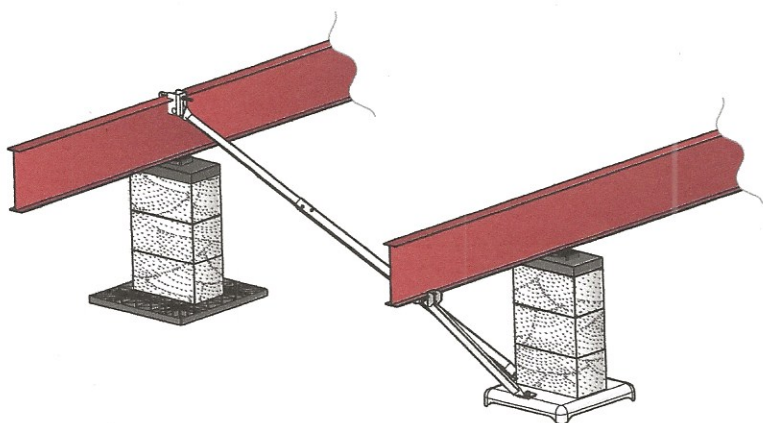




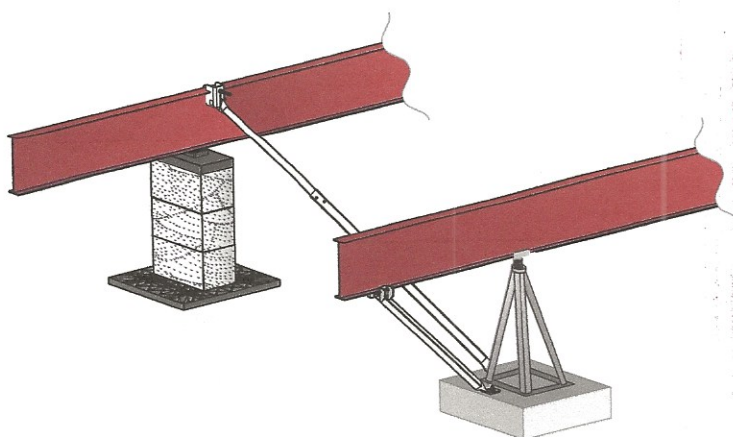
**Xi2-24 Foundation System**  
**Installation Instructions for California**  
**for Ground & Concrete Systems**  
**California Residential Code (CRC) 2022**  
**Wind = 105 mph Ultimate, Exposure C;**  
**Seismic Design Category Max. D2**  
**By Tie Down**



**Xi2-24 Ground System**



**Engineer Approval**



**Xi2-24 Concrete System**

**State Approval**

**MANUFACTURED HOME/MOBILE HOME  
 FOUNDATION SYSTEM  
 HEALTH AND SAFETY CODE, SECTION 18551  
 APPROVED**

**APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY  
 OMISSIONS OR DEVIATION FROM REQUIREMENTS OF  
 APPLICABLE STATE LAWS AND REGULATIONS**  
 State of California  
 Department of Housing and Community Development

**DIVISION OF CODES AND STANDARDS**  
 BY W.C. Farish IV DATE 9/10/24  
 SPA NO. 121-3F (signature)  
 This Plan Approval Expires 9/10/26

## Xi2-24 Foundation System

### Installation Instructions for California for Ground & Concrete Systems

**California Residential Code (CRC) 2022**  
**Wind = 105 mph Ultimate, Exposure C;**  
**Seismic Design Category Max. D2**  
**By Tie Down**

US Patent No.11,898,318

The Xi2 System (2024 Version) Instructions use the Lateral and Longitudinal struts to replace normal lateral frame tie and longitudinal end tie anchorage and stabilizer plates. The home manufacturer may require additional vertical anchor ties that are unique to a home's design. Check the manufacturers installation instructions for set-up requirements.

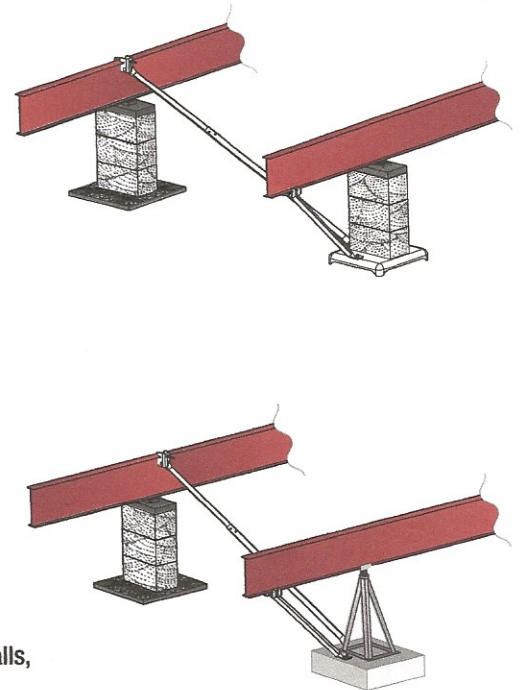
### REQUIREMENTS:

