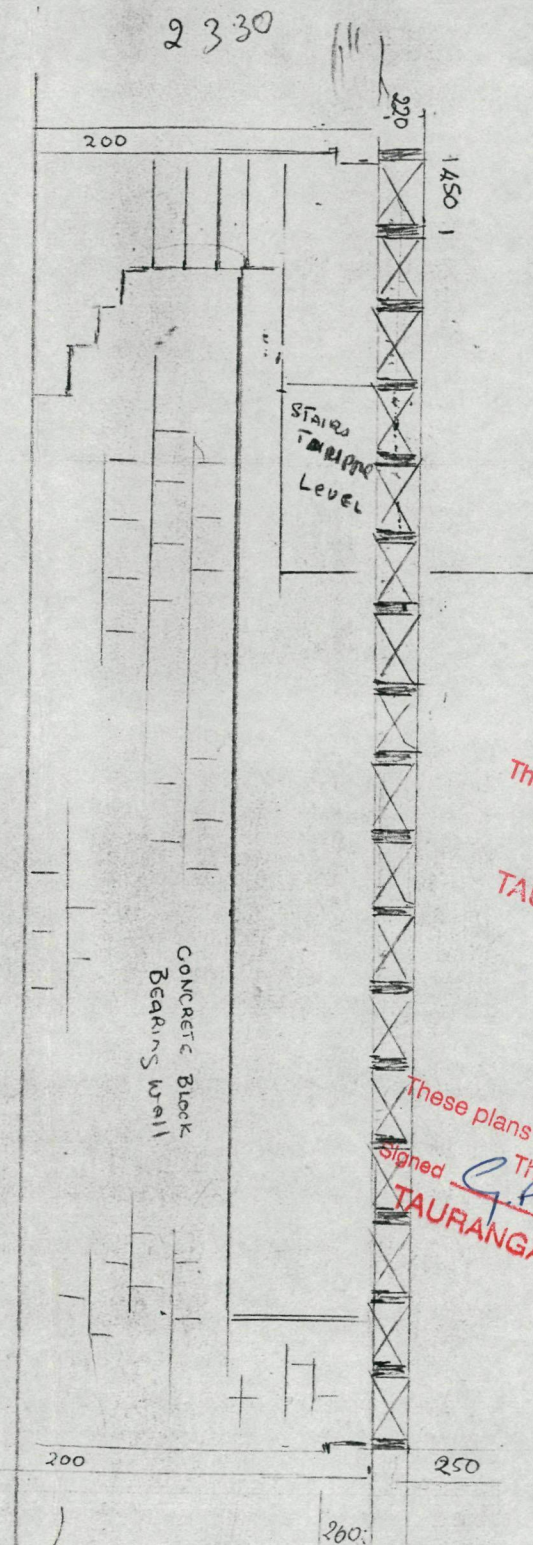
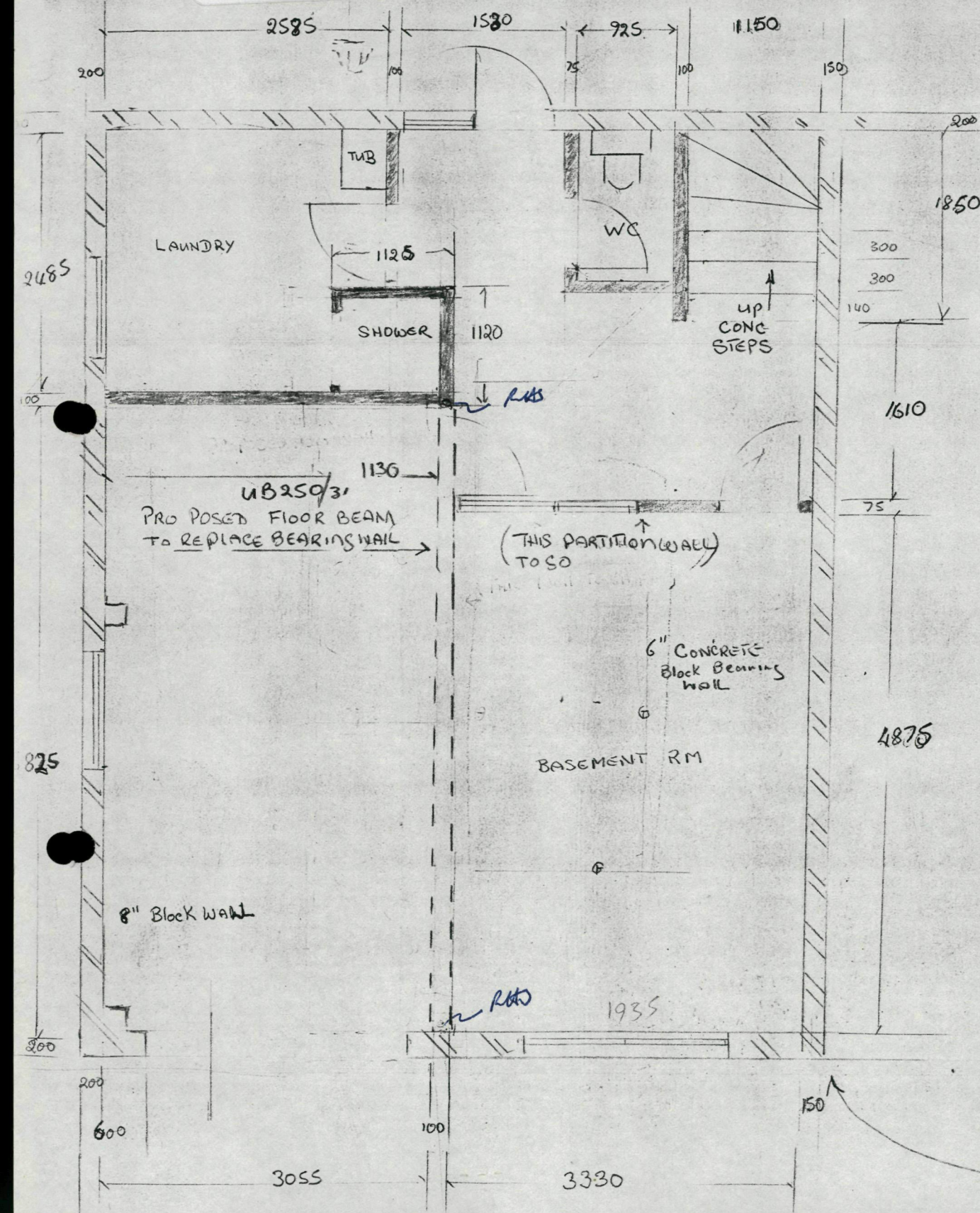




LF_273930B

1715787660



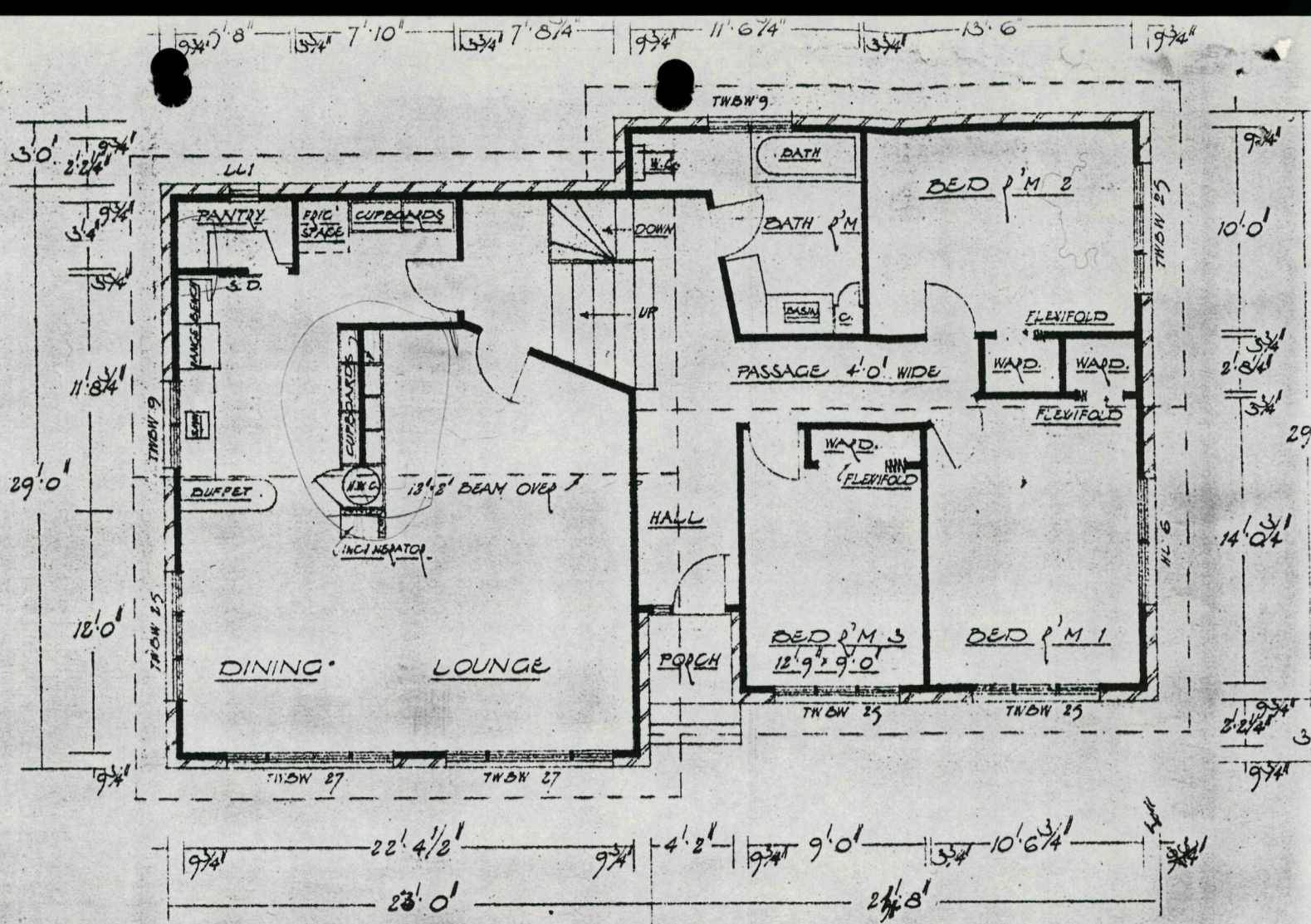
APPROVED
These plans are approved in accordance with
The NZ Building Code.
These plans must remain on site.
TAURANGA DISTRICT COUNCIL

APPROVED
These plans are approved in accordance with
The NZ Building Code.
These plans must remain on site.
TAURANGA DISTRICT COUNCIL

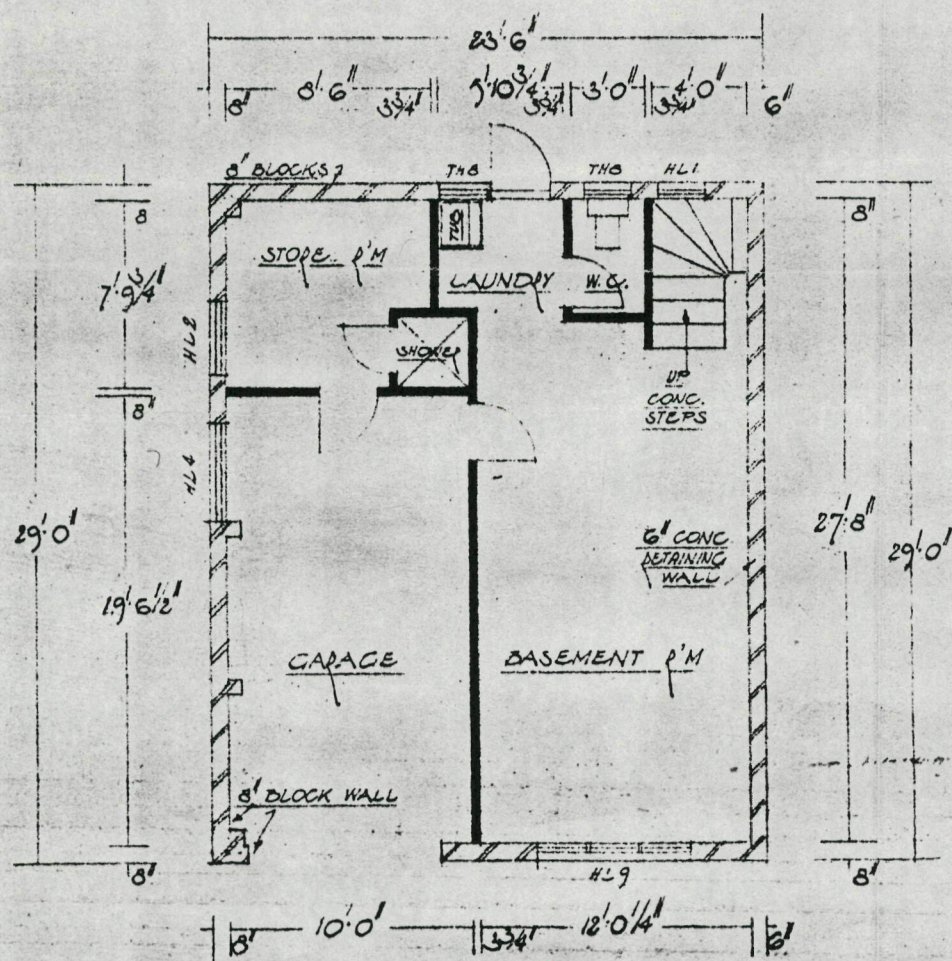
APPROVED
These plans are approved in accordance with
The NZ Building Code.
Signed C.P.R. Date 2-8-97
TAURANGA DISTRICT COUNCIL

Handwritten signature
2/8/97

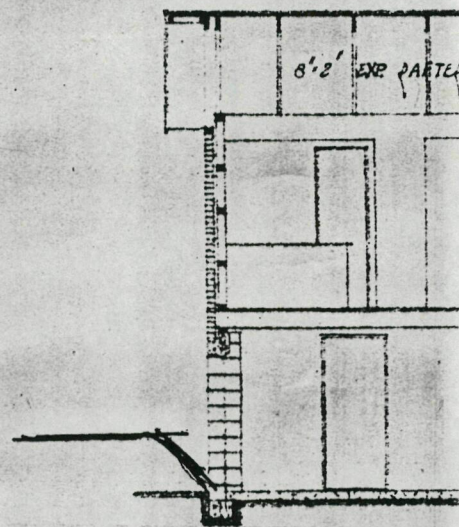
LF_273931B



FIRST FLOOR PLAN



GROUND PLAN



SECTION

These plans are approved in accordance with the NZ Building Code. These plans must remain on site.

APPROVED

TAURANGA DISTRICT COUNCIL

Ian Lloyd B.E.(Civil), Registered Engineer

Structural Design Engineer

212 14th Avenue
Tauranga
Phone & Fax 578-4821

DESIGN CERTIFICATE

TO: The Engineer
Tauranga District Council
Tauranga

Date. 25 July 1997

REF. 2392

I, **IAN LLOYD** being a Registered Engineer under the provisions of the Engineers registration act 1924 and currently holding an annual practising certificate hereby certify that I have been engaged to design and execute the computations for the following elements:

250 UB 31 floor beam, and 75 RHS post and foundation

to be incorporated in a ; *basement alteration*

proposed to be erected for; *Mr Cranch*

at; *19 Manson Street, Tauranga*

and shown in the accompanying 2 sets of drawings,

Titled *Tom Cranch, 19 Manson Street, Tauranga*

Prepared by *Mr Cranch*

I certify that the design has been carried out in accordance with sound and widely accepted engineering principles to support the loads specified in NZS 4203 General Structural Design and Design Loadings for Buildings. I have ascertained to the best of my ability that the stresses in the various materials of construction do not exceed the maxima to ensure the safety and stability of the structure if constructed in accordance with the above drawings and specifications.

The design has been undertaken using the following relevant authorities,

NZS 3101 The Design of Concrete Structures

NZS 3404 Design of Steel Structures

THIS CERTIFICATE IS ONLY VALID FOR DRAWINGS OR PRINTS COUNTERSIGNED BY MYSELF.

signed *[Signature]*

Date: *25/7/97*

IAN LLOYD BE^(CIVIL) REGISTERED ENGINEER

This certificate is valid for a building consent application made within one year of the date of issue of this certificate.

No inspection of the site has been made and this Design Certificate does not cover the subsoil.

This certificate covers only those elements listed above.

Ian Lloyd

B.E. (Civil),

Registered Engineer

212 14th Avenue

Tauranga

Phone/Fax 578-4821

Client

Tom Cranch.

Ref 2392

Project

19 Manson Street
Greater Tauranga

Date 17/7/97

Page Summary

New Floor Beam to support floor

Span 5800

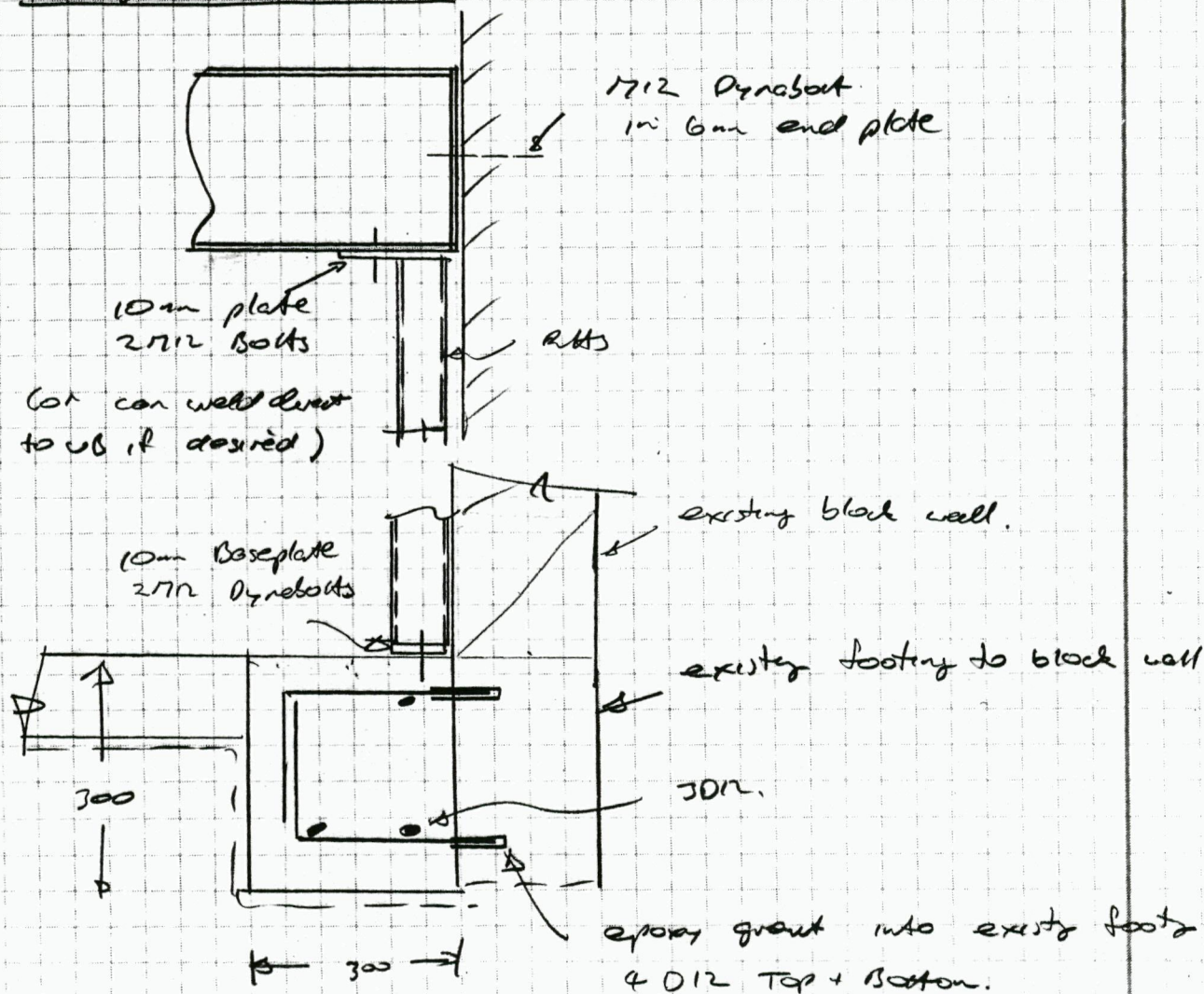
250 UB 31.

75x75x3.0 Ribs

Footings: 650x650x250 foundation Pad
3012 each way 75 bottom cover.

or 300x300 footings x 1200 long.

End adjacent to Block wall



Ian Lloyd

B.E. (Civil),

Registered Engineer

212 14th Avenue

Tauranga

Phone/Fax 578-4821

Client

Mr Tom Crank.

Ref 2392

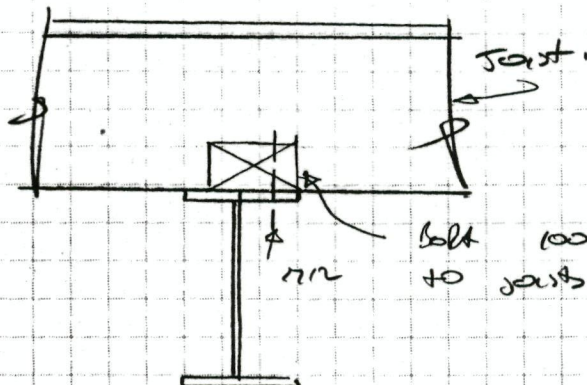
Project

19 Manson Street
Tauranga.

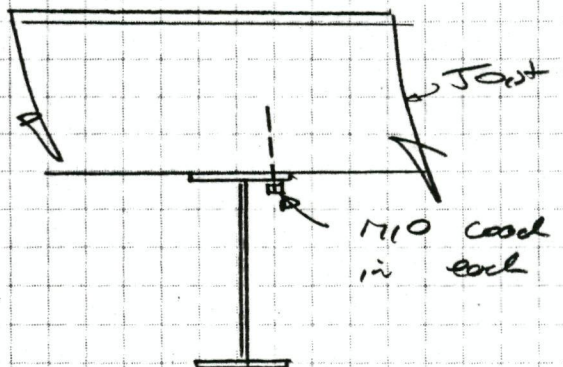
Date 17/7/97.

Page Summary 2.

either



2/



Ian Lloyd

B.E.(Civil),

Registered Engineer

212 14th Avenue
Tauranga
Phone/Fax 578-4821

Client

Tom Cranch

Project

19 Benson St

Greerton Tavea

Ref 2392

Date 17/7/87

Page

1

Floor beam

span 5.8m

(not support
on wall beam above: no load to floor)

$$\text{Floor Dead Load} = \frac{6.6}{2} \times 0.95 = 1.48$$

SL

$$\frac{0.35}{1.83 \times 1.2} = 2.2$$

 Δ
1.83

Live load

$$\frac{6.6}{2} \times 1.5 = 4.9 \times 1.6 = \frac{7.9}{10.1 \text{ kN}}$$

$$\frac{4.9 \times 1.7}{5.2}$$

$$M = 10.1 \times \frac{5.8^2}{8} = 42.5 \text{ kNm}$$

Try 200 UB25

$$M_u = 0.9 \times 68 + 0.83$$

$$= 50.8 \text{ kNm}$$

restrain

$$\Delta = \frac{5 \times 5.2 \times 5.8^3}{384 \times 200 \times 24} = 16 \text{ mm} \quad \text{too high}$$

250 UB31

$$\Delta = 16 \times \frac{24}{24} = 8.8 \text{ mm}$$

250 UB31

$$P = 10.1 \times \frac{5.8}{2} = 29.3 \text{ kN}$$

752 75 x 7.0 RA3

$$\frac{P}{A_s} = \frac{29.3}{29} = 79$$

$$M = 29.3 \times 0.05$$

$$= 1.46 \text{ kNm}$$

$$P_u = 0.9 \times 841 \times 250 \times 0.75 = 141$$

$$M_u = 0.9 \times 19 \times 250 \left(1 - \frac{29}{141} \right) = 3.3 \text{ kNm} \quad \checkmark$$

Ian Lloyd

B.E.(Civil),

Registered Engineer

212 14th Avenue
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Client

Tom Cronch

Project

19 Manson St
Greta

Ref 2392

Date 17/7/97

Page 2

facty. gross collect base p-rm = 80
(clear 50-60)

$$B = \sqrt{\frac{29}{80}} = 602 \text{ m}$$

602 m

as step agent entry block wall say 300 wide

or 300
x 1200
step

$$e = \frac{29}{80 \times 0.3} = 1.2$$

$$M = 80 \times 3 \times \left(\frac{1.2}{2} \right)^2 = 43 \text{ m}$$

$$a = \frac{112 \times 300}{0.85 \times 17 \times 300} = 7.7 \text{ m}$$

$$M_u = 0.85 \times 112 \times 300 \left(250 - \frac{7.7}{2} \right) = 7.0 \text{ m}$$

Bracing

4 external walls to basement are block.
therefore the internal walls will not contribute
much to the lateral bracing \therefore can delete.

Ian Lloyd

B.E. (Civil)

Registered Engineer

212 14th Avenue
Tauranga
Phone/Fax 578-4821

Client

Tom Cranch

Project

19 Manson St

Greerton Tavea

Ref 2392

Date 17/7/87

Page

1

Floor beam

span 5.8m

(roll support
on joist beam above: no load to floor)

$$\text{Floor Dead Load} = \frac{6.6}{2} \times 0.95 = 1.48$$

SL

$$\frac{0.35}{1.83} \times 1.2 = 22$$

1.83

Live load

$$\frac{6.6}{2} \times 1.5 =$$

$$49 \times 1.6 = \frac{70.9}{10.1 \text{ kN}}$$

$$\frac{49 \times 1.7}{5.2}$$

$$M = \frac{10.1 \times 5.8^2}{8} = 42.5 \text{ kNm}$$

Try 200 UB25

$$M_u = 0.9 \times 68 + 0.83$$

$$= 50.8 \text{ kNm}$$

restrain

$$\Delta = \frac{5 \times 5.2 \times 5.8^3}{384 \times 200 \times 24} = 16 \text{ mm} \quad \text{too high}$$

250 UB31

$$\Delta = 16 \times \frac{24}{44} = 8.8 \text{ mm}$$

250 UB31

$$P = 10.1 \times \frac{5.8}{2} = 29.3 \text{ kN}$$

Try 75x 75x 7.0 RHS

$$\frac{P}{A_g} = \frac{29.3}{29} = 79$$

$$M_u = 29.3 \times 0.05$$

$$= 1.46 \text{ kNm}$$

$$P_u = 0.9 \times 841 \times 250 \times 0.75 = 141$$

$$M_u = 0.9 \times 19 \times 250 \left(1 - \frac{29}{841} \right) = 3.3 \text{ kNm} \quad \checkmark$$