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## Submission by the New Zealand Concrete Society to the Canterbury Earthquakes Royal Commission

This submission is made in response to the document: 'Discussion paper: Training and education of engineers and organisation of the engineering profession', GEN.CERC.0003.

### **Preamble:**

The New Zealand Concrete Society (NZCS) is a non-profit organisation<sup>1</sup> that aims to encapsulate the wealth of expertise of its membership and to output this expertise in the form of seminars, technical publications and conferences for the betterment of the concrete and construction industry at large. NZCS is a learned Society with a focus on technical excellence and is not influenced by any external commercial interests. The goals and activities of NZCS include to:

1. Provide a forum for the discussion by its members of matters relevant to the objects of the Society. Industry representation on behalf of the membership is provided by the NZCS Council. This body comprises a broad cross section of industry representatives who are committed to promoting good concrete construction and developing industry networks. The Council will establish and maintain relations with appropriate local, national and international bodies where this will further the objectives of NZCS.
2. Affiliate and liaise with other organisations of similar or allied interests. NZCS interests are very much interrelated with industry groups such as the Cement and Concrete Association of NZ, NZ Ready Mixed Concrete Association, NZ Concrete Masonry Association, NZ Master Placers' Association and Precast NZ. This is a powerful network of industry groups and effective liaison and partnering with these other organisations can only strengthen the position of concrete in the market place and extend the level of knowledge. Overseas affiliated organisations are: The Federation Internationale du Beton (fib), The American Concrete Institute (ACI) and The Concrete Institute of Australia (CIA).
3. Support, and undertake where appropriate, training courses and seminars. NZCS participates and facilitates training at all levels within the concrete construction industry. NZCS assists in identifying innovations that can enhance our industry and areas of concern that need attention. NZCS has been involved in seminars such as "Concrete for Engineers", "Industrial Floor Construction", "Quality Concrete –

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<sup>1</sup> See Appendix A for the NZCS Constitution

Successful Management”, “Concrete Durability and Specification” and “Specialty Concretes”. NZCS partners with other industry groups to produce these seminars and they are structured to assist designers and practitioners. In addition, NZCS has agreements with ACI and CIA, which enables it to obtain benefits such as pre-packaged seminars, website links and reciprocal member entitlements for technical publications and conference registrations. Courses and seminars will generally qualify for IPENZ continuing professional development credits.

4. Disseminate information on prestressed and reinforced precast and cast insitu concrete and related materials. The NZCS is associated with a regular programme of functions, including technical meetings, seminars and conferences. A bi-monthly NZCS newsletter is e-mailed to all members to advise them of key items of interest. A free subscription to “concrete” (the Cement & Concrete Association quarterly newsletter) is also provided and this contains information on a variety of concrete industry related issues. Internationally, NZCS has long term relationships with the Federation Internationale du Beton (fib) and the American Concrete Institute (ACI). Through these affiliations, the NZCS has access to publications and the opportunity to join international committees as consulting or corresponding members.
5. Encourage research and foster the developments of new techniques for design, construction, maintenance and repair. NZCS promotes R&D, facilitates academic research and provides a study fellowship each year.
6. Participate in the development of appropriate standards, codes of practice and specifications. Invitations to contribute and comment on concrete and other related standards are sought from NZCS and its members.
7. Provide a channel for discussion with Government, Government departments, or other organisations. Together with CCANZ and other industry groups, NZCS is able to participate in key political issues.

A key activity on the NZCS event calendar is the annual Concrete Industry Conference. This conference allows both members and non-members to participate in the whole range of NZCS activities with broad industry participation. Internationally renowned keynote speakers are sought to address conference delegates. A wide range of technical papers are presented on projects, design, methodologies, materials, innovative techniques and R&D. This conference is an excellent opportunity to participate in professional development and network with key people in the industry.

Every two years, NZCS invites applications for the Concrete Awards. These comprise the Concrete, Monte Craven Architectural Building, Infrastructure, Residential, Landscaping, and Technology Concrete Awards. This is an opportunity for industry to applaud excellence in concrete construction and the awards are presented at the Concrete Conference. These prestigious awards are keenly contested and provide deserved recognition for outstanding achievements in the advancement of concrete practice in design, construction, rehabilitation or research.

