

15-28-08

**SINGLE SECTION MANUFACTURED
HOME INSTALLATION MANUAL**



**FAIRMONT HOMES, INC.
502 S. OAKLAND AVE.
NAPPANEE, IN 46550**
www.fairmonthomes.com

Serial Number: _____

Contents

| | |
|--|----|
| INTRODUCTION..... | 1 |
| PRE-INSTALLATION CONSIDERATIONS..... | 7 |
| SITE PREPARATION..... | 13 |
| FOUNDATION SYSTEM..... | 18 |
| INSTALLATION..... | 27 |
| UTILITY CONNECTIONS..... | 32 |
| ELECTRICAL SYSTEM..... | 38 |
| GROUND ANCHORING SYSTEM..... | 44 |
| EQUIPMENT, OPTIONS, AND CONNECTIONS..... | 51 |
| INSTALLATION COMPLETION AND INFORMATION..... | 59 |
| INDEX..... | 61 |

Introduction

1-1 PREAMBLE

This home was designed and constructed to meet or exceed the requirements of the National Manufactured Home Construction and Safety Standards which were in effect on the date of manufacture. This standard sets forth minimal requirements for the design, construction, electrical system, plumbing systems, heating system and thermal protection for manufactured homes designed to be used as single family dwellings.

These instructions are intended to instruct and assist a qualified licensed installer in the proper installation of this manufactured home. The installer must possess a valid installation license as a manufactured home installer. The installer should guarantee his work in writing for a reasonable time and should agree to realign the home on its supporting system in approximately 60 days from the time of initial installation.

This installation manual contains instructions that must be followed for the proper installation of the home. It complies with the HUD Model Manufactured Home Installation Standards. Please read all instructions and any other documents (including addendum pages and supplements) that may apply to this home prior to commencing site work or installation.

This installation manual covers permits and site work through final inspection of the installation. It covers single-section homes installed over pier and anchor; foundation system designs, which may be required for a specific home and are included in the supplemental addendum. It contains instructions, including specifications and procedures, for the set and hookup of manufactured homes to be used as single-family dwellings. Supplemental addendum pages may be included with this manual. Supplements include requirements not covered in this manual or that supersede the manual instructions.

NOTE: Once the home installation is complete, leave this manual with the home.

The importance of correct installation cannot be over-emphasized. Correct installation is absolutely essential to homeowner satisfaction and the structural integrity of the home. A properly maintained installation will, under normal conditions, prevent the home from settling and avoid the possibility of incurring expensive repair bills. If the home is not set and maintained in proper alignment as it was designed, or if it is not set on a completely firm and proper foundation system as described in this instruction, certain portions of the home will undergo undue and unnatural structural strain. Such structural strain could lead to problems later. Typically, these problems appear in the form of the buckling, loosening or separating of wall coverings, exterior siding, floors and their covering, ceilings, metal roof membranes and miscellaneous fixed original fixtures and cabinets of the home. Other problems relating to installation include the leaking of doors, windows, roofs, ceilings, and exterior walls due to the loss of the weather seals in these areas, as well as the loss of proper operation of windows and doors and their locking devices.

It is of the utmost importance that the electrical feeder connection to the home be installed in accordance with the instructions in this manual and in the diagram located at the electrical distribution panel with the home. **IT IS ABSOLUTELY ESSENTIAL THAT A 4-WIRE FEEDER BE USED. WITHOUT THE 4-WIRE FEEDER THE CIRCUIT BREAKERS WILL NOT FUNCTION AND A SHORT CIRCUIT AT ANY TIME COULD CAUSE ELECTROCUTION.**

1-2 IMPORTANT NOTICES

TO INSTALLERS AND SITE PREPARATION CONTRACTORS:

- Noncompliance with these installation instructions may make the home owner or occupants liable for damages or injury resulting from the omissions or incorrect or defective work. Accordingly, care should be exercised in conforming to the requirements herein.
- Improperly vented skirting will cause moisture to accumulate beneath the home. When skirting the bottom of the home, a minimum 6 mil polyethylene vapor retarded must be installed over the surface of the ground and ventilation must be provided. The minimum vent area shall be 1 square foot for each 1,500 square feet of area under the home. The ventilators must be equally spaced along each side of the home and one ventilator must be placed within 3 feet of each end of the home.
- The home manufacturer is not responsible for installation or for the materials supplied by the set-up crew at the time of installation. The installer may be responsible for any deviations from the installation instructions of this manual.

- When an installer does not provide support and anchorage in accordance with the approved manufacturer's installation instructions, or encounters site conditions (such as areas that are subject to flood damage or high seismic risk) or other conditions that prevent the use of the instructions provided in this manual, the installer must obtain special site-specific instructions from the manufacturer, if available, or use a design approved by a registered professional engineer or registered architect that has been approved by the manufacturer and the manufacturer's DAPIA. The installer is responsible for determining whether the manufactured home site lies wholly or partly within a special flood hazard area.
- Installers must certify that the completed installation is in compliance with either the manufacturer's installation instructions or a design prepared by a registered professional engineer or registered architect.
- If the serial number of the home starts with the letters "AC", the Alternate Construction on-site check list supplied with the home must be completed and returned to the manufacturer in a timely manner.
- If the installer identifies failures of the home to comply with MHCSS, the installer must notify the manufacturer and the retailer.

TO THE HOMEOWNER:

- Please be advised that this company does not participate in retail sales. Our units are purchased by independent retailers, who in turn sell them to their customers. We, of course, have no control over, and are not aware of the terms and conditions of these sales, nor the manner in which these homes and home sites are prepared for final installation of the units. In like manner, we have no control or obligation in matters concerning after market items, such as installation, skirting, appliances and/or furnishings not on the factory invoice, porches, decks, awnings, ramadas, concrete work, utility connections, etc.
- To keep the home in compliance with its warranty, the home installation must follow the procedures described in this manual or other procedures approved by the manufacturer. Deviation from the instructions in this manual may void the home's warranty. Any alterations or changes to the home should be designed by a registered professional engineer or registered architect and may still be subject to warranty violations.

1-3 SAFETY CONSIDERATIONS

There are potential hazards associated with the installation of a manufactured home.

Only qualified licensed installers should install a manufactured home. As qualified professionals in the field of manufactured home installation, they are the experts and must be aware of the hazards and conditions faced. Warnings are published throughout this manual as reminders. These reminders may not cover all hazards, all potential hazards, or all possible consequences of improper or unsafe installation practices. Installation crews should be trained in the skills required and be supervised by experienced personnel. Installers should regularly inspect work performed by crews and subcontractors. Obey OSHA regulations, particularly those related to home construction, such as Title 29 Code of Regulations Part 1926. For copies of OSHA regulations, call (202) 512-1800 or visit www.osha.gov on the web.

1-4 FEDERAL PREEMPTION

This home was engineered, constructed, and inspected in conformance with the requirements of the Federal Manufactured Home Construction and Safety Standards (24 CFR Part 3280, commonly referred to as the "HUD Code") as regulated and amended by the US Department of Housing and Urban Development which were in effect on the date of manufacture. These Standards set forth minimum requirements for the design and construction of manufactured homes designed to be used as dwellings.

Individual states, counties and cities shall have no authority to establish standards regarding the construction or safety of a manufactured home. A metal certification label is affixed to each section of the home to certify that it has been constructed and inspected to comply with these Standards. The design plans and in-plant construction of all homes are inspected by independent third party agencies to assure compliance with the Standards.

The installation of the home and any alterations made to the home shall conform to the requirements of the Federal Manufactured Home Construction and Safety Standards and the Model Manufactured Home Installation Standards. These installation instructions are minimum requirements. Applicable local or state laws may have more stringent installation requirements than outlined in this manual and must be followed.

Consult with the local authority having jurisdiction (LAHJ) for regulations that may require licenses and/or permits or which may affect procedures described in this manual.

1-5 ENGINEER'S STAMP

Certain pages of this manual display the seal of a registered professional engineer or registered architect. Federal guidelines only require the seal from one state to be displayed, but the details herein apply to all states.

1-6 ALTERNATIVE FOUNDATION SYSTEMS

Alternative foundation systems or designs are permitted if they are approved by the home manufacturer and the manufacturer's DAPIA, and are in accordance with either of the following:

- Systems or designs are manufactured and installed in accordance with their listings by a nationally recognized testing agency based on a nationally recognized testing protocol; or
- System designs are prepared by a registered professional engineer or a registered architect or tested and certified by a registered professional engineer or registered architect in accordance with acceptable engineering practice and are manufactured and installed so as not to take the home out of compliance with the Manufactured Home Construction and Safety Standards.

1-7 DISPLAY AND STORAGE OF THE HOME

WEATHER PROTECTION

If the installation is not started immediately upon delivery of the home, the retailer and/or installer has the responsibility to ensure that any exterior weather protection covering applied to the home has not been damaged during shipment or while in storage on the retailer's lot or at the home site before installation is complete. Inspect the home immediately upon the delivery and frequently during storage. Promptly repair damage in the home protective covering using a contractors sheathing tape designed for use with polyethylene sheeting or other appropriate sealants depending on the material to be sealed to prevent damage from the elements. Inspect and repair roof shingles and siding as needed.

SUPPORTING A HOME FOR DISPLAY

When a new or used manufactured home is to be displayed at a retail location, temporarily block and support the home. Set up single-section homes with single block piers spaced no further apart than 10 feet o.c. beneath each I-beam. The tire and axle system may be used as one of these required supports. Locate the first pier no further than two feet from the rear end of the home (Figure 1). Place additional piers along the perimeter on either side of openings greater than four feet (i.e. sliding glass doors, bay windows, etc.).

