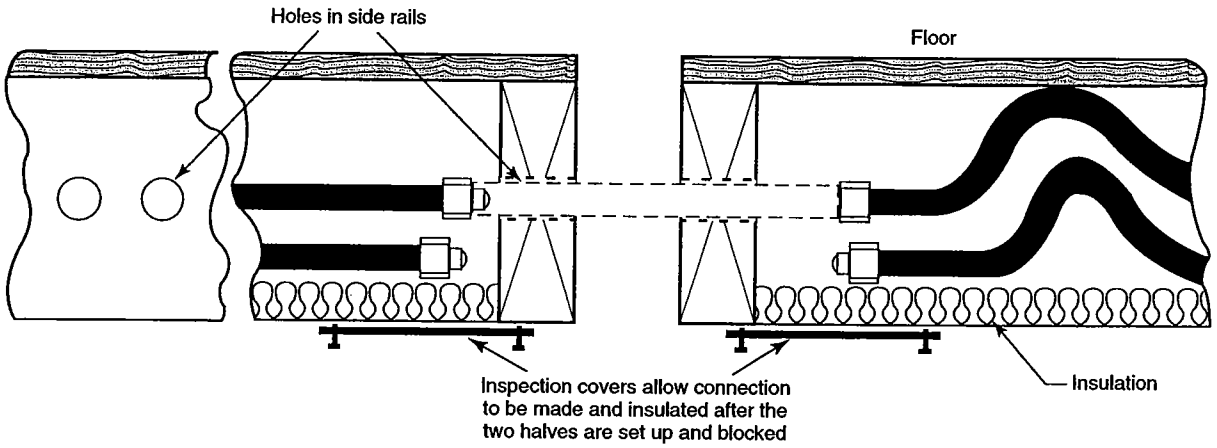
10.2.3 Freezing Protection.

10.2.3.1 Necessity. In areas subjected to subfreezing temperatures, exposed sections of water-supply piping, shut-off valves, pressure reducers, and pipes in water-heater compartments with uninsulated doors shall be protected from freezing.

10.2.3.2 Use of Pipe Heating Cable. Only pipe heating cable listed for manufactured home use shall be permitted to be used and shall be installed in accordance with the manufacturer's installation instructions.

10.2.4 Testing Procedures.

10.2.4.1 The water system shall be rechecked for leaks at the installation site.



Note: If freezing conditions exist, wrap water connector with insulation. Use water connectors supplied by manufacturer, where applicable.

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10.2.4.2 The test shall be made by subjecting the system to air or water at 100 psi (0.7 mPa) for 15 minutes without loss of pressure.

10.3 Drainage System.

10.3.1 Assembly and Support. If portions of the drainage system were shipped loose when the home was relocated, they shall be reinstall in accordance with NFPA 501, [redacted] and Figure 10.3.1.

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Figure 10.3.1 Drain-pipe slope and connections.

10.3.2 Proper Slopes. Drains shall be installed in accordance with [redacted] or [redacted].

10.3.2.1 Drain lines shall slope at least 1/4 in. (6.3 mm) fall per foot of run unless otherwise noted on the schematic diagram, as shown in Figure 10.3.2.1.

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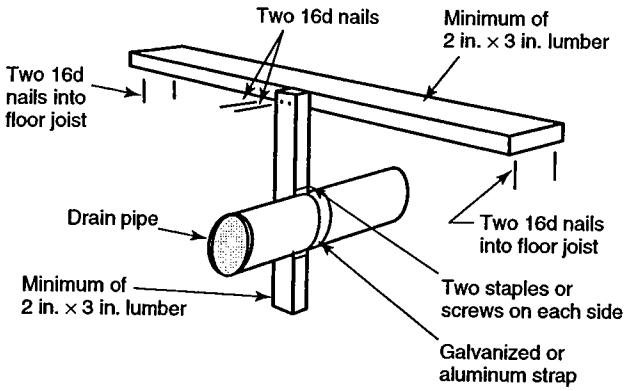
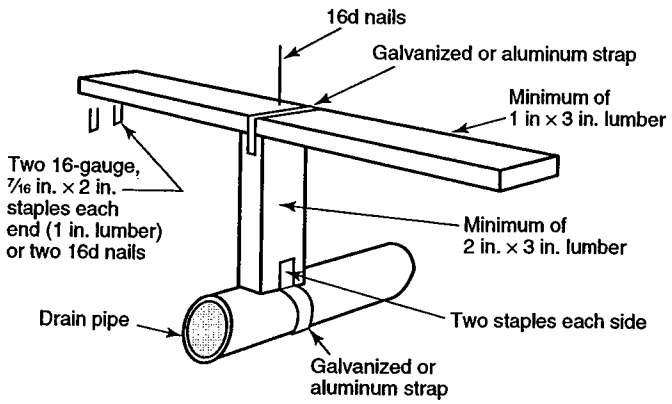
Figure 10.3.2.1 Drain-pipe slope and connections.

10.3.2.2 An 1/8-in. (3.2 mm) fall per foot shall be permitted when a clean-out is installed at the upper end of the run.

10.3.3 Connector Sizes. The main drain line shall be connected to the site's sewer hook-up, using an approved elastomer coupler as shown in Figure 10.3.3.





