

History of the Institution of Structural Engineers

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Formation

The Institution of Structural Engineers was founded as The Concrete Institute in 1908. The first meeting of Council took place in the Smoking Room at the Ritz Hotel on 21st July 1908. Ironically, the recently completed Ritz was one of the first *steel* frame buildings in London.

The driving force behind the creation of the Institute was Edwin O Sachs (1870-1919)¹, who in 1897 had established the British Fire Prevention Committee. Sachs, an architect with a particular interest in theatre design and fireproof construction, was also the founder of the influential and respected journal *Concrete and Constructional Engineering* (1906-1966).

At the time the Hennebique and Coignet systems were coming into widespread use in the United Kingdom and were leading to a plethora of new proprietary systems and patentees². Owners of these specialist systems, notably Francois Hennebique and his agent in the UK, Louis Gustave Mouchel, were extremely guarded and protective towards the use of their products and contractors were only able to build to these systems under restrictive and secretive licensing arrangements. Architects felt they were subject to the monopoly of the system owners and believed there was a need for a representative body to contribute towards the provision of design guidance for those wishing to work with the new material which was being largely overlooked by the existing engineering institutions and to influence the London Building Acts which made no provision for reinforced concrete. Under Sachs' leadership, The Concrete Institute was founded with a membership consisting of architects, engineers, surveyors, chemists and manufacturers. On 22nd February 1909, the Institute was incorporated under The Companies Act (1862-1907) and much of the time and energy of the new body was spent on ensuring reinforced concrete was accepted by the London County Council Regulations and the London Building Acts.

The diversity of the Institute's initial membership was however also a hindrance to its development and influence. In 1911, Sir Henry Tanner in his presidential address made the first proposal for the Institute to broaden its scope and become the Institution of Structural Engineers but through its editorial *Concrete and Constructional Engineering* responded by stating it regarded the term "structural engineer" as one which described steel contractors and failed civil engineers. In 1912, the scope of the Institute *was* widened to embrace all areas of structural engineering, particularly steel frames. "Structural engineering" was defined as "that branch of engineering which deals with the scientific design, the construction and erection of structures of all kinds of material". "Structures" were defined as "those constructions which are subject principally to the laws of statics as opposed to those which are subject to the laws of dynamics and kinetics, such as engines and machines". The Institute's title was extended to *The Concrete Institute, an Institution for Engineers, Architects, etc.*

Ten years later, with the use of steel frames becoming increasingly widespread it was finally agreed to extend the scope of the Institute and on 28th September 1922, the name was changed to the *Institution of Structural Engineers* to reflect this.

Royal Charter

Such was the Institution's standing that in 1926 the London County Council (General Powers) Act named the Institution as one of four organisations to be consulted regarding changes to its Regulations under London Building Acts. However, the first petition for Royal Charter in 1927 failed, due to a combination of financial concerns and stricter membership admission and examination requirements. A second petition was successful though and a Royal Charter was granted on 4th May 1934. It is interesting to note that the Institution of Civil Engineers opposed the petition on both occasions.

A Supplemental Charter was granted on 2 November 1965.

Headquarters building

The Concrete Institute's original offices were at 1 Waterloo Place on Pall Mall. Sachs' offices were at number 7 and in 1910 the Institute moved to number 8 as subtenants of the British Fire Prevention Committee. At the time, meetings and papers were presented at Royal United Services Institution on Whitehall.

In 1911, larger premises were found at Denison House, 296 Vauxhall Bridge Road. The Institute remained there until 1923 when, as the Institution of Structural Engineers, it moved to 231-5 Abbey House, 2-8 Victoria Street.

The connection with Upper Belgrave Street began with a move to number 10 in 1926 before moving to the current premises, number 11, in 1938. The Royal Institution of Naval Architects has occupied number 10 ever since.

There are four named rooms at 11 Upper Belgrave Street - the Adams and Baker Rooms on the ground Floor, the Plymouth Room on the first floor and the Waters and Hardy Cross Rooms on the 4th Floor. Professors Henry Adams and J F Baker were the first two recipients of the Institution's Gold Medal, the [Earl of Plymouth](#) was the first President, [Sir Arnold Waters](#) is the only person to have held the post of President twice whilst [Hardy Cross](#) was the developer of the moment distribution method.

