

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
NGA WHARE I HORO I NGA RUWHENUA O
WAITAHA**

AND IN THE MATTER OF

THE CTV BUILDING COLLAPSE

**STATEMENT OF EVIDENCE OF WILLIAM JONES IN RELATION TO THE CTV BUILDING
COLLAPSE**

DATE OF HEARING: COMMENCING 25 JUNE 2012

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Introduction

1. My full name is William (Bill) James Jones. I live in Ashburton. I am retired.
2. I am giving evidence to the Canterbury Earthquakes Royal Commission because I was the foreman for the building that was constructed at 249 Madras Street. This building later became known as the CTV Building (**the building**).

Personal Background

3. I started working in the construction industry straight from school at age 15. My first job was with Williamsons. I worked as an apprentice unofficially for about 18 months and was then offered an apprenticeship through work experience but as I would be paid a lot less, I decided to stay on as a hammer hand. I became a carpenter and worked my way up to the position of leading hand with Williamsons.
4. After about two years I left Williamsons and got a job with Luneys, where I stayed for about five years. I worked on the Memorial Wing of the Canterbury Museum as a carpenter and hammer hand. I also worked on St Mary's Church in Manchester Street, St Stephen's Church in Papanui and the Government Life Building in the Square among others.
5. My first job as a foreman was for Barry Rea Construction in about 1958. We worked on a new building at the airport.

6. In approximately 1960 I joined Paynter and Hamilton as a foreman. We built a bus depot in Hereford Street and the bottling store for New Zealand Breweries near Christchurch Hospital.
7. Prior to 1986 I had worked on a number of multi-level shear core buildings. I was the foreman for Williams Construction (**Williams**) on the Radio Avon building in Kilmore Street. This was either four or five levels and had a shear core on one side of the building. I also was the foreman for a six level office and retail building in Cashel Street built for the Pyne Gould Corporation and the Aged Persons Welfare Building, a four level building with the lift core at the back, on the corner of Cashel Street and Cambridge Terrace.
8. After I was made redundant from Union Construction, which I joined after Williams, I worked for a number of years at St George's Hospital. I retired in 2007 after 49 years in the construction business.

Williams Construction

9. I cannot recall when I started working for Williams but my first job for them was the Radio Avon building. I do remember before the 249 Madras Street job I worked on the Aged Persons Welfare Building in Cashel Street and the Christ's College housing project.
10. At the time I worked on the Aged Persons Building, Geoff Taylor was my boss. During construction of 249 Madras Street Geoff Taylor left Williams and Gerald Shirtcliff was appointed as his replacement.
11. I enjoyed working for Williams. It was a good construction company and was well managed. The foremen were kept in the picture by management. Every time

Williams got a new contract the foreman would be invited into the office to meet each sub-contractor over a few drinks. The engineer and the architect might be invited by management as well.

Aged Persons Building

12. The Aged Persons project started in 1985 and took about six months to complete.

Alan Reay was the structural engineer on that project. I remember contacting Alan Reay about lifting the concrete panels.

13. After the Aged Persons Building I did a couple of jobs in between and then went to the 249 Madras Street job.

249 Madras Street

14. I was the foreman for this project. I have been shown a Council inspection record for the building which is dated 20 August 1987 and records that there was a new foreman on site **[BUI.MAD249.0117B]**. I recall that the topping of slab to the lift was placed on 10 July 1987. I remember this date as it was the day I attended my mother's service of remembrance at the Harewood Crematorium. After that I can remember doing the roof steel and closing in the building but that is all. I do not recall doing the linings to the outside wall on line A from level 4 to the underside of the roof. I do not recall doing the fitout to the inside, or the ceilings, door jambs, trim skirtings or the pre-cast planters and pre-cast panel detailed on Sheet S26 **[BUI.MAD249.0284.27]**.

15. It would take approximately six weeks from the topping of the lift slab to the closing in of the building. That would mean that by 20 August 1987 I was no longer on site and a new person must have taken over as foreman, as the Council inspection record dated 20 August 1987 suggests.

16. I do recall being on the site at the end of the project, fixing the signs to doors for the toilets and exits and meeting the Council and the Architect or Engineer and handing over the keys.