- These plans and specifications meet the requirements of Title 25 Section 1333 and Wind & Seismic Requirements, CRC 2022.
- The Xi2-24 System, with either a concrete footer or the steel pan, is installed at or in place of one of the piers required by the home manufacturer's set up instructions. The systems must be placed as evenly as possible. Measuring from the center of the pier, systems are to be located a minimum of 2' and a maximum of 1/4 the length of the home from each end of the home as shown on pier placement chart. Components of the Xi2-24 system such as the longitudinal strut and connecting hardware, may extend beyond the pier location.
- Maximum vertical projection at sidewall is 10' (see charts).
- Main rail spacing must be 75.5" - 99.5" (112" allowed with proper strut).
- The lateral and longitudinal components of the Xi2-24 System replace standard frame ties. Additional Vertical anchor ties that are unique to a home's design may be required by the home manufacturer. These locations may include shear walls, marriage line ridge beam support posts, and rim plates. Check manufacturers set-up requirements.
- Maximum pier height is 48".
- Maximum floor widths are 16' (single section), 32' (double) and 48' (triple).
- Steel piers must be fastened to the I-beam with clamps provided with steel pier.
- Designed for up to 6:12 roof slope.
- Flood Zone: A, AE or AH Zone flood plain (riverine or inland flood area); Max flood velocity - 1 fps; No waves, Bottom of home main beam is at or above BFE; bottom of main beam max 36" above natural grade. Not suitable for V zones, coastal A zones or floodways. Install Tie Down Engineering anchors per table (on page 7) to resist flotation.
- Designed to provide resistance up to Seismic Design Category D2 Earthquake Loads.
- Maximum roof live load is 100 psf (see charts).

### Additional Requirements for Concrete Systems

- Poured concrete must be 2,500 PSI minimum at 28 days.
- Footings must be large enough for pier load at that location and be a minimum of 22" wide by 6" deep with anchor wedge bolts a minimum of 4" from any edge, or 18" wide by 12" deep with wedge bolts a minimum of 1-1/2" from edge. Strip footings to be minimum of 18" wide by 14' long by 6" deep or 27" wide by 14' long by 4" deep.

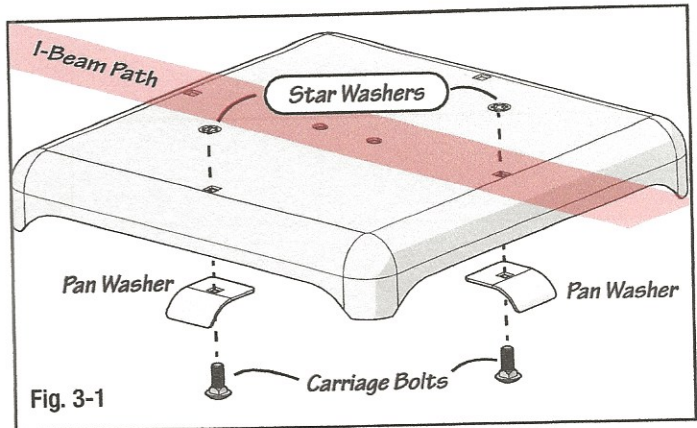
\* Xi2 components exceed HUD code 3280.306g requirements stating "Anchoring equipment exposed to weathering shall have a resistance to weather deterioration at least equivalent to that provided by a coating of zinc on steel of not less than 0.30 ounces per square foot of surface coating...."



