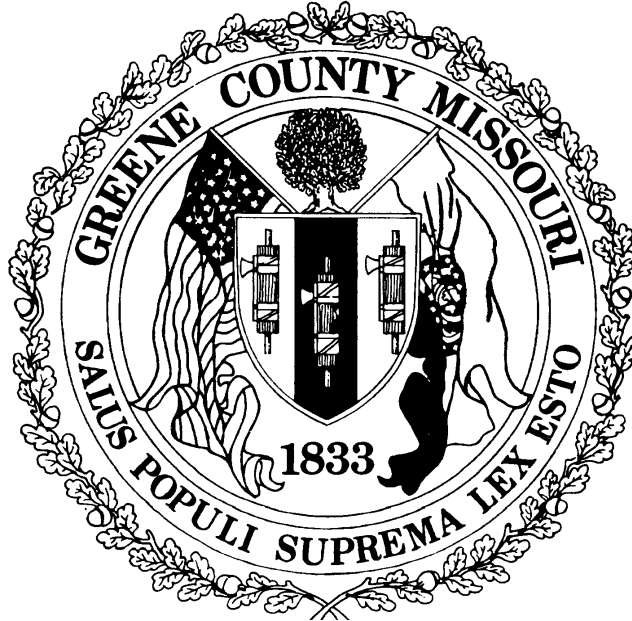


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# MANUFACTURED HOME INSTALLATIONS

## RULES & REGULATIONS

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**A PERMIT MUST FIRST BE OBTAINED FROM GREENE COUNTY BUILDING OFFICIALS BEFORE SETTING A MANUFACTURED HOME IN GREENE COUNTY.**

**A NEW DRIVE WAY ENTRANCE FROM A COUNTY OR STATE ROAD REQUIRES A DRIVEWAY PERMIT ISSUED BY MODOT OR GREENE COUNTY HIGHWAY DEPARTMENT**

Revised: January 1, 2013

## **INTRODUCTION**

**THIS HANDOUT IS ONLY A SOURCE FOR BASIC INFORMATION AND DOES NOT ADDRESS ALL THE CODE REQUIREMENTS NOR DOES THIS INFORMATION TAKE THE PLACE OF ANY ADOPTED CODE OR ADMENDMENT. YOU MAY CONTACT THE INSPECTORS FOR FURTHER INFORMATION.**

### Required Inspections:

- Footing for pier supports prior to placing of concrete
- Piers
- Tie Down System
- Electric Service (meter) and connections
- Plumbing Connections
- Air Test on Gas Line (if applicable)
- Sewer Connection or Septic Inspection
- Final Before Home is Occupied

Most of the required inspections can be conducted at one time.

- Exceptions: Footing, sewer/septic and final

### Footing or Pier Supports

A footing is required for each pier. The footing is required to be excavated to a minimum of 18 inches below finish grade. The dimension of the footing is a minimum of 16 inches by 16 inches. Concrete in the bottom of the footing is to be a minimum of 8 inches thick. You may pour the footing hole full or start your pier from the 8 inch footing.

#### **SEE FIGURE 1**

Trench footings may be used. Trenches are to span full width of manufacture home, a minimum of 16 inches wide and 18 inches deep. Two rolls of one-half inch rebar elevated 4 inches from the bottom of the trench and 3 inches from the side of the trench. The minimum thickness of concrete is 8 inches.

#### **SEE FIGURE 2**

A manufactured home park with pre-existing home pads may use a 16 X 16 inch reinforced concrete pad or other approved pad for the pier to rest on.

## Piers

Piers may be cast-in-place concrete, masonry units or a listed and approved load-bearing device. Caps and leveling spacers may be used for leveling. Leveling spacers or shim material must be hardwood or steel. Soft wood **is not** approved for leveling spacers.

The piers are to be placed at a maximum of 10 feet apart. **SEE FIGURE 1**

**Exception:** Manufacture installation specifications may be used, provided the specifications are submitted to Greene County Building Regulations at the time the permit is obtained.

