



Reins Versus Snow

Snow removal in Boston in the early twentieth century was a low-horsepower affair. This photo shows a pair of draft horses pulling a plow through heavy snow on the Boston Common. Boston has been in pursuit of better ways to clear its streets of heavy snow since colonial times. Undated photo. Courtesy of the Boston Public Library.

PHOTO ESSAY

Conquering Winter: Snow Removal from Boston's Streets from the Colonial Period to the Present

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Editor's Introduction: *This colorful essay documents the City of Boston's efforts to keep its streets passable—and the city functioning—after heavy snowfalls. The contest with winter is one that Boston has been waging from the colonial period to today. The stakes for the city have gotten higher as Boston became a major regional metropolis dependent on its vast network of roads and railways. In this essay, we see city officials respond with evolving snow-clearing technology as well as with regulations and the build-out of an administrative infrastructure to direct snow removal citywide and prepare for future storms. As to whether the skies or the plows will ultimately prevail, this essay doesn't risk a prediction. But it does show that over more than 300 years, Boston has learned how to keep the city going through even the worst New England winters.*

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Snowplows aren't perfect. They pile chunks of icy, compact snow at the end of your driveway, usually right after you've finished shoveling. They hit your mailbox. They always plow your street last.

But things could be worse. Snowplows as we know them today have been around only as long as the automobile, about a century, give or take. Which means that, for over two centuries before that, snow removal in Boston was a much more difficult process.

It was also less essential, because there weren't any cars to clear roads for. According to historian Blake McKelvey's book *Snow in the Cities*, when it came to winter transportation in colonial Boston, ice was of much greater concern. If the bay froze over, the city could be cut off from necessary supplies.¹

That isn't to say that nothing was done about the piles of snow on the city's streets and sidewalks. As early as 1823, Boston felt the need to legally require residents to keep their sidewalks clear of snow. The *Boston Commercial Gazette* ran a notice on Christmas of that year dictating that all tenants or owners of property (excepting "that part of the City called South Boston," for



Smashing through the Snow

In winter, the horse-drawn plow was a familiar feature of Boston's streets in the 1800s. This image from *Ballou's Pictorial*, January 31, 1857, shows how the snow was turned aside by angled planks near the front wheels operated by a pair of plowmen. The plows worked better in light snows. Courtesy of the Boston Public Library.

some reason) must clear snow and ice from their sidewalks no later than six hours after snow stopped falling or before two in the afternoon if the snow stopped falling overnight—which is pretty similar to the rules today. Also like today, there was a fine for not doing so: no less than \$1 (about \$23 today) and no more than \$4 (about \$90) per day.²

The roads didn't have to be snow-free. In fact, it was better if they weren't. Within the city, ground travel was done on foot, on horseback, or in horse-drawn carriages. When it snowed, carriages were either outfitted with wheels better suited for the weather or they were converted into sleighs. If the snowfall was significant, the snow was flattened and packed down rather than cleared. After a two-foot snowfall in the 1830s, the *Boston Gazette* reported that "several sleds filled with men and boys" were pulled by a team of horses through the streets to level the drifts.³

By the 1840s, rail travel was widely available, making intra- and interstate travel easier. But that introduced a new problem: trains couldn't just run over tightly packed snow—it had to be cleared from the tracks. And there were miles and miles of tracks.

A *Boston Globe* article from 1900 looked back on this time:

Snowplows were not in existence. Birch brooms, reaching to the rails, were fastened to posts and cleared away small obstructions. During a winter storm, iron plates about the size of ordinary shovels were placed diagonally to the rails to remove the snow.⁴

Things got better. Around this time, trains began to mount wedge plows on their noses, which pushed the snow to either side, well clear of the tracks. While those plows were an improvement, they weren't perfect. "Often 10 hours was consumed in going through an 800-foot cut," the *Boston Globe* complained. "It sometimes took three days to get from Boston to Portland." Not Portland, Oregon. Portland, Maine.⁵

The plow was effective enough to be adopted for city use. In Boston, teams of horses pulled wedge-shaped plows to help clear the roads or level the snowdrifts. A *Boston Globe* cartoon from 1897 shows one in action.⁶ It also shows that then, as now, the snowplow proved to be particularly annoying for the sidewalk user.