Responsibilities of the Foreman

17. The responsibilities of a foreman on a job like this are to manage the tradesmen, build the building to the plans and specifications and to keep the construction on schedule. I set out below a list I have compiled which summarises a foreman's responsibilities:

- a. Set out site
- b. Safety of all workers on site
- c. Staff – allocate jobs according to their skills
- d. Contract sub-contractors with drawings of all relevant details
- e. Office duties/order materials as required
- f. Critical Path Programme prepared – Bar Chart – update as required each week
- g. Phone Engineer for inspections of foundations, columns, beams, slabs, walls, roof steel and all items on the Engineer's drawings before placing formwork, concrete and linings
- h. Pass on Engineer's instructions to sub-contractors and send copy to Williams office
- i. Draw up formwork and set out works. Do levels, check plumb and walls and columns with theodolite level
- j. As the job progressed check all schedule items for quantity and order materials to meet site requirement and programme date for on-site delivery
- k. Check on workers several times a day

- l. Work with tower crane operator as 'Dog-man' on the ground checking and securing loads before being lifted then radio instruction to operator
 - m. Plant maintenance. Plant in general
 - n. Security on crane and site sheds
 - o. Time sheets for each staff member with hours worked and contract analysis for materials and labour. All orders to supplier with quantities of item along with full description of job and code number
 - p. Site Report Book – two copies completed each day, includes list of staff, list of sub-contractors, visitors to site, work in progress and weather
18. There were around approximately 8 to 14 staff who reported to me that were working on the building at any one time. Some of the staff would be working on the shear wall, others on the wall on the south, others on the columns. Some of the staff were hired on a daily or weekly basis. If they were good we tried to keep them, otherwise we would get rid of them. Some of them stayed for up to three months. It was hard to get good staff. There was a lot of building going on round Christchurch at that time. There were others on site at different times, for example the sub-contractors who placed and tied the reinforcing steel.
19. When I first started on this project I went to the Williams' yard in Vagues Road in Papanui. At that stage, the staff had cast about 75% of the beams that later went into lines 2 and 3 and A for levels 2 to 6. I was involved in placing another casting bed at Vagues Road to speed up the casting process. Then I designed and manufactured the formwork for the North Core with the staff that were working at Vagues Road while the rest of the beams were completed.
20. I have no recollection of the shell beams being made at Vagues Road but they could have been done before I got there.

Foundations

21. I remember that the foundations for the building were quite simple. They were not very deep and were just pads in some areas. When I was shown the drawings for the building by Dr Clark Hyland in September 2011 I could confirm that there were four pads on line 2. Three of those were not tied into the perimeter of the building. There were also four pads on line 3 which were tied into the core [BUI.MAD249.0284.3].
22. I am fairly certain that it was on this site where I smelt gas in the soil for quite some time during the excavation process.

Components

23. The beams and spandrel panels were pre-cast and brought onto the site while the columns and floor slabs were poured in situ, meaning on site. I do not recall which company made the pre-cast beams.
24. The building was built one level at a time. My recollection is that we would have started on the western face of the building and worked out. The columns were poured and then the beams would be lifted up and the slab poured. The North Core and the South Wall were built level by level as well. My memory is that the blockwork on the western side was built in later and may have been saved as a job to be done over the winter.
25. I have been shown three photographs that have been provided to the Royal Commission which show the building at three different stages of construction.
26. Photograph **BUI.MAD249.0077A.2** has been taken from the opposite side of Madras Street looking North West. On the left hand side of the photograph you can see the

building which was on the corner section of Madras and Cashel Streets during the construction of the building and which must have been demolished sometime later. My office was in the white portacom with the Williams signage. When this photograph was taken the ground floor columns were in place with starter reinforcing rods coming out the top of each column.

27. As the floors progressed we used a tower crane which was attached to the building on the Madras Street side at the southern end. This can be seen in **BUI.MAD249.0077A.1** By this stage my office is up above the footpath. In this photograph construction is up to Level 4 (if the ground is Level 1) and the North Core is at the same height.

28. The third photograph **BUI.MAD249.0077A.3** shows all six levels and the roof on the building. The tower crane is still there. The scaffolding is still in place around the North Core. The canopy over the entrance to the North Core off Madras Street is not visible in the photograph so must not have been completed at this point.

Columns

29. The reinforcing steel starter bars and the spiral reinforcing for the columns were supplied by Christchurch Steel. The spiral reinforcing was 6mm in diameter. When the tradesmen brought it onto the site for the columns they just pulled it from each end until it was 250mm pitch. That was then placed around the starter bars and then the formwork was placed around that.

30. We used steel formwork for the round columns. The ground floor was higher than the rest so the formwork was made to the height of the other five floors and then we put an extender on top when we were pouring the columns for the ground floor.

