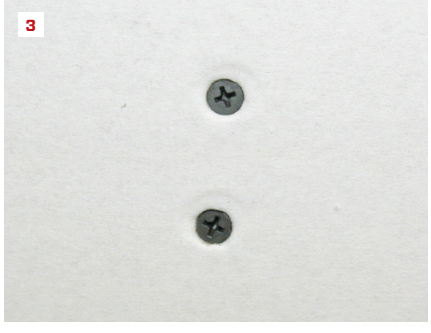
BY MYRON FERGUSON



This **(1)** is the goal for drywall painted with flat paint: a Level 4 finish—tape coat followed by two finish coats lightly sanded with 220-grit paper. For a glossy or eggshell finish, go with Level 5, which adds a skim coat of compound over the entire surface. Screw pops **(2)** are the most common callback in the industry and often result from poorly driven screws. The top screw **(3)** is driven properly, but the bottom screw has broken the paper around the screw head.

Avoiding Drywall Callbacks

JLC contacted long-time JLC contributor and JLC Live presenter, Myron Ferguson, to plumb his expertise on what can go wrong with drywall and how problems can be prevented. Myron started us off with an overview, before we dove in with specific questions.

MF: Someone joked to me recently, "It's only drywall—anyone can screw it up!" The truth is, it's easy to do a lousy job with drywall. There are a lot of good, basic rules to follow, and it all starts with the quality of the hanging job: Use longer sheets to minimize butted seams, run the boards perpendicular to the framing, use screws instead of nails, use drywall adhesive on the framing in the most visible areas, don't use too many screws, and use the proper length screws. Most importantly, don't depend on the tapers to fix problems that were created by the hangers.

It's not just the drywall. Homeowners usually have high expectations for completed drywall work. People expect a perfectly smooth, blemish-free surface, and they expect it to look that way years after the project is completed. Part of my job is managing those expectations. I can do a Level 5 finishing job in a room, but a bad paint job can make the walls and ceiling look terrible. If a builder is investing time and money into a high-level drywall finish, they should also hire a first-rate painter.

Takes two parties. Both drywall contractor and general contractor play a role in achieving a high-quality finish. The drywall contractor needs to take the time to do high-quality work and should always use the best tools and materials. Getting in and out as quickly as possible, scraping by with minimal tools, and low-balling the materials are not compatible with doing first-rate work.

The general contractor needs to give the drywall crew enough time on the schedule to do their best work and needs to create the best working conditions possible. The work site should be clean and wide open so that the drywall crew can work quickly and efficiently. Conditions for the materials are important, as well. Controlling temperature, humidity, and airflow before, during, and after drywall work is a huge factor and one of the best ways to ensure the lasting quality of finished drywall. Keep in mind that

Photos by Myron Ferguson

This butt joint **(4)** over an opening is OK, but just barely. The joint should be at least 7 or 8 inches from the corner. Overcuts **(5)** and blow-outs **(6)** are common with sloppy hanging. The taper can fix these, but it takes considerably more time.

quality in drywall is not only about what the job looks like when you leave but also about how well it endures.

JLC: Every contractor has seen screw pops; what causes them?
MF: A screw pop happens when a screw head pushes out from the drywall surface and pushes the compound coating out along with it. A common cause is setting a screw to proper depth, but without pulling the drywall tight to the framing. If the drywall ever is pushed tight to the framing, the screw head will pop. Any fastener that misses or is not securely anchored into a framing member may work loose over time. If you miss, don't leave the screw in place.

The opposite is also possible; if not enough compound is used over a screw indentation, a slight depression will show in the drywall surface. It's also possible for the framing or drywall to expand after taping is finished, which can pull the screw in slightly and cause an indentation. One of the most common causes for this is hanging drywall when the framing is too wet. As the wood dries, the framing shrinks and pulls away from the drywall. Misaligned and twisted framing can also contribute to fastener failure.

JLC: What's the best way to prevent fastener pops?
MF: From a contractor's standpoint, the most important thing is controlling the temperature, humidity, and airflow in the rooms where the drywall is being installed. Wet framing is one of the biggest culprits.

The moisture content should be tested (no more than 12% moisture content), but it rarely is. Using common sense can go a long way here. If the building has never been heated and has never had time to dry out after being framed in wet conditions, then the contractor should build time into the schedule for the framing to dry out before insulating or installing any vapor retarders.

If I am concerned that framing is wet, I will test and record the results in case future problems should arise, or if I feel like the job is being rushed. I generally like to see a moisture content of 10% or less. By the time the electric, plumbing, and heating are roughed in, enough time has usually gone by to dry out most buildings unless the conditions for drying are poor; high humidity, rain, and propane space heaters being used will all delay drying.

The drywall contractor needs to fasten the drywall correctly. I make certain that the panel is tight against the framing. The nose of a screw gun helps to push the panel tight to the framing, which is another advantage of screws over nails.

