

CAMO® Truss Screw Installation Instructions

1 Products Evaluated

1.1 CAMO Series Structural Truss Screws:

- 1.1.1 #14 x 4½" Truss Screw
- 1.1.2 #14 x 6" Truss Screw

2 Installation

- 2.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 2.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 2.3 *General Guidelines*
 - 2.3.1 Fasteners shall be installed with a ½" (12.7 mm), low rpm/high torque electric drill (450 rpm).
 - 2.3.2 Fasteners shall be installed with manufacturer-supplied bits.
 - 2.3.3 Fasteners shall be installed with the topside of the head flush to the surface of the wood member. Fasteners shall not be overdriven.
 - 2.3.4 Fasteners shall not be struck with a hammer during installation.
 - 2.3.5 Lead holes are not required but may be used where lumber is prone to splitting.
 - 2.3.6 Installer shall use appropriate/required personal protection equipment during installation and must not place fastener in mouth.
 - 2.3.7 Minimum requirements for fastener spacing, edge distance, and end distance shall be in accordance with Table 1.

Table 1. Minimum Spacing, Edge Distance and End Distance Requirements

Connection Geometry	Minimum Spacing/Distance (in)
	#14 Truss Screw
Edge Distance – Load in any direction	½
End Distance – Load parallel to grain, towards end	2⅜
End Distance – Load parallel to grain, away from end	1⅝
End Distance – Load perpendicular to grain	1⅝
Spacing between Fasteners in a Row – Parallel to grain	2⅜
Spacing between Fasteners in a Row – Perpendicular to grain	1⅝
Spacing between Rows of Fasteners – In-line	⅞
Spacing between Rows of Fasteners – Staggered	½
SI: 1 in. = 25.4 mm 1. Edge distances, end distances and spacing of fasteners shall be sufficient to prevent splitting of the wood or as shown in this table, whichever is the more restrictive. 2. Values for "Spacing between Rows of Fasteners – Staggered" apply where the fasteners in adjacent rows are offset by one half of the "Spacing between Fasteners in a Row".	

2.4 Truss/Rafter/Joist to Top Plate Connection

- 2.4.1 Install CAMO Series #14 x 6" Truss Screws upward through the wall top plates or wood structural framing member at the bottom corner of the top plate(s) and into the center of the wood truss or rafter. The fastener shall be installed at an upward angle from the vertical of 20° to 30° (Figure 1), and shall penetrate the wood truss, rafter or joist within 1/4" of the centerline. Fasteners located between studs may be installed at a 0° angle, as shown in Figure 5.

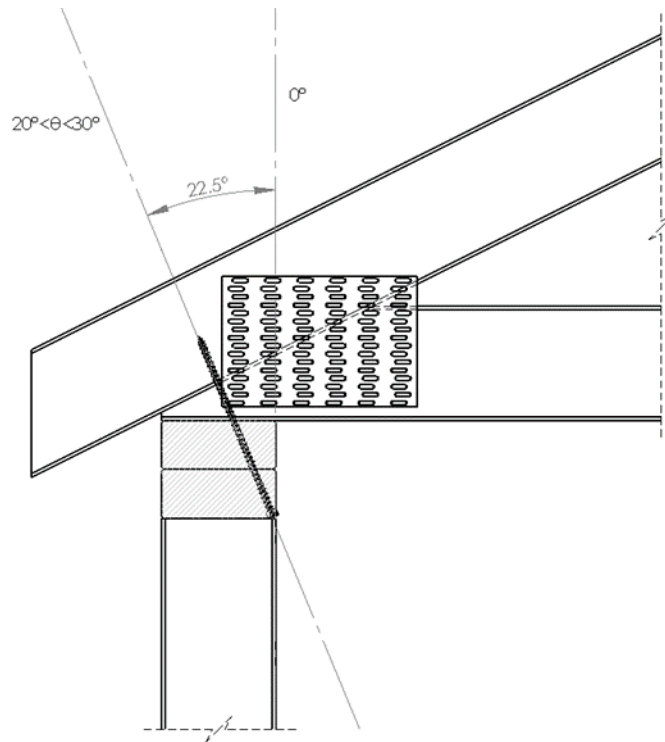


Figure 1. Installation of Fasteners at an Angle in Double Top Plate to Truss/Rafter/Joist Applications

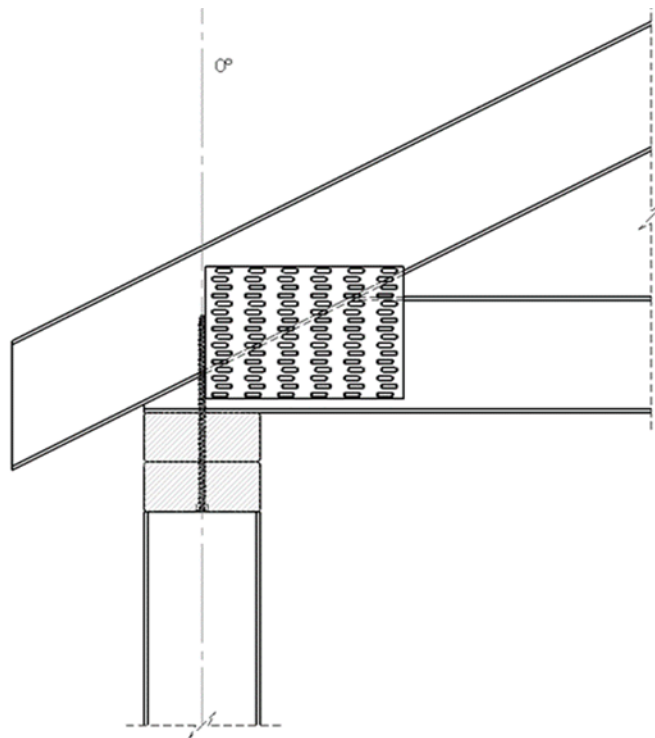


Figure 2. Installation of Fasteners in Double Top Plate Perpendicular to Truss/Rafter/Joist Applications

2.4.1.1 If the wood truss, rafter or floor joist is located directly over a top plate splice, offset the fastener $\frac{1}{4}$ " to one side of the splice. Note that the splice may be in either top plate.

