

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**

**MEMORANDUM OF COUNSEL FOR CHRISTCHURCH CITY COUNCIL REGARDING
THE CTV BUILDING**

DATE OF HEARING: COMMENCING 25 JUNE 2012

Legal Services Unit, 53 Hereford Street, Christchurch 8013
P O Box 73013, Christchurch 8154
Telephone (03) 941 8999

MAY IT PLEASE THE COMMISSIONERS:

1. On 17 August 2012, the statement of evidence of Anthony David Hutt dated 15 August 2012 (**WIT.HUTT.0001**) was admitted into evidence by consent and taken as read.
2. His Honour, Justice Cooper reserved leave to the Christchurch City Council to advise the Commission by Memorandum if there were any issues with the conclusions set out in the statement. His Honour ordered that any Memorandum should be filed by Wednesday 22 August 2012 (**TRANS.20120817.164**).
3. Mr Hutt's statement of evidence notes that he has been asked by Counsel Assisting to search the Council's systems for buildings in Madras Street built in the same era as the CTV building, being 1985-1986. Mr Hutt states that the purpose of his evidence is to provide facts that may be relevant to the issue of whether the building in Madras Street, referred to in the evidence of Mrs Patricia (Pat) Tapper, was the CTV building.
4. Mr Hutt refers in his statement to one other building in Madras Street that was issued with a building permit during this period. The building referred to is 213 Salisbury Street.
5. Mr John Buchan, a former Council officer currently contracted to the Council, has carried out a separate review of Council records for the same purpose as that described in paragraph 3 of this Memorandum.
6. No other buildings were identified by Mr Buchan which were located on Madras Street (between Bealey Avenue and Moorhouse Avenue), and which had been granted a building permit between 1985 and 1986.
7. Mr Buchan did however also extend his search to the full period that Mr Tapper was employed at the Christchurch City Council, that is the period from 1985 to 1992.
8. Mr Buchan has identified another building on Madras Street, designed by Alan Reay Consultants Limited, which received a building permit in 1990. The

relevant address is 347 Moorhouse Avenue, which is on the corner of Moorhouse Avenue and Madras Street.

9. Mr Buchan has reviewed the building permit file for this building. The file includes correspondence between Mr Tapper and Alan Reay Consultants Limited concerning an apparent disagreement about the seating of Unispan and Dycore units. Mr Buchan has extracted various relevant documents from the permit file in relation to this matter. These documents are attached as **Annexure "A"**. It is also noted that Mr John Henry, in answer to a question from Counsel Assisting, (**TRANS.20120802.53-54**), referred to disagreements between Mr Tapper and Alan Reay Consultants Limited, involving concerns about the seating for pre-cast floor units (*"which might be a uni-span or Dycore unit"*) and their anchorage to walls.

Dated: 22 August 2012



DJS Laing / K Reid / ND Daines
Counsel for Christchurch City Council

"A"

BUI.MAD249.0606.4

CHRISTCHURCH CITY COUNCIL

90095511

BUILDING PERMIT APPLICATION

APP No: 09-5511

To: The City Engineer,
Christchurch City Council

ZONE: B 2

Date: 9/5/90

I/we hereby apply for a Building Permit for the work described below and in accordance with the plans and specifications deposited herewith in duplicate:

DESCRIPTION OF WORK: Erection of single storey shopping centre with mezzanine floors

PROPOSED USE:

SITE AND LEGAL DESCRIPTION

Street Address: ~~Crossed~~ ³⁴⁷ ~~Mochose & Madras Street~~

Lot No. Area 1 DP No. A9323 enclosed

Site Area 16800m² approx. CT No.

FLOOR AREA (M²)

New Building: 2000 Additions:

Estimated Value: \$3,200,000

OWNER OF SITE

Name: Allied Properties

Address: Developments Ltd
c/- P.O. Box 25028 Chch.

BUILDER

Name: ~~John Adams~~

Address: Hanham 7 Ph/O
P.O. Box 8061

Contact Phone No.

EMPLOYER FOR WHOM WORK IS BEING CARRIED OUT

Name: Allied Properties

Address: Developments Ltd
c/- P.O. Box 25028 Chch.

