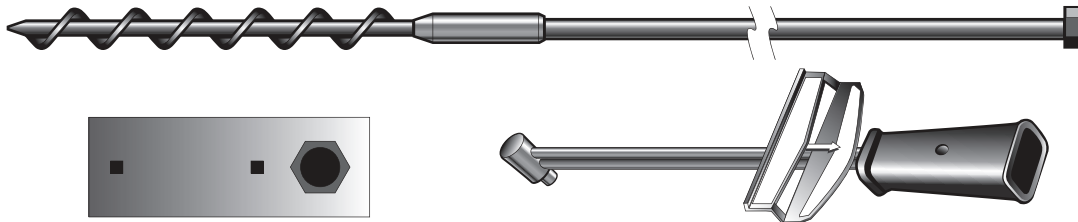










GROUND ANCHOR INSTALLATION INSTRUCTIONS

- NOTE: 1) The tensioning bolt can be inserted in the head from either side.
 2) In areas of severe cold weather, where possible damage could occur from frost heave, the home owner should be prepared to adjust tension on the straps to take up slack.

Ground anchors come in a variety of lengths and designs. Always test the soil with a “soil test probe” prior to any anchor installation. This will determine the proper anchor for the soil condition.

WARNING! Prior to any anchor installation, determine that the anchor location around the home will not be close to any underground electrical cables, water lines or sewer pipes. Failure to determine the location of electrical cable may result in serious injury or death.



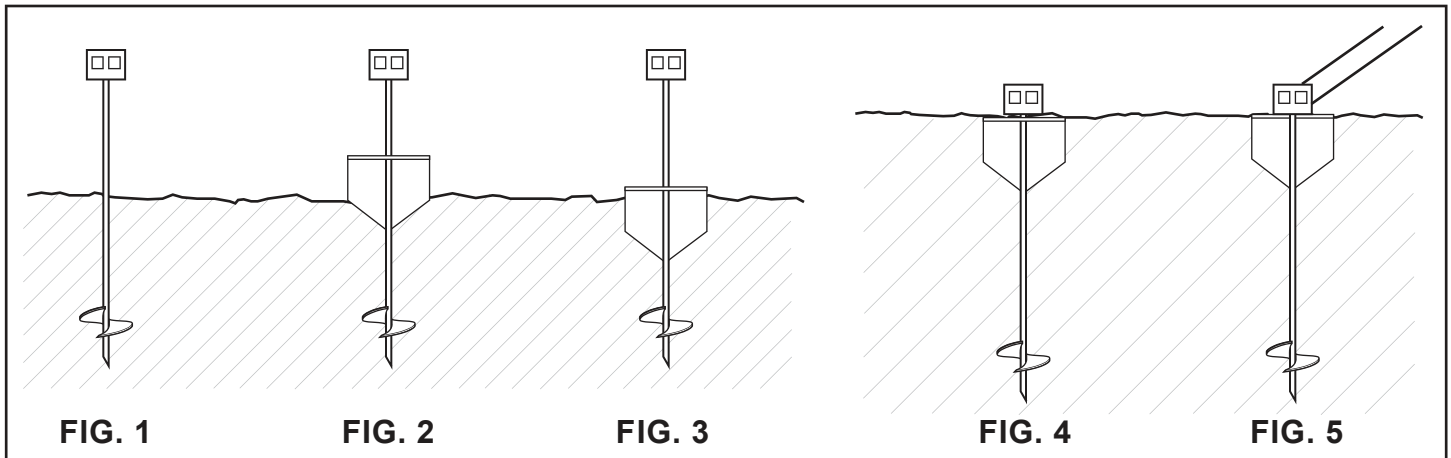
SOIL CLASSIFICATION CHART				
SOIL CLASS	SOIL DESCRIPTION	TEST VALUE	RECOMMENDED ANCHOR	RECOMMENDED STABILIZING DEVICES
1	Crystalline bedrock	A / N	P D C	6 3 T O A / N
2	Sedimentary and foliated rock	550 in. lbs.	OT3044AP *OT3044BP *OT3646BP	 
3	Sandy gravel and/or gravel (GW and GP)	350 to 550 in. lbs.	OT3044AP *OT3044BP (C/Z) *OT3646BP (C/Z) OT4244BP OT486A OT486B	 
4a	Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM AND GC)	276 to 350 in. lbs.*	*OT3646BP (C/Z) OT4244BP OT486AP OT486BP OT486A (Galv.) OT486B (Galv.)	  
4b	Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	175 to 275 in. lbs.**	OT607B (Galv.)	

*These anchors can be used with Quick Cap/Anchor model # OTCAP1
 **Below 175 in. lbs., a professional engineer should be consulted.

REMEMBER: Each State, County, or Municipality may require a specific anchor from the groups shown for each soil classification. Check State & local regulations first.

NOTE: Many anchors are designed for particular soil condition(s) and are unacceptable for use in other soil types. We have listed the soils for which each anchor is designed and approved. Soil classifications are taken from the “standard for the installation on mobile homes.” Each anchor listed meets ANSI A225.1 and ASTM D3953.91 codes.

