HOMES

Some of Boston’s Priciest Real Estate Is Sinking Into the Earth

Rotten wood pilings are threatening the city’s most expensive homes

By Candace Taylor
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In 2011, developer Koby Kempel paid $2.5 million for a red brick, former carriage house in Boston’s coveted Beacon Hill, one of the priciest neighborhoods in the country. Famed for its cobblestone streets and historic row houses, Beacon Hill has been home to former Secretary of State John Kerry and many other notable Bostonians over the years.

When Mr. Kempel bought the circa-1900 house on Beaver Place, the underground wooden pilings supporting the foundation had been rotting for years, to the point where the building’s walls were “almost floating,” he recalled. “The only thing that was holding the building [up] was the fact that it was connected to the adjacent buildings. It was almost leaning on those party walls.”

Mr. Kempel said he spent several hundred thousand dollars repairing the pilings before he was able to carry out his plan of renovating the rest of the house.
Mr. Kempel’s experience is far from unique. For more than a century, the city of Boston has grappled with the slow destruction of its most treasured and expensive architecture. Depleted groundwater levels are causing the rot of the wooden piles that support historic buildings in many areas of the city, and in particular the sought-after, pricey neighborhoods of Back Bay, the South End and Beacon Hill, which are known for their picturesque 19th- and early 20th-century row houses.

Damage to these wooden pilings causes homes to settle, jagged cracks to appear in walls and bricks, and windows to blow out of their frames. If left unchecked, rotted pilings can render a home uninhabitable. A number of buildings have been condemned over the years as a result of the settling.

“These old brick row houses are incredibly beautiful and really valuable,” said Michelle Laboy, an assistant professor of architecture at Northeastern University in Boston. “And yet so many of them are threatened by the dropping groundwater table.”

Today, roughly 6,000 buildings in Boston—including some of the city’s most expensive homes—are supported on wood pilings, constituting 40% to 50% of the city’s residential tax base, says Christian Simonelli, executive director of the Boston Groundwater Trust, an organization established by the city to monitor groundwater levels.
Yet the issue of rotten pilings remains an open secret in Boston. Home sellers and their brokers are often loath to discuss it, and even more loath to find out if their property is affected. Massachusetts is a “buyer beware” state, meaning home sellers have few disclosure requirements, although they are required to answer questions truthfully. Any buyer who unknowingly purchases a house, or a condo in a building, with rotten pilings is responsible for the cost of repairs, which are rarely covered by insurance.

“This is one of the bigger, more costly issues that you’ll ever run into in purchasing one of these properties,” said Boston real-estate agent Nick Hanneman. But “a lot of people kind of have a ‘don’t ask, don’t tell’ mentality when it comes to this, especially sellers. They don’t want to discover costly issues.”

Many buyers, especially out-of-towners, are unaware of the problem and don’t know to ask about the condition of a home’s pilings before buying. In fact, real-estate agents say in Boston’s booming housing market, many buyers are waiving their right to a home inspection that could detect the problem.

“I could easily see a scenario where a buyer could end up in a situation where they didn’t know they should have asked,” said Mr. Hanneman.
Much of modern-day Boston was underwater when European settlers first arrived on the Shawmut Peninsula. From the late-1700s to the late-1800s, the city aggressively expanded, filling parts of Massachusetts Bay with soil, sand and gravel. Today, the city has about 5,250 acres of filled land, said Mr. Simonelli.

To build on the unstable surface, builders drove tree trunks into the fill until they hit firmer ground, then placed foundation stones on top of these wooden piles. This technique was used until the 1920s, when foundation-building technology changed, Mr. Simonelli said.

Wooden piles can remain intact for hundreds of years if covered by groundwater, as they were when first installed. As the city grew, construction of tunnels, sewers, basements and subways caused the groundwater level to drop in many areas, which exposed the tops of the pilings. Air causes the wood to rot, said Giuliana Zelada-Tumialan of the engineering firm Simpson...
Gumpertz & Heger. As the rotted wood crumbles, the foundation stones sink, and so do the structures they support.

To repair decayed wooden pilings, the rotted tops are removed and replaced with metal caps. The building's foundation stones sit on top of them.

PHOTO: BOSTON GROUNDWATER TRUST

In 1929, rotted pilings supporting the main Boston Public Library were repaired at a cost of roughly $3 million in today’s dollars. In the 1980s, four buildings in the Back Bay area had to be demolished and replaced with a parking lot. Five buildings in Chinatown were condemned and demolished. The late real-estate executive Robert Beal had to partially tear down and rebuild his circa-1900 townhouse on Beacon Hill’s Brimmer Street. More than a dozen Beacon Hill residents claimed in a lawsuit that construction on nearby Storrow Drive caused pilings rot and damage to their homes. The suit was settled.

