Header Tricks for Remodelers

Creative responses to unusual specs

by Roger Gwinnup

Between the Scylla of the homeowner's desires and the Charybdis of the house's structural needs, the course of the remodeler is often narrowly charted. When the request is to "take out that wall, but hide the header so it looks like nothing ever happened," the possibilities are usually at least two, but hopefully not more than two million. Given the vagaries of everyone who has ever worked on the house previously, the only way to proceed is to get out the old recipro-saw/scalpel and make an incision. Having done so several times, with instructions to "hide that header," I'd like to share some techniques that have worked for myself and my former partner Bill Pappas, now in Minnesota.

Heading off truss ends—I once built a small, gable-roof addition to a house that had pre-engineered roof trusses. The header had to run perpendicular, and adjacent to, the truss ends. I plumb cut the truss ends flush with the outside of the old framing (being careful not to disturb the truss plates) and removed enough plywood sheathing to allow access for nailing (drawing 1). Using a metal-cutting blade in my reciprocating saw, I cut the nails holding the truss to the wall and slid a joist hanger on the end of each truss. After installing posts at either end of the opening, I set the header and nailed the joist hangers to it. All that remained was to secure additional joist hangers to the other side of the new ceiling joists, remove the wall, and have a donut.

One advantage to this method, besides the concealed header, is that the existing wall supports everything until the new header is completely installed. Another advantage is that starting wall removal from the outside of a house leaves everything in place as a barrier between a habitable room and a construction zone. Depending on the situation, several wall components may be reusable, especially the insulation and the studs, if the nails have been cut from the top and bottom plates and the studs carefully twisted away from the drywall.

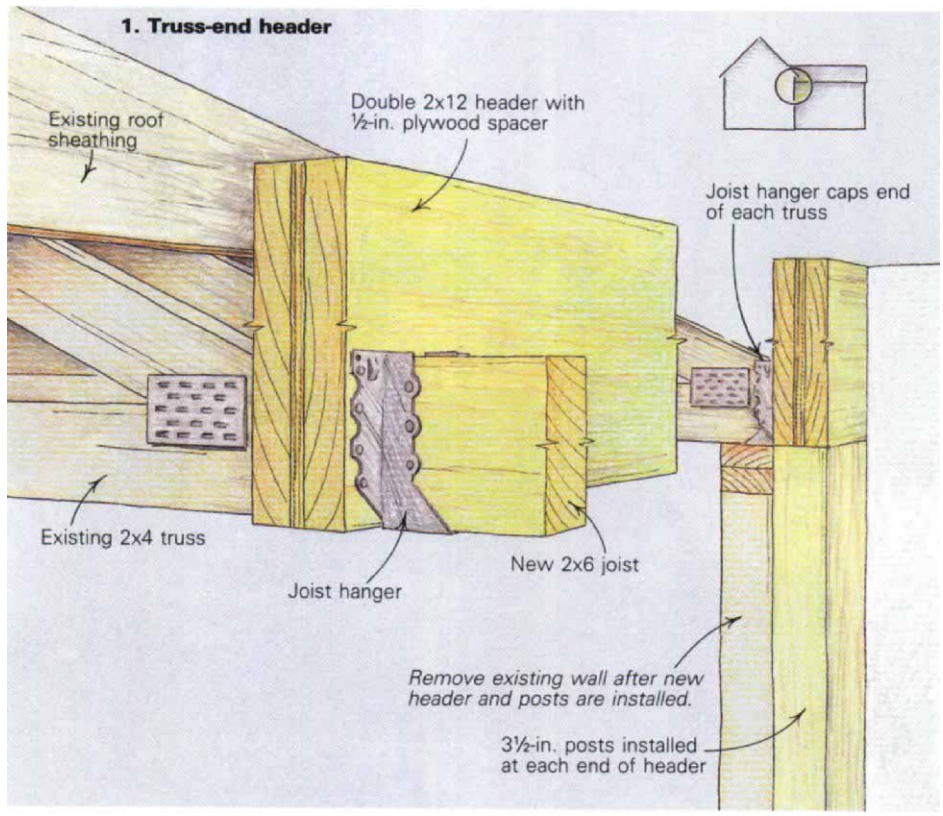
Balloon-frame header addition— I once worked on a two-story balloon-frame house with 2x6 walls where I needed to add a one-story addition with no visible header over the opening between them.

