MANAWATU DISTRICT COUNCIL BUILDING CONSENT APPLICATION

DISCIPLINE	SIGN & DATE	ENDORSEMENTS (prefix with discipline) PIM	CONSENT
PLANNING DELAY	Bill 20/4/06 (ISSUE) 35	~~New site plan required showing dwelling meeting the District Plan boundary requirements, as land use consent required.~~ ~~Also~~, reserve contribution for 2nd dwelling =$1640.00 DELAY. No resource consent required as property does not have separate yet. Reserve contribution received 4/5/06 for second dwelling. BJ 4/5/06.	~~Land use consent has been applied for & is being processed~~
OPERATIONS 137, 138, 123	MIKE 26-04-06		
BUILDING • site and subdivn • stability • fire safety • access • safety users • ventilation - dwg • lighting -dwg • food prep - dwg • moisture - structure • insulation	12 21/04/06 (ISSUE) 24-5-06	Provide engineers report for foundations. (ISSUE) P.I.M. ISSUED	CONSENT ISSUED
PLUMBING • water reticulation • surface water • foul water • personal hygiene	114 (ISSUE)		ISSUE C.C.C. SENIOR BUILDING INSPECTOR
COMPLIANCE SCHEDULES			
GENERAL BY-LAWS	116 21/04/06	(ISSUE)	Pre line Plumbing 7-8-06
HEALTH	112 21/04/06	(ISSUE) DOCUMENTS SCANNED 11-11-08	Preline 08/08/06 (No insulation) Drains 18-8-06 Post line 22-8-06 Metering 22-8-06 FINAL 01/12/06
OTHERS REG. COUNCIL			

LAND ID No. 16647 ~~16426~~

VAL No. 14020/414

OWNER NAME (Kibble ... Boschma

ADDRESS (site) 51 Briarwood Rd

CONSENT No. 117136

PROJECT Dwelling

LOCATION

CODE COMP. CERT. 2006 dwelling

ADMINISTRATION amendment - 24/07/06 sent

AMENDMENT Balustrade

NOTES
Site 26/04/06 BJ & GD
FND 24.5.06
Pre line Plumbing 30-5-06
SLB 01/06/06
Framing 13/07/06 Joist hang...
Cavity Battens 27/07/06 CT's to...

ENTERED

Manawatu District Council

ENVIRONMENTAL SERVICES
Private Bag 10 001, FEILDING

RECEIVED
19 APR 2006
Manawatu District Council

IN DOC No	75700		
FILE No.:	6/1400		
DIVISION		ACTION	FILE
CEO			
E			

BUILDING CONSENT APPLICATION

Owners

Name: Judy & Brian Kibblewhite.	
Postal Address: 21 Martin street, Palmerston North.	
Phone: 353 6053.	Mobile: 0275 313 302.
Fax: 952 1062.	

Project Information

Site Address: Briarwood Estate.	
Legal Description: Lot 13.	
Land ID: 16926.	Valuation Number:
Building Name:	
Number of levels: 1	Year First Constructed (eg: c1920's or 1960-1970):
Current, lawfully established use: N/A	
Proposed use:	
Description of work: To erect a new four Bedroom dwelling with attached garage & workshop	
Estimated Value: (GST Incl): $~~335,000~~ Please round to the nearest $1000.00	Floor Area: 279.0m²

This is a New Building / ~~Alteration / Relocation / Demolition~~ (cross out those that don't apply).

The life of this project is....

☐ Indefinite but not less than 50 years
☑ Specified as 50 years

For more information please call Council's Customer Services on 06 323 0000

List building consents previously issued for this project (if any):

N/A

This application is

- ☐ For a PIM only
- ☐ For a building consent only. The number of the PIM is _____
- ☑ For a PIM and building consent
- ☐ To include Electrical certification
- ☐ To include Gas certification
- ☐ A Staged Consent project

Project Information Memorandum

The following matters are involved in the project:

- ☐ Subdivision
- ☑ Alterations to land contours
- ☑ New or altered connections to public utilities
- ☑ New or altered locations and or external dimensions of buildings
- ☐ New or altered access for vehicles
- ☐ Building work over or adjacent to any road or public place
- ☑ Disposal of stormwater and wastewater
- ☐ Building work over any existing drains or sewers or in close proximity to wells or water mains
- ☐ Other matters known to the applicant that may require authorisation from the territorial authority (specify):

_____

Building Consent

The building work will comply with the building code as follows:

			Acceptable Solution	Verification	Waiver
☑	B1	Structure	☑	☐	☐
☑	B2	Durability	☑	☐	☐
☐	C1	Outbreak of fire	☐	☐	☐
☐	C2	Means of escape	☐	☐	☐
☐	C3	Spread of fire	☐	☐	☐
☐	C4	Structural stability of fire	☐	☐	☐
☐	D1	Access routes	☐	☐	☐
☐	D2	Mechanical installations for access	☐	☐	☐
☑	E1	Surface water	☑	☐	☐
☑	E2	External moisture	☑	☐	☐
☑	E3	Internal moisture	☑	☐	☐
☐	F1	Hazardous agents on site	☐	☐	☐
☐	F2	Hazardous building materials	☐	☐	☐
☐	F3	Hazardous substances and processes	☐	☐	☐
☐	F4	Safety from falling	☐	☐	☐
☐	F5	Construction and demolition hazards	☐	☐	☐
☐	F6	Lighting for emergency	☐	☐	☐
☐	F7	Warning systems	☐	☐	☐
☐	F8	Signs	☐	☐	☐
☑	G1	Personal hygiene	☑	☐	☐
☑	G2	Laundering	☑	☐	☐
☐	G3	Food preparation & prevention of contamination	☐	☐	☐
☑	G4	Ventilation	☑	☐	☐
☐	G5	Interior environment	☐	☐	☐
☐	G6	Airborne and impact sound	☐	☐	☐
☑	G7	Natural light	☑	☐	☐
☐	G8	Artificial light	☐	☐	☐
☐	G9	Electricity	☐	☐	☐

☑	G10 Piped services	☑	☐	☐
☐	G11 Gas as an energy source	☐	☐	☐
☑	G12 Water supplies	☑	☐	☐
☐	G13 Foul water	☐	☐	☐
☐	G14 Industrial liquid waste	☐	☐	☐
☑	G15 Solid waste	☑	☐	☐
☑	H1 Energy efficiency	☑	☐	☐

Compliance Schedule (Commercial Buildings only)

The specified systems for the building area are as follows:

The following specified systems are being altered, added to, or removed in the course of the building work:

☐ There are no specified systems in the building.

Please fill in all applicable fields.

Architect /Designer Diamond Homes Name: Monica Kells.	Phone: 3554448
Builder Diamond Homes. Name:	Phone: 3554448.
Drainlayer Clearflow Contracting Name: Sean. Lynch.	Phone: 3574788.
Plumber Anthony Cuff Name: Plumbing.	027241 8016. Phone: 3558157.
Electrician Ian Hardyment. Name:	Phone: 3540454. 027 440 5069.
Gasfitter Name:	Phone:

Where would you like your building Consent posted?

Diamond Homes
Name: Att: Monica Kells

Address: 752 main st
Palmerston North

Contact Person: Monica Kells

Contact Number: 3554448

Relationship to Owner: Nominated Builder

Signed by/on behalf of owner

Name: Monica Kells

Signature:

Date: 18-4-06

FOR OFFICE USE ONLY 04

Building Consent	945.00
Planning	60.00
BRANZ Levy	335.00
BIA Levy	659.95
Land Use Consent	
Relocate Inspection	
Reserves Contribution	
Bond	
Other	
Total amount payable	$ 1999.95
Receipt number	DN 8636
Date Received	
Date Entered	

Note:
Please make sure checklist is completed and submitted with Building Consent application.

Application Number	

Allen Ken

SEVENTH EDITION (3) JULY 1999

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

This form is approved by the Real Estate Institute of New Zealand and by the Auckland District Law Society.

DATE:

VENDOR: Age Boschma and Sandra Helena Boschma

PURCHASER: Judy ~~Wright~~ and Brian Kibblewhite (Kibblewhite Wright Trust)

PROPERTY

Address of property: Lot 13, Stage II off Briarwood Road, Palmerston North

Estate: **FEE SIMPLE** ~~**LEASEHOLD**~~ ~~**CROSSLEASE**~~ ~~**UNIT TITLE**~~ (if none is deleted fee simple)

Legal Description:

Area: ***Lot:*** ***DP:*** ***CT:***

8100m² more or less being Lot 13 on the proposed plan of subdivision of Lot 6 DP 348056 being part of the land in CT 197391as is outlined in red on the plan attached hereto.

PURCHASE PRICE

Purchase Price: $ 210,000.00

Plus GST (if any) OR **Inclusive of GST** (if any).
If neither is deleted the purchase price includes GST (if any).

GST date: (refer clause 12)

Deposit: (refer clause 2) $ 21,000.00 payable on signing of this Agreement

Balance of purchase price to be paid or satisfied as follows:
payable to the vendor's solicitor on settlement

POSSESSION (refer clause 3)

Possession date: pursuant to clause 3.12 of this Agreement **Interest rate for late settlement:** 14 **% p.a.**

~~**CONDITIONS (refer clause 8)**~~

~~**Financial condition (if any):**~~ **LIM required:** **Yes/No**

~~**Lender:**~~

Amount required: **OIA Consent required:** **Yes/No**

~~**Finance date:**~~ ~~**Land Act/OIA date:**~~

TENANCIES (if any)

Name of tenant: Nil

Bond: **Rent:** **Term:** **Right of renewal:**

CHATTELS

The following chattels if now situated on the property are included in the sale.

(strike out or add as applicable):

~~**STOVE**~~ ~~**TV AERIALS**~~ ~~**FIXED FLOOR COVERINGS**~~ ~~**BLINDS**~~ ~~**CURTAINS**~~ ~~**DRAPES**~~

~~**TELEPHONES**~~ ~~**LIGHT FITTINGS**~~

The vendor will provide power and telecommunications to the road or right of way frontage of the section hereby sold

Sale by (name of real estate agent):
Private Treaty

It is agreed that the vendor sells and the purchaser purchases the above described property, and the chattels included in the sale, on the terms set out above, and the General and Further Terms of Sale

FURTHER TERMS OF SALE

14.0 It is recorded that the land sold is not yet defined on a plan deposited under the Land Transfer Act 1952. The Vendor will arrange for a plan of subdivision (based on the attached plan) to be completed and deposited at LINZ as soon as possible.

15.0 The areas, dimensions, representations and other statements (if any) descriptive to the property are believed by the Vendor to be satisfactorily true and correct but are subject to alteration before the deposit of the plan. If any mis-statement, error or omission is or shall be found in the attached plan or if the plan of subdivision, in the course of preparation for deposit shall differ from the attached plan, this shall not annul the sale. However if the error, omission or change to the final plan is significant or material then the Purchaser may at its option cancel the sale and in that event any deposit paid shall be refunded in full but without interest.

16.0 The Purchaser shall not lodge a Caveat against the Vendor's title unless the Vendor shall be in default in settlement.

17.0 The Vendor reserves the right to grant or create any easements that it may be required to grant in order to deposit the plan of subdivision and the Purchaser agrees to take title subject to any such easements.

18.0 The Vendor will provide power and telecommunications to the road front boundary of the Lot hereby sold or right of way frontage of the section hereby sold.

19.0 (a)The Purchaser acknowledges and agrees with the Vendor that each lot in the subdivision forms part of a development which is intended to be established as a modern and well designed subdivision of new good quality homes and it is desirable that supervision and control be exercised by the Vendor for the protection and in the interest of all purchasers in relation to the nature and type of construction to be permitted in the subdivision. In recognition of these objectives the Purchaser for his land and for the benefit of all other lots comprised in the subdivision AGREES with the Vendor that the Purchaser will covenant by deed, transfer or otherwise as required by the Vendor as follows:

(i) Not to erect nor permit to be erected on the subject property:

(1) any building except one private dwelling with garage(s) and/or carport(s), and

(2) any dwelling other than a new dwelling constructed from new materials to the intent that no existing dwelling will be moved onto and resited on the subject property, and

(3) any dwelling which has a floor area of less than 220 square metres excluding any verandah, basement, garage and carport, and

(4) any dwelling that has been constructed or partly constructed away from the subject property, and

(5) any dwelling except one constructed of new permanent low maintenance materials of good quality, and

(6) any dwelling that has for its outer wall sheathing any unfinished flat fibrolite hardiplank or similar material, and

(7) any dwelling which is designed on a barn style, and

(8) any fence except a fence constructed in new and permanent materials of wood, concrete or stone, and

(9) any form of metal roofing which has not been factory pre-painted or which will create glare offensive to adjoining property owners, and

(10) any water or other storage tanks which are not dug into the ground to the extent of at least 1.5 metres of their depth.

(ii) Not to commence to erect nor permit the commencement or erection of any dwelling or other works on the subject property, without having first submitted the plans, site plan and specifications therefor (copies of which may be retained by the Vendor for later verification) to the Vendor and having obtained from the Vendor written approval of the same.

(iii) Not to alter in any significant manner any such plans and specifications to which the Vendor may have given approval as aforesaid, nor to deviate significantly therefrom, nor to permit any significant deviation therefrom in the construction of any dwelling or other works, without first obtaining the written approval of the Vendor to any such change, such approval not to be unreasonably or arbitrarily withheld.

(iv) Not to apply to the Local Authority for a building permit nor to proceed with the erection of any building on the said property, until the Vendor's approval has been obtained as required above and once the approval has been obtained, the Purchaser will carry out and complete the work in accordance with the plans and specifications approved by the Vendor and in particular will complete exterior finishing and painting within eight (8) months from the date on which the construction commences.

(v) Except when building operations are in progress, not to place not permit nor allow to be brought onto or remain on the subject property any temporary dwelling, caravan, trade vehicle, trade equipment or machinery materials, debris, rubbish or vehicle of an unsightly nature, unless the same is adequately garaged or screened to prevent offence to any adjoining property and to preserve the amenities of the neighbourhood.

(vi) Not to use the property for any trading or commercial purpose.

(vii) Not to leave stormwater to flow over the surface of the land but to ensure that the same is piped into the natural causeways.

(b) The Purchaser further acknowledges and agrees as follows:

(i) That the above covenants will be binding on the Purchaser and his executors, administrators, assigns and successors in title.

(ii) The above covenants (as well as the provisions in this sub-clause (b)) shall be included in the Memorandum of Transfer of the property to the Purchaser or may be created and registered by the Vendor prior to the completion of this contract to the intent that the property shall not only have the burden of the

covenants but also the benefit of similar covenants in respect of neighbouring properties comprised in the subdivisional plan.

(iii) The Vendor will be entitled to grant the Purchaser of any lot in the subdivision a dispensation in respect of any of the above covenants so as to allow the Purchaser to proceed with work that otherwise would not meet the requirements of any one or more of the covenants provided that the Vendor will not grant any dispensation unless the Vendor is satisfied that such dispensation will have no material affect on the subdivision as a whole. The Vendor's decision on any such dispensation will be final and the Purchaser will have no right of objection or appeal against such decision.

(iv) The Vendor will use its best endeavours to administer and ensure compliance by Lot owners with the above covenants but will not be liable to the Purchaser (or any other owner of a lot in the subdivision) for any breach of a covenant by any other owner.

(v) The Purchaser will indemnify the Vendor from all proceedings, costs, claims and demands in respect of breaches by the Purchaser of the above covenants.

(vi) It is acknowledged that there is a continuing rural enterprise being carried out by the Vendors on the balance of Lot 6 Deposited Plan 348056 of the subdivision. The Purchaser will not interfere with or restrict this continued activity provided it is conducted in accordance with the Manawatu District Council's Planning Ordinances current from time to time and in a manner that is considered standard District practice and with the minimum of disturbance that is practical. It is further acknowledged that the burden of these covenants shall not apply in respect to the said balance of Lot 6 which is outside of the subdivision of which the land, the subject of this Agreement, forms part.

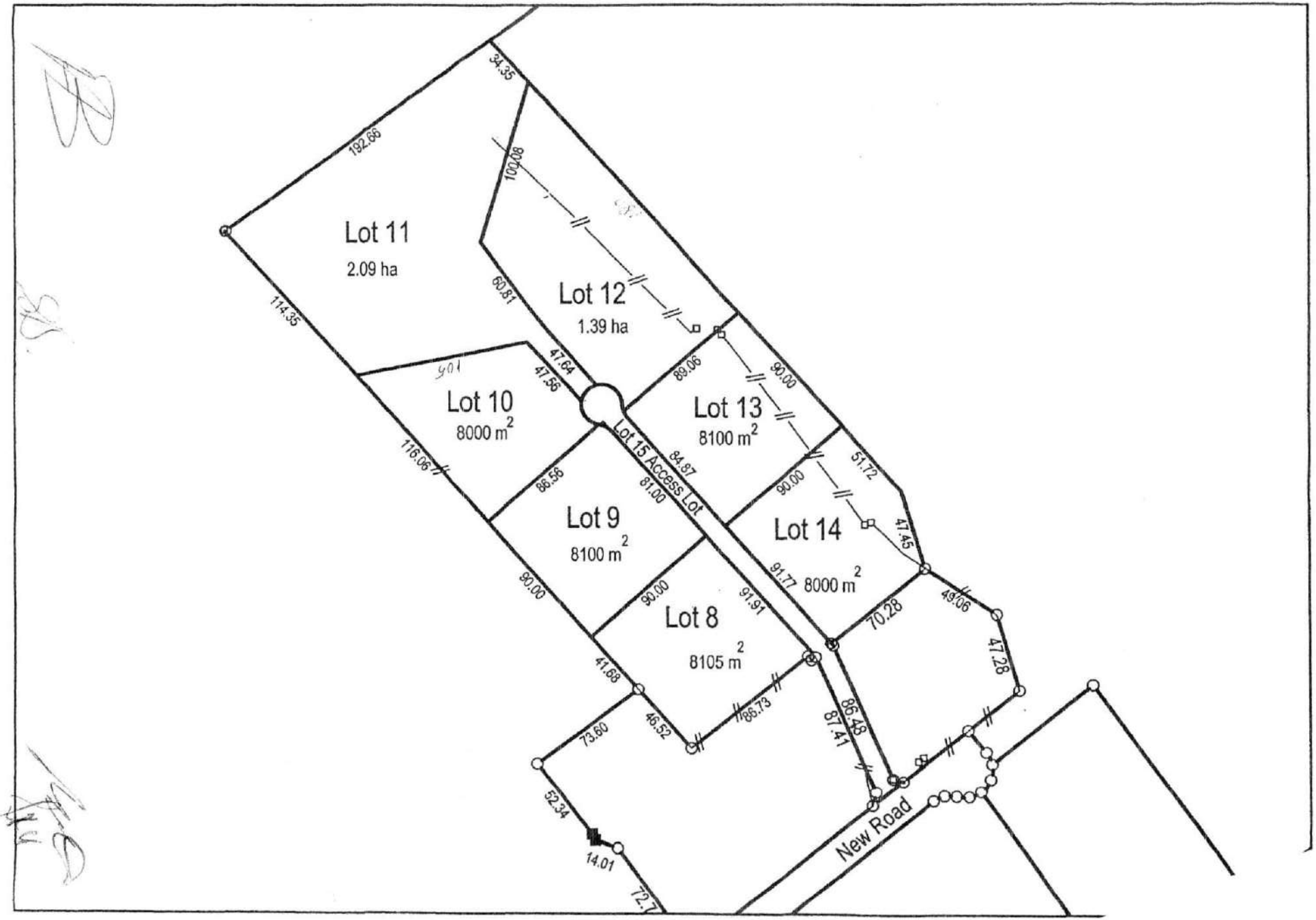
20.0 It is hereby acknowledged that this Agreement is not a Deferred Payment Disposition under the Credit Contracts Act 1981 as the purchase price represents the lowest price at which a person could have purchased the property from the Vendor on the basis of payment being made in full at the time this Agreement was made.

21.0 It is hereby acknowledged that the purchase price does not include any capitalised interest and the parties agree that the "lowest price" for the purpose of the definition of "core acquisition price" in the relevant sections of the Income Tax Act 1994 is equal to the purchase price.

22.0 The Purchaser will not call upon the Vendor to pay for or contribute towards the cost of erection or maintenance of any boundary fence between the property and any adjoining land of the Vendor. This covenant will not enure for the benefit of any subsequent registered proprietor of any adjoining land.

23.0 If there is any conflict between these conditions of sale and the other terms and conditions of the contract, these conditions of sale shall prevail.

24.0 This Agreement is subject to and conditional upon the Purchaser being satisfied in all respects of any requirements from Palmerston North City Council as to the erection of a dwelling on the property. If this condition shall not be fulfilled on or before the 4th day of November 2005 then this Agreement shall be voidable at the option of the Purchaser.


Lot 11
2.09 ha
Lot 12
1.39 ha
Lot 10
8000 m2
Lot 13
8100 m2
Lot 9
8100 m2
Lot 14
8000 m2
Lot 8
8105 m2
Lot 15 Access Lot
New Road
34.35
192.66
100.08
114.35
60.81
47.64
47.56
89.06
90.00
116.06
86.56
81.00
84.87
51.72
90.00
47.45
91.77
49.06
70.28
47.28
90.00
90.00
91.91
41.68
86.73
46.52
73.60
86.48
87.41
52.34
14.01
72.7

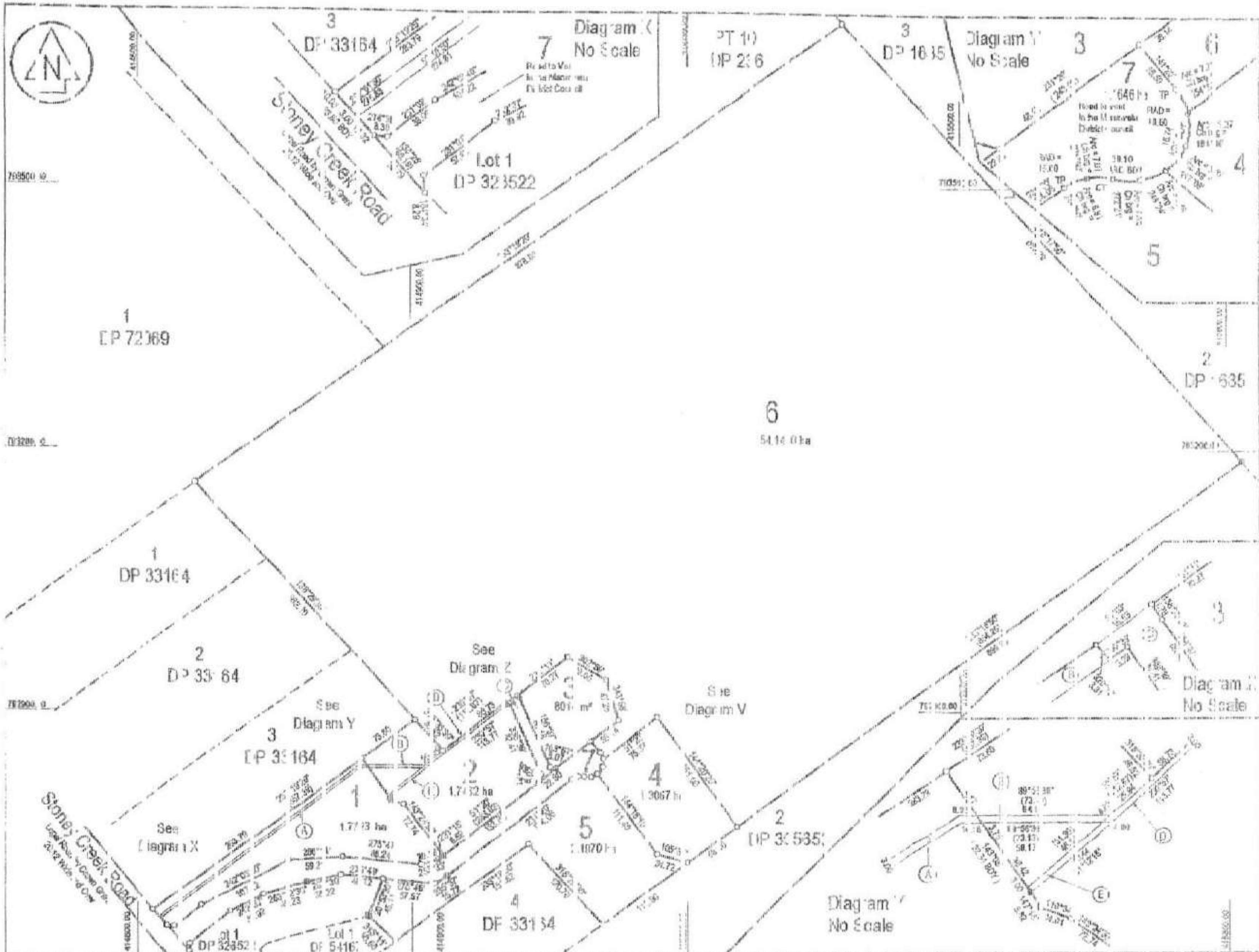
FURTHER TERMS OF SALE

See Further Terms of Sale attached hereto

WARNINGS *(These warnings do not form part of this agreement)*

1. This is a binding contract. **Read the information set out on the back page before signing.**
2. If the property is vacant land which is part of a Head Title, subdivided by cross lease, then it is essential that the Auckland District Law Society and Real Estate Institute of New Zealand clauses for Staged Development Work are included in this agreement.

Signature of vendor(s)	Signature of purchaser(s)
.....	.....
.....	.....



LAND DISTRICT Wellington	Lots 1 - 7 Being Subdivision of Lot 2 DP 326522
SURVEY BLK. & DIST	

TERRITORIAL AUTHORITY Manawatu District

Surveyed by Truebridge Associates Limited

Scale 1:3000 Date November 2004

Approvals

New CT Allocation

Schedule of Easements in Gross

Shown	Purpose	Servient	Grantee
	Road		

Schedule of Easements

Shown	Purpose	Servient	Dominant

Total Area 61.1252 ha

Comprised in 109886

Approved as to Survey by Land Information New Zealand on ..../......./2004

Deposited by Land Information New Zealand on ..../......./2004

248055

BEFORE SIGNING THE AGREEMENT

- It is recommended both parties seek professional advice before signing. This is especially so if:
  - There are any doubts. This is a binding contract with only restricted rights of termination.
  - The property is sold as a going concern.
  - Property such as a hotel or a farm is being sold. The agreement is designed primarily for the sale of residential and commercial land.
  - The property is vacant land in the process of being subdivided or there is a new cross lease or unit title to be issued. In these cases additional clauses may need to be inserted.
  - There is any doubt as to the position of the boundaries.
- The purchaser should investigate the status of the property under the Council's District Plan. The property and those around it are affected by zoning and other planning provisions regulating their use and future development.
- The purchaser should investigate whether necessary permits and certificates have been obtained from the Council where building works have been carried out by an earlier owner. This investigation can be assisted by obtaining a LIM from the Council. The vendor's warranties under the agreement may not extend to such works.
- The purchaser should compare the title plans against the physical location of existing structures where the property is a cross lease or unit title. Structures or alterations to structures not shown on the plans may result in the title being defective.
- In the case of a unit title, the purchaser should inquire whether the body corporate holds funds for deferred maintenance of common property.
- The vendor should ensure the warranties and undertakings in clauses 6 and 7:
  - are able to be complied with; and if not
  - the applicable warranty is deleted from the agreement and any appropriate disclosure is made to the purchaser.
- Both parties should ensure the chattels list at the bottom of the front page is accurate.
- If the property is sold as a "going concern", the vendor should ensure the purchase price is stated on the front page as "PLUS GST (if any)".

THE ABOVE NOTES ARE NOT PART OF THIS AGREEMENT AND ARE NOT A COMPLETE LIST OF MATTERS WHICH ARE IMPORTANT IN CONSIDERING THE LEGAL CONSEQUENCES OF THIS AGREEMENT.

PROFESSIONAL ADVICE SHOULD BE SOUGHT REGARDING THE EFFECT AND CONSEQUENCES OF ANY AGREEMENT ENTERED INTO BETWEEN THE PARTIES.

THE PURCHASER IS ENTITLED TO A COPY OF ANY SIGNED OFFER AT THE TIME IT IS MADE.

Dated:.....

BETWEEN

Age Boschma and Sandra Helena Boschma

.....

Vendor

Ph.(Bus.)

(Pvt.)

AND

Judy ~~Wright~~ and Brian Kibblewhite (Kibblewhite Wright Trust)

.....

Purchaser

Ph.(Bus.)

(Pvt.)

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

Fitzherbert Rowe (S Harrex)
Private Bag 11016
Palmerston North
Ph 06 3514208 Fax 06 351 4725

Vendor's solicitor (indicate individual acting)

Loughnans (B Stewart)
PO Box 1257
Palmerston North
Ph 06 356 4960 Fax 06 356 2118

Purchaser's solicitor (indicate individual acting)

Deposit paid to

Amount: $

Date paid:

SALE BY:

Member of the Real Estate Institute of New Zealand

Office:

Address:

Telephone:

Fax:

Manager:

Salesperson:

Manawatu District Council

CHECK LIST – Building Consents

Building Consent No. 117136

Project Address 51 Briarwood Rd

DOCUMENTS SUPPLIED

2 Copies of each document

CHECK ALL ITEMS – "☑" OK or "☒" Incomplete OR "n/a"

- ☒ Foundation plans
- ☑ Elevations of all external walls
- ☑ Roof framing plan
- ☑ Details of thermal insulation
- ☑ Floor Plans
- ☐ Floor framing plan
- ☐ Details of sub-floor braces
- ☑ Details of roof bracing
- ☑ Details of Barriers (safety from falling & pools)
- ☑ Details of wall bracing
- ☑ Risk matrix building envelope
- ☑ Ventilation Schedule
- ☑ Truss Calculations and fixing details
- ☑ Plumbing & Drainage plan
- ☑ Specifications (relevant to proposal)

Design Calculations

- ☐ Sub-floor & wall bracing calculations
- ☐ Structural design calculations
- ☐ Storm water design calculations
- ☐ Effluent disposal system design
- ☐ Specific thermal design calculations
- ☐ Enclosing rectangle calculations

Reports

- ☐ Fire design report
- ☐ Foundation report
- ☐ Waste Water report

Clause	Checked		Clause	Checked	
B1		**STRUCTURE**	B1		Ceiling joists
	✓	General		✓	Ceiling battens
		Timber Barriers		✓	Trusses
		Small Chimneys			Rafters
		FOUNDATIONS		✓	Purlins
		Dimensions		✓	Truss fixings
		Bearing capacity		✓	Purlin fixings
		Reinforcing – Construction/joints		✓	Roof bracing
		Fill Material			Under purlins
		Bracing columns			Struts
		Thickenings			**CHIMNEYS**
		Veranda posts/footings & fixings			Pumice
		Internal Pads			Brick
		Pile treatment & size			Metal
		Sub floor bracing	B2		**DURABILITY**
		Pile & bearer spacing		✓	Minimum of the intended use
		Pile fixings	C1		**OUTBREAK OF FIRE**
		Anchor piles			Freestanding Inbuilt Installation to manufactures requirements
		Canterlever piles			Open Fire
		Bracing piles		✓	Gas fuel appliances
		BEARERS	C2		**MEANS OF ESCAPE**
	✓	Size			Fire Cells
	✓	Bearer & joist fixings			Fire ratings
		JOISTS			External walls & roofs
	✓	Joist fixings			Closures in fire & smoke stopping
	✓	Joist Blocking			Fire stopping
		FRAMING			Concealed spaces
	✓	Timber sizes			Surface finishes & floor coverings
	✓	Lintels TRIFOLD			Suspended flexible fabrics
	✓	Trimming studs			Smoke control
	✓	Sill heads	C4		**STRUCTURAL STABILITY & FIRE**
	✓	Point loading			Fire resistance ratings
	✓	Point loading above lintels			Non-evacuation
		Strong backs			

DECK

D1		**ACCESS ROUTES**
	✓	General Criteria
		Level access routes
		Ramps
		Stairways
		Fixed ladders
		Handrails
		Door & openings
		Accessible Accommodation units of communal residential units
D2		**MECHANICAL INSTALLATIONS FOR ACCESS**
E1		**SURFACE WATER**
		Drainage system
	✓	Downpipes
	✓	Size of pipes
		Roof gutters
	✓	Drainage plan
		Cleaning points
		Sumps
	✓	Spouting
E2		**EXTERNAL**
	✓	Roofs
	✓	Exterior Joinery
	✓	Floors – DPM
		Basements
		Construction Moisture
		ROOF CLADDING
	✓	Heavy / Light
	✓	Flashings
	✓	Fixings to manufacture specifications
		WALL CLADDING
	✓	Heavy / Light
		WINDOWS
	✓	Flashings
		CLADDINGS
	✓	Cavity
E3	✓	**INTERNAL MOISTURE**

E3		Overflow
		Water Splash
F1		**HAZARDOUS AGENTS ON SITE**
F2		**HAZARDOUS BUILDING MATERIALS**
	✓	Safety Glass
F3		**HAZARDOUS SUBSTANCES & PROCESSES**
F4		**SAFETY FROM FALLING**
	✓	Barriers & Buildings
		Construction site barriers
		Swimming pool barriers
	✓	Balustrades – height & fixing
F5		**CONSTRUCTION & DEMOLITION HAZARDS**
F6		**LIGHTING FOR EMERGENCY**
F7		**WARNING SYSTEMS**
	✓	Smoke alarms
F8		**SIGNS**
G1		**PERSONAL HYGIENE**
		Number & type of fixtures
		Fixture construction & installation
		Location of Sanitary fixtures
		Facilities for people with disabilities
		Privacy
G2		**LAUNDERING**
	✓	Laundering facilities
G3		**FOOD PREPARATION PREVENTION OF CONTAMINATION**
G4		**VENTILATION**
	✓	Natural ventilation
	✓	Mechanical ventilation
		Spaces containing – gas fuel appliances
G5		**INTERIOR ENVIRONMENT**
		Temperature control / Tempering valve
	✓	Space
		People with disabilities
G6		**AIRBORNE SOUND IMPACT SOUND**

		Preventions of Fungal Growth
G7	✓	**NATURAL LIGHT**
	✓	Vertical windows
	✓	Awareness of the outside environment
G8	✓	**ARTIFICIAL LIGHT** Solartube
G9		**ELECTRICITY**
G10		**PIPE SERVICES**
G11	✓	**GAS AS AN ENERGY SOURCE**
G12		**WATER SUPPLIES**
	✓	Hot water supply INFinity
		Hot water cylinder valve layout
	✓	Cold Water Supply
	✓	Materials & installation methods
		Solar heating
	✓	Pressure Test
	✓	Piping approved type
	✓	Fixing of piping & jointing
	✓	Pipe sizes
	✓	Under floor plumbing

G13		**FOUL WATER**
	✓	Underfloor plan
	✓	Drainage plan
	✓	Gully traps above ground
	✓	Venting drains & waste
	✓	Approved type material
	✓	Inspection Junctions & bends
	✓	Pipe sizes
G14		**INDUSTRIAL LIQUID WASTE**
G15		**SOLID WASTE**
	✓	Effluent systems
H1		**ENERGY EFFICIENCY**
		Batts – walls & ceilings
	✓	Rock wool
	✓	Other Bradford gold

Delayed require further information

Signed ..... Geoff Lockery

Date 20-4-06 24/04/06

Reviewed by

Signed .....

Date 24.4.06

Processing complete ready for issue of building consent

Signed .....

Date .....

Comments

provide engineers report for foundations.

Manawatu District Council

135 Manchester Street
Private Bag 10-001
FEILDING
Phone (06) 323 0000
Fax (06) 323 8711

PROJECT INFORMATION MEMORANDUM 117136

Section 33, Building Act 2004

THE OWNER

Name of owner:	Boschma Age Boschma Sandra Helena
Mailing address:	Stoney Creek Rd, R D 10, PALMERSTON NORTH 5321
Phone No: Landline Mobile: After hours:	
Facsimile No:	
Email address:	
Name of contact:	**Diamond Homes**
Mailing address:	**752 Main St, PALMERSTON NORTH**
Phone No: Landline: Mobile: After hours:	
Facsimile No:	
Email address:	

THE BUILDING

Street location:	51 Briarwood Rd
Legal description:	LOT 6 DP 348056 SUBJ TO ELECTRICITY
Level/unit number: 1 Valuation No: 14020 / 41411	

BUILDING WORK

Erect new four bedroom dwelling with attached garage & workshop

This Project Information Memorandum is issued under section 33 of the Building Act 2004 and includes all information known to this authority.

This project information memorandum is:

☑ Confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 2004 and any requirements of the Building Consent No. 117136 attached.

☐ Notification that other authorisations must be obtained before a building consent will be issued.

☐ Notification that the proposed building work may not be undertaken because a necessary authorisation has been refused.

On behalf of: **Manawatu District Council**

Name: Warren Cummerfield

Date: 4 May 2006

Position: Senior Building Officer

PROPERTY MEMORANDA

This Project Information Memorandum is subject to the following memo's.

Plumbing and/or Drainage work is to comply with the N.Z Building Code 1992

This property is zoned Rural 2 under the Manawatu District Plan

A land use consent has been submitted to build 10 metres from the boundary. This land use consent is being processed. A reserve contribution of $1640.00 for the second dwelling on the property is required.

Please feel free to contact a planner at Council for any clarification.

The building is to comply with the Building Act 2004.

There are no Environmental Health requirements.

There are no known General Bylaw Implications to this application

PROVIDE ENGINEERS REPORT FOR FOUNDATIONS

Please note: The subdivision consent has been approved however a survey plan has not been lodged and the conditions have not been completed.

For information regarding Power, Gas or Telecom services you are advised to contact the respective utility providers.

The property should have an approved Motor Vehicle Crossing. If one does not exist, a new crossing will need to be constructed to Council standards. If there is an existing crossing it shall be upgraded, as necessary, to meet Council's current standards.

If, during work being carried out on this project, any damage occurs to the road reserve or its environs, repairs and/reinstatement is to be made to the satisfaction of Council within 24 hours of the damage occuring.

If this this not done, Council will make good any damage and forward and account to you detailing all costs incurred.

To avoid any misunderstanding, the road reserve is the full width of the road between property boundaries and includes the carriageway, footpaths, berms also all pipes, drains, signage, street furniture (fire hydrants etc) any ornamental planting.

There are no attachments with this Project Information Memorandum

135 Manchester Street
Private Bag 10-001
FEILDING
Phone (06) 323 0000
Fax (06) 323 8711

BUILDING CONSENT NO 117136 / 1

Section 51, Building Act 2004

THE OWNER

Name of owner:	Boschma Age Boschma Sandra Helena
Mailing address:	Stoney Creek Rd, R D 10, PALMERSTON NORTH 5321
Phone No: Landline:	
Daytime:	
Mobile:	
After hours:	
Facsimile No:	
Email address:	
Website:	
Name of contact:	**Diamond Homes**
Mailing address:	**752 Main St, PALMERSTON NORTH**
Phone No: Landline:	
Daytime:	
Mobile:	
After hours:	
Facsimile No:	
Email address:	

THE BUILDING

Street location:	51 Briarwood Rd
Legal description:	LOT 6 DP 348056 SUBJ TO ELECTRICITY

Level/unit number: 1
Valuation No: 14020 / 41411

BUILDING WORK

The following building work is authorised by the building consent:

Erect new four bedroom dwelling with attached garage & workshop

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).

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.

This building consent is subject to the following conditions:
If you have requested an inspection, do not proceed until you have been given the approval from the building officer.
No endorsements were required on this consent

COMPLIANCE SCHEDULE

A compliance schedule is not required for the building.

On behalf of: **Manawatu District Council**

Name: Warren Cummerfield

Date: 4 May 2006

Position: Senior Building Officer

Inspection Record

DUNCAN	Application Number. 117136/1.

Owners Name:	Kibblewhite
Site Address:	51 Briarwood Rd.
Project:	New Dwelling

	Site Inspection		Wall Framing Inspection
✓	Foundation		Roof Framing Inspection
	Concrete Floor Slab		Framing Inspection
	Sub Floor Framing		Prelining (Moisture, Insulation) Insp.

	Subfloor Plumbing Inspection		Fire Safety Inspection
	Subfloor Drainage Inspection		System / Services Inspection.
	Drainage Effluent Inspection		
	Drainage (to NUO System)		OTHER :
	Effluent disposal system		
	Plumbing & or Drainage Insp.		
	Preline Plumbing Ispection		

	REINSPECTION.		FINAL INSPECTION

Date: 24.5.06	Time:

Comments: Inspected Foundation Beam & Walls Reo in place. All as per Eng details.

RECD 13/06

KEVIN O'CONNOR
& ASSOCIATES LTD

106009 LT02
MB

9 June 2006

Diamond Homes Ltd
752 Main Street
PALMERSTON NORTH

Attention: Geoff Boyden

Dear Sir

KIBBLEWHITE RESIDENCE – FILL TESTING

As requested, we have checked the natural ground with respect to the filling and also conducted KLEGG hammer testing on the fill material itself. We believe the bearing capacity of the natural ground is satisfactory for the placing of the fill as shown on the drawings.

Subsequent testing of the fill material itself using the KLEGG hammer revealed that the riverrun fill material has been adequately compacted.

Please note that we have not been asked to comment on any pea metal material that may be placed above the tested fill.

We trust that this information is suitable for your requirements. Should you have any queries regarding the above or any other matters please do not hesitate to contact us.

Yours faithfully

S E Pinkney
KEVIN O'CONNOR & ASSOCIATES LTD

Directors: Kevin O'Connor 0275 466 241, Scott Blain 021 2706 004, Kevin Judd 027 4912 829, Stephen Pinkney 027 257 6377 Email: reception@koa.co.nz

CONSULTING ENGINEERS, SURVEYORS AND PLANNERS | 7 PITT STREET, PO BOX 600 | PALMERSTON NORTH, NEW ZEALAND

T 06 356 7000 | F 06 356 7007

135 Manchester Street
Private Bag 10-001
FEILDING
Phone (06) 323 0000
Fax (06) 323 8711

APPLICATION FOR CODE COMPLIANCE CERTIFICATE

Section 92, Building Act 2004

THE OWNER

Name of owner: Boschma Age

Boschma Sandra Helena

Mailing address: Stoney Creek Rd, R D 10, Palmerston North 5321

Street address/ registered office: 06 353 6053

Phone No: Landline:
Daytime:
Mobile:
After hours:

Facsimile No:

Email address:

Website:

The following evidence of ownership is attached to this application showing full name of legal owner(s) of the building: (please tick)

- ☐ Copy of certificate of title
- ☐ Lease
- ☐ Agreement for sale and purchase
- ☐ Other (specify) _____

AGENT

Name of agent: Diamond Homes

Mailing address: 752 Main St, PALMERSTON NORTH

Phone No: Landline: 3554448
Daytime:
Mobile: 027651525
After hours:

Facsimile No: 355 4449

Email address: monica@diamondhomes.co.nz

Relationship to owner (state details of the authorisation from the owner to make the application on the owner's behalf):

Nominated Builder.

THE BUILDING CONSENT

Building consent no: 117136 / 1

Issued by: Manawatu District Council

APPLICATION

All building work to be carried out under the above building consent was completed on: 1st December 2006

Date

The personnel who carried out the building work are as follows:

Name	Address	Phone No	Registration No
Designer	Diamond Homes - Manka 752 Main st, PNorth	3554448	NZDAT
Builder - Contractor	Diamond Homes 752 Main st, PNorth	3554448	
Clearflow Contracting	PO Box 5462 Palmerston North	3574782	Reg 13343.
Anthony Gill Plumbing	10 Piriani Place Palmerston North	355815?	Reg 12949.
Ian Hadgraft Electrical	21 Humphries place Palmerston North	3540454	Reg E148.
Builder Brian Jackson	10 Hedgewood Grove. Palmerston North	3588626	Cert in joint corp.

The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent:

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004. The code compliance certificate should be sent to:

Address: 752 Main st, Palmerston North.

Being Owner / Agent (please circle which)

Signature of Owner/Agent

1st December 2006.

Date

Monica Wells

Name of person signing (please print)

Attachments

The following documents are attached to this application: (please tick)

- ☑ Certificates from the personnel who carried out the work
- ☑ Certificates that relate to the energy work
- ☐ Evidence that specified systems are capable of performing to the performance standards set out in the building consent

REGISTRATION BOARD COPY

Plumbers, Gasfitters and Drainlayers Board

PLUMBERS, GASFITTERS AND DRAINLAYERS BOARD

GASFITTING CERTIFICATION CERTIFICATE
(Pursuant to the Gas Act 1992 and the Gas Regulations 1993 and amendments)
ENERGY WORK CERTIFICATE
(Pursuant to the Building Act 1991)

THIS CERTIFICATE IS NOT TRANSFERABLE

Certificate No 417524

9th Floor, 70 The Terrace
PO Box 10655
WELLINGTON
Tel 04 494 2970
Fax 04 494 2975
website www.pgdb.co.nz

Installation address: (Box No's not acceptable) Please complete in block letters

(Number) 51 (Street name) Briarwood Estate

(Suburb)

(Town/City) Palmerston North

Consumer: (Title) Mr & Mrs (Initials) B e J (Family/Business name) Kibblewhite

Category: ☑ Domestic ☐ Commercial ☐ Industrial ☐ Temporary ☐ Other

Type (Regulation 24(1)): ☑ New ☐ Addition, ☐ Extension, ☐ Replacement ☐ Alteration ☐ Repair following accident

Gas Type ☐ NG ☑ LPG ☐ TLP ☐ Bio

Name of Gas Supplier On Gas

Pipework Installed (attach pipework diagram) ☑ YES ☐ NO

DESCRIPTION OF GASFITTING TO WHICH THIS CERTIFICATE APPLIES

Qty	Appliance Type	Appliance Location	Make/model	Input rate	Flue Type	Flue Location	Ventilation Type	Ventilation Location
1	Water Heater	In Ceiling Space	Rinnai Infinity 26 Internal	195MJ	Power Flue thru Roof		external	
1	I/B Heater	Lounge 2/C Box	Rinnai Timberflame Compact IBF	25MJ	Twin Skin thru Roof		complies	
1	F/S Heater	Family/Dining Room	Rinnai Timberflame FS35ETR	35MJ	Twin Skin thru Roof		complies	

Test Results

10 min Duration
5.5 kPa Test pressure
0 kPa Loss / gain
2.75 kPa Working pressure

Other Testing

Combustion ☐ Yes ☑ No
Ventilation ☐ Yes ☐ No

Test Date 29 / 11 / 06

I certify that :-

- All appliances and fittings worked on by me or by persons working under my supervision are safe and that all work carried out was in accordance with all applicable requirements of the Gas Act 1992 and Gas Regulations 1993 as amended.
- The gasfitting to which this certificate applies does not make other parts of the installation unsafe or otherwise non-compliant with the Gas Act 1992 and Gas Regulations 1993 as amended.
- Gasfitting work to which this certificate applies ☐ **does** ☑ **does not** include work on an appliance or fitting imported or manufactured by a person for their own use.

Certifiers Name Darrell Bavater
Address 69 Cashmere Drive Palmerston North

Registration No 9083
Signature [signature]

Registered Gasfitter/s Supervised by certifier
Name
Registration No
Name

Certificate owner Bavaters Plumbing Co Ltd
Registration No
On behalf of
Address PO Box 4113 P.N.

EWRB 551

ELECTRICAL WORKERS REGISTRATION BOARD
Safety • Competency

Electrical Certificate of Compliance

for prescribed electrical work that is carried out on electrical installations and involves the placing or positioning or the replacing or repositioning of conductors (including fittings attached to those conductors).

To be completed whether or not an Inspection is required.

No. 2148669

No. of attachments

This form is approved by the Electrical Workers Registration Board (PO Box 10-156, Wellington. Freephone 0800 66-1000) for the purposes of the Electricity Regulations 1997.

CUSTOMER INFORMATION - PLEASE PRINT CLEARLY

Name of customer: Brian + Judy Kibblewhite Phone: 3536053

Address of installation: Lot 13 Briarwood Estate PN

Postal address of customer (if not as above):

WORK DETAILS

54 No. of lighting outlets

54 No. of socket outlets

Was any installation work carried out by the homeowner? Yes ☐ No ✓

1 No. of ranges

Cias No. of water heaters

Please tick (✓) as appropriate where work includes:

✓ Mains

✓ Switchboard

✓ Main earthing system

✓ Electric lines

Description: New house:-
2 Heat/Light/Fan Units
2 Heated Towel Rails
1 Water pump
1 Effluent pump.
1 Sweep Fan.
1 Cupboard Heater
2 Exterior Weather Proof Power Points
RG30 Downlights used

If necessary attach any pages with sketches of work done

It is recommended that test results be recorded here:

Visual Examination ✓

Earth Continuity ✓

Bonding ✓

Polarity ✓

Insulation Resistance 100 Mohm

Other

CERTIFICATION OF WORK

I certify that the above electrical work has been carried out in accordance with the requirements of the Electricity Act 1992 and Electricity Regulations 1997.

ELECTRICAL WORKER DETAILS

Name: Ian Hardyment

Registration no.: E148

Company: Ian Hardyment Electrical Ltd

Signature: I.G Hardyment

Date: 27/11/06

Contact Ph No.: 0274 440 509

CERTIFICATION OF ELECTRIC LINES

(to be completed where a separate electrical worker has installed the electric line portion of the mains)

Name:

Registration no.:

Company:

Signature:

Date:

Contact Ph No.:

INSPECTION DETAILS

Electrical work requiring inspection by a registered electrical inspector

✓ New mains ✓ Switchboard ✓ Earthing system ☐ Installation work in hazardous areas

I certify that the inspection has been carried out in accordance with the requirements of regulation 41 of the Electricity Regulations 1997.

Name: Terry Farnsworth

Signature:

Registration no.: L1471

Date: 27-11-06

Contact Ph No.: 0274 451 581

CUSTOMER COPY - THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED

PRODUCER STATEMENT - CONSTRUCTION

ISSUED BY Glenn Pollard
Contractor

to Diamond Homes Ltd

in respect of Kibblewhite Residence

at 51 Briarwood Estate
Address

Palmerston North

I/We have inspected the Hardibacker substrate and the flashing system at the above address prior to papering and netting and confirm that the substrate and flashing system is satisfactory. My employees papered and netted the home under my guidance.

I believe that the finished work has been carried out and completed to a good exterior plastering standard.

G Pollard Date 17/10/06.

Contractor Glenn Pollard

Address 594 Kelvin Grove Road

RD:0 Palmerston North

INSTALLER DECLARATION

(to be signed by the installer at the completion of the work and returned to Clearflow Contracting)

Re: Diamond Homes Ltd client, Briarwood Estate, Lot 13 Stoney Creek Road, PN

System: LOW PRESSURE EFFLUENT DOSING (LPED)

INSTALLER: Drainaway Ltd, t/a Clearflow Contracting

ADDRESS: 141 Keith Street, P O Box 5462, Palmerston North

I declare that I have installed the LPED system at the Briarwood Estate residence as per the plans and specifications, and hereby guarantee the quality of the workmanship.

Signed:

(Licensed Drainlayer)

Registration No: 12326

135 Manchester Street
Private Bag 10-001
FEILDING
Phone (06) 323 0000
Fax (06) 323 8711

CODE COMPLIANCE CERTIFICATE

Section 95, Building Act 2004

THE OWNER

Name of owner: Boschma Age

Boschma Sandra Helena

Mailing address: Stoney Creek Rd, R D 10, Palmerston North 5321

Phone No: Landline:
Daytime:
Mobile:
After hours:

Facsimile No:

Email address:

Website:

Name of contact: First point of contact for communications with the council/building consent authority:
Name: Diamond Homes
Mailing address: 752 Main St, PALMERSTON NORTH
Phone number: Landline:
Mobile:

Daytime: After hours:
Facsimile number:
Email address:

Mailing address: Stoney Creek Rd, R D 10, PALMERSTON NORTH 5321

Phone No: Landline:
Daytime:
Mobile:
After hours:

Facsimile No:

Email address:

BUILDING WORK

Erect new four bedroom dwelling with attached garage & workshop

Building Consent No: 117136 / 1

Issued by: Manawatu District Council

On behalf of: **Manawatu District Council**

Name: Warren Cummerfield

Date: 14 December 2006

Position: Senior Building Officer

THE BUILDING

Street location:	Briarwood Rd
Legal description:	LOT 13 DP 371668 - HAVING UNDIVIDED 1/7 SHARE IN 3795 SQ M BEING LOT 15 DP 371668 - LOT 13 INT IN STORMWATER DRAINAGE LOT 15 SUBJ TO ELECTRICITY
Level/unit number: 1	
Valuation No: 14020 / 41417	
Current, lawfully established use:	Dwelling
Year first constructed:	

CODE COMPLIANCE

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

(a) The building work complies with the building consent

KEVIN O'CONNOR
& ASSOCIATES LTD

DIAMOND HOMES

KIBBLEWHITE RESIDENCE

~ CALCULATIONS & DETAILS ~

CONSULTING ENGINEERS, SURVEYORS & PLANNERS
7 Pitt Street, P O Box 600, Palmerston North Ph 06 356 7000 Fax 06 356 7007 Email reception@koa.co.nz
Directors: Kevin O'Connor 021 466 241, Scott Blain 021 2706 004, Kevin Judd 0274 912 829, Stephen Pinkney 027 257 6377

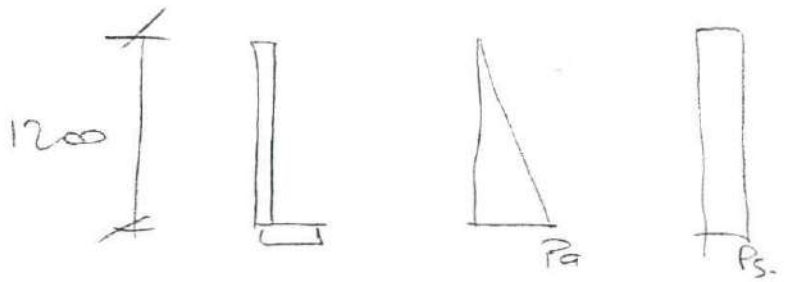
CLIENT: DIAMOND HOMES

SUBJECT: KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	1			

KEVIN O'CONNOR & ASSOCIATES LTD

1200 MAX RETAINING WALL



Soil $\quad \gamma = 18\ kN/m^3$

$\phi = 30°$

$K_a = \dfrac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18\ kN/m^3 \times 1.2m$

$= 7.1\ kPa$

$P_s = 0.33 \times 2\ kPa$

$= 0.66\ kPa$

$M^* = 1.6\left(7.1 \times \dfrac{1.2^2}{2 \times 3} + 0.66 \times \dfrac{1.2^2}{2}\right)$

$= 3.5\ kNm/m$

D12 - 600 .