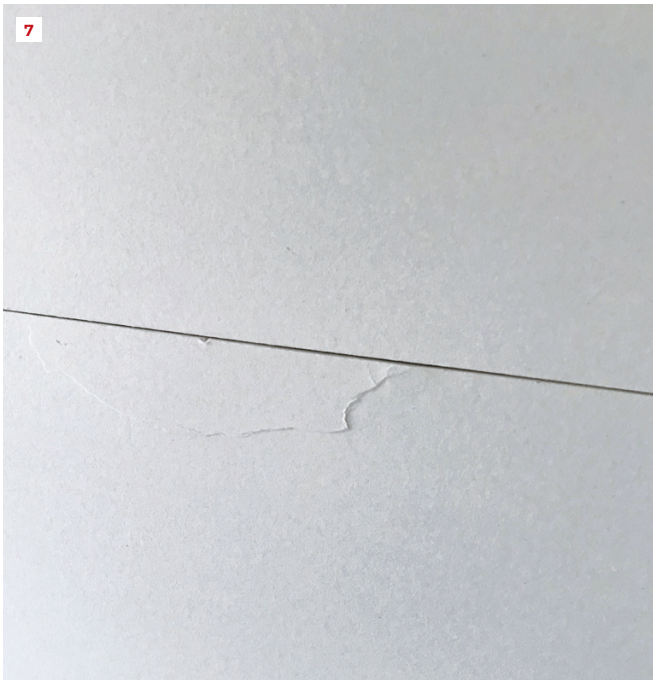
Screws should penetrate into the wood framing 5/8 inch; longer is not necessarily better. (Nails, if used, need to penetrate the framing at least 7/8 inch.) I typically use 1 1/4-inch (32mm), coarse-thread screws for both 1/2-inch- and 5/8-inch-thick drywall, and 1-inch (25mm), fine-thread screws when fastening drywall to steel studs or resilient channel.

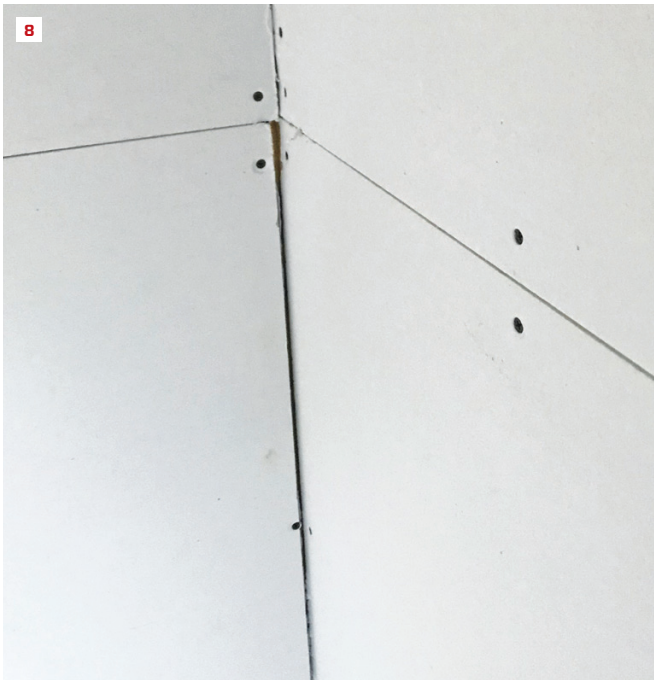
Don't use too many screws. For walls framed 16 inches on-center, place screws every 16 inches along studs, no more; for 24-inch-o.c. framing, every 12 inches. For ceilings, space fasteners every 12 inches along joists for both 16- and 24-inch-o.c. framing.

When properly set, a screw should not damage the drywall core or even tear the paper face. The screw head should be set about 1mm below the drywall face. If a screw is set too deep, the panel is more likely to pop loose.

Underdriven screws are obvious and easy to detect. Just run a taping knife over the screw before applying compound. If you hear the knife click when it hits the screw head, then the fastener has to be set deeper. If you try to hide an underdriven screw by coating it with more compound, you'll end up with an unattractive bump of compound.

With an overdriven screw, the fastener breaks through the paper face of the drywall, creating a much weaker connection than an





Broken edges need to be repaired (the broken area cut out and the void prefilled with a setting compound) before taping and finishing the seam **(7)**. Any large gap (wider than 1/4 inch) needs to be prefilled with a setting compound before taping **(8)**.

underdriven screw. Often, an overdriven screw shows up right away because a panel is loose. Overdriven fasteners typically are corrected by tapers when they do their pre-taping inspection (see "Prep Work Before Taping," Aug/19). A worse case is having this weak connection pop when subject to even minimal structural movement or expansion and contraction of the building materials.

I prefer to use adhesive, as well. It's not a must, but it improves the job and limits the number of problems common to fastening drywall. I also use it to reduce the number of fasteners. With adhesive on each stud or joist, the number of fasteners needed can be reduced by up to 75%. An added benefit is that the adhesive strengthens the structure by increasing the panel's tensile strength by up to 100%, and its shear strength by up to 50%.

When using adhesive, apply a 3/8-inch-wide bead to each framing member to within 6 inches of the edge of the drywall. Install fasteners on 16-inch centers along the perimeter of each panel immediately after hanging it.

