

Tiedown Engineering, Inc. – Xi2 Foundation System

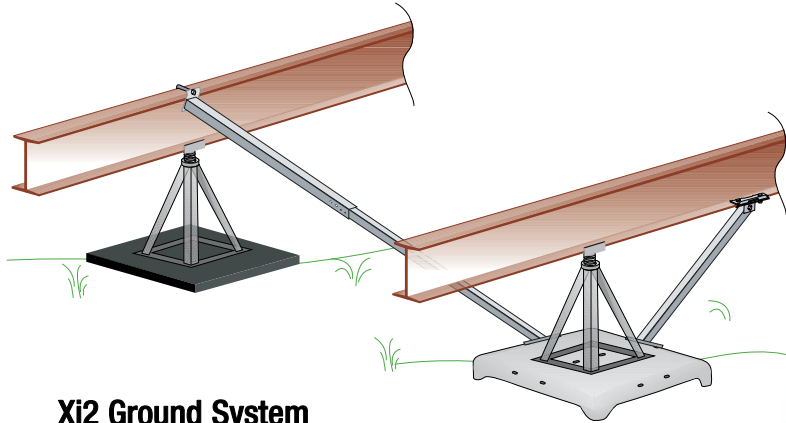
The following are the requirements for using the Xi2 Foundation System from Tiedown Engineering, Inc.:

- Approved for HUD coded homes ONLY
- Homes must **not** be located within 1500 feet of the coast
- Approved for Wind Zone 1, 2 and 3
- Main I-beam spacing 75.5 inches – 99.5 inches
- Maximum main I-beam depth 12 inches
- Maximum pier height 48 inches
- Maximum sidewall height 108 inches
- Vertical tiedowns must be used at all connection points furnished/required by the manufacturer along the sidewall and marriagewall
- Max roof pitch 9/12
- Maximum width 16 feet nominal width – singlewide
- Maximum width 36 feet nominal width – doublewide
- Maximum width 48 feet nominal width – triplewide
- Soil conditions must equal or exceed 4B



Xi2 Foundation System
Installation Instructions for California
for Ground & Concrete Systems
California Building Code (CBC) 2007
Wind 85 mph, Exposure C;
Seismic Design Category D
By Tie Down Engineering
May 16, 2008

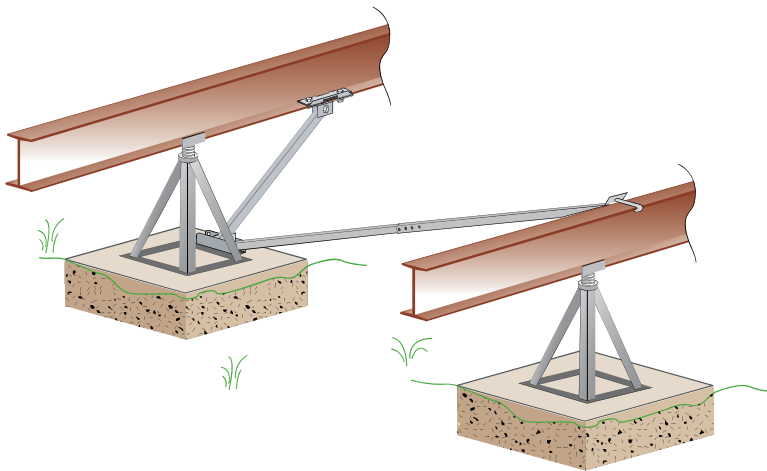
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& SAFETY STANDARDS
07
7/25/2008
APPROVED



Xi2 Ground System



Engineer Approval



Xi2 Concrete System

State Approval

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

SUBJECT TO CORRECTIONS NOTED

**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 Andrewell DATE 6/5/08
(signature)
SPA NO. 121-F
This Plan Approval Expires 7/26/09





