

Raise Bore Drilling

Raise bore drilling is one method of mechanical excavation of shafts used within New York City and around the world. Locally, raise bore drilling is being used to drill shafts as part of the New York City No. 3 Water Tunnel. This method is used primarily in the mining industry with application in congested urban areas. For the East Side Access Project, raise bore drilling is being used to create three ventilation shafts at Park Avenue and 37th Street.

To create each shaft at Park Avenue and 37th Street, the raise bore machine is assembled on top of a concrete pad and steel deck. It first drills a pilot hole which will be approximately 14 inches in diameter with a drill bit. Additional lengths of drill pipe are added as the drill bit goes deeper. Once the drill bit reaches the desired depth below street surface, the bit is removed and a drill reamer is attached. The reamer is then rotated and pulled towards the surface. The drill pipe lengths are removed as the reamer gets closer and closer to the surface. The raise bore machine will grind away at the rock and is expected to advance at a rate of about one foot per hour. All the excavated material (also called tailings) falls to the floor of the shaft and will be removed via the tunnel.

The use of the raise bore machine at Park Avenue and 37th Street was chosen as the excavation method for these shafts for several reasons. It minimizes surface disruption that would be otherwise caused by drill and blast excavation, the next best alternative to create these shafts. Thus less noise, vibration, dust and truck traffic will be experienced by those who are living, working or passing through this neighborhood.

