Register

Pittwater Council

Construction Certificate No: CC0295/03

Site Details: **22 KANIMBLA CRESCENT BILGOLA PLATEAU NSW 2107**

Legal Description: **Lot 96 DP 28862**

Type of Development: Building Work ☑ Subdivision ☐

Description: **alterations and additions to the dwelling**

Associated Development Consent No: **N0951/02** Dated: **16/04/2003**

Building Code of Australia Certification: **Class 1a**

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

- **Architectural plans prepared by Robert Ferguson dated 24/4/03 Issue E, Dwg No. A1002; A2001; A2002; A2003; A2004; A5002; A5001; A4001; A4002; A3001; A3003; A3004; A2003 scale 1:50; A2004 scale 1:50; A2006 scale 1:50.**
- **Engineering details prepared by McCrae Pty Limited dated 8/5/03 Sheets 1 and 2 – Structural details, Sheets 1 and 2 – Stormwater details**
- **Landscaping Plan prepared by Landscape Architectural Services dated May 2003, Dwg No LP 03-79/1; LP 03-79/2; LP03-79/3**
- **Correspondence prepared by R L Frew dated 10/6/03**
- **Correspondence prepared by McRae Civil & Structural Pty Limited dated 2/7/03**
- **Driveway Section plans prepared by Robert Ferguson dated 24/4/03, Dwg No A5001; A5002 Issue E**
- **Correspondence prepared by Robert Ferguson dated 12/6/03**
- **Correspondence prepared by Robert Ferguson dated 27/6/03 fence detail**
- **Correspondence prepared by Robert Ferguson dated 27/6/03 Swimming Pool Barrier**
- **Building Specification dated 30/6/03 prepared for Gabriella Horvath**

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: **N0951/02**

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.

.....
Development Officer

18/7/03
.....
Date of Endorsement

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.

CONSTRUCTION CERTIFICATE PROCEDURE

ADDRESS:

22 Kanimbla Crescent, Bilgola Plateau

CC NO:_____

DA NUMBER: N0951/02

1. **THE WORKING PLANS/STRUCTUREL/GEOTECHNICAL ENGINEERING PLANS/EROSION CONTROL PLANS ETC COMPLY WITH THE CONDIIONS OF DEVELOPMENT CONSENT**

   DEVELOPMENT OFFICER: Sean Buin 9/7/03
   Consulting Building Surveyor / Town Planner

   REASONS WHY NOT?

2. **THE LANDSCAPE PLAN COMPLY WITH THE CONDITIONS OF DEVELOPMENT CONSENT**

   LANDSCAPEOFFICER:: Sean Buin 9/7/03
   Consulting Building Surveyor / Town Planner

   REASONS WHY NOT?

3. **THE WORKING DRAWINGS COMPLY WITH THE BCA**

   BUILDING SURVEYOR: Sean Buin 9/7/03
   Consulting Building Surveyor / Town Planner

   REASONS WHY NOT?

Pittwater Council

Construction Certificate No: _____

WHO WILL BE SIGNING THIS CC OFF _____
(ie who will we return it to)

Site Details: 22 Kanimbla Crescent, Bilgola Plateau

Legal Description: Lot 96 ; DP. 28862

Type of Development: Building Work ☑ Subdivision ☐

Description: New Dwelling

Associated Development Consent No: N0951/02 Dated: 16/4/03

Building Code of Australia Certification: Class 1a.

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

1. Architectural Plans prepared by Robert Ferguson dated 24/4/03 Issue C dwg N° A1003; A2001; A2002; A2003; A2004; A5001; A5001; A4001; A4002; A1006; A3001; A3002; A3003; A3004.

2. Engineering Details prepared by McCrae Pty Ltd dated 8/5/03 Sheets 1 & 2 - Structural Details; Sheets 1 & 2 - S/Water details A2003 A2004 } 1.50

DRD

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: (N0951/02

9/7/03

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.

..... 17/7/03 .....

Development Officer Date of Endorsement

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.

3. Landscaping Plan prepared by Landscape Architectural Services dated May 2003 Dwg. No. LP03-7911, LP03-7912, LP03-7913.

4. Correspondence prepared by R.C. Trees dated 20/6/03.

5. Correspondence prepared by McRae Civil & Structural P/L dated 2/7/03

6. Driveway section plans prepared by Robert Ferguson dated 24/4/03 dwg. No. 5001, 5002 issue E.

7. Correspondence prepared by Robert Ferguson dated 12/6/03

8. Correspondence prepared by Robert Ferguson dated 27/6/03 - Fence detail.

9. Correspondence prepared by Robert Ferguson dated 27/6/03 - Swimming pool Barrier

10. Building Specification dated 30/6/03 prepared for Gabriella Horvath.

9/7/03

PITTWATER COUNCIL
DEVELOPMENT DIVISION
FILE NOTE

RECORD OF MEETING/ENQUIRY/TELEPHONE CALL/ COMPLAINT

DATE:..... FILE No:.....

PARTICIPANTS.....

ADDRESS.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

OFFICERS SIGNATURE.....

CONSTRUCTION CERTIFICATE APPLICATION

C/C NO: CC0239/02.
FILE AND PART NO:
PROPERTY NO:
OFFICER:
TARGET DATE:
APPROVAL NO:
POST OUT ☐ or PICK UP ☐

2nd Floor, Unit 11, No 5 Vuko Place, Warriewood
PO Box 882, MONA VALE NSW 2103
DX 9018, MONA VALE
Facsimile: (02) 9970 7150
Telephone: (02) 9970 7222

12/6/03

LODGEMENT

- **All information required by the schedule and checklist are to accompany this application.**
- **Incomplete applications will not be accepted.**
- **Fees are to be paid at the time of lodgement.**
- **To minimise delays it is suggested that you lodge this application between the hours of 10.00am and 4.30pm weekdays.**

☐

THIS APPLICATION RELATES TO: *(please tick)*

BUILDING WORK ✓ SUBDIVISION WORK

AN EXISTING DEVELOPMENT CONSENT FOR THIS SITE

Consent No N0951/02 *Date* 16/4/03

A CONCURRENT DEVELOPMENT APPLICATION

Application No _____ *Date* _____

☐

SITE DETAILS: *(please print)*

House No 22 Street/Road KANIMBLA CR. Suburb BILGOLA

Postcode 2107 Lot _____ Section _____ Deposited Plan _____

Description of Proposal Alterations and additions

FAX N°9653 9613

VALUE OF DEVELOPMENT: $.....289,200.....

Nominated Building Classification: Class(es)...1.....

CC - 924.00.
BS - 165.00
CSC - 580.00

- 1669.00

Pittwater Council

ABN: 61340837871

TAX INVOICE

OFFICIAL RECEIPT

12/06/2003 Receipt No 116503

To L & G HORVATH P/L

22 KANIMBLA CR
BILGOLA

Qty/ Applic	Reference	Amount
CC0239/02		
22 GL Rec	TCER-Dom 22 KANIMBLA CRES	$840.00
GL Rec	GST	$93.00
GL Rec	HKER-Ser P 22 KANIMBLA CRES	$165.00
GL Rec	OLSL-Bull 22 KANIMBLA CRES	$480.00
GL Rec	DSTP-Eng 22 KANIMBLA CRES	$69.00
To GL Receipt		

Total Amount:	$1,757.00
Includes GST of:	$64.00

Amounts Tendered

Cheque	$1,757.00
Total	$1,757.00
Rounding	$0.00
Change	$0.00
Nett	$1,757.00

Printed 12/06/2003 3:41:31 PM
Cashier RLindsay

APPLICANT: *(please print)*

Name/Company GABRIELLA HORVATH

Address 22 KANIMBLA CR, BILGOLA

Phone (04) 09202518 Daytime Contact No (02) 96539613

I declare that all of the particulars and information supplied in connection with this application are correct. Further, I acknowledge that I am aware of my obligations under the Disability Discrimination Act.

Signature _____ Date 2/6/03

OWNER ***(please print)***

This section must be signed by ALL owners

I/we consent to the lodgement of this application and permit Council authorised personnel to enter the site for the purpose of inspections.

Owner/s GABRIELLA HORVATH

Address 22 KANIMBLA CRESENT

BILGOLA Postcode 2107

Signature(s) _____

- **If the property has recently been purchased, written confirmation from the Purchaser's Solicitor must be provided.**
- **If contracts have been exchanged for purchase of the land, the current owner is to sign the form.**
- **If signed on behalf of a Company, the seal must be stamped over the signature.**
- **If the land is below mean high water mark, the written consent of the Crown is required.**
- **If the written consent is not signed by all owners of the property, this application will not be accepted.**

BUILDER'S NAME AND ADDRESS

(must be completed when the proposal involves residential building work): ***(please print)***

Are you an Owner-Builder? YES, Permit No. 259722P

Licensed Builder Details

Name/Company _____

Address _____

Phone ( ) _____ Daytime Contact No ( ) _____

Licence No _____ Insurance Policy No _____

Note: (1) Where the works are to be carried out by a licensed builder, documentary evidence must be submitted confirming that the builder's insurance is current and appropriate for this proposal.

(2) Prior to the release of the Construction Certificate, the owner/builder permit must be sighted by a Council Officer.

THE CHECKLIST

- **We suggest you use the left hand column as <u>your</u> checklist, Council staff will check off the items in the right hand column.**
- **<u>All</u> of the details in the relevant sections <u>must</u> be included in your application, or it will not be accepted.**

INFORMATION REQUIRED TO ACCOMPANY THIS APPLICATION:

For Building Work See Items A – J in the checklist.

For Subdivision – See Items A, B, C, F and J in the checklist.

YOUR USE		STAFF USE
A	**COMPLIANCE WITH CONSENT CONDITIONS**	
✓	All information required by the conditions of development consent, prior to the issue of the Construction Certificate accompanies this application.	
B	**COMPLIANCE CERTIFICATE** **A Certificate which signifies compliance with conditions of development consent, Australian or Industry standards or the Building Code of Australia.**	
	A copy of any Compliance Certificates which may have been issued in respect of this proposal, accompanies this application.	
C	**SITE PLAN** **An aerial view of the site showing existing and proposed buildings and the following information. Minimum Scale 1:200**	
✓	North point and all boundary dimensions of the block.	
✓	All existing/proposed buildings on the site and their setback or distance to the boundary; the location of windows and doors. Proposed additions to existing buildings are to be clearly identified (preferably coloured).	
✓	The outline of buildings on the adjoining sites, the setback or distance from the street and common boundary including the location of windows and doors.	
✓	Any easements or right of way over the site, existing/proposed stormwater drainage lines or watercourses.	
✓	Existing/proposed fences, swimming pools, retaining walls, driveways or parking areas, garbage or trade waste holding areas.	
D	**ELEVATIONS** **A view of all sides of the building and the site profile. Minimum scale 1:100**	
✓	All relevant elevations detailed and identified (i.e. north, south etc) with the proposed additions clearly identified.	
✓	Existing/proposed ground levels and all floor to ceiling heights.	
✓	Reduced levels (RL's) to Australian Height Datum (AHD) shown for all roof ridges, floor and ceiling levels for the existing/proposed building and those on adjoining sites, also street levels.	
✓	Roof profile, material, colour, reflectivity and eaves width are shown.	
✓	The outline of buildings on the adjoining sites.	

USE		USE
E	**SECTIONS** **A cut through view of the building and site. Minimum scale 1:100**	
	The outline of the existing and/or proposed building showing all dimensions including roof pitch.	
✓	All sections labelled and cross related back to where they occur on the floor plan and site plan (including driveways and their proposed gradients).	
✓	Existing and proposed RL's to AHD, for the building (ceiling and floor level) and the site showing proposed excavation or filling (if any).	
✓	Construction details for wall, floor, window, door, ceiling, roof frame, type of footings and size	
N/A	Provisions made for Fire Saftey and Fire Resistance.	
F	**LONG SECTIONS** **A length ways cut through view of the site, the building or driveway. Minimum Scale 1:100**	
✓	Details of driveways, vehicle crossing profiles and transitions.	
✓	Maximum driveway grade 1:4; maximum emergency pedestrian access grade 1:8.	
G	**FLOOR PLAN** **An aerial view of the room layout on all levels, or storeys. Minimum scale 1:100**	
✓	North point shown.	
✓	Room dimensions and use shown.	
✓	The location and dimension of all windows, doors and walls (including wall thickness).	
	Provisions made for Fire Safety and Fire Resistance	
H	**BUILDING SPECIFICATION** SPECIFIED ON DRAWINGS. **Details of construction.**	
✓	Two copies, detailing method of construction, fire ratings, type of materials, dimensions and length.	
✓	Whether the material will be new or second hand. Give particulars of second hand materials.	
✓	Details of drainage, effluent disposal, water supply, ventilation arrangements etc.	
Note: Where the proposal involves an alternative solution to the Building Code of Australia requirements, the application must be accompanied by details of the performance standard intended to be met and the details/assessment used to establish compliance with the performance standard.		
I	**FIRE SAFETY PROVISIONS** **Class 2-9 buildings only** CLASS 1	
	Details of the fire safety measures to be implemented.	
	Where the proposal involves alterations or additions to an existing building, details of the existing fire safety measures.	
J	**DETAILED ENGINEERING DRAWINGS** **Detailed plans which have been certified by a qualified consultant for the following where relevant**	
✓	Earthworks, erosion control measures, elevations of retaining walls, etc.	
✓	Roadworks, road pavement details.	
✓	Stormwater drainage (including stormwater management details).	
✓	Water supply, effluent disposal.	
✓	Landscape construction works.	
Note: Where the works involve an amendment or modification to previously approved plans, the alteration is to be appropriately highlighted on the submitted engineering plans.		

Checked by:

SCHEDULE

CONSTRUCTION MATERIALS/DETAILS: *(please print)* *(must by law be accurate)*

Construction materials

External walls RENDERED MASONARY Roof CORRIGATE STEEL COLORBOND

Floor CONCRETE/TIMBER Wall frames RENDERED MASONRY

Details

Current use of the land/building(s) 3 bedroom Home

Site area 704.6 m² m²

Floor area - existing 132 m²

- proposed 232 m²

Total 364 m²

Number of Storeys 3

Number of dwellings to be demolished 0

Number of dwellings proposed N/A

rfa
robert ferguson
architects

27 June 2003

Level 1, 768 military road
Mosman NSW 2088
T 02 9969 8322
F 02 9969 8722
E admin@rfarchitects.com.au

PITTWATER COUNCIL
Unit 9, 11 & 12/5 Vuko Place
Warriewood NSW 2102

RE- 22 KANIMBLA CRESENT, BILGOLA

I herby certify that the documents show that the front boundary fencing is to be no higher than 1m above natural ground level.

Regards

Robert Ferguson

rfa
robert ferguson
architects

27 June 2003

Level 1, 768 military road
Mosman NSW 2088
T 02 9969 8322
F 02 9969 8722
E admin@rfarchitects.com.au

PITTWATER COUNCIL
Unit 9, 11 & 12/5 Vuko Place
Warriewood NSW 2102

RE- 22 KANIMBLA CRESENT, BILGOLA

I herby certify that the pool barrier as documented will satisfy the requirements of the Swimming Poll Act AS 1992 and AS 1926 – 1995.

Regards

R. Ferg

Robert Ferguson

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

rfa
robert ferguson
architects

12 June 2003

Level 1, 768 military road
Mosman NSW 2088
T 02 9969 8322
F 02 9969 8722
E admin@rfarchitects.com.au

PITTWATER COUNCIL
Unit 9, 11 & 12/5 Vuko Place
Warriewood NSW 2102

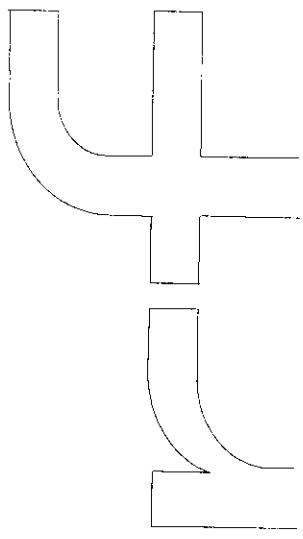
RE- 22 KANIMBLA CRESENT, BOLGOLA

I herby certify that the proposed means of access to and within the site complies with the requirements of Council's policy DCP No. E3 "Driveways and internal Roadways" and AS 2890.1 – 1993: Parking Facilities – Off-street Car Parking.

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

Regards

Robert Ferguson



McRae Civil & Structural Pty Ltd

A.C.N. 089 023 852 E-mail : Mcraceng@optusnet.com.au

22 Juno Pde GREENACRE NSW 2190
Phone & Fax - (02) 9759 7836

Date : 02/07/2003

Subject : Stormwater for development at 22 Kanimbla Cres - Avalon

To Whom It May Concern

This certificate is to be read in conjunction with the Architectural drawings and the DA conditions and the Engineering drawing MC122 for stormwater drainage

The Undersigned hereby certifies that the drainage details and specifications have been derived in accordance with the following documents :

a) Australian Rainfall and Runoff

b) Pitwater Council Stormwater Management Control Plan

c) AS 3500.3.2 " Stormwater Drainage – Acceptable Solution "

Regards,

Dirk Nguyen (B.Eng – P.C.Eng)

R. L. Frew Landscape Architectural Services Pty. Ltd.

Robert Frew BLA AILA

10.6.03

PITTWATER COUNCIL
PO Box 882,
MONA VALE
NSW 1660

ATTENTION: **Catherine Otto,**
DEVELOPMENT OFFICER,
Pittwater City Council

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

RE: **LANDSCAPE COMPLIANCE CERTIFICATE**

FOR

22 KANIMBLA CRES,
BILGOLA PLATEAU
D.A. # N0951/02

As a qualified Landscape Architect, I certify that the landscape plans for the above proposed development, Drawing No. LP 03 – 79 (sheets 1 to 3), comply with Pittwater Council's DCP #23 "Landscape & Vegetation Management". Further they comply with the landscape conditions outlined in the Notice of Determination dated 16th April, 2003

If you have any questions, please call our office at your convenience.

Best regards,

Robert Frew.

Robert Frew BLA AILA
Director.

Level 1 / 112 Glover St, Cremorne 2090 AUSTRALIA

ph: 9908 5698 fax: 9908 5798 mobile: 0413 861 351

e-mail: r_frew@optusnet.com.au

OFFICE OF **FAIR TRADING**
NSW Consumer Protection Agency
Department of Commerce

GABRIELLA HORVATH
22 KANIMBLA CRESCENT
BILGOLA 2107

HOME BUILDING ACT 1989

OWNER BUILDER PERMIT

Permit :259722P **Issued:03/06/2003**
Receipt:AA1746283 **Amount:$122.00**

Building Site:

22 KANIMBLA CRESCENT, BILGOLA 2107

Authorised Building Work:

N0951/02-HOUSE RENOVATIONS & ADDITIONS-150 SQM
BUILDING WORK AS PER BA NO.
ISSUED BY PITTWATER COUNCIL

Should the property be sold within 6 years of completion of the work it will be necessary to obtain home warranty building insurance from approved insurers if the value of the work was greater than $12,000. A certificate of insurance must be attached to any contract for sale.

You should obtain professional advice from general insurers regarding public liability and property damage cover, etc.

Note: This permit is only valid when an official receipt has been imprinted. If payment is made by cheque, the permit is conditional on the cheque being met at presentation.

Issuing Officer

********** END OF PERMIT **********

Sydney Fair Trading Centre Level 21, 227 Elizabeth Street, Sydney NSW 2000
PO Box 972 Parramatta NSW 2124 Australia Telephone (02) 9619 8660 Facsimile (02) 9619 8659
http://www.fairtrading.nsw.gov.au

ALL STATE BUILDING SURVEYING

Incorporated in NSW

FACSIMILE

1/85 Dee Why Parade
Dee Why NSW 2099
Email:
seanobrien1@bigpond.com
Ph/Fax: (02) 9982 4006

Building Surveying
Fire Engineering
Building Codes
Accredited Certifier
Access For The Disabled

To	Gabriella Horvath
Fax No.	02 9653 9613
From	Sean O'Brien
Date	20 June 2003
Subject	**22 Kanimbla Cr, Bilgola**
Pages	1, including this one

We refer to our discussions with Gabriella Horvath on Friday 20 June 2003 and would confirm that we have been engaged by Pittwater Council to process this application for Construction Certificate.

We would confirm that prior to the completion of the assessment of this application, you are requested to provide a copy of the following:

1. A copy of a Building Specification detailing compliance with the requirements of the Building Code of Australia - see condition B5 of the consent including a note to specify the height of the front fence is no higher than 1m.

2. A copy of a statement detailing that the swimming pool barrier will satisfy the requirements of the Swimming Pools Act 1992 and AS 1926 - 1985 - see condition B12 of the consent.

3. A copy of a statement that the on-site stormwater detention system facilities comply with the Pittwater Council's policy and guidelines for the on-site detention of stormwater - see condition B19 of the consent.

Should your require any additional information, please contact the undersigned.

Your faithfully,
All State Building Surveying Pty Ltd.

Sean O'Brien.

ALL STATE BUILDING SURVEYING

Incorporated in NSW

FACSIMILE

1/85 Dee Why Parade
Dee Why NSW 2099
Email:
seanobrien1@bigpond.com
Ph/Fax: (02) 9982 4006

Building Surveying
Fire Engineering
Building Codes
Accredited Certifier
Access For The Disabled

To	Gabriella Horvath
Fax No.	02 9653 9613
From	Sean O'Brien
Date	20 June 2003
Subject	**22 Kanimbla Cr, Bilgola**
Pages	**1, including this one**

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE

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

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Should your require any additional information, please contact the undersigned.

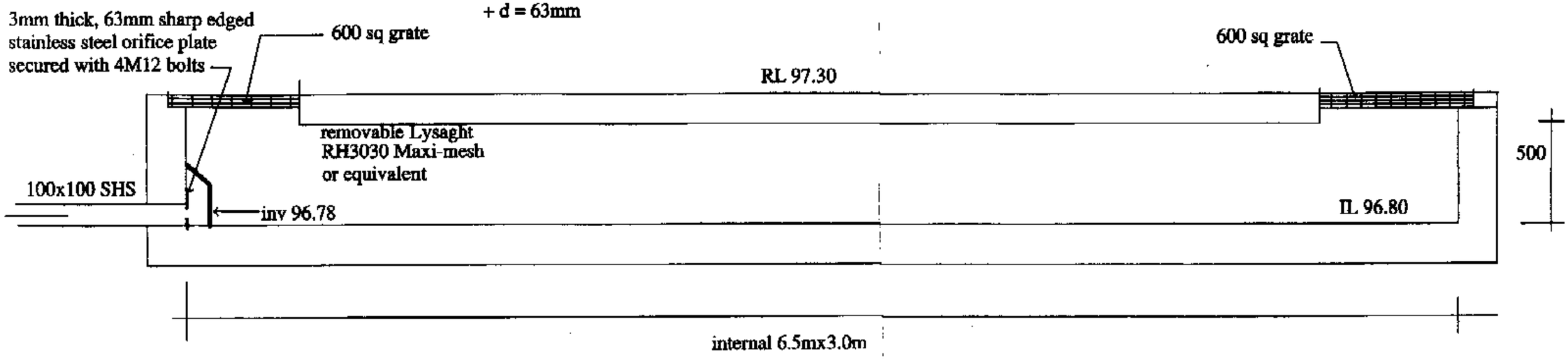
Your faithfully,
All State Building Surveying Pty Ltd.

Sean O'Brien.

