

Installing Deck Posts for Cable Railings

By Feeney CableRail

Installing the posts for a CableRail system on a deck isn't very different than for most other railings. While there are a few special considerations for the posts of cable-railing systems—ranging from spacing to material choice—they are not onerous.

Because of the tension cable railings exert, you might think that newel posts for these systems require special lateral bracing so the tops of the posts, where the cables are anchored, don't get pulled inward. (The cable simply passes through most of the posts and is fastened with special tensioning hardware at end posts.) In fact, there always should be a solid rail between the posts, often

topped with a cap rail that runs over the post tops. The solid rail between the posts resists the pull of the cables, not the post's attachment to the floor framing.

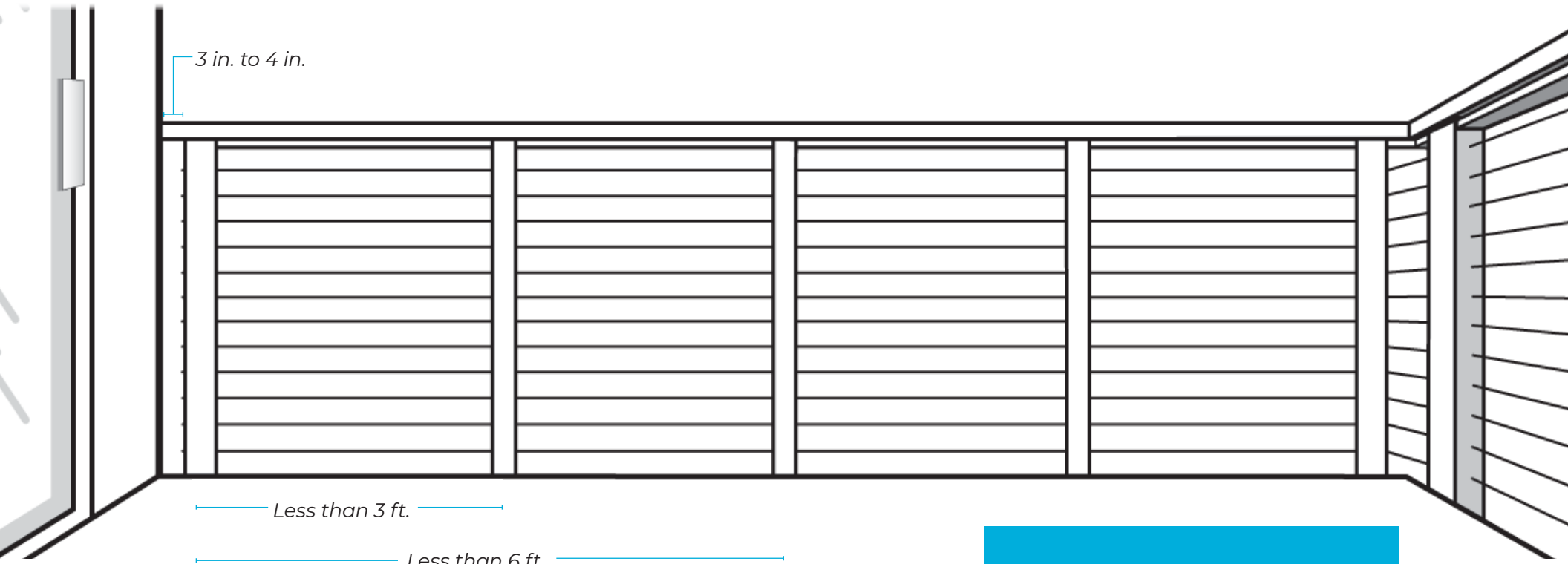
Railing cables are placed under considerable tension so that they cannot spread beyond the code limit of 4-in. spacing. Spaced at 3 in. to allow some inevitable movement and remain within code, that's 11 tight cables for a standard 36-in.-high railing. While the top rail will keep the tops of the posts from bowing in under the cable tension, bowing can still be a problem in the centers of the anchor posts depending on the type of wood. The problem is

exacerbated with taller balustrades, such as the 42-in. ones required for public spaces. The solution is simple, though: Particularly if you're using cedar posts, upsizing the end ones to 6x6 eliminates the problem. When using a typical pressure-treated 4x4 with a post wrap or a hardwood 4x4, inward bowing isn't usually a problem.