31. Three or four columns would be poured at a time. The next day we would strip the formwork off and spray the columns with a sealant which kept the moisture in. The engineer allowed us to do this rather than keeping the columns wrapped in hessian for seven days. That sped up the process by saving us that curing time.
32. I do remember thinking that the reinforcing in the columns and the size of the columns made this building light, having regard to its height. I had built other buildings where there was so much steel in the columns you could not fit a recessed light switch into the column. The spiral reinforcing was quite light too because as I have already stated it was able to be stretched out on site.
33. I was responsible for ordering steel and ensuring it was delivered. I would supply the drawings and detail sheets to the sub-contractor. The steel placer would then come on site and put the steel in place. I would check that the steel was clean and tidy and then phone the Engineer for inspection when the steel placer informed me that he had completed his work. Inspection of reinforcing steel was not my responsibility but I would take responsibility for any steel placed by my staff, for example the extra steel for the bracing of the tower crane to the slab. The Engineer would also be contacted for inspection of this work.

Beams

34. The pre-cast beams sat on a small seating at the top of each column. This may have been as little as 20 to 30mm so the beams were all propped. They had reinforcing already in them which joined into the columns.
35. The beams on the perimeter of the building were shell beams which meant they were hollow on the inside. These were all put in place before the slab was poured.

36. I have been told that the Hyland/Smith report states that there was no roughening on the inside face of the shell beams. These were made by a pre-cast supplier arranged by Tony Scott. They arrived on site ready to go. I never thought about roughening them. If I had noticed that they were not roughened and were meant to be I would have contacted the supplier.
37. The supplier should have painted the formwork with 'Rugasol "MH"' retardant before placing concrete and cleaned it off when the formwork was removed from the mould. This gave a roughened joint with no latent surface. I have provided a document about 'Rugasol "MH"' to Counsel Assisting the Royal Commission **[BUI.MAD249.0420.1]**.
38. There was also another product called 'Rugasol "C"'. This was used on the site and painted onto the wall joints as soon as the concrete was set and washed off the next day. We also cleaned the concrete from the reinforcing steel at the same time with 'Rugasol "C"' **[BUI.MAD249.0420.2]**.

Shear Walls

39. The shear walls were built at the same time as the columns up to the underneath side of the slab.
40. The outside walls of the North Core may have been built up higher than the floor level but the area inside the walls was poured at the same time as the rest of the floor slab on that level. Before the floor was poured the reinforcing bars and the 664 mesh would then be put in place in the shear core then out over the metal decking and then the floor would be poured over the reinforcing.

41. For the South Wall we had formwork made up to the height of the next floor. I would set out where the weld plates were going to go and then the steel placer would come and tie the diagonal reinforcing steel into the wall. We then completed the formwork and poured the concrete for the wall.

Floor Slabs

42. The pre-cast beams had a recessed part, a seating built into them where the metal decking could be placed and supported by the beams.

43. The floor slab would be poured once all the steel work was in place on a floor. After the slab was poured we sprayed it with water for a day and then used the same spray as we used on the columns to prevent the concrete drying out.

44. This was one of Williams first jobs where the floor was free-screeded. This meant that we pre-cambered the floor to the levels set on Sheet S15 by placing pads and hand screeding with a 3 metre aluminium screed between pads.

45. We propped the floors at pre-camber points and left the props in place as we went up the building. We kept a minimum of two fully propped floors throughout the build. Williams had plenty of props.

46. It did worry me that we would be lifting our equipment up onto a floor the day after it was poured. The first thing we would be lifting up would be the steel for the columns. It would take me about a day to set out the gridlines on the new floor slab to work out where the columns would go but after that we would be straight onto the next lot of columns.

Concrete

47. Prior to construction commencing Tony Scott would organise a concrete supplier for the whole project but if that supplier could not supply concrete when it was needed I had the approval of the company to go to another supplier. We had always had only one supplier for each floor. I do not remember who the concrete supplier was for this job.
48. When the concrete truck arrived the driver would give me a docket which recorded the strength of the concrete. I kept one docket and another went back with the truck. I always received a docket which confirmed that the concrete delivered met the strength that I had ordered.
49. I would ring the engineer for every pour except the columns because the steel was there sticking out of the columns for them to see at their initial inspection. Quite often, in relation to the columns, the Engineer did not arrive at the site. They would say *"if you don't see us, go ahead"*. This did not concern me.
50. About the time of the construction of the building at 249 Madras Street the concrete supplier was using crushed sand in the mix. This was to give the concrete more strength. It also made it harder to pump. The finish on the floor slabs was not as good with this kind of mix as the crushed sand would tip when the floor slab was being finished off with a hand float. It was my understanding that they could use less cement to obtain the required strength when crushed sand was added.
51. I also recall that the columns were being placed four or five at a time which required about 2.5m³ of concrete. Sometimes the concrete truck would be carrying a split load of up to 5m³ but we would not always get our 2.5m³ delivered first.