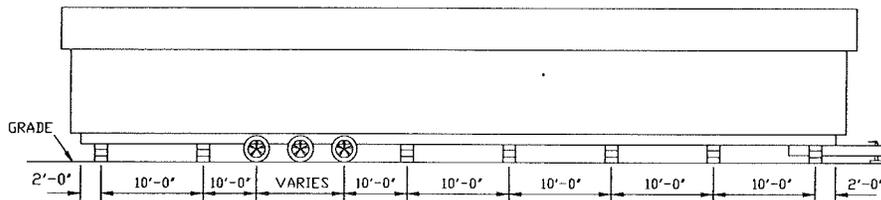


FIGURE 1-1

For all homes, place footings below each pier. Footings may be placed directly on the surface grade without excavation and may be ABS pads or 4 inch thick pre-cast concrete pads, 24 inches square.

SUPPORTING A HOME FOR TEMPORARY STORAGE

To prevent damage to homes being stored on the retailer's lot or home site, but not on display (i.e. people should not be permitted inside the home), for a period exceeding 30 days, locate piers below each I-beam no further than two feet from each end of the home and at the approximate center of the home length where the distance between the front of the floor and the first axle is greater than 22 feet for homes 16/32 feet wide and 24 feet for homes up to 14/28 feet wide.

1-8 ABBREVIATIONS

| | | | |
|--------------|--|--------------|---|
| ABS | Acrylonitrile Butadiene Styrene | max. | Maximum |
| ANSI | American National Standards Institute | MHCSS | Manufactured Home Construction and Safety Standards |
| APA | American Plywood Association | MMHIS | Model Manufactured Home Installation Standards |
| ASTM | American Society for Testing and Materials | min. | Minimum |
| AWPA | American Wood Preservers Association | mph | Mile(s) per hour |
| CFM | Cubic feet per minute | NEC | National Electric Code |
| CFR | Code of Federal Regulations | NFIP | National Flood Insurance Program |
| DWV | Drain, Waste, Vent | NFPA | National Fire Protection Association |
| EMT | Electrical metallic tubing | o.c. | On center |
| FEMA | Federal Energy Management Agency | OSHA | Occupational Safety and Health Administration |
| ft | Foot/feet | oz | Ounce(s) |
| ga | Gauge | p. | Page |
| HUD | US Department of Housing and Urban Development | psf | Pounds per square foot |
| in | Inch(es) | psi | Pounds per square inch |
| LAHJ | Local Authority Having Jurisdiction | SAA | State Administrative Agency |
| lb(s) | Pound(s) | sq ft | Square foot/feet |

1-9 DEFINITIONS

ABS FOOTING PAD. A listed, pre-manufactured footing, used to support the piers beneath the home (must be installed in strict accordance with their manufacturer's printed instructions).

ANCHOR ASSEMBLY. Any device or other means designed to transfer loads to the ground.

ANCHORING EQUIPMENT. Ties, straps, cables, turnbuckles, chains, and other approved components, including tensioning devices that are used to secure a manufactured home to anchor assemblies.

ANCHORING SYSTEM. A combination of anchoring equipment and anchor assemblies that will, when properly designed and installed, resist the uplift, overturning, and lateral forces on the manufactured home and on its support and foundation system.

ARID REGION. Area subjected to 15 inches or less of annual rainfall.

BASEMENT. A load-bearing perimeter wall foundation that includes habitable space (finished or unfinished, heated or unheated) partly or completely below grade.

COMFORT COOLING CERTIFICATE. A certificate permanently affixed to an interior surface of the home, often part of the Data Plate, specifying the factory design and preparations for air conditioning the manufactured home.

CRAWLSPACE. The space underneath the home's floor system, enclosed with either load- or non-load bearing perimeter walls. The ground may be covered with a concrete slab or by a plastic ground cover. Crawlspace walls must be vented.

CROSSOVERS. Utility interconnections between sections of multi-section homes, including heating and cooling ducts, electrical circuits, and water pipes, drain plumbing, and gas lines.

DATA PLATE. An information sheet located at the main electrical panel, in the utility room, in a bedroom closet, or in a cabinet in the kitchen. It contains a unique identification number and identifies the wind zone, roof load zone, and climatic zone for which the home was constructed.

DESIGN APPROVAL PRIMARY INSPECTION AGENCY (DAPIA). A state or private organization which evaluates, approves, or disapproves manufactured home designs.

DESIGN FROST DEPTH. The minimum depth at which the soil temperature remains above freezing for an extreme winter event, based on analysis, local regulations, or experience.

DIAGONAL STRUT/ADJUSTABLE OUTRIGGER. A device listed for the support perimeter loads at the ends of door and window openings.

DIAGONAL TIE. A tie intended to resist horizontal or shear forces, but which may resist vertical, uplift, and overturning forces.

FLOOD HAZARD AREA. The greater of either the special flood hazard area shown on the flood insurance rate map, the area subject to flooding during the design flood and shown on the LAHJ's flood hazard map, or otherwise legally designated.

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

FOUNDATION SYSTEM. A system of support that is capable of transferring all design loads to the ground, including elements of the support system, as defined herein, or a site-built permanent foundation.+

GROUND ANCHOR. A specific anchoring assembly device designed to transfer home loads to the ground.

H-BEAM. Steel H-beams, also called Wide Flange beams, are often used to support a home over a basement or crawlspace. They span across the foundation from sidewall to sidewall, typically with an intermediate support pier and footing (typically in the center point resulting in a line of piers under the centerline of a double section home).

INFORMATION PACKET. A set of important documents provided with the home including warranties, information on high wind coverage, and other features of the specific home.

INSTALLATION LICENSE. The proof that an installer meets the requirements for installing manufactured homes under the Manufactured Home Installation program.

LABELED. Equipment or materials to which has been attached a label, symbol, or other identifying mark of a certified testing laboratory, inspection agency, or other an organization concerned with product evaluation. The label indicates compliance with nationally recognized standards or tests to determine suitable usage in a specified manner.

LICENSED INSTALLER. Any individual that has met the requirements for installation license and has a valid license issued by HUD or is certified or licensed to perform manufactured home installations in a state with a qualifying installation program.

LISTED OR CERTIFIED. Included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

LOAD-BEARING PERIMETER WALL FOUNDATION. A support system for the home whereby the home is mechanically fastened to a structural wall(s) that transfers gravity, lateral, and uplift loads to the ground.

LOCAL AUTHORITY HAVING JURISDICTION (LAHJ). The state, city, county, municipality, utility, or organization that has local responsibilities that must be complied with during the installation of a manufactured home.

LONGITUDINAL TIE. A tie intended to resist horizontal or shear forces applied to the ends of the home, but which may also resist vertical and uplift forces.

LOWEST FLOOR. The floor of the lowest enclosed living area of the manufactured home.

MUST. Indicates a mandatory requirement.

N/A. Indicates not applicable.

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: (1) manufactured steel stands; (2) pressure-treated wood; (3) manufactured concrete stands; (4) concrete blocks; and (5) portions of foundation walls.

PIER AND GROUND ANCHOR FOUNDATION. A support system for the home that employs piers under the chassis and other locations to support gravity loads and employs ground anchors and tie downs (the stabilizing system) to resist lateral and uplift loads.

PERIMETER BLOCKING. Regularly spaced piers supporting the sidewalls and marriage line of the home. Some homes require perimeter blocking in addition to supports under the home's frame.

QUALIFIED. Has the necessary knowledge and skills gained from experience and training that will allow performance of the job safely, competently, and in accordance with the manufacturer's installation manual and all applicable codes, standards, rules, and regulations.

RAMADA. Any freestanding roof or shade structure, installed or erected over a manufactured home or any portion thereof.

SHOULD. Indicates a recommendation that is strongly advised but not mandatory.

SHALL. Indicates a mandatory requirement.

SITE FOR A MANUFACTURED HOME. 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.

SKIRTING. A weather-resistant material used to enclose the perimeter, under the living area of the home, from the bottom of the manufactured home to grade.

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

SUPPORT SYSTEM. Pilings, columns, a combination of footings, piers, foundation walls, caps, and shims and any combination thereof that will, when properly installed, support and secure the manufactured home to the ground.

TIE. Straps, cable, or securing devices used to connect the manufactured home to anchoring assemblies.

ULTIMATE LOAD. The absolute maximum magnitude of load that a component or system can sustain, limited only by failure.

UTILITY CONNECTION. The connection of the manufactured home to utilities that include, but are not limited to, electricity, water, sewer, gas, or fuel oil.

VERTICAL TIE. A tie intended to resist uplifting and overturning forces.

WIND ZONE. The areas designated on the Basic Wind Zone Map, as further defined by the Manufactured Home Construction and Safety Standards.

Pre-Installation Considerations

2-1 LOCATE THE DATA PLATE

To properly access the support and anchoring needs of the home the design criteria the home was built to meet must be known. This information is listed on the Data Plate usually posted on a wall in the master bedroom closet, or alternately, near the distribution panel board or in the utility room.