And of course, there's also the usual problem of installing railing posts that can resist the IRC-mandated 200-lb. loading, which remains the same no matter what type of railing we're talking about. (Because of the industry-standard 250% safety factor, the mounting details here are actually designed to withstand a 500-lb. load from any direction.) To achieve the code-required strength, posts must be fastened into floor framing composed of at least 2x8s. Smaller joists don't provide enough resistance to the leverage generated by a 3-ft.-tall post to meet code. Posts can't be notched, and they must be fastened to the framing with hold-down anchors (Simpson StrongTie, MiTek, or Screw Products) or blocking affixed according to a structural-screw manufacturer's (FastenMaster or Simpson StrongTie) specifications.

There's one big difference between cable railings and more traditional railings with vertical balusters. For the cable to remain taut, it's stretched pretty tight during installation. Each cable can put a lateral load of as much as 300 lb. on the posts in a direction carpenters might not be used to thinking about. Having a rigid top rail running between the posts to resist that force is very important. It's not a bad idea to run a bottom rail between the posts, either, but good post attachment can work as well.





Spacing Guide

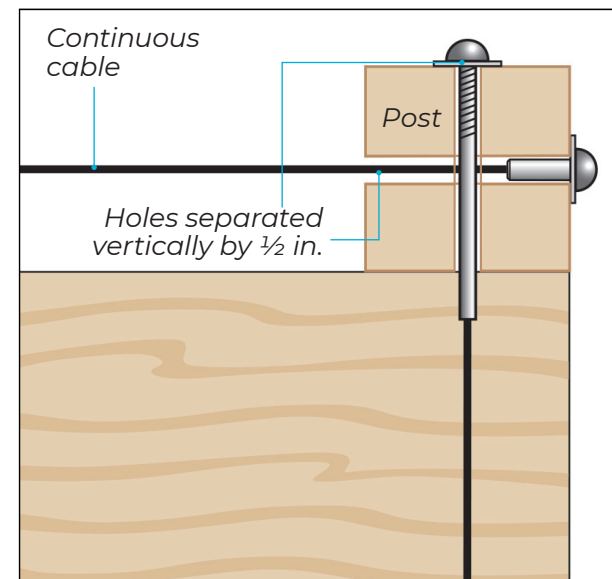
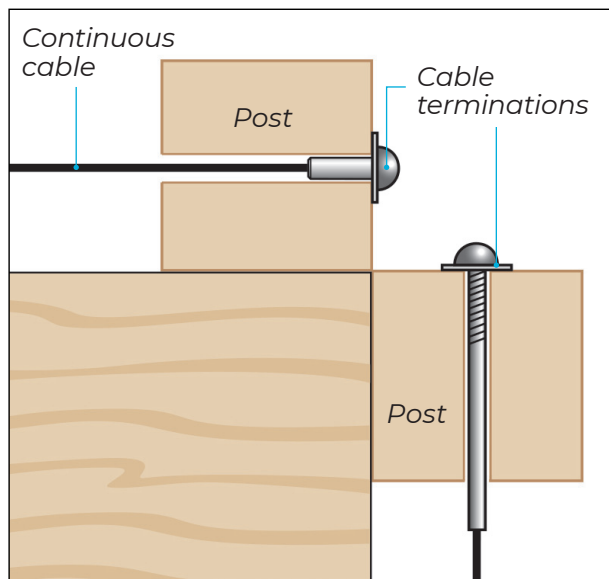
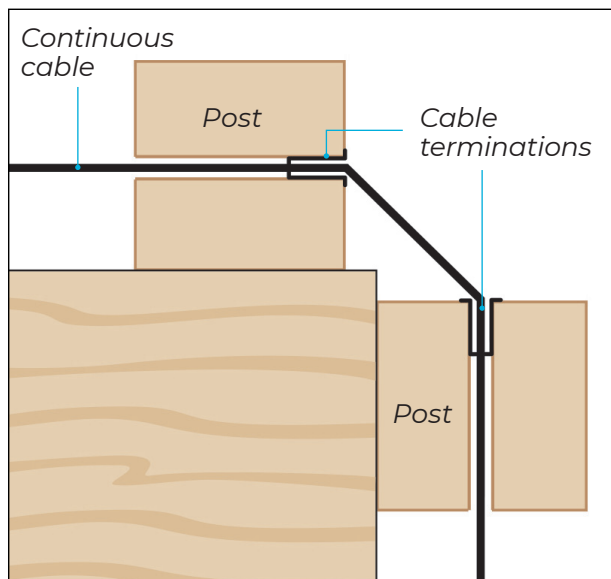
Hardware space 3 in. to 4 in.