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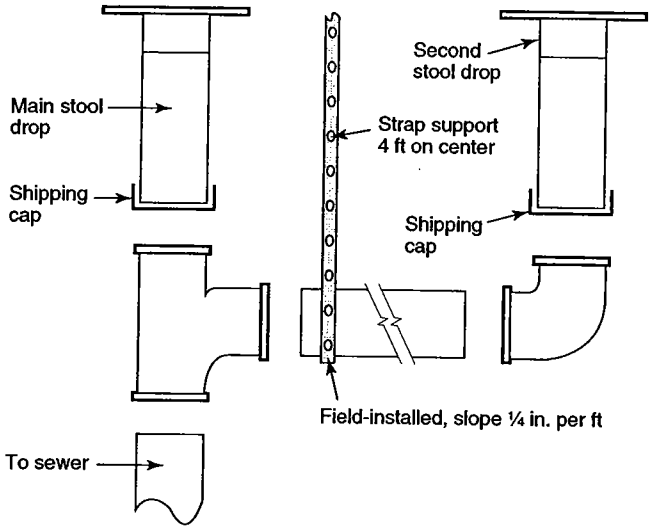

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Figure 10.3.3 Connection to site sewer.

10.3.4 Crossovers. Multisection home, drainage line crossovers shall be connected as shown in Figure 10.3.4.

Insert Artwork here

Figure 10.3.4 Drain line crossover connection.

10.3.5 Testing Procedures.

10.3.5.1 The drainage system shall be rechecked for leaks after installation at the site.

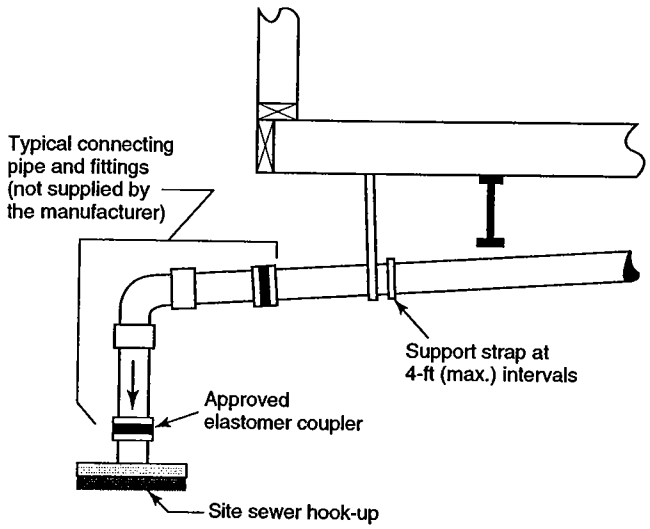
10.3.5.2 This test shall be accomplished by capping the drain line, filling it with water, and holding it 15 minutes.

10.4 Gas Supply.

10.4.1 Conversion of Gas Appliances. A qualified service person shall convert the appliance from one type of gas to another, following the instructions provided by the manufacturer of each appliance.

10.4.2 Orifices and Regulators. Before making any connections to the site supply, the inlet orifices of all gas-burning appliances shall be checked to ensure they are correctly set up for the type of gas to be supplied.

10.4.3 Proper Supply Pressure.



Note: Fittings in the drainage system that are subject to freezing, such as P-traps in the floor, have been protected with insulation by the manufacturer. Insulation must be replaced if it is removed for access to the P-trap.

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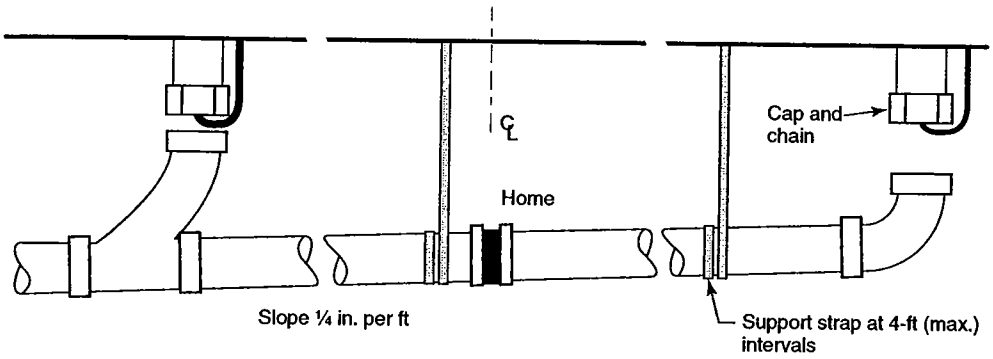

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10.4.3.1 The gas piping system in the home shall have been designed for a pressure that is not to exceed 14 in. of water column (8 oz or 1/2 psi) (3.5 kPa). If gas from any supply source exceeds, or could exceed, this pressure, a regulator shall be required to be installed.

10.4.4 Crossovers.

10.4.4.1 All crossovers and fittings shall be listed for exterior use and be of the same size as the main unit pipe.

10.4.4.2 Tools shall not be used to connect or remove the flexible connector quick-disconnect.

10.4.5 Testing Procedures. The gas system shall be retested for leaks at the installation site by qualified personnel *(see* [redacted]).

10.4.6 Connection Procedures. Gas-burning appliance vents shall be inspected to ensure that they have been connected to the appliance and that roof jacks are installed and have not come loose during transit.

10.4.7 Gas Appliance Start-Up Procedures.

10.4.7.1 One at a time, each equipment shut-off valve, light pilot lights, and adjust burners shall be opened in accordance with each appliance manufacturer's instructions.

10.4.7.2 The operation of the furnace and water heater thermostats shall be checked and then set to the desired temperatures.