INSTALLATION INSTRUCTIONS OTI AUGER ANCHOR



1. Attach anchor to machine (two person operation). Place anchor in proper position in line with the strap.
2. Install the anchor into the ground leaving 14" - 16" of the rod exposed. (FIG. 1)
3. Place the stabilizing plate in front of the shaft in the direction of pull. Always remove vegetation under the stabilizing plate. (FIG. 2)
4. Drive the stabilizing plate into the ground (FIG. 3)
5. The anchor is then turned into the ground to a point where the bottom of the tension head is at or slightly below ground level. Engineered to allow ground anchor to be installed at a slight back angle of 10 degrees. (FIG. 4)
6. Use Galvanized Strapping page for installation instructions for proper tensioning on anchor and stabilizer plate (FIG. 5)

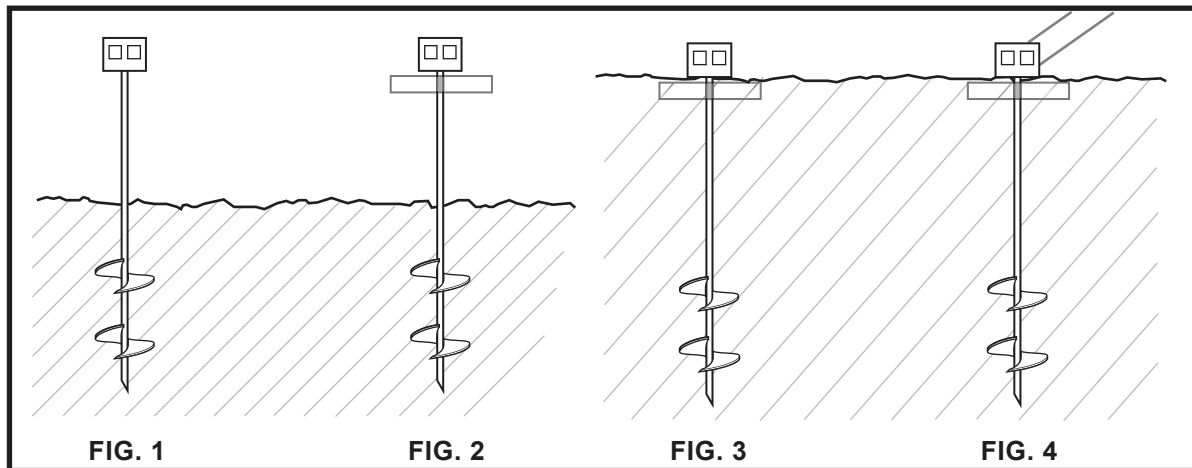
IMPORTANT NOTES

- Anchors must be approved by the authority having jurisdiction.
- Anchors must be installed in the correct soil types (classes 2-3-4).
- When the rod is installed vertically with no stabilizer plate, the maximum allowable working load on a single vertical tie is 3150 lbs.
- When the anchor rod is installed vertically with an OTMSP2P stabilizer plate, the maximum allowable working load on a single vertical tie (or the maximum allowable working resultant load of two ties) is 3150 lbs. between 45 and 90 degrees from horizontal.

QUICK ANCHOR INSTALLATION INSTRUCTIONS MODEL# OTCAP1 OTI Anchor Model #'s OT3044BP and OT3044BPC (welded cap) OT3646BP and OT3644BPC (welded cap)

1. Attach anchor to drive machine (two person operation). Place anchor in proper position in line with strap.
2. Install the anchor into the ground leaving 14" to 16" of rod exposed. (Fig. 1)
3. Slide the slotted end of the "Quick Cap" over the exposed anchor rod. (Fig. 2)
 *Always remove grass, sod, or loose vegetation under the "Quick Cap."
4. The anchor is then turned into the ground to a point where the bottom of the tension head is at or slightly below ground level. (Fig. 3) Quick Cap slot must be at least 90 degrees away from direction of pull. (Fig. 4) The Quick Cap was engineered to allow ground anchor to be installed at a slight back angle of 10 degrees.
5. Use installation instructions on galvanized strapping page for proper tensioning of anchor and stabilizing device.

PATENT # 6,298, 611B1



IMPORTANT NOTES

- Anchors must be approved by the authority having jurisdiction.
- Anchors must be installed in the correct soil types (Classes 2, 3, or 4).
- OT3646BP: In class 4, the soil torque value must be 276 in. lbs. or greater at the stabilizer device depth and the soil torque value must be 276 in. lbs. or greater at the bottom helix depth. In class 3 soil: OT3646BP or OT3044BP, the soil torque value must be 350 in. lbs. or greater at the stabilizer device depth and the soil torque value must be 350 in. lbs. or greater at the helix depth.
- When the rod is installed vertically with no stabilizer plate, the maximum allowable working load on a single vertical tie is 3150 lbs.
- When using a fixed or attachable cap stabilizer, the maximum allowable working load on a single tie (or the maximum allowable working resultant load of two ties) is 3150 lbs between 45 and 90 degrees from horizontal.

GROUND ANCHOR INSTALLATION INSTRUCTIONS

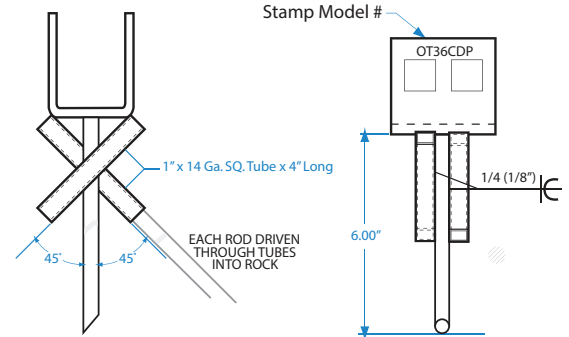
CROSS DRIVE ROCK ANCHOR (Model# OT36CDP)

1. Drill a 5/8" diameter hole 5 1/2" deep, on a 90 degree angle on center of anchor location, for pilot stud into hole.
2. Drill two - 3/4" diameter holes in rock at 45 degree angles, using anchor head as a location guide.
3. Place rod through the top of (1) square tube and into hole.
4. Rod must be driven into rock at least 24" in order to achieve minimum allowable pullout resistance.
5. Place the second rod through the top of the remaining tube.
6. Distance from the square tubing to the rock surface shall not exceed 1".