Anchor posts Less than 6 ft.

Intermediate posts Less than 3 ft.

Spacing

Place anchor posts no closer than 3 in. (but not more than 4 in.) from walls so there's room to install hardware. Code requires main posts to be no more than 6 ft. apart with most railing systems. For cable railings, there also needs to be intermediate posts no further apart than 3 ft apart. These can be lighter-duty.

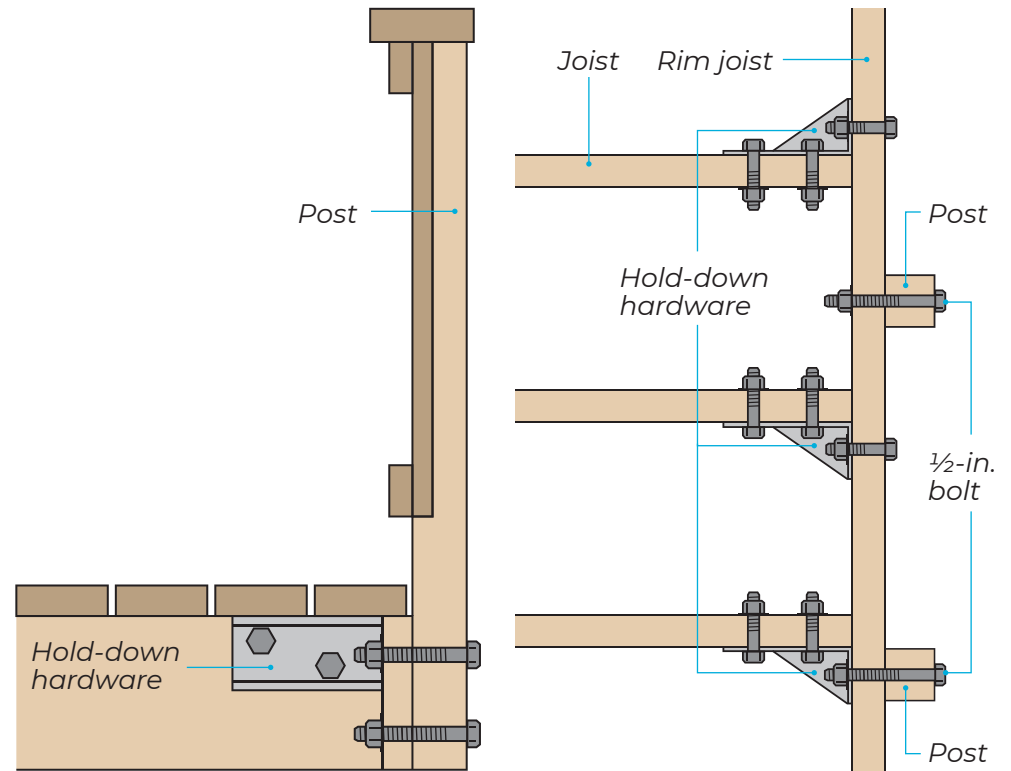


Corners

There are several ways to take cables around corners. You can fasten one post on each side of the corner and run the cables continuously through them. This reduces the amount of hardware needed, but the resistance it generates also reduces the maximum run of cable from 70 ft. to 40 ft. Alternatively, using one or two posts, you can terminate the cables at the corner. When terminating two runs on one post, drill one set of holes $\frac{1}{2}$ in. below or above the other to avoid a clash.