10.5 Heating Oil Systems.

10.5.1 Homes equipped with oil-burning furnaces shall have their oil supply tankage and piping installed on site.

10.5.2 The oil-burning furnace manufacturer's instructions shall be consulted for pipe size and installation procedures.

10.5.3 All oil storage tanks and pipe installations shall meet all applicable local regulations and shall be required to be made only by experienced, qualified personnel.

10.5.4 Tank Installation Requirements.

10.5.4.1 Unless the home is installed in a community with a centralized oil distribution system, an oil storage tank shall be installed outside the home.

10.5.4.2 The tank shall be located where it is accessible to service and supply and safe from fire and other hazards.

10.5.5 Leak Test Procedure.

10.5.5.1 Before operating the system, it shall be checked for leaks in the tank and supply piping.

10.5.5.2 The tank shall be filled to capacity with fuel, and all joints in the system shall be examined for leakage.

10.6 Electricity. A power supply shall be available at the site.

10.6.1 Description and Rating of House Wiring. The home shall be designed for connection to an electrical wiring system rated at 120/240 volts AC.

10.6.2 Electrical Equipment/ Installations. All electrical equipment and installations shall be designed, constructed, and maintained in accordance with the applicable

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provisions of NFPA 70, *National Electrical Code*®, or the authority having jurisdiction, or all of the above.

10.6.3 Testing. Each manufactured home shall be subjected to the following tests:

(1) An electrical continuity test to ensure that metallic parts are effectively bonded

(2) An operational test of all devices and utilization equipment except water heaters, electric ranges, electric furnaces, dishwashers, clothes washers/dryers, and portable appliances to demonstrate that they are connected and in working order

(3) Electrical polarity checks to determine that connections have been made in accordance with applicable provisions of NFPA 70, *National Electrical Code*. Visual verification shall be an acceptable electrical polarity check.

Chapter 11 Life Safety Features

11.1 Smoke Alarms. Smoke alarms shall be functionally tested in accordance with the alarm manufacturer's instructions.

11.2 Sprinkler Systems. If provided, fire sprinkler systems shall comply with the provisions of 3.10.5 of NFPA 501, *Standard on Manufactured Housing*.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1 Utilization of this standard by the homeowner and installation crew, and use of a registered professional engineer in those unusual circumstances as required by this standard, will help ensure the homeowner of a well-built, safe, and affordable home.

This standard contains instructions, including specifications and procedures, for installation of utility connections of a manufactured home. It has been written in an objective manner so that it can be understood by those who are trained in the installation of manufactured homes and are properly licensed. It discusses the installation of the home from preparation of the site through final inspection. It includes many tables and figures giving important data for proper installation.

A.1.3.3 The federal standards, regulations, and requirements for manufactured housing, as authorized by 42.U.S.C.5401 et seq., are as follows:

(1) 24 CFR Part 3280 – *Manufactured Home Construction and Safety Standards.*

(2) 24 CFR Part 3282 – *Manufactured Home Procedural and Enforcement Regulations.*

A.3.1 Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural, and the plural number includes the singular.

Where terms are not defined in this chapter, they should be defined using their ordinarily accepted meanings within the context in which they are used. *Webster's Third New International Dictionary of the English Language, Unabridged*, should be a source for ordinarily accepted meaning.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position

to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.4 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.20 Manufactured Home Acccessory Building or Structures. Examples are awnings, garages, storage structures, carports, fences, windbreaks, or porches.

A.4.2 Alterations can include such items as modifying the electrical, plumbing, or heating or cooling systems; adding a room, carport, or garage; or making major repairs such as replacing a roof.

A.4.3.1 These items can be found in locations such as a master bedroom closet, kitchen cabinet door, or under a sink.

A.5.2.1 Installation on loose, uncompacted fill can invalidate the home's limited warranty.

A.5.7.2 Figure A.5.7.2 demonstrates the intent of this requirement.

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Figure A.5.7.2 Elimination of water beneath the home.

A.5.7.2.2 Where the site is sloped toward the foundation, it is important to provide drainage swales on the uphill side of the home. Figure A.5.7.2.2 demonstrates the intent of this requirement.

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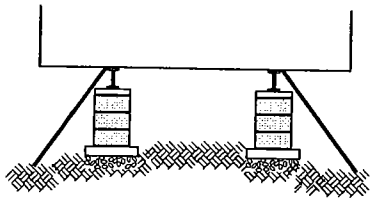
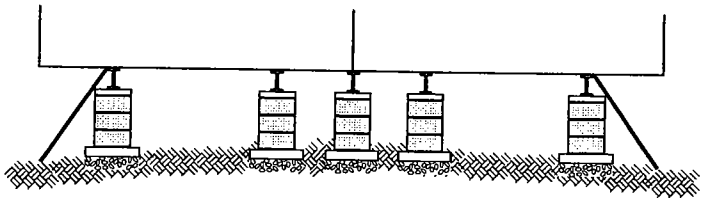
Figure A.5.7.2.2 Sloped site construction.

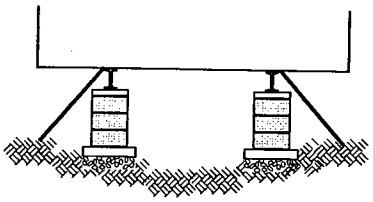
Single-section

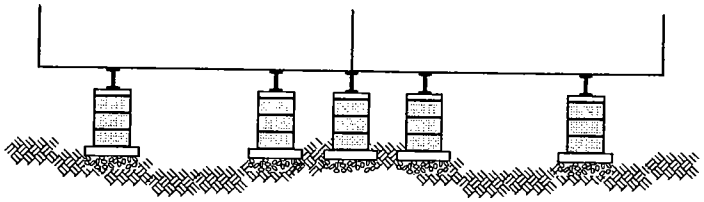


Multisection



Do: Crown and grade the site to slope away from the home and cover it with 6-mil-thick polyethylene sheeting or the equivalent.





