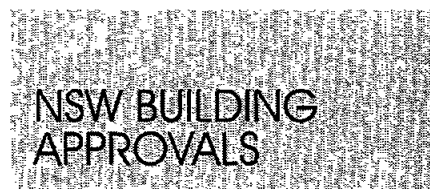


- ACCREDITED CERTIFIERS
- PRINCIPAL CERTIFYING AUTHORITY
- CONSTRUCTION CERTIFICATES
- FIRE SAFETY/BUILDING CONSULTANTS



11 December 2009

Pittwater Council
PO Box 882
MONA VALE NSW 1660

The General Manager
 Attention Planning Department

Dear Sir/Madam

Re N0452/08 & CC50P09 5 Bilgola Terrace, BILGOLA

Please find attached a copy of the Construction Certificate for the proposed development that has been granted by the Accredited Certifier, Mr Patrick Doherty

The CC, Notice of Commencement and Appointment of Principal Certifying Authority relates to provision for alterations and additions to the existing dwelling

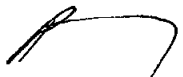
Together with CC, we have enclosed the following for Council's record

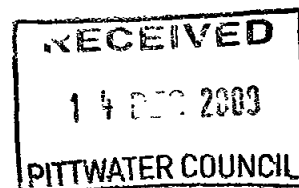
- 1 Construction Certificate / NOC & PCA Application Form
- 2 Other documents relied upon

In accordance with Council's policy we have attached a cheque for the registration of this certificate. In forwarding the receipt for this cheque it is requested that reference be made to the address of the premises

If you have any queries regarding the above please do not hesitate to contact the undersigned on 9566 4952 / 0424 699 924 during business hours

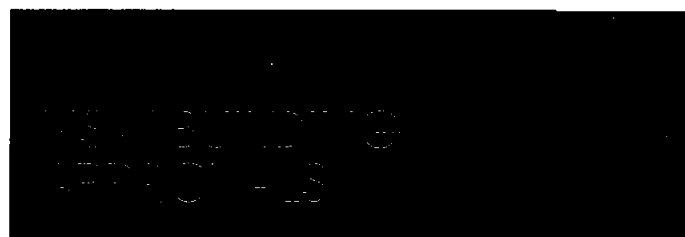
Yours faithfully,


 Patrick Doherty
 NSW Building Approvals
 cc
 Mr and Mrs Mitchell
 5 Bilgola Terrace
 BILGOLA NSW 2107



REC 272481
\$30
14/12/09

- ACCREDITED CERTIFIERS
- PRINCIPAL CERTIFYING AUTHORITY
- CONSTRUCTION CERTIFICATES
- FIRE SAFETY/BUILDING CONSULTANTS



Construction Certificate

Issued under the Environmental Planning and Assessment Act 1979

Certificate No

50P09

Applicant

Mark and Katrina Mitchell

Owner

K Mitchell and M Mitchell

Subject land

5 Bilgola Terrace, BILGOLA Lot 8, DP 822263

Proposal

Alterations and additions to the existing dwelling

BCA Classification

Class 1a

Cost of building works

\$242,000 00

Builder

Colmer Constructions Pty Ltd, Li No U 148830C

DA No

N0452/08

Determination Date

16 June 2009

Consent Authority

Pittwater Council

Date of receipt of CC application

8 December 2009

Determination

Approved

Date of Determination

11 December 2009

Approved plans

ARCHITECTURAL

- Plans prepared by Nick Karahalios Job No 081356-1 081356-2 081356-3 and dated 25 August 2008

Construction Certificate Attachments

- Structural Engineering Details prepared by Northern Beaches Consulting Engineers Pty Ltd S01 to S010 (inclusive) and dated October 2009
- Certificate of Existing Structural Adequacy prepared by Northern Beaches Consulting Engineers Pty Ltd and dated 6 November 2009
- Crozier – Geotechnical Consultants report 10 11 09
- Fire Base Consulting Bushfire Risk Assessment and dated 23 June 2008
- Sydney Water Approved Stamp Property No 3400276
- Development Control Services External Doors, Practice Note 3/06
- BASIX Certificate No A59440 and dated 10 June 2009

Attachments

☒ Approved plans ☒ Specifications (SOUTHspec)

Accredited Certifier

Accreditation Level & No

Patrick Doherty

Accreditation Body

Grade 2 – BPB0094

I certify that

Building Professionals Board

- the work if completed in accordance with documentation accompanying the application for the certificate (with such modifications verified by the certifying authority as may be shown on that documentation) will comply with the requirements of *Environmental Planning & Assessment (EP&A) Regulation 2000* as are referred to in sec 81A (5) of the *EP&A Act 1979*

Signed

Patrick Doherty

Accredited Certifier

Date 11 December 2009

SUITE 15/2, 12 QUEBEC POINT ROAD
GLEBE
NSW 2037
WWW.NSWBUILDING.COM.AU

MOBILE 0424 699 924
PHONE (02) 9566 4830
FAX (02) 9518 6310
EMAIL pd@nswbuilding.com.au

- ACCREDITED CERTIFIERS
- PRINCIPAL CERTIFYING AUTHORITY
- CONSTRUCTION CERTIFICATES
- FIRE SAFETY/BUILDING CONSULTANTS

NSW BUILDING
APPROVALS

Construction Certificate Application

Under Section 109C (1) (b) 81A (2) and 81A (4) of the Environmental Planning and Assessment Act 1979

1 Details of the applicant

Mr ☒ Ms ☐ Mrs ☒ Other

First name

Family name

Company/ Organisation

MARK & KATRINA

MITCHELL

Flat/street no

Street name

5

BILGOLA TERRACE

Suburb or town

State

Postcode

BILGOLA

NSW

2107

Daytime telephone

Fax

Mobile

9907 1833

9907 1844

0412 259 121

Email

MARK@URGEFOOTWEAR.COM.AU

2 Identify the land

Level / Flat no

Street no & Street name

5 BILGOLA TERRACE

Suburb or town

Postcode

State

BILGOLA

2107

Lot no

DP/ MPS no

Section

8

822263

Building Name

Volume/ folio

3 Estimated cost of the development

\$242,000 including GST

4 Describe the development

What type of work do you propose to carry out?

Building work ☒

Subdivision work ☐

Describe the work

TOP FLOOR TIMBER FRAME ADDITION

Certificate Application Form

5 Development Consent

Development Consent Number

ND452 / 08

Date Consent Determined

16-06-09

Consent Authority (Local Government)

PITTWATER

6 Signatures

Applicant's Signature

Signature

[Signature]

Date

[Signature] 4/12/09

Owners Consent

- Every owner of the land must sign this application
- If the owner is a company, this form must be signed by an authorised director of the company
- If the property is a unit under strata title or a lot in a community title this form must be signed by the chairperson or the secretary of the Body Corporate or the appointed managing agent
- If you are signing on the owner's behalf as the owner's legal representative you must state the nature of your legal authority and attach documentary evidence (e.g. power of attorney, executor, trustee, company director etc)

As the owner(s) of the above property I/we consent to this application. I also consent for NSW Building Approvals staff to enter the land to carry out inspections relating to this application.

Owners Signature

Signature

[Signature]

Name Of Person and/ or Company Name & Address

K MITCHELL
5 BILGOLA TERRACE,
BILGOLA 2107

Date

4/12/09

Owners Signature

Signature

[Signature]

Name Of Person and/ or Company Name & Address

M MITCHELL
5 BILGOLA TERRACE
BILGOLA 2107

Date

4/12/09

7 Details of the principal contractor/builder

Builder's name

COLUMER CONSTRUCTIONS P/L

Builder's licence number

01488300

Flat/street no

Street name

Suburb or town

State

Postcode

Daytime telephone

Fax

Mobile

OFFICE USE ONLY date received

07/12/2009

SUITE 15/2 12 GLEBE POINT ROAD
GLEBE
NSW 2037
WWW.NSWBUILDING.COM.AU

MOBILE 0424 699 924
PHONE (02) 9566 4952
FAX (02) 9518 6310
EMAIL pd@nswbuilding.com.au

8 Information to be attached to the application

You need to provide material with your application that is relevant to the type of work you propose to do. Please indicate the material you have attached by placing a cross in the appropriate boxes ☐

1 If you are going to carry out **building work**

- ☒ a copy of any compliance certificates on which you rely
- ☒ detailed plans of the building (4 copies)

The plans must be drawn to a suitable scale and consist of a general plan and a block plan. The general plan of the building is to

- show a plan of each floor section
- show each elevation of the building
- show the level of the lowest floor, the level of any yard or unbuilt area on that floor and the level of the ground
- indicate the fire safety and fire resistance measures (if any) and their height, design and construction

Where you propose to alter, add to or rebuild a building that is already on the land, or modify plans that have already been approved, please mark the general plan (by colour or otherwise) to show the change you propose to make

- ☒ detailed specifications of the building (4 copies)

The specifications are to

- describe the construction (including the standards that will be met), the materials which will be used to construct the building and the methods of drainage, sewerage and water supply
- state whether the materials proposed to be used are new or second hand and give details of any second hand materials to be used

Where you propose to modify specifications that have already been approved, please mark the approved specifications (by colour or otherwise) to show the modification

- ☐ a plan of the existing building, drawn to scale, where the application involves building work to alter, enlarge or extend that building

This plan will assist NSW Building Approvals, being the certifying authority, to assess whether the work will reduce the fire protection capacity of the building

- ☒ evidence of any accredited component, process or design on which you seek to rely
Components, processes or designs that relate to the erection or demolition of a building are accredited under the Environmental Planning and Assessment Regulation 2000

- ☒ details of the fire safety measures, unless you are building a single dwelling or a non-habitable building or structure (such as a private garage, carport, shed, fence, antenna, wall or swimming pool). These details are to include

- a list of any fire safety measures you propose to include in the building or on the land if you propose to alter, add to or rebuild a building that is already on the land; a list of the fire safety measures that are currently used in the building or on the land

The lists must describe the extent, capability and the basis of design of each measure

- ☐ the attached schedule, completed for the development

The information in the schedule will be used by the Australian Bureau of Statistics to report each quarter on the building activity that occurs in the economy. Building statistics allow governments and businesses to accurately identify main areas of population growth and demand for products and services

- ☒ a long service levy to construct a building, unless
 - the cost of construction is less than \$25 000

SUITE 15/2 12 GLEBE POINT ROAD
GLEBE
NSW 2037
WWW.NSWBUILDING.COM.AU

MOBILE 0424 699 924
PHONE (02) 9566 4952
FAX (02) 9516 6310
EMAIL pd@nswbuilding.com.au

9 Schedule to application for a construction certificate

Please complete this schedule. The information will be sent to the Australian Bureau of Statistics

All new buildings

Please complete the following

- Number of storeys (including underground floors)
- Gross floor area of new building (m²)
- Gross site area (m²)

TWO
83.40 sq m
396.60 sq m

Residential buildings only

Please complete the following details on residential structures

- Number of dwellings to be constructed
- Number of pre-existing dwellings on site
- Number of dwellings to be demolished
- Will the new dwelling(s) be attached to other new buildings?
- Will the new building(s) be attached to existing buildings?
- Does the site contain a dual occupancy?
(NB dual occupancy = two dwellings on the same site)

—
ONE
—
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Materials – residential buildings

Please indicate the materials to be used in the construction of the new building(s)

Walls	Code	Roof	Code	Floor	Code	Frame	Code
Brck (double)	<input type="checkbox"/> 11	Tiles	<input type="checkbox"/> 10	Concrete or slate	<input type="checkbox"/> 20	Timber	<input checked="" type="checkbox"/> 40
Brck (veneer)	<input type="checkbox"/> 12	Concrete or slate	<input type="checkbox"/> 20	Timber	<input checked="" type="checkbox"/> 40	Steel	<input type="checkbox"/> 60
Concrete or stone	<input type="checkbox"/> 20	Fibre cement	<input type="checkbox"/> 30	Other	<input type="checkbox"/> 80	Aluminium	<input type="checkbox"/> 70
Fibre cement	<input type="checkbox"/> 30	Steel	<input checked="" type="checkbox"/> 60	Not specified	<input type="checkbox"/> 90	Other	<input type="checkbox"/> 80
Timber	<input checked="" type="checkbox"/> 40	Aluminium	<input type="checkbox"/> 70			Not specified	<input type="checkbox"/> 90
Curtain glass	<input type="checkbox"/> 50	Other	<input type="checkbox"/> 80				
Steel	<input type="checkbox"/> 60	Not specified	<input type="checkbox"/> 90				
Aluminium	<input type="checkbox"/> 70						
Other	<input type="checkbox"/> 80						
Not specified	<input type="checkbox"/> 90						

SUITE 15/2 12 GLEBE POINT ROAD
GLEBE
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FAX (02) 9518 6310
EMAIL pd@nswbuilding.com.au

ACCREDITED CERTIFIERS

- PRINCIPAL CERTIFYING AUTHORITY
- CONSTRUCTION CERTIFICATES
- FIRE SAFETY/BUILDING CONSULTANTS

NSW BUILDING
APPROVALS

Notice of Commencement & Appointment of Principal Certifying Authority

Under Section 81A (2)(b)(ii) or (c) or (4)(b)(ii) or (c) 86(1) and (2) of the Environmental Planning and Assessment Act 1979

1 Details of the applicant

Mr ☒ Ms ☒ Mrs ☒ Other

First name Family name Company/ Organisation

Flat/street no Street name

Suburb or town State Postcode

Daytime telephone Fax Mobile

2 Identify the land

Level / Flat no Street no & Street name

Suburb or town State Postcode

Lot no DP/ MPS no Section

3 Describe the development

What type of work do you propose to carry out?

- Building work ☒
Subdivision work ☐

Describe the work

4 Development Consent/CDC & Construction Certificate

DA No / CDC No Date Consent Determined Consent Authority (Local Govt)

CC No Date CC Determined Certifying Authority

5 Compliance with Conditions of Consent & HOW Insurance

- 1 Have all the conditions in the development consent or the complying development certificate required to be satisfied before the commencement of work been satisfied
Yes ☒ No ☐
- 2 Have you obtained the necessary builder's insurance under the Home Building Act
Yes ☒ No ☐

- ACCREDITED CERTIFIERS
- PRINCIPAL CERTIFYING AUTHORITY
- CONSTRUCTION CERTIFICATES
- FIRE SAFETY/BUILDING CONSULTANTS

NSW BUILDING APPROVALS

Notification of Critical Stage Inspections

Environmental Planning and Assessment Act 1979 Section 81A & 86 and Regulation 2000 Clauses 103A & 135A

Address Details

Level / Flat no

Street no & Street name

5 Bilgola Terrace

Suburb or town

BILGOLA

State

Postcode

Describe the work

Alterations and addition to the existing dwelling house

Approval Details

Construction Cert Number

CCP09

Development Consent Number

452/08

Principal Certifying Authority

PCA's name

Patrick Doherty

Accreditation number

BPB 0094

Accreditation body

Department of Planning – Building Professionals Board

THE FOLLOWING ARE REQUIRED CRITICAL MANDATORY INSPECTIONS

They are required pursuant to section 109E(3)(d) of the Act & Clause 162A of the Regs

- (a) after excavation for, and prior to the placement of, any footings, & (AE)
- (b) prior to pouring any in-situ reinforced concrete building element, & (AE)
- (d) prior to covering of the framework for any floor, wall, roof or other building element, & (PD)
- (e) prior to covering waterproofing in any wet areas, & (PD)
- (f) in the case of a swimming pool, after the construction of the swimming pool is completed and the barrier (if one is required under the Swimming Pools Act 1992) has been erected and before the pool is filled with water,
- (g) prior to covering any stormwater drainage connections, (AE)
- (h) after the building work has been completed and prior to any occupation certificate (PD)

Legend PD = Patrick Doherty AE = Accredited Engineer Eng = Member IE Aust

“Call NSW Building Approvals on 0424 699 924 providing 48 hours notice for us to carry out the above inspections”

Please Note if a builder is appointed the legislation requires you to notify them of these inspections A missed inspection may result in the PCA being prohibited from issuing an Occupation Certificate An Occupation Certificate must be issued at the end of construction

SUITE 15/2 12 GLEBE POINT ROAD
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NSW 2037
WWW.NSWBUILDING.COM.AU

MOBILE 0424 699 924
PHONE (02) 9566 4952
FAX (02) 9518 6310
EMAIL pd@nswbuilding.com.au

L7L

PITBWATER COUNCIL

RECEIPT

LSL-BUILD 847 00

 DETAILS NOTED

20/11/2009

RECEIPT N°

270587

Residential Builders' Warranty Insurance

Certificate of Insurance

Policy Number 32-N000400-BWC-3

Date Issued 11/11/2009

LEVEL 9 82 PITT STREET
SYDNEY
NSW 2000
Phone 1300 790 723
Fax 02 8227 8198
ABN 78 003 191 035
AFS License No 239545

QBE

MARK AND KATRINA MITCHELL
5 BILGOLA TERRACE
BILGOLA NSW 2107

Date 11/11/2009

Dear MARK AND KATRINA MITCHELL

QBE Insurance has been chosen as the provider of your Residential Builders' Warranty Insurance. Please find attached your original certificate of insurance and the relevant state policy wording. Please keep this original certificate of insurance in a safe place as this covers the home owner and subsequent home owners in the event that you sustain loss or damage but can not recover compensation from the Builder because of the insolvency death or disappearance of the Builder (subject to the terms and conditions as set out in the policy wording).

If you have any queries, please do not hesitate to call us on 1300 790 723

For and behalf of

QBE Insurance (Australia) Limited

 **DETAILS NOTED**



DIRECTORS
Stewart McGeady Rick Wray

Certificate of Existing Structural Adequacy

Date 6th November 2009 Job No 091001
Client Mark & Katrina Mitchell Engineer RW

Site 5 Bilgola Terrace, Bilgola

Rick Wray of Northern Beaches Consulting Engineers P/L carried out a site inspection at the above residential premises in August 2009. The purpose of the visit was to inspect and comment on the capacity of the existing structure to support the proposed additions and alterations as per approved architectural plans by Nick Karahalios Architectural Drafting Services.

The assessment consisted of a walk over style inspection of the building.

In summary, the dwelling is considered sound and provides an adequate structure for the proposed works, provided that engineering plans are complied with and that all structural works are certified during construction. However, some minor cracking may occur as the building adjusts to the new load distribution. This is not expected to adversely affect the buildings overall structural integrity.

Note: This certification does not cover any defects to the structure that were not accessible at the time of inspection. If in the event that defects are uncovered during construction or become apparent after construction is complete, then the engineer should inspect the areas of concern and prepare a specification for remedial works (These works will be carried out at hourly rates).

If the building is founded on clays of classification 'M' or 'H' movement and cracking is to be expected with changes in the moisture content of the supporting clay.

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

NORTHERN BEACHES CONSULTING ENGINEERS P/L


Rick Wray
BE CPEng NPER Director

X:\ENG\NBC\2009\091001\SA001.doc


Ph 0424 699 924
These plans have been relied upon
by NSW Building Approvals
for the issue of a
CONSTRUCTION CERTIFICATE

CROZIER - Geotechnical Consultants

Engineering Geologists & Geotechnical Engineers

(A Division of PJC Geo-Engineering Pty Ltd)

A B N 96 113 453 624

Suite 202/30 Fisher Road, Dee Why, NSW, 2099

Phone 9972 9578 Fax 9401 9206

Date 10th November 2009

No Pages 1

Project No 2439B 1

The Manager,
Development Compliance Office
Pittwater Council
Mona Vale Customer Service Centre,
Village Park, 1 Park Street,
Mona Vale 2103

RE First Floor Addition to Residence at 5 Bilgola Terrace, Bilgola

We have reviewed the design drawings Numbers 081356-1, 2 & 3, Dated August 2008 which were submitted by Nick Karahalios for a top floor addition to the existing house

A review of our report for the property titled "Report on Geotechnical Investigation for a Proposed Alterations and Additions at 5 Bilgola Terrace, Bilgola" Report Number 2439, Dated 31st May 2004, and the original site construction reports confirm that the site is quite stable. The proposed new roof addition will fall directly above the existing building envelope and no excavation work is required therefore the risk of slope instability associated with site works will be extremely low.

We are of the opinion that the site complies with the 'acceptable risk' criteria as set down in Council's Geotechnical Risk Management Policy of 2009. It is therefore suitable for the proposed new addition and can continue to achieve the Acceptable Risk criteria required by Council's Policy provided that any recommendations outlined in our original report with regard to site maintenance are followed.

Hope the above information meets Council's requirements. If we can be of further assistance in regards to this matter please don't hesitate to contact the undersigned.

Yours faithfully,



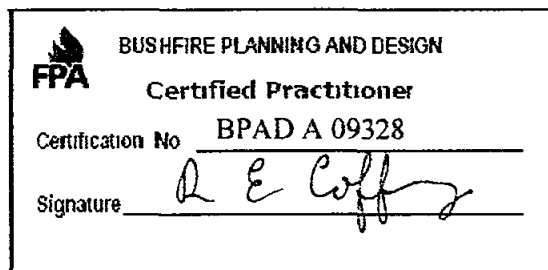
Peter Crozier
MSc MIE Aust CPEng NPER
Registration Number 691550



Ph 0424 699 924
These plans have been relied upon
by NSW Building Approvals
for the issue of a
CONSTRUCTION CERTIFICATE

This Report has been prepared and submitted by Ron Coffey - FPA Australia Certified Practitioner
Practitioner Certification No PBD PA 09328

Fire Base Consulting




Building Construction in Bush Fire Prone Areas

Bushfire Risk Assessment

In relation to

Proposed Development at

No 5 Bilgola Terrace, Bilgola ph 0424 699 924

Prepared on behalf of  These plans have been relied upon by NSW Building Approvals for the issue of a

Mr & Mrs Mitchell CONSTRUCTION CERTIFICATE

<p>Ron Coffey 20 Lake Park Road North Narrabeen Sydney NSW 2101 ABN – 14 640 865 430 (02) 99137907 – 0408220443 roncoffey@optusnet.com.au www.bushfireconsultants.com.au</p>	<p>23rd June 2008</p> <p>Reference No – 658</p>
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Contents

Introduction

- 1) Location
- 2) Zoning of Proposed Development Site and Adjoining Properties
- 3) Development Proposal and Building Classifications
- 4) Description of the Subject Property
- 5) Classification of the Vegetation on and surrounding the Site
- 6) Assessment of Slope on and surrounding the Site
- 7) Access and Egress
- 8) Water Supplies
- 9) Environment considerations
- 10) Bushfire Threat Assessment
- 11) Assessment of the extent to which the development proposal
Conforms or Deviates with Chapter 4 of Planning for Bushfire Protection
- 12) Recommendations
- 13) Summary
- 14) References
- 15) Web-based Bushfire Attack Assessor Version 2.0
- 16) Further Readings

Introduction

This report has been commissioned by Nick Karahalios Architectural Draughting Services on behalf of Mr & Mrs Mitchell to provide a bushfire risk assessment for the construction of alterations and additions at No 5 Bilgola Terrace, Bilgola

The site is identified as 'bush fire prone land' for the purposes of Section 146 of the *Environmental Planning and Assessment Act 1979* and the legislative requirements for building on bushfire prone lands are applicable

The proposed development is an infill development as defined within Chapter 4.6 of Planning for Bushfire Protection 2006 and this report has been prepared in accordance with the requirements of section 79BA of the Environment Planning and Assessment Act. This assessment includes an analysis of the hazard, threat and subsequent risk to the development proposal and provides recommendations that satisfy the Objectives and Performance requirements of the Building Code of Australia, Planning for Bushfire Protection 2006 [BPB] and Australian Standard AS3959, 1999

The site was inspected 23rd June 2008

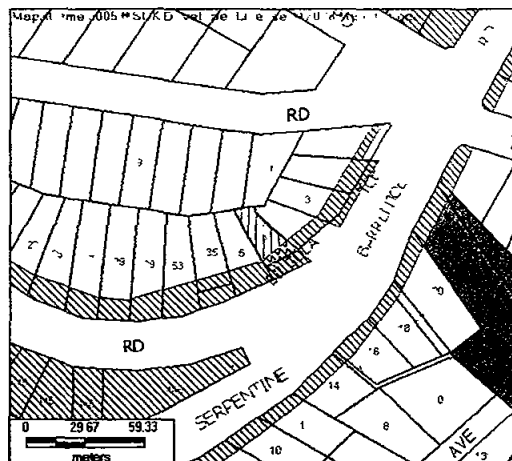
1) Location

No 5 Bilgola Terrace, Bilgola

UBD Page 119 Reference A5

Lot 8, DP 822263

LGA - Pittwater



2) Zoning of Proposed Development Site and Adjoining Properties

The site is zoned 2a residential

Properties north, south, east and west of the subject site are similarly zoned 2a residential

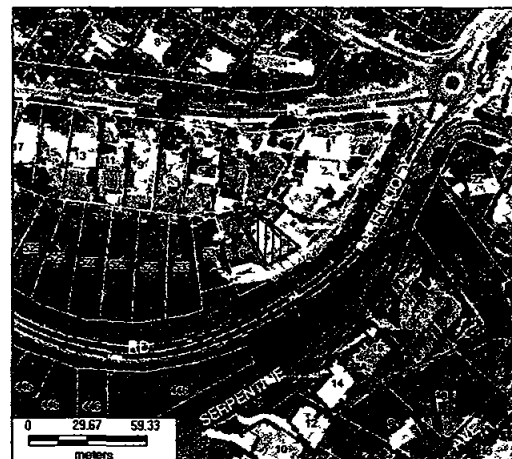
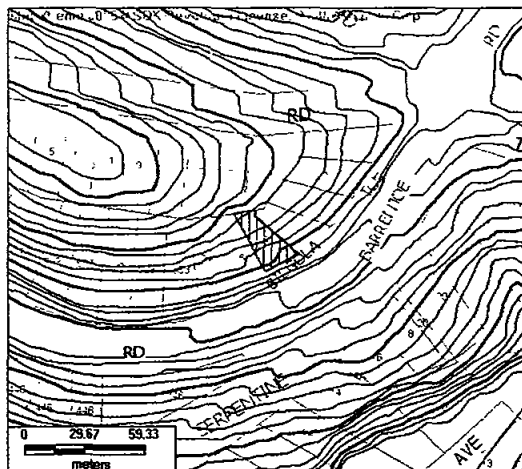
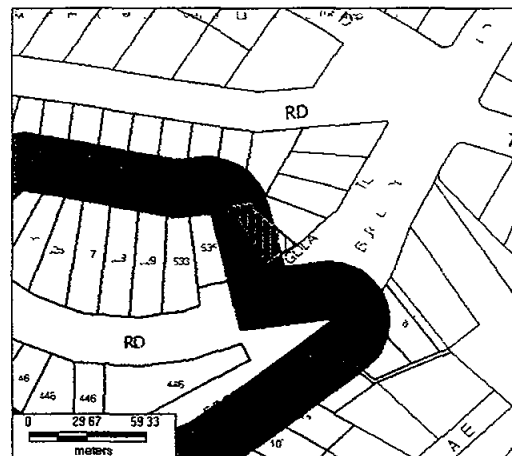
3) Development Proposal and Building Classifications

The proposal is for alterations and additions to an existing class 1A dwelling. The additions include a top floor over the existing dwelling set back approximately 4m from the south-east elevation.

4) Description of the Subject Property

The development site is a residential lot facing south-east onto Bilgola Terrace. The following sections 5-9 describe in detail the vegetation, slope, access and egress, availability of water supplies and environmental considerations for the site.

These images are the bushfire prone land map for the area, a topographical map and an aerial photograph which shows the proximity of the subject site to the hazard.



5) Classification of the Vegetation on and surrounding the Site

The site is developed and maintained and there is no threat from bushfire attack on the site



North & East Properties north and east of the subject site are developed and maintained and there is no threat of bushfire attack from these directions for more than 100m

South Across Bilgola Terrace and Barrenjoey Road is a handle of bush considered a hazard This hazard is a remnant and 47m from the proposed addition at the closest point

West Adjoining the western boundary is a developed site then an area of bushland that is considered a threat from bushfire attack to the site

With reference to PBP and the bushfire prone land map for the area this area of bushland is a remnant and a low hazard The closest point of the hazard to the proposed development is 23m The APZ requirements and building construction standards for this bushland area will be the same as for rainforests [PBP-Appendix 2]

PBP Appendix 2, part [a] provides that ‘ *Remnant vegetation is a parcel of vegetation with a size of less than 1ha or a shape that provides a potential fire run directly towards buildings not exceeding 50m. These remnants are considered a low hazard and APZ setbacks and building construction standards for these will be the same as for rainforests. The effective slope is to be determined over the length of the remnant.* ’

6) Assessment of Slope on and surrounding the Site

Slope on site The site slopes downslope from NW to SE at >20 degrees and is generally level across the site from east to west [across slope]

Slope away from the development site

- North 10-15 degrees upslope
- South 15-20 degrees downslope
- East Across slope
- West Across slope

7) Access and Egress

The site has direct access to Bilgola Terrace, which is a public access roadway road, and access and egress for emergency vehicles and evacuation appears adequate

8) Adequacy of water supply

The area has reticulated water supply and the nearest hydrant is in Plateau Road more than 90m from the development site

9) Environmental Considerations

The scope of this assessment has not been to provide an environmental assessment, however, the subject site is a small residential lot that has been developed for many years and it appears that the proposed development will have no adverse environmental effect. A Statement of Environmental Effects shall be submitted with the development application.

10) Bushfire Risk Assessment

Table 1, Reference PBP Table A3.3 / Web-based Bushfire Attack Assessor Version 2.0

Determination of Category of Bushfire Attack for the site and subsequent required building standards

Direction	Distance of Asset Protection Zone	Vegetation Classification	Assessment of Slope away from the development	Anticipated Radiant heat	Category of Bushfire Attack for the Site	Construction Standard Required
North	>140m	Developed sites	10-15 degrees upslope	n/a	Low	None
South	47m	Public roads then remnant	19 degrees downslope	11.44kw/m2	Medium	Level 1 AS3959
East	>140m	Developed sites	Across slope	n/a	Low	None
West	23m	Developed sites then remnant	Across slope	9.82kw/m2	Medium	Level 1 AS3959
<p>Summary: Based upon the relevant provisions of PBP the category of bushfire attack is for the site is Medium and the subsequent minimum construction standard is Level 1 AS3959:1999</p> <p>The anticipated radiant heat attack on the proposed development is calculated applying the Web-based Bushfire Attack Assessor Version 2.0 [Refer to section 15 of this report for a full analysis.]</p>						

11) Assessment of the extent to which the construction conforms or deviates from Chapter 4 of 'Planning for Bushfire protection 2006'

The proposed alterations and additions conform to the requirements of PBP for bushfire protection measures for infill development in relation to

- **Asset Protection Zones** Defendable space is provided on site. Asset protection zones are provided to the north and east by adjoining development and public roads and compensated for to the south and west by an increase in construction standards.
- **Siting and Design** The siting of the building has been previously determined in accordance with local council requirements and the proposed additions and alterations will not involve a re-siting of the building [no advantage could be gained by recommending a re-siting of the building].
- **Construction Standards** The construction standards have been determined using the Web Based Attack Assessor Version 2.