## Pier Heights

- All corner piers over 24 inches in height are required to be a minimum of 16 inches by 16 inches, interlocking masonry units with a 4 inch solid cap. Cores and cells are required to be placed vertically.
- Piers that are less than 36 inches in height, **except for corner piers**, can be placed with masonry units when the cores and cells are placed vertically. Piers are to have a cross sectional area of 128 square inches and installed with the long dimension at right angles to the main frame. The top of the pier is required to have a minimum of a 4 inch solid cap.
- Piers between 36 inches and 80 inches in height are required to be a minimum of 16 inches by 16 inches consisting of interlocking masonry units with a 4 inch cap. Cores and cells are required to be placed vertically.
- Piers over 80 inches in height: When using masonry units for piers over 80 inches in height, the units are required to be mortared together, the units are to be filled solid with grout and reinforced with four No. 5 reinforced bars. One bar is to be placed in each corner cell of the hollow masonry or in each corner cell of solid masonry unit. Piers are to be a minimum of 16 inches by 16 inches. Cores and cells are to be placed vertically.

## Anchoring Equipment

Anchoring equipment, when installed, must be capable of resisting an allowable working load equal to or exceeding 3,150 pounds and must be capable of withstanding a 50 percent overload with a total of 4,725 pounds without failure.

- Flat steel strapping is required to be Type 1, Heavy Duty, Finish B, Grade 1, 1 ¼ inches wide and 0.035 inch in thickness and certified by a registered engineer as conforming with ASTM Standard Specifications D3953-91.
- Seals are required to be Class H, Heavy Duty, Finish B, Grade 1, for steel strapping as certified by the manufacturer and in conformance with ASTM Standard Specifications D3953-91.

- Anchoring equipment is required to be designed and installed to prevent self-disconnection when the ties are slack.
- Tension devices such as turnbuckles or yoke-type fasteners are to end with clevis, forged or welded eyes.

## Tie-Downs

### **Materials**

- Tie materials are required to resist a working load of 3,150 pounds and required to withstand a 50 percent overload for a total of 4,750 pounds without failure.
- Flat steel strapping or other approved materials are required.
- All ties are required to be fastened to anchors and drawn tight with turnbuckles or other approved adjustable tensioning devices for use with the anchor.

### **Attachment**

- Ties are required to connect the anchor and the main structural steel frame that runs lengthwise under the manufactured home.
- Tie-downs straps are to be routed from the anchor to the top of the main structural steel frame.
- Ties **cannot** be connected to steel outrigger or cross members that fasten to and intersect the main structural frame.
- Tie-downs straps are to be attached to the anchor in accordance with the anchor manufacturer's instructions.

## Anchors

### **Soil Testing**

**Classified soil:** A determination of the soil classification should be made at each anchor location through a standard torque probe or equivalent method. Soil test is to be determined by the registered engineer.

**Unclassified soil:** If no soil test is performed for the anchor location, then the location shall be considered as unclassified.

### **Requirements**

- Anchors installed in classified soil are required to resist a minimum working load of 3,150 pounds in the direction of the tie, plus a 50 percent overload for a total of 4,750 pounds without failure.
- Each manufactured anchor is to be tested and installed in accordance with the specified testing procedures and the manufacturer's instructions.

- Each anchor is to be installed and pre-tensioned until it is flush with the stabilizer plate.
- The slotted bolt must have a minimum of 4 wraps of the strap after the installations.

### **Spacing and Location**

**Classified soil:** All anchors are to be installed at the intervals and locations specified by the manufactured home manufacturer's installations and the correct soil class for which they are approved. This information must be submitted to Greene County Building Regulations prior to installation.