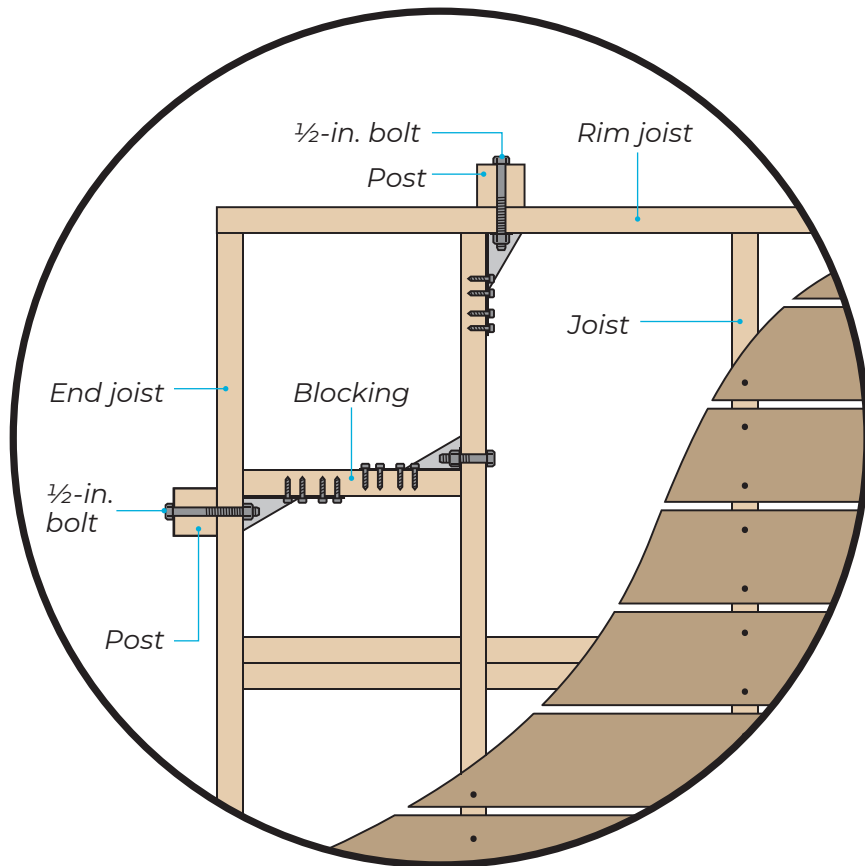
Setting with Hardware

To anchor posts with hold-down hardware, manufacturer-specific designs must be followed. Generally, the posts need to be outside the joists, although you can later run more framing to the outside of the posts for the look of internally mounted posts. The hardware is mounted high on the framing to better resist the post's leverage. All bolts are ½-in. machine bolts with washers, not carriage bolts. (Engineering values for carriage bolts haven't been developed.) The bolts should be HD galvanized for use with galvanized hardware or stainless steel with stainless hardware.