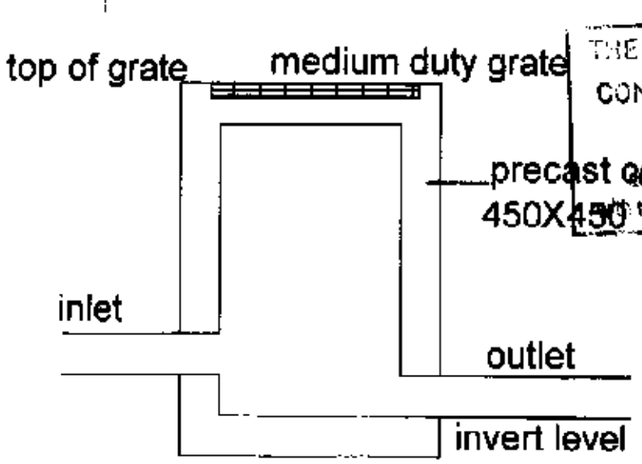
RFA. GABOR. 99698722

FAX - 99698722

Calculations :
+ site area : 704.6 sqm
+ driveway : 35.7 sqm
+ building area : 225.8 sqm
+ total catchment area : 261.5 sqm
+ storage required : 0.0345*261.5 = 9.0 cubm
+ tank capacity : 6.5*3.0*0.5 = 9.8 cubm
+ discharge requirement : 0.0124 l/sec/ha * 261.5 = 3.24 l/sec
+ h= 96.68 - 96.83 = 0.15m
+ A = 0.00324/0.61/(2*9.81*0.15)^2 = 0.00324/1.0464
+ d = 63mm



DETENTION TANK scale 1:20

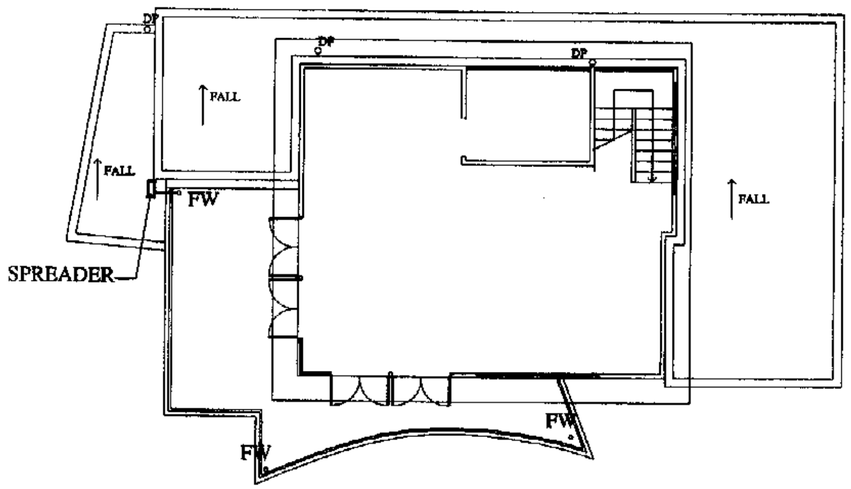


TYP JUNCTION PIT

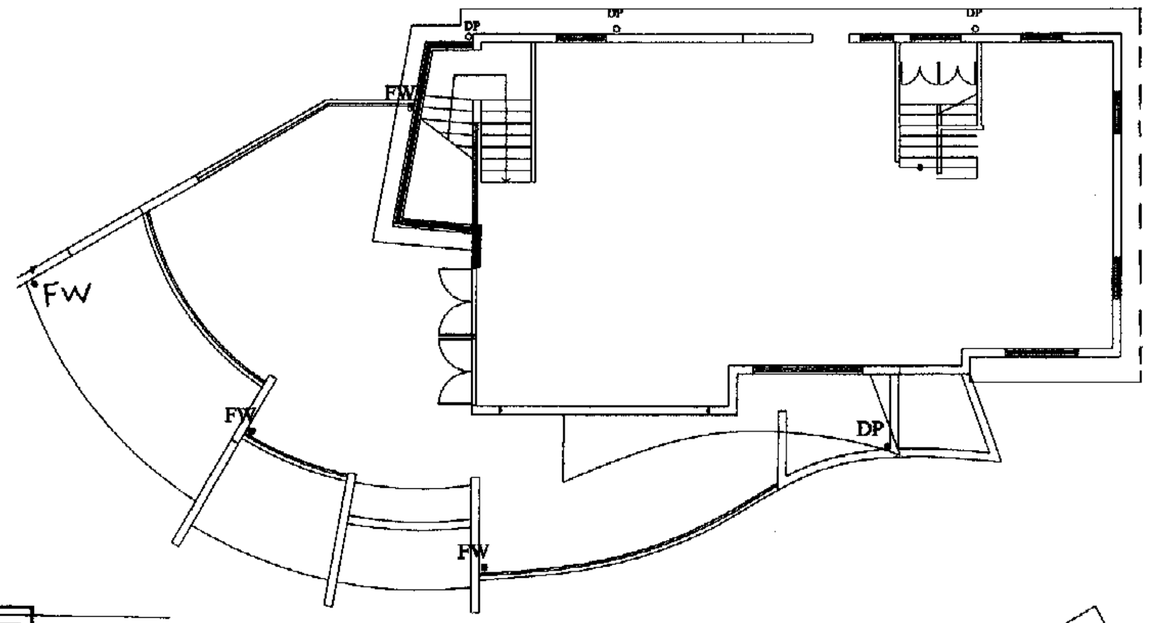
LEGEND :
co : clean-out point
IL : invert level
TOG : top of grate
TOW : top of water
DP : downpipe

MCRAE Pty Ltd - CIVIL & STRUCTURAL
ACN 089023852 Phone & Fax : (02)97597836
E-mail: mcraeeng@optusnet.com.au
PO box 117 - BELFIELD - NSW 2191

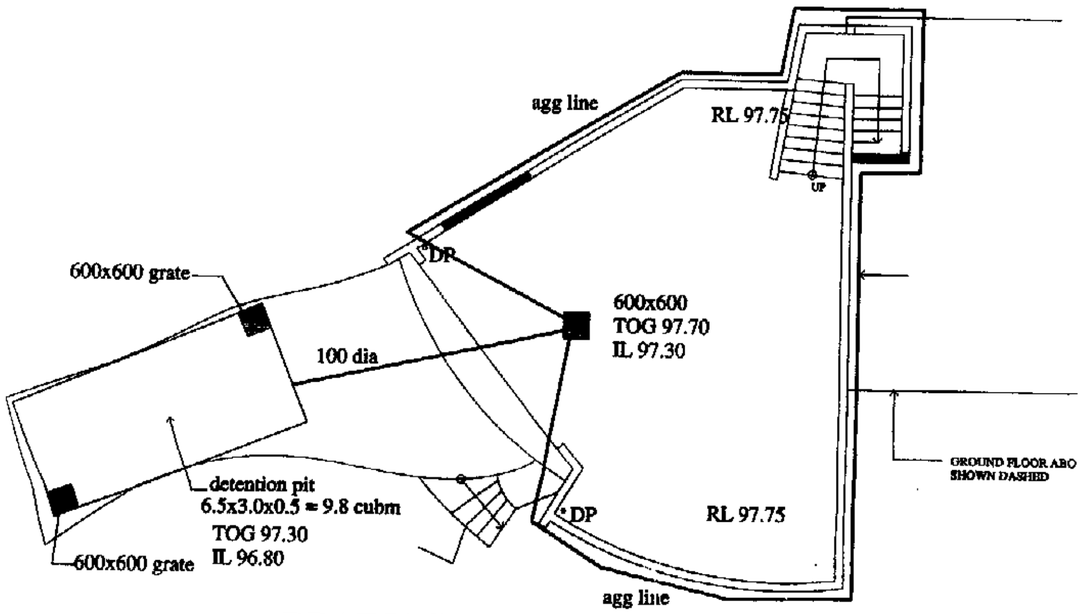
	EXTENSION AT 22 KANIMBLA Cres - AVALON	DATE : 08/05/2003
	DRAINAGE DESIGNS AND SPECIFICATIONS	JOB NUMBER : 171-02
AMENDMENTS	CERTIFIED : (MEng)	DRAWING : MC122 2 of 2



MENZANINE LEVEL scale 1:100

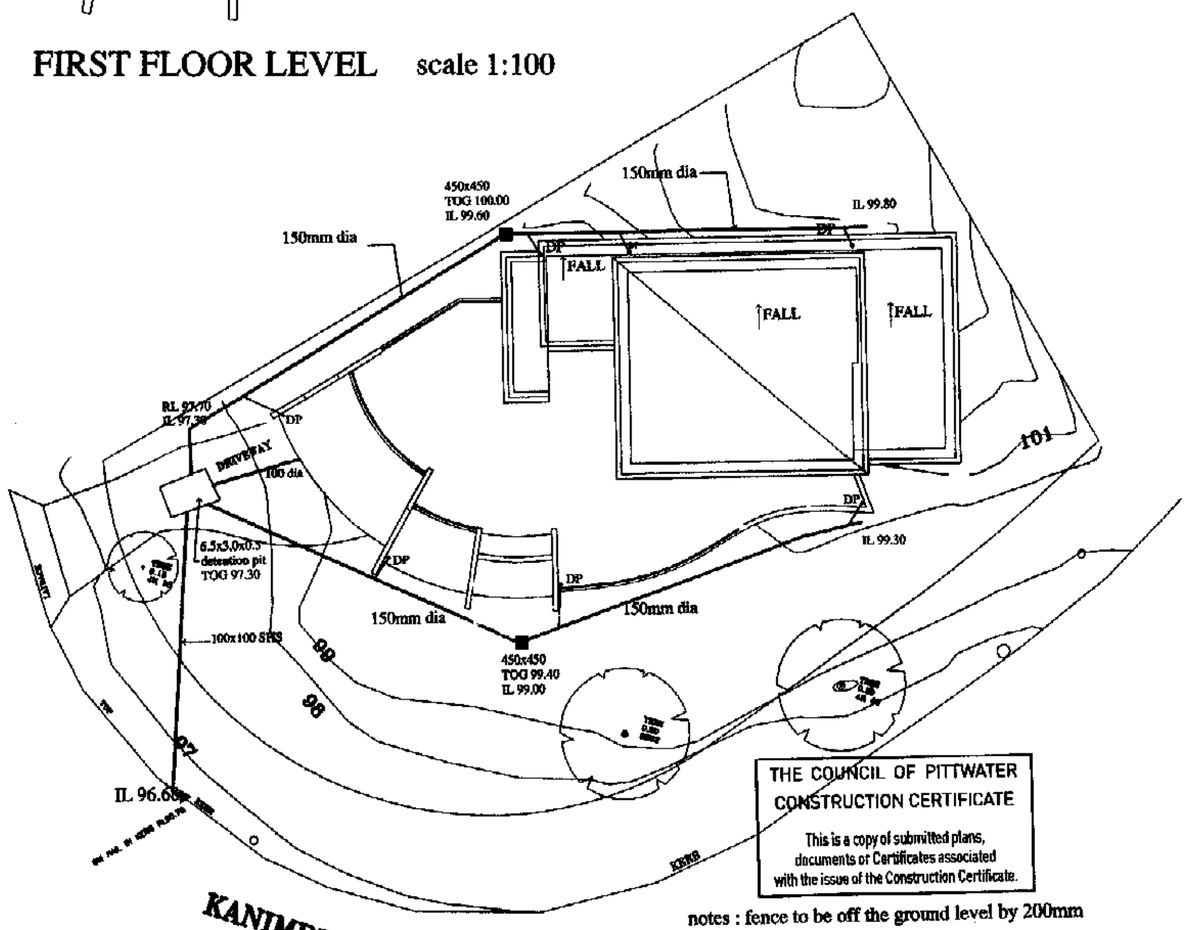


FIRST FLOOR LEVEL scale 1:100



DRAINAGE LAYOUT

scale 1:100 - basement level

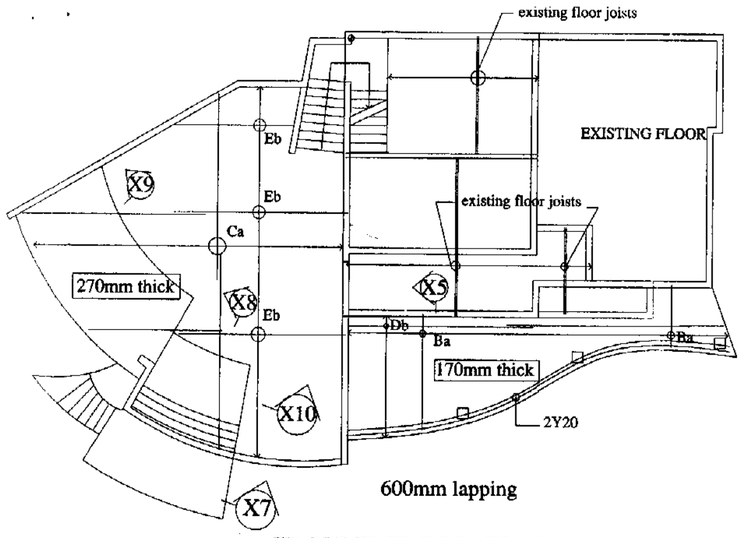


notes : fence to be off the ground level by 200mm

STORMWATER DRAINAGE

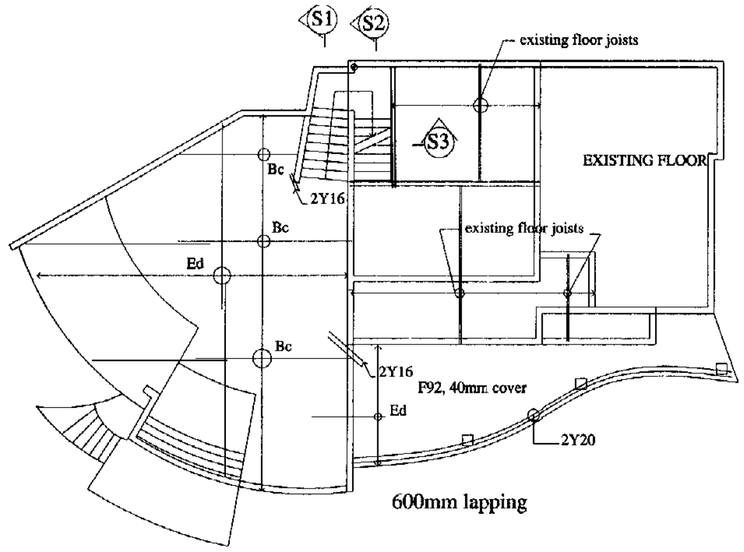
(scale 1:100) - ground level

MCRAE Pty Ltd - CIVIL & STRUCTURAL ACN 089023852 Phone & Fax : (02)97597836		E-mail: mcraeeng@optusnet.com.au PO box 117 - BELFIELD - NSW 2191
	EXTENSION AT 22 KANIMBLA Cres - AVALON	DATE : 08/05/2003
	DRAINAGE DESIGNS AND SPECIFICATIONS	JOB NUMBER : 171-02
AMENDMENTS	CERTIFIED : (BEng. ep Eng)	DRAWING : MC122 1 of 2



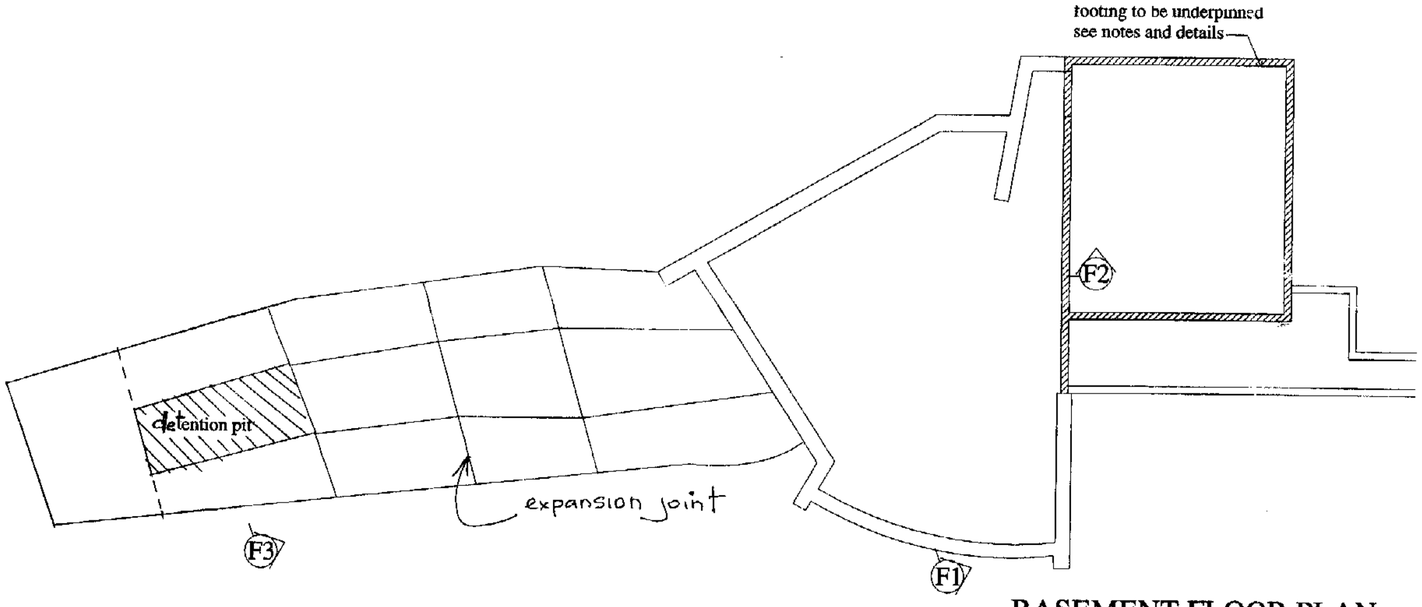
600mm lapping

GROUND FLOOR PLAN
scale 1:100 - bottom reinforcement



600mm lapping

GROUND FLOOR PLAN



BASEMENT FLOOR PLAN
scale 1:100

Notes

General

G1 These drawing shall be read in conjunction with all architectural and other drawings, specifications and with other written instructions as may be issued during the course of the construction. All discrepancies shall be referred to the Architect for decision before proceeding with the work.
G2 Dimension shall not be obtained by scaling structural drawings
G3 All levels and setting out dimensions shall be verified by the Builder.
G4 During construction, structure shall be maintained in a stable condition and no parts shall be overstressed. Masonry walls shall be adequately braced against wind forces.
G5 The structural elements shown on these drawings have been designed for live loads in accordance with current SAA loading codes, unless noted otherwise.
G6 Construction of brick wall shall be articulated in accordance with recommendation in " Articulated Walling " published by Australian Concrete and Cement Association

FOUNDATIONS

F1 Footings have been designed for an allowable bearing capacity of 150 KPa. Foundation material shall be approved for this pressure before placing concrete.
F2 All grass or inorganic materials shall be removed prior to the placement of concrete.
F3 Trenches shall be clean, level and dewatered prior to the placement of the reinforcements.
F4 Rolled fill consists of sand repeated rolling by an excavator. Sand shall not exceed 600mm in compacted depth and compacted in layers not more than 300mm

CONCRETE

C1 All workmanship and materials shall be in accordance SAA Concrete Structures Code current edition with amendments, except where varied by the contract
C2 Sizes of concrete elements do not include thickness of applied finishes.
C3 Construction joints where not shown shall be located with the approval of the Engineer.All construction joints shall be scabbled over the whole face and any unsound material removed.
C4 No holes or chases other than those shown in the drawings shall be made in concrete members without prior approval of the Engineer. Reinforcements shall not be cut at holes but shall be displaced
C5 All concrete shall be machanically vibrated and vibrator shall not be used to spread the concrete.
C6 Formwork to suspended slabs or beams shall remain in place for a full 28 days. If there is less than 28 days between placements of concrete for successive slabs / beams, props shall be in place two slabs or beams carry the load
C7 All reinforcements shall be firmly supported on plastic chairs generally not greater than 750mm centres both way. Bars shall be tied at alternate intersections
C8 Where transverse tie-bars are not shown, provide Y12 @ 300 splice 500mm where necessary
C9 Splices in reinforcements shall be made in the positions shown and shall be :
+ 500mm for fabrics unless noted otherwise
+ 40 bar diameter unless noted otherwise
C10 Clear concrete cover to reinforcement shall be as followed unless noted otherwise:

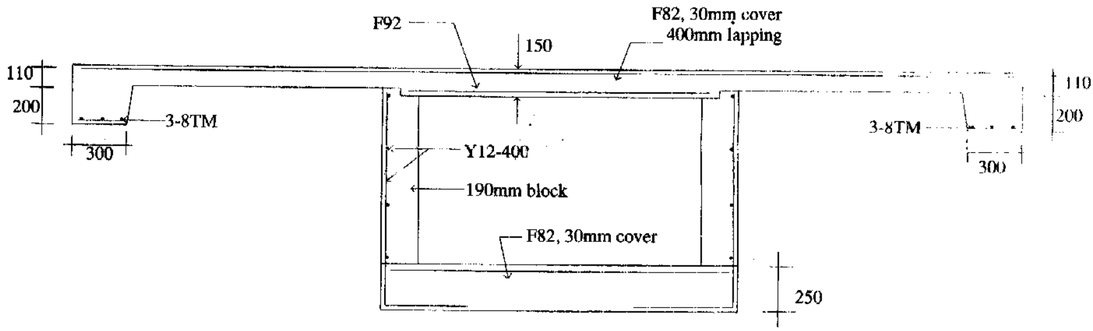
	sheltered location	exposed to ground or weather
Column & pedestal	40mm	50mm
beams	30mm	40mm
footings		40mm
slabs	20mm	30mm
walls	20mm	30mm

Structural Steel

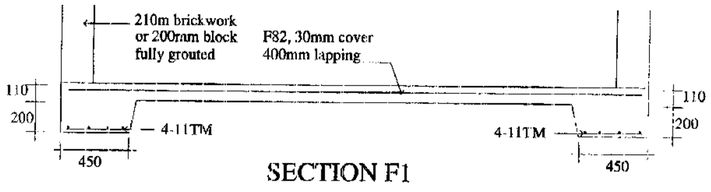
S1 All workmanship and materials shall be in accordance with AS4100 current edition with amendments, except where varried by contract documents
S2 Weld shall be 6mm continuous fillet, all bolts M12, all gusset plates 6mm thick unless noted otherwise
S3 Concrete encased steelwork shall be wrapped with 4mm wire at 100mm cnt and shall have a minimum 50mm cover of concrete unless noted otherwise

BRICKWORK

B1 All load-bearing brickwork shall be constructed in accordance with current AS Brickwork Code
B2 Minimum compressive strength of brick shall be 20MPa
B3 Mortar to brickwork shall be strickly in accordance with appropriate AS or with Manufacturers recommendations; however the strength shall be as followed:
a) 11MPa for retaining wall and all brickwork below ground
b) 4MPa for other load-bearing brickwork.
B4 Where brickwork supports concrete slab, top course shall be laid frog down and covered with Malthoid or Galvanised iron strips
B5 Where walls are not load-bearing, they shall be separated from the concrete cover by 20mm thick Caneite or expanded Polystyrene
B6 All steel lintel shall be hot-dip galvanised with 150mm minimum bearing at each end



SECTION F3



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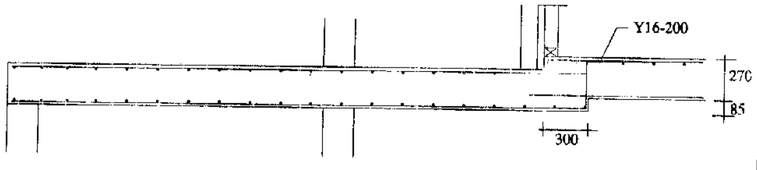

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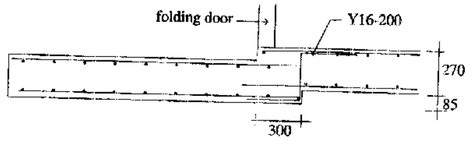

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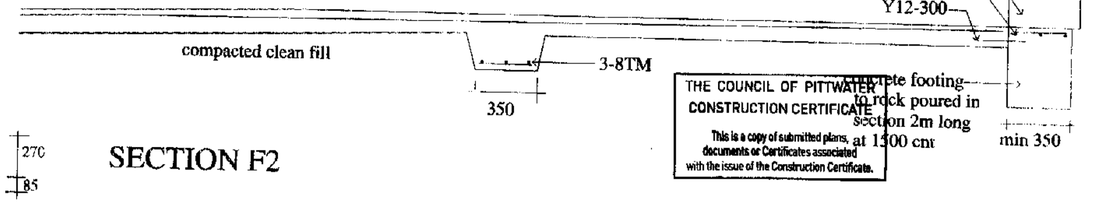

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CONSTRUCTION CERTIFICATE
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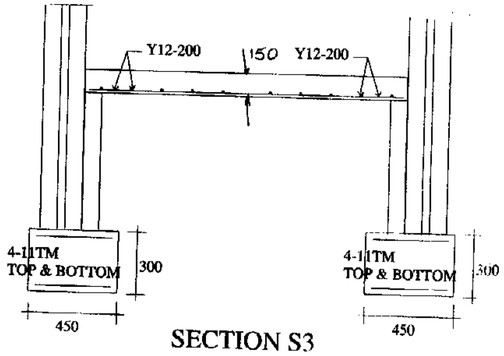
SECTION F2



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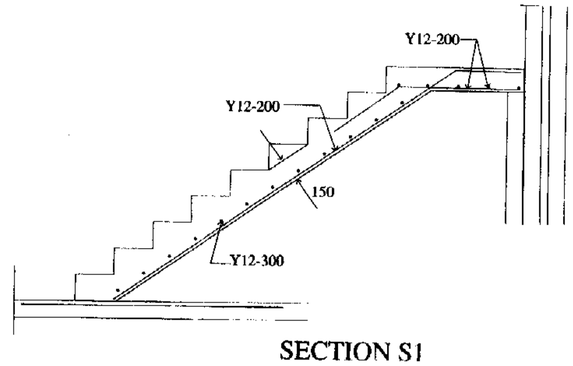

SECTION S1

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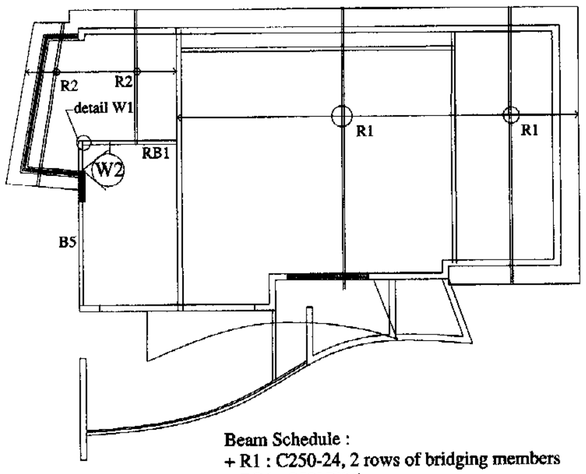
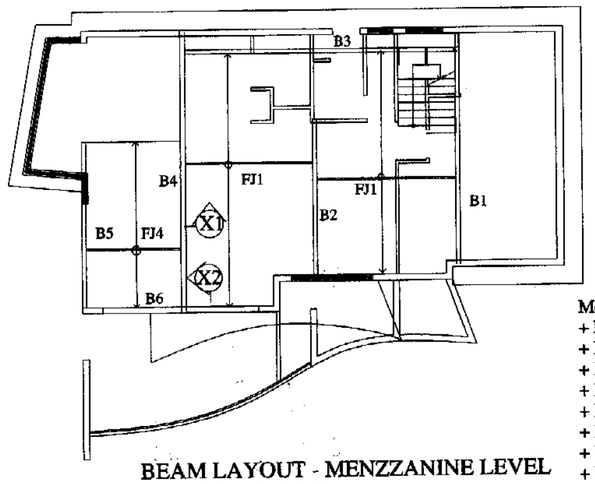
	EXTENSION AT 22 KANIMBLA Cres - AVALON	DATE : 08/05/2003
	STRUCTURAL DESIGNS & SPECIFICATIONS	JOB NUMBER :171-02
AMENDMENTS	CERTIFIED (BEng. CPEng)	DRAWING MC122 1 of 2



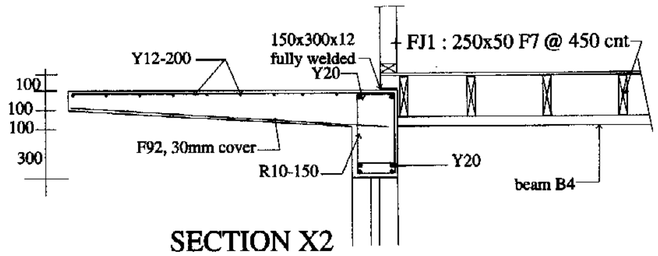
Beam Schedule :
+ R1 : C250-24, 2 rows of bridging members
+ RB1 : 250UB26
+ R2 : C150-19
+ R1, R2 spaced at 1200 cnr

ROOF BEAM LAYOUT scale 1:100



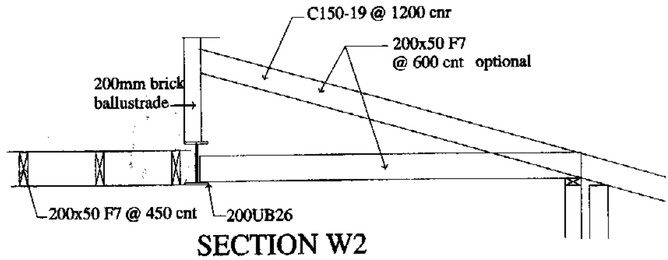
BEAM LAYOUT - MENZZANINE LEVEL
scale 1:100