Xi2 Foundation System

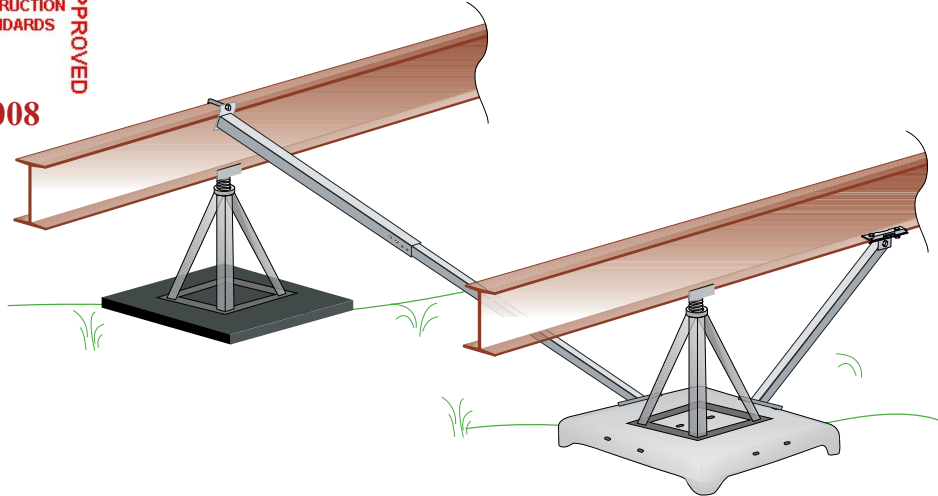
Installation Instructions for California

for Ground & Concrete Systems

CBC-07, 85 mph Wind Exposure C; Seismic Category D

By Tie Down Engineering

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REQUIREMENTS

- These plans and specifications meet the requirements of Title 25 Section 1333 and Wind & Seismic Requirements, CBC 2007.
- Maximum vertical projection at sidewall is 9'. Higher walls may be used when the design loads are adjusted accordingly and approved by HUD.
- Main rail spacing must be 75.5" - 99.5" * Except single sections 95" minimum
- 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. The longitudinal component of the Xi2 system replaces end frame ties. Check manufacturers set-up requirements.
- Maximum pier height is 48" pier. *Except for single sections 36".
- Steel piers must be fastened to the I-beam with clamps provided with steel pier.
- Systems must be placed as evenly as possible, no more than 10' from end of home.
- Designed for 7:12 roof slope. *Except single sections, (20° - 4.37 in. 12" pitch).

Additional Requirements for Concrete Systems

- Poured concrete must be 2,500 PSI minimum at 28 days.
- Square concrete pads minimum is 18" wide by 12" deep. Round concrete pads minimum is 18" wide by 14" deep. Strip footings minimum is 18" wide by 14' long by 6" deep.

* Xi2 components exceed HUD code 3280.306g "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..."