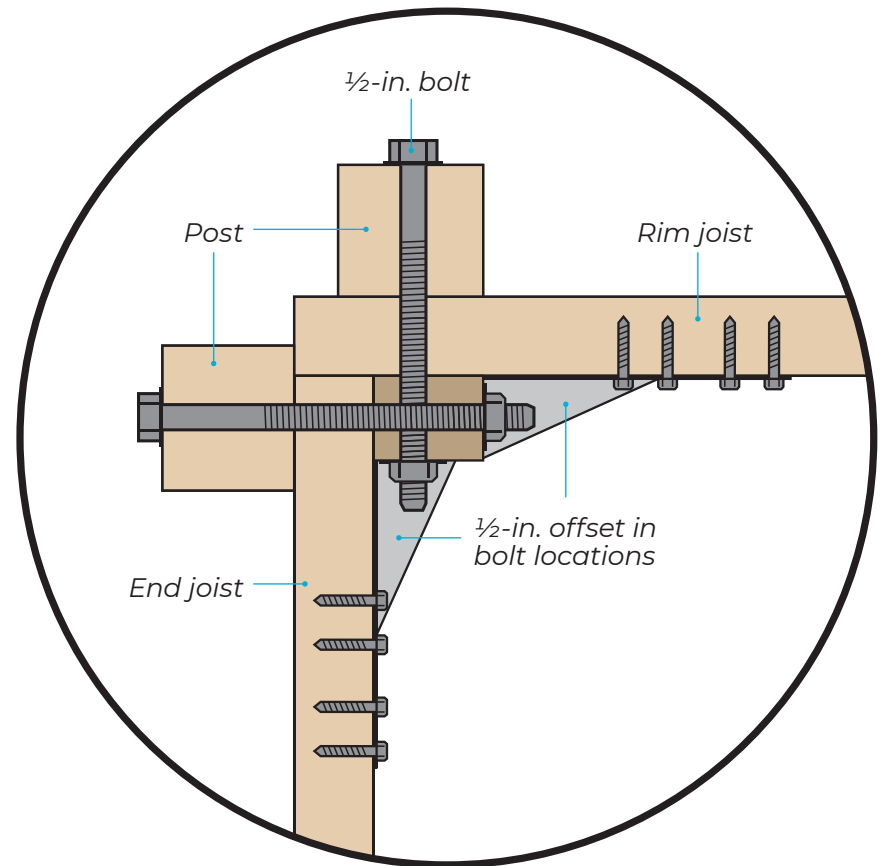


Post and hardware. Hardware is mounted high on the framing and fastened with two ½-in. machine bolts.

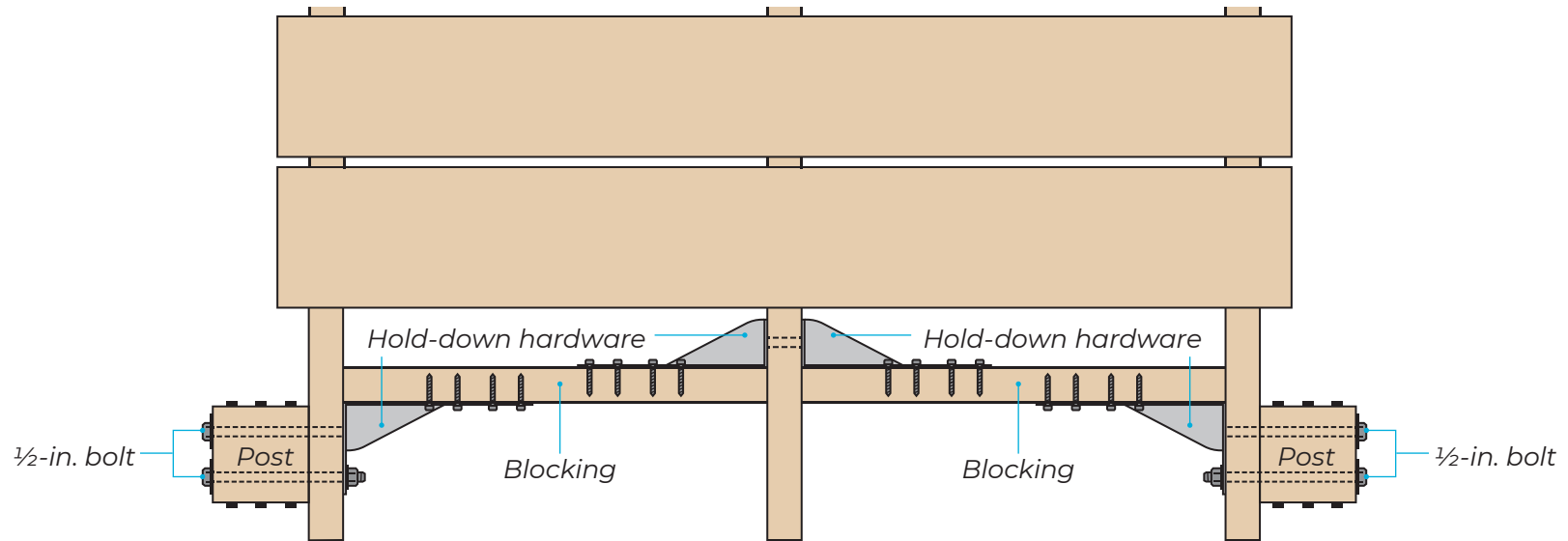
Rim joists. Posts that fall near the joist layout can be secured with a single hold-down. In the middle of a bay, each flanking joist is attached to the rim to which the post is bolted.



