



Environmental Compliance
8am to 5.30pm Mon - Thurs, 8am to 5pm Fri
Phone 9970 1111

26 September 2006

COPY

Site Alternatives Pty Ltd
PO Box 6215
PYMBLE NSW 2073

Attention: Kevin Shanahan

Dear Sir,

**Re: Construction Certificate: CC0435/06
Property: 162 Narrabeen Park Parade Mona Vale**

Please find enclosed your approved Construction Certificate and stamped plans.

Did you know that work is unable to commence until such time as a completed Notification of Commencement Form has been submitted to Council at least two (2) days prior to starting work? Not to do so is a breach of the Environmental Planning and Assessment Act, which would result in a Penalty Infringement Notice (on-the-spot fine) being issued to you and the builder.

To assist you please find enclosed a "Notification of Commencement and Principal Certifying Authority Service Agreement" form to enable you to appoint Pittwater Council as your Principal Certifying Authority (PCA).

If appointed as the PCA, Council would engage the services of Tom Miskovich & Associates Pty Ltd to carry out the various inspections as indicated in Part 6 of the enclosed "Notification of Commencement and Principal Certifying Authority Service Agreement" form and ultimately issue an Occupation Certificate for your development. Appointment and inspection fees are also detailed in the enclosed form.

Council will endorse your completed "Notice of Commencement and Principal Certifying Authority Service Agreement" form and return a copy to the applicant with advice as to the required critical stage and other inspections to be carried out on behalf of Council.

Council is committed to providing a quality service and would value your business in being appointed as the Principal Certifying Authority for your development.

Yours faithfully

Development Compliance Group

Per: Tom Miskovich & Associates Pty Ltd



Pittwater Council

Construction Certificate No: CC0435/06

Site Details: 162 Narrabeen Park Parade Mona Vale

Legal Description: Lot 15 DP#16692

Type of Development: *(Building Work)*

Description: Construction of a new dwelling, swimming pool, driveway & landscaping works

Associated Development Consent No: N0256/06 Dated: 27 July 2006

Building Code of Australia Classification: Class 1a & 10b

Details of plans, documents or Certificates to which this Construction Certificate relates:

Architectural plans prepared by Site Alternatives Pty Ltd

- Drawing No: A01-C Site Plan dated Aug 06
- Drawing No: A02-C Basement Plan dated Aug 06 (excluding store room)
- Drawing No: A03-C Ground Floor Plan dated Aug 06
- Drawing No: A04-C First Floor Plan dated Aug 06 (excluding window W28)
- Drawing No: A05-C Elevations Plan dated Aug 06
- Drawing No: A06-C Elevations Plan dated Aug 06
- Drawing No: A07-C Sections Plan dated Aug 06
- Drawing No: A08-C Sections Plan dated Aug 06
- Drawing No: A09-C Sections Plan dated Aug 06
- Drawing No: A010-C Driveway & Elevations Plan dated Aug 06
- Drawing No: A011-C Site Setout Plan dated Aug 06
- Drawing No: A012-C Roof Plan dated Aug 06
- Drawing No: A013-C Window Schedule Plan dated Aug 06

Structural plans prepared by Randall Jones & Associates Pty Ltd

- Drawing No: S1-A Basement Slab, Driveway & Retaining Wall Layout dated: 4-9-06
- Drawing No: S2-A Ground Floor Slab, Bottom Reinforcement Layout dated: 4-9-06
- Drawing No: S3-A Ground Floor Slab, Top Reinforcement Layout dated: 4-9-06
- Drawing No: S4-A Slab & Footing Details dated: 4-9-06
- Drawing No: S5-A First Floor Structural & Ground Floor Wall Bracing Layout dated: 4-9-06
- Drawing No: S6-A First Floor Wall Bracing Layout dated: 4-9-06

Structural plan prepared by Kneebone & Beretta Consulting Engineers Pty Ltd

- Drawing No: 58897-1, Proposed Swimming Pool Structural Details, dated 24-8-06

Stormwater plans/certification prepared by Greenarrow Hydraulics

- Drawing No: H-01-B Roof Plan & Sediment Control Details dated: 20-9-06
- Drawing No: H-02-B Stormwater Drainage dated: 20-9-06
- Certificate of Design – Stormwater Drainage dated: 7-9-06

COPY



Pittwater Council

Construction Certificate No: CC0435/06

COPY

Landscape plan/certification prepared by Tract Consultants

- Drawing No: 206011 L/D-DD01 Landscape Plan dated: 17-8-06
- Memorandum confirming compliance with native plant selections, dated 20-9-06

Other supporting documents

- Specification of Building Works prepared by: Natspec Domestic dated: 6-9-06 (as modified)
- BASIX Certificate 69340S, dated 11-5-06
- Certification from Souter & Associates for driveway design, dated: 22-9-06
- Specification for Altair window louvres for child-safe windows opening into pool enclosure
- Letter from Site Alternatives confirming compliance with various DA conditions and BASIX commitments, dated 25-9-06.

I hereby certify that the above plans, documents or Certificates satisfy:

- The relevant provisions of the Building Code of Australia.
- The relevant conditions of Development Consent No: N0256/06

Further that the work, completed in accordance with the Building Code of Australia, all relevant Australian Standards and these plans and specifications, will comply with the requirements of Section 81A(5) of the Environmental Planning and Assessment (Amendment) Act, 1997.

Issued By: Tom Donohoe
Accreditation Number: P0064
Pittwater Council Consultant
Building Surveyor

Date of Endorsement: 26 September 2006

Note: You are reminded that pursuant to provisions of Clause 81A, you must nominate whether Council or an accredited certifier will be the principal certifying authority, also you must give notice to Council of your intention to commence work at least two days beforehand.

BASIX Certificate

Building Sustainability Index www.basix.nsw.gov.au

Certificate number: 693405

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 30/06/2005, published by the Department of Planning. This document is available at www.basix.nsw.gov.au

Director-General
Date of issue: Thursday, 11 May 2006



NSW GOVERNMENT
Department of Planning

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0435/06
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.
Endorsed by: TWA (NV)
Date: 26 SEP 2006

Score

- ✓ Water: 40 (Target 40)
- ✓ Thermal comfort: pass (Target pass)
- ✓ Energy: 28 (Target 25)

Description of development

Project address	
Project name	Shanahan Residence
Street address	162 Narrabeen Park Pde
Suburb	Warrewood
Postcode	2102
Local Government Area	Pittwater Council
Project type	
Project type	separate dwelling house
No. of bedrooms	4
Site details	
Site area (m ²)	633
Roof area (m ²)	240
Conditioned floor area (m ²)	260
Unconditioned floor area (m ²)	45
Total area of garden and lawn (m ²)	323
Assessor details and thermal loads	
Assessor number	n/a
Certificate number	n/a
Cooling load (MJ/m ² year)	n/a
Heating load (MJ/m ² year)	n/a
Other	
Groundwater Licence/Water Supply Works Approval number	n/a
Dwelling is within a designated flood prone area	n/a

11B

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments		Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Landscape				
The applicant must plant indigenous or low water use species of vegetation throughout 150 square metres of the site.		✓	✓	
Fixtures				
The applicant must install showerheads with a minimum rating of 3A in all showers in the development.			✓	✓
The applicant must install a toilet flushing system with a minimum rating of 3A in each toilet in the development.			✓	✓
The applicant must install taps with a minimum rating of 2A in the kitchen in the development.			✓	
The applicant must install basin taps with a minimum rating of 2A in each bathroom in the development.			✓	
The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the development.			✓	✓
Alternative water				
Rainwater tank				
The applicant must install a rainwater tank with a capacity of at least 2800 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.		✓	✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 120 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).			✓	✓
The applicant must connect the rainwater tank to:				
- all toilets in the development - the cold water tap that supplies each clothes washer in the development			✓	✓
Swimming pool				
The swimming pool must not have a volume greater than 36 kilolitres.		✓	✓	

Water Commitments

The swimming pool must be protected and shaded.

Show on DA plans	Show on CC/CDC plans & specs	Certifier check
✓	✓	

Thermal Comfort Commitments**Floor, walls and ceiling/roof**

The applicant must construct the floor(s), walls, and ceiling/roof of the dwelling in accordance with the specifications listed in the table below.

Construction	Additional insulation required (R-Value)	Other specifications	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
floor - concrete slab on ground	nil				
floor - suspended floor above garage, concrete	nil				
external wall - framed (weatherboard, fibro, metal clad)	1.30 (or 1.70 including construction)				
external wall - concrete block/plasterboard	1.18 (or 1.70 including construction)				
ceiling and roof - flat ceiling / pitched roof	ceiling: 0.2 (up), roof: foil backed blanket (75mm)	unventilated; light (solar absorptance < 0.475)		✓	✓

Thermal Comfort Commitments**Windows, glazed doors and skylights**

The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door.

The dwelling may have 1 skylight (<0.7 square metres) and up to 2 windows/glazed doors (<0.7 square metres) which are not listed in the table.

The following requirements must also be satisfied in relation to each window and glazed door:

- Except where the glass is 'single clear' or 'single toned', the U-value and SHGC for all windows and glazed doors must be calculated in accordance with Australian National Average Conditions (ANAC).
- The leading edge of each eave, pergola, verandah, balcony or awning must be no more than 500 millimetres above the head of the window or glazed door, except that a projection greater than 500mm and up to 1500mm above the head must be twice the value in the table.
- Pergolas with polycarbonate roof or similar translucent material must have a shading coefficient of less than 0.35.
- Pergolas with fixed battens must have battens parallel to the window or glazed door above which they are situated, unless the pergola also shades a perpendicular window. The spacing between battens must not be more than 50mm.
- Overshadowing buildings/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.

Window/glazed door no.	Orientation	Maximum area (square metres)	Type	Shading	Overshadowing
W1	NE	11.4	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	eave/verandah/pergola/balcony 751-900 mm	not overshadowed
W2	NE	11.4	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	none	2-4m high, 8-12 m away
W3	SW	6.6	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	none	not overshadowed
W4	SW	10.0	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	eave/verandah/pergola/balcony 601-750 mm	not overshadowed
W5	NW	7.7	timber or uPVC, single pyrolytic low-e (U-value:3.07, SHGC:0.492)	none	>4m high, 8-12 m away
W6	NW	2.7	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	eave/verandah/pergola/balcony 601-750 mm	not overshadowed

Window/glazed door no.	Orientation	Maximum area (square metres)	Type	Shading	Overshadowing
W7	NW	13.4	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	eave/verandah/pergola/balcony 601-750 mm	2-4m high, 5-8 m away
W8	SE	10.8	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	eave/verandah/pergola/balcony 601-750 mm	not overshadowed
W9	SE	19.2	timber or uPVC, single clear (or U-value:4.58, SHGC:0.736)	none	not overshadowed
W10	NE	11.4	timber or uPVC, single pyrolytic low-e (U-value:3.07, SHGC:0.492)	none	2-4m high, 8-12 m away

Energy Commitments		Show on DA plans	Show on CC/CD/C plans & specs	Certifier check
Hot water	The applicant must install the following hot water system in the development, or a system with a higher energy rating, or a system with a higher energy rating: gas instantaneous - 3 Star	✓	✓	✓
Cooling system	The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: ceiling fans; Energy rating: n/a		✓	✓
	The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans; Energy rating: n/a		✓	✓
Heating system	The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: gas fixed flued heater; Energy rating: 3.5 Star		✓	✓
	The bedrooms must not incorporate any heating system, or any ducting which is designed to accommodate a heating system.		✓	✓
Ventilation	The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, ducted to facade or roof; Operation control: interlocked to light Kitchen: individual fan, not ducted; Operation control: manual switch on/off Laundry: natural ventilation only, or no laundry; Operation control: n/a		✓ ✓ ✓	✓ ✓ ✓
Artificial lighting	The applicant must ensure that the "primary type of artificial lighting" is fluorescent lighting in each of the following rooms, and where the word "dedicated" appears, the fittings for those lights must only be capable of accepting fluorescent lamps: • all bathrooms/toilets; dedicated • the laundry; dedicated		✓ ✓	✓ ✓
Natural lighting	The applicant must install a window and/or skylight in 3 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓

Energy Commitments

	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Swimming pool			
The applicant must install the following heating system for the swimming pool in the development (or alternatively must not install any heating system for the swimming pool): solar only		✓	
The applicant must install a timer for the swimming pool pump in the development.		✓	
Other			
The applicant must install a gas cooktop & electric oven in the kitchen of the dwelling.		✓	
The applicant must install a fixed outdoor clothes drying line as part of the development.		✓	

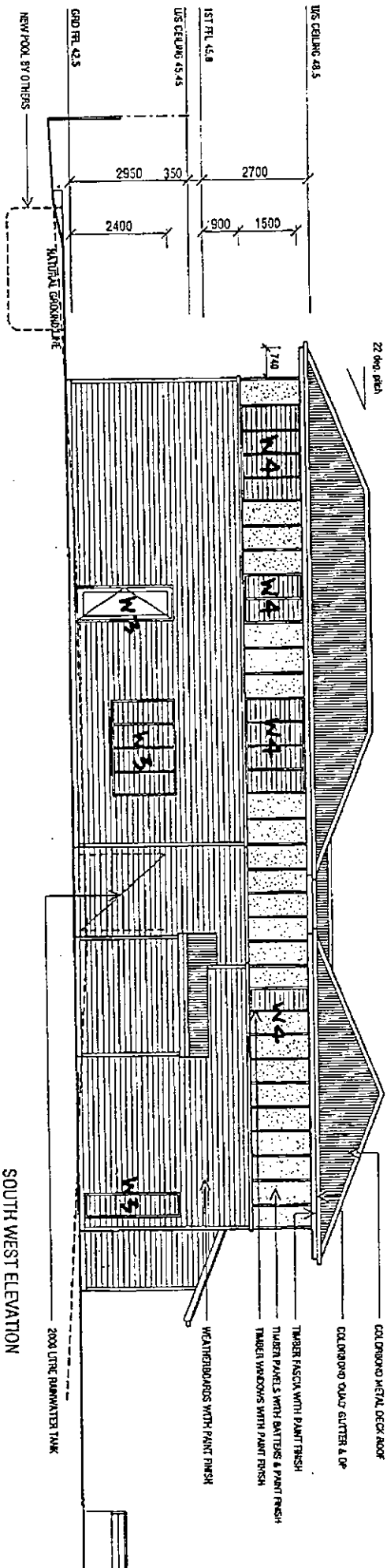
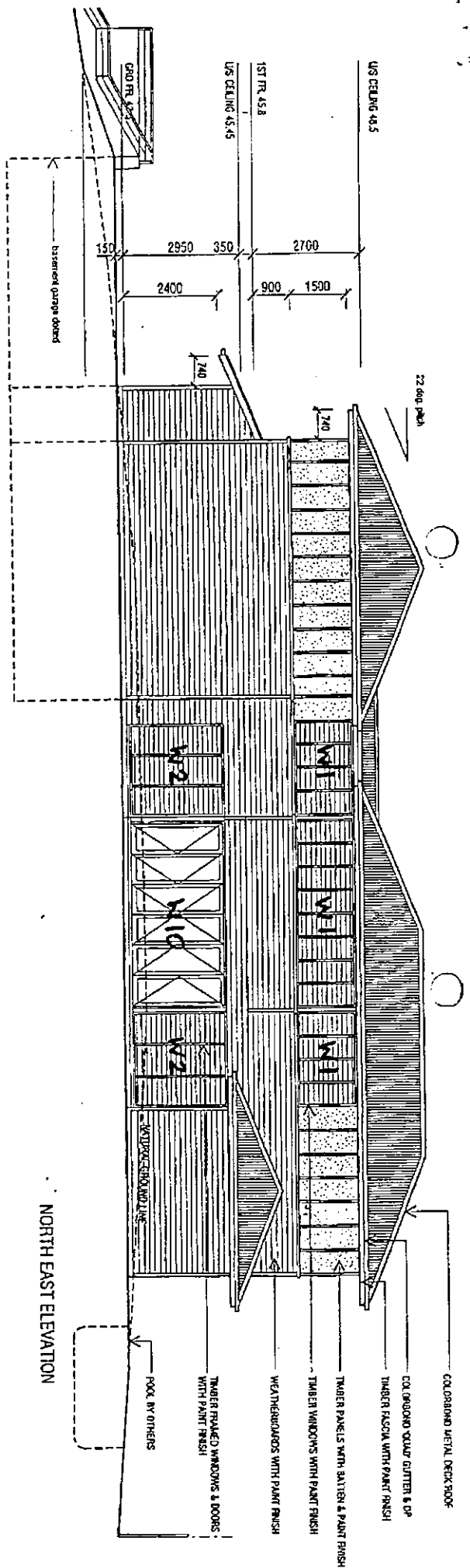
Legend

In these commitments, "applicant" means the person carrying out the development.

Commitments identified with a ✓ in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).

Commitments identified with a ✓ in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.

Commitments identified with a ✓ in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.



NO.	DESCRIPTION	UNIT	QUANTITY	PRICE
1	CONCRETE	m ²		
2	BRICKWORK	m ²		
3	ROOFING	m ²		
4	GLAZING	m ²		
5	PAINTING	m ²		
6	LANDSCAPING	m ²		
7	POOLING	m ²		
8	WATER SUPPLY	m ²		
9	SEWERAGE	m ²		
10	ELECTRICITY	m ²		
11	TELEPHONE	m ²		
12	HEATING	m ²		
13	Cooling	m ²		
14	Other	m ²		



DESIGN SUBMITTED FOR THE
NEW DWELLING
102 NARRABEEN PARK PARADE, NARRABEEN
NSW 2546

NEW DWELLING
102 NARRABEEN PARK PARADE, NARRABEEN
NSW 2546
ELEVATIONS

DATE: 10/01/21
DRAWN BY: AOS-A



25th September 2006.

By Facsimile : 9484 3400
Tom Miskovich & Associates Pty Limited
P.O Box 189
Pennant Hills NSW 2120

25 SEP 2006

BY FAX

Attention : Tom Donohoe

Dear Sir,

**Re : Construction Certificate Application for new dwelling and swimming pool
Premises : 162 Narrabeen Park Pde Mona Vale**

Further to your letter dated 25th September 2006, I confirm the following :

1. External glazing will have a maximum reflectivity index of 25%
2. Materials and Colours will comply with approved schedule.
3. Roofs will be dark grey, brown and or/green tones
4. Fencing will be passable by native wildlife

In relation to BASIX commitments :

5. The volume of the pool will not exceed 36 kilolitres
6. The star rating of the gas heater will be minimum 3.5 star
7. The gas heater will heat the spa only.
8. A pool pump timer will be fitted.
9. In relation to Rumpus Room Window W7, we have rerun the BASIX report and detailed W7a. The efficiency rating of the building is unchanged.

Please do not hesitate to contact the undersigned if you require further information.

Yours Faithfully,

Kevin Shanahan
Director
Site Alternatives Pty Limited

0435/06

TMA (NV)

26 SEP 2006

BASIX Report

Building Sustainability Index

www.basix.nsw.gov.au

Project address

Project name	Shanahan Residence (copy of)
Street address	162 Narrabeen Park Warriewood 2102
Local Government Area	Pittwater Council
Plan type and plan number	Deposited Plan 16692
Lot no.	162
Section no.	

Project type

Project type	separate dwelling house
No. of bedrooms	4

Site details

Site area (m ²)	633
Roof area (m ²)	240
Conditioned floor area (m ²)	260
Unconditioned floor area (m ²)	45
Total area of garden and lawn (m ²)	323

Assessor details and thermal loads

Assessor number	n/a
Certificate number	n/a
Cooling load (MJ/m ² .year)	n/a
Heating load (MJ/m ² .year)	n/a

Other

none	n/a
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Score

Water: 40 (Target 40)

Thermal comfort: pass (Target pass)

Energy: 28 (Target 40) *

Note - Energy target increased from 25 to 40 on 1/7/06

- Original BASIX Certificate 693405 forms part of Construction Certificate - This revision was to clarify impact of no eave directly above Rumsus windows.

Approved TMA 26-9-06

Thermal Comfort Commitments

Windows, glazed doors and skylights

The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door.

The dwelling may have 1 skylight (<0.7 square metres) and up to 2 windows/glazed doors (<0.7 square metres) which are not listed in the table.

The following requirements must also be satisfied in relation to each window and glazed door:

- Except where the glass is 'single clear' or 'single toned', each window and glazed door must have a U-value no greater than that listed and a Solar Heat Gain Coefficient (SHGC) +/-10% of that listed. Total system U-values and SHGC must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions.
- The leading edge of each eave, pergola, verandah, balcony or awning must be no more than 500 millimetres above the head of the window or glazed door, except that a projection greater than 500 mm and up to 1500 mm above the head must be twice the value in the table.
- Pergolas with polycarbonate roof or similar translucent material must have a shading coefficient of less than 0.35.
- Unless they have adjustable shading, pergolas must have fixed battens parallel to the window or glazed door above which they are situated, unless the pergola also shades a perpendicular window. The spacing between battens must not be more than 50 mm.
- Overshadowing buildings/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.

Window/glazed door no.	Orientation	Maximum area (square metres)	Type	Shading	Overshadowing
W1	NE	11.4	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	eave/verandah/pergola/balcony 751-900 mm	not overshadowed
W2	NE	11.4	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	none	2-4m high, 8-12 m away
W3	SW	6.6	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	none	not overshadowed
W4	SW	10.0	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	eave/verandah/pergola/balcony 601-750 mm	not overshadowed
W5	NW	7.7	timber or uPVC, single pyrolytic low-e (U-value:3.99, SHGC:0.4)	none	>4m high, 8-12 m away

This is not a valid certificate.

Window/glazed door no.	Orientation	Maximum area (square metres)	Type	Shading	Notes
W6	NW	2.7	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	eave/verandah/ pergola/balcony 601-750 mm	not overshadowed
W7	NW	7.6	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	eave/verandah/ pergola/balcony 601-750 mm	2-4m high, 5-8 m away
W8	SE	10.8	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	eave/verandah/ pergola/balcony 601-750 mm	not overshadowed
W9	SE	19.2	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	none	not overshadowed
W10	NE	11.4	timber or uPVC, single pyrolytic low-e (U-value:3.99, SHGC:0.4)	none	2-4m high, 8-12 m away
W7a	NW	5.76	timber or uPVC, single clear (or U-value:5.71, SHGC:0.66)	none	2-4m high, 5-8 m away

SPECIFICATION FOR BUILDING WORK**THE WORK**

The building work described in the
building contract dated

No/street 162 Narrabeen Park Parade

Suburb/town Mona Vale

Municipality/shire/city Pittwater

Reference to title

Lot/position 15

Deposited Plan (DP)/Strata Plan
(SP) 16692

Volume

Folio

THE PARTIES

Owner(s) Gretel Shanahan

Address 3 Melbourne Ave Mona Vale NSW 2103

Builder Site Alternatives Pty Limited

Address P.O Box 6215 Pymble

Australian Business Number (ABN) 90 053 034 080

Licence/registration number 24260C

SIGNATURES

Owner(s)

Date

Builder

Date

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number: <u>CO0435/06</u>	
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by: <u>TMA (NV)</u>	
Date: <u>26 SEP 2006</u>	

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1 GENERAL REQUIREMENTS

1.1 GENERAL**Interpretation**

Owner: Means the same as "principal" or "proprietor".

Builder: Means the same as "contractor".

Metallic-coated: Includes zinc-coated steel, zinc/iron alloy-coated steel, and aluminium/zinc-coated steel.

Supply: Means "supply only" - do not install.

Provide: Means "supply and install".

Required: Means required by the contract documents or by the local council or statutory authorities.

Proprietary: Means identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.

Standards

Use referenced Australian or other standards (including amendments) which are current one month before the date of the contract except where other editions or amendments are required.

Manufacturers' or suppliers' recommendations

Select, store, handle and install proprietary products or systems in accordance with the current published recommendations of the manufacturer or supplier.

1.2 AUTHORITIES AND ESTABLISHMENT**Existing services**

Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate as required. If such a service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.
- If the service is to be abandoned, cut and seal or disconnect, and make safe.

Temporary services and works

Provide temporary toilet accommodation. Connect to the sewer main if required by the Local Authority.

Use of existing services

Existing services may be used as temporary services for the performance of the contract.

Signs

Provide a signboard displaying the owners name, the lot number and the builder's name, address and licence number.

1.3 EXECUTION AND COMPLETION**Survey marks**

Preserve and maintain the owners survey marks in their true positions.

Rectification: If the proprietor's survey marks are disturbed or obliterated, immediately give notice and rectify the disturbance or obliteration.

Removal of temporary work, services and plant

Remove temporary work services and construction plant within 10 working days after practical completion.

Rectification: Clean and repair damage caused by the installation or use of temporary work and services and restore existing facilities used during construction to original condition.

Final cleaning

Remove rubbish and surplus material from the site and clean the work throughout.

Warranties

Name the owner as warrantee and give the owner copies of manufacturers' warranties.

Instruction manuals

Give the owner manufacturers' instruction manuals.

Operation

Ensure moving parts operate safely and smoothly.

Surveyor's certificate

Give the owner a certificate which confirms that the work, including boundary fences, has been correctly located.

Services layout

Give the owner a plan which shows the location of underground services.

Authorities' approvals

Give the owner evidence of approval of the local council and statutory authorities whose requirements apply to the work.

Keys

Give the owner two keys for each set of locks keyed alike and two keys for each lock keyed to differ.

1.4 TERMITE PROTECTION**General**

Standard: To AS 3660.1-2000 (*Termite management - New buildings*).

Chemical soil barriers - reticulation systems: Submit evidence that the system has been type tested to AS 3660.1-2000 (*Termite management - New buildings*) Appendix E.

Termite barrier notice: Provide a durable notice permanently fixed in a prominent location to BCA Volume 2 clause 3.1.3.2 (b) (*Installation of termite barriers*).

Termite protection schedule

Location	Method
Slab	Termimesh
Slab penetrations	Termimesh
Slab control joint and footing/slab joints	Termimesh
Under slabs	Termimesh
Building perimeters	Termimesh
Under suspended floors	N/A
Timber poles and posts	N/A

1.5 TIMBER GENERALLY**Unseasoned timber**

If unseasoned timber is provided, or variations in moisture content is likely, make allowance for shrinkage, swelling and differential movement.

Durability

General: Provide timbers with natural durability appropriate to the conditions of use or preservative treated timbers of equivalent durability.

Minimum requirement: To the **Natural and treated timber durability table**.

- Natural durability class of heartwood: To AS 5604-2003 (*Timber - Natural durability ratings*).
- Preservative treatment: To the AS 1604 series (*Specification for preservative treatment*).

Natural and treated timber durability table

Exposure	Untreated timber	Treated timber	Remarks
	Required durability class to AS 5604	Required hazard class to AS 1604 series	

Inside, above ground. Completely protected from the weather. Well ventilated	Class 4	H1	Treated timber resistant to lyctids. Untreated timber must be protected from termites
Inside, above ground. Protected from wetting with nil leaching. Well ventilated	Class 3	H2	Treated timber resistant to borers and termites. Untreated timber must be protected with a finish
Above ground, exposed to weather. Periodic moderate wetting and leaching	Class 2	H3	Treated timber resistant to borers termites and moderate decay. Applicable to weatherboards, fascias, pergolas (above ground), window joinery, framing and decking
In-ground	Class 1	H4 (Severe wetting and leaching)	Treated timber resistant to borers termites and severe decay. Applicable to fence posts, greenhouses, pergolas (in- ground) and landscaping timbers
		H5 (Extreme wetting and leaching and/or critical applications)	Applicable to retaining walls, piling, house stumps, building poles, cooling tower fill

1.6 STEEL GENERALLY

Durability

General: Provide metals with inherent durability appropriate to the conditions of use or proprietary metallic and/or organic coatings of equivalent durability.

Minimum external requirements: To the **Stainless and coated steel table**.

Stainless and coated steel table

External environment Includes cavity wall and roof spaces not protected from moisture penetration by sheathing or sarking	Heavy steel members including lintels more than 3.2 mm thick	Light steel framing, wall ties, connectors and accessories less than 3.2 mm thick	Steel cladding, lining, trims and flashings
Low corrosivity - More than 10 km from salt water with breaking surf - More than 1 km from salt water without breaking surf	Galvanize after fabrication 300 g/m ²	Galvanize after fabrication 300 g/m ² Metallic- coated sheet Z600/AZ200	Metallic- coated sheet AZ150
Medium corrosivity - 1 - 10 km from salt water with breaking surf - 100 - 1000 m from salt water without breaking surf - Non-heavy industrial areas	Galvanize after fabrication 600 g/m ²	Galvanize after fabrication 470 g/m ² Galvanised wire 470 g/m ²	Metallic- coated sheet AZ200

External environment Includes cavity wall and roof spaces not protected from moisture penetration by sheathing or sarking	Heavy steel members including lintels more than 3.2 mm thick	Light steel framing, wall ties, connectors and accessories less than 3.2 mm thick	Steel cladding, lining, trims and flashings
Severe marine - 200-1000 m from salt water with breaking surf - 0 - 100 m from salt water without breaking surf - Heavy industrial areas	Stainless steel 316 or 316L	Stainless steel 316 Engineered polymer	Metallic- coated sheet AZ200 plus organic coating



2 SITE PREPARATION

2.1 GENERAL

Standard

Groundworks for slabs and footings: To AS 2870-1996 (*Residential slabs and footings – Construction*).

Interpretation

Rock: Monolithic material with volume greater than 0.5 m³ which cannot be removed until broken up by mechanical means such as rippers or percussion tools.

Bad ground: Ground unsuitable for the work, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is, or becomes, soft, wet or unstable.

Line of influence: A line extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.

Subgrade: The trimmed or prepared portion of the formation on which the pavement or slab is constructed.

Immediate notice

If rock or bad ground is encountered, advise the owner immediately.

2.2 ENVIRONMENTAL PROTECTION

Erosion control

Avoid erosion, contamination, and sedimentation of the site, surrounding areas, and drainage systems.

Dewatering

Keep the site free of water and prevent water flow over new work.

2.3 SITE CLEARING

Extent

Limit clearing to areas to be occupied by construction, paving or landscaping.

Clearing operations

Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders and rubble. Remove grass to a depth just sufficient to include the root zone.

Grubbing

Grub out or grind stumps and roots over 75 mm diameter to a minimum depth of 500 mm below subgrade under construction, and 300 mm below the finished surface in unpaved areas.

Removal of topsoil

General: Remove the topsoil layer of the natural ground which contains substantial organic matter over the areas to be occupied by construction and paving.

Maximum depth: 100 mm.

Topsoil stockpiles

Stockpile site topsoil required for re-use. Protect stockpiles from contamination by other excavated material, weeds and building debris.

Surplus material

Take possession of surplus material and remove it from the site.

2.4 EXCAVATION

Extent

Excavate to give the levels and profiles required for construction, site services, paving, and landscaping. Allow for compaction or settlement.

Foundations

After excavation, confirm that the bearing capacity is adequate.

Bearing surfaces

Provide even plane bearing surfaces for load-bearing elements including footings. Step for level changes. Make the steps to the appropriate courses if supporting masonry.

Reinstatement

If excavation exceeds the required depth, or deteriorates, reinstate with fill to the correct depth, level and bearing value.

Existing footings

If excavation is required below the line of influence of an existing footing, use methods which maintain the support of the footing and ensure that the structure and finishes supported by the footing are not damaged.

Grading

Grade the ground surface externally and under suspended floors to drain ground or surface water away from buildings without ponding.

2.5 SURFACE PREPARATION**General**

Before placing fill, ground slabs or load-bearing elements, remove loose material, debris and organic matter and compact the ground to achieve the required density.

Placing fill

Place fill in layers and compact each layer to achieve the required density.

Moisture content

If necessary to achieve the required density or moisture content, adjust the moisture content of the fill before compaction.

2.6 PILING**Bored piers**

After excavating bored piers, remove loose material and water from the base and confirm the bearing capacity. Do not allow loose material to fall down the hole before or during concreting; provide a liner if necessary.

2.7 SERVICE TRENCHES**Excavation**

Generally, make trenches straight between manholes, inspection points and junctions, with vertical sides and uniform grades.

Trench widths

Keep trench widths to the minimum consistent with the laying and bedding of the relevant service and construction of manholes and pits.

Backfilling

General: Backfill service trenches as soon as possible after laying the service. Place backfill in layers. Compact each layer to a density sufficient to minimise settlement.

Backfill material: Excavated spoil or well graded inorganic material with maximum particle size of 75 mm.

- Next to services: Do not place any particles greater in size than 25 mm within 150 mm of services.
- Under paved areas: Coarse sand, controlled low strength material or fine crushed rock.
- In reactive clay sites classified M, M-D, H, H-D or E to AS 2870-1996 (*Residential slabs and footings – Construction*): Impervious material.



3 CONCRETE CONSTRUCTION

3.1 GENERAL

Cross reference

Conform to the *General requirements* worksection for termite protection.

Standards

Concrete structures generally: To AS 3600-2000 (*Concrete structures*).

Ground slabs and footings: To AS 2870-1996 (*Residential slabs and footings - Construction*).

3.2 GROUND SLAB VAPOUR BARRIER

Material

General: Provide a proprietary vapour barrier which consists of high impact resistant polyethylene film minimum 0.2 mm thick which has been pigmented and branded by the manufacturer.

Base preparation

Blind the surface with sufficient sand to cover any hard projections. Wet the sand just before placing the vapour barrier.

3.3 FOOTINGS AND SLABS

All concrete footings and slabs are to be constructed in accordance with Engineer's plans and specification.

Concrete footings and slabs shall not be poured until approval to pour concrete is given by Engineer or Local Authority.

3.4 REINFORCEMENT

Reinforcement shall conform and be placed in accordance with AS 3600-2000, AS 2870-1996 and the engineer's plans and specifications.

3.5 CONCRETE

Ready mixed supply

Standard: To AS 1379-1997 (*Specification and supply of concrete*).

Maximum slump: 100 mm.

Concrete placing

Depth: If concrete is deeper than 350 mm, place it in layers so that each succeeding layer is blended into the preceding one by the compaction process.

Slabs and pavements: Place concrete uniformly over the width of the slab so that the face is generally vertical and normal to the direction of placing.

Compaction

Vibrate concrete to remove entrapped air, but avoid over-vibration that may cause segregation.

Curing

Protection: Protect concrete from premature drying and from excessive hot, cold and/or windy conditions.

Method: Cure concrete by

- using a proprietary curing compound; or
- keeping it covered and moist for the following periods:
 - . In-ground footings: 2 days.
 - . Exposed footings, beams and slabs: 7 days.

Formwork removal

Remove timber formwork.

Stripping times

Leave formwork for suspended structures in place after pouring concrete for the following periods:

- Vertical surfaces: 2 days.

- Bottom surfaces: 7 days with shoring and backprops left in position for 21 days.

3.6 JOINTS**Construction joints**

Joint preparation: Roughen and clean the hardened concrete joint surface, remove loose or soft material, free water and foreign matter. Dampen the surface before placing the concrete.

Slip joints

If concrete slabs are supported on masonry, provide proprietary pre-lubricated slip joints.

3.7 GARAGE FLOOR

Floor is to be bare concrete with a steel trowel finish with falls graded to floor wastes.



4 TIMBER AND STEEL CONSTRUCTION

4.1 GENERAL

Cross references

Refer to the following worksections:

- *General requirements*, for termite protection and timber durability.
- *Concrete construction*, for concrete bearer supports.
- *Brick and block construction*, for clearance for timber frame shrinkage and masonry bearer supports.
- *Block and tile finishes*, for waterproofing of wet areas.
- *Painting*, for priming of steel and timber before fixing, and repair of zinc-coated steel after cutting and welding.

Standards

Timber framing and flooring: To AS 1684.4-1999 (*Residential timber-framed construction - Simplified - Non-cyclonic*) or AS 1720.1-1997 (*Timber structures - Design methods*).

Structural steelwork: To AS 4100-1998 (*Steel structures*).

Cold-formed steel framing: Provide a proprietary system designed to AS 3623-1993 (*Domestic metal framing*).

Preparation of metal surfaces: To AS 1627-Various (*Metal finishing - Preparation and pretreatment of surfaces*).

4.2 MATERIALS AND COMPONENTS

Cold-formed steel framing

Cold-form sections from metallic-coated steel to AS 1397-2001 (*Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated*).

Corrosion protection: To BCA Volume 2 clause 3.4.2.2 (*Acceptable construction - Framing - Steel framing - General*).

Self-drilling screws

Standard: To AS 3566.1-2002 (*Self-drilling screws for the building and construction industries - General requirements and mechanical properties*).

Corrosion resistance: Class 2 to AS 3566.2-2002 (*Self-drilling screws for the building and construction industries - Corrosion resistance requirements*), Table 1.

Flashings and damp-proof courses

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Timber fasteners

Metal washers: Provide washers to the heads and nuts of all bolts and coach screws.

Steel straps: Metallic-coated steel to AS 1397-2001 (*Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated*), minimum size 25 x 1 mm or 30 x 0.8 mm.

Galvanizing

Galvanize mild steel components (including fasteners) to AS 1214-1983 (*Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)*) or AS/NZS 4680-1999 (*Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*), as appropriate, if

- exposed to weather;
- embedded in masonry; or
- in contact with chemically treated timber.

Timber Framing

Timber wall, floor and roof framing shall be LOSP treated for termite resistance.

4.3 CONSTRUCTION GENERALLY

Welding

Standard: To AS/NZS 1554.1-1995 (*Structural steel welding - Welding of steel structures*).

Grommets

Provide grommets to isolate piping and wiring from cold-formed steel framing.

Swarf

Remove swarf and other debris from cold-formed steel framing immediately after it is deposited.

Priming steel

Before fixing, prime steel which is not galvanized or metallic-coated.

4.4 FLOORS**General**

Standard: To AS 1684.4-1999 (*Residential timber-framed construction – Simplified – Non-cyclonic*).

Strip flooring

Weather: Do not fix strip flooring until the work is weathertight.

19mm T&G floor boards as selected on 35 x 70 timber battens fixed to concrete slab with 75mm gun nails at 600 centres maximum.

Ensure top of slab is flat and even. Where undulations exceed 3mm in 1500mm apply concrete topping or filler.

Timber floors should not be installed until concrete slab has a moisture content of 5.5% (generally achieved after curing for approximately 4 – 6 months)

Particleboard flooring

Standards: To AS/NZS 1860.1-2002 (*Particleboard - Specifications*) and install to AS 1860-1998 (*Installation of particleboard flooring*).

Junctions: Sand junctions lightly to a smooth, level surface.

Fibre cement flooring

Compressed sheets: To AS/NZS 2908.2-2000 (*Cellulose-cement products - Flat sheets*), Type A, Category 5.

Plywood flooring

Standard: To AS/NZS 2269-1994 (*Plywood – Structural*), bond type A, tongue and grooved.

4.5 WALL FRAMING**Timber wall framing**

Provide gauged timbers for studs, noggings and plates in double-faced walls.

Additional support

General: Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings as necessary.

Provide additional nogging to stair well to support Easycraft “Easy VJ” wall lining to manufacturers specifications.

Maximum spacing of noggings generally: 1350 mm centres.

Damp-proof courses

Clad-frame walls: Provide damp-proof courses under the bottom plate of external clad-frame walls built off slab.

Flashings

Provide flashings to external openings sufficient to prevent the entry of moisture.

4.6 ROOF AND CEILING FRAMING AND TRUSSES**Nailing strips**

Where timber joists, rafters or purlins bear on steel members, provide 50 mm thick nailing strips bolted to the flange of the steel member.

Strutted framing

General: Construct traditional timber pitched roof framing consisting of rafters and ceiling joists supported at intermediated points by a system of underpurlins strutted off walls or strutting beams and braced by collar ties, and ceiling hanging beams.

Beam framing

General: Construct framing for flat or pitched roofs where the ceiling follows the roof line, consisting of rafters or purlins acting as beams to support both ceiling and roof covering.

Roof trusses

General: Factory-assemble trusses.

Camber: 10 mm upward in bottom chord.

Connections: Connector plates pressed to contact with the truss members. No knots in plate area.

Joints: No gaps greater than 2 mm.

Overhangs: Free from spring or splits.

Installation: To AS 4440-1997 (Installation of nailplated timber trusses).

Support: Support trusses on bottom chord at two points only, unless designed for additional support.

Vertical movement: Over internal walls provide at least 10 mm vertical clearance and use bracing methods which allow for vertical movements.

Additional support

Provide a frame member behind every joint in fibre cement sheeting or lining.

4.7 TIMBER ROOF TRIM**Priming timber**

Prime exposed timber all round before fixing and re-prime cut edges if trimmed in-situ.

Fascia, valley gutter and barge boards

Minimum thickness:

- Fixed at up to 600 mm centres: 19 mm.
- Fixed at 600 - 900 mm centres: 32 mm.

4.8 EXTERNAL BALUSTRADE

Provide stainless steel 32mm CHS balusters at 1200 max centres with 3mm diameter 3.16 grade S.S. wire horizontally at 125 centres complete with bridge closed barrel 3.16 S.S. turnbuckles and 75x50 blackbutt top rail with paint finish.