$a = \dfrac{188 \times 300}{0.85 \times 32 \times 1000}$

$= 8.3mm$

$\phi M = 0.85 \times 188 \times 300 \times \left(\dfrac{120}{2} - \dfrac{8.3}{2}\right)$

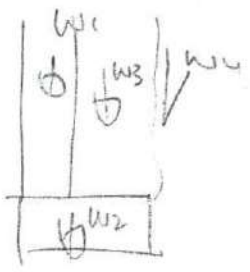
$= 4.4\ kNm/m \Rightarrow$ OK

USE
D12-600 CRS
D12-600 CRS

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLEWHITE RESIDENCE					
FILE No. 1006009	DATE 18/4/06	PAGE 4 OF	BY	CKD	

KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1. WALL SW, G = 4.4kPa × 1.8m = 7.91 kN/m

W2 FOOTING G = 8 × 0.2m × 24 = 3.84 kN/m

W3 FILL G = 18 kN/m³ × 0.6m × 1.8m = 19.4 kN/m

W4. FILL FRICTION G = 0.577 × 0.5 × 10.7kPa × 1.8m = 5.6 kN/m

36.7 kN/m

OBG = 0.9(36.7) = 33.1 kN/m

OBM = 0.9(7.9 × 0.1m + 3.84 × 0.8m/2 + 19.4 × 0.5 m + 5.6 × 0.8m)

= 16.2 kNm/m

$e = \frac{16.2 - 10.9}{33.1}$

$= 0.161m$

$P_E = \frac{33.1}{2 \times 0.161}$

= 102 kPa — LARGE

USE 850 × 200 FOOTING

CLIENT: DIAMOND HOMES

SUBJECT: KIBBLE WHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	B-1			

KEVIN O'CONNOR & ASSOCIATES LTD

DESIGN BRACES TO DECK :

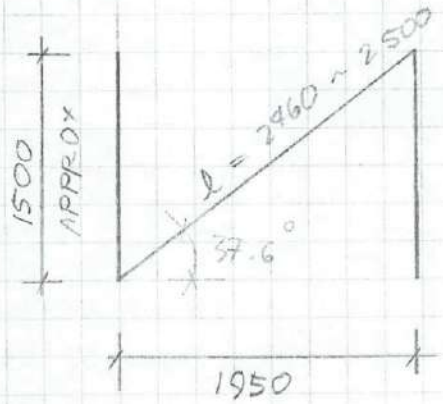
EARTHQUAKE :

AREA 19.6m × 2m = 39.2 m²

BUS REQ'D . . . . = 9.8/2 BUS/m² × 39.2m² = 193 BUS

EQ ALONG : REQ'D = $\frac{193}{120}$

= 2 BRACES



l = 2500 MAX

NZS3604: USE : 100 × 75 BRACES

PROVIDE : 350SQ × 450 deep CONC FOOTINGS

Refer details as attached. BS-2

KEVIN O'CONNOR
& ASSOCIATES LTD

DIAMOND HOMES

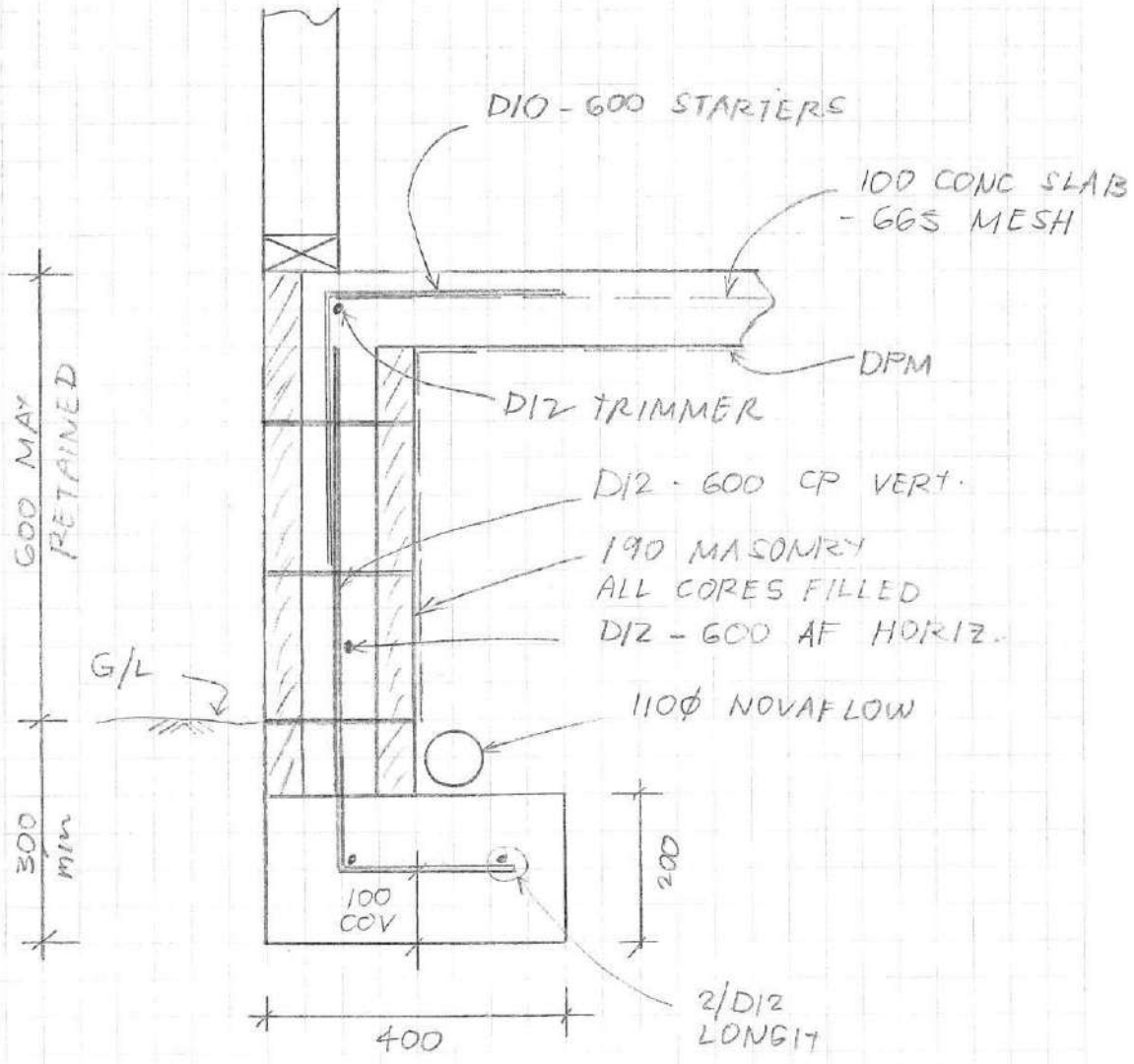
KIBBLEWHITE RESIDENCE

~ CALCULATIONS & DETAILS ~

CONSULTING ENGINEERS, SURVEYORS & PLANNERS
7 Pitt Street, P O Box 600, Palmerston North Ph 06 356 7000 Fax 06 356 7007 Email reception@koa.co.nz
Directors: Kevin O'Connor 021 466 241, Scott Blain 021 2706 004, Kevin Judd 0274 912 829, Stephen Pinkney 027 257 6377

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLEWHITE RESIDENCE					
FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	SK1			

KEVIN O'CONNOR & ASSOCIATES LTD

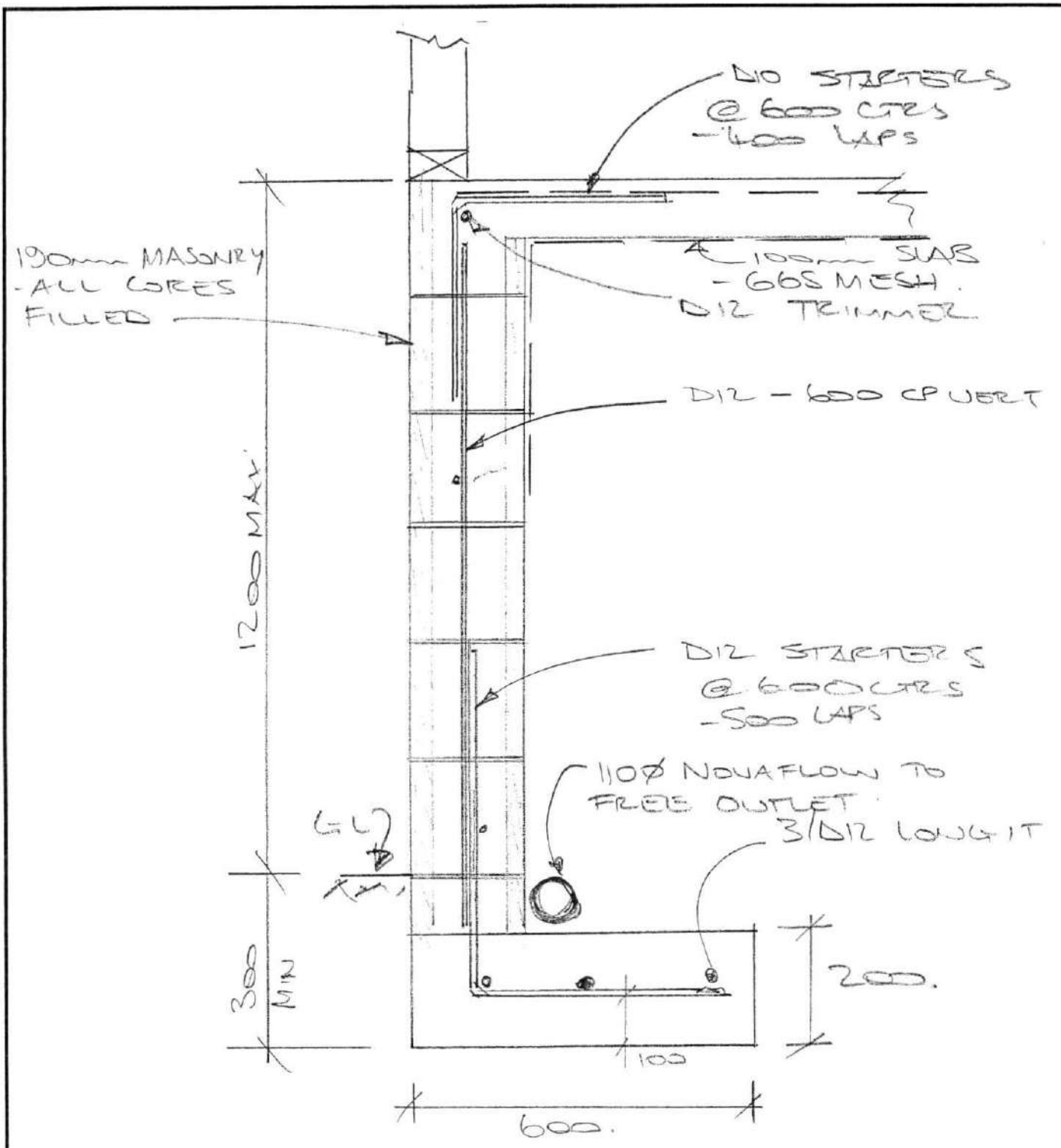


600 mm MAX RETAINING WALL

1.10

CLIENT					
DIAMOND HOMES					
SUBJECT	KIBBLEWHITE RESIDENCE				
FILE No.	DATE	PAGE	OF	BY	CKD
106009	19/4/06	SK2		SP	

KEVIN O'CONNOR & ASSOCIATES LTD

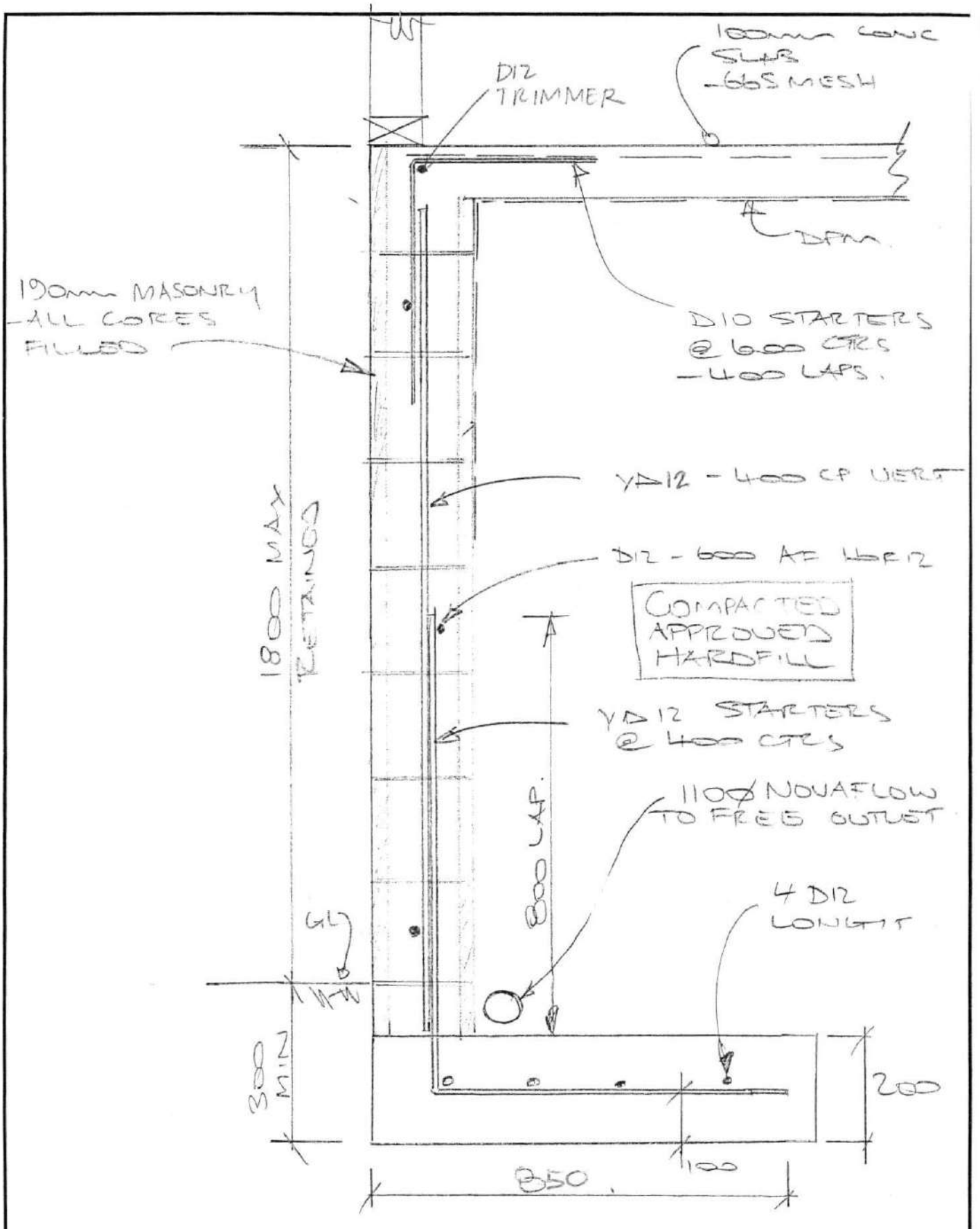


1200MAX RETAINING WALL

1:10

CLIENT					
DIAMOND HOMES					
SUBJECT	KIBBLEWHITE RESIDENCE				
FILE No.	DATE	PAGE	OF	BY	CKD
106009	19/4/06	SK3		SP	

KEVIN O'CONNOR & ASSOCIATES LTD



1800MAX RETAINING WALL

1.10

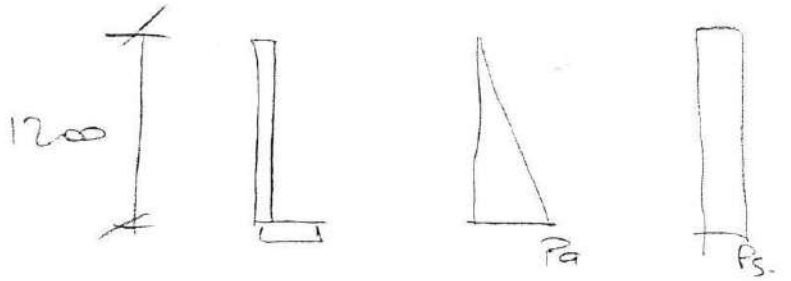
CLIENT: DIAMOND HOMES

SUBJECT: KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	1			

KEVIN O'CONNOR & ASSOCIATES LTD

1200 MAX RETAINING WALL



Soil $\quad \gamma = 18\,kN/m^3$

$\phi = 30°$

$K_a = \dfrac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18 \times 1.2^2 \times 1m$

$= 7.1\,kPa$

$P_s = 0.33 \times 2\,kPa$

$= 0.66\,kPa$

$M^* = 1.6\left(7.1 \times \dfrac{1.2^2}{2 \times 3} + 0.66 \times \dfrac{1.2^2}{2}\right)$

$= 3.5\,kNm/m$

D12 - 600.

$a = \dfrac{188 \times 300}{0.85 \times 32 \times 1000}$

$= 8.3\,mm$

$\phi M = 0.85 \times 188 \times 300 \times \left(\dfrac{130}{2} - \dfrac{8.3}{2}\right)$

$= 4.4\,kNm/m \Rightarrow$ OK

USE
D12-600 CRS
D12-600 CRS

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLE WHITE RESIDENCE					
FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	2			

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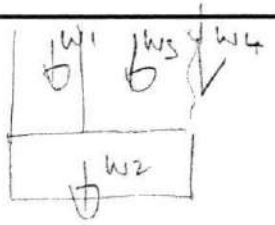
FOOTING



W1

WALL SW, G = 4.4kN/m² × 1.2m = 5.3kN/m

W2 600 × 200 FOOTING — G = 0.6m × 0.2m × 24 = 2.9 kN/m

W3. FILL G = 0.4m × 1.2m × 18kN/m³ = 8.6kN/m

W4. FILL FRICTION. G = 0.577 × 0.5 × 7.1kN/m² × 1.2m = 2.5kN/m

19.3kN/m

OVG = 0.9 (19.3)

= 17.4kNm/m

OVM = 0.9 (5.3 × 0.1m
+ 2.9 × 0.3m
+ 8.6 × 0.1m
+ 2.5 × 0.5m)

= 5.7kNm/m

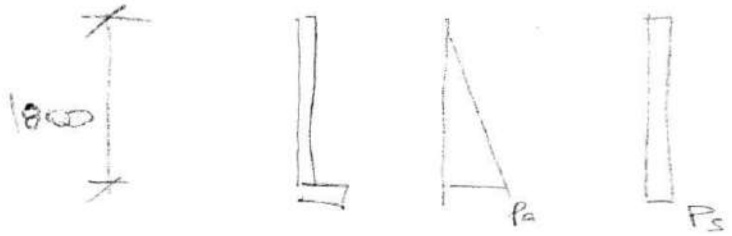
$e = \frac{5.7 - 3.5}{17.4}$

= 0.12m

$P_a = \frac{17.4}{2 \times 0.12m}$

= 73kN/m²

1800 MAX RETAINING WALL



LOADS

SOIL $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin\phi}{1 + \sin\phi}$

$= 0.33.$

$P_a = 0.33 \times 18 kN/m^3 \times 1.8m$

$= 10.7 KPa$

$P_s = 0.33 \times 2.0 KPa$

$= 0.66 KPa$

PURE CANTILEVER $M^* = 1.6\left(10.7 \times \frac{1.8^2}{2 \times 3} + 0.66 \times \frac{1.8^2}{2}\right)$

$= 10.9 kNm$

YP 12 - 400.

$a = \frac{283 \times 500}{0.85 \times 8 \times 1000}$

$= 20.8 mm$

$M_{ROW} = 0.85 \times 283 \times 500 \times \left(\frac{150}{2} - \frac{20}{2}\right)$

$= 10.2 kNm/m$

USE YD-40
@ VERT
D12-600
@ HORIZ

CLIENT: DIAMOND HOMES

SUBJECT: KIEBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
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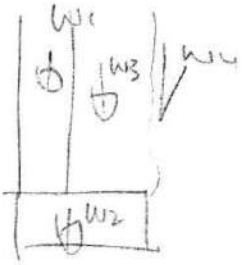
KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1. WALL SW, G = 4.4kPa × 1.8m = 7.91KN/m

W2 FOOTING G = 0.8 × 0.2m × 24 = 3.84KN/m

W3 FILL G = 18KN/m³ × 0.6m × 1.8m = 19.4KN/m

W4. FILL FRICTION G = 0.577 × 0.5 × 10.7kPa × 1.8m = 5.6 KN/m

36.7 KN/m

OBG = 0.9(36.7) = 33.1 KN/m

OBM = 0.9(7.9 × 0.1m
+ 3.84 × 0.8m/2
+ 19.4 × 0.5 M
+ 5.6 × 0.8m)

= 16.2 KNm/m

$e = \frac{16.2 - 10.9}{33.1}$

$= 0.161m$

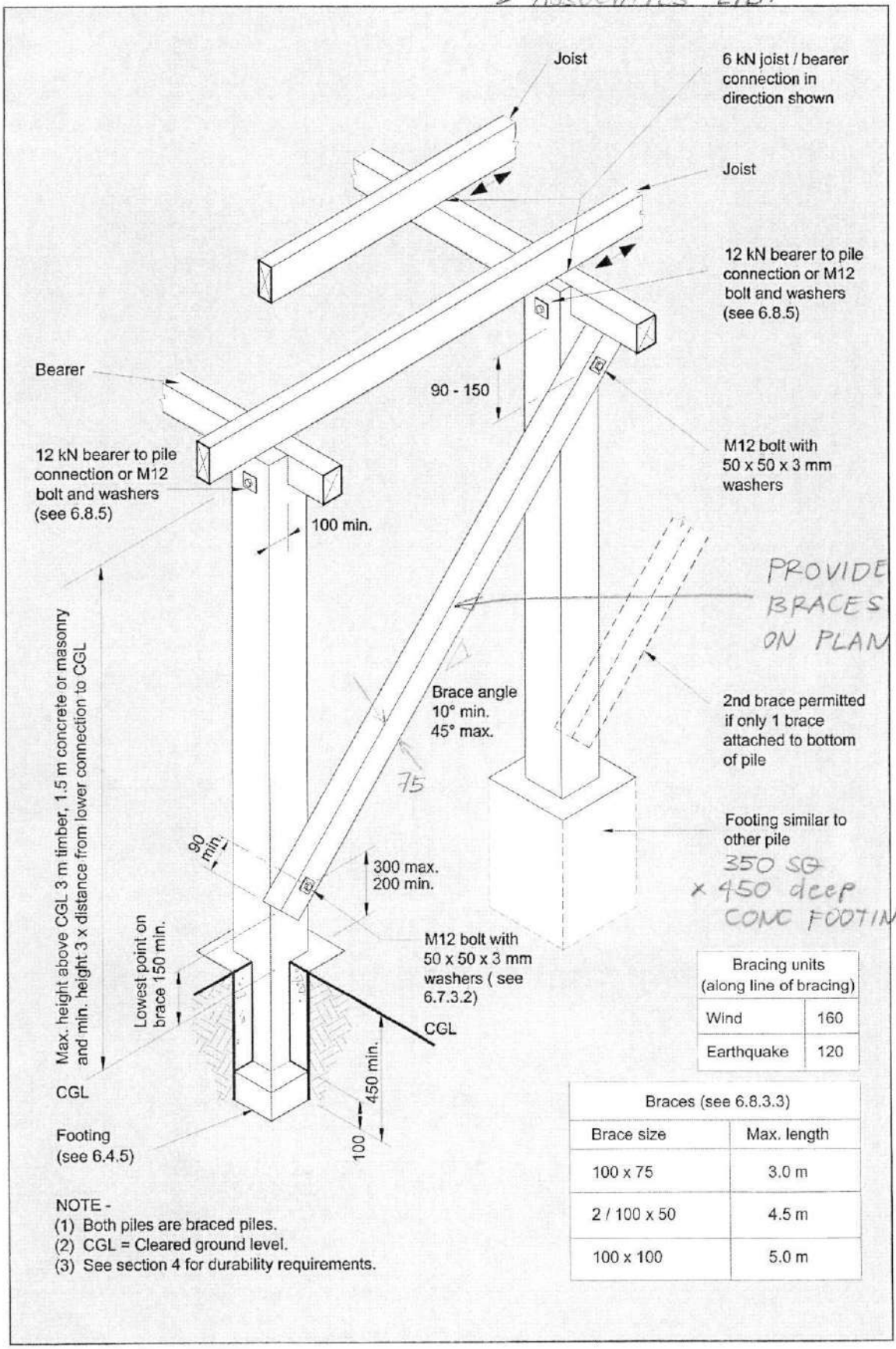
$q_a = \frac{33.1}{2 \times 0.161}$

= 102 kPa — LARGE

→ USE 850 × 200 FOOTING

BS - 2
106009
18/4/06

KEVIN O'CONNOR & ASSOCIATES LTD.



Bracing units (along line of bracing)	
Wind	160
Earthquake	120

Braces (see 6.8.3.3)	
Brace size	Max. length
100 x 75	3.0 m
2 / 100 x 50	4.5 m
100 x 100	5.0 m

NOTE -
(1) Both piles are braced piles.
(2) CGL = Cleared ground level.
(3) See section 4 for durability requirements.

Figure 6.6 – Braced pile system – Brace connected to pile (see 6.8)

CLIENT				
DIAMOND HOMES				
SUBJECT				
KIBBLE WHITE RESIDENCE				
FILE No. 106009	DATE 18/4/06	PAGE B-1 OF	BY	CKD

KEVIN O'CONNOR & ASSOCIATES LTD

DESIGN BRACES TO DECK :

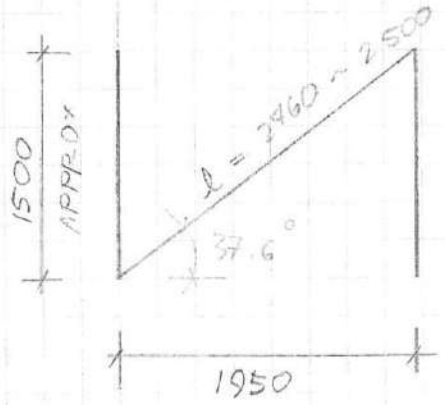
EARTHQUAKE .

AREA 19.6m × 2m = 39.2 m²

BUS REQ'D . . . . = 9.8/2 BUS/m² × 39.2m² = 193 BUS

EQ ALONG : REQ'D = $\frac{193}{120}$

= 2 BRACES

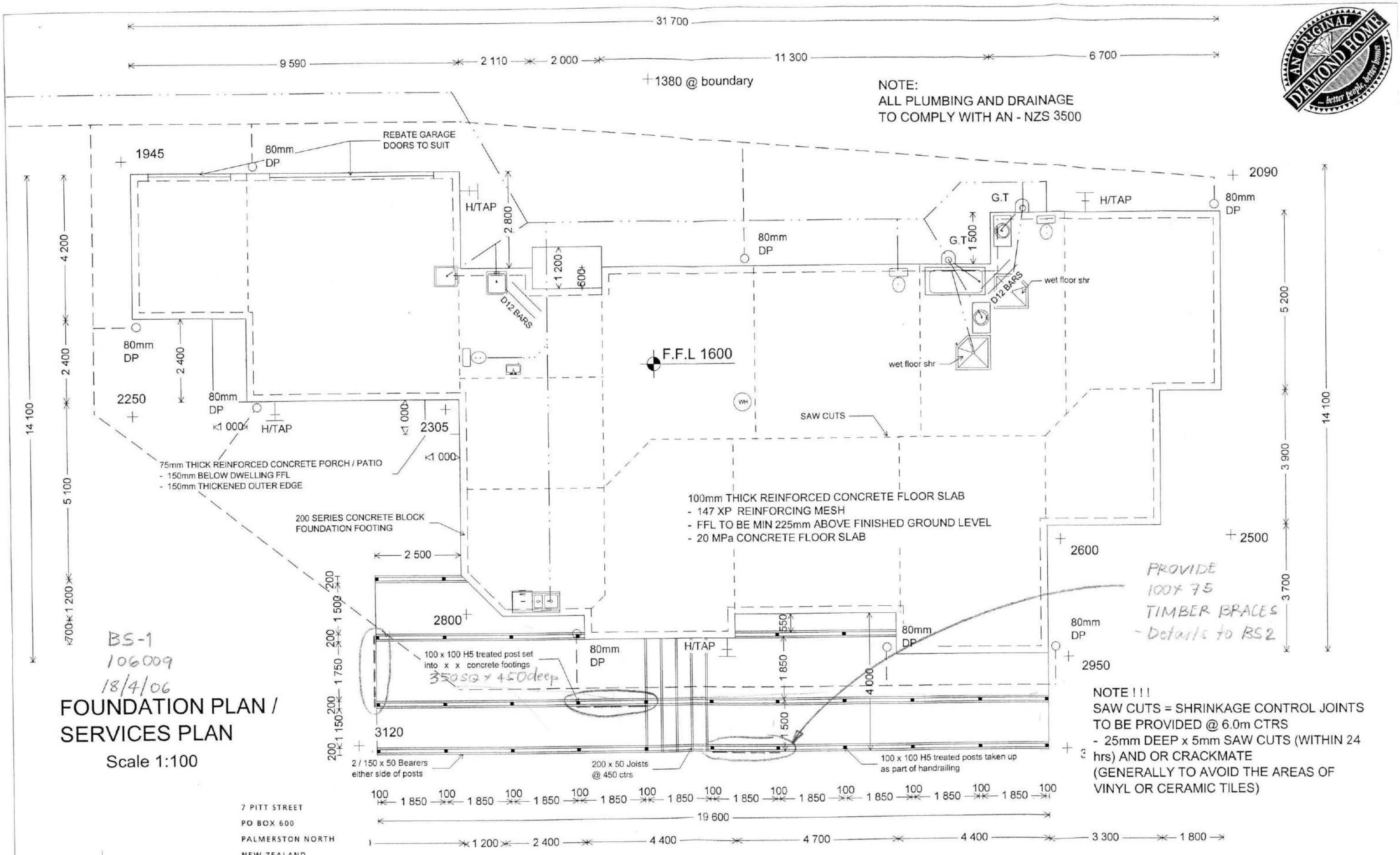


ℓ = 2500 MAX

NZS3604: USE : 100 × 75 BRACES

PROVIDE : 350SQ × 450 deep CONC FOOTINGS

Refer details as attached. BS - 2



BS-1
106009
18/4/06

FOUNDATION PLAN / SERVICES PLAN

Scale 1:100

NOTE ! ! !
SAW CUTS = SHRINKAGE CONTROL JOINTS TO BE PROVIDED @ 6.0m CTRS
- 25mm DEEP x 5mm SAW CUTS (WITHIN 24 hrs) AND OR CRACKMATE
(GENERALLY TO AVOID THE AREAS OF VINYL OR CERAMIC TILES)

KEVIN O'CONNOR & ASSOCIATES LTD
CONSULTING ENGINEERS, SURVEYORS AND PLANNERS
7 PITT STREET
PO BOX 600
PALMERSTON NORTH
NEW ZEALAND
06 356 7000
06 356 7007
reception@koa.co.nz

ET
ORTH
3
49

KIBBLEWHITE RESIDENCE

BRIARWOOD ESTATE

PALMERSTON NORTH

Drawing Title
FOUNDATION PLAN / SERVICES PLAN
Scale 1:100

M. KELLS
NZDAT
Rev #2 28/03/06
08.00

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

20th July 2006

To: Manawatu District Council
Private Bag 10 001
Feilding

RE: Kibblewhite Wright Trust
Lot 13
Briarwood Estate
Palmerston North
Building Consent No 117136/1

To Whom It May Concern:

Please find enclosed an amendment to the above job. We have added in some steps on the decking. Please refer to enclosed foundation plan.

If you have any queries, please don't hesitate to contact me.

Thanking you

Monica Kells
Architectural Designer
Diamond Homes
monica@diamondhomes.co.nz

NOTE:
ALL PLUMBING AND DRAINAGE
TO COMPLY WITH AN - NZS 3500

31 700
9 590 | 2 110 | 2 000 | 11 300 | 6 700

1240
80mm DP
REBATE GARAGE DOORS TO SUIT
H/TAP
2 800
1280
POWER OUTLET
1 200
600
D12 BARS
80mm DP
F.F.L 1000
1520
G.T
H/TAP
80mm DP
G.T
1 500
D12 BARS
wet floor shr
wet floor shr
SAW CUTS
WH

80mm DP
2 400
1430
80mm DP
1 000
H/TAP
1510
1 000
1 000
75mm THICK REINFORCED CONCRETE PORCH / PATIO
- 150mm BELOW DWELLING FFL
- 150mm THICKENED OUTER EDGE
REFER TO ENGINEERS DETAILS ON FOUNDATION FOOTINGS
Steps to suit height from ground
Handrail
600
600
POWER OUTLET
2 500
1950

100mm THICK REINFORCED CONCRETE FLOOR SLAB
- 147 XP REINFORCING MESH
- FFL TO BE MIN 225mm ABOVE FINISHED GROUND LEVEL
- 20 MPa CONCRETE FLOOR SLAB

1680
ground levels
1680

80mm DP
H/TAP
80mm DP
1900
100 x 100 H5 treated post set into concrete footings designed by engineer
550
500
1 850
1 750
4 000
1 500
1 150
600
600
Steps to suit height from ground
Handrail
2 / 150 x 50 Bearers either side of posts
200 x 50 Joists @ 450 ctrs
100 x 100 H5 treated posts taken up as part of handrailing

14 100
4 200
2 400
5 100
1 200
700
200
1 500
200
1 750
200
1 150
200
5 200
3 900
3 700
14 100

100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100 | 1 850 | 100
19 600

3 300 | 6 200 | 1 200 | 2 400 | 4 400 | 4 700 | 4 400 | 3 300 | 1 800

FOUNDATION PLAN / SERVICES PLAN
Scale 1:100

Manawatu District Council
117136
27/07/06

NOTE ! ! !
SAW CUTS = SHRINKAGE CONTROL JOINTS TO BE PROVIDED @ 6.0m CTRS
- 25mm DEEP x 5mm SAW CUTS (WITHIN 24 hrs) AND OR CRACKMATE
(GENERALLY TO AVOID THE AREAS OF VINYL OR CERAMIC TILES)

DIAMOND HOMES
752 MAIN STREET
PALMERSTON NORTH
PH 06 355 4448
FAX 06 355 4449

KIBBLEWHITE RESIDENCE
BRIARWOOD ESTATE
PALMERSTON NORTH

Drawing Title
FOUNDATION PLAN / SERVICES PLAN
Scale 1:100

M. KELLS
NZDAT
Rev #6 22/06/06
08.00

Application for Amendment to Building Consent

ManawatuDistrictCouncil

RECEIVED
25 OCT 2006
Manawatu District Council

IN DOC No	80288		
FILE No.:	BC 117136/1		
DIVISION	ACTION	FILE	
CEO			
E			

ENVIRONMENTAL SERVICES
Private Bag 10 001, FEILDING

Building Consent Number

117136/1

Owners

Name: J & B Kibblewhite.

Postal Address: 21 Martin St, Palmerston North.

Project Information

Site Address: Briarwood Estate, PNorth.

Legal Description: Lot 13.

Land ID: | Valuation Number:

Detail of Building work originally applied for:
To erect a new dwelling

Description of amendment:
change balustrading material.

Will the amendment change the value of Building work, if so please advise:
Yes. $3000:00

Please indicate the name of the new or added Building Professional (if applicable)

Registration No:

Signed by/or on behalf of owner

Name Monica Kells

Signature

Date 24-10-06.

Note: Please make sure all details of this form are filled out. If there are any additional fees you will be advised once we have processed this appli... payable before we c... amendment.

Please do not proce... amendments until y... confirmation from C...

additional fees to be Charged Bra!!

Office use only
PLA
BLD
P&D

DIAMOND HOMES®

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

24th October 2006

To: Manawatu District Council
Private Bag 10 001
Feilding

RE: Kibblewhite Wright Trust
Lot 13
Briarwood Estate
Palmerston North
Building Consent No 117136/1

To Whom It May Concern:

Please find enclosed a revised plan showing the change from timber balustrade to wrought iron balustrade to the deck.

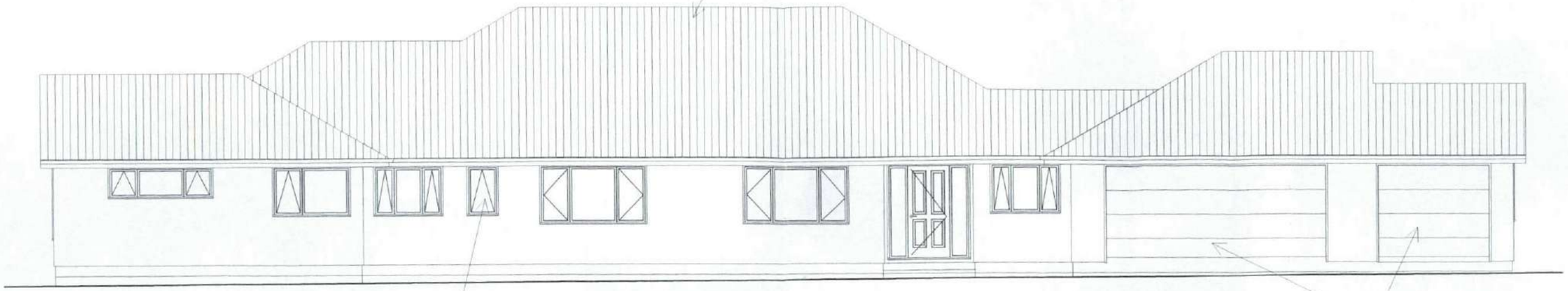
If you have any queries, please don't hesitate to contact me.

Thanking you

Monica Kells
Architectural Designer
Diamond Homes
monica@diamondhomes.co.nz

PLASTER APPLICATOR TO DECIDE ON EXACT LOCATIONS OF CONTROL JOINTS ACCORDING TO MANUFACTURERS SPECIFICATIONS.

LONGRUN COLORSTEEL
ROOFING @ 30 deg PITCH



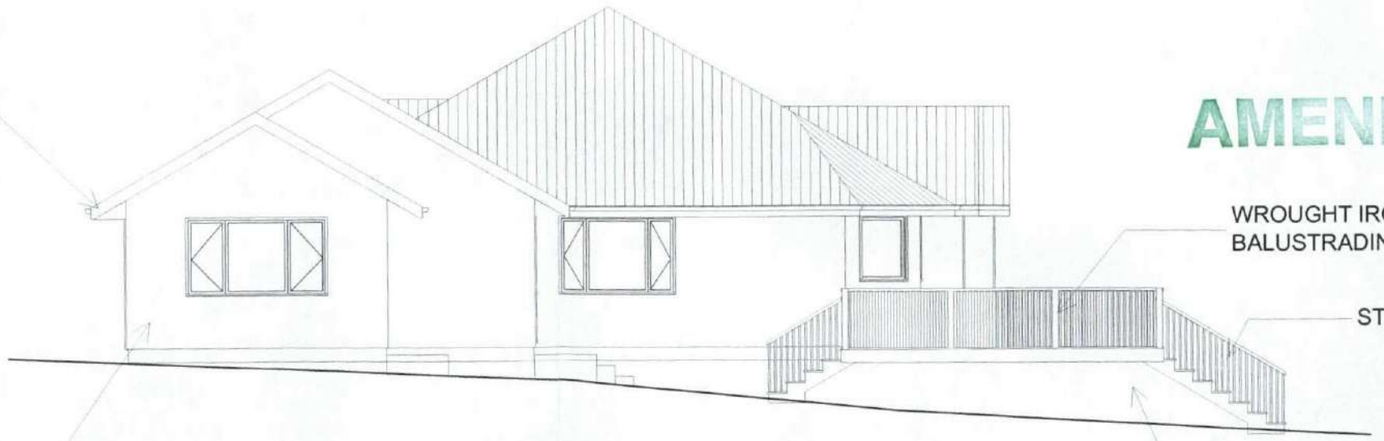
ALUMINIUM JOINERY

SECTIONAL GARAGE DOORS

ELEVATION A

Scale 1:100

CONTINUOUS COLORSTEEL
SPOUTING WITH PVC DOWN PIPES



WROUGHT IRON
BALUSTRADING

STAIRS TO SUIT

LIGHT PEBBLE DASH SOLID PLASTER TO
EXTERIOR OVER A FULL CAVITY SYSTEM

ELEVATION B

Scale 1:100

POST POSITIONS FOR DECKING
ARE MARKED ON THE
FOUNDATION PLAN
NO BASE COVERING OR STEPS
ALLOWED FOR

AMENDMENT

24 OCT 2006

DIAMOND HOMES

752 MAIN STREET
PALMERSTON NORTH
PH 06 355 4448
FAX 06 355 4449

KIBBLEWHITE RESIDENCE

BRIARWOOD ESTATE
PALMERSTON NORTH

Drawing Title

ELEVATIONS
Scale 1:100

M. KELLS
NZDAT
Rev #11 24/10/06
11.30

DIAMOND HOMES®

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

20th April 2006

To: Manawatu District Council
Private Bag 10 001
Feilding

RE: Kibblewhite Wright Trust
Lot 13
Briarwood Estate
Palmerston North

To Whom It May Concern:

Please find enclosed the engineering for the above job. The building consent was sent in a couple of days ago. Also Sean from Clearflow is sending the septic design directly to the council.

If you have any queries, please don't hesitate to contact me.

Thanking you

Monica Kells
Architectural Designer
Diamond Homes
monica@diamondhomes.co.nz

KEVIN O'CONNOR
& ASSOCIATES LTD

DIAMOND HOMES

KIBBLEWHITE RESIDENCE

~ CALCULATIONS & DETAILS ~

CONSULTING ENGINEERS, SURVEYORS & PLANNERS
7 Pitt Street, P O Box 600, Palmerston North Ph 06 356 7000 Fax 06 356 7007 Email reception@koa.co.nz
Directors: Kevin O'Connor 021 466 241, Scott Blain 021 2706 004, Kevin Judd 0274 912 829, Stephen Pinkney 027 257 6377

CLIENT					
	DIAMOND HOMES				
SUBJECT	KIBBLEWHITE RESIDENCE				
FILE No. 106009	DATE 18/4/06	PAGE SK1	OF	BY	CKD

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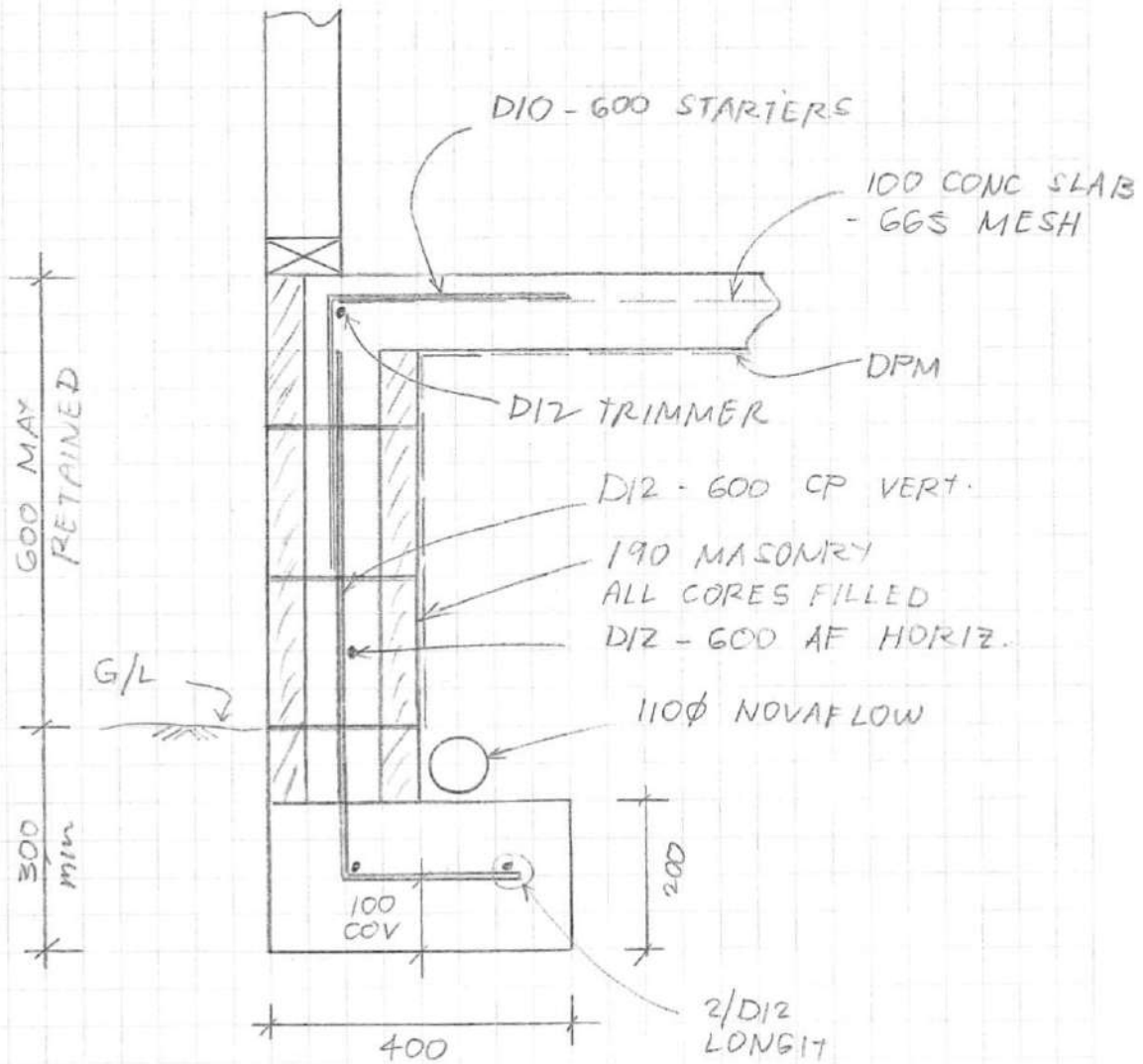

600 mm MAX RETAINING WALL

1.10

CLIENT				
DIAMOND HOMES				
SUBJECT				
KIBBLEWHITE RESIDENCE				
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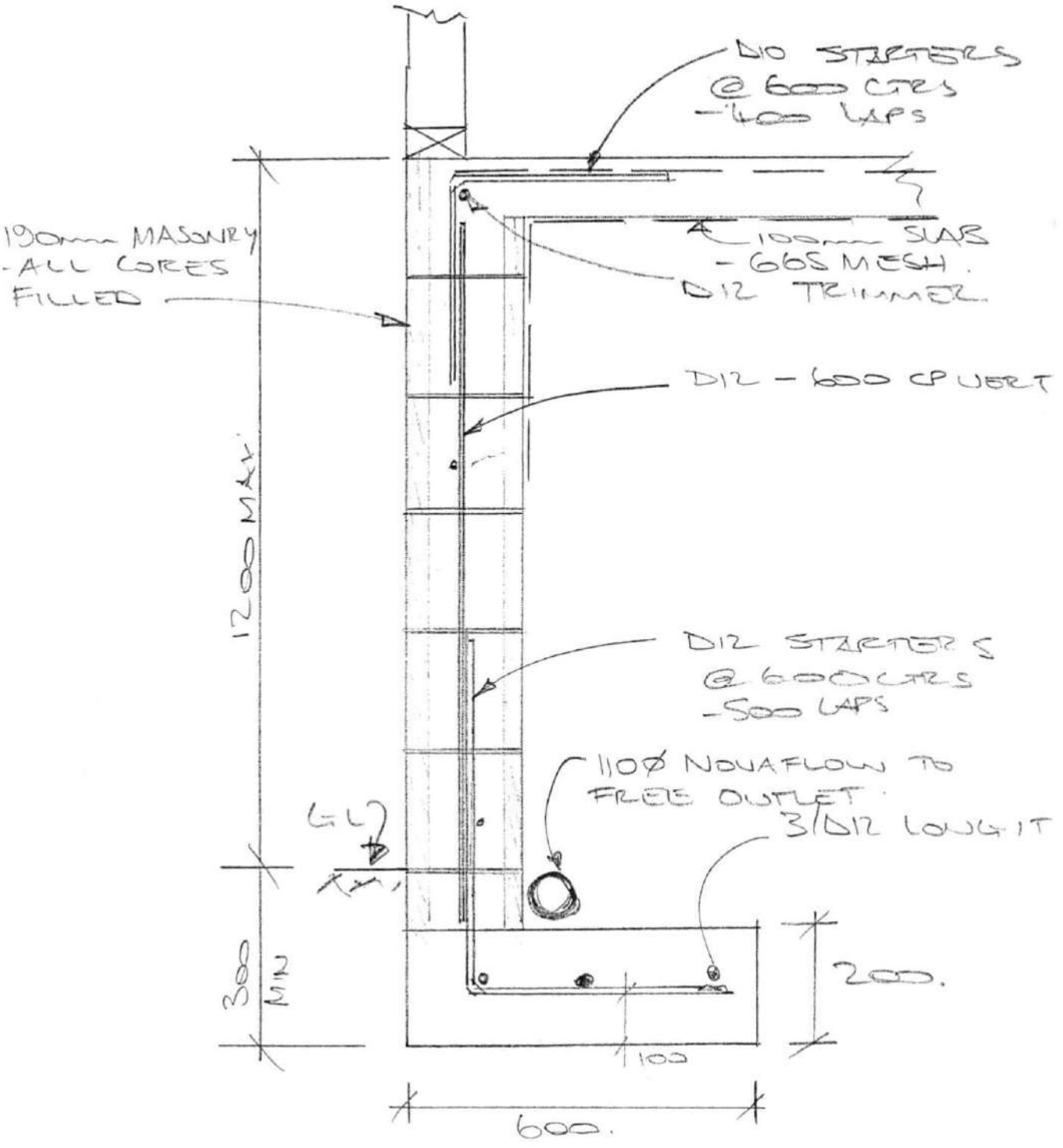

1200MAX RETAINING WALL

1:10

CLIENT DIAMOND HOMES

SUBJECT KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	19/4/06	SK3		SF	

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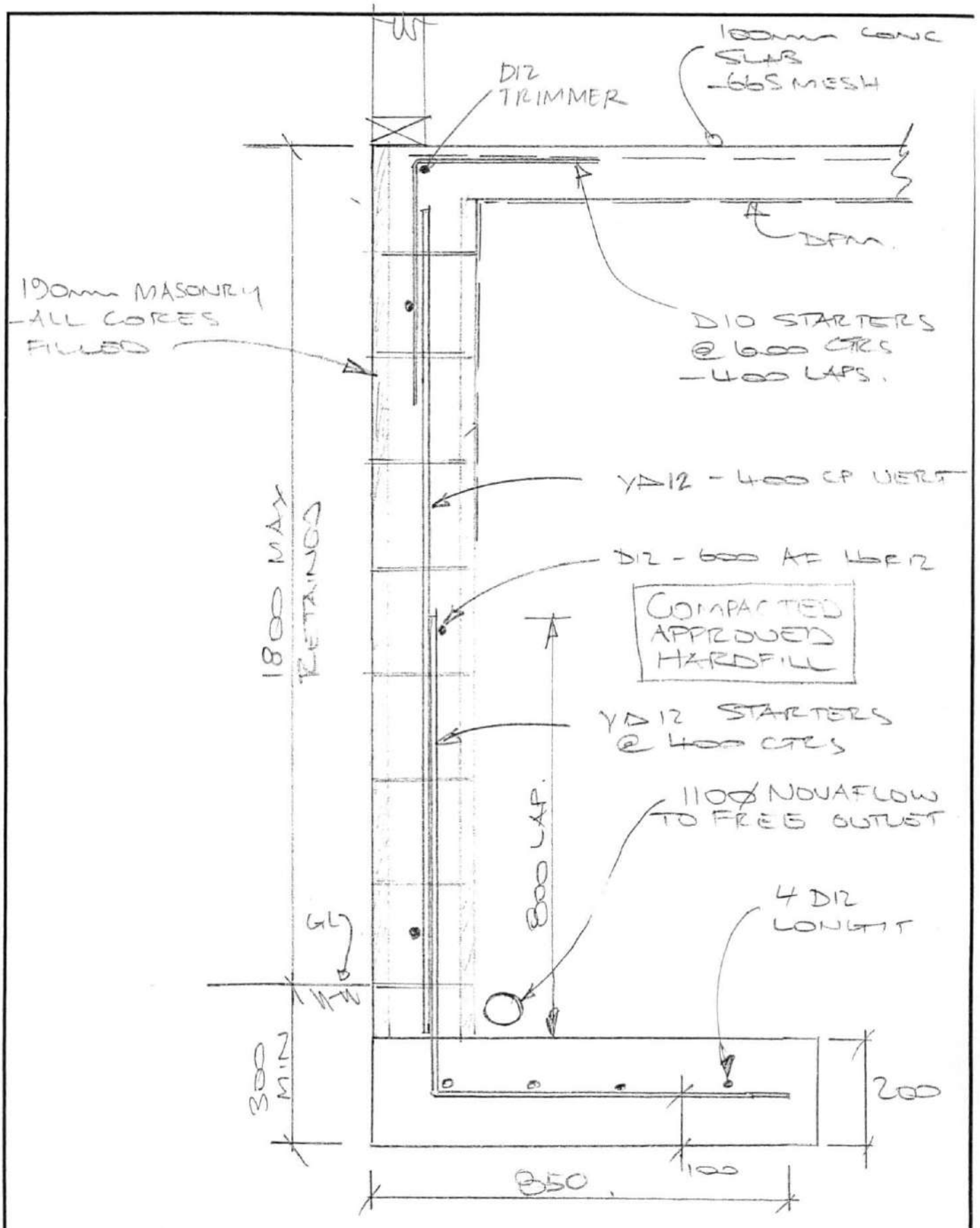

1800MAX RETAINING WALL

1.10

CLIENT: DIAMOND HOMES

SUBJECT: KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
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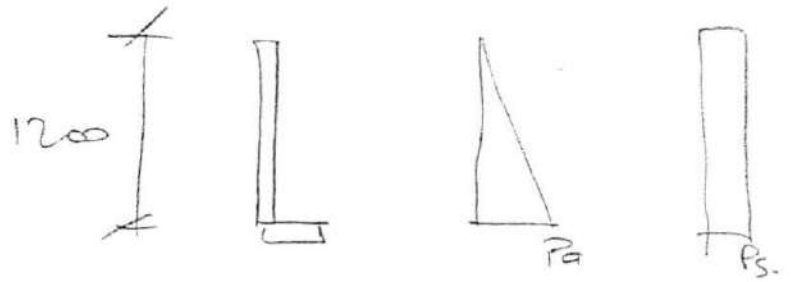
KEVIN O'CONNOR & ASSOCIATES LTD

1200 MAX RETAINING WALL



Soil $\quad \gamma = 18\,kN/m^3$

$\phi = 30°$

$K_a = \dfrac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18\,kN/m^3 \times 1.2m$

$= 7.1\,kPa$

$P_s = 0.33 \times 2\,kPa$

$= 0.66\,kPa$

$M^* = 1.6\left(7.1 \times \dfrac{1.2^2}{2 \times 3} + 0.66 \times \dfrac{1.2^2}{2}\right)$

$= 3.5\,kNm/m$

D12 - 600.

$a = \dfrac{188 \times 300}{0.85 \times 32 \times 1000}$

$= 8.3mm$

$\phi M = 0.85 \times 188 \times 300 \times \left(\dfrac{120}{2} - \dfrac{8.3}{2}\right)$

$= 4.4\,kNm/m \Rightarrow$ OK

USE
D12-600 CRS
D12-600 CRS

CLIENT: DIAMOND HOMES

SUBJECT: KIBBLE WHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
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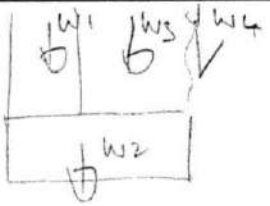
KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1 WALL SW, G = 4.4KN/m² × 1.2m = 5.3KN/m

W2 600 × 200 FOOTING " G = 0.6 × 0.2m × 24 = 2.9 KN/m

W3. FILL G = 0.4m × 1.2m × 18KN/m³ = 8.6KN/m

W4. FILL FRICTION. G = 0.577 × 0.5 × 7.1KN/m² × 1.2m = 2.5KN/m

19.3KN/m

DDG = 0.9 (19.3)

= 17.4KN/m

DDRM = 0.9 (5.3 × 0.1m
+ 2.9 × 0.3m
+ 8.6 × 0.1m
+ 2.5 × 0.6m)

= 5.7KNm/m

$e = \frac{5.7 - 3.5}{17.6}$

= 0.12m

$Pa = \frac{17.6}{2 \times 0.12m}$

= 73KN/m

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLEWHITE RESIDENCE					
FILE No. 106009	DATE 18/4/06	PAGE 3	OF	BY	CKD

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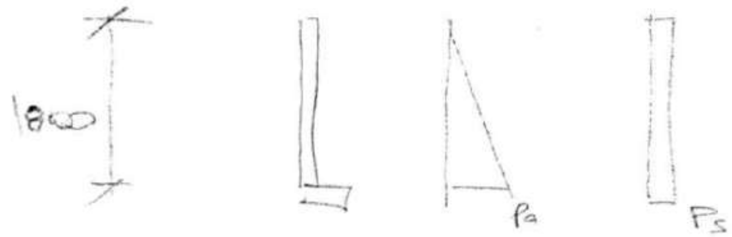
1800 MAX RETAINING WALL



LOADS

Soil $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin\phi}{1 + \sin\phi}$

$= 0.33$

$P_a = 0.33 \times 18 kN/m^3 \times 1.8m$

$= 10.7 kPa$

$P_s = 0.33 \times 2.0 kPa$

$= 0.66 kPa$

PURE CANTILEVER $M^* = 1.6\left(10.7 \times \frac{1.8^2}{2\times3} + 0.66 \times \frac{1.8^2}{2}\right)$

$= 10.9 kNm$

YD 12-400.

$a = \frac{283 \times 500}{0.85 \times 8 \times 1000}$

$= 20.8 mm$

$M_{ROW} = 0.85 \times 283 \times 500 \times \left(\frac{190}{2} - \frac{20.8}{2}\right)$

$= 10.2 kNm/m$

USE YD -400 CP VERT
D12 -600 AF HORIZ

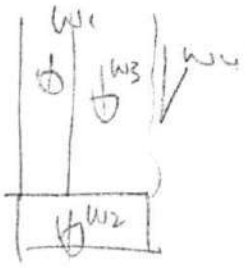
CLIENT: DIAMOND HOMES

SUBJECT: KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
1006009	18/4/06	4			

KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1. WALL SW, G = 4.4 KPa × 1.8m = 7.9 KN/m

W2 FOOTING G = 24 × 0.8 × 0.2 = 3.84 KN/m

W3 FILL G = 18 KN/m³ × 0.6m × 1.8m = 19.4 KN/m

W4. FILL FRICTION G = 0.577 × 0.5 × 10.7 KPa × 1.8m = 5.6 KN/m

36.7 KN/m

OBG = 0.9(36.7) = 33.1 KN/m

OBM = 0.9(7.9 × 0.1m
+ 3.84 × 0.8m/2
+ 19.4 × 0.5 M
+ 5.6 × 0.8m)

= 16.2 KNm/m

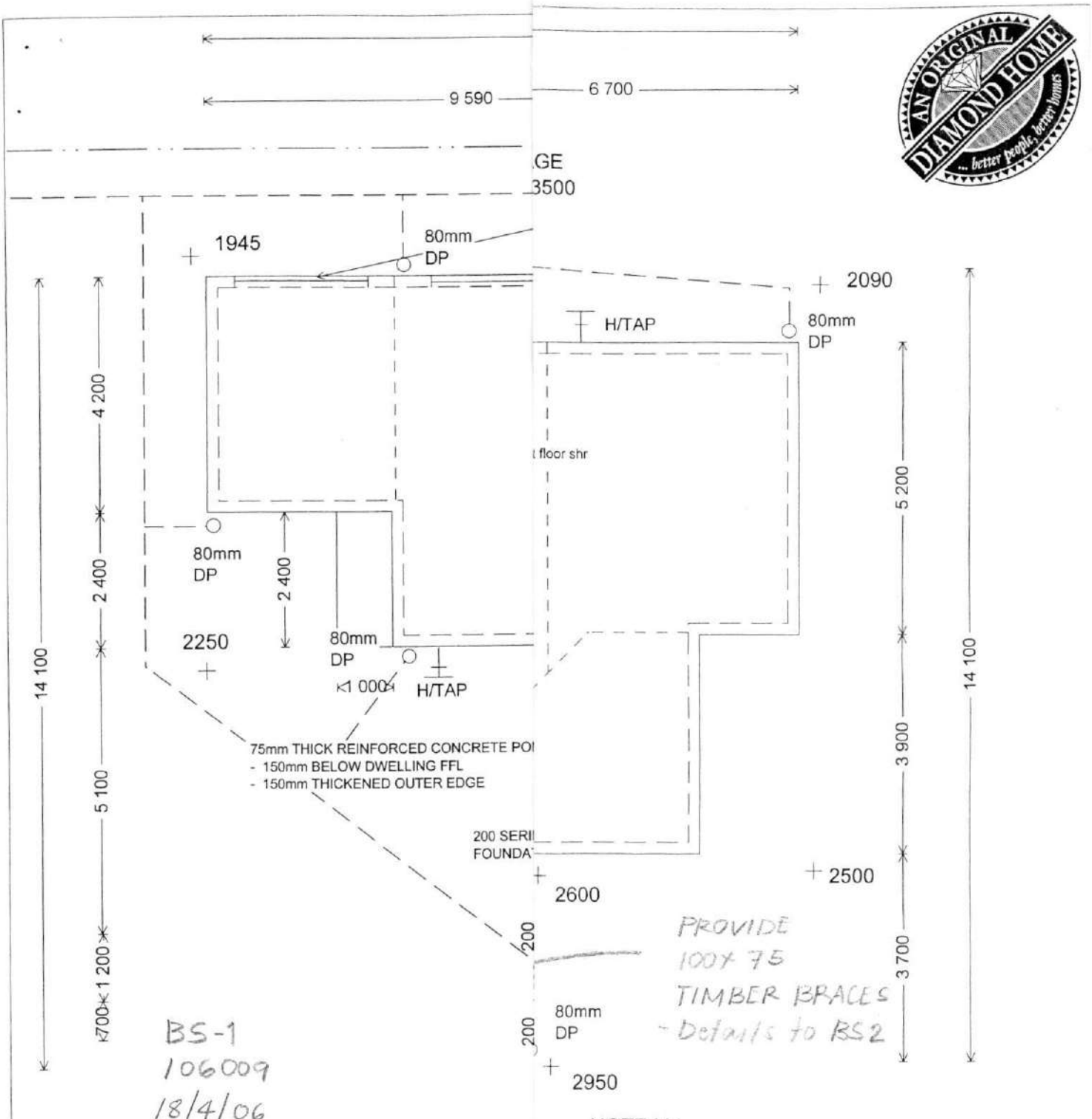
$e = \frac{16.2 - 10.9}{33.1}$

= 0.161m

$f_e = \frac{33.1}{2 \times 0.161}$

= 102 KPa — LARGE

→ USE 850 × 200 FOOTING



BS-1
106009
18/4/06

FOUNDATION PLAN / SERVICES PLAN

Scale 1:100

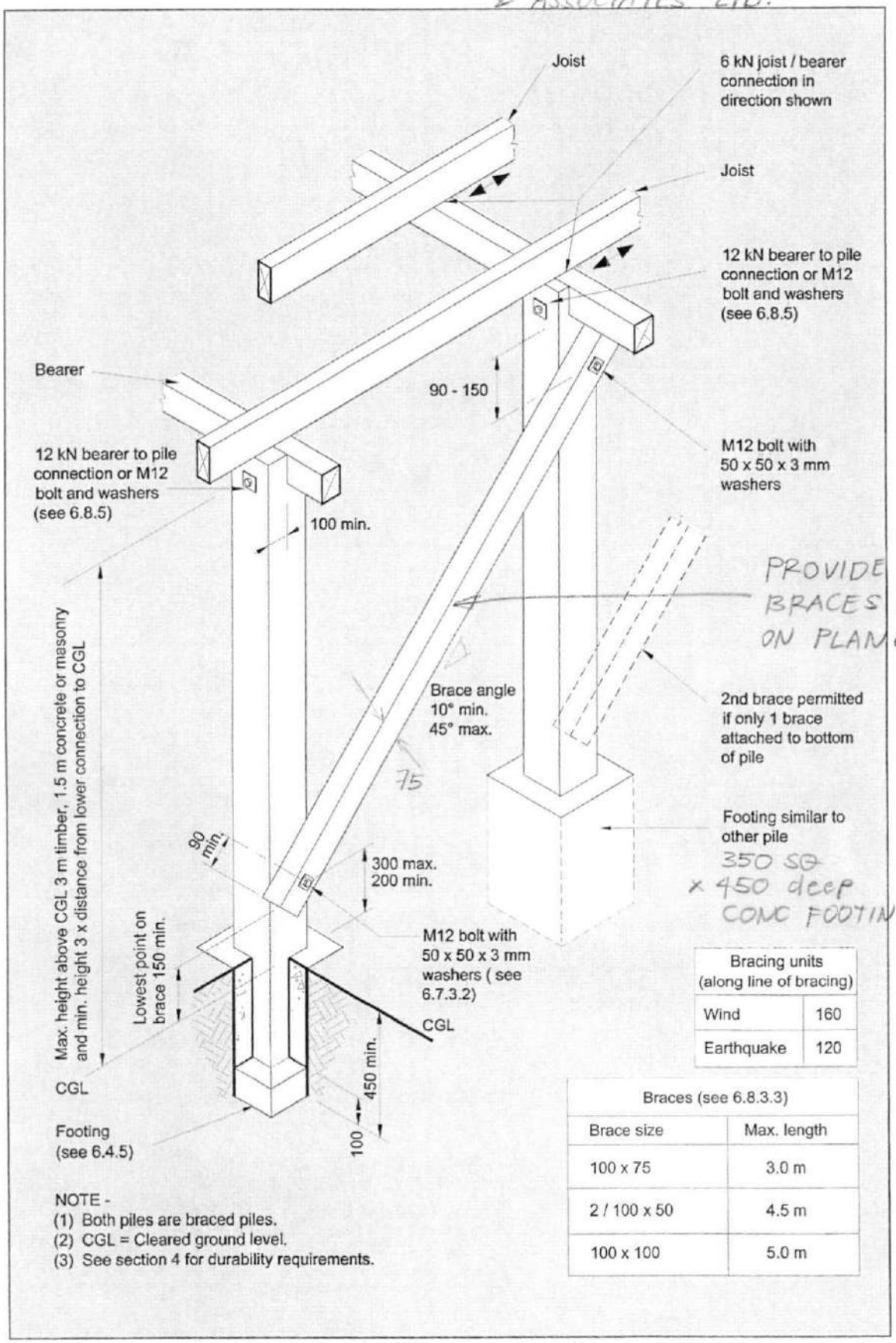
NOTE ! ! !
SAW CUTS = SHRINKAGE CONTROL JOINTS TO BE PROVIDED @ 6.0m CTRS
- 25mm DEEP x 5mm SAW CUTS (WITHIN 24 hrs) AND OR CRACKMATE
(GENERALLY TO AVOID THE AREAS OF VINYL OR CERAMIC TILES)

KEVIN O'CONNOR & ASSOCIATES LTD
CONSULTING ENGINEERS, SURVEYORS AND PLANN
7 PITT STREET
PO BOX 600
PALMERSTON NORTH
NEW ZEALAND
06 356 7000
06 356 7007
reception@koa.co.nz

ATION PLAN /
CES PLAN
Scale 1:100

M. KELLS
NZDAT
Rev #2 28/03/06
08.00

BS - 2
106009
18/4/06
KEVIN O'CONNOR & ASSOCIATES LTD.