- Access Requirements The access and egress requirements have been designed to provide safe and effective evacuation from the subject site and appear to be adequate for fire brigade personnel and fire fighting equipment
- Water Supplies The nearest street hydrant is greater than 90m from the development. This report will include recommendations that the existing in ground swimming pool shall be considered an appropriate additional water supply for protection from bushfire attack
- Landscaping The development application shall include recommendations that the site is landscaped and managed in accordance with Inner Protection Area requirements of PBP

French, sliding stacker and/or bi fold doors

AS3959, 1999 requires that all openable doors must be screened with a tight fitting screen with corrosion resistant mesh, however the NSW Rural Fire Service [RFS] accept that special consideration can be applied to Bi-fold doors, French and Sliding Stacker doors. Development Control Practice Note 03/2006 'External Doors' [Revised November 2007] outlines the requirements for the non-screening of these doors.

The RFS position in relation to this matter is based on the premise that in practical terms these doors will be closed in the event of a bushfire so that the system performs in the intended way.

The RFS require that to achieve the intended performance requirement, evidence is required that demonstrates the door system

- a) has been tested by a recognised testing authority for compliance with AS1530 8.1 (2007) – *Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack - Radiant heat and small flaming sources* or AS1530 8.2 (2007) *Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack - Large flaming sources*, or
 - b) Shall
 - a) Prevent the entry of flame, embers and smoke into the building,
 - b) Withstand predicted (modeled) radiant heat flux (RHF) in kWm²,
 - c) Resist impact of wind borne debris associated with bush fires and,
-

- d Not permit the transfer of heat exceeding 10kW/m² into the building

12) Recommendations

The following recommendations are made for the bushfire protection measures for the proposed residential development of alterations and additions at No 5 Bilgola Terrace, Bilgola and are based upon the relevant provisions of the NSW Rural Fire Service guideline entitled *Planning for Bushfire Protection 2006*

Radiant heat calculations to assist in the determination of the category of bushfire attack, and subsequent construction standard for the development, have been calculated applying the NSW Rural Fire Service Web-based Bushfire Attack Assessor Version 2.0

- 1) The proposed development shall be constructed to a minimum standard of Level 1 AS3959, 1999
- 2) The Non Screening of Bi fold, French and Sliding Stacker doors is considered appropriate provided the doors are constructed to
 - 1 Prevent the entry of flame, embers and smoke into the building,
 - 2 Withstand the predicted modeled radiant heat flux of 11.57kW/m² [Level 1 Construction Standard AS3959, 1999],
 - 3 Resist impact of wind borne debris associated with bush fires and,
 - 4 Not permit the transfer of heat exceeding 10kW/m² into the building
- 3) In recognition that reticulated water supply is available but is not within 90m of the proposed development the existing inground swimming pool shall be considered an appropriate additional water supply for protection from bushfire attack
- 4) The entire site where not built on shall be established and maintained as an Inner Protection Area in accordance with the requirements of Planning for Bushfire Protection *Note Although the Asset Protection Zone requirements are listed as a recommendation, the site has been landscaped and is maintained to a standard that complies with the requirements of 'Planning for Bushfire Protection 2006' for Inner Protection Area Requirements*

13) Summary

This report consists of a bushfire risk assessment for the proposed residential development of alterations and additions at No 5 Bilgola Terrace, Bilgola

The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable

The proposed additions will be constructed to the minimum standards required in accordance with the guidelines of *Planning for Bushfire Protection 2006*

This report has considered all of the elements of bushfire attack and provided the proposed development is constructed in accordance with the recommendations included in section 12 of this report, it is my considered opinion that the development satisfies the Objectives and Performance requirements of the *Building Code of Australia, Planning for Bushfire Protection 2006 and Australian Standard AS3959, 1999*

Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee because of the variable nature of bushfires that any one building will withstand bushfire attack on every occasion

This Report has been prepared and submitted by R Coffey - FPA Australia Certified Practitioner
Practitioner Certification No PBD-PA 09328

This Report is a Bush Fire Hazard Assessment that provides the required information to assist Local Council and the Rural Fire Service in determining compliance in accordance with Planning for Bushfire Protection and AS 3959, 1999. The Local Council is the Final Consenting Authority



Ron Coffey Director, Fire Base Consulting
Grad I Fire E [Institute of Fire Engineers - 1973]
Grad Cert Fire Safety Eng [UWS - 2003]
Grad Dip Building in Bushfire Prone Areas [UWS - 2005]
Ass Prof Cert in Expert Evidence in the Land & Environment Court [UTS - 2005]
Corporate Member - Institute of Fire Engineers
Member - Fire Protection Association Australia



*Fire Base Consulting
Fire Protection Association of Australia
BPAD-A Certified Practitioner/Certified Business
Certification No BPD-PA09328
02 99137907 0408220443*

14) References

Australian Building Codes Board [2005]

Building Code of Australia
Volumes 1&2
Canprint

Australian Building Codes Board [2001]

Fire Safety Engineering Guidelines
Edition 2001
ABCB Canberra

D Drysdale D [1998]

Introduction to Fire Dynamics 2nd Edition
John Wiley & Sons Ltd

NSW Government Environmental Planning and Assessment Act [1979]

Part 79BA – Consultation and development Consent – Certain Bushfire Prone Land
NSW Government Printer

Planning NSW [2006]

Planning for Bushfire Protection 2006

A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners

This document provides the necessary planning considerations when developing areas for residential use in residential, rural residential, rural and urban areas when development sites are in close proximity to areas likely to be affected by bushfire events and replaces Planning for Bushfire Protection 2001

This document is essential reading. Download a copy from the RFS website or purchase a copy through the NSW Government Online Shop or phone 9228 6333

Ramsay C & Rudolph L [2003]

Landscape and Building Design for Bushfire Prone Areas
CSIRO Publishing

Standards Australia [1999]

Australian Standards 3959

Australian Building Code Board

Second Edition 1999, amended 2001

AS3959 – 1999 Construction of Buildings in Bushfire Prone Areas is available from SAI Global Limited Unit 10-16 South St Rydalmere – Phone 131242 or online from Standards Australia

15) Web-based Bushfire Attack Assessor Version 2.0



BUSHFIRE ATTACK ASSESSMENT REPORT

For Site Located At: **5 Bilgola Terrace Bilgola**

Created By: **Web-based Bushfire Attack Assessor Version 2.0**

1 User's Inputs

Local Government Area: **Pittwater**

In Alpine Areas: **No**

Vegetation: **Rainforest**

Effective Slope (degree): **0 (level)**

Separation Distance (m): **23**

2 Program's Settings

Flame Width (m): **100**

Flame Angle (degree): **80** (determined by the built in algorithm)

Flame Temperature (K): **1090**

Flame Emissivity: **0.95**

Surface Available Fuel Load (t/ha): **8**

Overall Fuel Load (t/ha): **10**

Fire Danger Index: **100** (Fire Weather Area: Greater Sydney Region)

Relative Humidity (%): **25**

Ambient Temperature (K): **308**

Heat of Combustion (kJ/kg): **18600**

Elevation of Receiver (m): **3.66** (determined by the built in algorithm)

3 Program Outputs

Category of Attack: **Medium**

Level of Construction Required: **Level 1**

Rate of Fire Spread (km/h): **0.96** (Noble et al., 1980)

Fire Intensity (kW/m): **4960**

Transmissivity: **0.824** (Fuss and Hammins, 2002)

Flame Length (m): **7.44** (RFS PBP, 2001)

Radiant Heat Flux (kW/m²): **9.82**

Assessment Date: **23/6/2008**

Assessed By: **R Coffey**

16) Further Readings

Standards Australia can provide a complete version of AS 3959 1999 *Construction of Buildings in bushfire prone areas* and this can be accessed from their website <http://www.standards.org.au/>

The NSW Rural Fire Service provides a list of publications that can be accessed from their website. The list below can be used as a guide and the website can be accessed as follows <http://www.bushfire.nsw.gov.au/>
Go to For the Community then Building in Bushfire Prone Areas to see an abridged version of AS3959 in the Legal Obligations section and all of the items listed below are in the Introduction Publications section

Development Control Practice Note 1/07 - Submission Requirements

This note provides advice to those involved with the development application process with information on the submission requirements supporting alternative solutions for Planning for Bush Fire Protection 2006

Development Control Practice Note 2/07 - Part 3A Process

This document outlines the role of the NSW Rural Fire Service and submission requirements for Major Projects that are referred under Part 3A of the Environmental Planning and Assessment Act 1979

Development Control Practice Note 2/06 - Fire Retardant Treated Timber

To provide guidance and to support the RFS position regarding fire retardant treated timber and naturally resistant timbers

Development Control Practice Note 3/06 External Doors

The purpose of this practice note is to provide performance criteria for external door systems including french, bi-fold and stacking type doors proposed for development located in bush fire prone areas. This document outlines the NSW Rural Fire Service performance criteria which applicants will be required to demonstrate to the RFS or the consent authority

Development Control Note 01 - Fire Retardant Timber

This Development Control Note provides a guide for the use of fire retardant-treated timber for the various levels of construction under Australian Standard AS3959 1999 Construction of Buildings on Bushfire Prone Areas and Planning for Bushfire Protection 2001(PBP)

Development Control Note 02 - Establishment of Easements for the purposes of Asset Protection Zones

This Development Control Note aims to provide guidance for the establishment of easements under section 88B or 88D of the Conveyancing Act 1919 for the purpose of providing Asset Protection Zones (APZ) on the adjoining land arising from a proposed development requiring a bush fire safety authority

Development Control Note 04 - Preparation of Local Environmental Plans (LEPs)

This Development Control Note aims to clarify the processes required in the assessment of Environmental Planning Instruments and the role of the NSW Rural Fire Service (RFS) in providing advice to councils under Section 117 of the Environmental Planning and Assessment (EP&A) Act, 1979

Development Control Note 05 - Development Consent in Bush Fire Prone Areas

This Development Control Note aims to provide a guide for persons that are preparing or assessing development applications for the construction of habitable dwellings in bush fire prone areas under section 79BA of the Environmental Planning and Assessment Act 1979 (EP&A Act)

Fast Fact - Transitional Arrangements & Planning for Bush Fire Protection, 2006

This document provides councils, applicants for development, State agencies and other groups involved with the development application process with information on the introduction of the revised Planning for Bush Fire Protection, 2006

Fast Fact - Requests to Review Recommendations

This document reinforces the legislative requirements for consent authorities, applicants, and other groups involved with the development approval process when requesting a review or variation to NSW Rural Fire Service recommendations under section 79BA or General Terms of Approval under section 91A of the Environmental Planning and Assessment Act 1979

Fast Fact - Consolidation of Land

This Fast Fact provides clarification on the position of the NSW Rural Fire Service (RFS) for the requirements for the consolidation of two or more lots into one

Fast Fact - Western NSW District

Since the release of Planning for Bush Fire Protection 2006 (PBP 2006) there have been several new exclusions from section 100B of the Rural Fires Act 1997 (RF Act) and the requirements for a Bush Fire Safety Authority. This Fast Fact aims to clarify which areas are considered Western NSW District as referred to in schedule 1 of the RF Regs

Fast Fact - Window Protection

This Fast Fact provides clarification on the position of the NSW Rural Fire Service (RFS) for window protection in Bush Fire Prone Areas

Fast Fact - Evacuation Plans

The aim of this Fast Fact is to clarify the policy position of the NSW Rural Fire Service (RFS) in relation to the process and role the Service undertakes in reviewing and utilising Emergency and Evacuation Management Plans for developments in bush fire prone areas

Fast Fact - Evacuation Plans

The aim of this Fast Fact is to clarify the policy position of the NSW Rural Fire Service (RFS) in relation to the process and role the Service undertakes in reviewing and utilising Emergency and Evacuation Management Plans for developments in bush fire prone areas

Fast Fact - Ecotourism

The aim of this Fast Fact is to clarify the policy position of the NSW Rural Fire Service (RFS) in relation to the requirements of ecotourism developments in bush fire prone areas

Fast Fact - Dual Occupancy Developments

This Fast Fact sheet provides information on dual and multiple occupancy developments

Fast Fact - Construction Levels

This Fast Facts clarifies the RFS position on varying construction levels for 79BA applications

Fast Fact - Fences and Gates

This fast fact provides advice on the RFS position for dividing fences in Bushfire prone areas

Fast Fact - Bush Fire Prone Land

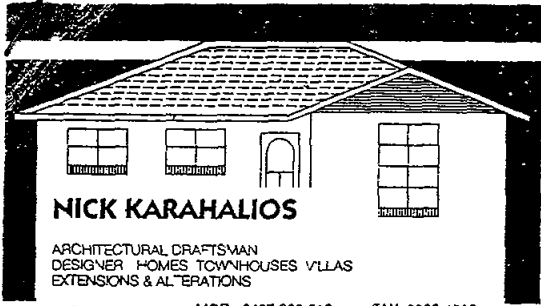
The aim of this Fast Fact is to define what constitutes Bush Fire Prone Land (BFPL) for the purposes of interpreting s79BA of the Environmental Planning and Assessment Act 1979 (EP&A Act) and s100B of the Rural Fires Act 1997 (RF Act). This document provides clarity for consent authorities and the general public on what proposals must consider bush fire as part of the development application

Fast Fact - Holiday Parks

This Fast Fact provides clarification on the position of the NSW Rural Fire Service (RFS) in relation to the construction of new or expansion of existing holiday parks on lands identified as bush fire prone

Fast Fact - Intumescent Paints

This Fast Fact clarifies the NSW Rural Fire Service (RFS) position in relation to the application of intumescent paint systems on proposed construction located within bush fire prone areas



NSW DETAILS NOTED
PROPOSED TIMBER
ACCESS STAIRS

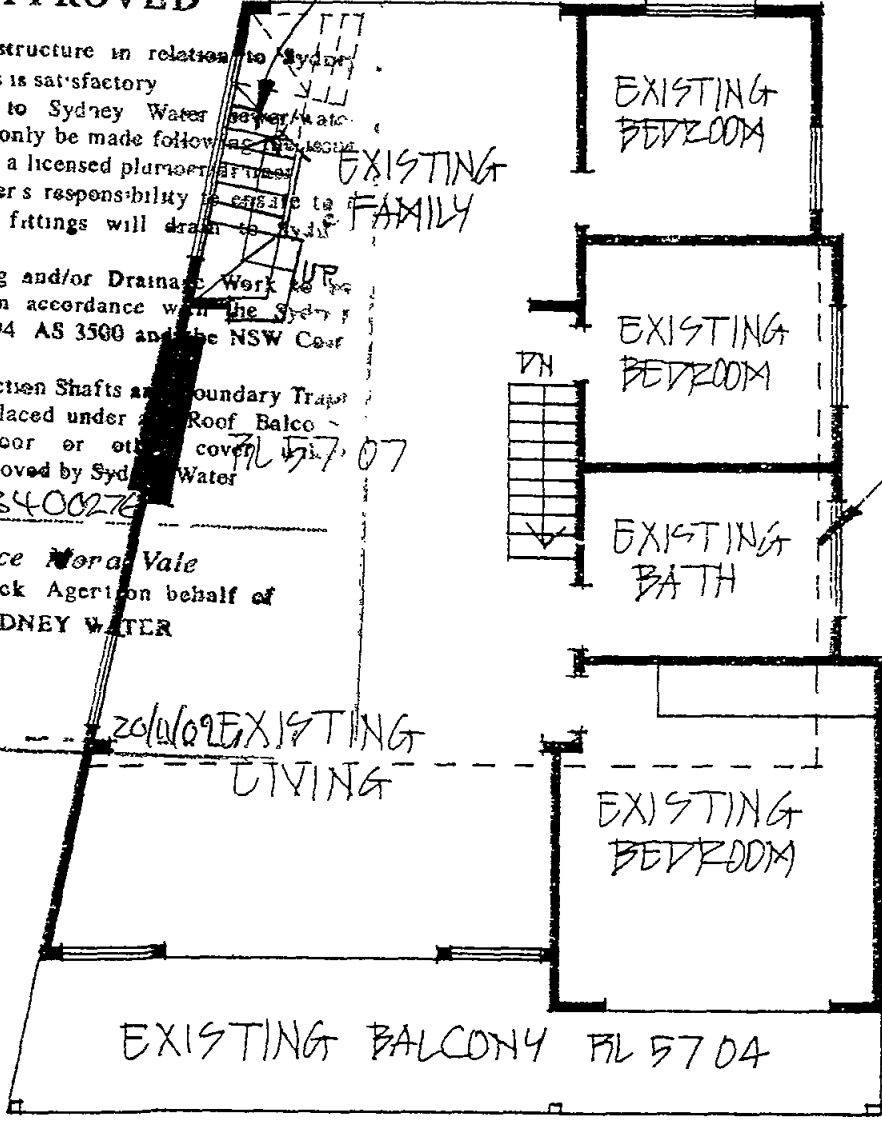
ALL DIMENSIONS AT
LEVELS TO BE
CONFIRMED ON S

SYDNEY WATER
APPROVED

- 1 Position of structure in relation to Sydney Water's assets is satisfactory
- 2 Connections to Sydney Water services may only be made following the issue of a permit to a licensed plumber
- 3 It is the owner's responsibility to ensure that all proposed fittings will drain to Sydney Water's sewer
- 4 Any Plumbing and/or Drainage Work to be carried out in accordance with the Sydney Water Act 1994 AS 3500 and the NSW Code of Practice
- 5 Gallies Inspection Shafts and Boundary Traps shall not be placed under a Roof Balcony Verandah Floor or other covered area unless otherwise approved by Sydney Water
- 6 Property No 340027

Reece Mera Vale
Quick Check Agent on behalf of
SYDNEY WATER

Per [Signature]



ALL NEW TIM
FRAMING TO C
WITH ASIG8

EXTEND
FIRE FLA

EXTENT OF
FLOOR OVER

3500

PROVIDE POST &
RAINHEAD SUPP

1000 HIGH
DWARF WALL

WATERPROOF BALCONY
FLOOR TO COMPLY WITH
THE MANUFACTURERS DETAILS

EXISTING PLAN LEVEL-2 SCALE 1:100

NOTE WINDOW W1 = 3800 X 2100
WINDOW W-2 = 3000 X 600 HIGHLIGHT WINDOW



Development Control Services

'Working towards a Safer Community' – Useful summaries to guide you in your practice.

External Doors

Practice Note 3/06

Revised November 2007 (Release 2)

The purpose of this practice note is to provide performance criteria for external door systems including french bi-fold and stacking type doors proposed for development located in bush fire prone areas

This document outlines the NSW Rural Fire Service performance criteria which applicants will be required to demonstrate to the RFS or the consent authority

Introduction

The requirements of AS3959 *Construction of Buildings in Bush Fire Prone Areas* for Level 1 2 & 3 construction for external doors and windows is that tight fitting mesh screens are to be fitted to prevent the entry of embers into the building. French, bi-fold and stacking type door systems may generally be unable to comply with this requirement which clashes with the intention of the doors to achieve seamless indoor/outdoor living

The RFS recognises the practical limitations of achieving compliance with AS 3959 for french, bi-fold and stacking type door systems. Performance of the door system must be balanced with the need to protect life and property

The RFS recognises the practical limitations of achieving a Deemed-to-Satisfy (DTS) solution for french, bi-fold and stacking type door systems. However, performance of door systems must be balanced with the need to protect life and property and achieve the intent of the performance solution being to prevent the entry of embers and reduce radiant heat transfer into buildings

In some cases (such as flame zone) it is inappropriate for such systems in high risk areas. The RFS reserves the right to not accept a performance solution if it is not demonstrated in accordance with Building Code of Australia (BCA) requirements. More specifically, the applicant must demonstrate how the product, design or solution can meet the performance threshold and/or calculated radiant heat levels that have been calculated as impacting on the structure during a bush fire event

Underlying Principles

The underlying principle for the performance of these door systems is based on the premise that the system is operating as designed during the fire event. In this case, that the door system will be closed. If people make an informed decision to stay and defend a properly prepared property, the RFS assumption is that the door system will remain closed to meet the intended performance solution

Limitations

The goal of absolute safety during a bush fire event is not attainable and despite best efforts there is the ever-present risk of personal injury or damage to property

Ultimately, it is the responsibility of the owner/occupier to comply with conditions of consent and to maintain systems designed to mitigate the impacts of bush fire

The RFS position in relation to these matters is based on the premise that in practical terms, french, bi-fold and stacking type door systems will be closed in the event of bush fires so that the system performs in the intended way

The RFS will not accept solutions exceeding a performance level beyond level 3 (29kWm²) without appropriate accreditation and testing

General

The BCA provides two paths to achieve compliance with its performance requirements, DTS and performance solutions



DETAILS NOTED

NSW RURAL FIRE SERVICE



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External Doors

Practice Note 3/06

Revised November 2007 (Release 2)

Deemed to Satisfy (DTS) Approach - AS3959

The DTS provision for external doors including french bi-fold and stacking type door systems in bushfire prone areas is verifiable compliance with AS3959

Under AS3959 s DTS provisions External Doors (3.7) for 1, 2 and 3 construction levels *shall be provided with tight fitting screens fitted with corrosion resistant metal mesh, except where Level 1 permits the use of aluminium mesh, with an aperture no greater than 1.8mm*. This solution is intended to restrict the penetration of wind blown burning embers into the dwelling when doors are left open.

Mesh screens also reduce the level of radiant heat impacting on glazed components and may assist the performance of standard glazing to perform above expected failure thresholds. Research by CSIRO has demonstrated that metal screens deflect up to approx 40% (Report No. FSZ 0688 – Fire Test on a Security Window Screen) of radiant heat that would otherwise impact on glazing or exposed materials such as curtains.

Performance Approach

Proposal to remove screens to open-able areas of a door system, required by AS3959 is an alternate solution as it deviates from the requirements of the standard. The below RFS requirements are an alternate or performance based solution and need to be supported in each and every case.

In order to support a performance solution and comply with the provisions of the BCA, the RFS requires demonstration as to the performance of the proposed system. The BCA provides a methodology for determining the level of compliance with the performance requirements. Applicants should ensure that the alternate solution they intend to use meets these requirements (BCA 2006 Volume 2, 1.04 – 1.0.10) and the criteria outlined in Table 1.

Performance Requirements

To achieve the intended performance, the RFS requires evidence that demonstrates the door system.

- a) has been tested by a recognised testing authority for compliance with AS1530.8.1 (2007) – *Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack - Radiant heat and small flaming sources* or AS1530.8.2 (2007) *Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack - Large flaming sources* or,
- b) shall
- Prevent the entry of flame, embers and smoke into the building,
 - Withstand predicted (modelled) radiant heat flux (RHF) in kW/m^2 ,
 - Resist impact of wind borne debris associated with bush fires and,
 - Not permit the transfer of heat exceeding 10kW/m^2 into the building.

Currently there are limitations to the performance of a door system based on modelled radiant heat levels. The RFS may require additional measures within the flame zone. Flame zone solutions will need to demonstrate these requirements based on predicted (modelled) RHF levels. Flame zone is currently modelled as the point of flame contact and/or radiant heat levels which exceed 29kW/m^2 .

The performance criteria for external doors including french, bi-fold and stacking type door systems in bush fire prone areas are outlined in Table 1.



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External Doors

Practice Note 3/06

Revised November 2007 (Release 2)

Table 1 - Performance criteria for external doors

Performance Criteria
<ul style="list-style-type: none">Glazing to withstand the modelled radiant heat flux
<ul style="list-style-type: none">All components (rail, stile, jambs, head, seals etc) of the system to withstand the modelled radiant heat flux
<ul style="list-style-type: none">The provision of seals to stiles head sill or threshold (if applicable) for the system to withstand the modelled radiant heat flux
<ul style="list-style-type: none">Fitted with either a draught excluder to the bottom rail or seals with a flammability index no greater than 5 (with the exception of intumescent seals which are permissible), on the sill / threshold to prevent the entry of embers and smoke into the building
<ul style="list-style-type: none">Rebated or planted jambs (if applicable)
<ul style="list-style-type: none">Rebated centre stiles (if applicable)
<ul style="list-style-type: none">The entire door/window systems (including jamb) shall be designed and constructed to withstand the modelled site specific radiant heat flux

Recommended standard RFS Conditions

The following standard conditions may be applied by RFS staff for applications proposing an alternate solution for an external door

The screen-less door system including glazing and supporting framework shall be designed and constructed to withstand the modelled radiant heat flux, and prevent the entry of embers into the building Draught excluders, seals and door furniture shall be manufactured from materials having a flammability index no greater than 5 (with the exception of intumescent seals which are permissible) and ensure that there are no gaps >1 8mm in diameter when the door is closed

The RFS will accept supporting submissions from an *expert* who has the qualifications and experience to determine whether a 'Building Solution' complies with the 'Performance Requirements' Council and private certifiers may accept, as a performance solution, the installation of external doors including french, bi-fold and stacking type door systems, within bush fire prone areas, where they comply with the requirements of Table 1

Lew Short
Manager Development Control Services

Disclaimer Any representation statement opinion or advice expressed or implied in this publication is made in good faith on the basis that the State of New South Wales the NSW Rural Fire Service its agents and employees are not liable (whether by reason of negligence lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation statement or advice referred to above



Development Control Services

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External Doors

Practice Note 3/06

Revised November 2007 (Release 2)

References

- 1 *The Building Code of Australia 2005* Australian Building Codes Board (ABCB)
- 2 Australian Standard (AS) 3959 – 1999 Construction of buildings in bushfire prone areas Standards Australia
- 3 Australian Standard (AS) 1530 8 1 – 2007 - Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack - Radiant heat and small flaming sources Standards Australia
- 4 Australian Standard (AS) 1530 8 2 – 2007 - Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bushfire attack Large flaming sources Standards Australia

BASIX Certificate

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

Alterations and Additions

Certificate number A59440

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments have the meaning given by the document entitled "BASIX Alterations and Additions Definitions" dated 29/9/2006 published by Department of Planning. This document is available at www.basix.nsw.gov.au

Director General
Date of issue: Wednesday 10 June 2009



Project address	
Project name	5 Bilgola Terrace, Bilgola
Street address	5 Bilgola Terrace Bilgola 2107
Local Government Area	Pittwater Council
Plan type and number	Deposited Plan 822263
Lot number	8
Section number	0
Project type	
Dwelling type	Attached dwelling house
Type of alteration and addition	My renovation work is valued at \$50 000 or more, and does not include a pool (and/or spa)

 DETAILS NOTED

Fixtures and systems		Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Hot water	The applicant must install the following hot water system in the development	✓	✓	✓
Lighting	The applicant must ensure a minimum of 40% of new or altered light fixtures are fitted with fluorescent, compact fluorescent, or light-emitting-diode (LED) lamps		✓	✓
Fixtures	The applicant must ensure new or altered showerheads have a flow rate no greater than 9 litres per minute or a 3 star water rating		✓	✓
	The applicant must ensure new or altered toilets have a flow rate no greater than 4 litres per average flush or a minimum 3 star water rating		✓	✓
	The applicant must ensure new or altered taps have a flow rate no greater than 9 litres per minute or minimum 3 star water rating		✓	

Construction

Show on
DA Plans

Show on
CC/CDC
Plans &
specs

Certifier
Check

Insulation requirements

The applicant must construct the new or altered construction (floor(s), walls and ceilings/roofs) in accordance with the specifications listed in the table below except that a) additional insulation is not required where the area of new construction is less than 2m2, b) insulation specified is not required for parts of altered construction where insulation already exists

Construction	Additional insulation required (R-value)	Other specifications
floor above existing dwelling or building	nil	
external wall framed (weatherboard fibro, metal clad)	R1 30 (or R1 70 including construction)	
flat ceiling, pitched roof	ceiling R2 50 (up), roof foil/sarking	medium (solar absorptance 0 475 - 0 70)

✓

✓

✓

Glazing requirements

Show on
DA Plans

Show on
CC/CDC
Plans &
specs

Certifier
Check

Windows and glazed doors

The applicant must install the windows, glazed doors and shading devices, in accordance with the specifications listed in the table below

Relevant overshadowing specifications must be satisfied for each window and glazed door

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

Each window or glazed door with standard aluminium or timber frames and single clear or toned glass may either match the description, or, have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below

Total system U-values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions

Each window or glazed door with improved frames, or pyrolytic low-e glass, or clear/air gap/clear glazing, or toned/air gap/clear glazing must have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below

Total system U-values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions

The description is provided for information only

Alternative systems with complying U-value and SHGC may be substituted

For projections described in millimetres, the leading edge of each eave, pergola, verandah, balcony or awning must be no more than 500 mm above the head of the window or glazed door and no more than 2400 mm above the sill

Pergolas with polycarbonate roof or similar translucent material must have a shading coefficient of less than 0.35

External louvres and blinds must fully shade the window or glazed door beside which they are situated when fully drawn or closed

Pergolas with fixed battens must have battens parallel to the window or glazed door above which they are situated, unless the pergola also shades a perpendicular window

The spacing between battens must not be more than 50 mm

Windows and glazed doors glazing requirements

Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing Height (m)	Distance (m)	Shading device	Frame and glass type			
W1	NW	6.3	0	0	eave/verandah/pergola/balcony >=600 mm	standard aluminium single pyrolytic low-e, (U-value 5.7, SHGC 0.47)	✓	✓	✓
W2	SW	1.8	0	0	none	standard aluminium, single clear, (or U-value 7.63, SHGC 0.75)	✓	✓	✓
W3	SW	1.9	0	0	none	standard aluminium, single clear, (or	✓	✓	✓

Glazing requirements					Show on DA Plans	Show on CC/CDDC Plans & specs	Certifier Check
Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing Height (m)	Distance (m)	Shading device	Frame and glass type	
						U-value 7.63, SHGC 0.75)	
W4	SE	2.5	0	0	eave/verandah/pergola/balcony >=900 mm	standard aluminium, single clear, (or U-value 7.63, SHGC 0.75)	
SD1	SE	15.75	0	0	eave/verandah/pergola/balcony >=900 mm	standard aluminium, single clear, (or U-value 7.63, SHGC 0.75)	
SD2	NE	10.5	0	0	external louvre/blind (adjustable)	standard aluminium, single clear, (or U-value 7.63, SHGC 0.75)	
SD3	NE	8.4	0	0	external louvre/blind (adjustable)	standard aluminium, single clear (or U-value 7.63, SHGC 0.75)	

[illegible]

SPECIFICATION OF BUILDING WORKS



Ph 0424 699 924
The builder must construct the building
in accordance with the Building Code
of Australia and the Development
Consent conditions
CONSTRUCTION CERTIFICATE

BUILDING TYPE

SINGLE DWELLING	<input type="checkbox"/>	VILLA OR TOWNHOUSE	<input type="checkbox"/>	INDUSTRIAL BUILDING	<input type="checkbox"/>
DUAL OCCUPANCY	<input type="checkbox"/>	GARAGE	<input type="checkbox"/>	OFFICE BUILDING	<input type="checkbox"/>
MEDIUM DENSITY UNITS	<input type="checkbox"/>	RETAIL BUILDING	<input type="checkbox"/>	ADDITION	<input checked="" type="checkbox"/>
FARM SHED	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

