



**UNDER THE COMMISSIONS OF INQUIRY ACT 1908**

**IN THE MATTER OF ROYAL COMMISSION OF INQUIRY INTO BUILDING  
FAILURE CAUSED BY CANTERBURY EARTHQUAKES**

**KOMIHANA A TE KARAUNA HEI TIROTIRO I NGĀ  
WHARE I HORO I NGĀ RŪWHENUA O WAITAHA**

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**SECOND STATEMENT OF EVIDENCE OF JOHN STUART O'LOUGHLIN IN RELATION  
TO THE CTV BUILDING**

**HEARING BEGINNING: 25 JUNE 2012**

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## INTRODUCTION

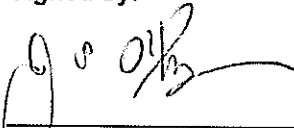
1. My full name is John Stuart O'Loughlin. I am a Structural Engineer living in Christchurch. I refer to my previous statement of evidence dated 18 June 2012. My qualifications and experience are set out therein.
2. Since preparing my 18 June 2012 statement I have had the opportunity to read the evidence of Geoffrey Nigel Banks dated 31 May 2012. I wish to comment on paragraph 28 to 31 of this evidence. At paragraph 28 Mr Banks indicates that when he reviewed the calculations for the CTV Building in 1990 he noted that there were no calculations relating to the connection between the floor diaphragms in the "two walls in question".
3. In my evidence I refer at paragraphs 40 to 49 to the calculations shown on S56 and S57 [reference of the structural engineering design calculations]. The calculations I was referring to relate to the connection between the diaphragms and the two walls on the western side of the north shear core and the wall on line 5. The walls to which Mr Banks is referring when he notes the absence of calculations relate, I surmise, to the two eastern walls of the north shear core. Mr Banks is quite correct that there are no calculations relating to the transfer of load for an earthquake in a north/south direction to these walls.
4. I should note that the calculations on S57 refer to a wall length over which the load is being transferred of 1.4m on line 5 (also refer diagram on S56). I note in fact that the length of the wall to which the load was transferred in the final permitted drawings is shown as a total length of 2.35m. One possible explanation as to how this may have been achieved is that there was a reduction in the dimensions of the air conditioning duct in the western corner line 5 B/C.
5. It may be that this change to length of wall as referred to in the calculations and as shown on the final drawings was a response to the query raised in Mr Tapper's letter of 27 August 1986. It is not possible to be certain whether this is the case given that, as I understand it, copies of the plans as submitted to the Council, and prior to amendment, are not now able to be located.
6. On the basis of my review of the calculations and plans, I believe that the amendment to extend the length of wall over which the east/west load was

being transferred would have led to my concerns with regard to the east/west loading being addressed and would likely have bought the building into or close to compliance for the east/west load transfer.

7. I note however, and on this point I agree with Mr Banks, that there were no calculations relating to the transfer of load for a north/south earthquake on the two eastern walls. The calculations on S56 and S57 give sufficient comfort of load transfer for a north/south earthquake for the two western walls of the north shear core but not those on the eastern side.

Dated: 27.6.12

Signed by:



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Name: John Stuart O'Loughlin