Bracing units (along line of bracing)	
Wind	160
Earthquake	120

Braces (see 6.8.3.3)	
Brace size	Max. length
100 x 75	3.0 m
2 / 100 x 50	4.5 m
100 x 100	5.0 m

NOTE -
(1) Both piles are braced piles.
(2) CGL = Cleared ground level.
(3) See section 4 for durability requirements.

Figure 6.6 – Braced pile system – Brace connected to pile (see 6.8)

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLE WHITE RESIDENCE					
FILE No. 106009	DATE 18/4/06	PAGE B-1	OF	BY	CKD

KEVIN O'CONNOR & ASSOCIATES LTD

DESIGN BRACES TO DECK :

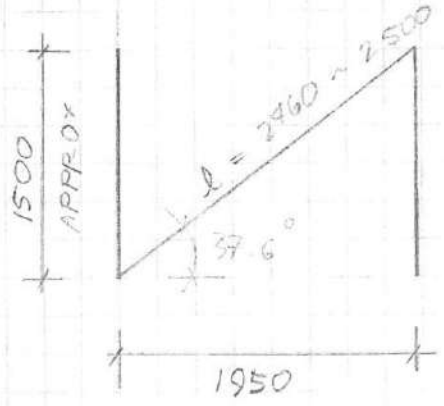
EARTHQUAKE :

AREA 19.6m × 2m = 39.2 m²

BUS REQ'D . . . . = 9.8/2 BUS/m² × 39.2 m² = 193 BUS

EQ ALONG : REQ'D = $\frac{193}{120}$

= 2 BRACES



ℓ = 2500 MAX

NZS3604: USE : 100 × 75 BRACES

PROVIDE : 350SQ × 450 deep CONC FOOTINGS

Refer details as attached. BS-2

As Built

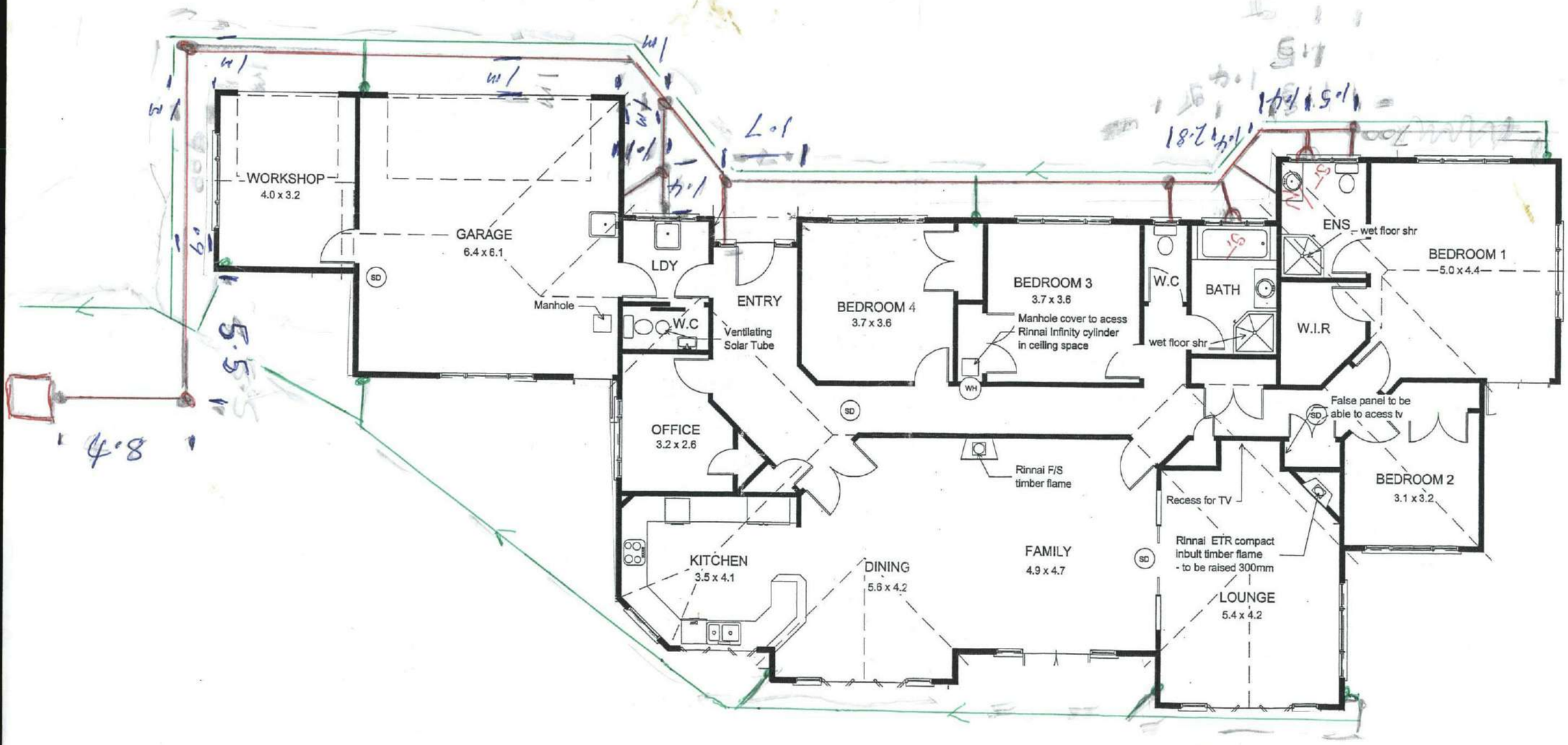
Home - Mr + Mrs Kibblewhite

Briarwood Estate.
off Stoney Cr. Rd.

ATTention – Wayne Findlayson
M.D.C.

SW

SS



DIAMOND HOMES®

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

15th May 2006

To: Manawatu District Council
Private Bag 10 001
Feilding

RE: Kibblewhite Wright Trust
Lot 13
Briarwood Estate
Palmerston North
Building Consent No 117136/1

To Whom It May Concern:

Please find enclosed some revised engineers details. We have decided to complete the foundation walls with insitu concrete rather than concrete blocks.

If you have any queries, please don't hesitate to contact me.

Thanking you

Monica Kells
Architectural Designer
Diamond Homes
monica@diamondhomes.co.nz

Latest info.

FACSIMILE COVER SHEET

KEVIN O'CONNOR & ASSOCIATES LTD

DATE: 11 May 2006

TO: Diamond Homes

ATTENTION: Monica Kells

FROM: Regina

FAX NO: 355 4449

OUR REF: 106009 – FX01

TIME:

NO OF PAGES: 8
(including cover sheet)

SUBJECT: Kibblewhite Residence

Hi Monica

As per our telephone conversation today, please find attached revised preliminary details and calculations for 150 *In Situ* wall foundations of the above job

Should you have further queries please contact us

Regards,

Regina

CONSULTING ENGINEERS, SURVEYORS & PLANNERS
7 Pitt Street, P O Box 600, Palmerston North Ph 06 356 7000 Fax 06 356 7007 Email reception@koa.co.nz
Directors: Kevin O'Connor 021 466 241, Scott Blain 021 2706 004, Kevin Judd 0274 912 829, Stephen Pinkney 027 257 6377

CLIENT DIAMOND HOMES

SUBJECT KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	11/5/06	SK 101			

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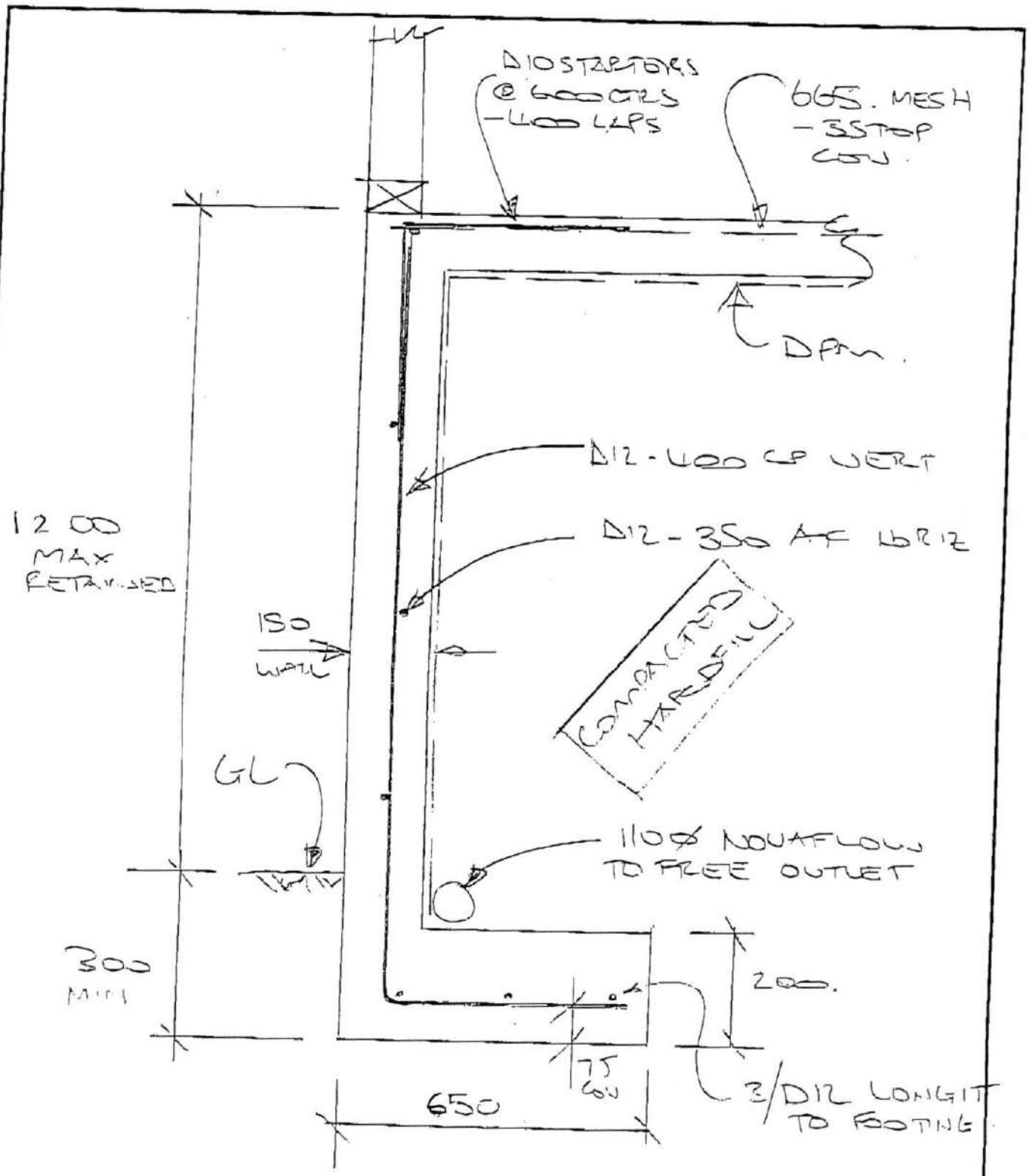
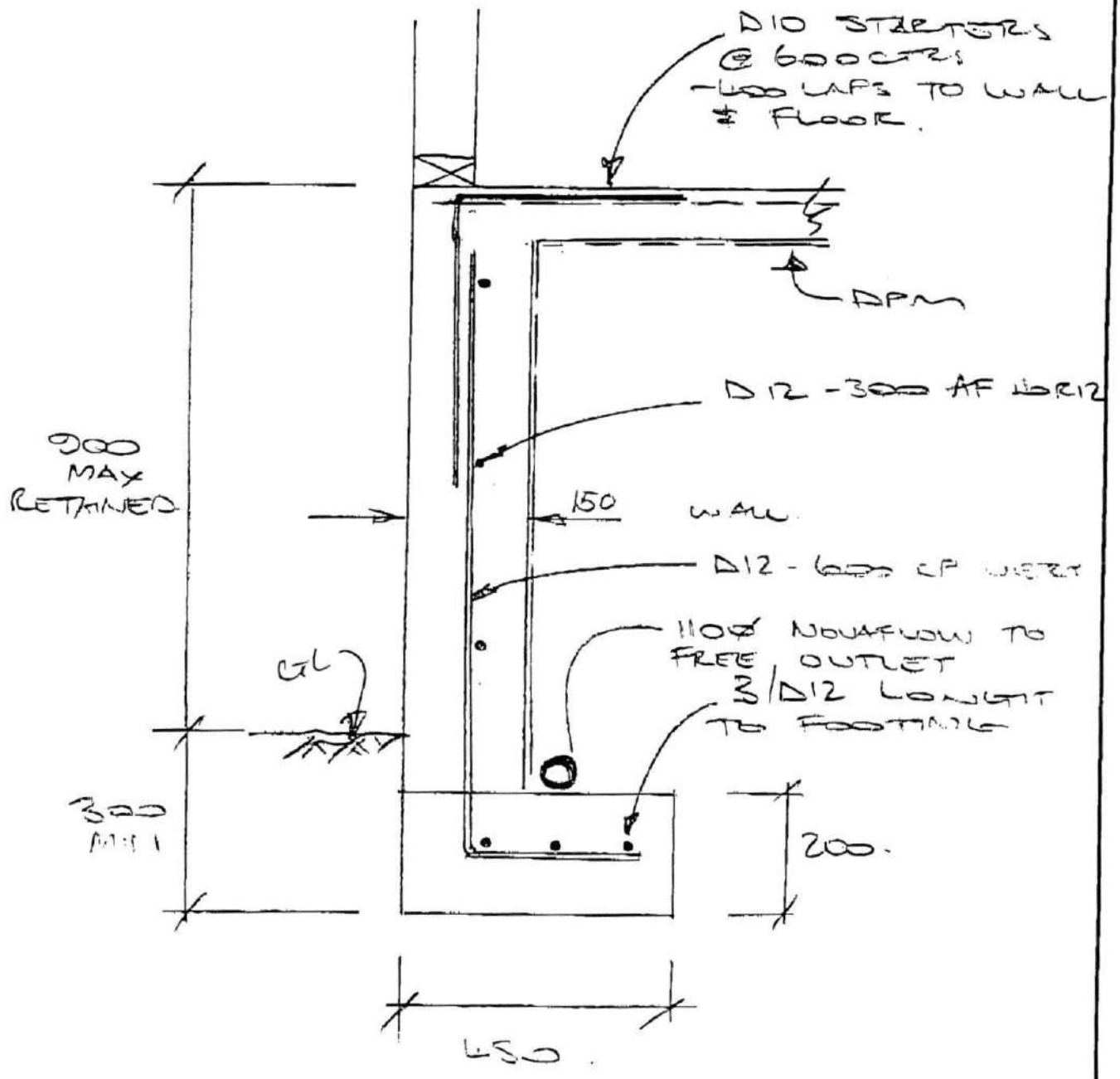


1200 MAX RETAINING WALL

NOTE - DESIGN BASED ON SAFE SOIL BEARING CAPACITY OF 100KPa. REMOVE ALL SOFT MATERIAL FROM UNDER FOUNDATION

CLIENT	DIAMOND HOMES			
SUBJECT	KIBBLEWHITE RESIDENCE			
FILE No. 106009	DATE 11/5/06	PAGE SK102 OF	BY	CKD

KEVIN O'CONNOR & ASSOCIATES LTD



900MM MAX RETAINING WALL.

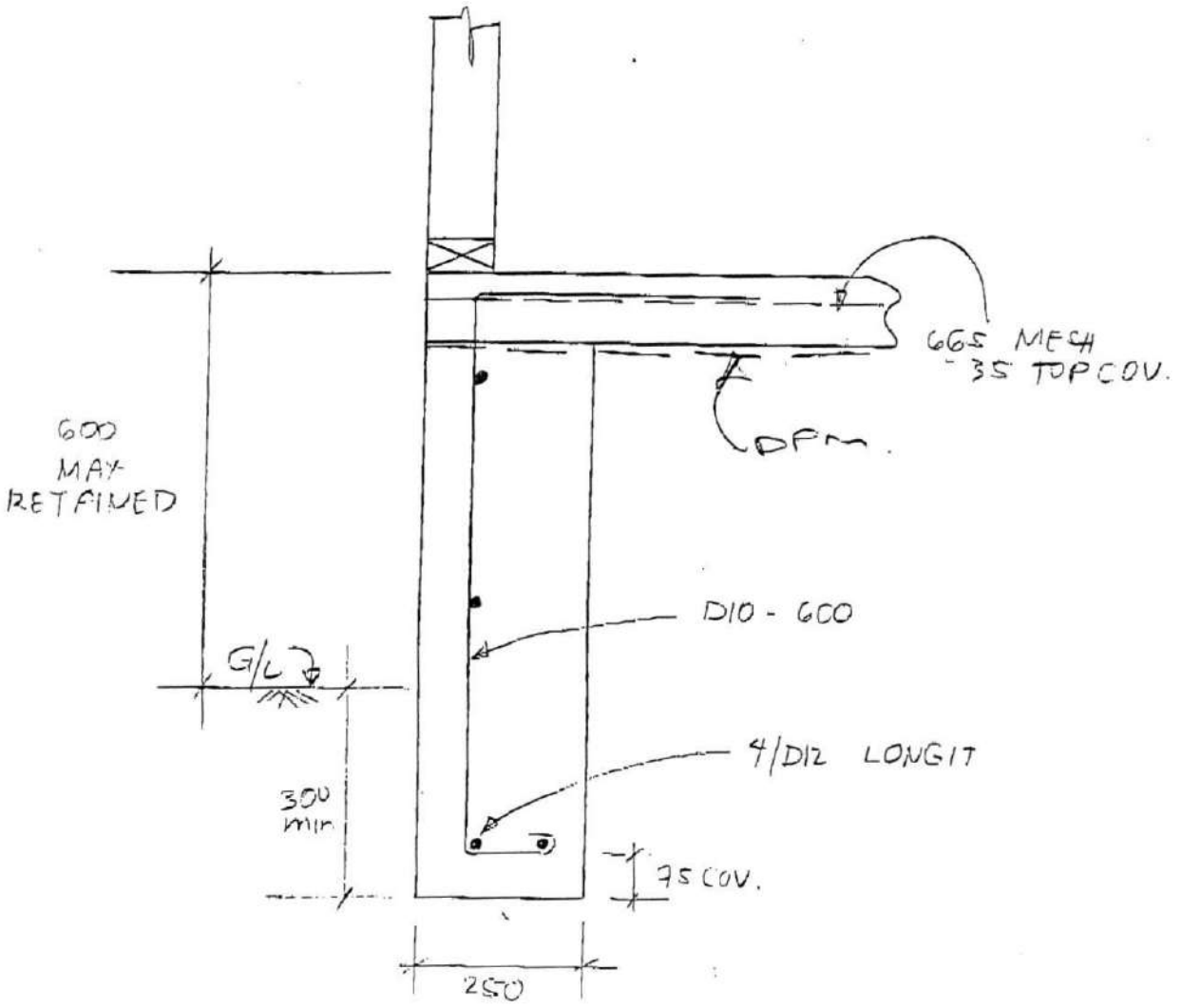
-NOTE- DESIGN BASED ON SITE SOIL BEARING CAPACITY OF 100kPa. ALL SOFT MATERIAL TO BE EXCAVATED FROM UNDER FOOTING.

CLIENT DIAMOND HOMES

SUBJECT KIBBLEWHITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	11/5/06	SK103			

KEVIN O'CONNOR

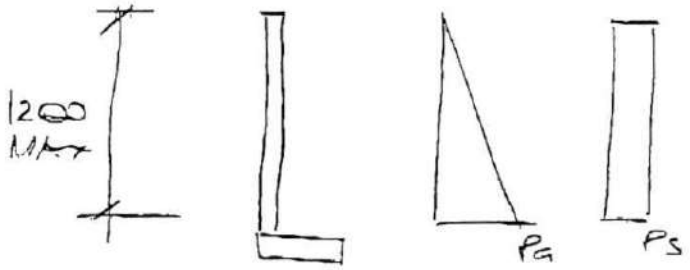


600 MAX RETAINING WALL

CLIENT DIAMOND HOMES
SUBJECT KIBBLEWHITE RESIDENCE
FILE No. 106009 | DATE 11/5/06 | PAGE 101 OF | BY | CKD

KEVIN O'CONNOR & ASSOCIATES LTD

1200 MAX RETAINING WALL - INSITU CONC



Soil $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_q = 0.33 \times 18 kN/m^3 \times 1.2 m$

$= 7.1 kPa$

$P_s = 0.33 \times 2 kPa$

$= 0.66 kPa$

$M^* = 1.6\left(7.1 \times \frac{1.2^2}{2 \times 3} + 0.66 \times \frac{1.2^2}{2}\right)$

$= 3.5 kNm$

D12 - 400 CRS VERT

$a = \frac{283 \times 300}{0.8T \times 17.5 \times 1000}$

$= 37 mm$

$d = \frac{150}{2}$

$= 75 mm$

$\phi M = 0.8T \times 283 \times 300 \times \left(75 - \frac{37}{2}\right)$

$= 5.2 kNm/m > 3.5 kNm/m$ OK

- USE D12 - 400 CRS VERT
D12 - 350 CRS HORIZ

CLIENT DIAMOND HOMES
SUBJECT KIBBLEWHITE RESIDENCE
FILE No. 106009 | DATE 11/5/06 | PAGE 102 OF | BY | CKD

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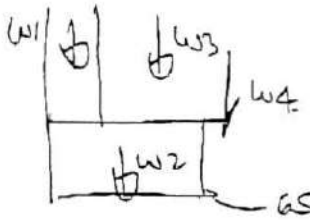
FOOTING



W1. WALL SW G = 0.15m × 24 × 1.2m = 4.3 kN/m

W2 650 × 200 FOOTING G = 0.65m × 0.2m × 24 = 3.1 kN/m

W3. FILL WT G = 15 kN/m³ × 1.2m × 0.5m = 10.8

W4. FILL FRICTION G = 0.577 × 7.7 kN/m² × 1.2m / 2 = 2.7 kN

20.9 kN

ODG = 0.9 (20.9)

= 18.8 kN/m

ODBM = 0.9 (4.3 × 0.15m
+ 3.1 × 0.325m
+ 10.8m × 0.4m
+ 2.7 × 0.65m)

= 7.0 kNm/m

e = (7.0 − 3.5) / 18.8

= 0.19m

Pa = 18.8 / (2 × 0.19m)

= 50 kPa ⇒ OK

USE 650 × 200 FOOTING

CLIENT DIAMOND HOMES

SUBJECT KIBBLEWITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	11/5/06	103			

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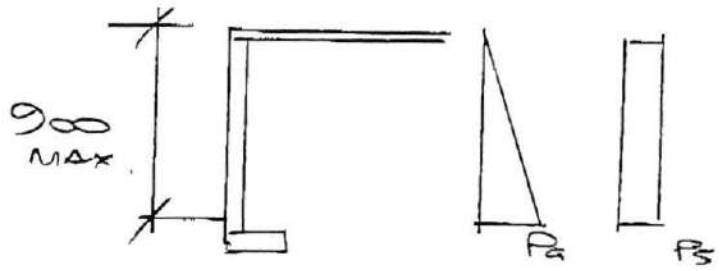
900mm RETAINING - IN SITU CONC.



LOADS

Fill $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18 \times 0.9$

$= 5.3 kPa$

$P_s = 0.33 \times (2.4 + 1.5)$

$= 1.3 kPa$

$M^* = 1.6 \left(5.3 \times \frac{0.9^2}{2 \times 3} + 1.3 \times \frac{0.9^2}{2 \times 3} \right)$

$= 1.4 kNm/m$

200 THICK WALL.
-D12-600.

$a = \frac{188 \times 300}{0.85 \times 17.5 \times 1000}$

$= 3.8mm.$

$d = 100mm$

$\phi M = 0.85 \times 188 \times 300 \times \left(100 - \frac{3.8}{2}\right)$

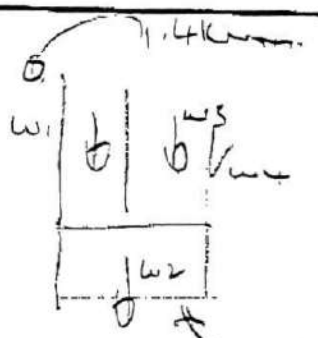
$= 4.7 kNm/m > 1.4$

USE D12-600

CLIENT	DIAMOND HOMES			
SUBJECT	KIBBLEWHITE RESIDENCE			
FILE No. 106009	DATE 11/5/06	PAGE 104 OF	BY	CKD

KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1 — 200 wall $G = 0.15 \times 0.9m \times 24 = 3.24 kN/m$

W2 — 450×200 footing $G = 0.45 \times 0.2 \times 24 = 2.2 kN/m$

W3 — Fill $G = 0.25m \times 0.9m \times 18 kN/m^3 = 4.05 kN/m$

W4 — Fill friction $G = 0.577 \times 5.8 kPa \times \frac{0.9m}{2} = 1.4 kN/m$

$10.89 kN/m$

$0.9G = 0.9(10.89) = 9.8 kN/m$

$0.9RM = 0.9(3.24 \times \frac{.15m}{2} + 2.2 \times 0.225m + 4.05 \times 0.3m + 1.4 \times 0.45m)$

$= 2.3 kNm$ — OT

$e = \frac{2.3 - 1.4}{9.8} = 0.10m.$

$P_a = \frac{9.8}{2 \times 0.10m} = 49 kPa$

Use 450 wide footing

DRAINAWAY LTD TRADING AS

CLEARFLOW CONTRACTING

Drainage & Septic Tank Specialists

RECEIVED
24 APR 2006
Manawatu District Council

IN DOC No	75802	
FILE No.	6/1400	
DIVISION	ACTION	FILE
CEO		
E-		

In reply, please quote our reference QC 4930

19 April 2006

Manawatu District Council
Private Bag 10001
FEILDING

Re: Diamond Homes Ltd client, Briarwood Estate, Lot 13 Stoney Creek Road, Palmerston North

Herewith design criteria for inclusion with the Building Permit with respect to the wastewater system component.

Clearflow, as the installer, will supply to you, an 'as built' drawing on completion of the work.

Should there be any queries, please do not hesitate to contact me.

Yours faithfully

Sean Lynch
Managing Director
DRAINAWAY LTD

"Leave Your Drainage to Us"

Member Manawatu Master Plumbers Association

PO Box 5462
PALMERSTON NORTH

Phone: (06) 357 4788
Fax: (06) 357 6388

Sean Lynch
Lloyd Miles

INDEX

CLIENT: Diamond Homes Ltd client Briarwood Estate
ADDRESS: Lot 13 Stoney Creek Road, PN
CONTACT: Clearflow Contracting
JOB DETAILS: New LPED system

INTRODUCTION:

This design relates to the wastewater disposal for a 4 bedroom house at Lot 13 Stoney Creek Road, PN. The water supply is provided by a pressure pump feeding from water storage tanks.

The soil profile in this area is typically sandy clay, non swelling clay and silty clay; slow draining. I would assess this soil as being Category 6 as defined in AS/NZS 1547:2000 requiring a specific engineering design.

This design criteria is based on AS/NZS 1547:2000 for an equivalent of a 4 bedroom house with up to 7 occupants, each using 140 litres of water per day. The design-loading rate (DLR) is 3mm per square metre per day.

This design seeks to extend the life of traditional septic tank soakage trenches by filtering the effluent and evenly distributing it throughout the effluent trenches using a Low Pressure Effluent Dosing (LPED) system. OSI flow control assemblies are required at the beginning of each trench.

WASTEWATER DESIGN:

1. The new septic tank shall be 4500 litres in capacity fitted with an *ORENCO* effluent filter or pump vault with a sealed access riser brought to the surface. This design incorporates the *ORENCO* (OSI) effluent filter which protects the effluent trenches from carry over solids by reducing the total suspended solids (TSS) from the septic tank from 125 to 33 parts per million. As this is a proprietary computer design specifically designed for OSI filters, substitution of other brands of effluent filter is not permitted.

2. Install a pump chamber/vault containing a Lowara Domo 7 (or similar approved) stainless steel submersible effluent pump with a flow rate of 200 litres per minute @ 3 metres head fitted with an automatic control float set at it full operating extension. The pump assembly must include a Mac Union or detachable coupling within easy reach of the surface and a 'ball' type non-return valve on the pumping line. Ensure the septic tank and pump chamber are completely watertight.

3. A pressure test point (to enable a pressure reading to be taken) shall be fitted on the pressure line within the pump chamber in a position where it can be easily read. The initial operating pressure shall be recorded, preferably with a marker pen, within the pump chamber and the power meter. The pressure reading will be used to determine the lateral line flushing intervals as per the maintenance section of this report.

4. The effluent disposal trenches are to be 200 metres (or equivalent) trenches spaced 2 metres apart as shown on the accompanying plans. The trenches are 200mm deep and 200mm wide with the 25Ø pressure pipe laid inside 110Ø Novaflow. The Novaflow must be covered with a porous filter cloth that prevents soil being washed into the Novaflow, allows effluent to soak into the soil and allows the circulation of air. Flushing points situated inside fresh air inlets are to be located at each end of the lateral. This disposal system can also be extended in size in the future, if desired or required.

5. The laterals are drilled with evenly spaced 3mmØ squirt holes at 1.8 metre centres drilled into the top of the lateral pies. This ensures the effluent discharger ate from each lateral does not exceed the designed parameter of 1.45 litres per minute and evenly distributes the effluent throughout the trenches.

6. Flow control assemblies are to be fitted at the beginning of each trench. If, during installation, the ground levels at the beginning of each effluent trench are found to vary, they must be recorded and communicated to the certified installer to calculate the correct size hole to be driller in the flow control disc assemblies.

The Flow Control Assemblies Hole Sizing Chart is included in this report for this purpose. These holes compensate for the hydraulic differential between disposal trenches at varying levels. If you do not have the correct drill bit sizes, an engineering workshop may drill the holes for you, as it is critical the correct sizes be drilled. The flow control details will be forward to the Council as an addendum to this design and can be attached to the Consent documents.

PLANTING:

The owner should prevent stock access to the disposal area by additional fencing, as required. This area should be planted with selected trees and shrubs to assist transpiration – a list of suitable plants is attached. As trees transpire a significant volume of water this process is an integral part of effluent disposal. Grass, moderately mown, should complement the planting.

MAINTENANCE:

The filter and pump should be inspected on an annual basis and I enclose a leaflet on the filter maintenance procedure for your information. The pump should also be inspected to ensure the floats are clear of any build-up that might inhibit their operation. The pump intake and pump chamber base should also be checked to ensure no sediment build-up occurred.

If there is sediment build-up in the pump chamber this should be pumped out and the effluent distribution laterals may need flushing. The lateral lines require flushing when the pressure reading on the pump chamber gauge has increased 10% from that originally recorded. This can be done by opening the flushing points and briefly operating the pump to clear each line in turn.

Generally, the septic tank and filter should only require cleaning every 8 to 12 years and the lateral lines every 3 years or so. This work may be carried out by the installing plumber/drainlayer upon request. The Territorial Authority may request or require this to be carried out as a condition of the Building Consent.

However, should you have any queries or require any additional information please do not hesitate to contact Clearflow.

Sean Lynch
Managing Director
DRAINAWAY LTD

Licensed Drainlayer - Gold Card #13342
Member: Master Plumbers Association
Member: NZ Water and Waste Association

↓ Pressure Dosing System

Bdy 89.06m

SITE PLAN

Scale 1:500

Lot 13

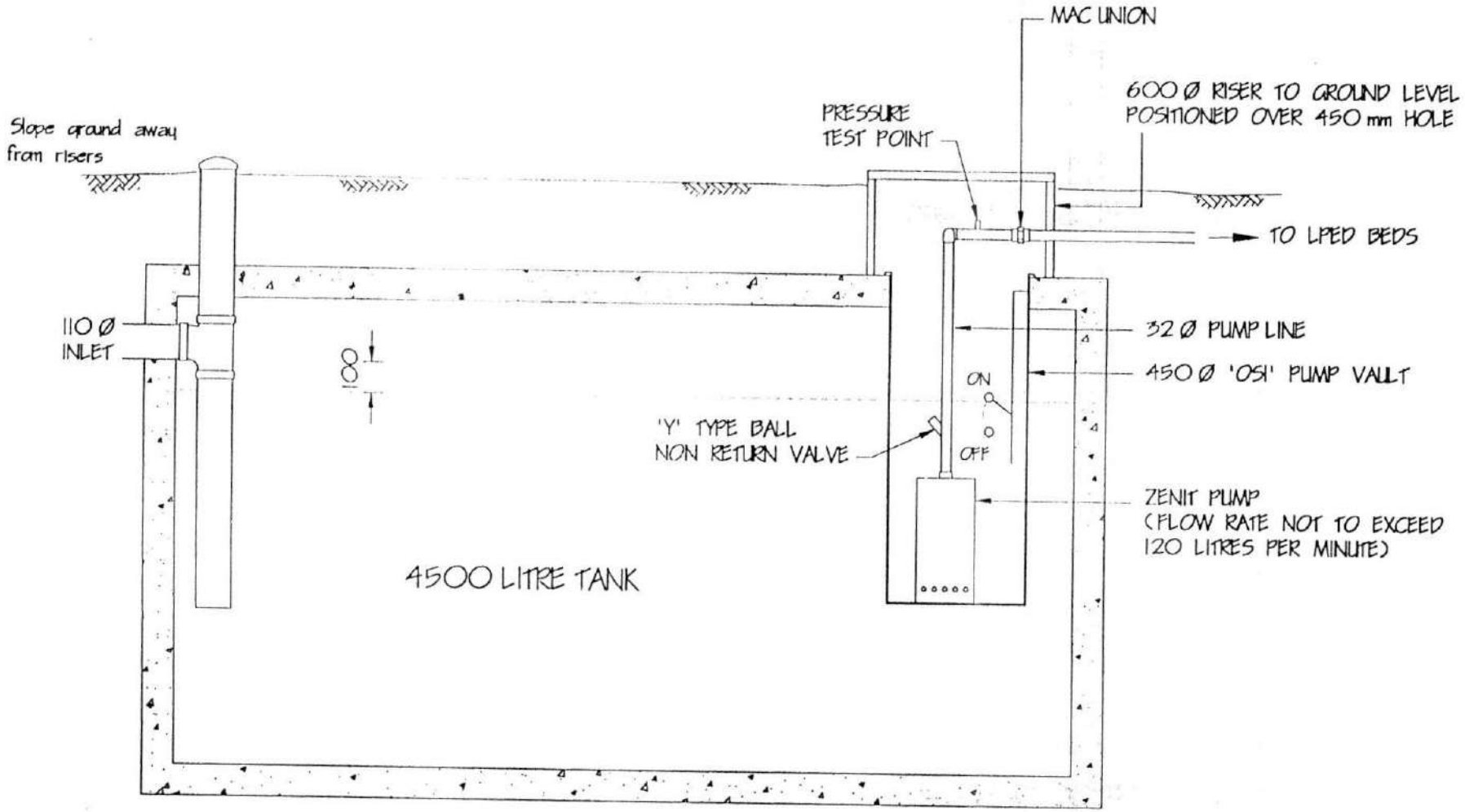
DP ?

Briarwood Road

Palmerston North

Site Size 8100.0m2

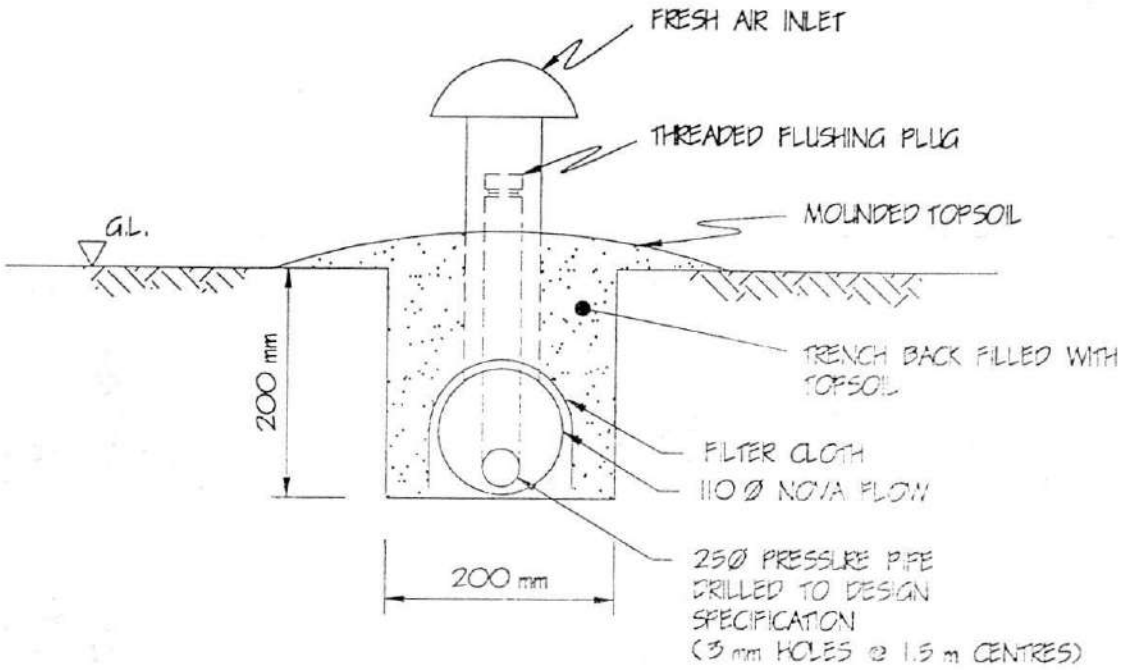
DIAMOND HOMES	752 MAIN S PALMERSTO_AN PH 06 35 FAX 06 3500	M. KELLS NZDAT Rev #3 18/04/06 08.00 14/14



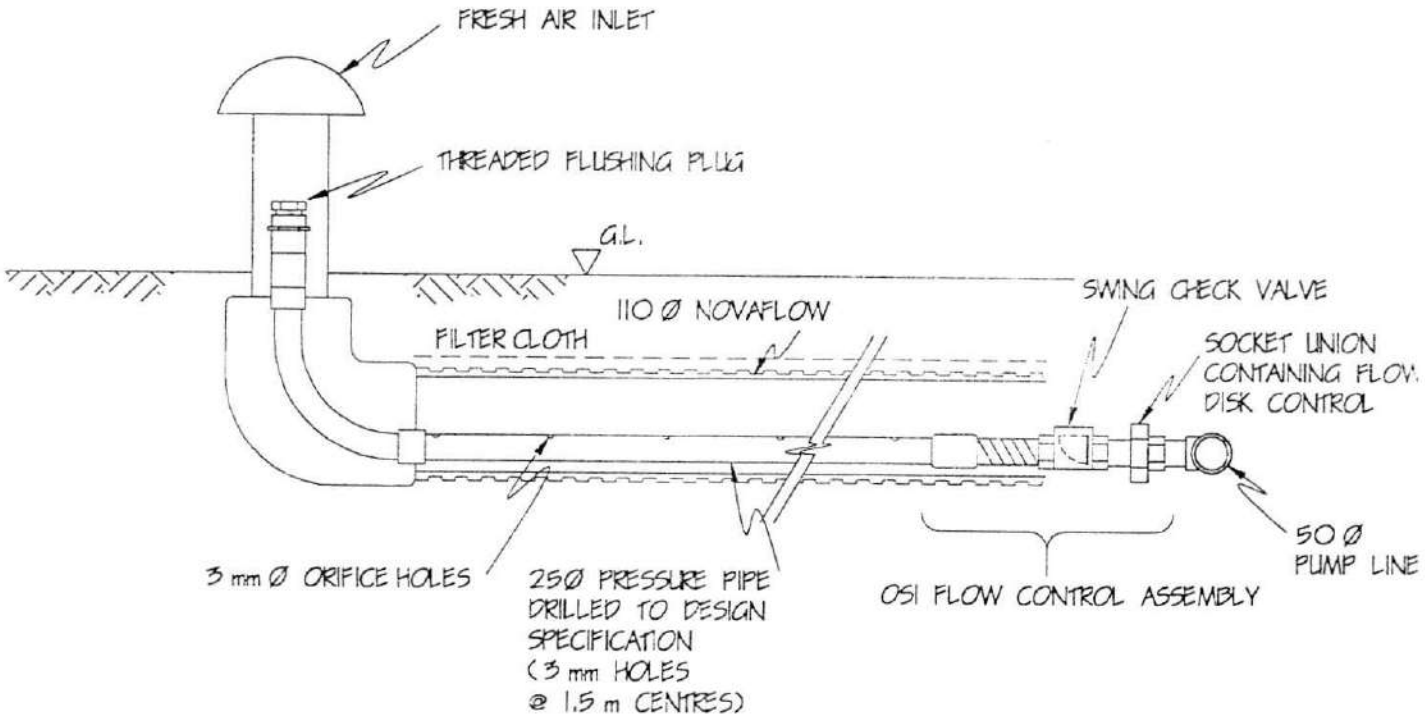
4500L SEPTIC TANK WITH PUMPED DISCHARGE USING ZENIT PUMP INSIDE A 450Ø OSI PUMP VAULT

Scale 1:20 approx

CROSS SECTION



LONG SECTION



LOW PRESSURE EFFLUENT DISPOSAL TRENCHES

(NTS)

INNOFLOW TECHNOLOGIES LIMITED

INNOVATIVE WASTE WATER TREATMENT AND DISPOSAL SOLUTIONS

FACSIMILE MESSAGE

TO:	Innoflow Technologies	**FAX NBR:**	09 4261047
FROM: (Name)		**DATE:**	
Contact Ph. Nbr:		**YOUR REF:**	

Please forward the flow control hole sizes for the site at: _____

NOTE: The Top trench is taken as the zero reference

Left Side of Transport Pipe				Right Side of Transport Pipe			
Flow Hole Size (mm) LEAVE BLANK	Nbr of Squirt Holes in Lateral	Lateral Drop from Top Tench(mm)	Trench Nbr	Lateral Drop from Top Tench(mm)	Nbr of Squirt Holes in Lateral	Flow Hole Size (mm) LEAVE BLANK	DOWN HILL
None		0	1	0		None	
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11				
			12				

Remember to use a **sharp** 3 mm drill to drill the squirt holes in the laterals !

Flowfax.doc

PO Box 300 572, Albany, AUCKLAND, Phone (09) 415-5880 Fax (09) 415-5889 E-mail: innoflow@xtra.co.nz

WASTEWATER FLOW CALCULATION

Total occupants: n = 7

Toilets and normal fixtures only with water saving devices installed where applicable. Tank supply.

Base calculation on daily wastewater flow allowance of 140l/person/day

Total daily design wastewater flow, Q = 7 persons @ 140l/person/day
= 980l/day

Assume daily loading rate to soil of 3.0l/sq/m. using low pressure dosing with squirt holes @ 1.8 metre centres

Total line length required, L = 980l/3.0l/sq.m.
= 326m²

Therefore 200 lineal metres of low pressure dosing lines is sufficient

INSTALLER DECLARATION

(to be signed by the installer at the completion of the work and returned to Clearflow Contracting)

Re: Diamond Homes Ltd client, Briarwood Estate, Lot 13 Stoney Creek Road, PN

System: LOW PRESSURE EFFLUENT DOSING (LPED)

INSTALLER: Drainaway Ltd, t/a Clearflow Contracting

ADDRESS: 141 Keith Street, P O Box 5462, Palmerston North

I declare that I have installed the LPED system at the Briarwood Estate residence as per the plans and specifications, and hereby guarantee the quality of the workmanship.

Signed:

(Licensed Drainlayer)

Registration No: _____

SECTION A

Trees - general

These should preferably be evergreens, although some deciduous trees offer very good transpiration

Eg:	
Elms	3A
American Oaks	3A
Birch	3A
Shrubby Pussy Willow, Bitter Willow	3A
Hydrangea	2A
Catalpa	3B

SECTION B

Fringe Trees

Eg:	
Kawakawa	3A
Geniostonia	3A
Hibiscus (various indigenous and exotic	1-2B
Catalpa	3B
Trumpet flowers [*Brugsania*]	3B
Karaka	3A
Pukatea [for very wet conditions]	3A
Kohekohe	3A
Puka [*Meryta*]	3B
Puriri	3A
Makomako	3A
Lemonwood [Pittosporus]	3A
Parapara	3C
Totara	
Cabbage Trees [Cordyline]	

Shelter during initial establishment period may be very important.

SECTION C

Plant and Evergreens

Eg:	
Canna	1B
Taro	1C
Gingers (caution – some species only)	1B
Aralas	1-2B
Rhubarb	1A
Arum lily	1A
Rangiora	2A
Fushia	2A
Philodendrons [large range]	1C
Flax [*Phorium tenax*]	2-3A
Agapanthus	1B
Kaka Beak [*Clianthus*]	1-2A
Swan plant	2-3A
Geraniums	1A
Poroporo [*Solanua aviculare*]	2B
Begonias [large range of species]	1C
[useful as an underplant in sheltered places]	

SECTION D

Grasses

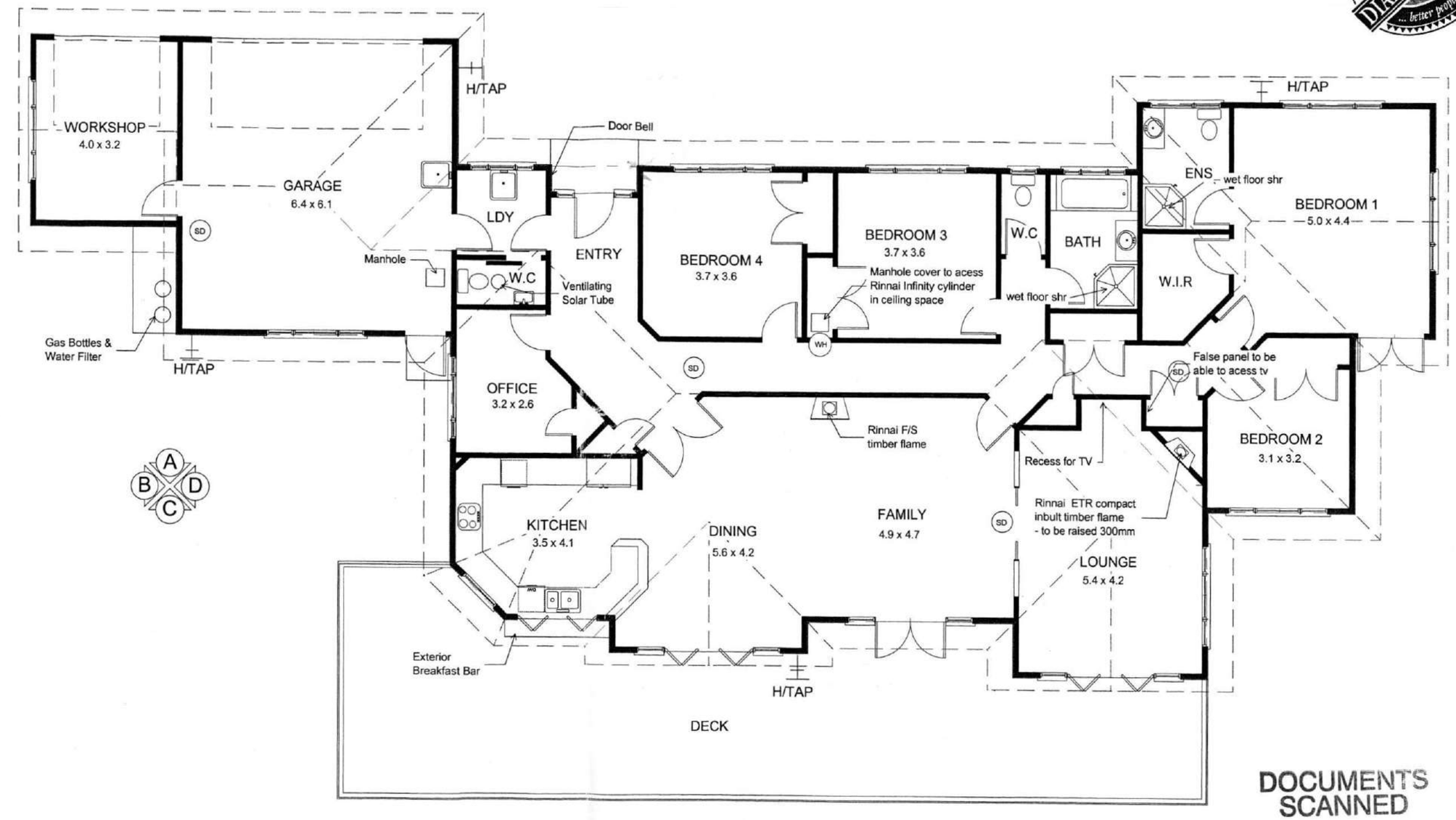
Eg:
Kikuyu [will tolerate extreme wet and dry, but may be difficult to crop]
Paspallum[will tolerate extreme wet and dry]
Poa species
Crested Dog's Tail [*Cynesurus cristatus*]
Yorkshire Fog [if fairly wet]
Canary Reed Grass [*Palarus Arundinacea*]
Carex Secta
Carex Bachananii
Cortaderia Fulvida

SECTION E

Ground Covers

Eg:	
Mercury Bay Weed [*dichondra*]	Could be useful on light soils
Yellow Clovers [or pseudo covers]	Good where extra wet

NOTE ! ! !
THE GIVEN ROOM SIZES ARE ONLY INDICATIVE
- [redacted]ER TO THE DIMENSIONED FLOOR PLAN FOR
AN ACCURATE REPRESENTATION:



FLOOR LAYOUT

Scale 1:100

Floor Area 223.0m2
Garage Area 56.0m2
Total Area 279.0m2

Lot 13
DP ?
Briarwood Road
Palmerston North
Site Size 8100.0m2

DOCUMENTS SCANNED

DIAMOND HOMES
752 MAIN STREET
PALMERSTON NORTH
PH 06 355 4448
FAX 06 355 4449

KIBBLEWHITE RESIDENCE
BRIARWOOD ESTATE
PALMERSTON NORTH

Drawing Title
FLOOR LAYOUT
Scale 1:100

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08.00

PLASTER APPLICATOR TO DECIDE ON EXACT LOCATIONS OF CONTROL JOINTS ACCORDING TO MANUFACTURERS SPECIFICATIONS.

ELEVATION A

Scale 1:100

ELEVATION B

Scale 1:100

DIAMOND HOMES

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KIBBLEWHITE RESIDENCE

BRIARWOOD ESTATE
PALMERSTON NORTH

Drawing Title

ELEVATIONS
Scale 1:100

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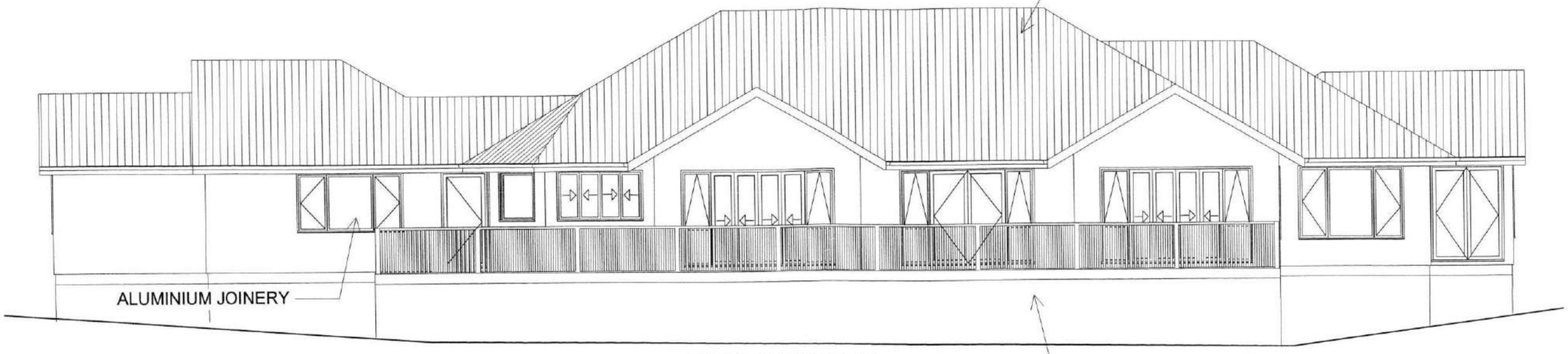
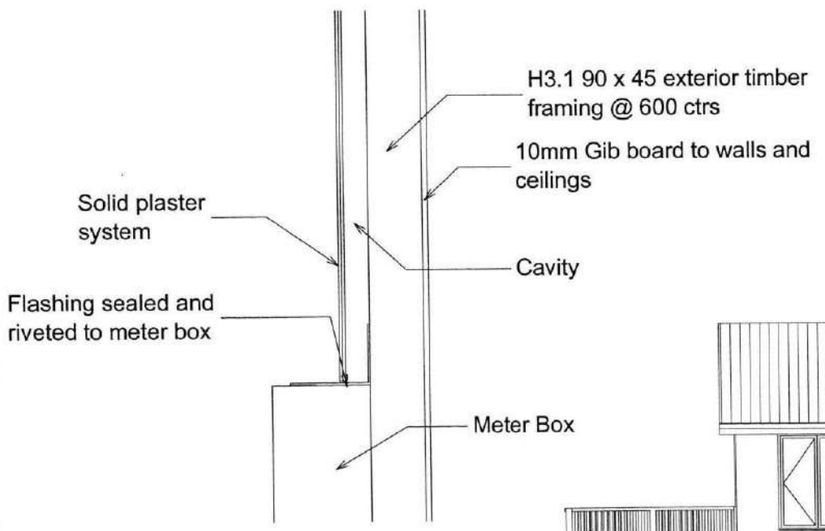
PLASTER APPLICATOR TO DECIDE ON EXACT L[illegible]TIONS OF CONTROL JOINTS ACCORDING [illegible] MANUFACTURERS SPECIFICATIONS.

