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CITY PLAN SERVICES

26 June 2007

Customer Service Department
Pittwater Council
PO Box 882
Mona Vale NSW 1660

Dear Sir/Madam,

237 WHALE BEACH ROAD, WHALE BEACH NSW
DEVELOPMENT APPLICATION NO. DA 535/05
CONSTRUCTION CERTIFICATE NO. 27072

City Plan Services have issued a Construction Certificate under Part 4A of the Environmental Planning and Assessment Act 1979 for the above premises.

Please find enclosed the following documentation:

- Construction Certificate No. CC 27072
- Copy of application for Construction Certificate.
- Documentation used to determine the application for the Construction Certificate as detailed in Schedule 1 of the certificate.
- Notice of Appointment of Principal Certifying Authority.
- Cheque for Council's registration fee.

Our client has been advised of the necessity to submit to Council the notice of commencement of building works 48 hours prior to the commencement of works.

Should you need to discuss any issues, please do not hesitate to contact the Project Building Surveyor Michael Conroy on 8270-3500.

Yours Sincerely,

Brendan Bennett
Director

Encl

N:\CPCertification\CPC2007\27-072 237 Whale Beach\CC27072\Letter CC Council.doc

$30 - R.218197

TELEPHONE 8270 3500
FACSIMILE 8270 3501

LEVEL 1 364 KENT STREET
SYDNEY NSW 2000

WWW.CITYPLAN.COM.AU
ABN 30 075 223 353

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237 Whale Beach Road, Whale Beach NSW
Construction Certificate No. 27072

TELEPHONE 8270 3500
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SYDNEY NSW 2000

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CONSTRUCTION CERTIFICATE NO. 27072

Issued under Section 81A(5) and Part 4A Sections 109C, of the Environmental Planning and Assessment Act 1979

APPLICANT	
Name of person having benefit of the development consent:	**Ross Grant**
Address:	**10 Loombah Road, Dover Heights 2030**
Contact Details:	**Phone: 9324 4211 Fax: 9324 4301**
OWNER	
Name:	**Ross Grant**
Address:	**10 Loombah Road, Dover Heights 2030**
Contact Details:	**Phone: 9324 4211 Fax: 9324 4301**
DEVELOPMENT CONSENT	
Consent Authority/Local Government Area:	**Pittwater Council**
Development Consent No:	**DA 535/05**
Date of Development Consent:	**11.08.06**
PROPOSAL	
Address of land on which the work is to be carried out:	**237 Whale Beach Road, Whale Beach NSW**
Building Classification:	**Class 1a**
Type of Construction:	**N/A**
Scope of building works covered by this Notice:	**Demolition of existing dwelling and construction of new dwelling and swimming pool.**
Value of Construction Certificate (Incl GST):	**$3,000.000.00**
Plans and Specifications approved:	**Schedule 1**
Fire Safety Schedule:	**N/A**
Critical stage inspections;	**See attached Notice**
Exclusions:	**Nil**
Conditions (Clause 187 or 188 of the Environmental Planning & Assessment Regulation 2000):	**Nil**
PROJECT BUILDING SURVEYOR	Please contact **Michael Conroy** for any inquiries
CERTIFYING AUTHORITY	**Brendan Bennett** for and on behalf of **City Plan Services Pty Ltd**
ACCREDITATION NUMBER	**BPB 0027**

That I, Brendan Bennett, as the certifying authority, certify that the work if completed in accordance with the plans and specifications identified in Schedule 1 (with such modifications verified by the certifying authority as may be shown on that documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation 2000 as referred to in section 81A(5) of the Environmental Planning and Assessment Act 1979.

DATED THIS **26th** **day** **of** **June** **2007**

Brendan Bennett
Director

NB: Prior to the commencement of work S81A(2)(b)(i) and (ii) and (b2)(i) and (ii) and (iii) and (c) of the Environment Planning and Assessment Act 1979 must be satisfied.

N:\CPCertification\CPC2007\27-072 237 Whale Beach\CC27072\CC27072.doc

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SCHEDULE 1
APPROVED PLANS AND SPECIFICATIONS

1. Endorsed Architectural plans prepared by Guy de Compiegne Architect

Plan Title	Drawing No	Revision	Date
Site Plan	CC01		May 2007
Floor Plans	CC02		May 2007
Sections & Elevations	CC03		May 2007

Endorsed Structural plans prepared by James Taylor & Associates

Plan Title	Drawing No	Revision	Date
Construction Notes	S00	C	29.05.07
Pool Level Floor Plan & Details	S01	A	01.05.07
R.C. Details	S02	A	01.05.07
R.C. Details	S03	A	01.05.07
Lower Ground Floor Plan	S04	B	29.05.07
R.C. Details	S05	A	01.05.07
Ground Floor Plan	S06	B	29.05.07
R.C. Details	S07	A	01.05.07
Level 1 Floor Plan Reinforcement & Details	S08	B	29.05.07
R.C. Details	S09	A	01.05.07
Roof Level Plan Reinforcement & Details	S10	B	29.05.07
Roof Framing Plan	S11	C	29.05.07
Excavation Plan and Civil Works	C01	C	29.05.07

Endorsed Stormwater plans prepared by A K Y Engineering

Plan Title	Drawing No	Revision	Date
Stormwater Drainage Plan Long Section Lines A & B	C-01	B	25.05.07
Stormwater Drainage Plan Long Section Line C, Drainage Details and Drawing Notes	C-02	B	25.05.07

Endorsed Hydraulic plans prepared by ITM Design

Plan Title	Drawing No	Revision	Date
Cover Sheet & Legend	H-00	C	04.06.06
Pool Level Hydraulic Services	H-01	C	04.06.06
Lower Ground Hydraulic Services	H-02	C	04.06.06
Ground Floor Hydraulic Services	H-03	C	04.06.06
First Floor & Roof Hydraulic Services	H-04	C	04.06.06
Sedimentation Control and Rainwater Tanks	H-05	C	04.06.06
Specification	H-06	C	04.06.06

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Endorsed Landscape plan prepared by Tropic of Sydney

Plan Title	Drawing No	Revision	Date
Landscape Plan	021603	L	28.05.07

2. Other documents relied upon

Title	Prepared By	Reference	Date
Construction Certificate Application	Ross Grant		21.05.07
Correspondence Re: Deferred Commencement Condition 1	Pittwater Council	DA N0535/05	19.06.07
Certificate of Insurance	Master Builders Insurance Services		21.05.07
Certification of Structural Documentation	James Taylor & Associates	4095:JT:rp	30.05.07
Levy Receipt	Long Service Payments Corporation	51417	31.05.07
Basix Certificate	ABSA	20069-21480609	01.06.07
Design Certification – Landscaping	Tropic of Sydney P/L		17.05.07
Geotechnical Indemnity Policy Certificate	James Taylor & Associates		17.05.07
Design Certificate – Stormwater, sewer, water & gas services	ITM Design P/L		04.06.07
Report on Geotechnical Investigation	Douglas Partners	37583A	April 2005
Sydney Water Approved Stormwater Plans	AKY Civil Engineering	Drawing Nos. C-01 & C02	25.05.07
Sydney Water Approved Site Plan	Guy de Compiegne Architect	Dwg No. 00-03	April 2007

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NOTICE TO APPLICANT OF CRITICAL STAGE INSPECTIONS

Made under Part 4 of the Environmental Planning and Assessment Act 1979 Sections 81A(2)(b1)(ii)

PROPOSAL

Address of land on which the work is to be carried out:	**237 Whale Beach Road, Whale Beach, NSW**
Description of building works covered by this Notice:	**Demolition of existing dwelling and construction of new dwelling and swimming pool.**

APPLICANT

Name of person having benefit of the development consent:	**Ross Grant**
Address:	**10 Loombah Road, Dover Heights 2030**
Contact Details:	**Phone: 9324 4211 Fax: 9324 4301**

RELEVANT CONSENTS

Development Consent No:	**DA 535/05**
Date of Development Consent:	**11.08.06**
Construction Certificate No:	**CC 27072**
Date of Construction Certificate:	**26.06.07**

INSPECTION TELEPHONE NUMBER

Please telephone the following number to book a critical stage inspection: Ph: **8270 3500**
A minimum period of 48 hours is to be provided

CERTIFYING AUTHORITY	**Brendan Bennett** for and on behalf of **City Plan Services Pty Ltd**
ACCREDITATION NUMBER	**BPB 0027**

MANDATORY CRITICAL STAGE INSPECTIONS

That I, Brendan Bennett, of City Plan Services located at Level 1, 364 Kent Street, Sydney acting as the principal citifying authority hereby give notice in accordance with Section 81A(2)(b1)(ii) of the Environmental Planning and Assessment Act 1979 to the person having the benefit of the development consent that the mandatory critical stage inspections identified in Schedule 1 & Schedule 2 are to be carried out in respect of the building work.

The applicant, being the person having benefit of the development consent is required under Section 81A(2)(b2)(Iii) of the Environmental Planning and Assessment Act 1979 to notify the principal contractor (if not an owner-builder) of the applicable mandatory critical stage inspections specified under this notice.

To allow a principal certifying authority or another certifying authority time to carry out mandatory critical stage inspections, the principal contractor for the building site, or the owner builder, must notify the principal certifying authority at least 48 hours before building work is commenced at the site if a mandatory critical stage inspection is required before the commencement of the work in accordance with Clause 163 of the Environmental Planning & Assessment Regulation 2000.

Failure to request a mandatory critical stage inspections will prohibit the principal certifying authority under with Section 109E(3)(d) of the Environmental Planning and Assessment Act 1979 to issue an occupation certificate.

DATED THIS **26th** **day** **of** **June** **2007**

Brendan Bennett
Director

TELEPHONE 8270 3500 LEVEL 1 364 KENT STREET WWW.CITYPLAN.COM.AU
FACSIMILE 8270 3501 SYDNEY NSW 2000 ABN 30 075 223 353

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SCHEDULE 1
MANDATORY CRITICAL STAGE INSPECTIONS

NO.	CRITICAL STAGE INSPECTION	INSPECTOR
1.	At commencement of building work	Certifying Authority
2.	After Excavation for, and prior to the placement of any footings	Certifying Authority
3.	Prior to pouring any in-situ reinforced concrete building element	Certifying Authority
4.	Prior to covering of the framework for any floor, wall, roof or other building element	Certifying Authority
5.	Prior to covering waterproofing in any wet areas	Certifying Authority
6.	Prior to covering any stormwater drainage connections	Certifying Authority
7.	After the building work has been completed & prior to any occupation certificate being issued in relation to the building	Principal Certifying Authority

SCHEDULE 2
OTHER MANDATORY INSPECTION SPECIFIED BY THE PRINCIPAL CERTIFYING AUTHORITY

NO.	OTHER CRITICAL STAGE INSPECTIONS	INSPECTOR
	None have been specified in this instance	N/A

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RECEIVED
30 MAY 2007
BY:----------

CONSTRUCTION CERTIFICATE APPLICATION

Made under the *Environmental Planning and Assessment Act 1979*
Sections 81A(2), 109C(1)(b)

IDENTIFICATION OF BUILDING

Address 237 whale beach road

Lot, DP/MPS etc 70 11067

Suburb or town WHALE BEACH Post Code

DESCRIPTION OF DEVELOPMENT

Detailed Description: new residence -

APPLICANT

Name Ross Grant Company

Address 10 LOOMBAH ROAD

Suburb or town Dover Heights Post Code 2030

Phone B/H 0293244211 Fax No 02 93244301

Mobile Email

As the applicant, I/we hereby submit this Construction Certificate Application under the Environmental Planning & Assessment Act 1979, with City Plan Services Pty Ltd.

Signature of applicant: **Sign** **Date**

CONSENT TO ALL OWNER(S)

Name ROSS GRANT Company

Address 10 LOOMBAH ROAD

Suburb or town DOVER HEIGHTS Post Code 2030

Phone B/H 0293244211 Fax No 02 93244301

Mobile Email rgrant@grantsamuel.com.au

As the owner of the above property:
1. I/we consent to this application; and
2. I/we appoint Brendan Bennett of City Plan Services Pty Ltd as the Principal Certifying Authority for the building work identified in this application.

Signature of Owner **Sign** **Date** 21/5/07

TELEPHONE 8270 3500
FACSIMILE 8270 3501
LEVEL 1 364 KENT STREET
SYDNEY NSW 2000
WWW.CITYPLAN.COM.AU
ABN 30 075 223 353

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VALUE OF WORK

Estimated Cost of work: $ 3,000,000

GST: $

For developments over $5 million, a Quantity Surveyors Certificate verifying the cost must be submitted on lodgement of the application.

DEVELOPMENT CONSENT

Development Consent No: No. DA No 535/05

Date of Determination: Date 11.08.2006

BUILDING CODE OF AUSTRALIA BUILDING CLASSIFICATION

Nominated on the Development Consent: Class

RESIDENTIAL BUILDING WORK

Relevant only to residential building work

Owner-builder Permit No.

or

Name of Builder WILDEIN BUILDING

Address PO Box 1111 Newport Beach 2106

Telephone 99862144 Fax /

Contractor License No. 143186C

REQUIRED ATTACHMENTS

- Note 1 details the information that must be submitted with an application for a construction certificate for proposed building works
- Note 2 details the additional information that may be submitted with an application for a construction certificate for proposed residential building work.

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Schedule 1 information to be
Collected for ABS Particulars of the proposal

DESCRIPTION

What is the area of the land (m^2) 1184

Gross floor area of existing building (m^2)

What are the current uses of all or parts of the building(s)/land? residential

(If vacant state vacant)

Location	Use

Does the site contain a dual occupancy? no

What is the gross floor area of the proposed addition or new building (m^2)

What are the proposed uses of all parts of the building(s)/land?

Location	Use

Number of pre-existing dwellings

Number of dwellings to be demolished 1

How many dwellings are proposed? 1

How many storeys will the building consist of? 4

MATERIALS TO BE USED

Walls	Code	
Brick veneer	12	
Full brick	(11)	
Single brick	11	
Concrete block	(11)	
Concrete/ masonary	20	
Concrete	20	
Steel	60	
Fibrous cement	30	
Hardiplank	30	
Timber/weatherboard	40	
Cladding aluminium	70	
Curtain glass	50	
Other		
Unknown	90	

Roof	Code	
Aluminium	70	
Concrete	(20)	
Concrete tile	10	
Fibrous cement	30	
fibreglass	80	
Masonry/terracott a shingle tiles	10	
Slate	20	
Steel	60	
Terracotta tile	10	
Other	(80)	
Unknown	90	

Floor	Code	
Concrete	(20)	
Timber	10	
Other	80	
Unknown	90	

Frame	Code	
Timber	40	
Steel	(60)	
Other	80	
Unknown	90	

Pittwater Council

ABN 61 340 837 871 **Telephone** (02) 9970 1111 **Facsimile** (02) 9970 7150
Postal Address: P.O. Box 882, Mona Vale NSW 1660, DX 9018 Mona Vale

pittwaterlga.com.au **e-mail:** pittwater_council@pittwater.nsw.gov.au

Anna Williams, Principal Officer - Development
8am to 5.30pm Mon - Thurs, 8am to 5pm Fri
Phone 9970 1111

DA No N0535/05
In all correspondence please quote this number

19 June 2007

Guy De Compiegne
79 Surrey St
DARLINGHURST 2010

Dear Sir/Madam,

Re: Deferred Commencement Conditions – Development Application N0535/05, 237 Whale Beach Road, Whale Beach.

I refer to the deferred commencement condition 1 contained within the aforementioned consent, and your submission of information on 10/11/06.

Please be advised that pursuant to Regulation 95 (5) of the Environmental Planning and Assessment Regulation 2000, Council considers the details provided in accordance with deferred commencement Conditions 1 contained in Part 1 of the conditions of Development Consent are satisfactory. The following documentation therefore forms part of the consent documentation:

- Drawing No.C-01, C-02 (sheet 1 & 2 and 2 of 2) Project number 03191, Prepared by AKH Civil Engineering dated 29/9/06

In this regard, the Consent becomes operative from the date of this letter subject to the conditions listed in Part 2 of the Consent.

Yours faithfully

Anna Williams
SENIOR PLANNER

MBIS/003279-PermitAuthority

Master Builders Insurance Services
A Division of Queensland Master Builders Association
Industrial Organisation of Employers
ABN 96 641 989 386 AFS Licence 246834
18 Central Park Avenue, Ashmore. Queensland 4214
Phone: 1300 13 13 24 FAX: 1300 13 13 28

21/05/2007

Windrim Building Contractors Pty Ltd
PO Box 1111
NEWPORT BEACH NSW 2106

Certificate of Insurance

RESIDENTIAL BUILDING WORK BY CONTRACTORS

A contract of insurance complying with sections 92 and 96 and 96A of the *Home Building Act 1989* has been issued by ***Calliden Limited*** *(ABN 43 110 186 224) (AFSL 284889)*

In respect of:	New Single Dwelling
At:	237 Whale Beach Road WHALE BEACH NSW 2107
Carried out by:	Windrim Building Contractors Pty Ltd
Licence Number:	143186C
ABN:	87 000 370 650
For:	Mr Ross Grant
In the amount of:	$4,500,000.00

Subject to the Act and the *Home Building Regulation 2004* and the conditions of the insurance contract, cover will be provided to:

- a beneficiary described in the contract and successors in title to the beneficiary,

  OR
- the immediate successor in title to the contractor or developer who did the work and subsequent successors in title.

Authorisation: In Witness Whereof, the Insurer issuing this Policy has caused this Policy to be signed by Authorised Signatory of the Insurer's Agent.

Issued on the 21st day of May, 2007.

Master Builders Insurance Services (ABN 96 641 989 386)(AFS Licence 246834)
For and on behalf of the Calliden Ltd (ABN 43 110 186 224) (AFS Licence 284889)
as their authorised agent.

NOTICE: To download a copy of your insurance policy wording visit www.policywording.com.au.

James Taylor & Associates Civil & Structural Consulting Engineers

[illegible]
4 Curriard Street, Mosman, 2088, N.S.W.
Telephone: (02) [illegible]
Fax: (02) [illegible] 2472
Email: [illegible]

Ref:4095:JT:rp

30 May 2007

City Plan Services
Level 1, 364 Kent Street
Sydney NSW 2000

Dear Sir

CERTIFICATION OF STRUCTURAL DOCUMENTATION FOR PROPOSED BEACH HOUSE AT 237 WHALE BEACH ROAD, WHALE BEACH

We confirm that the structural members and elements shown on our Drawings dated numbered 4095 C01C, S00C, S01B, S02B, S03B, S04B, S05B, S06B, S07B, S08B, S09B, S10B, S11B, S12 B dated 29/05/07 have been designed with reference to the Architectural Drawings prepared by Guy de Compiegne , Quadrant Design Pty Ltd. Architects, numbered 0415 00-01, 02, 03, 04, 05, 06, 01-01, 05, 06, 02-01, 02, 05, 06, 0301, 02, 03, 05, 06, 04-01, 02, 03 dated April 2007 and 01-02, 04-05, 06, 05-01, 06-01, 02, 03, 04 dated October 2006 and were prepared:

a) under the supervision of a professional structural engineer certified under NPER: and
b) in accordance with the relevant structural requirements of the Building Code of Australia, principally:

- BCA Spec C1.1 FRL	
- AS3600	Concrete Structures
- AS3700	Masonry Structures
- AS1170	Minimum Design Loads on Structures
Part 0	General Principles
Part 1	Structural Design Actions Permanent, Imposed and other actions
Part 2	Wind Loads
Part 4	Earthquake Loads
- AS4100	Steel Structures
- AS1684	National Timber Framing Code

Our office holds the following insurance:-

Professional Indemnity QBE	Policy No. AO7994403PID
Allianz Australia Workers' Compensation	Policy No. MW2 2016941

..2

Should you require any further information please do not hesitate to contact the writer.

Yours faithfully
JAMES TAYLOR & ASSOCIATES

JAMES TAYLOR & ASSOCIATES CP Eng MIE Aust NPER 23907
DIRECTOR

LONG SERVICE
BUILDING & CONSTRUCTION

31 May 2007

Building and Construction Industry
Long Service Payments Corporation
Ground Floor
cnr Donnison & Baker Streets
Gosford NSW 2250
Locked Bag 3000
Central Coast MC NSW 2252
Tel: 13 14 41
Fax: (02) 9287 5685
Email: info@lspc.nsw.gov.au
www.lspc.nsw.gov.au
ABN 93 646 090 808

ROSS ALAN GRANT
GPO BOX 4301
SYDNEY NSW 2001

Levy Receipt

Receipt No.
00051417

Received from: (Name of person or organisation paying for levy)

ROSS ALAN GRANT

the amount of

$10,500.00

Payment details:

Direct Deposit $10,500.00

being payment for Long Service Levy as detailed below

Levy Payment Form number	0287963
Council/Department/Authority	PITTWATER COUNCIL
D.A. Number	N0535/05
Work address	237 WHALEBEACH ROAD WHALE BEACH NSW 2107
Estimated value of work	$3,000,000.00
Levy payable (No exemption)	**$10,500.00**
Total levy paid	**$10,500.00**

Signed: (Signature of authorised person)

Date

31/5/07

59921

Assessor Certificate

Single Dwellings (BCA Class 1).

Certificate Version 4.0. Effective from 1 July 2004

Issued in accordance with requirements of the **BASIX.**

ABSA

Assessor

Name: Paul Brennan **Company:** The House Energy Rating Co. Aust. **ABSA #:** 20069

Address: 18 Garden Street, Kingsford NSW 2032

Phone: 9345 0219 **Fax:** 9349 6912 **Email:** info@house-energyratings.com.au

Declaration of interest: Provided design advice to client.

Client

Name: Mr & Mrs Grant **Company:**

Address:

Phone: **Fax:** **Email:**

Project

Address: 237 Whale Beach Road, Whale Beach NSW

Applicant: (as above) **LGA:** Pittwater

Assessment

Date: 1 Jun. 07 **File ref:** PIT/1444 **Software:** NatHERS **Version:** 2.32B

Proxies referenced:

Documentation

All details, upon which this assessment has been based, are included in the project documentation that has been stamped and signed by the Assessor issuing this certificate, as identified below:

Thermal Performance Spec. / Schedule of Commitments: Attached, Affixed to drawings Page#: CC01

Drawings:

(Title, Ref #, Revision, Issue date, etc) CC01-03.

Building Specifications:

(Title, Ref #, Revision, Issue date, etc)

Certificate – BASIX 'THERMAL COMFORT'

ABSA Assessor #: 20069 **Certificate #:** 21480690

Predicted annual energy loads (MJ/M^2/year)

Heating Load: 79	**Cooling Load:** 21		
		Adjustment:	**Adjusted Total:**

Rating

Climate Zone: 17

Concessions *(Identify type & supporting evidence)*

Concession: Nil

Adjustment:

Assessed total:

3.5 star max:

ABSA Assessor stamp

ABSA

Assr # 20069 Cert # 21480690

Sign

Date 1/6/07

('Energy' values & 'Ratings' apply to plans/information/specifications supplied at time of assessment. THERCA accepts no liability for plans/documentation altered after this assessment.)

BASIX Certificate

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

Certificate number: 22976 version 2

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. Note that this proposal has been the subject of an Alternative Assessment by the Department of Planning. The schedule below contains additional commitments, shown in italics. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 30 06 05 published by the Department of Planning. This document is available at www.basix.nsw.gov.au

Director-General

Date of issue: Friday, 1 June 2007

Score

✓	Water: 40 (Target 40)
✓	Thermal Comfort: pass (Target Pass)
✓	Energy: 28 (Target 25)

Project name	Grant residence (copy of)
Street number	257
Street name	White Beach
Suburb	White Beach
Post code	2108
Local Government area	Pittwater Council
Deposited Plan number	11067
Lot number	70
Nature of project	Erecting a new residential building
Project type	Detached dwelling
Site area (m2)	1184
Gross floor area (m2)	532
Roof area (m2)	240
Number of bedrooms	4
Total area of garden and lawn (m2)	726
ABSA Certificate number	21480690
Net conditioned floor area	296
Concession claimed	not applicable
Cooling load (MJ/m2 yr)	31
Heating load (MJ/m2 yr)	79
Total cooling and heating load (MJ/m2 yr)	109
Concrete claimed	not applicable

BASIX Certificate number: 22976 version 2

Schedule of BASIX commitments

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

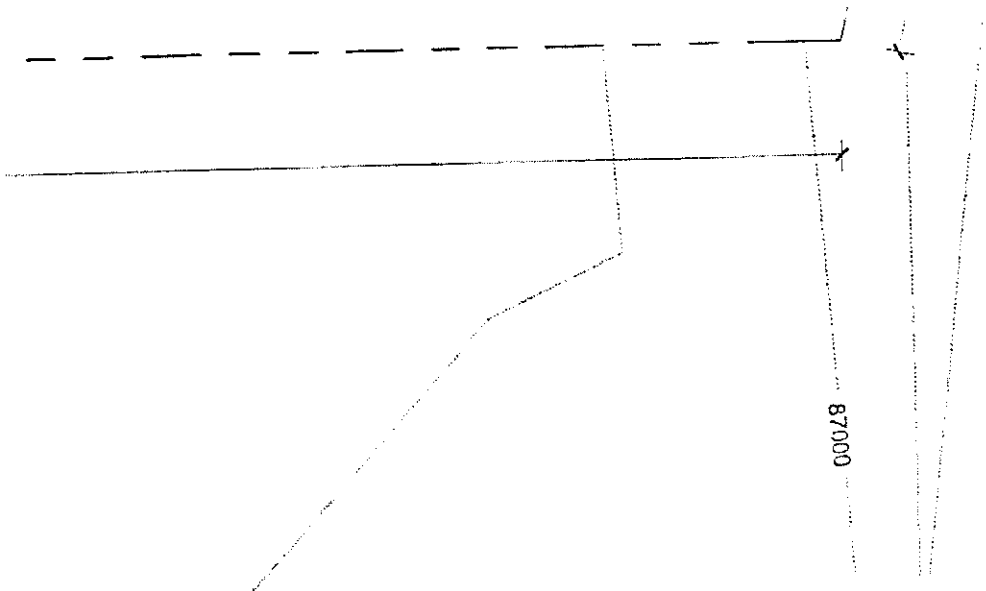
Commitments		Shown on DA plans	Shown on CC/CDC plans & specs	Certifier check
	*Landscaping			
A1.1	The applicant must plant at least 520 square metres of indigenous vegetation on the site. Vegetation is indigenous if it is listed in the BASIX Species List for the local government area in which the development is to be constructed.	✓	✓	
	*Collection of rainwater and stormwater			
B1.1	The applicant must install a rainwater tank on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
	*Rainwater tank			
B2.1	The applicant must configure the rainwater tank to collect rain runoff from at least 120 square metres of the roof area of the dwelling.		✓	✓
B2.2	The applicant must connect the rainwater tank to all the toilets in the development so that rain water can be used for toilet flushing.		✓	✓
B2.3	The applicant must connect the rainwater tank to the cold water tap that supplies each clothes washing machine in the development so that rain water can be used for clothes washing.		✓	✓
B2.4	The applicant must connect the rainwater tank to at least one outdoor tap in the development so that rain water can be used to irrigate vegetated areas of the site.		✓	✓
B2.5	The rainwater tank must have a capacity of at least 9000 litres.	✓	✓	✓
	*Showerheads			
C2.1	The applicant must install showerheads with a minimum rating of 3A in all showers in the development.		✓	✓
	*Toilets			
C3.1	The applicant must install taps with a minimum flow rate of 5A in the kitchen in the development.		✓	✓
	*Tap fittings			
C4.1	The applicant must install taps with a minimum flow rate of 3A in the kitchen in the development.		✓	
C4.2	The applicant must install bathroom taps (other than showerheads) with a minimum flow rate of 3A in each bathroom in the development.		✓	
	*Swimming pool and spa			
C5.1	The swimming pool must not have a volume greater than 30 kL.	✓	✓	
C5.2	The swimming pool must have a pool cover.		✓	

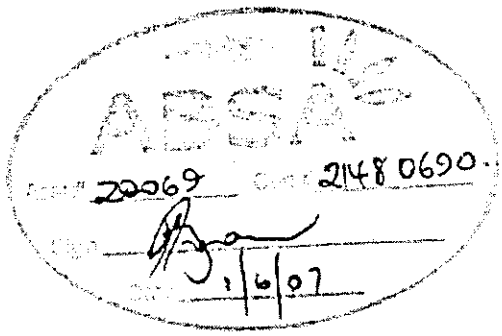
Commitments			
Da1 "General			
Da1.1 The applicant must attach certificate no. 21480650 (the "Assessor certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, then to that application).			
Da1.2 The Assessor certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol. The details on the Assessor certificate must be consistent with the details shown in this BASIX certificate. The applicant must attach the Assessor certificate to this BASIX certificate.			
Da1.3 The applicant must construct the development in accordance with the requirements set out in the Assessor certificate and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate the values shown in the Assessor certificate.		✓	✓
Da1.4 (For the purposes of complying with this commitment, terms used in the Assessor certificate have the meanings given to those terms in the BASIX Specification.)			

BASIX Certificate number: 229758 version: 2

Commitments				
E1	*Active cooling			
E1.2	The applicant must install a three phase a/c system - EER between 2.5 - 3.0, or one with a higher EER, for living areas of the dwelling		✓	✓
E1.3	The applicant must install a three phase a/c system - EER between 2.5 - 3.0, or one with a higher EER, for the bedrooms of the dwelling		✓	✓
E2	*Active heating			
E2.2	The applicant must install a three phase a/c system - EER between 2.5 - 3.0, or one with a higher EER, for living areas of the dwelling		✓	✓
E2.3	The applicant must install a three phase a/c system - EER between 2.5 - 3.0, or one with a higher EER, for the bedrooms of the dwelling		✓	✓
E3	*Hot water			
E3.1	The applicant must install the following hot water system in the development: solar/gas boosted	✓	✓	✓
E4	*Lighting			
E4.7	The applicant must install a window in the kitchen of the dwelling for natural lighting.	✓	✓	✓
E4.8	The applicant must install a window in each bathroom and toilet in the development for natural lighting	✓	✓	✓
E5	*Cooking			
E5.1	The applicant must install a gas cooktop & gas oven in the kitchen of the dwelling		✓	
E6	*Swimming pool and spa			
E6.1	The applicant must install a timer for each swimming pool and spa pump in the development		✓	
E6.2	The applicant must install the following heating system for the swimming pool in the development: solar		✓	
E7	*Design enhancements			
E7.1	The applicant must construct each refrigerator space in the development so that it is well ventilated, as defined in the BASIX Specification		✓	
E7.2	The applicant must install a fixed indoor clothes drying line or cupboard as part of the development		✓	
E7.3	The applicant must install a fixed outdoor clothes drying line as part of the development		✓	

Legend
In these commitments, "applicant" means the person carrying out the development.
Commitments identified with a "✓" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development.
Commitments identified with a "✓" in the "Show on CC/CDC plans and specs" column must be shown on the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a "✓" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.





Guy de Compiegne Architect
QUADRANT DESIGN PTY LTD 64 Goodhope street Padington 2021 Tel:0425 221193 /02 9331 2232
email:gdcomp@mpx.com.au

Mr & Mrs GRANT

237 WHALE BEACH ROAD WHALE BEACH NSW

SITE PLAN

Project number	0415
Date	APRIL 2007
Drawn by	Author
FOR COSTING ISSUE	

CC01

Scale 1 : 100

1/05/2007 10:13:05 AM

DESIGN CERTIFICATION

ADDRESS 237 whale Beach Road, Whale Beach
PROJECT Ross Alan Grant

Pursuant to the provisions of Part 4A of the Environmental Planning and Assessment Regulation 1994

I, G. GREENHALGH of TROPIC OF SYDNEY P/L
(Name of Certifier) (Firm)

14 EDGECLIFF RD WOOLLAHRA
(Address)

Qualifications and experience: CERT. HORT. (HONS); MAILDM; MAIH, DIRECTOR TROPIC OF SYDNEY (25 yrs)

Phone numbers: **Bus.** 93691991 **Fax.** 93590275 **Mob.**

hereby certify:-

That the ...**Landscaping**..... listed in Schedule A have been checked and comply with:-
(Type of drawings and specifications)

a) The relevant clauses of the Building Code of Australia (Housing Provisions), as follows:...
.....

.....

.....

b) The architectural plans submitted to the Accredited Certifier for approval (Schedule B),

c) The relevant Australian Standards listed in the Building Code of Australia (Specification A1.3) as follows:..... .....
.....

d) The following additional Australian Standards (if applicable):.....

.....

e) Other practices or standards relied upon for this certification:.....

Condition C12 of DA No N0535/05 issued by Pittwater Council dated 11th August 2006

f) Exclusions: YES/NO.....

.....

Signature: ..... **Date**....17/05/07.....

DESIGN CERTIFICATION

ADDRESS ......237 whale back road......
PROJECT ......Kess olau grant......

SCHEDULE A
Design Drawing Numbers and Revision List and Specifications reference.

LANDSCAPE PLAN
DWG 021603 L
TROPIC OF SYDNEY

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 2 – To be submitted with detailed design for construction certificate

Development Application for MR ROSS GRANT
Name of Applicant

Address of site 237 WHALE BCH RD
WHALE BEACH.

Declaration made by Structural or Civil Engineer in relation to the incorporation of the Geotechnical issues into the project design

I, JAMES TAYLOR (insert name) on behalf of JAMES TAYLOR & ASSOC. (trading or company name)

on this the 17TH MAY, 2007 (date)

certify that I am a Structural or Civil Engineer as defined by the Geotechnical Risk Management Policy for Pittwater. I am authorised by the above organization/company to issue this document and to certify that the organization/company has a current professional indemnity policy of at least $2million. I also certify that I have prepared the below listed structural documents in accordance with the recommendations given in the Geotechnical Report for the above development

Geotechnical Report Details:

Report Title: DOUGLAS PTNRS – PROJECT 37583A
Report Date: APRIL 2005
Author: RICHARD LLOYD

Structural Documents list:

4095 S00, C01D, S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified

JAMES TAYLOR (name) J Taylor. (signature)

Declaration made by Geotechnical Engineer or Engineering Geologist in relation to Structural Drawings

I ~~prepared and/or~~ technically verified the abovementioned Geotechnical Report as per Form 1 dated 28/4/2005 Douglas Partners and now certify that I have viewed the above listed structural documents prepared for the same development. I am satisfied that the recommendations given in the Geotechnical Report have been appropriate taken into account by the structural engineer in the preparation of these structural documents. I am aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature G Young
Name GEOFF YOUNG
Chartered Professional Status BE Mtng Sc, MIEAust, NPER, CPEng
Membership No 98650.

itm design pty ltd
consulting hydraulic engineers

6 / 3 apollo street
warriewood nsw 2102
po box 1438
mona vale nsw 1660
abn 25 092 366 624

tel (02) 9997 1566
fax (02) 9997 3266
mobile 0411 869 504
email itm@bigpond.net.au

Quadrant Design
Att.: Guy de Compiegne

Date 4 June 2007
File 04 – 85 / cert 1001.doc

project: 237 whale beach road, whale beach
re: certificate of design for stormwater, sewer, water + gas services

I hereby certify that the above design is in accordance with normal engineering practice and meets the requirements of the Building Code of Australia, relevant Australian Standards and Conditions of the DA

In particular the design is in accordance with the following:

Sanitary and Stormwater Plumbing & Drainage:	AS 3500.2 + 3500.3
Domestic Hot & Cold Water Services:	AS 3500.1 + 3500.4
Natural Gas:	AS 5601
Pittwater Council's Stormwater Requirements	

DA conditions B3, B5 (excluding downpipes), B11 (Hydraulic part only), C2, C3, C7,

Drawings prepared by itm design pty ltd H – 00 to H – 06 (all revision 'C' / dated 4th of June 2007)

I am an appropriately qualified and competent professional Hydraulic Engineer and a member of the AHSCA (Association of Hydraulic Services Consultants Australia) and as such can certify that the design and performance of the design systems complies with the above.

- name of certifying company	- itm design pty ltd
- name of certifier	- Markus Lachele
- phone	- (02) 9997 1566
- mobile	- 0411 869 504
- fax	- (02) 9997 3266
- position within company	- Director
- qualification of certifier	- Dip. Hydraulic Engineer and a member of the AHSCA (Association of Hydraulic Services Consultants Australia)

Signature:. . . . . .
Date: 4th of June 2007
Markus Lachele, Director, itm design pty ltd, Hydraulic Engineer AHSCA

Douglas Partners

Geotechnics • Environment • Groundwater

REPORT
on
GEOTECHNICAL INVESTIGATION

PROPOSED RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

Prepared for
MR and MRS R GRANT

Project 37583A
April 2005

Douglas Partners Pty Ltd
ABN 75 053 980 117

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Australia

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West Ryde NSW 1685

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Douglas Partners
Geotechnics - Environment - Groundwater

RKL:ss
Project 37583A
27 April, 2005

REPORT ON GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENCE
237 WHALE BEACH ROAD, WHALE BEACH

1. INTRODUCTION

This report details the results of a geotechnical investigation carried out for a proposed new residence at 237 Whale Beach Road, Whale Beach. It is understood that the development will comprise a multi-level masonry and concrete residence with a new garage linked to the existing garage and a swimming pool on the eastern side of the residence. The work was carried out at the request of Guy de Compiegne of Quadrant Design Pty Ltd, acting on behalf of the owners Mr and Mrs Grant.

Investigation was carried out to provide information on subsurface conditions for Development Application purposes and for the design of site works and building foundations. It comprised geological inspections of the site and accessible adjacent areas, the drilling of three test bores and test probes at selected locations. Details of the field work are given in this report, together with comments relating to design and construction practice.

Architectural drawings (Project 0415, Drawings DC01 to DC04, Issue 11 April 2005) by Quadrant Design Pty Ltd and a site survey plan were supplied by for use in the investigation.