CONSTRUCTION

CAVITY BRICK	<input type="checkbox"/>	TIMBER FRAMED	<input checked="" type="checkbox"/>	A A C BLOCK/PANEL	<input type="checkbox"/>
BRICK VENEER	<input type="checkbox"/>	STEEL FRAMED	<input type="checkbox"/>	MASONRY BLOCK	<input type="checkbox"/>
SINGLE BRICK	<input type="checkbox"/>	STEEL CLAD	<input type="checkbox"/>	CONCRETE PANEL	<input type="checkbox"/>
				F/C SHEET	<input type="checkbox"/>

ADDENDUM

If any difference in requirements exists between this specification and the Building Code of Australia or relevant Standard that may apply to the construction of any building nominated by this specification then the requirements of the Building Code of Australia and/or the appropriate Standard shall take precedence over this specification for any construction

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SPECIFICATION

FOR THE ERECTION AND COMPLETION OF BUILDING AT LOT No 8
ADDRESS 5 BILGOLA TERRACE
MUNICIPALITY / SHIRE / CITY PITTWATER
FOR MR M & MRS K MITCHELL

DP No 822263
TOWN/AREA BILGOLA
POST CODE 2107
Hereinafter called the Proprietor

The builder must ensure that relative drawings plans and construction comply with the prescribed construction the Local Government Act the Building Code of Australia and that the work and services performed by the Builder are to the satisfaction of the Proprietor and Lending Authorities

INSPECTION NOTICE

This is to apply only if inspections are required by the Lending Authority The building is to be inspected by the Society or Bank Representative at the following stages of construction and the Builder is to give the Lending Authority and Owner at least (2) clear working days notice that inspections are required

- 1 When trenches for footings have been prepared or rock surfaces scabbled and in the case of reinforced concrete footings when reinforcement and depth pegs have been placed in position just prior to placing of concrete Footings must not be commenced until the trenches have been inspected and approved by the Society Representative
- 2 On completion of floor wall and roof framing with noggin in position and veneer walling but before flooring is cut down roof covering is laid and wall linings and sheetings are secured
- 3 When the internal wall coverings have been secured and fixing out commenced apron mouldings must not be fixed until flashings have been inspected and approved
- 4 ON COMPLETION OF BUILDING The owner is cautioned that if works have advanced beyond these stages without the requisite notices being given inspections made and unsatisfactory conditions are discovered later the offer of a loan or the terms and conditions of a loan may be varied by the lending authority

REGULATIONS AND NOTICES

The builder is to comply with the Building Code of Australia as amended and as applicable to the particular State or Territory in which the building is being constructed and the requirements of legally constituted Authorities for local Government and/or Services The Builder is to give all notices obtain all permits and pay all fees required by such Authorities If any difference in requirements exists between this specification and the Building Code of Australia or relevant Standard that may apply to the construction of any building nominated by this specification then the requirements of the Building Code of Australia and/or the appropriate Standard shall take precedence over this specification for any construction Where materials components design factors and construction methods comply with the Performance Requirements of the B C A these may be accepted by approval authorities as an alternative as per the Deemed to Satisfy Provisions

INSURANCE

Insurance of the works against fire will be effected as nominated in the Building Contract The Builder shall at his own expense adequately insure against Public Risk and arrange indemnification in respect of his liability under the Workers Compensation Act Work Cover and/or other regulations as applicable

VISIT THE SITE

Builders tendering are to visit the site and satisfy themselves to the nature and extent of the work the facilities available and the difficulties entailed in the execution of the said works No amount above the accepted price will be allowed because of work arising due to neglect of this precaution or assumptions made

LABOUR AND MATERIALS

The Builder is to provide all materials labour fittings and plant required to construct and complete the work Materials shall be of the standard specified and workmanship in each trade shall be performed by tradesmen of that particular trade and in conformity with current good building practice

SET OUT

The Builder shall be responsible for the accuracy and clear delineation of the site boundaries and location of the buildings there on The Builder is to set out and maintain the works in accordance with the drawings Figured dimensions to be taken in preference to scale

PLANS AND SPECIFICATIONS

Any work indicated on the plans and not in the specification or vice versa and any item not shown on either plans or specifications but which is obviously necessary as part of proper construction and/or finish is to be considered as so shown or specified and is to be duly done as part of the contract Any variations to plans or specifications are to be agreed and recorded by the proprietor and the builder/contractor

PLANS ON JOB

The builder must at all times maintain on the job a legible copy of the plans and specifications bearing the approval of the Municipal Authority concerned or Principal Certifying Authority

STANDARDS

Where an Australian Standard (AS) or Australian New Zealand Standard (AS/NZS) is nominated in this specification then that nomination refers to the latest revision of that Standard unless the Building Code of Australia references a different revision

EARTHWORKS AND EXCAVATIONS BCA part 3 1

All earthworks shall be designed and constructed in accordance with the guidelines of AS3798 Stormwater and other surface water drainage by underground piping or surface diversions shall be in accordance with AS/NZS3500

All siteworks shall be in accordance with the Environmental Planning and Assessment Act and Regulations for siteworks for the erection of a building safeguarding excavations backfilling preventing soil movement and supporting neighbouring buildings Drainage requirements must be determined according to the soil classifications BCA part 3 1 1 and part 3 1 2

FOOTINGS AND PIERS BCA part 3 2 2

Excavate for all footings piers etc to dimensions and minimum depth shown on plans or otherwise specified or to depths necessary to secure solid bottoms and even bearing throughout similar strata Bottoms of excavations to be level and stepped where necessary Grade fill and ram where necessary to receive concrete floors where shown on ground level

At completion of foundations all excavations to be filled well rammed to ground level and surplus soil spread as directed All seepage and soakage water to be effectively dealt with and diverted clear of the building Excavate for and lay agricultural drains to back of walls retaining earth and to any other sections of foundations as may be necessary and/or directed

ROCK EXCAVATIONS

Should rock of any type be encountered in excavation of the works the cost of its removal is to be considered as an extra to the contract and charged for at a rate per cubic metre as indicated in the schedule of rates The Proprietor is to be notified when rock is encountered in excavations

CONCRETE - BCA part 3 2 3

All structural concrete shall be ready mixed and in compliance with AS3600 and unless otherwise specified on Engineers drawings shall be of N20 grade

The concrete shall be supplied by an approved firm and delivery dockets shall be kept on the job for inspection by the proprietor if he so desires The concrete for minor works where strength of concrete is not critical such as paving on solid ground may have a minimum compressive strength of 15MPa if unreinforced and 20 MPa if reinforced Alternatively such concrete may be mixed on site where the aggregate proportions and water/cement ratio can be controlled so that the required compressive strengths can be obtained

All concrete work shall comply with the AS3600 Maximum slump shall be 80mm unless otherwise specified by Engineer Concrete shall be carefully handled and placed to avoid segregation and shall be adequately compacted Reinforcing mesh fabric to AS 1304 and all reinforcing bars mild steel grade unless otherwise specified

FOOTINGS BCA parts 3 2 3 3 2 4 and 3 2 5

Where sites have soils or foundations of reactive nature or problem sites footings shall be approved by a practising structural engineer and in the case of known highly swelling soils or other unstable soils special precautions may have to be taken in the design and construction of concrete footings In the case of concrete suspended floors to first floor it will be necessary for size of footings to be specified by a practising structural engineer Footing sizes to be as per AS2870 part 1

At completion of footing excavations fill to the underside of floor slab with approved hardcore so as to provide a minimum depth of 100mm Such hardcore may be carried under minor interior footings if required

TERMITE PROTECTION BCA part 3 1 3

Where the building is being erected in a prescribed termite area and protection is required by regulation of local government or state authority then protection against subterranean termites shall be installed in accordance with AS 3660 Details of method of protection to be used shall be submitted where required prior to commencement of building works Written certification signed by the installer that the method used and the manufacturers specification complies with the Australian Standard shall be provided to the relevant authority and owner where required A durable notice must be permanently fixed in a prominent location in the building prior to its occupation indicating 1 The method and date of installation of the system and the need to inspect and maintain the system on a regular basis 2 Where a chemical barrier is used the life expectancy as listed on the National Registration Authority label and recommended date of renewal Note that AS3660 and BCA lists the minimum acceptable level of protection only Owners and/or builders may specify and install additional protection if desired

PATHS (see AS 3727 for guide to residential pavement construction)

Provide paths as indicated on plans Concrete to be as previously specified and surfaced with wooden float Excavate for and lay paths to even grades true lines and curves Car tracks to be a minimum of 100mm thick and paths a minimum of 75mm Provide expansion joints in paths at a maximum spacing of 1200mm with bitumen impregnated felt joining strips the full thickness of concrete with tooled V joints above same

CROSS SECTION DIMENSIONS OF REINFORCED CONCRETE FOOTINGS for buildings with timber framed floors for sites classified a or s according to AS2870

CONSTRUCTION OF WALL	Normal thickness of wall to be supported (not more than)	Size of Concrete (width x depth)	
		For stable soil foundations Class A	Other foundations not subject to significant movement Class S
Brick single storey with wall height not exceeding 4200mm excluding any gable	mm 270	mm 400x300	mm 400X400
Brick two storey with external wall height not exceeding 7200mm excluding any gable internal wall height not exceeding 7200mm use 11TM reinforcement Top and Bottom	110 270	300x300 400x400	400x400 400x500
Brick veneer single storey with wall height not exceeding 4200mm excluding any gable	110	300x300	300x400
Brick veneer two storey with external wall height not exceeding 7200mm excluding any gable	110	300x300	300x400
Timber frame single storey – foundation walling measured from the top of the strip footing Up to 1500mm height	110	300x300	300x400
Exceeding 1500mm and up to 3000mm height	110	300x400	300x400

REINFORCEMENT FOR STRIP FOOTINGS	Width of Strip Footing	Minimum number of main wires per layer using 8TM or 11TM fabric	Minimum number of 10mm dia bars per layer	Minimum number of 12mm dia bars per layer
	300 400	3 4	3 4	3 4

Where wall thickness exceeds as specified above increase footing width to maintain the offset and provide additional bar or bars so that bar centres do not exceed 200mm or an additional width of trench mesh maintaining in all cases the required concrete cover

CONCRETE FLOORS BCA parts 3 2 5

Provide concrete floors where indicated on plans Where not specifically detailed floors are to be a minimum of 100mm thick reinforced with No F72 hard drawn reinforcing fabric set 32mm below top of concrete Floor slabs to be full thickness and free from grooves and ridges Finish surface in one operation as required for tiling or otherwise to fine finish with float or steel trowel and sponge Thickness of floors shall be maintained under tiling recesses in all cases

Note that in Climate Zones 6 7 and 8 the edges and underneath some concrete slab construction may require thermal insulation

INTEGRAL FLOOR SLABS AND SLAB ON GROUND BCA part 3 2 5

Grade whole area occupied by floor to a minimum depth as required to remove top soil and grass roots etc Determine level of top of floor to habitable rooms a minimum of 150mm above highest point of adjacent proposed external ground level (adjust for fill or general excavation as required) or as otherwise required by Local Council The external finished ground surface must be graded to drain water away from the building at a minimum slope away of 50mm over the first 1m as per BCA Part3 1 2 3

Excavate for perimeter and other main footings to minimum depths as shown on Engineers drawings or to depths necessary to obtain solid bottoms and even bearing throughout a similar strata Allow for sufficient recess for brickwork if carried under main floorings so as to reduce the amount of concrete necessary provided that the fill is retained from displacement under the footings (by a temporary earth bank or similar) and provided also that a minimum of 100mm depth of the same hardcore is provided under all footings in such case roadbase or ungraded bluemetal is recommended as hardcore coalwash is NOT to be used Reinforce to Engineers detail and pour in one continuous operation in concrete Grade 20 unless otherwise nominated Residential slabs and footings must be constructed in accordance with AS2870 as amended

SUSPENDED REINFORCED CONCRETE SLABS

All concrete slabs to separate areas within or adjoining a building generally of timber floor construction shall be suspended Temporary formwork must be removed prior to final inspection Permanent metal formwork approved by the lending authority may be used with slab sizes and reinforcement according to manufacturers recommendation

Suspended floor slabs to have minimum of 100mm bearing on at least two opposite sides and spans are not to exceed 2100mm except where specifically detailed Solid fill forming may be used under concrete floors (eg laundry garage) adjoining the building providing that the level of the top of the slab is not less than 50mm below antcap and/or dampcourse level of the main building For spans exceeding 2100mm slabs supporting walls cantilever slab floors or where beams and columns are used to support the slab a practising structural engineers details shall be submitted with the drawings and specifications

PRE-STRESSED BEAM FLOORING

Pre stressed beams for areas to be constructed by this method shall be delivered to site and stacked for storage on timber packers to avoid damage and where stacked one above the other the timber packers shall be positioned in vertical lines

Beams shall be purpose made by the manufacturer for this particular project designed in accordance with AS3600 Beams shall be individually marked for their respective location on the job and positioned in the work to comply with manufacturers key drawing Cutting or drilling into beams or modification in any way shall be done only with the express authority of the manufacturer or their site representative

Spacing of beams and fibre cement infill panel placement shall be strictly to manufacturers detail Topping slab concrete shall have a 28 day strength of not less than 20 MPA and thickness shall not exceed 50mm unless shown on the drawings Reinforce with nominal F52 Mesh U N O

Topping slabs shall be continuously cured for 7 days to prevent non structural cracking

BRICK AND BLOCKWORK - (construction of masonry building shall be as per AS3700) BCA part 3 3

CLAY BRICKS

To be sound hard of well burnt clay and shale and comply with specifications AS1225 Burnt Clay and Shale Building Bricks

SAND LIME BRICKS To Comply with AS1654 Calcium Silicate Bricks and have a transverse strength no less than as per Specification AS1640

Clay Bricks

CONCRETE BLOCKS OR BRICKS To comply with AS4455 Masonry Building Blocks/Pavers

SAND To be clean sharp and free from all impurities

CEMENT MORTAR To be one part fresh cement to 3 parts sand

LIME MORTAR BCA part 3 3 1 6

To be one part lime to 3 parts sand Lime to be well slaked before use

COMPO MORTAR To be one part cement one part lime and 6 parts sand All bricks to be well wetted before use This not to apply to textured bricks Footing courses to be grouted solid with cement mortar All brickwork to be properly bonded laid on full bed and all perpendis filled All piers are to be built solid and each course grouted as work proceeds Carry up all work true and plumb to even gauge and in level courses the full height and thickness required The brickwork faces above damp course level to be finished with neatly ironed or raked joints Beds and joints to be kept to a reasonable thickness Finish all other exposed brickwork faces with neat struck joints

BUILD THE FOLLOWING IN CEMENT MORTAR BCA part 3 3 1

All brickwork to underside of floor bearers level All 110mm thick brickwork All copings steps brick balustrade walls sills piers wing walls retaining walls Brick Fences on alignment and/or brickwork under timber fencing also concrete blocks or bricks **Build compo mortar** All other Brickwork including concrete masonry

SLEEPER PIERS BCA table 3 2 5

230 x 230mm up to 1 5 high footings are to be two courses of 350mm work Where pier height exceeds 1 5m up to a maximum of 2 4m footings are to be two courses of 470 work and lower portion of pier to be 350 x 350 Concrete footings must be 500mm square and 200mm thick for an effective supported floor area of not more than 20m² All footings must have Engineers details for soil other than class A or S

ENGAGED PIERS BCA figure 3 3 1 2

To be minimum of 230 x 350 (including wall thickness) spaced at not more than 1 8m centres up to 2700 high to support floor bearers and at similar centres to stiffen walls supporting concrete slabs All stack bonded piers to be anchored to walls with specified wall ties every fourth course Areas with design wind speeds greater than N2 must be vertically reinforced with at least 1 off Y12 bar tied to the footing

VENEER WALLS BCA 3 3

To be 110mm Brickwork built in Compo Mortar on foundation walls as previously specified Internal faces to be 38mm from timber frames Build in 3mm galvanised wall ties opposite each alternate stud four courses above level of bottom plate then every fourth course and spaced not more than 460mm horizontally and 610mm vertically or 610mm horizontally and 460mm vertically Ties to be left open for attachment to studs A cavity space of between 25mm and 50mm must be maintained throughout Where thermal insulation is required to comply with Energy Efficiency requirements clear cavity spaces must be maintained Cavities and weep holes to be clean and clear at damp course level All mortar droppings to be caught on paper or other material and removed before internal linings are fixed Mortar joints on inside face walls to be flush with brickwork

SPECIAL WALLS (if shown on plans)

Walling not of timber Veneer on timber or masonry to be constructed as per Structural Engineers Detail and Certificate

SINGLE LEAF MASONRY (Garage Walls etc)

Footings as per BCA part 3 2 5 engaged piers and reinforcing to be as per part 3 3 1

ACCESS

Adequate access in the external foundation wall must be provided with a weatherproof lockable door and crawl access is to be provided to all under floor areas

VENTILATION BCA part 3 4 1

Sub floor areas shall be ventilated by means of evenly distributed openings with an unobstructed area of 7300mm2 per lineal metre of external wall Where particle board flooring is used the unobstructed area shall be increased to 7500mm2 per lineal metre and evenly spaced Ventilation of internal walls shall be a minimum of 22000mm 2/m run of wall Vents to be immediately below bearers and similarly provide vents under verandah floors and suspended floor slabs Sufficient cross ventilation to be provided through all walls below floors No section of the under floor area should be so constructed that is will hold pockets of still air Appropriate special provision to be made where a gas bath heater is installed Ventilation may be varied by Local Council

BRICK REINFORCEMENT

In full brick cavity walls at two courses above level of the highest opening built into each 110mm thickness one continuous strand of 64 wide galvanised metal reinforcement lapped 100mm at joints and full width of layer at intersections

ANT CAPS

To all brickwork and piers at the level of underside of floorbearers ant capping of 0 5mm gauge galvanised steel or other approved metal is to be set projecting 38mm beyond the internal faces of all brickwork and turned down at a 45 degree angle lapped 13mm and soldered or crimped at all joints and corners so as to provide a continuous and effective barrier against termites throughout the length of the material Whole of house protection against subterranean termite attack shall be installed in accordance with AS 3660

TIES BCA PART 3 3 3

Wall ties complying with AS/NZS2699 shall be used for all tie requirements Corrosion protection and installation of wall ties is to comply with AS3700

STEPS

If shown on plan in bricks to match other exposed brickwork To be built in solid work or where side walls are provided in consolidated filling Treads are to be brick on edge or pre cast concrete units with a maximum of 355mm going and a maximum of 190mm and minimum of 115mm rises

LINTELS BCA PART 3 3 4

Provide galvanised mild steel angle iron or bars of the following sizes over openings to each 110mm thickness (or part thereof) of brickwork all having a minimum of 110 bearing each end All lintel angles to be placed with the longer leg vertical

UPPER STOREY	EXTERNAL WALLS	INTERNAL WALLS
Up to 1210mm span	One 76mmx10mm bar	One 76mmx10mm bar
Up to 1570mm span	One 76x51x10 angle	One 76x51x10 angle
Up to 2410mm span	One 127x76x10 angle	One 127x51x10 angle
Up to 3010mm span	One 152x89x10 angle	One 152x89x10 angle

LOWER STOREY OR BASEMENT	EXTERNAL WALLS	INTERNAL WALLS
Up to 910mm span	One 76x76x10 angle	One 76x76x10 angle
Up to 1210mm span	One 102x76x10 angle	One 127x76x10 angle
Up to 1810mm span	One 152x76x10 angle	One 152x89x10 angle
Up to 2410mm span	One 152x102x10 angle	One 152x102x10 angle

FIREPLACE CHIMNEY AND FLUES BCA part 3 2 5 5 and 3 7 3

Reinforced concrete footings 300mm wider all round than brick construction to be provided Build 110mm brick wall and/or corbel courses to support hearth Non combustible material to be used for upper surface of hearth with a minimum thickness of 155mm and shall extend not less than 300mm beyond the front of the fireplace opening and not less than 150mm beyond each side of the opening Local council may vary this requirement Provide fireplace and chimney in position as shown and to the dimensions on plan Mild steel bars or angles of suitable sizes and with a 110mm bearing at each end to support work over openings Up to the level of 300mm above the underside of the arch or lintel the back and sides of the fireplace to be constructed in two separate sections of solid masonry minimum 190mm thick not including cavity Concrete masonry not permitted in construction of inner section balance of walling to be minimum of 90mm thick Flue to be rendered minimum 12mm thick Mix 1 cement 2 lime 10 sand or L C approved material Chimney stack is to be not less than the height of the main roof ridge and is to be built in compo mortar The flue is to be 250 x 250mm or one tenth of the area of the fireplace opening whichever is the greater gathered over to break daylight and pargetted to the full height An 0 6mm galvanised steel tray in one piece holed for flue is to be set at level of one course above roof covering on the high side of the roof The internal edges are to be shaped to form a quadrant gutter 25mm wide sweated at corners The tray is to project a minimum of 25mm beyond the external faces of brickwork turned up and/or down as required Where the tray is turned up a clearance of at least 6mm is to be maintained between the brickwork and the tray Provide weep holes by leaving open vertical joints in brickwork above tray Rake joints in brickwork ready to receive flashing to be provided by Plumber A loose brick must be left on the back of the chimney stack This brick must not be set until after the tray has been cleared of all mortar droppings

HEATING APPLIANCES BCA part 3 3 4

Heating appliances installed in brick or blockwork surrounds shall be in conformance with AS 1691 or AS 2918 as applicable

DAMPCOURSE AND WEATHERPROOFING OF MASONRY BCA part 3 3 4

Provide a continuous run of L C Approved dampcourse material to full width of wall thickness on all brickwork at level not higher than bottom of floor bearers and engaged piers Dampcourse material is to be run in long lengths lapped minimum 100mm at joints and full width at all intersections To wall surrounding concrete and/or solid floors an additional run of dampcourse is to be laid one full course above floor level and stepped down to meet lower dampcourse where other walls about walls of bathroom shower recess or laundry Damp proof courses and flashings shall be installed to give performance as specified in AS/NZS 2904

VERMIN PROOFING

13mm mesh galvanised bird wire to be built into brickwork and taken across cavity and secured to bottom plate

FLASHING BCA part 3 3 4

L C approved dampcourse material to be built in under all window sills 25mm at back of wood sill and 50mm at each end of same Flashing to be bent down across cavity and built 25mm into veneer wall L C approved dampcourse material to be built in over all exposed window and external door openings

WEEP HOLES

Perpend joints are to be left open in exterior brick walls spaced approx 600mm in course immediately over flashings of all exposed openings and to brick retaining walls fender walls etc as required See Bushfire Clauses for protection of weep holes in bush fire areas

RETAINING WALLS

Retaining walls not specifically detailed and foundation walling required to retain earth are to be a minimum of 230mm thick up to a height of 750mm of retained earth. Cavity walls used to retain earth are to have the leaf adjacent to the retained earth a minimum of 230mm thick to a maximum of 900mm of retained earth height. All to be properly bonded (see Bonded Walls) and provide with a properly constructed agricultural drain to the earth side of retaining wall. For walls in excess of the above heights of retained earth an Engineers detail will be required.

BONDED WALL

Solid brick walls more than one brick width which are used to retain earth or are otherwise noted as Bonded Walls shall be bonded throughout the thickness of the wall by either header bricks or equivalent tying. Where header bricks are used every sixth course shall be a header course or there shall be at least one header or equivalent tie to every 0.13sq metres (every third course at 480mm centres). Walls 350mm or more in thickness shall have overlapping headers or ties to provide a continuous tie through the wall.

CAVITY WALLS

Walls indicated as cavity walls to be constructed with two leaves 110mm thick spaced nominally at 60mm apart. Where thermal insulation is required to comply with Energy Efficiency requirements clear cavity spaces must be maintained. Connect the two leaves with wall ties as per AS2699 set nominally 600mm apart in every fifth course. Keep ties clean of mortar droppings and cavity clear as work proceeds.

STRAPS BCA part 3 3 3

To full brick cavity walls secure door and window frames with 1.6mm galvanised iron straps set in brickwork. Straps to be 25mm wide and at least 300mm long where practicable and spaced at a maximum of five courses apart. Set 25mm x 1.6mm galvanised iron straps 1800 apart and 1200mm down cavity with ends turned 75mm into brickwork to secure wall top plates.

COMPLETION

Clean all cavities. Wait upon and make good after other trades. Replace all damaged and defective bricks. Clean all exposed brickwork with diluted spirits of salts or as otherwise recommended by brick manufacturers. Wash down with clean water and leave free from cement and mortar stains.

CONCRETE BRICK A S 1346 - BCA part 3 3

MORTAR For normal conditions mortar to consist of			
		Above Dampcourse	Below Dampcourse
		1 part cement	1 part cement
		2 parts lime or lime putty	1 part lime or lime putty
		9 parts clean sand	6 parts clean sand

Mortar mixes must comply with A S 3700 and BCA part 3 3 1 6. The substitution of other plasticisers for lime is not recommended. Under no circumstances should the proportion of cement be increased. **JOINTS** BCA part 3 3 1 7 Finish all external brickwork and internal feature walls with raked joints. Finish all other brickwork with neat struck joints.

JOINT REINFORCEMENT AND ARTICULATION JOINTS BCA part 3 3 1 8 in addition to reinforcement over openings as later specified provide joint reinforcement in bed joints at vertical spacings not exceeding 600mm. Control joints providing a continuous vertical separation through the entire thickness of the wall are to be provided where indicated on plans or where walls exceed 9m in length as close as practical building will permit. Reinforcement not to extend across control joints.

AUTOCLAVED AERATED CONCRETE BLOCKS

Lightweight blockwork shall be Autoclaved Aerated Concrete blocks consisting of sand, cement and lime and shall be installed to areas as indicated on drawings. Site provisions for storage of materials and for the mixing of adhesive shall be as recommended by the manufacturer.

WORKMANSHIP

Fixings, fastenings, anchors, lugs and the like shall be of a type approved by the manufacturer and shall transmit the loads and stresses imposed and ensure the rigidity of the assembly. Block laying shall be in accordance with the manufacturers current published specifications.

TOLERANCES

Maximum planar misalignment shall be 2mm along butt joints. The thickness and width of walls shall not vary by more than 5mm from design sizes. Deviation from plumb, level or dimensional angle must not exceed 5mm per 3.5m of length of member or 6mm in total run in any line.

INSTALLATIONS

All lightweight blockwork shall be installed using thin bed adhesive mortar to all horizontals and perpendics. The first course must be made true and level using a normal thick bed mortar with thin bed adhesive to fully seal the perpendics. All thin bed adhesive shall be applied using a recommended notched trowel to obtain an even distribution of adhesive to achieve joint thickness of 2.3mm. All lightweight blockwork shall be laid in a format that the vertical joint of the lower course must be staggered at least 100mm relative to the vertical joint of the overlaying course. A slip/joint bond breaker must be installed between the first course and the foundations or slab on all internal and external walls to allow for differential movement between the blocks and the supporting structure. Build in as necessary all flashings, reinforcements, arch bars, lintels, frames, straps, bolts, lugs, wall ties, metalwork, precast units, sills, partitions, joists and the like. Carefully set out and leave openings for other trades to eliminate cutting.

COMPLETION

On completion clean out all blocks, mortar droppings, debris etc and remove all scaffolding. Make good all put log holes and other blemishes and leave all work in perfect condition and protect until handover.

CONCRETE BLOCK and REINFORCED MASONRY AS 3700 BCA part 3 3 2

All masonry units shall comply with AS1500 Hollow Load Bearing Concrete Units. Masonry shall be stacked on planks off the ground and in wet weather shall be covered with tarpaulins or otherwise kept dry. At the end of each days work the top of the wall shall be covered with tar paper, polyethylene sheets or by other means protected from becoming excessively wet. Masonry units shall not be dampened prior to laying and shall be laid in dry state.

MORTAR BCA PARTS 3 3 1 6

Mortar shall comply with AS 3700 in all respects. Plasticisers may be used when approved and where tests show the mortar with plasticisers meets the requirements of these specifications.

CONSTRUCTION BEDDING

All face and end joints shall be fully filled with mortar and joints shall be squeezed tight. Slushing of mortar into joints shall not be permitted. The first course of blocks shall be laid in a full bed of mortar.

JOINTS BCA part 3 3 1 7

Joints on all exposed surfaces shall be as specified. The joint shall be formed by striking the mortar flush and after it has partially set, tooling with the proper shaped tool to adequately compact the surface. The tool shall be of sufficient length to form a straight line free from waves. Internal joints shall be ironed. Where flush joints are left exposed they shall be first compacted then repointed and excess mortar removed. Joints shall be 10mm thick unless otherwise specified or directed.

PATTERNS AND BOND

All walls shall be built plumb, true and level to the thickness shown on the plans and with the pattern indicated or running bond U N O.

ARTICULATION JOINTS

Shall be located where shown and shall form a continuous vertical break from top to bottom of wall or from bond beam. Provision shall be made for adequate lateral stability. Joint shall be filled with mortar, raked back 16mm and pointed with a non hardening plastic filler. No reinforcing shall be carried across control joint.

JOINT REINFORCEMENT

Reinforce every 600mm in height and in the two courses immediately above and below window openings. Lap mesh at least 150mm at all joints and intersections except at articulation and expansion joints where a slip joint may be required.

BRACING DURING CONSTRUCTION

Masonry walls constructed in locations where they may be exposed to highwinds during erection shall not be built higher than ten times their thickness unless adequately braced or unless provision is made for prompt installation of permanent bracing such as intermediate floor or roof structure. Back filling shall not be placed against foundation walls or retaining walls before mortar or grouting has sufficiently hardened or before wall has been permanently braced to withstand horizontal pressure.

WEATHERPROOFING BCA part 3 3 4

All concrete masonry walls exposed to the weather or below ground level shall be adequately water proofed using an approved paint or other coating and applied in accordance with the directions of the manufacturer.

CLEANING

During the progress of the work every effort shall be made to keep walls that are to be left exposed clean. Mortar smears shall be allowed to dry for a short period and shall then be promptly removed by trowel or wire brush or both. Care shall be taken to avoid damage to the mortar joint when brushing. Mortar burrs shall be promptly removed. At the conclusion of the work walls shall be cleaned down, all scaffolding and debris removed and the wall left in good clean condition.

