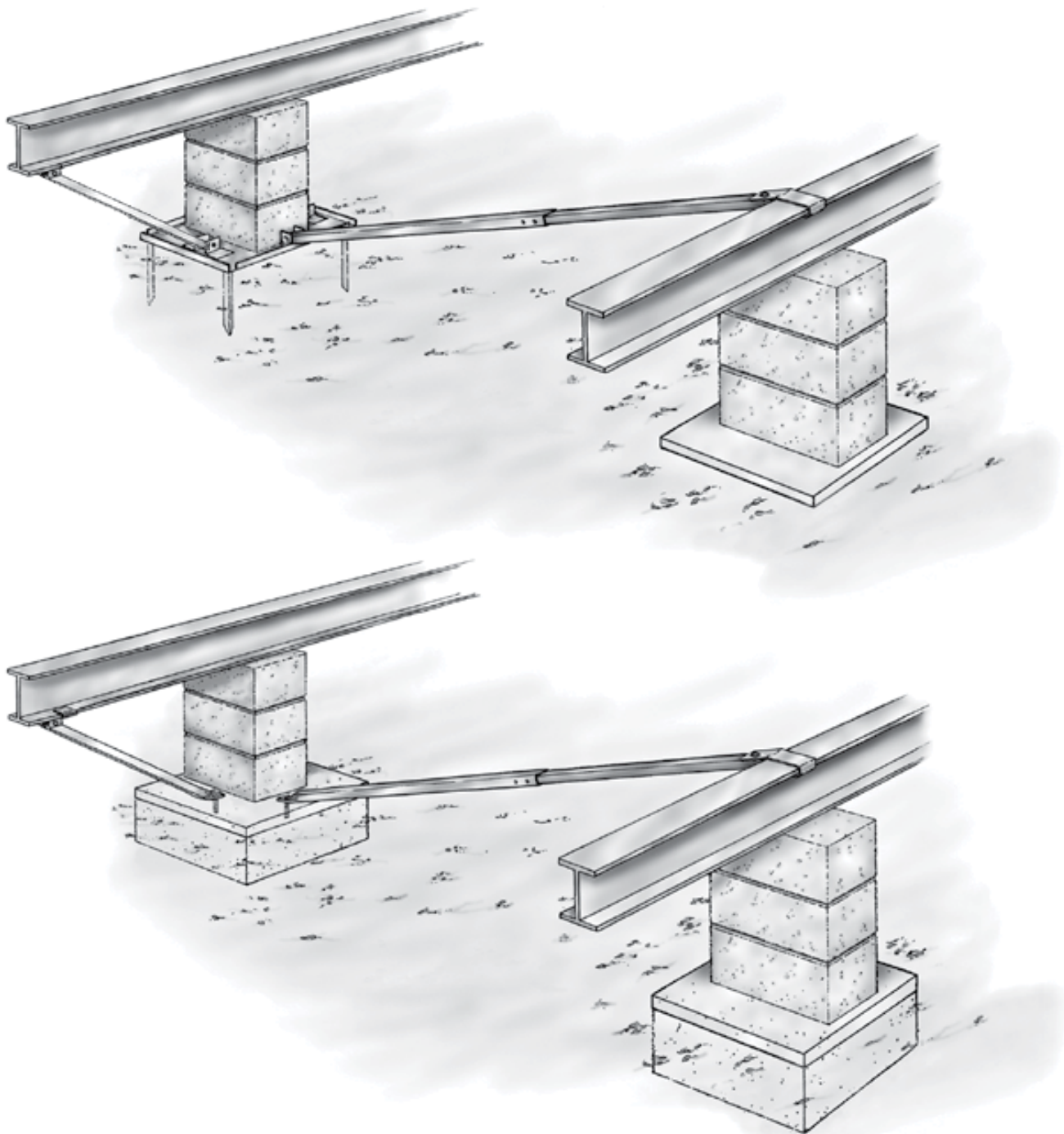


Minute Man Anchors

Installation Instructions for LLBS Longitudinal and Lateral Bracing System



Thank you for using Minute Man Anchors. If you have any questions, please call us
at: (800) 438-7277 • (828) 692-0256, info@minutemanproducts.com

MADE IN THE USA



LIMITED WARRANTY

Minute Man Anchors 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 WARRANT 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 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.



Wind Zone I

Patent# 6622439

12/1/09

**Installation Instructions for Model LLBS Longitudinal and
Lateral Bracing System Zones I**

The LLBS is not designed to be used as a supporting pier.

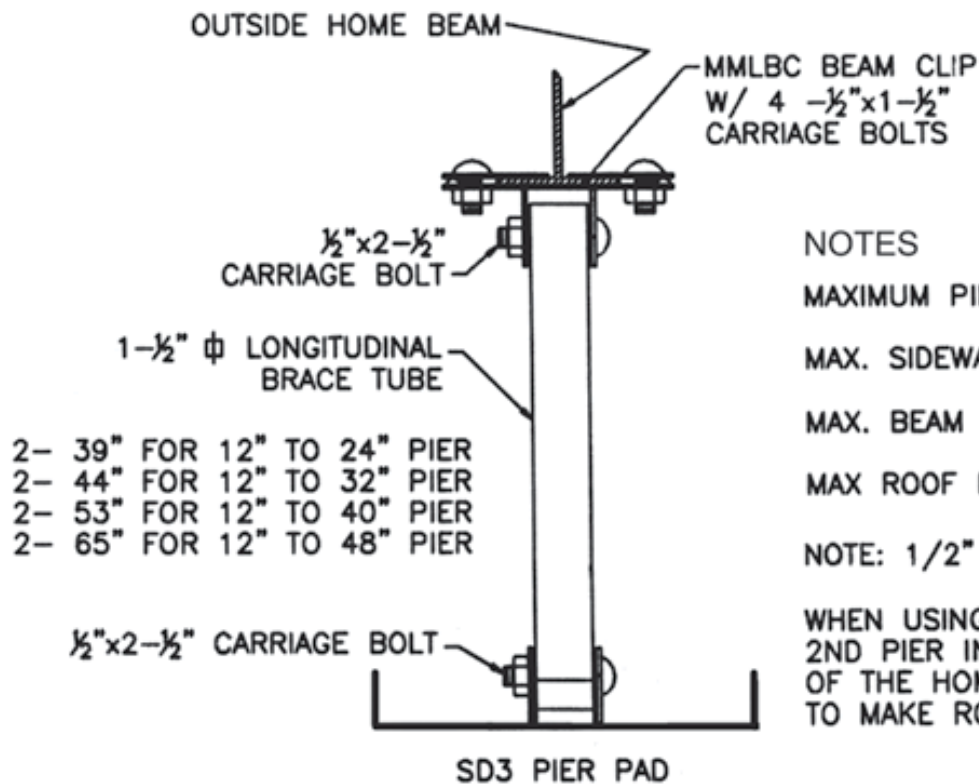
Note: Your set must be designed by a Registered Professional Engineer if the following conditions occur:

Location is within 1,500 feet of Coast
Pier Height exceeds 48"
Sidewall height exceeds 96"

