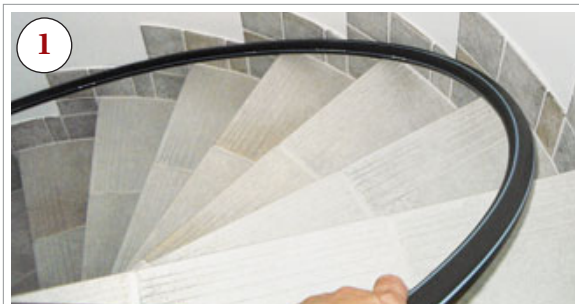


Backfill

Spiral Stair Rail

Aghast at subcontractor bids for a two-section spiral staircase railing, Finnish boat builder Hannu Vartiala combined his affinity for graceful curves with some outside-the-box thinking to produce the satisfying result pictured here. Besides being good-looking and simple to build, the unconventional railing was also easy on the budget: Vartiala reports that the cost for materials (not including his own labor) was just 4 percent of the uninstalled cost of a custom-made wood rail. — *Jon Vara*



1 The basic structure of each railing section is a length of conventional 1 $\frac{1}{4}$ -inch high-density polyethylene water-supply pipe. The radius of the coiled pipe is slightly smaller than the radius of the stairwell, so Vartiala straightened it a bit to achieve the required curve.



2 With the railing body temporarily wired to its mounts, Vartiala stiffened the assembly by inserting a bundle of seven pine dowels (inset) and filling the remaining space with flowable West System marine epoxy (westsystem.com). A small air-bleed hole was left at the plugged bottom of the rail, and a slow-curing hardener was used to allow the resin to flow and settle into the pipe before stiffening up. By comparing the interior volume of the pipe and the space occupied by the battens with the amount of resin used, Vartiala confirmed that few voids remained unfilled.



3 To sweep the railing smoothly toward the wall at its downstairs terminus, a separate short section of pipe was twisted 180 degrees on the dowels and sealed with duct tape. The wording on the sign is Finnish for “Do not touch.”



4 Where sharper bends were called for, PVC sweep fittings were secured to internal wood plugs with more epoxy.



5 A spiral leather wrapping, secured with intermittent dabs of contact cement, provides a striking textured surface (inset). While unusual, that treatment does have a local antecedent: Architect Alvar Aalto used a similar approach on the linear brass railings in a well-known Helsinki concert hall.