Don't: Grade the site so that water collects beneath the home.

A.5.7.2

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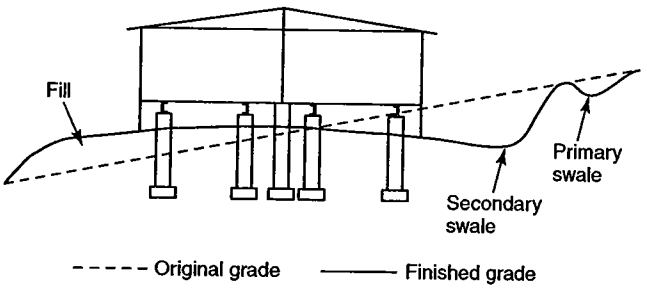

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A.6.2.1 This section does not consider uplift or lateral loads [redacted] The support system should resist vertical live and dead loads including the weight of the home, its furnishings, and temporary roof loading as well as resisting side loads imposed by wind forces to the foundation below. Consult the data plate for design data describing the roof and wind load.

A.6.2.2.1 Piers are permitted to be of the following:

(1) Hollow load-bearing concrete masonry blocks conforming to [redacted], *Standard Specification for Loadbearing Concrete, Masonry Units*, Grade N, nominal 8 in. × 8 in. × 16 in.

(2) Commercial metal piers available in various heights and base widths listed and stamped with maximum load capacity

A.6.2.3.2.1.1 [redacted] and [redacted] represent some typical design arrangements followed by several producers of manufactured homes. It should be noted that, in addition to these designs examples, guidance is found in these typical arrangements for drainage under the manufactured home, moisture prevention, consideration of termite infestation, and other critical aspects that must be taken into consideration when installing or setting up a manufactured home. The user should consult the producer or dealer of the manufactured home in question for the

actual design configuration of support, piers, and so forth to be followed.

A.6.2.4.2 Mortar will not normally be required.

A.6.2.5.3 Supports might also be necessary for heavy concentrated loads such as heavy pieces of furniture such as pianos, organs, waterbeds, etc.

A.6.2.5.4 See [redacted].

A.6.2.5.5 See [redacted].

A.6.3.2.3 Useful design guidelines can be found in the references found in [redacted].

A.6.3.3 [redacted] utilized in this standard only addresses gravity forces.

A.6.3.4 The benefits of footings are twofold: they can resist live and dead load forces in a downward direction to the soil below, and they also can resist uplift forces by combing the weight of the pier, concrete, and the soil over the footing. The table utilized in this standard only addresses the download forces.

A.6.4 Useful ideas and design guidelines can also be found in references such as those listed in [redacted].

A.7.1 CAUTION: The home weighs several tons. Use adequate temporary support blocking to safeguard workers. During leveling, take care to avoid stressing the home. Excessive and/or nonuniform jacking during the leveling process will cause the home to be racked and twisted and can result in damage to the home.

A.7.2 In order to level the section, it is suggested that a water level be used to ensure all pier supports are at the same height before lowering the section(s) to its final supported position. Figure A.7.2 shows one suggested method.

Figure A.7.2

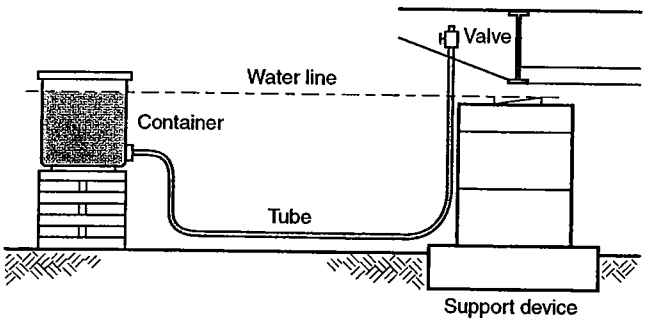
A.7.5.2 This section summarizes and defines the types of normal installations. The pier-and-ground-anchor system, as provided in this standard, is most common.

The following are types of foundation systems:

(1) *Piers — anchors.* The manufactured home rests on piers of concrete block; formed-in-place concrete; permanent wood; or steel pedestals on permanent wood, crushed stone, or concrete footers. The ground anchors in the soil are angled to the resist straps or embedded in dead-men in the soil. Straps are tied to the frame, with or without over-the-top straps.

(2) *Concrete slab or continuous footings.* The manufactured home rests on a concrete slab or ribbons of concrete. The straps are tied between the frame and the perimeter footers or concrete slab.

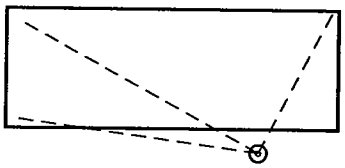
(3) *Pile/post system.* The manufactured home rests on piles or posts placed sufficiently deep in the ground to resist



Material to Make Level

- Five gallon pail with lid
- Plastic tubing — 100 ft × ⅜ in. or ½ in.
- Cork — 1½ in.
- Male barbed fitting — ⅜ in. × ¾ in.
- Steel washer — ⅞ in.
- Nut — ¾
- Female barbed fitting — ⅜ in. × ½ in.
- Male valve — ½ in.
- Pipe sealant
- Cake coloring — 8 oz.