Roof eaves exceeds 12"
Main beam spacing exceeds 99.5"

1. Refer to the Home Manufacturer Installation Instructions for pier locations. Refer to the home manufacturer installation instructions for required footing size and pier spacing. Note: SD3 pad is 2.8 sq. Ft. Vertical Sidewall and Marriage wall anchors may be required by the home manufacturer when using the MMA LLBS systems. See Manufacturer's instructions.* Max Pier Height 48"
2. Refer to the Systems Placement Plans for the location of Longitudinal Lateral Bracing System. **(See Attached)**
3. Remove turf to expose firm soil at each SD3 pad location. Install SD3 pad to manufacturer, state, local codes, and frost line guidelines as it may apply. For extremely hard or rocky soil, mark four [4] slots and pre-drill soil with a 3/4 x 12" masonry drill.
4. Attach tube clip to SD3 pier pads (see Detail Assembly Drawing) center pad under beam, level pad. Angle Drive Pins may be driven vertically through four (4) slots in SD3 pier pad now or after home is totally set. Angle drive pins may be driven up to ten degrees (10) off of vertical. If you choose to drive pins after home is set, do not cover slots in pier pad.
5. Level home on concrete blocks or steel pier by Minute Man.
6. Install Longitudinal and Lateral Bracing in accordance with System Placement Plan and Detail Assembly Drawing. **(1 longitudinal brace tube per system in Wind Zone I only).**
7. Approved uplift anchors with strap installed 75 to 90 degrees are required when using the MMLLB system. Reference uplift anchor chart for number of required anchors.

LONGITUDINAL BRACE DETAIL FOR SD3 PIER PAD



NOTES

MAXIMUM PIER HEIGHT 48"

MAX. SIDEWALL HEIGHT 96"

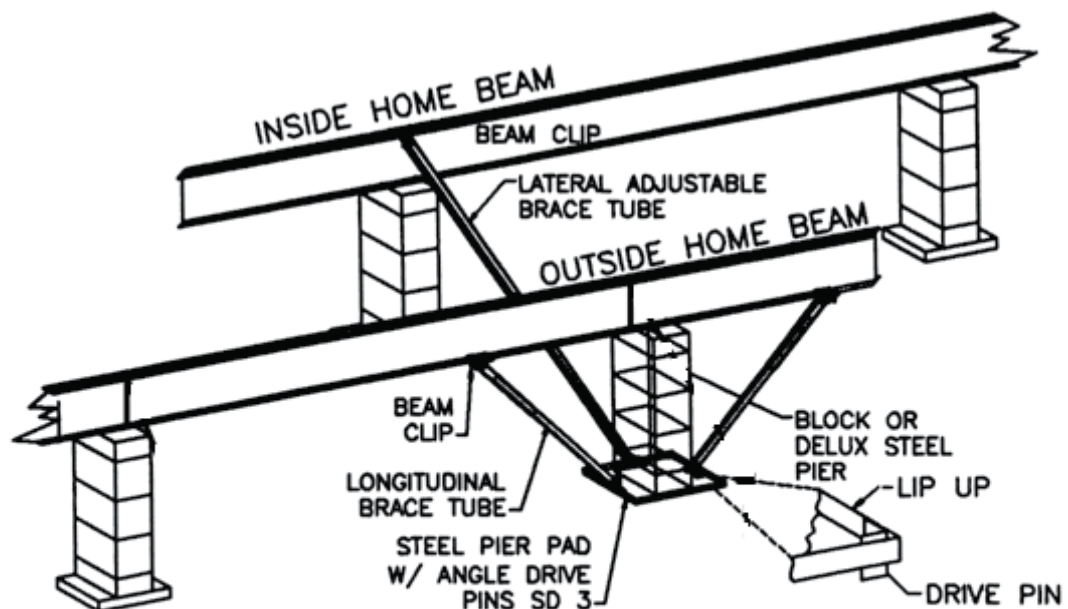
MAX. BEAM SPACING 99.5"

MAX ROOF EAVES 16"

NOTE: $\frac{1}{2}$ " 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 & LATERAL BRACING SYSTEM DETAIL ASSEMBLY DRAWING



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

Rev. 1/1/15

Rev. 9/6/24



ALTERNATE CONCRETE APPLICATION INSTRUCTIONS FOR MODEL LLBS LONGITUDINAL AND LATERAL BRACING SYSTEM FLEX TUBES WITH ADAPTER USING CONCRETE BLOCK PIERS OR STEEL PIERS

Refer to *Minute Man Anchors Installation Instructions* for LLBS Wind Zones I, II, III for the following information.

- The required number and locations of LLBS Systems.
- Home Manufactures anchor requirements where called for.
- LLBS System detail assembly drawing.

The Longitudinal and Lateral Bracing tubes are engineered to attach directly to **cast in place concrete** slabs, runners, square footers and round footers. Refer to HUD Code 3285.312(a)(i,ii) and HUD Code Part 32885.312(b)(1,2,3) for additional information.

Poured Concrete must be a minimum of 3,000 PSI at 28 days.

Concrete Runner at system LLBS locations must be a minimum of 26" wide by 6" deep with 3,000 psi concrete with a minimum 8 linear feet of runner surface per LLBS System location.

Concrete Slab must be a minimum of 6" deep 3,000 psi fiber mesh concrete with 16 sq. feet of slab per LLBS system location. Example 4'-0" x 4'-0".

Shallow Square Concrete Footers at LLBS system locations must be a minimum of 26" x 26" x 8" deep.

Concrete Pile Footers at LLBS systems locations must be a minimum of:

- 18" round or square x 14" deep for Class II soils
- 18" round or square x 18" deep for Class III soils
- 18" round or square x 24" deep for Class IV soils

