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LAWYERS

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24 May 2012

Canterbury Earthquakes Royal Commission
PO Box 14053
Christchurch 8544

VIA EMAIL
Mary-ann.hutton@royalcommission.govt.nz

Attention: Stephen Mills QC, Counsel Assisting

Dear Sir

Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes:
CTV Building: 249 Madras Street – information request

Further to your letter of 2 May 2012.

Enclosed Mr Harding's response in "*clarification or amplification*".

Yours faithfully
SAUNDERS & CO

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Partner

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Document Ref: 626837\1\L120229JMK

David Harding
[redacted]

File CERC
20 May 2012

Stephen Mills QC
P O Box 14053
Christchurch 8544

Dear Sir,

Royal Commission of Inquiry
Information Request

Further to your letter of 2 May 2012 to Saunders and Co, I enclose additional information as requested, enumerated as in your letter.

Answer(b) (5)
I was employed as a Civil and Structural Engineer for Alan Reay Consultants between 1978 and May 1980. I designed structural elements of residential buildings, and single or two storey industrial and commercial buildings particularly of precast concrete construction. This work also involved site levelling surveys and site soils investigations for low rise buildings. The work did not involve any direct contact with clients or preliminary design work.

I graduated with my Bachelor of Engineering (Civil) with second class honours from Canterbury University on 1 May 1973.
I became a Registered Engineer in May 1976.
I became a Member of the Institute of Professional Engineers New Zealand on 25 November 1985.

I recall Alan Reay personally calling me and making the offer, but I do not recall what precipitated this call.

I was not specifically looking for the opportunity to design multi-storey buildings prior to that telephone call. However Alan was clearly advising me that the position which he was offering would specifically involve the design of such buildings. He advised me that since I left the firm in 1980 he had specifically targeted the Multistorey Building market, which he felt had previously been dominated by Holmes, Wood Poole and Johnstone. He had employed an Engineer and structural draughtsmen with experience in multi-storey buildings, he had now completed a number of such buildings.
In terms of whether it was Alan, or his firm which designed them, I had and still have no way of knowing. Alan holds a Doctor of Philosophy degree and has lectured at Canterbury University in structural engineering, and so far as I know he designed Ibis House at 183 Hereford St himself, so I understood that he was competent to do so.

Alan often used the royal "we" when referring to his activity, and I often wondered whether he was referring to himself personally or to his firm. I have no way of knowing.

Alan was aware of my experience when I left his firm in 1980, and I advised him of the kind of work which I had been doing at the Waimairi District Council. I advised him that I had no experience in the use of ETABS, and limited use of computer analysis in any kind of structural design. He did not appear to be concerned about this, and advised me that I would be able to gain that experience at his firm.

While I was working out my three months notice at Waimairi, Alan rang to see if I could cut that notice short, as it appeared that an Engineer who was currently working for him was leaving, and he was short handed for current projects, including a low rise residential building for the Hospital Board. I was unable to shorten my notice at Waimairi. On inquiry of Alan it appeared that the proposed Hospital Board building was a regularly proportioned concrete masonry building which was relatively low rise, so it did not require a dynamic analysis using ETABS and the seismic deflections did not require to be calculated. Accordingly it was possible for that building to be designed using the Equivalent Static Method, with which I was experienced, so I offered to prepare the calculations for this building for him while I was working out my notice in order to help. This I then did.

When I started at Alan's office the previous Engineer, John Henry, had already left. The CTV building was the first multi-storey building requiring an ETABS design which I was asked to do. Alan presented the preliminary architectural drawings and discussed the design philosophy with me. It was apparent to me that Alan had done the preliminary calculations and the preliminary design for that building. As already noted, Alan was aware that I had not used ETABS before, which is why he gave me the set of calculations prepared by John Henry to use as a method template.

This was the first time that I had seen or knew anything of this building. I had not met the proposed builder or the client at that time. I certainly did not bring the job to ARC.

Answer(d)(1)
There are two buildings in Durham St which I have referred to.

