

**COMPLEX CHALLENGES ...  
MADE SIMPLE**

RoC Consulting is a highly experienced and qualified team of civil, structural, geotechnical & geo-environmental engineers

**CASE STUDY**



# THE HARD, PORTSMOUTH INTERCHANGE

## Key facts

**Project**  
The Hard  
Portsmouth Interchange

**Client**  
Portsmouth City Council

**Architect**  
AHR Architects

**Programme duration**  
2014 - July 2017

**Value**  
£7.5m



Civil Engineering



Structural Engineering

## CIVIC SECTOR PROJECT OVERVIEW

RoC Consulting was appointed by Portsmouth City Council to be a part of its exciting vision to create a multi-modal transport interchange, combining Portsmouth railway station, the Gosport and Isle of Wight ferry terminal and a brand new bus station. Commenced in 2014, the project has been commissioned to replace the current facility constructed in 1977.

Comprising a suspended, reinforced concrete deck which supports inverted 'T' pre-stressed beams over the River Wallington, the project is a major step forward in the city's regeneration and infrastructure strategy.



The proposed interchange which serves 3.5 million people each year provides common access between The Hard and the railway station, with levels over the existing deck being regraded. Where necessary, expanded polystyrene blocks have been used in conjunction with foam concrete. This helps achieve the new levels, minimising the effects of increased dead loads on the existing structure.

The new Pavilion building is approximately triangular in plan form and features a series of structural steel frames, with stability being provided by vertical braced bays to the side elevations and braced bays perpendicular to the main bus stand elevation.

A wind canopy sits above the interchange to shelter passengers as they move between the building and buses, while additional facilities include a separate waiting area for those taking a taxi.

## CHALLENGES

Due to the constrained nature of the site with the deck suspended across the harbour, a number of challenges, for a project of this scale were presented these included:

- Existing load restrictions limited the build-ups of the bus apron. This was solved through the inclusion of expanded polystyrene
- Structures with limited depth needed to be strengthened so that they could be included within external build-ups
- A sustainable drainage strategy was agreed with the Environment Agency so that the water collected from the bus apron could be treated in-situ, before discharge into the River Wallington
- Maintenance of bus services required a detailed phasing strategy, resulting from a rigorous construction planning study. This in turn had a significant influence on the design approach particularly with regard to the apron construction

