



SPECS

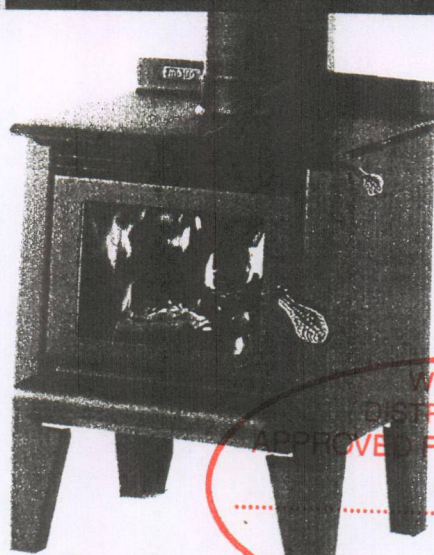
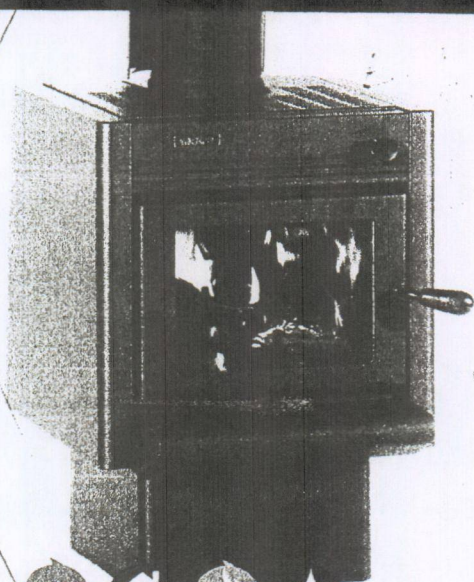
Tiny Series

metrofires

- Designed to heat open areas up to 120m²
- Compact with high performance, offering 11kW's of heat output
- Booster option, capable of heating your water needs
- Designed to last with 6mm carbon steel & fire brick lined

Metro Tiny Ped

Metro Tiny Rad



WHAKATANE
DISTRICT COUNCIL
APPROVED FOR CONSTRUCTION

Building Control
Office

5/4/13

Finished in metallic black
high temperature paint.

Finished in metallic black
high temperature paint.

Installation Clearances & Specifications

Freestanding - Clearances & Dimensions (mm)

Model (Wood Fire)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Width	Depth	Height
Ambie One	250	538	589	391	100	275	250	100	839	825	1142	960	427	350	540	577	464	717
Ambie Plus	267	685	658	462	125	275	350	100	925	905	1317	1110	506	360	550	671	550	761
ECO Tiny Ped	210	430	580	290	25	200	185	60	790	650	990	875	250	280	470	490	530	665
ECO Tiny Rad	225	552	580	420	150	200	300	75	805	650	1165	925	250	280	470	505	530	665
ECO Wee Rad	260	525	580	385	80	200	220	110	840	825	1125	950	425	295	485	607	530	665
ECO Wee Ped	260	595	580	385	85	200	300	110	840	825	1120	950	425	295	485	590	530	665
ECO Wee Curve (DV)	300	555	580	405	100	200	250	150	880	825	1150	975	425	280	470	607	530	665
ECO Xtreme Ped (DV)	230	585	625	495	170	200	250	80	855	905	1325	1120	505	325	515	670	575	715
ECO Xtreme Rad (DV)	250	575	625	435	80	200	200	100	875	905	1240	1065	505	338	528	750	575	745
ECO Euro Rad (DV)	250	625	625	435	80	200	250	100	875	905	1240	1065	505	338	528	750	575	745
ECO Euro Ped (DV)	230	585	625	495	170	200	250	80	855	905	1325	1120	505	325	515	670	575	715
ECO Euro Trad (DV)	230	585	625	495	170	200	250	80	855	905	1325	1120	505	325	515	670	575	715
LTD Wee Rad	250	555	580	400	80	200	250	100	830	825	1145	950	425	295	485	607	530	665
LTD Wee Ped	250	595	580	400	85	200	300	100	830	825	1145	950	425	295	485	590	530	665
LTD Xtreme Ped	250	575	625	455	110	200	240	100	875	905	1265	1065	505	340	530	670	575	715
LTD Xtreme Rad	250	575	625	455	80	200	200	100	875	905	1265	1065	505	353	543	750	575	745
LTD Euro Ped	250	575	625	455	110	200	240	100	875	905	1265	1065	505	340	530	670	575	715
LTD Mega Rad	270	675	725	500	125	200	300	120	995	905	1425	1175	505	353	543	750	675	745
LTD Mega Ped	270	610	725	465	130	200	275	120	995	905	1400	1140	505	340	530	670	675	715

Insert & Built-In - Dimensions (mm)

Model (Firebox)	Width	Depth	Height
ECO Insert	560	500	550
ECO Smart Insert	560	495	550
LTD Insert	560	500	550
ECO Mega Smart Built-In	860	621	815

Model (Fascia)	Width	Depth	Height
ECO Trad	805/900	195	655/685
ECO Smart	890	30	672
ECO/LTD Trend	810	180	650
ECO Mega Smart Built-In	1057	30	825

Model Clearances

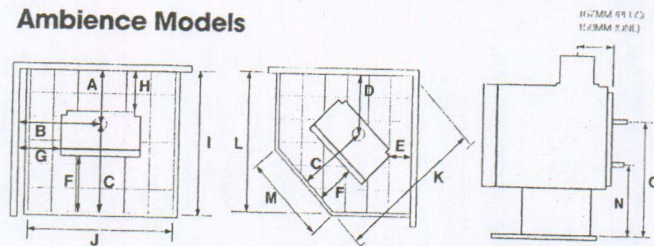
Minimum clearances shown are in mm, with a Pioneer double flue mounted shield fitted. All Metro wood fires comply with AS/NZS 2918:2001. Specifications were correct at the time of printing, but may alter and those detailed within should be used only as a guide. Refer to the installation and operation manual supplied with every Metro, or if in doubt, consult your Metro retailer.

Clearance Reductions

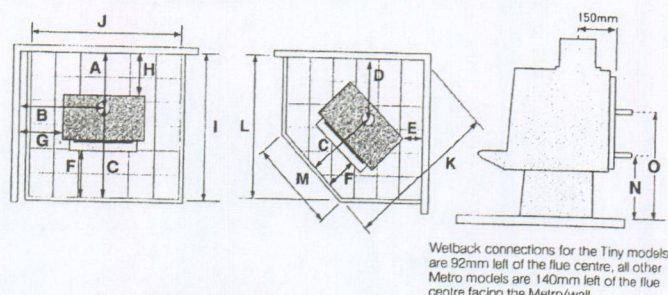
AS/NZS 2918:2001 allows for a reduction in minimum clearances as detailed in tables 3.1 and 3.2 of the standard which your Metro retailer will be able to advise you on. Pioneer has also tested certain model Metro's with "side extensions" fitted to the Pioneer double flue mounted shield, to achieve a reduction in clearances, details are;

- The LTD Wee Ped installed with a Pioneer double flue mounted shield with side extensions fitted can have side clearances B and G reduced by 80mm if installed into an alcove which does not project forward of the Metro.
- The LTD Wee Rad and LTD Wee Ped rear clearance (H) and overall floor protector depth (I) can reduce by 50mm providing a wetback is not fitted and therefore maintenance access is not required.
- The ECO Euro Ped and ECO Xtreme Ped installed with a Pioneer double flue mounted shield with side extensions fitted reduces minimum corner clearance E from 170mm to 110mm. In this situation use the LTD Metro equivalent for measurements E, D, K & L. (i.e use LTD Euro Ped chart for ECO Euro Ped for E, D, K & L).

Ambience Models



ECO & LTD Models

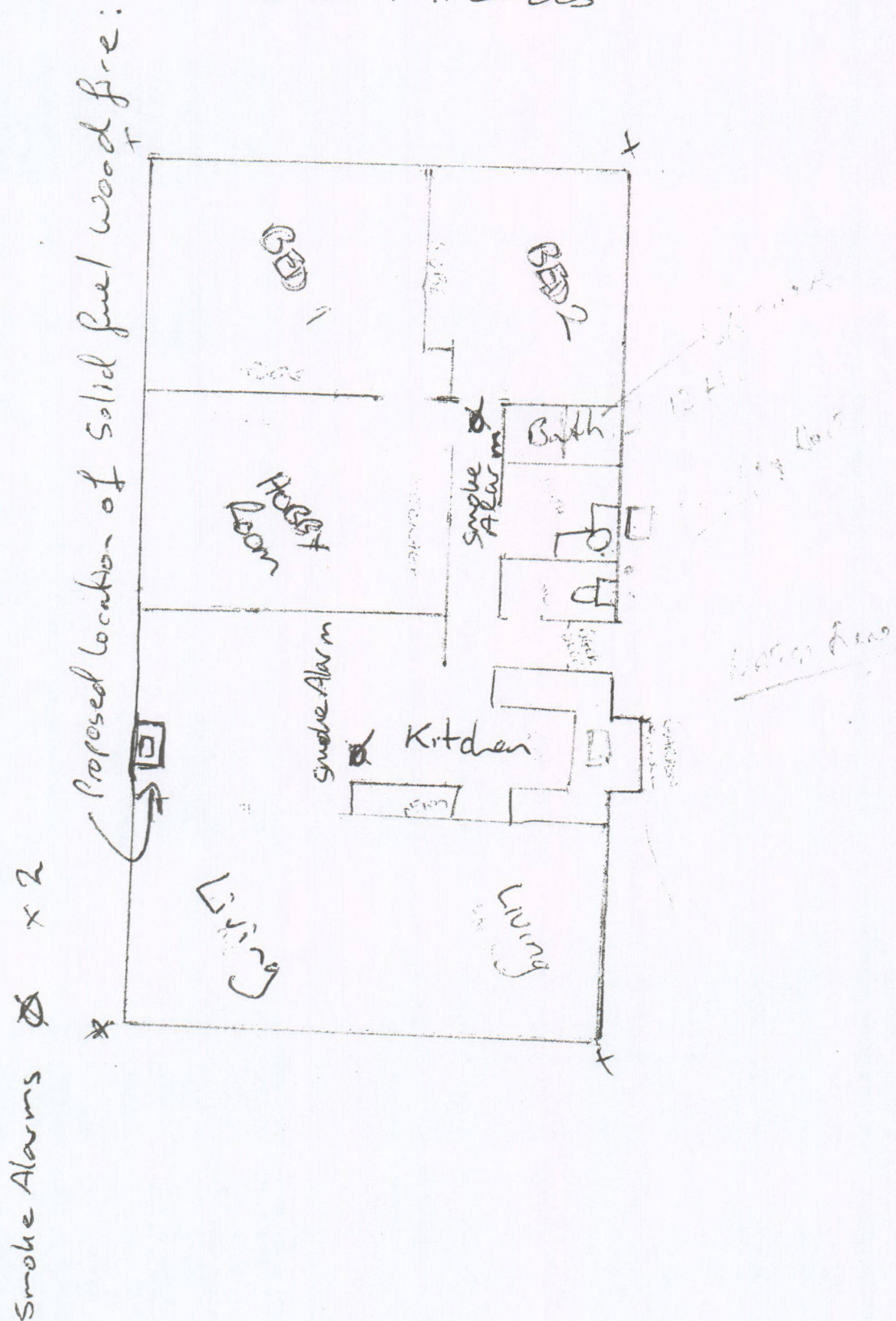


ROTORUA
HEAT & GAS
 CNR LAKE & FAIRY SPRINGS RDs CENTRE
 P.O. BOX 52, ROTORUA.
 PH/FAX: 07 345-1111

Retailer stamp

Neville Newland
1098 Braemar Rd
RD2
Whakatane

Consent #20223



FAILURE TO OBSERVE THESE CONDITIONS MAY NEGATE WARRANTIES

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- Enamelled Flue Pipe may be joined without fasteners, however, three equally spaced Monel or Stainless Steel rivets should be used to secure Enamelled and Stainless Steel Flue Pipes together.
- Enamelled Flue Pipe will be warranted for one year from time of installation providing the above conditions are met.
- Enamelled Flue Pipe must be installed in accordance with SFP installation instructions, using componentry supplied by SFP. It is the responsibility of the installer to ensure no water leaks into the Enamelled Flue System.
- Enamelled Flue Pipe **MUST** be installed in locations where the Flue Pipe is visible after installation is complete.
- Enamelled Flue Pipe should be sealed with Stovax Fire Cement or equivalent.
- Enamelled Flue Pipe should not be used on a Wood Fire burning coal, treated or wet (unseasoned) wood. **Only use newspaper when lighting the fire, never burn colour printed brochures or junk mail.**
- Enamelled Flue Pipe must be swept by mechanical means only. (We recommend mixed head or polypropylene brushes). Under NO circumstances should chemical flue cleaners, (soot destroyers) or steel chimney brushes be used.
- Enamelled Flue Pipe must not be cut or crimped.
- The Wood Fire must be operated in accordance with the manufacturer's instructions. Particularly the Wood Fire must not be operated in a manner, or wood burnt that causes creosote build up in Flue Pipe. Clean air guidelines and regulations must be observed.

- The Stainless Steel Flue Pipe used in "Hi-Therm Stainless Steel Flue Pipe" is warranted for five years, providing the above conditions are met.
- Hi-THERM Flue Pipe must be installed in accordance with SFP installation instructions, using flue componentry supplied by SFP. It is the responsibility of the installer to ensure no water leaks into the Hi-Therm Flue System.
- The paint finish appearance may change, depending on Wood Fire operation and is designed to be a MAINTAINABLE finish. To maintain paint finish or touch up use only genuine STOVE BRIGHT Aerosol. (Refer label on packaging).
- Hi-THERM Flue Pipes must be secured together with a minimum of three Monel Steel rivets equally spaced around the joint.
- Hi-THERM Flue Pipe should not be used on a Wood Fire burning treated or wet (unseasoned) wood. **Only use newspaper when lighting the fire, never burn colour printed brochures or junk mail.**
- Hi-THERM Flue Pipe must be swept by mechanical means only. (We recommend mixed head or polypropylene brushes). Under NO circumstances should chemical flue cleaners, (soot destroyers) or steel chimney brushes be used.
- The Wood Fire must be operated in accordance with the manufacturer's instructions. Clean air guidelines and regulations must be observed.

CONDITIONS OF USE

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VITREOUS ENAMELLED FLUE PIPE

HI-THERM STAINLESS STEEL FLUE PIPES

HI-THERM STAINLESS STEEL FLUE PIPE



Sheetmetal Fabricated Products Ltd.

150mm

Free Standing Wood Fire Flue Kit Installation Instructions Complies with AS/NZS 2918:2001

- Hi-THERM Flue Pipe is a high temperature, matt finish Flue Pipe designed for use on slow combustion, solid fuel heaters.
- Hi-THERM Flue Pipe is ideal for heaters that have high flue temperatures and that also can be operated under circumstances that may produce creosoting of Flue Pipes for short periods of time, ie. on refuelling and with air control in shut or low position. Clean air guidelines must be observed.
- Hi-THERM Flue Pipe is a maintainable product.

What is the difference between Vitreous Enamelled and Hi-Therm Flue Pipe?

- Enamelled Flue Pipe has a base metal of low carbon mild steel. The longevity of Enamelled Flue Pipe is dependent on the quality of the enamelled surface on the **inside of the Flue Pipe ONLY**.
- Hi-THERM is a decorative finish only. The longevity is ensured by the Stainless Steel Flue Pipe.
- Enamelled Flue Pipe is very resistant to scratching, but may chip or craze. Hi-THERM Flue Pipe is more readily scratched, but will not chip or craze.
- Hi-THERM Flue Pipe is easily restored to original finish. Enamelled Flue Pipe cannot be restored.
- Hi-THERM Flue Pipe may be cut or crimped without affecting the Flue Pipe longevity. Enamelled Flue Pipe **MUST NOT** be treated in any way that affects the inside enamelled surface.
- Enamelled Flue Pipe finish and longevity can be affected by a wide range of incorrect heater operation procedures.
- Hi-THERM Flue Pipe finish may whiten with over-firing of the heater. Longevity of the Flue Pipe is not affected by the condition of Hi-THERM paint finish.
- Enamelled Flue Pipe can be damaged internally by drilling or riveting.

Date of Installation:

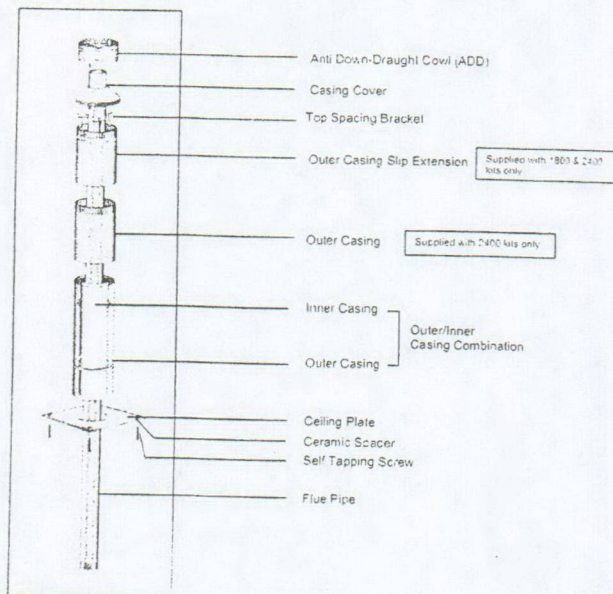
Woodfire Make:

Woodfire Model:

Serial No.:

Installed By:

Owners:





Sheetmetal Fabricated Products Ltd.

150 MM FREE STANDING WOODFIRE FLUE KIT INSTALLATION INSTRUCTIONS

WARNING: THIS FLUE KIT HAS BEEN MANUFACTURED IN ACCORDANCE WITH AS/NZS 2918:2001 AND TESTED TO APPENDIX F. TO ENSURE SAFETY THIS FLUE KIT MUST BE INSTALLED AS OUTLINED IN THESE INSTRUCTIONS AND THE APPROPRIATE REQUIREMENTS OF THE RELEVANT BUILDING CODE OR CODES. WOOD FIRE AND FLUE CLEARANCES FROM COMBUSTIBLE WALLS MUST BE IN ACCORDANCE WITH WOOD FIRE MANUFACTURER'S SPECIFICATIONS AND AS/NZS 2918:2001. THESE INSTALLATION INSTRUCTIONS ARE FOR TESTED APPLIANCES ONLY.