Instructions

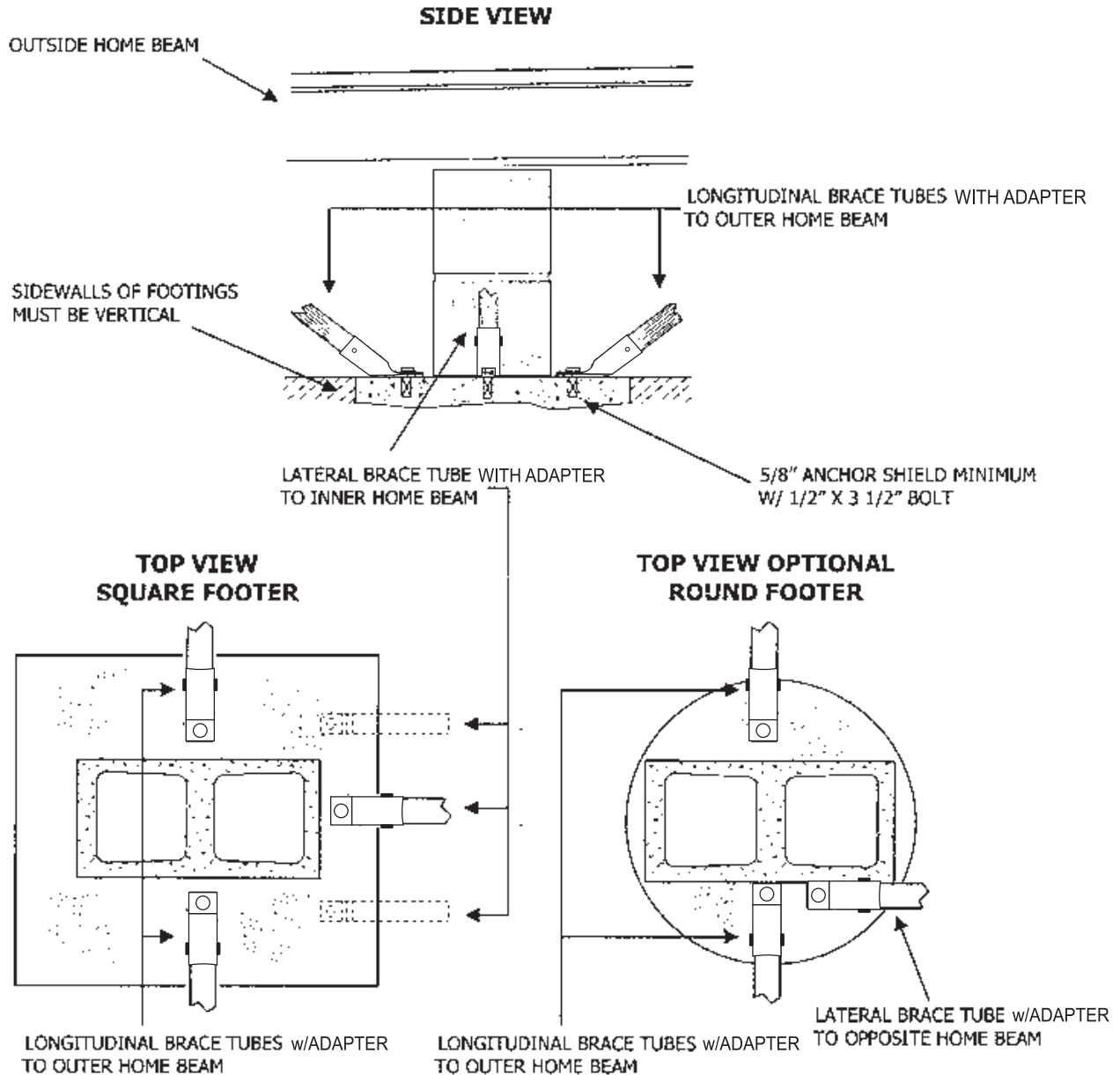
1. Place concrete block or steel pier on the centerline of footer and home's I beam.
2. Attach Flex Tube adapter to square end of *Lateral Brace Tube* and *Longitudinal Brace Tubes*.
3. For *Lateral Brace Tube*, loosely attach tube and hook to top flange of opposite I-beam. Extend flat bottom end of tube to desired location near the base of the pier and mark pilot hole for drilling.
4. For *Longitudinal Brace Tubes*, loosely attach beam clips to bottom flange of overhead I-beam. Slide flat bottom end of tubes to desired location near the base of pier and mark pilot holes for drilling.
5. **THE CENTERLINE OF THE HOLES FOR THE ANCHOR BOLTS MUST BE A MINIMUM OF 4" IN FROM THE EDGE OF THE CONCRETE FOOTING AND 4" FROM OTHER WEDGE BOLTS.**
6. Move flat bottom of Lateral and Longitudinal tubes to the side and drill pilot holes. Drill 5/8 x 3-1/2 holes for 5/8 x 3" wedge anchor. Clean dust from holes and insert wedge anchors full length of "wedge sleeve."
- 6b. For wet set anchor: align L shaped anchor with leg submerged completely in concrete with only threads extending upright above concrete surface.
7. Place tubes over embedded wedge anchors and tighten nuts (do not use washers). Bend tube to desired angle (when needed), attach top hook or beam clip. Tighten nuts on remaining system connections. All bolts to be tensioned 65 to 70 in. ft. lbs.

MADE IN THE USA

Minute Man + Anchors -

LLBS FLEX TUBES WITH ADAPTER

SAMPLE CONCRETE APPLICATION ILLUSTRATION WITH CONCRETE BLOCK OR STEEL PIER



Conventional footings must be placed below frost line depth for the site unless an insulated foundation or monolithic slab is used.
See HUD CODE part 3285.312(a)(i,ii) and part 3285.312(b)(1,2,3)

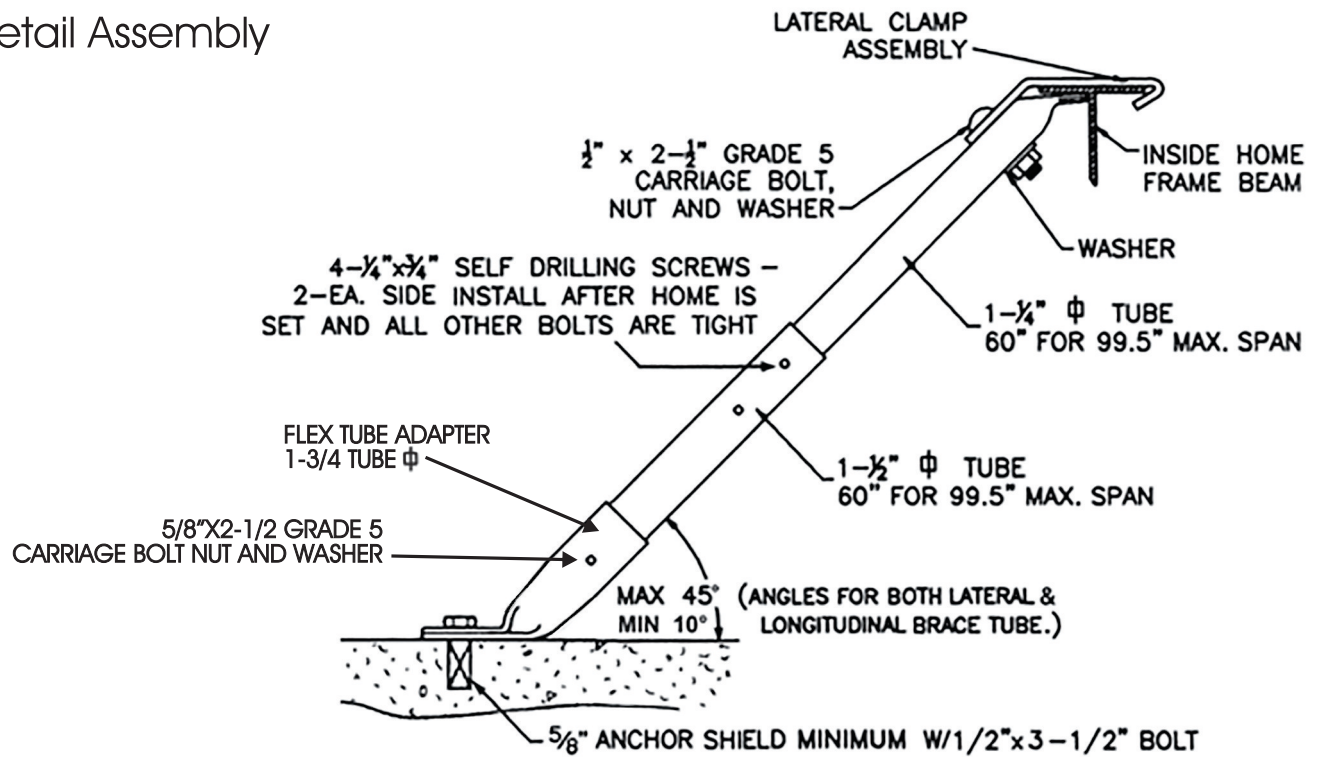
CENTERLINE OF HOLES FOR WEDGE ANCHORS MUST BE MINIMUM OF 4" IN FROM THE EDGE OF THE CONCRETE AND 4" FROM OTHER WEDGE ANCHORS.