Member schedule :
+ FJ1 : 250x50 F7 @ 450 c
+ FJ4 : 200x50 F7 @ 450 c
+ B1 : 2/300x63 Hyspan
+ B2 : 250UB25
+ B3 : 2/250x50 F7
+ B4 : 310UC97
+ B5 : 250UB25
+ B6 : see section X2



SECTION X2

+ soil classification : class H
+ concrete for first floor slab and beam : N32
+ concrete shall be of grade N25 and cured in accordance with AS3600 " Concrete Structures "
+ concrete shall be placed over compacted fill, waterproof membrane and 50mm sandbed
+ all internal walls in the first floor are non load-bearing, roof truss construction is recommended and fabricated by Truss Supplier. Wind velocity is 42m/sec



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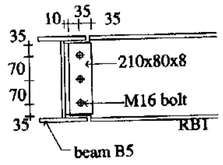
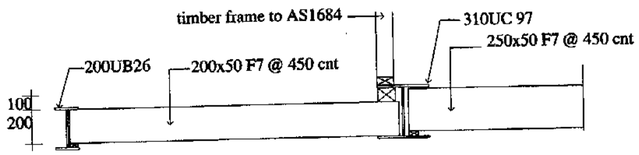
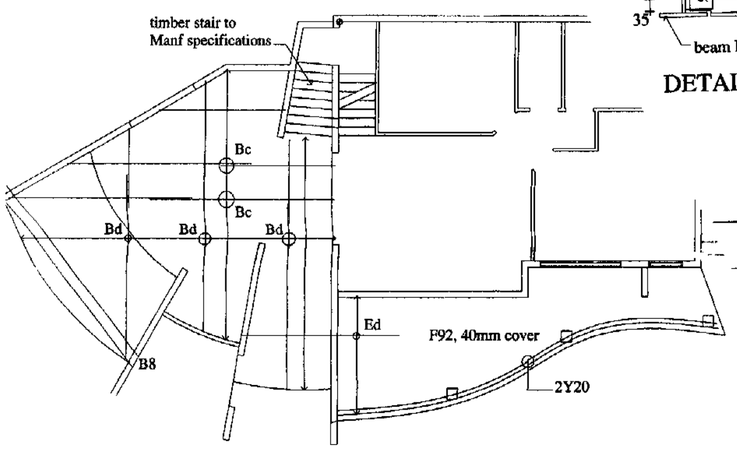


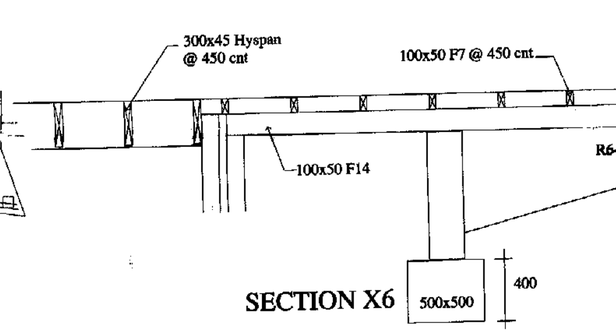
DETAIL W1



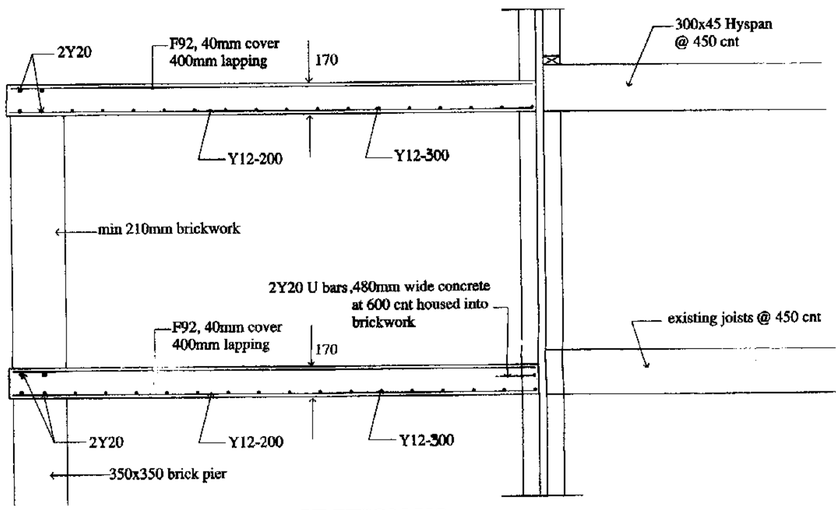
SECTION X1



FIRST FLOOR BEAM LAYOUT - Top Reinforcement
scale 1:100 - 170mm slab



SECTION X6



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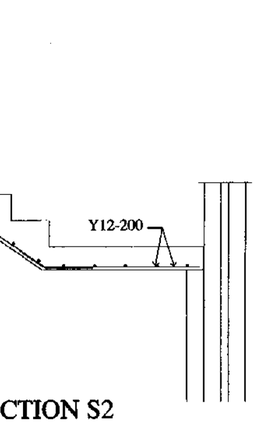
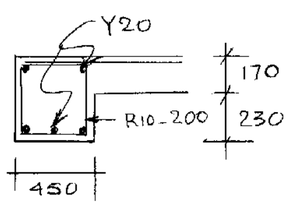
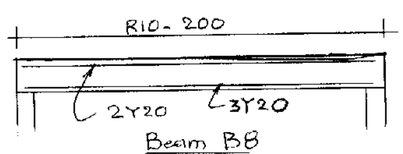


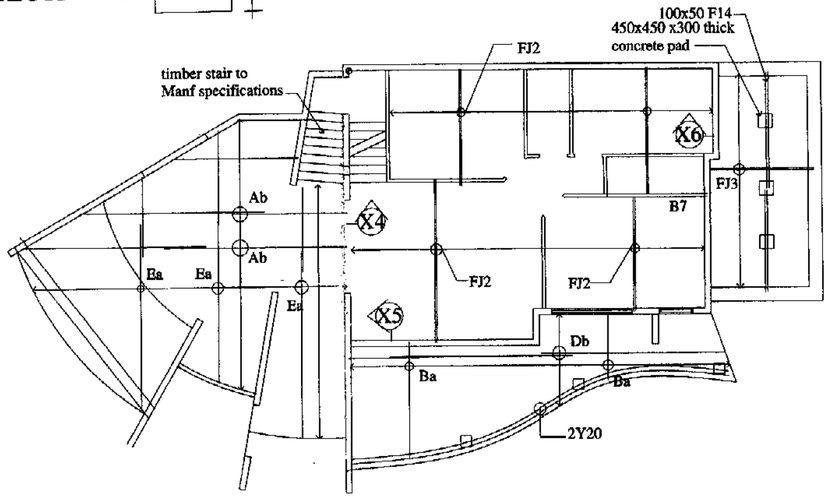


Beam B8

SECTION S2



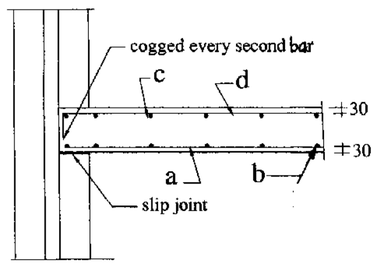
Beam B8



FIRST FLOOR BEAM LAYOUT - Bottom reinforcements

A	Y12-150
B	Y12-200
C	Y16-150
D	Y12-300
E	Y16-200

REINFORCEMENT SCHEDULE



BAR POSITIONING

THE COUNCIL OF PITTWATER
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Special Notes
1) Backfill shall be of residual soil with stones, fine silty sand and granular material
2) Weepholes shall be provided at every 1000mm centres with crushed stones around the intake end of each hole
3) continuous agricultural drain shall be located at the base of the wall. The outlet shall be connected at lowest point along the wall , then directed towards the water pit. The outlet pipe shall be sleeved when penetrating through the wall
4) control joint shall be provided at every 5m interval along the retaining wall. See detail shown in this drawing
5) Hollow blocks : grade 12 (AS 1500) core filling grout : 15 MPa, 10mm max aggregates, 230mm slump

MCRAE Pty Ltd - CIVIL & STRUCTURAL
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EXTENSION AT 22 KANIMBLA Cres - AVALON
STRUCTURAL DESIGNS & SPECIFICATIONS
DATE : 08/05/2003
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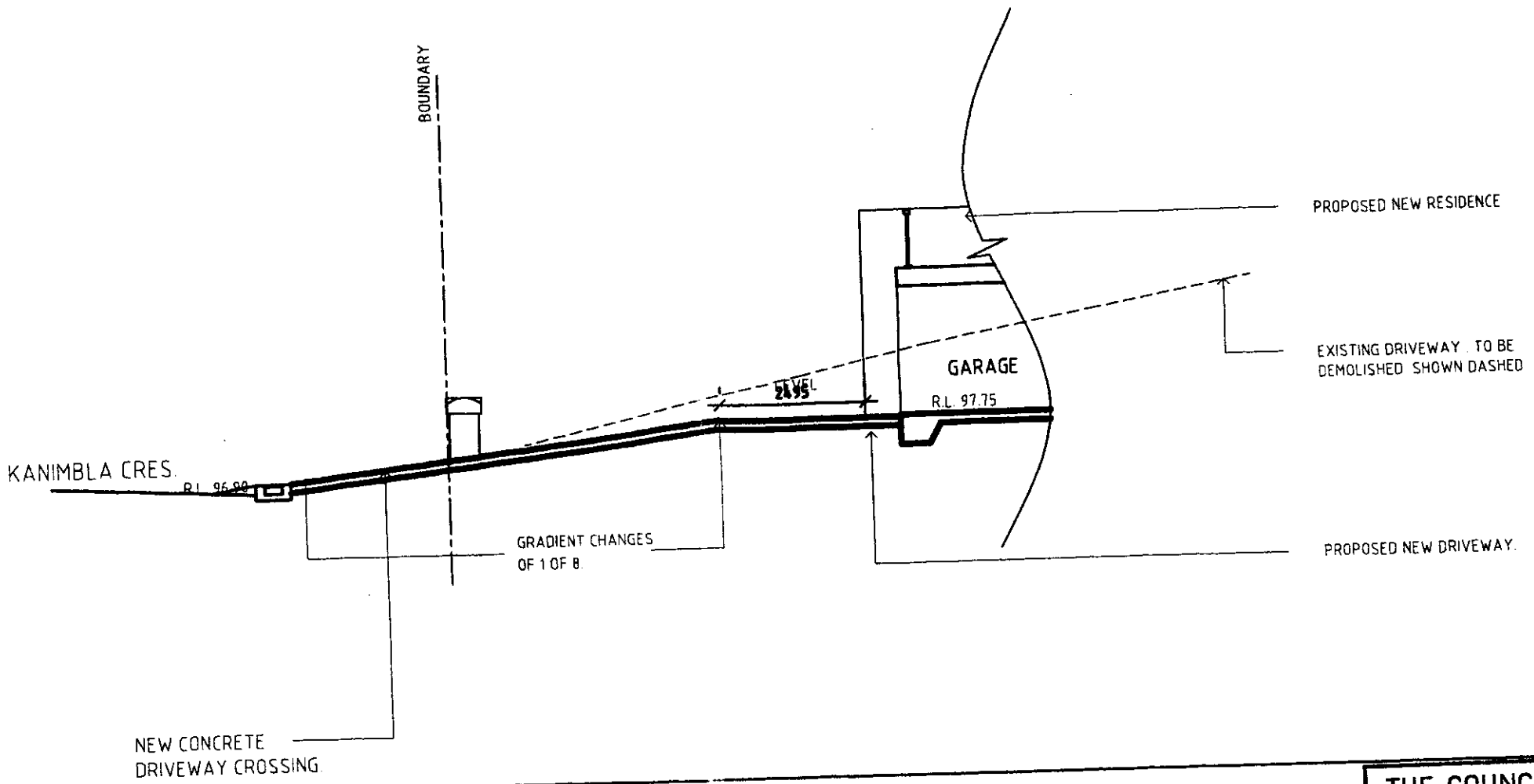
AMENDMENTS
CERTIFIED : Daulin (BEng - CPEng)
DRAWING : MC122 2 of 2



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Driveway Section

1:100

revision:			
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs l. & g. horvath

drawing: **driveway section**

reference: A5001 **issue:** e
date: Oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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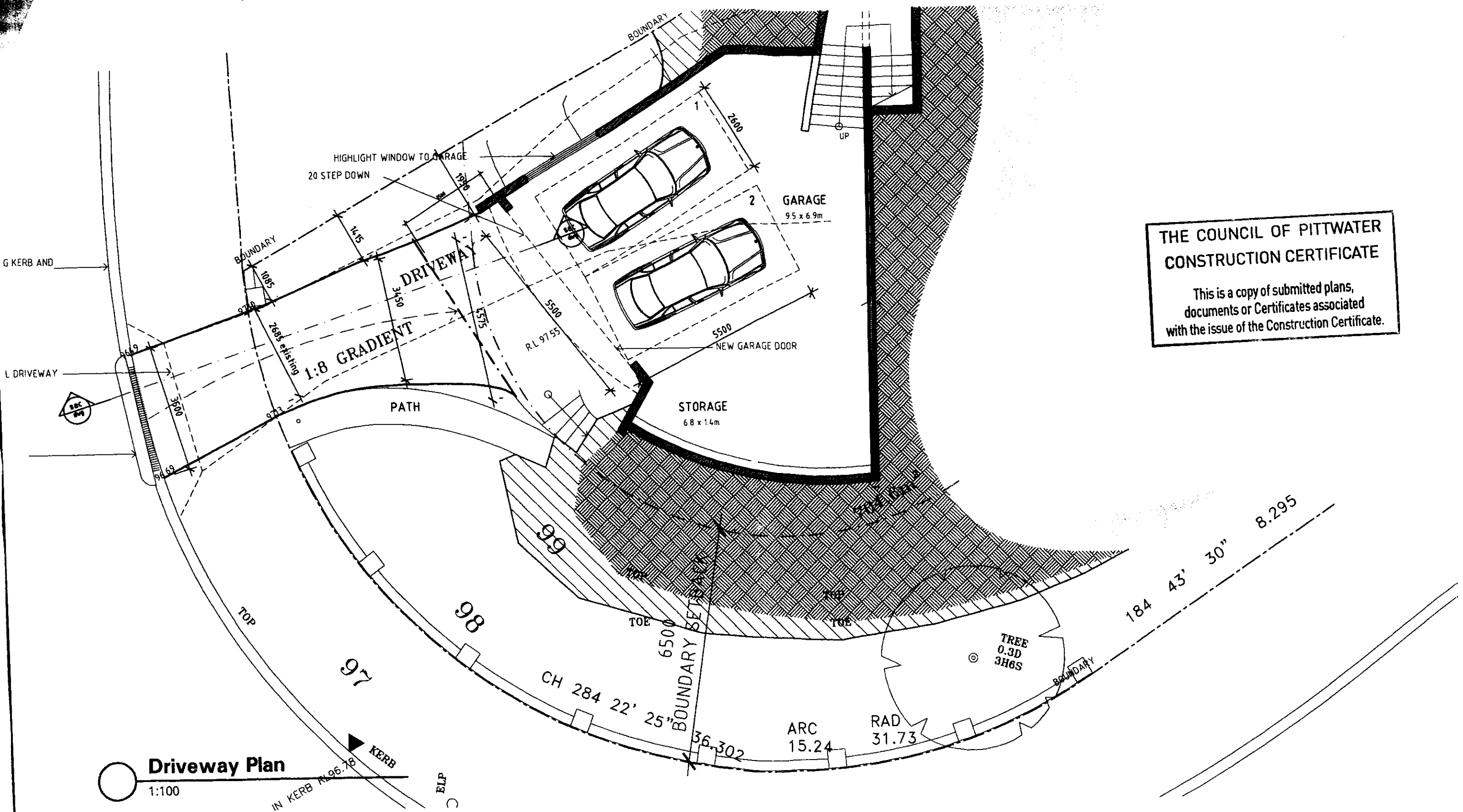

Driveway Plan

1:100

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE

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revision:			
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs l. & g. horvath

drawing: **driveway section**

reference: A5002 | **issue:** e

date: Oct 02 | **scale:** 1:100 @ a3

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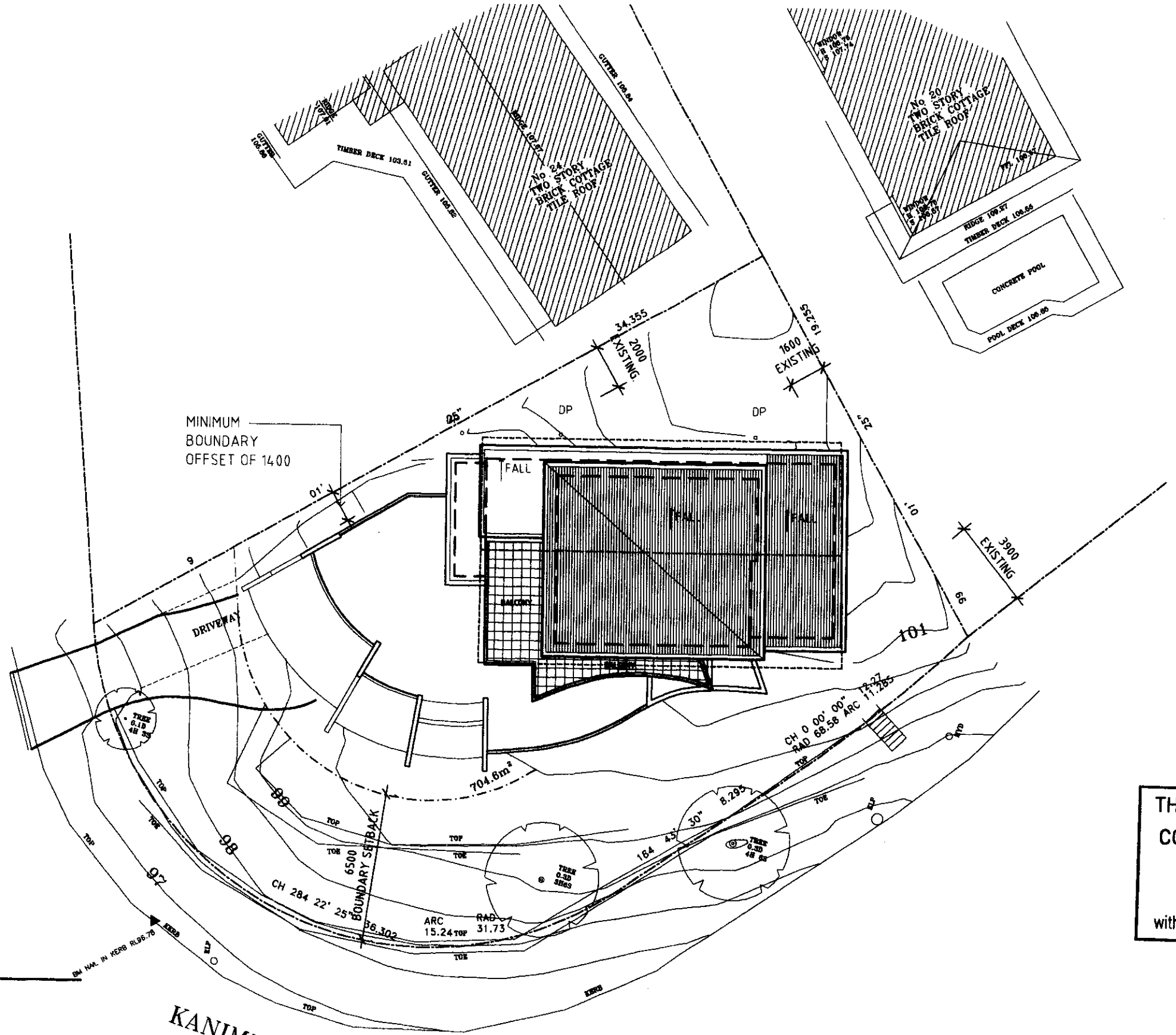

Site Plan
1:200

KANIMBLA CRESCENT

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revision:			
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	19.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: site plan

reference: A1002
issue: e
date: Oct 02
scale: 1:200 @ a3

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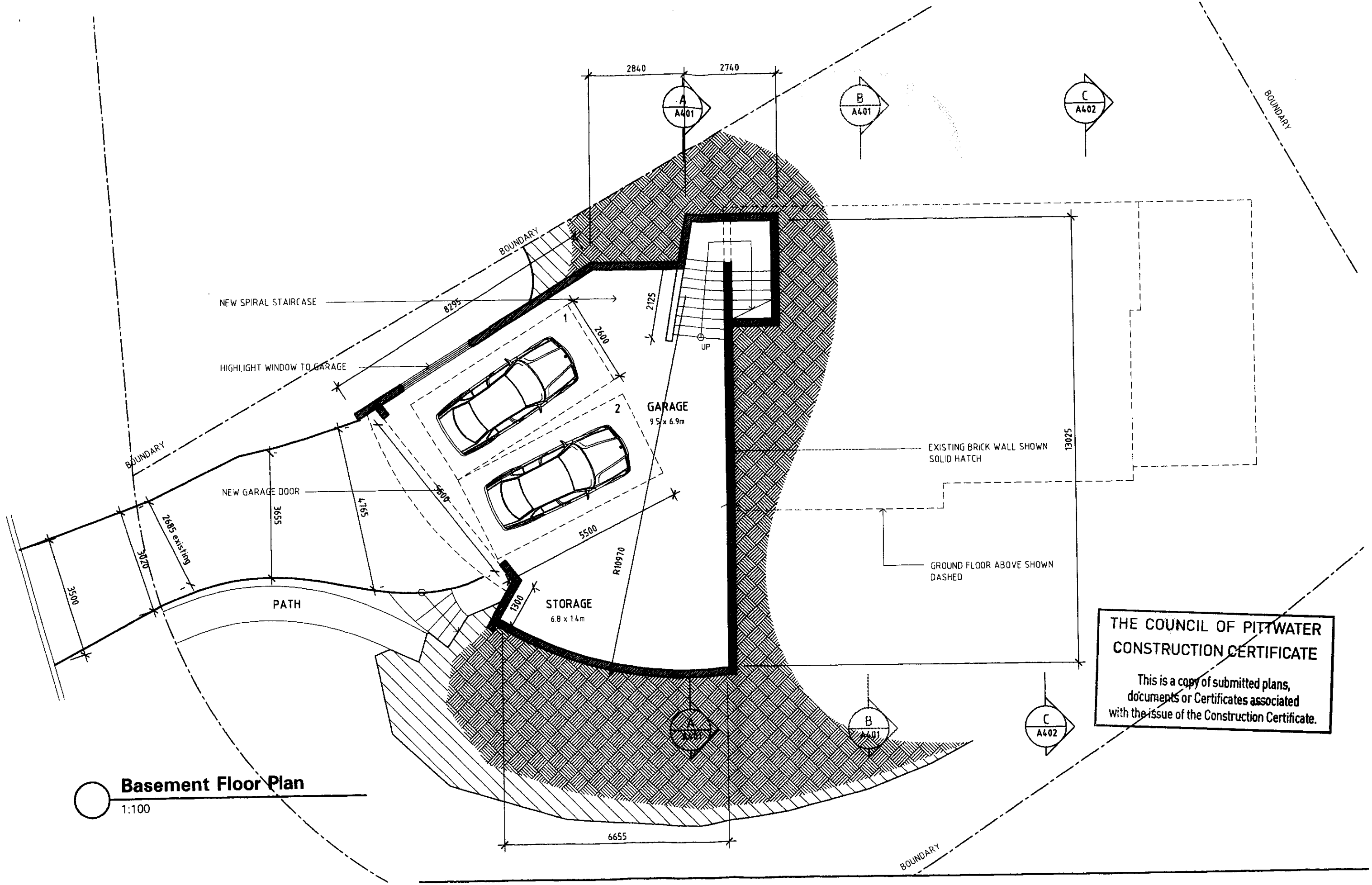

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Basement Floor Plan

1:100

revision:		
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: basement floor plan

reference: A2001 **issue:** e

date: Oct 02 **scale:** 1:100 @ a3

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INDICATED WITH SOLID HATCHING.

NEW WINDOW. DEMOLISH EXISTING DOOR.

EXIST. WINDOW TO REMAIN.

OUTLINE OF FIRST FLOOR ABOVE SHOWN DASHED

NEW WALLS INDICATED HATCHED.

NEW WINDOWS

BALCONY ABOVE, SHOWN DASHED

RENDERED CONCRETE COLUMN FIN TO FUTURE DETAILS.

NEW TILED PATIO

NEW BI-FOLDING GLASS DOORS TO RUMPUS ROOM.

NEW BI-FOLDING GLASS DOORS TO LOUNGE ROOM

NEW ENTRY DOORS.