CAUTION: MIXING FLUE SYSTEM COMPONENTS FROM DIFFERENT SOURCES OR MODIFYING THE DIMENSIONAL SPECIFICATION OF COMPONENTS MAY RESULT IN HAZARDOUS CONDITIONS WHERE SUCH ACTION IS CONSIDERED, THE MANUFACTURER SHOULD BE CONSULTED IN THE FIRST INSTANCE.

CAUTION: IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT THE INSTALLATION OF THIS FLUE KIT COMPLIES WITH AS/NZS 2918:2001. THE APPLIANCE MANUFACTURER'S SPECIFICATIONS FOR FLUE PIPE SHIELD AND CEILING PLATE AND THAT THE RELEVANT BUILDING CODES ARE ADHERED TO.

BENDS AND EXTENSIONS TO THE LENGTH OF A FLUE SYSTEM ARE PERMITTED (AS/NZS 2918:2001 4.1)

- 1) Locate Wood Fire in its proposed position and mark a point on the ceiling that is directly above the centre of the Wood Fire's Flue Spigot. Check that the Wood Fire's location allows the OUTER CASING to clear all structural roof timbers.
- 2) Cut a 250mm square hole in ceiling. Directly above cut a hole in roof to accommodate OUTER CASING.
- 3) Fit timber nogs around ceiling, i.e. Nogs form a 250mm square aperture that allows air to circulate freely over the OUTER CASING surface.
- 4) Position the OUTER CASING so that it is flush with the underneath of the ceiling and protrudes through the roof the required height. Note that AS/NZS 2918:2001 4.9.1(a) states, "the FLUE PIPE shall extend not less than 4.6m above the top of the floor protector". Refer to diagram B.
 - a) If the FLUE PIPE is within 3 metres of the ridge, the FLUE PIPE must protrude at least 600mm above the ridge of the roof.
 - b) If the distance from the ridge is more than 3 metres, the FLUE PIPE must protrude at least 1000mm above roof penetration.
 - c) The FLUE PIPE must be more than 3 metres from any nearby structure. (Refer diagram C).

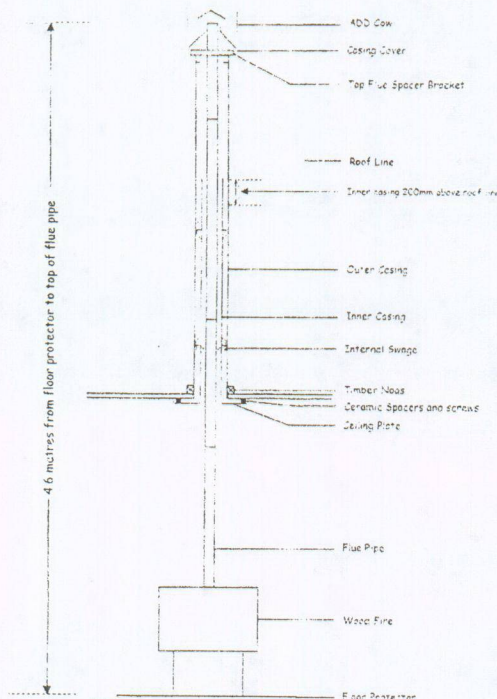
Additional FLUE PIPE, OUTER CASING and/or INNER CASING may have to be added to ensure the following:

- 1) The correct minimum roof penetration height.
- 2) Sufficient overall height to encase the FLUE PIPE which must extend a minimum of 4.6 metres from the floor protector. Refer diagram B.

Note that the INNER CASING should extend 200mm above roof penetration.

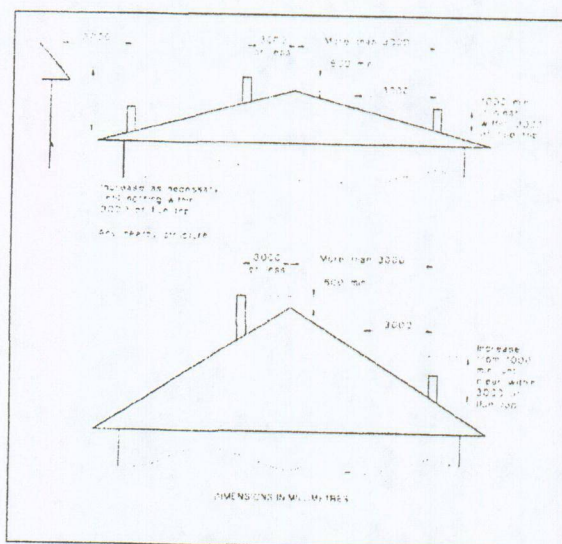
150MM x 150MM

Diagram B



150MM x 150MM

Diagram C AS/NZS 2918:2001 pg 37



NB Do not secure the OUTER CASING SLIP EXTENSION onto the OUTER CASING, as final adjustment will be required when fitting cowl assembly. See Paragraph 11.

- 5) Fix an appropriate flashing around the OUTER CASING to seal onto the roofing material. Refer to the manufacturer's recommendations for correct fitting. NB: On iron roofs, fixings such as metal angle brackets (approximately 25mm x 25mm) can be fitted under the flashing to securely fix the roof to OUTER CASING.
- 6) Drill holes in ceiling plate for the fixing screws. Place CEILING PLATE over Wood Fire's Flue Spigot, ensuring the folded edges are facing the ceiling.
- 7) Position bottom length of FLUE PIPE (crimped end downwards) into Wood Fire Flue Spigot.

Refer to the supplier of the Wood Fire and use flue pipe sealant if recommended.

Assemble FLUE PIPES together ensuring seams are straight, offsetting the seams will ensure a neat fit. FLUE PIPES must be assembled with crimped ends down (towards Wood Fire). Secure each joint with a minimum of three Monel Steel rivets equally spaced around the joint. If using HI-THERM FLUE PIPE the protective wrapping should be left on the FLUE PIPE during installation.

- 9) From the roof lower FLUE PIPE through OUTER CASING into the bottom FLUE PIPE securing with three monel rivets.
- 10) Check that the FLUE PIPE SPACING BRACKETS inside the INNER CASING are correctly positioned and then from the roof slide the INNER CASING into the OUTER CASING until the brackets rest on to the internal swage ring of the OUTER CASING, this will ensure the INNER CASING is the correct 12mm above ceiling level.

Check the INNER CASING when correctly positioned extends a minimum of 200mm above the roof penetration
- 11) Before securing the OUTER CASING SLIP EXTENSION to the OUTER CASING with 3 rivets, ensure the FLUE PIPE extends above the top of the OUTER CASING SLIP EXTENSION 145mm. Adjust SLIP EXTENSION to obtain this measurement.
- 12) Fit TOP SPACER BRACKET to the FLUE PIPE making sure the nogs fit snugly inside OUTER CASING SLIP EXTENSION. Make sure TOP SPACER BRACKET fits hard down onto OUTER CASING SLIP EXTENSION.
- 13) Fit CASING COVER over the FLUE PIPE and push down firmly onto TOP SPACER BRACKET
- 14) Fit COWL but do not secure, as removal for flue cleaning will be necessary. Deform or ovalise the stub of the COWL to ensure it is a tight friction fit.
- 15) Fasten CEILING PLATE to ceiling using screws and ceramic spacers provided. Ensure an even air gap around FLUE PIPE when fixing. Remove protective plastic from CEILING PLATE. NB 12mm air gap between ceiling plate and ceiling must be maintained.
- 16) Leave all installation and operating instructions with the owner.

Cleaning of Flue Pipes before lighting the fire.

Stainless Steel pipe should be wiped clean using a soft cloth and methylated spirits to remove finger marks and oils used to manufacture the flue pipe.

Enamelled flue pipes should be wiped with a soft cloth.

Hi-Therm flue pipe can be touched up using only STO/E BRIGHT aerosol paint.

150MM x 150MM

150MM x 150MM



**Plumbing
Laser**

Laser Plumbing Kawerau

9 Liverpool Street

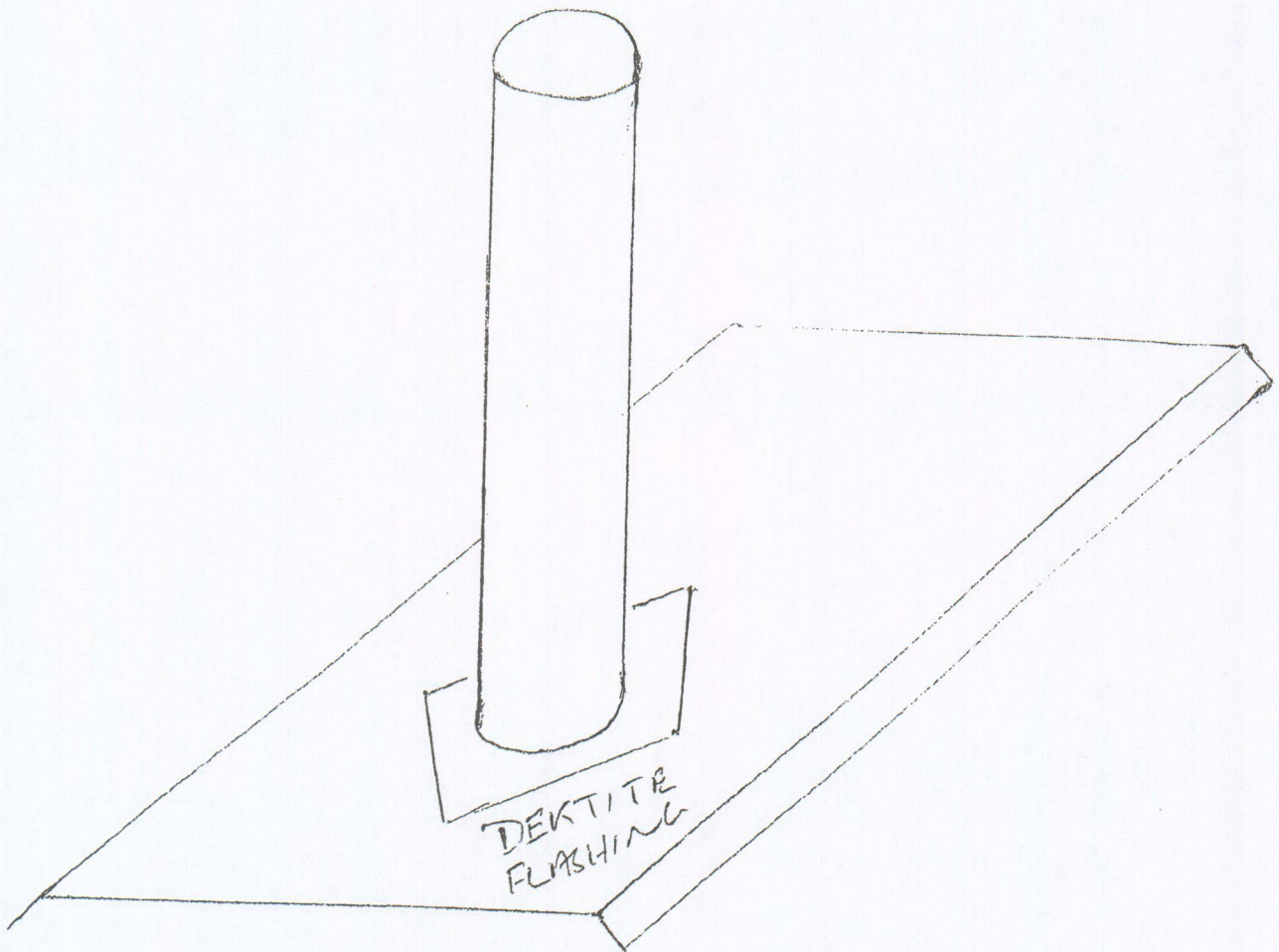
Kawerau 3127

Phone: 07 323 9252

Fax: 07 323 9232

kawerau@laserplumbing.co.nz

Typical Soaker Flashing for a Metal profile roof penetration



Kawerau Plumbing 2007 Co. Ltd trading as Laser Plumbing Kawerau is independent to Laser Plumbing Group Limited. Laser Plumbing Kawerau uses the Laser name pursuant to a franchise agreement with Laser Plumbing Group Limited.

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED BY: MTEC CONSULTANTS LTD
 (Design Firm)

TO: N NEWLAND
 (Owner/Developer)

TO BE SUPPLIED TO: WHAKATANE DISTRICT COUNCIL
 (Building Consent Authority)

IN RESPECT OF: PILED FOUNDATION FOR NEW DWELLING
 (Description of Building Work)

AT: 1098 BRAEMAR RD, WHAKATANE
 (Address)

LOT DP SO

We have been engaged by the owner/developer referred to above to provide **ENGINEERING DESIGN SERVICES**
PILE DESIGN services in respect of the requirements of

Clause(s) B1 AND B2 (STRUCTURAL COMPONENTS ONLY) of the Building Code for
☐ All or ☒ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by Department of Building & Housing NZS/AS 1170, NZS 3603, 3404
 (verification method / acceptable solution) or

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled
 and numbered 1098 BRAEMAR RD (Job No 134104)

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, STEPHEN BOS am: ☒ CPEng 154367 #
 (Name of Design Professional)

☐ Reg Arch #

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications: BE, MIPENZ (Civil/Struct), CPEng

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ ☐ YES ☒ NO

SIGNED BY STEPHEN BOS ON BEHALF OF MTEC CONSULTANTS LTD
 (Design Firm)

Date 16-2-11 (signature)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1992. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suite of producer statements has been revised at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

PS1 Design	Intended for use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent.
PS2 Design Review	Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent.
PS3 Construction	Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2003 ¹ or Schedules E1/E2 of NZIA's SCC 2007 ²
PS4 Construction Review	Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, IPENZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence-based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Institution of Professional Engineers New Zealand (IPENZ) or the New Zealand Institute of Architects (NZIA), provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional"

* Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-CM5)³ (OL1-OL4)². The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

- ¹ Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2003
- ² NZIA Standard Conditions of Contract SCC 2007 (1st edition)
- ³ Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ/IPENZ 2004)

www.acenz.org.nz
www.ipenz.org.nz
www.nzia.co.nz



ATTI STEPHAN

Shawn McGinness

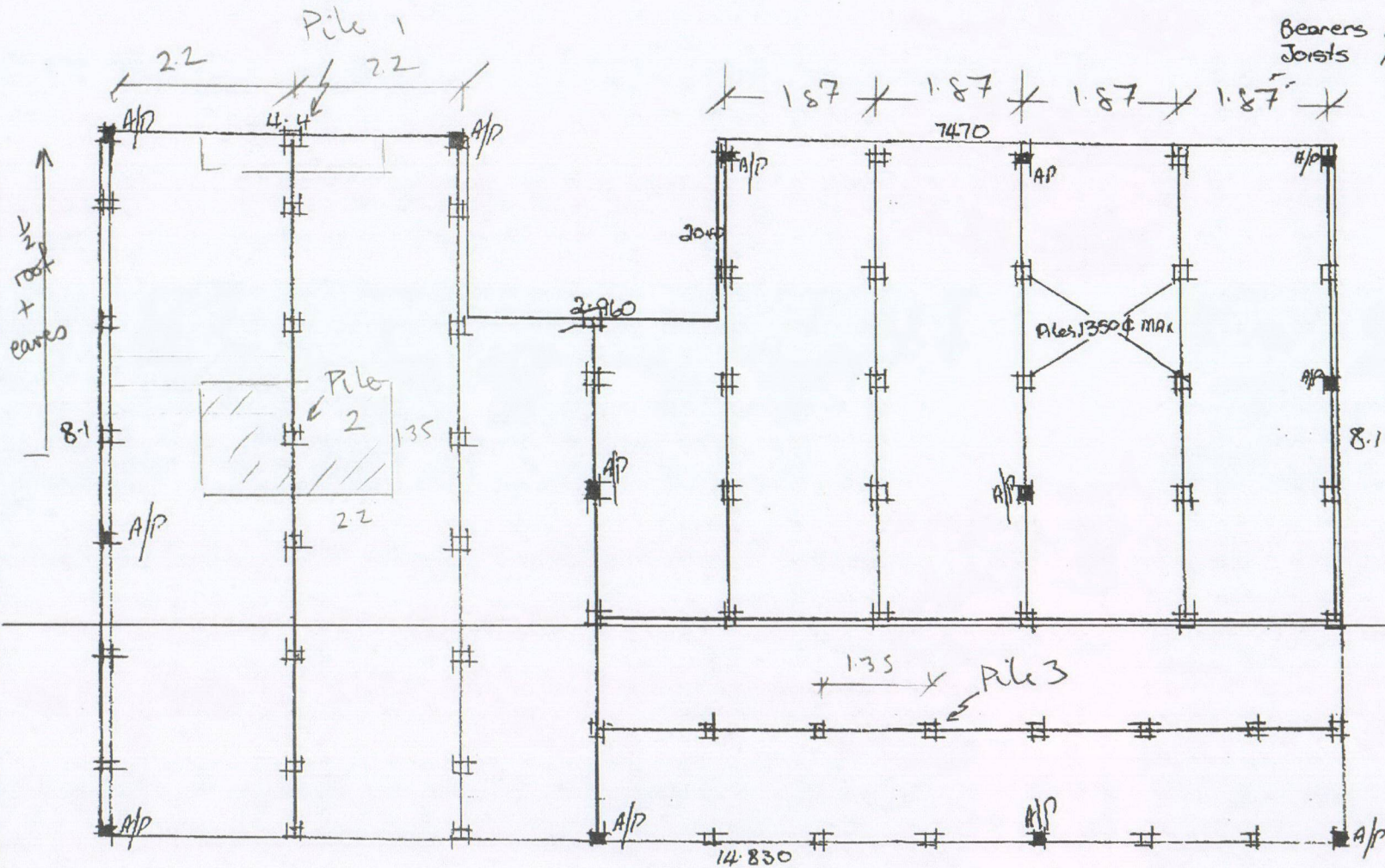
Piles Ø 1350 max

175 SED ROUND TIMBER PILES

Drive to min depth of 1.5m

Bearers 100 x 75.

