

Chairman's Review



I would like to start by wishing all our members a very happy and industrious New Year.

The Republic of Ireland Branch of the Institution of Structural Engineers Annual Dinner will be held on 4th February 2011 at Thomas Priory Hall, Bewleys Hotel, Ballsbridge. This is a most fitting venue, as it is believed that many of the meetings in the very early days of the Republic of Ireland Branch of the Institution of Structural Engineers took place here. The new President of the Institution of Structural Engineers, Professor Roger Plank, shall be in attendance, and our special guest of honour is Mr Tom Parlon, Chief Executive of the Construction Industry Federation. We look forward to seeing all our members present on that night.

We confirm that the tutorial workshop for EuroCode 2 took place over two days in October of last year, and was very well attended. The possibility of organising future similar events is currently being reviewed.

The lecture on the Criminal Courts of Justice Building, presented by PJ Hegarty & Sons and DBFL Consulting Engineers, was an excellent presentation of a very interesting structure and

construction process. The lecture on the Aviva Stadium given by Project Management Group and Sisk was also most engaging. It followed our Annual General Meeting in Bolton Street Institute of Technology.

I would like to thank all who participated in the Branch's Graduate Evening in November 2010, particularly those who spoke on the night and gave excellent briefings of their achievements to date.

As noted in our previous newsletter of October 2010, we propose to hold a seminar on Sustainability with reference to the Structural Engineer before the summer break.

Strong emphasis has been given at the Institution of Structural Engineers Council meetings to the effect that structural engineers should be leaders in sustainable design and construction, as they are primarily responsible for the specification and design of the fabric of a building, and therefore are ultimately responsible for sustainability. Sustainability is now a topic which is being presented as part of third-level studies in engineering and, like Health & Safety, has become an integral part of the design process. To this end, the seminar on Sustainability will be followed later in the year by a forum on Health & Safety, highlighting the responsibilities that exist in current legislation for the structural design engineer.

The Part 3 examination for Chartered Membership is taking place in April, as usual. I would like to wish all of the candidates the best of success in their preparation of and participation in the exam. Courses for the exam are being run and spaces are still available. Please refer to the website of the Republic of Ireland Branch for further details.

Once again, I would like to reiterate that the Republic of Ireland Branch is dedicated to providing its members with opportunities to improve their skill-set by providing seminars, forums and lectures throughout the coming year. These enhanced skills will help our members to take advantage of the opportunities in the future when the economic turn-around happens.

We welcome any comments or suggestions from members at any time. Contact details are listed on our website www.istructe.ie

I would also refer members to the headquarters website www.istructe.org in particular with respect to the webinars that are available for viewing, thereby giving members access to Continuing Professional Development in many areas.

Pearse Sutton

Republic of Ireland Branch Committee Members 2011:

- Pearse Sutton (Chair)
- Colin Caprani
- Jonathon Billings
- Paddy Butler
- Martin Mannion
- John Dunny
- Sadhbh Ní Hógáin
- Gavin Hughes
- Victoria Janssens
- Joe Kindregan
- Henry Mullen
- Joe Ryan
- Paul Sexton
- Don Twomey
- Dan Moran

Chartered Membership – Exam Timetable



The importance of Time Management is emphasised in the advice material published in relation to sitting the Part 3 exam. However, the fundamental fact that there is actually insufficient time to answer all the sections comfortably is missed. This became clear to me when doing a full day trial run on a past paper.

The solution, therefore, is to develop a timetable that distributes the available time between the various sections in proportion to the workload involved and to stick religiously to it in the exam (not necessarily to the extent of stopping mid-sentence, but the next best thing). Inevitably this means being prepared for a feeling of unease when leaving a section of the question. However, the rule should be to leave some space in the answer book (for any spare time at the end), don't panic, and move on to the next section.

In relation to the development of a timetable, the best distribution of time would probably vary between questions and the particular strengths and weaknesses of individual candidates. It is not possible to predict the particular variations in the question that will be faced, so the only way of developing a meaningful timetable is on the basis of trial runs. Even though Parts 1 and 2 of the exam

carry the same marks, I found that the mechanics of preparing calculations and drawings required more time proportionately than the other sections. Therefore, for me, calculations had to start before lunch. Table 1 below shows the timetable I followed.