In the event that the manufacturer's installation instructions are unavailable, all anchors are to be installed according to **Tables A and B included in this information. Anchors are required to be installed in the correct soil class where they have been approved.**

**Unclassified soil:** All anchors installed in unclassified soil are required to be installed according to **Tables A and B included in this information. A 30 inch double 4 inch helix anchor with a 12 inch stabilizer is required in unclassified soils. An Easy Anchor (round head) is not allowed.**

**Spacing:** Anchor spacing is to be as even as practical along both sides and the entire length of the home with the first anchor at each end being no more than 2 feet from the end of the home.

Anchors are to be installed just inside the skirting line.

### **Attached Tables**

**Tables A and B** are for diagonal tie-down strap spacing for single and multi-section homes.

**Tables C and D** are for alternate strapping system.

**Table E** is for approved ground anchor installations.

### **Skirting**

All manufactured homes are required to be enclosed around the perimeter of the home. The enclosure is from the bottom of the home to the finished grade level.

## Landings – Steps – Handrails – Guardrails

**Landings:** Landings are required to be located on the exterior side of the front door. A landing is required on the exterior of the back door if the threshold for the door is greater than 15 ½ inches (2 stair risers) above the finish grade level. The landing is required to be a minimum of 3 feet by 3 feet.

**Steps:** Steps from the landing or doors are required to have a minimum of a 10 inch wide tread with a maximum riser height of 7 ¾ inches. The radius of the curvature at the nosing of the step shall be no greater than 9/16 of an inch. A nosing not less than 3/4 of an inch but not more than 1 ¼ of an inch shall be provided on all stairways with solid risers.

Nosing exception: When the tread depth is a minimum of 11 inches nosing is not required.

**Handrails:** Handrails are required on one side of the side of stairs with 4 or more risers from the bottom landing or ground level to the top landing or door. The minimum height of the handrail is 34 inches and the maximum height is 38 inches.

**Guardrails:** Guardrails are required on landings, porches, decks and open sides of stairs if the height is more than 30 inches above the finish grade. Height of the guardrail is not less than 36 inches, measured from the toe of the step or platform. Balusters are to be placed less than 4 inches apart.

## Gas Installation

The gas line is required to be steel piping from the exterior of the manufactured home to the appliances. The gas line is required to have 20 pounds of air applied to the gas line. An air gauge is required to be installed on the gas line by the owner or installer. The air test and gas line must be approved by the building inspector .

## Electric Installation

- Service entrance conductors shall be a 4 wire system and sized according to size of the panel box and main disconnect.
- The conductors must be the same size with no reduced neutrals.
- Underground service entrance conductors are to be designed for direct bury or placed in conduit. At no time should the conductors be exposed.

- Service entrance conductors under the manufactured home are to be protected with conduit up to the bottom of the home or the panel box. At no time should the service conductors be installed on top of the ground. Grounding electrode system: All grounding electrodes that are present are required to be bonded together to form the grounding electrode system.
- When trench footings are installed, a concrete encased grounding electrode system is required. The concrete electrode system consists of a number 4 copper conductor attached to at least 20 feet of footing steel OR a ½ inch rebar connected to the footing rebar may be stubbed out of the footing and the grounding system connected to this rebar. This connection must be witnessed by the inspector.

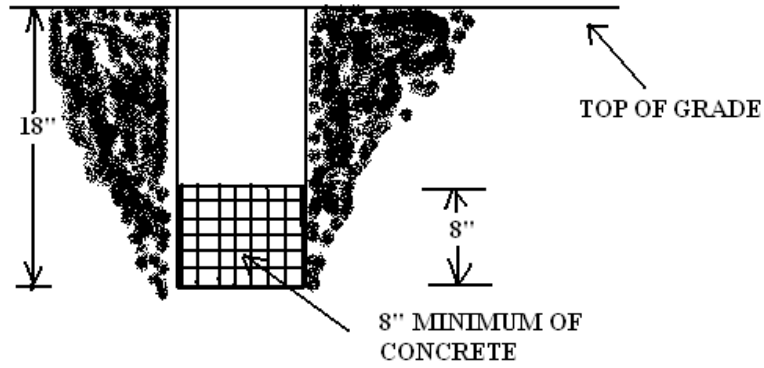
When trench footings are not used then the grounding of the electrode systems is to be obtained by installing two (2) ground rods at least 6 feet apart. The ground rods are to be connected with a minimum of a number 6 ground wire.

