**STATE OF MISSOURI**
**PUBLIC SERVICE COMMISSION**
**JEFFERSON CITY**
**July 18, 2001**

**CASE NO: MX-2000-449**

**Office of the Public Counsel**
P.O. Box 7800
Jefferson City, MO 65102

**General Counsel**
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

**Enclosed find certified copy of a PROPOSED RULE in the above-numbered case(s).**

**Sincerely,**

Dale Hardy Roberts

**Dale Hardy Roberts**
**Secretary/Chief Regulatory Law Judge**

*AUTHORITY: section 700.076, RSMo [1986] 2000. Original rule filed Nov. 12, 1976, effective Feb. 11, 1977. Emergency rule filed Dec. 7, 1976, effective Dec. 17, 1976, expired April 16, 1977. Amended: Filed Oct. 12, 1982, effective Jan. 13, 1983. Amended: Filed June 12, 2001.*

*PUBLIC COST: This proposed amendment will cost state agencies or political subdivisions less than $500 in the aggregate.*

*PRIVATE COST: This proposed amendment will cost private entities less than $500 in the aggregate.*

*NOTICE TO SUBMIT COMMENTS: Anyone may file a statement in support of or in opposition to this proposed amendment with the Public Service Commission, Dale Hardy Roberts, Secretary, PO Box 360, Jefferson City, MO 65102. To be considered, comments must be received within thirty days after publication of this notice in the Missouri Register. No public hearing is scheduled.*

FILED
JUL 18 2001
Missouri Public Service Commission

MX-2000-444

## Title 4—DEPARTMENT OF ECONOMIC DEVELOPMENT
## Division 240—Public Service Commission
## Chapter 124—Manufactured Home *[Tiedown] Tie-Down* Systems

### PROPOSED AMENDMENT

**4 CSR 240-124.040 Commission Approval of Manufactured Home *[Tiedown] Tie-Down* Systems.** This proposal amends the following sections of this rule: section (2) and adds new text as paragraphs (2)(E)1. through 7.

*PURPOSE: This rule describes the manner in which an approval of manufactured home tie-down systems may be obtained and is amended to clarify text and to include new text concerning anchor tests and approvals.*

(2) Applications for an approval shall be submitted to the director and shall be executed by the owner or seller of the system on forms *[which]* **that** shall be provided by the director upon request. To be complete, the applications shall include:

(E) A copy of the plans and specifications of the system for which the approval is sought*[;]*.

**1. Detailed drawings of each type of anchor system and for each type of component for which approval is sought must accompany the submittal.**

**A. Each drawing shall show model identification, all dimensions, types of welds or fastening, types of material, methods of securing strap, methods of attachment, orientation after installation in soil, direction(s) of applied load(s), and location of model number on the system and each component.**

**B. Each drawing shall bear the seal of a registered professional engineer, registered in the state of Missouri.**

**2. Each anchor system model must be tested and certified by an approved testing agency to be in conformance with the standards promulgated by the commission and accepted engineering practice.**

**A. Pullout tests shall be performed on three (3) samples of each anchor system model and the failure load for all three (3) tests must equal or exceed four thousand seven hundred twenty-five (4,725) pounds. The authorized representative must certify that three (3) pullout tests were performed on each anchor system model. The anchor shall be installed with the specified tie attached, in a soil type for which the anchor is designed and pulled at a forty-five degree (45°) angle. The device shall be set up as required by the installation instructions. The test report shall include a photograph or drawing. The load at failure and the type of failure shall be described. The anchoring system must be capable of meeting or exceeding the Zone 1 wind load requirements of the federal Manufactured Home Construction and Safety Standards 24 CFR 3280.306.**

**B. Failure and ultimate load capacity tests shall be performed on three (3) samples of each component part and must also be witnessed by the authorized representative.**

**C. Laboratory destruction tests shall be performed on each anchor system model and the failure load must equal or exceed four thousand seven hundred twenty-five (4,725) pounds. These tests are needed to establish the required strengths of the components and component connections of an anchor. The anchor will be approved for all soil test probe values at or above the soil test probe value in which the anchor is tested.**

**3. The result from each test will indicate:**

**A. Point and mode of failure;**

**B. Force required for failure;**

**C. Description of test procedure;**

**D. Test equipment used.**

**4. The report of the results of the test in specified soil or rock groups will also include:**

**A. Method of installation;**

**B. Date of installation;**

**C. Date of test;**

**D. Soil profile description and soil test probe values.**

**5. The anchor manufacturer shall furnish and ship with each anchoring system, information on the types of soil in which the anchor has been tested and certified for installation, instructions on the method of installation, and procedure for identifying soil types. A copy of the installation instructions must be filed with the director.**

**6. The director, upon receipt of new or additional information relating to the performance of any anchoring system, or a similar anchoring system, may request from the manufacturer of that anchoring system, additional testing or supplemental information.**

**7. Rock anchors shall be tested in specified rock. Rock anchors shall be field-tested in natural rock strata or in a rock sample. There must be twelve-inch (12") minimum radius of rock around the drilled hole. The natural rock strata or rock sample must be geologically described;**