5 BRICK AND BLOCK CONSTRUCTION

5.1 GENERAL

Cross references

Refer to the following worksections:

- *General requirements*, for termite protection.
- *Timber and steel construction*, for structural steelwork.

Standard

Masonry generally: To AS 3700-2001 (*Masonry structures*).

Masonry units: To AS/NZS 4455-1997 (*Masonry units and segmental pavers*).

5.2 MATERIALS AND COMPONENTS

Steel components

Galvanizing: Galvanize mild steel components (including fasteners) to AS 1214-1983 (*Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)*), or AS/NZS 4680- (*Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*), as appropriate.

Durability requirements: To AS/NZS 2699.2-2000 (*Built-in components for masonry construction – Connectors and accessories*)

Masonry durability

Requirement: Conform to AS 3700, Table 5.1.

Flashings and damp-proof courses

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Mortar materials

Sand: Fine aggregate with a low clay content and free from efflorescing salts, selected for grading and colour for facework.

Mortar colour: > off white

Mortar mix table (cement, lime, sand ratios)

Provide mortar mixes as follows:

Mortar class to Bricks or blocks AS 3700				Water thickener
	Clay	Concrete	Calcium silicate	
Masonry cement				
M3	1:0:4	1:0:4	n/a	No
Portland cement				
M3	1:1:6	1:1:6	n/a	Optional
	1:0:5	1:0:5	1:0:5	Yes

5.3 CONSTRUCTION GENERALLY

Joints and cutting

Set out masonry with joints of uniform width and the minimum cutting of masonry units.

Joints

Joint tolerances in accordance with AS 3700-2001 (*Masonry Structures*)

Rod

190 mm high blocks: 3 courses to 600 mm.

Bond

Single leaf construction: Stretcher bond.

Perpends

Keep perpends in alternate courses vertically aligned and fill them completely with mortar.

Appearance

Leave facework clear of mortar smears, stains and discolouration. Do not clean using an acid solution and do not erode joints if using pressure spraying.

5.3 CONTROL OF MOVEMENT

Control joints for concrete masonry

Maximum length of continuous wall: 8 m.

Minimum width of control joint: 10 mm.

Flexible ties and anchors

If ties or anchors extend across control joints, provide ties or anchors which maintain the stability of the masonry without impairing the effectiveness of the joint.

Joint material

Installation: Clean the joints thoroughly and insert an easily compressible backing material before sealing.

Sealant depth: Fill the joints with a gun-applied flexible sealant for a depth of at least two-thirds the joint width.

5.4 STEEL LINTELS**Cold-formed lintels**

General: Proprietary cold-formed flat-based type designed to AS/NZS 4600-1996 (*Cold-formed steel structures*).

Material: Mild steel galvanized to AS/NZS 4680-1989 (*Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*). Do not cut after galvanizing.

Corrosion protection: To AS/NZS 2699.3-2002 (*Built-in components for masonry construction – Connectors and accessories*).

Steel flats and angles

Sizes: To BCA Volume 2, Figure 3.3.3.5 (*Lintels supporting roofs and masonry walls*).

Material: Mild steel galvanized to AS/NZS 4680. Do not cut after galvanizing.

Corrosion protection: To AS/NZS 2699.3 (*Built-in components for masonry construction – Lintels and shelf angles (durability requirements)*).

Installation

General: Install with the longest leg vertical. Keep lintels 5 mm clear of heads and frames. Pack mortar between the angle upstand and supported masonry units.

Propping: To prevent deflection or excessive rotation, temporarily prop proprietary cold-formed lintels until the masonry reaches its required strength.

Minimum propping period: 3 days.

5.5 RETAINING WALLS

Retaining walls shall be constructed in accordance with Engineer's plans and specification.

5.6 SANDSTONE CLADDING

Install 50mm sandstone cladding from Gosford Quarries as selected and install in accordance with supplier's specification to external garageconcreteblock wall, terrace balustrade and retaining walls as indicated on working drawings.



6 INSULATION AND SARKING

6.1 GENERAL

Interpretation

Sarking-type material: Flexible membrane material normally used for waterproofing, vapour retarding or thermal reflective insulation.

6.2 MATERIALS AND COMPONENTS

Bulk insulation

Cellulosic fibre (loose fill): To AS/NZS 4859.1-2002 (*Materials for the thermal insulation of buildings - General criteria and technical provisions*), Section 5.

Mineral wool blankets and cut pieces: To AS/NZS 4859.1, Section 8.

Polystyrene (extruded rigid cellular sheets): To AS 1366.4-1992 (*Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Extruded (RC/PS-E)*).

Polystyrene (moulded rigid cellular sheets): To AS 1366.3-1992 (*Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS-M)*).

Reflective insulation: To AS/NZS 4859.1, Section 9.

Wool: To AS/NZS 4859.1, Section 6.

Sarking material

Standard: To AS/NZS 4200.1-1994 (*Pliable building materials and underlays - Materials*).

Insulation types and ratings

Building Services : Services insulation is to comply with requirements with BCA provisions of 3.12.5.0 – 3.12.5.3

Wall: > R-Value 1.3 (or 1.7 including construction)

Roof: > Foil lined blanket insulation (50mm)

Ceiling: > R-Value 3.0

6.3 INSTALLATION

Bulk insulation

Standard: To AS 3999-1992 (*Thermal insulation of dwellings - Bulk insulation - Installation requirements*).

Batts: Fit tightly between framing members. If support is not otherwise provided, secure nylon twine to the framing and stretch tight.

Sarking material

Standard: To AS/NZS 4200.2-1994 (*Pliable building materials and underlays - Installation requirements*).

Wall sarking

General: Provide vapour-permeable sarking under cladding.

Installation: Apply to the outer face of external stud walls from the top plate down over the bottom plate and flashing. Run across the studs and lap at least 150 mm at joints.

6 INSULATION AND SARKING



6.1 GENERAL

Interpretation

Sarking-type material: Flexible membrane material normally used for waterproofing, vapour retarding or thermal reflective insulation.

6.2 MATERIALS AND COMPONENTS

Bulk insulation

Cellulosic fibre (loose fill): To AS/NZS 4859.1-2002 (*Materials for the thermal insulation of buildings - General criteria and technical provisions*), Section 5.

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Polystyrene (extruded rigid cellular sheets): To AS 1366.4-1992 (*Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Extruded (RC/PS-E)*).

Polystyrene (moulded rigid cellular sheets): To AS 1366.3-1992 (*Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS-M)*).

Reflective insulation: To AS/NZS 4859.1, Section 9.

Wool: To AS/NZS 4859.1, Section 6.

Sarking material

Standard: To AS/NZS 4200.1-1994 (*Pliable building materials and underlays - Materials*).

Insulation types and ratings

Wall: > R-Value 1.3 (or 1.7 including construction)

Roof: > Foil lined blanket insulation (75mm)

Ceiling: > R-Value 3.0

(+ see previous page)

6.3 INSTALLATION

Bulk insulation

Standard: To AS 3999-1992 (*Thermal insulation of dwellings - Bulk insulation - Installation requirements*).

Batts: Fit tightly between framing members. If support is not otherwise provided, secure nylon twine to the framing and stretch tight.

Sarking material

Standard: To AS/NZS 4200.2-1994 (*Pliable building materials and underlays - Installation requirements*).

Wall sarking

General: Provide vapour-permeable sarking under cladding.

Installation: Apply to the outer face of external stud walls from the top plate down over the bottom plate and flashing. Run across the studs and lap at least 150 mm at joints.



7 ROOFING

7.1 GENERAL

Cross reference

Refer to the *Insulation and sarking* worksection for roof sarking requirements.

7.2 MATERIALS AND COMPONENTS

Flashing material

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Fasteners

Self-drilling screws: To AS 3566.1-2002 (*Self-drilling screws for the building and construction industries – General requirements and mechanical properties*).

Corrosion resistance: Class 3 to AS 3566.2-2002 (*Self-drilling screws for the building and construction industries – Corrosion resistance requirements*), Table 1.

Exposed fasteners: Provide fasteners which are prefinished with a coating to match the roofing material, or provide matching purpose-made plastic caps.

7.3 METAL ROOFING

Design and installation

Standard: To AS 1562.1-1992 (*Design and installation of sheet roof and wall cladding – Metal*).

Colorbond “customorb” metal deck roof to be installed together with accessories all in accordance with manufacturers instructions.

Sheets shall be in single lengths from fascia to ridge. Fixings of sheets shall be strictly in accordance with the manufacturer’s recommendations. Incompatible materials shall not be used for flashings, fasteners or downpipes.

Visible accessories

Provide material with the same finish as roofing sheets.

Eaves

Treat ends of sheets as follows:

- Generally: Close off ribs at tops and bottoms of sheets by mechanical means or with purpose-made fillers or end caps.
- At gutters: Project sheets 50 mm into gutters.

Swarf

Remove swarf and other debris as soon as it is deposited.

7.4 ROOF PLUMBING

Selection and installation of rainwater goods

Standard: To AS/NZS 3500.3.2 (*National Plumbing and Drainage – Stormwater drainage – Acceptable solutions*).

PVC rainwater goods and accessories: To AS/NZS 2179.2 (Int) -1998 (*Specifications for rainwater goods, accessories and fasteners – PVC rainwater goods and accessories*)

Sealing: Seal fasteners and mechanically fastened joints with silicone sealant.

Flashings and cappings

General: Flash projections above or through the roof with two part flashings consisting of an apron flashing and an over flashing, with at least 100mm vertical overlap. Provide for independent movement between the roof and the projection

Wall abutments: Where a roof abuts a wall, provide overflashings.

Gutters

Minimum slope of eaves gutters: 1:200.

Minimum width overall of valley gutters: 400 mm.

Downpipes

Downpipes are to connect into “Action Underground Tank” system in accordance with Hydraulic Engineer’s plans and specifications.



8 CLADDING

8.1 GENERAL

Cross references

Refer to the following worksections:

- *General requirements*, for timber durability.
- *Insulation and sarking*, for wall sarking requirements.

8.2 MATERIALS AND COMPONENTS

Flashing material

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Fasteners

Steel nails: Hot-dip galvanized to AS 4680- (*Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*).

Self-drilling screws: To AS 3566.1-2002 (*Self-drilling screws for the building and construction industries – General requirements and mechanical properties*).

Corrosion resistance: Class 3 to AS 3566.2-2002 (*Self-drilling screws for the building and construction industries – Corrosion resistance requirements*), Table 1.

8.3 HARDBOARD CLADDING

General

Standard: To AS/NZS 1859.4 (Int)-2001 (*Reconstituted wood-based panels – Specifications – Wet-processed fibreboard*).

Exterior wall cladding

Weathertex “Exterior Board” smooth

Cladding to be installed in accordance with manufacturers recommendations in location indicated on working drawings.

Finish with 32x19mm timber cover battens to joints at approximately 600 centres as indicated on working drawings and with timber cover battens at external corners.

Junction between Weathertex “Exterior Board” cladding and weatherboards to be covered with 50x50 with bevelled top timber batten. Weatherboards to butt into batten. Batten is to be located as indicated in working drawings.

8.4 TIMBER BOARD CLADDING

Boards

Timber boards to be treated pine H3 “rusticated” 175 x 25 with pre primed finish

Preparation

Timber boards should be primed all around, plus one coat of undercoat colour matched to the final finishing coat. Knots to be sealed with a 2 pack polyurethane or other sealer recommended by paint manufacturer.

Installation

General: Whenever possible provide single lengths of boards when installed horizontally.

Fixing: Two nails per board at each stud.

Drill nail holes prior to fixing to prevent splitting of the boards.

Nailheads: Treat visible nailheads by punching below the surface and fill flush with putty after the surface has been primed.

Joints

For end grain joints, boards are to be installed so that butt joints are in compression.

All freshly cut joints are to be primed with colour matched primer.

All joints are to be sealed, including stopped ends, with a compatible mastic or silicone sealant (eg Thioseal). The sealant is to be placed onto the boards prior to fixing them into position.

For internal and external corners butt up against timber stop 30x30 and 57x30 to manufacturers recommendations.

8.5 FIBRE CEMENT CLADDING

Standard

General: To AS/NZS 2908.2-2000 (*Cellulose-cement products – Flat sheets*) Type A Category 3.

Eaves lining

7.5mm HardiGroove lining fixed on battens in accordance with manufacturers recommendations to underside of rafters.

HardiGroove lining to be rebated into rear of timber fascia and to be finished with timber moulding at wall junction.

Sealant to be placed on butt joints prior to fixing into position.



9 DOORS AND WINDOWS

9.1 GENERAL

Cross references

Refer to the following worksections

- *Lining*, for architraves.
- *Painting*, for priming of frames and doors before installation.

Window and doors shall be as specified in the window and door schedule and shown on working drawings.

9.2 MATERIALS AND COMPONENTS

Flashings

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Metal finishes

Zinc plating: To AS 1789-2003 (*Electroplated zinc (electrogalvanized) coatings on ferrous articles (batch process)*), at least service condition number 2.

Anodising: To AS 1231-2000 (*Aluminium and aluminium alloys – Anodic oxidation coatings*), at least class AA10.

Thermoset powder coating: To AS 3715-2002 (*Metal finishing – Thermoset powder coatings for architectural applications of aluminium and aluminium alloys*).

Glass

Selection and installation: To AS 1288-1994 (*Glass in buildings – Selection and installation*).

Doors

Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for satisfactory operation..

Windows

Selection: To AS 2047-1999 (*Windows in buildings – Selection and installation*).

Preglazing

If possible, preglaze doors and windows.

9.3 CONSTRUCTION GENERALLY

Standards

Window installation: To AS 2047-1999 (*Windows in buildings – Selection and installation*).

Security screen doors and window grilles installation: To AS 5040-2003 (*Installation of security screen doors and window grilles*).

All windows and doors shall comply with the requirements of the Building Code of Australia in particular the provisions of NSW 3.12.3.1 – Building Sealing – Compliance with national BCA provisions 3.12.3.0 – 3.12.3.5.

Flashings and weatherings

Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between frames and the building structure.

Windows and Doors

Window and doors shall be as specified in the window and door schedule and shown on the working drawings.

9.4 TIMBER DOORS

Door thickness

Generally: 35 mm.

External doors and doors over 900 mm wide: 40 mm.

Timber internal doors

As indicated on door schedule and working drawings.



9 DOORS AND WINDOWS

9.1 GENERAL

Cross references

Refer to the following worksections

- *Lining*, for architraves.
- *Painting*, for priming of frames and doors before installation.

Window and doors shall be as specified in the window and door schedule and shown on working drawings.

9.2 MATERIALS AND COMPONENTS

Flashings

Standard: To AS/NZS 2904-1995 (*Damp-proof courses and flashings*).

Metal finishes

Zinc plating: To AS 1789-2003 (*Electroplated zinc (electrogalvanized) coatings on ferrous articles (batch process)*), at least service condition number 2.

Anodising: To AS 1231-2000 (*Aluminium and aluminium alloys – Anodic oxidation coatings*), at least class AA10.

Thermoset powder coating: To AS 3715-2002 (*Metal finishing – Thermoset powder coatings for architectural applications of aluminium and aluminium alloys*).

Glass

Selection and installation: To AS 1288-1994 (*Glass in buildings – Selection and installation*).

Doors

Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for satisfactory operation..

Windows

Selection: To AS 2047-1999 (*Windows in buildings – Selection and installation*).

Preglazing

If possible, preglaze doors and windows.

9.3 CONSTRUCTION GENERALLY

Standards

Window installation: To AS 2047-1999 (*Windows in buildings – Selection and installation*).

Security screen doors and window grilles installation: To AS 5040-2003 (*Installation of security screen doors and window grilles*).

Flashings and weatherings

Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between frames and the building structure.

+ see previous page

Windows and Doors

Window and doors shall be as specified in the window and door schedule and shown on the working drawings.

9.4 TIMBER DOORS

Door thickness

Generally: 35 mm.

External doors and doors over 900 mm wide: 40 mm.

Timber internal doors

As indicated on door schedule and working drawings.

Jambs

Internal hinged doors to have double rebated door jambs.

Priming

Prime timber doors on top and bottom edges before installation.

Door stops

Install door stops to prevent door furniture striking the wall or other surface.

Hinge table

Provide 3 hinges for external doors and door leaves over 2040 mm in height or 820 mm in width and as follows:

Thickness of door (maximum)	Weight of door (maximum)	Number of hinges (per door leaf)	Size of hinges (steel)
35 mm	35 kg	2	85 x 60 x 1.6 mm
40 mm	68 kg	3	100 x 75 x 1.6 mm

9.5 SLIDING INTERNAL DOORS**Accessories**

Provide CS Cavity Sliders "Single Timberform" overhead track supports and jamb lings in accordance with manufacturers recommendations.

9.6 GARAGE DOOR**General**

Standard: To AS/NZS 4505:1998 (*Domestic garage doors*).

Garage doors

Renlita "Springaway" tilt-up door with remote opening or equal, installed in accordance with manufacturers recommendations.

To be clad in weatherboards as previous with paint finish.

All hardware to be galvanised.

9.7 LOCKSETS**External doors**

To be selected

Internal doors

Generally: Passage sets to Laundry to be selected.

Bathrooms, showers and toilets: Privacy sets to be selected

Door lockset mounting heights

To centreline of spindle: 1 m above finished floor.

Windows

Standard window hardware such as hinges, locks, catches, strikers and handles shall be included as necessary to operate, close and lock windows.

Keying

Key doors (excluding garage doors) alike and key windows alike.



10 LINING

10.1 GENERAL

Cross reference

Refer to the *Block and tile finishes* worksection for waterproofing of wet areas.

10.2 MATERIALS AND COMPONENTS

Plasterboard

Standard: To AS/NZS 2588-1998 (*Gypsum plasterboard*).

Sheet thickness: > 10mm

Fibre cement

Standard: To AS/NZS 2908.2-2000 (*Cellulose-cement products – Flat sheets*), Type B Category 2.

10.3 SHEET LINING

Supports

Install timber battens or proprietary cold-formed galvanized steel furring channels

- if framing member spacing exceeds the recommended spacing;
- if direct fixing of the sheeting is not possible due to the arrangement or alignment of the framing or substrate; and
- to support fixtures.

Installation

Plasterboard: To AS/NZS 2589.1-1997 (*Gypsum linings in residential and light commercial construction – Application and finishing – Gypsum plasterboard*) Level 4 finish.

Wet areas: Do not use adhesive.

Joints

General: Provide recessed edge sheets and finish flush with perforated reinforcing tape.

External corner joints: Make over metallic-coated steel corner beads.

Wet areas: Provide the flashings, trim and sealants necessary to ensure wet areas are waterproofed.

Joints in tiled areas: Do not apply a topping coat after bedding perforated paper tape in bedding compound.

Control joints: Install purpose-made metallic-coated control joint beads to coincide with structural movement joints.

10.4 V-GROOVE LINING

9mm Easycraft (Laminex Group) "Easy VJ" supplied by The Laminex Group complying with AS/NZS 1859.2 – 1997.

Refer to working drawings for ceiling and wall areas requiring "Easy VJ".

Sheets are factory primed and incorporates plastic tongue and groove system for joining off stud.

Installation to be in strict accordance with manufacturers specifications available from The Laminex Group (phone 132 136). Provide extra noggings or battens if framing member exceeds the recommended spacing.

Sheets sizes to be selected to minimise joints. 42x18 timber cover batten at skirting level to stair well at ground and first floor.

10.5 TRIM

General

Provide timber or medium density fibreboard trim, such as beads, skirtings, architraves, mouldings and stops, where necessary to make neat junctions between components and finishes.

Cornice

Types: > Timber batten as selected.

Skirtings

Types: > MDF primed square dressed size to be selected.

Architraves

Types: > MDF primed square dressed size to be selected.



11 BLOCK AND TILE FINISHES

11.1 GENERAL

Standards

Follow the guidance given in AS 3958.1-1991 (*Ceramic tiles - Guide to the installation of ceramic tiles*) and AS 3958.2-1992 (*Ceramic tiles - Guide to the selection of a ceramic tiling system*).

11.2 MATERIALS AND COMPONENTS

Exposed edges

If available, provide purpose-made border tiles with the exposed edge (whether round, square or cushion) glazed to match the tile face.

Accessories

If available, provide tile accessories such as round edge tiles, cove tiles, step treads and nosings to stairs, landings, and thresholds, skirtings, sills, copings and bath vents, which match the surrounding tiles, composition, colour and finish.

Adhesives

Standard: To AS 2358-1990 (*Adhesives - For fixing ceramic tiles*).

PVA (polyvinyl acetate)-based adhesives: Do not use in wet areas or externally.

Mortar materials

Cement: To AS 3972-1997 (*Portland and blended cements*), type GP.

Sand: Fine aggregate with a low clay content selected for grading.

Bedding mortar

Proportioning: Select proportions from the range 1:3 to 1:4 cement:sand to obtain satisfactory adhesion. Provide minimum water.

Grout

Cement-based proprietary grout: Mix with water. Fine sand may be added as a filler in wider joints.

Preparation

Prepare the substrates, including the following:

- Remove deleterious and loose material and leave the surface dust-free and clean.
- For mortar bedding, wet the substrate as necessary to achieve suitable suction. Alternatively, apply a proprietary bonding agent to the substrate to improve adhesion.

11.3 WATERPROOFING WET AREAS

Standard

General: To AS 3740-2004 (*Waterproofing of wet areas within residential buildings*).

Membrane

Provide a proprietary liquid applied or sheet membrane system which

- has a current Australian Building Products and Systems Certification Scheme certificate; or
- has a current appraisal report issued by the CSIRO Building Products and Systems Appraisals stating that the system is suitable for use as a waterproofing system for use in wet areas, shower recess bases and associated floors and wall/floor junctions which are to be tiled.

Installation

Floor wastes: Turn membrane down onto the floor waste puddle flanges, and adhere.

Hobs: For hobless showers extend 1800 mm into the room.

External tiling: Provide a waterproof membrane under external floor tiling, to balconies and over habitable rooms, which forms a drained tank suitable for continuous immersion. Do not run under bounding walls.

Curing: Allow membrane to cure fully before tiling.

11.4 TILING

Cutting and laying

Cut tiles neatly to fit around fixtures and fittings, and at margins where necessary. Drill holes without damaging tile faces. Rub edges smooth without chipping. Butt up to returns, frames, fittings, and other finishes.

Variations

Distribute variations in hue, colour, or pattern uniformly, by mixing tiles or tile batches before laying.

Protection

Keep traffic off floors until the bedding has set and attained its working strength.

Setting out

General: Set out tiles to give uniform joint widths within the following limits:

- Internal ceramic tiling: 1.5 - 3 mm.
- Mosaic tiling: As dictated by pattern.
- Vitrified floor tiles: 3 - 5 mm.

Joint alignment: Set out tiling with joints accurately aligned in both directions and wall tiling joints level and plumb.

Joint position: Set out tiles from the centre of the floor or wall to be tiled and, if possible, ensure cut tiles are a half tile or larger.

Fixtures: If possible, position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or in the centre of tiles.

Falls and levels

General: Grade floor tiling to even and correct falls generally, and to floor wastes and elsewhere as required. Make level junctions with walls. If falls are not required, lay level.

Minimum fall generally: 1:100.

Minimum fall in shower areas: 1:60.

Change of finish: Maintain finished floor level across changes of floor finish including carpet.

Preparation of tiles

Adhesive bedding: Fix tiles dry.

Mortar bedding: Soak porous tiles in water for half an hour and then drain until the surface water has disappeared.

Floor finish dividers

Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate. If changes of floor finish occur at doorways, make the junction directly below the closed door.

Bath ventilation

Ventilate the space below fully enclosed baths with at least 2 ventilating tiles.

Sealed joints

Fill joints with silicone sealant and finish flush with the tile surface where tiling joins sanitary fixtures and at corners of walls in showers.



12 FLOOR COATINGS AND COVERINGS

12.1 GENERAL

Cross reference

Refer to the *Painting* worksection for finishing of sanded timber floors.

12.2 SUBSTRATE

Substrate preparation

Prepare the substrate including the following:

- Stripping and cleaning: Remove deleterious and loose material, including any surface treatment which could adversely affect adhesion.
- Basic sanding: Produce an even plane sanded surface on strip flooring to be covered with carpet or resilient sheet. Lightly sand the junctions of sheet flooring.
- Fine sanding: If flooring is to be clear finished, stop with matching filler and produce a smooth sanded surface free from irregularities and suitable to receive the finish.

12.3 LAYING CARPET

Standard

General: To AS/NZS 2455.1-1995 (*Textile floor coverings - Installation practice – General*).

Setting out

General: Lay the carpet in continuous lengths without cross joins in the body of the area. Make unavoidable cross joins at doorways under the closed door.

Joints in underlay: Ensure joints in underlay do not coincide with carpet joints. Do not carry underlay over carpet grippers or edge strips.

Seaming methods

Woven carpet: Machine or hand sew.

Tufted carpet: Provide hot-melt adhesive tapes.

Fixing

Gripper strip: Provide preformed gripper strip and tackless edge strip. Space fixings at 150 mm maximum centres.

Edge strip

Provide a proprietary aluminium edge strip at exposed edges of the carpet. If edge strips occur at doorways, make the junction underneath the closed door.



13 PAINTING

13.1 GENERAL**Standards**

Follow the guidance given in AS/NZS 2311-2000 (*Guide to the painting of buildings*) and AS/NZS 2312-2002 (*Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*).

13.2 MATERIALS AND COMPONENTS**Combinations**

Do not combine paints from different manufacturers in a paint system.

Delivery

Deliver paints to the site in the manufacturers' labelled containers. Ensure containers are marked with the APAS (Australian Paint Approvals Scheme) specification number.

Order of work

Complete clear timber finishes before commencing opaque paint finishes in the same area.

Protection

Remove door furniture, switch plates, light fittings and other fixtures before starting to paint, and refix in position on completion of painting.

Substrate preparation

All surfaces to be painted shall be properly sanded and prepared.

Paint application

Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Ensure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture, and free of runs, sags, blisters, or other discontinuities.

Priming before fixing

Timber: Apply a first coat (two coats to end grain) to exposed roof trim, timber doors and window frames, tops and bottoms of doors, associated trims and glazing beads before fixing in position.

Steel: Apply a priming coat of zinc-rich organic binder to APAS 2916-2001 (*Organic zinc rich coating for protection of steel*).

Repair of galvanizing

If galvanized or zinc-coated surfaces have been cut or welded after galvanizing, prime the affected area with a zinc-rich organic binder to APAS 2916-2001 (*Organic zinc rich coating for protection of steel*).

Finishing timber floors

After sanding, finish with 3 coats of clear floor sealer to APAS-0205-2003 (*One pack clear moisture cured finish for timber*).

Paint system description

If a system is referred to only by its final coat (for example by the manufacturer's brand name, the APAS specification code or the generic name) provide stains, primers, sealers and undercoats which are suitable for the substrate and are compatible with the finish coat and each other.

Paint final coat table

Provide paints as follows:

Final coat	Use paint to APAS specification
Interior	
Flat latex	APAS-0260/4-2003 (<i>Washable flat finish for interior use (buildings)</i>)
Low gloss latex	APAS-0260/3-2003 (<i>Low gloss interior latex paint in MCR (buildings)</i>)
Semi-gloss latex	APAS-0260/2-2003 (<i>Semi gloss interior latex paint in MCR (buildings)</i>)
Gloss latex	APAS-0260/1-2003 (<i>Interior gloss latex paint (buildings)</i>)
Exterior	
Full gloss solvent-borne	APAS-0015/1-2003 (<i>Full gloss alkyd enamel for exterior and interior use (buildings)</i>)
Flat latex	APAS-0280/3-2003 (<i>Flat or low gloss exterior latex finish in MCR (buildings)</i>)
Low gloss latex	APAS-0280/3-2003 (<i>Flat or low gloss exterior latex finish in MCR (buildings)</i>)
Gloss latex	APAS-0280/1-2003 (<i>Gloss exterior latex paint in MCR (buildings)</i>)
Stain, lightly pigmented	APAS-0115-2003 (<i>Lightly pigmented solvent borne ranch finish for exterior timber</i>)
Latex stain, opaque	APAS-0280/5-2003 (<i>Heavily pigmented low gloss latex ranch finish for exterior timber</i>)
Semi-gloss latex	APAS-0280/2-2003 (<i>Semi gloss latex paint, exterior (buildings)</i>)



14 TIMBER FIXTURES

14.1 GENERAL

Cross references

Refer to the following worksections:

- *General requirements*, for timber durability.
- *Doors and windows*, for timber doors and reveal and jamb linings.

14.2 MATERIALS AND COMPONENTS

Moisture content

Make milled products from timbers seasoned

- to within 3% of the equilibrium moisture content appropriate to the timber and its intended conditions of use; and
- with no more than 3% difference between any 2 pieces in any one group.

Finished sizes

Provide milled timbers with actual dimensions which are at least the required dimensions, except for dimensions qualified by a term such as "nominal" or "out of" to which industry standards for finished sizes apply.

Hardboard

Standard: To AS/NZS 1859.4 (Int)-2001 (*Reconstituted wood-based panels – Specifications – Wet-processed fibreboard*).

Particleboard

Standard: To AS/NZS 1859.1 (Int)-2001 (*Reconstituted wood-based panels – Specifications – Particleboard*).

Medium density fibreboard

Standard: To AS/NZS 1859.2 (Int)-2001 (*Reconstituted wood-based panels – Specifications – Dry-processed fibreboard*).

Decorative overlaid wood panels

Standard: To AS/NZS 1859.3-1996 (*Reconstituted wood-based panels – Decorative overlaid wood panels*).

High pressure decorative laminate sheets

Standard: To AS/NZS 2924.1-1987 (*High pressure decorative laminates – Sheets made from thermosetting resins – Classification and specifications*).

High pressure decorative laminate sheet application table

Provide classes as follows:

Class to AS/NZS 2924-1987 (High pressure decorative laminates - Sheets made from thermosetting resins)	Application
HGS or HGP	Kitchen work-tops
VGS or VGP	Kitchen front panels
VLS	Other locations

14.3 CONSTRUCTION GENERALLY

General

Construction: Build components square and install plumb.

Joints: Provide materials in single lengths whenever possible. If joints are necessary, make them over supports.

Fasteners and adhesives

General: Provide fasteners, adhesives or both to transmit the loads imposed and ensure the rigidity of the assembly. Do not split, discolour or otherwise damage timber or sheets.

Visibility: Do not provide visible fixings except in the following locations:

- Inside cupboards and drawer units.
- Inside open units, in which case provide proprietary caps to conceal fixings.

Finishing

Junctions with structure: Scribe plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of floors or walls.

14.4 TIMBER STAIRS AND BALUSTRADES**Compliance**

All stairs and balustrades will comply with requirements of Building Code of Australia (BCA) in particular to clause 3.9.1 and 3.9.2.

Cut strings

Profile for treads and risers. Mitre riser ends.

Treads

Dress nosings to a pencil-round. Return nosings at cut strings. Groove for riser tongue in closed riser stair. Set riser 19 mm back from nosing.

Top tread

Flush with finished floor, otherwise to match stair treads. Provide similar tread section as nosing to floor edges around stair well.

Risers

Tongue to tread. Mitre to string in cut-string stairs.

Joints

Glue joints in internal work. In closed riser stairs, wedge treads and risers to strings. Plant 2 glue-blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stairwell.

Fascia

Of depth sufficient to overlap 19 mm below ceiling, and fixed to floor joists hard up under nosing.

Soffit lining

Fix to 38 x 38 mm nailing battens notched and nailed to the underside of treads and risers of closed rise stairs at the centre of flights and at each side.

Balustrade

To be timber frame lined with Easycraft "Easy VJ" to butt dressed timber top plate 120x32mm with paint finish.

14.5 DOMESTIC KITCHEN ASSEMBLIES**Standard**

General: To AS/NZS 4386.1-1996 (*Domestic kitchen assemblies – Kitchen units*).

14.6 CUPBOARD AND DRAWER UNITS**Plinths, carcasses, drawer fronts, shelves and doors**

Material: Provide melamine overlaid high moisture-resistant particleboard or melamine overlaid high moisture-resistant medium density fibreboard.

Minimum thickness: 16 mm.

Finish: as selected

Installation: Secure plinths and carcasses to floors, walls, or both at not more than 600 mm centres.

Drawer fronts: Rout for drawer bottoms.

Adjustable shelves: Support on proprietary pins in holes bored at 32 mm centres vertically.

Drawer and door hardware

Hinges: Provide concealed all-metal hinges with the following features:

- Adjustable for height, side and depth location of door.
- Self-closing action.
- Hold-open function.
- Nickel plated.

Slides: Provide metal runners and plastic rollers with the following features:

- 30 kg loading capacity.
- Closure retention.

Finishing

Junctions with structure: Scribe plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of floors or walls.

14.4 TIMBER STAIRS AND BALUSTRADES**Cut strings**

Profile for treads and risers. Mitre riser ends.

+ See previous page

Treads

Dress nosings to a pencil-round. Return nosings at cut strings. Groove for riser tongue in closed riser stair. Set riser 19 mm back from nosing.

Top tread

Flush with finished floor, otherwise to match stair treads. Provide similar tread section as nosing to floor edges around stair well.

Risers

Tongue to tread. Mitre to string in cut-string stairs.

Joints

Glue joints in internal work. In closed riser stairs, wedge treads and risers to strings. Plant 2 glue-blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stairwell.

Fascia

Of depth sufficient to overlap 19 mm below ceiling, and fixed to floor joists hard up under nosing.

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Finish: as selected

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Adjustable shelves: Support on proprietary pins in holes bored at 32 mm centres vertically.

Drawer and door hardware

Hinges: Provide concealed all-metal hinges with the following features:

- Adjustable for height, side and depth location of door.
- Self-closing action.
- Hold-open function.
- Nickel plated.

Slides: Provide metal runners and plastic rollers with the following features:

- 30 kg loading capacity.
- Closure retention.
- White thermoset powder coating or nickel plated.

14.7 CEILING ACCESS**Ceiling**

Trim an opening and provide a loose access panel of minimum size 600 x 400 mm.



15 PLUMBING INSTALLATIONS

15.1 GENERAL

Cross references

Refer to the following worksections:

- *Site preparation*, for service trenches.
- *Roofing*, for roof plumbing and rainwater tanks.
- *Block and tile finishes*, for waterproofing of wet areas.
- *Painting*, for priming steel or iron before installation and exposed piping required to be painted.

Standard

Plumbing and drainage products: To SAA MP52-2001 (*Manual of authorization procedures for plumbing and drainage products*) and AS/NZS 3718:2003 (*Water supply - Tap ware*).

Swimming Pool water recirculation and pool filtration will comply with requirements of AS1926.3.

Connections

Excavate to locate and expose the connection points and connect to the authorities' mains. On completion, backfill and compact the excavation and reinstate surfaces and elements which have been disturbed such as roads, pavements, kerbs, footpaths and nature strips.

15.2 MATERIALS AND COMPONENTS

Water heater

- Type: > Gas instantaneous, external – Energy rating 5 Star
 Manufacturer: > Rheem
 Model/capacity: > Integrity 26

Valves

Finish valves to match connected piping.

Sanitaryware and tapware schedule

Refer to PC Item Schedule for selected sanitary and tapware.

Selected items to comply with BASIX include

- Showerheads min 3A rating
- Taps to Kitchen min 2A rating
- Taps to Bathroom basins min 2A rating
- Toilet flushing system min 3A rating

15.3 CONSTRUCTION GENERALLY

General

Install piping in straight lines and to uniform grades. Arrange and support the piping so that it remains free from vibration and water hammer, while permitting thermal movement. Keep the number of joints to a minimum. Prevent direct contact between incompatible metals.

Concealment: If practicable, conceal piping and fittings requiring maintenance or servicing so that they are accessible within non-habitable enclosed spaces such as roof spaces, subfloor spaces and ducts. Keep pipelines in subfloor spaces at least 150 mm above ground and ensure access can be provided throughout for inspection. Provide at least 25 mm clearance between adjacent pipelines (measured from the piping insulation where applicable).

Pipes under pressure embedded in concrete: Use only copper pipe with the minimum number of joints. Pressure test and rectify leaks before concrete is poured.

Building penetrations: If piping passes through building elements provide purpose-made metal or plastic sleeves formed from pipe sections. Prime steel or iron before installation.



15 PLUMBING INSTALLATIONS

15.1 GENERAL

Cross references

Refer to the following worksections:

- *Site preparation*, for service trenches.
- *Roofing*, for roof plumbing and rainwater tanks.
- *Block and tile finishes*, for waterproofing of wet areas.
- *Painting*, for priming steel or iron before installation and exposed piping required to be painted.

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+ see previous page

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Water heater

- Type: > Gas instantaneous, external – Energy rating 5 Star
- Manufacturer: > Rheem
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Taps to Kitchen min 2A rating

Taps to Bathroom basins min 2A rating

Toilet flushing system min 3A rating

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Pipes under pressure embedded in concrete: Use only copper pipe with the minimum number of joints. Pressure test and rectify leaks before concrete is poured.

Building penetrations: If piping passes through building elements provide purpose-made metal or plastic sleeves formed from pipe sections. Prime steel or iron before installation.

Pipe support materials: The same as the piping, or galvanized or non-ferrous metals, with bonded PVC or glass fibre woven tape sleeves where needed to separate dissimilar metals.

Cover plates: Where exposed piping emerges from wall, floor or ceiling finishes, provide cover plates of non-ferrous metal, finished to match the piping, or of stainless steel.

15.4 STORMWATER

Standard

General: To AS/NZS 3500.3-2003 (*Plumbing and Drainage - Stormwater drainage*) or AS/NZS 3500.5: 2000 (*National Plumbing and Drainage - Domestic installations*).

Cleaning

During construction, use temporary covers to openings and keep the system free of debris. On completion, flush the system using water and leave it clean.

Pipelaying

Lay pipelines with the spigot ends in the direction of flow.

Downpipe connections

Turn up drain branch pipelines to finish 50 mm above finished ground or pavement level.

Subsoil drains

Connection: Connect subsoil drains to the stormwater drainage system.

Trench width: Minimum 450 mm.

Subsoil drains: Provide proprietary perforated plastic pipe.

Filter fabric: Provide a polymeric fabric formed from a plastic yarn containing stabilisers or inhibitors to make the filaments resistant to deterioration due to ultraviolet light.

Filter sock: Provide a polyester permeable sock capable of retaining particles of 0.25 mm size. Securely fit or join the sock at each joint.

Backfilling: Backfill with 20 mm nominal size washed screenings, to the following depths:

- To the underside of the bases of overlying structures such as pavements, slabs and channels.
- To within 75 mm of the finished surface of unpaved or landscaped areas.

Pits

Cover levels: Locate the top of covers or gratings, including frames as follows:

- In paved areas: Flush with the paving surface.
- In landscaped areas: 25 mm above finished surface.
- Gratings taking surface water runoff: Set to receive the runoff without ponding.

15.5 WASTEWATER

Standards

General: To AS/NZS 3500.2-2003 (*Plumbing and Drainage - Sanitary plumbing and drainage*) or AS/NZS 3500.5.

Cleaning

During construction, use temporary covers to openings and keep the system free of debris. On completion, flush the system using water and leave it clean.

Vent pipes

Staying to roof: If fixings for stays penetrate the roof covering, seal the penetrations and make watertight.

Terminations: Provide bird-proof vent cowls made of the same material and colour as the vent pipe.

Standards

General: To AS/NZS 3500.1-2003 (*Plumbing and Drainage - Water services*) and AS/NZS 3500.4-2003 (*Plumbing and Drainage - Heated water supply services*) or AS/NZS 3500.5.

Copper pipe: To AS 4809-2003 (*Copper pipe and fittings - Installation and commissioning*).

Tap positions

Locate hot tap to the left of, or above, the cold water tap.

Accessories

Provide the accessories and fittings necessary for the proper functioning of the plumbing systems, including taps, valves, outlets, pressure and temperature control devices, strainers, gauges and pumps.

Heater installation

Location: Locate water heaters where they can be maintained or replaced without damaging adjacent structures, fixtures or finishes as indicated on working drawings.

Temperature

Maximum temperature at ablution outlets: 50°C.

Piping insulation

Hot water supply: >

Cold water supply: >

Isolating valves

Provide isolation valves to water heaters.

Cleaning

On completion, flush the pipelines using water and leave them clean.

15.6 RAINWATER TANKS**General**

Type: Provide "Action Underground Tanks" to Hydraulic Engineer's plans and specifications and to comply with BASIX and regulatory authorities.

Installation: To AS/NZS 3500.1.

Installation to be in accordance with manufacturer's specification.

Rainwater tank to connect to all toilets and cold water tap in Laundry.

15.7 GAS**Standard**

General: To AS 5601-2000 (*Gas Installation Code*).

Buried pipes

Warning tape: During backfilling, lay plastic warning tape above and for the full length of buried gas pipes.

- Type: Minimum 100 mm wide, with "GAS PIPE UNDER" marked continuously.

Commissioning

On completion of installation and testing, turn on isolating and control valves and purge and charge the installation.

