

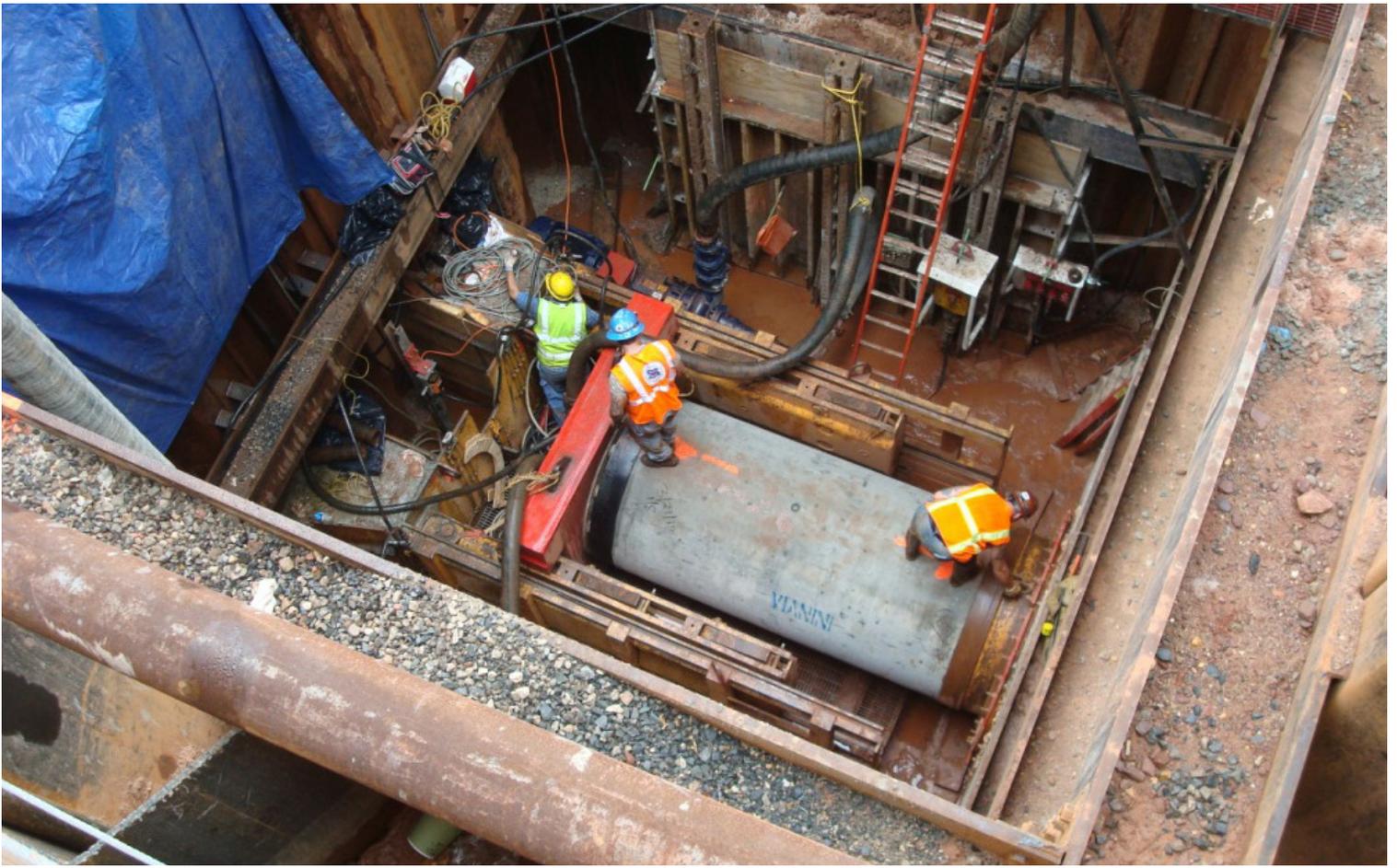


Department of
Design and
Construction

OFFICE OF
COMMUNITY OUTREACH
AND NOTIFICATION

How can we dig under highways and rivers?





Microtunneling

When the NYC Department of Design and Construction (DDC) installs a water main or repairs a sewer, it often means digging into the roadway. But sometimes there is something in the way—such as a river or a highway—that makes it difficult or impossible to dig below the surface.