NEW CONC. ENTRY STEPS

BOUNDARY

BEDROOM 2
4.4 x 3.5m

WC
1.1 x 1.8m

BATHROOM
4.6 x 2.8m

CUPB

LOUNGE
6.3 x 6.1m

OFFICE
5.2 x 4.9m

RUMPUS
8.3 x 7.3m

BALCONY

ENTRY
2.3 x 3.0m

DESK

PATIO

PATH

STAIRS

ENTRY

DP

UP

A A401

B A401

C A402

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Ground Floor Plan
1:100

revision:			
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: ground floor plan

reference: A2002
issue: e
date: Oct 02
scale: 1:100 @ a3

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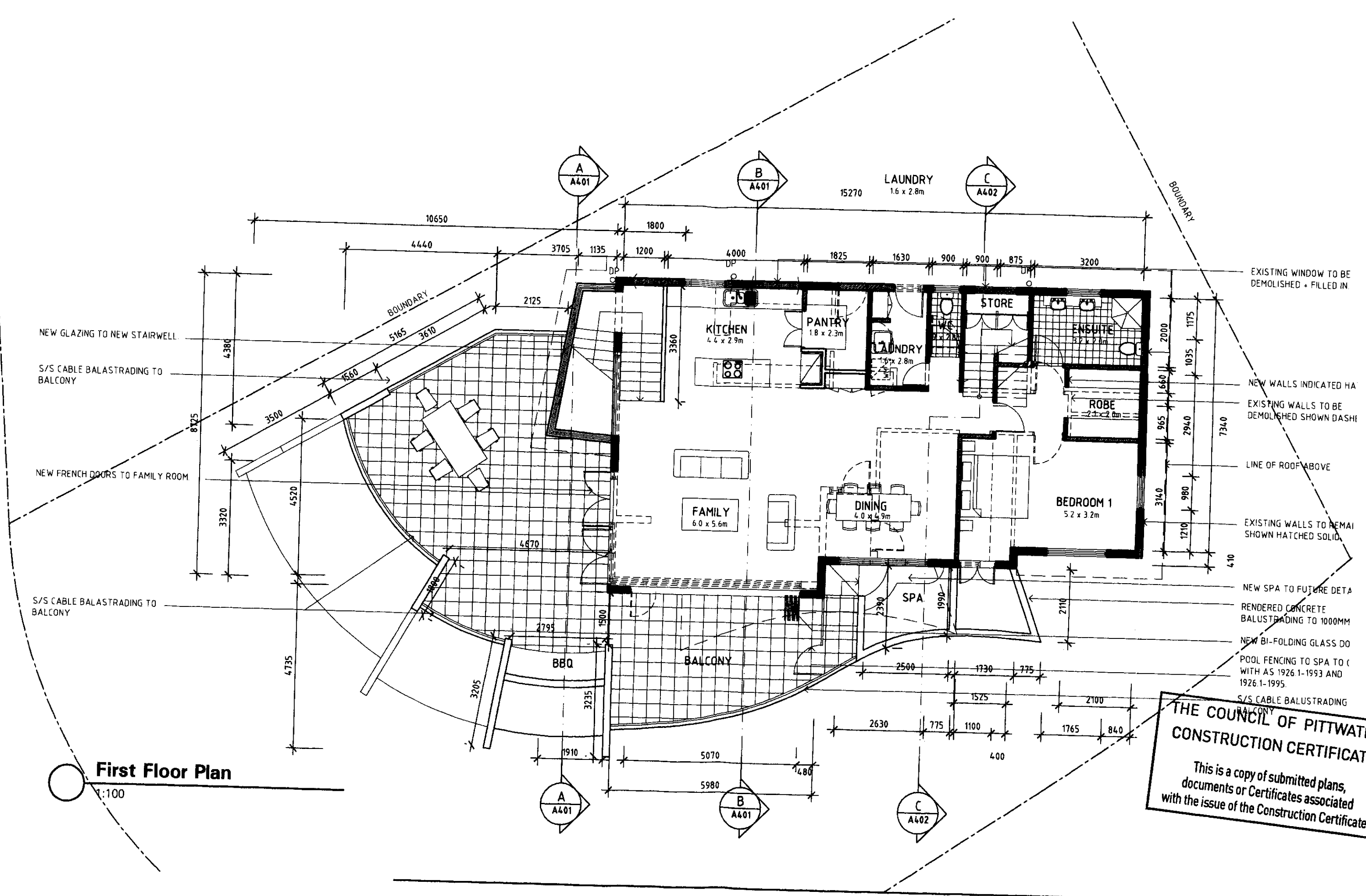

First Floor Plan

1:100

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revision:		
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: first floor plan

reference: A2003
issue: e
date: Oct 02
scale: 1:100 @ a3

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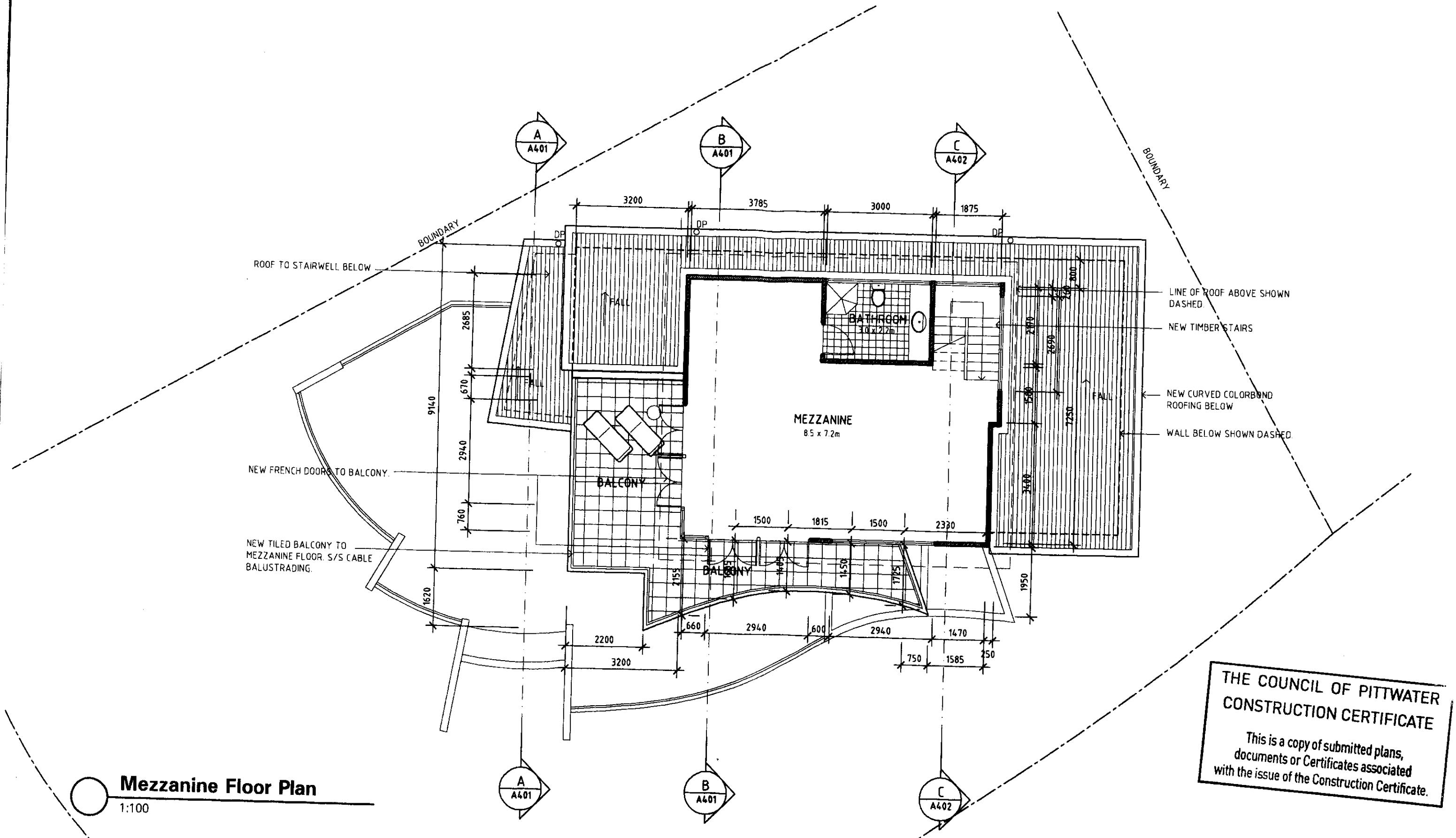

Mezzanine Floor Plan

1:100

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revision:			
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs l. & g. horvath

drawing: **mezzanine floor plan**

reference: A2004 **issue:** e

date: Oct 02 **scale:** 1:100 @ a3

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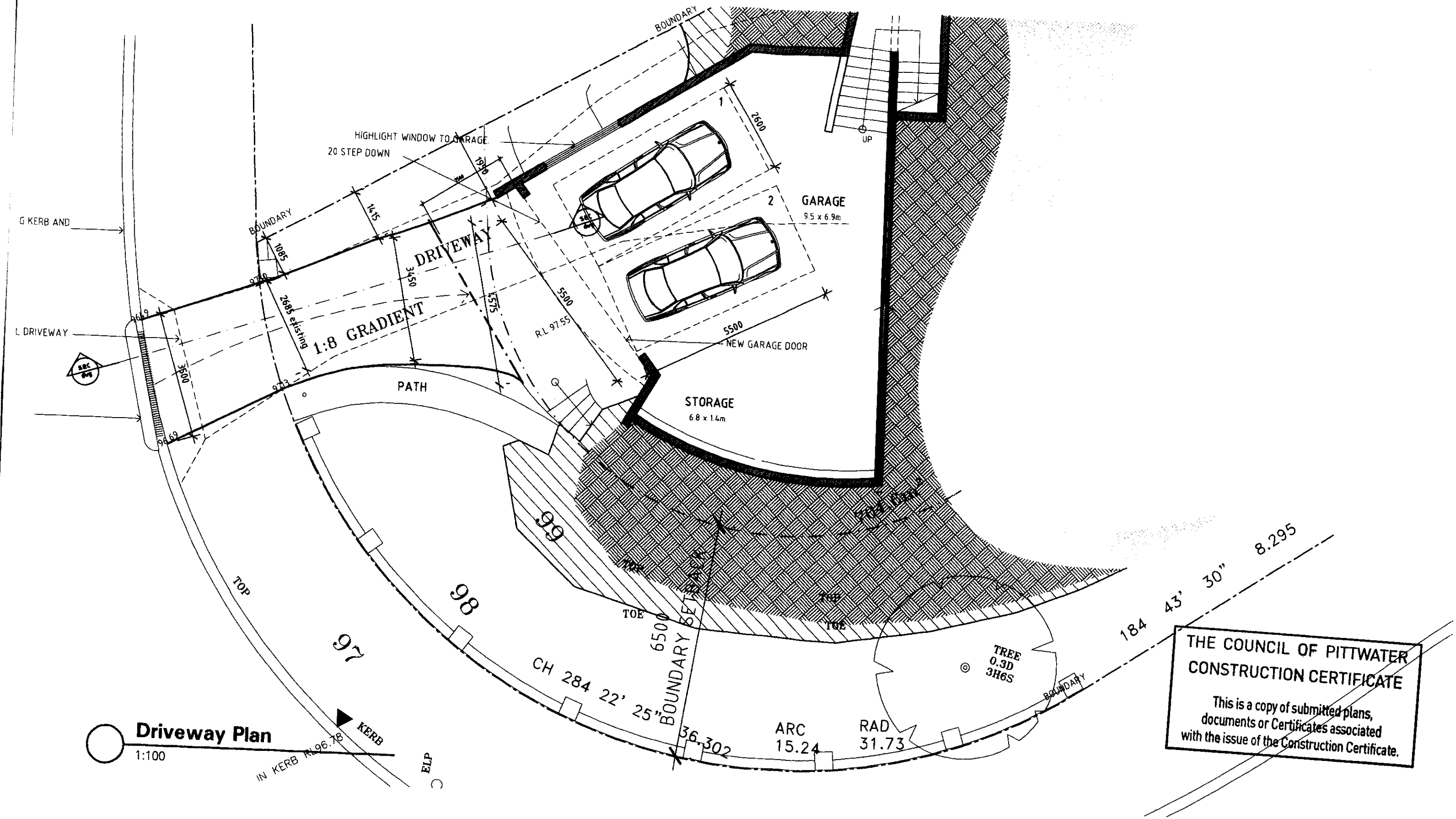

Driveway Plan
1:100

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revision:		
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

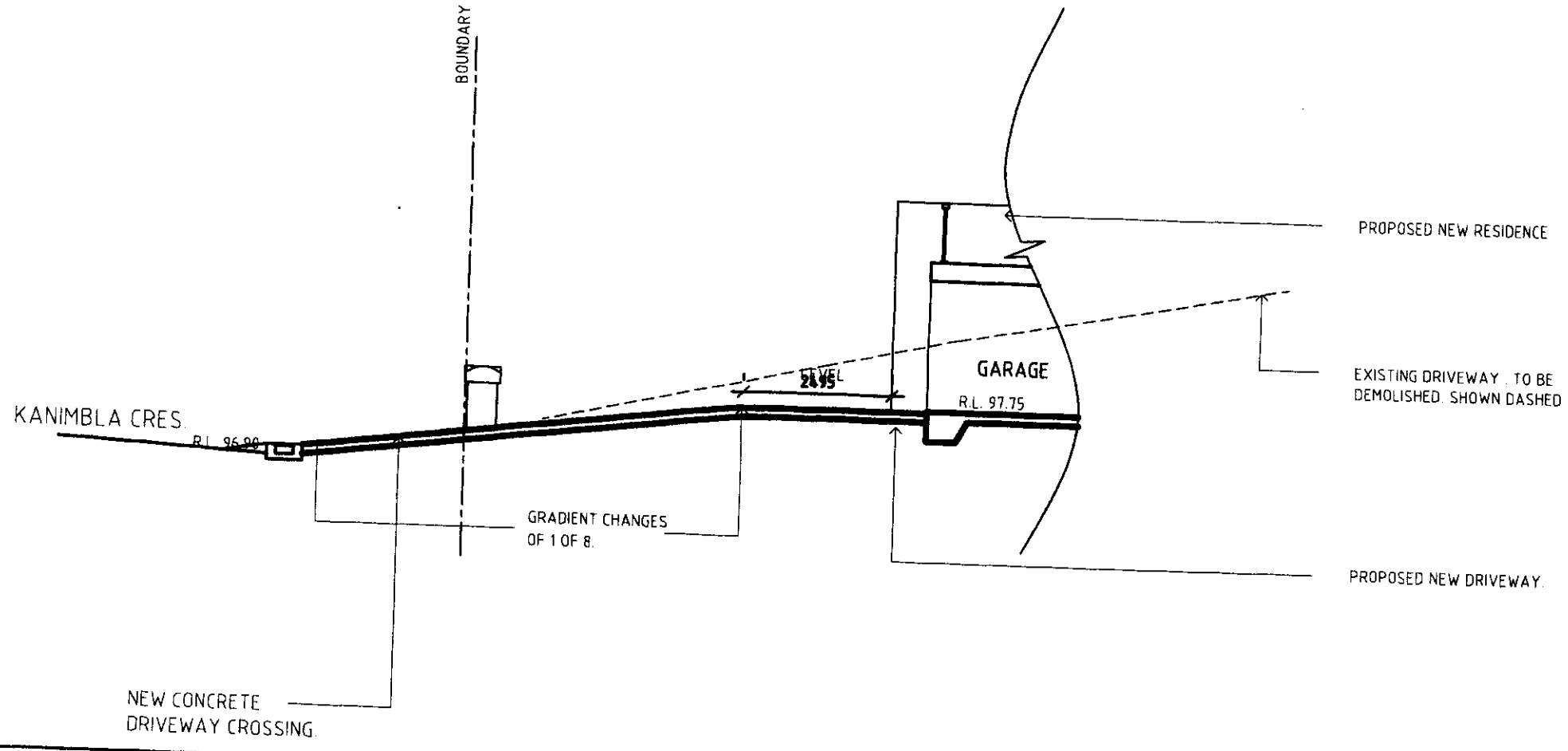
project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: **driveway section**

reference: A5002 **issue:** e
date: Oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au
rfa
robert ferguson



Driveway Section

1:100

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revision:

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b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: **driveway section**

reference: A5001 **issue:** e

date: Oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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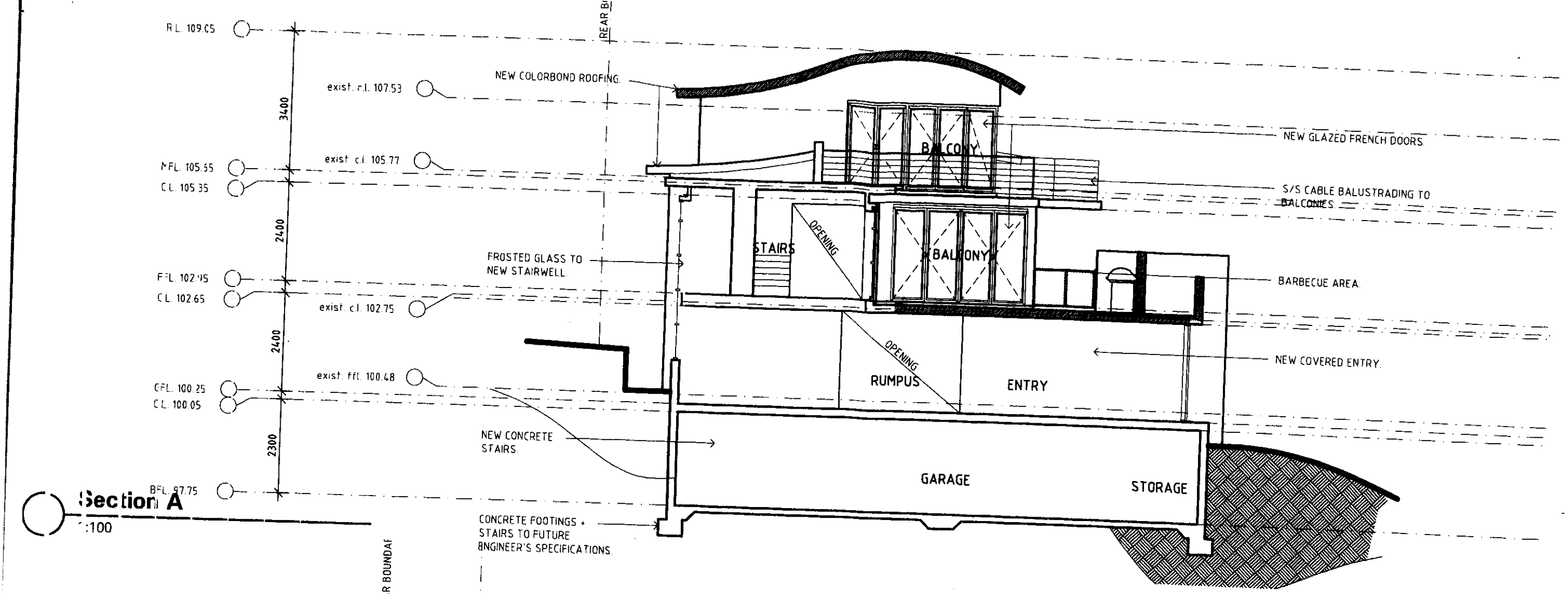
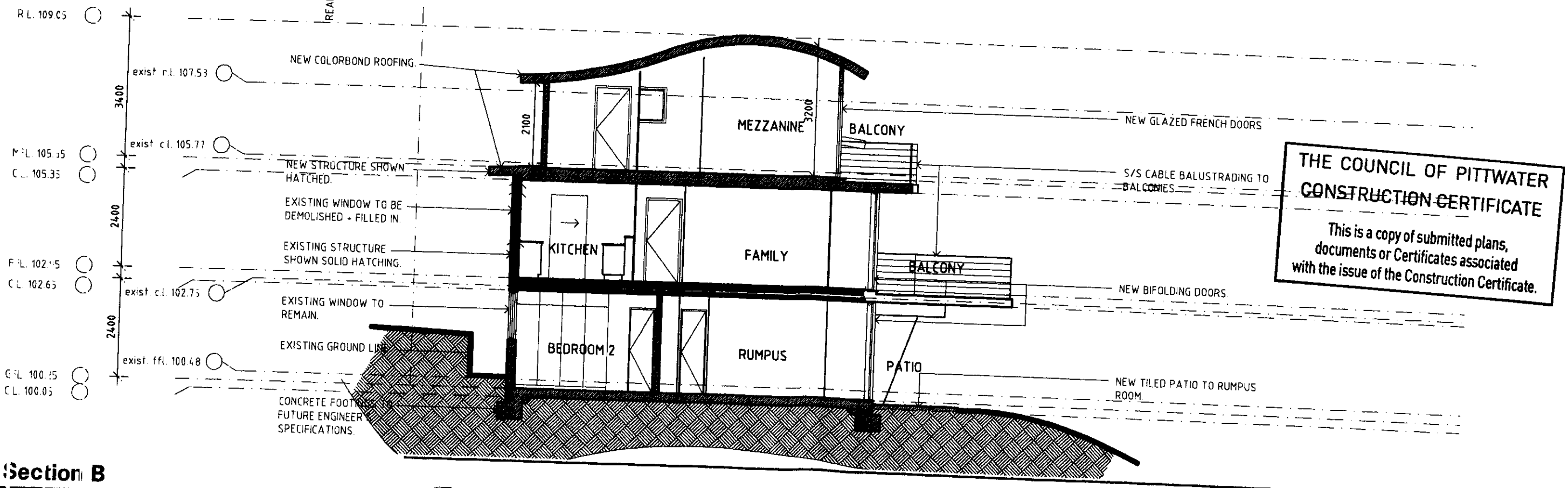
robert ferguson



Section A
1:100



Section B
1:100

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revision:			
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b	11.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs l. & g. horvath

drawing: **sectio A+B**

reference: A4001
date: oct 02
issue: e
scale: 1:100 @ a3

T 02 9953 1300 F 02 9953 1018 · E admin@rfarchitects.com.au
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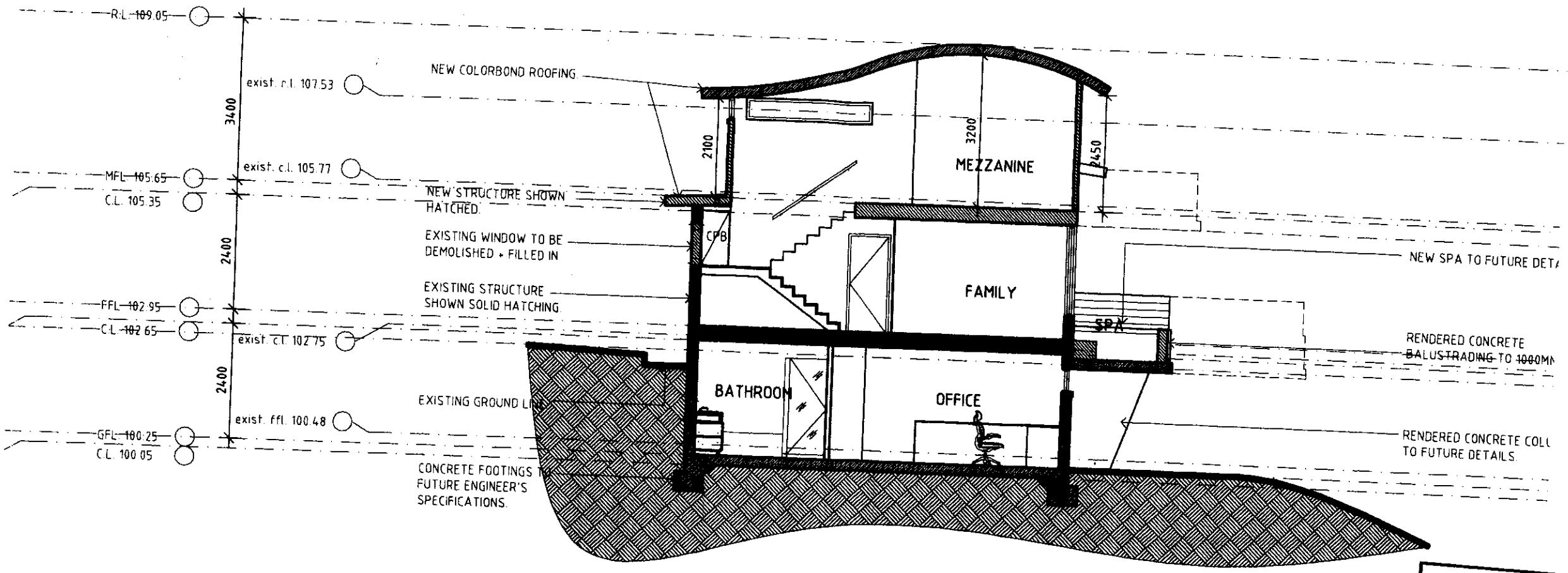

Section C
1:100

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revision:

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c	10.03.2003	DA revision
b	11.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs l. & g. horvath

drawing: section C

reference: A4002 **issue:** e

date: oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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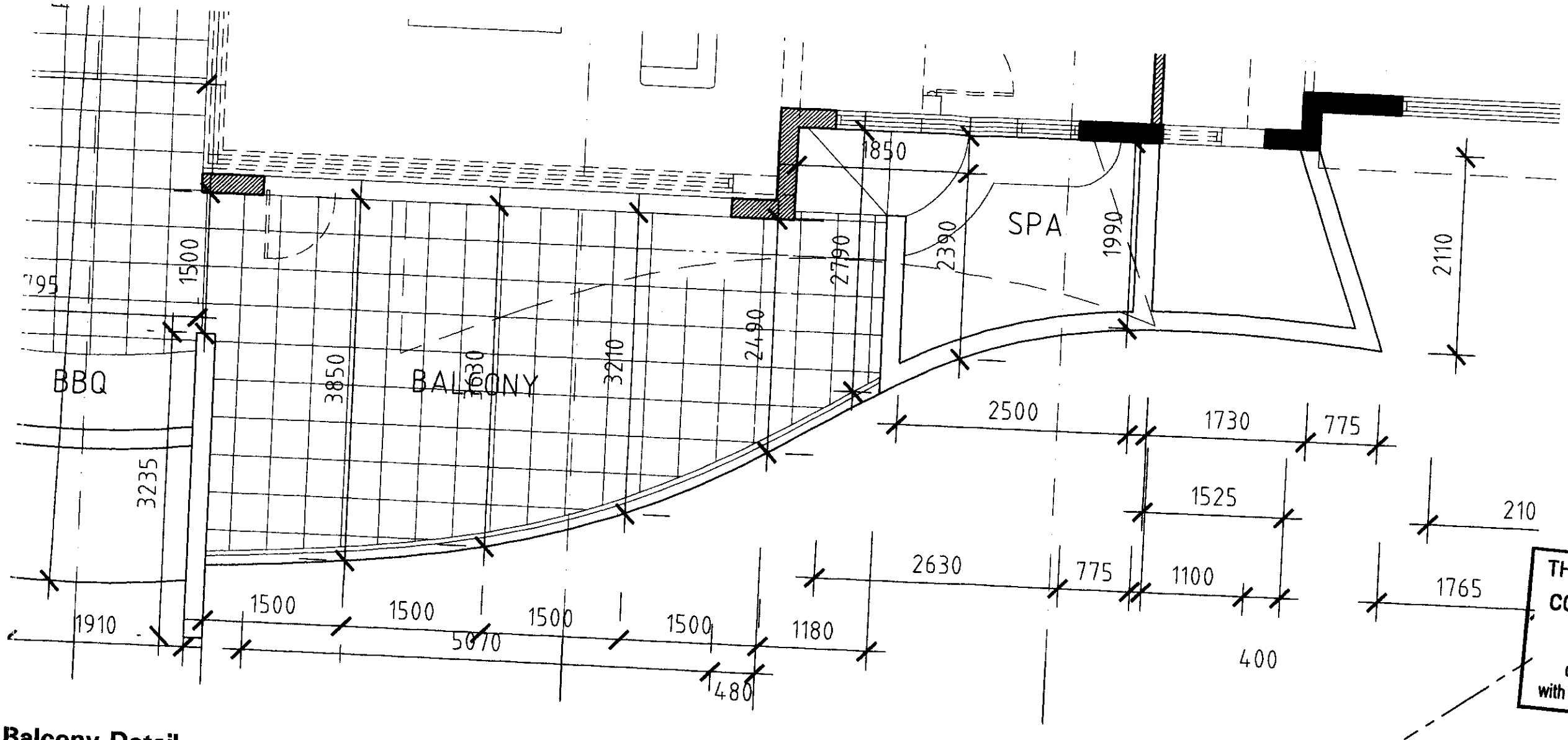