Gas Fireplace

Install a Jetmaster Heat-N-Glo SL-550 gas fireplace to living area indicated in working drawings in accordance with manufacturer's plan and specifications with flue to external wall.



16 ELECTRICAL INSTALLATIONS

16.1 GENERAL

Cross references

Refer to the *Site preparation* worksection for service trenches.

Standard

Electrical installation: To AS/NZS 3018-2001 (*Electrical installations – Domestic installations*).

Interpretation

ED S&IR: The Electricity Distributor's Service and Installation Rules.

RCD: Residual Current Device.

16.2 COMPONENTS

Standards

Circuit breakers: To AS/NZS 3947.2-2002 (*Low-voltage switchgear and controlgear – Circuit-breakers*).

Electrical accessories: To AS/NZS 3100-2002 (*Approval and test specification General requirements for electrical equipment*).

Luminaires: To AS 3137-1992 (*Approval and test specification - Luminaires (lighting fittings)*).

Smoke detectors: To AS 3786-1993 (*Smoke alarms*).

Switchboards: To AS/NZS 3439.1-2002 (*Low-voltage switchgear and controlgear assemblies - Type-tested and partially type-tested assemblies*) or AS/NZS 3439.3-2002 (*Low-voltage switchgear and controlgear – Particular requirements for low-voltage switchgear and controlgear assemblies...*).

Telecommunications accessories: To AS/ACIF S008: 2001 (*Requirements for authorised cabling products*).

Television antenna: To AS 1417.1-1987 (*Receiving antennas for radio and television in the frequency range 30 MHz to 1 GHz - Construction and installation*) and AS 1417.2-1991 (*Receiving antennas for radio and television in the frequency range 30 MHz to 1 GHz - Performance*).

Telecommunications system

Telephony cable only - Speech and low band frequencies (≤ 100 kHz).

Small office/home office cable class

Class A Speech and low band frequencies (≤ 100 kHz).

Class B Medium bit rate data (≤ 1 MHz).

Class C High bit rate data (≤ 16 MHz).

Class D Very high bit rate data (≤ 100 MHz).

Accessory schedule

Type	Manufacturer	Catalogue or model no.
Audio system		
Blank plates		
Data/fax/modem outlet		
Door chimes		
Exhaust fan		
Intercom		
Pay television		
Socket outlet		
Switch		
Television outlet		
Telephone outlet		

Spare conduits

For future audio and television cable installation.

16.3 INSTALLATION**General**

Submit all necessary applications for electricity supply. Liaise with the electricity distributor and comply with the ED S&IR.

Telecommunications installation

Standard: To AS/ACIF S009: 2001 (*Installation Requirements for Customer Cabling (Wiring Rules)*) and the recommendations of SAA HB29-2000 (*Communications Cabling Manual, Module 2: Communications Cabling Handbook*).

Submissions: Submit required applications for telecommunications services to the telecommunications services carrier. Liaise with the carrier and submit the Telecommunications Cabling Advice (TCA1) to the Australian Communications Cabling Authority (ACA).

Consumers mains and metering

Provide consumers mains and connect them to the electricity distributor mains.

Consumer mains phases: >

Electricity distributor's requirements: Provide metering, protection, and control equipment as required by the ED S&IR.

Metering switchboard location: >

Switchboards

Distribution switchboard location(s): >

Prohibited locations: Do not locate a switchboard in a position prohibited by AS/NZS 3018-2001 (*Electrical installations – Domestic installations*) or the ED S&IR. Verify that any proposed location complies, and if the location is not compliant, recommend a suitable location to the owner.

Construction: Enclosed type with a hinged lid. Provide circuit breakers and RCDs.

Maximum demand and spare capacity

Calculate the maximum demand of the installation in accordance with AS/NZS 3018-2001 (*Electrical installations – Domestic installations*) and give the owner a copy of the calculations.

Spare capacity: Provide

- > 10% spare capacity in mains and submains; and
- > 25% spare capacity in final subcircuits.

Load balancing: Spread electrical load equally across circuits to prevent overloading and inadvertent circuit breaker operation.

Fixed and stationary appliances: Treat socket outlets supplying fixed or stationary appliances likely to cause an RCD to trip due to earth leakage currents in accordance with AS/NZS 3018-2001 (*Electrical installations – Domestic installations*). Do not connect to circuits that supply socket outlets intended for hand held or portable appliances.

Spare spaces: Provide switchboards with ≥ 2 spare positions for future single phase circuit breakers.

Electrical and telecommunications accessories

Provide electrical accessories necessary for a complete installation including but not limited to switches, dimmers, socket outlets, and telecommunications outlets.

Mounting: Flush mount accessories to the wall (or ceiling) unless noted otherwise. Provide proprietary wall boxes in masonry and wall brackets in stud walls.

Wet areas: Position accessories in locations containing baths showers or other fixed water containers to comply with the requirements of AS/NZS 3018-2001 (*Electrical installations – Domestic installations*).

Wiring

Conceal cables and conduits: Provide conduits as necessary to allow wiring replacement without structural work or the removal of cladding, lining, plaster or cement rendering.

Sequence of work: Install conduits and cables before the installation of wall and ceiling linings, and before any external landscaping works.

Installation: Do not penetrate damp-proof courses. Arrange wiring such that it does not bridge the cavity in external masonry.

Conduit sizes: Provide conduits of sufficient internal diameter and arranged so that cables are not subject to undue mechanical stress during installation.

Minimum conduit diameter: 20 mm.

Conduits for future use: Provide a non-metallic drawstring having a breaking strain > 100 kg.

Lighting

Provide lighting as indicated on electrical layout working drawings.

Provide for fluorescent lighting in all bathrooms and laundry to comply with BASIX requirements.

Dimmers and control devices

Locate dimmers and control devices for future access. Provide ventilation and acoustic treatment to suit the device characteristics.

Ceiling Fans

Install ceiling fans to each Bedroom, Living, Family and Rumpus as indicated on electrical layout working drawings.

Exhaust fans

Install exhaust fans to each bathroom ducted to roof as indicated on electrical layout working drawings as selected.

Install Kitchen exhaust fan, not ducted as selected

Power Points

Provide for power points in positions indicated on electrical layout working drawings.

Telecommunications

Installations requiring telephony only: To AS/ACIF S009: 2001 (*Installation Requirements for Customer Cabling (Wiring Rules)*).

Small office/home office installations: To AS/ACIF S009: 2001 (*Installation Requirements for Customer Cabling (Wiring Rules)*) and AS/NZS 3086-1996 (*Telecommunications installations - Integrated communications cabling systems for small office/home office premises*) and in accordance with the recommendations of SAA HB29-2000 (*Communications Cabling Handbook*).

Television and audio systems

Provide a complete operational analogue and digital television distribution system to AS/NZS 1367-2000 (*Coaxial cable systems for the distribution of analogue television and sound signals in single and multiple unit installations*) and conforming to the recommendations of Digital Broadcasting Australia.

Antennas: Provide and locate antennas to receive all locally available free-to-air television stations. Provide a coaxial cabling system.

Conduits for future cabling: ≥ 25 mm diameter with drawstrings.

Smoke detection

Installation and testing: To AS 1670.1-2004 (*Fire detection, warning, control and intercom systems - System design, installation and commissioning - Fire*).

Provision: Provide smoke detectors to the requirements of the Building Code of Australia. Connect smoke detectors to mains power.

Testing and certification

Electrical installations: Test to AS/NZS 3017-2001 (*Electrical installations - Testing and inspection guidelines*). Give the owner a certificate showing test results and certifying compliance with AS/NZS 3018-2001 (*Electrical installations - Domestic installations*).

Telecommunications cabling: To AS/NZS 3086-1996 (*Telecommunications installations - Integrated communications cabling systems for small office/home office premises*) and the recommendations of SAA HB29-2000 (*Communications Cabling Handbook*). Test the cable link performance in accordance with the recommendations of SAA HB29-2000 (*Communications Cabling Handbook*) at the maximum frequency and data rate for the cable class, and the cable category. Give the owner a certificate showing test results and certifying compliance with

AS/NZS 3086-1996 (*Telecommunications installations - Integrated communications cabling systems for small office/home office premises*).

Television and audio systems: To AS/NZS 1367-2000 (*Coaxial cable systems for the distribution of analogue television and sound signals in single and multiple unit installations*). Test the complete television and audio system. Give the owner a certificate showing test results and certifying compliance.

**17 LANDSCAPING****17.1 GENERAL****Cross reference**

Refer to the *General requirements* worksection for timber durability.

17.2 MATERIALS AND COMPONENTS**Concrete**

Standard: To AS 1379-1997 (*Specification and supply of concrete*) or proprietary packaged mix.

17.3 PREPARATION**Weed eradication**

Eradicate weeds using a non-residual glyphosate herbicide in any registered formulae, at the recommended maximum rate.

Surplus spoil

Remove surplus spoil from site. Do not burn vegetative material.

17.4 SUBSOIL**Ripping**

General: If practicable, rip parallel to the final contours. Do not rip when the subsoil is wet or plastic. Do not rip within the dripline of trees and shrubs to be retained.

Ripping depths: Rip the subsoil to the following typical depths:

- Compacted subsoil: 300 mm.
- Heavily compacted clay subsoil: 450 mm.

Cultivation

Cultivate to a minimum depth of 100 mm. Do not disturb services or tree roots; if necessary, cultivate these areas by hand. During cultivation, thoroughly mix in materials required to be incorporated into the subsoil. Remove stones exceeding 25 mm, clods of earth exceeding 50 mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation. Trim the surface to the required design levels after cultivation.

Additives

General: Apply additives after ripping or cultivation and incorporate into the upper 100 mm layer of the subsoil.

Gypsum: Incorporate at the rate of 0.25 kg/m².

17.5 TOPSOIL**General**

Provide topsoil which is free from unwanted matter and is suitable for reuse on site as topsoil.

Source

If it is available, provide site topsoil.

Placing topsoil

Spread the topsoil on the prepared subsoil and grade evenly, making the necessary allowances so that:

- required finished levels and contours are achieved after light compaction; and
- grassed areas may be finished flush with adjacent hard surfaces such as kerbs, paths and mowing strips.

Consolidation

Compact lightly and uniformly in 150 mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which is:

- finished to design levels;
- smooth and free from stones or lumps of soil;
- graded to drain freely, without ponding, to catchment points;
- graded evenly into adjoining ground surfaces; and

- ready for planting.

Topsoil depths

Spread topsoil to the following typical depths:

- Planting areas: 225 mm.
- Irrigated grassed areas generally: 150 mm.
- Grass areas: 100 mm.

17.6 TURFING**Turf**

Obtain turf from a specialist grower of cultivated turf. Provide turf of even thickness, free from weeds and other foreign matter.

Supply

Deliver the turf within 24 hours of cutting, and lay it within 36 hours of cutting. Prevent it from drying out between cutting and laying.

Fertilising

Mix fertiliser thoroughly into the topsoil before placing the turf.

Laying

Lay turf

- in "stretcher" pattern with the joints staggered and close butted;
- parallel with the long sides of level areas, and with contours on slopes; and
- to finish flush, after tamping, with adjacent finished surfaces of ground, paving edging, or grass seeded areas.

Tamping

Lightly tamp to an even surface immediately after laying. Do not use a roller.

Watering

Water immediately after laying until the topsoil is moistened to its full depth.

17.7 PLANTING**Excavation**

Excavate a plant hole for each plant large enough to accept the root ball plus 0.1 m³ of backfilling with topsoil.

Plants

General: Provide plants which

- have large healthy root systems, with no evidence of root curl, restriction or damage;
- are vigorous, well established, free from disease and pests, of good form consistent with the species or variety; and
- are hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site.

Trees: Provide trees which, unless required to be multi-stemmed, have a single leading shoot.

Labelling

Label at least one plant of each species or variety in a batch using a durable, readable tag.

Planting conditions

Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.

Watering

Thoroughly water plants before planting and immediately after planting.

Fertilising

In planting beds and individual plantings, place fertiliser pellets around plants at the time of planting.

17.8 MULCHING**Mulch**

General: Provide mulch which is free of deleterious and extraneous matter such as stones, soil, weeds and sticks.

Application: Place mulch clear of plant stems, and rake to an even surface flush with the surrounding finished levels.

Depth: 75 mm.

17.9 STAKES AND TIES**Stakes**

Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground at least one third of their length, avoiding damage to the root system.

Stake sizes:

- For plants 1 to 2.5 m high: Two 50 x 50 x 1800 mm stakes per plant.
- For plants smaller than 1 m high: One 38 x 38 x 1200 mm stake per plant.

Ties

General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant.

Webbing: Provide 50 mm hessian webbing stapled to the stake.

**18 TERRACE PAVING AND DRIVEWAY****18.1 GENERAL****Cross reference**

Refer to the *General requirements* worksection for timber durability.

Kerb crossing

Provide a kerb crossing to local council requirements.

18.2 MATERIALS AND COMPONENTS**Mortar materials**

Sand: Use a fine aggregate with a low clay content selected for grading.

Cement: To AS 3972-1997 (*Portland and blended cements*), type GP.

Mortar

Mix proportions: 1:3 cement:sand.

18.3 CONSTRUCTION GENERALLY**Grading**

General: Grade paving to even falls to drain away from buildings to drainage outlets without ponding. Minimum fall for drainage: 1:100.

18.4 UNIT PAVING**Masonry and segmental pavers**

General: Provide paving units of clay, natural stone or concrete masonry, purpose-made for use as paving, or units made for bonded masonry construction but suitable for paving.

Standard: To AS/NZS 4455-1997 (*Masonry units and segmental pavers*).

Minimum thickness:

- Foot and bicycle traffic: 40 mm.
- Light domestic traffic occasionally up to 3 tonne gross: 50 mm.

Cutting units: Cut paving units to maintain sharp edges and accurate joints and margins.

Manufacturer: > UrbanStone Ultra Premium

Size: > To be selected

Colour: > "Saltbush" terrace and "Ironbark" driveway

Driveway Paving**Terrace Paving**

Install UrbanStoneUltra Premium paving to manufacturer's specifications for "Rigid Pavement System".

Allow for graded falls to pits indicated on Hydraulic Engineer's working drawings

SOUTER & ASSOCIATES



Consulting Surveyors and Planners

Suite 6,
Heron Cove Marina
Queens Pde (West)
NEWPORT NSW 2106
Ph: (02) 9979 5709
Fax: (02) 9979 9489
Email: souter@bigpond.net.au
ABN 48 304 348 042

REF: 22-130

22 SEPTEMBER 2006

MR KEVIN SHANAHAN
SITE ALTERNATIVES PTY LTD
PO BOX 6215
PYMBLE
NSW
2073

RE: 162 NARRABEEN PARK PARADE, WARRIEWOOD

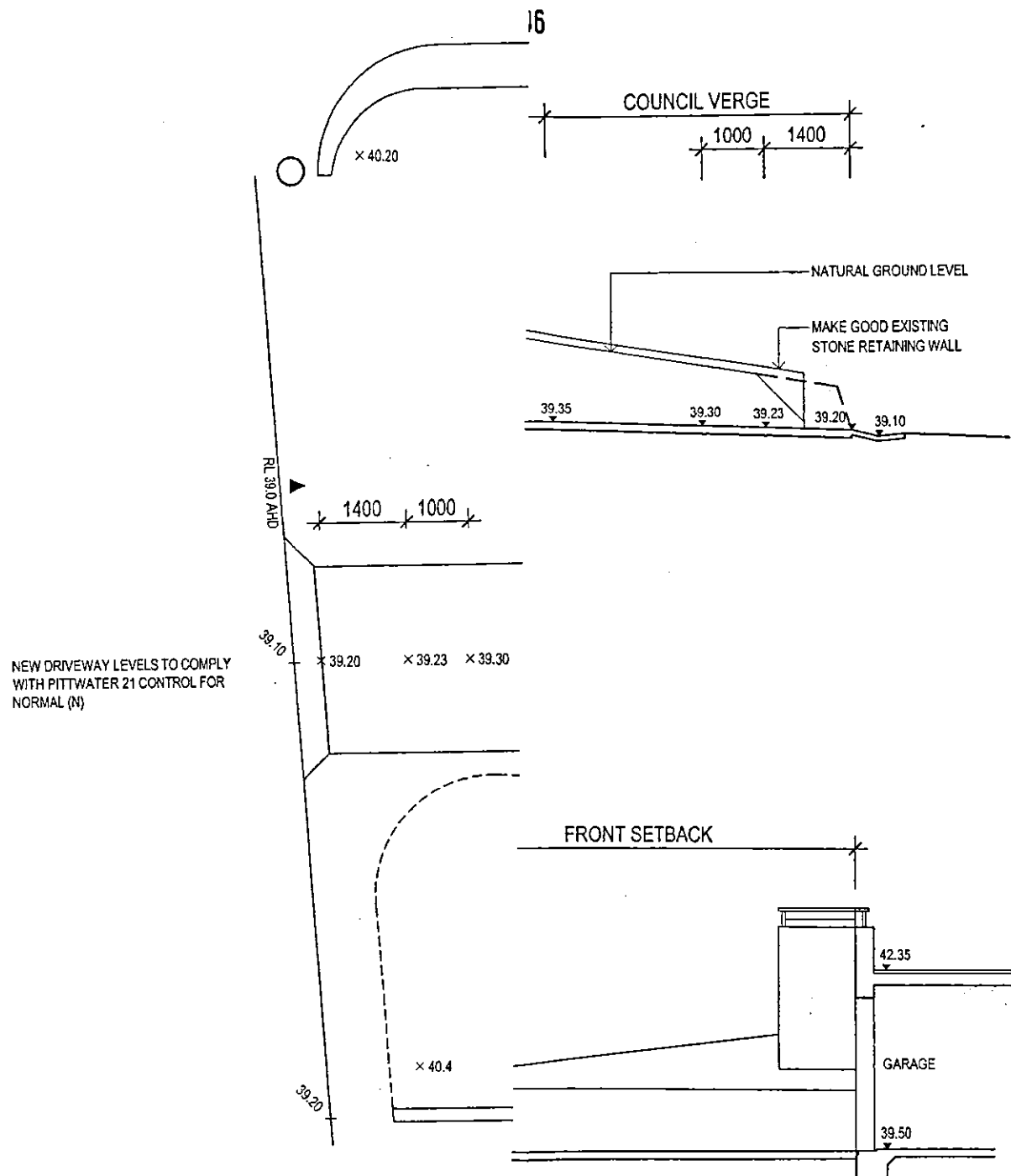
Dear Kevin,

I wish to confirm that the driveway plans prepared by Site Alternatives (A10-C) comply with Pittwater Council's standard driveway profiles.

Yours faithfully,

IAN SOUTER B. Surv M.I.S. (Aust)
Registered Surveyor

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0435/06
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.
Endorsed by: TWA (NV)
Date: 26 SEP 2006



DRIVEWAY PLAN 1:100

AMENDMENTS					DRAWING TITLE		DRAWINGS IN SET	
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	PROJECT TITLE		15	
A	DEVELOPMENT APPLICATION	MAY 08			NEW DWELLING		CHECKED	
B	AMEND FRONT GARDEN VERGE FRONT STAIR AND PANTRY REDUCED	14.07.08			12 NARRABEEN PARK PARADE, MONA VALE		GS	
C	CONSTRUCTION CERTIFICATE	AUG 08			DRIVEWAY PLANS & ELEVATIONS		JOB NO.	
					SCALE 1:100@A3		904	
							DRAWING NUMBER	
							A10-C	

"11"

7 September 2006
Our Ref: 206-461

GreenArrow Hydraulics Pty Ltd
ABN 32 095 342 153
Level 1, 409 Forrest Road
PO Box 442
Bexley NSW 2207
Ph: (02) 9567 4466
Fax: (02) 9567 4462
Email: greenarrow@bigpond.com

Site Alternatives Pty Ltd
Po Box 6215
PYMBLBE NSW 2073

Attention: Mrs. Gretel Shanahan

Dear Madam,

**CERTIFICATE OF DESIGN – STORMWATER DRAINAGE
NEW SINGLE DWELLING AT
162 NARRABEEN PARK PARADE, MONA VALE
DEVELOPMENT APPLICATION NO: 256/06**

We hereby certify that the design for the above project is in accordance with normal engineering practice and meets the requirements of the Development Consent. In particular the design is in accordance with the following:

- *Pittwater Council's DCP 21 Section B5.3*
- *Da Condition No's: B1, B2, B3, B4 & C1*

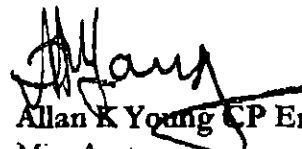
I am an appropriately qualified and competent person in this area and as such can certify that the design and performance of the design comply with the above and which are detailed on the following drawings.

- *H-01 Rev.B*
- *H-02 Rev.B*

Yours faithfully,


Michael Green Dip. Eng., AHSCA
Director

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0435/06
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Endorsed by: TMA (NV)
Date: 26 SEP 2006


Allan K Young CP Eng.
Mie. Aust

MEMORANDUM / FACSIMILE TRANSMITTAL

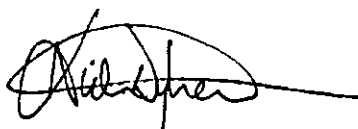
PROJECT NAME	FACSIMILE NUMBER
162 Narrabeen Park Parade	by e-mail
TO	PAGES INCLUDING THIS FORM
Gretel Shanahan	1
ATTENTION	DATE
	20.09.06
FROM	TOPIC
Aidan Nyhan	Landscape
PHONE CONVERSATION / FILE NOTE / SITE INSPECTION / MINUTES OF MEETING / OTHER	

Dear Gretel,

We confirm that the plant list for the proposed landscape works at 162 Narrabeen Park Parade have been primarily taken from Pittwater Council's recommended native plant lists as indicated on Landscape Plan number 206011 L/D-DD01 revision 02 dated the 16th of May and as amended for Council submission on the 17th of July 2006.

Therefore trees, shrubs and ground covers to be planted both in the front setback and within the road reserve adequately meet Council's requirement that these should be 50% locally native plants.

Yours faithfully,



Aidan Nyhan
Landscape Architect

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
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Endorsed by: TWA (NV)
Date: 26 SEP 2006

TRACT CONSULTANTS PTY LTD
ABN 75 423 048 499
LEVEL 1, 186 BLUES POINT ROAD
MORRISONS POINT
2060 NSW AUSTRALIA
TELEPHONE 61 2 9954 3733
FACSIMILE 61 2 9954 3825
sydney@tract.net.au

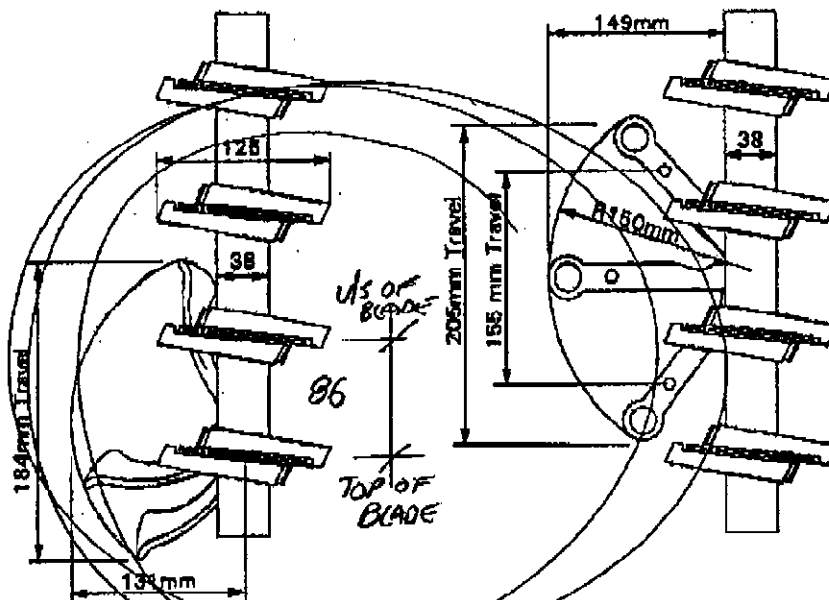
SYDNEY
MELBOURNE BRISBANE
ASSOCIATED OFFICE PERTH

altair™

AL7

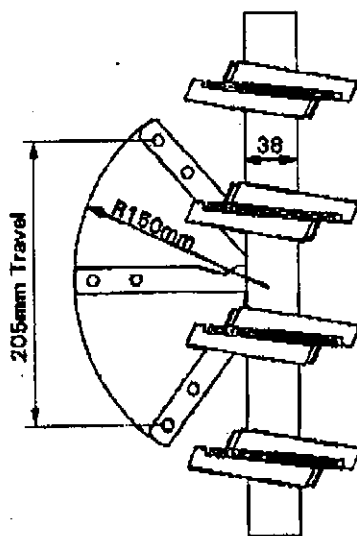
102mm ALTAIR™ LOUVRE HANDLES

ANNEXURE "E"

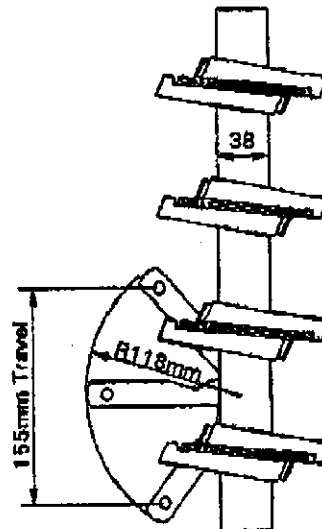


102mm Altair Standard Handle
with Over Centre Locking Action
Acetal Handle

102mm Altair Off-standard
Ring Handle Type A13
with Over Centre Locking Action
Stainless Steel Handle
For Manual Operation with Breezway Map Rod



102mm Altair Off Standard
Dual Control Handle Type A6
with Over Centre Locking Action
Stainless Steel Handle
For use with a Remote Control Window System



102mm Altair Off Standard
Single Control Handle Type A2
with Over Centre Locking Action
Stainless Steel Handle
For use with a Remote Control Window System

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Date: 26 SEP 2006



PROPOSED NEW RESIDENCE AND POOL

162 NARRABEEN PARK PARADE, MONA VALE

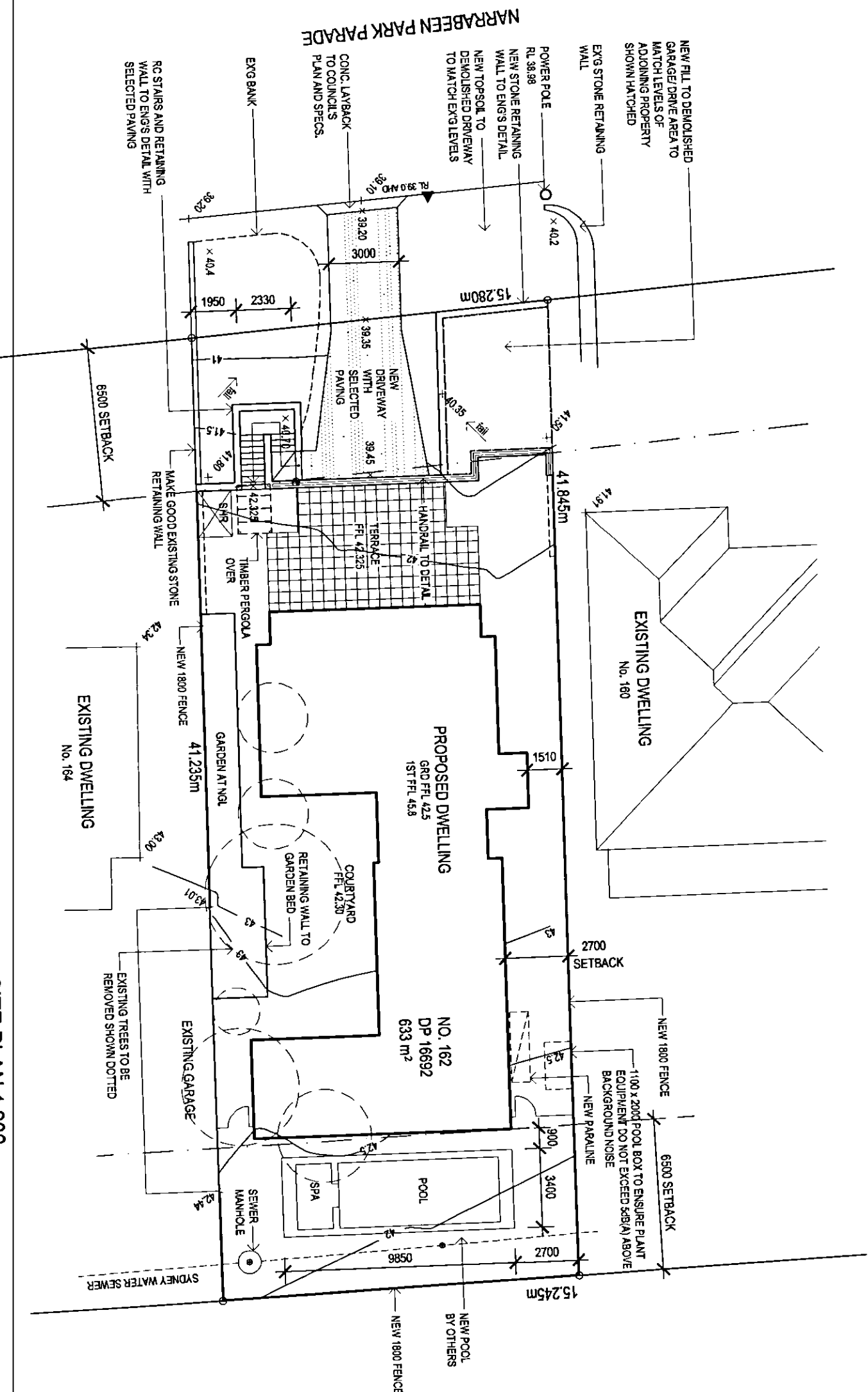
PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number:	CC0435/00
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Endorsed by:	TWA (NV)
Date:	26 SEP 2006

SCHEDULE OF DRAWINGS

- A01 SITE PLAN 1:200
- A02 BASEMENT PLAN 1:100
- A03 GROUND FLOOR PLAN 1:100
- A04 FIRST FLOOR PLAN 1:100
- A05 ELEVATIONS 1:100
- A06 ELEVATIONS 1:100
- A07 SECTIONS 1:100
- A08 SECTIONS 1:100
- A09 SECTIONS 1:100
- A10 DRIVEWAY PLAN & SECTIONS 1:100
- A11 SITE SETOUT 1:200
- A12 ROOF & DRAINAGE PLAN 1:200
- A13 WINDOW SCHEDULE 1:100

CALCULATIONS OF AREAS

TOTAL SITE AREA = 633m²
PROPOSED IMPERVIOUS AREAS = 292m² = 46%
DWELLING FOOTPRINT = 192m²
TERRACE & POOL HARD AREAS = 54m²
DRIVEWAY AND STAIRS = 36m²
OTHER SOFT AREAS (too narrow for classification as soft areas) = 10m²
PROPOSED SOFT AREAS = 341m² = 54%
POOL WET AREA = 28m²
SOFT LANDSCAPING FRONT = 96m²
SOFT LANDSCAPING (REAR AND SIDE) = 217m²
EXISTING AREAS = 201.7m²
EXISTING DWELLING FOOTPRINT = 145.5m²
TOTAL EXISTING IMPERVIOUS AREAS = 201.7m²
TOTAL EXTRA IMPERVIOUS = 90m²



SITE PLAN 1:200

AMENDMENTS				NOTES	
ISSUE	DESCRIPTION	DATE	SS/E	DESCRIPTION	DATE
A	DEVELOPMENT APPLICATION	14/09/06		1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.	
B	LANDING CONCRETE WORK NOT SHOWN	14/09/06		2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.	
C	CONSTRUCTION CERTIFICATE	14/09/06		3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684:1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.	

site alternatives

PTY. LTD

Suite 1, Level 1, 55 Grandview Street
Pymble NSW 2073
PO BOX 6215 Pymble NSW 2073
Ph 02 9488 6600 Fax 02 9144 6864

PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE, MONA VALE

DRAWING TITLE
SITE PLAN

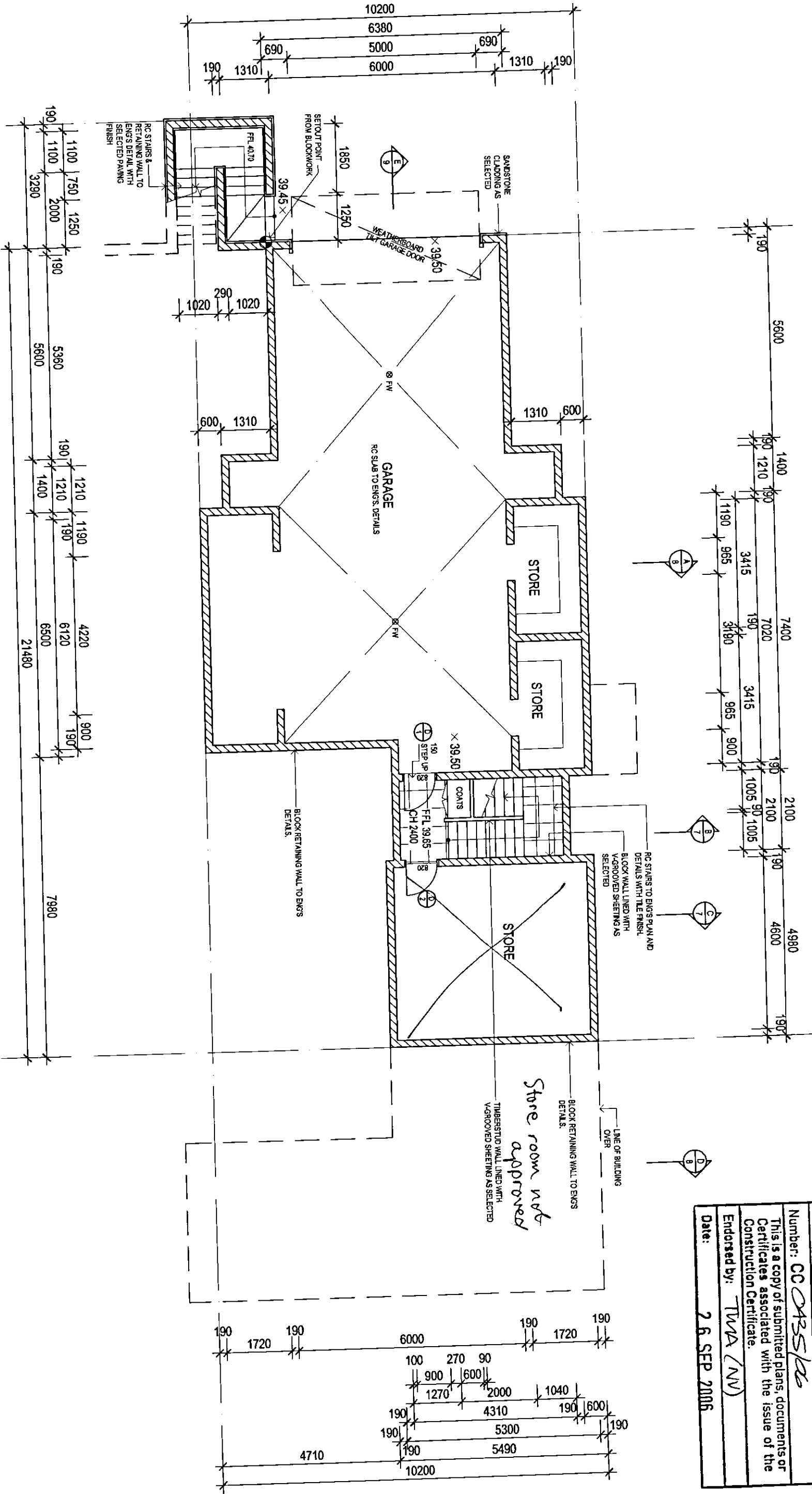
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A01-C

DRAWING NO.
904

DRAWING NO.
904

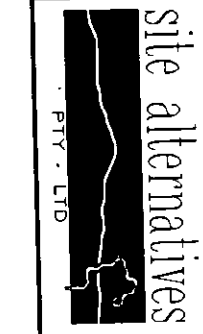
PITTWATER COUNCIL CONSTRUCTION CERTIFICATE

Number: **CC 0435/16**
 This is a copy of submitted plans, documents or
 Certificates associated with the issue of the
 Construction Certificate.
 Endorsed by: **TWA (NV)**
 Date: **26 SEP 2006**



AMENDMENTS	ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE
A	DEVELOPMENT APPLICATION	14/7/06				
B	AMENDMENT TO DEVELOPMENT APPLICATION	14/7/06				
C	CONSTRUCTION CERTIFICATE	14/7/06				

NOTES
 1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
 2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
 3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684.1:1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

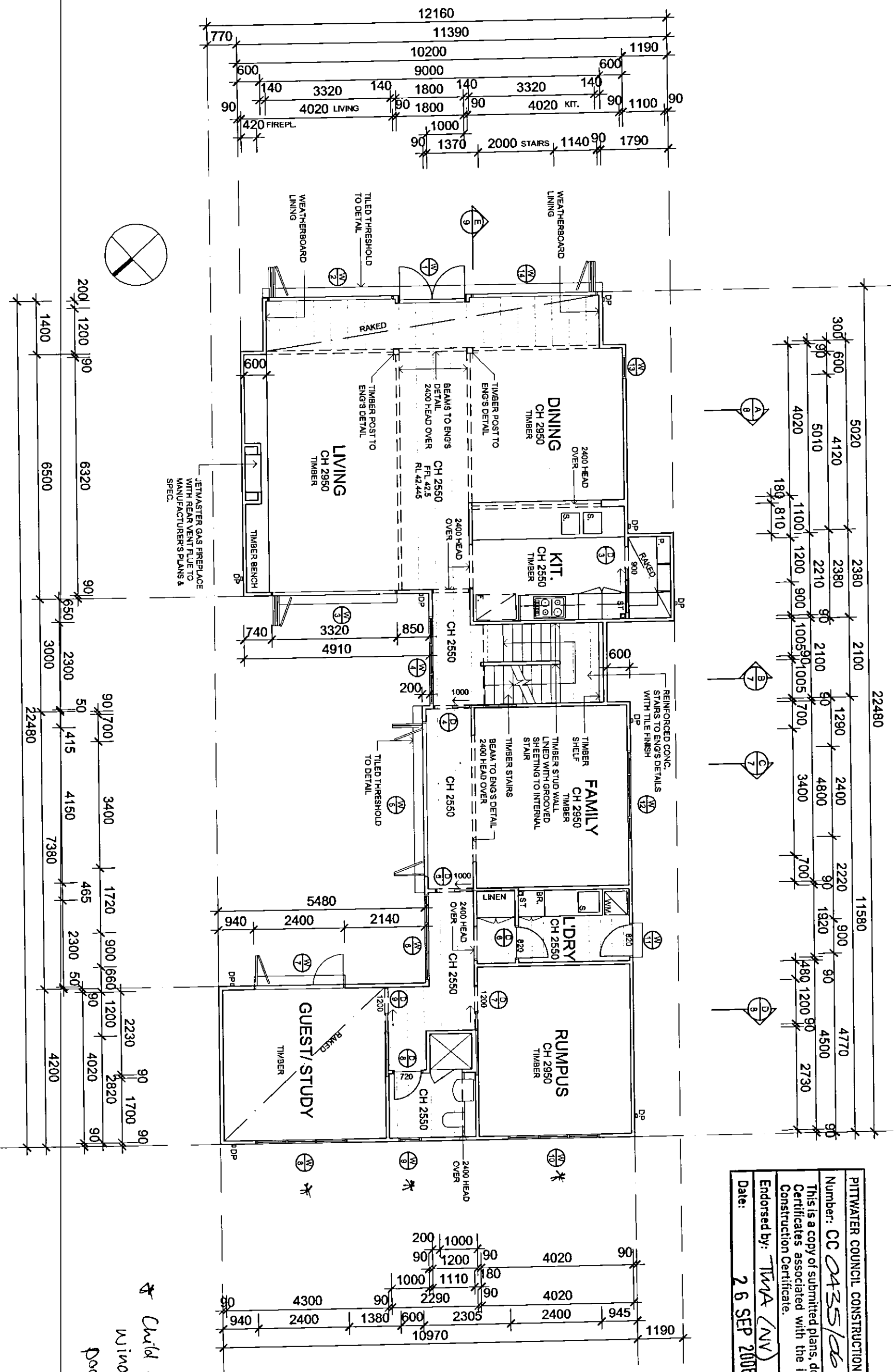


site alternatives
 Suite 1, Level 1, 55 Grandview Street
 Pyrmble NSW 2073
 PO BOX 6215 Pyrmble NSW 2073
 Ph 02 9498 6800 Fax 02 9144 6864

PROJECT TITLE
 NEW DWELLING
 162 NARRABEEN PARK PARADE, MONA VALE
DRAWING TITLE
 BASEMENT PLAN
 SCALE 1:100@A3

DESIGN	NT	15
DESIGNED	GS	
CHECKED	GS	
DRAWING NUMBER		A02-C

PITTSBURGH COUNCIL CONSTRUCTION CERTIFICATE	
Number: CC 0435/06	
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by: TWA (NV)	
Date: 26 SEP 2006	



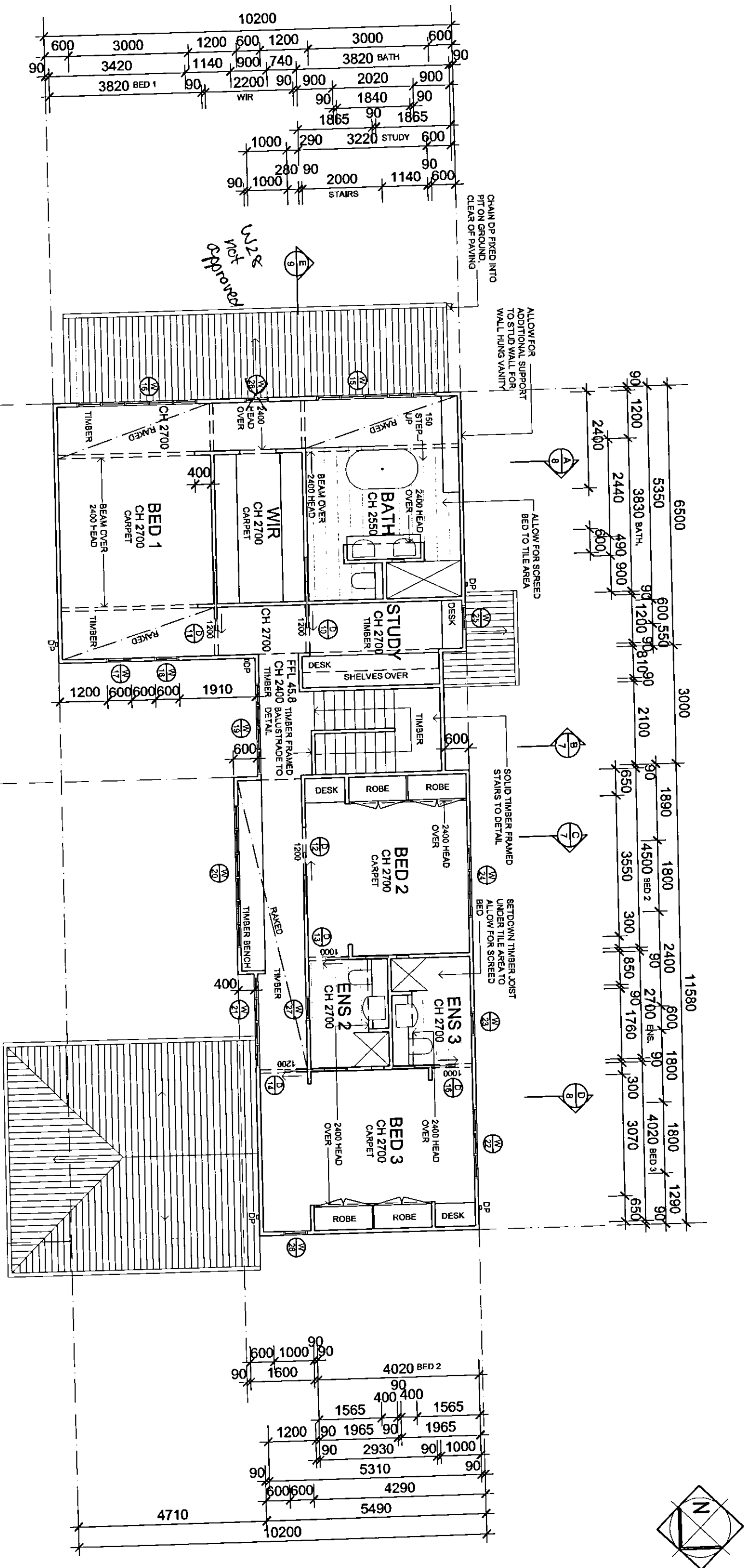
* Child safe windows to pool

AMENDMENTS			NOTES		
ISSUE	DESCRIPTION	DATE	DATE	DATE	DATE
A	DEVELOPMENT APPLICATION	14.07.06			
B	PLAN AND ELEVATION SHOWN	14.07.06			
C	CONSTRUCTION CERTIFICATE	AUG 06			

1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.			2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty. Limited as soon as they are discovered.		
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684, 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.					

site alternatives PTY. LTD Suite 1, Level 1, 55 Grandview Street Pymble NSW 2073 PO BOX 6215 Pymble NSW 2073 Ph 02 9488 6800 Fax 02 9144 6864			PROJECT TITLE NEW DWELLING 162 NARRABEEN PARK PARADE, MONA VALE DRAWING TITLE GROUND FLOOR PLAN SCALE 1:100 @ A3		
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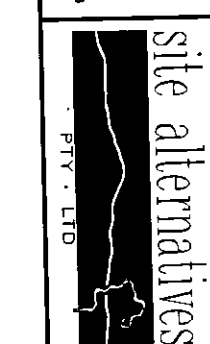
DRAWN NT	15	DRAWING NUMBER A03-C
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AMENDMENTS			
ISSUE	DESCRIPTION	DATE	ISSUE
A	DEVELOPMENT APPLICATION	May 06	
B	AMEND FRONT GARDEN VERGE FRONT STAIR AND QUALITY REDUCED	14/07/06	
C	CONSTRUCTION DETAIL	AUG 06	

NOTES

1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.