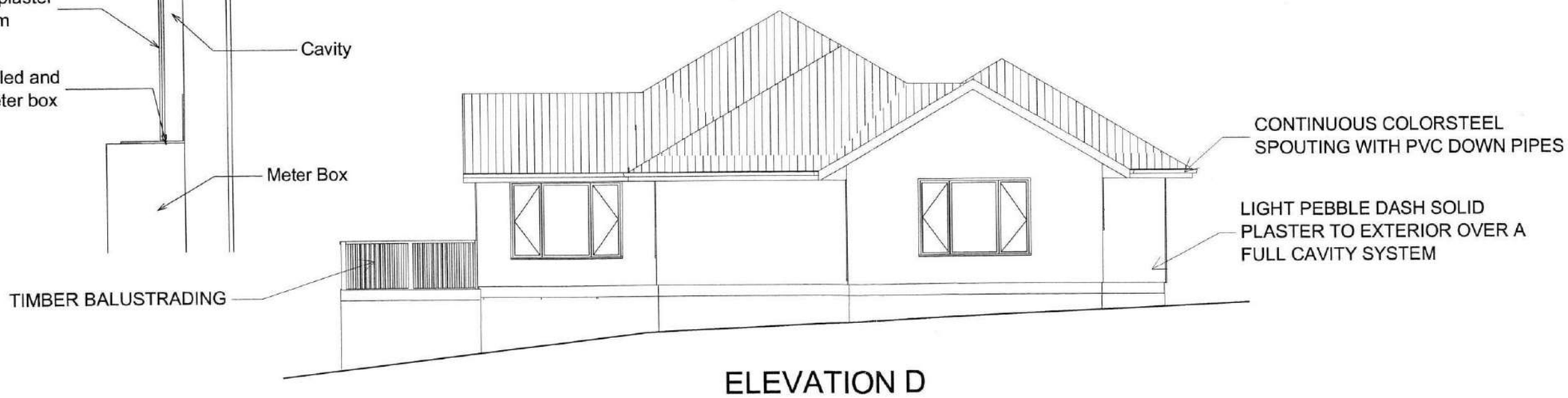


ELEVATION C

Scale 1:100

POST POSITIONS FOR DECKING ARE MARKED ON THE FOUNDATION PLAN
NO BASE COVERING OR STEPS ALLOWED FOR





ELEVATION D

Scale 1:100

DIAMOND HOMES
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KIBBLEWHITE RESIDENCE
BRIARWOOD ESTATE
PALMERSTON NORTH

Drawing Title
ELEVATIONS
Scale 1:100

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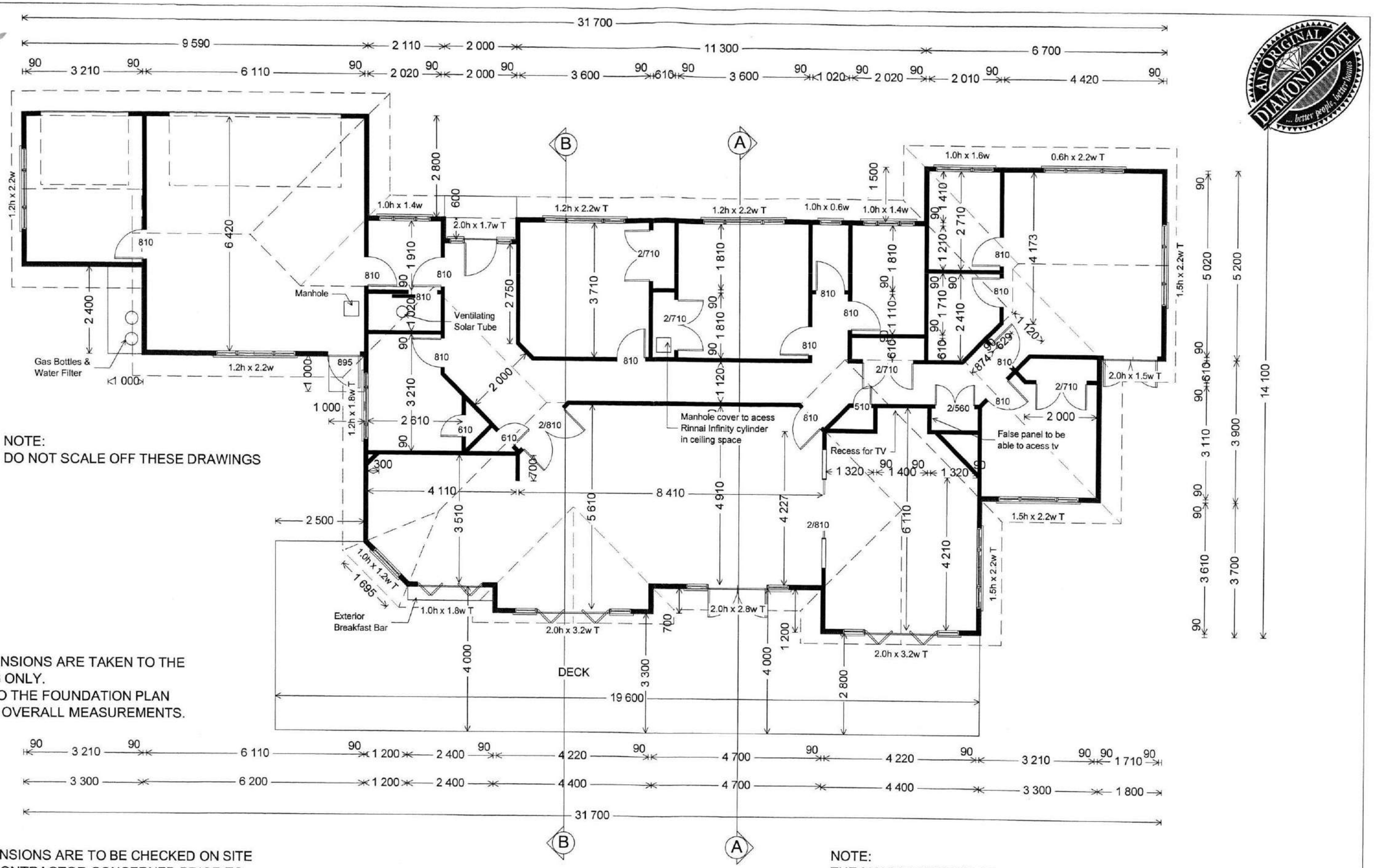

NOTE:
DO NOT SCALE OFF THESE DRAWINGS

NOTE:
ALL DIMENSIONS ARE TAKEN TO THE FRAMING ONLY.
REFER TO THE FOUNDATION PLAN FOR THE OVERALL MEASUREMENTS.

NOTE:
ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR CONCERNED PRIOR TO CONSTRUCTION / MANUFACTURE

NOTE:
THE MANUFACTURER OF TRIFOLD LINTELS ARE TO PROVIDE THE SIZES OF LINTELS TO ALL WINDOWS AND EXTERIOR DOORS

DIMENSIONED FLOOR PLAN

DIAMOND HOMES
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PALMERSTON NORTH

Drawing Title
DIMENSIONED FLOOR PLAN
Scale 1:100

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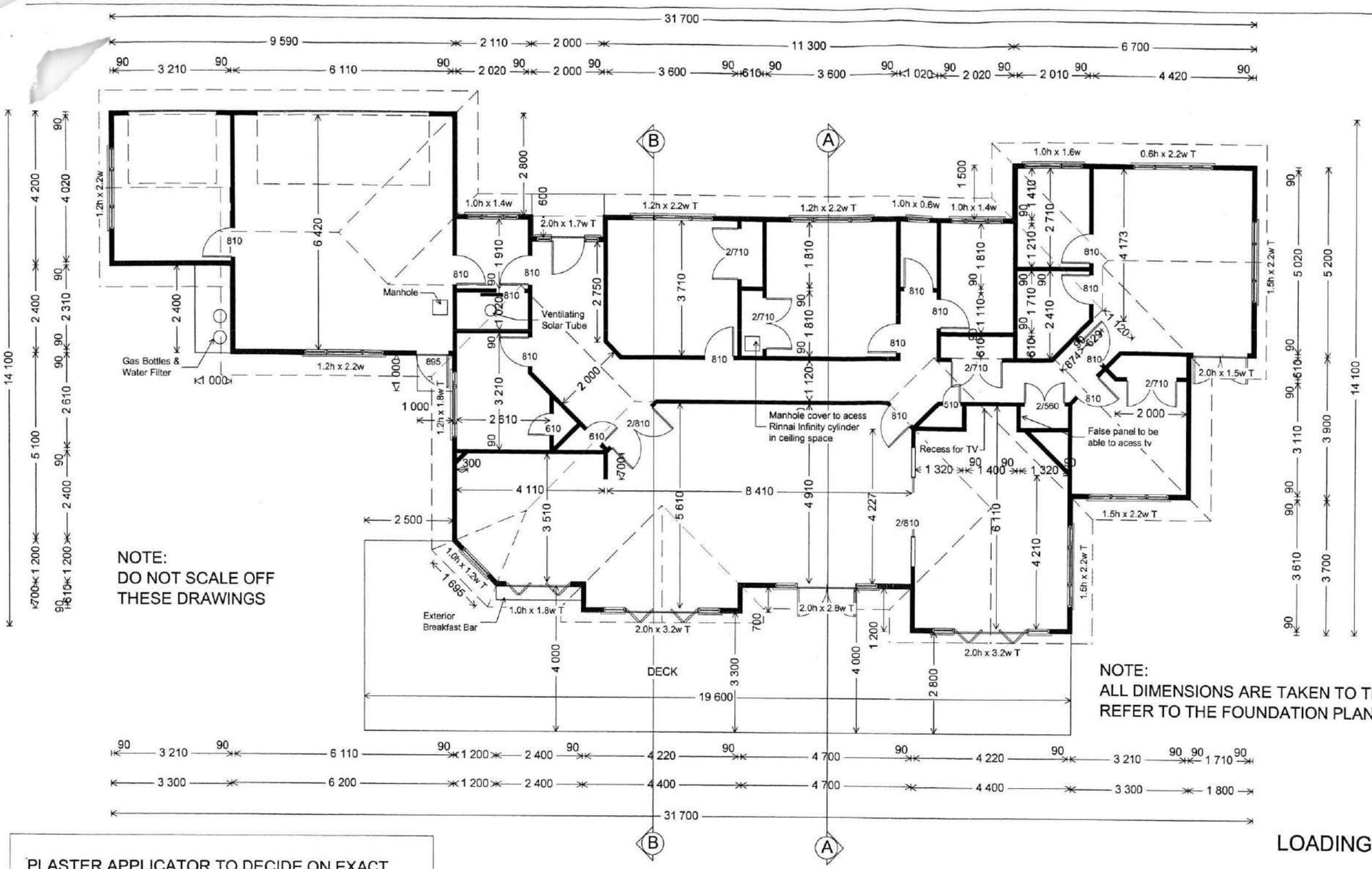

NOTE:
DO NOT SCALE OFF
THESE DRAWINGS

NOTE:
ALL DIMENSIONS ARE TAKEN TO THE FRAMING ONLY.
REFER TO THE FOUNDATION PLAN FOR THE OVERALL MEASUREMENTS.

PLASTER APPLICATOR TO DECIDE ON EXACT LOCATIONS OF CONTROL JOINTS ACCORDING TO MANUFACTURERS SPECIFICATIONS.

NOTE:
THE MANUFACTURER OF TRIFOLD LINTELS ARE TO PROVIDE THE SIZES OF LINTELS TO ALL WINDOWS AND EXTERIOR DOORS

NOTE:
ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR CONCERNED PRIOR TO CONSTRUCTION / MANUFACTURE

DIMENSIONED FLOOR PLAN
Scale 1:120

LOADING SCHEDULE:

EARTHQUAKE ZONE A:
HIGH WIND ZONE:
- ALL PURLINS ARE TO BE FIXED TO EACH TRUSS WITH MIN 2 - 100 x 3.75 SKEWED NAILS + 1 WIRE DOG (OR 2 - 100 x 3.75 SKEWED NAILS + 1 - 12g TYPE 17 SCREW)
EXCEPT USE 2 - WIRE DOGS (OR 2 - SCREWS) @ PERIMETER FIXINGS TO EAVES / VERGE / HIP AND RIDGE LINES (REFER TO FIG 10.16 AND 10.17 OF NZS 3604:1999)
- ALL TRUSSES UP TO 9.0m WIDE ARE TO BE FIXED TO EACH EXTERIOR TOP WALL PLATE WITH MIN 2 - 100 x 3.75 SKEWED NAILS + 3 - WIRE DOGS
- ALL TRUSSES MORE THAN 9.0m WIDE ARE TO BE FIXED WITH MIN 2 - 100 x 3.75 SKEWED NAILS + 4 - WIRE DOGS

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Drawing Title
DIMENSIONED FLOOR PLAN
Scale 1:120

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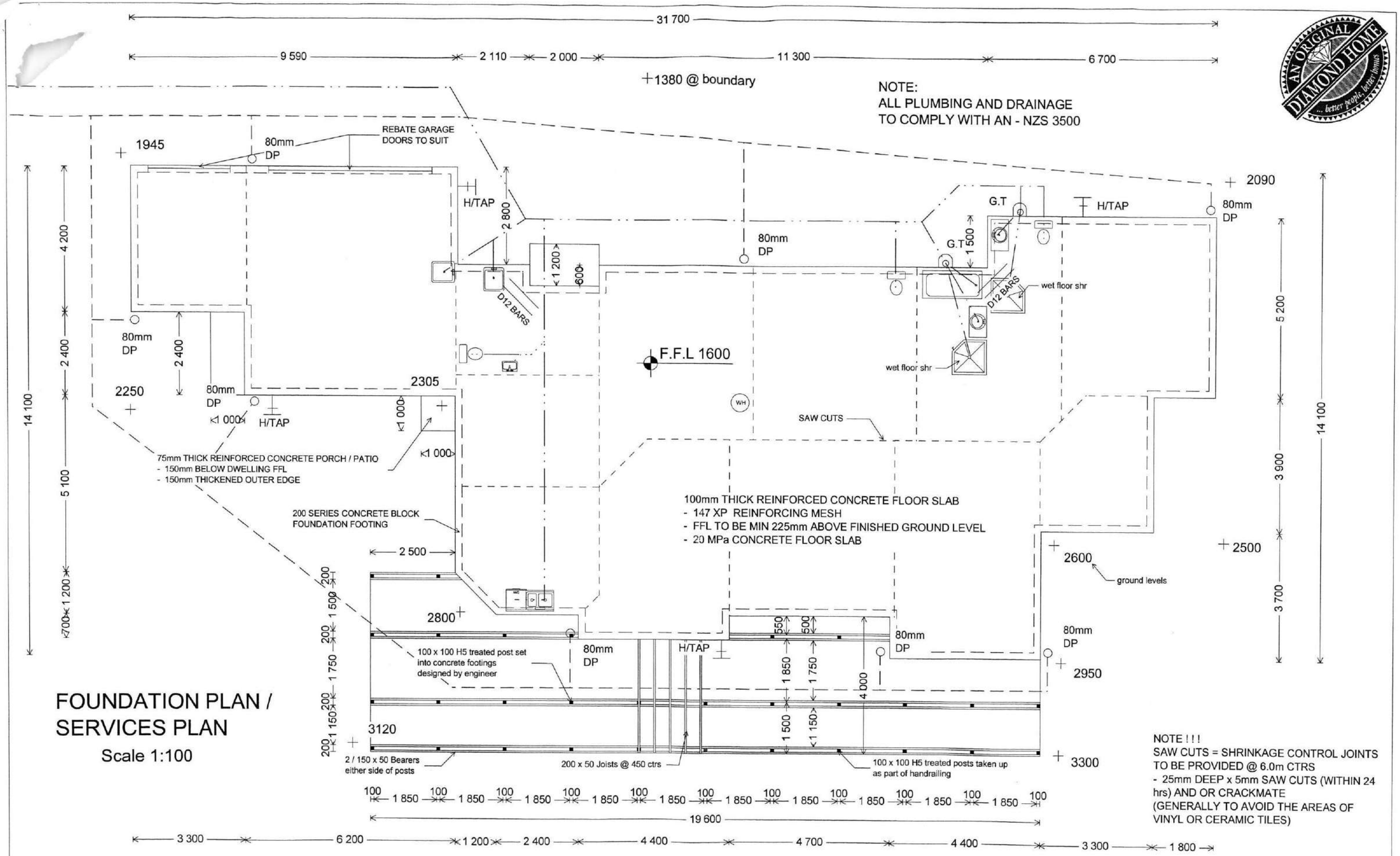

FOUNDATION PLAN / SERVICES PLAN

Scale 1:100

NOTE ! ! !
SAW CUTS = SHRINKAGE CONTROL JOINTS TO BE PROVIDED @ 6.0m CTRS
- 25mm DEEP x 5mm SAW CUTS (WITHIN 24 hrs) AND OR CRACKMATE (GENERALLY TO AVOID THE AREAS OF VINYL OR CERAMIC TILES)

DIAMOND HOMES

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Drawing Title
FOUNDATION PLAN / SERVICES PLAN
Scale 1:100

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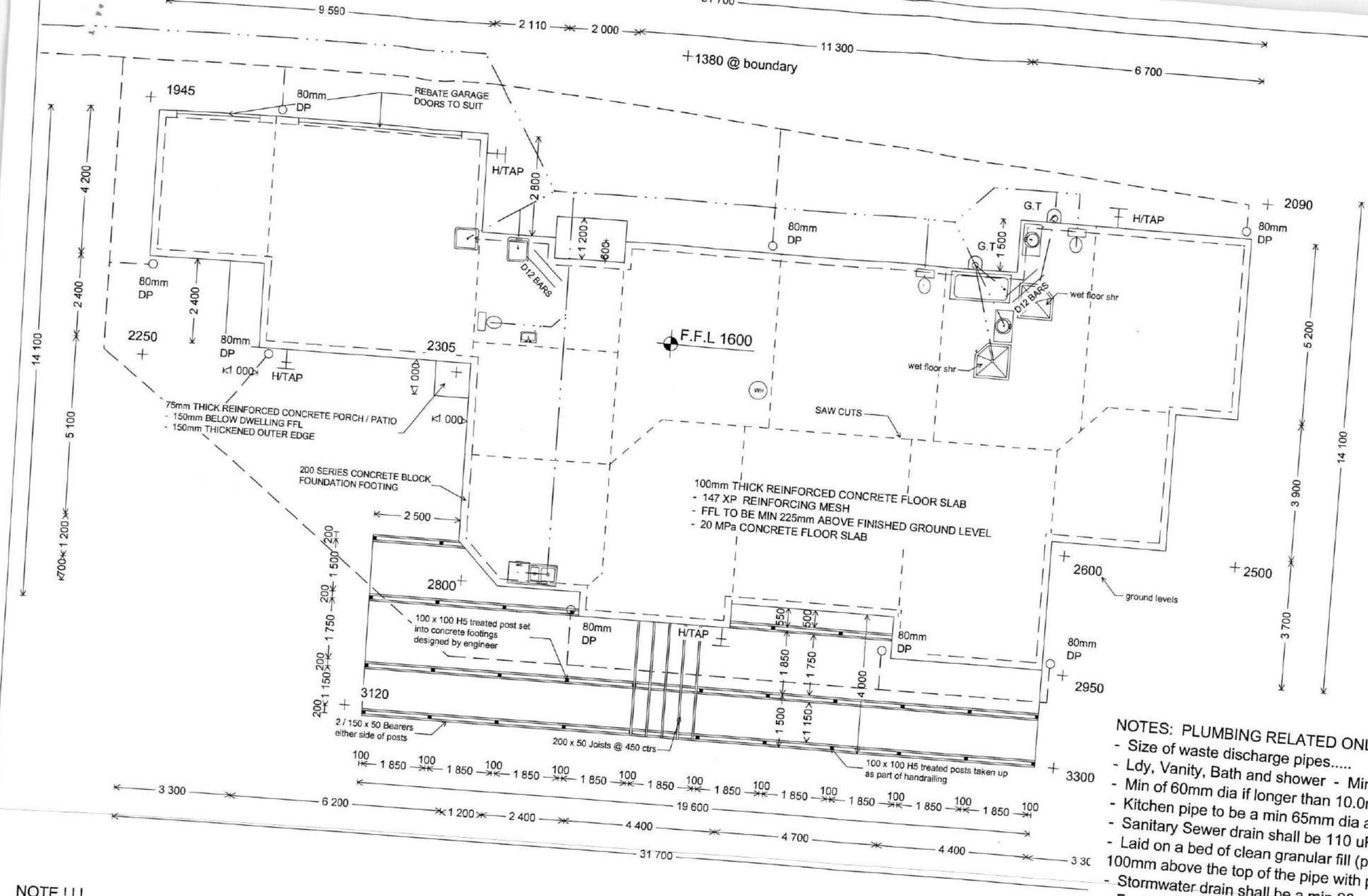

NOTE ! ! !
SAW CUTS = SHRINKAGE CONTROL JOINTS TO BE PROVIDED @ 6.0m CTRS
- 25mm DEEP x 5mm SAW CUTS (WITHIN 24 hrs) AND OR CRACKMATE
(GENERALLY TO AVOID THE AREAS OF VINYL OR CERAMIC TILES)

FOUNDATION PLAN / SERVICES PLAN

Scale 1:120

NOTE:
ALL PLUMBING AND DRAINAGE TO COMPLY WITH AN - NZS 3500

NOTES: PLUMBING RELATED ONLY!!!
- Size of waste discharge pipes.....
- Ldy, Vanity, Bath and shower - Min 40mm dia and at a gradient of 1:40
- Min of 60mm dia if longer than 10.0m
- Kitchen pipe to be a min 65mm dia and at a gradient of 1:60
- Sanitary Sewer drain shall be 110 uPVC laid to a graident of 1:60.
- Laid on a bed of clean granular fill (pea metal) and back filled to a min of 100mm above the top of the pipe with pea metal
- Stormwater drain shall be a min 90mm dia uPVC pipe.
- Fusio-therm pipes used to supply hot and cold water - 20mm pipe through out the whole house
- Fusio-therm pipes supported @ 600mm ctrs horizontally and @ 800mm ctrs vertically (according to dwang spacing).
- Holes in dwangs to be sealed with Silicon
- Hot water to be supplied at a safe water temperature of 55 deg C max.
- Rheem Hot water cylinder with Callifi pressure kit.
- Refer to specification for HWC size.

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FOUNDATION PLAN / SERVICES PLAN
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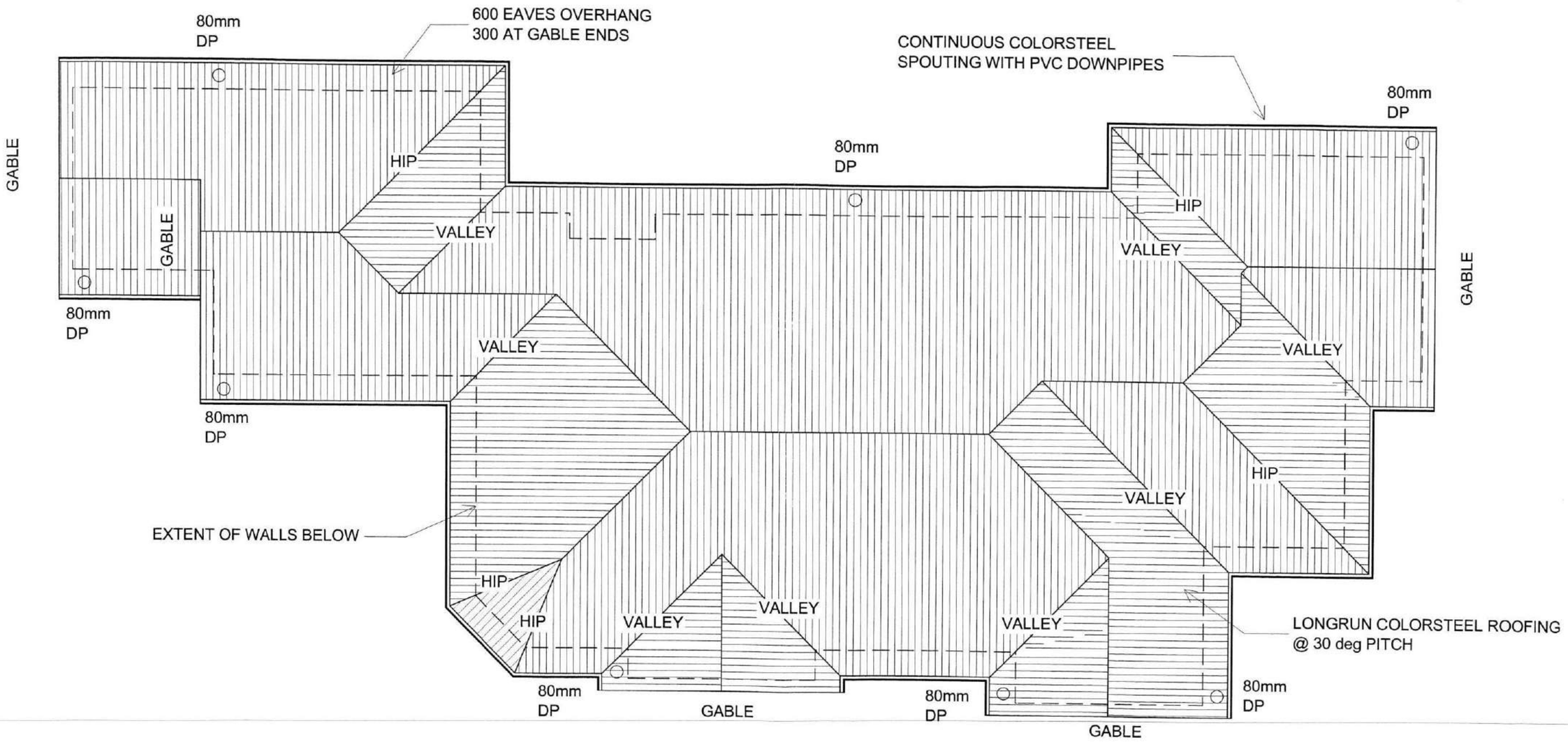
NOTE:
THE SUB-CONTRACTOR INSTALLING THE GUTTER AND DOWNPIPE SYSTEM IS TO CONFIRM THAT THE CROSS-SECTIONAL AREA OF THE GUTTER IS APPROPRIATE FOR THE ROOF AREA IT DRAINS AND THE SIZE AND LOCATION OF THE DOWNPIPES INDICATED:



ROOF PLAN
Scale 1:100

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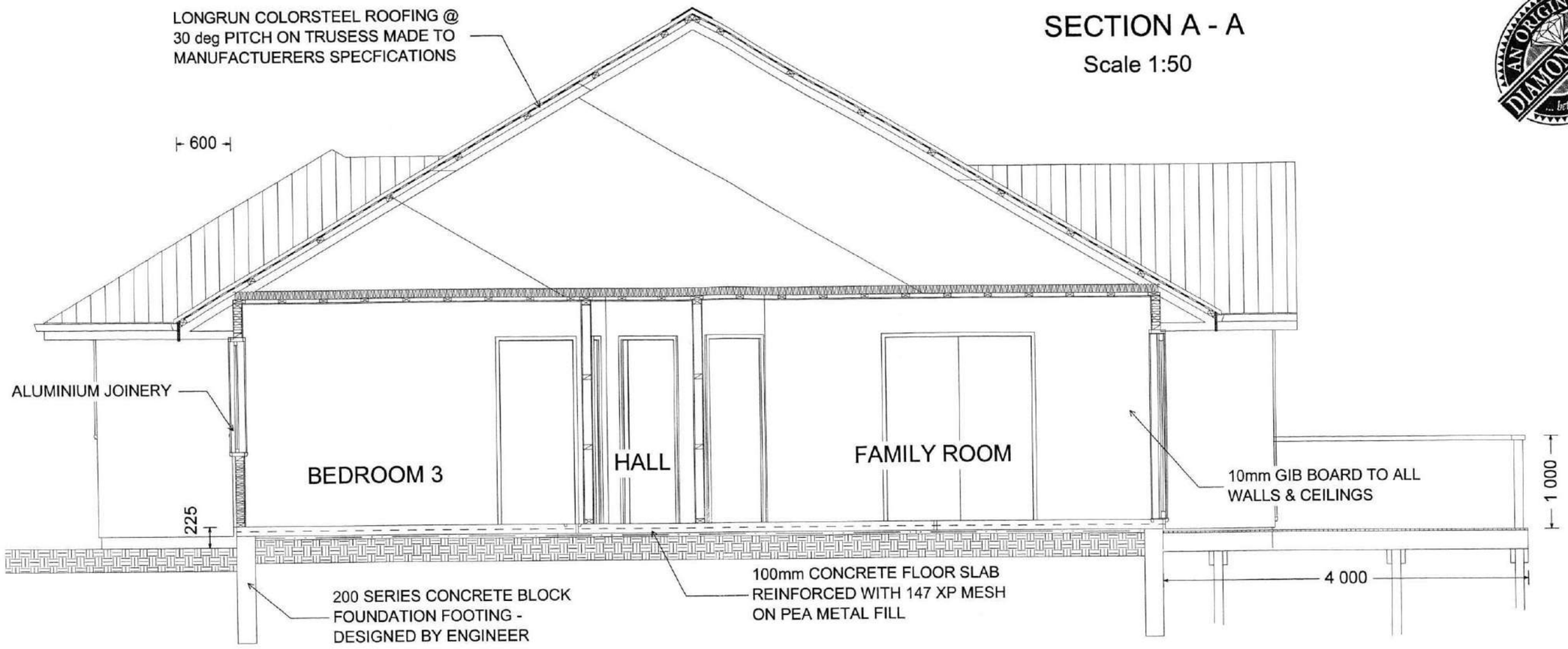
SECTION A - A

Scale 1:50



FLOOR CONSTRUCTION NOTES !

- 100mm THICK REINFORCED CONCRETE SLAB
- 147 XP MESH REINFORCING
- FFL TO BE 225mm ABOVE FINISHED GROUND LEVEL
- 20 MPa CONCRETE FLOOR SLAB
- DPC VAPOUR BARRIER
- PEA METAL FILL TO 600mm HIGH MAX, THEN USE COMPACTED HARDFILL
- CONCRETE FOUNDATION WALL / FOOTING - BLOCKED
- MIN 200mm WIDE CONCRETE BLOCKS (U/SIDE MIN 300mm BELOW CLEARED GROUND LEVEL)
- ENGINEER DESIGNED

NOTE:
IF WHERE THE VERTICAL DISTANCE BETWEEN HORIZONTAL BARS @ TOP OF FOUNDATION WALL AND BOTTOM OF FOUNDATION FOOTING EXCEEDS 600mm, THEN THE FOUNDATION WALL IS TO BE REINFORCED WITH D12 REINFORCING BARS @ 600 CTRS EACH WAY - DEPENDING ON ENGINEERS SPECIFICATION

- 75mm THICK CONCRETE PORCH SLABS
- 150mm BELOW DWELLING FFL
- 150mm THICKENED OUTER EDGE

WALL CONSTRUCTION NOTES !

- H1.2 TREATED 150 x 40 RIBBON PLATE (WITH 90 x 45 F5 LAZER FRAME TOP PLATE)
- 12mm TRUE BOLTS @ 900 CTRS WITH 50 x 50 GALV WASHERS TO FIX BOTTOM PLATE TO SLAB
- H3.1 TREATED 90 x 45 KILN DRIED FRAMING TO ALL WALLS
- STUDS @ 600 CTRS MAX / DWANGS @ 800 CTRS MAX
- EXCEPT DWANGS @ 600 CTRS MAX TO GARAGE TO SUIT THE FIXING OF CUSTOM WOOD
- TYVEK BUILDING PAPER TO EXTERIOR WALLS
- LIGHT PEBBLE DASH SOLID PLASTER TO EXTERIOR
- H3.1 TREATED 50 x 25 TIMBER CAVITY BATTENS FIXED VERTICALLY @ 300 CTRS MAX
- JAMES HARDIE uPVC CAVITY VENT STRIPS (OR OTHER APPROVED) TO BE FIXED TO THE TOP (WITH MIN 5mm VENTILATION CLEARANCE TO SOFFIT LINING) AND BOTTOM OF ALL WALLS
- 4.5mm HARDIBACKER
- GALVANISED WIRE NETTING ADEQUATELY SPACED FROM HARDIBACKER
- SELECTED FINISH SOLID PLASTER TO EXTERIOR
- PROVIDE CONTROL JOINTS @ 4.0M CTS MAX (EACH WAY)
- 75mm ROCKWOOL INSULATION TO DWELLING OUTER WALLS
- INCLUDING WALLS BETWEEN DWELLING AND GARAGE
- BRADFORD GOLD TO ALL RAKED CEILINGS AND UNSUITABLE PLACES FOR ROCKWOOL
- 10.0mm GIB BOARD WALL LINING
- EXCEPT 9.0mm CUSTOM WOOD TO GARAGE
- SELECTED WINDOW AND DOOR JOINERY TO COMPLY WITH NZS 4223, PART 3 - 1999
- TOP AND BOTTOM FLASHINGS AS PER ATTACHED JAMES HARDIE DETAILS
- SIDE FLASHING - DPC FOLDED AROUND THE FRAMING AT THE OPENINGS WITH FLEXWRAP ON THE SIDES OF THE OPENINGS
- ALL GLAZING WITHIN 1.5m OF THE FLOOR LEVEL IN BATHROOMS AND ENSUITES MUST BE SAFETY GLASS

DIAMOND HOMES

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Drawing Title

CROSS SECTION

Scale 1:50

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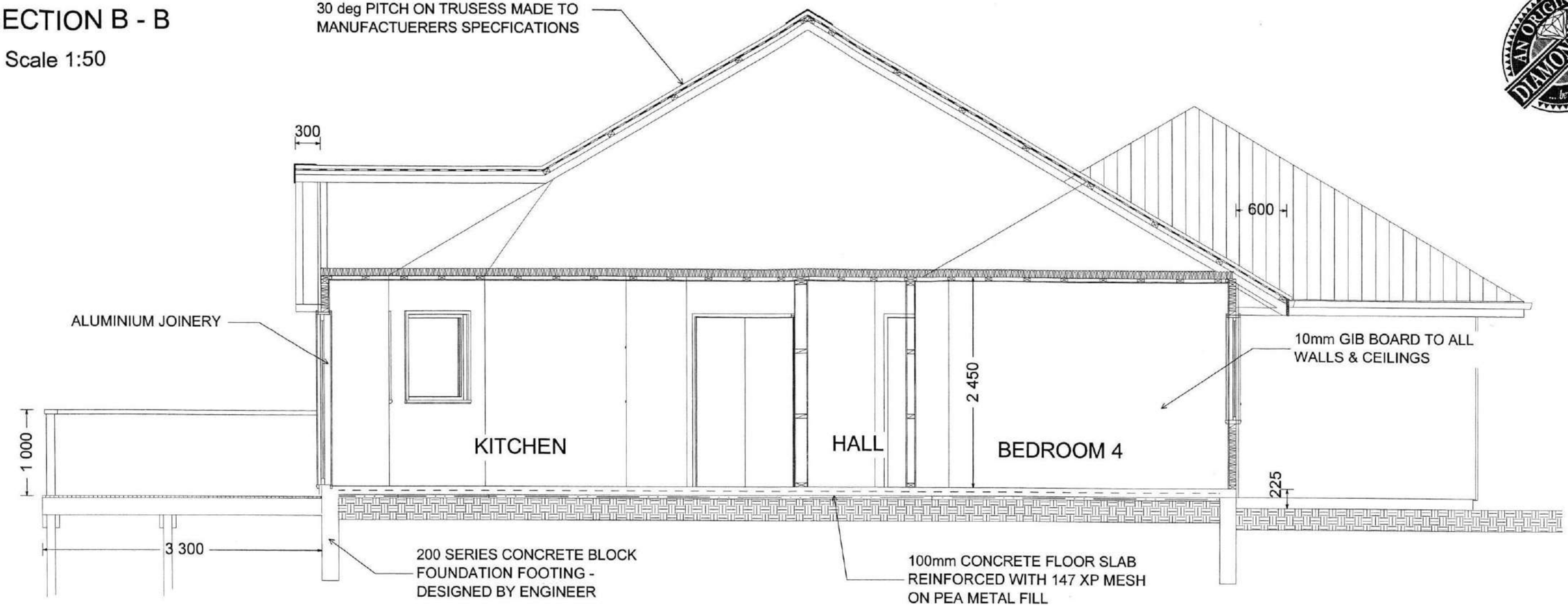
SECTION B - B

Scale 1:50



ROOF / CEILING / SOFFIT CONSTRUCTION NOTES !

- 30 deg ROOF PITCH (HIP AND GABLE ROOF)
- SELECTED COLORSTEEL LONGRUN ROOFING AND ACCESSORIES
- THERMAKRAFT 215 ROOFING UNDERLAY AND NETTING
- H1.2 TREATED 75 x 50 PURLINS @ 900 CTRS MAX
- H 1.2 TREATED GANG-NAIL TIMBER ROOF TRUSSES @ 900 CTRS MAX
- DESIGN AND LAYOUT TO BE PROVIDED BY MANUFACTURER
- 100mm ROCKWOOL CEILING INSULATION OVER DWELLING
- H1.2 TREATED 75 x 40 CEILING BATTENS @ 450 CTRS - EXCEPT @ 400 CTRS TO GARAGE
- 10.0mm ULTRALINE GIB BOARD CEILING LINING - EXCEPT 12.5mm PINEX SHEET TO GARAGE
- 600 EAVES OVERHANG - 300 @ GABLE ENDS
- H1.2 TREATED 75 x 50 RIBBON BOARD / SOFFIT BEARERS @ 900 CTRS MAX
- EXCEPT 100 x 50 @ 600 CTRS OVER PORCH
- 4.5mm HARDIFLEX SOFFIT LINING
- JAMES HARDIE - LINEA FASCIA AND BARGE BOARD
- COLORSTEEL GUTTER SYSTEM - PVC DOWN PIPES
- SMOKE ALARMS MUST BE INSTALLED ON OR NEAR THE CEILING IN ACCORDANCE WITH AS 1670.6 AND THE MANUFACTURERS SPECIFICATION

SPECIFICATION NOTES !

- ALL MATERIALS & WORKMANSHIP SHALL CONFORM WITH ALL REQUIREMENTS OF THE NEW ZEALAND BUILDING CODE APPROVED DOCUMENTS AND ACCEPTABLE SOLUTIONS (ESP NZS 3604:1999).
- ALL MATERIALS ARE TO BE STORED, HANDLED AND INSTALLED / FIXED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
- ALL FRAMING TIMBER IS TO BE No 1 GRADE BORIC TREATED RADIATA PINE (OR EQUAL APPROVED) AND WITH THE APPROPRIATE CCA RESERVATION TREATMENT AS APPLICABLE.
- ALL FIXINGS ARE TO COMPLY WITH THE FIXING TABLES / DETAILS TO NZS 3604:1999 REQUIREMENTS.
- ALL TIMBER LINTELS / TRIMMERING STUDS / HEAD AND SILL TRIMMERS ARE TO SUIT THE OPENINGS THAT ARE REQUIRED BY NZS 3604:1999.
- ALL CONCRETE IS TO BE 17.5 MPA ORDINARY GRADE - PROTECT ALL TIMBER IN CONTACT WITH CONCRETE WITH DPC VAPOUR BARRIER.
- ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR CONCERNED PRIOR TO CONSTRUCTION / MANUFACTURE

DIAMOND HOMES

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KIBBLEWHITE RESIDENCE
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PALMERSTON NORTH

Drawing Title
CROSS SECTION
Scale 1:50

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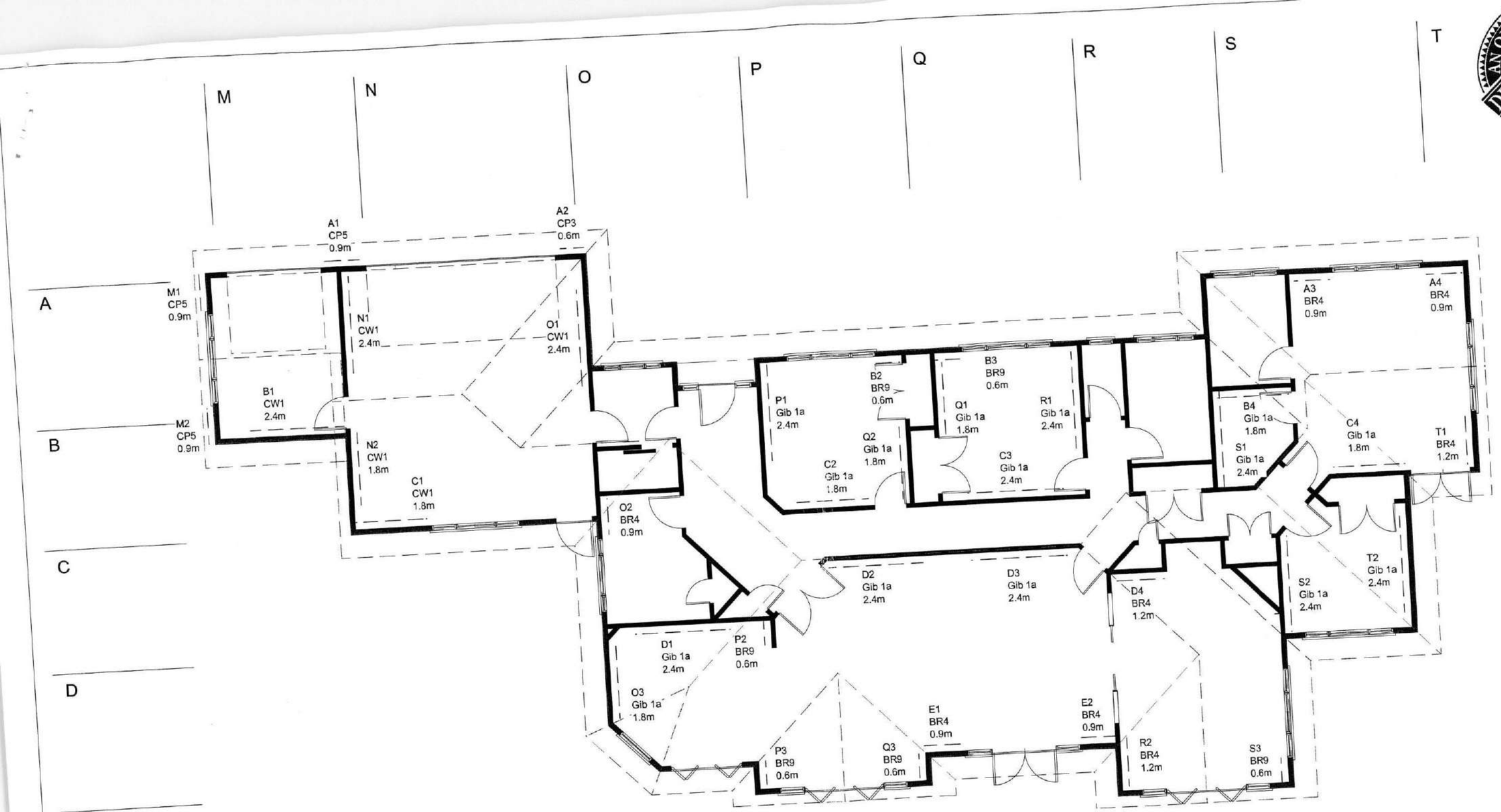

NOTES:

REFER TO ACCOMPANYING WALL BRACING CALCULATIONS SHEET:
BR 4 10.0mm GIB BRACELINE ON ONE FACE
BR 9 10.0mm GIB BRACELINE ON ONE FACE
GIB 1a STANDARD 10.0mm GIB PLASTERBOARD ON ONE FACE
CP3 7.5mm PLYWOOD TO ONE FACE
CP5 7.5mm PLYWOOD TO ONE FACE
CW1 CUSTOM WOOD BOARD TO ONE FACE
THE FIXING OF ALL BRACING IS TO MEET THE REQUIREMENTS OF THE NZ BUILDING CODE & APPROVED DOCUMENTS (ESP NZS 3604:1999) & THE MANUFACTURERS FIXING INSTRUCTIONS.

BRACING SETOUT
Scale 1:100

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Drawing Title
BRACING SETOUT
Scale 1:100

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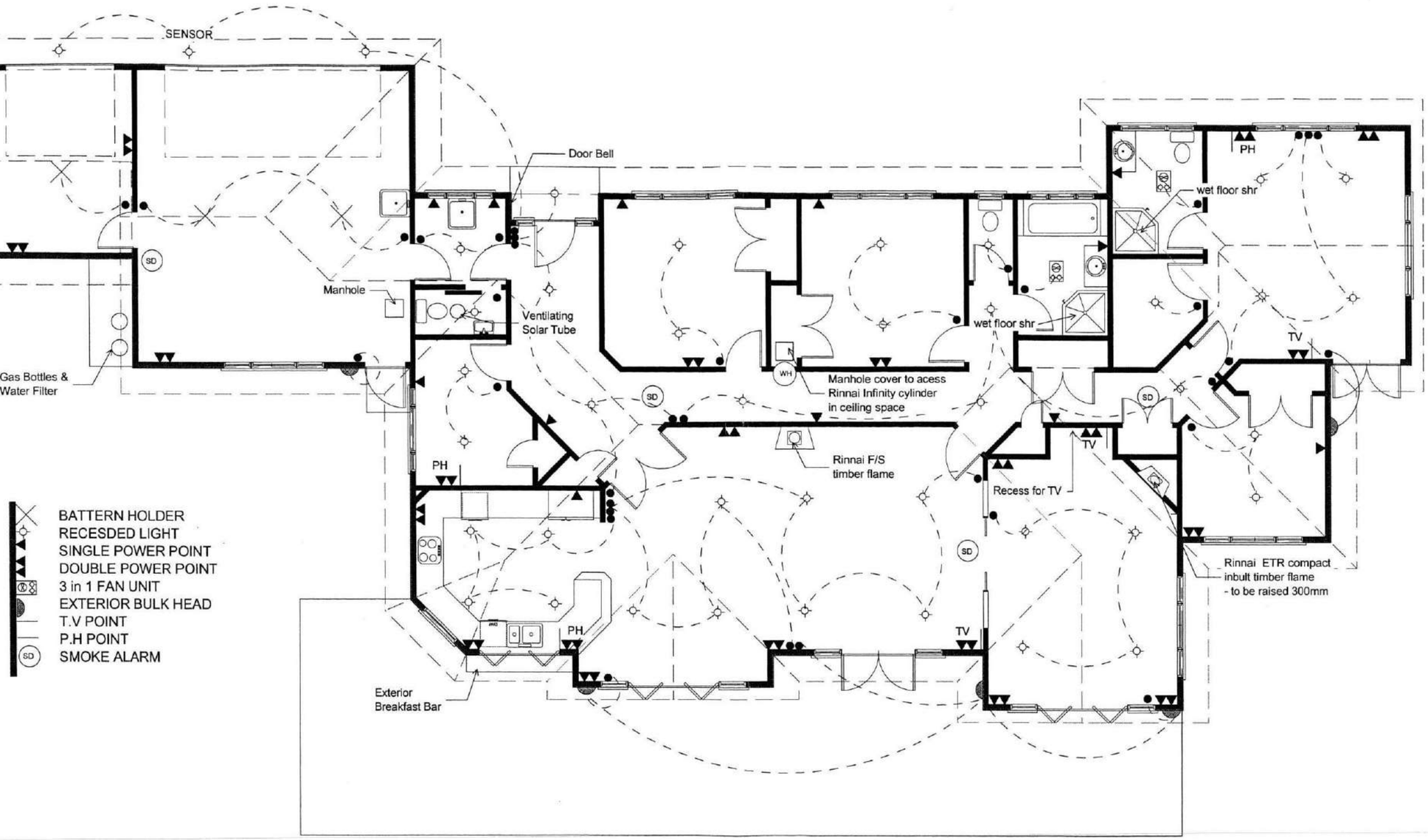
NOTE:
ALL WORK AND LAYOUT IS TO BE APPROVED BY THE CLIENT AND CONTRACTOR BEFORE INSTALLING:



DRAFT

ELECTRICAL PLAN

Scale 1:100

DIAMOND HOMES	752 MAIN STREET PALMERSTON NORTH PH 06 355 4448 FAX 06 355 4449	KIBBLEWHITE RESIDENCE BRIARWOOD ESTATE PALMERSTON NORTH	Drawing Title ELECTRICAL PLAN Scale 1:100

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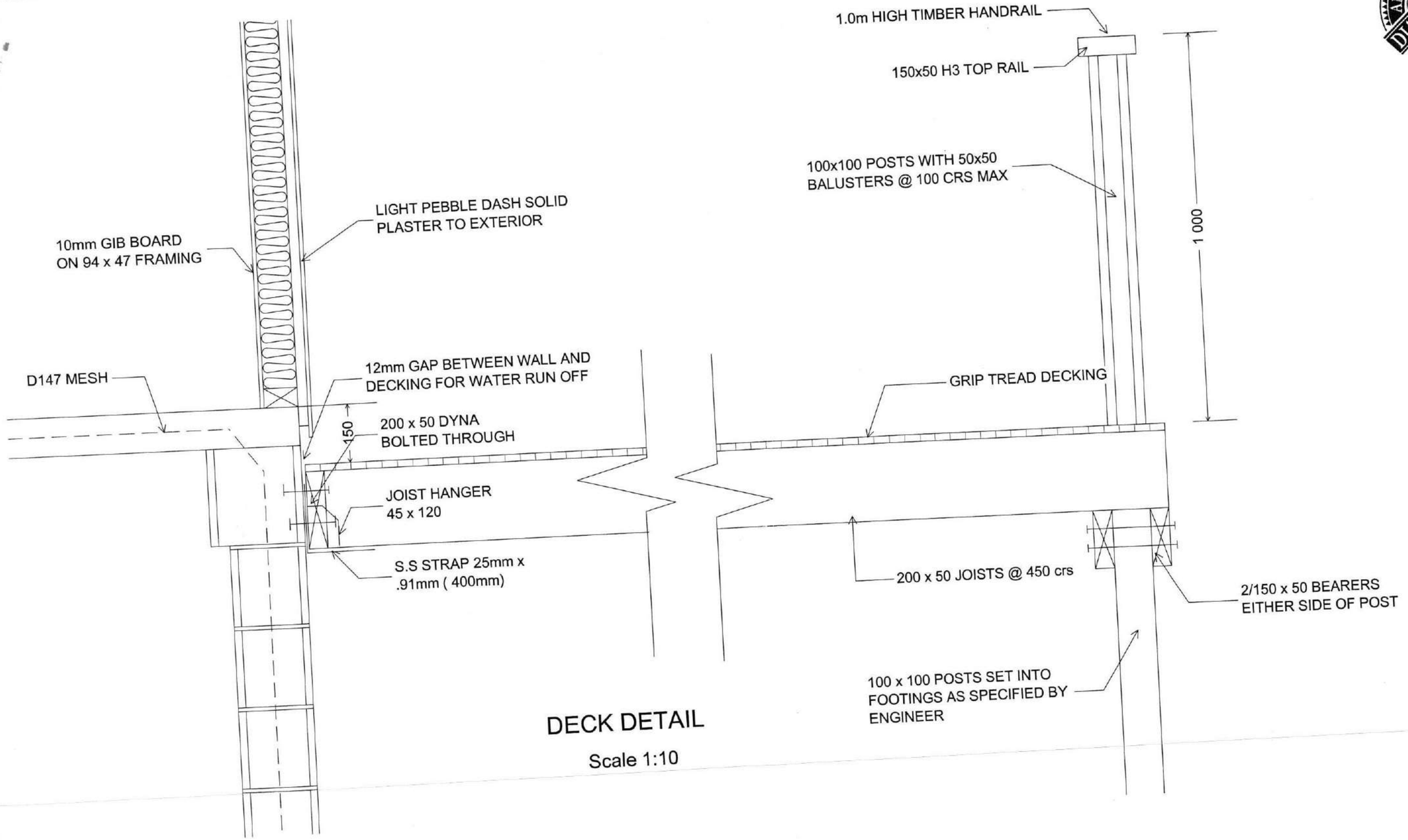

DECK DETAIL

Scale 1:10

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Drawing Title

DETAILS

Scale 1:10

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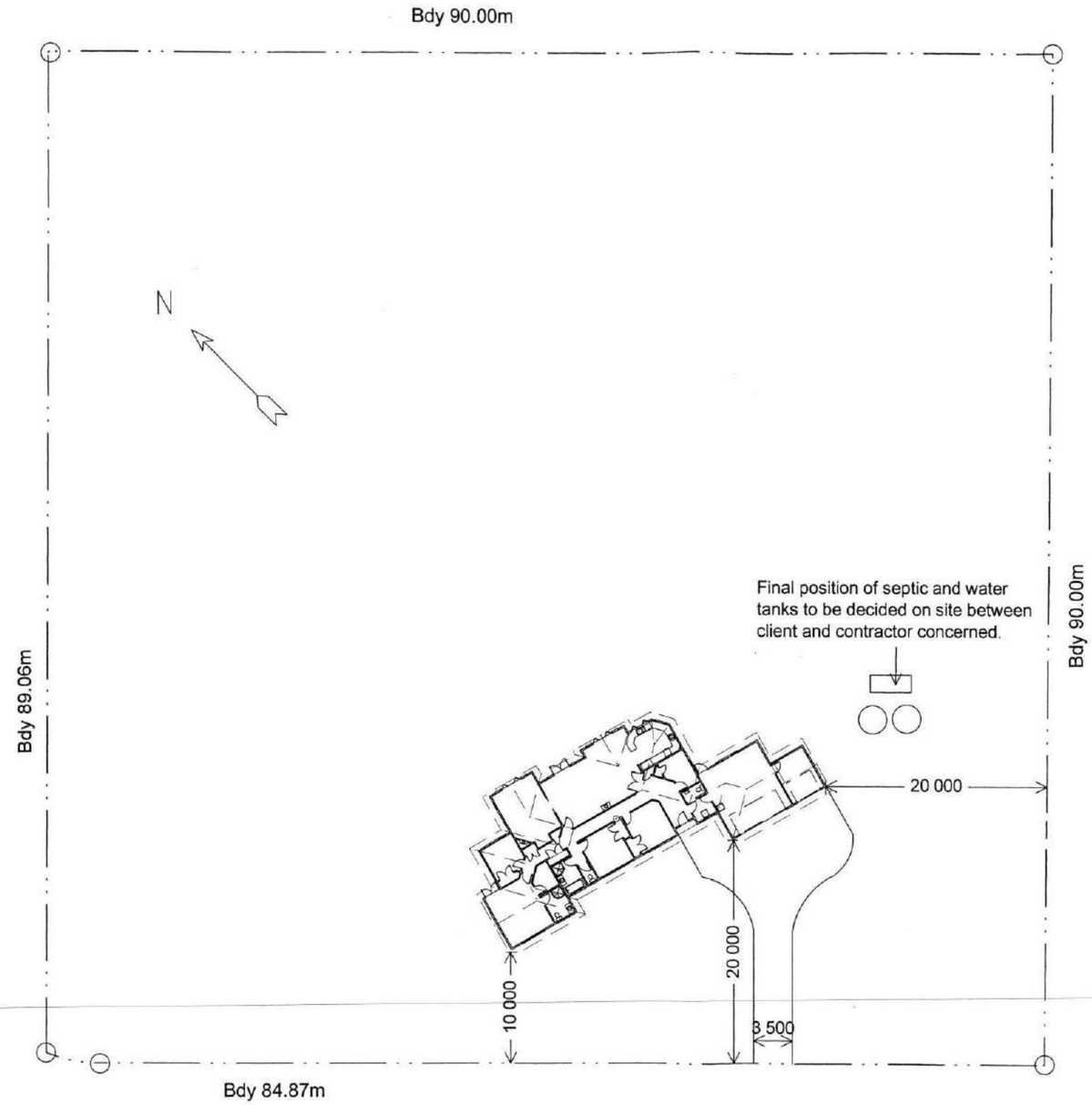