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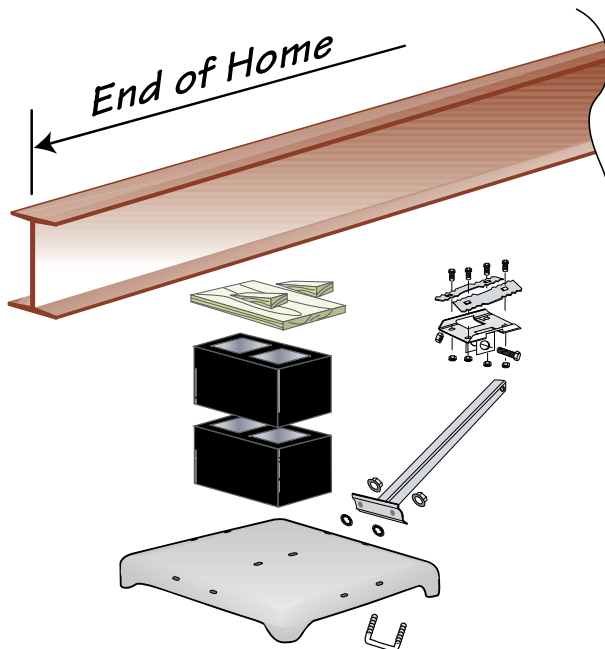
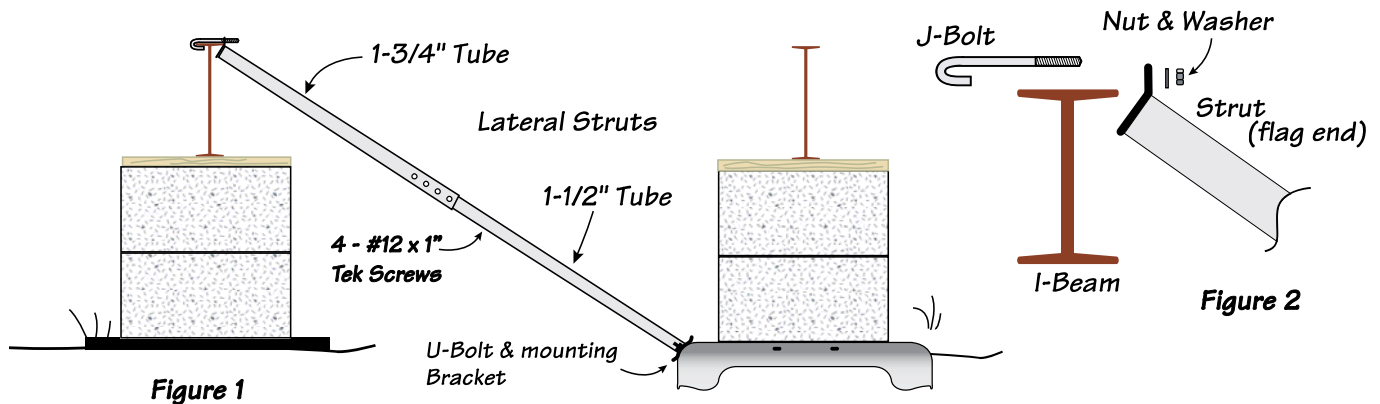


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Installation of Xi2 Ground Systems

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1. Identify the number of systems to be used on the home using the chart provided.
2. Identify the location where the systems will be installed.
3. Clear all organic matter and debris from the pad site.
4. Place U-bolts through holes in pan provided.
5. Place pad centered under beam with the lateral strut bracket towards the inside of the home.
6. Press or drive pan into ground until level and flush with prepared surface.
7. Build pier according to State, Local or Home Manufacturers guidelines. **(Figure 1)**
8. Attach the end of the smaller tube to the inside of pan using U-bolt & nuts provided
9. Attach the flag end of the larger tube to the opposite I-beam using the "J" bolt over the top of the I-beam with the nut & washer provided. **(Figure 2)**
10. Install a minimum of four (#12 x 1" tek screws) self-tapping screws into the holes provided in the lateral strut so that the two tubes are connected together. **(Figure 1)**



11. Install frame bracket clamps to I-beam on inside of block/pier. Do not tighten nuts at this time.
12. Attach longitudinal strut to U-bolt in pan using nuts provided.
13. Insert strut in the frame bracket clamp, attach with nut and bolt. Do not tighten at this time.
14. Pull the frame bracket clamp with the fastened strut outward to remove any slack.
15. Tighten all nuts and bolts on the struts and beam clamps.

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Xi2 Ground Parts Detail

Xi2 Ground Lateral System

Part Number 59306

Includes: 5' Strut, pad & hardware kit
(#59329-1 includes all nuts and bolts).

Longitudinal Hardware Kit

Part Number 59331

Includes: 2 I-beam brackets &
2 U-bolts with all nuts and bolts.