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MX-2000-449

## Title 4—DEPARTMENT OF ECONOMIC DEVELOPMENT
## Division 240—Public Service Commission
## Chapter 124—Manufactured Home Tiedown Systems

### PROPOSED RULE

4 CSR 240-124.045 Anchoring Standards

*PURPOSE: This rule applies to the anchoring of any manufactured home purchased or relocated on or after the effective date of this rule. This rule shall not be applicable to any manufactured home which has previously been anchored at its existing location and which has not been relocated subsequent to the effective date of this rule.*

(1) Definitions. The following definitions, as well as those set out in section 700.010, RSMo apply to this chapter:

(A) Anchor means any device designed to transfer wind loads imposed on a manufactured home to the ground;

(B) Anchoring equipment means straps, seals, cables, turnbuckles, and tensioning devices, which are used to secure a manufactured home to anchors;

(C) Anchoring systems means a combination of ties, anchoring equipment, and ground anchors that will, when properly designed and installed, resist overturning and lateral movement of the manufactured home from wind forces;

(D) Classified soil means soil that has been evaluated through the use of a standard soil torque probe or other approved method to determine anchor-holding capacity;

(E) Installed means the arrangement and assembly at the occupancy site of all portions of an anchoring system, in accordance with the manufacturer's design, that renders the anchoring system fit for its intended use;

(F) Stabilizing device means a lateral support device such as a steel plate or a concrete collar used in connection with an anchor to limit lateral movement of the anchor;

(G) Tie means straps, cable, or securing devices used to connect the manufactured home to the anchor; and

(H) Unclassified soil means soils that have not been evaluated to determine anchor-holding capacity.

(2) Anchoring System. Each manufactured home installed after the effective date of the rule must be anchored in accordance with the minimum standards specified in the rule. At a minimum, each anchoring system must also meet or exceed the design wind load requirements for Wind Zone 1, as defined in 3280.305 in the Federal Manufactured Home Construction and Safety Standards.

(3) Anchoring Equipment.

(A) Load. Anchoring equipment, when installed, must be capable of resisting an allowable working load equal to or exceeding three thousand one hundred fifty (3,150) pounds and must be capable of withstanding a fifty percent (50%) overload (4,725 pounds total) without failure of either the anchoring equipment or the attachment point on the manufactured home.

(B) Resistance to Weather Deterioration. Anchoring equipment exposed to weathering shall have a coating that is resistant to weather deterioration at least equivalent to that provided by a coating of zinc on steel of not less than 0.30 ounces per square foot of surface (.0005 inch in thickness), and in accordance with the following:

1. Slit or cut edges of zinc-coated steel strapping do not need to be zinc coated;

2. Flat steel strapping shall be Type 1, Heavy Duty, Finish B, Grade 1, 1 1/4 inches wide and 0.035 inch in thickness, certified by a registered professional engineer as conforming with ASTM Standard Specification D3953-91, Standard Specification for strapping, flat steel, and seals; and

3. Seals shall be Class H, Heavy Duty, Finish B, Grade 1, for steel strapping, certified by the manufacturer as conforming with ASTM Standard Specification D3953-91.

(C) Permanency of Connections. Anchoring equipment shall be designed and installed to prevent self-disconnection when ties are slack.

(4) Tensioning Devices. Tensioning devices such as turnbuckles or yoke-type fasteners shall be ended with clevis or forged or welded eyes.

(5) Ties.

(A) Material.

1. Flat steel strapping and seals or other approved methods or materials shall be used for ties. All ties shall be fastened to anchors and drawn tight with turnbuckles or other adjustable tensioning devices or devices approved for use with the anchor.

2. Tie materials shall be either as described in (3)(B)2. of this standard or other approved material capable of resisting an allowable working load of 3,150 pounds with no more than twelve percent (12%) elongation and shall withstand a fifty percent (50%) overload (4,725 pounds total).

(B) Attachment.

1. Ties shall connect the anchor and the main structural steel frame that runs lengthwise under the manufactured home. Ties shall not connect to steel outrigger or cross beams that fasten to and intersect the main structural frame. Tie-down straps shall be routed from the anchor to the top of the main structural steel frame.

2. Tie-down straps shall be attached to the anchor in accordance with the anchor manufacturer's instructions. A permanently attached strap that has been cut off may be spliced, provided an approved splicing device is used.

(C) Vertical Ties. Vertical ties are not required in Wind Zone 1, as defined in 3280.305 in the Federal Manufactured Home Construction and Safety Standards.

(6) Anchors.

(A) Performance of Anchors. Each anchor, when installed in classified soil, must be capable of resisting a minimum allowable working load of 3,150 pounds in the direction of the tie, plus a fifty percent (50%) overload (4,725 pounds total) without failure. Failure shall be considered to have occurred when the connection between the tie and anchor moves more than two inches (2") vertically or three inches (3") horizontally when pulled at an angle of 45 degrees under a force of 4,725 pounds.

