



Information Sheet: Tunnels

What are the major factors that influence where a tunnel might be placed?

Tunnels can be the most expensive type of construction for a transit corridor, with costs averaging \$250 to \$300 million per mile. Because of this, tunnels are considered by MTA where physical restrictions, traffic, or environmental issues preclude any possible surface alignment.

What is the difference between cut-and-cover and mechanically bored tunnels?

Cut and Cover Tunnel

A cut-and-cover tunnel is usually a box-shaped structure used where the tunnel needs to be extremely shallow. A cut-and-cover tunnel is usually buried only 8' to 10' below, say, and the surface of a street.

Mechanically Bored Tunnel

A bored tunnel is used when disturbance to the surface must be avoided. A bored tunnel is usually buried a minimum of one tunnel diameter, typically 22' or so, below the surface. A twin bore tunnel is usually circular and becomes economical when it reaches a length of 1/2 mile. This factor can vary greatly with local geology and the availability of boring machines.

The depth of either type of tunnel is determined by: geology, the desirable tunnel grade, and the need to avoid other existing underground features such as utilities and other tunnels.

What effects can be expected during tunnel construction?

Construction of a cut-and-cover tunnel will effect the surroundings because the surface is disturbed, whereas construction of a bored tunnel will effect the surface where the transit line switches to and from underground (known as the "portal"). Ventilation or emergency shafts may be required in tunnels and would also have effects on the surroundings. Once tunnels are completed, there are no surface impacts for either type of tunnel. Typically the surface conditions are improved as part of a tunnel project.

Will explosive blasting be necessary for a Red Line tunnel?

We do not know yet. Blasting will be avoided, if possible, but cannot be ruled out. Much would depend on the noise and vibration sensitivity of nearby land uses (receptors) and on the geology of the area. If blasting is needed, there would be notification provided in advance and community considerations and time of day would be taken into account.

Will there be an increase in rodents with tunnel construction and can it be prevented?

Bored tunnel depths would be deeper than rodent habitats so we would not anticipate much disturbance to rodents. Because of this, precautionary measures are probably not needed. Where shallow underground disturbances are anticipated, say for a cut-and-cover tunnel, the project team will consult with appropriate health agencies to prevent rodent problems.

Would tunnels for Bus Rapid Transit (BRT) and Light Rail Transit (LRT) be the same size?

Probably yes. Either mode can fit in an 18' diameter tunnel. A BRT system might include a guidance system to allow the buses to operate at higher speeds within the tunnel. LRT would be guided by tracks within the tunnel. Without a guidance system, buses would have to operate more slowly in the tunnel.

Could a new light rail line use the existing Metro tunnels?

No. There are too many differences between the vehicles and the required running way that create conflicts with such a shared operation. The Metro gets power from an electrified "third rail" along the tracks. This third rail would interfere with a light rail vehicle. Also, the height of the Metro cars requires boarding from high-level platforms, whereas proposed light rail cars would be boarded from low, or street-curb level, platforms.