



CODE COMPLIANCE CERTIFICATE

SECTION 95, BUILDING ACT 2004

THE OWNER

Clement Michael Wayne & Clement Nicola Mary 6 Manhattan Court PARAPARAUMU BEACH	No. Issue date Application date	056327 24/08/06 13/12/05
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THE BUILDING


Street Address	10 CHARLOTTE WAY, RAUMATI
Valuation No.	1529160367
Legal Description	LOT 56 DP 89871
Intended Use	residential dwelling
Intended Life	Indefinite, but not less than 50 years
Current Use	Residential
Proposal	New residential dwelling
Estimated Value	\$330,000

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that –

- a) The building work complies with the building consent; and
- b) The property owner must follow and carry out the manufacturers prescribed maintenance procedures.

Signed for and on behalf of the Kapiti Coast District Council:

Name: 

Date: 24.8.06

KAPITI COAST DISTRICT COUNCIL
APPLICATION FOR SEWER CONNECTION AND PERMIT

(Full name)

Kapiti Village Hd

PLEASE PRINT

(Postal Address)

P.O. Box 128, Paraparaumu

Apply for an ordinary connection to the Kapiti Borough Sewer from the premises owned by me at

(PROPERTY Address in full if different from above)

(216) 50 Cheltenham Drive

Lot

DP

Note: All dwelling units to pay full inspection fees. The connection fee to be divided equally between dwelling units situated on the same lot sharing a common lateral.

Fees Payable (on application)

Inspection \$ _____
 Connection \$ _____
 Total \$ _____

Date

Owners Signature

THIS PART TO BE COMPLETED BY DRAINLAYER

I, *Andrew Fletcher* (full name)
 (address)

being a licensed Drainlayer apply for permission to connect the premises mentioned above to the Kapiti coast district councils sewer
 N.B. Connection NOT permitted until consent obtained.

new dig

(Signature)

(License No.)

(Date)

OFFICE USE ONLY

Building Register Entry

TO *05006*
 Date Issued

Job Inspected
Max 2006
 Connection Recored

KAPITI COAST DISTRICT COUNCIL
APPLICATION FOR A CONNECTION TO COUNCIL WATER SUPPLY.

..... (full name)
 J. J. Wray
 PLEASE PRINT
 (Postal address)
 hereby apply for an "ORDINARY" service to be laid from the Kapiti Borough Water Supply to the premises owned by me at/s

(PROPERTY address in full, if different from above) 10 Charlotte Way
 Lot 56 DP 89871
 Note: All dwelling units to pay full inspection fees.
 The connection fee to be divided equally between dwelling units situate on the same lot sharing a common lat

Fees Payable (on application)
 Inspection \$ _____
 Connection \$ _____
 Total \$ _____

.....
 Owners Signature
 Date

THIS PART TO BE COMPLETED BY PLUMBER

I, (full name)
 of (address)
 being a Licensed Craftsman Plumber apply for permission to connect the above premises to the Kapiti Borough Water Supply. I agree to comply in every respect with the Kapiti Borough Water Supply By-Laws. Connection NOT permitted until permit obtained.

- (Signature) _____ (Date) _____
 (Craftsman Licence No.) _____
- 1. Existing Water Supply
 - 2. Pressure: high/low
 - 3. E/W Cylinder Type inewbery
 - 4. Approximate Age of Water Piping
 - 5. If premises have swimming pool what capacity
 - 6. State precisely how it is proposed to make the new connection:
- To be retained/dismantled
 "Header Tank"/Pressure Reducing Valve
 Exhaust Pipe/Pressure Relief Valve
 Copper/PVC/Alkathene

OFFICE USE ONLY	
Engineering consent no <u>056327</u>	Plumbers producer statement to be provided.
Date Issued	Connection Recorded <u>MAY 2006</u>

KAPITI COAST DISTRICT COUNCIL
APPLICATION FOR SEWER CONNECTION AND PERMIT

I, J Wang (Full name)
PLEASE PRINT
..... (Postal Address)

hereby apply for an ordinary connection to the Kapiti Borough Sewer from the premises owned by me at

(PROPERTY Address in full
if different from above)

10 Charlotte Way

Lot 56 DP 89871

Fees Payable (on application)

Inspection \$ _____
Connection \$ _____
Total \$ N/C

Note: All dwelling units to pay full inspection fees.
The connection fee to be divided equally between
dwelling units situated on the same lot sharing
a common lateral.

.....
Owners Signature

.....
Date

THIS PART TO BE COMPLETED BY DRAINLAYER

I, Alby Mann (full name)
..... (address)

being a licensed Drainlayer apply for permission to connect the premises mentioned above to the
kapiti coast district councils sewer

N.B. Connection NOT permitted until consent obtained.

Alby Mann
.....
(Signature)

.....
(License No.)

.....
(Date)

OFFICE USE ONLY

B.C NO 056321

Job Inspected

Building Register Entry

Date Issued

Connection Recored

APRIL 2006

Producer Statement
Piped Services
&
Sanitary Plumbing Stacks

Construction Review

Issued by A. Mann..... Registration Number 07202.....

To Kapiti Coast District Council

In respect to the following

Piped Services installed in accordance with G12/AS1 as shown on the approved plans or as per the attached amended plan and Sanitary Plumbing Stacks installed in accordance with G13/AS1 or AS/NZS 3500.2.2

Installed at 10 Charlotte Way.....

Building Consent No. 89871.....

As a Craftsman plumber, currently holding an annual practicing license, certify that I, or personnel under my control, have carried out the installation of the above system and I believe on reasonable grounds that the installation complies with the New Zealand Building Code. Both hot and cold systems have been pressure tested for a period of 15 minutes at a pressure of 1500 kPa.

Signed [Signature]..... Date 16. Aug. 06.....

Producer Statement

Stormwater Drains

Construction Review

Issued by *A. Mann* Registration Number *07202*

To Kapiti Coast District Council

In respect to the following

Stormwater Drains installed in accordance with E1 AS1 as shown on the approved plans or as per the attached amended plan

Installed at *10 Chantrelle Way*

Building Consent No. *89871*

As a registered drainlayer, currently holding an annual practicing license, certify that I, or personnel under my control, have carried out the installation of the above system and I believe on reasonable grounds that the installation complies with the New Zealand Building Code.

Signed *[Signature]* Date *16 Aug 06*

Note: Fully dimensioned as built drain plan to be supplied. (scale 1:100)

Producer Statement

Private Sewer Drains

Construction Review

Issued by... *A. Mann* Registration Number... *07202*

To Kapiti Coast District Council

In respect to the following

Private Sewer Drains installed in accordance with G13 AS2 or AS/NZS 3500 .2.2 as shown on the approved plans or as per the attached amended plan

Installed at... *10 Charlotte Way*

Building Consent No... *89871*

As a registered drainlayer, currently holding an annual practicing license, certify that I, or personnel under my control, have carried out the installation of the above system and I believe on reasonable grounds that the installation complies with the New Zealand Building Code.

Signed... *[Signature]* Date... *16 Aug 06*

Note: *Fully dimensioned as built drain plan to be supplied. (scale 1:100)*

Drains may be laid and backfilled without inspection provided that the drain is left under test with a min of 1.0 m head and the inspection at the lateral left exposed.

SCOPE OF INSPECTION SHEET

Date 2/6/06 SR or BCA DS6327 Inspection No. 7

Time 1255 Documents on site YES / NO

Owner Name JCK Developments Project Description New Dwg.

Site Address 10 Charlotte way RMT

Building Plumbing

Circle appropriate Type & Inspection Other

Site Found Piles PreSlab Subfloor Drainage PreWrap PreClad Weathertight PreLine PostLine Block Brick Ret.Wall Final

Engineer Supervision Yes No n/a - Name

Notes Eng design bracing. Std 3604.
Upper UB2 & B3 (SP) changed. Full length
HF @ 1.9m.
Hold downs OK. Bracing OK.
Batts on site.
Air seal OK. Gwilla.

Diagram (if necessary)

Photo's Taken - Nos. saved / scanned? Y / N

Site instruction issued

OK to proceed.

Result: Pass Part pass Fail

Confirmation of inspection by person on site

Person on site: Builder Owner Other No One on site

Your next inspection will be
(Guidance notes for inspection on the rear of this sheet)

Agreed, Paul Bourke Sign P E Bourke Date 2/6/06
(Print Name)

Officer sign [Signature] Name SAGE Date 2/6/06

Additional Insp. Sheet No.

Information entered into data base Initial Date .. / .. / ..

SCOPE OF INSPECTION

Inspections are made in conjunction with, and with the cooperation of, the owner/owner's agent to ensure that the building work complies with the provisions of the Building Act and NZ Building Code. The inspection is general in nature and involves an audit of the following aspects:

Engineer – Civil/Structural/Fire/Geotechnical: An engineer has been engaged to carry out inspections on behalf of the owner. Please ensure those inspections are carried out. A construction statement (PS4) is required to be supplied to Council.

Site: A surveyor's report, or visible boundary markers provided, so that the set out of the project can be clearly identified.

Foundation: When all formwork has been completed, footings have been excavated and reinforcement is in place.

Piles: When all holes are excavated prior to installation.

Pre-slab plumbing (concrete slab): When all plumbing and drainage pipes have been installed, prior to backfilling.

Pre-slab building (concrete slab): When DPM has been placed with all laps and penetrations sealed, reinforcing in place and in position with chairs as appropriate.

Sub-floor (timber suspended floor): When all sub-floor connections, joists and required blocking, and any suspended plumbing pipe work have been completed, but before any flooring or base boards have been fitted. Relocated dwellings require a sub-floor inspection prior to the base boards being fitted.

Drainage: When all drainage works is completed and is under test, before backfilling occurs. As laid drainage plan is required at time of inspection.

Pre-wrap: When all roof and wall framing is complete, including any exterior sheet bracing, but before building wrap has been installed.

Pre-clad: When building wrap and window and door flexible flashing tape has been installed, cavity battens (cavity systems), cavity closers and all flashing systems are in place, but before joinery has been installed.

Post-clad: When exterior cladding has been installed, flashings in place, air seals fitted to openings, but before any coating system have been applied.

Pre-stucco: After the post-wrap inspection and when all the reinforcing and flashings are in place.

Pre-line (plumbing): When all internal plumbing is complete and plumbing pipe work is under test pressure.

Pre-line (building): When the exterior of the building is weather tight, all structural components (including bracing) have been completed and wall insulation is in place.

Wet area membranes, decks, roofs and shower area: Pre application of wet area membrane, when all outlets and flashings have been installed, ready for membrane installation.

Post application of wet area membrane.

Post-line: When all interior linings have been installed, but before skirting, Scotia or plastering stopping. Installation details of screws check of wall bracing element.

Block: When all masonry block work including block foundations for slab floors, is completed, reinforcing in place and washout openings in place.

Brick Veneer: When veneer is at half height and all flashings are in place.

Retaining wall: Pre application of waterproof membrane system.

Post application of waterproof membrane system.

Protection installed for membrane system and installation of perforated drainage system before back filling.

Final: Final inspections are carried out at the completion of the project and may include entire project, plumbing, drainage and storm water. The Code Compliance Certificate is issued if the building work complies with the approved building consent.

Free Standing Fireplace: Final inspection required only.

In Built Fireplace: Inspection required before installation and after installation.

PRIVACY STATEMENT

1. The information contained on the Building Inspection Report Sheet is held by the Kapiti Coast District Council, whose address is 175 Rimu Road, Private Bag 601, Paraparaumu.
2. The information is available for public inspection as part of the Building Record of the property concerned.
3. You have the right under the Privacy Act 1993 to obtain access to, and to request correction of any personal information held by Council concerning you.

Council has a Privacy Officer. If you have any concerns regarding privacy issues please telephone (04) 904 5700

WEATHERTIGHTNESS / PRELINE / POSTLINE

Date 2/6/06 SR or BCA DS6327 Inspection No. 7

Time 12:55 Documents on site YES / NO

Owner Name JCK Developments Project Description New Dwg

Site Address 10 Charlotte way RMT

All inspections are carried out with strict reference to the building consent granted.

P = Pass F = Fail NA = Non-Applicable

Inspection decisions are based on the extent of work inspected at the time of inspection.

Please refer to the related scope sheet for definition of the inspections extent.

Applies to all inspections

Sighted previous inspection notes	Y	N	NA	Conforms with approved drawings	Y	N	NA	Confirm Additional information/amended plan	Y	N	NA
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WEATHERTIGHTNESS

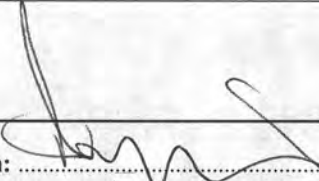
Cladding selection complies with BC?	P	F	NA	Roof material complies with BC?	P	F	NA	Sheets fixed to manufacturers	P	F	NA
Roof fixing complies	P	F	NA	Fixings appropriate for durability?	P	F	NA	Sheet layout	P	F	NA
Ridge/hip flashings in place	P	F	NA	Roof/wall junctions flashed	P	F	NA	Control joints where appropriate	P	F	NA
Penetrations correctly flashed	P	F	NA	Fixings appropriate for bracing elements	P	F	NA	Flashings in place	P	F	NA
Clearance provided for fascia & spouting	P	F	NA	Ground clearances achieved	P	F	NA	Clearance off deck surface	P	F	NA
Flashings/wraps in place, parapets/barriers	P	F	NA	Glazing - human impact	P	F	NA	Truss/Rafter fixings	P	F	NA

PRELINE

Max moisture Content <u>15</u> %	P	F	NA	Insulation R Value <u>2.6/1.8</u>	P	F	NA	Bracing connections	P	F	NA
Ventilation to rooms	P	F	NA	Top plate connection	P	F	NA	Air seals	P	F	NA
Timber treatment	P	F	NA	Ceiling batten spacing	P	F	NA	Bottom plate fixings	P	F	NA
Lintel/beam size & fixing	P	F	NA	Stud spacing	P	F	NA		P	F	NA
Plumber Name				TPR line	P	F	NA	Waste pipe size & test	P	F	NA
Soil pipe size and test	P	F	NA	Inbuilt S/W pipes tested	P	F	NA	Floor wastes	P	F	NA
Pipes fixed/supported	P	F	NA	Vents terminated	P	F	NA	Shut off valves	P	F	NA
System: AS3500, G13, Other	P	F	NA	Pressure Test	P	F	NA		P	F	NA

POSTLINE

Sheet bracing	P	F	NA	Wet area substrate system	P	F	NA	Sheet fixings	P	F	NA
Penetrations sleeved	P	F	NA		P	F	NA		P	F	NA

Officer Sign:  Name: STAN Date: 2/6/06



SITE INSPECTIONS - BC 056327

Application Details

Applicant Name :	Name JCK Developments
Contact Address :	PO Box 2082 Raumati Beach
Location :	10 CHARLOTTE WAY, RAUMATI
Legal Description :	LOT 56 DP 89871
Proposal :	New residential dwelling

Mobile

WORK CANNOT PROCEED PAST EACH STEP UNTIL THAT STEP HAS BEEN INSPECTED, APPROVED AND THIS FORM SIGNED BY THE RELEVANT INSPECTOR

FOUNDATIONS

Date: 17/2/2006 Officer: [Signature] Builder/Contractor/Owner:

Approved building consent documents on site: YES / NO

SITING:

Front yard	<input type="checkbox"/>	Left hand side yard	<input type="checkbox"/>	Conforms with approved plan	YES / NO
Rear yard	<input type="checkbox"/>	Right hand side yard	<input type="checkbox"/>	If no, has new site plan been requested	YES / NO
Minimum floor level	<input type="checkbox"/>	Footing size	<input type="checkbox"/>	Foundation wall reinforcing	<input type="checkbox"/> YES/NO YES/NO
Pile hole size	<input type="checkbox"/>	Footing reinforcing	<input type="checkbox"/>	Foundation wall size	
Anchor pile size	<input type="checkbox"/>	Subfloor vents	<input type="checkbox"/>	Specific design	
Pile hole spacing	<input type="checkbox"/>	Steps/stairs	<input type="checkbox"/>	If yes, has Engineer inspected	

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Labels in place? Yes/No Producer Statement Yes/No/NA

COMMENTS

10/2/2006 - 1st pour - Rotating wire founds OK. ENGINEER HAS PASSED [Signature]
17/2/2006 - 2nd (lower) pour OK. - engineer checked up ALSO

PRE-SLAB

PLUMBING AND DRAINAGE:

Date: Officer: Builder/Contractor/Owner:

UNDERSLAB PLUMBING

Pipe sizes
Falls
Pipe protection

UNDERSLAB DRAINAGE

Pipe sizes
Falls
Pipe protection

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Labels in place? Yes/No Producer Statement Yes/No/NA

COMMENTS

PRE-SLAB

BUILDING

Date: 6/3/2006 Officer: [Signature] Builder/Contractor/Owner:

Minimum floor level
DPC
Joints taped
Penetrations
Specific design
If yes, has Engineer inspected

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Yes/No
Yes/No

Mesh
Mesh chairs
Slab thickening - FOOTING
Bottom plate fixings

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Labels in place? Yes/No Producer Statement Yes/No/NA

COMMENTS

2 SLABS + UPPER FOOTING OK. ENGINEER
COMING.

PRE-BLOCKFILL

COMMENTS

17/2/2006 - Main Retaining foundation - J/K - Engineer
Checking also - J/K

PRE-WRAP INSPECTION

COMMENTS

2/5/2006 1916 L, Severn OK STRAPS MISSING -
Builder doing OK. All

8/5/2006 POSTWRAP OK - All

Post-Wrap Inspection

Direct Fixed Claddings (all types)

Element to Check	Hot tips	Comments	Pass	Fail
<i>Envelope</i>				
Timber moisture	Min 20% or as required by manufacturer		<input type="checkbox"/>	<input type="checkbox"/>
Building wrap	Fixed securely and appropriate for cladding type. Roofing underlay required for vertical profiled metal		<input type="checkbox"/>	<input type="checkbox"/>
Flexible sealing tape	Check for installation at top and bottom of openings. Minimum 100mm up opening and full width across. Check has not been over stretched		<input type="checkbox"/>	<input type="checkbox"/>
Head Flashings <i>If installed at time of inspection</i>	Compatibility checked. Flashing tape or second layer of building wrap in place. If flashing tape is used it must be compatible with building wrap		<input type="checkbox"/>	<input type="checkbox"/>
Sill flashings	Stop ends required. Flashing must extend under joinery to cover possibility of mitre's failing. Sill framing timber to be chamfered to accommodate sill flashing		<input type="checkbox"/>	<input type="checkbox"/>
Back flashings	Installed at critical junctions, internal corners, control joints, deck barrier/wall junctions		<input type="checkbox"/>	<input type="checkbox"/>
Capillary clearance	Wall framing to overhang by a minimum of 6mm.		<input type="checkbox"/>	<input type="checkbox"/>
Ground clearances	Fig 65. table 18		<input type="checkbox"/>	<input type="checkbox"/>

**Post-Wrap Inspection
Claddings Utilising Cavities (except stucco)**

Element to Check	Hot Tips	Comments	Pass	Fail
<i>Envelope</i>				
Building wrap	Fixed securely and appropriate for cladding type. Roofing underlay required for vertical profiled metal		<input type="checkbox"/>	<input type="checkbox"/>
Flexible sealing tape	Check for installation at top and bottom of openings. Minimum 100mm up opening and full width across. Check has not been over stretched		<input type="checkbox"/>	<input type="checkbox"/>
<i>Flashings</i>				
Head flashings	Must be installed prior to cladding. Compatibility checked. Stop ends required Flashing tape or second layer of building wrap in place. If flashing tape is used it must be compatible with building wrap		<input type="checkbox"/>	<input type="checkbox"/>
Back flashings	Installed at critical junctions, internal corners, control joints, deck barrier/wall junctions		<input type="checkbox"/>	<input type="checkbox"/>
Flashing of penetrations	Ensure penetrations such as air extract systems are flashed. Ensure penetrations fall to outside to prevent water tracking to rear of cavity. Confirm flashing materials comply with B2 for durability		<input type="checkbox"/>	<input type="checkbox"/>
Internal corners	Applies to weatherboards with or without a cavity, plywood without cavity, horizontal profiled metal, fibre cement with or without a cavity		<input type="checkbox"/>	<input type="checkbox"/>

Battens	H3 treatment Fixed securely No horizontal battens except at soffit level Cavity spacers (if reqd 100mm long, 50mm min gap, 5° slope. Additional support between battens		<input type="checkbox"/>	<input type="checkbox"/>
Element to Check	Hot Tips	Comments	Pass	Fail
Deck membranes	Deck membranes carried up behind cladding 150mm from deck Fig 62 E2/AS1		<input type="checkbox"/>	<input type="checkbox"/>
Cavity closures	In place with drainage provided		<input type="checkbox"/>	<input type="checkbox"/>
Ground clearances	Fig 65. table 18		<input type="checkbox"/>	<input type="checkbox"/>

**Post-Wrap Inspection
Solid Plaster (Stucco)**

Element to Check	Hot Tips	Comments	Pass	Fail
<i>Envelope</i>				
Building wrap	Fixed securely and appropriate for cladding type. Roofing underlay required for vertical profiled metal		<input type="checkbox"/>	<input type="checkbox"/>
Flexible sealing tape	Check for installation at top and bottom of openings. Minimum 100mm up opening and full width across. Check has not been over stretched		<input type="checkbox"/>	<input type="checkbox"/>
<i>Battens</i>				
H3 treatment	NZS 3602 H3.1		<input type="checkbox"/>	<input type="checkbox"/>
20mm minimum cavity spacing	Provide support for solid backing sheets. Cavity spacers to have correct fall, 50mm gap and 100mm in length		<input type="checkbox"/>	<input type="checkbox"/>
Spacing	Additional support required if battens exceed		<input type="checkbox"/>	<input type="checkbox"/>

	450mm spacing. (to prevent insulation pushing out into cavity)			
<i>Flashings to penetrations</i>				
	Confirm flashing details for elements that bridge cavity. E.g. air extraction systems		<input type="checkbox"/>	<input type="checkbox"/>
<i>Back flashings</i>				
	Back flashings to internal corners		<input type="checkbox"/>	<input type="checkbox"/>

Post-Cladding Inspection

Element to Check	Hot tips	Comments	Pass	Fail
<i>Fibre Cement Sheet</i>				
Sheet layout	According to manufactures requirements. If bracing elements ensure correct fixings are used (stainless steel)		<input type="checkbox"/>	<input type="checkbox"/>
External corners taped and supported			<input type="checkbox"/>	<input type="checkbox"/>
<i>EIFS</i>				
Sheets supported at bottom edge with proprietary moulding	PVC cavity closure		<input type="checkbox"/>	<input type="checkbox"/>
External corners properly supported	PVC corner moulding		<input type="checkbox"/>	<input type="checkbox"/>
<i>Flashings</i>				
Sill	Not required for cavity systems other than stucco		<input type="checkbox"/>	<input type="checkbox"/>
Jamb	Only applies to stucco		<input type="checkbox"/>	<input type="checkbox"/>
Head	Applies to all claddings Stop ends where appropriate		<input type="checkbox"/>	<input type="checkbox"/>
Saddle	Required for all junctions and penetrations		<input type="checkbox"/>	<input type="checkbox"/>
Junctions with other materials	Have flashings fitted that are compatible (Tables 21 & 22)		<input type="checkbox"/>	<input type="checkbox"/>
Flashings/Wraps	In place over parapets/barriers prior to placement of finishing systems		<input type="checkbox"/>	<input type="checkbox"/>
<i>All Systems</i>				
Sheet fixings	Nailed as per specifications. Sheets extend past bottom plate by minimum 50mm 10mm drip edge formed (Fig 18)		<input type="checkbox"/>	<input type="checkbox"/>
Ground clearances	Fig 65. table 18		<input type="checkbox"/>	<input type="checkbox"/>
Clearance off deck surface	35mm at highest point above deck/roof fig 62		<input type="checkbox"/>	<input type="checkbox"/>
Element to Check	Hot tips	Comments	Pass	Fail

Vertical control joints as required by system manufacturer	Sheets fixed correctly to allow for movement at control joint		<input type="checkbox"/>	<input type="checkbox"/>
Horizontal control joints as required by system manufacturer	Sheets fixed correctly to allow for movement at control joint		<input type="checkbox"/>	<input type="checkbox"/>
Window installation	Window flange cover 10mm minimum Will require measuring by either checking overall window frame size (outside flange to flange) minus frame opening, difference should be 20mm, or check for maximum clearance either side between frame and window reveal, should be no more than 5mm		<input type="checkbox"/>	<input type="checkbox"/>
Air seals	In place with PEF backing rod		<input type="checkbox"/>	<input type="checkbox"/>
Parapets, solid barriers etc.	Provision for cap flashings to parapets with flashing tape separation Have sloping tops minimum 10 degrees or as specified by manufacturer Cap flashing may be omitted for deck barriers. No top fixing of rail supports or other fixtures to barriers		<input type="checkbox"/>	<input type="checkbox"/>
Wall barrier junctions etc.	Flashed to main wall		<input type="checkbox"/>	<input type="checkbox"/>
Vermin proof to cavity	Cavity closer installed		<input type="checkbox"/>	<input type="checkbox"/>
Cavity sealed to roof/mid-floor space	Usually with horizontal batten		<input type="checkbox"/>	<input type="checkbox"/>
Unusual or complex areas of building envelope	Particular attention to detail reqd		<input type="checkbox"/>	<input type="checkbox"/>
Penetrations correctly managed	Fig 68 & 69 for pipes and meterbox		<input type="checkbox"/>	<input type="checkbox"/>

Apron flashings	Appropriate kick outs in place. Ensure material used will be suitably durable; refer table 20		<input type="checkbox"/>	<input type="checkbox"/>
Coating able to be applied behind spouting stop ends	Fascia and spouting systems to be installed after coating systems applied		<input type="checkbox"/>	<input type="checkbox"/>
<i>Solid Plaster (Stucco)</i>				
Proprietary control joints	Proprietary control joints avoid the need for control joint inspections after each plaster coat has been applied		<input type="checkbox"/>	<input type="checkbox"/>

Post-Clad Inspection (Stucco)

Element to Check	Hot Tips	Comments	Pass	Fail
<i>Rigid backing</i>				
Fibre cement sheet/fixing			<input type="checkbox"/>	<input type="checkbox"/>
H3 plywood/fixing			<input type="checkbox"/>	<input type="checkbox"/>
H3 diagonal sheathing/fixing			<input type="checkbox"/>	<input type="checkbox"/>
<i>Non-rigid backing</i>				
Support for backing			<input type="checkbox"/>	<input type="checkbox"/>
Allowable deflection			<input type="checkbox"/>	<input type="checkbox"/>
<i>Reinforcing mesh</i>				
Mesh type			<input type="checkbox"/>	<input type="checkbox"/>
Reinforced around openings			<input type="checkbox"/>	<input type="checkbox"/>
6-9mm spacers			<input type="checkbox"/>	<input type="checkbox"/>
Proprietary self-spacing mesh			<input type="checkbox"/>	<input type="checkbox"/>
Fixings	Confirm durability of fixings (double dipped galvanised or stainless steel)		<input type="checkbox"/>	<input type="checkbox"/>

Proprietary control joints	Proprietary control joints avoid the need for control joint inspections after each plaster coat has been applied		<input type="checkbox"/>	<input type="checkbox"/>
<i>Flashings</i>			<input type="checkbox"/>	<input type="checkbox"/>
Head flashings	Compatibility checked. Stop ends required Flashing tape or second layer of building wrap in place. If flashing tape is used it must be compatible with building wrap		<input type="checkbox"/>	<input type="checkbox"/>
Cavity closures	In place with drainage provided		<input type="checkbox"/>	<input type="checkbox"/>
Ground clearances	Refer fig 65 & table 18 E2/AS1		<input type="checkbox"/>	<input type="checkbox"/>

PRELINE

PLUMBING AND DRAINAGE: Plumber:

Date: Officer: Builder/Contractor/Owner:

Pressure test
 Visual leak check
 Pipe support/clips
 Pipe size
 Pipe material

Joint strain
 Pipe insulation
 Stacks
 Wastes
 Supply tank

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Preline Labels in place? Yes/No Producer Statement Yes/No/NA

COMMENTS

BUILDING

Date: Officer: Builder/Contractor/Owner:

Timber treatment
 Ceiling diaphragm
 Dragon ties
 Studs - size/spacing
 Wall insulation
 Posts - size/fixing
 Lintels/bms - size/fixings
 Ext joinery - labels
 Ceiling runners
 Wall bracing
 Mech ventilation
 Moisture Content Walls %

Bracing straps
 Timber grade
 Wall dwangs
 Trimming studs
 Truss/rafter - fix/space
 Ceiling joists
 Plate fixings
 Ventilation
 Ceiling battens
 Check exterior claddings
 Ceiling %

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Preline Labels in place? Yes/No Producer Statement Yes/No/NA

COMMENTS

POSTLINE

Date: 23/6/2006 Officer: R/G Builder/Contractor/Owner:

Sheets nailed as per your schedule Insulation to walls

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Postline Label in place? Yes/No

COMMENTS

Builder completing BRG's as discussed.

DRAINS

Drainlayer: Alb. Mann

Date: 17/1/16 Officer: Siron Corp Builder/Contractor/Owner:

Drain depth	<input type="checkbox"/>
Subsoil drains	<input type="checkbox"/>
Pipe material	<input type="checkbox"/>
Disposal field	<input type="checkbox"/>
Drains under building	<input type="checkbox"/>
Connection to main	<input type="checkbox"/>
Pipe supports	<input type="checkbox"/>
Manhole - structure	<input type="checkbox"/>
Lamp holes	<input type="checkbox"/>
Drain test <u>water</u>	<input checked="" type="checkbox"/>

Gully traps	<input type="checkbox"/>
Granular bedding	<input type="checkbox"/>
Terminal vents	<input type="checkbox"/>
Even gradient/line	<input type="checkbox"/>
Soil stack	<input type="checkbox"/>
Manhole - haunching	<input type="checkbox"/>
Inspection/bends	<input type="checkbox"/>
SW to kerb	<input type="checkbox"/>
Sumps	<input type="checkbox"/>

Has a **Site Instruction** been issued? Yes/No Instruction No:

Is a reinspection required? Yes/No Proposed date of follow up inspection

Producer Statement Yes/No/NA

To be provided with a build plan

COMMENTS

Drain under tested and plotted.

B.C. 056327

FINAL INSPECTION

BM 21/8/06

Building Exterior

CHECK PLANS

<input checked="" type="checkbox"/> Subfloor - ventilation	<input checked="" type="checkbox"/> Flashings - roof penet	<input checked="" type="checkbox"/> Gully dishes
<input checked="" type="checkbox"/> Decks - structure	<input checked="" type="checkbox"/> hips	<input checked="" type="checkbox"/> Wastes to gullys
<input checked="" type="checkbox"/> Balustrades - design	<input checked="" type="checkbox"/> valleys	<input checked="" type="checkbox"/> Terminals vents
<input checked="" type="checkbox"/> height	<input checked="" type="checkbox"/> gables	<input checked="" type="checkbox"/> Spouting - Downpipes
<input checked="" type="checkbox"/> Steps/Stairs - design	<input checked="" type="checkbox"/> flues	<input checked="" type="checkbox"/> Landscaping & ground levels
<input checked="" type="checkbox"/> handrail	<input checked="" type="checkbox"/> Cladding (ground clearance)	<input checked="" type="checkbox"/> Texture Coating Warranty
<input checked="" type="checkbox"/> Flashings - windows	<input checked="" type="checkbox"/> Roofing & Fixings (roofing warranty)	<input checked="" type="checkbox"/> <i>SMOKE ALARMS (2)</i>

Building Interior

CHECK FITTINGS

<input checked="" type="checkbox"/> Service area floors & walls	<input checked="" type="checkbox"/> Food storage	<input checked="" type="checkbox"/> Water temperature
<input checked="" type="checkbox"/> Stair design	<input checked="" type="checkbox"/> Nat. ventilation	<input checked="" type="checkbox"/> Solid fuel heater
<input checked="" type="checkbox"/> Handrails	<input checked="" type="checkbox"/> Mech. Ventilation	<input checked="" type="checkbox"/> Supply tank <i>HEAT PUMPS</i>
<input checked="" type="checkbox"/> Barriers	<input checked="" type="checkbox"/> Insulation	<input checked="" type="checkbox"/> Trap seals & AA Valves <i>(2)</i>
<input checked="" type="checkbox"/> Lightings	<input checked="" type="checkbox"/> Hot water cylinder flues	<input checked="" type="checkbox"/> Cistern flushing
<input checked="" type="checkbox"/> Laundering	<input checked="" type="checkbox"/> Hot water cylinder valves	<input checked="" type="checkbox"/> WC pan connection
<input checked="" type="checkbox"/> Cooking facilities	<input checked="" type="checkbox"/> Hot water cylinder rest	<input checked="" type="checkbox"/> Septic Tank
	<input checked="" type="checkbox"/> Tempering valve	<input checked="" type="checkbox"/> (engineers inspc report)
		<input checked="" type="checkbox"/> Windows - labels <i>FABRICATION</i>
		<input checked="" type="checkbox"/> Safety glass <i>LEVEL 3 WIN</i>

EXISTING PRIVATE ROW

crossing installed Yes/No Berm damaged Yes/No
 ing deposit Yes/No Engineering site reports required Yes/No
 site drainage Yes/No Engineering site reports received Yes/No
 satisfactory Yes/No

is issued? Yes/No NTR Instruction No.

2AD Yes/No/NA certificate. Yes/No

list proposed conditions on the reverse of this form.

date of follow up inspection

BM
SOURCE STATEMENTS & ASHADO DRAWINGS

TO ISSUE
21/8/06

inspections not approved

Strike out inspections not applicable



Comments:

Tick (✓) approved inspections

Cross (x) inspections not approved

Strike out inspections not applicable

FOR COUNCIL USE:

DEPARTMENT	TICK FOR REFERRAL	COMMENTS	APPROVING OFFICER/ DATE
Resource Consents (refer PIM Sheet)	/		
Plumbing and Drainage	/		
Building	/		 19/11/05 R. J. J. J. 21/12/05
Fire Design			
Compliance Schedule			
Structural			
Hazardous Substances			
Environmental Health			
Site- Footpath & Entrance Conditions		Ground	
N/A OFF R.O.W.		ENGINEERS DESIGN	15/12/05 
Kerb x-ing at R.O.W OK.			
NOTES:			



Building Consent No. BC 056327

Building Project... New Dwelling...
 10 Charlotte way
 Raumati

CONSENT DATA INPUT REQUIREMENTS

REQUIRED INSPECTIONS

1	✓	Foundation inspection	32	✓	Lapse and cancellation after 12mths of consent	21	✓	Minimum FFL to comply with NZS3604
3		Sub-Floor inspection, suspended floor	2	✓	Engineer design specific components	22	✓	Deck and stair balustrades with greater drop than 1 m
7	*	Pre-concrete slab inspection of plumbing	3		foundations to solid bearing of 200mm	23		Installation of solid fuel appliance (wood burner) comply and secured
2	✓	Pre-Slab inspection, concrete floor	4	✓	NZS3604 as accept. solution in terms of NZ Bld Code	23A		Second hand wood burner - certified
16	✓	Pre-Block-Fill inspection	5		Not approved as Habitable BUILDING	24		Chimney to be cleaned prior to fitting of new unit
23	✓	Pre-Wrap inspection	6		Not approved as Habitable ROOM	24A	✓	Section F7 requires fitting of smoke detectors
24	✓	Post-Wrap inspection	7	✓	Fit proprietary Head, Jamb, Sill flashings & air seals to ext joinery	25	✓	Contractor to leave site clean and clear
25	✓	Post-Clad inspection	8		As in V H Wind Zone, ext load bearing walls, extra fixing for roof	26		Sewer and water services to be disconnected and capped
18		Substrate inspection - solid plaster	8A		As in Very High Wind Zone, extra fixings for roof	27	✓	Provide from contractor roof warranty
19		Brick Veneer inspection	8B		All glazing, constr. system to comply with V H Wind and CCZ	28	✓	Contractor warranty covering roof, fascia and gutter system
8	*	Prelining inspection of plumbing	9	✓	Note and comply with all endorsements on approved plans	29		Provide from contractor texture coating warranty
4	✓	Prelining inspection, moisture test, check bracing	10		Names and Reg'n of plumber and drain layer req'd	30		To comply with food hygiene regulations 1974
5	✓	Post-lining inspection, linings, fixed as per brace design	11		Concealed soil and TV pipes and gas flues only allowed in ducts or minimum framed	31		As in CCZ, all fixings need to be stainless steel
10	*	Water test on sewer drains	12		Hot & Cold water pipes tested to 1500kPa	33		Approval only given for relocation purposes
15	*	Completion inspection	13		Roof storm water to be connected to existing	34		If cladding to have pre-finished colour coating, to be appropriate for coastal conditions
			14		Copper water pipes not permitted	38	✓	Window sashes on upper levels less than 760mm above floor to have stays fixed
		* = plumbing inspections	15		Owner/builder to ensure prop foundation height will allow satisfactory connection	39		Construction of playground to comply with NZS 5828
			16		Drainlayer to discuss septic tank, etc	40		Fencing, gates, doors directly leading to swimming pool to comply Pool act 1987
		STANDARD CONSENT CONDITIONS	17		Owner's responsibility to arrange septic tank design	41		Owner's legal responsibility to provide locking lid for spa pool
37			18		Roof stormwater to be disposed inside property boundary	42		Intended appraised/approved Polystyrene Texture Coating system to be advised
72			19		Roof stormwater to be piped to kerb	43		Textured systems should be applied by licensed, trained applicators - supply warranty
80			20		Tempering valve to be installed on HW cylinder	44	✓	Exterior cladding system to be completed and inspected prior to internal lining.

NON STANDARD ADDENDA

FOR OFFICE USE ONLY

FEES		APPLICATION FEE \$.....	
Building Fee	\$ 2,368.00	\$ 3824.60	
Sewer Connection	\$.....	RECEIPT NO	DATE 13/12/05
Water Connection	\$.....	150573	
Vehicle Crossing	\$.....	INVOICE NO	DATE 13/12/05
Damage Deposit	\$ 400.00	17866	
Structural Checking	\$.....	RECEIPT NO	DATE.....
Building Research Levy	\$ 330.00		
Development Levy	\$.....	FEES PAID BY:	
DBH Levy	\$ 650.10	JCK Developments	
Compliance Schedule	\$.....		
Digital Storage Fee	\$ 31.50	BUILDING CONSENT NUMBER	DATE ISSUED
Certificate of Title Charge	\$ 45.00	BC056327	29/12/05
Photocopying	\$.....	AUTHORISATION FOR REFUND OF DEPOSIT	
SUBTOTAL	\$ 3824.60	Deposit held =	\$.....
Less Fee Paid	\$ 3824.60	Cost to Repair Damage Caused During Construction =	\$.....
TOTAL	\$.....	Total Balance to be Refunded	\$.....
GST INCLUDED	\$.....	Authority Number:	DATE:
		Authorised:	

GST 51-860-608
 Received with thanks by 47/01
 KAPITI COAST DISTRICT COUNCIL
 13-12-05 9:37 Receipt no.150573
 COPY *COPY* *COPY*
 DR BC056327
 DEVELOPMENTS JCK 3,824.60-
 JCK Developments::PO Box 2082:Raumati B
 CQ N
 JCK Developments 3,824.60



Building consent 056327

Section 51, Building Act 2004

The building

Street address of building: 10 CHARLOTTE WAY, RAUMATI

Legal description of land where building is located: LOT 56 DP 89871

Valuation number: 1529160367

Building name:

Location of building within site/block number:

Level/unit number:

The owner

Name of owner: JCK Developments

Contact person: Jerome Wagg

Mailing address: PO Box 2082, Raumati Beach

Street address/registered office:

Phone number: Landline:

Mobile: 021 500 844

Daytime:

After hours: 904 2288

Facsimile number:

Email address:

Website:

First point of contact for communications with the council/building consent authority:

Full Name: Jerome Wagg

Mailing Address: P.O Box 2082, Raumati Beach

Phones:: 04 304 2288: 021 500 844

Building work

The following building work is authorised by this building consent:

New residential dwelling

residential dwelling

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building).

Kapiti Coast District Council

Phone (04) 904 5700, Fax (04) 904 5830 175 Rimu Road, Private Bag 601, Paraparaumu. Website www.kapiticoast.govt.nz

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

Compliance schedule

A compliance schedule is not required for the building.

Attachments

Copies of the following documents are attached to this building consent:



Signature



Position

On behalf of: KAPITI COAST DISTRICT COUNCIL

Date: 29/12/05

29 December 2005

JCK Developments
PO Box 2082
Raumati Beach

Dear Sir/Madam

Approval of Building Consent: 056327

Description: New residential dwelling
Location: 10 CHARLOTTE WAY, RAUMATI
Legal Description: LOT 56 DP 89871

I am pleased to inform you that the above building consent application has been approved. The building consent documents have been issued and are enclosed.

Before starting any work please read ALL the building consent documents carefully and in full so that you as the owner understand the conditions under which the consent has been issued.

As the owner you are also responsible for the following:

- ensuring that building work starts within 12 months of the approval of the building consent and that work progresses at a reasonable pace.
- ensuring that all required inspections are completed and that a Code Compliance Certificate is obtained once the work has been completed – please be aware that before a Code Compliance Certificate is issued, the building work must comply with the Building Act 2004 and the Building Code as at the date of final inspection.
- that no work with noisy equipment is to be carried out before 7.30 a.m. or after 6 p.m. Monday to Saturday. During the week there may be workers on site from 6.30 a.m. quietly preparing for work. Work with noisy equipment is not permitted on Sundays and public holidays.
- ensuring that no damage occurs to public property, for example footpaths or retaining structures. Should damage occur you will be required to pay for any repairs.
- ensuring that if you wish to make any changes to the approved building consent, then an amendment to the building consent will need to be lodged with us.

If you have any questions regarding your building consent or your responsibilities, please contact Kapiti Coast District Council on (04) 9045 617.

Addenda to Application

Application

JCK Developments PO Box 2082 Raumati Beach	No.	056327
--	-----	--------

Project

Description	New (& prebuilt) House, Unit, Bach, Crib, Town House etc. Being Stage 1 of an intended 1 Stage New residential dwelling
Intended Life	Indefinite, but not less than 50 years
Intended Use	residential dwelling
Estimated Value	\$330,000
Location	10 CHARLOTTE WAY, RAUMATI
Legal Description	LOT 56 DP 89871
Valuation No.	1529160367

Builder:	Jerome Wagg : 021 500 844
Designer:	Peter Davis : 04 902 2757
Plumber:	AM Plumbing : 027 472 9111
Contractor:	Abuild Consulting, Structural Engineer : 04 478 3929

General Requirements

- a) The District Inspector is to be given 24 hours' notice before carrying out the following inspections:
1. Foundation Inspection:
 2. Pre-concrete slab inspection of plumbing
 3. Pre-slab Inspection, concrete floor
 4. Pre-block-fill inspection
 5. Pre-wrap Inspection
 6. Post-wrap Inspection
 7. Post-Clad Inspection
 8. Prelining Inspection, moisture test, check bracing
 9. Post-lining inspection, linings, fixed as per brace design
 10. Water test on sewer drains
 11. Completion inspection
- b) To arrange for any of the above required inspections by the District Inspector, please contact the building inspectorate on (04) 298 5139 between the hours of 8.00am and 4.30pm.

1. LAPSE AND CANCELLATION OF BUILDING CONSENT. A building consent shall lapse and be of no effect if the building work concerned has not been commenced within 12 calendar months after the date of issue. Or within such further period as the territorial authority allows.
2. The inspection of all specific design components of the building is the responsibility of the Design Engineer who is also required to supply a written report to Council.
3. NZS3604 is an Acceptable Solution in terms of the New Zealand Building Code and is a recommended reference document for timber framed buildings.
4. Fit head, jamb, sill flashings and proprietary sill tray to external joinery. Fit airseals to the inside edges of the window reveals.
5. Note and comply with endorsements on approved plans.
6. Minimum heights of finished concrete slab-on-ground floors above adjoining finished ground level to comply with the current NZS3604.
7. Deck & stair balastrades with a greater drop than 1.0m require min 1.0m high balastrade measured from floor or tread. max 150mm bottom rail to floor. max 100mm space or hole between vertical rails. CERTAIN OTHER DECK CONFIGURATIONS MAY REQUIRE SAFETY BARRIERS. CONFER INSPECTOR
8. Section F7 of the New Zealand Building Code requires the installation of an approved smoke alarm system for detection and warning of fire. Alarms are to be of a type which include a reset and test buttons.
9. Provide from your Contractor a roof warranty covering the product and its installation.
10. Provide from your Contractor a warranty covering the roof and fascia gutter system, including product, design and installation.
11. Restrictor stays, limiting sash opening to max 100mm must be fitted wherever sill height is less than 760mm and the difference in levels are 1 metre or greater. Refer F4.NZBC
12. Exterior cladding system to be previously completed and inspected by Council's Inspector prior to any subsequent prelining inspection/approval being granted for the fixing of internal linings.

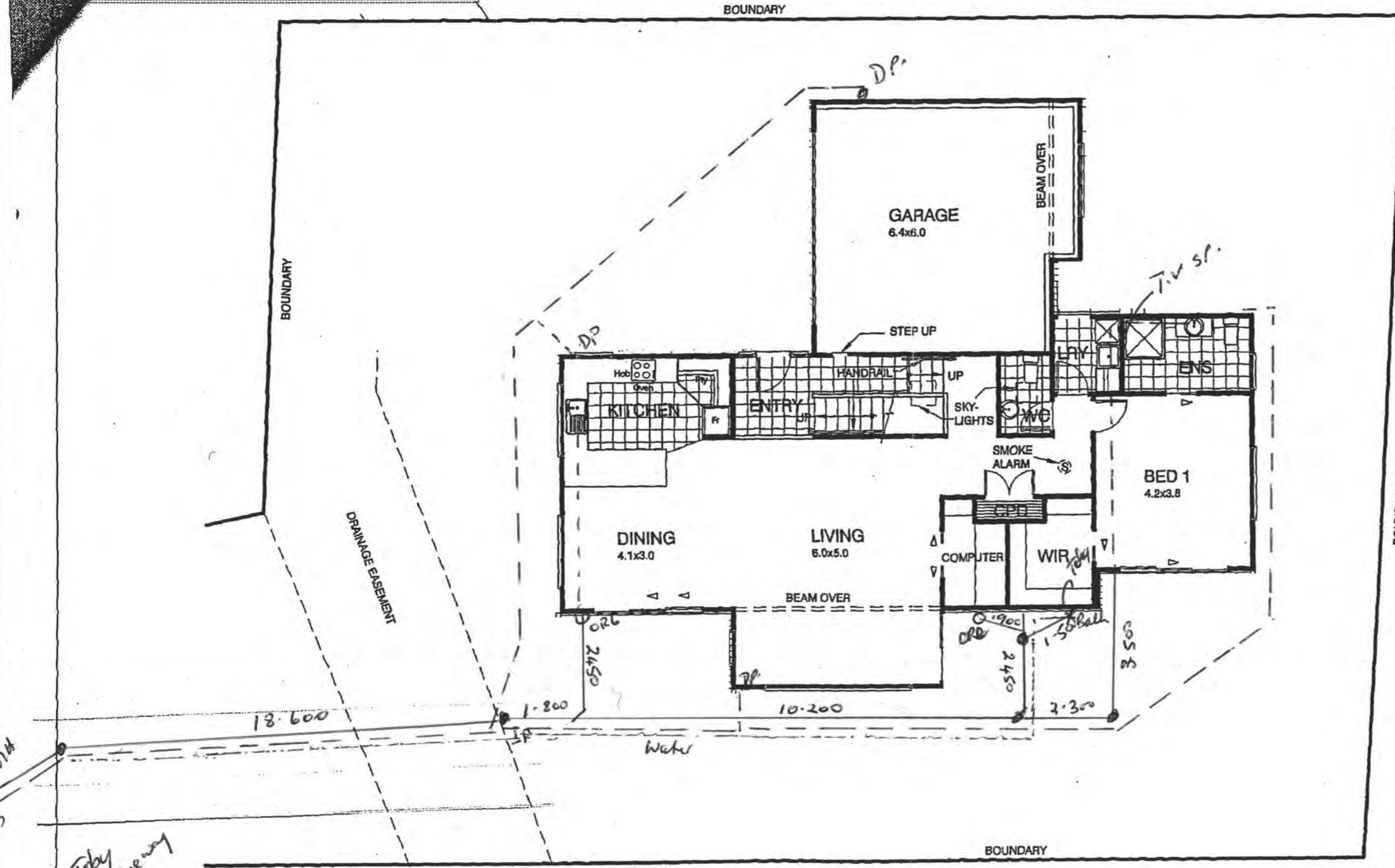
I have read the foregoing addenda to application, and the Owner/Builder/Authorised Person hereby agrees to comply with them.

**OWNER/BUILDER/
AUTHORISED PERSON**

Date:

ENSURE THE BUILDING AND SERVICES ARE CLEAR OF THE EASEMENT.

PLEASE SHOW SEWER, WATERMAIN AND TOBY AND STORMWATER DRAINS



- NOTES
- PQ 60x12 BEVELLED SKIRTINGS THROUGHOUT
 - PQ BEVELLED CORNICE THROUGHOUT
 - 13mm GIB ULTRALINE CEILINGS THROUGHOUT
 - 10mm AQUALINE TO BATHROOM AND ENSUITE WALLS, 13mm AQUALINE TO CEILINGS
 - ALL INTERNAL DOORS TO BE PQ PLYCO MANHATTEN IN PQ SLIMLINE JAMBS

NEW HOUSE
 LOT 56 RAUMATI ESTATE
 RAUMATI
 BY JCK DEVELOPMENTS

UPPER LEVEL FLOOR PLAN

Scale	Date	Job	Rev.	Sheet
1:100	SEPT 05	3725	A	2

PDA PETER DAVIS
 architecture

Raumati Village Shops, Rosetta Road
 P O Box 2066 Raumati Beach
 Kapiti Coast, New Zealand
 Fax 04 902 6675 Tel 04 902 2757
 Email info@pda.net.nz



UPPER LEVEL FLOOR PLAN

Toby
 Leanna Jane way



Inspection Advice

Commencing 1 July 2004 Kapiti Coast District Council Building Control has introduced additional inspection requirements primarily to cover the exterior envelope of buildings to ensure compliance with Clause E2 of the Building Code.

The following list provides an explanation of when the 'normal' inspections and those new ones should be carried out. (* indicates new inspection.)

1. **Foundation Inspection:** When all formwork has been completed, footings have been excavated and reinforcement is in place.
2. **Sub-floor Inspection (timber suspended floor):** When all sub-floor connections, joists and required blocking have been completed but before any flooring or base boards have been fitted. Relocated dwelling require a sub-floor inspection prior to the base boards being fitted.
3. **Pre-slab plumbing inspection (concrete slab):** When all plumbing and drainage pipes have been installed prior to backfilling.
4. **Pre-slab building inspection (concrete slab):** When DPM has been placed with all laps and penetrations sealed, reinforcing in place and in position with chairs as appropriate.
5. **Pre-block-fill Inspection:** When all masonry block work is completed, reinforcing in place and washout openings in place.
6. * **Pre-wrap Inspection:** When all roof and wall framing is complete, including any exterior sheet bracing, but before building wrap has been installed.
7. * **Post-wrap Inspection:** When building wrap and window and door flexible flashing tape has been installed, cavity battens (cavity system) cavity closers and all flashing systems are in place, but before joinery has been installed.
8. * **Post-clad Inspection:** When exterior cladding has been installed, flashings in place, air-seals fitted to openings, but before any coating system has been applied.
9. **Pre-stucco Inspection:** After the post-wrap inspection and when all the reinforcing and flashings are in place.
10. **Brick veneer Inspection:** When veneer is at half-height and all flashings are in place.
11. **Pre-line Inspection (plumbing):** When all internal plumbing is complete and plumbing pipe work is under pressure test (when required).
12. **Pre-line Inspection (building):** When the exterior of the building is weather tight, all structural components (including bracing) have been completed and wall insulation is in place.
13. **Post-line Inspection:** When all interior linings have been installed.
14. **Waste water drain Inspection:** When all drainage work is complete, drain under test and as-built drawing available.
15. **Final Inspections:** Final inspections carried out at completion of project and may include, entire project, plumbing, drainage, stormwater.

COUNCIL COPY

Building Consent Number : 056327
 Applicant Name : Name JCK Developments
 Project : New residential dwelling
 Location : 10 CHARLOTTE WAY, RAUMATI
 Legal Description : LOT 56 DP 89871

Please note the list below, which identifies the inspections required for this project. To ensure that a Code Compliance Certificate can be obtained at completion of your building project, these inspections must be carried out.

It is your responsibility to advise Council, giving 24 hours notice, when your project has reached the stage identified on the adjacent page to enable the inspection to be scheduled. This can be arranged by contacting Council on 04-9045-617 between the hours of 7.30am and 5.30pm Monday- Friday inclusive. Close off for booking inspections is 4.30pm on the day prior to the requested inspection.

Inspection	Required	Inspecting Officer	Date Inspected
Foundation	Yes	<i>[Signature]</i>	17/2/2006
Sub-floor <i>Required.</i>	No		
Pre-slab Plumbing	Yes		
Pre-slab Building	Yes	<i>[Signature]</i>	6/3/2006
Pre-block-fill	Yes	<i>[Signature]</i>	17/2/2006
Pre-wrap	Yes	<i>[Signature]</i>	2/5/2006
Post wrap	Yes	<i>[Signature]</i>	8/5/2006
Post-clad	Yes		
Pre-stucco	No		
Brick veneer	No		
Pre-lining (plumbing)	No		
Pre-lining (building)	Yes	<i>[Signature]</i>	2/6/06
Post-lining	Yes	<i>[Signature]</i>	23/6/2006
Waste Water Drain	Yes	<i>[Signature]</i>	27/4/06
Final Inspection	Yes	<i>[Signature]</i>	

**APPROVED
BY BUILDING
OFFICER**

*Robert Ferris
BArch (hons)*

21/12/05

HIGH WIND ZONE

2 'Z' Nails to truss / rafter and external
wall top plates (light roof)
Standard framing to NZS 3604
stud tables.
Fixings in accordance with nailing
schedule.

All work must be carried out to conform to relevant sections of
The New Zealand Building Code and New Zealand Standards,
particularly NZS.3604:1999 For Light Timber Framed construction.

PDA

PETER DAVIS
architecture

Rosetta Road, Raumati Village Shops
PO Box 2066 Raumati Beach
Tel 04 902 2757 Fax 04 902 6675
Email: info@pda.net.nz Website: www.pda.net.nz

BC056327

**APPROVED
BY P & D**
Simon Copp
Officer

19/12/2005

RECEIVED

13 DEC 2005

KAPITI COAST
DISTRICT COUNCIL

NEW HOUSE

at

**LOT 56
RAUMATI ESTATE
RAUMATI**

for

JCK DEVELOPMENTS

Job No. - 3725
Date: SEPT 2005

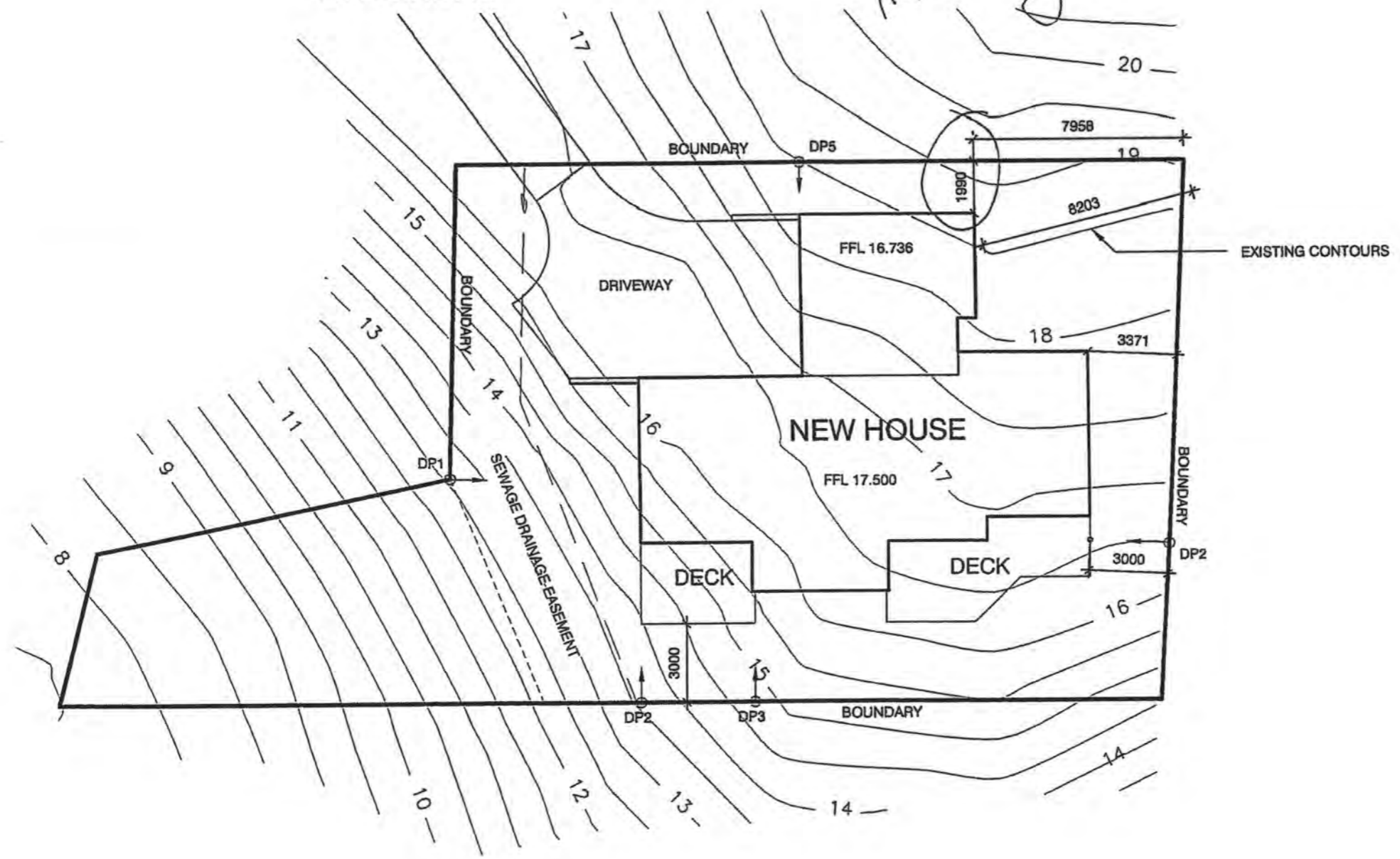
CAUTION

Plans have been digitally
reproduced and may not
be to scale.

ENSURE THE BUILDING AND SERVICES ARE CLEAR OF THE EASEMENT.

ROW ACCESS FROM CHARLOTTE WAY

BOUNDARY ENCROACHMENT FROM 3.0 mtrs to 1.990 mtrs.
AW & JW.