COMPLIANCE CERTIFICATE

| | | |
|---|------------------|-------|
| NAME OF MANUFACTURER | ADDRESS (STREET) | |
| MANUFACTURER'S FEDERAL NUMBER AND MODEL UNIT IDENTIFICATION | | |
| (SEE QUALIFIED BY (D.A.P.A.)) | | |
| This manufactured home is designed to comply with the Federal Manufactured Home Construction and Safety Standards in force at time of manufacture. (For additional information, contact the Dealer's Manufacturer.) | | |
| THE FACTORY INSTALLED EQUIPMENT INCLUDES: | | |
| EQUIPMENT | MANUFACTURER | MODEL |
| Hot Watering | _____ | _____ |
| Hot Air Ducting | _____ | _____ |
| Refrigerator | _____ | _____ |
| Water Heater | _____ | _____ |
| Washer | _____ | _____ |
| Clothes Dryer | _____ | _____ |
| Dishwasher | _____ | _____ |
| Garbage Disposal | _____ | _____ |
| Fireplace | _____ | _____ |
| Smoke Detector | _____ | _____ |
| Stove/Range | _____ | _____ |

HOME CONSTRUCTED FOR: ZONE I ZONE II ZONE III

This information is for informational purposes only. It does not constitute a warranty or a statement of fact. The manufacturer is not responsible for any damage or injury resulting from the use of this information. For more information, contact the manufacturer.

The home is designed to be used in the following wind zones: Zone I, Zone II, and Zone III. The home is designed to be used in the following roof load zones: North, Middle, and South. The home is designed to be used in the following value zones: Zone I, Zone II, and Zone III.

COMFORT COOLING
 AIR CONDITIONER PROVIDED AT FACTORY INSTALLATION

AIR CONDITIONER NOT PROVIDED AT FACTORY INSTALLATION
 AIR CONDITIONER NOT PROVIDED AT FACTORY INSTALLATION

APPLICABLE CODES AND STANDARDS
 APPLICABLE CODES AND STANDARDS

INFORMATION PROVIDED BY THE MANUFACTURER NECESSARY TO CALCULATE SEITELE HEAT GAIN

4.000 sq. ft. of floor area
12.000 sq. ft. of wall area
10.000 sq. ft. of roof area
1.000 sq. ft. of window area
1.000 sq. ft. of door area
1.000 sq. ft. of porch area
1.000 sq. ft. of balcony area
1.000 sq. ft. of deck area
1.000 sq. ft. of patio area
1.000 sq. ft. of driveway area
1.000 sq. ft. of parking area
1.000 sq. ft. of other area

BASIC WINDZONE MAP

DESIGN ROOF LOAD ZONE MAP

VALUE ZONE MAP FOR MANUFACTURED HOUSING

DATA PLATE

2-2 CONFIRM WIND ZONE

From Table 2-1, identify the wind zone for the home. Verify that the home conforms to the following rules and any special requirements determined by the local authority having jurisdiction (LAHJ).

- No home may be located in a higher wind zone than that indicated on the data plate. (Example: a home designed for Wind Zone II cannot be placed in Wind Zone III.)
- A home may be located in a lower wind zone than that indicated on the data plate. (Example: a home designed for Wind Zone II can be placed in either Wind Zone II or I.)
- Homes located within 1,500 feet of the coastline in Wind Zones II and III must be designed to withstand exposure 'D' conditions. This will be indicated on the data plate.

TABLE 2-1. WIND ZONE BY LOCALITY

| Wind Zone I | |
|---|---|
| All areas except those areas listed below within Wind Zone II or III. | |
| Wind Zone II | |
| Alabama | Counties of Baldwin and Mobile |
| Florida | All counties except those listed below as within Wind Zone III |
| Georgia | Counties of Bryan, Camden, Chatham, Glynn, Liberty, McIntosh |
| Louisiana | Parishes of Acadia, Allen, Ascension, Assumption, Calcasieu, Cameron, East Baton Rouge, East Feliciana, Evangeline, Iberia, Iberville, Jefferson Davis, Lafayette, Livingston, Pointe Coupee, St. Helena, St. James, St. John the Baptist, St. Landry, St. Martin, St. Tammany, Tangipahoa, Vermillion, Washington, West Baton Rouge, and West Feliciana. |
| Maine | Counties of Hancock and Washington |
| Massachusetts | Counties Barnstable, Bristol, Dukes, Nantucket, and Plymouth |
| Mississippi | Counties of George, Hancock, Harrison, Jackson, Pearl River, and Stone |
| North Carolina | Counties of Beaufort, Brunswick, Camden, Chowan, Columbus, Craven, Currituck, Jones, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington |
| South Carolina | Counties of Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, Horry, Jasper, and Williamsburg |
| Texas | Counties of Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, Orange, Refugio, San Patricio, and Willacy |
| Virginia | Cities of Chesapeake, Norfolk, Portsmouth, Princess Anne, and Virginia Beach |
| Wind Zone III | |
| Hawaii | Entire State |
| Alaska | Coastal Regions (as determined by the 90 mph isotach on the ANSI/ASCE 7-88 map) |
| Florida | Counties of Broward, Charlotte, Collier, Dade, Franklin, Gulf, Hendry, Lee, Martin, Manatee, Monroe, Palm Beach, Pinellas, and Sarasota |
| Louisiana | Parishes of Jefferson, La Fourche, Orleans, Plaquemines, St. Bernard, St. Charles, St. Mary, and Terrebonne |
| North Carolina | Counties of Carteret, Dare, and Hyde |
| Other | All regions of the U.S. Territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, Trust Territory of the Pacific Islands, and the US Virgin Islands |

2-3 CONFIRM THERMAL ZONE

From Table 2-2, identify the thermal (UO) zone for the home. Verify that the home conforms to the following rules.

- No home may be located in an area with a higher thermal zone number than that indicated on the data plate. (Example: a home designed for Thermal Zone 2 cannot be placed in Thermal Zone 3.)
- A home may be located in a lower thermal zone than that indicated on the data plate. (Example: a home designed for Thermal Zone 2 may be placed in either Thermal Zone 2 or 1.)

- In no case may a home designated for installation in the “Humid & Fringe Climate” as identified on the data plate, be located outside of this region (Table 2-2)

TABLE 2-2. HUMID AND FRINGE CLIMATE ZONES

| Humid and Fringe Climate Zone | |
|--------------------------------------|--|
| Alabama | Counties of Baldwin, Barbour, Bullock, Butler, Choctaw, Clark, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Lowndes, Marengo, Mobile, Monroe, Montgomery, Pike, Washington, and Wilcox |
| Florida | All counties and locations |
| Georgia | Counties of Appling, Atkinson, Bacon, Baker, Ben Hill, Berrien, Brantley, Brooks, Bryan, Calhoun, Camden, Charleton, Chatham, Clay, Clinch, Coffee, Colquitt, Cook, Crisp, Decatur, Dougherty, Early, Echols, Effingham, Evans, Glynn, Grady, Irwin, Jeff Davis, Lanier, Lee, Liberty, Long, Lowndes, McIntosh, Miller, Mitchell, Pierce, Quitman, Randolph, Seminole, Tattnall, Terrell, Thomas, Tift, Turner, Ware, Wayne, and Worth |
| Hawaii | All counties and locations |
| Louisiana | All counties and locations |
| Mississippi | Counties of Adams, Amite, Claiborne, Clarke, Copiah, Covington, Forrest, Franklin, George, Greene, Hancock, Harrison, Hinds, Issaquena, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Lamar, Lawrence, Lincoln, Marion, Pearl River, Perry, Pike, Rankin, Simpson, Smith, Stone, Walthall, Warren, Wayne, and Wilkinson |
| Mississippi Cont' | |
| North Carolina | Counties of Brunswick, Carteret, Columbus, New Hanover, Onslow, and Pender |
| South Carolina | Counties of Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, and Horry |
| Texas | Counties of Anderson, Angelina, Aransas, Atascosa, Austin, Bastrop, Bee, Bexar, Brazoria, Brooks, Burleson, Cardwell, Calhoun, Cameron, Camp, Cass, Chambers, Cherokee, Colorado, Comal, De Witt, Dimmit, Duval, Falls, Fayette, Fort Bend, Franklin, Freestone, Frio, Galveston, Goliad, Gozales, Gregg, Grimes, Guadalupe, Hardin, Harris, Harrison, Hays, Henderson, Hidalgo, Hopkins, Houston, Jackson, Jasper, Jefferson, Jim Hogg, Jim Wells, Karnes, Kaufman, Kennedy, Kinney, Kleberg, LaSalle, Lavaca, Lee, Leon, Liberty, Limestone, Live Oak, Madison, Marion, Matagorda, Maverick, McMullen, Medina, Milam, Montgomery, Morris, Nacogdoches, Navarro, Newton, Nueces, Orange, Panola, Polk, Rains, Refugio, Robertson, Rush, Sabine, San Augustine, San Jacinto, San Patricio, Shelby, Smith, Starr, Titus, Travis, Trinity, Tyler, Upshur, Uvalde, Val Verde, Van Zandt, Victoria, Walker, Waller, Washington, Webb, Wharton, Willacy, Williamson, Wilson, Wood, Zapata, and Zavala |

2-4 CONFIRM ROOF LOAD ZONE

From Table 2-3, identify the Roof Load Zone for the home. Verify that the home conforms to the following rules.

- No home may be placed in an area with a higher roof load than that indicated on the data plate. (Example: a home designed for the South (20 psf), Roof Load Zone cannot be placed in the Middle (30 psf) Roof Load Zone).
- A home may be located in an area with a lower roof load than that indicated on the data plate. (Example: a home designed for the Middle (30 psf) Roof Load Zone may be placed in the South (20 psf) Roof Load Zone).
- There are special high roof load areas (primarily in mountains) not shown on the map. Contact the LAHJ or the SAA listed in the Home Owners Manual for information about these areas. The home's data plate will indicate if the home has been designed for one of these high roof load areas.

- Ramadas may be used in areas with roof live loads greater than that shown on the data plate. Ramadas are to be self-supporting, except that any connection to the home must be for weatherproofing only.

