Installation Instructions
For Anchors, Frame Ties, Steel Piers, & LLBS Support Systems
LIMITED WARRANTY

Minute Man Anchors, Inc. warrants its product is free from defects in materials and workmanship at the time of installation when properly installed in accordance with the installation instructions. THE FOREGOING WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY LIABILITY IS EXPRESSLY LIMITED TO AN AMOUNT EQUAL TO THE PURCHASE PRICE PAID, AND ALL CLAIMS FOR SPECIAL, INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE HEREBY EXCLUDED. Minute Man does not assume any other liability or obligation in connection with the sale or use of this product.

If the product is defective at the time of delivery or installation and you give prompt notice to Minute Man no later than thirty (30) days of attempted installation of the defect, Minute Man, at its option, will replace the product at no cost or refund the full amount of the purchase price, provided the defective product is returned to Minute Man with proof of purchase at the address set forth below. PRODUCT REPLACEMENT OR REFUND IS YOUR SOLE AND EXCLUSIVE REMEDY.

This warranty extends only to the distributor and original installer of the product and does not cover a defect resulting from abuse, misuse, neglect, repairs, any use not in conformity with the printed instructions or installation by unauthorized personnel.

This warranty gives you specific legal rights, and you may also have other legal rights which vary from state to state. Some states do not allow limitations on implied warranties or special, incidental or consequential damages, so the foregoing limitations may not apply to you.

If you have a claim under this warranty, please contact our CUSTOMER SERVICE department (have model and type numbers available):

CUSTOMER SERVICE
Toll Free In the U.S.  1-800-438-7277
       1-828-692-0256

OR WRITE TO:
Minute Man- Customer Service
305 West King Street
East Flat Rock, NC  28726

To our knowledge, the information provided in and by the independent, professional engineers’ reports and certifications and obtained from other independent sources contained in the installation instructions and product manuals is accurate. However, Minute Man Anchors, Inc. cannot assume any liability whatsoever for the accuracy or completeness thereof. Final determination of the suitability of any information or material for the use contemplated is the sole responsibility of the user. Specifications are subject to change without notice. The load ratings established in the report are not valid in any application where the use of the product would overload any structural member of the home or foundation, or would invalidate the written limited warranty, or would violate any applicable building code or these installation standard or instructions.
To Our Customers:

These Installation Instructions are provided as a source of reference and installation information.

Minute-Man Anchors, Inc., having pioneered anchoring for the manufactured home industry, continues in our efforts to provide new and innovative products. In so doing, we are committed to the highest quality made materials, workmanship and total customer satisfaction.

If you are a longtime Minute-Man customer, “Thank You” for your continued trust and patronage. If you are a new customer, “Welcome!” we look forward to serving you in this ever growing industry.

Questions?
Regardless of your level of association with the Manufactured Housing market, if you have questions or we may be of service, please contact our office.
1-800-438-7277
FAX: (828) 692-0258
You can also find further information at our website:
www.minutemanproducts.com

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Note: Prior to installation, refer to any local, state and federal regulations, to assure proper compliance.
Soil test probe the anchor location in order to match the soil classification with the proper anchor.
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ANCHOR INSTALLATION
There are two basic methods of installing anchors, each equally effective in properly securing manufactured homes to the ground.

**CAUTION:** The installation of anchors with a drive machine is a two person operation.

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**MACHINE INSTALLATION**

In this method, the anchor is turned to full depth into the ground by an anchor drive machine.

1. Attach anchor to machine.
2. Placed anchor in proper position in line with strap and machine.
3. Anchor should be installed at a slight angle as shown to assure head being positioned behind future skirting.

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**MANUAL INSTALLATION**

A hole is dug to a depth of approximately \( \frac{1}{2} \) the length of the anchor, in the proper position as explained under machine installation.

After the hole is dug to \( \frac{1}{2} \) the length of the anchor, then the anchor is turned into the ground by hand, using a rod or length of pipe for leverage or by machine.

After anchor is installed full depth, earth is repacked, six inches at a time.

---

**PROPER TENSIONING OF STRAP TO ANCHOR HEAD**

1. Insert bolt into head; attach nut loosely. Insert strap in slot of 5/8" bolt until strap is flush with far side of bolt.

2. Bend strap 90° and take at least three complete turns on bolt until strap is taut.

3. Bolt is turned with 15/16" socket wrench, or adjustable wrench, on hex head. With square hole in anchor head, hold bolt under tension while repositioning wrench: Place open-end wrench on 5/8" square shoulders of bolt. Align square shoulders of bolt with square hole in anchor head.

4. Holding hex head of bolt in position, tighten nut to draw square shoulders into square hole. Shoulders are now in locking position; continue to tighten nut. Tensioning device is now in locked, secure position.

**Note:** The tensioning bolt can be inserted in the head from either side.

**Notice:** In areas of severe cold weather, where possible damage could occur from frost heave, the homeowner should be prepared to adjust tension on the straps to take up slack.
2. When the angle of the near beam frame tiedown strap exceeds 60° the far beam frame tiedown strap is installed in addition to the near beam strap as indicated by dotted lines. Proper earth anchor with stabilizer for soil condition (or approved alternate i.e. E-Z Anchor).
Frame Tie With Buckle

1. Thread sufficient length of frame tie strap through buckle as shown.

2. Next, thread long end of strap between frame and floor of home. Bring strap around frame and back through buckle as shown in diagram and fasten to anchor head.

3. Diagram showing strap in position around frame and through buckle. It is important to remove all slack from system.

Note: Use of a single buckle is an appropriate alternate.