APPROVED
BY PLANNING
Vijay Soma
Officer

22/12/2005

LEGAL DESCRIPTION

LOT 56
DP 89871
RAUMATI

NOTES

SITE AREA = 663 m sq
SITE COVERAGE (INCL 34 m sq DECKS) = 191 m sq
SITE COVERAGE = 29%

SITE PLAN

SCALE 1:200

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

SITE PLAN

Scale	Date	Job	Rev.	Sheet
1:200	SEPT 05	3725	A	1

PDA PETER DAVIS
architecture
Raumati Village Shops, Rosetta Road
P O Box 2066 Raumati Beach
Kapiti Coast, New Zealand
Fax 04 902 6675 Tel 04 902 2757
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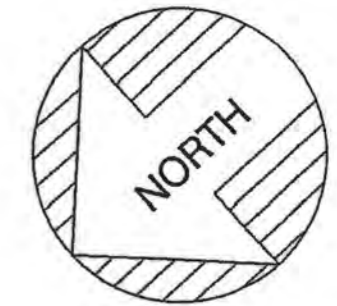
**APPROVED
BY BUILDING
OFFICER**

*Robert Ferris
Arch (hons)*

21/12/05

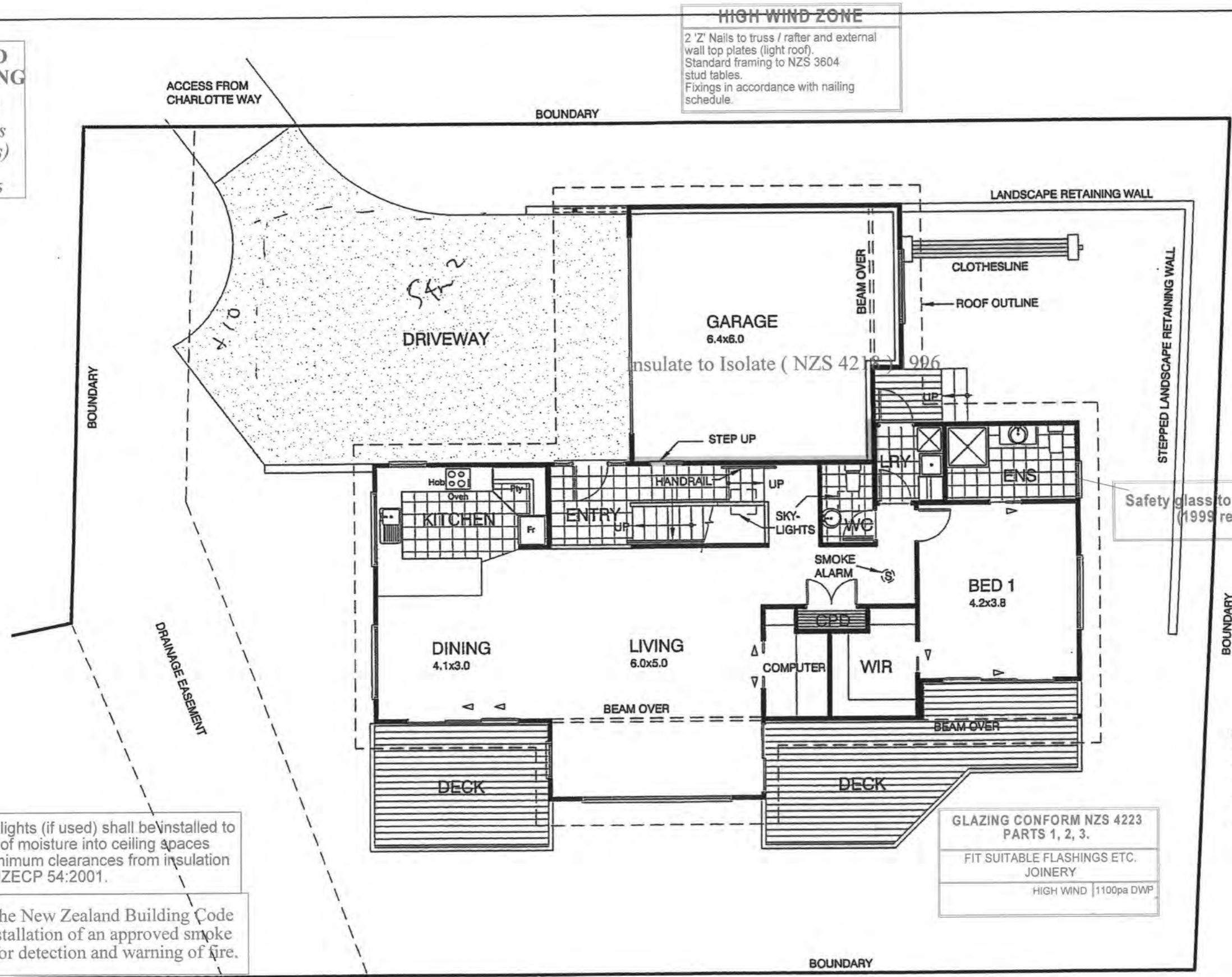
HIGH WIND ZONE

2 'Z' Nails to truss / rafter and external wall top plates (light roof).
Standard framing to NZS 3604 stud tables.
Fixings in accordance with nailing schedule.



**APPROVED
BY P & D**
*Simon Copp
Officer*

19/12/2005



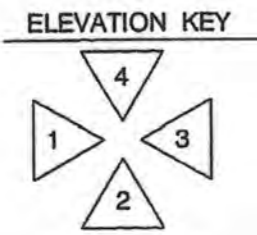
Safety glass to NZS 4223 Pt3 (1999 revision)

GLAZING CONFORM NZS 4223 PARTS 1, 2, 3.
FIT SUITABLE FLASHINGS ETC. JOINERY
HIGH WIND | 1100pa DWP

Recessed Downlights (if used) shall be installed to prevent transfer of moisture into ceiling spaces and maintain minimum clearances from insulation as required by NZECP 54:2001.

Section F7 of the New Zealand Building Code requires the installation of an approved smoke alarm system for detection and warning of fire.

- NOTES**
- PQ 60x12 BEVELLED SKIRTINGS THROUGHOUT
 - PQ BEVELLED CORNICE THROUGHOUT
 - 13mm GIB ULTRALINE CEILINGS THROUGHOUT
 - 10mm AQUALINE TO BATHROOM AND ENSUITE WALLS, 13mm AQUALINE TO CEILINGS
 - ALL INTERNAL DOORS TO BE PQ PLYCO MANHATTEN IN PQ SLIMLINE JAMBS



UPPER LEVEL FLOOR PLAN
SCALE 1:100

PIPES TO BE INSPECTED BEFORE COVERING WITH SAND.

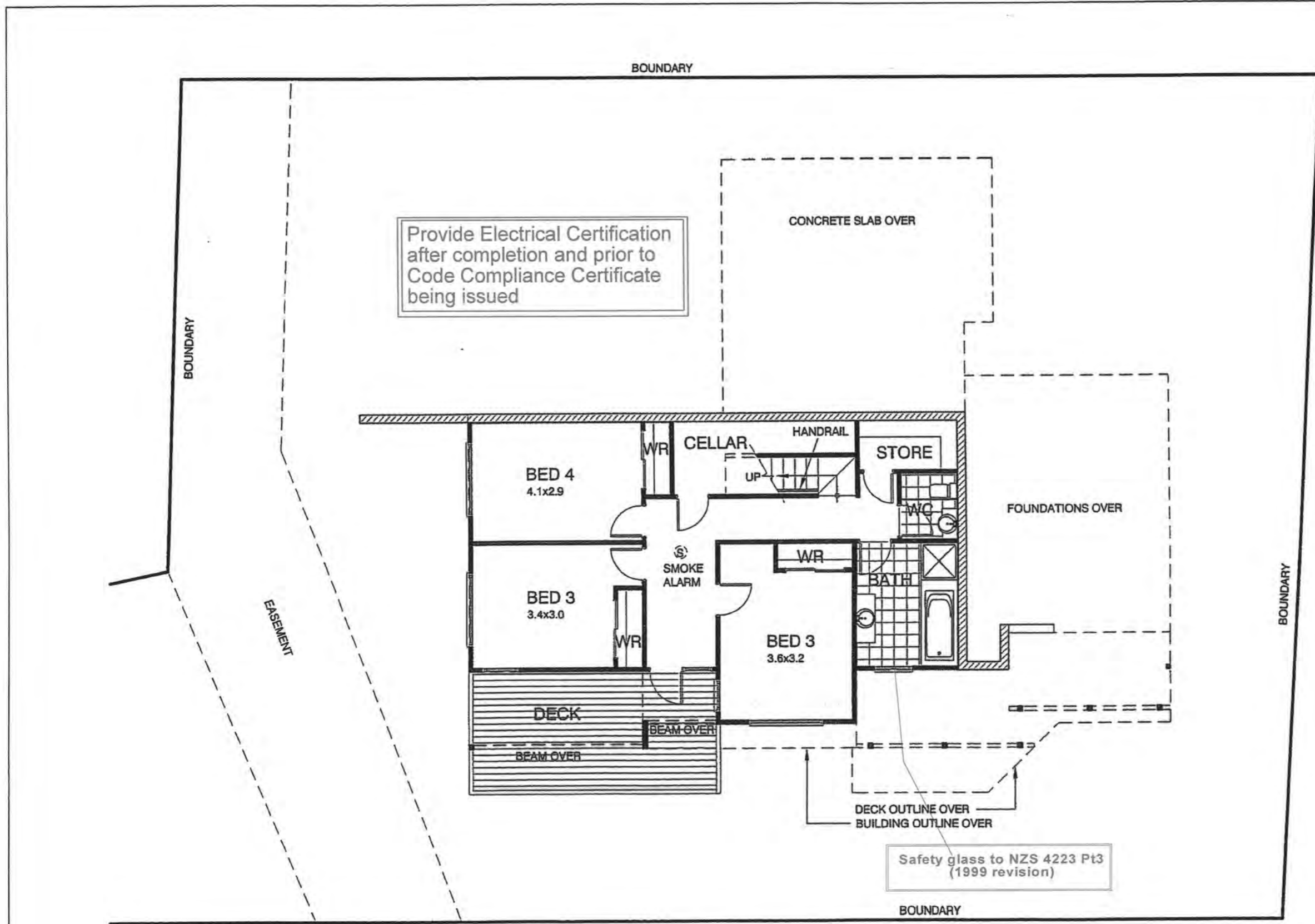
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

UPPER LEVEL FLOOR PLAN

Scale	Date	Job	Rev.	Sheet
1:100	SEPT 05	3725	A	2

PDA **PETER DAVIS**
architecture
Raumati Village Shops, Rosetta Road
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APPROVED
BY P & D
Simon Copp
Officer
19/12/2005



- NOTES
- PQ 60x12 BEVELLED SKIRTINGS THROUGHOUT
 - PQ BEVELLED CORNICE THROUGHOUT
 - 13mm GIB ULTRALINE CEILINGS THROUGHOUT
 - 10mm AQUALINE TO BATHROOM AND ENSUITE WALLS, 13mm AQUALINE TO CEILINGS
 - ALL INTERNAL DOORS TO BE PQ PLYCO MANHATTEN IN PQ SLIMLINE JAMBS

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

LOWER LEVEL FLOOR PLAN

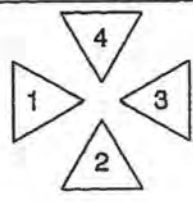
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LOWER LEVEL FLOOR PLAN

SCALE 1:100

ELEVATION KEY



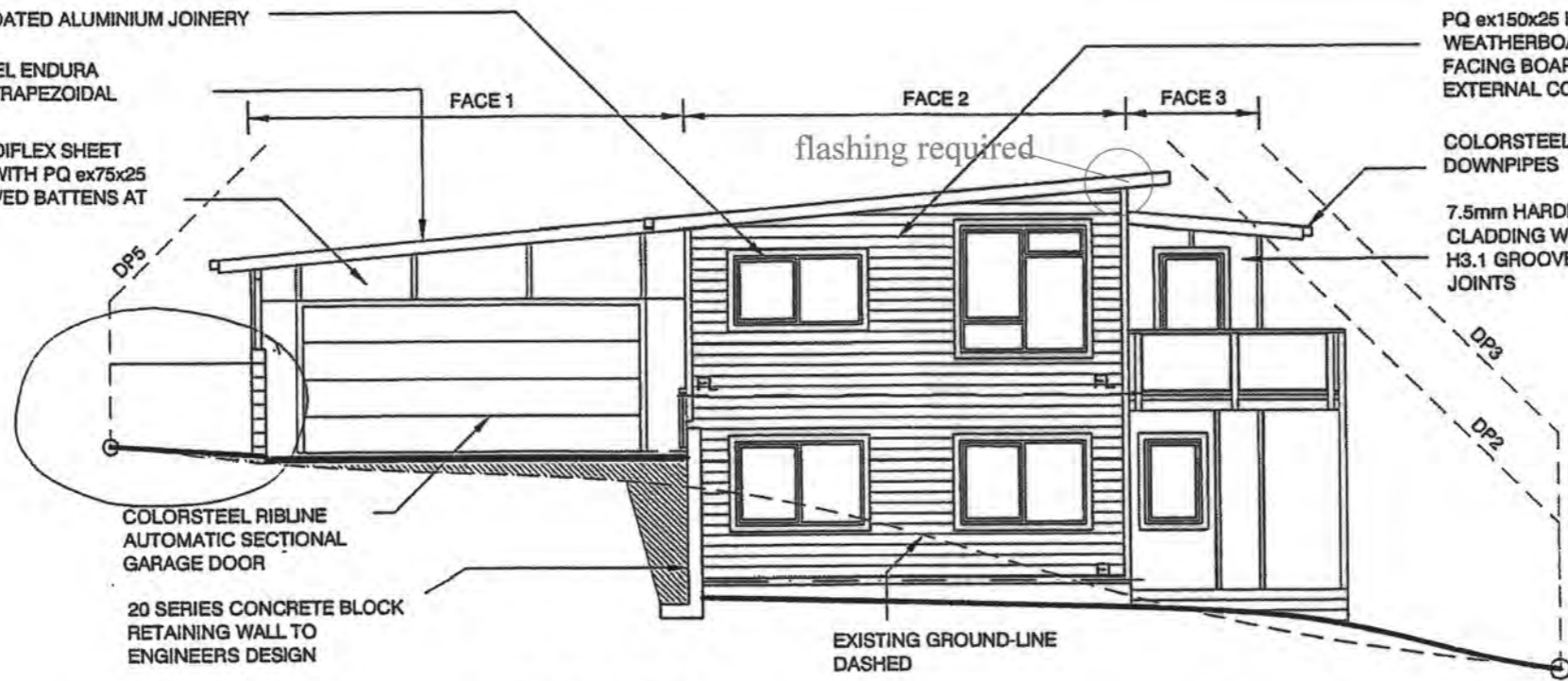
ensure that the hot water heater is located centrally

Boundary
Affected
1.9.90
J.W. CW-

POWDERCOATED ALUMINIUM JOINERY

COLORSTEEL ENDURA
LONGRUN TRAPEZOIDAL
ROOFING

7.5mm HARDIFLEX SHEET
CLADDING WITH PQ ex75x25
H3.1 GROOVED BATTENS AT
JOINTS



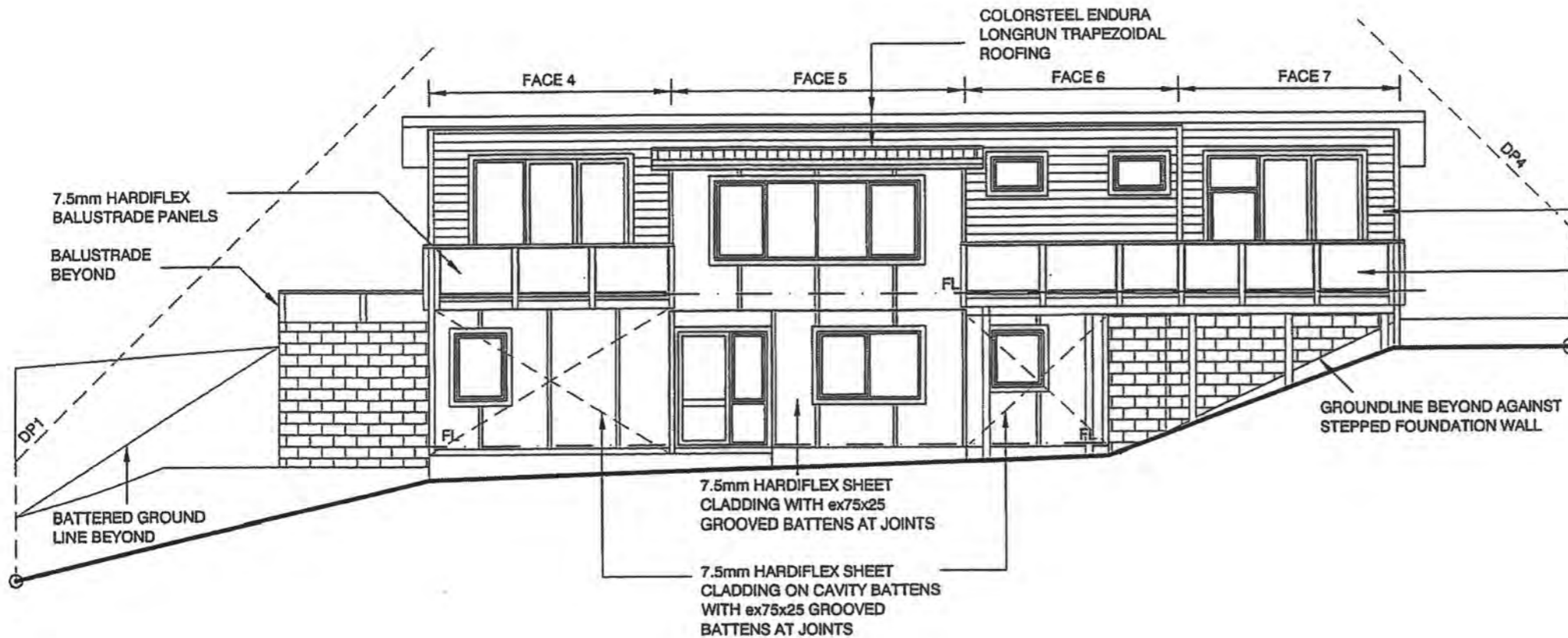
PQ ex150x25 H3.1 BEVELBACK
WEATHERBOARDS WITH ex100x25
FACING BOARDS TO WINDOWS AND
EXTERNAL CORNERS

COLORSTEEL GUTTERS uPVC
DOWNPIPES

7.5mm HARDIFLEX SHEET
CLADDING WITH PQ ex75x25
H3.1 GROOVED BATTENS AT
JOINTS

ELEVATION 1
SCALE 1:100

COLORSTEEL ENDURA
LONGRUN TRAPEZOIDAL
ROOFING



PQ ex150x25 H3.1 BEVELBACK
WEATHERBOARDS WITH PQ ex100x25
H3.1 FACING BOARDS TO WINDOWS
AND EXTERNAL CORNERS

7.5mm HARDIFLEX
BALUSTRADE PANELS

Balustrades/handrails/stairways to
conform to requirements of B1, D1
and F4 of NZ Building Code

7.5mm HARDIFLEX SHEET
CLADDING WITH ex75x25
GROOVED BATTENS AT JOINTS

7.5mm HARDIFLEX SHEET
CLADDING ON CAVITY BATTENS
WITH ex75x25 GROOVED
BATTENS AT JOINTS

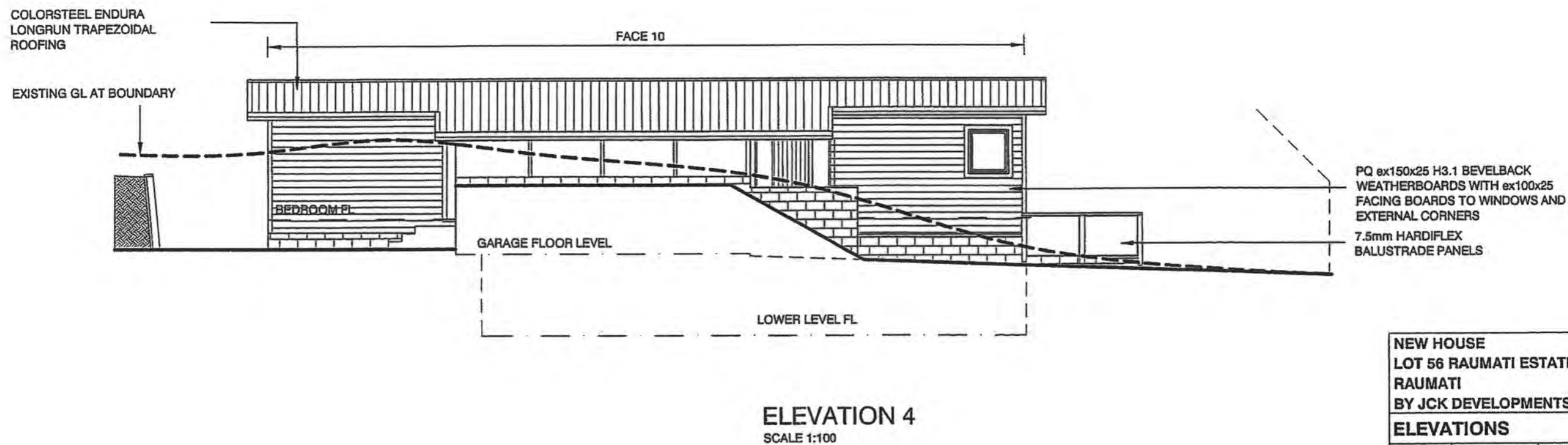
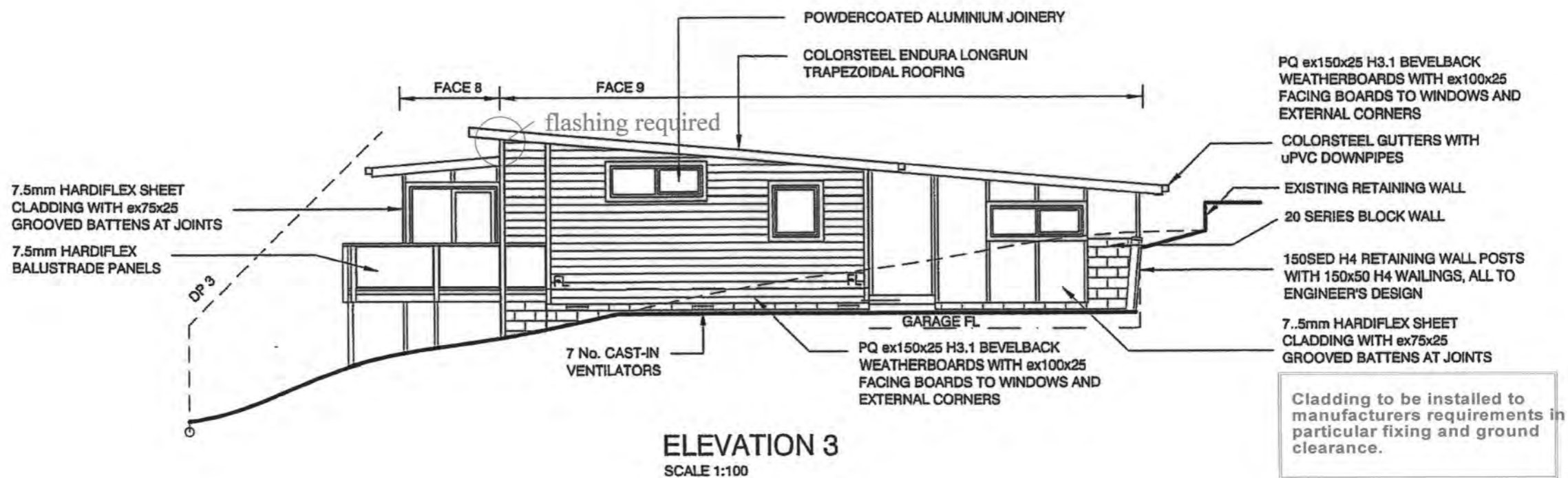
ELEVATION 2
SCALE 1:100

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

ELEVATIONS

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NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

ELEVATIONS

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CHECK P.I.M INFORMATION FOR SERVICE CONNECTIONS PROVIDED IN THE PLUMBING @ DRAINAGE PACK

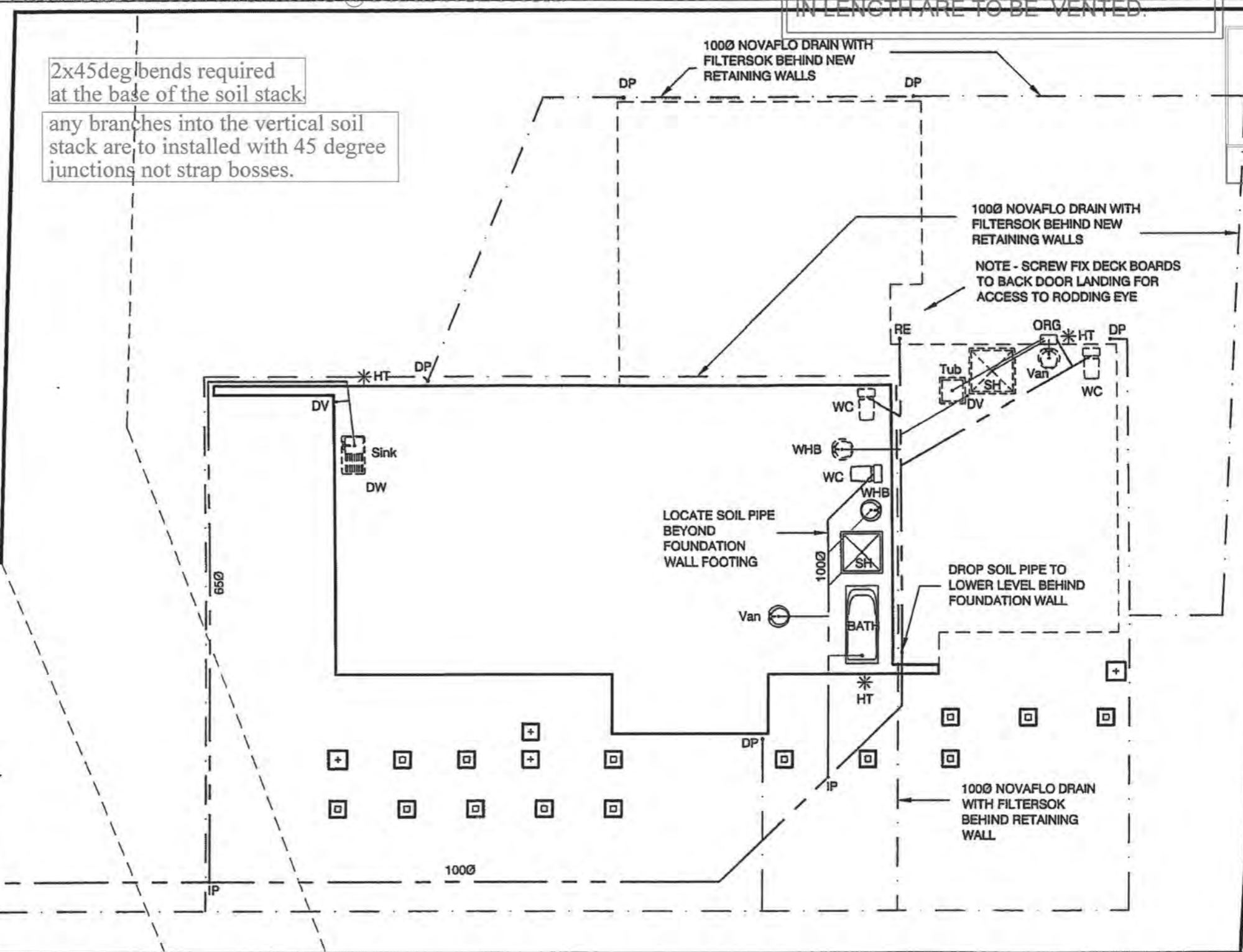
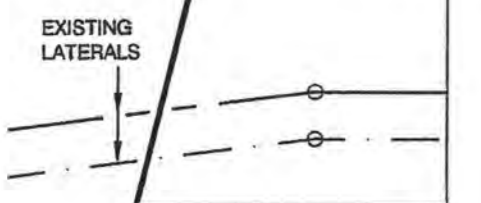
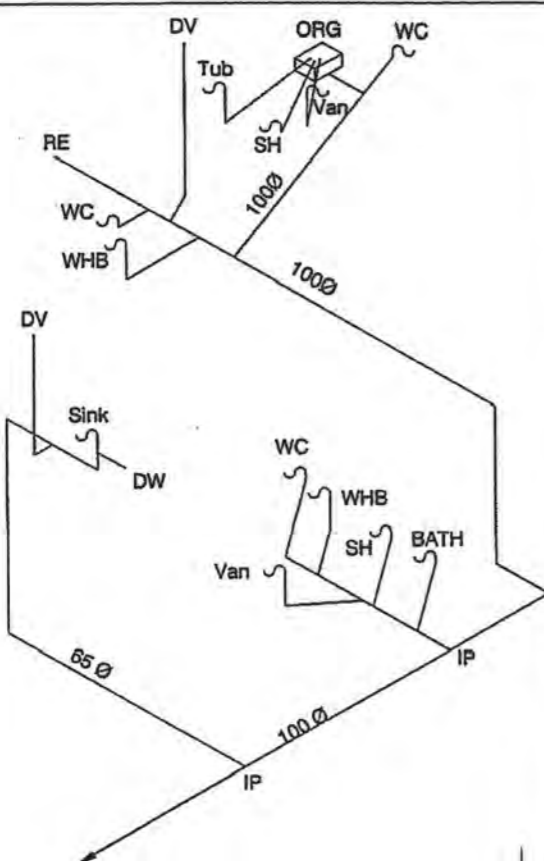
BRANCH DRAINS LONGER THAN 10.M IN LENGTH ARE TO BE VENTED.

APPROVED BY P & D
Simon Copp
Officer
19/12/2005

2x45deg bends required at the base of the soil stack.
any branches into the vertical soil stack are to be installed with 45 degree junctions not strap bosses.

NOTE - SCREW FIX DECK BOARDS TO BACK DOOR LANDING FOR ACCESS TO RODDING EYE

DRAINAGE SCHEMATIC
NTS



- LEGEND**
- 100 dia uPVC SEWER DRAIN
 - - - 100 dia uPVC STORMWATER DRAIN
 - ORG OVERFLOW RELIEF GULLY
 - DV 50 dia DRAIN VENT
 - IP INSPECTION POINT

- RE RODDING EYE
- DP DOWNPIPE
- *HT HOSE TAP OUTLET

NOTES:
- PLUMBING AND DRAINAGE WORK TO BE IN ACCORDANCE WITH NZ/AS3500 PART 2.2

DRAINAGE PLAN
SCALE 1:100

MIMUMUM SIZE DRAIN 65MM
SWEPT "Y" JUNCTIONS TO BE USED.

PLUMBER / DRAINLAYER TO FILL OUT ATTACHED PRODUCER STATEMENT FORMS AND RETURN TO COUNCIL ALSO PROVIDE AN ASBUILT DRAINAGE PLAN

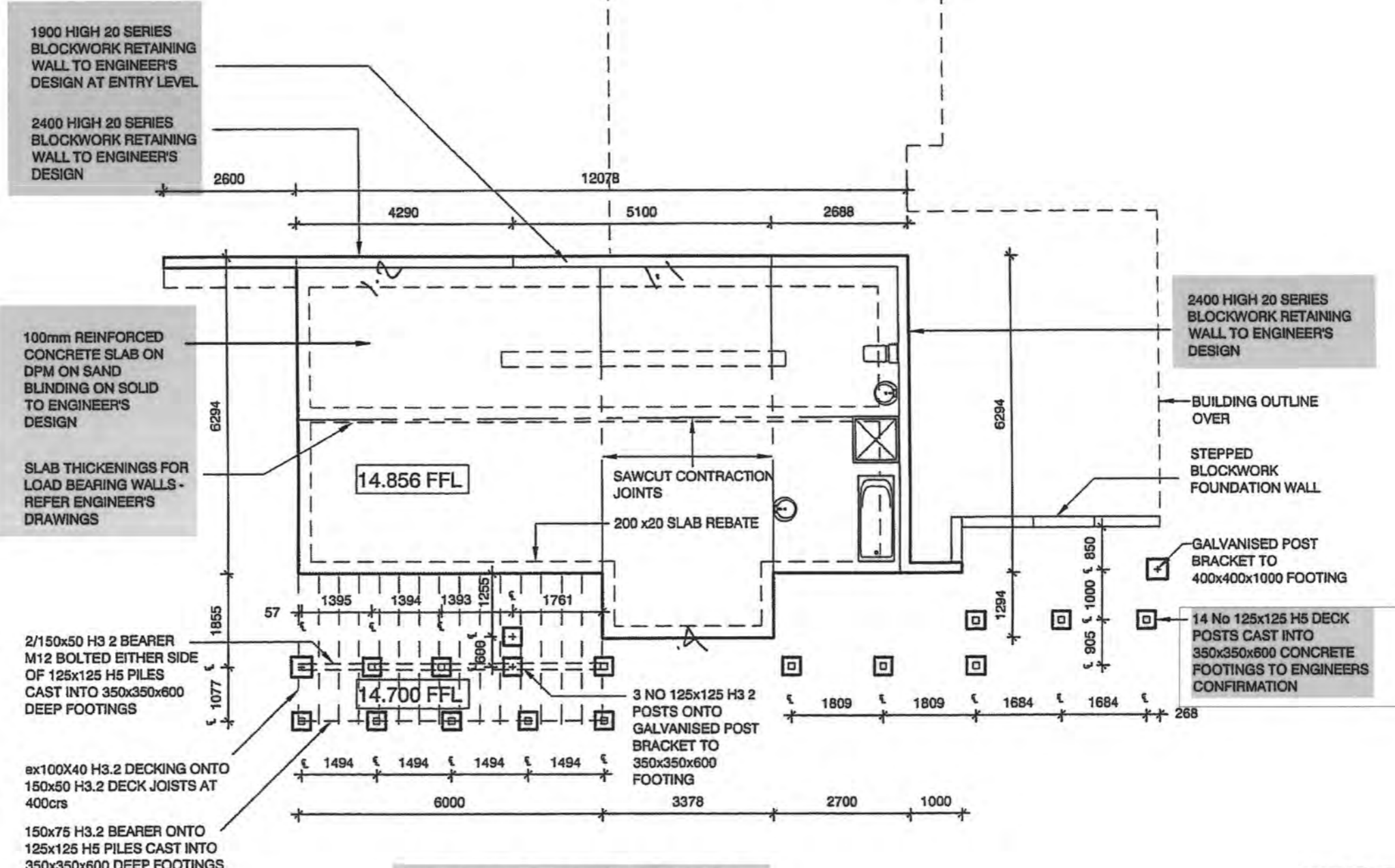
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
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DRAINAGE PLAN

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NOTE - ENGINEER TO CONFIRM FOOTING DETAILS

LOWER LEVEL FOUNDATION PLAN
SCALE 1:100

EXPOSED CONCRETE STRENGTH REQUIREMENTS
Within 500m of mean high tide - 25mpa
Beyond 500m of mean high tide - 20mpa

Reinforcing Steel Bends
D10mm = Min 50mm Ø & min 40mm for stirrups
D12mm = Min 60mm Ø & min 48mm for stirrups
D16mm = Min 80mm Ø
Refer also to NZS 3101 for clarity

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

LOWER LEVEL FOUNDN PLAN

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APPROVED
BY P & D
Simon Copp
Officer

19/12/2005

Subfloor pile connections within 600mm of ground level shall conform to Table 4.1 NZS 3604 :1999. Seaspray Zone 500m - 304 Grade stainless Steel. Other Zones - 304 Grade Stainless Steel or hot dip galvanised plus additional protection.

19mm ECOPLY PLYWOOD T&G FLOORING ONTO 140x45 H1.2 FLOOR JOISTS AT 600crs TO ENTRY LEVEL

Fit blocking @ max.1.8m spacings down internal subfloor brace line.

20 SERIES BLOCKWORK RETAINING WALL BELOW TO ENGINEER'S DESIGN

LOAD BEARING WALLS AND BEAMS BELOW SHOWN DASHED

19mm ECOPLY PLYWOOD T&G FLOORING ONTO 200-47 HYBEAM FLOOR JOISTS AT 600crs

19mm ECOPLY PLYWOOD T&G FLOORING ONTO 200x45 HYPAN FLOOR JOISTS AT 400crs

300 HY90 H3.1 BEAM BELOW, PAINT FINISHED

ex100X40 H3.2 DECKING ONTO ex200x50 H3.2 DECK JOISTS AT 400crs WITH ex200x50 H3.2 BOUNDARY JOIST

ex100X40 H3.2 DECKING ONTO ex200x50 H3.2 DECK JOISTS AT 400crs WITH ex200x50 H3.2 BOUNDARY JOIST

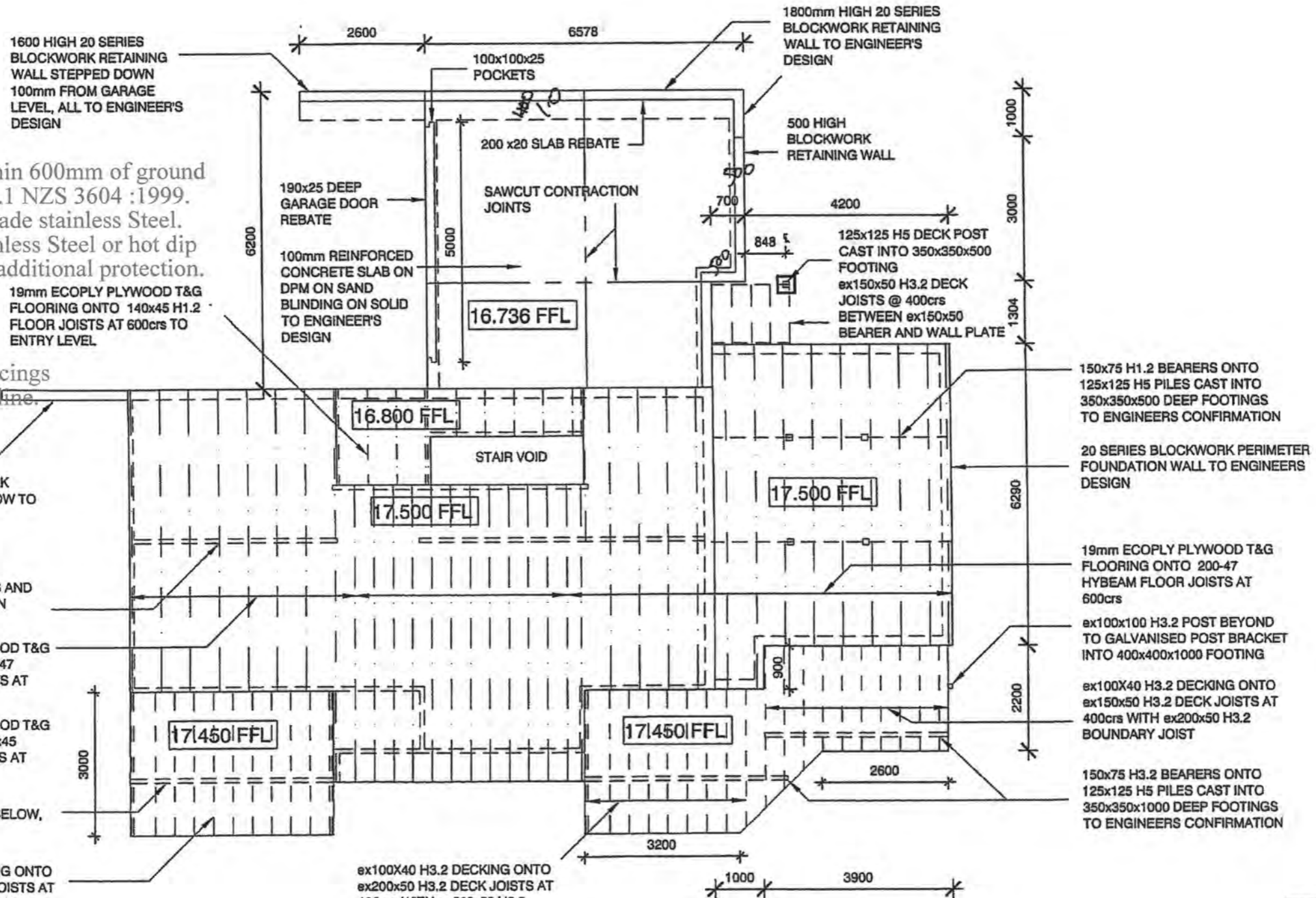
UPPER LEVEL JOIST AND FOUNDATION PLAN

SCALE 1:100

Ensure that the correct floor joists are installed to enable pipes to run through them i.e webbed or ply check with manufacturer for hole requirements

Ensure that the up stairs soil and waste pipes can run to the exterior without damaging any structural members.

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.



NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS
UPPER LEVEL FOUNDN PLAN

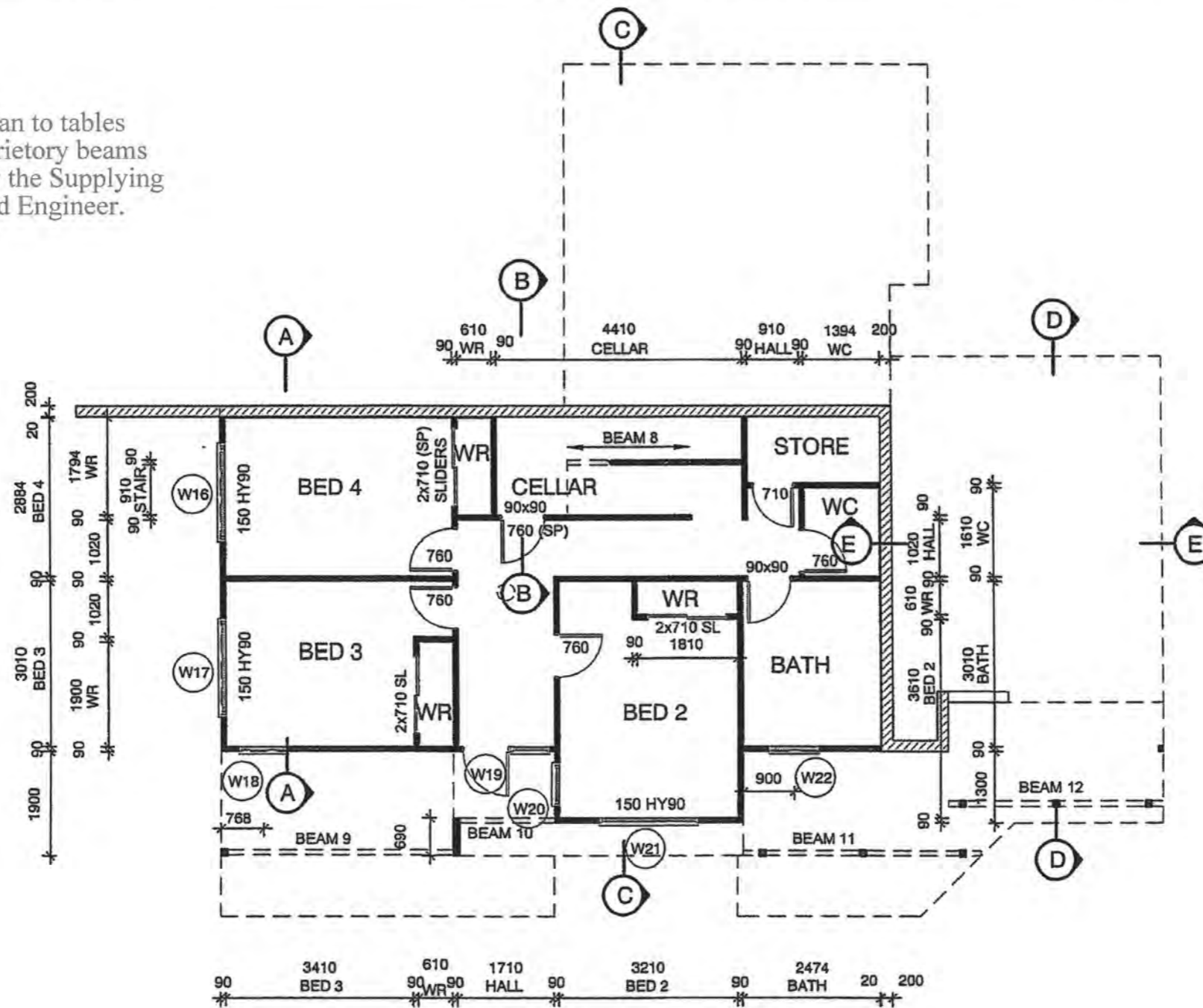
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Lintels where specified other than to tables of NZS 3604:1999 and all proprietary beams & trusses must be confirmed by the Supplying Licensed Prenailer or Registered Engineer.

BEAM SCHEDULE

BEAM 8	150 HY90
BEAM 9	300x90 HY90 H3.1 - PAINT FINISHED
BEAM 10	150x100 H3.2
BEAM 11	150x100 H3.2
BEAM 12	150x100 H3.2



- NOTES - ALL FRAMING TO BE KILN DRIED 90x45 H1.2 TREATED
- EXTERIOR WALL FRAMING TO BE AT 400 crs
 - INTERIOR WALL FRAMING TO BE AT 600 crs
 - BLOCK WALLS TO ENGINEERS DESIGN
 - BRACING TO ALL LEVELS BY ENGINEER
 - PRENAIL FRAME MANUF TO CONFIRM TIMBER LINTEL SIZES
 - WINDOW OPENINGS TO BE 20mm LARGER THAN WINDOW SIZES (10mm TOLERANCE EACH SIDE)

LOWER FLOOR FRAMING PLAN

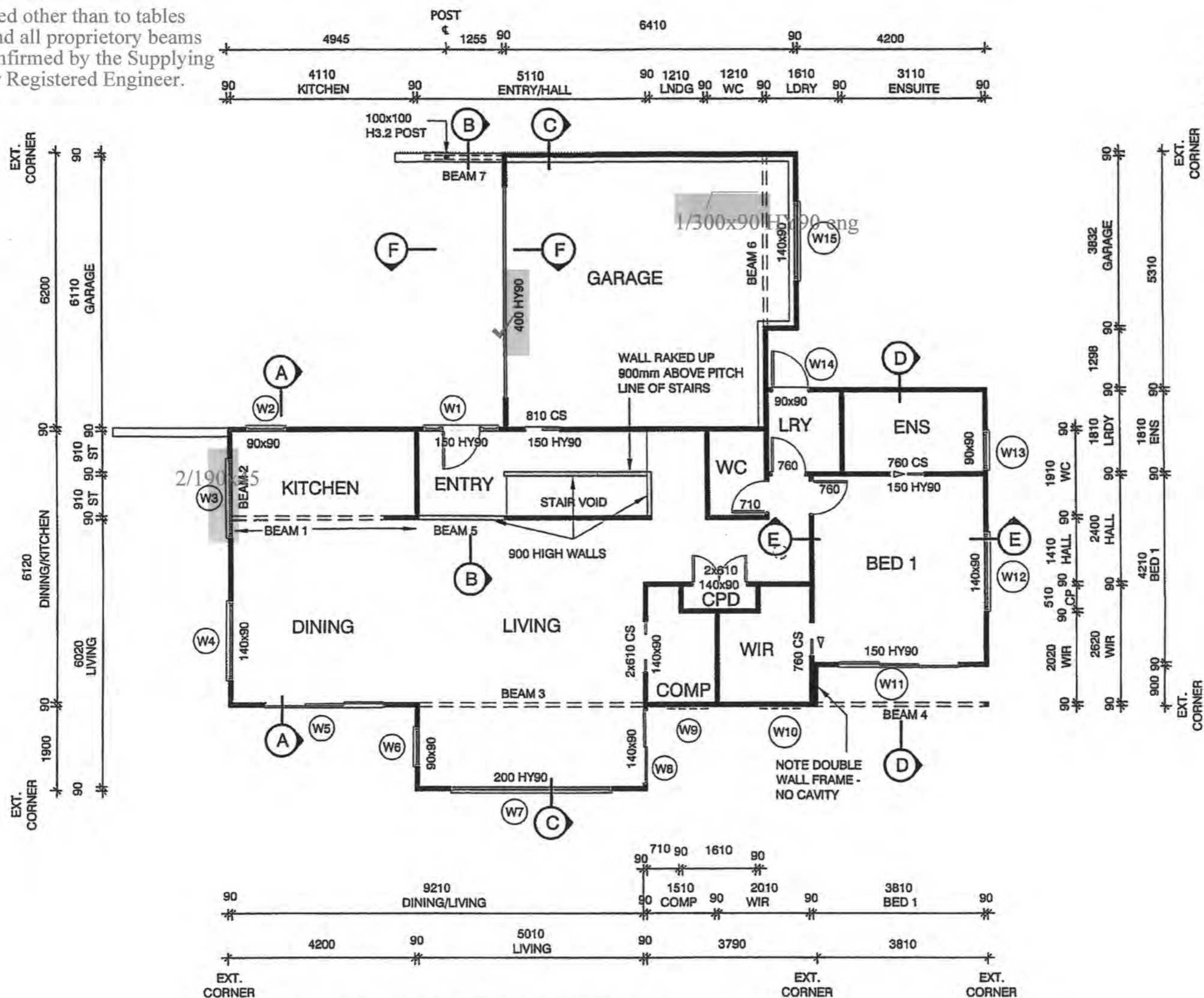
SCALE 1:100

NEW HOUSE
 LOT 56 RAUMATI ESTATE
 RAUMATI
 BY JCK DEVELOPMENTS
LOWER FLOOR FRAMING PLAN

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Lintels where specified other than to tables of NZS 3604:1999 and all proprietary beams & trusses must be confirmed by the Supplying Licensed Preailer or Registered Engineer.



BEAM	DESCRIPTION
BEAM 1	DOUBLED 200x45 H3.1 HYPAN ROOF BEAM
BEAM 2	DOUBLED 190x45 - ENG TO CONFIRM
BEAM 3	300 HY90
BEAM 4	150 HY90
BEAM 5	140x90
BEAM 6	200x90 HY90 - ENG TO CONFIRM
BEAM 7	150x100 H3.2

- NOTES - ALL FRAMING TO BE KILN DRIED 90x45 H1.2 TREATED
- EXTERIOR WALL FRAMING TO BE AT 400 CRS
 - INTERIOR WALL FRAMING TO BE AT 600 CRS
 - BLOCK WALLS TO ENGINEERS DESIGN
 - BRACING TO ALL LEVELS BY ENGINEER
 - PRENAIL FRAME MANUF TO CONFIRM TIMBER LINTEL SIZES
 - WINDOW OPENINGS TO BE 20mm LARGER THAN WINDOW SIZES (10mm TOLERANCE EACH SIDE)

UPPER FLOOR FRAMING PLAN
SCALE 1:100

NEW HOUSE
LOT 56 RAUMATI ESTATE
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BY JCK DEVELOPMENTS

UPPER LEVEL FRAMING PLAN

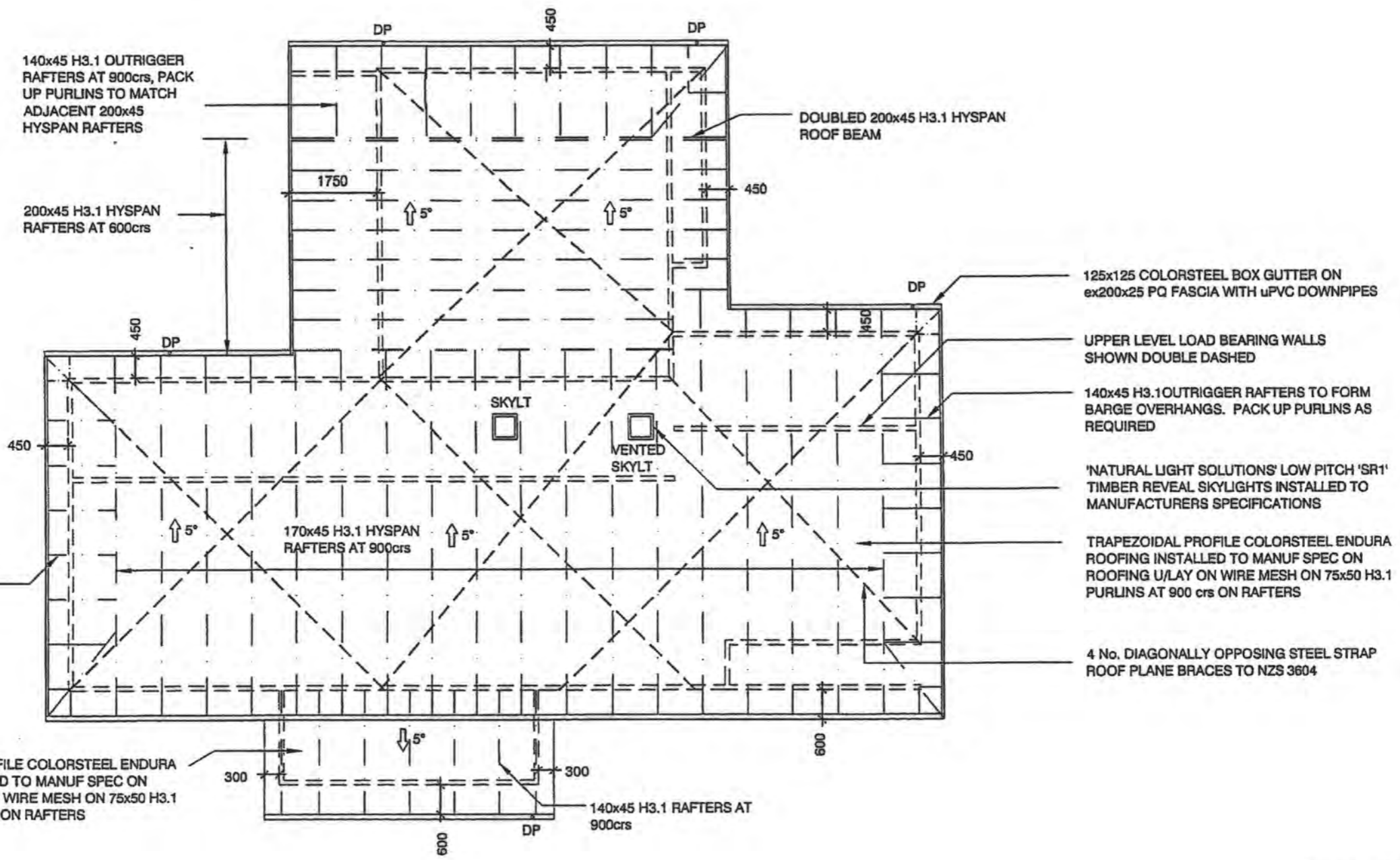
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Roofing material to be installed to manufacturers requirements. In particular, fixing and minimum pitch (reference also sect. 8 of E2 NZ Building Code.)

Supply copy of relevant warranties for roofing, membrane systems or fascia/gutter systems as appropriate to Council



- NOTES - 2 No. SKEW NAILS + 1 No. WIRE DOG TO EACH PURLIN / RAFTER CONNECTION
 - 2 No. SKEW NAILS + 2 No. WIRE DOGS TO EACH PURLIN / RAFTER CONNECTION WITHIN 900 OF BARGES AND EAVES
 - 2 No. SKEW NAILS + 2 No. WIRE DOGS TO EACH RAFTER / TOP PLATE CONNECTION
 - ALL SOFFIT DIMENSIONS ARE FOR SLOPING SOFFITS
 - INSTALL 200x50 EAVES FLASHING TO ALL EAVES DETAILS
 - REFER ALSO TO EAVE AND BARGE DETAILS

ROOF PLAN
SCALE 1:100

NEW HOUSE				
LOT 56 RAUMATI ESTATE				
RAUMATI				
BY JCK DEVELOPMENTS				
ROOF PLAN				
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0.4mm COLORSTEEL ENDURA
TRAPEZOIDAL ROOFING ONTO
ROOFING UNDERLAY ON MESH ON
70x45 H3.1 BATTENS AT 900crs
ONTO 170x45 H3.1 HYPAN
RAFTERS AT 900crs AT 5° PITCH
EAVES FLASHING

COLORSTEEL '125' GUTTER
ONTO PQ ex200x25 FASCIA

4.5mm HARDIFLEX SOFFIT

POWDERCOATED
ALUMINIUM JOINERY

PQ ex150x25 BEVELBACK
WEATHERBOARDS OVER
THERMAKRAFT BUILDING WRAP
ONTO 90x45 H1.2 FRAMING AT
400crs, R2.2 WALL BATTS

EXISTING GL
SHOWN DASHED

NEW GL

20 SERIES BLOCKWORK
RETAINING WALL TO
ENGINEER'S DESIGN

3 COATS FLINTCOTE OR
SIMILAR WATERPROOFING
PROTECTED BY 25mm
POLYSTYRENE SHEETS

100Ø NOVAFLO DRAIN WITH
FILTERSOK IN DRAINAGE
METAL

100mm REINFORCED
CONCRETE SLAB ON DPM ON
SAND BLINDING ONTO SOLID
TO ENGINEER'S DESIGN

SLAB THICKENING BENEATH LOAD
BEARING WALLS TO ENGINEER
DETAIL

MINIMUM FINISHED GROUND
LEVEL CLEARANCES. (to FFL)

BRICK VENEER
Protected ground minimum 100mm.
Unprotected ground minimum 150mm.

OTHER CLADDINGS
Protected ground minimum 150mm.
Unprotected ground minimum 225mm.

DOUBLED 200x45 HYPAN
H3.1 ROOF BEAM
R2.2 BATT CEILING
INSULATION

Flashing required

13mm GIB ULTRALINE
CEILING ONTO 70x35 H1.2
BATTENS AT 600crs

19mm ECOPLY PLYWOOD
T&G FLOORING ONTO
HJ200-47 HYBEAM FLOOR
JOISTS AT 600crs
R1.8 NOISE CONTROL BATTS

KITCHEN

DINING

BED 4

BED 3

13mm GIB ULTRALINE
CEILING ONTO 70x35
H1.2 BATTENS AT 600crs

10mm GIB TO
ex50x25 H3.2
STRAPPING AT
600crs

7.5mm HARDIFLEX
BALUSTRADE PANELS
BETWEEN 90x90 H3.2 POSTS
AT 1.4m CRS MAX

ex100x40 H3.2 DECKING ONTO
ex200x50 H3.2 DECK JOISTS AT
400crs

300 HY90 H3.1 BEAM
PAINT FINISH

7.5mm HARDIFLEX SHEET
CLADDING ONTO 45x20 H3.1
CAVITY BATTENS OVER
THERMAKRAFT BUILDING WRAP
ONTO 90x45 H1.2 FRAMING

ex100x40 H3.2 DECKING ONTO
150x50 H3.2 DECK JOISTS AT
400crs

150x75 H3.2 BEARER ONTO 125x125 H5
PILES CAST INTO 350x350x600 DEEP
FOOTINGS

2/150x50 H3.2 BEARER M12 BOLTED
EITHER SIDE OF 125x125 H5 PILES
CAST INTO 350x350x600 DEEP
FOOTINGS

NOTE - ENGINEER TO CONFIRM
FOOTING DETAILS

DECK JOISTS FIXED WITH GALV
JOIST HANGERS ONTO 150x50
H3.2 STRINGER M12 BOLTED TO
FOUNDATION WALL AT 1.2M CRS

SECTION A-A
SCALE 1:50

Fit head, jamb & proprietary sill tray
to external joinery. Fit flexible flashing
tape to corners, jamb and sill. Fit airseals
to the inner edge of the joinery reveals.