I put in a temporary wall inside to support the second floor; I then notched out the existing wall studs to receive the new header (drawing 2, next page). Because the studs in a balloon frame extend in one continuous length from sill to roof, I notched the header 1¾ in. into the wall studs to better support the existing second floor. For this particular job I used two Micro = Lams to form the header. The advantage of this is that I can go to my supplier with the spans and load factors, and they will calculate the size I need. I secured the first Micro = Lam to the framing with 16d cement-coated sinkers, then attached the second to the first with more 16ds and Max Bond Adhesive (H. B. Fuller Co., Building Products Div., 315 S. Hicks Rd., Palatine, Il. 60067; 708-358-9555), though any good construction adhesive will do. I installed support posts at each end of the opening, and used twisted hanger straps to connect each existing joist to each stud and to the Micro = Lam. Then I removed the studs below the joists and hung the new ceiling joists.

Concealed header in an attic—I once removed part of a bearing wall in the middle of a house that supported the ceiling joists from each side of the house. In this case I went up in the attic with some 2x10s and laid them across the top of all the joists that were going to lose bottom support.

Then I installed twisted metal straps (drawing 3, next page) to connect the header and the joists, went back downstairs, and removed some drywall and a stud from each end of the wall to be removed. After making sure that the posts themselves were supported below to the foundation, I slipped them in place and removed the rest of the wall. The only patching necessary here was to install 4½-in. wide strips of drywall along two walls and the ceiling, and to patch the flooring.

Removing ceiling sag—This trick involves the use of a strongback, but the principle would work for a header, too. I once worked on a motel that had two large dining rooms divided by a large hanging curtain. The curtain track was attached through the ceiling directly to the bot-