Joists 150 x 50 at 450¢



Scale 1:50

Pile Layout for N + J NEWLAND
Braemar RD

∴ worst
load case
= Pile 1
use
270 kg hammer
175¢ piles
1.0m drop
Set = 28mm

MTEC CONSULTANTS LTD	JOB TITLE	N Newland			PAGE	
	ADDRESS	1098 Braemar Road				
	JOB No.	134104	DATE	Feb 11	BY	SJB

1 PILE DRIVING DESIGN

OUTER PILES SUPPORTING ROOF

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC
ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION
 - MEDIUM SOIL DRIVING CODITIONS =>
 e = co-efficient of restitution e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	W _G	W _Q
ROOF	0.350	0.250	4.650	2.200	3.58	2.56
WALL	0.350		2.400	2.200	1.85	0.00
FLOOR	0.500	1.500	0.450	2.200	0.50	1.49
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					6.47	4.04
LOAD COMBINATIONS	ULTIMATE		w _u = 1.2G + 1.5Q =		13.83	kN/m

FROM CALCS - PILE LOAD - P* = 13.83 kN AND REQUIRED FOS 4.0
 => R* = 55.3 kN

(c) HAMMER

ASSUME HAMMER WEIGHT W = 270 kg = 2.65 kN
 HAMMER DROP h' = 1000 mm EFFECTIVE DROP h = 800

(d) PILE

USE TIMBER PILE L = 3.0 m LONG & 175 mm DIAMETER
 Density = 450 kg/m³
 P = (π D² / 4) (6) (L) = 0.32 kN

(e) DRIVING

EFFICIENCY $n = \frac{W + Pe^2}{W + P} = 0.90$
 W = 2.65 Kn
 Pe = 0.079636
 P/W = 0.120264

DRIVING COEFFICIENT
 C = C_c + C_p + C_q

WHERE

C_c = 2.0 mm
 C_p = 2.1 mm
 C_q = 3.0 mm

C = 7.1 mm

(f) SET

$S = \frac{W h n}{R^*} - \frac{C}{2} = 30.89 \text{ mm}$
 Check with Hiley formula
 $R = W h n / (S - C/2)$
 R = 55.33 kN
 Required Achieved with specified set
 => LET SET = 28.0 mm 60.40 kN

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS PLEASE CONTACT THE ENGINEER

MTEC CONSULTANTS LTD	JOB TITLE	N Newland		PAGE	
	ADDRESS	1098 Braemar Road			
	JOB No.	134104	DATE	Feb 11	BY SJB

1 PILE DRIVING DESIGN INNER PILES SUPPORTING FLOOR ONLY

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC

ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION

- MEDIUM SOIL DRIVING CODITIONS =>

e = co-efficient of restitution e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	WG	WQ
ROOF					0.00	0.00
WALL	0.350		2.400	2.200	1.85	0.00
FLOOR	0.500	1.500	1.350	2.200	1.49	4.46
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					3.88	4.46

LOAD COMBINATIONS ULTIMATE $w_u = 1.2G + 1.5Q = 11.34$ kN/m

FROM CALCS - PILE LOAD - $P^* = 11.34$ kN AND REQUIRED FOS 4.0
 $\Rightarrow R^* = 45.4$ kN

(c) HAMMER

ASSUME HAMMER WEIGHT
HAMMER DROP

$W = 270$ kg =
 $h' = 1000$ mm

2.65 kN

EFFECTIVE DROP h = 800

(d) PILE

USE TIMBER PILE

$L = 3.0$ m LONG & 175 mm DIAMETER
Density = 450 kg/m³
 $P = (\pi D^2 / 4) (6) (L) = 0.32$ kN

(e) DRIVING

EFFICIENCY

$$n = \frac{W + Pe^2}{W + P} = 0.90$$

$W = 2.65$ Kn

$Pe = 0.079636$

$P/W = 0.120264$

DRIVING COEFFICIENT

$C = C_c + C_p + C_q$

WHERE

$C_c = 2.0$ mm

$C_p = 2.1$ mm

$C_q = 3.0$ mm

$C = 7.1$ mm

(f) SET

$$S = \frac{W h n}{R^*} - \frac{C}{2} = 38.46 \text{ mm}$$

$\Rightarrow$ LET SET = 28.0 mm

Check with Hiley formula

$R = W h n / (S - C/2)$

$R = 45.37$ kN

60.40 kN

Required
Achieved with
specified set

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS
PLEASE CONTACT THE ENGINEER

MTEC CONSULTANTS LTD	JOB TITLE	N Newland			PAGE	
	ADDRESS	1098 Braemar Road				
	JOB No.	134104	DATE	Feb 11	BY	SJB

1 PILE DRIVING DESIGN DECK PILES

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC
ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION
 - MEDIUM SOIL DRIVING CODITIONS =>
 e = co-efficient of restitution e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	WG	WQ
ROOF					0.00	0.00
WALL					0.00	0.00
FLOOR	0.500	2.000	1.350	1.350	0.91	3.65
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					1.46	3.65

LOAD COMBINATIONS ULTIMATE $w_u = 1.2G + 1.5Q = 7.22$ kN/m

FROM CALCS - PILE LOAD - $P^* = 7.22$ kN AND REQUIRED FOS 4.0
 $\Rightarrow R^* = 28.9$ kN

(c) HAMMER

ASSUME HAMMER WEIGHT $W = 270$ kg = 2.65 kN
 HAMMER DROP $h' = 1000$ mm EFFECTIVE DROP $h = 800$

(d) PILE

USE TIMBER PILE $L = 3.0$ m LONG & 175 mm DIAMETER
 Density = 450 kg/m³
 $P = (\pi D^2 / 4) (6) (L) = 0.32$ kN

(e) DRIVING

EFFICIENCY $n = \frac{W + Pe^2}{W + P} = 0.90$
 $W = 2.65$ Kn
 $Pe = 0.079636$
 $P/W = 0.120264$

DRIVING COEFFICIENT

$$C = C_c + C_p + C_q$$

WHERE

$C_c = 2.0$ mm
 $C_p = 2.1$ mm
 $C_q = 3.0$ mm

$$C = 7.1 \text{ mm}$$

(f) SET

$S = \frac{W h n}{R^*} - \frac{C}{2} = 62.43$ mm Check with Hiley formula
 $R = \frac{W h n}{(S - C/2)} = 28.88$ kN Required
 $\Rightarrow$ LET SET = 28.0 mm 60.40 kN Achieved with specified set

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS PLEASE CONTACT THE ENGINEER

Shawn meginess

Att. Stephan

65.

Date 17-2-11

Building Control
Office

Piles @ 1350¢ max

175 SED ROUND TIMBER PILES H5.

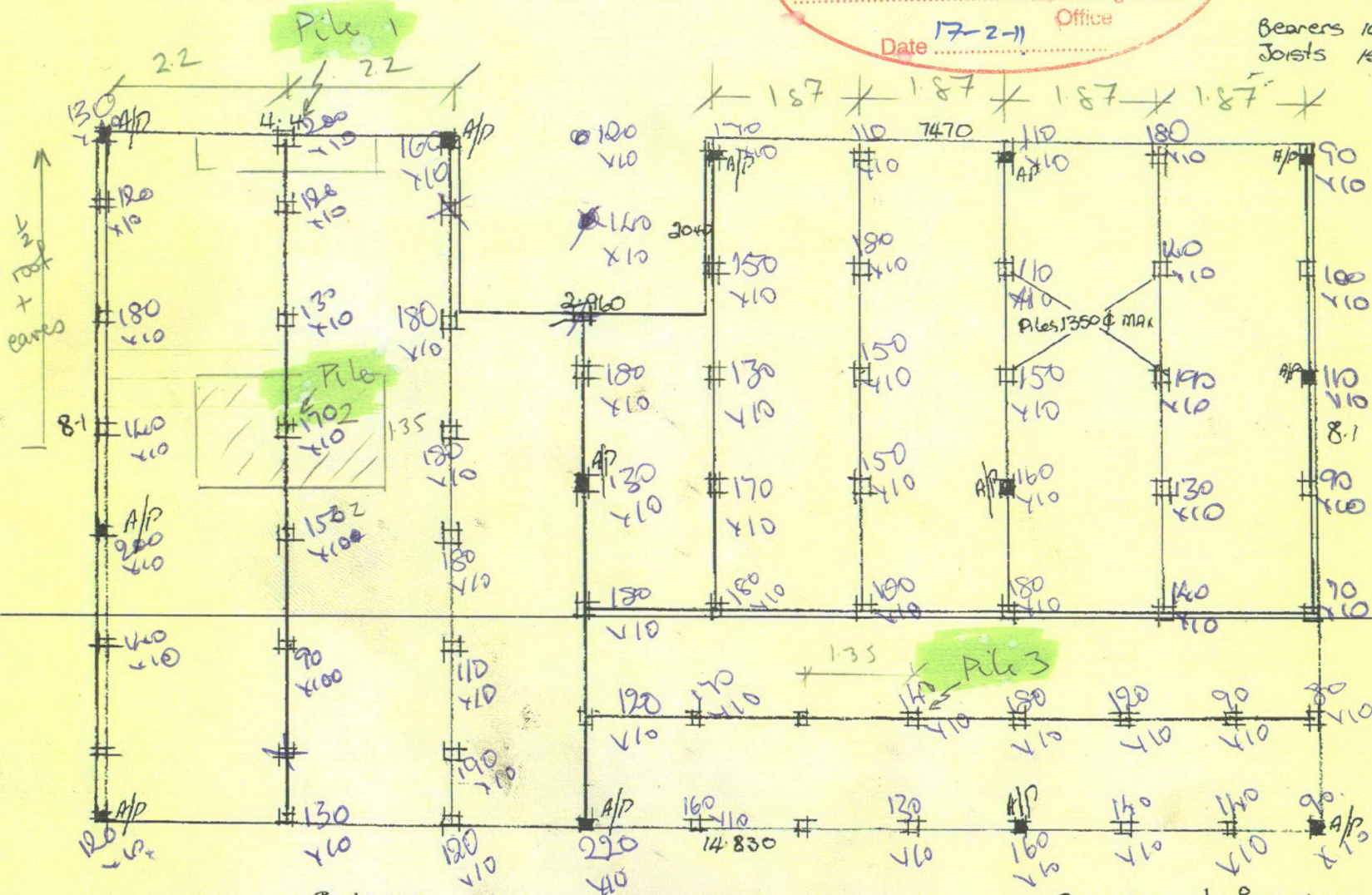
Drive to the depth of ~~100~~

Bearers 100 x 75.

Joists 150 x 50 ad 450¢

H 1.2 min

4 1-2 min



worst
load case
= Pile 1

use
270 kg hammer
175 ϕ piles
1.0m drop
Set = 28mm

Pine layout for N + J NEWLAND
Braemar RD



NEW ZEALAND INSTITUTE OF
ARCHITECTS
INCORPORATED



Building Code Clause(s) **B1 and B2**

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED BY: MTEC CONSULTANTS LTD.
(Design Firm)

TO: N. NEWLAND
(Owner/Developer)

TO BE SUPPLIED TO: WHAKATANE DISTRICT COUNCIL
(Building Consent Authority)

IN RESPECT OF: PILED FOUNDATION FOR NEW DWELLING
(Description of Building Work)

AT: 1098 BRAEMAR RD, WHAKATANE
(Address)

LOT DP SO

WHAKATANE DISTRICT COUNCIL
APPROVED FOR CO
Date 12-2-11

We have been engaged by the owner/developer referred to above to provide ENGINEERING DESIGN SERVICES.....
PILE DESIGN.....services in respect of the requirements of
 Clause(s) B1 AND B2 (STRUCTURAL COMPONENTS ONLY).....of the Building Code for
☐ All or ☒ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by Department of Building & Housing .NZS/AS 1170. NZS 3603: 3404
(verification method / acceptable solution)

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled.....
..... and numbered ..1098 BRAEMAR RD (Job No 134104)
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions
- (ii) All proprietary products meeting their performance specification requirements;

I **believe on reasonable grounds** the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, STEPHEN BOS am: ☒ CPEng 154367 #
(Name of Design Professional)

I am a Member of : ☒ IPENZ ☐ NZIA and hold the following qualifications: BE, MIPENZ(Civil/Struct), CPEng.....

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*. The Design Firm is a member of ACENZ ☒ YES ☐ NO

SIGNED BY STEPHEN.BOS..... ON BEHALF OF MTEC CONSULTANTS LTD
(Design Firm)

Date: 16-2-11 (signature) 

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1992. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suite of producer statements has been revised at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

PS1 Design	Intended for use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;
PS2 Design Review	Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;
PS3 Construction	Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2003 ¹ or Schedules E1/E2 of NZIA's SCC 2007 ²
PS4 Construction Review	Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, IPENZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence-based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Institution of Professional Engineers New Zealand (IPENZ) or the New Zealand Institute of Architects (NZIA), provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

* Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-CM5)³ (OL1-OL4)². The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

- ¹ Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2003
- ² NZIA Standard Conditions of Contract SCC 2007 (1st edition)
- ³ Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ/IPENZ 2004)

www.acenz.org.nz
www.ipenz.org.nz
www.nzia.co.nz



MTEC CONSULTANTS LTD	JOB TITLE	N Newland		PAGE	
	ADDRESS	1098 Braemar Road			
	JOB No.	134104	DATE	Feb 11	BY

1 PILE DRIVING DESIGN

OUTER PILES SUPPORTING ROOF

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC

ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION

- MEDIUM SOIL DRIVING CODITIONS =>

e = co-efficient of restitution

e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	Wg	Wq
ROOF	0.350	0.250	4.650	2.200	3.58	2.56
WALL	0.350		2.400	2.200	1.85	0.00
FLOOR	0.500	1.500	0.450	2.200	0.50	1.49
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					6.47	4.04

LOAD COMBINATIONS ULTIMATE $w_u = 1.2G + 1.5Q = 13.83$ kN/m

FROM CALCS - PILE LOAD - $P^* = 13.83$ kN AND REQUIRED FOS 4.0

=> $R^* = 55.3$ kN

(c) HAMMER

ASSUME HAMMER WEIGHT
HAMMER DROP

W = 270 kg =

2.65 kN

h' = 1000 mm

EFFECTIVE DROP h = 800

(d) PILE

USE TIMBER PILE

L = 3.0 m LONG &

175 mm DIAMETER

Density = 450 kg/m³

$P = (\pi D^2 / 4) (6) (L) = 0.32$ kN

(e) DRIVING

EFFICIENCY

$$n = \frac{W + Pe^2}{W + P} = 0.90$$

W = 2.65 Kn

Pe = 0.079636

P/W = 0.120264

DRIVING COEFFICIENT

C = Cc + Cp + Cq

WHERE

Cc = 2.0 mm

Cp = 2.1 mm

Cq = 3.0 mm

C = 7.1 mm

(f) SET

$$S = \frac{W h n}{R^*} - \frac{C}{2} = 30.89 \text{ mm}$$

=> LET SET = 28.0 mm

Check with Hiley formula

$R = W h n / (S - C/2)$

R = 55.33 kN

60.40 kN

Required
Achieved with
specified set

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS
PLEASE CONTACT THE ENGINEER

MTEC CONSULTANTS LTD	JOB TITLE	N Newland			PAGE	
	ADDRESS	1098 Braemar Road				
	JOB No.	134104	DATE	Feb 11	BY	SJB

1 PILE DRIVING DESIGN

INNER PILES SUPPORTING FLOOR ONLY

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC

ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION

- MEDIUM SOIL DRIVING CODITIONS =>

e = co-efficient of restitution

e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	WG	WQ
ROOF					0.00	0.00
WALL	0.350		2.400	2.200	1.85	0.00
FLOOR	0.500	1.500	1.350	2.200	1.49	4.46
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					3.88	4.46

LOAD COMBINATIONS ULTIMATE $w_u = 1.2G + 1.5Q = 11.34$ kN/m

FROM CALCS - PILE LOAD - $P^* = 11.34$ kN AND REQUIRED FOS 4.0

=> $R^* = 45.4$ kN

(c) HAMMER

ASSUME HAMMER WEIGHT
HAMMER DROP

$W = 270$ kg =
 $h' = 1000$ mm

2.65 kN

EFFECTIVE DROP $h = 800$

(d) PILE

USE TIMBER PILE

$L = 3.0$ m LONG & 175 mm DIAMETER
Density = 450 kg/m³

$P = (\pi D^2 / 4) (6) (L) = 0.32$ kN

(e) DRIVING

EFFICIENCY

$$n = \frac{W + Pe^2}{W + P} = 0.90$$

$W = 2.65$ Kn

$Pe = 0.079636$

$P/W = 0.120264$

DRIVING COEFFICIENT

$C = C_c + C_p + C_q$

WHERE

$C_c = 2.0$ mm

$C_p = 2.1$ mm

$C_q = 3.0$ mm

$C = 7.1$ mm

(f) SET

$$S = \frac{W h n}{R^*} - \frac{C}{2} = 38.46 \text{ mm}$$

Check with Hiley formula

$R = W h n / (S - C/2)$

$R = 45.37$ kN

=> LET SET = 28.0 mm

60.40 kN

Required
Achieved with
specified set

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS
PLEASE CONTACT THE ENGINEER

MTEC CONSULTANTS LTD	JOB TITLE	N Newland			PAGE	
	ADDRESS	1098 Braemar Road				
	JOB No.	134104	DATE	Feb 11	BY	SJB

1 PILE DRIVING DESIGN DECK PILES

(a) GENERAL

USE HILEY FORMULA IN ACCORDANCE WITH THE NZBC
ASSUME - SINGLE ACTING HAMMER WITH TIMBER PILES IN GOOD CONDITION
 - MEDIUM SOIL DRIVING CODITIONS =>
 e = co-efficient of restitution e = 0.25

(b) LOAD

UDL(kN/m)	G	Q	WIDTH	BREADTH	W _G	W _Q
ROOF					0.00	0.00
WALL					0.00	0.00
FLOOR	0.500	2.000	1.350	1.350	0.91	3.65
					0.00	0.00
					0.00	0.00
BEAMS	0.250		1.000	2.200	0.55	0.00
TOTAL					1.46	3.65

LOAD COMBINATIONS ULTIMATE $w_u = 1.2G + 1.5Q = 7.22$ kN/m

FROM CALCS - PILE LOAD - $P^* = 7.22$ kN AND REQUIRED FOS = 4.0
 => $R^* = 28.9$ kN

(c) HAMMER

ASSUME HAMMER WEIGHT $W = 270$ kg = 2.65 kN
 HAMMER DROP $h' = 1000$ mm EFFECTIVE DROP $h = 800$

(d) PILE

USE TIMBER PILE $L = 3.0$ m LONG & 175 mm DIAMETER
 Density = 450 kg/m³
 $P = (\pi D^2 / 4) (6) (L) = 0.32$ kN

(e) DRIVING

EFFICIENCY $W = 2.65$ Kn
 $\eta = \frac{W + Pe^2}{W + P} = 0.90$ $Pe = 0.079636$
 $P/W = 0.120264$

DRIVING COEFFICIENT
 $C = C_c + C_p + C_q$

WHERE

$C_c = 2.0$ mm
 $C_p = 2.1$ mm
 $C_q = 3.0$ mm

$C = 7.1$ mm

(f) SET

Check with Hiley formula
 $S = \frac{W h \eta}{R^*} - \frac{C}{2} = 62.43$ mm $R = \frac{W h \eta}{(S - C/2)}$
 $R = 28.88$ kN Required
 => LET SET = 28.0 mm 60.40 kN Achieved with specified set

SUMMARY

PILE DRIVING

175mm DIAMETER TIMBER PILE DRIVEN WITH A 270kg HAMMER WITH A DROP OF 1000 mm TO ACHIEVE A SET OF 28mm

DRIVE PILE A MINIMUM OF 250 mm INTO STIFF NATURAL GROUND

IF THERE ARE ANY VARIATIONS TO THE ABOVE SPECIFICATIONS
 PLEASE CONTACT THE ENGINEER

Table 5: Landings
Paragraphs 3.3.1 and 3.3.3

Ramp type	Maximum rise between landings (mm)	Length of landing (mm)
Accessible	750 ^m	1200
Other	1500	Ramp width but need not be greater than 900

Note:

1. 750 mm is the reasonable maximum level difference for a person to negotiate in a wheelchair.