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PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE,
MONA VALE
DRAWING TITLE
FIRST FLOOR PLAN
SCALE 1:100 @ A3

DRAWN	NT	DATE	15
CHECKED	GS	DATE	
DATE	904		

DRAWING NUMBER
A04-C

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0435/06
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.
Endorsed by: TMA (NW)
Date: 26 SEP 2006

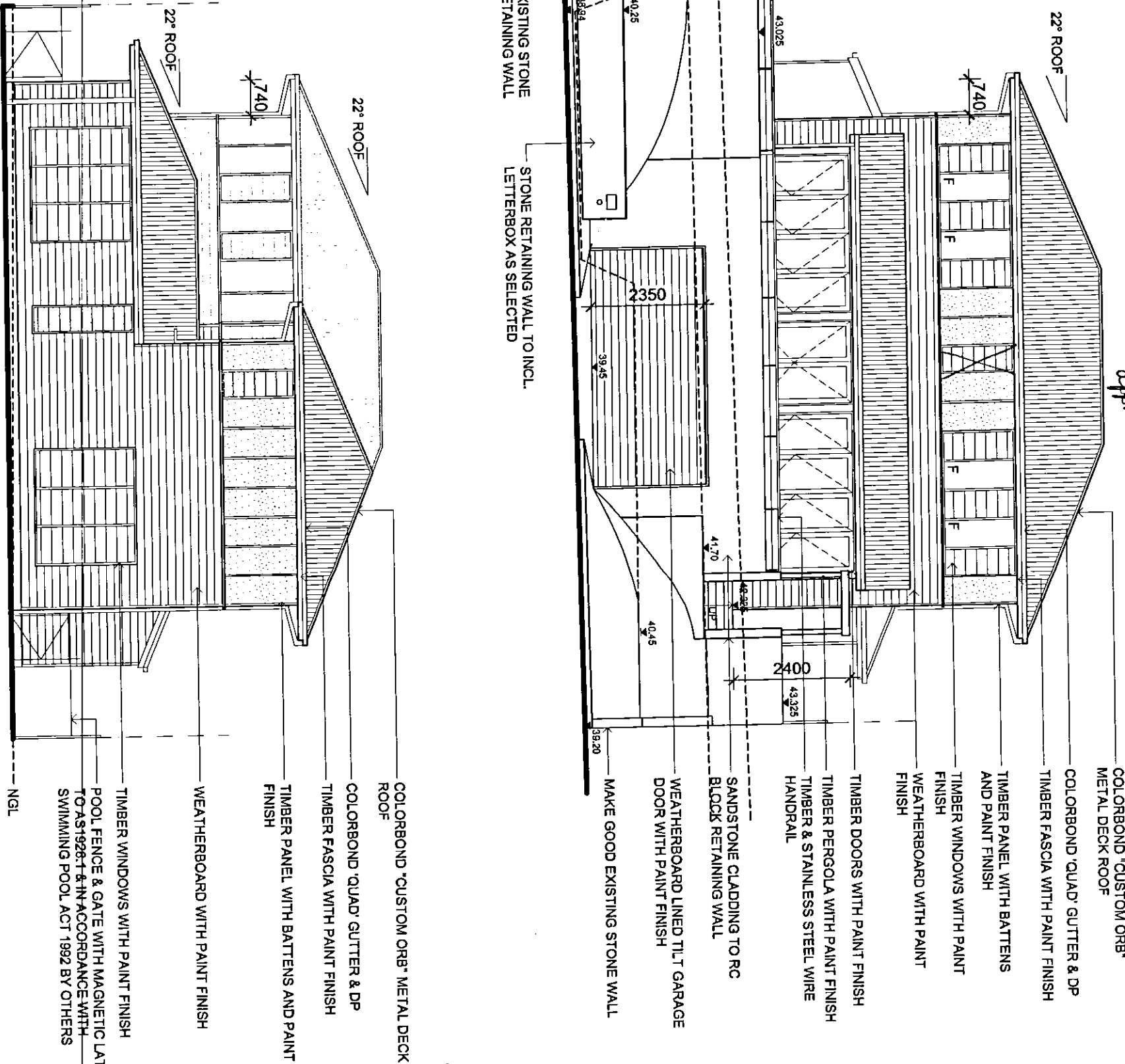
RIDGE 50.10

U/S CEILING 48.5
2700
1530
870
1ST FFL 45.8
U/S CEILING 45.45
350
2950
2400
3000
GRD FFL 42.5
NGL AT FACE OF NEW DWELLING
NGL FOR 8.5m SETBACK
GARAGE FFL 39.50

SOUTHEAST ELEVATION
(STREET FRONT)

RIDGE 50.10
U/S CEILING 48.5
2700
1530
870
1ST FFL 45.8
U/S CEILING 45.45
350
2950
2400
2090
GRD FFL 42.5

NORTHWEST ELEVATION



was not approved

PITTSWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0435/02
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.
Endorsed by: TWA (NV)
Date: 26 SEP 2006

AMENDMENTS			
ISSUE	DESCRIPTION	DATE	ISSUE
A	DEVELOPMENT APPLICATION	MAY 06	
B	AMEND FRONT GABLE VERGE FRONT STAIR AND PAINTING REDUCED	14.07.06	
C	CONSTRUCTION CERTIFICATE	AUG 06	

NOTES
1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1824 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

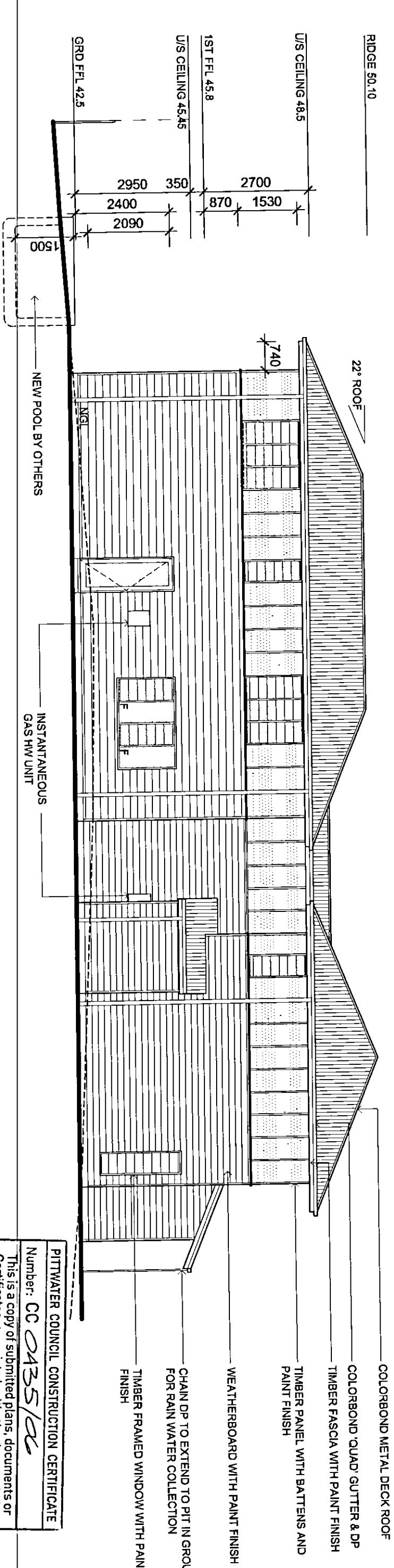
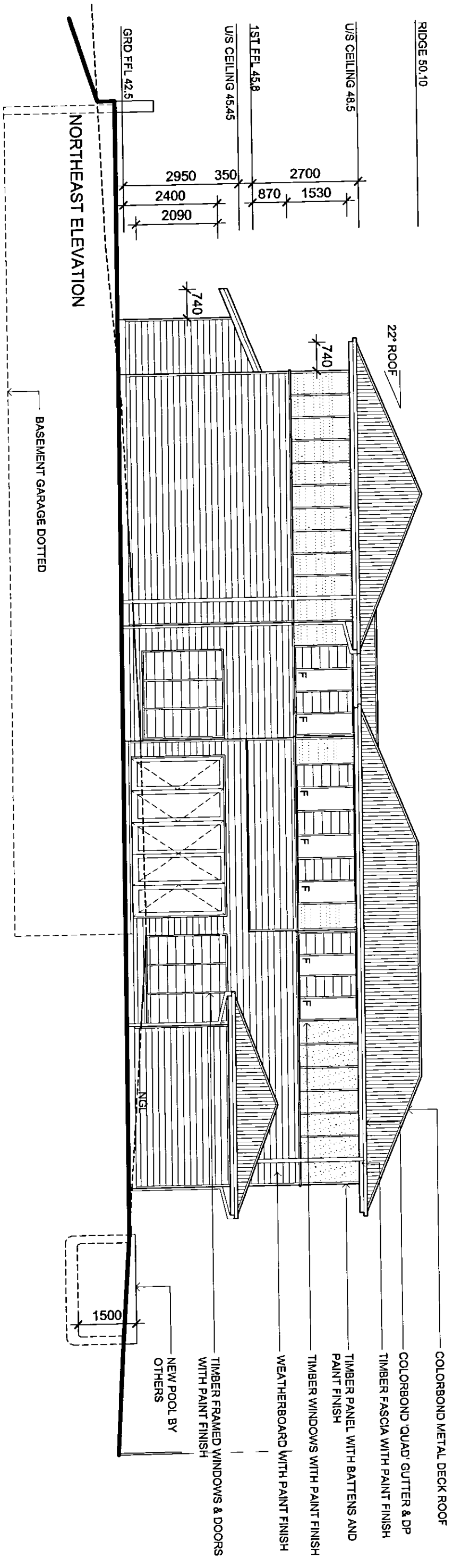


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PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE,
MONA VALE
DRAWING TITLE
ELEVATIONS
SCALE 1:100@A3

DRAWN
NT
CHECKED
GS
JOB NO.
904

DRAWINGS IN SET
15
DRAWING NUMBER
A05-C



SOUTHWEST ELEVATION

NORTHEAST ELEVATION

AMENDMENTS			
ISSUE	DESCRIPTION	DATE	ISSUE
A	DEVELOPMENT APPLICATION	MAY '06	
B	AMEND FRONT GARDEN VERGE FRONT STAIR AND PAINTS REDUCED	14.07.06	
C	CONSTRUCTION CERTIFICATE	AUG 06	

NOTES
1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS 604 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

PTY. LTD

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Ph 02 9488 6800 Fax 02 9144 6864

PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE,
MONA VALE

DRAWING TITLE
ELEVATIONS

SCALE
1:100@A3

DRAWN
NT

CHECKED
GS

JOB NO.
904

DRAWING NUMBER
A06-C

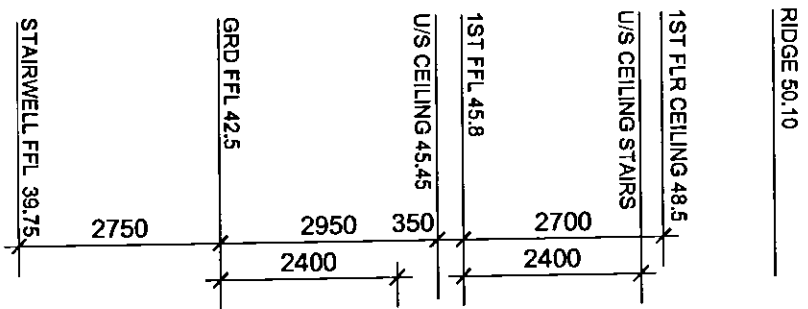
PITTWATER COUNCIL CONSTRUCTION CERTIFICATE

Number: CC 0435/06

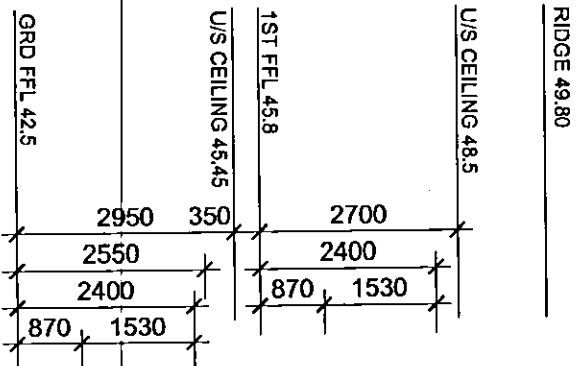
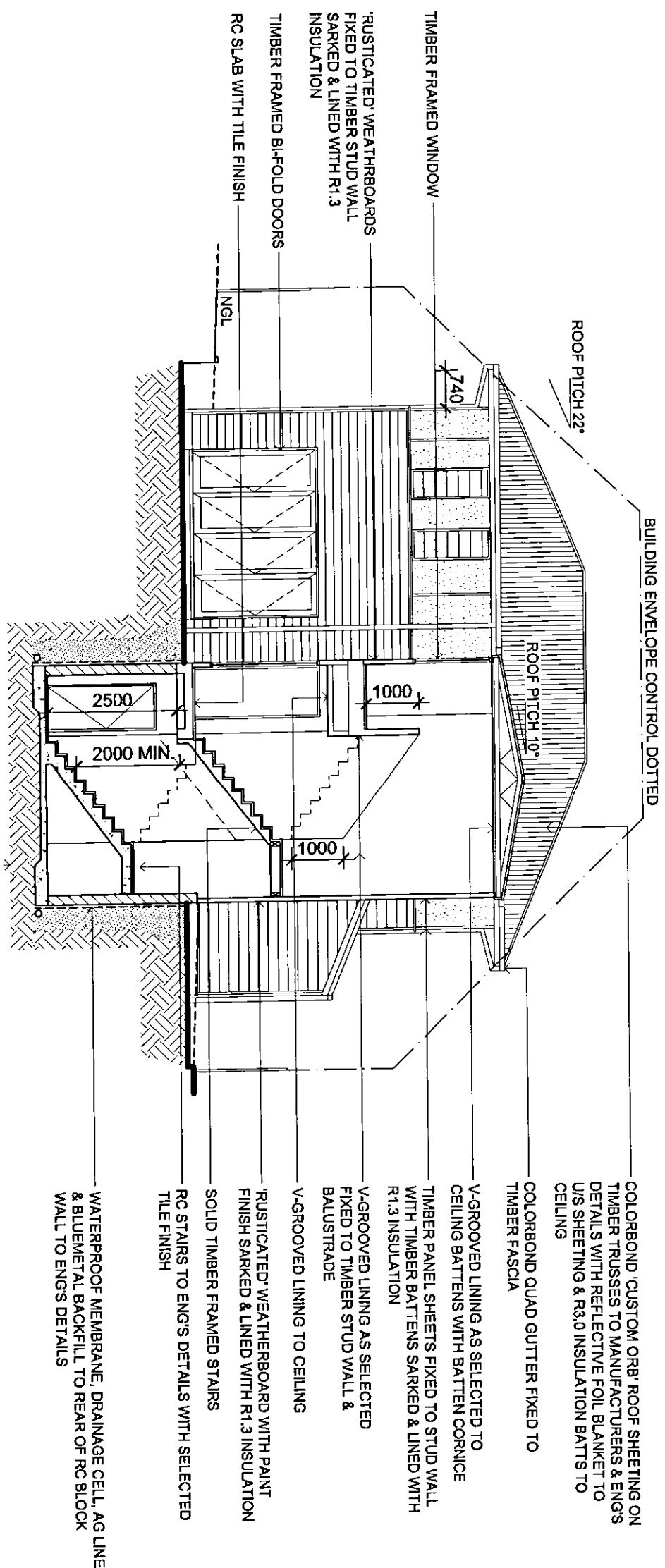
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

Endorsed by: TWA (NV)

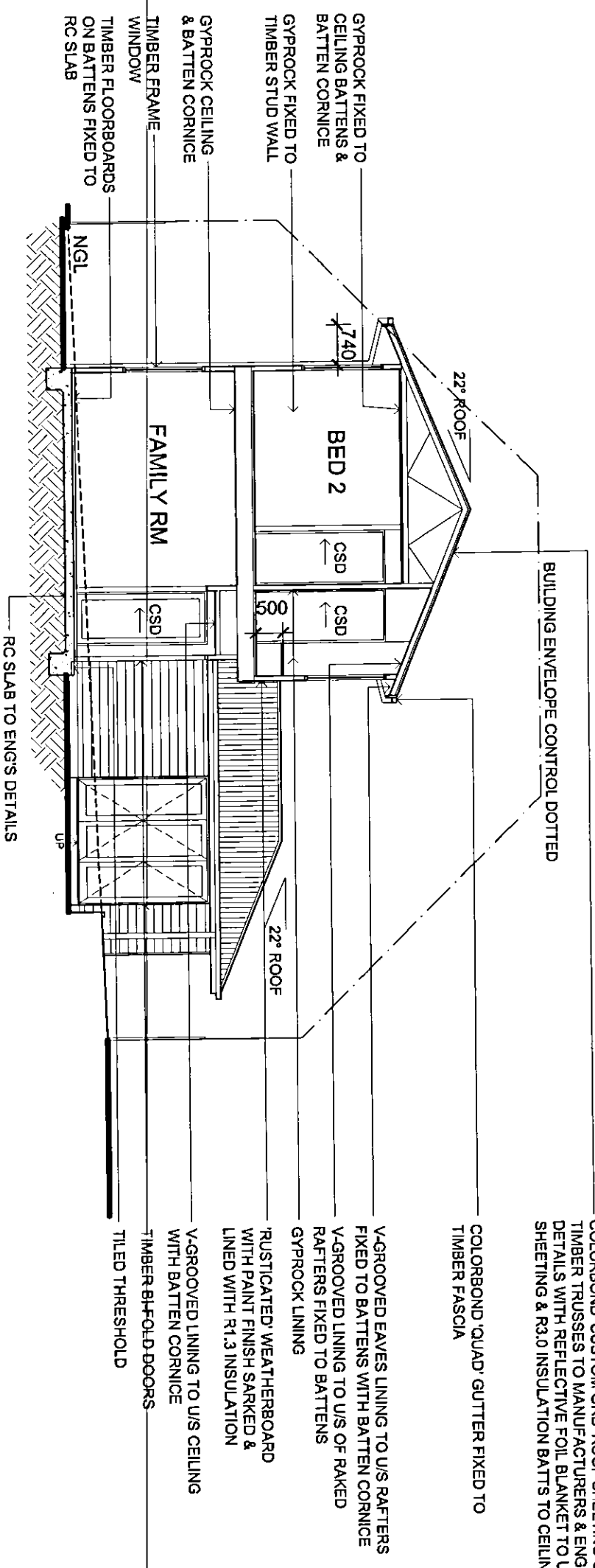
Date: 26 SEP 2006



SECTION BB



SECTION CC



AMENDMENTS			
ISSUE	DESCRIPTION	DATE	ISSUE
A	REVISIONS	14/07/06	
B	REVISIONS	14/07/06	
C	REVISIONS	14/07/06	

NOTES
1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty. Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684.1:1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

site alternatives

PO BOX 6215 Pymble NSW 2073
Ph 02 9488 8800 Fax 02 9144 6864

PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE, MONA VALE

DRAWING TITLE
SECTIONS

DRAWING NUMBER
A07-C

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE

Number: CC 0435/06

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Endorsed by: TMA (NV)

Date: 26 SEP 2006

RIDGE 50.10

U/S CEILING 48.5

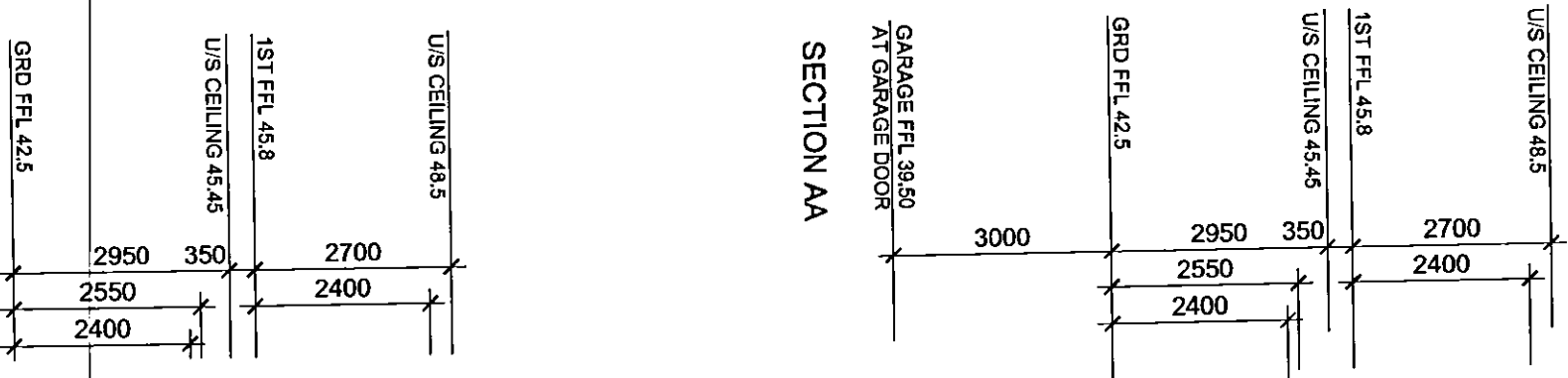
1ST FFL 45.8

U/S CEILING 45.45

GRD FFL 42.5

GARAGE FFL 39.50
AT GARAGE DOOR

SECTION AA

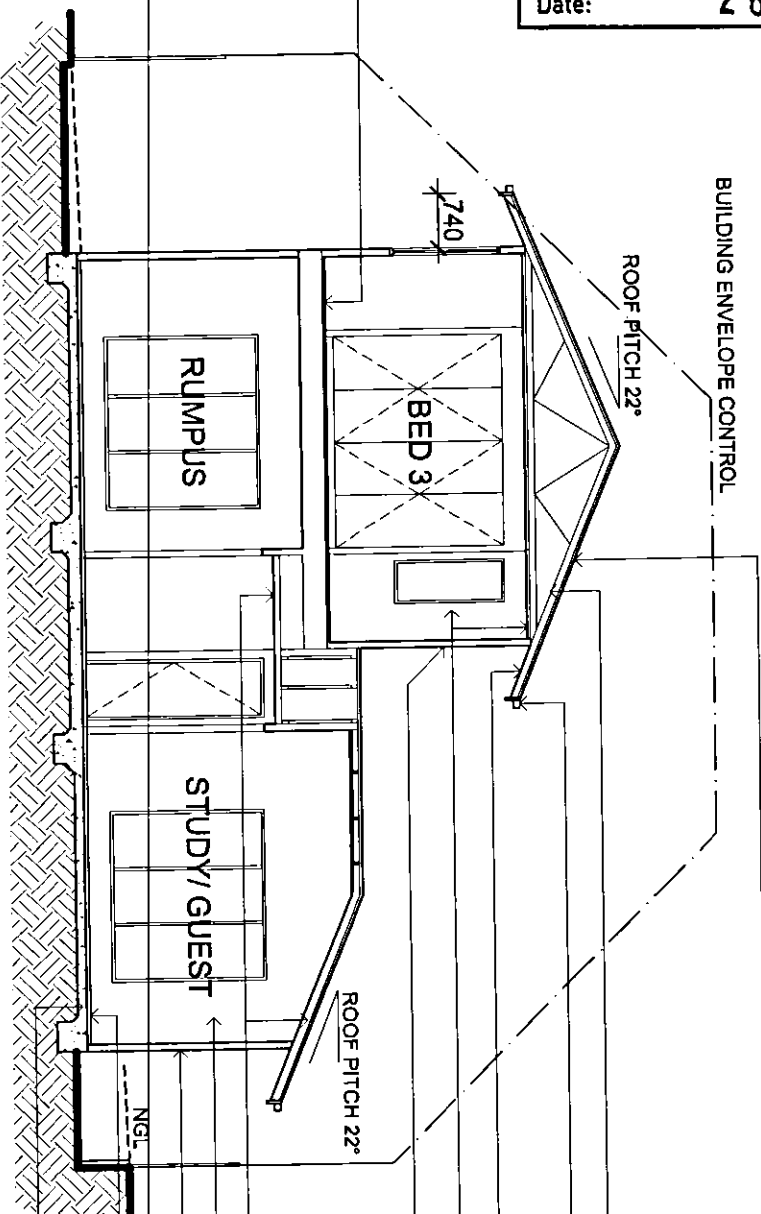


TIMBER FLOOR BOARD ON
PARTICLE BOARD SHEETING
FIXED TO FLOOR JOISTS TO
ENG'S DETAILS

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number: CC 0435/06	
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by: TMA (NV)	
Date: 26 SEP 2006	

CARPET AS SELECTED
ON PARTICLE BOARD
SHEETING ON FLOOR
JOISTS TO ENG'S
DETAILS

SECTION DD



BUILDING ENVELOPE CONTROL

ROOF PITCH 22°

ENS.

BED 1

DINING

LIVING

GARAGE

39.50

BUILDING ENVELOPE CONTROL

ROOF PITCH 22°

BED 3

RUMPUS

STUDY/GUEST

ROOF PITCH 22°

NGL

COLORBOND CUSTOM ORB ROOF WITH REFLECTIVE
SHEETING ON TIMBER TRUSSES TO MANUFACTURERS &
ENG'S DETAILS WITH REFLECTIVE FOIL BLANKET TO U/S
SHEETING OF R3.0 INSULATION BATTS TO CEILING

COLORBOND QUAD GUTTER
FIXED TO TIMBER FASCIA

V-GROOVED EAVES LINING TO U/S
RAFTERS FIXED TO BATTENS

V-GROOVED LINING TO U/S RAKED
RAFTERS FIXED TO BATTENS

GYPROCK LINING FIXED TO STUD WALL

'RUSTICATED' WEATHERBOARD WITH PAINT
SARKED & LINED WITH R1.3 INSULATION

GYPROCK LINING TO WALL & CEILING WITH
BATTEN CORNICE

V-GROOVED LINING TO U/S CEILING WITH
BATTEN CORNICE

TIMBER FLOORBOARDS ON BATTENS
FIXED TO RC SLAB TO ENG'S DETAIL.

WATERPROOF MEMBRANE, DRAINAGE CELL, AG
LINE & BLUEMETAL BACKFILL TO REAR OF RC
BLOCK WALL TO ENG'S DETAILS.

BLOCK WALL

RC SLAB TO ENG'S DETAILS

COLORBOND CUSTOM ORB ROOF SHEETING ON
TIMBER TRUSSES TO MANUFACTURERS & ENG'S
DETAILS WITH REFLECTIVE FOIL BLANKET TO
U/S SHEETING & R3.0 INSULATION BATTS TO
CEILING

GROOVED PLASTERBOARD CEILING
COLORBOND QUAD GUTTER FIXED TO
TIMBER FASCIA

V-GROOVED EAVES LINING TO U/S RAFTERS FIXED TO BATTENS
GYPROCK WALL & CEILING WITH BATTEN CORNICE

TIMBER PANEL SHEETS FIXED TO STUD WALL
WITH TIMBER COUCH BATTENS SARKED &
LINED WITH R1.3 INSULATION & PAINT FINISH

GROOVED LINING TO U/S RAFTERS WITH BATTEN CORNICE
GYPROCK LINING FIXED TO STUD WALLS

'RUSTICATED' WEATHERBOARDS WITH PAINT SARKED & LINED
WITH R1.3 INSULATION

TIMBER FLOORBOARDS ON BATTENS FIXED
TO RC SLAB TO ENG'S DETAILS

RC SLAB TO ENG'S DETAILS

AMENDMENTS	ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE
A	DEVELOPMENT PROPOSITION					
B	AMEND FRONT GARDEN VERGE FRONT FENCE AND PAINTIVE REDUCED		14/12/06			
C	CONSTRUCTION CERTIFICATE		14/12/06			

NOTES
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2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewerage and water authorities.

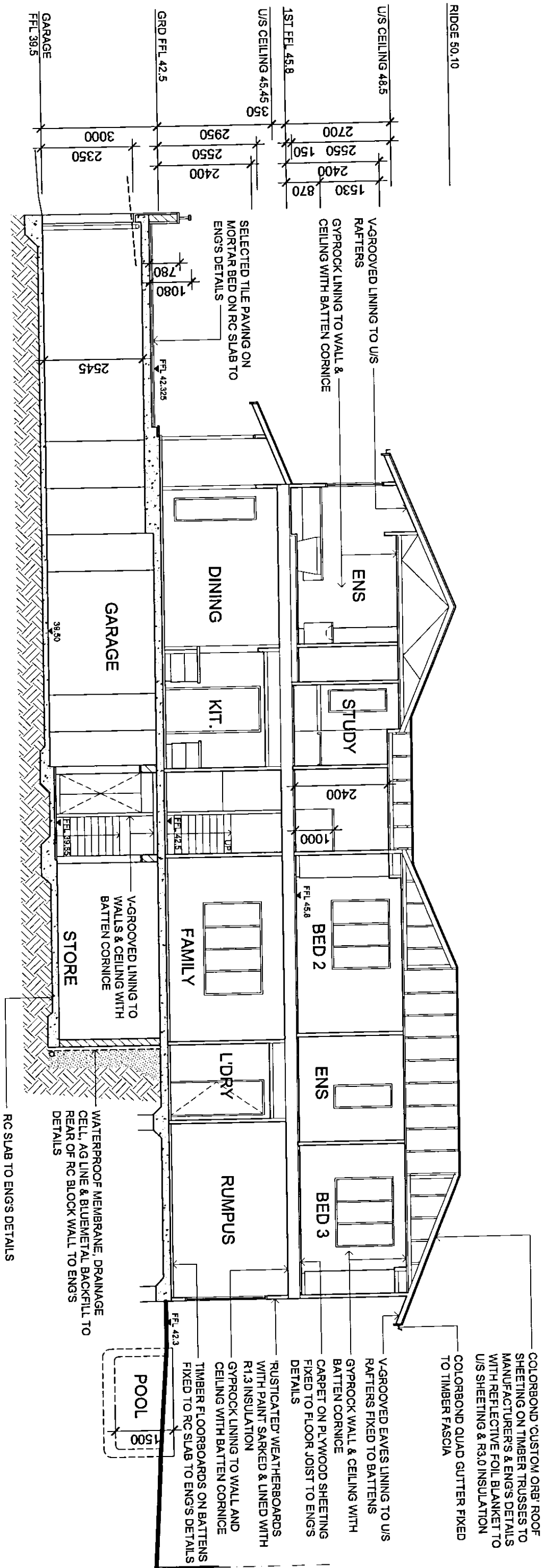
site alternatives

PTY. LTD

Suite 1, Level 1, 55 Grandview Street
Pymble NSW 2073
PO BOX 6215 Pymble NSW 2073
Ph 02 9488 6800 Fax 02 9144 6864

PROJECT TITLE	NEW DWELLING 162 NARRABEEN PARK PARADE, MONA VALE	DRAWN	NT	DRAWING SHEET	15
DRAWING TITLE	SECTIONS	DESIGNED	GS	DRAWING NUMBER	A08-C
SCALE	1:100@A3	JOB NO.	804		

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number:	CC0435/06
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by:	TWA (NV)
Date:	26 SEP 2006



SECTION EE

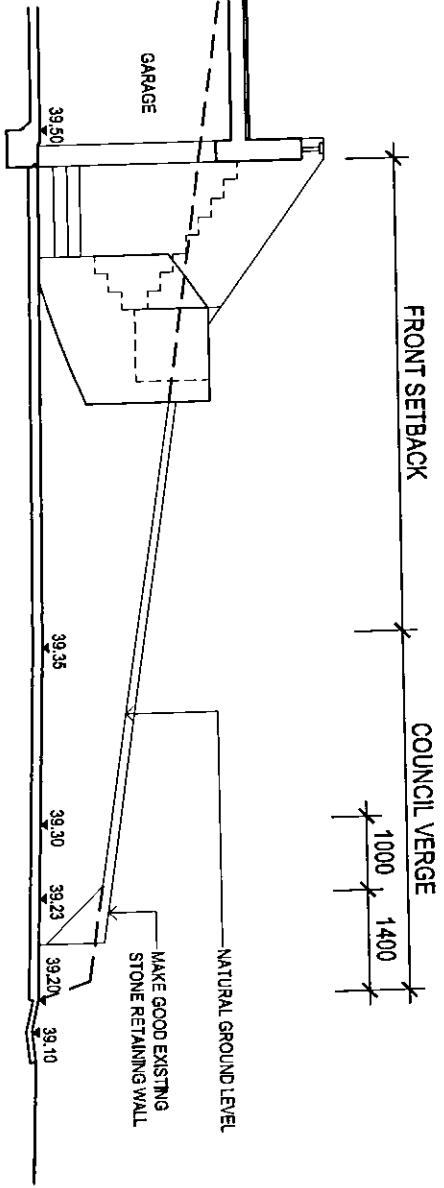
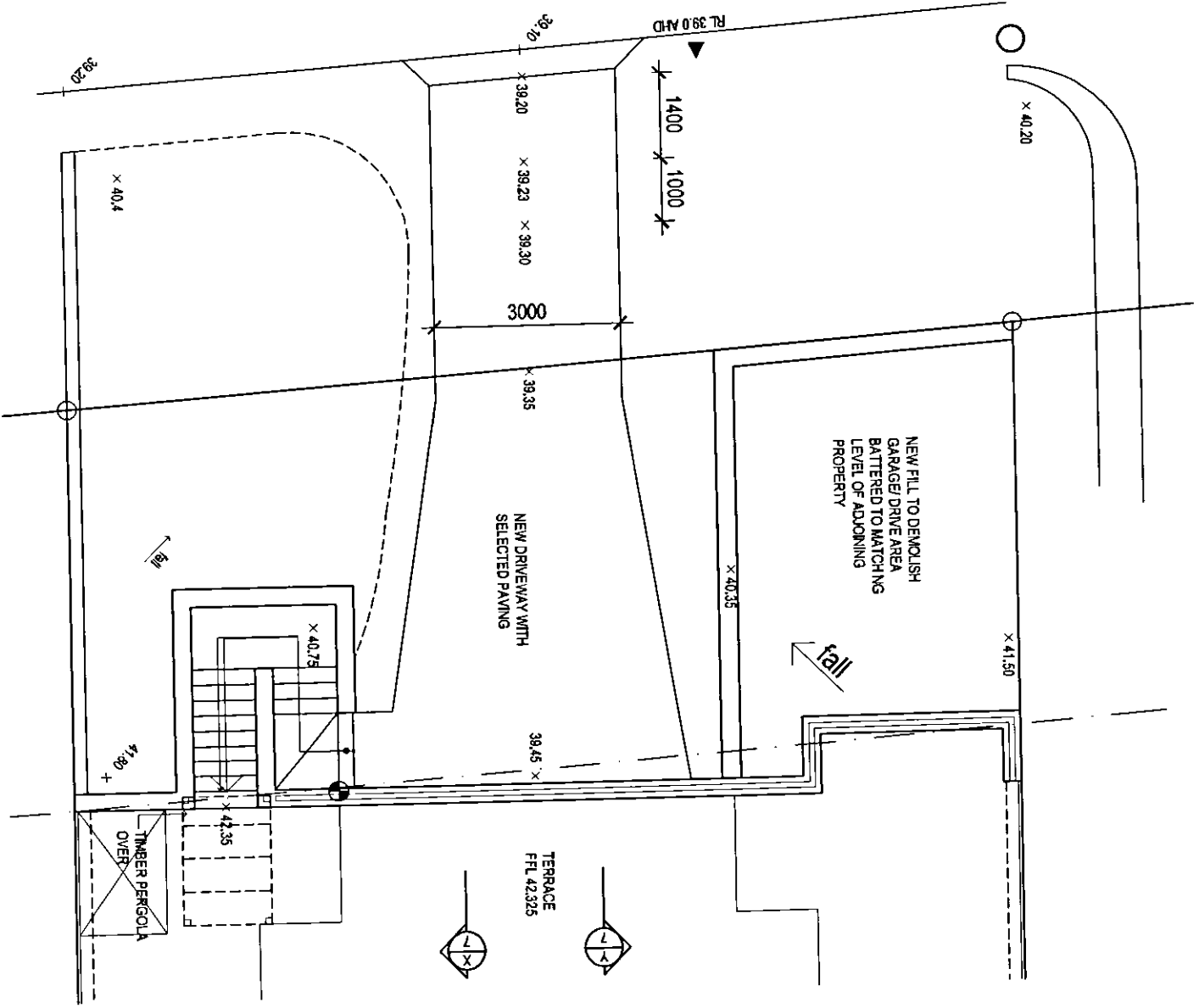
AMENDMENTS					
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE
A	DEVELOPMENT APPLICATION	May 06			
B	AMEND FRONT GARDEN VERGE FRONT STAIR AND PAINTING REQUIRED	14/07/06			
C	CONSTRUCTION CERTIFICATE	AUG 06			

