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CITY OF AMSTERDAM

Construction crews are building a two-floor parking garage with 600 spaces for vehicles and 60 spots for bicycles underneath the Boerenwetering, a canal in the heart of the Oude Pijp neighborhood.

By [Matt Rocheleau](#)

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Editor's note: This is part of a series exploring initiatives around Boston, the country, and the world that have succeeded or hold great promise, from government to business to culture. For more stories, [click here](#).

Tell someone you stashed your car in the Charles, the harbor, or Fort Point Channel, and you'll probably get a sideways look.

But someday, such a seemingly far-fetched notion might become a reality if Boston follows the lead of other cities desperate for parking but lacking land to build it. Underwater parking garages have been built, or are in the midst of being built, in at least three cities: Amsterdam, Copenhagen, and Geneva.

In a city like Boston, where the most parking-starved areas are surrounded by water, the payoff could be significant: helping to reduce the pollution and traffic caused by drivers circling the block hunting for spot, making parking more affordable, and freeing up more street-level space for other uses.

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The idea has been floated — pun intended — for Boston at least once in recent years.

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“It’s definitely very possible,” said Arthur G. Stadig, vice president of Walker Parking Consultants,

who said a client of his Boston firm — whom he declined to identify — recently toyed with the idea of extending part of a planned parking garage into the harbor.

While such a project would raise unusual technical challenges, they would be manageable, he said, and the cost would be about the same or only somewhat more than for building an underground garage.

“It’s just a matter of is there that right combination of a development that’s close to the water, needs the parking, and is feasible from all different aspects,” including cost and securing regulatory approvals, Stadig said.

In Amsterdam, work began in January 2016 to build a two-floor garage with 600 spaces for vehicles and 60 spots for bicycles underneath the Boerenwetering, a canal in the heart of the Oude Pijp neighborhood, officials there said. Once it’s completed in early 2018, about 300 street parking spaces in the surrounding area will be removed to create more green space and room for pedestrians, cyclists, and play facilities.

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“In this way, efficient use is made of the limited space available in the local area,” said Michelle Mulder, a spokeswoman for the city of Amsterdam’s engineering department.

Dutch officials said the net gain of 300 spaces will reduce the laps residents now must make as they hunt for parking, reducing drivers’ frustration as well as traffic and air pollution.

Aside from the utilitarian benefits, underwater garages are engineering marvels.

The Amsterdam canal remained full of water for the initial phases of construction. Crews first [installed](#) steel sheets and concrete to serve as walls to keep water out in later phases.



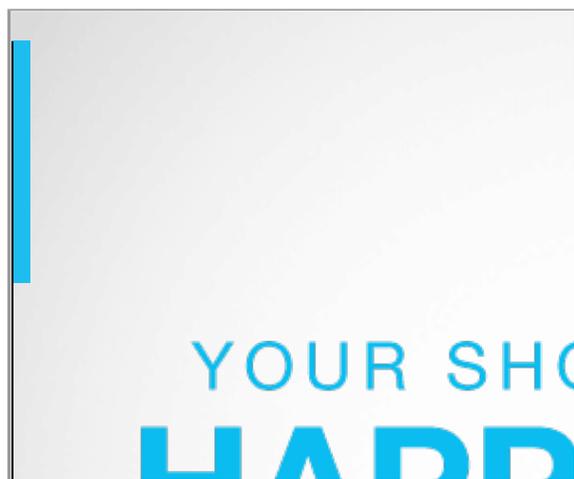
CITY OF AMSTERDAM

Construction crews are building a two-floor parking garage with 600 spaces for vehicles and 60 spots for bicycles underneath the Boerenwetering, a canal in the heart of the Oude Pijp neighborhood, which is sorely in need of parking.

Next, they dug out the bottom of the canal where the garage sits, removing about 80,000 cubic meters of soil in the process, and poured gravel and concrete to form the foundation, which is held in place with more than 1,000 piles, or cylindrical anchors.

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Then pumps were used to suck out the canal water so workers could install the garage's columns, floors, walls, and elevator shafts. The final step will be building the roof and filling the canal back up with water. Once it's complete, the only sign anything has changed will be the entrances to the garage alongside the canal.

While building the garage below the canal had its own challenges, officials said it would have also been a complicated endeavor to build one below, or on, dry land. Crews would have had to avoid damaging the densely packed 18th-century buildings in the area.

The garage is projected to cost about \$40.5 million — a figure that includes 15 years of maintenance and renovation of a nearby bridge, officials said. It will be paid for with money raised by surcharges assessed to parking-permit holders.

Amsterdam is already planning two more underwater garages in the coming years: an 800-space garage under the Singelgracht canal, which will also free up some street-level space, and another under the Open Havenfront waterway, near a busy transit station, with spaces for 7,000 bicycles.



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In Copenhagen, construction finished last summer on a roughly \$79 million, three-floor, 500-space [garage](#) that sits in the city's harbor beneath the Kvaethus Pier. The garage is meant to serve people driving in to see shows at the Royal Danish Playhouse and the Copenhagen Opera House nearby, or to visit other attractions.

It was paid for by a Danish philanthropic organization called Realdania. Its CEO, Ole Bach, said stand-alone parking garages, whether underwater or not, typically are too expensive for the city to build and do not make sense for developers looking to turn a profit.

Bach said underwater structures present “technical and special challenges.”

One major challenge arose in Amsterdam when construction crews did not properly install anchors that secure the garage to the seafloor, allowing water to leak in. That required rebuilding the garage floor, which delayed the project by six months and cost an additional \$4 million, Bach said.

Building parking beneath waterways isn't a new concept. What is believed to be the world's first underwater garage opened under Lake Geneva in 1972. The four-floor, 1,450-space garage quickly became a [tourist attraction](#).

Called the Mont-Blanc Car Park, it cost just \$6 million, The [New York Times reported](#) at the time. That would be roughly \$36 million today, adjusted for inflation.

Construction involved few serious problems, took just over two years, and was completed six months ahead of schedule.

In Boston, parking demand is much higher than supply.

A [study](#) released last month by INRIX, a company that analyzes traffic, found that Boston drivers, on average, waste about 53 hours a year looking for parking, far above the national average of 17 hours.

[Demand](#) is expected to continue to grow as construction booms in the [Seaport](#), where new buildings replaced large parking lots.

While an underwater garage would provide some obvious benefits in Boston, local officials said such a project would face more regulatory hurdles than standard garages and probably would require approval from numerous municipal, state, and federal agencies.

Among the myriad concerns that would need to be addressed: the project's potential impact on the marine environment; whether it would affect boat travel; how to build it around existing infrastructure, including Big Dig tunnels and MBTA subway lines; and whether the garage's entrances would be susceptible to flooding from sea level rise.

"It's a complex question, because who actually controls those areas? Are you disturbing habitat and how does that get mitigated and restored?" said Rich McGuinness, deputy director for climate change and environmental planning at the Boston Planning & Development Agency.

Because of pollution concerns, there already are longstanding [freezes and other restrictions](#) on the

construction of certain parking spaces in key areas of the city, covering downtown, Beacon Hill, the North End, the Back Bay, the South End, South Boston, and East Boston.

Stadig, of Walker Parking Consultants, said worry about gaining regulatory approval was the main reason his client abandoned the idea of building parking in the harbor.

“Politically, it would be a difficult sell,” he said.



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Part of a series exploring initiatives around Boston, the country, and the world that have succeeded or hold great promise, from government to business to culture. Matt Rocheleau can be reached at matthew.rocheleau@globe.com. Follow him on Twitter [@mrochele](https://twitter.com/mrochele).

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