### **NZCS activities undertaken in response to the Canterbury earthquakes**

The following details are provided in order to illustrate the types of activities that NZCS undertakes, the number of professional individuals (typically NZCS members) that participate in these activities, and the partnering relationships that NZCS has with other technical societies:

**Afternoon seminar at 2010 NZ Concrete Industry Conference, Wellington**

‘Darfield Earthquake Discussion Panel’

8 October 2010

Total 110 attendees

**NZCS nationwide seminar series, in partnership with SESOC, NZ Timber Design Society and NZSEE**

‘Building Performance in the February 2011 Christchurch Earthquake’ seminars

April/May 2011 – North Harbour, Ellerslie, Wellington, Taupo, Nelson, Christchurch

Total 417 attendees

**Des Bull keynote speaker at 2011 NZ Concrete Industry Conference, Rotorua**

‘The Performance of Concrete Structures in the Canterbury Earthquakes: Lessons to be learned and the future of Concrete Buildings’

8 August 2011

Total 205 attendees

**Des Bull sent to ACI Spring Convention, 18-22 March 2012, Dallas, Texas**

‘The Performance of Concrete Structures in the Canterbury Earthquakes: Lessons to be learned and the future of Concrete Buildings’

Des sent to the Convention via a NZCS Travel Bursary

**Coordinated articles to be published through fib ‘Structural Concrete’ journal**

Four articles were published, two in the December 2011 issue and two in the March 2012 issue

- ‘The Seismic Performance of RC buildings in the 22 February 2011 Christchurch earthquake’ – Weng Yuen Kam & Stefano Pampanin
- ‘Seismic performance of concrete bridges during Canterbury earthquakes’ – Alessandro Palermo, Liam Wotherspoon, Lucas Hogan, Mitchel Le Heux and Elena Camnasio
- ‘Façade damage assessment of concrete buildings in the 2011 Christchurch earthquake’ – Andrew Baird, Alessandro Palermo & Stefano Pampanin
- ‘Behaviour of tilt-up precast concrete buildings during the 2010/2011 Christchurch earthquakes’ – Richard Henry & Jason Ingham

These articles were also made available to all NZCS members via the NZCS website.

**NZCS approach to Standards NZ to begin review of NZS 3101**

An NZCS delegation met with Standards NZ to initiate a review of NZS 3101, the Concrete Structures Standard. Subsequently a full-day meeting was convened to discuss the scope of required modifications to the standard. This exercise was led by NZCS immediate past president, Dene Cook.

**NZCS nationwide seminar series, in partnership with NZSEE and SESOC**

‘Best Practice – Repair & Strengthening of Concrete Structures’

May 2012 – Christchurch, Wellington, Taupo, North Harbour, Ellerslie

Total 449 attendees

**NZCS nationwide seminar series, in partnership with NZSEE and SESOC**

'Damage Control Design – Conceptual Design & Practical Implementation'

June 2012 – Christchurch, Wellington, Auckland

Total 186 attendees

**Response to GEN.CERC.0003 Discussion Paper:****Part 1:**

NZCS have no comment to make on this matter.

**Part 2:**

NZCS has a long history of interacting with New Zealand tertiary education institutions offering courses relevant to the New Zealand concrete industry. In particular, NZCS has significant interactions with the University of Auckland, the University of Canterbury, Victoria University of Wellington, and Unitec Institute of Technology. These interactions include representation on the NZCS Council, guest lectures by NZCS members to tertiary students, use of university personnel to deliver NZCS seminars, and the awarding of NZCS student prizes and scholarships to encourage best practice concrete solutions.

With respect to the CERC invitation to comment on the education of engineers, NZCS note that the Society would welcome the opportunity to be routinely consulted on the syllabus offerings related to the activities of the Society that are provided by New Zealand tertiary education institutions. As NZCS is made of concrete professionals with expert knowledge and experience on topics relevant to the training of engineers, NZCS suggest that currently there is an opportunity for tertiary institutions to request a greater extent of external technical peer review of the offerings than is current happening. NZCS would suggest that such an initiative does not need to be regulated or enforced, but would welcome a CERC recommendation that such peer review be strongly encouraged. This peer review would entail a critique of both the technical nature of syllabus offerings, plus the provision of assistance with respect to the use of actual examples from the profession that will assist student education.

**Part 3:**

With respect to the questions posed in Part 3 of the CERC discussion paper, NZCS note that:

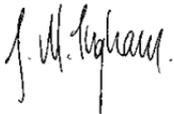
1. NZCS has a long history of interaction with other learned societies, and has previously delivered seminars in collaboration with the New Zealand Geotechnical Society. NZCS encourages interactions between structural engineers and geotechnical engineers and because foundation elements are routinely constructed of concrete, the interaction between structural and geotechnical engineers is a matter of relevance to the Society. NZCS would not be opposed to a CERC recommendation that interactions between structural and geotechnical engineers be more strongly encouraged, but is of the view that sensible levels of interaction already occur at both the professional engineer level and at the tertiary student level. Perhaps a more relevant and a more challenging issue is the integration of structural and geotechnical engineering analysis and design practice into a unified design procedure.