2.4.1.2 Minimum penetration for truss/rafter/joist to top plate connections is $2\frac{1}{2}$ ".

2.5 Floor Truss/Joist to Bottom Plate Connection

2.5.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x $4\frac{1}{2}$ " Truss Screws downward through the wall bottom plates and into the center of the floor truss or joist.

2.5.1.1 The CAMO Series #14 x 6" Truss Screws shall be installed at a downward angle from the vertical of 4° to 14° (Figure 6) and shall penetrate the wood truss, rafter or joist within $\frac{1}{4}$ " of the centerline.

2.5.1.1.1 Minimum penetration into the floor truss/joist is $2\frac{1}{2}$ ".

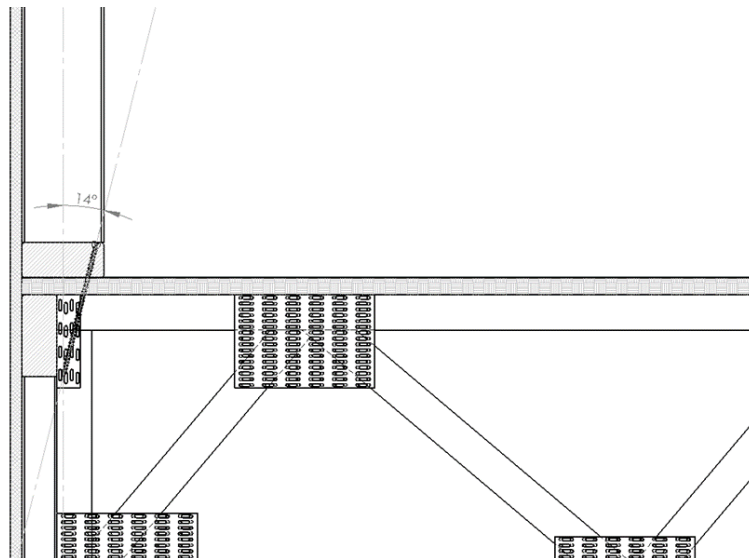


Figure 3. Installation of #14 x 6" Truss Screws at an Angle in Bottom Plate to Floor Truss/Joist Applications

2.5.1.2 The CAMO Series #14 x $4\frac{1}{2}$ " Truss Screws shall be installed at a downward angle from the vertical of 20° to 30° (Figure 4) or perpendicular to the bottom plate (Figure 5) and shall penetrate the wood truss, rafter or joist within $\frac{1}{4}$ " of the centerline.

2.5.1.2.1 Minimum penetration into the floor truss/joist is $1\frac{1}{2}$ ".

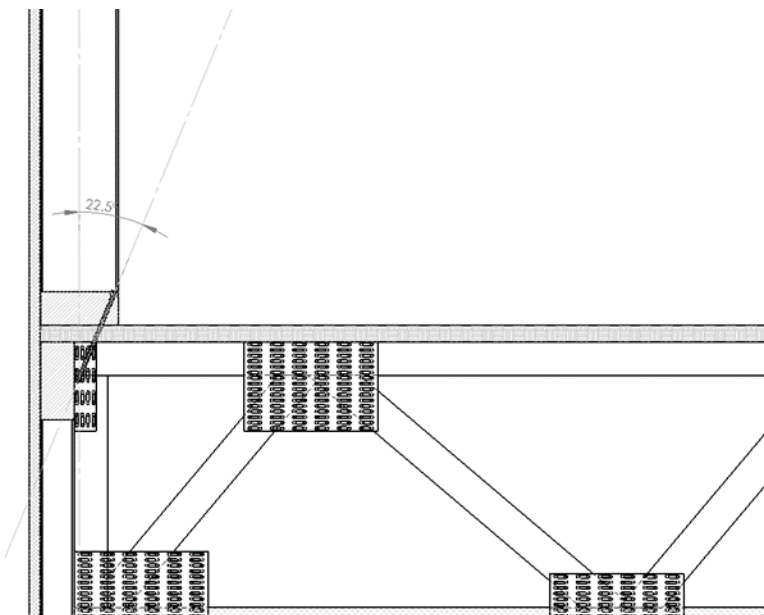


Figure 4. Installation of #14 x $4\frac{1}{2}$ " Truss Screws at an Angle in Bottom Plate to Floor Truss/Joist Applications