Presidents

The first of the Institutions [Presidents](#), elected in 1908, was the Rt Hon Earl of Plymouth, who had been the 1st Commissioner of Works from 1902-5. His appointment would have added considerable prestige to the new Institute. His successor in 1910 was Sir Henry Tanner, Chief Architect to HM Office of Works from 1889 to 1913, who had recently designed the extensions to the General Post Office building at St Martin's-le-Grand in London, the reinforced concrete work for which had been designed on the Hennebique system.

Major A H S Walters is the only President to have held the post twice, in 1934 and 1943, Captain Murray B Buxton was killed in air raid in 1940 and the oldest surviving President is Dr Bill Eastwood (1976-77). The current President Sarah Buck is the 88th President and the first woman to hold the post.

Secretaries and Chief Executives

Drawn primarily from the original minutes as well as from published histories, John Dougill's unpublished account of [The role and influence of the Secretaries of the Institution of Structural Engineers, 1908-1961](#) provides a fascinating insight into the inner workings of the Institution and the personalities involved, from Sachs through to Major Maitland who ran the Institution for over 30 years.

The Concrete Institute was run initially by an Executive, of which Edwin O Sachs was the Chairman, and honorary positions. Such was Sachs' influence that during a period of his ill health and consequent inactivity the Institute effectively ceased to function. It was realised that the Institute could not be run on an honorary post basis, for example, the Honorary Secretary Arthur E Collins was the City Engineer of Norwich, and a decision was made to appoint a permanent Secretary. Herbert Kempton Dyson was chosen for the post in May 1910 and the Executive was ceased.

Captain Maurice George Kiddy was the first Secretary of the newly named Institution of Structural Engineers. Kiddy gained a form of notoriety when he was exposed as being involved in financial irregularities involving the Institution's finances and his services were dispensed with. A consequence of this was that the name of Major James Petrie, who had been the President at the time of Kiddy's misdemeanours, was wiped from the list of past Presidents until his name was reinstated to the list in 2007.

Chairman of the Executive

1908 - 1910 Edwin Sachs

Secretary

1910 - 1917 Herbert Kempton Dyson

1917 - 1917 Harrison Townsed

1917 - 1921 Percy L Marks

1921 - 1929 Capt Maurice G Kiddy

1929 - 1930 Herbert J Beaufoy-Lane (Acting)

1930 - 1961 Major Reginald F Maitland

1961 - 1982 Cyril D Morgan

1982 - 1994 Derek J Clark

Chief Executive & Secretary

1994 - 1999 Dr John W Dougill

Chief Executive

1999 - 2008 Dr Keith J Eaton

2008 - Martin Powell

Branches

As the Concrete Institute expanded into the Institution of Structural Engineers in 1922, there was a demand for more regional activity and involvement, culminating in the formation of the first branch, the Lancashire and Cheshire Branch. Other branches soon followed, the next being Western Counties (1923) and Yorkshire and Midland Counties (both 1924).

In 1932, the first overseas representatives were appointed in Australia, New Zealand, South Africa and India and in 1937, the first overseas branch (now a Division) was founded in South Africa, originally as the Transvaal Branch.

The Institution now has eighteen Branches and three Sections across Great Britain and Ireland and eleven overseas Divisions and Groups.

Publications

The Institution has a long history of providing technical and professional guidance both to its members and the broader public through its own journal and publications.

The first journal, *Concrete Institute Transactions and Notes* was published in 1909. The name was changed to the *Journal of the Concrete Institute* in 1922 and then to the *Journal of the Institution of Structural Engineers* in 1923. From 1924 the journal has been entitled *The Structural Engineer*.

The first technical publications appeared in 1918. These were *Mnemonic notation*, *Loads on highway bridges* and *Recommendations to clerks of works and foremen concerning the execution of reinforced concrete works*. A *standard specification for reinforced concrete work* followed in 1920.

The Institution's guidance on the use of steel and reinforced concrete, which continues to be updated today, dates back to 1927 and 1928 respectively. Prior to this, the Concrete Institute had been represented on the RIBA Joint Committee on Reinforced Concrete. The 2nd *Report* of this Committee, published in 1911, became the standard guide for design using that material.

In 1926 the Institution published *Regulations for professional practice and scale of charges* followed in 1927 by *Forms of contract for the engagement of the consulting Engineer by the client*. These continued to be revised for several years but the Institution no longer publishes in these areas.

A full publications list appears in the *Yearbook*, which itself was first published in 1923. A list of current publications available for sale can be viewed on the [Institutions website](#).