Balcony Detail
1:50

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revision:			
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b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

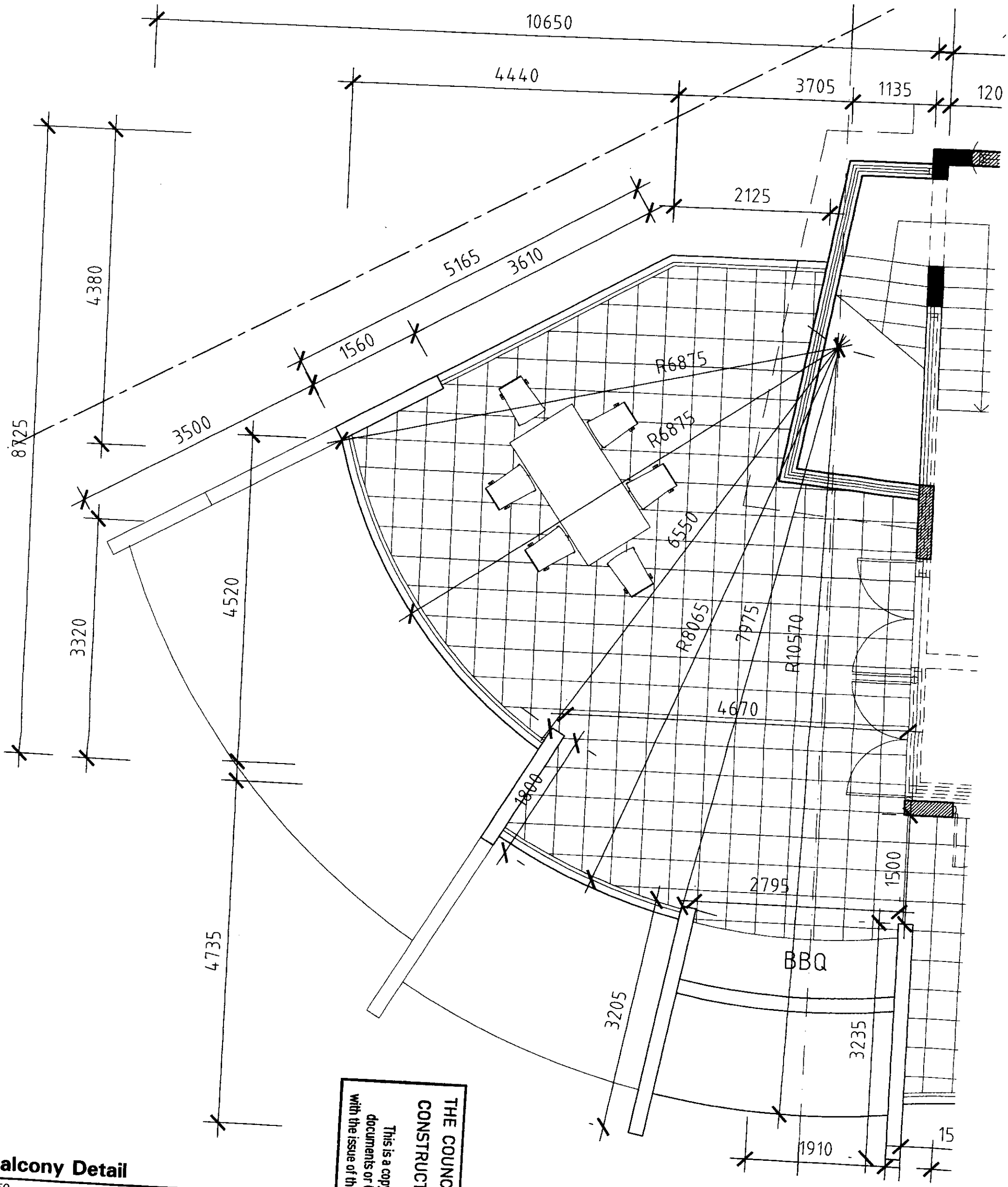
client: mr & mrs I. & g. horvath

drawing: **first floor plan**

reference: A2003
date: Oct 02
issue: e
scale: 1:50 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

rfa
robert ferguson architects



Balcony Detail

1:50

THE COUNCIL OF PITTWATER
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c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs I. & g. horvath

drawing: **first floor plan**

reference: A2004
issue: e
date: Oct 02
scale: 1:50 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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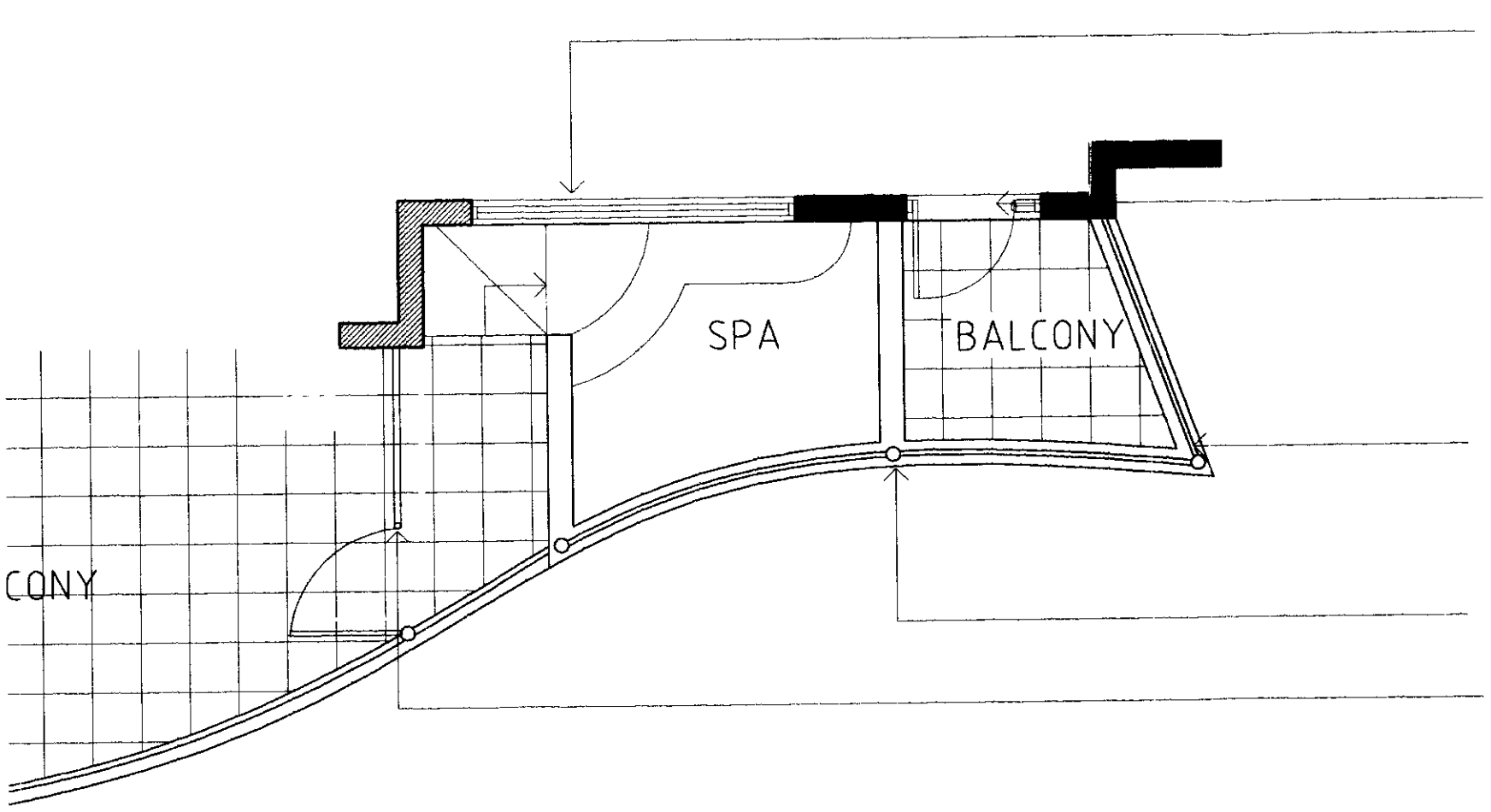
robert ferguson
architects



OPENABLE WINDOW , MAXIMUM OPENING 125MM

HINGED DOOR WITH HYDRAULIC CLOSER WITH APPROVED LATCHING MECHANISM AT 1200MM ABOVE FLOOR LEVEL.

S/S CABLE AND RENDERED CONCRETE BALUSTRADING TO 1000MM HIGH ABOVE BALCONY LEVEL

POSTS

GALSS BAUSTRADE AND GATE 1200MM HIGH TO SPA TO COMPLY WITH AS 1926.1-1993 AND 1926.1-1995.

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Spa Detail

1:50

revision:		
e	24.04.2003	cc issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	18.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
bilgola

client: mr & mrs l. & g. horvath

drawing: **Spa Detail**

reference: A2006 **issue:** e
date: Oct 02 **scale:** 1:50 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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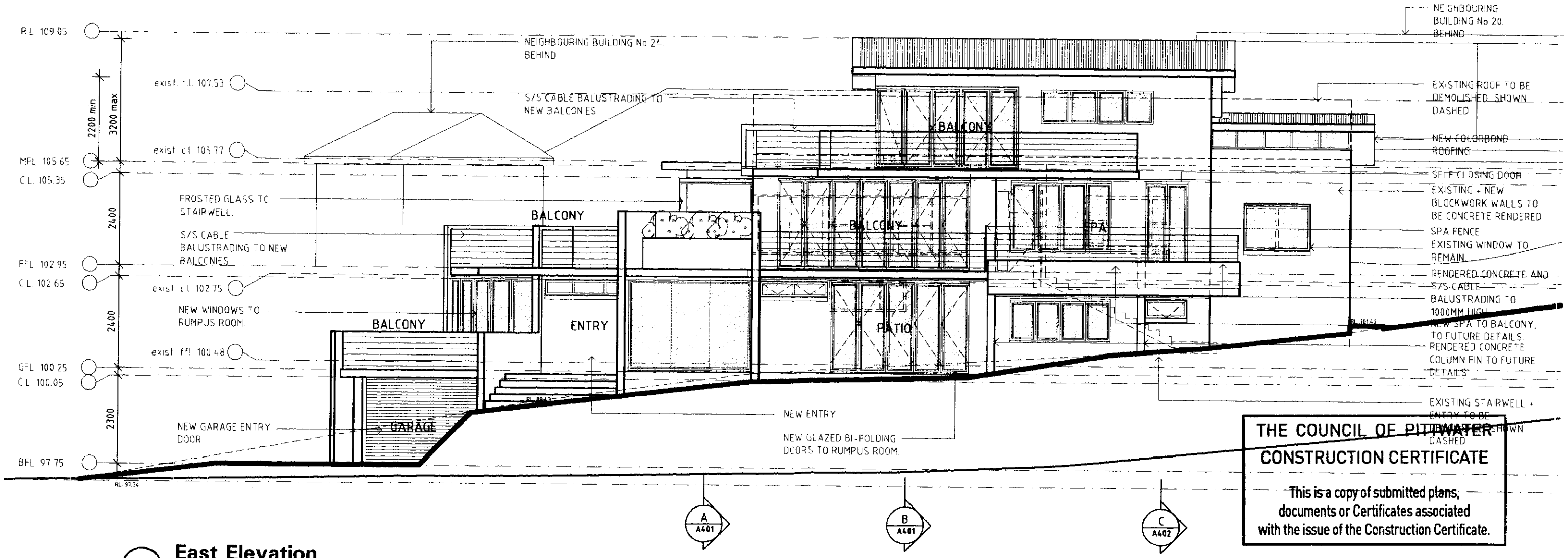

East Elevation

1:100

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revision:		
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c	10.03.2003	DA revision
b	11.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs l. & g. horvath

drawing: east elevation

reference: A3001 **issue:** e

date: oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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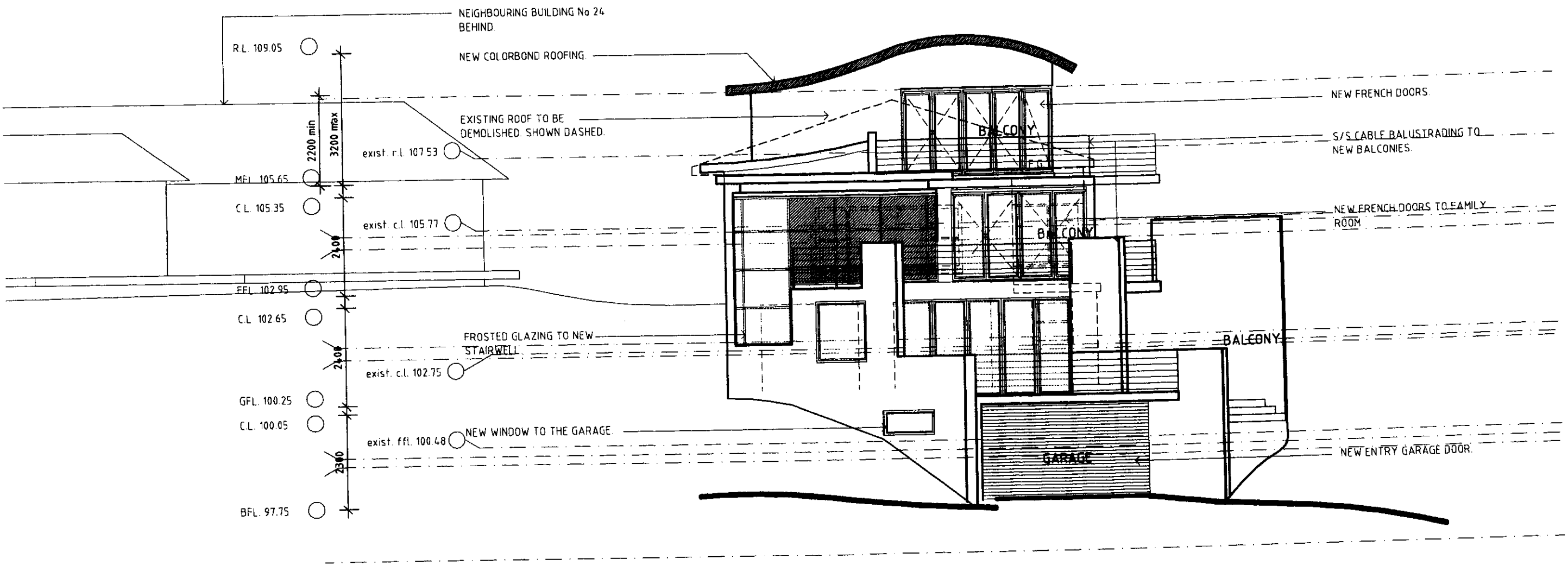

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE

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

South Elevation

1:100

revision:		
e	24.04.2003	CC issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	11.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs f. & g. horvath

drawing: **southern elevation**

reference: A3002 **issue:** e

date: oct 02 **scale:** 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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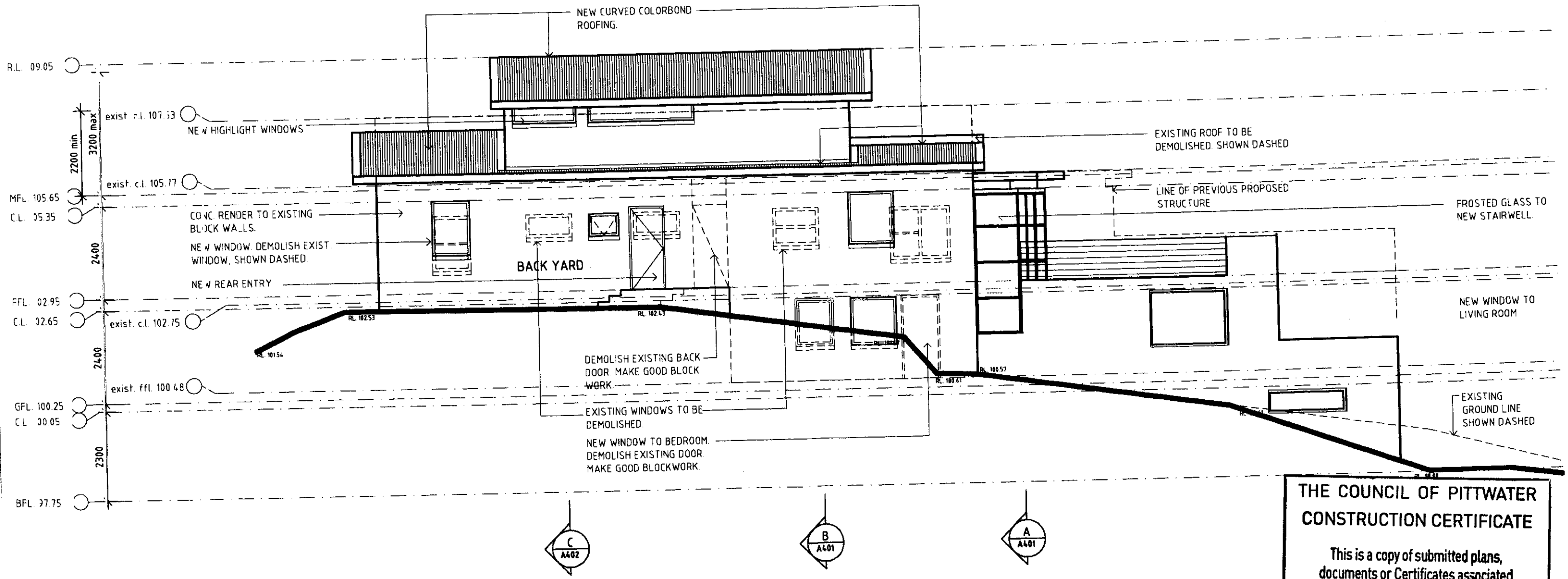

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE

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West. Elevation

1:100

revision:		
e	24.04.2003	CC issue
d	10.04.2003	DA revision
c	10.03.2003	DA revision
b	11.02.2003	DA revision
a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs l. & g. horvath

drawing: **west elevation**

reference: A3003 | **issue:** e

date: oct 02 | **scale:** 1:100 @ a3

T 02 9953 1300 F 02 9953 1018 E admin@rfarchitects.com.au

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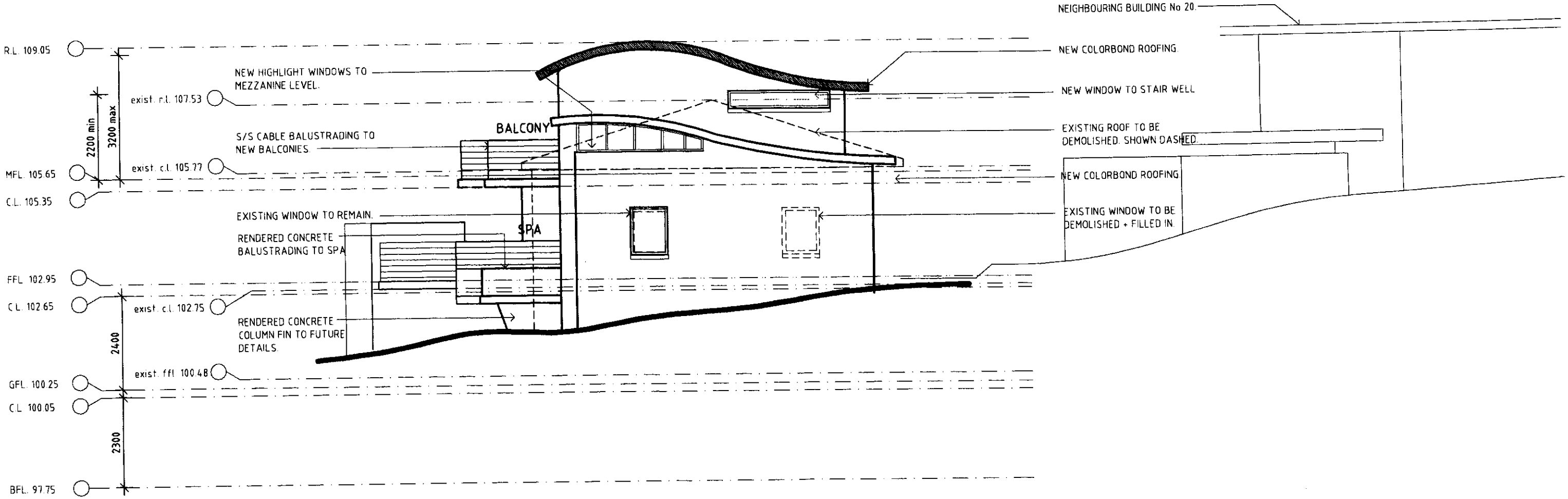
robert ferguson architects



North Elevation

1:100

revision:			
	e	24.04.2003	CC issue
	d	10.04.2003	DA revision
	c	10.03.2003	DA revision
	b	11.02.2003	DA revision
	a	12.11.2002	DA submission

project: additions & alterations
22 kanimbla cres
avalon

client: mr & mrs l. & g. horvath

drawing: **northern elevation**

reference: A3004
issue: e
date: oct 02
scale: 1:100 @ a3

T 02 9953 1300 **F** 02 9953 1018 **E** admin@rfarchitects.com.au

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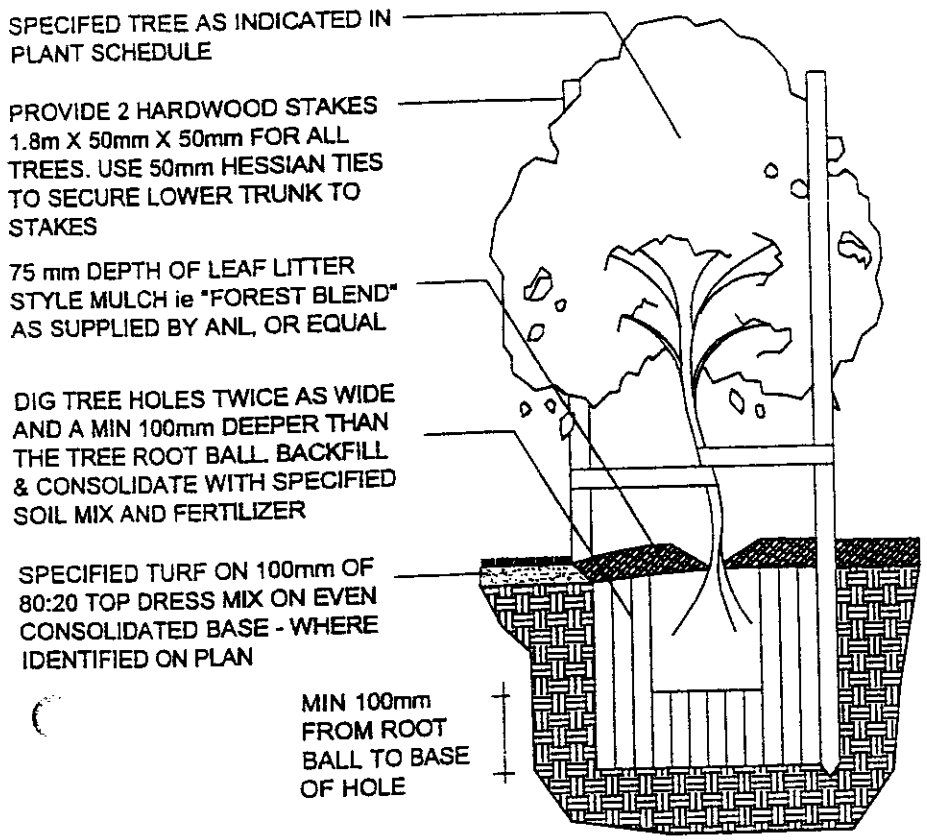
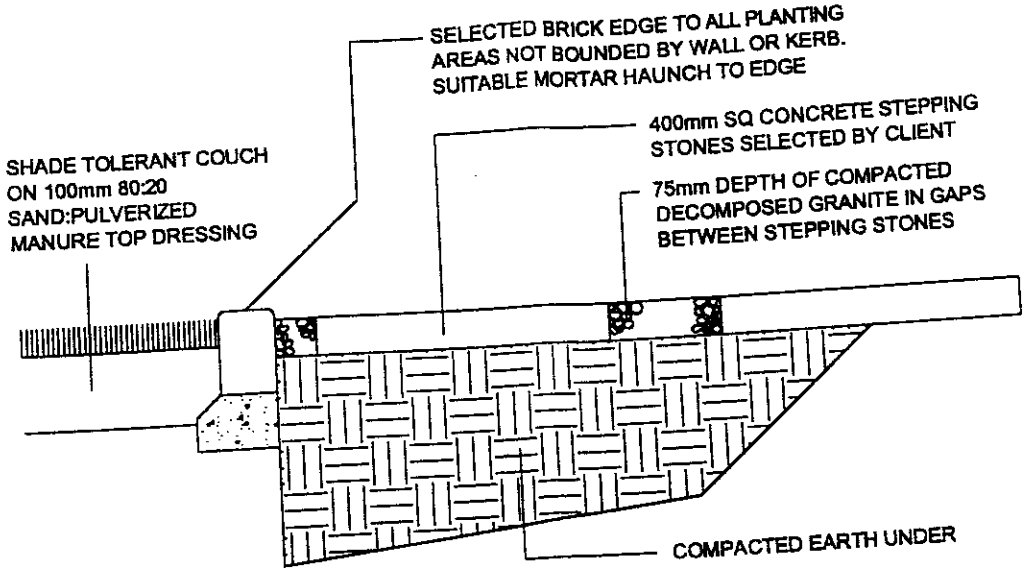
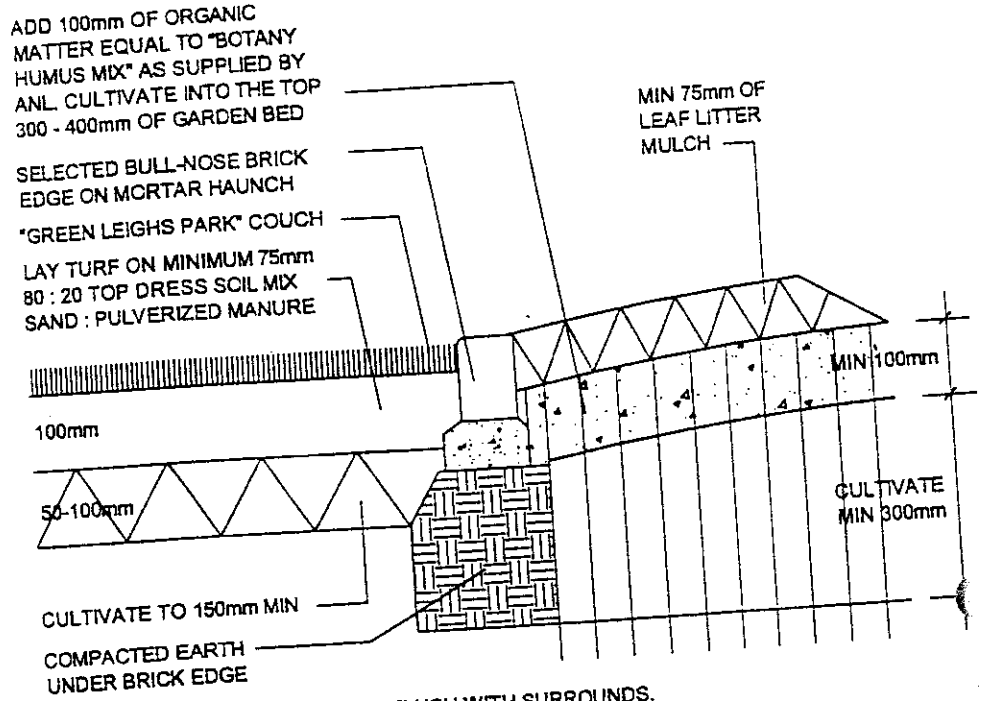