# Installation of Xi2-24 Ground Systems

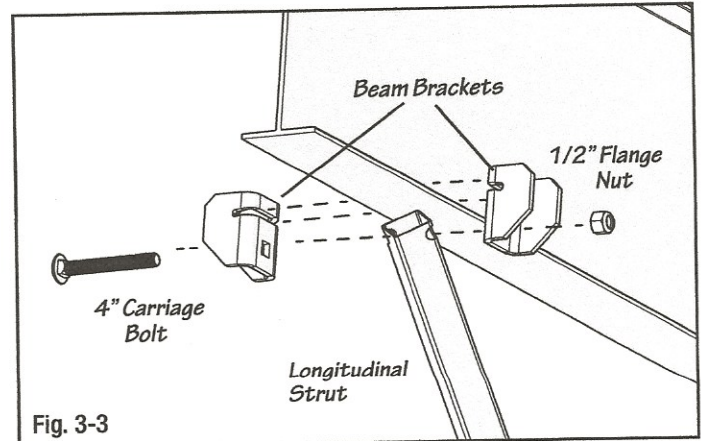
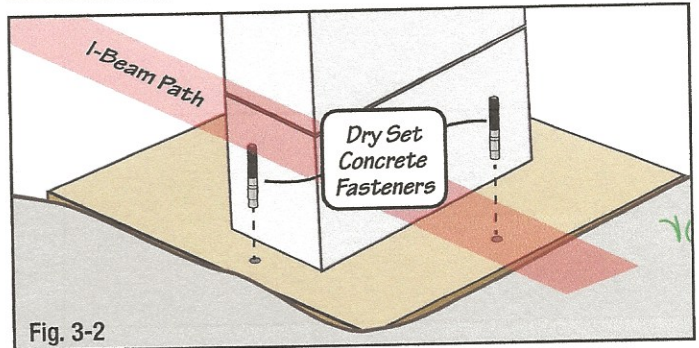
## Step 1 - Ground Pad

- Stand the ground pad on its side. Slide a carriage bolts through the pan washers passing through the ground pad as shown right in Fig 3-1.
- Attach two star washers over the carriage bolts on top of the ground pan, securing both bolts in place as in Fig 3-1.
- Clear all organic matter and debris from the pad site.
- Place pad centered under I-beam.
- Press or drive pan into ground until the top of the pan is level and flush with prepared surface.
- Stack the pier blocks as needed.



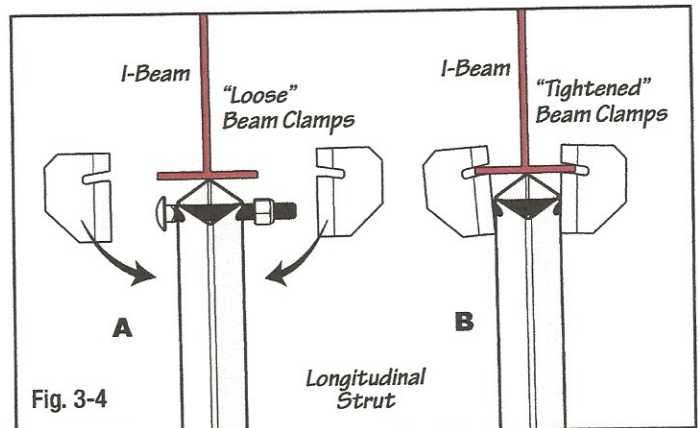
## Step 1 - Concrete Footer

- Build footer according to State Local, or Home Manufacturer's guidelines.
- **For Dry Set:** Depending on depth of footer, measure 1 1/2" from edge or 4" from edge of footer and drill a 3/8" x 3" hole on the side of the block under the beam for longitudinal and a hole at the end of the block for the lateral going across to the other beam. Place a nut and washer on the very top of anchor wedge bolt leaving no threads showing. Using a hammer, tap the bolts until snug in the hole, remove nut and washer and attach strut and pan washer to anchor bolt, followed by the washer and nut. Tighten wedge bolt to slab. **Note: Once the wedge bolts are set, proceed with standard installation steps.**
- **For Wet Set:** Follow steps for dry set except instead of drilling a hole in the footing insert the J bolt into the wet concrete up to the bottom of the threads at the proper placement and allow to dry.



## Step 2 - Longitudinal Beam Clamps

- Position two longitudinal beam clamps on both sides of the I-beam. The I-beam frame will slide into the slot on the clamp.
- Raise the longitudinal strut upward and position it between the two beam brackets as shown right in Fig. 3-3.
- Insert a 4" carriage bolt through the clamp, strut, and opposite clamp as shown right.
- Attach a flange nut to the carriage bolt. **Note: the two "loose" beam clamps will appear to be out of alignment with the frame as shown in Fig. 3-4 "A".**
- Do Not tighten beam clamps.



121-3F  
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# Xi2-24 Installation for Ground

## Step 3 - Longitudinal Strut

- Slide the end of the longitudinal strut over the carriage bolt on the ground pad.
- Slide a pan washer over the carriage bolt, install a flange nut over the carriage bolt as show right in Fig. 4-1
- Using a 3/4" deep socket/impact driver, tighten the flange nut on the ground pad.
- Pull outward on the longitudinal beam clamp removing any slack between the clamp and ground pad.
- Using a 3/4" deep socket/impact driver, tighten the flange nut on the beam clamp.

