Olympia London
London, UK

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Property Owner
Consortium of investors
(Deutsche Finance and Yoo Capital)

Main Contractor
Laing O'Rourke

Architect
SPPARC & Adamson

Structural Engineer
Robert Bird Group

Acoustic Consultant
Buro Happold (Vanguardia) & SLR

Stravifloor Deck

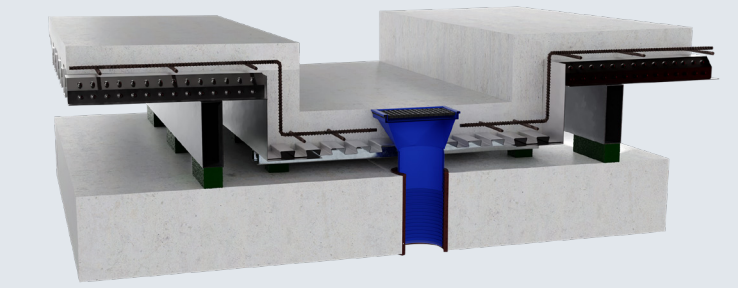
- High-performance low-profile deck floor system with high bending stiffness
- Allows for large support spans

OVERVIEW

Olympia London, an iconic 43,728 square meters venue in the heart of London, has captivated visitors for almost 140 years with its diverse range of events and spectacular shows. The ongoing redevelopment project encompasses the refurbishment of existing buildings as well as the construction of new structures. The central building will feature office space, a new exhibition area, and a façade retention.

One of the newly constructed buildings is called the Central building. The latter is a mixed use building which is constructed on top of the existing West Hall. The Central building needed to be decoupled from the West Hall to minimize structure-borne noise transfer between the West Hall and the offices planned in Central. In this regards, our team designed three massive pre-compressed bearing assemblies to limit the deflection during the construction works.

The revived West Hall features two new floors of large scale format, flexible exhibition space, with a new full height glazed facade. The exhibition space and music venue have been designed to function independently of each other. The two spaces are designed with acoustic insulation to allow the music auditorium freedom from the constraints of neighbouring exhibition timelines.



AT A GLANCE

CHALLENGES

- Sloping roof profile to be created
- Large spans in deck to reduce the number of lines of support

BENEFITS

- Few contact points allowing for maximum acoustical performance (spans over 2 m on roof solution)
- Aluminimum SHS sections of varying heights used to create sloped profile of the roof deck
- Different bearings used to accomodate different load cases

2400 m²
Stravifloor Deck West Hall Roof

2000 m²
Stravifloor Deck West Hall Interior

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SOLUTION

A Stravifloor Deck acoustic floating floor is being meticulously installed **on the roof of the West Hall** of Olympia London, encompassing an impressive area of over 2400 m². The project's primary objective is to support green roof areas on the Olympia West building while accommodating a sloping roof profile. To achieve this, aluminum SHS sections of varying heights were skillfully employed to create the desired roof deck incline. Large spans in the deck were incorporated to reduce the need for excessive lines of support. For this purpose, the Hody-60 deck profile was employed, offering spans of over 2 m (2030 sq.m.), while the Lewis deck was adopted in gutter areas (370 sq.m.).

The project's complexity required precise planning and analysis. A Finite Element analysis of the roofs was performed to determine the necessary reinforcement requirements, ensuring the utmost structural integrity. The installation process itself proved challenging, but the skilled team took on the task, expertly handling the changing sheet directions and numerous intersections of different zones with distinct orientations.

Furthermore, **within the West Hall**, another area of around 2000 m² is currently undergoing installation with a standard Stravifloor Deck. Additionally, stiffer pads were used in the stage area to withstand higher load capacities compared to the audience area.