NOTES

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3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

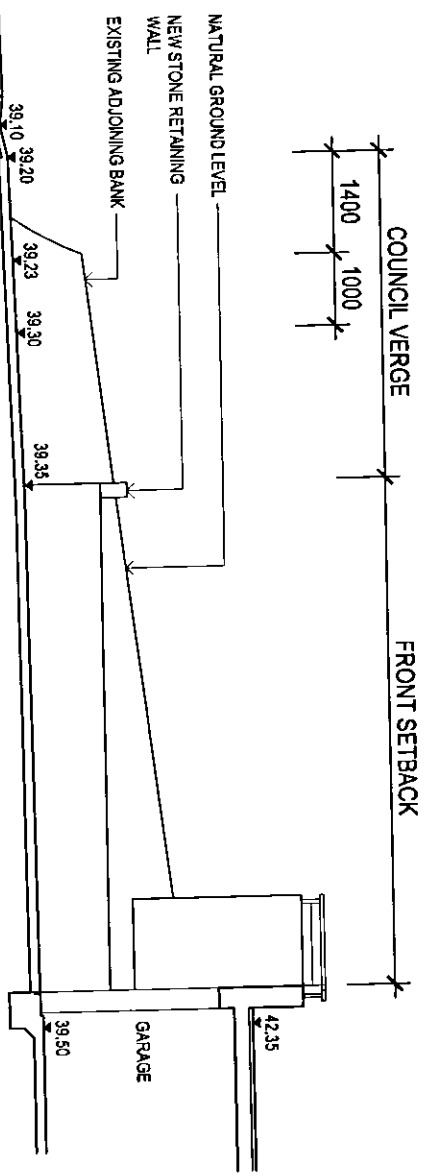
site alternatives		PROJECT TITLE	
PTY. LTD		NEW DWELLING	
Suite 1, Level 1, 55 Grandview Street		162 NARRABEEN PARK PARADE,	
Pymble NSW 2073		MONA VALE	
PO BOX 6215 Pymble NSW 2073		DRAWING TITLE	
Ph 02 9488 6800 Fax 02 9144 6864		SECTIONS	
		SCALE	1:100@A3

DRAWN	NT	DRAWING NUMBER
CHECKED	GS	
DATE	9/04	A09-C



ELEVATION X-X

PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number:	CC 0435/06
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by:	TWA (NW)
Date:	26 SEP 2006



ELEVATION Y-Y

DRIVEWAY PLAN 1:100

AMENDMENTS			
NO.	DESCRIPTION	DATE	BY
1	RELOCATE/REPOSITION	14/7/06	
2	MAKE FRONT DRIVEWAY VERGE FRONT STAR AND PAVEMENT REDUCED	14/7/06	
3	CONSTRUCTION ESTIMATE	14/7/06	

NOTES
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3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684 1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

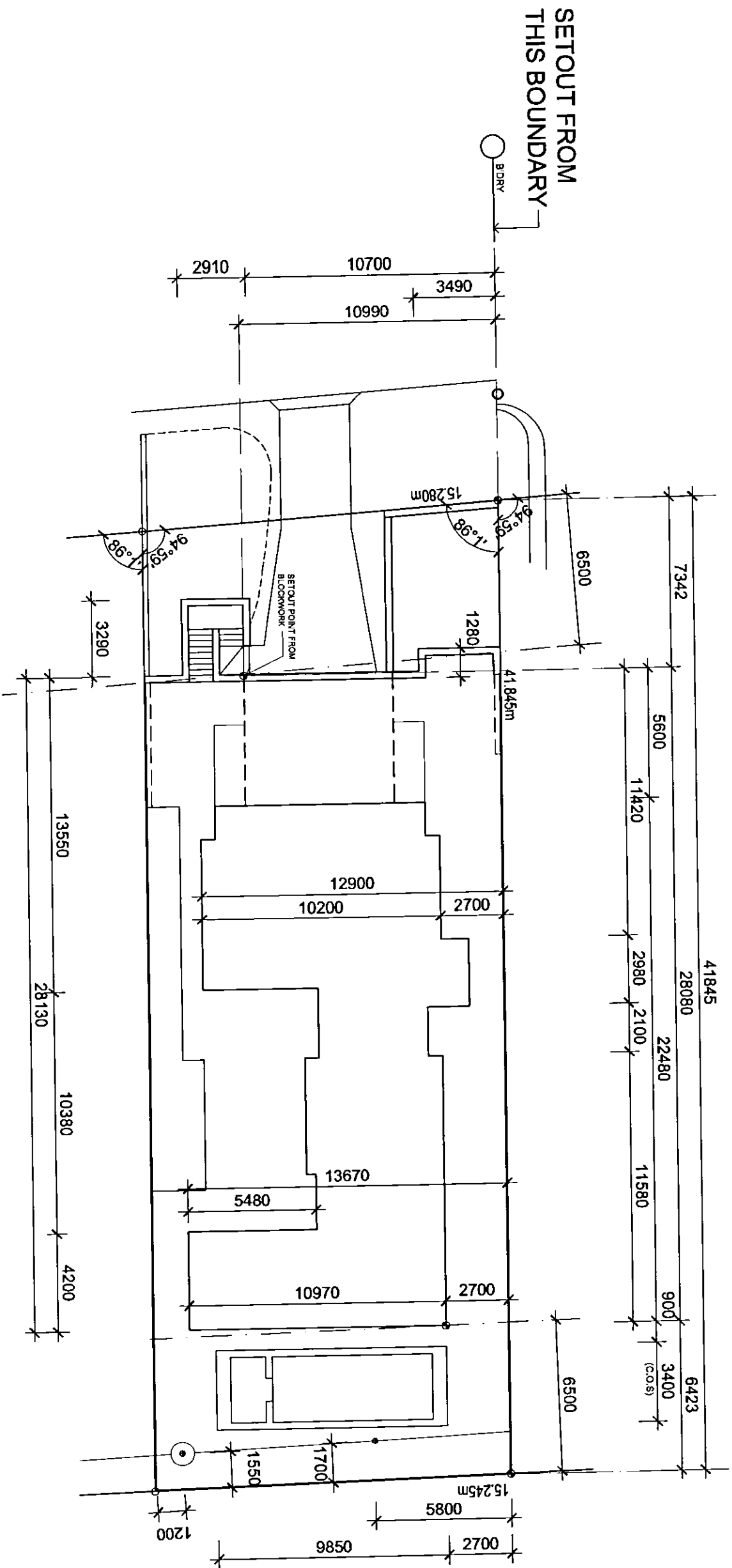


Site Alternatives Pty. Ltd.
Suite 1, Level 1, 55 Grandview Street
Pymble NSW 2073
PO BOX 6215 Pymble NSW 2073
Ph 02 9488 6800 Fax 02 9144 6864

PROJECT TITLE		DRAWING NUMBER	
NEW DWELLING		15	
DRAWING TITLE		DRAWING NUMBER	
DRIVEWAY PLANS & ELEVATIONS		A10-C	
SCALE		DATE	
1:100@A3		9/04	



PITTSWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number: CC	0435/00
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by:	TWA (NV)
Date:	26 SEP 2006



SETOUT FROM
THIS BOUNDARY

AMENDMENTS			
ISSUE	DESCRIPTION	DATE	ISSUE
A	RE-CONSTRUCT APPLICATION	14/07/06	
B	AMEND FRONT GARDEN VERGE FROM STAIR AND DRIVE REDUCED	14/07/06	
C	CONSTRUCTION CERTIFICATE	14/07/06	

NOTES
1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.
2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.
3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684 (1992) and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewages and water authorities.



Suite 1, Level 1, 55 Grandview Street
Pymble NSW 2073
PO BOX 6245 Pymble NSW 2073
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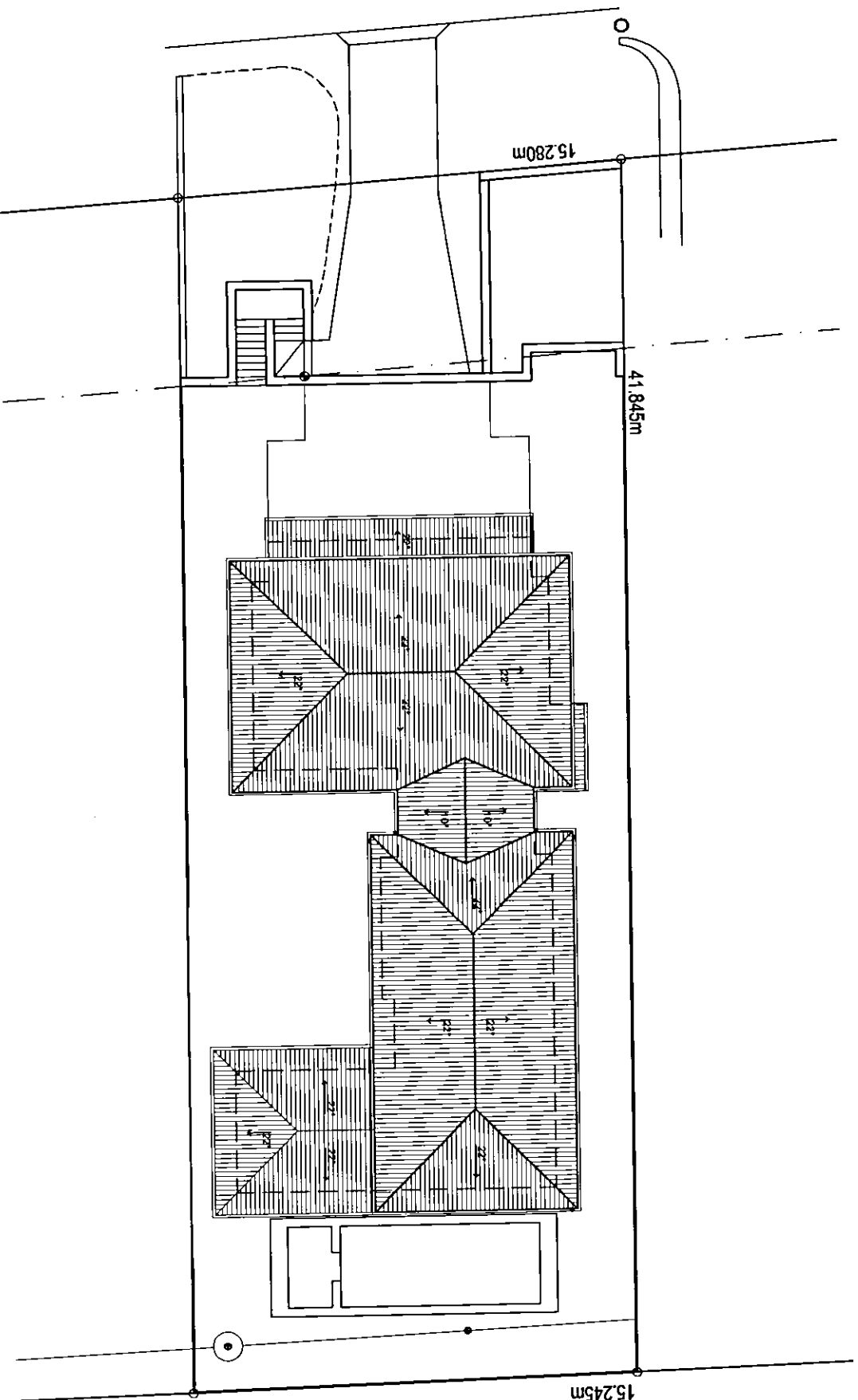
PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE, MONA VALE
DRAWING TITLE
SITE SETOUT PLAN
SCALE 1:200@A3

DRAWN
NT
CHECKED
GS
JOB NO.
904

DRAWING NUMBER
15
A11-C



PITTWATER COUNCIL CONSTRUCTION CERTIFICATE	
Number:	CC 0435/16
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.	
Endorsed by:	TWA (NV)
Date:	26 SEP 2006



AMENDMENTS				
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION
A	DEVELOPMENT APPLICATION	14/09/06		
B	PLANNING AND ENVIRONMENTAL IMPACT STATEMENT	14/09/06		
C	CONSTRUCTION CERTIFICATE	26/09/06		

NOTES

1. All dimensions are to be checked on site and with boundaries, existing levels and other site conditions by the builder and/or each contractor before the commencement of any work including excavation.

2. Do not scale drawings. If in doubt, report any discrepancies to Site Alternatives Pty Limited as soon as they are discovered.

3. All work is to comply with "The Building Code of Australia", "The National Timber Framing Code", AS1684.1:1992 and all the other applicable standards of the Standards Association of Australia as well as local government, electricity authorities, sewage and water authorities.

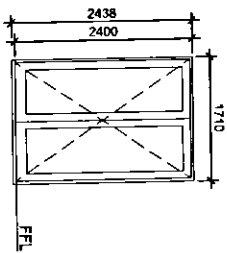


Site 1, Level 1, 55 Grandview Street
Pymble NSW 2073
PO BOX 6215 Pymble NSW 2073
Ph 02 9488 6800 Fax 02 9144 6864

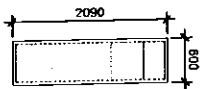
PROJECT TITLE
NEW DWELLING
162 NARRABEEN PARK PARADE, MONA VALE

DRAWING TITLE
ROOF PLAN
SCALE 1:200 @ A3

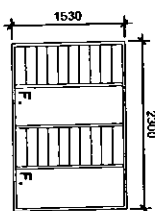
DRAWN NT	DRAWINGS IN SET 15
CHECKED GS	DRAWING NUMBER A12-C
JOB NO. 324	



W1
ENTRY
TIMBER FRAME & GLAZED DOORS
WRC (38mm FRAME) + SILL
OPEN OUT
SINGLE PYROLYTIC LOW-E - 'CLEAR'

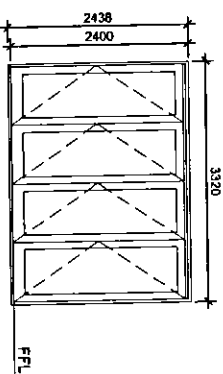


W9
POWDERROOM
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY AND MATCHING CLIPS
'SANDBLASTED'

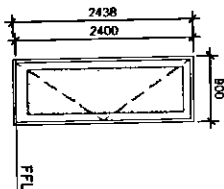


W19/ W21
STAIR/ HALL
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
SINGLE PYROLYTIC LOW-E - 'CLEAR'

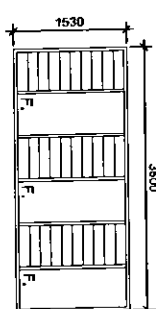
2 OFF



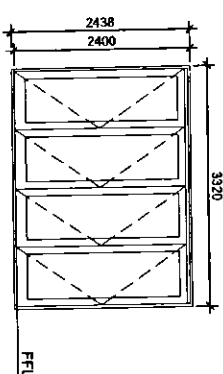
W2
LIVING
BI-FOLD DOOR
WRC (38mm FRAME) + SILL
OPEN OUT
SINGLE PYROLYTIC LOW-E - 'CLEAR'



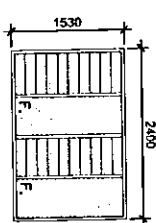
W11
LAUNDRY
TIMBER FRAME & GLAZED DOOR
WRC (38mm FRAME)
OPEN IN
'SANDBLASTED'



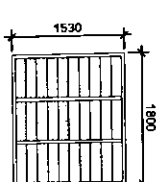
W20
HALL
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
SINGLE PYROLYTIC LOW-E - 'CLEAR'



W3
LIVING
BI-FOLD DOOR
WRC (38mm FRAME) + SILL
OPEN OUT
SINGLE PYROLYTIC LOW-E - 'CLEAR'

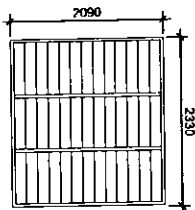


W12
FAMILY
152 BLADE LOUVRES
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
'SANDBLASTED'

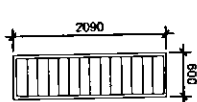


W22/ W24
BED 3/ BED 2
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
LOWER HALF 'SANDBLASTED'
UPPER HALF 'CLEAR'

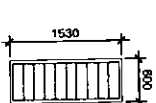
2 OFF



W4/ W6
STAIR/ HALL
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY WITH
MATCHING CLIPS
SINGLE PYROLYTIC LOW-E - 'CLEAR'
2 OFF

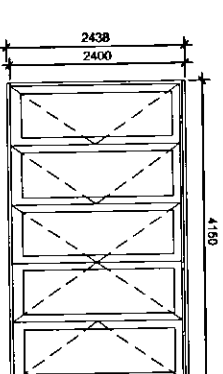


W13
DINING
152 BLADE LOUVRES
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
'CLEAR'

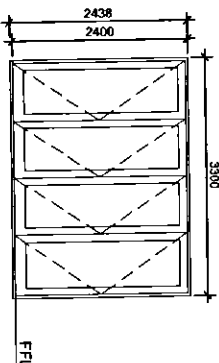


W23/ W25/ W28
ENS BED 3/ STUDY/ WIR
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
'SANDBLASTED'

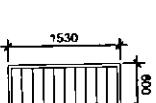
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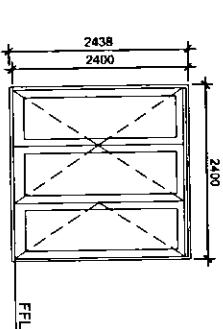
W5
FAMILY
BI-FOLD DOOR
WRC (38mm FRAME) + SILL
OPEN OUT
SINGLE PYROLYTIC LOW-E - 'CLEAR'



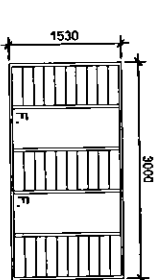
W14
DINING
BI-FOLD DOORS
WRC (38mm FRAME) + SILL
OPEN OUT
SINGLE PYROLYTIC LOW-E - 'CLEAR'



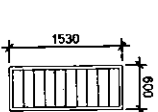
W27
ENS BED 2/ STUDY/ BED 3/ WIR
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY MATCHING CLIPS
'TIMBER LOUVRES PRIMED'



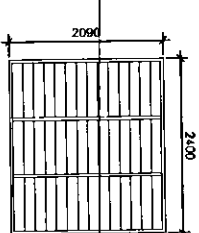
W7
GUEST/ STUDY
BI-FOLD DOOR
WRC (38mm FRAME) + SILL
OPEN OUT
'CLEAR'



W15/ W16
BATHROOM/ BED 1
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
SINGLE PYROLYTIC LOW-E - 'CLEAR'



W17/ W18/ W26
BED 1/ BED 1/ BED 3
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY & MATCHING CLIPS
LOWER HALF 'SANDBLASTED'
UPPER HALF 'CLEAR'



W8/ W10
GUEST/ RUMPUS
152 BLADE LOUVER
WRC (38mm FRAME)
WHITE GALLERY AND MATCHING CLIPS
'CLEAR'

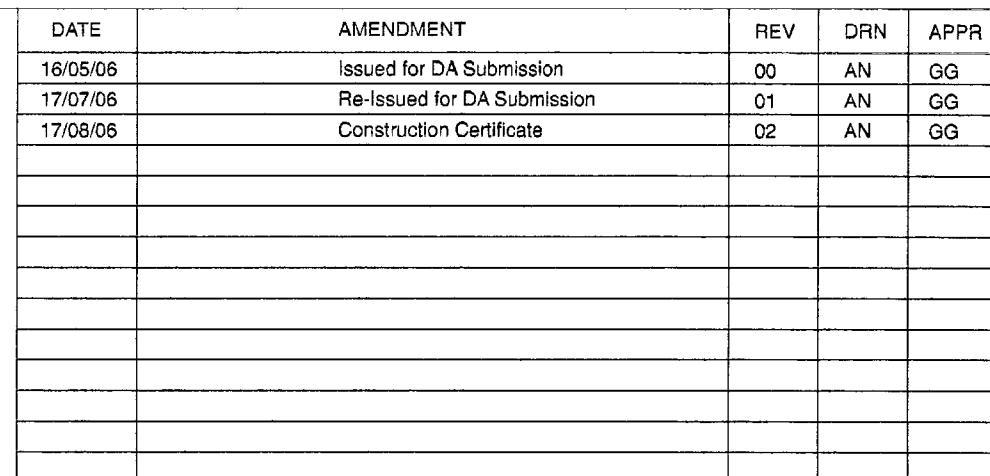
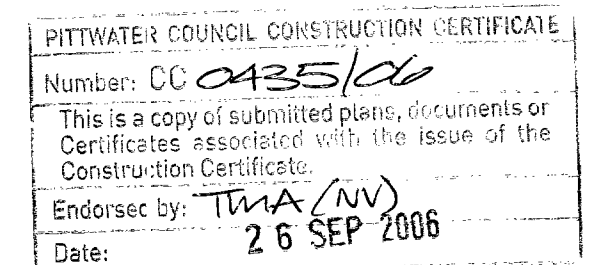
2 OFF

3 OFF

NOTE:
1. ALL WINDOWS KEYED ALIKE.
2. ALL DIMS TO BE CHECKED & MEASURED ON SITE PRIOR TO MANUFACTURE.
3. TO COMPLY WITH BCA & RELEVANT AUSTRALIAN STANDARDS.
4. ALL TIMBER TO BE PRIMED

AMENDMENTS					
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE
A	DEVELOPMENT APPLICATION	MAY 06			
B	LANDING FRONT GARDEN VESSEL FRONT STAIR AND PAINTING REDUCED	14.07.06			
C	CONSTRUCTION DEFICIENCY	AUG 06			

BOTANICAL NAME	COMMON NAME	CONTAINER SIZE	SPACING	MATURE HEIGHT
CANOPY TREES				
<i>Angophora costata</i>	Sydney Red Gum	25ltr	as shown	20m
<i>Banksia integrifolia</i>	Coast Banksia	25ltr	as shown	8m
<i>Cupaniopsis anacardioides</i>	Tuckeroo	45ltr	as shown	12m
<i>Hymenosporum flavum</i>	Native Frangipani	45ltr	as shown	10m
<i>Plumeria rubra</i>	Frangipani	45ltr	as shown	8m
SCREEN PLANTING				
<i>Acacia longifolia</i>	Sydney Golden Wattle	5ltr	as shown	6m
<i>Acmena smithii</i>	Lillypilly	25ltr	as shown	5m
<i>Casuarina glauca</i>	Swamp She Oak	5ltr	as shown	20m
<i>Elaeocarpus reticulatus</i>	Blueberry Ash	15ltr	as shown	5m
<i>Leptospermum laevigatum</i>	Coast Tea Tree	25ltr	as shown	4m
<i>Metrosideros excelsa</i>	NZ Christmas Bush	25ltr	as shown	10m
SHRUBS				
<i>Banksia spinulosa</i>	Hairpin Banksia	200mm	4 per m2	1m
<i>Bauera rubioides</i>	Dog Rose	150mm	4 per m2	1m
<i>Correa alba</i>	White Correa	200mm	4 per m2	1m
<i>Crimum pedunculatum</i>	River Lily	200mm	4 per m2	1.2m
<i>Doranthus excelsa</i>	Gymea Lily	200mm	4 per m2	3m
<i>Grevillea lavandulacea</i>	French Lavander	100mm	4 per m2	0.2m
<i>Grevillea 'Sandra Gordon'</i>	Grevillea	200mm	4 per m2	0.5m
<i>Leptospermum polygalifolium</i>	Yellow Tea Tree	200mm	4 per m2	1.8m
<i>Myoporum acuminatum</i>	Mangrove Boobialla	200mm	4 per m2	4-6m
<i>Melaleuca thymlifolia</i>	Thyme Honey Myrtle	200mm	4 per m2	1m
<i>Westringia fruticosa</i>	Coastal Rosemary	200mm	4 per m2	1.5m
PALMS & FERNS				
<i>Adiantum aethiopicum</i>	Common Maidenhair	150mm	6 per m2	0.3m
<i>Blechnum nudum</i>	Fishbone Water Fern	100mm	4 per m2	0.6m
<i>Doodia aspera</i>	Rasp Fern	100mm	6 per m2	0.3m
<i>Dendrobium speciosum</i>	Rock Orchid	200mm	4 per m2	0.5m
GROUNDCOVERS				
<i>Anigozanthos cultivars</i>	Kangaroo Paw	150mm	6 per m2	0.3m
<i>Alpina caerulea</i>	Native Ginger	150mm	6 per m2	0.2m
<i>Actinotus helianthi</i>	Flannel Flower	150mm	6 per m2	0.2m
<i>Brachycome multifida</i>	Swan River Daisy	100mm	6 per m2	0.2m
<i>Dianella longifolia</i>	Blue Flax Lily	150mm	6 per m2	0.4m
<i>Hibbertia linearis</i>	Showy Guinea Flower	150mm	6 per m2	0.75m
<i>Lanadula dentata</i>	Toothed Lavender	150mm	6 per m2	1m
<i>Lomandra tanika</i>	Mat Rush	150mm	6 per m2	0.5m
<i>Myoporum parvifolium</i>	Creeping Boobialla	150mm	6 per m2	0.3m
<i>Paterosonia glabrata</i>	Leafy Purple Flag	150mm	6 per m2	0.3m
<i>Pandorea pandorana</i>	Wonga-Wong Vine	150mm	6 per m2	-
<i>Viola hederacea</i>	Native Violet	150mm	6 per m2	0.3m
GRASSES				
<i>Carex appressa</i>	Tall Sedge	150mm	6 per m2	1m
<i>Isolepis nodosa</i>	Knobby Clubrush	150mm	6 per m2	1m

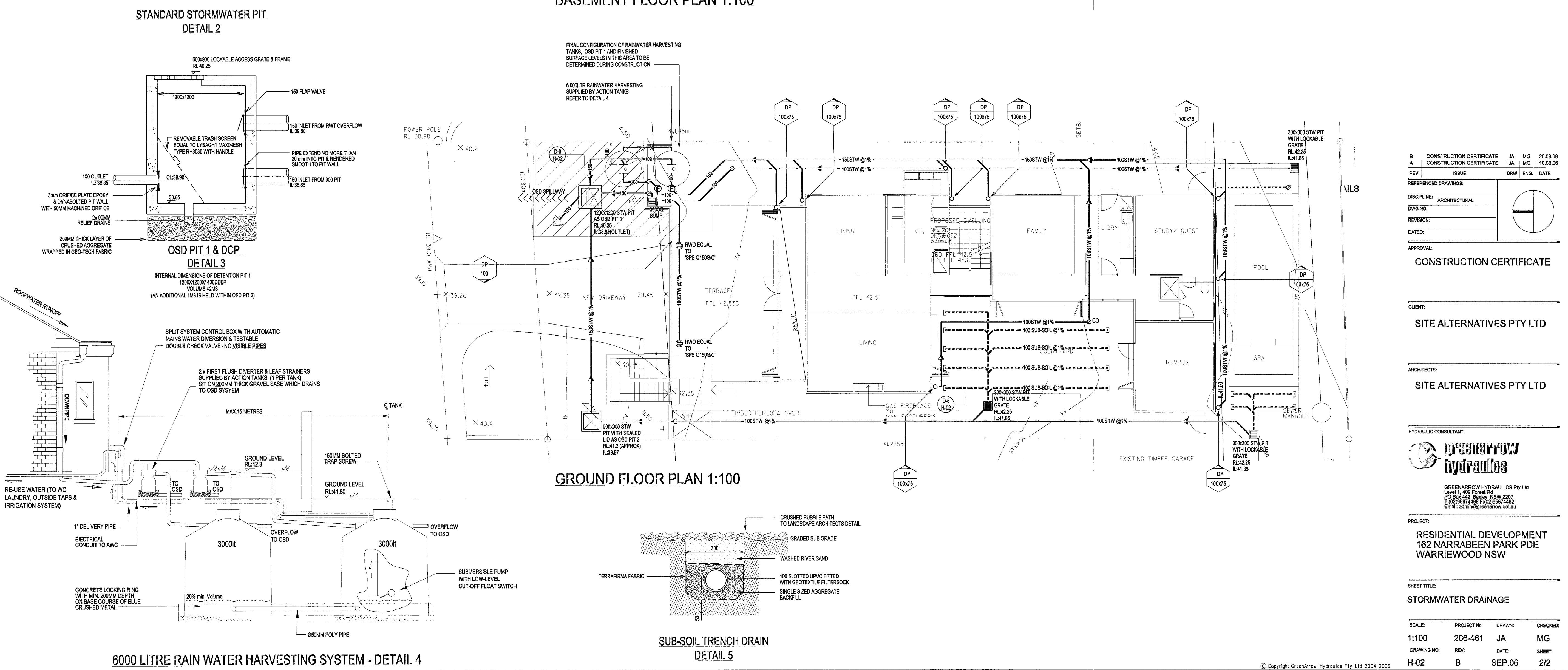
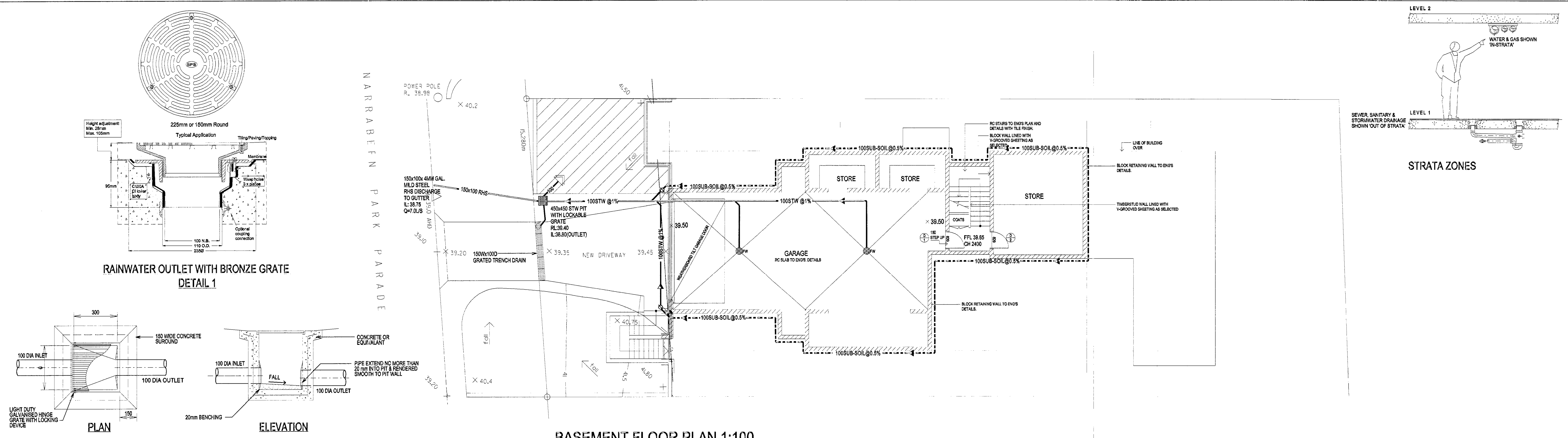


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MELBOURNE SYDNEY BRISBANE
ASSOCIATED OFFICE PERTH

QUALITY ENDORSED COMPANY
ISO 9001 LIC NO 2095

Title Landscape Plan		Scale: 1:100 @ A1		
Project Proposed New Residence 162 Narrabeen Park Parade Warriewood		Date 16 May 06	Drawn: AN	
		Drawing Number: 206011 L/D-DD01		Revision 02



STORMWATER DRAINAGE

162 NARRABEEN PARK PDE, WARRIEWOOD NSW

GENERAL NOTES

1.1 INTRODUCTION
THESE PLANS AND SPECIFICATION SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL, STRUCTURAL AND OTHER SERVICE DRAWINGS AS WELL AS OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED THROUGHOUT THE TERM OF THE CONTRACT.

1.2 AUTHORITIES AND STANDARDS
ALL WORK SHALL COMPLY TOO AND BE IN ACCORDANCE WITH AS 3600, THE NEW SOUTH WALES PLUMBING & DRAINAGE CODE OF PRACTICE, THE REQUIREMENTS OF THE RELEVANT AUTHORITIES HAVING JURISDICTION AND ALL OTHER RELEVANT AUSTRALIAN STANDARDS AND CODES OF PRACTICE INCLUDING THE BUILDING CODE OF AUSTRALIA.
ALL WORK SHALL BE CARRIED OUT UNDER THE SUPERVISION OF A FULLY LICENSED PLUMBER.
ALL TRADESMEN SHALL HAVE THE NECESSARY EXPERIENCE AND SKILLS TO PERFORM THE WORK DESCRIBED HEREIN.

1.3 STORMWATER DESIGN DRAWINGS
THE DESIGN DRAWINGS ARE DIAGRAMMATIC ONLY AND SHOW DESIGN INTENT; THEY DO NOT PURPORT SHOW ALL NECESSARY FITTINGS AND ITEMS INCLUDING DROPPERS, RISERS, OFFSETS AND BRACKETS. THE CONTRACTOR SHALL ALLOW FOR ALL NECESSARY ITEMS AND FITTINGS REQUIRED FOR THE COMPLETE AND COMPLIANT INSTALLATION OF THE HYDRAULIC SERVICES TRADE PACKAGE.
ANY DISCREPANCY OR VARIATIONS OF DESIGN SHALL BE REFERRED TO THE PRINCIPLE FOR DECISIONS PRIOR TO THE COMMENCEMENT OF ANY SUCH WORK.

1.5 MATERIALS AND WORKMANSHIP
UNLESS INDICATED OTHERWISE THE WHOLE OF THE MATERIALS USED SHALL BE NEW, OF FIRST QUALITY AND OF AN APPROVED TYPE AND MANUFACTURE. ALL WORK SHALL BE CARRIED OUT IN A TRADESMAN LIKE MANNER TO THE SATISFACTION OF THE PRINCIPLE.
WHERE EVER POSSIBLE PIPES SHALL BE RUN PARALLEL WITH ADJACENT WALL AND SLABS.
PIPES SHALL BE BRACKETED INDEPENDENTLY OF EACH OTHER AND ALL VALVES AND INSPECTION OPENINGS GIVEN ACCESS VIA ACCESS PANELS.

1.7 EXISTING SERVICES
THE LOCATION OF UNDERGROUND SERVICES SHOWN ON THESE PLANS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED FOR THE AUTHORITIES OWN USE AND MAY NOT BE ACCURATE.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND IDENTIFYING ALL EXISTING SERVICES WITHIN THEIR AREA OF WORK. IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY ALL UTILITY SERVICE PROVIDERS PRIOR ANY EXCAVATION OR WORK THAT MAY OR MAY NOT BE ADJACENT TO A UTILITIES SERVICE, IE; TELSTRA, OPTUS, ENERGY AUSTRALIA, AGL, SYDNEY WATER, LOCALE COUNCILS AND THE LIKE. THIS SHALL INCLUDE BUT NOT LIMITED TO NOTIFYING THE DIAL BEFORE YOU DIG SERVICE.
ALL EXISTING SERVICES THAT ARE TO BE MADE REDUNDANT SHALL BE REMOVED AND SEALED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION OVER THE WORK.
PRIOR DISCONNECTION OR REMOVAL OF ANY SERVICE THE CONSTRUCTION MANAGER SHALL BE NOTIFIED.

1.8 SETTING OUT
THE CONSTRUCTION MANAGER SHALL PROVIDE DATUM POINTS, GRID LINES AND BENCH MARKS ONLY.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SET OUT AND PLACEMENT OF CORE HOLES AND PENETRATIONS SURVIVABLE MATERIAL. THEY SHALL BE EQUAL TO ABEYER MANUFACTURE OR UNISTRUT DEPENDING ON THE PARTICULAR TYPE OF SUPPORT REQUIRED. ALL FASTENERS AND ANCHORS SHALL BE EQUAL TO HILTI/MANUFACTURE SPECIAL CARE SHALL BE TAKEN TO AVOID CONTACT OF DISSIMILAR MATERIALS.
ALL SERVICES INSTALLED WITHIN NOISE SENSITIVE AREAS SHALL BE ACOUSTICALLY INSULATED USING A LOADED POLY VINYL CHLORIDE, WITH THE MINIMUM STANDARD BEING SOUNDLAG 4125C2 INSTALLED TO THE MANUFACTURES RECOMMENDATIONS.

1.9 SAMPLES
THE CONTRACTOR SHALL SUBMIT SAMPLES OF THE SELECTED MATERIALS AND ITEMS AND FITTINGS TO THE PRINCIPLE FOR APPROVAL PRIOR TO THE INSTALLATION OF SUCH MATERIAL OR ITEM. THIS MUST BE STRICTLY ADHERED TO WHEN OFFERING ALTERNATIVES TO SPECIFIED ITEMS.

1.10 BRACKETING AND NOISE
ALL PIPEWORK SHALL BE INSTALLED SO THAT THERE WILL BE NO UNDUE STRESS ON ANY FITTING OR PIPE
ALL PIPE CLAMPS, HANGERS AND BRACKETS SHALL BE PROPRIETARY MADE ITEMS, GALVANISED MILD STEEL OR OTHER SUITABLE MATERIAL. THEY SHALL BE EQUAL TO ABEYER MANUFACTURE OR UNISTRUT DEPENDING ON THE PARTICULAR TYPE OF SUPPORT REQUIRED. ALL FASTENERS AND ANCHORS SHALL BE EQUAL TO HILTI/MANUFACTURE SPECIAL CARE SHALL BE TAKEN TO AVOID CONTACT OF DISSIMILAR MATERIALS.
ALL SERVICES INSTALLED WITHIN NOISE SENSITIVE AREAS SHALL BE ACOUSTICALLY INSULATED USING A LOADED POLY VINYL CHLORIDE, WITH THE MINIMUM STANDARD BEING SOUNDLAG 4125C2 INSTALLED TO THE MANUFACTURES RECOMMENDATIONS.

1.11 FIRE STOP COLLARS
ALL FLOOR AND WALL PENETRATIONS ARE TO BE FIRE RATED TO COMPLY WITH THE REQUIREMENTS OF THE BCA.
ALL FIRE COLLARS SHALL COMPLY WITH AS1530 AND INSTALLED TO THE RECOMMENDATIONS OF THEIR MANUFACTURER.

1.12 EXCAVATION
ALL EXCAVATION SHALL BE CARRIED OUT IN A SAFE WORKING MANNER WITH ALL NECESSARY SAFETY PRECAUTIONS TAKEN AND IN ACCORDANCE WITH WORKCOVER REQUIREMENTS.
THE CONTRACTOR SHALL PAY ALL ASSOCIATED ROAD AND FOOTPATH OPENING FEES RELEVANT TO THE AUTHORITIES REQUIREMENTS.
CONDUCT ALL NECESSARY SERVICE SEARCHES INCLUDING CONTACTING THE DIAL BEFORE YOU DIG SERVICE AND OTHER REQUIREMENTS AS NOTED IN NOTE 1.9.
ALL SERVICES SHALL BE LAID ON APPROVED BEDDING MATERIALS AND TO THE REQUIRED DEPTHS AND GRADES WHERE APPLICABLE.
BACKFILL USING SAND TO THE REQUIRED DEPTH SUFFICIENTLY COVERING THE SERVICE TO THE REQUIREMENTS OF AS3600. SUBJECT TO THE APPROVAL OF THE PRINCIPLE FILL THE REMAINDER OF THE EXCAVATION USING THE EXCAVATED SOIL ENSURING COMPACTION TO 95% MODIFIED AASH.

1.13 TESTING AND COMMISSIONING
ALL WORK SHALL BE PROGRESSIVELY TESTED AND INSPECTED TO THE APPROVAL OF THE CONSTRUCTION MANAGER AND AUTHORITY HAVING JURISDICTION. COPIES OF ALL TEST AND COMPLIANCE CERTIFICATES SHALL BE FORWARDED TO THE CONSTRUCTION MANAGER AND PRINCIPLE. THE CONTRACTOR SHALL PROVIDE ALL LABOUR AND MATERIALS REQUIRED FOR THE CARRYING OUT OF SUCH TESTS AND SHALL ALSO BE RESPONSIBLE FOR THE RECTIFICATION OF ANY WORK FAILING ANY TEST.
THE ENTIRE SYSTEM SHALL BE COMMISSIONED PRIOR PRACTICAL COMPLETION, WHICH SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING:-
- THE CLEARING OF ALL DEBRIS FROM ANY IN-LINE FILTER OR STRAINER.