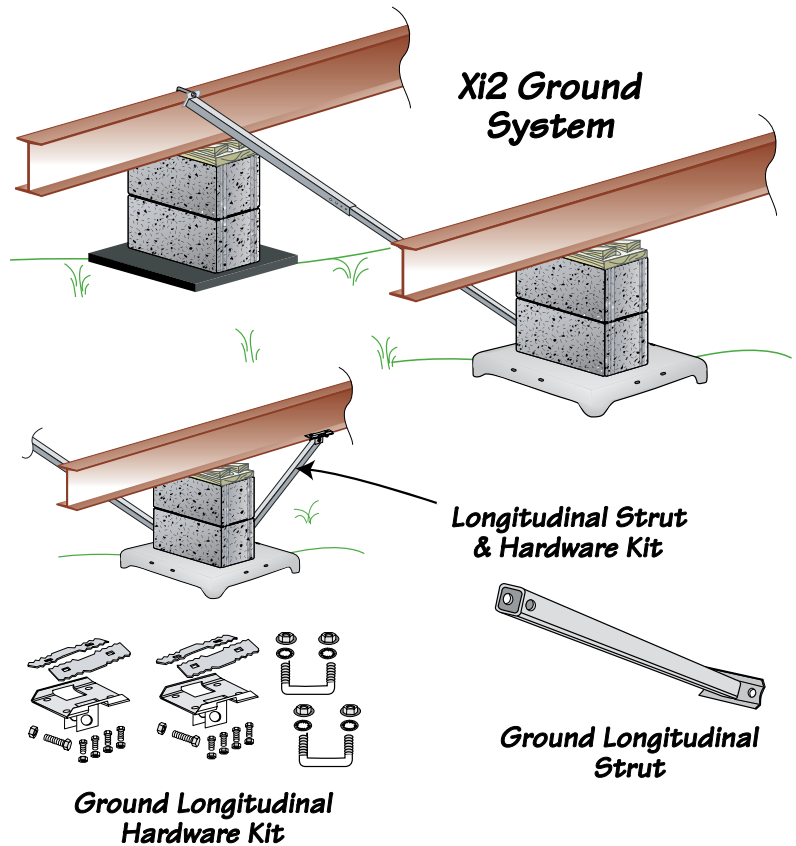
Lateral and Longitudinal Combination

Part Number 59333

Includes: 5' Strut, Pad, Longitudinal Strut
(#59329), Lateral and Longitudinal Hardware
Kit with all nuts and bolts.

Struts for Longitudinal Systems

Part No.	Strut Length	Pier Height Up To:
59330-44	44"	4 Blocks or 32"
59330-65	65"	6 Blocks or 48"

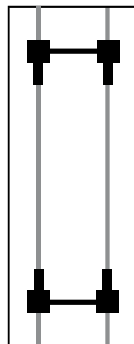


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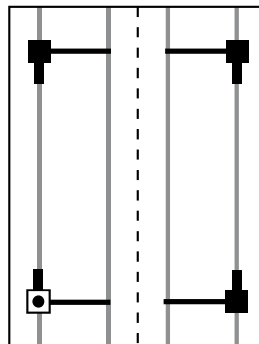
Xi2 Stabilization Pier Placement for Ground or Concrete