APPROVED FOR SOLID ROCK ONLY

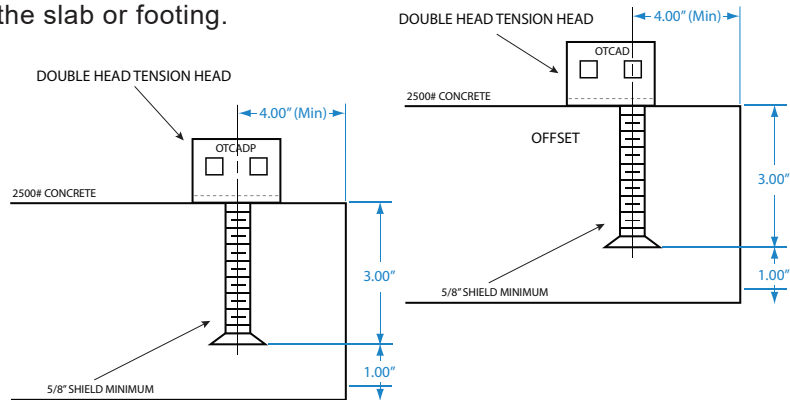
NOTE: The maximum allowable working load of a single tie (or the maximum allowable resultant load of 2 ties) is 3150 lbs. between 45 and 90 degrees from horizontal.



CONCRETE DRY SET INSTALLATION (Model# OTCADP (Center) or OTCAD (Offset))

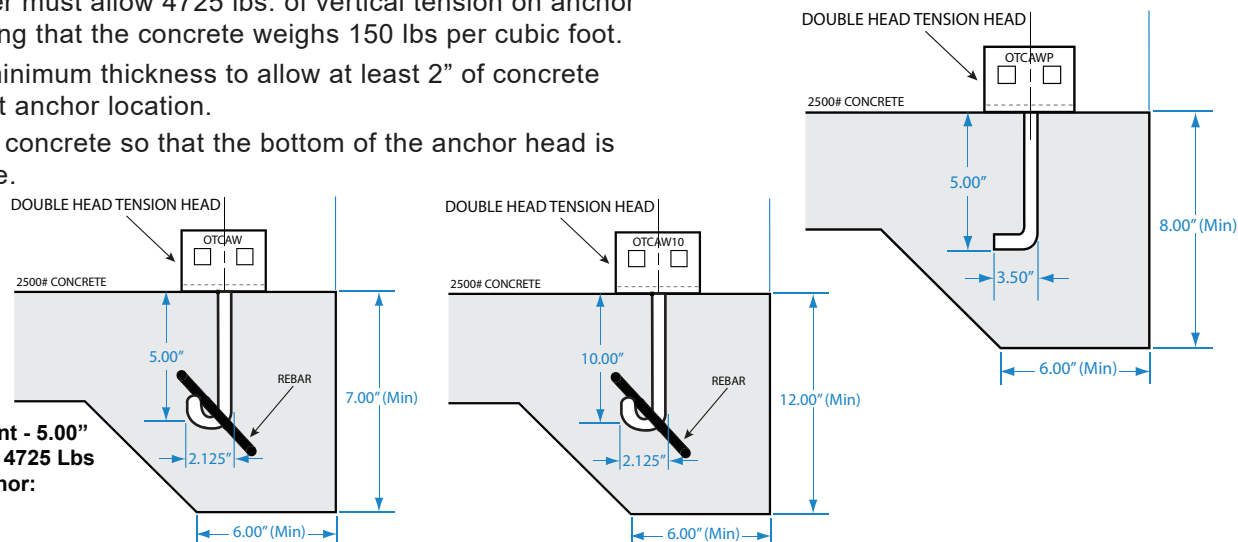
1. Drill a 21/32" diameter hole 4" minimum from the edge of the slab or footing.
2. Place tension head on slab and install 5/8" diameter bolt. (Tighten bolt per manufacturers instructions.)

- A. Maximum load per anchor = 4725 lbs
 B. Minimum slab area per anchor:
 4" slab - 95 sf
 6" slab - 65 sf
 8" slab - 48 sf



CONCRETE WET SET INSTALLATION (Model# OTCAWP, OTCAW or OTCAW10)

1. Concrete slab or footer must allow 4725 lbs. of vertical tension on anchor without lifting, assuming that the concrete weighs 150 lbs per cubic foot.
2. Concrete must be a minimum thickness to allow at least 2" of concrete below bottom of rod at anchor location.
3. Insert anchor into wet concrete so that the bottom of the anchor head is flush with the concrete.