Note: As the bolt/nut tighten, the two beam clamps will begin to crimp the I-beam frame as shown in Fig. 4-4 "B".

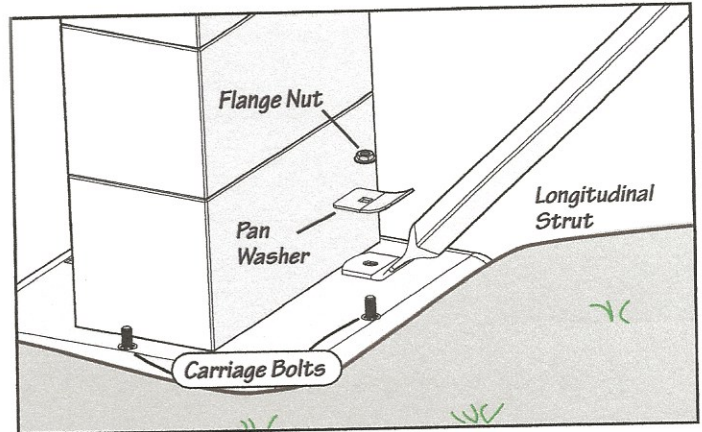


Fig. 4-1

## Lateral Strut Beam Attachment

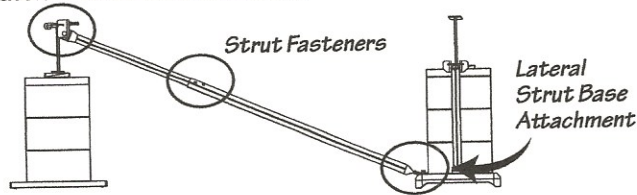


Fig. 4-2

## Step 4 - Lateral Strut Beam Attachment

- Extend the lateral strut outward to the opposite side I-beam as shown above. **NOTE: The fully extended strut must maintain a minimum 6" to 8" overlap between inner and outer tubes.**
- Slide the "J" bolt (10631Z) over the I-beam and between the home frame.
- Slide the beam clamp over the "J" bolt end passing through the top of the beam clamp and slide the clamp over the i-beam frame as shown in Fig. 4-3. Attach flange nut over the "J" bolt and loosely tighten nut.
- Align/insert the lateral strut end in the mounting slot on the bottom of the beam clamp as shown in Fig. 4-3.
- Pass a carriage bolt through the beam clamp and lateral strut coming out the opposite side beam clamp. Loosely tighten nut. Do not tighten nut.
- Slide the assembled beam clamp with the mounted lateral strut left or right aligning the strut perpendicular to the Xi2 Pan.
- Once the beam clamp/strut attachment is in its final location, tighten the two flange nuts.

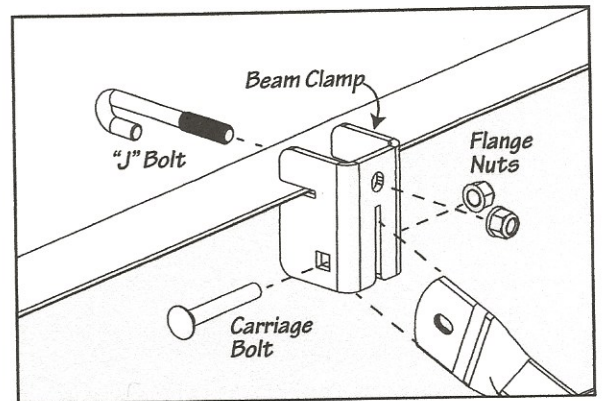


Fig. 4-3

## Step 5 - Lateral Strut Base Attachment

- Slide the end of the lateral strut over the carriage bolt on the ground pad.
- Slide a pan washer over the carriage bolt/lateral strut, install a flange nut over the carriage bolt as show right in Fig. 4-4.
- Using a 3/4" deep socket/impact driver, tighten the flange nut on the ground pad.
- Using a 3/4" deep socket/impact driver, tighten the flange nut on the beam clamp.

## Step 6 - Strut Fasteners

- Secure the extended lateral strut by mounting 4 self tapping screws in the 4 holes in the outer lateral tube as shown in Fig. 4-2. Attach two screws per side.