How to Use a Water Level



Place at Any Point Around Home

Unroll Tubing: Position level where it is to be used. Take care not to have kinks in it, step on it, or lay anything on it.

Check for Air Bubbles: To remove any, lower valve below bottom of container and open. Close valve when they are out.

Container Location: Located so valve can reach all areas of the home. Build up container so water line in valve end of tubing is at the predetermined height support devices will be set.

Leveling of Support Device: Secure valve above determined height and open. Adjust device as needed. Close valve and move to next support device.

Note: Level all support devices before lowering home.

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all wind, snow, and earthquake forces. Straps fasten the home to the piles or posts or to caps placed thereon.

(4) *Concrete, concrete block, or wood foundation, load-bearing, perimeter walls.* The manufactured home rests on exterior load-bearing walls that sit on concrete or gravel footings. Straps fasten the home to the walls to resist all external forces.

A.7.5.4.2 Design guidelines can be found in HUD's permanent foundations guidebook referenced in [redacted].

A.7.7.1 CAUTION: Failure to do so can cause condensation to build up in the walls and damage the home.

A.7.7.2 The exterior siding on the front and rear end walls and exposed mating line walls (multisection) might have been shipped loose by the manufacturing facility with the home. The vapor retarder and/or insulation have been installed by the home's manufacturing facility.

A.7.7.5 CAUTION: Entry of outside air into the home's floor cavity is one of the most frequent causes of water piping freeze-up. Necessary repairs should be completed regardless if skirting is to be installed around the perimeter of the home.

A.8.2 Special care must be taken when installing them to avoid personal injury and to avoid structural damage as these members are usually very heavy.

A.8.6 For an example of the ventilation options see Figure A.8.6.

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Figure A.8.6 Ventilation improvement installation.

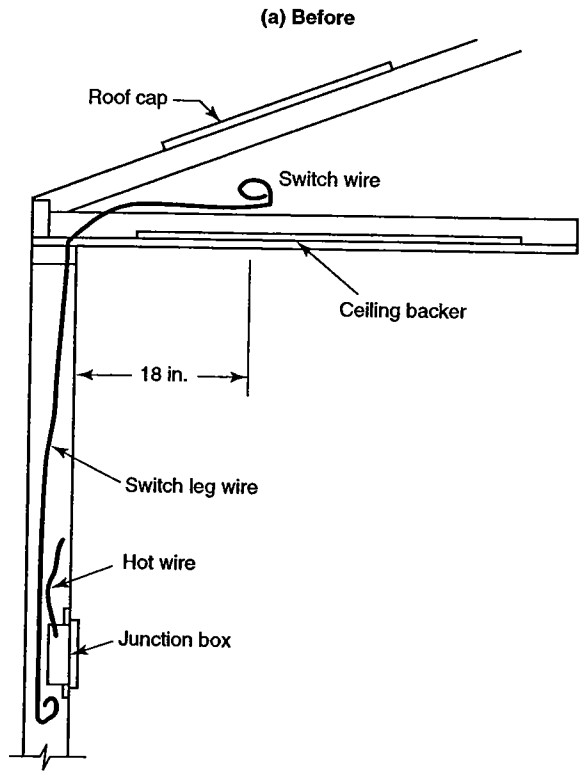
A.8.8.1 CAUTION: Homes with open slatted decking at recessed entries, open porches, or decks with skirting in front of, behind, or under the deck-home transition must have adequate drainage to prevent water from draining back under the home.

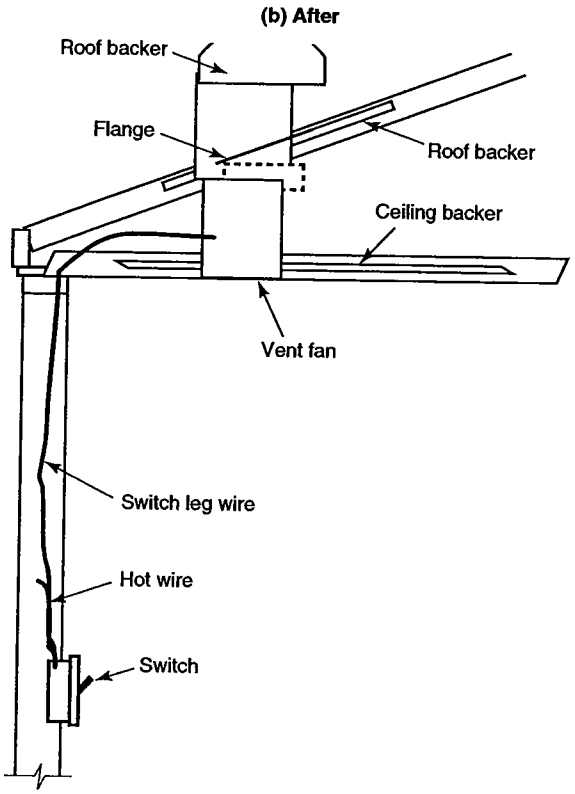
A.8.8.2.1(2) Where local codes have minimum ventilation requirements for crawlspaces, the requirements of [redacted](2) ~~through [redacted] shall apply~~ should be applied to homes with skirting and continuous foundations.

A.8.9 CAUTION: Careless installation of telephone and cable television lines may be hazardous. Failure to follow these instructions can result in serious personal injury or death. The walls and floors of the home contain electrical circuits, plumbing, and duct work. Avoid contact with these systems when drilling through and placing cables within these cavities. Only trained professionals should handle such work.