- A. Minimum anchor embedment - 5.00"
 B. Maximum load per anchor - 4725 Lbs
 C. Minimum slab area per anchor:
 4" slab - 95 SF
 6" slab - 65 SF
 8" slab - 48 SF

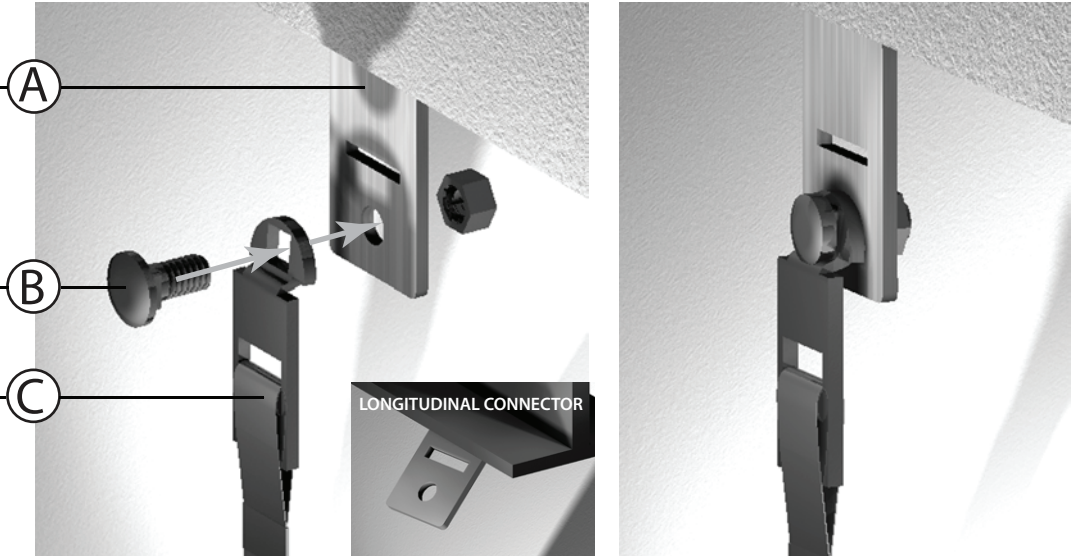
NOTE: OTCAW & OTCAW10 are rebar anchors

SIDEWALL AND LONGITUDINAL FRAME CONNECTORS MODEL# OTQC or OT 2002

Typical sidewall or longitudinal bracket installed by home manufacturer.

Bolt and Nut

Quick Connector with factory installed strap.

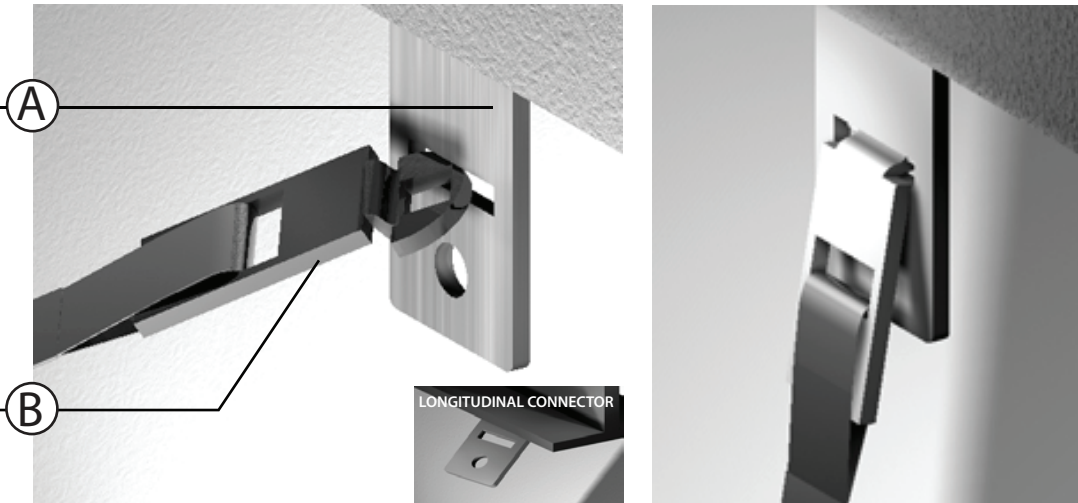


STEP 1: Locate the sidewall or longitudinal bracket installed by home manufacturer, insert bolt through hole in Quick Connector then through hole in bracket.

STEP 2: Place nut on bolt and tighten. STEP 3: Refer to strapping page for proper installation of strap.

Typical sidewall or longitudinal bracket installed by home manufacturer.

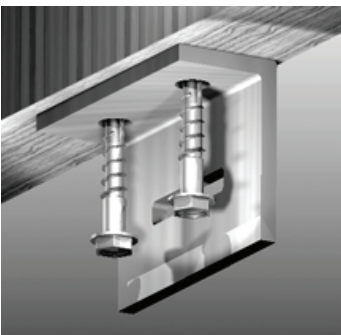
Quick Connector with factory installed strap.



STEP 1: Locate the sidewall or longitudinal bracket installed by home manufacturer, insert Quick Connector into bracket slot at 45 degree angle.

STEP 2: Turn Quick Connector until locked into position. STEP 3: Refer to strapping page for proper installation of strap.

Model # OTSWB



STEP 1: Locate the outside rim joist underneath the home.

STEP 2: Position the Sidewall Bracket so that the two (2) holes are centered on the joist and the strap slot is facing towards the outside of the home.

STEP 3: Mark the center of both holes and pre-drill two (2) pilot holes using a 15/64" drill bit.

STEP 4: Using a 9/16" socket install two (2) 3/8" - 7 x 3" Lag screws into the two (2) pre-drilled holes to secure the Sidewall Bracket.

STEP 5: Refer to anchor and strapping installation instructions for proper installation to anchor and strap.

NOTE: The maximum allowable working load capacity of the OTSWB is 3150 lbs and shall withstand 50% overload (4125 lbs).