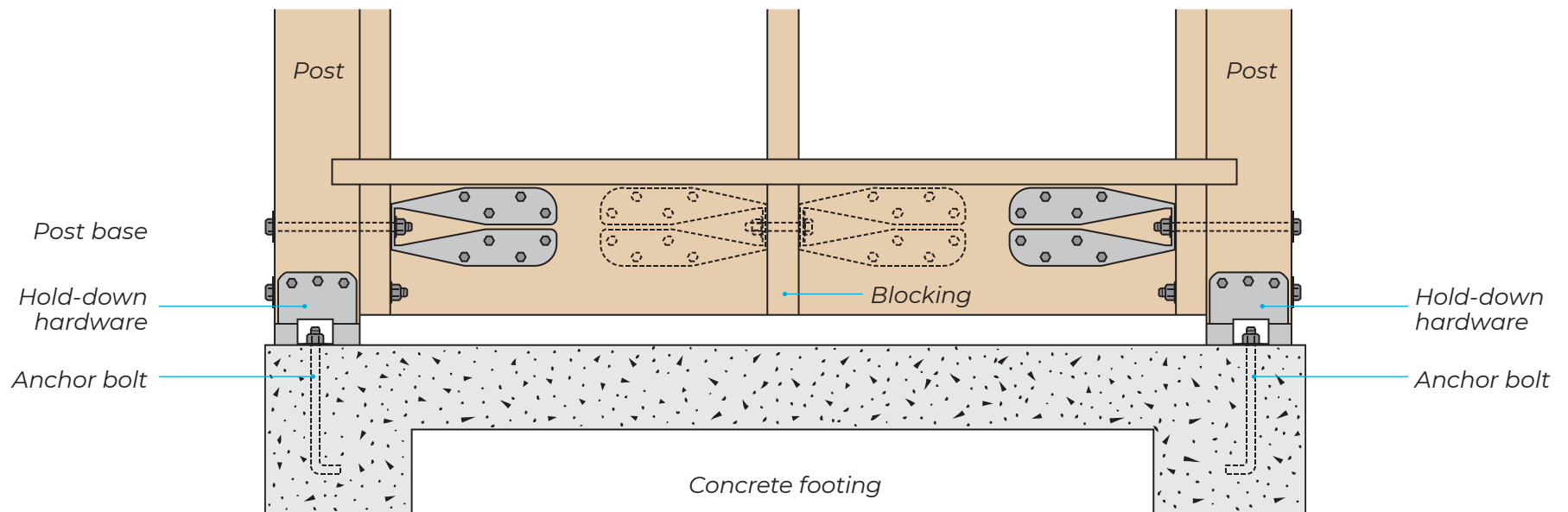
End joists. To attach a post to an end joist, solid blocking must be fastened between that joist and the next one inside the deck.