TABLE 2-3. ROOF LOADS BY LOCALITY

| North (40 psf roof load) | |
|----------------------------------|--|
| Alaska | All counties |
| Maine | Aroostook, Piscataquis, Somerset, Penobscot, Waldo, Knox, Hancock, Washington |
| Middle (30 psf roof load) | |
| Colorado | All Counties |
| Idaho | All Counties |
| Iowa | Buena Vista, Butler, Calhoun, Cerro Gordo, Cherokee, Chickasaw, Clay, Dickinson, Emmet, Floyd, Franklin, Hamilton, Hancock, Hardin, Howard, Humboldt, Ida, Kossuth, Lyon, Mitchell, O'Brien, Osceola, Palo Alto, Plymouth, Pocahontas, Sac, Sioux, Webster, Winnebago, Worth, Wright |
| Maine | Counties of Androscoggin, Cumberland, Franklin, Kanabec, Lincoln, Oxford, Sagadahoc, York |
| Massachusetts | County of Essex |
| Michigan | Counties of Alger, Alcona, Alpena, Antrim, Baraga, Benzie, Charlevoix, Cheboygan, Chippewa, Crawford, Delta, Dickson, Emmet, Gogebic, Grand Traverse, Houghton, Iron, Kalkaska, Keweenaw, Leelanau, Luce, Mackinac, Marquette, Menominee, Missaukee, Montmorency, Ogemaw, Ontonagon, Oscoda, Otsego, Presque Isle, Roscommon, Schoolcraft, Wexford |
| Minnesota | Counties of Aitkin, Anoka, Benton, Blue Earth, Brown, Cass, Carlton, Carver, Chippewa, Chisago, Cook, Cotton-wood, Crow Wing, Dakota, Dodge, Douglas, Faribault, Fillmore, Freeborn, Goodhue, Grant, Hennepin, Hubbard, Itasca, Isanti, Jackson, Kandiyohi, Kanabec, Koochiching, Lac qui Parle, Lake, Le Sueur, Lincoln, Lyon, McLeod, Meeker, Morrison, Millie Lacs, Mower, Martin, Murray, Nicollet, Nobles, Olmsted, Pipestone, Pine, Pope, Ramsey, Redwood, Renville, Rice, Rock, St. Louis, Sibley, Scott, Steele, Sherburne, Swift, Stearns, Stevens, Todd, Wadena, Wright, Washington, Wabasha, Winona, Waseca, Watonwan, Yellow Medicine. |
| Montana | All Counties |
| New Hampshire | All Counties |
| New York | Counties of Cayuga, Clinton, Essex, Erie, Franklin, Fulton, Genesee, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga Ontario, Orleans, Oswego, St. Lawrence, Saratoga, Schenectady, Seneca, Warren, Washington, Wayne, Wyoming, Yates |
| South Dakota | Counties of Brookings, Clay, Codington, Deuel, Grant, Hamlin, Hanson, Hutchinson, Kingsbury, Lake, Lincoln, McCook, Miner, Minnehaha, Moody, Turner, Union, Yankee |
| Utah | All Counties |
| Vermont | Counties of Addison, Caledonia, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orange, Orleans, Rutland, Washington, Windsor |
| Wisconsin | Counties of Ashland, Bayfield, Barron, Buffalo, Burnett, Clark, Chippewa, Door, Douglas, Dunn, Eau Claire, Florence, Forest, Iron, Jackson, Langlade, Lincoln, Marathon, Marinette, Menominee, Oconto, Oneida, Pepin, Pierce, Polk, Price, Rush, St. Croix, Sawyer, Taylor, Trempealeau, Vilas, Washburn |
| Wyoming | All Counties |
| South (20 psf roof load) | |
| Other | The states and counties not listed for the Middle or North roof load zone above are deemed to be within the South roof load zone. |

2-5 CONFIRM THE HOME SITE

Is the home being placed in the appropriate wind, roof load, and thermal zones?

- Yes; continue with the installation.
- No; stop installation and notify the retailer immediately.

2-6 CHECK LOCAL CODES AND SECURE PERMITS

Local regulations may set conditions for the siting and installation of a manufactured home. Consult the LAHJ for the specific local requirements, including:

- Building codes that may affect the construction of site built structures and infrastructure.
- Local requirements regulating the installation of manufactured homes.
- Setback requirements for property lines, streets, yards, and courts.
- Fire separation distances.
- Development covenants for the specific property
- The locations of flood hazard areas and any special foundation requirements for homes installed in those areas.
- In some areas, building permits are required to install manufactured homes. Prior to making any alteration to the site and the home, contact the LAHJ to determine if plan approval and permits are required.

2-7 SUPPORT AND ANCHORING SYSTEMS

The support and anchoring systems described and illustrated in this manual are for pier over footing and strap and anchor. If the home requires a permanent foundation by design, additional information was included in the supplemental addendum.

Where different support and anchoring designs are desired or required due to special site conditions, such as areas subject to flood or high seismic risk, the designs must be prepared and certified by a registered professional engineer or registered architect. These designs must in turn be approved by the manufacturer and the manufacturer's DAPIA.

A proprietary foundation and/or anchoring system may be used to support the home for gravity loads (i.e. roof, wall, and floor including safety factors) and anchor the home against wind loads (i.e. horizontal and up-lift including safety factors) providing it complies with all of the following:

- It has been evaluated and approved by a registered professional engineer or registered architect (any state) as required by the MHCSS;
- Its design meets the requirements of the above named Standard;
- It is listed by a nationally recognized testing agency;
- The width of the home is within the system design parameters;
- The roof pitch of the home is within the system design parameters;
- Support points along the home frame members do not exceed 8 feet on centers.
- The home is not required by design to be fully supported by a foundation wall.
- Requirements for support along the center line of the home, at exterior sidewall openings, exterior doors and for special loadings such as stone-front fireplaces as well as special ground anchor conditions along the center line, at porch columns, and as otherwise described in this manual must be adhered to.

Typically, such proprietary systems and equipment are manufactured by companies including Minute Man Anchors, Inc., Oliver Technologies, Inc., and Tie Down Engineering. These systems are acceptable to this manufacturer and it's DAPIA. Proprietary systems from other manufacturers may be used as described above when they have been approved as required.

2-8 AREAS SUBJECT TO FLOODING

Manufactured homes located wholly or partly within special flood hazard areas must be installed on foundations engineered to incorporate methods and practices that minimize flood damage during the base flood, in accordance with the LAHJ. Appliances installed on the manufactured home site in flood hazard

areas, their air intakes, and exhausts must be anchored and elevated to or above the same elevation as the lowest elevation of the lowest floor of the home.

CAUTION: The foundation specifications contained in this manual are not intended to address flood loads. If the home is to be placed in a flood plain, consult a registered professional engineer or registered architect for the design of the support and anchoring systems.

Site Preparation

3-1 SITE SELECTION

The home site must be selected so as to provide a reasonably level surface in the area of home placement. This area must be undisturbed soil or compacted fill. Any required fill must be inorganic "controlled fill" applied in a maximum of four inch layers, compacted between each layer to at least 95% of its maximum relative density. This is necessary to prevent the soil from settling and damaging the foundation or allowing it to settle.

3-2 FIRE SEPARATION

When selecting the area of home placement make certain that no portion of the home will be closer than 10 feet side to side, 8 feet end to side, or 6 feet end to end from any other manufactured home or, where the home is sited in a manufactured home community, no other building unless the exposed composite walls and roof of either structure are without openings and constructed of materials that will provide a 1-hour fire resistance rating or the structures are separated by a 1-hour fire-rated barrier (NFPA 501A 2003).

In addition to the above separation requirements, local fire codes may have further impact on the siting of the home. Contact the LAHJ for any local requirements.

3-3 SITE ACCESS

Planning the route to the site is typically the responsibility of the retailer or transportation company. Whoever is responsible must secure transportation permits from the states, counties, and/or cities through which the home will pass.

In planning the route, avoid obstructions that might interfere with the passage of the home, such as low hanging wires and trees, low overpasses, and bridges not suitable for the load. Contact the utility company if wires need to be moved. Do not allow branches, bushes, or other foliage to scrape against the home as the home is moved to the site. Avoid ditches, berms, steep slopes, and soft ground. Identify and fill any holes and soft spots into which the transporter's and home's wheels may sink. Avoid moving over steep changes in grade.

If required, provide for home storage and staging areas on the site. Plan the delivery and staging of home sections and materials so that after all deliveries are complete, home sections and materials can be accessed for use and installed in the appropriate sequence. Position home sections so they do not have to be rotated or excessively maneuvered during the installation process. Plan for temporary needs such as dumpsters, portable toilets, crew parking, delivery vehicle drop-offs, and concrete mixer deliveries at the home site.

Before moving the manufactured home to the site inform the LAHJ, make sure the site is prepared, permits have been obtained, pre-delivery inspections made, and utilities are available.

3-4 SITE PLAN

Plan the home location and layout in keeping with the information presented in the Introduction and Pre-Installation sections of this manual, check local codes, and secure permits. Contact utilities for locations of existing infrastructure, such as underground cables, pipes, and electrical lines.

When planning the site improvements, consider the following:

- The home site must provide a reasonably level surface in the area of home placement.
- Avoid contact with large trees, steep slopes, poorly drained areas, and potential flood zones.
- Preserve trees and shrubs for shade, visual screens, and windbreaks.
- Plan the driveway, parking areas, septic, well, other structures, and utility lines.
- Consider future additions, such as screen rooms, porches, and awnings.
- Site the home away from natural water paths.

3-5 CLEAR AND GRADE THE SITE

Trim overhanging foliage considering future growth, potential storms, swaying in wind and snow/ice-weighted branches. Remove organic material such as vegetation, wood, roots, twigs, dead branches, grass, and brush from directly under the home. Remove any debris that could become termite infested from the site

and surrounding area. Remove all other debris from the home location, including roots from beneath footing locations. Properly dispose of all items.

