

Chapter 45: Pitch Breaks – Flatter to Steeper (Upper Gambrel)

Most Common Mistakes:

1. Failure to properly locate pitch break.
2. If a loft floor is included, installing floor prior to any steeply sloped rafters.
3. Upper Gambrel flashing set other than to stringline.
4. Omitting closure strips.
5. Overlooking caulking between Upper Gambrel flashing overlaps.

Upper gambrel pitch breaks occur at a transition between flatter (towards peak) and steeper roof slopes. Exercising care, this will be a painless and leak free area. This pitch break location is denoted by distance above and in from eave height. **See Figure 45-1**

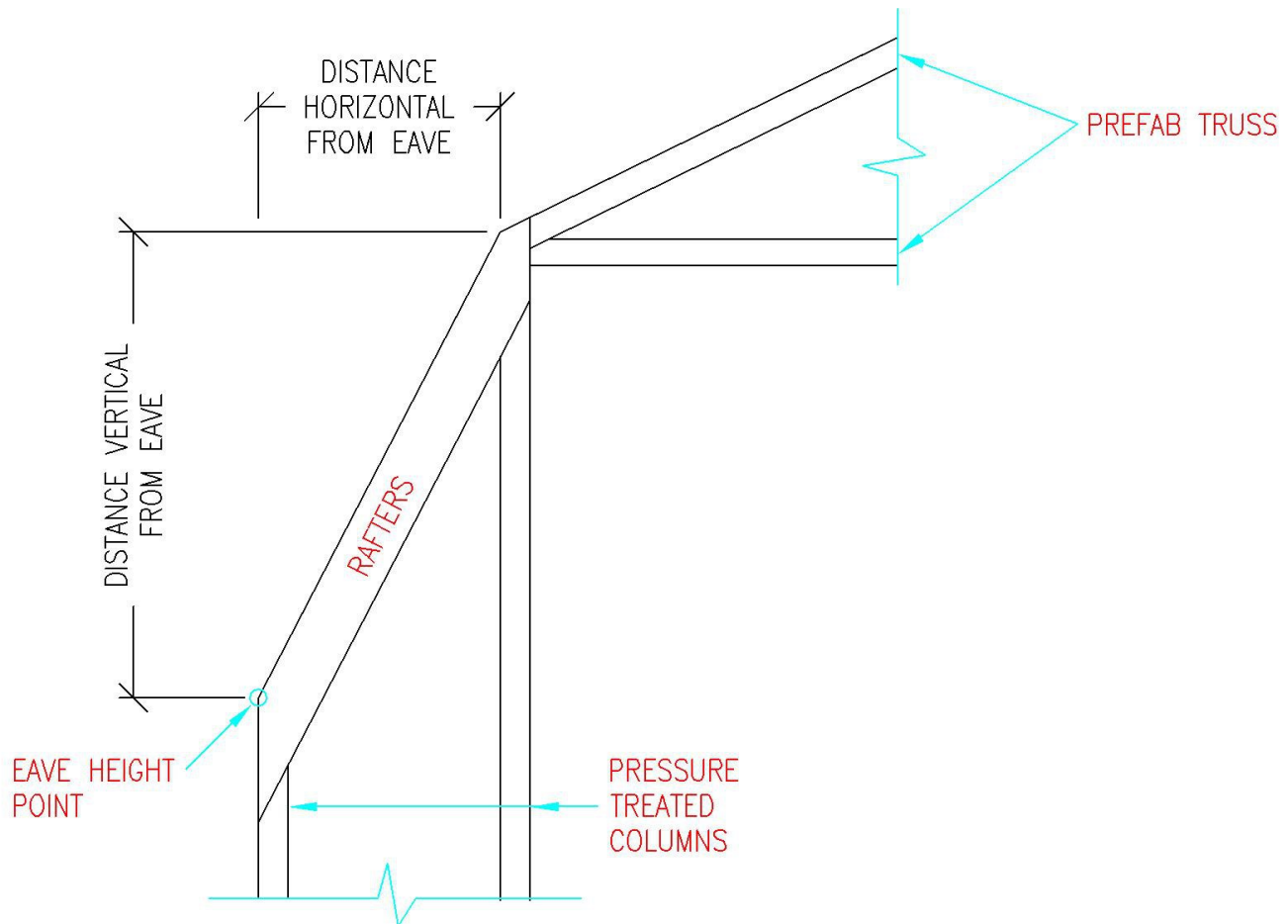


Figure 45-1: Gambrel Pitch Break

Gambrel roofs may either be clearspan trussed, from eave to eave, or have trusses supported by columns at pitch break, with rafters each side of columns for steep sloped area. Same construction concepts will apply in either case.

After all columns are set, determine pitch break point and install trusses for center span. Place rafters on each side of columns with 2x blocking between. Bevel pitch break edge purlin at upper roof slope. Pitch break edge purlin is installed so upper outside edge is at

pitch break. Outer edge of pitch break edge purlin joist hanger may extend beyond upper edge of steep slope rafters. If so, bend any hanger portion extending above rafter over rafter.