The first is at 299 Durham St, at the corner of Durham St and Armagh St. I have referred to it as the Contours Building. This building was Architecturally designed by Alun Wilkie Architects. I do not know who did the structural design, but so far as I am aware it was not Alan Reay. I have not seen Architectural or structural drawings for this building, nor any structural calculations.
I understand that the client for the CTV building was impressed by the Architectural features of this building, and wanted the CTV building to look the same. One of the features which he wanted to replicate was for the lift shaft/services core to be offset from the main office area such that when viewed from the street the lift shaft would look like a separate and distinct structure from the main office building. Another feature was to repeat the fenestration of the building. This means that the office area was to have the same look from the outside. This meant that it would have the same column spacing, the same column size, the same type of precast concrete facade panels, the same setback of the windows, the same flashing details etc. The CTV building would obviously be higher and of different overall size, but this would just involve more repetition of the same details.
I understand that this client approached Alan Reay to design the building. Alan was to do the structural design, and he apparently recommended to the client that he engage Alun Wilkie Architects to complete the Architectural design drawings for Building Consent, the same as he

had done for the Contours building. This would obviate any issues of copyright for the original designer if the details were to be copied.
I understand that Alun Wilkie was engaged as a secondary consultant, and that Alan Reay would have been the Principal consultant. Alan Reay or someone in his office would have approved the concept design, prepared preliminary calculations as necessary, and have adjusted the Architectural drawings so that the structural system would work. The Architect would then modify his concept plans accordingly, and that would be the time that I became involved.

The second building is at 287 Durham St, and was known as Landsborough House. This building was structurally designed by Alan Reay Consultants. I do not know who the Architect was. I do not recall seeing any Architectural or structural drawings for this building.
Alan Reay gave me a set of the structural calculations for this building, which had been prepared by Alan's previous structural Engineer, John Henry. I was given these calculations so that I could use them as a template as to how to design a multi-storey building using the ETABS computer program, as Alan was aware that I had not done such a design before. I was to set out the calculations the same way that John had, separating the gravity elements, seismic resisting elements and foundations. I was to model the building for the computer analysis by calculating the section properties of the walls and columns the same way, and to use the same design criteria with regard to allowable seismic drift, and compliance with the many and various code requirements to be satisfied.
There was no need for me to see the structural drawings for the Landsborough House to do this, as the carcase drawings for the CTV building were being prepared by the same draughtsmen in Alan's office as those who did Landsborough House.
Alan told me he did not want me to contact John Henry as I prepared my calculations, but to ask Alan Reay if I had any queries and to keep him appraised of my progress with the design. I understood that this was because John had left the firm in difficult circumstances, and that he could not be expected to be helpful. I accepted this requirement, and acted accordingly.
It was never intended that the CTV building should copy the Structural or Architectural design of Landsborough House. The calculations were provided to me as a method template.

Answer(d)(4)
The correct answer is still Not Applicable. I hope it is now clear why in reference to the reply to question d1 above.

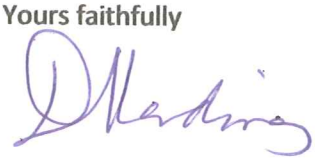
Answer (e)(2)
I was not sufficiently experienced in the design of such buildings to have an opinion as to whether the south wall was large enough. I accepted Alan Reay's decision on the size which I could make the coupled shear wall, because of his experience with such buildings.
The next stage was for me to model the coupled shear wall in the ETABS program, and we would decide on the adequacy or otherwise of the walls according to the output results from the computer program. If the wall arrangement as modelled in the computer was to give lateral sway results which complied with the requirements of the building code, then the wall arrangement would be deemed acceptable.

Answer (g) (2)
As I have previously said, I do not recall any discussions with Mr Tapper or Mr Bluck at the time of Building Consent. I can state for certain that I would not have spoken to Bryan Bluck. Bryan would not have short cut Graham Tapper by talking to me, as he was more involved with policy than details of specific building permits. I cannot ever remember talking to Bryan Bluck about detailed design on any project I have done.

My letter of 19 August to Williams Construction does not say that I had discussions personally with Council Officers at the time of Building Permit. Rather, it advises Williams Construction that agreement had been reached between the City Council and Alan Reay Consultants at the time of Building Permit as to how the floor system would gain a fire rating. The letter from Mr Tapper dated 27 August, has a note relating to sheet 15 where he questions the restraint of the Hi Bond for f.r.r. purposes.

This item must have been resolved at the time of Building Permit Application by placing fire emergency reinforcement in the floor. My letter of 19 August is intended to confirm that this matter was resolved with the City Council at the time of Building Permit application. I appear to have met with Mr Tapper in August 1997 to confirm that my reading of the Building Permit correspondence was correct.

Yours faithfully



Dave Harding