DESIGNER

Name: Alan Reay Consultants Ltd

Address: P.O. Box 25028
Christchurch

Contact Phone No. 660 134

Name of Applicant: A. REAY (PLEASE PRINT)

Signature of Applicant: *A. Reay*

OFF	PLAN ROOM	WW1	WW FEES	CDB	TP	TE	SW	STR	EGR	DES	HI	P & R	SUR	DBI	CB
<i>R</i>	<i>P/B</i>	<i>7-6-90</i>	<i>C/-</i>	<i>P/B</i>				<i>Set 2</i>	<i>Set 2</i>	<i>Set 3</i>			<i>Set 2</i>		
			<i>SW</i>	<i>CI-1-B</i>					<i>Set 3</i>						

P.W.A. Ltd 35280

Letter of title amalgamation covering site works plans

12578

SET 1

CHRISTCHURCH CITY COUNCIL

BUILDING PERMIT APPLICATION

APP No: 09-5511

ZONE: Bas 1

To: The City Engineer, Christchurch City Council

Date: 9/5 1990

I/we hereby apply for a Building Permit for the work described below and in accordance with the plans and specifications deposited herewith in duplicate:

DESCRIPTION OF WORK: Erection of single storey shopping centre with mezzanine floors

PROPOSED USE:

SITE AND LEGAL DESCRIPTION
Street Address: 347 ~~Canal~~ ~~Marshouse~~ ~~St~~
~~Market Street~~
Lot No. Area 1 DEAN: A9323 enclosed.
Site Area 16,800m² approx. CT No.

FLOOR AREA (M²)
New Building: 7400 Additions:

Estimated Value: \$3.62 million + GST
\$275 m R Fleming

OWNER OF SITE
Name: Allied Properties
Address: Developments Ltd
c/- P.O. Box 25028, Chch.

BUILDER
Name: To be Advised
Address:
Contact Phone No.

EMPLOYER FOR WHOM WORK IS BEING CARRIED OUT
Name: Allied Properties
Address: Developments Ltd
c/- P.O. Box 25028, Chch.

DESIGNER
Name: Alan Reay Consultants Ltd
Address: P.O. Box 25028
Christchurch
Contact Phone No. 660 434

10 MAY 1990
Name of Applicant: A. REAY (PLEASE PRINT)

Signature of Applicant: [Signature]

Table with 14 columns: IFF, PLAN ROOM, WWI, WW FEES, CDB, TP, TE, SW, STR, EGR, DES, HI, P & R, SUR, DBI, CBI. Includes handwritten notes like 'R set 1', 'set 1', 'Dev. R', '18/6', 'set 3', '30/5/90'.

Letter re site amalgamation permit needs 30/5/90 OK.
site works plans

SET 2

12578

CHRISTCHURCH COUNCIL

BUILDING PERMIT APPLICATION

APP No: 09-56

ZONE: B2

To: The City Engineer,
Christchurch City Council

Date: 7/5 1990

I/we hereby apply for a Building Permit for the work described below and in accordance with the plans and specifications deposited herewith in duplicate:

DESCRIPTION OF WORK: Erection of single storey shopping centre with mezzanine floors

PROPOSED USE:

SITE AND LEGAL DESCRIPTION
 347
 Street Address: ~~101~~ ~~Maxhouse St~~
~~Walker Street~~
 Lot No. Area 1 DB No. A7323 enclosed.
 Site Area 16800m² CT No. approx.

FLOOR AREA (M²)
 New Building: 7400 Additions:

Estimated Value: \$3,200,000
~~\$3.2 million GST~~

OWNER OF SITE
 Name: Allied Properties
 Address: Developments Ltd
 c/- P.O. Box 25028, Chch.

BUILDER
 Name: ~~John Adams~~
 Address: Hanham & Philp
 P.O. Box 8061
 Contact Phone No.

EMPLOYER FOR WHOM WORK IS BEING CARRIED OUT
 Name: Allied Properties
 Address: Developments Ltd
 c/- P.O. Box 25028, Chch.