A.9.1 IMPORTANT: Do NOT let the exhaust system end under the home, where excess moisture or flammable material can accumulate. (Follow the dryer manufacturer's instructions for installing the exhaust system.)

A.9.2 IMPORTANT: Before installing a comfort cooling system, check the home's data plate to assure that the home





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has been designed for the installation of central air-conditioning. Only qualified personnel can install a comfort cooling system not provided with the home. Follow the product manufacturer's installation instructions and conform to all local codes.

A.9.2.1.1 CAUTION: Oversized air-conditioning equipment can lead to poor overall performance of the home's cooling system. Do not cut any floor framing when installing return air grill(s).

A.9.2.1.2 IMPORTANT: Electrical circuits within the home might not have been sized for the additional load of non–factory installed air-conditioning, and a separate, outside electrical supply might have to be provided.

A.9.3.5 If there are obstructions on the site that extend higher than the home's roof peak and are within 10 ft (3050 mm) of the chimney, the installer might have to provide an additional section of chimney pipe, if required to do so by the authority having jurisdiction.

A.9.3.7 If the added ducts are not supplied, they can be purchased at a hardware store. The fireplace manufacturer's instructions for installing combustion air ducts can be found in the fireplace/stove or with the chimney parts.

A.10.2.3.2 Figure A.10.2.3.2 provides an illustration of the intent of this paragraph.

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Figure A.10.2.3.2 Typical water connection.

A.10.4.2 IMPORTANT: Special orifices and regulators are required for specific gases. See the instructions accompanying each gas-burning appliance for modification instructions. Special attention should be given to homes sited at altitudes above 3000 ft (945 m).

A.10.4.3 To operate gas-burning appliances safely and efficiently, do not exceed the design pressure limitations. For NG systems, the incoming gas pressure should remain between 6 in. and 8 in. (1.5 kPa and 2 kPa) of water column. For LP-Gas systems, the pressure should register between 12 in. and 14 in. (3 kPa and 3.5 kPa) of water column.

A.10.4.4 A gas crossover may need to be installed in multisection homes.

A.10.4.~~7~~1 IMPORTANT: Ensure that the water heater is filled with water before lighting the pilot light.

A.10.4.6 IMPORTANT: Have the gas system connected to the gas supply by a qualified service person, familiar with local codes and licensed where required, or representative of the gas company.

SL: OK?

IMPORTANT: Have the gas supply turned on by a qualified service person, familiar with local codes and licensed where required, or by an authorized representative of the gas company.

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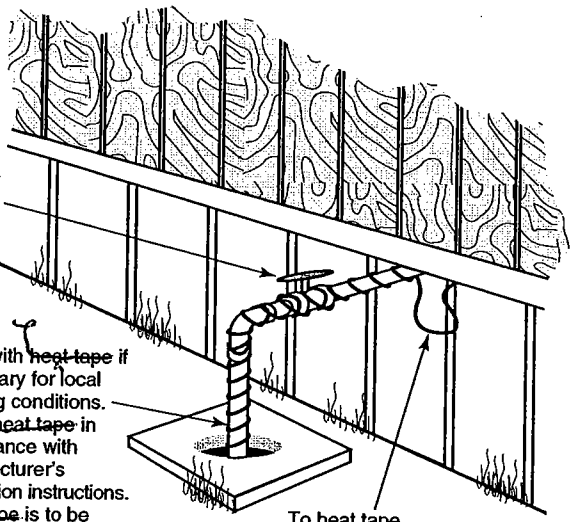
ROC 225-122



pipe heating cable

Pipe heating cable

225-A.10.2.3.2-02
20 x 18

Paste up - subject to further change/action

A.10.6 An inadequate power supply can result in improper operation of, and possible damage to, motors and appliances. The current rating in amperes of the home can be found on the tag located outside, next to the feeder or service entrance, and also on the electrical distribution panel.

A.10.6.1 IMPORTANT: Proper and safe connection depends on the type of supply system with which the home is equipped.

Annex B Final Inspection Checklist

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 Final inspection should be made when the home installation (set-up) is complete. A checklist such as the one given in Figure B.1 should be developed to ensure that no items have been overlooked and that work has been properly completed.

Insert Artwork Here

Figure B.1 Sample final inspection checklist.

B.2 All transit and installation damage is required to be reported to the manufacturer if the home is a new unit. Check with local authorities having jurisdiction prior to

CHECKLIST FOR FINAL INSPECTION UPON COMPLETION OF HOME INSTALLATION

1. *Water and drain systems.* Check to ensure the following:
- ____ Correct materials for water and drain lines have been used
- ____ Connections and splices are properly made
- ____ Supports are of correct material and are properly spaced
- ____ Necessary inspections and tests have been made
- ____ Water lines are protected from freezing, when applicable
- ____ Proper slope has been maintained on drain lines

2. *Electrical systems.* Check to ensure the following:
- ____ Panel amperage matches connection to home
- ____ Electrical inspections have been performed, connections between multisections are in accordance with the MHCSS, and access covers are in place

3. *Gas/fuel oil systems.* Check to ensure the following:
- ____ Correct materials and fittings are used
- ____ The pressure test has been conducted on the gas system
- ____ The connection between multisections are in accordance with the MHCSS, with access as required