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3. FIELD WORK

3.1 Field Work Methods

The field investigation comprised detailed geological inspections of the site and adjacent areas by a senior engineering geologist on 24 November 2004 together with three test bores (Bores 1 to 3) and a series of test probes (Dynamic Penetrometer Tests - DCPs) at each bore location with an additional test on the low, eastern portion of the site.

The bores were drilled using man-portable drilling equipment to a depths of 4.0 m to 6.3 m. The bores were initially progressed using hand auger equipment, then extended into the bedrock using pneumatically powered, diamond coring methods to recover NMLC (50 mm diameter) core samples. Sampling of the overburden was carried out by removing cuttings from the auger tip.

The locations of the test bores and DCP tests are shown on Drawing 1 and were determined by tape measurement from site boundaries. The surface levels shown on the borehole logs and DCP result sheet were determined by interpolation from the site survey plan provided.

3.2 Site Observations

The principal observations made during inspection of the site and adjacent areas were that:

- within the upper portion of the site, where development is proposed, there was no outcrop within the proposed foundation area or adjacent sections of the site.
- across the lower, eastern portion of the site there was no outcrop with beach sand dune present beyond the eastern boundary towards the northern end where the property immediately adjoins Whale Beach.
- the slope between the upper and lower areas of the site comprised a landscaped garden across the southern half and adjoining southern property, and across the northern half and the adjoining northern property comprised sandstone outcrop with some soil infilled joints and detached blocks (Photo 6).

Bore 2 penetrated 0.8 m of filling then a probable sandstone floater to 2.35 m then extremely low and very low strength sandstone to 4.0 m with medium strength from 4.03 m to 5.32 m depth.

Bore 3 penetrated filling/overburden and extremely low sandstone to 2.0 m, then high and medium strength sandstone to 4.0 m with core loss between 3.18 m and 3.5 m. Groundwater was encountered in Bore 3 at 1.5 m depth during hand augering and is considered to represent a perched water table and seepage along the top of rock rather than a permanent groundwater level which would be a greater depth within bedrock.

The presence of sections of core loss within the rock suggests that there could be layers of extremely to highly weathered, very low strength rock within the stronger bedrock.

DCP tests carried out adjacent to Bores 1 to 3 typically indicated firm to stiff conditions within the overburden. DCP 2A, which was undertaken within 2 m of DCP 2, penetrated approximately 1.1 m deeper than DCP 2, which suggests that Bore 2 encountered a sandstone floater in the upper level of the bore.

DCP 4 encountered refusal at 3.29 m depth which is consistent with the level of rock (shale) encountered in the test bore drilled on the adjacent, northern property (Bore 1 of Project 12148 – presented in Appendix A).

4. COMMENTS

4.1 Proposed Development

It is understood that the development will comprise a multi-level masonry and concrete residence with a new garage linked to the existing garage, and a swimming pool on the eastern side of the residence. Inspection of the plans suggest that excavation of the order of 3.5 m may be required for lower ground and pool level construction with about 1.8 m of excavation for the swimming pool itself.

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The site has been assessed in accordance with the methods of the Australian Geomechanics Society (Landslide Risk Management AGS Subcommittee, May 2002) and Pittwater Council Interim Geotechnical Risk Management Policy (IGRMP) guidelines of 16 June 2003. Identified hazards within and adjacent to the site are summarised in Table 1, together with qualitative assessment of likelihood, consequence and risk to the proposed development after completion of the works, including appropriate engineering design and construction works.

Table 1 - Property and Life Risk Assessment for Proposed Development

Hazard	Likelihood	Consequence	Risk
Soil creep, or slumping of filling /colluvium across slope between upper and lower sections of site	Likely, but adequately controlled by landscaping maintenance, or	Property – Insignificant	Low
		Life - Insignificant	1×10^{-6}
Collapse of temporary excavation support measures during construction	Rare, for engineer designed and properly constructed support measures	Property – Medium (on adjacent northern property)	Low
		Life – Medium	1×10^{-7}
Collapse of final retaining walls of residence.	Rare, for engineer designed and properly constructed structure	Property – Major	Low
		Life – Major	1×10^{-6}
Loss of sand on lower area of site due to coastal forces and complete exposure of sandstone outcrop	(Barely Credible to) Rare – within the next 100 years (Ref. Patterson Britton Coastal Engineering Assessment Report)	Property - Insignificant	Very Low
		Life - Insignificant	1×10^{-9}

When compared to the requirements of the IGRMP, it is considered that the proposed development will achieve the "Acceptable Risk Management" criteria for both property and life under current site conditions. It is also considered that the site is suitable for the proposed development.

4.4 Excavation

The architectural concept drawings indicate that excavation to the order of 3.5 m depth may be required for lower ground and pool level construction, with about 1.8 m of excavation for the swimming pool.

possible minor volumes of filling from this site. Accordingly, environmental testing may need to be carried out to enable classification of the spoil to be removed.

The type and extent of testing undertaken will depend on final use or destination of the spoil, and requirements of the receiving site. It should be noted that some non-licensed fill sites, such as those operated by Councils may have their own special environmental criteria to be met before admitting any materials.

4.6 Retaining Structures

Engineer designed retaining walls should be used for all cuts in excess of 1 m height and be designed in accordance with the following suggested parameters.

Table 2 – Suggested Design Parameters for the Design of Retaining Structures

Material	Coefficient of Active Earth Pressure (Ka) *	Unit Weight
Colluvium/filling	0.4	20 kN/m^3
Clay - stiff/very stiff	0.3	20 kN/m^3
Sandstone - extremely low to very low strength	0.25	24 kN/m^3

* Assuming a level surface behind any retaining structures and free draining backfill material behind the wall.

All retaining structures should be designed incorporating free draining backfill material behind the structure with appropriate subsoil drainage to discharge all seepage and groundwater collected within the backfill material. Appropriate design and construction of all retaining walls is considered particularly important on this site as the investigation suggests the possible presence of a shallow water table or significant subsurface water seepage and movement.

Allowance for the sloping nature of the site above the crest of any retaining structures will be required as well as consideration of any surcharge loading.

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4.8 Site Drainage

Appropriate surface and subsurface drainage is very important with respect to the overall stability of a sloping site and to the amenity of the proposed structures.

It is recommended that all surface and stormwater run-off from both the house and surrounding land be collected in a properly designed stormwater system and directed off site in a controlled and approved manner. All ground surfaces adjacent to the buildings walls should be sloped away from the building to prevent ponding and reduce the risk of dampness.

Subsurface seepage collected from behind retaining structures should also be directed off site in a controlled and approved manner to the Council stormwater system. Consideration could be given to the use of absorption trenches located on the lower, eastern portion of the site should access to the Council stormwater system not be possible.

5. CONDITIONS RELATING TO DESIGN AND CONSTRUCTION MONITORING

To comply with Council conditions and to enable the completion of Forms 2 and 3 required as part of construction, building and post-construction certificate requirements of the IGRMP, it will be necessary for Douglas Partners Pty Ltd to:

- review the structural drawings for compliance with the recommendations of this report.
- inspect all footings prior to placement of steel or concrete.
- inspect any new subsurface drainage measures and drainage measures behind retaining walls.

6. DESIGN LIFE AND MAINTENANCE

Douglas Partners Pty Ltd interprets the reference to design life requirements specified within the IGRMP to refer to structural elements designed to retain the subject slope and maintain the risk of instability within acceptable limits.

APPENDIX A
Notes Relating to this Report
Results of Field Work
Photographic Plates
Drawings 1 and 2

clays and in sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are very disturbed and may be contaminated. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability, due to remoulding, contamination or softening of samples by ground water.

Non-core Rotary Drilling — the hole is advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from 'feel' and rate of penetration.

Rotary Mud Drilling — similar to rotary drilling, but using drilling mud as a circulating fluid. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg. from SPT).

Continuous Core Drilling — a continuous core sample is obtained using a diamond-tipped core barrel, usually 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in very weak rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation.

Standard Penetration Tests

Standard penetration tests (abbreviated as SPT) are used mainly in non-cohesive soils, but occasionally also in cohesive soils as a means of determining density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" — Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of say 4, 6 and 7

  as 4, 6, 7
  N = 13

- In the case where the test is discontinued short of full penetration, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm

  as 15, 30/40 mm.

The results of the tests can be related empirically to the engineering properties of the soil.

Occasionally, the test method is used to obtain samples in 50 mm diameter thin walled sample tubes in clays. In such circumstances, the test results are shown on the borelogs in brackets.

Cone Penetrometer Testing and Interpretation

Cone penetrometer testing (sometimes referred to as Dutch cone — abbreviated as CPT) described in this report has been carried out using an electrical friction cone penetrometer. The test is described in Australian Standard 1289, Test 6.4.1.

In the tests, a 35 mm diameter rod with a cone-tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig which is fitted with an hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130 mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20 mm per second) the information is plotted on a computer screen and at the end of the test is stored on the computer for later plotting of the results.

The information provided on the plotted results comprises: —

- Cone resistance — the actual end bearing force divided by the cross sectional area of the cone — expressed in MPa.
- Sleeve friction — the frictional force on the sleeve divided by the surface area — expressed in kPa.
- Friction ratio — the ratio of sleeve friction to cone resistance, expressed in percent.

There are two scales available for measurement of cone resistance. The lower scale (0—5 MPa) is used in very soft soils where increased sensitivity is required and is shown in the graphs as a dotted line. The main scale (0—50 MPa) is less sensitive and is shown as a full line.

The ratios of the sleeve friction to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1%—2% are commonly encountered in sands and very soft clays rising to 4%—10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:—

q_c (MPa) = (0.4 to 0.6) N (blows per 300 mm)

In clays, the relationship between undrained shear strength and cone resistance is commonly in the range:—

q_c = (12 to 18) c_u

Interpretation of CPT values can also be made to allow estimation of modulus or compressibility values to allow calculation of foundation settlements.

Inferred stratification as shown on the attached reports is assessed from the cone and friction traces and from experience and information from nearby boreholes, etc. This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties, and where precise information on soil classification is required, direct drilling and sampling may be preferable.

is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The Company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly laminated	<6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0 2 m
Medium bedded	0 2 m to 0 6 m
Thickly bedded	0 6 m to 2 m
Very thickly bedded	>2 m

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks The orientation of rock defects is measured as an angle relative to a plane perpendicular to the core axis Note that where possible, recordings of the actual defect spacing or range of spacings is preferred to the general terms given below

Term	Description
Fragmented	The core consists mainly of fragments with dimensions less than 20 mm
Highly Fractured	Core lengths are generally less than 20 mm - 40 mm with occasional fragments
Fractured	Core lengths are mainly 40 mm - 200 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths are generally 200 mm - 1000 mm with occasional shorter and longer sections
Unbroken	The core does not contain any fracture

ROCK QUALITY DESIGNATION (RQD)

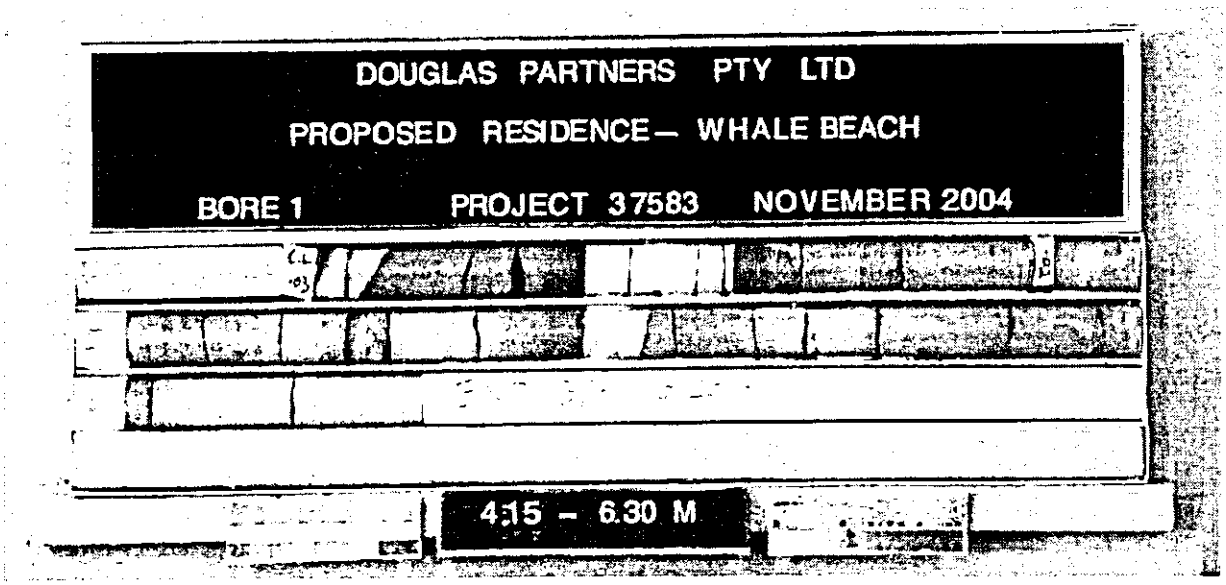
This is defined as the ratio of sound (i e low strength or better) core in lengths of greater than 100 mm to the total length of the core, expressed in percent If the core is broken by handling or by the drilling process (i e the fracture surfaces are fresh, irregular breaks rather than joint surfaces) the fresh broken pieces are fitted together and counted as one piece

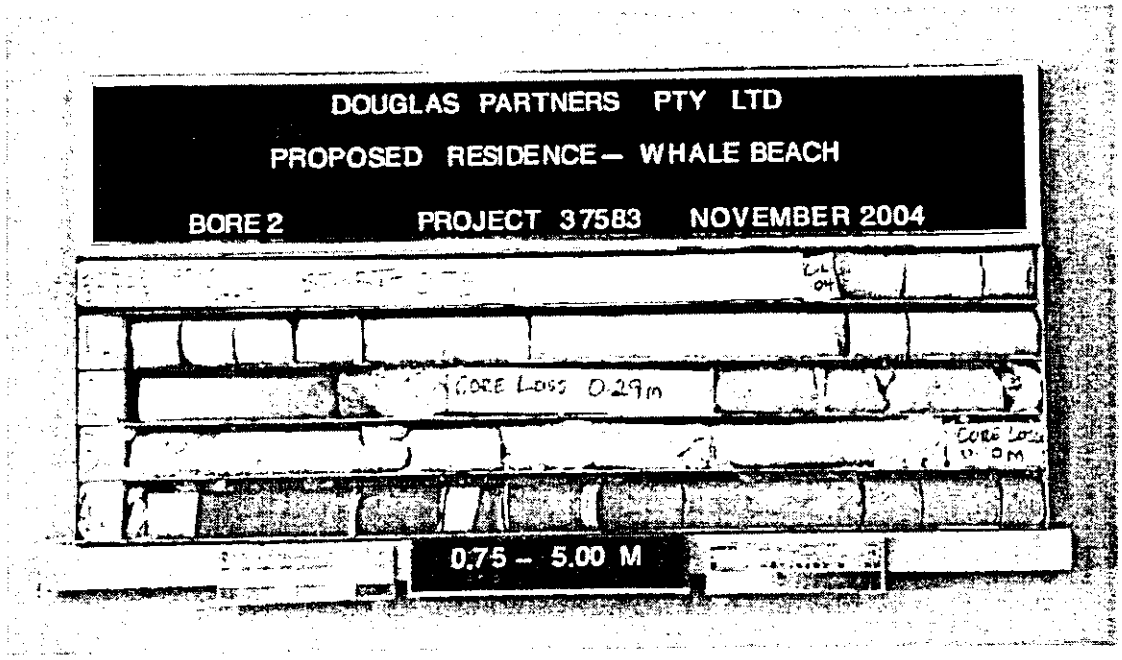
SEDIMENTARY ROCK TYPES

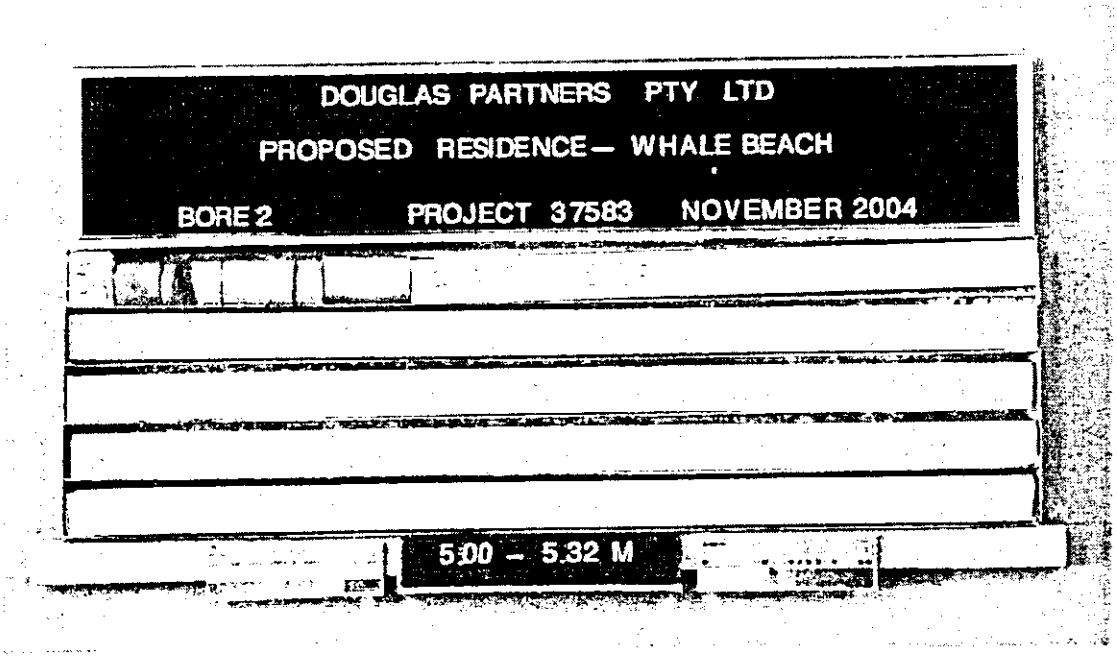
This classification system provides a standardised terminology for the engineering description of sandstone and shales, particularly in the Sydney area, but the terms and definitions may be used elsewhere when applicable

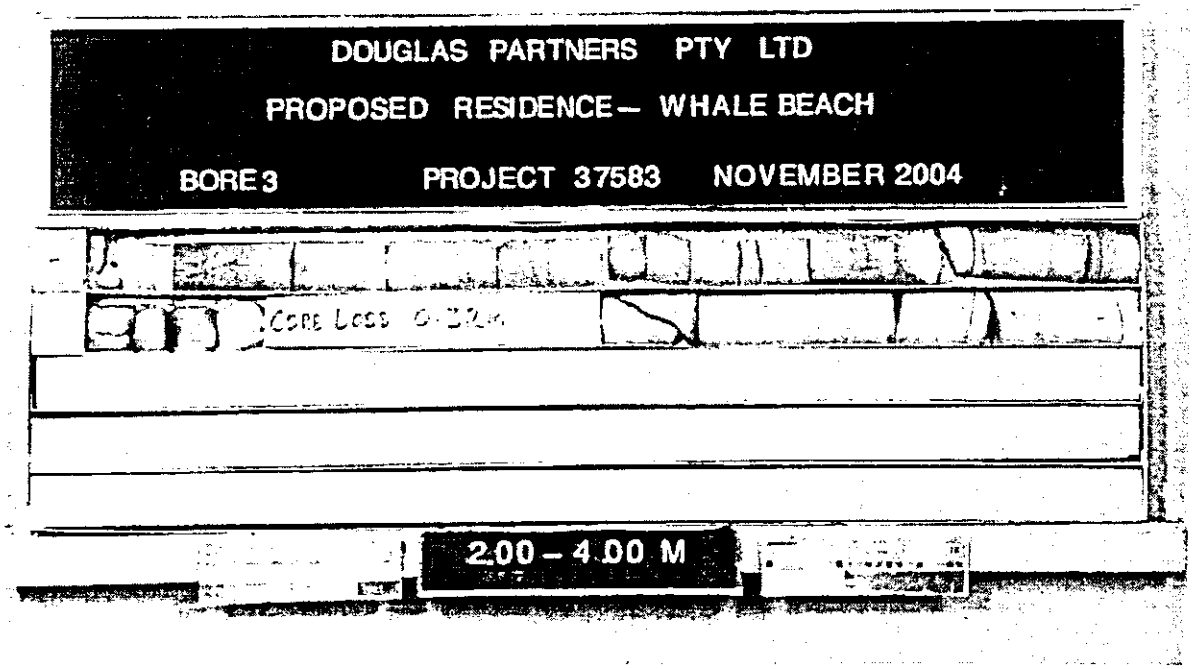
Rock Type	Definition
Conglomerate	More than 50% of the rock consists of gravel-sized (greater than 2 mm) fragments
Sandstone:	More than 50% of the rock consists of sand-sized (0 06 to 2 mm) grains
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0 06 mm) granular particles and the rock is not laminated.
Claystone:	More than 50% of the rock consists of clay or sericitic material and the rock is not laminated
Shale:	More than 50% of the rock consists of silt or clay-sized particles and the rock is laminated

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, eg clayey sandstone, sandy shale


DOUGLAS PARTNERS PTY LTD
PROPOSED RESIDENCE – WHALE BEACH
BORE 1 PROJECT 37583 NOVEMBER 2004
4.15 – 6.30 M


DOUGLAS PARTNERS PTY LTD
PROPOSED RESIDENCE – WHALE BEACH
BORE 2 PROJECT 37583 NOVEMBER 2004
CORE LOSS 0.29m
0.75 – 5.00 M


DOUGLAS PARTNERS PTY LTD
PROPOSED RESIDENCE – WHALE BEACH
BORE 2 PROJECT 37583 NOVEMBER 2004
5.00 – 5.32 M


DOUGLAS PARTNERS PTY LTD
PROPOSED RESIDENCE – WHALE BEACH
BORE 3 PROJECT 37583 NOVEMBER 2004
CORE LOSS 0.32m
2.00 – 4.00 M

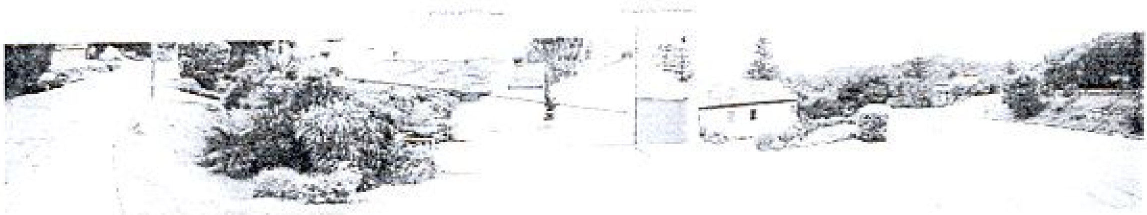


Photo 1 180 degree panorama of the site viewed towards the east

Photo 2 270 degree panorama of the lower levels of existing Residence

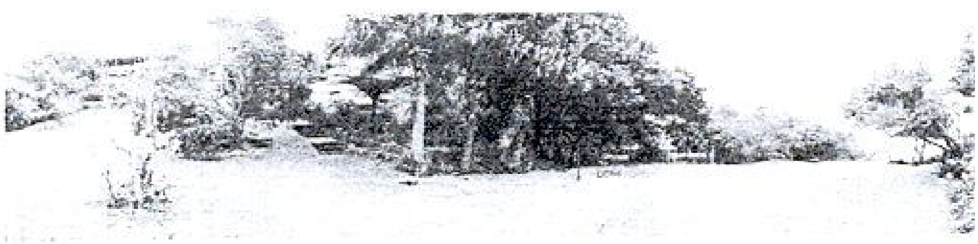


Photo 3 Lower, eastern portion of the site showing location of DCP4/South eastern corner. Note outcrop at rear of adjacent property and possible outcrop in centre foreground

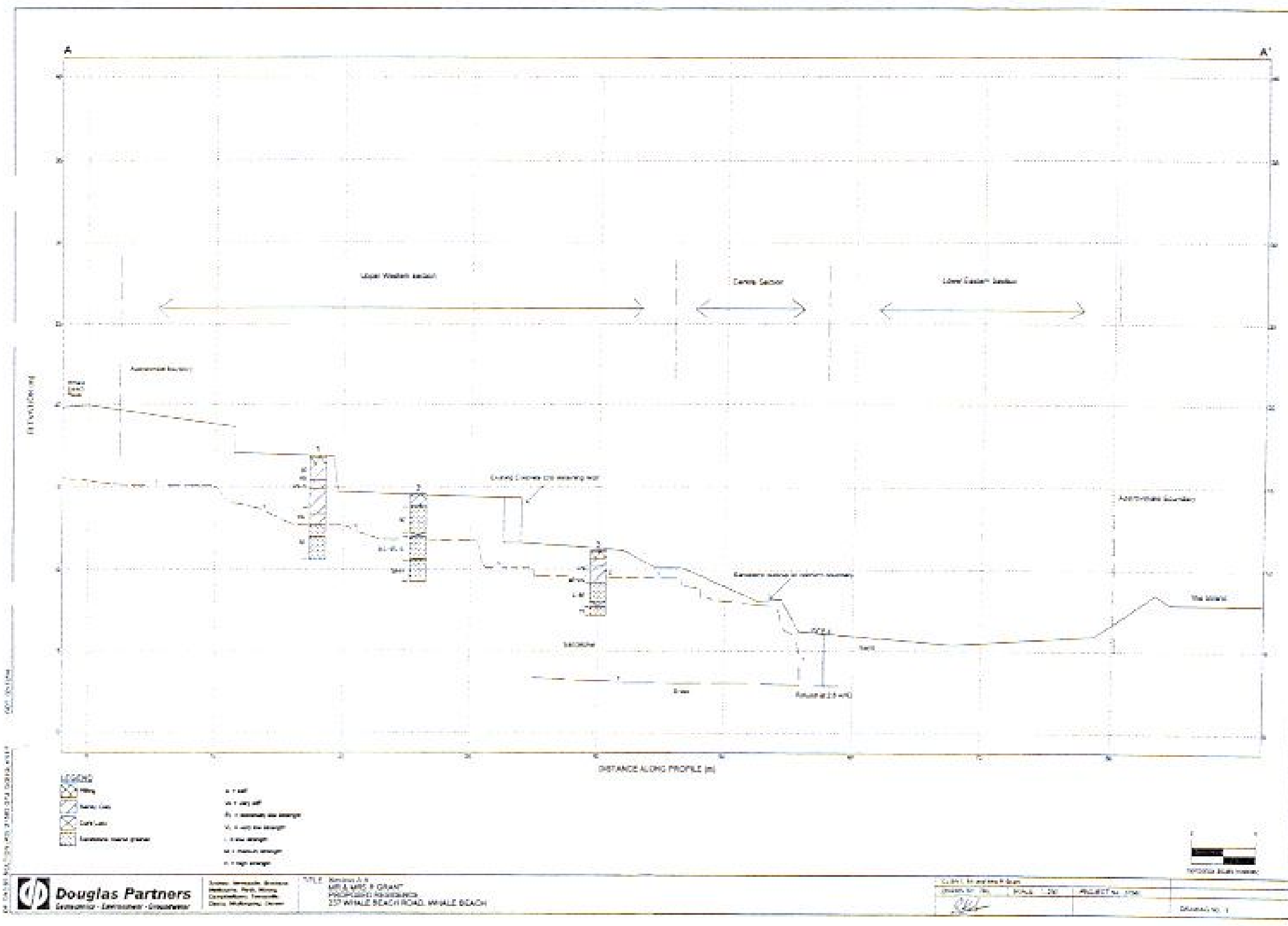
	Project		Plate
PROPOSED RESIDENCE 237 WHALE BEACH ROAD WHALE BEACH	37580	2004	1

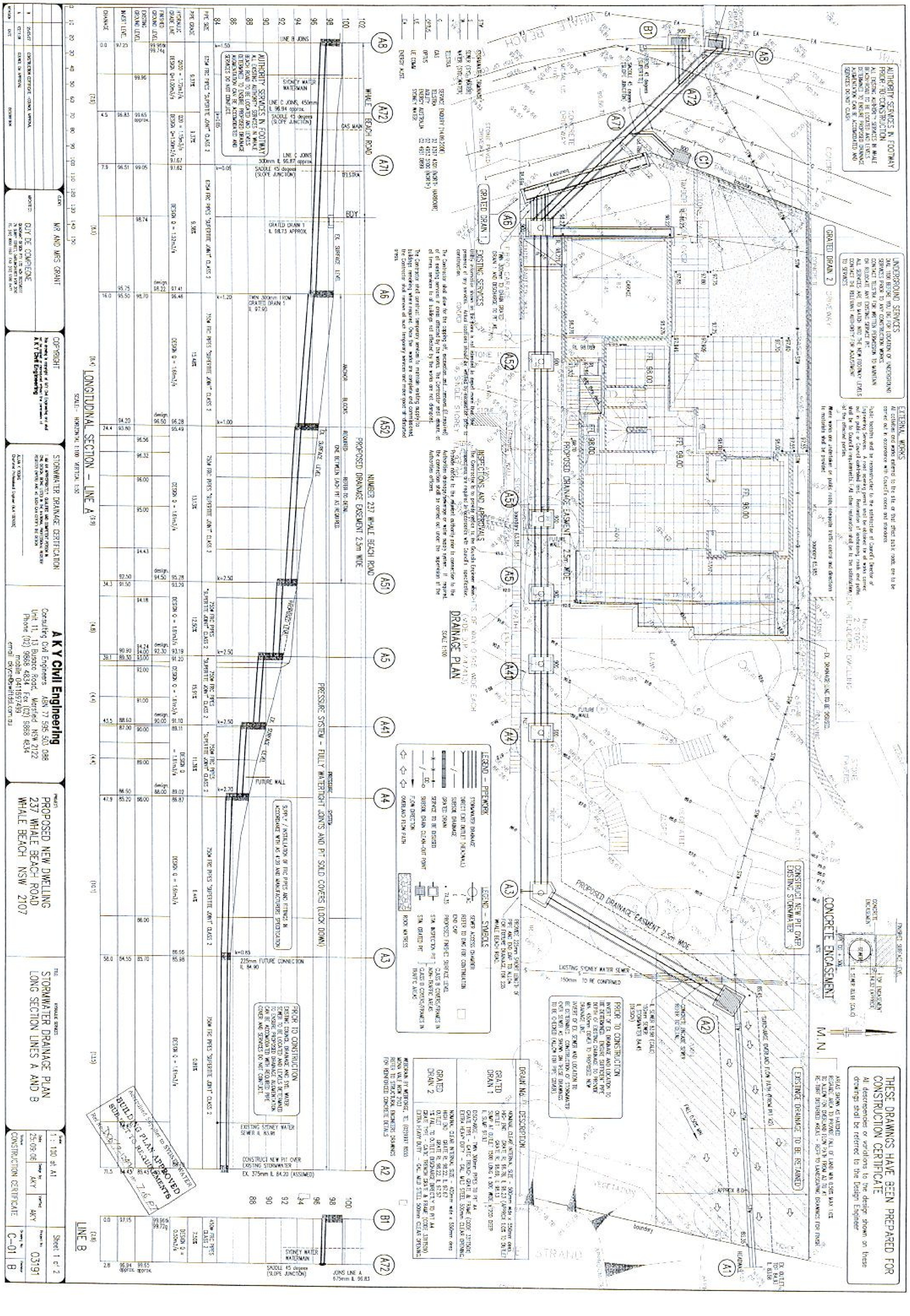
Douglas Partners

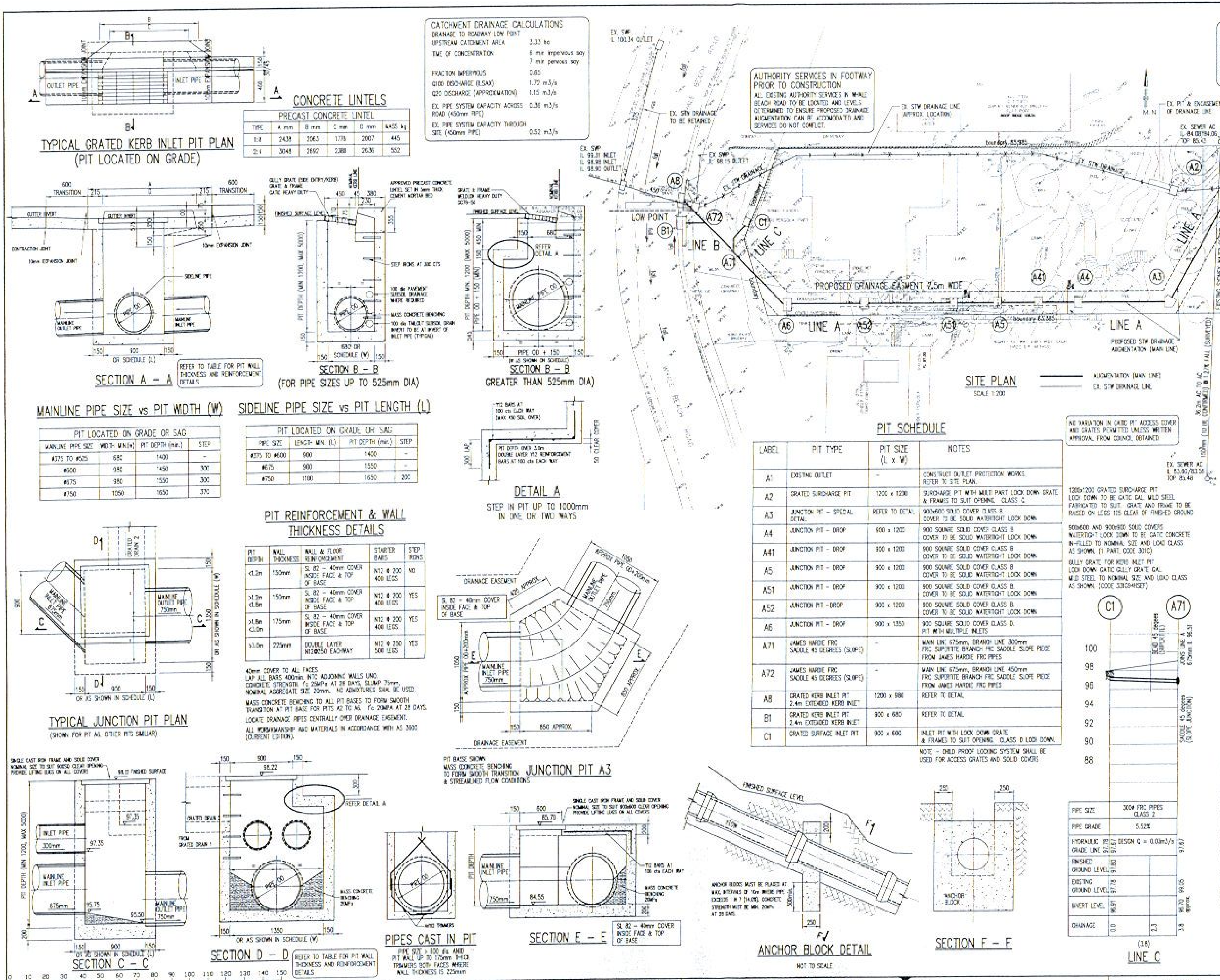
Photo 5 Sandstone outcrop within northern section of the slope between the upper and lower areas of the site

PROPOSED RESIDENCE 231 WHALE BEACH ROAD WHALE BEACH	Project 87563	Date/Version 2004	Plate 3

Douglas Partners


A
A'
Upper Western Section
Centre Section
Lower Eastern Section
Existing Concrete crib retaining wall
Sandstone
Sand
DISTANCE ALONG PROFILE (m)
LEGEND
Douglas Partners
Geotechnics · Environment · Groundwater
MRS & MRS P GRANT
PROPOSED RESIDENCE
237 WHALE BEACH ROAD, WHALE BEACH


THESE DRAWINGS HAVE BEEN PREPARED FOR CONSTRUCTION CERTIFICATE
All descrepencies or variations to the design shown on these drawings shall be referred to the Design Engineer
AUTHORITY SERVICES IN FOOTWAY PRIOR TO CONSTRUCTION
ALL EXISTING AUTHORITY SERVICES IN WHALE BEACH ROAD TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMODATED AND SERVICES DO NOT CLASH.
UNDERGROUND SERVICES
EXTERNAL WORKS
GRATED DRAIN 1
GRATED DRAIN 2
EXISTING SERVICES
INSPECTIONS AND APPROVALS
DRAINAGE PLAN
SCALE 1:100
PROPOSED DRAINAGE EASEMENT 2.5m WIDE
CONCRETE ENCASEMENT
CONSTRUCT NEW PIT OVER EXISTING STORMWATER
EXISTING DRAINAGE TO BE RETAINED
EXISTING SYDNEY WATER SEWER
150mm TO BE CONFIRMED
PRIOR TO CONSTRUCTION
LEGEND - PIPEWORK
LEGEND - SYMBOLS
DRAIN No. DESCRIPTION
M.N.
FFL 98.00
FFL 99.00
LONGITUDINAL SECTION - LINE A
SCALE:- HORIZONTAL 1:100 VERTICAL 1:50
NUMBER 237 WHALE BEACH ROAD
PROPOSED DRAINAGE EASEMENT 2.5m WIDE
PRESSURE SYSTEM - FULLY WATERTIGHT JOINTS AND PIT SOLID COVERS (LOCK DOWN)
SUPPLY / INSTALLATION OF FRC PIPES AND FITTINGS IN ACCORDANCE WITH AS 4139 AND MANUFACTURERS SPECIFICATION
PRIOR TO CONSTRUCTION
EXISTING COUNCIL DRAINAGE AND SYD. WATER SEWER TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMMODATED WITH REQUIRED PIPE COVER AND SERVICES DO NOT CONFLICT.
225mm FUTURE CONNECTION IL 84.90
EXISTING SYDNEY WATER SEWER IL 83.98
CONSTRUCT NEW PIT OVER EXISTING STORMWATER
EX. 375mm IL 84.20 (ASSUMED)
LINE B
SYDNEY WATER WATERMAIN
SADDLE 45 degrees (SLOPE JUNCTION)
JOINS LINE A 675mm IL 96.83
BUILDING PLAN APPROVED SUBJECT TO REQUIREMENTS
MR AND MRS GRANT
GUY DE COMPIEGNE
COPYRIGHT
STORMWATER DRAINAGE CERTIFICATION
A K Y Civil Engineering
Consulting Civil Engineers ABN 77 595 503 088
Unit 11, 13 Busaco Road, Marsfield NSW 2122
Phone (02) 9868 4834 Fax (02) 9868 4834
mobile 0411597499
PROPOSED NEW DWELLING
237 WHALE BEACH ROAD
WHALE BEACH NSW 2107
STORMWATER DRAINAGE PLAN
LONG SECTION LINES A AND B
1 : 100 at A1
Sheet 1 of 2
25.09.06
AKY
AKY
03191
CONSTRUCTION CERTIFICATE
C-01
B



