

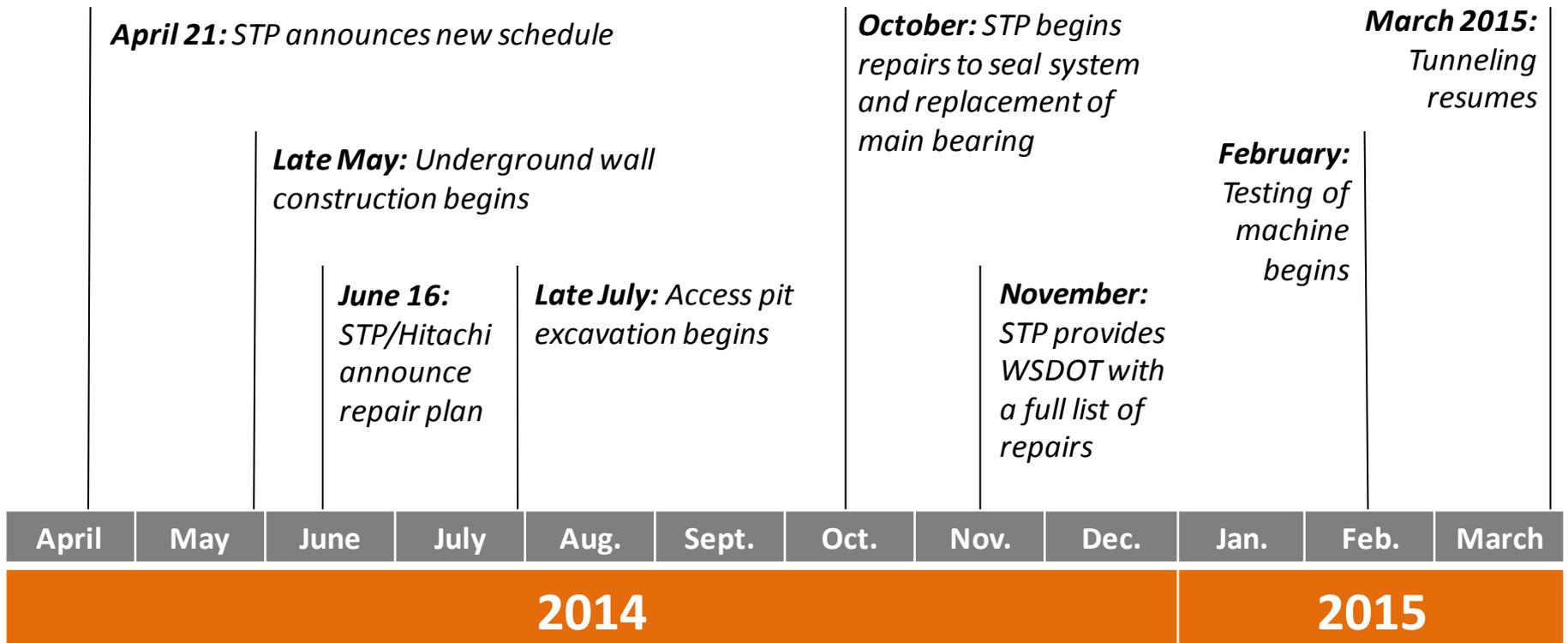


Repairing the **SR 99**
TUNNELING
MACHINE

June 2014

Seattle Tunnel Partners, WSDOT's contractor for the SR 99 Tunnel Project, is building a pit to access and repair Bertha, the SR 99 tunneling machine. The following images illustrate STP's conceptual plan for resuming tunneling.

Seattle Tunnel Partners' repair schedule



Access pit site today, above ground



Looking southeast toward the site where crews are building a 120-foot-deep circular pit to access and repair Bertha. Contractor Seattle Tunnel Partners built the white walls on the west side of the SR 99 Alaskan Way Viaduct to minimize noise during construction.

