

Tunnel Boring Machine Tunnels Mechanical and Electrical (M&E) Fit Out

Before operating a road tunnel, it needs to be fitted with a series of services to create a safe and comfortable environment for motorists. These include: jet and axial fans for ventilation and smoke control, lights, substations, variable and fixed message (traffic) signs, drains, pumps, communication systems (overhead speakers), air quality monitoring system, closed circuit television (CCTV) and fire fighting equipment.

The typical mechanical and electrical fit out sequence is as follows:

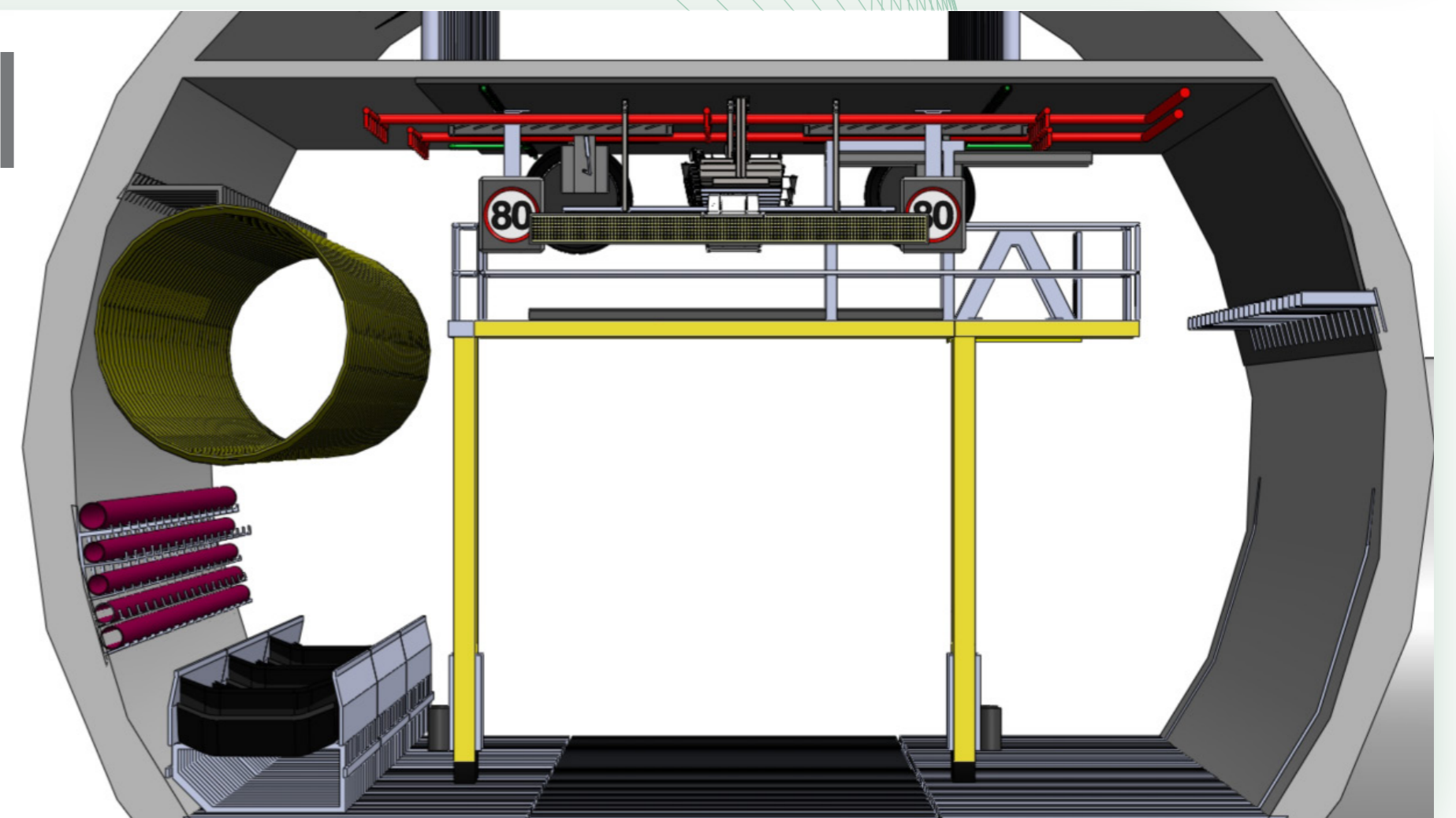
- Black paint is first applied to the tunnel's ceiling and walls
- Two mobile work platforms are used to progressively install electrical cable trays, piping for the fire deluge system, lights, speakers, heat detection cables, fire main brackets, jet fans, cameras, advanced lane use signs, tunnel message signs and cabling
- Cross passages located every 120 metres along the tunnel alignment are fitted out simultaneously with electrical panels, cable trays, cabling and deluge manifolds
- Cables are connected in the equipment rooms and electrical substations