DESIGNER
 Name: Alan Reay Consultants Ltd
 Address: P.O. Box 25028
 Christchurch
 Contact Phone No. 660 134

Name of Applicant: A. REAY (PLEASE PRINT)

Signature of Applicant: *A Reay*

PLAN ROOM	WWI	WW FEES	CDB	TP	TE	SW	STR	EGR	DES	HI	P & R	SUR	DBI	CBI
1-RSET/1	1	1			SET 2		1-SET	8.6/10	11/5/90	10				

amalg
 Letter re site amalgamation coming
 site plans require these plans before checking
 12578
SET 3
 See attached



CHRISTCHURCH CITY COUNCIL

P.O. BOX 237 CHRISTCHURCH NEW ZEALAND

..... IN REPLY PLEASE QUOTE
 IF CALLING PLEASE ASK FOR
 EXTENSION NO. 14 June 1990

Alan Reay Consultants Ltd
P.O. Box 25-028

04140/175/347

CHRISTCHURCH

Dear Sirs
 Your application number 09/5511 to erect shopping centre
 at 347 Moorhouse Ave is held up pending receipt of:

- a report describing the bracing system and integration of the structure and the manner in which the designer expects it to function

- a full set of computations to support the design and show how it complies with the Building Bylaws

- Soil test results to support the 'posthole' design concept.

Yours faithfully

For B C Bluck
BUILDINGS ENGINEER



147 KILMORE STREET
CHRISTCHURCH 1

TELEPHONE 666-434

P.O. BOX 25028 3257

DOCUMENT TRANSFER FORM

To: Christchurch City Council

Date: 1/6/90

Project Name: Big Fresh

Attention: City Engineer

Project No.: 3570

As requested by _____ by phone letter on _____

We enclose the following:

- Prints
- Reports
- Draft Specs
- Schedule
- Specifications
- Photocopies
- Calculations
- Sketches
- Design Cert.

Item No.	File No.	Description
	3570	Design Certificate for Big Fresh
		Permit Application No. 07-5511
<p style="font-size: 2em; font-weight: bold;">90-674</p> <p style="font-size: 3em; font-weight: bold;">SHEET 2.</p>		

Sent Via:

- 1 Mail
- 2 Airmail
- 3 Parcel Post
- 4 Courier
- 5 Our Delivery

Item No.	Copy of Documents also sent to:	Via
Copy of this Form only to:		Via

ALAN M. REAY per



147 KILMORE STREET
CHRISTCHURCH 1

TELEPHONE 666-434

P.O. BOX 25028 3270

DOCUMENT TRANSFER FORM

To: Christchurch City Council

Date: 7-6-90

Project Name: Big Fresh Shipping
Centre - Christchurch

Attention: Mr G.L. Tappin

Project No.: 3570

As requested by _____ by phone letter on _____

We enclose the following:

- Prints
- Reports
- Draft Specs
- Schedule
- Specifications
- Photocopies
- Calculations
- Sketches
- Reports

Item No.	File No.	Description
A	3570	Calculations - Sections 1-9
B	3570	Structural Design Features - Summary
C	3570	Soil Test Results & Location Plan

Sent Via:

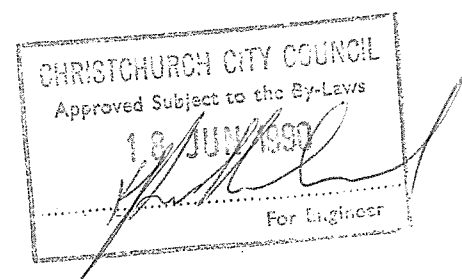
- 1 Mail
- 2 Airmail
- 3 Parcel Post
- 4 Courier
- 5 Our Delivery
- _____

Item No.	Copy of Documents also sent to:	Via
Copy of this Form only to:		Via

ALAN M. REAY per [Signature]