Single Slot Buckle With Strap

Frame Tie With Hook

Enlarged View of Frame Beam
Place buckle at top of anchor side of beam, pass strap around beam and through buckle. Pass strap back around beam and through buckle to anchor. Strap will wrap beam twice. Remove all slack from system.

Enlarged View of Frame Beam
Attach Frame Clamp (Hook) inside top flange of home frame. Bring strap around frame. Place strap between frame and home as shown in sketch. Pull strap tight and attach to anchor tension head.

LOCKING FRAME CLAMP II
MMA-33 ASSEMBLED UNIT

½ x 1" Grade 5 Bolt & Nut

Locking Clip

Home Frame

Pivot Clip must not vary more than 10 Deg. from Perpendicular to Beam.

Minute Man Strap w/Radius Clip

To Anchor
E-Z ANCHOR INSTALLATION METHOD

Note: With machine installation, a Minute-Man adapter designed to fit both the anchor head and drive machine shaft is available. Installers do not need additional or special equipment for E-Z Anchor Installation. E-Z Anchors are a patented item.

1. MACHINE INSTALLATION

The drive machine is started and the anchor is turned into the ground to a point where the top (stabilizer head plate) is flush with or slightly below ground level. This assures that the E-Z Anchor Stabilizer will be at its required installation position. See Figure A.

To achieve full potential, install the E-Z Anchor vertically. A 10° deviation from vertical is acceptable. See Figure A.

Note: A slightly greater angle may be used to start anchor to avoid contact with the home and straightened as anchor is ground set. The splitbolt is inserted, strap is fastened, and tightening adjustment made.

E-Z Anchor carries U.S. Patents and manufacture is exclusive to Minute-Man Anchors, Inc.

2. STANDARDS FOR INSTALLATION

• E-Z Anchors and all components are to be installed per manufacturer’s instructions.

• E-Z Anchors are approved for designated Soil Class III, IV.

• E-Z Anchor working load capacity is 3,150 pounds for a single tie or the load of (2) ties combined. See Figure B.

• Consult manufactured home set up instructions for number of frame tie downs, over the roof tie downs and tie down spacing.

• Proper site preparation requires removal of grass and sod prior to installation.

For additional information, copies of engineering test(s) and report, Contact Minute-Man Anchors, Inc.
The Nu-Concept GW-2 Anchor combines a patented elongated hole in the tension head with a stabilizing and compaction cap with drive rod guides. When combined with a grade 5 bolt, the anchor will rotate in all directions allowing adjustment to uneven terrain. Under load conditions the cap, rotates downward in the direction of the pull, causing a double compaction of the soil and laterally restricts movement of anchor through the soil. Turn cap to position the drive rod guides facing away from the home. Insert 30" rods and drive to full depth into the soil.

I. Attach stabilizer/ compaction cap to the tension head of the anchor. This is done by sliding the "cap over the top of the tension head, aligning 9/32" holes in cap with 1/4" elongated hole in tension head. Insert 1/4" x 2-1/4", grade 5 bolt (included). Hand tighten. Cap must be installed at any time prior to ground contact. See Cap Figure A and Tension Head Figure B.

II. The Drive Machine is started and the anchor is turned into the ground to a point where the bottom of the tension head is at or slightly below ground level. At this point, the drive rod guides on the top of the cap should be started away from the outer wall of the home allowing the installer to drive the rods from the outside of the home. This insures maximum soil compression by the cap. See Figure C. Engineered to allow ground anchor to be installed at a slight back angle of 15°.

III. Anchor is pre-loaded. Pre-load causes the cap to rotate downward in the direction of pull, further compacting the soil and presenting a larger surface area, resisting both horizontal and vertical movement. See Figure D. When used with rigid support tubes, rather than strap systems, pre-loading is not required.

Note: A special adapter is available to insure against tension head and bolt damage.

Revised 3-14-07
INSTALLATION INSTRUCTIONS

Drill 5/8" diameter hole 5 1/2" deep, in center of anchor location, for pilot stud. Insert pilot stud into hole.
Drill two - 3/4" diameter holes in rock at 45 degree angles, using anchor head as a locating guide.
Place rod through top of (1) square tube and into hole. Drive rod to desired depth. (Rod must be driven into rock at least 80% of its length in order to achieve minimum allowable pullout resistance.) Place second rod through top of remaining tube. Drive rod to desired depth to lock.
Maximum pullout resistance is developed when anchor head is low as possible and ground surface is solid rock. Distance from square tubing to rock surface should not exceed 1".

NEW MINUTE PLAIN EZ JOIST BRACE

- Ideal for supporting sticky doors and windows, heavy pianos, fish tanks, or waterbeds.
- EZ to install, one adjustable size fits most homes.
- Will not bend I-beams or split rim joist like outriggers can do.
- Braces from the ground up to the rim joist for stronger and more stable support under the home.

NOTE: Do not use the EZ Joist Brace to replace any foundation piers required by the home manufacturer. EZ Joist Braces’ maximum working load is 1,500 lbs.

1. Determine the rim joist area that needs bracing.

2. Remove turf to expose firm soil at each EZ Joist Brace location. Footing must be level, directly under problem area, and located inside perimeter to allow clearance for skirting. Footings must be in compliance with home manufacturer, state codes, local codes, and frost line guidelines as they may apply.