See Figure 45-2

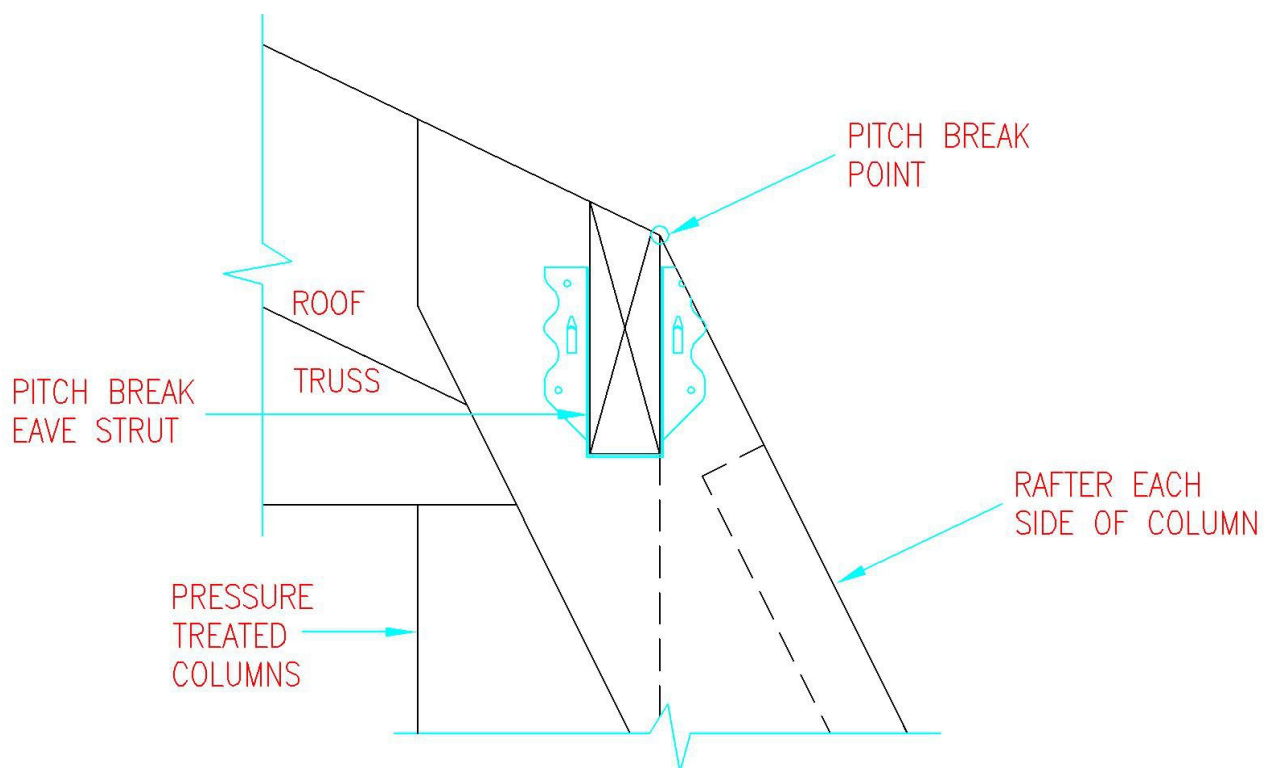


Figure 45-2: Gambrel Pitch Break Point

Install uppermost steep slope purlin, so hangers avoid overlapping. **See Figure 45-3**

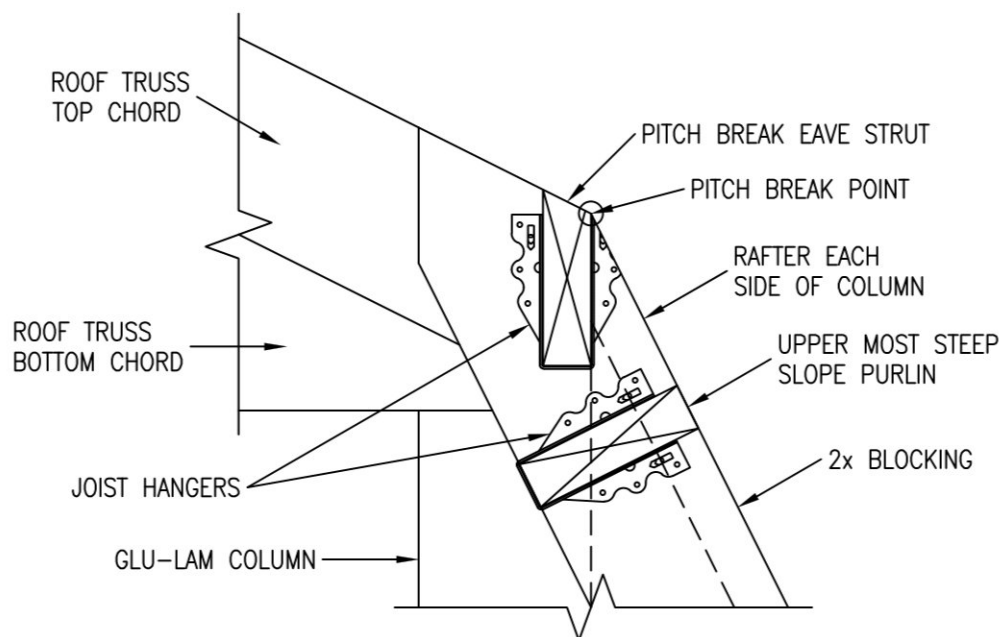


Figure 45-3: Gambrel Pitch Break Purlins

Complete all roof framing.

Square pitched roof and install roofing on roof steep slope, being careful to hold top edge of steel down to allow for upper roof steel. Attach to upper most steep slope roof purlin with diaphragm screws each side of every high rib. **See Figure 45-4**