BUSHFIRE PRONE AREAS – BCA 3 7 4

Performance requirements are satisfied for a class 1 building in a bushfire prone area if constructed in accordance with AS3959 NSW variation excludes Section 2 of that standard which is replaced by Planning for Bushfire Protection appendix 3 Site Assessment for Bushfire Attack OR in consultation with NSW rural Fire Service under Sec 79B of the Environmental Planning and Assessment act 1979

OR as modified for development consent under section 100B of the Rural fires Act

CONSTRUCTION OF CLASS 1 BUILDINGS as per acceptable methods in BCA clause 3 7 4 1 (for information only)

BUILDING COMPONENT	BUSH FIRE ATTACK CATEGORY		
	MEDIUM	HIGH	EXTREME
Flooring system	(a) Concrete slab on ground (b) Suspended concrete floor (c) Framed floor with all joists and bearers above 600mm above ground (d) Framed floor where timbers are less than 600mm above ground (i) All timbers fire retardant OR (ii) subfloor space fully enclosed as per the wall above OR (iii) fully enclosed with non combustible material or 6mm thick F R cement sheets	As per medium requirements	As per medium requirements except that where bearers and joists are greater than 600mm above ground and not enclosed all timbers must be fire retardant treated or sheathed underneath with non combustible material
Supporting posts piers stumps poles (except where enclosed as per flooring systems)	(a) Non combustible material (b) Fire retardant treated timber to 400mm above ground (c) Timber mounted on 75mm high stirrups	As per medium requirements	As per medium requirements except that all timber is to be fire retardant treated
External Walls	(a) Masonry concrete or earthwall (b) Framed wall with (i) sarking having a flammability index not more than 5 OR (ii) an insulation material of that standard (c) Timber logs with all joints between the logs planed and sealed (d) Combustible sheet cladding if cladding within 400mm of ground is covered by non combustible sheet material	As per medium requirements except that (a) P V C cladding must not be used and (b) Timber wall cladding must be fire retardant treated	As per high attack category
Windows	The openable part of a window must be screened with aluminium steel or bronze corrosion resistant mesh with 1 8mm max aperture size	As per medium requirements except that (a) timber must be fire retardant treated except if enclosed by non combustible shutters (b) Leadlight windows must be protected with non combustible material or toughened glass (c) Window screens must not be aluminium	As per high requirements except that windows not protected by non combustible shutters shall be glazed with toughened glass
External doors	External doors must be fitted with (a) weather strips or draught excluders to prevent build up of burning debris and (b) tight fitting screen doors with corrosion resistant mesh as per windows	As per medium requirements except that (i) aluminium mesh must not be used and (ii) leadlight panels must be protected by non combustible shutters or panels	As per high bushfire requirements except that (a) Timber doors must be fire retardant treated OR (b) Protected by non combustible shutters OR (c) Solidcore doors min 35mm
Vents and weepholes	Vents and weepholes must be protected by spark guards of corrosion resistant 1 8mm max mesh size aluminium steel or bronze	As per medium category except that aluminium mesh must not be used	As per high category requirements
Roof covering eaves and fascias	(a) Timber shakes or shingles are not allowed (b) Sheet roofing must be metal or fibre reinforced cement (c) Seal gaps under corrugations at wall or eaves line by (i) fully sarking roof OR (ii) corrosion resistant mesh as per weepholes or profiled metal sheet or mineral wool (d) Hip and ridge capping must be preformed with no gaps or gaps sealed as per (c) (e) Roof wall junctions must be sealed by (i) fascia and eaves lining OR (ii) sealing to u/side of roofing at wall line with non combustible material (f) Tiled roofs must be fully sarked (including ridge) with sarking directly under tiling battens All sarking must have Flammability Index less than 5	As per medium requirements except that (a) all roof sheeting must be non combustible and sarked and (b) Timber eaves lining and/or trimming strips must be of fire retardant treated timber and (c) Fascias must be non combustible or fire retardant treated	As per high category requirements except that (a) Fibre reinforced cement or aluminium sheet must not be used for roof sheeting or fascias and (b) Aluminium must not be used for eaves linings
Roof lights	(a) rooflight penetrations and shafts must be sealed with non combustible sleeve and linings (b) A rooflight may be of metal framed thermoplastic provided that the diffuser at ceiling level is wired or toughened glass in a metal frame (c) Vents in rooflights must have a steel or bronze mesh screens with 1 8mm max aperture size	As per medium requirements except that (a) roof light glazing must be wired glass (Thermo plastic or toughened glass must not be used)	As per the requirements for high category attack
Roof Ventilators	All components of roof ventilators including rotary ventilators must be of non combustible materials and ventilation openings must be protected by 1 8mm max aperture size non corrosive steel or bronze screens		
Gutters and downpipes	Must be constructed of non combustible materials including materials or devices to stop leaves collecting or clogging		
Verandah and decks	Supporting posts columns and piers and external walls must comply with previous requirements as per this table for all categories If sheathed or tongue and grooved solid flooring is used the flooring system must comply with previous requirements for flooring systems		
	(a) spaced timber deck flooring (i) gaps in deck strips must not be less than 5mm (ii) the perimeter of the deck must not be enclosed (iii) The deck flooring must be separated from main building so fire will not spread	(a) spaced timber deck flooring must be fire retardant treated	(a) as per high category except that all timber (including balustrades) must be fire retardant treated or all materials must be non combustible

- NOTES
- (a) Fire retardant timber must comply with requirements of AS/NZS3837 Some timber varieties naturally meet the Ignition and Heat Radiance Parameters when tested to ASTM D2898 Method B without having to be fire retardant treated
 - (b) External timbers in a verandah patio deck or the like are regarded as protected also if they are under a roof or similar structure that projects to a line at an angle of 30 off the vertical from the base of the wall
 - (c) Where roofing systems are fully sarked mesh protected vents may be necessary to reduce condensation in some areas
 - (d) Where sub floor areas are enclosed termite protection must not be compromised

ENERGY EFFICIENCY – BCA part 3 12

Performance provisions of the BCA part 2 6 requires that a building must have a level of thermal performance so that greenhouse gas emissions are reduced using energy efficiently This level of thermal performance must facilitate the efficient use of energy for cooling and heating This will be achieved by selection of materials and methods of construction of Building Fabric External Glazing Building sealing Air movement and services as best suited to the particular Climatic Zone in which the building is sited A building must have an energy rating of not less than 5 stars complying with the ABCB protocol for House Energy Rating (Note BCA part 2 6 does not apply in N S W) Map of Australian Climate Zones for Thermal Design can be viewed on the Australian Building Code Boards website at www.abcb.gov.au

R-Value is the Thermal Resistance of a component to heat and cold movement Thermal movement is upwards or downward through a roof or a combination of both

THERMAL RESISTANCE minimum TOTAL R Value required for various climatic zones													
BUILDING COMPONENT		CLIMATE ZONE											
ROOFS		1	2	Altitude less than 300	2	Altitude 300m or more	3	4	5	6	7	8	
Direction of heat flow		Downwards			Downwards and upwards			Upwards					
Minimum Total R Value required		2.2	2.2			2.5		2.2	3.0	2.7	3.2	3.8	4.3

BUILDING COMPONENT		CLIMATE ZONE							
WALLS		1	2	3	4	5	6	7	8
Minimum Total R – Value required		1.4			1.7	1.4	1.7	1.9	2.8
QLD Variation minimum Total R Value		1.0			n a	1.4	n a		

Special Condition apply to two storey houses

FLOORS	CLIMATE ZONES	6	7	8	Enclosed perimeters and heated slab floors have special requirements Consult authorities
Suspended floors without heating and unenclosed around perimeter		1.0	1.0	2.5	

Added insulation to achieve minimum R Values for various climate zones can be (a) Reflective Insulation or (b) Bulk insulation or a combination of both Reflective insulation must be installed with not less than 20mm air space between the more reflective side and a building lining or cladding (note cavity clearances are not to be reduced) and closely fitted against any penetration and or door/window frame be adequately supported and overlapped to adjoining sheet not less than 150mm Bulk insulation must be installed so that it maintains its position by not slumping and forming voids and must abut other installation or building members Care should be taken that insulation does not interfere with the safety or performance of services or fittings Insulation as manufactured must comply with AS/NZS4859 1

R VALUE OF INSULATION TO BE ADDED TO BUILDING COMPONENT TO MEET TOTAL R VALUE REQUIRED									
ROOF TYPE		CLIMATE ZONE							
ROOFS		1 2	1 2	3	4	5	6	7	8
		Below 300m AHD altitude	at or over 300m AHD						
Minimum required Total R Value for roofs		2 2	2 5	2 2	3 0	2 7	3 2	3 8	4 3

FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING UNDER RAFTERS									
TILED	Total R Value of roof materials	0 4 downwards	0 4 down and up	0 40 upwards					
	Minimum R Value of insulation to add	1 8	2 1	1 8	2 59	2 29	2 79	3 39	3 89

FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING ON TOP OF EXPOSED RAFTERS									
TILED	Total R Value of roof materials	0 4 downwards	0 41 down and up	0 41 upwards					
	Minimum R Value of insulation to add	1 79	2 09	1 79	2 59	2 29	2 79	3 39	3 89

FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE									
TILED	Total R Value of roof materials	0 7 downwards	0 35 down and up	0 35 upwards					
	Minimum R Value of insulation to add	1 5	2 15	1 85	2 65	2 35	2 85	3 4	3 95

FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING UNDER RAFTERS									
METAL	Total R Value of roof materials	0 38 downwards	0 35 down and up	0 39 upwards					
	Minimum R Value of insulation to add	1 82	2 12	1 82	2 61	2 31	2 81	3 41	3 91

FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING OF TOP OF EXPOSED RAFTERS									
METAL	Total R Value of roof materials	0 37 downwards	0 37 down and up	0 39 upwards					
	Minimum R Value of insulation to add	1 83	2 13	1 83	2 61	2 31	2 81	3 41	3 91

FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE									
METAL	Total R Value of roof materials	0 5 downwards	0 4 down and up	0 4 upwards					
	Minimum R Value of insulation to add	1 7	2 1	1 8	2 6	2 3	2 8	3 4	3 9

A roof must achieve the minimum Total R Value specified In Climate Zones 1 2 and 3 pitched roof material with a flat ceiling must have a Solar Absorbance value less than 0 55 RBM installed below the roof and the roof space ventilated by roof gable eaves or ridge vents that allow an unobstructed air flow with no dead air spaces Vents must have a total fixed open area of not less than 1% of the ceiling area OR not less than 2 wind driven ventilators in association with fixed vents subject to approval

TYPICAL SOLAR ABSORBANCE VALUES OF COLOURED ROOFS

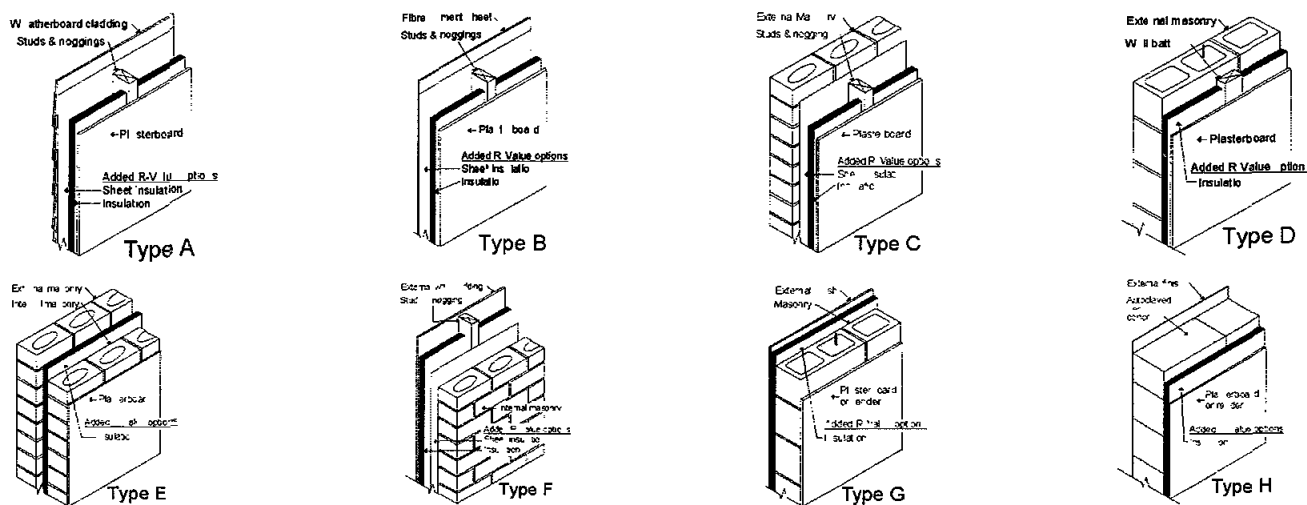
Slate (dark grey)	0 9		Light Grey	0 45
Red Green	0 75	Zinc Aluminium (dull)	off white	0 35
Yellow Buff	0 6	Galvanised steel (dull)	Light Cream	0 3

EXTERNAL WALLS

An external wall must achieve the minimum Total R Value for the relevant Climate Zone or in Climate Zones 1 2 and 3 to be shaded by a verandah balcony carport eaves and gutter or the like The horizontal projection from the external face of the building must be not less than one quarter of the overall height of the wall measured from the internal floor vertically to the underside of the projection This applies to all stories NOTE In Climate Zones 4 5 6 7 and 8 all walls must achieve a surface density of not less than 220 Kg/m2 and in Climate Zone 6 be constructed on a flooring system that is in direct contact of ground i e concrete slab or in Climate Zones 6 7 and 8 incorporate insulation with an R Value not less than 1 0 to the edges and underneath the slab

These requirements to not apply to South facing walls in Climate Zones 1 2 and 3 south of latitude 20 south

R VALUE OF INSULATION TO BE ADDED TO BUILDING COMPONENT TO MEET TOTAL R VALUE REQUIRED									
TYPICAL WALL CONSTRUCTION		CLIMATE ZONE							
		R VALUES							
		1	2	3	5	4	6	7	8
Minimum required Total R – Value for Walls		1	4	1	7	1	9	2	8
		Total R Value of Wall Materials				0 47			
(A) Weatherboard minimum 70mm Timber Frame		Minimum R Value of insulation to add				0 93	1 23	1 43	2 33
		Total R Value of Wall Materials				0 4			
(B) Cement or Metal Sheet 70mm timber frame		Minimum R Value of insulation to add				1 0	1 3	1 5	2 4
		Total R Value of Wall Materials				0 54			
(C) Clay Masonry Veneer minimum 110mm Veneer		Minimum R Value of insulation to add				0 86	1 16	1 36	2 26
		Total R Value of Wall Materials				0 52			
(D) Concrete Block Masonry minimum 140mm Masonry		Minimum R Value of insulation to add				0 88	1 18	1 38	2 28
		Total R Value of Wall Materials				0 67			
(E) Cavity Clay Masonry 110 ext veneer 90mm internal (min)		Minimum R Value of insulation to add				0 73	See note above		
		Total R Value of Wall Materials				0 5			
(F) External insulated Clay Masonry Minimum 110 mm masonry		Minimum R Value of insulation to add				0 9	1 2	1 4	2 3
		Total R Value of Wall Materials				0 48			
(G) External insulated Corner Masonry minimum 140mm thick		Minimum R Value of insulation to add				0 92	1 22	1 42	2 32
		Total R Value of Wall Materials				1 73			
(H) Autoclaved Aerated Masonry minimum 200mm thick		Minimum R Value of insulation to add				Nil	Nil	Nil	1 07



ENERGY EFFICIENT EXTERNAL GLAZING – BCA part 3 12 2

This part of the BCA applies to Class 1 buildings and class 10a buildings with a conditioned space. Acceptable Construction Practice. The effective glazing area of a building must not exceed the percentages of the building area as per BCA Table 3 12 2 1. This table defines the maximum effective glazing area (Total glazed area of all windows in a storey) as a percentage of the total floor area of a storey. The glazing area limits listed provide only the minimal protection against overheating (heat flow into the building via the glazing) and heat loss (through the glazing) in cold conditions. The heat loss or gain can be controlled by siting of windows, shading, use of protective films, double glazing with air or gas fill in a sealed unit, and size of windows. Window manufacturers can supply windows to suit the requirements for the site Climate Zone and the window construction depends on shading of the glazed area by verandahs, balcony, fixed canopies etc. or a shading device. A shading device must restrict at least 80% of the solar radiation when in use and can be a shutter, blind, vertical or horizontal screen with blades, battens, slats etc. and be adjustable by the building occupants. Where necessary, the nomination of glazing types, window locations, shading etc. should be carried out by an approved specialist.

NSW requirements to comply with BASIX Specifications are selectable in Natthers 2 32A

CARPENTRY

All timber shall comply with the appropriate standard as listed below. Timber sizes shall be selected so that the building as constructed complies with AS1170 2 or AS4055 for serviceability and Design Wind Gust Velocities (permissible stress) of 33 M/s minimum. Substitution of some members may be required for higher Gust Wind Velocities and advice of local authorities Building Department or Structural Engineer should be sought as whether design to N3 or higher is required.

STRESS GRADES

Visually Stress Graded Timber: Timbers whose species or place of growth is known may be visually graded for quality in accordance AS 2082.

Mechanically Stress Graded Timber: of required stress grade according to AS/NZS 1748 may be used regardless of species.

Seasoned Timbers: All timber shall be regarded as seasoned only if its moisture content does not exceed 18 per cent.

FRAMING – BCA part 3 4 3

Timber sizes in this specification are based on AS1684 4 Simplified Non cyclonic areas with restrictions as follows: Maximum wind classification N2 (33m/s), maximum roof pitch 30°, maximum building width 12.0m, maximum rafter overhang 750mm, maximum wall height at ext. walls floor to ceiling 2400mm. The sizes are for information only and should not be used for construction. All design for a structure within these limits should be carried out to AS1684 4.

NOTE: for wind classification N3 (W41N) and N4 (W50N) Non cyclonic areas with building widths 12.0m and up to 16.0m and with roof slopes exceeding 30° and up to 35°, design according to AS1684 2 is required. For construction in Cyclonic Areas, wind classification C1 to C3 refer to AS 1684 3.

CUTTING, ASSEMBLY AND ERECTION OF FRAMING ABOVE GROUND FLOOR LEVEL

Where framing is cut, assembled and erected on site, particular care should be taken that member sizes and fixings are designed to comply with stress grades for the particular number of stories and roof loads according to AS1684.

FLOOR FRAMING

Ground floor timbers shall be only of hardwood, cypress pine or pressure treated Radiata or Canada Pine below a height of 300mm above finished ground level and must not be built into brickwork. Subfloor ventilation shall conform to BCA part 3 4 1. In Bushfire Prone Areas special conditions apply. Where termite barriers need to be inspected, 400mm clearance is required between the underside of bearer and ground surface. BCA FIGURE 3 4 1.

ANT CAPS

To all brickwork and piers, at the level of underside of floorbearers, and capping of 0.5mm gauge galvanised steel or other approved metal is to be set, projecting 38mm beyond the internal faces of all brickwork and turned down at a 45 degree angle, lapped 13mm and soldered or crimped at all joints and corners so as to provide a continuous and effective barrier against termites throughout the length of the material. Whole of house protection against subterranean termite attack shall be installed in accordance with AS 3660 1.

BEARERS

Bearers should be laid in straight and normally parallel lines with top surfaces arranged to give level bedding for joists. Unless specifically noted as otherwise, bearers shall be located directly under all load bearing walls, except where walls are located at right angles to line of bearers, in which case piers or other approved supports shall be provided for bearers at points where they cross under such walls. Bearers having minor excesses in depth shall be brought to required level by checking out underside over supports. Packing is to be avoided but where there is no alternative, corrosion resistant and incompressible sheet material over full area of contact may be permitted. Bearers having not more than permitted spring shall be placed so that they tend to straighten under loading. Joints in bearers, unless specifically detailed otherwise, shall be made only at points of support on which adequate bearing for both members can be provided and the joint shall be secured by means of bolting or spiking against displacement or separation.

JOISTS

Joists shall be laid over bearers in straight and normally parallel lines with top surfaces set accurately to a common level to receive flooring. Underside of joists having minor excesses in depth are to be notched out over bearers to obtain required common level. Packing may be employed if unavoidable, similar to that for bearers, such packing to be securely fixed. Joists having not more than the permitted amount of spring shall be laid so that they tend to straighten under loading. Joints, unless specifically detailed, shall be made only over bearers or other supports. Joints occurring in joists which are parallel and support wallplates shall be made at points of support which provide adequate bearing for both ends which shall be butted or scarfed to maintain a straight line. Posts shall be securely skew nailed from both sides to bearers at all points of support.

Where floor joists abut solid masonry or concrete walls, they shall be supported on timber wall plates or bearers carried on walling, off sets or attached piers, where such method is not practicable and height of floor is more than 1800mm above ground, the ends of joists or bearers may bear in pockets formed in the wall which allow at least 12mm clear air space at sides and ends of members and provide solid bearing at least 100mm in depth.

Where the unsupported span of deep joists exceed 2700mm, 50mm x 50mm herringbone strutting or solid blocking of 25mm min thickness shall be provided in continuous rows between joists at not more than 1800mm centres.

EAVES BEAMS AND VERANDAH PLATES

Eaves beams and verandah plates shall be provided to support rafters or trusses over full height openings or recesses in walls or over verandahs or porches covered by main roof structure. Any reduction in nominal size through mill dressing or scalloping shall be allowed for so that the minimum size listed is not reduced. The ends of eaves beams and verandah plates that are supported on stud wall shall be carried by studs or stud groups as

for heads for equivalent spans End fixing shall provide resistance to uplift or displacement Verandah Posts to be not less than 100mm x 100mm in timber F11 If supporting roof loads they shall be as per AS1684 2

ROOFING BATTENS Supporting roofing only (Note roofing battens are not suitable for the safe support of workers prior to fixing roof cladding) Battens should be continuous over a minimum of two spans and their design to suit rafter/truss spacing and batten spacing must be in accordance with AS1684 for the allowable roof mass

MANHOLE

Trim as required between ceiling joists or trusses for manhole 600 x 400mm minimum size Line the opening and provide a suitable cover

EAVES

Project rafters to give a soffit at eaves of directed width and fix 200 x 25mm timber fascia or colourbond steel as directed Where eaves are boxed in soffit bearers (sprockets) of 50 x 38mm shall be provided spaced to suit eaves lining and attached directly to outer ends of rafters In brick veneer buildings the inner ends of soffit bearers shall be fixed to the frame so as to be 20mm or more clear above top of brickwork at time of construction In solid masonry buildings the inner ends of soffit bearers shall be located by means of 50 x 25mm hangers from rafters or wall plates In Bushfire Prone Areas fascias and eaves linings have special requirements

PREFABRICATED TIMBER WALL FRAMES AND TRUSSES – BCA part 3 4 3

Where prefabricated frames and/or trusses are used for construction of the building the manufacturers certification of construction according to AS1684 2 or AS1684 4 for the building on the particular site must be obtained Where certification is attached to truss or framing members the certification labels shall be left in place after erection for approval by the appropriate Building Surveyor P C A or Council Authority Timber trusses purpose manufactured for this project and engineer designed according to AS1720 1 are to be spaced at centres as directed erected and fixed in accordance with the manufacturers instructions as approved Support only on ends or designed bearing points Where spacing of trusses exceeds 600mm centres provide intermediate ceiling joists in 100mm x 38mm hardwood (in F7) or 100mm x 50mm (in F8) supported from hangers at maximum of 2100 centres Hanging beams shall be supported not more than 600mm from bottom chord panel points unless hangers are provided to nearest top chord panel points

MASSES OF TYPICAL ROOF CONSTRUCTION

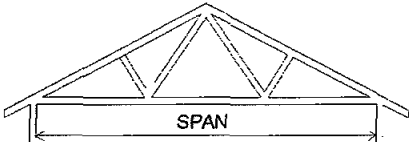
MASS OF ROOF	MATERIAL
10 kg/m2	Steel sheet roofing 0.50mm thick and battens
20 kg/m2	Metal sheet tiles or medium gauge steel sheet roofing battens 12mm softwood ceiling lining sarking and lightweight insulation
30 kg/m2	Steel sheet roofing 0.775mm thick 13mm plaster ceiling roof and ceiling battens sarking and lightweight insulation
40 kg/m2	Steel sheet roofing 0.75 thick battens graded purlins and high density fibreboard ceiling lining
60 kg/m2	Terracotta or concrete tiles and battens
75 kg/m2	Terracotta or concrete tiles roofing and ceiling battens 10mm plasterboard sarking and insulation
90 kg/m2	Terracotta or concrete tiles, purlins roofing and ceiling battens 19mm hardwood ceiling lining sarking and insulation

DEFINITIONS

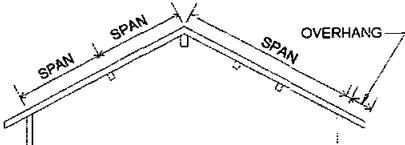
Spacing Where this term is used the measurement shall be the centre to centre distance between members

Span Where this term is used the measurement shall be the face to face distance between members

Reference is made to effective roof spans in the tables the span is an indicator of the mass of roof being carried by the outer wall members



TRUSSED ROOF



ROOF WITH LOADBEARING RIDGEBEAMS AND WALLS

TABLES OF TIMBER SIZES

SINGLE STOREY TILED ROOF

SINGLE STOREY SHEET ROOF

Framing Member Stud Height 2400	Span	Unseasoned		Seasoned		Unseasoned		Seasoned	
		F8	F5	MGP10	MGP12	F8	F5	MGP10	MGP12
BEARERS									
Strutted roof – max rafter span 3000 @ 1800 spacing continuous over two or more spans load bearing	1500	100 x 75	2/120 x 35	2/120 x 35	2/90 x 35	100 x 75	2/90 x 35	2/90 x 35	2/90 x 35
	1800	125 x 75	2/140 x 35	2/120 x 35	2/90 x 35	125 x 75	2/120 x 35	2/120 x 35	2/90 x 35
Trussed Roof 9 0 Span External Wall 1800 spacing continuous over two or more spans load bearing	1500	175 x 75	2/170 x 35	2/140 x 35	2/140 x 35	125 x 75	2/120 x 35	2/120 x 35	2/90 x 35
	1800	150 x 75	2/190 x 35	2/190 x 35	2/140 x 35	200 x 75	2/190 x 35	2/190 x 35	2/170 x 35
JOISTS									
450 spacing continuous over two or more spans	1800	125 x 38	120 x 45	120 x 35	120 x 35	125 x 38	120 x 45	120 x 35	120 x 35
LINTELS									
Trussed Roof 9000 Span	900	100 x 75	2/90 x 35	90 x 45	90 x 35	100 x 50	2/90 x 35	90 x 45	90 x 35
	1200	125 x 75	2/120 x 35	120 x 45	2/90 x 45	125 x 50	140 x 45	2/90 x 45	2/90 x 35
	1500	175 x 75	2/140 x 45	2/120 x 45	2/120 x 45	150 x 50	2/120 x 35	2/140 x 35	2/90 x 45
	1800	200 x 75	2/170 x 45	2/170 x 35	2/140 x 35	150 x 75	2/140 x 35	2/120 x 35	2/120 x 35
	2100	225 x 75	2/240 x 35	2/170 x 45	2/170 x 35	175 x 75	2/170 x 35	170 x 45	2/120 x 45
	2400	275 x 75	2/240 x 35	2/240 x 35	2/190 x 45	200 x 75	2/170 x 45	2/170 x 35	2/140 x 45
	3000	— — —	2/290 x 45	2/290 x 35	2/240 x 45	250 x 75	2/240 x 35	2/190 x 45	2/190 x 35
3600	— — —	— — —	—	2/290 x 45	— —	2/290 x 45	2/290 x 35	2/240 x 45	

UNCOUPLED ROOF WITH LOADBEARING RIDGEBEAMS AND/OR WALLS

Rafters supporting roof and ceiling loads – non coupled cathedral roof single span

Rafter Span		Rafter Spacing	Unseasoned				Seasoned			
			F5	F7	F8	F11	F5	MGP10	MGP12	F17
Tiled Roof Ceiled										
3000	Overhang	600	200 x 38		175 x 50	175 x 50	175 x 45	140 x 45	140 x 45	140 x 35
			750	750	750	750	750	750		
3600	Overhang	600	250 x 50		225 x 50	200 x 50	240 x 35	170 x 45	170 x 45	170 x 35
			750	750	750	750	750	750		
4200	Overhang	600	275 x 50		250 x 50	250 x 50	240 x 45	240 x 35	190 x 45	190 x 45
			750	750	750	750	750	750		
4800	Overhang	600	275 x 75		300 x 50	275 x 50	290 x 35	240 x 45	240 x 35	240 x 35
			750	750	750	750	750	750		
5400	Overhang	600	-----		300 x 75	275 x 75	-- --	290 x 35	290 x 35	240 x 45
			750	750	750	750	750	750		
Sheet Roof Ceiled										
3000	Overhang	900	175 x 50		175 x 50	150 x 50	140 x 45	140 x 35	120 x 45	120 x 45
			750	750	750	750	750	750		
3600	Overhang	900	225 x 50		200 x 50	200 x 50	170 x 45	170 x 35	140 x 45	140 x 45
			750	750	750	750	750	750		
4200	Overhang	900	250 x 50		225 x 50	225 x 50	240 x 35	190 x 45	170 x 45	170 x 45
			750	750	750	750	750	750		
4800	Overhang	900	300 x 50		275 x 50	250 x 50	240 x 45	240 x 35	190 x 45	190 x 45
			750	750	750	750	750	750		
5400	Overhang	900	300 x 75		300 x 50	275 x 50	290 x 35	240 x 45	240 x 35	240 x 35
			750	750	750	750	750	750		

- NOTE**
- 1 Allowable overhangs are based on a maximum birdsmouth depth of D/3. Where rafters are not birdsmouthed the allowable overhang may be increased to 30% of the single span for that member provided that the overhang does not exceed 50% of the actual backspan
- 2 Overhang limits are only applicable where rafter ends are supported by a structural fascia

NOTE Sizes shown in tables in this specification are intended only as a guide to the size and stress grade for a particular member of a building frame. All timber framing should be designed and constructed in accordance with AS1684 2 and/or AS1684 4. Sizes in this specification are based on AS1684 4 Simplified Non cyclonic areas with restrictions as follows:

- Maximum wind classification N2 (33m/s)
- Maximum Roof pitch 30°
- Maximum building width 12.0m

Where a building exceeds the restrictions as listed above design to comply with AS1684 2 will allow wind speeds up to N4 (50 m/s) roof slopes up to 35° and building widths up to 16.0m

PERMANENT BRACING OF WALLS AS PER AS1684 2 Section 8 BCA parts 3 4 3

This section Permanent Bracing of walls as per AS1684 shows typical bracing applicable to timber frame construction as explanatory information only.