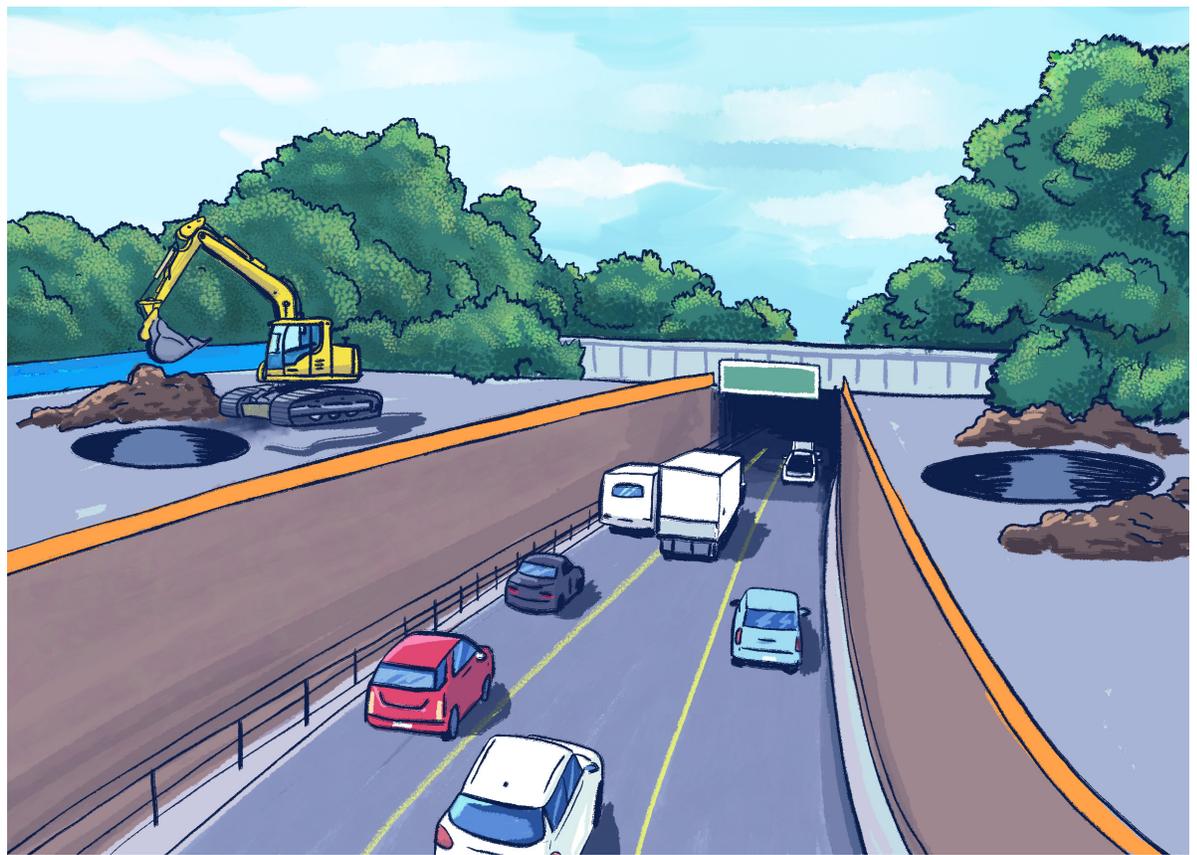
In other instances, underground pipes may be so large and so far underground that digging directly to them would create an enormous trench. DDC can use microtunneling for these complicated projects to create a small tunnel that can allow water mains, sewers, and utilities to be inserted.

Above:
Microtunneling is a method of digging that uses computers and machines, with human help.