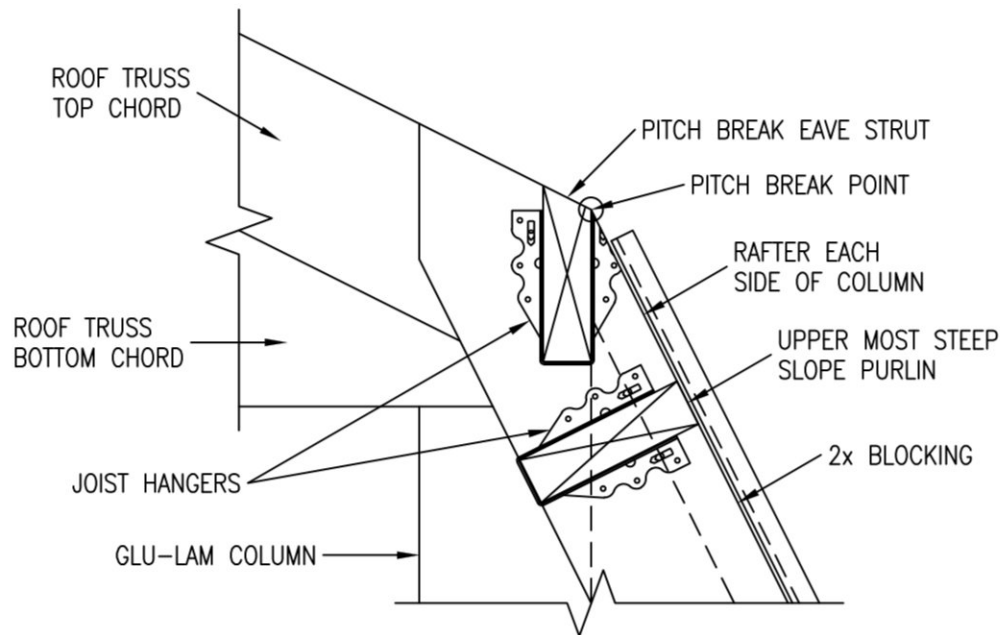


Figure 45-4: Gambrel Steep Slope Roof Steel Installation

Place Upper Gambrel transition flashing on roof. “Bend” in flashing should be at steep slope roofing top edge.

Make a pencil mark at lower flashing edge at both building ends, on end truss/rafter or fly rafter tops. Partially drive nails at these marks and run string line from end-to-end of building and attach to nail heads.

Stringline will make Upper Gambrel flashing easier to align and provide a measuring point for locating form-fitted outside closure strips. **See Figure 45-5**