BRIARWOOD ROAD

SITE PLAN

Scale 1:500

Lot 13
DP ?
Briarwood Road
Palmerston North
Site Size 8100.0m2

DIAMOND HOMES

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Drawing Title

SITE PLAN

Scale 1:500

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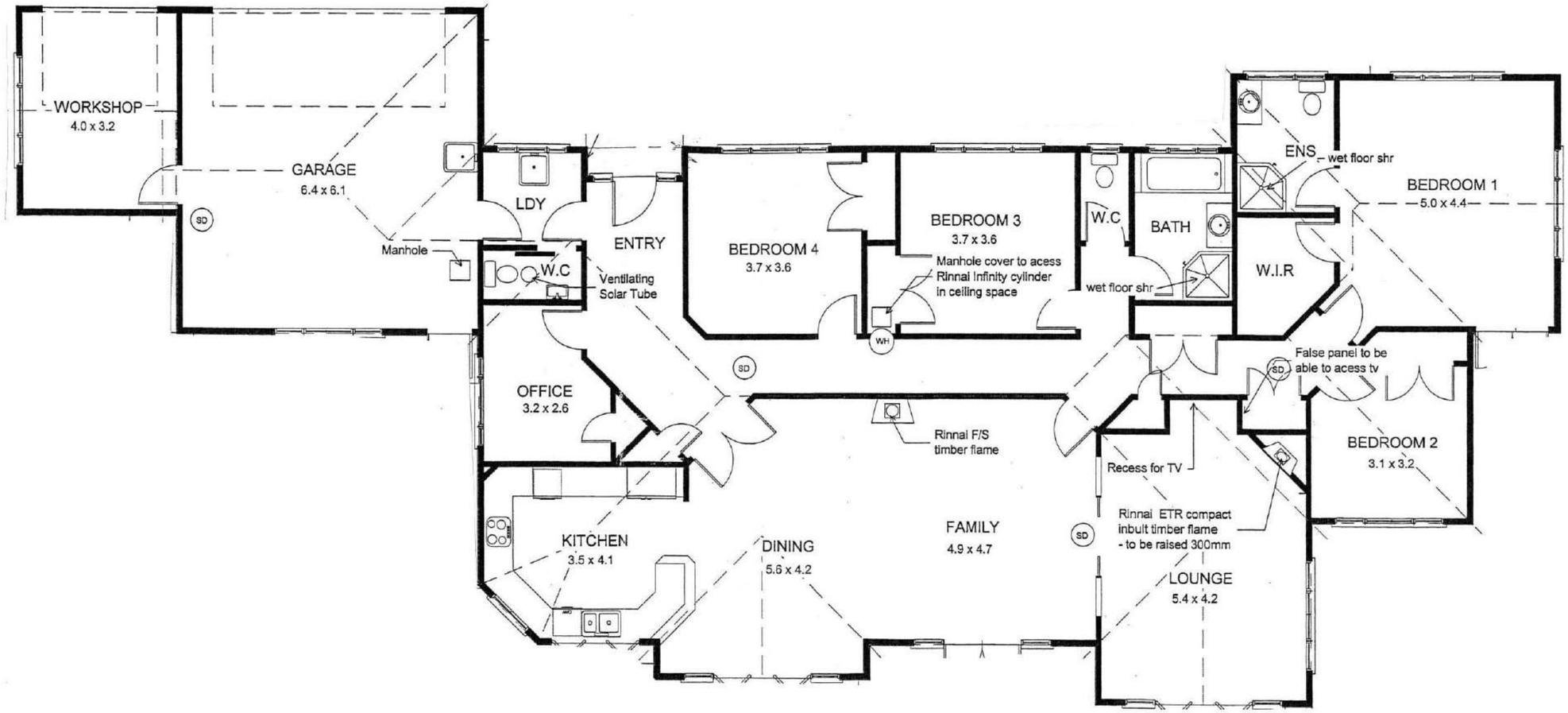
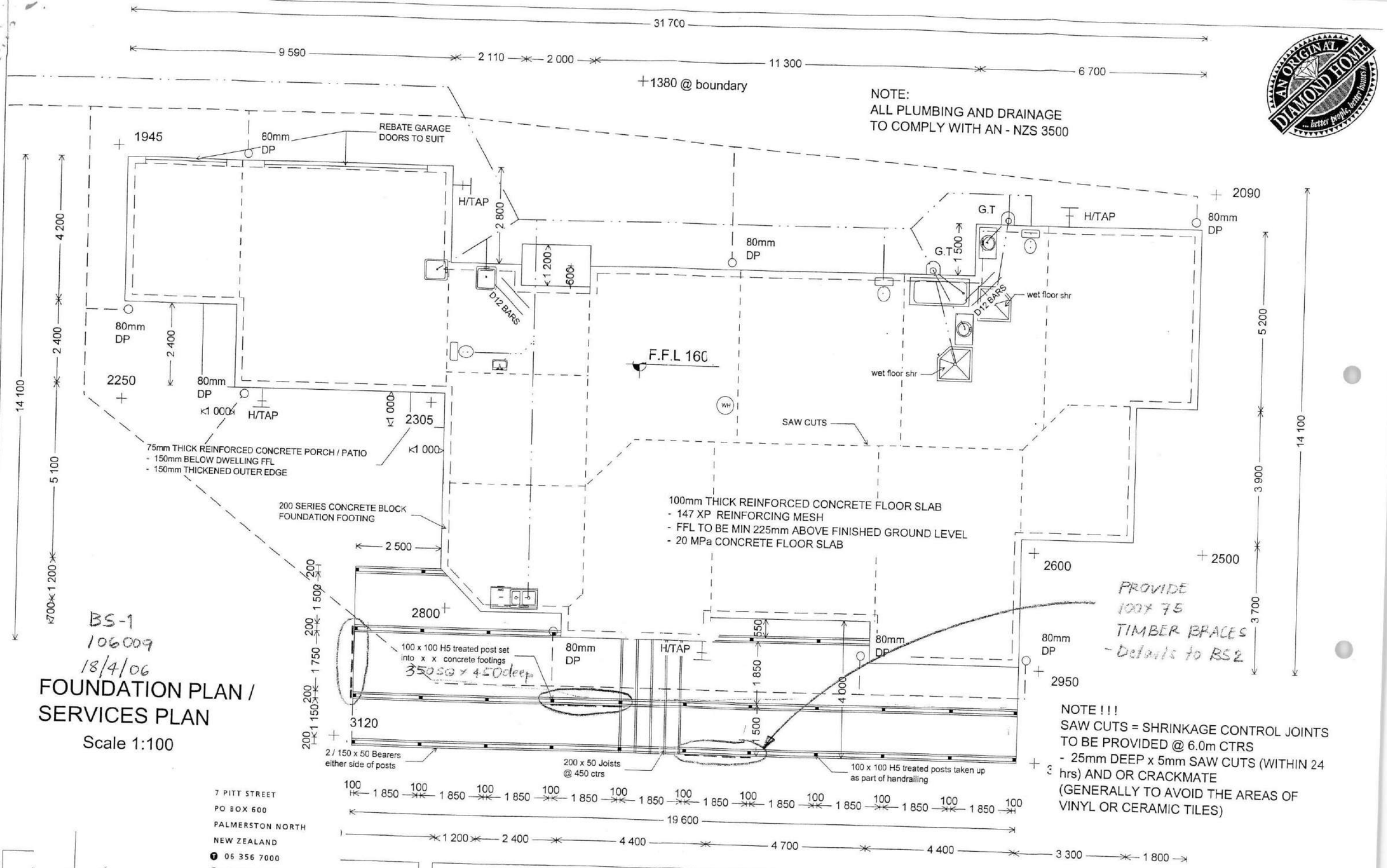

WORKSHOP
4.0 x 3.2
GARAGE
6.4 x 6.1
SD
LDY
ENTRY
Manhole
W.C
Ventilating
Solar Tube
BEDROOM 4
3.7 x 3.6
BEDROOM 3
3.7 x 3.6
Manhole cover to acess
Rinnai Infinity cylinder
in ceiling space
W.C
BATH
wet floor shr
ENS
wet floor shr
BEDROOM 1
5.0 x 4.4
W.I.R
WH
SD
False panel to be
able to acess tv
OFFICE
3.2 x 2.6
Rinnai F/S
timber flame
Recess for TV
BEDROOM 2
3.1 x 3.2
KITCHEN
3.5 x 4.1
DINING
5.6 x 4.2
FAMILY
4.9 x 4.7
SD
Rinnai ETR compact
inbuilt timber flame
- to be raised 300mm
LOUNGE
5.4 x 4.2



BS-1
106009
18/4/06

FOUNDATION PLAN / SERVICES PLAN

Scale 1:100

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CONSULTING ENGINEERS, SURVEYORS AND PLANNERS
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PO BOX 600
PALMERSTON NORTH
NEW ZEALAND
T 06 356 7000
F 06 356 7007
E reception@koa.co.nz

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FOUNDATION PLAN / SERVICES PLAN
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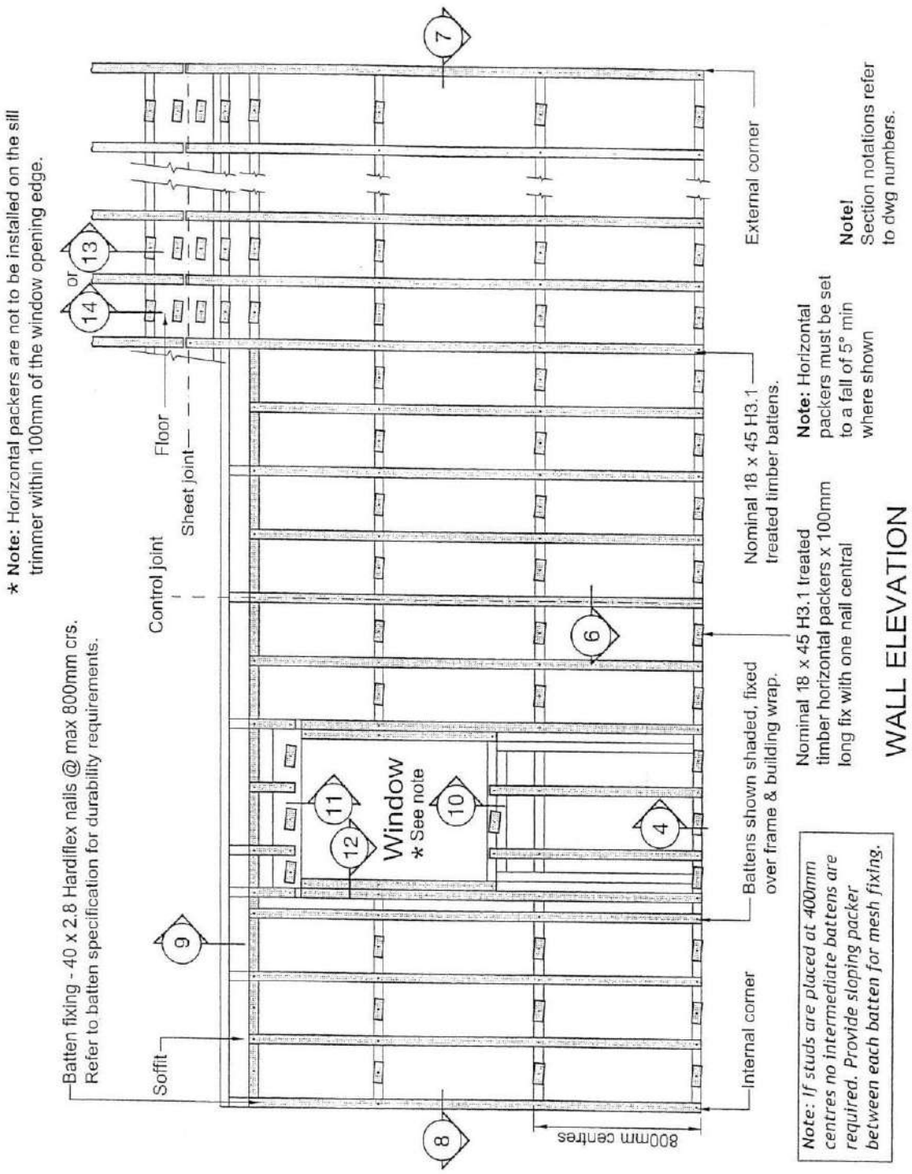


WALL ELEVATION

FIGURE 1: CAVITY TYPICAL FRAMING AND BATTEN SETOUT

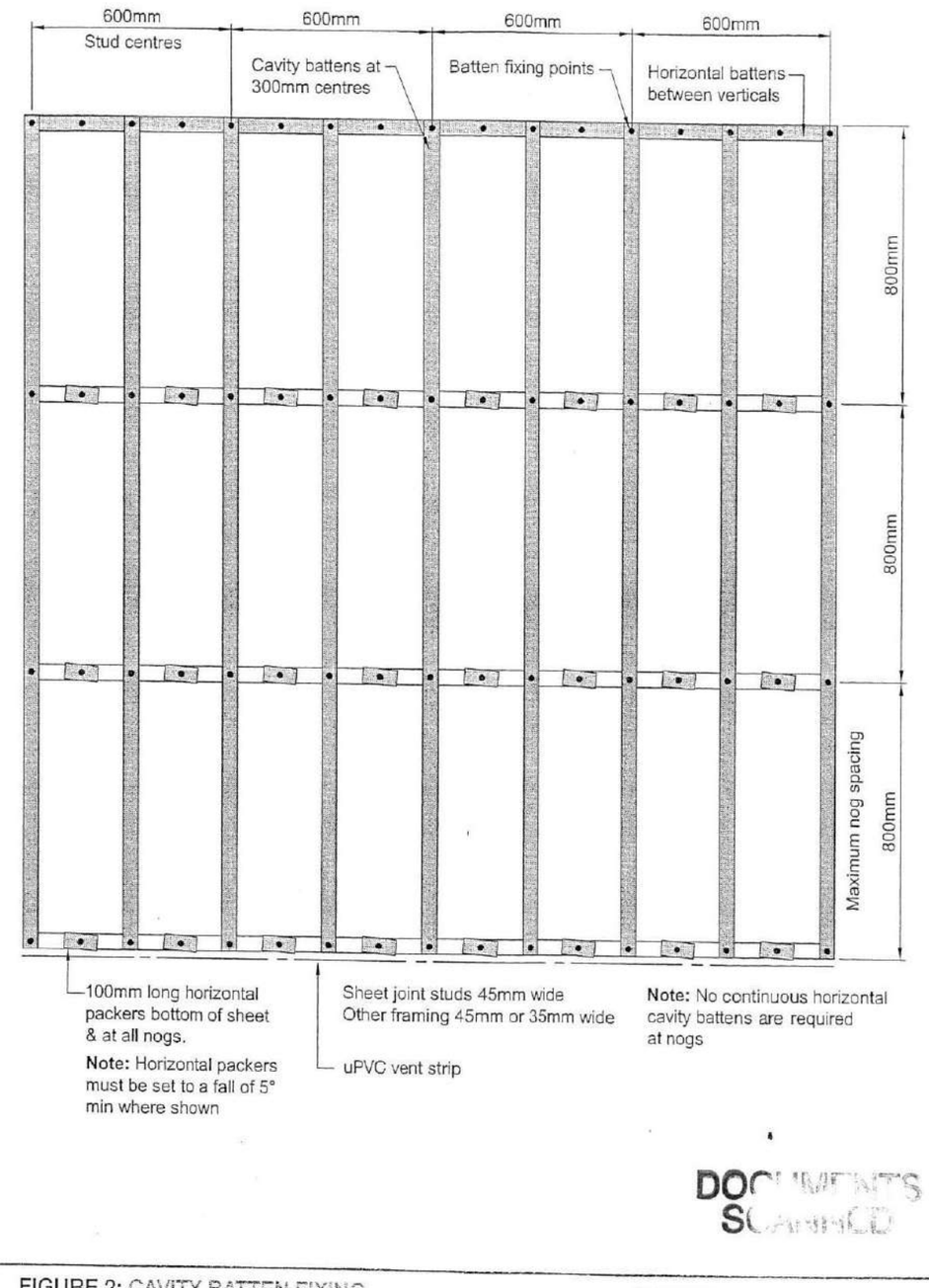


FIGURE 2: CAVITY BATTEN FIXING

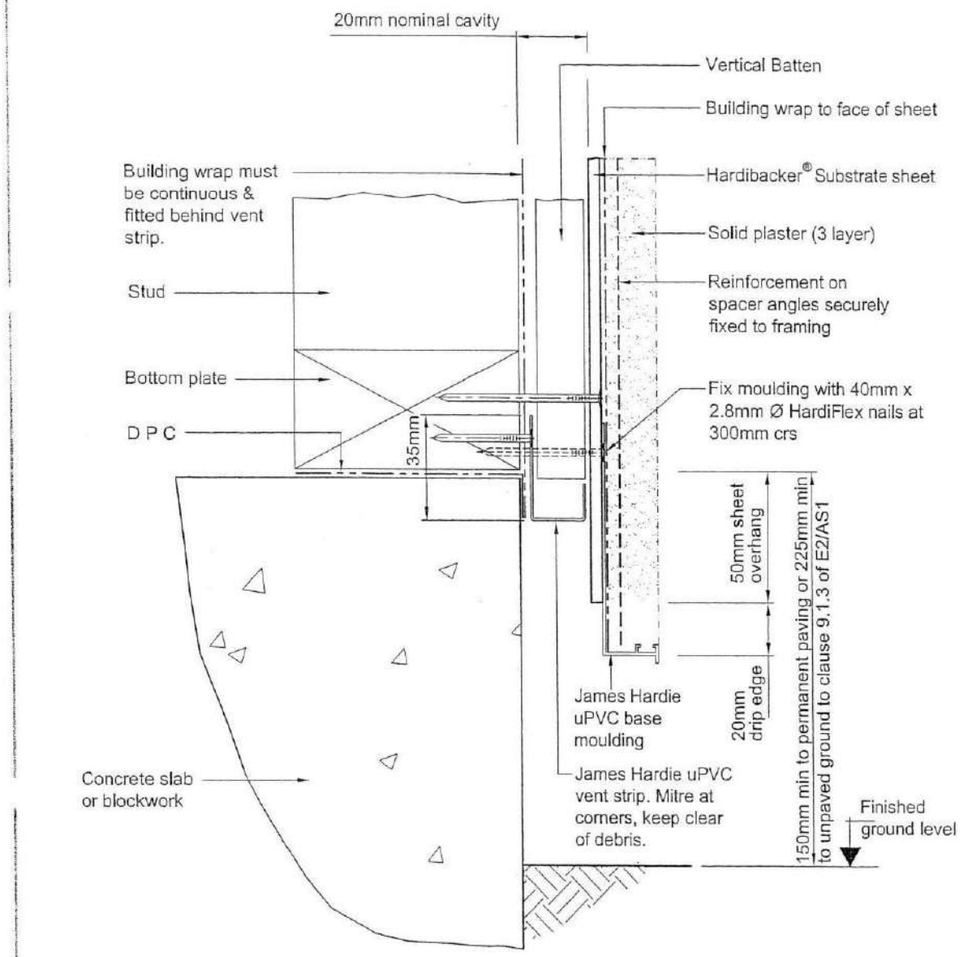


FIGURE 4: CONCRETE FOOTING

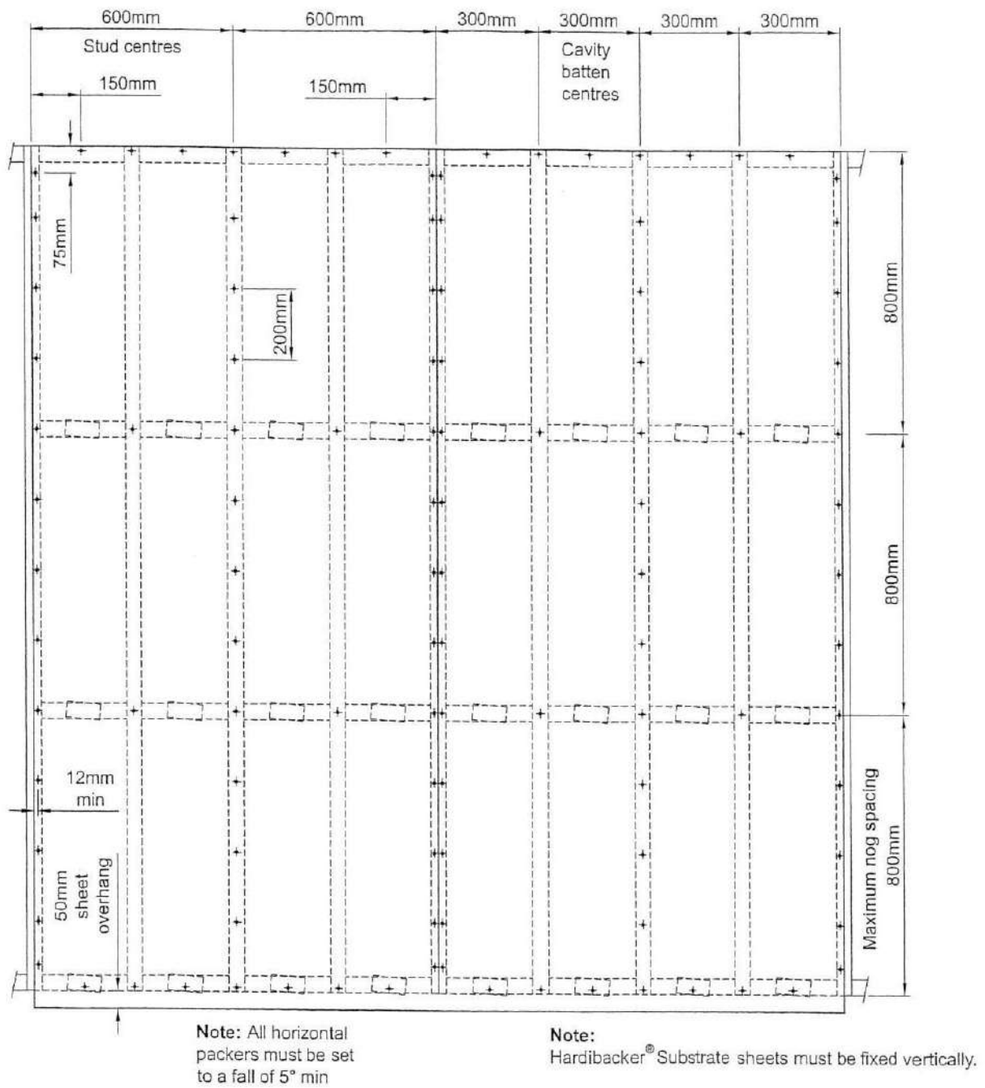


FIGURE 3: TYPICAL SHEET FIXING SETOUT

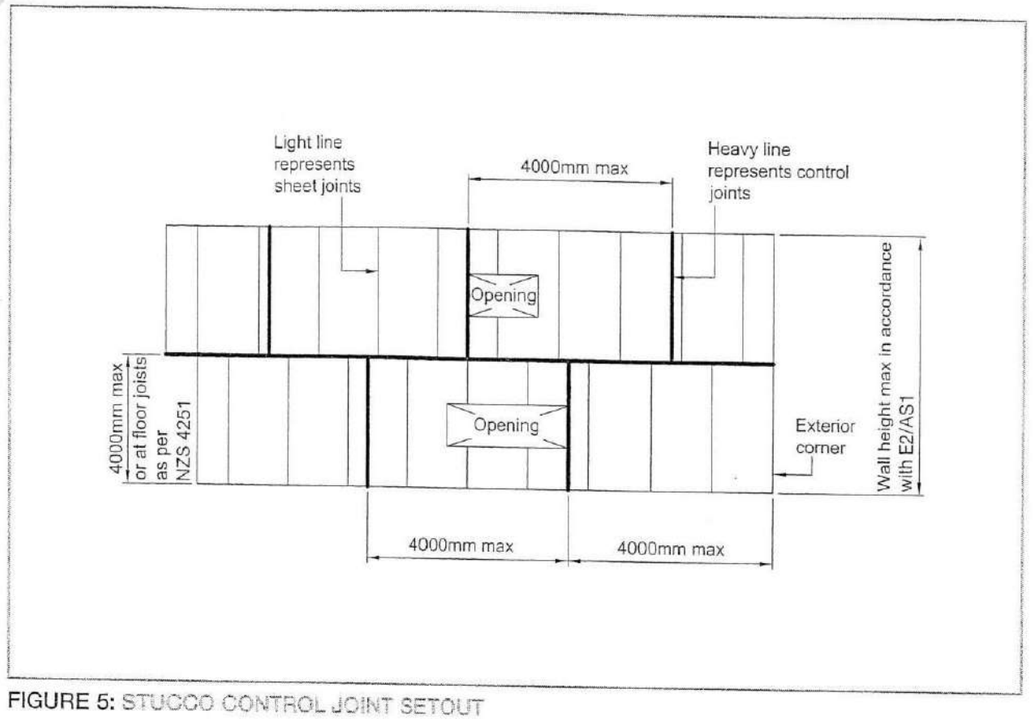


FIGURE 5: STUCCO CONTROL JOINT SETOUT

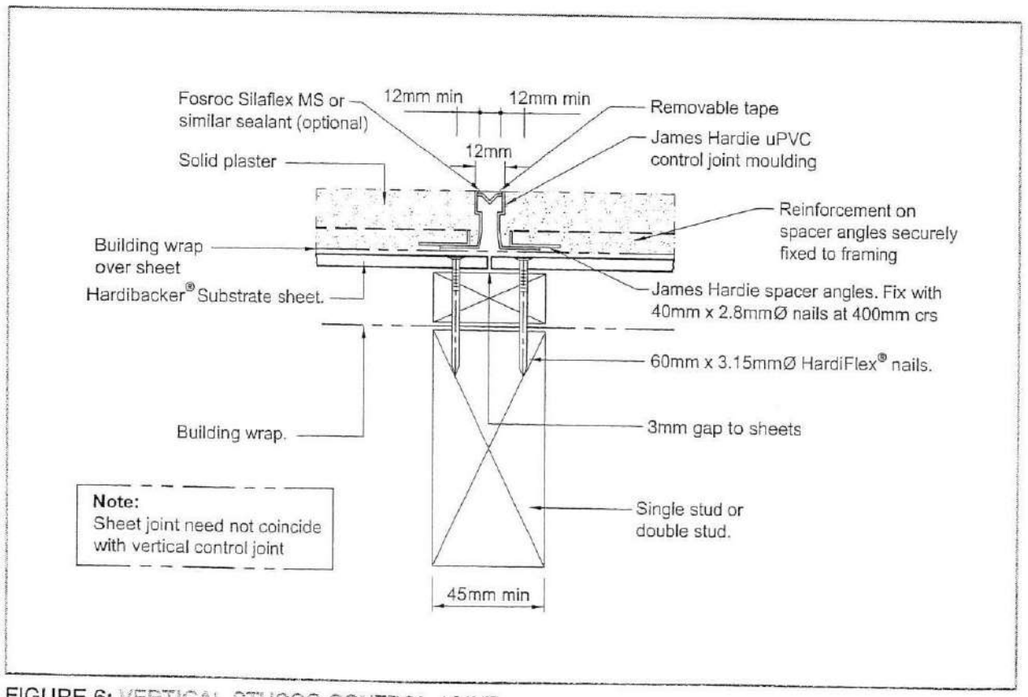


FIGURE 6: VERTICAL STUCCO CONTROL JOINT

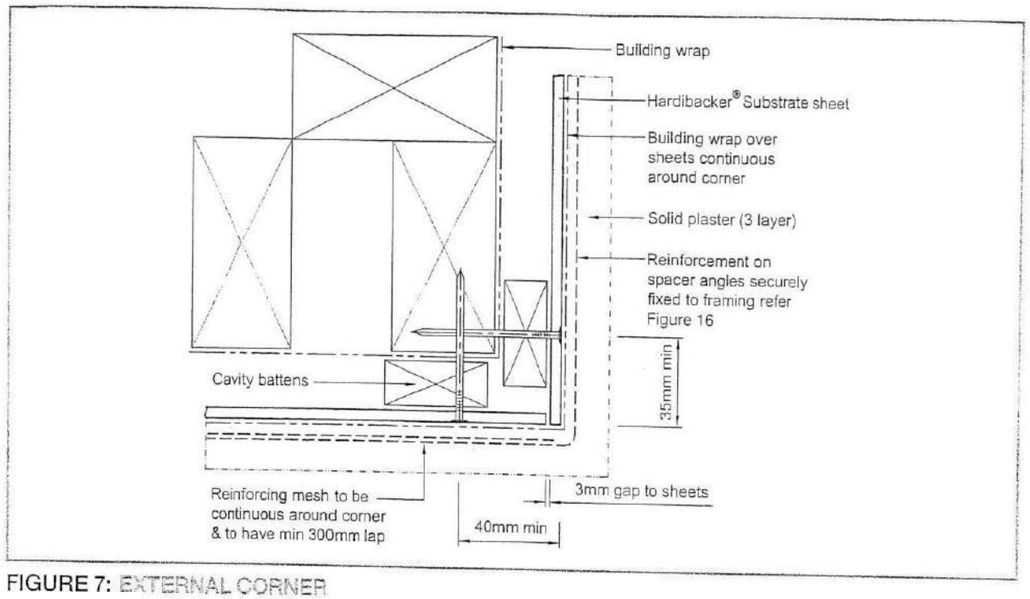


FIGURE 7: EXTERNAL CORNER

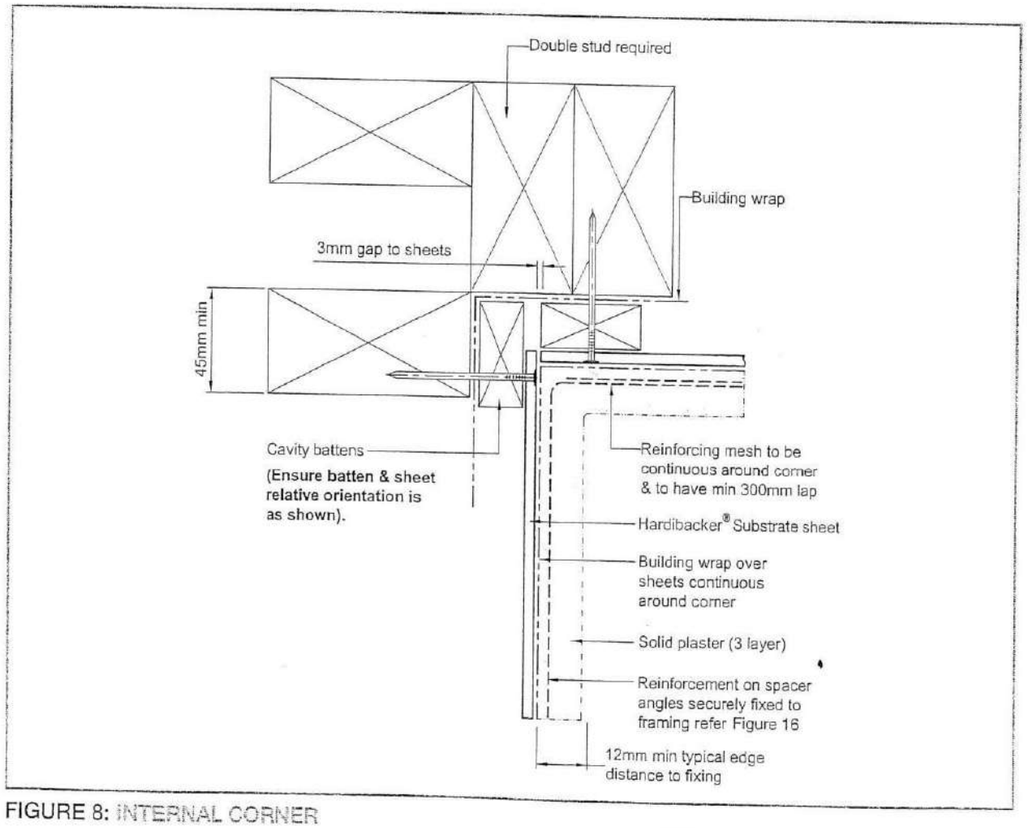


FIGURE 8: INTERNAL CORNER

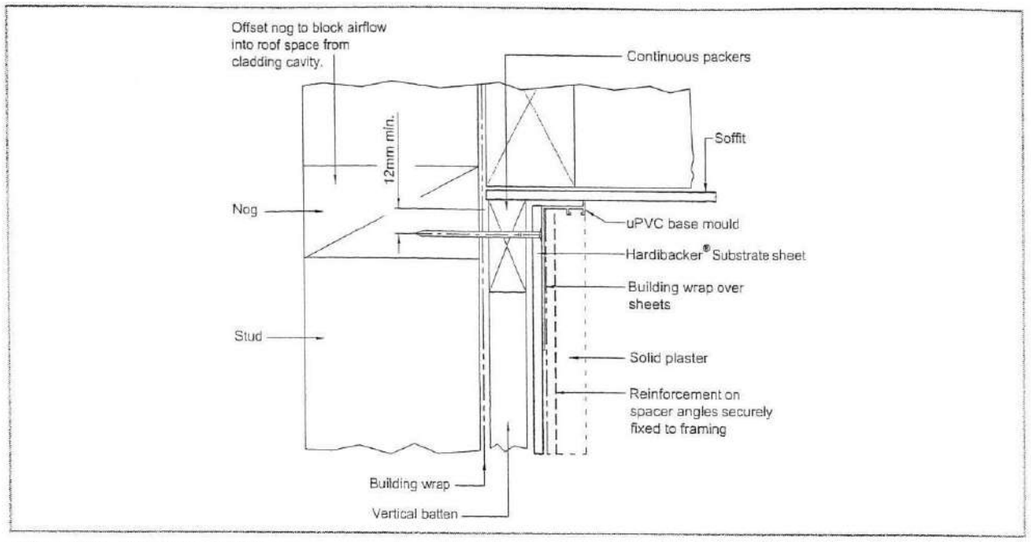
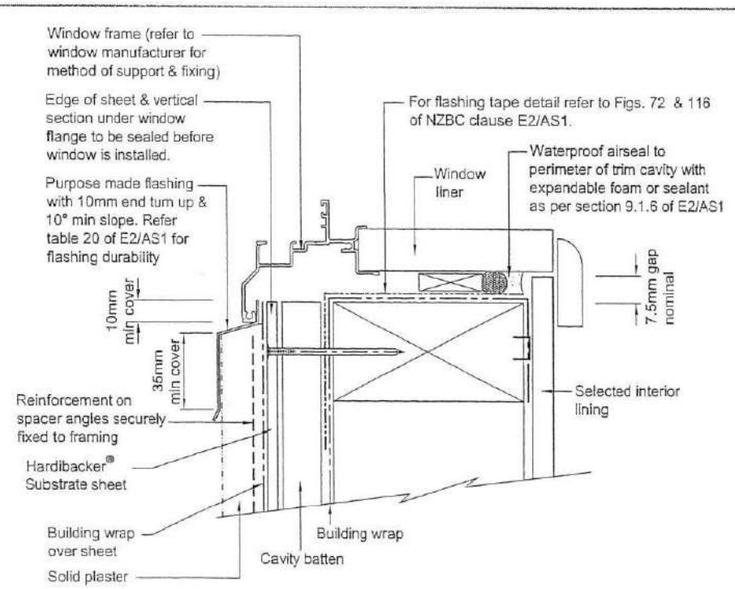


FIGURE 9: SOFFIT DETAIL



General notes for materials section

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and table 20 of NZBC clause 'E2/AS1'.
2. Building wrap must comply with acceptable solution NZBC clause 'E2/AS1' and NZS 3604.
3. Flashing tape must have proven compatability with the selected building wrap and other materials with which it comes into contact as per table 21 of NZBC clause 'E2/AS1'.

(Refer to the manufacturer or supplier for technical information on these materials.)

FIGURE 10: WINDOW SILL

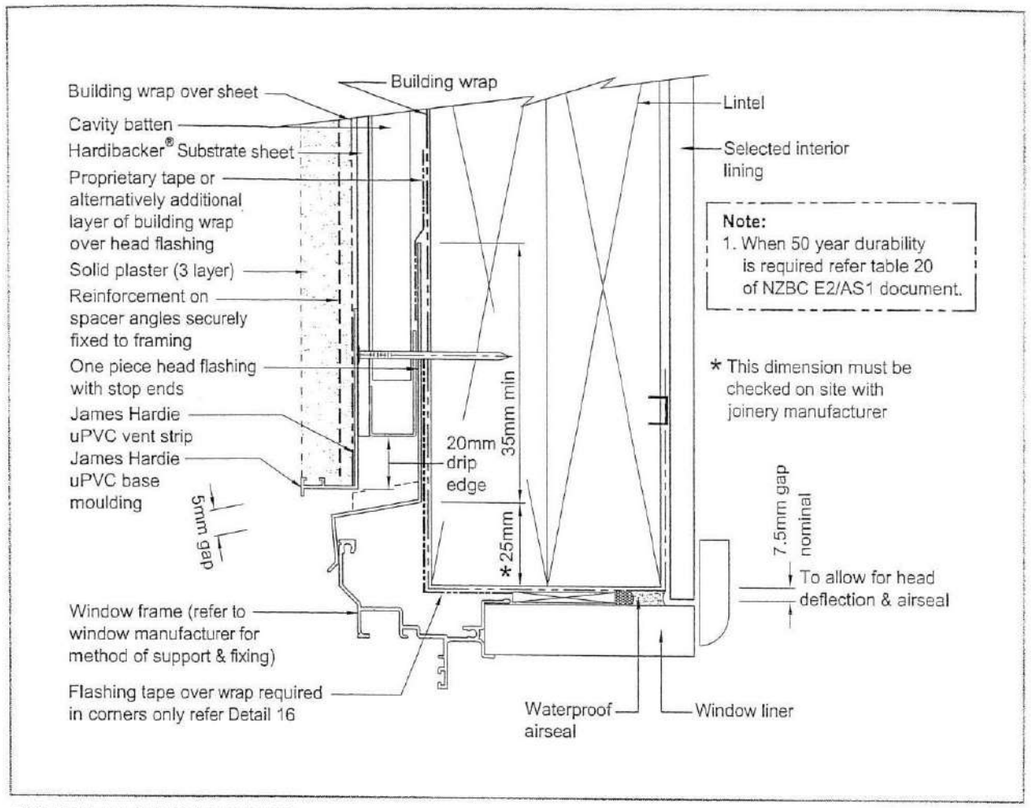


FIGURE 11: WINDOW HEAD

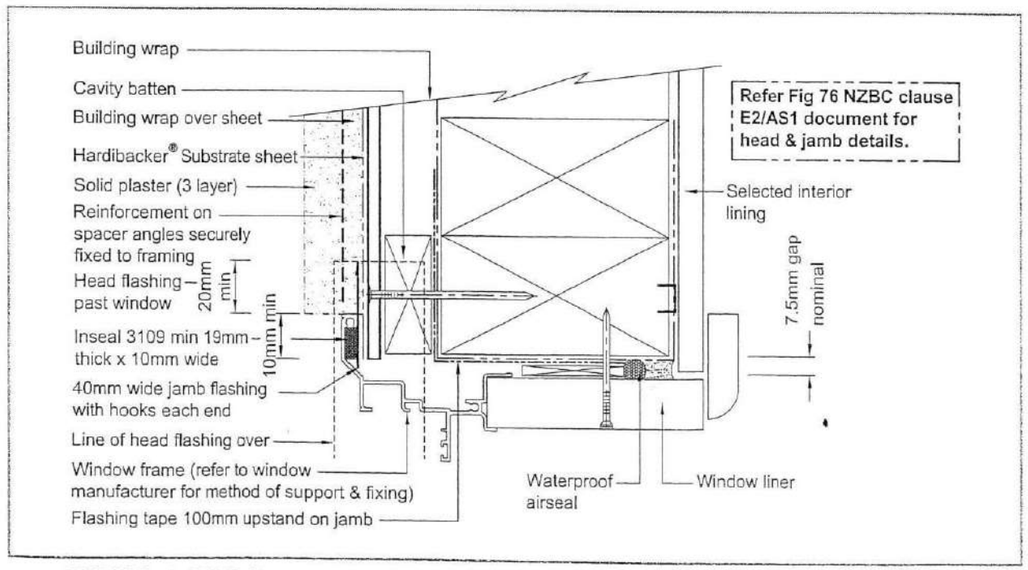
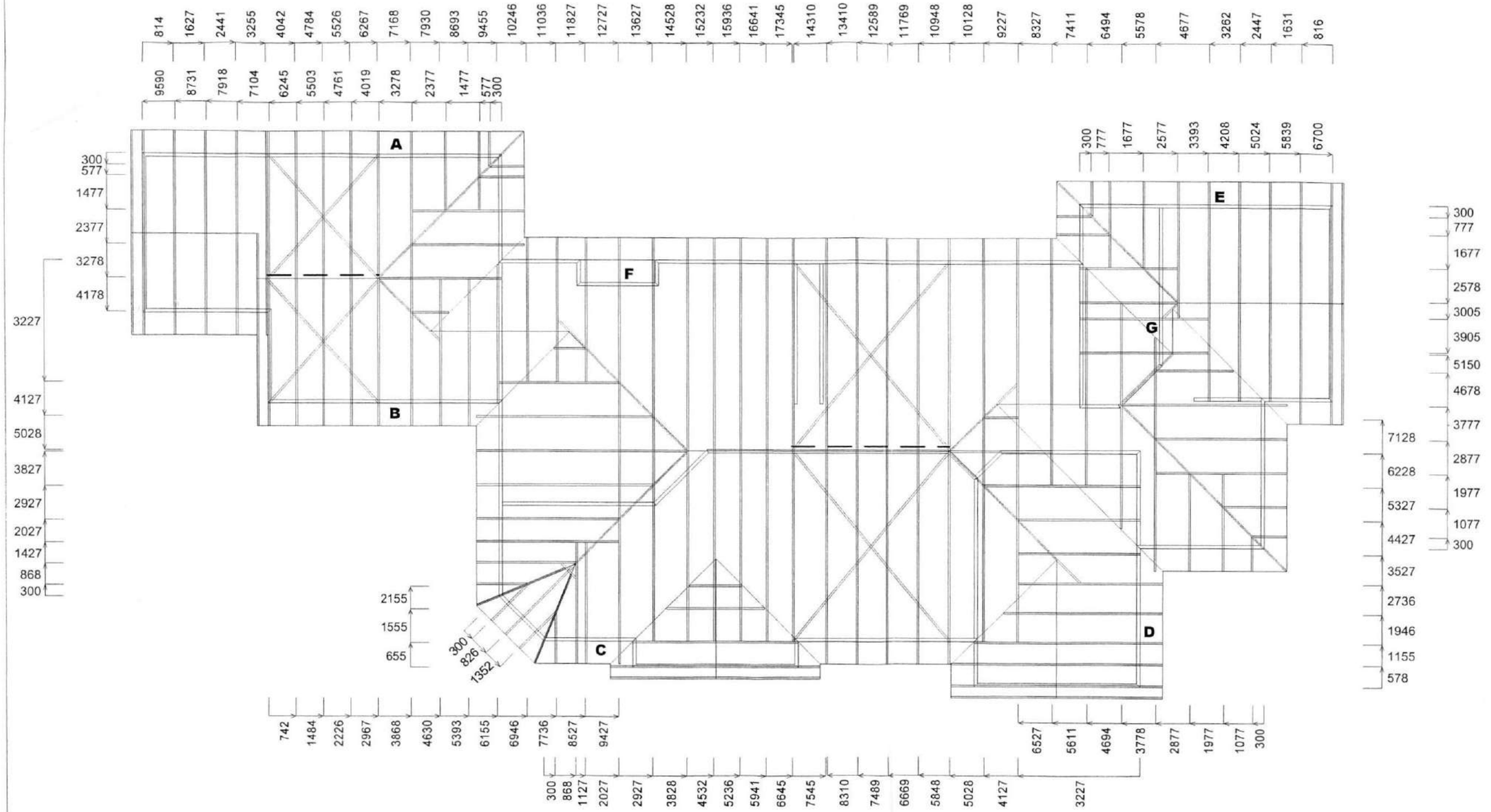


FIGURE 12: WINDOW JAMB



— — — DIAGONAL ROOF SPACE BRACE
as per
NZS3604:1999 10.4.3 & fig. 10.26

LUMBERLOK STRIP BRACE
WITH TENSIONERS

CARTERS
MANUFACTURING
418-426 Rangitikei St
Palmerston North
Ph (06) 358 9029

JOB No **FP0094**

Client: Diamond Homes
Job Name: Kibblewhite
Address: Briarwood Estate
Palmerston North

Pitch: 30
Roof Material: Longrun Iron
Soffit Overhang: 600mm
Wind Area: High
Snow Load: 0 kPa

Trusses And Rafters At 900 Centres Unless Stated Otherwise.

This layout is to be read in conjunction with the Architectural plans.

DRAWN BY Chris

DATE 09/06/06 PAGE 2 of 2

These lintels have been sized as per the GANGLAM and FLITCH BEAM selection manuals as provided by MiTek NZ Ltd.

HYSPAN lintels have been sized as per the FUTUREBUILD selection manuals.

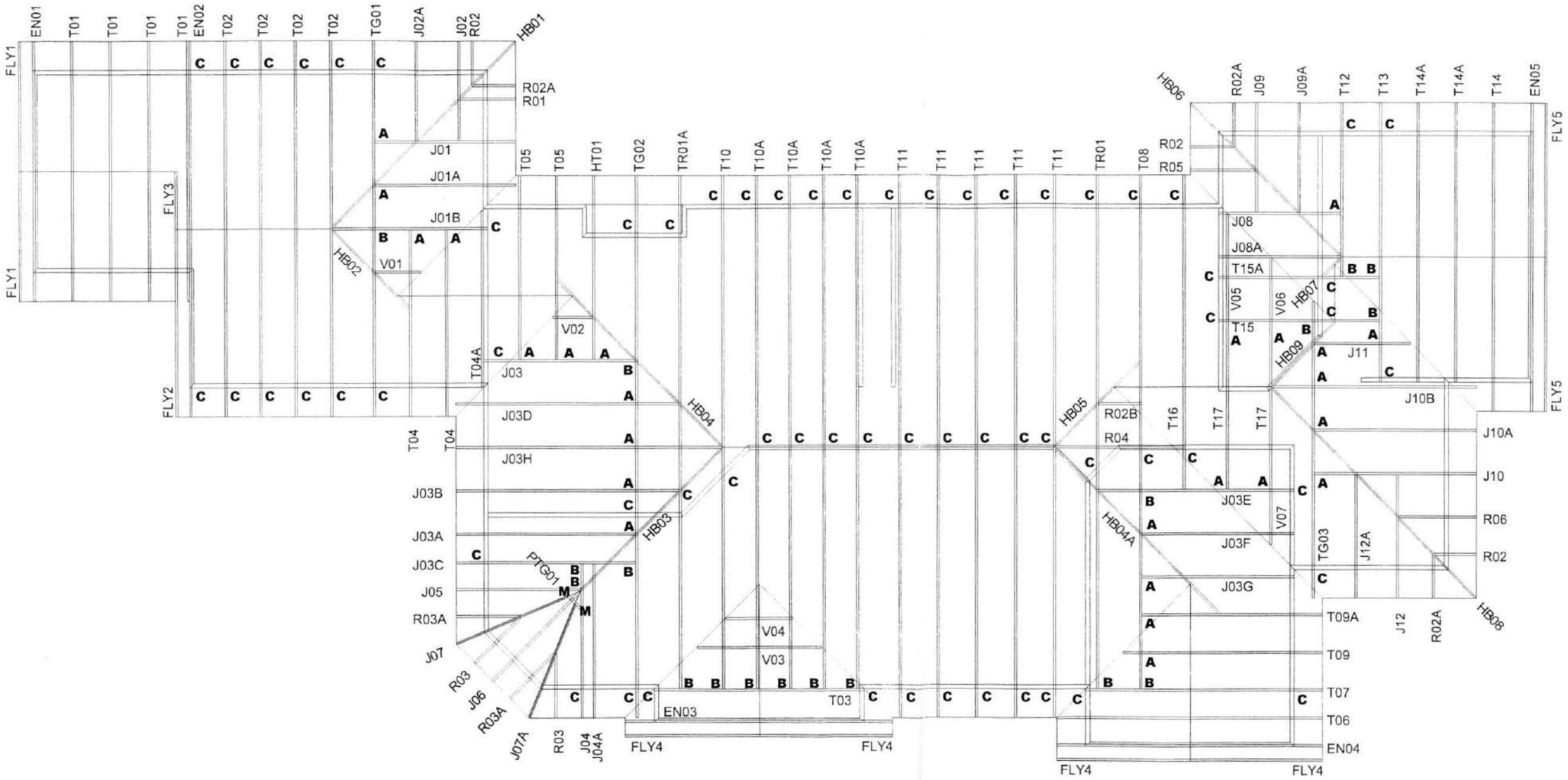
Unless otherwise stated all lintels are as per NZS3604 1999.

All walls shown on this layout are considered to be load bearing.

LINTEL	SIZE	LENGTH
A	FB25H Flitch Beam	4800mm
B	M400 Trifold	2200mm
C	L400 Trifold	1800mm
D	M400 Trifold	2200mm
E	L400 Trifold	2200mm
F	M400 Trifold	1700mm
G	150x100	870mm

QUALITY ASSURANCE FTMA NEW ZEALAND FRAME & TRUSS MANUFACTURERS ASSOCIATION (N.Z.) INC.

See Page 1 for Truss Layout and Fixings



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DATE 09/06/06 | PAGE 1 of 2

FIXINGS

A=47x90 JH
B=47x120 JH
D=47x190 JH
E=95x165 JH

Joist Hanger

CT 200

C=CT200
M=Multigrips
N=Nail On Plate
P=CPC 80

Multi Grips

Nail on plate

All other truss fixings must have two wire dogs Unless indicated as above

CPC

NOTE

Please contact your local CARTERS Manufacturing Branch for any queries regarding this layout or if any on site remedial work is required.

No modifications to Roof Trusses or Wall Frames are to be undertaken without first obtaining written authority from CARTERS Manufacturing.

QUALITY ASSURANCE FTMA NEW ZEALAND FRAME & TRUSS MANUFACTURERS ASSOCIATION

See Page 2 for Dimensions, Lintel Statement and Roof Truss Bracing

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

Manawatu
District Council

Kibblewhite Knight Trust

Dear Sir/Madam

The plans for this consent application are to remain confidential to safeguard copyright of the plans and specifications and the security of the Owner's property and can only be uplifted by Diamond Homes Ltd or the above mentioned Owner.

Yours faithfully

Monica Kells
Designer

ADDENDUM:

Important

Progress payments are to be made within 5 working days of the date of the relevant invoice as per clause 4(b) of the Building Agreement. Payment received after 5 days will attract an interest rate of 1½ times the average interest rate as per clause 7 of the Building Agreement. If post dated cheques fall outside the 5 day payment period the cheque will be treated in the same way as late or non payment. Handover or possession, will only take place once all monies owing under the Contract have been paid to the Registered Master Builder as per clause 36 of the Building Agreement and a Code of Compliance Certificate has been issued. If your final payment is made by way of an electronic transfer, then evidence that the transaction has been made must be given to the Contractor.

1. This Agreement is to be made unconditional within 2 weeks so as to confirm a fixed price.

2. The attached site plans will be used for a Building Consent Application only.
No allowance has been made for:
   a. Concrete to driveway
   b. Footpaths
   c. Fencing
   d. Letterbox/clothesline
   e. Retaining walls
   f. Excavation (except the building platform and the driveway)
   g. Removal from site of excavated materials from the house and driveway
   h. Seepage drains, field or boundary drains
   i. Storm water retention dams, tanks etc.

3. **Copyright**

Copyright of the attached drawings is owned by Diamond Homes. Any unauthorised copying or adaptation of the whole or a substantial part of these drawings is an infringement of copyright. If you, as our client, have brought to Diamond Homes a plan, which has its own copyright attached, and have presented it to Diamond Homes as an original idea and Diamond Homes have unknowingly re-drawn this plan as an original, and it is later discovered that the plan has been stolen, then you, as our client, will be liable for all costs involved in the litigation, and down time that this may cause.

4 No responsibility will be taken by the Contractor for any damage to existing concrete access way, footpaths, gardens, or existing services, being drainage, power and water.

5. Any special requirement called for by the Local Governing Body that is not specifically contained within the Contract. No allowance has been made for any engineer's report and/or fees relating to the building site. Should the building platform be unsuitable for a standard foundation and where the local authority requires detailed foundation plans prior to, or upon the issuing of a Building Consent - then the appointment by the above Contractor of a Registered Engineer to complete the above drawings and the additional cost involved in complying to the Engineer's requirements is at the Owner's expense. The additional cost could be - additional labour, concrete, steel and fill.

6. In the event that the Building Code or a building requirement is changed, or the Council will not issue a Building Consent or on completion issue a Code of Compliance for reasons beyond the control of the Contractor, the Contractor will have the right to issue a variation to the contract to reflect any additional costs, be paid in full for the work done to date and to seek compensation for loss of profit if delays occur, or the Owner defaults the Contract.

7. Under the new Building Act that came into force on the 1 April 2005, it is an offence to take possession or occupy your house until the Code of Compliance Certificate is issued. The local authority has up to 20 working days to issue this after the house is fully complete.

8. No allowance for the upgrading of existing services as required by the Council.

9. If title is not available to the building site at the time the Building Consent is approved, then the Contractor reserves the right to charge increase cost by reinstating Clause 24 of our Residential Building Agreement, if not having a title hinders progress in starting the building.

10. Where the Owner is building on a site which has the developer covenant/s, it is the responsibility of the Owner to have the plans and specifications approved before the building agreement is made unconditional and a consent uplifted. The Contractor will not be held liable for any breach of covenant, should the Owner not obtain approval of the plans and specifications.

11. Should the Owner decide to supply essential items to the Contractor for fitment in the house, then these are to be delivered to the site prior to the Contractor's fitment timing. Should the items not be available at the time required, then the Contractor will supply the same where possible and charge the client for the items, or for the time delay. It will be the Owner's responsibility to make sure that all Owner items are delivered in good condition.

12. Colour variance within the same colour, but mostly due to different brands being used (e.g. Almond Ivory bathroom fittings) are unavoidable. The Contractor will not accept responsibility for colour variance.

13. The Owner is responsible to remove any trees, shrubs, or fencing as instructed by the Contractor one week prior to construction starting.

14. The Owner is responsible to flag all boundary pegs. Should they not be available then it is the Owner's responsibility to have boundary pegs in place within 3 days of the date being required to do so by the builder. Should a surveyor be required to peg the site, this will be at the Owner's cost.

15. The Owner to supply power and pressured water to the building site prior to commencement. The Contractor will not be responsible for scratching to glass, if water is not available to wash down windows and doors during the course of construction.

16. No allowance for Telecom installation or materials. The cable installation will be charged to you, either by Diamond Homes or Telecom at the time of installation.

17. Any item that is supplied to the Contractor by the Owner for inclusion into the home, will not be covered by the Contractor's insurance. In simple terms - if the Contractor has not got an invoice for the items in his name, then the items are not covered by the Contractor's insurance.

18. Diamond Homes has your home insured under a construction insurance, during the course of construction. Security on rural sites can be a problem, so Diamond Homes requests you have on a rural site, a lockable entrance to the property. It is recommended that an alarm is installed in your home, and the best time to install this and have it operational is during construction. Operating this during the later stages of the construction period, could save you unnecessary delays in us completing your home due to a burglary.

19. All materials placed by the Contractor upon the land and not incorporated in the dwelling house, and all waste materials, shall be the property of the Contractor and shall be removed by him as soon as is reasonably possible after the completion of the dwelling-house.

20. Our guarantee will be null in void, should the home be used for rental purposes.

21. **Our sub-contractors will not accept cost responsibility for workmanship or product failure, in the instance that they are not contacted to rectify first.**

22. **The Contractor will not accept instructions by e-mail or text message.**

23. House cleaning - under the terms of this agreement we are required to remove all rubbish from the site. We also complete a first clean of the house. This is a pre-clean, as more dust and dirt is accumulated during the moving in process. **We do not give the house a 'Professional Clean'.**

24. **Special Note** - Once our Agreement is unconditional, please sign a new power supply connection form. This needs to be done so that we can connect your home to the power supply on completion. **Please advise Diamond Homes of your electrical supplier at the time of making the Agreement unconditional.**

25. Right of access - Occupation Health and Safety regulations require that the Owner must be accompanied by a representative of the Contractor or an agent for the Contractor. Owners organising their own work i.e. electrical, flooring or decorating, must sign the key register and undertake full responsibility for all building regulations, insurance requirements and OSH regulations

DIAMOND HOMES SPECIFICATIONS

CUSTOMER: KIBBLEWHITE WRIGHT TRUST
SITE: LOT 13 BRIARWOOD ESTATE (PROPOSED OF LOT 6 DP348056 & CT197391)

Foundation and Floor
The floor is placed at approximate heights to the plan. All heights are taken from the ground to the top of the floor. FFL maximum 1.7m. Height over 1.7m is charged as additional work.
Concrete foundations and floor - reinforced/un-plastered.
Block work unpainted.
Site scraped by the Contractor.
Note: No soil testing has taken place. A Penetrometer test is recommended prior to building taking place.

Roof Style and Roof Sheathing
Style - Gable/Hip.
Sheathing – Longrun Colorsteel – Met rib or corrugated – TBA – (30 degree pitch).
Colour - TBA.

Exterior Wall Cladding
Soffitt - Hardiflex.
Plaster – Type – Solid plaster over an approved cavity system. Style – Light pebbledash.
Note: Solid plaster does crack. The cracks become obvious soon after the plaster begins to dry, however, the painting system used, generally covers these.
The timing between the final plaster coat and being able to first coat the plaster with paint is 28 days, pending weather conditions. The plaster needs to cure.

Spouting and Down pipes
Longrun Colorsteel - external fitting on a Linea fascia with PVC down pipes.

Window Joinery and Exterior Doors
Aluminium Powder coated. Colour - TBA. Paint quality reveals/double catches to main windows/condensation rail.
Tinted windows to all doors and windows except service rooms, garage and workshop.
Front Door (in Aluminium frame) Fisher Aluminium.
Style - Duke.with a powder coated lever latch.
Note: If timber doors are selected, the Timbers are not "Hand Selected", therefore colours within the door will vary. The manufacture has a non return policy. Timber doors are not guaranteed by Diamond Homes. Doors are to be re-sealed every 12-18 months pending the degree of exposure.
French doors - tinted.
All obscure glass is Satinlite.
Deadlocks fitted to exterior doors.
Ribbed sectional colour coated garage doors with 2 remote openers in total.
Sectional doors/Colour - TBA .
No allowance has been made for an automatic opener to the workshop sectional door.

Note: If timber doors are selected, the Timbers are not "Hand Selected", therefore colours within the door will vary. The manufacture has a non return policy. Timber doors are not guaranteed by Diamond Homes.
The colours do blend over-time.

Interior Doors
Doors are PQ Manhattan (U groove) in slimline MDF jambs except to Bedroom 2, 3 &.4 WRs, office cupboard, garage workshop and laundry WC to be PQ smooth.
The double doors from the entry to the dining area are to be clear glazed open tops.
The door furniture is Sylvan brass or satin stainless. The options within the same price are - the Vita series knob set or the Seattle series lever sets - TBA.
Door pulls - Devon 160mm matt chrome or slimline bow 125mm brass.
Privacy locks are fitted to the bathroom/en-suite/WC and garage.
Peg style white door stops fitted.

Linings
Walls - Gib board vertically fixed – Garage and workshop walls –MDF - vertically fixed.
Ceilings - Gib Ultraline board. Garage and workshop – pinex sheet.
Gib cove to main ceiling areas 55mm. Customwood scotia fitted in the garage, workshop, linen cupboard & wardrobes except the WIR.

Insulation
Rockwool to the ceilings and external walls except garage external walls. Insulate the internal wall between the house and garage.

Finishing timbers
All finishing timbers are PQ/Skirting 85mm/12mm bevel or bull nose - TBA.

Kitchen
The kitchen is as per the separate kitchen plan as drawn by our kitchen designer - Isles of Roxburgh specification attached.
The kitchen manufacturer will supply and install a 2.3m long x 300 deep Jarrah breakfast bar to the exterior of the kitchen wall under the bi-folding windows.
The kitchen tap is a chrome single lever Methven Censink Centique.
Note: Should you decide to supply the kitchen yourselves, then your supplier is to allow to install the rangehood, splash back, if any, and cover the kitchen in total with a protective cover.

Bathroom and En-suite
Bath: white acrylic Kohler Studio 1675mm bath with a double row of 250 x 400mm white tiles around the bath splash area and to the front of the bath. Single row of 250 x 400 white tiles above the vanities.
Shower Unit: Wet floor tiled showers with an easi clean waste and walls tiled to 2.0m high and clear glazed side panels and doors.
Promix chrome single lever mixer with a variable pressure slide shower Aquatica QUVSHSSCP in chrome to the en-suite and bathroom.
Note: Should any other brand of shower be chosen, additional costs in installation will be charged. Installation warranty may also be invalid.

Vanities:	Sapphire Standard 900mm in white with chrome handles
Taps:	Bath - chrome Promix single lever mixer with a chrome CP388 bath spout, both mounted at the end of the bath.
Taps:	Vanity - chrome Promix single lever (additional cost for coloured).

Wastes: Chrome.
Tastic 3 in 1 extractors supplied and installed by the Contractor to the bathroom and en-suite.
Chrome heated towel rails supplied and installed by the Contractor to the bathroom and en-suite.

Toilet
Fowler Flinders china toilet suite in white (x3).
Duravit white hand basin 3161.50 with a Promix single lever mixer in chrome (x1).
Heirloom Accenti toilet roll holder in chrome (x3).

Laundry
Aquatica Laundry tub with overflow outlet for the washing machine and an Aquatica laundry tub in the garage with washing mashing outlets blanked off.

HW System
Rinnai Infinity 26 internal in the ceiling above Bedroom 2 WR with no controllers – manhole for access.

Exterior taps
3 brass taps, positioned close to internal cold water piping.

Electrical
All electrical to be single phase.
Meter box positioned on an exterior wall, at the closest direct point to the power source. The sub-board positioned in a convenient position in the home. The home is wired into 2 complete RCD systems.

Lights

Exterior (including bulk head fittings - wall mounted)	No 11
Censors	No 1
Interior	No 5
Mirror lights (PC sum of $160.00 for 2 x lights)	No 2
Recessed circular down lights	No 35
2 way light switching	No 5
3 way light switching	No 2

Note: Should square or rectangle recessed down lights be requested or provided, the Contractor will not guarantee the ceiling against cracking at these points.