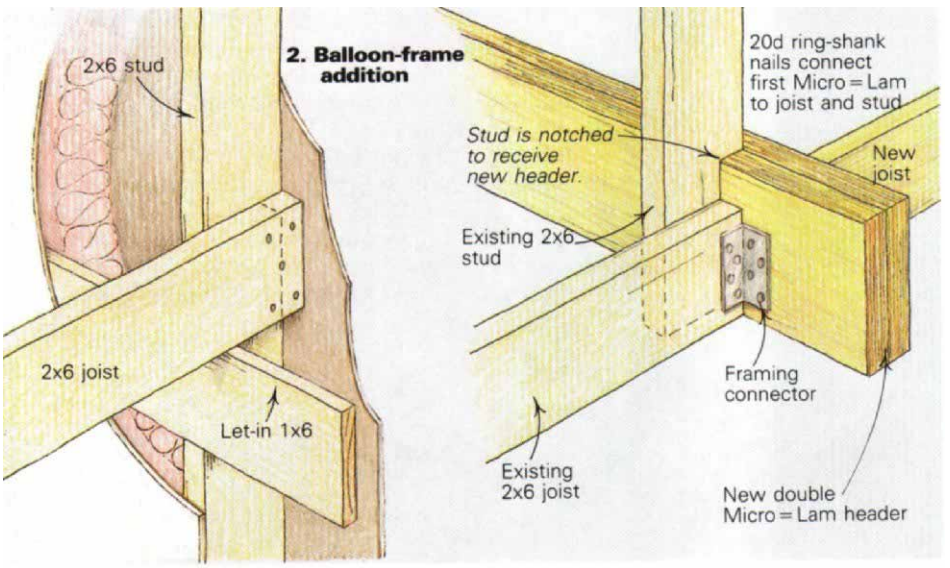
Drawings: Christopher Clapp

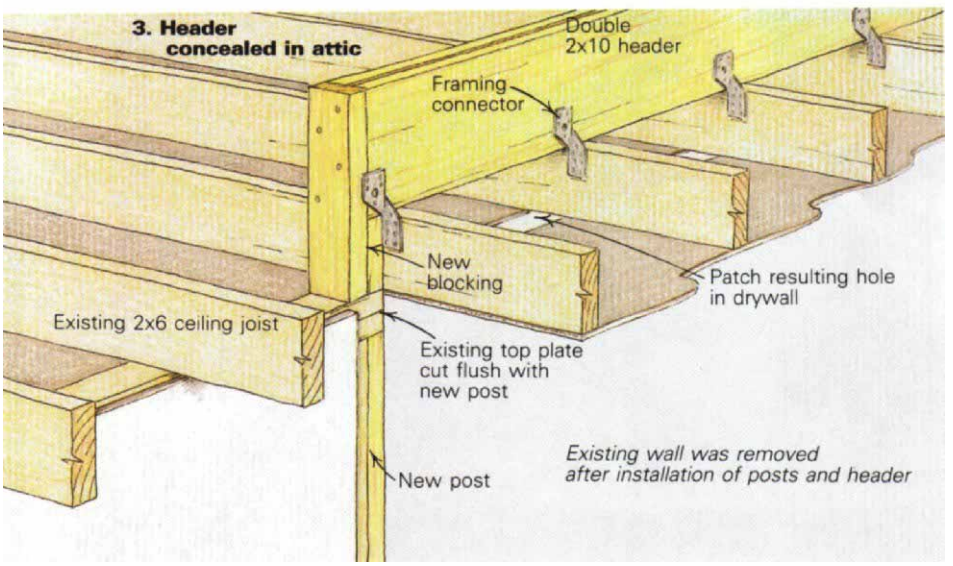
tom chord of one truss. Needless to say, the curtain bottom became wrinkled as gravity did its job and the noble truss sagged. The span was too long to double the truss up without adding extra support, so we went up in the attic and set a strongback beam perpendicular to the truss at the center of the span. Our beam also sat on three trusses on each side of the beleaguered curtain-bearer. We were told we couldn't use posts in the dining rooms, so we fastened the trusses to the beam with twisted metal straps, then fastened small cables to the beam and to the top chord of each truss. Structurally, this joined the beam, the top chord and the bottom chord into a single unit. Each cable included a turnbuckle somewhere along its length. After tightening the turnbuckles, we installed additional 2x framing between the beam and several top chords to lock everything in place.

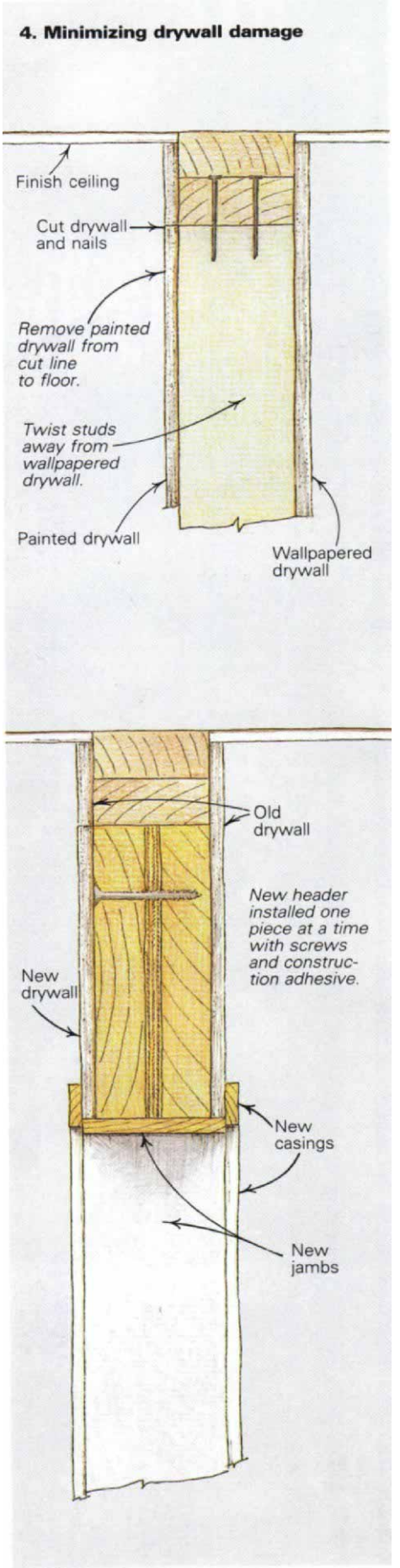
Minimizing drywall damage—The final header method I'll discuss does result in a visible beam, but it saves the wallpaper. We needed to cut an opening in an existing wall. On the side of the wall that had painted drywall, we cut that drywall where the top of the new header would be (drawing 4). On the wallpapered side, we cut the drywall out where the bottom of the new header would be. All the waste drywall was then removed, exposing the studs. We cut the nails holding the studs to the top and bottom plates, then carefully twisted each stud so that the drywall nails pulled out through the back of the wallpapered drywall. After setting posts in place at each end of the opening, we applied glue to one side of a 2x and slid this in place against the back of the wallpapered drywall. This invisibly fastened the wallpapered drywall to the header. We then set the second half of the header in place and *screwed* the two sides together to keep from disturbing the existing drywall. Wrapping the opening with wood trim left the wallpapered side as finished as ever.