DO NOT USE ANCHOR WASHER ON BRACE TUBES.

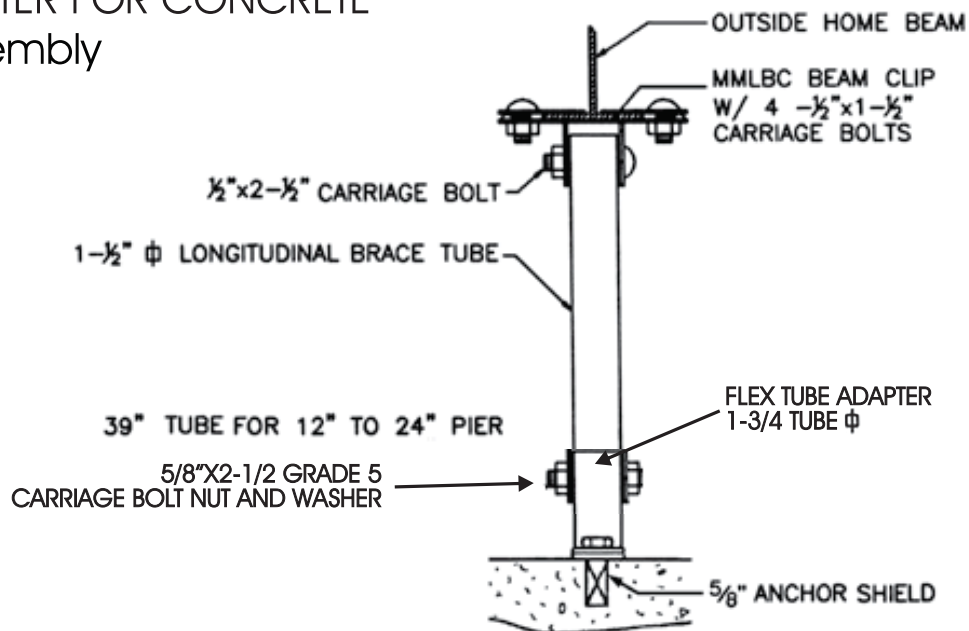
POURED CONCRETE MUST BE A MINIMUM OF 3,000 PSI AT 28 DAYS.

