

# PILING WORKS AT PARKVILLE



Major works are underway to support construction of the new Parkville Station. The new station will connect the world-class education, health and research precinct to the rail network for the first time and includes station entrances on the doorstep of the University of Melbourne and some of Victoria's biggest hospitals.

## What we are doing

To construct the new Parkville Station, a 30 metre deep box will be excavated using a construction method called 'bottom-up'. The 'bottom up' method involves excavating the box down to its maximum depth, construction and fit out of the station, followed by the installation of mechanical and electrical equipment required to operate the station.

The road surface is then reinstated over the top once the station is complete.

Before excavation can commence, we need to install approximately 500 piles around Grattan Street, between Royal Parade and Leicester Street, to support the structure and enable workers to safely carry out excavation underground.

## Facts at a glance



Approximately 500 piles will be installed around the perimeter of the station box



Up to four, 100 tonne piling rigs, operating at a height of approximately 27m will be used with an estimated production rate of 1-2 piles per day, per rig



It is estimated over 8000 tonnes of concrete and 2800 tonnes of steel reinforcement will be used to form the piles



Piles will be bored to a depth of approximately 32m

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# Stages of piling

1

## SETTING UP THE RIG

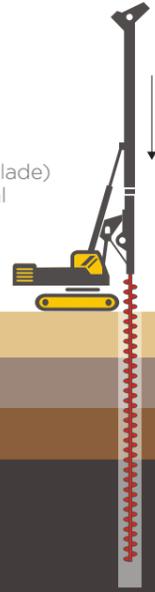
Deliver the rig to site and move it into position



2

## DRILLING

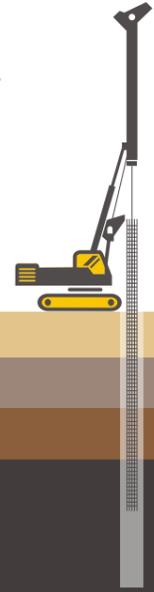
Drilling holes into the ground using an auger (drill bit with rotating blade) and excavating material



3

## STEEL REINFORCEMENT

Removing the material and inserting a prefabricated steel reinforcement cage into the hole



4

## CONCRETE POURING WITH TREMIE PIPE

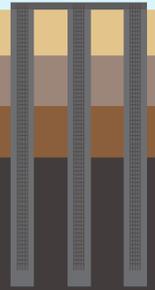
Pouring concrete into the hole to form the pile. Once the concrete sets, the pile is complete



5

## CAPPING THE PILES

Once the piles are constructed, the top layer of concrete is removed and topped by a capping beam to prevent lateral displacement.



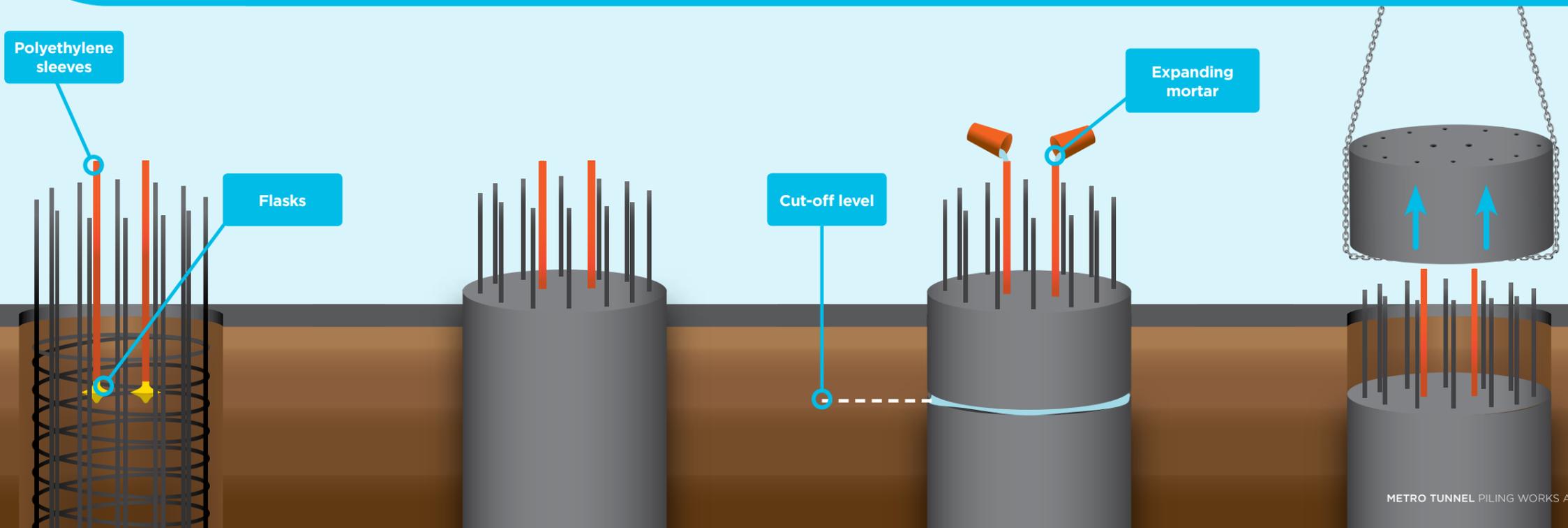
## Start of the break back process

As the piles are constructed, we will be using an innovative new method to break back the piles. The method involves the use of an expanding mortar to create pressure and generate a perfectly horizontal cut, so the top layer of concrete can be easily removed by a crane. This removes the need to use jack hammers and excavators in the pile break back process, reducing the noise, dust and vibration impacts on the surrounding community.

Following the removal of the top layer of concrete, a temporary concrete capping beam is cast on top of completed piles to prevent any lateral displacement during subsequent excavation works.

## The innovative break back process

1. Polyethylene sleeves are placed over the reinforcement cage down to the desired cut off level
2. An arrangement of purpose designed flasks with PVC tubes attached are fixed to the reinforcement cage to the cut off level
3. The concrete is then poured into the hole
4. Once the concrete is set, an expanding mortar is poured into the tubes
5. In this process, the pressure from the expanding mortar forms a perfectly horizontal crack at cut-off level
6. The top layer of concrete can then be removed using a crane and the breaking back of the pile is complete.





## Managing noise and vibration

The use of heavy machinery such as piling rigs, cranes and excavators will generate high levels of noise and vibration at various stages of construction.

While every effort is made to minimise impacts from construction, a project of the size and scale of the Metro Tunnel will have an impact on the comfort of people living, working or studying near construction sites. We recognise there are a number of sensitive receivers located close to the Parkville Station worksite, including residential, educational, medical and research facilities.

Prior to works commencing, qualified consultants have undertaken extensive modelling of the predicted

noise and vibration impacts to teaching spaces, laboratories, bio-resources, sensitive equipment, hospital wards and residential buildings. This has allowed us to determine appropriate mitigation strategies, and discussions are continuing with key stakeholders to determine if any further mitigation measures are required.

Mitigation measures may include (but not limited to) offering periods of respite, selecting less noisy equipment, shielding noise sources, and installation of acoustic timber hoarding around the site.

Noise and vibration monitoring will continue throughout the project to inform the construction

process, validate the modelling, and demonstrate compliance with the Metro Tunnel Environmental Performance Requirements (EPRs).

## How long will it take?

Piling works started in May 2018 and are expected to be completed in October 2018.

At the completion of piling, excavation will commence and continue until approximately December 2019.

Parkville Station construction will take around five years.

The Metro Tunnel is on track to be completed by 2025.

### More information

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