3. Measure distance from top of footing to bottom of joist. Square cut top of tube 1" less than measured distance.

4. Turn nut on threaded rod up to "T" plate. Place "T" top into EZ Brace Joist Tube.

5. Center EZ Joist Brace under the rim joist and in the center of footing, use your level to be sure the brace is vertical.

6. Adjust nut on "T" top to apply desired pressure to level rim joist. Secure "T" top to rim joist with 2 - # 10 nails or 2 - # 10" x 2" screws in holes provided. The maximum safe adjustment between the top of "T" top plate and top of tube is 2 1/2 inches.
Foundation Pier Installation Instructions

For your safety read, understand, and follow the information provided with and on these foundation piers before installing. The manufactured unit shall be installed and leveled by qualified contracting personnel who are trained and licensed by the governing authority. Minute Man Foundation Piers are engineered to support on frame manufactured and modular homes and commercial modular structures. Foundation piers are designed and tested to vertical loads for a support rating of 6,000 lbs. (1 pier). Minute Man Foundation Piers should be placed directly under main support frames (I-beams). Design support configurations for pier loads, pier spacing, and live roof loads must be consistent with unit manufacturers installation guidelines (instructions) and/or State and local regulations (HUD Code Part 3285.303,310).

FOUNDATION SET-UP PROCEDURES

1. The foundation pier is best suited to a dry environment and are not recommended for use within 1500 feet of a coastline. All piers must be attached to the I-beams with a compatible pier head to prevent horizontal movement.

2. Refer to unit manufacturers installation instructions for proper leveling procedures before installing foundation piers. Warning, no one should be under the unit while jacks are being operated or while the unit is supported only on the jacks. Be sure to use sufficient jacks, safety cribbing and blocking to safely support the home before installing piers. Piers should never be installed individually under a unit. A complete system of foundation piers must be set before the weight of the unit is lowered onto the piers. Failure to follow this step could result in serious injury or death.

3. Determine the pier height that will be best for each individual pier location and insure that the height from the footer to the bottom of the chassis I-beam is no greater than 30 inches. Insure that the pier heads are compatible to I-beam chassis or for marriage line.

4. Each pier must be supported underneath with a compatible footer on a prepared level surface. Design support configurations for pier loads, pier spacing, and live loads must be consistent with unit manufacturer's installation guidelines (instructions) and/or State and local regulations (HUD Code Part 3285.303,310).

5. Center the pier on the footer. Where required by local code, secure the pier to the footer with appropriate fasteners. In no case should you extend the threaded rod of the pier head more than two inches. When more height is needed, use the next taller sized pier. Carefully align the support pier under the center of chassis beam or marriage line and install the pier head. Tighten and snug nut plus one-half turn.

6. Repeat the installation process with each pier. After all foundation piers are installed properly you may remove the safety cribbing, blocking, and jacks used to initially level the unit.
CONCRETE ANCHOR INSTALLATION INSTRUCTIONS

210 PDH CONCRETE ANCHOR

NOT TO SCALE

MINIMUM HORIZONTAL STRAP ANGLE OF 15°

3000# CONCRETE

NOTES:
1. MINIMUM ANCHOR EMBEDMENT = 6”
2. MAXIMUM VERTICAL LOAD PER ANCHOR = 4725 lb.
3. 3,150 lb. WORKING LOAD
4. 2-#4 Rebar x 30’ L
5. 6” SLAB = 65 s.f.
6. 8” SLAB = 48 s.f.
7. MARK: MMA-14

THDHLS CONCRETE ANCHOR

1. MAXIMUM VERTICAL LOAD PER ANCHOR = 4725 lb.
2. 3,150 lb. WORKING LOAD.
3. MINIMUM SLAB AREA PER BOLT
4. 4” SLAB = 95 s.f.
5. 6” SLAB = 65 s.f.
6. 8” SLAB = 48 s.f.
7. MARK: MMA 18

INSTALLATION NOTE
1. DRILL 21/32" DIAM. HOLE 4" FROM EDGE OF SLAB
AND INSERT SHIELD.
2. PLACE TENSION HEAD ON SLAB AND
INSTALL 1/4" DIAM. SHIELD BOLT.

210 JDH CONCRETE ANCHOR

NOTE:
Your set must be designed by a
Registered Professional Engineer if
the location is within 1500 feet of
the coastline.
The allowable working load on
concrete anchor models 210 PDH,
THDHLS, and 210 JDH is 3,150
pounds vertical for single or double
ties in 3,000 PSI concrete. There
must be a minimum 4” of distance
from the edge of the concrete to
the center of the anchor shaft.

Revised 3-14-07
Soil Classification and Bearing Capacity

TABLE TO § 3285.202

<table>
<thead>
<tr>
<th>Classification number</th>
<th>Soil description</th>
<th>Allowable soil bearing pressure (psf)</th>
<th>Blow count ASTM D 1586-99</th>
<th>Torque probe value (inch-pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rock or hard pan; Sandy gravel and gravel; very than dense and/or cemented sands; course gravel/ cobbles; preloaded silts, clays and coral.</td>
<td>4000+</td>
<td>40+</td>
<td>More than 550.</td>
</tr>
<tr>
<td>2</td>
<td>GW, GP, SW, SP, GM, SM.</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>CG, MH²</td>
<td>1000</td>
<td>18–23</td>
<td>276–350.</td>
</tr>
<tr>
<td>5</td>
<td>OL, OH, PT</td>
<td>Refer to 3285.202(e)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 for a 4B soil.
3. The torque test probe is a device for measuring the torque value of 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 or twisting force of the probe.