Access pit site today, below ground



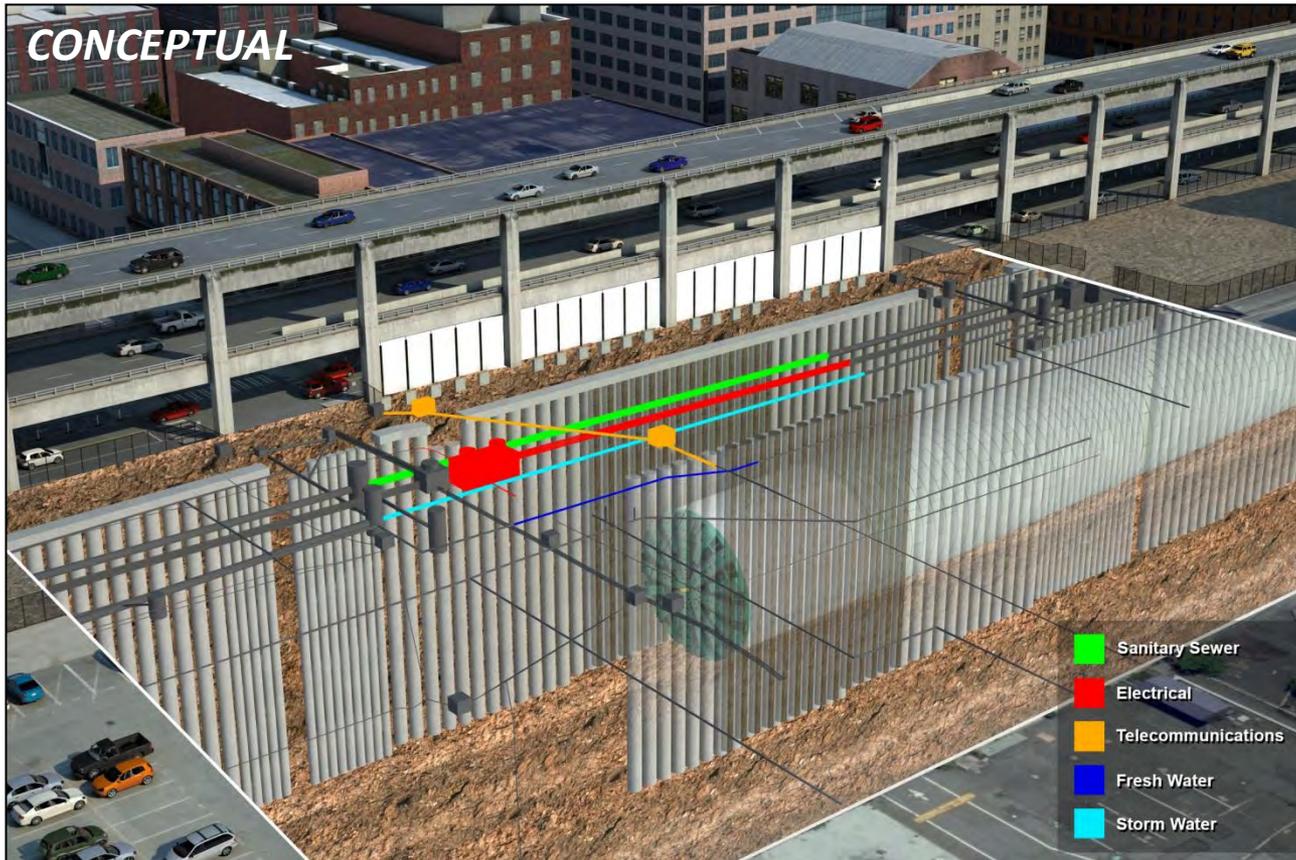
This underground view shows Bertha's current location between South Jackson and South Main streets in Seattle. The red line shows the path Bertha will take once she resumes tunneling. The sections of gray on both sides of Bertha are underground walls built to protect the Alaskan Way Viaduct and nearby buildings from settlement during the initial section of the tunnel drive.