There are other methods of hidden-beam installation, but I won't know what they are until the next owner gives us the next set of requirements and the wall is opened up. □

Roger Gwinnup is a builder who recycles old houses near Iowa City, Iowa







Problem solvers

Concealed header

I needed to remove an 8-ft. bearing wall, but didn't want the new header to break the ceiling surface between rooms (drawing 5). Once the ceiling was shored up, the wall removed, and the joists exposed, I cut slots the thickness of doubled 2x10s, plus a spacer, through each joist Because I was working alone, I pushed each 2x10 separately up through the gap, into the attic and supported each end on the top plates of opposing walls. Next, I connected each joist to the new header with joist hangers. Then it was a simple matter to patch the surfaces where the wall had been. Like magic, there was no trace of any structural element.

—Steve Orton, a builder who lives in Seattle, Wash.

Heavy long-span headers

Installing a long-span header is an inherently dangerous process. A 12-ft. to 15-ft. flitch-plate header or steel I-beam can weigh several hundred pounds. Here's how I easily and safely install a steel I-beam, using only one helper, some scrap lumber, and a couple of tools.

First I install two pairs of guides made of two 2x's between the ceiling and the floor at each end of the beam (drawing 6). The space between the guides should be about ¼ in. wider than the width of the beam. I then drill a ¾-in. hole through both sets of guides about 3 in. below where the lower edge of the installed beam will be. If the beam is heavy or I haven't had a good breakfast, I'll add some extra holes every foot or so. I use four sill-plate L-bolts or lengths of rebar in the holes for temporary beam supports. These allow me to lift one end of the beam and then the other as I "ratchet" it toward the ceiling. The advantage to this method is that the beam can't tip and I can stop any place I need to. To get the last two or three inches, I use a 4-ton hydraulic bottle jack and a scrap 4x4 post. This allows me to preload the beam enough so the cripple studs don't need to be bashed into place. Sometimes the building groans a little when I remove the supports from underneath the beam. The steel beam is usually straighter than the wall it replaces and the building has to adjust itself to the change.

—Roy K. Jenson, a house remodeler in Edina, Minnesota.

Lateral support for long-span headers

As a building inspector, I'm concerned about lateral movement in long-span headers. Fastening a header in place by toenailing it into the upper plate works for a short span, but I have my doubts about this technique for headers longer than 6 ft. to 8 ft., a span that is too great without some consideration for "racking." While this should be a design concern in every structure (to counteract wind loads, for example), it is of special concern in seismically active areas.

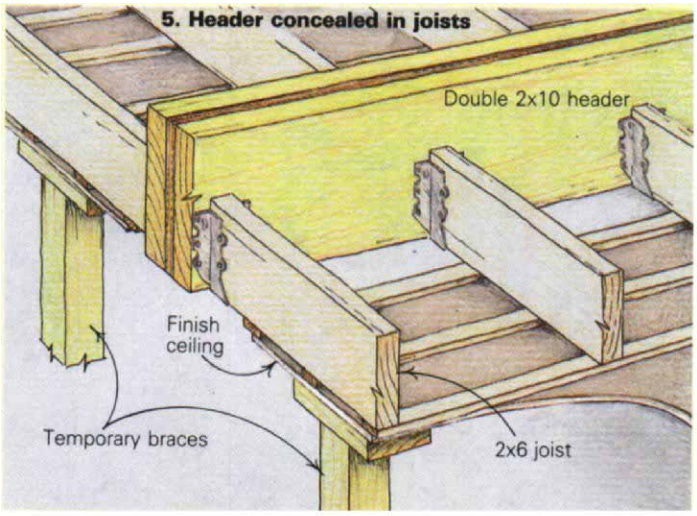
To solve this problem, I usually ask the builder to install ½-in. plywood on both sides of the wall at either end of the header (drawing 7). This is called a shear diaphragm. The plywood should extend uncut 12 in. to 16 in. onto the header from each end to form an inverted "L." Shear walls constructed of plywood must be a minimum of 5/16 in. thick for studs 16 in. o. c. Six-penny common nails, 6 in. o. c., are the smallest permissible size to be used in a shear panel. Nails at panel edges should be no less than ⅜ in. from the edge and no greater than 4 inches apart. Where a shear wall will not work, metal framing straps can be used in innovative ways to help provide lateral stiffening.