There were other options. A picture from an 1857 edition of Ballou's Pictorial shows a horse-drawn rail plow with angled planks between the front and back wheels, which scraped small amounts of snow off the tracks. The "snow-plough" was "used successfully," except in heavy snow. "In which case, stage-sleighs will be substituted," *Ballou's* reported.⁷



Buried on Beacon Street

In this photo from 1901, Bostonians dig out from a heavy snowstorm that left Beacon Street nearly impassable—although the sidewalks have been cleared. The city’s streets were cleared by horse-drawn plows. Courtesy of the Boston Public Library.

In 1889, Boston instituted electric trolley lines, which soon replaced the horse-drawn carriages. The horse-drawn rail plow was also replaced. A *Boston Globe* article from 1904 introduced something described as a “monster rotary plow” that ran along trolley lines in and around the city.⁸

The *Boston Globe* was very excited about this monster rotary plow. “HUGE DRIFTS VANISH BEFORE IT,” the headline screamed. A “double-ended monster weighing 28 tons,” the plow functioned much like a snowblower, with huge fans in the front that cut through and swallowed any snow in the plow’s path, spraying it out the side, probably on a sidewalk someone had just finished shoveling.⁹

According to Blake McKelvey, the rotary plow didn’t work in deep or wet snow. By 1905, *Engineering News* reported that Boston and Worcester trolley lines attached Wilder Radial plows to both ends of their cars, which proved effective at clearing the streets.¹⁰

Plows solved some problems, but created others. Snow pushed off the streets accumulated on the side of the road, creating huge piles of the stuff. It had to go somewhere and someone had to put it there. The city paid teams of people to shovel the excess snow away. That could be a welcome means of employment, albeit temporary, for some. In 1874, the city was in the midst of a snowstorm and a depression, which made for a large and eager shovel workforce of unemployed men. Boys, too. “Many an urchin, with shovel in hand and cold hands and feet, worked hard for his dime,” *The Boston Globe* said at the time. “By noon the sidewalks were comparatively clear.”¹¹

This is not to say that Boston was entirely welcoming of their efforts. One man ranted at length in the *Boston Globe* in 1883 about “the fiery, untamed snow-shovel.” Basically, he was annoyed that his neighbors were diligently shoveling their sidewalks at six in the morning because the noise woke him up. This is understandable.¹²

“The snow-shovel seems to exercise some sort of witch-like fascination over its possessor that does not allow him to rest in ease a single moment as long as there is a flake of snow on the sidewalk in front of his habitation and that shovel is not filling the air with its discordant scraping,” wrote the unbylined author.

Then again, in 1882, the *Boston Globe* published a rant about people who didn’t shovel enough. “It is a very bad plan to leave a coating of ice over a brick sidewalk for the righteous to slip upon,” another unbylined author wrote, noting that only the “upright” citizen seemed to fall victim to the slippery unshoveled sidewalks due to the “feat of funambulism” (tightrope walking) that only the “wicked” who refused to shovel possessed. Those who refused to shovel snow, the author concluded, would become a “public enemy” because the police were recently ordered to enforce the shoveling ordinance. That meant a fine of \$5 to \$50 (these days, that fine is between \$50 and \$200, depending on the size and type of property).¹³ It is fun to imagine that the two authors lived next door to each other.

Six years later, Boston’s snow removal methods were really put to the test. In March 1888, a massive blizzard hit the Northeast, burying it under up to four feet of snow. The region was paralyzed. Trains were stuck—in many places, the snowdrifts were taller than they were. No simple wedge plow was going to get through that. Telegraph wires were knocked down, cutting off communication between cities. (Although the *Boston Globe*, always on the cutting edge of technology, had recently invested in a long-distance telephone line and was able to communicate with New York. Competing newspapers, the *Boston Globe* proudly and often noted, were left waiting for the wires to be fixed.)

Within Boston, conditions were less dire. According to *Yankee Magazine*, the city received only 12 inches of snow and was able to keep its streets (relatively) clear. The *Boston Globe* reported that horse cars “experienced much delay” and had to add extra horses to their teams, but “the Charlestown, Cambridge and Somerville cars were at times slightly blockaded, but snowploughs, driven by from six to eight horses kept the track even and made progress possible.”¹⁴

That progress came at a price. The *Boston Globe* wrote in 1904 that “horses suffer the most in the Boston snowstorm,” slipping in the snow and ice and falling “by the hundreds.” Other horses just dropped dead from exhaustion. The paper also published stories about people killed by plows in various terrible ways, their bodies often ending up “mangled beyond recognition.”