Microtunneling Step-by-Step

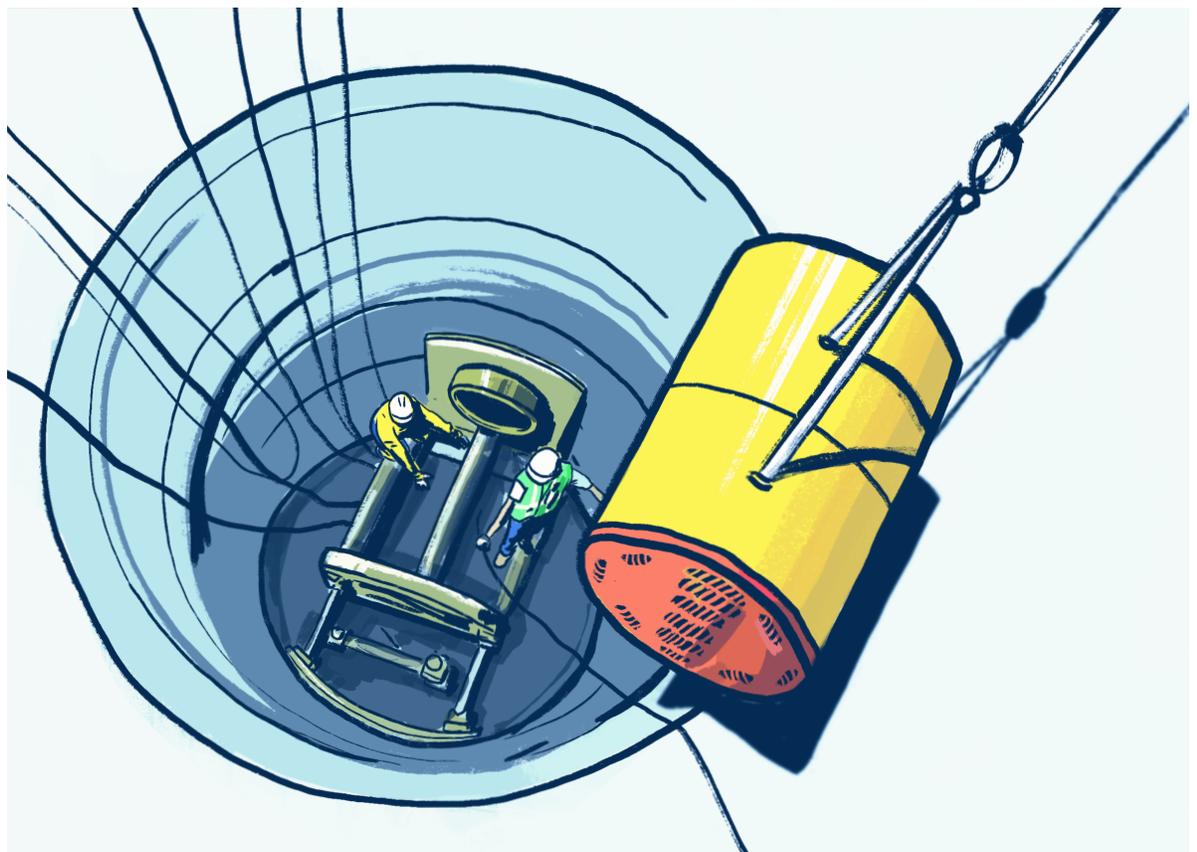
STEP 1

We excavate two deep holes on opposite ends of the service area. One hole will launch the microtunnel boring machine and the other will receive it.