2. NZCS has a long history of fostering interactions between engineers and architects, with NZCS offering architectural prizes for both professionals and students, providing special sessions at the annual Concrete Industry Conferences that focus on architectural contributions, and seeking out architects to participate as members of the NZCS Council. However, NZCS do acknowledge that the Society has historically struggled to attract architects to seminars and conferences, and would welcome a CERC recommendation that would lead to a greater extent of interactions between professional engineers and architects. Similarly, NZCS would welcome a CERC recommendation that there be greater interactions between tertiary students enrolled in engineering and architectural degrees.
3. NZCS have a long history of partnering with NZSEE and SESOC, and to a lesser extent with NZGS and the NZ Timber Design Society. However, NZCS does acknowledge that these partnerships have primarily involved activities such as co-branding of technical seminars, and that there is a lack of history associated with the separate technical learned societies working together to produce a substantive output of particular note. It is suggested that in a country such as New Zealand that has a comparatively low population, individuals with appropriate technical expertise that are prepared to contribute to the undertaking of activities benefiting the profession often simultaneously belong to several technical societies, and indeed sometimes simultaneously operate at an executive level of several technical organisations. It then becomes important for the separate individual technical organisations to demarcate their specific offerings in order to attract and retain members, which may be counterproductive to the undertaking of joint projects. NZCS would welcome the opportunity to work more closely with other technical societies and would support a CERC recommendation of this nature.
4. The membership of NZCS is composed of professionals with expertise in topics such as concrete materials technology, seismic design of concrete structures, and the remediation and repair of concrete structures. Also, NZCS have strong relationships with similar entities from outside of New Zealand, such as Federation Internationale du Beton (fib) and the American Concrete Institute (ACI). NZCS welcome the opportunity to provide specialist knowledge to activities such as industry advisory boards, but notes that to date this expertise has not been requested on matters related to the Canterbury earthquakes.
5. NZCS has a long history of participating in Standards development. NZCS will provide further comment on this matter when making a submission in response to document GEN.CERC.005.

**Conclusion**

The New Zealand Concrete Society acknowledges the significance of the Canterbury earthquakes and the important role of the Canterbury Earthquake Royal Commission to assist in identifying opportunities for improvements on technical matters relevant to NZCS. In this submission we have sought to outline the activities of NZCS and the initiatives that we have undertaken following the earthquakes. NZCS welcome the chance to contribute to syllabus development at tertiary institutions and would welcome recommendations that led to greater interactions between engineers and architects, and between different technical learned organisations. NZCS intends to make a separate submission on the matter of standards development in response to document GEN.CERC.0005.

Yours Sincerely,



**Jason Ingham**

**President of the New Zealand Concrete Society**

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## NEW ZEALAND CONCRETE SOCIETY INCORPORATED CONSTITUTION AND BY-LAWS

### I NAME

The organisation shall be known as the New Zealand Concrete Society Incorporated.

### II OBJECTS

The objects of the Society shall be to encourage a greater knowledge and understanding of all aspects of structural and architectural concrete and to support their development and use where appropriate.

### III SCOPE AND ACTIVITIES

- (a) To disseminate information on prestressed and reinforced precast and cast insitu concrete and related materials.
- (b) To support, and undertake where appropriate, training courses and seminars.
- (c) To encourage research and foster the developments of new techniques for design, construction, maintenance and repair.
- (d) To provide a forum for the discussion by members of matters relevant to the objects of the Society.
- (e) To participate in the development of appropriate standards, codes of practice and specifications.
- (f) To provide a channel for discussion with Government, Government departments, or other organisations.
- (g) To affiliate and liaise with other organisations of similar or allied interests.

### IV MEMBERSHIP

1. Membership of the Society shall consist of:
  - (a) Honorary Members: Those persons who may from time to time accept the invitation of the Council to become Honorary Members of the Society. Such members shall be entitled to vote.
  - (b) Individual Members: Those persons who are actively interested in the development and use of structural or architectural concrete. Membership category shall be selected from either:

- (1) Individual member, or
- (2) Corporate Individual member comprising a discounted fee structure depending on the number of employees nominated by the corporate business.

Application for such membership shall be made in writing to the Council on a form approved by Council.

