

In the matter of the Commissions of Inquiry Act 1908

And

In the matter of the Canterbury Earthquakes Royal Commission of
Inquiry into the Collapse of the CTV Building

Brief of evidence of Trevor Robertson in relation to the CTV Building

Date: 26 June 2012



DLA PHILLIPS FOX

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- 1 My full name is Trevor William Robertson.

Qualifications and Experience

- 2 I hold the position of Senior Principal of Sinclair Knight Merz (**SKM**) working in the role of Principal Structural Engineer (NZ). I have previously been, at various times, Structural Section Manager and Buildings Operation Centre Manager, both with SKM New Zealand. However, I have recently elected to concentrate my career on the technical side of engineering and move away from line management.
- 3 I hold a Bachelor of Engineering (Civil) with Honours (BE Hons).
- 4 I am a Chartered Professional Engineer (CPEng) and registered as an International Professional Engineer (IntPE).
- 5 I am a Fellow of IPENZ (FIPENZ) and a member of the Association of Consulting Engineers (MACENZ).
- 6 I am also a member of the New Zealand Structural Engineering Society (SESOC), the New Zealand Society for Earthquake Engineering (NZSEE), the Timber Design Society (TDS) and the New Zealand Cement & Concrete Association (NZCCA).
- 7 Earlier in my career I founded the Auckland Structural Group and through this was also on the founding committee of SESOC for which I previously served on the Management and Executive Committees for about a decade, was President for three years and have recently been made a Life Member.
- 8 I have forty years' experience as a structural engineer with projects ranging through multi-storey buildings, major stadiums and major industrial installations. This work has involved all the usual engineering materials including concrete, timber and steel. Throughout my career I have always maintained a strong interest in earthquake engineering and I have been involved in a number of significant building strengthening projects.

- 9 Twice I have been appointed by IPENZ as a member of an Ethical Complaints Investigating Committee. The first of these was in or about the early to mid-1990s, the second being this current year. This involvement reinforces that I am fully aware of the IPENZ Code of Ethics and have been throughout my career, including at the time relevant to the present proceedings.
- 10 I confirm that I have read the New Zealand High Court Code of Conduct for Expert Witnesses and that my evidence complies with the Code of Conduct's requirements.
- 11 I have had no prior involvement with the CTV Building, nor any other Christchurch building prior to the earthquake sequence.

Scope of Evidence

- 12 I have been instructed by DLA Phillips Fox, on behalf of Holmes Consulting Group Limited (**HCG**), to provide independent expert evidence on issues relevant to the ethical, conduct and reporting obligations owed by engineers. In particular, I have been asked to comment on the following:
- 12.1 The ethical, conduct and reporting obligations owed by engineers when undertaking a routine review of a building for a prospective purchaser, as at 1990.
- 12.2 Whether, having discovered an area of possible non-compliance with the code of the day, a reviewing engineer acted reasonably in reporting the matter to the original designer.
- 12.3 Whether, in light of the reviewing engineer being satisfied that the original designer had accepted responsibility and intended to take the necessary steps to remedy the issue, it owed any additional ethical, conduct or reporting obligation to report a possible non-compliance with the design codes of the day to any additional third party.

Background

- 13 In preparing my evidence I have considered the following documents:
- 13.1 Brief of Evidence of Henry John Hare relating to the CTV Building (249 Madras Street) dated 1 June 2012;
 - 13.2 Statement of Evidence of R. Grant Wilkinson in relation to CTV Building;
 - 13.3 Holmes Consulting Group's draft Structural Report on the Office Building situate at 249 Madras Street, dated January 1990;
 - 13.4 Calculations (hand written) prepared by Holmes Consulting Group in preparation for the above report, first page dated 25 September 1990 but understood to have actually been prepared in January 1990;
 - 13.5 Memo by Holmes Consulting Group and attached sketches dated 1 February 1990;
 - 13.6 Letter from Alan Reay Consultants Ltd to Adam and Adam Ltd dated 1 February 1990;
 - 13.7 Letter from Alan Reay Consultants Ltd to Holmes Consulting Group dated 2 February 1990;
 - 13.8 Letter from KPMG Peat Marwick to Alan Reay dated 2 February 1990;
 - 13.9 Letter from Indemnity & General to Alan Reay Consultants Ltd dated 12 February 1990;
 - 13.10 File Note of Mr Geoff Banks dated 14 February 1990;
 - 13.11 Calculations under Alan Reay Consultants logo dated from 29 January 1990 to 10 October 1991, presumed to have been prepared by Mr Geoff Banks;