TYPICAL GRATED KERB INLET PIT PLAN
(PIT LOCATED ON GRADE)
SECTION A – A
REFER TO TABLE FOR PIT WALL THICKNESS AND REINFORCEMENT DETAILS
SECTION B – B
(FOR PIPE SIZES UP TO 525mm DIA)
SECTION B – B
GREATER THAN 525mm DIA)
DETAIL A
STEP IN PIT UP TO 1000mm IN ONE OR TWO WAYS
TYPICAL JUNCTION PIT PLAN
(SHOWN FOR PIT A6. OTHER PITS SIMILAR)
JUNCTION PIT A3
SECTION C – C
SECTION D – D
PIPES CAST IN PIT
SECTION E – E
ANCHOR BLOCK DETAIL
NOT TO SCALE
SECTION F – F
SITE PLAN
SCALE 1:200
LINE A
LINE B
LINE C
LOW POINT
PROPOSED DRAINAGE EASEMENT 2.5m WIDE
AUTHORITY SERVICES IN FOOTWAY PRIOR TO CONSTRUCTION
ALL EXISTING AUTHORITY SERVICES IN WHALE BEACH ROAD TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMODATED AND SERVICES DO NOT CONFLICT.
AUTHORITY SERVICES IN SITE PRIOR TO CONSTRUCTION
EXISTING COUNCIL DRAINAGE AND SYD. WATER SEWER TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMODATED WITH REQUIRED PIPE COVER AND SERVICES DO NOT CONFLICT.
OUTLET PROTECTION WORKS
ROCK LINING AND FILTER LAYER. WELL GRADED ANGULAR DURABLE ROCKFILL 0–200mm NOMINAL SIZE, MINIMUM LAYER THICKNESS 600mm INCREASE SIZES OF ROCKS TOWARDS UPSTREAM AND DOWNSTREAM ENDS. BIDIM A44 GEOTEXTILE FABRIC UNDER ROCK LINING (BY GEOFABRICS AUST.)
AUGMENTATION (MAIN LINE)
EX. STW DRAINAGE LINE
NO VARIATION IN GATIC PIT ACCESS COVER AND GRATES PERMITTED UNLESS WRITTEN APPROVAL FROM COUNCIL OBTAINED
1200x1200 GRATED SURCHARGE PIT LOCK DOWN TO BE GATIC GAL MILD STEEL FABRICATED TO SUIT. GRATE AND FRAME TO BE RAISED ON LEGS 125 CLEAR OF FINISHED GROUND
900x600 AND 900x900 SOLID COVERS WATERTIGHT LOCK DOWN TO BE GATIC CONCRETE IN-FILLED TO NOMINAL SIZE AND LOAD CLASS AS SHOWN (1 PART, CODE 301C)
GULLY GRATE FOR KERB INLET PIT LOCK DOWN GATIC GULLY GRATE GAL MILD STEEL TO NOMINAL SIZE AND LOAD CLASS AS SHOWN (CODE 331C9411SEF)

CONCRETE LINTELS

PRECAST CONCRETE LINTEL					
TYPE	A mm	B mm	C mm	D mm	MASS kg
1:8	2438	2063	1778	2007	445
2:4	3048	2692	2388	2636	552

CATCHMENT DRAINAGE CALCULATIONS

DRAINAGE TO ROADWAY LOW POINT UPSTREAM CATCHMENT AREA	3.33 ha
TIME OF CONCENTRATION	6 min impervious way; 7 min pervious way
FRACTION IMPERVIOUS	0.65
Q100 DISCHARGE (ILSAX)	1.72 m3/s
Q20 DISCHARGE (APPROXIMATION)	1.15 m3/s
EX. PIPE SYSTEM CAPACITY ACROSS ROAD (450mm PIPE)	0.38 m3/s
EX. PIPE SYSTEM CAPACITY THROUGH SITE (450mm PIPE)	0.52 m3/s

MAINLINE PIPE SIZE vs PIT WIDTH (W)

PIT LOCATED ON GRADE OR SAG			
MAINLINE PIPE SIZE	WIDTH MIN (W)	PIT DEPTH (min.)	STEP
#375 TO #525	680	1400	-
#600	950	1450	300
#675	950	1550	300
#750	1050	1650	370

SIDELINE PIPE SIZE vs PIT LENGTH (L)

PIT LOCATED ON GRADE OR SAG			
PIPE SIZE	LENGTH MIN (L)	PIT DEPTH (min.)	STEP
#375 TO #600	900	1400	-
#675	900	1550	-
#750	1100	1650	200

PIT REINFORCEMENT & WALL THICKNESS DETAILS

PIT DEPTH	WALL THICKNESS	WALL & FLOOR REINFORCEMENT	STARTER BARS	STEP IRONS
<1.2m	150mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	NO
>1.2m <1.8m	150mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	YES
>1.8m <3.0m	175mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	YES
>3.0m	225mm	DOUBLE LAYER N12@250 EACHWAY	N12 @ 250 500 LEGS	YES

40mm COVER TO ALL FACES. LAP ALL BARS 400mm. N12 ADJOINING WALLS UNO. CONCRETE STRENGTH f'c 25MPa AT 28 DAYS, SLUMP 75mm, NOMINAL AGGREGATE SIZE 20mm. NO ADMIXTURES SHALL BE USED.

MASS CONCRETE BENCHING TO ALL PIT BASES TO FORM SMOOTH TRANSITION AT PIT BASE FOR PITS A2 TO A6. f'c 20MPa AT 28 DAYS.

LOCATE DRAINAGE PIPES CENTRALLY OVER DRAINAGE EASEMENT.

ALL WORKMANSHIP AND MATERIALS IN ACCORDANCE WITH AS 3600 (CURRENT EDITION).

PIT SCHEDULE

LABEL	PIT TYPE	PIT SIZE (L x W)	NOTES
A1	EXISTING OUTLET	-	CONSTRUCT OUTLET PROTECTION WORKS. REFER TO SITE PLAN.
A2	GRATED SURCHARGE PIT	1200 x 1200	SURCHARGE PIT WITH MULTI PART LOCK DOWN GRATE & FRAMES TO SUIT OPENING. CLASS C
A3	JUNCTION PIT – SPECIAL DETAIL	REFER TO DETAIL	900x600 SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A4	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A41	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A5	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A51	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A52	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A6	JUNCTION PIT – DROP	900 x 1350	900 SQUARE SOLID COVER CLASS D. PIT WITH MULTIPLE INLETS
A71	JAMES HARDIE FRC SADDLE 45 DEGREES (SLOPE)	-	MAIN LINE 675mm, BRANCH LINE 300mm FRC SUPERTITE BRANCH FRC SADDLE SLOPE PIECE FROM JAMES HARDIE FRC PIPES
A72	JAMES HARDIE FRC SADDLE 45 DEGREES (SLOPE)	-	MAIN LINE 675mm, BRANCH LINE 450mm FRC SUPERTITE BRANCH FRC SADDLE SLOPE PIECE FROM JAMES HARDIE FRC PIPES
A8	GRATED KERB INLET PIT 2.4m EXTENDED KERB INLET	1200 x 980	REFER TO DETAIL
B1	GRATED KERB INLET PIT 2.4m EXTENDED KERB INLET	900 x 680	REFER TO DETAIL
C1	GRATED SURFACE INLET PIT	900 x 600	INLET PIT WITH LOCK DOWN GRATE & FRAMES TO SUIT OPENING. CLASS D LOCK DOWN.

NOTE – CHILD PROOF LOCKING SYSTEM SHALL BE USED FOR ACCESS GRATES AND SOLID COVERS

LINE C

PIPE SIZE	300# FRC PIPES CLASS 2	
PIPE GRADE	5.52%	
HYDRAULIC GRADE LINE	97.82	DESIGN Q = 0.03m3/s; 97.67
FINISHED GROUND LEVEL	97.80	
EXISTING GROUND LEVEL	97.78	99.05
INVERT LEVEL	96.91	96.70
CHAINAGE	0.0	2.3; 3.8

GENERAL NOTES

All levels are to Australian Height Datum (A.H.D). Do not scale from the drawings.

The Contractor must verify all dimensions and existing levels on site prior to commencement of works. Report any discrepancies to the Superintendent or Design Engineer.

Read these plans in conjunction with approved architectural, structural, hydraulic and mechanical drawings and specification.

Where new work abuts existing, the contractor shall ensure that a smooth even profile, free from abrupt changes, is obtained.

The Contractor shall arrange all survey setout to be carried out by a registered surveyor.

Care is to be taken when excavating near existing services. No mechanical excavations are to undertaken over telecom or electrical services. Hand excavate in these areas.

All building surrounds should be graded to ensure overland flow from upstream areas can drain around the foundations, walls and building. Grade finished surface to fall into the series inlet pits and grates.

All excavation, shoring of excavation and stability of adjacent structures shall be the responsibility of the Contractor.

Workmanship and materials shall conform with the requirements of the relevant SAA Codes, BCA requirements and the specification, by-laws and ordinances of the relevant Authorities.

Proprietary products used shall be installed to manufacturer's specification and to the satisfaction of the Superintendent.

Council's tree preservation orders shall be strictly adhered to. No trees shall be removed.

Vehicular access and all existing services shall be maintained at all times to adjacent properties during the construction period.

CONCRETE PIPES

Pipe storage on site must be secure to prevent pipes from rolling.

Pipes must not be pushed or rolled around the site. They must be lifted in the correct way, by using the lifting hole or by using a belly sling in the correct position.

Pipes must be installed, bedded and backfilled in accordance with the designers specification.

Lay pipes on steep slopes with socket facing up the grade.

If ground water is likely to be a problem, subsoil drainage shall be provided, discharging to natural outlets.

If anchor blocks are specified, anchor blocks must be designed and installed so that they do not differentially support a pipe in a manner likely to seriously stress it longitudinally or to interfere with the flexibility of a joint.

Existing pipes which form no part of the drainage system shall be removed or sandfilled.

Pipe lengths measured between pit centres.

All pipe junctions and tapers shall be via purpose made fittings.

DRAINAGE PITS

Benching to be half outgoing pipe depth. Concrete for benching to be 20MPa mass concrete.

Approved precast pits may be used.

Diameter 100mm hole for subsoil drainage outlet to be located 100mm above invert of all inlet pipes. Diameter 100mm subsoil drainage to extend for a distance of 3.0m upstream of pit (at each inlet trench) with the upstream end sealed.

All connections to existing drainage pits shall be made in a tradesman like manner and the internal wall of the pit at the point of entry shall be cement rendered to ensure a smooth finish.

Pit grates and solid covers shall be Class B in non traffic areas and Class D in traffic areas in accordance with AS 3996.

THESE DRAWINGS HAVE BEEN PREPARED FOR CONSTRUCTION CERTIFICATE

All descrepencies or variations to the design shown on these drawings shall be referred to the Design Engineer

REVISION	DATE	DESCRIPTION
B	25.05.07	CONSTRUCTION CERTIFICATE – COUNCIL APPROVAL
A	22.11.06	COUNCIL DA APPROVAL

CLIENT: MR AND MRS GRANT

ARCHITECT: GUY DE COMPIEGNE

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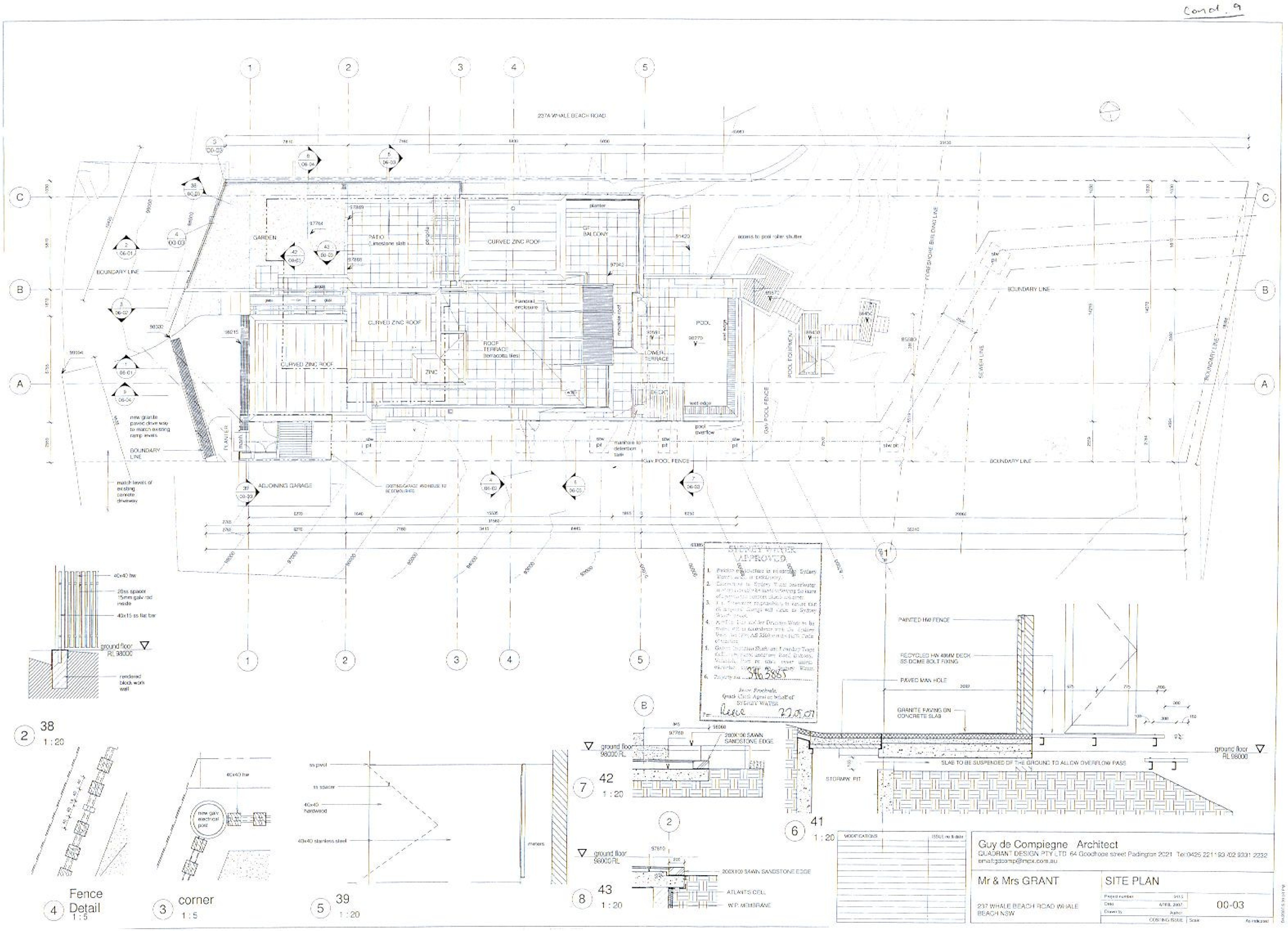
STORMWATER DRAINAGE CERTIFICATION

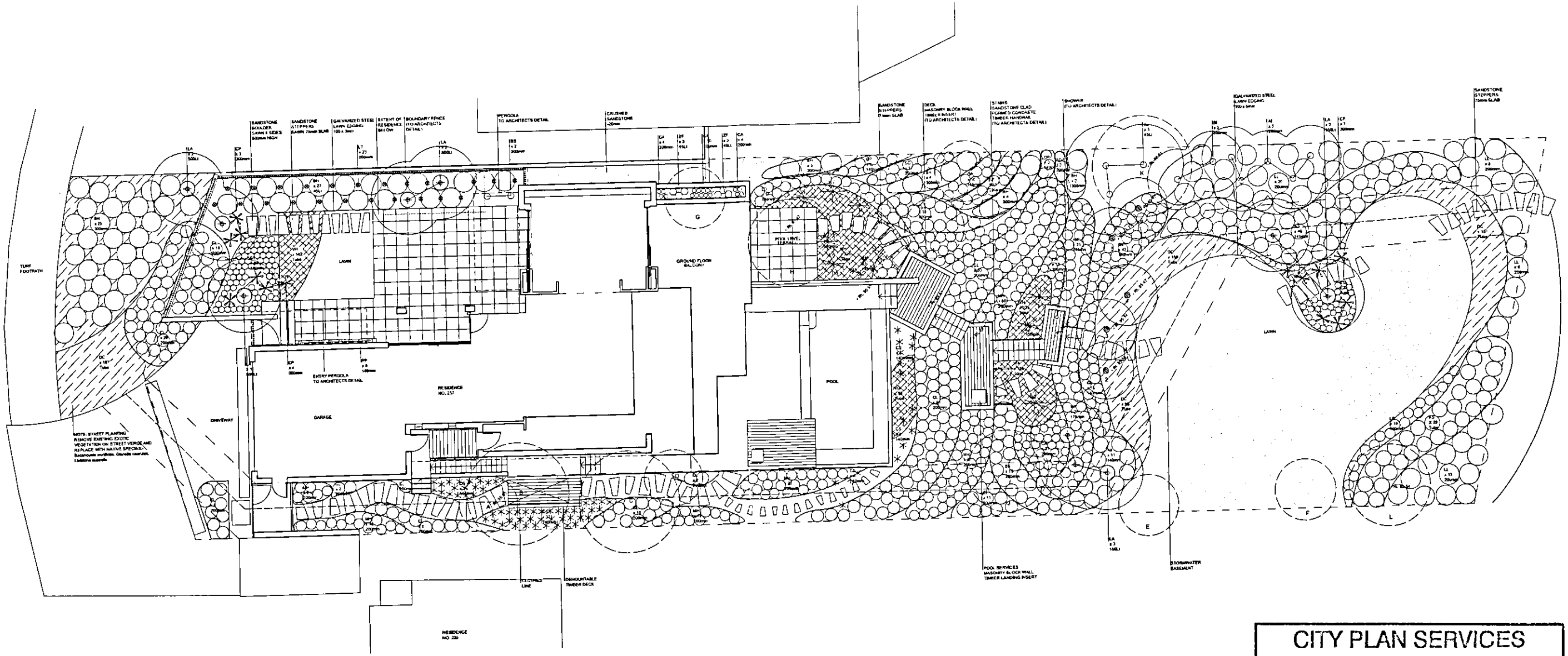
A K Y Civil Engineering
Consulting Civil Engineers ABN 77 595 503 088
Unit 11, 13 Busaco Road, Marsfield NSW 2122
Phone (02) 9868 4834 Fax (02) 9868 4834
mobile 0411697499
email akyce@swiftdsl.com.au

PROJECT: PROPOSED NEW DWELLING 237 WHALE BEACH ROAD WHALE BEACH NSW 2107

TITLE: STORMWATER DRAINAGE LONG SECTION LINE C, DRAINAGE DETAILS AND DRAWING NOTES

Scale			Sheet 2 of 2	
1 : 100 at A1				
Date: 25.09.06	Design by: AKY	Drafted: AKY	Project No: 03191	
Status: CONSTRUCTION CERTIFICATE			Drawing No: C-02	Revision: B


Cond. 9
237A WHALE BEACH ROAD
GARDEN
PATIO
Limestone slab
pergola
CURVED ZINC ROOF
GF BALCONY
planter
Handrail enclosure
ROOF TERRACE (terracotta tiles)
ZINC
movable roof
LOWER TERRACE
DECK
POOL
wet edge
pool overflow
POOL EQUIPMENT
access to pool roller shutter
FORESHORE BUILDING LINE
SEWER LINE
BOUNDARY LINE
Galv POOL FENCE
PLANTER
new granite paved drive way to match existing ramp levels
match levels of existing concrete driveway
ADJOINING GARAGE
EXISTING GARAGE AND HOUSE TO BE DEMOLISHED
manhole to detention tank
SYDNEY WATER APPROVED
Quick Check Agent on behalf of SYDNEY WATER
22.05.07
2 38 1 : 20
40x40 hw
20ss spacer 15mm galv rod inside
40x15 ss flat bar
ground floor RL 98000
rendered block work wall
4 Fence Detail 1 : 5
3 corner 1 : 5
new galv electrical post
5 39 1 : 20
ss pivot
ss spacer
40x40 hardwood
40x40 stainless steel
meters
7 42 1 : 20
200X100 SAWN SANDSTONE EDGE
8 43 1 : 20
200X100 SAWN SANDSTONE EDGE
ATLANTIS CELL
W.P. MEMBRANE
6 41 1 : 20
PAINTED HW FENCE
RECYCLED HW 40MM DECK SS DOME BOLT FIXING
PAVED MAN HOLE
GRANITE PAVING ON CONCRETE SLAB
STORMW. PIT
SLAB TO BE SUSPENDED OF THE GROUND TO ALLOW OVERFLOW PASS
MODIFICATIONS
Guy de Compiegne Architect
QUADRANT DESIGN PTY LTD 64 Goodhope street Padington 2021 Tel:0425 221193 /02 9331 2232
email:gdcomp@mpx.com.au
Mr & Mrs GRANT
237 WHALE BEACH ROAD WHALE BEACH NSW
SITE PLAN
APRIL 2007
COSTING ISSUE
00-03
As indicated



NOTES

1. Site preparation
Any existing trees and vegetation to be retained shall be preserved and protected from damage of any sort during the execution of site work. In particular, root systems of existing plants must not be disturbed if possible. Any nearby site works should be carried out carefully using hand tools.

To ensure the survival and growth of existing trees during landscape works, protect by fencing or armouring where necessary. Trees shall not be removed or topped unless specific written approval to do so is given or is indicated on plan. Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refuelling, site office and sheds, and the lighting of fires shall not occur within three (3) metres of any existing trees. Vehicles shall not be permitted within three (3) metres of any tree.

2. Soil Preparation
All proposed planting areas be cultivated by hand to 200mm depth, any imported soil to be appropriate for indigenous planting (ANL Native Mix Low 'P' or similar). Clay breaker to be added to cultivation where clay soils exist. Soil to be cultivated with care in areas where tree roots exist to preserve tree health.

3. New Planting
Newly planted trees and large shrubs should be secured to stakes with hessian ties to prevent rocking by wind. Planting holes for plant material should be large enough in size to take root ball with additional space to take back filling of good quality planting mix incorporating existing site soil where possible.

Mature heights of planting as shown on planting schedule show the greatest height possible in ideal conditions. These heights are subject to particular site conditions, possible container environments and intended hedging or pruning for functional requirements.

4. Mulching
All planting areas to be mulched with a minimum 75mm depth of native leaf litter or other mulch as indicated on plan. Courtyard garden areas to be mulched with ANL Greenlife recycled Mulch 75mm thick or similar. All newly planted areas to be thoroughly soaked with water. All organic mulch shall be free of vegetative reproductive parts of all weed species.

5. Fertiliser
All newly planted areas to be fertilised with Organic pellet fertiliser and Osmocote 9 month native formulation. All planter boxes to be fertilised with 9 month 'NPK' slow release formulaion fertiliser.

6. Edging
All planter beds adjacent to lawn areas to have flush galv. steel edges (100 x 3mm).

7. Lighting
12 volt inground lighting indicated on separate plan.

8. Irrigation
Irrigation system to be programmed to assist establishment of predominately native species. After establishment frequency of irrigation to be curtailed over time to reduce planting dependency on artificial watering.

9. Paving
Refer to architect's plan for paving details, stairs, paths, decks, walkways adjacent to house and garage.

10. Pool fence
Refer to architects plans.

11. Turf
Turf to be soft leafed Buffalo. Turf to be laid on 100mm topsoil over 150mm deep prepared area. Care taken to hand cultivate in any area where tree roots exist to preserve health of trees. Area to be turfed to be evenly graded to the line of extent of works as indicated on plan.

12. Retaining Walls
All retaining walls to have agricultural drainage lines with free drainage aggregate around to connect to stormwater. All grates indicated on plans to connect to stormwater.

13. Structural
All retaining walls to Engineer's drawings. All structural elements whatsoever to Engineer's details.

TREES

Code	Botanical Name	Qty	Size	Height
AC	Acmena smithii *Lilly pilly*	3	45Lt	7m
AL	Allocasuarina littoralis *Black sheoak*	5	200mm	6m
BH	Backhousia myrtifolia *Grey Myrtle*	27 38	45Lt 300mm	4m
BI	Banksia integrifolia *Coastal Banksia*	2	300mm	6m
LA	Livistona australis *Cabbage Tree Palm*	5 5	150Lt 500Lt	10m 10m

SHRUBS

Code	Botanical Name	Qty	Size	Height
AS	Acacia sophorae *Coastal wattle*	85	140mm	3m
BS	Banksia spinulosa *Hairpin banksia*	19	200mm	2m
CA	Correa alba *White correa*	68	200mm	1m
CL	Callistemon linearifolius *Netted bottle brush*	187	200mm	3m
CP	Crinum pedunculatum *Corcurn lily*	14	300mm	1m
CS	Cordyline stricta *Narrow leaf palm lily*	80	300mm	2m
GS	Gahnia sieberiana *Red-fruit saw-edge*	58	140mm	1m
LL	Leptospermum laevigatum *Coastal Teatree*	47	200mm	4m
MC	Macrozamia communis *Burrawang*	8	300mm	1m
MH	Melaleuca hypericifolia *Red flowered paperbark*	57	200mm	2m
OP	Omalanthus populifolius *Native bleeding heart*	20	140mm	2m

SHRUBS continued.

Code	Botanical Name	Qty	Size	Height
SG	Syncarpia glomuliferum *Bastard turpentine*	25	200mm	2m
WF	Westringia fruticosa *Coastal Rosemary*	60	200mm	1m

CLIMBERS / GROUNDCOVERS

Code	Botanical Name	Qty	Size	Height
BS	Bougainvillea sp. *Bougainvillea*	2	300mm	-
BT	Baloskion tetraphyllum *Tassle cord rush*	88	140mm	0.5m
CG	Carpobrotus glaucescens *Pig face*	30	Tube	-
DR	Dianella caerulea *Parco lily*	584	Tube	0.5m
LO	Lomandra longifolia *Spiny headed mat rush*	36	100mm	1m
LT	Lomandra longifolia 'Tanika' *Tanika lomandra*	23	200mm	0.5m
PP	Pandorea pandorana *Wonga wonga vine*	8	200mm	-
VH	Viola hederacea *Native violet*	816	Tube	-

POT PLANT AND BALCONY PLANTER SPECIMENS

Code	Botanical Name	Qty	Size	Height
CH	Chamaerops humilis (Potted) *Mediterranean Fan Palm*	2	75Lt	5m
CR	Cycas revoluta (Potted) *Sago Palm*	4	45Lt	1m
ZF	Zamia furfuracea *Cardboard palm*	6	45Lt	1m

EXISTING TREES TO BE RETAINED

Code	Species	Common Name	Height	Spread
1.	Banksia integrifolia	Coastal Banksia	5m	3m
2.	Livistona australis	Cabbage Tree Palm	4m	3m
3.	Livistona australis	Cabbage Tree Palm	4m	3m
4.	Livistona australis	Cabbage Tree Palm	4m	3m
5.	Livistona australis	Cabbage Tree Palm	4m	3m
6.	Livistona australis	Cabbage Tree Palm	4m	3m

EXISTING TREES TO BE REMOVED

Code	Species	Common Name	Height	Spread
A.	Washingtonia filifera	American Cotton Palm	13m	2m
B.	Melaleuca quinquenerva	Paperbark	10m	4m
C.	Melaleuca armillaris	Honey Bracel Myrtle	6m	4m
D.	Washingtonia filifera	American Cotton Palm	10m	2m
E.	Metrosideros thomsonii	New Zealand Christmas Bush	3m	3m
F.	Metrosideros excelsa	New Zealand Christmas Bush	3m	3m
G.	Callistemon salignus	Willow Bottlebrush	8m	2m
H.	Metrosideros excelsa	New Zealand Christmas Bush	3m	1m
I.	Metrosideros excelsa	New Zealand Christmas Bush	4m	3m
J.	Metrosideros excelsa	New Zealand Christmas Bush	3m	1m
K.	Lagunaria pattersonii	New Zealand Hybiscus	7m	5m
L.	Lagunaria pattersonii	New Zealand Hybiscus	6m	3m

SITE CALCULATIONS

Exotic Species = 208m² (Including lawn)
Locally Indigenous Site Planting = 45m²
Locally Indigenous Nature Strip Planting = 88m²

TOTAL

Exotic Species = 208m²
Locally Indigenous Planting = 527m²

CITY PLAN SERVICES
Construction Cert. No: 27022 Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: ~~BPB 0027~~

NO.	DATE	REVISION	ISSUE DETAILS
L	28.05.2007	SOUTH BOUNDARY STAIR AND PATH	
K	17.05.2007	STAIR POSITION, PLANTING DETAILS AND LAYOUT	
J	30.04.2007	EAST DECK LAYOUT/DIM.	
I	20.04.2007	PLANTING LAYOUT AND SPECIES, LAWN AREA, EAST DECK DIM, DRYING AREA DECK	
H	23.11.2006	EAST STAIR/DECK	
G	30.03.2006	NW COURTYARD, SW BOUNDARY, POOL LEVEL TERRACE	
E	02.09.2005	POOL FENCE ORIGINAL GARAGE, AMEND PLANTING IN ENTRANCE AREA	
D	16.05.2005	NEW GARAGE AND ENTRANCE, PLANT SIZES ADJUSTED	
C	16.02.2005	PLANTING	
B	22.12.2004	LOWER COURTYARD PAVING DETAIL AND PLANTING	
A	21.12.2004	ENTRY COURTYARD, PAVING DETAIL AND STAIR POSITION	

AMENDMENT/ ISSUE LOG:

TITLE LANDSCAPE PLAN
SCALE 1:100
CLIENT GRANT
237 WHALE BEACH ROAD
WHALE BEACH
DATE 28.05.2007
DWG NO. 021603 - L

141 EDGECLIFF RD WOOLLAHRA NSW 2025 TEL. 93691991 FAX 93890273
Tropic of Sydney

HYDRAULIC SERVICES

237 WHALE BEACH ROAD

WHALE BEACH

PIPEWORK

SDSL	SEWER DRAINAGE SIDE LINE
SD	SEWER DRAINAGE
SRM	SEWER RISING MAIN
SP	SANITARY PLUMBING
SST	SANITARY STACK
SW	SANITARY WASTE
WST	WASTE STACK
V	VENT
RV	RELIEF VENT
STW	STORMWATER
SS	SUBSOIL
DP	DOWNPIPE
STWRM	STORMWATER RISING MAIN
GD	GARAGE DRAINAGE
RO	ROOF DRAINAGE
CW	COLD WATER
RW	RAIN WATER
WW	WARM WATER
HW	HOT WATER
HWHC	HOT WATER WITH HEATING CABLE
HWF	HOT WATER FLOW
HWR	HOT WATER RETURN
FLUE	FLUE
NG	NATURAL GAS
	EXISTING SERVICE

GENERAL SYMBOLS

- DIRECTION OF FLOW
- CW — TYPE OF SERVICE
- 50 — SIZE OF SERVICE
- DIRECTION OF FLOW
- RISER INDICATOR
- RISER NUMBER
- RISER TYPE
- (1) REFER TO DETAIL No...
- DRAWING CHANGE INDICATION
- INDICATES EXTENT / AREA OF CHANGE
- 1 INDICATES DRAWING REVISION ASSOCIATED WITH CHANGE
- H-03 INDICATES DRAWING NUMBER FOR CONTINUATION — CONTINUATION ARROW
- 1 / H-02 — INDICATES DETAIL AREA; INDICATES DRAWING NUMBER; INDICATES DETAIL NUMBER — DETAIL INDICATOR
- 1 / H-02 — INDICATES DRAWING NUMBER; INDICATES SECTION NUMBER; INDICATES SECTION ORIENTATION — SECTION INDICATOR
- U/S BEAM RL 25.340 RL/FFL 2.350 — INDICATES RL @ U/S OF BEAM / DUCT; INDICATES DISTANCE FROM U/S BEAM / DUCT TO FFL — BEAM / DUCT INDICATOR
- SD Ø 25.340 LL/FFL 2.350 — INDICATES Ø (U/S) OF PIPE; INDICATES DISTANCE FROM Ø (U/S) OF PIPE TO FFL; INDICATES TYPE OF SERVICE — PIPEWORK INDICATOR

PROXIMITY TO THE OCEAN

PAY SPECIAL ATTENTION TO THE PROXIMITY OF THE DWELLING TO THE OCEAN WHEN SELECTING MATERIALS AND EQUIPMENT. LIAISE WITH MANUFACTURER TO ENSURE SUITABILITY

PIPEWORK SYMBOLS

	R	RISER
	D	DROPPER
	TDR	TEE DROPPER
	COF	CAPPED OFF
	FO	FLANGED OFF
	U	UNION
	HP	HORIZONTAL PENETRATION
	DOF	DIRECTION OF FLOW
	NC	NEW CONNECTION
	C	CONTINUATION
	MH	MAN HOLE
Ø	CO	CLEAR OUT
	TD	TUNDISH
	SBT	SEWER BOUNDARY TRAP
	IPMF	INDUCT PIPE WITH MICA FLAP
	SIS	SEWER INSPECTION SHAFT
	SSG	SEWER SURCHARGE GULLY
	FW	FLOOR WASTE
	BTFW	BUCKET TRAP FLOOR WASTE
	PDFW	PLANT DRAIN FLOOR WASTE
	STWKIP	STORMWATER KERB INLET PIT
	STWIP	STORMWATER INLET PIT
	GRD	GRATED DRAIN
	SO	SAFETY OVERFLOW
	SP	SPREADER
	RWO	RAINWATER OUTLET
	BRWO	BALCONY RAINWATER OUTLET
	PRWO	PLANTER RAINWATER OUTLET
	SRWO	SPOON DRAIN RAINWATER OUTLET
	GRWO	GARAGE RAINWATER OUTLET
		STORMWATER OVERLAND FLOW WITH SEDIMENTS
		STORMWATER OVERLAND FLOW WITHOUT SEDIMENTS
	IV	ISOLATION VALVE
	IVPB	ISOLATION VALVE IN PATH BOX
	CV	CHECK / REFLUX VALVE
	CVPB	CHECK / REFLUX VALVE IN PATH BOX
	DCV	DOUBLE CHECK VALVE
	BV	BALL VALVE
	TMV	THERMOSTATIC MIXING VALVE
	TV	TEMPERING VALVE
	RPZ	REDUCED PRESSURE ZONE DEVICE
	WPLV	WATER PRESSURE LIMITING VALVE
	HT	HOSE TAP WITH ISOLATION VALVE
	WF	WATER FILTER
	WMA	WATER METER ASSEMBLY
	P	PUMP
	CP	CONTROL PANEL
	WH	WATER HEATER
	CWC	COLD WATER CONNECTION
	HWC	HOT WATER CONNECTION
	WWC	WARM WATER CONNECTION
	NGC	NATURAL GAS CONNECTION
	GRA	GAS REGULATOR ASSEMBLY
	GMA	GAS METER ASSEMBLY

ABBREVIATIONS

B	BASIN
KS	KITCHEN SINK
WC	WATER CLOSET
BTH	BATH
SHR	SHOWER
SHR BTH	BATH WITH SHOWER
T	LAUNDRY TUB
DW	DISHWASHER
CWM	CLOTH WASHING MACHINE
CS	CLEANER SINK
UR	URINAL
BI	BIDET
BWU	BOILING WATER UNIT
CWU	CHILLED WATER UNIT
BBQ	BARBEQUE
RH	ROOM HEATER
CT	COOK TOP
STO	STOVE
O	OVEN

ABBREVIATIONS (CONT)

PT	P - TRAPPED
FFL	FINISHED FLOOR LEVEL
BFFL	BELOW FINISH FLOOR LEVEL
HL	HIGH LEVEL
LL	LOW LEVEL
IL	INVERT LEVEL
RL	REDUCED LEVEL
BWL	BOTTOM WATER LEVEL
TWL	TOP WATER LEVEL
WL	WATER LEVEL
CL	CEILING LEVEL
GL	GROUND LEVEL
SL	SURFACE LEVEL
US	UNDERSIDE
COP	COPPER
CP	CHROME PLATED
UPVC	UNPLASTICIZED POLYVINL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
SS	STAINLESS STEEL
VCP	VERIFIED CLAY PIPE
NY	NYLON
BR	BRASS
CI	CAST IRON
CICL	CAST IRON CONCRETE LINED
XLPE	CROSS LINKED POLYETHYLENE
HDPE	HIGH DENSITY POLYETHYLENE
GMS	GALVANISED MLD STEEL
FRC	FIBRE REINFORCED CEMENT
CIS	CAST IN SLAB
CIC	CAST IN COLUMNE
CIB	CAST IN BEAM
NTS	NOT TO SCALE
TBC	TO BE CONFIRMED
TBA	TO BE ADVISED
UNO	UNLESS NOTED OTHERWISE
SQ	SQUARE
mm	MILLIMETRES
m	METRES
m2	SQUARE METRES
m3	CUBIC METRES
/s	PER SECOND
/min	PER MINUTE
/h	PER HOUR
MJ	MEGA JOULE
L	LITRES
kW	KILOWATT
MIN	MINIMUM
MAX	MAXIMUM
APPR	APPROXIMATLY
kPa	KILOPASCALS
mHEAD	METRES HEAD
TBR	TO BE REMOVED
DIA	DIAMETER
FU	FIXTURE UNITS
FLU	FIXTURE LOADING UNITS
EX	EXISTING
AHD	AUSTRALIAN HEIGHT DATUM