It is recommended that a 2-inch grade be provided from the longitudinal centerline of the home to the edge of the home. The grade beneath the home must not allow for the collection of water. Further, maintain a minimum slope of 1/2 inch per foot away from the edge of the home for the first 10 feet in any direction (see Figures 3-1 and 3-2). Where property lines, walls, slopes, or other physical conditions prohibit this slope, provide the site with drains, swales, or grading to drain water away from the structure. Direct storm drainage runoff away from the site using ditches, culverts, and berms meeting the requirements of the LAHJ. If the home will have skirting, start grading from two feet in from the edge of the home.

Grade the ground so that water under porches, decks, and recessed entries flows away from the home. If proper grading is not possible, use other methods such as a drain tile and automatic sump pump system to remove any water that may collect under the home.

CAUTION: Moisture under the home can result in structural damage to the floor system and other parts of the home. Failure to provide adequate slope/drainage can result in moisture-related problems such as mold, mildew, and erosion.

The home is suitable for the installation of gutters and downspouts. Gutters and downspouts should be installed to direct runoff away from the home.

3-6 DETERMINE SOIL CONDITIONS

Examine the soil type in the area of the proposed home location to make sure it is suitable for placement of a home. The design of the home's support system, including footing/pier spacing and size, will in part be determined by the bearing capacity of the soil, as will the ground anchors used.

The soil under every portion of the support system must meet the following criteria:

- The soil must be firm and undisturbed (not previously excavated) or fill compacted to at least 95% of its maximum relative density. Uncompacted fill will settle over time, causing the home to shift and become misaligned with its supporting system.
- Fill must not contain large debris. This too will settle over time.
- The soil must not be comprised of organic clays or peat. Organic material can decay, causing settlement, and also may harbor pests that can infest the home.
- The water table must be below the lowest level of the planned support system/foundation. A soil's bearing capacity can be greatly reduced when it is saturated with water. Note that water tables may vary with seasonal or climactic conditions. Consult a geologist or the LAHJ if unsure of the water table level.
- The soil must not be a highly expansive type. Expansive soils can expand when they become saturated with water, causing the home to shift and become misaligned. If soils are expansive, contact a registered professional engineer or registered architect to assist with the design of the foundation system.

3-7 DETERMINE SOIL-BEARING CAPACITY AND FROST LINE

The soil under a home must be capable of withstanding the loads imposed by the weight of the home, its support system and furnishings, as well as any loads imposed by wind, snow, or other climactic conditions.

SOIL-BEARING CAPACITY

Determine the soil-bearing capacity in pounds per square foot (psf) before designing a support system. The higher the capacity (psf), the more weight the soil can hold without unduly compressing. As the soil-bearing capacity increases, footings can be reduced in size or spaced farther apart.

WARNING! Inadequate soil bearing capacity or a support system mismatched to the soil characteristics can result in excessive or differential settlement of the home, which can cause the home to be misaligned on its supporting system, resulting in structural strain as discussed in the introduction to this instruction.

Use one or more of the following methods to determine the site's soil bearing capacity:

- Test the soil. Hire a registered geologist, registered professional engineer, or registered architect to determine the soil classification and maximum allowable soil bearing capacity by testing the soil in accordance with generally accepted engineering practice.

- Obtain soil records. The local office of the U.S. Department of Agriculture's Natural Resources Conservation Service (www.soils.usda.gov) and/or the LAHJ may have test results and/or soil analyses on file for the area.
- Conduct a pocket penetrometer test. Use a pocket penetrometer to estimate allowable soil-bearing capacity as follows:
 1. Clear an area of a minimum of one square foot at least four inches deep or to the depth of the bottom of the planned footing.
 2. Select a location that will be under a footing.
 3. Using the instructions provided with the pocket penetrometer, take at least five readings.
 4. Discard the high and low readings and average the remaining readings. Round this result down to the nearest soil-bearing value shown in the right column of Table No. 3-1.
 5. Confirm that the rounded result matches the soil description in Table 3-1.
- Determine soil-bearing value by visual examination. If one of the options above is not available, the values in Table 3-1 can be used to establish soil-bearing capacity by visual examination. This method provides lower capacity values than the options above. Accurate soil identification typically requires special training or expertise. An engineer or building code official may be able to assist in classifying the soil found on the site.
- Use default capacity. Use an allowable pressure of 1,500 psf, unless site-specific information requires the use of lower values based on soil classification and type according to Table 3-1

NOTE: Soil types may vary across a home site. In this case, the soil with the lowest bearing capacity should be assumed when designing the support system. Keep a record of the soil-bearing capacity value; it will be used later to design the home's support system.

FROST LINE

In climates subject to ground freezing and the frost line is not available from the LAHJ, contact a registered engineer or registered architect to determine the depth of the frost line. Figure 3-3 may be used as a guideline when there is no specific local determination. Keep a record of the frost depth; it will be used later to design the home's support system.

WARNING! Support systems on soils with bearing capacities less than 1,000 psf must be designed by a registered professional engineer or registered architect.

WARNING! Limitations of pocket penetrometers. Pocket penetrometers do not work on sand or gravel. Use Table 3-1 to determine allowable pressure for these types of soils. If a layer of gravel is encountered, test the soil under the gravel. Do not put the penetrometer on stones larger than its tip as this will provide an inaccurate reading.

3-8 DETERMINE GROUND ANCHOR HOLDING CAPACITY

When using auger-type ground anchors to fasten the home to the ground it will be necessary to determine the capacity of the soil on the site using a torque probe. Employ a torque probe with a shaft of sufficient length to test the soil at the depth of the anchor helical plate. Augur the probe into the ground, and following the probe manufacturer's instructions, take the torque wrench reading in the area where the anchors will be installed and at the depth of the anchor helix. If the soil varies in consistency across the site, then use the lowest reading. Based on this reading, consult the anchor manufacturer's charts to select the anchor type(s).

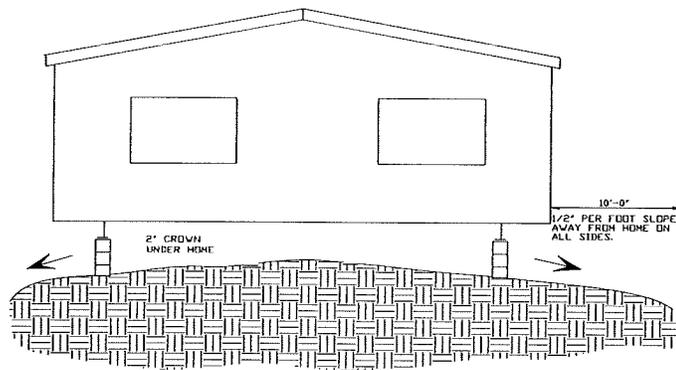
3-9 GROUND MOISTURE CONTROL

When the space beneath the home is enclosed with skirting or other materials, a minimum 6 mil thick polyethylene sheeting vapor retarder must be installed to cover the ground under the home, unless the home is installed in an arid region with dry soil.

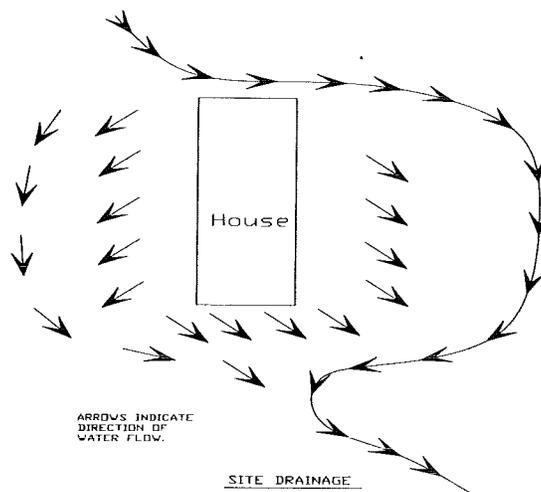
The entire area beneath the home must be covered with the vapor retarder except for areas under open porches, decks, and recessed entries. The vapor retarder may be placed directly beneath the partings, or otherwise installed around or over footings placed at grade, and around anchors or other obstructions. Joints in the vapor retarder must be overlapped at least 12 inches. The lap should be oriented so that the sheet with the higher elevation overlaps the sheet with the lower elevation to promote the runoff of water from any source.

Tears and voids in the vapor retarder must be repaired using a 2 inch (min.) wide contractors sheathing tape suitable for use with polyethylene sheeting. The tape must be installed on a surface that is dry and free from oil and other contamination and within its manufacturer's temperature limitations. To repair a tear, cut a piece of tape approximately 4 inches longer than a tear, center it over the tear with an approximate 2 inch extension on each end and press it firmly in place on the vapor retarder. Depending on the length and nature of the tear multiple overlapping layers may be needed. To repair a void, cut a piece of polyethylene sheeting large enough to extend at least 12 inches beyond the edges of the void and tape it in place along its edges as though it was a tear.