Step 1: Inject grout between existing piles



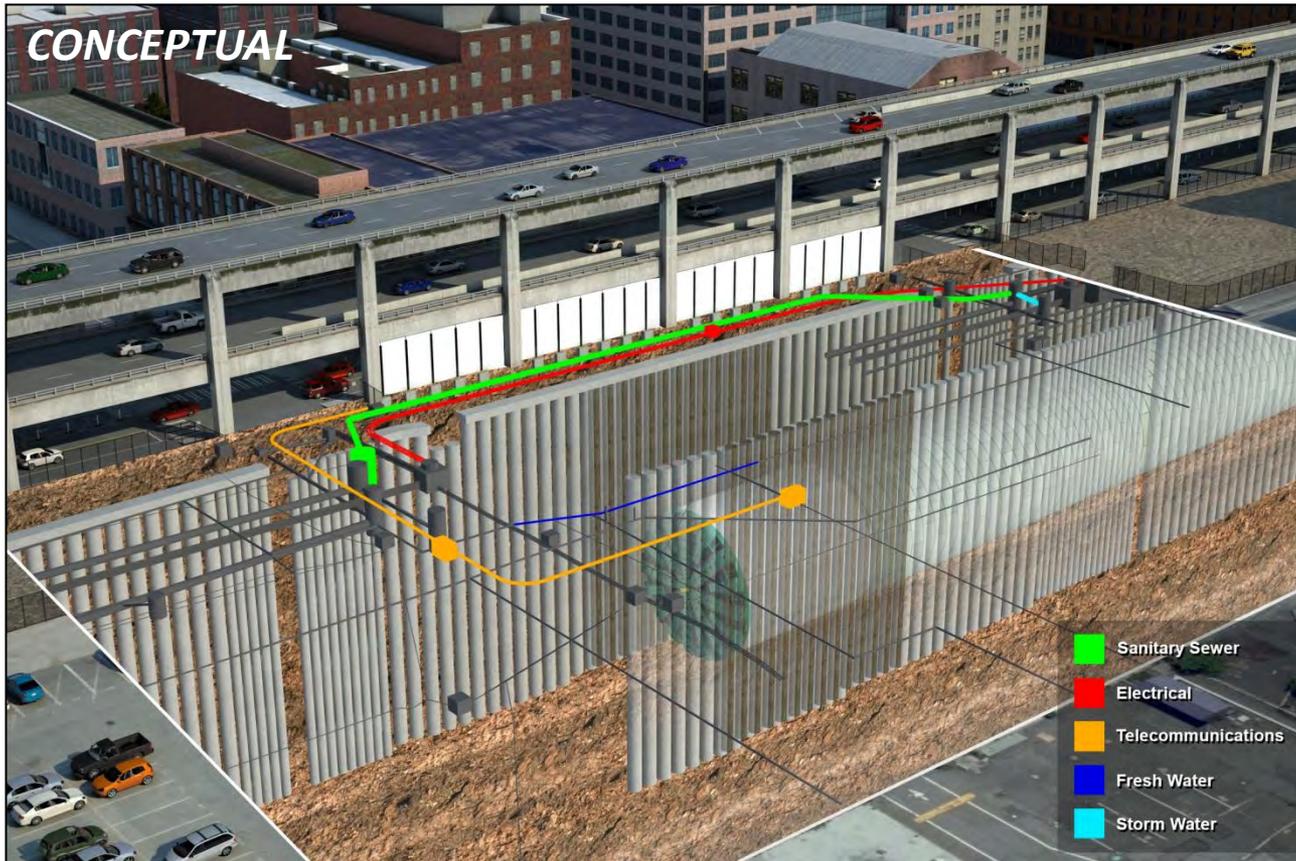
The dark gray areas in this image show where grout was injected between segments of existing underground walls on the east and west sides of Bertha. The grout further stabilizes the ground and is one of many tools STP will use to keep water out of the access pit. The grout injection was completed on schedule in May 2014.

Step 2: Relocate utilities (before)



A number of utility lines cross the site of the access pit. This image shows where the utilities were located before construction began. Utilities shown in dark gray do not need to be moved. Utility relocation started on schedule in May 2014.