(f) If soil appears to be composed of peat, organic clays, or uncompacted fill, or appears to have unusual conditions, a registered professional geologist, registered professional engineer, or registered architect must determine the soil classification and maximum soil bearing capacity.

Source: Manufactured Home Construction and Safety Standards - Part 3285.202

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DESIGN WIND-LOAD ZONES:

<table>
<thead>
<tr>
<th>Design Wind-Load Zones:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Wind</td>
</tr>
<tr>
<td>Hurricane Zone II 39 psf Horizontal</td>
</tr>
<tr>
<td>Hurricane Zone III 47 psf Horizontal</td>
</tr>
</tbody>
</table>

*net uplift

Source: Manufactured Home Construction and Safety Standards- Part 3280.305

Note: Prior to installation, refer to any local, state and federal regulations, to assure proper compliance. Soil test probe the anchor location in order to match the soil classification with the proper anchor.
# Soil Classification Chart

for Minute Man Anchors

<table>
<thead>
<tr>
<th>Soil Class</th>
<th>Torque Probe Values</th>
<th>Recommended Minute Man Anchors &amp; Stabilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NA</td>
<td>Cross Drive or Rock Anchor</td>
</tr>
<tr>
<td>2</td>
<td>551 Inch Pounds Up</td>
<td>4430 DH 4636 DH 636 DH 4450 DH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4430 EZDH 4636 EZDH 636 EZDH GW-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12&quot; Stabilizer Plate Nu-Concept Stabilizer Cap</td>
</tr>
<tr>
<td>3</td>
<td>351 to 550 Inch Pounds</td>
<td>4430 DH 4636 DH 636 DH 4450 DH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4430 EZDH 4636 EZDH 636 EZDH GW-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12&quot; Stabilizer Plate Nu-Concept Stabilizer Cap</td>
</tr>
<tr>
<td>4A</td>
<td>276 to 350 Inch Pounds</td>
<td>4636 DH 4450 DH 650 DH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4636 EZDH 12&quot; Stabilizer Plate 17&quot; Stabilizer Plate</td>
</tr>
<tr>
<td>4B</td>
<td>175 TO 275 Inch Pounds</td>
<td>760 DH 860 DH 1060 DH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17&quot; Stabilizer Plate</td>
</tr>
<tr>
<td>5</td>
<td>Less Than 175 Inch Pounds</td>
<td>Call Minute Man Anchors 800-438-7277</td>
</tr>
</tbody>
</table>

**Note:**
Each state, county, municipality may require a specific anchor from the groups shown for each soil classification. Check local regulations before installation.
Test soil with soil probe and torque wrench at the anchor location in order to match the proper anchor with soil soil classification.
A stabilizer plate or certified stabilizing device must be used with DH anchors when the anchors are used to resist lateral loads.

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## Soil Test Probe and Torque Wrench

**Warning:** Before ground anchor installation or probing, determine that the anchor or probe locations around the home will not be close to any underground utilities. Failure to determine the location of electrical lines may result in serious personal injury.

**Instructions**
1. Place tip of probe into ground where the anchor is to be located. Using a 15/16" hex socket with a ratchet, breaker bar, or electric drive machine, turn soil probe in a clockwise direction.
2. Rotate probe into the soil to a depth equal to the length of the recommended anchor to be installed.
3. To determine the soil classification:
   a) Place wrench adapter onto torque wrench.
   b) Insert hex portion of wrench adapter onto the top of the probe.
   c) Support probe shaft with one hand while turning the probe steadily with the torque wrench.
   **Do not exceed 600 inch pounds when turning!**
   d) Read torque value while turning torque wrench and probe clockwise.
   e) Use Minute Man Anchors’ Soil Classification Chart to cross reference probe readings and match the anchor model with the proper soil class at the site.
Following is a list of Minute-Man Anchors with an allowable working load equal to or exceeding 3,150 lbs. and are capable of withstanding a 50% overload (4,725 lbs. total). Stabilizer devices must be used with anchors when anchors are used to resist horizontal forces. HUD Part 3280.506(f)