GENERAL NOTES

- CONFIRM LOCATION, SIZE, CONDITION AND LEVELS OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK
- ALL WORK TO BE IN ACCORDANCE WITH SPECIFICATION, AUTHORITIES REQUIREMTS, BCA AND RELEVANT AUSTRALIAN STANDARDS (IN PARTICULARLY AS 3500)
- DISCONNECT, CAPP OFF AND REMOVE ALL EXISTING, REDUNDANT SERVICES TO AUTHORITIES APPROVAL
- ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DOCUMENTS. ALL DISCREPANCIES SHALL BE REFERRED TO THE PROJECT MANAGER BEFORE PROCEEDING WITH THE WORK
- LOCATION OF ALL PIPEWORK IS DIGRAMMATIC ONLY FINAL LOCATION TO BE CO-ORDINATED ON SITE AND APPROVED BY THE PROJECT MANAGER PRIOR TO COMMENCEMENT OF ANY WORK

SEWER

TABLE 1: FIXTURES PIPE SIZES

FIXTURE	SIZE
WC	100
SHR	100 RISER / 50 TRAP & WASTE
B	40 TRAP & WASTE
BTH	40 TRAP & WASTE
FW	100 RISER / 65 TRAP & WASTE
KSK	50 TRAP & WASTE
CS	50 TRAP & WASTE

- ALL DRAINAGE TO BE MINIMUM 65mm
- ALL PIPEWORK TO BE 100mm UNO
- ALL VENT PIPES TO BE 100mm UNO

TABLE 2: DRAINAGE INSPECTION CHAMBER SIZES

MINIMUM INTERNAL MEASUREMENTS:				
DEPTH TO BASE OF CHAMBER	RECTANGULAR		CIRCULAR	LADDER / STEP IRON
	WIDTH	LENGTH		
SMALLER THAN 600	450	600	600	NO
601 TO 900	600	900	900	NO
GREATER THAN 900	750	1200	1050	YES

STORMWATER

GENERAL NOTES

ALL IN ACCORDANCE WITH PITTWATER COUNCIL'S STORMWATER GUIDELINES

PIPEWORK DESIGN

ALL PIPEWORK IS SIZED AND DESIGNED TO HANDLE A 1:100 YEAR EVENT RAINFALL

CALCULATIONS OF FLOW RATES

$$Q = \frac{A \times C \times I}{3600}$$

Q = PEAK DISCHARGE RATE IN (l/s)
A = CATCHMENT ARE IN (m2)
C = RUN OFF CO-EFFICIENT (Fig 14.13 OF AR1)
I = RAINFALL INTENSITY IN (mm/h)

PIPEWORK

ALL PIPEWORK TO BE 100mm @ 1% FALL (UNO)

TABLE 3: STORMWATER PIT SIZES

MINIMUM INTERNAL MEASUREMENTS:				
DEPTH TO BASE OF CHAMBER	RECTANGULAR		CIRCULAR	LADDER / STEP IRON
	WIDTH	LENGTH		
SMALLER THAN 600	450	450	600	NO
601 TO 900	600	600	900	NO
901 TO 1200	600	900	1050	NO
GREATER THAN 1200	900	900	1050	YES

DRAWING SCHEDULE

DRAWING No.	SCALE	DRAWING TITLE
H - 00	NTS	COVER SHEET & LEGEND
H - 01	1:100 @ A1	POOL LEVEL - HYDRAULIC SERVICES
H - 02	1:100 @ A1	LOWER GROUND - HYDRAULIC SERVICES
H - 03	1:100 @ A1	GROUND FLOOR - HYDRAULIC SERVICES
H - 04	1:100 @ A1	FIRST FLOOR & ROOF - HYDRAULIC SERVICES
H - 05	1:200 @ A1	SEDIMENTATION CONTROL DURING CONSTRUCTION
H - 06	NTS	SPECIFICATION

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: ~~BPB 0027~~

CONSTRUCTION

WORKING DRAWING

REV	DESCRIPTION	DATE
C	ISSUED FOR CONSTRUCTION	04.06.08
B	ISSUED FOR CLIENT REVIEW	29.11.06
A	ISSUED FOR REVIEW	22.11.06

LIST OF REFERENCE DRAWINGS USED AS BACKGROUND

DISCIPLINE	COMPANY	DRAWING No
ARCH	QUADRANT	
ARCH	QUADRANT	
SURVEYOR	D L & CO	
STRUCT		
MECH		
ELEC		
FIRE		

DRAWING REVISION

CLIENT: MRS & MR GRANT

ARCHITECT: QUADRANT DESIGN

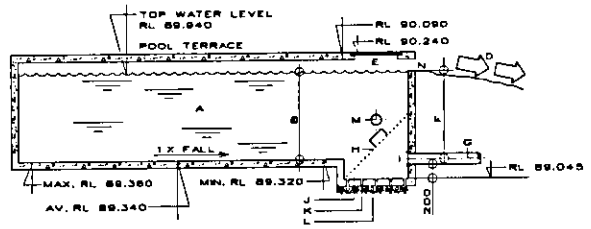
itmdesign pty ltd
consulting hydraulic engineers
5 / 3 apollo street, warriewood nsw 2102
po box 1438 mona vale nsw 1660
tel (02) 9997 1368 fax (02) 9997 3266
email: itm@bigpond.net.au

PROJECT: GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

DRAWING TITLE: COVER SHEET AND LEGEND

SCALE: NTS
JOB No: 04/85
DISCIPLINE: HYD
DRAWING No: H - 00
REVISION: C

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

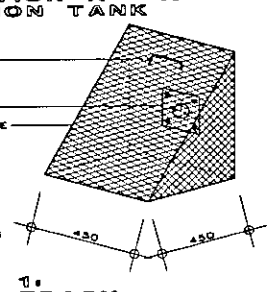


- ALL TANK DIMENSIONS SHOWN ARE INTERNAL MEASUREMENTS
- REFER TO STRUCTURAL ENGINEERS DOCUMENTS FOR WALL / SLAB THICKNESS AND CONSTRUCTION DETAILS.

ITEM	DESCRIPTION	
A	TANK AREA	6.0 m2
B	AVERAGE EFFECTIVE WATER DEPTH	0.8m
C	TANK VOLUME 7.2m2 X 1.1m	3.6m3
D	SAFETY OVERLAND FLOW PATH	
E	ACCESS LID	600 SQUARE
F	MAX. WATER LEVEL ABOVE ℄ OF ORIFICE PLATE	0.895m
G	OUTLET PIPE	REFER TO PLAN
H	TRASH SCREEN	REFER TO DETAIL 1
I	ORIFICE PLATE	REFER TO DETAIL 2
J	SILT TRAP	200m D x 1.0m SQ
K	WEEP HOLES 20mm DIA	@ 200mm CENTRE
L	BLUE METAL BED (WRAPPED IN GEOFABRIC)	150mm HIGH
M	INLET PIPE	REFER TO PLAN
N	HORIZONTAL SAFETY OVERFLOW OPENING	0.8m W x 0.15m

DIAGRAMMATIC SECTION A - A THROUGH DETENTION TANK

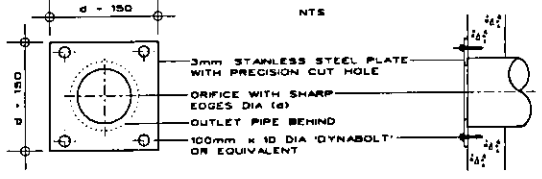
NTS



TRASH SCREEN TO PROTECT THE ORIFICE & DOWNSTREAM DRAINAGE SYSTEM
MATERIAL:
STAINLESS STEEL OR GALVANISED MESH SCREEN (MAXIMESH RH 3030 OR EQUIVALENT)
SIZE:
MIN 50 TIMES THE ORIFICE AREA
PLACEMENT:
SCREEN MUST BE PLACED SO THAT THE LONG AXIS OF THE OVAL SHAPED HOLES ARE HORIZONTAL WITH THE PROTRUDING LIP ANGLED UPWARDS AND FACING DOWNSTREAM

DETAIL 1: REMOVABLE TRASH SCREEN

NTS



IN ACCORDANCE WITH PITTWATER COUNCIL'S STORMWATER REQUIREMENTS (DCP 21 / 85.3):

ORFICE PLATE REQUIRED - 102mm DIA

DEATAIL 2: ORIFICE PLATE

NTS

DETENTION CALCULATIONS

CAPACITY

IN ACCORDANCE WITH PITTWATER COUNCIL'S STORMWATER REQUIREMENTS (DCP 21 / 85.3):

SITES WITH NEW HARD SURFACE AREA GREATER THAN 40m2 UP TO 500m2 = 10 000 ltrs OSD CAPACITY REQUIRED

THIS CAN BE REDUCED BY 50% OF THE RAINWATER TANK EXCESS STORAGE VOLUME (18000 - 4470 = 13530 ltrs x 50% = 6765 ltrs)

AMENDED VOLUME REQUIRED: 10 000 ltrs - 6765 = 3235 ltrs

MAX. SITE DISCHARGE

IN ACCORDANCE WITH PITTWATER COUNCIL'S STORMWATER REQUIREMENTS (DCP 21 / 85.3):

MAX. ALLOWABLE SITE DISCHARGE:

18 ltrs / sec

RAINWATER COLLECTION TANK

IN ACCORDANCE WITH PITTWATER COUNCIL'S STORMWATER REQUIREMENTS (DCP 21 / 85.2):

WATER STORAGE / COLLECTION TANK TO BE PROVIDED FOR SITES WITH NEW HARD SURFACE AREA GREATER THAN 20m2 UP TO 1000m2 = 4000ltrs (OR TOTAL SITE HARD SURFACE AREA x 10 = STORAGE CAPACITY IN LITRES) WHICHEVER IS THE GREATER

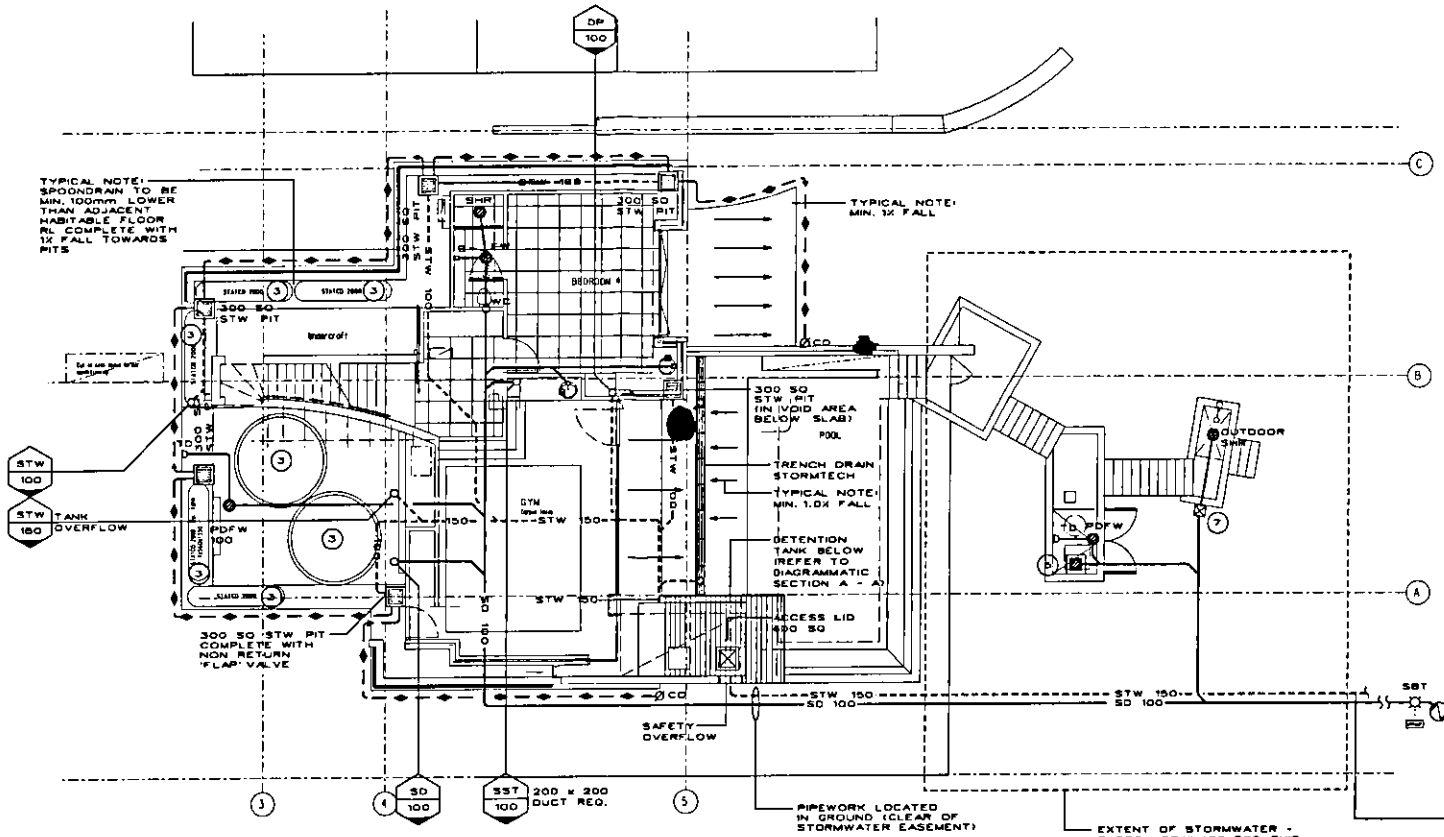
MIN. SIZE OF COLLECTION TANK: 447m2 x 10 ltrs = 4470 ltrs

SIZE REQUIRED AS PER BASIX CERTIFICATE: 9 000 ltrs

CAPACITY PROVIDED: 2 x 9 000 ltrs AND 5 x 2 000 ltrs = 28 000 ltrs

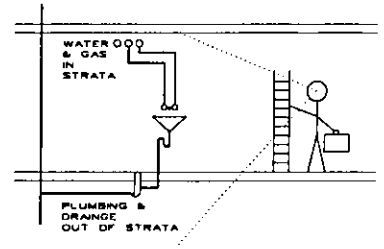
PROXIMITY TO THE OCEAN

PAY SPECIAL ATTENTION TO THE PROXIMITY OF THE DWELLING TO THE OCEAN WHEN SELECTING MATERIALS AND EQUIPMENT. LIAISE WITH MANUFACTURER TO ENSURE SUITABILITY



SANITARY & STORMWATER

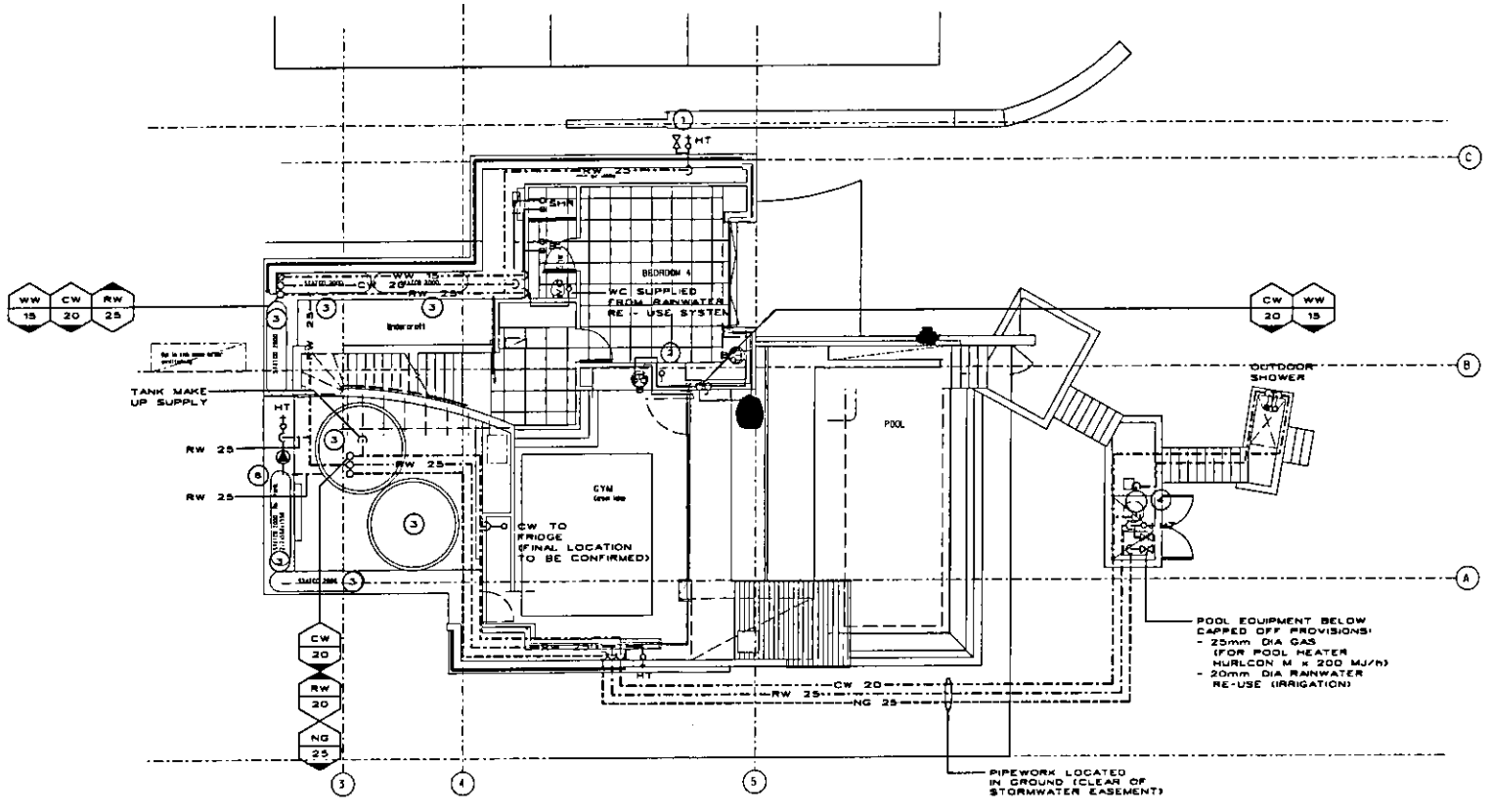
STRATA ZONE



NOTES

FOR GENERAL NOTES AND LEGEND REFER TO COVER SHEET

1. 25mm DIA IRRIGATION PROVISION (CAPPED OFF FOR CONTINUATION BY LANDSCAPING CONTRACTOR) AND HOSE TAP (ALL SUPPLIED FROM RAINWATER RE - USE SYSTEM)
2. CW PROVISION FOR FILTERED, CHILLED, BOILING WATER UNIT
3. RAINWATER RE - USE TANKS (REFER TO DETAIL 1 ON DRAWING H - 05)
4. ELECTRIC WATER HEATER 'RHEEM' 50LITRES COMPLETE WITH ISOLATION, NON RETURN, PRESSURE LIMITING AND RELIEF VALVES POWER SUPPLY: 240V / 3.6KW
5. PDFW 100 COMPLETE WITH 200mm HIGH HOB SURROUND FOR POOL BACKWASH FINAL LOCATION TO BE CO- ORDINATED WITH POOL CONTRACTOR
6. RAINWATER RE - USE BOOSTER PUMP (REFER TO DETAIL 1 ON DRAWING H - 05)
7. 100mm DIA OVERFLOW GULLY (GRATE 75mm ABOVE GROUND LEVEL / 150mm BELOW LOWEST FIXTURE)



WATER & GAS

CITY PLAN SERVICES

Construction Cert. No: 27072

Approved Date: 26 JUN 2007

Certifying Authority: Brendan Bennett

Accreditation No: ~~BPB 0027~~

GAS NOTES

GENERAL
- ALL INSTALLATION COMPONENTS TO BE IN ACCORDANCE WITH AS 5081 AND AGILITY REQUIREMENTS
- ALLOW ALL INSTALLATION COMPONENTS TO BE REGULARLY CHECKED BY AGILITY INSPECTOR THROUGHOUT CONSTRUCTION

BBQ CONNECTIONS
- EXACT LOCATION OF ALL CONNECTIONS TO BE CONFIRMED ON SITE
- BAYONET OPENING TO POINT DOWNWARDS (MIN. 300mm AFFL)

WET AREA DETAILS

- EXACT / FINAL LOCATION OF ALL KITCHEN, BATHROOM AND LAUNDRY FIXTURES, TAPS AND FLOOR WASTES IN ACCORDANCE WITH ARCHITECTURAL & INTERIOR DRAWINGS
- OBTAIN EXACT LIST OF ALL FIXTURES, TAPWARE AND APPLIANCES FROM CONSTRUCTION MANAGER. ENSURE THAT ALL AUTHORITIES AND WATER SAVING REQUIREMENTS ARE MET (AAA RATING, DUAL FLUSH,..). PAY SPECIAL ATTENTION TO SPECIFIC BASIX REQUIREMENTS AND DA CONDITIONS

LANDSCAPING DRAINAGE

ALL PLANTERS AND LANDSCAPED AREAS TO BE EQUIPPED WITH WATERPROOFING MEMBRANE, DRAINAGE CELL AND GEOFABRIC

CONSTRUCTION

N

WORKING DRAWING

REV	DESCRIPTION	DATE
C	ISSUED FOR CONSTRUCTION	04.08.06
B	ISSUED FOR CLIENT REVIEW	29.11.05
A	ISSUED FOR REVIEW	22.11.05

LIST OF REFERENCE DRAWINGS USED AS BACKGROUND

DISCIPLINE	COMPANY	DRAWING No	DRAWING REVISION A	B	C
ARCH	QUADRANT	01-01	B	B	?
ARCH	QUADRANT				
SURVEYOR	D L & CO				
STRUCT					
MECH					
ELEC					
FIRE					

CLIENT: MRS & MR GRANT

ARCHITECT: QUADRANT DESIGN

itmdesign pty ltd
consulting hydraulic engineers
6 / 3 panda street, warriewood new 2102
po box 1438 mona vale new 1660
tel(02) 9997 1568 fax (02) 9997 3266
email itm@bigpond.net.au

PROJECT: GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

DRAWING TITLE: POOL LEVEL HYDRAULIC SERVICES

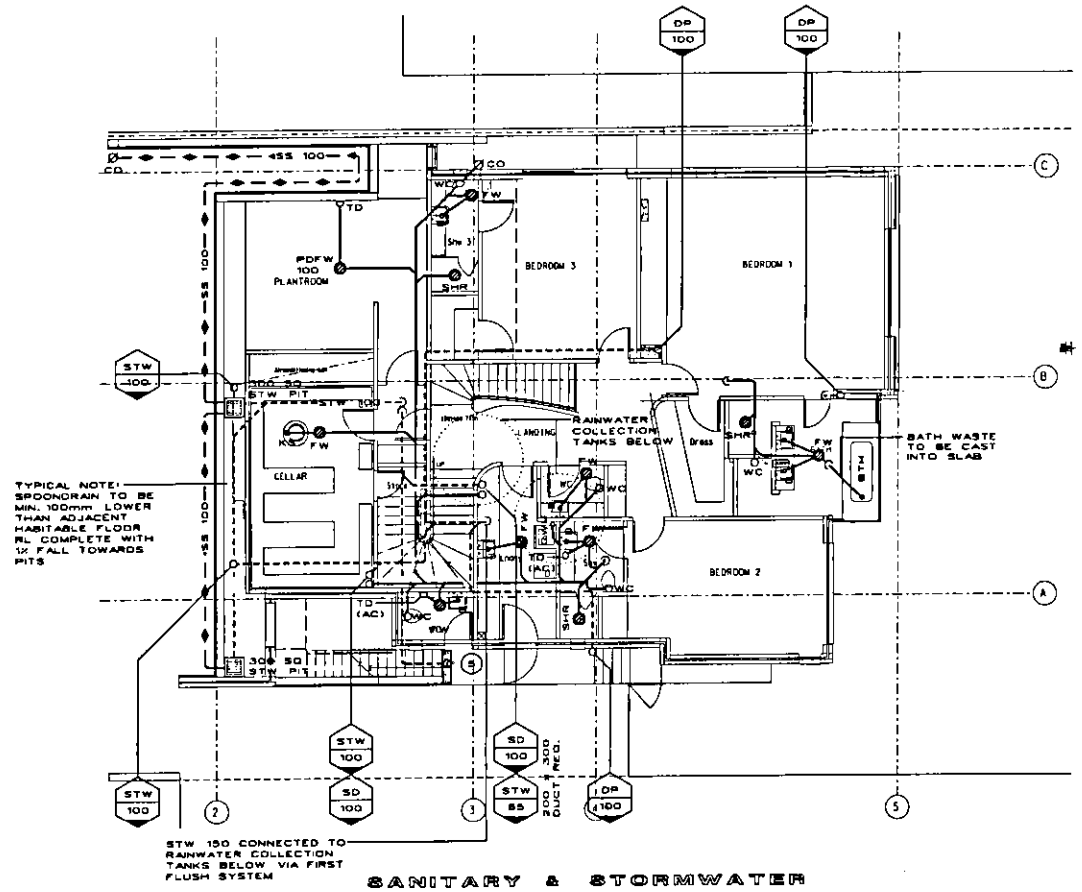
SCALE: 1:100 at A1

JOB No: 04/85

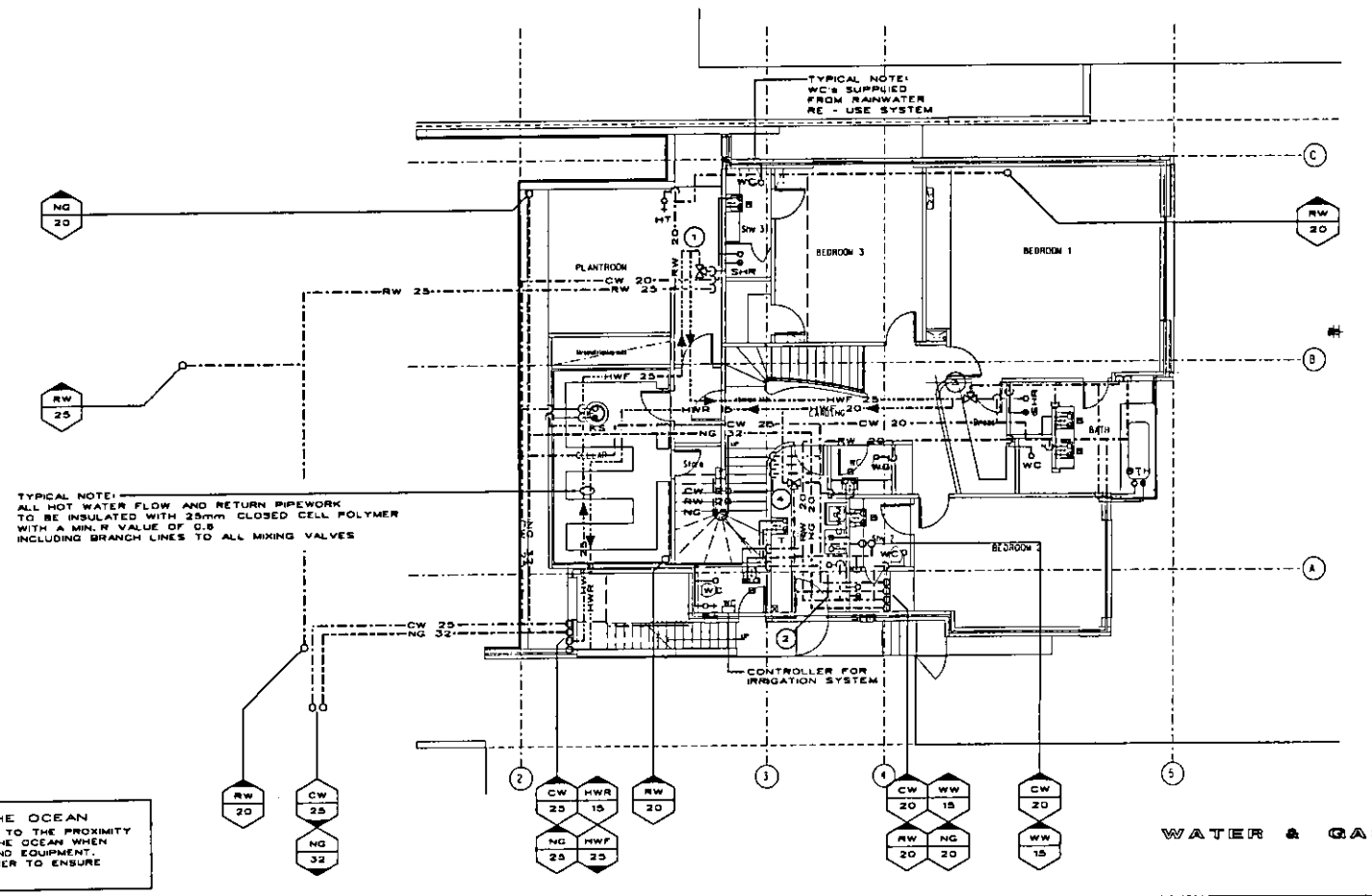
DISCIPLINE: HYD

DRAWING No: H - 01

REVISION: C



SANITARY & STORMWATER



WATER & GAS

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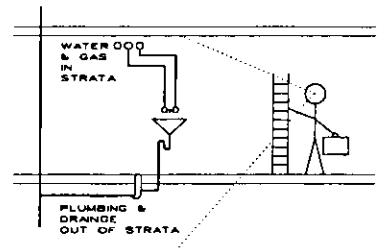
STRATA ZONE



NOTES

FOR GENERAL NOTES AND LEGEND REFER TO COVER SHEET

1. MIXING VALVE ENWARE AQUABLEND 1000 LOCATED IN PLANTROOM WARM WATER SUPPLY TO BATHROOM 3
2. COLD WATER AND RAINWATER RE - USE SUPPLY TO CLOTH WASHING MACHINE
3. MIXING VALVE ENWARE AQUABLEND 1000 LOCATED ABOVE WALK IN WARDROBE (ACCESS PANEL REQUIRED) WARM WATER SUPPLY TO:
   - MAIN BATHROOM
   - BASIN BEDROOM 4 BELOW
   - BASIN IN GYM BELOW
4. MIXING VALVE ENWARE AQUABLEND 1000 LOCATED IN CEILING SPACE IN LAUNDRY (ACCESS PANEL REQUIRED) WARM WATER SUPPLY TO:
   - BASIN IN GARDNER TOILET
   - BATHROOM 2
   - LAUNDRY
   - POWDER ROOM
   - KITCHEN SINKS ABOVE
5. TRENCH DRAIN 100 x 100 COMPLETE WITH GRATE AS SPECIFIED BY ARCHITECT

CITY PLAN SERVICES

Construction Cert. No: 27072

Approved Date: 26 JUN 2007

Certifying Authority: Brendan Bannett

Accreditation No: BPB 0027

GAS NOTES

GENERAL
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- ALLOW ALL INSTALLATION COMPONENTS TO BE REGULARLY CHECKED BY AGILITY INSPECTOR THROUGHOUT CONSTRUCTION

BBQ CONNECTIONS
- EXACT LOCATION OF ALL CONNECTIONS TO BE CONFIRMED ON SITE
- BAYONET OPENING TO POINT DOWNWARDS (MIN. 300mm AFFL)

WET AREA DETAILS

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LANDSCAPING DRAINAGE

ALL PLANTERS AND LANDSCAPED AREAS TO BE EQUIPPED WITH WATERPROOFING MEMBRANE, DRAINAGE CELL AND GEOFABRIC

CONSTRUCTION

N

RFV	DESCRIPTION	DATE
C	ISSUED FOR CONSTRUCTION	04.06.08
B	ISSUED FOR CLIENT REVIEW	29.11.08
A	ISSUED FOR REVIEW	22.11.08

LIST OF REFERENCE DRAWINGS USED AS BACKGROUND

DISCIPLINE	COMPANY	DRAWING No
ARCH	QUADRANT	02-01
ARCH	QUADRANT	
SURVEYOR	D L & CO	
STRUCT		
MECH		
ELEC		
FIRE		

DRAWING REVISION

A	B	?								
B	B	?								