3.3.2 Landing width shall be no less than the minimum width of the ramp it serves.

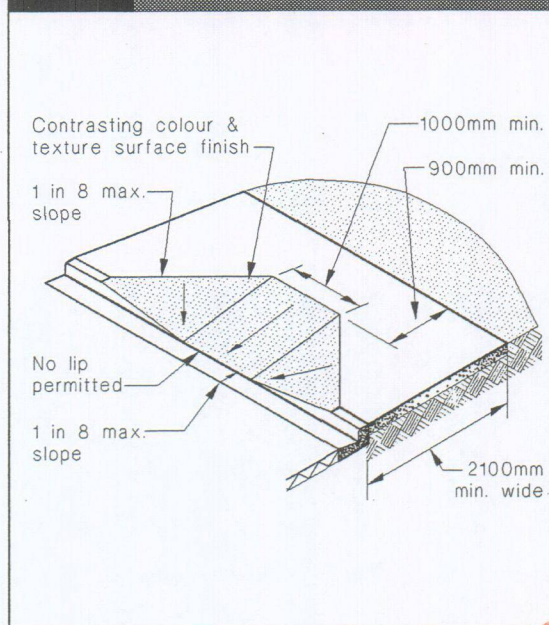
3.3.3 Landing length shall comply with Table 5 and Figure 9.

3.4 Kerb ramps

3.4.1 Kerb ramps (see Figure 10) shall have:

- a) A slope of no greater than 1 in 8, and
- b) Colour and texture contrast with the adjacent footpath.

Figure 10: Minimum Dimensions for Kerb Ramps
Paragraph 3.4.1



COMMENT:

Kerb ramps allow the safe and easy movement of wheeled trolleys and prams, as well as wheelchairs.

4.0 Stairways

4.1 Pitch, risers and treads

4.1.1 Acceptable *stairway pitch line* slopes, and step riser heights are given in Table 6 and Figure 11.

COMMENT:

1. The values given in Table 6 are based on recent research in North America. The often used design rule of twice the rise plus the going (2R+G) does not always lead to safe *stairway* geometry and can exclude some safe moderate pitch stairs.
2. Stairs having a *pitch line* slope of less than 23° do not permit a person to use the stair with an acceptable gait. Dangerous falls occur where the rhythm of movement is broken.

4.1.2 The method of measuring risers and treads is shown in Figure 12. If a landing on an outside *stairway* is formed by ground sloping across the width of the flight, the rise is measured at mid-width.

4.1.3 Uniformity – Riser height and tread depth for all steps in one flight, shall be uniform within the tolerance of ± 5 mm measured at the centreline on straight flights and at the *pitch line* on curved and spiral flights.

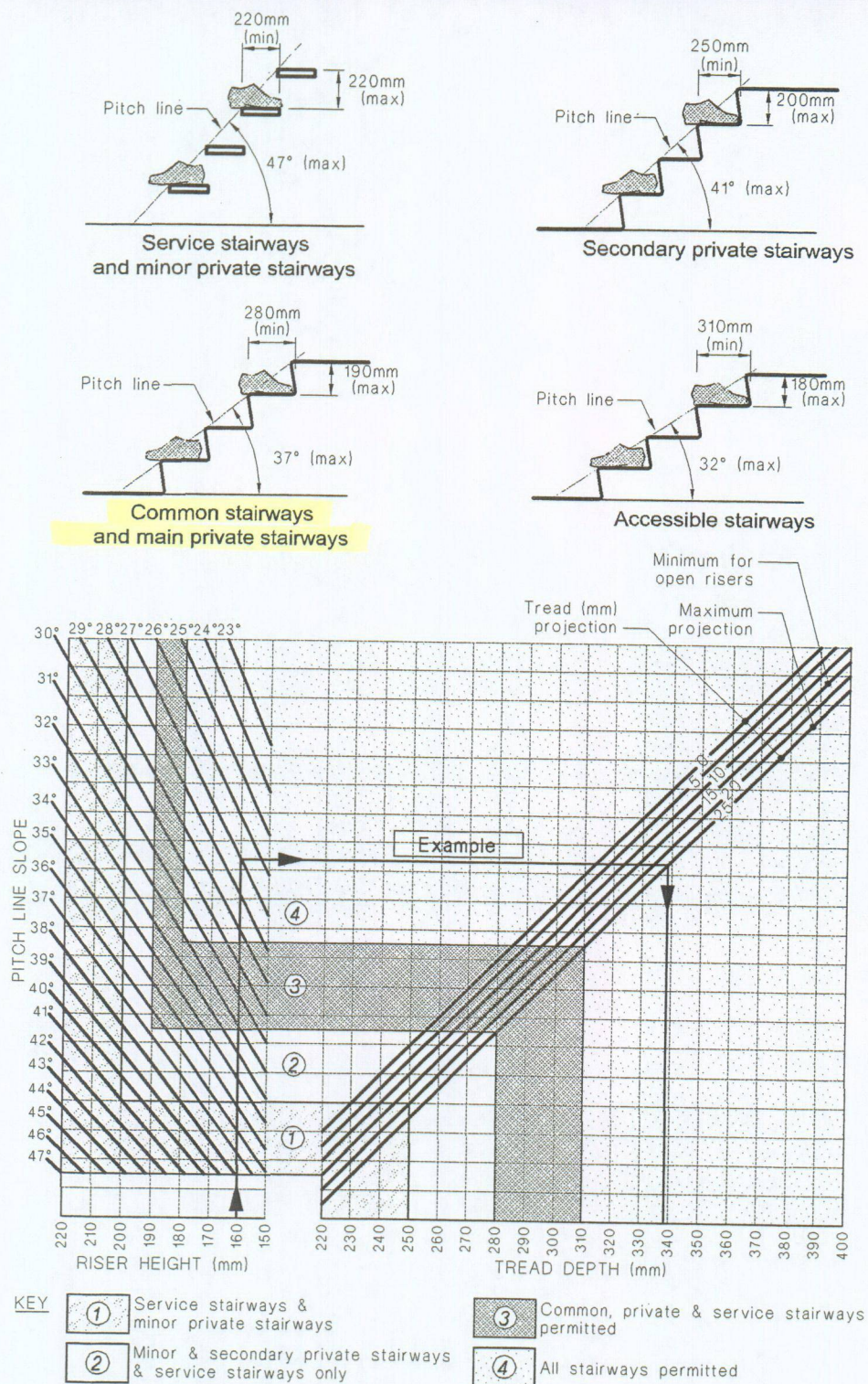
COMMENT:

The foot is normally only lifted a few mm above the treads during ascent. A minor variation in riser height can cause someone to stumble.

Table 6: Design Limits for Stairs
Paragraphs 4.1.1, 4.1.4 a), 4.4.2, 4.5.1 a) and Figure 17

Stair	Maximum pitch	Maximum riser height (mm)	Minimum tread (mm)
Service, minor private	47°	220	220
Secondary private	41°	200	250
Common and main private	37°	190	280
Accessible	32°	180	310

Figure 11: Pitch, Risers and Treads for Stairs
Paragraphs 4.1.1, 4.1.4, 4.4.2, 4.5.1 a) and Figure 17



Example of accessible stairway

For a riser height of 160mm, pitch line slope of 27° and tread projection of 25mm, the design tread depth is 340mm.

Figure 12: Measurement of Rise and Tread Depth
Paragraphs 4.1.2 and 4.1.6

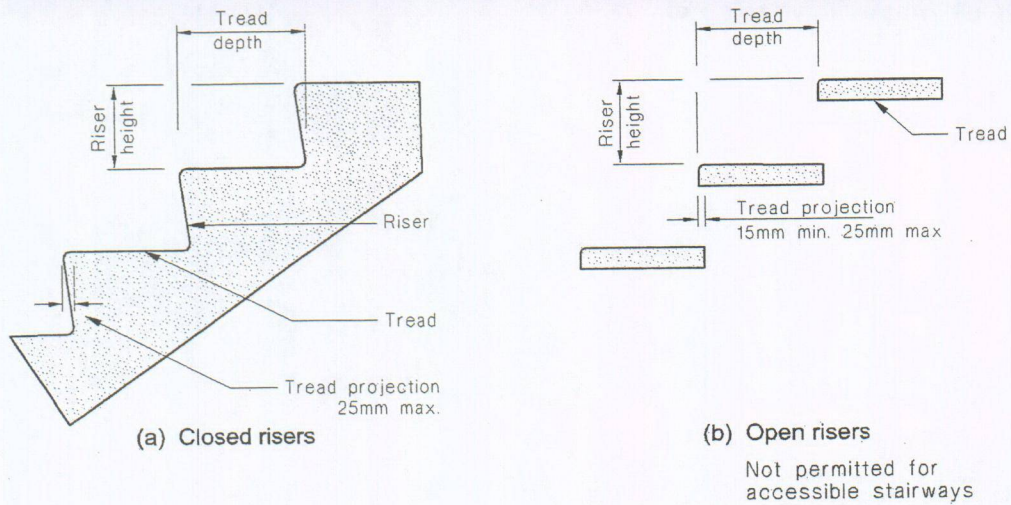
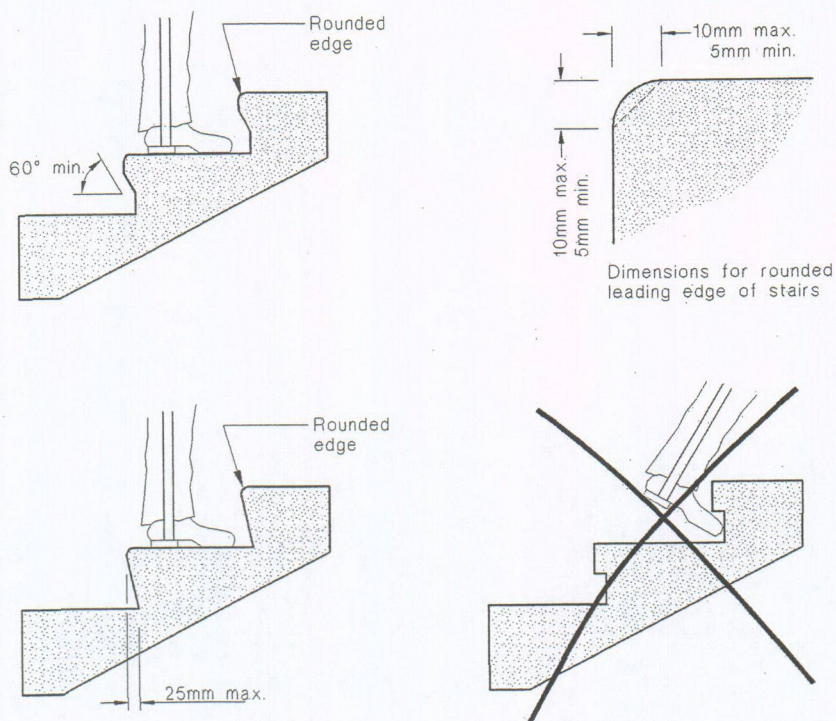


Figure 13: Accessible Stairway Projections
Paragraph 4.1.7



- iv) 200 mm between the rungs and any solid objects behind the ladder.

5.3.2 Access to landings (see Figures 22 and 23).

- Ladder stiles shall extend to the height of the barrier, but no less than 900 mm above the landing.
- Toeboards shall not extend across ladder openings.
- For step-through access, stile spacing above the landing shall be between 500 mm and 700 mm, and the top rung either level with, or one full rise below, the landing.
- For side access to landings, the spacing from the nearest stile to the landing shall be between 150 mm and 300 mm, and the top rung must be level with the landing.

5.4 Individual rung-type ladders

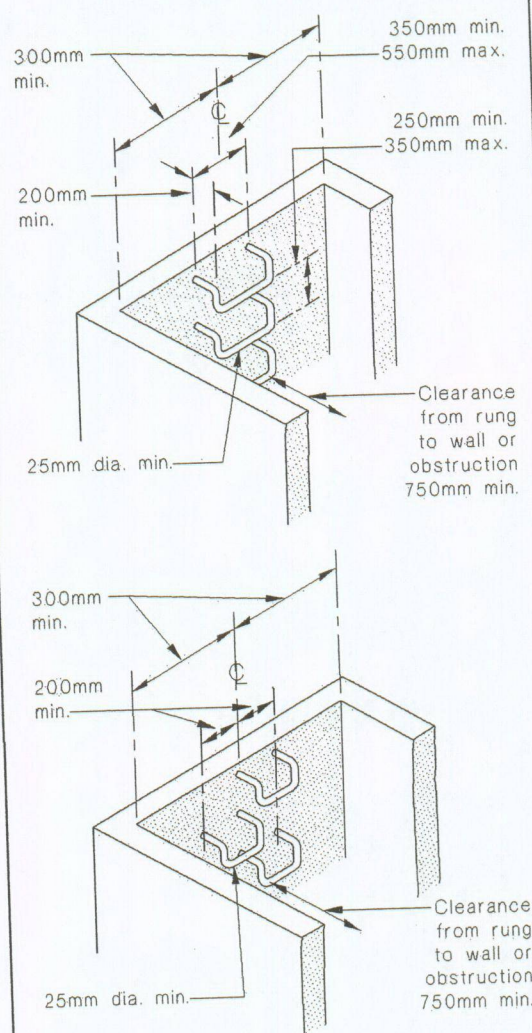
5.4.1 Individual rung-type ladders (see Figure 24) shall have:

- Rungs** of no less than 25 mm diameter, shaped to prevent the foot slipping off sideways, and spaced evenly at between 250 mm and 350 mm centres,
- A tread width** on each rung of between 300 mm and 550 mm, except that for staggered rungs this may be reduced to 200 mm, and
- Height and clearance** limitations as for rung-type ladders (see Paragraphs 5.3.1 d) and e)).

6.0 Handrails

6.0.1 All accessible stairways shall have handrails on both sides (see Paragraph 6.0.3). All other stairways with a width of 2.0 m or less and having two or more risers, shall have handrails on at least one side. For a stairway of two or three risers within, or giving access to a household unit, the handrail may be omitted.

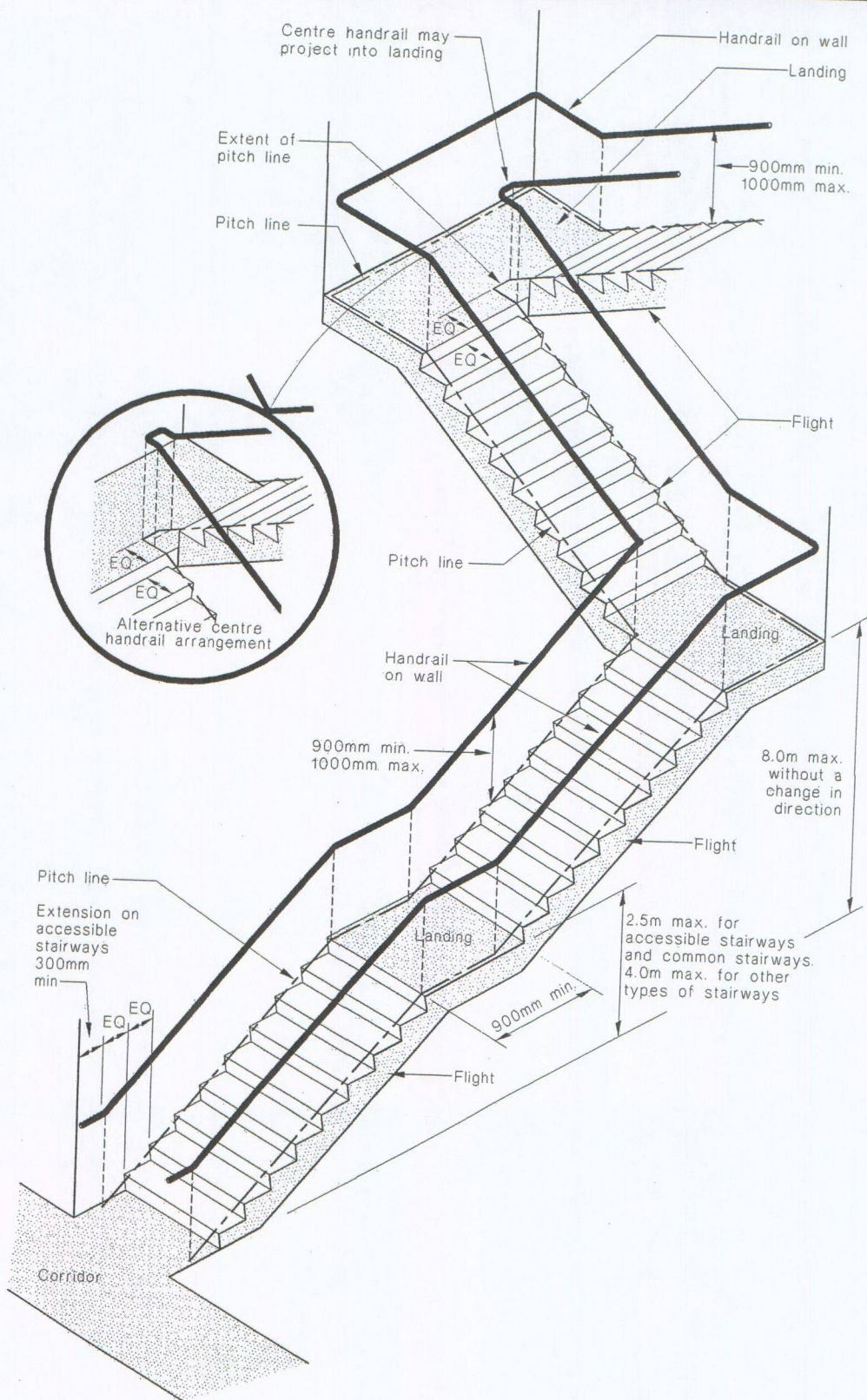
Figure 24: Individual Rung-type Ladders
Paragraphs 5.1.1 c) and 5.4.1



COMMENT:

- Wherever possible, handrails should be continuous on all access routes. On private stairways a handrail may be considered continuous if the continuity is interrupted by newel posts.
- A single riser is an isolated step which by NZBC D1.3.3 i) is permitted only within Detached dwellings or within household units of Multi-unit dwellings, and in Outbuildings and Ancillary buildings.