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>MARK</th>
<th>MODEL</th>
<th>DESCRIPTION</th>
<th>USE IN SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1071</td>
<td>MMA-2</td>
<td>650-DH 5/8”</td>
<td>6” DISC, 50” ANCHOR</td>
<td>2,3,4(a)</td>
</tr>
<tr>
<td>1101</td>
<td>MMA-4</td>
<td>650-DH 3/4</td>
<td>6” DISC, 50” ANCHOR</td>
<td>2,3,4(a)</td>
</tr>
<tr>
<td>1131</td>
<td>MMA-28</td>
<td>636-DH 3/4</td>
<td>6” DISC, 36” ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>1241</td>
<td>MMA-30</td>
<td>4430-DH 5/8</td>
<td>DOUBLE 4” DISC, 30” ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>1271</td>
<td>MMA-6</td>
<td>4430-DH 3/4</td>
<td>DOUBLE 4” DISC, 30” ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>1349</td>
<td>MMA-35</td>
<td>36-XDH</td>
<td>36” CROSS DRIVE ANCHOR</td>
<td>1</td>
</tr>
<tr>
<td>1350</td>
<td>MMA-8</td>
<td>48-XDH</td>
<td>48” CROSS DRIVE ANCHOR</td>
<td>1</td>
</tr>
<tr>
<td>1390</td>
<td>MMA-BR</td>
<td>24 BA</td>
<td>BARB ROCK ANCHOR</td>
<td>1</td>
</tr>
<tr>
<td>1287</td>
<td>MMA-86</td>
<td>860-DH 3/4</td>
<td>8” DISC, 60” ANCHOR</td>
<td>4(b) (Fla.)</td>
</tr>
<tr>
<td>1288</td>
<td>MMA-71</td>
<td>1060-DH 3/4</td>
<td>10” DISC, 60” ANCHOR</td>
<td>4(b)</td>
</tr>
<tr>
<td>1291</td>
<td>MMA-75</td>
<td>760-DH 3/4</td>
<td>7” DISC, 60” ANCHOR</td>
<td>2,3,4(a),4(b)</td>
</tr>
<tr>
<td>1346</td>
<td>MMA-52</td>
<td>4636-DH 3/4</td>
<td>4” &amp; 6” DISC, 36” ANCHOR</td>
<td>2,3,4(a)</td>
</tr>
<tr>
<td>1284</td>
<td>MMA-55</td>
<td>4450-DH 3/4</td>
<td>DOUBLE 4” DISC, 50” ANCHOR</td>
<td>2,3,4(a)</td>
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<tr>
<td>1592</td>
<td>MMA-92</td>
<td>4430-EZDH 3/4</td>
<td>DOUBLE 4” DISC, 30” EZ ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>1593</td>
<td>MMA-93</td>
<td>4636-EZDH 3/4</td>
<td>4” DISC, 6” DISC, 36” EZ ANCHOR</td>
<td>2,3,4</td>
</tr>
<tr>
<td>1594</td>
<td>MMA-94</td>
<td>636-EZDH 3/4</td>
<td>6” DISC, 36” EZ ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>1596</td>
<td>MMA-96</td>
<td>650-EZDH 3/4</td>
<td>6” DISC, 50” EZ ANCHOR</td>
<td>2,3</td>
</tr>
<tr>
<td>2390</td>
<td>MMA-18</td>
<td>THDH</td>
<td>DOUBLE HEAD TENSION DEVICE</td>
<td>SLAB</td>
</tr>
<tr>
<td>2391</td>
<td>MMA-18</td>
<td>THDHL/5</td>
<td>DH TENSION DEVICE W/LAG</td>
<td>SLAB</td>
</tr>
<tr>
<td>1450</td>
<td>MMA-14</td>
<td>210-PDH</td>
<td>WET CONCRETE ANCHOR</td>
<td>SLAB</td>
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<tr>
<td>1445</td>
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<td>G W2</td>
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<td>2510</td>
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<td>2530</td>
<td>MMA-32</td>
<td>SS BUCKLE</td>
<td>SINGLE SLOT BUCKLE</td>
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<tr>
<td>2491</td>
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<td>44 RB</td>
<td>4X4” ROOF BRACKET</td>
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<td>20” STEEL PIER PAD</td>
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**LATERAL BRACE TUBES W/BEAM CLIP (For Soil Pier Pad)**

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>MARK</th>
<th>MODEL</th>
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<th>USE IN SOIL TYPE</th>
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<tr>
<td>3532</td>
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<td>LONGITUDINAL &amp; LATERAL BRACING SYSTEM</td>
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**LONGITUDINAL BRACE TUBES W/BEAM CLIP (For Soil Pier Pad)**

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<thead>
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**LATERAL FLEX TUBES (For Concrete)**

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<td>“L” ANCHOR BOLT-WET SET</td>
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**LONGITUDINAL FLEX TUBES (For Concrete)**

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<td>65” LONG FLEX TUBE W/BC</td>
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</table>

Revised 10/27/10
March 4, 2013

Minute Man Products
305 West King Street
East Flat Rock, NC 28726

Dear Sir,

I have analyzed design drawings, physical testing reports, and installation instructions for the Minute Man Products listed as follows:

- 650 5/8 DH
- 650 3/4 DH
- 760 3/4 DH
- 636 5/8 DH
- 636 3/4 DH
- 4450 3/4 DH
- 4430 3/4 DH
- 4430 5/8 DH
- 4430 3/4 DH
- 4442 5/8 DH
- 4636 3/4 DH

- GW 2–NC2
- XDH
- 48 XDH
- 24 BA
- 210 DH
- 210 JDH
- 210 PDH
- 36 DH
- 36 XDH
- THDH

- 100 DH
- MMAS (Seal)
- SBN (Bolt & Nut)
- Pivot Clip W/S
- FCI W/S
- FCII W/S
- BUC W/S
- MMA SD2
- MMA SD2A
- NC 2 (Stab. cap)

CT W/S Corner Tie MMA 71 & MMA 71C
LLBS Longitudinal & Lateral Bracing System
MMSPP Longitudinal Stabilizing System

My analysis of the physical test reports defines the breaking strength of each of these anchors and their component to be in excess of 4,725 pounds. The strapping meets federal specifications QQ-S-781H for type 1 class B, Grade 1 strapping. The strapping also meets with ANSI 225.1 standards and ASTM D3953-91 standards. The strapping is 1 ¼” x .035 minimum, hot dip galvanized steel.

On file are testing reports of direct withdrawal strength of these anchors. These test evaluate the anchorage strength of Minute Man Anchors installed resisting an axial and 45 degree angle applied withdrawal load. For the anchors listed on pages 10 and 11, the average holding power meets and / or exceeds the required minimum of 4,725 pounds when installed in accordance with manufacturer instructions in the soil type and class shown.

