



TUNNELING PROCESS

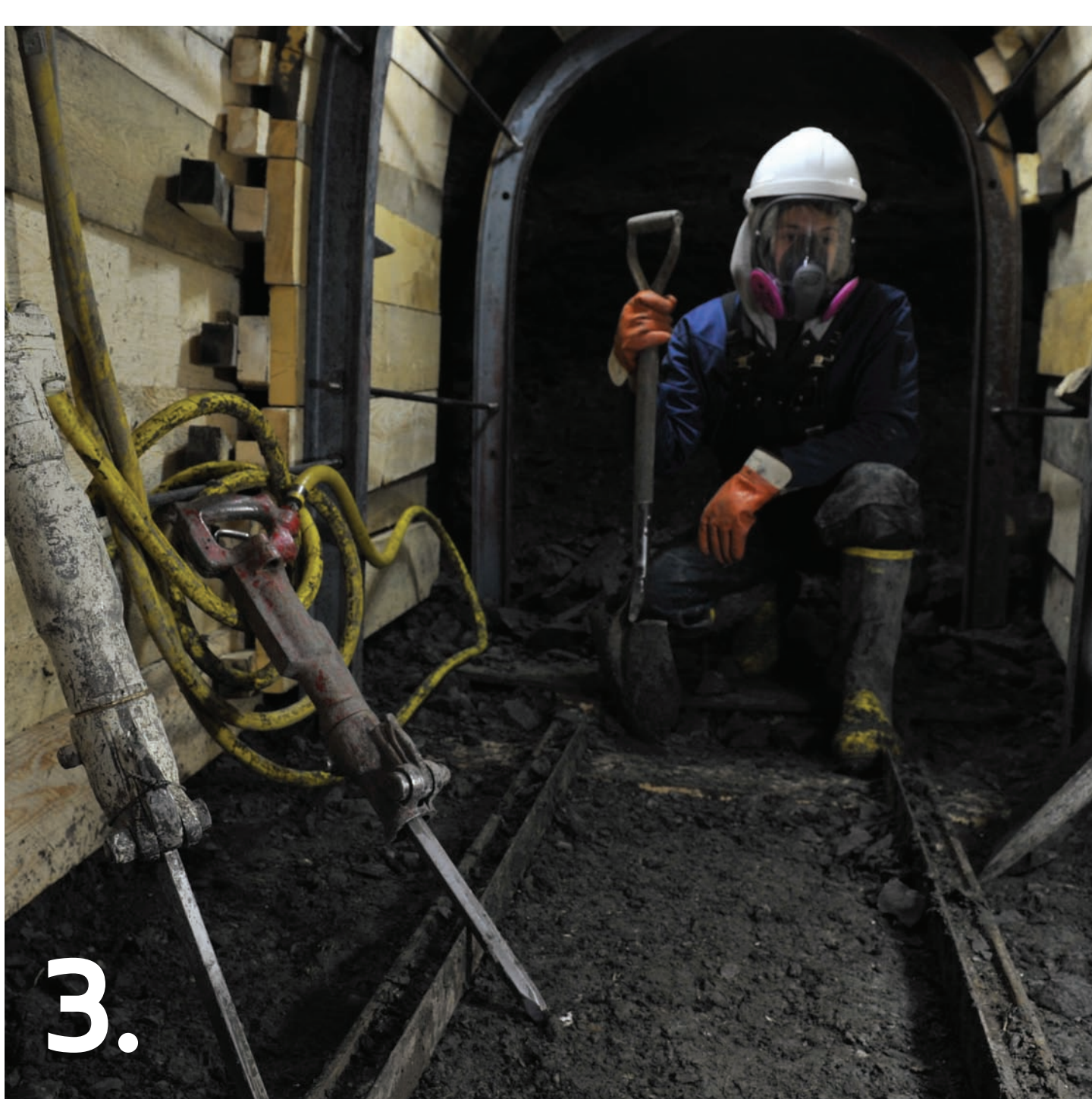
The following steps describe the process Drainage Services crews use to dig tunnels needed for sewer upgrades and replacement:



1. The first step in tunneling is mobilization when equipment and materials are moved on to the site.



2. A working shaft, 16 feet in diameter, is constructed using a large drill rig. Crews use timber and steel to build the shaft structure. The shaft takes one to two months to construct.



3. When the shaft is done, crews tunnel a small section at the bottom by hand to make room for the tunnel boring machine (TBM).



4. A large crane lowers the TBM, called the mole, down the shaft.

5. The mole has a large rotating wheel with teeth that cut into the earth and excavate soil from the tunnel. The soil is sent on a conveyor to carts which carry it to the shaft entrance to be lifted out by crane.

6. The excavated soil is stored in a stockpile on the work site until dump trucks take it to a designated dump site.

7. The mole continues to slowly tunnel beneath the ground, at approximately 10 to 15 feet per day if the soil conditions are good. The tunnel is lined with precast concrete segments.

8. At the end of the route, another shaft is drilled so the mole can be lifted out for the next job. Additional shafts may be required along the route for sewer lines or for tunnel access.



For more information visit:
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