- All other grounding and bonding is required according to the 2005 National Electric Code.

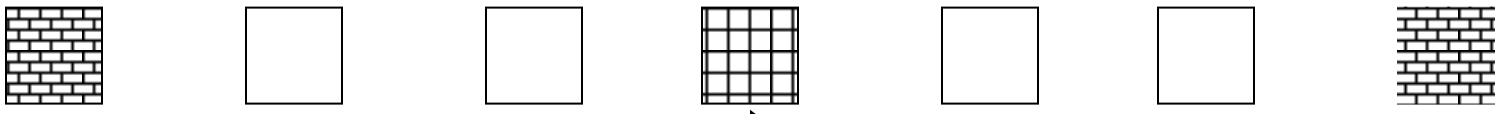
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**FIGURE 1**

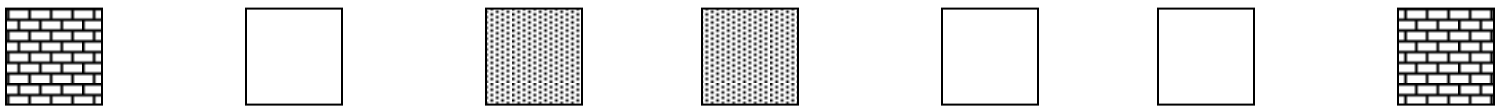
**PIER FOOTING REQUIREMENTS**



**PER PLACEMENT**



**16" X 16" CONCRETE PIERS**



**PIERS 10" ON CENTER MAXIMUM**

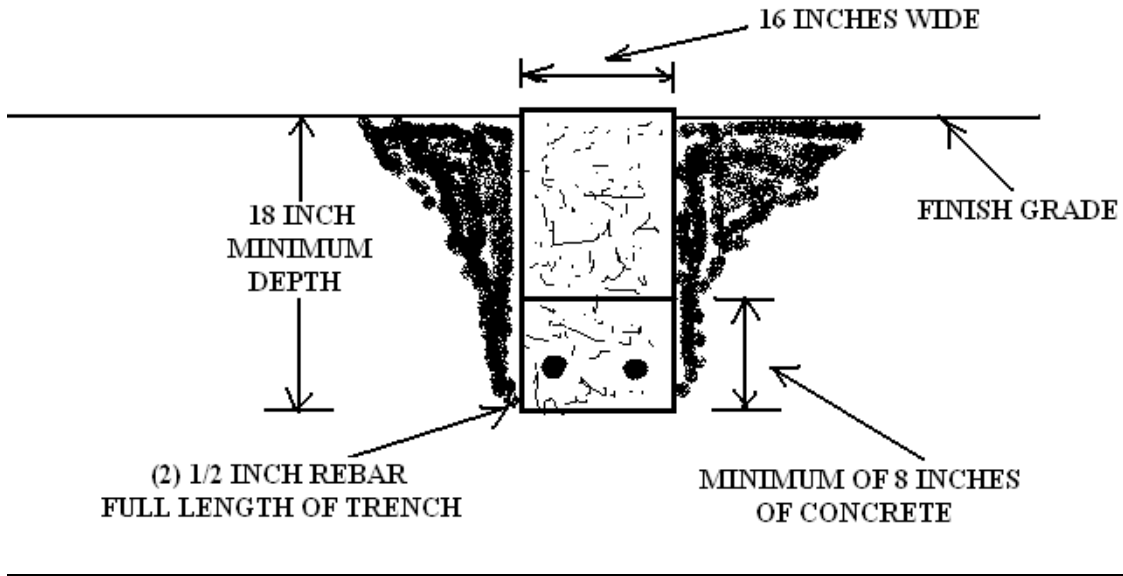
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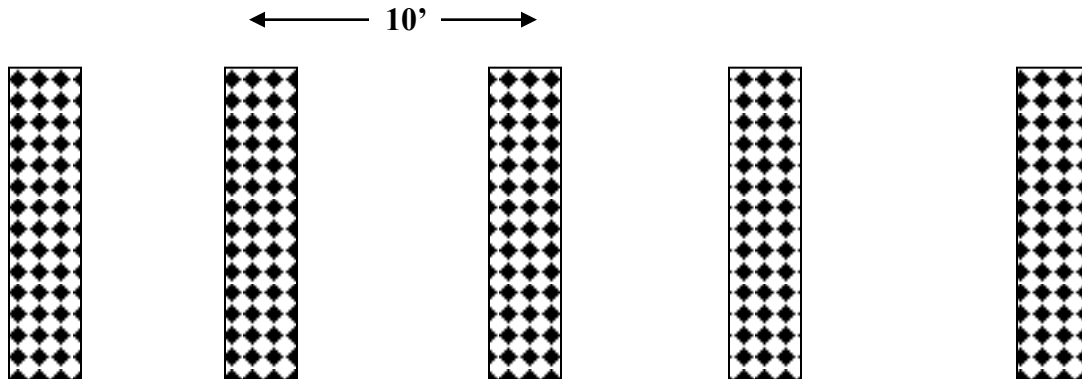
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**FIGURE 2**  
**TRENCH FOOTING REQUIREMENTS**