TYPE A UNITS (Design racking resistance of 2kN) The following bracing units are deemed satisfactory type A braces

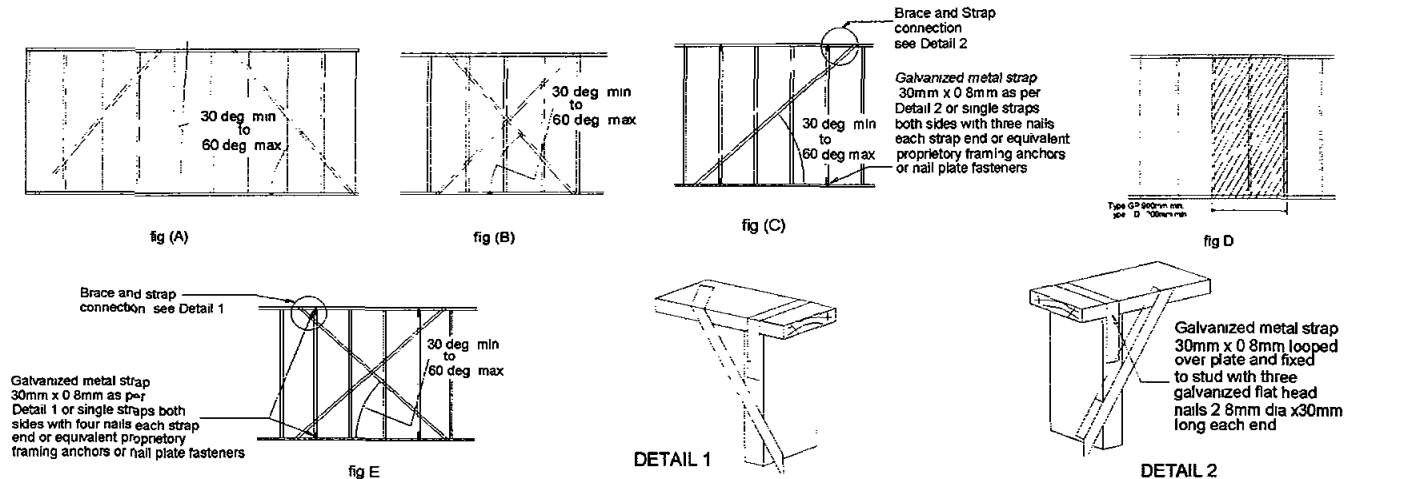
- 1 A pair of diagonal timber or metal section braces in opposite directions from each end of the wall as per fig (A) OR galvanised metal tensioned strap bracing as per fig (B)
- 2 Single diagonal timber or metal section brace as per figure (C)
- 3 A 900mm minimum wide panel of structural plywood as per figure (D)

Type 'A' Bracing – Pair of diagonals from each end of wall		
Timber	Metal Section	Tensioned Straps
50mm x 19mm for studs up to 2.7m long 75mm x 19mm for studs over 2.7m long Fixing galvanised flat head nail 2.8mm dia x 50mm long to each plate and stud	18mm x 16mm x 12mm min galvanised angle brace fixed with one 2.8mm dia x 30 long galvanised flat head nail to each plate and stud edge	Flat galvanised straps 0.8mm thick x 20 wide Fixings one galvanised flat head nail 2.8mm dia x 30mm long to each plate and stud edge Tension straps

Type 'A' Bracing – Single diagonal at end of wall	
Timber	Metal Section
75mm x 19mm min fixed with two 2.8mm dia x 50mm long flat head galvanised nails to each stud and plate	Galvanised angle brace fixed with two 2.8mm dia x 30 long galvanised flat head nails to each plate and stud

Type B UNITS (design racking resistance of 4kN) The following bracing units are deemed to be satisfactory type B braces

- 1 A pair of diagonal galvanised metal tension straps of minimum nominal dimension 30mm x 0.8mm in opposing directions on one side of timber frame. Ends of straps shall be bent over top and bottom faces of plates and fixed with four 3.15mm dia x 30mm long galvanised flat head nails. Braces shall be fixed to stud edges with two similar nails to each crossing. End studs of braces section shall be strapped to top and bottom plates with 30mm x 0.8mm galvanised strap looped over plate and fixed to studs with four galvanised flat head nails 3.15mm dia x 30mm long each end of loop.
- 2 A 900mm minimum wide panel of structural plywood as shown in figure (D). Fixed as follows:
- | | | |
|--------------------------|--|--|
| Plywood stress grade F8 | Stud spacing 450mm to be 7mm thick ply | Stud spacing 600mm to be 9mm thick ply |
| Plywood stress grade F11 | Stud spacing 450mm to be 6mm thick ply | Stud spacing 600mm to be 7mm thick ply |
| Plywood stress grade F14 | Stud spacing 450mm to be 4mm thick ply | Stud spacing 600mm to be 6mm thick ply |
- Fixing 2.8mm dia x 30mm long galvanised flat head nails at 50mm centres along top and bottom plates 150mm centres along vertical edges and 300mm centres along intermediate studs



Diagrams as shown and explanation of the various types of bracings are not intended to specify bracing requirements for any timber frame construction. All bracing requirements for a particular design in timber framing must be determined in accordance with Section 8 of AS1684 2 or AS1684 4 as applicable.

TIEDOWN REQUIREMENTS BCA tables 3 4 3

Tie down requirements for timber frame construction can be determined from AS1684 4 Section 9 for maximum design gust wind speeds of 33m/sec. For wind speeds in excess of 33m/sec design as per AS1684 2 is required.

Tie down fixings should be determined for the following connections

- | | | |
|--|-----------------------------------|---|
| a) bearers to piers | d) studs to bottom and top plates | g) battens and/or purlins to rafters |
| b) floor joists to bearers | e) rafters to top plates | h) collar ties to rafters |
| c) Bottom plates to floor joists or concrete slabs | f) rafters to ceiling joists | i) verandah plates and eaves beams to posts |

NOTE Special fastening requirements are required for type A and B wall bracing for connections (c) and (d) above

CYCLONIC AND OTHER HIGH WIND AREAS BCA part 3 10 1

Where buildings are to be constructed in regions B, C and D as per AS/NZS1170 2 and AS1170 2 compliance with the AS1170 2 Minimum Design Loads on Structures or AS4055 Australian Wind Loads for Housing.

NOTE High wind areas exist outside of cyclone regions B, C and D. Clarification of the category at the site should be sought from local authorities. Cyclonic Regions of Australia and Tasmania are shown on Map BCA fig 3 10 1 4.

STEEL FRAMING AND OR TRUSSES BCA part 3 4 2

MATERIALS All framing sections shall be manufactured from galvanised steel conforming to AS1397 Galvanised materials up to 3 2mm thick shall have minimum coating mass of 200 g/m² Design fabrication and fixing shall be as per recommendations of the component manufacturers design manual Design for Residential and Low Rise Steel Framing may conform to NASH standard as alternative to AS3623

FABRICATION AND ERECTION

All structural components fabricated into frames and/or trusses and shall be cut accurately to length to fit firmly against abutting members and held so until fastened Studs shall be seated squarely in bottom plates with webs at 90deg to the face of the wall and accurately located plumbed and securely fixed to top and bottom plates Multiple studs shall be used as specified at concentrated load points Plates shall be securely spliced to maintain continuity Splices in studs are not permitted Structurally adequate heads shall be fitted over openings in walls All frames shall be adequately braced for transport and resist wind loads in service Preferred fastening is by MIG welding All welds shall be cleaned and painted with zinc rich paint The bottom plate shall be securely fastened to sub floor at centres as recommended and all site connections shall be as specified in design manual Holes for electrical wiring other cables and plumbing services shall be max 33mm dia flanged holes Service pipes shall be effectively separated from framing by lagging and be securely fixed in cavities Permanent electrical earthing of a steel frame building shall be carried out in accordance with the requirements of the local electrical authority Where power tools are used on site temporary earthing to the frame shall be made during construction On completion of framing all debris shall be removed from cavities and bottom plates Domestic metal framing shall be designed to comply with the load combinations as per AS3623

STRUCTURAL STEEL BCA part 3 4 4

All steel work is to be fabricated to details as shown on engineers drawings all work to be in accordance with AS4100 Steel Structures

PURLINS AND GIRTS

To roof and walls of building provide purlins and girts according to engineers details Cover roof and walls of building in full length sheets complete with all necessary flashings cappings etc Secure as recommended by manufacturer and provide panels of selected translucent sheeting as indicated or directed

ROOFING BCA part 3 5 1

TILE ROOFING BCA part 3 5 1 2

Provide all roofs with first quality roofing tiles Where pitch of rafters is less than 1 2 75 terra cotta Marseilles pattern 1 3 7 Swiss pattern 1 3 3 concrete tiles are used the roof shall be sarked with either 2 ply bituminous felt or double faced aluminium foil covered reinforced fabric as per AS1736 Between 1 3 7 and 1 4 5 slope perimeter of roof shall be provided with an anti ponding board or device to ensure that all water will be discharged into eaves gutter a clear space must be provided between edge of the device and the lowest side of the first batten so as to allow a free flow of water into the gutter Where one section of the roof discharges into a lower section the discharge is to be widely distributed and the roof is to be fully sarked Elsewhere where a spreader is used the roof shall be sarked from the point of discharge to Eaves with a minimum width of 1800mm approved sarking Cover all ridges and hips with capping starters and apex caps necessary and bed all capping and verge tiles on lime mortar and point with coloured cement mortar

TERRA COTTA TILES

To be glazed and manufactured in accordance with AS 2049 To be fixed to timber battens with copper wire ties every alternate tile all fixed in accordance with AS2050

CONCRETE TILES

To conform to AS1757 and AS1758 and to be produced by manufacturers who provide a comprehensive guarantee and fix in accordance with AS1787 Tiles are to have an end lap of not less than 75mm Where wiring holes are provided every alternate tile in each course is to be tied to battens with approved wire Where holes are provided for nailing every tile in each third course is to be fixed with galvanised flat head nails at least 19mm into tile batten Fixing to be as per AS2050

CORRUGATED FIBRE CEMENT ROOFING

To conform to AS1611 and fixed in accordance with AS1562 Pt 2 Minimum pitch of roof is to be 1 8 for large corrugations and 1 11 where the rafter length can be covered with a single sheet Where pitch of roof is less than 1 6 in the case of large corrugations and 1 4 5 in the case of small corrugation end laps shall be at least 225mm and sealed Sheets to be fixed with galvanised round head screws and felt washers set in mastic to each run of battens with side and end laps or other approved method in accordance with manufacturers instructions All necessary accessories are to be provided and the roof is to be adequately birdproofed

PROFILED STEEL ROOF BCA part 3 5 1 3

To be material as nominated on drawings All necessary accessories to be provided and fixed according to manufactures recommendations Roof is to be bird proofed Sheet fixings and spacings are to be strictly as per manufacturers recommendations for the design wind speed for the area Design and installation shall be in accordance with AS/NZS 1562 Cover roof and walls of building in full length sheets complete with all necessary flashings and cappings etc Secure as recommended by manufacturer and provide panels of selected translucent sheeting as indicated or directed

SARKING

Where sarking is specified or required by any authority the selection of and fixing shall be in accordance with the code of practice as specified in AS1736 for pliable roof sarking and/or AS1903 04 for reflective foil laminates All installations must comply with the requirements of BCA part 3 7 4 in Bushfire prone areas

FLOORING BCA part 3 4 3

T & G STRIP FLOORING BCA table 3 4 3 1

Flooring shall be seasoned and stored in a way to preserve its delivery condition Flooring boards shall be laid in straight and parallel lines with tongues fitted into grooves and cramped together with pressures suited to moisture content and seasonal conditions End joints shall be made on a joist and joints in adjoining boards shall be staggered Flooring shall be kept 12mm clear of walls or wall plates parallel with the direction of laying Boards of normal width of 75mm and less shall be fixed with one nail at each joist and boards over 75mm shall be fixed with two nails at each joist Nails in faces of boards are to be well punched to allow for subsequent sanding and stopping Boards profiled for secret nailing are to be skew nailed through tongues at each joist with nail punched to permit the full entry of the tongue into the groove Flooring is not to be cut in and fixed before roofing is complete external walls sheeted or lined and all external openings covered

SHEET FLOORING

The minimum height of sheet flooring above ground level and under floor ventilation shall be in accordance with manufacturers instructions or as required by Council or Lending Authority

Where sheet flooring is used in platform construction and a decorative finish is required it shall be sealed with a water repellent at time of fixing

a) Structural Plywood shall be manufactured in accordance with AS2269 and sheets stamped on the face side with manufacturers name or trade mark Sheets shall be fixed in accordance with manufacturers instructions as approved

b) Particle Board Approved board bonded with phenolic resin to achieve a type A bond as defined in AS1860 for plywood may be used in platform construction or as fitted flooring Boards shall be fixed in accordance with manufacturers instructions as approved The perimeter of flooring should be fully supported by joists or noggins Other approved particle board may be used providing it is a minimum of 2100mm above the ground

c) Compressed Fibre Cement Sheet flooring not less than 18mm thick with density of not less than 1 8g/cm³ may be used in lieu of suspended concrete floors Sheets shall be fixed in accordance with manufacturers instructions adequately flashed and suitably finished

ELECTRICAL INSTALLATIONS

Provide all labour and materials necessary for the proper installation of electrical services in accordance with the appropriate AS Rules and requirements of the Local Supply Authority Arrange with the supply Authority for connection from supply main to meter board Provide for the proper installation and connect electricity stove/s and hot water unit/s Provide light and power points as indicated on drawings or as directed and in accordance with AS/NZS1680 Provide box to enclose meters in accordance with the requirements of the Authority concerned Arrange for inbuilt wiring for telephone television computer and security installation as required AS/NZS 3000 specifies the minimum requirements including safety provisions

SMOKE DETECTORS/ALARMS BCA part 3 7 2

Fire/smoke detectors selected by the owner and complying with the requirements of the Local Government Act and/or state or territory regulations must be fitted in the locations required and approved by the regulatory authority and shall be installed in accordance with AS3786

LIGHTNING PROTECTION

Where lightning protection is specified by the proprietor or required under regulatory provisions it shall be installed in accordance with AS1768

EXTERNAL WALL CLADDING - BCA part 3 5 3

WEATHERBOARDS OR PROFILE SHEETING or other cladding as approved by the leading authority shall be fixed and flashed in accordance with manufacturers instructions and to the satisfaction of the leading authority. Weatherboards with laps as specified by the relevant AS shall be hardwood, pressure treated radiata pine or slash pine, cypress pine, baltic pine or western red cedar. The boards shall have a maximum moisture content of 15% be in long lengths with staggered end joints, securely nailed and fitted with angle stops. Western red cedar used externally shall be fixed with galvanised or cadmium plated fasteners. Boards exceeding 100mm in width shall be double fastened at all bearings. All boards shall be primed or sealed all around including rebates and ends before fixing. Where vertical boarding is used it shall be fixed to battens at not more than 600mm centres and sarking acceptable to the leading authority placed behind the battens to provide air space and fixed to the frame work with adequate provision for discharge of moisture. External boarding shall be in one length or have joints specially designed for external use.

FIBRE CEMENT

a) Flat Sheeting. Fibre cement sheeting shall be not less than 4.5mm thick and close jointed to full height of walling or above sill level where weatherboard dadoes are specified. Horizontal joints shall be flashed with 0.42mm galvanised steel turned up 13mm against stud faces and down 12mm over sheet faces, lapped 25mm at joints. Internal angles of walls shall be flashed with 38mm x 38mm x 0.42mm minimum base thickness galvanised steel angles or bitumen coated metal flashing to full height of studs and lapped 50mm at joints. All vertical and horizontal joints and angles shall be covered with timber fibre cement mouldings as approved by the leading authority. Trimmers of not less than 75mm x 38mm timber shall be provided between ends of floor bearers to support lower edge of sheeting.

b) Profiled sheeting and Weatherboard. As approved by the leading authority shall be fixed and flashed in accordance with the manufacturers instructions and to the satisfaction of the leading authority.

INTERNAL LININGS

Line all internal walls not specified as otherwise with Gypsum plaster board fixed horizontally in full length sheets or with staggered end joints to ceiling height. Sheets to have recessed edges and of thickness as recommended by the manufacturer for the stud, batten or support spacing. Fixing is to be with galvanised clouts, manufacturer approved screws and/or approved adhesive and be strictly in accordance with manufacturers instructions. Set all internal angles. Note: Where below 1200mm in laundry, bathroom and W.C. and at back of kitchen sink unit and below 1800mm in shower recess, only approved water repellent sheet shall be used. Note: Adhesives must not be used to fix sheets in tiled areas.

FIBREBOARD

Sheets shall not be less than 4.5mm thick except where tiled. Sheets to be tiled shall not be less than 6mm thick. Where flush jointing is required fibreboard sheets shall be used, fixed and jointed in accordance with manufacturers instructions.

CEILING LININGS

Provide Gypsum plaster board to all internal ceilings unless otherwise specified. Sheets to have recessed edges and to be 10mm thick when fixed to ceiling battens/joists spaced at not more than 450mm and 13mm thick for 600mm spacings. Fixing is to be with galvanised clouts and/or approved adhesive and is to be in accordance with manufacturers recommendations as approved. Provide selected cornices, neatly mitred, properly fixed and scrimmed and set at all joints in full wall lengths where practicable. Gypsum plaster board for ceilings and walls shall be as per AS2589. Sheets of different thickness may be used at other spacings where their manufacture and installation complies with the Deemed to Satisfy Provisions.

PLASTER AND RENDER

To all brick walls not specified as feature brickwork or otherwise (with exception of garage) apply render to minimum thickness of 12mm. Render to consist of one part fresh cement to 3 parts clean sand with 10 per cent hydrated lime added. Use only whilst fresh. All brickwork to be well wetted before plastering is commenced. Point up all flashings externally with cement mortar and make good as required after other trades.

JOINERY

Joinery timber is to be of species seasoned and free from those defects that might effect its appearance and/or durability. All to be D.A.R. accurately cut and fitted, properly mitred and scribed as required and securely fixed. All surfaces to be left free of mill marks or other defects, filled where necessary and ready for painting or staining. Where wood plugging is required it shall be a suitable species properly seasoned.

DOOR FRAMES – BRICK BUILDINGS

Shall be at least 100mm x 50mm solid rebated, properly dowelled to thresholds. Mullions shall be 75mm thick and double rebated.

JAMB LININGS – INTERIOR DOORS ALL BUILDINGS, EXTERIOR DOORS TIMBER FRAMED AND BRICK VENEER

Linings shall be a minimum of 38mm thick solid rebated to all door openings. Where return plaster reveals occur linings shall be 75mm x 50mm rebated. Alternatively for internal doorways 25mm linings may be used with 12mm planted stops. In brick veneer and timber framed construction 12mm clearance shall be provided over jamb linings to external openings. Linings to openings not having doors or to have swing doors are to be 25mm thick timber securely fixed. Other proprietary linings may be approved by the owner.

DOORS Fit accurately to door frame. Hang external doors with three 88mm steel butts and internal doors unless otherwise specified with two 88mm steel butts. External doors shall not be less than 2040mm x 820mm x 40mm thick. Where sheeted with plywood, waterproof plywood only shall be used. All framed glazed doors (external or internal) shall be minimum of 40mm thick. Internal doors shall be minimum of 35mm thick and free of warping.

WINDOWS AND FRAMES In brick veneer construction 10mm clear space shall be left between underside of sill and brickwork. In two storey construction with hardwood timber framing the clearance shall be increased to 20mm.

INSTALLATION

All windows shall be installed in accordance with the requirements of AS2047:48 for Aluminium windows and AS2146:47 for timber windows.

STAIRS, HANDRAILS AND BALUSTRADES – BCA 3 9 1 and 3 9 2

Stairways shall be constructed to the layout as shown on plans with treads of equal dimensions except where shown or where winders are required. All risers in any flight shall be of equal height. All flights shall have a minimum of 2 and not more than 18 risers. Vertical clearances above stairs shall be 2000mm min. to soffit of floor or structure above when measured vertically above nose of tread. Relationship of riser to going shall be between 1:2 and 1:1.35 unless otherwise directed or as permitted in AS1657. Balustrades shall be provided to all landings, decks, roofs, other elevated platforms where the vertical distance from that level is more than 1 metre above the adjoining floor or finished ground level. Height of the balustrade must be a minimum of 1 metre above landings etc. and not less than 865mm above the nosings of any stair treads or floor of a ramp. Openings in balustrades (decorative or otherwise) and space between treads, eg. riser opening must not allow a 125mm dia sphere to pass through. Resistance to loading forces of a balustrade must be in accordance with A.S. 1170. Materials and finish of handrails, newel posts and balustrading shall be as directed or agreed by owner. Where balustrades are constructed of tensioned wires provision shall be made to maintain tension applied.

ACCESS AND MOBILITY

Where access and mobility requirements are to be addressed in the construction of a new building, AS1428:1 General Requirements for Access – New Building Work contains the minimum design requirements to enable access for people with disabilities. Revision of the BCA in order to address requirements of the Disability Discrimination Act (DDA) as applies to the construction of buildings with public areas will require that the latest revision of AS1428 should be used.

PLUMBING AND DRAINING – BCA part 3 5 2

EAVES, GUTTERS, VALLEY GUTTERS AND DOWNPIPES

Eaves gutters and downpipes of material and finish as nominated on drawings shall be installed as per manufacturers specification to all eaves as required with falls to downpipes in positions shown and to comply with AS/NZS 2179. Valley gutters of material compatible roof covering to comply with BCA 3 5 2 4.

FLASHINGS

Flash around chimney stacks, exhaust flues and wherever else required with approved flashings dressed well down onto roof slopes and taken vertically at least 75mm. Wedge step flashing into brickwork joints and point up with cement mortar. Eaves gutters, valleys and roof flashings shall be selected from materials compatible with each other and the roof covering to prevent bi-metallic corrosion. (See BHP publications TB8, TB15). Use of lead for flashings, gutters, downpipes and roofing is prohibited if the roof will collect potable water.

WATER SERVICES

Where a reticulated water supply is available all work shall be carried out by a licensed water plumber. All water supply installations shall be carried out in accordance with AS3500 National Plumbing and Drainage Code.

RETICULATED RECYCLED WATER

Where a utility supplied reticulated recycled water supply is connected as a dual reticulation it is important that no cross connection between the potable and recycled water can occur. There must be at least one external tap for each system and the recycled water system must have lilac coloured components. Identification markings and signage shall be installed as per AS1319 and AS1345. Recycled water cannot be used for human consumption or contact, household cleaning, personal washing or irrigation where fruit and crops are eaten raw or unprocessed.

WET ROOM FLASHINGS BCA 3 8 1

Waterproofing of wet areas shall be designed and installed in accordance with requirements and construction techniques as per AS3740 and appendix for wall/floor combinations. All waterproofing installations are to be inspected and approved prior to covering. Where waterproof membranes are used in the construction of wet area membranes shall comply with AS/NZS4858.

HOT WATER SERVICE

All installations must comply with AS3500 4. Provide from H/water unit with selected tubing to points necessary. Terminate with taps selected. Provide inlet stop cock to hot water unit.

GAS SERVICE

The whole of the work is to be carried out as per requirements of the Local Supply Authority. The plumber is to be responsible for the gas service from boundary alignment including fixing of the meter and cover for same. Installations for bottled gas supply shall comply with the relevant standard.

HEATING APPLIANCES BCA 3 7 3 Domestic type Oil Gas and Solid Fuel heater installations shall comply with AS2918. Domestic solid fuel burning appliances – Installation or AS1691. Rules for installation of domestic Oil Fired appliances as applicable. Installation of gas fired appliances shall be carried out by a licensed gas plumber.

SEWERED AREAS

Provide a drainage system from pedestal pan and from wastes of all fittings unless a grey water system is to be installed and connect to the sewer main where shown on site plan all to be in accordance with the rules and requirements of the Authority for Water Supply and Sewerage. Provide at least one gully outside the building. The Authority Certificate to be produced at Completion of the Work.

UNSEWERED AREAS

Provide a drainage system from all fittings and from grease trap in accordance with the requirements of the Local Authority concerned. Excavate for drains to provide even falls throughout and a minimum cover of 300mm. Lay 100mm socketed vitrified clay P V C or HDPA pipes to take discharge from wastes of washtubs bath shower washbasin and grease trap. All pipes to be completely jointed with rubber rings or solvent cement as approved. All drain lines to be laid so that water is discharged into an absorption trench provided in position shown on plan. Provide an approved grease trap with lid in position shown to take the water from kitchen sink. Top of trap to be 75mm above finished ground or nearby concrete paving level. All drainage work from fittings to the drainage line outside the building to be in accordance with the rules and requirements of the Water Supply and Sewerage Authority for sewer areas. That Authority Special Inspection Certificate of the work to be produced by the builder. All plumbing and drainage shall be in accordance with the Code of Practice for state or territory and regulating local government area.

GREYWATER REUSE SYSTEMS

Where a greywater reuse system is proposed the installation shall comply with the following Australian Standards and Codes. AS1546 parts 1 and 3. AS1547. NSW Health 1998 AWTS guideline. NSW Health 2000 Domestic greywater treatment guidelines and sewer single domestic premises. An on site greywater reuse system is not permitted in Reticulated Recycled water areas. Domestic Greywater Treatment Systems (DGTS) and Aerated Wastewater Treatment Systems (AWTS) require a certificate of accreditation from NSW Health.

SEPTIC SYSTEM

In position shown on site plan provide and install septic system as nominated by the proprietor together with a holding tank and length of absorption trench installed in accordance with the manufacturers instructions and the requirements of the Local Authority. Installations shall comply with AS1546 part 1.

STORM WATER TREATMENT METHODS

Provide roof water drains from downpipes and from grates in paving where shown on site plan. Drains to be 100mm socketed vitrified clay pipes or PVC laid to an even and regular fall so as to have a minimum cover of 150mm. Drains to discharge into street gutter where possible. Where outlets are shown within the site they are to discharge at least 3000mm clear of the building into rubble packing 600mm diameter and 600mm deep. Acceptable solutions for stormwater drainage to be as per AS/NZS3500 part 3. Stormwater treatment systems should satisfy the following performance requirements:

1. Conserve Water
2. Prevent Increases In Flooding/Erosion
3. Maintain water balance
4. Control Stormwater Pollution

Systems suitable for detached dwellings are: Roof/rainwater tanks. Detention devices. Infiltration devices and Filter strips. These are also suitable for multi dwelling developments in addition to Stormwater tanks and Bio retention devices.

RAIN WATER TANKS

Install rainwater tanks of selected material on slab or support as nominated by tank manufacturer. Rainwater tanks may be trickle topped up (max 2litres/minute) from a potable water supply main and internally reticulated. A dual supply system should have no direct or indirect connection between the mains potable supply and the rainwater tank supply. Inground concrete tanks may be installed as an option with a suitable pressure pump and a testable backflow prevention device as per AS/NZS2845 1. Where an above ground tank is connected to internal reticulation a meter with a dual check valve is to be installed and a visible air gap between the mains supply and the rainwater tank as per AS3500 and AS2845 2 1. (See NSW Health circular Use of rainwater tanks where a reticulated mains water supply is available).

NOTE Drain pipes must not be taken through the footings of the building. All seepage and soakage water is to be effectively dealt with and diverted clear of the buildings as shown on site plan. Trenches for drains where running parallel to the building must not be within 600mm of the footings of the building.

WALL AND FLOOR TILES

For guidance on installation of ceramic tiles see recommendations as set out in AS3958 parts 1 and 2.

WALLS

Cover the following wall faces with selected glazed tiles	To shower recess to a height of 1800mm
To bathroom generally to a height of 135mm	To enclosing of bath and hobs
To bath recess to a height of 1350mm	To WC to height of one row of tiles or as directed

Above kitchen sink/s and cooking area/s allow for four rows tiles. Finish at top and salient angles with round edge tiles. Provide vent tiles and selected recess fittings. Tiles to be fixed to a backing of Fibre Cement with approved adhesive. Areas for tiles can be increased by proprietors direction or as noted on plans.

FLOORS

Cover floors of bathroom shower recess WC and ES with selected ceramic tiles set in cement mortar or approved adhesive and graded to give an even and adequate fall to floor waste.

PAINTING

All paints stains varnishes and water colours are to be of approved brands as selected. Materials used for priming and undercoating are to be the same brand as the finishing paints or as recommended by the manufacturers of the finishes used. All finishing colours are to be selected by the proprietor. Do all necessary stopping after the priming has been applied. Rub down all surfaces to a smooth finish prior the application of each successive coat of paint. External joinery or other exposed woodwork to have a clear plastic finish is to be treated with a priming oil containing wood preservative and a water repellent.

EXTERNALLY All external woodwork to be given one coat of primer one coat of oil based undercoat and one coat of gloss finish enamel or to be given one coat of clear primer one coat of flat clear plastic and one coat of clear plastic.

PRIMING WEATHERBOARDS Any Pine is to be primed all round as well as on the ends before fixing. Hardwood cypress pine radiata pine and oregon are to be primed on external faces including rebates before fixing. pressure treated Canada pine is to be primed at ends before fixing.

IRONWORK

Eaves gutters downpipes exposed service pipes and wrought iron etc to be cleaned and primed and give one coat of gloss paint all round.

FIBRE CEMENT Clean and prepare all external fibre cement surfaces and finish with two coats of water based paint.

INTERNALLY

All exposed woodwork in kitchen bathroom laundry WC EC to be prepared primed and then given one undercoat and finished with one coat of full gloss paint or to be stained and finished with two coats of clear liquid plastic as selected.

CEILINGS

To be given one coat of sealer and two coats of paint. The finishing coat of bathroom laundry and kitchen ceilings to be semi gloss (unless directed otherwise).

WALLS All rooms except bathroom laundry and kitchen to be given one coat of sealer and two coats of water based paint. To bathroom kitchen WC EC and laundry where no tiled or pre surfaced material is required walls are to be given one coat of sealer one coat of undercoat and one coat of gloss oil paint system.

GLAZING BCA part 3 6

All sashes doors fixed lights and other glass in building shall be selected and installed by procedures as set out in AS1288 and/or AS2047 for type thickness and area of glass according to wind loading human impact and other considerations for glazing in frames of timber steel stainless steel aluminium and bronze according to type of frame height of building and glazing compound and for design and glazing of unframed toughened glass assemblies. Specific attention should be made to the selection of frame materials glazing location in walls and orientation to the path of the sun for various climate zone. Where windows are not shaded by roof eaves or other building projections advice by an approved specialist or manufacturer should be sought to ensure that all installations comply with the Energy Efficiency requirements of the BCA.

FENCING

Provide paling fence 1500mm height to side and rear boundaries. Posts to be 125 x 50mm in sawn approved durable hardwood morticed for two rails and sunk into ground 600mm at maximum of 2700 mm. Posts at angles in fencing to be 125mm square. Well ram around posts. Where rock is encountered posts are to be set in concrete. Fit two rows of 75 x 50mm hardwood rails into mortises. Cover framing with hardwood palings. Double nail to rails at top and bottom. Cut line at top and top corners. All timber in ground or concrete to be well tarred or treated with an approved preservative. Allow for repairing any existing recommendations of the manufacturer.

FRONT FENCING Provide front fencing as directed

ALPINE AREAS

For buildings to be constructed in an alpine area compliance with the requirements of BCA part 3.7.5 is required. Alpine areas are areas above Australian Height Datum (AHD) as follows: NSW VIC ACT above 1200 metres AHD TASMANIA above 900 metres AHD. For sub alpine areas where significant snow loads may occur see BCA fig 3.7.5.2. Where snow loads may be applied to a building design according to AS1170.3 is required (see BCA 3.11.3).

EARTHQUAKE

Earthquake probability shall be determined to BCA3.11.3 and loading requirements designed to comply with AS1170.4

LANDSCAPING

The area to be landscaped shall comply with the landscape plan and requirements of the Local Council Authorities. Appropriate landscape design will reduce water usage in lawns and gardens by up to 50%. Selection of native (indigenous plants suited to the local micro climate along with exotic species from California South Africa and the Mediterranean will normally require minimal maintenance and water use. (BASIX website see table D.2.1 for indigenous plants in various local government areas)

CAR PARKING All car parking and loading bays to be kerbed guttered sealed drained line marked and landscaped. Drainage of surface water into neighbouring properties is NOT permitted except where an easement is obtained. All car parks shall comply with the provision of Local Council Authorities.

