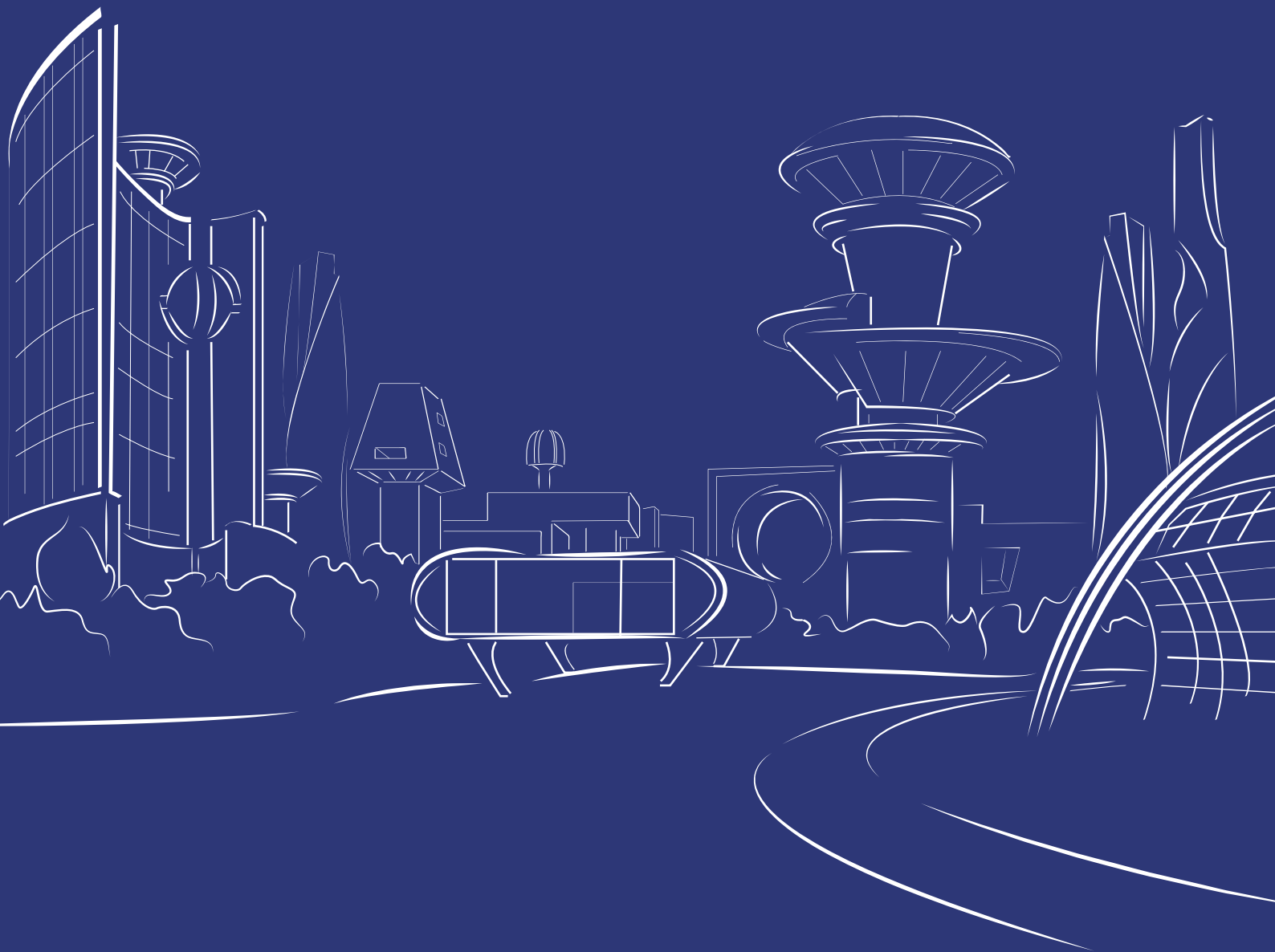


# STUDENT DESIGN COMPETITION - ARCHITECTURE 2014

For further information visit:

[tatasteelconstruction.com/sdc](http://tatasteelconstruction.com/sdc)



**TATA STEEL**



# Foreword

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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 prepare a concept design for a vertical city of the future.

The award will be judged by:

Mr C Nash      Nash Architecture

Mr D Bonnett    David Bonnett Associates

Mr S Piercy     Piercy & Company

Mr T Lucas      Price & Myers

Mr M Bean      Tata Steel

Tata Steel / BCSA and The Steel Construction Institute would like to express their gratitude for the continuing support of all those concerned.

# 1 THE BRIEF

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## 1.1 INTRODUCTION: NEW VERTICAL CITY

In the 1995 novel 'The Diamond Age'<sup>[1]</sup>, the science fiction author Neal Stevenson imagined a near future where history and technology have developed along a trajectory radically different from that which we take for granted now. Society is dominated by nanotechnology and anything that can be manufactured, including food, is provided by 'matter compilers'; vast machines which assemble individual molecules into finished artefacts. Society is highly factionalised into religious and political groups which have taken the place of geographical allegiances (i.e. countries and regions) as the primary identifier of an individual's status and place in that society. So perhaps this imagined future is not such a different world after all.

