

The logo consists of a red circle containing the white letters 'AJ', followed by the word 'SPECIFICATION' in a large, white, sans-serif font.

AJ SPECIFICATION

The title 'ROOFING & DRAINAGE' is written in a large, white, sans-serif font, overlaid on a photograph of a modern building with a complex, metallic, geometric roof structure. The building's facade is composed of large, triangular panels that create a faceted, crystalline appearance. In the foreground, several people are walking on a paved plaza, and some greenery is visible. The sky is blue with scattered white clouds.

ROOFING
& DRAINAGE

Foster + Partners
Robin Snell and Partners
Hugh Broughton Architects

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.

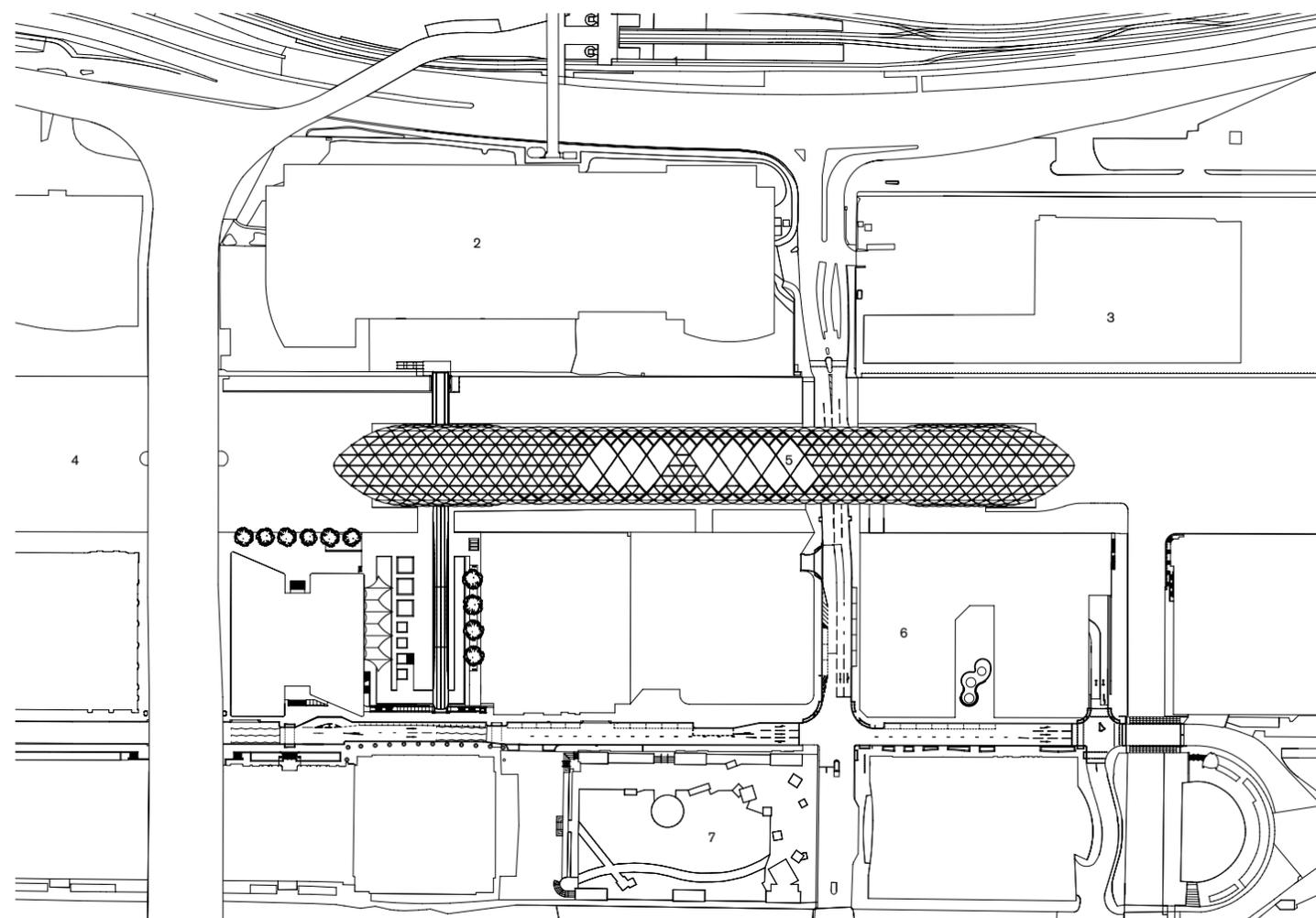
The area around the station is designed to encourage people's enjoyment of the new park and shops, creating a lively community facility. *Ben Scott, partner, and Jonathan Rabagliati, associate, Foster + Partners*