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

SECTIONS

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0.4mm COLORSTEEL ENDURA TRAPEZOIDAL ROOFING ONTO ROOFING UNDERLAY ON MESH ON 75x45 H3.1 BATTENS AT 900crs ONTO 140x45 H3.1 RAFTERS AT 900crs AT 5° PITCH
NOTE - PURLINS PACKED UP TO SUIT DEPTH OF ADJACENT 200x45 HYPAN RAFTERS

Eave flashings required for all profiled metal roofing in High and Very High wind zones and in any wind zone where roof pitch is less than 10 degrees.

PQ ex150x25 BEVELBACK WEATHERBOARDS OVER THERMAKRAFT BUILDING WRAP ONTO 90x45 H1.2 FRAMING AT 400crs, R2.2 WALL BATTS

0.4mm COLORSTEEL ENDURA TRAPEZOIDAL ROOFING ONTO ROOFING UNDERLAY ON MESH ON 200 x45 HYPAN H3.1 RAFTERS AT 600crs AT 5° PITCH

DOUBLED 200x45 HYPAN H3.1 ROOF BEAM

EAVES FLASHING

COLORSTEEL '125' GUTTER ONTO PQ ex200x25 FASCIA

4.5mm HARDIFLEX SOFFIT

EXISTING RETAINING WALL

EXISTING GL SHOWN DASHED

20 SERIES BLOCKWORK RETAINING WALL TO ENGINEER'S DESIGN

100Ø NOVAFLO DRAIN WITH FILTERSOK IN DRAINAGE METAL

4800x2100 HIGH COLORSTEEL RIBLINE AUTOMATIC SECTIONAL GARAGE DOOR

EXPOSED AGGREGATE 100mm THICK CONCRETE TO DRIVE

4.5mm HARDIFLEX SOFFIT

ex150x100 H3.2 BEAM AND POST BEHIND - POST ONTO GALVANISED CAST IN BRACKET

4
16

F

20 SERIES BLOCKWORK RETAINING WALL TO ENGINEER'S DESIGN

3 COATS FLINTCOTE OR SIMILAR WATERPROOFING PROTECTED BY 25mm POLYSTYRENE SHEETS

100Ø NOVAFLO DRAIN WITH FILTERSOK IN DRAINAGE METAL

DOUBLED 140x45 H1.2 LINTEL

2
23

ENTRY

19mm ECOPLY PLYWOOD T&G FLOORING ONTO 140x45 H1.2 FLOOR JOISTS AT 600crs JOIST-HUNG ONTO 140x45 H1.2 WALL PLATES EACH SIDE

10mm GIB LINING TO WALLS AND UNDERSIDE OF STAIR

CELLAR

SLAB THICKENING BENEATH LOAD BEARING WALLS TO ENGINEER DETAIL

100mm REINFORCED CONCRETE SLAB ON DPM ON SAND BLINDING ONTO SOLID TO ENGINEER'S DESIGN

SECTION B-B
SCALE 1:50

0.4mm COLORSTEEL ENDURA TRAPEZOIDAL ROOFING ONTO ROOFING UNDERLAY ON MESH ON 200x45 H3.1 HYPAN RAFTERS AT 600crs AT 5° PITCH

13mm STANDARD GIB CEILING LINING

400 HY90 GARAGE DOOR LINTEL

100mm REINFORCED CONCRETE SLAB ON DPM ON SAND BLINDING ONTO SOLID TO ENGINEER'S DESIGN

GARAGE

SECTION F-F
SCALE 1:50

1200 450

COLORSTEEL BARGE FLASHING OVER ex 250x25 BARGE BOARD

4.5mm HARDIFLEX SOFFIT

7.5mm HARDIFLEX SHEET CLADDING OVER THERMAKRAFT BUILDING WRAP ONTO 90x45 H1.2 FRAMING

ex100x100 H3.2 POST BEHIND ONTO GALVANISED POST BRACKET CAST INTO TOP OF RETAINING WALL

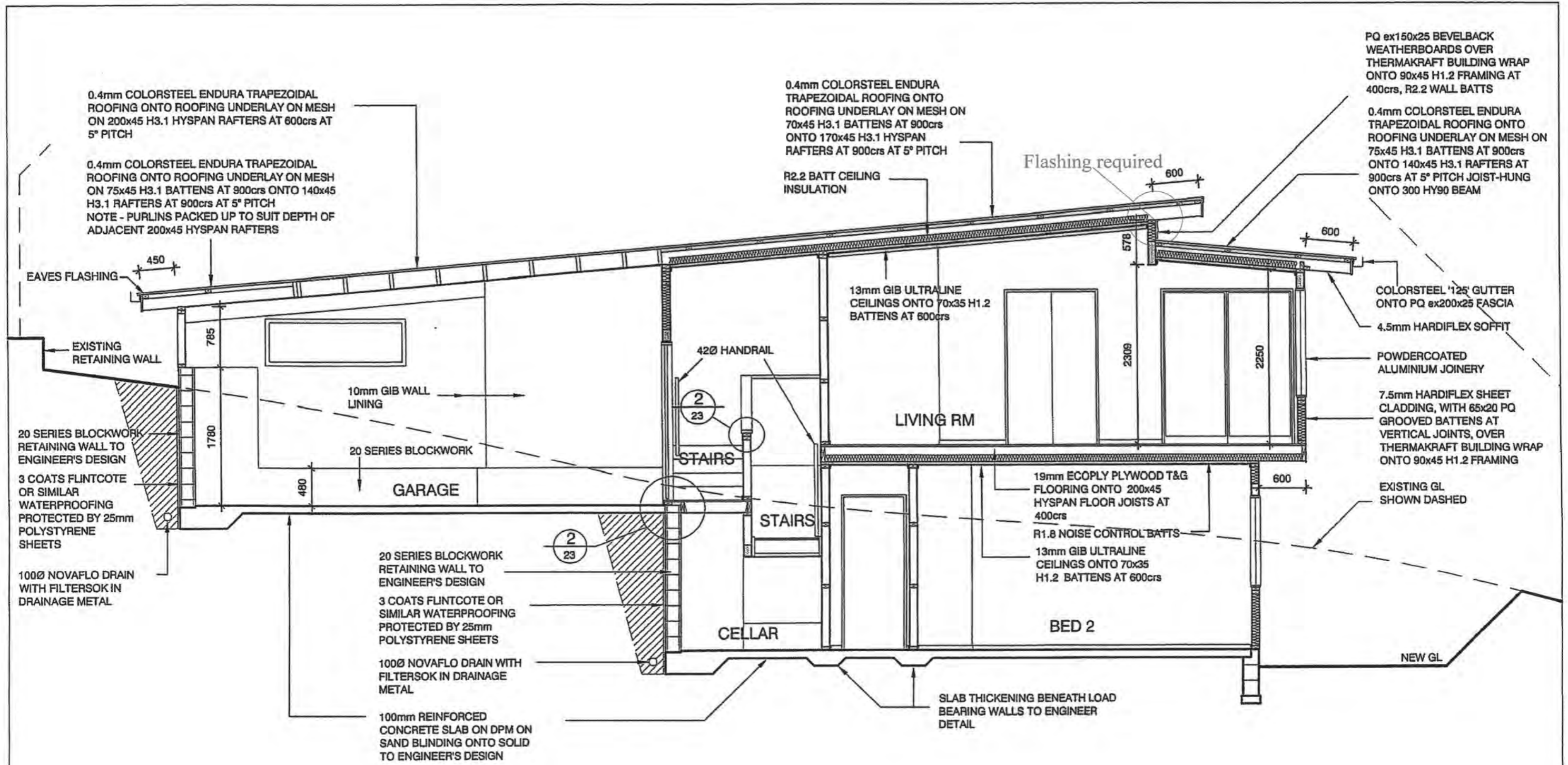
EXPOSED AGGREGATE 100mm THICK CONCRETE DRIVEWAY RAMPED UP LOCALLY TO GARAGE DOOR

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

SECTIONS

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SECTION C-C
SCALE 1:50

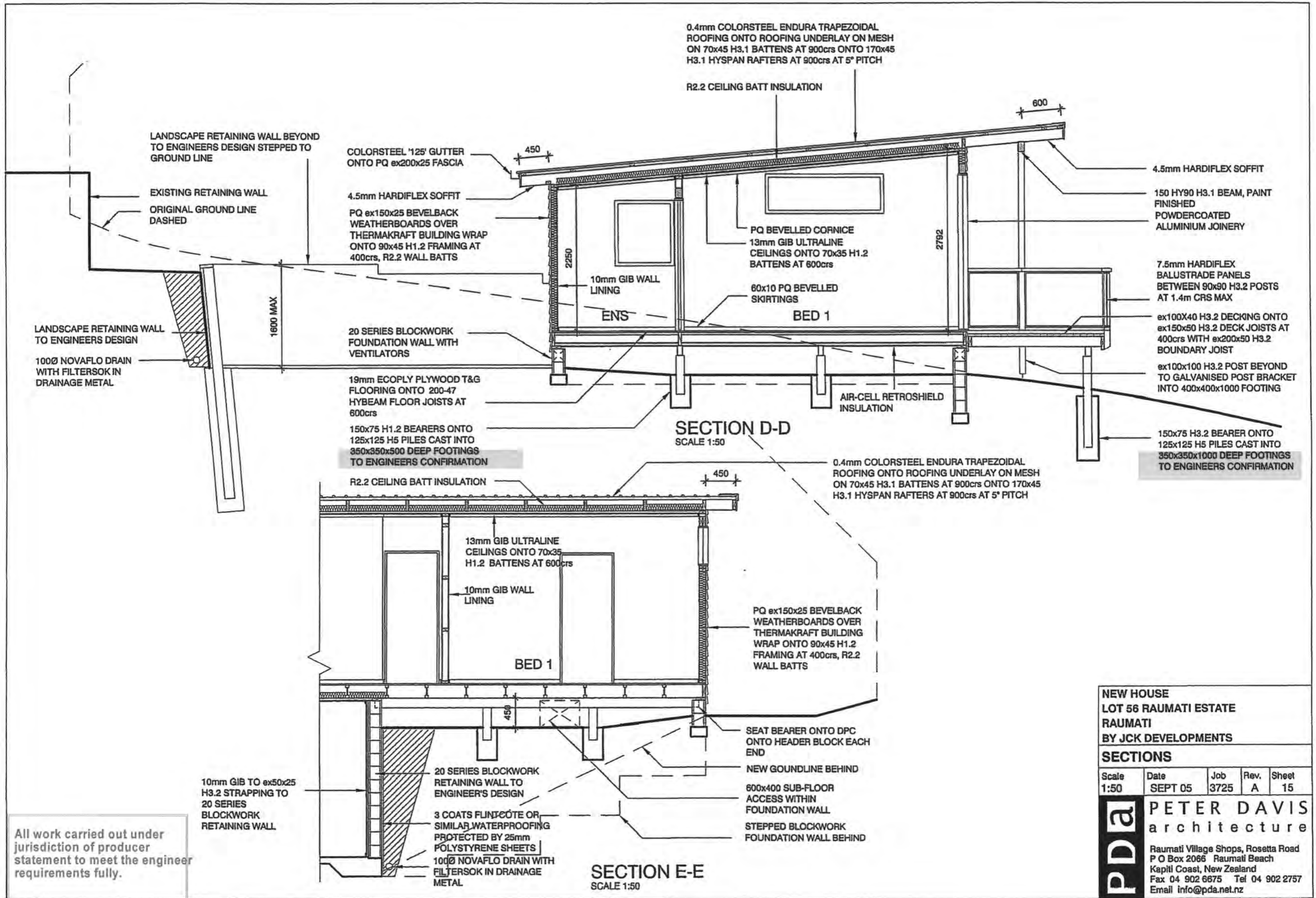
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

SECTIONS

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All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

SECTIONS

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Eave flashings required for all profiled metal roofing in High and Very High wind zones and in any wind zone where roof pitch is less than 10 degrees.

COLORSTEEL ENDURA TRAPEZOIDAL PROFILE ROOFING ON ROOFING U/LAY ON WIRE MESH ON 75x50 H3.2 PURLINS AT 900 crs ON 170x45 H3.1 HYPAN RAFTERS

125x125 COLORSTEEL BOX GUTTER ON PQ H3.1 ex25 FASCIA WITH HARDIFLEX SOFFIT

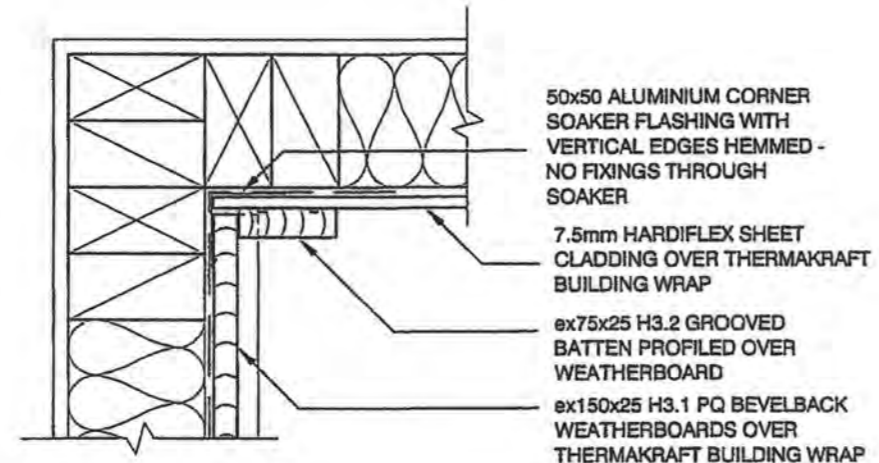
SOFFIT LINING TO U/SIDE 90x45 OUTRIGGERS FIXED TO BLOCKING BETWEEN RAFTERS

PQ H3.1 RUSTICATED WEATHERBOARD CLADDING ON THERMAKRAFT BUILDING WRAP ON 90x45 H1.2 FRAMING

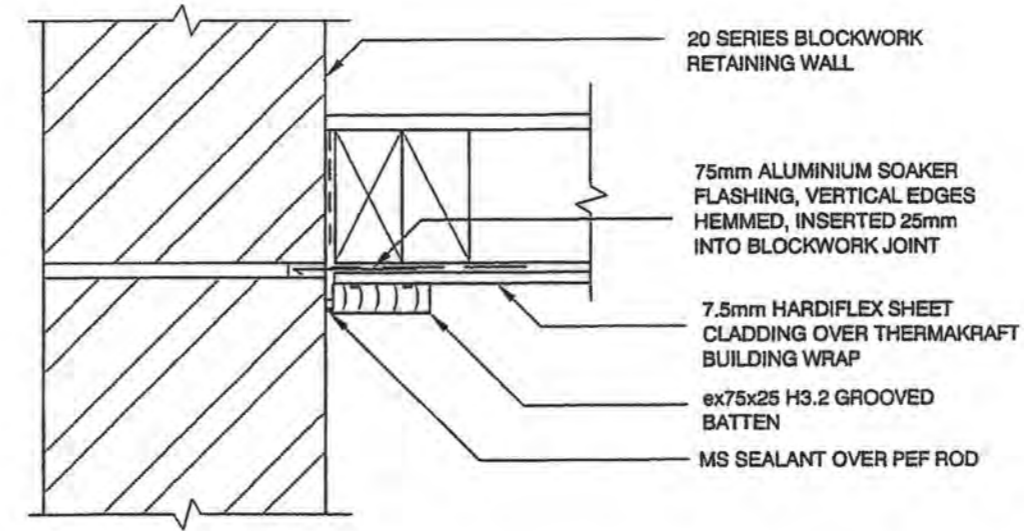
birdsmouth min seating 32mm

TYPICAL EAVES DETAIL 1
12
SCALE 1:10

TYPICAL BARGE DETAIL 2
12
SCALE 1:10



TYPICAL INTERNAL CORNER DETAIL 3
12
SCALE 1:5



BLOCKWORK INTERNAL CORNER DETAIL 4
13
SCALE 1:5

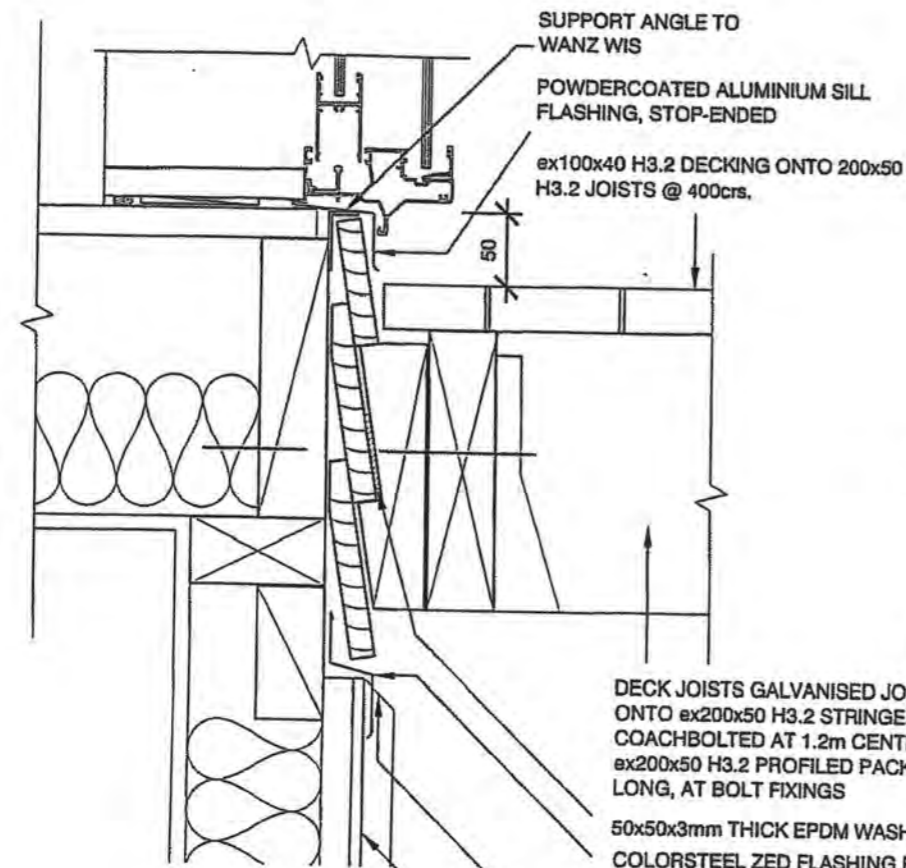
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

DETAILS

Scale 1:10; 1:5	Date SEPT 05	Job 3725	Rev. A	Sheet 16
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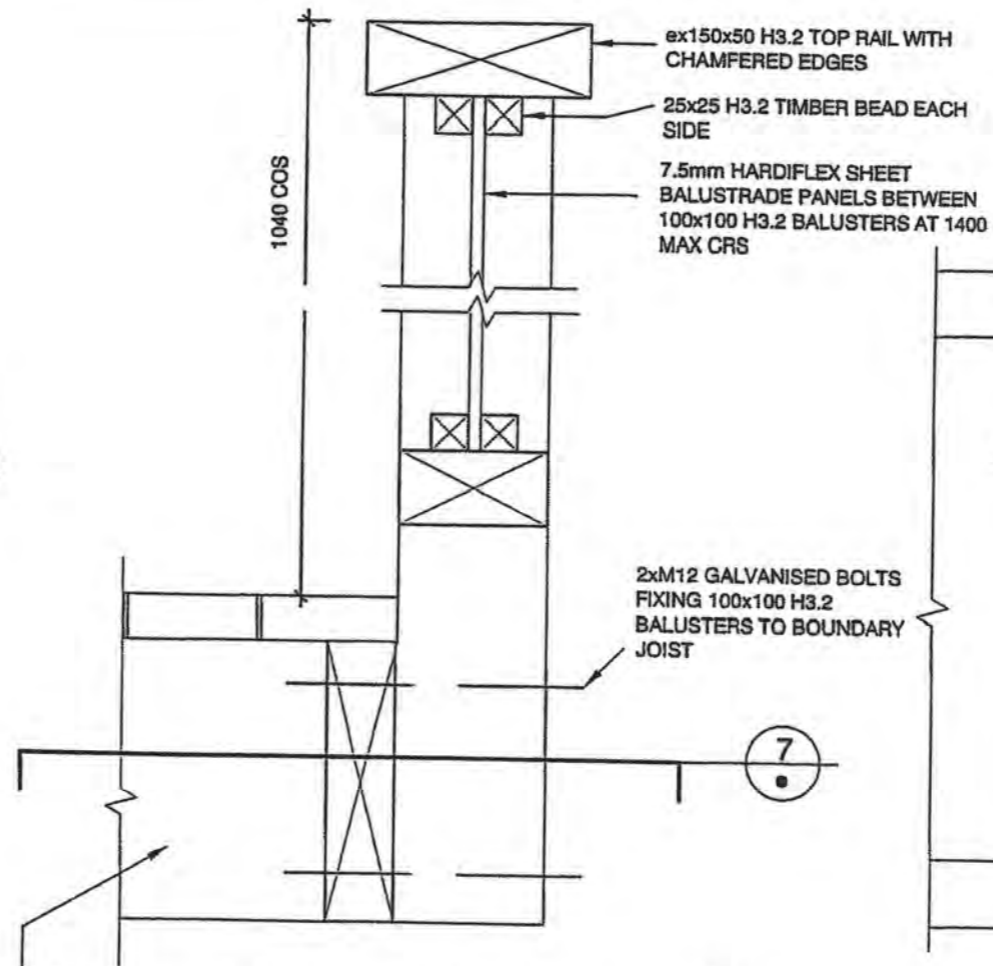
PDA PETER DAVIS
 architecture

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 P O Box 2066 Raumati Beach
 Kapiti Coast, New Zealand
 Fax 04 902 6675 Tel 04 902 2757
 Email info@pda.net.nz

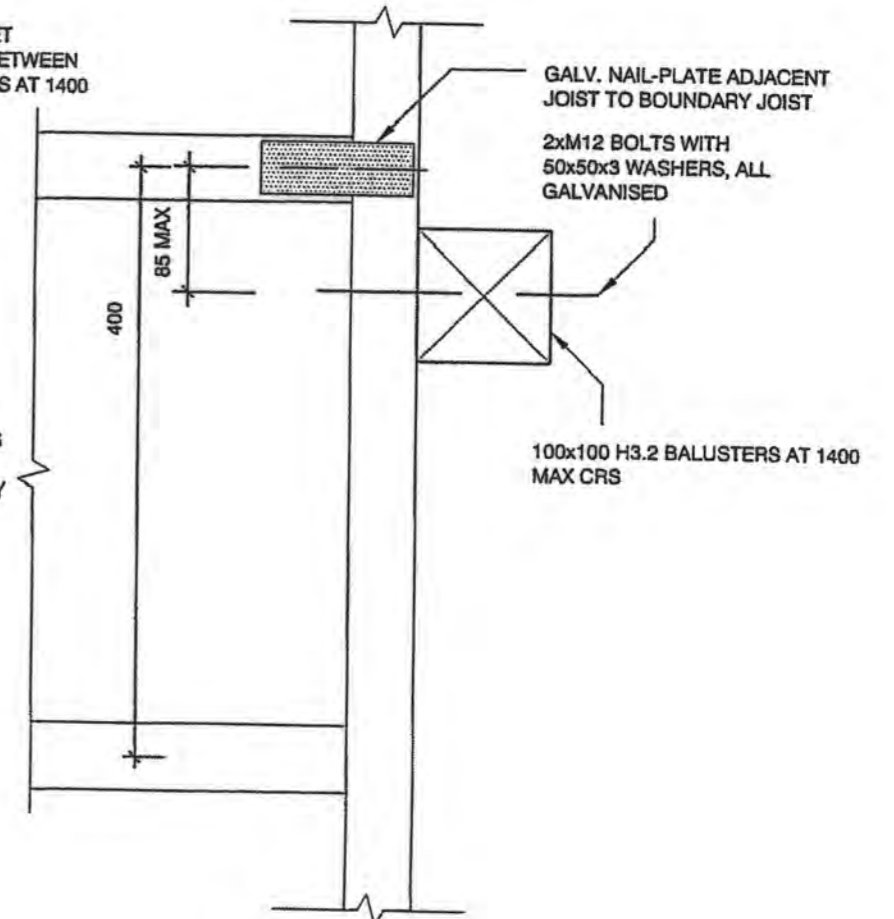


DECK DETAIL 5
12
SCALE 1:10

DECK JOISTS GALVANISED JOISTHUNG ONTO ex200x50 H3.2 STRINGER, 12mm COACHBOLTED AT 1.2m CENTRES TO ex200x50 H3.2 PROFILED PACKER, 150 MIN LONG, AT BOLT FIXINGS
 50x50x3mm THICK EPDM WASHER
 COLORSTEEL ZED FLASHING EXTENDING MIN 35mm BEHIND CLADDING AND OVER HARDIFLEX BELOW
 MS SILICONE SEAL GROOVES AT TOP OF ex75x25 H3.2 BATTEN
 7.5mm HARDIFLEX CLADDING ON CAVITY TO WALL FACES 4 AND 6 OF LOWER FLOOR. DIRECT FIX ELSEWHERE



BALUSTRADE DETAIL 6
12
SCALE 1:10

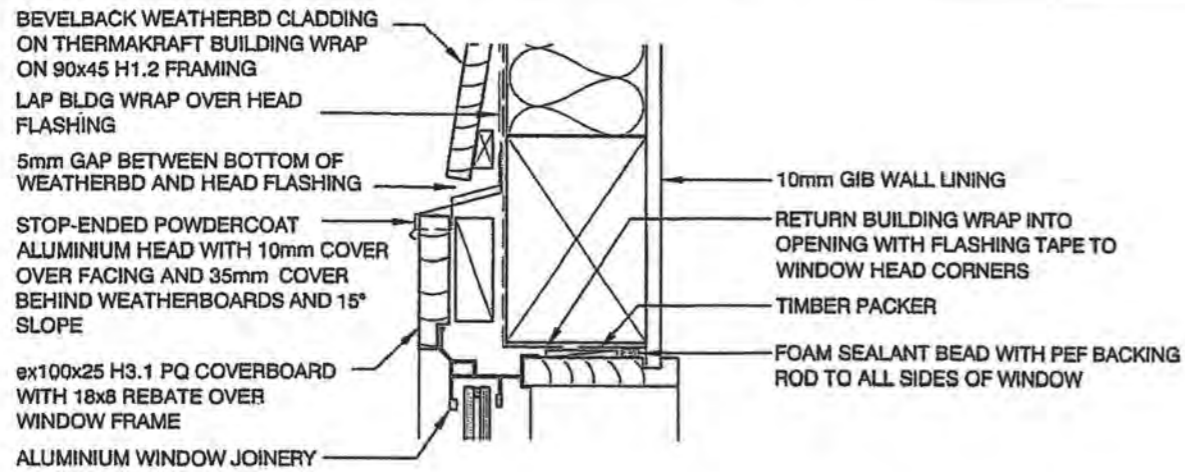


DETAIL 7
SCALE 1:5

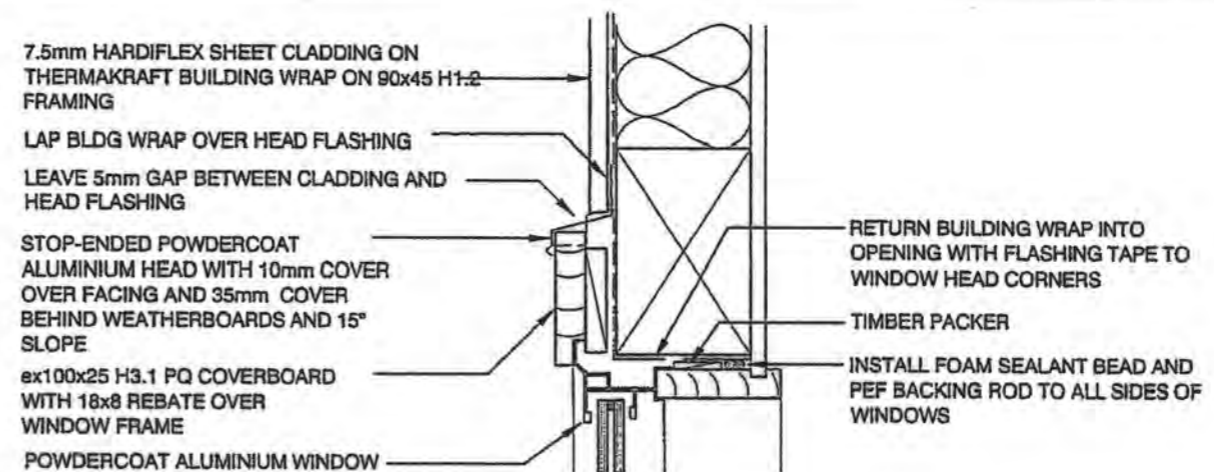
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

DETAILS				
Scale	Date	Job	Rev.	Sheet
1:5	SEPT 05	3725	A	17

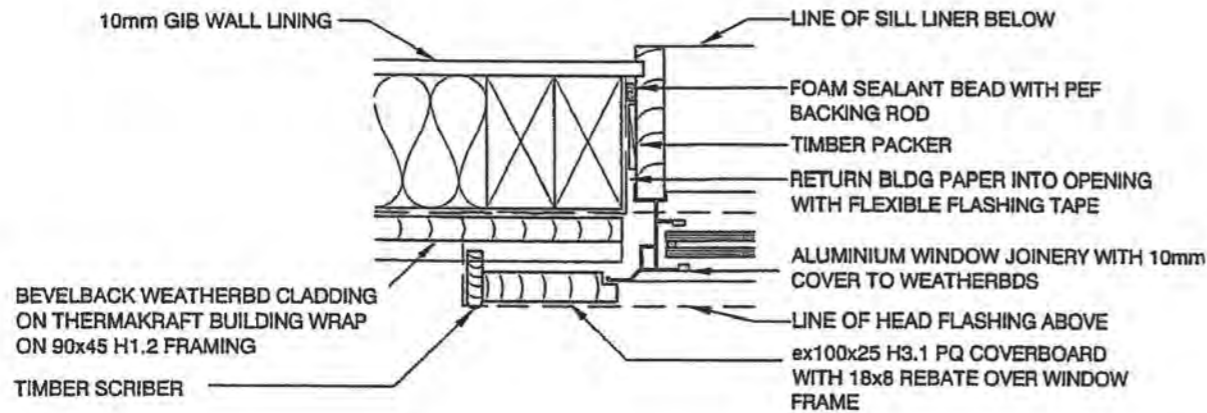
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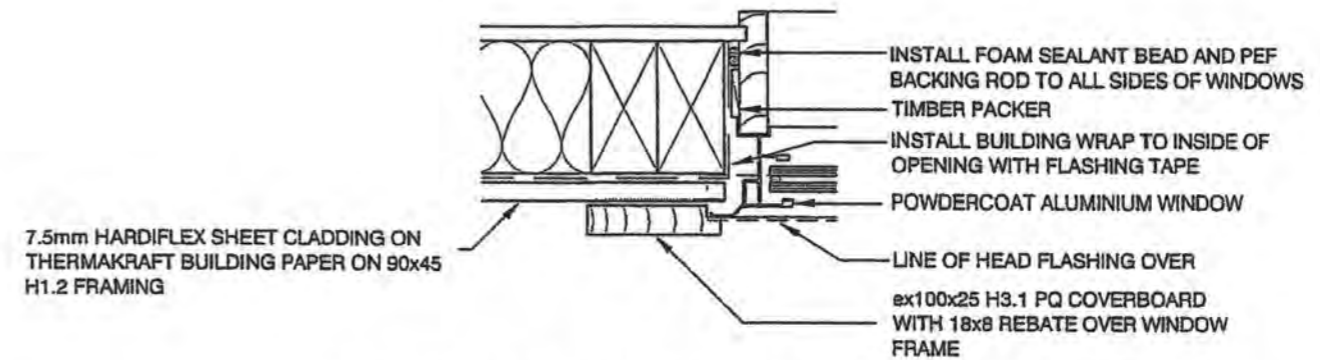
WEATHERBOARD / WINDOW HEAD DETAIL
SCALE 1:5



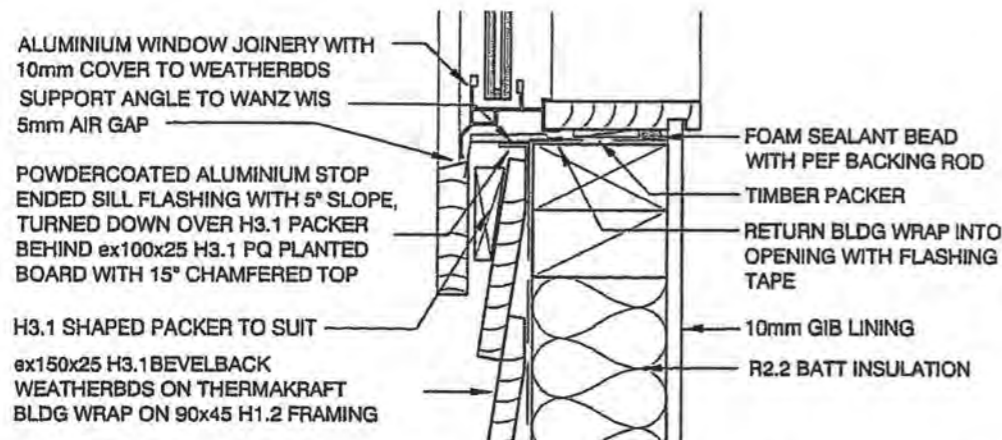
DIRECT FIX HARDIFLEX/WINDOW HEAD DETAIL
SCALE 1:5



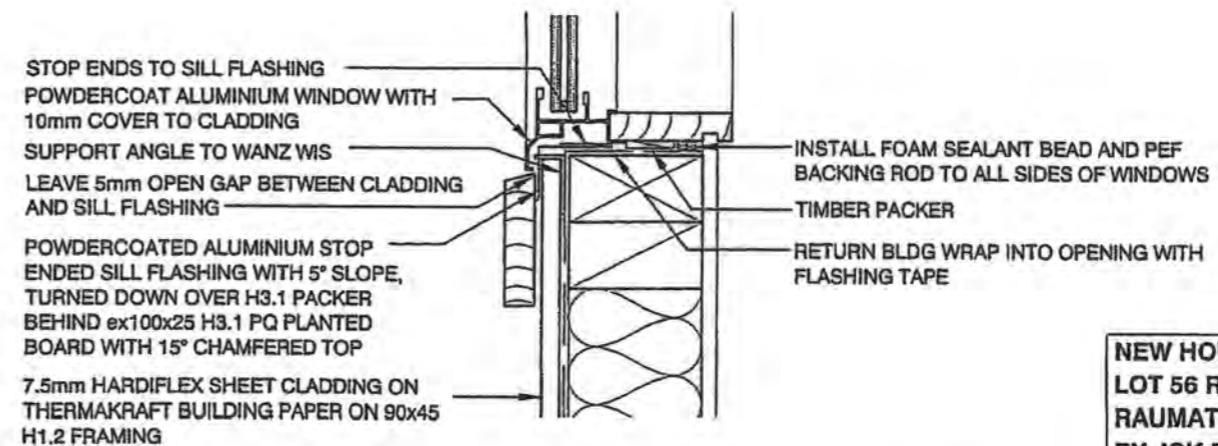
WEATHERBOARD/WINDOW JAMB DETAIL
SCALE 1:5



DIRECT FIX HARDIFLEX/WINDOW JAMB DETAIL
SCALE 1:5



WEATHERBOARD/WINDOW SILL DETAIL
SCALE 1:5



DIRECT FIX HARDIFLEX/WINDOW SILL DETAIL
SCALE 1:5

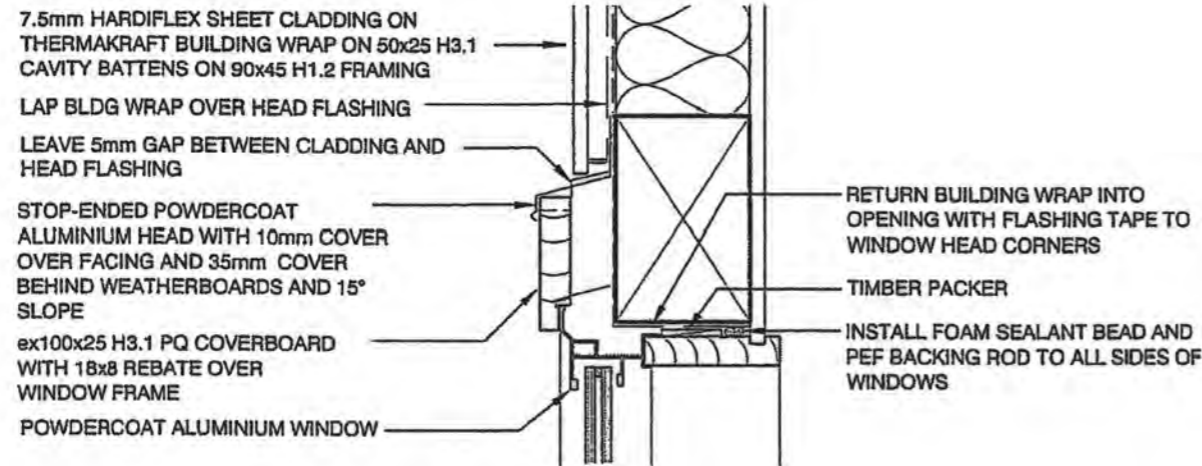
NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS

DETAILS

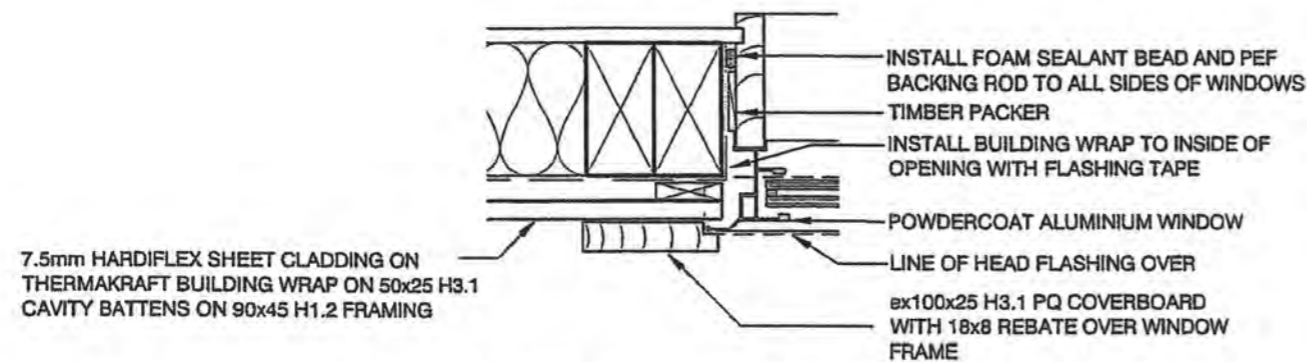
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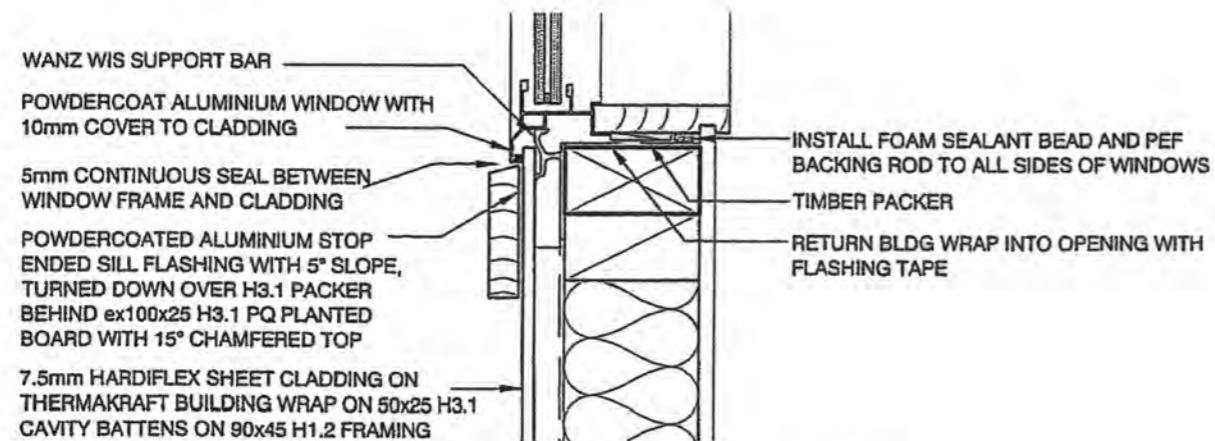
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CAVITY HARDIFLEX/WINDOW HEAD DETAIL
SCALE 1:5



CAVITY HARDIFLEX/WINDOW JAMB DETAIL
SCALE 1:5



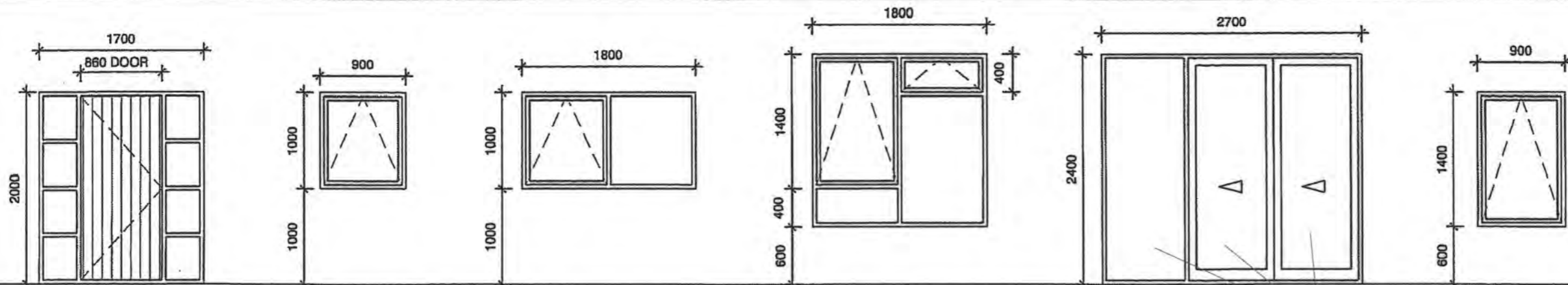
CAVITY HARDIFLEX/WINDOW SILL DETAIL
SCALE 1:5

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
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DETAILS				
Scale	Date	Job	Rev.	Sheet
1:5	SEPT 05	3725	A	19

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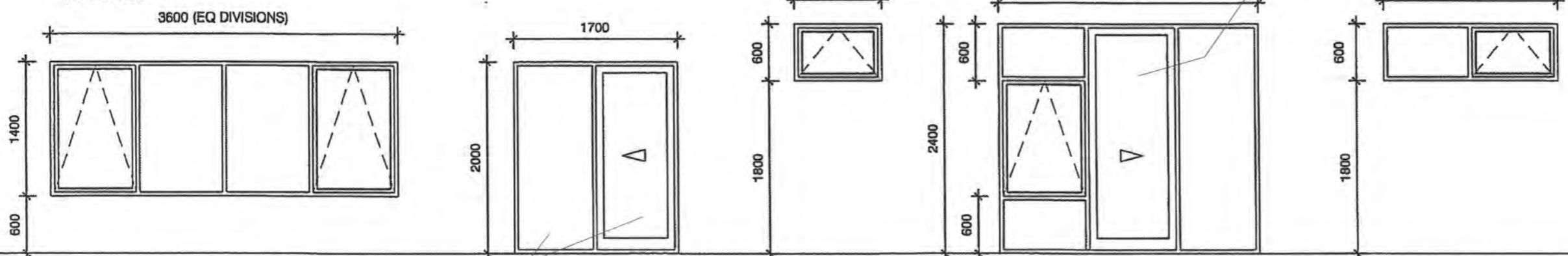


W01 W02 W03 W04 W05 W06

- TIMBER ENTRANCE DOOR TO ALUMINIUM FRAME
- LAMINATED SAFETY GLASS
SIDE-LIGHTS

DOUBLE SLIDER UNIT
LAMINATED SAFETY GLASS

Safety glass to NZS 4223 Pt3 (1999 revision)



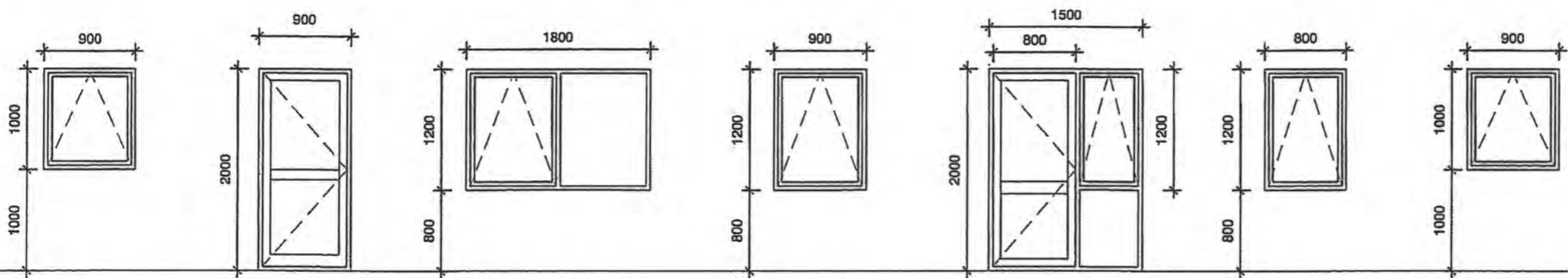
W07 W08 W09, W10 W11 W12, W15

RESTRICTOR STAYS TO SASHES

Safety glass to NZS 4223 Pt3 (1999 revision)

SLIDING DOOR UNIT
LAMINATED SAFETY GLASS

SLIDING DOOR UNIT
LAMINATED SAFETY GLASS TO SLIDERS



W13 W14 W16, W17, W21 W18 W19 W20 W22

OBSCURE SAFETY GLASS

OBSCURE SAFETY GLASS

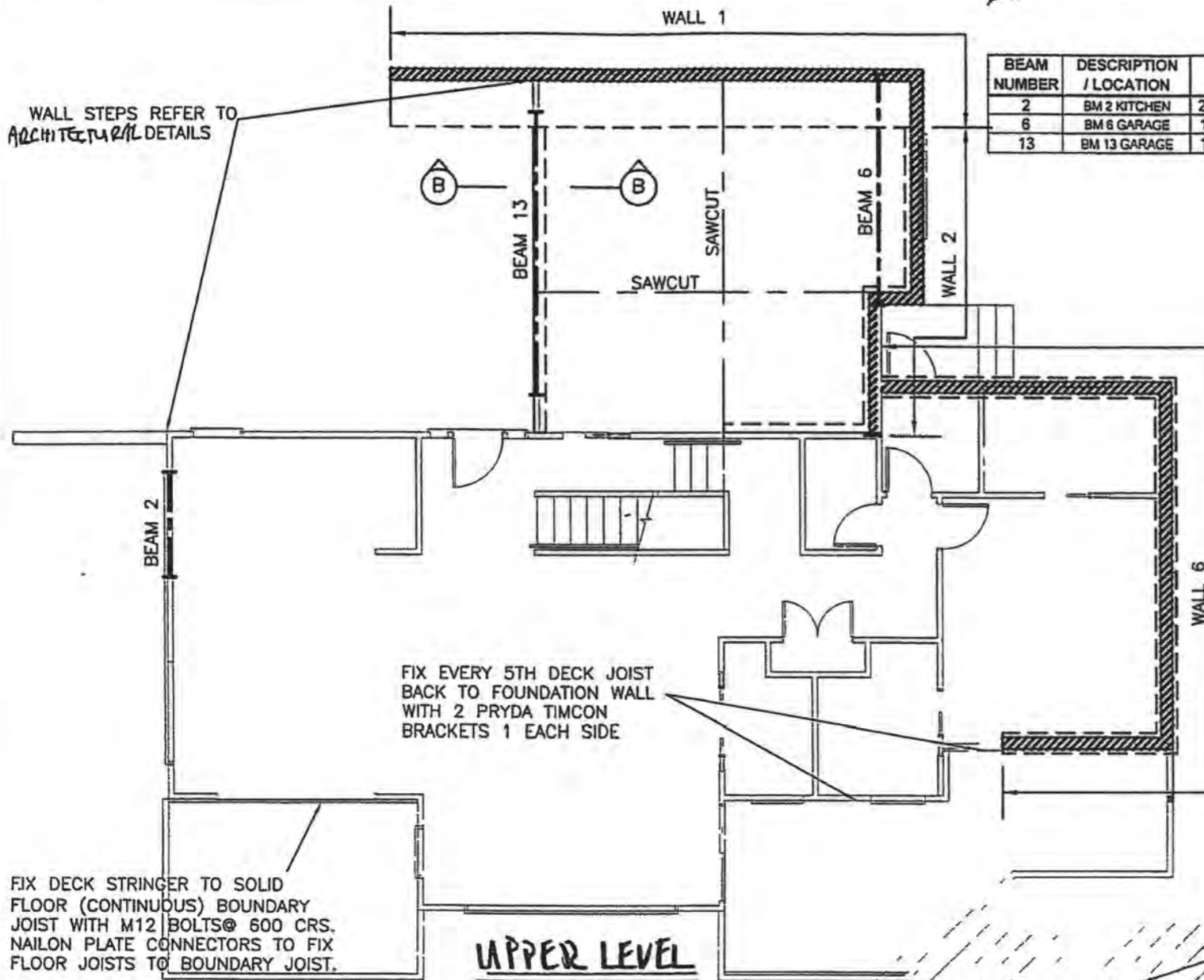
- NOTES:
- WINDOWS SHOWN AS VIEWED FROM EXTERIOR ALL POWDERCOAT ALUMINIUM FINISH
 - ALL UNITS DOUBLE GLAZED TO NZS4223
 - WINDOWS TO BE INSTALLED IN ACCORDANCE WITH WANZ WIS METHOD
 - REFER ALSO TO WINDOW DETAILS
 - JOINER TO CHECK OPENING SIZES ON SITE PRIOR TO MANUFACTURE
 - WINDOW SIZE TO BE 20mm SMALLER THAN WINDOW OPENING
 - ALLOW FOR BLACK DOUBLE TONGUE LATCHES TO EACH SASH

WINDOW AND DOOR SCHEDULE
SCALE 1:50

NEW HOUSE
LOT 56 RAUMATI ESTATE
RAUMATI
BY JCK DEVELOPMENTS
WINDOW SCHEDULE

Scale	Date	Job	Rev.	Sheet
1:50	SEPT 05	3725	A	20

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BEAM NUMBER	DESCRIPTION / LOCATION	BEAM TYPE	MAX. CLEAR SPAN (m)	BEAM END FIXINGS		NOTES	deflection D+0.4L
				END 1	END 2		
2	BM 2 KITCHEN	2- 180 x 45 VSG8	1.8	TO NZS 3604	TO NZS 3604	6 kN NAILSTRAP	2.3
6	BM 6 GARAGE	1- 300 x 90 HY90	3.8	TO NZS 3604	TO NZS 3604	12kN NAILSTRAPS	4.2
13	BM 13 GARAGE	1- 400 x 90 HY90	4.8	TO NZS 3604	TO NZS 3604	12kN NAILSTRAPS	7.2

NOTES:

FOUNDATIONS TO BE CONFIRMED ON SITE BY ENGINEER WHEN SUBGRADE IS EXPOSED. THERE IS EVIDENCE OF SOME FILL ON SITE AND PILES MAY BE REQUIRED.

(A) - ANCHOR PILE TO NZS3604:1999 AMENDMENT #4 REQUIREMENTS (900mm MIN DEPTH 350mmX350mm SQUARE WITH MAXIMUM HEIGHT ABOVE GROUND LEVEL 600mm TO FLOOR)

(1) - TIMBER PILE CAST INTO 350X350 SQUARE MINIMUM 600mm DEEP DETAIL AS PER NZS3604:1999 AMENDMENT #4; ENGINEER TO CONFIRM ON SITE DURING EXCAVATION.

(2) - TIMBER PILE CAST INTO CONCRETE FOOTING AS PER NZS3604:1999 AMENDMENT #4; FOR ANCHOR PILES OR BRACED PILE AS REQUIRED. (MINIMUM DEPTH TO BE 600mm BELOW GROUND LEVEL. ENGINEER TO CONFIRM ON SITE DURING EXCAVATION.

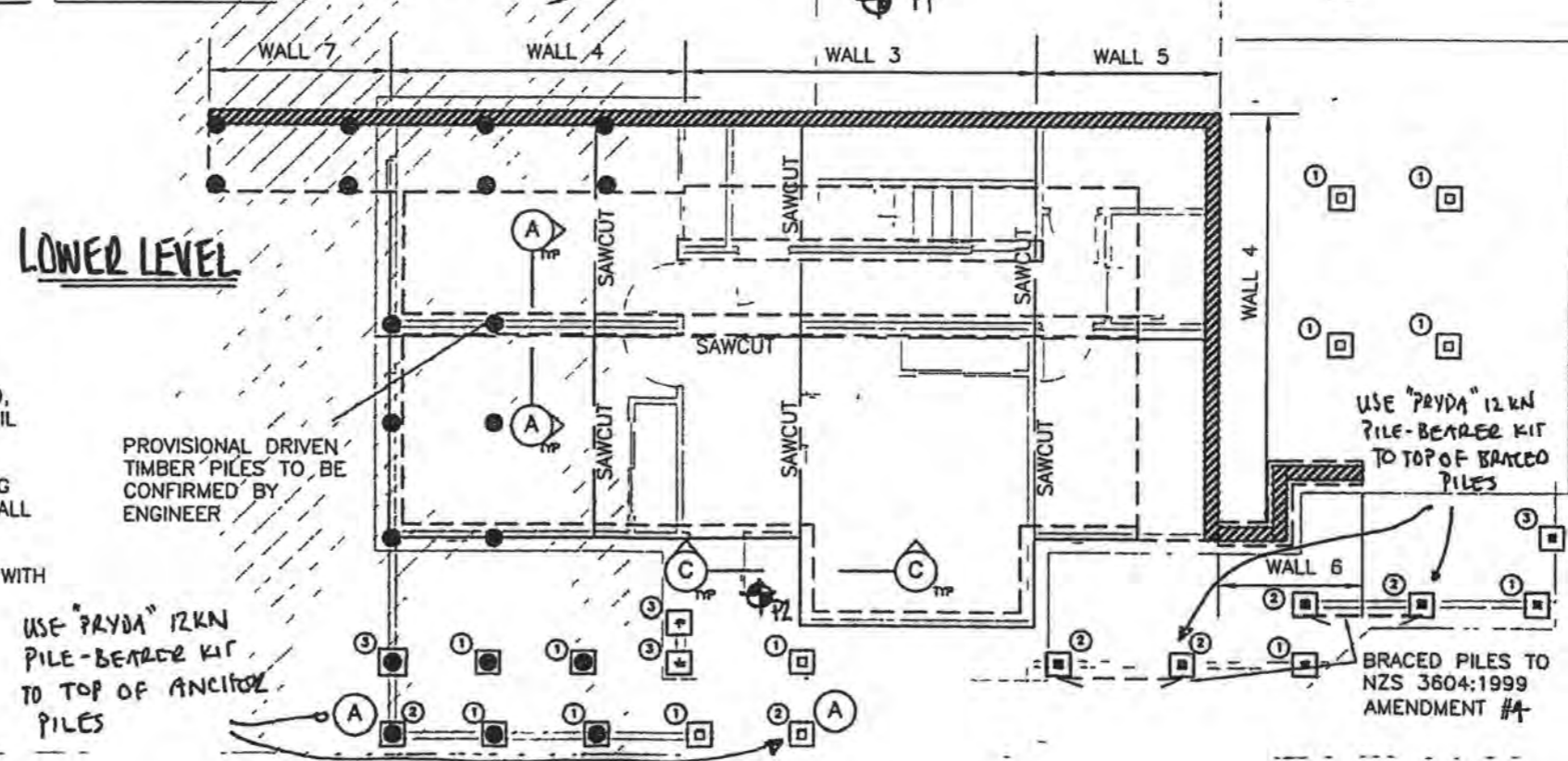
(3) - TIMBER PILE TO BRACKET (REFER ARCHITECTURAL DRAWINGS) WHICH IS CAST INTO CONCRETE FOOTING 500mmX500mm SQUARE AND 250mm DEEP WITH 2HD12 BARS EACH WAY IN FOOTING (75mm BOTTOM COVER). (MINIMUM DEPTH TO BE 600mm BELOW GROUND LEVEL. ENGINEER TO CONFIRM ON SITE DURING EXCAVATION.

- ALL BRACKETS & OTHER EXPOSED FIXINGS TO BE STAINLESS STEEL

POSSIBLE LOCATION OF FILL, EXTENT TO BE CONFIRMED BY ENGINEER. ALL OTHER FOUNDATIONS TO BE CONFIRMED ON SITE

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

- NOTES:
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NZS 3604:1999, AMENDMENT No. 1, THE NZBC AND THE KAPITI COAST DISTRICT COUNCIL BYLAWS.
 2. ALL DIMENSIONS SHALL BE CONFIRMED ON SITE PRIOR TO ORDERING MATERIALS, ALL VARIATIONS TO THE DIMENSIONS ON THE DRAWINGS SHALL BE REFERRED TO THE DESIGNER.
 3. ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION SPECIFICATION
 4. CONFIRM THE LOCATIONS OF ALL SERVICES WITH SERVICE OWNERS PRIOR TO THE START OF CONSTRUCTION.
 5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.



All Details Not Shown to NZS 3604:1999 Amendment No. 4

NOTE:- POLE WALL DESIGN BY OTHERS SPECIFIC DESIGN REQUIREMENT TO BE CONFIRMED

- WALL NOT TO EXCEED 1.5m IN HEIGHT & NO SURCHARGE TO TOP.
- MUST BE MIN 1.5m FROM ANY EXISTING RETAINING WALLS. ELSE ADVISE ENGINEER.