**TRENCH REQUIRED TO SPAN FULL WIDTH**  
**OF MANUFACTURED HOME**



**TRENCHES ARE TO BE SPACED A MAXIMUM OF 10 FEET ON CENTER OR MANUFACTURE SPECIFICATIONS**

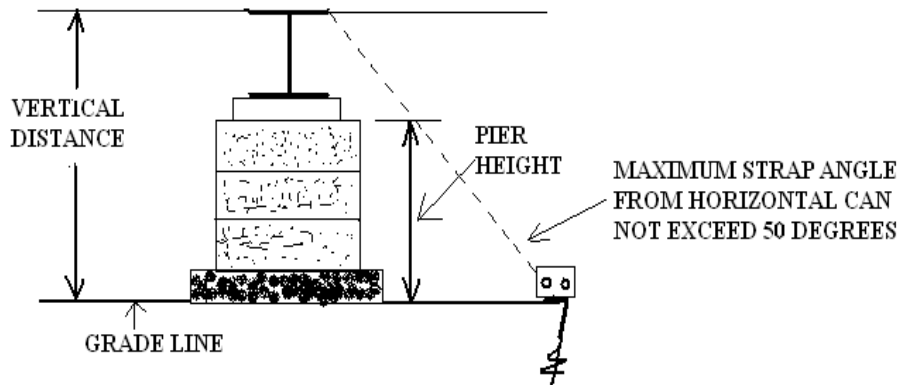


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**TABLE (A)**  
**DIAGONAL TIE DOWN STRAP SPACING**  
**FOR SINGLE SECTION AND MULT-SECTION HOMES**  
**TYPICAL 12' and 14" WIDE**

Minimum Pier Height	Maximum Strap Angle (from horizontal)	Classified Soils	Unclassified Soils
		Maximum Strap Spacing	Maximum Strap Spacing
12"	50	8'	4'
12"	40	10'	4'