Figure 25: Handrails and Landings for Stairways and Ramps
 Paragraphs 1.5.2, 4.3.2, 6.0.2, 6.0.3, 6.0.4 and 6.0.5



6.0.2 Any stairway which exceeds 2.0 m in width shall:

- a) Have *handrails* on both sides and, where the width exceeds 4.0 m, shall also have an intermediate *handrail* provided at the centre of the *stairway*, or
- b) If the *stairway* is essentially an outdoor architectural feature and not required to be an *accessible stairway*, have at least one *handrail*. Examples of such *stairways* are those leading to civic areas, or to decks on *Housing*.

COMMENT:

A central rail gives all users a rail to use for safety purposes. On *stairways* in public buildings, such as sports stadia, intermediate rails are also effective for crowd control. The 2.0 m width is a comfortable width for three people, two of whom can grasp a rail if anyone trips.

6.0.3 Accessible stairways and accessible ramps – *Handrails* shall be provided on both sides of *accessible stairways* and on both sides of *accessible ramps* where the ramp slope is steeper than 1 in 20. The *handrails* shall be continuous except where doors are located on landings (see Figures 9 and 25).

6.0.4 Slope of handrails – *Handrails* shall have the same slope as the *pitch line*, begin no further than the second riser from the lower end of the *stairway*, and extend the full length of the *stairway* they serve. Except that, where the *handrail* serves an *accessible stairway* or *accessible ramp*, a 300 mm (minimum) horizontal extension shall be provided at each end of the *handrail*, as shown in Figures 9 and 25.

6.0.5 The first riser shall be located a sufficient distance back from the corner where the two walls meet, to accommodate the extended *handrail*, as shown in Figure 25.

6.0.6 Height of handrails – *Handrails* shall be positioned between 900 mm and 1 m above the *pitchline* (see Figure 25).

6.0.7 Handrail profiles – *Handrails* shall have a profile which can be readily grasped by an adult hand and shall be installed in a way that avoids the likelihood of personal injury. An acceptable *handrail* shall be shaped and

located to ensure that, under normal usage, a person's hand will not contact adjacent walls, supporting brackets or fixings, or any other obstruction.

COMMENT:

It is important that in the event of stumbling on a *stairway* or ramp an adult, even with a small hand, can firmly grasp the *handrail* to prevent a fall. Refer to B1/AS2 for *handrail* structural design requirements.

Amend 4
Jul 2001

6.0.8 A graspable *handrail* profile shall have:

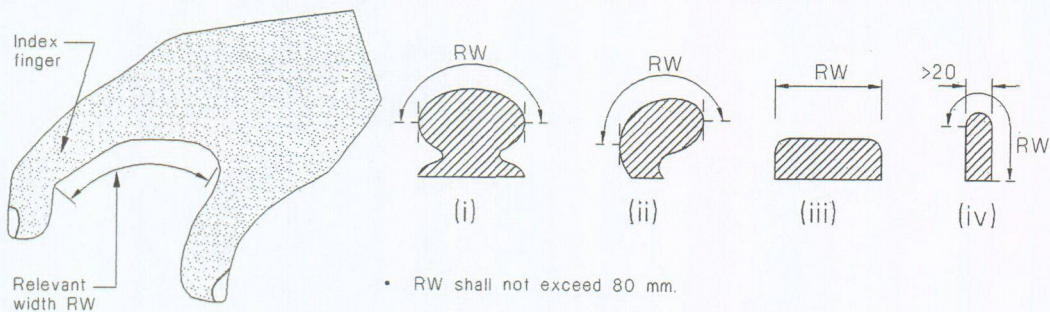
- a) A flat or convex upper surface,
- b) Arrised or radiused edges,
- c) A minimum cross section width of 20 mm, and
- d) A "relevant width" (as illustrated in Figure 26 (a)) across the top surface of no greater than 80 mm. Figure 26 (a) and (b) indicates some acceptable profiles but others may also be acceptable.

6.0.9 Acceptable *handrail* profiles for *accessible stairways* and *accessible ramps* are shown in Figure 26 (b).

COMMENT:

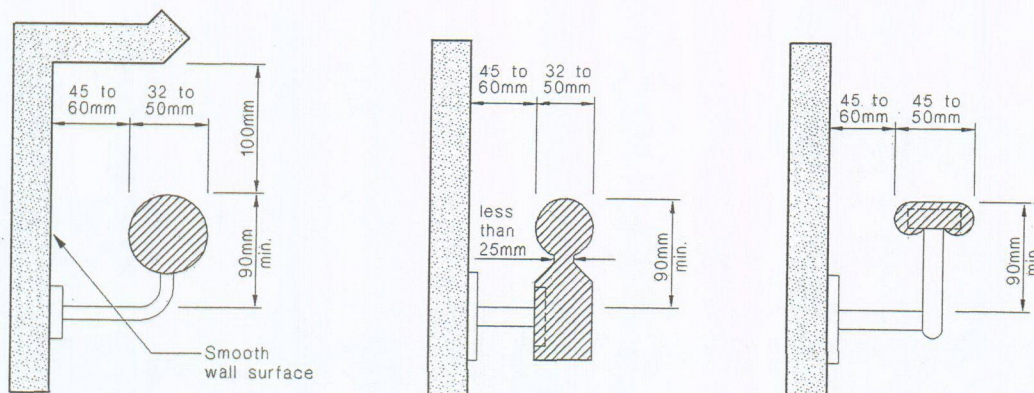
In most circumstances a *handrail* is used with a light grip to steady the user of a *stairway* or ramp. Ambulant people with disabilities use *handrails* for both leverage and support, and wheelchair users often need to firmly grip the rails to pull themselves along, particularly on ramps. In those circumstances a profile offering an adequate grip is important.

Figure 26: Handrail Profiles and Clearances
Paragraphs 6.0.8 and 6.0.9



- RW shall not exceed 80 mm.
- RW (relevant width) is measured around the upper surface perimeter of the handrail section between the vertical tangents on either side.
- Variations in shape are acceptable provided the effective grip is not reduced. For example, the side faces shown as vertical in details (iii) and (iv) are still acceptable even if slightly curved or sloped up to 5° from vertical.
- See fig. 26 (b) for wall clearances.

(a) Determination of relevant width for private and common stairways



The profiles shown comply with the provisions for accessible handrails.

The clearances apply to all handrails and the maximum dimension must be used for rough textured wall surfaces.

(b) Acceptable profiles and clearances for accessible stairways

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 By RGS/MS

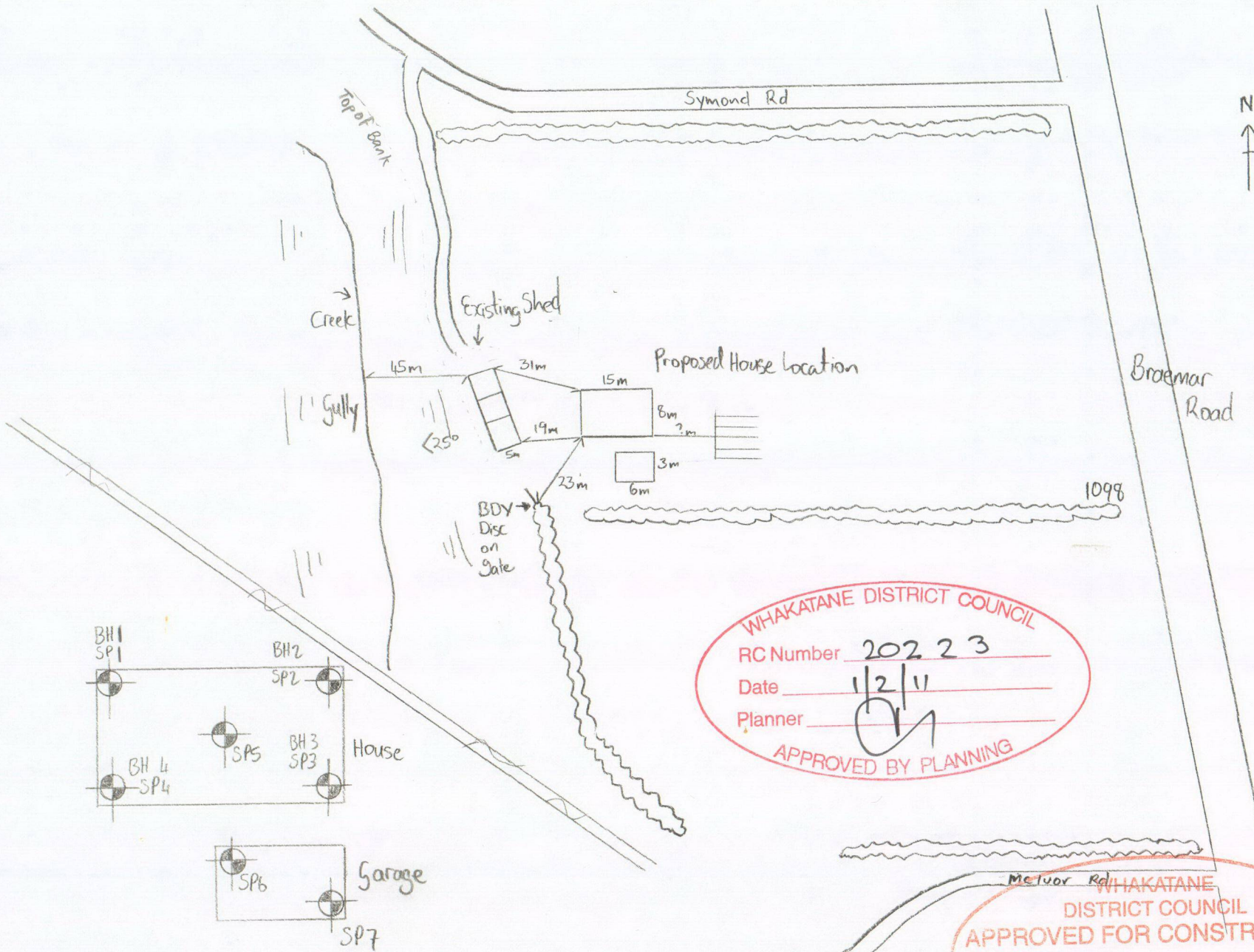
TGA REV 2 9/07/2010

Test Location Sketch



WHAKATANE DISTRICT COUNCIL
 APPROVED FOR CONSTRUCTION
 Building Control Office
 Date 17-2-11

WHAKATANE DISTRICT COUNCIL
 RC Number 202 2 3
 Date 1/2/11
 Planner [Signature]
 APPROVED BY PLANNING



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Scala Penetrometer Results

Probe description: 9kg hammer falling 500mm striking a steel anvil driving a 16mm diameter rod fitted with a 20mm diameter cone

Depth of penetration begins at the existing ground level

Readings taken in mm. Penetration is given in mm per 5 blows

Number of Blows GL Start	Test 1		Test 2		Test 3		Test 4	
	Reading (mm)	Penetration (mm)	Reading (mm)	Penetration (mm)	Reading (mm)	Penetration (mm)	Reading (mm)	Penetration (mm)
0	0		0		0		0	
5	250	250	170	170	200	200	160	160
10	850	600	500	330	530	330	400	240
15	1120	270	1060	560	1120	590	780	380
20	1260	140	1220	160	1320	200	1020	240
25	1440	180	1420	200	1540	220	1140	120
30	1580	140	1600	180	1750	210	1250	110
35	1680	100	1710	110	1940	190	1380	130
40	1820	140	1820	110			1550	170
45	1920	100	1920	100			1650	100
50	1990	70					1740	90
55	2100	110					1780	40
60	2180	80					1850	70
65	2280	100					1960	110
70	2380	100						
75	2450	70						
80	2510	60						
85	2680	170						
90	2750	70						
95	2820	70						
100	2900	80						
105								
110								
115								
120								
125								
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225								
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240								
245								
250								
255								
260								
265								
270								

Notes: Tests 1-5 house location, tests 6 & 7 garage location.

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Scala Penetrometer Results

Probe description: 9kg hammer falling 500mm striking a steel anvil driving a 16mm diameter rod fitted with a 20mm diameter cone

Depth of penetration begins at the existing ground level

Readings taken in mm. Penetration is given in mm per 5 blows

Number of Blows GL Start	Test 5		Test 6		Test 7		Reading (mm)	Penetration (mm)
	Reading (mm)	Penetration (mm)	Reading (mm)	Penetration (mm)	Reading (mm)	Penetration (mm)		
0	0		0		0			
5	160	160	180	180	170	170		
10	400	240	430	250	380	210		
15	980	580	750	320	770	390		
20	1170	190	1000	250	1050	280		
25	1400	230	1130	130	1150	100		
30	1660	260	1210	80	1230	80		
35	1850	190	1300	90	1310	80		
40	1950	100	1400	100	1380	70		
45			1490	90	1430	50		
50			1590	100	1500	70		
55			1660	70	1560	60		
60			1740	80	1620	60		
65			1880	140	1720	100		
70					1820	100		
75					1900	80		
80								
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260								
265								
270								

Notes: Tests 1-5 house location, tests 6 & 7 garage location.

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**Hand Augured Borehole**

Borehole No : 1

Associated Penetrometer No : 1

Depth (m)	Groundwater	Graphic Log	DESCRIPTIONS	Strength	Soil Class(USCS)	SCALA PENETROMETER RESULTS Penetration per 5 Blows (mm)
0.0m			TOPSOIL. Fine - coarse SAND , trace of Silt, dark brown, poorly graded, dry.	L	SM	
0.5m			Intermixed fine - coarse SAND with trace of Silt, mottled dark brown - orange brown, poorly graded, very loose, dry.			
1.0m			Medium Pumice SAND , orange brown, poorly graded, very loose - medium dense, slightly moist.	VL		
			Occasional fine - coarse Pumice gravel.			
1.5m			Medium Pumice SAND occasional fine - coarse gravel, pale brown, poorly graded, loose - dense, becomes moist.	L	SP	
2.0m				MD		
2.5m			Medium Pumice SAND occasional fine - coarse gravel, pale brownish grey, poorly graded, medium dense - dense, moist becomes wet.	MD		
3.0m			Medium Pumice SAND occasional fine - coarse gravel, grey mottled pale orange brown, poorly graded, wet.	D		
				MD		
3.5m			Target Depth			
4.0m						
4.5m						
5.0m						

Notes:

Building platform formally a asparagus field

Scala Penetrometer: 9kg hammer

falling 510mm. Penetration per 5 blows recorded.

