Repairing a Bungalow Balcony

A beam replacement project with a Storybook ending

BY GERRET WIKOFF

Last year, I was contacted by homeowners seeking to repair an exterior entry staircase on their bungalow-style home in Los Angeles. Built in 1929, the house was designed by Benjamin W. Sherwood, one of the primary L.A.-based architects known for building Storybook-style cottages and bungalows popularized in the 1920s.

The wood-framed entry stairs were clad with stone veneer, which was popping off, and they connected the home's flagstone driveway to a raised first-floor entry, also clad with stone veneer. The first seven steps of the 14-step staircase were winder treads, while the remainder formed a straight run up to the entry. Adjacent to the entry, a 24-foot-long porch-style balcony ran the length of the bungalow's front façade above a garage.

Along with the failing stone veneer, the entry staircase's underlying wood framing had rotted, primarily at the stair-to-balcony connection. More alarming, I noticed the adjacent balcony's floor beam was failing and that both the balcony and the roof above were sagging more than 2 inches. The homeowners mentioned that the bungalow's 54-inch-deep balcony originally had been supported by cantilevered 6x6 beams, and that it had been rebuilt in the 1970s by a previous owner. To prop up the balcony's cantilevered 6x6 beams and the roof above, a 6x12 glulam beam supported by two 6x6 posts on pier footings had been installed.

Over time, the replacement glulam beam had rotted to the point where the top half started to curl away from the house **(1)**, causing a "hinge joint" to open up between the top of the posts and the decorative wood capitals original to the home's 1929 construction **(2)**. The wood capitals were toenailed to the posts and to an existing—and still sound—6x8 beam, which supported the rafters.

In order to repair the rotted curved staircase, we would first have

Photos by Gerret Wikoff; illustrations by Tim Healey

Installed in the 1970s, the existing glulam had rotated outward due to rot **(1)**, causing a "hinge joint" to open up between the top of the posts and the decorative wood capitals **(2)**. A 30-ton jack was used to separate the beam from its saddle-bracket connector **(3)**.

To provide level bearing for a temporary shoring to support the clay tile roof, sloped blocking was nailed into place **(4)**. To remove the existing posts, workers cut the toenailed connection between the beam and the decorative capitals **(5)**. The existing glulam was cut into sections prior to removal **(6)**.

to replace the failing glulam floor beam.

Navigating the HPOZ. Although the client's home was modest in both size and detailing (L.A.'s Storybooks are typically fanciful structures based on themes such as J.R.R. Tolkien's "Hobbit House" and Disney's "Snow White Cottage"), it was still considered a Sherwood Storybook, and therefore any planned remediation work would be subject to the rigors of a historical review board. More pointedly, the home is located in what the City of Los Angeles refers to as a Historic Preservation Overlay Zone (HPOZ).