CLIENT: MRS & MR GRANT

ARCHITECT: QUADRANT DESIGN

itmdesign pty ltd
consulting hydraulic engineers
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PROJECT: GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

DRAWING TITLE: LOWER GROUND HYDRAULIC SERVICES

SCALE: 1:100 at A1

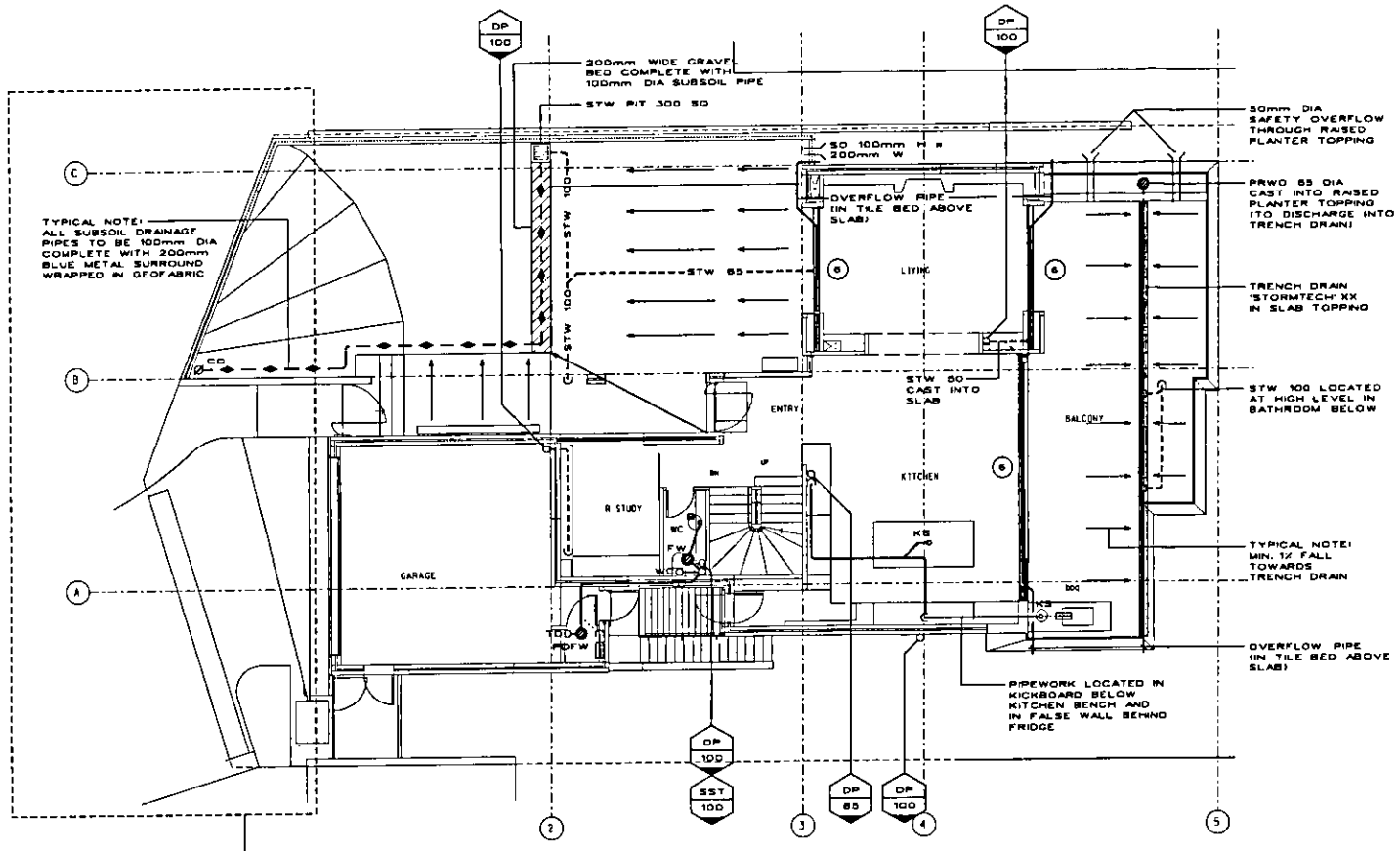
JOB No: 04/85

DISCIPLINE: HYD

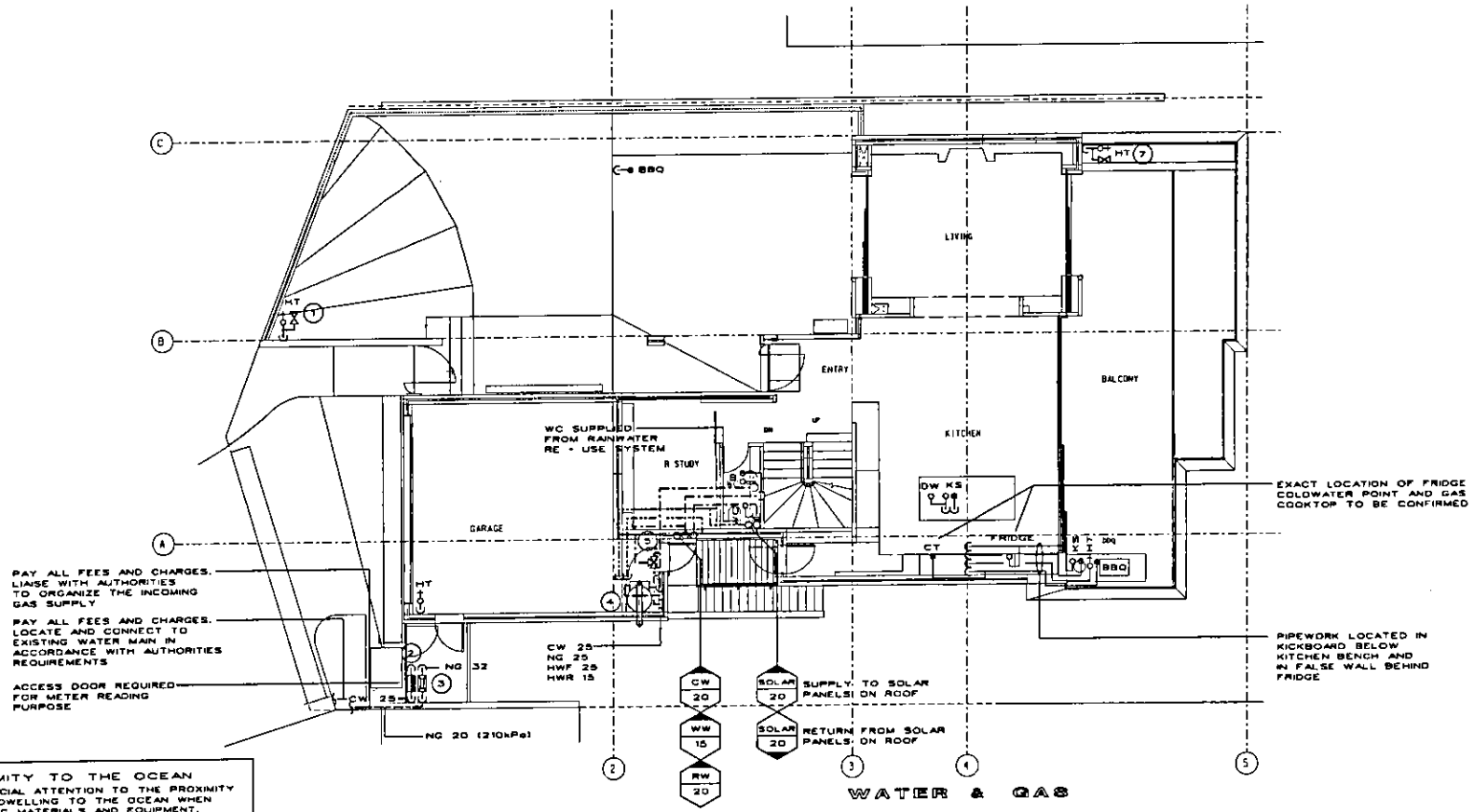
DRAWING No: H - 02

REVISION: C

WORKING DRAWING



SANITARY & STORMWATER

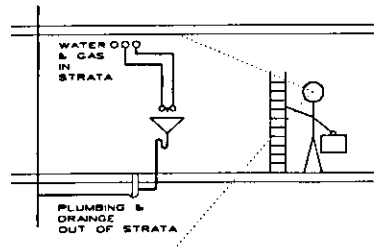


WATER & GAS

PROXIMITY TO THE OCEAN

PAY SPECIAL ATTENTION TO THE PROXIMITY OF THE DWELLING TO THE OCEAN WHEN SELECTING MATERIALS AND EQUIPMENT. LIASE WITH MANUFACTURER TO ENSURE SUITABILITY

STRATA ZONE



NOTES

FOR GENERAL NOTES AND LEGEND REFER TO COVER SHEET

(1) 25mm DIA IRRIGATION PROVISION (CAPPED OFF FOR CONTINUATION BY LANDSCAPING CONTRACTOR) AND HOSE TAP (ALL SUPPLIED FROM RAINWATER RE - USE SYSTEM)

(2) WATER METER ASSEMBLY COMPLETE WITH SOLATION VALVES AND BACKFLOW PREVENTION

(3) GAS METER ASSEMBLY COMPLETE WITH REGULATOR AND ISOLATION VALVES

(4) SOLAR / GAS BOOSTED WATER HEATER 'RINNAI' MODEL 328 WITH 270 litres CAPACITY STORAGE TANK COMPLETE WITH:
- ISOLATION, NON RETURN, PRESSURE LIMITING AND RELIEF VALVES
- GAS SUPPLY: 189 MJ/h
- POWER SUPPLY: 240 VOLT GPO
- TWO SOLAR PANELS

ALL ASSOCIATED PIPEWORK, WIRING AND ELECTIC CONTROLS

FLUE TERMINATION IN ACCORDANCE WITH AS5601 (F.G.3.3)
- HORIZONTALLY - MIN 300mm FROM WINDOWS AND OPENINGS
- IN DIRECTION OF DISCHARGE- MIN 500mm CLEAR AREA
- VERTICALLY -1500mm BELOW WINDOWS AND OPENINGS
- ABOVE TRAFFICABLE AREAS - 2000mm
- BELOW EAVES OR BALCONIES OR OTHER PROJECTIONS - 300mm

MAX. 9.0m LONG
MAX. 3 BENDS

HOT WATER RETURN CIRCULATION PUMP GRUNDFOS COMPLETE WITH TIME CLOCK, ISOLATION, BALANCING AND NON RETUREN VALVES POWER SUPPLY: 240 VOLT

(5) MIXING VALVE ENWARE AQUABLEND 1000' LOCATED IN WATER HEATER CUPBOARD WARM WATER SUPPLY TO:
- FIRST FLOOR BATHROOM ABOVE
- BASIN IN POWDER ROOM

(6) WINDOW 'SUBSIL' DRAINAGE CHANNEL

(7) 20mm DIA IRRIGATION PROVISION (CAPPED OFF FOR CONTINUATION BY LANDSCAPING CONTRACTOR) AND HOSE TAP (ALL SUPPLIED FROM RAINWATER RE - USE SYSTEM)

CITY PLAN SERVICES

Construction Cert. No: 27072 — Approved Date: 26 JUN 2007

Certifying Authority: Brendan Bennett

Accreditation No: BPB 0027

GAS NOTES

GENERAL
- ALL INSTALLATION COMPONENTS TO BE IN ACCORDANCE WITH AS 3061 AND AGILITY REQUIREMENTS
- ALLOW ALL INSTALLATION COMPONENTS TO BE REGULARLY CHECKED BY AGILITY INSPECTOR THROUGHOUT CONSTRUCTION

BBQ CONNECTIONS
- EXACT LOCATION OF ALL CONNECTIONS TO BE CONFIRMED ON SITE
- BAYONET OPENING TO POINT DOWNWARDS (MIN. 300mm AFFL)

WET AREA DETAILS
- EXACT / FINAL LOCATION OF ALL KITCHEN, BATHROOM AND LAUNDRY FIXTURES, TAPS AND FLOOR WASTES IN ACCORDANCE WITH ARCHITECTURAL & INTERIOR DRAWINGS
- OBTAIN EXACT LIST OF ALL FIXTURES, TAPWARE AND APPLIANCES FROM CONSTRUCTION MANAGER. ENSURE THAT ALL AUTHORITIES AND WATER SAVING REQUIREMENTS ARE MET (4A6 RATING, DUAL FLUSH...). PAY SPECIAL ATTENTION TO SPECIFIC BASIX REQUIREMENTS AND DA CONDITIONS

LANDSCAPING DRAINAGE

ALL PLANTERS AND LANDSCAPED AREAS TO BE EQUIPPED WITH WATERPROOFING MEMBRANE, DRAINAGE CELL AND GEOFABRIC

N

CONSTRUCTION

WORKING DRAWING

C	ISSUED FOR CONSTRUCTION	04.06.08
B	ISSUED FOR CLIENT REVIEW	29.11.06
A	ISSUED FOR REVIEW	22.11.06
	DATE	

LIST OF REFERENCE DRAWINGS USED AS BACKGROUND

DISCIPLINE	COMPANY	DRAWING No	DRAWING REVISION A	B	C
ARCH	QUADRANT	03-01	B	B	?
ARCH	QUADRANT				
SURVEYOR	D L & CO				
STRUCT					
MECH					
ELEC					
FIRE					

CLIENT: MRS & MR GRANT

ARCHITECT: QUADRANT DESIGN

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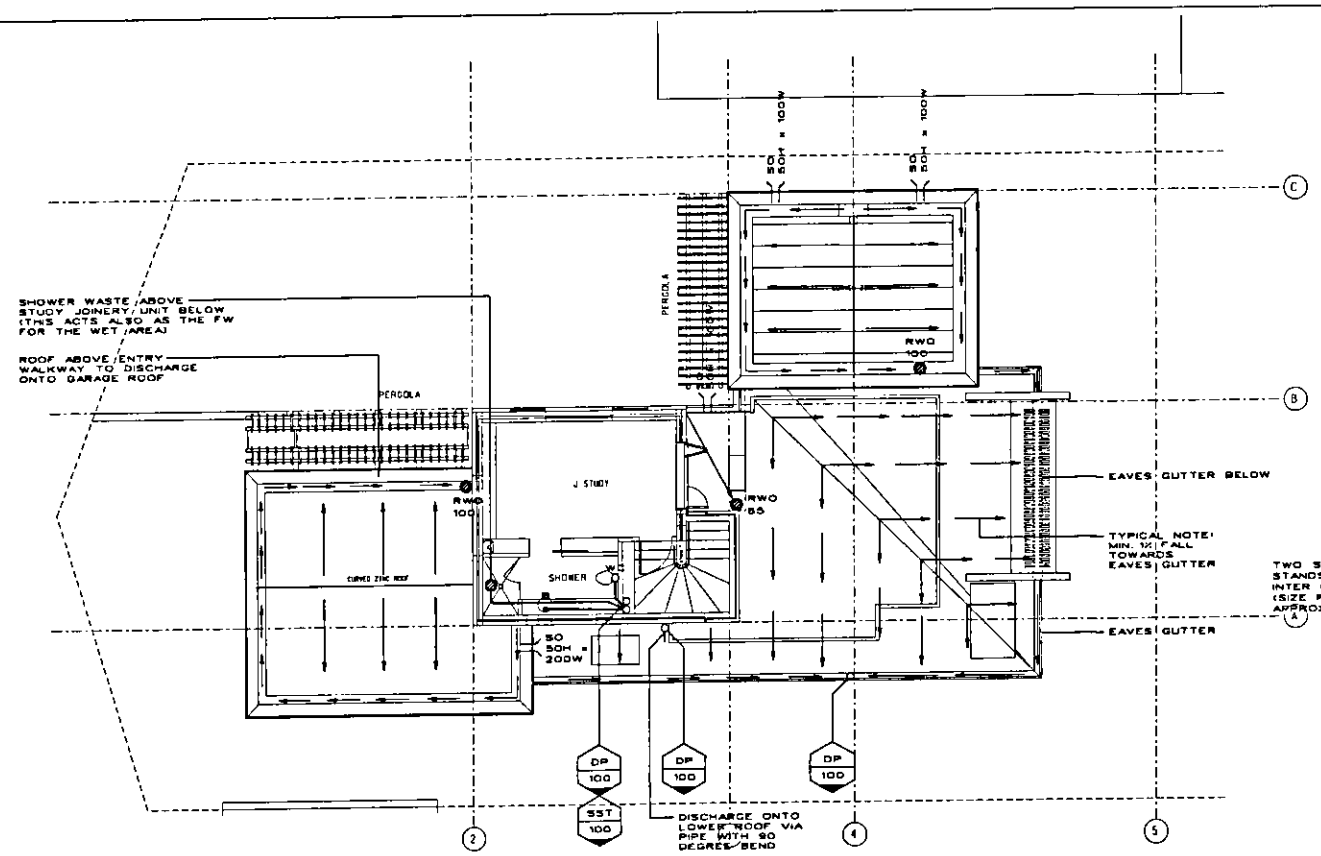
PROJECT: GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

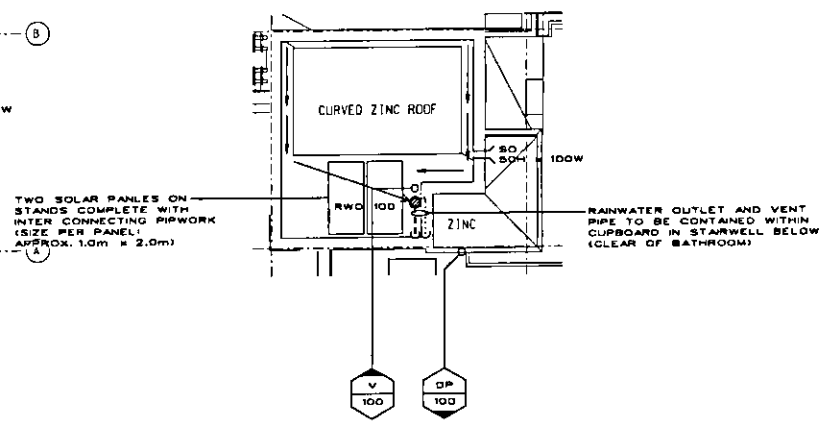
DRAWING TITLE: GROUND FLOOR HYDRAULIC SERVICES

SCALE: 1:100 at A1 — JOB No: 04/85

DISCIPLINE: HYD — DRAWING No: H - 03 — REVISION: C

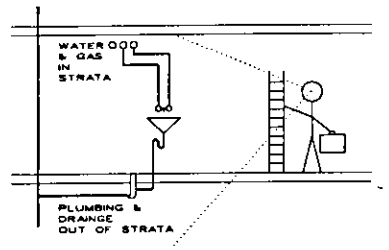


FIRST FLOOR
SANITARY & STORMWATER



ROOF
HYDRAULIC SERVICES

STRATA ZONE



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FOR GENERAL NOTES AND LEGEND REFER TO COVER SHEET

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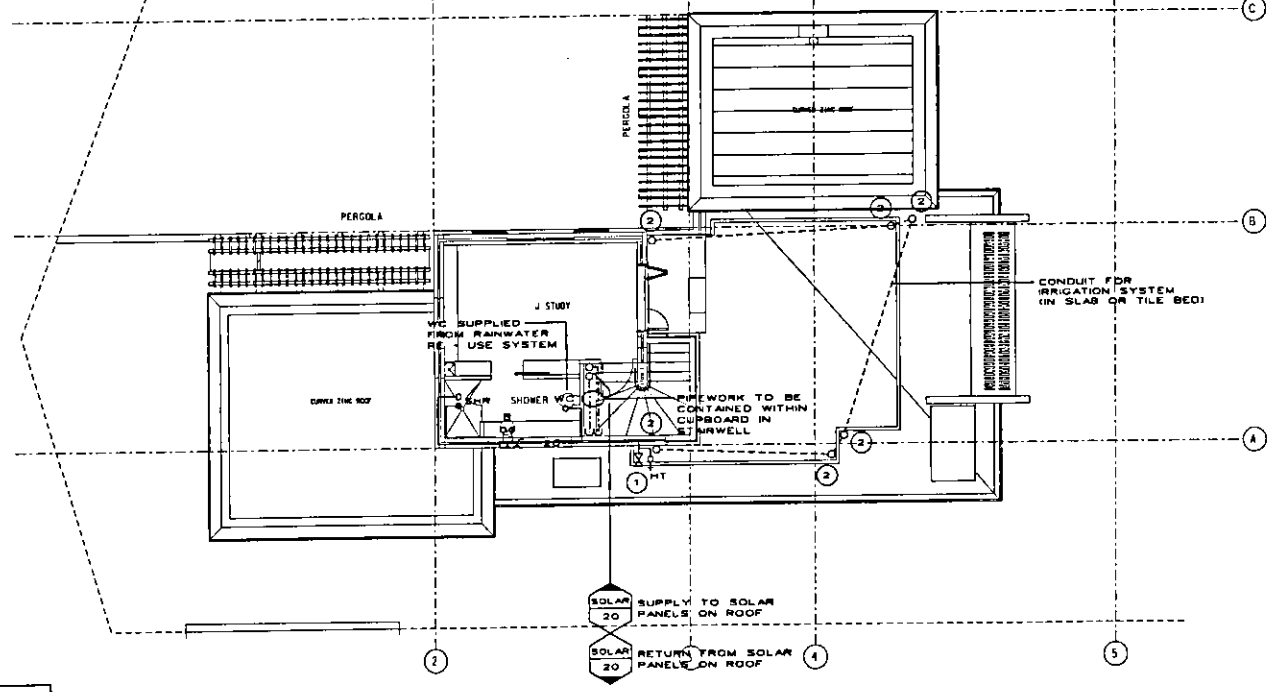
2. TERMINATION POINT FOR IRRIGATION SYSTEM (EXACT LOCATION TO BE CONFIRMED ON SITE)



FIRST FLOOR
WATER & GAS

PROXIMITY TO THE OCEAN

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C	ISSUED FOR CONSTRUCTION	04.05.06
B	ISSUED FOR CLIENT REVIEW	29.11.05
A	ISSUED FOR REVIEW	22.11.05
	DATE	

LIST OF REFERENCE DRAWINGS USED AS BACKGROUND

DISCIPLINE	COMPANY	DRAWING No
ARCH	QUADRANT	04-01
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SURVEYOR	D L & CO	
STRUCT		
MECH		
ELEC		
FIRE		

DRAWING REVISION

A	B	C
B	B	?

CLIENT
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ARCHITECT
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PROJECT
GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

DRAWING TITLE
FIRST FLOOR & ROOF HYRAULIC SERVICES

SCALE 1:100 at A1
JOB No 04/85
DISCIPLINE HYD
DRAWING No H - 04
REVISION C

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

GAS NOTES

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- ALLOW ALL INSTALLATION COMPONENTS TO BE REGULARLY CHECKED BY AGILITY INSPECTOR THROUGHOUT CONSTRUCTION

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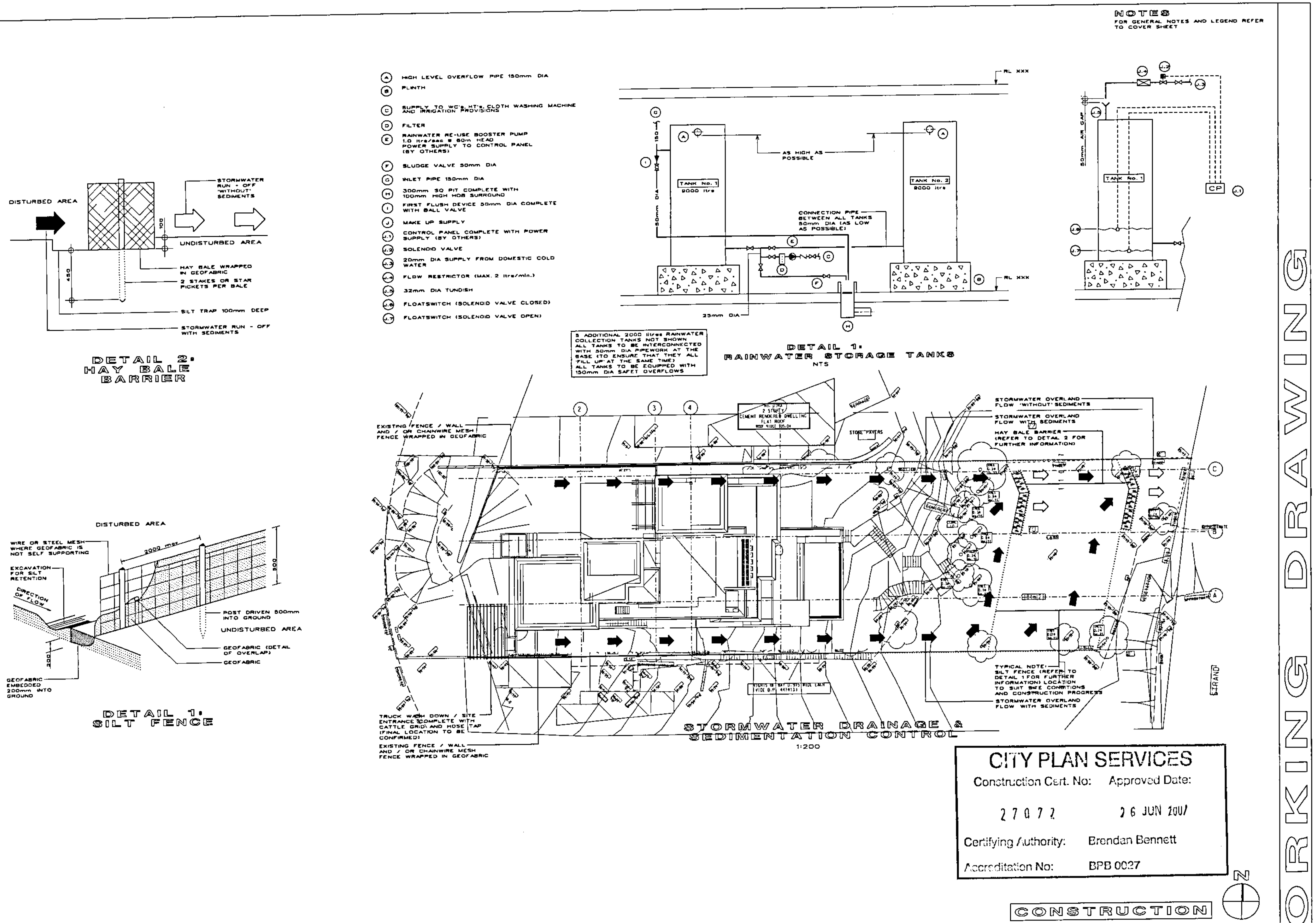

CITY PLAN SERVICES

Construction Cert. No: 27072 Approved Date: 26 JUN 2007

Certifying Authority: Brendan Bennett

Accreditation No: BPB 0027

CONSTRUCTION

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C	ISSUED FOR CONSTRUCTION	04.06.08
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PROJECT: GRANT RESIDENCE, 237 WHALE BEACH ROAD, WHALE BEACH

DRAWING TITLE: SEDIMENTATION CONTROL AND RAINWATER TANKS

SCALE: 1:200 at A1

JOB No: 04/85

DISCIPLINE: HYD

DRAWING No: H - 05

REVISION: C

SPECIFICATION

1. PREAMBLE

SCOPE OF WORKS
THE WORK UNDER THIS SECTION COVERS THE COMPLETE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE FOLLOWING SYSTEMS:

- SANITARY DRAINAGE
- STORMWATER DRAINAGE
- SUBSOIL DRAINAGE
- SANITARY PLUMBING
- STORMWATER PLUMBING
- FIXTURES AND FAUCETS
- COLD, HOT AND WARM WATER
- RAINWATER WATER RE - USE
- NATURAL GAS
- PLANT AND EQUIPMENT

EXISTING SERVICES
PAY ALL FEES AND CHARGES, LIASE WITH RELEVANT AUTHORITIES FOR ALL NEW CONNECTIONS TO EXISTING SERVICES.

ALLOW TO DISCONNECT AND REMOVE ALL EXISTNG, REDUNDANT SERVICES IN ACCORDANCE WITH AUTHORITIES REQUIREMENTS.

VERIFY AND CHECK THE EXTENT, SIZE AND LOCATION OF EXISTING SERVICES THAT NEED DISCONNECTION, REMOVAL, DIVERSION, ALTERATIONS PRIOR TO COMMENCEMENT OF ANY WORKS.

AUTHORITIES AND STANDARDS
ALL WORKS UNDERTAKEN OR PROVIDED AS PART OF THIS CONTRACT SHALL COMPLY, BUT NOT BE LIMITED, WITH THE MATERIAL, WORKMANSHIP, INSTALLATION AND COMMISSIONING REQUIREMENTS AS SPECIFIED BY AUTHORITIES HAVING JURISDICTION, RELEVANT STANDARDS AND CODES.

SUBMIT COMPLIANCE AND COMPLETION CERTIFICATES PRIOR OF APPLICATION FOR FINAL PAYMENT.

TENDER DRAWINGS
ALL DRAWINGS ARE DIAGRAMMATIC AND ISSUED AS A GUIDE ONLY. THEY SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS PREPARED BY THE ARCHITECT AND OTHER CONSULTANTS.

WORKSHOP DRAWINGS
PREPARE ALL NECESSARY WORKSOP DRAWING(S) REQUIRED FOR INSTALLATION AND COMPLETION OF THE CONTRACT;

ALL WORKSHOP DRAWINGS SHALL BE CO-ORDINATED WITH EXISTING SERVICES / STRUCTURES, ARCHITECTURAL, STRUCTURAL AND OTHER TRADES DRAWINGS AND DOCUMENTS.

THE DRAWOS SHALL BE SUBMITTED FOR COMMENTS AND APPROVAL PRIOR TO COMMENCEMENT OF ANY WORKS.

AS INSTALLED DRAWINGS AND MAINTENANCE MANUALS
ON COMPLETION OF THE WORKS, SUPPLY TWO SETS OF 'AS INSTALLED' DRAWING(S) AND 'MAINTENANCE MANUALS'.

THE DRAWING(S) SHALL INDICATE THE LOCATION OF ALL PIPEWORK, PITS, VALVES, PLANT AND EQUIPMENT.

THE MANUAL SHALL INCLUDE ALL WARRANTIES AND OUTLINE ALL MAINTENANCE, SERVICE AND INSPECTION REQUIREMENTS.

MATERIAL AND WORKMANSHIP
ALL MATERIALS SHALL BE NEW, OF FIRST QUALITY AND COMPLY WITH ALL RELAVANT STANDARDS, CODES AND AUTHORITIES REQUIREMNTS.

INSPECTION AND TESTING
ALL PIPEWORK AND PLANT SHALL BE TESTED IN ACCORDANCE WITH RELAVANT STANDARDS, MANUFACTURERS REQUIREMENTS AND AUTHORITIES HAVING JURISDICTION.

SUFFICIENT NOTICE SHALL BE GIVEN, SO THAT DESIGNATED TESTS CAN BE WITNESSED AND NECESSARY INSPECTION CAN BE CARRIED OUT.

ALTERNATIVES
GENERALLY ADHERE TO THE TYPES OF MATERIAL AND EQUIPMENT DETAILED IN THE DRAWINGS AND SPECIFICATION.

ALTERNATIVES MIGHT BE CONSIDERED AS LONG AS THEY ARE EQUAL AND CONFIRM WITH RELVANT STANDARDS AND REQUIREMENTS.

SUBMIT PROPOSED ALTERNATIVES FOR APPROVAL PRIOR TO INSTALLATION.

PROTECTION OF WORKS, EXISTING SERVICES AND STRUCTURES
BE RESPONSIBLE FOR THE PROTECTION OF ALL WORKS, EXISTING SERVICES AND STRUCTURES IN PARTICULAR:-
- SUPPLY COVERS FOR OPEN ENDS OF PIPEWORK, PLANT AND EQUIPMENT
- PROTECT PRIVATE AND PUBLIC PROPERTY (INCLUDING 'MAKE GOOD DAMAGE')

DEFECTS LIABILITY
BE RESPONSIBLE FOR THE RECTIFICATION AND / OR REPLACEMENT OF DEFECTS AND EQUIPMENT DUE TO FAULTY MATERIALS AND / OR WORKMANSHIP FOR TWELVE MONTH AFTER PRACTICAL COMPLETION.

ACOUSTIC PERFORMANCE
ALL PIPEWORK TO BE ACOUSTICALLY INSULATED TO ACHIEVE THE REQUIRED / DESIRED STC LEVEL.

CORE HOLES AND FIRE STOPPING
SET OUT ALL CORE HOLES AND SLEEVES IN SLABS AND BEAMS.

INSTALL APPROVED FIRE STOP COLLARS TO ACHIEVE / MAINTAIN THE REQUIRED FIRE RATING WHERE PLASTIC PIPES PASS THROUGH FIRE RATED WALLS AND STRUCTURES

ON COMPLETION
FLUSH AND REMOVE ALL DEBRIS WITHIN THE WHOLE SYSTEM AND ROD ALL INGROUND DRAINAGE LINES

NOISE AND VIBRATION
BE RESPONSIBLE FOR THE ELIMINATION OF SYSTEM NOISE AND WATER HAMMER. TAKE SPECIAL CARE TO AVOID TRANSMISSION OF VIBRATION USING FLEXIBLE CONNECTIONS AND SUPPORT BRACKETS WITH RUBBER INSERTS.

FIXING AND SUPPORT
ALL PIPES SHALL BE ADEQUATELY SUPPORTED AND SECURED TO ADJACENT WALLS AND SLABS AND MUST NOT COME IN CONTACT WITH OTHER SERVICES AND / OR BUILDING STRUCTURE.

THEY HAVE TO BE FIXED IN A MANNER THAT ALLOWS FREE MOVEMENT AND EXPANSION WITHOUT CAUSING STRESS IN THE PIPEWORK AND / OR ITS JOINTS.

SUPPLY AND INSTALL ALL BRACKETS AND HANGERS IN APPROPRIATE SPACING DISTANCES IN ACCORDANCE WITH RELEVANT STANDARDS AND MANUFACTURERS REQUIREMENTS.

PIPE IDENTIFICATION AND PAINTING
ALL PIPES SHALL BE ADEQUATELY IDENTIFIED AND LABELLED IN ACCORDANCE WITH AS 1345

WORK BY OTHERS
THE FOLLOWING WORK ASSOCIATED WITH THE HYDRAULIC SERVICES HAS TO BE PROVIDED BY OTHER TRADES:

BUILDER:
- ACCESS AND INSPECTION PANELS
- CUTTING HOLES IN FINISHED SURFACES (SUCH AS KITCHEN AND VANITY CUPBOARDS)
- SHOWER BASES AND NOBS INCLUDING SEALING OF ALL WET AREAS FLOORS
- FORMING OF SPOON AND CHANNEL DRAINS COMPLETE WITH FALL TO OUTLETS
- CONCRETE PLINTHS FOR PLANT AND EQUIPMENT
- BOXING AND CONCEALING OF ALL PIPEWORK
- BALCONY AND ROOF STORMWATER SAFETY OVERFLOWS
- SIGNAGE

ROOF CONTRACTOR:
- GUTTERS AND SUMPS
- ROOF PENETRATIONS AND FLASHING

ELECTRICAL CONTRACTOR:
- POWER SUPPLY TO ALL PLANT AND EQUIPMENT AS SPECIFIED

MECHANICAL CONTRACTOR
- EXTENSION OF CONDENSATE DRAIN(S) FROM AC EQUIPMENT TO DRAINAGE PROVISION(S)

LANDSCAPE CONTRACTOR
- EXTENSION OF IRRIGATION WATER PIPEWORK FOR CAPPED OF PROVISION(S)

ALLOW TO CO-ORDINATE ALL REQUIREMENTS WITH THE PROJECT MANAGER AND OTHER TRADES

2. DRAINAGE

STANDARDS, REGULATIONS AND REQUIREMENTS
THIS SECTION SHALL COMPLY (BUT NOT BE LIMITED) TO:
- AS 3500.2.
- NSW CODE OF PRACTICE PLUMBING AND DRAINAGE
- AS 3500.3.
- COUNCIL STORMWATER POLICY

EXCAVATION AND TRENCHES
ALLOW FOR ALL EXCAVATION WORK REQUIRED FOR INSTALLATION OF THE DRAINAGE SYSTEMS.

TRENCHES SHALL BE PARALLEL WITH THE DESIGN INVERT OF THE PIPE AND EXTEND MIN. 100mm FROM EITHER OUTSIDE EDGE OF THE PIPE(S) TO THE INNERMOST FACE OF THE TRENCH.

BACKFILLING
THE DRAINAGE PIPEWORK SHALL BE INSPECTED BY THE PROJECT MANAGER AND / OR THE RELEVANT AUTHORITIES PRIOR TO ANY BACKFILLING

ALL PIPES SHALL HAVE A MIN. COVER OF 300mm, EXCEPT WHERE A COVER OF STRUCTURALLY REINFORCED CONCRETE IS PROVIDED. ALL IN ACCORDANCE WITH AS 3500.2.2 CLAUSE 3.7
BEDDING MATERIAL SHALL BE ADEQUATE TO CONTINUOUSLY SUPPORT THE INSTALLED PIPE AND TO ACCOMMODATE EXPECTED LOADS FROM THE PIPE AND SURROUNDING GROUND AND STRUCTURES.
ALL BEDDING MATERIALS IN ACCORDANCE WITH AS 3500.2.2 CLASUE 5.4
DO NOT LAY DRAINAGE PIPEWORK ON FILLED GROUND
EXCAVATED MATERIAL FROM THE TRENCH CAN BE USED FOR BACKFILLING AS LONG AS IT IS FREE FROM ROCK AND / OR HARD MATTER LARGER THAN 25mm. ALLOW TO CAREFULLY BACKFILL AND COMPACT ALL TRENCHES (IN INCREMENTS OF MAX. 300mm)

LAY ALL SUBSOIL DRAINAGE PIPES ON 50mm BED OF BLUE METAL, BACKFILL TO TOP OF BULK EXCAVATION LEVEL WITH BLUE METAL AND WRAPP IN GEOFABRIC.

PAY SPECIAL ATTENTION TO UNSTABLE AND / OR WATERCHARGED GROUND CONDITIONS
(CAST IRON AND / OR PIER BEAM CONSTRUCTION MIGHT BE REQUIRED

CLEAROUTS AND INSPECTION OPENINGS
INSTALL 100mm DIA BRASS CLEAROUTS AND INSPECTION OPENINGS AS REQUIRED EXTENDING TO FINISHED SURFACE LEVEL USING A 90 DEGREE JUNCTION AND A 30 DEGREE BEND.

STORMWATER OUTLETS
ALL STORMWATER OUTLETS SHALL BE EQUAL TO 'SPS TRUFLO' COMPLETE WITH GRATE AS SPECIFIED BY ARCHITECT

3. SANITARY PLUMBING

STANDARDS, REGULATIONS AND REQUIREMENTS
THIS SECTION SHALL COMPLY (BUT NOT BE LIMITED) TO:
- AS 3500.2
- NSW CODE OF PRACTICE PLUMBING AND DRAINAGE

EXPANSION JOINTS
EXPANSION JOINTS SHALL BE INSTALLED IN SUCH MANNER THAT AXIAL MOVEMENT WITH ADJACENT SECTIONS OF THE PIPE TO THE EXTENT OF 8mm IN EITHER DIRECTION IS POSSIBLE.

HORIZONTAL PIPES:
INSTALL EXPANSION JOINTS ON HORIZONTAL PIPES IN EXCESS OF 6m LENGTH, WHERE FIXED AT CLOSER INTERVALS: BETWEEN EVERY TWO FIXED SUPPORTS THAT ARE MORE THAN 2m APART.

VERTICAL PIPES:
INSTALL EXPANSION JOINTS AT THE BASE AND AT EVERY ALTERNATE FLOOR LEVEL

INSPECTION OPENINGS AND GATES
INSTALL INSPECTION OPENINGS IN PIPES SO THAT EACH SECTION IS ACCESSIBLE IN AT LEAST ONE DIRECTION AND TEST GATE AT BASE OF EACH STACK.

FIXTURE TRAPS
FIXTURE TRAPS SHALL BE OF THE SAME SIZE AS THE FIXTURE OUTLET
- CONCEALD TRAPS SHALL BE UPVC / HDPE
- EXPOSED TRAPS SHALL BE CHROME PLATED COPPER

FLOOR WASTES
FLOOR WASTES SHALL CONSIST OF A 100mm WATERTIGHT RISER COMPLETE WITH GRATE (AS SPECIFIED BY ARCHITECT) SET AT A LEVEL TO ENSURE CORRECT DRAINAGE OF THE FLOOR AREA

VENT TERMINATIONS
INSTALL UPTURNED FLASHING TO ALL VENT PIPES PASSING THROUGH ROOFS COMPLETE WITH COWL AT EACH TERMINATION

4. RAINWATER PLUMBING

STANDARDS, REGULATIONS AND REQUIREMENTS
THIS SECTION SHALL COMPLY (BUT NOT BE LIMITED) TO:
- AS 3500.3
- COUNCIL STORMWATER POLICY

INSPECTION OPENINGS AND GATES
INSTALL INSPECTION OPENINGS IN PIPES SO THAT EACH SECTION IS ACCESSIBLE IN AT LEAST ONE DIRECTION AND TEST GATE AT BASE OF EACH DOWNPIPE

5. FIXTURES AND FAUCETS
ALLOW TO SUPPLY AND INSTALL ALL FIXTURES AND FAUCETS AS SPECIFIED BY THE ARCHITECT AND SHOWN ON THE DRAWINGS(S) COMPLETE WITH CONNECTION TO THE WATER SYSTEM

6. COLD, HOT , WARM & RAIN WATER RE - USE

STANDARDS, REGULATIONS AND REQUIREMENTS
THIS SECTION SHALL COMPLY (BUT NOT BE LIMITED) TO:
- AS 3500.1
- AS 3500.4
- NSW CODE OF PRACTICE WATER AND HOT WATER SUPPLY
- AS 5601
- GUIDELINES FOR RAINWATER TANKS ON RESIDENTIAL PROPERTIES

DESIGN CRITERIAS
- PIPE VELOCITY: 1.8 - 1.8 m/s
- OPERATING PRESSURE: 250 to 500 kPa
  (PRESSURE LIMITING VALVES REQUIRED FOR PRESSURES GREATER THAN 500kPa)

CONNECTION POINTS
PROVIDE AND INSTALL BSP BRASS MALE THREAD AT THE WALL COMPLETE WITH CHROME PLATED COVER PLATES

ISOLATION VALVES
SUPPLY AND INSTALL EASY ACCESSIBLE ISOLATION VALVES ('JOHNS' OR APPROVED EQUAL) FOR EACH GROUP OF FIXTURES (CHROME PLATED RECCESS COCKS WHERE LOCATED IN WALLS IN EXPOSED LOCATIONS)

MIXING VALVES
SUPPLY AND INSTALL EASY ACCESSIBLE THERMOSTATIC MIXING VALVES (ENWARE ADUABLEND) AS INDICATED ON THE DRAWING(S)

VALVES GENERALLY
- SUPPLY AND INSTALL CAST IRON PATH BOX WITH HINGED LID WHERE VALVES ARE LOCATED BELOW GROUND
- VALVES 50mm AND ABOVE SHALL BE FLANGED
- VALVES UNDER 50mm SHALL BE SCREWED BSP

BALANCING VALVES
SUPPLY AND INSTALL EASY ACCESSIBLE BALANCING VALVES (AMETAL TOUR & ANDERSSON SERIES STAD OR APPROVED EQUAL) ON EACH HOT WATER RETURN LINE

EXPANSION
ALLOW FOR SUFFICIENT OFFSETTING AND LOOPS OF HOT WATER PIPEWORK TO COMPENSATE FOR LENGTH INCREASES FROM THERMAL PIPE EXPANSION

INSULATION
ALL HOT AND WARM WATER LINES SHALL BE INSULATED AS FOLLOWS:
IN ACCORDANCE WITH AS 3500.4 (SECTION 8)

COLD WATER:
INSULATE ALL COLD WATER PIPEWORK LICATED IN WALL CHASES WITH 'KEMLAG' / 'THERMOTEC' (OR APPROVED EQUAL)

TESTING AND COMMISSIONING
ALLOW FOR SUFFICIENT TESTING IN ACCORDANCE WITH AS/NZS 3500.1.2 SECTION 13
- WATER SERVICES SHALL NOT SHOW ANY SIGN OF LEAKAGE WHEN SUBJECT TO HYDROSTATIC PRESSURE OF 1500kPa FOR A PERIOD OF NOT LESS THAN 30 min.