Mobile work platforms within the TBM tunnel

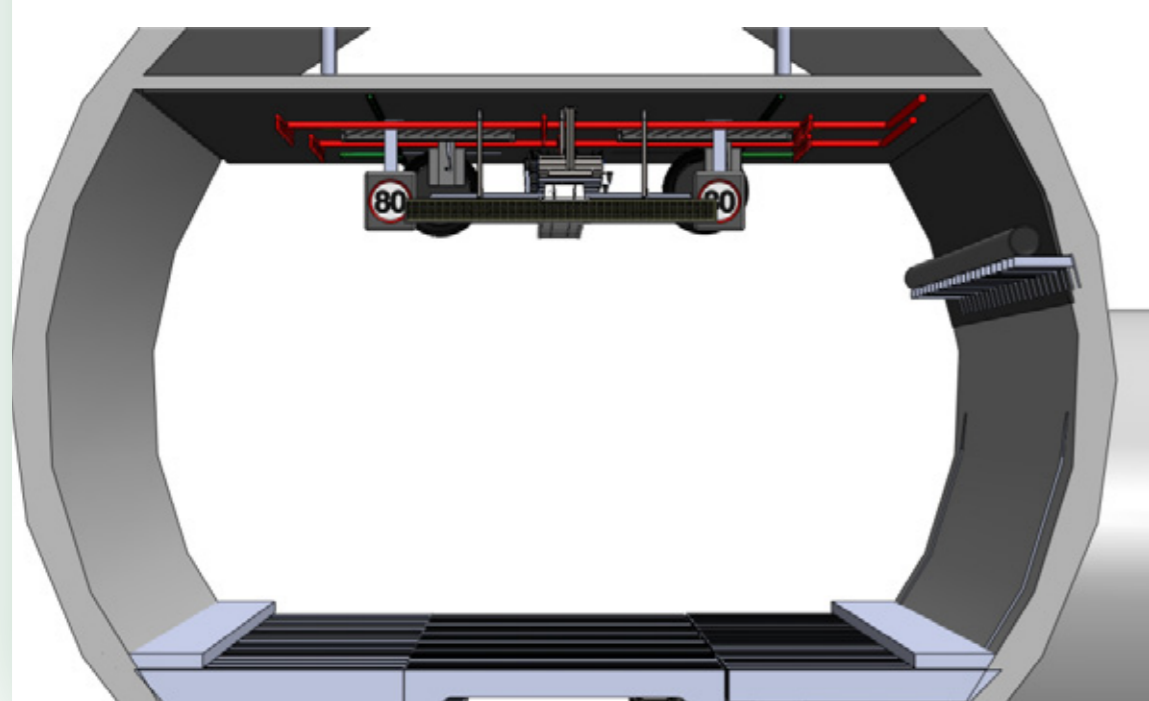
The first mobile work platform is used to install cable trays, fire deluge piping, lights, speakers, linear heat detection cables and fire mains. The second mobile work platform is used to install jet fans, dampers, cameras, advanced lane use signs, tunnel message signs and cabling.

What is a cross passage?

Cross passages connecting the two mainline tunnels are located every 120 metres and are able to be accessed in the event of an emergency. Construction is likely to take 12 weeks for each cross passage with up to ten passages under construction at any one time. The cross passages are fitted out with electrical panels, cable trays, cabling and deluge manifolds.