TYPICAL INDIVIDUAL TREE PLANTING DETAIL 1:20



STEPPING STONES & BRICK EDGE DETAIL 1:10



TYPICAL TURFING, GARDEN BED PREP & BRICK EDGE 1:10

THE COUNCIL OF PITTWATER
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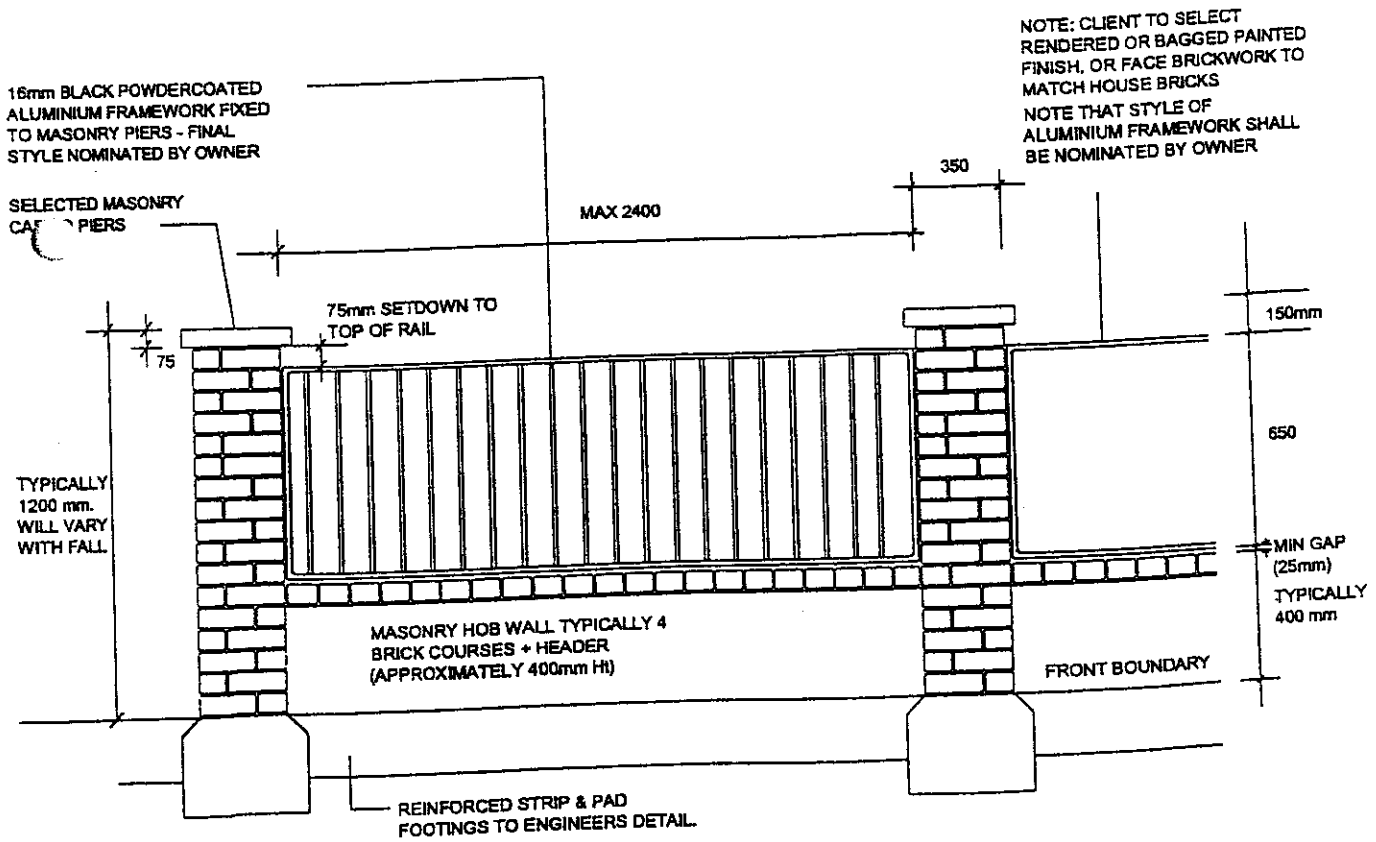
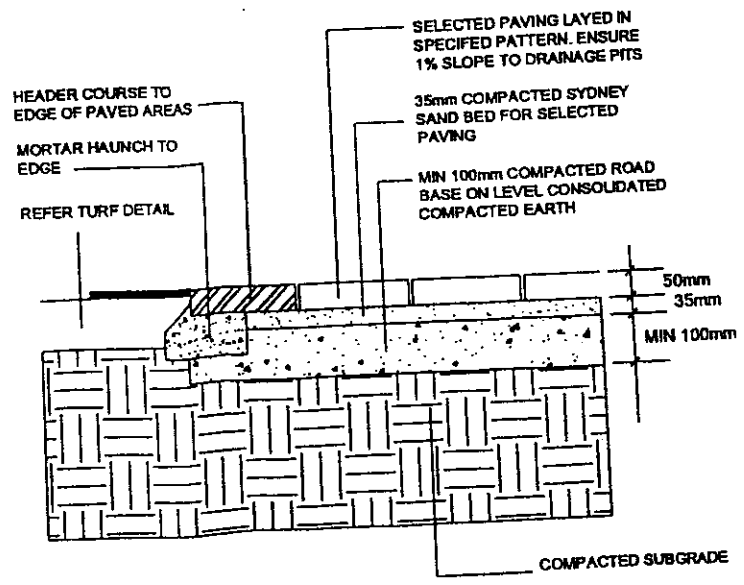


1.2m PIER & METAL PANEL FENCE



PAVING DETAIL 1:15

R.L.Frew
Landscape Architectural Services
landscape architecture . urban design
garden design . horticulture . graphics

Level 1,
112 Glover Street,
MOSMAN 2088

Phone: 9908 5698
Fax: 9908 5798
Mobile: 0413 861 351

LANDSCAPE DETAILS

Proposed Dual - Occupancy Development

22 KANIMBLA CRES,
AVALON

Client: ***Mr & Mrs HORVATH***
Prepared By: ***Rob Frew***
Scale: ***as shown***
Date: ***May 2003***
Drawing No: ***LP 03-79 / 2***

LANDSCAPE WORK SPECIFICATION

PRELIMINARIES

1.01 GENERAL
The following general notes should be considered prior to the commencement of landscape works:

- The landscape plans should be read in conjunction with the architectural plans, hydrological plans and the survey prepared for the proposed development.
- All services should be accurately located prior to the commencement of landscape installation. Any proposed tree planting which falls close to services will be relocated on site under the instruction of the landscape architect.
- It is recommended that the client have installed an automated irrigation system, to be designed, priced and installed by a qualified landscape contractor.
- Any anomalies that occur in these plans should be brought to the immediate attention of the landscape architect.

1.02 PROTECTION OF ADJACENT FINISHES
The Contractor shall take all precautions to prevent damage to all or any adjacent finishes by providing adequate protection to these areas / surfaces prior and during the commencement of the Works

1.03 PROTECTION OF EXISTING TREES
Existing trees designated on the drawing for retention shall be protected at all times. Any soil work within the drip line of existing trees to be retained shall be excavated and removed by hand only. If these trees have been identified on the plans, or by Council as significant, any works occurring within the root zones of these trees shall further be supervised by a qualified arborist. No stockpiling shall occur within the root zone of existing trees to be retained.

Temporary fencing shall be installed as detailed or directed around the base of all trees to be retained prior to the commencement of landscape works. Where possible this fencing will be located around the drip line of these trees, or a minimum of 3m from the trunk. The fencing shall be maintained for the full construction period.

1.04 EROSION
The Contractor shall take all proper precautions to prevent the erosion of soil from the subject site. The contractor shall install erosion & sediment control barriers as required by council, and maintain these barriers throughout the construction period. These barriers are to include silt fencing to the base of batters, and hay bails and other silt traps to storm water lines and drainage inlets.

Batters or disturbed slopes exceeding a 1 in 5 gradient shall be stabilized during construction with an approved method. All stockpiles shall also be stabilized, and no areas of disturbed soil shall be left exposed for prolonged periods.

SOIL WORKS

2.01 MATERIALS

A) Specified Soil Conditioner – Garden Areas & Trees
The specified soil conditioner for mass planting beds shall be an organic mix, equal to "Botany Humus" as supplied by ANL

For the back filling of new trees, use clean site topsoil, or if soil quality is poor, the soil mix shall be an imported soil, equal to "Premium Garden Mix", as supplied by ANL.

B) Specified Soil Mix – Turf
The specified soil mix for all turf areas shall be a 100mm layer of imported soil mix consisting of 80% washed river sand (reasonably coarse), and 20% pulverized chicken manure.

C) Site Topsoil
Site topsoil is to be clean and free of unwanted matter such as gravel, clay lumps, grass, weeds, tree roots, sticks, rubbish and plastics, and any materials toxic to plants. The topsoil must have a pH of between 5.5 and 7.5 and for re-use in planting areas shall be conditioned as specified to provide a good growing medium.

2.02 INSTALLATION

a) Set Out of Individual Trees & Mass Planting Areas
All individual tree planting positions and areas designated for mass planting shall be set out with stakes or another form of marking, ready for inspection and approval. Note that all services shall be detected and avoided (as per clause 1.01) prior to the planting of all trees.

b) Establishing Subgrade Levels
Subgrade levels are defined as the finished base levels prior to the placement of the specified material (i.e. soil conditioner). The following subgrade levels shall apply:

- Mass Planting Beds – 100 mm below finished surface level.
- Turf areas – 100 mm below finished surface level.

Note that all subgrades shall consist of a free draining natural material, consisting of site topsoil placed previously by the Civil Contractor. No builders waste material shall be acceptable.

c) Subgrade Cultivation
Cultivate all subgrades to a minimum depth of 300 mm in all planting beds and 150 mm to all turf areas, ensuring a thorough breakup of the subgrade into a reasonably fine tilth. Grade subgrades to provide falls to surface and subsurface drains, prior to the placement of the final specified soil mix.

d) Drainage Works
Install surface and subsurface drainage where required and as detailed on the drawing. Drain subsurface drains and ag line to outlets provided, with a minimum fall of 1.5% to outlets & pits.

e) Placement and Preparation of Specified Soil Conditioner and mixes.

- **Spot plant all trees in holes a minimum of 100mm deeper and twice as wide as the root ball of the plant – Backfill with clean treated site topsoil or "Premium Garden Mix" as appropriate.**
- Mass Planting Beds – Install specified soil conditioner to a compacted depth of 100 mm

Place the specified soil conditioner to the required compacted depth. Use a hoe or rotary hoe to thoroughly mix the organic matter into the top 300mm of garden area to create a fine tilth and good growing medium. Grade to required finished soil levels, in preparation for planting.

- Turf Areas – Install specified soil mix to a compacted depth of 100 mm

Place the specified soil mix to the required compacted depth and grade to required finished soil levels, in preparation for turfing.

PLANTING

3.01 MATERIALS

a) Quality and Size of Plant Material
All Plant material shall be to the type and size specified. No substitutions of plant material shall be permitted without prior approval by the Landscape Architect or Councils Environmental Officer. No plant shall be accepted which is undersized, unhealthy, root-bound, deformed or has not been adequately hardened off, suffering from socketing or root girdling.

b) Stakes and Ties
Provide 2 No. stakes and ties to all plants identified as trees in the plant schedule. Stakes shall be sound, unpainted, straight hardwood, free of knots and pointed at one end.
They shall be 1800 mm x 50 mm x 50 mm, or length as required to ensure stability. Ties shall be 50 mm wide hessian webbing material adjusted to allow some free movement of the tree trunk.

c) Fertilizers
Fertilizers shall be Osmocote "Complete" or equal slow release fertilizer, or approved fertilizer suitable for the specified planting types.

d) Mulch
Mulch shall be an approved leaf litter or recycled A Grade green waste equal to "Forest Blend" as supplied by ANL. Mulch shall be completely free from any soil, weeds, rubbish or other debris.

e) Turf
Turf shall be a "Green Leigh's" Couch, free from any weeds and other grasses, and be in a healthy growing condition. Turf substitutions shall be approved by the Landscape Architect &/ or Councils Environmental Officer.

3.02 INSTALLATION

a) Setting Out
All planting set out shall be in strict accordance with the drawings, or as directed. Note that trees located within 1500 mm of a service line shall be adjusted to allow adequate clearance. Notify Landscape Architect for inspection for approval prior to planting.

b) Planting
All plant material shall be planted as soon after delivery as possible. Planting holes for trees shall be excavated as detailed and specified. Plant containers shall be removed and discarded, and the outer roots gently teased from the soil mass. Immediately set plant in hole and backfill with topsoil mix, incorporating the approved quantity of fertilizer for each plant type. Ensure that plants are set plumb vertically and root balls set to the consolidated finished grades detailed on the drawings. Compact the backfilled soil and saturate by hand watering to expel any remaining air pockets immediately after planting.

c) Staking and Tying
Provide 2 No. stakes and ties to all plants identified as trees in the plant schedule. Staking and tying shall occur immediately following plant placement and soil backfilling.

d) Mulching
Mulch should be spread so that a compacted thickness of 75 mm is achieved after settlement in all planting beds and around each individual tree. Apply immediately following planting and watering in. There shall be no mixing of soil and mulch material.

e) Turfing
Moisten soil prior to the turf being laid. Turf shall be neatly butt jointed and true to grade to finish flush with adjacent surfaces. Incorporate a lawn fertilizer and thoroughly water in. Keep turf moist until roots have taken and sods cannot be lifted. Keep all traffic off turf until this has occurred. Allow for top dressing of all turf areas. All turf shall be rolled immediately following installation.

f) Timber / Brick Edging
The Contractor shall install timber / Brick edging as detailed on the drawings, to all mass planting beds adjoining turf or gravel mulched areas, and where required. The resultant edge shall be true to line and flush with adjacent surfaces.

HARDSCAPE WORKS

4.01 GENERAL
The Contractor shall undertake the installation of all hardscape works as detailed on the drawing, or where not detailed, install as per the manufacturers specification. Details are typical and may vary on site. Any queries or problems that arise from hardscape installation should be bought to the immediate attention of the Landscape Architect.

All hardscape works shall be setout as per the drawings, and inspected and approved by the Landscape Architect prior to installation. All workmanship shall be of the highest standard.

CONSOLIDATION AND MAINTENANCE

5.01 GENERAL
The consolidation and maintenance period shall be 26 weeks. Consolidation and maintenance shall mean the care and maintenance of Contracted works by accepted landscaping or horticultural practices, ensuring that all plants are in optimum growing conditions and appearance at all times, as well as rectifying any defects that become apparent in the contracted works.

This shall include, but not be limited to, the following items where and as required:

- Watering, Fertilizing and Weeding
- Clearing litter and other debris
- Soil Subsidence
- Plant maintenance & Replacements
- Insect and Disease Control
- Mowing and Edging
- Adjusting ties to Stakes

R.L.Frew
Landscape Architectural Services
landscape architecture . urban design
garden design . horticulture . graphics
Level 1,
112 Glover Street,
MOSMAN 2088
Phone: 9908 5698
Fax: 9908 5798
Mobile: 0413 861 351

LANDSCAPE SPECIFICATION
Proposed Dual - Occupancy Development
22 KANIMBLA CRES, AVALON
Client: *Mr & Mrs HORVATH*
Prepared By: *Rob Frew*
Scale: *n / a*
Date: *May 2003*
Drawing No: *LP 03-79 / 3*

PLANT SCHEDULE

BOTANICAL NAME	COMMON NAME	POT SIZE	Plant QTY	Mat. HGHT.	Mat. SPD.	Nat / Exotic
TREES						
Elaeocarpus reticulatus	Blueberry Ash	25L	5	8m	5m	N
Metrosideros excelsa	NZ Xmas Bush	15L	1	6m	4m	E
SHRUBS						
Banksia aemula	Wallum Banksia	5L	3	2m	2m	N
Callistemon citrinus "Endeavour"	Endeavour Bottlebrush	5L	27	2m	2m	N
Doryanthes excelsa	Gymea Lilly	5L	5	1.5m	1.5m	N
Eriostemon myoporoides	Longleaf Waxflower	5L	15	1m	1m	N
Hibiscus rosa-sinensis	Chinese Hibiscus	15L	1	3m	2m	E
Pittosporum tobira	Japanese Pittosporum	5L	9	3m	2m	E
Syzygium "Aussie Compact"	Aussie Compact	15L	8	3-5m	2.5m	N
Syzygium "Tiny Trev"	Tiny Trev	5L	20	750mm	750mm	N
Westringia fruticosa	Coastal Rosemary	5L	27	1.5m	1.5m	N
GROUND COVER PLANTING						
Lomandra longifolia	Lomandra	150mm	12	1m	1m	N
Trachelospermum jasminiodes	Star Jasmine	150mm	25	300mm	1m	E

NEIGHBOURING RESIDENCE #24

RESIDENCE #

KEY STOVE RETAINING WALL TO REAR COURTYARD TO CONSLOIDATE LEVELS

SMALL TIMBER DECK & TIMBER STAIRS TO LAUNDARY LEVEL & REINSTATE TURF AREA TO REAR

7 ERIOSTEMON
5 DORYANTHES

EXISTING OLEANDER TO BE RETAINED (UNDER)

4 ELAEOCAPUS
25 JASMINE
(UNDER)

POOL

EXISTING HIBISCUS TO BE RETAINED

RETACTABLE CLOTHES LINE + NOMINATED STEPPINGS STONES

1 HIBISCUS

RL 102.5
TURF AREA

TOW 103.6

TOW 102.6

RL 101.5

STORE

LAUNDRY

7 LOMANDRA (UNDER)
1 METROSIDEROS
9 P.TOBIRA
BRICK EDGING TO GARDEN AREA

3 EXISTING NEIGHBOURING B. INTEGRIFOLIA APROX. 5M X 5M - FAIR TO POOR COND.
20 S.'TINY TREV'
8 S.'AUSSIE COMPACT'
3 C.CITRINUS

GF FFL 100.25
1st FFL 102.95

1 ELAEOCARPUS
5 LOMANDRA
(UNDER)

EXISTING CONIFERS & SHRUBS TO BE REMOVED & REPLACED

TURF

NEW BRUSHWOOD FENCE 1.8M BY OWNE
NEW "MASONRY" WALL (SEE DETAIL)
3 WESTRINGIA
BRICK EDGING TO ALL GARDEN AREA

NEW DRIVEWAY TO ARCH'S DETAILS

ENTRY

PATH

STAIRS

PATIO

3 B.AEMULA
4 ERIOSTEMON
PATIO OVER

NEW PAVED PATH TO HOUSE
RETAIN EXISTING STEPS AND ENTRY SURROUNDS
4 C.CITRINUS
RETAIN / REINSTATE EXISTING SWALE

NEW CROSSOVER & DRIVEWAY- REINSTATE LEVELS TO KERB
TERBOX IN PIER TO AUST POST STANDARDS

4 WESTRINGIA
2 C.CITRINUS
1 EXISTING CALLISTEMON

4 ERIOSTEMON
REINSTATE LAWN TO BANK
STEPPING STONES SELECTED BY CLEINT

TURF BANK

THE COUNCIL OF PITTWATER
CONSTRUCTION CERTIFICATE
This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

NEW MASONRY & STEEL FRONT BOUNDARY WALL REFER DETAIL
5 WESTRINGIA
6 C.CITRINUS

5 WESTRINGIA
6 C.CITRINUS
REINSTATE TURF TO KERB

SSM IN KERB RL 97

BM NAIL IN KERB RL96.75

KANIMBLA CRESCENT

5 WESTRINGIA
2 EXISTING B.INTEGRIFOLIA - POOR CONDITION PRUNE & RETAIN
6 C.CITRINUS
5 WESTRINGIA

PLAN PREPARED IN ACCORDANCE WITH PITTWATER COUNCIL'S 'LANDSCAPE & VEGETATION MANAGEMENT ' DCP # 23, & PLANTS SELECTED FROM LOCAL LISTS SITE IS DEVOID OF SIGNIFICANT REMNANT VEGETATION READ IN CONJUNCTION WITH SITE SURVEY, ENG'S & ARCHITECTURAL PLANS.

R.L.Frew
Landscape Architectural Services
Landscape architecture , urban design
garden design , horticulture , graphics

Level 1,
112 Glover Street
MOSMAN 2088

Phone : 99085698
Fax : 99085798
Mobile : 0413 861 351

Landscape Plan

Proposed Residential Development

22 KANIMBLA CRESENT, AVALON

Client: Mr & Mrs HORVATH
Prepared By: R Frew
Council: Pittwater
Architect : Robert Ferguson Architects

Scale: 1:150
Date: May 2003
Drawing No: LP-03-79/1

SPECIFICATION FOR BUILDING WORK

THE WORK

The building work described in the building contract dated	Additions and Alterations
No/street	22 Kanimbla Cresent
Suburb/town	Bilgola
Municipality/shire/city	Pittwater Council
Reference to title	
Lot/position	
Deposited Plan (DP)/Strata Plan (SP)	
Volume	
Folio	

THE PARTIES

Owner(s)	Gabriella Horvath
Address	22 Kanimla Cresent
Builder	Owner Builder
Address	
Australian Business Number (ABN)	
Licence/registration number	

SIGNATURES

Owner(s)	Gabriella Horvath
Date	30-6-2003
Builder	.....
Date	.....

1 GENERAL REQUIREMENTS

1.1 GENERAL

Interpretation

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

Builder: Means the same as "contractor".

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.

Bushfire protection

If required, provide protection to AS 3959-1999 (*Construction of buildings in bushfire prone areas*).

1.2 CONTRACTS AND FINANCE

Payment and adjustment of contract sum

At commencement of the building work, submit a schedule of anticipated progress claims which will be made throughout the contract.

Progress claims break-down: With each progress claim, submit a statement of amounts claimed in respect of each worksection or trade heading designated in the specification.

1.3 AUTHORITIES AND ESTABLISHMENT

Prior applications and approvals >

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.

Occupied premises

For the parts of the site which are occupied premises

- allow occupants to continue in secure possession and occupancy of the premises for the required period;
- make available safe access for occupants;
- arrange work to minimise nuisance to occupants and ensure their safety; and
- protect occupants against weather, dust, dirt, water or other nuisance, by such means as temporary screens. >

1.4 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.

Hours of work >

Order of work >

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.

1.5 TERMITE PROTECTION

General

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

Termite protection schedule

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

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 BCAVolume 2 clause 3.1.3.2 (b) and AS 3660.1 – 2000 (*Termite management – New buildings*) Appendix A.

1.6 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 classification: To AS/NZS 1604.1 2000 *(Specification for preservative treatment - Sawn and round timber)* Table F2.
- Preservative treatment: To the AS/NZS 1604 series *(Specification for preservative treatment).*

Natural and treated timber durability table

Untreated natural durability class in AS1604.1 Table 2	Preservative treated hazard class to AS 1604 series	Exposure	Situation and uses
Class 4	H1	Inside, above ground. Completely protected from the weather. Well ventilated.	Protect treated timber from termites.
Class 3	H2	Inside, above ground. Protected from wetting with nil leaching. Well ventilated.	Framing, flooring, joinery in dry situations. Protect untreated timber with a finish and maintain well.
Class 2	H3	Above ground, exposed to weather. Periodic moderate wetting and leaching.	Weatherboard, fascia, pergolas (above ground), window joinery, framing and decking
Class 1	H4	In-ground. Severe wetting and leaching.	Fence posts, greenhouses, pergolas (in-ground) and landscaping timbers
	H5	In-ground contact with or in fresh water. Extreme wetting and leaching.	Retaining walls, piling, house stumps, building poles, cooling tower fill.

1.7 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
Mild, non marine - More than 10 km from 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 Z450/AZ150

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
Moderate, marine - More than 1 km from breaking surf - More than 100 m from salt water without breaking surf	Galvanize after fabrication 600 g/m^2	Galvanize after fabrication 470 g/m^2 Galvanised wire 470 g/m^2	Metallic coated sheet AZ200
Severe marine - Less than 1 km from breaking surf - Less than 100 m from salt water without breaking surf	Stainless steel 316 or 316L	Stainless steel 316	Stainless steel 316

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 m^3 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.

Explosives

Do not use explosives.

2.2 DEMOLITION

Standard

Demolition: To AS 2601-2001 (*The demolition of structures*).

