A NEW GATEWAY TO THE CITY

Liverpool Street is one of nine major new stations on the Elizabeth line and will have two ticket halls – one at Broadgate and the other at Moorgate. The station will provide an interchange with London Underground and National Rail services.

Stretching from Moorgate in the west to Broadgate in the east, the Elizabeth line ticket halls are connected by two mined platforms.

Fully accessible ticket halls provide direct interchange with the Northern, Central, Metropolitan, Circle and Hammersmith & City lines, as well as London Overground, and National Rail services to East Anglia including Stansted and Southend airports.

A unified architectural design inside the ticket halls is driven by the desire to maximise height in these constrained spaces. A shallow, folded ceiling plane formed by ribbed pre-cast concrete panels breaks the perception of the low flat ceilings to create a greater sense of space, scale and movement.

The grooved, angled ceilings has been seen by some to reflect the ‘city pinstripe’ often seen in the suits of City workers. A subtle sparkle of mica in the fibre-reinforced white concrete will glow with indirect lighting.

The entrance into the eastern ticket hall at Broadgate is through a striking, five metre high glazed canopy located in an open pedestrian plaza. Natural light will filter below ground during the day, while at night the canopy acts as a lantern with artificial lighting from inside shining out of the glazed entrance to illuminate the streetscape.

The western ticket hall at Moorgate is at street level and accessed through an angular portal entrance. Framed by bold blue coloured glass. Glass panels and acoustic panels made from perforated enamelled steel will be used on walls, while terrazzo will be used for the floors.

New forecourts and plazas around each entrance create pedestrian friendly, accessible spaces with wider pavements and allow clear pedestrian flows in and out of the station.

In addition to the station improvements, Crossrail has been working with the City of London to deliver public realm improvements to the area around the station.

An over-site development will sit above the Moorgate ticket hall. ‘Manifold’ by British artist Conrad Shawcross will be a bronze sculpture positioned outside the entrance. Outside the Broadgate ticket hall, a new public artwork is provided at street-level courtesy of the imagination of Japanese artist Yayoi Kusama. Her work ‘Infinite Accumulation’ is made up of a series of steel spheres supported by liminous, curving metal rods.

FACTS & FIGURES

• Step-free from street to train
• 567,000 tonnes of excavated material
• 238 metre passenger platform length
• 124,000 passengers predicted per day on the Elizabeth line at Liverpool St.
• Interchange: Central, Circle, Hammersmith & City, Metropolitan, Northern, Overground, National Rail including trains to Stansted and Southend airports

DESIGN & BUILD

• Station architect: Wilkinson Eyre
• Engineer: Mott MacDonald
• Main Contractor: Laing O’Rouke
• Urban realm designs: Burns & Nice/URS
• Oversite development partner: Aviva Investors
• BREEAM rating: Very Good

LIVERPOOL STREET

Elegant and timeless: The new eastern ticket hall at Broadgate

FUN FACTS

• Liverpool Street has the shortest escalator across the Elizabeth line central stations, at 18.5 metres long; it will take passengers from street level down into the Broadgate ticket hall
• The station is 34 metres deep; the deepest of the Elizabeth line central stations, with 6 lifts and 15 escalators and a total area of 22,677 square metres
LIVERPOOL STREET

MAKING A LITTLE SPACE GO A LONG WAY

Nestled in one of the City’s leading financial centres, surrounded by a continually evolving dense urban landscape, the design for Liverpool Street station makes the most of what little space is available to build a massive piece of infrastructure.

The physical constraints to building a new station at Liverpool Street were considerable. Contractor Laing O’Rourke had to build the station in an area already crowded with shops and office blocks above ground and below held to contend with a maze of sewers, utilities, existing Tube lines and the former Post Office Railway.

In addition, layers of the city’s history had to be removed and protected before much of the work could get underway, most notably over 3,300 skeletons from the Bedlam burial site uncovered during the initial excavations at Broadgate, as well as thousands of artefacts dating back to Roman times.

The contractors also had to work alongside the operational railway at Liverpool Street station, surrounded by multiple stakeholders, including residents and businesses. This meant implementing noise, vibration & dust restrictions at the site.

To support construction of Liverpool Street station, a temporary 42 metre deep access shaft was constructed in Finsbury Circus so that the platform tunnels could be dug at the same time as the access down to the platforms were being constructed from the ticket hall sites.

The Broadgate ticket hall and escalator box are in Liverpool Street and include a link corridor to the Tube station and National Rail.

The distinctive ‘pinstripe’ roof at Broadgate

The box dig was 65 metres long, 25 metres wide and 20 metres deep and within that space the station structure has been built.

Concrete piles support the foundations of the box with internal walls providing additional strength for the reinforced concrete box structure. The roof comprises both precast architectural roof planks and a roof capping slab at a depth of 2.8 metres in places.

The Moorgate ticket hall includes a 175 metre long link tunnel to the Northern line. The two ticket halls are connected by a central concourse running under Finsbury Circus along with platforms that are over 200 metres long. The platforms at Liverpool Street have been built by modular construction.

The construction of Moorgate shaft was undertaken using a combination of diaphragm walls and piles. The shaft was excavated top down with a series of ring beams and lining walls being installed at various stages with internal propping. Once the base slab was installed the propping was removed enabling the internal reinforced concrete walls and tunnels connections to be formed.

Once the physical structure had been largely completed, the focus of the project switched to the construction of all the mechanical, electrical and public health services associated with the station.

It has been a complicated project, but the resulting station will provide a crucial transport interchange in the heart of the City for years to come.

Construction of platform tunnels underway

FROM BURIAL GROUNDS TO ROMAN SUBURBS

Crossrail undertook one of the most extensive archaeological programmes in the UK. At Liverpool Street, Crossrail archaeologists uncovered layers of London’s history down to the remains of Roman London.

There are 2,000 years of history buried beneath Liverpool Street including the foundations of Broad Street railway station; the former Bedlam burial ground; Moorfields marsh: a Roman road and the Walbrook, one of London’s lost rivers.

In 1569, the Bedlam burial ground was established outside the City walls to ease the growing overcrowding of City cemeteries. More than 10,000 bodies were buried in the new cemetery and Crossrail archaeologists unearthed over 3,300 during their excavation.

POLKA DOTS AND MAJOR THIRD: THE STORY OF TWO VERY SPECIAL SCULPTURES

A final flourish is given to Liverpool Street station by two distinctive pieces of art which will be installed outside the ticket halls.

For the western ticket hall, or Moorgate end, artist Conrad Shawcross has designed the tall and elegant ‘Manifold (Major Third) 5:4’ sculpture.

This three-dimensional, tree-like bronze creation is based on a visualisation of the sound waves generated by the third chord in the harmonic spectrum, also known as the major third.

Shawcross mapped the sound by using a machine based on a Victorian harmonograph and the shape it gave him, of a gradually diminishing, vibrating chord turning from loops into a straight line, gives the spiralling form to this striking piece of work.

At the eastern end, in Broadgate, another piece of work rises from the ground outside the adjacent ticket hall. Here the design springs from the imagination of Japanese artist Yayoi Kusama who is famous for her use of polka dots in her creations.

At Liverpool Street her work ‘Infinite Accumulation’ is made up of a series of steel spheres supported by sinuous, curving metal rods.

Both are likely to become landmarks for this part of London for years to come.