(B) Installation and Testing. Each manufactured anchor shall be tested and installed in accordance with the terms of its specified testing procedures and the anchor manufacturer's instructions. Each anchor shall be installed with a minimum of 750 pounds of pre-load with a minimum of four (4) wraps after installation.

(C) Spacing and Location.

1. Classified soil.

A. All anchors shall be installed at the intervals and in the locations specified by the manufactured home manufacturer's installation instructions, and in the correct soil class for which they are approved.

B. In the event that the manufacturer's installation instructions are unavailable, all anchors shall be installed in accordance with Tables (A) through (C) of this standard included herein, and in the correct soil class for which they are approved.

2. Unclassified soil. All anchors installed in unclassified soil shall be in accordance with Tables (A) through (C) of this standard, included herein. A thirty-inch (30") double four-inch (4") helix anchor with a twelve-inch (12") stabilizer shall be used in unclassified soil.

3. Spacing.

A. Spacing shall be as even as practicable along the entire length of the home with the first anchor on each end no more than two feet (2') from the end of the home.

(D) Soil Testing. A determination for soil classification should be made at each anchor location through the use of a standard torque probe, as described in ASTM Standard D2573-94, or equivalent method. If no soil classification test is performed for the

anchor location, then the soil at the location shall be considered as unclassified.

(7) Diagonal Tie-Down Strap Spacing. Strap spacing for anchors is illustrated in the following tables.

(A) Tables (A) through (C), included herein, illustrate the strap spacing for single section and multi-section homes with anchors located in classified and unclassified soils.

1. Note that the maximum vertical distance is measured from the anchor head to the top of the I-beam (i.e., bottom of the floor).

2. The maximum distance to the first tie-down strap at each end of the home shall be two feet (2'0").

3. Strap spacing calculations are based on the fact that single disk anchors and double disk anchors have the same holding capacity if installed in accordance with the anchor manufacturer's installation instructions and in the proper soil classification.

4. Anchors shall be installed just inside the skirting line in order to maintain the angles identified in each table.

5. Anchor strap attachments to the home must be in accordance with the anchor manufacturer's methods.

(B) Tables (D) and (E), included herein, illustrate the criss-cross strapping system for elevated single and multi-section homes (or portion thereof) to be used in lieu of diagonal tie-down strap spacing tables; and

(C) Table (F), included herein, illustrates approved methods of ground anchor installation.

(8) Spacing For Federal Manufactured Home Construction and Safety Standards Wind Zone 1 Conditions.

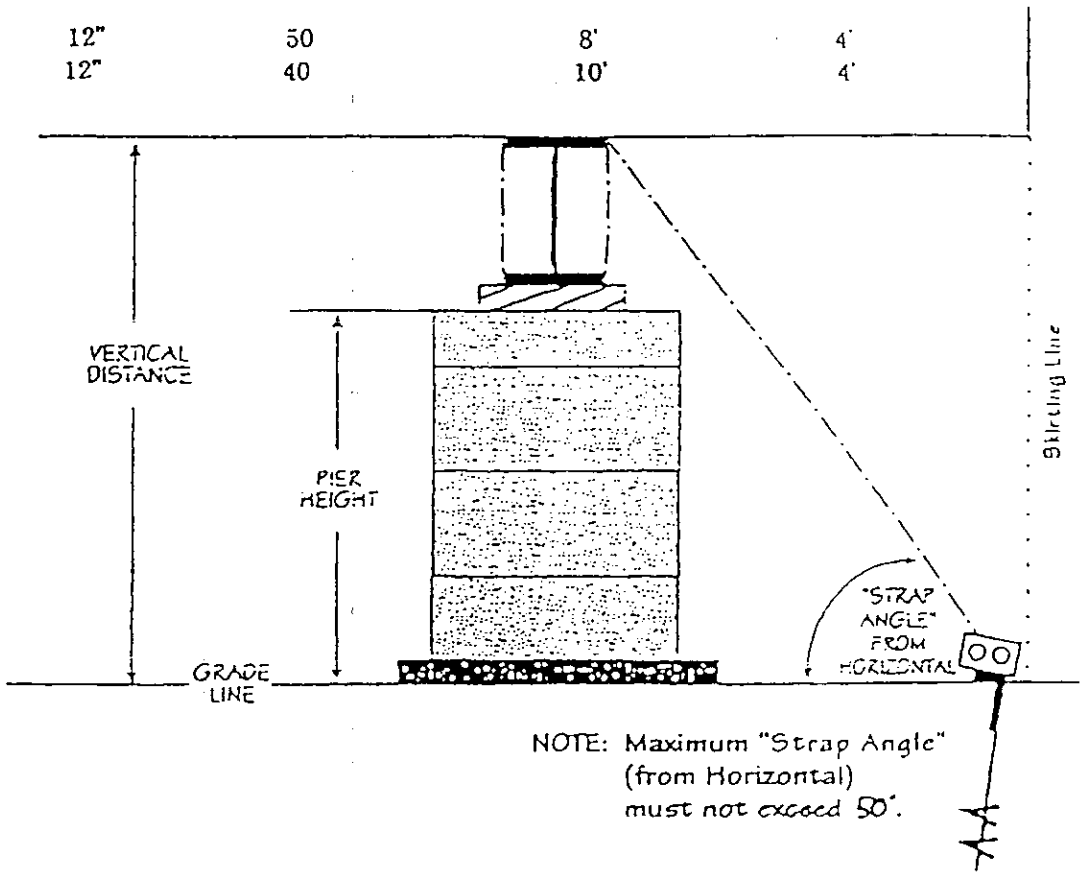
(A) If the floor width is 166 inches (typical 14-wide), with I-beam spacing 95–98 inches center to center and the distance from the top of the footer to the top of the I-beam is no higher than 64 inches, anchors shall be spaced eight feet (8') apart for classified soil, or five feet (5') apart for unclassified soil.