Step 2: Relocate utilities (after)



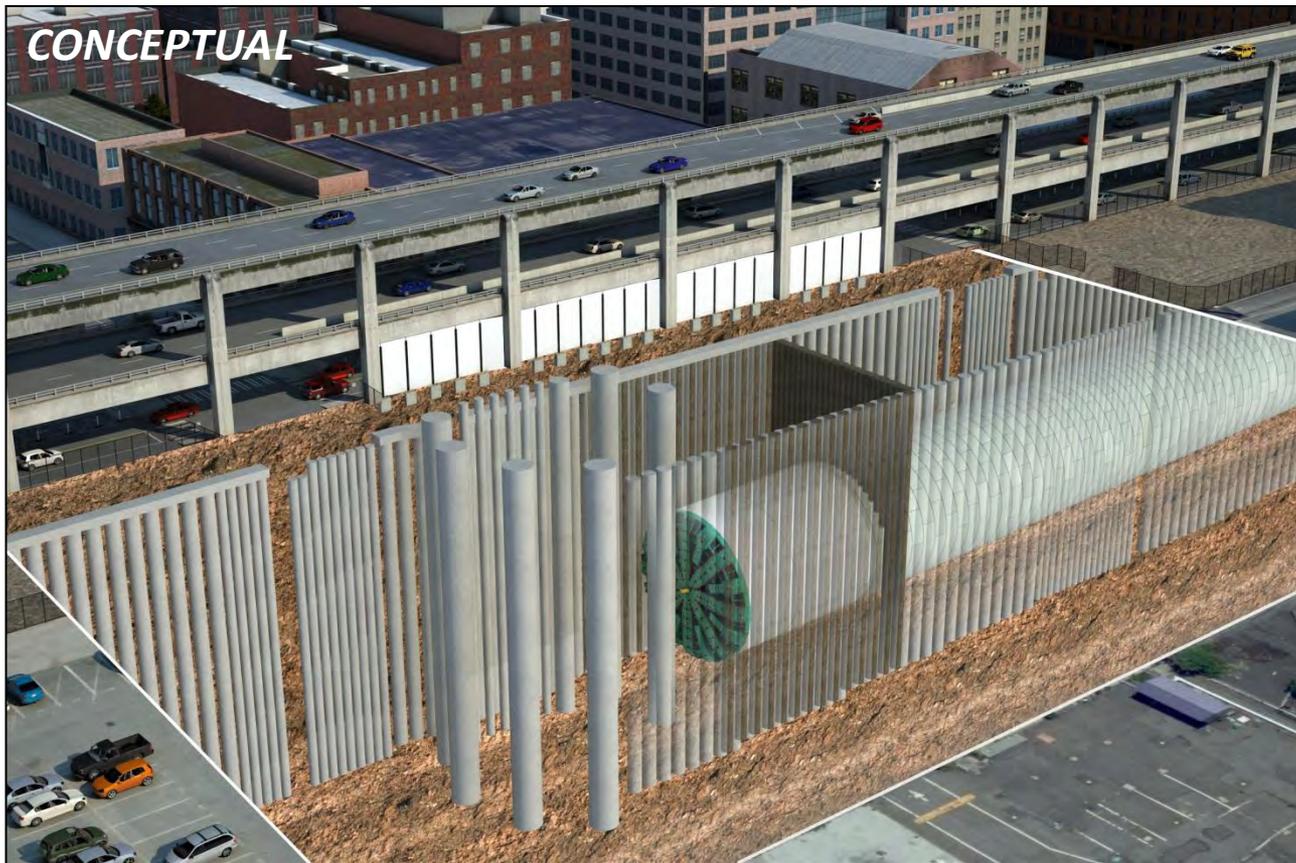
This image shows where sewer, electrical, telecommunications and water lines are being relocated to make room for construction of the access pit. Utility relocation started on schedule in May 2014.

Step 3: Inject grout behind the machine



STP crews injected a wall of grout near the back of the machine's shield to seal water out of the access pit. This work was completed on schedule in May 2014.