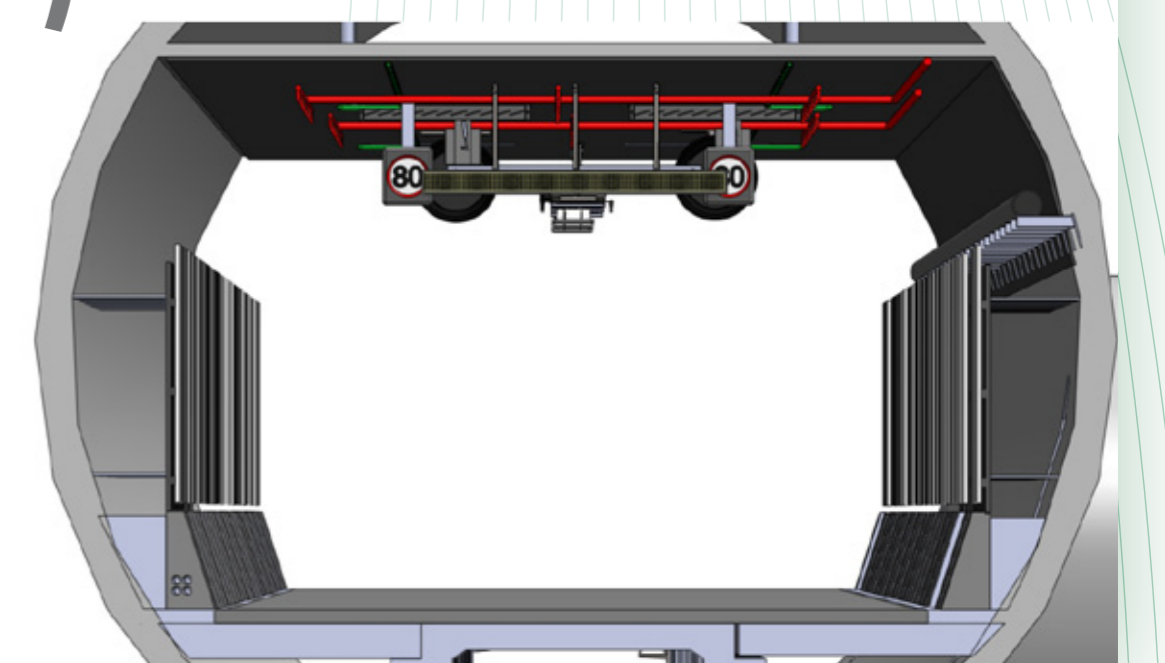
Road barrier foundations



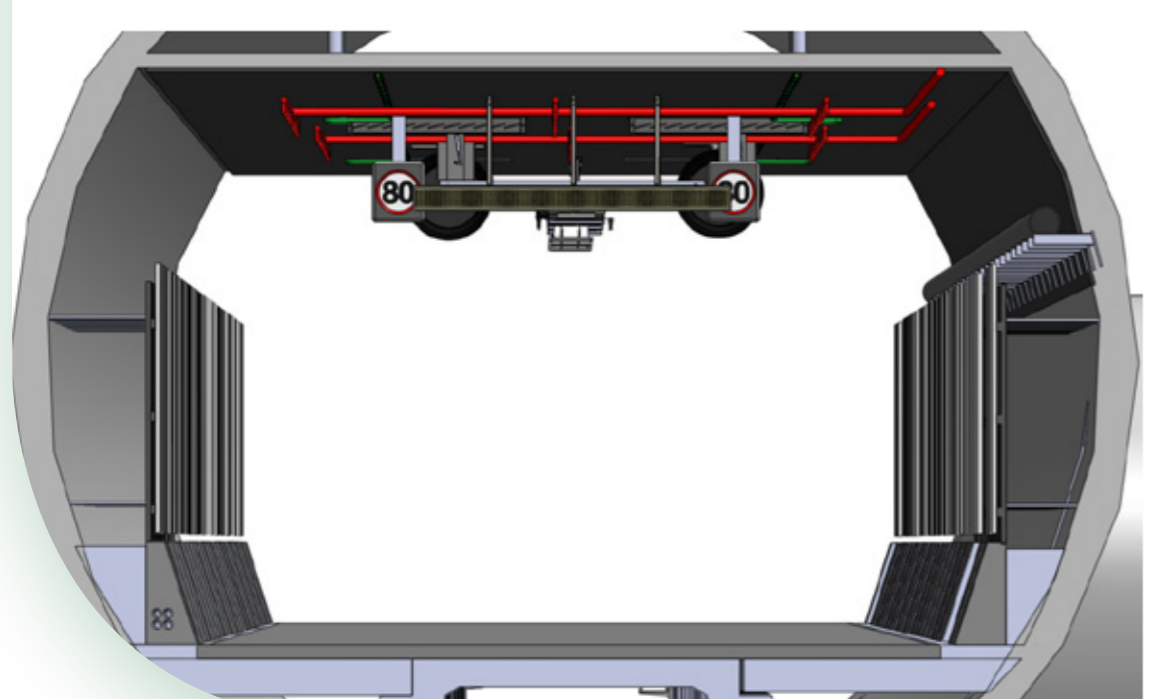
Foundations for the roadside concrete barriers are installed either side of the tunnel. An asphalt interlayer is then installed.

Continually reinforced concrete pavement (CRCP)

Segments of reinforced concrete are installed the full width of the tunnel's floor.



Barriers and panels installation



Roadside concrete barriers are installed followed by architectural side panels and barrier mounted equipment such as emergency telephones.

Asphalt and line marking

The final layer of asphalt or wearing course and line marking is completed just prior to the tunnel opening.