(B) If the floor width is 141 inches (typical 12-wide), with I-beam spacing 75.5–83 inches center to center and the distance from the top of the footer to the top of the I-beam is no higher than 52 inches, anchors shall be spaced six feet (6') apart for classified soil, or four feet (4') apart for unclassified soil.

(C) Anchors must be installed just inside the skirting line, or as close to the skirting line as possible.

# TABLE (A)
## DIAGONAL TIE DOWN STRAP SPACING FOR SINGLE SECTION AND MULTI-SECTION HOMES TYPICAL 12' WIDE

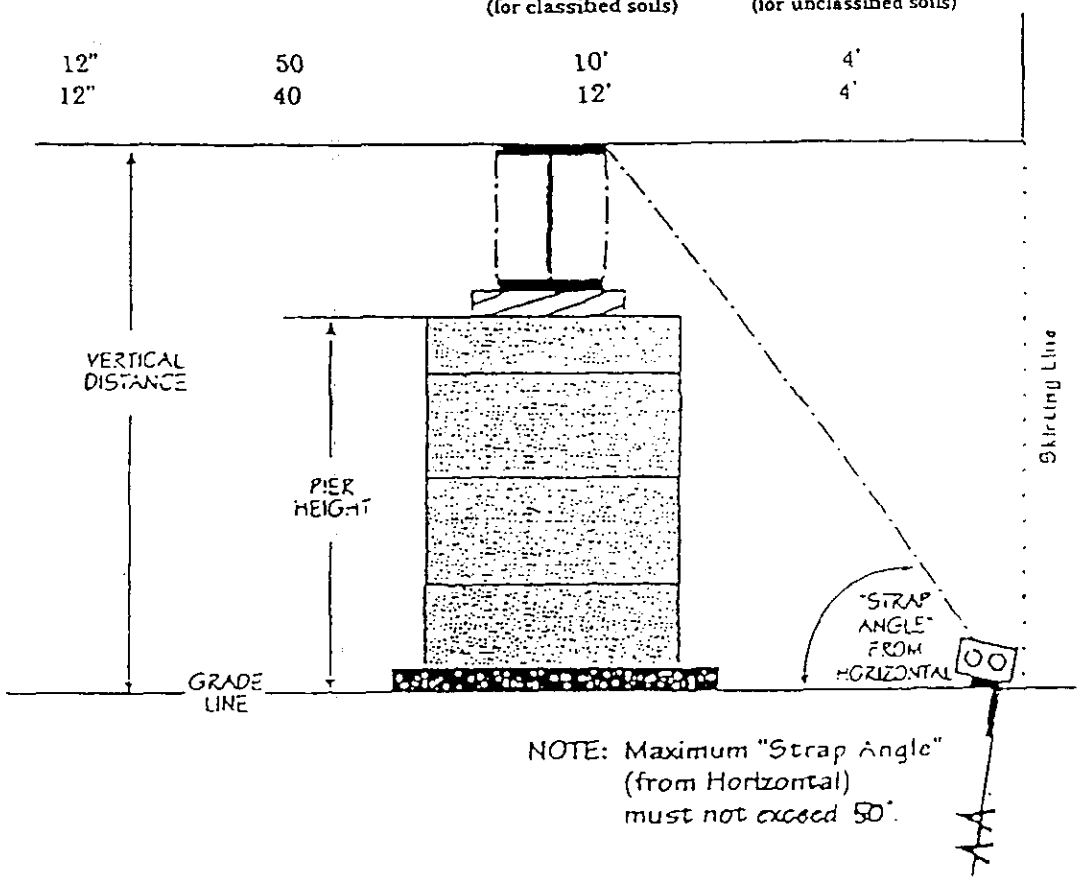
| Minimum Pier Height | Maximum Strap Angle (From Horiz.) | Maximum Strap Spacing (for classified soils) | Maximum Strap Spacing (for unclassified soils) |
|---|---|---|---|
| 12" | 50 | 8' | 4' |
| 12" | 40 | 10' | 4' |




- 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.

