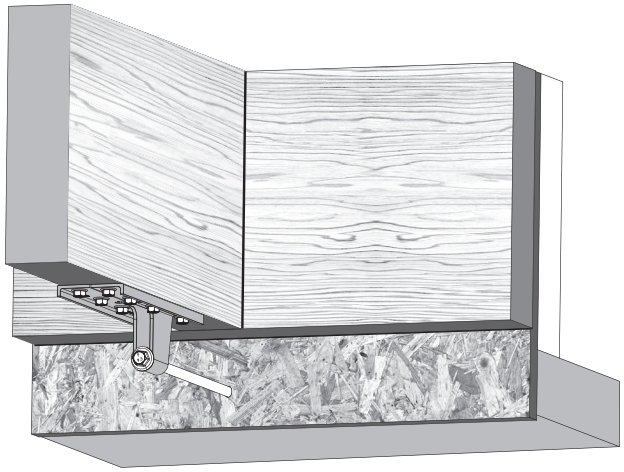
FastenMaster Lateral Tension System™



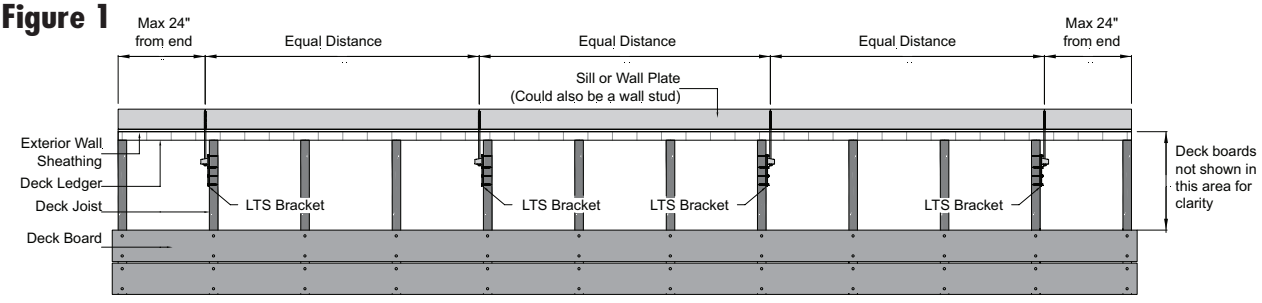
The International Residential Code (IRC) requires that decks be designed to withstand both vertical and lateral loads. Until recently, the existing code lacked any specific means to achieve these loads.

A prescriptive method to meet vertical loads was introduced in 2006 with specific fastening schedules using lag screws or bolts to properly connect the deck ledger to the rim board of a house. Approved structural wood screws, such as FastenMaster's LedgerLOK, can be used to meet this code when installed as instructed.

In 2009, the code provided the first detail on how to restrain lateral loads on decks. It called for two lateral connectors, each capable of transferring 1500 pounds, to be installed on either end of the deck. In many cases this required that an additional pair of connectors and threaded rods be installed on the interior of the house as well.

The 2015 code introduced a much easier and less invasive alternative method. This newest version allows for tension ties to be attached to the deck joist then fastened directly to an interior sill plate, wall plate or stud – all from the outside. These lateral connections must be designed to resist 750 pounds in tension and installed in four locations along the length of the ledger: one within 2' of each end of the ledger with two more evenly spaced between **(see Figure 1 below).** The FastenMaster Lateral Tension System (LTS) is a complete system designed to transfer the lateral forces on an exterior deck when attached to the wood frame of a structure. When installed per the enclosed instructions these connections meet the lateral load requirement in Section R507 of the International Residential Code.

Figure 1

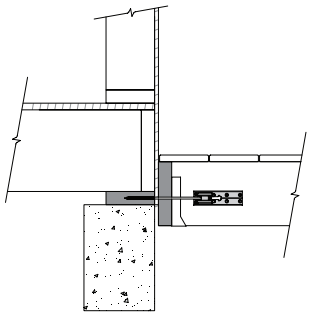


PREPARATION

1. Select the appropriate ledger alignment condition, A through E, based on the orientation of the deck ledger to house framing member that applies to your specific deck.