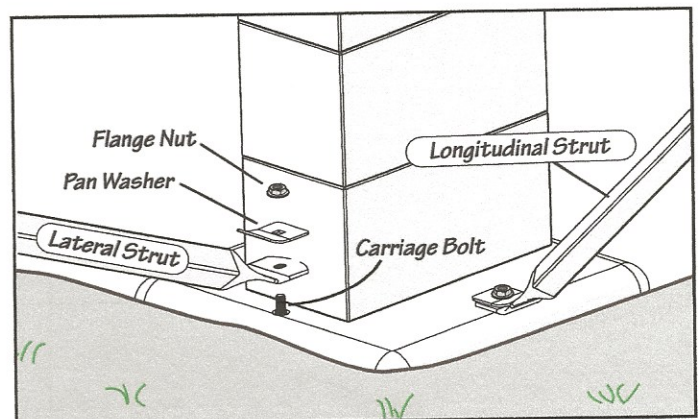


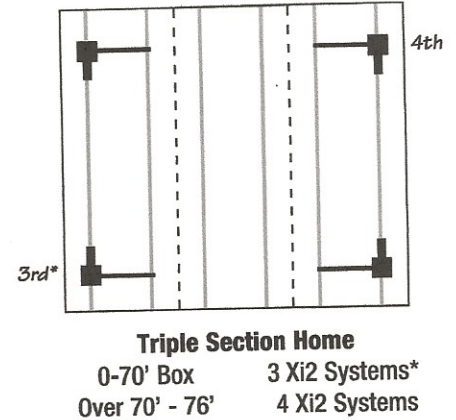
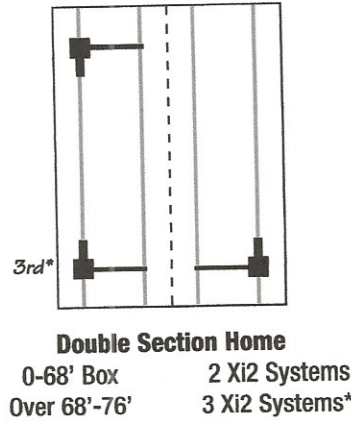
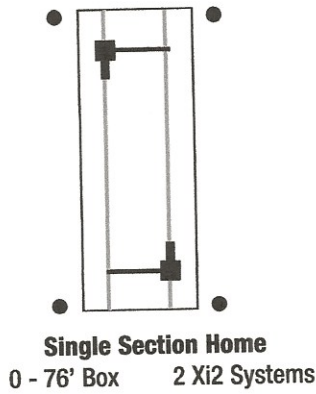
Fig. 4-4

# Xi2-24 Stabilization System Placement for up to 9 ft. Sidewall - 30 psf Roof



Approved Anchor with straps from 45 to 90 degrees

Both lateral and longitudinal systems at each location.



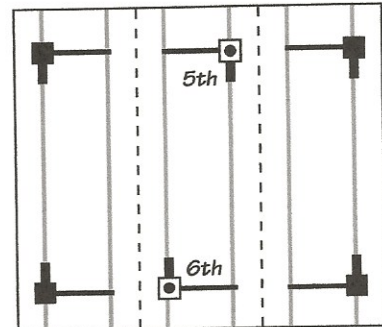
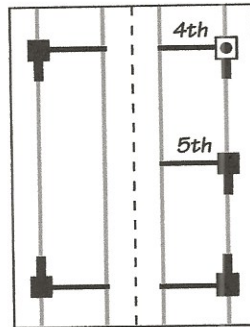
\*3rd Xi2 system can be placed at either end of the home.

## Xi2-24 Stabilization System Placement for 10 ft. Sidewall - 100 psf Roof

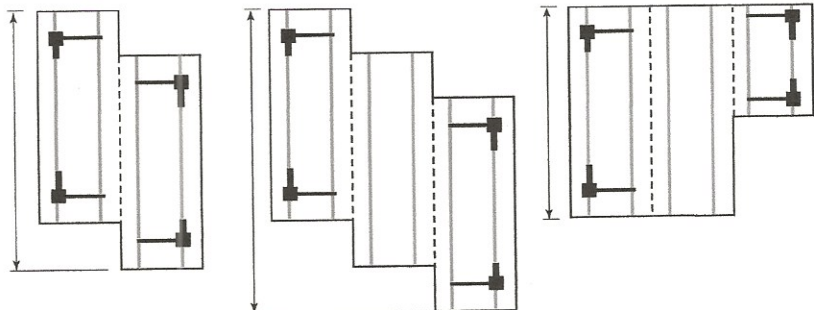


\*2 Xi2 systems can be placed at either end of the home.

Both lateral and longitudinal systems at each location.