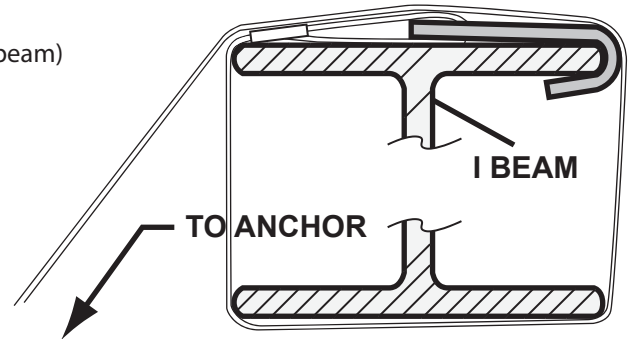
I-BEAM FRAME CONNECTORS

FRAME TIE (OTFT-1)

- STEP 1 : Attach frame clamp (hook) inside top flange of home frame.
 STEP 2: Place strap between the frame and home as shown. (wrapping I-beam)
 STEP 3: Pull strap tight and attach to the anchor tension head. (Refer to strapping page for proper installation of strap.)
- NOTE: The frame tie has an allowable working load of 3150 lbs., with no more than 2% elongation and shall withstand a 50% overload (4725 lbs. total)

OTFT-1 with factory installed strap

Enlarged End View of I-Beam Floor

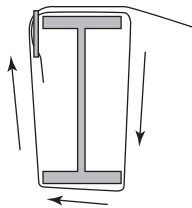


DOUBLE SLOTTED BUCKLE (OTST-1)

INSTALLATION INSTRUCTIONS



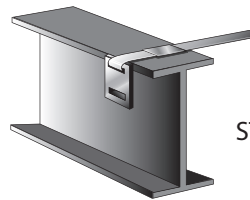
- STEP 1 : Thread frame tie strap through buckle as shown.
 STEP 2: Thread long end of strap between the frame and floor of home.
 STEP 3: Ensure proper strap tension. (Refer to strapping page for proper installation of strap.)



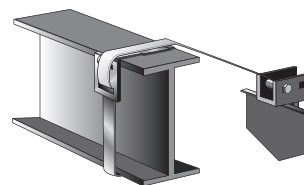
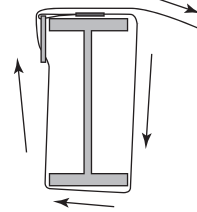
NOTE: The maximum allowable working load capacity of the strap woven through the slots in the buckle is 3150 lbs., with no more than 2% elongation and shall withstand a 50% overload (4725 lbs. total)

FACTORY CRIMPED DOUBLE SLOTTED BUCKLE (OTST-1)

INSTALLATION INSTRUCTIONS

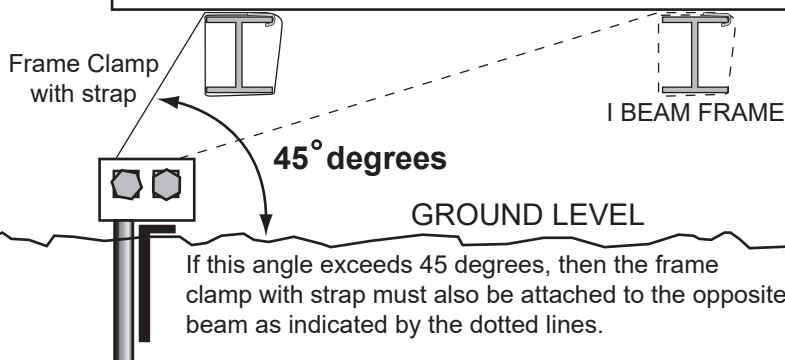


- STEP 1 : Install strap by pushing the end of the strap between the inside of the frame I-beam and the floor.
 STEP 2: Position the buckle at the upper end of the I-beam frame. Wrap the end of the strap through the slot in the buckle as shown. Push the end of the strap in between the I-beam and floor.



NOTE: The maximum allowable working load capacity of the strap woven through the slots in the buckle is 3150 lbs., with no more than 2% elongation and shall withstand a 50% overload (4725 lbs. total)

MANUFACTURED HOME

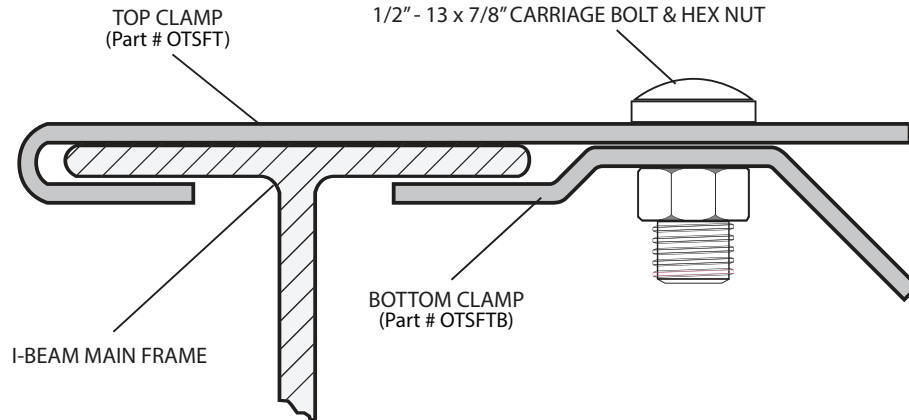


- 1) The tensioning bolt can be inserted in the head from either side.
- 2) In areas of severe cold weather where possible damage could occur from frost heave, the homeowner should be prepared to adjust tension on the straps to take up slack.

