



# Quick Curves With Steel

Light-gauge steel makes creative deck framing easier

BY JOE CIARALDI

**W**e use curves a lot when we build our decks. Sometimes they can solve design problems, like by avoiding existing landscaping or providing extra deck space for a table and chairs. Other times, the curve is all about aesthetics.

Not surprisingly, curves add significant labor and expense to a deck project. We find the process is easiest when you start with a steel deck frame. A steel frame costs 30% to 40% more than treated lumber, but the ability to quickly adapt the components to form

a curve make it worth the expense. Plus, customers like the uniform dark brown of the Trex Transcend steel joists and beams that we use, and the rot and insect resistance are icing on the cake.

Our crew likes how the steel components are lightweight and dead straight. Although we can usually convince clients to go with the steel track and joists once we explain the advantages, Trex's matching metal support posts are expensive (\$150 each), so most clients opt for pressure-treated wood posts wrapped with PVC trim boards. The match-

ing guardrails start out as pressure-treated posts bolted to the framing with ThruLok fasteners ([fastenmaster.com](http://fastenmaster.com)), which are then covered with PVC post sleeves (see "A Field Guide for Prefab Railing," *FHB* #266, pp. 68-73). The curved rail parts start out as straight rail parts made by Trex. We create the curve by heating up and bending the straight rails on site (pp. 71). □

Joe Ciaraldi is a remodeler and deck builder in Salem, N.H. Photos by Patrick McCombe, except where noted.





# Why steel?

## STRAIGHT AND STRONG

With consistent dimensions and no knots or other defects, steel can span longer distances than similarly sized beams and joists made from pressure-treated wood.

## LESS WEIGHT, LESS WASTE

A light-gauge steel joist is about  $\frac{1}{3}$  the weight of a pressure-treated wood joist. Because there are no knots or wane, waste is minimal and what is left over is recyclable.

## ROT- AND INSECT-PROOF

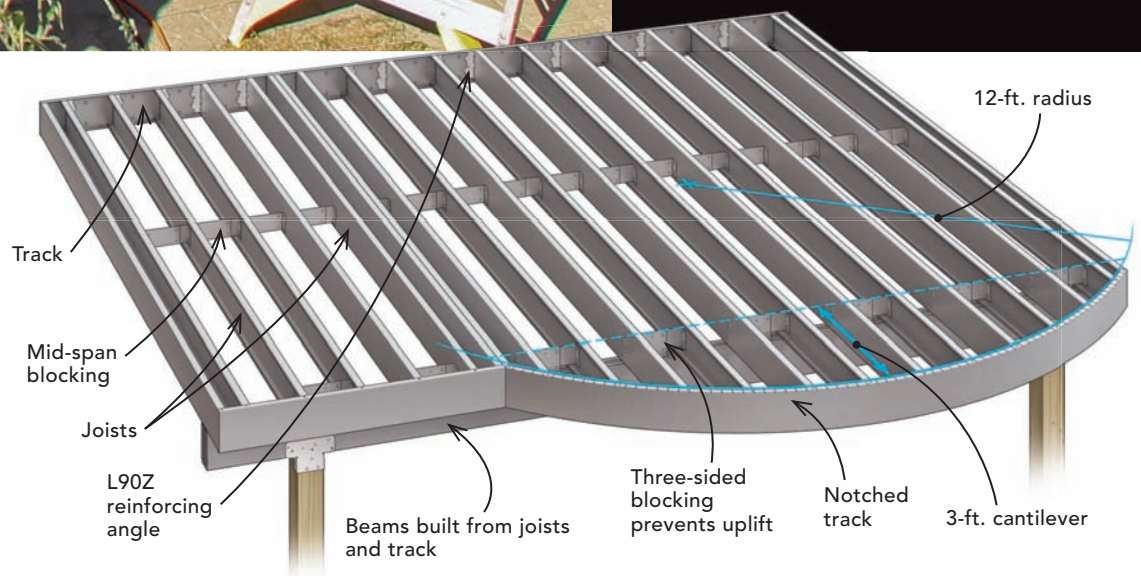
Steel framing is rot-proof and insect-proof, making it a good choice for outdoor projects. A zinc coating on the steel prevents rust.

## MAKING THE SWITCH IS EASY

Steel framing is arranged much like wood, with ledgers, beams, joists, and blocking. You'll need a metal-cutting circular saw and a grinder for cuts, plus an impact driver for fastening.

## SIZING THE STEEL

When framing a curve, joists must be long enough to reach the center of the curve. The curve is transferred to the joists using a 12-ft. string to reproduce the radius. We build our decks to 75 psf (pounds per sq. ft.) for the region's sometimes heavy snow, but Trex has span tables for loads from 50 psf to 200 psf as well as details for supporting beams, post connections, and cantilevers.





# FRAMING A CURVE

To reduce mistakes and allow us to tweak the radius for the best look, we run the joists long and cut them in place. Field cuts are hit with color-matching spray paint to prevent corrosion.



**Swing an arc.** Starting at a point 12 ft. from the center of the overhanging curve, we swing an arc to transfer the radius to the other joists. Once the length is established, a plumb line is drawn on the side of the joists to guide the metal-cutting saw.



**Cut the joists.** A metal-cutting circular saw spins slower than a conventional circular saw and has a shrouded blade to contain the hot chips. A 4-in. or 5-in. grinder is good for odd-shaped cuts and notching the steel framing components.



**Notch the rim joist.** By cutting through the top and bottom flanges of the 8-in. track, the rigid metal gets spaghetti-soft and conforms easily to the curve.



**Fasten the rim joist.** Guided by the plumb vial of a magnetic torpedo level, the track is fastened with self-drilling screws through the top and bottom flanges into the joists.



# Finishes made to fit

The curved border and guardrail components are heat-formed with a propane-fired oven that can heat two 8-ft. parts at a time.



## 1 Scribe

The curve is scribed onto cardboard and cut to create a template for bending the border and railing. The compass is set to accommodate the fascia board, overhanging deck board, and PVC boards temporarily used in the bending process.



## 2 Align

The template is taped to the bending table and the form clamps lined up with its edge. The cam-style clamps ride in T-slots and exert pressure on both sides of the curving border and rail parts.



## 3 Bend

The deck board that creates the curving border is heated for about two hours in the oven before it is pliable enough to bend. Gloves are a must for handling the hot board.



## 4 Clamp

With PVC boards protecting the edges, the curved border and rail parts are clamped in place. Once clamped, the parts are cooled with water from a hose that's equipped with a watering nozzle.