Corner blocking. When there are two posts at a corner, blocking and offset bolt locations are needed to create clearance for each piece of hold-down hardware.

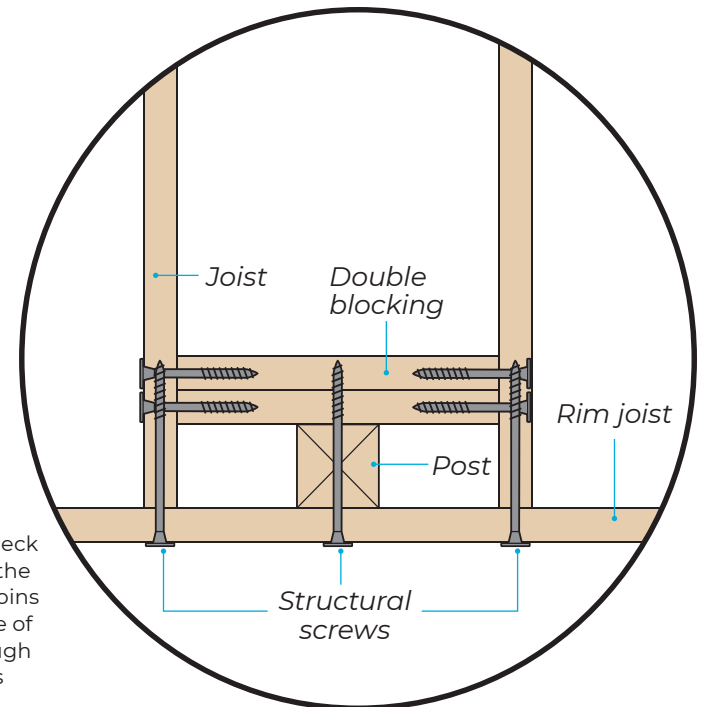
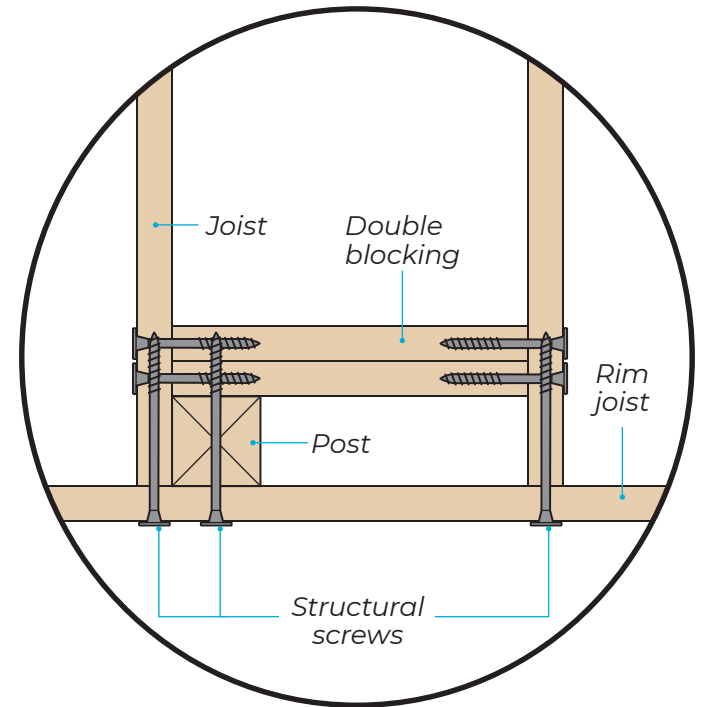


Stair posts. Posts at stair bottoms require a lot of hardware and blocking, including post bases anchored to the stair's concrete footing.

