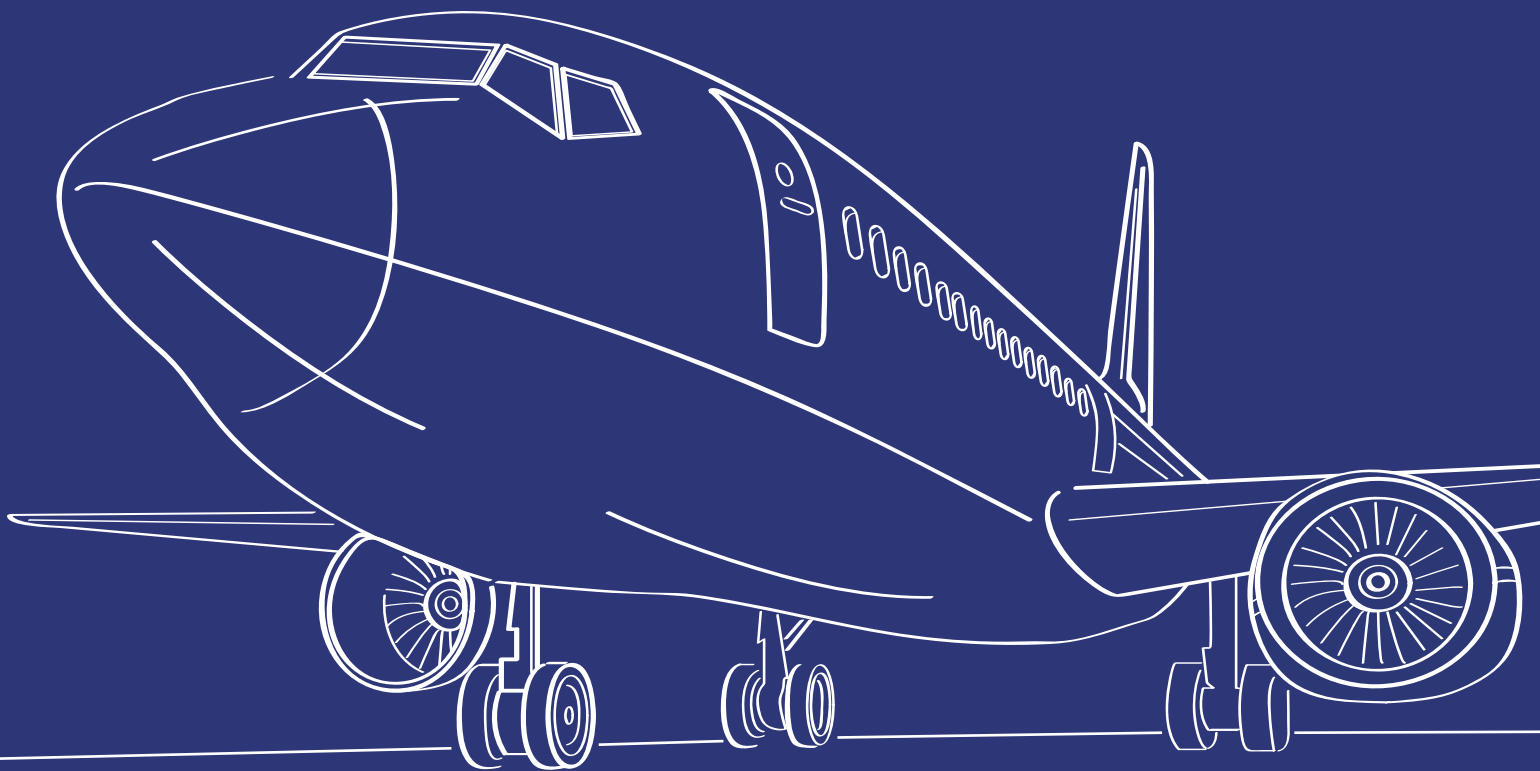


ARCHITECTURAL STUDENT DESIGN COMPETITION 2012

For further information visit:
tatasteelconstruction.com/sdc



TATA STEEL



Foreword

The Tata Steel / BCSA Architectural Student Design Competition has been organised by The Steel Construction Institute, with the sponsorship of Tata Steel / BCSA, and is one of three popular Undergraduate Prize Award Competitions. The other competitions cover the engineering design of steel bridges and buildings.

The main purpose of this competition is to give architectural students a creative vehicle for learning about the use of steel in buildings. The brief has been formulated to encourage the entrants to realise the full structural, economic and aesthetic advantages offered by the use of both open and tubular structural steelwork profiles.

The competition is open to students of architecture in the UK. The challenge is to design a long span airport building.

The award will be judged by a panel of distinguished architects and industry figures.

1 THE BRIEF

1.1 INTRODUCTION

Metal long spanning structures have been in existence since the 15th century when the Tibetans and Chinese built iron chain bridges to cross Himalayan rivers. As gravity helps the suspension bridge to function (and easier to build) the majority of long spanning structures were all suspension type bridges until, with the invention of cast iron technology in the 18th century, the ability to construct more complex arched bridge forms – and later buildings to cover space, rather than traverse an obstacle – became a reality.