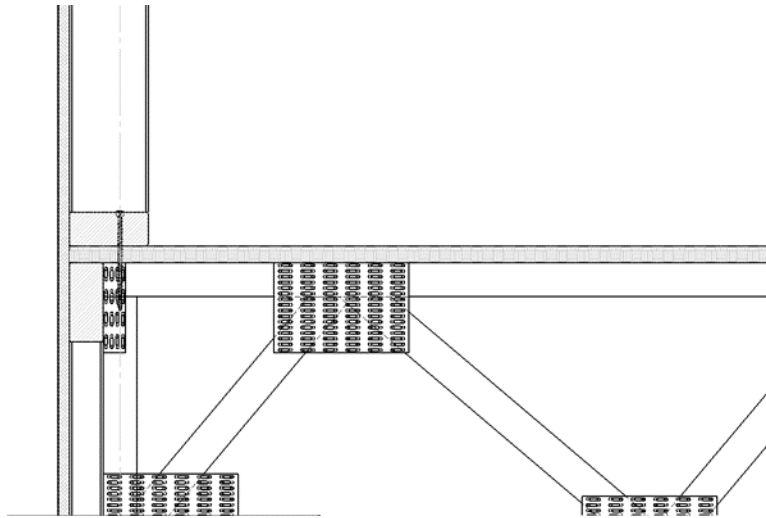


Figure 5. Perpendicular Installation of #14 x 4¹/₂" Truss Screws in Bottom Plate to Floor Truss/Joist Applications

2.6 Stud to Top Plate Connection

2.6.1 Angle (Toenail) Installation:

- 2.6.1.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x 4¹/₂" Truss Screws upward through the centerline of wall studs or wood structural framing member at the specified distance from the end of the stud and into the top plate(s).
- 2.6.1.2 Fastener shall be installed at an upward angle from the vertical of 20° to 30° within 1/4" of the centerline of the stud.
- 2.6.1.3 Starting from the specified end distances, drive the fastener until the bottom surface of the fastener head fully bears against stud (see Figure 6).
- 2.6.1.4 When desired, fastener can be driven until the filet edge of the fastener head is tangent to the surface of the wood member.

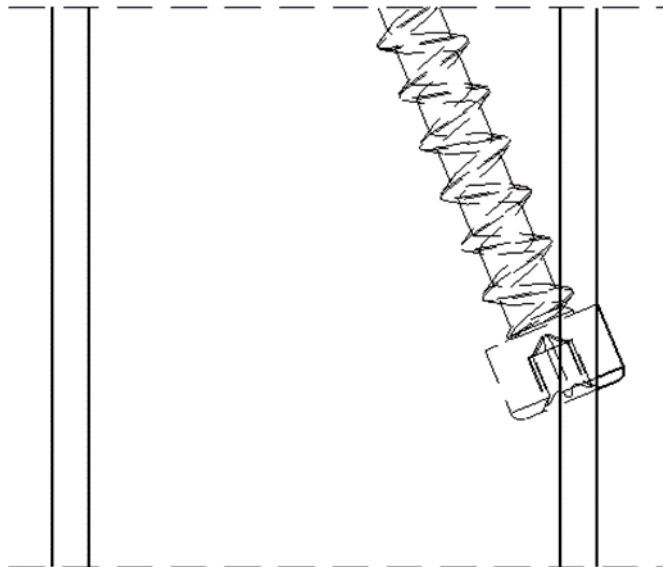


Figure 6. Diagram Showing Fastener Head Fully Bearing against Stud

2.6.2 Perpendicular Installation:

2.6.2.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x 4½" Truss Screws downward through the top plate(s) and into the wall studs.

2.6.2.1.1 Fastener shall be within ¼" of the centerline of the stud.

2.6.2.2 Drive the fastener until the bottom of the head is flush with the surface of the outermost top plate.

2.7 Stud to Bottom Plate Connection

2.7.1 Angle (Toenail) Installation:

2.7.1.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x 4½" Truss Screws downward through the centerline of wall stud or wood structural framing member within the specified distances from the end of the stud and into the bottom plate.

2.7.1.2 For CAMO Series #14 x 6" Truss Screws:

2.7.1.2.1 Fasteners shall be installed at a downward angle from the vertical of 20° to 30° into the narrow face (Figure 7) and within ¼" of the centerline of the stud, or shall be installed at a downward angle from the vertical of 4° to 14° into the wide face (Figure 8) and within ¼" of the centerline of the stud.

2.7.1.2.2 For multiple fasteners, the CAMO Series #14 x 6" Truss Screws shall be installed at a downward angle from the vertical of 4° to 14° into the wide face (Figure 9 and Figure 10) of the stud while upholding the fastener spacing provided in Table 1.

2.7.1.2.3 Starting from the specified end distances shown in Figure 7 through Figure 10 (at a minimum), drive the fastener until the bottom surface of the fastener head fully bears against stud (see Figure 7).