# TABLE (B)
## DIAGONAL TIE DOWN STRAP SPACING FOR SINGLE SECTION AND MULTI-SECTION HOMES TYPICAL 14' WIDE

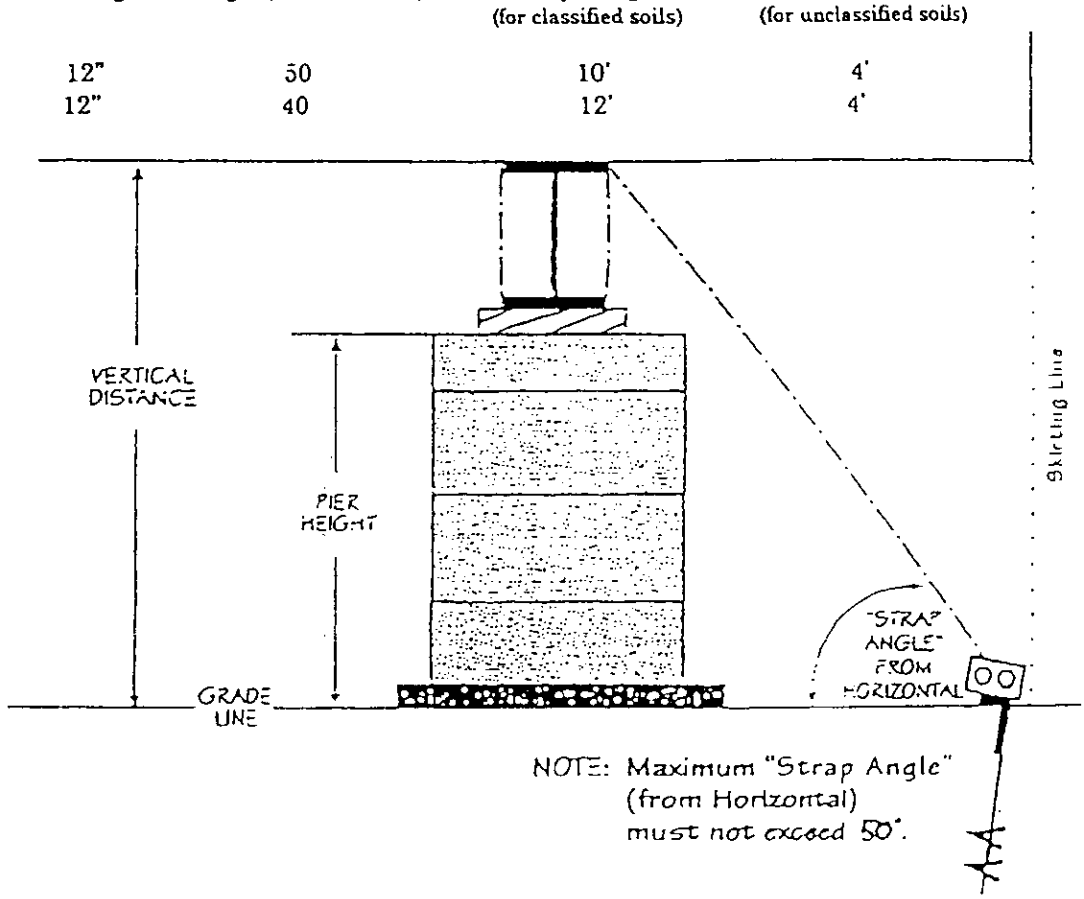
| Minimum Pier Height | Maximum Strap Angle (From Horiz.) | Maximum Strap Spacing (for classified soils) | Maximum Strap Spacing (for unclassified soils) |
|---|---|---|---|
| 12" | 50 | 10' | 4' |
| 12" | 40 | 12' | 4' |




- 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 to the skirting line as possible.