Photography by
Nigel Young

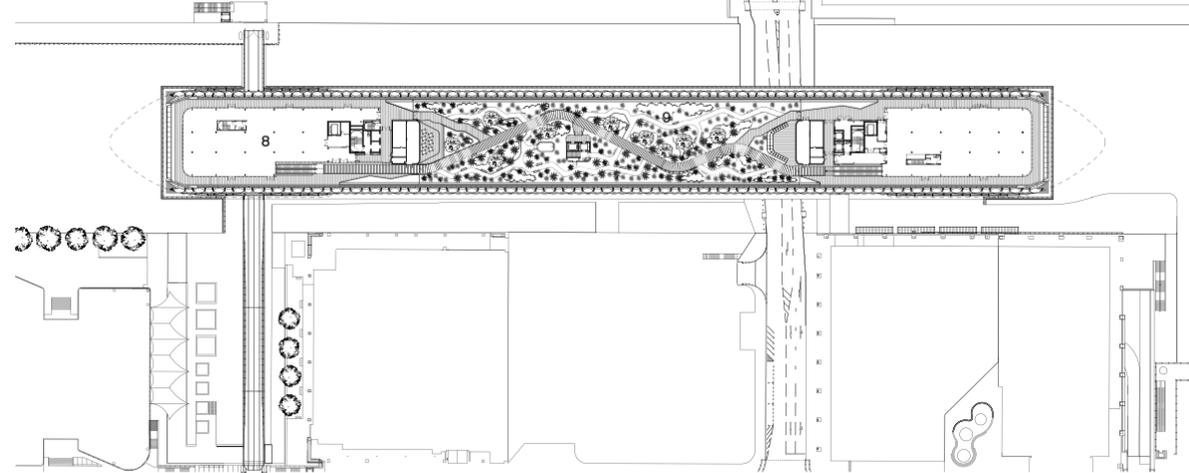
Right Aerial view
of the 300m-long roof
Previous page Cantilever
at west end with fritting
on ETFE cushions
adjusted to control
internal microclimate