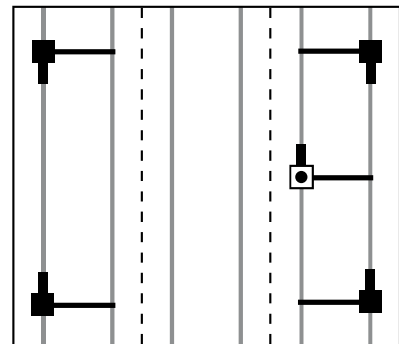
Xi2 Pier Placement



Single Section Home
0 - 80' (76' Box) 4 Xi2 Systems



Double Section Home
0 - 62' 3 Xi2 Systems*
63' - 80' 4 Xi2 Systems



Triple Section Home
0 - 62' 4 Xi2 Systems
63' - 80' 5 Xi2 Systems

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

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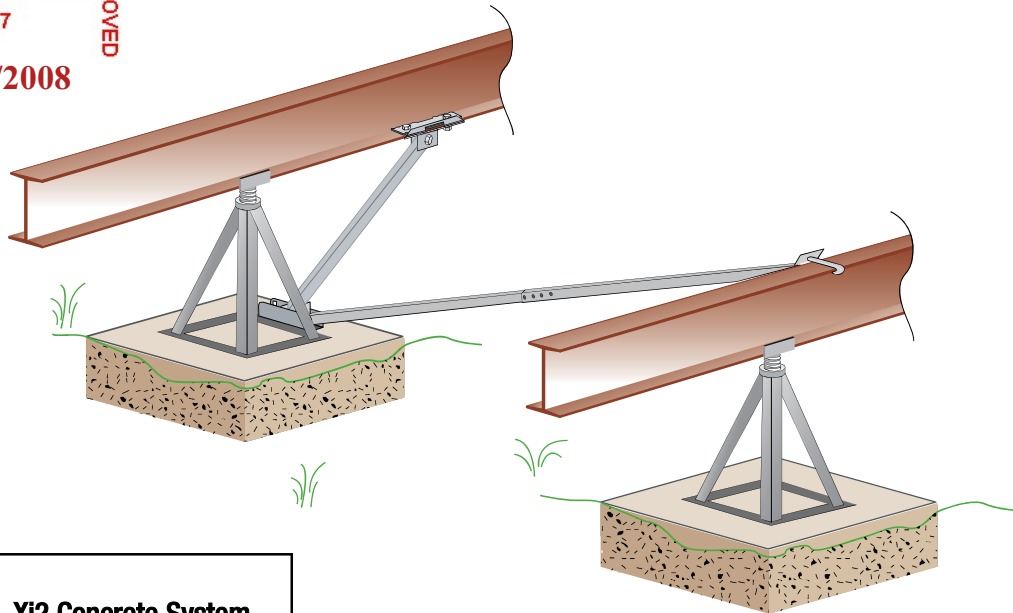


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Installation of Xi2 Concrete Systems

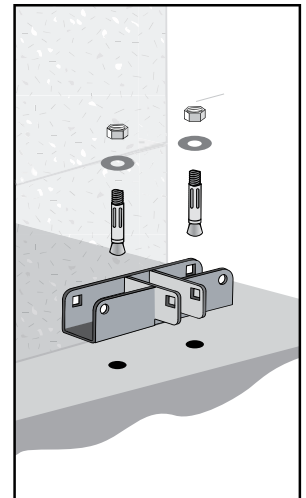
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Xi2 Concrete System

1. Identify the number of systems to be used on the home using the chart provided.
2. Identify the location where the systems will be installed.
3. Build pier according to State, Local or Home Manufacturers guidelines.
4. Drill two 3/8"x 3" deep holes in the concrete using holes in galvanized bracket as a guide. Attach bracket to concrete pad using 3/8"x3-1/2" wedge anchors provided. Place nut & washer on anchor, leave enough room for 1 to 2 threads showing on top of bolt. Using a hammer, tap the wedge bolts into hole through bracket, leaving nut & washer flush with bracket. Using a 9/16" socket wrench, tighten wedge/anchor bolt, securing bracket to the concrete.
5. Attach the end of the smaller tube to the bracket mounted on the pad, using the grade 5, 1/2" x 2-1/2" bolt/nut provided.
6. Attach the flag end of the larger tube to the opposite I-beam using the "J" bolt over the top of the I-beam with the nut & washer provided. *(Figure 1 next page)*
7. Install a minimum of four (#12 x 1" tek screws) self-tapping screws into the holes provided in the lateral strut so that the two tubes are connected together
8. Install frame bracket clamps on I-beam on the inside of block/pier.
9. Insert strut in frame bracket clamp and attach with nut & bolt. Attach opposite end to concrete bracket.
10. Pull the frame bracket clamp with fastened strut outward to remove any slack.
11. Tighten all nuts and bolts on system.



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Xi2 Lateral Concrete Systems

Part #59307

Includes: 5' Strut, Bracket, & Hardware Kit
#59315-1 with all nuts and bolt.