Step 4: Build the access pit's walls



STP crews are installing concrete columns that will form the underground walls of the circular access pit. Made up of 73 columns, the pit will be about 120 feet deep and more than 80 feet wide. Underground wall construction started on schedule in May 2014.

Step 4: Build the access pit's walls



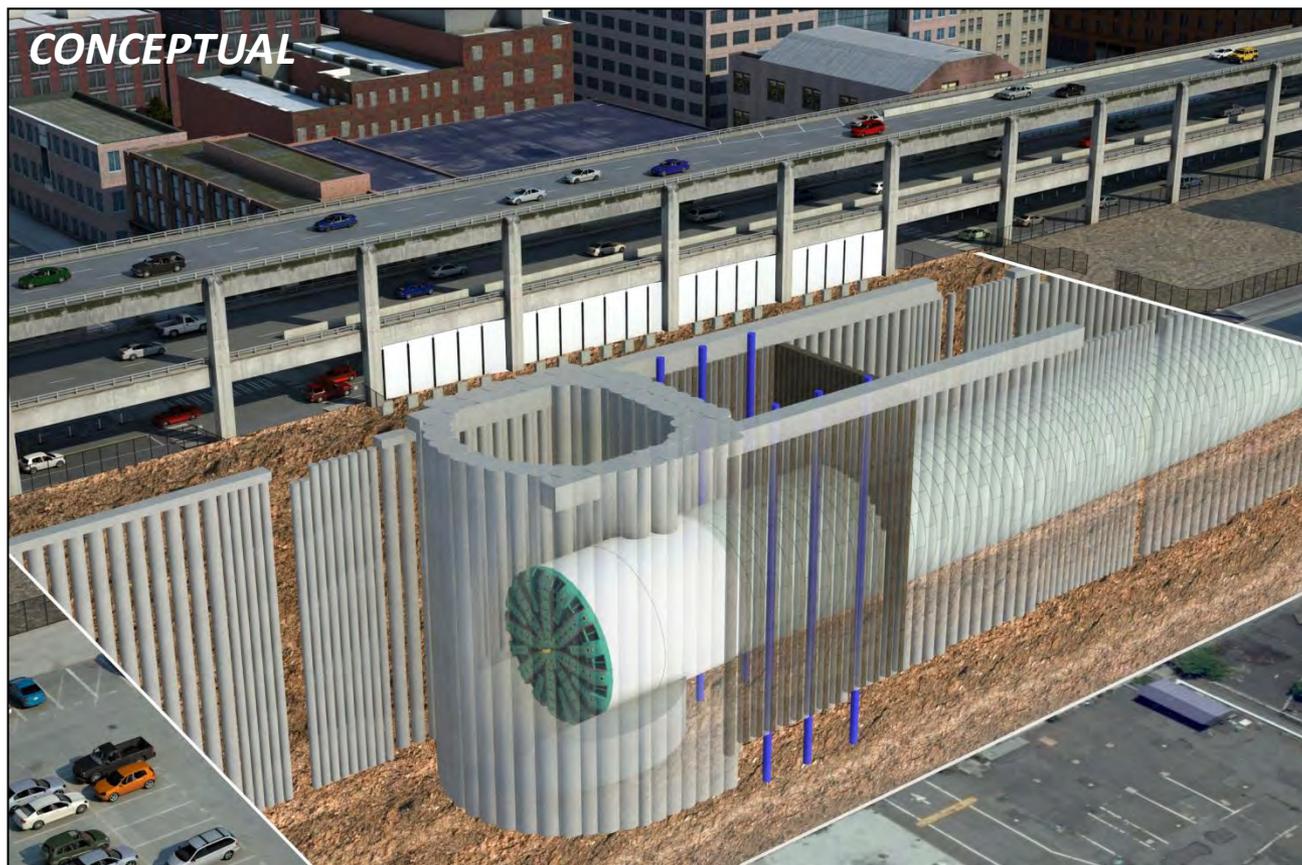
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Step 5: Lower groundwater, tunnel into wall