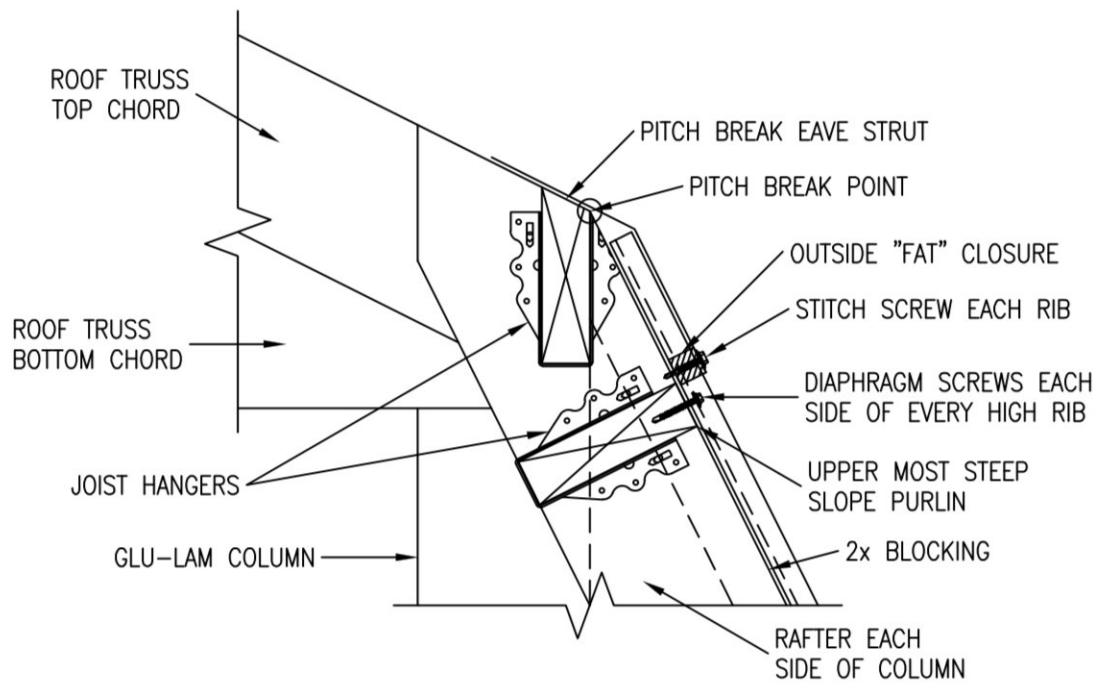


Figure 45-5: Upper Gambrel Transition Flashing

Press Outside Closure Strips into place, along building length. Closure low edge will be $\frac{1}{4}$ " up from string line. Install first Upper Gambrel transition flashing piece at building back, allowing an overhang beyond end truss/rafter $1\frac{3}{4}$ " or fly rafter by $\frac{3}{4}$ ".

See Figure 45-6

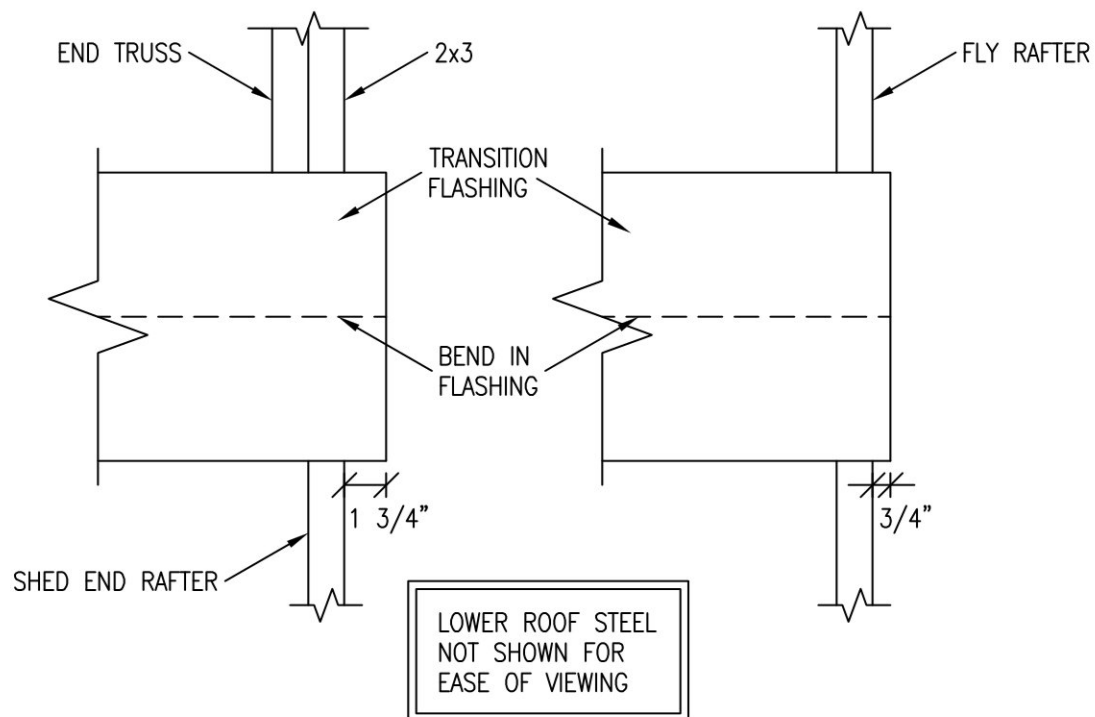


Figure 45-6: Pitch Break Transition Flashing

Fasten with #12 x 1-1/4" stitch screws through Upper Gambrel transition flashing edge flange and closure strips into all roof steel high ribs. As stitch screws attach Upper Gambrel transition flashing directly to steel roofing, purlin location has no effect on flashing installation.

Run two caulk beads at first Upper Gambrel transition flashing piece end to seal to next overlapping piece. Lap next Upper Gambrel transition flashing a 3" minimum over first. Press seams together and so on down building. Trim last piece, if necessary, to overhang either end truss/rafter or fly rafter at building front end, identical to overhang on rear end.