The annual subscriptions and discounted fee structure for Corporate Individuals shall be fixed by the Annual General Meeting.

Any person who qualifies for membership as an Individual Member but who is employed by a non-member firm eligible for business membership, shall be eligible for membership only at the Council's discretion.

The annual subscription shall be fixed by the Annual General Meeting.

- (c) Student Members: Those persons who are currently in training as students at a tertiary educational institution. Application for such membership shall be made to Council on a form approved by Council.

The annual subscription shall be fixed by the Annual General Meeting.

- (d) Business Members: Eligible for such membership are persons representing incorporated bodies, or members of associations actively engaged in:
- (i) the manufacture of structural or architectural concrete, or
  - (ii) the construction of buildings and/or civil engineering structures, or
  - (iii) the manufacture and/or supply of equipment, materials and services relevant to (i) or (ii) above, and who in the opinion of Council are eligible for such membership.

Any such person, incorporated body or association shall apply in writing to the Council for admission on a form approved by Council. Any association of persons whether incorporated or not shall from time to time nominate a person as its representative and such representative shall be in the same position in all respects as if he were an ordinary member in his own right.

Additional benefits for Business Membership may include the use of the Society logo on company literature and correspondence, preference for exhibition space at the Society conference, acknowledgement at the Society conference and such other matters as the members may decide. The additional benefits and annual subscription for Business Members shall be fixed by the Annual General Meeting.

- (e) Retired Members: Those persons who, having been members of the Society for a minimum of five years, and have attained the age of not less than sixty years, have retired and have applied and been approved by Council for transfer to the retired list. Such membership, for which there shall be a nominal annual subscription to be fixed by Council, shall have all the rights and privileges of Ordinary membership.
- (f) Observers: Those representatives of Authorities and/or Institutions appointed by invitation of the Council.

2. Rules governing membership:

- (a) Rejection: The Council may decline application for membership at its discretion.
- (b) Resignation of Members: Any member may resign from the Society by giving not less than one calendar month's notice, in writing, of his intention to resign and at the expiration of such period shall remain liable for all debts and levies outstanding and unpaid as at the date of expiry of such notice.
- (c) Termination of Membership: The membership of any member may be cancelled;
  - (i) if such member fails to abide by the Constitution and By-laws of the Society;
  - (ii) if such member shall cease activities which originally qualified him as a member;
  - (iii) if such member shall make defaults for a period of not less than 3 calendar months in payment of any subscription or membership fee or part thereof due by him to the Society howsoever arising;
  - (iv) if such member becomes bankrupt or assigns his estate for the benefit of his creditors.
- (d) Re-admittance to Membership: Any member whose membership has been cancelled by any of the provisions of Rule IV 2(c) may be re-admitted to membership by Council upon full payment by such member of all membership fees due by him or upon full discharge by such member of his obligation to the Society under this Constitution or on the basis of a new application for membership.

**V MEETINGS:**

- (a) Annual Meetings: In addition to technical meetings and conferences, the Society shall meet at least annually in such place as the Council may decide;
- (i) to receive a report from Council which shall include a Statement of Income and Expenditure;
- (ii) to elect a Council and office-bearers for the forthcoming year.
- 10% of the full membership of the Society present at a meeting shall constitute a quorum.
- (b) Special Meetings: The Secretary/Manager shall call a Special Meeting of the Society at the request of the Council or on receipt of a written notice signed by at least 20 members of the Society and the notice of such meeting shall state the purpose for which the meeting has been called.
- (c) Notice of Meetings: Notification of all meetings shall be made by circular to all members at least fourteen days prior to the date of such meetings.
- (c) Voting Powers at Meetings: Questions submitted to Annual or Special meetings shall be decided by a show of hands unless a poll is called for by 25 per cent of members present. Voting shall be on the basis of one vote for each financial member or honorary member present.

**VI REGISTER OF MEMBERS**

A register of members shall be kept at the offices of the Society.

**VII BRANCHES**

The Council may set up branches and/or regional committees. The Council shall, in the first instance, nominate members of the Society to serve as officers and members of the newly-formed branch committees. Subsequent membership of such committees shall be governed by the branch rules as approved by Council.

**VIII COUNCIL**

The Council shall consist of a President, Vice President, the Chairmen of Branches and at least four but not more than seven councillors. The immediate past president and the Federation Internationale de la Precontrainte (FIP) Vice President for New Zealand shall be members of Council ex-officio.

The following officers who are all subject to re-election annually, shall be elected by members present at the Annual General Meeting:

1. President
2. Vice President
3. Either four or five councillors of which at least two shall be Business members and at least two shall be Ordinary members. The Council shall have power to co-opt two additional councillors.