MADE IN THE USA

LATERAL BRACE FLEX ADAPTER FOR CONCRETE Detail Assembly

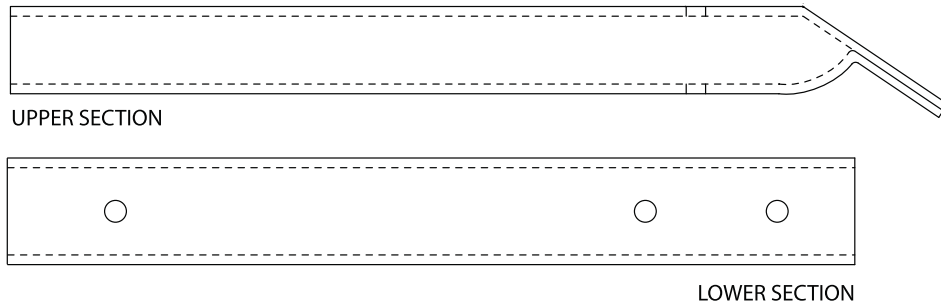


LONGITUDINAL BRACE FLEX ADAPTER FOR CONCRETE Detail Assembly

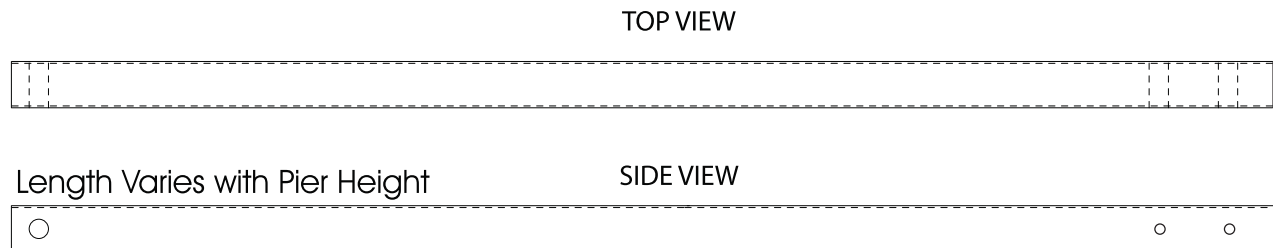


MADE IN THE USA

LATERAL BRACE TUBES FOR CONCRETE



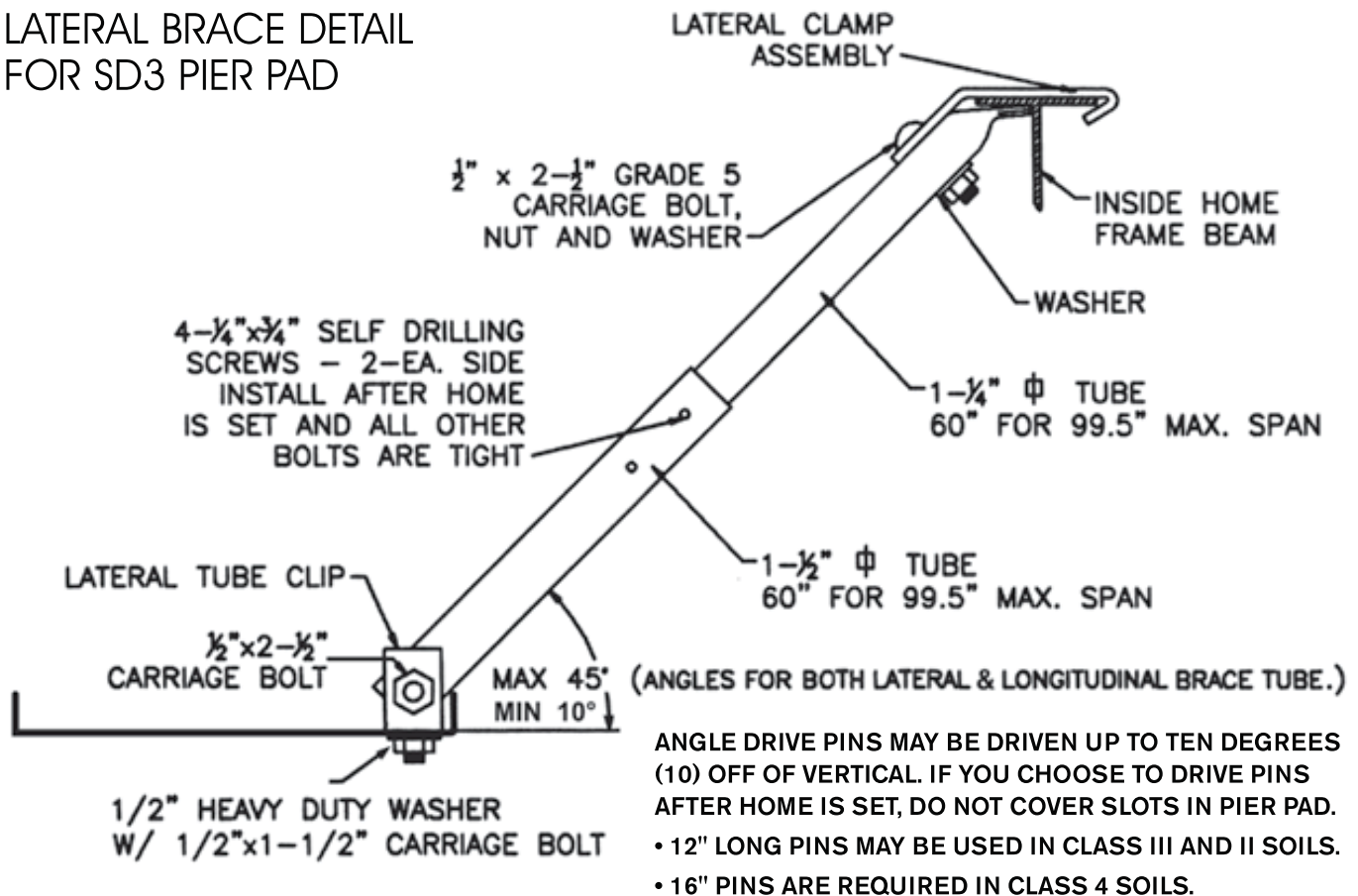
LONGITUDINAL BRACE TUBES FOR CONCRETE



FLEX TUBES ADAPTER



LATERAL BRACE DETAIL FOR SD3 PIER PAD

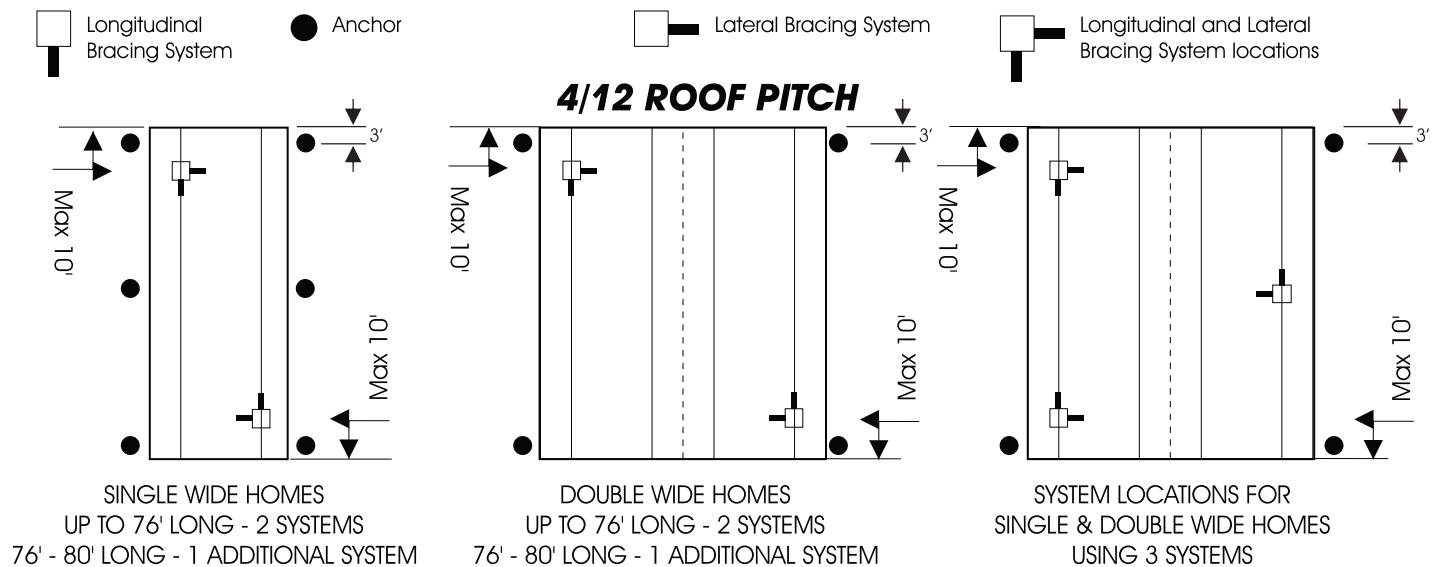


ZONE I LONGITUDINAL AND LATERAL BRACING SYSTEMS PLACEMENT

Approved uplift anchors with strap installed 75 to 90 degrees are required when using the MMA LLBS system. Uplift anchors are to be installed to the bottom of the rim joist along the sidewall with the approved sidewall bracket kit/lag bolts. An addendum is available allowing for the placement of required uplift anchors to be installed inward up to 10" on a floor joist for certain situations. All anchors must have a working load of 3,150 lbs. Systems must be as equally spaced as possible. Triple wide and tag units require 2 additional systems. Place additional systems at the corner ends of the exposed side of the home.

HOME DIMENSIONS REPRESENT BOX SIZE- FOR HOMES OVER 80' CALL MMA

Minimum uplift anchors required. Reference uplift anchor chart for additional required anchors.