—Lee Brann, a building inspector in Belvedere, California.

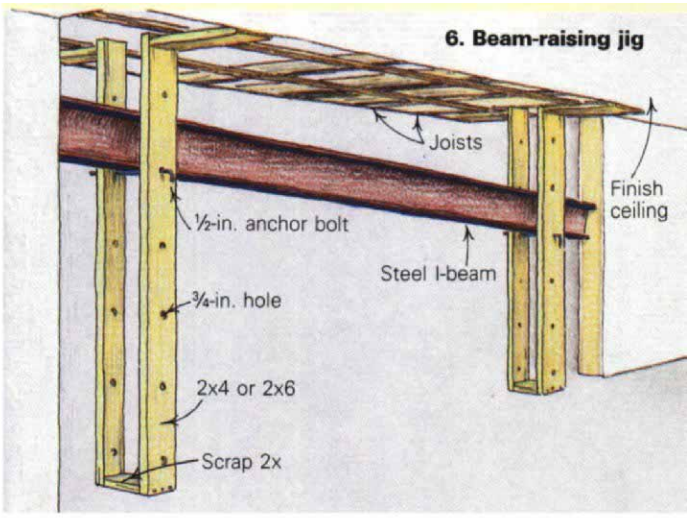
Headers and point loads

One important effect to consider when installing long-span headers is that of newly created point loads. The load which was once evenly distributed along the bearing wall is now concentrated at two points. In many cases the original foundation may not be capable of supporting these concentrated loads without the risk of cracking or differential settlement. The existing footing and soil conditions should be investigated by an architect or engineer to determine the foundation's ability to support these new point loads. If there's a problem, the situation should be remedied *before* the point loads are created. I suggest that the structural situation be assessed by an architect or engineer when dealing with any span of 7 ft. or longer.

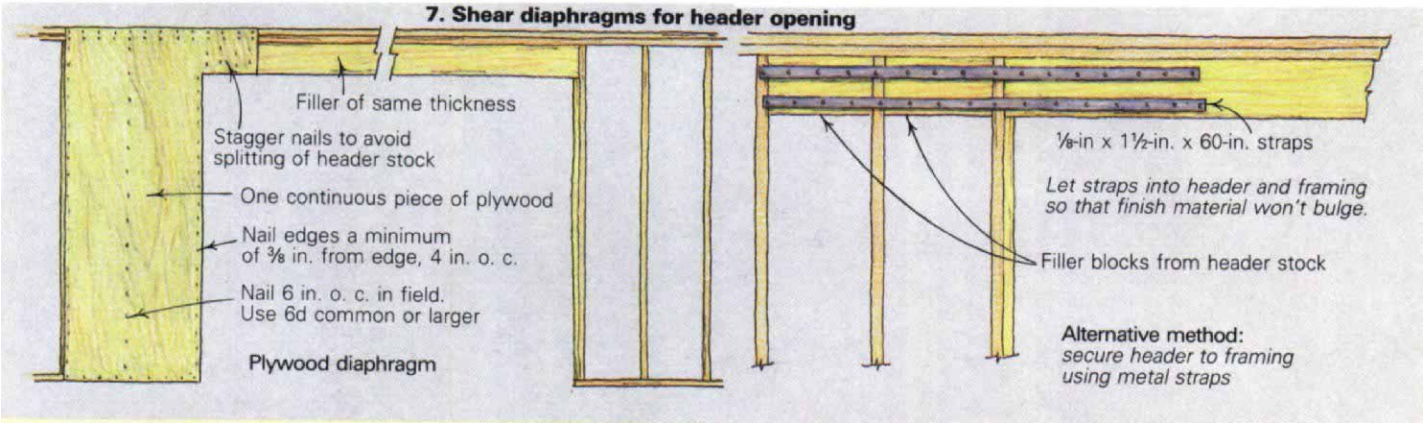
—Martin Hammer, an architect in Oakland, California.



5. Header concealed in joists



6. Beam-raising jig



7. Shear diaphragms for header opening