COMPLETION

The building shall be completed in every trade. Sashes doors locks and all other equipment shall be checked and left in a satisfactory operating condition. Timber floors shall be at least rough sanded. Where fine sanding is specified see CA39. Code of practice for sanding interior wooden floors. All plant surplus materials and rubbish is to be removed from site. Gutters and drains shall be cleared and the building generally to be left clean and fit for occupation.

The Builder is to furnish the Owner with

- | | |
|---|--|
| 1 Notification of Completion | 4 Certificate from Sewerage Authority re sanitary drainage |
| 2 All Keys for all doors | 5 Invoices for all PC items required |
| 3 Certificate of termite protection treatment | |

It is the responsibility of the builder to arrange any inspections necessary by Local Council Waterboard or Lending Authorities and/or Principal Certifying Authority.

It is the responsibility of the Owner to apply to Local Supply Authorities for connection of Electricity from mains to meter box.

APPROVAL TO OCCUPY' MUST BE OBTAINED

BASIX. The Building Sustainability Index – (NSW only)

This is a planning tool that measures the performance of a new dwelling (residential) by comparing its potential to consume less mains water supply and energy than an existing average home.

Sustainability Indices are assessed for Energy Water Usage and Thermal Comfort. The policy also factors in Stormwater reuse and Landscaping but does not score these.

NSW Government targets of a reduction in mains potable water consumption and reduction in Greenhouse Gas emissions can be achieved by dwelling design and sustainability features. These features may include design elements such as recycled water rainwater tanks ***min rated shower heads taps and toilets. Heat pump or solar water heaters gas space heaters eaves awnings and insulation of walls ceilings and roofs.

A BASIX Certificate must be submitted with Development Application. Complying Development Certificate and Construction Certificate applications for all of NSW for new homes and for some alterations and additions.

Data required to Complete a BASIX Assessment is described in the BASIX Data Input checklist and this should be used in conjunction with the BASIX Assessment Tool.

Extracts from BASIX are reproduced by courtesy of DIPNR.

Information shown in this specification is intended as a guide only. Applicants for DACC and CDC must submit a BASIX Certificate that can be generated in the Department of Planning website www.basix.nsw.gov.au

SUGGESTED ENERGY SAVING METHODS CAN BE

Use of gas for heating hot water and cooking. Both indoor and outdoor clothes drying lines. Installing energy saving light bulbs.

To improve the efficiency of the refrigerator by ensuring there is adequate air passing over the refrigerant coils.

- The refrigerator would be completely freestanding or at least one side or the top of the refrigeration space is completely open.

GREYWATER

- Ensure that public health and the environment are not adversely affected.
- Minimise the adverse impact on the amenity of the premises and provide for the reuse of resources.

GREYWATER DIVERSION DEVICES (GDD)

A greywater diversion device must be in accordance with the NSW Health's Greywater requirements.

DOMESTIC GREYWATER TREATMENT SYSTEMS (DGTS) must be

- greywater treatment system device that is accredited by NSW Health in accordance with the DTGS Accreditation Guideline or
- An aerated wastewater treatment system (AWTS) accredited by NSW Health or
- A facility that is purposely designed for a particular premises and has Local Government (Approvals) as per Regulation 1999.

THERMAL COMFORT

PERFORMANCE REQUIREMENTS (CAN BE ASSESSED BY THREE DIFFERENT METHODS)

Option 1 **RAPID** Meet conditions listed in 10 questions within the BASIX Data Input checklist.

NOTE only for simple single storey homes (usually) brick veneer dwellings.

Option 2 **DO IT YOURSELF (DIY)** tick box questions on Construction type details of floors walls ceilings roof windows and skylights cross ventilation.

Option 3 **SIMULATION METHOD** Assessments of the thermal performance of the dwelling undertaken through the Simulation method. Assessments are to be conducted by an accredited assessor using approved software.

PRECONDITIONS The total area of all skylights must not occupy more than 2% of the gross floor area

CONSTRUCTION

(a) Walls Wall types See wall type diagrams in Specification section insulation R Value

CROSS VENTILATION

- (a) Living area cross ventilation
- 1 The total area of ventilation openings in all living areas must be greater than 12.5% of the floor area of all living areas
 - 2 Openings must be provided on opposite or adjacent walls of every living area
- (b) Bedroom cross ventilation
- 1 The bedroom must contain at least two windows or a window and a skylight which can be opened

GLAZING AND SKYLIGHTS

- (a) Orientation Windows facing different directions have varying requirements to comply with BASIX Thermal Comfort requirements
- (b) Glazing and skylight types
- 1 Must have the characteristics nominated in Appendix1 Glazing and skylight characteristics (Available on BASIX website)

SHADING

- (a) Eaves and projections
- 1 May be an eave horizontal opaque projection awning or pergola and shall be made of a durable material suitable for external use
 - 2 The projection is measured horizontally from the face of the wall/building
 - 3 The eave/projection must be located no greater than 2400mm vertically above the sill of the glazing system
- (b) Vertical adjustable external shading
- 1 An adjustable shading device may comprise of shutters louvers or panels
- (c) Vertical fixed external shading
- 1 A fixed shading device may comprise of shutters louvers or panels An adjacent building over 5 m in height and less than 3.1 m from glazing sill is equivalent to fixed vertical shading
- (d) Controlling solar gain
- 1 BLOCKING SOLAR GAIN A shading device must restrict at least 80% of solar radiation at the summer solstice
 - 2 PERMITTING SOLAR GAIN An adjustable shading device may be allowed
- (e) Concessions to shading requirements may be allowed

REQUIRED INSULATION AND ROOF COLOURS Lighter coloured roofing has more resistance to Solar gain (see table C2.8 in BASIX website)

(a) Insulation Technical and installation requirements for thermal insulation are to be in accordance with the B C A NSW Appendix

ROOF VENTILATION Can be increased by Wind driven Ventilators and Gable End vents

INDIGENOUS PLANT SPECIES

Promote the planting of indigenous plant species to preserve the character of the local environment and promote a balanced ecosystem

Ensure that the species selected are adapted to the natural rainfall patterns of the locality

PERFORMANCE REQUIREMENTS

- (a) The indigenous plants for each local government area are set out in Table D 2.1 of the full BASIX Specification on www.basix.nsw.gov.au
- (b) In addition a plant species is considered to be indigenous to a local government area for the purposes of BASIX commitment if the local council for that area states in writing that the species is indigenous to that local government area

Generation of a BASIX Certificate can only be made in the NSW Department of Infrastructure, Planning and Natural Resources BASIX Website www.basix.nsw.gov.au

ADDITIONAL BUILDING REQUIREMENTS (All instructions for extra work or additional requirements must be in writing Dated and signed copies of instructions shall be retained by both the owner and the builder)

This is the specification referred to in the Contract dated / /

Date for Completion / /

PROPRIETOR / /

BUILDER / /

Builders Licence No

MASONRY CONSTRUCTION	Clay Bricks	<input type="checkbox"/>	Face	<input type="checkbox"/>	Commons	<input type="checkbox"/>	Stone	<input type="checkbox"/>
	Concrete Bricks	<input type="checkbox"/>	Concrete Blocks	<input type="checkbox"/>	AAC Blocks	<input type="checkbox"/>	AAC Panels	<input type="checkbox"/>
	Rendered	<input type="checkbox"/>	Bagged	<input type="checkbox"/>	Painted	<input type="checkbox"/>		
MORTAR JOINTS	Colour	<input type="checkbox"/>	Ironed	<input type="checkbox"/>	Flush	<input type="checkbox"/>	Raked	<input type="checkbox"/>
SILLS	Brick	<input type="checkbox"/>	Quarry Tiles	<input type="checkbox"/>				
EXTERNAL WALL SHEETING	Timber Cladding	<input type="checkbox"/>	Fibre Cement Cladding	<input type="checkbox"/>	Metal Cladding	<input type="checkbox"/>	PVC/Vinyl	<input type="checkbox"/>
	Type	<input type="checkbox"/>	Type	<input type="checkbox"/>	Type	<input type="checkbox"/>	Type	<input type="checkbox"/>
FLOOR CONSTRUCTION	Timber	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Pre Str Beam Floor	<input type="checkbox"/>	Steel	<input type="checkbox"/>
FLOORING	T & G	<input type="checkbox"/>	Species	<input type="checkbox"/>	Compressed FC Sheet	<input type="checkbox"/>	Structural Plywood	<input type="checkbox"/>
	Particle Board	<input type="checkbox"/>	Tiles Ceramic	<input type="checkbox"/>	Terra Cotta	<input type="checkbox"/>	Quarry	<input type="checkbox"/>
DECKING	Treated Pine	<input type="checkbox"/>	Other	<input type="checkbox"/>				
WALL FRAMES	Timber	<input type="checkbox"/>	Hardwood	<input type="checkbox"/>	Pine	<input type="checkbox"/>	H S Galv Steel	<input type="checkbox"/>
	Structural Steel	<input type="checkbox"/>	Off site prefabricated	<input type="checkbox"/>	Onsite cut/assembled	<input type="checkbox"/>		
ROOF CONSTRUCTION	Pitched Roof	<input type="checkbox"/>	Exposed Rafters	<input type="checkbox"/>	Oregon	<input type="checkbox"/>	Hardwood	<input type="checkbox"/>
	Roof Trusses	<input type="checkbox"/>	Raked Ceiling	<input type="checkbox"/>	Pine	<input type="checkbox"/>	Steel Framing	<input type="checkbox"/>
	Flat/Skillion	<input type="checkbox"/>						
ROOF COVER	Concrete Tiles	<input type="checkbox"/>	Terra Cotta Tiles	<input type="checkbox"/>	Shingles/Slate	<input type="checkbox"/>	Corrugated FC	<input type="checkbox"/>
	Zincsalume	<input type="checkbox"/>	Colorbond	<input type="checkbox"/>	Polycarbonate	<input type="checkbox"/>	Profile	<input type="checkbox"/>
THERMAL INSULATION	Roof/ceiling	<input type="checkbox"/>	Reflective Insulation Rating R				Bulk Insulation Rating R	
	Walls	<input type="checkbox"/>	Reflective Insulation Rating R				Bulk Insulation Rating R	
	Floors	<input type="checkbox"/>	Reflective Insulation Rating R				Bulk Insulation Rating R	
INTERNAL WALL LININGS	Gypsum Plasterboard	<input type="checkbox"/>	FC Sheeting	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	Cement Render	<input type="checkbox"/>
	Face Brick	<input type="checkbox"/>	Other	<input type="checkbox"/>				
WET AREA LININGS	WR Gyp Plasterboard	<input type="checkbox"/>	Villaboard	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	Laminated Panel	<input type="checkbox"/>
CEILINGS	Gypsum Plasterboard	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	FC Sheeting	<input type="checkbox"/>		
CORNICE	Type	<input type="checkbox"/>	Size	mm				
DOOR JAMBS	Timber	<input type="checkbox"/>	Galvanised Steel	<input type="checkbox"/>				
WINDOWS	Timber	<input type="checkbox"/>	Aluminium	<input type="checkbox"/>	Type/Manufacturer	<input type="checkbox"/>		
FLYSCREENS	Timber	<input type="checkbox"/>	Aluminium	<input type="checkbox"/>	Other	<input type="checkbox"/>		
JOINERY	Timber	<input type="checkbox"/>	Species	<input type="checkbox"/>	Stained/Polished	<input type="checkbox"/>	Other	<input type="checkbox"/>
	Architrave Size	mm	Skirting Size	mm	Material	<input type="checkbox"/>		
	Kitchen Cupboards	<input type="checkbox"/>			Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Front Door Type	<input type="checkbox"/>			Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Other External Doors Type	<input type="checkbox"/>			Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Internal Doors Type	<input type="checkbox"/>			Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Garage Door Type	<input type="checkbox"/>			Size	mm	Colour	<input type="checkbox"/>
EXTERNAL STAIRS	Timber	<input type="checkbox"/>	Steel	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Brick	<input type="checkbox"/>
INTERNAL STAIRS	Timber	<input type="checkbox"/>	Steel	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Brick	<input type="checkbox"/>
	as manufactured by				Balustrade type			
ELECTRICIAN	Provide		Light Points		Single Switches		Two way switches	
			Power Outlets	Single		Double		
		Light fittings			Smoke Detectors		Exhaust Fans	
ROOF PLUMBER	Quad Gutters (size)	<input type="checkbox"/>	Box Gutters	<input type="checkbox"/>	Sheerline Gutters	<input type="checkbox"/>		
GUTTERS/DOWNPINES	Downpipes 100 x 50	<input type="checkbox"/>	100 x 75	<input type="checkbox"/>	100 x 100	<input type="checkbox"/>	Round dia	<input type="checkbox"/>
	Colorbond	<input type="checkbox"/>	PVC	<input type="checkbox"/>	Copper	<input type="checkbox"/>	Zincalume	<input type="checkbox"/>
	Aluminium	<input type="checkbox"/>	Galvanised	<input type="checkbox"/>				
WATER SERVICE	Copper pipe	<input type="checkbox"/>	PVC Pipe	<input type="checkbox"/>	Flex pipe system	<input type="checkbox"/>		
RETICULATED RECYCLED WATER	All Reticulation Systems for Recycled Water must have Lilac Coloured components and markings							
RAINWATER STORAGE TANKS	Type	<input type="checkbox"/>	Size	(kl)	Nos		Pressure Pump	<input type="checkbox"/>
STORMWATER STORAGE TANKS	Type	<input type="checkbox"/>	Size	(kl)				
HOT WATER SERVICE	Electric	<input type="checkbox"/>	Gas	<input type="checkbox"/>	Solar	<input type="checkbox"/>		
	Mains Pressure	<input type="checkbox"/>	Gravity Fed	<input type="checkbox"/>	Cylinder capacity	litres		
INTERNAL SEWER SERVICE	Copper	<input type="checkbox"/>	PVC	<input type="checkbox"/>				
DRAINER	Sewer connection	<input type="checkbox"/>	Septic System	<input type="checkbox"/>	Aerated System	<input type="checkbox"/>	Greywater diversion	<input type="checkbox"/>
	PVC pipes	<input type="checkbox"/>	Vitrified clay pipes	<input type="checkbox"/>	Copper pipes	<input type="checkbox"/>		
FENCING	Brick	<input type="checkbox"/>	Paling	<input type="checkbox"/>	Rail	<input type="checkbox"/>	Brushwood	<input type="checkbox"/>
	Front Boundary	<input type="checkbox"/>	Side Boundary	<input type="checkbox"/>	Rear Boundary	<input type="checkbox"/>	Colorbond	<input type="checkbox"/>
	As manufactured by				Type			
POOL	Type	<input type="checkbox"/>	Inground	<input type="checkbox"/>	Above Ground	<input type="checkbox"/>	Pool Cover	<input type="checkbox"/>

This Schedule is to be fully completed Items applicable should be marked items with blank spaces will NOT be included in the works

PROPRIETOR
 BUILDER
 DATE
 /
 200

SCHEDULE OF RATE / P C ALLOWANCES AND MATERIALS

ITEMS	MODEL OR TYPE	PRIME COST
1 CONCRETE PIERS TO FOOTINGS		\$
2 ROCK EXCAVATION per cubic metre		\$
3 AGRICULTURAL DRAINS per lin metre		\$
4 STORMWATER		\$
5 SEWER CONNECTIONS		\$
6 CERAMIC TILES WALL \$ PER M2 S/O		\$
S/O=SUPPLY ONLY FLOOR \$ PER M2 S/O		\$
QUARRY \$ PER M2 S/O		\$
7 SEPTIC INSTALLATIONS		\$
8 GREYWATER TREATMENT INSTALLATION		\$
9 BATHROOM VANITY & CABINET		\$
10 EN SUITE VANITY & CABINET		\$
11 BASIN		\$
12 BATH		\$
13 TOWEL RAILS		\$
14 SOAP HOLDERS		\$
15 MIRRORS		\$
16 TOILET SUITES		\$
17 SHOWER SCREENS		\$
18 LAUNDRY TUB		\$
19 STAINLESS STEEL SINK		\$
20 KITCHEN CUPBOARDS		\$
21 OVEN		\$
22 HOT PLATES		\$
23 STOVE		\$
24 DISHWASHER		\$
25 EXHAUST FANS		\$
26 RANGE HOOD		\$
27 HOT WATER UNIT		\$
28 SMOKE/FIRE DETECTORS		\$
29 PHONE WIRING/FAX WIRING		\$
30 T V WIRING/COMPUTER WIRING		\$
31 INTERCOM WIRING		\$
32 SECURITY INSTALLATION		\$
33 AIR CONDITIONING SINGLE UNIT		\$
34 INTERNAL VACUUM SYSTEM		\$
35 FRONT GATE		\$
36 FRONT FENCE		\$
37 CLOTHES HOIST		\$
38 CONCRETE PATHS per lin metre		\$
39 GARAGE DOOR REMOTE CONTROL		\$
40 LANDSCAPING (As per Design Supplied)		\$
41 UNIT PAVING		\$
42 RAINWATER TANKS		\$
43 RETICULATED RECYCLED WATER SYSTEM		\$
44		\$
45		\$
46		\$

Where there are additional items or different types of the same item a duplicate list should be added and agreed on by the propnretor and builder

NOTE The builder is to allow Prime Costs amounts of items set out in this Schedule above All items to be selected by Owner The Builders tender is to include the provision of all items including the cost of cartage freight fixing and fitting as part of his contract Adjustment for substituted fittings will be made on the basis of the prevailing retail price

PROPRIETOR BUILDER DATE / /

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PROPOSED TOP FLOOR ADDITION

At: 5 BILGOLA TERRACE, BILGOLA.

Prepared By:

NB
NORTHERN BEACHES
Consulting Engineers P/L.

A C N 076 121 616 A B N 24 076 121 616


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These plans have been relied upon
by NSW Building Approvals
for the issue of a
CONSTRUCTION CERTIFICATE

DRAWING SCHEDULE:

S01 - GENERAL NOTES

S02 - FLOOR FRAMING PLAN AND P1 DETAIL

S03 - SECTION A-A & DETAIL-1

S04 - ROOF FRAMING PLAN & PF.1 ELEVATION

S05 - DETAILS D2, D3, D4, D5 & BASE PLATE PLANS

S06 - TYPICAL ROOF SECTION & TYPICAL LAMINATION DETAIL

S07 - TYPICAL TIE DOWN DETAILS

S08 - WALL PLY BRACING DETAILS

S09- ALTERNATIVE JOIST LAYOUT AT STAIRS AND TYPICAL DETAILS

S010 - SC.2 DETAIL

091001

OCTOBER 2009

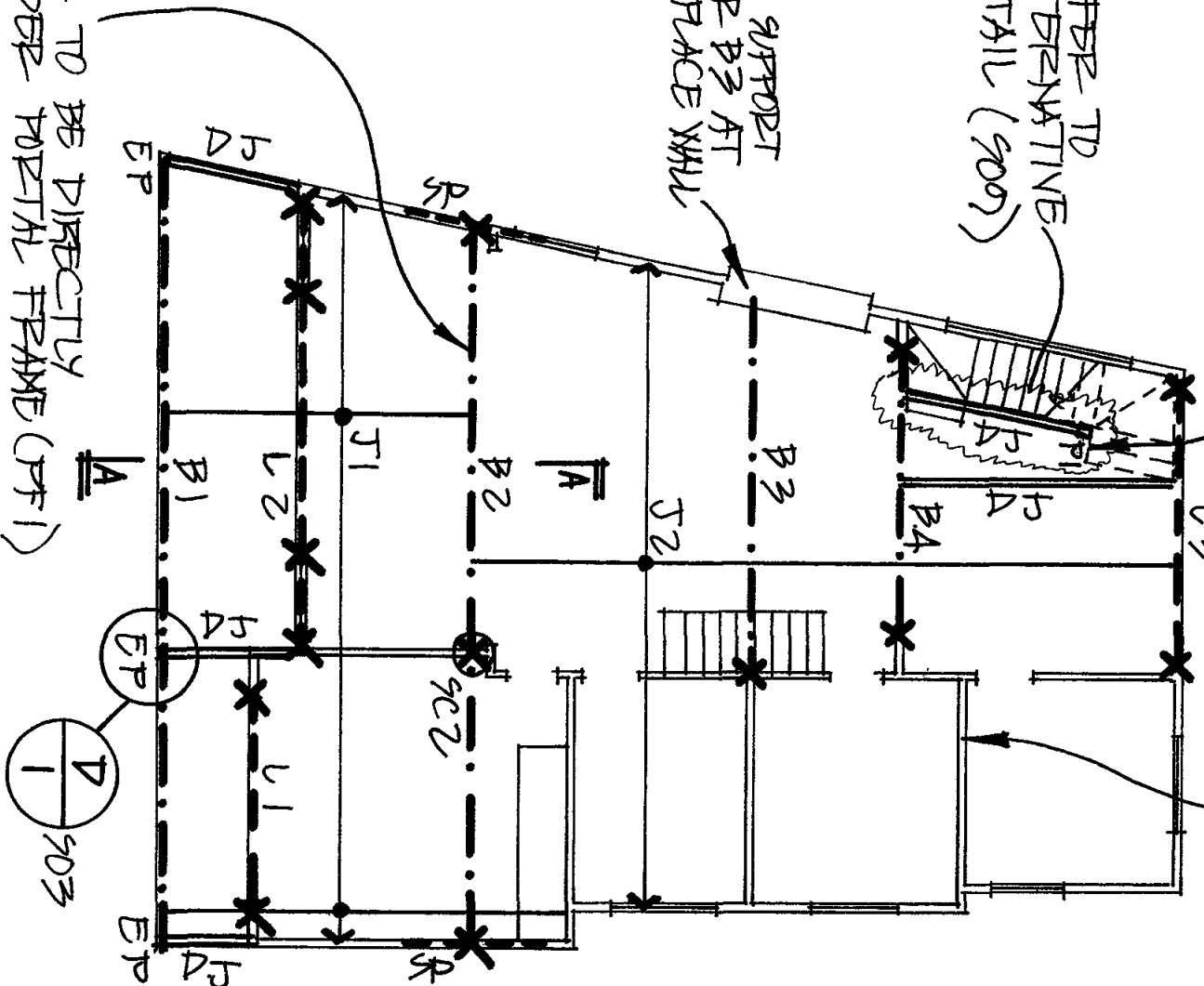
TRIMMER TO STAIR
EDGE 240 X 45
HYSPAN LVL

IF WALL IS REMOVED
PROVIDE 240 X 63
HYSPAN LVL

REFER TO
ALTERNATIVE
DETAIL (S00)

BRICK SUPPORT
UNDER B3 AT
FIRE PLACE WALL

B2 TO BE DIRECTLY
UNDER PORTAL FRAME (PF1)



FLOOR FRAMING PLAN
SCALE 1:100

MEMBER LEGEND

BEAM B1 - 250 PFC GALVANISED - CONTINUOUS
BEAM B2 - 250 UB 37 TO BE DIRECTLY UNDER
PORTAL FRAME (PF1) - B2 TO BE CONTINUOUS

BEAM B3 - 250 UB 31

BEAM B4 - 250 UB 25

LINTEL L1 - 2 X 240 X 45 HYSPAN LVL (LAMINATED)

LINTEL L2 - 2 X 300 X 45 HYSPAN LVL (LAMINATED)

LINTEL L3 - 2 X 300 X 45 HYSPAN LVL (LAMINATED)

FLOOR JOIST J1 - 200 X 45 @ 450 HYSPAN LVL - ENSURE
JOISTS ARE COVERED (NOT EXPOSED TO THE

ELEMENTS)

ELEMENTS)

FLOOR JOIST J2 - 240 X 45 @ 450 HYSPAN LVL

POST P1 - 100 X 100 F7

SPREADER SP - 2 X 150 X 45 HYSPAN LVL

PS = TUBULAR FLOOR JOIST

EP = EXISTING POSTS TO REMAIN

X = DOUBLE STUD OR LAP TO SPREADER

SC.2 = 90 X 90 X 5 SHS (LAP TO BRICKWORK)

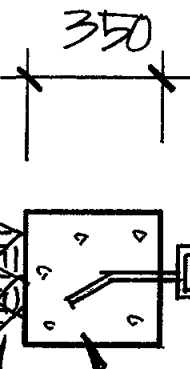
REFER TO DETAIL S0-10

GALVANISED
IRON POST
BRACKET

10mm GALVANISED
BOLT

MASS CONCRETE
PAD

ROCK



P1 DETAIL SCALE 1:20

Ph 0424 699 924
NSW
These plans have been relied upon
by NSW Building Approvals
for the issue of a
CONSTRUCTION CERTIFICATE

NOTES:

1 ALL DIMENSIONS TO BE VERIFIED ON SITE BY
BUILDER BEFORE COMMENCING WITH WORK

2 FOR GENERAL NOTES AND DRAWING SCHEDULE
REFER TO DRAWING NUMBER S01

DOCUMENT CERTIFICATION

Date: 02/09/2009

Rick G. Wray

(Director Northern Beaches Consulting Engineers Pty Ltd)

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NORTHERN BEACHES Consulting Engineers P/L

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Architect: NICK KARAYALLOS

Client: MARK MITCHELL

Project: TOP FLOOR ADDITION
AT-5 BILGOLA TRC,
BILGOLA

Drawing Title: FLOOR FRAMING PLAN

Date: 02/09/2009

Design: RAY

Drawn: MK

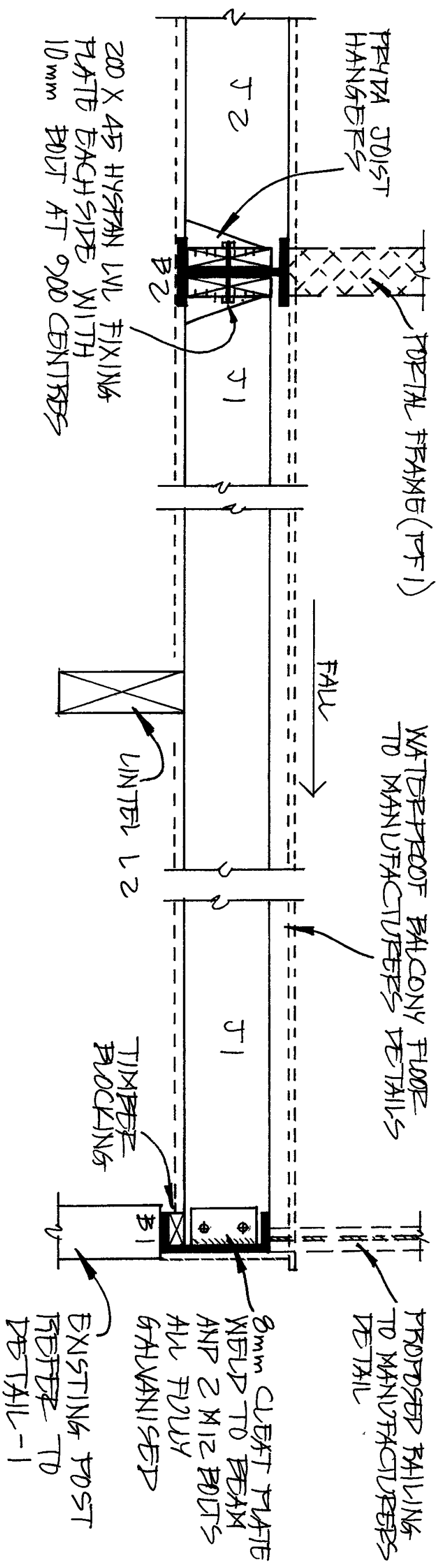
Job No: 091001

Drawing No: 502

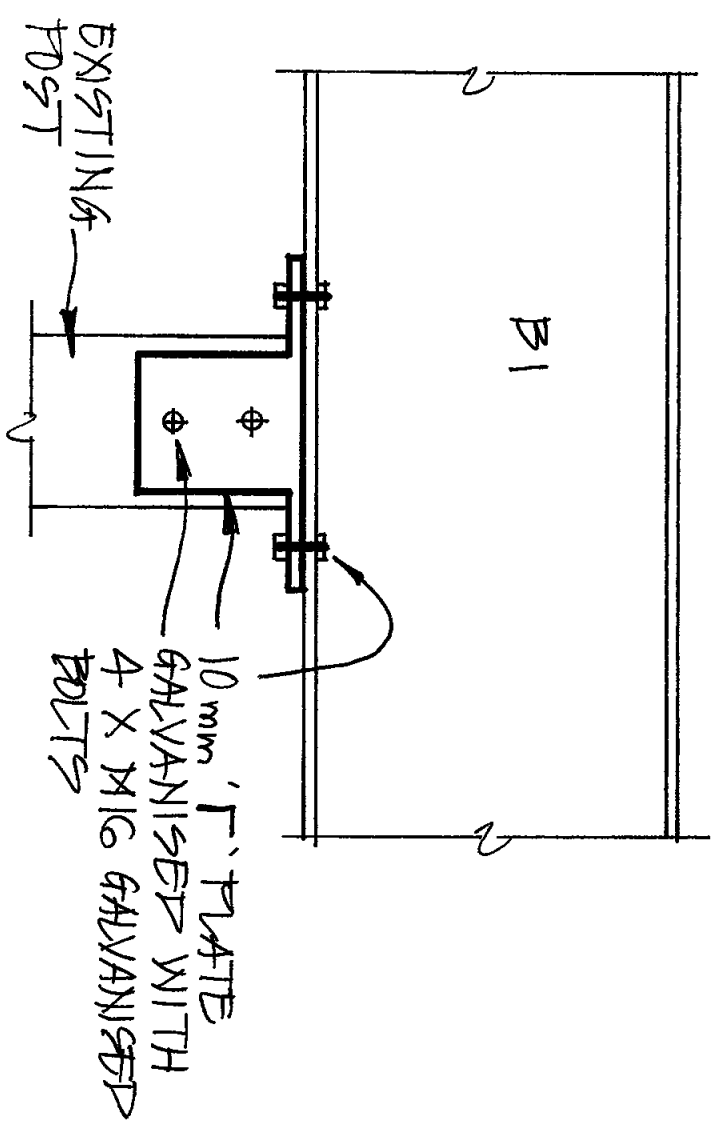
Rev:



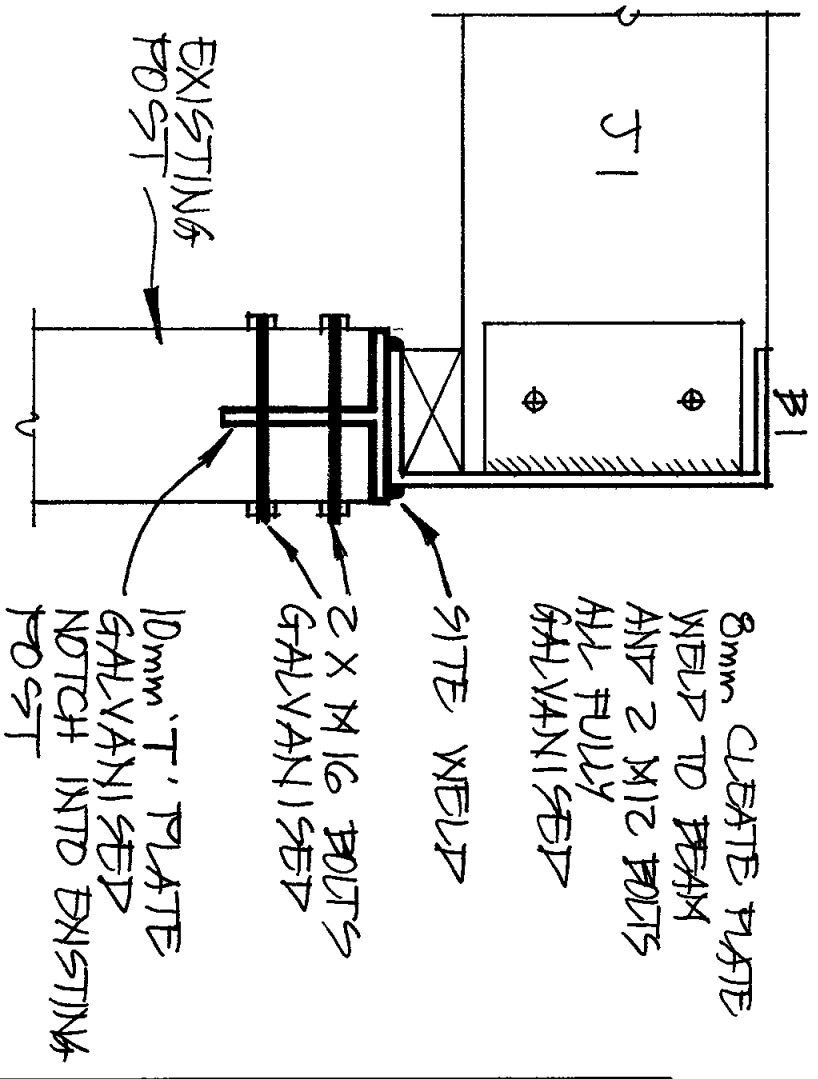
Northern Beaches Consulting Engineers Pty Ltd.