ALLOW TO COMMISSION THE WHOLE SYSTEM INCLUDING PIPEWORK, PLANT, BALANCING, FLOW, PRESSURE AND TEMPERATURE ON COMPLETION

7. NATURAL GAS

STANDARDS, REGULATIONS AND REQUIREMENTS
THIS SECTION SHALL COMPLY (BUT NOT BE LIMITED) TO:
- AS 5601

REGULATOR AND METER ASSEMBLY
LIASE WITH AGL TO ORGANISE THE INCOMING GAS SUPPLY AND TO OBTAIN THE GAS METER / REGULATOR ASSEMBLY

INSTALLATION OF APPLIANCES
ENSURE THAT ALL APPLIANCES ARE APPROVED BY AGL PRIOR TO CONNECTING TO THE GAS SYSTEM.

INSTALL APPROVED ISOLATION VALVE AT INLET TO EACH APPLIANCE.

INCOMING SUPPLY PIPE
THE INCOMING SUPPLY PIPE SHALL TERMINATE 225mm BEYOND THE BOUNDARY WITH AN APPROVED VALVE IN A PATH BOX AS INDICATED ON THE DRAWING(S)

VENTILATION
PROVIDE ADEQUATE VENTILATION TO ALL APPLIANCES, METERS AND REGULATORS IN ACCORDANCE WITH AGL REQUIREMENTS

TESTING AND COMMISSIONING
ALLOW FOR SUFFICIENT TESTING IN ACCORDANCE WITH AG 601 SECTION 2.6.

ALLOW TO COMMISSION THE WHOLE SYSTEM INCLUDING PIPEWORK, PLANT, FLOW AND PRESSURE ON COMPLETION

SERVICE	MATERIAL ABBREVIATION	DESCRIPTION	STANDARD	NOTES
STORMWATER DRAINAGE	UPVC	UNPLASTICIZED POLYVINL CHLORIDE	- AS 1254 - AS 1260 - AS 2032	- BELOW GROUND - ABOVE GROUND - INSTALLATION
	RCP	REINFORCED CONCRETE	- AS 4058 - AS 3725	CLASS 4 UNO LAYING
	HDPE	HIGH DENSITY POLYETHYLENE	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (VINIDEX / GEBERIT) REQUIREMENTS	
	FRC	FIBRE REINFORCED CEMENT	- AS 4139 - AS 3725	- CLASS 4 UNO - LAYING & INST.
SEWER DRAINAGE	UPVC (DWV)	UNPLASTICIZED POLYVINL CHLORIDE	- AS 1254 - AS 1260 - AS 2032	- BELOW GROUND - ABOVE GROUND - INSTALLATION
	HDPE	HIGH DENSITY POLYETHYLENE	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (VINIDEX / GEBERIT) REQUIREMENTS	
	FRC	FIBRE REINFORCED CEMENT	- AS 4139 - AS 3725	- CLASS 4 UNO - LAYING & INST.
SUBSOIL	PERFORATED UPVC	UNPLASTICIZED POLYVINL CHLORIDE	- AS 1254 - AS 2032	- BELOW GROUND - INSTALLATION
	DRAINAGE CELL	'ATLANTIS' (OR APPROVED EQUAL) INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND REQUIREMENTS		
SANITARY & STORMWATER PLUMBING	CO	COPPER	AS 1432 TABLE 2 (TYPE 'A' & 'B')	
	UPVC	UNPLASTICIZED POLYVINL CHLORIDE	- AS 1260 - AS 2032	
	HDPE	HIGH DENSITY POLYETHYLENE	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (VINIDEX / GEBERIT) REQUIREMENTS (min. B20)	
POTABLE WATER SERVICES	CO	COPPER	AS 1432 TABLE 2 (TYPE 'B')	
	XLPE	CROSS LINKED POLYETHYLENE (REHAU)	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (REHAU) REQUIREMENTS / DIN 16892	
	PP-R	POLY-PROPYLENE (AQUATHERM)	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (AQUATHERM) REQUIREMENTS	
RAIN WATER RE - USE SERVICES	XLPE	CROSS LINKED POLYETHYLENE (REHAU)	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (REHAU) REQUIREMENTS / DIN 16892	
	PP-R	POLY-PROPYLENE (AQUATHERM)	INSTALLED IN ACCORDANCE WITH MANUFACTURERS (AQUATHERM) REQUIREMENTS	
GAS SERVICES	CO	COPPER	AS 1432 TABLE 2 (TYPE 'B')	

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

CONSTRUCTION

WORKING DRAWING

			LIST OF REFERENCE DRAWINGS USED AS BACKGROUND		
			DISCIPLINE	COMPANY	DRAWING No
			ARCH	QUADRANT	
			ARCH	QUADRANT	
			SURVEYOR	D L & CO	
C	ISSUED FOR CONSTRUCTION	04.06.08	STRUCT		
B	ISSUED FOR CLIENT REVIEW	29.11.08	MECH		
A	ISSUED FOR REVIEW	22.11.08	ELEC		
		DATE	FIRE		

DRAWING REVISION

CLIENT: MRS & MR GRANT

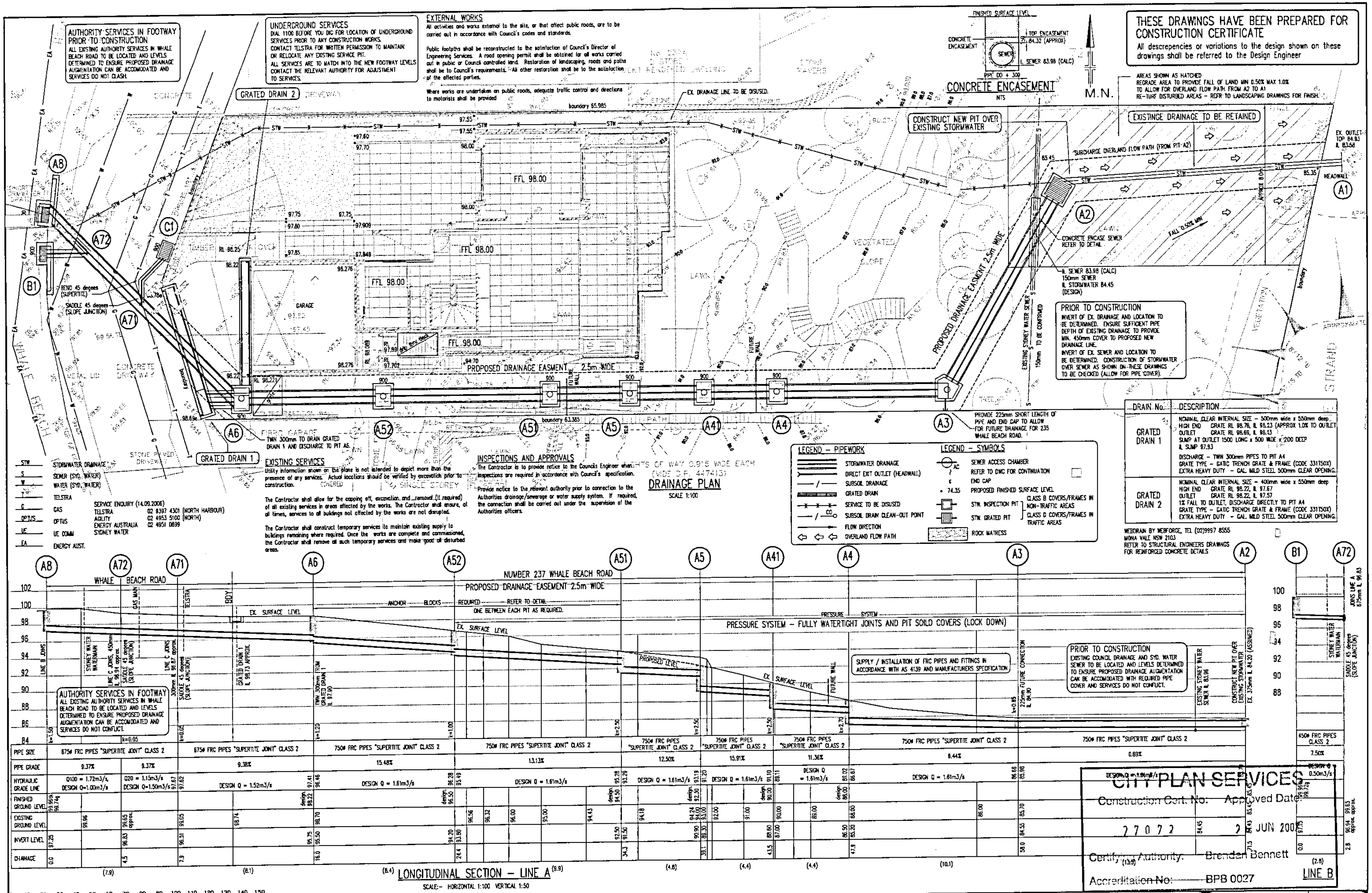
ARCHITECT: QUADRANT DESIGN

itmdesign pty ltd
consulting hydraulic engineers
6 / 3 apollo street, warriewood nsw 2102
po box 1438 mona vale nsw 1660
tel (02) 9997 1588 fax (02) 9997 3266
email: itm@bigpond.net.au

PROJECT: GRANT RESIDENCE
237 WHALE BEACH ROAD
WHALE BEACH

DRAWING TITLE: SPECIFICATION

SCALE: NTS
JOB No: 04/85
DISCIPLINE: HYD
DRAWING No: H - 005
REVISION: C



CLIENT:	MR AND MRS GRANT
ARCHITECT:	GUY DE COMPIEGNE

Revision	Date	Description
B	25.05.07	CONSTRUCTION CERTIFICATE - COUNCIL APPROVAL
A	02.11.06	COUNCIL DA APPROVAL

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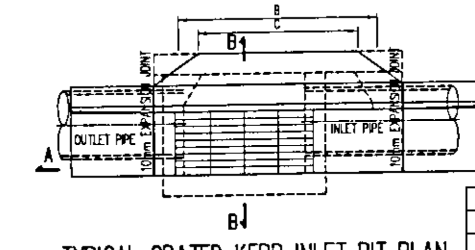
STORMWATER DRAINAGE CERTIFICATION
I AM AN APPROPRIATELY QUALIFIED AND COMPETENT PERSON IN CIVIL DESIGN, BEING LISTED IN THE NATIONAL PROFESSIONAL REGISTER REGISTER (NPER) AND AS SUCH CAN CERTIFY THE DESIGN
ALLAN K YOUNG
Chartered Professional Engineer (NLA 1001005)

A K Y Civil Engineering
Consulting Civil Engineers ABN 77 595 503 088
Unit 11, 13 Buscoo Road, Morsfield NSW 2122
Phone (02) 9868 4834 Fax (02) 9868 4834
mobile 0411697499
email akyce@swiftdsl.com.au

PROJECT: PROPOSED NEW DWELLING
237 WHALE BEACH ROAD
WHALE BEACH NSW 2107

TITLE: HYDRAULIC SERVICES
STORMWATER DRAINAGE PLAN
LONG SECTION LINES A AND B

Scale	Sheet
1 : 100 at A1	Sheet 1 of 2
Date: 25:09:06	Design by: AKY	Verified: AKY	Project No: 03191
Status: CONSTRUCTION CERTIFICATE	Drawing No: C-01	Revision: B



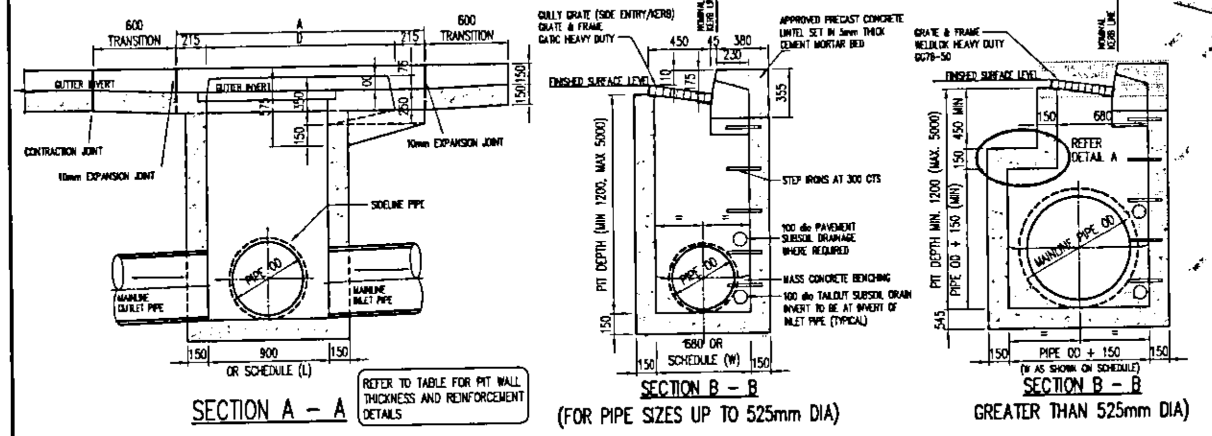
TYPICAL GRATED KERB INLET PIT PLAN
(PIT LOCATED ON GRADE)

CONCRETE LINTELS

PRECAST CONCRETE LINTEL					
TYPE	A mm	B mm	C mm	D mm	MASS kg
1:8	2438	2063	1778	2007	445
2:4	3048	2692	2388	2636	552

CATCHMENT DRAINAGE CALCULATIONS

DRAINAGE TO ROADWAY LOW POINT	
UPSTREAM CATCHMENT AREA	3.33 ha
TIME OF CONCENTRATION	6 min impervious say 7 min pervious say
FRACTION IMPERVIOUS	0.65
Q100 DISCHARGE (ILSAX)	1.72 m3/s
Q20 DISCHARGE (APPROXIMATION)	1.15 m3/s
EX. PIPE SYSTEM CAPACITY ACROSS ROAD (450mm PIPE)	0.36 m3/s
EX. PIPE SYSTEM CAPACITY THROUGH SITE (450mm PIPE)	0.52 m3/s

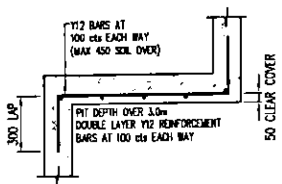


MAINLINE PIPE SIZE vs PIT WIDTH (W)

PIT LOCATED ON GRADE OR SAG			
MAINLINE PIPE SIZE	WIDTH MIN.(w)	PIT DEPTH (min.)	STEP
ø375 TO ø525	680	1400	-
ø600	980	1450	300
ø675	980	1550	300
ø750	1050	1650	370

SIDELINE PIPE SIZE vs PIT LENGTH (L)

PIT LOCATED ON GRADE OR SAG			
PIPE SIZE	LENGTH MIN. (L)	PIT DEPTH (min.)	STEP
ø375 TO ø600	900	1400	-
ø675	900	1550	-
ø750	1100	1650	200



DETAIL A

STEP IN PIT UP TO 1000mm IN ONE OR TWO WAYS

PIT REINFORCEMENT & WALL THICKNESS DETAILS

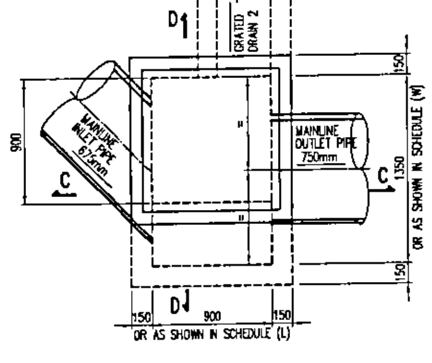
PIT DEPTH	WALL THICKNESS	WALL & FLOOR REINFORCEMENT	STARTER BARS	STEP IRONS
<1.2m	150mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	NO
>1.2m <1.8m	150mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	YES
>1.8m <3.0m	175mm	SL 82 – 40mm COVER INSIDE FACE & TOP OF BASE	N12 @ 200 400 LEGS	YES
>3.0m	225mm	DOUBLE LAYER N12@250 EACHWAY	N12 @ 250 500 LEGS	YES

40mm COVER TO ALL FACES
LAP ALL BARS 400min. INTO ADJOINING WALLS UNO.
CONCRETE STRENGTH, f'c 25MPa AT 28 DAYS, SLUMP 75mm, NOMINAL AGGREGATE SIZE 20mm. NO ADMIXTURES SHAL BE USED.

MASS CONCRETE BENCHING TO ALL PIT BASES TO FORM SMOOTH TRANSITION AT PIT BASE FOR PITS A2 TO A6. f'c 20MPA AT 28 DAYS.

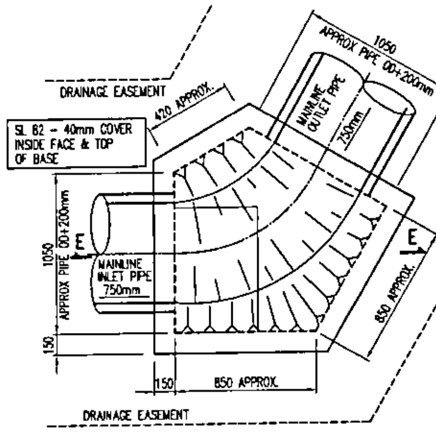
LOCATE DRAINAGE PIPES CENTRALLY OVER DRAINAGE EASEMENT.

ALL WORMKMANSHIP AND MATERIALS IN ACCORDANCE WITH AS 3600 (CURRENT EDITION).

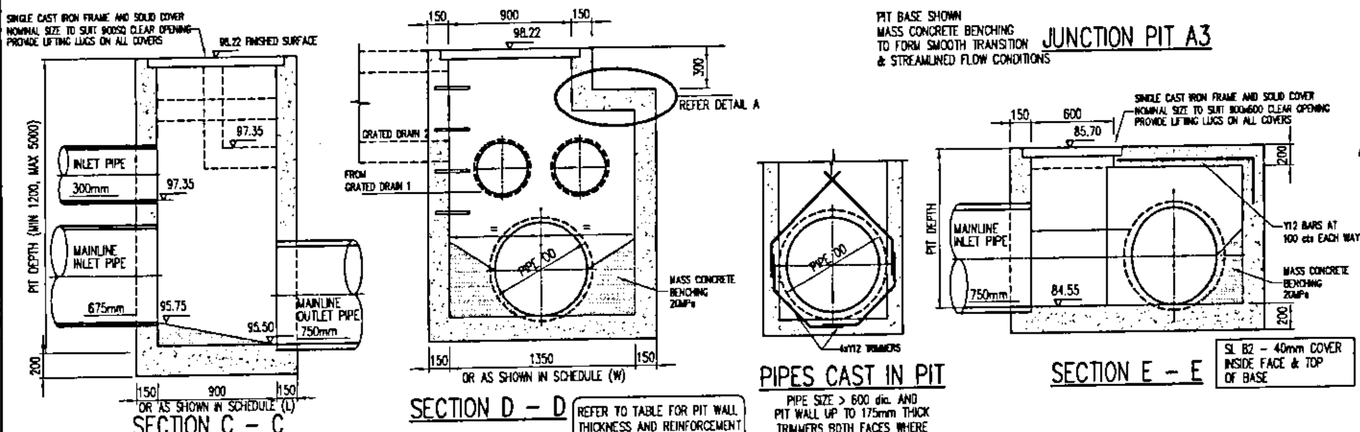


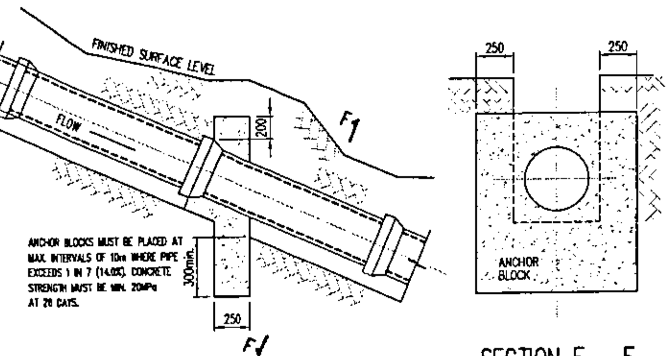
TYPICAL JUNCTION PIT PLAN

(SHOWN FOR PIT A6, OTHER PITS SIMILAR)



JUNCTION PIT A3

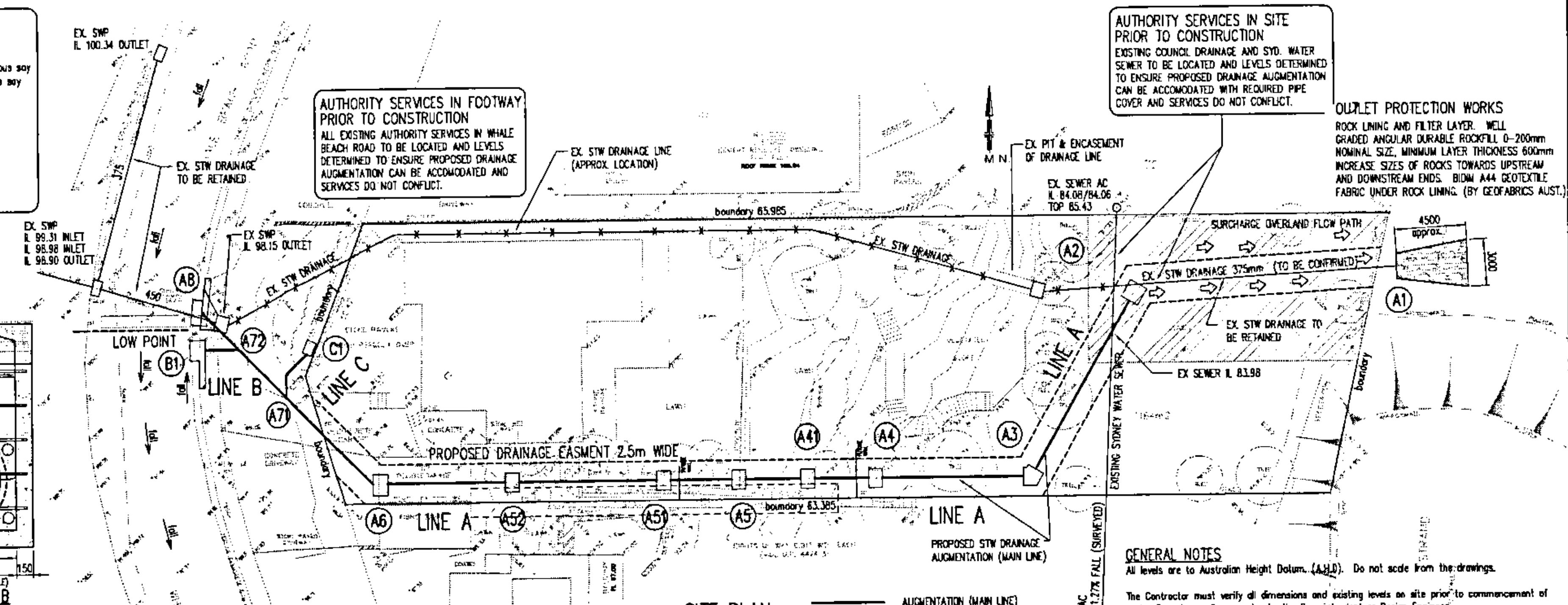




ANCHOR BLOCK DETAIL

NOT TO SCALE

SECTION F – F



AUTHORITY SERVICES IN FOOTWAY PRIOR TO CONSTRUCTION
ALL EXISTING AUTHORITY SERVICES IN WHALE BEACH ROAD TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMODATED AND SERVICES DO NOT CONFLICT.

AUTHORITY SERVICES IN SITE PRIOR TO CONSTRUCTION
EXISTING COUNCIL DRAINAGE AND SYD. WATER SEWER TO BE LOCATED AND LEVELS DETERMINED TO ENSURE PROPOSED DRAINAGE AUGMENTATION CAN BE ACCOMODATED WITH REQUIRED PIPE COVER AND SERVICES DO NOT CONFLICT.

OUTLET PROTECTION WORKS
ROCK LINING AND FILTER LAYER. WELL GRADED ANGULAR DURABLE ROCKFILL 0–200mm NOMINAL SIZE, MINIMUM LAYER THICKNESS 600mm INCREASE SIZES OF ROCKS TOWARDS UPSTREAM AND DOWNSTREAM ENDS. BIDIM A44 GEOTEXTILE FABRIC UNDER ROCK LINING (BY GEOFABRICS AUST.)

SITE PLAN

SCALE 1:200

AUGMENTATION (MAIN LINE)
EX. STW DRAINAGE LINE

PIT SCHEDULE

LABEL	PIT TYPE	PIT SIZE (L x W)	NOTES
A1	EXISTING OUTLET	–	CONSTRUCT OUTLET PROTECTION WORKS. REFER TO SITE PLAN.
A2	GRATED SURCHARGE PIT	1200 x 1200	SURCHARGE PIT WITH MULTI PART LOCK DOWN GRATE & FRAMES TO SUIT OPENING. CLASS C.
A3	JUNCTION PIT – SPECIAL DETAIL	REFER TO DETAIL	900x600 SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A4	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A41	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A5	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B COVER TO BE SOLID WATERTIGHT LOCK DOWN
A51	JUNCTION PIT – DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A52	JUNCTION PIT –DROP	900 x 1200	900 SQUARE SOLID COVER CLASS B. COVER TO BE SOLID WATERTIGHT LOCK DOWN
A6	JUNCTION PIT – DROP	900 x 1350	900 SQUARE SOLID COVER CLASS D. PIT WITH MULTIPLE INLETS
A71	JAMES HARDIE FRC SADDLE 45 DEGREES (SLOPE)	–	MAIN LINE 675mm, BRANCH LINE 300mm FRC SUPERTITE BRANCH FRC SADDLE SLOPE PIECE FROM JAMES HARDIE FRC PIPES
A72	JAMES HARDIE FRC SADDLE 45 DEGREES (SLOPE)	–	MAIN LINE 675mm, BRANCH LINE 450mm FRC SUPERTITE BRANCH FRC SADDLE SLOPE PIECE FROM JAMES HARDIE FRC PIPES
A8	GRATED KERB INLET PIT 2.4m EXTENDED KERB INLET	1200 x 980	REFER TO DETAIL
B1	GRATED KERB INLET PIT 2.4m EXTENDED KERB INLET	900 x 680	REFER TO DETAIL
C1	GRATED SURFACE INLET PIT	900 x 600	INLET PIT WITH LOCK DOWN GRATE & FRAMES TO SUIT OPENING. CLASS D LOCK DOWN.

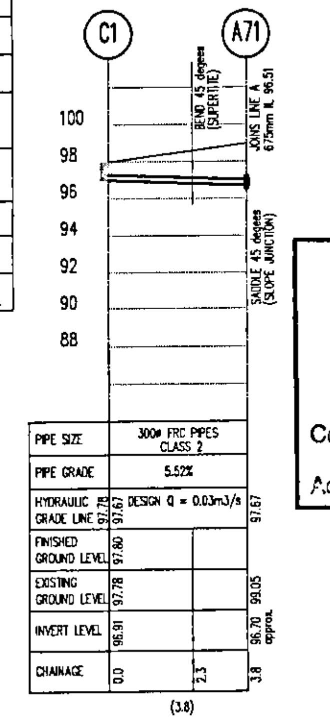
NOTE – CHILD PROOF LOCKING SYSTEM SHALL BE USED FOR ACCESS GRATES AND SOLID COVERS

NO VARIATION IN GATIC PIT ACCESS COVER AND GRATES PERMITTED UNLESS WRITTEN APPROVAL FROM COUNCIL OBTAINED

1200x1200 GRATED SURCHARGE PIT LOCK DOWN TO BE GATIC GAL. MILD STEEL FABRICATED TO SUIT. GRATE AND FRAME TO BE RAISED ON LEGS 125 CLEAR OF FINISHED GROUND

900x600 AND 900x900 SOLID COVERS WATERTIGHT LOCK DOWN TO BE GATIC CONCRETE IN-FILLED TO NOMINAL SIZE AND LOAD CLASS AS SHOWN. (1 PART, CODE 301C)

GULLY GRATE FOR KERB INLET PIT LOCK DOWN GATIC GULLY GRATE GAL. MILD STEEL TO NOMINAL SIZE AND LOAD CLASS AS SHOWN. (CODE 331G94HSEF)



LINE C

GENERAL NOTES

All levels are to Australian Height Datum (A.H.D). Do not scale from the drawings.

The Contractor must verify all dimensions and existing levels on site prior to commencement of works. Report any discrepancies to the Superintendent or Design Engineer.

Read these plans in conjunction with approved architectural, structural, hydraulic and mechanical drawings and specification.

Where new work abuts existing, the contractor shall ensure that a smooth even profile, free from abrupt changes, is obtained.

The Contractor shall arrange all survey setout to be carried out by a registered surveyor.

Care is to be taken when excavating near existing services. No mechanical excavations are to undertaken over telecom or electrical services. Hand excavate in these areas.

All building surrounds should be graded to ensure overland flow from upstream areas can drain around the foundations, walls and building. Grade finished surface to fall into the varies inlet pits and grates.

All excavation, shoring of excavation and stability of adjacent structures shall be the responsibility of the Contractor.

Workmanship and materials shall conform with the requirements of the relevant SAA Codes, BCA requirements and the specification, by-laws and ordinancies of the relevant Authorites.

Proprietary products used shall be installed to manufacturer's specification and to the satisfaction of the Superintendent.

Council's tree preservation ordes shall be stictly adhered to. No trees shall be removed.

Vehicular access and all existing services shall be maintained at all times to adjacent properties during the construction period.

CONCRETE PIPES

Pipe storage on site must be secure to prevent pipes from rolling.

Pipes must not be pushed or rolled around the site. They must be lifted in the correct way, by using the lifting hole or by using a belly sling in the correct position.

Pipes must be installed, bedded and backfilled in accordance with the designers specification.

Lay pipes on steep slopes with socket facing up the grade.

If ground water is likely to be a problem, subsoil drainage shall be provided, discharging to natural outlets.

If anchor blocks are specified, anchor blocks must be designed and installed so that they do not differentially support a pipe in a manner likely to seriously stress it longitudinally or to interfere with the flexibility of a joint.

Existing pipes which form no part of the drainage system shall be reoved or sandfilled.

Pipe lengths measured between pit centres.

All pipe junctions and tapers shall be via purpose made fittings.

DRAINAGE PITS

Benching to be half outgoing pipe depth. Concrete for benching to be 20MPa mass concrete.

Approved precast pits may be used.

Diameter 100mm inlet for subsoil drainage outlet to be located 100mm above invert of all inlet pipes. ~~Diameter 100mm subsoil drainage to extend for a distance of 3.0m upstream of pit (at~~ each inlet trench) with the upstream end sealed.

All connections to existing drainage pits shall be made in a tradesman like manner and the internal wall of the pit at the point of entry shall be cement rendered to ensure a smooth finish.

Pit grates and solid covers shall be Class B in non traffic areas and Class D in traffic areas in accordance with AS 3996.

CITY PLAN SERVICES
Construction Cert. No: 27022
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB0027

THESE DRAWINGS HAVE BEEN PREPARED FOR CONSTRUCTION CERTIFICATE
All descrepencies or variations to the design shown on these drawings shall be referred to the Design Engineer

REVISION	DATE	DESCRIPTION
B	23.03.07	CONSTRUCTION CERTIFICATE –COUNCIL APPROVAL
A	02.11.06	COUNCIL DA APPROVAL

CLIENT: MR AND MRS GRANT

ARCHITECT: GUY DE COMPIEGNE
QUADRANT DESIGN PTY LTD ACN 003256517
79 SURRY STREET, DARLINGHURST NSW 2010
TEL (02) 9200 1183 FAX (02) 9380 9477

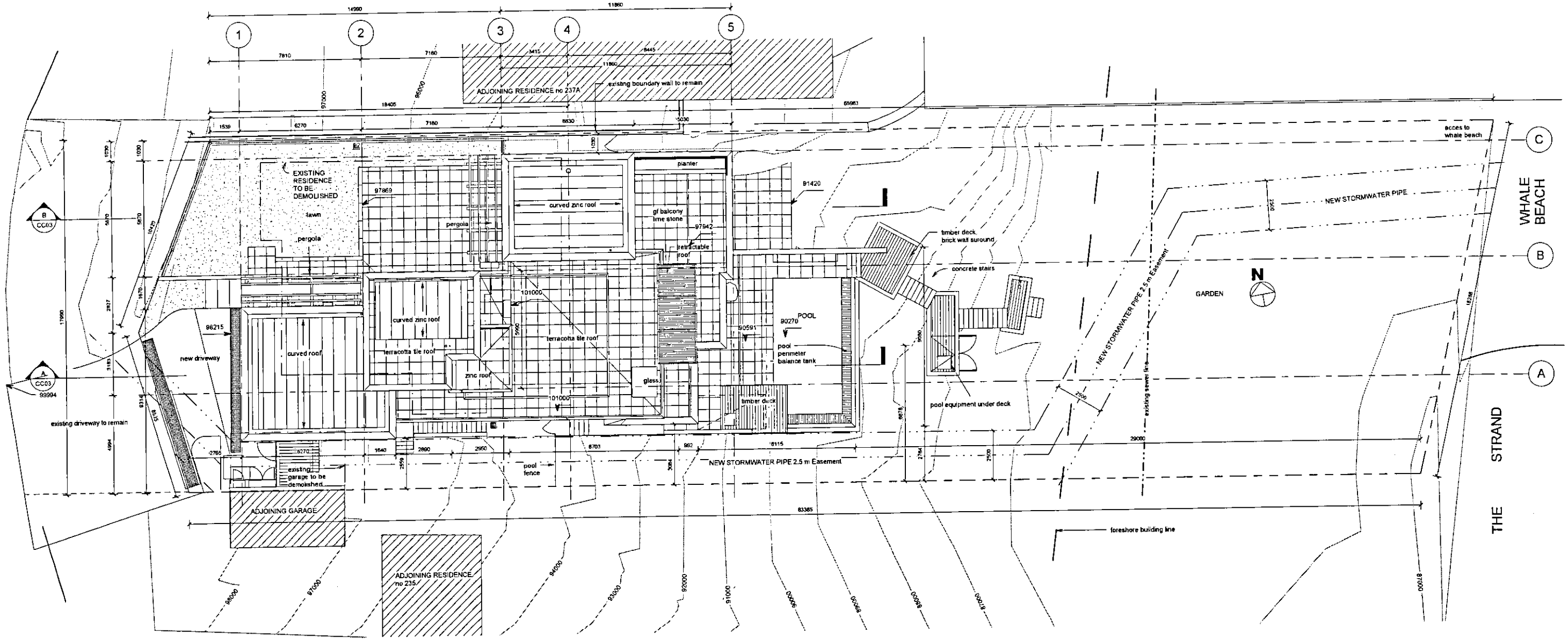
STORMWATER DRAINAGE CERTIFICATION
I AM AN APPROPRIATELY QUALIFIED AND COMPETENT PERSON IN CIVIL DESIGN, BEING LISTED IN THE NATIONAL PROFESSIONAL REGISTER REGISTER (NPER) AND AS SUCH CAN CERTIFY THE DESIGN
ALLAN K. YOUNG
Chartered Professional Engineer (NER 1001005)

A K Y Civil Engineering
Consulting Civil Engineers ABN 77 595 503 088
Unit 11, 13 Busaco Road, Marsfield NSW 2122
Phone (02) 9868 4834 Fax (02) 9868 4834
mobile 0411697499
email akyce@swiftdsl.com.au

PROJECT: PROPOSED NEW DWELLING
237 WHALE BEACH ROAD
WHALE BEACH NSW 2107

TITLE: HYDRAULIC SERVICES
STORMWATER DRAINAGE LONG SECTION LINE C, DRAINAGE DETAILS AND DRAWING NOTES

Scale	Sheet 2 of 2	
1 : 100 at A1	Project No	03191
Date: 25.09.06	Design by: AKY	Verified: AKY
Status: CONSTRUCTION CERTIFICATE	Drawing No: C-02	Revision: B



CITY PLAN SERVICES

Construction Cert. No: 27072

Approved Date: 26 JUN 2007

Certifying Authority: Brendan Bennett

Accreditation No: BPB 0027

MODIFICATIONS	ISSUE no & date

Guy de Compiegne Architect
QUADRANT DESIGN PTY LTD 64 Goodhope street Padington 2021 Tel:0425 221193 /02 9331 2232
email:gdcomp@mpx.com.au

