AWARD

TERMINAL 2, DUBLIN AIRPORT

ARCHITECT	PASCALL+WATSON ARCHITECTS
STRUCTURAL ENGINEER AND PROJECT MANAGER	ARUP
STEELWORK CONTRACTOR	WATSON STEEL STRUCTURES LTD (SEVERFIELD-ROWEN PLC)
CONSTRUCTION MANAGER	MACE
CLIENT	DUBLIN AIRPORT AUTHORITY

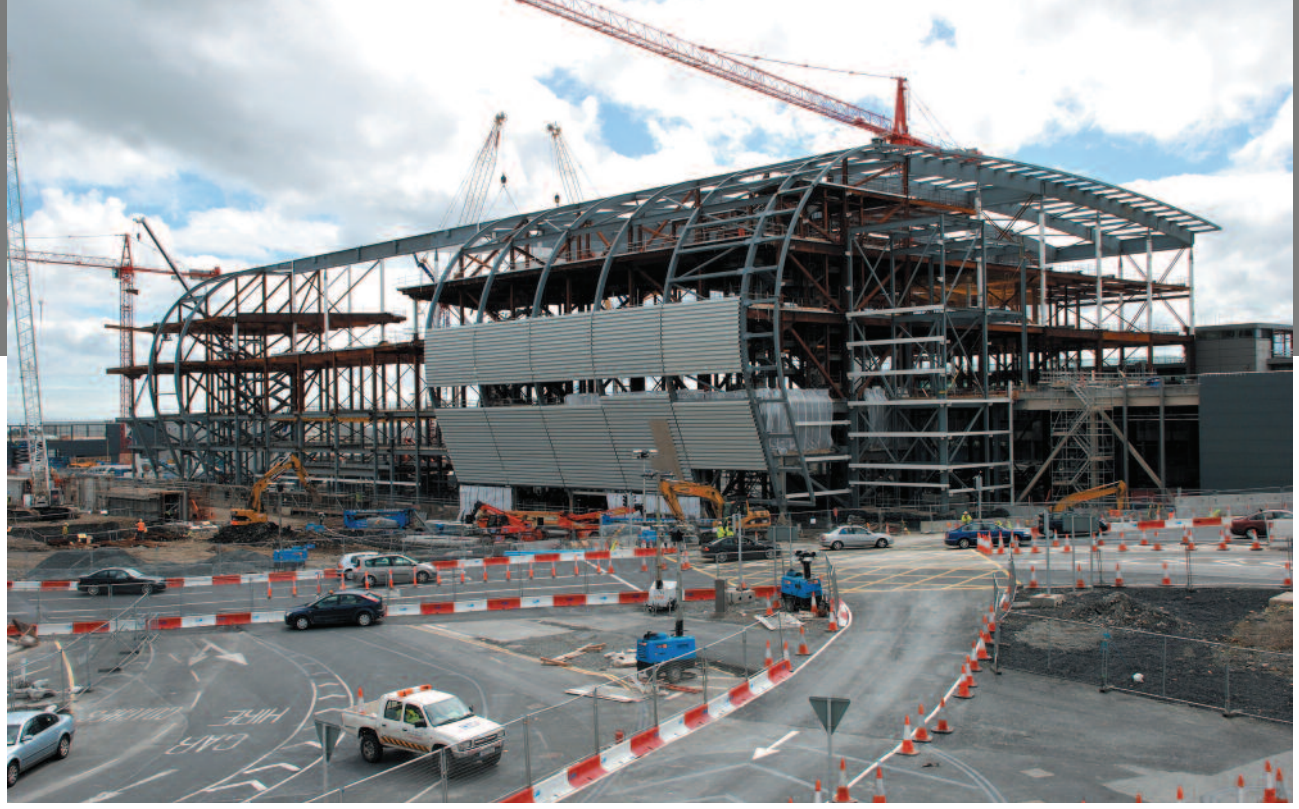
Terminal 2 was developed to provide a new terminal, pier and road frontage systems to cater for 10-15 million passengers per annum, which would be a simple, efficient and user-friendly experience for passengers and all other end users. This was achieved by providing a flexible, expandable and contemporary facility, which acknowledged current trends and international industry standards for airport and passenger terminal design

The terminal building consists of arrivals, departures, check-in buildings and link bridges comprising of nearly 12,000 tonnes of structural steelwork, together with 55,000sq m of structural metal decking, stair cores and staircases.

In order to meet the challenging build schedule, Dublin Airport Authority took a package approach to various aspects of the expansion project rather than using prime contractors to build the entire system. This allowed the airport more flexibility with the phasing of the packages and accelerated the process. The packages included steel, structure, fit-out and specialist systems, and MEP (mechanical, electrical and public health), which spans communications infrastructure and alarms.

The client's brief was to provide a sustainable landmark building that could adapt over time to the ever changing requirements of the airport industry. The building was to be light and airy and make the maximum use of natural light, and provide a calm atmosphere for passengers. The project also had to be delivered at the 'right cost' in terms of both construction costs and life cycle costs, safely and in a manner that did not affect the airport capacity during construction. Independent consultants, appointed by the Government, have confirmed that the budgeting process and costs of Terminal 2 were in line with best international practice.

The new terminal was designed to utilise appropriate technology, which remains flexible to ensure future 'proofing', and to provide enhanced efficiency for both airlines and the operator. Certain elements of the structure are designed to allow for further expansion and also for the required increase in demand.



The building was designed to be highly architectural and the curved shape of the building combined with the extensive use of glass satisfies that requirement. The shape of the roof and the large designed spans clearly pointed to the use of steel as the most practical and economic way of creating the curved shape of the building. Bespoke fabricated box section roof girders were designed and these were fabricated from curved plates and fully welded in the factory. Prior to despatch the roof girders were fitted and bolted together during the fabrication process to ensure the tolerances and fit-up on site were achieved.

One of the main drivers during the design development period was to reduce the amount of work on site and this was achieved by providing large pre-fabricated units, up to 20 tonnes each. These were bolted together at low level to form the main roof girders. Heavy plate girders and plated columns were also used to create large spans.

In order to achieve a very tight site programme, and to avoid disrupting the existing airport operations, all the works were planned on both a day and night shift basis.

The structure presented a considerable challenge in respect of fabrication workmanship. The roof and the sides of the building are curved in both plan and in elevation. The use of 3D modelling and CNC data transfer to the cutting and drilling machines were essential in achieving the accuracy and tolerances in the individual components. The manual assembly of the components to form the complex shapes required considerable experience and skill. Bespoke fabrication jigs were used extensively combined with 3D laser setting out equipment with the data being transferred from the Tekla model directly onto the shop floor equipment.

The internal superstructure frame of the building is fire engineered using intumescent coatings. The roof structure did not require fire protection and was shop painted with a primer with the final coat applied on site during the fit-out process

Throughout the design process there was a high degree of communication between the design team and the steelwork contractor to overcome the more challenging aspects of the design and erection to produce an efficient cost-effective structure that could be erected safely. This was particularly evident when considering the erection sequence and stability issues.

JUDGES' COMMENT

A large complex infrastructure scheme designed and constructed in a short time in the midst of the day-to-day life of a busy international airport. The intention is to provide an exceptionally user-friendly experience.

The expression of the steel structure is clear, with consistent detailing.

A well executed project which demonstrates close cooperation between all involved, and a fine example of the capabilities of steelwork.