



# Canterbury Earthquakes Royal Commission

Te Komihana Rūwhenua o Waitaha



28 March 2012

Mr David Harding

Dear Mr Harding

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

Please provide the following further information in relation to your involvement in the CTV Building:

- (a) You referred in your letter of 21 February 2012 to an analysis of the CTV Building that was prepared using the ETABS programme on a computer at the University of Canterbury. Please advise:
  - (i) The nature and extent of your involvement in that analysis;
  - (ii) Whether anyone else was involved in that analysis and, if yes, the name of that person and, if you know it, the current address or whereabouts of that person;
  - (iii) Whether the presence of the western masonry wall was included in the data analysed.
- (b) You stated in your letter of 20 September 2011 that you started at Alan Reay Consultants (**ARC**) in early 1986. The Commission has been advised that you had a previous period of employment with ARC or its predecessor firm. Please advise:
  - (i) Whether the advice the Commission has received is correct and, if so, what was the name of the predecessor firm;
  - (ii) The period during which you were employed by that firm;
  - (iii) Whether during that period you were involved in the structural design of any multi-storey buildings utilising a shear core structure;
  - (iv) If yes to (iii), the location of those buildings by reference to building name (if any) and street address.
  - (v) During your time at ARC, what was the principal nature of the structural engineering work you were engaged in.

- (c) You stated in your letter of 20 September 2011 that the preparation of the structural drawings for the CTV Building was done by structural draughtsmen specifically recruited by Dr Reay from Holmes Consulting Group and they were under the constant supervision of Dr Reay. Dr Reay, on the other hand, says that the structural draughtsmen acted under your direction. Please advise:
- (i) The name or names of the structural draughtsmen who you say prepared the structural drawings for the CTV Building;
  - (ii) The degree of involvement you had (if any) with these structural draughtsmen;
  - (iii) Whether now that you have been advised of Dr Reay's claim that they acted under your direction, you still maintain the statement you made in your letter of 20 September 2011 regarding the responsibility for their supervision.
- (d) You stated in your letter of 20 September 2011 that you were presented with the architectural drawings prepared by Alun Wilkie Architects and asked to design the structure in a similar manner to 287 Durham St. I understand this is the building now known as Landsborough House. As I expect you will recall, the shear core for that building was located within the external walls of the building. By contrast, the north shear core for the CTV Building is located outside the walls of the building and is then attached to the north wall and other structural elements. Please advise:
- (i) Who was responsible for making that change from the Landsborough House structural design?
  - (ii) Did Dr Reay discuss with you, or you with Dr Reay, the implications of moving the shear core to the position used in the CTV Building rather than placing it as it was in Landsborough House?
  - (iii) If there was such a discussion, did it include the effect this might have on the performance of the Building in the event of an earthquake?
  - (iv) In the event that you are able to contribute any further information in relation to the decision to depart in this respect from the design of Landsborough House, please also provide this.
- (e) You have said in your letter of 7 March 2012 that you were concerned about the torsional eccentricity of the building when the design was first presented to you and you voiced this concern to Dr Reay. Please advise:
- (i) What was Dr Reay's response to your expression of concern?
  - (ii) Did Dr Reay support your proposal to introduce the coupled shear wall on the south wall, or did you proceed with this without his approval?
- (f) You have said in your letter of 21 February 2012 that Dr Reay had designed a number of "*such buildings*" and this was your first. Please advise:
- (i) What is meant by the reference to "*such buildings*". Is this a reference to multi-storey shear core buildings?
  - (ii) Are you referring to Dr Reay personally or to his company (Alan Reay Consultants Ltd and its predecessor entities)?