2.1 DRAINAGE PITS
STORMWATER PIT INTERNAL DIMENSIONS AS FOLLOWS:
TOTAL DEPTH LESS THAN 800MM = 450MM SQUARE OR 800MM DIAMETER.
TOTAL DEPTH 800MM TO 800MM = 600MM SQUARE OR 800MM DIAMETER.
TOTAL DEPTH 900MM TO 1200MM = 800X900MM OR 1000MM DIAMETER.
TOTAL DEPTH GREATER THAN 1200MM = 900X900MM SQUARE OR 1000MM DIAMETER.
PITS DEEPER THAN 1200MM SHALL BE FITTED WITH STEP IRONS AT 300MM CENTRES.
PITS SHALL BE CONSTRUCTED FROM MASONRY BLOCK WORK, CAST IN-SITU CONCRETE OR APPROVED PRE-CAST FRC. PIT GRATES, FRAMES SHALL BE HINGED AND FITTED WITH LOCKING DEVICES.
SOLID COVERS SHALL BE TYPE B IN NON-TRAFFIC ABLE AREAS AND TYPE D IN TRAFFIC ABLE AREAS OR IN ACCORDANCE WITH AS 3996 AND AS 1428.1
ALL CONNECTIONS TO DRAINAGE PITS SHALL BE MADE IN A TRADESMAN LIKE MANNER. THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
SUBSOIL DRAINAGE AS NOTED BELOW SHALL EXTEND 3M UPSTREAM OF ANY DRAINAGE PIT AND BE SEALED WITH A SUITABLE CAP. THE OUTLET SHALL TERMINATE A MINIMUM OF 100MM ABOVE THE INVERT OF THE SUBJECT PIT.
ALL BUILDING SURROUNDS SHALL BE GRADED TO ENSURE OVERLAND FLOW FROM UPSTREAM AREAS CAN DRAIN AROUND THE FOUNDATIONS, WALLS AND BUILDING.

2.2 SUBSOIL DRAINAGE
SUBSOIL DRAINAGE SHALL BE CONSISTANT WITH THE STRUCTURAL ENGINEERS DETAILS AND SUBJECT TO THE FINDINGS OF THE GEOTECHNICAL REPORT.
SUBSOIL DRAINS SHALL BE SLOTTED UPVC 100MM DIAMETER FITTED WITH GEO-FABRIC FILTER SOCK.
SUBSOIL DRAINAGE SHALL BE LAID AT A MINIMUM GRADE OF 0.5% U.N.O.
SUBSOIL DRAINAGE SHOULD BE INSTALLED ON THE UPSTREAM END OF ANY PROPOSED PAVED AREAS AND CONNECTED TO THE PIPED DRAINAGE SYSTEM OR WATERCOURSE.
ADDITIONAL SUBSOIL DRAINAGE SHALL BE LAID TO SUIT SITE CONDITIONS AND GROUNDWATER PRESERVANCE AS DIRECTED.

2.3 DRAINAGE PIPES
MINIMUM GRADE OF ANY DRAINAGE PIPES TO BE 1% (U.N.O.)
ALL DRAINAGE PIPES LESS THAN 300MM IN DIAMETER SHALL BE SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS (U.N.O.)
ALL PIPE JOINTS AND TAPERS SHALL BE VIA PROPRIETARY MADE FITTINGS.
ALL DRAINAGE PIPES 300MM AND GREATER IN DIAMETER SHALL BE REINFORCED CONCRETE RUBBER RING JOINTED CLASS 7' (U.N.O.) MANUFACTURED TO AS 4058.
EQUIVALENT STRENGTH FRC PIPES MAY BE USED.
MINIMUM PIPE DIAMETER 100MM U.N.O.
FINAL LOCATION OF RAINWATER DOWNPIPES SHALL BE CO-ORDINATED ON-SITE WITH THE BUILDER, TO THE APPROVAL OF THE ARCHITECT AND ENGINEER AND IN ACCORDANCE WITH AS 3600, AS4154/48 AND ARR 97.
ALL BOX OUTLETS AND RAINWATER HEADS SHALL BE FITTED WITH FAILSAFE OVERFLOWS SIZED AND INSTALLED TO AS 3500
ALL DOWNPIPES LOCATED IN NOISE SENSITIVE AREAS AS DEEMED BY THE ARCHITECTS, ACOUSTIC ENGINEER OR EQUIVALENT PERSONS, SHALL BE ACOUSTICALLY INSULATED USING AS SYSTEM NO LESS IN STANDARDS THAN SOUNDLAG 4820C2 INSTALLED TO THE MANUFACTURES RECOMMENDATIONS.
PROVIDE FAIL SAFE OVERFLOW SVTTERS NO LESS THAN 50MM DIAMETER FOR ALL BALCONIES AND TERRACES.

2.4 STORMWATER RE-USE PIPEWORK
ALL WORK CARRIED OUT SHALL COMPLY TO AND BE IN ACCORDANCE WITH COUNCIL REQUIREMENTS AND SYDNEY WATERS PUBLICATION GUIDELINES FOR RAINWATER TANKS ON RESIDENTIAL PROPERTIES.
THE CONTRACTOR IS TO MAKE APPLICATIONS AND PAY ALL FEES AND CHARGES AS REQUIRED BY THE REGULATORY AUTHORITIES.
SYDNEY WATERS APPROVAL IS REQUIRED FOR ANY TOP UP FROM DRINKING WATER SUPPLY, REGARDLESS OF TANK SIZE.
THE CONTRACTOR SHALL PROVIDE A FLOW RESTRICTOR RATED AT 2 LITRES PER MINUTE TO THE DOMESTIC WATER INLET FILING VALVE IN ACCORDANCE WITH THE CODE REQUIREMENTS.
ALL PIPEWORK AND OUTLETS ARE TO BE LABELLED "RAINWATER" IN ACCORDANCE WITH CODE REQUIREMENTS.
RE-CYCLED RAINWATER PIPEWORK IS TO BE INSTALLED WITH A 300MM CLEARANCE FROM DOMESTIC WATER SUPPLIES IN ACCORDANCE WITH CODE REQUIREMENTS.
A TESTABLE DOUBLE CHECK VALVE SHALL BE INSTALLED AT THE PROPERTIES WATER METER IN ACCORDANCE WITH CODE REQUIREMENTS.
ON COMPLETION PROVIDE A COPY OF "AS INSTALLED DRAWINGS" WITH CERTIFICATION FOR THE COMPLETED WORKS AND BACKFILL PROTECTION.

LEGEND

PIPEWORK:
SEWER DRAINAGE
SUB SOIL
STORMWATER
TRUNK MAIN
SEDIMENT & EROSION FENCE
EXISTING STW
EXISTING STORMWATER
EXISTING TO BE REMOVED
SYPHONIC
RAIN WATER RE-USE
RISE IN SERVICE
DROP IN SERVICE
FLOW DIRECTION
ELECTRICAL

SERVICE ACCESSORIES

D-2 REFER DETAIL NO.
H-02 REFER DRAWING NO.
SS TYPE OF SERVICE
100 SIZE OF SERVICE
P FIRST FLUSH CONVERTER
RTW RAINWATER TANK
X RAINWATER SUMP
O RAINWATER HEAD
O DOWN PIPE
DOWN PIPE & SPREADER
PLANTER BOX DRAINAGE OUTLET 100 DIA U.N.O.
RAINWATER OUTLET (150GRATE U.N.O.)
DRAINAGE TURN UP POINT 100 DIA U.N.O.
BALCONY RAINWATER OUTLET (100GRATE U.N.O.)
OVERFLOW SPITTER (60MM DIA U.N.O.)
CLEAR OUT
GRATED STORMWATER PIT
CONCRETE COVERED JUNCTION PIT
GRATED TRENCH DRAIN (150 WIDE U.N.O.)
KERB INLET PIT
STORMWATER PUMP WELL
VEHICULAR CROSSING
BALE OF HAY
REVISION

MATERIALS
UPVC UNPLASTISIZED POLYVINYL CHLORIDE
PVC POLYVINYL CHLORIDE
HDPE HIGH DENSITY POLYETHYLENE
FRC FIBRE REINFORCED CONCRETE
CI CAST IRON
CU COPPER
CP CHROME PLATED
STORMWATER SERVICES
SW SEWER
STW STORMWATER
RWR RAINWATER RE-USE
DP DOWNPIPE
OF OVERFLOW
RM RISING MAIN
SYDP SYPHONIC DOWNPIPE
RWT RAIN WATER TANK
T.D. TUNDISH
TTD TRAPPED TUNDISH
D.T.U. DRAINAGE TURN UP POINT
GD GRATED TRENCH DRAIN
RWO RAINWATER OUTLET
BRWO BALCONY RAINWATER OUTLET
PRO PLANTER BOX OUTLET
BTWP BUCKET TRAP FLOOR WASTE
SYDP SYPHONIC DOWNPIPE
SPO SPOON DRAIN OUTLET
CO CLEAROUT

LEVELS
RL REDUCED LEVEL
IL INVERT LEVEL
SL SURFACE LEVEL
FFL FINISHED FLOOR LEVEL
APFL ABOVE FINISHED FLOOR LEVEL
FSL FINISHED SURFACE LEVEL
HL HIGH LEVEL
LL LOW LEVEL
TCW TOP OF WALL
US UNDERSEDE
+0.11 EXISTING SURFACE LEVEL
+21.11 FINISHED SURFACE LEVEL
L/S LITRES PER SECOND
KPA PRESSURE IN KILOPASCALS
MH PRESSURE IN METRES HEAD
MISCELLANEOUS
CIC CAST IN SLAB
CIC CAST IN COLUMN
EK EXISTING
DA DIAMETER
M METRE
SQ SQUARE
U.N.O. UNLESS NOTED OTHERWISE
N.T.S NOT TO SCALE
@ AT

EROSION AND SEDIMENT CONTROL NOTES:

1) THE NOTES AND MEASURES STATED HEREAFTER SHALL BE READ IN CONJUNCTION WITH THE NSW PUBLICATION: *MANAGING URBAN STORMWATER: SOLID & CONSTRUCTION*. PARTICULAR ATTENTION SHALL BE PAID TO CHAPTERS 8 & 9.
2) EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TOO AND DURING THE CONSTRUCTION PERIOD. THESE CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED REGULARLY BY THE CONTRACTOR TO ENSURE THE EFFECTIVENESS OF THE SYSTEM, ESPECIALLY AFTER STORM EVENTS.
3) ALL NECESSARY WORKS SHALL BE CARRIED OUT TO PREVENT EROSION, CONTAMINATION AND SEDIMENTATION OF THE PROJECT SITE AND ADJACENT PROPERTIES AND DRAINAGE SYSTEMS.
4) MINIMISE DISTURBED AREAS COVERED WITH NATURAL VEGETATION. ONLY THOSE AREAS DIRECTLY REQUIRED FOR CONSTRUCTION ARE TO BE DISTURBED.
5) DIVERT CLEAN WATER FROM UNDISTURBED AREAS AROUND THE WORKING AREAS.
6) ADOPT TEMPORARY MEASURES AS MAY BE NECESSARY FOR EROSION AND SEDIMENT CONTROL, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- DRAINS: CONSTRUCT TEMPORARY DRAINS AND CATCH DRAINS
- CONSTRUCT SPREADER BANKS OR OTHER STRUCTURES TO DISPERSE CONCENTRATED RUN-OFF.
- SILT TRAPS: CONSTRUCT AND MAINTAIN SILT TRAPS TO PREVENT DISCHARGE OF SOURCED MATERIAL TO DOWNSTREAM AREAS.
- TEMPORARY FENCING: CONSTRUCT, MAINTAIN AND KEEP IN GOOD REPAIR ALL SILT & WIND FENCES.
- CHECK AND CLEAN FENCES FOLLOWING RAIN & STORM EVENTS.
- REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WHEN THEY ARE NO LONGER REQUIRED
7) ALL DISCOLOURED WATER SHALL BE TREATED TO EPA STANDARDS PRIOR TO DISCHARGE OFF SITE, OR ALTERNATIVELY REMOVED BY TANKER WITH A LICENSED TRASH WASTE CONTRACTOR

SEDIMENT CONTROL FENCE DETAIL 1

DRAWING SCHEDULE:
H-01 - ROOF PLAN SHOWING SEDIMENT CONTROL DETAILS
H-02 - STORMWATER DRAINAGE

STABILISED SITE ACCESS DETAIL 2

B	CONSTRUCTION CERTIFICATE	JA	MG	20.09.06
A	CONSTRUCTION CERTIFICATE	JA	MG	10.08.06
REV.	ISSUE	DRW	ENG.	DATE
REFERENCED DRAWINGS:				
DISCIPLINE:	ARCHITECTURAL			
DWG NO:				
REVISION:				
DATED:				
				

CONSTRUCTION CERTIFICATE

CLIENT:
SITE ALTERNATIVES PTY LTD

ARCHITECTS:
SITE ALTERNATIVES PTY LTD

HYDRAULIC CONSULTANT:
greenarrow hydraulics

GREENARROW HYDRAULICS Pty Ltd
Level 1, 405 Forest Rd
PO Box 442, Bexley NSW 2207
T: (02) 9567 1458 F: (02) 9567 1462
Email: admin@greenarrow.net.au

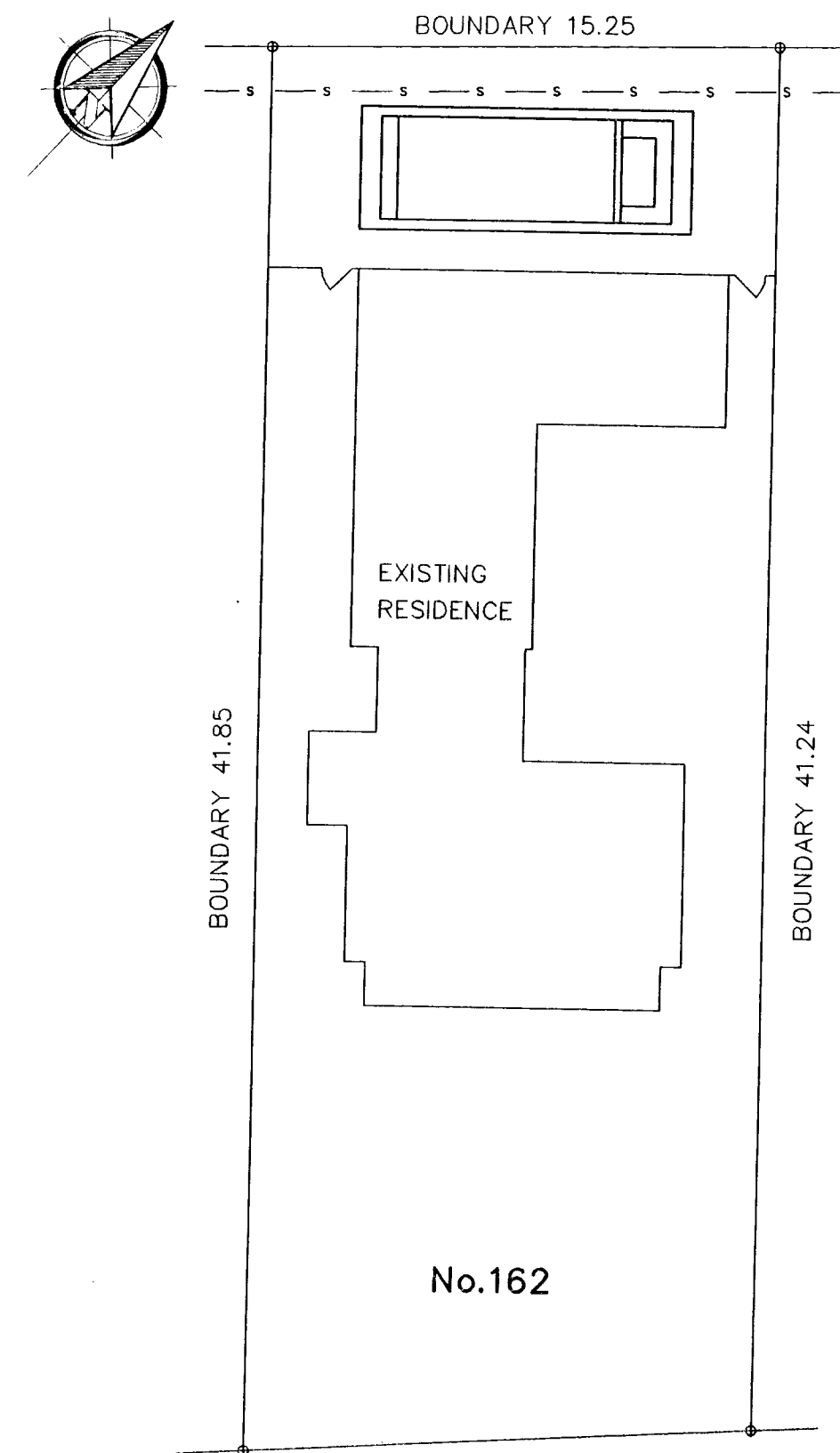
PROJECT:
RESIDENTIAL DEVELOPMENT
162 NARRABEEN PARK PDE
WARRIEWOOD NSW

SHEET TITLE:
ROOF PLAN & SEDIMENT
CONTROL DETAILS

SCALE:	PROJECT No:	DRAWN:	CHECKED:
1:100	208-461	JA	MG
DRAWING NO:	REV:	DATE:	SHEET:
H-01	B	SEP.06	1/2

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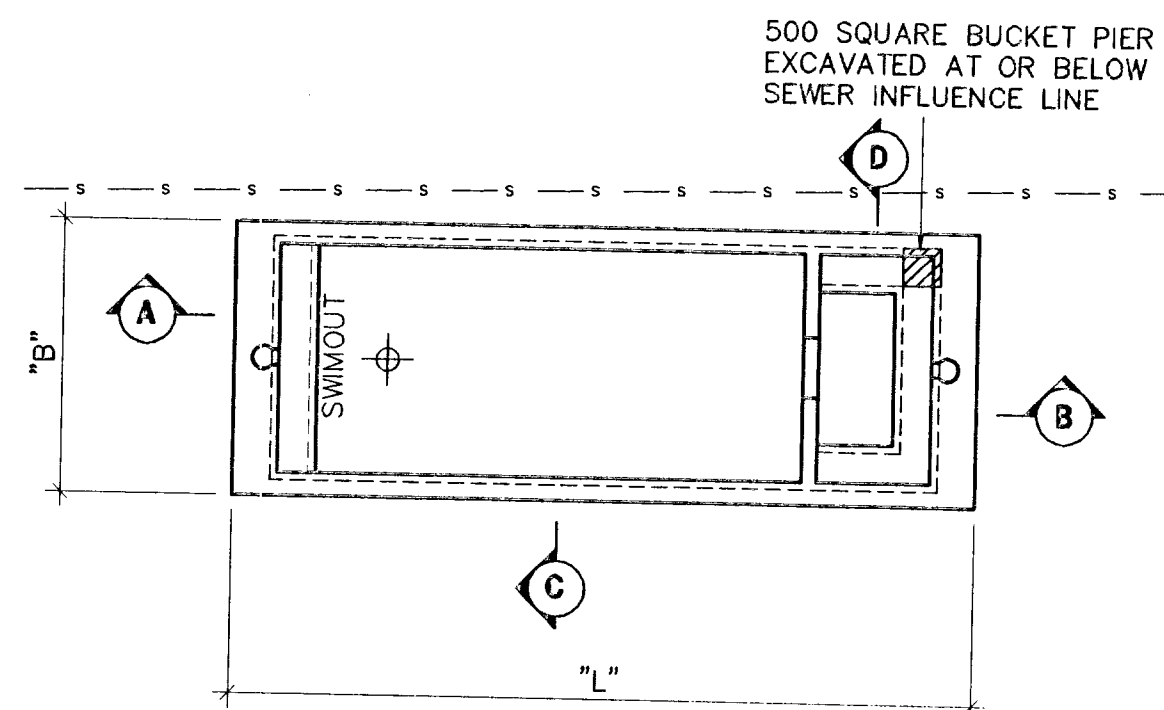
ROOF PLAN AND SEDIMENT CONTROL DETAILS 1:100



NARRABEEN PARK PARADE

LOCATION PLAN

SCALE = 1:200



POOL PLAN

SCALE = 1:100

NOTE : THIS POOL IS NOT DESIGNED FOR DIVING

CONCRETE NOTES:

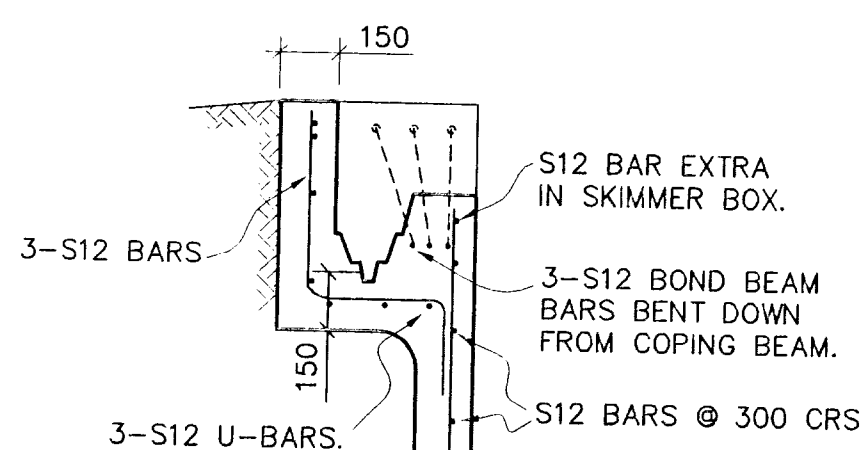
1. CONCRETE TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 25MPa AT 28 DAYS AND TO BE PNEUMATICALLY APPLIED BY A SKILLED OPERATOR, WHERE POOL IS LOCATED <1km FROM COASTLINE OR IS SUBJECT TO SALT ATTACK, CONCRETE DESIGN STRENGTH F_c SHALL BE 40MPa AT 28 DAYS. EXCLUDE CALCIUM CHLORIDE. MAX. AGGREGATE SIZE 10MM. MAX. SLUMP 80MM. CEMENT TYPE A.
2. SUPPORTING SOIL UNDER POOL TO BE FIRM, UNIFORM, STABLE, NATURAL GROUND WITH A SAFE BEARING CAPACITY OF AT LEAST 150KPa.
3. CONCRETE IN WALLS BELOW GROUND TO BE APPLIED DIRECTLY AGAINST FIRM NATURAL GROUND CAPABLE OF BEING EXCAVATED TO A VERTICAL FACE.
4. MINIMUM CONCRETE COVER TO REINFORCEMENT FROM CLOSEST CONCRETE SURFACE TO BE AS FOLLOWS:
WATER FACE SALT CHLORINATION: 70MM
WATER FACE STANDARD CHLORINATION: 50MM
COPING/WALKWAY: 50MM
REAR FACE FORMED: 40MM
ROUGH GROUND: 70MM

STEEL FIXER NOTES

1. REINFORCEMENT S12 TO BE 12MM DIAMETER GRADE 230 DEFORMED BAR IN ACCORDANCE WITH A.S.1302. Y12 DEFORMED BAR MAY BE SUBSTITUTED FOR S12 BARS SPECIFIED.
2. REINFORCEMENT TO BE ACCURATELY MAINTAINED IN POSITION BY MEANS OF PLASTIC TIPPED BAR CHAIRS PLACED AT 900MM CENTERS IN BOTH DIRECTIONS. PLASTIC CHAIRS RESTRICT ENTRY OF CONCRETE INTO AND AROUND THEM AND SHALL NOT BE USED. REINFORCEMENT TO BE ADEQUATELY WIRE TIED WITH WIRE ENDS FLATTENED INTO PLANE OF BARS. S12 BARS TO BE LAPPED 450MM AT SPLICES, SPLICES TO BE STAGGERED.
3. REINFORCEMENT NOT SPECIFICALLY NOTED TO BE S12 @ 300MM CENTERS.
4. ADVISE ENGINEER IF EXCAVATION IN FILL OR GROUND WATER IS ENCOUNTERED.

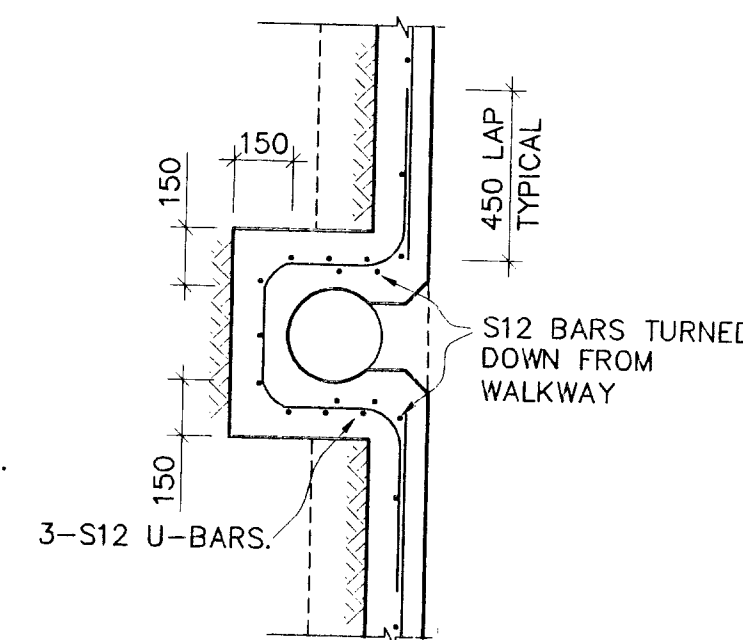
POOL BUILDER GENERAL NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL/LANDSCAPE DRAWING AND SPECIFICATION
2. POOL SET OUT DIMENSIONS BY OTHERS
3. THIS DESIGN APPLIES ONLY FOR GROUND LEVELS AS SHOWN.
4. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH RELEVANT CURRENT SAA CODES, BY-LAWS AND ORDINANCES OF THE LOCAL BUILDING AUTHORITY.
5. THE OVERALL DIMENSIONS SHALL BE CHECKED ON SITE. DIMENSIONS SHOWN ON SECTIONS ARE CONCRETE SIZES AND DO NOT INCLUDE FINISHES.
6. THE FOUNDATION MATERIAL MUST BE STABLE, IN UNIFORM NATURAL GROUND HAVING A MINIMUM SAFE BEARING CAPACITY OF AT LEAST 150 KPa.
7. PROVIDE TEMPORARY DRAIN HOLES IN BOTH SHALLOW AND DEEP ENDS OF POOL SHELL. HYDROSTATIC RELIEF VALVE TO BE CLEANED OF DEBRIS ON COMPLETION OF CONCRETING
8. UNDERSIDE OF POOL SHELL TO BE SEPERATED FROM UNDERLYING MATERIAL BY 75MM LAYER OF CRUSHED STONE /GRAVEL. PROVIDE MEMBRANE BETWEEN SHELL AND CRUSHED STONE/GRAVEL. CORUGATED IRON ALTERNATIVE ON ROCK ONLY. FILL MAIN DRAIN SUMP WITH CRUSHED ROCK/GRAVEL.
9. WALKWAYS HAVE BEEN DESIGNED FOR A DISTRIBUTED LOAD OF 4KPa AND A LIVE LOAD OF 30KG/M. ENGINEERS APPROVAL REQUIRED FOR ADDITIONAL LOADS.
10. ADVISE ENGINEER IF EXCAVATION IS IN FILL OR GROUND WATER IS ENCOUNTERED.
11. UNDERGROUND SERVICES NOT KNOWN. DIAL 1100 BEFORE YOU DIG

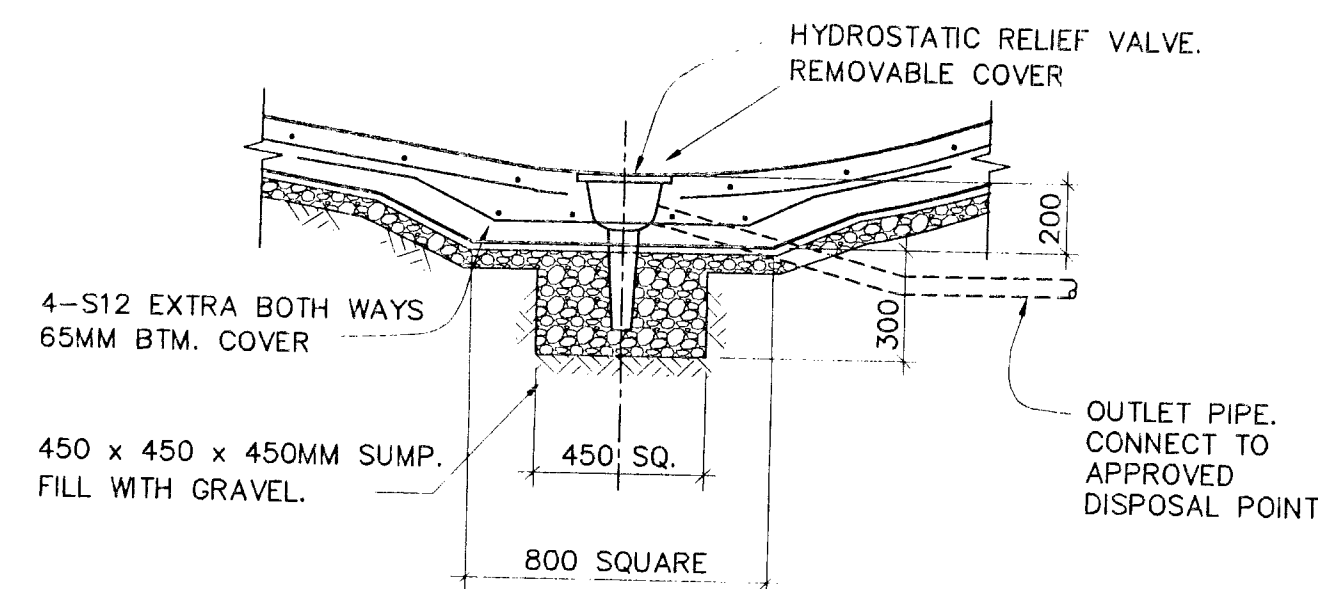


SECTIONAL ELEVATION

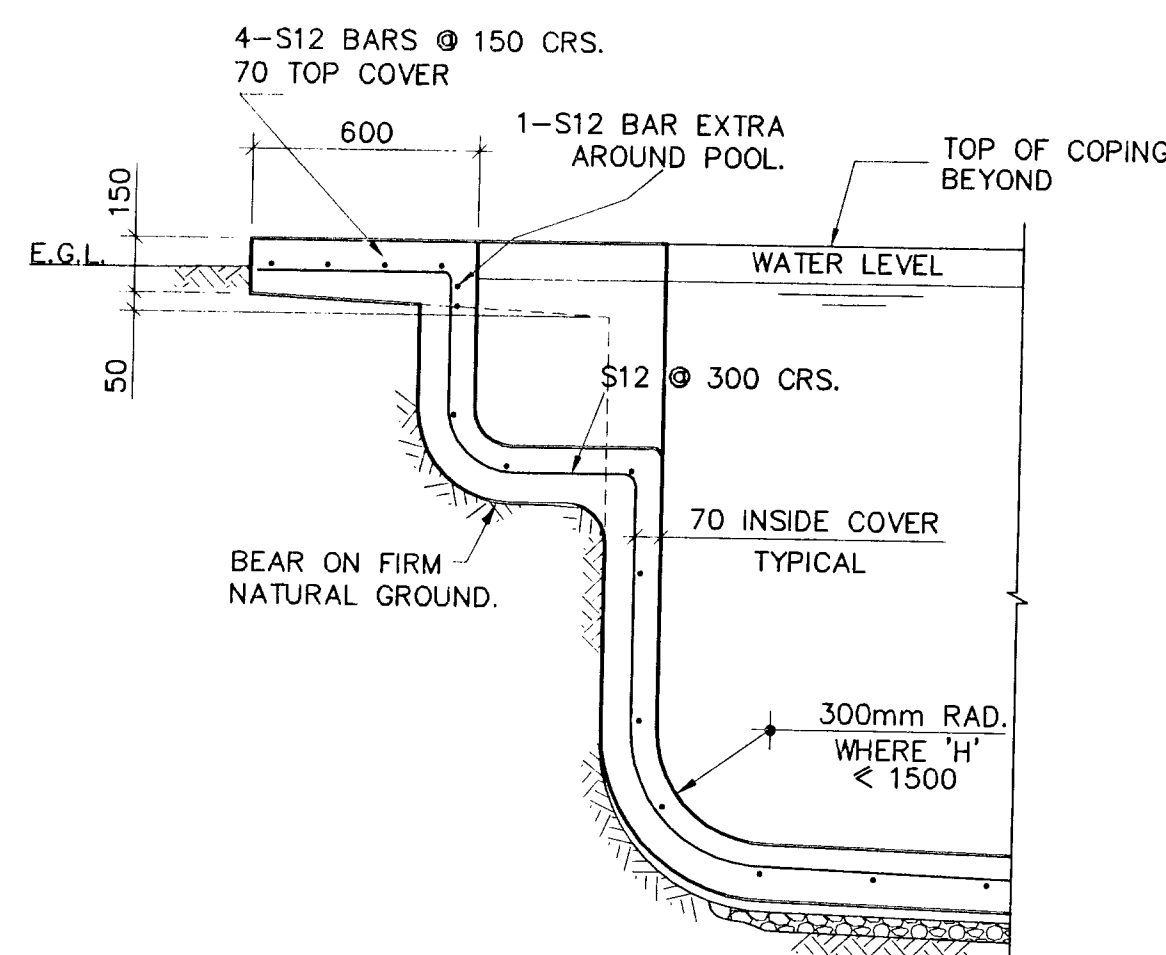
DETAILS AT SKIMMER UNIT



SECTIONAL PLAN

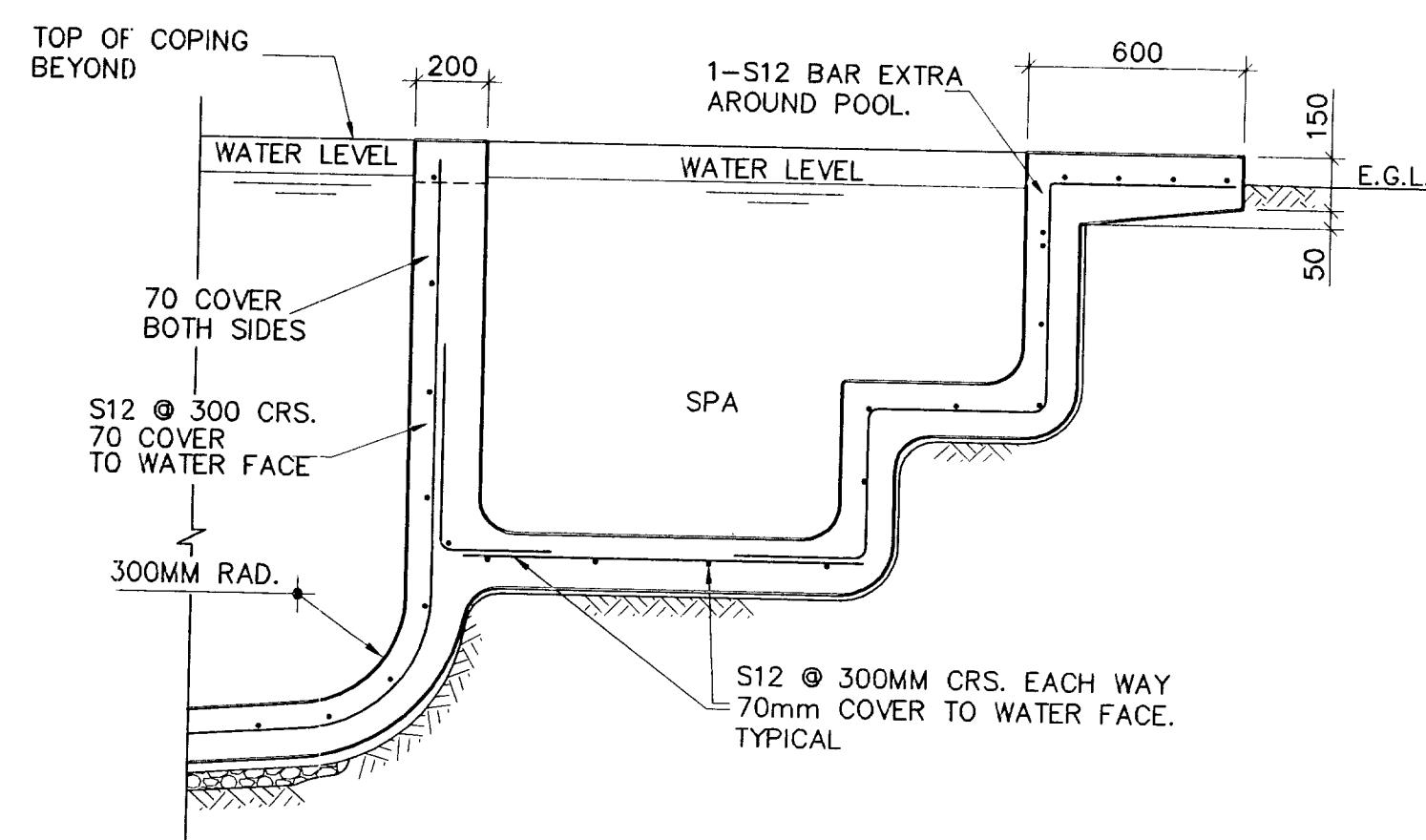


DETAIL- POOL RELIEF VALVE

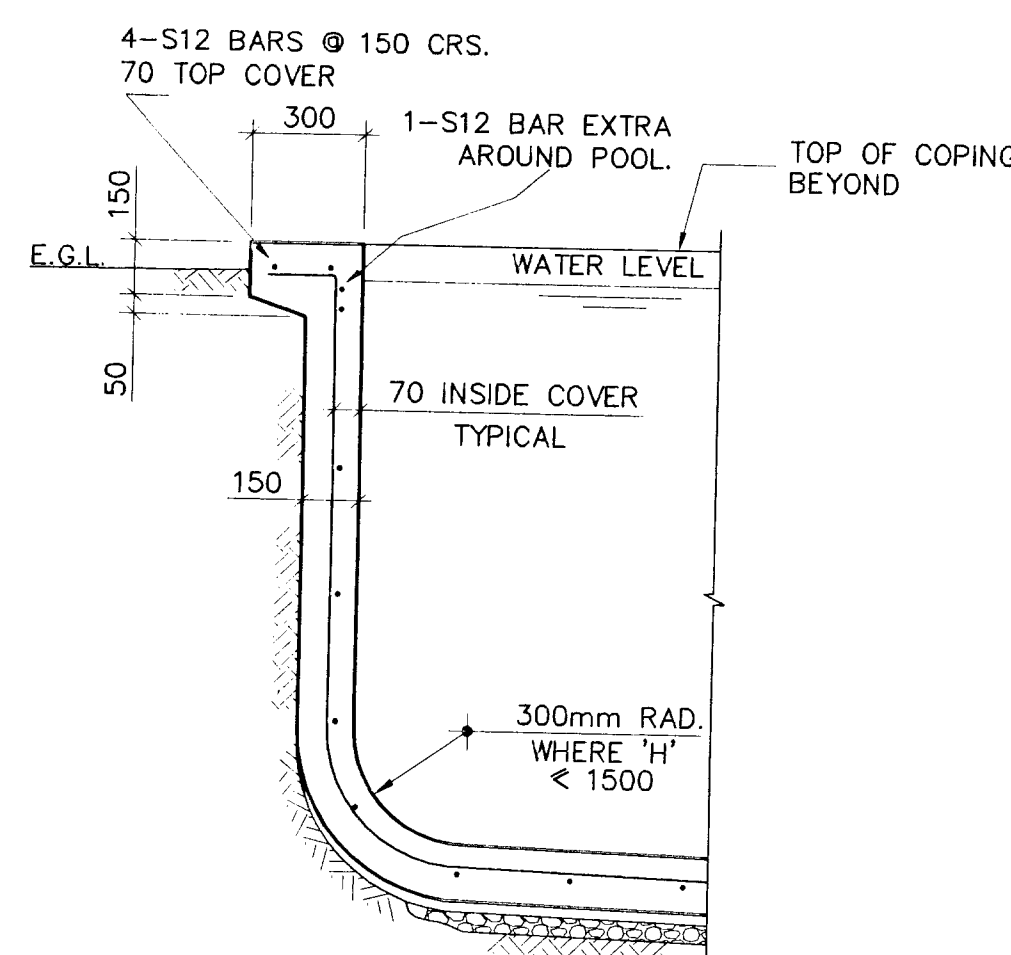


DETAILS AT SWIMOUT

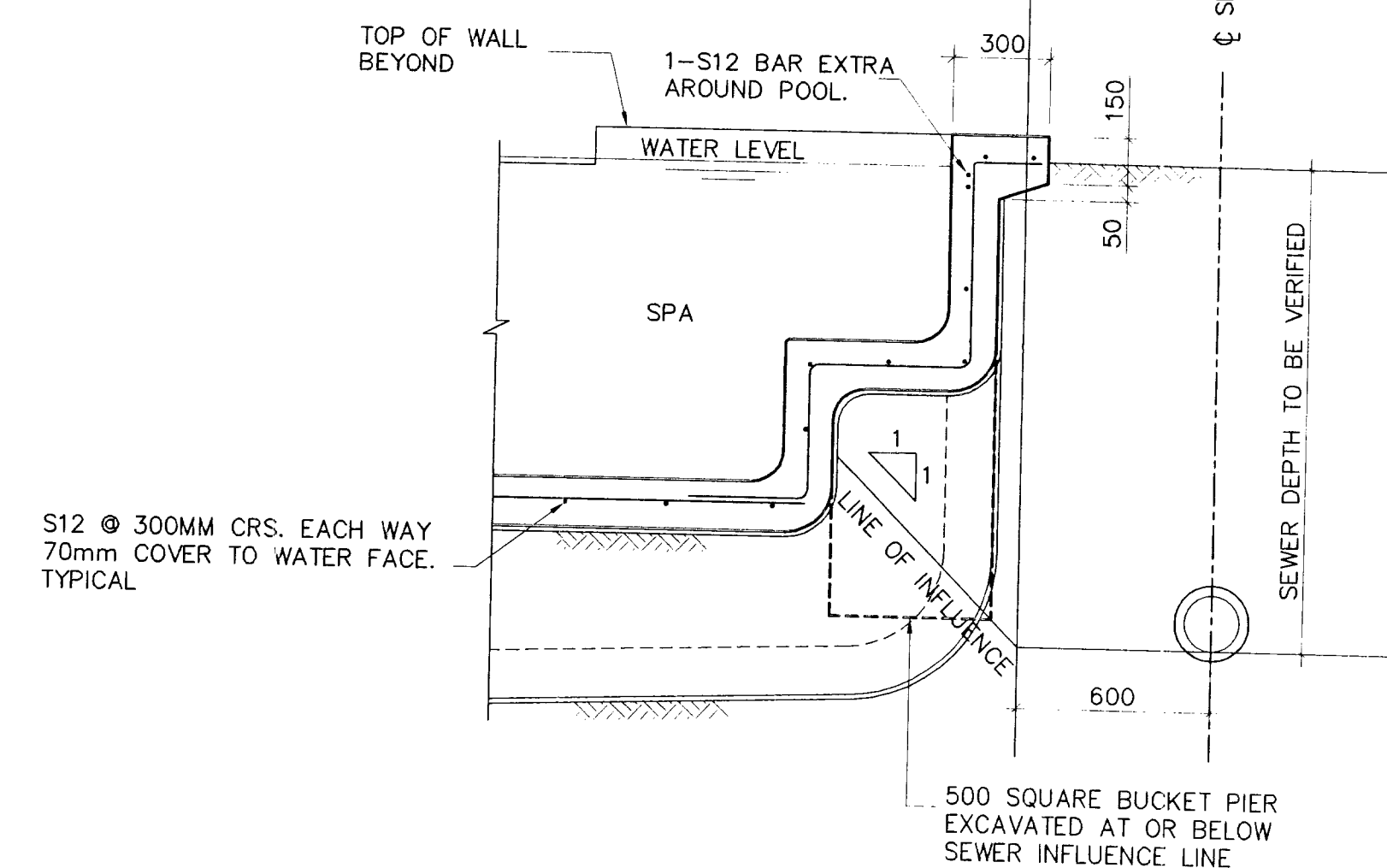
DETAIL A



DETAIL B



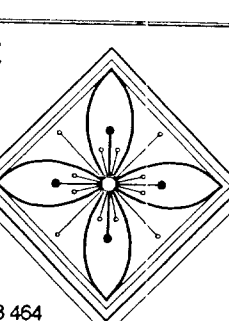
DETAIL C



DETAIL D

Concept Pools Pty. Ltd

CONCEPT LANDSCAPES Pty. Ltd
ABN 97 066 103 464



ISSUE	DATE	APP'D	DESCRIPTION
A	24-8-08	PKS	SWIMOUT EXTENDED
REVISIONS			

KNEEBONE & BERETTA CONSULTING PTY LTD
STRUCTURAL & CIVIL ENGINEERS
ABN 63 483 315 179
15-19 MARION STREET, PARRAMATTA, N.S.W., 2150
TELEPHONE (02) 9635-8299 FACSIMILE (02) 9691-2397
WEBSITE www.kneeboneandberetta.com
E-MAIL ADDRESS info@kneeboneandberetta.com