## Offset Placement

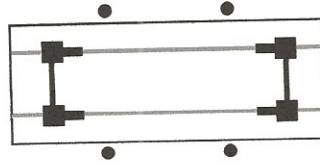


Diagrams represent examples of double and triple section offsets. Total size is determined by the length of unit plus offset. The number of systems needed would be based on Home Size Charts. For "Quad" Units install systems as 2 Double sections.

**Alternate Anchoring Method:** As an alternate to the requirement for ground anchors at the corners of a single section home, approved concrete anchors may be installed into poured concrete footings 18" x 18" x 48" deep. If shallow footing are desirable, and local frost line requirements allow it, footings a minimum of 24" x 24" x 12" deep may be used, with an anchor, at all four corners with the addition of one footing and anchor in the middle of each side, for a total of 6.

Anchors along the sides of a single section may have the straps connecting either vertically to the sidewall, or diagonally to I-beam.

# FEMA Flood Zones A, AE & AH



Anchor placement to be the same on single or multiple sections. Evenly spaced from the end of unit, between Xi2 placements.

When using concrete anchors in Lieu of ground auger anchors, the Mass of Concrete Per Anchor from chart would be: 21.1 Cu. Ft.  
 (Example: 3'x 3'x 2.5' = 22.5' Cu. Ft., 2' dia. x 3.5' = 22' Cu. Ft.)

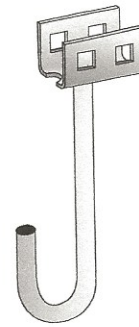
To Reduce the Mass of Concrete, increase the number of tie downs proportionally.

To Reduce concrete to 11 cu. ft. (Example: 2.25' x 2.25' x 2.25' = 11.4 Cu. Ft.) double the required number of tie downs.

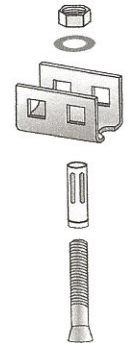
Flotation Anchors Single Section	Total Anchors Per Side
12' x 40' - 16' x 80'	2
<b>Multiple Section</b>	
20' x 40' - 20' x 64'	2
24' x 40' - 24' x 56'	2
Over 56'	2
28' x 40' - 28' x 48'	2
28' x 49' - 28 x 72'	2
Over 72'	2
32' x 56' - 32' x 64'	2
Over 64'	2

## Concrete Anchors

Concrete must be 2500 PSI minimum slab with a 4" minimum thickness and must allow 4725 lbs. of vertical tension on anchor without lifting. Minimum distance from the anchor shaft to one edge of the slab is 4" from one edge and 6" from any other edge. MIJ2 anchor is designed to be installed into the concrete at the time it is being poured. Slab must be 8" minimum thickness at location under anchor to allow 5" embedment of "J" rod anchor. MICS2 anchor is designed to be installed in dry concrete. Drill a 5/8" x 3" hole in the slab place expansion bolt in hole, place washer and nut over bolt and tighten until maximum expansion is achieved. Remove nut and washer and place anchor head over exposed bolt and place washer and nut back on threaded bolt and tighten nut.



MIJ2  
"J" Anchor

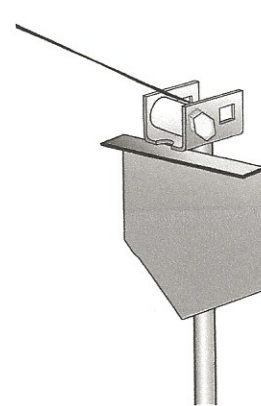


MICS2

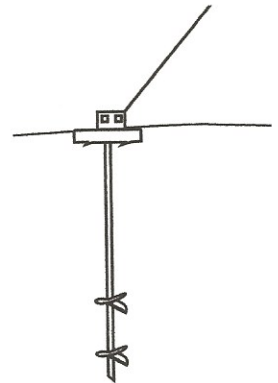
## Ground Anchors

All Frame tie ground anchors must be stabilized to prevent horizontal slicing through the soil.

1. Position anchor at a slight back angle so that when Fully installed, anchor will be inside skirting wall.
2. For vertical or stabilized (Deepset) anchors, fully drive anchor into the ground. Horizontal (Frame Tie) anchors install 2/3 of way in ground and install stabilizer plate vertically within 3"-4" of the shaft, parallel to home.
3. Drive anchor fully into ground until head rests on plate and attach strap. Pretension strap to pull anchor against plate with head slightly over top.