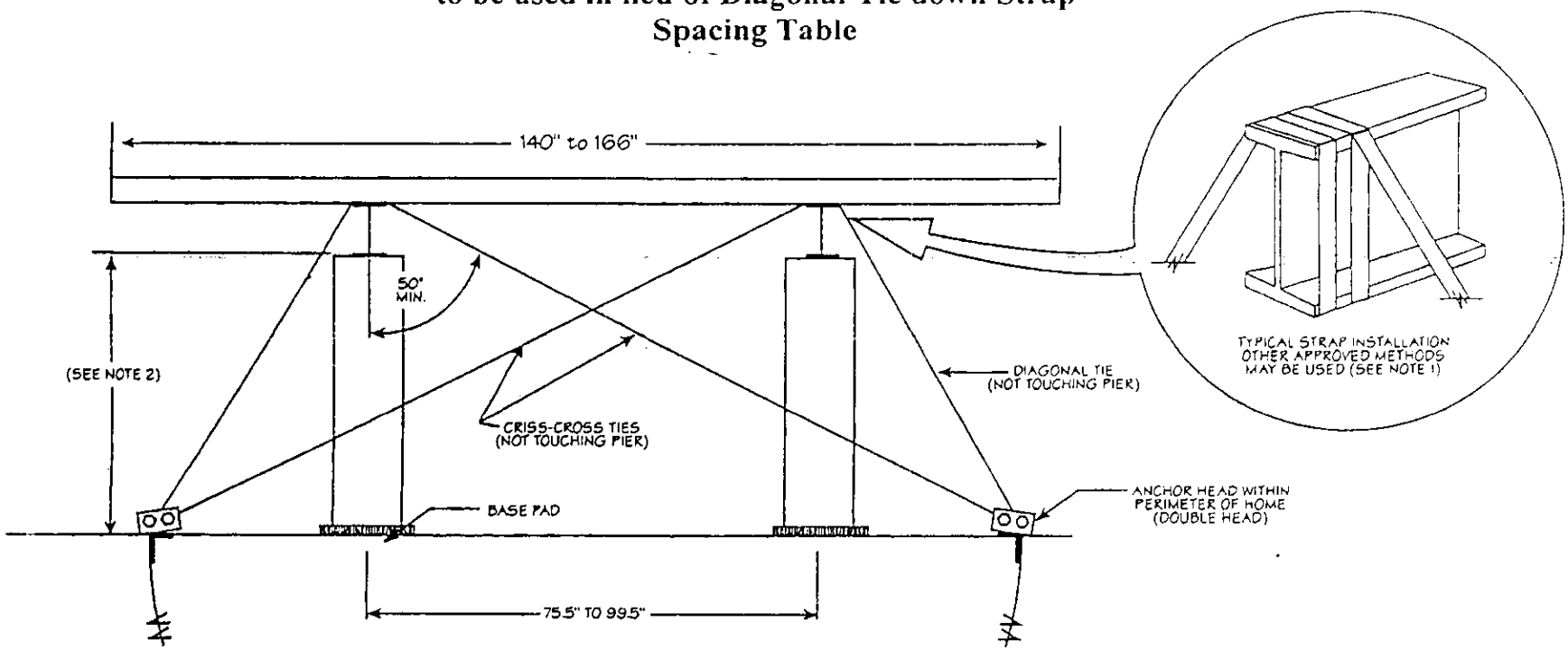
# TABLE (C)
## DIAGONAL TIE DOWN STRAP SPACING FOR SINGLE SECTION AND MULTI-SECTION HOMES TYPICAL 16' WIDE

| Minimum Pier Height | Maximum Strap Angle (From Horiz.) | Maximum Strap Spacing (for classified soils) | Maximum Strap Spacing (for unclassified soils) |
|---|---|---|---|
| 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 to the skirting line as possible.

# TABLE (D)
## CRISS-CROSS STRAPPING SYSTEM
### For elevated single section homes
### (or portions thereof)
### to be used in lieu of Diagonal Tie down Strap Spacing Table