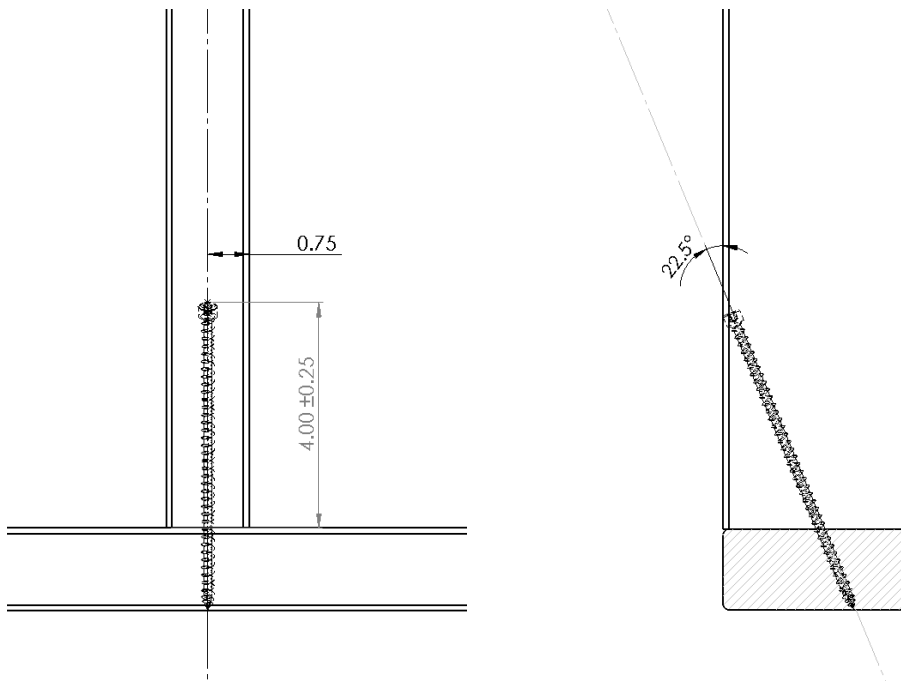


Figure 7. Stud to Bottom Plate – 22.5° (Angle), One #14 x 6" Truss Screw Option

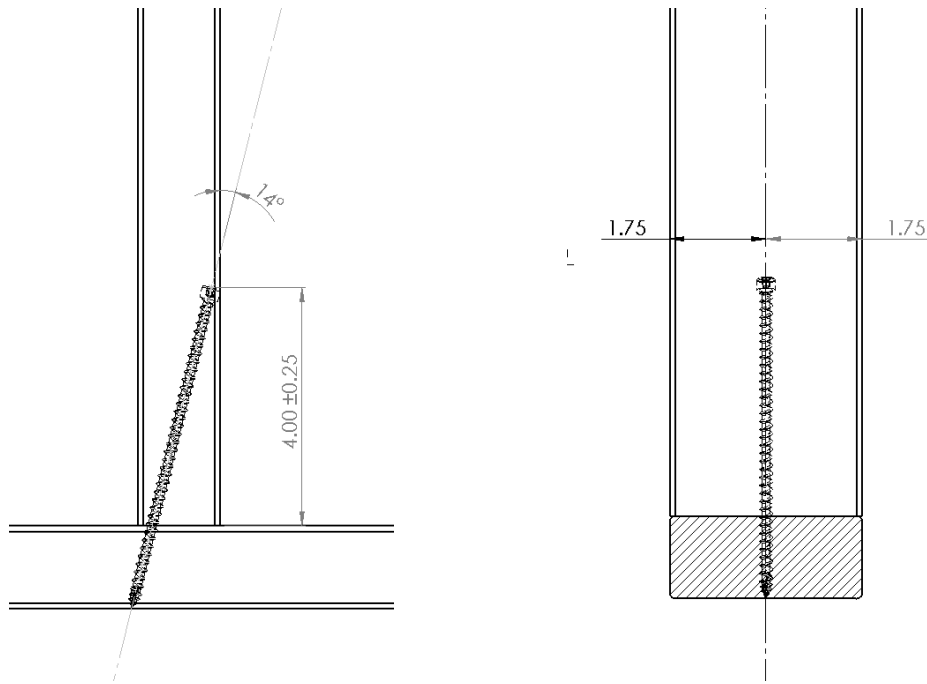


Figure 8. Stud to Bottom Plate – 14° (Angle), One #14 x 6" Truss Screw Option

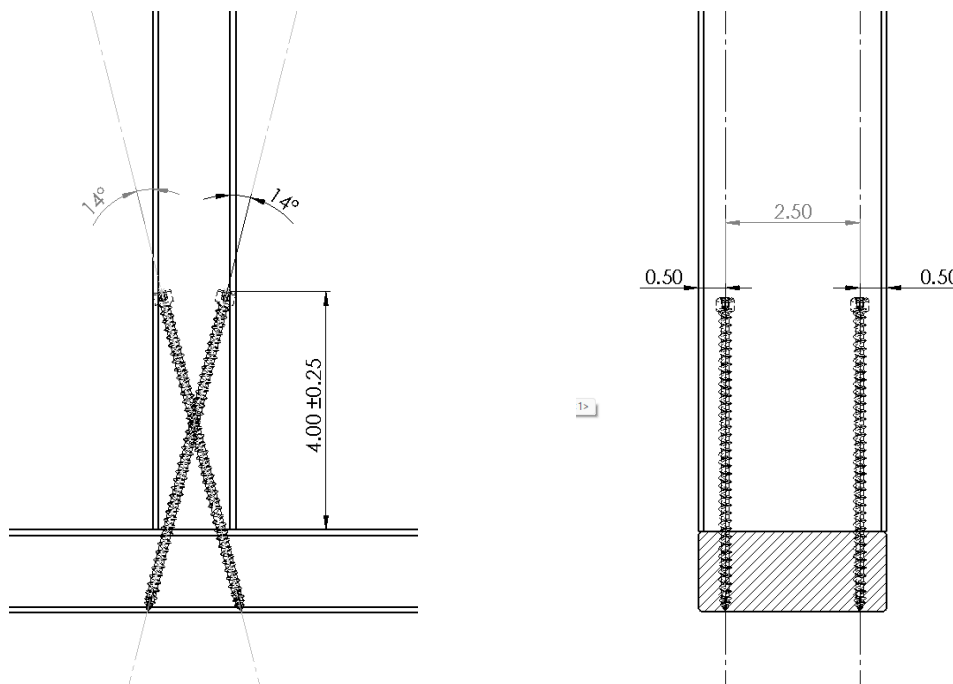


Figure 9. Stud to Bottom Plate – 4°-14° (Angle), Two #14 x 6" Truss Screws Install Option