SECTION A-A SCALE 1:10



ALTERNATIVE D1 DETAIL SCALE 1:5



DETAIL -1 SCALE 1:5

A3

Date	Rev	Attachment	By



Ph: 0424 699 924
These plans have been relied upon
by NSW Building Approvals
for the issue of a
CONSTRUCTION CERTIFICATE

NOTES:

- ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK
- FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER S01

DOCUMENT CERTIFICATION

Date: 08/09/2009
Rick G. Wray
(Director Northern Beaches Consulting Engineers)
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A/C N 078 121 616 A/B N 24 076 121 616
Suite 207 30 FISHER ROAD DEE WHY NSW 2098
Ph (02) 9984 7000 Fax (02) 9984 7444
email: nb@northernbeaches.com.au
web page: www.northernbeaches.com.au

Architect: NICK KARAKALIOS

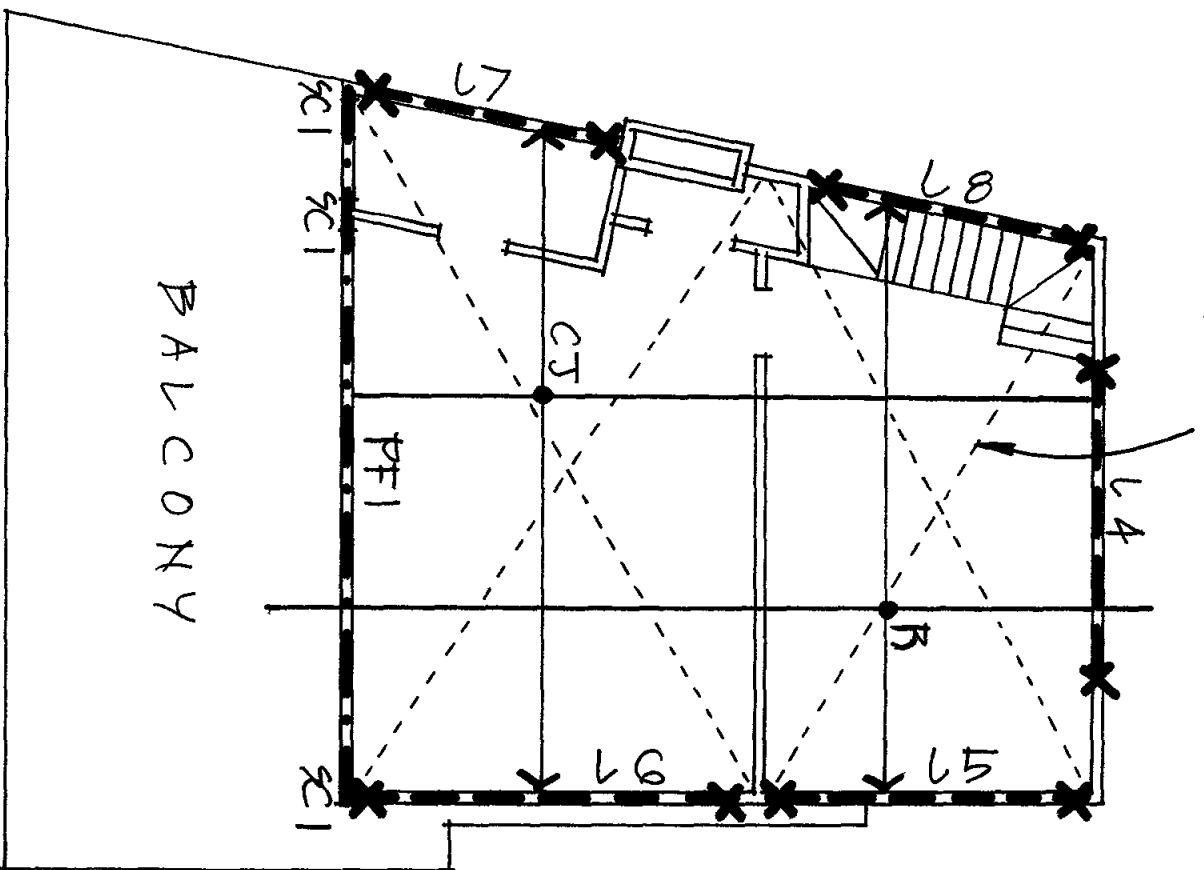
Client: MARTEL MITCHELL

Project: TOP FLOOR ADDITION
AT-5 BILGOLA TRC,
BILGOLA

Drawing Title: SECTION A-A
& DETAIL-1

Date	Design	Drawn
08/09/2009	RGW	KL
Job No	Drawing No	Rev
091001	S03	

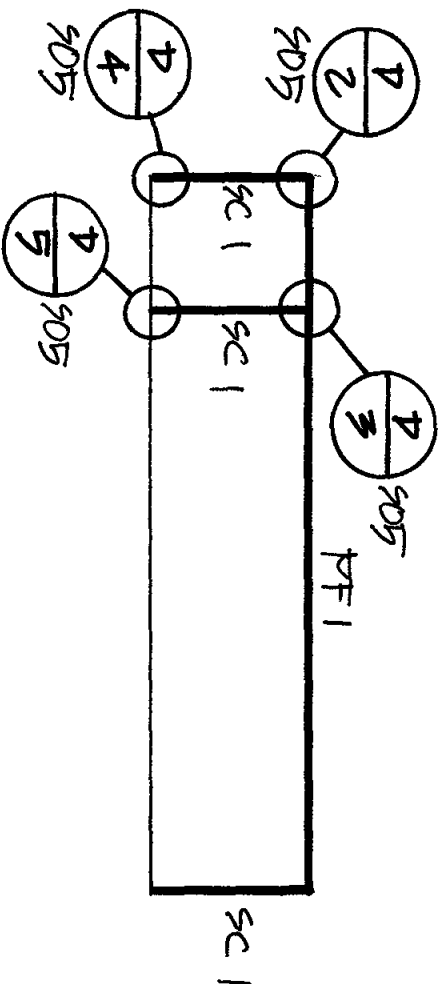
G1 STRAP ROOF FRACING



ROOF FRAMING PLAN SCALE 1/100

- MEMBER LEGEND
- PORTAL FRAME PF1 - 300 PFC
 - UNTEL L4 - 2 X 200 X 45 HYSPAN LVL (LAMINATED)
 - UNTEL L5 - 2 X 200 X 45 HYSPAN LVL (LAMINATED)
 - UNTEL L6 - 2 X 300 X 45 HYSPAN LVL (LAMINATED)
 - UNTEL L7 - 2 X 200 X 45 HYSPAN LVL (LAMINATED)
 - UNTEL L8 - 2 X 200 X 45 HYSPAN LVL (LAMINATED)
 - CEILING JOIST C5 - 170 X 30 @ 450 HYSPAN LVL
 - RAFTER R - 240 X 45 @ 450 HYSPAN LVL
 - COLUMN SC1 - 200 X 100 X 5 RHS
 - X = DOUBLE STUD

NOTE
ALL UPPER FLOOR WALLS TO
BE FULLY FLY BRACED
ON ONE SIDE



PF.1 ELEVATION SCALE 1/100

NSW
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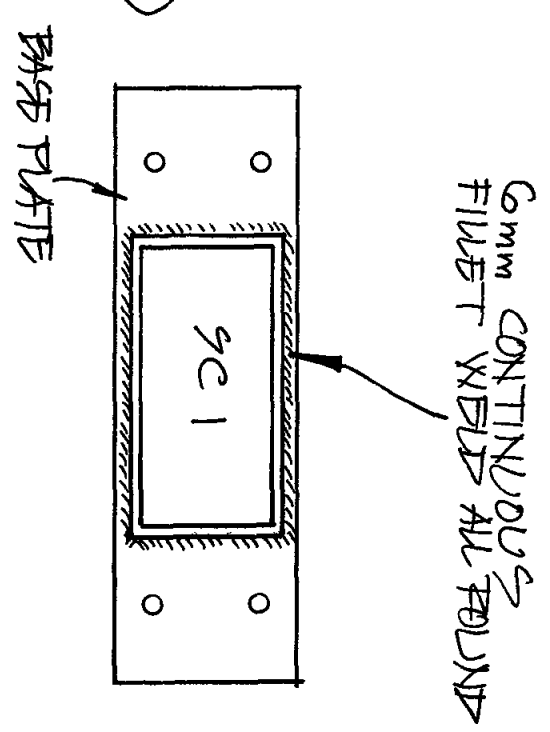
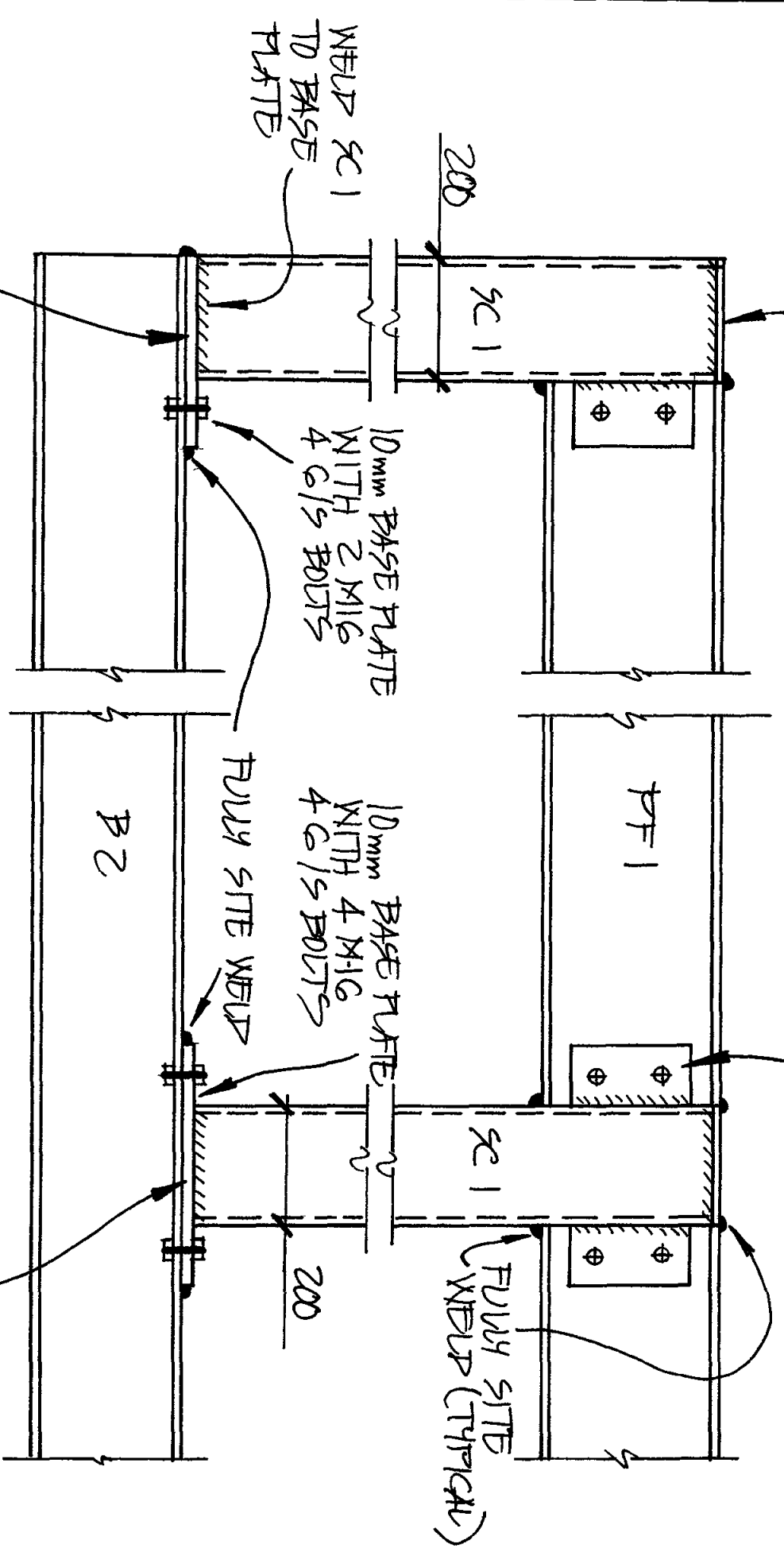
- NOTES:
- ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK
 - FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER S01

Northern Beaches Consulting Engineers Pty Ltd.

DOCUMENT CERTIFICATION			
Date:	OCT 09	<i>Rick G. Wray</i>	
Rick G. Wray (Director Northern Beaches Consulting Engineers Pty Ltd.)			
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A/C N 076 121 616 A/B N 24 076 121 616			
Suite 207 30 FISHER ROAD DEE WHY N.S.W. 2089			
Ph (02) 9984 7000 Fax (02) 9984 7444			
e-mail nh@nbcconsulting.com.au			
web page www.nbcconsulting.com.au			
Architect:	NICK KAPPAHALIOS		
Client:	MAFEE MITCHELL		
Project:	TOP FLOOR ADDITION AT-5 BILGOLA TFC, BILGOLA		
Drawing Title:	ROOF FRAMING PLAN		
Date:	OCTOBER 2009	Design:	RGW
Job No:	091001	Drawing No:	S04

10mm PLATE TO TOP OF COLUMN

8mm CLEFT PLATE WITH 2 MIG 4.6/s BOLTS (TYPICAL)



TYPICAL DETAIL
SCALE 1:5

DETAILS D.2-D.3-D.4-D.5 SCALE 1:10



BASE PLATE PLAN SCALE 1:10

NSW
Ph 0424 699 924
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NOTES:

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DOCUMENT CERTIFICATION

Date: 02/09/2007
Rick G. Wray
(Director Northern Beaches Consulting Engineers)

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Ph. (02) 9584 7000 Fax (02) 9584 7444
e-mail: nb@nbcconsulting.com.au
web page: www.nbcconsulting.com.au

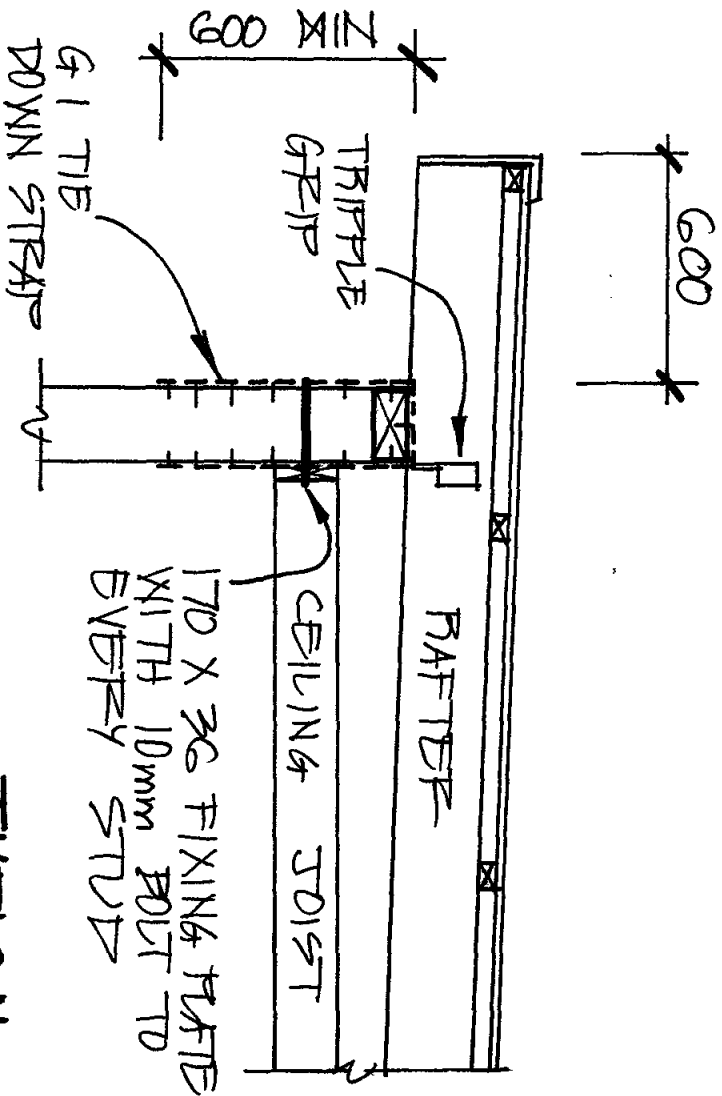
Architect: NICE KARAHALIOS

Client: MARE MITCHELL

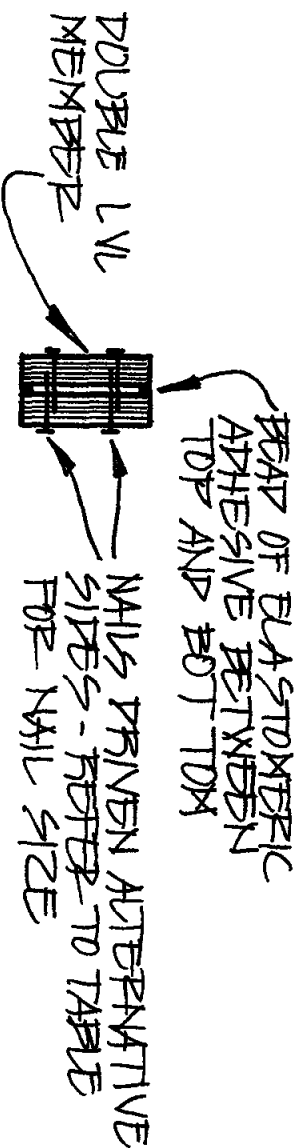
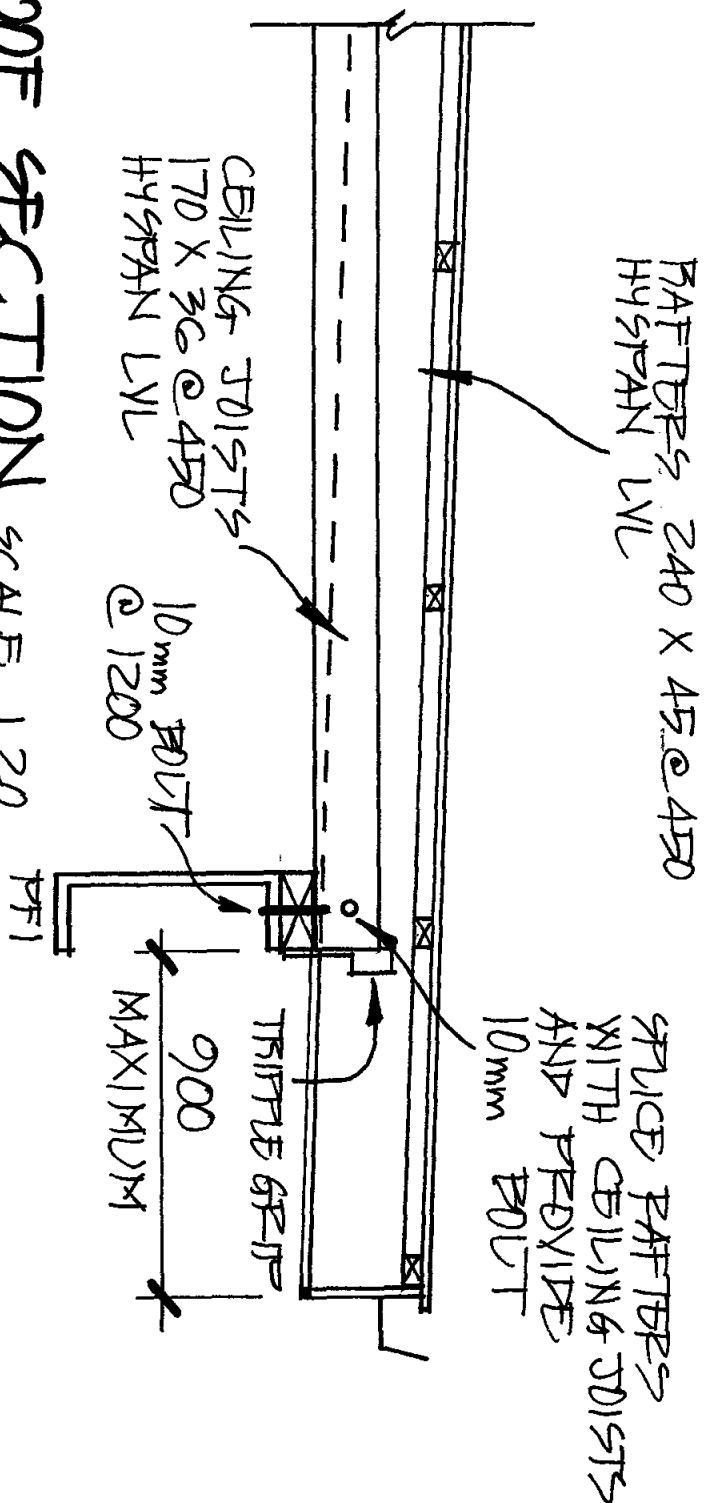
Project: TOP FLOOR ADDITION AT-5 BILGOLA TRC, BILGOLA

Drawing Title: DETAILS D.2-D.3-D.4-D.5 BASE PLATE PLAN

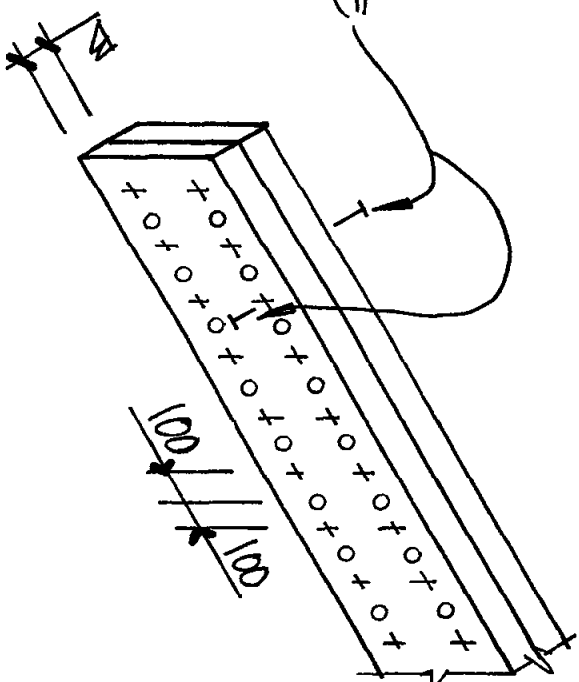
Date	02/09/2007	Design	TRW	Drawn	ML
Job No	091001	Drawing No	S05	Rev	



TYPICAL ROOF SECTION SCALE 1:20



SECTION SIZE "B"	MINIMUM NAIL DIA	MINIMUM NAIL LENGTH
36	3.06 mm	75 mm
45	3.30 mm	90 mm
63	3.30 mm	100 mm



TYPICAL VERTICAL LAMINATION DETAIL

NOT TO SCALE

These plans have been relied upon by NSW Building Approvals for the issue of a CONSTRUCTION CERTIFICATE

NOTES

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DOCUMENT CERTIFICATION

Date: 01/09/2009

Rick G. Wray

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Suite 207 30 FISHER ROAD DEE WHY NSW 2089

Ph (02) 9984 7000 Fax (02) 9984 7444

E-mail: nb@norbeach.com.au

web page: www.norbeach.com.au

Architect: NICK KAPPAHALIOS

Client: MARK MITCHELL

Project: TOP FLOOR ADDITION

AT-5 BILGOLA TFC,

BILGOLA

Drawing Title

TYPICAL ROOF SECTION

TYPICAL LAMINATION DETAIL

Date: 01/09/2009

Design: TAYN

Drawn: ML

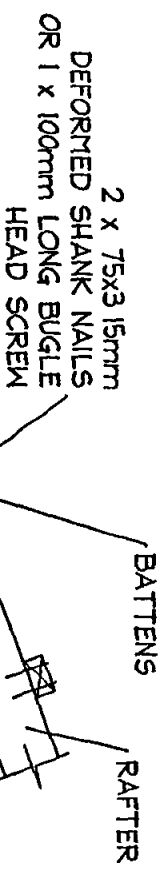
Job No: 091001

Drawing No: 906

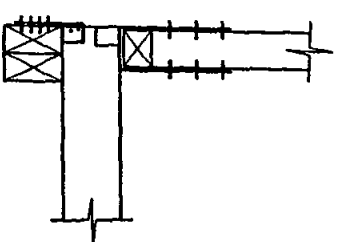
Rev

Date

Rev



GROUND FLOOR



DETAIL B

SCALE = 1 20

NSW


Ph 0424 699 924

PH 0424 859 324
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BUILDER BEFORE COMMENCING WITH WORK
- 2 FOR GENERAL NOTES AND DRAWING SCHEDULE
REFER TO DRAWING NUMBER S01

A3			
Date	Rev	Amendment	By

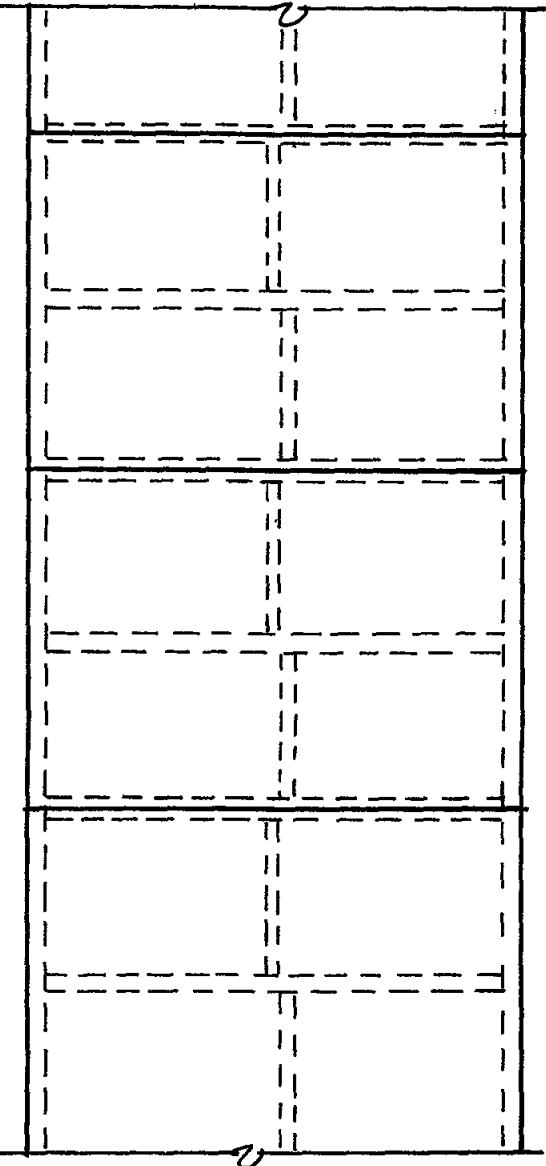
DOCUMENT CERTIFICATION Date : OCT 09 / K. W. J. / 2009 Rick G. Wray (Director, Northern Beaches Consulting Engineers)	
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NORTHERN BEACHES Consulting Engineers P/L A C N 076 121 616 A B N 24 076 121 616 Suite 207 30 FISHER ROAD DEE WHARF NSW 2098 Ph (02) 9984 7000 Fax (02) 9984 7444 e-mail: info@nbcconsulting.com.au web page: www.nbcconsulting.com.au	
Architect NICL KAPPA HALLIOS	Client MARK MITCHELL
Project TOP FLOOR ADDITION AT-5 BILGOLA TFC, BILGOLA	
Drawing Title TYPICAL TILE ROOFING DETAILS	
Date OCTOBER 2009	Design RAYN
Job No 0091001	Drawn 
Drawing No S07	Rev

PLYWOOD BRACING

FIX PLYWOOD PANELS WITH GALVANISED FLATHEAD NAILS $\phi 2.8\text{mm}$ x 30mm LONG MINIMUM OR EQUIVALENT AT 50mm CENTRES ALONG TOP AND BOTTOM PLATES, 150mm CENTRES ALONG VERTICAL EDGES AND 300mm CENTRES ALONG INTERMEDIATE STUDS

NAILS SHALL BE LOCATED A MINIMUM OF 7mm FROM PANEL EDGES POWER DRIVEN GALVANISED NAILS OR COATED STAPLES MAY BE USED WHERE THEY PROVIDE AT LEAST THE EQUIVALENT STRENGTH TO HAND DRIVES $\phi 2.8\text{mm}$ x 30mm LONG GALVANISED CLOUTS OR FLATHEAD NAILS IN THE CASE OF POWER DRIVEN STAPLES, STAPLE SPACING SHALL BE 35mm CENTRES AT TOP AND BOTTOM PLATES, 100mm CENTRES AT VERTICAL PLYWOOD EDGES AND 200mm CENTRES ALONG INTERMEDIATE STUDS

PLYWOOD THICKNESS		
PLYWOOD STRESS GRADE	PLYWOOD THICKNESS	
	MAXIMUM STUD SPACING	
F8	450mm	600mm
F11	70mm	90mm
F11	60mm	70mm
F14	40mm	60mm
F27	40mm	45mm



NOTES

- 1 FOR PLYWOOD THICKNESS REFER TO TABLE
- 2 FOR POWER DRIVEN NAILS AND STAPLES REFER ABOVE
- 3 PANEL EDGES SHALL BE SUPPORTED BY STUDS
- 4 NOGGINGS HAVE BEEN OMITTED FOR CLARITY