SWIVEL FRAME TIE

Model # OTSFT

PATENT # 6,928,783,B2



STEP 1: Place top clamp over the top of the I-Beam.

STEP 2: Place the carriage bolt in the first exposed hole closest to the I-Beam. (Top clamp works on I-Beam sizes 2 3/4" through 4".) (Part # EXTOTSFT extended top clamp works on I-Beam sizes 7" - 9")

STEP 3: Attach the bottom clamp (with pre fabricated strap) by tightening the carriage bolt and hex nut.

STEP 4: The Swivel Frame Tie and attached strap should be installed perpendicular to the I-Beam when possible, however there is an allowance of 7.5 degrees in either direction from perpendicular.

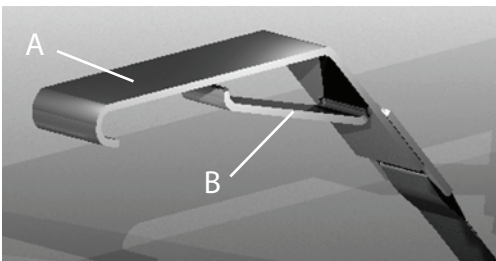
NOTE: DO NOT WRAP STRAP AROUND FRAME. The maximum allowable working load capacity of the OTSFT is 3150 lbs., with no more than 2% elongation and shall withstand 50% overload (4725 lbs).

OTI anchors and components will perform at this design load regardless of the wind pressures and distance from the coastline, provided that the number, location and spacing of the components is such that the design load of 3150 is not exceeded.

Fastener required to assemble both parts 1/2" - 13 x 7/8" carriage bolt and hex nut (abstract of SAE J429 1985) coating ASTM standard B633-85 (re-approved 1994).

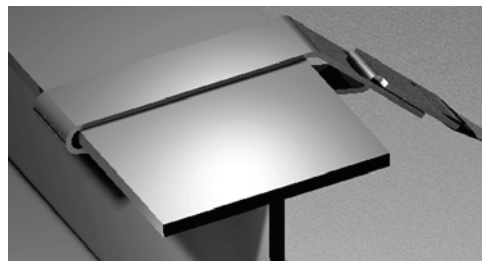
SWIVEL FRAME TIE

Model # 2001



A = Top jaw (OT2001UJ)
Extended Top Jaw (OT2001LUJ)

B = Bottom jaw (OT2001L) of Swivel Clamp
with factory installed strap



STEP 1: Slide top jaw over top flange on the I-Beam then pull to secure.

STEP 2: Insert bottom jaw into slot of top jaw at a 45 degree angle.



STEP 3: Rotate bottom jaw into lock position with top jaw.

STEP 4: Refer to strapping page for proper installation of strap.

NOTE: This frame clamp (Part # OT2001UJ) was designed to be used on 2 3/4" (2.75") minimum flange width and 4" maximum flange width. The bottom jaw of the clamp can swivel up to 10 degrees maximum. Frame Clamp (Part # OT2001LUJ) for a double beam (2) - 4" flange welded beams application.

INSTALLATION INSTRUCTIONS

MODEL # OTLT LONGITUDINAL BEAM CONNECTOR

Use with OTQC (Quick Connector Strap)

STEP 1: Attach the longitudinal beam connectors (A) on the bottom flange of the I-beam, tighten beam connectors with carriage bolt & nut 2 1/2 turns past hand tight.

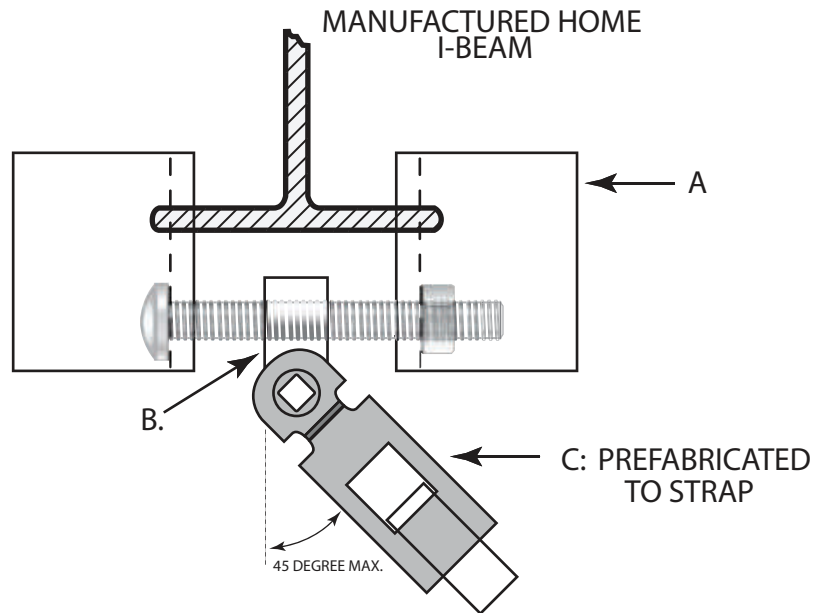
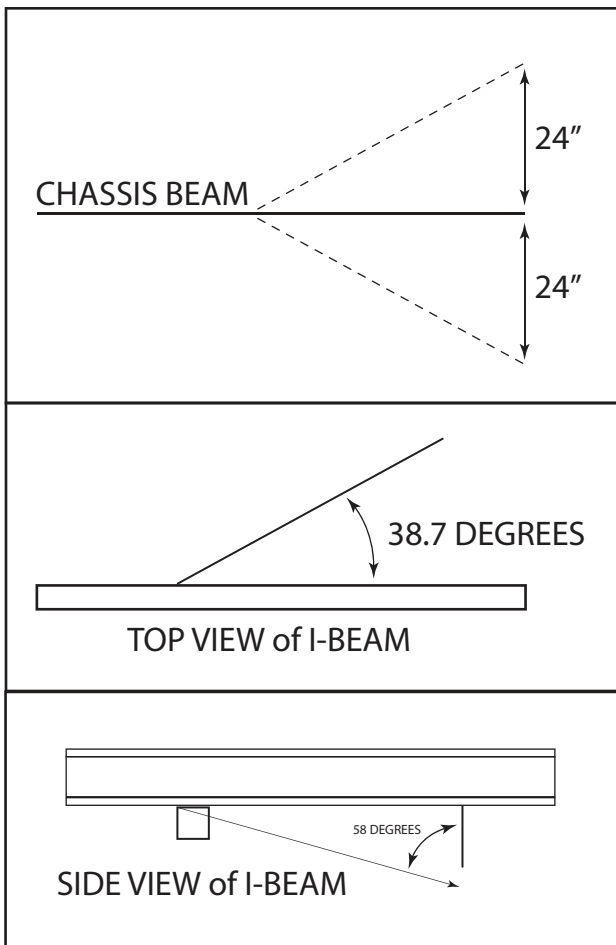
STEP 2: Slide clip (B) over bolt and attach swivel clamp (C) with 1 1/2" carriage bolt & nut and tighten with standard hand tools.