13.12 IPENZ Code of Ethics dated 5 July 1989.

Ethical, conduct and reporting obligations

- 14 I am asked to comment on the ethical, conduct and reporting obligations owed by engineers when undertaking a routine review of a building for a prospective purchaser, as at 1990.
- 15 The ethical code under which professional engineers in New Zealand conduct themselves is the IPENZ Code of Ethics, as provided by IPENZ current to the time under consideration. The Code of Ethics, applicable to members of IPENZ, as at 1990 was the IPENZ Code of Ethics dated 5 July 1989, as attached.
- 16 The IPENZ Code applicable as at 1990 states "*Each member shall so conduct himself as to uphold the dignity, standing and reputation of the Institution and of the profession*". The Code then sets out 17 sub-rules, in clarification as to how the underlying requirement shall be achieved.
- 17 With respect to the conduct and reporting obligations owed by an engineer when undertaking a routine review of a building for a prospective purchaser as at 1990, it is sub-rule 8 that best defines the obligations. Some guidance on the interpretation of reporting obligations can also be obtained from sub-rule 9.
- 18 In the normal course of events, if an engineering review of an existing building finds nothing untoward other than normal maintenance issues, and the review concludes that the building is compliant with the codes and rules applicable at the time it was designed, then the reviewing engineer should report to its client who engaged the engineer and to that client alone, unless directed by the client to distribute the findings to other parties. To do otherwise runs the risk of the engineer inadvertently disclosing matters that may be confidential to its client, which would be in breach of sub-rule 11 of the IPENZ Code.
- 19 When undertaking a routine review of a building, it may be that the codes applicable at the time of design may have been superseded and hence

the building may not comply with the codes current at the time of the review. While the engineer would be prudent to draw its client's attention to this fact, there is no obligation on the engineer to report this information further, as, with the passage of time, every building in New Zealand will in due course become out of date with respect to 'current' design codes and this is a situation that society accepts.

- 20 In the event that the engineer reviewing a building discovers/determines that there is a feature of the design that appears to be non-compliant with the design codes under which it was designed, and particularly where this non-compliance may be critical to, or at least compromise, the building's integrity then the engineer must consider how the matter should be handled in relation to the IPENZ Code, sub-rule 8, with particular reference to its responsibilities to the public interest.
- 21 In terms of the IPENZ Code (as applicable in 1990), the reviewing engineer would act properly, in my opinion, if he/she undertook the following steps:
 - 21.1 Discusses the matter with their superiors within their own employment (assuming this hierarchy exists);
 - 21.2 Alert and report to their client as to the discovery and its implications;
 - 21.3 Advise the original designer (if known and still in business) of the discovery and importance/implications;
 - 21.4 Be informed as to whether the designer accepts responsibility for attending to the matter.
- 22 Whether the reviewing engineer has any further obligation to report the matter differently or to other parties is very dependent on the outcome of the reporting just described.
- 23 The responsibility for the structural integrity of a building, consistent with the codes and development of engineering knowledge at the time of the

design, lies with its engineering designer. If that designer, on being alerted to a possible deficiency in its design, takes appropriate action, or confirms it is going to take appropriate action to address the deficiency, then I believe that the reviewing engineer has fulfilled his/her responsibilities to the public interest. The responsibility thereon rests entirely with the original design engineer.

- 24 For confirmation as to whether this is a reasonable interpretation of sub-rule 8, I turn to sub-rule 9 which gives guidance as to what steps a member should take where their advice is overruled or disregarded. The obligation set out in sub-rule 9 is to make the person overruling or neglecting that advice aware of the possible consequences of that action. Even in this circumstance, the sub-rule does not indicate that the engineer should go any further. This is not to say that I believe that that would be the end of such a matter. I believe that where the reviewing engineer's advice is overruled or disregarded by the original design engineer, under that circumstance an engineer would consider advising an authority; such an authority possibly being IPENZ itself.
- 25 However sub-rule 9 is not, in my opinion, applicable to the situation under review, as it is apparent that the reviewing engineer in this instance had good cause to believe the original design engineer did treat the advice seriously and did intend to take action on it.
- 26 The relevance of sub-rule 9 is that there would clearly not be a greater obligation on an engineer where its advice is accepted than where it is not. Thus, I believe, a reviewing engineer who advises the original design engineer of a potential deficiency and has good cause to understand that the design engineer does treat the advice seriously and does intend to take action on it, has acted reasonably within the Code of Ethics and does not carry a further reporting obligation.

Reporting the matter to the original designer

- 27 I am asked to comment on whether, having discovered an area of possible non-compliance with the code of the day, the reviewing engineer acted reasonably in reporting the matter to the original designer.