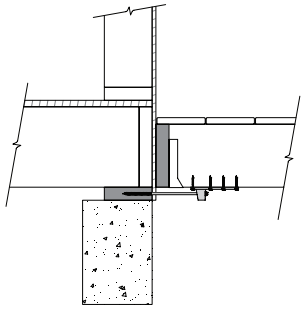
CONDITION A

Sill Plate or Wall Plate Behind Ledger



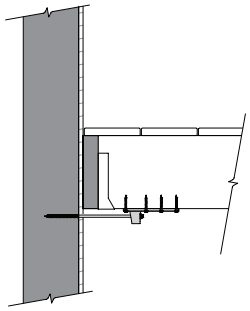
CONDITION B

Sill Plate or Wall Plate Directly Below Ledger



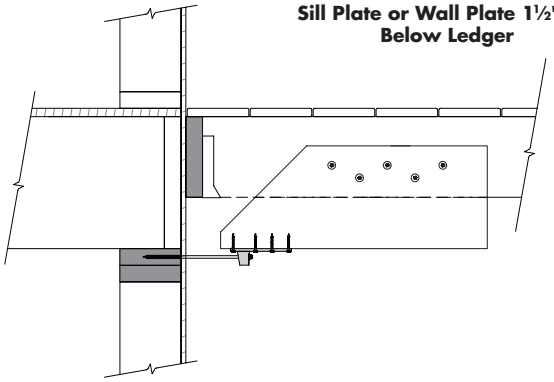
CONDITION D

Wall Stud In Line with Deck Joist



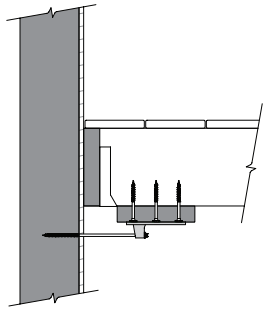
CONDITION C

Sill Plate or Wall Plate 1½"- 6" Below Ledger

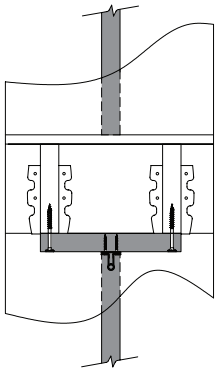


CONDITION E

Wall Stud Between Deck Joists



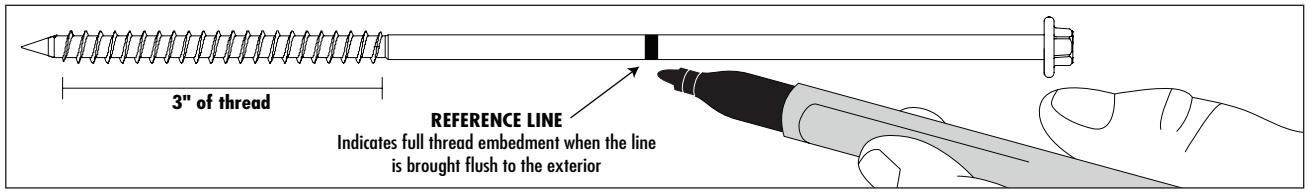
Side



Front

2. Verify the area behind the ledger is free from electrical, plumbing or HVAC hazards.
3. Measure and mark a "reference line" on the smooth shank of all (4) long fasteners that corresponds to the surface of the sheathing or siding when the threaded portion of the screw is fully embedded into the house framing. **(Figure 2)**
   - Add up the entire thickness of materials between the framing member and the surface of the application.
     For example: 1/2" sheathing + 1-1/2" ledger = 2"
   - Find where the threads meet the smooth shank of the screw and measure back towards the head this amount.
   - Draw a line around the screw.