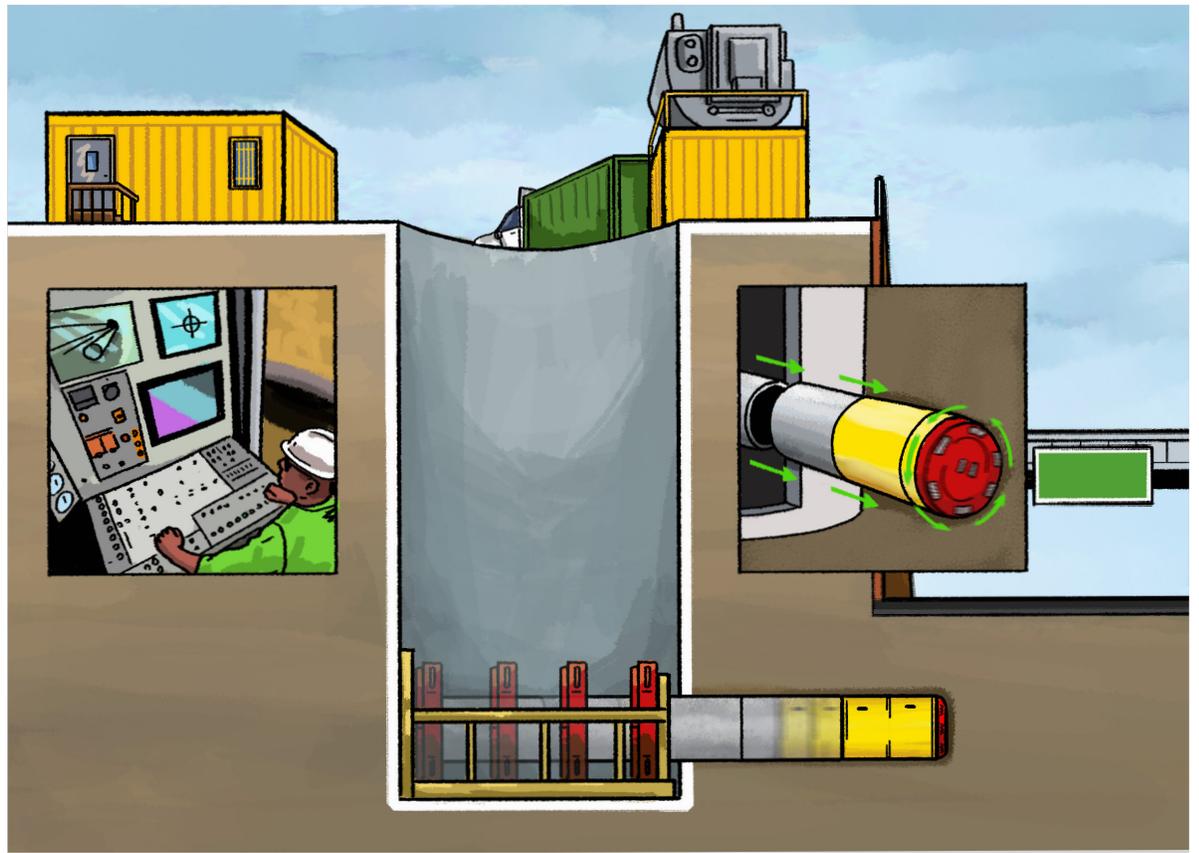
STEP 2

We lower the specialized machine into the launching hole.