Masonry on the western wall

52. The western side of the building was blockwork masonry up against an existing building. The columns on that wall were square rather than circular and there were pre-cast beams between each column. The beams had dowels in them to put the block work in at a later date. Those beams had to go in before the slab was poured on top because they had starters going into the slab.
53. I do not recall if the blockwork was put in first and then the beam put on top or if the beam was propped and the blockwork put in later. The blockwork may have been left as an inside job for the winter. I have been shown the Council inspection record which records that as at 9 October 1987 the block work on the first and second floor was to be filled in on the west end [BUI.MAD249.0117B].
54. I do not have any recollection of the engineers coming to inspect the blockwork before it was grouted. As there was a building hard up against the masonry wall mortar could not have been placed on the outside wall at the time 249 Madras Street was built.
55. I recall there were rods threaded into inserts in the square columns and beams and built into the blockwork. These rods were greased to allow for movement. I do remember there being a gap down the side between the square columns and the blockwork.

Spandrel Panels

56. The spandrel panels were pre-cast and came to the site with the textured finish already on them. I remember that they were just lifted up with the tower crane and sat in place between the columns on brackets which had been fixed into the beam.

Once it was in alignment we bolted them on with tru-bolts. There was timber in-fill between the spandrel and the column and on the corners as well.

57. When I was interviewed by Dr Hyland last year I said to him that I did not remember any problems with fitting the spandrels. After that interview I did have a recollection of having to chip the edge off one of the panels to ensure there was a gap between the panel and the column but I cannot be any more specific than that.

Levels Survey

58. I note from the Hyland/Smith report that the North Core was found to be out of plumb. I can say that the building was plumb when I left the job and the lift was working well.

Supervision and Monitoring by Design Engineer and Council

59. I do recall inspectors from the Christchurch City Council coming onto the site and I have seen the summary of their inspection cards [BUI.MAD249.0117B].

60. My impression is that the Council inspectors relied on the design engineer to do supervision and maintenance.

61. I would observe that by the time the building was constructed there was less supervision of construction than I had been used to in the past. I had been used to having a Clerk of Works on the site who was there to look after the client's interest. They had their own office on site. The clerk of works was invaluable to the foreman to help with technical matters. For example I remember building the St Mary's Church and being told to stop building on the back of the building and start on the front because the Clerk of Works on that job had taken a level and found that it had gone down 30mm.

Williams to Union Construction

62. At some point during the construction of the building the Richmond Smart Corporation took over Williams. Sometime after that Michael Brooks left Williams and Tony Scott left soon after. Together they formed a new company, Union Construction Limited (**Union**) with the backing of Angus Construction. I do not remember exactly what stage the building was at when this happened but I think it was fairly well on.

63. I left Williams and went to work for Union. I was working for Union by December 1987 because on 21 December 1987 I applied for a building permit on behalf of Union to erect a canopy covering the entranceway from Madras Street into the North Core. The permit was issued by the Council on 25 January 1988 and I have signed the permit [**BUI.MAD249.0010A.14**].

64. There was an issue with the placing of the columns for the canopy on Madras Street which is reflected in the Council inspection records [**BUI.MAD249.0117B**]. The columns were 200mm outside the boundary and had to be moved back. The Council records state that by 11 January 1988 they had been moved.

65. I remember after leaving 249 Madras Street I joined Union. Together with two other foremen that went over to Union with me we were offered one share in the company between us as a bonus. That came to nothing though because the only jobs that Union did was the foundations for two buildings.

66. I remember that someone from Angus Construction came down from Wellington and said that Angus was going under and that Union would too unless it had some big projects in the pipeline. I stayed on until the end of Union and sold off the company's materials and equipment. I received a reference from Michael Brooks dated 23

September 1988 which records that I was made redundant by Union "following the local downturn in the industry" [BUI.MAD249.0309.1].

Telephone Call about the Building

67. Some years after the building was constructed I received a telephone call from someone who was making inquiries about the building as he was interested in buying it. He wanted to know about the alterations that had been done on the top floor to the core. I said that I did not know anything about that.

68. I always thought that the building was intended to be for light office work. I have wondered since whether the building could have handled the weight of the cameras and other equipment that Canterbury Television would have had in there.

69. I also think that removing the tower crane at the end of the construction could have damaged the building. It had a concrete base and a large hole had been dug out for it.



William Jones

Date: 1/6/2012