

## 2 London Wall Place – 11m Cantilevered Truss System

**Najwa JAWAHAR**  
Structural Design Engineer  
WSP | Parsons Brinkerhoff  
London, United Kingdom

*najwa.jawahar@wspgroup.com*



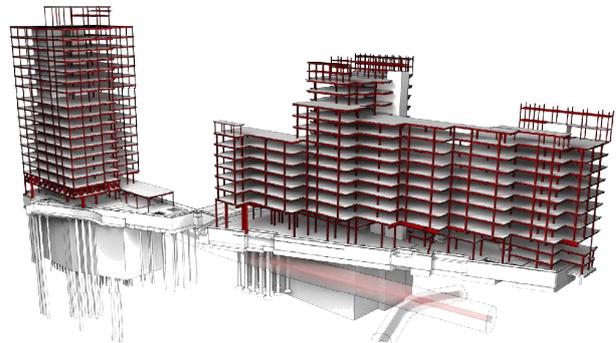
As a structural design engineer, Najwa demonstrates her passion for engineering of high-rise structures, working on fascinating residential and commercial developments in London.

Najwa is also part of the WSP | PB's Taskforce, a diverse group of individuals, selected as ambassadors to drive change and business excellence and implement business initiatives.

**Keywords:** *Buildings; High-Rise; Truss Cantilever; Steel Construction, High Strength Steel.*

### 1. Introduction

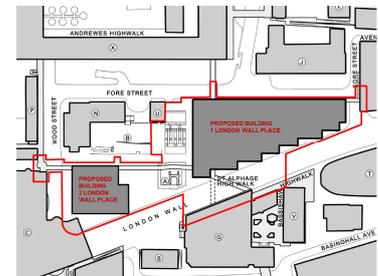
Working with signature architects, MAKE, WSP | Parsons Brinkerhoff have developed concept of a 500,000ft<sup>2</sup> premium commercial development, located at the heart of the City of London. The development, now under construction, comprises of two new landmark buildings, replacing a 1960s podium and a vacant tower. A series of new bridges will link both buildings with their surrounding infrastructure, replacing exiting walkways. The new development sits within the existing basement boundary (outlined as RED line in image below).



### 2. 2LWP – 11m Cantilevered Truss System

2 London Wall Place, smaller of the two buildings, is a 16 storey office block with two basement floors, located at the Western end of the London Wall Place site.

- The existing basement has a trapezoidal shape, therefore part of the 16 storey building footprint overhangs beyond the site boundary. The cantilever is approximately 11m from the nearest internal column, supported using a system of six 5.4m deep trusses at level 01.
- The stability core to the building is positioned eccentric to the floor layout and disconnected from the truss system, resulting in an additional twisting effect in the core.
- Tight deflections limits were set for the installation and performance of the façade system.
- A step in the level 01 slab introduced to isolate walkway (connected with one of the bridges) and external landscape terrace from the internal retail space interrupts the floor diaphragm behaviour limiting truss deflection.
- High strength grade S460 steel box fabricated columns supporting the truss will be pre-set to mitigate the effects of axial shorting due to bi-axial bending and high axial loads.
- The most heavily loaded column is located at the edge of the existing basement envelope and various foundation options were developed.



### 3. Conclusion

It is simple to predict and understand behaviour of a cantilever truss under a uniformly applied load, but how does it behave when it's connected with 6 other cantilever trusses forming a system that supports a 16 stories tower above it. Analysis and development of the truss system was highlight of my experience working on the London Wall Place project.