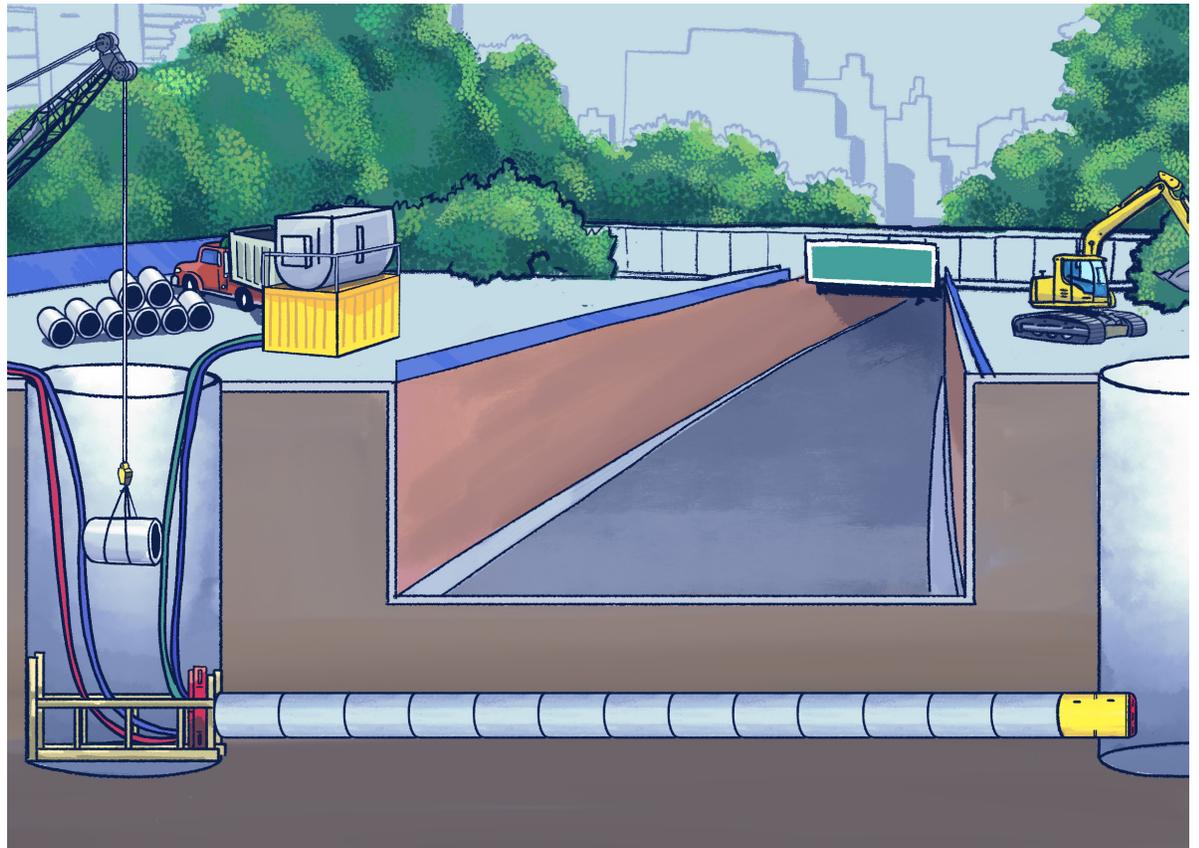
STEP 3

A highly trained operator in a control booth on the surface uses a laser to guide the machine and its cutting equipment as the machine pushes through the soil. A mixture of water and clay helps the machine bore.



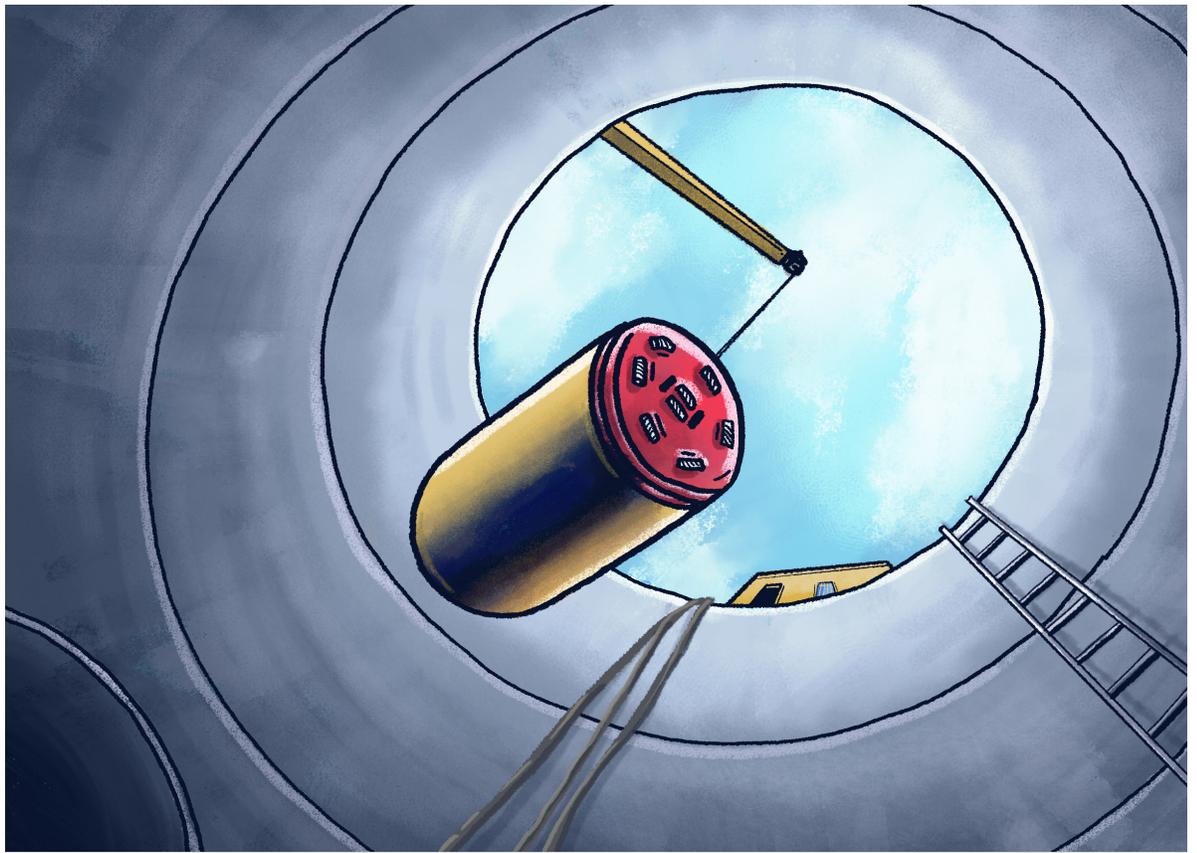
STEP 4

We lower pipe segments into the launching hole. As the machine digs, these pipes hold the soil open behind it. The machine and its pressure devices push the pipes through the soil. This continues until the machine and the pipes reach the receiving hole.