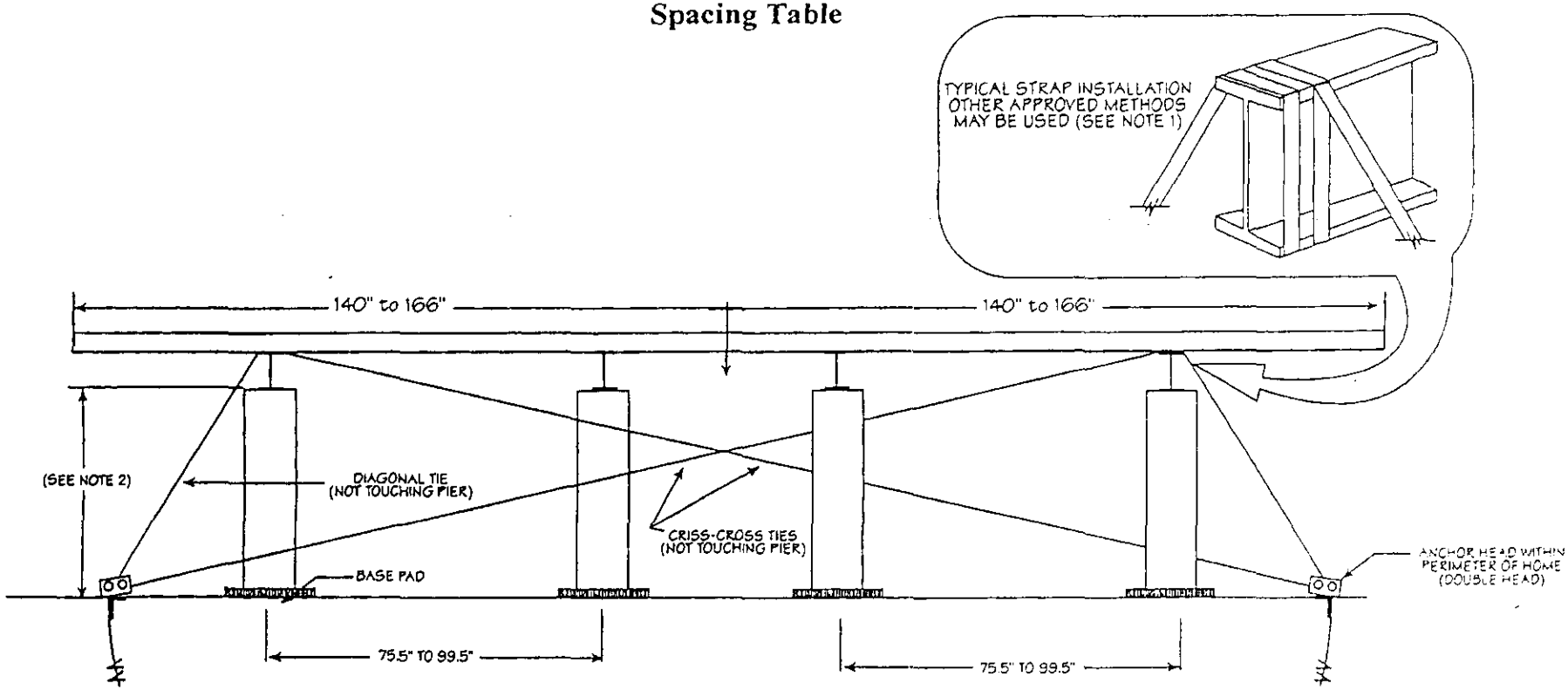

• 50° Min. Strap Angle applies only to homes with 75.5" or less I-Beam spacing.

NOTES:

1. Inset drawing shows typical strap installation. All anchors, devices, and tiedown straps to be rated for a 3150 lbs. working load (4725 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 tiedowns designed by a Professional Engineer. Minimum pier height is 12"

# TABLE (E)
## CRISS-CROSS STRAPPING SYSTEM
### For elevated multi-section homes
### (or portions thereof)
### to be used in lieu of Diagonal Tie down Strap
### Spacing Table

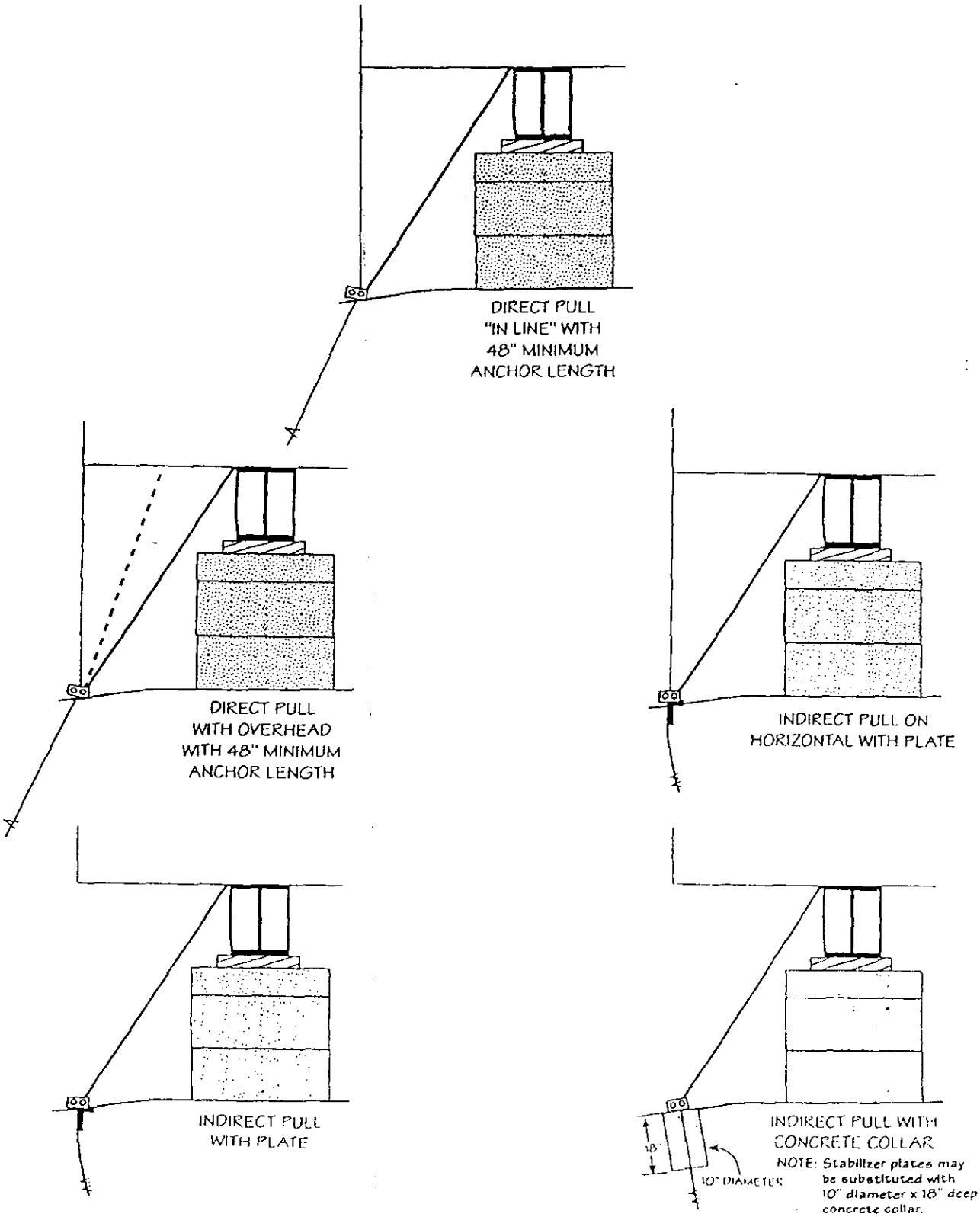



NOTES:

1. Inset drawing shows typical strap installation. All anchors, devices, and tiedown straps to be rated for a 3150 lbs. working load (4725 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 tiedowns designed by a Professional Engineer. Minimum pier height is 12".