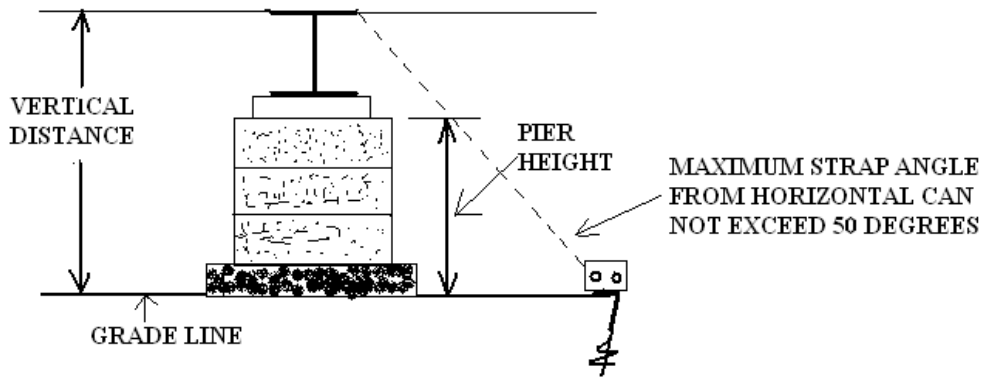
- Classified soil is soil that has been evaluated through the use of a standard torque probe, or other approved method to determine anchor-holding capacity. Each anchor location must be probed to confirm ground anchor models to be installed are consistent with soil classification.
- Unclassified soil is soil that has not been evaluated to determine anchor-holding capacity. At a minimum, a 30" double 4" helix anchor with a 12" stabilizing plate shall be used in unclassified soils.
- Anchors must be installed just inside the skirting line or as close to the skirting line as possible.

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**TABLE (B)**  
**DIAGONAL TIE DOWN STRAP SPACING**  
**FOR SINGLE SECTION AND MULTI-SECTION HOMES**  
**TYPICAL 16' WIDE**

Minimum Pier Height	Maximum Strap Angle (from horizontal)	Classified Soils	Unclassified Soils
		Maximum Strap Spacing	Maximum Strap Spacing
12"	50	10'	4'
12"	40	12'	4'



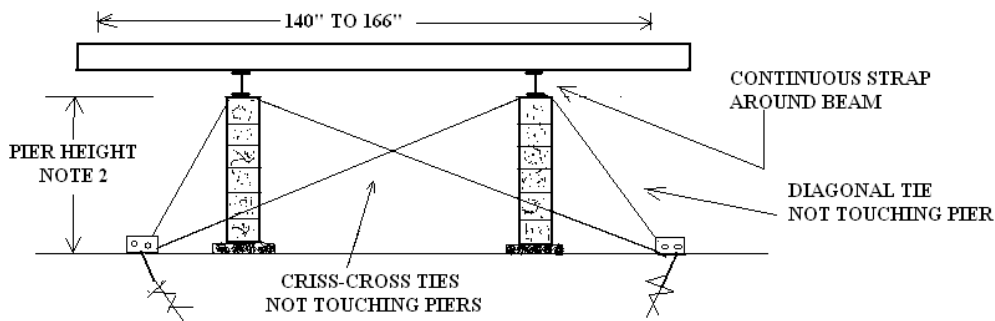
Classified soil is soil that has been evaluated through the use of a standard torque probe, or other approved method to determine anchor-holding capacity. Each anchor location must be probed to confirm ground anchor models to be installed are consistent with soil classification.

- Unclassified soil is soil that has not been evaluated to determine anchor-holding capacity. At a minimum, a 30" double 4" helix anchor with a 12" stabilizing plate shall be used in unclassified soils.
- Anchors must be installed just inside the skirting line or as close the skirting line as possible.

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**TABLE (C)**  
**ALTERNATIVE STRAPING SYSTEM FOR SINGLE SECTION HOMES**  
**FOR USE IN LIEU OF DIAGONAL TIE DOWN STRAP SPACING IN CIRCUMSTANCES WHERE 40 TO 50 DEGREE STRAP ANGLE CANNOT BE ACHIEVED**