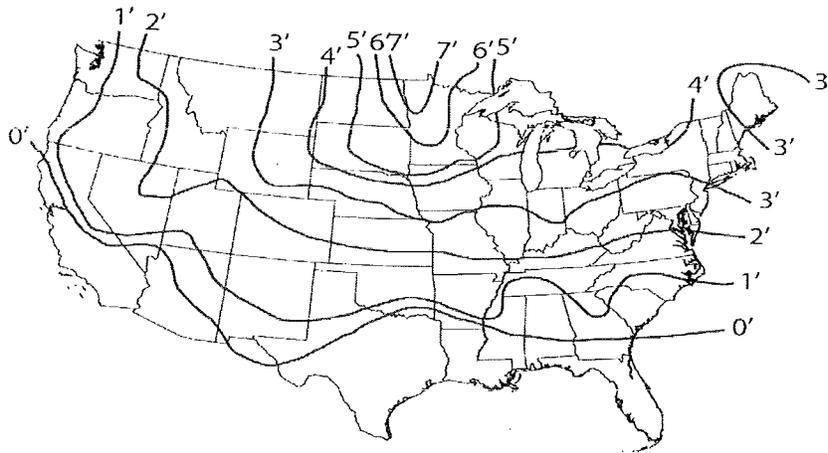
NOTE: If the home site is not accessible, not appropriate for the planned support system, or cannot be properly graded, notify the purchaser, the retailer, and HUD, with the reasons why the site is unsuitable. Do not install the home until a; issues are remedied.



SITE GRADE
FIGURE 3-1



SITE DRAINAGE
FIGURE 3-2



AVERAGE FROST PENETRATION MAP
FIGURE 3-3

| SOIL CLASSIFICATION | | SOIL DESCRIPTION | ALLOWABLE SOIL BEARING PRESSURE (PSF) ¹ | BLOWN COUNT ASTM D. 1586-99 | TORQUE PROBE ³ VALUE ⁴ (INCH-POUNDS) |
|-----------------------|-----------------------------|---|--|-----------------------------|--|
| CLASSIFICATION NUMBER | ASTM D 2487-00 OR D 2488-00 | | | | |
| 1. | | ROCK OR HARD PAN. | 4000+ | | |
| 2. | GW, GP, SW, SP, GM, SM | SANDY GRAVEL AND GRAVEL; VERY DENSE AND/OR CEMENTED SANDS; COARSE GRAVEL/COBBLES; PRELOADED SILTS, CLAYS AND CORAL. | 2000 | 40+ | MORE THAN 550 |
| 3. | GC, SC, ML, CL | SAND; SILTY SAND; CLAYEY SAND; SILTY GRAVEL; MEDIUM DENSE COARSE SANDS; SANDY GRAVEL; AND VERY STIFF SILT, SAND CLAYS | 1500 | 24-39 | 351-550 |
| 4A. | CD, MH ² | LOOSE TO MEDIUM DENSE SANDS; FIRM TO STIFF CLAYS AND SILTS; ALLUVIAL FILLS. | 1000 | 18-23 | 276-350 |
| 4B. | CH, MH ² | LOOSE SANDS; FIRM CLAYS; ALLUVIAL FILLS | 1000 | 12-17 | 175-275 |
| 5 | DL, DH, PT | UNCOMPACTED FILL; PEAT; ORGANIC CLAY | REFER TO 3285.202(e) | 0-11 | LESS THAN 175 |

NOTES

1. THE VALUES PROVIDED IN THIS TABLE HAVE NOT BEEN ADJUSTED FOR OVERBURDEN PRESSURE, EMBEDMENT DEPTH, WATER TABLE HEIGHT, OR SETTLEMENT PROBLEMS
2. FOR SOILS CLASSIFIED AS CH OR MH, WITHOUT EITHER TORQUE PROBE VALUES OR BLOW COUNT TEST RESULTS, SELECTED ANCHORS MUST BE RATED A 4B SOIL.
3. THE TORQUE TEST PROBE IS A DEVICE FOR MEASURING THE TORQUE VALUES OF THE SOILS TO ASSIST IN EVALUATING THE HOLDING CAPACITY OF THE SOIL IN WHICH THE GROUND ANCHOR IS PLACED. THE SHAFT MUST BE OF SUITABLE LENGTH FOR THE FULL DEPTH OF THE GROUND ANCHOR.
4. THE TORQUE VALUE IS A MEASURE OF THE LOAD RESISTANCE PROVIDED BY THE SOIL WHEN SUBJECT TO THE TURNING AND TWISTING FORCE OF THE PROBE.

SOIL BEARING CAPACITY

TABLE 3-1

Foundation System

4-1 CLIMATIC CONDITIONS

Climatic conditions must also be taken into consideration when installing the foundation. The bottom of the footing on which the pier is to be placed must be located at or below the local frost line or the foundation must be frost protected. If elected to locate the footings above the frost line and the foundation is not properly frost protected, the foundation will be susceptible to the heaving and the resultant settling action caused by frost. The symptoms of heaving are the same as for settling and can cause damage to the home. Consult with the LAHJ to determine the maximum depth of the local frost line prior to installing the footings.

4-2 CRAWLSPACE VENTILATION

It is very important that the area beneath the home be enclosed with a foundation wall or skirting to conserve energy and provide added comfort; this crawlspace must be ventilated (see section 3-9 for information on required vapor retarder). The minimum ventilation area must be 1 square foot of net free area (area of the openings in grillwork) for every 1,500 square feet of area under the home. The Length of home multiplied by width of home divided by 1,500 equals the net free area of vent required in square feet.

Ventilation openings must be located as high as practicable above the ground must be located on at least two opposite sides of the space to provide cross-ventilation, and one ventilator must be placed within 3 feet of each corner of the home with the remainder equally spaced along the length of the home and located across from one another. Ventilation openings must be covered for their full height and width with a perforated corrosion and weather resistant covering that is designed to prevent the entry of rodents. In areas subject to freezing, the ventilation openings must be of the adjustable type, allowing them to be in the open or closed position, depending on the climatic conditions.

4-3 CRAWLSPACE ACCESS

An access opening(s) must be provided to the crawl space area so that utility connections beneath the home are easily reached. The access openings must be not less than 18 inches in width and 24 inches in height and not less than 3 square feet in area.

NOTE: the actual installed size of the access should be based on the material and equipment which must pass through the opening. This would include item such as the jacks and base plates used during the installation process, water pumps and pressure tanks, and similar items.

4-4 FOOTING PLAN

Determine whether only I-beam support or a combination of I-beam and perimeter support will be used. Using perimeter support reduces the load on the I-beam footings allowing the footings to be smaller. Footings must be located at all support locations. I-beam and perimeter support must be centered within 24 inches of each end of the floor and be centered no more than 96 inches apart in between unless otherwise indicated on a foundation plan produced by this company and then only in keeping with the restrictions listed on that plan. Footings and piers may be offset up to 6 inches in either direction along the supported members to allow for plumbing, electrical, mechanical equipment, or other devices in crawlspaces.

Create a sketch of the home that includes the exterior walls, large windows, doors, porches, the frame I-beams and any known location of heavy interior features or furnishings of the home. Determine the point load and support point locations, mark these locations on the sketch noting the required footing size and loading. Also note the soil bearing capacity at the home site. This information will be used to size the footings when construction begins.

4-5 POINT LOAD SUPPORTS

For maximum safety and secure living all homes must be supported on a solid foundation, and therefore footings, are required under the frame, exterior wall openings and other heavy point loads. Support points have been identified around the perimeter of the home specifically for door and window openings. The marking of support points may be tags, paint, or labels. Figures 4-1 and 4-2 illustrate typical support points.

4-6 DETERMINE POINT LOAD SUPPORT LOCATIONS

Point loads exist where a bearing or structural weight is concentrated and needs to be transferred to the supporting system or foundation at a specific point, generally along the perimeter of the floor. Load-bearing walls are those walls that support the ends of the roof trusses or rafters; typically sidewalls but not end walls. Locate a support beneath each point load, including the following:

- Exterior doors on side walls at both sides of each door (blocking is not required at exterior doors on non-bearing end walls).
- Other exterior wall openings four feet and greater at both sides of each opening including multiple windows that total four feet wide or more without intermediate supports, even if individual windows are less than four feet (blocking is not required at exterior windows on non-bearing end walls).
- Load-bearing porch posts.
- Under waterbeds, large fish tanks, fireplaces, and fireplace stoves located outboard of the home's main I-beams.

Pier and footing supports may be omitted at door and window locations where listed adjustable outriggers or diagonal struts have been installed in keeping with the terms of their listings, rated capacities, and use restrictions.

4-7 FRAME SUPPORTS (homes without perimeter supports)

Except by specific design, all homes require regularly spaced supports along the main frame I-beams. The first support at either end of the home must be centered within 24 inches of the ends of the home. Intermediate spacings between the end supports may be located up to 8 feet on centers anywhere along the length of the I-beam. Figure 4-1 illustrates typical frame support locations.

4-8 FRAME AND PERIMETER SUPPORTS (homes with perimeter supports)

Depending on the design and location, some homes require regularly spaced perimeter supports along the sidewalls. This will be indicated on the data plate and/or documents included with the home. As a rule, any home installed in the north roof load zone, 40 psf and greater, will require perimeter support.

To minimize the number of perimeter supports, they may be evenly spaced between point load supports as shown in Figure 4-2 but not under spans. These illustrations identify typical support locations for homes utilizing perimeter supports.

4-9 DETERMINE FRAME SUPPORT LOADS

Determine whether the home will be supported along its I-beams alone or along both its I-beams and perimeter. Review the Pier and Pad Schedules found in Tables 4-1 through 4-7 to determine the required footing size. Find the table for the appropriate roof load zone and support arrangement (I-beam only or I-beam and perimeter), locate the home width column and the soil bearing capacity row. The column and row intersection will list the footing area and capacity.