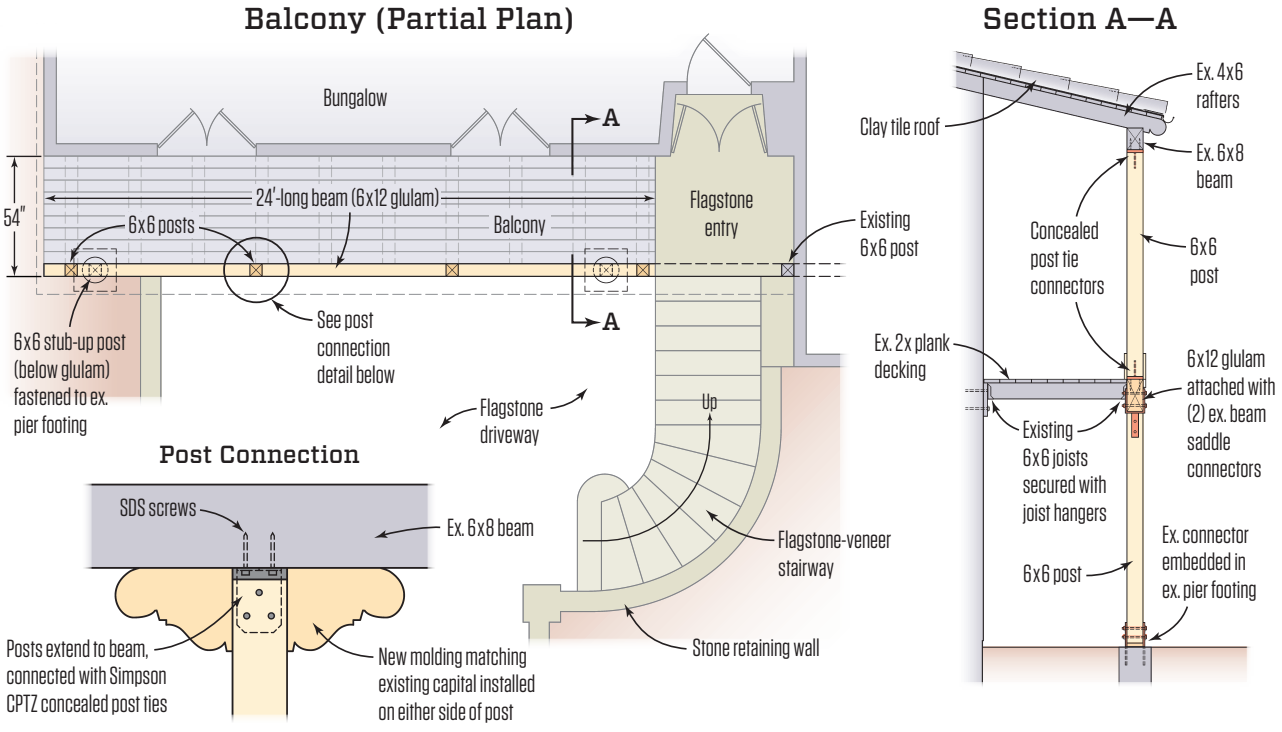
Adopted in 1979, the HPOZ ordinance is a zoning tool the city uses to protect and preserve single-family residential neighborhoods composed of historically significant structures. It's fairly dogmatic about keeping homes located within a preservation zone period-correct, particularly the front elevations seen from the street. So, what would normally be a straightforward beam replacement became more difficult, given the provenance and location of the home.

Design. Having worked in overlay zones before, I knew we would not only be required to rebuild the stairs and balcony in the same shape and design, but we would also have to try to salvage as much of the original material as possible. I drew up the plans and reviewed them with a structural engineer, who determined we could replace the beam with one the same size (a 24-foot-long 6x12 glulam). Then he did the load and seismic calculations for the new beam, posts, post connections, and stair stringers.

BEAM REPLACEMENT

After the delivery truck dropped off new 6x6 Doug-fir posts and a new 24-foot-long glulam, it took the whole crew to lift the nearly 400-pound 6x12 beam off the truck by hand and carry it close to where it would be installed. We then dismantled the wrought-iron railings and put them aside.

Before we could safely remove and replace the rotted beam, we needed to support the balcony and its heavy clay tile roof. We started by building a temporary 2x4 wall to support the balcony's existing 6x6 joists, which were 30 inches on-center and supported the balcony's 2-by plank decking (see illustration, opposite page). Next, we removed the



existing 6x6 hangers connecting the joists to the glulam and began to jack the balcony and roof back to level, unbolting the two post saddles at each end of the glulam and using a 30-ton jack to raise the balcony and roof up 2-plus inches **(3)**. We installed temporary posts, then removed two of the outer decking planks to make room for shoring and moved on to supporting the roof.

Supporting the roof. Rather than posting up each rafter, we ripped some 4x10 beam offcuts into wedges cut at an angle to match the roof slope. We nailed them to the bottom of the 4x6 rafters to create a level bearing surface for two temporary 12-foot-long 4x6 beams run perpendicular to the rafters **(4)**. Then we nailed the two temporary beams to the wedges. Six steel shoring posts, run from grade to the underside of the 4x6s, were installed to support the roof. Then we used a reciprocating saw to cut the toenails holding the existing wood capitals and 6x6 posts in place and removed them **(5)**. We had planned to reinstall the capitals per HPOZ requirements, but they were too rotted to salvage.

The new balcony-level 6x6 posts were slotted and bored to receive concealed post tie connectors **(7)**. After the new 24-foot-long glulam was set in the beam saddles **(8)** and the posts installed, they were chamfered to match the original beams.