Mr & Mrs GRANT

237 WHALE BEACH ROAD WHALE BEACH NSW

SITE PLAN

Project number	0415
Date	MAY 2007
Drawn by	Author
CONSTRUCTION CERTIFICATE	

CC01

Scale 1 : 100

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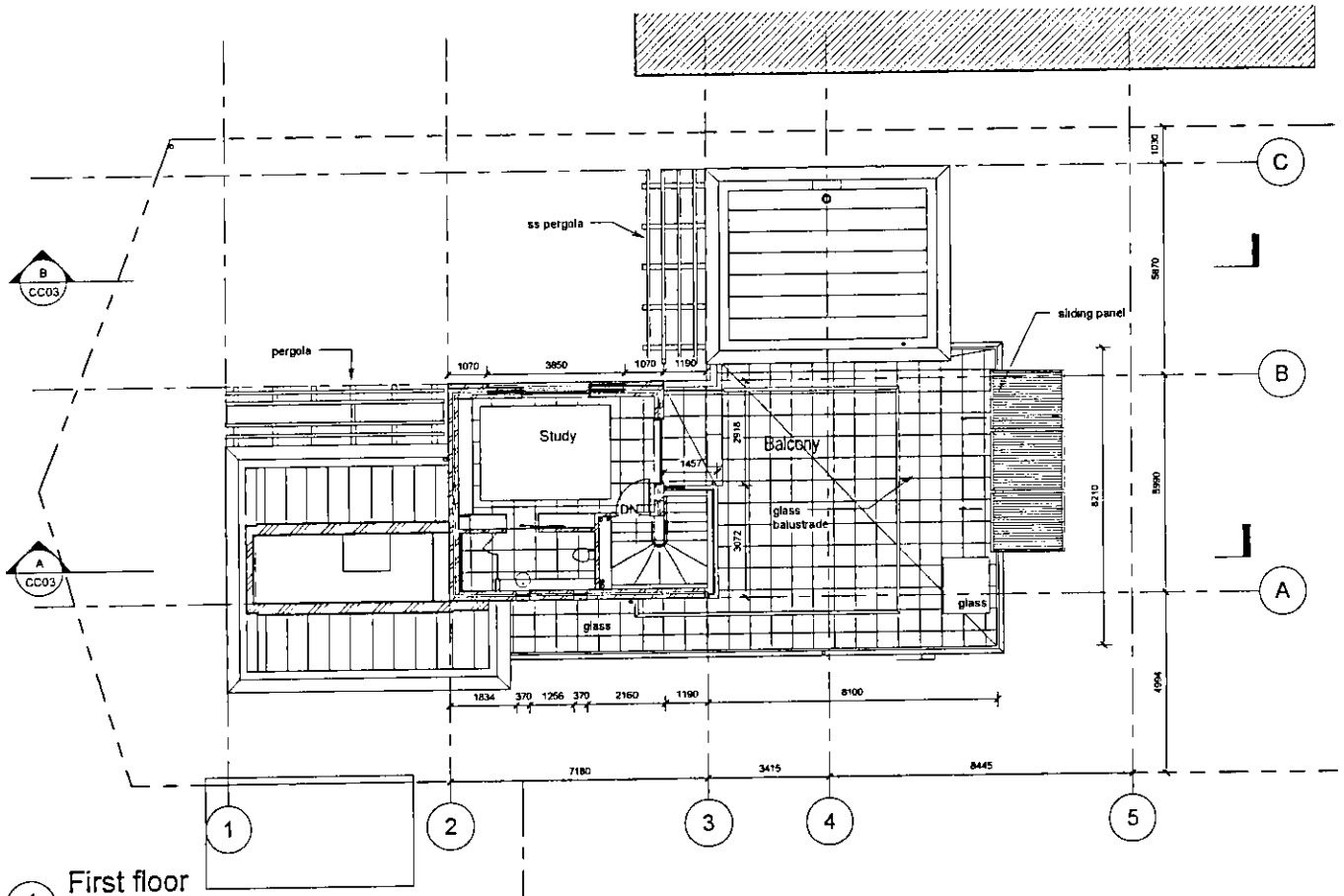
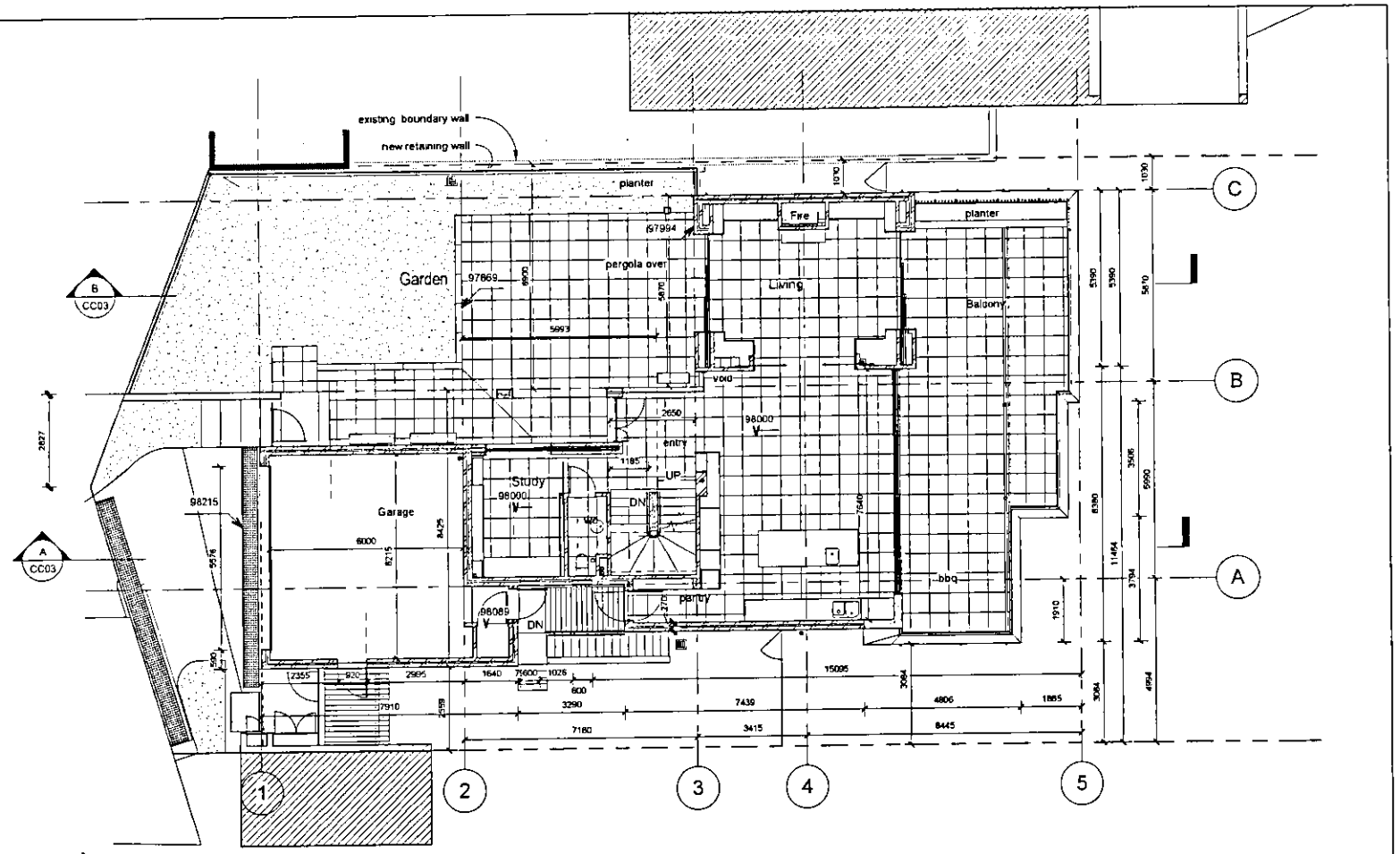
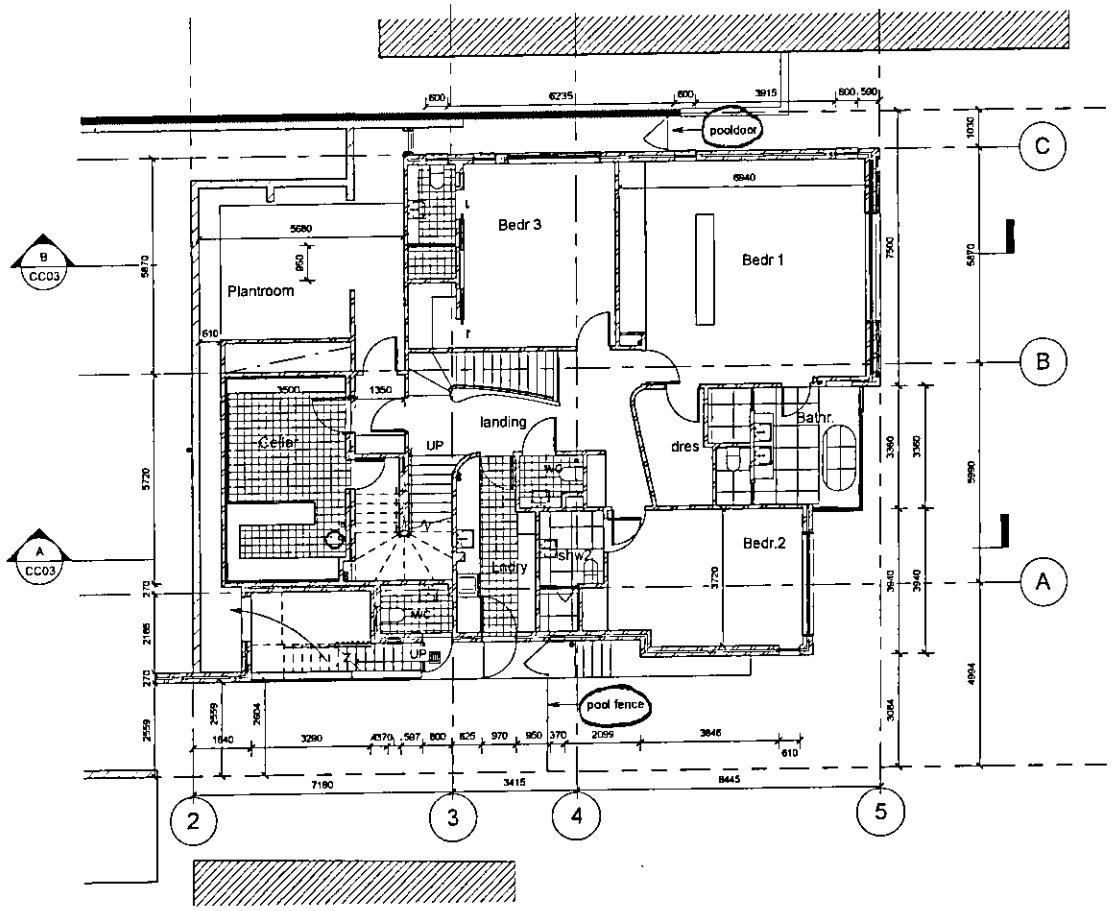


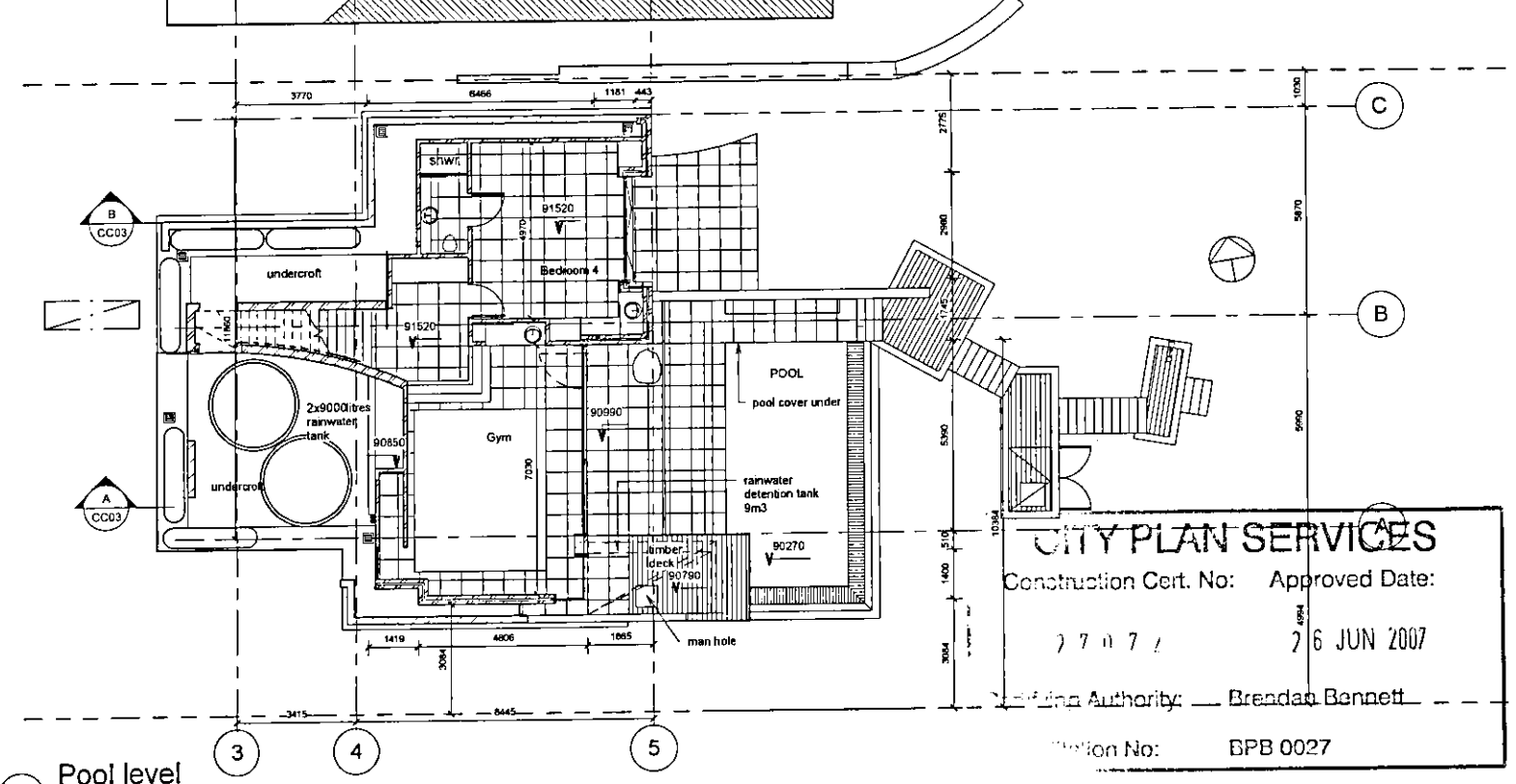
1 First floor
1 : 100



2 ground floor
1 : 100



3 Lower Ground
1 : 100



4 Pool level
1 : 100

CITY PLAN SERVICES
Construction Cert. No: Approved Date:
2707 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

All work are to comply with all relevant Australian Standards and BCA clauses including but not limited to :

Stormwater AS3500	Termite Control AS 3660.1
Timber Framing AS 1684	Glazing AS 1288-2006 & AS 2047
Wet Areas AS 3740	Sheet roofing and wall cladding AS 1562
Roof tiles AS 2049 & AS2050	Masonry AS 3700
Mechanical Ventilation AS 1668.2	Insulation AS/NZS 4859.1
Balustrade glassing AS1288-2006	Balustrade BCA part 3.9.2
Roof lights BCApart 3.12.3.2	Smoke Alarms BCAPart 3.7.2
Open fire place BCA part 3.7.3.3 &3.8.3.3	
Hot water supply AS /NZS 3500.4 AZ/NZS3500.5 cl 3.38	
Central heating pipe in accordance with table 3.12.5.1	
Heating & cooling ductwork BCA part 3.12.5.3	
Each edge of external doorway and openable windows to be air sealed	
Pool fence in accordance with the Swimming pool act 1992	

MODIFICATIONS	ISSUE no & date

Guy de Compiegne Architect
QUADRANT DESIGN PTY LTD 64 Goodhope street Padington 2021 Tel:0425 221193 /02 9331 2232
email:gdcomp@mpx.com.au

Mr & Mrs GRANT

237 WHALE BEACH ROAD WHALE BEACH NSW

FLOOR PLANS

Project number	0415
Date	MAY 2007
Drawn by	Author
CONSTRUCTION CERTIFICATE	
Scale	As indicated

CC02

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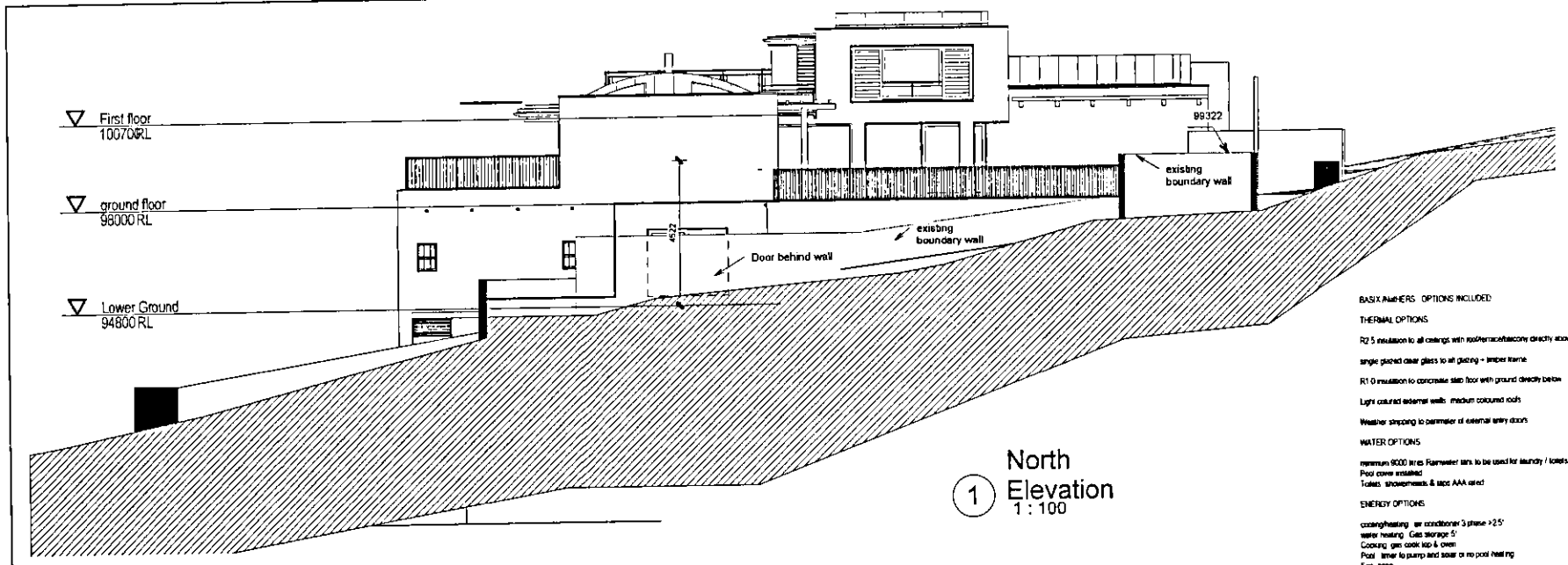


1 North Elevation
1 : 100

BASIX /NatHERS OPTIONS INCLUDED

THERMAL OPTIONS

R2.5 insulation to all ceilings with roof/terrace/balcony directly above

single glazed clear glass to all glazing – timber frame

R1.0 insulation to concrete slab floor with ground directly below

Light coloured external walls medium coloured roofs

Weather stripping to perimeter of external entry doors

WATER OPTIONS

minimum 9000 litres Rainwater tank to be used for laundry / toilets/garden

Pool cover installed

Toilets showerheads, & taps AAA rated

ENERGY OPTIONS

cooling/heating air conditioner 3 phase >2.5*

water heating Gas storage 5*

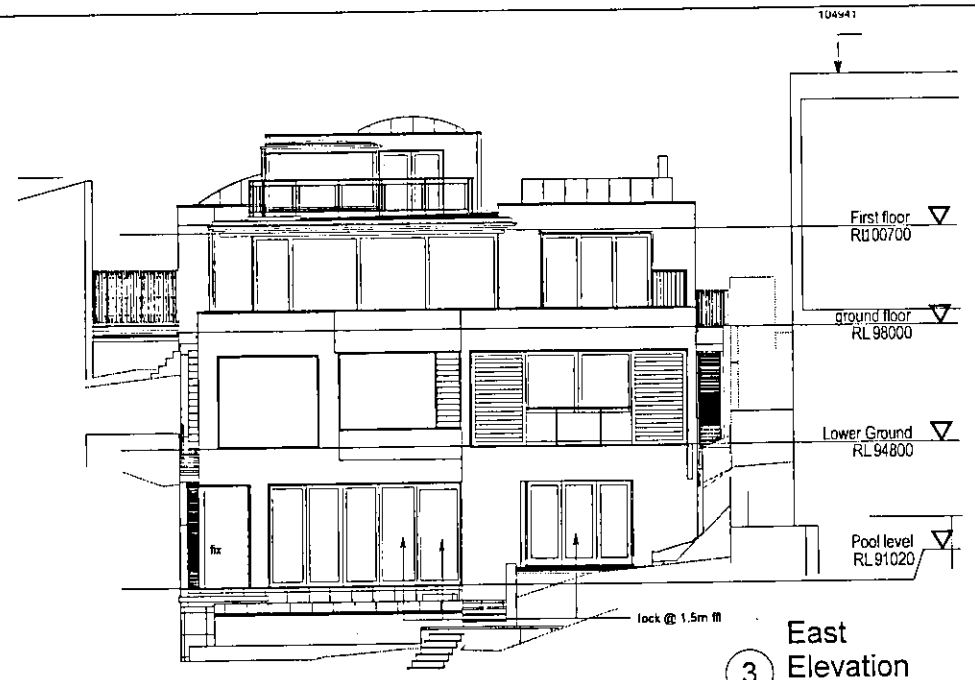
Cooking gas cook top & oven

Pool timer to pump and solar or no pool heating

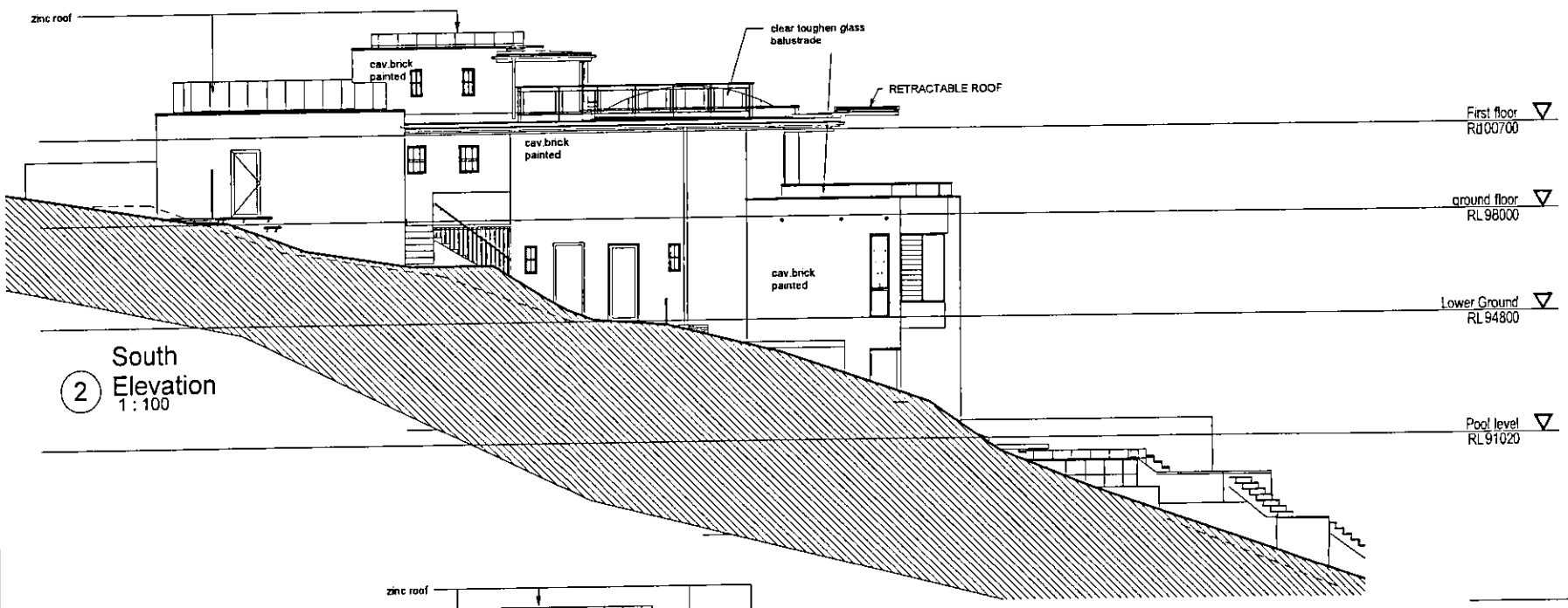
Spa none

Refrigerator well ventilated

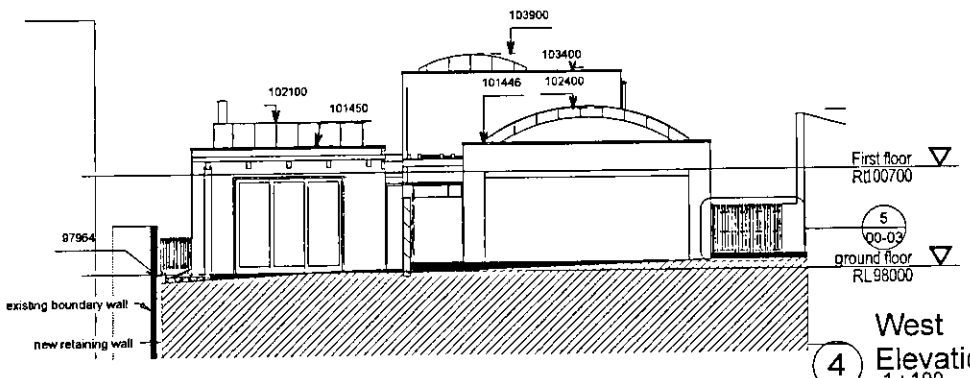
Clothes drying area outdoor and indoor



3 East Elevation
1 : 100



2 South Elevation
1 : 100



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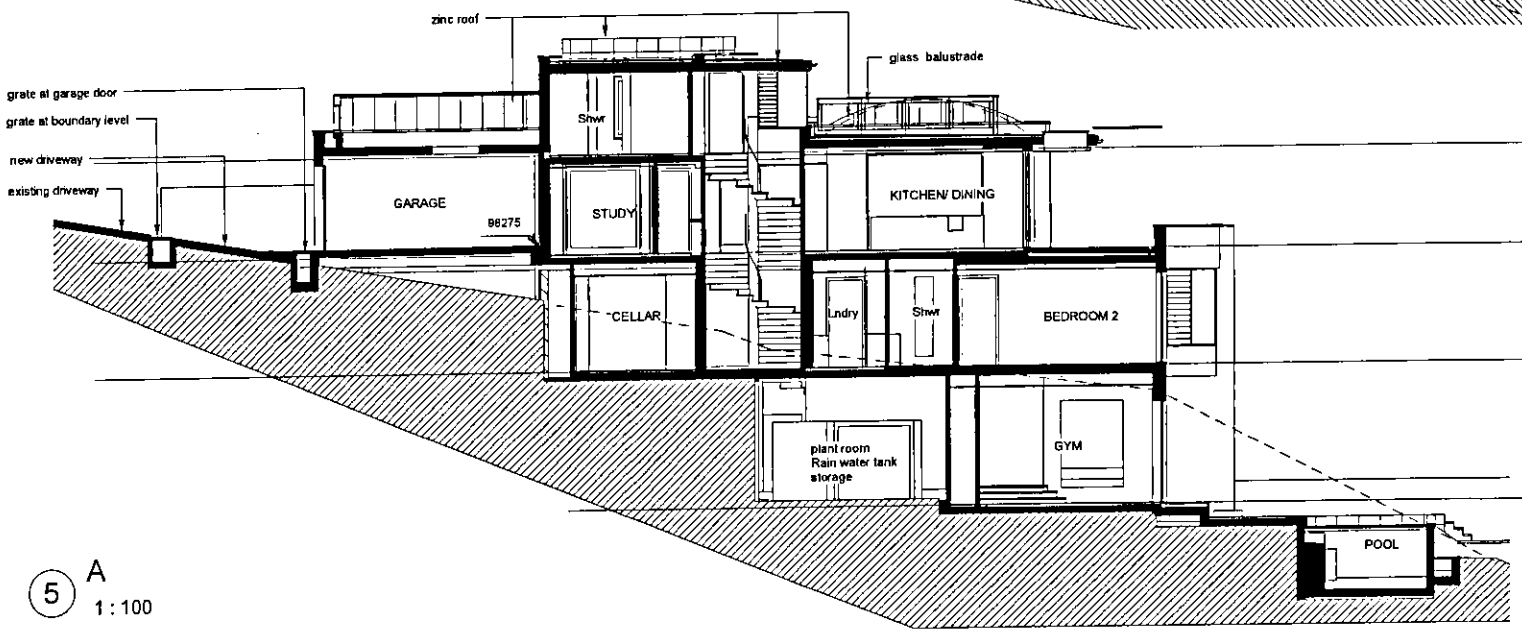

5 A
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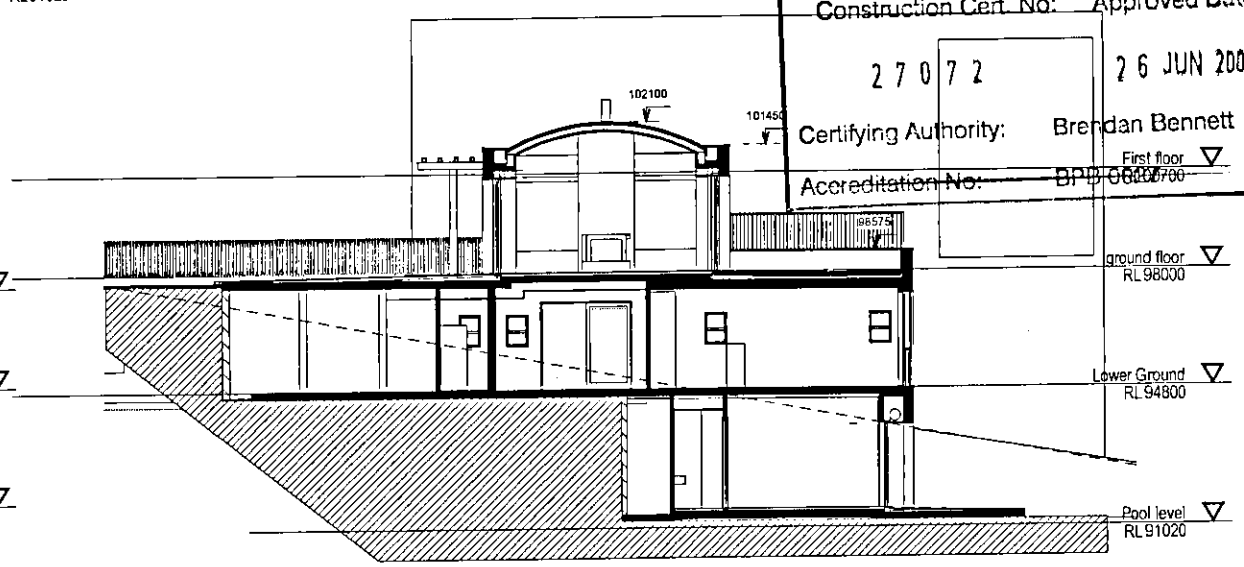

6 B
1 : 100

CITY PLAN SERVICES
Construction Cert. No: 27072 Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPD/0622

All work are to comply with all relevant Australian Standards and BCA clauses including but not limited to :

Stormwater AS3500	Termite Control AS 3660.1
Timber Framing AS 1684	Glazing AS 1288-2006 & AS 2047
Wet Areas AS 3740	Sheet roofing and wall cladding AS 1562
Roof tiles AS 2049 & AS2050	Masonry AS 3700
Mechanical Ventilation AS 1668.2	Insulation AS/NZS 4859.1
Balustrade glassing AS1288-2006	Balustrade BCA part 3.9.2
Roof lights BCApart 3.12.3.2	Smoke Alarms BCAPart 3.7.2
Open fire place BCA part 3.7.3.3 &3.8.3.3	
Hot water supply AS /NZS 3500.4	AZ/NZS3500.5 cl 3.38
Central heating pipe in accordance with table 3.12.5.1	
Heating & cooling ductwork BCA part 3.12.5.3	
Each edge of external doorway and openable windows to be air sealed	
Pool fence in accordance with the Swimming pool act 1992	

MODIFICATIONS	ISSUE no & date

Guy de Compiegne Architect
QUADRANT DESIGN PTY LTD 64 Goodhope street Padington 2021 Tel:0425 221193 /02 9331 2232
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Mr & Mrs GRANT

237 WHALE BEACH ROAD WHALE BEACH NSW

SECTIONS & ELEVATIONS

Project number	0415
Date	MAY 2007
Drawn by	Author
CONSTRUCTION CERTIFICATE	Scale As indicated

CC03

24/05/2007 4:45:1 PM

STRUCTURAL DOCUMENTATION

BEACH HOUSE

237 WHALE BEACH ROAD, WHALE BEACH

JAMES TAYLOR AND ASSOCIATES

4 GURRIGAL STREET, MOSMAN. 2088 A.C.N. 002 376 454
Tel. (02) 9969 1999 Fax (02) 9960 2472

REFER TO TRANSMITTAL FOR LATEST REVISIONS

S00	CONSTRUCTION NOTES
C01	EXCAVATION PLAN AND CIVIL WORKS
S01	POOL LEVEL FLOOR PLAN AND DETAILS
S02	R.C. DETAILS
S03	R.C. DETAILS
S04	LOWER GROUND FLOOR PLAN
S05	R.C. DETAILS
S06	GROUND FLOOR PLAN
S07	R.C. DETAILS
S08	LEVEL 1 FLOOR PLAN REINFORCEMENT AND DETAILS
S09	R.C. DETAILS
S10	ROOF LEVEL PLAN REINFORCEMENT AND DETAILS
S11	ROOF FRAMING PLAN

FOUNDATIONS

F1 DESIGN BEARING PRESSURE = 1000kPa (APPROVED ROCK)
F2 FOUNDATION MATERIAL SHALL BE APPROVED FOR THE ABOVE DESIGN BEARING PRESSURE PRIOR TO CONSTRUCTION OF FOOTINGS

B

STEELWORK

S1 FABRICATE AND ERECT ALL STRUCTURAL STEELWORK IN ACCORDANCE WITH CURRENT EDITIONS OF S.A.A. CODES AS1250 AND AS1554
S2 VERIFY ALL SETTING OUT DIMENSIONS WITH ARCHITECT.
S3 DO NOT OBTAIN DIMENSIONS BY SCALING STRUCTURAL ELEMENTS
S4 SUBMIT THREE COPIES OF ALL SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL OF GENERAL ARRANGEMENT OF STRUCTURAL ELEMENTS BEFORE COMMENCING FABRICATION
S5 DESIGN LIVE LOAD 2.0kPa GENERAL.
S6 STRUCTURAL GRADE QUALITY STEEL GRADE 250MPa SHALL BE USED THROUGHOUT UNO. EXCEPT FOR RHS AND SHS SECTIONS WHICH SHALL BE 350MPa GRADE.
S7 ALL WELDS TO BE OF STRUCTURAL GRADE ELECTRODE AND NOT LESS THAN 6mm CONTINUOUS FILLET UNO.
S8 ALL WELDS SHALL BE FREE OF SLAG.
S9 ALL BOLTS SHALL BE GRADE 8.8/S TO AS1111
S10 ALL HIGH STRENGTH STRUCTURAL GRADE BOLTS TO AS1252 TO BE USED IN SNUG TIGHTENED CONDITION (BEARING MODE)
S11 PROPRIETARY ITEMS (BOLTS etc) SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
S12 THE CONTRACTOR SHALL PROVIDE AND EMPLOY ANY ADDITIONAL TEMPORARY BRACING AS NECESSARY TO ADEQUATELY AND SAFELY HOLD THE STEELWORK IN POSITION DURING CONSTRUCTION.
S13 DO NOT GROUT UNDER BASEPLATES UNTIL FIRST LEVEL STEELWORK IS PLUMB AND FIXED BY WELDING OR BOLTING.
S14 ALL FABRICATED STEELWORK SHALL BE INSPECTED AT:-
1. COMPLETION OF FABRICATION AND PRIOR TO LEAVING THE FABRICATORS SHOP
2. COMMENCEMENT OF SURFACE PREPARATION PRIOR TO PROTECTIVE COATING
3. COMPLETION OF PROTECTIVE COATING PRIOR TO DELIVERY TO SITE.
THE INSPECTION SHALL BE CARRIED OUT BY THE SUPERVISING ARCHITECT AND/OR HIS NOMINATED REPRESENTATIVE
S15 SURFACE FINISHING - SPECIAL ATTENTION SHALL BE PAID TO THE FOLLOWING:-
1. WELD SPATTER AND MANUFACTURERS MARKINGS SHALL BE REMOVED AND GROUND SMOOTH.
2. FILLET WELDS SHALL BE UNIFORM AND SMOOTH.
3. PIN HOLES AND OTHER DEFECTS SHALL BE RECTIFIED AND GROUND BACK TO SUIT.
4. BUTT WELDS SHALL BE 'V' PREPARED AND THE SURFACE GROUND SMOOTH.
S16 SURFACE PREPARATION - ALL STEEL SURFACES TO BE COATED SHALL BE BLAST CLEANED TO A 'NEAR WHITE' METAL FINISH ACCORDING TO A1627.4 CLASS 2.5
S17 PAINTING -
PRIME COAT- 75µm min INTERNATIONAL INTERZINC 315
INTERMEDIATE COAT 150µm min INTERNATIONAL INTERCURE 420HS
NOTE PRIME AND INTERMEDIATE COATS SHALL BE APPLIED IN SHOP PRIOR TO DELIVERY.
FINISH COAT- 75µm min INTERNATIONAL INTERFINE 629
TOTAL DRY FILM THICKNESS 300µm
INTERMEDIATE AND FINISH COATS APPLY TO ALL EXPOSED STEELWORK INTERNAL AND EXTERNAL.
S18 ALTERNATIVE PAINTS WHERE PROPOSED MUST BE A COMPLETE COATING SYSTEM ACCOMPANIED BY A REPUTABLE MANUFACTURERS RECOMMENDATIONS, AND BE EQUIVALENT TO THE ABOVE SPECIFICATION.
S19 PAINTING IS PROHIBITED WHERE -
1. AMBIENT TEMPERATURE IS LESS THAN 10°C.
2. RELATIVE HUMIDITY IS GREATER THAN 85%
S20 REPAIRS TO DAMAGED SURFACES - DAMAGE TO SURFACES SHALL BE REINSTATED IN ACCORDANCE WITH THE PAINT SPECIFICATION NOTED ABOVE.
S21 THE CONTRACTOR SHALL SUPPLY THIRD PARTY CERTIFICATION THAT THE STEEL PREPARATION AND PAINT THICKNESSES COMPLY WITH THE SPECIFICATION ABOVE

A

CONCRETE

C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITIONS EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS
C2 CONCRETE COMPOSITION AND CLEAR COVER TO REINFORCEMENT SHALL BE AS FOLLOWS

ELEMENT	AS 3600 f'c MPa	COVER mm
FOOTINGS	25	60
ALL - UNO. INTERNAL	32	20
EXTERNAL	40	45

ADMIXTURES, WHERE USED, SHALL COMPLY WITH THE REQUIREMENTS OF AS1478 AND AS1479. THESE COVER REQUIREMENTS MAY VARY DUE TO REQUIRED FIRE RESISTANCE RATING - REFER AS3600
C3. ALL CONCRETE SHALL HAVE MAXIMUM SLUMP OF 80mm, 20mm MAXIMUM AGGREGATE WITH NO FLY ASH UNLESS APPROVED BY THE ENGINEER
C4. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON DRAWINGS OR SPECIFICALLY APPROVED BY THE ENGINEER
C5 NO HOLES, CHASES OR EMBEDMENTS OF PIPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER
C6 ALL CONCRETE SHALL BE PLACED AND CURED IN ACCORDANCE WITH AS3600. WHERE A SURFACE CURING COMPOUND IS USED, IT MUST BE APPLIED ONTO SLABS WITHIN 2 HOURS OF FINISHING OPERATION AND ONTO WALLS AND COLUMNS IMMEDIATELY AFTER REMOVAL OF THE FORMWORK.
C7. HORIZONTAL FORMWORK SHALL BE STRIPPED WHEN APPROVED BY THE ENGINEER
C8. SLABS AND BEAMS SHALL BEAR ONLY ON THE BEAMS, WALLS ETC SHOWN ON THE STRUCTURAL DRAWINGS. ALL OTHER BUILDING ELEMENTS SHALL BE KEPT 15mm CLEAR OF SOFFITS OF STRUCTURAL ELEMENTS.
C9. COMPLETED STRUCTURAL ELEMENTS SHALL CONFORM WITH THE SHAPES, LINES, LEVELS, GRADES AND DIMENSIONS REQUIRED BY THE CONTRACT DRAWINGS.
C10 ALL CONCRETE REINFORCEMENT SHALL BE TO AS1302, AS1303 AND AS1304. NO REINFORCEMENT SHALL BE WELDED WITHOUT PRIOR APPROVAL
C11 R = STRUCTURAL GRADE ROUND BAR
N = "TEMPCORE" DEFORMED BAR
F = HARD DRAWN STEEL WIRE REINFORCING FABRIC
DESIGNATION CODE OF REINFORCEMENT BARS:-

NO. OF BARS IN GROUP — BAR GRADE AND TYPE
N16-300
NOMINAL BAR SIZE — SPACING IN mm.