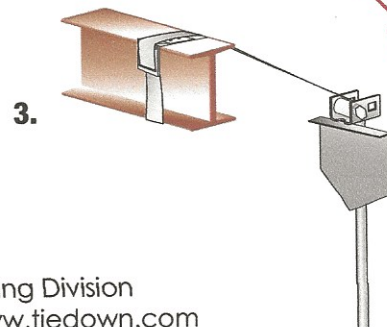
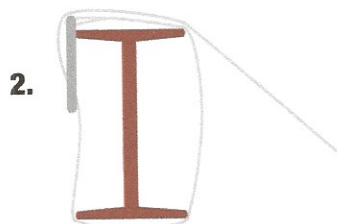
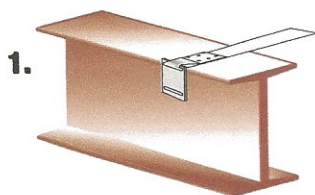
Stabilizer Plate



Deepset Anchor

## Frame Tie with Buckle

1. Install strap by pushing the end between the inside of The frame "I" beam and floor.
2. Position the buckle at the upper end of the "I" beam frame. Wrap the end of the strap around the "I" beam. Thread the end of the strap through the slot in the buckle as shown. Push the end of the strap in between the "I" beam and floor.
3. Pull the strap, making certain the buckle stays in position. Thread loose end of strap through the slotted tensioning bolt attached to the tension head of anchor. Tighten slotted bolt a minimum of 4-5 turns until all slack in strap is removed.



121-3P  
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## Soil Classification Chart

Soil Class	Soil Description	Recommended Anchors and Stabilizers		
		Model #	STK#	Description
2	Sedimentary and Foliated Rock	MI2255/8	59090	30" x 5/8" rod / 2 - 4" helix
		MI2233/4	59095	30" x 3/4" rod / 2 - 4" helix
			59292	Stabilizer Plate
3	Sandy Gravel and/or Gravel (GW and GP)	MI2H5/8	59080	48" x 5/8" rod / 1 - 6" helix
		MI2H3/4	59085	48" x 3/4" rod / 1 - 6" helix
		Deepset	59091	30" x 3/4" rod / 2 - 4" helix with stabilizer cap
			59292	Stabilizer Plate
4	Sand, Silty Sand, Clayed Sand, Silty Gravel	MI2H5/8	59080	48" x 5/8" rod / 1 - 6" helix
		MI2H3/4	59085	48" x 3/4" rod / 1 - 6" helix
		Deepset	59092	36" x 3/4" rod / 1 - 4" & 1 - 6 helix with stabilizer cap
		MI48	59086	48" x 3/4" rod / 2 - 4" helix
		MI42	59128	42" x 3/4" rod / 2 - 4" helix
	59292	Stabilizer Plate		

Higher class anchors can be used in lower class soils. Example; Class 4 anchors can be used in Class 3 soils.

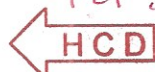
The required flotation anchors shown in the table are in addition to any other anchors or hold down devices required by the manufacturer. See requirements, bullet 5, page 2 of 8.

### Xi2 System Requirements for Roof Pitches Higher than 20 degrees

#### Additional Systems:

On a single section home, the 3rd system is placed in the middle of the home. When using 3 or 4 systems (double and triple sections), install on opposite corners. If needed, a 5th system would be in the center of the unit on either side.

Module Length (Feet)	Wind Zone I			
	5:12	6:12	7:12	9:12
34	2	2	2	2
36	2	2	2	2
38	2	2	2	3
40	2	2	2	3
42	2	2	3	3
44	2	2	3	3
46	2	3	3	3
48	2	3	3	3
50	3	3	3	3
52	3	3	3	3
54	3	3	3	3
56	3	3	3	3
58	3	3	3	3
60	3	3	3	3
62	3	3	3	3
64	3	3	4	4
66	3	3	4	4
68	3	4	4	4
70	3	4	4	4
72	3	4	4	4
74	4	4	4	5
76	4	4	4	5
78	4	4	4	5
80	4	4	4	5