PERMIT CONDITIONS FOR 347 MOORHOUSE AVENUE

1. Compliance with the amendments shown on the plans.
 2. The Engineer responsible for the structural design (including the foundation system) confirming in writing that the intent of his design has been complied with before the building is occupied.
 3. Detailed drawings and specifications of the emergency lighting and exit sign system being submitted to this office for approval.
 4. The steel columns adjacent to the Rope Street frontage being provided with a 1½ hour FRR as required by Table 2 of NZS 1900, Chapter 5.
 5. The sprinkler system being designed and installed in accordance with NZS 4541 the manual fire alarm system being a Type 'C' in accordance with NZS 4561, both be connected to the NZ Fire Service's receiving equipment.
 6. The accessible toilet (area 116) being provided with either an outward opening or sliding door and grab rails all in accordance with NZS 4121.
 7. Details of the various occupancy layouts being submitted to this office for approval.
 8. Any advertising signs being the subject of a separate permit application.
 9. 2 x 8.0m commercial vehicle crossing being installed in Moorhouse/Madras Streets
 10. Any existing vehicle crossing(s) being removed.
 11. All areas used by motor vehicles, being formed and sealed.
 12. Front fence or effective vehicle barrier being erected and maintained along entire street frontage, except opposite vehicle crossing(s).
 13. Where applicable all stormwater from buildings, concrete and/or sealed areas be piped to side channel and pipes being kept clear of vehicle crossing(s).
 14. Utility pole to be relocated Madras Street blocking accessway. It is the responsibility of the property owner/developer to contact the service authority involved and pay any such fee associated with the relocation.
 15. Note: The issue of the permit does not in any way authorise the establishment of any use that does not fall within the predominate use of the Business Zone.
- N.B. Your attention is drawn to the Christchurch City Council Drainage requirements attached to the plans.

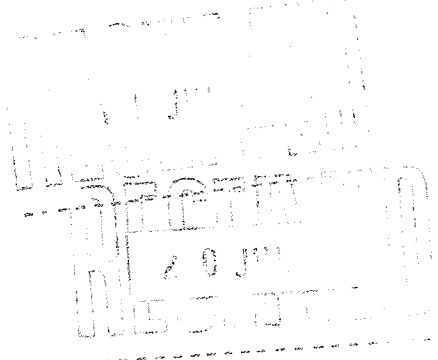


File 3570

18th July, 1990

The City Engineer,
 Christchurch City Council,
 P.O. Box 237,
CHRISTCHURCH

Attention Mr K. Sutherland



Dear Sir,

RE : BIG FRESH SHOPPING CENTRE

We have been asked by the Contractor to confirm to you that the seating of Unispan and Dycore is satisfactory.

Our analysis has shown that the 20mm seating is more than adequate to provide the necessary shear strength for the seating of Unispan and it should be noted that the manufacturers recommendations are based on the seating being larger due to the Unispan supporting the concrete topping during curing. You will note that on site the Unispan and Dycore is propped on the line of the panels thus removing the necessity to provide seating for this purpose.

Yours faithfully,

DR. A.M. REAY

9006451			INT'L	DATE
MR.	RJS	ACTION REPORT INFO	<i>[initials]</i>	20/7
MR.	Tapper		<i>[initials]</i>	20/7
MR.				
MR.				
MR.				
MR.				
REPLY	SENT	MIX	TO FOLLOW	
FILE No		900/60/175/347		

AY CONSULTANTS LIMITED

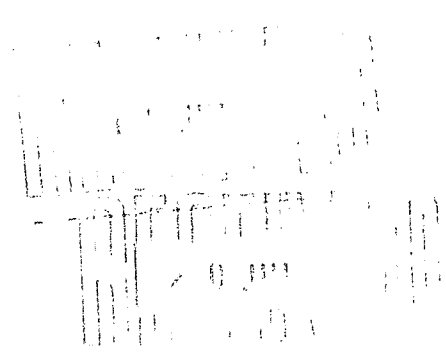
147 KILMORE ST
BOX 25-028, VICTORIA ST
CHRISTCHURCH 1
Telephone (03) 660-434
Fax No. (03) 793-981

File 3570

18th July, 1990

The City Engineer,
Christchurch City Council,
P.O. Box 237,
CHRISTCHURCH

Attention Mr K. Sutherland



Dear Sir,

RE : BIG FRESH SHOPPING CENTRE

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Our analysis has shown that the 20mm seating is more than adequate to provide the necessary shear strength for the seating of Unispan and it should be noted that the manufacturers recommendations are based on the seating been larger due to the Unipsan supporting the concrete topping during curing. You will note that on site the Unispan and Dycore is propped on the line of the panels thus removing the necessity to provide seating for this purpose.