SCALE 1:200, 1:100, 1:20
DATE 22-6-2006
DRAWN D.S.
CHECKED J.M.H.
APPROVED [Signature]

PROPOSED SWIMMING POOL
AT 162 NARRABEEN PARK PDE, MONA VALE
FOR MR & MRS SHANAHAN
STRUCTURAL DETAILS

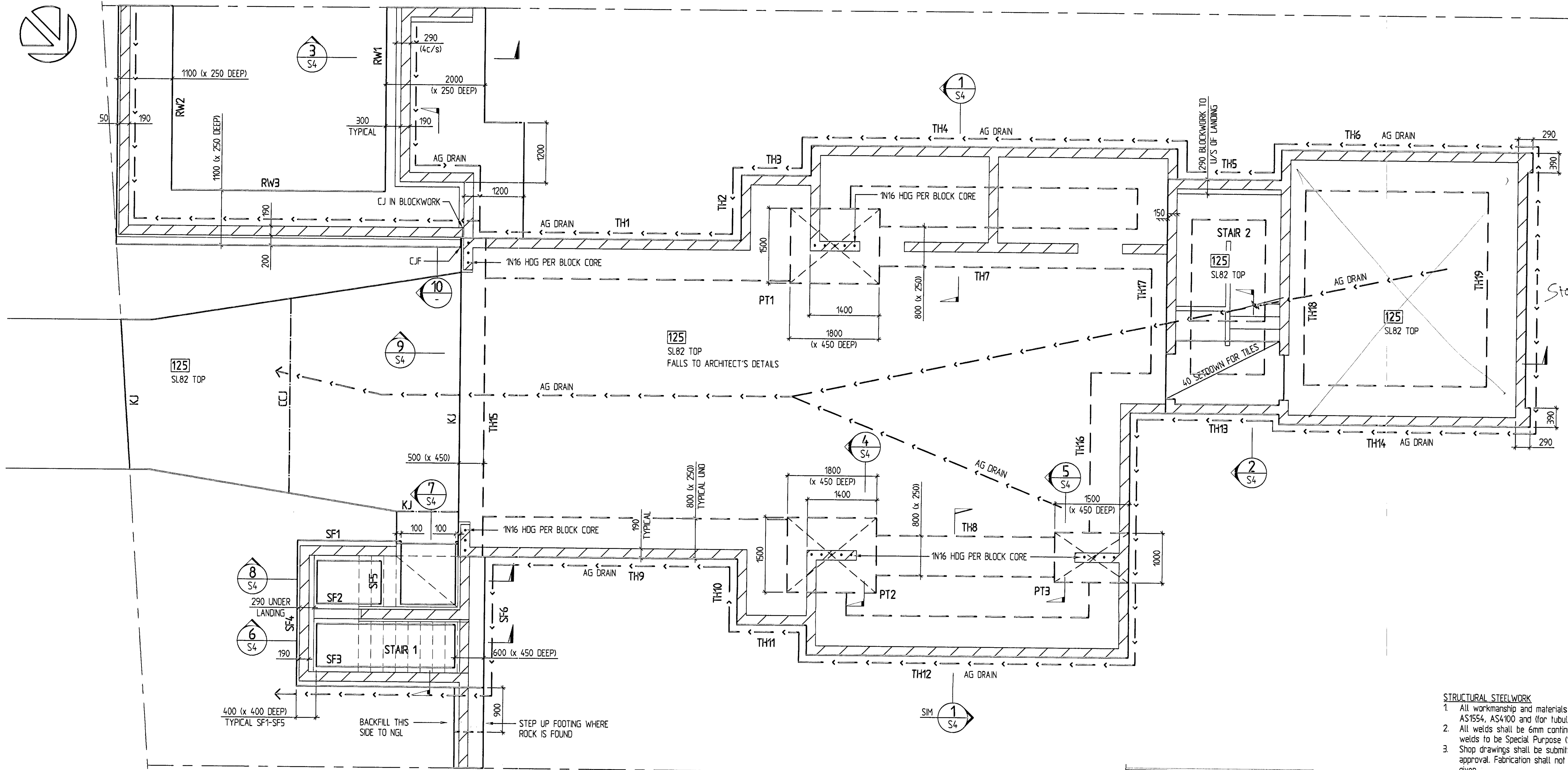
DRAWING NUMBER

58897-1

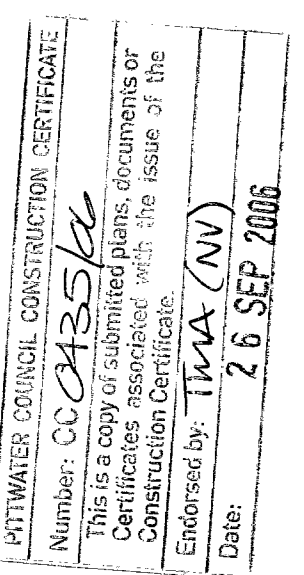
ISSUE

A

PTWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC 0135/K6
This is a copy of submitted plans, documents or
Certification Certificate with issue of the
Engineered by: TWA (N)
Date: 26 SEP 2006

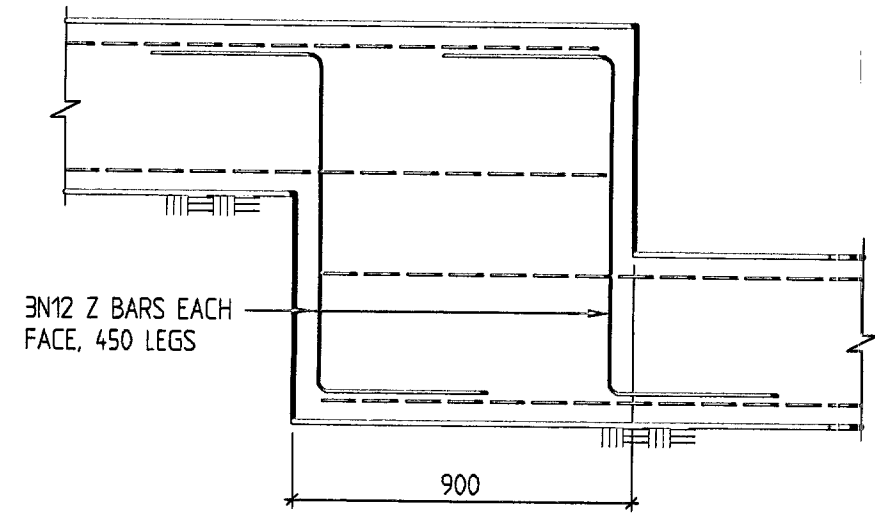


Store room
not approved
OK TMA

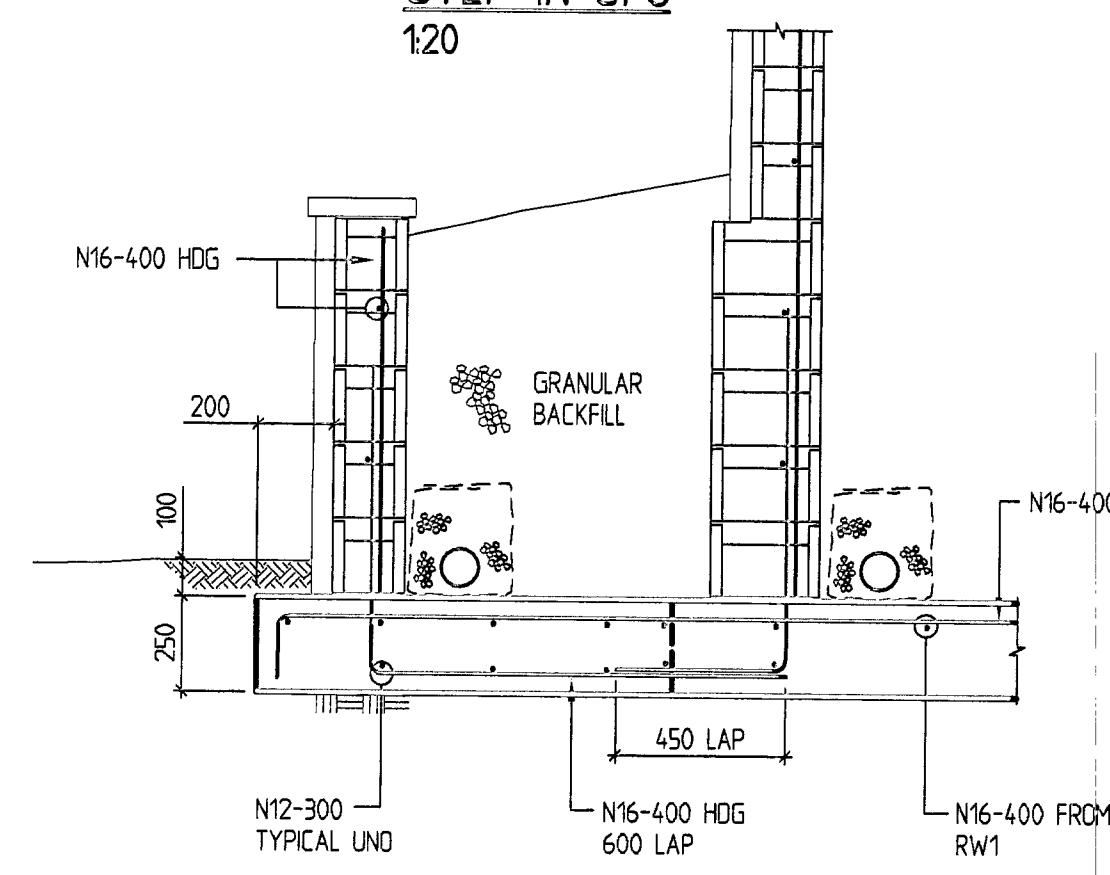


BASEMENT FLOOR SLAB LAYOUT

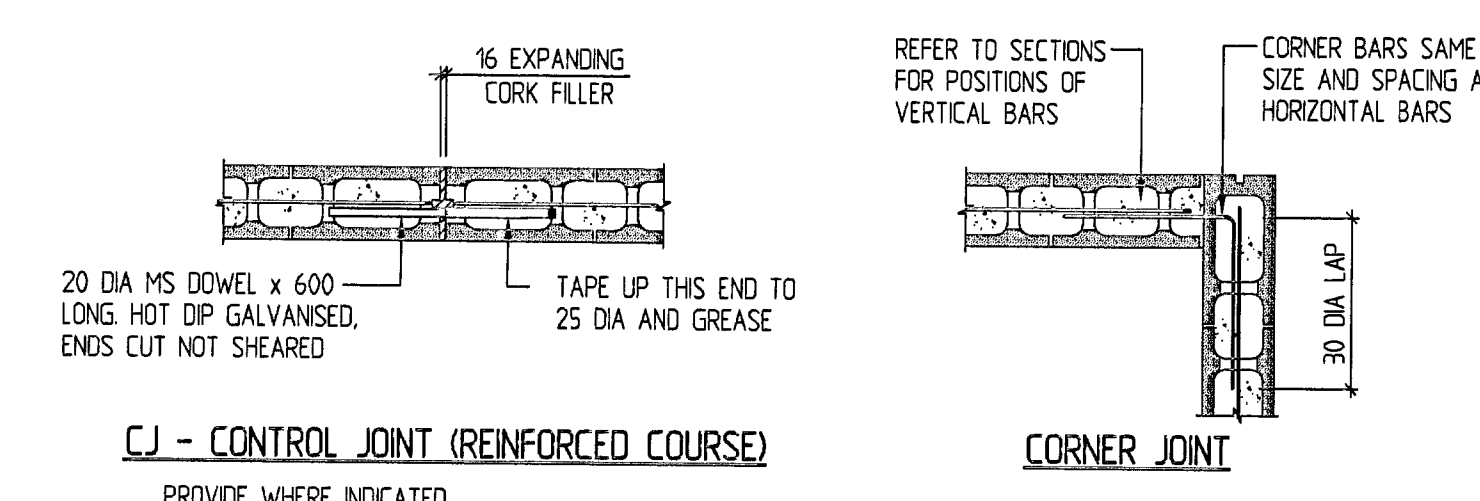
150
ALL THICKENINGS AND FOOTINGS TO BEAR ON SOUND ROCK - DEEPEN AS NECESSARY
REFER TO DETAILS ON DWG S3 FOR STARTER BARS TO BLOCK WALLS



STEP IN SF6
120

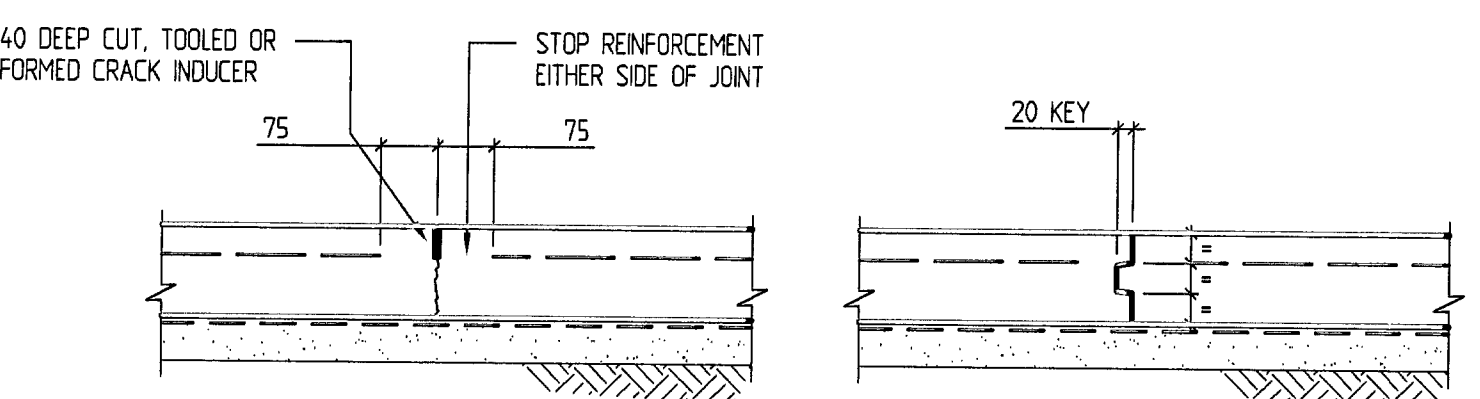


SECTION
120



TYPICAL JOINTS IN BLOCKWORK

120
NOTE:
PROVIDE WEEDHOLES AT 1600 MAX CTS IN EXTERNAL RETAINING WALLS
GROUT UP ALL CORES



ABBREVIATIONS

ARTICULATION JOINT	HW	HARDWOOD
BTM	HDG	HOT DIP GALVANISED
CJ	NGL	NATURAL GROUND LEVEL
COS	NSOP	NOT SHOWN ON PLAN
CTS	OUT	OUT OF
IF	SS	STAINLESS STEEL
RW	STP	TYPICAL
PFL	UND	UNLESS NOTED OTHERWISE
FSBW	US	UNDERSIDE

HW	HARDWOOD
HDG	HOT DIP GALVANISED
NGL	NATURAL GROUND LEVEL
NSOP	NOT SHOWN ON PLAN
OUT	OUT OF
SS	STAINLESS STEEL
STP	TYPICAL
UND	UNLESS NOTED OTHERWISE
US	UNDERSIDE

Issue	Date	Description
1	04.09.2006	FOR CONSTRUCTION CERTIFICATE

RANDALL JONES & ASSOCIATES PTY. LTD.
Consulting Engineers
27 Mansfield Street
Glebe NSW 2037
Tel. (02) 9660 4000
Fax. (02) 9660 4072

Scale 150, 120, 110	Project PROPOSED NEW RESIDENCE 162 NARRABEEN PARK PARADE, WARREWOOD	Project No. G037
Date 04.09.2006	Title BASEMENT SLAB, DRIVEWAY AND RETAINING WALL LAYOUT	Drawing No. S1-A

- GENERAL**
- These drawings shall be read in conjunction with all Architectural and other consultants drawings and specifications.
 - Any discrepancies in the contract documents shall be referred to the Architect for decision before proceeding with the work.
 - All work shall be carried out by licensed contractors, experienced and competent in this kind of work.
 - Dimensions shall not be obtained by scaling.
 - Any setting-out dimensions shown on the structural drawings shall be verified on site.
 - The contractor shall be responsible for maintaining the structure in a stable condition during construction. No part shall be overstressed.
 - All workmanship and materials shall be in accordance with the requirements of the S.A.A. Codes and the Building Code of Australia.
 - F N DOUBT ASK.**

DESIGN LOADS
SITE CLASSIFICATION A (Rock)

LIVE LOADS 15 kPa GENERALLY
3.0 kPa DECKS
3.0 kPa GARAGE
4.0 kPa STAIRS

- REINFORCED CONCRETE**
- All workmanship and materials shall be in accordance with AS3600 current edition with amendments.
 - Concrete Quality :

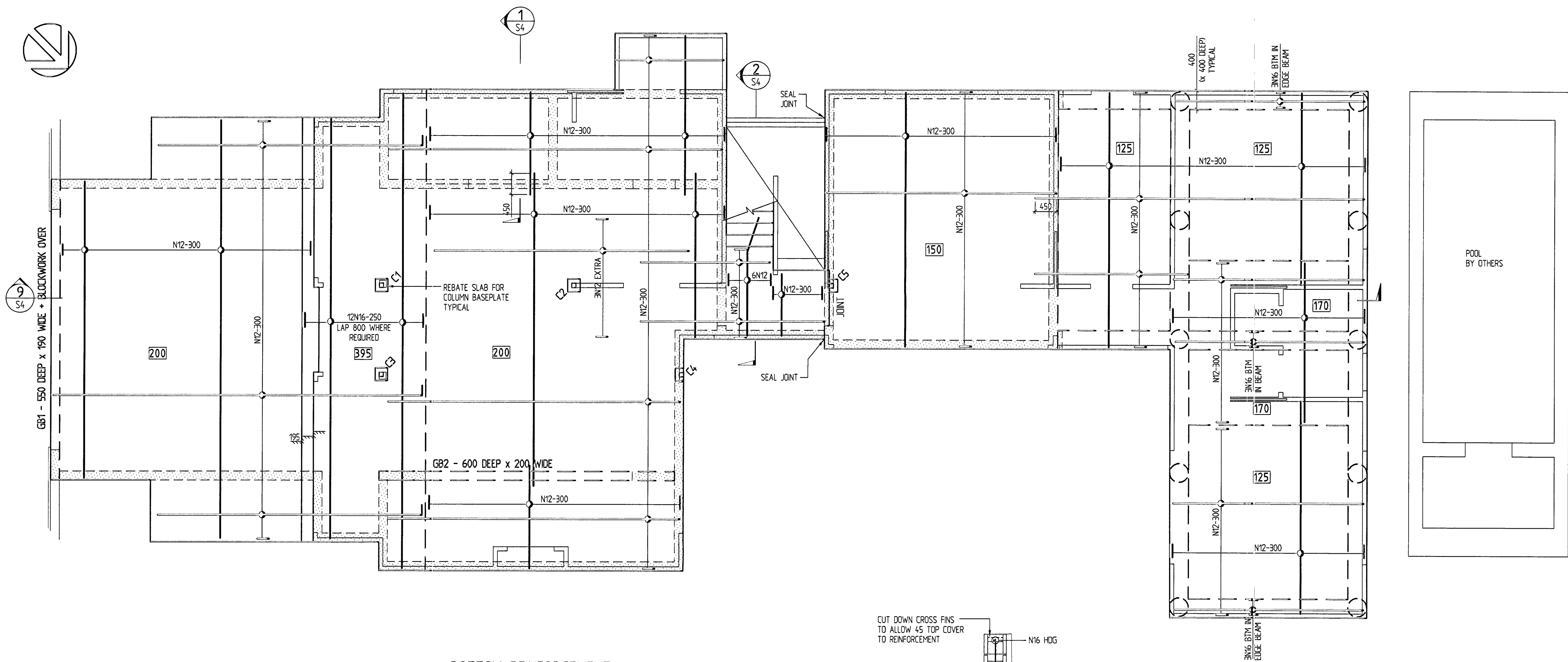
Element	F _{cd} (MPa)	Max. Slump	Max. Aggregate
FOOTINGS UND	25	75mm	20mm
GROUND FLOOR & GARAGE SLABS	40	75mm	20mm
EXTERNAL PAVEMENTS	32	75mm	20mm
 - All cement shall be ACSE Specification Type 'A' normal portland cement.
 - Admixtures shall not be used without the written approval of the Engineer. The inclusion of admixtures, if any, shall be noted on the concrete delivery docket.
 - The clear concrete cover to reinforcement (outside of stirrups or ties) shall be :

Element	Formed & sheltered	Formed & exposed	Not formed
Slabs	20	45	65
Beams	25	45	65
Footings	-	65	65
 - Cover to reinforcement shall be obtained by the use of concrete or plastic bar chairs for bottom reinforcement and plastic fitted wire bar chairs for top reinforcement. All chairs to be spaced at 750 centres maximum.
 - All concrete shall be compacted using high frequency vibrators.
 - All slabs are to be poured at the same time as beams of which they form part.
 - The concrete sections shown are minimum and no reductions of these sizes by ducts, pipes etc. shall be made without the approval of the Engineer.
 - Beam depths are written first and include slab thickness.
 - Reinforcement symbols:
 - N...denotes hot rolled deformed bar to AS4671.
 - R...denotes structural grade plain round bar to AS4671.The number preceding the bar symbol denotes the number of bars in the group.
The number following the bar symbol notes the diameter of the bar in mm.
 - All reinforcement noted HDG or hot dip galvanised to be hot dip galvanised in accordance with AS4680.
 - All numbers indicating types of hard drawn steel wire fabric refer to AS4671.
 - All concrete to be cured by ponding for a minimum of 7 days or other approved method.

- BUILDING SLABS ON GROUND**
- Remove all vegetation, old tree roots and top soil from entire area of slab. Remove any loose material and refill with an approved fill compacted in layers.
 - If unusual site conditions are encountered during excavation (eg. excessive wet and/or dry patches, deep layers of topsoil or fill, etc.) the Engineer is to be contacted for further instruction.
 - Compact controlled fill material (not topsoil) in layers less than 150mm thick to a maximum depth of 400mm. If this depth is exceeded refer to the engineer for details of deepened edge beams or piers.
 - The concrete slab is to be cured for a minimum of seven days, by ponding with water or other approved method.

- REINFORCED CONCRETE MASONRY**
- Place concrete units conforming to AS2733, strength f_{uc} = 15MPa, Category C.
 - The type of concrete block to be used is the 'double U' or 'H' block.
 - Lay all walls true using best quality workmanship. Face shells and perpends should be fully bedded in mortar freshly prepared and mixed in the ratio of 1 part cement : 4.5 parts sand and additives if used, all conforming to AS3700.
 - Mortar fins protruding into the cores should be removed before grouting.
 - Clean out holes should be provided in the bottom course of all cores, to permit removal of mortar fins and other debris. These holes must be closed before grouting.
 - Reinforcement must be positioned and tied securely before placing concrete or grout.
 - For retaining walls, vertical reinforcing bars, including starter bars, should be as close to the back face of the wall as possible, consistent with cover requirements, unless shown otherwise on the drawings.
 - Fill all cores with grout as follows:
Strength F_c 25MPa (AS3600), slump 230mm ±30mm and maximum aggregate size 10mm. Minimum cement content 300 kg/m³.
 - The grout should be compacted thoroughly so that no voids are left. Compaction may be by rodding with a plain round bar, or with a high frequency pencil vibrator, used carefully. Fully vibrate to the base of each core.
 - The height of any single lift of grout should not exceed 30 times the minimum core dimension, or 3.6m, whichever is less.
 - Stop all grout pours 20mm from top of block.

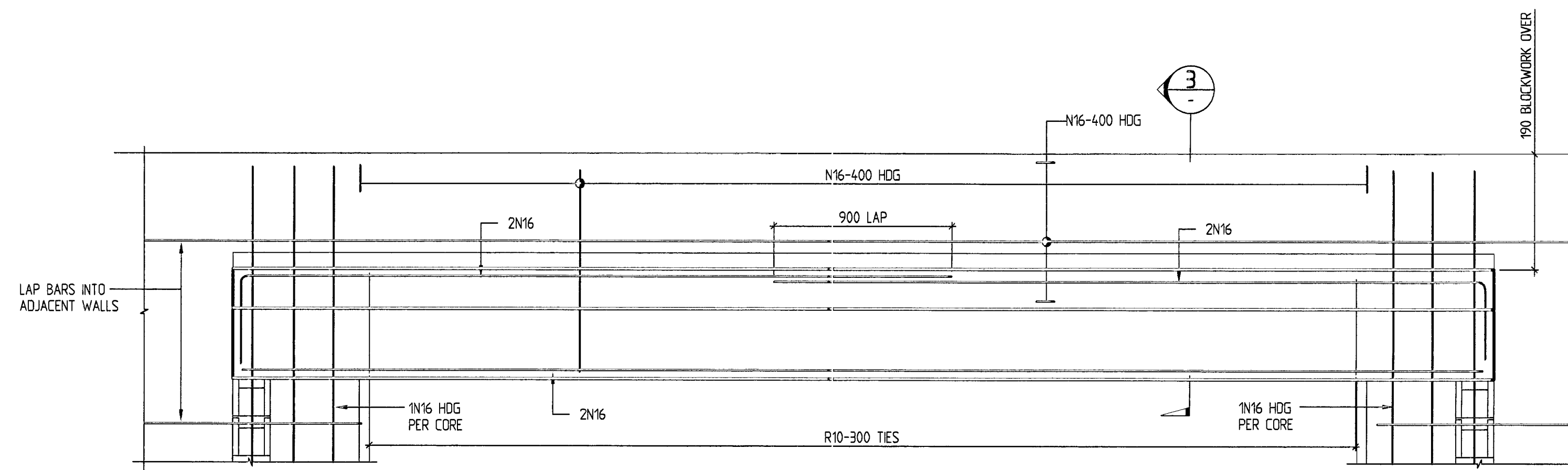
FOR FLASHINGS, WATERPROOFING AND TERMITE PROTECTION REFER TO THE ARCHITECTURAL DRAWINGS AND SPECIFICATION



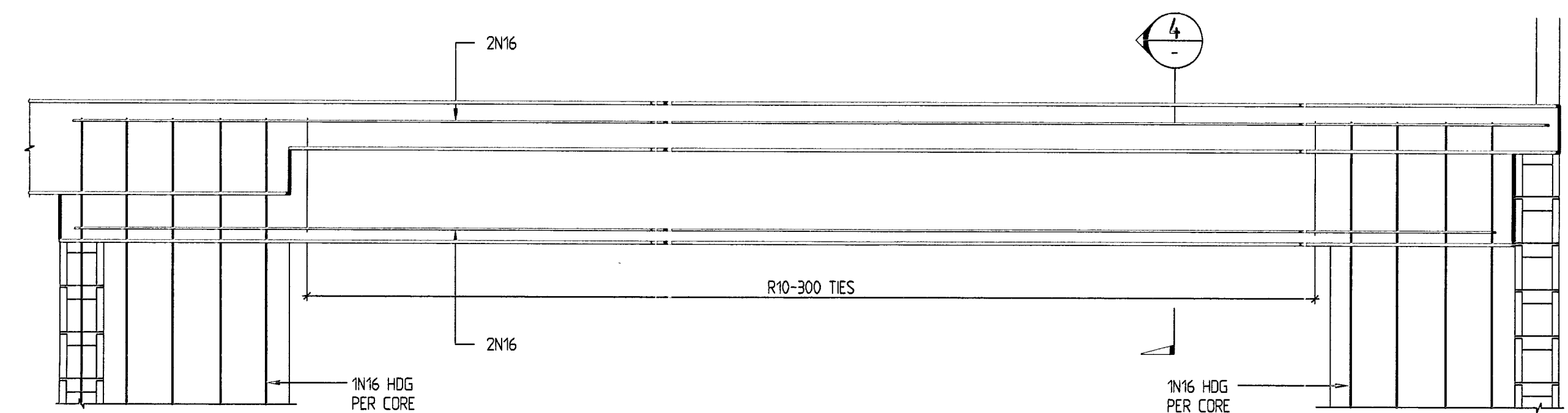
BOTTOM REINFORCEMENT

GROUND FLOOR SLAB LAYOUT

150



GB1 ELEVATION - 600 DEEP x 190 WIDE
120



GB2 ELEVATION - 600 DEEP x 190 WIDE
120

ABBREVIATIONS	
AI	ARTICULATION JOINT
BTM	BOTTOM
C.P.	COMPRESSIBLE JOINT FILLER
COS	CHECK ON SITE
C/S	CENTRES
EF	EACH FACE
EW	EACH WAY
F.F.L.	FINISHED FLOOR LEVEL
FSBW	FULL STRENGTH BUTT WELD
HW	HARDWOOD
HDG	HOT DIP GALVANISED
NGL	NATURAL GROUND LEVEL
NBDP	NOT SHOWN ON PLAN
%	OUT OF
SS	STAINLESS STEEL
TY	TYPICAL
UNO	UNLESS NOTED OTHERWISE
U/S	UNDERSIDE

Issue:	Date:	Description:
1	04.09.2006	FOR CONSTRUCTION CERTIFICATE

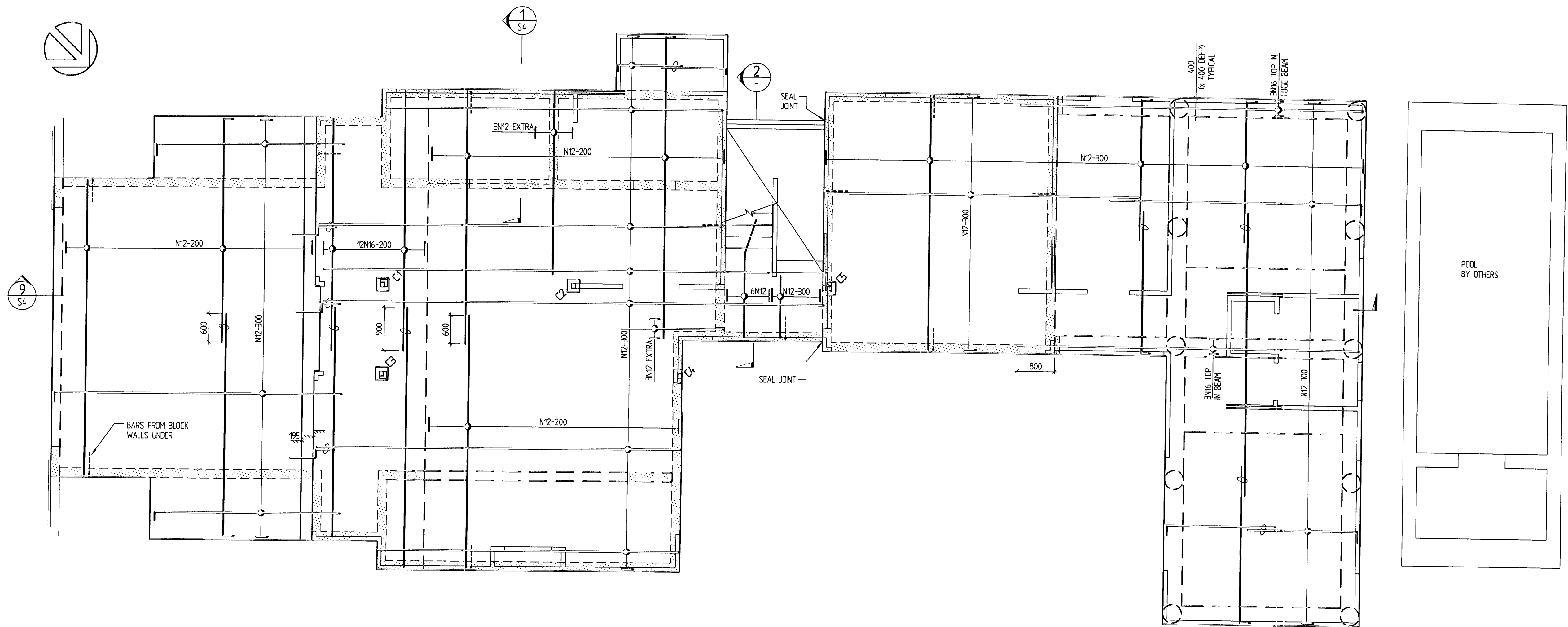
RANDALL JONES & ASSOCIATES PTY. LTD.
Consulting Engineers
27 Mansfield Street
Glebe NSW 2037
Tel. (02) 9660 4000
Fax. (02) 9660 4072

Scale: 150, 120
Date: 04.09.2006
Drawn: SD
Checked: [Signature]
Reviewed: [Signature]

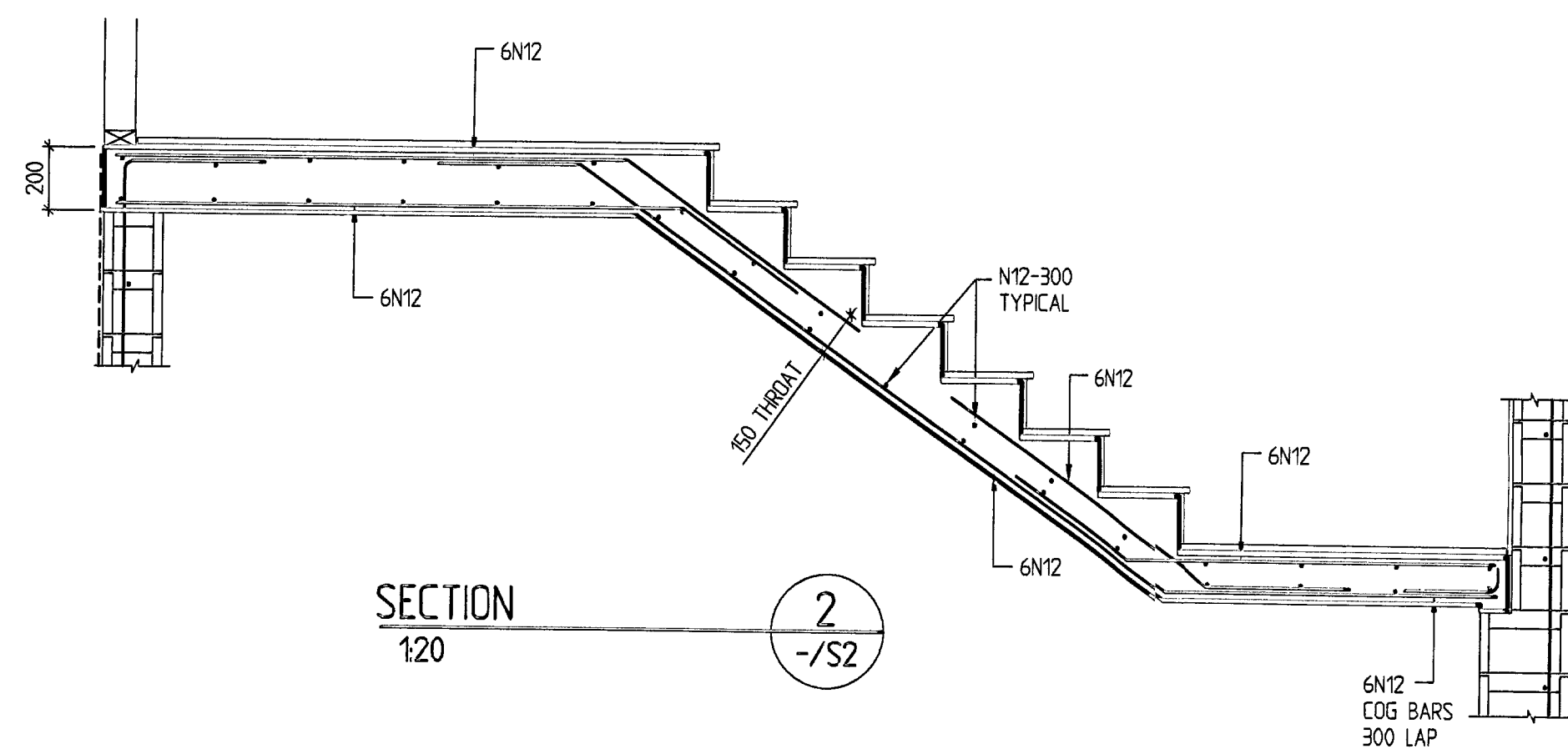
Project: PROPOSED NEW RESIDENCE
162 NARRABEEN PARK PARADE, WARRIEWOOD
Title: GROUND FLOOR SLAB
BOTTOM REINFORCEMENT LAYOUT