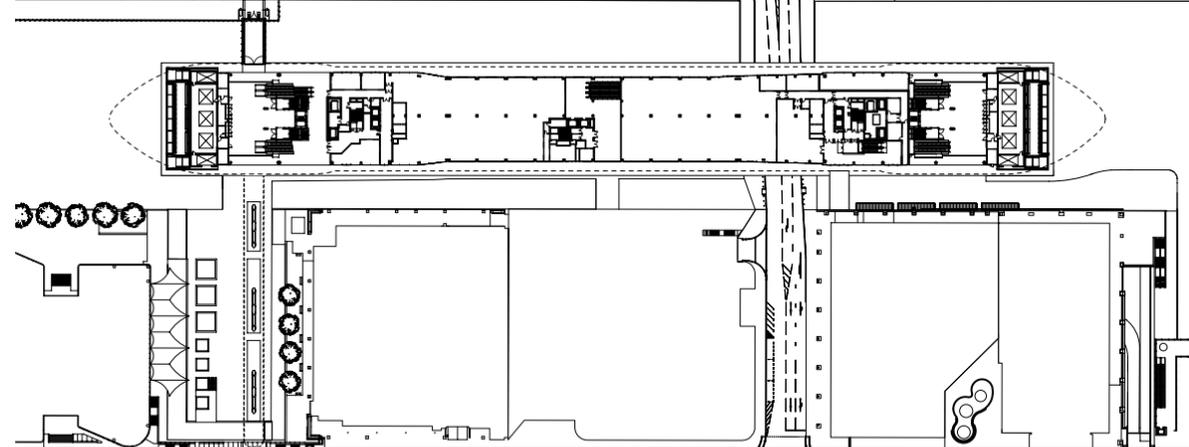
Aerial plan



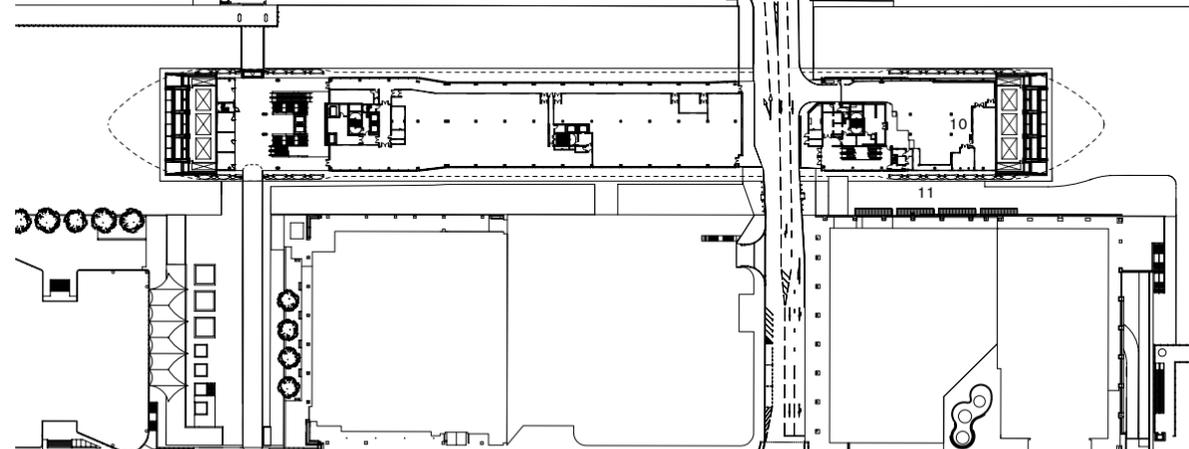
Park plan



Promenade plan



Ground floor 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