Make a pencil mark at steeper slope edge purlin lower edge at both building ends, on end truss/rafter or fly rafter tops. Partially drive nails at these marks and run stringline from end-to-end of building and attach to nail heads. Stringline will provide a measuring point for locating form-fitted inside closure strips.

Press Inside (skinny) Closure Strips into place, along building length. Closure low edge will be at stringline. Upper roof steel downhill edge, will be at 1-1/2" past bend in Upper Gambrel transition flashing. **See Figure 45-7**

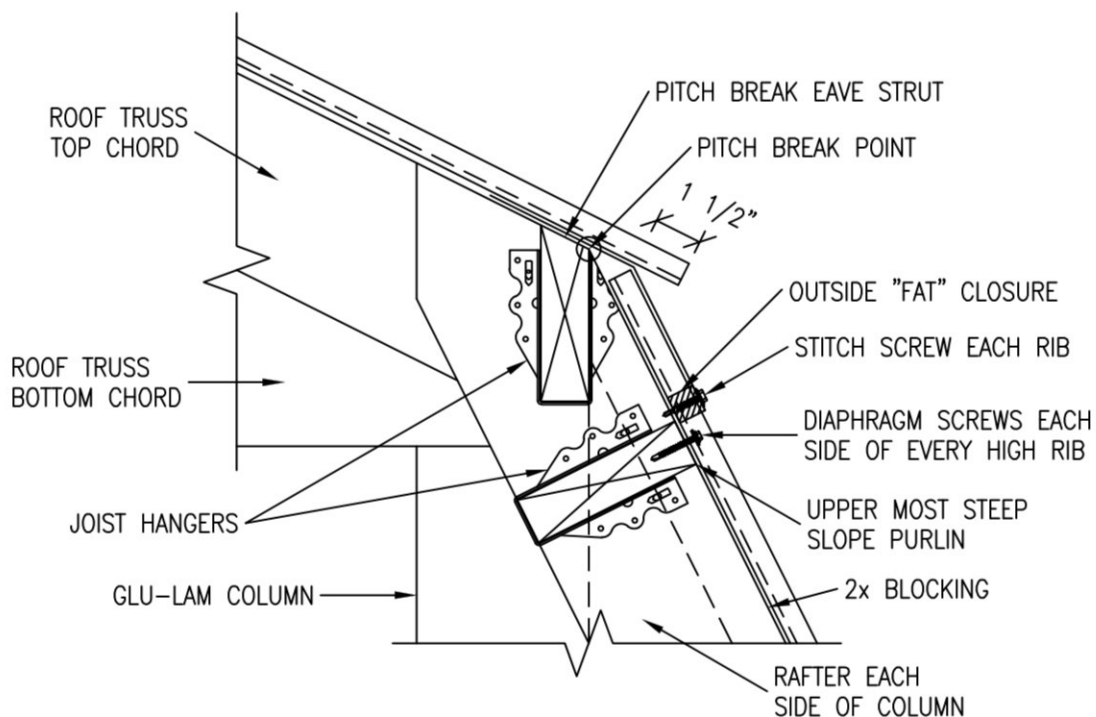


Figure 45-7: Gambrel Upper Roof Steel Installation

(Dimensions may vary by vendor)

Fabral: AT-1 (5" lower 7" upper)

McElroy: G-GU (both 4-3/4")

Union Corrugating : Gambrel Flashing (both 6-3/8")

After roof steel is installed, place lower rake trim with top against overhanging upper roof steel (sliding under leading edge of Upper Gambrel transition flashing).

Place upper rake trim, so rake trim and upper roof steel lower edges are flush. Trim face of upper rake trim to a smooth transition from upper to lower (any lap should leave lower rake behind upper).