Longitudinal Struts for
"Concrete Systems"

Part No.	Length	Pier Height
#59013	44"	up to 4 Blocks
#59015	65"	up to 6 Blocks

Longitudinal Hardware Kit

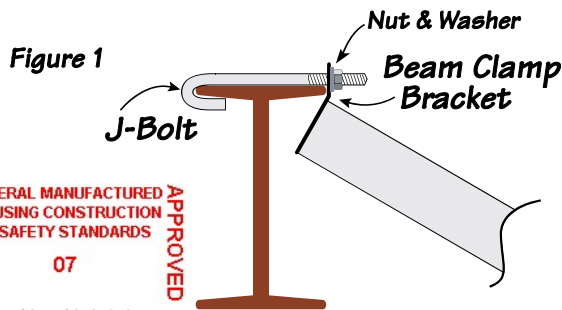
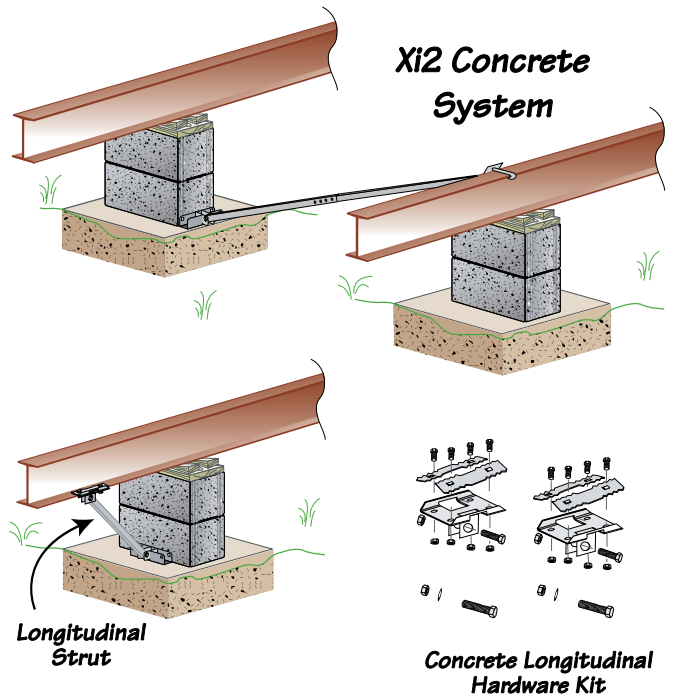
Part #59263

(Includes 2 sets per kit: I-beam bracket, nuts, bolts and washers)