LLBS System Requirements for roof pitches over 20° with 8' Sidewalls

Home's Length ft.	Roof Pitch/Degree of Slope				
	5:12	6:12	7:12	8:12	9:12
	22.62°	26.57°	30.26°	33.69°	36.87°
34'	2	2	2	2	2
36'	2	2	2	2	2
38'	2	2	2	2	2
40'	2	2	2	2	2
42'	2	2	2	2	3
44'	2	2	2	3	3
46'	2	2	2	3	3
48'	2	2	3	3	3
50'	2	3	3	3	3
52'	2	3	3	3	3
54'	3	3	3	3	3
56'	3	3	3	3	3

Home's Length ft.	Roof Pitch/Degree of Slope				
	5:12	6:12	7:12	8:12	9:12
	22.62°	26.57°	30.26°	33.69°	36.87°
58'	3	3	3	3	3
60'	3	3	3	3	3
62'	3	3	3	3	3
64'	3	3	3	3	4
66'	3	3	3	4	4
68'	3	3	3	4	4
70'	3	3	4	4	4
72'	3	3	4	4	4
74'	3	3	4	4	4
76'	3	4	4	4	4
78'	3	4	4	4	4
80'	3	4	4	4	4

Call Minute Man Products for system requirements on homes with 9' Sidewalls

Home Section	Home Width	4:12 Roof Pitch		5:12 Roof Pitch		6:12/7:12 Roof Pitch	
		Home Length (Act.Box Size)	Anchors per Side	Home Length (Act.Box Size)	Anchors per Side	Home Length (Act.Box Size)	Anchors per Side
Single	12' (Nominal) 140"	up to 57'	3	Contact Minute Man			
		58' to 88'	4				
	14'-18' (Nominal) 156" to 210"	up to 66'	3	Contact Minute Man			
		67' to 90'	4				
Double	20' (Nominal) (2)118"	up to 90'	2	up to 90'	3	up to 63'	3
						64' to 90'	4
	24'-32' (Nominal) (2)140" to (2)186"	up to 90'	2	up to 64'	2	up to 73'	3
				65' to 90'	3	74' to 90'	4
Triple	36'-48" (Nominal) (3)140" to (3)186"	up to 90'	2	up to 90'	2	up to 90'	2

Notes:

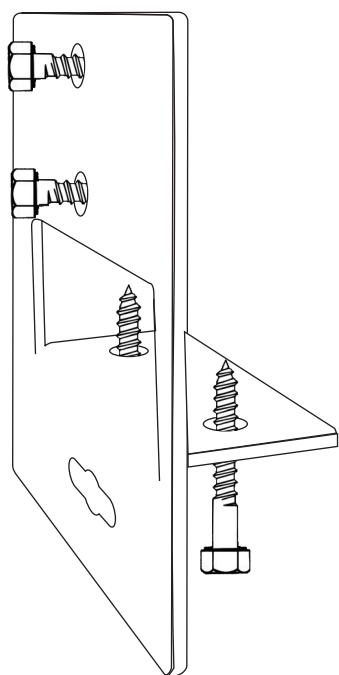
1. Home length refers to the size of the structure.
2. Anchors should be placed 3' from each end of the frame and evenly spaced.
3. Brackets to be rated at 3,150 lb. min. allowable.

Side Wall Bracket Installation

Position bracket to the bottom of rim joist.
Use (2) 3/8 x 3" lags, (2) 5/16 x 1" lags

Strap Installation

Through slot and crimp or 5/8 bolt on pivot clip





Patent Number
6622439

**Installation Instructions for Model LLBS Longitudinal and
Lateral Bracing System Zone II**

Note: Your set must be designed by a Registered Professional Engineer if all or one of the following conditions occur:

Location is within 1,500 feet of Coast
Pier Height exceeds 48"
Sidewall height exceeds 96"

Roof eaves exceeds 12"
Main beam spacing exceeds 99.5"

1. Refer to the Home Manufacturer Installation Instructions for pier locations. Note: SD3 pad is 2.8 square foot. Vertical tie anchors are required in accordance with home manufacturer. Vertical ties must be used at all connection points furnished by the home manufacturer. Marriage wall anchors are required in accordance with the Home Manufacturer Instructions.
2. Refer to the Systems Placement Plans for the location of Longitudinal Lateral Bracing System. **(See Attached)**
3. Remove turf to expose firm soil at each SD3 pad location. Install SD3 pad to manufacturer, state, local codes, and frost line guidelines as it may apply. For extremely hard or rocky soil, mark four (4) slots and pre-drill soil with a 3/4 x 12" masonry drill bit.
4. Attach tube clip to SD3 pier pads (see Detail Assembly Drawing) center pad under beam, level pad. Angle Drive Pins may be driven vertically through four (4) slots in SD3 pier pad now or after home is totally set. Angle drive pins may be driven up to ten degrees (10) off of vertical. If you choose to drive pins after home is set, do not cover slots in pier pad.
5. Level home on concrete blocks or steel pier by Minute Man.
6. Install Longitudinal and Lateral Bracing in accordance with Systems Placement Plan and Detail Assembly Drawing. **(2 longitudinal brace tubes per system in Wind Zone II & III).**
7. 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).

ZONE II LONGITUDINAL AND LATERAL BRACING SYSTEMS PLACEMENT

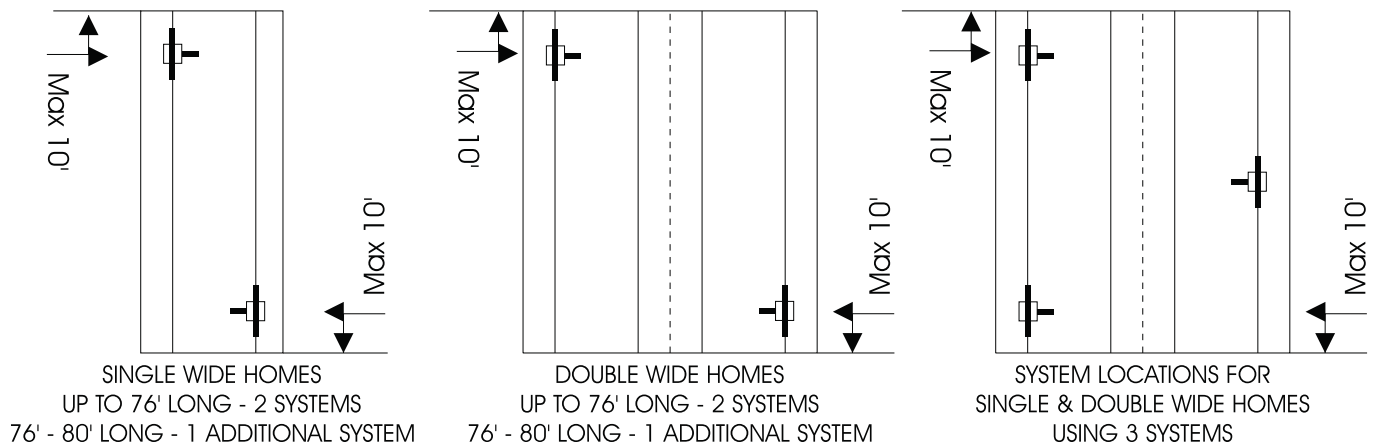
No frame ties or stabilizer plates required. **Vertical tie anchors are required in accordance with home manufacturer instructions.**

2 longitudinal brace tubes per-system required in Wind Zone II.