Rev	Date	By	Reason	Approval

Job Address: PROPOSED DWELLING LOT 56 RAUMATI ESTATE RAUMATI

Client Owner: JCK DEVELOPMENTS LTD

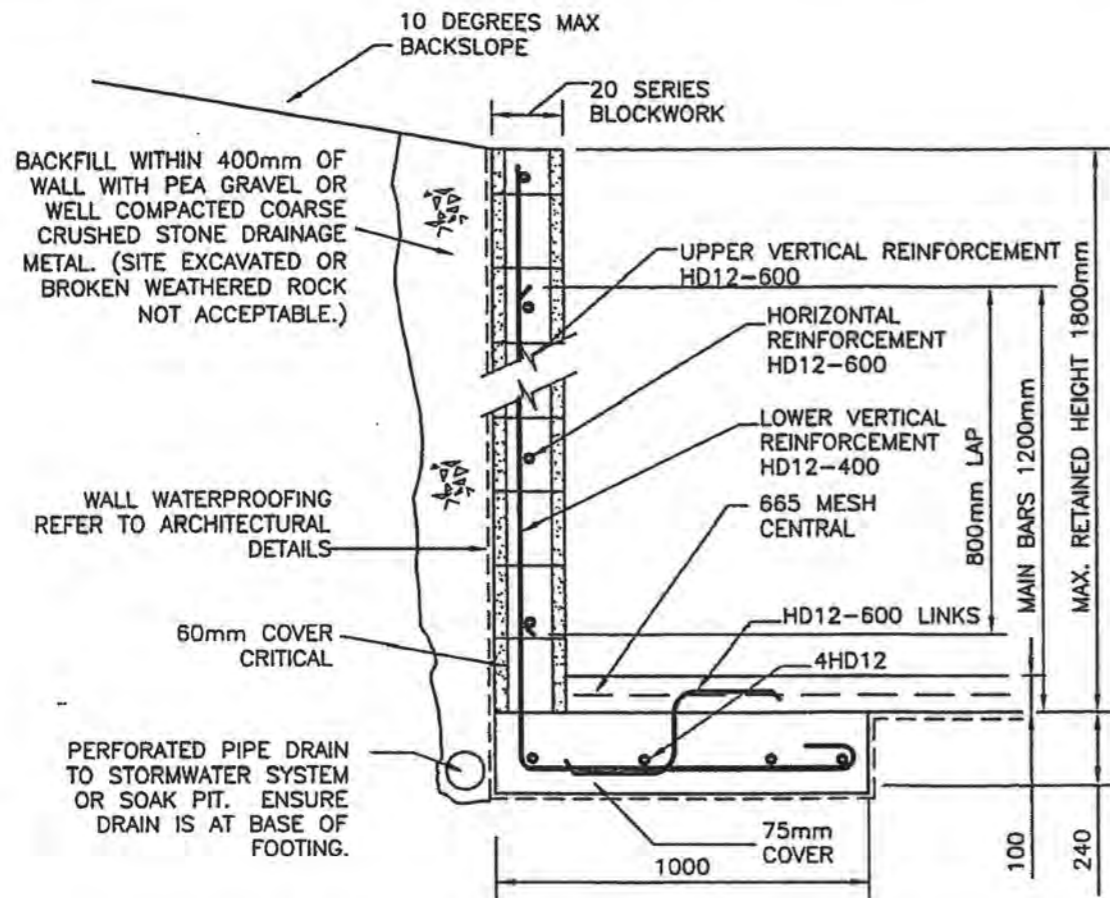
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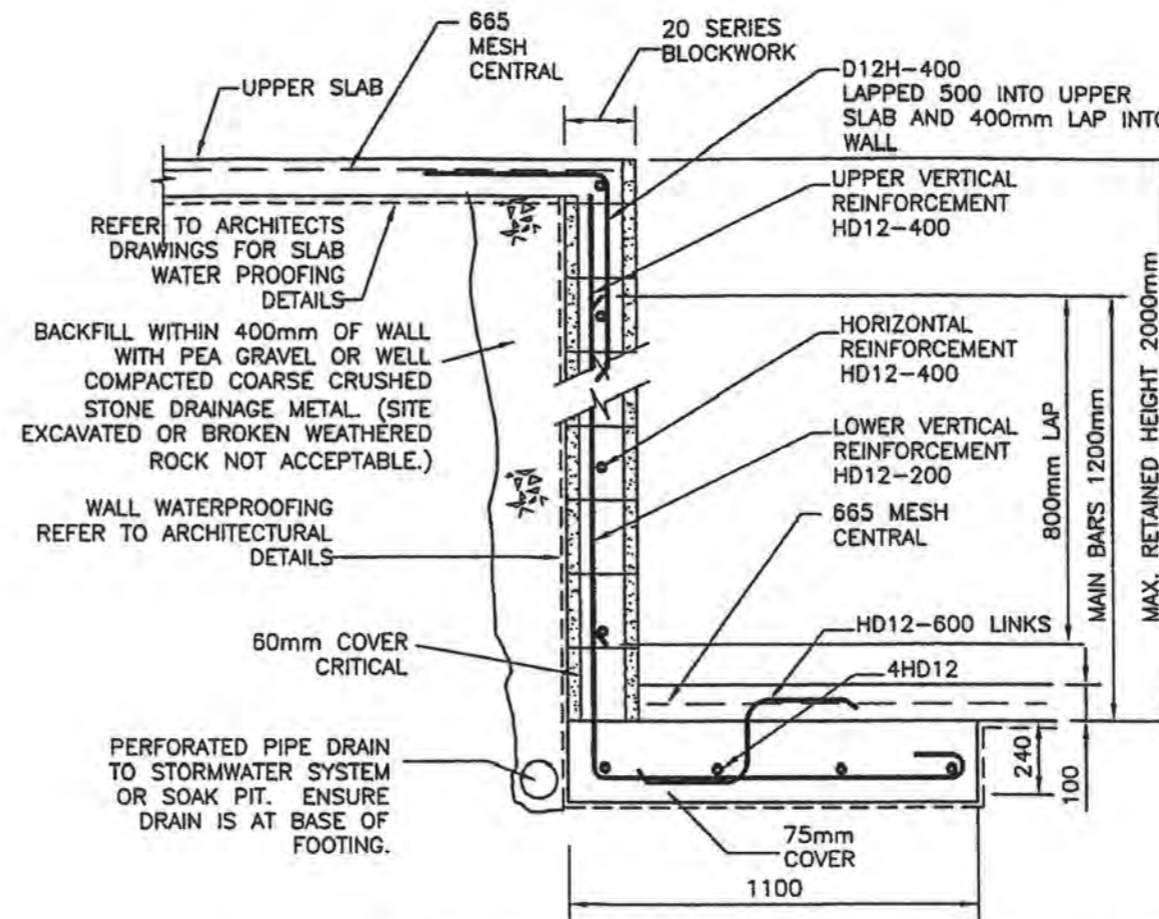
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Checked: R.G Taylor
Traced: AS SHOWN
Scale: 10/11/05
Date:

Sheet Title: BEAM LAYOUT AND BLOCK WALL LAYOUT

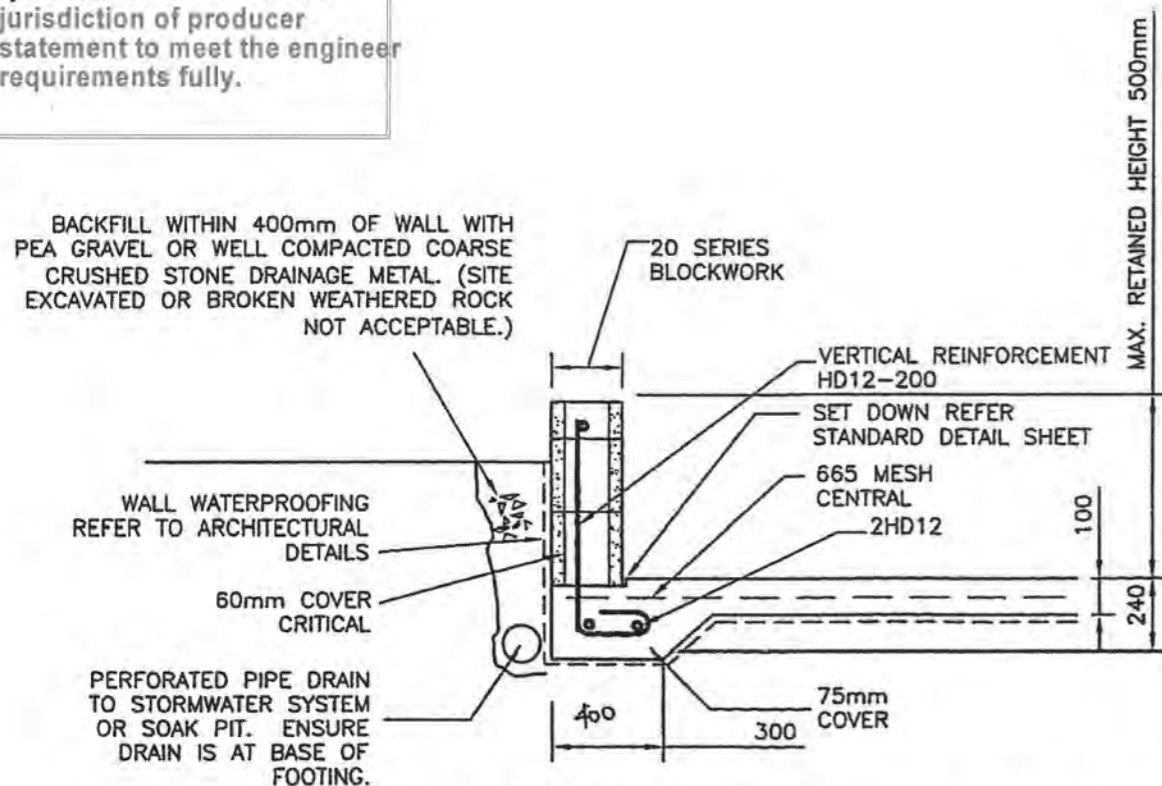


RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 1 WITH SLAB IN FRONT, TYPICAL SECTION

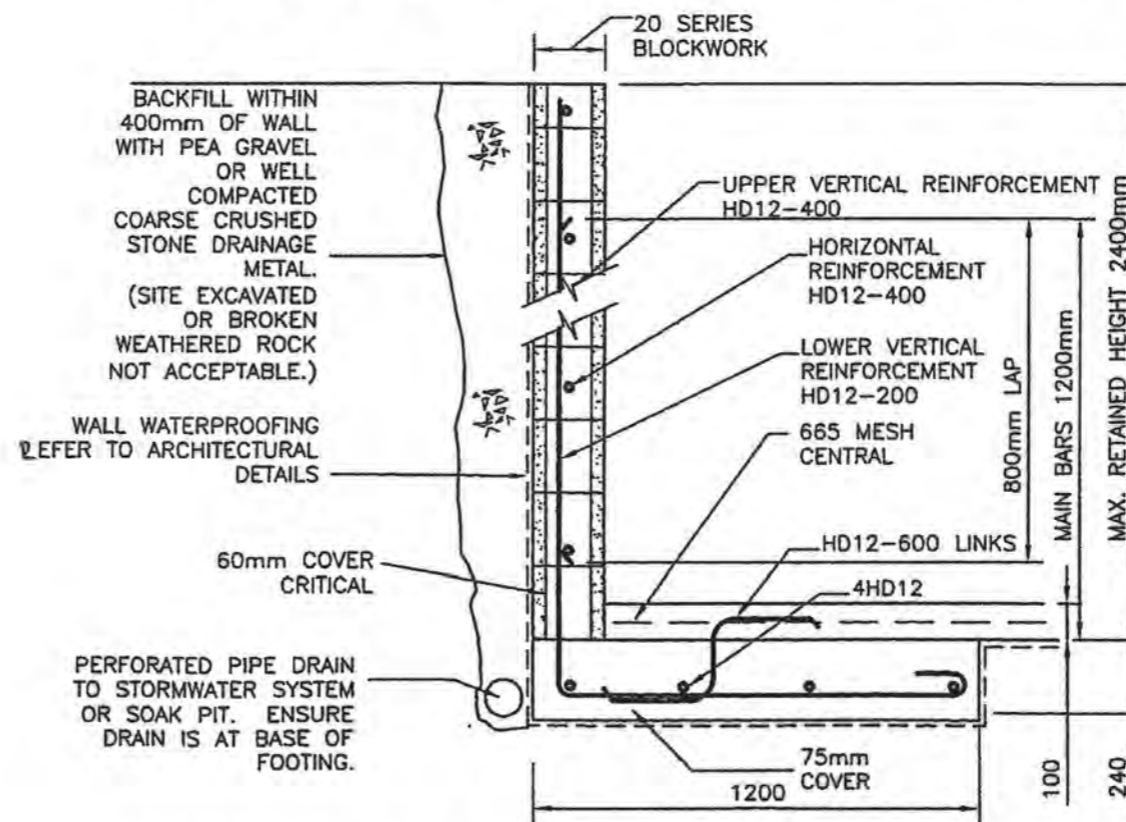


RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 3 WITH SLAB IN FRONT, TYPICAL SECTION

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.



RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 2 WITH SLAB IN FRONT, TYPICAL SECTION



RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 4 WITH SLAB IN FRONT, TYPICAL SECTION

All Details Not Show
to NZS 3604:1999
Amendment No. 4

SEE BLOCK WALL TYPICAL
SECTIONS SHEET 2 FOR
GENERAL NOTES

- PILES NOT SHOWN

Rev	Date	By	Reason	Approval

Job Address PROPOSED DWELLING
10 CHARLOTT WAY
RAUMATI ESTATE

Client Owner JCK DEVELOPMENTS LTD

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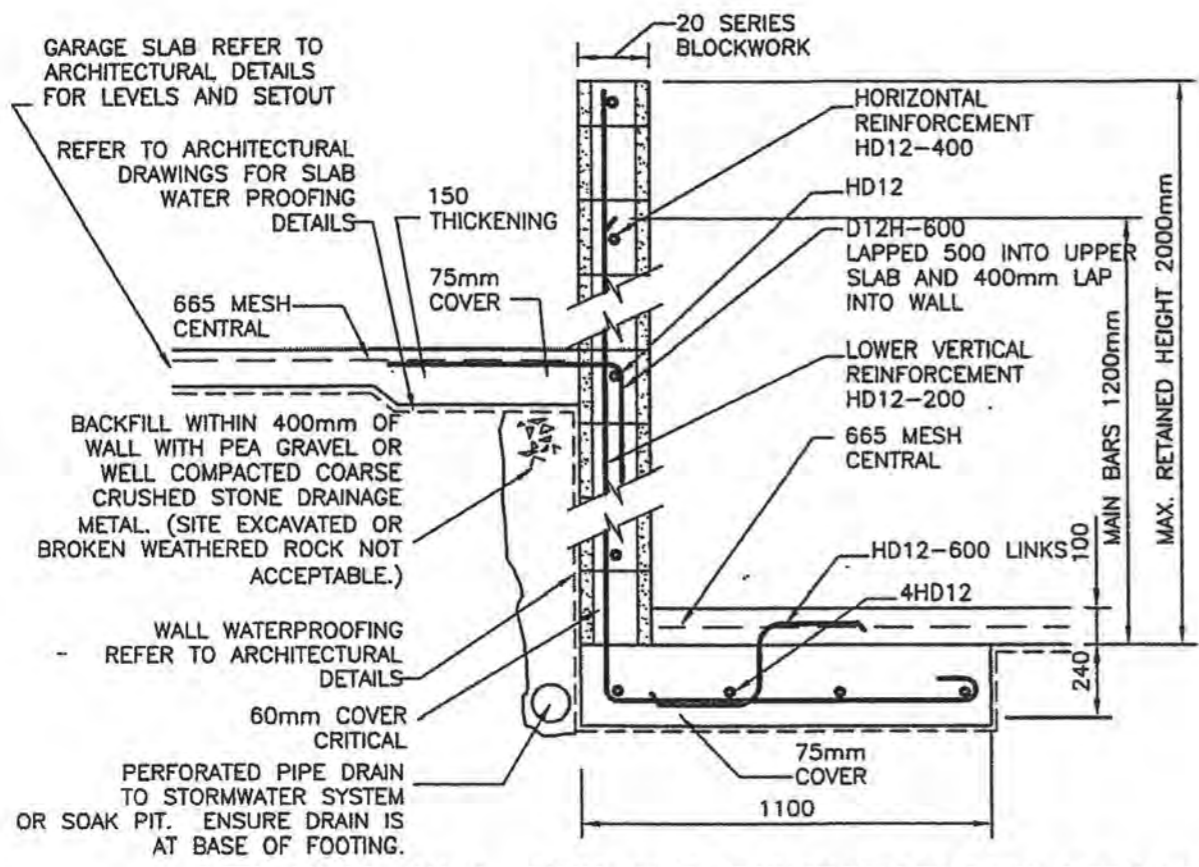
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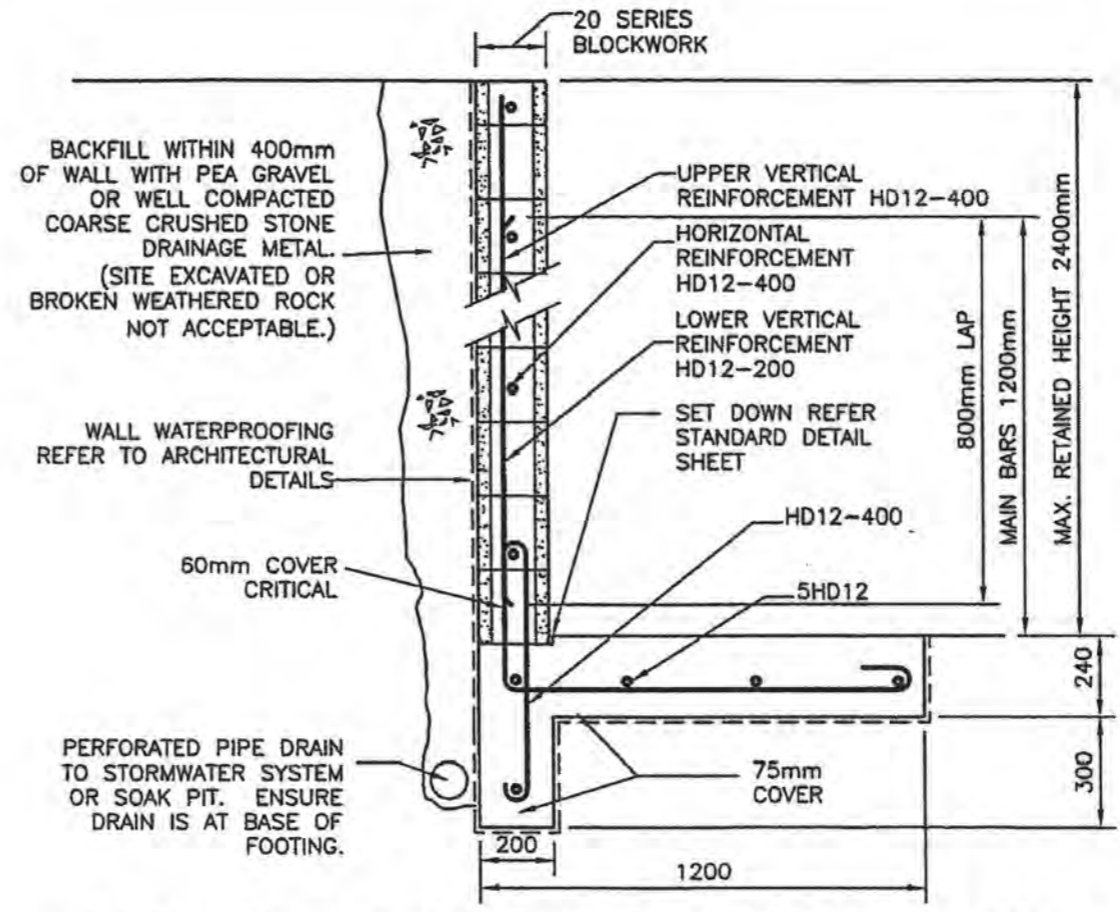
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Traced
Scale NTS
Date 16/11/05

Sheet Title
**BLOCK WALL
TYPICAL SECTIONS
SHEET 1**

Job No 6075 Sheet S 7 Rev A

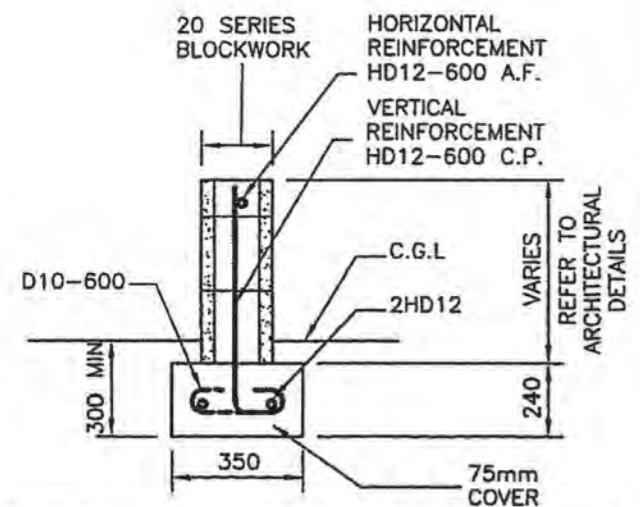


RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 5 WITH SLAB IN FRONT, TYPICAL SECTION



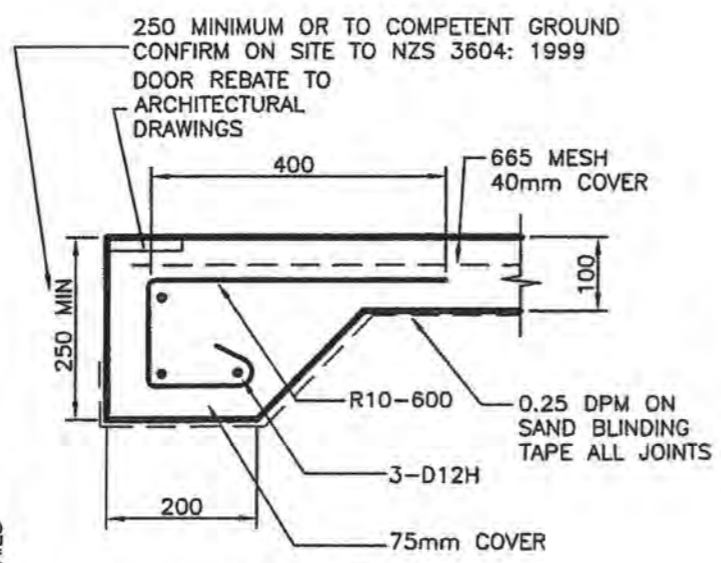
RETAINING WALL SIZE AND REINFORCEMENT DETAILS
WALL 7 WITH NO SLAB IN FRONT, TYPICAL SECTION

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

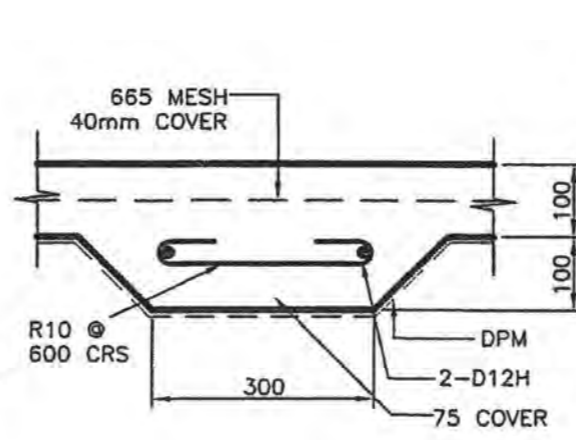


BLOCKWORK PERIMETER WALL 6,
TYPICAL SECTION

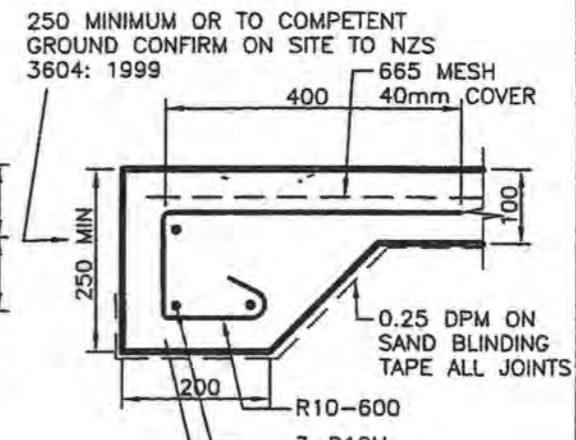
STEP DETAILS TO FIG 6.12 NZS 3604:1999 AMENDMENT #4



SECTION A



SECTION B



SECTION C

NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NZS 3604:1999, AMENDMENT No. 1, THE NZBC AND THE KAPITI COAST DISTRICT COUNCIL BYLAWS.
2. ALL DIMENSIONS SHALL BE CONFIRMED ON SITE PRIOR TO ORDERING MATERIALS, ALL VARIATIONS TO THE DIMENSIONS ON THE DRAWINGS SHALL BE REFERRED TO THE DESIGNER.
3. ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION SPECIFICATION
4. CONFIRM THE LOCATIONS OF ALL SERVICES WITH SERVICE OWNERS PRIOR TO THE START OF CONSTRUCTION.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.

All Details Not Shown to NZS 3604:1999 Amendment No. 4
- PILES NOT SHOWN

Rev	Date	By	Reason	Approval

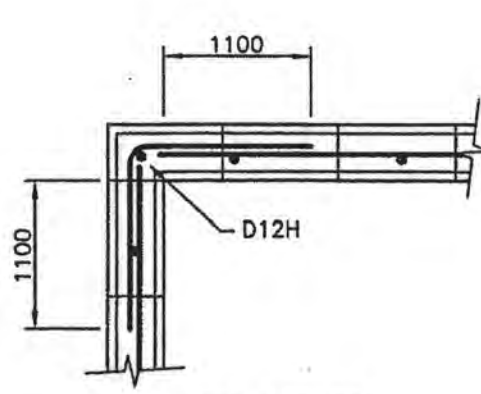
Job Address: PROPOSED DWELLING 10 CHARLOTT WAY RAUMATI ESTATE
Client Owner: JCK DEVELOPMENTS LTD

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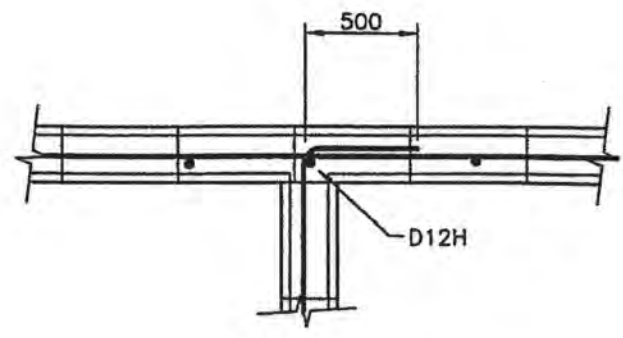
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Traced: NTS
Scale: NTS
Date: 16/11/05

Sheet Title: BLOCK WALL TYPICAL SECTIONS SHEET 2

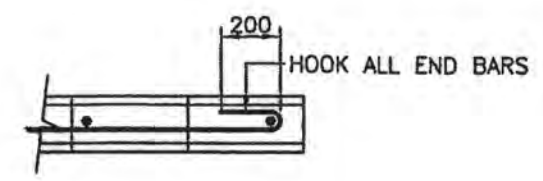
Job No: 6075
Sheet: S3
Rev: A



WALL CORNER

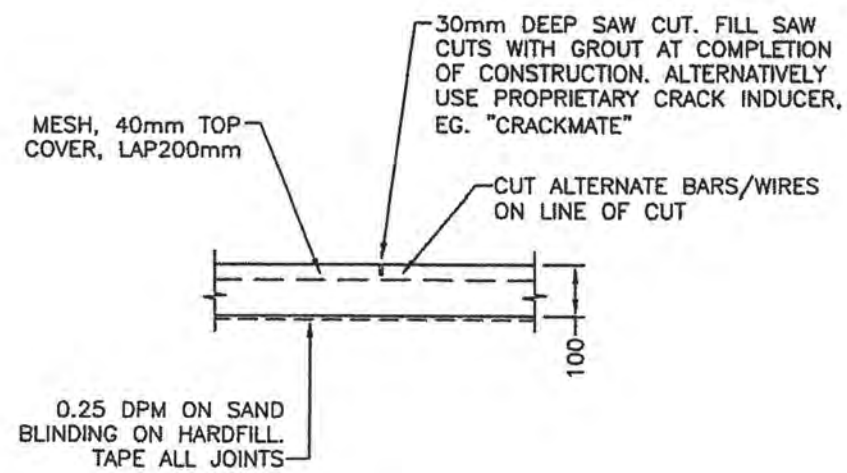


WALL JUNCTION

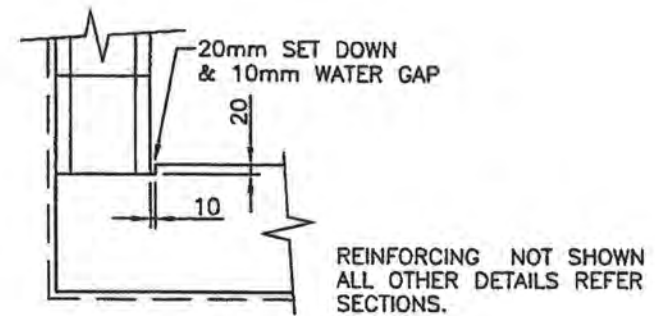


WALL END

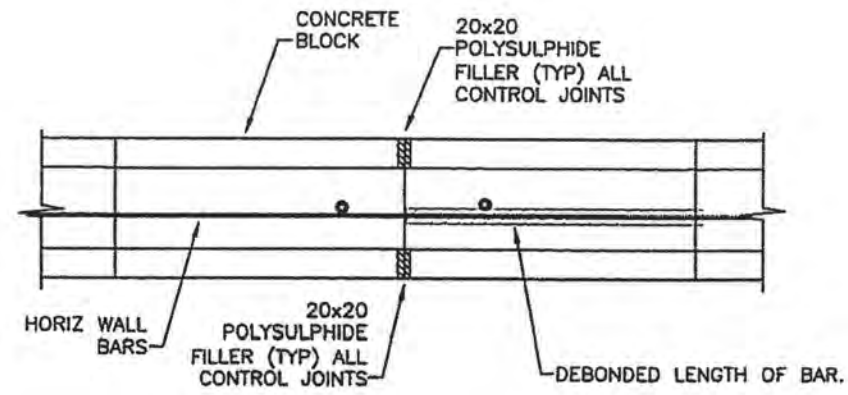
TYPICAL BLOCKWALL DETAILS



TYPICAL SAW CUT DETAIL



TYPICAL BLOCK WALL/FOOTING DETAIL



BLOCKWALL CONSTRUCTION JOINT

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

All Details Not Shown to NZS 3604:1999 Amendment No. 4

Rev	Date	By	Reason	Approval

Job PROPOSED DWELLING
 Job Address 10 CHARLOTT WAY RAUMATI ESTATE
 Client PETER DAVIS ARCHITECT
 Owner JCK DEVELOPMENTS LTD

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Sheet Title
BLOCKWALL AND FOUNDATION DETAILS

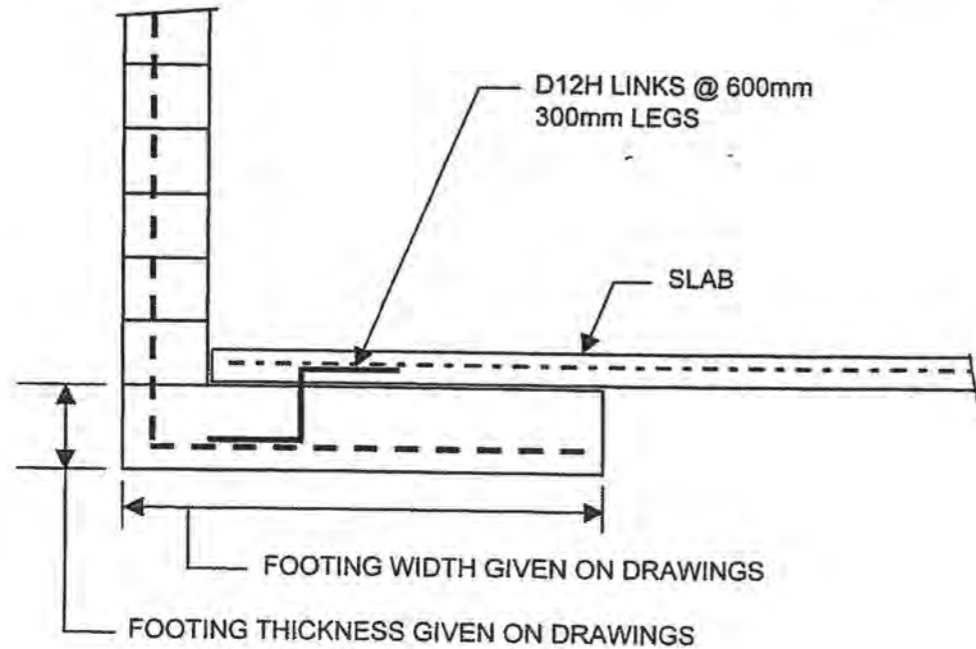
Job No 6075 Sheet S 4 Rev A

STANDARD BLOCK WALL NOTES AND DETAILS

- BUILDER SHOULD BE FAMILIAR WITH THE QUOTED PRODUCTS, MANUALS, DOCUMENTS AND STANDARDS
- READ THIS SHEET IN CONJUNCTION WITH THE WALL LAYOUT AND DETAIL DRAWINGS
- REFER ANY DISCREPANCIES OR ANOMALIES TO THE ENGINEER AS SOON AS POSSIBLE
- ALL DETAILS NOT SHOWN OR NOTED TO BE IN ACCORDANCE WITH NZS 3604:1999

ALTERNATIVE CONSTRUCTION

- 1 SLAB MAY BE PLACED SEPARATELY TO FOOTING PROVIDED:
 - FOOTING THICKNESS REMAINS AS DRAWN
 - LINK BARS ARE ADDED (may not be needed, refer to Engineer)
 - SLAB IS PLACED BEFORE BACKFILLING WALL (may not be needed, refer to Engineer)
 - 20mm REBATE MAY BE DELETED



- 2 POLYSTYRENE BLOCKS
POLYSTYRENE BLOCKS CAN USUALLY BE READILY SUBSTITUTED FOR CONCRETE BLOCKS WITH MINOR CHANGES; REFER TO ENGINEER FOR DESIGN CHANGE.

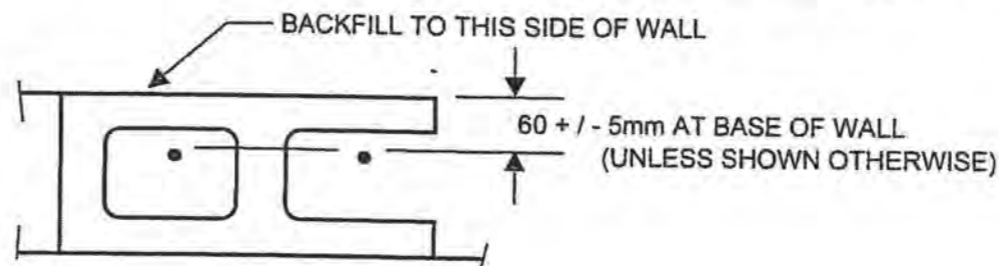
All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

SPECIFICATION

- 1 All concrete blockwork to be Grade B Masonry to NZS 4210:2001
- 2 Concrete blocks to be 200mm wide units unless shown otherwise.
- 3 Use open end bond beam units wherever practical.
- 4 All cells to be filled with 20 MPa grout to NZS 3109 unless shown otherwise.
- 5 All reinforcement (except mesh) to be High Tensile Grade 500 E deformed bars to AS/NZS 4671:2001; indicated "DxxH" on the drawings.



- This is the marking for Grade 500 bars to AS/NZS 4671:2001. Ensure all bars are marked and not interspersed with lower grade steel. Steel with other markings will only be accepted with Factory Certificates provided in advance.
- 6 The placing of vertical reinforcement in concrete block retaining walls is critical in achieving the required wall strength. Vertical bars shall be positioned with the specified cover to the outside of the "fill" face as shown. Placing tolerance shall be +/- 5mm at the base and +10mm up the wall, refer detail. Securely fix vertical starters to footing formwork to maintain correct position.



- 7 All concrete work shall be in accordance with NZS 3109.
- 8 Comply with Health and Safety in Employment Act 1992; the Building Code and Territorial Authority requirements.
- 9 Provide Clean-Out Ports at 600mm centres and thoroughly clean the construction joint of mortar droppings and other deleterious material. Place the bottom course of bond beam units upside down to facilitate cleaning out and flushing of debris. Leave ports open for inspection by the Engineer.
- 10 Provide full height movement control joints to blockwork at 6m maximum centres along walls. Do not cut horizontal bars, but pass continuously through control joint and wrap with a bond breaker tape for 400mm to one side of the joint.
- 11 Horizontal reinforcement in concrete block walls shall be D12H bars at maximum 600mm centres over the full height unless shown otherwise
- 12 All bars shall be continuous for the height or length of the wall unless shown otherwise.
- 13 D12H bars to have 1100mm laps unless shown otherwise.
D16H bars to have 1400mm laps unless shown otherwise.
- 14 All details not shown shall comply with NZS 3604.
- 15 The builder shall be responsible for the stability of all excavations during construction. Where bank cut dimensions are shown on the drawings these shall be strictly adhered to with a tolerance of 100mm.
- 16 All structural blockwork shall be carried out by a registered mason.
- 17 Builder/blocklayer to provide adequate safe access, such as ladders or staging, to allow Engineer to fully inspect walls and reinforcement. Failure to do this may incur additional costs for repeat visits.

All Details Not Shown to NZS 3604:1999

Rev	Date	By	Approval	Reason

Job Proposed Dwelling
Job Address Lot 56 Raumati Estate RAUMATI
Client Peter Davis Architectu
Owner JCK Developments Li

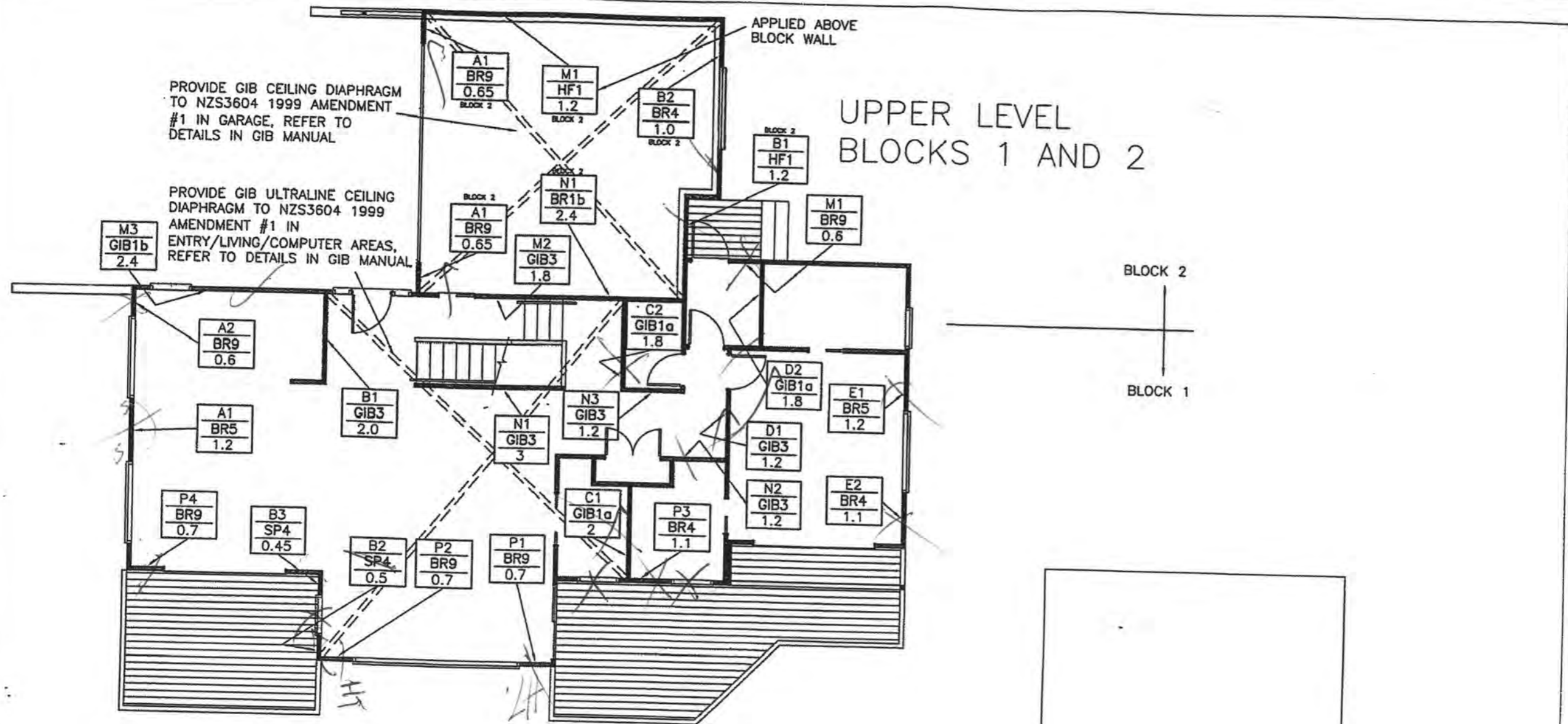
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Civil & Structural Engineers

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Checked: RG Taylor
Traced: -
Scale: -
Date: 16/11/2005

Sheet Title
STANDARD CONCRETE BLOCKWORK DETAILS AND NOTES

Job No 6075 Sheet S5 Rev A

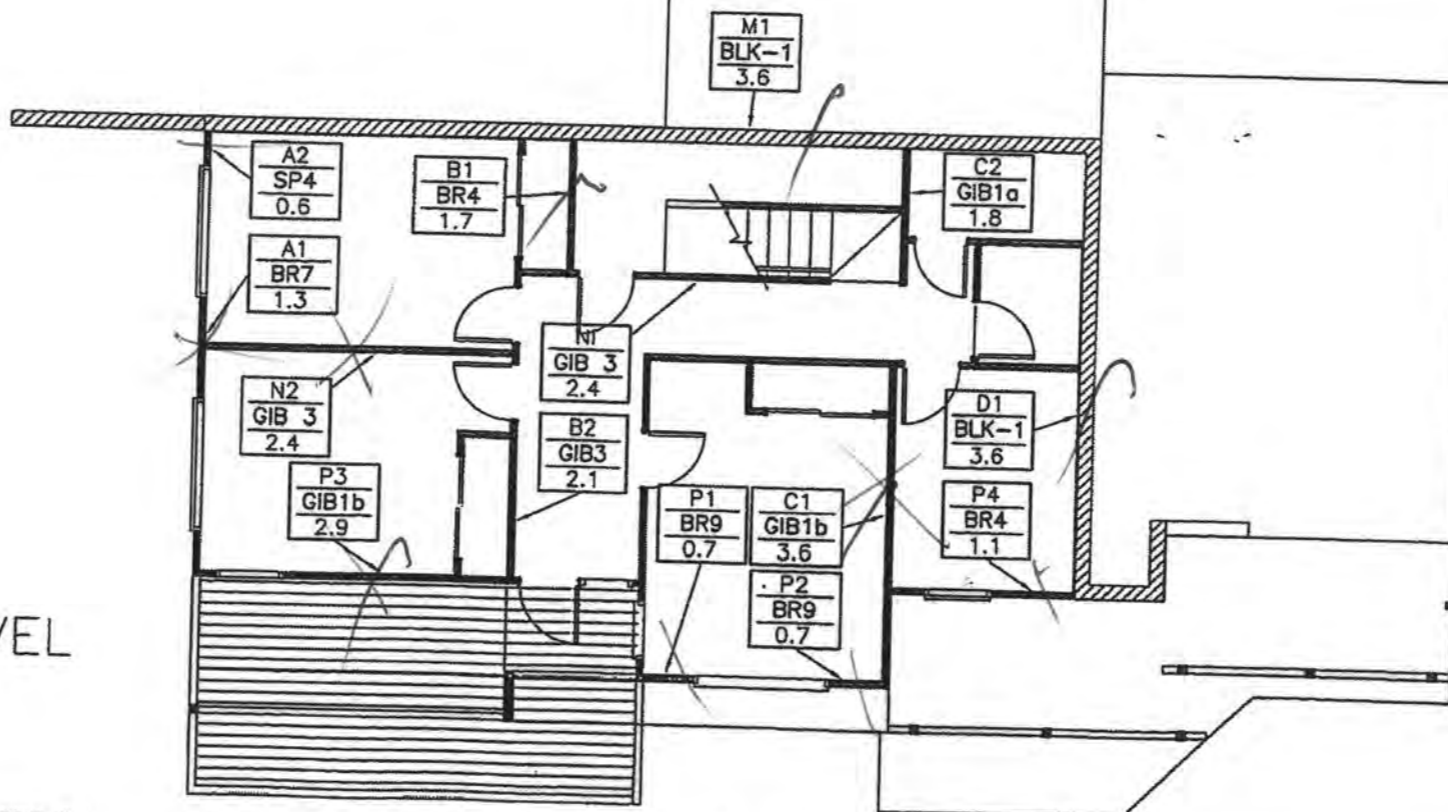


NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NZS 3604:1999, AMENDMENT No. 1, THE NZBC AND THE KAPITI COAST DISTRICT COUNCIL BYLAWS.
2. ALL DIMENSIONS SHALL BE CONFIRMED ON SITE PRIOR TO ORDERING MATERIALS, ALL VARIATIONS TO THE DIMENSIONS ON THE DRAWINGS SHALL BE REFERRED TO THE DESIGNER.
3. ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION SPECIFICATION
4. CONFIRM THE LOCATIONS OF ALL SERVICES WITH SERVICE OWNERS PRIOR TO THE START OF CONSTRUCTION.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

LOWER LEVEL
BLOCK 1



All Details Not Shown to NZS 3604:1999 Amendment No. 4

Rev	Date	By	Reason	Approval

Job PROPOSED DWELLING
 Job Address LOT 56 RAUMATI ESTATE RAUMATI
 Client JCK DEVELOPMENTS LTD
 Owner

ABUILD™
 Consulting Engineers Ltd
Structural and Civil Engineers

Member of the Association of Consulting Engineers NZ

Box 13 273 Johnsonville Wellington
 Phone (04) 478 3929
 Mobile (025) 491 857

Drawn MBI
 Checked R.G. Taylor
 Traced AS SHOWN
 Scale 10/11/05
 Date

Sheet Title
 BRACING SCHEDULE
 UPPER AND LOWER

These ratings apply to walls detailed in accordance with NZS 3604 and this leaflet. The hold-down value determines which details should be used. The 6kN hold-down is a dropped panel detail with no steel straps or a single strap at each end of the wall. The 12kN hold-down (Type D) is two straps at each end of the wall.

Wall Type	Minimum Wall Length (m)	Minimum Plywood Thickness (mm)	Nail* Spacing (mm)	Hold-down (kN)	Stud Spacing (mm)	Bracing Units/m	
						Wind	Earthquake
Ratings for plywood component only							
SP4	0.45	7	75	6	450	70	85
SP2	0.6	7	150	6	600	85	85
SP1	0.9	7	150	6	450 or 600	100	100
SPST1	1.2	7	150	-	600	90	80
SP6	0.9	12	150	6	450 or 600	115	110
SP8D	0.9	7	150	12	450	125	135
SP5D	1.2	7	75	12	600	130	135
SP10	1.8	7	75	6	450	135	135
Ratings for additional sheathing (Gib Board)							
SP2G	0.6	7	150	6	600	95	95
SP1G	0.9	7	150	6	450 or 600	100	100
SP11G	1.8	7	150	6	450 or 600	140	120
BR7**	0.9	7	150	6	450 or 600	145	145
SP6G	0.9	12	150	6	450 or 600	120	110
SP6GD	0.9	12	150	12	450 or 600	145	135

* Use these spacings at all sheet edges. Within the sheet, spacings may be double that specified.
** Braceline.

For 7mm plywood use 30mm x 2.5mm galvanised flathead nails.

For 12mm plywood use 50mm x 2.8mm or larger galvanised flathead nails.

For steel framing use SPST1 for plywood on light steel frames. Use button head self drilling, self tapping screws for Plybrace and standard plywood and counter sunk stainless steel self drilling, self tapping screws for cladding applications. Refer Carter Holt Harvey Plywood Technical Note "Plywood on steel frame" for more detail.

Table 1

Ratings for 2.4m high Plybrace wall bracing elements

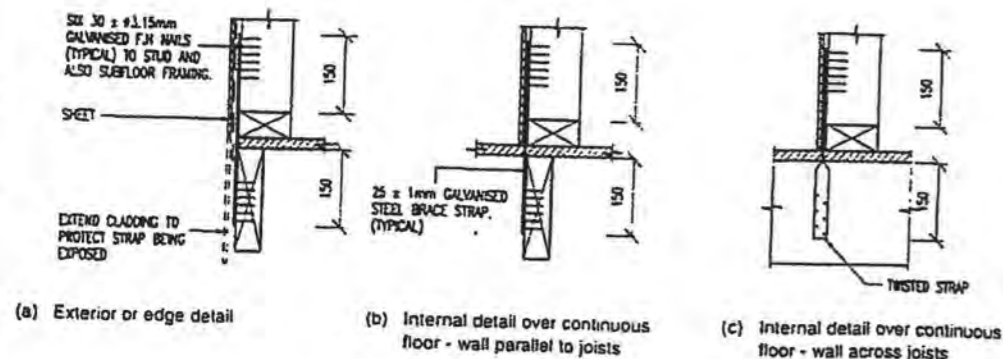


Figure 1

6kN strap fixings to each end stud of plywood sheet braces for timber ground floor and upper storey

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

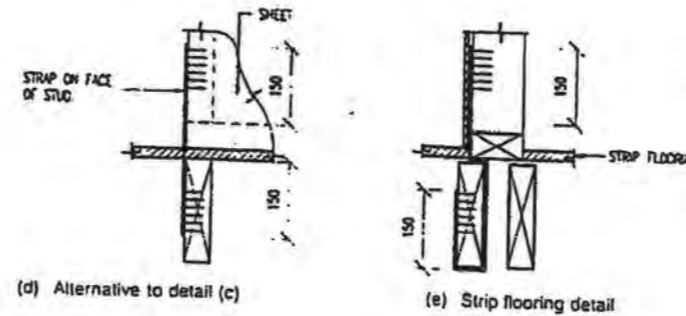


Figure 1

Continued

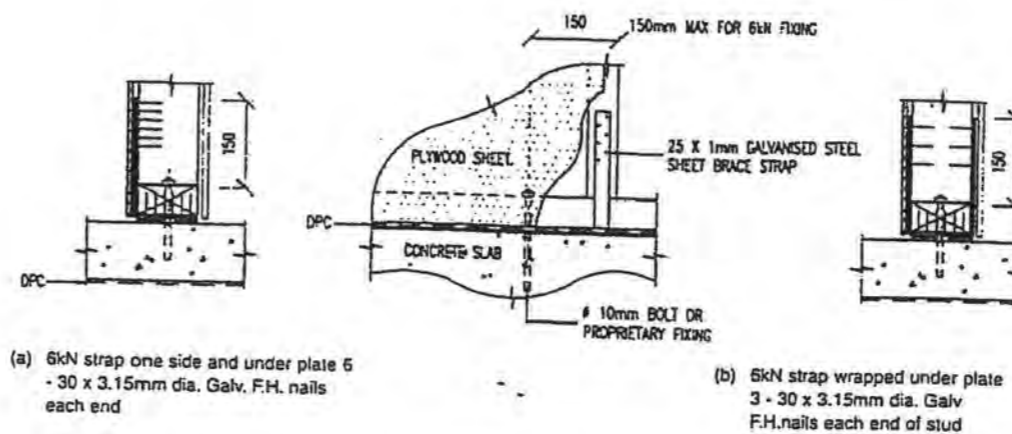


Figure 2

6kN strap fixings and capacities to each end stud of braced panels on concrete

Installation

Framing

Framing shall be in accordance with NZS 3604: 1990 or similar standard. Before placing the frame in position, check the hold-down requirements to enable positioning of any straps required. Refer Figure 5 for detailing of expansion gaps and framing alignment.

Hold-down details

6kN hold-down:

For 6kN hold-down; at each end of the wall, use either:

- A single 25mm x 1.0mm galvanised steel sheet brace strap with 6kN capacity. See:
 - Figure 1(a) to (e) for timber floors.
 - Figure 2(a) or (b) for concrete floors.
- Or the dropped panel detail, requiring no straps. See:
 - Figure 4(a) where the brace is in a veneer cavity or under cladding.
 - Figure 4(b) for cladding used as bracing.

FOR INFORMATION SEE CARTERS PLYBRACE MANUAL

Note

- Detail (a) can be replaced by a dropped panel fixing with no straps. See Figure 4.
- Straps may be recessed into framing where a smooth finish is required in linings over straps.

All Details Not Shown to NZS 3604:1999 Amendment No. 4

Rev	Date	By	Approval	Reason

Job	Proposed Dwelling
Job Address	Lot 56 Raumatī Estate RAUMATI
Client	Peter Davis Architecture
Owner	JCK Developments Limited

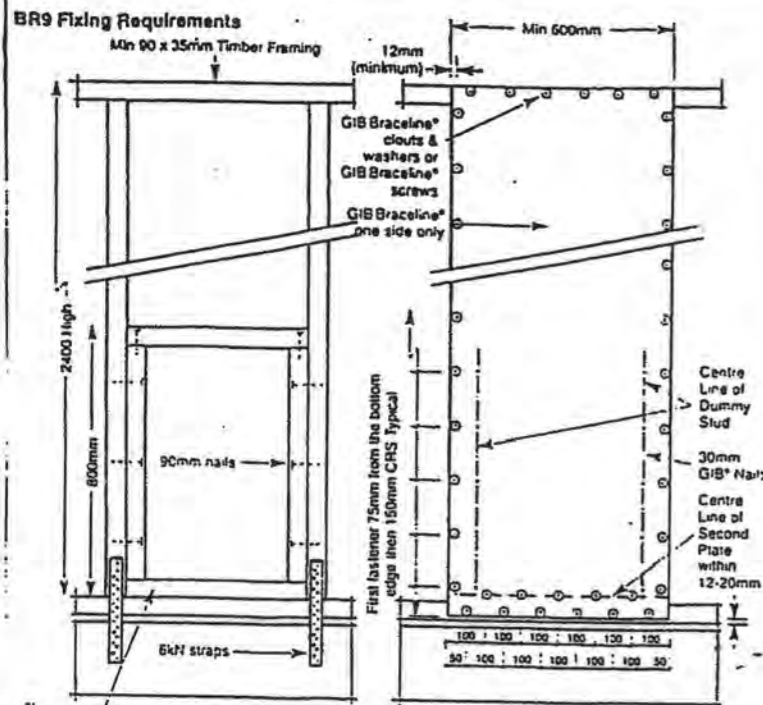
ABUILD™
Consulting Engineers Ltd
Civil & Structural Engineers
Box 13 273 Johnsonville Wgtn 3
Phone (04) 478 3929
Mob (025) 491 857

Drawn: MBI
Checked: RG Taylor
Traced: -
Scale: -
Date: 17-Nov-05

Sheet Title
PLY BRACE DETAILS

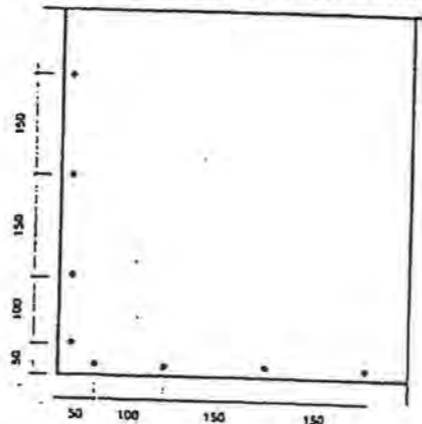
Job No 6075
Sheet S9

Rev A



Note: When fastening BR9 to a concrete slab, the 12mm bolt at each end of the element passes through both bottom plates.

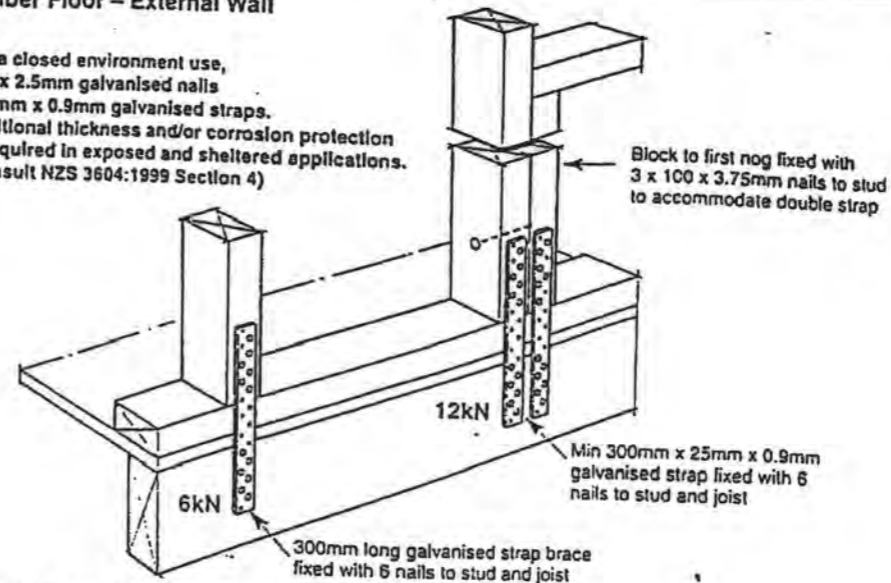
IMPORTANT
Corner Fastening Details
This pattern applies to ceiling diaphragms and to all wall bracing elements except BR9.