- (iii) What is the source of your understanding that Dr Reay had designed a number of "*such buildings*"?
  - (iv) Can you recall the location of these buildings?
  - (v) In respect of your statement that this was your first building of this kind, what kind of building did you consider the CTV building to be?
  - (vi) What kind of buildings did you have previous experience with?
- (g) In previous correspondence with you, you have been asked about the letter from Mr G L Tapper, a City Council engineer, dated 27 August 1986. Your advice has been that you do not recall any conversation with Mr Tapper in relation to that letter or the issues it raises. However Dr Reay has advised that you were the person within ARC who had the responsibility for dealing with the issues raised in that letter. Also **enclosed** is a letter dated 19 August 1987 from you to the Manager of Williams Construction Ltd. This refers to the question of axial restraint for the floor slab being the subject of detailed discussion with Council officers at the time of the Building permit application, apparently in the context (at least in part) of fire rating. You will note that the handwritten letter from Mr Tapper previously forwarded to you refers in relation to drawing Sh 15 to a fire rating "*(f.f.r)*" issue. The Document Transfer Form signed by you (also previously sent to you) and sent to Mr Tapper also refers to the fire issue.
- (i) In light of the statement by Dr Reay that you had the responsibility for dealing with the issues listed in the Tapper letter, the 19 August 1987 letter and the Document Transfer Form, do you still maintain the statement you made in your previous letters of 20 September 2011 and 21 February 2012 that you do not recall any discussion with Mr Tapper over the issues referred to in his letter?
  - (ii) If you do, who is it from ARC you are referring to in your letter of 19 August 1987?
  - (iii) If the reference is to you, do you say you were meeting with someone other than Mr Tapper?
  - (iv) Did you deal with Bryan Bluck in relation to the concerns identified in the Tapper letter, or in order to persuade Bryan Bluck to authorise the issuing of a building permit?
  - (iii) If not, do you know whether Dr Reay was involved in dealing with Bryan Bluck over these issues?
- (h) The Royal Commission has been advised that a design certificate ought to have been provided to the Christchurch City Council in respect of the CTV Building. The Council has no record in its files of a design certificate being provided. Please advise.
- (i) Do you recall whether a design certificate was provided to the Council?
  - (ii) If yes, do you recall who signed that certificate and, in particular, did you sign it?

- (i) I understand from Dr Reay that you signed off on the structural drawings presented to the Council for permitting. Is this correct?

This information is required by the Royal Commission in the exercise of its powers under s4C of the Commissions of Inquiry Act 1908. A reply is required by no later than **5.00pm on Wednesday 4 April 2012**. If an earlier response is possible it would be appreciated. Thank you for your continued cooperation with the important work of the Royal Commission.

Yours faithfully



Stephen Mills QC  
Counsel Assisting  
Canterbury Earthquakes Royal Commission

Cc: M Kirkland  
Saunders & Co  
Lawyers  
Email: [jmk@saunders.co.nz](mailto:jmk@saunders.co.nz)

1987-08-19 11:55 03 793 981

ALAN REAY CONSULTANTS

011 P

**ALAN M. REAY CONSULTING ENGINEER**

ALAN M. REAY  
B.E. (Hons.), Ph.D.  
M.N.Z.I.E.  
Registered Engineer  
Structural Consultant

147 KILMORE STREET  
BOX 25 028, VICTORIA ST.  
CHRISTCHURCH, 1.

Telephone: 60-434

File 2503

19th August, 1987.

The Manager,  
Williams Construction Ltd.,  
P.O. Box 538,  
CHRISTCHURCH.

Dear Sir,

RE: OFFICE BUILDING - 249 MADRAS STREET

Further to our recent discussion, we have received a copy of the City Council letter by Mr. B. Bluck, dated 17th August, which was recently sent to you.

We consider the use of end caps or "stop off plates" as described by Mr. Bluck to be standard practice, and in this case they were in our opinion supplied and fixed as detailed in the manufacturer's written instructions.

In this situation the floor slab does not depend on axial restraint to provide a Fire rating to the exposed steel floor, and therefore the integrity of the Hi-Bond is not affected by the use of end plates.

The question of restraint was discussed in detail with Council officers at the time of Building Permit Applications and at that time it was agreed that the Fire rating for the floor would be achieved by including additional "Fire Emergency" reinforcement in the floor slab, which would support the floor without assistance from the Hi-Bond. Calculations in support of this proposal were submitted to the Council and were subsequently approved.

We can confirm that from site inspections carried out by this office, we consider that the floor slabs and their reinforcement were constructed in conformity with our drawings and specifications.

I have had a recent meeting with Mr. Tapper of the City Council, and can confirm also that the Council hold copies of our drawings and calculations.

On the basis of the above information we believe that the as-built floor slabs have a fire rating of at least 1½ hours without the application of any fire rating material.

Yours faithfully,



N. Harding