

11.0

Impediments to the Installation of Horizontal Braces

Skirtable impediments: In many instances impediments such as recessed lights, AC ducts or ceiling supplies or inlets and bathroom exhaust fans can simply be skirted by installing a horizontal brace at an angle. Be sure that the brace is long enough so that the fasteners to the framing member at the end of the brace from the gable wall are at least 2-1/2" from the end of the brace.

Fishing horizontal braces: A wire or an air conditioning duct in the way may require you to fish a horizontal brace under the obstruction. There must be enough space to maneuver the horizontal brace and enough clearance. There must be a gap of at least 1-1/2" in order for the 2x4 horizontal brace to slip under the obstruction.

Splicing lower horizontal braces: If an obstruction prevents installing a horizontal brace, then it may be possible that a splice can be made under braces in a manner similar to that just described.

Splicing upper horizontal braces: If there is insufficient space to fish a full 6' long brace under an obstacle, then the brace can be spliced as long as it is done properly. Each side of the splice must have the total number of fasteners to be applied in any framing members beyond the splice (measured away from the gable end). For example, if the splice is made between the first and second framing member away from the gable end, then the part beyond the splice would cross two framing members and would have a total of six fasteners. Consequently, six fasteners would be required between the horizontal brace and the splice block on both sides of the splice.

Thinner horizontal bracing: If a 2x4 horizontal brace cannot be fished under an obstruction, but 1/2" or thicker plywood will fit, then a solution is to use a 1' to 2' wide strip of plywood that is as thick as possible and long enough to span three framing members. Attach the plywood with 1-1/2" long #8 screws at a 5" to 6" spacing along each framing member crossed. Similarly, if an obstruction prevents you from running a horizontal brace 4' from the gable end (see 4' blocking below), then you can use plywood running parallel to the gable end and spanning across adjacent horizontal braces to help distribute the wind loads into the ceiling or roof structure. Make the plywood strip as wide as possible and anchor it to all of the horizontal braces that it crosses including the short one installed at the obstruction with 1-1/2" long #8 screws at 5" to 6" spacing.

Four foot long horizontal braces: If 6' long horizontal braces cannot be installed but 4' or longer braces that rest on two interior framing members can be installed, then blocking can be used to safely transfer the loads. Figure A -11 shows a remedial method that can be used in this situation in Appendix A. The essence of it is the installation of a block of the same depth as the framing members. By depth we mean the larger face of the framing member and not the 1-1/2" edge. The anchor block helps

transfer the load that a retrofit stud applies to a horizontal brace to the plane of the ceiling. The figure makes it pretty clear how the block is to be installed. For the block to function effectively, it must be precisely cut so there is little gap between it and the framing members. The gap should be limited to 1/8" at each end. The anchor block also helps prevent framing members from twisting.

Obstructions that prevent installation of 4' long horizontal braces or sheathing (see thinner horizontal braces above): Where there are obstructions that prevent installation of 4' long horizontal brace and a plywood strip cannot be installed, then a retrofit stud cannot be installed because it would not be secured at one end. In that case read the next section about impediments to the installation of retrofit studs. What needs to be done to compensate for the missing retrofit stud is to strengthen the retrofit studs on each side of the missed one and to build a ladder between the two that spans over the missed retrofit stud.

Truss plates: Truss web plate locations may prevent installation of horizontal braces onto framing members precisely where they would ordinarily be placed. In the typical case where the plate is at the peak, the method shown in the Appendix Figure A- 15 can be used. You may be able to install the brace by offsetting it a bit.

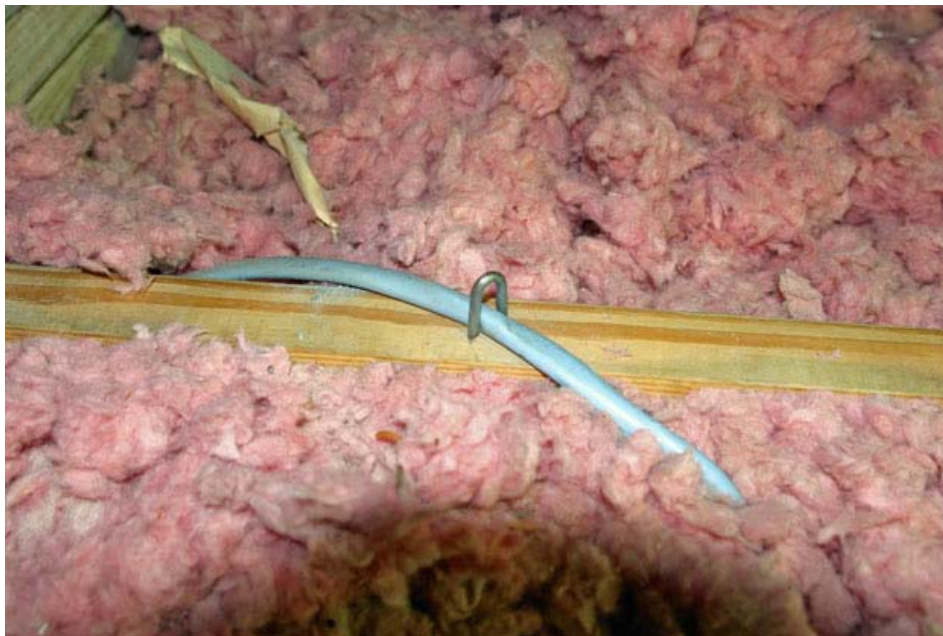


Figure 11.1. Electrical wiring running over ceiling joist. If the wire were to potentially to be under a horizontal brace, the brace could be routed under it or the staple carefully removes and moved aside to avoid the conflict. Wires should NEVER sandwiched between horizontal braces and other framing members.

Wiring: You may encounter electrical wiring running over the top of ceiling framing members (Figure 16). **DO NOT sandwich a wire between a brace and a framing member.** That creates a fire hazard! To move a wire or to gain enough slack so that you can fish a Horizontal Brace under a wire, you may need to remove a staple or two

that secures the wire to a framing member. Tools for that purpose include the claw part of a hammer, a medium sized slot (flat) screw driver, a pair of pliers or nippers. Pull the staple up WITHOUT compressing the wire cable itself. Pliers and nippers should only be used to carefully grab and pry out the staple. Be very careful not to damage the wire or its protective cover. In some cases, it may be necessary to fish or needle the brace under wires as opposed to just moving the crossing point to a location that is not under the brace. You may also need to fish or needle a brace under an AC duct. Be gentle with AC ducts so as not to create costly leaks.

Once you have installed all the lower and upper horizontal braces, you will be about two thirds of the way through strengthening the gable end wall, and you have completed the hardest part of installing the upper horizontal braces.