4-10 SELECT FOOTING TYPE AND MATERIAL

Poured in place concrete, pre-cast concrete, ABS plastic, and a monolithic slab system are acceptable for use as footings to support the individual piers (all piers must be supported by footings) as limited below:

- Poured in place individual concrete footings must have a minimum thickness of 8 inches. The concrete for poured in place footings must have a minimum 28-day compressive strength of not less than 2500 psi.
- Pre-cast concrete footings (ASTM C 90-02a) must have a minimum thickness of 8 inches. The concrete for pre-cast concrete footings must have a minimum 28-day compressive strength of not less than 3000 psi.
- ABS plastic footings must be certified by a registered professional engineer or registered architect, be listed for the required load capacity of the installation, and be installed in accordance with their manufacturer's recommendations.
- Pre-cast concrete footings and ABS plastic footings must be laid on a solid, level bearing surface that provides for full contact between the bottom of the footing and the supporting soil (see Figure 4-3). Where footings must exceed their thickness to reach the frost line, poured in place footings must be used.
- The monolithic slab system, shown in Figure 4-4, requires the concrete to have a minimum 28-day compressive strength of not less than 3000 psi with a minimum slump of 4.

- Footings of materials other than those identified above are acceptable provided they are listed for such use and meet all other applicable requirements of the MHCSS and MMHIS.

NOTE: When using a monolithic slab the anchor bolts will need to be in position when the concrete is poured.

4-11 FOOTING INSTALLATION

Once the soil-bearing capacity is known the size of each footing can be determined. I-beam and perimeter support footing size can be determined from Tables 4-1 through 4-7.

Footings must be sized to allow for the entire bearing surface of the concrete block pier. The minimum size footings for a single stack pier will be as follows: a square footing must be at least 16 inches by 16 inches (256 square inches) and a round footing must have a diameter of at least 18 inches (254 square inches). The minimum size footing for a double stack pier will be as follows: a square footing must be at least 16 inches by 16 inches (256 square inches) and a round footing must have a diameter of at least 24 inches (452 square inches).

The footings must be flat on the top surface to allow for the proper bearing of the single or double stack concrete block piers. Footings which have a rounded top surface or are too small in size to allow the entire block pier to bear on them are unacceptable, see Figure 4-5. The maximum allowable slope on the top surface of the footings, in any direction, will be 1/8 of an inch per 12 inches of footing size (Figure 4-6). In all cases the bottom of the footings must extend to or below the maximum local frost line. The stability of the home is dependent on the quality of the footing/pier system and the properly installed ground anchors addressed later in this instruction.

Where the footing will be supporting a corner pier over 3 blocks high, it will need to be sized to handle a double stack pier.

NOTE: For the ease of pier construction, all of the footing tops should be at the same elevation.

CAUTION: If the bottom of the footings are not placed at or below the maximum local frost line and upward heaving occurs, the home can become misaligned and actually damaged by unseen forces. Damage caused by the improper installation and support of the home is not warranted by this company.

4-12 MONOLITHIC SLAB

The slab system is permitted to be installed above the frost line as follows:

- When all relevant site-specific conditions including soil characteristics, site preparation, ventilation, and the isolative properties of the under floor enclosure are considered.
- Anchorage requirements are accommodated.
- The monolithic slab is designed by a registered professional engineer or registered architect in accordance with acceptable engineering practice to prevent frost heave, or
- In accordance with SEI/ASCE 32-01.

Monolithic slabs placed on a layer of well-drained, undisturbed ground or fill material that is not susceptible to frost must have the thickness of such a layer included in meeting the design frost depth defined in Section 1-9. Undisturbed granular soils or fill material with less than 6% of mass passing a #200 (0.003 inches) mesh sieve in accordance with ASTM D 422 and other approved non-frost-susceptible materials must be considered non-frost-susceptible. Classification of frost susceptibility of soil must be determined by soils or geotechnical engineer, unless otherwise approved by the LAHJ (Section 4.2, SEI/ASCE 32-01).

4-13 INSULATED FOUNDATION

An insulated foundation is permitted above the frost line as follows:

- When all relevant site-specific conditions including soil characteristics, site preparation, ventilation, and the isolative properties of the under floor enclosure are considered.
- The foundation is designed by a registered professional engineer or registered architect in accordance with acceptable engineering practice to prevent frost heave, or
- In accordance with SEI/ASCE 32-01.

4-14 PIER CONFIGURATION

Manufactured piers or concrete blocks may be used to support the home on its foundation.

MANUFACTURED PIERS

Manufactured piers must be listed and labeled and installed to the pier manufacturer's installation instructions. They must be listed or labeled for their vertical load capacity and where required by design, for the appropriate horizontal load, and be provided with protection against weather deterioration and corrosion at least equivalent to that provided by a coating of zinc on steel not less than 0.30 oz. ft.² of surface coated. The height of the manufactured piers must be selected so that the adjustable risers do not extend more than 2 inches when finally positioned.

CONCRETE BLOCK PIERS

Concrete block piers must be constructed from load bearing (not decorative) 8 inch by 8 inch by 16 inch nominal size, open or closed cell, concrete blocks conforming to ASTM C 90. The blocks having hollow cells must be stacked with their hollow cells aligned vertically. The blocks of double stacked piers must be interlocked by laying each successive layer perpendicular to the previous layer (See Figure 4-7). Mortar is not required for concrete block piers unless otherwise specified in these installation instructions.

CAUTION: Dry stacked piers (joints not mortared) must not exceed their design capacity of 8,000 pounds for an 8 inch by 16 inch single stack block and 16,000 pounds for a 16 inch by 16 inch double stack block.

Structural loads must be evenly distributed across capped-hollow core block piers. Caps must be solid concrete or masonry at least 4 inches in nominal thickness, hardwood lumber at least 2 inches in nominal thickness, or be corrosion-protected 1/2 inch (min.) thick steel. All caps must be the same length and width as the piers on which they rest except 7 1/4 wide hardwood lumber, nominal 2 by 8, is allowable to cap a 7 1/2 inch wide masonry unit. When split caps (2 caps) are used on double-stacked blocks, the caps must be installed with the long dimension across the joint in the blocks below (See Figure 4-7).

Any gaps that occur during the installation between the bottom of the main chassis I-beam and the supporting pier must be filled. Hardwood plates no more than 2 inch nominal thickness or 2 inch or 4 inch nominal concrete block must be used to fill the gaps.

Shims, 4 inch by 6 inch by 1 inch nominal, must be used in pairs from opposite sides of the I-beam as shown in Figure 4-7 and must be driven tightly to occupy no more than 1 inch of vertical height completing the support of the home atop each pier.

4-15 PIER DESIGN

Piers must be designed to provide at least 18 inches of clear space between the underside of the chassis I-beams and the grade beneath the home. Pier design is controlled by the finished height of the pier and its location beneath the home as follows:

- **FRAME PIERS LESS THAN 36 INCHES HIGH**

Piers less than 36 inches in height from the top of the footing to the top of the pier cap may be of single stack construction. The piers under I-beams must be installed so that their long dimension is perpendicular to the supported I-beam. Piers over 3 blocks high located at corners must be constructed out of double, interlocked, concrete blocks. Horizontal offsets from the top to the bottom of the pier must not exceed 1/2 inch (See Figure 4-6).

- **FRAME PIERS OVER 36 INCHES TO 57 INCHES HIGH**

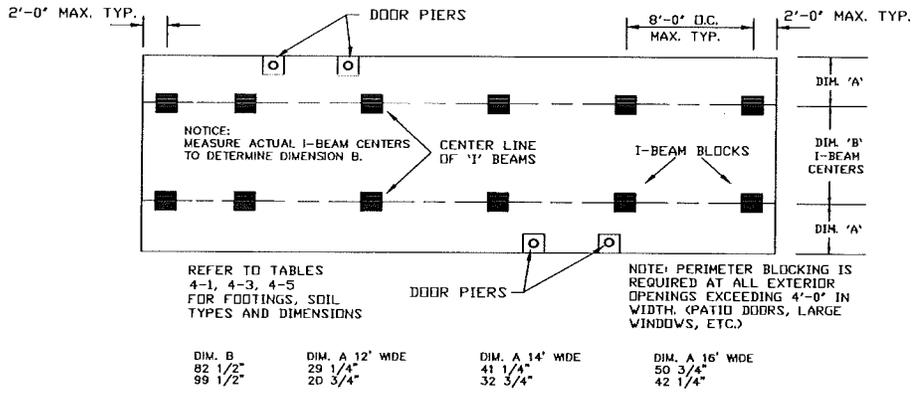
Piers between 36 and 57 inches high must be constructed out of double, interlocked, concrete blocks. Horizontal offsets from the top to the bottom of the pier must not exceed 1/2 inch (See Figures. 4-6 and 4-7).

- **FRAME PIERS OVER 57 INCHES HIGH**

Piers over 57 inches high must be designed by a registered professional engineer or registered architect. See paragraph 1-2. Further, the additional height will require that the anchoring system be redesigned by a registered professional engineer or registered architect.

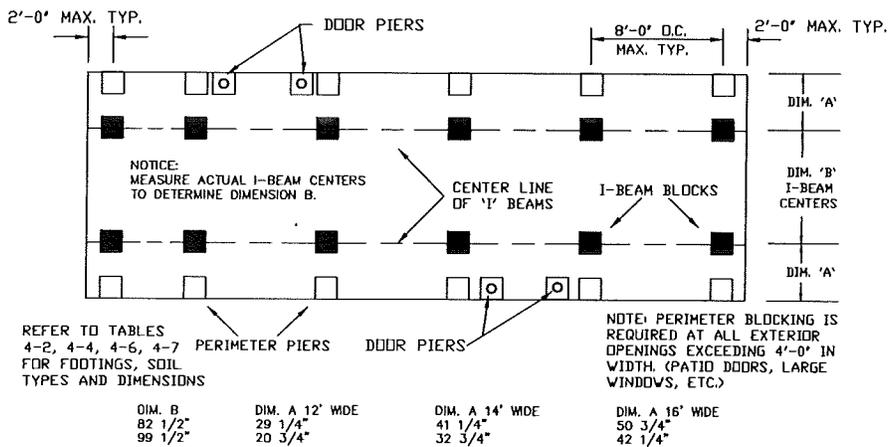
• PERIMETER SUPPORT PIERS

Piers required along the perimeter, and at the edge of load bearing exterior wall openings, may be single stacked to a height of 54 inches or double stacked to a height of 67 inches from the top of the footing to the top of the pier cap. Piers used for perimeter support must be installed with the long dimension parallel to the perimeter rail of the floor system. Piers used to support column loads must be installed with the long dimension of the concrete block perpendicular to the perimeter rail beneath the column.



