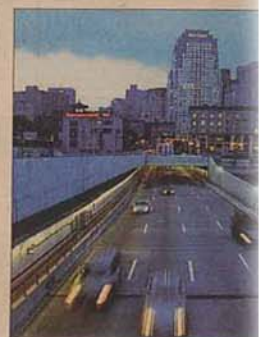


# HOUSE & HOME

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## From scrap to showhome

Architects are using everything from abandoned jumbo jets to torn-down highways to create unusual recycled residences, writes **Sarah Murray**



**Creative reuse:** Paul Pedini's house, top, uses pieces of the old Interstate 93 in Boston, below right. The planned kitchen, above, of Francie Rehwald's salvage project will be built from a redundant Boeing 747, left.

Getty

## **From scrap to showhome**

By Sarah Murray

After a long flight, most people can't wait to get out of the aircraft. But on a remote 55-acre site in the Santa – Monica Mountains, California's Francie Rehwald intends to live in one. David Hertz, the architect designing her new home, is using all the pieces of a Boeing 747 to build it.

This dazzling scheme is one of the most dramatic examples of a residence built with recycled materials. But there are many others around the world, created by owners and architects who have two goals: to conserve resources by using products at the end of their lives rather than manufacturing new ones and to showcase the rich textures, colours and other aesthetic attractions of materials reconstituted into siding, flooring, countertops and walls.

In Rehwald and Hertz's case, for example, the sweeping wings of the jumbo jet exactly matched their desire to build a house with curvilinear forms. "I started with the idea of a ceiling that curved up to take advantage of the fantastic view and minimise the structural elements that would block that view," the architect explains. "It reminded me of a section of a plane wing so I thought: 'Why not use an aeroplane wing?' After all, they're designed to be self-supporting and they cantilever off the fuselage."

He then set off for the aircraft graveyards of California, where hundreds of out-of-date models are mothballed in the desert, and discovered he could secure one for \$30,000-\$40,000. "So," Hertz says, "we decided to buy the whole plane and consume every part of it, like a North American Indian would consume a buffalo and not leave anything behind."

The resulting scheme includes a main residence made with the two horizontal stabilisers and the two primary wings; an art studio and meditation room created from a section of the fuselage; a guest house that incorporates the first-class mezzanine cabin and lounge; and a barn and other structures using other parts of the plane. Hertz, who has also used old fridge panels and car windshields in other projects, says he particularly liked the idea of benefiting from the billions of dollars of research and development that went into making the jet both durable and lightweight.

Though Hertz found his building material abandoned in a field, most large-scale residential recycling projects aim to reuse parts of structures that are being torn

down and would otherwise be deposited in a landfill site. In Aberavon, Wales, developer Ballantyne Homes and government-backed consultancy Envirowise recently razed Port Talbot hospital and recycled much of the facility into the 40 affordable houses now occupying the site. And in Mehrow, Germany, just outside Berlin, architect Hervé Biele has turned an old, grim communist-era housing block into a modern villa using the concrete slabs from the old structure - perhaps pointing the way forward for cities wondering what to do with thousands of plattenbauten, or "slab buildings", now standing empty.

An even more innovative use of waste products can be found in Lexington, Massachusetts, where a house has been created from pieces of Interstate 93 in Boston, which was demolished to make way for the multibillion-dollar highway construction project known as the Big Dig. Paul Pedini, a civil engineer who spent a decade on that scheme, worked with Jinhee Park and John Hong of – Single Speed Design to use slabs of concrete and steel from the old road to build the space where he and his wife, Cristina, also a civil engineer, now live.

"It looks like it was all meant to fit together but there was a lot of planning and a lot of work figuring how to make the pieces fit together," Hong says. "Without us [Pedini] couldn't have imagined it into a house and without him we couldn't have got access to the materials" - which, he adds, offered big advantages over traditional bricks and mortar.