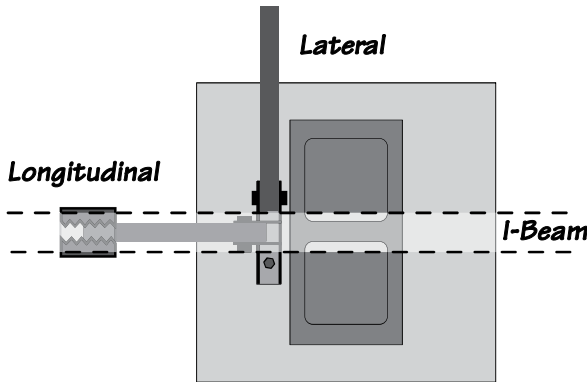
Lateral and Longitudinal Combination

Part #59332

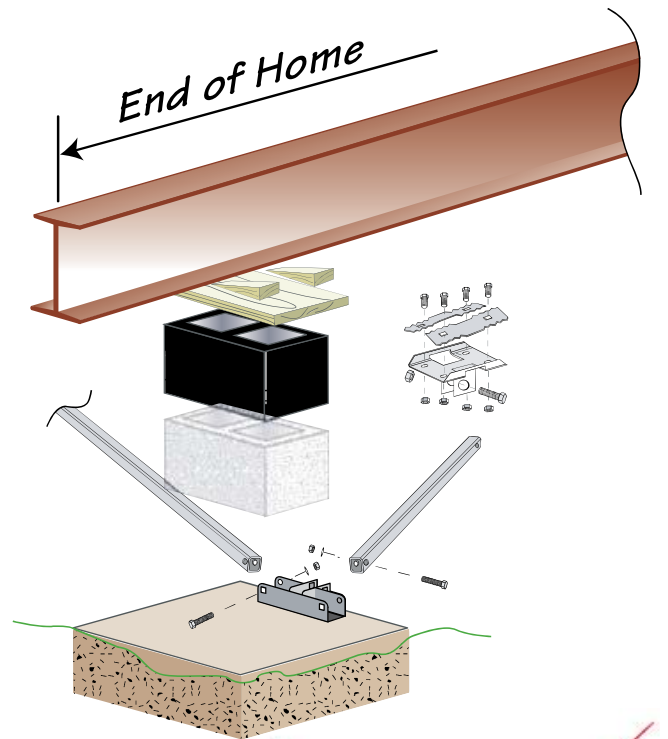
Includes: 5' Strut, Longitudinal Strut (#59364),
Lateral and Longitudinal Hardware
Kit with all nuts and bolts.



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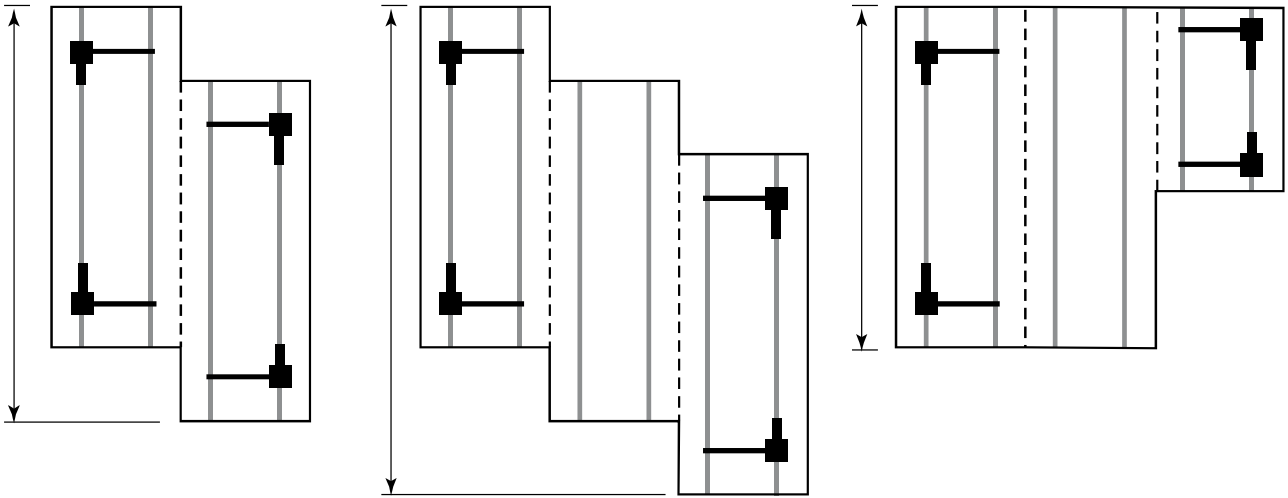


Xi2 Installation Placement



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Offset Placement

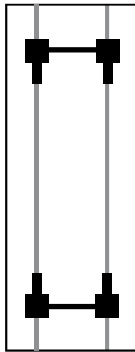


Diagrams represent examples of double and triple section offsets. Total size is determined by the length of unit plus offset.