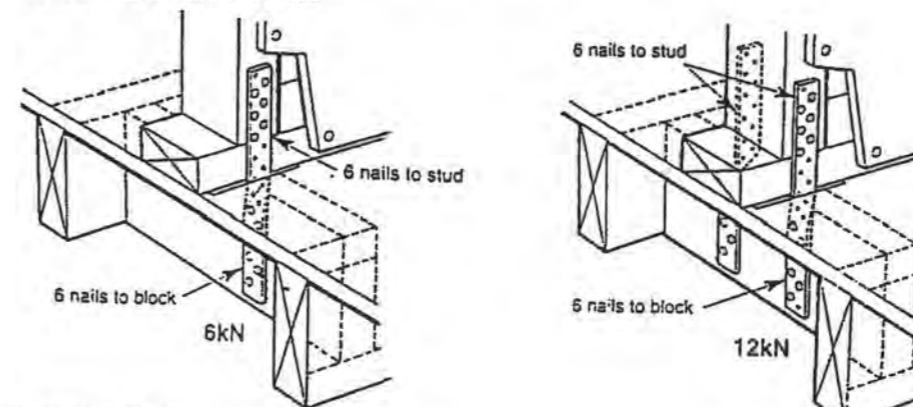
Hold-Down Straps

Timber Floor – External Wall

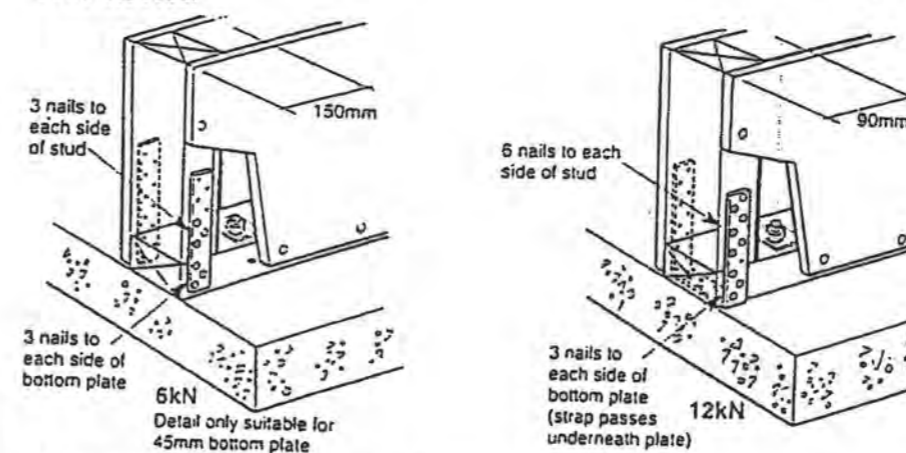
For a closed environment use,
• 30 x 2.5mm galvanised nails
• 25mm x 0.9mm galvanised straps.
Additional thickness and/or corrosion protection is required in exposed and sheltered applications.
(Consult NZS 3604:1999 Section 4)



Timber Floor – Internal Wall



Concrete Floor



6kN Connections – UL1, UL2, BR4, BR5, BR7, BR8 & BR9
12kN Connections – BR6



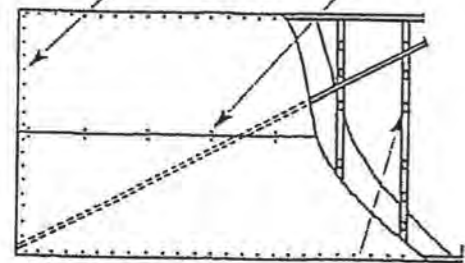
Fastener Layouts

32mm x 6g GIB® Grabber® screws or 30mm GIB® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or GIB® Nails where sheets cross studs

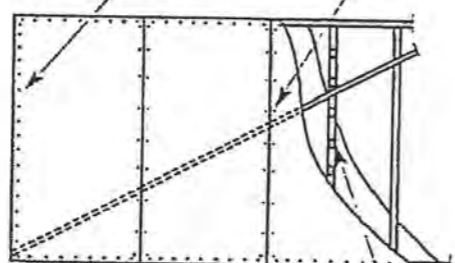
32mm x 6g GIB® Grabber® or 30mm GIB® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or GIB® Nails at 300mm centres



GIB® 1 (lined one side)
GIB® 2 (lined both sides)
(Horizontal Fixing)

Daubs of GIBFix® Wood Bond adhesive at 300mm centres to intermediate studs



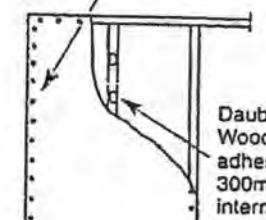
GIB® 1 (lined one side)
GIB® 2 (lined both sides)
(Vertical Fixing)

Daubs of GIBFix® Wood Bond adhesive at 300mm centres to intermediate studs

32mm GIB Braceline® screws or 30mm GIB Braceline® clouts and washers at 150mm centres to perimeter of braced element

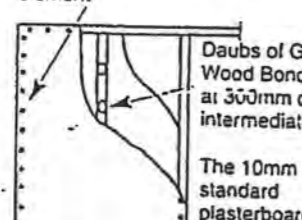
32mm GIB Braceline® screws or 30mm GIB Braceline® clouts and washers at 150mm centres to perimeter of braced element

32mm GIB Braceline® screws or 30mm GIB Braceline® clouts and washers at 150mm centres to perimeter of braced element



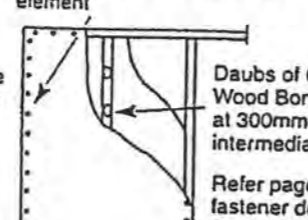
Daubs of GIBFix® Wood Bond adhesive at 300mm centres to intermediate studs

BR4 (lined one side)
BR5 (lined one side)



Daubs of GIBFix® Wood Bond adhesive at 300mm centres to intermediate studs

BR6 (lined both sides)



Daubs of GIBFix® Wood Bond adhesive at 300mm centres to intermediate studs

BR7 (lined both sides)
BR8 (lined both sides)

The 10mm GIB® standard plasterboard on the reverse face of BR6 is fastened as per system GIB1.

Refer page 12 re fastener details for Plywood (BR7) Hardboard (BR8)

Note: If the length of the braced element using systems BR4, BR5, BR6, BR7 and BR8 exceeds 1.2m, then the sheet edges within the element are secured with single screws or nails at 300mm centres.

INFORMATION PRESENTED ON THIS SHEET HAS BEEN COPIED FROM THE "GIB BRACING SYSTEMS" MANUAL FOR FURTHER INFORMATION REFER TO THE "GIB BRACING SYSTEMS" MANUAL

All Details Not Shown to NZS 3604:1999 Amendment No. 4

Rev	Date	By	Approval	Reason

Job	Proposed Dwelling
Job Address	Lot 56 Raumati Estate RAUMATI
Client	Peter Davis Architecture
Owner	JCK Developments Limited

ABUILD™
Consulting Engineers Ltd
Civil & Structural Engineers
Box 13 273 Johnsonville Wgtn 3
Phone (04) 478 3929
Mob (025) 491 857

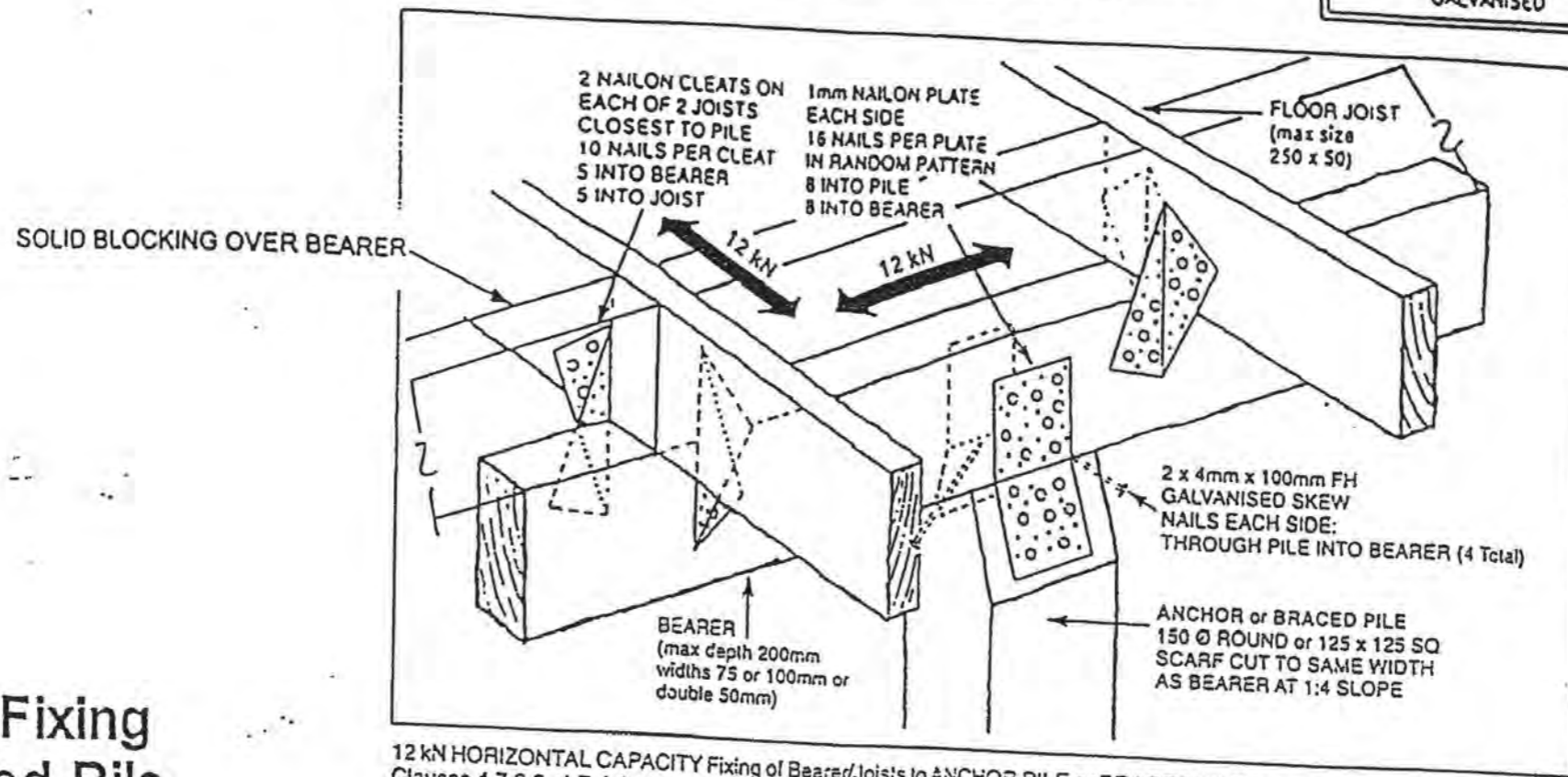
Drawn:	MBI
Checked:	RG Taylor
Traced:	-
Scale:	-
Date:	17-Nov-05

Sheet Title
BRACING SCHEDULE DETAILS

Job No	Sheet
6075	S10

12kN Pile-Bearer Kit

ALL STEEL & FASTENERS
TO BE HOT DIP
CALVANISED



12 kN HORIZONTAL CAPACITY Fixing of Bearer/Joists to ANCHOR PILE or BRACED PILE, in accordance with NZS 3604:1990
Clauses 4.7.2.3, 4.7.4.1 and 4.7.7.

12kN Capacity Fixing
of Anchor/Braced Pile
to Bearer and Joists

pryda[®]

TIMBER CONNECTORS

FEATURES

- Allows ANCHOR/BRACED Pile to be in line with and same height as other piles.
- Connection detail covers both Anchor and Braced Piles, with bearer sizes up to 200mm deep, joists up to 250mm deep.
- Design Capacity verified by extensive testing program carried out by Auckland Uniservices.
- All components supplied as one complete package.

INSTALLATION

As detail drawing above but subject to the following:-

1. On round pile bearer must be central. Bearer may be offset on square pile but must not overhang edge.
2. Nailon cleats fix to two joists closest to pile. At building corner where fixing to boundary joist is precluded fix cleats to next two closest joists along bearer.
3. At external wall where joists do not overhang bearer enough for cleats to be fixed on outside face, they may be fixed to inside face only of that bearer provided a similar detail is used on the other side of the floor system.
4. Joists must have lateral support (blocking or perimeter joist) within 300mm of bearer in accordance with NZS3604:1990 cl 5.1.2.1.
5. Braced Piles - connection is required at top of both piles to which each brace attaches.
6. All components must be protected after installation against wind-blown sea salt deposition by coating with 2mm thick grease, Selleys roof and gutter (silicone) sealant, or other approved coating.

DURABILITY

Complies with NZ Building Code - Clause B2 for structural component with 50 year durability, subject to conditions of use and regular inspection and maintenance as below. See Pryda Durability statement for more detailed information.

PBK12: Standard Kit (Nailon plates/Nails Hot Dip Galvanised, Cleats G250 Z600 galvanised steel coil) - Not suitable for use near coastal areas subjected to strong onshore winds, or geothermal areas. Lowest component must be minimum 300mm above ground. Recommended inspection and maintenance period 5 years when used near sheltered coastal areas, 10 years elsewhere.

PBK12H: High Corrosion Kit (Nailon plates Grade 304 Stainless Steel, Cleats G250 Z600 galvanised steel coil) - Not suitable within 200m of coast or geothermal areas. Cleats must be minimum of 300mm above ground. Inspect/maintain every 5 years in coastal areas, 15 years elsewhere.

PBK12S: Severe Corrosion Kit (All Grade 304 Stainless Steel Components) - suitable for Coastal Geothermal areas Inspect/maintain every 10 years in coastal areas, 25 years elsewhere.

SPECIFICATIONS

NAILON PLATES:

190 x 100 x 1mm (2 off).

CLEATS:

150 x 63 x 1mm diagonally folded (2 LH and 2 RH).

NAILS:

45 x 3.4 Flat Head Square Twist (72 off) 100 x 4.0 Flat Head (4 off).

All Details Not Shown
to NZS 3604:1999
Amendment No. 4

Rev	Date	By	Approval	Reason

Job	Proposed Dwelling
Job Address	Lot 56 Raumati Estate RAUMATI
Client	Peter Davis Architecture
Owner	JCK Developments Limited

ABUILD™ Consulting Engineers Ltd

Civil & Structural Engineers

Box 13 273 Johnsonville Wgtn 3

Phone (04) 478 3929

Mob (025) 491 857

Drawn:	MBI
Checked:	RG Taylor
Traced:	-
Scale:	-
Date:	17-Nov-05

Sheet Title

"PRYDA" 12 KN
PILE - BEARER KIT

Job No	Sheet	Rev
6075	S11	A

ASSOCIATION
CONSULTING
ENGINEERS OF
NEW ZEALAND

NEW ZEALAND
INSTITUTE
OF ARCHITECTS

INSTITUTION
PROFESSIONAL
ENGINEERS OF
NEW ZEALAND

6075 -3

P.I.M. No.....

Building Regulation Clause(s).....

PRODUCER STATEMENT - PS 1 - DESIGN
(Guidance notes on the use of this form are printed on the reverse side)

ISSUED BY:

TO:

IN RESPECT OF:

AT:

Lot 56 Raumati Estate

ROY GEORGE TAYLOR
(Suitably Qualified Design Professional)

JCK Developments Limited
(Owner)

Proposed Dwelling
(Description of Building Work)

RAUMATI

RAUMATI
(Address)

LOT:

DP:

SO:

ABUILD™ CONSULTING ENGINEERS LTD has been engaged by
(Design Firm)

to provide

requirements of Clause(s)

STRUCTURAL DESIGN
(Extent of Engagement)

B1: STRUCTURE

*BEAMS,
BRACING,
FOUNDATIONS*

JCK Developments Limited
(Owner/Developer/Contractor)

services in the respect of the

of the Building Regulations 1992 for

All

Part only as specified

of the building work. The design has been prepared in accordance with

B1/VM1

B1/VM4

(verification method(s)/acceptable solution(s))

(respectively) of the approved documents issued by the Building Industry Authority and the work is described on

ABUILD CONSULTING ENGINEERS LTD
(Design Firm)

drawings titled

As per Document Transfer

Dated 17/11/05

Job # 6075

and numbered as per Document Transfer Job # 6075 Dated 17/11/2005
and the specification and other documents according to which the building is proposed to be constructed.

As an independent design professional covered by a current policy of Professional Indemnity Insurance to a minimum value of \$ 200,000 I BELIEVE ON REASONABLE GROUNDS that subject to:

- (i) elements of specific engineering design to be inspected by a professional engineer prior to closing in.
- (ii) Council inspectors or certifiers to inspect all other aspects.

and (iii) all proprietary products meeting the performance specification requirements,
the drawings, specifications, and other documents according to which the building is proposed to be constructed
comply with the relevant provisions of the Building Code.

R G Taylor
(Signature suitably qualified Design Professional)

Date

17-Nov-05

R G Taylor MIPENZ (Civil, Structural) CPEng IntPE
Chartered Professional Engineer
(Professional Qualifications)

MIPENZ # 53757

2nd FLOOR 21-29 BRODERICK RD, JOHNSONVILLE
(Address)

Member

ACENZ

IPENZ

NZIA

This form to accompany Form 3 of the Building Regulations 1992 for the application of a building consent

~~THIS CERTIFICATE EXCLUDES FOUNDATION
CONDITIONS - TO BE CHECKED ON SITE~~

THIS CERTIFICATE IS ISSUED SUBJECT TO THE
ARCHITECTURAL DESIGNER PLACING CURRENT
BEAM SIZES AND KEY INFORMATION ON
ARCHITECTURAL DRAWINGS BEFORE CONSENT
IS ISSUED.

All work carried out under
jurisdiction of producer
statement to meet the engineer
requirements fully.

All work carried out under
jurisdiction of producer
statement to meet the engine
requirements fully.
Engineer to sign off work
supervision after construction

ABUILD Consulting Engineers Ltd
 2nd Floor, 21-29 Broderick Rd
 Box 13 - 273 Ph (04) 478 3929
 Johnsonville Fax (04) 478 3424
 Wellington Mobile (04) 478 3424

Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate
 RAUMATI
 JCK Developments Limited

Job No. 6075
 Page 19
 Date #####
 Designed 0
 Checked RG Taylor

Operational version 5A, October 2004

BRACING CALCULATION FOR - UPPER STOREY

WIND DIRECTION 1:

NORTH-WEST

HOUSE BLOCK 1

BRACING ELEMENTS PROVIDED						
Element Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
A1	13	BR5	1.2	2.4		YES
A2	16	BR9	0.6	2.4		YES
		0		0		YES
B1	5	GIB3	2	2.4		YES
B2	102	SP4	0.5	2.4		YES
B3	102	SP4	0.45	2.4		YES
		0		0		YES
C1	1	GIB1a	2	2.4		YES
C2	1	GIB1a	1.8	2.4		YES
		0		0		YES
		0		0		YES
D1	5	GIB3	1.2	2.4		YES
D2	1	GIB1a	1.8	2.4		YES
		0		0		YES
E1	13	BR5	1.2	2.4		YES
E2	12	BR4	1.1	2.4		YES

WIND	
Rating (B.U./m)	Element B.U.'s
115	138
110	66
0	0
0	0
65	130
70	35
70	32
0	0
55	110
55	99
0	0
0	0
65	78
55	99
0	0
115	138
100	110

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
85	102
95	57
0	0
0	0
60	120
85	43
85	38
0	0
50	100
50	90
0	0
0	0
60	72
50	90
0	0
85	102
85	94

TOTAL B.U.'S ACHIEVED

WIND: 1032

EQ: 907

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: 689
OK

EQ: 856
OK

WIND DIRECTION 2:

SOUTH-WEST

BRACING ELEMENTS PROVIDED						
Line Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
M1	16	BR9	0.6	2.4		YES
M2	5	GIB3	1.8	2.4		YES
		0		0		YES
M3	2	GIB1b	2.4	2.4		YES
N1	5	GIB3	3	2.4		YES
N2	5	GIB3	1.2	2.4		YES
		0		0		YES
N3	5	GIB3	1.2	2.4		YES
P1	16	BR9	0.7	2.4		YES
P2	16	BR9	0.7	2.4		YES
P3	12	BR4	1.1	2.4		YES
P4	16	BR9	0.7	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
110	66
65	94
0	0
75	180
65	195
65	78
0	0
65	78
110	77
110	77
100	110
110	77
0	0
0	0
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
95	57
60	86
0	0
50	120
60	180
60	72
0	0
60	72
95	67
95	67
85	94
95	67
0	0
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: 1032

EQ: 880

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: 328
OK

EQ: 856
OK

All work carried out under jurisdiction of NZCER FOR BRACED OR ANCHOR PILES ENSURE ELEMENT LENGTH SET TO 1m AND HEIGHT TO 2.4m statement to meet the engineer requirements fully.

ABUILD Consulting Engineers Ltd
 2nd Floor, 21-29 Broderick Rd
 Box 13 - 273 Ph (04) 478 3929
 Johnsonville Fax (04) 478 3424
 Wellington Mobile (04) 478 3424

Client: Peter Davis Architecture
 Job: b. u. mid Proposed Dwelling
 Job Address: Lot 56 Raumati Estate
 RAUMATI
 JCK Developments Limited

Job No. **6075**
 Page **10** of
 Date #####
 Designed **0**
 Checked **RG Taylor**

Operational version 5A, October 2004

BRACING CALCULATION FOR - LOWER STOREY

WIND DIRECTION 1:

NORTH-WEST

HOUSE BLOCK 1

BRACING ELEMENTS PROVIDED						
Element Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
A1	15	BR7	1.3	2.4		YES
A2	102	SP4	0.6	2.4		YES
		0		0		YES
		0		0		YES
B1	12	BR4	1.7	2.4		NO
B2	5	GIB3	2.1	2.4		YES
		0		0		YES
		0		0		YES
C1	2	GIB1b	3.6	2.4		YES
C2	1	GIB1a	1.8	2.4		YES
		0		0		YES
		0		0		YES
D1	140	BLK -1	3.6	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
145	189
70	42
0	0
0	0
0	0
100	170
65	137
0	0
0	0
75	270
55	99
0	0
0	0
100	360
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
145	189
85	51
0	0
0	0
0	0
85	145
60	126
0	0
0	0
50	180
50	90
0	0
0	0
100	360
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: **1269**

EQ: **1140**

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: **1,249**
OK

EQ: **988**
OK

WIND DIRECTION 2:

SOUTH-WEST

BRACING ELEMENTS PROVIDED						
Line Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
M1	140	BLK -1	3.6	2.4		YES
		0		2.4		YES
		0		2.4		YES
		0		2.4		YES
N1	5	GIB3	2.4	2.4		YES
N2	5	GIB3	2.4	2.4		YES
		0		2.4		YES
		0		2.4		YES
P1	16	BR9	0.7	2.4		YES
P2	16	BR9	0.7	2.4		YES
P3	2	GIB1b	2.9	2.4		YES
P4	12	BR4	1.1	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
100	360
0	0
0	0
0	0
0	0
65	156
65	156
0	0
0	0
110	77
110	77
75	218
100	110
0	0
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
100	360
0	0
0	0
0	0
0	0
60	144
60	144
0	0
0	0
95	67
95	67
50	145
85	94
0	0
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: **1154**

EQ: **1020**

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: **723**
OK

EQ: **988**
OK

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

NOTE: FOR BRACED OR ANCHOR PILES ENSURE ELEMENT LENGTH SET TO 1m AND HEIGHT TO 2.4m

SUBFLOOR BRACING REQUIRED FOR DECK

PROBES INDICATE REASONABLE BEARING CAPACITY SO PRESUME THAT PAD FOOTINGS O.K. TO BE CONFIRMED ON SITE.

LOWER LEVEL DECK

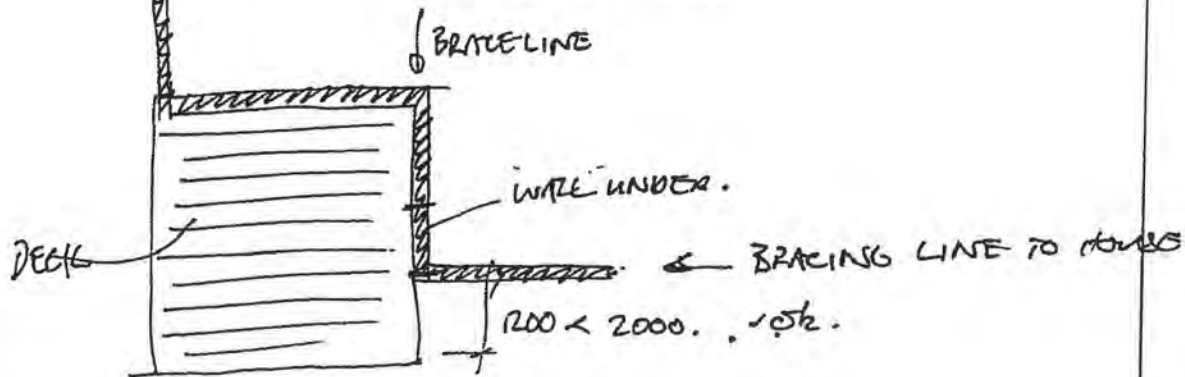
$$\begin{aligned} \text{AREA A} &= 18 \text{ m}^2 \\ \text{BU'S REQ} &= 18 \text{ m}^2 \times 4.7 \text{ BU'S/m}^2 \\ &= 84.6 \text{ BU'S} \end{aligned}$$

∴ 1 ANCHOR PILE
 or 1 BRACED PILE.

UPPER DECK ABOVE LOWER DECK

BRACELINE.

$$\begin{aligned} \text{AREA A} &= 13.5 \text{ m}^2 \\ \text{BU'S REQ} &= 13.5 \text{ m}^2 \times 4.7 \text{ BU'S/m}^2 \\ &= 64 \text{ BU'S} \end{aligned}$$



GENERALLY OK. BUT PROVIDE BRACING TO WALL UNDER.

≠ CHECK FIXINGS BACK TO HOUSE. RE INTO HOUSE.

ABUILD

All work carried out under jurisdiction of producer statement to meet the engineer requirements fully.

RECEIVED

13 DEC 2005

KAPITI COAST
DISTRICT COUNCIL

GENERAL SPECIFICATION

SPECIFICATION

of work to be done and materials to be used in carrying
out the works shown on the accompanying drawings

New House

at

Lot 56, Raumati Estate Raumati South

by

JCK Developments

Job No: 3725
Date: October 2005

Addenda to Application

Application

JCK Developments PO Box 2082 Raumati Beach	No.	056327
--	-----	--------

Project

Description	New (& prebuilt) House, Unit, Bach, Crib, Town House etc. Being Stage 1 of an intended 1 Stage New residential dwelling
Intended Life	Indefinite, but not less than 50 years
Intended Use	residential dwelling
Estimated Value	\$330,000
Location	10 CHARLOTTE WAY, RAUMATI
Legal Description	LOT 56 DP 89871
Valuation No.	1529160367

Builder: Jerome Wagg : 021 500 844
Designer: Peter Davis : 04 902 2757
Plumber: AM Plumbing : 027 472 9111
Contractor: Abuild Consulting, Structural Engineer : 04 478 3929

General Requirements

- a) The District Inspector is to be given 24 hours' notice before carrying out the following inspections:
1. Foundation Inspection:
 2. Pre-concrete slab inspection of plumbing
 3. Pre-slab Inspection, concrete floor
 4. Pre-block-fill inspection
 5. Pre-wrap Inspection
 6. Post-wrap Inspection
 7. Post-Clad Inspection
 8. Prelining Inspection, moisture test, check bracing
 9. Post-lining inspection, linings, fixed as per brace design
 10. Water test on sewer drains
 11. Completion inspection
- b) To arrange for any of the above required inspections by the District Inspector, please contact the building inspectorate on (04) 298 5139 between the hours of 8.00am and 4.30pm.

1. LAPSE AND CANCELLATION OF BUILDING CONSENT. A building consent shall lapse and be of no effect if the building work concerned has not been commenced within 12 calendar months after the date of issue. Or within such further period as the territorial authority allows.
2. The inspection of all specific design components of the building is the responsibility of the Design Engineer who is also required to supply a written report to Council.
3. NZS3604 is an Acceptable Solution in terms of the New Zealand Building Code and is a recommended reference document for timber framed buildings.
4. Fit head, jamb, sill flashings and proprietary sill tray to external joinery. Fit airseals to the inside edges of the window reveals.
5. Note and comply with endorsements on approved plans.
6. Minimum heights of finished concrete slab-on-ground floors above adjoining finished ground level to comply with the current NZS3604.
7. Deck & stair balastrades with a greater drop than 1.0m require min 1.0m high balastrade measured from floor or tread. max 150mm bottom rail to floor. max 100mm space or hole between vertical rails. CERTAIN OTHER DECK CONFIGURATIONS MAY REQUIRE SAFETY BARRIERS. CONFER INSPECTOR
8. Section F7 of the New Zealand Building Code requires the installation of an approved smoke alarm system for detection and warning of fire. Alarms are to be of a type which include a reset and test buttons.
9. Provide from your Contractor a roof warranty covering the product and its installation.
10. Provide from your Contractor a warranty covering the roof and fascia gutter system, including product, design and installation.
11. Restrictor stays, limiting sash opening to max 100mm must be fitted wherever sill height is less than 760mm and the difference in levels are 1 metre or greater. Refer F4.NZBC
12. Exterior cladding system to be previously completed and inspected by Council's Inspector prior to any subsequent prelining inspection/approval being granted for the fixing of internal linings.

I have read the foregoing addenda to application, and the Owner/Builder/Authorised Person hereby agrees to comply with them.

**OWNER/BUILDER/
AUTHORISED PERSON**

Date:



ROOFING LTD

We're strong on construction, selection & customer care

Head Office / Accounts:
20-30 Coventry Street
PO Box 1087, Levin
Phone 06 367 9480
Fax 06 367 0795
Freefax 0800 104000
Email quins.levin@xtra.co.nz

16 August 2006

Roofing Direct
29 Quadrant Heights
Paraparaumu

Dear Sirs

WARRANTY - JCK DEVELOPMENTS, CHARLOOT WAY, LOT 56, RAUMATI ESTATE

Date of Supply: 1.5.06 on Invoice 26591

Warranty Terms:

Colorcote ZR8 pre-painted metal products used for Residential Buildings will perform as follows.

1. Resistance to flaking, peeling and excessive fade.	ZR8 10 years.
2. Will not perforate as a result of corrosion	ZR8 20 years.

Colourcote products will inevitably weather, chalk and fade over time as a result of normal wear and tear.

If the product fails to perform as warranted we will, at our sole option, repair or replace the affected material.

Please note this warranty is subject to the following terms and conditions:

- This warranty will not apply to weathering, chalking or fading over time as a result of normal wear and tear.
- If inappropriate fastenings are used this warranty will not apply.
- Defects caused by faulty design, or method of manufacture of Residential Buildings are not covered by the warranty.
- We must be given the opportunity for inspection on site prior to any remedial action being offered or taken.
- Damage or corrosion resulting from the following are not covered by this warranty:
 - 1) Damage sustained during storage, handling, or installation.
 - 2) Damage sustained after installation.
 - 3) Causes after the product has left our control.
 - 4) Failure to remove debris leading to the accumulation of moisture retaining matter in gutters and downpipes.

Our liability under this warranty shall in all cases be limited to replacing or repairing the defective product as specified above excluding labour. Any repaired or replaced product will be covered by this warranty up to the unexpired portion of the warranty of the original product. Quin Roofing Ltd will not be liable for consequential loss or damage. All claims must be made promptly in writing and accompanied by the original warranty document. This warranty does not in any way affect the rights of a consumer under the Consumer Guarantees Act.

MINIMUM MAINTENANCE REQUIREMENTS
1. Washing of Naturally Unwashed Areas every 6 months.
2. Removal of Debris from gutters every 6 months.
3. Any noticeable buildup of salt deposits and/or other contaminants are removed when identified.
4. When considering overpainting, please consult with your local distributor to ensure correct procedures are undertaken.

Yours faithfully

Bruce Love
Roofing Manager
Quin Roofing Ltd

Mr & Mrs CLEMENTS

10 CHARLOTTE WAY RAUMATI B.A.

46

2

35

1

Description NEW CONNECTION.

It is recommended that test results be recorded here:

Visual Examination

Earth Continuity

Bonding

Polarity

Insulation Resistance 5/100 Mohm

Other _____

If necessary attach any pages with sketches of work done

Shawn O'LEARY

E17118

O'LEARY ELECTRICAL

5.00 h

8-8-06

027-2755400

AJ STELLINGWERF

T. 2866.



8-8-06

This form is approved by the Electrical Workers Registration Board (P.O. Box 1016, Wellington, Telephone 0800 56 1100) for the purposes of the Electricity Regulations 1982.

2nd Floor, 21-29 Broderick Rd
 Ph (04) 478 3929 Box 13 - 273
 Fax (04) 478 3424 Johnsonville
 Mob (025) 491 857 Wellington

Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate
 RAUMATI

Job No	6075 - 35
Calculation Sheet	
Date	17/11/05
Designed	MBI
Checked	RG Taylor

SUBFLOOR BRACING REQUIRED FOR DECK

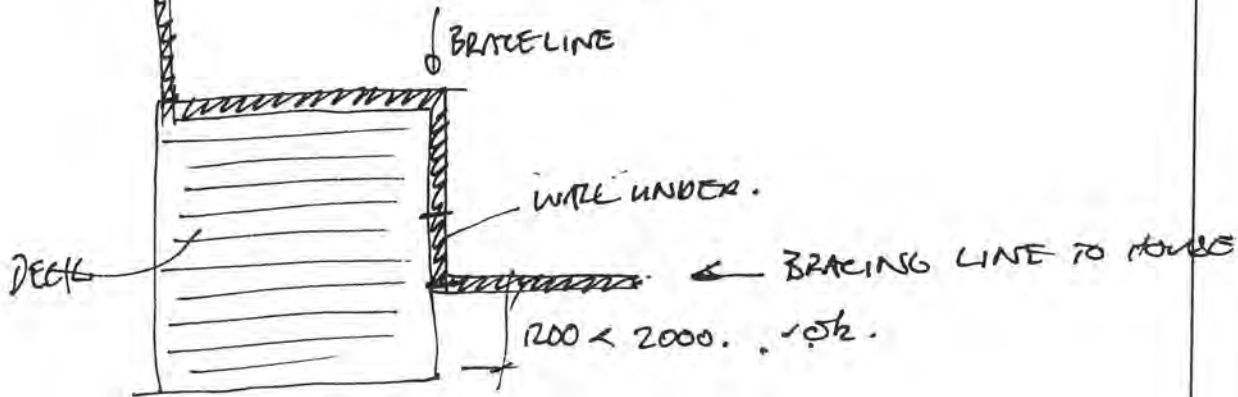
PROBES INDICATE REASONABLE BEARING CAPACITY SO PRESUME THAT PAD FOOTINGS O.K. TO BE CONFIRMED ON SITE.

LOWER LEVEL DECK

$$\begin{aligned} \text{AREA A} &= 18 \text{ m}^2 \\ \text{BU'S REQ} &= 18 \text{ m}^2 \times 4.7 \text{ BU's/m}^2 \\ &= 84.6 \text{ BU's} \\ &\therefore 1 \text{ ANCHOR PILE} \\ &\text{or } 1 \text{ BRACED PILE.} \end{aligned}$$

UPPER DECK ABOVE LOWER DECK

BRACELINE. AREA A = 13.5 m²
 BU'S REQ = 13.5 m² × 4.7 BU's/m²
 = 64 BU'S



GENERALLY OK. BUT PROVIDE BRACING TO WALL UNDER.
 & CHECK FIXINGS BACK TO HOUSE. RE INTO HOUSE.

ABUILD

RISK ASSESMENT MATRIX

Lot 56					
Raumati Estate, Raumati					
Elevation 1 - Face 1	Risk Severity				Sub Totals
Risk Factor	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	0
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	0
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
Total Risk Score					2
Elevation 1 - Face 2	Risk Severity				Sub Totals
Risk Factor	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	5
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
Total Risk Score					9
Elevation 1 - Face 3	Risk Severity				Sub Totals
Risk Factor	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	5
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	2
Total Risk Score					11
Elevation 2 - Face 4	Risk Severity				Sub Totals
Risk Factor	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	3
Eaves Width	0	1	2	5	5
Envelope Complexity	0	1	3	6	1
Deck Design	0	2	4	6	2
Total Risk Score					15
Elevation 2 - Face 5	Risk Severity				Sub Totals
Risk Factor	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	1
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
Total Risk Score					5

RISK ASSESMENT MATRIX

Elevation 2 - Face 6					
Risk Factor	Risk Severity				Sub Totals
	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	3
Eaves Width	0	1	2	5	5
Envelope Complexity	0	1	3	6	1
Deck Design	0	2	4	6	2
Total Risk Score					15

Elevation 2 - Face 7					
Risk Factor	Risk Severity				Sub Totals
	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	0
Roof/Wall Intersection	0	1	3	5	3
Eaves Width	0	1	2	5	0
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	2
Total Risk Score					7

Elevation 3 - Face 8					
Risk Factor	Risk Severity				Sub Totals
	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	2
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	5
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	2
Total Risk Score					11

Elevation 3 - Face 9					
Risk Factor	Risk Severity				Sub Totals
	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	0
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	1
Envelope Complexity	0	1	3	6	1
Deck Design	0	2	4	6	0
Total Risk Score					4

Elevation 4 - Face 10					
Risk Factor	Risk Severity				Sub Totals
	Low	Medium	High	Very High	
Wind Zone	0	0	1	2	2
No. of Storeys	0	1	2	4	0
Roof/Wall Intersection	0	1	3	5	0
Eaves Width	0	1	2	5	1
Envelope Complexity	0	1	3	6	1
Deck Design	0	2	4	6	0
Total Risk Score					4

CLADDING SELECTION	TYPE	Direct fixed	Drained Cavity
Elevation 1	Hardiflex Sheet Bevelback Weatherboard	• •	
Elevation 2	Hardiflex Sheet (Faces 4 & 6) Hardiflex Sheet (Faces 5 & 7) Bevelback Weatherboard	• •	•
Elevation 3	Hardiflex Sheet Bevelback Weatherboard	• •	
Elevation 4	Hardiflex Sheet Bevelback Weatherboard	• •	

RISK ASSESMENT MATRIX

RISK DEFINITION		
Risk Factor	Risk	Detail
A	Low	Low wind zone to NZS 3604
Wind zone	Medium	Medium wind zone to NZS 3604
	High	High wind zone to NZS 3604
	Very High	Very High wind zone to NZS 3604
B	Low	One storey
Number of Storeys	Medium	Two storeys in part
	High	Two storeys
	Very High	More than two storeys
C	Low	Fully protected (eaves)
Roof/wall intersection	Medium	Partly exposed (no eaves)
	High	Fully exposed (parapets, enclosed balustrades, eaves at more than 90°)
	Very High	Finished within boundries formed by exterior walls
D	Low	Greater than 600mm at first level
Eaves width	Medium	451-600mm at first level, over 600mm at second level
	High	101-450 at first level, 450 - 600 at second level, over 600mm at third level
	Very High	0-100 at first level, 0-450 at second level, 0-600 at third level
E	Low	Simple with single cladding type
Envelope complexity	Medium	Moderate complexity with no more than 2 cladding types
	High	More complex and multiple cladding types
	Very High	As for high, with junctions not covered by C&F (e.g. pergolas, bow windows)
F	Low	None or open timber slat at ground level
Deck design	Medium	Enclosed deck with roof, or open timber slat deck at first or second level
	High	Enclosed deck exposed or cantilevered at first level
	Very High	Enclosed deck exposed or cantilevered at second or third level

CLADDING TYPES		
Risk Score	Direct Fix to framing	Over 20mm drained cavity
0~6	Timber weatherboards - all profiles Fibre cement weatherboards Vertical profiled metal (corrugated and symmetrical trapezoidal) Fibre cement sheet Plywood sheet Plaster on EIFS	Masonry veneer (40mm min cavity) Stucco Horizontal profiled metal (corrugated and symmetrical trapezoidal)
7~12	Bevelback weatherboard Linea weatherboard Vertical board and batten Vertical profiled metal (corrugated only)	Masonry veneer (40mm min cavity) Stucco Horizontal profiled metal (corrugated and symmetrical trapezoidal) Fibre cement weatherboards Fibre cement sheet Plywood sheet Plaster on EIFS Rusticated weatherboards
13~20	Vertical profiled metal (corrugated only)	as for 7~12 Bevelback & Linea weatherboard



ABUILD™

Consulting Engineers Ltd

Structural and Civil Engineers

21-29 Broderick Road, Box 13 273, Wellington 4 N.Z.
 Telephone (04) 478 3929, Facsimile (04) 478 3424
 Mobile (025) 491 857, Email abuild@abuild.co.nz

QUALITY ASSURANCE PLAN

Job:	Proposed Dwelling	Client:	Peter Davis Architecture	Date	17-Nov-05
Job Address:	Lot 56 Raumati Estate RAUMATI	Client Address:	Box 2066 RAUMATI BEACH		
Job Number:	6075	Client Phone:	(04) 902 2757		
Service Request #	Not available	Client Fax:	(04) 902 6675		
		Owner:	JCK Developments Limited		

Territorial Authority:	Kapiti Coast District Council	Building Inspector (If known)
Territorial Address:	Private Bag 601 PARAPARAUMU	
Territorial Fax:	904 5830	

Designer	Design Check	Approval & Release
MBI	RG Taylor	RG Taylor

INPUTS

Architectural Drawing
NZ Standards and Product Data

OUTPUTS

Engineers' Drawings
Engineers' Calculations
Producer Statement

Professional Staff	Qualifications	Email Address	Position	Scope
RG Taylor	BE(Hons), PhD MIPENZ (Civil, Structural) Chartered Professional Engineer (CPEng IntPe)	roy.taylor@abuild.co.nz	Civil/Structural Engineer and Director	Design Checker
RJ Davidge	MIPENZ (Geotechnical) Chartered Professional Engineer (CPEng)	royston.davidge@abuild.co.nz	Geotechnical Engineer	
PD Wright	BE	peter.wright@abuild.co.nz	Structural Engineer	
MB Ives	BE(Hons)	michael.ives@abuild.co.nz	Structural Engineer	
RG Borlase	NZCE	reg.borlase@abuild.co.nz	Design, Roading & Drainage	
BJJ Hillis	NZCE	ben.hillis@abuild.co.nz	Assistant Engineer	
SAJ Taylor	BBS(Acc)	sally.taylor@abuild.co.nz	Operations Manager	

ASSOCIATION
CONSULTING
ENGINEERS OF
NEW ZEALAND

NEW ZEALAND
INSTITUTE
OF ARCHITECTS

INSTITUTION
PROFESSIONAL
ENGINEERS OF
NEW ZEALAND

P.I.M. No.....

Building Regulation Clause(s).....

PRODUCER STATEMENT - PS 1 - DESIGN

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

ISSUED BY:

ROY GEORGE TAYLOR
(Suitably Qualified Design Professional)

TO:

JCK Developments Limited
(Owner)

IN RESPECT OF:

Proposed Dwelling
(Description of Building Work)

AT:

Lot 56 Raumati Estate

RAUMATI

RAUMATI
(Address)

LOT:

DP:

SO:

ABUILD™ CONSULTING ENGINEERS LTD has been engaged by
(Design Firm)

JCK Developments Limited
(Owner/Developer/Contractor)

to provide

STRUCTURAL DESIGN
(Extent of Engagement)

*BEAMS,
BRACING,
FOUNDATIONS*

services in the respect of the

requirements of Clause(s)

B1: STRUCTURE

of the Building Regulations 1992 for

All

Part only as specified

(C)

of the building work. The design has been prepared in accordance with

B1/VM1

B1/VM4

(verification method(s)/acceptable solution(s))

(respectively) of the approved documents issued by the Building Industry Authority and the work is described on

ABUILD CONSULTING ENGINEERS LTD
(Design Firm)

drawings titled

As per Document Transfer

Dated 17/11/05

Job # 6075

and numbered as per Document Transfer Job # 6075 Dated 17/11/2005
and the specification and other documents according to which the building is proposed to be constructed.

As an independent design professional covered by a current policy of Professional Indemnity Insurance to a minimum value of \$ 200,000 I BELIEVE ON REASONABLE GROUNDS that subject to:

- (i) elements of specific engineering design to be inspected by a professional engineer prior to closing in.
- (ii) Council inspectors or certifiers to inspect all other aspects.

and (iii) all proprietary products meeting the performance specification requirements,
the drawings, specifications, and other documents according to which the building is proposed to be constructed
comply with the relevant provisions of the Building Code.

R G Taylor
(Signature suitably qualified Design Professional)

Date

17-Nov-05

R G Taylor MIPENZ (Civil, Structural) CEng IntPE
Chartered Professional Engineer
(Professional Qualifications)

MIPENZ # 53757

2nd FLOOR 21-29 BRODERICK RD, JOHNSONVILLE
(Address)

Member

ACENZ

IPENZ

NZIA

This form to accompany Form 3 of the Building Regulations 1992 for the application of a building consent

~~THIS CERTIFICATE EXCLUDES FOUNDATION~~
CONDITIONS - TO BE CHECKED ON SITE

(D)

THIS CERTIFICATE IS ISSUED SUBJECT TO THE
ARCHITECTURAL DESIGNER PLACING CURRENT
BEAM SIZES AND KEY INFORMATION ON
ARCHITECTURAL DRAWINGS BEFORE CONSENT
IS ISSUED.

(D)

ABUILD Consulting Engineers Ltd

Level 2, 21-29 Broderick Rd
 Box 13 - 273 Johnsonville Wellington
 Ph (04) 478 3929
 Fax (04) 478 3424
 Mobile (025) 491 857

Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate RAUMATI

Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

Beam 3006 version 1.3 July 2005
 Add Carter & Origin beam data

BEAM DESIGN

to NZS 4203, NZS 3404, NZS 3603

BEAM NUMBER NAME COMMENT:
 BEAM SPAN m

A: BEAM LOADING

1 LOAD FROM ROOF SPANS

AS UDL ALONG BEAM:		FROM (m)	0	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)	4.2	TRANS LENGTH OF SUPPORTED MEMBER			0.0001
UDL PARTICIPATION FACTOR			1	POINT LD. PARTICIPATION FACTOR			0.0001

UDL PARTICIPATION FACTOR: 1

ROOF DETAILS:	ROOF SPAN	6.2	EAVE	0	PITCH (degrees)	5	CLADDING	0.1	NOTE: USE EAVE = 0 FOR INTERIOR BEAM			
WIND DETAILS:	SPEED	50	TERRAIN	3	HEIGHT	8	LIMIT STATE	0.93	TOPOGRAPHY	1.15	M (z, cat)	0.80
	EXT. COEFF 1	0.3	INT. COEFF 1	0	EXT. COEFF 2	-0.9	INT. COEFF 2	0	Ka x Kl x Kp	1	(use Ka, Kl, Kp particularly for studs & walls)	
	V (m/s) =	42.7	Q (kPa) =	1.09	P1 (kPa) =	0.33	P2 (kPa) =	-0.98				

DEAD LOAD (kPa)		LIVE LOAD		WIND LOAD (kPa)	
ROOF CLADDING (ON PLAN)	0.100	NO ACCESS		W1, DOWN	0.33
BATTEN/PURLIN	0.028	UDL (kPa)	0.25	W2, UP	-0.98
TRUSS/RAFTER & JOIST	0.083	POINT (kN)	1.00	UNDER EAVE	-0.674
GIB CEILING	0.090				

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)		
UDL (kN/m)	PT. LOAD (kN)	
DEAD	0.93	0.00
LIVE	0.78	0.00
WIND1, DN.	1.02	0.00
WIND2, UP	-3.05	0.00

BOTH LIVE LOADS USE GREATER OF DISTRIBUTED ROOF LOAD OR 1kN POINT LOAD

2 LOAD FROM WALL SPANS

AS UDL ALONG BEAM:		FROM (m)	0	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)	4.2	TRANSVERSE LENGTH OF WALL			0.0001
UDL PARTICIPATION FACTOR			1	POINT LD. PARTICIPATION FACTOR			0.0001

UDL PARTICIPATION FACTOR: 1

WALL DETAILS:	WALL HEIGHT (AVERAGE) (m)	1
	WALL WEIGHT (kPa)	0.15

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)		
UDL (kN/m)	PT. LOAD (kN)	
DEAD	0.000	0.000

3 LOAD FROM FLOOR SPANS

AS UDL ALONG BEAM:		FROM (m)		AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)		TRANS LENGTH OF SUPPORTED MEMBER			0.0001
UDL PARTICIPATION FACTOR			0.0001	POINT LD. PARTICIPATION FACTOR			0.0001

UDL PARTICIPATION FACTOR: 0.0001

FLOOR DETAILS:	FLOOR SPAN	
----------------	------------	--

DEAD LOAD	JOISTS	0.325	DEPTH	0.3	THICKNESS	0.05	SPACING	300
	BATTEN	0.000						400
	PARTICLE BD	0.14						
	GIB CEILING	0.150						
	TOTAL	0.62						

LIVE LOAD	BASIC UDL	1.5	kPa	L. L. REDUCTION FACTOR	1.00	AREA UDL	0	AREA POINT	0.0
	POINT (kN)			ACTING AT (m)		POINT LD PARTICIPATION FACTOR			

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)		
UDL (kN/m)	PT. LOAD (kN)	
DEAD	0.000	0.000
LIVE (UDL)	0.000	0.000
LIVE (POINT)		0

4 DIRECT POINT LOADING

POINT LOAD 1 ON BEAM:	ACTING AT (m)		AND	POINT LOAD 2 ON BEAM:	ACTING AT (m)	
DEAD	1.4D			DEAD	1.4D	
LIVE	1.2D+1.6L			LIVE	1.2D+1.6L	
WIND1 (DN)	1.2D+L+W1			WIND1 (DN)	1.2D+L+W1	
WIND2 (UP)	0.9D+W2			WIND2 (UP)	0.9D+W2	

USE THESE:

D	0.0	0.0
L	0.0	0.0
W1	0.0	0.0
W2	0.0	0.0

LOAD 1 LOAD 2

B: LOAD COMBINATION SUMMARIES / RESULTS (ULS)

LOAD COMBINATION	PEAK ULS MOMENT	DEFLECTION COEFF.	LEFT END REACTION	RIGHT END REACTION
1.4D	2.89	DIVIDE BY	2.7	2.7
1.2D+1.6L	5.21	(E * I)	5.0	5.0
1.2D+L+W1	4.71	FOR DEFLN.	4.5	4.5
0.9D+W2	-4.87		-4.5	-4.6
D+0.2L	2.40	4.41	2.3	2.3
D+0.4L	2.74	5.03	2.6	2.6
0.65W2 (UP)	-4.37	-8.01	-4.2	-4.2

C: LOAD CASE SUMMARIES (SLS)

LOAD CASE	PEAK MOMENT	DEFLECTION COEFF.	LEFT END REACTION	RIGHT END REACTION
DEAD	2.06	2.06	2.0	2.0
LIVE	1.71	1.71	1.5	1.5
WIND1, DN.	2.24	2.24	2.1	2.1
WIND2, UP	-1.28	-1.28	-6.4	-6.4

NOTE: CAN ONLY COMBINE REACTIONS FROM THESE AS PEAK MOMENTS AND DEFLECTIONS MAY NOT COINCIDE

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 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate RAUMATI

Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

BEAM NUMBER SPAN NAME Beam 3006 version 1.3 July 2005

D: OPTIMUM SOLUTIONS

THE AUTOMATIC SEARCH FOR CHEAPEST OPTION IS BASED ON THE FOLLOWING CRITERIA:
 MAX STRESS RATIO: ACCEPTABLE SPAN/DEFLECTION RATIOS:

	520	480	
GENERAL:	D+0.2L 520	D+0.4L 480	0.65W2 200
TIMBER ONLY:	440	400	165
	440	400	

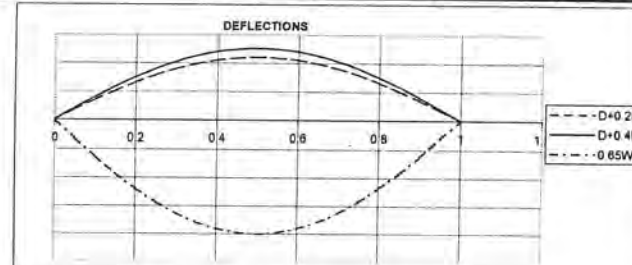
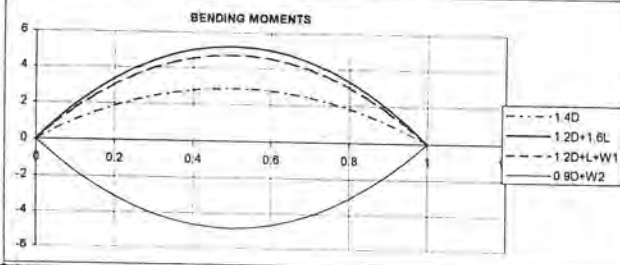
NOTES TO SELECTION TABLE:

INCREMENT = SIZE FORCED UP OR DOWN TO SUIT SPECIFIC REQUIREMENT
 FOOT TRAFFIC SENSITIVITY = PERCENTAGE OF ACCEPTABLE 1mm DEFLECTION UNDER 1 kN POINT LOAD AT MIDSPAN. SHOULD BE LESS THAN 100% FOR COMFORT
 FREQUENCY = NATURAL VIBRATION FREQUENCY. SHOULD BE GREATER THAN 8 Hz FOR COMFORT. NOTE, HOWEVER, STIFFNESS, AND THEREFORE FREQUENCY, USUALLY HIGHER THAN ESTIMATED.

PROCESS

	STEEL I BEAM	STEEL CHANNEL	TIMBER DRESSED	TIMBER SAWN	TIMBER HY 90	TIMBER HYPAN	HYBEAM HJ JOIST	SPARE	ABUILD FLITCH - L	ABUILD FLITCH - M	PLATE FLITCH
SELECT BEAM TYPES			Y			Y					
# PARALLEL MEMBERS	1	1	2	2	1		1		1	1	1
MAX WIND STRESS (Mpa)	250	250	14	14	35	42	26.2		D'GAL / MILD	D'GAL / MILD	250
MAX SHORT TERM STRESS (MPa)	250	250	11.2	11.2	28	33.6	20.96		MS	MS	250
MAX LONG TERM STRESS (MPa)	250	250	8.4	8.4	21	25.2	15.72		300	300	250
ELASTIC MOD. - SHORT TERM (MPa)	200000	200000	6700	6700	9000	13200	12000		200000	200000	200000
ELASTIC MOD. - LONG TERM (MPa)	200000	200000	3350	3350	4500	6600	6000		200000	200000	200000
STRENGTH REDUCTION FACTOR (phi)	0.9	0.9	0.8	0.8	0.8	0.8	0.8		0.9	0.9	0.9
ALLOWABLE ULS STRES: BRIEF (including phi)	225	225	12.8	12.8	28	33.6	20.96		270	270	225
SHORT	225	225	10.2	10.2	22.4	26.88	16.768		270	270	225
LONG	225	225	7.7	7.7	16.8	20.16	12.576		270	270	225
FLITCH BEAM STRENGTHENING ANGLE									ANGLE	ANGLE	
SECTION MODULUS - ELASTIC (mm3)	#VALUE!	#VALUE!	1,176,000	#VALUE!	#VALUE!	600,000	#VALUE!		40 x 40 x 3 MS	40 x 40 x 5 MS	#VALUE!
SECTION MODULUS - PLASTIC (mm3)	#VALUE!	#VALUE!	1,176,000	#VALUE!	#VALUE!	600,000	#VALUE!		#VALUE!	#VALUE!	#VALUE!
MOMENT OF INERTIA (mm4)	#VALUE!	#VALUE!	164,640,000	#VALUE!	#VALUE!	60,000,000	#VALUE!		#VALUE!	#VALUE!	#VALUE!
DEPTH (mm)			280			200			#VALUE!	#VALUE!	#VALUE!
SELECTED BEAM	1-	1-	2- 280 x 45	2-	1- HY90	2- 200 x 45 HYPAN	1- HYBEAM JOIST		-2-L MS	-2-M MS	1-
GRADE			#1 framing								
BEAM WEIGHT (kg/m)	#VALUE!	#VALUE!	12.6	#VALUE!	#VALUE!	11.6	#VALUE!		#VALUE!	#VALUE!	#VALUE!
GLUELAM WIDTH (mm)			4.4			8.7			40 x 40 x 3 MS	40 x 40 x 5 MS	
CRITICAL STRESS (MPa)			1.2D+1.6L			1.2D+1.6L					
CRITICAL LOAD CASE			43%			32%					
% STRESSED											
DEFLECTION:	D+0.2L		8.0			11.1			AFBs use 95% ttrans. with n=50 for all cases		
Span / defn.	D+0.4L		526			377					
Span / defn.	0.65W2		8.0			11.1					
Span / defn.			526			377					
			-7.3			-10.1					
			578			415					
DESIGN COMMENT											
FOOT TRAFFIC SENSITIVITY			140%			195%					
FREQUENCY (equiv. uniform load)			9			4					
WARNINGS											
FORCED INCREMENT (UP or DOWN)						-1					
CHOOSE OPTION TO PRINT (1st, 2nd)											
BEAM REF. No. (IN LOOKUP TABLE)	4	8	8	9	3	7	3	1	1	1	1

BEAM TABLE



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Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

Beam 3006 version 1.3
 Add Carter & Origin beam data July 2005

BEAM DESIGN

to NZS 4203, NZS 3404, NZS 3603

BEAM NUMBER

2

NAME BM 2 KITCHEN

COMMENT: CHECK LINTEL FOR POINT LOAD

BEAM SPAN

1.9

m

A: BEAM LOADING

1 LOAD FROM ROOF SPANS

AS UDL ALONG BEAM:		FROM (m):	0	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):	1.9	TRANSVERSE LENGTH OF SUPPORTED MEMBER			0.0001
UDL PARTICIPATION FACTOR			1	POINT LD. PARTICIPATION FACTOR			0.0001

ROOF DETAILS:

ROOF SPAN	0.945	EAVE	0.45	PITCH (degrees)	5	CLADDING	0.1	NOTE: USE EAVE = 0 FOR INTERIOR BEAM	
WIND DETAILS: SPEED	50	TERRAIN	3	HEIGHT	6.2	LIMIT STATE	0.93	TOPOGRAPHY	1.15
EXT. COEFF 1	0.3	INT. COEFF 1	0	EXT. COEFF 2	-0.9	INT. COEFF 2	0	Ka x Kl x Kp	1
V (m/s) =	41.1	Q (kPa) =	1.02	P1 (kPa) =	0.30	P2 (kPa) =	-0.91	M (z, cat)	0.77
(use Ka, Kl, Kp particularly for studs & walls)									

DEAD LOAD (kPa)		LIVE LOAD		WIND LOAD (kPa)	
ROOF CLADDING (ON PLAN)	0.100	NO ACCESS		W1, DOWN	0.30
BATTEN/PURLIN	0.028	UDL (kPa)	0.25	W2, UP	-0.91
TRUSS/RAFTER & JOIST	0.083	POINT (kN)	1.00	UNDER EAVE	-0.812
GIB CEILING	0.090				

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.28	0.00
LIVE	0.53	0.00
WIND1, DN.	0.28	0.00
WIND2, UP	-1.21	0.00

BOTH LIVE LOADS USE GREATER OF DISTRIBUTED ROOF LOAD OR 1kN POINT LOAD

2 LOAD FROM WALL SPANS

AS UDL ALONG BEAM:		FROM (m):	0	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):	1.9	TRANSVERSE LENGTH OF WALL			0.0001
UDL PARTICIPATION FACTOR			1	POINT LD. PARTICIPATION FACTOR			0.0001

WALL DETAILS: WALL HEIGHT (AVERAGE) (m)	0.5
WALL WEIGHT (kPa)	0.35

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.175	0.000

3 LOAD FROM FLOOR SPANS

AS UDL ALONG BEAM:		FROM (m):		AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):		TRANSVERSE LENGTH OF SUPPORTED MEMBER			0.0001
UDL PARTICIPATION FACTOR				POINT LD. PARTICIPATION FACTOR			0.0001

FLOOR DETAILS

FLOOR SPAN					
DEAD LOAD	JOISTS	0.325	DEPTH	THICKNESS	SPACING
	BATTEN	0.000	0.3	0.05	300
	PARTICLE BD	0.14			400
	GIB CEILING	0.150			
	TOTAL	0.62			
LIVE LOAD	BASIC UDL	1.5	kPa		
	POINT (kN)		L. L. REDUCTION FACTOR 1.00		
			AREA UDL 0		
			AREA POINT 0.0		
			ACTING AT (m)		
			POINT LD PARTICIPATION FACTOR		

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.000	0.000
LIVE (UDL)	0.000	0.000
LIVE (POINT)	-----	0

4 DIRECT POINT LOADING

POINT LOAD 1 ON BEAM:		ACTING AT (m)	0.5	AND	POINT LOAD 2 ON BEAM:		ACTING AT (m)	
DEAD		1.4D	2.7		DEAD		1.4D	
LIVE		1.2D+1.6L	5.0		LIVE		1.2D+1.6L	
WIND1 (DN)		1.2D+L+W1	4.5		WIND1 (DN)		1.2D+L+W1	
WIND2 (UP)		0.9D+W2	-4.6		WIND2 (UP)		0.9D+W2	

APPLY LOAD CASES OR COMBINATIONS BUT NOT BOTH

USE THESE:	D	2.0	0.0
	L	1.6	0.0
	W1	0.5	0.0
	2	-6.4	0.0
		LOAD 1	LOAD 2

B: LOAD COMBINATION SUMMARIES / RESULTS (ULS)

LOAD COMBINATION	PEAK ULS MOMENT	DEFLECTION COEFF.	LEFT END REACTION	RIGHT END REACTION
1.4D	1.20	DIVIDE BY	2.6	1.3
1.2D+1.6L	2.26	(E * I)	5.0	2.6
1.2D+L+W1	1.88	FOR DEFLN.	4.1	2.0
0.9D+W2	-1.93		-4.2	-2.0
D+0.2L	1.01	0.33	2.2	1.1
D+0.4L	1.17	0.38	2.6	1.3
0.65W2 (UP)	-1.75	-0.56	-3.8	-1.8

C: LOAD CASE SUMMARIES (SLS)

LOAD CASE	PEAK MOMENT	DEFLECTION COEFF.	LEFT END REACTION	RIGHT END REACTION
DEAD	0.86	0.86	1.9	0.9
LIVE	0.77	0.77	1.7	0.9
WIND1, DN.	0.28	0.28	0.6	0.4
WIND2, UP	-0.26	-0.26	-5.9	-2.8

NOTE: CAN ONLY COMBINE REACTIONS FROM THESE AS PEAK MOMENTS AND DEFLECTIONS MAY NOT COINCIDE

JOB NO

6075

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Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

BEAM NUMBER **2** SPAN **1.9** NAME **BM 2 KITCHEN** Beam 3006 version 1.3 July 2005

D: OPTIMUM SOLUTIONS

THE AUTOMATIC SEARCH FOR CHEAPEST OPTION IS BASED ON THE FOLLOWING CRITERIA:
 MAX STRESS RATIO: **1.05** ACCEPTABLE SPAN/DEFLECTION RATIOS:

	520	480	0.65W2
GENERAL:	520	480	200
TIMBER ONLY:	440	400	165
	440	400	

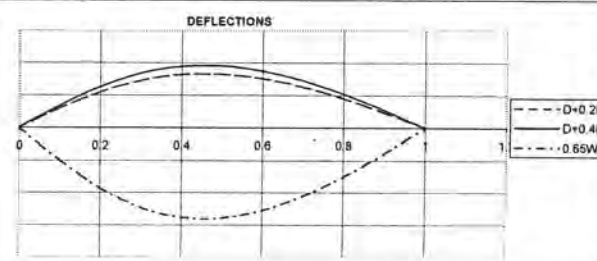
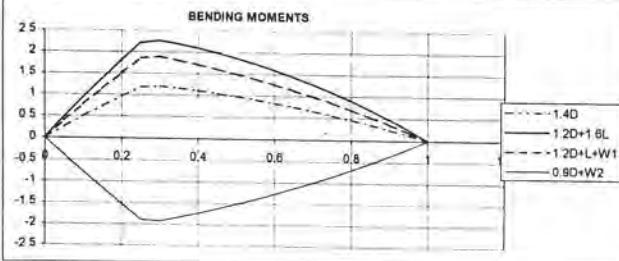
NOTES TO SELECTION TABLE:

INCREMENT = SIZE FORCED UP OR DOWN TO SUIT SPECIFIC REQUIREMENT
 FOOT TRAFFIC SENSITIVITY = PERCENTAGE OF ACCEPTABLE 1mm DEFLECTION UNDER 1 KN POINT LOAD AT MIDSPAN. SHOULD BE LESS THAN 100% FOR COMFORT
 FREQUENCY = NATURAL VIBRATION FREQUENCY. SHOULD BE GREATER THAN 8 Hz FOR COMFORT. NOTE, HOWEVER, STIFFNESS, AND THEREFORE FREQUENCY, USUALLY HIGHER THAN ESTIMATED.