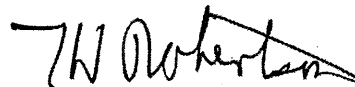
- 28 I believe that HCG, as the reviewing engineers, could not properly carry out its commission to its client if it did not raise the matter with the original designer. It needed to do so in order to complete its review of the building.
- 29 In the first instance, HCG was supplied with only limited structural drawings through Alun Wilkie Architects. From these limited drawings HCG was able to advance its investigation, including calculations, a significant distance but it also determined that there seemed to be no information on the drawings available concerning the connection of floor diaphragms to the structural walls.
- 30 Clearly, to close out this apparent omission and indeed to carry out a proper review of the whole of the structure, HCG needed a comprehensive set of structural drawings and it appeared that these would be available only through the office of Alan Reay Consultants.
- 31 In that HCG had already detected a potential problem, it was quite reasonable for them to raise this issue with the original designers as there was always the possibility that the omission had been closed out subsequent to the initial drawing issue and corrected by a variation to the construction contract. Indeed, Alan Reay Consultants initially believed that this may have in fact happened.
- 32 It was quite apparent to HCG, as verified by the 1990 documents I have viewed, that Alan Reay Consultants did take the matter seriously and was taking steps to address the matter and this would have been clear to HCG.

Reporting to Third parties

- 33 I am asked to comment on whether, in light of HCG being satisfied that the original designer had accepted responsibility and intended to take the necessary steps to remedy the issue, it owed any additional ethical, conduct or reporting obligation to report the non-compliance with the code of the day to any additional third party. In particular, I am asked should HCG have reported the matter to Christchurch City Council?

- 34 I believe that HCG, through its representatives, acted reasonably and in accordance with the IPENZ Code (applicable as at 1990) by leaving subsequent action as the responsibility of the original designer. I believe that other responsible and experienced engineers would have acted in the same manner.
- 35 I don't believe that HCG had an obligation to "police" the subsequent actions of Alan Reay Consultants nor to report the matter to any third party (e.g. Christchurch City Council or IPENZ). HCG received very clear confirmation that Alan Reay Consultants took the matter seriously and HCG observed them to be taking steps to further investigate and/or resolve the matter promptly, primarily through the site investigation being conducted. HCG also received a letter from Alan Reay Consultants (dated 2 February 1990) clearly indicating that they were proceeding to fully investigate the matter and its solution.
- 36 Thus HCG's situation was not a circumstance contemplated by the IPENZ Code sub-rule 9, as HCG's advice was quite clearly being taken by the original design engineer and, indeed, actioned. It is clear to me that HCG was not in an obligation greater than would have applied if the response had been one where sub-rule 9 applied.

Date: 26 June 2012



Trevor William Robertson

Chapter 4

The Institution of Professional Engineers Code of Ethics

Rule 18.2 of the Rules of the Institution of Professional Engineers New Zealand states:

"Each member shall so conduct himself as to uphold the dignity, standing and reputation of the Institution and of the profession".

In furtherance thereof:

1. Members shall exercise their professional and technical skill and judgement to the best of their ability and shall discharge their professional and technical responsibilities with integrity.
2. Members shall refrain from and discourage criticism in public of the work of other members. This does not preclude engineers in their professional capacity from providing responsible comment on the work of other engineers when called upon to do so in the course of their employment.
3. No member shall review the work of another member without taking reasonable steps to ensure that such member is informed.
4. No member shall attempt, directly or indirectly, to supplant another member, nor take over work of another member until clear notification has been received from the employing party that the connection of the other member with the work has been discontinued.
5. No member shall improperly solicit work either directly or through an agent nor shall that member reward any person, by commission or otherwise, for the introduction of work.
6. Members may not misrepresent their competence nor, without disclosing its limits, undertake work beyond it.
7. When called upon to give an opinion in their professional capacities members shall give an opinion that is objective and reliable to the best of their ability.
8. However engaged, members shall at all times recognise their responsibilities to their employer or client, others associated with their work, the public interest and their profession.
9. When a member's professional advice is not accepted the member shall take reasonable steps to ensure that the person overruling or neglecting that advice is made aware of the possible consequences.
10. In respect of a professional relationship, whether with employer or client, a member shall disclose any financial or other interest they may have which might impair their professional judgement.
11. A member shall not disclose any confidential information or matter related to his or her work or the business of his or her client or employer, without the express authority of that client or employer.
12. A member shall not accept from nor give to any third party anything of substantial value.
13. Members shall encourage the further education and training of their subordinates particularly those who are candidates for corporate membership of the Institution.
14. Members shall maintain and strive to improve their professional competence by attention to new developments relevant to their professional activity and shall encourage those working under them to do likewise.
15. Members shall strive to relate their work to the preservation or enhancement of the environment and to make effective use of available resources of manpower, machines, materials and money.
16. Members shall conduct their affairs in accordance with this Code and shall positively endeavour to ensure that the organisations of which they are employees, shareholders, partners or sole owners act in a manner consistent with this Code.
17. In connection with work in another country where established professional practices differ from this Code members may adopt local practices but shall be guided by the principles contained in this Code. Members shall observe Rule 18.2 at all times.

BY ORDER OF THE COUNCIL
Wellington, 5 July, 1989