THE BEATING HEART OF LONDON’S NEW FINANCIAL CENTRE

Project description
The Crossrail Place mixed-use scheme encompasses a public roof garden, retail spaces and the above-ground elements of the new Crossrail station at Canary Wharf. It features a distinctive, timber latticed roof, which cantilevers out over the waters of the North Dock at both ends.

Located adjacent to the HSBC tower and the residential neighbourhood of Poplar, the scheme connects two distinct neighbourhoods, providing retail amenities, shared public facilities and valuable open space.

The 310m-long timber grid-shell arches over a large landscaped park, which lies at the heart of the design. The park is open from dawn till dusk and accessible from ground level via connecting bridges. The spruce beams support ETFE cladding with triangular cushions. The roof is partially open for views out and for natural irrigation, while also providing sheltered spaces so workers and residents can enjoy the park all year round. The planting includes some of the species that first entered Britain through the historic docks.

The area around the station is designed to encourage people’s enjoyment of the new park and shops, creating a lively community facility.

Ben Scott, partner, and Jonathan Rabagliati, associate, Foster + Partners

Photography by Nigel Young

Right: Aerial view of the 310m-long roof
Previous page: Cantilever at west end with fritting on ETFE cushions adjusted to control internal microclimate
**Project data**

- **Park and retail opening**: May 2015
- **Park area**: 3,000m²
- **Architect**: Foster + Partners
- **Collaborating architect**: Adamson Associates Architects
- **Client**: Canary Wharf Group
- **Structural engineer**: Arup
- **Roof structural engineer**: Wiehag/Seele
- **Timber engineering consultant**: Haring
- **Bridge engineer**: MG Bennett
- **M&E consultant**: Arup
- **Landscape consultant**: Gillespies
- **Acoustics consultant**: Arup
- **Traffic/movement consultant**: Steer Davies Gleave
- **Facade access consultant**: Reef
- **Planning consultant**: DP9
- **Lighting consultant**: Maurice Brill Lighting Design
- **Access consultant**: Arup
- **Main contractor**: Canary Wharf Contractors

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**Aerial plan**

- 1. Poplar DLR station
- 2. North Quay
- 3. Billingsgate Market
- 4. North Dock
- 5. Crossrail Place
- 6. HSBC tower
- 7. Canada Square Park
- 8. Restaurant
- 9. Public roof garden
- 10. Catering
- 11. Walkway

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**Ground floor plan**

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**Promenade plan**

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**Park plan**

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Opposite Aerial view of the 300m-long roof from the north-east, with 236m-high One Canada Square in background

1. Public roof garden
2. Walkway
3. Crossrail station
4. Enclosed footbridge
5. Open deck access

Section A-A

Section B-B

1. Cover extrusion (aluminium anodised)
2. ETFE pillow
3. Base extrusion (aluminium anodised)
4. Condensation drip catcher (silicone)
5. Primary air pipe
6. Support bracket
7. Individual air pipe feed to ETFE pillow
8. Electrical services for lighting and CCTV cameras
9. Horizontal timber beam
10. Structural node (galvanised)
11. End plate (galvanised)
Specification description

The visual simplicity of the roof design incorporates subtle variations in the underlying geometry, which accelerates outwards towards each end, generating dramatic 30m cantilevers. While all but four of the 1,418 glulam beams are straight, they vary in structural grade, depth and length.

For the steel node connections, the degree of geometric complexity is larger. Of the 564 nodes, more than half are unique in geometry. Similarly, the 777 ETFE cushions occupy 302 different shaped triangles. With ETFE air pipes integrated into the structure, the whole system is a carefully integrated design.

A key feature of the project was that rather than conceptually considering typical or atypical conditions, all the nodes, beams and cushions were designed and fabricated as one parametric family. This approach and the use of scripting was also adopted by specialist ETFE and timber contractors. This permitted the exchange of data sets and geometric rules facilitating the gradual refinement of the design through successive digital and physical prototypes.

This underpinned the project’s success and allowed an unprecedented level of precision through design, fabrication and installation. As a result, the completed timber structure was – across its 300m base-span – just 5mm out at each end.

Ben Scott, partner, and Jonathan Rabagliati, associate, Foster + Partners
View from south-west, with轮廓 generated by subtly accelerating the geometry of the underlying roof structure.