

Birmingham Westside Metro Extension

- Phase One to Centenary Square

Client: West Midlands Combined Authority
(supporting Colas Rail as part of the Midland Metro Alliance)

Location: Birmingham City Centre

Duration: 17 Months

In Brief...

The Midland Metro Alliance is working on a ten year programme of work to deliver tram extensions across the West Midlands. Barhale are a sub-alliance partner whose remit is to deliver the civil engineering elements of the work. One of the projects is the first phase of the Birmingham Westside Metro extension, which will see the line extended from Grand Central to Centenary Square. These works will aid regeneration across the city and prepare for the Commonwealth Games that Birmingham will be hosting in 2022.



Beam installation for Easy Row Subway widening



Concrete pour floating track slab on Pinfold Street

Technical Features...

Barhale's scope on this extension included:

- Undertaking bulk earthworks
- Managing demolition and hydro-demolition work
- Installing drainage and ducting
- Constructing reinforced concrete retaining walls
- Tram stop structural foundations
- Subway widening
- Statue foundations
- Standard track and floating track slab structures

The drainage works varied in depth from 2m up to 6m deep in a congested city centre environment. Methods employed were traditional open cut, timber headed tunnels and some caisson shaft work for the deeper sewer connections. Some of the challenges during excavation for the drainage works were the high volume of underground utilities and the thick layers of concrete and asphalt built up over years of city centre development. Barhale, as an approved Severn Trent water contractor, were able to manage and co-ordinate all 106 connections.

The subway widening was an existing subway beneath a major arterial route in Birmingham city centre, which was required to be widened to accommodate both trams and general traffic. The widening consisted of intricate demolition and hydro-demolition of the existing structure, partial removal of existing abutments, deck and parapet wall and then installing a new structure to tie in to and widen the existing. Temporary works were required for supporting and propping the existing structure during demolition and reconstruction, as well as for the new structures.

The dual track slab works measured in excess of 600m with a number of challenging vertical and horizontal alignments. Some of these were between narrow building corridors so required careful planning and sequencing in getting materials to site and maintaining quality during pouring concrete. Other structures included foundations for significant public works of art, such as the iconic city centre statue by Antony Gormley, Iron Man and Boulton, Watt and Murdoch statue. Foundations for metro stops which included bases, retaining walls and upstands and also bases for lighting columns and CCTV masts were also constructed as part of Barhale's works.



Removal of Iron Man statue (Art work from Antony Gormley) in Victoria Square

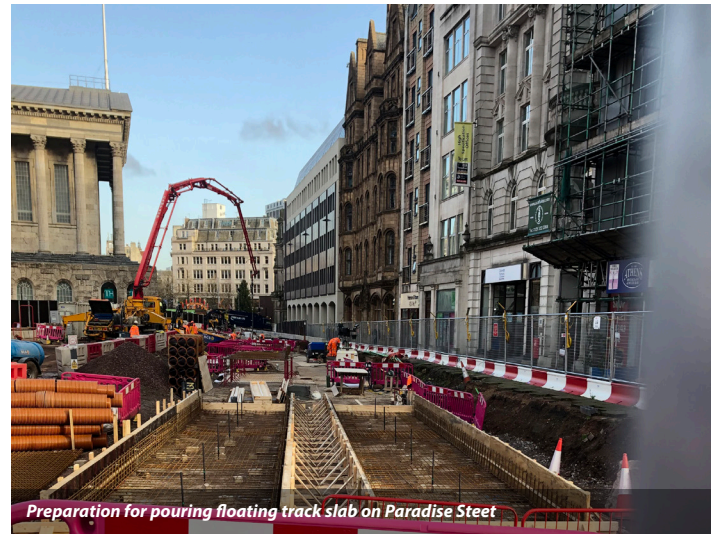
Constraints and Customer Benefits...

There were numerous constraints whilst working in the city centre. These ranged from keeping key stakeholders along the route updated and satisfied with development plans, city centre events such as the Frankfurt Christmas Market, Velo cycle event and the RAF centenary event. These brought challenges such as large deliveries, having to reduce working areas, temporary reinstatement and a high volume of pedestrians. There were also interfaces with three major developments which introduced logistical challenges. The team at the alliance ensured flexibility to manage and adapt to change, working with stakeholders and developers, ensuring minimal impact and delivering the works within a safe, efficient and timely manner. The Midland Metro Alliance ensured that pedestrian access around the working areas was maintained at all times. It was also ensured that the pedestrian routes were suitable for disabled persons, that they were adequately lit and routinely inspected. This was key to ensuring that the impact of the works were limited for nearby businesses and remained accessible at all times, including in the event of any emergencies.

We support the Midland Metro Alliance's ethos of leaving a legacy and supported their recent roadshow at local colleges showcasing career opportunities within rail, civils and construction sectors to schools, colleges and unemployed young people aged 18-29 across the West Midlands.

Luana Bills, Project Manager - Women into Construction CIC

"Women into Construction had the pleasure of attending several of the roadshows and was impressed by the proactive and collaborative approach of the alliance to promoting the rail and construction sectors. The events gave WiC the opportunity to connect with similar organisations but most importantly the chance to engage with candidates requiring our support and guidance and the necessary help to access the industry at any level. Well done to MMA for taking the lead on Construction CIAG for the region, especially during this period of growth and demand for skills."



The MMA will be working in the West Midlands over the next decade and is keen to leave more than just new tramways. We want to leave a legacy of knowledgeable light rail and construction experts that can export their skills for light rail and construction projects around the world.