The LLBS Bracing System was tested for Wind Zones I, II, & III.
PRODUCT: CONCRETE, ROCK, AND SOIL GROUND ANCHORS

MANUFACTURER: Minute Man Anchors, Inc.
305 W. King St.
East Flat Rock, NC 28726

PLANT LOCATION: 305 W. King St.
East Flat Rock, NC 28726

APPLICATION: HUD Code Manufactured Homes & Modular Homes

1. INTRODUCTION

At the request of Minute Man Anchors, Inc., RADCO investigated the possibility of listing ground anchors produced by Minute Man Anchors, Inc., for approval of ground anchors in accordance with RADCO’s Listing Requirements for Ground Anchors.

RADCO’s Listing Requirements for Ground Anchors defines the classification and performance requirements of each respective ground anchor model. The requirements are in general accordance with those developed by the MHI Ground Anchor Task Force and adopted by HUD’s MHCC on March 9, 2011 after accepting minor revisions offered by HUD staff.

2. DESCRIPTION

There are two categories of ground anchors that are specified in this listing. The first group is soil ground anchors, which pertain to all anchors designated for soil classes 2, 3, 4, and 5. The second group is rock and concrete (non-soil) ground anchors, which are designed for installation into class 1 conditions.

All Minute Man Ground Anchors are manufactured using steel in conformance with ASTM A-36. The models under this listing vary with respect to shaft diameter, number and location of helixes, length of shaft and stabilizer device. Table 1 shows a complete description of each ground anchor model, as well as a corresponding stabilizer device.

All ground anchors have a minimum working load of 3,150 lbs and a minimum ultimate load of 4,725 lbs.

3. INSTALLATION

The installation of the ground anchors is to be in accordance with the Manufacturer’s Installation Instructions. In addition, each anchor must be installed in accordance with the following:

a) The proper soil class. (Tables 2 & 3, and notes)

b) Minimum angle of pull to the horizontal. (Tables 2 & 3)

4. EVIDENCE SUBMITTED

4.1 Testing has been conducted to verify the compliance of Minute Man ground anchors to the RADCO Listing Requirements for Ground Anchors.

4.2 The quality and process control system used in the manufacture has been submitted to RADCO. An adequate method of traceability is maintained by the manufacturer. A follow-up quality assurance audit program is maintained by RADCO.

5. RECOMMENDATIONS

RADCO recommends that Minute Man Anchors, Inc. ground anchors be accepted for use with HUD code manufactured homes and modular homes provided that:

5.1 Each ground anchor will be marked with a label, a facsimile of which is shown in figure 1. The label for each facility denotes the model number, RADCO name, and Listing #1344.

5.2 All products are produced only at the facility referenced in this listing.

5.3 The quality control procedures are maintained by the manufacturing facility as submitted.

5.4 The audit system of RADCO is maintained.

5.5 All products are installed per the manufacturers installation instructions and section 3 of this listing.

6. APPROVAL

This listing is subject to approval on an annual basis by RADCO. Updating and further information will be included and/or resubmitted as necessary.

Figure 1: Sample Label
Note 1: See 24 CFR Part 3285 Model Manufactured Home Installation Standards, section 202: Soil Classification and Bearing Capacity & Table 3285.202 for an explanation of soil classification numbers. Please note that anchors approved for use in soil class 4 may be used in soil classes 3 or 2, and anchors approved for use in soil class 3 may be used in soil class 2.

Note 2: The stabilizer plates are available in 12" or 17" width. The stabilizer caps are 6" diameter. "X drive" refers to cross-driven anchors which utilize two rods angled at 45 degrees from the vertical.

Note 3: Anchor model MMA-GW2NU has a 6" stabilizer cap as well as a 32" long stabilizer rod which is driven through the stabilizer cap and downward at 45 degrees from the horizontal.
LISTING & TESTING DIVISION

RESOURCES, APPLICATIONS, DESIGNS, & CONTROLS, INC.
3220 E. 59th Street
Long Beach, CA 90805
Tel: (562) 272-7231
Fax: (562) 529-7513

LISTING #1350

PRODUCT: MANUFACTURED HOUSING SUPPORT PIERS

MANUFACTURER: Minute Man Anchors, Inc.
305 W. King St.
East Flat Rock, NC 28726

PLANT LOCATION: 305 W. King St.
East Flat Rock, NC 28726

APPLICATION: Manufactured (Mobile) Housing

1. INTRODUCTION
At the request of Minute Man Anchors, Inc., RADCO has examined steel piers designed to provide support for manufactured (mobile) homes, modular units, and other structures.

2. DESCRIPTION
The standard steel piers have adjustments for placement under the longitudinal I-beams of the manufactured (mobile) home and range in vertical height from 8 to 30 inches, in 2 inch increments. Steel Piers with vertical height between 22 and 30 inches are reinforced with four (4) 14 Gauge (44in) x 1 1/4" wide steel straps with the upper edge of the strap located a minimum 11 inches from the top of the pier head. The piers have four legs constructed of 1-inch wide 90 degree angle steel with an average thickness of 0.13 inches. All piers have a rated working load of 6000 pounds, which is based on a minimum ultimate load of 18,000 pounds. The legs are connected to steel base plate strips. All components of the pier are to be welded, with the exception of the adjustable pier head. Steel conforms to ASTM A-36.

3. INSTALLATION
The application of standard piers is for use on manufactured (mobile) homes. The system shall be installed in accordance with the manufacturer's installation instructions and the requirements of this listing.