HOME DIMENSIONS REPRESENT BOX SIZE- FOR HOMES OVER 80' CALL MMA

4/12 ROOF PITCH



Home's Length ft.	Roof Pitch/Degree of Slope				
	5:12	6:12	7:12	8:12	9:12
	22.62°	26.57°	30.26°	33.69°	36.87°
34'	2	2	2	2	2
36'	2	2	2	2	2
38'	2	2	2	2	2
40'	2	2	2	2	2
42'	2	2	2	2	3
44'	2	2	2	3	3
46'	2	2	2	3	3
48'	2	2	3	3	3
50'	2	3	3	3	3
52'	2	3	3	3	3
54'	3	3	3	3	3
56'	3	3	3	3	3

Home's Length ft.	Roof Pitch/Degree of Slope				
	5:12	6:12	7:12	8:12	9:12
	22.62°	26.57°	30.26°	33.69°	36.87°
58'	3	3	3	3	3
60'	3	3	3	3	3
62'	3	3	3	3	3
64'	3	3	3	3	4
66'	3	3	3	4	4
68'	3	3	3	4	4
70'	3	3	4	4	4
72'	3	3	4	4	4
74'	3	3	4	4	4
76'	3	4	4	4	4
78'	3	4	4	4	4
80'	3	4	4	4	4

Call Minute Man Anchors for system requirements on homes with 9' Sidewalls



Patent Number
6622439

**Installation Instructions for Model LLBS Longitudinal and
Lateral Bracing System Approved for Florida**

Note: Your set must be designed by a Registered Professional Engineer if all or one of the following conditions occur:

Location is within 1,500 feet of Coast
Pier Height exceeds 48"
Sidewall height exceeds 96"

Roof eaves exceeds 12"
Main beam spacing exceeds 99.5"

1. Refer to the Home Manufacturer Installation Instructions for pier locations. 6" Disc anchors 48" long with vertical ties are required at maximum 5'-4" center along both sidewalls starting a maximum of 2'-0" in from each end of the home. Vertical ties must be used at all connection points furnished by the home manufacturer. Centerline anchors to be sized according to soil torque condition. Any manufacturer's specifications for sidewall anchor loads in excess of 4,000 lbs require a 5' anchor.
2. Refer to the Systems Placement Plans for the location of Longitudinal Lateral Bracing System. **(See Attached)**. Each system is required to have a frame tie and stabilizer attached at each lateral arm stabilizing location.
3. Remove turf to expose firm soil at each SD3 pad location.
4. Attach tube clip to SD3 pier pads (see Detail Assembly Drawing) center pad under beam, level pad. Angle Drive Pins may be driven vertically through four (4) slots in SD3 pier pad now or after home is totally set. Angle drive pins may be driven up to ten degrees (10) off of vertical. If you choose to drive pins after home is set, do not cover slots in pier pad. 16" Drive pins must be used in Florida.
5. Level home on concrete blocks or deluxe steel pier by Minute Man.
6. Install Longitudinal and Lateral Bracing in accordance with Systems Placement Plan and Detail Assembly Drawing.
7. 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).

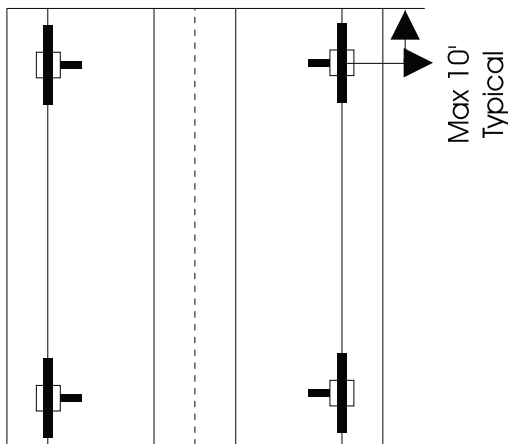
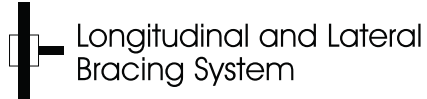
FLORIDA ZONE II AND III LONGITUDINAL AND LATERAL BRACING SYSTEMS PLACEMENT

For Roof slopes up to 4/12 pitch

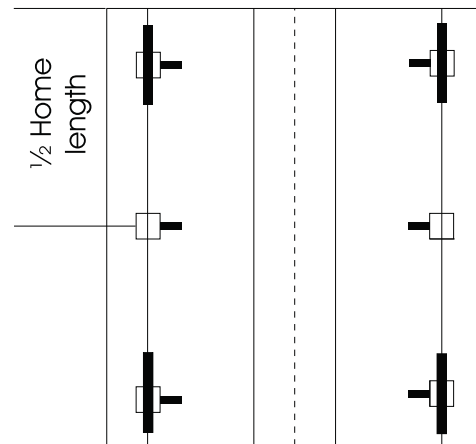
Each system is required to have a frame tie and stabilizer attached at each lateral arm stabilizing location.

HOME DIMENSIONS REPRESENT BOX SIZE

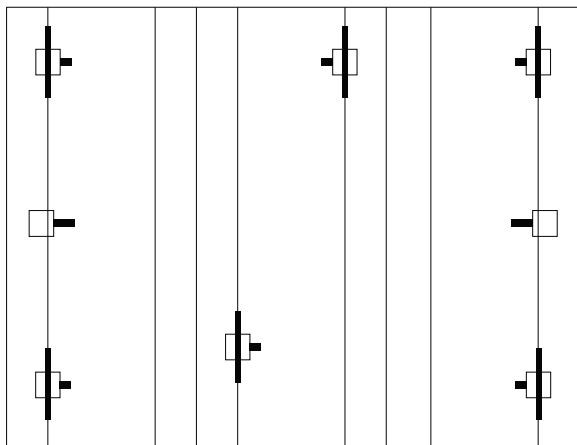
LEGEND



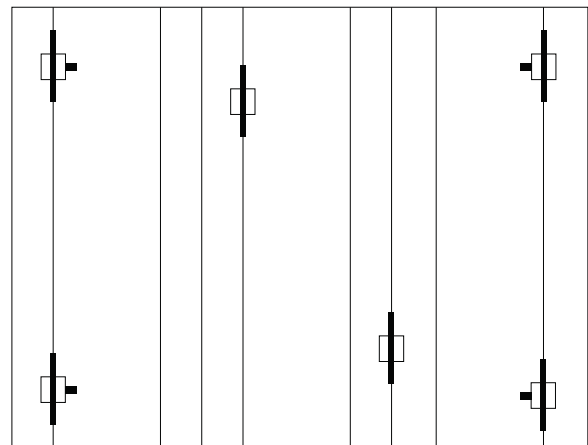
SINGLE AND DOUBLE WIDE
UP TO 48' LONG - 4 SYSTEMS
52' INCLUDING HITCH