Since the 1980s, the city has worked to replenish groundwater levels by, for example, requiring builders to install groundwater recharge systems and use porous paving materials to let rainwater into the ground. Still, the levels fluctuate. When one of the city’s roughly 800 monitoring wells indicates that groundwater levels have dropped, the Boston Groundwater Trust investigates the cause—often a broken sewer pipe siphoning off groundwater—and works with government agencies to fix it.

Mr. Simonelli said there are now only a few reports of pilings damage a year, but the challenge is ongoing: In the fall of 2019, the Groundwater Trust found that the water in roughly 100 of its wells was at or below 5 feet, the level that typically risks exposing nearby piles, leading to more rot.

Resubmerging the piles in water stops further rot, but doesn’t fix existing damage. The only way to find out if pilings under a building are rotted is to dig an underground “test pit” at a cost of $10,000 to $50,000, according to Mark Balfe of the engineering and environmental
consulting company Haley & Aldrich, who said his firm does three to four pilings repair projects in Boston each year.

Repair means an expensive process called “underpinning”—cutting off the rotten wood at the top of the piles and replacing it with steel. It usually involves hand-digging a series of pits in the basement floor, a laborious process that can cost more than $200,000, and a further $100,000 to repair the brick damaged by settling, said Mr. Kempel of Pegasus Luxury Homes, who has bought, renovated and sold a number of Boston houses. That cost doesn’t include any repairs or renovations that would be required if that basement unit was living space, as many are in row houses.

The expense is one reason why current homeowners avoid finding out if their property is affected. The other is that if they know for certain the condition of their pilings, they are legally required to truthfully answer questions about it if a potential buyer asks.
Late real-estate executive Robert Beal partially tore down and rebuilt this circa-1900, four-bedroom townhouse in the 1980s. It is available for sale for $8.75 million.

PHOTO: TONY LUONG FOR THE WALL STREET JOURNAL
Buildings with pilings damage also sell for a significant discount, said Mr. Kempel, who was able to negotiate the price of the Beaver Place property. After buying it for $2.5 million, he rebuilt the structure and resold it the next year for $5.4 million.

“Few people investigate it—they don’t want to know,” said Compass agent Doug Miller. When working with buyers, “if I see settling, it’s definitely a question that I ask, but I’ve never had anyone answer with anything other than ‘I don’t know.’ ”

But digging test pits before a sale is often unrealistic in Boston’s current red-hot real-estate market, said developer Marc Savatsky, who has redeveloped a number of row houses in Boston’s South End. “In this competitive market, the seller isn’t likely to allow us that luxury,” he said.

An experienced building inspector can often locate the signs of rotted pilings without a test pit, but many buyers are waiving their right to a home inspection to beat out other bidders. Homes in Boston’s coveted historic neighborhoods are seeing strong demand and limited inventory, brokers said. In Suffolk County, where Boston is located, the median sales price for a single family home in December 2019, $595,000, was up 18.7% from a year earlier, according to the Warren Group.

“To skip [an inspection] is insane to me,” said Joseph Aiello of Gumshoe Home Inspection, who said that in the past eight years, he has inspected a number of Boston homes with foundation damage likely due to rotted pilings.

Mr. Aiello said when he’s found signs of rotted piles in inspections, “the majority of my clients will say ‘I’m not getting involved’ and walk away. No one wants to take that on.”
And while Mr. Savatsky and other developers may know what to look for when it comes to settling—and have funds available to repair pilings if necessary—regular home buyers may not, especially if they are from out of town.

Even among buyers who do know about the problem, there are misconceptions about which areas are vulnerable to rotted pilings. That can lead to a false sense of confidence. “I get that a lot—‘oh, it’s a Back Bay thing, oh, it’s a Beacon Hill thing,’ ” said Mr. Simonelli. “It’s not. It’s in many other areas.”

Koby Kempel spent several hundred thousand dollars to underpin the rotted pilings underneath this home on Beaver Place.

PHOTO: TONY LUONG FOR THE WALL STREET JOURNAL

C. Forbes Dewey Jr., and his wife Carolyn Dewey found that out the hard way. In 2001, they paid $1.04 million for a condo in a “gorgeous” 1850s building with a cast-iron facade in the North End of Boston, said Mr. Dewey, a professor emeritus at MIT.
Mr. Dewey had heard of the issue of rotted piles in Boston, but “I had no reason to believe we were in that position,” he said. “Six months later, we found out that we had a serious problem.”

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That is when residents of the roughly 25-unit building noticed cracks in the walls and doors that were stuck open. They were told that roughly half the building’s piles had rotted and would have to be underpinned at a cost of roughly $3 million. Insurance wouldn’t cover it, so the condo board levied an assessment, which averaged $50,000 for each owner.

The repairs took over a year. Building residents suspected the nearby Big Dig tunnel project depleted the area’s groundwater. “It’s pretty hard to trace where the water table goes or what affects it,” Mr. Dewey said.

He declined to specify how much his share of the assessment was, but said it was roughly the cost of a Ferrari. “My joke about it is I’ve always loved Ferraris, but I didn’t think I’d have to put one down in the basement in order to keep the building up.”

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