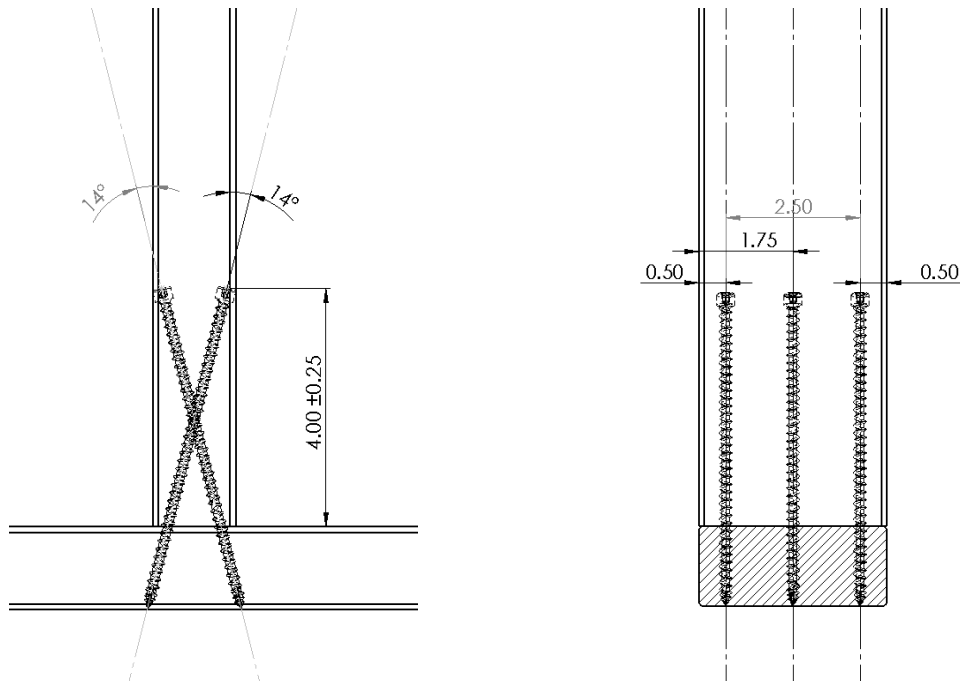


Figure 10. Stud to Bottom Plate – 4°-14° (Angle), Three #14 x 6" Truss Screws Install Option

2.7.2 Perpendicular Installation:

2.7.2.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x 4½" Truss Screws upward through the bottom plates and into the wall studs (see Figure 11).