Awards

In 1912, the first Concrete Institute award was a Bronze Medal for the best paper in the journal, presented to Beresford Pite for his paper on [The Aesthetic treatment of concrete](#). An account of the early history of the Institution's awards is given by Bullen³.

The highest award the Institution makes is the [Gold Medal](#). This was first awarded to Professor Henry Adams in 1922 and the second one was not awarded until 1953 when Professor J F Baker was the recipient. Since 1957 the Gold Medal has been awarded annually or every other year.

In 1929, the first Certificate of Commendation was awarded to A.C. (later Sir Alfred) Bossom for paper on [The Problem of the skyscraper](#). In 1973, this award was re-named the Lewis Kent Award and was first presented to William Hunter Rose for his services to the Institution.

In 1958, the [Maitland Lecture](#) was established to commemorate the Institution's golden jubilee and was named after its long-standing secretary, Major Maitland. Oleg Alexander Kerensky was the first recipient of the Maitland Medal and its first lecturer. The lecture continues to be given every two years.

In 2006, Professor Arthur Bolton became the first and only member to be awarded the Lifetime Achievement Award for outstanding contribution to structural engineering.

A full list of the current awards is listed in the *Yearbook*.

Membership

The Concrete Institute was established in 1908 with one hundred founder members. Membership rose quickly and by 1910 when the first list of members was published the total had risen to 850. By 1927, membership was in excess of 3000 and there was some concern that the comparative ease of admission had contributed to the unsuccessful Royal Charter petition and more stringent entry requirements were introduced, resulting in a slow down of growth but an increase in standing and contributing to the second, successful petition in 1934. Membership has continued to increase steadily, both in terms of numbers and globally, and currently stands at around 23,000 across over one hundred countries.

First woman member was [Florence Mary Taylor \(1879-1969\)](#), who was elected an *Associate* member in 1926. The first chartered woman member was Mary Thompson Irvine (from 1955, Mary Thompson Lindsay) (1919-2001), who was elected an *Associate Member* in 1947. The first woman Fellow was Marjem Chatterton (1916- present day), who was elected a *Member* in 1954.

Milestones

More detailed accounts of the Institution's history have been written by Fox⁴, Vaughan⁵, Hamilton⁶, Morgan⁷ and Witten⁸. For a context of the first one hundred years of the Institution's life, readers are directed towards the [Jubilee](#) and [Centenary](#) issues of *The Structural Engineer*.

- 1913 Foundation of The Library
- 1920 First examinations held
- 1923 First regular syllabus issued
- 1924 International Cement Congress, Olympia, organised by the Institution
- 1926 Travelling scholarships: Portland House, Brenforce and Dorman Long travelling scholarships introduced
- 1928 The Institution represented at the International Congress on Bridge & Structural Engineering, Vienna
- 1929 First Certificate of Commendation awarded to A.C. (later Sir Alfred) Bossom for paper on [The Problem of the Skyscraper](#)
- 1930 The Institution represented at the Congress for Concrete and Reinforced Concrete, Liege
- 1932 First IABSE Congress, Paris
- 1936 Benevolent Fund established and Royal Charter Bye-laws published
- 1944 Chair of Concrete Technology at Imperial College is the first chair of structural engineering or related branch at a British university
- 1947 Sir Winston Churchill and Earl Mountbatten elected Honorary Members
- 1957 Chair of Structural Engineering, Manchester College of Science & Technology
- 1958 Chair of Engineering Structures, City and Guilds College, London
- 1958 HRH Prince Philip, Duke of Edinburgh elected the Institution's first Honorary Fellow
- 1968 First Structural Awards - Structural Special Awards won by Freeman Fox & Partners for the Severn Bridge and Lowe and Rodin for the Metropolitan Cathedral of Christ the King in Liverpool
- 1968 The Institution influential responses to Ronan Point collapse
- 1969 Bye-laws change title of *Member* and *Associate Member* grades to *Fellow* and *Member* respectively
- 1976 New definition of structural engineering published
- 1984 HRH The Duke of Gloucester elected an Honorary Fellow
- 1986 First international agreement signed, an agreement of cooperation with the China Civil Engineering Society

- 1988 First Service Award for services to the Institution as a Branch or Division official, or an Institution representative awarded to Professor Henry Jacob Cowan, New South Wales representative, 1964-88
- 2000 First [Young Structural Engineer of the Year Award](#) to encourage and acknowledge young structural engineers, won by Clare Gardiner
- 2007 Technician grade of membership introduced

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