PROCESS

	STEEL I BEAM	STEEL CHANNEL	TIMBER DRESSED	TIMBER SAWN	TIMBER HY 90	TIMBER HYPAN	HYBEAM HJ JOIST	SPARE	ABUILD FLITCH - L	ABUILD FLITCH - M	PLATE FLITCH
SELECT BEAM TYPES			Y								
# PARALLEL MEMBERS	1	1	2	2	1	1			1	1	1
MAX WIND STRESS (Mpa)	250	250	14	14	35	42	26.2		D'GAL / MILD	D'GAL / MILD	250
MAX SHORT TERM STRESS (MPa)	250	250	11.2	11.2	28	33.6	20.96		MS	MS	250
MAX LONG TERM STRESS (MPa)	250	250	8.4	8.4	21	25.2	15.72		300	300	250
ELASTIC MOD. - SHORT TERM (MPa)	200000	200000	6700	6700	9000	13200	12000		200000	200000	200000
ELASTIC MOD. - LONG TERM (MPa)	200000	200000	3350	3350	4500	6600	6000		200000	200000	200000
STRENGTH REDUCTION FACTOR (phi)	0.9	0.9	0.8	0.8	0.8	0.8	0.8		0.9	0.9	0.9
ALLOWABLE ULS STRES: BRIEF (including phi)	225	225	12.8	12.8	28	33.6	20.96		270	270	225
SHORT	225	225	10.2	10.2	22.4	26.88	16.768		270	270	225
LONG	225	225	7.7	7.7	16.8	20.16	12.576		270	270	225
FLITCH BEAM STRENGTHENING ANGLE									ANGLE	ANGLE	
SECTION MODULUS - ELASTIC (mm3)	#VALUE!	#VALUE!	486,000	#VALUE!	#VALUE!	#VALUE!	#VALUE!		40 x 40 x 3 MS	40 x 40 x 5 MS	#VALUE!
SECTION MODULUS - PLASTIC (mm3)	#VALUE!	#VALUE!	486,000	#VALUE!	#VALUE!	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
MOMENT OF INERTIA (mm4)	#VALUE!	#VALUE!	43,740,000	#VALUE!	#VALUE!	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
DEPTH (mm)			180						#VALUE!	#VALUE!	#VALUE!
SELECTED BEAM	1-	1-	2- 180 x 45	2-	1- HY90	1- HYPAN	1- HYBEAM JOIST		-2-L MS	-2-M MS	1-
GRADE			#1 framing								
BEAM WEIGHT (kg/m)	#VALUE!	#VALUE!	8.1	#VALUE!	#VALUE!	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
GLUELAM WIDTH (mm)											
CRITICAL STRESS (MPa)			4.7						40 x 40 x 3 MS	40 x 40 x 5 MS	
CRITICAL LOAD CASE			1.2D+1.6L								
% STRESSED			46%								
DEFLECTION:	D+0.2L		2.3						AFBs use 95% ltrans. with n=50 for all cases		
Span / defn.	D+0.4L		842								
D+0.4L	Span / defn.		2.3								
Span / defn.	0.65W2		842								
0.65W2	Span / defn.		-1.9								
Span / defn.			989								
DESIGN COMMENT											
FOOT TRAFFIC SENSITIVITY			49%								
FREQUENCY (equiv. uniform load)			17								
WARNINGS											
FORCED INCREMENT (UP or DOWN)											
CHOOSE OPTION TO PRINT (1st, 2nd)			1								
BEAM REF. No. (IN LOOKUP TABLE)	4	8	5	9	3	10	3	1	1	1	1

BEAM TABLE



BEAM 2 CHECK LINTEL IN KITCHEN FOR POINT LOAD

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 Page of
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 Checked RG Taylor

Beam 3006 version 1.3 July 2005
 Add Carter & Origin beam data

BEAM DESIGN

to NZS 4203, NZS 3404, NZS 3603

BEAM NUMBER NAME COMMENT:
 BEAM SPAN m

A: BEAM LOADING

1 LOAD FROM ROOF SPANS	AS UDL ALONG BEAM:		FROM (m):	0	5.8	AS POINT LOAD ON BEAM:		ACTING AT (m)		
	UDL PARTICIPATION FACTOR		TO (m):	5.8		TRANSVERSE LENGTH OF SUPPORTED MEMBER				0.0001
ROOF DETAILS:		ROOF SPAN	2	EAVE	0	PITCH (degrees)	5	CLADDING	0.1	
WIND DETAILS: SPEED		50	TERRAIN	3	HEIGHT	6.2	5	0.93	TOPOGRAPHY	1.15
EXT. COEFF 1		0.3	INT. COEFF 1	0	EXT. COEFF 2	-0.9	INT. COEFF 2	0	Ka x Kl x Kp	1
V (m/s) =		41.1	Q (kPa) =	1.02	P1 (kPa) =	0.30	P2 (kPa) =	-0.91	NOTE: USE EAVE = 0 FOR INTERIOR BEAM M (z, cat) 0.77 (use Ka, Kl, Kp particularly for studs & walls)	

DEAD LOAD (kPa)		LIVE LOAD		WIND LOAD (kPa)	
ROOF CLADDING (ON PLAN)	0.100	NO ACCESS		W1, DOWN	0.30
BATTEN/PURLIN	0.028	UDL (kPa)	0.25	W2, UP	-0.91
TRUSS/RAFTER & JOIST	0.083	POINT (kN)	1.00	UNDER EAVE	-0.612
GIB. CEILING	0.090				

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.30	0.00
LIVE	0.25	0.00
WIND1, DN.	0.30	0.00
WIND2, UP	-0.91	0.00

BOTH LIVE LOADS USE GREATER OF DISTRIBUTED ROOF LOAD OR 1kN POINT LOAD

2 LOAD FROM WALL SPANS	AS UDL ALONG BEAM:		FROM (m):	0	5.8	AS POINT LOAD ON BEAM:		ACTING AT (m)	
	UDL PARTICIPATION FACTOR		TO (m):	5.8		TRANSVERSE LENGTH OF WALL			
WALL DETAILS:		WALL HEIGHT (AVERAGE) (m)	1			POINT LD. PARTICIPATION FACTOR			0.0001
		WALL WEIGHT (kPa)	0.15						

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.150	0.000

3 LOAD FROM FLOOR SPANS	AS UDL ALONG BEAM:		FROM (m):		0.0001	AS POINT LOAD ON BEAM:		ACTING AT (m)	
	UDL PARTICIPATION FACTOR		TO (m):			TRANS LENGTH OF SUPPORTED MEMBER			
FLOOR DETAILS		FLOOR SPAN				POINT LD. PARTICIPATION FACTOR			0.0001
DEAD LOAD		JOISTS	0.325	DEPTH	0.3	THICKNESS	0.05	SPACING	300
		BATTEN	0.000						400
		PARTICLE BD	0.14						
		GIB CEILING	0.150						
		TOTAL	0.62						
LIVE LOAD		BASIC UDL	1.5	kPa		L. L. REDUCTION FACTOR	1.00	AREA UDL	0
		POINT (kN)		ACTING AT (m)		POINT LD PARTICIPATION FACTOR		AREA POINT	0.0

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.000	0.000
LIVE (UDL)	0.000	0.000
LIVE (POINT)	-----	0

4 DIRECT POINT LOADING	POINT LOAD 1 ON BEAM:		ACTING AT (m)		AND	POINT LOAD 2 ON BEAM:		ACTING AT (m)	
	DEAD		1.4D			DEAD		1.4D	
APPLY LOAD CASES OR COMBINATIONS BUT NOT BOTH		LIVE		1.2D+1.6L		LIVE		1.2D+1.6L	
		WIND1 (DN)		1.2D+L+W1		WIND1 (DN)		1.2D+L+W1	
		WIND2 (UP)		0.9D+W2		WIND2 (UP)		0.9D+W2	

USE THESE:

D	0.0	0.0
L	0.0	0.0
W1	0.0	0.0
2	0.0	0.0

LOAD 1 LOAD 2

B: LOAD COMBINATION SUMMARIES / RESULTS (ULS)

LOAD COMBINATION	PEAK ULS MOMENT	DEFLECTION COEFF	LEFT END REACTION	RIGHT END REACTION
1.4D	2.66		1.8	1.8
1.2D+1.6L	3.96	DIVIDE BY (E*1)	2.7	2.7
1.2D+L+W1	3.56	FOR DEFLN.	2.5	2.5
0.9D+W2	-2.13		-1.5	-1.5
D+0.2L	2.11	7.37	1.5	1.5
D+0.4L	2.32	8.11	1.6	1.6
0.65W2 (UP)	-2.50	-8.73	-1.7	-1.7

C: LOAD CASE SUMMARIES (SLS)

LOAD CASE	PEAK MOMENT	DEFLECTION COEFF	LEFT END REACTION	RIGHT END REACTION
DEAD	1.90	1.90	1.3	1.3
LIVE	1.05	1.05	0.7	0.7
WIND1, DN.	1.28	1.28	0.9	0.9
WIND2, UP	-0.73	-0.73	-2.6	-2.6

NOTE: CAN ONLY COMBINE REACTIONS FROM THESE AS PEAK MOMENTS AND DEFLECTIONS MAY NOT COINCIDE

JOB NO. 6075
 PAGE 9

ABUILD Consulting Engineers Ltd

Level 2, 21-29 Broderick Rd
 Box 13 - 273 Johnsonville Wellington
 Ph (04) 478 3929
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Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate RAUMATI

Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

BEAM NUMBER **6** SPAN **5.8** NAME **BM 6A GARAGE** Beam 3006 version 1.3 July 2005

D: OPTIMUM SOLUTIONS

THE AUTOMATIC SEARCH FOR CHEAPEST OPTION IS BASED ON THE FOLLOWING CRITERIA:
 MAX STRESS RATIO: **1.05** ACCEPTABLE SPAN/DEFLECTION RATIOS:

	520	480	
GENERAL:	D+0.2L 520	D+0.4L 480	0.65W2 200
TIMBER ONLY:	440	400	165
	440	400	

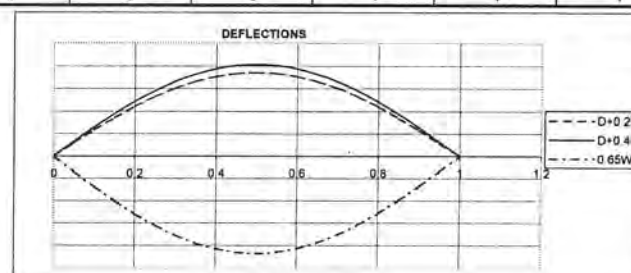
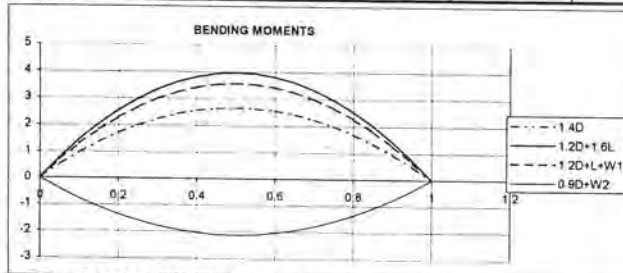
NOTES TO SELECTION TABLE:

INCREMENT = SIZE FORCED UP OR DOWN TO SUIT SPECIFIC REQUIREMENT
 FOOT TRAFFIC SENSITIVITY = PERCENTAGE OF ACCEPTABLE 1mm DEFLECTION UNDER 1 kN POINT LOAD AT MIDSPAN. SHOULD BE LESS THAN 100% FOR COMFORT
 FREQUENCY = NATURAL VIBRATION FREQUENCY. SHOULD BE GREATER THAN 8 Hz FOR COMFORT. NOTE, HOWEVER, STIFFNESS, AND THEREFORE FREQUENCY, USUALLY HIGHER THAN ESTIMATED.

PROCESS

	STEEL I BEAM	STEEL CHANNEL	TIMBER DRESSED	TIMBER SAWN	TIMBER HY 90	TIMBER HYSpan	HYBEAM HJ JOIST	SPARE	ABUILD FLITCH - L	ABUILD FLITCH - M	PLATE FLITCH
SELECT BEAM TYPES						Y					
# PARALLEL MEMBERS	1	1	2	2	1	2	1		1	1	1
MAX WIND STRESS (Mpa)	250	250	14	14	35	42	26.2		D'GAL / MILD	D'GAL / MILD	250
MAX SHORT TERM STRESS (MPa)	250	250	11.2	11.2	28	33.6	20.96		MS	MS	250
MAX LONG TERM STRESS (MPa)	250	250	8.4	8.4	21	25.2	15.72		300	300	250
ELASTIC MOD. - SHORT TERM (MPa)	200000	200000	6700	6700	9000	13200	12000		200000	200000	200000
ELASTIC MOD. - LONG TERM (MPa)	200000	200000	3350	3350	4500	6600	6000		200000	200000	200000
STRENGTH REDUCTION FACTOR (phi)	0.9	0.9	0.8	0.8	0.8	0.8	0.8		0.9	0.9	0.9
ALLOWABLE ULS STRES: BRIEF (including phi)	225	225	12.8	12.8	28	33.8	20.96		270	270	225
SHORT	225	225	10.2	10.2	22.4	26.88	16.768		270	270	225
LONG	225	225	7.7	7.7	16.8	20.16	12.576		270	270	225
FLITCH BEAM STRENGTHENING ANGLE									ANGLE	ANGLE	
SECTION MODULUS - ELASTIC (mm ³)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	864,000	#VALUE!		40 x 40 x 3 MS	40 x 40 x 5 MS	#VALUE!
SECTION MODULUS - PLASTIC (mm ³)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	864,000	#VALUE!		#VALUE!	#VALUE!	#VALUE!
MOMENT OF INERTIA (mm ⁴)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	103,680,000	#VALUE!		#VALUE!	#VALUE!	#VALUE!
DEPTH (mm)						240			#VALUE!	#VALUE!	#VALUE!
SELECTED BEAM	1-	1-	2-	2-	1- HY90	2- 240 x 45 HYSpan	1- HYBEAM JOIST		-2-L MS	-2-M MS	1-
GRADE											
BEAM WEIGHT (kg/m)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	13.8	#VALUE!		#VALUE!	#VALUE!	#VALUE!
GLUELAM WIDTH (mm)									40 x 40 x 3 MS	40 x 40 x 5 MS	
CRITICAL STRESS (MPa)						4.6					
CRITICAL LOAD CASE						1.2D+1.6L					
% STRESSED						17%					
DEFLECTION:	D+0.2L								AFBs use 95% Itrons. with n=50 for all cases		
Span / defn.	D+0.4L					10.8					
Span / defn.	0.65W2					538					
Span / defn.	0.65W2					10.8					
Span / defn.	0.65W2					538					
Span / defn.	0.65W2					-6.4					
Span / defn.	0.65W2					909					
DESIGN COMMENT											
FOOT TRAFFIC SENSITIVITY											
FREQUENCY (equiv. uniform load)						297%					
WARNINGS						4					
FORCED INCREMENT (UP or DOWN)											
CHOOSE OPTION TO PRINT (1st, 2nd)											
BEAM REF. No (IN LOOKUP TABLE)	4	8	10	9	3	9	3	1	1	1	1

BEAM TABLE



JOB NO 6075 PAGE 9

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Job No. **6075**
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

Beam 3006 version 1.3 July 2005
 Add Carter & Origin beam data

BEAM DESIGN

to NZS 4203, NZS 3404, NZS 3603

BEAM NUMBER

6

NAME **BM 6 GARAGE**

COMMENT: CHECK BEAM SUPPORTING REACTION FORM DOUBLE RAFTER

BEAM SPAN

3.9

m

A: BEAM LOADING

1 LOAD FROM ROOF SPANS

AS UDL ALONG BEAM:		FROM (m):	0	2.6	1	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):	2.6			TRANS LENGTH OF SUPPORTED MEMBER			
		UDL PARTICIPATION FACTOR		1	1	POINT LD. PARTICIPATION FACTOR			

0.0001
0.0001

ROOF DETAILS:

ROOF SPAN	6.5	EAVE	0	PITCH (degrees)	5	CLADDING	0.06	NOTE: USE EAVE = 0 FOR INTERIOR BEAM	
WIND DETAILS: SPEED	50	TERRAIN	2	HEIGHT	8	LIMIT STATE	0.93	TOPOGRAPHY	1.15
EXT. COEFF 1	0.3	INT. COEFF 1	0	EXT. COEFF 2	-0.9	INT. COEFF 2	0	Ka x Kl x Kp	1
V (m/s) =	51.5	Q (kPa) =	1.59	P1 (kPa) =	0.48	P2 (kPa) =	-1.43	(use Ka, Kl, Kp particularly for studs & walls)	

DEAD LOAD (kPa)		LIVE LOAD		WIND LOAD (kPa)	
ROOF CLADDING (ON PLAN)	0.060	NO ACCESS		W1, DOWN	0.48
BATTEN/PURLIN	0.028	UDL (kPa)	0.25	W2, UP	-1.43
TRUSS/RAFTER & JOIST	0.083	POINT (kN)	1.00	UNDER EAVE	-1.276
GIB. CEILING	0.090				

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.85	0.00
LIVE	0.81	0.00
WIND1, DN.	1.55	0.00
WIND2, UP	-4.66	0.00

BOTH LIVE LOADS USE GREATER OF DISTRIBUTED ROOF LOAD OR 1KN POINT LOAD

2 LOAD FROM WALL SPANS

AS UDL ALONG BEAM:		FROM (m):	0	3.9	0.0001	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):	3.9			TRANSVERSE LENGTH OF WALL			
		UDL PARTICIPATION FACTOR		1	1	POINT LD. PARTICIPATION FACTOR			

0.0001
0.0001

WALL DETAILS: WALL HEIGHT (AVERAGE) (m) 1
 WALL WEIGHT (kPa) 0.15

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.000	0.000

3 LOAD FROM FLOOR SPANS

AS UDL ALONG BEAM:		FROM (m):		0.0001	0.0001	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m):				TRANS LENGTH OF SUPPORTED MEMBER			
		UDL PARTICIPATION FACTOR		1	1	POINT LD. PARTICIPATION FACTOR			

0.0001
0.0001

FLOOR DETAILS

DEAD LOAD		JOISTS	0.325	DEPTH	0.3	THICKNESS	0.05	SPACING	300	
		BATTEN	0.000						400	
		PARTICLE BD	0.14							
		GIB. CEILING	0.150							
		TOTAL	0.62							
LIVE LOAD		BASIC UDL	1.5	L. L. REDUCTION FACTOR		1.00	AREA UDL	0	AREA POINT	0.0
		POINT (kN)		ACTING AT (m)			POINT LD PARTICIPATION FACTOR			

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.000	0.000
LIVE (UDL)	0.000	0.000
LIVE (POINT)		0

1.5
0.0001

4 DIRECT POINT LOADING

POINT LOAD 1 ON BEAM:		ACTING AT (m)	2.6	AND	POINT LOAD 2 ON BEAM:		ACTING AT (m)	
DEAD		1.4D	1.8		DEAD		1.4D	
LIVE		1.2D+1.6L	2.7	LIVE		1.2D+1.6L		
WIND1 (DN)		1.2D+L+W1	2.5	WIND1 (DN)		1.2D+L+W1		
WIND2 (UP)		0.9D+W2	-1.5	WIND2 (UP)		0.9D+W2		

USE THESE:

D	1.3	0.0
L	0.7	0.0
W1	0.2	0.0
2	-2.6	0.0

LOAD 1 LOAD 2

B: LOAD COMBINATION SUMMARIES / RESULTS (ULS)

LOAD COMBINATION	PEAK ULS MOMENT	DEFLECTION COEFF	LEFT END REACTION	RIGHT END REACTION
1.4D	3.00	DIVIDE BY (E+1)	2.7	2.3
1.2D+1.6L	5.24	FOR DEFLN.	4.9	3.8
1.2D+L+W1	5.40		5.3	3.9
0.9D+W2	-6.72		-7.2	-4.4
D+0.2L	2.47		2.2	1.8
D+0.4L	2.81		2.6	2.1
0.85W2 (UP)	-5.60		-5.8	-3.8

C: LOAD CASE SUMMARIES (SLS)

LOAD CASE	PEAK MOMENT	DEFLECTION COEFF	LEFT END REACTION	RIGHT END REACTION
DEAD	2.14	2.14	1.9	1.6
LIVE	1.67	1.67	1.7	1.2
WIND1, DN.	2.43	2.43	2.7	1.5
WIND2, UP	-1.13	-1.13	-9.0	-5.8

NOTE: CAN ONLY COMBINE REACTIONS FROM THESE AS PEAK MOMENTS AND DEFLECTIONS MAY NOT COINCIDE

JOB NO. 6075
 PAGE 10

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Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate RAUMATI

Job No. **6075**
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

BEAM NUMBER **6** SPAN **3.9** NAME **BM 6 GARAGE** Beam 3006 version 1.3 July 2005

D: OPTIMUM SOLUTIONS

THE AUTOMATIC SEARCH FOR CHEAPEST OPTION IS BASED ON THE FOLLOWING CRITERIA:
 MAX STRESS RATIO: **1.05** ACCEPTABLE SPAN/DEFLECTION RATIOS:

	520	480	0.65W2
GENERAL:	520	480	200
TIMBER ONLY:	440	400	165
	440	400	

NOTES TO SELECTION TABLE:

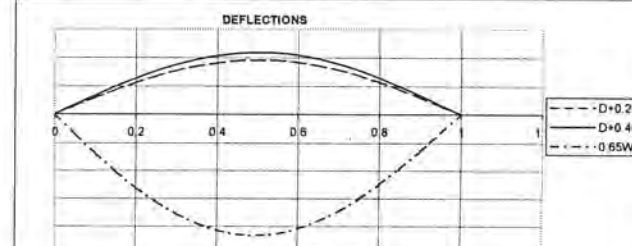
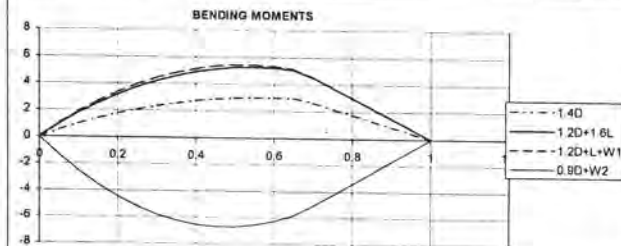
INCREMENT = SIZE FORCED UP OR DOWN TO SUIT SPECIFIC REQUIREMENT
 FOOT TRAFFIC SENSITIVITY = PERCENTAGE OF ACCEPTABLE 1mm DEFLECTION UNDER 1 kN POINT LOAD AT MIDSPAN. SHOULD BE LESS THAN 100% FOR COMFORT
 FREQUENCY = NATURAL VIBRATION FREQUENCY. SHOULD BE GREATER THAN 8 Hz FOR COMFORT. NOTE, HOWEVER, STIFFNESS, AND THEREFORE FREQUENCY, USUALLY HIGHER THAN ESTIMATED.

PROCESS

PROCESS	STEEL I BEAM	STEEL CHANNEL	TIMBER DRESSED	TIMBER SAWN	TIMBER HY 90	TIMBER HYPAN	HYBEAM HJ JOIST	SPARE	ABUILD FLITCH - L	ABUILD FLITCH - M	PLATE FLITCH
SELECT BEAM TYPES					Y						
# PARALLEL MEMBERS	1	1	2	2		1	1		1	1	1
MAX WIND STRESS (Mpa)	250	250	14	14	35	42	26.2		D'GAL / MILD	D'GAL / MILD	250
MAX SHORT TERM STRESS (MPa)	250	250	11.2	11.2	28	33.6	20.96		MS	MS	250
MAX LONG TERM STRESS (MPa)	250	250	8.4	8.4	21	25.2	15.72		300	300	250
ELASTIC MOD. - SHORT TERM (MPa)	200000	200000	6700	6700	9000	13200	12000		200000	200000	200000
ELASTIC MOD. - LONG TERM (MPa)	200000	200000	3350	3350	4500	6600	6000		200000	200000	200000
STRENGTH REDUCTION FACTOR (phi)	0.9	0.9	0.8	0.8	0.8	0.8	0.8		0.9	0.9	0.9
ALLOWABLE ULS STRES: BRIEF (including phi)	225	225	12.8	12.8	28	33.6	20.96		270	270	225
SHORT	225	225	10.2	10.2	22.4	26.88	16.768		270	270	225
LONG	225	225	7.7	7.7	16.8	20.16	12.576		270	270	225
FLITCH BEAM STRENGTHENING ANGLE									ANGLE	ANGLE	
SECTION MODULUS - ELASTIC (mm ³)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1,350,000	#VALUE!	#VALUE!		40 x 40 x 3 MS	40 x 40 x 5 MS	#VALUE!
SECTION MODULUS - PLASTIC (mm ³)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1,350,000	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
MOMENT OF INERTIA (mm ⁴)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	202,500,000	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
DEPTH (mm)					300				#VALUE!	#VALUE!	#VALUE!
SELECTED BEAM	1-	1-	2-	2-	1- 300 x 90 HY90	1- HYPAN	1- HYBEAM JOIST		-2-L MS	-2-M MS	1-
GRADE											
BEAM WEIGHT (kg/m)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	13.5	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
GLUELAM WIDTH (mm)									40 x 40 x 3 MS	40 x 40 x 5 MS	
CRITICAL STRESS (MPa)					-5.0						
CRITICAL LOAD CASE					0.9D+W2						
% STRESSED					18%						
DEFLECTION:									AFBs use 95% ltrans. with n=50 for all cases		
D+0.2L					4.2						
Span / defn.					931						
D+0.4L					4.2						
Span / defn.					931						
0.65W2					-4.8						
Span / defn.					820						
DESIGN COMMENT											
FOOT TRAFFIC SENSITIVITY					68%						
FREQUENCY (equiv. uniform load)					6						
WARNINGS											
FORCED INCREMENT (UP or DOWN)					1						
CHOOSE OPTION TO PRINT (1st, 2nd)					1						
BEAM REF. No. (IN LOOKUP TABLE)	4	8	10	9	4	10	3	1	1	1	1

relative to back wall.

BEAM TABLE

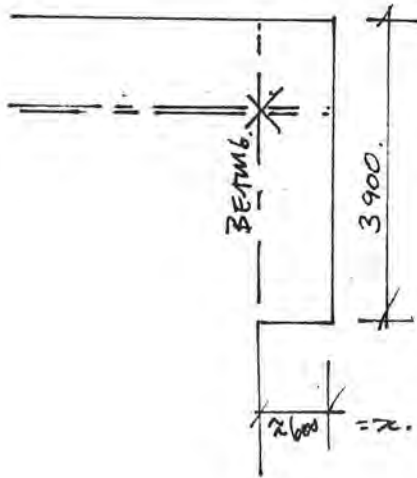


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Client: Peter Davis Architecture
 Job: Proposed Dwelling
 Job Address: Lot 56 Raumati Estate
 RAUMATI

Job No	6075 - 12
Calculation Sheet	
Date	15/11/05
Designed	MBI
Checked	RG Taylor

CHECK RELATIVE DEFLECTION TO BACK WALL OF GARAGE FOR BEAM 6



$600 < \frac{3900}{2}$
 < 1950
 $\therefore A \leq \frac{2 \times 600}{300}$
 $9.8 \neq 4$
 \swarrow
 $240 \times 90 \text{ HY90.}$
 $\therefore \text{TRY BIGGER BEAM.}$

ABUILD

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Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

Beam 3006 version 1.3
 Add Carter & Origin beam data July 2005

BEAM DESIGN

to NZS 4203, NZS 3404, NZS 3603

BEAM NUMBER

13

NAME BM 13 GARAGE

COMMENT: CHECK GARAGE LINTEL WITH POINT LOAD FROM DOUBLE RAFTER

BEAM SPAN

4.9

m

A: BEAM LOADING

1 LOAD FROM ROOF SPANS

AS UDL ALONG BEAM:		FROM (m)	0	4.2	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)	4.2				TRANSVERSE LENGTH OF SUPPORTED MEMBER	
UDL PARTICIPATION FACTOR			1	1	POINT LD. PARTICIPATION FACTOR			0.0001

ROOF DETAILS:

ROOF SPAN	7	EAVE	1.7	PITCH (degrees)	5	CLADDING	0.06	NOTE: USE EAVE = 0 FOR INTERIOR BEAM			
WIND DETAILS: SPEED	50	TERRAIN	3	HEIGHT	6.2	LIMIT STATE	0.93	TOPOGRAPHY	1.15	M (z, cat)	0.77
EXT. COEFF 1	0.3	INT. COEFF 1	0	EXT. COEFF 2	-0.9	INT. COEFF 2	0	Ka x Kl x Kp	1	(use Ka, Kl, Kp particularly for studs & walls)	
V (m/s) =	41.1	Q (kPa) =	1.02	P1 (kPa) =	0.30	P2 (kPa) =	-0.91				

DEAD LOAD (kPa)		LIVE LOAD		WIND LOAD (kPa)	
ROOF CLADDING (ON PLAN)	0.060	NO ACCESS		W1, DOWN	0.30
BATTEN/PURLIN	0.028	UDL (kPa)	0.25	W2, UP	-0.91
TRUSS/RAFTER & JOIST	0.083	POINT (kN)	1.00	UNDER EAVE	-0.812
GIB CEILING	0.090				

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	1.36	0.00
LIVE	1.30	0.00
WIND1, DN.	1.58	0.00
WIND2, UP	-6.13	0.00

BOTH LIVE LOADS USE GREATER OF DISTRIBUTED ROOF LOAD OR 1kN POINT LOAD

2 LOAD FROM WALL SPANS

AS UDL ALONG BEAM:		FROM (m)	0	4.9	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)	4.9				TRANSVERSE LENGTH OF WALL	
UDL PARTICIPATION FACTOR			1	1	POINT LD. PARTICIPATION FACTOR			0.0001

WALL DETAILS: WALL HEIGHT (AVERAGE) (m) 1
 WALL WEIGHT (kPa) 0.2

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.200	0.000

3 LOAD FROM FLOOR SPANS

AS UDL ALONG BEAM:		FROM (m)		0.0001	AS POINT LOAD ON BEAM:		ACTING AT (m)	
		TO (m)					TRANSVERSE LENGTH OF SUPPORTED MEMBER	
UDL PARTICIPATION FACTOR				0.0001	POINT LD. PARTICIPATION FACTOR			0.0001

FLOOR DETAILS

DEAD LOAD		JOISTS	0.325	DEPTH	0.3	THICKNESS	0.05	SPACING	300
		BATTEN	0.000					400	
		PARTICLE BD	0.14						
		GIB CEILING	0.150						
		TOTAL	0.62						
LIVE LOAD		BASIC UDL	1.5	L. L. REDUCTION FACTOR		1.00	AREA UDL		0
		POINT (kN)		ACTING AT (m)			AREA POINT		0.0

BEAM LOAD SUMMARY (INCL. UDL / POINT LOAD FACTOR)

	UDL (kN/m)	PT. LOAD (kN)
DEAD	0.000	0.000
LIVE (UDL)	0.000	0.000
LIVE (POINT)		0

4 DIRECT POINT LOADING

APPLY LOAD CASES OR COMBINATIONS BUT NOT BOTH

POINT LOAD 1 ON BEAM:		ACTING AT (m)	4.2	AND	POINT LOAD 2 ON BEAM:		ACTING AT (m)	
DEAD		1.4D	3.0		DEAD		1.4D	
LIVE		1.2D+1.6L	4.6		LIVE		1.2D+1.6L	
WIND1 (DN)		1.2D+L+W1	4.2		WIND1 (DN)		1.2D+L+W1	
WIND2 (UP)		0.9D+W2	-2.8		WIND2 (UP)		0.9D+W2	

USE THESE:	D	4.2	0.0001
	L	2.1	0.0
	W1	1.3	0.0
	W1	0.3	0.0
	2	-4.8	0.0
		LOAD 1	LOAD 2

B: LOAD COMBINATION SUMMARIES / RESULTS (ULS)

LOAD COMBINATION	PEAK ULS MOMENT	DEFLECTION COEFF	LEFT END REACTION	RIGHT END REACTION
1.4D	7.38		5.7	6.7
1.2D+1.6L	13.03	DIVIDE BY (E * I)	10.2	11.3
1.2D+L+W1	11.43	FOR DEFLN.	8.9	9.9
0.9D+W2	-14.58		-11.7	-10.8
D+0.2L	6.11		4.7	5.5
D+0.4L	6.95		5.4	6.2
0.65W2 (UP)	-12.55		-10.0	-9.8

C: LOAD CASE SUMMARIES (SLS)

LOAD CASE	PEAK MOMENT	DEFLECTION COEFF.	LEFT END REACTION	RIGHT END REACTION
DEAD	5.27		5.27	4.1
LIVE	4.20		4.20	3.3
WIND1, DN.	4.66		4.66	3.8
WIND2, UP	-3.59		-3.59	-15.4

NOTE: CAN ONLY COMBINE REACTIONS FROM THESE AS PEAK MOMENTS AND DEFLECTIONS MAY NOT COINCIDE

JOB NO 6075
 PAGE 13

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Job No. 6075
 Page of
 Date 15-Nov-05
 Designed MBI
 Checked RG Taylor

BEAM NUMBER **13**

SPAN **4.9**

NAME **BM 13 GARAGE**

Beam 3006 version 1.3 July 2005

D: OPTIMUM SOLUTIONS

THE AUTOMATIC SEARCH FOR CHEAPEST OPTION IS BASED ON THE FOLLOWING CRITERIA:
 MAX STRESS RATIO: ACCEPTABLE SPAN/DEFLECTION RATIOS:

	520	480	
GENERAL:	D+0.2L 520	D+0.4L 480	0.65W2 200
TIMBER ONLY:	440	400	165

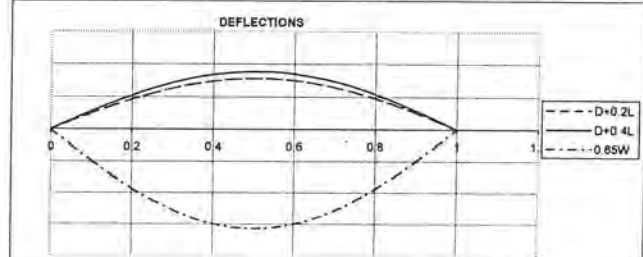
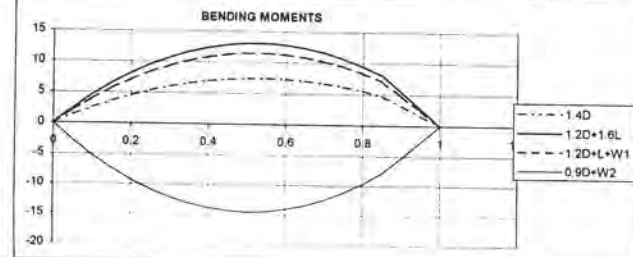
NOTES TO SELECTION TABLE:

INCREMENT = SIZE FORCED UP OR DOWN TO SUIT SPECIFIC REQUIREMENT
 FOOT TRAFFIC SENSITIVITY = PERCENTAGE OF ACCEPTABLE 1mm DEFLECTION UNDER 1 kN POINT LOAD AT MIDSPAN. SHOULD BE LESS THAN 100% FOR COMFORT
 FREQUENCY = NATURAL VIBRATION FREQUENCY. SHOULD BE GREATER THAN 8 Hz FOR COMFORT. NOTE, HOWEVER, STIFFNESS, AND THEREFORE FREQUENCY, USUALLY HIGHER THAN ESTIMATED.

PROCESS

	STEEL I BEAM	STEEL CHANNEL	TIMBER DRESSED	TIMBER SAWN	TIMBER HY 90	TIMBER HYPAN	HYBEAM HJ JOIST	SPARE	ABUILD FLITCH - L	ABUILD FLITCH - M	PLATE FLITCH
SELECT BEAM TYPES					Y						
# PARALLEL MEMBERS	1	1	2	2	1	1	1		1	1	1
MAX WIND STRESS (Mpa)	250	250	14	14	35	42	26.2		D'GAL / MILD	D'GAL / MILD	250
MAX SHORT TERM STRESS (MPa)	250	250	11.2	11.2	28	33.6	20.96		MS	MS	250
MAX LONG TERM STRESS (MPa)	250	250	8.4	8.4	21	25.2	15.72		300	300	250
ELASTIC MOD. - SHORT TERM (MPa)	200000	200000	6700	6700	9000	13200	12000		200000	200000	200000
ELASTIC MOD. - LONG TERM (MPa)	200000	200000	3350	3350	4500	6000	6000		200000	200000	200000
STRENGTH REDUCTION FACTOR (phi)	0.9	0.9	0.8	0.8	0.8	0.8	0.8		0.9	0.9	0.9
ALLOWABLE ULS STRES: BRIEF (including phi)	225	225	12.8	12.8	28	33.6	20.96		270	270	225
SHORT	225	225	10.2	10.2	22.4	26.88	16.768		270	270	225
LONG	225	225	7.7	7.7	16.8	20.16	12.576		270	270	225
FLITCH BEAM STRENGTHENING ANGLE									ANGLE	ANGLE	
SECTION MODULUS - ELASTIC (mm3)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2,400,000	#VALUE!	#VALUE!		40 x 40 x 3 MS	40 x 40 x 5 MS	#VALUE!
SECTION MODULUS - PLASTIC (mm3)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2,400,000	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
MOMENT OF INERTIA (mm4)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	480,000,000	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
DEPTH (mm)					400				#VALUE!	#VALUE!	#VALUE!
SELECTED BEAM	1-	1-	2-	2-	1- 400 x 90 HY90	1- HYPAN	1- HYBEAM JOIST		-2-L MS	-2-M MS	1-
GRADE											
BEAM WEIGHT (kg/m)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	18	#VALUE!	#VALUE!		#VALUE!	#VALUE!	#VALUE!
GLUELAM WIDTH (mm)					5.4				40 x 40 x 3 MS	40 x 40 x 5 MS	
CRITICAL STRESS (MPa)					1.2D+1.6L						
CRITICAL LOAD CASE					24%						
% STRESSED											
DEFLECTION:									AFBs use 95% Itrans. with n=50 for all cases		
D+0.2L					7.2						
Span / defn.					683						
D+0.4L					7.2						
Span / defn.					683						
0.65W2					-7.3						
Span / defn.					671						
DESIGN COMMENT											
FOOT TRAFFIC SENSITIVITY					57%						
FREQUENCY (equiv. uniform load)					5						
WARNINGS											
FORCED INCREMENT (UP or DOWN)					1						
CHOOSE OPTION TO PRINT (1st, 2nd)					1						
BEAM REF. No. (IN LOOKUP TABLE)	4	8	10	9	6	10	3	1	1	1	1

BEAM TABLE



Ground Surface RL:

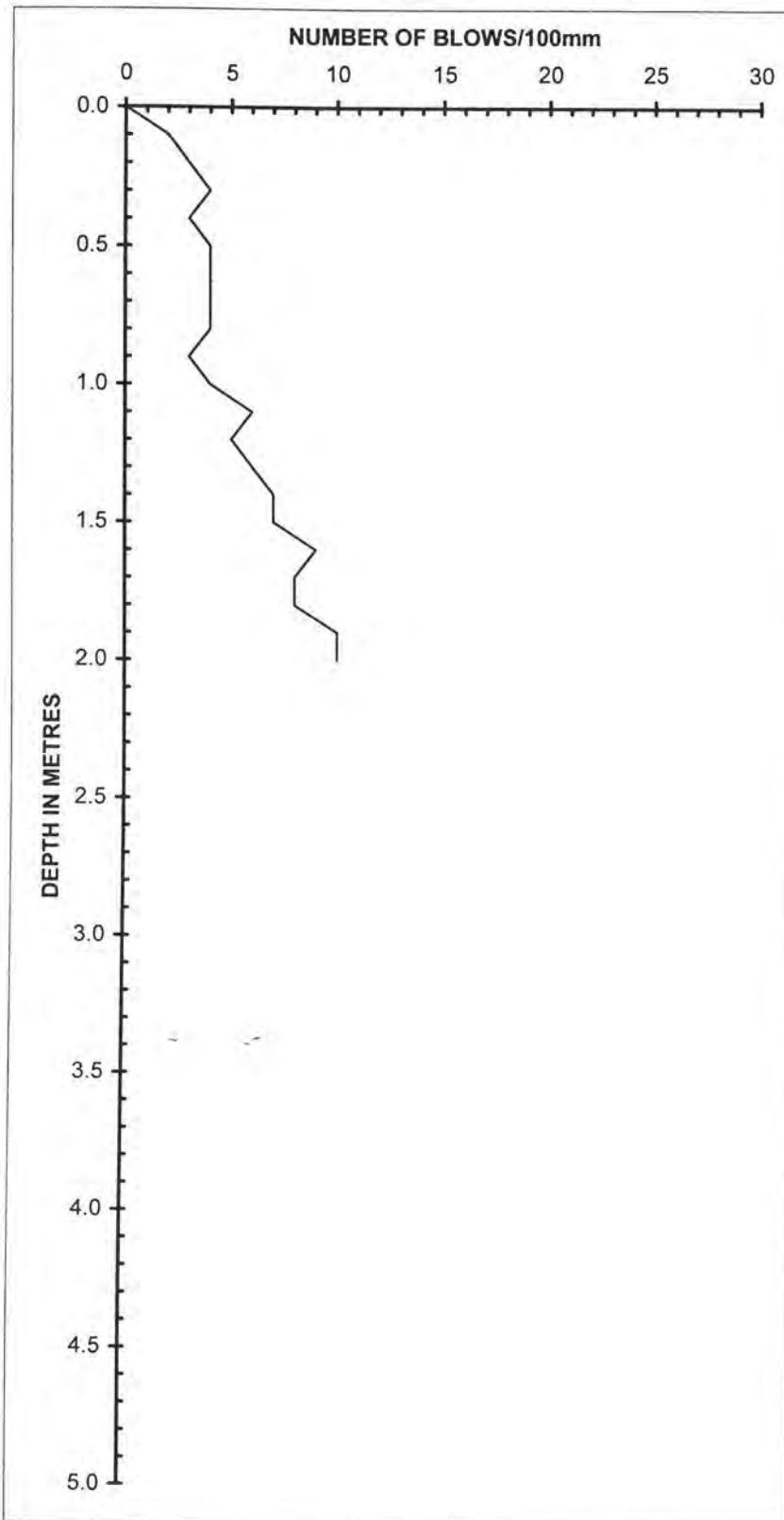
Depth from ground RL to Excavated Surface:

Shear Vane:

SCALA PENETROMETER RESULTS

TEST No. P1

m DRIVEN	No. of BLOWS
0.0	0
0.1	2
0.2	3
0.3	4
0.4	3
0.5	4
0.6	4
0.7	4
0.8	4
0.9	3
1.0	4
1.1	6
1.2	5
1.3	6
1.4	7
1.5	7
1.6	9
1.7	8
1.8	8
1.9	10
2.0	10
2.1	
2.2	
2.3	
2.4	
2.5	
2.6	
2.7	
2.8	
2.9	
3.0	
3.1	
3.2	
3.3	
3.4	
3.5	
3.6	
3.7	
3.8	
3.9	
4.0	
4.1	
4.2	
4.3	
4.4	
4.5	
4.6	
4.7	
4.8	
4.9	
5.0	



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Ground Surface RL:

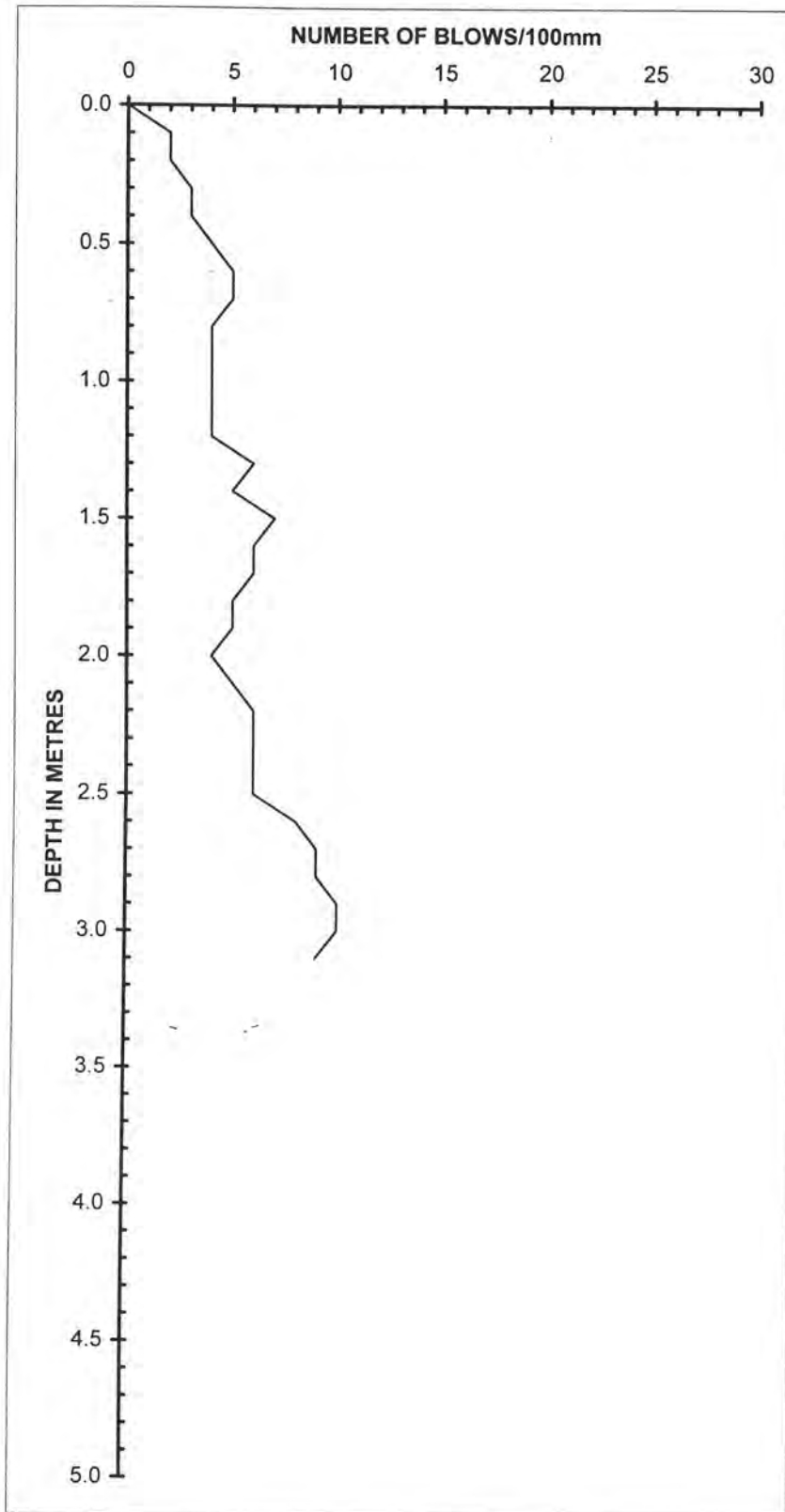
Depth from ground RL to Excavated Surface:

Shear Vane:

SCALA PENETROMETER RESULTS

TEST No. P2

m DRIVEN	No. of BLOWS
0.0	0
0.1	2
0.2	2
0.3	3
0.4	3
0.5	4
0.6	5
0.7	5
0.8	4
0.9	4
1.0	4
1.1	4
1.2	4
1.3	6
1.4	5
1.5	7
1.6	6
1.7	6
1.8	5
1.9	5
2.0	4
2.1	5
2.2	6
2.3	6
2.4	6
2.5	6
2.6	8
2.7	9
2.8	9
2.9	10
3.0	10
3.1	9
3.2	
3.3	
3.4	
3.5	
3.6	
3.7	
3.8	
3.9	
4.0	
4.1	
4.2	
4.3	
4.4	
4.5	
4.6	
4.7	
4.8	
4.9	
5.0	



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ABUILD Consulting Engineers Ltd 2nd Floor, 21-29 Broderick Rd Box 13 - 273 Johnsonville Wellington Ph (04) 478 3929 Fax (04) 478 3424 Mobile 025 491 857	Client:	Peter Davis Architecture	Job No.	6075
	Job:	Proposed Dwelling	Page	<input type="checkbox"/>
	Job Address:	Lot 56 Raumati Estate RAUMATI	Date	11/11/2005
	Owner:	JCK Developments Limited	Designed	
			Checked	RG Taylor

Operational version 5A, October 2004

SPREADSHEET TO CALCULATE BRACING REQUIREMENTS

WIND LOAD ANALYSIS TO NZS 4203: 1992
 EARTHQUAKE ANALYSIS TO NZS 3604: 1999

1. WIND LOADING

DIRECTION 1:

NORTH-WEST ▼

or enter your choice for basic wind speed [m/s]

WIND DATA:

HOUSE BLOCK 1

DIRECTION / SPEED

N	NE	E	SE	S	SW	W	NW
47	43	39	43	46	46	46	50

FACTORS

Terrain Category	Height	Terrain Category Multiplier	Limit State Multiplier	Topographic Multiplier	Area Reduction Multiplier	Roof Pressure Coefficients	Wall Pressure Coefficients
3	6.2	0.77	0.93	1.15	1	0.3	0.7
						-0.6	-0.5

BASIC WIND SPEED

50

m/s

SITE WIND SPEED

41.1

m/s

DESIGN PRESSURE

1.02

kPa

NOTE: THIS WIND SPEED HAS BEEN DERIVED SPECIFICALLY FOR DETERMINING BRACING REQUIREMENTS AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE, SUCH AS GLAZING CLADDING OR FIXINGS. THESE MAY REQUIRE CONSIDERATION OF OTHER WIND DIRECTIONS AND/OR PARAMETERS

BUILDING DIMENSIONS:

	Width	Height	Cp	Cp	Force
ROOF	11.6	1	0.3	0.6	10.60
ROOF	6.2	1	0	0.6	3.78
ROOF			0.3	0.6	0.00
GABLE			0.7	0.5	0.00
GABLE			0.7	0.5	0.00
UPPER	10.6	2.5	0.7	0.5	32.28
UPPER	6.2	2.5	0	0.5	7.87
UPPER			0.7	0.5	0.00
LOWER	11.6	2.7	0	0.5	15.90
LOWER			0.7	0.5	0.00
LOWER			0.7	0.5	0.00
SUB-FLOOR			0.7	0.5	0.00
SUB-FLOOR			0.7	0.5	0.00
SUB-FLOOR			0.7	0.5	0.00
GROUND			0.7	0.5	0.00
GROUND			0.7	0.5	0.00
GROUND			0.7	0.5	0.00

STOREY FORCES:

	kN	=	Bracing Units
UPPER STOREY	34.4	=	689
LOWER STOREY	62.5	=	1,249
SUB-FLOOR	70.4	=	1,408
GROUND STOREY	70.4	=	1,408

2. EARTHQUAKE LOADING

EQ ZONE

A

HEAVY ROOF Y/N

N

	B.U.'s / m ² CHIMNEY & etc	AREA DECK (m ²)	AREA HOUSE (m ²)	B.U.'s / m ² HOUSE	B.U.'S REQD. HOUSE	B.U.'S REQD. DECK	B.U.'S TOTAL
UPPER ▼ STOREY		36	118.2	5.8	686	169.2	856
LOWER ▼ STOREY		18.2	80.5	11.2	902	85.54	988
SUB-FLOOR ▼ STOREY					0	0	0
GROUND ▼ STOREY					0	0	0

ABUILD Consulting Engineers Ltd 2nd Floor, 21-29 Broderick Rd Box 13 - 273 Johnsonville Wellington Ph (04) 478 3929 Fax (04) 478 3424 Mobile (04) 478 3424	Client:	Peter Davis Architecture	Job No.	6075
	Job:	Proposed Dwelling	Page	16
	Job Address:	Lot 56 Raumati Estate RAUMATI	Date	11/11/2005
		JCK Developments Limited	Designed	0
			Checked	RG Taylor

Operational version 5A, October 2004

SPREADSHEET TO CALCULATE BRACING REQUIREMENTS
 WIND LOAD ANALYSIS TO NZS 4203: 1992

WIND LOADING

DIRECTION 2:

SOUTH-WEST

WIND DATA:

HOUSE BLOCK 1

DIRECTION / SPEED

N	NE	E	SE	S	SW	W	NW
47	43	39	43	46	46	46	50

FACTORS

Terrain Category	Height	Terrain Category Multiplier	Limit State Multiplier	Topographic Multiplier	Area Reduction Multiplier	Roof Pressure Coefficients	Wall Pressure Coefficients
3	6.2	0.77	0.93	1.15	1	0.3	0.7
						-0.6	-0.5

BASIC WIND SPEED

46

m/s

SITE WIND SPEED

37.8

m/s

DESIGN PRESSURE

0.86

kPa

NOTE: THIS WIND SPEED HAS BEEN DERIVED SPECIFICALLY FOR DETERMINING BRACING REQUIREMENTS AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE, SUCH AS GLAZING CLADDING OR FIXINGS. THESE MAY REQUIRE CONSIDERATION OF OTHER WIND DIRECTIONS AND/OR PARAMETERS

BUILDING DIMENSIONS:

	Width	Height
ROOF		
ROOF		
ROOF		
GABLE	6.2	0.4
GABLE		
UPPER		
UPPER	6.2	3.1
UPPER	2.4	3.2
LOWER	6.2	2.4
LOWER	2	2.3
LOWER		
SUB-FLOOR		
SUB-FLOOR		
SUB-FLOOR		
GROUND		
GROUND		
GROUND		

Cp	Cp	Force
0.3	0.6	0.00
0.3	0.6	0.00
0.3	0.6	0.00
0.7	0.5	2.56
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	19.82
0.7	0.5	7.92
0.7	0	8.95
0.7	0	2.77
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00

STOREY FORCES:

	kN
UPPER STOREY	16.4
LOWER STOREY	36.2
SUB-FLOOR	42.0
GROUND STOREY	42.0

Bracing Units

328
723
840
840

BRACING CALCULATION FOR - UPPER STOREY

WIND DIRECTION 1:

NORTH-WEST

HOUSE BLOCK 1

BRACING ELEMENTS PROVIDED						
Element Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
A1	13	BR5	1.2	2.4		YES
A2	16	BR9	0.6	2.4		YES
		0		0		YES
		0		0		YES
B1	5	GIB3	2	2.4		YES
B2	102	SP4	0.5	2.4		YES
B3	102	SP4	0.45	2.4		YES
		0		0		YES
C1	1	GIB1a	2	2.4		YES
C2	1	GIB1a	1.8	2.4		YES
		0		0		YES
		0		0		YES
D1	5	GIB3	1.2	2.4		YES
D2	1	GIB1a	1.8	2.4		YES
		0		0		YES
E1	13	BR5	1.2	2.4		YES
E2	12	BR4	1.1	2.4		YES

WIND	
Rating (B.U./m)	Element B.U.'s
115	138
110	66
0	0
0	0
65	130
70	35
70	32
0	0
55	110
55	99
0	0
0	0
65	78
55	99
0	0
115	138
100	110

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
85	102
95	57
0	0
0	0
60	120
85	43
85	38
0	0
50	100
50	90
0	0
0	0
60	72
50	90
0	0
85	102
85	94

TOTAL B.U.'S ACHIEVED

WIND: 1035

EQ: 907

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: 689

EQ: 856

OK

OK

WIND DIRECTION 2:

SOUTH-WEST

BRACING ELEMENTS PROVIDED						
Line Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
M1	16	BR9	0.6	2.4		YES
M2	5	GIB3	1.8	3		YES
		0		0		YES
M3	2	GIB1b	2.4	2.4		YES
N1	5	GIB3	3	2.4		YES
N2	5	GIB3	1.2	2.4		YES
		0		0		YES
N3	5	GIB3	1.2	2.4		YES
P1	16	BR9	0.7	2.4		YES
P2	16	BR9	0.7	2.4		YES
P3	12	BR4	1.1	2.4		YES
P4	16	BR9	0.7	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
110	66
65	94
0	0
75	180
65	195
65	78
0	0
65	78
110	77
110	77
100	110
110	77
0	0
0	0
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
95	57
60	86
0	0
50	120
60	180
60	72
0	0
60	72
95	67
95	67
85	94
95	67
0	0
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: 1032

EQ: 880

TOTAL B.U.'S REQUIRED
(FROM SHEET 1 or 2)

WIND: 328

EQ: 856

OK

OK

NOTE: FOR BRACED OR ANCHOR PILES ENSURE ELEMENT LENGTH SET TO 1m AND HEIGHT TO 2.4m

ABUILD Consulting Engineers Ltd 2nd Floor, 21-29 Broderick Rd Box 13 - 273 Ph (04) 478 3929 Johnsonville Fax (04) 478 3424 Wellington Mobile (04) 478 3424	Client:	Peter Davis Architecture	Job No. 6075
	Job:	b. u. mid Proposed Dwelling	Page 20 of
	Job Address:	Lot 56 Raumati Estate RAUMATI	Date #####
		JCK Developments Limited	Designed 0
			Checked RG Taylor

Operational version 5A, October 2004

BRACING CALCULATION FOR - LOWER STOREY

WIND DIRECTION 1:

NORTH-WEST

HOUSE BLOCK 1

BRACING ELEMENTS PROVIDED						
Element Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
A1	15	BR7	1.3	2.4		YES
A2	102	SP4	0.6	2.4		YES
		0		0		YES
		0		0		YES
B1	12	BR4	1.7	2.4		NO
B2	5	GIB3	2.1	2.4		YES
		0		0		YES
		0		0		YES
C1	2	GIB1b	3.6	2.4		YES
C2	1	GIB1a	1.8	2.4		YES
		0		0		YES
		0		0		YES
D1	140	BLK -1	3.6	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
145	189
70	42
0	0
0	0
100	170
65	137
0	0
0	0
75	270
55	99
0	0
0	0
100	360
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
145	189
85	51
0	0
0	0
85	145
60	126
0	0
0	0
50	180
50	90
0	0
0	0
100	360
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: 1266

EQ: 1140

TOTAL B.U.'S REQUIRED

WIND: 1,249

EQ: 988

(FROM SHEET 1 or 2)

OK

OK

WIND DIRECTION 2:

SOUTH-WEST

BRACING ELEMENTS PROVIDED						
Line Label	Element Type no.	Bracing Type	Element Length (m)	Element Height (m)	Angle to Bracing Line	Length Within Limits?
M1	140	BLK -1	3.6	2.4		YES
		0		2.4		YES
		0		2.4		YES
		0		2.4		YES
N1	5	GIB3	2.4	2.4		YES
N2	5	GIB3	2.4	2.4		YES
		0		2.4		YES
		0		2.4		YES
P1	16	BR9	0.7	2.4		YES
P2	16	BR9	0.7	2.4		YES
P3	2	GIB1b	2.9	2.4		YES
P4	12	BR4	1.1	2.4		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES
		0		0		YES

WIND	
Rating (B.U./m)	Element B.U.'s
100	360
0	0
0	0
0	0
65	156
65	156
0	0
0	0
110	77
110	77
75	218
100	110
0	0
0	0
0	0
0	0
0	0

EARTHQUAKE	
Rating (B.U./m)	Element B.U.'s
100	360
0	0
0	0
0	0
60	144
60	144
0	0
0	0
95	67
95	67
50	145
85	94
0	0
0	0
0	0
0	0
0	0

TOTAL B.U.'S ACHIEVED

WIND: 1154

EQ: 1020

TOTAL B.U.'S REQUIRED

WIND: 723

EQ: 988

(FROM SHEET 1 or 2)

OK

OK

NOTE: FOR BRACED OR ANCHOR PILES ENSURE ELEMENT LENGTH SET TO 1m AND HEIGHT TO 2.4m

These calculations are valid only for the specific project they have been prepared for.