2.7.2.1.1 Fastener shall be within ¼" of the centerline of the stud.

2.7.2.1.2 Drive the fastener until the bottom of the head is flush with the surface of the outermost top plate.

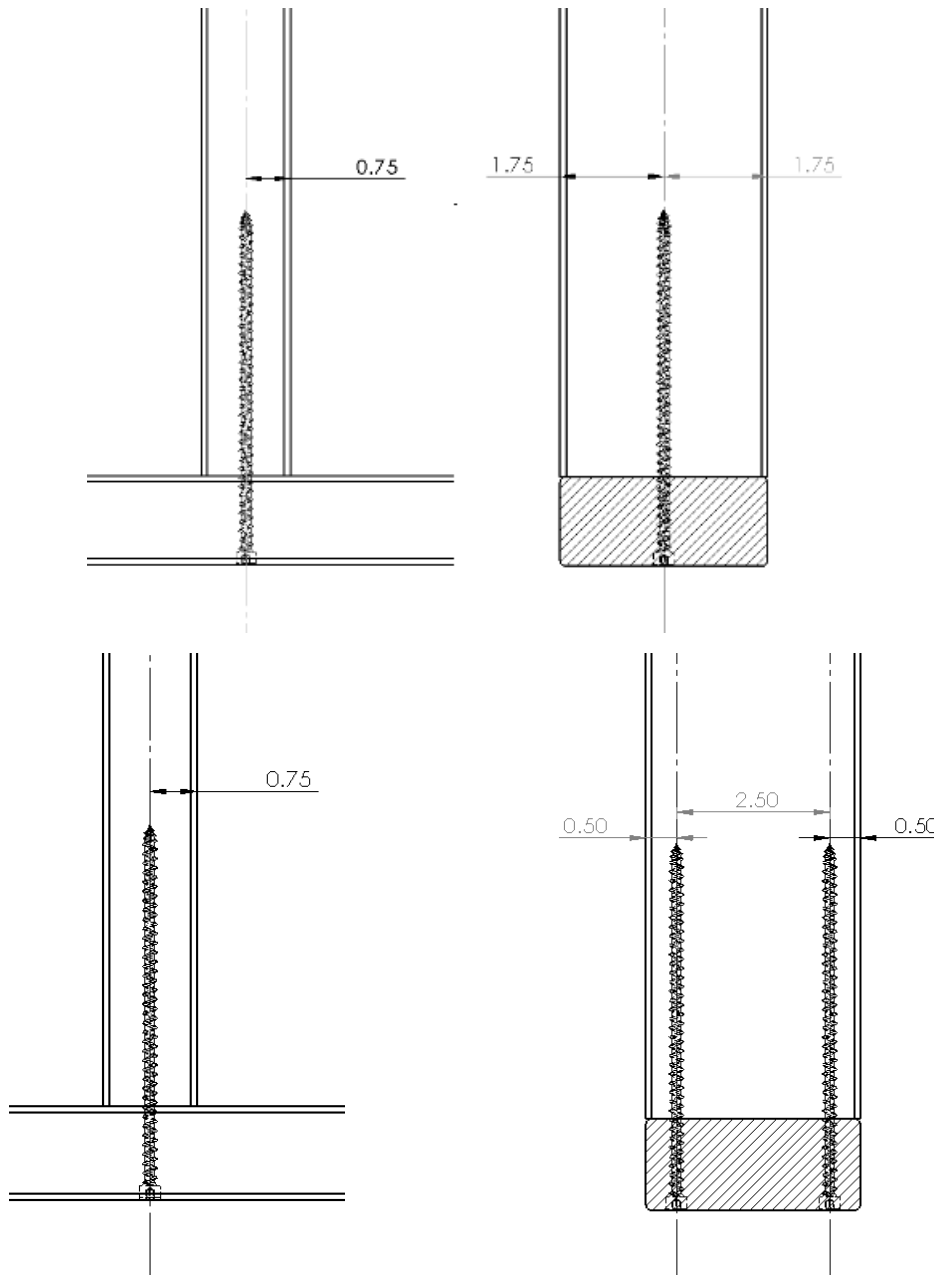


Figure 11. Stud to Bottom Plate – 0° (Perpendicular) Install Options

2.8 Bottom Plate to Rim Board/Ribbon Board Connection

- 2.8.1 Install CAMO Series #14 x 6" Truss Screws or CAMO Series #14 x 4 $\frac{1}{2}$ " Truss Screws downward and perpendicular to the face of the wall bottom plate, a minimum of $\frac{1}{2}$ " from the outside face of the wall, through the plate and into the rim board/ribbon board (see Figure 12).
- 2.8.2 Minimum penetration for truss/rafter/joist to bottom plate is 2 $\frac{1}{2}$ ".

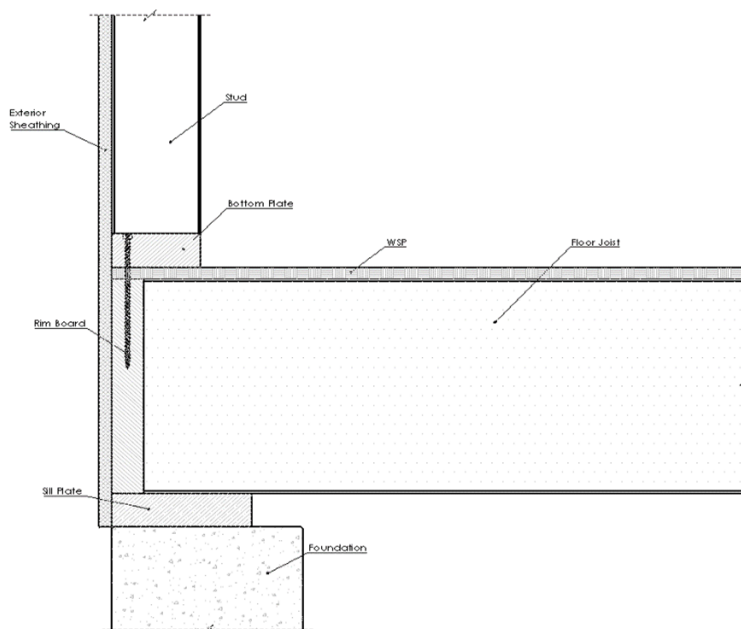


Figure 12. Fastener in Bottom Plate to Rim Board Connection

2.9 Joist to Beam Connection

- 2.9.1 Install CAMO Series #14 x 6" Truss Screws upward through the deck beam and into the center of the joist. The fastener shall be installed at an upward angle from the vertical of 20° to 30° (Figure 13) and shall penetrate the deck joist within $\frac{1}{4}$ " of the centerline. Install fasteners away from the end of the joist.
- 2.9.2 If the deck joist is located directly over a beam splice, offset the fastener to one side of the splice.
- 2.9.3 Minimum penetration for deck joist to deck beam connections is 2 $\frac{1}{2}$ ".