Snow removal wasn’t just a matter of convenience. For some, it could be a lifesaver. Men and women with limited incomes couldn’t afford to take a trolley or a carriage to get to work in inclement weather. They also couldn’t afford to take the day off. So they walked to work, sometimes several miles. The journey could be perilous. In the Blizzard of 1888, there were reports of people getting stuck in the snow and freezing to death on the way home from work.

After the 1888 storm, according to the National Snow and Ice Data Center, “cities recognized the need for more organized snow removal and looked for ways to avoid some problems altogether.”¹⁵ One solution was something many Boston commuters rely on today: an underground subway.

Even in its premotorized days, snow removal never came cheap. A 1902 *Boston Globe* article on “Boston’s Battle With Snow” reported that the Boston Elevated Railway Company spent \$135,000 to remove snow from its 409 miles of track after one storm. That’s over \$3.6 million in today’s dollars. The city itself spent about \$30,000 for every six inches of snow on removal—about \$800,000 today.¹⁶ In the winter of 1908–09, according to Blake McKelvey, Boston spent \$114,026, or \$3 million in today’s dollars (in 2015, \$18.5 million was budgeted). The money went to plow maintenance and labor—not just the men who drove the plows, but those who followed closely behind to shovel the snow left in their wake. The city also hired private citizens with their own horse teams and plows. Men who worked for the city earned \$2 per day (about \$56 in 2014) for their efforts.¹⁷

The shovelers either leveled the snow left behind by the plow or piled it into horse-drawn carts that would transport it to a water source or a vacant lot where it could be dumped. The author noted that up until “a few years ago,” snow was dumped on the Common. “Mayor Quincy put a stop to that



Street Pioneer

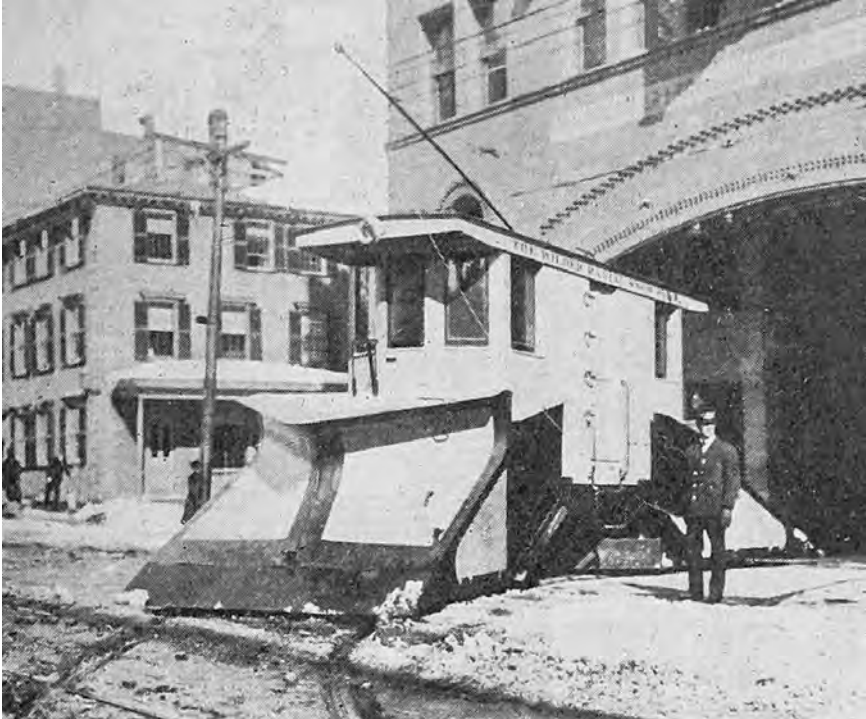
Boston's first motorized snowplow: a modified Model T. Harrowlike wheels provided traction, and muscle power apparently guided the plow from inside the open cabin. The plow went into operation in 1914. Undated photo. Courtesy of the *Boston Globe*.

custom,” the article said. It did not specify which Mayor Quincy did this (by this point, there had been three Mayor Quincys, all named Josiah).