Figure 2



INSTALLATION CONDITION A Sill Plate or Wall Top Plate Behind Deck Ledger

1. Identify the deck joist receiving the first bracket.

2. Draw a horizontal line onto the face of the ledger near this joist that represents the center line of the sill or plate behind. **(Figure A1)**

3. Place the point of the long screw at the intersection of this center line within 1-1/4" from the face of the deck joist. **(Figure A2)**

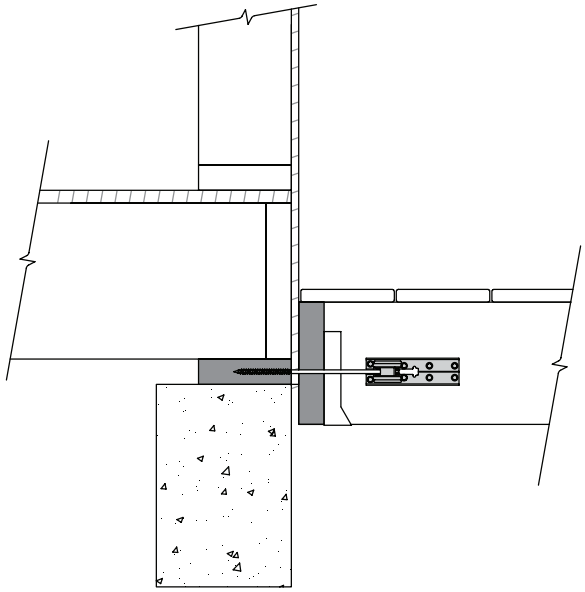
4. Install the fastener to the correct depth using the reference line on the screw. **(Figure A3)**

5. Slide the bracket over the screw and onto the side of the joist using the screw silhouette as a pass-through. **(Figure A4)**

6. Pull the bracket directly firmly away from the house so that the head of the screw is snug against the hoop of the bracket.