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

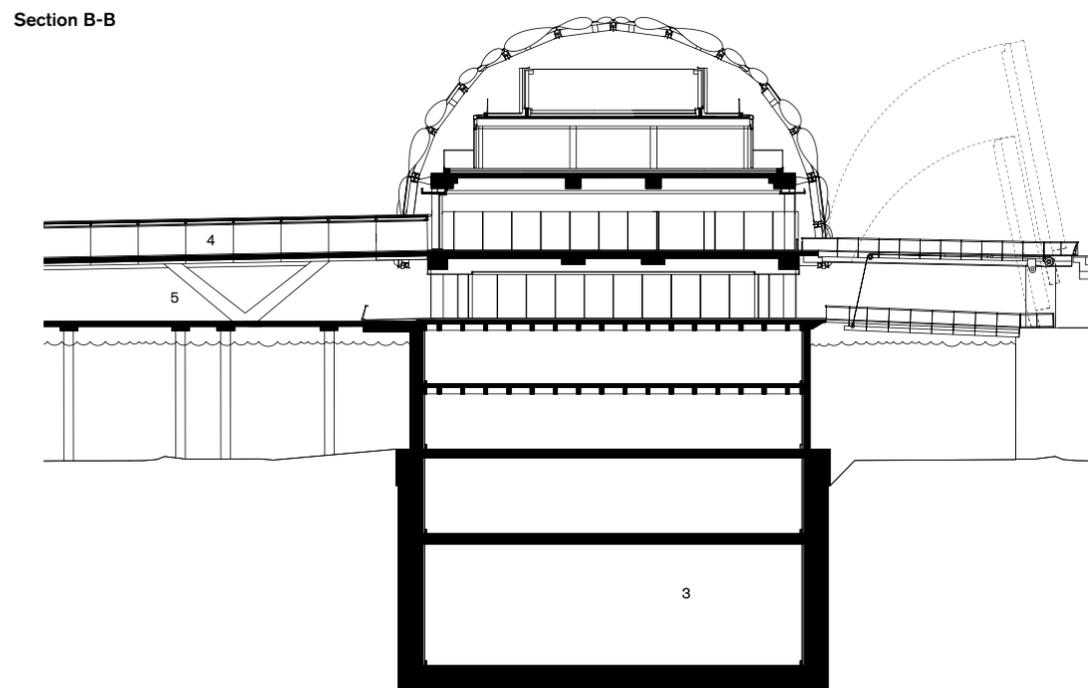
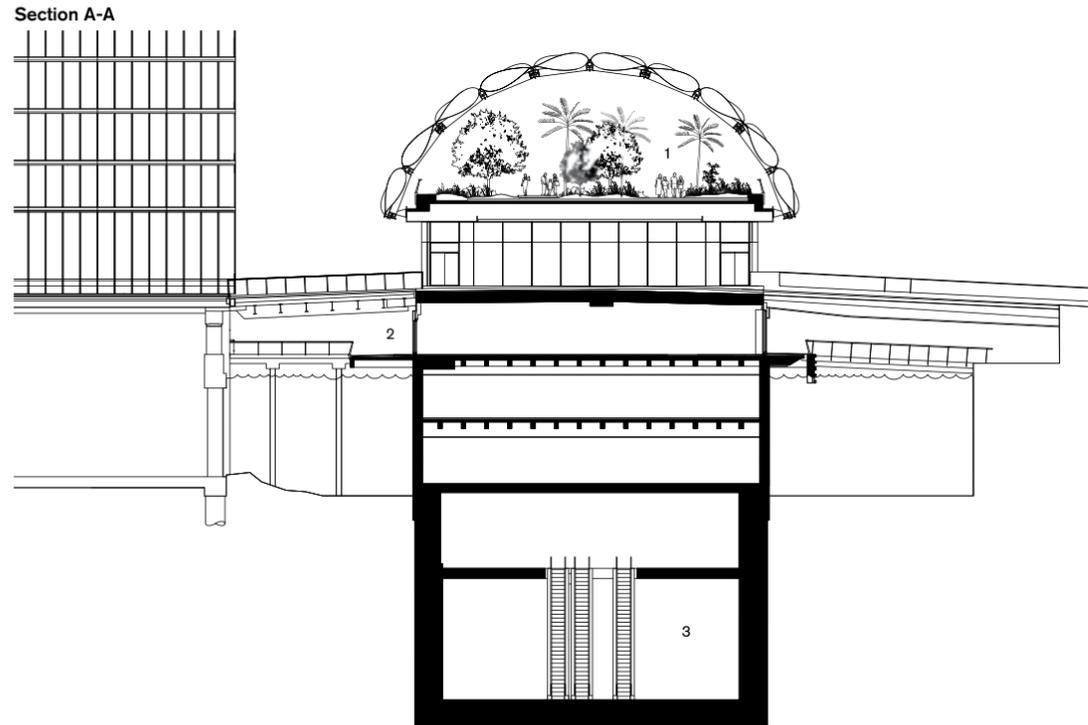
Planning consultant DP9