These days, the city tries to push as much snow as possible onto the side of the road, usually against your parked car. Excess is placed in “snow farms” around the city—vacant lots, basically. It hasn’t been dumped in the harbor since December 1997, when the Department of Environmental Protection banned the practice, believing that the roadside garbage and chemicals in plowed snow contributed to polluting state waterways. That said, in winters with particularly heavy snowfalls, the temptation to throw some of it in the harbor can be great.

AUTOMOBILES FORCE A CHANGE IN STRATEGY

As automobiles became more and more commonplace, they created new problems—and solutions—for snow removal. Horse-drawn carts were being phased out, which meant there were fewer of them available to remove snow in the first place. Car tires weren’t able to simply drive over snow the way



Wilder Radial Plow

Like the model shown here, the Wilder radial plow had plows mounted front and back for clearing the city's street rail system. Undated photo. *Engineering News*.

horse carts could. It couldn't just be packed down anymore—it had to be cleared completely. Cities had to rethink how they dealt with snow.

By 1914, Boston had its first motorized snow plow: a Model T that rolled on vicious-looking harrow wheels. That same year, representatives from several cities, including Boston, met in Philadelphia for a convention on snow-removal strategy. According to McKelvey, “the conference was informative,” and Boston left “determined to rely on the 1,000-man force and 300 carts in its street-cleaning department to handle snowfalls up to six or eight inches; for heavier storms, it authorized each of six district superintendents to hire additional workers as needed.”¹⁸

A 1915 article in *Better Roads and Streets* details Boston's snow-removal plans. While the city streets were cleared in a reasonably efficient manner (especially streets with trolley lines, as trolley companies were responsible for

clearing snow on their tracks, often at a considerable expense), suburban streets “merely” had their gutters and crosswalks plowed.¹⁹

The city’s motorized plow fleet soon expanded. In 1916, Boston’s snow removal force included three motorized plows, according to McKelvey. A *Boston Globe* article from February of that year claims the city had six “motor trucks” available to fight snow, though it does not say how many of those trucks, if any, had plows attached.²⁰ In 1917, the *Boston Globe* reported that a Park and Recreation Department employee designed a plow, described as “an iron-shod heavy plank arrangement, attached to a big motor truck.” An accompanying photo shows a plow that looks similar to what we use today.

“The blade can be rigged at any angle and is reversible,” the *Boston Globe* reported. “The plow overcomes many handicaps of the old wedge-shaped plows drawn by horses and can be used on streets and gutters as well as sidewalks and park walks.” The result? It “was put to work yesterday at Franklin Park yesterday and did a speedy and effective job in clearing the snow from the miles of walks there.”

Nearby Weymouth got a motorized plow of its own in 1920, when a *Boston Globe* article declared, “Weymouth keeps streets open by means of new fangled motor driven snow plow.” Other towns, the article noted, were inspired by Weymouth’s success and planned to purchase snowplows of their very own.

In 1920, the city’s snow-fighting force, “new fangled” and otherwise, proved to be insufficient. With three feet of snow covering its streets, the city had to resort to using steam shovels to clear a path. By the spring, Blake McKelvey writes, the city resolved to “upgrade” its snow removal methods. At the same time, the postwar boom made automobiles even more common.²¹

That same year, the question of how to clear the developing intra- and interstate highways was raised in the State House—specifically, who would pay for it. “It is a big problem,” the *Boston Globe* wrote. “To have the state assume the entire burden would be so costly that the taxes would fall heavily upon the entire community.”

A week later, the *Boston Globe* reported that Public Works Department Commissioner John N. Cole called together representatives from various cities and towns to figure out how to get snow off highways—and who would pay for it.²² The state purchased plows that could be attached to trucks, but would not provide any trucks itself. Cities would have to provide the trucks, or hire private citizens to do the plowing.