Cohesive MaterialVery Soft VS Soft S Firm F Stiff St
Very Stiff Vst Hard H**Non Cohesive Material**Very Loose VL Loose L Medium Dense MD
Dense D Very Dense VD

Verified:

Date:

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Hand Augured Borehole

Borehole No : 2

Associated Penetrometer No : 2

Depth (m)	Groundwater	Graphic Log	DESCRIPTIONS	Strength	Soil Class(USCS)	SCALA PENETROMETER RESULTS Penetration per 5 Blows (mm)
0.0m			TOPSOIL. Fine - coarse SAND , trace of Silt, dark brown, poorly graded, dry.	L	SM	
0.5m			Intermixed fine - coarse SAND with trace of Silt, mottled dark brown - orange brown, very loose, poorly graded, dry.	VL	SP	
1.0m			Medium Pumice SAND , orange brown, poorly graded, very loose dry. Occasional fine - coarse Pumice gravel.	L		
1.5m			Medium Pumice SAND occasional fine - coarse gravel, pale brown, poorly graded, loose, becomes moist.	MD		
2.0m			Medium Pumice SAND , brown, poorly graded, medium dense, moist.			
2.5m			Target Depth			
3.0m						
3.5m						
4.0m						
4.5m						
5.0m						
Notes: Building platform formally a asparagus field					Scala Penetrometer: 9kg hammer falling 510mm. Penetration per 5 blows recorded.	
Cohesive Material			Non Cohesive Material			
Very Soft VS Soft S Firm F Stiff St Very Stiff Vst Hard H			Very Loose VL Loose L Medium Dense MD Dense D Very Dense VD			
Verified: Date:						

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Hand Augured Borehole

Borehole No : 3

Associated Penetrometer No : 3

Depth (m)	Groundwater	Graphic Log	DESCRIPTIONS	Strength	Soil Class(USCS)	SCALA PENETROMETER RESULTS Penetration per 5 Blows (mm)																
0.0m			TOPSOIL Fine - coarse SAND , trace of Silt, dark brown, poorly graded, dry.	L	SM	<table border="1"><caption>Scala Penetrometer Results Data</caption><thead><tr><th>Depth (mm)</th><th>Penetration per 5 Blows (mm)</th></tr></thead><tbody><tr><td>200</td><td>200</td></tr><tr><td>500</td><td>350</td></tr><tr><td>1100</td><td>600</td></tr><tr><td>1300</td><td>250</td></tr><tr><td>1500</td><td>280</td></tr><tr><td>1800</td><td>250</td></tr><tr><td>2000</td><td>220</td></tr></tbody></table>	Depth (mm)	Penetration per 5 Blows (mm)	200	200	500	350	1100	600	1300	250	1500	280	1800	250	2000	220
Depth (mm)	Penetration per 5 Blows (mm)																					
200	200																					
500	350																					
1100	600																					
1300	250																					
1500	280																					
1800	250																					
2000	220																					
0.5m			Intermixed fine - coarse SAND with trace of Silt, mottled dark brown - orange brown, poorly graded, very loose, dry.	VL	SP																	
1.0m			Medium Pumice SAND occasional fine - coarse gravel, orange brown, poorly graded, very loose - loose, becomes moist.																			
1.5m				L																		
2.0m			Medium Pumice SAND , pale brown, poorly graded, loose, moist.																			
2.5m			Target Depth																			
3.0m																						
3.5m																						
4.0m																						
4.5m																						
5.0m																						
Notes: Building platform formally a asparagus field					Scala Penetrometer: 9kg hammer falling 510mm. Penetration per 5 blows recorded.																	
Cohesive Material			Non Cohesive Material			Verified: Date:																
Very Soft VS Soft S Firm F Stiff St Very Stiff Vst Hard H			Very Loose VL Loose L Medium Dense MD Dense D Very Dense VD																			

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Hand Augured Borehole

Borehole No : 4

Associated Penetrometer No : 4

Depth (m)	Groundwater	Graphic Log	DESCRIPTIONS	Strength	Soil Class(USCS)	SCALA PENETROMETER RESULTS Penetration per 5 Blows (mm)
0.0m			TOPSOIL. Fine - coarse SAND , trace of Silt, dark brown, poorly graded, dry.	L	SM	
0.5m			Intermixed fine - coarse SAND with trace of Silt, mottled dark brown - orange brown, poorly graded, dry.		SP	
			Medium Pumice SAND occasional fine - coarse gravel, orange brown, poorly graded, becomes moist.	VL		
1.0m				L		
			Medium Pumice SAND , pale brown, poorly graded, moist.	MD		
1.5m				L		
				MD		
				D		
2.0m				MD		
			Medium Pumice SAND occasional fine - coarse gravel, pale brownish grey, poorly graded, moist.			
2.5m			Target Depth			
3.0m						
3.5m						
4.0m						
4.5m						
5.0m						
Notes: Building platform formally a asparagus field					Scala Penetrometer: 9kg hammer falling 510mm. Penetration per 5 blows recorded.	
Cohesive Material			Non Cohesive Material			Verified: Date:
Very Soft VS Soft S Firm F Stiff St Very Stiff Vst Hard H			Very Loose VL Loose L Medium Dense MD Dense D Very Dense VD			

Table 6 – Factors Restricting Choice of Conventional On-Site Effluent Treatment System

Select one item from each of numbered sections below and put the score in "1st score" column to find out first score.

On-site effluent treatment systems with a total score between 1 and 4 (inclusive) from Table 6 are **permitted activities** provided they meet the requirements of Rule 3 of the Plan. On-site effluent treatment systems with a score of 5 or more from Table 6 are discretionary activities unless the systems can be modified in accordance with the modification factors set out in Table 8.

1098 Braemar Rd		Factor	1 st Score	2 nd Score (if necessary)
1	Pre-Treatment Level (Maintenance access should be provided) (a) Single stage septic tank with approved effluent outlet filter (b) Two stage septic tank and approved effluent outlet filter (c) Greywater only	2 2 1	2	
2	Depth to Highest Groundwater Table Conventional On-Site Effluent Systems below bottom of soakage field land treatment area ⁴ greater than 1500 millimetres between 1200-1500 millimetres between 600-1200 millimetres between 0-600 millimetres	0 1 2 4	1	
3	Soil Category (Refer to Table 10) 1 gravel, coarse sand; rapid draining; 2 coarse to medium sand; free draining; 3 medium-fine and loamy sand; good drainage; 4 sandy loam, loam and silt loam; moderate drainage; 5 sandy clay-loam, clay-loam and silty clay-loam; moderate to slow drainage. 6 sandy clay, non-swelling clay and silty clay; slow drainage. 7 swelling clay, grey clay, hardpan; poorly or non-draining.	2 1 1 0 0 4 4	1	

⁴ See 'Definition of Terms' for definition of 'Treatment Area'

4	Restrictive Soil Horizon⁵ (barrier to soil soakage) Restrictive drainage soil horizon within 2 metres of soil surface. Restrictive drainage soil horizon deeper than 2 metres of soil surface.	4 0	0	
5	Slope less than 15 percent slope (8.5°) greater than 15% (8.5°)	0 3	0	
6	Barrier to Horizontal Soil Soakage Within 3 metres (For example vertical cuttings, retaining walls, building walls etc. in the soil profile) greater than 3 metres and greater than 45 degrees from the toe of a wall/embankment less than 3 metres or less than 45 degrees from the toe of the wall/embankment	0 4	0	
7	Proximity to Surface Water (including ephemeral) or Water Supply Bore (i) Greater than or equal to 40 metres (ii) Between 20-40 metres (iii) Less than 20 metres	0 1 4	0	
TOTAL SCORE			4	

45 : ok✓

⁵ A restrictive soil horizon may be a change in soil textural class or some other change which severely reduces drainage.

Table 7 – Effluent Treatment Trench Length Required (in metres) for Discharge Volumes of up to 2 cubic metres per day to Standard Trenches

Soil Category											
Average daily flow (L) ²	Number of Bedrooms	1 (LPED) ¹		2		3		4		5	
		Min. Trench Length (metres) Req.	Area Req. (metres ²) incl. Reserve Area	Min. Trench Length (metres) Req.	Area Req. (metres ²) incl. Reserve Area	Min. Trench Length (metres) Req.	Area Req. (metres ²) incl. Reserve Area	Min. Trench Length (metres) Req.	Area Req. (metres ²) incl. Reserve Area	Min. Trench Length (metres) Req.	Area Req. (metres ²) incl. Reserve Area
Up to 500		16	64	22	90	37	150	45	180	75	300
Up to 1000	1 to 3	32	128	45	180	74	300	90	360	150	600
1000-1400	4	45	180	60	240	105	420	125	500	210	840
1400-1600	5	50	200	70	280	120	480	145	580	240	960
1600-2000	6	64	256	90	360	148	590	180	720	300	1200
More than 2000	7 or more	Resource consent is required for discharges >2m ³ /day									

Advisory Notes:

- 1 For Category 1 soils a low pressure effluent distribution system (LPED) must be used. This system utilises pump dosed loading into a perforated small diameter pipe inserted within draincoil (refer Figure 4). The LPED dosing system requires careful design to ensure even distribution throughout the full trench system. Automatic sequencing valves may be used in preference to pressure manifolds. Pressure dosing systems must incorporate an alarm/warning system on the pump unit to detect failure of the system at an early stage.

Soil Category 1 = gravel, coarse sand; rapid draining;

Soil Category 2 = coarse to medium sand; free draining;

Soil Category 3 = medium-fine and loamy sand; good drainage;

Soil Category 4 = sandy loam, loam and silt loam; moderate drainage;

Soil Category 5 = sandy clay-loam, clay-loam and silty clay-loam; moderate to slow drainage.

- 2 The values in the "average daily flow" column are to be used in the design sizing of trench systems for domestic wastewater producing facilities serving staff/employees in office, commercial, retail and light industrial premises. Where flows are below 1,000 litres/day, then trench lengths may be "pro rata" reduced down to, but to not less than 50% of those for 1,000 litres/day.

Table 7 is based on the following:

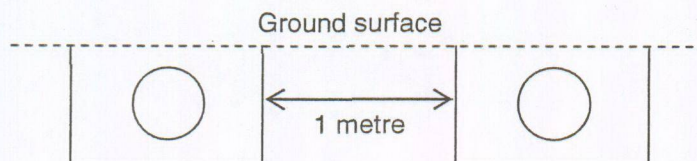
- 0.45 metre wide gravel filled standard trench (Figure 4 trench configuration). The width of the trench may be reduced as long as the trench length from Table 7 is increased by the following formula:

$$\text{Narrow Trench Length} = (T \times 0.45) \div W$$

where T = trench length from Table 7

W = trench width. The trench width must not exceed 0.45 metres.

D = spacing between adjacent trenches (sidewall to sidewall). The minimum is 1 metre although 2 metres is preferable (see diagram below).



- 100% reserve area so that if the soakage field fails, there is room to develop another field.
- For discretionary activities these lengths may exceed those recommended in Table 7.
- Any compaction of a soakage field is to be avoided.

134104-m-e-c001

21 December 2010

N Newland
1098 Braemar Road
RD 2
Otakiri



Dear Neville

re: **FOUNDATION REPORT FOR PROPOSED NEW DWELLING AT 1098
BRAEMAR ROAD, OTAKIRI**

1. Introduction

MTEC Consultants Ltd have been engaged to carry out a geotechnical assessment for the proposed new residential dwelling to be located on the above property

We have assessed the nature of the proposed building site in terms of soil type, bearing capacity, location and stability. Comment is also made in terms of effluent disposal and stormwater disposal for the new dwelling

The following report is an account of our findings and recommendations for development.

2. Site Description

The site is located at 1098 Braemar Road on relatively flat land. The identified building platform is elevated from the locally surrounding land by around 1 ~ 1.5 metres. The site slopes generally to the west, to an open watercourse running from south to north through the property.

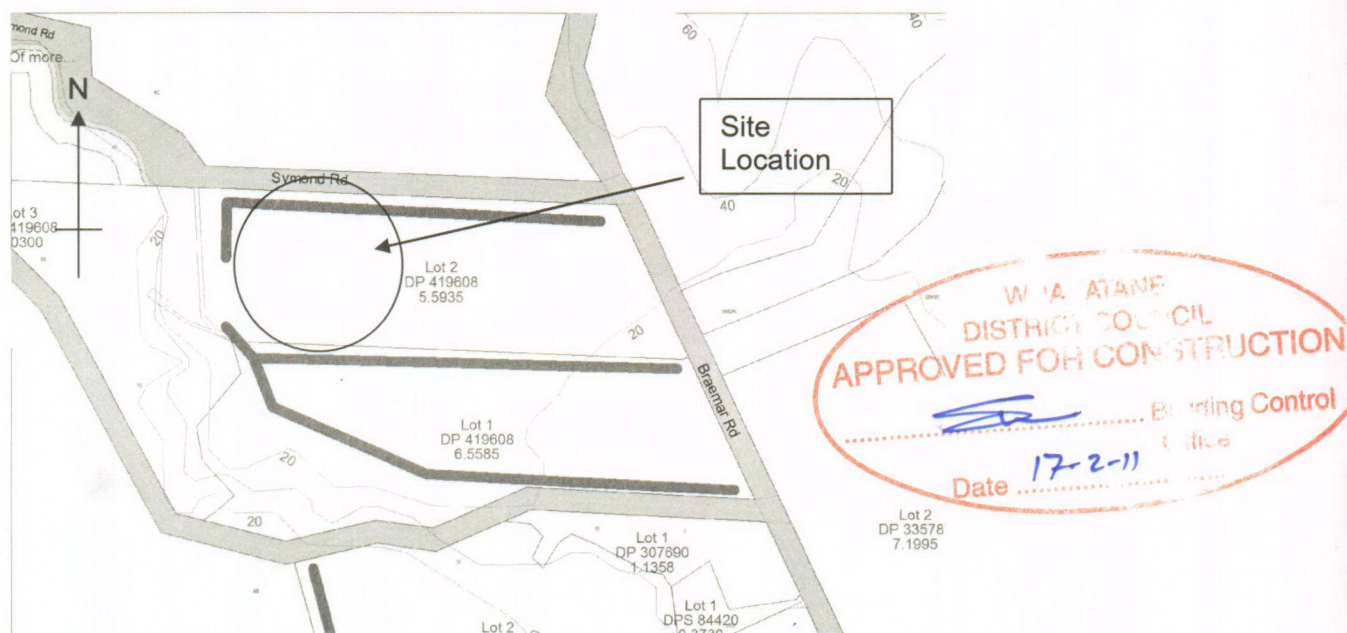


Figure 1: Site Location

The gradients on the property are minimal and no slope stability issues have been

identified related to the proposed development.

The site was previously planted in asparagus, but is now in general pasture. At the time of our visit the proposed building platform area had been marked out but no clearing or site works had been undertaken.

3. Site Investigations

Site investigations consisted on the following:-

- Site walkover and inspection
- 4 handauger boreholes to various depths.
- 5 Scala penetrometer tests adjacent to the boreholes for the proposed dwelling and 2 scala penetrometers for the proposed garage

Scala penetrometer testing involves a 9kg weight falling a distance of 510mm, the penetration per 5 blows is recorded. The penetration can then be interpolated to give allowable bearing capacities of the soil profile.

Borehole (BH) and test locations are indicated on the attached test location plan.

4. Site Conditions

4.1. Published Geology

The Geological Map of New Zealand, sheet 5 – Rotorua indicates the site is underlain by Rotoiti Breccia which is described as Poorly compacted white pumice breccias and basal siltstone.

4.2. Subsoil Conditions

The site is underlain by a number of sand and pumice sand layers. Typically the pumice sand layer from below topsoil level to around 1.0m depth is very loose and not suitable for the direct support of foundations.

Beneath this depth the sand was identified as a pumice Sand, with occasional gravel but relatively dense.

Test results indicated the top 1m of material ranged from 35kPa to 75kPa allowable bearing (105kPa to 225kPa ultimate geotechnical bearing capacity).

5. Building Recommendations

5.1. Building Construction

- You have advised that an existing timber framed dwelling is to be relocated onto the site.
- As such the foundation requirements are identified as timber joists, bearers and piles to support the relocated dwelling.

5.2. Foundations

As test results for the upper soil layers below the proposed building platform have indicated soils that do not comply with the definition of good ground as per NZS

3604:1999 "Timber Framed Buildings" we recommend one of the following options be implemented to provide for support of the future dwelling.

Piled Floor

Not going this option.

Hammer pile design rec'd for this consent.

16-2-11 *San*

270 kg hammer

Ø 175 piles

1.0 mtr drop.

Set = 28 mm

- All pile supports to the new dwelling are to be driven or drilled to a minimum depth of 1.4 metres below the existing ground.
- For drilled piles foundations should be as per NZS 3604 will all piles taken as cantilever piles.
- If piles are to be driven then a specific design will be required to determine the loading on each pile and the associated set for the pile rig (with specific hammer weight and drop).

175 mm

Excavated and Remediated Floor (for garage or slab on grade)

- For the dwelling, to 1.5m outside of the building perimeter the existing insitu material shall be dug out to a depth of 1.4 metres and then replaced with suitable hardfill backfill.
- The existing pumice sand may be suitable after mixing with imported pumice (50/50 mix)
- The material shall be placed and compacted in 200mm layers and rolled with a 6t static roller (minimum weight).
- Upon completion testing and certification by a Chartered Engineer will be required.
- Upon certification the ground can be considered 'good ground' as per the definition of NZS 3604 with an allowable bearing pressure of 100 kPa.
- Standard footings for either timber or concrete construction can then be utilised.

5.3. Stormwater Disposal

- Stormwater should be piped to the house rainwater tanks, with any overflow directed to the open water course to the west.

checked with Stephen

Bo's - can use soak holes as long as are shallow installation. *San* 11-2-11

5.4. Effluent Disposal

- On site effluent disposal is permitted for the proposed building platform and should be installed in accordance with the Environment Bay of Plenty On site Effluent Treatment Regional Plan (2006).
- The disposal field shall be determined based on the size of the structure and a category 3 soil.
- On the basis of the disposal bed being located on the upper platform, adjacent the house, and a clear distance of 1.2m to the (winter) water table, it is considered that a standard septic tank can be installed, as per the EBOP Schedule 1 attached.

6. Conclusion

As a result of testing we confirm that the results obtained indicate that suitable bearing can be achieved for future building foundations provided that:

1. For a dig out and replace option the site is undercut by 1.4m and the unsuitable material removed and replaced with hardfill backfill compacted in suitable layers
2. For a piled option piles are installed driven to a minimum depth of 1.40

metres.

7. Limitations

The assessment given in this report is based on limited site data from discrete test locations. Variations in ground conditions could exist across the site. The nature and continuity of subsoil conditions away from the test sites are inferred and it must be appreciated that actual conditions could vary from the assumed model.

This report has been prepared for the sole benefit of Neville Newland for the proposed development at 1098 Braemar Road, Otakiri. It is not to be relied upon or used out of context by any other person without reference to MTEC Consultants Ltd. The reliance by other parties on the information or opinions contained in the report shall, without prior review and agreement in writing, be at such party's sole risk.

We trust this report provides the information you require. Should you have any queries or require further information please call me.

Yours faithfully
MTEC CONSULTANTS LTD

Report Prepared By:



Stephen Bos
NZCE, BE (hons), MIPENZ, CPEng (Civil / Struct)

027 455 2009



**NZBC Pre-Purchase
Company Limited**

RELOCATION REPORT ON HOUSE

**AT
HOUSE TRANSPORTERS LIMITED YARD
PAENGAROA**

**FOR
MR & MRS N NEWLAND**

11 January 2011





NZBC Pre-Purchase Company Limited

11 January 2011

BR 201-010

Mr & Mrs N Newland
1098 Braemar Road
R D 2
Whakatane

Dear Mr & Mrs Newland

Relocation report on house - destination Whakatane

1. Brief/Purpose:

You requested that we inspect the above elements and provide a written report for the Council to consider as part of a Building Consent application to relocate the dwelling.

1.1 Commissioning Date: 21 December 2010

1.2 Limitation of Report:

This report is a relocation report only. It is not a pre-purchase report.

The primary reason for this report is to satisfy the District Council that the house is suitable to be brought into their district.