4. *Appliance function, operation, and venting.* Check to ensure the following:
- ____ Vent or chimney extensions shipped loose on the home have been mounted and serviced in accordance with the manufacturer's instructions
- ____ Appliances and valves have been tested and are properly working
- ____ Venting of appliances under unit are in accordance with the MHCSS
- ____ Dryer is properly vented
- ____ Solid-fuel-burning fresh air intake is properly installed
- ____ Temporary shipping blocks have been removed
- ____ Exhaust fan operation and air flow are correct

5. *Windows and doors.* Check to ensure the following:
- ____ Windows meet egress requirements and have operation instructions on them
- ____ Doors function properly
- ____ Temporary shipping hardware has been removed from windows and doors

6. *Exterior of home.* Check the following:
- ____ For damage to under carriage or bottom board
- ____ Chassis, floor joists, or both for installation/transportation damage
- ____ Bottom board for rips or tears
- ____ For damage to siding (cracks, breaks, holes, nail pops, etc.)
- ____ For damage to metal or composition roofs, such as the following:
  - ____ For holes or rips in metal roof
  - ____ Shingles for damage and sealing
  - ____ Drip edge or fascia damage
  - ____ Roof openings for sealing (vents, stacks, etc.)
  - ____ To ensure that when gutters and downspouts are installed, the water is diverted away from the home

7. *Interior of home.* Check the following:
- ____ For damage to floor coverings (vinyl, carpet)
- ____ For damage to wall finish (holes, cracks, nail pops, etc.)
- ____ For damage to ceiling finish (holes, cracks, nail pops, etc.)
- ____ For damage to interior trim (splits, cracks, nail pops, etc.)
- ____ Multisection common areas for correct finishing

8. *Skirting.* Check to ensure the following:
- ____ Skirting used is in accordance with owner's specifications
- ____ Venting is in accordance with the manufacturer's specifications
- ____ Skirting is constructed to prevent frost movement in areas where it occurs
- ____ Polyethylene ground cover is correctly installed

9. *Blocking/footings.* Check to ensure the following:
- ____ Footings are of proper size and construction for soil conditions
- ____ Spacing of piers is in accordance with the manufacturer's guidelines
- ____ Footing depth is below frost line
- ____ Foundation walls, if required, meet local codes, ordinances, or covenants
- ____ Pier construction meets manufacturer's specifications

10. *Anchoring.* Check to ensure the following:
- ____ Approved anchors are used
- ____ Correct number of anchors, straps, or both are used according to the manufacturer's instructions
- ____ Anchors are installed at correct angles and in accordance with the anchor manufacturer's listing for approval

11. *Miscellaneous.* Check to ensure the following:
- ~~____ The smoke alarm(s) is operating correctly~~
- ____ Construction seals (the "HUD Label") have not been damaged, removed, or covered by skirting
- ____ Installation/anchoring certificates, seals, or both have been issued and installed, if required
- ____ Data plate is intact and legible
- ____ Low-hanging tree branches and bushes have been trimmed

(NFPA 225, 1 of 1)

ROC 225-140

AC: 2 items, each with write-on rule.

—The smoke alarms or smoke detectors are installed per Section 3.8 of NFPA 501.

—The smoke alarms or smoke detectors are tested in accordance with the smoke alarm or smoke detector manufacturer's instructions.

225-B.1(1)-01
42 x 50

ROC 225-141

inspected

inspected

—The smoke alarm(s) or smoke detector(s) is inspected and tested.

Wally, which should be implemented, ROC 140 or ROC 141?

— do 140 NOT 141 — add "inspected and" after all

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installation for code requirements and permits/inspections required.

Annex C Sample Checklist for AHJ Officials

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

C.1 Figure C.1 is a sample form that can be used as a checklist by enforcement officials for the installation of manufactured homes.

Insert Artwork Here

Figure C.1 Sample checklist for enforcement officials.

Annex D Sample Schedule for Manufactured Home Installation Permits

This annex is not part of the requirements of this document but is included for informational purposes only.

D.1 For installation of new or relocated homes in a municipality, a basic permit flat fee can be established by the authority having jurisdiction to cover the following inspections:

ROC 225-146

THE AUTHORITY HAVING JURISDICTION

CHECKLIST FOR ~~ENFORCEMENT OFFICIALS~~

Owner: _____

Address: _____

Manufacturer: _____

Address: _____

Model: _____ Serial Number: _____ Mfd. Date: _____

"HUD" Label/State Label Number: _____

Dealer: _____ Dealer #: _____

Installer: _____ Installer #: _____

Local Building Official Inspection: _____

Local Permits: _____

INSTALLATION:

Installation #: _____ Anchor #: _____

Instructions Used: Manufacturer: _____ State: _____

Support Footings: Type: _____

Size: _____

Piers: Materials: _____

Spacing: _____

Shims: _____

Lot/Soil Conditions: _____

Anchors: Spacing: _____

Equipment Used: _____

Equipment Approved: _____

Frame Removed: Permitted by Manufacturer: _____

(Prior to 11/89)

Foundation to Local Building Code: _____

Support Locations as per Manufacturer: _____

Skirting: Type: _____

Attachment to Home: _____

Poly on Grade: _____

Access Panel: _____

UTILITIES:

Water: Correct Materials/Fittings: _____

Protected From Freezing: _____

Support Spacing: _____

C.1(1)

225-D.1(1)-01
42 x 50

Paste up - subject to further change/action

ROC 225-146

THE AUTHORITY HAVING JURISDICTION

CHECKLIST FOR ~~ENFORCEMENT OFFICIALS~~ (Cont.)