Since the road was built to be load-bearing, the house is too and is easily able to support a green roof (including soil, plants and irrigation) without additional reinforcements. "And because we assembled it like a highway, it went up really fast," says Hong. "The frame of the house went up in 20 hours and with regular housing technology that would have taken two months."

Cargo shipping containers have also proved popular with architects wanting to create unorthodox but attractive homes relatively quickly. In 2001, UK-based Nicholas Lacey & Partners completed a scheme reusing these large steel boxes (appropriately located in London's Docklands neighbourhood), painting them in bright reds, oranges and yellows. Urban Space Management, the organisation behind the project, has since expanded the concept in another complex of containers that provides affordable apartments and work studios.

The owners of recycled homes say that one of the best parts about inhabiting them is thinking about how the materials were used in their former life. In the Pedini house, Hong and Park worked to preserve the characteristics of the original road, leaving intact the labels printed on the highway panels when they were cast. "Things like that are fun," Hong says.

Hertz cites another commission in which he used the oak staves of drums used to store and age cabernet sauvignon. "There's a provenance to the origin of the material but there's also a beauty of that surface and even the aroma of the wine," he says. In another project he created walls from teak off a US battleship deck, leaving his client with "a wonderful story" to tell.

Recycling can be done on a much smaller scale too. The tradition of architectural salvage - whereby features including ornate windows, doors, fireplaces and statuary are rescued from houses, hotels and offices that are being demolished, then incorporated into modern-day homes - is a well-established tradition, aided by specialist dealers and antiques stores. And builders looking for floors with more depth and complexity in colour and finish have long used reclaimed wood. "It gives people a huge range of options and gets away from having the luxury of choice with no consideration of the impact on the planet," says Geoff Rich, head of the creative re-use studio at UK architecture practice Feilden Clegg Bradley.

But there are new innovations too. Old tyres can be recycled to create simulated slate tiles that are as durable as the authentic versions but far less costly. Options for kitchens and bathrooms include recycled tiles and countertops made of polished glass that started life as bottles or traffic lights.

Manufacturers are also producing recycled materials on an industrial scale. At Shaw Industries, for example, old carpets are sent to the company's Evergreen nylon recycling facility in Augusta, Georgia, where they eventually emerge as new ones. Welsh company Ty-Mawr, which makes and sells environmentally friendly building and decorating materials, has meanwhile created Glaster, a product created from recycled glass ground down to sand, which creates an appealing sheen. And Hertz has developed Syndcrete, a cement-like material made from 41 per cent recycled materials, including glass, plastic, scraps of wood and metal shavings.

The question now is whether any of these techniques will make their way from individual, architect-designed homes into mainstream developments. "People are super traditional in what they want out of housing and have serious expectations about what are the correct materials, [which] is a problem for recycling," acknowledges Allison Arieff, a consultant at Ideo, the international design consultancy.

Even those who are eager to live in a less conventional property might hesitate because of concerns about its resale potential. "In a way, it's more of a cultural problem than a materials problem. The materials are there but there's a reticence to use them."

Even more problematic is the fact that the construction industry and government regulators are notoriously slow to embrace radically new ideas. "There is so much inertia in doing things the same way all the time," says James Ewell of the MBDC

consultancy, which works with companies on – "cradle-to-cradle" design and manufacturing. "And this is combined with building codes that are well-intentioned but can act as a real depressant to using unusual materials."

Still, as pressure on the world's resources increases and landfill options become more limited and expensive, architects and developers might be forced to find ways of using a greater proportion of recycled materials in the homes they build. This will undoubtedly involve a shift in conventional thinking. Hong says he would like to see more structures, from buildings to roads, constructed with recycling in mind - "It's the whole idea of planning for the second use" - while Ewell urges industrialised countries such as the US to take the lead. "It's a materials store that you're mining above the ground rather than under the ground," he says. "It will take a change in mindset to see that as wealth rather than stuff you put in a hole in the ground."

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