Cole left that meeting thinking everything was taken care of. But it wasn’t. Two weeks later, the *Boston Globe* reported that there was a significant “lack of cooperation” amongst truck owners and operators, because even 94 years ago, people in Massachusetts were just as stubborn and the bureaucratic wheels moved just as slowly as they do today.²³

“Not a single through route radiating from Boston to the important centers is properly cared for under the method of cooperation,” the *Boston Globe* wrote. Cole was quoted as saying “the department cannot believe that the agreement, which was so definitely arrived at in framing the legislation a year ago, is so lightly to be thrown aside by those who are responsible for a large part of the development of this new system of transportation over the highways of the Commonwealth.”²⁴

Now we have the Massachusetts Department of Transportation to clear the highways, as well as any other roadways under its purview. Boston’s streets are plowed by the city’s Public Works Department unless they’re owned by the state Department of Conservation and Recreation (DCR). Some of DCR’s roads are plowed by DCR itself (Morrissey Boulevard, for example), others by MassDOT (Storrow Drive). The MBTA bears the responsibility (and cost) of snow removal on its own lines. Every once in a while, it employs “Snowzilla,” a 35-year-old jet engine with a powerful, snow-blasting exhaust that consumes 900 gallons of fuel per trip, to clear the Mattapan line’s tracks.

Motorized snowplows weren’t the only new means of snow removal used by the city. Snow loaders, first tried in Chicago, consisted of a giant scoop and that fed snow onto a inclined conveyer belt, which then dumped it into a waiting cart or dump truck. As early as 1928, Boston had snow loaders, too.

The 1940s is when we first see salt used in significant quantities as part of the city’s snow-clearing efforts. (While then-mayor James Curley suggested using flamethrowers in 1948, that method does not appear to have ever been used, probably for the best.) Salt’s de-icing abilities were known for decades before this, but its use was protested—vigorously. People thought the salt (and the resulting slush) damaged their shoes and clothes. The slush also made sleighing close to impossible. But by the 1940s, sleighs were out, and cars needed roads to be snow-free. (And while horse-drawn carriages are certainly not a fixture on Boston’s roadways today, there remains a law on the books prohibiting travel by sleigh or horse-drawn sled “unless there are at least three bells attached to some part of the harness.” That was probably to warn people who may not see the approaching sleigh behind a tall snow bank.)

GOING BIG: GROWTH OF A SNOW REMOVAL INFRASTRUCTURE

Two decades later, Boston once again decided to re-evaluate its snow removal processes. It wasn’t alone; in the early ’60s, New York City’s commissioner of sanitation called a meeting of delegates from several northeastern cities, including Boston, to discuss city snow removal. According to McKelvey, the first meeting wasn’t very productive, but the



Monster of Mattapan

Snowzilla, a 35-year-old jet engine that blasts snow out of the way, is occasionally used by the Metropolitan Boston Transit Authority to clear the Mattapan line. Faced with paralysis (and political consequences) by snow, Boston invested early and heavily in motorized methods of clearing its streets and railways. Its modern arsenal includes snow removers as imposing as Snowzilla. Undated photo. Courtesy of the *Boston Globe*.



The Heat Maker

SNOWTRON, acquired by Boston in 1965 for \$100,000 (about \$750,000 today), was the city's answer to winter: the massive machine could melt 150 tons of snow an hour by discharging heated water. Boston no longer clears snow this way, and SNOWTRON's whereabouts are unknown. *Courtesy of The Boston Globe.*

succeeding one was. Boston's representative discussed the effectiveness of the city's rule banning parking on the odd-numbered side of the street, providing more space for plows to push the snow into. By the third conference, Boston had plans to create a full-time snow removal manager. In September of 1962, *New England Construction* wrote about Boston's new Snow Emergency Center, "a headquarters to which all telephone calls and requests could be funneled, regarding the removal of snow from the streets of the city." The center boasted "new teletype machines," according to the magazine, while the *Boston Globe* wrote around this time that the Snow Emergency Center "functions like a military unit" for "snowstorms fought like wars."²⁵

A new weapon in the city's snow war arsenal was the snow melter. According to the *Boston Globe*, Boston's Public Works Commissioner James W. Haley returned from a 1961 snow conference inspired by "some magic device to make the snow



TowPlow Time

THE MassDOT debuted TowPlow, the latest big snow-clearing machine, in winter 2012. TowPlow can clear 2.5 travel lanes in a single pass. The image shows a TowPlow system at work on an out-of-state highway. Undated photo.