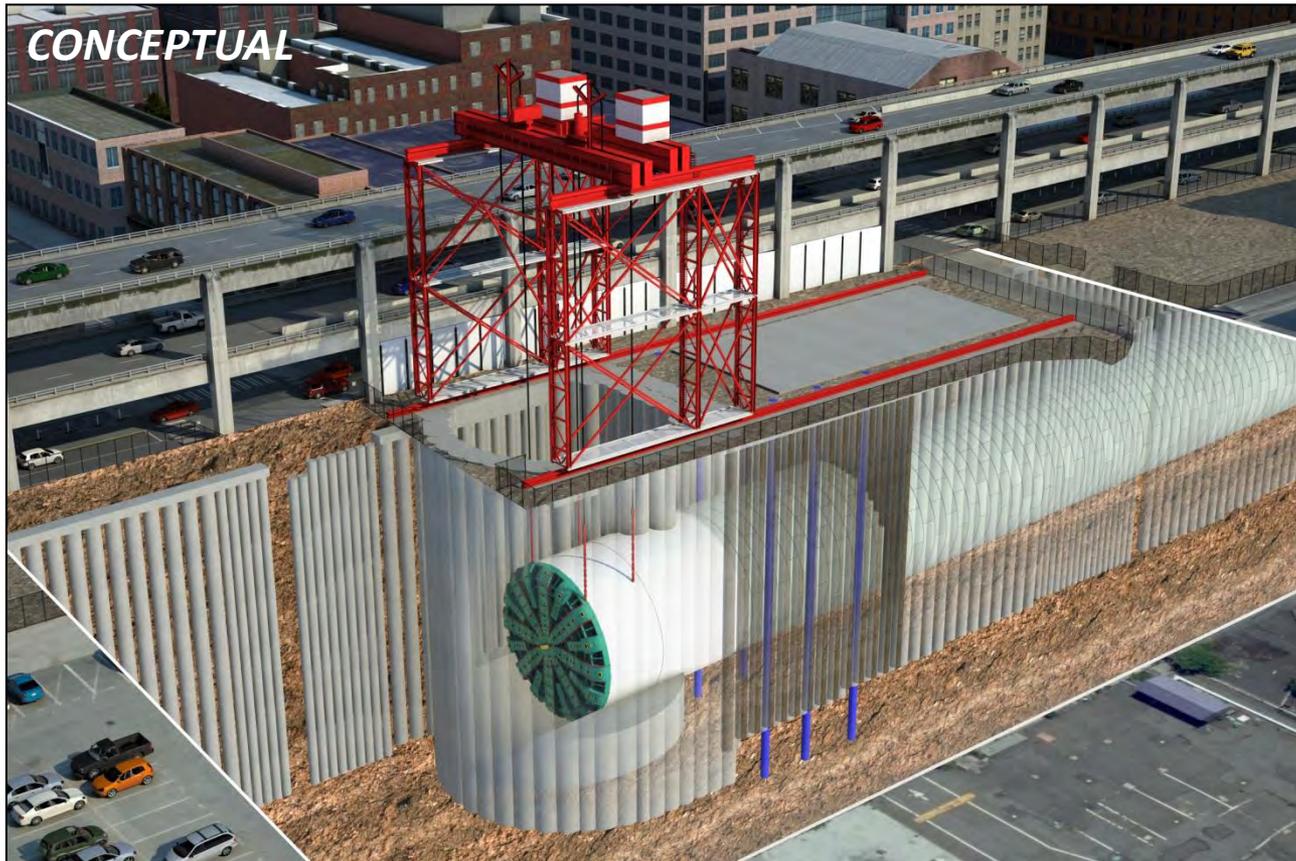
STP crews will install wells to lower groundwater near the access pit. This will make it easier for the machine to tunnel through the soil and into the pit wall.