The new stairs were built with pressure-treated 2-by stock and PT plywood with compatible screws **(9)**. Then the framing was sealed with a liquid-applied waterproofing and crack-prevention membrane **(10)**.

To prevent water intrusion, flashing that runs up the framing was sealed to the masonry **(11)**. Then the stairs were papered and lathed with stucco wire on the stringers **(12)** and with rib lath underneath **(13)** prior to the application of a traditional two-coat stucco finish **(14)**.

Beam. We cut the existing 6x12 glulam into pieces **(6)** and placed the beam saddles aside. Next, we installed the two new 6x6 posts, attaching the bottom of the posts to the metal connectors embedded in the existing pier footings. We reinstalled the old beam saddles on the top of the posts, ready to receive the new beam, which we lifted into place and fastened to the saddles.

At the balcony level, we wanted the four new posts supporting the roof to look as original as possible, so we used Simpson Strong-Tie CPTZ concealed post ties to connect the post tops and bottoms to the beams. Using a beam saw, we sliced the posts to receive the concealed hardware, taking multiple passes to widen the kerfs so that the fins would fit. Then it was a matter of drilling three 1/2-inch holes for the pins **(7)**.

We lag-screwed the base plates of the fasteners to the upper and lower beams, installed their cover plates, and slid the posts into their future home, sometimes with a little persuasion from a single jack hammer. Once the pins were driven into place, we disassembled the shoring jacks, took down the temporary 4x6 beams, and removed the wedges **(8)**. All in all, that was eight hours of work for the six of us.

The next day, we reinstalled the deck planking, chamfered the new posts with a router, plugged the 1/2-inch pin holes at the concealed post anchors, and began to rebuild the staircase.

STAIR REPLACEMENT

We were required to match the new staircase as closely as possible to the original, which included reusing the wrought-iron rails and flagstone veneer. For the new stair carriage, we installed four pressure-treated 2x14 stringers for the straight run of stairs. To make the radius turn for the winder, we framed a series of platforms using PT material. We built a short wall midspan to cancel out any flex, then sheathed the treads and risers with 3/4-inch PT plywood **(9)**.

The masonry sub wanted a second layer of plywood at the treads to make sure they wouldn't flex. Also, he suggested coating the stairs with a liquid-applied waterproofing and crack-prevention membrane by Red Guard (custombuildingproducts.com). He applied the membrane with a 3-inch paint roller, in two coats, then let it cure over the weekend **(10)**. The following Monday, he applied thinset over the Red Guard on the treads and risers, then set the salvaged stone he was able to save, and new similar flagstone, on a layer of mortar troweled over the thinset.

On the staircase walls, the stucco sub installed a membrane base flashing, which ran up the framing and was sealed to the masonry to prevent water intrusion **(11)**. The side walls were black-papered and lathed with stucco wire **(12)**, while the underside of the stairs was lathed with rib lath **(13)**. Conforming to 1920s construction, a traditional two-coat stucco finish consisting of a scratch and brown coat was applied **(14)**; the brown coat was later painted **(15)**.

Finishing up. Some of the original decorative capitals were unsalvageable. Also, to avoid re-creating a hinge joint, I had new capitals matching the existing made by a mill my lumberyard uses and fastened them on either side of the new posts with Timberlok screws **(16)**.

To reinstall the wrought-iron railings, which originally had been assembled with screws that had since rusted, we had to weld the railings back together. In addition, the balusters had been individually screwed down to the glulam, which created a passage at each picket for water intrusion. Instead, our welder fabricated a new hammered steel plate for a bottom rail and welded the balusters to it, which reduced the number of screw holes per handrail section down to three. This choice was to make the new piece more period correct.

We installed a copper cap on top of the new glulam beam to keep water from soaking into it and rotting it out a second time. To avoid the possibility of galvanic corrosion, we placed peel-and-stick flashing (protectowrap.com) between the new steel bottom rail and the copper flashing **(17)**.

Gerret Wikoff is a builder-remodeler based in Los Angeles.

Wrought-iron railings are reinstalled **(15)** and new capitals are installed on either side of the new posts **(16)**. A copper cap is installed on top of a new glulam beam to prevent water from soaking into it **(17)**.