Demolition items

Fences and external walls: >

External buildings: >

Other items for demolition: >

Materials to be salvaged: >

Demolished materials

Except for materials to be salvaged and retained by the owner or re-used, take possession of demolished materials and remove them from the site. Do not burn or bury demolished materials on the site.

Support

Provide temporary support for sections of existing buildings which are to be altered and which rely for support on work to be demolished.

Weather protection

If walls or roofs are opened for alterations and additions, or the surfaces of adjoining buildings are exposed, provide temporary covers to prevent water penetration.

Security

If walls or roofs are opened for alterations or additions, provide security against unauthorised entry.

2.3 TREES TO BE RETAINED

Existing trees, plants and shrubs

Trees, plants and shrubs to be retained: >

Trees, plants and shrubs to be removed: >

Marking

Mark trees which are required to be retained using suitable non-injurious, easily visible and removable means of identification. Remove the identification on completion.

Protection

Protect from damage trees which are required to be retained. Do not remove topsoil from the area within the dripline of the trees and keep this area free of construction material and debris.

Excavation

If excavating near trees required to be retained, use hand methods to locate, expose and cleanly remove the roots on the line of excavation.

2.4 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.

2.5 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.

2.6 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.

Under-floor access

Provide a minimum clearance to underside of timber bearers of 400 mm.

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.

2.7 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.

2.8 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.

Timber piled footing system

Provide a proprietary system designed to AS 2870-1996 (*Residential slabs and footings – Construction*).

Screw-in foundations

Provide a proprietary system designed to AS 2159-1995 (*Piling - Design and installation*).

2.9 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, H or E to AS 2870-1996 (*Residential slabs and footings – Construction*): Impervious material.
-

3 CONCRETE CONSTRUCTION

3.1 GENERAL

Cross reference

Refer 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.

Type: >

Base preparation

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

3.3 REINFORCEMENT

Minimum lap

Splice as follows:

- Mesh generally: 225 mm.
- Trench mesh: 500 mm.
- Bars: Greater of either 500 mm or 25 x bar diameter.
- Strip footing intersections and corners: For full width of intersecting reinforcement.

Minimum cover

Unprotected by membrane on ground or external surfaces: 40 mm.

Protected by membrane on ground: 30 mm.

Internal surfaces: 20 mm.

Aggressive soil or salty environment: 65 mm.

3.4 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.

3.5 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.

3.6 CONCRETE BEARER SUPPORTS

General

Provide proprietary precast stumps to support bearers at 1800 mm maximum centres.

Concrete stumps

General: Set stumps 25 to 50 mm into concrete pad footings.

Marking: Maker's name on one face.

Bracing: Brace stumps which project above the ground by more than 12 times the width of their smallest face.

Concrete stump construction table

In areas with a wind speed of not more than W33, provide sizes and reinforcement as follows:

Length (mm)	Size (mm)	Reinforcement
Up to 1400	100 x 100 x 110 diameter	One 5 mm hard drawn wire
1401 - 1800	100 x 100 or 110 diameter	Two 5 mm hard drawn wires
1801 - 3000	125 x 125 or 140 diameter	Two 5 mm hard drawn wires

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 zinc-coated steel or aluminium/zinc alloy 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.

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: Zinc-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 roof trusses

Type: >

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.

CCA (copper chrome arsenic)-treated timber
Greasing: Before placing bolts in contact with CCA-treated timber, coat the shank of the bolt in grease or a bituminous coating.

Steel framing: Do not fix CCA-treated timber in contact with cold-formed steel framing.

Priming steel
Before fixing, prime steel which is not galvanized or zinc-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.

Type: >

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.

Minimum thickness:

- Joist spacing up to 450 mm: 15 mm.
- Joist spacing 450 - 600 mm: 18 mm.

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

Minimum thickness (F8):

- Joist spacing up to 450 mm: 14 mm.
- Joist spacing 450 - 600 mm: 19.5 mm.

Minimum thickness (F11):

- Joist spacing up to 450 mm: 13 mm.
- Joist spacing 450 - 600 mm: 18.5 mm.

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.

Maximum spacing of noggings: 1350 mm centres.

Vermin barriers for suspended floors
Masonry veneer barrier: Secure 10 mm galvanized wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Damp-proof courses
Clad-frame walls: Provide damp-proof courses under the bottom plate of external clad-frame walls built off slabs or masonry dwarf walls.

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

4.6 ROOF AND CEILING FRAMING AND TRUSSES

Wall plates
Fixing: Fix timber wall plates to masonry, with either straps or bolts.

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.

Supports for water containers

Where a water container or heater is located in the roof space, provide a support platform to AS/NZS 3500.4.2-1997 (*National Plumbing and Drainage - Hot water supply systems - Acceptable solutions*) clause 4.5.

Additional support

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

Anti-ponding boards

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

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.

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 units

Type: >

Manufacturer: >

Size: >

Colour: >

Feature colour: >

Clay bricks durability

Below damp-proof course: Use exposure category to AS/NZS 4456.10-1997 (*Masonry units and segmental pavers – Method of test – Method 10: Determining resistance to salt attack*) Appendix A (Salt attack resistance categories)

Wall ties

Standard: To AS/NZS 2699.1-2000 (*Built-in components for masonry construction – Wall ties*)

Non-seismic areas: Type A.

Seismic areas: Type B.

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.

Additives: Do not provide additives unless required.

Mortar colour: >

Mortar mix table

Provide mortar mixes as follows:

Location	Mortar proportions (cement:lime:sand)	Mortar type to AS 3700
Concrete or calcium silicate masonry	1:0:5 + water thickener	M3
Grouted and reinforced masonry	1:0:4 + water thickener	M4
Underpinning, high strength masonry	1:0 - 0.25:3	M4
Other masonry	1:1:6	M3

5.3 CONSTRUCTION GENERALLY

Joints and cutting

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

Joints

Externally: Tool to give a dense water-shedding finish.

Internally: Rake to give a key if wall is to be plastered.

Type: >

Rod

76 mm high bricks: 7 courses to 600 mm.

90 mm high bricks: 6 courses to 600 mm.

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.

Colour mixing

In facework, distribute the colour range of units evenly to prevent colour concentrations.

Sills and thresholds

Solidly bed masonry sills and thresholds and lay them so that the top surfaces drain away from the building.

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.

Chimneys and fireplaces

Follow the guidelines given in SAA HB33-1992 (*Domestic open fire places*).

5.4 BEARER SUPPORTS

Bearer piers table

Provide engaged or free standing unreinforced masonry piers as follows to support bearers at 1800 mm maximum centres:

Type	Minimum size (mm)
Engaged	230 x 110 bonded or tied to walls
Freestanding up to 1500 mm high	230 x 230
Freestanding 1500 mm to 2700 mm high	350 x 350

Access openings

In internal walls below suspended ground floors, leave door-width openings beneath doorways to give access to underfloor areas.

Air vents

General: Provide air vents to give adequate cross ventilation to the space under suspended ground floors. In cavity walls, provide an equal number of matching vents in the internal leaves located as near as practicable to the air vents in the external leaves.

Minimum provision: 7300 mm^2 net ventilation area per linear metre of wall.

5.5 DAMP-PROOF COURSES

Location

Provide damp-proof courses in the following locations:

- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40 mm and dress down over the membrane turned up against the wall.
- Cavity walls built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf one course above; or, in masonry veneer construction, fastened to the inner frame 75 mm above floor level.
- Internal walls built off slabs on ground: In the first course above floor level.
- At timber floors: In the first course below the level of the underside of ground floor timbers in internal walls and inner leaves of cavity walls.

Installation

Lay in long lengths. Lap the full width of angles and intersections and 150 mm at joints. Step as necessary, but not more than two courses per step. Preserve continuity of damp-proofing at junctions of damp-proof courses and waterproof membranes. Install at least 150 mm above adjacent finished ground. Sandwich damp-proof courses between mortar.

5.6 CAVITY MASONRY WALLS

Minimum cavity width

Masonry walls: 50 mm ± 10 mm.

Masonry veneer walls: 25 mm between the masonry leaf and the load-bearing frame and 40 mm between the masonry leaf and sheet bracing, if any.

Openings

Do not close the cavity at the jambs of external openings.

Cavity flashings

Location: Provide flashings in the following locations:

- Floors: Full width of outer leaf immediately above slab, continuous across cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf two courses above.
- Under sills: 30 mm into the outer leaf bed joint one course below the sill, extending up across the cavity and under the sill in the inner leaf or the frame. Extend at least 150 mm beyond the reveals on each side of the opening.
- Over lintels to openings: Full width of outer leaf immediately above the lintel, continuous across cavity, 30 mm into the inner leaf two courses above or turned up against the frame and fastened to it. Extend at least 150 mm beyond the ends of the lintels.
- At abutments with structural frames or supports: Vertical flashing in the cavity from 150 mm wide material, wedged and grouted into a groove in the frame opposite the cavity.
- At roof abutments with cavity walls: Cavity flashing immediately above the roof and over-flash the roof apron flashing.

Installation: Sandwich flashings between mortar except where on lintels.

Pointing: Point up joints around flashings to fill voids.

Weepholes

General: At ground floors, provide weepholes in the form of open perpends to external leaves of cavity walls in the course above cavity flashings.

Maximum spacing: Every third perpend.

Clearance for timber frame shrinkage

In seasoned timber frame brick veneer construction, leave the following clearances between window frames and brick sill and between roof frames and the brick veneer:

- Single storey frames and ground floor windows (not for slab on ground): 10 mm.
- Two storey frames and upper floor windows: 20 mm.
- Additional clearance: Accommodate additional shrinkage of unseasoned floor timbers.

5.7 WALL TIES

Wall tie application

Classification: To AS/NZS 2699.1.

Type: To BCA Volume 2 clause 3.3.3.2 (*Acceptable construction – Masonry – Masonry accessories – Wall ties*)..

Spacing: To BCA Volume 2 Figure 3.3.3.1 (*Typical brick ties spacings in cavity and veneer construction*)..

Corrosion protection: To BCA Volume 2 Table 3.3.3.1 (*Corrosion protection for wall ties*).

5.8 AUTOCLAVED AERATED CONCRETE WALLS

General

Provide a proprietary 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 in walls in buildings.

5.9 CONTROL OF MOVEMENT

Ageing of bricks and concrete

Minimum age of clay bricks: 7 days.

Minimum age of concrete supports to clay bricks: 28 days.

Control joints for clay brickwork

Maximum length of continuous wall: 12 m.

Minimum width of control joint: 15 mm.

Control joints for calcium silicate and 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.

5.10 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.

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.

5.11 BAGGING

Joints

Cut joints flush before bagging.

Dry bagging

Apply laying mortar to the surface using a hessian bag or similar to a consistent thickness. Flush up irregularities, but leave the minimum possible amount of mortar on the masonry surface.

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: To AS 2462-1981 (*Cellulosic fibre thermal insulation*).

Mineral wool batts and blankets: To AS 3742-1990 (*Mineral wool thermal insulation - Batt and blanket*).

Mineral wool in loose fill: To AS 2461-1981 (*Mineral wool thermal insulation - Loose fill*).

Polystyrene: To AS 1366.4-1989 (*Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Extruded (RC/PS-E)*).

Wool: To AWRAP/A202-1993 (*Mandatory Woolmark Specifications for building insulation material*).

Sarking material

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

Floor insulation: Provide perforated material.

Insulation types and ratings

Wall: >

Roof: >

Ceiling: >

Pipes: >

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.

Loose fill: Provide boxing to retain loose fill on external edges, cavities and penetrations, and to prevent spilling.

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 which does not provide a permanent weatherproof seal, including

- boards fixed vertically or diagonally;
- boards or planks fixed in exposed locations where wind-driven rain can penetrate the joints; and
- unpainted or unsealed 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.

Roof sarking

General: Provide sarking to

- tile roofs below 20° pitch;
- tile roofs where the design wind velocity exceeds 33 m/s; and
- tile roofs for a width of 2 m below a gutter discharging through a spreader from the point of discharge to the gutter below.

Anti-ponding boards: Provide 4.5 mm fibre-cement anti-ponding boards to eaves of tile roofs below 20° pitch.

Ridge ventilation: Finish sarking at least 50 mm clear of ridges.

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*).

Tiled roofs: 20 kg/m^2 lead.

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.

Roof lights

Type: >

7.3 TILING

Materials

Standard: To AS 2049-1992 (*Roof tiles*).

Tile type: >

Manufacturer: >

Tile colour: >

Installation

Standard: To AS 2050-1995 (*Installation of roofing tiles*).

Setting out: Set out the roof to give an even tile gauge in each course, with full tiles at verges.

Bedding and pointing: Bed and point accessories including ridges, hips and verges, in coloured mortar to match the accessories.

Pointed verge: Bed and point tiles on 100 x 5 mm fibre-cement pointing strip.

7.4 METAL ROOFING

Design and installation

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

Roof material: >

Manufacturer: >

Roof colour: >

Ridge capping colour: >

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.

7.5 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 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Wall abutments: Where a roof abuts a wall, provide overflashings as follows:

- Masonry: Stepped and built into the full width of the leaf.
- Planked cladding: Stepped.
- Other: Raking.

Gutters

Minimum slope of eaves gutters: 1:200.

Minimum width overall of valley gutters: 400 mm.

Guttering and downpipe prefinish colour: >

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 cladding: Exterior hardboard.

Sheltered exterior cladding: Tempered hardboard.

Manufacturer: >

Prefinish colour: >

Plank cladding

General: Provide a proprietary system of hardboard planks 9.5 mm thick.

Joints and edges: UPVC extrusions.

External corners: Preformed metal joining pieces.

Internal corners: Scribe.

8.4 TIMBER BOARD CLADDING

Boards

Manufacturer: >

Prefinish colour: >

Preparation

For cladding with a natural or stained finish, finish the boards on both sides before installation by dipping or brushing with water-repellent preservative. Do not apply preservative if this is incompatible with a specified pigmented stain finish.

Installation

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

Fixing: Nail twice to each crossing except for sawn weatherboard and secret nailed profiles.

Nailheads: Treat visible nailheads as follows:

- In stained or clear finishes: Drive flush.
- In opaque finishes: Punch below the surface and fill flush with putty after the surface has been primed.

Joints

End grain joints: Install boards so that butt joints are in compression.

Internal and external corners: Butt against a timber bead at least as thick as the cladding board.

8.5 FIBRE CEMENT CLADDING

Standard

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

Cladding

Manufacturer: >

Prefinish colour: >

Plank cladding

Type: Provide a proprietary system of single-faced fibre cement planks 7.5 mm thick.

Joints and edges: UPVC extrusions.

Corners: Preformed metal joining pieces.

Sheet cladding

Type: Provide single-faced fibre cement sheets 6 mm thick.

Joints, corners and edges: UPVC extrusions.

Eaves lining

Type: Provide a proprietary system of single-faced fibre cement sheets 4.5 mm thick nailed at minimum 200 mm centres to bearers at maximum 600 mm centres.

Minimum bearer size: For rafter overhang:

- 300 - 600 mm: 50 x 38 mm.
- 600 - 1500 mm: 75 x 38 mm.

Joints: UPVC extrusions.

8.6 METAL CLADDING

Cladding

Manufacturer: >

Prefinish colour: >

Design and installation

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

Visible accessories

Provide materials with the same finish as cladding sheets.

8.7 PLASTIC CLADDING

Standard

Unplasticised polyvinyl chloride (uPVC) sheet: To AS/NZS 4256.4-1995 (*Plastic roof and wall cladding materials - Unplasticized polyvinyl chloride (uPVC) wall cladding boards*).

Glass fibre reinforced polyester (GRP) sheet: To AS/NZS 4256.3-1994 (*Plastic roof and wall cladding materials - Glass fibre reinforced polyester (GRP)*).

Polycarbonate: To AS/NZS 4256.5-1996 (*Plastic roof and wall cladding materials – Polycarbonate*).

Cladding

Manufacturer: >

Prefinish colour: >

Installation

Standard: To AS/NZS 1562.3-1996 (*Design and installation of sheet roof and wall cladding – Plastic*)

8.8 AAC CLADDING

Cladding

Manufacturer: >

Panel cladding

Type: Provide a proprietary system of AAC panels.

Panel thickness: >

Joints: Thin bed adhesive.

Control joints: At all external and internal corners, adjacent to all openings and at maximum 6 m centres.

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.

9.2 MATERIALS AND COMPONENTS

Flashings

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

Metal finishes

Zinc plating: To AS 1789-1984 (*Electroplated coatings - Zinc on iron or steel*), 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*).

Doorsets

Timber doors: To AS 2688-1984 (*Timber doors*).

Timber frames and jamb linings: To AS 2689-1984 (*Timber doorsets*).

Security screen doors: To AS/NZS 2803.1-1994 (*Doors - Security Screen – Hinged*) or AS/NZS 2803.2- (*Doors - Security Screen – Sliding*).

Windows

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

Preglazing

If possible, preglaze doors and windows.

Windows and sliding external doors

Manufacturer: >

Material: >

Type: >

Prefinish type: >

Prefinish colour: >

Glass: >

Insect screen: >

Main entrance door

Manufacturer: >

Type: >

Glass: >

Other external doors

Manufacturer: >

Type: >

Glass: >

Security screen doors

Manufacturer: >

Type: >

Prefinish colour: >

9.3 CONSTRUCTION GENERALLY

Standards

Doorset installation: To AS 1909-1984 (*Installation of timber doorsets*).

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

Security screen doors installation: To AS/NZS 2804.1-1995 (*Installation of security screen doors – Hinged*) or AS/NZS 2804.2 –1996 (*Installation of security screen doors – Sliding*)

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.

Fixing

Packing: Pack behind fixing points with durable full width packing.

Prepared masonry openings: If fixing of timber windows to prepared anchorages is by fastening from the frame face, conceal the fasteners by sinking the heads below the surface and filling the sinking flush with a material compatible with the surface finish.

Linings

Provide reveal and jamb linings as necessary.

9.4 TIMBER DOORS

Door thickness

Generally: 35 mm.

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

Door construction

External doors: Solid construction.

Internal doors: Flush panel cellular core.

Medium density fibreboard doors: Board designated by the manufacturer as having a moisture resistance which is suitable for the exposure of the door.

Timber internal doors

Manufacturer: >

Type: >

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 leafs 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

General: Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Wheel carriages: Fully adjustable precision ball race type providing smooth, quiet operation.

9.6 WARDROBES

Wardrobe doors and frames

Frame material: >

Frame prefinish type: >

Frame prefinish colour: >

Door type: >

Wardrobe door panels

Mirrors: >

Panel prefinish type: >

Panel prefinish colour: >

9.7 GARAGE DOORS

General

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

Garage doors

Manufacturer: >

Type: >

Prefinish type: >

Prefinish colour: >

9.8 LOCKSETS

External doors

Provide a push-button key and knob set and a double-cylinder dead bolt to each door.

Internal doors

Generally: Passage sets.

Bathrooms, showers and toilets: Privacy sets.

Sliding patio doors and windows: Provide key-lockable surface mounted bolts.

Door lockset mounting heights

To centreline of spindle: 1 m above finished floor.

Keying

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

Lockset schedule

Door	Lockset manufacturer	Lockset type

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: >

Fibre cement

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

Sheet thickness: >

Fibrous plaster products

Standard: To AS 2185-1978 (*Fibrous plaster products*).

Sheet thickness: >

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 zinc-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 zinc-coated control joint beads to coincide with structural movement joints.

10.4 TONGUE AND GROOVE LINING

Installation

Stained or clear finished boards: Select board to give a random pattern. At corners, return the same board to give a continuous grain pattern.

Fixing: Nail twice to each crossing except for secret nailed profiles.

Nailheads: Treat visible nailheads as follows:

- In stained or clear finishes: Drive flush.
- In opaque finishes: Punch below surface and fill flush with putty after the surface has been primed.

Joints

End grain joints: Install boards so that butt joints are in compression.

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: >
Skirtings
Types: >
Architraves
Types: >

11 TROWELLED COATINGS

11.1 GENERAL

Cross references

Refer to the following worksections:

- *Block and tile finishes*, for waterproofing of wet areas.
- *Painting*, for priming of embedded steel.

11.2 MATERIALS AND COMPONENTS

Plaster materials

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

Lime: To AS 1672.1-1997 (*Limes and limestones - Limes for building*).

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

Gypsum plaster: To AS 2592-1983 (*Gypsum plaster for building purposes*).

Metal lath: Expanded metal to AS 1397-1993 (*Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated*)/Z275.

Lime putty mixes

Make a coarse mix of lime putty and sand 16 hours before use and do not allow to dry out.

Gauged mixes

To improve workability, mixes required to contain only cement and sand may be gauged by the addition of lime up to 25% of the cement content (i.e. not as a substitute for the cement).

Autoclaved aerated concrete walls

Provide a proprietary render or premixed plaster recommended by the wall system manufacturer.

11.3 SUBSTRATE

Correction of substrate

Before plastering, make good defects in the substrate. Hack off excessive projections. Fill voids and hollows with a mix not stronger than the substrate nor weaker than the first coat.

Untrue substrate

If one-coat application is required, but the substrate is not sufficiently true to comply with the thickness limits for one coat, or has excessively uneven suction resulting from variations in the composition of the substrate, apply 2 coats.

Cleaning

Remove loose material and leave the surface clean and dust-free.

Embedded items

Sheath water pipes and other embedded items to permit thermal movement. If ungalvanized steel items are to be embedded in plaster, prime before fixing.

Chases

If chases or recesses are more than 50 mm wide, cover with metal lath extending at least 75 mm beyond each side of the recess.

Metal backgrounds

Fix metal lath to provide a key for plaster.

Concrete

Apply a proprietary bonding agent before plastering.

11.4 PLASTERING

Thickness limits

One-coat work: 12 - 15 mm.

Multi-coat work:

- First coat: 9 - 15 mm.
- Floating coat (if any): 9 - 15 mm.
- Finishing coat (except setting coat): 6 - 9 mm.
- Setting coat: 2 - 3 mm.

Cement rendering

Proportions by volume (cement:lime:sand) for clay and dense concrete brick:

- Clay and dense concrete brick: 1:0.25:4.

Two or three-coat set plaster

Proportions by volume:

- Undercoats: 1:1:6 cement:lime putty:sand.
- Setting coat: 1:1 lime putty:gypsum plaster.

Tolerances

Finish plane surfaces within a tolerance of 6 mm in 3 m, determined using a 3 m straight edge placed anywhere in any direction. Finish corners, angles, edges and curved surfaces within equivalent tolerances.

Curing

Do not allow rapid or uneven drying out.

V-joints

Provide V-joints at the following locations:

- Junctions between different substrate materials.
- Abutments with other finishes.
- Joints in the structure.

Edge trim

Provide purpose-made zinc-coated steel sections as corner beads and stop beads.

11.5 CEMENT BASED FLOOR TOPPINGS (GRANO)

Preparing hardened surfaces

If toppings are to be applied to hardened concrete surfaces, scabble the surface to expose the aggregate. Thoroughly dampen and leave free of standing water. Immediately before placing, scrub a coat of neat cement grout into the surface, or apply a suitable adhesive.

Placing

General: Spread the topping mix, compact and float.

Thickness: 20 ± 5 mm.

Monolithic placing: Spread the topping mix as soon as surface water has disappeared from the base.

Curing

Use a method which prevents cracking or crazing resulting from drying shrinkage without impairing the adhesion of subsequent finishes.

Granolithic topping

Mix proportions: 1:1:1.5 (cement : fine aggregate : 5 mm coarse aggregate).

Water:cement ratio: 0.5 maximum.

Slump: 50 mm maximum.

Margins to toppings

Integral margins: Form margins to cementitious toppings integrally in the topping material.

Coved skirtings: Form the cove in topping material, and finish the top to a neatly struck line. Mitre internal and external angles.

12 BLOCK AND TILE FINISHES

12.1 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*).

12.2 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.

Block and tile schedule

Location	Floor	Wall/skirting	Accessories	Grout
Front entry				
Rear/side entry				
Kitchen/family				
Laundry				
Bathroom				
WC				
Ensuite				
Terrace				

12.3 WATERPROOFING WET AREAS

Standard

General: To AS 3740-1994 (*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: Extend membrane over the hob and into the room at least 50 mm. 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.

12.4 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. Return tiles into sills, reveals and openings. 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.
- Quarry tiles: 6 - 12 mm.
- 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.

13 FLOOR COATINGS AND COVERINGS

13.1 GENERAL

Cross reference

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

13.2 MATERIALS AND COMPONENTS

Hardboard underlay

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

Classification: General purpose medium board manufactured as flooring underlay.

Resilient underlay alternatives

Needled underfelt: Provide a felt composed of 60% animal fibre and 40% jute, reinforced with polypropylene scrim with a minimum mass of 50 g/m^2, or hessian fabric with a minimum mass of 150 g/m^2.

Synthetic foam underlay: Provide a high density synthetic latex flat cushion foam sandwiched between reinforced carrier fabric.

Rubber underlay: Provide a heavy-duty natural rubber, waffle pattern, with a backing of reinforcing fabric, either hessian, spun nylon, or polyester.

Hot-melt adhesive tape

Provide a glass fibre and cotton thermoplastic adhesive-coated tape 60 mm wide on a 90 mm wide metal foil base and backed with silicon-coated release paper.

Carpet

Minimum class: Domestic Medium Duty under the Australian Carpet Classification Scheme.

Manufacturer: >

Colour: >

Underlay: >

Resilient finish

Manufacturer: >

Colour: >

Underlay: >

13.3 SUBSTRATE

Substrate preparation

Prepare the substrate including the following:

- Stripping and cleaning: Remove deleterious and loose material, including existing floor coverings and any surface treatment which could adversely affect adhesion.
- Repairs: Make good to the surface finish as necessary. Fill depressions with a suitable filler, and remove high spots and projections. If necessary lay a steel-trowelled underlay to concrete substrate.
- Fixtures and fittings: Remove door stops and other fixtures, and refix in position undamaged on completion of the installation.
- Basic sanding: Produce an even plane sanded surface on strip flooring to be covered with carpet or resilient sheet or tile. 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.

13.4 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.

Permanent stick method: Immediately after laying, and again one hour later, roll the carpet from the centre diagonally towards each edge using a 65 kg multi-wheeled roller. Do not roll foam-backed carpet.

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.

13.5 LAYING RESILIENT FINISHES

Standard

General: To AS 1884-1985 (*Floor coverings - Resilient sheet and tiles - Laying and maintenance practices*).

Sheet set out

Set out sheets to give the minimum number of joints. Run sheet joints parallel with the long sides of floor areas.

Tile set out

Set out tiles from the centre of the area. Match edges and align patterns. Arrange the material so that variation in appearance is minimised.