7. Install the (8) small screws into each of the holes on the bracket. **(Figure A5)** Do not overdrive.

8. Repeat this same procedure for the last (3) brackets.



Reference Figures

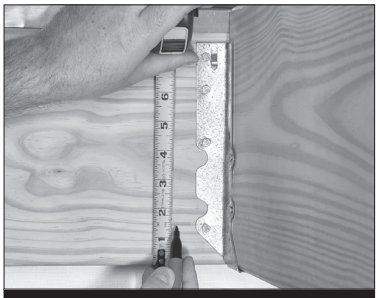


FIGURE A1

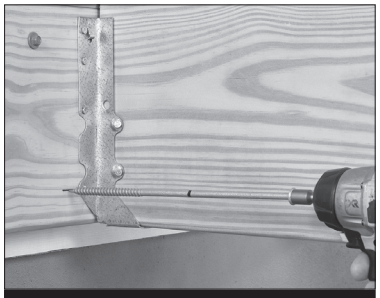


FIGURE A2

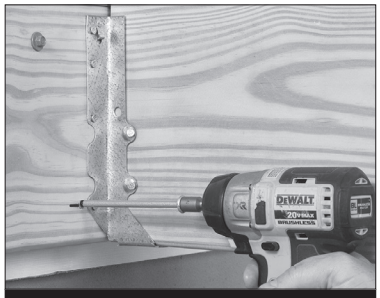


FIGURE A3

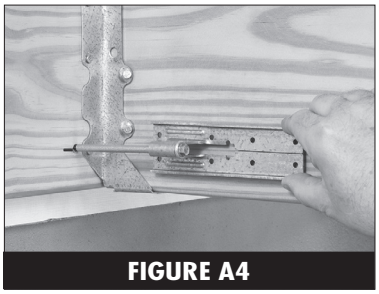


FIGURE A4

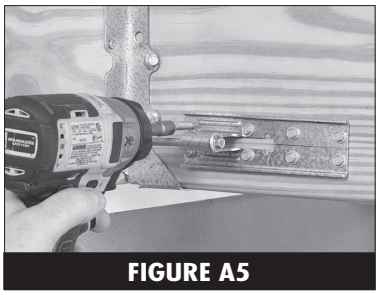
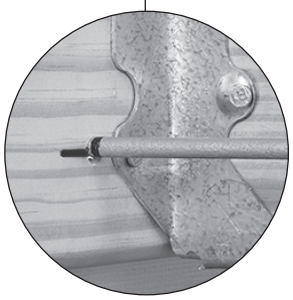
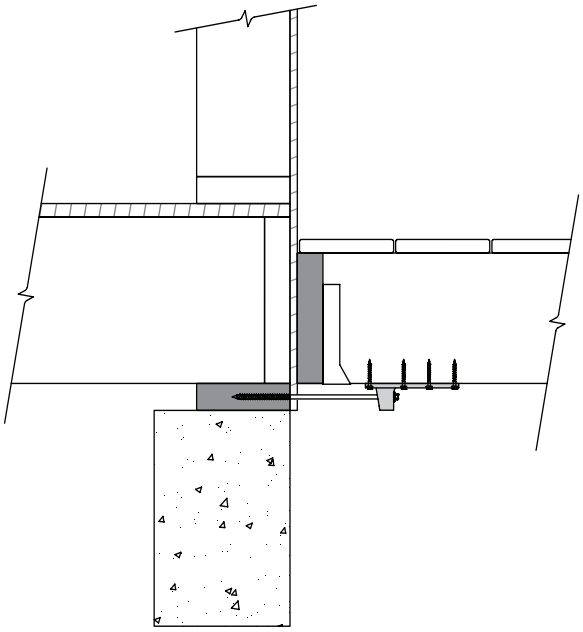


FIGURE A5



Enlargment of FIGURE A3
(Correct depth of screw)

INSTALLATION CONDITION B Sill Plate or Wall Plate Directly Below Deck Ledger



1. Identify the deck joist receiving the first bracket.
2. Draw a horizontal line onto the face of the sheathing or siding below this joist that represents the center line of the sill or plate behind. **(Figure B1)**
3. Place the point of the long screw at the intersection of this center line and the center of the deck joist above. **(Figure B2)**
4. Install the fastener to the correct depth using the reference line on the screw. **(Figure B3)**
5. Slide the bracket over the screw and onto the bottom edge of the joist using the screw silhouette as a pass-through. (**Figure B4)**
6. Pull the bracket directly firmly away from the house so that the head of the screw is snug against the hoop of the bracket.
7. Install the (8) small screws into each of the holes on the bracket. **(Figure B5)** Do not overdrive.
8. Repeat this same procedure for the last (3) brackets.

Reference Figures

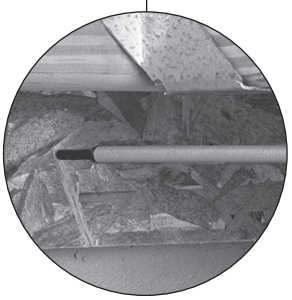
FIGURE B1

FIGURE B2

FIGURE B3

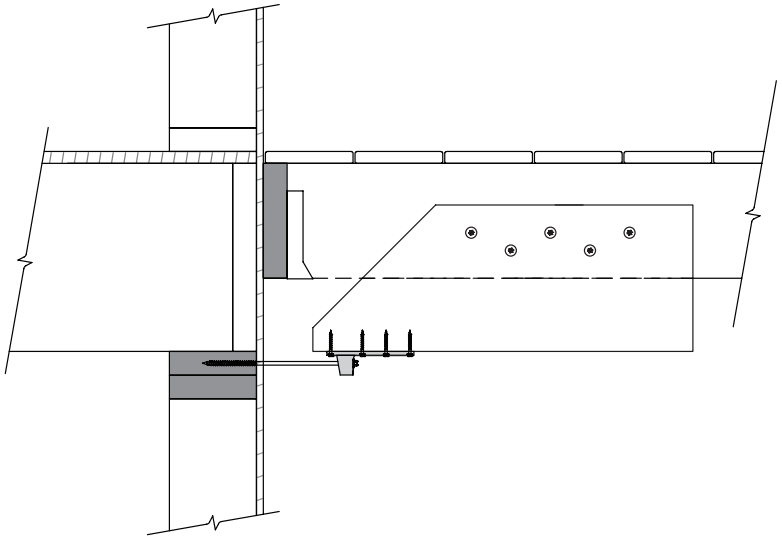
FIGURE B4

FIGURE B5



Enlargment of FIGURE B3
(Correct depth of screw)