Power Points

Single plug	No 8
Double plug	No 22
Bathroom/En-suite shaver/hair dryer points	No 2
Oven	No 1
Hobb	No 1
Dishwasher	No 1
Range Hood	No 1
Microwave	No 1
Door Bell (cordless, battery operated)	No 1
Ceiling Fan	No 1
Towel Rail	No 2
Garage Door opener	No 1
HWC	No 1
TV Connection	No 3

Water pump	No 1
Smoke alarms	No 1

Note: The Contractor will not be responsible for the non-function of the alarms, in event of a fire. Check the batteries annually.

Ceiling Fan
A standard white ceiling fan to be supplied and installed by the Contractor. A PC sum of $150.00 has been allowed for the fan only.

Telephone
1 Master and 2 slaves installed by the Contractor. The cost of the connection from the source to the house is the Owner's cost. The Contractor will arrange for the cable to be placed. The account for the cable and connection is debited direct to the Owner by either Telecom or Diamond Homes.

Kitchen Appliances
Classique Oven Model CL904SS and Classique Hobb Model K12SS - supplied and installed by the Contractor.
Classique Canopy F889SS vented to under the soffitt - supplied and installed by the Contractor.
Classique Dishwasher Model CLDSS supplied and installed by the Contractor.

Painting and Decorating
Exterior - by the Contractor.
Interior - by the Contractor.
Painted walls - by the Contractor.
(Walls stopped to a "paint finish" Level 4 and painted with 2 coats of acrylic paint - lining paper not included).
Frieze borders will be hung at an additional cost.
Three interior colours have been allowed for ex Dulux/British Paints charts. Extra colours will incur additional cost. Picking out of skirtings or scotia will incur additional cost.
Garage and workshop/unpainted.
(If the garage is lined with MDF board, this material should only be sealed with an oil based paint).
Concrete bases are unpainted

Shelving
Wardrobe - 1 shelf 600mm wide fixed 1.6m above the floor and with a Pryda aluminium hanger rail under.
Linen/HWC cupboards - 3 shelves in total evenly spaced - unpainted.
Store Cupboard - 1 shelf at 1.6m above the floor.

Decks/Porch (as per plan)
Deck pine griptread - timber unstained griptread laid grip to the top side.
Porch - grey concrete un-plastered 5m² total.
Note: Concrete drives, paths, patios and porches are placed without a finish guarantee. Cracking, surface indifferences, discolouration in coloured concrete are risks taken with using concrete. Exposed aggregate finishes are inconsistent in finish, size of stone, depth of exposure and often have lots of grit. We do not recommend using coloured or exposed aggregate concrete if you want a perfect finished surface.

Steps, Handrails and Baseboards
Standard pine handrail 150 x 50 with 50 x 50 H3.2 DRSD balustrades at a 100mm maximum spacing centre to centre. No allowance has been made for any steps or baseboards around the deck.

Floor Coverings
Carpet/Tiles by the Contractor.
Carpet as per Lew's Creative Flooring Ltd quote dated 10/01/06.
Tiles as per The Tile Centre quote dated 20/02/06.
Note: Diamond Homes do not pay for and hold tiles prior to our required tiling date. If tiles have been allowed for in your Builder's Agreement and you select tiles that are on special prior to our standard time of ordering and accept the quoted price, you will be required to pay the deposit to secure your choice and special price. Diamond Homes will credit you the sum paid from the tile allowance in your Builder's Agreement.

Timber Floors are not guaranteed by the Master Builders Guarantee.
Natural wood floors are subject to shrinkage and swell due to seasonal variations in the humidity level of the home. While boards may be installed tight together, gaps or separations may appear during heating seasons or periods of low humidity. Owners should be familiar with the recommended care and maintenance requirements of their wood floor. Repeated wetting and drying, or wet mopping may damage wood finishes. Moving furniture can cause dimples or scratches or dropping heavy objects, pets and high heels shoes may cause indentations.

Tiling
BRANZ recommends a minimum of 4 months under favourable conditions between pouring the concrete floor and tiling, to allow the concrete to dry and shrinkage to take place. Diamond Homes does not accept responsibility for cracking of tiles under the guarantee.

Heating
Solid fuel fire position is noted on the plan for purpose of obtaining a consent to install the fire. The exact position of the fire may differ from the plans, due to the truss layout in the roof area.
Gas heating as per Heatrite quote dated 15/02/06.
Note: Due to the new emission levels set by the Government which comes into place on 1 September 2005 we cannot guarantee that a wet back will comply at that date as the local council has not put anything in writing at this stage.
Note: By the Contractor supplying a Solid Fuel Burner or any other heater of the Owner's choice on behalf of the Owner, the Contractor will not assume responsibility to its use or function assuming that the fire has been correctly installed. The Contractor will not accept responsibility for damage caused either internally or externally, by the incorrect sizing or use of a Solid Fuel Burner or any other heater.

Storm water and Down pipes
From the down pipes to a water tank as per plan.
Maximum length 93m installed by the Contractor.

Water Supply
Water source - tank.
Tank type - concrete - by the Contractor.
Size 2 x 22,500 litre sitting on a level surface pad (maximum 500mm deep).
Spouting to tank connection - underground.
Pressure pump Maxi 5000 - supplied and installed by the Contractor.

Sanitary Sewer
Septic tank and effluent system to meet local body requirement and standards/quote attached - supplied and installed by the Contractor.

Gas
Gas LPG bottles – rental bottles supplied by the Owner.

Site Electrical
From the local power authorities power pod to the meter box, by the shortest route. Power cable laid underground. Power single phase.
Power connection by the Contractor.

2 YEARS BUILDER'S COVER AND 5 ADDITIONAL YEARS STRUCTUAL COVER MASTER BUILD GUARANTEE will be applied for by the Contractor once the Agreement is unconditional and a building consent is approved.

ELECTRICAL APPLIANCES/TAPWARE/WATER PUMPS have a 12 month warranty only.

BUILDING CONSENT - Included within this Agreement. Resource consents, if required, are not included.

VEHICLE CROSSING - By the Owner.
Note: this may need to be completed to the Palmerston North City Council requirement by the Owner, prior to the Palmerston North City Council issuing a Code of Compliances.

PRELIMINARY & GENERAL SPECIFICATIONS TO ALL TRADES

1. **CONSENTS:**
The Contractor shall arrange to obtain all consents to build etc. and arrange all inspections

2. **PROTECTION OF WORK**:
All parts of the work liable to injury and all adjoining property existing work, footways, trees etc. are to be protected to the best of the Contractor's ability, until completion of the Contract. Due to Health and Safety regulations implied on Contractors by OSH, clients must be accompanied on site at all times by the Contractor during construction.

3. **PC SUMS (NETT SUMS)**:
The PC sums quoted in this Specification are nett and the Contractor or Subcontractor concerned must add any fixing charges and profit he requires to all such items. The builders margin on prime cost variations is 10% exclusive of GST.

4. **BY-LAWS**:
The whole of the work in this Contract is to be carried out in strict accordance with the local Territorial Authorities regulations.

5. **INSURANCE**:
The Contractor shall at all times, keep the whole of the works fully covered by insurance, both Fire and Public Liability.

6. **TEMPORARY SERVICES**:
The Contractor shall arrange for temporary power and water the cost of which will be of the Owner's care. If temporary power and water is not practical or available to connect to, and permanent connections have to be made, then this connection fee is at the Owner's expense if not covered in the Contract.

7. **MAINTENANCE**:
The Contractor shall maintain the property for a period of 31 days after completion and any damage done, arising during that time through faulty workmanship shall be made good at the Contractor's expense.

8. **COMPLETION**:
On completion all trade debris is to be removed from the site except the 'You finish', and the building left ready for occupancy with all services and mechanical parts in good order.

1. CARPENTER:

Materials schedule or to By-Law 3604 or as shown on accompanying drawing.

MATERIAL	SIZE	GRADE	
Top and Bottom Plates	90x45mm	Rad P BT.	H3.1 internal & external
Studs	90x45mm	Rad P BT.	" "
Trimmer Studs		Rad P BT.	" "
Lintels	Trifolds	Rad P BT.	" "
Nogging (Dwangs)	90x45mm	Rad P BT.	" "
Bracing	Prud		" "
	100x25mm	Rad P BT.	
Ceiling Joist	100x50mm	Rad P BT.	
Ceiling Nogging	75x50mm	Rad P BT.	
Rafters	As per table 10.2m	Rad P BT.	
Ridges and Hip Rafters	200x25mm	Rad P BT.	
Valley Rafters	150x40mm	Rad P BT.	
Valley Boards	150x25mm	Rad P BT.	
Under Purlins	100x75mm	Rad P BT.	
Roof Struts	100x50mm	Rad P BT.	
Collar Ties	150x25mm	Rad P BT.	
Roof Trusses	Gang-nail or similar		
Purlins (Iron roof)	75x50mm	Rad P BT.	
Eaves Framing	75x40mm	Rad P BT.	
Fascia Boards	Linea weatherboard		
Barge Boards	As per drawings		
Weather Boards	"		
Vertical Boards	"		
Exterior Facings	"		
Floor	20.0mpa	Concrete	
Interior Door Jambs	25mm	Customwood	
Skirtings	No 20	Customwood/Pine	
Shelving	18mm	Customwood	
Exterior Trim	Mouldings as required		
Interior Trim	Mouldings as required	Rad P UT.	
Lintels:	Trifolds		

2. CONSTRUCTION:

All materials are to be the best of their respective kinds due to grades, laid true to their various lines and levels and constructed in a proper tradesman-like manner, to make the whole of the works a sound construction in accordance with the local by-laws.

All timber work abutting or resting on masonry units, concrete or brickwork is to be protected with a bitumen-fabric damp proof course.

Where detailed, the roof framing is to be constructed with Engineer designed 'Gang-nail' roof trusses fixed plumb, fastened to the plates with two 100mm nails and braced at each end the building.

Purlins (Iron roof): to be spaced to accommodate the roof covering and ridging and fastened to the rafters with two 100mm nail and one 100mm screw at every crossing. Eaves runner to be nailed to the outside of the wall frames. Eaves bearers to be nailed securely to each rafter overhang.

3. **EXTERIOR FINISH**:
Behind all exterior wall linings and as detailed on the drawings except if fitted onto tanalised timber, fit Tyvek building paper lapped 150mm minimum over framing.
Wall areas are to be covered with exterior lining as shown on the drawings. Vertical boards are to be fixed over Tyvek building paper, plumb and in single lengths where possible and fixed with 60mm galvanised nails. Soffitts and porch ceilings to be lined with flat Hardiflex.
Build in the various exterior joinery frames. Fit head capping and flashing.
Solid Plastering - where indicated on the drawings, the plasterer is to apply a Solid Plaster System to the exterior wall over a rigid backing material - Hardi-backer. The plasterer to apply/fix one layer of flame retardant breather type building paper, run horizontally and lapped a minimum of 75mm at joints. Reinforcement is by way of suitable galvanised wire netting mesh/crimped, side lapped/end lapped and allowing additional mesh at the corners and openings. The plaster is applied in a 2 coat system with the first coat being a scratch coat, adequately covering the reinforcement and still leaving enough plaster to permit a deep scratching as a key for the next coat. Control joints are to be scratched in, and provided vertically at 4.0Lm maximum centres (located at the sides of openings). The plaster is to be wet cured by a mist spray.

4. **INTERIOR FINISH**:
Interior wall linings generally to be 10mm sheets fixed with vertical joints and nailed or screwed with flat headed galvanised clouts or gib-screws.
Plates: to be in long straight lengths. Bottom plates and wall plates to be butt jointed over continuous support, top plates to be butt jointed and fastened with 4 NH nail plates.
Studs: are to be set out to accommodate 2.4m high wall lining sheets and are to be held to the plates with two 100mm nails at each end, bowed studs are to be straightened with saw cuts, wedges and 100x25mm or 75x25mm strapping.
Lintels: where built up trimmer studs are used. One 90x45mm stud is to be run up past the trimmer to the top plate and the 100x25mm or 90x45mm remaining is to run up to the underside of the lintel.
Nogging: (Dwangs) to be set out to accommodate the ceiling lining sheets and cornices around the perimeter of each room.
Bracing: to be let in flush with the face of the wall frames and raked as nearly as practicable to 45 degrees and dog-legged as required. Alternatively, the Contractor may elect to use sheet bracing fixed to the inside walls (generally braceline).
The Wall Frames: are to be assembled, squared, braced and erected. The bottom plates are to be straightened and fastened down, the corners are to be plumbed both ways using a plumb bob and line and the top plates are to be held straight with temporary bracing until the ceiling and roof framing and bracing has been completed.
Trusses: to be plumb cut to the ridges and hip bottom cord are to be birdsmouthed to plates and fastened with two 100mm nails to the plates. Supply and fix the necessary ridgebearers, hiprafters, valley boards, underpurlins and roof struts and collar ties as required to complete the roof framing and as detailed on the drawings.
All Joints: nail holes and other imperfections are to be stopped flush and left ready for the paperhanger.
Shower Linings: wet floor tiled shower floor and walls.
Ceiling Linings: (see drawing) Nog for and build in various joinery fitments as supplied under "Joiner" and trim to walls.
Interior Doors: are to be fitted with 1.5 pairs of loose pin butts and are of paint quality unless otherwise specified.
Skirting: to be fitted to the floor and internal corners and mitred at external angles.
Coat cupboard and Wardrobes: to be fitted with one shelf 600mm wide fixed 1.6m above the floor and with a Pryda aluminium rail.

Linen, Hot water cupboards: to be shelved. Three shelves in total.
Form a ceiling access door in a convenient and inconspicuous place.
Cooperate with the electrician in the building of a meter box and the building of a switchboard recess and trimmed around as required.
Supply and fix the sundry internal mouldings and trim as required.
All internal finishing timbers shall be free from all hammer marks, splits, etc.
All nails in exposed work (interior and exterior) are to be punched.

PLUMBER AND DRAINLAYER

1. Generally:
The whole of the plumbing and drain laying shall be done in strict accordance with Drainage and Plumbing Regulations and drains shall be laid by registered workman only. The plumbing contractor shall obtain all necessary consents for the work.
Size of waste discharge pipes:
Min 40mm dia and at a gradient of 1:40 laundry, vanity, bath and shower.
Kitchen pipe to be a min 65mm dia and a gradient of 1:60.
Sanitary sewer drain shall be 110 uPVC laid to a gradient of 1:60.
Laid on a bed of clean granular fill (pea metal) and back filled to min of 100mm above the top of the pipe with pea metal.
Fusiotherm pipes used to supply hot and cold water.
Fusiotherm pipes supported at 600mm ctrs horizontally and at 800mm ctrs vertically (according to dwang spacing).
Holes in dwangs to be sealed with Silicon.
Hot water to be supplied at a safe water temperature of 55 deg C max.
Stormwater drain shall be a min 90mm dia uPVC pipe.
Rinnai Infinity 26 NC HW system.

2. Exterior Work:
Supply and fix all necessary flashings and caps, in conjunction with the builder to make a thoroughly watertight job. Supply and fix spouting to all eaves, laid with even falls to down pipes. Down pipes to run into storm water drains (or soak pits if specified) at foot. Valleys to be standard Colorsteel, laid over self supporting building paper.

3. Water Services:
Lay on cold water from the main to a hot water cylinder, set up as shown on the drawings. Provide and set up the cylinder, complete with thermostatically controlled electric element (unless gas specified). Lay on hot and cold water services to the various fittings as shown on the drawings and to one hose tap positioned as on accompanying drawing. Hot and cold water to run in Fusiotherm pipe system.

4. Fittings:
Provide and set up the fittings as shown on the drawings and provide traps and waste to same:

Bath - PVC first quality.
Vanity unit - size as per services plan, colour white unless specified otherwise.
Sink top - from Contractor's range.
Shower tray – wet floor tiled.
WC - porcelain wash-down pedestal with plastic double-flap seat.
Plastic flushing cistern.
Tub - Aquatica.
Taps interior - Methven or similar.
Exterior hose taps - brass.
Hot water – Infinity 26NC.

5. Drains:
Storm water to be taken in PVC pipes to storm water main connection or standard soak holes. Sewer drains to be first quality pipes, 100mm laid with even falls and easy bends to a main connection as directed. If not on sewer provide one septic tank, as specified in contract. Provide and fix all necessary gulley traps, terminal and back vents, cleaning eyes, inspection junctions and bends etc., as may be necessary to comply with the local authorities' regulations. Where a local authority requires detailed Drainage plans prior to the issuing of a Building Consent then the appointment by the Contractor of a registered Engineer/Surveyor to complete the above plans to the satisfaction of the local authority is at the employer's expense.
Note: All underground pipes and gulleys will be located in relation to the natural ground level and no responsibility will be taken by the Contractor for subsequent ground work, which alters that level.
6. Gas Fitting:
All pipe work shall be either copper or polyethylene, sized to suit the maximum possible loading, concealed within and securely fixed to the building structure. Where required, flues should be run in the shortest possible route rising progressively towards its termination point, terminating with minimum clearances from the building so that combustion products cannot re-enter the building. Ensure adequate ventilation to all appliances. Arrange with the Local Authority for the connection of the mains pipe, meter and isolation valve to the building at the closest point to the source. At completion, all work is to be thoroughly tested and certified by a registered person.

JOINERY

Selected window and door joinery to comply with NZS 4223, Part 3 -1999
1. Windows: (to be aluminium unless detailed as Timber).
Aluminium windows shall be delivered to the site, stored on edge and protected from breakages and damage prior to installation. The windows are to be glazed with standard quality glass, with obscure glass to bathroom and WC windows. (Generally Satinlite).
Safety glass where specified.
2. Doors:
Exterior door frames and doors are to be of standard sizes, aluminium (unless otherwise specified) and of the types as shown on the drawings. (Interior doors are to be flush type).
3. Fittings:
Construct the various fittings as shown on the drawings. Cupboards are to be of standard construction and divided into door and drawer units.
Sink tops as specified under "Plumber". Other bench to be of selected 'Formica'.
Cupboard doors and cabinets including vanity(ies) to be Melteca.
Drawers to have sides joined to fronts and Melteca bottom.
Customwood is used if specified.
Toe space to be unpainted customwood, to match kitchen cupboards.

ROOFER

1. Generally:
Refer to the drawings for the type of roofing to be used.
2. Colorsteel Iron:
The roof area is overlayed with breather type self supporting building paper. Roofing to be 40 gauge Colorsteel sheeting, in single lengths and nailed in accordance with standard practice. Ridges to be covered long lengths with the edge dressed down into the corrugations of the iron. Supply and fix all flashings, caps, etc. to make the roof thoroughly watertight.

EXCAVATOR

1. Generally:

The Contractor shall, of which the cost is of the employer's care, remove or cover over vegetation, including trees, from the area to be built on. Bulldoze the site to the level shown on the drawing.

2. Excavate:

As required for all wall footings, pile footings, steps etc. as shown on the drawings.
Footings excavations are to be not less than 300mm deep or as shown on the accompanying drawing.
Where the local authority requires detailed foundation plans prior to, or upon the issuing of a Building Consent, then the appointment by the above Contractor of a Registered Engineer to complete the above drawings and the additional costs involved in complying to the Engineer's requirements is at the Owner's expense. Excavations are to be stepped to suit the slope of the ground and kept level at the bottom, maintained free from fallen material before placing reinforcing or concrete.
Deposit the surplus soil on the site, practical to the Contractor, or as directed by the Owner. Any excavations for power or water sources or sewage and drainage to be refilled but not reinstated to its original condition. Replanting or resealing is the Owner's care.

CONCRETOR

1. Materials:

Concrete to be mixed with a text of 20.0MPA after 28 days.
Reinforcement to be round mild steel rods or reinforcing mesh (147 XP), as detailed, free from scale, paint, grease etc.
Formwork shall be erected and braced in such a manner that the concrete shall finish to the dimensions shown or specified. The formwork is to be hosed out and kept wet before and while the concrete is being placed.

2. Concrete Work:

Construct the various footings as detailed on the drawings and reinforced as shown.
Steps to have 150mm risers and 300mm treads or similar.
Hard filling to be 75mm sand or 'run of the pit' metal compacted in layers of 150mm depth maximum. Blind with 25mm of sand or use on-site soil for all hard filling.
All floor slabs to be laid to true and straight surfaced with a screed finish.
Thickness and reinforcing as detailed on the drawings.
Allow to build in all holding down bolts, pipes, wires, etc. as required prior to the pouring of the concrete.
Holding down bolts to be 375mm maximum from corners and at 900mm centres maximum, ramset down plates to floor at same spacing.

INSULATION

Where applicable the building shall be insulated in accordance with Council requirements.
Walls and ceilings are insulated with Rockwool.
Raked ceilings or areas inaccessible to Rockwool shall be insulated with Bradford Gold.

ELECTRICITY

1. Generally:

This Contract includes the supply and installation of the electric wiring system complete. The whole of the work shall be carried out strictly in accordance with the local authorities by-laws and the electrical Contractor is to obtain all consent from the supply authority and arrange for all inspections required.

2. Supply:
Arrange for a mains supply to the building.
3. Boards:
Provide and set up as required, one meter board and case with all necessary equipment there on, neatly labelled. Provide and set up where directed by the builder, a switchboard panel with all necessary fuses, switches and main switches properly mounted and labelled and hinged on one side. This panel can be combined with the meter board if convenient.
4. Lights:
Provide and fix the lights, switches and power outlets as listed on the electrical plan. Light switches and power points positioned at standard height unless requested.
5. Fittings:
The electrician is to install the electric oven and hobbs.
Earth all metal waste pipes and metal fittings as required by the regulations.
6. Completion:
On completion of all work, to fill out and present the appropriate certificate to the principal contractor, who will only authorise the connection of power once all payments pursuant to the contract documents are paid to their office.

GIB STOPPING/PAINTING/PAPERHANGING

1. Generally:
Decorating is of the Contractor's responsibility unless it has been excluded in the Specification Addendum appended to the Building Contract - therefore employee decorating.
All paint and paper is to be delivered to the job, exactly to the manufacturer's direction and availability.
2. Gib-stopping:
Walls are stopped to a wallpaper finish (Level 3) unless specified, whilst the ceilings are stopped to a paint quality finish (Level 4) which includes sanding by the Contractor (paint quality finish is where all joints are taped and three coats of bedding compound is applied). This level of finish can give shadowing in severe lighting areas, or areas abutting windows or large surface areas flooded with artificial or natural light.
3. Employer Decorating:
All substance should be inspected by the employer prior to applying any finishing. Defects shall be made known to the Contractor in writing and remedied before the continuation of any finishing system. It is the responsibility of the employer to provide all materials and labour to decorate the house both interior and exterior. Before commencing the work, the Owner must take out their own house insurance cover.
4. Exterior:
Woodwork - prime, stop and paint in one undercoat and one finish coat with a good finish.
Stained work - one coat of satin, the nail holes etc. are to be stopped.
Metal work including wrought iron etc - approved primer for galvanised iron, one undercoat and one finish coat.
PVC down pipes are painted, unless otherwise specified.
Hardie's sheets - two coats. Solid plaster and concrete block work to be left unpainted.
Roof is Colorsteel.
Bases are unpainted.

5. Interior:
All ceilings are to be sealed then two coats of flat ceiling paint applied, (textured if specified). All wall areas to be lined with wallpaper, hung in single lengths, plumb with butt joints unless otherwise stated.
Where the employers have chosen a gib-board ceiling, painting of this will be completed by our tradesmen to the best of their ability. Shadowing can often occur on large ceiling areas.
The quality control of the wallpaper is not of the Contractor's care. Any defects which become pronounced due to the nature of the wallpaper will not be rectified at the Contractor's expense. PC value as per quote addendum for wallpaper per roll. When walls are sprayed workmanship is to be of the highest trade practice. Flush doors, if stained, to be sealed and give one coat of satin finish polyurethane. To be rubbed down between coats. All interior finishing woodwork to be primed, stopped, undercoated and finished.

6. Completion:
On completion the residence is to be left clean and tidy. All trade debris is to be removed from the site and the building left clean and ready for occupancy.

VENTILATION SCHEDULE
Kibblewhite Residence

ROOM	ROOM AREA	VENTILATION AREA	VENTILATION REQUIRED
Bedroom 1	22.00m2	2.52%	1.10%
Bedroom 2	9.92m2	1.80%	0.50%
Bedroom 3	13.32m2	1.44%	0.66%
Bedroom 4	13.32m	1.44%	0.66%
Lounge	22.68m2	3.24%	1.13%
Kitchen/Dining/Family	60.90m2	4.68%	3.04%
Office	8.32m2	0.96%	0.42%

DIAMOND HOMES®

BUILIDNG ENVELOPE RISK MATRIX

Kibblewhite – Wall A

RISK FACTOR	LOW		MEDIUM		HIGH		VERY HIGH		SUBTOTAL OF EACH RISK FACTOR
WIND ZONE	0		0		1	1	2		1
NUMBER OF STOREYS	0	0	1		2		4		0
ROOF WALL / INTERSECTION DESIGN	0	0	1		3		5		0
EAVES WIDTH	0		1		2	2	5		2
ENVELOPE COMPLEXITY	0		1	1	3		6		1
DECK DESIGN	0		2	2	4		6		2
							TOTAL		6

DIAMOND HOMES®

BUILIDNG ENVELOPE RISK MATRIX

Kibblewhite – Wall B

RISK FACTOR	LOW		MEDIUM		HIGH		VERY HIGH		SUBTOTAL OF EACH RISK FACTOR
WIND ZONE	0		0		1	1	2		1
NUMBER OF STOREYS	0	0	1		2		4		0
ROOF WALL / INTERSECTION DESIGN	0	0	1		3		5		0
EAVES WIDTH	0		1		2	2	5		2
ENVELOPE COMPLEXITY	0		1	1	3		6		1
DECK DESIGN	0		2	2	4		6		2
							TOTAL		6

DIAMOND HOMES®

BUILIDNG ENVELOPE RISK MATRIX

Kibblewhite – Wall C

RISK FACTOR	LOW		MEDIUM		HIGH		VERY HIGH		SUBTOTAL OF EACH RISK FACTOR
WIND ZONE	0		0		1	1	2		1
NUMBER OF STOREYS	0	0	1		2		4		0
ROOF WALL / INTERSECTION DESIGN	0	0	1		3		5		0
EAVES WIDTH	0		1		2	2	5		2
ENVELOPE COMPLEXITY	0		1	1	3		6		1
DECK DESIGN	0		2	2	4		6		2
							TOTAL		6

DIAMOND HOMES®

BUILIDNG ENVELOPE RISK MATRIX

Kibblewhite – Wall D

RISK FACTOR	LOW		MEDIUM		HIGH		VERY HIGH		SUBTOTAL OF EACH RISK FACTOR
WIND ZONE	0		0		1	1	2		1
NUMBER OF STOREYS	0	0	1		2		4		0
ROOF WALL / INTERSECTION DESIGN	0	0	1		3		5		0
EAVES WIDTH	0		1		2	2	5		2
ENVELOPE COMPLEXITY	0		1	1	3		6		1
DECK DESIGN	0		2	2	4		6		2
							TOTAL		6

KEVIN O'CONNOR & ASSOCIATES LTD

FACSIMILE COVER SHEET

DATE: 11 May 2006

TO: Diamond Homes

ATTENTION: Monica Kells

FROM: Regina

FAX NO: 355 4449

OUR REF: 106009 – FX01

TIME:

NO OF PAGES: 8
(including cover sheet)

SUBJECT: Kibblewhite Residence

Hi Monica

As per our telephone conversation today, please find attached revised preliminary details and calculations for 150 *In Situ* wall foundations of the above job

Should you have further queries please contact us

Regards,

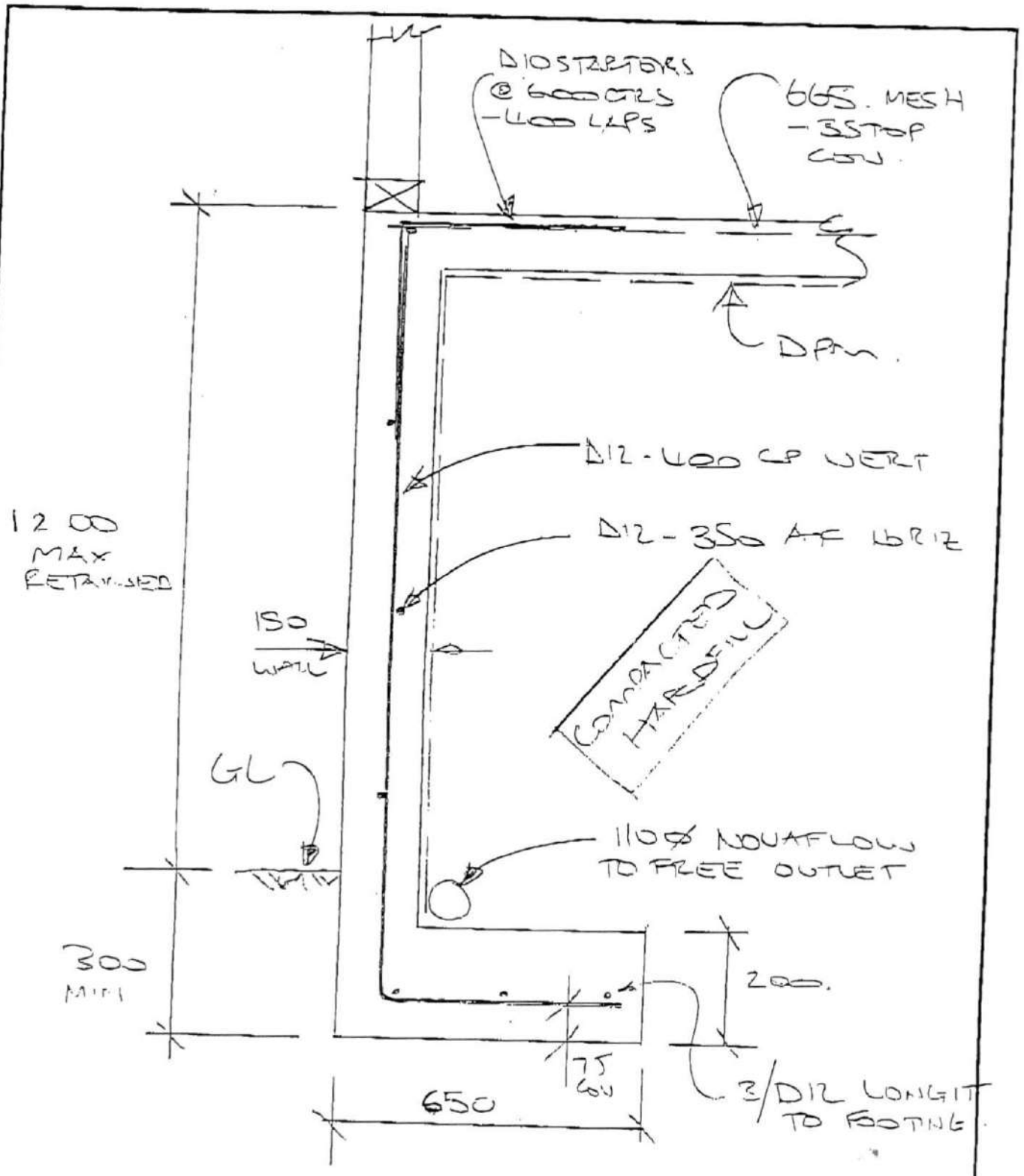
Regina

Latest info

CONSULTING ENGINEERS, SURVEYORS & PLANNERS
7 Pitt Street, P O Box 600, Palmerston North Ph 06 356 7000 Fax 06 356 7007 Email reception@koa.co.nz
Directors: Kevin O'Connor 021 466 241, Scott Blain 021 2706 004, Kevin Judd 0274 912 829, Stephen Pinkney 027 257 6377

CLIENT					
DIAMOND HOMES					
SUBJECT	KIBBLEWHITE RESIDENCE				
FILE No. 106009	DATE 11/5/06	PAGE SK 101	OF	BY	CKD

KEVIN O'CONNOR & ASSOCIATES LTD



1200 MAX RETAINING WALL

NOTE - DESIGN BASED ON SAFE SOIL BEARING CAPACITY OF 100KPa. REMOVE ALL SOFT MATERIAL FROM UNDER FOUNDATION

CLIENT	DIAMOND HOMES				
SUBJECT	KIBBLEWHITE RESIDENCE				
FILE No. 106009	DATE 11/5/06	PAGE OF SK/02	BY	CKD	

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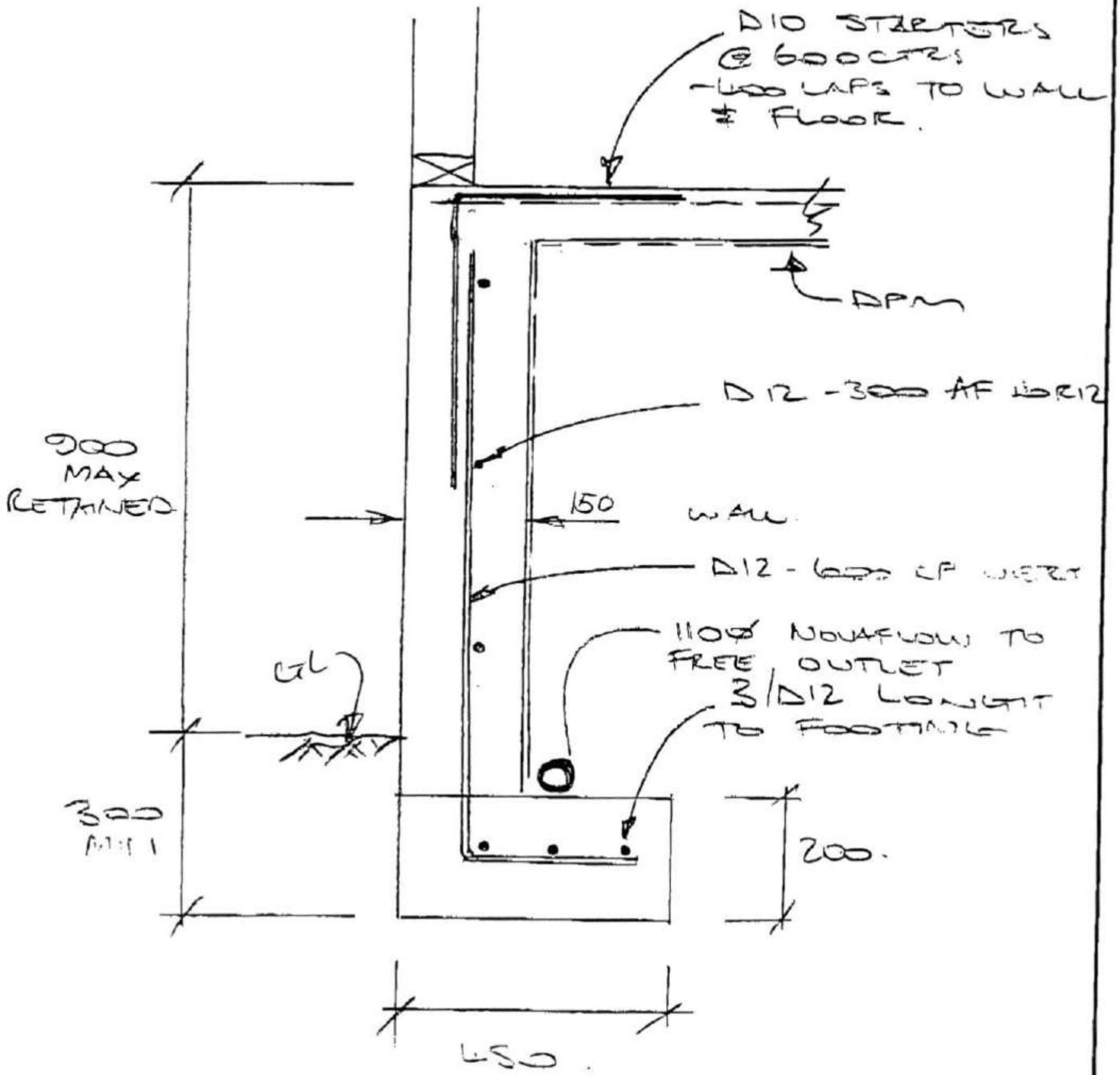
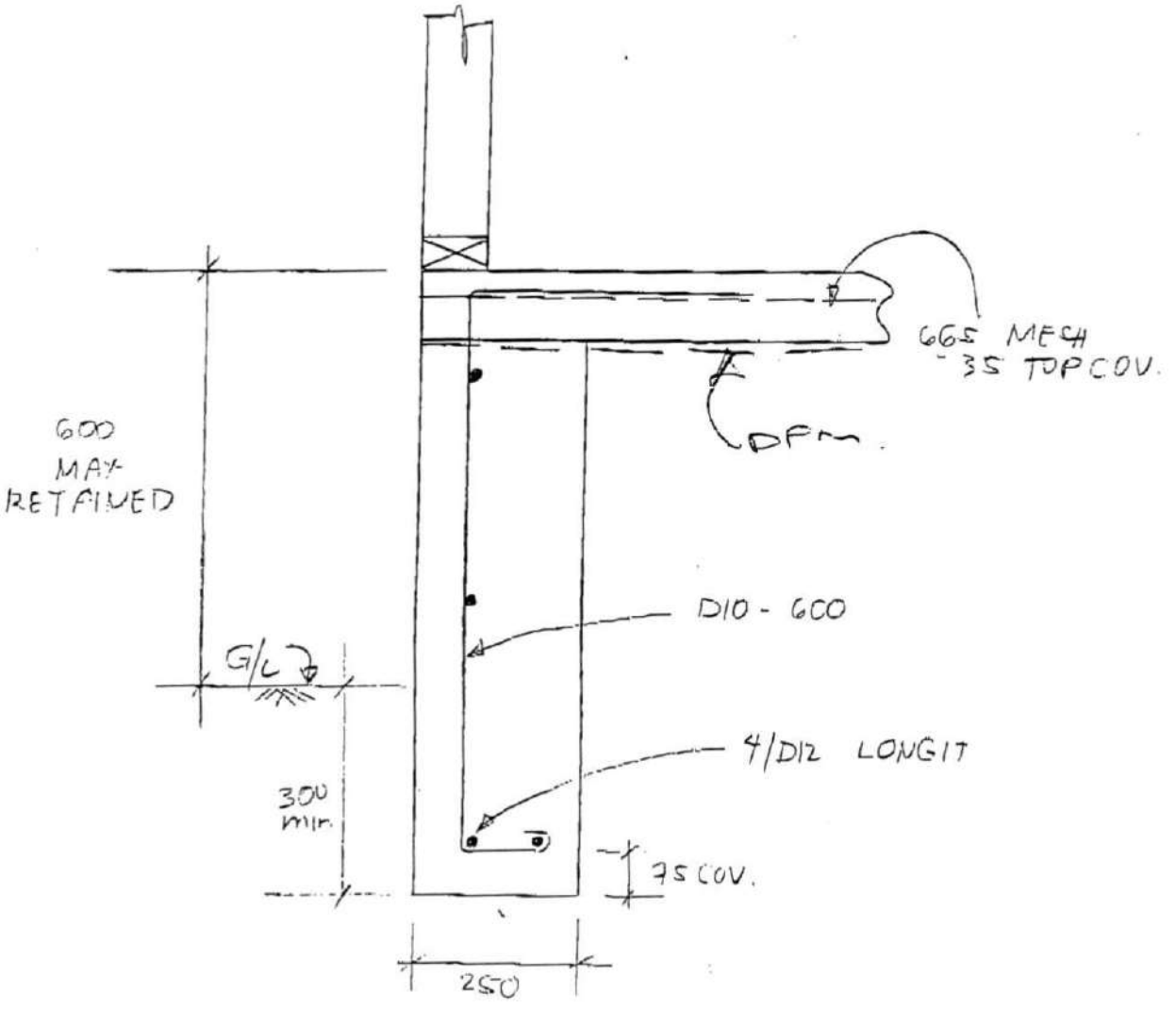


900MM MAX RETAINING WALL.

- NOTE - DESIGN BASED ON SITE SOIL BEARING CAPACITY OF 100kPa.
ALL SOFT MATERIAL TO BE EXCAVATED FROM UNDER FOOTING.

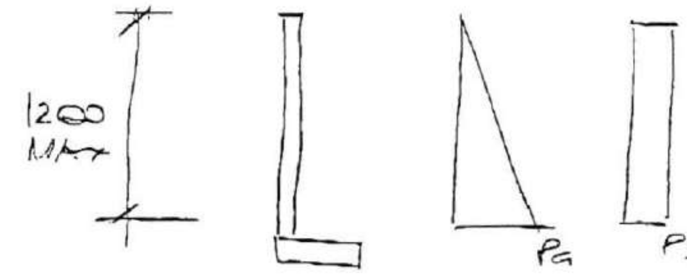
CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLEWHITE RESIDENCE					
FILE No.	DATE	PAGE	OF	BY	CKD
106009	11/5/06	SK103			

KEVIN O'CONNOR



600 MAX RETAINING WALL

1200 MAX RETAINING WALL - INSITU CONC



SOIL $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18 kN/m^3 \times 1.2m$

$= 7.1 kPa$

$P_s = 0.33 \times 2 kPa$

$= 0.66 kPa$

$M^* = 1.6\left(7.1 \times \frac{1.2^2}{2 \times 3} + 0.66 \times \frac{1.2^2}{2}\right)$

$= 3.5 kNm$

D12 - 400 CP VERT

$a = \frac{283 \times 300}{0.85 \times 17.5 \times 1000}$

$= 5.7 mm$

$d = \frac{150}{2}$

$= 75 mm$

$\phi M = 0.85 \times 283 \times 300 \times \left(75 - \frac{5.7}{2}\right)$

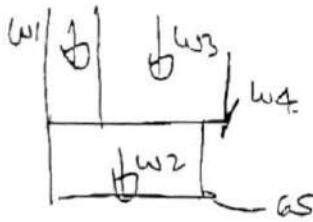
$= 5.2 kNm/m$ > OK

- USE D12 - 400 CP VERT
D12 - 350 AF HORIZ

CLIENT DIAMOND HOMES
SUBJECT KIRKLEWHITE RESIDENCE
FILE No. 106009 | DATE 11/5/06 | PAGE 102 OF | BY | CKD

KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1 WALL SW G = 0.15m × 24 × 1.2m = 4.3 kN/m

W2 650 × 200 FOOTING G = 0.65m × 0.2m × 24 = 3.1 kN/m

W3. FILL WT G = 15 kN/m³ × 1.2m × 0.5m = 10.8

W4. FILL FRICTION G = 0.577 × 7.7 kN/m × 1.2m / 2 = 2.7 kN

20.9 kN

ODL = 0.9 (20.9)

= 18.8 kN/m

ODEN = 0.9 (4.3 × 0.15m
+ 3.1 × 0.325m
+ 10.8 × 0.4m
+ 2.7 × 0.65m)

= 7.0 kN/m

e = (7.0 − 3.5) / 18.8

= 0.19m

Pa = 18.8 / (2 × 0.19m)

= 50 kPa ⇒ OK

USE 650 × 200 FOOTING

CLIENT

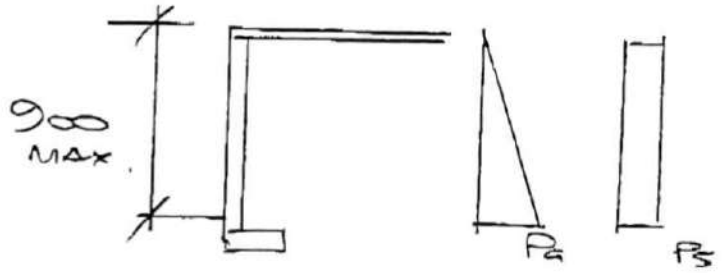
SUBJECT DIAMOND HOMES

SUBJECT KIBBLEWITE RESIDENCE

FILE No.	DATE	PAGE	OF	BY	CKD
106009	11/5/06	103			

KEVIN O'CONNOR & ASSOCIATES LTD

900 MAX RETAINING - IN SITU CONC.



LOADS

Fill $\gamma = 18 kN/m^3$

$\phi = 30°$

$K_a = \frac{1 - \sin 30°}{1 + \sin 30°}$

$= 0.33$

$P_a = 0.33 \times 18 \times 0.9 m$

$\approx 5.3 kPa$

$P_s = 0.33 \times (2.4 + 1.5)$

$= 1.3 kPa$

$M^* = 1.6 \left(5.3 \times \frac{0.9^2}{2 \times 3} + 1.3 \times \frac{0.9^2}{2 \times 3} \right)$

$= 1.4 kNm/m$

200 THICK WALL.
- D12 - 600.

$a = \frac{188 \times 300}{0.85 \times 17.5 \times 1000}$

$= 3.8 mm.$

$d = 100 mm$

$\phi M = 0.85 \times 188 \times 300 \times \left(100 - \frac{3.8}{2}\right)$

$= 4.7 kNm/m$ for 200 wall

USE D12-600

CLIENT DIAMOND HOMES

SUBJECT CIBBLEWHITE RESIDENCE

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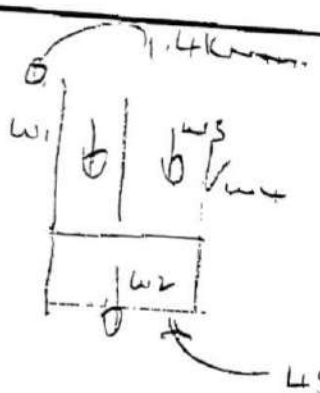
KEVIN O'CONNOR & ASSOCIATES LTD

FOOTING



W1 200 WALL G = 0.15 × 0.9m × 24 = 3.24 kN/m

W2 450 × 200 FOOTING G = 0.45 × 0.2 × 24 = 2.2 kN/m

W3 FILL G = 0.25m × 0.9m × 18 kN/m³ = 4.05 kN/m

LIVE FILL FRICTION G = 0.577 × 5 kPa × 0.9m/2 = 1.4 kN/m

10.89 kN/m

ODG = 0.9 (10.89)

= 9.8 kN/m

ODRM = 0.9 (3.24 × .15m/2 + 2.2 × 0.225m + 4.05 × 0.3m + 1.4 × 0.45m)

= 2.3 kN/m

e = (2.3 − 1.4)/9.8

= 0.10m.

P4 = 9.8/3 = 0.10m.

= 49 kPa

LIVE 450 LOAD

THE TILE CENTRE
FOR AFFORDABLE CERAMICS

Cnr Lombard & Walding Sts,
Palmerston North
Tel: 06-357 0652
Fax: 06-357 0653

9th March 2005

Diamond Homes
752 Main Street
Terrace End
Palmerston North

Re: Waterproofing

Tiling to wet areas follows a complete system from A.S.A. (Australian Structural Adhesives).

Out total contracting team of five Tilers, Contracts Manager Mike Matthews and I have attended the A.S.A. Waterproofing course and have been issued with an identification card, dated and numbered to indicate our competence in under tile wet area waterproofing.

We as The Tile Centre offer a fifteen year guarantee on waterproofing and ten year material guarantee, please see copy of identification card and pamphlet included.

The product most commonly used by us is Dampfix P.U. (technical specifications included).

Application is as follows;

- Clean Area
- Apply Seal & Fillet F/C (fast cure)
- Prime metal surface where required with N5 Primer
- 2 Coats .7mm thick Dampfix P.U.
- Flood test where possible

Please note all waterproofing is personally checked by me. If you have any queries regarding the enclosed please feel free to contact me on the above.

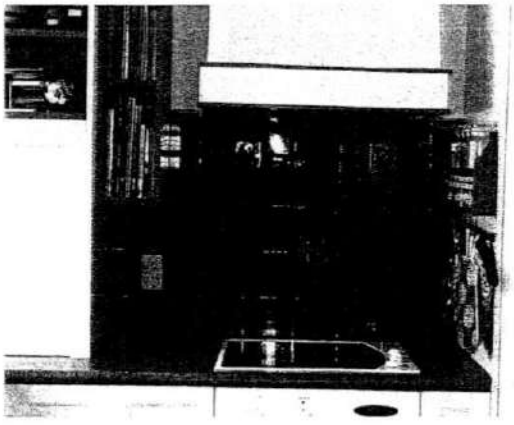
Yours faithfully

Bob Dawes
Director

The Tile Centre "Difference"

We offer:

- ✓ *Quality selection of tiles in all price ranges.*
- ✓ *NZQA trained & qualified staff for a complete laying service.*
- ✓ *15 Year Guarantee on Waterproofing Products.*
- ✓ *10 Year Guarantee on Materials.*
- ✓ *5 Year Guarantee on Workmanship.*
- ✓ *Advanced Technology on Sheet Waterproofing.*
- ✓ *Superior Crack Isolation System.*
- ✓ *Outstanding Service & Industry Knowledge.*
- ✓ *Over 25 years experience from the same location.*
- ✓ *In-store computer pictorials displaying our workmanship.*
- ✓ *Full support for the DIY market.*
- ✓ *Colour & Design Consultancy Service.*
- ✓ *Hassle free parking with wheelchair access.*
- ✓ *Itemised Large Quotations.*



The Tile Centre
Olde Villa
Cnr Lombard & Walding Streets
Palmerston North
Phone: (06) 9522250

COURSE CONTENT:

1. BUILDING CODE REQUIREMENTS
2. SUBSTRATES
3. MEMBRANE CLASSIFICATIONS
4. BOND BREAKERS & FILLETS
5. AREA TO BE WATERPROOFED
6. EXTENT OF WATERPROOFING
7. SUBSTRATE CHECKS
8. PRIMING
9. PRODUCT MIXING
10. APPLICATION
11. CURING
12. FLOOD TESTING

Under Tile Wet Area Waterproofing

THIS CERTIFIES THAT

Bob Dawes

HAS COMPLETED AN INTENSIVE COURSE (PRACTICAL & THEORY) ON WET AREA UNDER TILE WATERPROOFING. TO THE APPROVED STANDARD ADOPTED BY ARCHITECTURAL & STRUCTURAL ADHESIVES LIMITED

ISSUE DATE: Feb 05 EXP.DATE: Feb 07 NUMBER:100402

Manufacturers of premium ceramic tile adhesives, grouts, waterproofing membranes & epoxy systems.

106-108 Redfern St. Wetherill Park, NSW 2164
P O Box 6722 Wetherill Park, NSW 2164
Telephone No: (02) 9725 4666
Fax No: (02) 9725 4427

Australian Made

DAMPFIX
SEAL N FILLET JOINT

DESCRIPTION
Dampfix Seal n Fillet Joint is a white, low modulus, polyurethane sealant which cures from moisture in the air to form a soft, elastic, weatherproof sealant.

FEATURES AND BENEFITS
- High durability
- Excellent weather resistance
- Non staining
- Compatible with Dampfix membranes
- Fast cure

RECOMMENDED FOR
- Expansion and construction joints
- Brickwork and blockwork
- Wet areas

SURFACE PREPARATION
The surfaces to receive the **Dampfix Seal n Fillet Joint** must be clean and dry, being free from all oil, grease, dirt, water, old sealant and any protective coating. Roughen all non-porous and plastic surfaces. If high bond strength is needed to the tile then porous substrates must be primed using **Bostik N49 Primer** and non porous substrates with **Bostik N40 Primer.**

APPLICATION
Place **Dampfix Seal n Fillet Joint** sausage into an appropriate barrel gun and clip the end of the sausage. Screw the top of the nozzle and housing onto the barrel gun. Apply **Dampfix Seal n Fillet Joint** in a continuous operation using a firm pressure on the trigger of the gun to properly fill and seal the cavity.

CLEAN UP
Clean up equipment immediately after use with **Mineral turpentine.**

COVERAGE
600ml sausage

6mm bead	19 metres
3mm bead	81 metres
20mm bead	4.4 metres

PACKAGING
600ml (720g) Sausage

SHELF LIFE
12 months in unopened sausage when stored in a cool dry environment.

LIMITATIONS
- **Do not apply in temperatures below 5°C**
- **Do not use in swimming pools or spas**

SAFETY PRECAUTIONS
Uncured sealant will cause irritation. Gloves and protective goggles must be worn during application of **Dampfix Seal n Fillet Joint.** Avoid contact with skin, and eyes and avoid breathing vapour. If swallowed, do not induce vomitting. Give a glass of water. If poisoning occurs, contact a physician.

If skin contact occurs, remove contaminated clothing and wash skin thoroughly for a minimum of 15 minutes. If irritation persists, consult a physician.

Continued overleaf .....

ARCHITECTURAL & STRUCTURAL ADHESIVES

DAMPFIX PU

DESCRIPTION

ASA **Dampfix PU** is a flexible, elastic, one part polyurethane membrane used for waterproofing shower recesses, bathrooms, laundries, balconies, decks, roofs and planter boxes.

RECOMMENDED FOR

- Concrete slabs
- Cement render
- Blockwork and brickwork
- Fibrous cement sheeting
- Water resistant plasterboard
- Plywood
- Particleboard flooring

SURFACE PREPARATION

Surfaces must be firm, clean, dry, sound and smooth. All grease, oil, wax, curing compounds, dust, droppings, loose material, paint and any other contaminants must be removed. Fibrous cement sheeting and plasterboard must be fixed in accordance to manufacturers' directions. Allow concrete to cure for 28 days and cement render to cure for 7 days prior to application of **Dampfix PU**.

Priming - Generally surfaces do not require priming. In areas where the substrate is wet or water is likely to rise up below the membrane, then **Dampfix Moisture Seal** must be used prior to the application of **Dampfix PU.**

Crack Treatment - For cracks less than 3mm in width, clean, then fill with a scatch coat of **Dampfix PU.** Allow to dry, then repaet until no voids remain. For cracks greater than 3mm, clean thoroughly then fill joint with **Dampfix Seal n Fillet Joint.** Allow to dry. Apply a bead of **Dampfix Seal n Fillet** at all wall/flooring joints.

APPLICATION

Apply Dampfix PU onto correctly prepared substrate using a brush or roller to a depth of at least 1.2mm ensuring and even coat. Allow to dry.

CURING TIME

Approximately 24hrs @ 25°C.

COVERAGE

1 litre = $1m^2$ at 1mm thick
1 litre = $0.75m^2$ at 1.3mm thick

CLEAN UP

Dampfix PU Membrane can be cleaned with Xylene before product cures.

SHELF LIFE

Unopened containers can be stored in a cool, dry environment for up to 12 months.

TILING

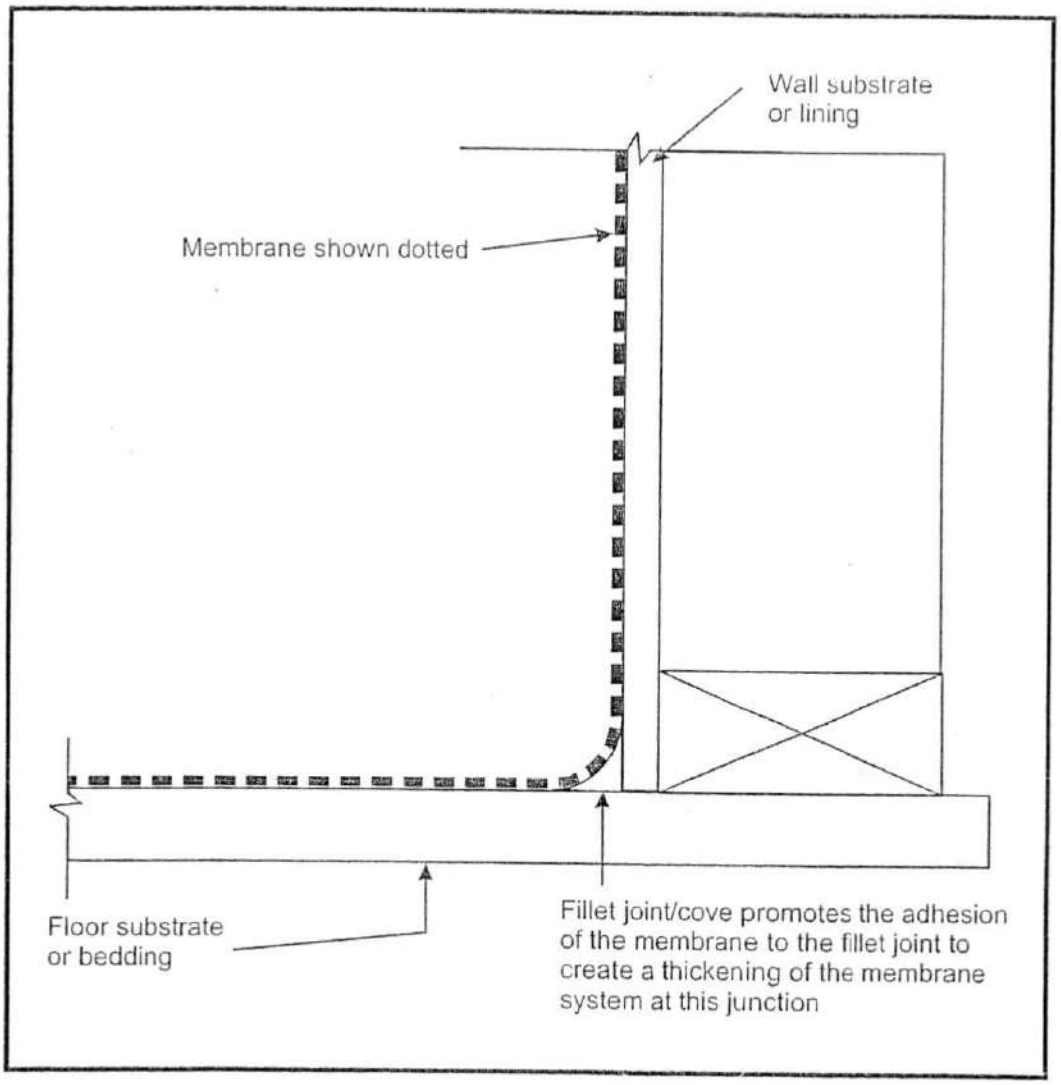
Commence tiling after membrane has fully cured. It is recommended that the membrane be tiled, or a mortar bed applied withing 72 hours of membrane application since this elimates surface contamination. If carried out after this time, ensure surface is clean and dry.

RECOMMENDED ADHESIVES

ASA Asaflex, ASA Megafix or ASA Conflex

Continued overleaf.....

Figure 4. Typical fillet joint detail for Class III membranes at wall / floor junctions



Metalcraft
INDUSTRIES LIMITED

[illegible] Avenue, Private Bag 11026
Palmerston North, New Zealand

Telephone: (06) 358 9119 (4 lines)
Fax: (06) 358 [illegible]
Email: metalcraft@[illegible]

8.10.04

To Whom It May Concern:

Installation of EsiClean Traps

Metalcraft Industries Ltd has produced some recommended installation guides for both bottom exit and side exit Esi Clean Traps to be included in the boxes with each trap. They are guidelines only.

For the Side Exit Trap we have produced a Tiling Ring for Tile Applications to ensure the trap is air tight. However, if the Tiler chooses to rebate the tiles, and then screw the lid down, this will also make it air tight, and Metalcraft Industries Ltd are satisfied with this method.

If a Tiler is prepared to guarantee his workmanship in regards to the correct installation of these traps, using either a Tiling ring or rebating (for side exit traps) we would find this more than adequate.