# TABLE (F)
## APPROVED METHODS OF GROUND ANCHOR INSTALLAION



*AUTHORITY: section 700.076, RSMo 2000. Original rule filed June 12, 2001.*

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STOP

## Title 10—DEPARTMENT OF NATURAL RESOURCES
## Division 10—Air Conservation Commission
## Chapter 6—Air Quality Standards, Definitions, Sampling and Reference Methods and Air Pollution Control Regulations for the Entire State of Missouri

### PROPOSED AMENDMENT

**10 CSR 10-6.050 Start-Up, Shutdown and Malfunction Conditions**. The commission proposes to amend this rule by amending the Purpose section, adding new sections (1), (2), (4) and (5) and renumbering and amending original section (1) as new section (3). If the commission adopts this rule action, it will be submitted to the U.S. Environmental Protection Agency to replace the current rule in the Missouri State Implementation Plan.

*PURPOSE: This amendment will clarify what constitutes a malfunction, start-up or shutdown condition. It will also determine the reporting requirements for each condition. The evidence supporting the need for this proposed rulemaking is the public comment from the U.S. Environmental Protection Agency regarding complaints and Notices of Violation due to excess emissions commonly from the start-up, shutdown and malfunction conditions at air pollution sources.*

*PURPOSE: This rule, applicable to all installations in Missouri, provides the owner or operator of an installation the opportunity to submit data regarding conditions which result[ed] in excess emissions. These submittals will be used by the director to determine whether the excess emissions were due to a start-up, shutdown or malfunction condition. These determinations will be [the basis for further enforcement action] used in deciding whether or not enforcement action is appropriate.*

**(1) Applicability. This regulation applies to all installations in the state of Missouri.**

**(2) Definitions.**

**(A) Engineering limitations of equipment—A failure of air pollution control equipment or process equipment that does not classify as a malfunction but causes a release of excess emissions.**

**(B) Malfunction—A sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal and usual manner, not to exceed five percent (5%) of the normal yearly operating hours.**

**(C) Release—Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping or disposing into the environment of any air contaminant which becomes, or may become, airborne.**

**(D) Definitions of certain terms in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.**

*[(1)]*(3) General Provisions.

**(A) In the event of a malfunction or release, which results in excess emissions, the owner or operator of such facility shall notify the Missouri Department of Natural Resources' Air Pollution Control Program in both of the following ways:**

**1. An oral report shall be submitted no later than close of business of the following working day. The oral report shall include:**

**A. Name and location of installation;**

**B. Name and telephone number of person responsible for the installation;**

**C. Time and duration of the period of excess emissions; and**

**D. Type of air contaminant involved; and**

**2. A written report shall be submitted within ten (10) business days. The written report shall include, at a minimum, the following:**

**A. Name and location of installation;**

**B. Name and telephone number of person responsible for the installation;**

**C. Identity of the equipment causing the excess emissions;**

**D. Time and duration of the period of excess emissions;**

**E. Cause of the excess emissions;**

**F. Air pollutants involved;**

**G. Estimate of the magnitude of the excess emissions expressed in the units of the applicable requirement and the operating data and calculations used in estimating the magnitude;**

**H. Measures taken to mitigate the extent and duration of the excess emissions; and**

**I. Measures taken to remedy the situation which caused the excess emissions and the measures taken or planned to prevent the recurrence of these situations.**

**(B) The owner or operator shall notify the Missouri Department of Natural Resources' Air Pollution Control Program at least ten (10) days prior to any maintenance, start-up or shutdown, which is expected to cause an excess release of emissions. If notice cannot be given ten (10) days prior to any maintenance, start-up or shutdown, which is expected to cause an excess release of emissions, notice shall be given as soon as practicable prior to the maintenance, start-up or shutdown or orally as soon as practical during normal working hours after the release and no later than close of business of the following working day with written notice to follow within ten (10) working days of the release. The owner or operator of such facility shall notify the Missouri Department of Natural Resources' Air Pollution Control Program in both of the following ways:**

**1. An oral report including:**

**A. Name and location of installation;**

**B. Name and telephone number of person responsible for the installation;**

**C. Type of air contaminant involved;**

**D. Expected date and time of the maintenance, start-up or shutdown;**

**E. Processes and equipment involved; and**

**F. Expected duration of the maintenance, start-up or shutdown; and**

**2. A written report including:**

**A. Name and location of installation;**

**B. Name and telephone number of person responsible for the installation;**

**C. Identity of the equipment causing the excess emissions;**

**D. Time and duration of the period of excess emissions;**

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 18th day of July 2001.

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge