



RRD001PD01

Document Number: **RDC-186496**

Date Registered: **21/04/2011**



ADDRESS
1364 Hinemoa Street
PO Box 23
Rotorua 3040
New Zealand

TELEPHONE
07 348 5394

FACSIMILE
07 348 2311

EMAIL
admin@bsk.co.nz

22 September 2010

Rotorua District Council,
Private Bag 3029,
Rotorua Mail Centre,
ROTORUA.

BC 65805

Attention: Building Control Division

Dear Sirs,

**RE: PROPOSED RESIDENCE FOR J PATTERSON
32A NIKAU STREET, ROTORUA**

OUR REF 18045

We confirm that we visited the above site on Monday 21st of September 2010 and have carried out a subsoils investigation comprising six Scala Penetrometer tests and three boreholes around the perimeter foundation excavations.

A copy of the foundation plan marked up with the test locations along with the test field result sheets are attached to this report.

Generally the site subsoils appear to comprise relatively soft silts with some pumiceous inclusions to depths of about 800mm to 1.3 meters below the underside of the foundations. Below this are firmer pumiceous sands and silty sands.

The Scala Penetrometer test results in the upper silts were consistent with Ultimate Bearing Pressures of between 60kPa and about 150kPa. The bearing capacities appear to improve with depth but were somewhat variable with results consistent with the 300kPa requirements of NZS 3604 not being found above about 1 to 1.5 m depth on most locations.

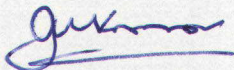
At test P2 an extremely soft layer was encountered between about 450mm and 1.2m. Additional tests were carried out in close proximity that indicate there is an isolated soft spot in that area.

Given the degree of variability on the site we would recommend that all load bearing foundations be over excavated 600mm wide x 300mm deep as shown on the attached marked up foundation plan. We have calculated the maximum design bearing pressures under the foundation at approximately 42 kPa and 20kPa under this hardfill layer which is consistent with the Scala Penetrometer results.

The excavation should be proof compacted with a minimum of 3 passes of a mechanical tamper prior to backfilling to identify any isolated softer spots. The excavation should then be backfilled with a suitable compacted hardfill material compacted in layers no greater than 150mm.

This should in our opinion provide an adequate foundation for the proposed residence that complies with the requirements on the New Zealand Building Code.

Yours faithfully,



John Kronast BE MIPENZ
BSK CONSULTING ENGINEERS LTD

bsk

Ref 18045 PROJECT: 32A NIKAU ST

DATE: 20/9/10

If found please return to

BSK Consulting Engineers Ltd

Box 23, Rotorua (Ph 07 348 5394)

BY: CN/CB

PAGE: 1 of 1

PENETROMETER P1			PENETROMETER P2			PENETROMETER P3			PENETROMETER P4			PENETROMETER P5			PENETROMETER P6		
No. of Blows	Reading (cm)	Depth/ Blow (cm)	No. of Blows	Reading (cm)	Depth/ Blow (cm)	No. of Blows	Reading (cm)	Depth/ Blow (cm)	No. of Blows	Reading (cm)	Depth/ Blow (cm)	No. of Blows	Reading (cm)	Depth/ Blow (cm)	No. of Blows	Reading (cm)	Depth/ Blow (cm)
	2			2			2			2			2			2	
	11	9		26	24		24	22		10	8		18	16		14	12
	22	11		46	20		38	14	tsb	60	10		31	13		23	9
	32	10		118	72		54	16		99	6		36	5		31	8
	43	11		126	8		75	19		125	5	tsb	55	4		44	13
	54	11		131	5		82	7		154	6		73	4		52	8
	65	9		148	17		91	9		171	3		88	3		59	7
	71	8		170	22	tsb	98	1		198	5		106	4		66	7
	78	7		181	11		102	1		218	4		124	4		71	5
	85	7		193	12		109	1		225	1		146	5		75	4
tsb	107	4		202	9		118	2								80	5
	119	2	tsb	231	7		135	3								88	8
	138	4		251	4		146	2								95	7
	149	2		258	1											101	6
	155	1		264	1											104	10
	160	1		271	1											118	7
	166	1		278	1											125	7
	172	1		284	1											130	5
	178	1		291	1											135	5
	184	1														137	2
	190	1														142	5
																148	6

NOTE: READINGS TAKEN FROM BOTTOM OF FOUNDATION BEAMS

BSK CONSULTING ENGINEERS LTD

BOREHOLE RESULT

Ref _____ PROJECT: 32A NIKAU ST DATE: 20/9/10
 If found please return to _____
 BSK Consulting Engineers Ltd _____
 Box 23, Rotorua (Ph 07 348 5394) BY: CN/CB PAGE: 1 of 2

BOREHOLE <u>BH 1</u>			BOREHOLE <u>BH 2</u>		
Depth below Ground	Description	Graphic Log	Depth below Ground	Description	Graphic Log
0	Silt/Pumice		0	Light silt.	
50	Dark silt/pumice		75	Light silt/pumice	
80	Light pumice		130	pale sand/pumice	
160	Light fine silty/sand		195	" " "	
195	Light fine silty/sand				

LOCATION PLAN

PROJECT: 32A NIKAU ST

DATE: 20/9/10

BSK Consulting Engineers Ltd

Box 23, Rotorua (Ph 07 348 5394)

BY: CN/CB

PAGE: 2 of 2

LOCATION PLAN

J PATTISON	JOB REF: 18045
Peopse House	DATE 21/9/10
32 NIKAU ST Rotorua	SHEET 1 OF

REFER TO DRAWINGS BY KIMMURA DESIGN.

LOADS

Roof: Metal Tiles on trusses $G = 0.40 \text{ kPa}$
 $Q = 0.25 \text{ kPa}$

Walls: Brick Veneer on framing $G = 2.0 \text{ kPa}$

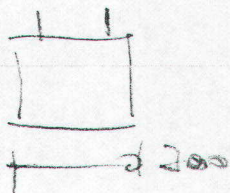
Worst Case Foundation Load

$$W_G = 0.40 \times 5.7 \times 200 \times 2.4 = 0.3^2 \times 24 \times 0.2 \times 0.4 \times 24 = 11.2 \text{ kN/m}$$

$$W_Q = 0.25 \times 5.7 = 1.43 \text{ kN/m}$$

$$G + Q_s \quad W = 12.6 \text{ kN/m}$$

$$\therefore \text{Max Foundation Pressure } p_{max} = \frac{12.6}{0.3} = 42 \text{ kPa}$$

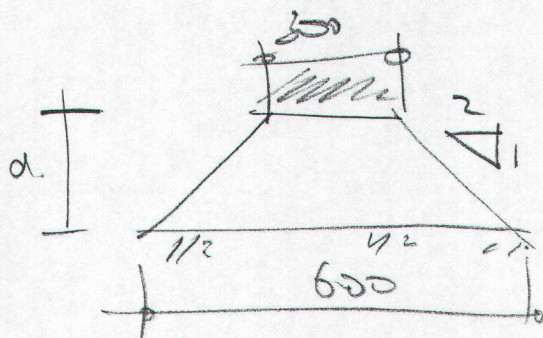


REFER TO SCAN PENETROMETER READS

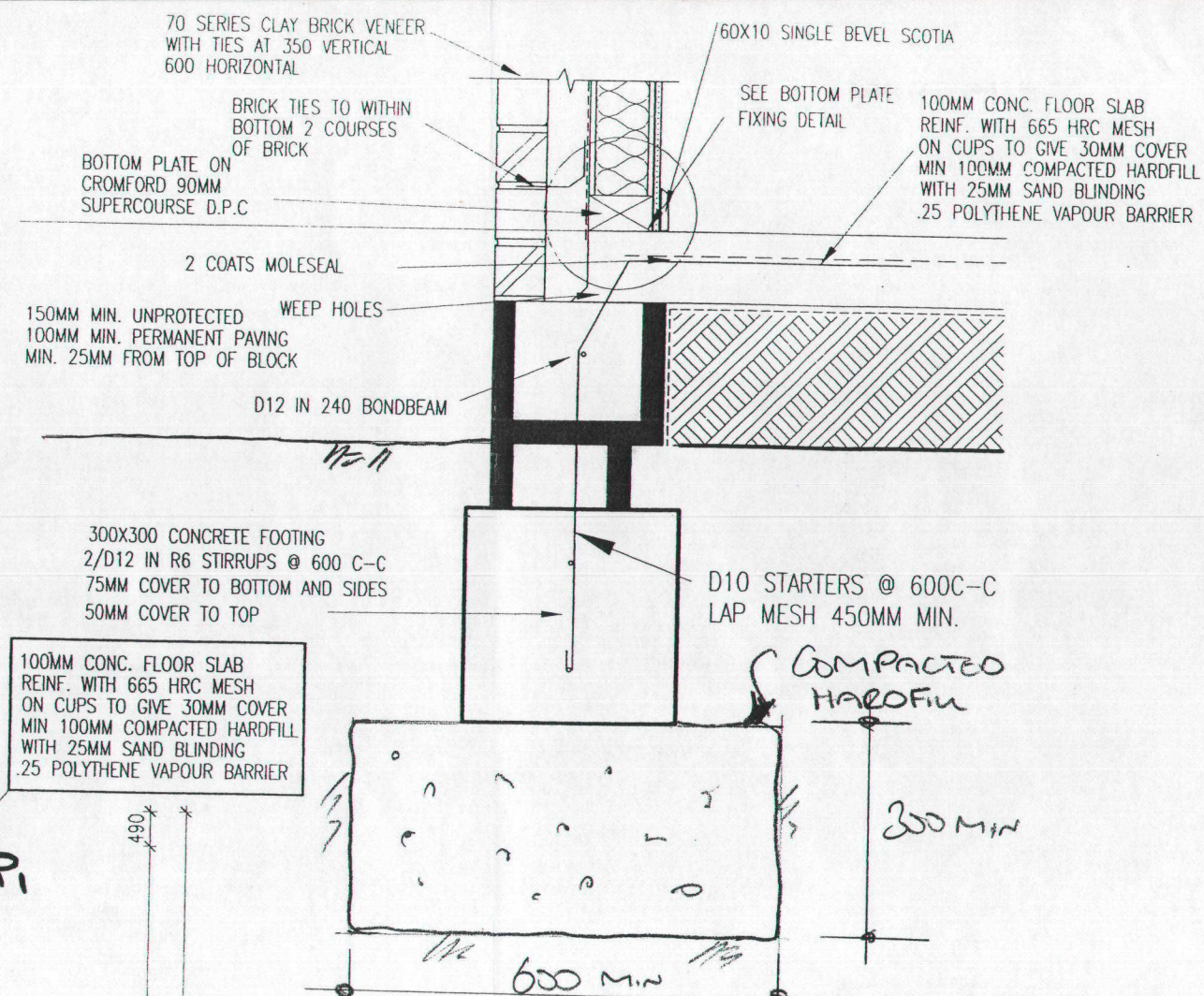
DESIGN FOR $W_{unif} = 10 \text{ kPa}$ AVERAGE STRESS

$$\therefore \text{USE } \frac{12.6}{2} = 6.3 \text{ WOC MAXIMUM}$$

	JOB REF:
	DATE
	SHEET 2 OF



ca 650 DEPTH + 300 mm = ca



$\oplus P_1$ = SCALA PENETROMETER
TEST LOCATION

$\oplus BH_1$ = BOREHOLE LOCATION.

KILLYLEAGH DESIGN

NOTES

1. ALL FOUNDATIONS SHALL BEAR INTO FIRM UNDISTURBED SUBSOILS WITH MIN. BEARING CAPACITY OF 100 KPA.
NOTIFY ENGINEER IF SOFT SUB SOILS ARE ENCOUNTERED.
2. CONCRETE STRENGTH SHALL BE 20 MPA AT 28 DAYS.
SOLID FILL ALL BLOCKWORK REINF. CORES AND BOND BEAMS 20MPA 10MM AGGREGATE GROUT.
3. LAP ALL REINFORCING 40 BAR DIAMETERS AT ALL INTERSECTIONS AND WHEREVER ELSE NECESSARY.
4. ALL BLOCKWORK SHALL COMPLY WITH THE REQUIREMENTS OF N.Z.S. 4210:1989 MASONRY CONSTRUCTION, MATERIALS AND WORKMANSHIP.
5. BECAUSE OF THE POSSIBILITY OF CRACKS DEVELOPING IN CONCRETE FLOOR DURING CURING PROCESS KILLYLEAGH DESIGN LTD CANNOT GUARANTEE AGAINST TILES CRACKING.

© COPYRIGHT OF THIS DRAWING REMAINS
THE PROPERTY OF KILLYLEAGH DESIGN LIMITED
NOT TO BE REPRODUCED WITHOUT PERMISSION

DRAWN MICHAEL	DATE 12/02/2009
CHECKED	JOB No.
FOUNDATION	
JOHN PATTERSON 32 NIKAU STREET ROTORUA	
SCALE 1:100 ON A3	SHEET 4 OF 9

PRODUCER STATEMENT

ISSUED BY: Phil Holder Tiler

TO: Macpat Holdings Ltd.

TO BE SUPPLIED TO: Rotorua District Council

Phil Holder has been engaged by Macpac Holdings Ltd to provide Water proofing Bathroom services in respect of the requirements of the New Zealand Building Code on: All Part only as specified of the building work.

The design has been done in accordance with the approved documents issued by Construction Chemicals (Liquid Flash 2) and the work which has been constructed on:

Consent No. 65405

Address: 32 Nikau St Rotorua.

To: Bathroom & Ensuite.

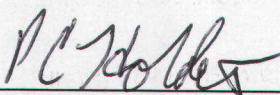
and numbered: on the specifications and other documents according to which the building has been constructed.

As an independent design professional/approved installer/licensed building practitioner etc I **HEREBY CERTIFY/BELIEVE ON REASONABLE GROUNDS** that:

i. The site verification of the following assumptions, Aqualine wall linings and concrete floor.

ii. All proprietary products meeting the performance specification requirements,

The drawing, specifications, and other documents according to which the building is proposed to be constructed/the building work as completed comply(s) with the relevant provisions of the New Zealand Building Code.



(Signature Approved Author of Producer Statement)

Date: 14/01/2011

Tiler

210 Levers Rd Matua Tauranga

Phil Holder Tiler
210 Levers Road
Matua
Tauranga
PH/FAX: 5764229
MOB: 0272912432

14 January 2011

APPLICATOR'S PRODUCER STATEMENT

Client: Macpat Holdings Ltd. 32 Nikau St Rotorua. Re: consent no. 6585

I Phil Holder being an applicator for construction chemicals waterproofing membranes confirm that I have applied construction chemicals Liquid flash 11 to bathroom & ensuite..

In the accordance with manufacturers written application instructions, and clause E3 and B2 of the NZBC.

I am satisfied that the substrate over which the system has been applied has been suitably prepared and the materials have been properly installed.

Product: Liquid flash 11

Manufactured by Dribond construction chemicals.

Description: Liquid flash 11 is a two pack fast drying reinforced cement/acrylic flexible waterproofing membrane that is easily applied to form a resilient waterproof membrane between different building surfaces. LIQUID FLASH 11 will remain pliable and elastic and will bridge cracks and smooth irregular surfaces. Internal wet areas must be waterproofed in accordance with AS3740 and local regulations. For more details refer to a brochure titled: "Waterproofing Enclosed Shower Alcoves Prior to Tiling".

Uses: A flashing material for roof vent pipes, parapet walls and roof sheeting/tiles. A waterproofing membrane for roofs, balconies, retaining walls, planter boxes, ponds, internal wet areas, (eg: bathrooms, kitchens, laundries and toilets.) For use on cement render, concrete, brick, block and building boards such as gypsum and cement sheeting on walls and structural timber and compressed cement sheeting on floors, roof and gutter repairs.

Features:

- Pre-reinforced
- Easy to apply
- Suitable for internal and external uses
- Fast drying

Performance Data:

- | | |
|-------------------------------|------------------------|
| • Tensile strength | 2.96mpa (ASTM D412-92) |
| • Elongation | 46% (ASTM D412-92) |
| • Potable water test (AS4020) | Pass |

All work was carried out in accordance with manufactures specifications.

Regards
Phil Holder