Lighting consultant Maurice Brill Lighting Design

Access consultant Arup

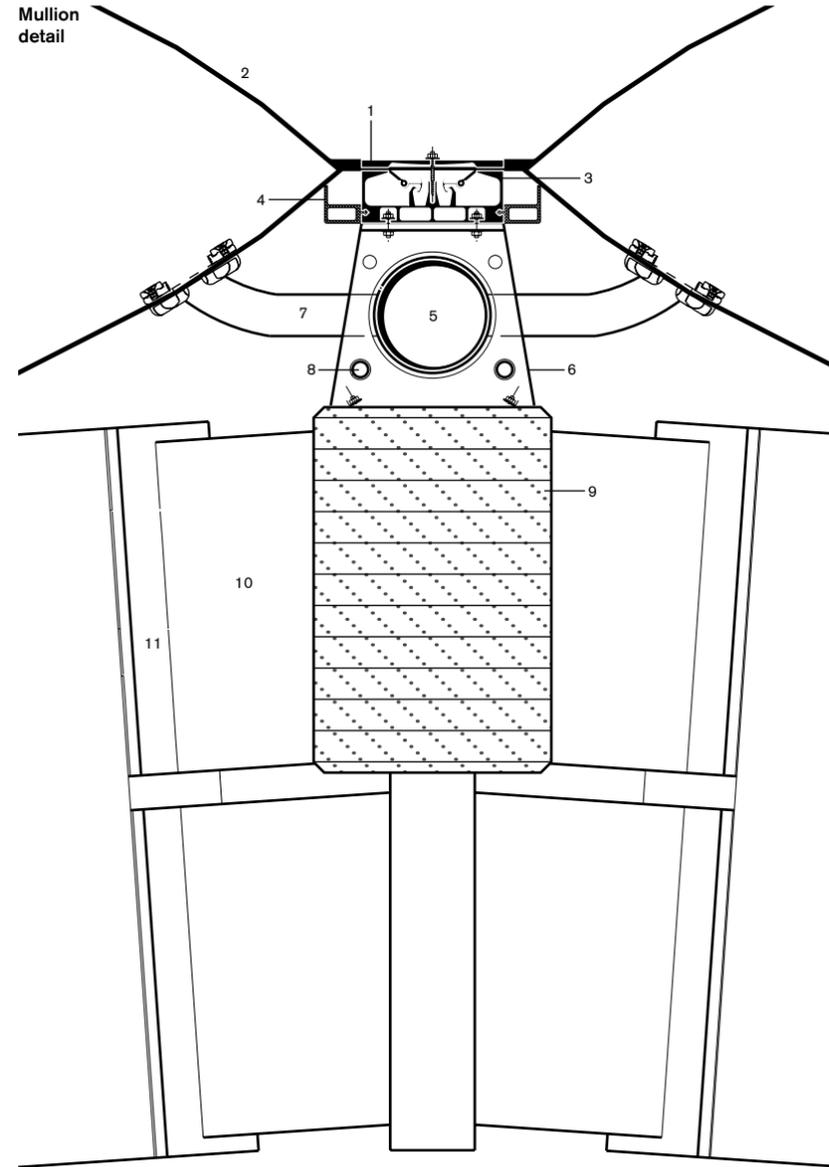
Main contractor Canary Wharf Contractors





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



- 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)





This image Where ETFE cushions are omitted, timber support members are protected by aluminium cladding
Opposite Diagonal timber beams have deeper section sizes than members connecting horizontally between them



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.

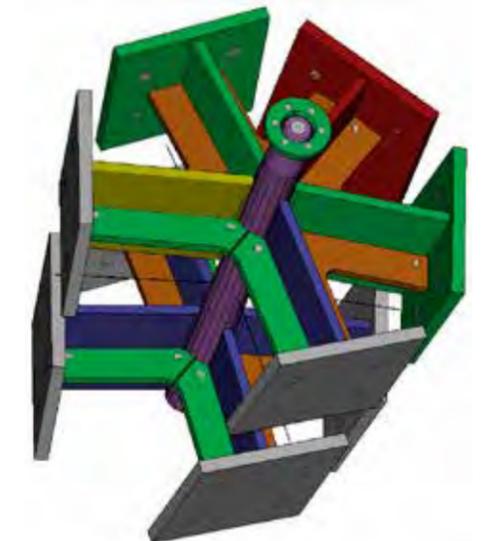
For the steel node connections, the degree of geometric complexity is larger. Of the 564 nodes, more than half are unique in geometry. Similarly, the 777 ETFE cushions occupy 302 different shaped triangles. With ETFE air pipes integrated into the structure, the whole system is a carefully integrated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