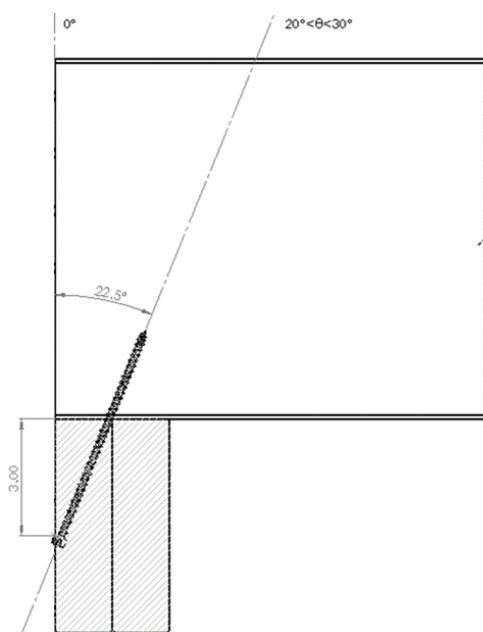


Figure 13. Joist to Beam - Deck Connection

2.10 Post to Beam Connection

- 2.10.1 Install CAMO Series #14 x 6" fasteners upward through the post and into the center of each 2x member of the deck beam.
 - 2.10.1.1 Fasteners shall be installed at an upward angle from the vertical of 4° to 14° (Figure 14), and shall penetrate the beam within 1/4" of the centerline. Install fasteners away from the end of the joist.
 - 2.10.1.2 Fasteners shall be installed at an upward angle from the vertical of 20° to 30°, and shall penetrate the beam within 1/4" of the centerline. Install fasteners away from the end of the joist.
 - 2.10.1.3 If the deck joist is located directly over a beam splice, offset the fastener to one side of the splice.
- 2.10.2 Minimum penetration for deck joist to deck beam connections is 2 1/2".

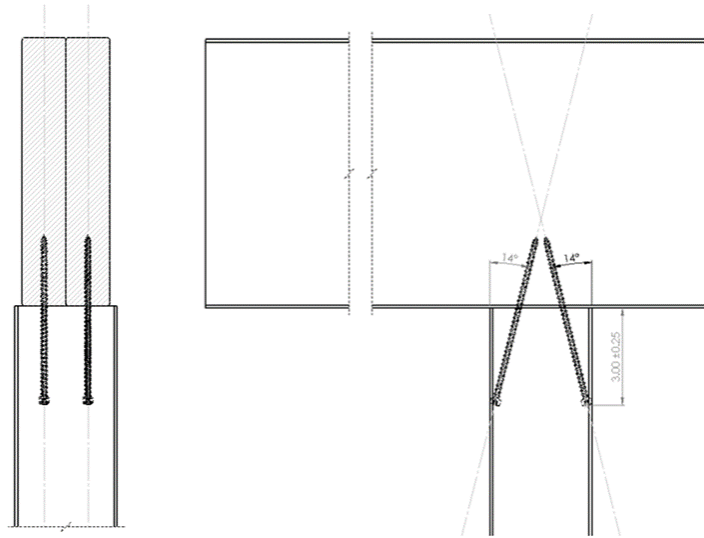


Figure 14. Post to 2-ply Beam - Deck Connection

2.11 Knee Brace to Post Connection

- 2.11.1 Knee brace is installed to post with one CAMO Series #14 x 6" Truss Screw at the bottom, one into the front and one into the back of the diagonal brace (See Figure 15 and Figure 16).
- 2.11.2 For the screws that are driven into the sides of the knee brace, it is permitted to drive the fastener until the bottom of the head is flush with the surface of the wood member as shown in Figure 6, or drive the fastener until the top of the head is flush with the surface of the wood member.