INSTALLATION CONDITION C Sill Plate or Wall Plate 1½" – 6" Below Ledger



1. Identify the deck joist receiving the first bracket.
2. Draw a horizontal line onto the face of the sheathing or siding below this joist that represents the center line of the sill or plate behind. **(Figure C1)**
3. Prepare (4) extension blocks as follows:
   - i. Where the center line falls between 1-1/2" and 4", install a 2x8 block per (**Figure C2)**
   - ii. Where the center line falls between 3" and 6", install a 2x10 block per (**Figure C3)**
4. Install the extension blocks so that the bottom of the blocking is approximately 3/4" above the horizontal center line. **(Figure C4)**
5. Place the point of the long screw at the intersection of the scribed center line and the center of the bottom edge of the extension block.
6. Install the fastener to the correct depth using the reference line on screw. **(Figure C5)**
7. Slide the bracket over the screw and onto the bottom edge of the extension block using the screw silhouette as a pass-through.
8. Pull the bracket directly firmly away from the house so that the head of the screw is snug against the hoop of the bracket.
9. Install the (8) small screws into each of the holes on the bracket. **(Figure C6)** Do not overdrive.
10. Repeat this same procedure for the last (3) brackets

Reference Figures

FIGURE C1

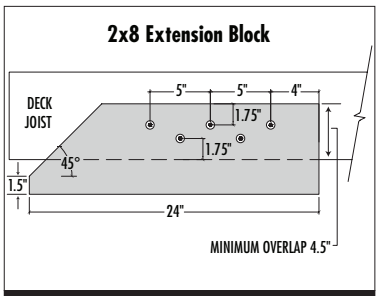


FIGURE C2

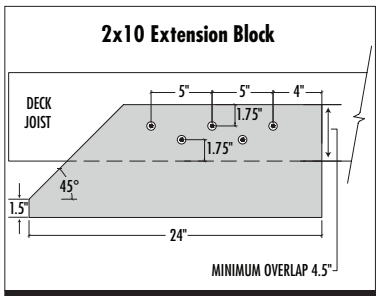


FIGURE C3

FIGURE C4

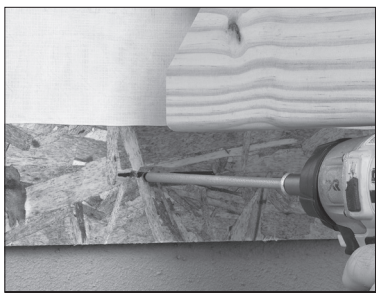
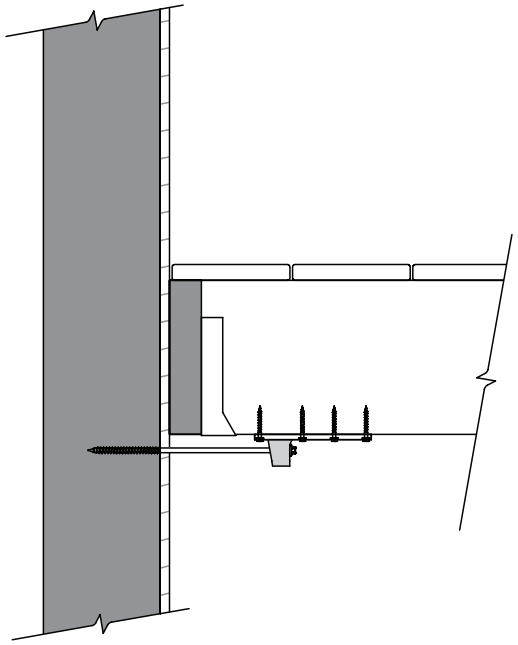