The BigDig-Out

Despite decades of experience with motorized plows, Boston was overwhelmed by the blizzard of February 1978. The U.S. Army was called in to help clear the city's streets, here looking toward the Prudential Tower. Courtesy of WGBH Boston.



Mush Hour

The Boston T's Green Line temporarily became the "white line" as the city labored to clear at least 27 inches of snow from its streets and rail lines in the aftermath of the blizzard of 1978. Here, a specialized streetcar does its best to plow snow at a Green Line stop. The February storm was dubbed "The Storm of the Century" by much of the Boston media.

disappear” he had seen there. The magic device was a truck with a large heated tank. Snow was dumped into the tank, melted, and then poured out as water via a large spigot. Haley told the *Boston Globe* he was “skeptical” about the machine. It appears he was soon won over, as Boston acquired several melters in the '60s, including the massive “SNOWTRON,” which the city purchased for \$100,000 in 1965 (that’s about \$750,000 today) and which could melt 150 tons of snow an hour. Sadly, the Department of Public Works no longer uses or owns any snow melters, and SNOWTRON has been lost to history.

Today, Boston has 850 miles of roads to clear and 70 city-owned plows to do it, along with 500 additional contract machines to use as needed. The process is much like that of the Snow Emergency Center, if slightly more high-tech. According to a DPW spokeswoman, the department uses a weather website called Precision Weather to track possible snowfall so it can be ready in advance. Once the plows are on the road, a GPS tracker called SnowCOP monitors their progress and feeds the information to something the spokeswoman called “Mayor [Martin J.] Walsh’s data dashboard.”

“If a call comes in via the mayor’s hotline requesting plowing services,” she said. “This information will appear on SnowCOP, and the crews will be informed which areas in Boston need attention.”

In 2013, the city made its GPS tracking data public, which proved so popular that the site ended up crashing from the demand. It’s unclear if it will return this winter.

Surely, Massachusetts has got this snow removal thing down, right? Maybe not—there are still new advances to be made. Somerville may start using “Snow Dragons,” snow melters that filter pollutants out of the resulting water, allowing it to be dumped in storm drains. In 2012, MassDOT proudly reported the debut of the “most efficient snow clearing machine, a TowPlow that can clear 2.5 travel lanes in a single pass.” The words “new fangled” did not appear.

HJM

Notes

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2. “City of Boston. An Ordinance Related to Snow and Ice on the Streets,” *Boston Commercial Gazette*, December 25, 1823.
3. McKelvey, citing the *Boston Gazette*, January 17, 1831.
4. George M. Bird, “Railroading in Boston 60 Years Ago,” *Boston Globe*, January 25, 1900.

5. Ibid.
6. *Boston Globe*, February 21, 1897.
7. "Metropolitan Railroad Snow-Plough," *Ballou's Pictorial*, January 31, 1851, 1.
8. "Huge Drifts Vanish Before It," *Boston Globe*, January 11, 1904.
9. Ibid.
10. "A New Snow-Plough for Electric Railways," *Engineering News*, September 28, 1905, and McKelvey, 73.
11. "Clearing the Wrecks," *Boston Globe*, February 5, 1874.
12. "The Snow-Shovel," *Boston Globe*, March 8, 1883.
13. www.cityofboston.gov/snow/removal/snoremoval.asp.
14. "Cut Off," *Boston Globe*, March 13, 1888.
15. nsidc.org/cryosphere/snow/removal.html
16. "Boston's Battle with Snow," *Boston Globe*, December 14, 1902.
17. McKelvey, 77.
18. McKelvey, 87.
19. "Snow Removal in Our Leading Cities," *Better Roads and Streets*, March 1915.
20. "Swift Work in Foot of Snow," *Boston Globe*, February 4, 1916.
21. McKelvey, 91–92.
22. James T. Sullivan, "Will Clear State Roads of Snow," *Boston Globe*, October 24, 1920.
23. "Interest Lacking in Snow Removal," *Boston Globe*, November 7, 1920.
24. Ibid.
25. McKelvey, 142–44; *New England Construction*, September 1962. See also Donald Fairlie, ed., *Northeast Conference on Urban Snow Removal*, 1962 (Chicago: American Public Works Association, 1962).