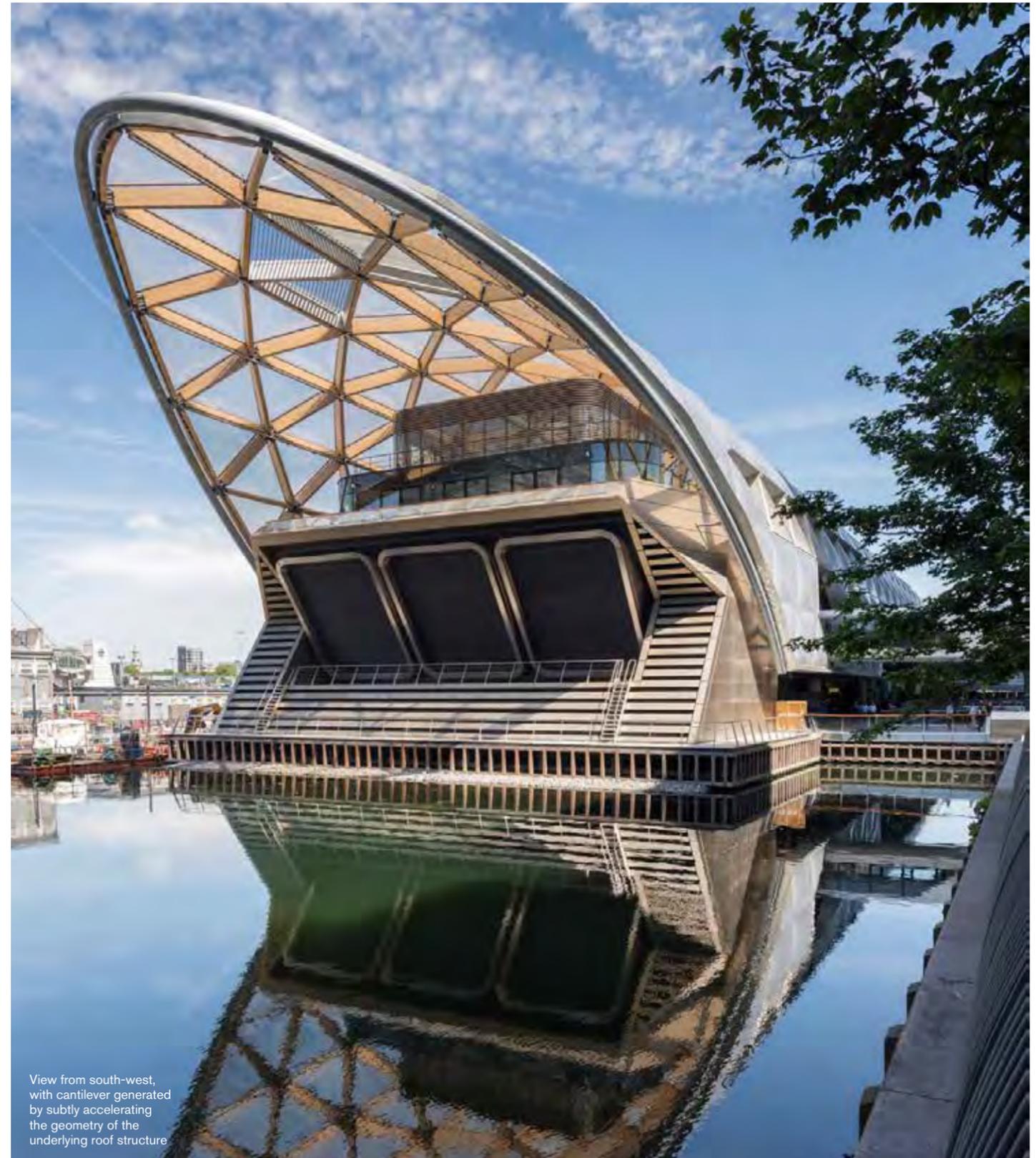
A key feature of the project was that rather than conceptually considering typical or atypical conditions, all the nodes, beams and cushions were designed and fabricated as one parametric family. This approach and the use of scripting was also adopted by specialist ETFE and timber contractors. This permitted 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

Single node CAD drawing





View from south-west,
with cantilever generated
by subtly accelerating
the geometry of the
underlying roof structure