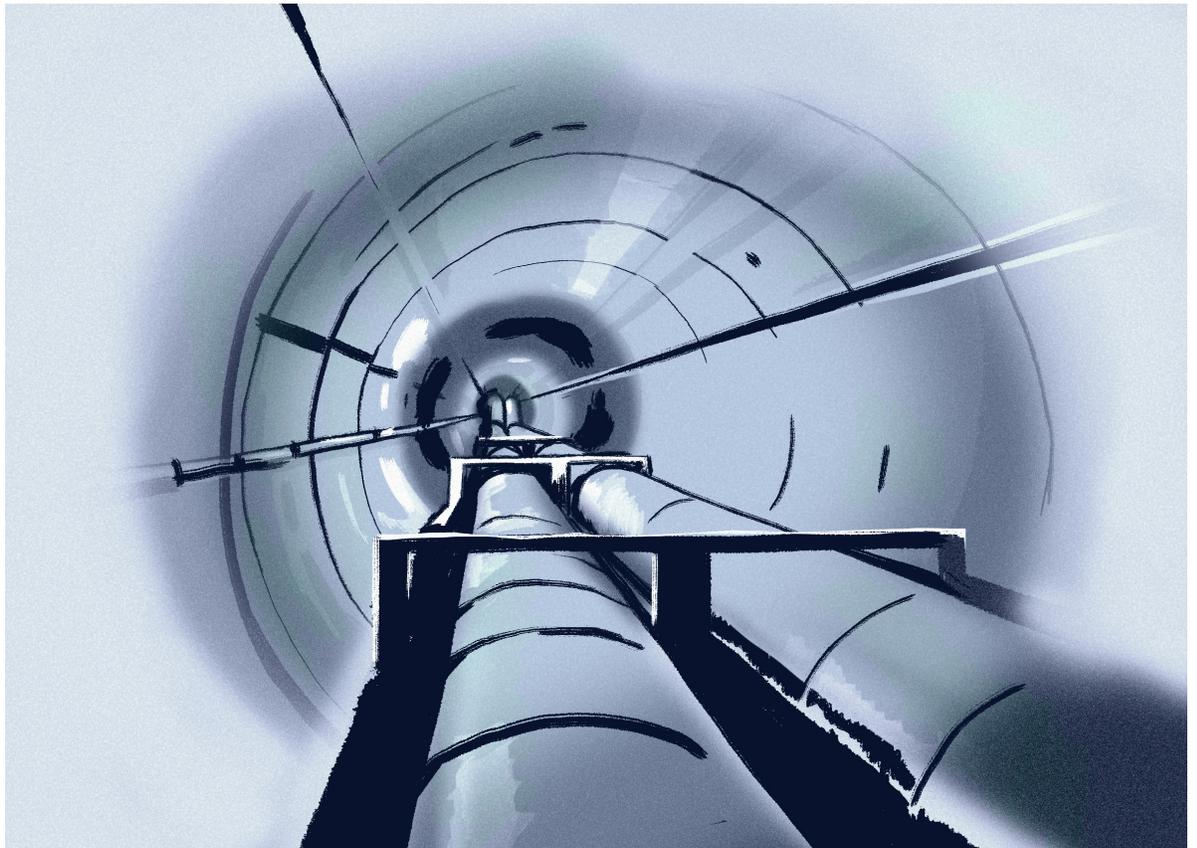
STEP 5

The machine is lifted out of the receiving hole. We install the pipes that will safely hold the water, sewer, or utilities within the larger pipes. The space between the smaller pipes and the microtunnel is filled with grout.



STEP 6

We connect the pipes to the main water, sewer, or utility system for residents and businesses to use. Both holes are covered with manholes that can be used for future repairs.



DDC has used microtunneling for over a decade. For example, we used microtunneling to install a pipe beneath the Bronx Kill waterway to ensure a reliable water supply for Randall's Island and Ward's Island. We also used it to install water mains beneath an elevated railroad in Queens and to install sewers under highways in Staten Island and Brooklyn. We will continue to use microtunneling where it best serves residents, helping to deliver the City's essential infrastructure.

Below: The Bronx Kill waterway in New York City. Microtunnels are often hundreds of feet long and many feet below the surface.