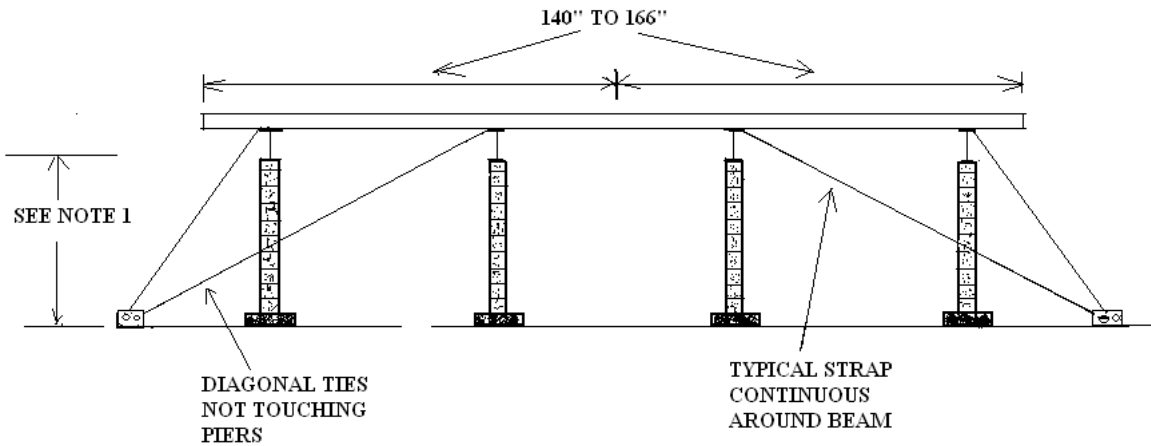
**NOTES:**

1. Insert drawing shows typical strap installation. All anchors, devices, and tie down straps to be rated for 3150 lbs. working load (4750 lbs. overload capacity) In classified soils.
2. Pier height is measured from the top of the ground to the top of the I-Beam. Pier heights exceeding 80" must have piers and tie downs designed by a Professional Engineer. Minimum pier height is 12"

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**TABLE (D)**  
**ALTERNATIVE STRAPPING SYSTEM FOR MULTI-SECTION**  
**HOMES**  
**FOR USE IN LIEU OF DIAGONAL TIE DOWN STRAP SPACING IN**  
**CIRCUMSTANCES WHERE 40 DEGREE TO 50 DEGREE STRAP ANGLE**  
**CANNOT BE ACHIEVED**



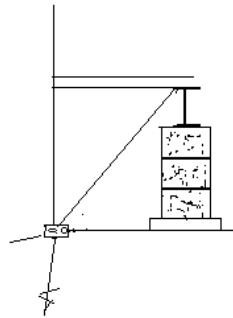
**NOTES**

1. Insert drawing shows typical strap installation. All anchors, devices, and tie down straps to be rated for a 3150 lbs. working load (4750 lbs. overload capacity) in classified soils.
2. Pier height is measured from the top of the ground to the top of the I-Beam. Pier heights exceeding 80" must have piers and tie downs designed by a Professional Engineer. Minimum pier height is 12".

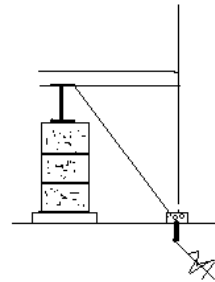
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**TABLE (E)**  
**APPROVED METHODS OF GROUND ANCHOR INSTALLATION**

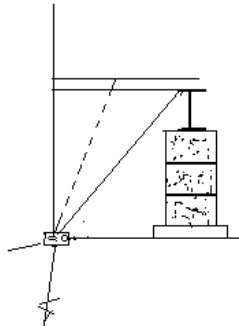
DIRECT PULL IN-LINE  
WITH 48" MINIMUM  
ANCHOR LENGTH



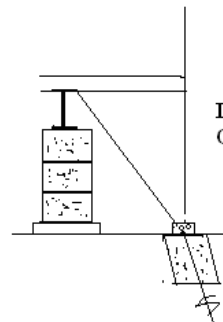
INDIRECT PULL ON  
HORIZONTAL WITH  
PLATE



DIRECT PULL WITH  
OVERHEAD  
48" MINIMUM  
ANCHOR LENGTH



INDIRECT PULL WITH  
CONCRETE COLLAR



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