Caulk between overlapping trims. **See Figure 45-8**

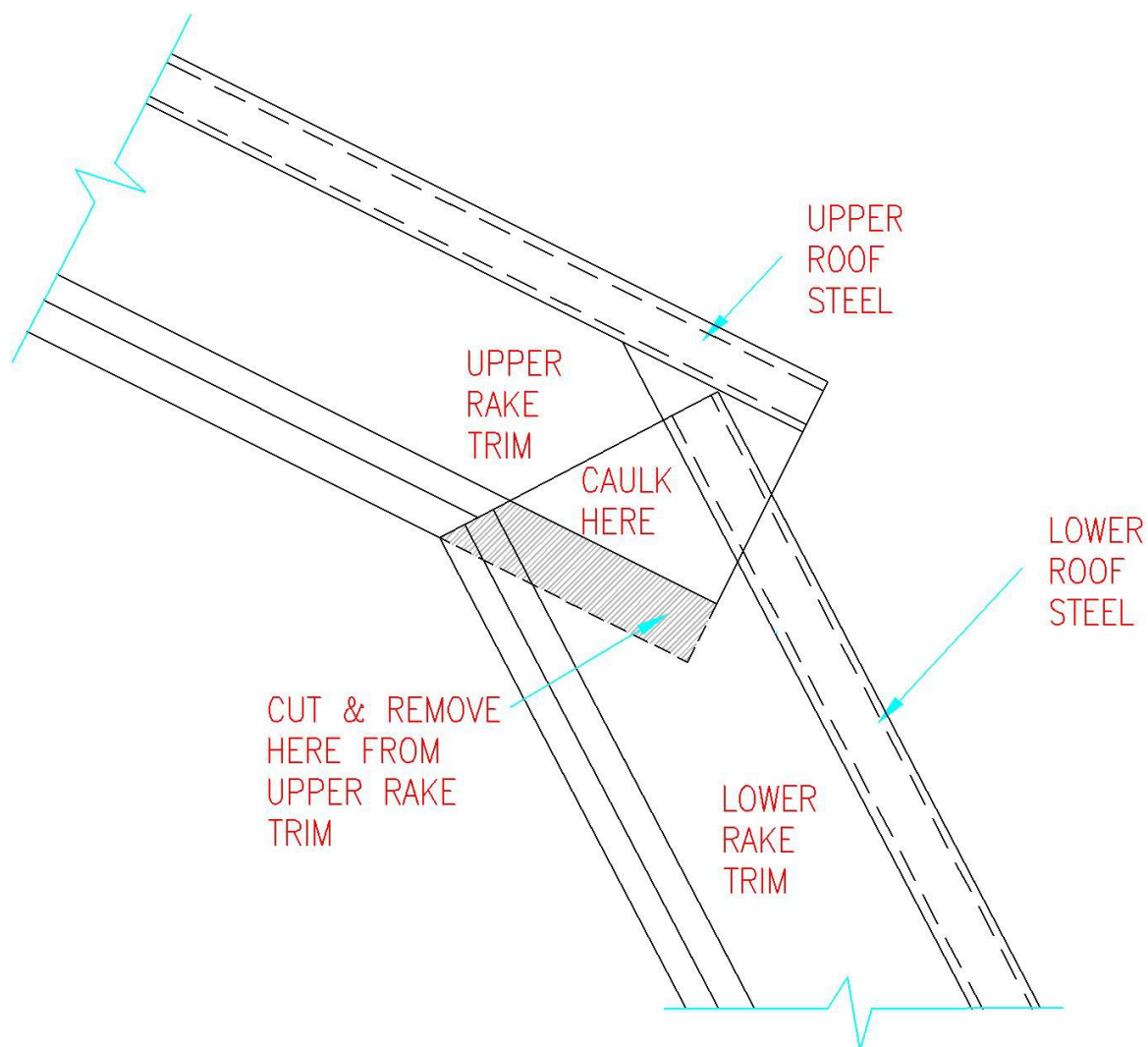


Figure 45-8: Gambrel Lower Roof Rake Trim Installation