FIGURE C5

FIGURE C6

INSTALLATION CONDITION D Wall Stud In Line With Deck Joist

1. Identify the deck joist receiving the first bracket.
2. Draw a vertical line onto the face of the sheathing or siding below this joist that represents the center line of the stud behind. **(Figure D1)**
3. Place the point of the long screw on the center line, approximately 3/4" below the bottom of the ledger and deck joist. **(Figure D2)**
4. Install the fastener to the correct depth using the reference line on screw. **(Figure D3)**
5. Slide the bracket over the screw and onto the bottom edge of the joist using the screw silhouette as a pass-through. **(Figure D4)**
6. Pull the bracket directly firmly away from the house so that the head of the screw is snug against the hoop of the bracket.
7. Install the (8) small screws into each of the holes on the bracket. **(Figure D5)** Do not overdrive.
8. Repeat this same procedure for the last (3) brackets.



Reference Figures

FIGURE D1

FIGURE D2

FIGURE D3

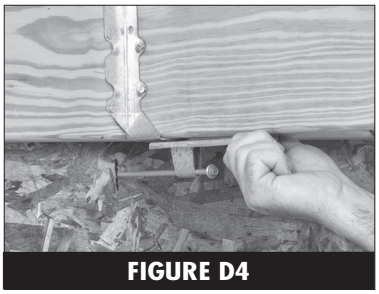


FIGURE D4

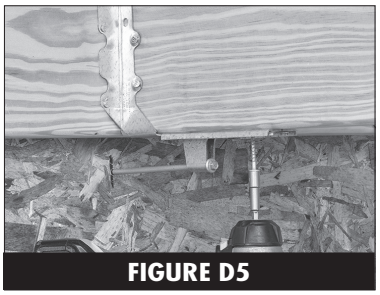
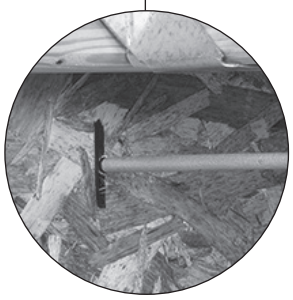


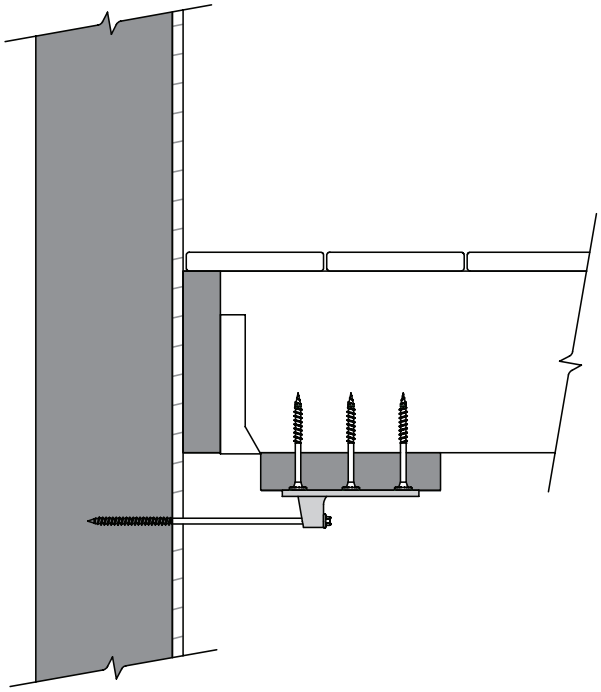
FIGURE D5



Enlargment of FIGURE D3
(Correct depth of screw)