The Chairman of a Branch shall be elected by the members of the Branch.

Any vacancy on the Council occurring between Annual Meetings shall be filled by the Council.

The Annual General Meeting shall appoint a Secretary/Manager and an Auditor.

It shall be the duty of Council generally to conduct the affairs of the Society, to collect all subscriptions and keep usual and proper books of account properly posted up and other records of the business of the Society, and to prepare and submit to the Annual General Meeting a report, balance sheet and statement of accounts for the preceding year.

## **IX COUNCIL MEETINGS**

Council shall meet at least twice a year or more often if deemed necessary by Council. The President shall exercise a vote at Council meetings only in the event that the remaining votes are equally divided. Each member of Council shall be entitled to one vote. Four members of Council present at a meeting shall constitute a quorum.

## **X COMMON SEAL**

There shall be a common seal of the Society which shall be kept in the custody of the Secretary/Manager and shall not be affixed to any Deed, Instrument, Contract, Document or Paper without the authority of the Council. The Affixing of this seal to any Deed or Instrument shall be attested by two members of the Council. The seal may be altered only by a resolution of the Council.

## **XI SOCIETY FINANCES**

- (a) Financial Year: The financial year of the Society shall commence on April 1.
- (b) Control and Investment: All subscriptions together with other income shall be paid into a bank account in the name of the Society. Withdrawals from the account shall be made by cheque signed by any member of Council and counter-signed by the Secretary/Manager. Council may from time to time invest the Society's funds in such securities and upon such terms as it thinks fit. The Society shall also have power to borrow or raise money from time to time by the issue of debentures, bonds, mortgages or any other security, or without any such security

and upon such terms and conditions as shall seem fit to the Council who shall also be entitled to exercise such power to borrow or raise money.

- (c) Auditor: The Accounts and Financial Statements of the Society shall be audited annually and reported upon by the Auditor appointed by the Annual Meeting. He shall hold no other office in the Society and shall receive such fee as the Council may approve from time to time. If a vacancy should occur in the office of Auditor during any year the Council shall appoint an Auditor to hold office until next Annual Meeting.
- (d) Winding Up: The Society may be wound up in accordance with Section 24 of the Incorporated Societies Act, 1908.

In the event of winding up the surplus assets after payment of the Society's liabilities and expenses of winding up shall be disposed of in such a manner as directed by the resolution to wind up, provided always that no such disposal shall result in personal pecuniary or other benefit to any member of the Society.

Such surplus assets may be distributed to another society or association having similar objects to the society.

- (e) Liability of Members: Each member of the Society shall contribute proportionately to the funds of the Society in the event of the same being wound up during the time he is a member, or within twelve months thereafter, such amounts as may be required for the payment of debts and liabilities of the Society contracted before the time at which he ceased to be a member, or within twelve months thereafter including the customary charges and expenses of winding up the same; but such liability shall in no case exceed the amount of such member's subscription for the then current year or the preceding year, whichever may be greater, or in the case of a person who has ceased to be a member, the amount of the last subscription that may have become payable by him. On the death of a member, his Executors or Administrators shall have no claim on the assets or be subject to the liabilities of the Society.

## **XII INDEMNITY**

No action in law or otherwise shall lie in favour of members or their Executors or Administrators against any other member of the Society or Council or Secretary/Manager in respect of any Act, matter or thing done, omitted or suffered, or purporting to be done, omitted or suffered, in pursuance of the provisions of these Rules, notwithstanding any irregularity or informality occurring in or about the doing or omitting or suffering of any act, matter or thing.

No member of the Council, Auditor or Secretary/Manager shall be liable for any other members of the Council, Auditor or Secretary/Manager or for joining in any receipt of document for any act of conformity or for any loss or expense happening to the Society unless the same happened from his own wilful default.

**XIII ALTERATION OF RULES**

Any of these rules of the Society (including the name of the Society) may be altered, added to, or rescinded by resolution of the Annual or Special Meeting on two-thirds majority of the members present provided that notice of the intention to propose such resolution and the nature thereof shall have been contained in the notice calling such a meeting. However, no addition to or alteration or rescission of the Rules shall be approved if it in any way affects Rule XI (d).

**XIV INTERPRETATION OF RULES**

If at any time any matter shall arise which is not provided for in these Rules or in the interpretation of these Rules the same shall be determined where appropriate by the Council whose decision shall be final unless varied by a resolution passed at any subsequent Annual or Special meeting.

November 2002