Step 6: Excavate, then tunnel into access pit



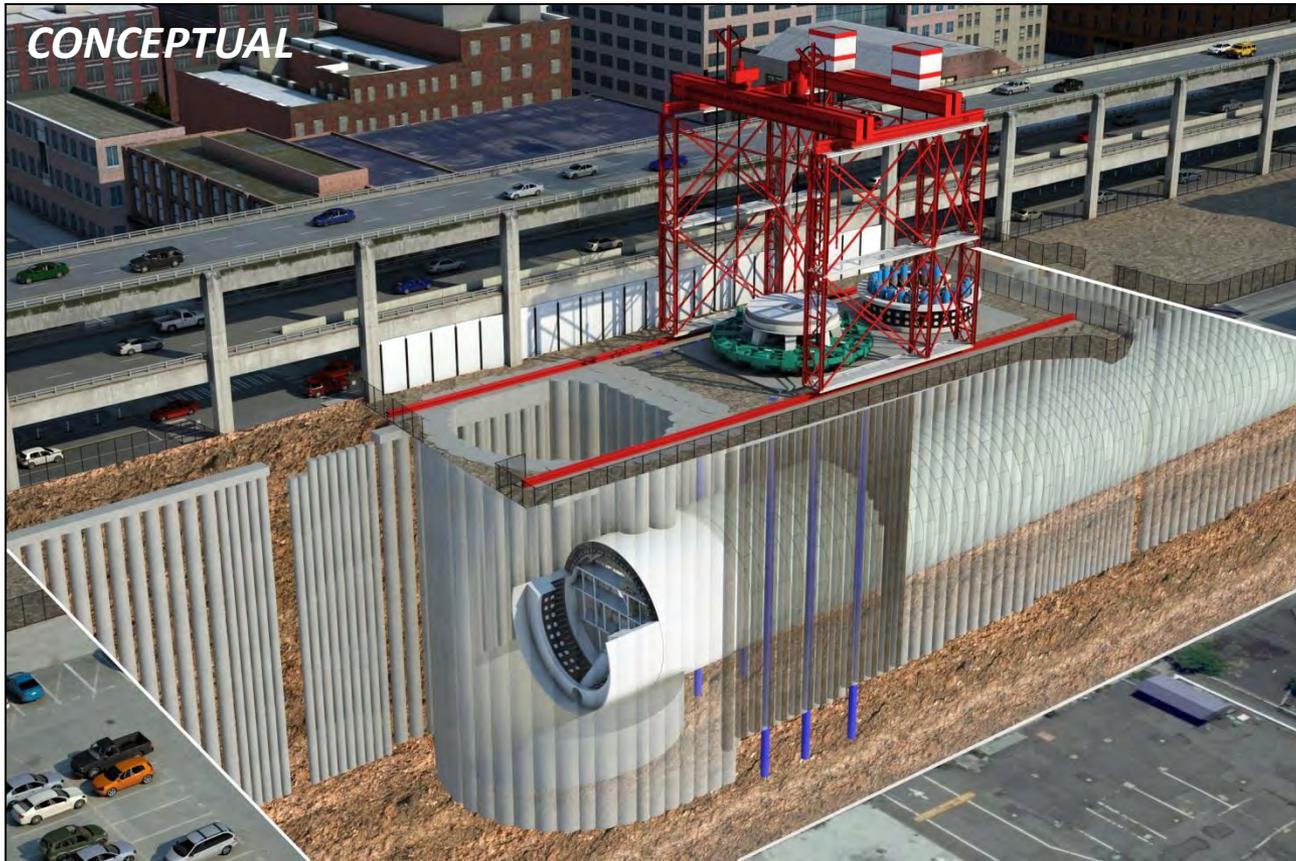
After the access pit has been excavated, Bertha will tunnel into the pit. A concrete cradle will hold Bertha in place while she is being repaired.

Step 7: Install a crane above the access pit



A large crane will be installed above the access pit to lift pieces to the surface for repair. The crane will be similar to the one used to assemble Bertha in her launch pit before tunneling started in July 2013.

Step 8: Remove pieces, make repairs



Crews will repair Bertha at the surface before reassembling her in the access pit. STP will thoroughly test Bertha before tunneling beneath downtown.

STP plans to resume tunneling in March 2015