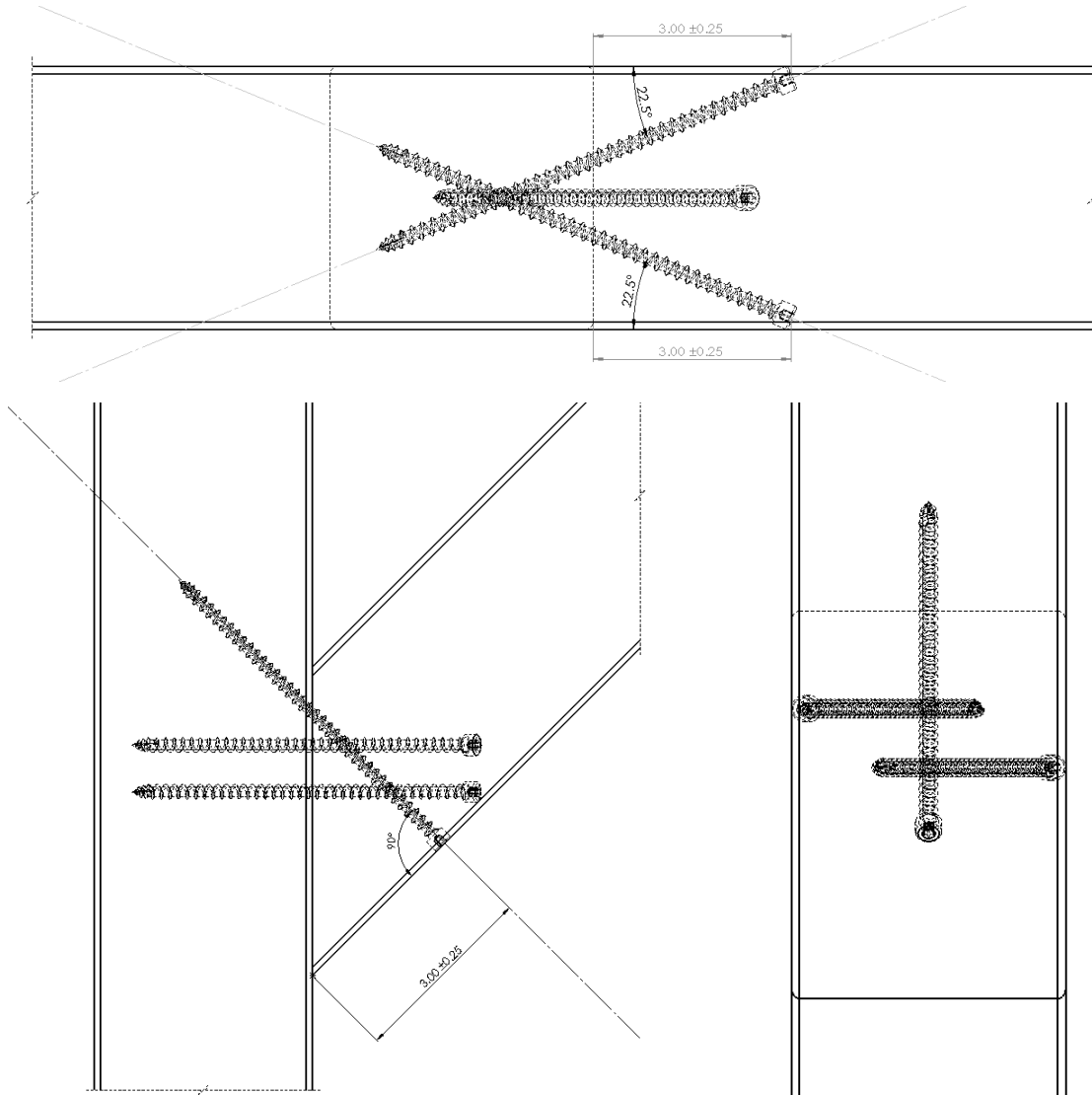


Figure 15. 4 x 4 Diagonal Brace Connection using CAMO Series #14 x 6 Truss Screws

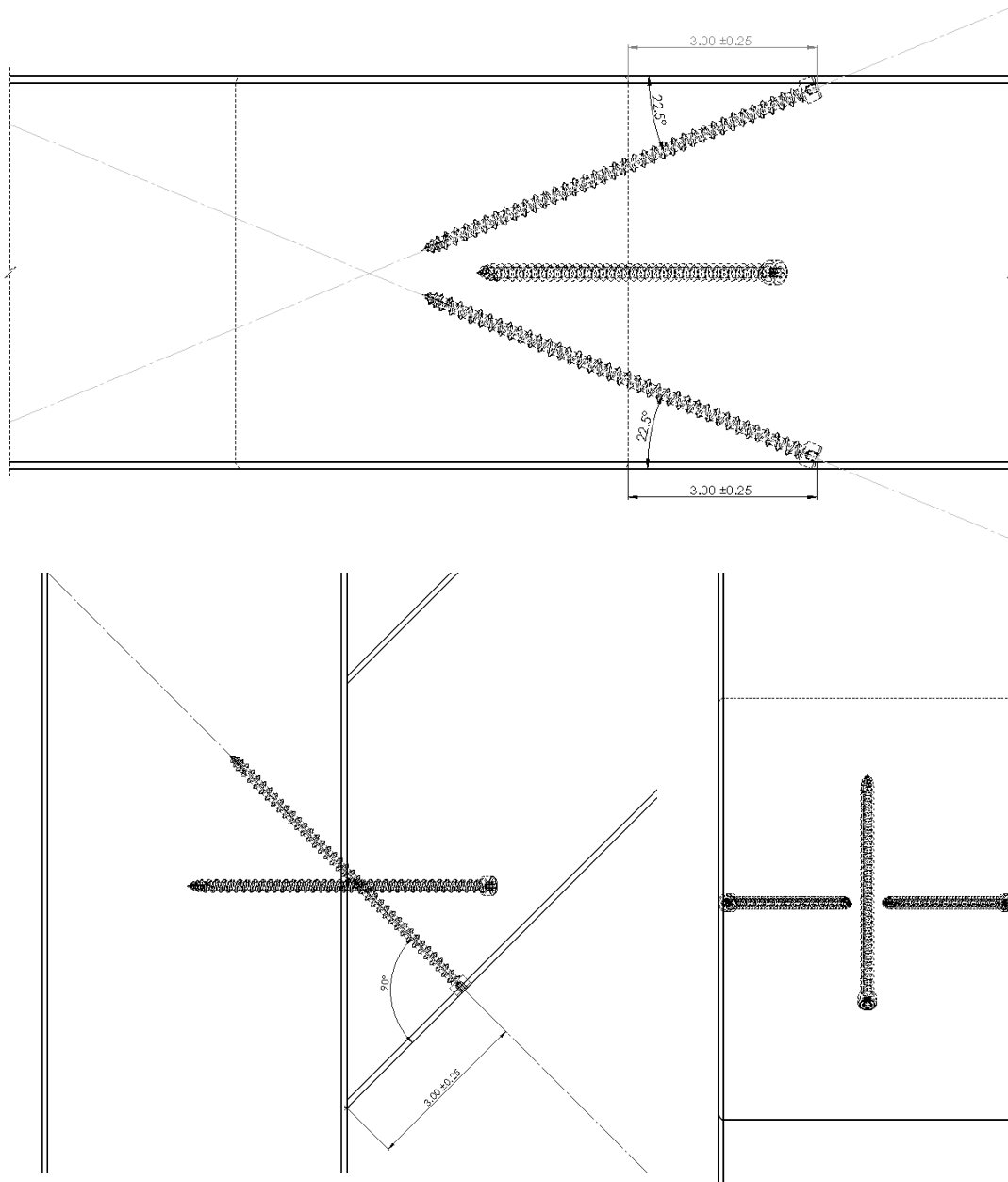


Figure 16. 6 x 6 Diagonal Brace Connection using CAMO Series #14 x 6 Truss Screws