Joints

Butt edges together to form tight neat joints showing no visible open seam and cold weld.

Junctions

Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

Cleaning and protection

Keep traffic off floors until bonding has set or for 24 hours after laying, whichever period is the longer. Do not allow water in contact with the finish for 7 days.

14 PAINTING

14.1 GENERAL

Standards

Follow the guidance given in AS/NZS 2311-2000 (*Guide to the painting of buildings*) and AS/NZS 2312-1994 (*Guide to the protection of iron and steel against exterior atmospheric corrosion*).

14.2 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.

Autoclaved aerated concrete walls

Do not apply oil-based paints.

14.3 PAINTING

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.

Restoration

Clean off marks, paint spots and stains progressively. Touch up damaged decorative paintwork or misses with the paint batch used in the original application.

Substrate preparation

Provide a filler tinted to match the substrate if the finish is transparent.

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 and cork floors

After sanding, finish with 3 coats of clear floor sealer to APAS-0205-2001 (*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	
Full gloss solvent-borne	APAS-0015/2-2001 (*Full gloss alkyd enamel for interior use only (buildings)*)

Final coat	Use paint to APAS specification
Flat latex	APAS-0260/4-2001 (*Washable flat finish for interior use (buildings)*)
Low gloss latex	APAS-0260/3-2001 (*Low gloss interior latex paint in MCR (buildings)*)
Semi-gloss latex	APAS-0260/2-2001 (*Semi gloss interior latex paint in MCR (buildings)*)
Gloss latex	APAS-0260/1-2001 (*Interior gloss latex paint (buildings)*)
Exterior	
Full gloss solvent-borne	APAS-0015/1-2001 (*Full gloss alkyd enamel for exterior and interior use (buildings)*)
Flat latex	APAS-0280/3-2001 (*Flat or low gloss exterior latex finish in MCR (buildings)*)
Low gloss latex	APAS-0280/3-2001 (*Flat or low gloss exterior latex finish in MCR (buildings)*)
Gloss latex	APAS-0280/1-2001 (*Gloss exterior latex paint in MCR (buildings)*)
Stain, lightly pigmented	APAS-0115-2001 (*Lightly pigmented solvent borne ranch finish for exterior timber*)
Latex stain, opaque	APAS-0280/5-2001 (*Heavily pigmented low gloss latex ranch finish for exterior timber*)
Semi-gloss latex	APAS-0280/2-2001 (*Semi gloss latex paint, exterior (buildings)*)
Paving	
Semi gloss	APAS-0200/1-2001 (*One pack semi gloss pigmented solvent borne paving paint for concrete*)
Gloss	APAS-0200/2-2001 (*One pack full gloss pigmented solvent borne paving paint for concrete*)

Exterior painting schedule

Item	Manufacturer and paint type	Colour
Fascia		
Guttering		
Downpipes		
Under eaves		
Cladding		
Shutters		
Handrails		
Balustrades		
Posts and beams		
Gable barge		
Gable panels		
Gable battens		
Finials		
Frieze horizontals		
Frieze verticals		
Masonry		

Windows and external doors painting schedule

Location	Manufacturer and paint type	Internal	External	Mouldings
Front door panel				
Front door frame				

Location	Manufacturer and paint type	Internal	External	Mouldings
Other door panels				
Other door frames				
Garage door panel				
Garage door frame				
Window frames				
Window sashes				

Interior painting schedule

Room/Item	Manufacturer and paint type	Walls	Ceiling	Cornice	Doors	Linings/ trim
Front entry						
Rear/side entry						
Hall (ground floor)						
Lounge						
Dining						
Room dividers						
Kitchen						
Family						
Rumpus room						
WC						
Laundry						
Landing (first floor)						
Handrails						
Balustrades						
Bathroom						
Bedroom 1						
Ensuite						
Bedroom 2						
Bedroom 3						
Bedroom 4						
Bedroom 5						
Garage						
Store						

15 TIMBER FIXTURES

15.1 GENERAL

Cross references

Refer to the following worksections:

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

15.2 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

Hardware

Handles: >

Locks: >

15.3 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.

15.4 TIMBER STAIRS AND BALUSTRADES

Closed strings

Trench for treads and risers.

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.

Newels

Halve and bolt to strings.

Handrail

Stub tenon to newels.

Balusters

Stub tenon to handrail at top and to tread or floor at the bottom.

15.5 DOMESTIC KITCHEN ASSEMBLIES

Standard

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

15.6 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: Provide decorative laminated sheet if necessary

- to conceal fasteners; or
- to provide selected colours.

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.
- White thermoset powder coating or nickel plated.

15.7 BENCHTOPS

Laminated benchtops

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

Minimum thickness: 32 mm.

Finish: Decorative laminated sheet adhesive fixed.

Sealing underside: Laminate undersides of benchtops if

- likely to be subject to excessive moisture from equipment such as dishwashers; or
- the benchtop is not restrained against warping by cupboard carcass or support framing.

Installation: Fix to carcass at least twice per 600 mm length of benchtop.

Joint sealing: Fill joints with sealant matching the finish colour and clamp with proprietary mechanical connectors.

Edge sealing: Seal to walls and carcasses with a sealant which matches the finish colour.

15.8 CEILING AND UNDER FLOOR ACCESS

Ceiling

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

Under floor

Provide a frame and a door, minimum size 720 mm wide x 600 mm high, complete with padbolt.

15.9 SCHEDULE

Joinery schedule

Location/Item	Manufacturer	Material	Colour

16 PLUMBING INSTALLATIONS

16.1 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*).

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.

16.2 MATERIALS AND COMPONENTS

Water supply pipes

Material: >

Insulation of supply pipes

Hot water: >

Cold water: >

Kitchen sink

Tap holes: >

Water heater

Type: >

Manufacturer: >

Model/capacity: >

Finishes

Finish exposed piping, including fittings and supports as follows:

- Internal locations such as toilet and kitchen areas: Bright chrome plate.
- Externally: Paint.
- Concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave unpainted except for required identification marking.

Valves

Finish valves to match connected piping.

Sanitaryware and tapware schedule

Location	Manufacturer	Type	Colour

16.3 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).

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 supports

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.

16.4 STORMWATER

Standard

General: To AS/NZS 3500.3.2-1998 (*National Plumbing and Drainage - Stormwater drainage - Acceptable solutions*) or AS/NZS 3500.5 (*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.

16.5 WASTEWATER

Standards

General: To AS/NZS 3500.2.2-1996 (*National Plumbing and Drainage - Sanitary plumbing and sanitary drainage - Acceptable solutions*) or AS/NZS 3500.5 (*National Plumbing and Drainage – Domestic installations*).

Waterless composting toilets: To AS/NZS 1546.2: 2001 (*On-site domestic wastewater treatment units - Waterless composting toilets*).

On-site domestic wastewater treatment units: To AS/NZS 1546.3: 2001 (*On-site domestic wastewater treatment units - Aerated wastewater treatment units*).

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.

Septic tanks

Precast concrete or glass fibre reinforced plastic septic tank: To AS/NZS 1546.1-1998 (*On-site domestic wastewater treatment - Septic tanks*).

Effluent disposal: To AS/NZS 1547-2000 (*On-site domestic wastewater management*).

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.

16.6 FRESHWATER

Standards

General: To AS/NZS 3500.1.2-1998 (*National Plumbing and Drainage - Water supply – Acceptable solutions*) and AS/NZS 3500.4.2-1997 (*National Plumbing and Drainage - Hot water supply systems – Acceptable solutions*) or AS/NZS 3500.5 (*National Plumbing and Drainage – Domestic installations*).

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.

Oil-fired heaters: To AS 1691-1985 (*Domestic oil-fired appliances – Installation*).

Solid fuel heaters: To AS/NZS 2918-2001 (*Domestic solid fuel burning appliances – Installation*).

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.

16.7 RAINWATER TANKS

General

Type: Provide a proprietary reinforced concrete, plastic or coated steel tank with flat base and pitched roof for storage of rainwater.

Installation: To AS/NZS 3500.1.2-1998 (*National Plumbing and Drainage - Water supply – Acceptable solutions*).

Coated steel tank: Fully support the tank above ground level.

- Material: Hot-dipped zinc-coated steel or aluminium/zinc-coated steel.

Reinforced concrete or plastic tank: Trim and compact the ground and place a level bed of sand at least 50 mm thick to support the tank.

16.8 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.

17 ELECTRICAL INSTALLATIONS

17.1 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.

17.2 COMPONENTS

Standards

Circuit breakers: To AS 3947.2-1997 *(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 3439.1-1993 (*Low-voltage switchgear and controlgear - Type-tested and partially type-tested assemblies*) or AS 3439.3-1995 (*Low-voltage switchgear and controlgear - Particular requirements ...)*, as appropriate.

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		

Luminaire schedule

Type	Manufacturer	Catalogue or model no.

Automatic fire detection system >

Security system >

Spare conduits

For future audio and television cable installation: >

17.3 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 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): >

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.

Luminaires

Non-specified luminaires: Provide a bayonet cap batten holder at each lighting point location where no luminaire is specified.

Dimmers and control devices

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

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

Installation and testing: To AS/NZS 1367-2000 *(Coaxial cable systems for the distribution of analogue television and sound signals in single and multiple unit installations).*

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 1670.1-1995 *(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.

18 MECHANICAL INSTALLATIONS

18.1 GENERAL

Interpretation

AIRAH: Australian Institute of Refrigeration and Air Conditioning and Heating.

AREMA: Air Conditioning and Refrigeration Equipment Manufacturers Association of Australia.

ASHRAE: American Society of Heating, Refrigeration and Air Conditioning Engineers.

Cross references

Refer to the *Electrical installations* worksection for electrical exhaust fan requirements.

Refer to the *Windows* worksection for external louvres.

Standards

Mechanical ventilation: To AS 1668.2-2002 (*The use of ventilation and airconditioning in buildings - Mechanical ventilation for acceptable indoor quality*) Grade 2 amenity.

Refrigeration systems: To AS 1677.2-1998 (*Refrigerating systems - Safety requirements for fixed applications*) and the recommendations of SAA HB40.1-1997 (*The Australian Refrigeration and Air Conditioning Code of Good Practice - Reduction of Emissions of Fluorocarbon Refrigerants in Commercial and Industrial Refrigeration and Airconditioning Applications*) and SAA HB40.2-1997 (*... in Residential Airconditioning Applications*).

18.2 AIRCONDITIONING DESIGN

Airconditioning load calculations

Calculate the cooling and heating loads using one of the following:

- Manual methods: AREMA/CSIRO, AIRAH DA9-1998 (*Load estimation and psychometrics*) ASHRAE or Carrier.
- Electronic proprietary methods: ACADS-BSG Koala or Camel, Carrier E20 or Trane Trace.

Design basis

Outside design conditions: Use outdoor design conditions listed in AIRAH DA9-1998 (*Load estimation and psychometrics*), Table 1 or Table 1A for the location geographically closest to the site and Comfort or non-critical process conditions.

Inside design conditions:

- Summer: 24°C dry bulb, 50% relative humidity.
- Winter: 21°C dry bulb.

Temperature variation: Limit the temperature difference in airconditioned spaces served by the same zone or system to 3K

- between any 2 points in the space from floor level to 1.5 m above floor level, > 2 m from cooking equipment and > 1 m from any other appliance;
- when outside conditions are in the range specified above;
- after the plant has been operating for one hour; and
- with the temperatures measured in the same 5 minute period.

Zoning: Divide the systems into temperature controlled zones to meet the specified permissible temperature variation and scheduled system divisions.

Fresh air: Supply fresh air to spaces with airconditioning systems via the air handling system.

Heating: Reverse cycle.

Windows, walls, floors and roofs: Refer to drawings for construction and insulation.

Internal window shading

Type: >

Ambient noise emitted: Lower than the level that can be heard within a habitable room in any neighbouring residential premises (regardless of whether any door or window to that room is open).

Duct design

Size ductwork on the following basis:

- Rigid sheet metal duct: ≤ 6 m/s and ≤ 1.2 Pa/m.
- Flexible duct: ≤ 4.0 m/s.

18.3 AIRCONDITIONING EQUIPMENT

Standards

Non-ducted airconditioners: To AS/NZS 3823.1.1-1998 (*Performance of electrical appliances - Room airconditioners - Non-ducted airconditioners and heat pumps - Testing and rating for performance*).

Ducted airconditioners: To AS/NZS 3823.1.2-2001 (*Performance of electrical appliances - Airconditioners and heat pumps - Ducted airconditioners and air-to-air heat pumps - Testing and rating for performance*).

Equipment

Supply equipment that

- is made by a manufacturer with a demonstrated ability to provide spare parts and service promptly to the site;
- will operate within the specified range of outdoor design conditions under the calculated loads without excessive head pressure or icing; and
- for equipment ≥ 7.5 kW nominal capacity, has been tested and certified under laboratory conditions in accordance with the requirements of the Association of Air Conditioning and Refrigeration Equipment Manufacturers of Australia (AREMA).

Reverse cycle units: Provide effective outdoor coil defrost facility that prevents room temperature dropping more than 2°C during defrost.

Cabinet: Aluminium, powder coated steel or moulded acrylonitrile-butadiene-styrene (ABS) plastic with zinc-coated steel or stainless steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions.

Drain trays: Aluminium, stainless steel or plastic to collect all moisture inside unit indoor and outdoor units.

Filters: Washable panel type with minimum average efficiency to AS 1324.2-1996 (*Air filters for use in general ventilation and airconditioning - Methods of test*) Test Dust No. 4 of 80%.

Coils: Copper tube with aluminium plate fins.

Controls

Provide the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Day/night zone changeover if scheduled.
- Time switch for each system with ≥ 6 temperature programs per day, separate programs for each day of the week, manual set point over ride and 'Vacation' temperature set back.

Non-ducted airconditioning system schedule

System designation
Plant location and room served
Split system or one-piece
Outdoor plant location

Ducted airconditioning system schedule

System designation
Rooms served
Split system or one-piece
Plant location
Day/night zone changeover required?

System designation
Rooms on day zone
Rooms on night zone

18.4 REFRIGERATION PIPEWORK

General

Pipes: To AS/NZS 1571-1995 (*Copper - Seamless tubes for airconditioning and refrigeration*).

Deemed to comply: Split system manufacturer's standard pre-charged piping kit.

Pipe insulation

Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell nitrile rubber in tubular form to ASTM C534-2002 (*Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form*). Protect insulation from sunlight and mechanical damage.

Insulation thickness: 13 mm for pipes < DN 20, 19 mm otherwise.

Condensate drains

Provide trapped ≥ DN 20 condensate drains to AS/NZS 3666.1-1995 (*Air-handling and water systems of buildings - Microbial control - Design, installation and commissioning*) from each indoor coil and safety tray. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.

18.5 UNIT INSTALLATION

General

Outdoor equipment: Provide clearance around units for condenser air flow and maintenance access. Ensure discharge air does not short-circuit to condenser intake.

Equipment at ground level: Mount on concrete plinth or similar impervious material.

Duct connections: Provide internal or external flexible duct connections at indoor unit.

Vibration isolation

Suspended units: Provide ≥ 4 metal spring or rubber-in-shear isolation mountings with ≥ 25 mm static deflection and 98% isolation efficiency.

Floor mounted units: Provide neoprene waffle pads. Bolt in place.

Safety trays

If leaks or condensation from equipment could cause nuisance or damage to the building or its contents provide a galvanized steel safety tray under the equipment.

18.6 DUCTWORK

Standard

Ductwork: To AS 4254-1995 (*Ductwork for air-handling systems in buildings*).

Insulation and sealing: To BCA clause 3.12.5.3 (*Acceptable construction - Energy efficiency - Services - Heating and cooling ductwork*).

Rigid duct

Material: Zinc-coated steel sheet to AS 1397-2001 (*Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated*), coating class Z275.

Flexible duct

Material: Alumidised fabric clamped on formed metal helix with insulation blanket wrapped around duct and covered with an outer vapour barrier.

Installation: Install flexible duct as straight as possible with minimum number of bends. Maximise bend radius. Check for and rectify crushed flexible duct.

Supports: To AS 4254-1995 (*Ductwork for air-handling systems in buildings*). Limit sag to < 40 mm/m.

Duct insulation

Insulate ducts to minimise heat gain and prevent condensation. Provide continuous vapour barrier around ducts carrying conditioned air.

Grilles and diffusers

Location: To provide even air distribution and temperatures with no draughts.

Supply diffusers

Type: >

Material: >

Return air grille

Type: >

Material: >

18.7 COMPLETION

Commissioning

Commission the systems to manufacturer's recommendations using recently calibrated instruments. Check ductwork for leaks. Submit signed commissioning check list on completion.

Cleaning

Clean interior of ductwork progressively during installation. Clean filters, outdoor coils, grilles and diffusers on completion.

Operating and maintenance instructions

Provide written operating and maintenance instructions for the day to day operation of the installation and setting of time switches. Include a schedule of recommended maintenance and drawing of the system as installed.

Maintenance

Provide corrective and preventative maintenance on the installation.

Maintenance period: The greater of 12 months from the date of commissioning of the systems and the duration of the Defects Liability Period.

Corrective maintenance: Attend site and undertake corrective maintenance within 24 hours of receipt of verbal or written advice.

Preventative maintenance: Provide preventative maintenance recommended by the equipment manufacturer. Provide all materials including consumable items and refrigerant.

Summer preventative maintenance visit: Provide at least one preventative maintenance visit during the months of December, January or February. Carry out preventative maintenance and provide electronic data logger or thermohydrograph to record temperatures at one location in each zone a period of 7 days. Submit results. If the temperature recorded is outside the specified tolerance identify and correct the cause and repeat test.

Maintenance reports: Provide a signed maintenance report setting out the work done and any measured values after each visit.

19 FENCES AND EXTERNAL WALLS

19.1 GENERAL

Cross reference

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

19.2 MATERIALS AND COMPONENTS

Galvanizing

Galvanize mild steel components as follows:

- Threaded fasteners: To AS 1214-1983 (Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)).
- Other components: To AS 4680-1999 ((Hot-dip galvanized (zinc) coatings on fabricated ferrous articles).

Concrete

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

Steel panel fencing

Self-drilling screws: To AS 3566-1988 (*Screws - Self-drilling - For the building and construction industries*) corrosion resistant class 3.

Steel framing: Zinc-coated or aluminium/zinc alloy coated steel to AS 1397-1993 (*Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated*)/Z450 or AZ150.

Steel sheeting: Prepainted to AS/NZS 2728-1997 (*Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements*).

Height: >

Prefinish colour: >

Steel posts

Galvanize to AS 4680-1999 ((*Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*).

Concrete posts

Reinforce and precast from concrete to AS 1379-1997 (*Specification and supply of concrete*).

Timber fencing size table

Provide timber members as follows:

Member	Preservative treated softwood picket (mm)	Preservative treated softwood paling/lap & cap (mm)	Hardwood or cypress pine paling/lap & cap (mm)
Maximum height	1200	1800	1800
End/corner gate posts	90 x 90	100 x 100	125 x 125 or 100 x 100
Intermediate posts	90 x 90	140 x 45 or 100 x 75	125 x 50 or 100 x 75
Maximum post spacing	2400	2400/2700*	2700
Rails	70 x 40	75 x 50 or 100 x 38	75 x 50 or 100 x 38
Picket/paling size	70 x 19	75, 100 or 150 x 15*	100 or 150 x 13*
Capping	-	125 x 35	100 x 50

* three rail fences only

Timber fencing

Height: >

Material: >

Type: >

19.3 CONSTRUCTION GENERALLY

Clearing

Clear vegetation on the fence alignment. Grub out the stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil.

Excavation

Excavate footings so that they have vertical sides and a firm base.

Minimum footing size

Generally: 200 diameter x 600 mm deep.

In loose material: 250 diameter x 900 mm deep.

In rock: 250 diameter x 300 mm deep.

Line and level

Erect posts vertically to follow the contours of the natural ground.

Earth footings

Place 100 mm of gravel in the footing base under posts and backfill with earth around posts, compacting firmly by hand or machine in 150 mm deep layers.

Concrete footings

Place mass concrete around posts and finish with a weathered top falling from the post to ground level.

Steel panel fencing

Ensure bottom rails have drain holes and are at least 50 mm clear of the ground.

Timber fencing

General: Mortice posts, taper splice rails and nail twice in mortices. Set pickets and palings clear of the ground.

Picket fence: Nail twice to each rail.

Plain paling fence: Use 2 rails for fences up to 1.8 m high. Close butt palings and nail twice to each rail.

Lap and cap paling fence: Use 3 rails for fences up to 1.8 m high with the top rail located to receive the capping. Close butt larger palings and nail twice to each rail. Fix smaller palings over joints and nail twice to each rail. Nail capping to the top rail.

19.4 GATES

General

Construction: Construct gates as follows:

- Ledges and braces: To match fence rails.
- Pickets or palings: To match fencing.

Hardware: Provide the following:

- Drop bolt and ferrule to each leaf of double gates.
- Latch to one leaf of double gates.
- Provision for locking by padlock.
- Hinges to ensure smooth operation.

Hand access: Provide hand holes to give access from outside to reach locking provision.

Size: >

Type: >

19.5 BRICK FENCES

Standards

Follow the guidance given in Clay Brick and Paver Institute Technical Notes 21A, and 21B.

Masonry units

Type: >

Manufacturer: >

Size: >

Colour: >

Feature colour: >

Mortar colour: >

Mortar joints: >

Construction generally

Provide a structurally sound brickwork fence composed of

- footings;

- brickwork panels; and
- lateral support where necessary in the form of piers, posts or return walls.

20 LANDSCAPING

20.1 GENERAL

Cross reference

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

20.2 MATERIALS AND COMPONENTS

Concrete

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

20.3 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.

20.4 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/m^2.

20.5 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.

20.6 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.

20.7 PLANTING

Excavation

Excavate a plant hole for each plant large enough to accept the root ball plus 0.1 m^3 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.

20.8 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.

20.9 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.

21 PAVING AND ROADS

21.1 GENERAL

Cross reference

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

Footpath crossing

Provide a footpath and kerb crossing to local council requirements.

21.2 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.

21.3 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.

21.4 BASE COURSE

Preparation

Prepare the subgrade to suit the thickness of the base course and paving. If necessary, loosen the ground to a depth of 200 mm and adjust the moisture content before compaction. Compact the ground to a firm, even surface using at least 2 passes of a vibrating plate compactor or roller. Remove and replace soft areas.

Base course material

Provide well-graded crushed rock or gravel, free of deleterious material, with a maximum particle size of 26.5 mm, uniformly graded and with a maximum clay content of 6% by mass.

Placing

Spread and compact the base course to a firm, tight, close textured surface using at least 3 passes of a vibrating plate compactor or roller. Adjust the moisture content as needed to facilitate compaction.

Base course minimum thickness table

Comply with the following minimum thicknesses:

	Site classification to AS 2870			
	Unit paving		Bituminous paving	
	A	S&M	A	S&M
Foot and bicycle traffic	0	0	50 mm	100 mm
Light domestic traffic occasionally up to 3 tonne gross	0	75 mm	100 mm	150 mm

21.5 ASPHALT PAVING

Hotmix paving

Standard: Place and compact asphaltic concrete paving over the prepared base course to AS 2734-1984 (*Asphalt (hot-mixed) paving - Guide to good practice*).

Mix designation: AC7.

Bitumen binder class: 170.

Minimum thickness: 25 mm.

Tack coating: Bituminous emulsion spray to AS 2734-1984 (*Asphalt (hot-mixed) paving - Guide to good practice*).

21.6 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: >

Size: >

Colour: >

Laying unit paving

General: Over the base course, lay the units on bedding sand screeded to a uniform thickness not exceeding 30 mm, and to the required falls and levels. Do not disturb the screeded sand bedding before the units are laid. Provide a gap of 1-3 mm wide between adjoining units. After laying, tamp the units using a vibrating plate compactor.

Dry joints: Fill the joints flush with clean, fine sand or screened bedding sand passing a 1.2 mm sieve, vibrate into the joints and then make 2 further passes of the vibrating plate compactor.

Edge restraint

Provide edge restraint where needed to support the sand bedding and maintain the paving shape. Bed units in mortar at least 40 mm thick.

21.7 IN SITU CONCRETE PAVING

Concrete

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

Colour: >

Aggregate: >

Minimum thickness

Foot and bicycle traffic: 75 mm.

Light domestic traffic occasionally up to 3 tonne gross: 100 mm.

Preparation

Trim the ground to suit the required thickness of concrete and compact to a firm, even surface.

Control joints

Form tooled joints at maximum 2 m spacing.

Expansion joints

Cast-in 10 mm thick bitumen impregnated fibreboard joint filler at maximum 6 m spacing.

Abutment with building

Where concrete paving more than 1.5 m wide abuts the wall of a building, provide a strip of 10 mm thick bitumen impregnated fibreboard between the paving and the wall.

Finishing methods

Broom finishing: Wood float and broom to an even textured slip-resistant surface with steel tooled margins. On gradients steeper than 10%, roughen the surface by scoring.

Exposed aggregate finish: Steel trowel to a smooth surface. After final set use clean water and brushes to remove the surface film of mortar until the aggregate is uniformly exposed without under cutting of the matrix.

Sponge finish: After floating, produce an even textured sand finish by wiping the surface using a damp sponge.

Stamper pattern: Use a proprietary system.

Finish type: >

22 APPLIANCES AND FIXTURES

22.1 GENERAL

Dishwasher

Manufacturer: >
Type: >
Colour: >
Built-in: >
Panel to match door: >
Cold water: >
Hot and cold water: >

Wall oven

Manufacturer: >
Type: >
Colour: >
Natural gas: >
LP gas: >
Electric: >

Cooktop/stove

Manufacturer: >
Type: >
Colour: >
Cooktop: >
Stove: >
Natural gas: >
LP gas: >
Electric: >

Range hood

Manufacturer: >
Type: >
Colour: >
Ducted: >
Recirculating: >

Microwave

Manufacturer: >
Type: >
Colour: >

Waste disposal unit

Manufacturer: >
Type: >

Heating/airconditioning

Manufacturer: >
Type: >
Natural gas: >
LP gas: >
Electric: >

Fixtures

Clothes line: >
Letter box: >
Street number: >
Towel rails: >
Clothes hooks: >

Toilet roll holders: >
Soap holders: >
Handrails: >
Mirrors: >
Shower screens: >
Blinds and curtains: >
Doors chimes: >
Other requirements: >

Appliances and fixtures schedule

Item	Supplied	Installed by