2. Introduction

2.1 Party requesting inspection: Mr & Mrs N Newland

2.2 Site location: The house is currently located at House Transporters Limited yard at Paengaroa

2.3 Time & Date of inspection: 13:30 hours 10 January 2011

2.4 NZBC Pre-Purchase Company Representative: Mr R A Hamilton

2.5 Other persons present: Mr & Mrs N Newland (prospective purchasers)

2.6 Weather prior to inspection: Not applicable - no moisture meter testing carried out
Note: This can affect whether any leaks are visible/detectable or not

3. General Description:

- 3.1 The house is a single storey timber framed dwelling, probably built in the 1970's and has a corrugated iron roof and timber weatherboard cladding.

4. Council Property File Search:

- 4.1 A search of the Council property file was not carried out.

5. Inspection Findings:

5.1 Interior

1. The house currently does not have a laundry. This is a requirement of the Building Code. *Recommendation: Provide approved laundry facilities.*
2. The house has textured ceilings in most of the rooms. These textured ceilings can potentially contain asbestos, if this material is to be removed, it needs to be tested and if it contains asbestos it needs to be removed by an OSH approved contractor. It is not compulsory to remove the textured ceiling, even if it does contain asbestos and you also have the option of encapsulating it by painting it with a heavy duty acrylic paint.
3. The inside of the house is generally well finished and tidily presented. There is a plywood floor with assorted floor coverings, gib board walls and fibrous plaster ceilings with texture coatings. Some refurbishing of the interior surfaces will be required once relocated. *Recommendation: Carry out interior refurbishing once relocated.*
4. The window and door joinery is early anodized aluminium. It is in reasonable condition for its age.
5. The prospective purchasers advise that the solid fuel heater is to be removed and will most likely be replaced with a brand new one. See photo 35.
6. The house consists of the following rooms; lounge, kitchen/dining, hallway, WC room, bathroom, bedroom one, right hand side, bedroom two middle, bedroom three left hand side.
7. See photos 34 – 40 & 50 - 56.

5.2 Attic space

1. The roof structure is a conventional close couple, timber framed and pitched roof. No defects were noted in the structure.
2. There is building paper and wire netting under the roofing iron, okay.
3. There is some evidence of leaks in the roof, both inside the various rooms and the house at ceiling level plus inside the attic space there is a significant growth of white mould in at least one location. See photos 48 & 49.
Recommendation: Ensure that the roof does not leak and cut out and replace any framework in the attic space or ceiling which is affected with mould. Check the entire attic space.
4. The attic space has been fitted with fiberglass batts. Some of these batts may be over the top of down lights. See photos 34, 36 & 43 - 47.
Recommendation: Ensure that there are no batts over the top of downlights.

5. The ceiling material appears to be fibrous plaster.

5.3 Exterior

1. The cladding is cedar horizontal weather boards and is in reasonable condition. There are some defective boards which will need replacement. The defects include cupping, splits and cracks, holes, lack of waterproofing at the joints in the weather boards including the vertical joints and the corners. See photos 1 – 12 & 22 – 30. The defects also include lack of waterproofing to the corrugations in the weather boards at the sides of the windows and doors. See photo 25. The defects also include damage to some of the timber facings around the aluminium windows. See photo 21. The defects also include lack of waterproofing to the penetrations through the cladding for the pipes and the meter box. See photos 31 – 33. *Recommendation: Repair any defective weather boards and ensure that the exterior envelope of the building is completely waterproof.*
2. The weather boards have been painted a relatively dark colour. This may have contributed to the cupping of some of the weather boards. The paint is not in good condition. *Recommendation: Repaint preferably with a light colour.*
3. The window and door joinery is aluminium and in reasonable condition.
4. The soffits are fibrolite and also in reasonable condition.
5. The fascia boards are timber and also in reasonable condition.
6. It is understood that the ranch slider in the alcove on the left hand side of the building is to be shifted to the outside wall of the building and when this is done, a head flashing should be fitted. See photo 10. *Recommendation: Ensure that a head flashing is fitted.*
7. There is no exterior cladding to the projecting window of the kitchen on the underside. *Recommendation: Fit some.*

5.4 Under house

1. The house was previously located over a basement and therefore does not have a conventional bearer system underneath. There are partial areas with bearers fitted. It will be necessary to fit bearers as per NZS3604. *Recommendation: Fit bearers as per NZS3604. See photos 57 – 72.*
2. The house has a particle plywood floor. It is not known whether the plywood is treated or not. Plywood was not commonly used as flooring at the time of construction of this building.
3. There is no sub floor insulation fitted at present. It is not compulsory however, it should be considered and there are government grants to assist with this.
4. The floor joists and bearers, (where fitted) are dressed and gauged pine. No decay or borer was evident. The timber treatment, if any, is unknown.
5. Some of the junctions between the floor joists underneath the house need strengthening. There are some right angle junctions between floor joists which should be fitted with joist hangers. See photo 72. In addition, there are a row of the joists running at right angles to the other joists in one area underneath the house where there is no structural attachment between the two sets of joists and no boundary joist. See photo 67. *Recommendation: Carry out structural upgrading in these areas. Note: That any fixings at 600 millimetres or below above ground levels need to be stainless steel.*

5.5 Roof

1. The roof is painted corrugated iron and in reasonable condition however, there is some surface rust and a lot of lichen. The roof will need cleaning and repainting. See photos 13 - 20. *Recommendation: Clean and paint.*
2. The flashings are generally in good condition.
3. The vent pipes etc. have been cut off for transit. Depending on the final plumbing arrangements they may need reinstating once relocated. See photos 16 & 20. *Recommendation: Ensure that any vent pipes which are still necessary are reinstated in a waterproof manner.*
4. There is an outer flue liner for a solid fuel heater fitted. It is understood that this particular heater will not be reused and certainly not in its current location. See photo 19. *Recommendation: Reinstall the roof in this area in a waterproof manner once the flue liner is removed.*
5. The spouting and downpipes are Marley plastic and generally properly constructed and in reasonable condition. They will need tidying up once relocated and the downpipes connected to an approved stormwater outfall.
6. There is evidence inside the building that the roof has been leaking in several locations and will be necessary to ensure that the roof does not leak once relocated. This may include replacement of all of the lead head nails. *Recommendation: Ensure that the roof does not leak once relocated.*

5.6 Plumbing and drainage

1. The plumbing consists of a combination of copper and plastic hot and cold feeds and plastic waste pipes. The terminal vent is copper. A certain percentage of the pipes have been cut off at floor level and some re-plumbing will be required once relocated. See photos 60, 61, 64 & 69. *Recommendation: Complete the plumbing once relocated.*
2. The hot water cylinder is a relatively recent low pressure electric cylinder connected to the solid fuel heater via a wet back. The existing cylinder does not have seismic restraint or tempering valve. The prospective purchasers advise that they intend to do away with this heater and fit an instantaneous gas water heater. See photos 55 & 56. *Recommendation: If the existing cylinder is to remain it should be fitted with seismic restraint and tempering valve.*
3. The vent pipes on the roof will need reinstatement depending on the final plumbing arrangements. See photos 16 & 20. *Recommendation: Complete the venting on the roof once relocated.*

5.7 Suitability of building for new site – site specific Building Code requirements

This report does not cover the suitability of the building for its new site in terms of the site specific requirements of the Building Code under the Building Act and compliance documents, buildings are specifically designed for specific sites. If the building is relocated to a site with different environmental conditions, the building may not be up to standard for the new site. An example of this is where a house is designed for a “low wind zone”, but is relocated to a “high wind zone” or where a house is designed for a “low corrosion zone” but is relocated to a “high corrosion zone”.

The Building Consent from the Council will not cover these matters and it is up to the owner to decide whether to upgrade the building to meet the standards for the new site. This could potentially involve removing the entire cladding, the roof or internal linings just to name a few. If you chose not to upgrade the existing building to meet the current Building Codes for the new site, you (and possibly your insurance company) are accepting the risk of any failures.

There was a recent case where a house was designed for a “low wind zone” and it was relocated to a “high wind zone” and the roof blew off in a storm, this resulted in severe damage to the house and contents.

If you choose to upgrade the house, it definitely will require a Building Consent.

The Building Consent for relocated buildings usually only covers the new foundations, water, sewer and stormwater connections. The Council do not normally require existing buildings to be upgraded to meet the new site requirements.

5.8 Building Consents

There is virtually no building work that can be done without a Building Consent now. If this report recommends remedial work, it is highly likely that it will require a Building Consent. The legal onus is on the property owner to obtain a Building Consent. If in doubt, contact the Council and preferably get an answer in writing as the lack of a Building Consent can cause serious problems when the property is to be sold and invalidating insurance cover. The Building Act has recently been changed requiring Building Consents for all waterproofing remedial work, no matter how small.

This company accepts no liability in respect of work which has been done without a Building Consent where one should have been obtained even if we have inspected the work.

5.9 Structure built to the Building Codes applicable at time of construction

The structure appears to have been built generally to the Building Codes applicable at the time of construction.

6. **Recommendations:**

See section five.

7. **Suitability to relocate:**

This building is suitable to relocate to Whakatane District Council.

The house is generally in good condition, well built and well maintained.

Once relocated, some remedial work and completion work will be required.

We can confirm this building is “Safe and Sanitary” and that there are no problems about “structural integrity”.

8. Council Property File:

If you wish to lodge this report with the District Council for placement on the property file, it will be necessary to supply them with:

- a copy of this report,
- any other documentation the District Council may require
- the current fee for this service.

Please note:

- Council will not accept reports without these attachments.
- We make no guarantees that Council will accept this report. This is outside our control. This applies particularly where defects in the building have been found and reported.

9. Disclaimer:

- 9.1 This report is not valid unless the standard NZBC Pre-Purchase Company Limited's Disclaimer is attached and is subject to the conditions contained in the disclaimer.
- 9.2 This report may not be reproduced in part without the author's approval in writing.
- 9.3 This report is only valid for the purpose for which it was commissioned. It may not be used and is not valid for any other purpose.

10. Copyright:

This report is subject to copyright and is the intellectual property of the author and the person commissioning this report.

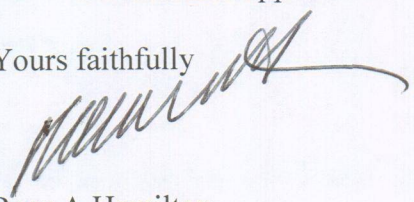
11. Further Information:

If you require any further information, please do not hesitate to contact the writer.

12. Qualifications/Experience of Building Consultant:

See attached appendix.

Yours faithfully



Ross A Hamilton
Building Consultant

Enclosures:

- NZBC Pre-Purchase Company Limited Disclaimer
- Qualifications/Experience of Building Consultant
- Digital photos
- Whakatane District Council Relocated Buildings Checklist



NZBC Pre-Purchase Company Limited

Disclaimer

This report is based on information gathered at the time of the inspection. It reflects the situation at that time only and will not be valid at a later date.

Pre-purchase inspections and reports are only an initial "screening report". If we find items that require further investigation, we report them, but do not carry out the further investigation as this cannot be completed within the time available/price quoted.

The inspection and subsequent report was only of building elements which could be easily seen and did not include any concealed, buried or closed in building elements for example, but not limited to, closed in wall and ceiling framing and concrete floors, walls and concealed plumbing, drains, sub soils etc, areas obscured by furniture, stored items, soft furnishings and floor coverings unless specifically mentioned otherwise, i.e., it is a non intrusive, non destructive visual only inspection.

We do not move furniture and stored items in order to inspect and moisture test the building. This is because there is frequently large amount of both and it is too time consuming and disruptive to the occupants. There are OSH risks in lifting these items, and also some are too valuable or delicate to safely shift.

We make no guarantees that the building, which this report is the subject of, are correctly located in relation to boundary(s) in terms of Building Codes or District Plan requirements as we are not Surveyors. It is up to the owner or purchaser to define boundaries and consequently distances to buildings.

This report only covers the items specifically mentioned in the report and does not cover other building items elsewhere in the building or on the property.

We endeavour to discover all defects of importance which could be reasonably discovered but make no guarantee that we have in fact discovered all such defects. Some defects, for example but not limited to, those relating to waterproofing may only be evident during periods of rain, and frequently rain from a specific direction and sometimes only when wind assisted. Some defects can be present and not be bad enough to display symptoms, but may deteriorate further after our inspection. Some defects are deliberately and skillfully hidden by vendors.

The report does not cover electrical wiring, appliances and fittings etc or gas piping, appliances and fittings as these are outside the scope of our expertise. However, we can arrange for suitably qualified persons to inspect these building elements if required.

The report does not cover chattels unless specifically mentioned otherwise.

The report does not cover the potential for flooding or landslide unless specifically mentioned otherwise.

The report does not address issues of planning under The Resource Management Act and the local Council District Plan or Scheme or Regional Council Operative Scheme or Plan unless specifically mentioned otherwise.

The report does not cover items covered by any other Act, Regulation or Bylaw or rule unless specifically mentioned otherwise.

The report does not purport or seek to legalise or legitimise unlawful building work; it merely reports on the Health & Safety aspects of the work and whether the building can be considered as "Insanitary, Earthquake prone or Dangerous" as defined under Section 121-123 of the Building Act 2004.

This report does not constitute a retrospective or de-facto Building Consent. The Building Act makes no provision for these. It is also not a "Certificate of Acceptance" under the Building Act.

Where this disclaimer accompanies a Safe and Sanitary Report or any other report to be lodged with the District Council, we make no guarantees that the Council will in fact accept this report for lodgement onto the building file for the property. This applies particularly where the report identifies defects in the building work

This report is not a Land Information Memorandum (LIM). It is strongly recommended that you apply to the Council for a LIM if purchasing property. There are sometimes important matters that the Council is aware of that are not on the building file.

This company accepts no liability in respect of work carried out without a Building Consent where one should have been obtained, even if we have inspected the work

Warning

If you are responsible for, or have been involved in carrying out, unlawful building work which this report is the subject of, you are advised that the Council may use this report in evidence should they decide the case is serious enough to institute legal proceedings.

R A Hamilton
Building Consultant

Ross Hamilton
55 Goods Road
Pillans Point Tauranga

Telephone: 07 576 7132
Facsimile: 07 576 7153

Mobile: 0274 898 015
E-mail: nzbc@xtra.co.nz



NZBC Pre-Purchase Company Limited

Qualifications and Experience of Inspector

Qualifications

Ross Hamilton (the inspector) was a Private Building a Certifier registered with the Building Industry Authority, Registered #21 from 1999 to 2004 when the Government legislated Building Certifiers out of business. He operated under the company name "New Zealand Building Certifiers Limited". The qualification as a Building Certifier included extreme checking by the BIA prior to approval and annual auditing by the BIA. Ross is a qualified Environmental Health Officer holding a Royal Society of Health Diploma in Public Health Diploma in Public Health Inspection. This qualification includes Building Construction, Technical Drawing, Plumbing and Drainage inspection and Public Health.

Experience

Ross has been a Council Building Inspector for over twenty five years in various Bay of Plenty Councils including three years as Chief Building Inspector and Town Planner for Te Puke Borough Council. Ross was a Council Building Inspector up to 2000 and Director and operator of New Zealand Building Certifiers Limited from 1999 to 2004. We have been carrying out pre-purchase inspections and building report since 1999 and is the longest serving provider in Tauranga. Ross has been involved in actual building construction over many years on several building projects. Ross has experience in leaking building investigations and supervising of remedial work to leaking buildings.

Ross has over the last few years been involved in numerous leaking building investigations and remedial work reports including a number of large apartments at Mount Maunganui and Tauranga.

Training

Ross has attended numerous training courses as a Building Inspector over the last twenty five years including many on 'leaking building syndrome' and waterproofing matters over the last few years.

Membership

Ross is a registered member of the Building Officials Institute of New Zealand. (The organisation for Building Inspectors, Clerks of Works and Plumbing and Drainage inspectors).