STEP 3: Refer to anchor and strapping installation instructions for proper installation to anchor and strap.

NOTE: 1) End tie-downs shall be located within 24" of either side of chassis beam axis as refer to "*" below.

2) Brackets need to be connected to I-Beam at proper distance from anchor so that correct strap angle can be achieved.

3) TEXAS: OTLT must be installed a minimum of 58 degrees from vertical.



Patent # 6,725,613B2

*When following the Texas Generic Standards, the installer must use the numbers and angles of longitudinal ties specified by the Texas Generic Standards. These standards describe longitudinal angles measured only from the vertical ties angled downward from the I-beam. The Texas Generic Standards do not allow longitudinal ties to also be angled sideways.

*When following the home installation instructions, the installer must use the numbers and angles of the longitudinal ties specified by the home installation instructions. The longitudinal tie angles shall not exceed the limits of these OTLT instructions.

TABLE 1

The maximum allowable working load capacity of the OTQC is 3150 lbs., with no more than 2% elongation and shall withstand 50% overload (4725 lbs.)

Fastener required to assemble both parts (1) 4" and (1) 1 1/2" - 13 x 7/8" carriage bolt & hex nut. (abstract of SAE J429 1985) coating ASTM standard B633-85 (re-approved 1994)

INSTALLATION INSTRUCTIONS GALVANIZED STRAPPING and SPLIT BOLTS

STRAP SPLICE

To lengthen strap in the field, a double crimp seal is required. Overlap strap and use two crimp seals evenly spaced, with 2 crimps per seal.



2 Seals - 2 Crimps per seal

Seals specifications: Type 1, Finish B, Grade 1, Semi-open crimp seals

Certified Galvanized Strapping

HUD requires that certified strapping must meet ASTM specification. OTI strapping is marked every 12 inches.

Oliver Technologies, Inc.
Certified TO
ANSI A225.1 ASTM D3953-91



Material: Type 1, Finish B, Grade 1
Dimension of strapping: 1 1/4" width,
.035 thickness + or - .005



SPLIT BOLT

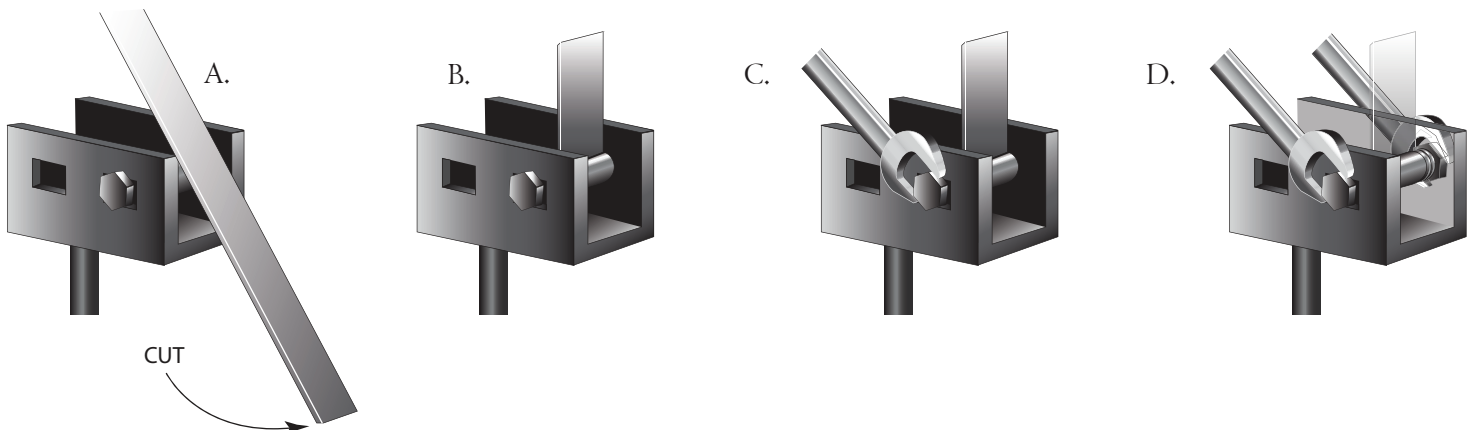
Galvanized split bolt:
5/8"x3"x5/8" sq. shoulder
with hexagon head, Standard
national thread, shaft saw cut.