As I recall, in the exam I did not manage to complete the full number of calculations or detailed drawings. Four drawings might be a more realistic target.

Another possible pitfall for candidates is an initial reticence about putting pen (or pencil) to paper in the first instance. Nervousness and timidity could create time problems from the outset with the inevitable associated panic. Some method of kick-starting oneself into writing or drawing at the appropriate time is essential. This might involve, for instance, an initial sketch to tease out or reflect the brief.

Programming in some spare time at the end is extremely worthwhile. It allows one to go back on the weakest section of the paper in respect of which some further inspiration may have been obtained during the day. Also, by the end of the day any early reluctance to put thoughts on paper will have well passed. In my own case I also recall picking up some time on the "method statement" (no hesitancy in writing my ideas by late afternoon!), and I spent the spare time adding another sketch to one of my scheme options as well as adding a few coloured arrows and dotted lines to represent load paths.

Table 1 – Exam Timetable

9:15 - 9:30	Initial read through paper – narrow down to two possible questions
9:30 - 9:45	Read two possible questions carefully and choose one
9:45 - 10:00	Thinking time
10:00 - 10:45	Sketches for scheme 1
10:45 - 11:30	Sketches for scheme 2
11:30 - 11:45	Written description of scheme 1
11:45 - 12:00	Written description of scheme 2
12:00 - 12:15	Recommendations
12:15 - 12:45	Letter
12:45 - 1:00	Calculations (list codes, list say 5 principal elements, list floor and wind loads)
1:30 - 2:30	Calculations (5 elements @ 12 minutes each)
2:30 - 4:00	Drawings (5 drawings @ 18 minutes each)
4:00 - 4:30	Method statement
4:30 - 4:45	Construction programme
4:45 - 5:00	Go back on weakest section

John Morrissey

Magennis Place Development - Pearse Street



A key feature of the project was the retention and refurbishment of the listed Georgian houses, including the underpinning and lowering of the existing basement beneath these buildings. A system of tie-rods and pins was installed to provide structural integrity between the facades and internal floor plates and cross-walls. Exposed concrete forms an integral part of the aesthetic of the Henry J Lyons building, with an emphasis placed on achieving a high-quality finish by careful design of joint locations, concrete mix design and the efforts of the P. Elliott construction team on site.

A desire to provide column-free lecture hall facilities within the basement levels of the Chartered Accountants building required the use of 15m spans for the suspended levels. This, along with constraints on the available floor-to-floor heights, dictated the use of Westock cellular beam construction. This facilitated the integration of all building services and structure within the available zones. Detailed vibration analysis was undertaken to ensure that the long-span beams, in combination with transfer beams at level 1, did not create uncomfortable working conditions for the high-quality office spaces on the upper levels.

Sustainability was an integral part of the design of all aspects of the building, including the application of SuDS principles in the drainage, the provision of GGBS cement replacements in all concrete mix designs, and the use of the concrete thermal mass and natural ventilation in the building environmental controls to achieve BREEAM rating.

Architect – Henry J Lyons Architects

Civil/Structural Engineer – Arup

M&E Engineer – Varming

Main Contractor – P. Elliott Construction Ltd

This project involved the re-development of an existing Dublin city centre site, located on the corner of Pearse Street and Magennis Place. The overall development was completed in 2009. It was undertaken as a joint venture between Chartered Accountants Ireland and Magennis Properties. It included the delivery of new headquarters buildings for Chartered Accountants Ireland and for Henry J Lyons Architects, along with a speculative office building to the rear of the site.

The construction works included the demolition of an existing office building and industrial facility, the retention and refurbishment of existing listed Georgian houses and the construction

of 10,900m² of buildings varying in height from three to five storeys over a double basement. Basement car-parking is provided along with plant rooms at the lowest basement level, while office/studio accommodation and a lecture hall occupy the upper basement level. The upper suspended levels are used for office space, meeting rooms and ancillary spaces.