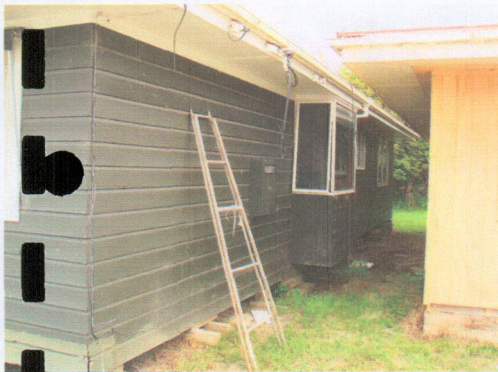
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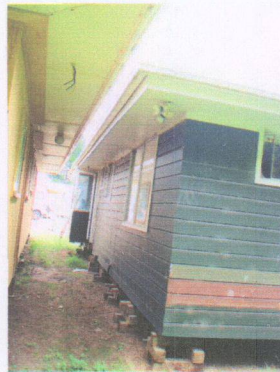
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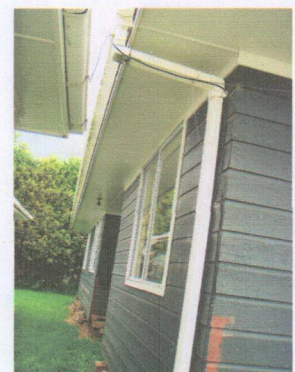
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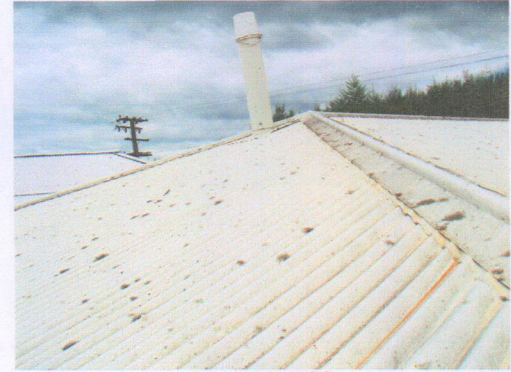
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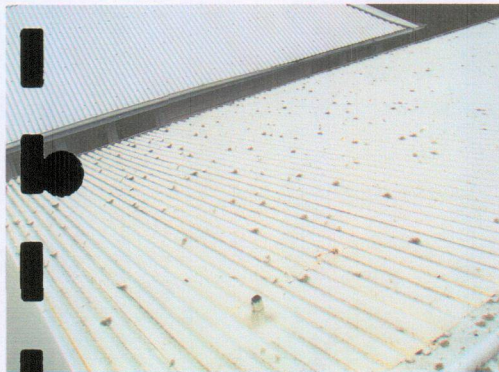
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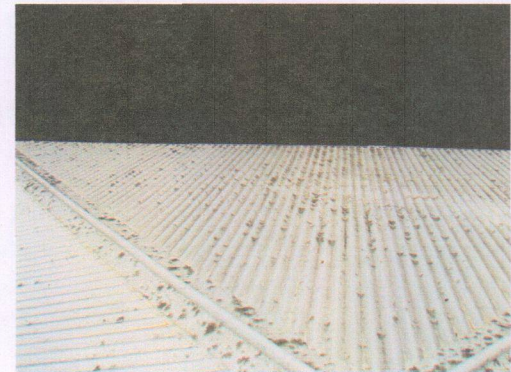
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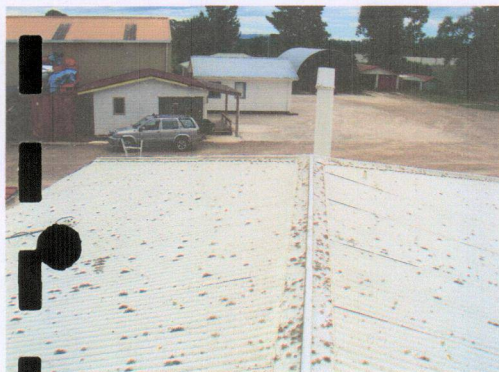
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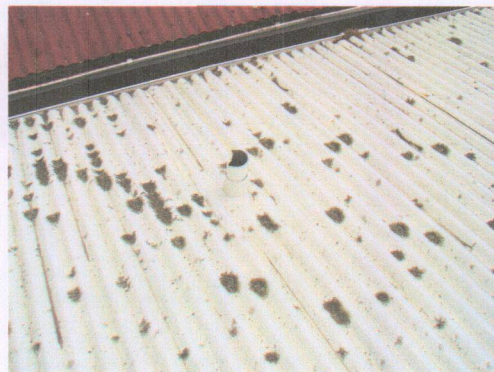
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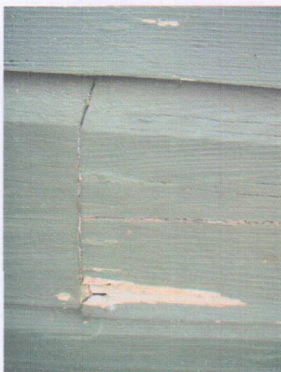
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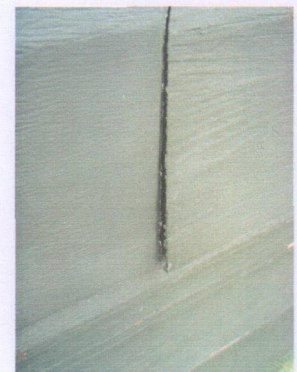
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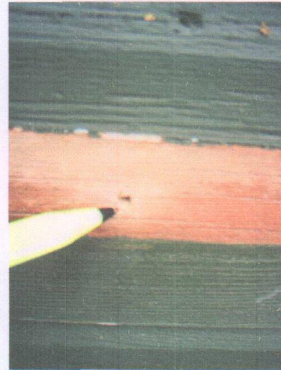
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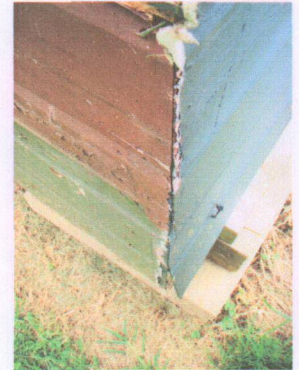
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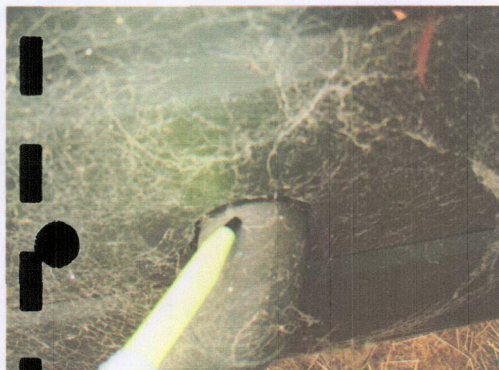
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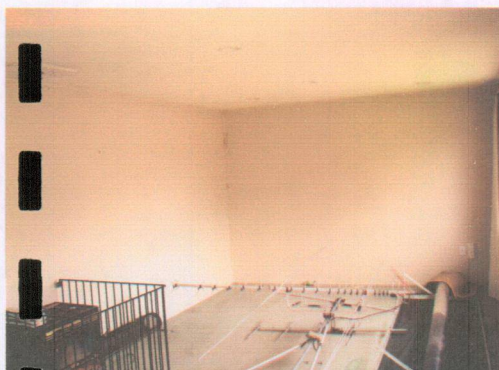
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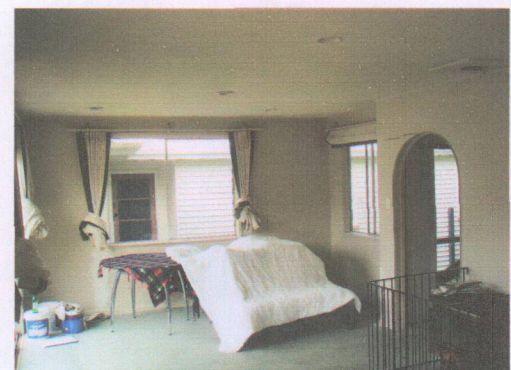
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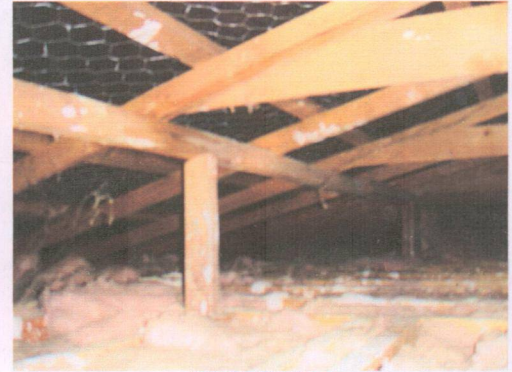
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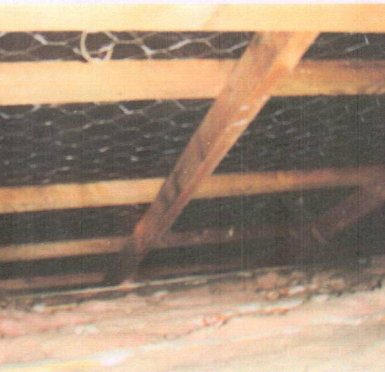
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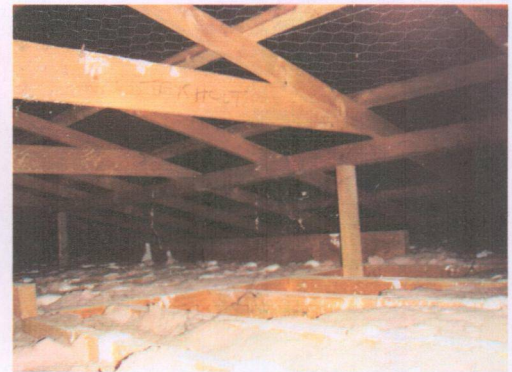
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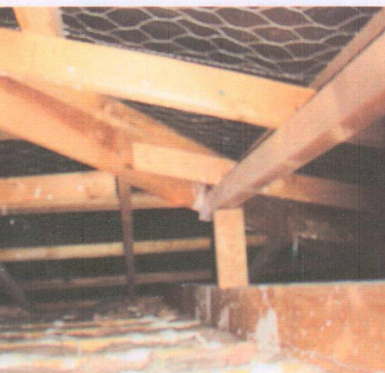
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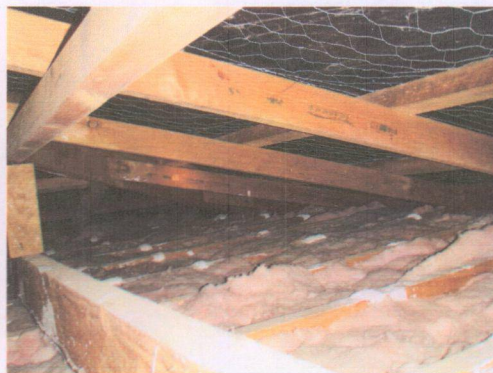
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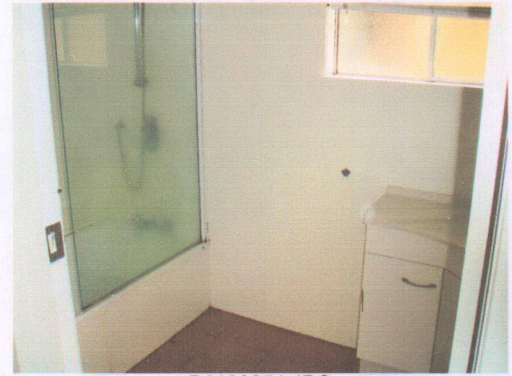
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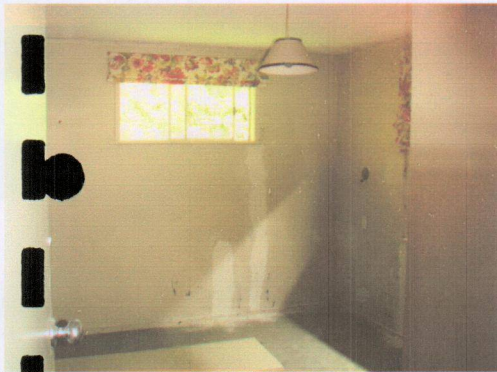
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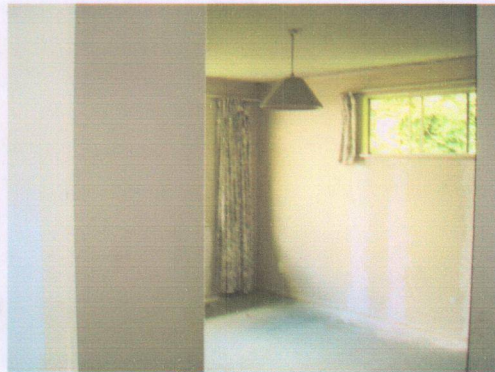
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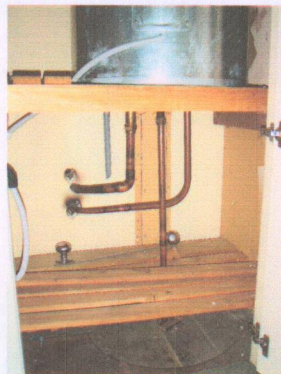
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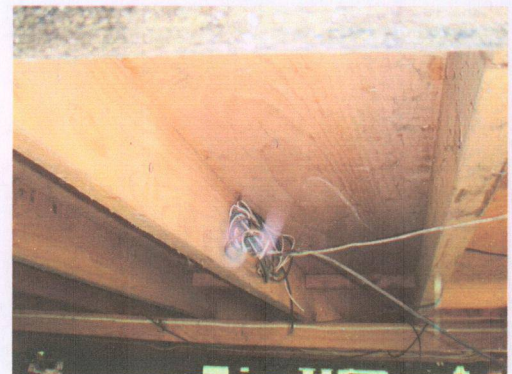
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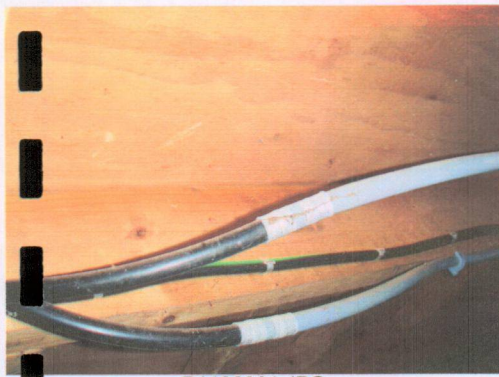
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10/01/2011



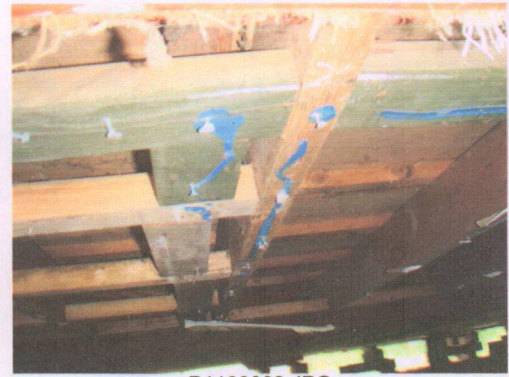
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P1100061.JPG
10/01/2011



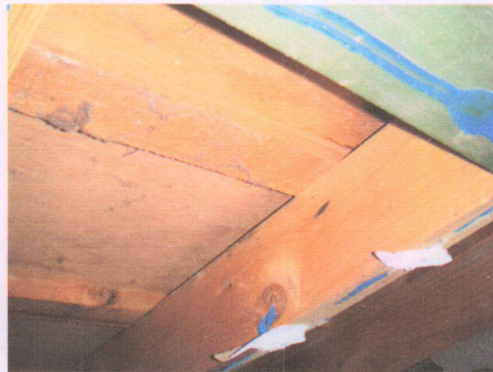
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10/01/2011



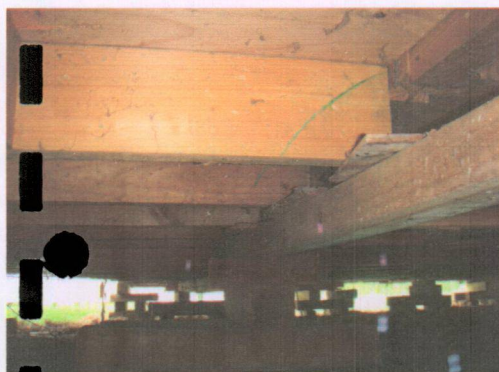
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10/01/2011



P1100065.JPG
10/01/2011



P1100066.JPG
10/01/2011



P1100067.JPG
10/01/2011



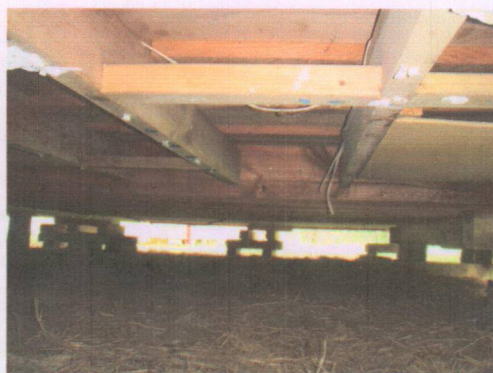
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P1100069.JPG
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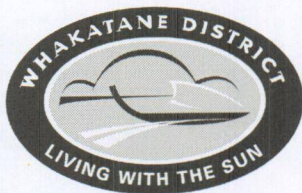
P1100070.JPG
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P1100071.JPG
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P1100072.JPG
10/01/2011



Whakatane District Council

SECOND HAND BUILDING CHECK LIST

Applicant's Name: Mr & Mrs N Newland
Postal Address: 1098 Braemar Road, R D 2, Whakatane
Location of Building: House Transporters Yard, Paengaroa
Type of Building: Dwelling house **Approx Age (Years):** 40 - 50 years

EXTERIOR

Wall Cladding

Type: Horizontal timber weatherboards
General Condition: Average – some repairs required
Condition of Paint Work: Average – repaint required

Windows

Type: Aluminum
General Condition: Good
Condition of Paint Work: Okay – timber facings will need repainting

Roof

Type: Painted corrugated iron
General Condition: Okay
Paint Work: Poor – needs cleaning and repaint

SUBFLOOR

Bearers

Size: 100 x 75 – house only has partial bearers
Type and Grade of Timber: Dressed and gauged pine – treatment unknown
Centres: 1.7 m
Condition: Very good
Span: N/A – no piles

Floor Joists

Size: 150 x 50 mm
Type and Grade of Timber: Pine – treatment unknown
Centres: 450 mm
Condition: Very good
Span: 1.7 m

Flooring

Type: Ply – treatment unknown
Condition: Very good

INTERIOR

Studs

Where untreated native timber has been noted in any building, or where the age or general condition is such that a building's suitability for relocation can not be readily determined, a sufficient area of the wall cladding is to be removed to enable thorough examination of the wall framing.

<i>Size:</i>	100 x 50 mm
<i>Type and Grade of Timber:</i>	Dressed and gauged – treated
<i>Centres:</i>	Most likely 600 mm
<i>Condition:</i>	Very good
<i>Stud Height:</i>	2.4 m

Wall Linings

<i>Type:</i>	Gib board
<i>General Condition:</i>	Good – repairs required
<i>Defects:</i>	Cracks under windows and doors

Ceiling Linings

<i>Type:</i>	Fibrous plaster with texture coating
<i>General Condition:</i>	Good
<i>Defects:</i>	Peeling of texture coating in one area

Windows

	YES	NO
1. Evidence of Leakage:		✓
2. Defective Timber:		✓
3. Functional:	✓	

ROOF FRAMING

Ceiling Joists

<i>Size:</i>	100 x 50 mm
<i>Type and Grade of Timber:</i>	Pine
<i>Centres:</i>	450 mm
<i>Span:</i>	Various
<i>Defects:</i>	Nil

Rafters

<i>Size or type of Truss:</i>	100 x 50 mm – framed roof
<i>Type and Grade of Timber:</i>	Pine treated dressed and gauged
<i>Centres:</i>	750 mm
<i>Span:</i>	2.3 m
<i>Defects:</i>	Decay in one area from roof leak

Purlins

<i>Size:</i>	75 x 50 mm
<i>Type and Grade of Timber:</i>	Pine – treatment unknown
<i>Centres:</i>	650 mm
<i>Span:</i>	750 mm
<i>Defects:</i>	Decay in one area from roof leak

DESCRIPTION AND COMMENTS ON SOLID FUEL HEATER:

The prospective purchasers' advise that it is to be removed

GENERAL COMMENTS

Generally good condition – some remedial work required once relocated

SUITABLE FOR RELOCATION: YES

COMMENTS FOR PLANNING SECTION:

N/A

Building Consultant:



Ross A Hamilton

Date of Inspection:

10 January 2010

The above is an indication of the minimum information required by this office to determine the suitability of a building for relocation into or within the Whakatane District.

Please note that a Building Consent must be obtained for the removal of the building off its present site. This consent is additional to the consent sought for the relocation of the building to a new site.