TYPICAL FRAME BLOCKING

FIGURE 4-1



TYPICAL PERIMETER & FRAME SUPPORT

FIGURE 4-2

TABLE 4-1

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 20 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 4400 | 729 | 3300 | 546 | 5040 | 835 | 3780 | 626 | 5627 | 932 | 4220 | 699 | | | |
| 1500 | ■ | FRAME | 4400 | 465 | 3300 | 348 | 5040 | 532 | 3780 | 399 | 5627 | 594 | 4220 | 446 | | | |
| 2000 | ■ | FRAME | 4400 | 341 | 3300 | 255 | 5040 | 390 | 3780 | 293 | 5627 | 436 | 4220 | 327 | | | |
| 2500 | ■ | FRAME | 4400 | 269 | 3300 | 201 | 5040 | 308 | 3780 | 231 | 5627 | 344 | 4220 | 258 | | | |
| 3000 | ■ | FRAME | 4400 | 222 | 3300 | 166 | 5040 | 254 | 3780 | 191 | 5627 | 284 | 4220 | 213 | | | |

TABLE 4-2

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 20 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 1863 | 308 | 1397 | 231 | 2063 | 342 | 1547 | 256 | 2246 | 372 | 1684 | 279 | | | |
| | □ | PERIMETER | 2138 | 354 | 1603 | 265 | 2578 | 427 | 1933 | 320 | 2981 | 494 | 2236 | 370 | | | |
| 1500 | ■ | FRAME | 1863 | 197 | 1397 | 148 | 2063 | 218 | 1547 | 163 | 2246 | 237 | 1684 | 178 | | | |
| | □ | PERIMETER | 2138 | 226 | 1603 | 169 | 2578 | 272 | 1933 | 204 | 2981 | 315 | 2236 | 236 | | | |
| 2000 | ■ | FRAME | 1863 | 144 | 1397 | 108 | 2063 | 160 | 1547 | 120 | 2246 | 174 | 1684 | 130 | | | |
| | □ | PERIMETER | 2138 | 165 | 1603 | 124 | 2578 | 199 | 1933 | 150 | 2981 | 231 | 2236 | 173 | | | |
| 2500 | ■ | FRAME | 1863 | 114 | 1397 | 85 | 2063 | 126 | 1547 | 94 | 2246 | 137 | 1684 | 103 | | | |
| | □ | PERIMETER | 2138 | 131 | 1603 | 98 | 2578 | 157 | 1933 | 118 | 2981 | 182 | 2236 | 136 | | | |
| 3000 | ■ | FRAME | 1863 | 94 | 1397 | 70 | 2063 | 104 | 1547 | 78 | 2246 | 113 | 1684 | 85 | | | |
| | □ | PERIMETER | 2138 | 108 | 1603 | 81 | 2578 | 130 | 1933 | 97 | 2981 | 150 | 2236 | 113 | | | |

TABLE 4-3

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 30 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | 8'-0" D.C. | | 6'-0" D.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 4950 | 820 | 3713 | 615 | 5670 | 939 | 4253 | 704 | 6330 | 1048 | 4748 | 786 | | | |
| 1500 | ■ | FRAME | 4950 | 523 | 3713 | 392 | 5670 | 599 | 4253 | 449 | 6330 | 668 | 4748 | 501 | | | |
| 2000 | ■ | FRAME | 4950 | 383 | 3713 | 287 | 5670 | 439 | 4253 | 329 | 6330 | 490 | 4748 | 367 | | | |
| 2500 | ■ | FRAME | 4950 | 302 | 3713 | 227 | 5670 | 346 | 4253 | 260 | 6330 | 386 | 4748 | 290 | | | |
| 3000 | ■ | FRAME | 4950 | 249 | 3713 | 187 | 5670 | 286 | 4253 | 214 | 6330 | 319 | 4748 | 239 | | | |

TABLE 4-4

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 30 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 1863 | 308 | 1397 | 231 | 2063 | 342 | 1547 | 256 | 2246 | 372 | 1684 | 279 | | | |
| | □ | PERIMETER | 2688 | 445 | 2016 | 334 | 3208 | 531 | 2406 | 398 | 3684 | 610 | 2763 | 458 | | | |
| 1500 | ■ | FRAME | 1863 | 197 | 1397 | 148 | 2063 | 218 | 1547 | 163 | 2246 | 237 | 1684 | 178 | | | |
| | □ | PERIMETER | 2688 | 284 | 2016 | 213 | 3208 | 339 | 2406 | 254 | 3684 | 389 | 2763 | 292 | | | |
| 2000 | ■ | FRAME | 1863 | 144 | 1397 | 108 | 2063 | 160 | 1547 | 120 | 2246 | 174 | 1684 | 130 | | | |
| | □ | PERIMETER | 2688 | 208 | 2016 | 156 | 3208 | 248 | 2406 | 186 | 3684 | 285 | 2763 | 214 | | | |
| 2500 | ■ | FRAME | 1863 | 114 | 1397 | 85 | 2063 | 126 | 1547 | 94 | 2246 | 137 | 1684 | 103 | | | |
| | □ | PERIMETER | 2688 | 164 | 2016 | 123 | 3208 | 196 | 2406 | 147 | 3684 | 225 | 2763 | 169 | | | |
| 3000 | ■ | FRAME | 1863 | 94 | 1397 | 70 | 2063 | 104 | 1547 | 78 | 2246 | 113 | 1684 | 85 | | | |
| | □ | PERIMETER | 2688 | 135 | 2016 | 102 | 3208 | 162 | 2406 | 121 | 3684 | 186 | 2763 | 139 | | | |

TABLE 4-5

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 40 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 5500 | 911 | 4125 | 683 | 6300 | 1043 | 4725 | 782 | 7033 | 1165 | 5275 | 874 | | | |
| 1500 | ■ | FRAME | 5500 | 581 | 4125 | 436 | 6300 | 665 | 4725 | 499 | 7033 | 743 | 5275 | 557 | | | |
| 2000 | ■ | FRAME | 5500 | 426 | 4125 | 319 | 6300 | 488 | 4725 | 366 | 7033 | 544 | 5275 | 408 | | | |
| 2500 | ■ | FRAME | 5500 | 336 | 4125 | 252 | 6300 | 385 | 4725 | 288 | 7033 | 429 | 5275 | 322 | | | |
| 3000 | ■ | FRAME | 5500 | 277 | 4125 | 208 | 6300 | 318 | 4725 | 238 | 7033 | 354 | 5275 | 266 | | | |

TABLE 4-6

| | | PIER & PAD SCHEDULE | | | | | | | | | | | | SINGLEWIDE 40 POUND LIVE LOAD | | | |
|-----------|--------|---------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------------|--|--|--|
| SOIL CAP. | LEGEND | PIER LOC. | 12 FEET WIDE | | | | 14 FEET WIDE | | | | 16 FEET WIDE | | | | | | |
| | | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | 8'-0" O.C. | | 6'-0" O.C. | | | | |
| | | | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | REQ'D PIER CAPACITY (LBS.) | REQ'D FOOTING (SQ. IN.) | | | |
| 1000 | ■ | FRAME | 1863 | 308 | 1397 | 231 | 2063 | 342 | 1547 | 256 | 2246 | 372 | 1684 | 279 | | | |
| | □ | PERIMETER | 3238 | 536 | 2428 | 402 | 3838 | 635 | 2878 | 477 | 4388 | 727 | 3291 | 545 | | | |
| 1500 | ■ | FRAME | 1863 | 197 | 1397 | 148 | 2063 | 218 | 1547 | 163 | 2246 | 237 | 1684 | 178 | | | |
| | □ | PERIMETER | 3238 | 342 | 2428 | 256 | 3838 | 405 | 2878 | 304 | 4388 | 463 | 3291 | 347 | | | |
| 2000 | ■ | FRAME | 1863 | 144 | 1397 | 108 | 2063 | 160 | 1547 | 120 | 2246 | 174 | 1684 | 130 | | | |
| | □ | PERIMETER | 3238 | 251 | 2428 | 188 | 3838 | 297 | 2878 | 223 | 4388 | 340 | 3291 | 255 | | | |
| 2500 | ■ | FRAME | 1863 | 114 | 1397 | 85 | 2063 | 126 | 1547 | 94 | 2246 | 137 | 1684 | 103 | | | |
| | □ | PERIMETER | 3238 | 198 | 2428 | 148 | 3838 | 234 | 2878 | 176 | 4388 | 268 | 3291 | 201 | | | |
| 3000 | ■ | FRAME | 1863 | 94 | 1397 | 70 | 2063 | 104 | 1547 | 78 | 2246 | 113 | 1684 | 85 | | | |
| | □ | PERIMETER | 3238 | 163 | 2428 | 122 | 3838 | 193 | 2878 | 145 | 4388 | 221 | 3291 | 166 | | | |