INSTALLATION CONDITION E Wall Stud Between Deck Joist

1. Identify the stud closest to the deck joists selected for attachment
2. Draw a vertical line onto the face of the sheathing or siding that represents the center line of the stud behind. **(Figure E1)**
3. Install a piece of 2x8 blocking to the underside of the two joists where the stud falls between using (6) 4-1/2" HeadLOK or (6) 5" FlatLOK Fasteners. **(Figure E2)**
4. Place the point of the long screw along the center line of the stud and approximately 3/4" below the bottom of this blocking. **(Figure E3)**
5. Install the fastener to the correct depth using the reference line on screw. **(Figure E4)**
6. Slide the bracket over the screw and onto the bottom face of the blocking using the screw silhouette as a pass-through. **(Figure E5)**
7. Pull the bracket directly firmly away from the house so that the head of the screw is snug against the hoop of the bracket.
8. Install the (8) small screws into each of the holes on the bracket. **(Figure E6)** Do not overdrive.
9. Repeat this same procedure for the last (3) brackets.



Reference Figures

FIGURE E1

FIGURE E2

FIGURE E3

FIGURE E4

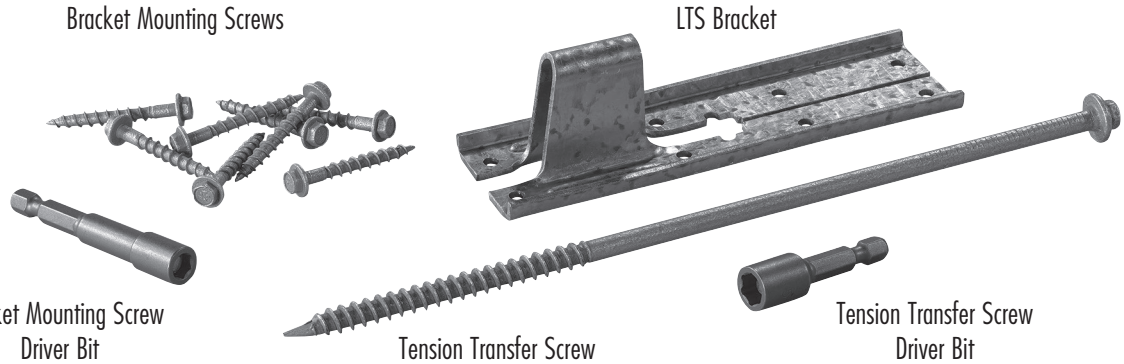
FIGURE E5

FIGURE E6

GUIDELINES AND RESTRICTIONS

- The long tension transfer screw must be embedded fully with all 3" of thread into the framing member of the house.
- Approved framing members include horizontal sill plates and wall top plates or vertical studs. Rim boards, headers or interior floor joists are not approved for LTS attachment.
- All designs in this bulletin meet the 750-pound minimum lateral load requirement and assume the following conditions:
    - Interior and exterior wood species are Hem Fir, Spruce-Pine-Fir (SPF) or better.
    - Deck framing may be installed in a wet-use condition.
    - Exterior lumber can be preservative treated with chemicals, such as ACQ, up to and including ground contact retention levels.
    - Application site is no closer than 1000 feet from salt water. Marine grade stainless steel connectors and fasteners are recommended for these coastal applications.
- The LTS Bracket is not to be installed closer than 2" from the cut end of any joist or blocking to which it's being attached.
- When attaching the LTS Bracket to the face of a joist or blocking, maintain a 1" distance from the top or bottom edge. Within this distance, predrill a 1/8" pilot hole before installing the mounting screws.
- Floor joists in supporting structure must be parallel to deck joists to use this method.
- The LTS has been tested in accordance with ICC-ES Acceptance Criteria AC-155 and found to exceed the minimum 750-pound design load called for by code. A chart reflecting these values and all other critical design data can be found in our evaluation report, ER-447, on our website or from the evaluation agency IAPMO UES at www.iapmoes.org. For additional information or technical assistance, please contact FastenMaster Technical Support at 800-518-3569.

LATERAL TENSION SYSTEM COMPONENTS



FastenMaster PRO Driven

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