As Stevenson depicted in 'The Diamond Age' it could be argued that we are on the cusp of a similar revolution in our ability to manufacture items in a variety of materials, moving from a 'subtractive' idiom, i.e. the act of removing material to arrive at a finished shape to one of 'additive manufacture' where items are built up in by a process of deposition, curing and melting - or combinations of these techniques.

Good science fiction writing, it has been said, is a reflection of current concerns and trends, placed in an alternative place, time or universe in order to explore with more freedom those same concerns and trends.

It is possible to imagine that, in the future, the manufacture of commodities in all sectors of commerce and all areas of life could be carried out in multi-material print factories, and their attendant assembly plants. Such a facility could switch from making a car in one moment to producing the components for a building the next.

Some academics are already considering these scenarios;

In 'Cradle to Cradle, Remaking the Way We Make Things'<sup>[2]</sup> by architect William McDonough and chemist Michael Braungart, the idea of 'technical nutrients' is suggested. A technical nutrient is material which, like a biological nutrient, stays within a closed-loop system. This closed loop could also include the use phase of the product lifecycle.

Architect Skylar Tibbitts<sup>[3]</sup>, a teacher at MIT, postulates that buildings will eventually build themselves, working with advanced memetic materials and 3D printing techniques the imagined near-future might consist of self-deployable structures, large and infinitely more complex, but conceptually the construction equivalent of the pop-up festival tent.

The up-scaling of 3D printing technology; material feeds of technical nutrients taken from re-use streams and new materials as they are invented or produced, could offer architects and designers near total control over the form and performance of their designs.

Couple this with a hermetic closed-loop (cradle to cradle) approach to manufacturing and a powerful new paradigm materialises. An aesthetic formed around a 'digital craft'. You are asked to design in this new paradigm.

## 1.2 THE CHALLENGE

The architectural brief for this year is a **conceptual** one that asks you to take the ideas and possibilities suggested by such an industrial future and to extrapolate them into the built environment.

The design task is for a **very tall skyscraper**. A city centre, mixed-use building that will contain elements of commercial office and shopping spaces, a hotel, public spaces and leisure facilities and residential provision: In short; a vertical city. The building should be **steel intensive, energy self-sufficient**, (possibly entirely self-sufficient) and a beautiful expression and celebration of technology and the use of steel both as a **construction material** and **technology enabler**.

You may choose to concentrate on the building as a whole, or on one aspect of the accommodation – residential or commercial for instance, in which case the context of the in-depth study must be presented so that the overall design concept can be understood and appreciated.

You may choose **any site** providing it meets the minimum criteria of being situated within an already established urban context.

The energy strategy for your design should be explained, but the judges do not expect a fully worked solution.

The construction **process** must be explained – but can also be conceptual.

Special care should be taken with the public realm where the building meets the ground, transport and pedestrian links should be strategically catered for. It goes without saying that your designs should be **fully accessible** for all ages and abilities.

### 1.3 REFERENCES

- 1 The Diamond Age  
Neal Stephenson  
Penguin, Re-issued 2011  
(see also 'Snow Crash' by the same author)
- 2 Cradle to Cradle, Remaking the Way We Make Things  
William McDonough and Michael Braungart  
Vintage, 2009
- 3 TED Lectures  
Skylar Tibbits on "4D printing" and self-assembly  
(may be viewed at [www.ted.com](http://www.ted.com))

See <http://www.eos.info/en> for details of Direct Metal Laser Sintering printers by EOS Corporation

### 1.4 ADDITIONAL RESOURCES

Additional resources are available at:

[www.steelconstruction.info](http://www.steelconstruction.info)

[www.tatasteelconstruction.com](http://www.tatasteelconstruction.com)

[www.steelbiz.org](http://www.steelbiz.org)

# 2 SUBMISSIONS

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## 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.

In addition to the two A1 sheets mentioned above, entries must include a JPEG image of the structure, on a CD, which the competition sponsors may freely use in any way whatsoever.

# 3 THE AWARDS

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## 3.1 NATIONAL AWARDS

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 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.

No family member of staff from the sponsoring body or the judges, nor any partner, associate or employee from their companies or practices, shall be eligible to enter the competition or to assist a competitor. 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 24 January 2014**. 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 9 May 2014**. 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 Tuesday 17 June 2014**.
7. The designs awarded first, second and third places will be announced in early July 2014 (date 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 Tuesday 17 June 2014**;
  - 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 24 January 2014**)

## TATA STEEL / BCSA Architectural student competition 2013/2014

*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 .....

.....

.....

.....

This year, we expect approximately ..... students will participate in the competition or use this brief as a design exercise.

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 9 May 2014)

## TATA STEEL / BCSA Architectural student competition 2013/2014

### 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