

# New Stand at Edgbaston

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## 1.0 Project Brief

PDA Ltd was commissioned by Galliford Try Limited to undertake the acoustic design of the new £25 million new stand and media and conference suite at Edgbaston Stadium, Birmingham. The facility consists of five floors of conference, banqueting, retail, changing, dining and media facilities including Sky TV studios and BBC commentary studios. The PDA Ltd brief was to undertake the full acoustic design of the building for the contractor including the following:

- Envelope Sound Insulation
- Internal Sound insulation between sensitive spaces
- Mechanical services noise control to the interior and exterior.
- Sub-contractor proposals
- Design Team Meetings
- Site Inspections (6)

In addition to meeting industry standard requirements the brief was to interpret and achieve the BREEAM requirements for the building in terms of Hea13 and Pol8, and to meet stringent planning requirements for noise to the exterior.



Figure 1: The Stand under Construction

## 2.0 Acoustic Challenges

This was a very large development with a large number of different uses, some generating high levels of noise and some requiring very quiet conditions. Some of the particular challenges were as follows:

- Low noise design of the broadcasting suite mechanical services

There were considerable limitations on space within the ceiling voids and corridors for the broadcasting suite. This required innovative routing design to allow incorporation of the required primary and cross-talk silencers and duct lagging while maintaining low levels of regenerated airflow noise. The design of the duct risers also employed very careful positioning of in-duct silencers and duct lagging to suppress noise break through from the press area above the studios from interfering with broadcast activities.



Figure 2: Due to spatial requirements the duct from the In-Vision Studio had to run through the adjacent TV studio and required careful independent boxing out

- Isolation of Sky In-Vision Studio

The need for proprietary “box-in-a-box” isolation system was eliminated by floating the access floor on soft resilient matting at each support mounting and fixing back to the base floor using resiliently isolated fixings. The perimeter walls were floated off the base slab using a similar isolation

system and isolated from the floor perimeter using resilient edging material. This effectively isolate the walls and floors from the base slab below using fairly standard means without having to build a proprietary floating structure. All services were routed via the corridor and ran outside conduit free to avoid mechanical connection to the floating structure. Flexible connections were used to isolate the ducting systems within the room from the building structure.

- Sound Insulation between Broadcasting Suites

To achieve the required sound insulation between broadcasting commentary suites required careful treatment at the junction between the separating wall and the curtain wall façade due to the sight-line requirements. To achieve this, the mullion was encapsulated in a carefully designed glazed wall system with two leaves of laminated glass set in separate frames. This glazed system also encapsulated the mullion at the junction leaving a free glazed area behind the mullion to achieve the required sight-line.

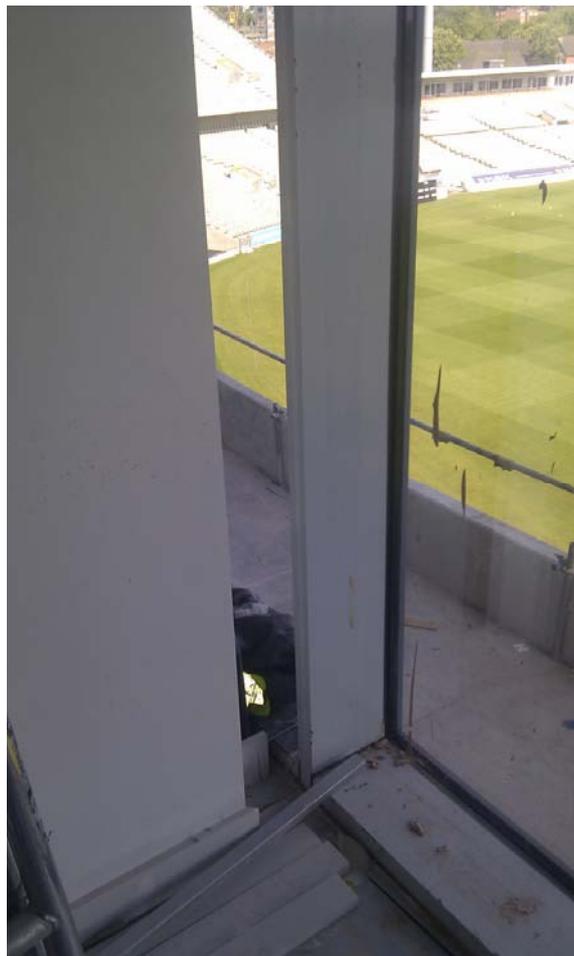


Figure 2: Gap between mullion and wall requiring encapsulation in the bespoke glazed wall system.

- Flexible Layout of Banqueting Suites

The banqueting suite was designed to work as one large area or to be partitioned into a number of smaller spaces. To achieve this, the movable wall detailing had to be carefully designed to work with the ventilation system and structure (trusses etc.) while maintaining adequate sound insulation at the wall head.

- Plant Noise Break-out

External plant and plant openings were shown achieve compliance with requirements using careful analysis including for the effects of in-built plant attenuation and screening. Acoustic louvers were only found to be needed in the case of the chiller platform, but otherwise treatments were kept to a minimum while achieving the requirements.

- Air Handling Noise to Conference Hall

The air handling unit in the conference hall was to be within the gantry of the hall itself, requiring careful lagging design to meet internal noise level requirements.



Figure 3: Conference Hall under Construction – Internal AHU Mounted in Gantry Area

- Other Areas

In other areas the brief was to deliver the acoustic design in the most economical way and use of acoustic treatments were scrutinised and optimised wherever possible. This was especially significant in the mechanical services system where the need for a number of attenuators was eliminated using detailed down-duct and duct break-out calculations to all areas of the building. Careful acoustic design in terms of sound insulation between internal spaces and in design of the building envelope and internal finishes also kept costs to a minimum while maintaining the high level of acoustic quality required.

### 3.0 The Building in Use

The building is now completely operational and was completed in time for the test match against India in 2011 including the use of all broadcasting facilities.



Figure 4: The Stand from Edgbaston Road



Figure 5: From the Pitch

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