The early manifestations in buildings were in France and Britain, where, fed by the burgeoning industrial revolution, industry and commerce were jointly changing the face of the land. New railways and factories were built, the one to facilitate the transport of the other's products, and a new architectural and engineering paradigm was spawned in these new building types. Of the notable examples of long span structures that survive it's not surprising that a significant number are railway stations.

With the great exhibition of 1851 in London the use of iron arguably reached its Victorian high watermark with Joseph Paxton's design for the Crystal Palace utilising pre-fabricated elements of iron in both cast and wrought form and, as the name implies, vast areas of glass. 1886 saw the construction in Paris of the *Galerie des machines* by Dutert and Contamin for the World's Fair, for which the Eiffel Tower was also built. Both of these structures used wrought iron; the *Galerie des machines* was to have used the new material of steel but, as this was still very expensive, utilised cheaper wrought iron for budgetary reasons. At 111 meters, the Galerie spanned the longest interior space in the world at the time, using a system of hinged arches.

Further advances in technology and the invention of a process that could control the production of steel with consistent and predicable results (primarily Sir Henry Bessemer's converter process) allowed longer spans still. One of the first steel buildings was the new slaughterhouse *La Halle des abbatoirs de la Mouche* for the city of Lyons, designed by Tony Garnier and completed in 1914, which has trusses spanning 80 metres. It is now used as an entertainments venue and convention centre.

This ability to construct large, column free spaces (not to mention tall buildings) has accompanied an age where the artefacts produced have also grown in size. The largest building in the world (floor area) is Boeing's Everett facility, where the 747 airliner is constructed. (The 747 has a wingspan of 65 metres.) Unsurprisingly EADS's Airbus A380 facility in Toulouse runs it a close second.

Developments in long span continued – Frei Otto's cable-net structures for the 1972 Munich Olympics, enabled by steel cables in tension, and structures such as the millennium dome, which use cables and fabric in tension, allowed architects to use lightweight materials to cover large spaces.

If any building type might be used to define an age it would surely be the airport. Powered flight, a product of the 20th century, required its own built language, and the requirements of the modern airport differ little (with some significant advances in the size of the aircraft) from the early days. Some might

suggest there has been a regression in the passenger experience since these early days.

Recent developments in steel, in particular high-strength grades and innovative engineering solutions, have enabled buildings such as Heathrow's Terminal 5 with a span of 176 metres. Designed by the Richard Rogers Partnership, Terminal 5 is the largest freestanding building in the UK.

1.2 THE CHALLENGE

Design an inspirational long span building to house a new medium-sized international airport terminal.

The site for this will be the old RAF airfield at Lydd in Kent (Map reference TR 062 214 GB). Lydd was controversially one of the sites earmarked for a new London airport; it was regarded as perfect for large passenger jets because of its long runway which had been constructed for the (cancelled) TSR2 bomber.

You may choose another site if you wish. The brief will remain the same.

Your designs will need to deal with the basic requirements of air travel. A schedule of accommodation requirements is provided, however the design should include examples of single span large volume space handled in an architectural manner which should contribute to the overall experience of the building. For the purposes of this brief long span shall be defined as spans in excess of 50 metres.

Your designs should address the 'airport experience' from arrival to departure. Primarily you should seek to address this one question; if a building can contribute to making your journey worse, then surely it can also make it better?

1.3 AIRPORT TERMINAL BUILDING - SCHEDULE OF ACCOMMODATION

The following minimum facilities should be provided for in the design. The brief may be extended if appropriate.

a) Departures - Landside

Transport connections/road/rail

Departures Hall

Baggage Check/Check-in desks (50 desks)

Retail and catering

WCs and cloakroom facilities

Security control

Immigration and customs control (UK Border Agency, HM Revenue and Customs)

b) Departures - Airside

Departure lounge/retail/catering

Aircraft gates (20)

c) Arrivals - Airside

Segregated access to;

Immigration control

Transfer desk(s)

Retail and catering

WC and cloakroom facilities

Baggage reclaim hall (x 4 carousels)

Customs control

d) Arrivals - Landside

Arrivals Hall

Retail/catering

WCs and cloakroom facilities

Transport connections

Office and administration facilities with landside/airside access.

2 SUBMISSIONS

2.1 SUBMISSION CONTENT

The submission will be required on two A1 sheets. These may be made up of smaller sheets (minimum A3) if required, as long as the submission explains clearly how the sheets are to be assembled.

A separate report is not required. Any text should be incorporated on the submission sheets.

Drawings, including photographs if required, should be mounted on lightweight board. Perspex or glass should not be used.

The submission should address:

- Plans, sections and elevations at a suitable scale.
- Landscaping details, items of street furniture, etc. should be shown in an appropriate form, if required.
- Internal and external perspectives.