SINGLE AND DOUBLE WIDE
49'-76' LONG - 6 SYSTEMS
80' INCLUDING HITCH



FOR TRIPLE WIDE OR TAG UNITS-
8 SYSTEMS OVER 52' BOX/ 56' INCLUDING HITCH



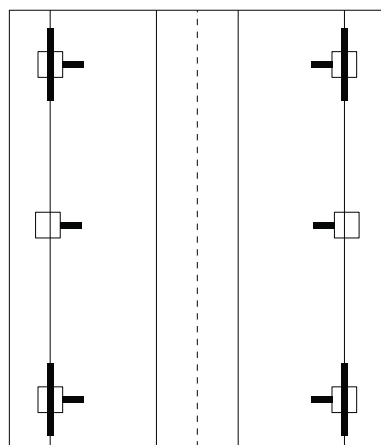
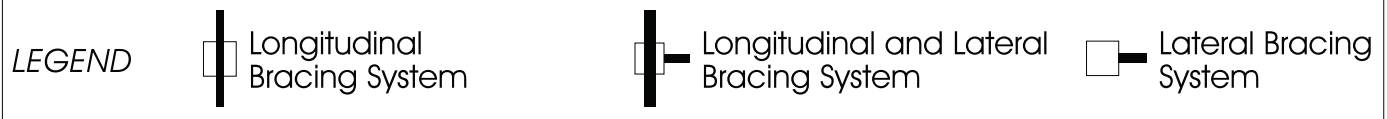
FOR TRIPLE WIDE OR TAG UNITS-
6 SYSTEMS UP TO
52' BOX/ 56' INCLUDING HITCH

FLORIDA ZONE II AND III LONGITUDINAL AND LATERAL BRACING SYSTEMS PLACEMENT

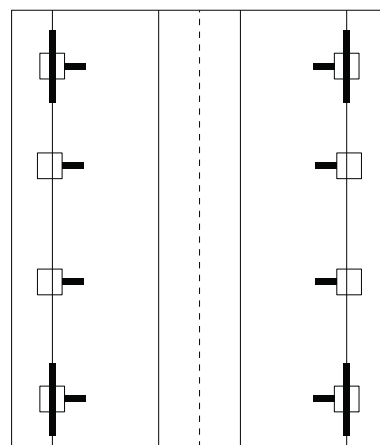
For 5/12 Roof Pitch

Each system is required to have a frame tie and stabilizer attached at each lateral arm stabilizing location. Systems must be as evenly spaced as possible.

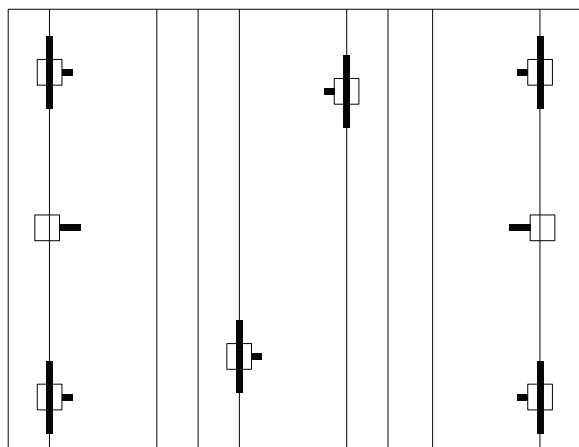
HOME DIMENSIONS REPRESENT BOX SIZE



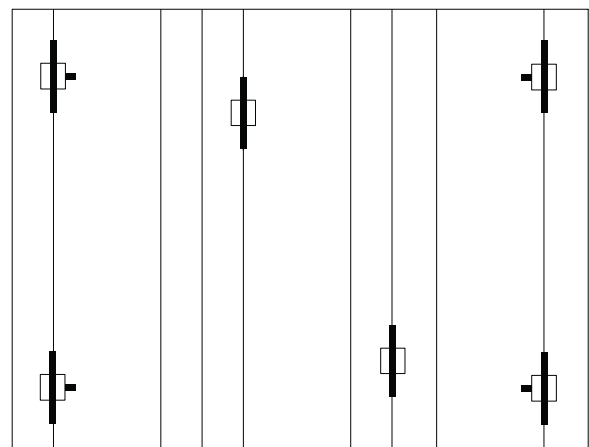
SINGLE AND DOUBLE WIDE
UP TO 32' WIDE AND 52' LONG
6 SYSTEMS
56' INCLUDING HITCH



SINGLE AND DOUBLE WIDE
UP TO 32' WIDE AND 76' LONG
8 SYSTEMS
80' INCLUDING HITCH



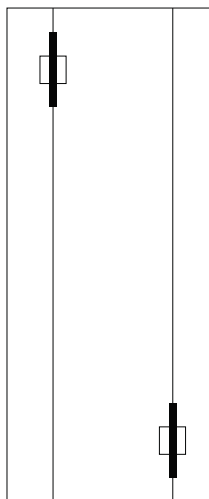
FOR TRIPLE WIDE OR TAG UNITS-
8 SYSTEMS OVER 52' BOX/ 56' INCLUDING HITCH



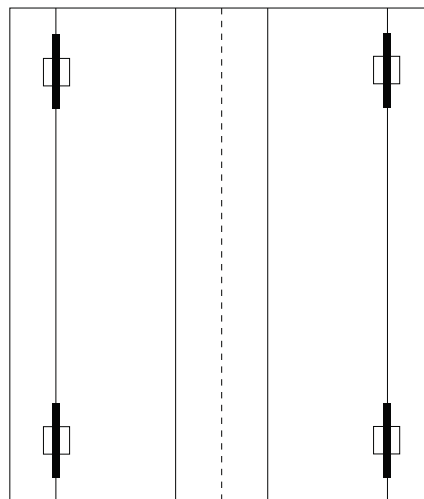
FOR TRIPLE WIDE OR TAG UNITS-
6 SYSTEMS UP TO
52' BOX/ 56' INCLUDING HITCH

LONGITUDINAL BRACING SYSTEMS PLACEMENT FOR FLORIDA

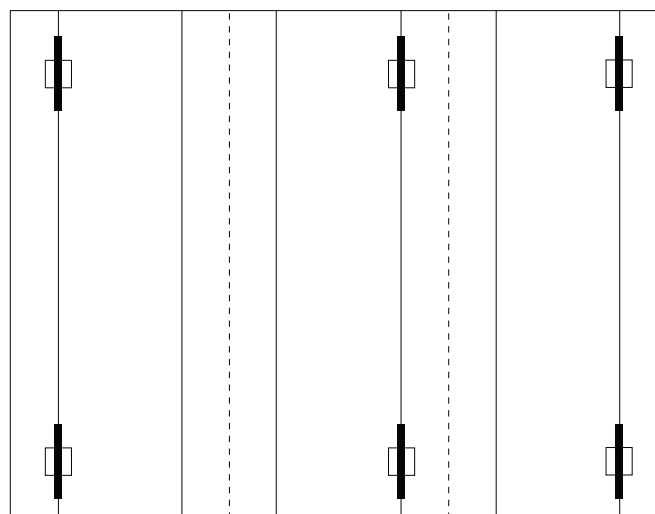
Use minimum 650 DH anchors and 180 square inch stabilizers with frames at maximums 5'-4" centers. Vertical ties must be used at all connection points furnished by the home manufacturer's instructions or in the case of used homes where designated on centerline. (SEE FLORIDA RULE 15C-1). Marriagewall anchors must be used in accordance with home manufacturers instructions. For roof slopes up to 5/12 pitch systems must be placed no more than 16' from end of home.



UP TO 16' SINGLE WIDE



UP TO 32' DOUBLE WIDE



UP TO 52' TRIPLE WIDE
OR DOUBLE WIDE WITH TAG

See Longitudinal and Lateral Bracing System detail assembly drawing.