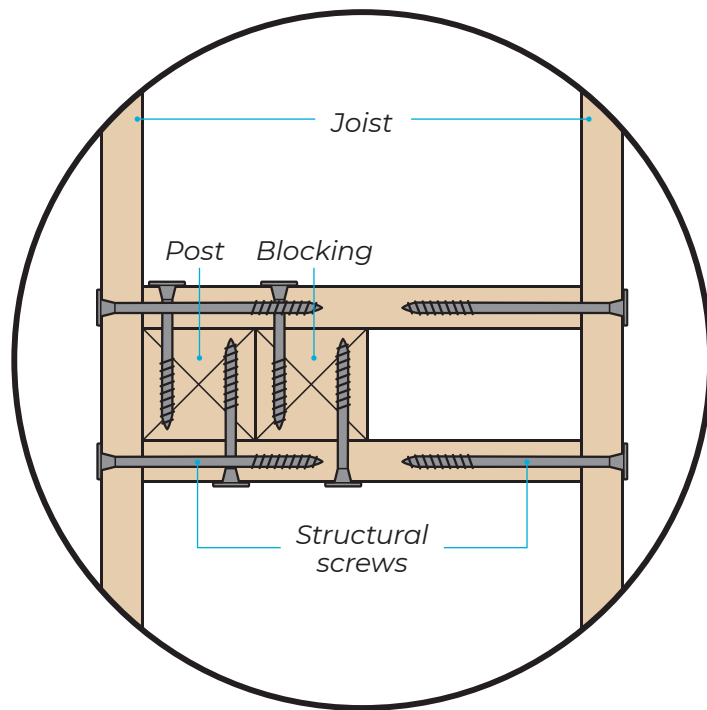


Setting with Structural Screws

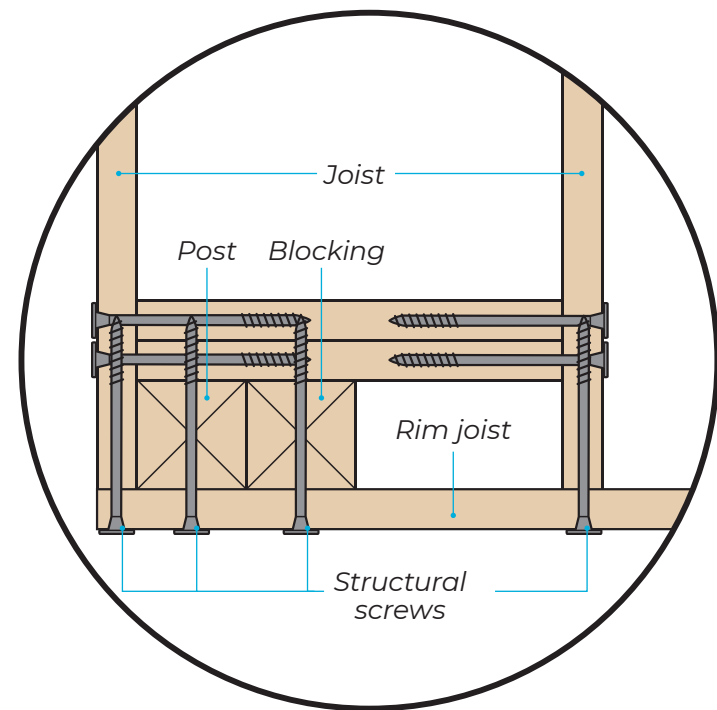
Two structural-screw manufacturers have published details for code-compliant post attachment using their products in combination with a fair amount of blocking. The blocking is necessary to provide additional reinforcement to the joists. One difference with the structural-screw method is that the posts are mounted to the inside of the rim and end joists.



Mid-deck. Middle-of-the-deck rim-joist attachments are the same whether the post adjoins a joist or if it's in the middle of the bay. Long screws through the rim joist reinforce its connection to the joists.



End joists. Posts attached to end joists require blocking that ties back to the first joist as well as a piece of post stock fastened between the pieces of blocking. That provides a place for additional structural screws to resist an outward thrust on the top of the post.



Corner blocking. A hybrid of the preceding attachments, corner posts call for both double blocking and blocking made from post material.