

Under **THE COMMISSIONS OF INQUIRY ACT 1908**
In the matter of the **CANTERBURY EARTHQUAKES ROYAL COMMISSION
OF INQUIRY INTO THE COLLAPSE OF THE CTV
BUILDING**

**AMENDED COMPOSITE STATEMENT OF EVIDENCE
OF ALAN MICHAEL REAY – CODE COMPLIANCE**

Dated 13 August 2012

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AMENDED COMPOSITE STATEMENT OF EVIDENCE OF ALAN MICHAEL REAY – CODE COMPLIANCE

SECOND STATEMENT OF EVIDENCE

1. My full name is Alan Michael Reay. I reside in Christchurch. I am a Chartered Professional Engineer and a Company Director.
2. I refer to my first statement of evidence dated 7 June 2012 for details of my qualifications and experience. I again confirm that I have read the Code of Conduct for expert witnesses and that my evidence complies with the Code's requirements.

CTV Building Compliance

44. I have been asked by the Royal Commission to express an opinion on the compliance of the CTV Building with the Code of the day. My opinion on the compliance of the CTV Building is as follows:

(a) At time of Building Permit application and issue:

With the passage of time there is no certainty as to the documentation used for the permit application. Equally there is also no certainty as to the documentation issued to the building contractor with the Building Permit. It is therefore not possible to definitively state whether the building documentation complied with the Building Code/Christchurch City Council ("**CCC**") bylaws at that time.

Based on the fact that the CCC issued the Building Permit for the building, the CCC must have considered that the building complied with the relevant codes/bylaws at that time.

Based on my review I have identified two areas of possible non compliance with the building codes within the Council approved drawings that are available in this hearing:

- (i) The beam column joints: In my view, the drawings show inadequate transverse reinforcing in the beam column joint, contrary to clause 9.4.8 of NZS3101. The joints ought to have had spiral reinforcing at a maximum of 200mm centres. The drawings show spiral reinforcing at 250mm centres, which is in excess of the code requirement.

- (ii) The connections between the floor and the northern shear core of the CTV Building, the subject of remedial work in 1991.

(b) When constructed:

When constructed by Williams the building did not include the additional ties installed between the shear wall and the floor diaphragms in 1991. In the absence of as-built drawings or other evidence to support the as-built condition of the building, I am unable to express a view different to that set out in (a) above.

(c) Following the 1991 additional work.

Holmes Consulting Group Limited ("**Holmes**") noted in its January 1990 report:

"The layout and design of the building is quite simple and straight forward and generally complies with current design loading and materials codes."
(clause 3.0 (2))

However, notwithstanding this comment in the Holmes report, it is now my view that following the 1991 works to install drag bars on levels 4, 5 and 6 of the CTV Building, it possibly remained non-compliant in relation to the beam column joints, discussed in (a)(i) above.

Dated this 13th day of August 2012



A M Reay