4. EVIDENCE SUBMITTED
a) Structural test reports and design drawings and specifications were submitted to substantiate the load carrying capacity of the product and are on file with RADCO.
b) The quality and process control used in the manufacturing and assembly of the product have been submitted to, reviewed, and are on file with RADCO.
c) RADCO's audit inspection program for standard piers is to assure that the product is manufactured from the specified material and in conformance to RADCO's listing and the approved quality control manual.

5. RECOMMENDATIONS
RADCO recommends that Minute Man Anchors, Inc. standard steel piers be accepted for use in manufactured (mobile) homes provided that:

1. The product is manufactured at the facility referenced in this listing.

2. Quality control of the product is maintained by the manufacturer.

3. The audit system by RADCO is maintained.

4. Each standard pier will be marked with a label, a sample of which is shown in figure 1. The label denotes the RADCO name, and Listing #1350.

6. APPROVAL
This listing is subject to approval on an annual basis by RADCO.

Figure 1: Sample Label

MINUTE MAN ANCHORS
RADCO Listing #1350

RATED 6,000 POUNDS/2" MAX PIER HEAD EXTENSION
WARNING! DO NOT SET PIER DIRECTLY ON SOIL
DO NOT USE PIER AS AN AUTOMOTIVE JACK STAND

Pier Bottom Stamp

MMP XX XX

*The first set of X's will represent the pier height and the second set of X's will represent the date of manufacture.
INSTALLATION INSTRUCTIONS

FIRST CHECK FOR UNDERGROUND UTILITY LOCATION:

EZDH EARTH AUGERS

SEE DETAIL THIS BROCHURE FOR INSTALLATION INSTRUCTIONS.

EARTH AUGERS

1. INSTALL AUGERS INTO SOIL WITH CONSTANT DOWNWARD PRESSURE TO MINIMIZE SOIL DISTURBANCE
   LEAVING APPROX. 1/2" OF SHAFT EXPOSED.

2. INSTALL STABILIZER PLATE. DRIVE FLUSH WITH GROUND SURFACE.

3. COMPLETELY TURNING AUGER INTO GROUND UNTIL AUGER HEAD IS FLUSH WITH GROUND SURFACE AND TOP
   OF STABILIZER PLATE.

CROSS DRIVE ANCHORS

1. CROSS DRIVES ARE USED WHERE HARD ROCKY SOIL OCCURS. IF THE GROUND SURFACE IS OTHER THAN
   ROCKY, INSTALL EZDH STABILIZER PLATE, OR PLACE 12"X12"X12" DEEP CONCRETE.

CONCRETE SLAB ANCHORS

1. CONCRETE SLAB TO BE MINIMUM 3/4" THICK AND IN GOOD CONDITION.

2. MINIMUM SLAB AREA REQUIRED FOR EACH ANCHOR IS 18 SQ. FEET.

3. DRILL PROPER SIZE HOLE IN SLAB MINIMUM 4" FROM ANY EDGE.

ALL APPLICATIONS

1. ATTACH STRAPS TO CHASSIS BEAM IN MANNER SHOWN.

2. INSERT STRAP THROUGH SPLICE NUT, CUT OFF EXCESS STRAP AND TIGHTEN UNIT UNTIL SNUG.

THIS PLAN MAY BE USED FOR MANUFACTURED HOMES PLACES IN FEMA FLOOD HAZARD ZONES A, AE AND AH.

PROVIDED THE GROUND ANCHORS ARE THE MMA-650, 50" EARTH AUGERS. UNDER FLOOR VENTS AT THE PERIMETER SKIRTING SHALL BE PLACED WITH THE BOTTOM OF THE VENT MAX. 12" ABOVE THE UNDER FLOOR GROUND SURFACE.

TIE DOWN LOCATIONS

<table>
<thead>
<tr>
<th>EARTH AUGERS</th>
<th>CROSS DRIVE ANCHORS</th>
<th>CONCRETE SLAB ANCHORS</th>
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<tbody>
<tr>
<td>MAX. LENGTH OF MIPD HOME</td>
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<td>34&quot;</td>
</tr>
<tr>
<td>MAX. NO. OF SIDE TIE DOWNS</td>
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<td>5</td>
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<tr>
<td>MAX. LENGTH OF MIPD HOME</td>
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</tr>
<tr>
<td>MAX. NO. OF SIDE TIE DOWNS</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

NOTE: IF OBSTRUCTIONS PRECLUDE THE PLACEMENT OF THE SIDE TIE DOWNS AT THE 2' LOCATION SHOWN
SIDE TIE DOWNS AT 2'" FROM EACH END HAVE A TOLERANCE OF 1".

EART AUGERS - SIDE TIE DOWNS

CROSS DRIVE ANCHORS - SIDE TIE DOWNS

CONCRETE SLAB ANCHORS - SIDE TIE DOWNS

NOTE: TIE DOWN STRAPS AT THE CHASSIS BEAM END (SIDE TIE DOWNS) CAN BE ATTACHED TO A CHASSIS SUPPORT PER WHER A PER BOLT OR TOP. (SEE MOUNTING).
INSTALLATION INSTRUCTIONS

1. THE DRIVE MACHINE IS STARTED AND THE ANCHOR IS TurnED INTO THE GROUND TO A POINT WHERE THE TOP (STABILIZER HEAD PLATE) IS FLUSH OR SLIGHTLY BELOW GROUND LEVEL. THIS INSURES THAT THE E-Z ANCHOR STABILIZER WILL BE AT ITS REQUIRED INSTALLATION POSITION.