121-3F  
  
 Exp 9/10/26

## Xi2-24 Ground Parts Detail

### 5 ft. Xi2 Ground System

#### 59831 Kit Includes:

- (1) Steel Pan
- (1) 5 ft. Lateral Strut
- (1) Lateral Hardware Kit

### 6 ft. Xi2 Ground System

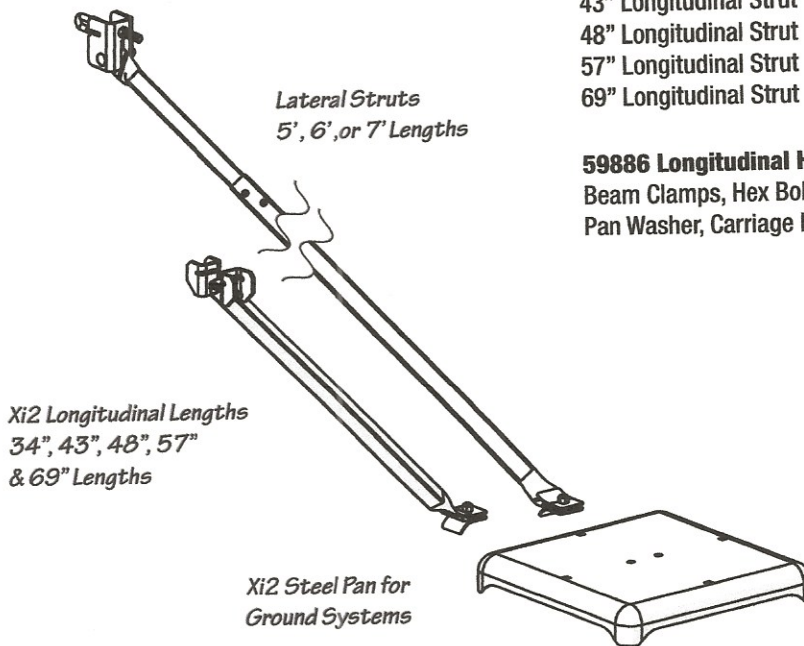
#### 59832 Kit Includes:

- (1) Steel Pan
- (1) 6 ft. Lateral Strut
- (1) Lateral Hardware Kit

### 7 ft. Xi2 Ground System

#### 59833 Kit Includes:

- (1) Steel Pan
- (1) 7 ft. Lateral Strut
- (1) Lateral Hardware Kit



### Xi2 Longitudinal Struts

34" Longitudinal Strut	Part ID: 59811
43" Longitudinal Strut	Part ID: 59812
48" Longitudinal Strut	Part ID: 59813
57" Longitudinal Strut	Part ID: 59814
69" Longitudinal Strut	Part ID: 59815

### 59886 Longitudinal Hardware Kit Includes:

Beam Clamps, Hex Bolt, Serrated Nuts,  
Pan Washer, Carriage Bolt, & Star Washer

## Xi2-24 Concrete Parts Detail

### 5 ft. Xi2 Concrete System

#### 59841 Kit Includes:

- (1) 5 ft. Lateral Strut & Hardware
- (1) Lateral Hardware kit

### 6 ft. Xi2 Concrete System

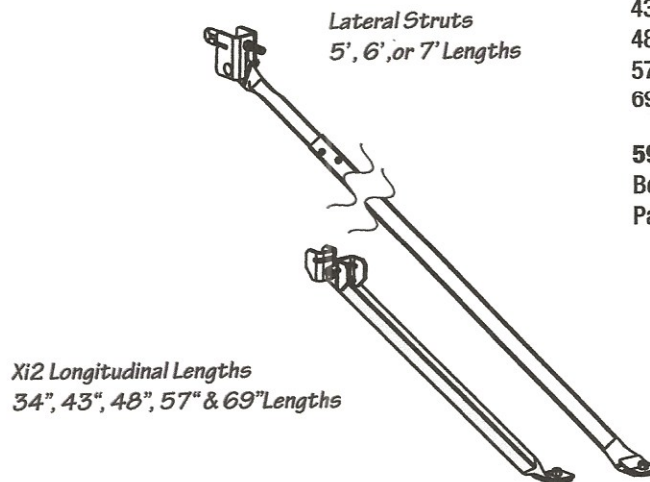
#### 59842 Kit Includes:

- (1) 6 ft. Lateral Strut & Hardware
- (1) Lateral Hardware kit

### 7 ft. Xi2 Concrete System

#### 59843 Kit Includes:

- (1) 7 ft. Lateral Strut & Hardware
- (1) Lateral Hardware kit



### Xi2 Longitudinal Struts

34" Longitudinal Strut	Part ID: 59811
43" Longitudinal Strut	Part ID: 59812
48" Longitudinal Strut	Part ID: 59813
57" Longitudinal Strut	Part ID: 59814
69" Longitudinal Strut	Part ID: 59815

### 59876 Longitudinal Hardware Kit Includes:

Beam Clamps, Hex Bolt, Serrated Nuts,  
Pan Washer, Carriage Bolt, & Wedge Bolt

121-3F  
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Exp 9/10/26