ABUILD Consulting Engineers Ltd 2nd Floor, 21-29 Broderick Rd Box 13 - 273 Johnsonville Wellington	Client:	Peter Davis Architecture	Job No.	6075
	Ph (04) 478 3929	Job:	Proposed Dwelling	Page 21
	Fax (04) 478 3424	Job Address:	Lot 56 Raumati Estate	Date 11/11/2005
	Mobile 025 491 857	Owner:	RAUMATI	Designed
			JCK Developments Limited	Checked RG Taylor

Operational version 5A, October 2004

SPREADSHEET TO CALCULATE BRACING REQUIREMENTS

WIND LOAD ANALYSIS TO NZS 4203: 1992
 EARTHQUAKE ANALYSIS TO NZS 3604: 1999

1. WIND LOADING

DIRECTION 1: NORTH-WEST ▼

or enter your choice for basic wind speed [m/s]

WIND DATA:

HOUSE BLOCK 2

DIRECTION / SPEED

N	NE	E	SE	S	SW	W	NW
47	43	39	43	46	46	46	50

FACTORS

Terrain Category	Height	Terrain Category Multiplier	Limit State Multiplier	Topographic Multiplier	Area Reduction Multiplier	Roof Pressure Coefficients	Wall Pressure Coefficients
3	3.4	0.75	0.93	1.15	1	0.3	0.7
						-0.6	-0.5

BASIC WIND SPEED

50

m/s

SITE WIND SPEED

40.1

m/s

DESIGN PRESSURE

0.97

kPa

NOTE: THIS WIND SPEED HAS BEEN DERIVED SPECIFICALLY FOR DETERMINING BRACING REQUIREMENTS AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE, SUCH AS GLAZING CLADDING OR FIXINGS. THESE MAY REQUIRE CONSIDERATION OF OTHER WIND DIRECTIONS AND/OR PARAMETERS

BUILDING DIMENSIONS:

	Width	Height
ROOF	6.2	1
ROOF		
ROOF		
GABLE		
GABLE		
UPPER	6.2	2.5
UPPER		
UPPER		
LOWER		
LOWER		
LOWER		
SUB-FLOOR		
SUB-FLOOR		
SUB-FLOOR		
GROUND		
GROUND		
GROUND		

Cp	Cp	Force
0.3	0	1.80
0.3	0.6	0.00
0.3	0.6	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0	10.47
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00

STOREY FORCES:

	kN	
UPPER STOREY	7.0	=
LOWER STOREY	12.3	=
SUB-FLOOR	12.3	=
GROUND STOREY	12.3	=

Bracing Units

141	=
245	=
245	=
245	=

2. EARTHQUAKE LOADING

EQ ZONE

A

HEAVY ROOF Y/N

N

- UPPER ▼ STOREY
- LOWER ▼ STOREY
- SUB-FLOOR ▼ STOREY
- GROUND ▼ STOREY

B.U.'s / m ² CHIMNEY & etc	AREA DECK (m ²)	AREA HOUSE (m ²)	B.U.'s / m ² HOUSE	B.U.'S REQD. HOUSE	B.U.'S REQD. DECK	B.U.'S TOTAL
		39.8	5.8	231	0	231
				0	0	0
				0	0	0
				0	0	0

ABUILD Consulting Engineers Ltd 2nd Floor, 21-29 Broderick Rd Box 13 - 273 Johnsonville Wellington Ph (04) 478 3929 Fax (04) 478 3424 Mobile (04) 478 3424	Client:	Peter Davis Architecture	Job No.	6075
	Job:	Proposed Dwelling	Page	12
	Job Address:	Lot 56 Raumati Estate RAUMATI	Date	11/11/2005
		JCK Developments Limited	Designed	0
			Checked	RG Taylor

Operational version 5A, October 2004

SPREADSHEET TO CALCULATE BRACING REQUIREMENTS

WIND LOAD ANALYSIS TO NZS 4203: 1992

WIND LOADING

DIRECTION 2:

SOUTH-WEST ▼

WIND DATA:

HOUSE BLOCK 2

DIRECTION / SPEED

N	NE	E	SE	S	SW	W	NW
47	43	39	43	46	46	46	50

FACTORS

Terrain Category	Height	Terrain Category Multiplier	Limit State Multiplier	Topographic Multiplier	Area Reduction Multiplier	Roof Pressure Coefficients	Wall Pressure Coefficients
3	3.4	0.75	0.93	1.15	1	0.3	0.7
						-0.6	-0.5

BASIC WIND SPEED

46

m/s

SITE WIND SPEED

36.9

m/s

DESIGN PRESSURE

0.82

kPa

NOTE: THIS WIND SPEED HAS BEEN DERIVED SPECIFICALLY FOR DETERMINING BRACING REQUIREMENTS AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE, SUCH AS GLAZING CLADDING OR FIXINGS. THESE MAY REQUIRE CONSIDERATION OF OTHER WIND DIRECTIONS AND/OR PARAMETERS

BUILDING DIMENSIONS:

	Width	Height
ROOF		
ROOF		
ROOF		
GABLE	6.2	0.4
GABLE		
UPPER	6.2	2.7
UPPER		
UPPER		
LOWER		
LOWER		
LOWER		
SUB-FLOOR		
SUB-FLOOR		
SUB-FLOOR		
GROUND		
GROUND		
GROUND		

Cp	Cp	Force
0.3	0.6	0.00
0.3	0.6	0.00
0.3	0.6	0.00
0.7	0.5	2.43
0.7	0.5	0.00
0.7	0.5	16.41
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00
0.7	0.5	0.00

STOREY FORCES:

	kN
UPPER STOREY	10.6
LOWER STOREY	18.8
SUB-FLOOR	18.8
GROUND STOREY	18.8

Bracing Units

=	213
=	377
=	377
=	377

ABUILD Consulting Engineers Ltd	Client Peter Davis Architecture	Page 14	JOB 6075
Ph (04) 478 3929	Owner JCK Developments Limited	Date 15/11/2005	
Fax (04) 478 3424	Job Proposed Dwelling	Designed MBI	
Mob (025) 491 857	Job Address Lot 56 Raumati Estate RAUMATI	Checked RG Taylor	

DESIGN OF CONCRETE BLOCK OR CONCRETE RETAINING WALL

WALL NO.	1	NAME :	WALL 1 GARAGE
		NOTES :	1.8M RETAINING SAY UP TO 10 DEG BACKSLOPE

THIS WALL USES THESE FEATURES FROM THE FOLLOWING CALCULATIONS

PILASTER		2-WAY		PROPPED		S. KEY	
----------	--	-------	--	---------	--	--------	--

HEIGHT (H)	1.8	WALL THICKNESS	190	
BACK SLOPE	10	Fy	500	
SURCHARGE		MAIN BAR DIA.	12	
IMPOSED LATERAL LOAD (STEPPED WALLS)		COVER TO BACK	60	Footing Bott. Cover
ACTING AT		CUTOFF HEIGHT	1.2	
PHI	32	MAIN BAR SPACING	400	
DENSITY	19	PILASTER SPACING		
WALL ANGLE, Beta	0	MASONRY GRADE	B	
FRICITION TO WALL, delta=0.3*Phi	9.6	GD Fric angle	20	
WATER PRESSURE (ASSUMED DRAIN)	0	GROUT / CONCRETE STRE	8	Footing Concrete
c	0	CUTOFF BAR SPACING	600	
DEPTH OF KEY		As, BASE	283	
LOAD FACTOR	1.6	As, CUTOFF	188	

FORCES

Rankine Earth Pressure

Ka	0.3210	
P (Earth) =	9.88	acts @ 0.60
P (S'charge) =	0.00	acts @ 0.90
P (Latrl. load) =	0.00	acts @ 0.00
Total P =	9.88	acts @ 0.60
Total M =	5.93	
ULS P =	15.81	
ULS M =	9.48	
Shear Stress (v)		0.15 OK

Coulomb Earth Pressure

	0.322	
	9.90	acts @ 0.60
	0.00	acts @ 0.90
	0.00	acts @ 0.00
	9.90	acts @ 0.60
	5.94	
	15.84	
	9.50	
		0.15 OK

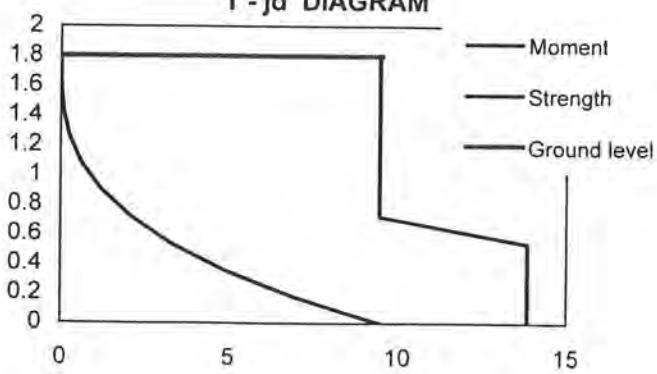
Ka x density x H²/2
Ka x Surcharge x H
Lat. load x Height to
Effective Ht. (M / P)
Earth, S'charge, Lateral

NOTES:

SECTION CAPACITY:

a(base) =	17.67	MOMENT (base) =	13.84	SHEAR FRICTION (base) =	79
a(cutoff) =	11.78	MOMENT (cutoff) =	9.46		kN/m

T - jd DIAGRAM



ABUILD Consulting Engineers Ltd		Client	Peter Davis Architecture	Page	25	JOB	6075
Ph (04) 478 3929	Box 13 - 273	Owner	JCK Developments Limited	Date	15/11/2005		
Fax (04) 478 3424	Johnsonville	Job	Proposed Dwelling	Designed	MBI		
Mob (025) 491 857	Wellington	Job Address	Lot 56 Raumati Estate RAUMATI	Checked	RG Taylor		

WALL NO. 1 **NAME :** WALL 1 GARAGE

STABILITY			
FOOTING THICKNESS (m)		0.24	
OVERALL FOOTING LENGTH (m)		1	
HEEL OUSTAND (m)		0	
PROPPED OR CANTILEVER (P or C)		C	
		FOR PROPPED WALL ASSUME WILL ACHIEVE ADEQUATE BASE FIXITY IF GET FOS GREATER THAN 1.5	

ACTIONS ABOUT TOE			
RANKINE		COULOMB	
Cantilever P	12.69	Cantilever P	12.71
Cantilever M	8.63	Cantilever M	8.6
Propped P	10.71	Propped P	10.7
Propped M	2.71	Propped M	2.7
Cantilever selected, USE P =	12.69	Cantilever selected, USE P =	12.7
Cantilever selected, USE M =	8.63	Cantilever selected, USE M =	8.6

OVERTURNING				
Resisting Actions	RANKINE		COULOMB	
	weight	moment	weight	moment
Footing weight	5.76	2.452	5.76	2.571
Wall Weight	8.208	6.819	8.208	6.988
Soil on heel 15°	0.243	8.31	0	0.000
downward component of P			0.17	2.12
total	22.28	16.96	16.09	11.57
Allow Bear(KPa)	150		150	
Bearing Width =	0.149		0.107	
FACTOR of SAFETY against OVERTURNIN	1.97		1.34	

SLIDING				
(No Shear Key)	RANKINE		COULOMB	
	W=	22.28	16.09	
	sig=	21.34	21.34	
	fric=	0.39	0.39	
	R1=	8.71	6.29	
	R2=	1.70	1.70	
	R3=	0.00	0.00	
C= 0				
Shear= 12.69			12.71	
FACTOR of SAFETY against SLIDING	0.82		0.63	
With shear Key	frict=	0.62	0.62	
	R1=	13.92	13.92	
	R2=	1.70	1.70	
	R3=	0.00	0.00	
FACTOR of SAFETY against SLIDING	1.231		1.229	
WITH NO KEY CONFIRM SLAB IN FRONT WILL PREVENT SLIDING: Y / N				Y

WALL NO. 2 **NAME :** WALL 2 GARAGE

STABILITY

FOOTING THICKNESS (m)	0.24	FOR PROPPED WALL ASSUME WILL ACHIEVE ADEQUATE BASE FIXITY IF GET FOS GREATER THAN 1.5
OVERALL FOOTING LENGTH (m)	0.3	
HEEL OUSTAND (m)	0	
PROPPED OR CANTILEVER (P or C)	C	

ACTIONS ABOUT TOE

RANKINE		COULOMB	
Cantilever P	1.60	Cantilever P	1.49
Cantilever M	0.39	Cantilever M	0.4
Propped P	1.46	Propped P	1.4
Propped M	0.16	Propped M	0.1
Cantilever selected, USE P =	1.60	Cantilever selected, USE P =	1.5
Cantilever selected, USE M =	0.39	Cantilever selected, USE M =	0.4

OVERTURNING

Resisting Actions	RANKINE		COULOMB	
	weight	moment	weight	moment
Footing weight	1.73	0.232	1.73	0.235
Wall Weight	2.28	0.432	2.28	0.435
Soil on heel 15°	0.0675	0.64	0	0.000
downward component of P			0.17	0.25
total	4.65	0.85	4.26	0.74
Allow Bear(KPa)	150		150	
Bearing Width =	0.031		0.028	
FACTOR of SAFETY against OVERTURNING	2.15		2.02	

SLIDING

(No Shear Key)	RANKINE		COULOMB	
	W=	sig=	W=	sig=
	4.65	21.34	4.26	21.34
	fric= 0.39		0.39	
C= 0	R1= 1.82		1.66	
Shear= 1.60	R2= 1.78	0	1.78	
	R3= 0.00	1.49	0.00	
FACTOR of SAFETY against SLIDING	2.25		2.32	
With shear Key	frict= 0.62		0.62	
	R1= 2.91		2.91	
	R2= 1.78		1.78	
	R3= 0.00		0.00	
FACTOR of SAFETY against SLIDING	2.932		3.151	
WITH NO KEY CONFIRM SLAB IN FRONT WILL PREVENT SLIDING: Y / N Y				

DESIGN OF CONCRETE BLOCK OR CONCRETE RETAINING WALL

WALL NO. **NAME :** WALL 3 LOWER LEVEL MAX RETAINED 2M
NOTES : SPLIT WALL BETWEEN LEVELS 2M RETAINING PROPEDED BY GARAGE

THIS WALL USES THESE FEATURES FROM THE FOLLOWING CALCULATIONS
PILASTER **2-WAY** **PROPPED** **S. KEY**

HEIGHT (H)	<input type="text" value="2"/>	WALL THICKNESS	<input type="text" value="190"/>	
BACK SLOPE		Fy	<input type="text" value="500"/>	
SURCHARGE	<input type="text" value="5"/>	MAIN BAR DIA.	<input type="text" value="12"/>	
IMPOSED LATERAL LOAD (STEPPED WALLS)		COVER TO BACK	<input type="text" value="60"/>	Footing Bott. Cover <input type="text"/>
ACTING AT		CUTOFF HEIGHT	<input type="text" value="1.2"/>	
PHI	<input type="text" value="32"/>	MAIN BAR SPACING	<input type="text" value="200"/>	
DENSITY	<input type="text" value="19"/>	PILASTER SPACING		
WALL ANGLE, Beta	<input type="text" value="0"/>	MASONRY GRADE	<input type="text" value="B"/>	
FRICTION TO WALL, delta=0.3*Phi	<input type="text" value="9.6"/>	GD Fric angle	<input type="text" value="20"/>	
WATER PRESSURE (ASSUMED DRAIN)	<input type="text" value="0"/>	GROUT / CONCRETE STRE	<input type="text" value="8"/>	Footing Concrete <input type="text"/>
DEPTH OF KEY	<input type="text" value="0"/>	CUTOFF BAR SPACING	<input type="text" value="400"/>	
LOAD FACTOR	<input type="text" value="1.6"/>	As, BASE	<input type="text" value="565"/>	
		As, CUTOFF	<input type="text" value="283"/>	

FORCES

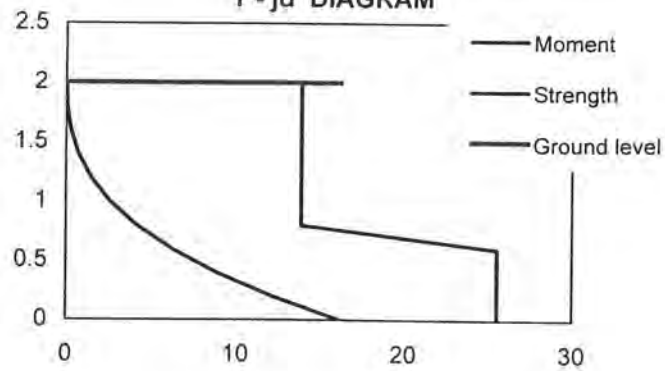
Rankine Earth Pressure			Coulomb Earth Pressure		
Ka	<input type="text" value="0.3073"/>		<input type="text" value="0.286"/>		
P (Earth) =	11.68	acts @ 0.67	10.86	acts @ 0.67	Ka x density x H ² /2
P (S'charge) =	3.07	acts @ 1.00	2.86	acts @ 1.00	Ka x Surcharge x H
P (Latrl. load) =	0.00	acts @ 0.00	0.00	acts @ 0.00	Lat. load x Height to
Total P =	<input type="text" value="14.75"/>	acts @ 0.74	<input type="text" value="13.72"/>	acts @ 0.74	Effective Ht. (M / P)
Total M =	<input type="text" value="10.86"/>		<input type="text" value="10.10"/>		Earth, S'charge, Lateral
ULS P =	<input type="text" value="23.60"/>		<input type="text" value="21.95"/>		
ULS M =	<input type="text" value="17.37"/>		<input type="text" value="16.16"/>		
Shear Stress (v)		0.22 OK		0.21 OK	

NOTES:

SECTION CAPACITY:

a(base) = MOMENT (base) = SHEAR FRICTION (base) = kN/m
a(cutoff) = MOMENT (cutoff) =

T - jd DIAGRAM



WALL NO. 3 **NAME :** WALL 3 LOWER LEVEL MAX RETAINED 2M

PROPPED WALL

USING COULOMB FORCES

FILL HEIGHT

2	m
---	---

HEIGHT ABOVE FILL TO PROP

0	m
---	---

CANTILEVER DEFLECTION

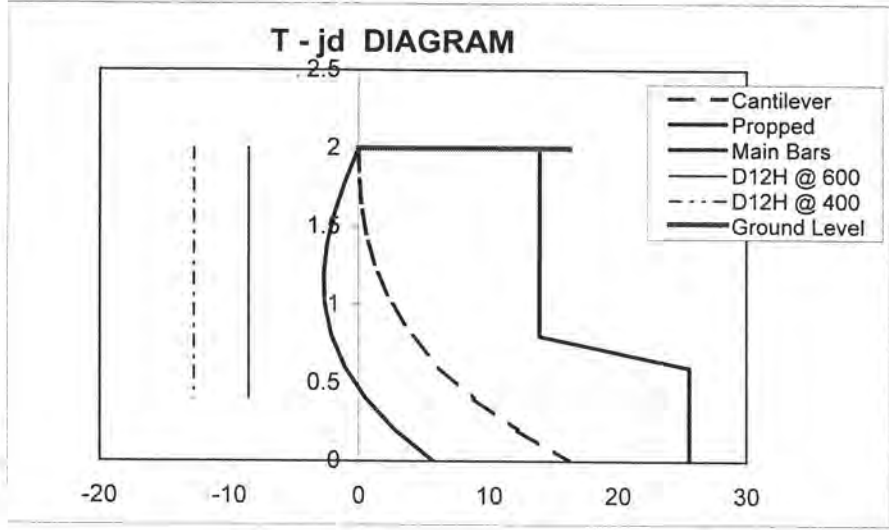
REACTION AT TOP

REACTION AT BOTTOM

BASE MOMENT BECOMES (ULS)

CF. BASE MOMENT CANTILEVER (ULS)

FOR DISTRIBUTE LOADS	FOR POINT LOAD	FOR COMBINED LOADS	
0.8	0.0	0.8	mm
3.2	0.0	3.2	kN
10.5	0.0	10.5	kN
5.8	0.0	5.8	kNm
		16.2	kNm



WALL NO. 3 **NAME :** WALL 3 LOWER LEVEL MAX RETAINED 2M

STABILITY
 FOOTING THICKNESS (m) 0.24
 OVERALL FOOTING LENGTH (m) 1.1
 HEEL OUSTAND (m) 0
 PROPPED OR CANTILEVER (P or C) C

FOR PROPPED WALL ASSUME WILL ACHIEVE ADEQUATE BASE FIXITY IF GET FOS GREATER THAN 1.5

ACTIONS ABOUT TOE

RANKINE		COULOMB	
Cantilever P	18.09	Cantilever P	16.83
Cantilever M	14.79	Cantilever M	13.8
Propped P	14.84	Propped P	13.6
Propped M	4.14	Propped M	4.0
Cantilever selected, USE P =	18.09	Cantilever selected, USE P =	16.8
Cantilever selected, USE M =	14.79	Cantilever selected, USE M =	13.8

allows for construction case.

OVERTURNING

	RANKINE		COULOMB	
Resisting Actions	weight	moment	weight	moment
Footing weight	6.34	2.885	6.34	3.099
Wall Weight	9.12	8.302	9.12	8.610
Soil on heel 15°	0.27	12.96	0	0.000
downward component of P			0.17	2.81
total	28.42	24.21	18.26	14.63
Allow Bear(KPa)	150		150	
Bearing Width =	0.189		0.122	
FACTOR of SAFETY against OVERTURNING		1.64		1.06

Based on probes.

SLIDING

	RANKINE		COULOMB	
(No Shear Key)	W= 28.42		18.26	
	sig= 21.34		21.34	
	fric= 0.39		0.39	
	R1= 11.10		7.14	
	R2= 1.78		1.78	
	R3= 0.00		0.00	
FACTOR of SAFETY against SLIDING		0.71		0.53
With shear Key	frict= 0.62		0.62	
	R1= 17.76		17.76	
	R2= 1.78		1.78	
	R3= 0.00		0.00	
FACTOR of SAFETY against SLIDING		1.080		1.161
WITH NO KEY CONFIRM SLAB IN FRONT WILL PREVENT SLIDING: Y / N				
				Y

ABUILD Consulting Engineers Ltd	Client Peter Davis Architecture	Page 3	JOB 6075
Ph (04) 478 3929	Box 13 - 273	Owner JCK Developments Limited	Date 16/11/2005
Fax (04) 478 3424	Johnsonville	Job Proposed Dwelling	Designed MBI
Mob (025) 491 857	Wellington	Job Address Lot 56 Raumati Estate	Checked RG Taylor
		RAUMATI	

DESIGN OF CONCRETE BLOCK OR CONCRETE RETAINING WALL

WALL NO.	4	NAME :	WALL 4 LOWER LEVEL SPLIT
		NOTES :	2.4M MAX RETAINING WITH VEHICLE SURCHARGE

THIS WALL USES THESE FEATURES FROM THE FOLLOWING CALCULATIONS

PILASTER		2-WAY		PROPPED		S. KEY	
----------	--	-------	--	---------	--	--------	--

HEIGHT (H)	2.4	WALL THICKNESS	190	
BACK SLOPE		Fy	500	
SURCHARGE	2.5	MAIN BAR DIA.	12	
IMPOSED LATERAL LOAD (STEPPED WALLS)		COVER TO BACK	60	Footing Bott. Cover
ACTING AT		CUTOFF HEIGHT	1.2	
PHI	32	MAIN BAR SPACING	200	
DENSITY	19	PILASTER SPACING		
WALL ANGLE, Beta	0	MASONRY GRADE	B	
FRICITION TO WALL, delta=0.3*Phi	9.6	GD Fric angle	20	
WATER PRESSURE (ASSUMED DRAIN c)	0	GROUT / CONCRETE STRE	8	Footing Concrete
DEPTH OF KEY		CUTOFF BAR SPACING	400	
LOAD FACTOR	1.6	As, BASE	565	
		As, CUTOFF	283	

FORCES

Rankine Earth Pressure

Ka	0.3073	
P (Earth) =	16.81	acts @ 0.80
P (S'charge) =	1.84	acts @ 1.20
P (Latrl. load) =	0.00	acts @ 0.00
Total P =	18.66	acts @ 0.84
Total M =	15.66	
ULS P =	29.85	
ULS M =	25.06	
Shear Stress (v)		0.28 >vm=0.24

Coulomb Earth Pressure

	0.286	
	15.64	acts @ 0.80
	1.72	acts @ 1.20
	0.00	acts @ 0.00
	17.36	acts @ 0.84
	14.57	
	27.77	
	23.32	
		0.26 >vm=0.24

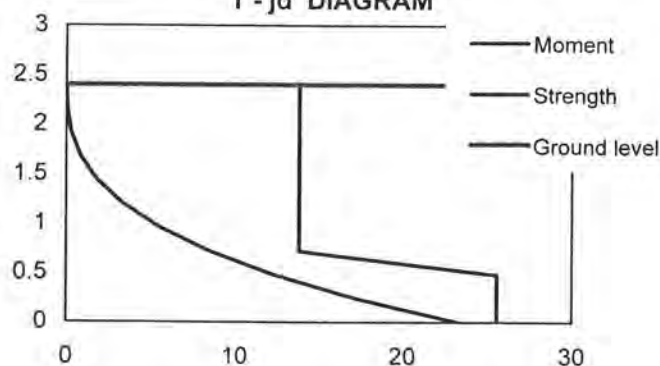
Ka x density x H²/2
Ka x Surcharge x H
Lat. load x Height to Effective Ht. (M / P)
Earth, S'charge, Lateral

NOTES:

SECTION CAPACITY:

a(base) =	35.34	MOMENT (base) =	25.55	SHEAR FRICTION (base) =	158
a(cutoff) =	17.67	MOMENT (cutoff) =	13.84		kN/m

T - jd DIAGRAM



WALL NO. 4 **NAME :** WALL 4 LOWER LEVEL SPLIT

STABILITY

FOOTING THICKNESS (m)	0.24	FOR PROPPED WALL ASSUME WILL ACHIEVE ADEQUATE BASE FIXITY IF GET FOS GREATER THAN 1.5
OVERALL FOOTING LENGTH (m)	1.2	
HEEL OUSTAND (m)	0	
PROPPED OR CANTILEVER (P or C)	C	

ACTIONS ABOUT TOE

RANKINE		COULOMB	
Cantilever P	22.37	Cantilever P	20.81
Cantilever M	20.58	Cantilever M	19.1
Propped P	18.60	Propped P	17.0
Propped M	6.12	Propped M	5.9
Cantilever selected, USE P =	22.37	Cantilever selected, USE P =	20.8
Cantilever selected, USE M =	20.58	Cantilever selected, USE M =	19.1

OVERTURNING

Resisting Actions	RANKINE		COULOMB	
	weight	moment	weight	moment
Footing weight	6.91	3.200	6.91	3.558
Wall Weight	10.944	10.594	10.944	11.160
Soil on heel 15°	0.324	16.39	0	0.000
downward component of P			0.17	3.47
total		34.25		21.33
		31.22		18.59
Allow Bear(KPa)	125		125	
Bearing Width =	0.274		0.171	
FACTOR of SAFETY against OVERTURNING	1.52		0.97	

SLIDING

	RANKINE		COULOMB	
	W=	sig=	W=	sig=
(No Shear Key)	34.25	21.34	21.33	21.34
	fric= 0.39		0.39	
	R1= 13.38		8.33	
	R2= 1.78		1.78	
	R3= 0.00		0.00	
FACTOR of SAFETY against SLIDING	0.68		0.49	
With shear Key	frict= 0.62		0.62	
	R1= 21.40		21.40	
	R2= 1.78		1.78	
	R3= 0.00		0.00	
FACTOR of SAFETY against SLIDING	1.036		1.114	
WITH NO KEY CONFIRM SLAB IN FRONT WILL PREVENT SLIDING: Y / N	Y		Y	

ABUILD Consulting Engineers Ltd	Client Peter Davis Architecture	Page 35	JOB 6075
Ph (04) 478 3929	Box 13 - 273	Owner JCK Developments Limited	Date 16/11/2005
Fax (04) 478 3424	Johnsonville	Job Proposed Dwelling	Designed MBI
Mob (025) 491 857	Wellington	Job Address Lot 56 Raumati Estate	Checked RG Taylor
		RAUMATI	

DESIGN OF CONCRETE BLOCK OR CONCRETE RETAINING WALL

WALL NO.	7	NAME :	WALL 7 DRIVEWAY
		NOTES :	2.4M MAX RETAINING NO SLAB IN FRONT

THIS WALL USES THESE FEATURES FROM THE FOLLOWING CALCULATIONS

PILASTER		2-WAY		PROPPED		S. KEY	
----------	--	-------	--	---------	--	--------	--

HEIGHT (H)	2.4	WALL THICKNESS	190	
BACK SLOPE		Fy	500	
SURCHARGE	2.5	MAIN BAR DIA.	12	
IMPOSED LATERAL LOAD (STEPPED WALLS)		COVER TO BACK	60	Footing Bott. Cover
ACTING AT		CUTOFF HEIGHT	1.2	
PHI	32	MAIN BAR SPACING	200	
DENSITY	19	PILASTER SPACING		
WALL ANGLE, Beta	0	MASONRY GRADE	B	
FRICITION TO WALL, delta=0.3*Phi	9.6	GD Fric angle	20	
WATER PRESSURE (ASSUMED DRAIN c)	0	GROUT / CONCRETE STRE	8	Footing Concrete
DEPTH OF KEY	0.3	CUTOFF BAR SPACING	400	
LOAD FACTOR	1.6	As, BASE	565	
		As, CUTOFF	283	

FORCES

Rankine Earth Pressure

Ka	0.3073		
P (Earth) =	16.81	acts @	0.80
P (S'charge) =	1.84	acts @	1.20
P (Latrl. load) =	0.00	acts @	0.00
Total P =	18.66	acts @	0.84
Total M =	15.66		
ULS P =	29.85		
ULS M =	25.06		
Shear Stress (v)		0.28 >vm=0.24	

Coulomb Earth Pressure

	0.286		
	15.64	acts @	0.80
	1.72	acts @	1.20
	0.00	acts @	0.00
	17.36	acts @	0.84
	14.57		
	27.77		
	23.32		
		0.26 >vm=0.24	

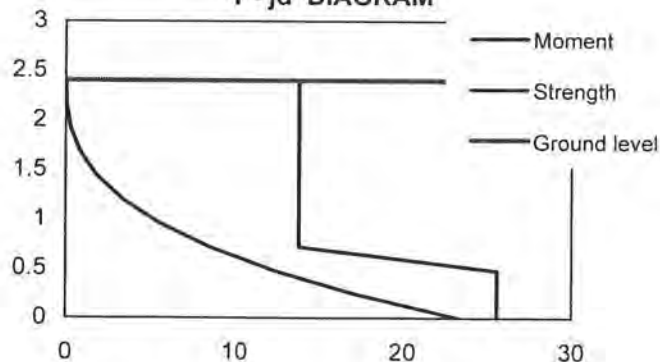
Ka x density x H²/2
Ka x Surcharge x H
Lat. load x Height to Effective Ht. (M / P)
Earth, S'charge, Lateral

NOTES:

SECTION CAPACITY:

a(base) =	35.34	MOMENT (base) =	25.55	SHEAR FRICTION (base) =	158
a(cutoff) =	17.67	MOMENT (cutoff) =	13.84		kN/m

T - jd DIAGRAM



ABUILD Consulting Engineers Ltd		Client	Peter Davis Architecture	Page	34	JOB	6075
Ph (04) 478 3929	Box 13 - 273	Owner	JCK Developments Limited	Date	16/11/2005		
Fax (04) 478 3424	Johnsonville	Job	Proposed Dwelling	Designed	MBI		
Mob (025) 491 857	Wellington	Job Address	Lot 56 Raumati Estate RAUMATI	Checked	RG Taylor		

WALL NO.	7	NAME :	WALL 7 DRIVEWAY
-----------------	----------	---------------	------------------------

STABILITY			
FOOTING THICKNESS (m)	0.24		
OVERALL FOOTING LENGTH (m)	1.2		
HEEL OUSTAND (m)	0		
PROPPED OR CANTILEVER (P or C)	C		
		FOR PROPPED WALL ASSUME WILL ACHIEVE ADEQUATE BASE FIXITY IF GET FOS GREATER THAN 1.5	

ACTIONS ABOUT TOE			
RANKINE		COULOMB	
Cantilever P	22.37	Cantilever P	20.81
Cantilever M	20.58	Cantilever M	19.1
Propped P	18.60	Propped P	17.0
Propped M	6.12	Propped M	5.9
Cantilever selected, USE P =	22.37	Cantilever selected, USE P =	20.8
Cantilever selected, USE M =	20.58	Cantilever selected, USE M =	19.1

OVERTURNING			
Resisting Actions		RANKINE	COULOMB
		weight	moment
Footing weight		6.91	3.358
Wall Weight		10.944	10.844
Soil on heel 15°	0.324	16.39	17.802
downward component of P			
total		34.25	32.00
Allow Bear(KPa)		150	
Bearing Width =		0.228	
FACTOR of SAFETY against OVERTURNING		1.56	0.99

SLIDING			
		RANKINE	COULOMB
		W= 34.25	21.33
		sig= 21.34	21.34
(No Shear Key)		fric= 0.39	0.39
		R1= 13.38	8.33
C= 0		R2= 1.78	1.78
Shear= 22.37		R3= 0.00	0.00
FACTOR of SAFETY against SLIDING		0.68	0.49
With shear Key		frict= 0.62	0.62
		R1= 25.68	25.68
		R2= 9.02	9.02
		R3= 0.00	0.00
FACTOR of SAFETY against SLIDING		1.551	1.667
WITH NO KEY CONFIRM SLAB IN FRONT WILL PREVENT SLIDING: Y / N			N

OUR REF 6075

March 07, 2006



ABUILD™

Consulting Engineers Ltd

Structural and Civil Engineers

JCK Developments Limited
Box 2082
RAUMATI BEACH

ATTENTION: Jerome Wagg

COPY TO: Kapiti Coast District Council
Private Bag 601
PARAPARAUMU

ATTENTION: The Building Inspector

056327

Dear Sir

LOT 56 RAUMATI ESTATE, 10 CHARLOTTE WAY, RAUMATI SOUTH, KAPITI COAST

We confirm a visit to site on Monday March 06, 2006 to inspect foundation reinforcing for the upper level walls, Beam 13 and upper and lower level floors.

The foundations are being poured with the floors so HD12 links are not required. The mesh was to be fixed nominally 50 mm below the finished floor level and the floor required a final clean prior to pouring.

Subject to the above we believe on reasonable grounds that the work inspected complies with the structural aspects of the Building Code, the Building Act and the design intent.

Yours faithfully
ABUILD™ Consulting Engineers Limited

Richard Skilton
BE(Hons) MIPENZ
Director



Member of the Association
of Consulting Engineers NZ

2ND FLOOR, 21-29 BRODERICK ROAD, JOHNSONVILLE
BOX 13 273, WELLINGTON 4, NEW ZEALAND
TEL (04) 478 3929, FAX (04) 478 3424
Email abuild@abuild.co.nz Website: www.abuild.co.nz

OUR REF 6075

March 14, 2006

JCK Developments Limited
Box 2082
RAUMATI BEACH

BL056327

ATTENTION: Jerome Wagg

COPY TO: Kapiti Coast District Council
Private Bag 601
PARAPARAUMU

ATTENTION: The Building Inspector

Dear Sir

LOT 56 RAUMATI ESTATE, 10 CHARLOTTE WAY, RAUMATI SOUTH, KAPITI COAST

We confirm a visit to site on Thursday March 09, 2006 to inspect the following:

- Block retaining Wall 1 prior to filling.
- Low perimeter footing, Wall 2.
- Four (4) piles, Type 1, to upper level bed 1.
- Two (2) piles, Type 3, to lower level roof eave support.

The work inspected was considered satisfactory and accordingly we believe on reasonable grounds that the work inspected complies with the structural aspects of the Building Code, the Building Act and the design intent.

Yours faithfully
ABUILD™ Consulting Engineers Limited

Prepared by:
BJJ Hillis



Richard Skilton
BE(Hons) MIPENZ
Director



OUR REF 6075

February 10, 2006

JCK Developments Limited
Box 2082
RAUMATI BEACH

ATTENTION: Jerome Wagg

COPY TO: Kapiti Coast District Council
Private Bag 601
PARAPARAUMU

ATTENTION: The Building Inspector

Dear Sir

LOT 56 RAUMATI ESTATE, 10 CHARLOTTE WAY, RAUMATI SOUTH, KAPITI COAST

We confirm a visit to site on Friday February 10, 2006 to inspect wall foundations to the east and south of the proposed house as shown on our drawings 6075-S1A, lower level.

The following was noted:

- The wall along the south side has been changed from wall type 4 to type 1 as the retained height will not exceed 1.8 metres.
- Hooks have not been included to the lower footing steel as shown on our drawings 6075-S2A and S3A. The footing widths are sufficiently wide that this is acceptable.
- The starters from the key in wall type 7 at the north east end of the house are at 0.6 metres, not at 0.4 metres as shown on the drawings. As the house foundation is better supported than anticipated in this area this is acceptable.
- The builder had covered the key for wall type 7 with polythene. This was instructed to be cut back and the exposed concrete roughened, which was being carried out while we were on site.

Subject to the above the foundations inspected appeared to comply with our design intent.

Yours faithfully
ABUILD™ Consulting Engineers Limited



Richard Skilton
BE(Hons) MIPENZ
Director



BC-056327



OUR REF 6075

February 20, 2006

JCK Developments Limited
Box 2082
RAUMATI BEACH

ATTENTION: Jerome Wagg

COPY TO: Kapiti Coast District Council
Private Bag 601
PARAPARAUMU

ATTENTION: The Building Inspector

Dear Sir

LOT 56 RAUMATI ESTATE, 10 CHARLOTTE WAY, RAUMATI SOUTH, KAPITI COAST

We confirm a visit to site on Friday February 17, 2006 to inspect slab foundation excavations and block walls to the lower level prior to pouring.

Wall 6 had been revised to Wall 1 details as the retained height is to be 1.8 metres maximum. This had been agreed previously with us by telephone (09/02/06).

The excavated subgrade for foundations to the lower slab footings appeared to be consistent with the other areas of excavation and below any fill area. We consider that the provisional piles detailed in the drawings will not be required.

Subject to the above we believe on reasonable grounds that the work inspected complies with the structural aspects of the Building Code, the Building Act and the design intent.

Yours faithfully
ABUILD™ Consulting Engineers Limited

Prepared by:
MB Ives



Richard Skilton
BE(Hons) MIPENZ
Director



RECEIVED
R.J. DEC 2005
KAPITI COAST
DISTRICT COUNCIL

SPECIFICATION

of work to be done and materials to be used in carrying
out the works shown on the accompanying drawings

New House

at

Lot 56, Raumati Estate Raumati South

by

JCK Developments

Job No: 3725
Date: October 2005

1201 PRELIMINARIES AND GENERAL

1. THE PROJECT

1.1 THE WORKS

The works are as described in this specification and as shown on the drawings.

1.2 SITE

The site of the works, the site address and the legal description are shown on the drawings. Confine access and work to the area of site indicated on the drawings.

2. DOCUMENTATION

2.1 SPECIFICATION STRUCTURE

The designation and numbering of individual specification sections follows the CBI (Co-ordinated Building Information) system for the co-ordination and classification of construction information. Sections are for reference and convenience only and do not profess to define subcontracts.

Read all sections together and read PRELIMINARIES AND GENERAL with all other sections.

2.2 INTERPRETATIONS

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Notified:	Notified in writing

2.3 ABBREVIATIONS

The following abbreviations are used throughout the specification sections:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BRANZ	Building Research Association of New Zealand
BS	British Standard
ECP	Electrical Code of Practice
FTMA	Frame and Truss Manufacturers Association of New Zealand
HERA	Heavy Engineering Research Association
IEC	International Electrotechnical Commission
MPNZ	Master Painters New Zealand Association Inc
NZBC	New Zealand Building Code
	AS Acceptable solution
	VM Verification method
NZHB	New Zealand Hand Book
NZMRM	New Zealand Metal Roofing Manufacturers Inc
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
OSH	Department of Labour – Occupational Safety and Health
WANZ	Window Association of New Zealand Inc

2.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

2.5 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.
Contractor: The person contracted by the owner to carry out the contract.

2.6 SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified.

Approval of substitutions: In writing.

2.7 MANUFACTURERS AND SUPPLIERS REQUIREMENTS

Manufacturers and suppliers requirements, instructions, specifications or details means those issued by them for their particular material, product or component and are the latest edition.

2.8 MANUFACTURERS AND SUPPLIERS DOCUMENTS

Refer to individual sections for a detailed list of manufacturers and suppliers documents relating to work on this project. Retain current copies of the documents listed, and other relevant manufacturers' technical literature, on site. Make this information available to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing products before commencing work. Provide a copy of all manufacturers' literature to the owner.

2.9 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code acceptable solutions (NZBC __/AS_) and verification methods (NZBC __/VM_) for criteria and/or methods used to establish compliance with the Building Act 2004.

Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards (AS, BS) and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications, and to ensure that all those engaged in construction of the works to be similarly informed.

Documents cited both directly and within other cited publications are deemed to form part of this specification.

2.10 PRECEDENCE OF REFERENCED DOCUMENTS

Should any discrepancy be found between drawings and specification then the Designer should be consulted for a ruling.

Resolution of any variance must be confirmed in writing and where building consent approval is affected, the change notified to the territorial authority prior to any further work proceeding.

2.11 COMPLIANCE WITH THE DOCUMENTS

The work shall be carried out to the true intent of the Contract Documents along with any further details which may be issued from time to time for the purpose of more fully explaining those already in the contract documents. The drawings and this specification

shall be accepted and considered sufficient for the general description of the works and the Contractor shall not depart from them without written consent.

2.12 DOCUMENTS REFERRED TO

Documents referred to in this preliminaries and general section are:

Building Act 2004
Health and Safety in Employment Act 1992
Smoke Free Environments Act 1990

2.13 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the building consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where building consent approval is affected refer any change to the territorial authority.

2.14 STATUTORY OBLIGATIONS

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

2.15 BUILDING CONSENT

Obtain the original or copies of the building consent form and documents from the owner and keep on site. Liaise with the territorial authority and/or the building certifier for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

2.16 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the territorial authority and the owner. Producer statements to be in the form required by the Territorial Authority to comply with the Building Act.

2.17 REGISTERED CERTIFIED BUILDER GUARANTEE

Provide a Registered Certified Builder 5 year Home Owner Guarantee. Complete the guarantee application. Before commencing the contract works, execute with the signatures of the owner and the registered certified builder and forward to CBA Insurance Services Ltd along with the fee payable.

2.18 TRADE WARRANTIES

Where specific trade warranties are offered covering materials and/or execution of proprietary products or complete installations, provide copies of all such warranties to the owner.

2.19 SERVICES PLANS

Prepare services plans setting out the actual positions as constructed of all sewer, stormwater, sanitary plumbing, piped and ducted services, electrical and mechanical services. Except where specified otherwise, as-built plans may be marked up on copies of relevant project drawings. Provide 1 set of services plans to the owner. Provide services plans required by the building consent to the territorial authority.

3. ESTABLISHMENT

3.1 APPROVALS

Attend on territorial authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of the works.

3.2 CONTRACT OBSERVATION

The role of the consultants commissioned to design the work does not include administering the contract and/or observing the construction or completing the project. The contract documents prepared are sufficient for the construction of the project by a competent contractor. Consequently the consultants will not be liable (in contract tort or otherwise) for any claim, damage, liability, loss or expense incurred arising in any way in relation to the contractor not carrying out and/or completing the work as described in the contract documents.

4. TEMPORARY WORKS AND SERVICES

4.1 SITE ACCOMMODATION

Provide, erect and maintain scaffolding, sheds, toilets, water, power, hoardings and access to the site. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works. Pay fees and remove temporary works and services on completion of the works.

4.2 PROTECT

Protect parts of the work liable to damage, including adjoining public or private property, existing buildings, existing roads, footpaths, fences, site services, trees, landscaping and existing retained site features, until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.

Make good damage to existing property and site features arising from construction activities or failure to protect.

4.3 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into the drainage system.

4.4 STORAGE

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers' requirements.

4.5 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, or objects of value. Ensure they remain undisturbed until direction is given for their removal.

5. PROJECT MANAGEMENT

5.1 SITE MEETINGS

Hold site meetings when required by the owner. The contractor's representative and site supervisor to attend such meetings. Inform subcontractors and others when their presence is required.

5.2 MEANS OF COMMUNICATION

All directions and approvals to be in writing.

5.3 WORKING HOURS

Work on site is not restricted. Comply with territorial authority consent conditions and noise and nuisance controls.

5.4 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992. Comply with all relevant New Zealand safety legislation.

Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards.

Identify any significant hazards.

Maintain proper procedures for dealing with any emergencies that may arise. Immediately investigate accidents, identify their cause and maintain a register of accidents and serious harm. Provide a copy of any report which the contractor is required to make to a public authority on any accident which is associated with carrying out the contract works and results in serious harm to any person.

5.5 SMOKING

Do not smoke on site except in a designated location in accordance with the Smoke Free Environments Act 1990. Location determined by the contractor, with the approval of the owner.

5.6 RESTRICTIONS

Do not:
- light rubbish fires on the site

6. CONSTRUCTION

6.1 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finishes (refer to 3101 CONCRETE).
- Dimensional accuracy of structural columns (following completion of foundations),
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content (refer to 3801 CARPENTRY).

Where any material, quality or dimension exceeds specified or required tolerances, obtain written confirmation of remedial action from the owner. When building consent approval is affected, confirm with the territorial authority.

Provide all materials, equipment, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met.

6.2 DAMAGE AND NUISANCE

Take all reasonable precautions to prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and all other causes resulting from the contract works. Comply with the requirements of the territorial authority and relevant Acts and Standards.

6.3 SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

6.4 OWNER TO SIGHT SET-OUT

While it remains the contractor's responsibility to set out the works accurately and correctly and to confirm any changes from the approved location with the territorial authority, obtain the owner's written confirmation that they have sighted the proposed building location, site datum and profiles, before commencing any further work.

6.5 EXECUTION

Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

6.6 MATERIALS AND PRODUCTS

Use only new materials and products, unless stated otherwise, of the specified quality and complying with all cited documents.

Substitution of alternative materials, products, plant or equipment from those specified must first be confirmed by the owner in writing. If the building consent approval is affected, obtain the approval of the territorial authority for the substitution.

6.7 COMPATIBILITY

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

6.8 COMPLETE ALL SERVICES

Ensure building services are operational, with temporary labelling removed, required labelling fixed and service instructions provided.

6.9 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the works leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings. Ensure that any maintenance requirements listed on temporary markings are conveyed to the owner.

6.10 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including cabinetwork, joinery, sanitary and hardware items. Vacuum or polish floor surfaces. Clean and polish glass, both sides.

6.11 SPARES

Collect, protect and store safely spare materials required under the contract. Give the owner an inventory of spares.

2201 PREPARATION AND GROUNDWORK

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3604 Timber framed buildings
OSH: Approved code of practice for safety in excavation and shafts for foundations

1.2 SITE SAFETY

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

2. PRODUCTS

2.1 EXCAVATED FILL

Material from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

2.2 SAND FILL

Clean sand of such grading in particle size as to allow for mechanical compaction to 90% maximum density.

2.3 GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20 mm to 7 mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

3. EXECUTION

3.1 EXCAVATION GENERALLY

Carry out excavation to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

3.2 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.3 PROTECT EXISTING WORK

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.

3.4 PROTECT TREES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained.

3.5 SURFACE PREPARATION

Comply with NZS 3604, section 3.5. Remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area to be built on.

3.6 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.

3.7 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

3.8 SHORING AND UNDERPINNING

Carry out shoring and underpinning shown on the drawings and as necessary to prevent subsidence of adjoining public or private property and to ensure the safety of the public and site personnel. Maintain protection throughout the progress of the works, or until foundations and subgrade structures have been completed and the stability of adjoining public and private property secured.

3.9 GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

3.10 FOUNDATION EXCAVATION

Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and solid, stepped as detailed and clean and free of water.

3.11 BASE FOR SLABS

To conform with NZS 3604, section 7.5.3. Consolidate with a vibrating roller. Blind the surface with coarse sand or sand/cement and roll ready to receive a dampproof membrane.

3.12 GENERAL BACKFILLING

Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150 mm layers with the last 200 mm in clean topsoil, lightly compacted and neatly finished off.

3.13 RETAINING WALLS

Backfill behind retaining walls with free draining granular material and compact in 200 mm layers. Ensure any tanking membranes, drain coil and dampproofing are not punctured.

3.14 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

2301 FOUNDATIONS

1. GENERAL

Refer to 3101 CONCRETE for poured concrete footings, foundations, foundation walls and floor slabs.

Refer to 3301 CONCRETE MASONRY for concrete block foundation walls.

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3605	Timber piles and poles for use in buildings
NZS 3631	New Zealand national timber grading rules

2. PRODUCTS

2.1 ROUND TIMBER PILES

Corsican pine or radiata pine, treated H5 to NZS 3602, table 1A, and complying with NZS 3605 for cross section, length, straightness, strength and branding. All to NZS 3604 for footing and type.

2.2 TIMBER SUB-FLOOR FRAMING

Species, grade, moisture content in service and level of treatment as set out in NZS 3602. Grading to NZS 3631 and treated to NZS 3602, table 1C.

2.3 NAILS

Steel, stainless steel and galvanised steel of pattern to NZS 3604, table 6.8 and section 4 Durability.

2.4 BOLTS AND SCREWS

Steel, stainless steel and galvanised steel to NZS 3604.

2.5 NAIL PLATES

Stainless steel and galvanised steel toothed or nailed steel plates to the plate manufacturer's design for the particular locations shown on the drawings.

3. EXECUTION

3.1 FOUNDATIONS GENERALLY

Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 INSTALL ROUND TIMBER PILES

Prepare for and drive timber piles to NZS 3604, section 6.6. Protect pile heads with a suitable cushion.

3.3 SUB-FLOOR FRAMING

Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, section 6.

3101 CONCRETE

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3101	Concrete structures standard Part 1 The design of concrete structures
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

2. PRODUCTS

2.1 NORMAL CONCRETE

Normal concrete 20 MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.2 PRESCRIBED MIX CONCRETE

Prescribed mix concrete 20 MPa grade minimum strength, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104: table 3.1 Grading recommendations for combined and uncombined coarse aggregates.

2.3 SITE CONCRETE

Special concrete 10 MPa with minimum water for workability, all materials and batching to NZS 3104: table 3.1 Prescribed mixes (P).

2.4 REINFORCEMENT

Bars to AS/NZS 4671. Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671.

2.5 TYING WIRE

Mild drawn steel wire not less than 1.2 mm diameter.

2.6 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

2.7 DAMPPROOF MEMBRANE

0.25 mm minimum polyethylene to NZS 3604: 7.5.4 Damp-proof membrane.

3. EXECUTION

3.1 HANDLE AND STORE

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.

Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the owner. Unless detailed otherwise, provide a 19 mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

Water blast to clean formwork. Keep formwork wet before concrete is placed.

3.3 INSTALL DAMPPROOF MEMBRANE

Apply polythene membrane to prepared basecourse with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

3.4 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109: 3.3 Hooks and bends. Do not rebend bars without written approval.

3.5 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109: 3.6 Spacing of reinforcement.

3.6 LAPPED SPLICES

Length of laps as dimensioned on the drawings. Tie all lapping bars to each other.

3.7 REINFORCEMENT COVER

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101: table 5.5 Minimum required cover. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109: 3.9 Tolerances for reinforcement.

3.8 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

3.9 CONSTRUCTION JOINTS

Locate and construct as shown on the drawings.

3.10 PRE-PLACEMENT INSPECTION

Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the territorial authority inspector.

3.11 SURFACE FINISHES

To NZS 3114: 105 Specification of finishes, as scheduled or as denoted on the drawings.

3.12 CONCRETE SURFACE TOLERANCES

To NZS 3114: 104 Surface tolerances and 105 Specification of finishes, with the suggested tolerances becoming the required tolerances.

3.13 PUMPING CONCRETE

Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: 7.4 Handling and placing and 7.6 Compaction. Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.

3.14 COMPACTION

Use power operated vibrators on foundations, vertical constructions and beams.

3.15 FLOOR SLABS

Construct to NZS 3604: 7.5 Concrete slab-on-ground floors in timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109: 104 Surface tolerances.

3.16 SAW CUTS

Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts: $\frac{1}{3}$ slab depth or 30 mm minimum.

3.17 SURFACE DEFECTS

Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with 1:2 mortar or plaster, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.

3.18 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.19 CLEAN OUT

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

3.20 REMOVE

Remove all unused materials and all concrete and reinforcing debris from the site.

3301 CONCRETE MASONRY

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure general, 2.0 Masonry
NZS 3103	Sands for mortars and plasters
NZS 3109	Concrete construction
NZS 3604	Timber framed buildings
NZS 4210	Masonry construction: materials and workmanship
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4455	Masonry units and segmented pavers
AS/NZS 4671	Steel reinforcing materials

1.2 QUALIFICATIONS

Carry out all masonry work with people competent and experienced in this type of work, under the supervision of a registered mason. The registered mason to certify in writing to the owner that the observation has been carried out in accordance with the relevant New Zealand Standards.

1.3 INSPECTION

Call for inspection of the work at critical stages including set out, reinforcing, and the time prior to and during grouting. All to recognised trade practice as set out in NZS 4210, clause 1.4.

1.4 TESTS

Carry out all required tests in accordance with NZS 4210, appendix 2A.

1.5 QUALITY RECORDS

Keep accurate records relating to strength and quality of materials used in the construction, and make the information available to the territorial authority inspector on request.

2. PRODUCTS

2.1 MASONRY UNITS

To AS/NZS 4455.

2.2 REINFORCEMENT

To AS/NZS 4671 and as detailed.

2.3 MORTAR

Sand to NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand. Mortar to NZS 4210, section 2.2. Compressive strength of not less than 12.5 MPa.

2.4 GROUT

To NZS 4210, section 2.3. Spread value 450 – 530 mm.

2.5 WATER

Clean, fresh and free from excess alkali, salt, silt and organic materials. Water from a local authority water supply is acceptable.

3. EXECUTION

3.1 MASONRY CONSTRUCTION GENERALLY

To NZS 4210 and NZS 4229.

3.2 STORAGE

Store masonry units clear of the ground, under cover and well ventilated until placed in the work.

3.3 MOISTURE CONTENT

Ensure masonry units are air dry prior to laying.