2. FOR THE E-Z ANCHOR STABILIZER TO ACHIEVE FULL POTENTIAL, INSTALL THE ANCHOR VERTICALLY WITH NO DEVIATION GREATER THAN 10 DEGREES. NOTE: A SLIGHTLY GREATER ANGLE MAY BE USED TO START THE ANCHOR TO AVOID CONTACT WITH THE HOME & STRAIGHTENED AS THE ANCHOR IS GROUND SET.

THE SPLIT BOLT IS INSERTED, STRAP FASTENED, AND TIGHTENING ADJUSTMENT MADE.

NOTE: WITH MACHINE INSTALLATION, A MINUTE-MAN ADAPTOR DESIGNED TO FIT BOTH THE ANCHOR HEAD AND DRIVE MACHINE SHAFT IS AVAILABLE. INSTALLERS DO NOT NEED ADDITIONAL OR SPECIAL EQUIPMENT FOR E-Z ANCHOR INSTALLATION.

CONCRETE TIE DOWN

CROSS DRIVE TIE DOWN
LONGITUDINAL AND LATERAL BRACING SYSTEM

LONGITUDINAL BRACE DETAIL

OUTSIDE HOME BEAM

MMIIBC BEAM CLIP
W/ 4 - 3/8"x1-1/2" CARRIAGE BOLTS

1 - 3/8" ø LONGITUDINAL BRACE TUBE

2 - 39" FOR 12" TO 24" PIER
2 - 44" FOR 12" TO 32" PIER
2 - 53" FOR 12" TO 40" PIER
2 - 65" FOR 12" TO 48" PIER

3/8"x2-3/8" CARRIAGE BOLT

SD3 PIER PAD

NOTES:

Maximum pier height 48"
Max. sidewalk height 96"
Max. beam spacing 99.5"
Max. roof eaves 16"

Note: 1/2" bolts are grade 5

When using longitudinal braces, 2nd pier in from the end of the home may be used to make room for brace tubes.

LONGITUDINAL BRACE FLEX TUBES FOR CONCRETE

TOP VIEW

Length Varies with Pier Height

SIDE VIEW

LATERAL BRACE DETAIL

LATERAL CLAMP ASSEMBLY

1 - 3/8" ø TUBE

3/8"x2-3/8" CARRIAGE BOLT

INSIDE HOME FRAME BEAM

WASHER

1 - 3/8" ø TUBE

60" FOR 99.5" MAX. SPAN

1 - 3/8" ø TUBE

60" FOR 99.5" MAX. SPAN

MAX 45° (ANGLES FOR BOTH LATERAL & LONGITUDINAL BRACE TUBE.)

1/2" HEAVY DUTY WASHER
W/ 1/2"x1-1/2" CARRIAGE BOLT

LATERAL BRACE FLEX TUBES FOR CONCRETE

UPPER SECTION

LOWER SECTION

LONGITUDINAL & LATERAL BRACING SYSTEM

DETAIL ASSEMBLY DRAWING

C.R. Caudle, P.E.
Sr. Registered Engineer

The Minute Man Anchors LLBS Bracing System was tested for Wind Zones I, II, & III
Tested 10/10/01
Rev. 3/6/02
Rev. 7/14/04
Rev. 2/1/10

NOTE:
All LLBS Systems are shipped with complete installation instructions.
See these instructions for System Locations in Zones I, II, III, FL.

Revised 2/18/10
“SUGGESTED RECOMMENDATIONS WHEN USING CRIMPING SEALS”

1. The strap must be identified “MINUTE MAN ANCHORS INC. CERTIFIED ANSI 225.1 AND ASTM D3953.”

2. WHEN EXTENDING OR SPLICING TWO STRAPS, OVER LAP APPROX. 6”, USE TWO SEALS FULLY CRIMPING EACH SEAL TWICE TO BOTH STRAPS.

3. WHEN STRAPPING TO AN APPLIANCE SUCH AS SLOT IN A VERTICLE TIE OR A HOOK OR A BUCKLE WE SUGGEST THAT YOU USE A SHORT PIECE OF STRAP (RADIUS CLIP) BENT 180 degrees IN DIRECT CONTACT WITH THE APPLIANCE. (This will act as a cushion, reinforce and prevent sharp bends in the strap.) NEXT INSERT THE STRAP BENDING IT OVER 180 degrees BACK TO THE STRAP USING ONE SEAL, PLACE BOTH STRAPS INTO SEAL AND CRIMP TWICE.

4. SEALS MUST ALWAYS BE CRIMPED TWICE.

5. PLEASE NOTE: TWO SEALS REQUIRED WHEN SPLICING TWO STRAPS. ONE SEAL WHEN BENDING 180 degrees.

Revised 3/14/07
All anchors are "DH" type for use with either one or two tension bolts. Anchors are priced without tension bolt and nut - they must be ordered separately. Tension bolts and nuts will be packed separately from anchors.

- **Eye Anchor**
  - 650 DH 5/8, 11/16, & 3/4

- **Cross Drive**
  - 36" & 48"

- **4636 DH 3/4**

- **4430 DH 5/8, 11/16, & 3/4**

- **EZDH Anchor**
  - 4430, 4636
  - 636 & 650
  - Available

- **Strap Buckle**

- **Stabilizer Plate**

- **Galvanized Strapping**

- **Tank Anchoring Systems**

- **210JDH**
- **210PDH**
- **THDHLs**

- **Standard Pier**

- **LLBS Foundation Bracing System**

- **Buckle W/Strap**
- **FC II W/Strap**
- **LFC II W/Strap**

- **Crimping Tool**

- **Minute Man Anchors Drive Machine**

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