Yours faithfully,

DR. A.M. REAY

Phone message

10

9008451		INT'L	DATE
MR. LJS	ACTION REPORT -NEC	<input checked="" type="checkbox"/>	20/7
MR. Tapper		<input checked="" type="checkbox"/>	27/7
MR.			
MR.			
MR.			
MR.			
REPLY <input checked="" type="checkbox"/>	SENT <input checked="" type="checkbox"/>	MIL <input type="checkbox"/>	TO FOLLOW <input type="checkbox"/>
FILE No 80/40/175/34			



CHRISTCHURCH CITY COUNCIL

P.O. BOX 237 CHRISTCHURCH NEW ZEALAND

IN REPLY PLEASE QUOTE BU/40/175/347
IF CALLING PLEASE ASK FOR Mr G Tapper
EXTENSION NO. 8789

FILE COPY

27 July 1990

Alan Reay Consultants
PO Box 25 028
CHRISTCHURCH

Dear Sir

Further to your letter of 18 July 1990 on the seating of Unispan and Dycore units please provide your analysis, amplified where necessary, which would then show to us that 20mm of seating is more than adequate for the as built condition. Please also provide a completely detailed design from the manufacturer of the units together with a current manufacturers recommendation for the installation of his Unispan and Dycore units.

Yours faithfully

A handwritten signature in cursive script that reads "G L Tapper".

G L Tapper
DEVELOPMENT CONTROL ENGINEER (STRUCTURAL)

GLT:ZEC

9006451



CHRISTCHURCH CITY COUNCIL

P.O. BOX 237 CHRISTCHURCH NEW ZEALAND

FILE COPY

IN REPLY PLEASE QUOTE
IF CALLING PLEASE ASK FOR
EXTENSION NO.

Mr G Tapper
8789

30 August 1990

Alan Reay Consultants Ltd
PO Box 25 028
CHRISTCHURCH

Bu/440/175/347

BIG FRESH

Dear Dr Reay

Further to your letters of 8 August and 22 August 1990 on the seating of Dycore units and calculations dated 7 August 1990 I note the division of design duty between the Manufacturer and your office but I can only discharge my Council responsibility to ensure that construction in this City complies with the relevant New Zealand Standards and By Law conditions if I have access to the Manufacturer's standards. Hence my letter of 27 July 1990 seeking a completed detailed design from the manufacturer. Your response of 8 August 1990 included two pages of calculations and three pages of printout on the design of a 7 metre unit for Big Fresh. This later printout is only part of the design process. It does not cover reference to appropriate materials or workmanship standards, quality assurance, tolerances and the like. Again I comment that there is more to structural design than presenting mathematic modelling to the permitting authority.

As you are aware following our joint site inspections I was singularly unimpressed by the quality of the Precision Concrete Dycore units presented at the Madras Street, site of the Big Fresh - 'Precision' they certainly weren't. And the lack of control of unit length at the 58 Kingsley Street site casts doubt on the Manufacturer's understanding, let alone execution, of quality control standards.

Returning to the calculations done in your office in response to our requests for the basis of design I have attempted to express our concern in the attached long hand notes. I have some difficulty in accepting that the reaction forces at the floor unit-slab to wall joint are catered for by unreinforced concrete and short starters into the topping. This detail requires concrete to transmit tension across the unit/topping construction joint face and unreinforced concrete to be reliable in shear and the resultant diagonal tension. (As I understand it at the end of the pre-stressed unit the strand is losing bond and hence the concrete progressively becomes unreinforced towards the end of the unit.)

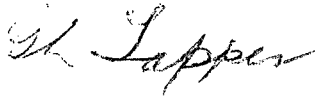
.../2

- 2 -

In closing I believe I would be failing in my duty to the Council if I did not question the detail of your design. This I have done and will now put this matter of design to one side for the time-being.

I suspect however that it will surface again when the Building Industry Authority comes into being and discharges its statutory authority to advise local government of approved design, for it is a fundamental matter about the redundancy and ductibility of concrete structures.

Yours faithfully



G L Tapper
DEVELOPMENT CONTROL ENGINEER (STRUCTURAL)

GLT:ZEC