3.4 CHECK BASE CONCRETE

Ensure the base concrete is true to line and level, requiring a base mortar bed of 10 mm (minimum) to 20 mm (maximum). Ensure that all laitance, loose aggregate, or anything preventing bond is removed prior to laying masonry units.

3.5 STARTER POSITIONS

Before commencing laying masonry units, check the location of starter reinforcement by measure or by a dry trial lay up of the first course. Do not correct misplacement by cranking bars. Where misplacement exceeds the location tolerance, obtain written direction before proceeding.

3.6 REINFORCEMENT AND GROUTING

Reinforcement detailed, bent and placed in accordance with NZS 4210. Refer to drawings for details of reinforcement and extent of grout filling.

3.7 COVER

Minimum cover as required for reinforced concrete, with grout and masonry treated as a homogeneous material. Maintain reinforcing bars for retaining walls a minimum of 15 mm and for other masonry a minimum of 6 mm from the masonry work face, with the space filled with grout.

3.8 TOLERANCES

Construct within the tolerances set out in NZS 4210, clauses 2.6.5 and 2.7.1. Lay masonry units with bedding of consistent thickness throughout.

3.9 PROTECTION

Protect fair-faced masonry walls, keeping them clear of mortar droppings, grout splashes, or stains of any kind.

3.10 LAY MASONRY UNITS

Ensure consistent, fully filled and tooled joints. Where walls are reinforced, prevent mortar droppings from entering the cells to be grouted. Provide clean out holes at base of wall, unless "low lift" (NZS 4210) grouting is used. Ensure reinforcement is accurately placed and tied. Lay in regular running bond with all necessary special units and sill units. Cut masonry, if necessary, true and square without chipping.

3.11 MASONRY UNITS JOINTS

Not exceeding 10 mm thick, or less than 8 mm when the units are bedded in. Joints tooled concave, unless detailed otherwise.

3.12 CONTROL JOINTS

Locate at major changes of wall height or thickness, at openings, and at not more than 8 metre centres, or, as shown on the drawings. Where reinforcement passes through a control joint, provide for breaking bond using methods detailed on NZS 4210, figure 2.10.1, unless specifically detailed otherwise.

- 3.13 BRACING**
Provide sufficient temporary lateral bracing to ensure stability until the final supporting construction is in place.
- 3.14 PRE-GROUTING INSPECTION**
Inspect walls prior to grouting. Ensure cells are clean and reinforcement is correctly placed. Where "high lift" (to NZS 4210) grouting is used, seal the clean out holes and brace to prevent blow outs.
- 3.15 GROUTING OF CELLS**
Grout all masonry cells below finished grades, all cells in retaining walls and all cells containing reinforcing.
- 3.16 GROUT CELLS**
Grout all masonry unit cells.
- 3.17 GROUTING PROCEDURE**
Use procedures set out in NZS 4210. Methods acceptable on this project are:
- high lift grouting with expansive admixture
- high lift grouting with reduced compaction
- low lift grouting.
- 3.18 CONSTRUCTION JOINTS**
Form and treat construction joints between grout pours and between masonry walls and hardened concrete work to ensure bonding occurs. Comply with NZS 4210, section 2.16.
- 3.19 MORTAR IN COMPONENTS**
Mortar in components such as sills, copings, lintels, and steps, as work proceeds.
- 3.20 BUILD IN**
Build in plugs, bolts, ties, metal flashings, dowels, fastenings and fixings as required by all trades and as shown on the drawings.
- 3.21 PROGRESSIVE CLEANING**
Clean off mortar splashes and grout spills as they occur, making good any damage at the same time.
- 3.22 FINAL CLEANING**
Clean down masonry work and remove waste material from adjoining surfaces and floors at completion.
- 3.23 REMOVE**
Remove from the site materials not used.

3801 CARPENTRY

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1 External moisture
9.0 Wall claddings
9.1 General
9.4 Timber weatherboards
9.7 Fibre cement sheet

NZBC H1/AS1 Energy efficiency, 2.0 Building thermal envelope
AS/NZS 1748 Mechanically stress-graded timber
AS/NZS 2269 Plywood - Structural
NZS 3602 Timber and wood-based products for use in building
NZS 3603 Timber structures standard
NZS 3604 Timber framed buildings
NZS 3606 Manufacturer of glue-laminated timber
NZS 3631 New Zealand national timber grading rules
NZS 3640 Chemical preservation of round and sawn timber
NZS 4218 Energy efficiency – Small building envelope

BRANZ Bulletin 453: Fasteners selection

BRANZ Bulletin 368: Preventing moisture problems in timber framed skillion roofs

1.2 PERFORMANCE

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

2. PRODUCTS

2.1 BUILDING WRAPS AND UNDERLAYS

Breather type, waterproof.

2.2 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

2.3 LAMINATED TIMBER

Radiata pine laminations to NZS 3606, table 1; treated as required by NZS 3602, to the requirements of NZS 3640, with special attention to Appendix B "Specification advisory notes". Supply weather resistant sealed.

2.3 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, minimum 20 mm thickness, width and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10.

2.4 EXTERIOR CAVITY VERMIN-PROOFING

Perforated uPVC, aluminium or stainless steel trays with upstands. Upstand one side 10 mm and the other 75 mm. Length and width to suit cavity.

2.4 PLYWOOD FLOORING

Structural plywood to AS/NZS 2269.

- 2.5 TIMBER WEATHERBOARD**
Dressing grade to NZS 3631, to NZS 3617 for profile and treated to NZS 3602, table 2, reference 2.A1.
- 2.6 FIBRE CEMENT SHEET CLADDING**
Cellulose cement autoclaved sheets to NZS/AS 2908.2.
- 2.7 FIBRE-CEMENT SOFFIT LINING**
Cellulose cement autoclaved sheets to AS/NZS 2908.2.
- 2.8 TIMBER FASCIAS AND BARGE BOARDS**
Dressing grade to NZS 3631 and treated to NZS 3602, table 2, reference 2A.3. Finger jointed timber to AS/NZS 1491.
- 2.9 PVC JOINTERS**
To suit sheet thickness.
- 2.10 SOFTWOOD SPACED BOARDING FOR EXTERIOR DECKS**
Selected radiata pine, treated to H3.2 CCA to NZS 3640, clause 6.3.1, Round, part round, or sawn timber. Dressed four sides and with arrises removed. Moisture content prior to laying ~.
- 2.11 DAMPPROOF COURSE**
2-ply/3-ply kraft felt strip saturated and coated with bitumen.
- 2.12 NAILS, BOLTS AND SCREWS**
Steel, stainless steel and galvanised steel of pattern to suit the location and to BRANZ Bulletin 328 "Selection and use of fasteners".
- 2.13 NAIL PLATES**
Stainless steel and/or galvanised steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings.
- 2.14 CONNECTORS**
Stainless steel and/or galvanised steel connectors and structural brackets to the
- 2.15 FLASHINGS**
Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.
- 2.16 GLASS FIBRE THERMAL INSULATING PADS**
Glass fibres bonded with a thermosetting resin to form a rectangular insulating pad.
- 2.17 TAPES**
Proprietary plastic tape, stapled across framing to retain insulation in unlined wall and ceiling locations.
- 2.18 ADHESIVE TAPE**
- 3. EXECUTION**
- 3.1 ATTENDANCE**
Provide and fix blocks, nogs, openings and other items as required by other trades.

3.2 MOISTURE CONTENT

Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings for framing to which linings are attached.

- Framing at erection: 24% maximum
- Framing at enclosure: 20% maximum
- Framing at lining: 16% maximum

3.3 EXECUTION GENERALLY

To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.4 FIX WRAPS AND UNDERLAYS

Fix to framing, with laps and fixing to the cladding manufacturer's requirements.

3.5 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

3.6 DIMENSIONS

All timber sizes are nominal sizes.

3.7 SET-OUT

Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.

3.8 FRAMING FLOORS

Framed and fastened to NZS 3604, section 7, Floors.

3.9 FRAMING WALLS

Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8, Walls.

3.10 FRAMING ROOFS

Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9, Posts and 10, Roof framing.

3.11 LAYING PLYWOOD FLOORING

Lay and countersink screw fix to the plywood manufacturer's requirements and to NZS 3604, section 7.2.3,

3.5 INSTALL DRAINED CAVITY

20 mm minimum thickness ventilated and drained cavity to NZBC E2/AS1: 9.0 Wall claddings, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs over the building wrap. Seal the top of the cavity and install vermin-proofing at base. Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.13 PRIME OR SEAL

Prime or seal all front and back faces, edges and end grain before fixing weatherboards and exterior trim, to the finish and quality specified in 6701 PAINTING AND PAPERHANGING.

3.14 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards, and to NZS 3604, section 11.5.2. Refer to NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

3.15 INSTALL FIBRE CEMENT SHEET CLADDING

Install to detail and to the cladding manufacturer's requirements. Refer to the cladding manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

3.16 INSTALL FIBRE CEMENT SOFFITS

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

3.17 INSTALL EXTERIOR TIMBER FINISHINGS

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

3.12 LAYING TIMBER SPACED BOARDING FOR EXTERIOR DECKS

Confirm whether the grooved side of the boards are face up or face down. Avoid excessively short or long lengths, drill for all fixings, stagger end joints and space boards a maximum of 2 mm apart in general conditions, or maximum 3 mm apart if boards are likely to swell after fixing. Fix using annular grooved galvanised jolt head nails, heads driven flush with the board surface.

3.18 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to BRANZ Bulletins 304 Flashing design and 448 Domestic flashing installation.

3.19 USE OF SEALANTS

Selection and use of sealants to follow BRANZ Bulletin 441 Sealed joints in external claddings - 2. Sealants.

3.20 INSTALL INSULATION

Lay, install, fit and fix to NZBC H1/AS1: 2.0 and to the insulation manufacturer's requirements. Install in housing to NZS 4218. Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents and leave a 150 mm gap around recessed light fittings and metal flues.

3.21 TRIM

Scribe and fit reveal linings to exterior timber joinery, architraves to interior joinery, and skirting to walls as detailed and shown.

3.22 INSTALL GARAGE DOORS

Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed. Install and fix the garage door installations, complete with specified operating systems and hardware, all strictly in accordance with the door manufacturer's requirements and installation instructions.

3.23 INSTALL ROOF WINDOWS

Check that the trimmed openings are formed and constructed to suit the required units. Do not proceed until roof and structural openings are properly formed. Install and fix the roof window units strictly in accordance with the roof window manufacturer's requirements and installation instructions. Install flashings and overflashings as detailed and as required to make the installation completely weatherproof.

3.24 CONFIRM

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

3.25 COMPLETE

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

3.26 REPLACE

Replace damaged or marked elements. Remove unused materials from the site.

3.27 CLEAN

On completion of the building, clean surfaces and fittings of spots, marks, dust and droppings. Clean off or remove glass indicators. Clean down both sides of window and door frames, sky window frames and garage door panels, using the methods required by the respective manufacturers.

4301 PROFILED METAL ROOFING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture 4.0 Flashings 5.0 Roof/wall junctions 8.0 Roof claddings 8.1 General 8.4 Profiled metal
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc-coated
NZS 3403	Specification for hot-dipped galvanised corrugated steel sheet for building purposes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings

NZ Metal Roofing Manufacturers Inc: NZ metal roofing & wall cladding code of practice

1.2 QUALIFICATIONS

Carry out roofing work using experienced, competent roofers familiar with the materials and techniques specified.

1.3 WIND AND EARTHQUAKE LOADINGS

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5.

1.4 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.

1.5 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

2. PRODUCTS

2.1 PROFILED METAL ROOFING

Steel sheet galvanised to NZS 3403, aluminium/zinc coated to AS 1397. Finish as specified. Accessories, cappings, flashings and fixings to match and to the roofing manufacturer's requirements.

2.2 UNDERLAY

Self supporting, Breather type, waterproof.

2.3 NAILS, SCREWS AND FASTENINGS

Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

3. EXECUTION

3.1 STORAGE

Stack roofing and accessories on clean, level areas of the site and protect from damage and from weather until ready to fix in place. Avoid overloading roof structure when roofing materials are placed on the roof area prior to installation.

3.2 SET-OUT

Set out the planned layout before fixing commences, to ensure true lines and the correct relationship to module, grid and roof features.

3.3 LAY ROOF UNDERLAY

Lay and fix to NZBC E2/AS1: 8.1.5 Underlays, NZS 3604, section 11.2.2 and the roofing manufacturer's requirements.

3.4 LAY ROOFING, GENERALLY

Take care to avoid damaging pre-finished roofing both during and after fixing. Wear only soft-soled shoes on the finished surface.

3.5 CUT PROFILED METAL ROOFING

Cut profiled metal roofing only with tools recommended by the roofing manufacturer. Fold ends and seal cut edges to the roofing manufacturer's requirements.

3.6 INSTALL PROFILED METAL ROOFING

Install profiled metal roofing and fix complete with all matching accessories, flashed to all roof features and penetrations; and in accordance with the requirements in the NZ Metal Roofing Manufacturers Inc: NZ metal roofing and wall cladding code of practice.

3.7 FIXINGS

Refer to the roofing manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements.

3.8 INSTALL COVERS AND FLASHINGS

Install and fix as detailed and to the roofing manufacturer's details and to comply with NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions and 6.0 Parapets.

3.9 PENETRATIONS

Flash and overflash all penetrations through the roof.

3.10 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

3.11 USE OF SEALANTS

Select and use sealants only as recommended by the roofing manufacturer.

3.12 COMPLETE

Ensure the work is complete with all flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.

3.13 REMOVE FILINGS

Remove metal filings from roofing surfaces at least daily.

3.14 CLEAR

Clear trade rubbish and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes, ensuring that metal filings, metal scraps and loose fixings are removed.

3.15 REPLACE

Replace damaged or marked elements. Remove unused materials from the site.

4502 ALUMINIUM WINDOWS AND DOORS

1. GENERAL

1.1 RELATED SECTIONS

Refer to 4601 GLAZING for glazing.

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
WANZ	Aluminium Window Handbook
WANZ	Specification for powder coatings on architectural aluminium products
WANZ	Installation code for aluminium joinery products

BRANZ Bulletin 349: Finishes for aluminium

1.3 CERTIFICATION

Provide a certificate from a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the performance requirements of NZS 4211.

1.4 QUALIFICATIONS

Fabrication by a member of WANZ.

1.5 PERFORMANCE

The structural and weather-tight performance of the completed window installation, the glazing and infill panels is the responsibility of the window manufacturer.

2. PRODUCTS

2.1 WINDOW AND DOOR SECTIONS

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

2.2 FLASHINGS GENERALLY

Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components

2.3 FABRICATION SEALANT

To the window manufacturer's requirements.

2.4 GLAZING TAPE AND GASKETS

To the window manufacturer's requirements.

2.5 FIXINGS

Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

Finishes

2.6 ORGANIC POWDER COATING FINISH

To AS 3715 and WANZ Specification for powder coatings on architectural aluminium products. All finished surfaces to show uniformity of gloss and colour (to match approved sample) free of all coating defects.

3. EXECUTION

3.1 CONFIRM

Confirm all framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery.

3.2 EXECUTION GENERALLY

Execute all fabrication and installation work in accordance with the requirements of NZS 4211, WANZ Aluminium window handbook and WANZ Installation code for aluminium joinery products.

3.3 HANDLING

Avoid distortion of elements during transit, handling and storage. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

3.4 CORROSION PROTECTION

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

3.5 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames
- claddings neatly finished off to all sides of openings
- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

3.6 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

3.7 DRAINAGE

Provide anti-condensation channels to all sills. Sills to sashes and fixed lights to incorporate positive drainage to the exterior.

Flashings and air seals

3.8 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail jamb facings by 15 mm at each end.

3.9 COMPLETE AIR SEAL

Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

Completion items

3.10 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.11 PROTECTIVE COVERINGS

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.12 SAFETY

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

3.13 MANIFESTATIONS

To NZS 4223, part 3, 303.1.

3.14 TRADE CLEAN

Clean off or remove safety indicators at completion of the building.

3.15 CLEAN FRAMES

On completion clean down both sides of window and door frames using the methods required by the window and door manufacturer.

3.16 CONFIRM

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

4601 GLAZING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
AS/NZS 2208	Safety glazing materials in building
NZS 3604	Timber framed buildings
NZS 4223	Glazing in buildings Part 1: The selection and installation of glass in buildings Part 3: Human impact safety requirements Part 4: Dead, wind and snow loading
AS/NZS 4666	Insulating glass units
AS/NZS 4667	Quality requirements for cut-to-size and processed glass

2. PRODUCTS

2.1 GLASS

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

- Clear float glass: Clear annealed transparent float glass
- Patterned glass: Translucent, annealed, rolled glass with a decorative pattern on one surface.
- Toughened glass: Grade A safety glazing material to AS/NZS 2208.
- Tinted float glass: Body tinted float glass
- Insulating glass units (IGU's): To AS/NZS 4666 and IGU Manufacturer's Association (IGUMA) requirements.

2.2 MIRROR GLASS

Float mirror glass to NZS 4223, part 1, clause 101.2.2.2: Silvering quality (selection S), with silver and copper plating and 2 coats of protective paint.

2.3 GLASS SCREENS

Proprietary shower/bath screens, formed to shape before toughening, complete with matching hardware.

2.4 GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

2.5 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

2.6 MIRROR ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

3. EXECUTION

3.1 GLAZING GENERALLY

To NZS 4223, part 1, and for human impact safety glazing to NZS 4223, part 3.

To AS/NZS 4666 for IGU's.

3.2 MIRRORS, SCREW FIXED

Fix with proprietary countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.

3.2 INSTALL GLASS SCREENS

Install shower and bath screens and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

3.3 SAFETY

After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.

3.4 MANIFESTATIONS

To comply with NZS 4223, part 3, 303.1.

3.5 TRADE CLEAN

Clean off or remove safety indicators at completion of the building.

5101G GIB® PLASTERBOARD LININGS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 2589 Gypsum linings in residential and light commercial construction - Application and finishing, Part 1: Gypsum plasterboard

BRANZ technical paper P21: A wall bracing test and evaluation procedure
BRANZ Appraisal Certificate No. 289 (2001): GIB® Fire Rated Systems

GIB® Site Guide (September 2003)

GIB® Bracing Systems (July 2003)

GIB® Goldline™ Tape-on Trims

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:

General:	GIB® Site Guide (September 2003)
Wet area:	GIB Aqualine® Wet Area Systems (October 2002)
Bracing:	GIB® Bracing Systems (July 2003)
Ceilings:	GIB® Rondo™ Metal Ceiling Batten Systems
Accessories:	GIB® Goldline™ Tape-on Trims

Copies of the above literature are available by phoning 0800 100 442.

1.3 QUALIFICATIONS

Carry out this work with competent workers experienced in GIB® drywall lining techniques. Submit evidence of experience on request.

1.4 QUALITY CONTROL

Inspect the finished surface of the installed plasterboard:

- before applying sealer and
 - before applying finish coatings or decorative papers,
- so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

1.5 SOUND CONTROL REQUIREMENTS

If sound control is required, refer to **GIB Noise Control® Systems** (July 2000). Provide sound rated wall and floor/ceiling systems as listed in 4. SCHEDULES.

2. PRODUCTS

2.1 NO SUBSTITUTIONS

No substitutions to be made to any specified GIB® plasterboard sheets, or associated products, components or accessories.

2.2 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS 2588 and for fire-rated use in accordance with BRANZ Appraisal Certificate No. 289 GIB® fire rated systems. Refer to 4. SCHEDULES for location, type, thickness and finish.

GIB® Standard sheets
GIB Ultraline® high quality surface sheets
GIB Braceline® wall bracing sheet

GIB Aqualine[®] wet area board

2.3 SCREWS

GIB[®] Grabber[™] drywall screws.

2.4 NAILS

GIB[®] Nails (gold passivated).

Size: 30 mm, 40 mm, 50 mm

2.5 METAL ANGLE TRIMS

GIB[®] galvanised steel slim angle trims.

2.6 TAPE ON TRIMS AND EDGES

GIB[®] Goldline[™] tape-on paper tape and galvanised steel trims.

2.7 ADHESIVE

Timber frame: GIBFix[®] Wood Bond wallboard adhesive.

Timber frame LOSP treated: GIBFix[®] All Bond wallboard adhesive.

2.8 JOINTING COMPOUND

Bedding compound: GIB Tradeset[®], GIB[®] Lite Blue and GIB ProMix[®] Taping compound

Finishing compound: GIB ProMix[®], GIB ProMix[®], Lite, GIB[®] All Purpose and GIB Plus 4[®]

2.9 JOINTING TAPE

GIB[®] paper jointing tape.

2.10 ACOUSTIC SEALANT

GIB Soundseal[®].

2.11 SKIMCOAT

Resene Broadwall Surface Preparation.

2.12 SEALER

Resene Broadwall acrylic based surface sealer for general areas and Resene SureSeal for wet areas.

3. EXECUTION

3.1 HANDLE AND STORE

Handle and store sheets and accessories in dry conditions stored indoors out of direct sunlight in neat, flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject all damaged material.

3.2 CHECK SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Moisture levels not to exceed 16% at the time of lining.

3.3 MOISTURE CONTENT

Maximum allowable moisture content in accordance with AS/NZS 2589.1 for:

Framing at lining: 12 - 16% for plasterboard linings

3.4 PROTECT

Protect all surfaces, cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage.

3.5 LEVELS OF FINISH

Provide the scheduled plasterboard surfaces to the levels of finish specified in AS/NZS 2589.1.

3.6 LEVELS OF FINISH ACCEPTANCE

Before commencing work, agree in writing upon the expectation for the final quality of finish. The specified level of finish for each area should be appropriate for the type of decoration and the type and angle of the primary source of illumination specified in that area.

3.7 LINING WALLS AND CEILINGS GENERALLY

Form in accordance with the **GIB® Site Guide** (September 2003).

3.8 DRY ZONE SOLUTIONS

Form in accordance with GIB Aqualine® Wet Area Systems (October 2002). Refer to 4. SCHEDULES.

3.9 BRACING

Form in accordance with **GIB® Bracing Systems** (July 2003). Refer to 4. SCHEDULES.

3.10 TAPE-ON TRIMS

Install in accordance with GIB® Goldline™ Tape-on trims

3.11 STANDARD OF FINISH

In accordance with the **GIB® Site Guide** (September 2003) and AS/NZS 2589.1.

3.12 REPLACE

Replace all damaged boards or elements.

3.13 CLEAN DOWN

Clean down completed surfaces to remove all irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean to the standard required for all following trades.

3.14 REMOVE

Remove all debris, unused materials and elements from the site.

5501 INTERIOR TIMBER DOORS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3610	Profiles of mouldings and joinery

2. PRODUCTS

2.1 TIMBER

To NZS 3602.

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

2.3 INTERIOR DOORS, TIMBER VENEER

Solid/hollow core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

2.4 INTERIOR CAVITY SLIDER

Solid/hollow core door hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.5 GLAZED DOORS

Solid timber framed, stop end jointed and bead glazed.

2.6 DOOR HINGES

Size and gauge to carry door. 3 hinges per door.

2.7 INTERIOR SLIDING DOOR GEAR

To suit door/sash size and glazed weight and as detailed.

3. EXECUTION

3.1 SITE MEASURE

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bifold door systems is within the manufacturer's specified tolerances. Provide not less than 10 mm unless otherwise required.

3.2 EXECUTION GENERALLY

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 FACTORY FIT HARDWARE

Factory fit hinges

3.4 FACTORY FINISHING

Before delivery to site: -

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

3.5 INTERNAL DOOR FRAMES, SOLID REBATED

Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.6 INTERNAL CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

Completion

3.7 CHECK

Check and adjust operation of all sashes, doors, hardware and furniture.

3.8 TEMPORARY PROTECTION

On completion remove any temporary protection and leave ready for following work.

5502 JOINERY FIXTURES

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC D1/AS1	Access routes, 4.0 Stairways
AS/NZS 1859	Reconstituted wood based panels, 1859.2: Dry processed fibreboard
AS/NZS 1860	Particleboard flooring, 1860.1: Specifications
NZS 3602	Timber and wood-based products for use in building

2. PRODUCTS

2.1 TIMBER BOARDS AND FRAMES

Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 STAIRCASE ELEMENTS

Timber selections to NZS 3602.

2.3 PARTICLE BOARD

Urea-formaldehyde resin bonded medium density particle board to AS/NZS 1860.1.

2.4 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2.

2.5 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid both sides with melamine resin impregnated sheet.

2.6 MEDIUM DENSITY FIBRE BOARD, WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid with natural wood veneer.

2.7 PRE-FINISHED BACKING BOARD

Urea-formaldehyde resin bonded fine wood fibre sheet to AS/NZS 1859.2, veneered one side with melamine sheet.

2.8 BENCHTOPS

As detailed on the manufacturers drawings and as required for specified fittings and appliances.

2.9 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap or tight joint connectors.

2.10 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.11 BUTT HINGES

Butt, broad butt, flush butt or overlay, steel, zinc-plated steel, stainless steel, or brass, to suit the location, or as detailed.

2.12 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Plastic button door stops.

2.13 DRAWER RUNNERS

Single action under mounted or side mounted powder coated runners or groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system.

2.14 GLUES AND ADHESIVES

As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint being used.

3. EXECUTION

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.3 FABRICATION QUALITY

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.

3.4 FABRICATE JOINERY FIXTURES

Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50 mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.5 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

3.6 FABRICATE DRAWERS

Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3 mm clearance into the drawer space.

3.7 FABRICATE TIMBER STAIRS

To NZBC D1/AS1: 4.0 Closed type, unless detailed otherwise. House and wedge treads and risers 15 mm into strings, all glued, wedged and blocked. Form nosing overhangs of 25 mm by splaying risers forward to finish flush with the front of the treads. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.

3.8 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.9 INSTALL JOINERY FIXTURES

Scribe fit on site and install level, square, plumb and true to line and face.

3.10 WARDROBE AND COAT CUPBOARD

Fit out with 300 mm wide melamine faced board shelf, on ex 25 mm scotia bead to back and ends. Exposed edges clashed to match. Fit a selected white powder-coated aluminium coat rail to the front edge of the shelf. Shelf heights as shown on the drawings.

3.11 STORAGE CUPBOARD

Fit out with 5 full depth melamine faced board shelves of thickness to suit span supported on ex 25 mm beads along back and ends. Exposed edges clashed to match. Shelf heights as shown on the drawings.

3.12 LINEN CUPBOARD

Fit out with 2 full depth 19 mm x 70 mm timber slat shelves on ex 25 mm scotia bead along ends. Shelf heights as shown on the drawings.

6201 TILING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

AS 2358	Adhesives - For fixing ceramic tiles
AS 3740	Waterproofing of wet areas within residential buildings
AS 3958	Ceramic tiles, 3958.1: Guide to the installation of ceramic tiles
BS 6431	Ceramic floor and wall tiles

BRANZ Good practice guide: Tiling

1.2 QUALIFICATIONS

Carry out tiling work using competent tilers, experienced with the materials and techniques specified.

1.3 ADHESIVES COMPATIBILITY

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

1.4 SAMPLES

Submit samples of the tiles specified, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

2.1 TILES

To BS 6431, parts 1 to 23 inclusive. Refer to 4. SCHEDULES.

2.2 LIQUID WATERPROOFING MEMBRANE

To AS 3740.

2.3 UNDERTILE HEATING

Proprietary electric undertile heating system complete with thermostat/controller.

2.4 CEMENT BASED SCREED

Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.

2.5 TILE ADHESIVE

To AS 2358.

2.6 GROUT

Cement based, compressible and to suit the particular location and use.

2.7 MOVEMENT CONTROL JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0.

3. EXECUTION

3.1 HANDLING AND STORAGE

Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non work areas that are enclosed, clean and dry.

3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

3.4 SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

3.5 SUBSTRATE

Ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory.

3.6 TEMPERATURE

Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.

3.7 TILING GENERALLY

Prepare surfaces and carry out the tiling work in accordance with AS 3958, part 1, as modified by BRANZ Good practice guide: Tiling.

3.8 TIMBER FLOORS PREPARATION

Confirm with the owner that the deflection of the timber floor is within the range of $\frac{1}{360}$ th span. Remove from the surface all existing finishes, punch nail heads and sand to a smooth, clean, dust-free surface.

3.9 APPLYING LIQUID WATERPROOFING MEMBRANE

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements and in accordance with AS 3740 and to BRANZ Good tiling practice, 7.0 Waterproofing interior wet areas.

3.10 INSTALL WATERPROOFING MEMBRANE

Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane to BRANZ Good tiling practice; 7.0 Waterproofing interior wet areas. Unless otherwise specified or shown on the drawings, install waterproof membranes as follows: -

Shower cubicle

To 1800 mm above floor and 300 mm above shower rose.

To at least 1500 mm from shower rose.

To the floor within 1500mm of the shower rose.

Bath

To 150 mm minimum around the sides and along walls horizontally 150 mm minimum.

Splashback to a vanity

To 300 mm minimum up wall behind the vanity.

To the floor level at least twice the width of the vanity and 500 mm min beyond it at each end.

3.11 INSTALL UNDERTILE HEATING

Clean thoroughly and prepare as for tiling. Remove any paint overspray and plaster spills. Ensure that waterproofing has been completed. Install electric undertile heating system to manufacturers requirements with the element connected to a continuity tester during installation. Leave ready for tiling and connection to the electrical system.

3.12 LAYING CEMENT SCREED

Apply a proprietary cement slurry bond coat over the whole of the floor to the tile manufacturer's requirements. Mix and place a 40 mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. Form screeds with a deviation from plane of not more than 5 mm over 3 metres.

In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

3.13 FALLS

Form screeds in areas where water is used in significant amounts with a deviation from plane of not more than 5 mm over 3 metres. Unless otherwise specified form screeds with the following falls:

1 : 40 minimum For shower bases

3.14 TILE FIXING GENERALLY

Apply adhesive, prepare and fix tiles by the method required by the adhesive manufacturer and tap them firmly into place.

3.15 TILE FIXING, RIGID SHEET LININGS

Prime the surface after the curing of any waterproof membrane. Spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press tiles and beat it into place to obtain the required coverage by adhesive on the back of each tile.

3.16 TILE FIXING, INTERIOR TIMBER FRAMED FLOORS

After the curing of any waterproof membrane, prime the surface, spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press tiles and beat it into place to obtain the required coverage by adhesive on the back of each tile.

3.17 GROUTING

Remove spacers. Prepare joints, mix and apply proprietary grout and finish off to the grout manufacturer's requirements. Grout to finish uniform in colour, smooth and without voids, pinholes or low spots.

3.18 MOVEMENT CONTROL JOINTS

Minimum width of 6 mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Install joints over expansion joints in structure, at junctions between different backgrounds, where abutting other materials, at storey heights horizontally and 3.0 metres vertically, at internal corners and at junctions with floors and columns.

Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.

3.19

CLEAN

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean dry cloth.

3.20

REMOVE

Remove unused materials from the site.

6701R RESENE PAINTING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

Health and Safety in Employment Act 1992

Resene: One-Line Specifications and Product Data Manual

Resene: Putting your safety first

1.2 PAINTER QUALIFICATION

All work to be carried out by persons competent in the trade and experienced with the **Resene** coating systems and techniques specified.

1.3 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992 and the **Resene** booklet "Putting your safety first" and if elimination or isolation is not possible, then minimise the hazards in this work.

1.4 CONTROL SAMPLES

Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain approval of the appearance before proceeding. Refer to 4. SCHEDULES.

2. PRODUCTS

2.1 PAINT TYPES

All paint coatings to be **Resene** products (which are guaranteed for consistency and performance under ISO 9001 and APAS) prepared, mixed and applied as directed in the One-Line Specifications and Product Data Manual.

2.2 GAP FILLERS

Use suitable gap fillers to match the surface being prepared. Any special primers required of the fillers must be satisfied. Refer to **Resene** surface preparation sheets in the One-Line Specifications and Product Data Manual.

3. EXECUTION

3.1 INSPECT

Inspect all surfaces to be painted and report any that will not, after the preparation as laid down in the **Resene** surface preparation sheets; allow work of the required standard.

3.2 PROTECT

Cover up all adjoining surfaces and areas liable to damage or over-painting.

3.3 REMOVE HARDWARE

Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed. Refer to 4. SCHEDULES.

3.4 PRIMING AND SEALING

Ensure that all priming and sealing work necessary before or during construction is carried out when required.

3.5 ENVIRONMENTAL CONDITIONS

Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of **Resene**.

3.6 SELECTIONS

Confirm all selections, colours and finishes for both paint and wallpaper with the owner, before commencing work.

3.7 SHARP EDGES, CRACKS AND HOLES

Sharp edges, cracks and holes if present: remove and/or repair as outlined in the preamble to the **Resene One-Line Specifications and Product Data Manual**.

3.8 PREPARE ALL SURFACES

Prepare all surfaces to be coated to the requirements of the **Resene** surface preparation sheets. Use suitable gap fillers to match the surface being prepared. Any special primers required of the fillers must be satisfied. Refer to **Resene** surface preparation sheets.

3.9 APPLICATION

Apply paint by brush and/or roller to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour. Do not spray on site without express permission.

3.10 RESENE SPECIFICATIONS

Refer to the **Resene One-Line Specifications and Product Data Manual** for surface preparation, coating sequence and application requirements as they apply to each system. Correct defective work immediately, with any recoating following the system's requirements.

3.11 SCUFF BETWEEN COATS

Between all coats remove any dust pick-up, protruding fibres and coarse particles.

3.12 FINISHED PAINT SURFACES

All finished paint surfaces to show uniformity of gloss and colour, to have the correct thickness for each coat, and freedom from painting defects such as tackiness and conspicuous brush marks. Finished work to be clean and free of any disfigurement.

3.13 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination.

3.14 REPLACE

Replace hardware without damage to the hardware or the adjoining surfaces.

3.15 TAKE AWAY

Take away from the site unused painting materials and equipment.

7101B BUTELINE HOT AND COLD WATER SYSTEM

1. GENERAL

Documents

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZBC G12/AS1	Water supplies
AS/NZS 2642	Polybutylene pipe fittings
Part 1:	Polybutylene (PB) pipe extrusion compounds
Part 2:	Polybutylene (PB) pipe for hot and cold water applications
Part 3:	Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606	Storage water heaters
NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
NZS 4617	Tempering (3-port mixing) valves
NZS 5261	Installation of gas burning appliances and equipment
NZS 7602	Polyethylene pipe (Type 5) for cold water services

Plumbers, Gasfitters and Drainlayers Act 1976

Documents listed above and cited in the clauses that follow are part of this specification. However this specification takes precedence in the event of it being at variance with the cited document.

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
NZBC Accreditation 94/005B Buteline Polybutylene Pipe System
Buteline Plumbers technical and installation manual March 2004

Copies of the above literature are available at www.buteline.com or by phoning 09 2735800.

Requirements

1.3 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

Warranties

1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

Refer to the PRELIMINARIES AND GENERAL section for the required form of warranty agreement and details of when completed warranty must be submitted.

1.5 MANUFACTURERS MATERIAL WARRANTY

Provide a Buteline materials warranty in the suppliers standard form.

Warranty period: 25 years

Performance

1.6 TESTING

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed.

Slowly fill service pipes with water to exclude air. Test to either NZBC G12 clause 7.5.1a, 1500 kpa for period not less than 15 minutes or to AS/NZS 3500 Part 1:2003, section 16.3.1, 1500 kpa for period not less than 30 minutes. Ensure there is no measurable loss of pressure for a minimum of 30 minutes. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2. PRODUCTS

Materials

2.1 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Buteline product or component, or associated Buteline products, components or accessories.

2.2 POLYBUTYLENE PIPE

Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with 50 year durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies, table 1.

2.3 WATER METER

To the requirements of the network utility operator.

2.4 ADJUSTABLE WALL ELBOW

Buteline Bute-1 adjustable wall elbow with 4 way fixing clamp.

2.5 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1: Water supplies.

2.6 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.

2.7 TEMPERING VALVE

Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.

2.8 HOT WATER SAFETY SYSTEM

Buteline AquaFuse hot water safety monitor to NZS 4617 to NZBC G12/AS1: Water supplies and manufacturer's requirements.

Materials - hot water heating appliances

2.9 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Continuous flow unit with an integral gas burner and flue.

Components

2.10 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

3. EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.2 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.3 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.4 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.5 PIPE SIZE

Flow rates to each outlet to be no less than those given in NZBC G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures, with pipe size as determined in table 4, Tempering valve and nominal pipe diameters.

Application - jointing

3.6 JOINTING POLYBUTYLENE PIPE

Seal ring compression joints to NZBC G12/AS1: Water supplies.

Application - distribution systems

3.7 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1: Water supplies.

3.8 COLD WATER INSTALLATION

From connection point, size the runs and branches to deliver the acceptable flow rate to NZBC G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures. Lay out pipes in straight runs with support spacing to NZBC G12/AS1: Water supplies, table 7, Water supply pipework support spacing firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings.

Application isolating valves

3.9 MAIN ISOLATING VALVE

Install an isolating ball cock in an accessible position at the point of entry to the building.

3.10 INSTALL ADDITIONAL ISOLATING VALVES - CONCEALED

Install additional isolating valves in an accessible and visually discrete position adjacent to or near by the specific fixture to allow for easy connection and operation. When the building is divided into zones, ensure an isolating valve is installed in each zone.

3.11 IN LINE FILTER

Install an in line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - hot water systems

3.12 GAS HOT WATER HEATER INSTALLATION, CONTINUOUS FLOW TYPE

Install complete with the necessary fittings to the manufacturer's requirements and in accordance with NZBC G12/AS1: Water supplies, 6.10, Water heater installation. Install flue in accordance with the manufacturer's details and requirements.

3.13 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1: Water supplies, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements.

3.14 INSTALL TEMPERING VALVE WITH AQUAFUSE

Install tempering valve 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install preformed copper pipe 'T' supplied with AquaFuse kit from outlet of hot water cylinder to Buteline AquaFuse fitting connected to the polybutylene piping. Install to Buteline's instructions.

Installation - tapware

3.15 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

3.16 INSTALLING TAPWARE

Install in accordance with the manufacturer's requirements.

Completion

3.17 REPLACE

Replace damaged or marked elements.

3.18 LEAVE

Leave work to the standard required by following procedures.

3.19 REMOVE

Remove debris, unused materials and elements from the site.

7201 GAS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC G10/AS1 Piped services (Gas)

NZS 5258 Gas distribution

NZS 5261 Installation of gas burning appliances and equipment

NZS 7646 Polyethylene pipes and fittings for gas reticulation

Electricity Regulations 1997

Gas Regulations 1993

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 REGULATIONS

Comply with the Gas Regulations, Electricity Regulations and other network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.3 PRIMARY CONNECTION

Include for the cost of the primary gas connection, complete with excavation and backfilling.

1.4 QUALIFICATIONS

Gasfitters to be experienced competent craftsman gasfitters, or registered gasfitters working under the direction of a craftsman gasfitter, familiar with the materials and techniques specified.

1.5 AS-BUILT PLANS

Supply a 1:100 scale as-built plan of gas pipe runs, sizes, componentry and fittings at completion of the installation.

1.6 PIPING DESIGN

Design the piping system with pipe sizes to give a minimum pressure at any appliance inlet of 1.13 kPa for natural gas, when all appliances are in use; and with a maximum design pressure drop from meter outlet to any appliance of 80 Pa. All to NZS 5261.

1.7 PRESSURE TEST

Pressure test the system for leakage to NZS 5261 before pipework is concealed by linings.

1.8 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the gas retailer that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

1.9 CERTIFICATION CERTIFICATE

Provide a Gasfitting Certification Certificate as required by Regulation 24 of the Gas Regulations 1993.

2. PRODUCTS

2.1 COPPER PIPE

Complete with fittings to NZS 5261.

2.2 POLYETHYLENE PIPE

To NZS 7646 and complete with fittings to NZS 5261.

2.3 ISOLATING VALVES

Manual shut-off valves to NZS 5261.

2.4 METER

Primary meter to suit design load, supply pressure and pressure drop, supplied and installed by the network utility operator.

3. EXECUTION

3.1 EXECUTION GENERALLY

Carry out the whole of this work to the requirements of NZBC G10/AS1 and NZS 5261.

3.2 MAINS CONNECTION

Arrange for the gas retailer to extend their distribution system through the primary meter to connect to this installation, all to NZS 5258.

3.3 METER INSTALLATION

Confirm the location of the meter enclosure with the owner. Allow to install as detailed.

3.4 INSTALL PIPING

Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to NZS 5261. Confirm the type of pipe to be used and its location.

3.5 INSTALL GAS APPLIANCES

Fit and connect the gas appliances to NZS 5261, complete with flues where required and to the appliance manufacturer's requirements.

3.6 CONNECT GAS HOT WATER HEATER

Connect the following gas hot water heater supplied and fitted under 7101 HOT AND COLD WATER SYSTEM, to NZS 5261 and the heater manufacturer's requirements.

3.7 REPLACE

Replace damaged, cracked or marked components.

3.8 LEAVE

Leave the installation including appliances clean and in full working order.

3.9 REMOVE

Remove debris and unused materials from the site.

7401 RAINWATER SYSTEMS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are: -

AS 1397 Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated

BRANZ Bulletin 304: Flashing design.
BRANZ Bulletin 448: Domestic flashing installation.

1.2 QUALIFICATIONS

Workers to be either competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, or roofers, familiar with the materials and techniques specified.

2. PRODUCTS

2.1 uPVC DOWNPIPES

Tubes, stand-off brackets and fittings brand matched and complete to the manufacturers specifications.

2.2 ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

2.3 RAINWATER HEADS, DROPPERS, OVERFLOWS

Fabricate and install as detailed.

2.4 FLASHINGS GENERALLY

0.55 mm sheet steel galvanised to AS 1397, aluminium/zinc coated to AS 1397, 1.8 mm (20 kg/m²) copperised pure lead, 0.5 mm half hard copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and design requirements of BRANZ Bulletin 304 Flashing design.

2.5 DOMES

Wire mesh in round form with legs to clip inside the outlet opening to the downpipe.

3. EXECUTION

3.1 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

Check compatibility of metals used for rainwater goods, against the materials used for roofing and flashings. Notify any incompatibility to the owner and obtain written approval for amendments to selections.

3.2 LIAISON

Ensure liaison with associated installations to confirm material selections are compatible and required flashing work is completed.

3.3 INSTALLATION GENERALLY

Install and fix spouting and downpipes to the manufacturers requirements. Install system to properly drain water from the roof area and so that water will not enter the building under overflow conditions.

3.4 FIT uPVC DOWNPIPES

Fit stand-off brackets or clips at maximum 1 metre centres and fix with round head galvanised screws. Set pipes plumb and clear of the wall. Solvent weld joints. Discharge into stormwater drain.

3.5 FIT ZINC ALLOY COATED STEEL PRE-PAINTED SPOUTING

Fit brackets at maximum 800 mm centres and fix with galvanised screws. Set to fall to outlets. Make joints with silicone sealed and pop-riveted to the spouting manufacturer's requirements.

3.6 FLASHINGS

Scribe fit, fold, lap, seam, or run solder as required by the metal, to flash all roof penetrations, roofing and exterior joinery to prevent weather penetration. Except at expansion joints, allow for 2 rows of rivets to overlapping sheet joints. Install and fix flashings and flashing joints to the criteria stated in BRANZ Bulletins 304 Flashing design and 448 Domestic flashing installation.

3.7 INSTALL DOMES

Install wire mesh domes at the top of downpipes.

3.8 FLASH ROOF LIGHTS

Flash to roofing to the manufacturer's specifications.

3.9 LEAVE

Leave rainwater services in proper working order and all flashing work completed to keep the building weathertight.

3.10 CLEAN UP

Wash out gutter daily and on completion to remove swarf. Take away from the site unused materials and elements.

7402 SANITARY PLUMBING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene 2.0 Fixture construction and installation 3.0 Location of sanitary fixtures
NZBC G13/AS1	Foul water - sanitary plumbing
AS/NZS 1260 AS/NZS 3500	PVC pipes and fittings for drain, waste and vent applications Plumbing and drainage Part 2: Sanitary plumbing and drainage
NZS 7641	Unplasticised PVC waste and ventilating pipe, fittings and accessories, 32 mm, 40 mm and 50 mm

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.1 UPVC WASTE, SOIL AND VENT PIPES

UPVC pipe to NZS 7641 and AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings.
White polybutylene or PVC, including all associated fittings.

2.3 SEALANT, SANITARY FIXTURES

For between sanitary fixtures and accessories and adjacent floor or wall surfaces.
1-part, silicone, containing mildew resistant agents.
Colour: White

3. EXECUTION

3.1 EXECUTION GENERALLY

Carry out this work and complete all tests to AS/NZS 3500 Part 2
Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 INSTALL SANITARY FIXTURES

Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

3.4 INSTALL TRAPS, WASTE AND VENT PIPES

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500 Part 2/NZBC G13/AS1. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.5 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

3.6 INSTALL SANITARY ACCESSORIES

Install sanitary accessories as selected.

3.7 TEST

Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

3.8 CLEAN UP

Remove labels and clean fittings. Remove unused materials from the site.

7403 DRAINAGE

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure – general, 6.0 Drains
NZBC E1/AS1	Surface water 3.0 Drainage system materials and construction
NZBC G13/AS2	Foul Water – drainage
AS/NZS 1254	PVC pipes and fittings for storm and surface water applications
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 4130	Polyethylene pressure pipes (PE)
AS/NZS 4671	Steel reinforcing materials
NZS 3107	Precast concrete drainage and pressure pipes
NZS 3104	Specification for concrete production
AS/NZS 3500	Plumbing and drainage Part 2: Sanitary plumbing and drainage Part 3: Stormwater drainage
NZS 7643	Installation of unplasticised PVC pipe systems

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 AS-BUILT DRAWINGS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.3 QUALIFICATIONS

Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 1976 and be experienced, competent and familiar with the materials and techniques specified.

2. PRODUCTS

2.1 CONCRETE

17.5 MPa ordinary grade to NZS 3104.

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671

2.3 uPVC PIPES

uPVC Pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

2.4 FIELD DRAINS

Plastic piping for field drains perforated (straight sections or coiled) with filter fabric to prevent silting of the pipe.

2.5 GULLY TRAPS

To NZBC G13/AS2: 3.3, complete with grating.

2.6 DRAINAGE AND FILLING MATERIALS

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.
Selected:	Fine grain soil or granular material suitable for bedding; excluding topsoil.
Ordinary:	Top soil or other excavated materials.

3. EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 DRAINAGE GENERALLY

Carry out drainage work and tests to AS/NZS 3500 Part 2 (sanitary drainage) AS/NZS 3500 Part 3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of NZS 7643.

3.4 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

3.5 INSTALL GULLY TRAPS

Set on concrete 50 mm above the surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.

3.6 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.7 LAY SUBSOIL DRAINS

Lay perforated piping firmly in a granular bed in straight runs to correct gradients, discharging into a sump. Carry the granular bed up over the pipes without disturbing them, to a total depth of 300 mm and cover with geotextile fabric; all to the pipe manufacturer's requirements.

3.8 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.

3.9 FIELD TEST

Field test drains for watertightness (UPVC to NZS 7643 section 11) to the satisfaction of the territorial authority inspector.

3.10 BACKFILL

Backfill drain lines in 150 mm layers, well tamped but without disturbing the drains. Finish off with 150 mm of topsoil, slightly mounded above the finished ground line.

7701 ELECTRICAL

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC F7/AS1	Warning systems, 3.1 Domestic smoke alarms
NZBC F8/AS1	Signs
AS/NZS 2293	Emergency evacuation lighting for buildings
AS/NZS 3000	Electrical regulations - Buildings, structures and premises
AS/NZS 3008	Electrical installations - Selection of cables 3008.1.2: Typical New Zealand installation conditions
AS 3786	Smoke alarms
NZS 6401	PVC-insulated cables for electric power and lighting

Electricity Regulations 1997
New Zealand electrical codes of practice (ECP)

1.2 COMPLY

Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.3 QUALIFICATIONS

Carry out work by or under the direct supervision of a holder of a practising certificate under the Electricity Regulations 1997.

1.4 CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. Allow the network utility operator to view before the meter installation, listed work inspection, polarity check and livening of supply.

2. PRODUCTS

2.1 MAINS SUPPLY, SINGLE PHASE

Tough plastic sheathed neutral screened cable to NZS 6401 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to NZS 6401, stranded above 1.0 mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0 mm ² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5 mm ² on 16 amp MCBs
Power circuits:	1.5 mm ² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5 mm ² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5 mm ² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5 mm ² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6 mm ² on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof if mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Proprietary manufactured, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCBs, 30 mA RCDs and 60 amp main switch, complete with 20% spare capacity to AS/NZS 3000. Include 2 spare MCBs labelled as "spare". All protective devices: 6kA MCBs of the appropriate rating.

2.5 MINIATURE CIRCUIT BREAKERS

Miniature moulded case circuit breakers

2.6 WALL BOXES

Standard size in plastic, with 2 or more gang size in metal, all screw fixed.

2.7 SWITCH UNITS

Sixteen amp minimum rated, 230 volt polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units.

2.8 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.9 SWITCHED SOCKET UNITS

Ten amp, 230 volt polycarbonate flushplate 3 pin flat NZS combination switch units, single or multi gang as detailed.

2.10 SMOKE ALARMS

To AS 3786

2.11 GARAGE DOOR CONTROLLERS

Provide single switched socket outlet for the door controller to plug into.

2.12 LIGHT FITTINGS

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.90 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 240v rated, bayonet cap; Fluorescent triphosphor 2700K; ELV 12v dichroic reflector with cover glass unless detailed otherwise.

2.13 SELECTIONS

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

3. EXECUTION

3.1 MAIN SUPPLY

Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.

3.2 METER BOX

Fit to meter box manufacturer's and network utility operator's requirements where detailed. Recess into external wall and flash to weatherproof. Arrange for meter installation and connection.

3.3 DISTRIBUTION BOARD

Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure is maintained.

3.4 CIRCUIT PROTECTION

Install MCBs to protect each final sub circuit sized for circuit maximum loading.

3.5 EARTH LEAKAGE PROTECTION

RCD protection to AS/NZS 3000

Domestic

Install RCD protection at the switchboard of final sub circuits controlling socket outlets except for:

- Fixed cooking equipment
- Lighting

3.6 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.6 CABLING

Install with a maximum of 10 light outlet units or 6 double or single switched socket units on any circuit. Minimum 2 lighting circuits per installation. Separate circuits for all electric heating appliances. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground.

3.7 WALL BOXES

Flush mounted in cavity construction.

3.8 SWITCH AND SOCKET UNITS

Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units:	1000 mm
Socket Units:	150 mm above work benches
	400 mm elsewhere

Mount switches vertically and socket units horizontally. Label all switch units that control electrical equipment by colour filled engraving on the switch plate.

3.9 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer's requirements.

3.10 EXTRA LOW VOLTAGE LIGHTING

Where remote transformers are used for ELV lamps, connect from transformer to lamp with minimum 2.5 mm² conductor, to ensure voltage drop in transformer and conductor does not exceed 0.8 volts. Connect lamps 50 watt or greater matched to no more than

one per transformer, located as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation.

3.11 HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end.

3.12 EARTH BONDS

Bond together and to earth all plumbing fittings not adequately isolated, to the Electricity Regulations 1997 and to the fitting manufacturer's requirements.

3.13 TELEPHONE WIRING

Install telephone cable to telephone outlet positions. Install in conduit for outlets on masonry surface. Fix and connect BT jack point outlets to NZ Telecom and TelstraClear requirements and terminate wiring at incoming terminal block.

3.14 SMOKE ALARMS

Install smoke alarms to NZBC F7/AS1 and to the alarm manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

3.15 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.

3.16 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items: -

- Heated towel rails: Install to manufacturers requirements.
- Extract fans: Install to manufacturers requirements.
- Undertile heating mats: Install to manufacturers requirements.

3.17 EXTERIOR SERVICES

Provide circuits and connections for exterior installations, including ELV 12 volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, connect mains voltage outlets with cable enclosed in conduit, or with 2 core neutral screen cable with heavy duty grade 3.2 mm PVC sheath, with the neutral screen conductors terminated in a soldered or compression cable lug, PVC sleeved, and connected as the earth continuity conductor.

Connect to all ELV outlets with 230v rated cable with minimum 2.5 mm² conductor, and to ensure voltage drop to lamp does not exceed 0.8 volts. Connect lamps 50 watt or greater matched to no more than one per transformer, located as close as practicable to the lamp. Ensure transformers and light fittings are adequately cooled and watertight if liable to immersion.

3.18 MAIN EARTH

Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

3.19 LABELLING

Complete all labelling in clear machine printed permanent manner. Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

3.20 COMPLETION

Leave work operating correctly, with equipment clean and all lamps operational.

8101 RETAINING WALLS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E1/AS1 Surface water, 3.0 Drainage system materials and construction

NZS 3104 Specification for concrete production

AS/NZS 4671 Steel reinforcing materials

NZS 3602 Timber and wood-based products for use in building

NZS 3605 Timber piles and poles for use in buildings

1.2 QUALIFICATIONS

Carry out retaining wall work using competent, experienced people, familiar with the materials and techniques specified.

2. PRODUCTS

2.1 TIMBER ELEMENTS

Corsican or radiata pine, to NZS 3602, table 1A.

2.2 TIMBER POLES

Corsican or radiata pine, selected in accordance with NZS 3605, treated H5 to NZS 3602 table 1A, and to NZS 3605 for cross-section, length, straightness and strength branding. Do not put cut ends into ground. Treat all cut ends or notches with a liberal brush coat of copper naphthenate or equivalent wood preservative before sealing with a bituminous sealer.

2.3 FIELD RELIEF DRAINS

Perforated plastic piping with filter fabric over.

2.4 FILTER FABRIC

High density polyethylene or polypropylene mesh.

2.5 DRAINAGE MATERIAL

Free draining crushed stone, 7 mm to 20 mm in size.

2.6 BACKFILLING MATERIAL

To NZBC E1/AS1: 3.9.5.

3. EXECUTION

3.1 STORAGE

Take delivery of retaining wall elements in protected pallets, undamaged and dry. Store on level hard standings, protect from damage and keep dry until laid.

Timber retaining walls

3.2 ERECT DRIVENTIMBER POLE WALLS

Set out and drive poles, and erect planks; all in accordance with the pole wall manufacturer's requirements and engineers details. Place poles butt end down. Install timber rails with staggered joints. All rail joints close butted at poles.

Set-out tolerances

From pole centre line:

Maximum 60 mm from centre line

Misalignment:	Maximum 20 mm at retaining face
Minimum back slope:	3 degrees back slope from vertical
Drill diameter:	Pole butt end diameter + 100 mm
Min concrete encasement:	25 mm over the timber pole

3.3 **SUBSOIL RELIEF DRAINS**

Lay perforated PVC coil piping firmly in a granular bed in straight runs to correct gradients, discharging into a cesspit. Carry the granular bed up and over the pipes without disturbing them, to a total depth of 300 mm. Cover with filter fabric, to the pipe manufacturer's requirements. Carry the high end of all lines up to the surface in capped, solid PVC to allow for flushing out.

3.4 **BACKFILLING**

Compact backfilling in 150 mm loose layers, using a suitable vibrating roller, until no further compaction is discernible. Top with 150 mm of clean topsoil.

3.5 **TAKE AWAY**

Take away from the site plant and material not used.



CONSENT DATA INPUT REQUIREMENTS

REQUIRED INSPECTIONS

1	✓	Foundation inspection	32	✓	Lapse and cancellation after 12mths of consent	21	✓	Minimum FFL to comply with NZS3604
3		Sub-Floor inspection, suspended floor	2	✓	Engineer design specific components	22	✓	Deck and stair balustrades with greater drop than 1 m
7	* ✓	<u>Pre-concrete slab inspection of plumbing</u>	3		foundations to solid bearing of 200mm	23		Installation of solid fuel appliance (wood burner) comply and secured
2	✓	Pre-Slab inspection, concrete floor	4	✓	NZS3604 as accept. solution in terms of NZ Bld Code	23A		Second hand wood burner - certified
16	✓	Pre-Block-Fill inspection	5		Not approved as Habitable BUILDING	24		Chimney to be cleaned prior to fitting of new unit
23	✓	Pre-Wrap inspection	6		Not approved as Habitable ROOM	24A	✓	Section F7 requires fitting of smoke detectors
24	✓	Post-Wrap inspection	7	✓	Fit proprietary Head, Jamb, Sill flashings & air seals to ext joinery	25	✓	Contractor to leave site clean and clear
25	✓	Post-Clad inspection	8		As in V H Wind Zone, ext load bearing walls, extra fixing for roof	26		Sewer and water services to be disconnected and capped
18		Substrate inspection – solid plaster	8A		As in Very High Wind Zone, extra fixings for roof	27	✓	Provide from contractor roof warranty
19		Brick Veneer inspection	8B		All glazing, constr. system to comply with V H Wind and CCZ	28	✓	Contractor warranty covering roof, fascia and gutter system
8	* ✓	<u>Prelining inspection of plumbing</u>	9	✓	Note and comply with all endorsements on approved plans	29		Provide from contractor texture coating warranty
4	✓	Prelining inspection, moisture test, check bracing	10		Names and Reg'n of plumber and drain layer req'd	30		To comply with food hygiene regulations 1974
5	✓	Post-lining inspection, linings, fixed as per brace design	11		Concealed soil and TV pipes and gas flues only allowed in ducts or minimum framed	31		As in CCZ, all fixings need to be stainless steel
10	* ✓	<u>Water test on sewer drains</u>	12		Hot & Cold water pipes tested to 1500kPa	33		Approval only given for relocation purposes
15	* ✓	<u>Completion inspection</u>	13		Roof storm water to be connected to existing	34		If cladding to have pre-finished colour coating, to be appropriate for coastal conditions
			14		Copper water pipes not permitted	38	✓	Window sashes on upper levels less than 760mm above floor to have stays fixed
		* = plumbing inspections	15		Owner/builder to ensure prop foundation height will allow satisfactory connection	39		Construction of playground to comply with NZS 5828
			16		Drainlayer to discuss septic tank, etc	40		Fencing, gates, doors directly leading to swimming pool to comply Pool act 1987
		STANDARD CONSENT CONDITIONS	17		Owner's responsibility to arrange septic tank design	41		Owner's legal responsibility to provide locking lid for spa pool
37			18		Roof stormwater to be disposed inside property boundary	42		Intended appraised/approved Polystyrene Texture Coating system to be advised
72			19		Roof stormwater to be piped to kerb	43		Textured systems should be applied by licensed, trained applicators - supply warranty
80			20		Tempering valve to be installed on HW cylinder	44	✓	Exterior cladding system to be completed and inspected prior to internal lining.

NON STANDARD ADDENDA

FOR COUNCIL USE:

DEPARTMENT	TICK FOR REFERRAL	COMMENTS	APPROVING OFFICER/ DATE
Resource Consents (refer PIM Sheet)	/		
Plumbing and Drainage	/		
Building	/		 19/11/05 R. Jen 21/12/05
Fire Design			
Compliance Schedule			
Structural			
Hazardous Substances			
Environmental Health			
Site- Footpath & Entrance Conditions		Ground	
N/A OFF R.O.W.		ENGINEERS DESIGN	15/12/05 
NOTES: Kerb x-ing at R.O.W. OK.			