EACH 900 mm PANEL EQUALS FOUR TYPE A BRACING UNITS AS PER AS1684 4-2006

WALL PLY BRACING DETAILS

Ph: 0424 699 924

NSW

These plans have been relied upon by NSW Building Approvals for the issue of a CONSTRUCTION CERTIFICATE

NOTES

- 1 ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK
- 2 FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER S01

DOCUMENT CERTIFICATION

Date: *Oct 09* *R. Wray*

Rick G Wray

(Director Northern Beaches Consulting Engineers)

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e-mail nb@nbconsulting.com.au
web page www.nbconsulting.com.au

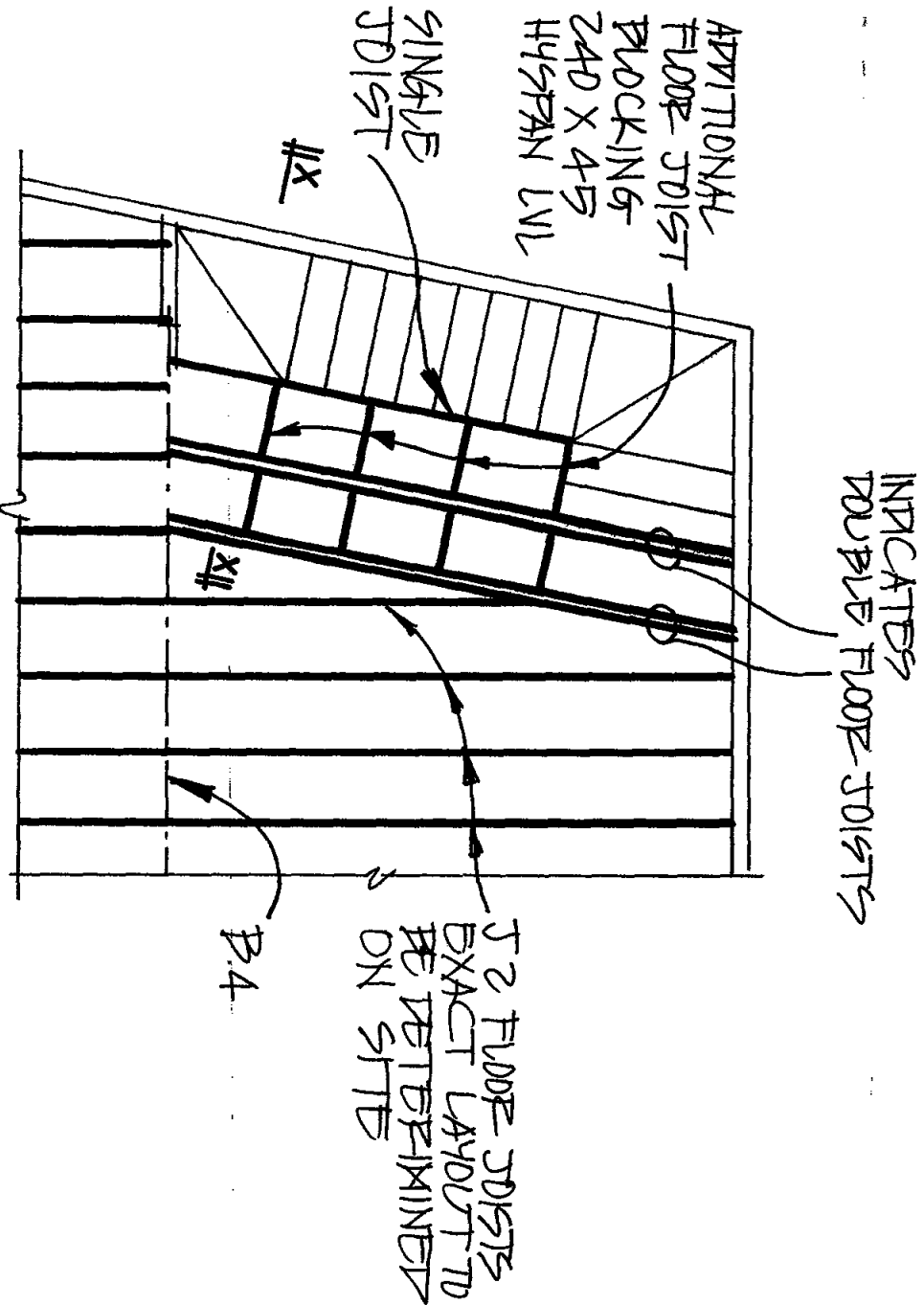
Architect: *NICK KAPATHALIOS*

Client: *MAFEE MITCHELL*

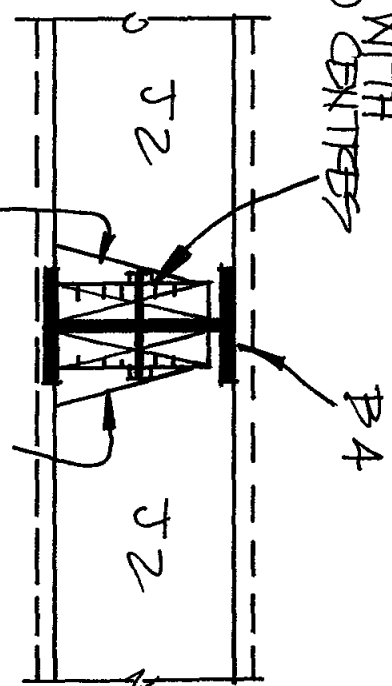
Project: *TOP FLOOR ADDITION*
AT 5 BILGOLA TFC,
BILGOLA

Drawing Title: *TYPICAL WALL BRACING DETAIL*

Date: <i>Oct 09</i>	Design: <i>FGM</i>	Drawn: <i>ML</i>
Job No: <i>091001</i>	Drawing No: <i>508</i>	Rev: <i></i>



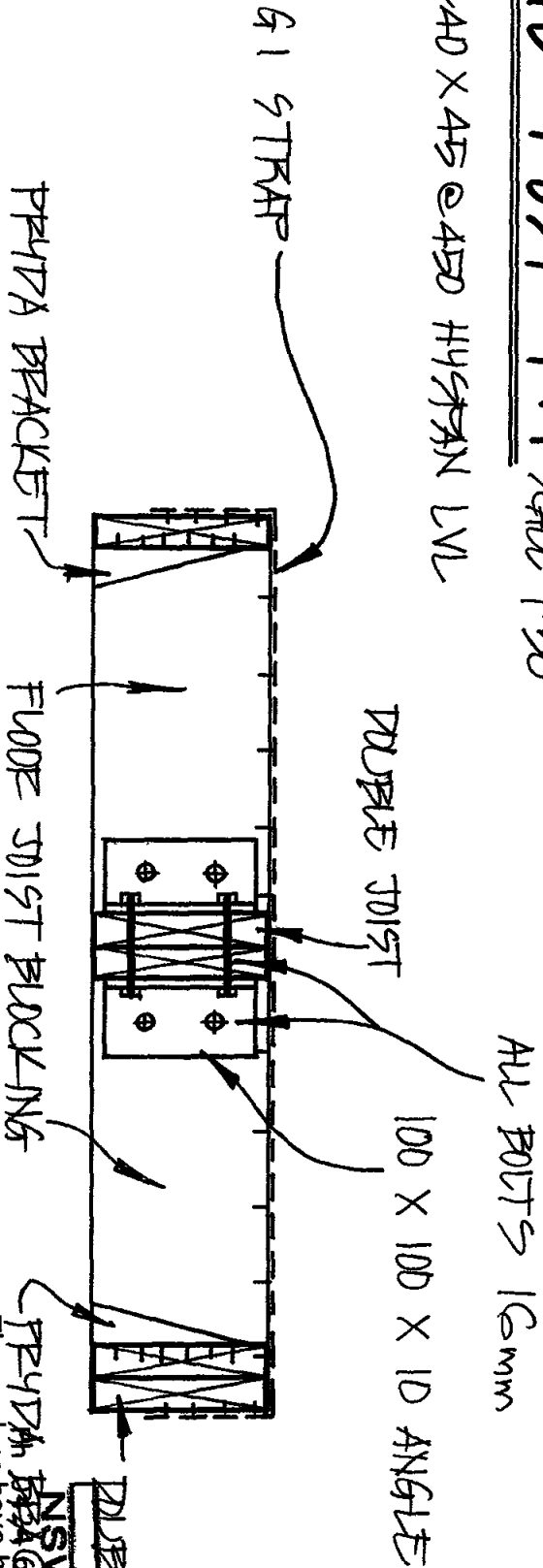
200 X 45 HYSPAN LVL FIXING PLATE EACH SIDE WITH 10mm BOLT AT 900 CENTRES



JOIST TO BEAM FIXING
TYPICAL DETAIL
SCALE 1:10

ALTERNATIVE JOIST LAYOUT AT STAIRS
TO ELIMINATE POST P.1
SCALE 1:50

FLOOR JOISTS 52 240 X 45 @ 450 HYSPAN LVL



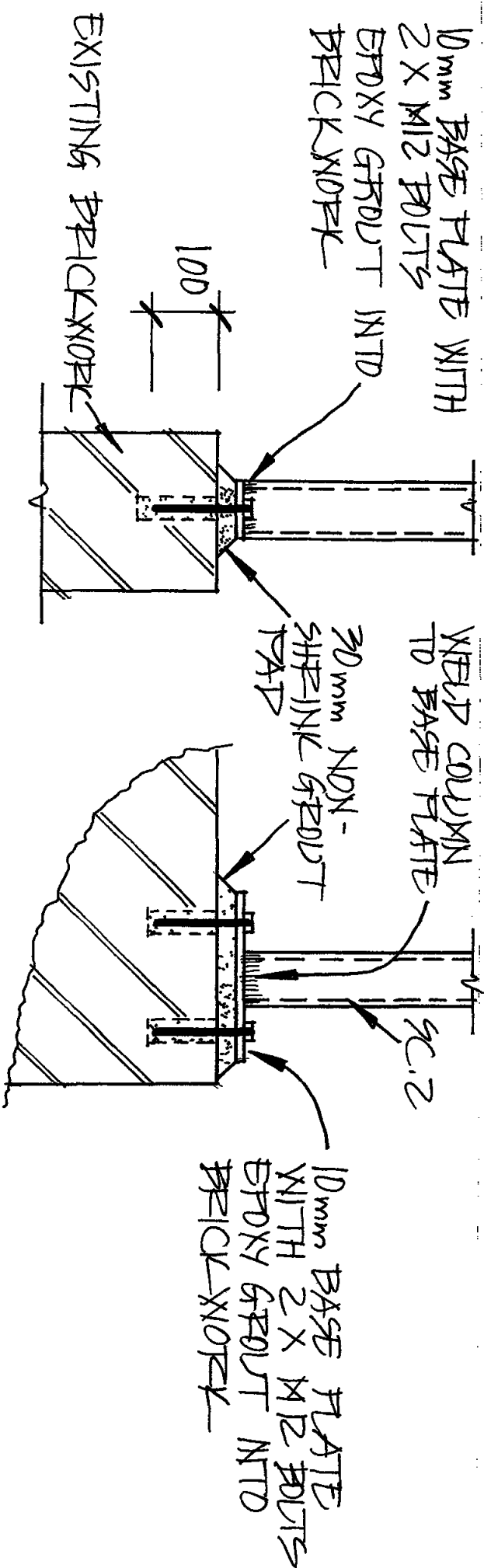
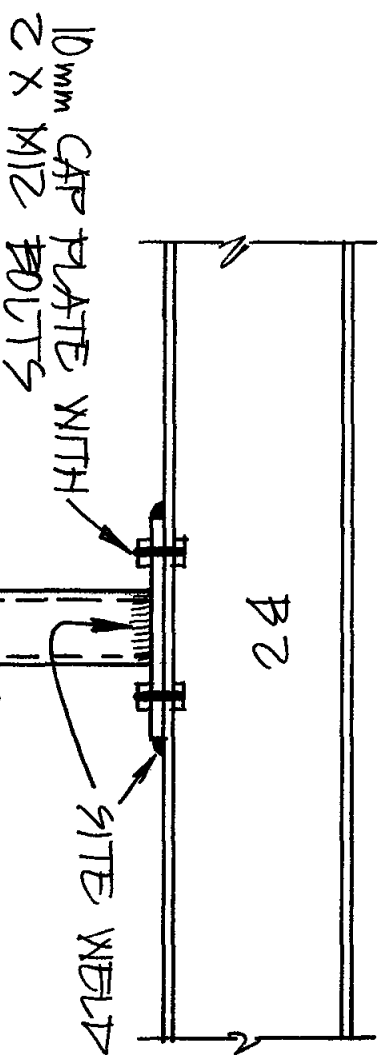
SECTION X-X
SCALE 1:10

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- NOTES**
- 1 ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK
 - 2 FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER S01

A3					
Date	Rev	Amendment	By		

DOCUMENT CERTIFICATION			
Date: OCT 01 2009 Rick G. Wray (Director Northern Beaches Consulting Engineers)			
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NORTHERN BEACHES Consulting Engineers P/L A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207 30 FISHER ROAD DEE WENT N.S.W. 2098 Ph (02) 9984 7000 Fax (02) 9984 7444 e-mail: nb@nbeconline.com.au web page: www.nbeconline.com.au			
Architect	NICK KARAHAYIDIS		
Client	MARK MITCHELL		
Project	TOP FLOOR ADDITION AT-5 BILGOLA TRC, BILGOLA		
Drawing Title	ALTERNATIVE JOIST LAYOUT AT STAIRS WITH TYPICAL DETAILS		
Date	02 OCT 2009	Design	RGW
Job No	091001	Drawing No	509
		Rev	



SC.2 DETAIL SCALE 1:10

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CONSTRUCTION CERTIFICATE

NSW
Ph 0424 699 924

- NOTES:**
- 1 ALL DIMENSIONS TO BE VERIFIED ON SITE BY
BUILDER BEFORE COMMENCING WITH WORK
 - 2 FOR GENERAL NOTES AND DRAWING SCHEDULE
REFER TO DRAWING NUMBER S01

DOCUMENT CERTIFICATION

Date: 09/09/2009
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Ph (02) 9984 7000 Fax (02) 9984 7444
e-mail: rbg@nbcengineering.com.au
web page: www.nbcengineering.com.au

Architect: NICK KARATHALIOS
Client: MARK MITCHELL

Project: TOP FLOOR ADDITION
AT-5 BILGOLA TRC,
BILGOLA

Drawing Title: SC.2 DETAIL

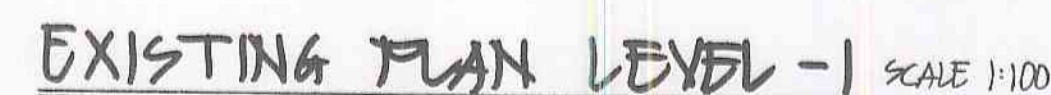
Date	Design	Drawn
09/09/2009	RGW	MK

Job No	Drawing No	Rev
091001	S010	

CONFIRM ALL DOOR AND WINDOW SIZES ON SITE

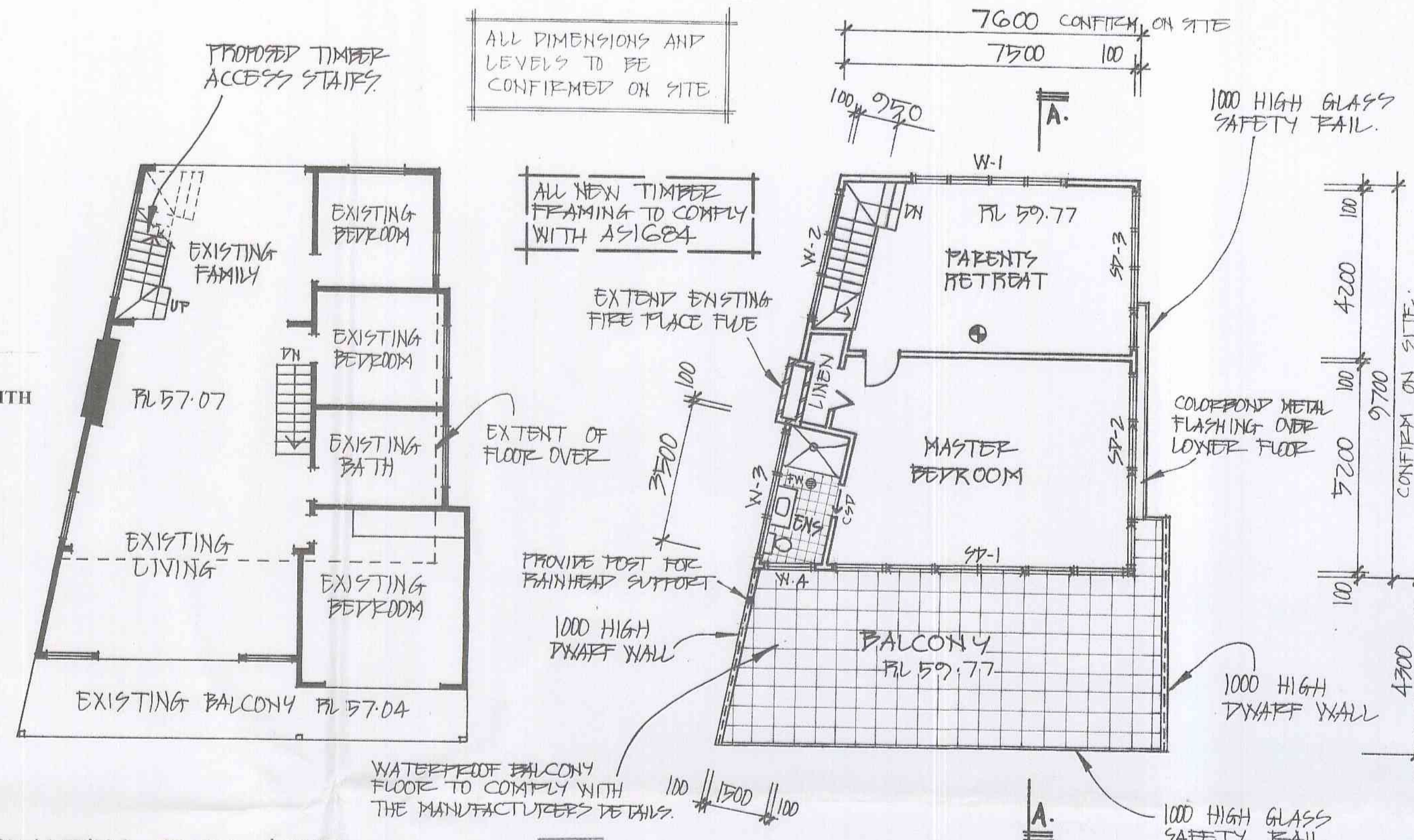
ALL EXTERNAL GLAZING TO HAVE A MAXIMUM REFLECTIVITY INDEX OF 25%

NOTE:
EXTERNAL DOORS SHALL COMPLY WITH
DEVELOPMENT CONTROL SERVICES
"PRACTICAL NOTE 3/06" – REVISED
NOVEMBER 2007 (RELEASE-2)



NOTE

- ⊕ INDICATES SMOKE
ALARM TO COMPLY WITH
THE BCA PART 3.7.2
AND AS 3786.
FW ⊖ = FLOOR WASTE
← CSD = CAVITY SLIDING DOOR



EXISTING PLAN LEVEL-2 SCALE 1:100 NSW
Ph: 0424 695

The builder must construct the building in accordance with the Building Code of Australia and the Development Consent conditions

PROPOSED PLAN LEVEL-3 SCALE 1:100

CONSTRUCTION CERTIFICATE PLANS 30-09-09

BSHX CERETIFICATE COMPLIANCE REQUIREMENTS

- **NEW HOT WATER SYSTEM TO BE GAS INSTANTANEOUS,**
- **MINIMUM 40% OF NEW OR ALTERED LIGHT FIXTURES ARE TO BE**
EMITTING DIODE (LED) LAMPS.
- **ALL NEW OR ALTERED SINKS, SHERARDS AND TAPS HAVE A FLOW**
RATE NO GREATER THAN 1.0 LITERS PER MINUTE OR A 3 STAR WATER
RATING.
- **ALL NEW OR ALTERED TOILETS HAVE A FLOW RATE NO**
GREATER THAN 4 LITERS PER AVERAGE FLUSH OR A 3 STAR WATER
RATING.
- **PROVIDE R2 INSULATION TO ALL NEW EXTERNAL STUD WALLS.**
- **PROVIDE R2 INSULATION TO ALL NEW CEILING AREAS.**
- **GLAZING REQUIREMENTS FOR ALL NEW STANDARD ALUMINIUM**
FRAMES, WINDOWS AND DOORS, SINGLE GLAZING SYSTEMS:
U-VALUE 5.7 AND SOLAR HEAT GAIN COEFFICIENT 0.47

SHADING OVER WINDOWS AND DOORS LE. PERGOLA OR ROOF EAVE

WINDOW - 1 = 600mm
WINDOW - 2 = NONE
WINDOW - 3 = NONE
WINDOW - 4 = 900mm
SLIDING DOOR - 1 = 900mm
SLIDING DOOR - 2 = EXTERNAL LOUVRE/BLIND
SLIDING DOOR - 3 = EXTERNAL LOUVRE BLIND

ABOVE NOTES TO BE READ IN-CONJUNCTION WITH THE
BASIX CERTIFICATE - NUMBER A39964

BUSHFIRE PRONE CONSTRUCTION

THE PROPOSED ADDITIONS SHALL BE
CONSTRUCTED TO A MINIMUM STANDARD OF
LEVEL 1 AS3950, 1999 AND AS PER THE
RECOMMENDATIONS OF THE PUSHFIRE
RISK ASSESSMENT REPORT DATED 23/06/08
REFERENCE No. G58 AND PREPARED BY
RON COFFEY FFA AUSTRALIA.

At the commencement of building works and in perpetuity the entire property should be managed as an Inner Protection Area (IPA) as outlined within Planning for Bush Fire Protection 2006 and the Service's document 'Standards for Asset Protection Zones'.

The Inner Protection Area should comprise of the following:

- minimal fine fuel at ground level,
- vegetation that does not provide a continuous path to building/s for the transfer of fire,
- shrubs and trees that do not form continuous canopy and vegetation is planted/cleared into clumps rather than continuous rows,
- species that retain dead material or deposit excessive quantities of ground fuel are avoided,
- shrubs and trees are pruned or removed so they do not touch or overhang the building/s, and
- vegetation is located far enough away from the building/s so that plants will not ignite the building/s by direct flame contact or radiant heat emission.

PROPOSED TOP
FLOOR ADDITION


LOCATION:

5 BILGOLA TERRACE
BILGOLA.

FOR:

MRS. M & MRS. K. MITCHELL

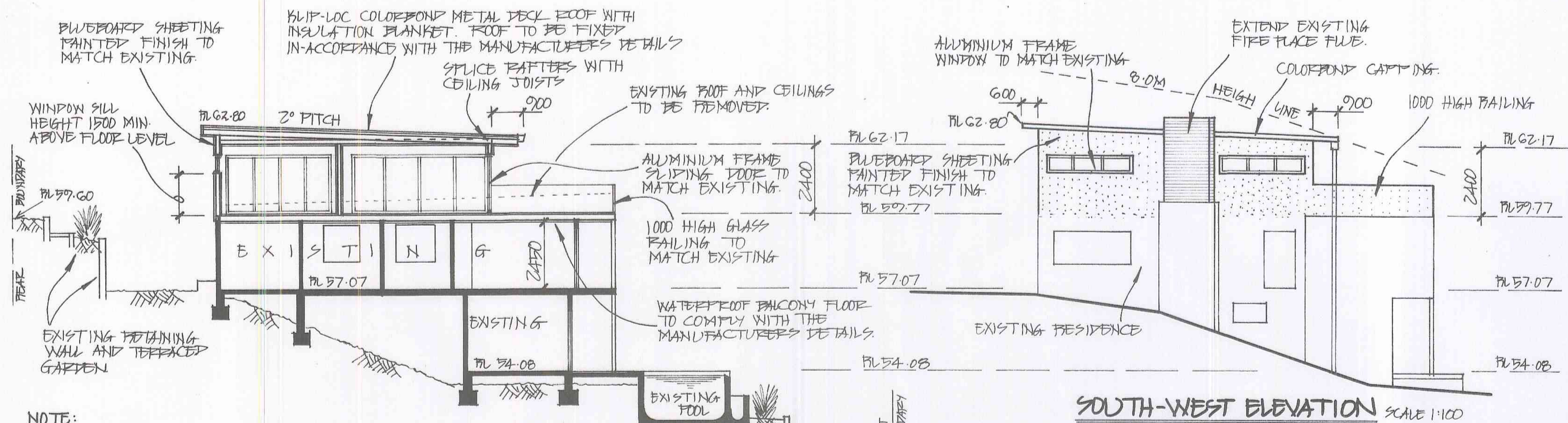
DATE	DRAWN BY	JOB No
25/08/08	NICK . K	081356-1



NICK KARAHALIOS

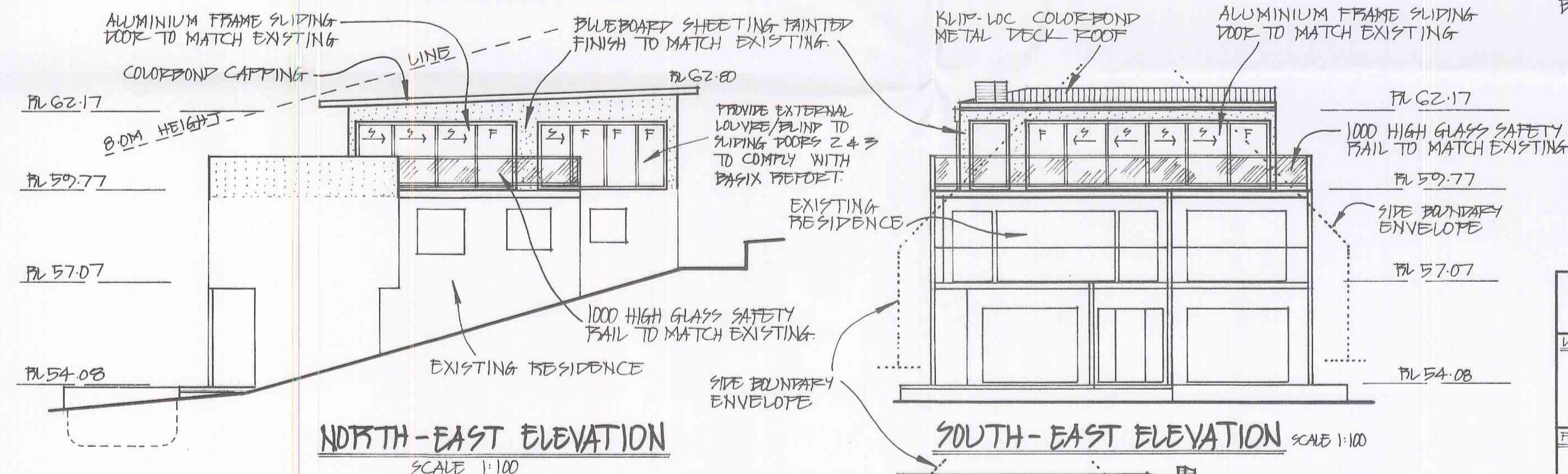
ARCHITECTURAL DRAFTSMAN
DESIGNER - HOMES, TOWN-HOUSES, VILLAS
EXTENSIONS & ALTERATIONS

9360 5121 MOB.: 0407 360 512 FAX: 9360 438
513 BOURKE STREET, SURRY HILLS 204

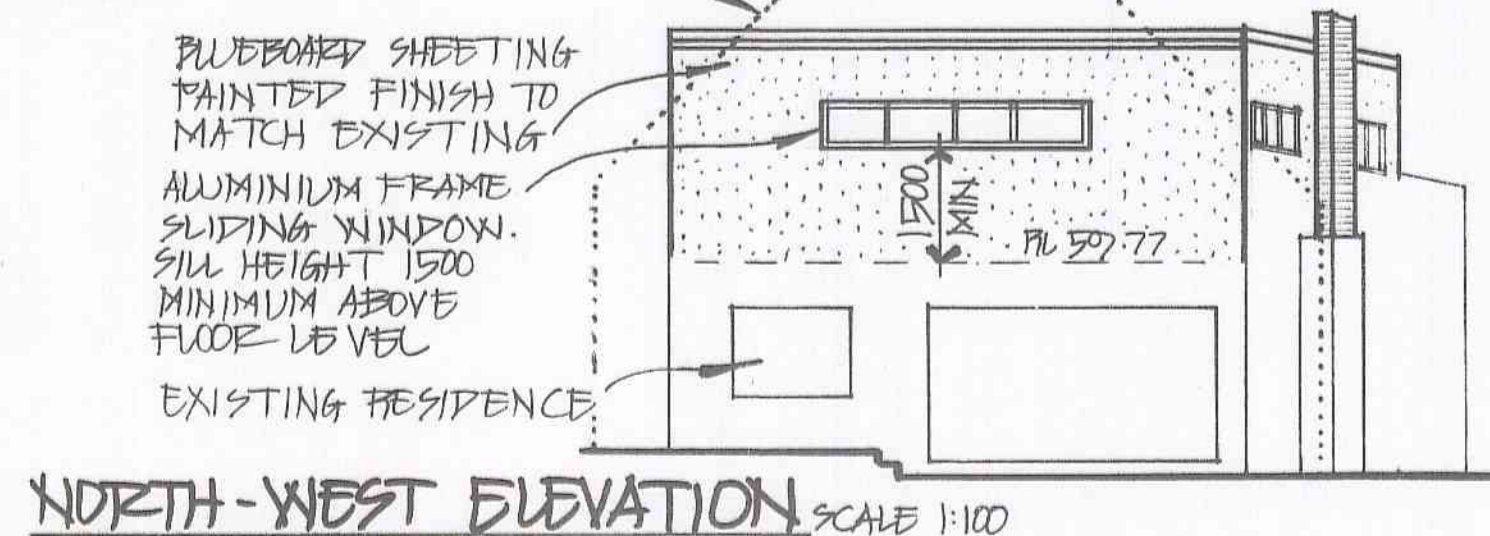


NOTE:
NEW FLOOR AND ROOF FRAMING TO ENGINEERS DETAIL.

SECTION A-A SCALE 1:100



NOTE:
ALL PLUMBING AND DRAINAGE FIXTURES ARE TO BE CONCEALED AND NOT EXPOSED TO PUBLIC VIEW ON BUILDINGS OVER ONE STOREY IN HEIGHT.



NOTE:
NEW ROOF TO BE DARK GREY, BROWN OR GREEN TONES.

NSW
Ph: 0424 699 924
The builder must construct the building in accordance with the Building Code of Australia and the Development Consent conditions
CONSTRUCTION CERTIFICATE

CONSTRUCTION CERTIFICATE PLANS 30-09-09

PROPOSED TOP FLOOR ADDITION		
LOCATION:		
5 BILGOLA TERRACE, BILGOLA.		
FOR:		
MRS. M & MRS. K. MITCHELL		
DATE	DESIGNED BY	DRAWN BY
25/06/08	NICK. K.	DB1356-2