Please note that a Tiling Ring is never used for a Bottom Exit Trap in a Tiling situation as it is not necessary and it is not the correct size.

On behalf of Metalcraft Industries Ltd

I. J C Henderson
Manager
Palmerston North

DIAMOND HOMES®

752 Main Street
Palmerston North
Telephone 06 355 4448
Fax 06 355 4449
E-mail geoff@diamondhomes.co.nz
www.diamondhomes.co.nz

18th April 2006

To: Manawatu District Council
Private Bag 10 001
Feilding

RE: Kibblewhite Wright Trust
Lot 13
Briarwood Estate
Palmerston North

To Whom It May Concern:

Please find enclosed an application for a Building Consent for the above dwelling.

If you have any queries, please don't hesitate to contact me.

Thanking you

Monica Kells
Architectural Designer
Diamond Homes
monica@diamondhomes.co.nz

P.S - I will forward on the engineering asap.

Gib® Wall Bracing Calculation Sheet A — single storey — V104B

Job Details

Name	:	Kibblewhite	
Street and Number	:	Brairwood Estate	
Lot and DP Number	:	Lot 13	
City/Town/District	:	Palmerston North	
Designer and date	:	M. Kells	18-Apr-06
Company Name	:	Diamond Homes	

Building Specification

Location of Storey	single	
Floor Loading	2 kPa	
Foundation Type	slab	
Building Height to Apex (m)	6	
Roof Height above Eaves (m)	3	
Stud Height (m)	2.4	
Cladding Weight (top or single)	heavy	
Cladding Weight (lower)	light	*not applicable (single storey building)*
Cladding Weight (subfloor)	light	*not applicable (slab)*
Roof Weight	light	
Roof Pitch (degrees)	25-45	
Room in Roof Space	no	
Building Length (m)	32.3	*Use roof length including eaves*
Building Width (m)	15	*Use roof length including eaves*
Gross Building Plan Area (m2)	279	

Building Location

Wind Zone	***High***	**Earthquake Zone**
Region	R1	A
Terrain	Inland	
Exposure	Exposed	
Topography	Moderate	

Bracing Units required for Wind

per m	subfloor	walls	
W along	n/a	78	BUs/m
W across	n/a	78	BUs/m
Totals	subfloor	walls	
W along	n/a	1170	BUs
W across	n/a	2519	BUs

Bracing Units required for Earthquake

per m2	subfloor	walls	
E	n/a	5.6	BUs/m2
Totals	subfloor	walls	
E along	n/a	1562	BUs
E across	n/a	1562	BUs

Gib® Wall Bracing Calculation Sheet B — single storey — V104B

Along								
Wall or Bracing Line		*Bracing Elements provided*					*Wind*	*Earthq.*
1	2	3	4	5	6	7	8W	9EQ
Line Label	Minimum BUs Req/Ach	Bracing Element No.	Supplier	Bracing Type	Element Length L (m)	Element Height H (m)	BUs Achieved	BUs Achieved
A	enter	1	Ecoply	CP5	0.9	2.4	90	90
line totals		2	Ecoply	CP3	0.6	2.4	51	51
W	321	3	Gib®	BR4	0.9	2.4	90	77
EQ	294	4	Gib®	BR4	0.9	2.4	90	77
B	enter	1	Cust wood	CW1	2.4	2.4	312	288
line totals		2	Gib®	BR9	0.6	2.4	66	57
W	543	3	Gib®	BR9	0.6	2.4	66	57
EQ	492	4	Gib®	Gib1a	1.8	2.4	99	90
C	enter	1	Cust wood	CW1	1.8	2.4	234	216
line totals		2	Gib®	Gib1a	1.8	2.4	99	90
W	564	3	Gib®	Gib1a	2.4	2.4	132	120
EQ	516	4	Gib®	Gib1a	1.8	2.4	99	90
D	enter	1	Gib®	Gib1a	2.4	2.4	132	120
line totals		2	Gib®	Gib1a	2.4	2.4	132	120
W	516	3	Gib®	Gib1a	2.4	2.4	132	120
EQ	462	4	Gib®	BR4	1.2	2.4	120	102
E	enter	1	Gib®	BR4	0.9	2.4	90	77
line totals		2	Gib®	BR4	0.9	2.4	90	77
W	180	3						
EQ	153	4						
F	enter	1						
line totals		2						
W		3						
EQ		4						
G	enter	1						
line totals		2						
W		3						
EQ		4						
H	enter	1						
line totals		2						
W		3						
EQ		4						
I	enter	1						
line totals		2						
W		3						
EQ		4						
J	enter	1						
line totals		2						
W		3						
EQ		4						

						Wind	Earthq.
Totals Achieved						2124	1917
						OK	*OK*
Totals Required (from Sheet A)						1170	1562

Gib® Wall Bracing Calculation Sheet B — single storey — V104B

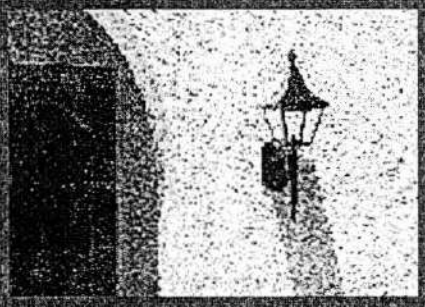
Across								
Wall or Bracing Line		*Bracing Elements provided*					*Wind*	*Earthq.*
1	2	3	4	5	6	7	8W	9EQ
Line Label	Minimum BUs Req/Ach	Bracing Element No.	Supplier	Bracing Type	Element Length L (m)	Element Height H (m)	BUs Achieved	BUs Achieved
M	enter	1	Ecoply	CP5	0.9	2.4	90	90
line totals		2	Ecoply	CP5	0.9	2.4	90	90
W	180	3						
EQ	180	4						
N	enter	1	Cust wood	CW1	2.4	2.4	312	288
line totals		2	Cust wood	CW1	1.8	2.4	234	216
W	546	3						
EQ	504	4						
O	enter	1	Cust wood	CW1	2.4	2.4	312	288
line totals		2	Gib®	BR4	0.9	2.4	90	77
W	501	3	Gib®	Gib1a	1.8	2.4	99	90
EQ	455	4						
P	enter	1	Gib®	Gib1a	2.4	2.4	132	120
line totals		2	Gib®	BR9	0.6	2.4	66	57
W	264	3	Gib®	BR9	0.6	2.4	66	57
EQ	234	4						
Q	enter	1	Gib®	Gib1a	1.8	2.4	99	90
line totals		2	Gib®	Gib1a	1.8	2.4	99	90
W	264	3	Gib®	BR9	0.6	2.4	66	57
EQ	237	4						
R	enter	1	Gib®	Gib1a	2.4	2.4	132	120
line totals		2	Gib®	BR4	1.2	2.4	120	102
W	252	3						
EQ	222	4						
S	enter	1	Gib®	Gib1a	2.4	2.4	132	120
line totals		2	Gib®	Gib1a	2.4	2.4	132	120
W	330	3	Gib®	BR9	0.6	2.4	66	57
EQ	297	4						
T	enter	1	Gib®	BR4	1.2	2.4	120	102
line totals		2	Gib®	Gib1a	2.4	2.4	132	120
W	252	3						
EQ	222	4						
U	enter	1						
line totals		2						
W		3						
EQ		4						
V	enter	1						
line totals		2						
W		3						
EQ		4						

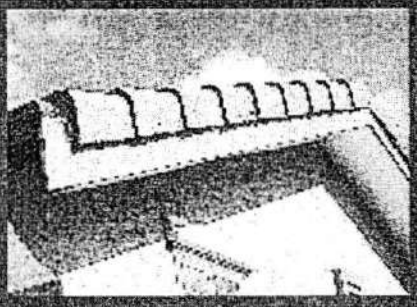
						Wind	Earthq.
Totals Achieved						2589	2351
						OK	*OK*
Totals Required (from Sheet A)						2519	1562

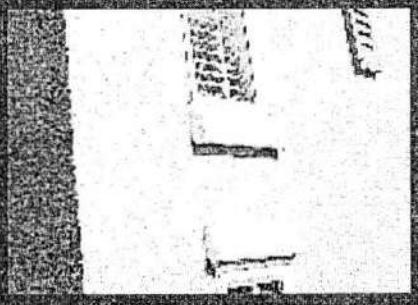
HARDIBACKER® SUBSTRATE

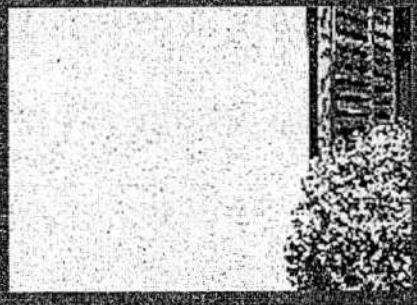
NEW ZEALAND
JUNE 2005

TECHNICAL SPECIFICATION









James Hardie®

CONTENTS

WE VALUE YOUR FEEDBACK

To continue with the development of our products and systems we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

James Hardie
Fax 0800 808 988
literaturefeedback@jameshardie.co.nz

1 APPLICATION AND SCOPE

1.1 APPLICATION

Hardibacker® Substrate is used as a rigid backing board behind stucco claddings. It can also be used to achieve structural bracings behind stucco, brick veneer and weatherboard claddings as per the requirements of NZS 3604 for 'Timber Framed Buildings'.

If you are a specifier...

Or other responsible party for a project ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

If you are an installer

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer. All the details provided in this document must be read in conjunction with the specifier's specification.

Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or, if you need more information, visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

1.2 SCOPE

This specification covers the use of Hardibacker® Substrate as rigid backing for stucco claddings using cavity construction method for buildings which fall within the scope of NZBC Acceptable Solution 'E2/AS1'. Refer 'E2/AS1' for further information regarding the cavity construction method for stucco claddings.

1.3 DETAILS

Various Hardibacker® Substrate details are provided at the rear of this document. This specification and figures in CAD file are also available to download from our website at www.jameshardie.co.nz.

1.4 SPECIFIC DESIGN

For use of Hardibacker® Substrate outside the published scope, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

2 DESIGN

2.1 COMPLIANCE

Hardibacker® Substrate complies with section 9.3.6.2 of 'E2/AS1'. Information contained in this document is aligned with the requirements of NZBC Acceptable Solution 'E2/AS1'.

2.2 RESPONSIBILITY

This document is not a substitute for any acceptable solution of the NZBC or any New Zealand standard. The specifier / designer responsible for the project design must ensure that the details provided in this specification are appropriate for the intended

application and that additional detailing is provided for specific design projects or any areas that fall outside the scope of this specification. The designer must ensure that the intent of their design meets the requirements of the NZBC. All dimensions shown are in millimeters unless noted otherwise.
All New Zealand Standards reference in this manual are current edition and must be complied with. The specifier / designer are also to ensure that the standards and other reference documents referred to at the time of construction are current and valid.
James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

2.3 SITE & FOUNDATION

The site on which the building is situated must comply with the NZBC Acceptable Solution E1/AS1 'Surface Water'.
The timber framing of external walls for buildings using stucco cladding shall be supported on a concrete slab on ground continuous reinforced concrete foundation wall or reinforced concrete masonry foundation wall. The grade of adjacent finished ground must slope away from the building to avoid any possibility of water accumulating.

2.4 GROUND CLEARANCES

The bottom edge of claddings must comply with section 9.1.3 of 'E2/AS1'. Hardibacker® Substrate must overhang the bottom plate on a concrete slab by a minimum of 50 mm as required by NZS 3604. Hardibacker® Substrate must have a minimum clearance of 100mm from paved ground and 150mm from unpaved ground.

2.5 MOISTURE MANAGEMENT

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.
Wall construction design must effectively manage moisture, accounting for both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled.
Walls shall include those provisions as required by the NZBC Acceptable Solution 'E2/AS1' 'External Moisture'. In addition all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashing and waterproofing.
Materials, components and their installation that are used to manage moisture in framed wall construction must, at a minimum, comply with the requirements of relevant standards and the NZBC.
For further information in relation to designing for weathertightness, refer to BRANZ Ltd and the Department of Building and Housing updates on the following websites, respectively www.branz.co.nz and www.dbh.govt.nz.

2.6 STRUCTURE

Timber-framing of external walls of buildings to be clad with stucco plasters shall comply with NZS 3604 (Timber Framed Buildings) and NZS 4251. When framing is provided as per a specific engineering design then the framing stiffness must be equivalent to or more than the minimum stiffness provisions of NZS 3604.

2.7 WIND LOADING

Hardibacker® Substrate is suitable for use in all wind zones (including and up to VH) in New Zealand as defined by NZS 3604.
A specific design is required for all situations where a buildings fall in a specific design (SD) wind zone.

2.8 STRUCTURAL BRACING

Hardibacker® Substrate can be used to achieve structural bracing when installed on cavity battens. The Hardibacker® Substrate sheets must be installed as per specific bracing system details that are available separately. Hardibacker® Substrate bracing systems have been independantly tested and assessed by BRANZ.
For higher bracing capacities HardiFlex® 6mm sheet may be used.
In bracing applications 316 grade stainless steel nails must be used in all zones.
Refer to the James Hardie Bracing information manual for details.

2.9 ENERGY EFFICIENCY

The R-Value of stucco plastered wall using Hardibacker® Substrate sheets and constructed in accordance with this manual using bulk insulation, will comply with the Section 3.1 - 'Schedule Method' of NZS 4218 (Energy Efficiency – Small Building Envelope) required under Table 1. To meet these insulation requirements, bulk insulation as mentioned in Table 1 of this specification must be used. This calculation is based on a timber framing member size of 90 x 45mm and internal linings of James Hardie Villaboard® Lining or plasterboard.

TABLE 1:

INSULATION CAPABILITY		
Climate Zone*	R-Value Requirement	Cavity Insulation Infill Requirement
1 & 2	1.5 m^2 °C/W	R1.8 Fibreglass batts.
3	1.9 m^2 °C/W	R2.2 Fibreglass batts.

*as defined in NZS 4218

3 FRAMING

3.1 GENERAL

This Hardibacker® Substrate sheet technical specification is only suitable for timber-framed buildings. Other framing materials are outside the scope of this specification.

3.2 DIMENSIONS

A 45mm (nominal) minimum stud width is required at all sheet edges. A 35mm wide stud width may be used as intermediate studs.

3.3 STRUCTURAL GRADE

Minimum timber grade requirements are No.1 framing grade in accordance with NZS 3631 'New Zealand Timber Grading Rules' or equivalent.

3.4 DURABILITY

The external framing must be treated to a minimum H1.2 treatment. Refer to NZBC Acceptable Solution B2/AS1 'Durability' for further

information about the durability requirements.
For timber treatment and allowable moisture content information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round Sawn Timber) for minimum timber treatment selection and treatment requirements. Also refer to the framing manufacturer's literature for further guidance on timber selection.
Framing must be protected from moisture at sites in accordance with the recommendations of framing manufacturers.

3.5 FRAME CONSTRUCTION

All edges of Hardibacker® Substrate sheet must be fully supported by the framing. Framing must be rigid and not rely on the Hardibacker® Substrate for stability.
Use of timber framing must be in accordance with framing manufacturers' specifications.

- All timber framing sizes and set-out must comply with NZS 3604, and with framing centres and timber widths required by this specification.
- Studs must be provided at 600mm centers max.
- Nogs/Dwangs must be provided at 800mm centers max.

3.6 SPECIAL FRAMING REQUIREMENTS

- An extra stud is required at internal corners.
- James Hardie recommends that the timber frame set-out is predetermined to suit Hardibacker® Substrate to ensure minimum cutting and wastage.

3.7 TOLERANCES

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604. All framing shall be made flush.

4 PREPARATION

4.1 BUILDING WRAP

Building wrap must be provided as per the requirements of NZBC Acceptable Solution 'E2/AS1' 'External Moisture' and NZS 3604.
The building wrap must comply with Table 23 of 'E2/AS1'.
The building wraps must be fixed in accordance with 'E2/AS1', NZS 3604 and the wrap manufacturer's recommendations. Walls which are not lined on the inside face e.g. garage walls or gable ends must include a rigid sheathing or an air barrier behind the cladding which meets the requirements of NZBC Acceptable Solution 'E2/AS1'.

4.2 VENT STRIP

The James Hardie uPVC cavity vent strip must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. The James Hardie uPVC cavity vent strip has an opening area of 1000mm²/m length.

4.3 CAVITY BATTENS

Cavity battens are fixed onto the building wrap on the framing to create a cavity behind the cladding.
The cavity battens provide airspace between the frame and the sheet and are considered a 'packer' only in this specification.
The timber battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of rough and sawn timber) to comply with the durability requirements of B2/AS1.
Cavity battens must comply with following requirements

- be minimum 18mm thick.
- be minimum as wide as the width of studs.
- be fixed at 300mm centres when studs are at 600mm centres.
- be fixed by the cladding fixings to the main framing under the building wrap.
- until claddings are fixed the battens only need to be tacked to the framing.

(Note: Batten fixing is required temporarily to keep them straight on the wall during construction.)

No intermediate batten between studs is required:

- when studs are spaced at maximum 400mm centres and
- when rigid sheathings instead of building wraps are used.

(Note: 100 mm long cavity packers must be used where required to support sheet fixings in this circumstance.)

The battens must be fixed to the studs with 40mm x 2.8 nails at 800mm centres maximum, small packers are required on nogs, as well as top and bottom plates to facilitate the fixing of reinforcing mesh.

4.4 JUNCTIONS & PENETRATIONS

Refer to Clause 2.5 of this literature for moisture management requirements. All windows and doors must be detailed as per the requirements of NZBC Acceptable Solution 'E2/AS1' 'External Moisture'. Also refer to joinery manufacturers / suppliers for installation information. Refer to Figures 10 to 12 for window penetrations. Also refer to section 9.1.9.3 of 'E2/AS1' for further information regarding the treatment of window penetrations. Pipes and service penetrations shall be made weathertight by using appropriate flashings and sealants. Refer to 'E2/AS1' for further information. Also refer to joinery manufacturer / provider for detailed information regarding window installation.

5 FIXING HARDIBACKER SUBSTRATE

5.1 GENERAL

The Hardibacker® Substrate sheets must be kept dry and under cover whilst in storage or during the installation. Framing moisture must not exceed a maximum 24% prior to sheet installation. Every endeavour must be made to keep framing dry once sheet fixing commences.

5.2 FASTENER DURABILITY

Fasteners must meet the minimum durability requirements of the NZ Building Code. NZS 3604 specifies the requirements for fixing's material to be used in relation to the exposure conditions and are summarised in Table 2.

TABLE 2:

EXPOSURE CONDITIONS & NAIL SELECTION PRESCRIBED BY NZS 3604		
NAIL MATERIAL		
Sea Spray Zones *	Zone 1 outside sea spray zone and Zones 2 – 4 & Geothermal hot spots	Bracing – All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 Stainless

* *(Zone 1 areas where local knowledge dictates that increased durability is required, appropriate selection shall be made)*

Also refer to NZBC Acceptable Solution 'E2/AS1' Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

5.3 FASTENER - SIZE & LAYOUT

Hardibacker® Substrate must be nail-fixed to timber as described as follows:

- Use 60 x 3.15mm HardiFlex® fibre cement nails.
- Nails at 200mm centres on studs.
- Nails at 150mm centres on top plate and bottom plate.
- Nails must be driven a minimum of 12mm from the sheet edges and 75mm minimum from corners.
- Nails must finish flush with sheet surface.

Note: The special fixing arrangements are required for bracing systems – For more information Ask James Hardie on 0800 808 868.

5.4 SHEET LAYOUT

- All sheet edges must be supported by the framing.
- Hardibacker® Substrate must be fixed vertically.

6 JOINTING

6.1 VERTICAL SHEET JOINT

Provide 3mm gap between Hardibacker® Substrate sheets at vertical sheet joints, or internal and external corners.

6.2 STUCCO VERTICAL CONTROL JOINT

Control joints are required to take up any shrinkage or movement of the stucco plaster finish. Refer Figure 6.

A vertical control joint must be provided at a maximum of 4 metres as required under NZS 4251. Also refer to 'Weathertight Solution Volume –2' (2004) a book published by BRANZ for further information.

- At all internal and external corners the mesh and plaster is to be continuous around the corners, control joints are not required.
- Control joints must be located at 4m maximum from the corners.
- When a window or door opening is in the vicinity of the control joint then the edge of the opening is an ideal location for the control joint.
- As a good practice, position the control joints so they are hidden by the building features where possible.
- The vertical sheet joints do not need to be coincided with plaster control joints.

6.3 HORIZONTAL CONTROL JOINT

At floor joist levels a horizontal joint must be provided to accommodate the movements resulting due to timber joist shrinkage or settlement.

Horizontal control joint must be located at 4 metres maximum as required under NZS 4251.

A cavity needs to be drained out to the exterior after every two floor levels as per the requirements of NZBC Acceptable Solution 'E2/AS1' clause 9.1.9.4. To achieve this, a purpose made metal 'Z' flashing must be used to form a horizontal joint. Refer Figure 13. The metals which could be used are stainless steel, powder-coated aluminum, powder-coated hot dipped galvanized steel and hot dipped galvanized steel.

Zinc/aluminium uncoated steel is not suitable as it deteriorates in contact with portland cement.

Where draining to the exterior is not required the James Hardie uPVC 'h' mould is used to form a horizontal joint. Refer Figure 14.

6.4 EXPANSION JOINT

Expansion joints are provided to accommodate or allow structural movements. A vertical structural expansion joint must be provided at maximum 12 metres. They are generally required for larger commercial buildings only, and such buildings are outside the scope of this literature. Appropriate joint design shall be undertaken for this situation.

7 FINISHING

7.1 STUCCO CLADDING SYSTEM

All stucco claddings shall be used over a drained cavity and must have a building wrap fixed to the framing and an overlay on Hardibacker® Substrate to provide a slip layer that permits independent movements of plaster and the backing board. For further information about the code requirements, please refer to NZBC Acceptable Solution 'E2/AS1' section 9.3. Hardibacker® Substrate is a rigid backing for stucco plaster and proprietary plaster coatings and provides true straight backing to plaster.

An approved plastering system is to be applied which meets the requirements of the NZBC and is in accordance with NZS 4251. Stucco plaster must be finished within 90 days after the installation of Hardibacker® Substrate.

7.1.1 BUILDING PAPER

Building paper over the face of Hardibacker® Substrate must be fixed before fixing reinforcing mesh and application of plaster to comply with section 9.3.3 (b) of 'E2/AS1'.

A suitable building paper must comply with NZS 2295. The building paper must be run horizontally and lapped 75mm at joints, with the direction lap ensuring water is shed to the outer face of the paper.

7.1.2 BASE MOULD

A uPVC base mould is available from James Hardie to finish the plaster against. Fix the base mould to the bottom plate over the Hardibacker® Substrate before plastering commences. The up-stand of the base mould must be lapped under the building paper. Refer Fig. 4.

7.1.3 REINFORCEMENTS

Fix reinforcement for stucco plaster in accordance with NZS 3604 and NZS 4251 'Solid Plaster'. The mesh must be spaced in the plaster between 6mm and 9mm from the Hardibacker® Substrate surface. To achieve this spacing and adequately tightening the mesh, use the Hardibacker® PVC spacer angle.

The Hardibacker® PVC spacer angle is fixed in a continuous strip vertically down each stud line at 600mm centres. The 150mm spacers are fixed to the centre of each nog line. Fix to reference marks previously set out on the building paper face as all mesh fixings must penetrate the timber frame. Use 50mm x 2.8mm large head clouts with 9mm diameter flat head, to fix the reinforcing mesh. Nail through or alongside every fourth hole (150mm spacing) in the spacers down each stud line and nail-fix the mesh at 150mm along the nogs. Slightly skew the nail from centre of the sheet outwards to make taut. For further information about stucco reinforcement refer to section 4.3 of NZS 4251.

7.2 SEALANTS

Application and use of sealants must comply with manufacturer's instructions and be compatible with texture coating. Check with sealant manufacturer prior to coating over sealants. Some sealant manufacturers do not recommend coating over their product.

7.3 COATING

Painting of plaster is essential to meet the durability requirements of the NZBC and product warranty requirements.

- Seal the stucco surfaces by applying a minimum two coats of a latex exterior paint system complying with any of parts 7, 8, 9 or 10 of AS 3730.
- Before painting, remove any surface dirt, grime or other contaminants and ensure the plaster is dry.

In all cases the manufacturer's specification for the selected paint must be followed. Note that some paints require undercoat before applying the finish coat.

8 STORAGE AND HANDLING

Hardibacker® Substrate must be laid flat on a smooth level surface. Edges and corners must be protected from chipping.

To ensure optimum performance, store panels under cover and keep dry prior to fixing. If the sheets should become wet, allow to dry thoroughly before fixing.

Do not carry Hardibacker® Substrate on the flat, carry in the vertical position to avoid excessive bending.

9 MAINTENANCE

It is the responsibility of the specifier to determine normal maintenance requirements to comply with Acceptable Solution B2/AS1. The extent and nature of maintenance will depend on the geographical location and exposure of the building.

As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months*,
- Re-applying exterior protective finishes*,
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants that may provide a means of moisture entry beyond the exterior cladding to comply with the requirements of the NZBC clause E2.
- Cleaning out gutters, blocked pipes and overflows as required,
- Pruning back vegetation which is close to or touching the building.

**Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.*

10 PRODUCT INFORMATION

10.1 MANUFACTURING & CLASSIFICATION

Hardibacker® Substrate is a cellulose fibre reinforced cement building product. The basic composition is portland cement, ground sand, cellulose fibre and water. Hardibacker® Substrate is easily identified by the name 'HARDIBACKER®' printed at regular intervals on the back face of sheet.

Hardibacker® Substrate is manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets') in New Zealand. James Hardie New Zealand is an ISO 9001 'Telarc' certified manufacturer.

Hardibacker® Substrate is classified Type A, Category 2 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.

For Material Safety Data Sheets (MSDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

Available sizes of Hardibacker® Substrate are provided in Table 3.

TABLE 3:

HARDIBACKER® SUBSTRATE SIZES

Thickness (mm)	Width (mm)	Length (mm)	
		2400	2700
4.5	1200	✓	✓

11 SAFE WORKING PRACTICES

TABLE 4:

PRODUCT TOLERANCES	
Product	Mass at EMC
Hardibacker® Substrate 4.5mm	7.3kg/m²

Properties	At Equilibrium Condition
Approx. Moisture Content	4% - 6%
Width Tolerance	-2mm
Length Tolerance	-2mm
Thickness Tolerance	+0.3/-0.2mm
Diagonal Difference	±3mm

10.2 DURABILITY

Hardibacker® Substrate, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

10.2.1 RESISTANCE TO MOISTURE/ROTTING

Hardibacker® Substrate has demonstrated resistance to permanent moisture-induced deterioration (rotting) by passing the following tests in accordance with AS/NZS2908.2:

- Water Permeability (Clause 8.2.2)
- Warm Water (Clause 8.2.4)
- Heat Rain (Clause 6.5)
- Soak Dry (Clause 8.2.5).

10.2.2 RESISTANCE TO FIRE

Hardibacker® Substrate has the following Early Fire Hazard indices 9 Tested to AS 1530 (part 3, 1982).

TABLE 5:

EARLY FIRE HAZARD INDICES	
Ignition Index	0
Flame Spread Index	0
Heat Evolved Index	0
Smoke Developed Index	0 -1

WARNING

DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardiBlade® Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.co.nz. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES
CUTTING OUTDOORS
Position cutting station so that wind will blow dust away from user or others in working area. Use one of the following methods based on the required cutting rate: **BEST** ▪ Score and snap ▪ Hand guillotine ▪ Fibreshear **BETTER** ▪ Dust reducing circular saw equipped with HardiBlade® Saw Blade and HEPA vacuum extraction. **GOOD** ▪ Dust reducing circular saw equipped with HardiBlade® Saw Blade.
CUTTING INDOORS
▪ Cut only using score and snap, hand guillctine or fibreshears (manual, electric or pneumatic). ▪ Position cutting station in well-ventilated area
DRILLING/OTHER MACHINING
When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

IMPORTANT NOTES:

1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best"- level cutting methods where feasible
2. NEVER use a power saw indoors
3. NEVER use a circular saw blade that does not carry the HardiBlade® logo
4. NEVER dry sweep – Use wet suppression or HEPA Vacuum
5. NEVER use grinders
6. ALWAYS follow tool manufacturer's safety recommendations

P1 or P2 respirators can be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.co.nz to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

WORKING INSTRUCTIONS

Refer to Recommended Safe Working Practices before starting any cutting or machining of product.

SCORE AND SNAP

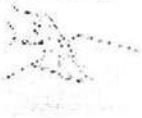
Score and Snap is a fast and efficient method of cutting the product using James Hardie's special tungsten tipped Score and Snap knife.

Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break – normally 1/3 of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.

HAND GUILLOTINE

Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.

FIBRESHEAR HEAVY DUTY



An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the "off-cut" side of the line to allow for the thickness of the shear.

HARDIBLADE® SAW BLADE

The HardiBlade® Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.

HOLE-FORMING

For smooth clean cut circular holes:

Mark the centre of the hole on the sheet.

Pre-drill a 'pilot' hole.

Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.

For irregular holes:

Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face. Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported.

STORAGE AND HANDLING

All James Hardie building products should be stored to avoid damage, with edges and corners of the sheets protected from chipping. James Hardie building products must be installed in a dry state and be protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water or moisture, etc.

QUALITY

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

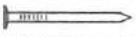
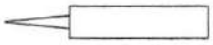
12 ACCESSORIES

ACCESSORIES SUPPLIED BY JAMES HARDIE FOR HARDIBACKER® SUBSTRATE ON CAVITY

	ACCESSORY AND MATERIAL NUMBER	SIZE (MM)	MATERIAL / APPEARANCE
	6mm Horizontal Flashing 302254	3000 long	uPVC/Bone colour
	Vent Strip 302490	3000 long	uPVC
	Horizontal flashing jointer 180° 301921	100 long	uPVC/Bone colour
	Horizontal flashing jointer 90° 301920	50 x 50	uPVC/Bone colour
	HardiFlex® nail - Jar 302781 - 5kg 302782	60 x 3.15 ø	316 Stainless Steel
	HardiFlex® nail - Jar 302783 - 5kg 302784	60 x 3.15 ø	Hot Dip Galvanised
	Base moulding 300658	2700 long	uPVC White
	Control Joint Moulding 300659	2700 long	uPVC White
	Spacer angle 300661	5000mm roll 160mm length	PVC White

ACCESSORIES NOT SUPPLIED BY JAMES HARDIE FOR HARDIBACKER® SUBSTRATE ON CAVITY

James Hardie recommends the following products for use in conjunction with its Hardibacker® Substrate. James Hardie does not supply these products. Please contact component manufacturer for information on their warranties and further information on their products.

	ACCESSORY AND MATERIAL NUMBER	SIZE (MM)	MATERIAL / APPEARANCE
	HardiFlex® nail	40 x 2.8 ø	316 Stainless Steel
	HardiFlex® nail	40 x 2.8 ø	Hot Dip Galvanised
	Flexible sealant or expandable foam	Tube	Fosroc, Holdfast or similar
	PEF rod	Polyethylene foam	Fosroc or similar
	Flashing tape	Proprietary tape to adhere to building wrap	Tyvek, Protecto wrap or similar
	Flashing as per table 20 'E2/AS1'	Refer Figure 13	Flashing fabricator
	Large head clout nail for fixing spacer angle	40 x 2.8 ø	Hot Dip Galvanised/ Stainless Steel
	Inseal 3109 Sealing Strip	19 x 10 x 12	Black compressible foam
	Reinforcing Mesh		Building Merchant to supply
	Flashing as per table 20 'E2/AS1'	Refer Figure 10	Flashing Fabricator

14 WARRANTY

HARDIBACKER® SUBSTRATE

PRODUCT WARRANTY

June 2005

WARRANTY: James Hardie New Zealand Limited ("James Hardie") warrants for a period of 15 years from the date of purchase that the Hardibacker® Substrate (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY: The warranty is strictly subject to the following conditions:

(a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.

(b) This warranty is not transferable.

(c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.

(d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards.

(e) The claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.

(f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).

(g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.

(h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

DISCLAIMER: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (eg quality of workmanship and design) James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards.

Ask James Hardie™

Call 0800 808 868

www.jameshardie.co.nz

James Hardie®

13 DETAILS

Various details outlined in the following table are available on Pages 10 to 21.

TABLE 7:

DETAILS	
DESCRIPTION	CAVITY CONSTRUCTION
Framing & Batten Setout	Figure 1
Batten Fixing	Figure 2
Sheet Fixing	Figure 3
Concrete Footing	Figure 4
Control Joint Set Out	Figure 5
Vertical Stucco Control Joint	Figure 6
External Corner	Figure 7
Internal Corner	Figure 8
Soffit Detail	Figure 9
Window Sill	Figure 10
Window Head	Figure 11
Window Jamb	Figure 12
Horizontal Drainage Joint	Figure 13
Horizontal Control Joint	Figure 14
'h' Mould Joiner Connection	Figure 15
Spacer Angle Fixing	Figure 16

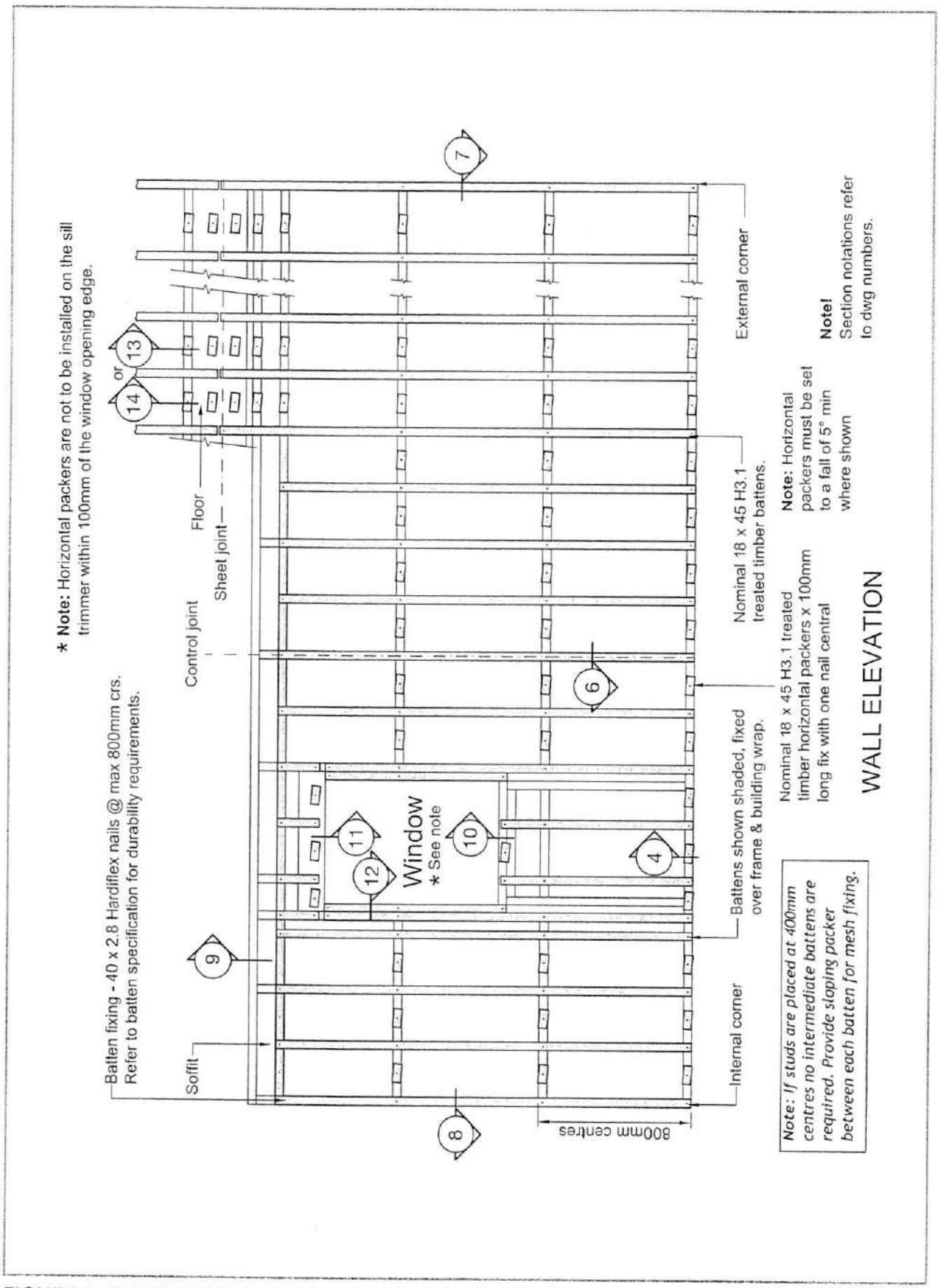


FIGURE 1: CAVITY TYPICAL FRAMING AND BATTEN SETOUT

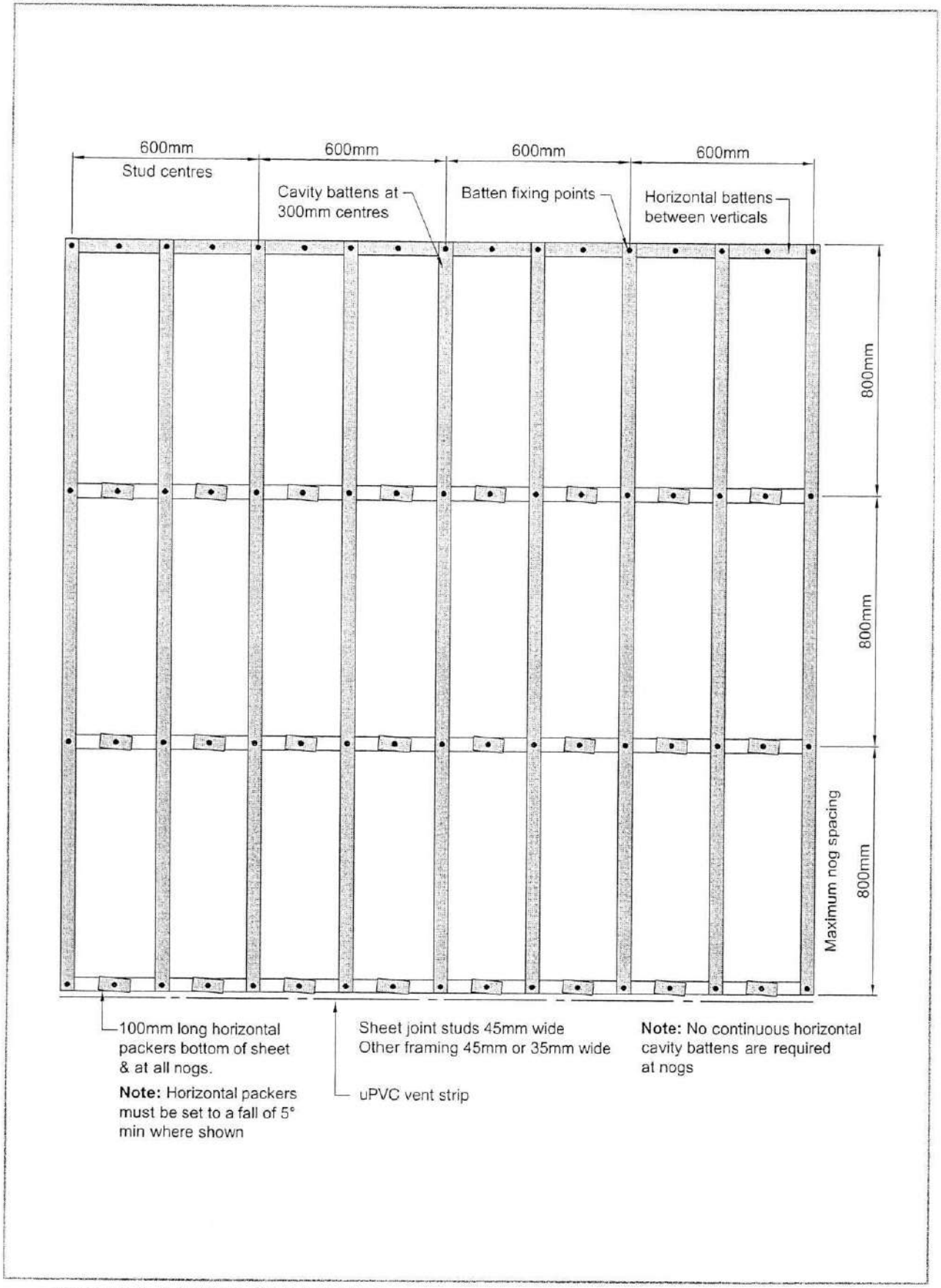


FIGURE 2: CAVITY BATTEN FIXING

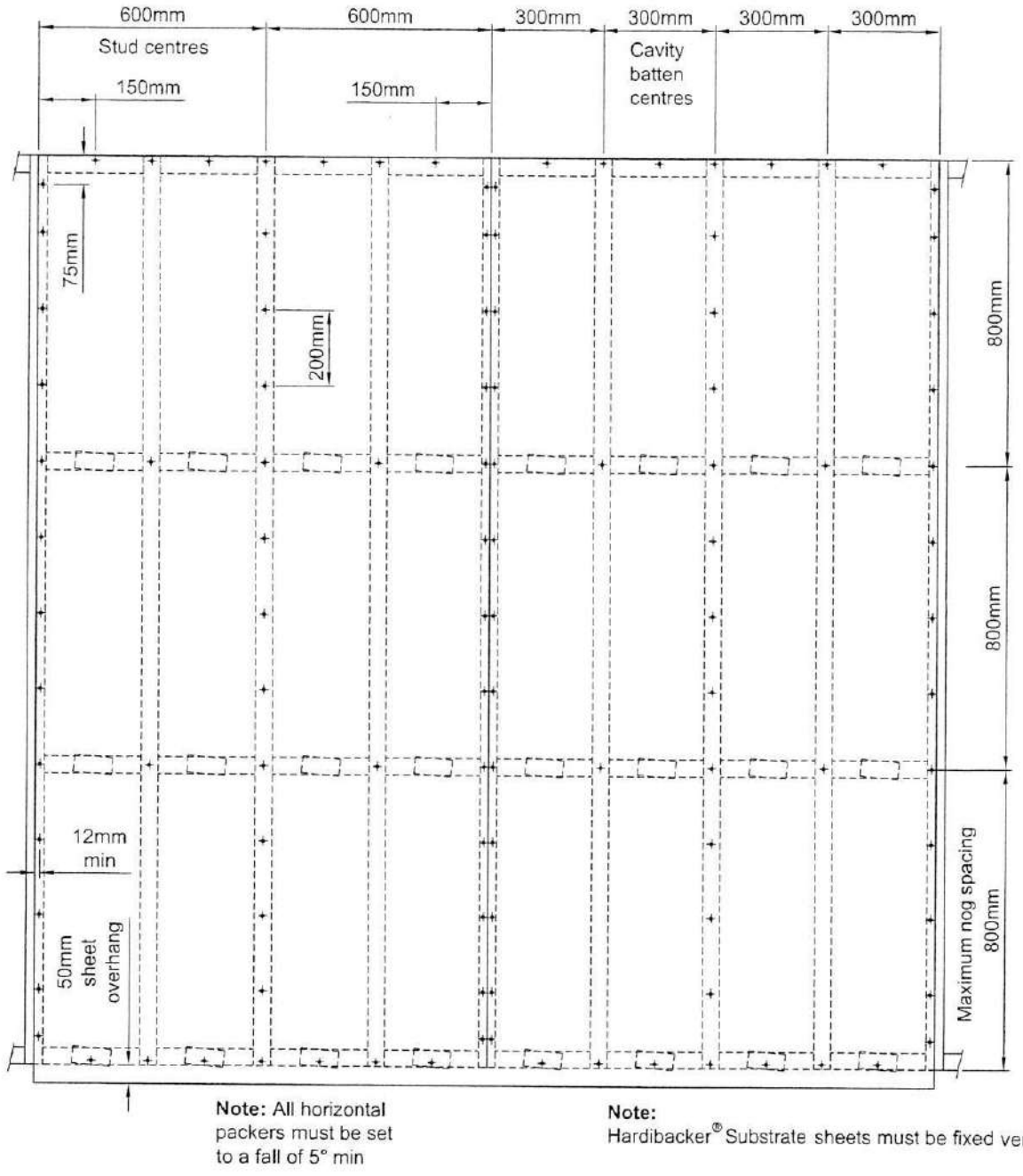


FIGURE 3: TYPICAL SHEET FIXING SETOUT

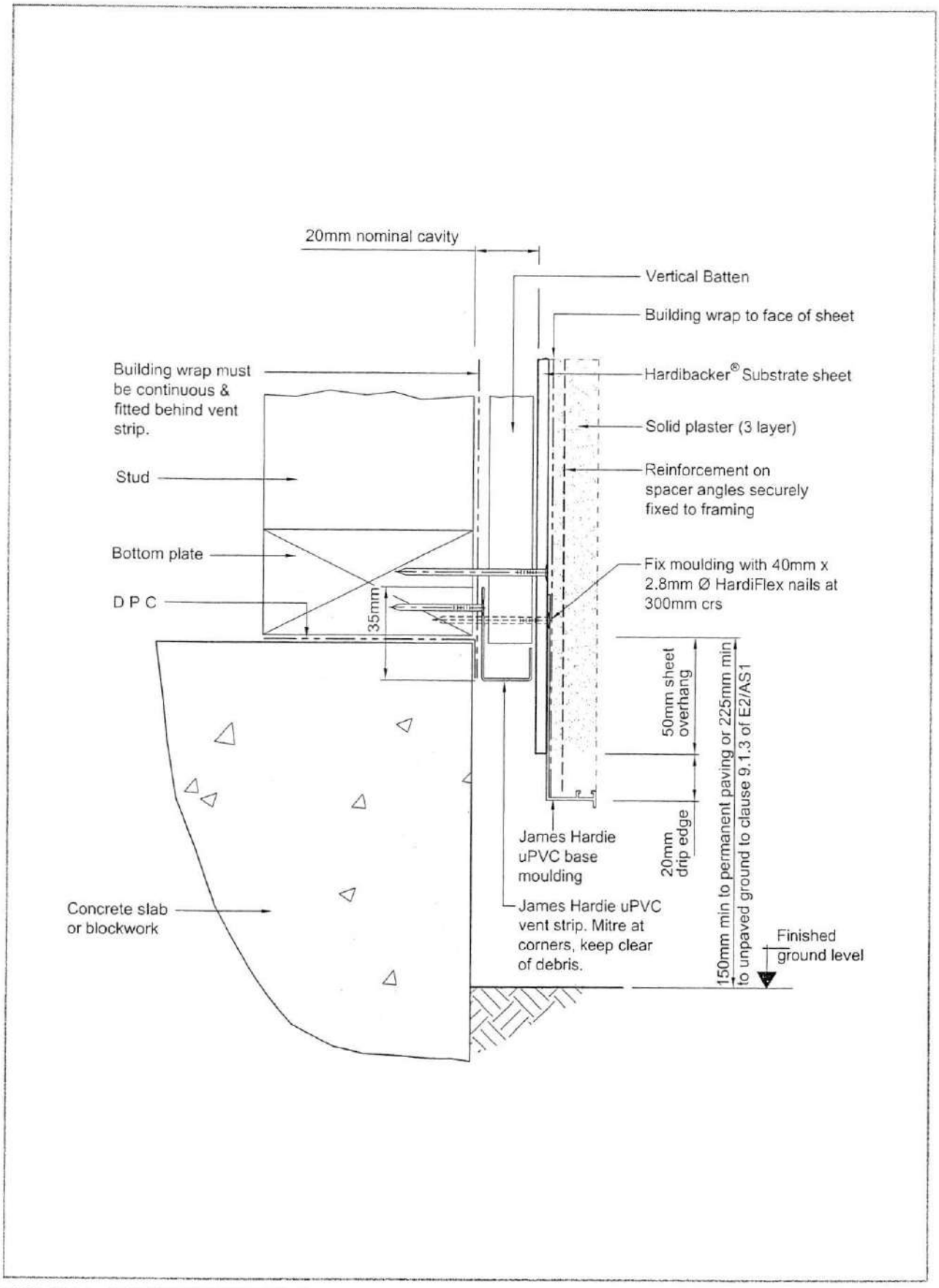


FIGURE 4: CONCRETE FOOTING

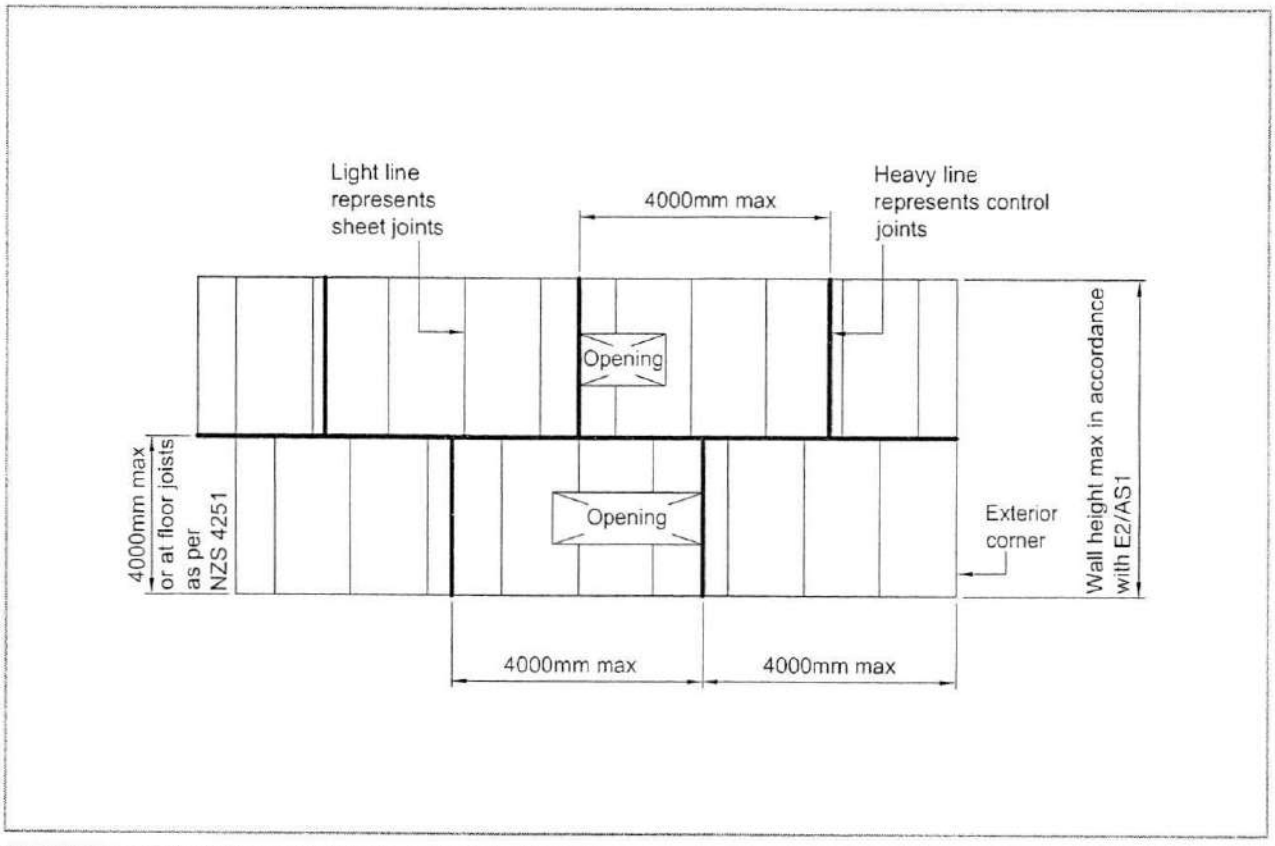


FIGURE 5: STUCCO CONTROL JOINT SETOUT

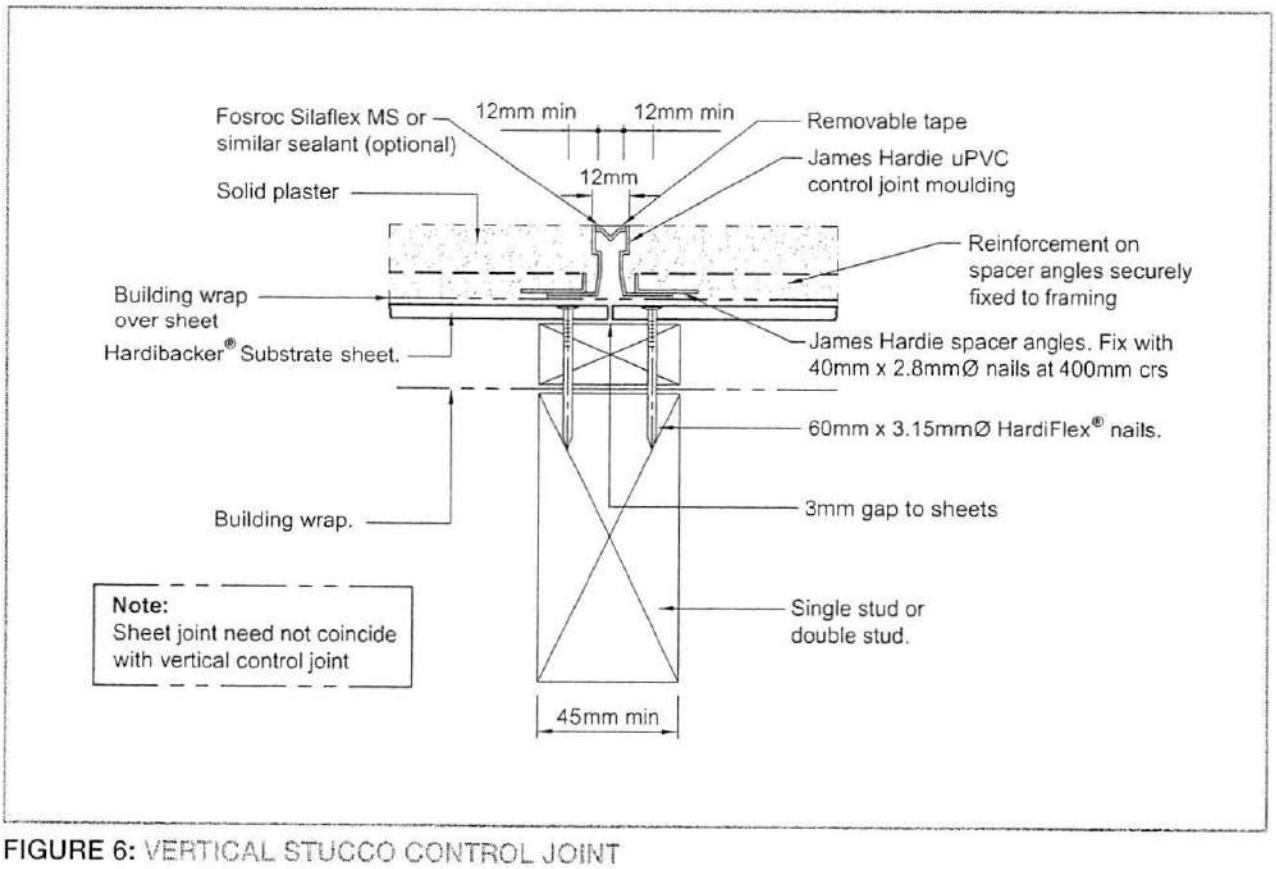


FIGURE 6: VERTICAL STUCCO CONTROL JOINT

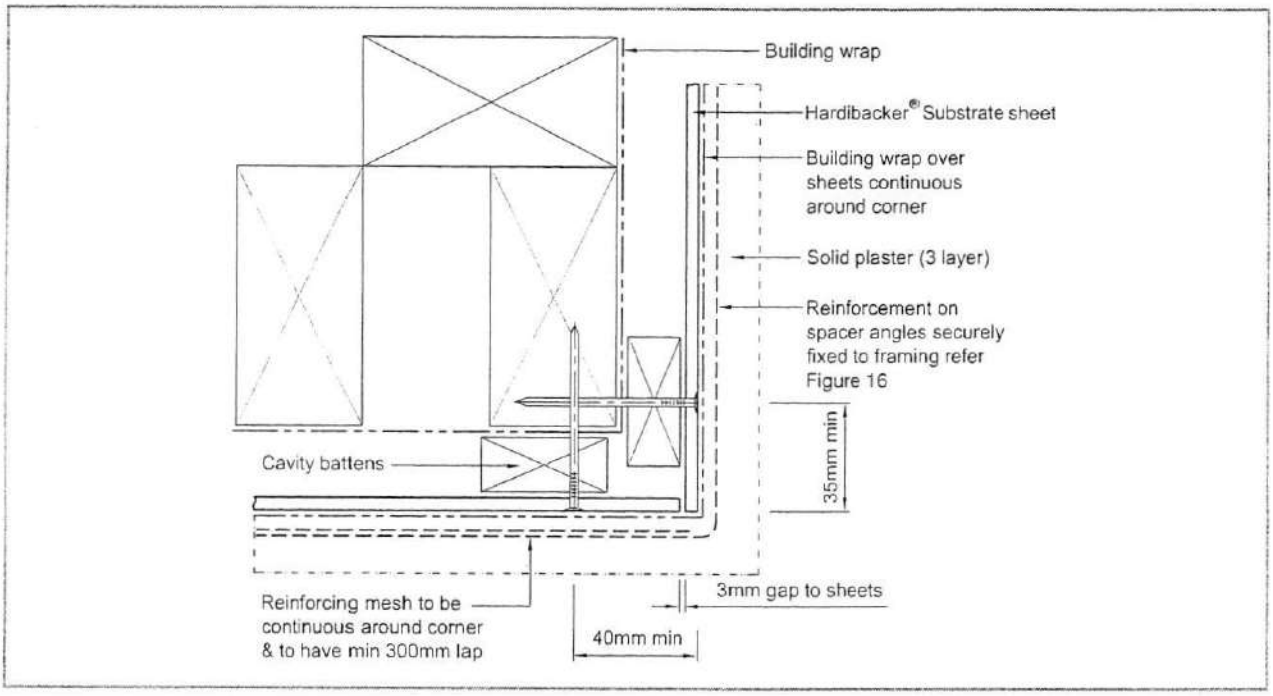


FIGURE 7: EXTERNAL CORNER

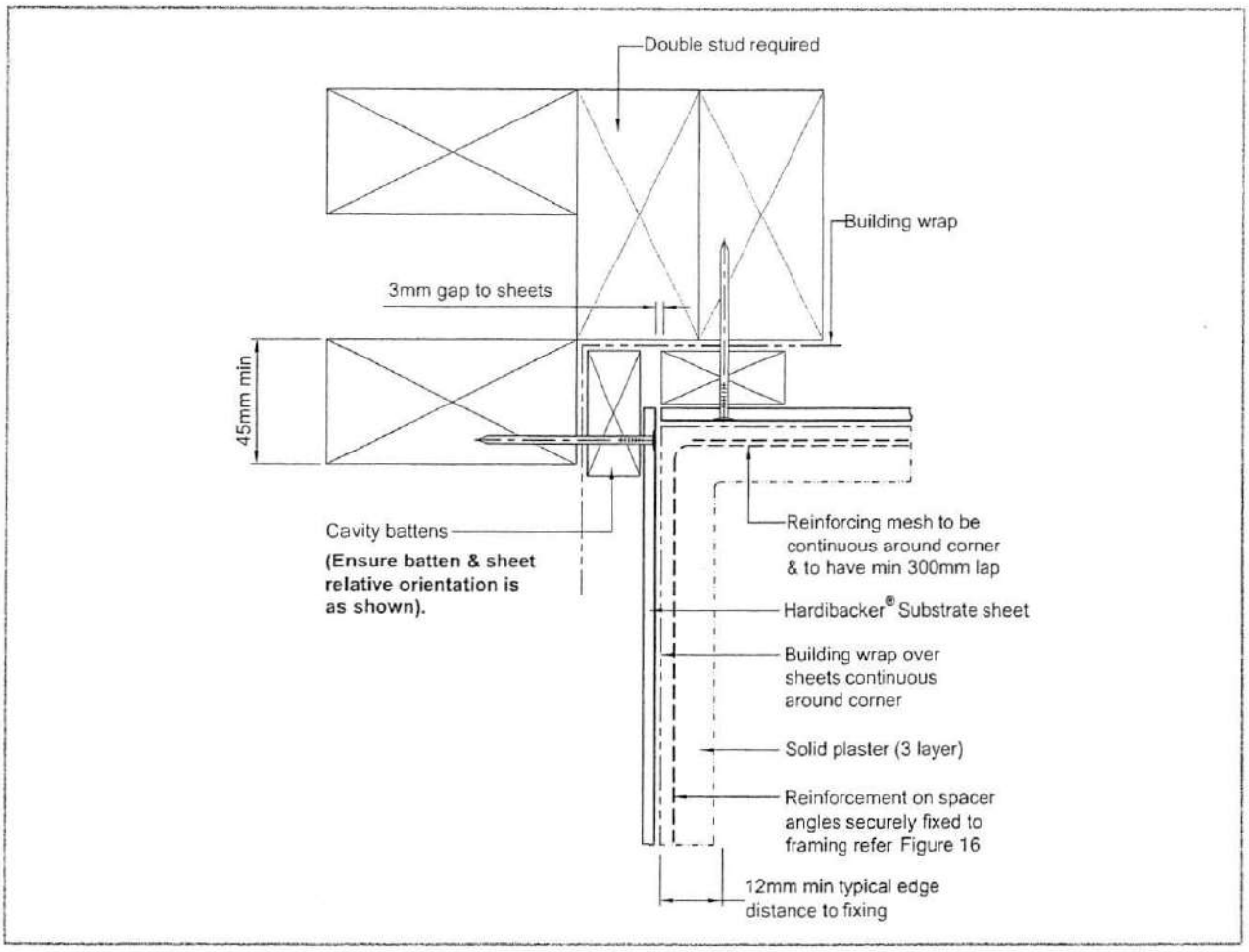


FIGURE 8: INTERNAL CORNER

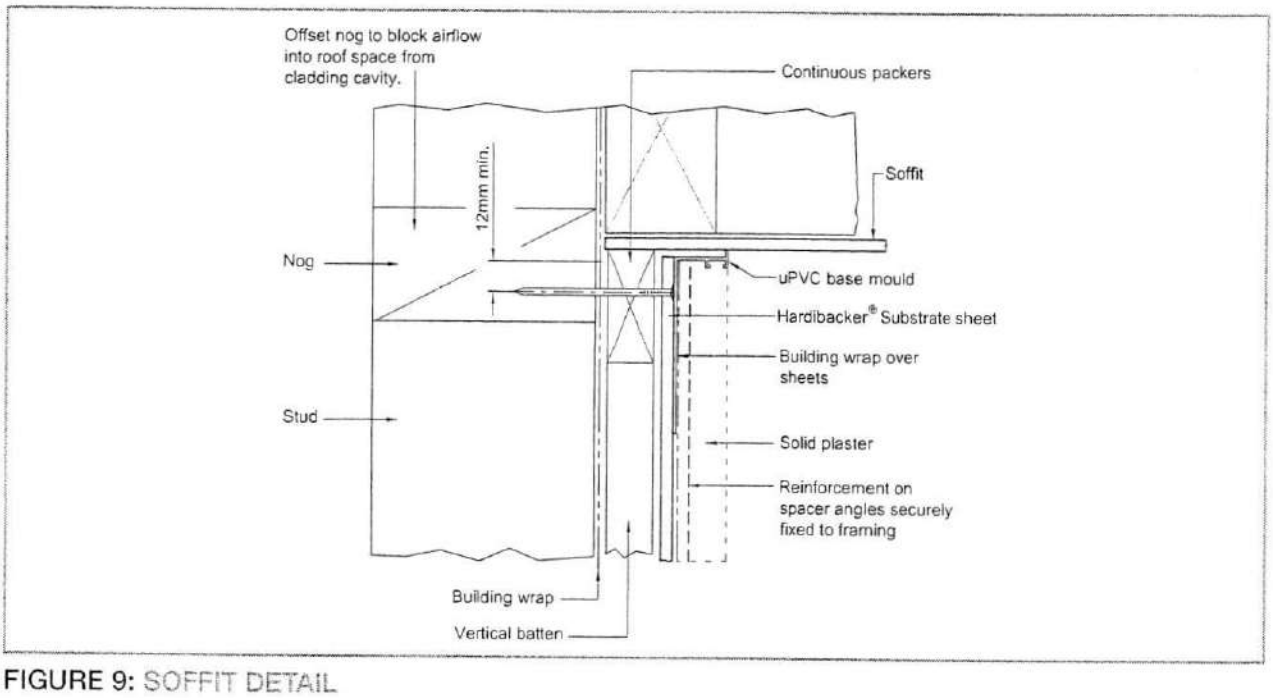
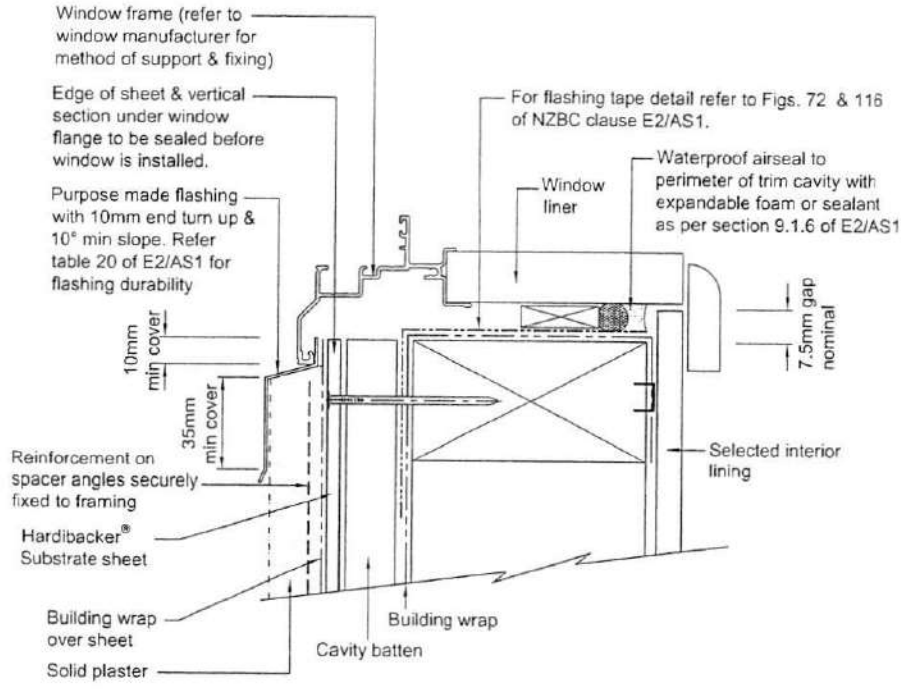


FIGURE 9: SOFFIT DETAIL



General notes for materials section

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and table 20 of NZBC clause 'E2/AS1'.
2. Building wrap must comply with acceptable solution NZBC clause 'E2/AS1' and NZS 3604.
3. Flashing tape must have proven compatability with the selected building wrap and other materials with which it comes into contact as per table 21 of NZBC clause 'E2/AS1'.