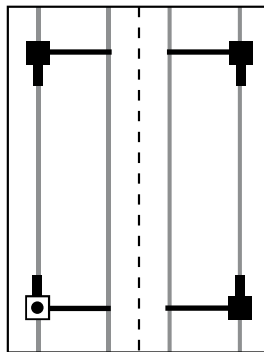
Xi2 Stabilization Pier Placement for Ground or Concrete



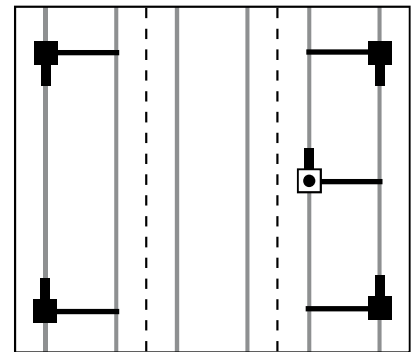
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Hardware Breakdown

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#59329-1 Hardware for 59306 Lateral System

- 1 84533Z U-Bolt 1/2-13 x 2.63 x 2.19 thread
1-3/4 zinc
- 4 10556 Tek Screw #12 x 1"
- 1 10631Z J Bolt 1/2 x 5-1/2 grade 5 zinc
- 2 10640 Push Nut 1/2
- 1 12107 Flat Washer 1x2" SS
- 1 10646Y Hex Nut 1/2-13 grade 5 zinc
- 2 10519 Hex Nut 1/2" w/ Serr flange

#59331 Longitudinal Hardware for 59306

- 2 59272-1 Beam Clamp Base
- 4 59272-2 Beam Clamp Top Flange
- 8 10926 Carriage Bolt 1/2-12 x 1-1/4
Full Thread
- 10 10646Y Hex Nut 1/2-13 grade 5 zinc
- 2 10801 Carriage Bolt 1/2-12 x 2-1/2
Grade 5
- 2 84533Z U-Bolt 1/2-13 x 2.63 x 2.19 thread
1-3/4 zinc
- 4 10640 Push Nut 1/2
- 4 10519 Hex Nut 1/2" w/ Serr flange

59329 Hardware for 59333 Lateral and Longitudinal combination

- 1 59329-1 Hardware Kit
- 1 59272-1 Beam Clamp Base
- 2 59272-2 Beam Clamp Top Flange
- 4 10926 Carriage Bolt 1/2-12 x 1-1/4
full thread
- 5 10646Y Hex Nut 1/2-13 Grade 5 zinc
- 1 10801 Carriage Bolt 1/2-12 x 2-1/2
Grade 5 zinc
- 1 84533Z U-Bolt 1/2-13 x 2.63 x 2.19 Thread
1-3/4 zinc
- 2 10640 Push Nut 1/2
- 2 10519 Hex Nut 1/2" w/Serr Flange

#59315-1 Hardware for Lateral System

- 1 10631Z J Bolt 1/2 x 5-1/2 Grade 5 zinc
- 1 12107 Flat Washer 1/2" SS
- 4 10556 Tek Screw #12 x 1"
- 2 10646Y Hex Nut 1/2x-13 Grade 5 zinc
- 1 10826 Carriage Bolt 1/2-12 x 3
Grade 5 zinc

#59027 Hardware Kit for 59307 Lateral System

- 2 59264 3 Way Concrete Bracket
- 4 10530 Wedge Anchor 3/8 x 3.50
- 1 59315-1 Hardware Kit

#59263 Longitudinal Hardware for 59307

- 2 59272-1 Beam Clamp Base
- 4 59272-2 Beam Clamp Top Flange
- 8 10926 Carriage Bolt 1/2-13 x 1-1/4
Full Thread zinc
- 12 10646Y Hex Nut 1/2-13 Grade 5 zinc
- 4 10801 Carriage Bolt 1/2-13 x 2-1/2
Grade 5 zinc

#59364 Hardware for 59332 Lateral and Longitudinal combination

- 1 59264 3 Way Concrete Bracket
- 2 10530 Wedge Anchor 3/8 x 3.50
- 1 59315-1 Lateral Hardware Kit
- 1 59272-1 Beam Clamp Base
- 2 59272-2 Beam Clamp Top Flange
- 4 10926 Carriage Bolt 1/2-13 x 1-1/4
Full Thread zinc
- 2 10801 Carriage Bolt 1/2-13 x 2-1/2
Grade 5 zinc
- 6 10646Y Hex Nut 1/2-13 Grade 5 zinc

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