The superstructure frames were constructed off a raft slab at basement level, which is approximately 12m below street level. Given the tight constraints around the site, the construction of the basement levels presented significant challenges in terms of excavation of materials, construction below ground water level and the retention of existing listed buildings adjacent to the secant pile wall. A comprehensive system of vibration- and movement-monitoring was established during the construction phase to check the effects of the construction on the surrounding buildings.

Dan Moran, Arup

Mandatory Reporting of Continuing Professional Development



Continuing Professional Development (CPD) can be accrued in many different ways, which can include, but is not restricted to:

- preparation and delivery of lectures
- project-specific research
- preparation of articles and refereed papers
- reading of journals or technical papers
- viewing appropriate TV programmes
- post-graduate study
- IT development skills

Every year, during November and December, the Institution sends all members an annual CPD return form.

Members need to list all CPD activities for the year, and indicate a plan of future objectives. You can attach

additional information or include record sheets from another organisation or employer.

Send the completed form back to us by 31st March of the following year. It will then be assessed by the Professional Development Panel. Members submitting a successfully completed form will have a "CPD" annotation placed against their names in the Members Directory.

Members who do not submit sufficient information for the Professional Development Panel are contacted and asked to submit additional information.

The Institution is flexible with regard to how information is submitted. The most important consideration is that you recognise your CPD activities and advise us accordingly. The annual return is a confidential account of one year's CPD activities and should highlight professional development beyond your daily work responsibilities.

The Annual Declaration will not become mandatory until 2013. The first audit will take place in

Key facts:

At least 30 hours CPD per year covering:

- Work-based learning;
- Self-directed study;
- Courses, events, seminars;
- Horizon-broadening activities.

APPLIES TO practising engineers in the following categories:

- Technician
- Associate-Member
- Chartered
- Associate
- Fellow

March/April 2013. Randomly selected members will be asked to submit records for the previous three years.

If an individual does not submit their Annual Declaration or Activity Record when requested they will be asked to submit a forward plan detailing their proposals for future CPD. If a member fails to submit this plan they will be subject to an administrative charge. If they do not comply, they could be expelled from the Institution.

For experienced engineers with aspirations to become FIStructE, proof of at least 5 years CPD is a requirement, which is another good reason for making consistent annual CPD returns.

Calendar of Events

2011

February

3rd - President's Address

4th - Annual Dinner

7th - CM Exam Prep Course

14th - CM Exam Prep Course

21st - CM Exam Prep Course

28th - CM Exam Prep Course

March

2nd - Committee Meeting

7th - CM Exam Prep Course

8th - James Daly Memorial Lecture - T2 Dublin Airport

April

6th - Committee Meeting

19th - Forum – Masonry Fixings

May

4th - Committee Meeting

18th - Seminar - Sustainability for Structural Engineers

CALL FOR SUBMISSIONS TO IStructE JOURNAL

Technical submissions to the Journal can be made under these headings:

- Features - technical/guidance notes
- General features on projects, aspects of engineering, architecture, legal matters etc.
- Viewpoints - personal views on aspects of design, construction, etc.

Other correspondence / notification to the Journal can be sent as follows:

- Letters to Verulam - new subjects, or discussion of previous topics
- Diary of meetings & events (first issue each month)
- Products & services
- Advertising

For submissions, contact: Ian Farmer, T: +44 20 7235 4535

Student Prize: Event-Driven Structural Analysis

The aim of this project was to develop a tool for structural analysis that produces "real-time". The user can build structures and add loads using quick, intuitive mouse actions. Once the program deems the structure to be static, it is analysed using the stiffness method. Subsequently, as changes are made to the structure or loading the structure is re-analysed. This tool responds instantaneously to design inputs.

The reason for developing this software is that it allows the user greater scope to develop an intuitive understanding of structural behaviour. By providing instantaneous feedback the project mimics both the real world and the natural process by which we learn, and can instil some of the finer concepts of how a structure responds to loading.

Martin Walsh & Alex Humphreys (UCC)