Waste: Correct Materials/Fittings: _____

Slope to Drain: _____

Support Spacing: _____

Main Sewer Connection (Gasketed): _____

Gas: Correct Materials/Fittings: _____

Pressure Test: _____

Electric: Connection Between Halves (MHCSS — "HUD-Code"): _____

("Pre-HUD-Code" Homes only)

Aluminum Wiring: _____

Method Used to Eliminate or Reduce Danger: _____

Supply Amps (Matches Panel in Home): _____

ROC 225-147

Smoke Alarms: or Smoke Detectors

DATA PLATE: Installed: _____

Functionally Tested: _____

Roof Zone Load: _____ Heating Zone: _____

Furnace: Original: ☐ yes ☐ no Gypsum Board Lined: _____

Water Heater: Original: ☐ yes ☐ no Gypsum Board Lined: _____

Dryer: Original: ☐ yes ☐ no

Range: Original: ☐ yes ☐ no

Wally, ROC 140 + 147 don't agree. Please indicate correct wording + placement.

D/C or ~~Show~~ Shown

MISCELLANEOUS:

Fireplace: ☐ yes ☐ no Model: _____ Approved: _____

Chimney: _____

Fresh Air Intake: _____

ROC 225-140

Venting: _____ Skirting/Foundation: _____

Roof and/or O.H.s: _____

~~Smoke Alarms:~~ _____

Alterations: Approved: _____ Inspected: _____

Comments: _____

Inspector: _____ Date: _____ Time: _____

Present During Inspection: _____

(NFPA 225, 2 of 2)

Wally, pls make changes per ROC 225-145. I'm not clear about what's wanted.

C.1(2)

225-D.1(2)-01
42 x 50

Paste up - subject to further change/action

(1) Foundation inspection, as follows:

(a) Frost depth foundation (requires extra inspection)

(b) Piers and footings on grade (common to most community installations)

(c) Skirting installation/ventilation

(d) Anchoring of unit (when required by the authority having jurisdiction or by manufacturer's instructions)

(2) Plumbing inspection, as follows:

(a) Sewer connection

(b) Water connection

(c) On-site work performed on home water/drain lines

(3) Gas-line inspection, as follows:

(a) Materials and connections

(b) Testing

(4) Structural inspection, as follows:

(a) Data plate information (June 15, 1976 and newer)

(b) Structural damage

(c) Precode upgrading rules by the authority having jurisdiction (*see Annex C*)

(5) Electrical inspection (state electrical board or municipality)

D.2 Separate permit or hourly inspection fees in excess of the original basic permit flat fees can be established by the authority having jurisdiction for the following:

(1) Required corrections — reinspection

(2) Accessory structures or buildings

(3) Inspection (i.e., wood decks, carports, entry ways, out-buildings, etc.)

(4) Alterations to original home inspection (i.e., structural, mechanical, plumbing, electrical) — contact the authority having jurisdiction ~~codes division~~ prior to issuance, as submittal to the authority having jurisdiction might be required for approval.

(5) Plan review of accessory structures or alterations

Annex E Foundation Related References

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

E.1 The following references are being provided to assist the user in obtaining related information pertaining to foundations.

E.1.1 ASCE 7, *Minimum Design Loads for Buildings and Other Structures*, American Society of Civil Engineering, 1430 Broadway, New York, NY 10018, 1988.

E.1.2 *Building Foundation Design Guidebook*, Doc. No. DE88013350, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

E.1.3 *Design Guide for Frost-Protected Shallow Foundations*, NAHB Research Center, Upper Marlboro, MD, June 1994.

E.1.4 FEMA 85, *Manufactured Home Installation in Flood Hazard Areas*, Federal Emergency Management Agency, Washington, DC 20472, September, 1985.

E.1.5 *Frost-Free Shallow Foundation Design Guidelines*, Energy Design Update, March 1988.

E.1.6 *Guidelines for Anchor System Design — Technical Support Document*, Manufactured Housing Research Alliance, The Ansonia, 2109 Broadway, Suite #203, Times, NY 10023, January 2000.

E.1.7 HUD Handbook 4930.3, *Permanent Foundations Guide for Manufactured Housing*, U.S. Department of Housing and Urban Development, 451 7th Street, SW, Washington, DC 20410, 1989.

E.1.8 *Manufactured Home Foundation Design for Seasonally Frozen Ground*, Progressive Engineering Incorporated, 58640 State Road 15, Goshen IN, 46526, June 14, 1996.

E.1.9 *Manufactured Housing Reference Guide for State Installation Programs* — Chapter 10, Council of State Administrative Agencies (COSAA), Arlington, VA, 1998.

E.1.10 *Permanent Wood Foundation System — Design, Fabrication, and Installation Manual*, National Forest Products Association, 1250 Connecticut Avenue, NW, Washington, DC 20036, 1987.

Annex F Informational References

F.1 References Publications.

F.1.1 NFPA Publications. (Reserved).

F.1.2 Other Publications.

F.1.2.1 ASTM Publication. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM C 90, *Standard Specification for Load Bearing Concrete Masonry Units.*

F.1.2.2 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402

Title 24, *Code of Federal Regulations*, Parts 3280 and 3282.

Title 42, Unites Stated Codes, 5401.

F.2 References for Extracts. The following documents are listed here to provide reference information, including title and edition, for extracts given throughout this standard as indicated by a reference in brackets [ ] following a section

or paragraph. These documents are not a part of the requirements of this document unless also listed in Chapter 2 for other reasons.

NFPA 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities, 2003 edition.