(Refer to the manufacturer or supplier for technical information on these materials.)

FIGURE 10: WINDOW SILL

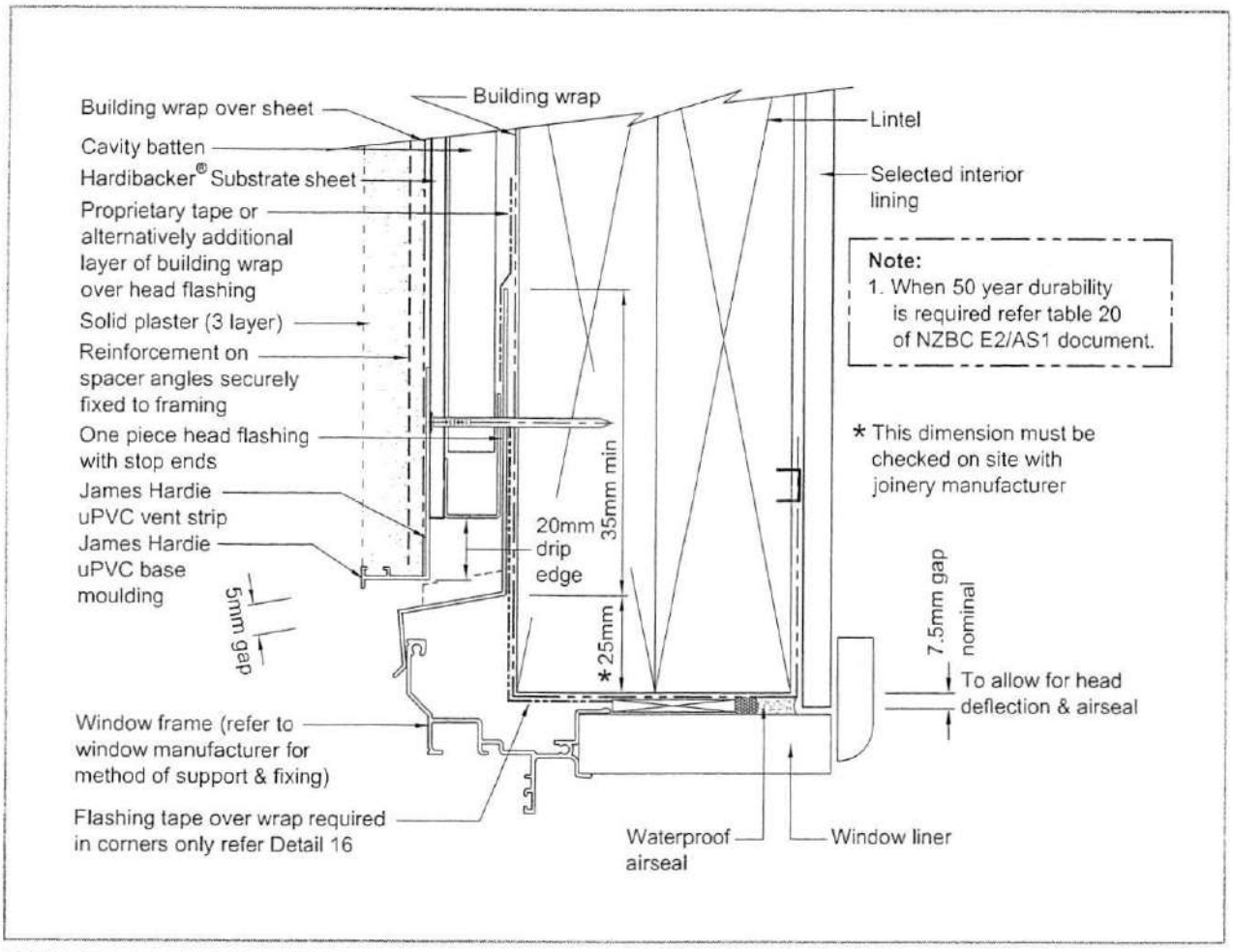


FIGURE 11: WINDOW HEAD

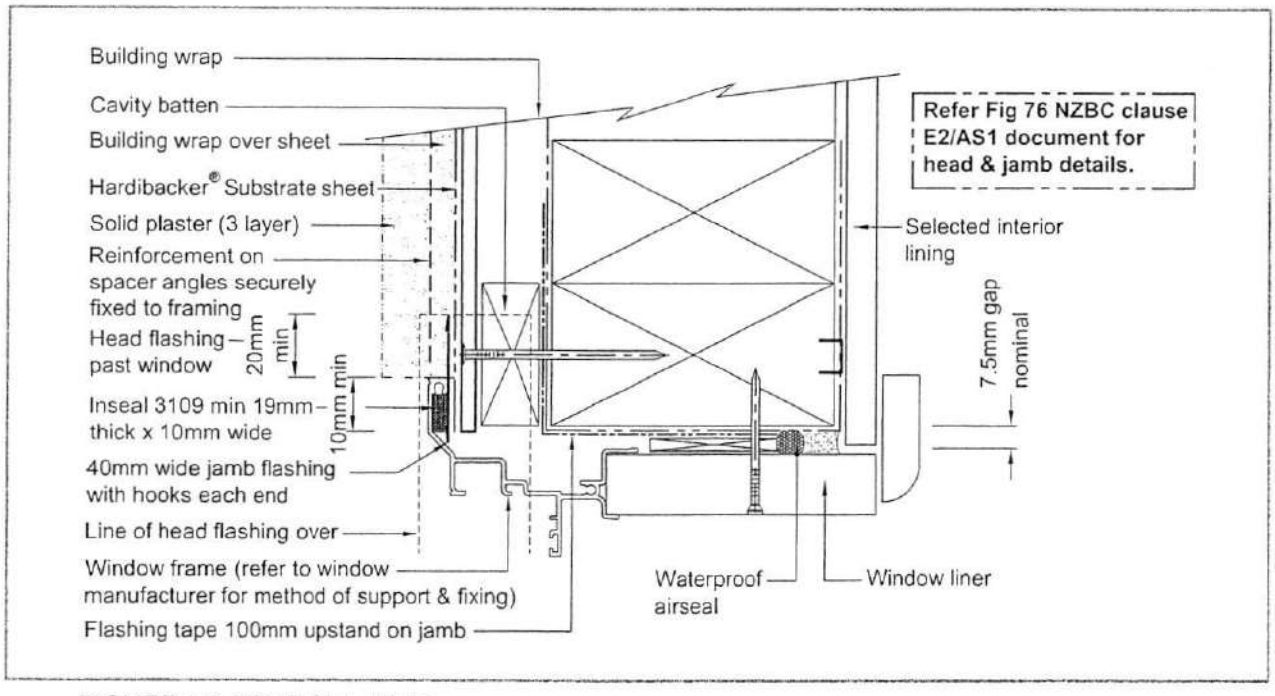


FIGURE 12: WINDOW JAMB

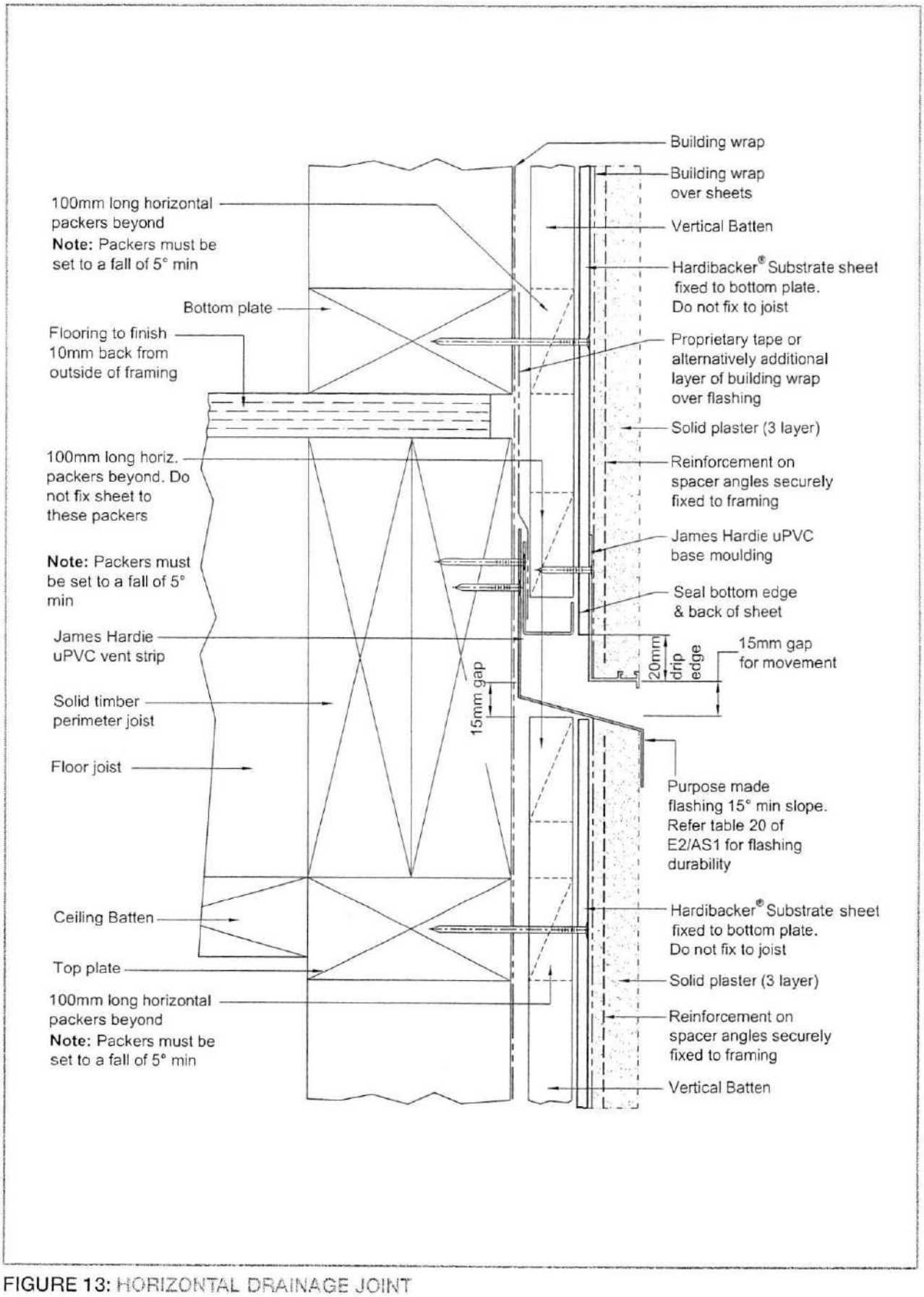


FIGURE 13: HORIZONTAL DRAINAGE JOINT

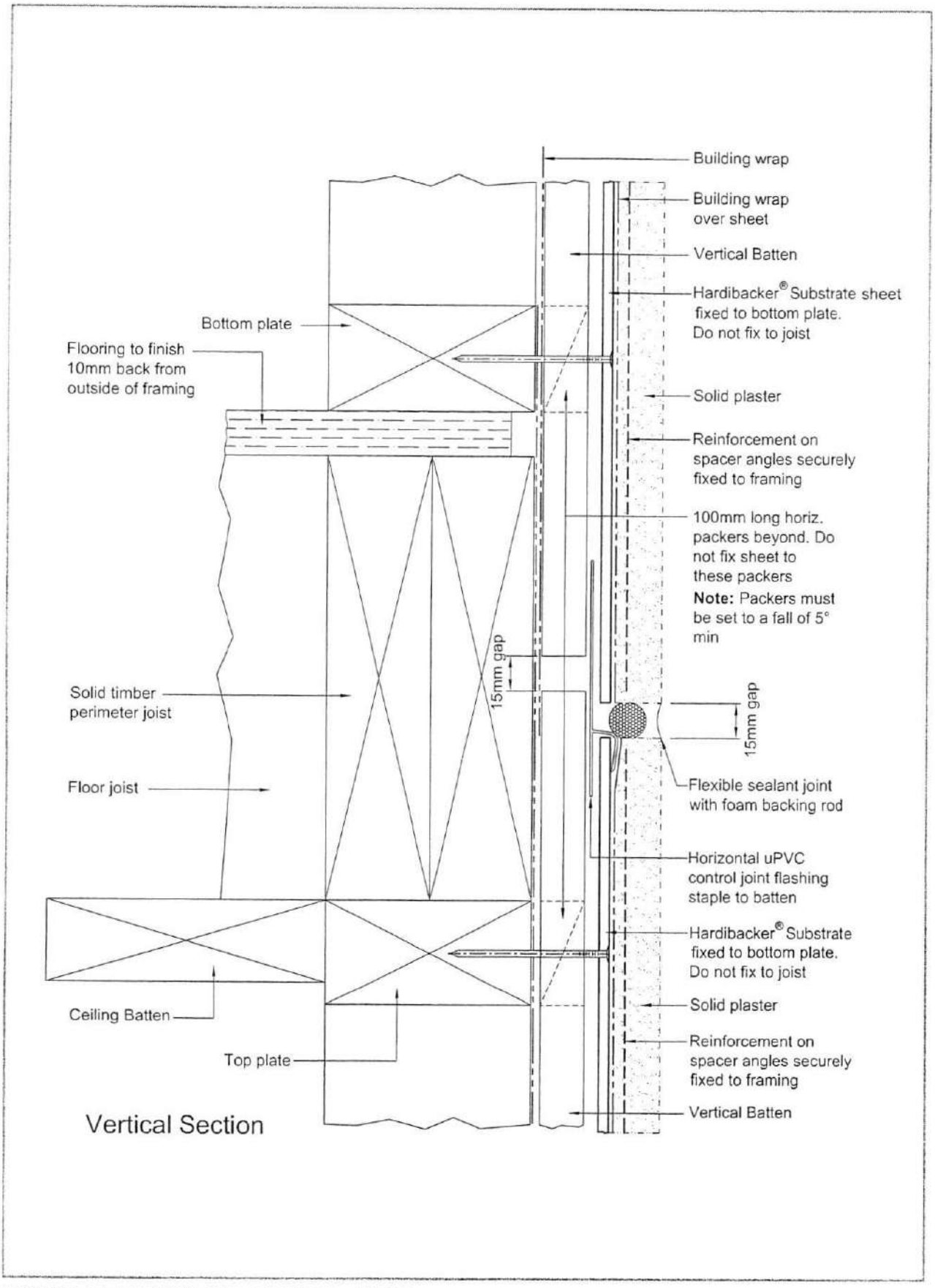


FIGURE 14: HORIZONTAL CONTROL JOINT

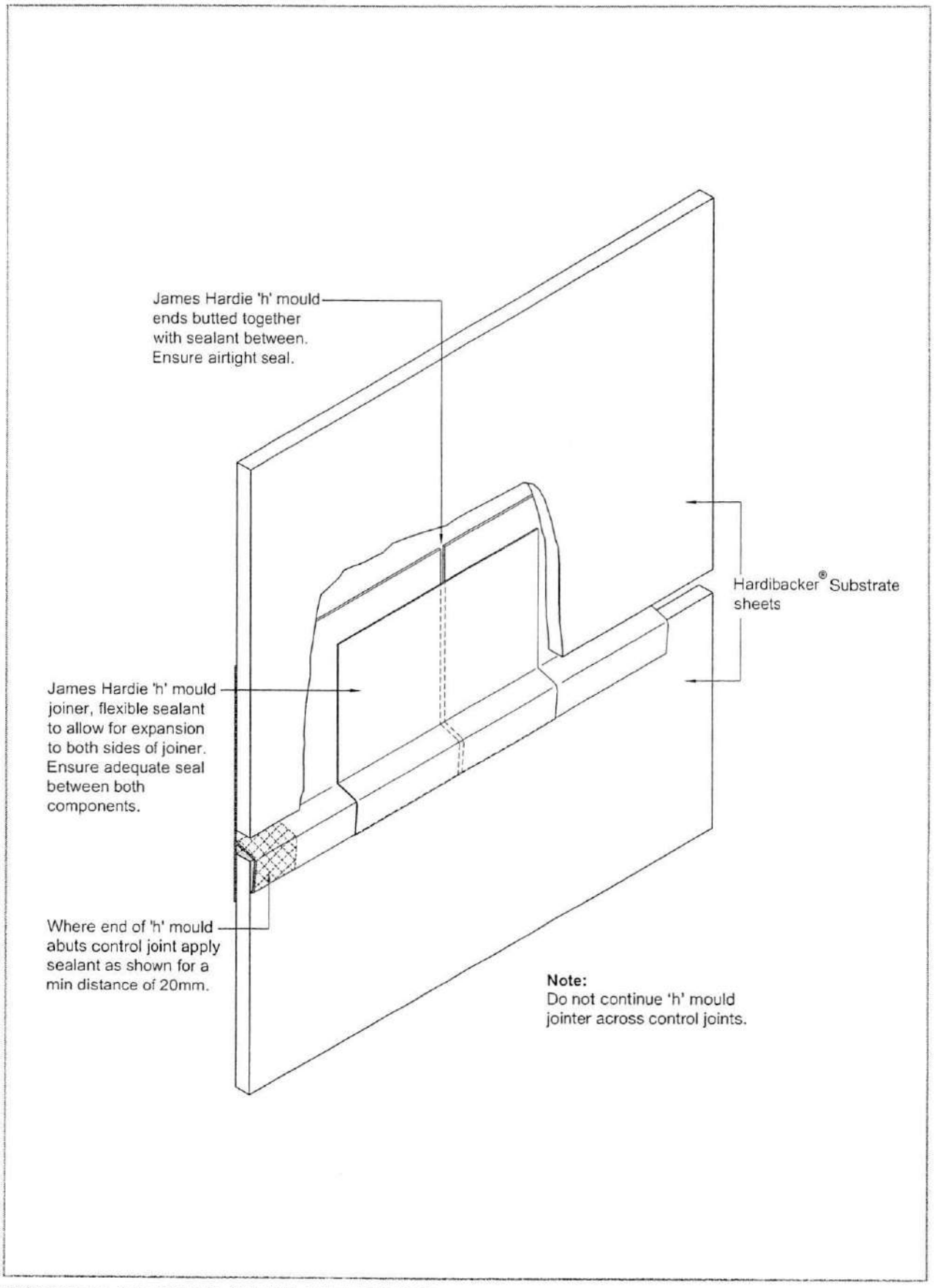


FIGURE 15: 'h' MOULD JOINER CONNECTION

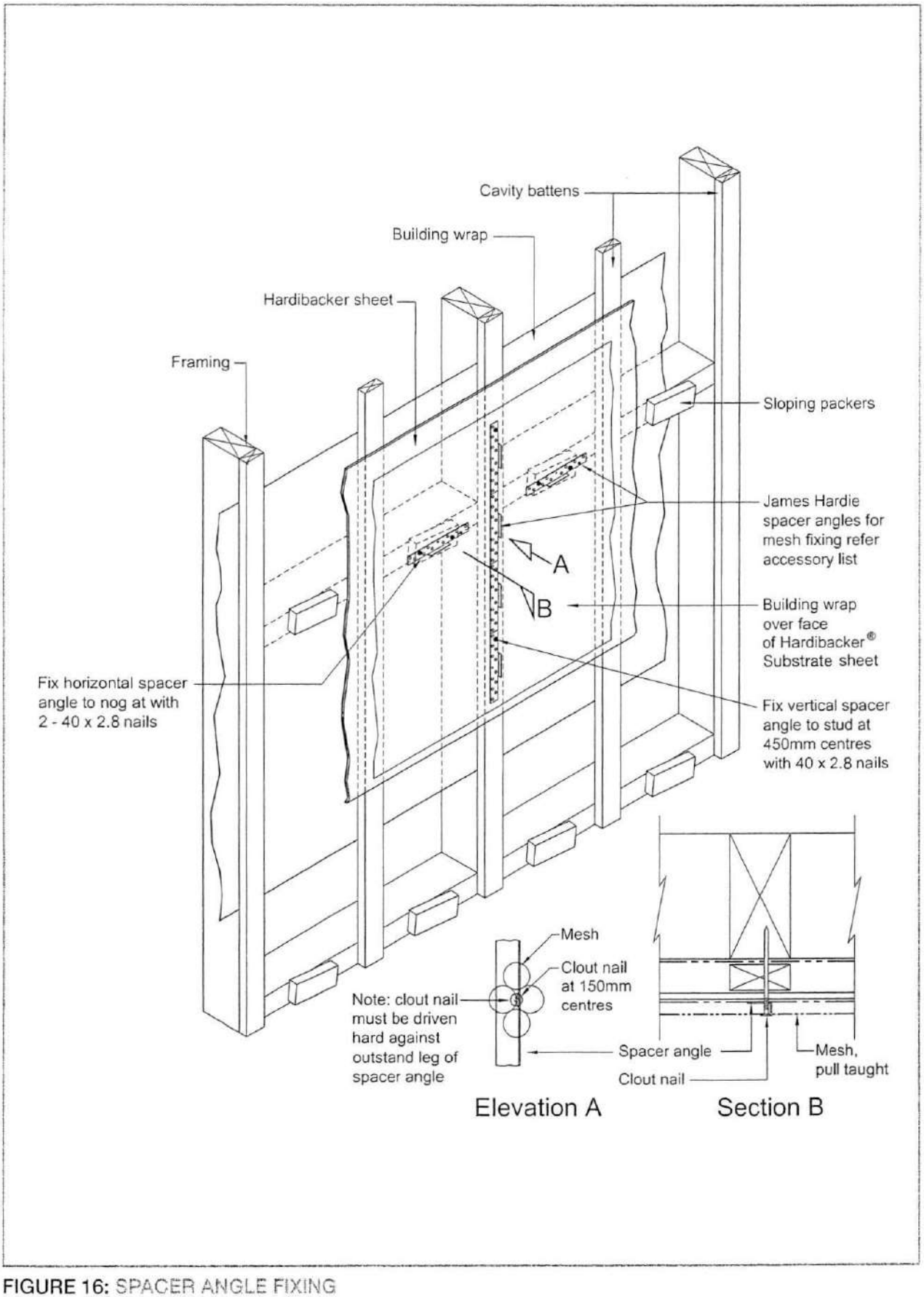


FIGURE 16: SPACER ANGLE FIXING

CARTERS Manufacturing

Job: *PN0489
Client: Diamond Homes
Phone:
Site: Briarwood Estate
Palmerston North
Phone:
Description:

MiTek 20/20 - Engineering 4.3 Gamma4 (Build 1228) MiTek New Zealand Ltd. Printed: 08:06:00 24 Mar 2006

PRODUCER STATEMENT
MiTek 2000™ TRUSS DESIGN PROGRAM

Certification of Mitek 2000™ Truss Design Program

The MiTek 2000™ truss design program has been developed by Gang-Nail Group Ltd for the design of Gang-Nail timber roof, floor and attic trusses in New Zealand. The truss designs computed by this program are prepared using sound and widely accepted engineering principles, and in accordance with NZS 4203, NZS 3603 and NZS 3604 as verification methods and acceptable solutions of the approved documents issued by the Building Industry Authority to satisfy the requirements of Clause B1:Structure of the Building Regulations 1992. This computer design for the proposed building complies with the relevant provisions of the NZ Building Code. This is subject to all proprietary products meeting their performance specification requirements, the provision of adequate bracing, fixings and the correct input of design data carried out by suitably trained personnel.

Summary of MiTek 2000™ Truss Design Data and Output

The MiTek 2000™ computer design output for this job titled and located at the site identified on the top of this page is based on the following parameters entered into the program. The owner must ensure that the following job details below are current and relevant to the project before fabrication and erection of the Gang-Nail trusses.

Job Details

Roof Truss

Timber Group:	45H12CTR	Pitch:	30.00 deg	Std Overhang:	600 mm
Roof		**Ceiling**		**Wind**	
Material:	Galv Iron .5mm	Material:	Standard	Area:	High (44.0 m/s)
Dead Load:	0.210 kPa	Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Restraints:	900 mm centres	Restraints:	400 mm centres		
Live Load:	Qur = 0.250 kPa Qc = 1.000 kN				

These trusses must be fabricated and erected in accordance with the Gang-Nail manual. Proper erection bracing must be installed to hold the components true and plumb and in a safe condition until permanent bracing is fixed. All permanent bracing and fixing must be installed before any loads are applied. The specifications for timber shall be as shown on the output. The timber shall be standard gauged and treated to the requirements of NZMP 3640. Unless otherwise noted, this design assumes that the steel fixings and timber connectors are situated in a closed environment, as defined by NZS3604:1999 Section 4.

Truss List

Legend: * = detail only, ? = input only, ~~Txx~~ = failed design, Unmarked trusses = designed successfully

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
*R02B	1	913	30.00	900	*HB03	1	4896	22.21	900	J07B	1	2877	30.00	900	*R07A	2	1266	30.00	900
ET01	1	4200	30.00	814	*HB04	1	4186	22.21	900	*HB07	1	6168	22.21	900	T15	5	10100	30.00	806
T01	4	4200	30.00	814	J03B	1	3227	30.00	900	*HB08	1	1900	22.21	900	V07	1	1150	30.00	900
*FLY1	2	2700	30.00	900	J03D	1	3227	30.00	900	J07A	1	2877	30.00	900	J01	1	2377	30.00	900
*HB01	1	5461	22.21	900	J03C	1	3227	30.00	900	J09	1	1977	30.00	900	J01A	1	2377	30.00	900
*HB02	1	2311	22.21	900	T08	2	3800	30.00	791	J09A	1	1977	30.00	900	T03	1	4400	30.00	655
J01B	1	2377	30.00	900	HT01	1	3227	30.00	900	*R04	1	1690	30.00	900	J03	1	3227	30.00	900
J02	1	1477	30.00	900	J04A	1	2627	30.00	900	*R05	1	2717	30.00	900	J05	1	2577	30.00	900
J02A	1	1477	30.00	900	T07	1	3800	30.00	762	*HB09	1	4819	22.21	900	J07	1	2877	30.00	900
*R01	1	1190	30.00	900	T06	2	3800	30.00	762	*HB10	1	2505	22.21	900	J03F	1	3227	30.00	900
*R02	3	913	30.00	900	V01	1	955	30.00	900	T16	1	4400	30.00	818	PTG01	1	600	0.00	900
*R02A	3	913	30.00	900	V02	1	854	30.00	900	T16A	1	4400	30.00	818	J10	1	2068	30.00	900
ET02	1	6600	30.00	742	J05A	1	2577	30.00	900	HT02	1	3227	30.00	818	TG01	1	6600	30.00	900
T02	4	6600	30.00	742	*HB05	1	4471	22.21	900	J13	1	3227	30.00	900	T14	1	10100	30.00	900
*FLY2	1	3900	30.00	900	*HB06	1	1232	22.21	900	*R02C	1	913	30.00	900	J04	1	2627	30.00	900
*FLY3	1	1200	30.00	900	J06	1	1677	30.00	900	*R06	1	749	30.00	900	T09	1	5200	30.00	900
ET03	1	4400	30.00	655	J06A	1	1677	30.00	900	T17	1	7600	30.00	917	T13	1	4900	30.00	900
TR01A	1	10100	30.00	900	*R03	1	1390	30.00	900	V03	1	2244	30.00	900	TG03	1	7600	30.00	900
T10	1	10100	30.00	743	J08	1	2877	30.00	900	V04	1	1328	30.00	900	T05	1	4400	30.00	578
T10A	4	10100	30.00	743	T12A	1	5200	30.00	816	V05	1	2600	30.00	900	J03A	1	3227	30.00	900
*FLY4	4	2800	30.00	900	T12	2	5200	30.00	816	V06	1	1200	30.00	900	T13A	1	4900	30.00	900
ET04	1	4400	30.00	578	ET05	1	5200	30.00	816	J11	1	1775	30.00	900	TG02	1	10100	30.00	900
T04	1	4400	30.00	578	*FLY5	2	3200	30.00	900	J12A	1	1922	28.08	900	T11	1	5200	30.00	816
TR01	1	10100	30.00	900	T18A	1	7600	30.00	917	J12	1	1922	28.08	900					
J03E	1	3227	30.00	900	T18	1	7600	30.00	917	*R07	2	1266	30.00	900					

Total quantity : 125

Friday, 24 March 2006

FAXED

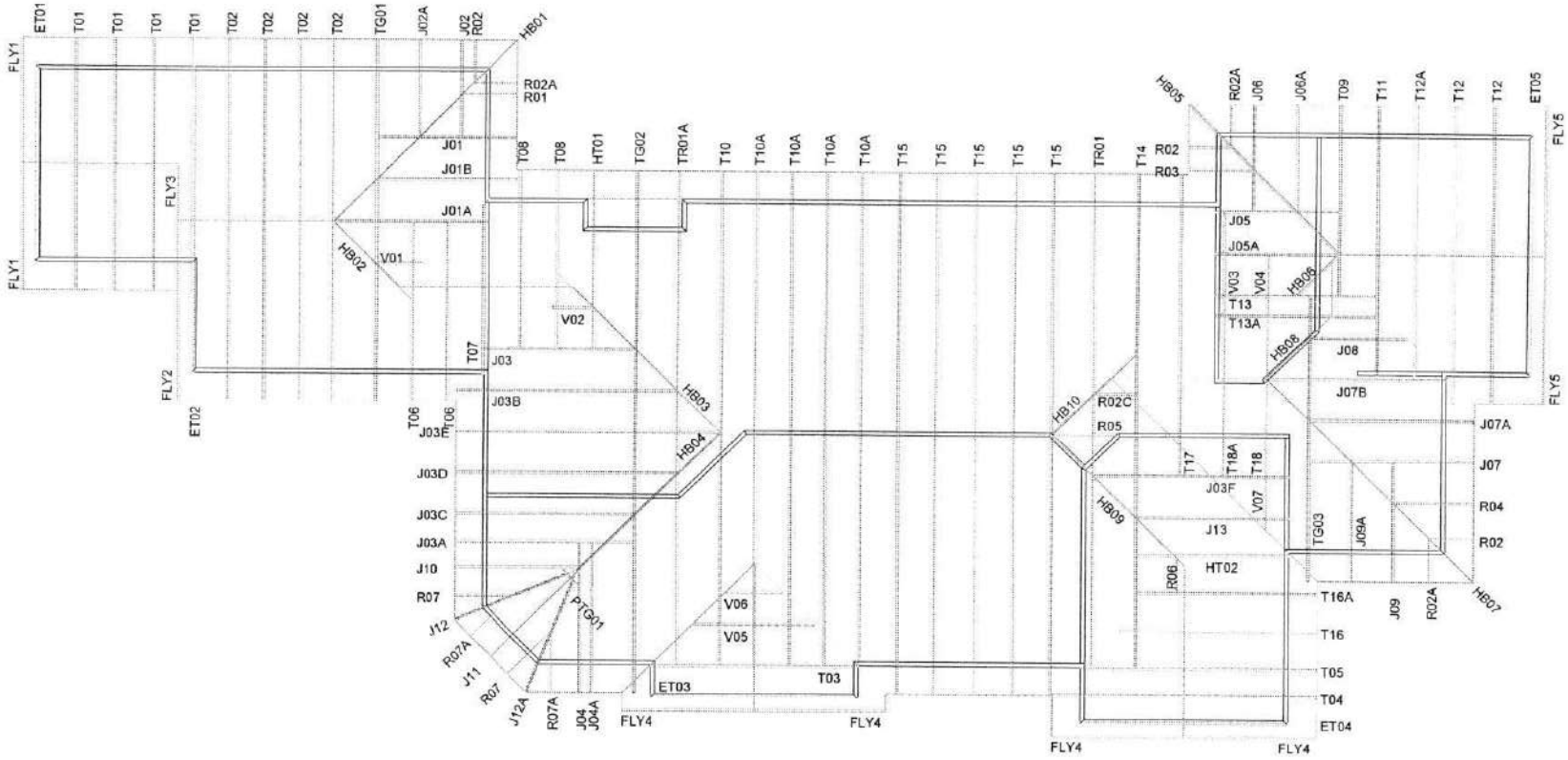
The computer design input has been carried out by:

Signed: KWhittle Dated: Friday, 24 March 2006

Name of Computer Operator: Chris Hindrup

Qualifications and Title: Truss Detailer

Company: **CARTERS Manufacturing**



BUILDING CONSENT LAYOUT

CARTERS
MANUFACTURING

418-426 Rangitikei St
Palmerston North
Ph (06) 358 9029

JOB No **PN0489**

Client: Diamond Homes
Job Name: Kibblewhite
Address: Briarwood Estate
Palmerston North

Pitch: 30
Roof Material: Longrun Iron
Soffit Overhang: 600 mm
Wind Area: High
Snow Load: 0 kPa

Trusses And Rafters At 900 Centres Unless Stated Otherwise.

This layout is to be read in conjunction with the Architectural plans.

DRAWN BY Chris

DATE 24/03/06 | PAGE 1 of 2

BUILDING CONSENT INFORMATION

This layout and associated design statements are for Building Consent Application purposes only and may not be used for construction.

All walls shown on this layout are considered to be load bearing.

As Built roof truss layouts, truss fixing details, point load notification, and a Producer Statement for the design of the roof trusses will be provided to the Local Authority at the time of manufacture.

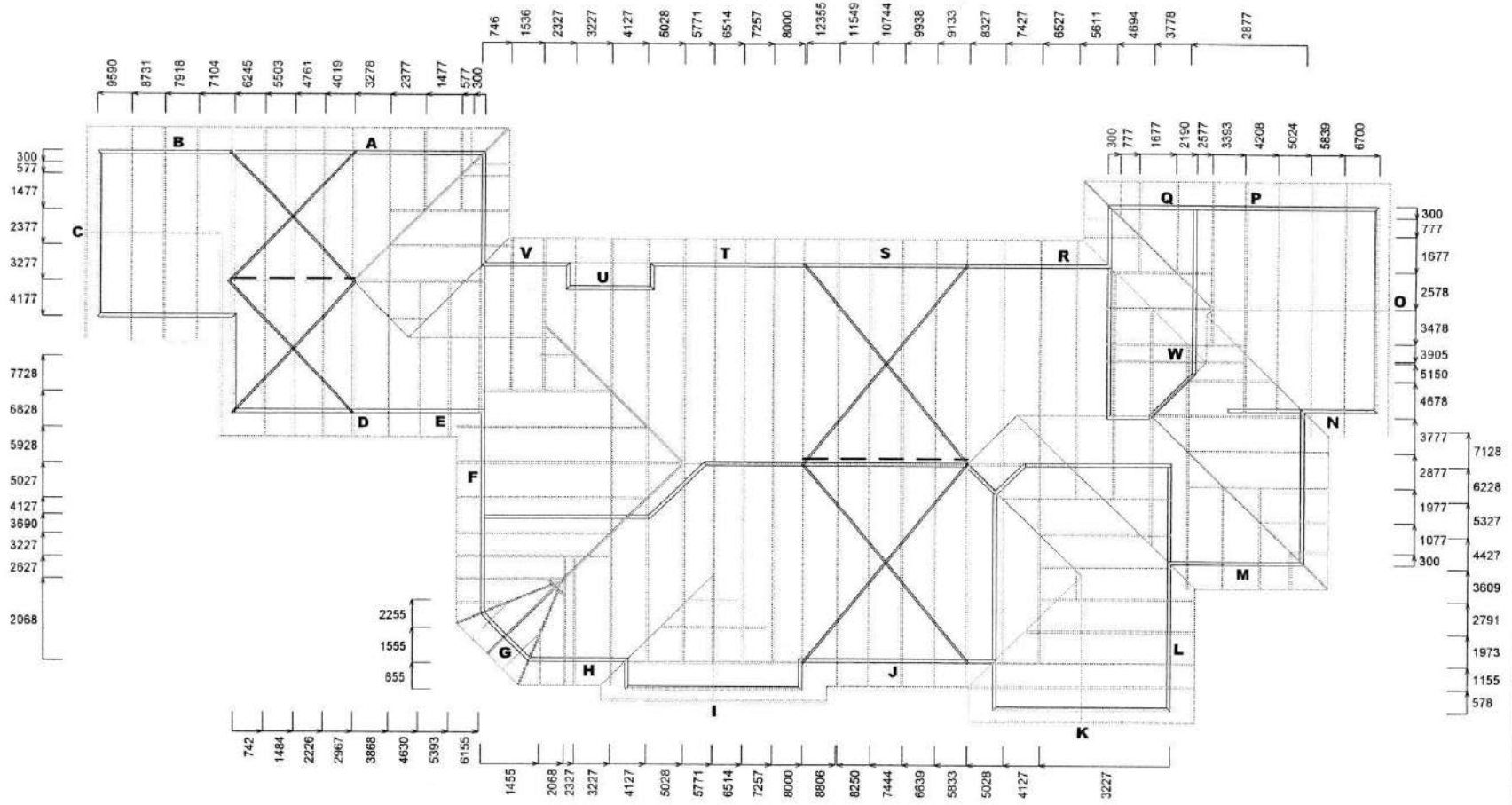
This layout and associated design statements are valid only if the job is manufactured by CARTERS.

TRUSS FIXINGS

Truss to Top Plate - 2 wire dogs
Truss to Truss - Joist Hanger
or alternatively as specified by CARTERS on the Final Layout

QUALITY ASSURANCE FTMA NEW ZEALAND

See Page 2 for Dimensions and Point Load notification



DIAGONAL ROOF SPACE BRACE
as per
NZS3604:1999 10.4.3 & fig. 10.26

LUMBERLOK STRIP BRACE
WITH TENSIONERS

See Page 1 for
Labelled Truss Layout

BUILDING CONSENT LAYOUT

CARTERS
MANUFACTURING
418-426 Rangitikei St
Palmerston North
Ph (06) 358 9029

JOB No **PN0489**

Client: Diamond Homes
Job Name: Kibblewhite
Address: Briarwood Estate
Palmerston North

Pitch: 30
Roof Material: Longrun Iron
Soffit Overhang: 600 mm
Wind Area: High
Snow Load: 0 kPa

Trusses And Rafters At 900 Centres Unless Stated Otherwise.

This layout is to be read in conjunction with the Architectural plans.

DRAWN BY Chris

DATE 24/03/06 PAGE 2 of 2

These lintels have been sized as per the GANGLAM 05/2005 and FLITCH BEAM 01/2001 selection manuals as provided by MiTek NZ Ltd.

HYSPAN and HY90 lintels have been sized using designIT v1.2NZ software or selection manuals, HYSPAN Edition 2 and HY90 Edition 1, as provided by CHH futurebuild.

Unless otherwise stated all lintels are to be selected as per NZS3604 1999.

All walls shown on this layout are considered to be load bearing.

LINTEL	SIZE	LENGTH
A	FB25H Flitch Beam	4800mm
B	L350 Trifold	2400mm
C	L400 Trifold	2200mm
D	M400 Trifold	2200mm
E	L400 Trifold	895mm
F	L400 Trifold	1800mm
G	L400 Trifold	1200mm
H	L400 Trifold	1800mm
I	L400 Trifold	3200mm
J	L400 Trifold	2800mm
K	L400 Trifold	3200mm
L	M400 Trifold	2200mm
M	L400 Trifold	2200mm
N	L400 Trifold	1500mm
O	L400 Trifold	2200mm
P	L400 Trifold	2200mm
Q	L400 Trifold	1600mm
R	L400 Trifold	1400mm
S	L400 Trifold	2200mm
T	L400 Trifold	2200mm
U	M400 Trifold	1700mm
V	L400 Trifold	1400mm
W	150x100	870mm

TRIFOLD LINTELS

Date :		20-May-06				
Customer :		Diamond Homes				
Contract :		Kibblewhite				
			Type			
Opening	**Depth**	**Light**	**Medium**	**Heavy**		**Spec**
Workshop	350	2.65				
Garage	250H Flitch Beam					
Laundry	400	1.5				
Entry	400		1.9			DS
Bed 4	400	2.3				
Bed 3	400	2.3				
Bath	400	1.5				
Ensuite	400	1.7				
Master Bed	400	2.3				
Master Bed	400	2.3				
Master Bed	400	1.6				
Bed 2	400	2.3				
Lounge	400		2.4			
Lounge	400	3.3				
Family	400	2.9				
Dining	400	3.3				
Kitchen	400	2				
Kitchen	400	1.3				
Office	400	1.9				
Garage	400	1				
Garage	400		2.4			
Workshop	400	2.3				

Job: FP0094
Description:
Building Consent No.:

Client: Diamond Homes
Phone:

Site: Kibblewhite
Briarwood Esate
Palmerston North

Phone:

PRODUCER STATEMENT
MiTek 2000™ TRUSS DESIGN PROGRAM

Certification of Mitek 2000™ Truss Design Program

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Summary of MiTek 2000™ Truss Design Data and Output

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Job Details

Roof Truss

Timber Group:	45H12CTR	Pitch:	30.000 deg	Std Overhang:	600 mm
Roof		**Ceiling**		**Wind**	
Material:	Galv Iron .5mm	Material:	Standard	Area:	High (44.0 m/s)
Dead Load:	0.210 kPa	Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Restraints:	900 mm centres	Restraints:	400 mm centres		
Live Load:	Qur = 0.250 kPa Qc = 1.000 kN				

These trusses must be fabricated and erected in accordance with the Gang-Nail manual. Proper erection bracing must be installed to hold the components true and plumb and in a safe condition until permanent bracing is fixed. All permanent bracing and fixing must be installed before any loads are applied. The specifications for timber shall be as shown on the output. The timber shall be standard gauged and treated to the requirements of NZMP 3640. Unless otherwise noted, this design assumes that the steel fixings and timber connectors are situated in a closed environment, as defined by NZS3604:1999 Section 4.

Truss List

Legend: * = detail only, ? = input only, ‡xx = failed design, Unmarked trusses = designed successfully, LB = lateral bracing required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
EN01	1	4200	30.000	814	V02	1	854	30.000	900	*FLY5	2	3200	30.000	900
T01	4	4200	30.000	814	J07A	1	1922	28.076	900	J10B	1	2877	30.000	900
*FLY1	2	2700	30.000	900	J06	1	1775	30.000	900	*HB08	1	6168	22.208	900
T04A	1	3278	30.000	762	J07	1	1922	28.076	900	*HB09	1	1900	22.208	900
T04	2	3278	30.000	762	*R03	2	1374	30.000	900	J10A	1	2877	30.000	900
*HB01	1	5461	22.208	900	*R03A	2	1374	30.000	900	J12	1	1977	30.000	900
*HB02	1	2311	22.208	900	EN04	1	4400	30.000	578	J12A	1	1977	30.000	900
J01A	1	2377	30.000	900	T06	1	4400	30.000	578	*R06	1	1690	30.000	900
J02	1	1477	30.000	900	TR01	1	10100	30.000	900	V05	1	2244	30.000	900
J02A	1	1477	30.000	900	*R04	1	2717	30.000	900	V06	1	1328	30.000	900
*R01	1	1190	30.000	900	*HB04A	1	4896	22.208	900	V07	1	1150	30.000	900
*R02	3	913	30.000	900	*HB05	1	2505	22.208	900	J01B	1	2377	30.000	900
*R02A	3	913	30.000	900	T09	1	3227	30.000	791	J01	1	2377	30.000	900
EN02	1	6600	30.000	742	T09A	1	3227	30.000	791	T03	1	4400	30.000	655
T02	4	6600	30.000	742	J03G	1	3227	30.000	900	J03	1	3227	30.000	900
*FLY2	1	3900	30.000	900	J03F	1	3227	30.000	900	PTG01	1	600	0.000	900
*FLY3	1	1200	30.000	900	T17	2	3478	30.000	917	J05	1	2068	30.000	900
EN03	1	4400	30.000	655	T16	1	5928	30.000	917	J03E	1	3227	30.000	900
TR01A	1	10100	30.000	900	*R02B	1	913	30.000	900	J08	1	2577	30.000	900
T10	1	10100	30.000	704 LB	T11	5	10100	30.000	821 LB	J10	1	2877	30.000	900
T10A	4	10100	30.000	704 LB	V03	1	2600	30.000	900	TG01	1	6600	30.000	900
*FLY4	4	2800	30.000	900	V04	1	1400	30.000	900	J04	1	2627	30.000	900
J03H	1	3227	30.000	900	J08A	1	2577	30.000	900	T08	1	10100	30.000	900
*HB03	1	4209	22.208	900	*HB06	1	4471	22.208	900	T12	1	3005	30.000	900
*HB04	1	4896	22.208	900	*HB07	1	563	22.208	900	T15A	1	3393	30.000	900
J03A	1	3227	30.000	900	J09	1	1677	30.000	900	TG03	1	5150	30.000	900
J03B	1	3227	30.000	900	J09A	1	1677	30.000	900	J03C	1	3227	30.000	900
J03D	1	3227	30.000	900	*R05	1	1390	30.000	900	T07	1	4400	30.000	578
T05	2	3227	30.000	791	J11	1	1370	30.000	900	T15	1	3393	30.000	900
HT01	1	3227	30.000	900	T14A	2	5200	30.000	816	TG02	1	10100	30.000	900
J04A	1	2627	30.000	900	T14	1	5200	30.000	816	T13	1	5200	30.000	816
V01	1	955	30.000	900	EN05	1	5200	30.000	816					

Total quantity : 123

Friday, 9 June 2006

The computer design input has been carried out by:

Signed: .....

Dated: Friday, 9 June 2006

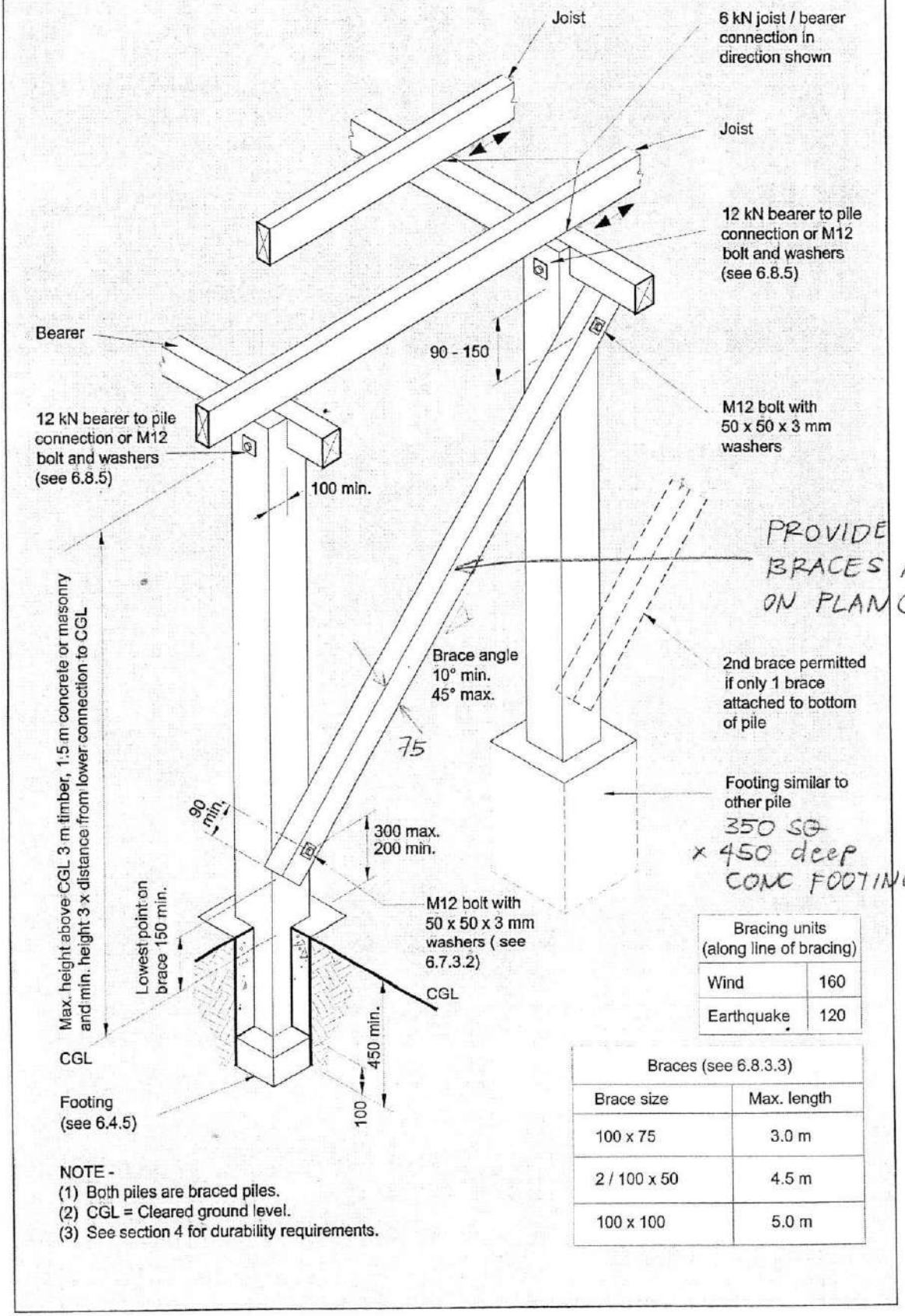
Name of Computer Operator: Chris Hindrup

Qualifications and Title: Truss Detailer

Company: **CARTERS Manufacturing**

BS - 2
106009
18/4/06

KEVIN O'CONNOR & ASSOCIATES LTD.



Bracing units (along line of bracing)	
Wind	160
Earthquake	120

Braces (see 6.8.3.3)	
Brace size	Max. length
100 x 75	3.0 m
2 / 100 x 50	4.5 m
100 x 100	5.0 m

NOTE -
(1) Both piles are braced piles.
(2) CGL = Cleared ground level.
(3) See section 4 for durability requirements.

Figure 6.6 – Braced pile system – Brace connected to pile (see 6.8)

CLIENT					
DIAMOND HOMES					
SUBJECT					
KIBBLE WHITE RESIDENCE					
FILE No.	DATE	PAGE	OF	BY	CKD
106009	18/4/06	B-1			

KEVIN O'CONNOR & ASSOCIATES LTD

DESIGN BRACES TO DECK :

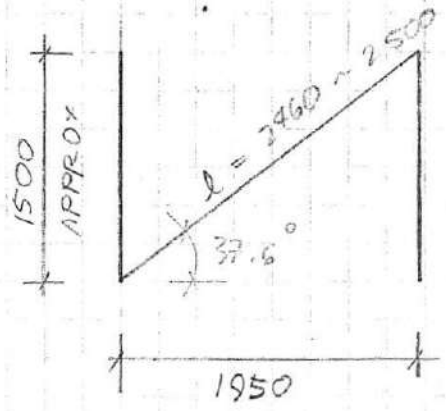
EARTHQUAKE :

AREA 19.6m × 2m = 39.2 m²

BUS REQ'D = 9.8/2 BUS/m² × 39.2 m² = 193 BUS

EQ ALONG : REQ'D = $\frac{193}{120}$

= 2 BRACES



l = 2500 MAX

NZS3604: USE : 100 × 75 BRACES

PROVIDE : 350 SQ × 450 deep CONC FOOTINGS

Refer details as attached. BS-2