Project No: G037
Drawing No: S2-A

PITMAN CONSTRUCTION CERTIFICATE
Number: CC 0435/06
This is a copy of submitted plans, documents or drawings for construction purposes only. The issue of the Construction Certificate is not the issue of the Construction Certificate.
Endorsed by: TIAA (N)
Date: 26 SEP 2006



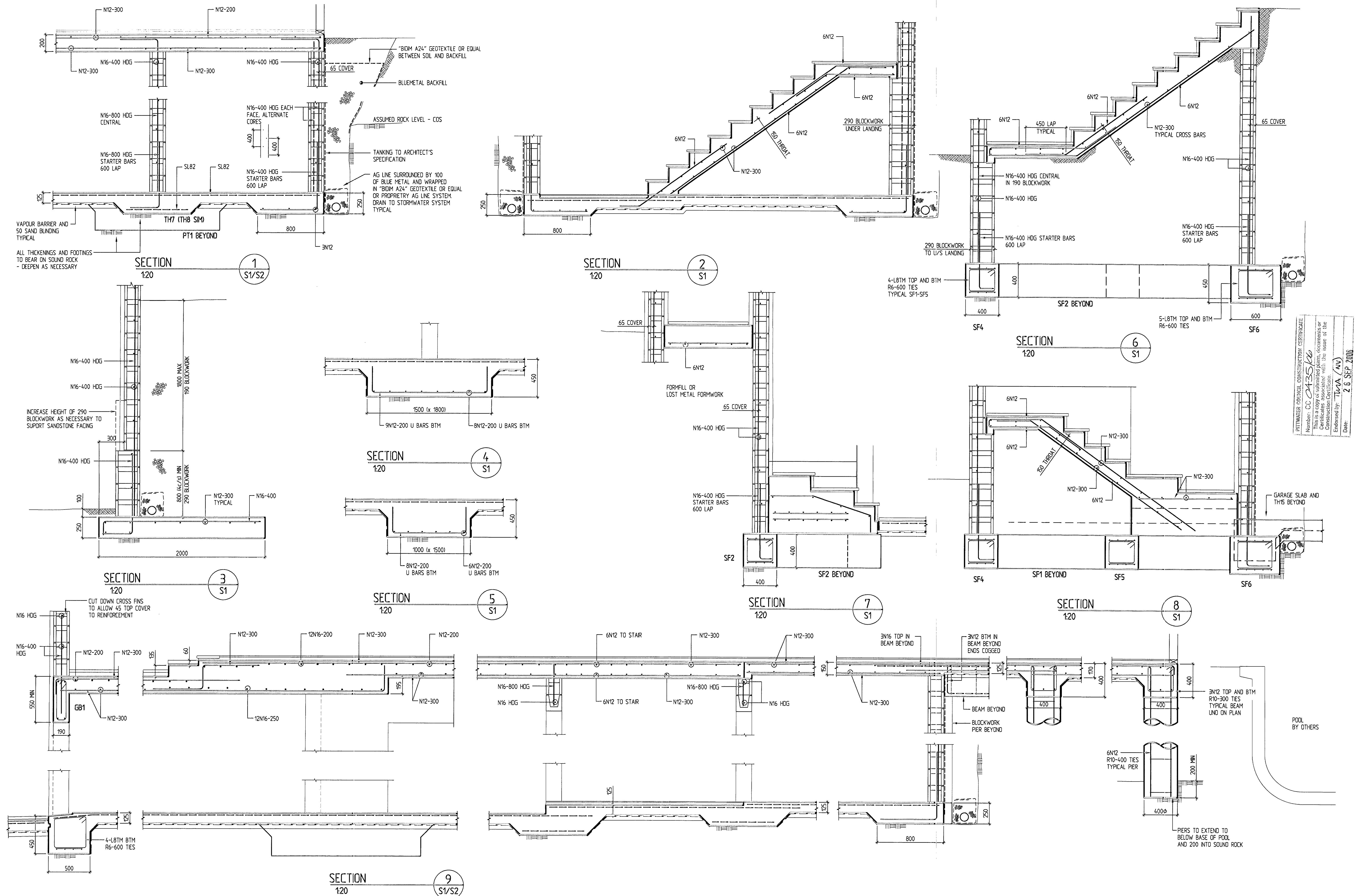
TOP REINFORCEMENT
GROUND FLOOR SLAB LAYOUT
150



SECTION
120
2
-S2

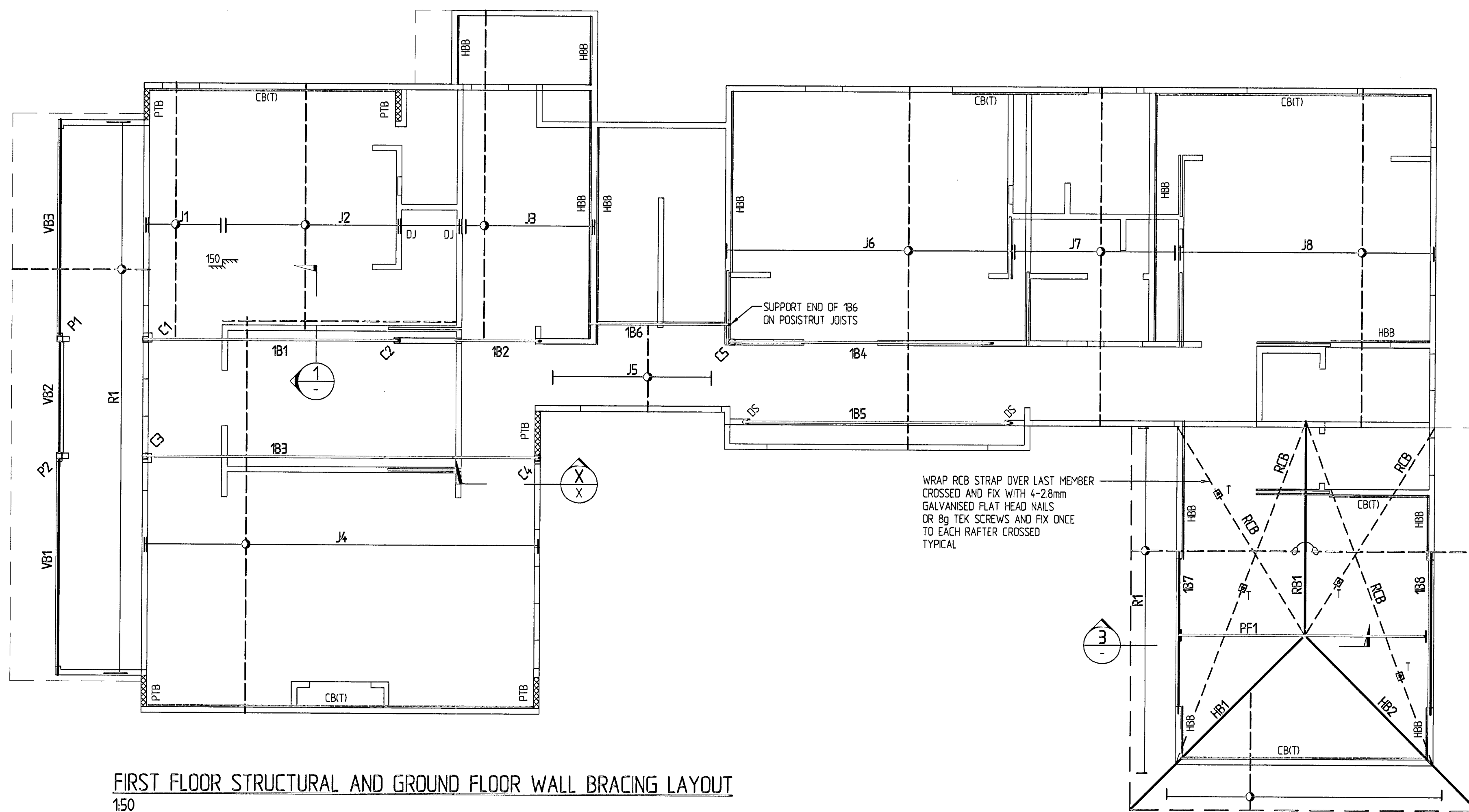
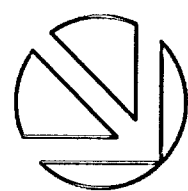
PITWATER COUNCIL CONSTRUCTION CERTIFICATE
Number: CC0435166
This is a copy of the original plans, documents or certificates associated with the issue of the Construction Certificate.
Endorsed by: Tika (A/N)
Date: 26 SEP 2006

ABBREVIATIONS AJ ARTICULATION JOINT BTM BOTTOM CJF COMPRESSIBLE JOINT FILLER COS CHECK ON SITE CTS CENTRES EF EACH FACE EW EACH WAY FFL FINISHED FLOOR LEVEL FSW FULL STRENGTH BUTT WELD	HW HARDWOOD HG HOT DIP GALVANISED NGL NATURAL GROUND LEVEL NSDP NOT SHOWN ON PLAN % OUT OF SS STAINLESS STEEL TYP TYPICAL UNO UNLESS NOTED OTHERWISE US UNDERSIDE	Issue: A Date: 04.09.2006 Description: FOR CONSTRUCTION CERTIFICATE	RANDALL JONES & ASSOCIATES PTY. LTD. Consulting Engineers 27 Mansfield Street Glebe NSW 2037 Tel. (02) 9660 4000 Fax. (02) 9660 4072	Scale: 150, 120 Date: 04.09.2006 Drawn: SD Checked: [Signature] BSC/ME/AS/JC/PE/NG/NPER	Project: PROPOSED NEW RESIDENCE 162 NARRABEEN PARK PARADE, WARREWOOD Title: GROUND FLOOR SLAB TOP REINFORCEMENT LAYOUT Project No: G037 Drawing No: S3-A
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ABBREVIATIONS AJ ARTICULATION JOINT BTM BOTTOM C.F. COMPRESSIBLE JOINT FILLER COS CHECK ON SITE CTS CENTRES EF EACH FACE EW EACH WAY FFL FINISHED FLOOR LEVEL FSW FULL STRENGTH BUTT WELD	HW HARDWOOD HDG HOT DIP GALVANISED NGL NATURAL GROUND LEVEL NSOP NOT SHOWN ON PLAN % OUT OF SS STAINLESS STEEL TPP TYPICAL UNO UNLESS NOTED OTHERWISE U/S UNDERSIDE	Issue: A Date: 04.09.2006 Description: FOR CONSTRUCTION CERTIFICATE	RANDALL JONES & ASSOCIATES PTY. LTD. Consulting Engineers 27 Mansfield Street Glebe NSW 2037 Tel. (02) 9660 4000 Fax. (02) 9660 4072	Scale: 120 Date: 04.09.2006 Drawn: SD Checked: [Signature] B.S. 5800:2000/AS/NZS 4576:2001	Project: PROPOSED NEW RESIDENCE 162 NARRABEEN PARK PARADE, WARREWOOD Title: SLAB AND FOOTING DETAILS	Project No: G037 Drawing No: S4-A
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PITWATER COUNCIL CONSTRUCTION CERTIFICATE
 Number: CC 043566
 This is a copy of a submitted Construction Certificate for the issue of the Construction Certificate. It is not a Construction Certificate.
 Endorsed by: TWA / NV
 Date: 26 SEP 2006



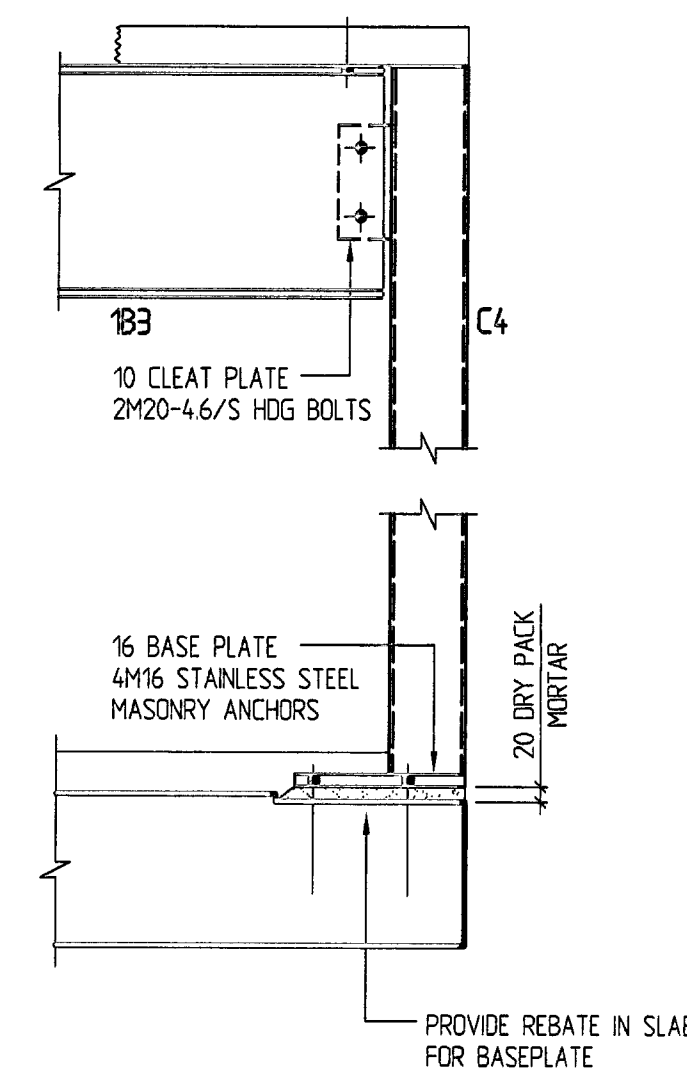
FIRST FLOOR STRUCTURAL AND GROUND FLOOR WALL BRACING LAYOUT
150

MEMBER SCHEDULE

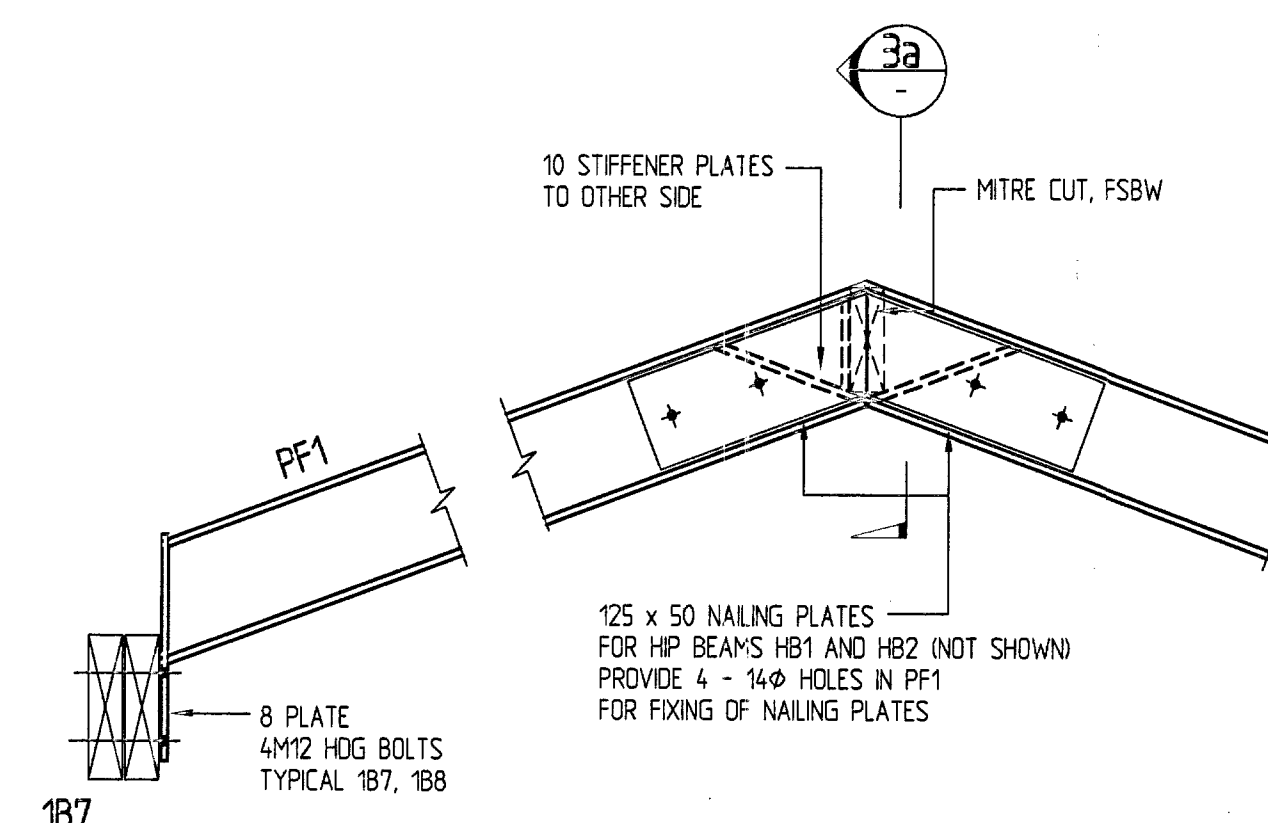
C1-C5	100 x 100 x 5.0 SHS
1B1	310UB32
1B2	130 x 63 (F16) HYSpan LVL
1B3	310UB40
1B4	200UB22
1B5	200UB18
1B6	300 x 45 (F16) HYSpan LVL
1B7, 1B8	2/190 x 45 (F27) SEASONED HARDWOOD SPIKED TOGETHER IN ACCORDANCE WITH AS 1684
1J1, 1J3	300 DEEP POSISTRUTS TO MANUFACTURER'S SPECIFICATION
1J2	220 x 45 (F27) SEASONED HARDWOOD AT 600 CTS
1J4-1J8	300 DEEP POSISTRUTS TO MANUFACTURER'S SPECIFICATION
DJ, DS	DOUBLE JOISTS, DOUBLE STUDS
PF1	PORTAL FRAME % 150UB18
RB1	140 x 45 (F27) SEASONED HARDWOOD
HB1, HB2	140 x 45 (F27) SEASONED HARDWOOD
R1	90 x 45 (F27) SEASONED HARDWOOD AT 600 CTS
VB1-VB3	220 x 45 (F27) SEASONED HARDWOOD
P1, P2	90 x 90 DURABILITY CLASS 2 HARDWOOD POSTS ON PRYDA STANDOFF PST BASES ABUK4 INSTALLED TO MANUFACTURER'S SPECIFICATION
HBB	HARDBOARD PANEL BRACING - REFER TO DETAIL ON DWG S6
PTB	PT BRACE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION
CB(T)	30 x 0.8 TENSIONED GALV STRAP WALL CROSS BRACING REFER TO DETAIL ON DWG S6
RCB	30 x 0.8 TENSIONED GALV STRAP ROOF CROSS BRACING
T	TENSIONER

ALL STEELWORK TO BE HOT DIP GALVANISED AFTER FABRICATION OR CUTTING
ALL BOLTS TO BE HOT DIP GALVANISED UNO

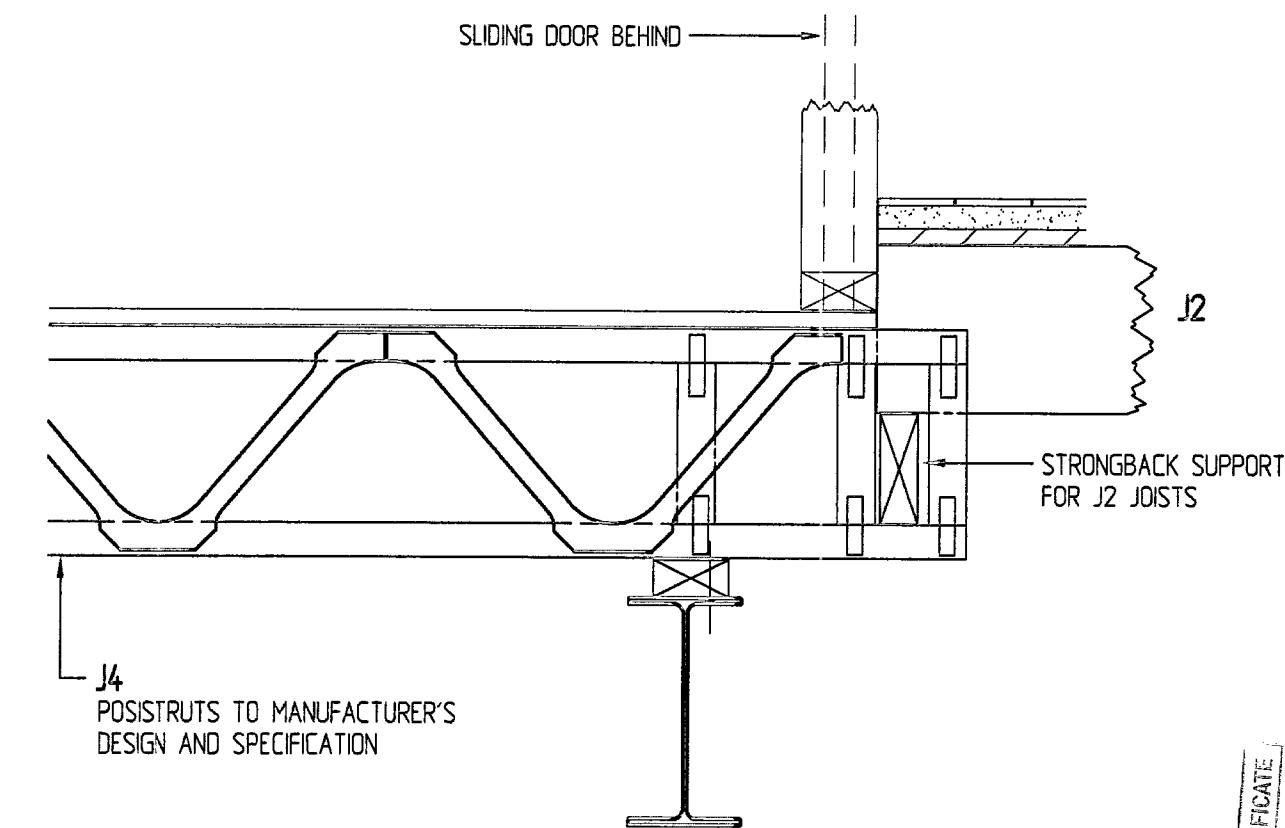
PROVIDE HOLES IN STEELWORK WEBS AND FLANGES FOR FIXING TIMBER PLATES FOR JOIST SUPPORT



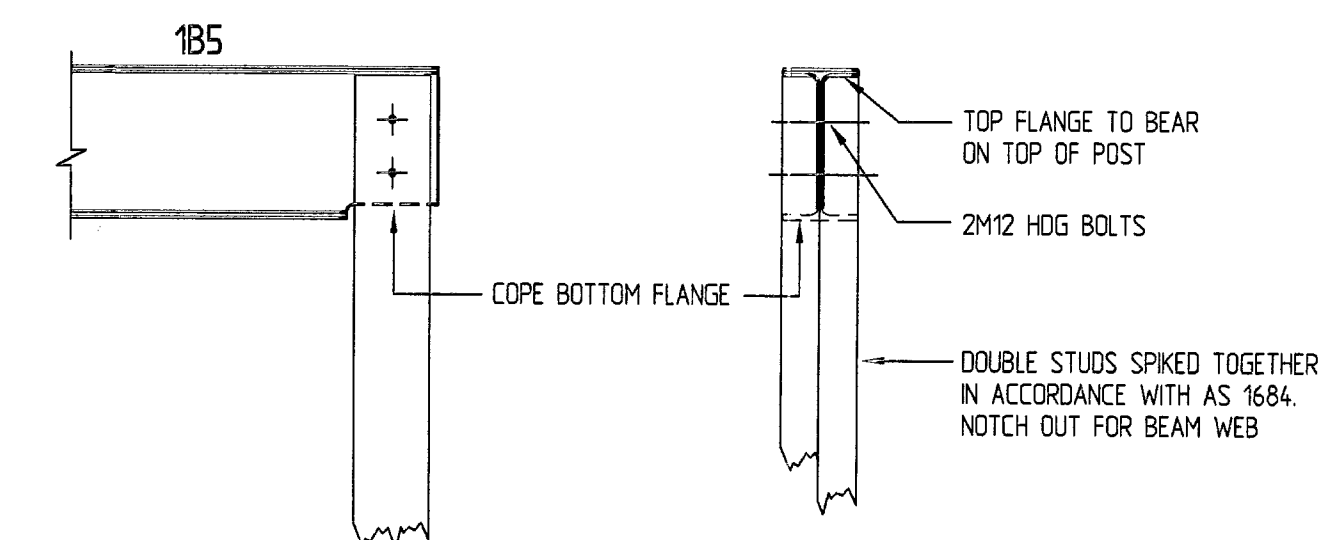
SECTION 2
1:10
C1-C3, C5 SIMILAR



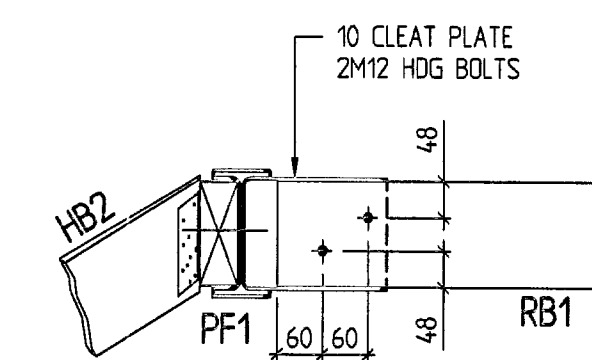
SECTION 3
1:10



SECTION 1
1:10



1B5 TO DS CONNECTION
1:10



SECTION 3a
1:10

ABBREVIATIONS	
AJ	ARTICULATION JOINT
BTM	BOTTOM
CJF	COMPRESSIBLE JOINT FILLER
CS	CHECK ON SITE
CTS	CENTRES
EF	EACH FACE
EW	EACH WAY
FFL	FINISHED FLOOR LEVEL
FSBW	FULL STRENGTH BUTT WELD
HW	HARDWOOD
HDG	HOT DIP GALVANISED
NGL	NATURAL GROUND LEVEL
NSDP	NOT SHOWN ON PLAN
O	OUT OF
SS	STAINLESS STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UNOSIDE	UNOSIDE

Issue: 04/09/2006
Date: 04/09/2006
Description: FOR CONSTRUCTION CERTIFICATE

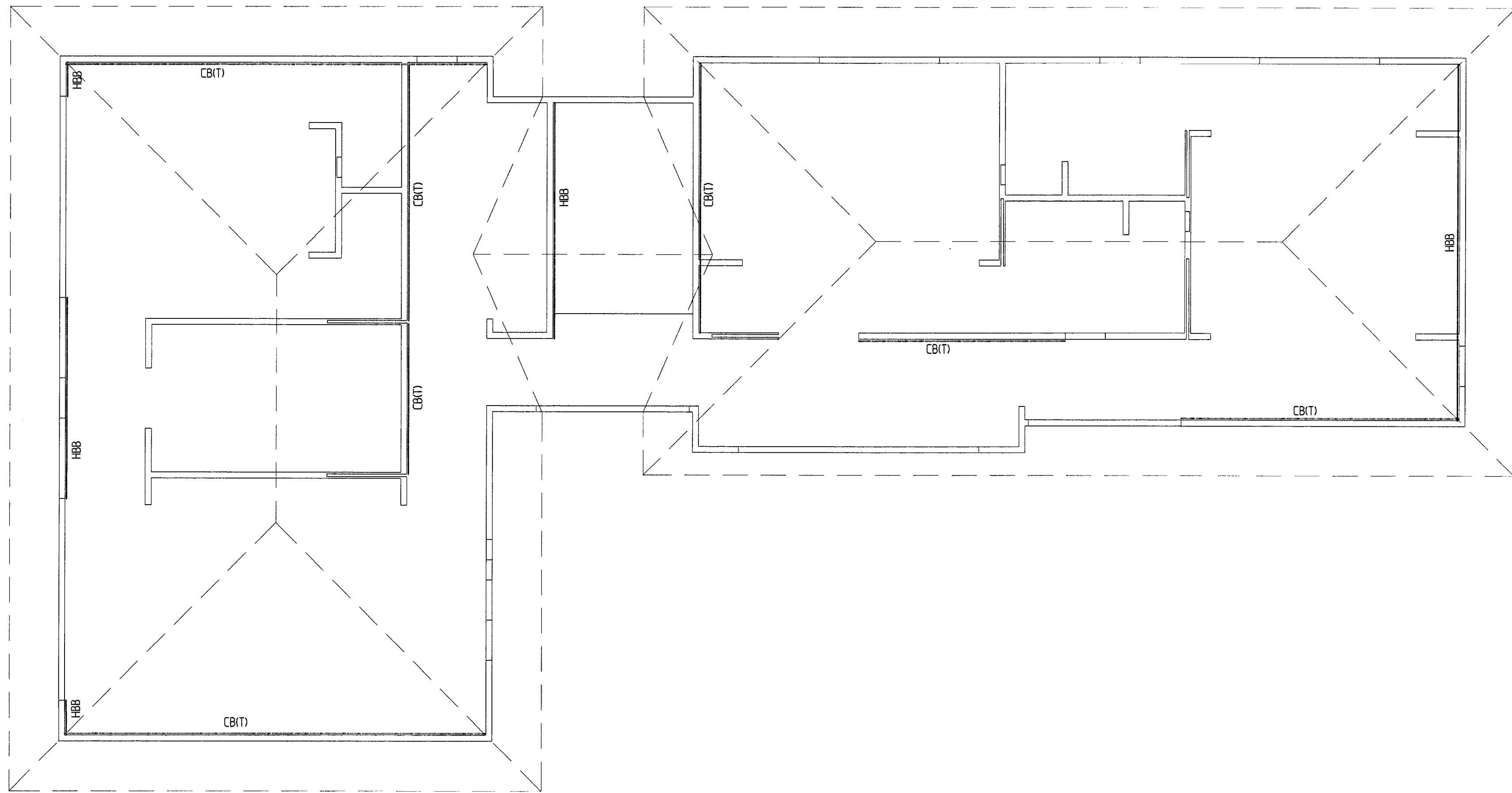
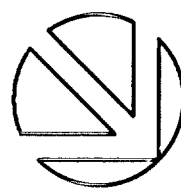
RANDALL JONES & ASSOCIATES PTY. LTD.
Consulting Engineers
27 Mansfield Street
Glebe NSW 2037
Tel. (02) 9660 4000
Fax. (02) 9660 4072

Scale: 150, 1:10
Date: 04/09/2006
Drawn: SD
Checked: BSC/ME/EA/JP/CP/EP/NP/EP

Project: PROPOSED NEW RESIDENCE
162 NARRABEEN PARK PARADE, WARRIWOOD
Title: FIRST FLOOR STRUCTURAL AND
GND FLOOR WALL BRACING LAYOUT

Project No: G037
Drawing No: S5-A

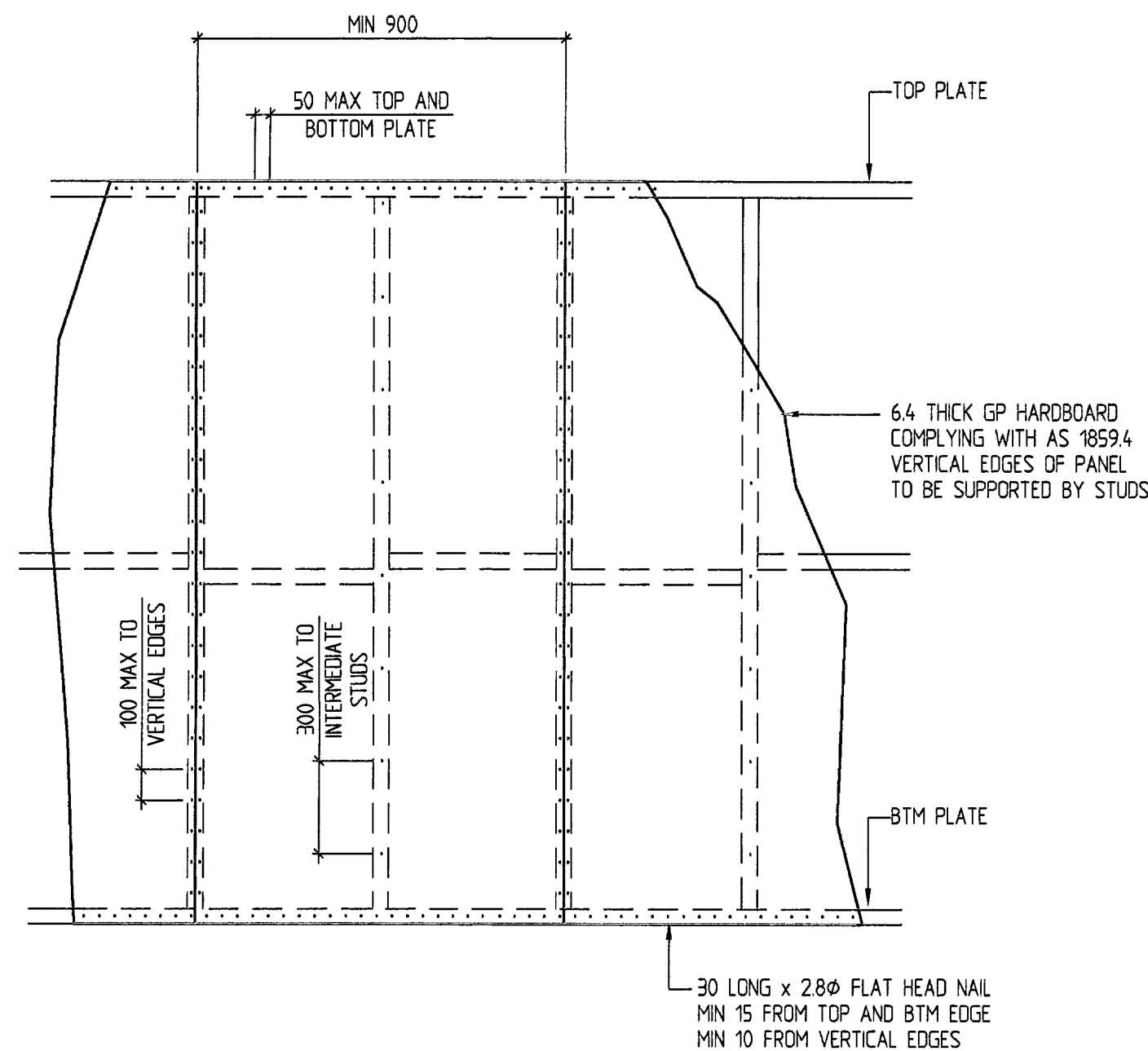
WATERWAY OPTICAL CORPORATION CERTIFICATE
Number: CC 0435/06
This is a copy of submitted plans, drawings or documents associated with the issue of the Certificate. It is not to be used for construction or other purposes.
Endorsed by: TWMA (NV)
Date: 26 SEP 2006



FIRST FLOOR WALL BRACING LAYOUT
150

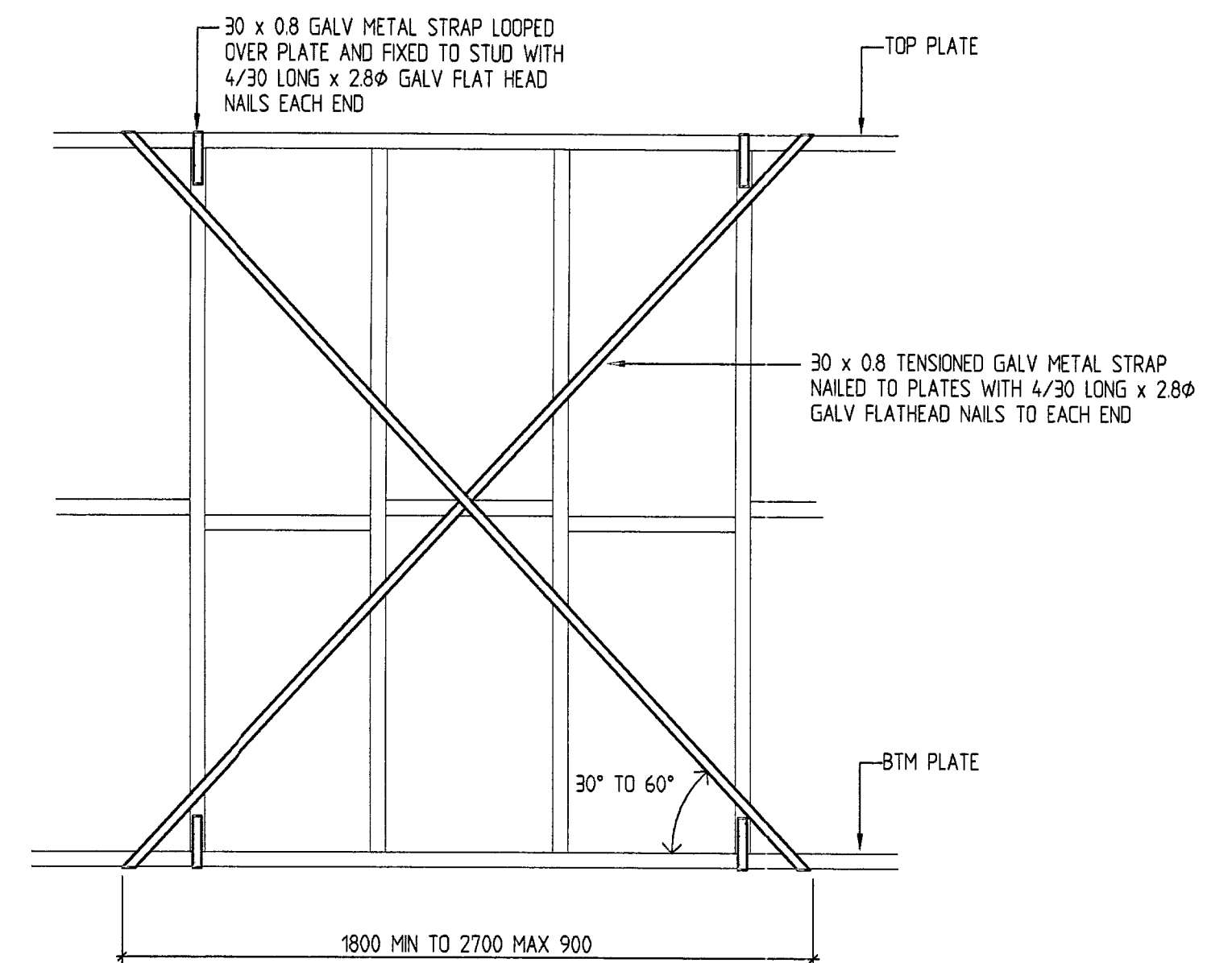
MEMBER SCHEDULE

HBB	HARDBOARD PANEL BRACING
CB(T)	30 x 0.8 GALV METAL STRAP CROSS BRACING (TENSIONED)



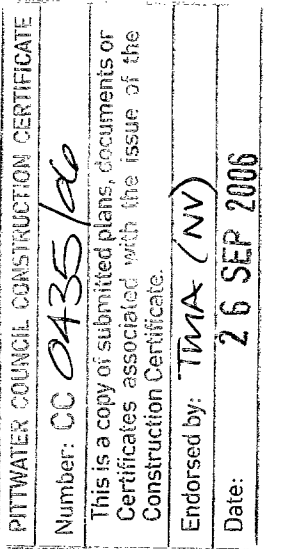
HBB - HARDBOARD PANEL BRACING
120

BRACED WALL PANELS TO BE SECURELY STRAPPED OR BOLTED TO FLOORS AND ROOF IN ACCORDANCE WITH AS 1684



CB(T) - TENSIONED GALV STRAP CROSS BRACING
120

BRACED WALL PANELS TO BE SECURELY STRAPPED OR BOLTED TO FLOORS AND ROOF IN ACCORDANCE WITH AS 1684



ABBREVIATIONS AJ ARTICULATION JOINT BTM BOTTOM CJF COMPRESSIBLE JOINT FILLER COS CHECK ON SITE CTS CENTRES EF EACH FACE EW EACH WAY FF FINISHED FLOOR LEVEL FSBW FULL STRENGTH BUTT WELD HW HARDWOOD HGD HOT DIP GALVANISED NGL NATURAL GROUND LEVEL NSOP NOT SHOWN ON PLAN N CUT OF SS STAINLESS STEEL TYP TYPICAL UNO UNLESS NOTED OTHERWISE US UNDERSIDE			Issue: A Date: 04.09.2006 Description: FOR CONSTRUCTION CERTIFICATE	RANDALL JONES & ASSOCIATES PTY. LTD. Consulting Engineers 27 Mansfield Street Glebe NSW 2037 Tel. (02) 9660 4000 Fax. (02) 9660 4072 A.B.N. 94 002 373 444	Scale: 150, 120 Date: 04.09.2006 Checked: SD Drawn: SD Title: FIRST FLOOR WALL BRACING LAYOUT	Project: PROPOSED NEW RESIDENCE 162 NARRABEEN PARK PARADE, WARRIWOOD Drawing No: S6-A	Project No: G037
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