1. ENSURE PROPER STRAP TENSION:

- A) Insert split bolt into anchor head, attach loosely. Pull strap past bolt and cut strap leaving approximately 12" of strap to wrap onto bolt.
- B) Insert the strap end into the slot in bolt until flush with opposite side of bolt.
- C) Using 15/16" wrench or socket; turn the bolt, winding the strap so that a minimum of four to five complete turns are made and the strap is adequately tensioned so that the anchor is firmly against the stabilizing device in direction of pull. All slack must be removed.
- D) Hold the bolt under tension while tightening the nut, drawing the head of the bolt into the recess, continue to tighten the nut until securely fastened.

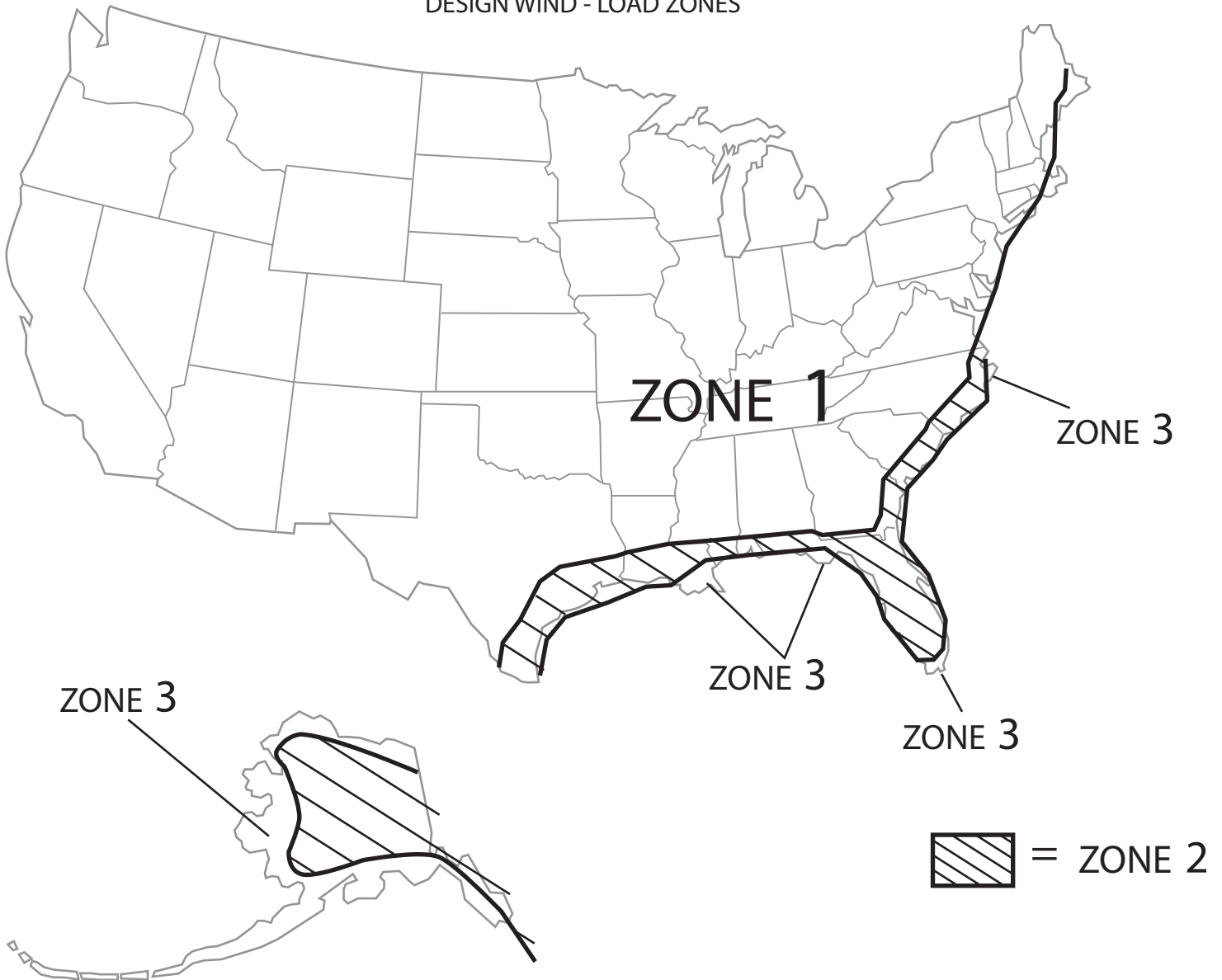
NOTE: The tensioning bolt can be inserted in the head from either side.

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.



WIND ZONE MAP

DESIGN WIND - LOAD ZONES



NOTE: psf = pounds per square foot

DESIGN WIND LOADS			
STANDARD WIND	ZONE 1	15 psf HORIZONTAL	9 psf UPLIFT
HURRICANE	ZONE 2	+ 39 psf HORIZONTAL	27 psf UPLIFT
HURRICANE	ZONE 3	+ 47 psf HORIZONTAL	32 psf UPLIFT