JLC: You began by saying we can't depend on the taper to fix what the hanger has done. Besides fastening, what are the other mistakes that can result in drywall blemishes or callbacks?

MF: One of the most common is installing panels so the butt end aligns with the edge of a window or door opening. This is a rookie mistake; it seems plausible for layout, but the butt joint will crack the tape if there is shrinkage in the header. Wood shrinks more across its width, so the wider the header, the more likely this will happen. The crack can appear below a window, too. Butt joints are very vulnerable to cracking. The way to prevent this is to not place seams close to the edge of an opening. Place the sheet so the panel covers the corner, and the butt joint falls somewhere in the middle of the opening, then cut out drywall in the opening. The joint should be no closer than 7 or 8 inches from the corner.

Butt joints anywhere on the wall are often problems because they don't start out as a recessed seam. They basically start as a bump that needs to be blended in properly. The best way to handle them is by "floating" butt joints between joists or studs and securing them to beveled backing boards that create recessed seams (for more on this technique, see "Hanging Drywall Smart," Mar/15).

On finishing jobs, I don't always hang the drywall and sometimes have to deal with butt joints that land on studs and joists. In those cases, I will prefill butted seams, using a setting compound. Prefilling is also needed for any large gaps and for any repairs.

Overcuts and blowouts at electrical boxes are common problems. The cover plates don't cover much more than a 1/4-inch gap. The tapers will usually catch these while taping, but to help them notice, I circle the box and point out the area that needs to be patched. Fixing a blowout requires tape embedded in compound and a couple of finish coats to conceal it. I always encourage people to take their time and be careful cutting out with the drywall router. Each mistake will cost the finisher at least four minutes.

Water seeping through a basement slab is a good recipe for drywall problems, which will appear once all the materials dry out **(9)**. This joint **(10)** cracked because the first coat hadn't cured before the second was applied. The building was not heated, which delayed curing.

JLC: What are the most common taping problems?
MF: There's a lot of detail to know about taping drywall. Inexperience is often the problem. For example, rookie tapers often don't bed the tape in enough mud. This is the kind of thing we covered in the article "Taping Drywall Seams" (Jul/17).

But even experienced tapers run into problems. The failures I see when I am called in to consult are often climate related. When drywall seams are taped, the air, surface, and compound temperature should be at least 55°F, with 65°F to 70°F being ideal. It's a good idea to establish the ideal temperature at least a few days before the drywall hanging starts. Once the hanging and taping are underway, maintain a constant temperature—don't work in 80°F weather during the day, then let the temperature drop to 45°F at night. The drywall phase is an important part of the job, so don't try to save a few dollars on heat. In addition, provide adequate ventilation and airflow to help remove excess moisture.

Cold and damp weather will adversely affect the taping job, delaying drying times and possibly softening the panels. Hot and dry weather can cause problems, too. Heat can affect the joint tape bond. Hot, dry weather hastens drying, which can result in poor bonding of the tape, edge cracking, and excessive shrinkage of compound. So take some precautions in hot and dry conditions. Eliminate drafts, work shorter joint lengths, use faster setting compounds, and don't weaken the compound by adding excess water.

JLC: How about sanding? We often see ridges telegraphing through the paint where it looks like the mud wasn't sanded enough.
MF: Undersanding is common over screws in the face of the drywall. Just the indentation has to be filled and then sanded flat so that there is no buildup of compound around the screw head. There is a smear of mud between fasteners that occurs on the second and third coats, but not a buildup.

Oversanding can certainly happen, too; it creates concave seams or exposes the tape, which is especially common on inside corners when not enough mud was applied in the first place. Because lightweight compounds are preferred for the finish coats nowadays (these compounds are softer than the traditional heavyweight compounds), you should never use coarser than a 220 sandpaper grit. A 220 grit will minimize scratches in the compounds and won't rough up the paper face.

JLC: What should a contractor look for before calling the painter?
MF: I often ask about how different parts of a job will be painted before I even bid on a drywall job. If ceilings will be painted with anything but a flat paint, I will usually recommend a level 5 finish. Large, well-lit walls will often need a level 5 finish, as well.

Don't rush the paint. Do not allow painters to begin work before all taped joints are thoroughly dry; painting over wet joints is a major cause of joint discoloration. Differences in suction between the paper facing and the joint compound may cause the paint color to appear lighter or darker, making the joint conspicuous.

A coat of primer is necessary to help equalize the porosity and texture of the taped drywall surface. I recommend using a good-quality latex primer, such as USG's First Coat, that's formulated with a high solids content, and applying it undiluted. However, even a good primer coat may not be enough when glossy paint will be used. In that situation, I recommend applying a skim-coat of compound to the entire wall surface first to equalize the surface reaction.

I know some painters damp-sponge surfaces after sanding to remove dust and knock down any raised fibers of the paper. Brushing with a very fine broom also helps. But I have found that sanding with 220 grit after the primer is dry works best and is less likely to do damage compared with sponging or brooming.

Myron Ferguson is a drywall contractor in Middle Grove, N.Y. Follow him on Instagram: @thatdrywallguy.