Models, although not acceptable in themselves as part of the submission material for the judging process, may be photographed.

a) Other submission requirements

Only the submission content above will be judged. If any additional supporting material is prepared, (such as fly-through, videos, etc.) these may be submitted in a separate envelope marked clearly with the reference number. This material may be used by the organisers for presentation purposes.

3 THE AWARDS

3.1 NATIONAL LEVEL

The winners of the competition will receive certificates and prizes up to a total of £2,500. The exact division of the prize money will be decided by the Judges and will depend upon the standard of the submissions received. Generally, the judging panel will seek to award up to three prizes. The winners' universities will also receive certificates.

3.2 PRESENTATION

The prizes will be presented at the Structural Steel Design Awards, to be held in early July 2012 (date and location to be advised). The winners of the first, second and third prizes, with their tutors, will be invited to the ceremony.

3.3 ELIGIBILITY

Individual entries, or team entries from a small group of students, will be accepted. Although the competition is aimed at final year students, entries from students at any other appropriate stages will also be considered at the discretion of the course tutors.

Assistance is available through the competitions website, <http://discus.steel-sci.org>

How to Enter

1. To enter the competition the academic tutor(s) at your university should firstly complete the enclosed **Notice of Intent** form and return it to the competition organiser at the address given below by **Friday 20 January 2012**. This will enable the SCI to provide supplementary information should this be necessary.
2. Any questions that competitors wish to ask should be submitted via the Undergraduate Prize Awards discussions area of the SCI's web site at <http://discus.steel-sci.org> All competitors should review the questions and responses posted to the site; automatic notification can be set up via the user profile.
3. The completed **Entry Form and Authorship Declaration** (contained in this document) should reach the competition organiser at the address given below by **Friday 4 May 2012**. On receipt of this, the SCI will issue each competitor with an entry reference number, which should be marked clearly on all items forming the design entry and on the outside of the package in which the entry is submitted. **No other form of identification or distinguishing mark should appear on any part of the submission.**
4. A successful competitor must be able to satisfy the judges that he or she is the bona fide author of the design that he or she has submitted.
5. The organisers cannot be held responsible for loss or damage to submissions which may occur either in transit or during exhibition, storage or packing.
6. Design entries must be received by **4.00 pm on Friday 8 June 2012**.
7. The designs awarded first, second and third places will be exhibited at the Structural Steel Design Awards, to be held in July 2012 (date and location to be confirmed).
8. Any entry shall be excluded from the competition if:
 - i. the entry is received after the competition closing date, **4.00 pm on Friday 8 June 2012**;
 - ii. the competitor shall in any way disclose his or her identity or that of their university;
 - iii. the competitor attempts to influence either directly or indirectly the decision of the judges;
 - iv. in the opinion of the judges, the design does not substantially meet the requirements of the brief.

Only one copy of each competitor's design is to be sent in a single package, carriage paid to:

The Competition Organiser
Tata Steel / BCSA Architectural Student Design Competition
The Steel Construction Institute
Silwood Park
Ascot
Berkshire
SL5 7QN

Tel: 01344 636525
Fax: 01344 636570



Notice of Intent

(to be submitted by Friday 20 January 2012)

TATA STEEL / BCSA Architectural student competition 2011/2012

If you wish to enter the competition, the academic tutor(s) at your university should complete this form and return it to the address given below in a sealed envelope.

Name of academic tutor(s)

Email(s)

Telephone No.

University

Address

We expect approximately individual entries, and/or
..... team entries

to take part in the competition

Signature(s)

Please return to:

The Competition Organiser
Tata Steel / BCSA Architectural Student Design Competition
The Steel Construction Institute
Silwood Park
Ascot
Berkshire
SL5 7QN

Tel: 01344 636525
Fax: 01344 636570



Entry Form and Authorship Declaration

(to be submitted by Friday 4 May 2012)

TATA STEEL / BCSA Architectural student competition 2011/2012

BLOCK CAPITALS PLEASE

University

Name of academic tutor(s)

Email address(es)

The following student(s) will be submitting an entry to the 2011/2012 competition.

Student's name Year

Tel. no.

email

Home address

.....

Student's name Year

Tel. no.

email

Home address

.....

Student's name Year

Tel. no.

email

Home address

.....

Student's name Year

Tel. no.

email

Home address

.....

1. *I/We have complied with and accepted the regulations and conditions which apply to this competition.
2. *I/We agree to accept the decision of the judges as final, and agree to permit free publication and exhibition of *my/our design.
3. *I/We declare that the design is *my/our work and that the drawings have been prepared by *myself/ourselves.

Signature, student(s) Date

Signature, academic tutor(s) Date

This form is to be completed by the competitor(s) and the academic tutor(s), placed in a sealed envelope and returned to the address given below. **An entry reference number will then be given, which should be marked clearly on all items forming the design entry and on the outside of the package in which the entry is submitted.**

Please return to: The Competition Organiser, Tata Steel / BCSA
 Architectural Student Design Competition,
 The Steel Construction Institute
 Silwood Park, Ascot, Berkshire, SL5 7QN
 Tel: 01344 636525
 Fax: 01344 636570



Steel Knowledge

The Steel Construction Institute