UNO - UNLESS NOTED OTHERWISE
NSOP - NOT SHOWN ON PLAN
LV - LENGTH VARIES
C12 TRANSVERSE TIE BARS N12-300 - SPLICE WHERE NECESSARY AND LAP WITH MAIN BARS 400mm
C13 SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE PRINCIPAL. LAPS SHALL BE IN ACCORDANCE WITH AS3600 AND NOT LESS THAN THE DEVELOPMENT FOR EACH BAR SIZE. BENDING OF REINFORCING BARS SHALL BE DONE WITHOUT HEATING USING MECHANICAL BENDING TOOLS. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER. FABRICS SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH THREE WRAPS OF TIE WIRE
C14. REINFORCEMENT IS SHOWN DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION
C15. ALL REINFORCEMENT SHALL BE MAINTAINED IN POSITION DURING CONCRETING.

GENERAL

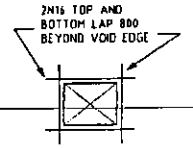
G1 THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS INCLUDING ALL WORKING DRAWINGS AND SPECIFICATIONS, AND WRITTEN INSTRUCTIONS AS MAY BE ISSUED PRIOR TO OR DURING THE COURSE OF CONSTRUCTION. ALL DISCREPANCIES AND VARIATIONS SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
G2. ALL STRUCTURAL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL RELEVANT AND CURRENT S.A.A. CODES
G3. STRUCTURAL DRAWINGS SHALL NOT BE SCALED IN ORDER TO OBTAIN DIMENSIONS. DIMENSIONS WHERE SHOWN ON STRUCTURAL DRAWINGS SHALL BE CO-ORDINATED WITH ALL OTHER RELEVANT DRAWINGS
G4. DURING CONSTRUCTION, THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED

BLOCKWORK

B1. CONCRETE MASONRY UNITS SHALL BE STRUCTURAL CLASS 'A' IN ACCORDANCE WITH THE REQUIREMENTS OF AS1475. 'DOUBLE U' BLOCKS ARE RECOMMENDED FOR USE
B2 MORTAR SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED IN THE FOLLOWING RATIO: 1 PART PORTLAND CEMENT TO 1/10 PART LIME TO 3 PARTS SAND, AND SHALL COMPLY WITH THE REQUIREMENTS OF AS123
B3. ALL PERPENDS, EXCEPT WHERE REQUIRED FOR WEEPHOLES, SHALL BE FULLY FILLED WITH MORTAR
B4. BOTTOM COURSE OF BLOCKS TO HAVE CLEAN OUT BLOCKS TO ALL CORES TO BE GROUTED. LAY BOTTOM COURSE OF BLOCKS ON A FULL MORTAR BED. CLEAN OUT MORTAR PROTRUSIONS FROM ALL CORES FOR FULL HEIGHT OF WALL PRIOR TO PLACING REINFORCEMENT FOR CORE GROUTING. TIE VERTICAL BARS TO STARTER BARS AT INSPECTION OPENINGS
B5. ALL CORES, WHERE SPECIFIED, IN CONCRETE MASONRY UNITS ARE TO BE GROUTED WITH:
a) CONCRETE MIXED BY VOLUME IN THE FOLLOWING RATIO: 1 PART PORTLAND CEMENT TO 3 PARTS SAND TO 2 PARTS OF 10MM AGGREGATE, OR
b) EQUIVALENT READYMIXED CEMENT GROUT WITH f'c = 20 MPa
THE GROUT SHALL HAVE A MAXIMUM SLUMP OF 250mm AT THE TIME OF PLACING
B6 FILL ALL CORES TO A MAXIMUM 3600mm HIGH FREE DROP IN ANY ONE POUR. STOP POUR 50mm BELOW TOP OF BLOCK TO PROVIDE KEY FOR THE FOLLOWING POUR
B7. CORE GROUT IS TO BE COMPACTED TO ENSURE COMPLETE FILLING OF ALL CORES
B8 PROVIDE TEMPORARY PROPPING TO WALLS WHERE REQUIRED FOR STABILITY DURING CONSTRUCTION.
B9 PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT 10m MAX CENTRES OR WHERE INDICATED ON THE DRAWINGS
B10 VERTICAL REINFORCEMENT IS TO BE POSITIONED 50mm CLEAR FROM FACE OF BLOCKWORK UNLESS NOTED OTHERWISE
B11 WATERPROOF MEMBRANE, D.P.C., AGRICULTURAL PIPES AND WEEPHOLES TO BE AS REQUIRED BY THE ARCHITECT'S SPECIFICATION.
B12 BACKFILL RETAINING WALLS, AFTER OBTAINING THE ENGINEER'S APPROVAL, WITH CLEAN GRANULAR FILL, FREE FROM CLAY AND OTHER ORGANIC MATTER

MASONRY

M1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT EDITIONS OF AS3700 EXCEPT AS VARIED BY THE CONTRACT DOCUMENTS
M2. BRICKS USED IN LOADBEARING CONSTRUCTION SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 20MPa UNLESS NOTED OTHERWISE
M3. MASONRY WALLS TO BE ERECTED ON PROPPED SUSPENDED SLABS AND BEAMS SHALL BE CONSTRUCTED IN SUCH A MANNER SO AS TO ALLOW FOR FUTURE SLAB DEFLECTION AND NOT TO EXCESSIVELY LOAD FORMWORK.
M4. WHERE SLABS OR BEAMS BEAR ON MASONRY, THE TOP COURSE SHALL BE LEVEL, SMOOTH AND COVERED WITH APPROVED SLIDING JOINT MATERIAL UNLESS NOTED OTHERWISE



TYPICAL PENETRATION REINFORCEMENT U.N.O.

MINIMUM BAR LAPS	
BAR Φ	LAP (mm)
12	400
16	500
20	600
24	800
28	1000
32	1200

B

BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR CONSTRUCTION	29.05.07	C
RB	JT	ISSUED FOR PRICING-REVISED	17.05.07	B
RB	JT	ISSUED FOR PRICING	01.05.07	A

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MR AND MRS GRANT
BEACH HOUSE
237 WHALE BEACH RD, WHALE BEACH

CONSTRUCTION NOTES

DESIGN JT	DRAWN RB	PROJECT No	
CHKD		4095	
APPRD.		DRAWING No.	REV
SCALE	DATE 01.12.06	S00	C

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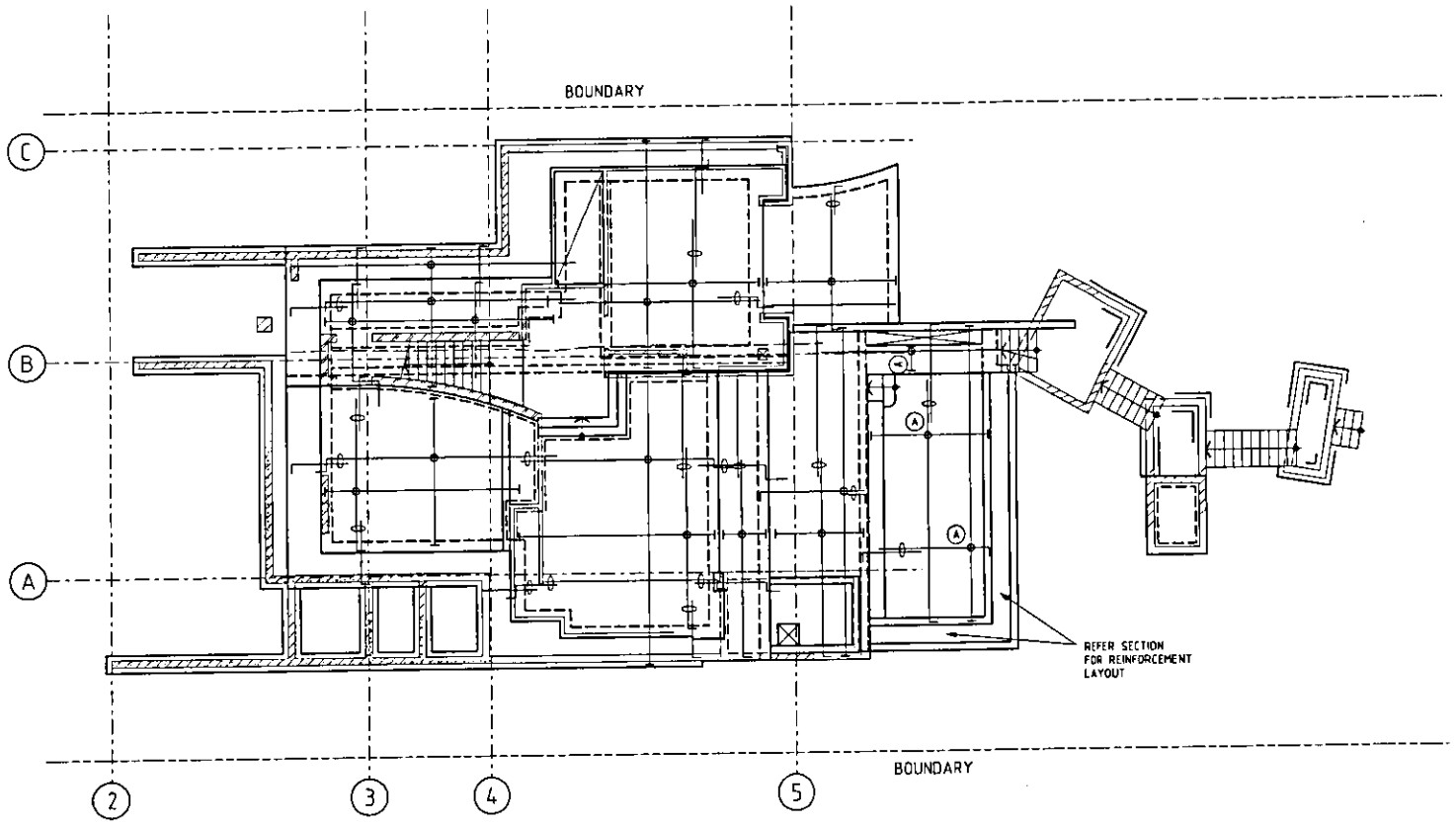


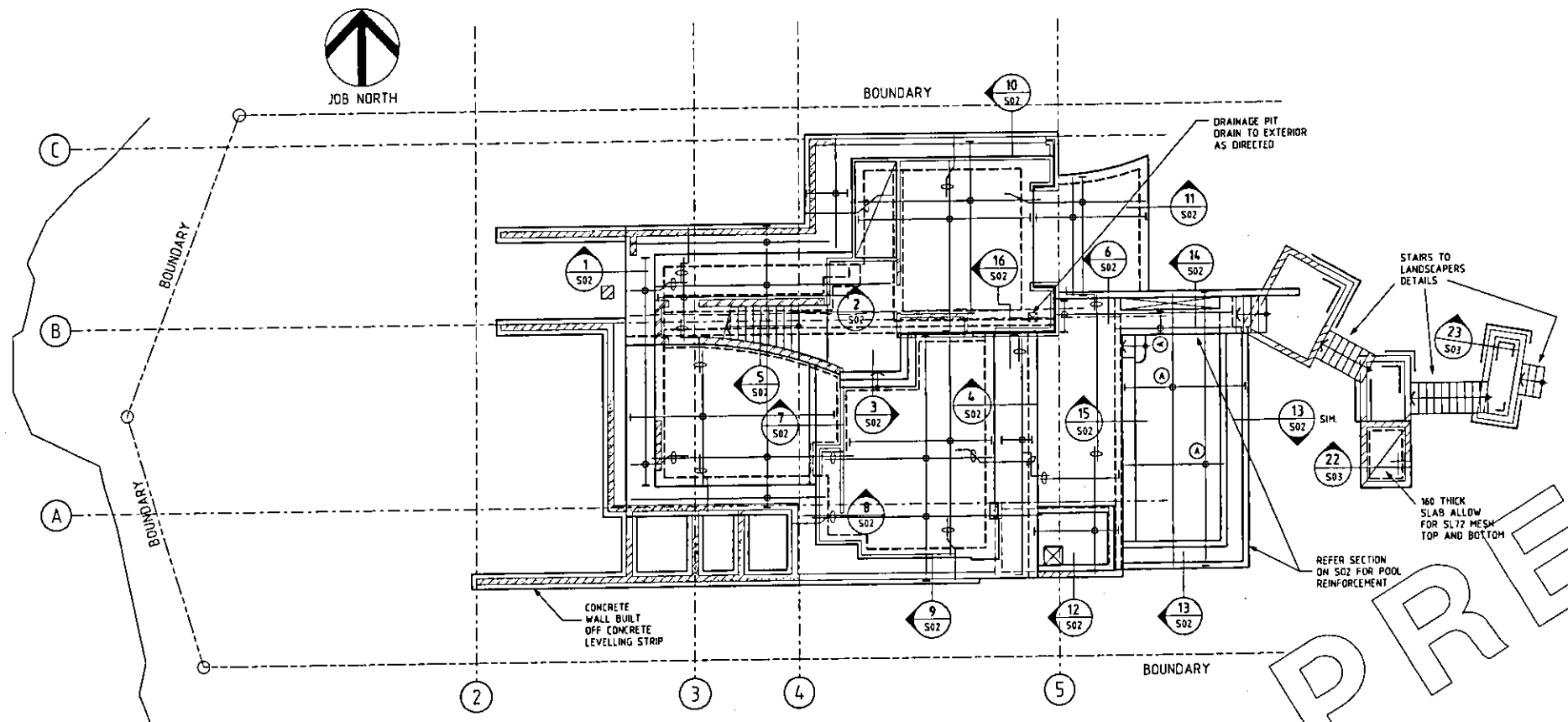
POOL LEVEL FLOOR PLAN
TOP REINFORCEMENT PLAN

SLAB 200 THICK U.N.O.
N12-250 EACH WAY U.N.O.

LAY FIRST IN BOTTOM AND LAST IN TOP

REINFORCEMENT SCHEDULE

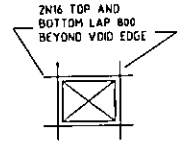
Ⓐ N12-200



POOL LEVEL FLOOR PLAN
BOTTOM REINFORCEMENT PLAN

SLAB 200 THICK U.N.O.
N12-300 EACH WAY U.N.O.

LAY FIRST IN BOTTOM AND LAST IN TOP



TYPICAL PENETRATION REINFORCEMENT U.N.O.

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BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR PRICING	27.06.07	A

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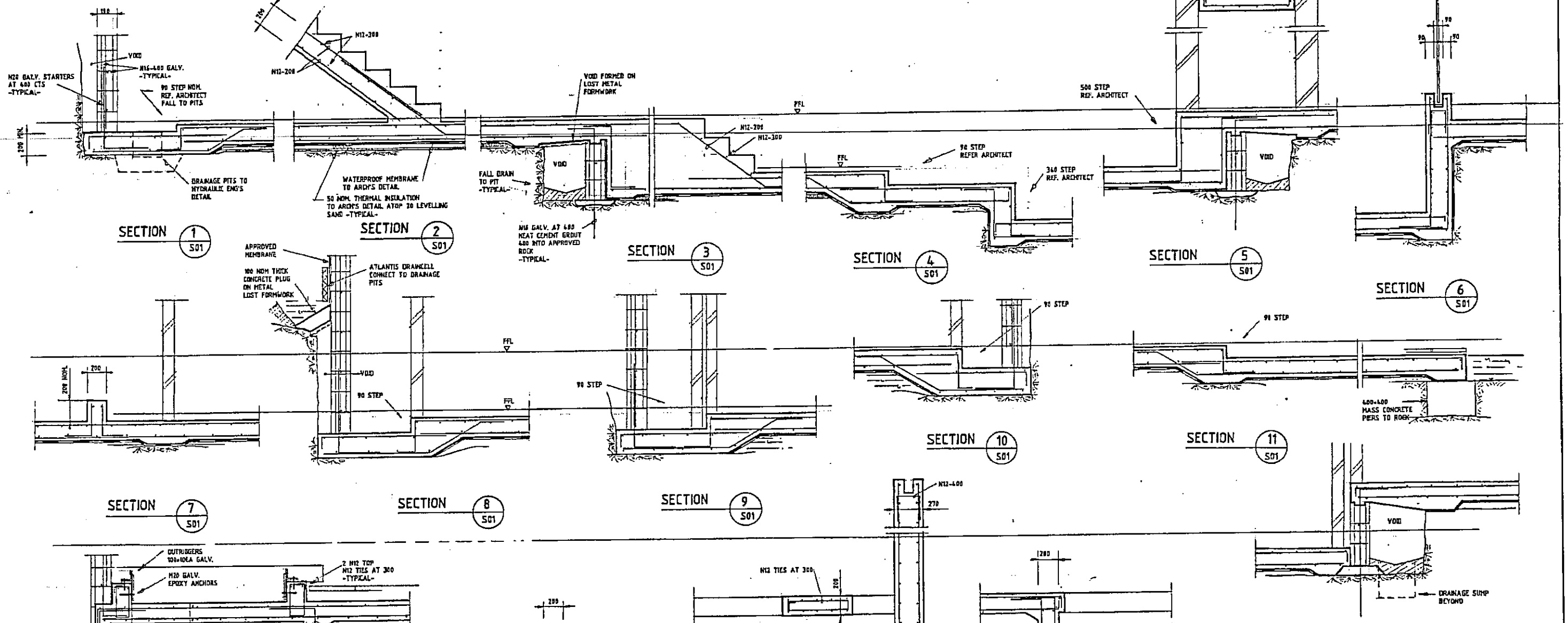
POOL LEVEL FLOOR PLAN AND DETAILS

DESIGN <DES>	DRAWN <DRN>	PROJECT No. 4095
CHKD		
APPRD.		DRAWING No. S01 / REV A
SCALE 1:100	DATE 17.10.06	



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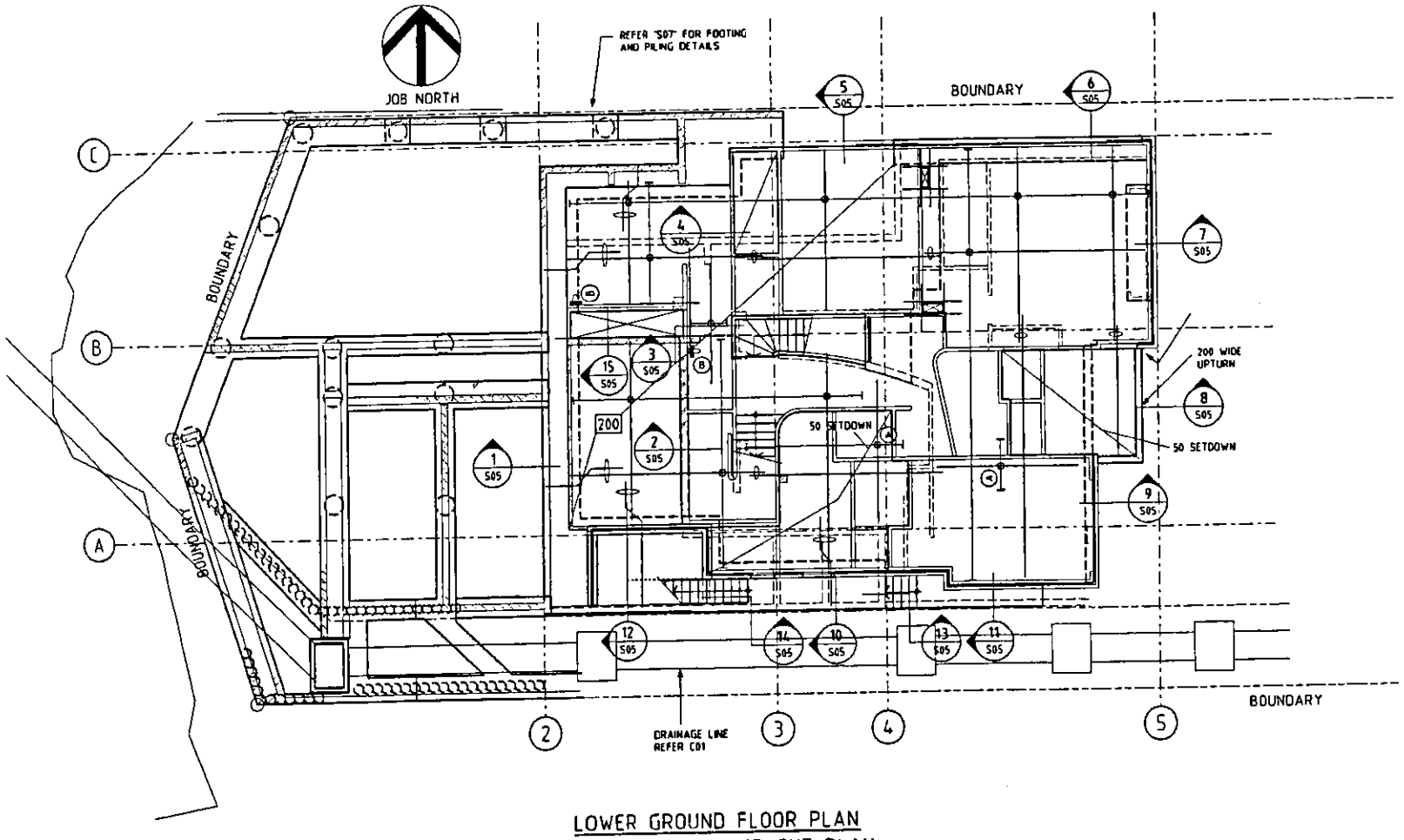
R.C. DETAILS

DESIGN JT	DRAWN JC	PROJECT No 4095
CHKD.		
APPRD.		DRAWING No. S02 / REV A
SCALE 1:20	DATE DEC 06	



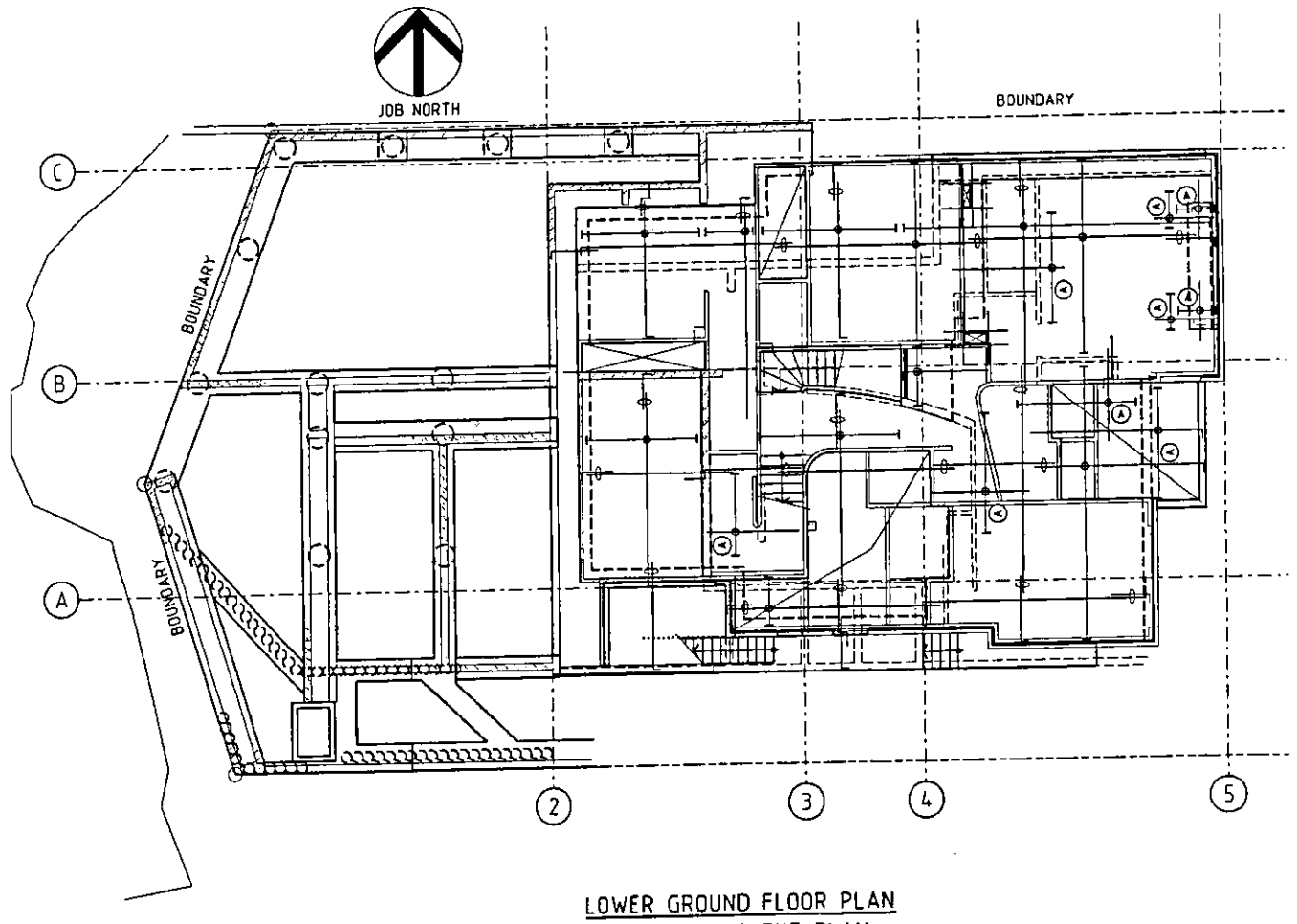
LOWER GROUND FLOOR PLAN
BOTTOM REINFORCEMENT PLAN

SLAB 250 THICK UNO
2N12-200 THROUGHOUT U.N.O.

LAY FIRST IN BOTTOM AND LAST IN TOP

REINFORCEMENT SCHEDULE

(A) N16-200 EXTRA
(B) 3N20 EXTRA



LOWER GROUND FLOOR PLAN
TOP REINFORCEMENT PLAN

SLAB 250 THICK UNO
N12-300 BOTH WAYS THROUGHOUT U.N.O.

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RB	JT	ISSUED FOR PRICING	01.05.07	A

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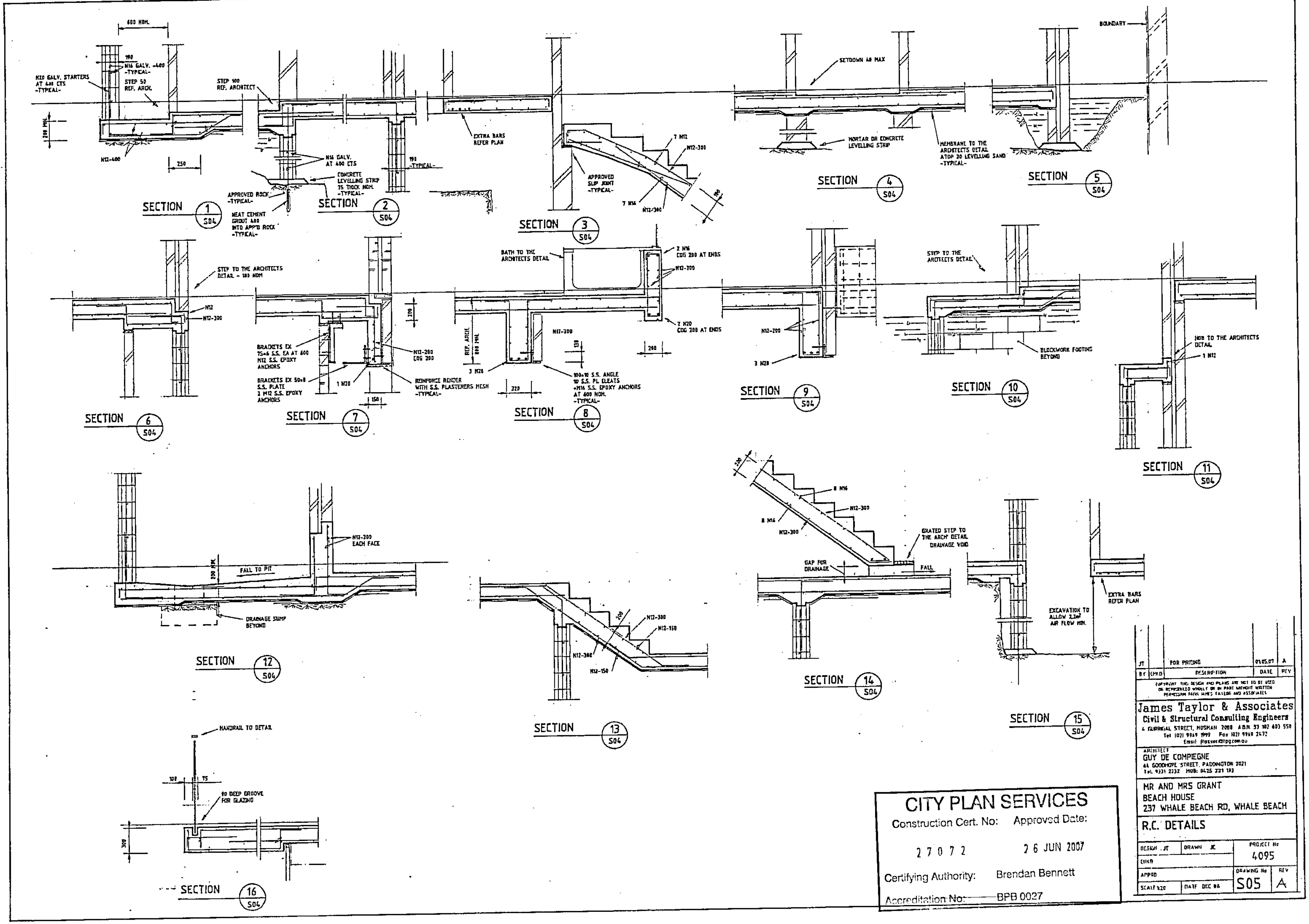
LOWER GROUND FLOOR PLAN
-

DESIGN JT	DRAWN RB	PROJECT No.	
CHKD		4095	
APPRD		DRAWING No	REV
SCALE 1:100	DATE 12.10.06	S04	B



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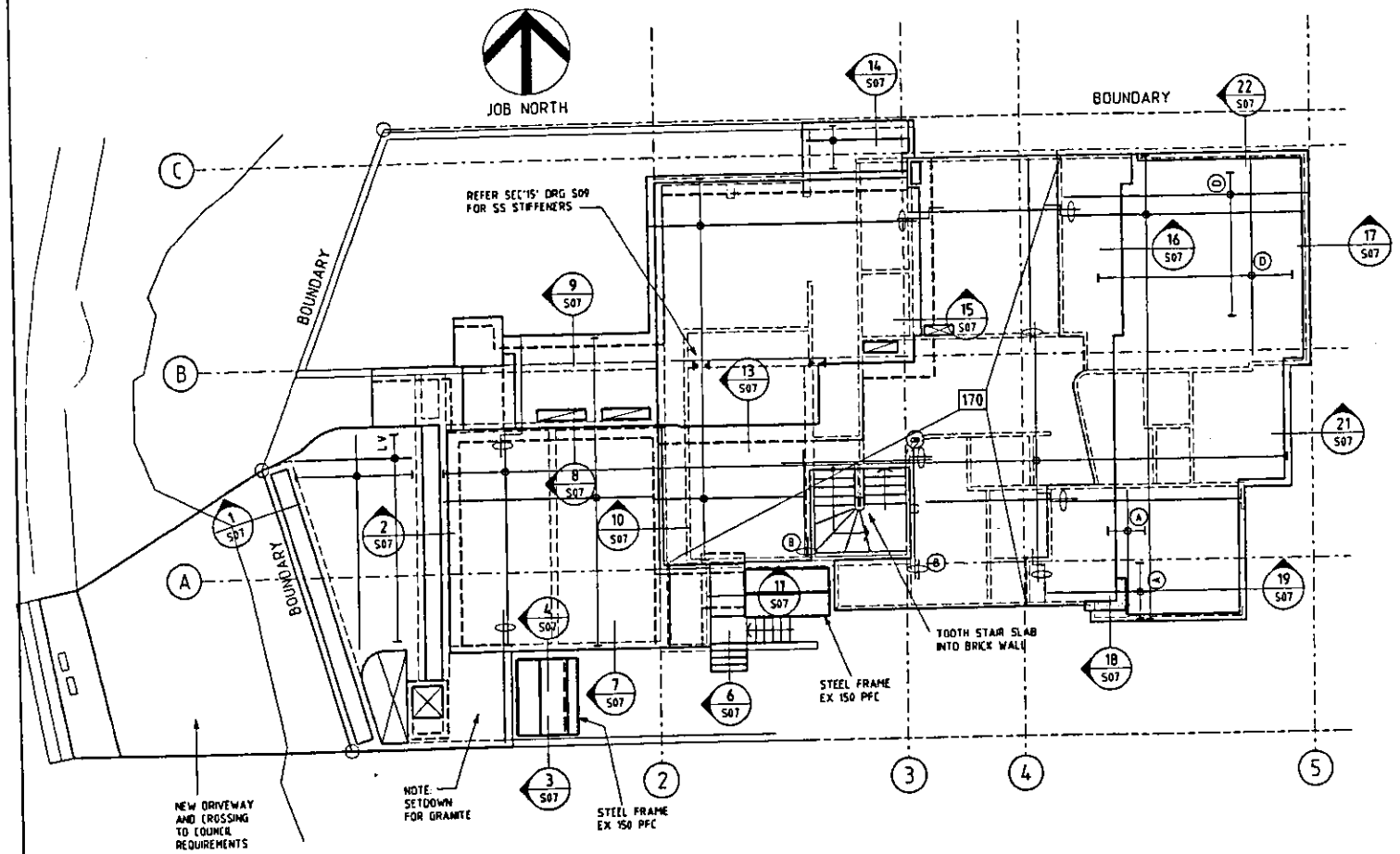
R.C. DETAILS

DESIGN JT	DRAWN JC	PROJECT No 4095
CHKD		
APPRD		DRAWING No S05 / REV A
SCALE 1:20	DATE DEC 06	



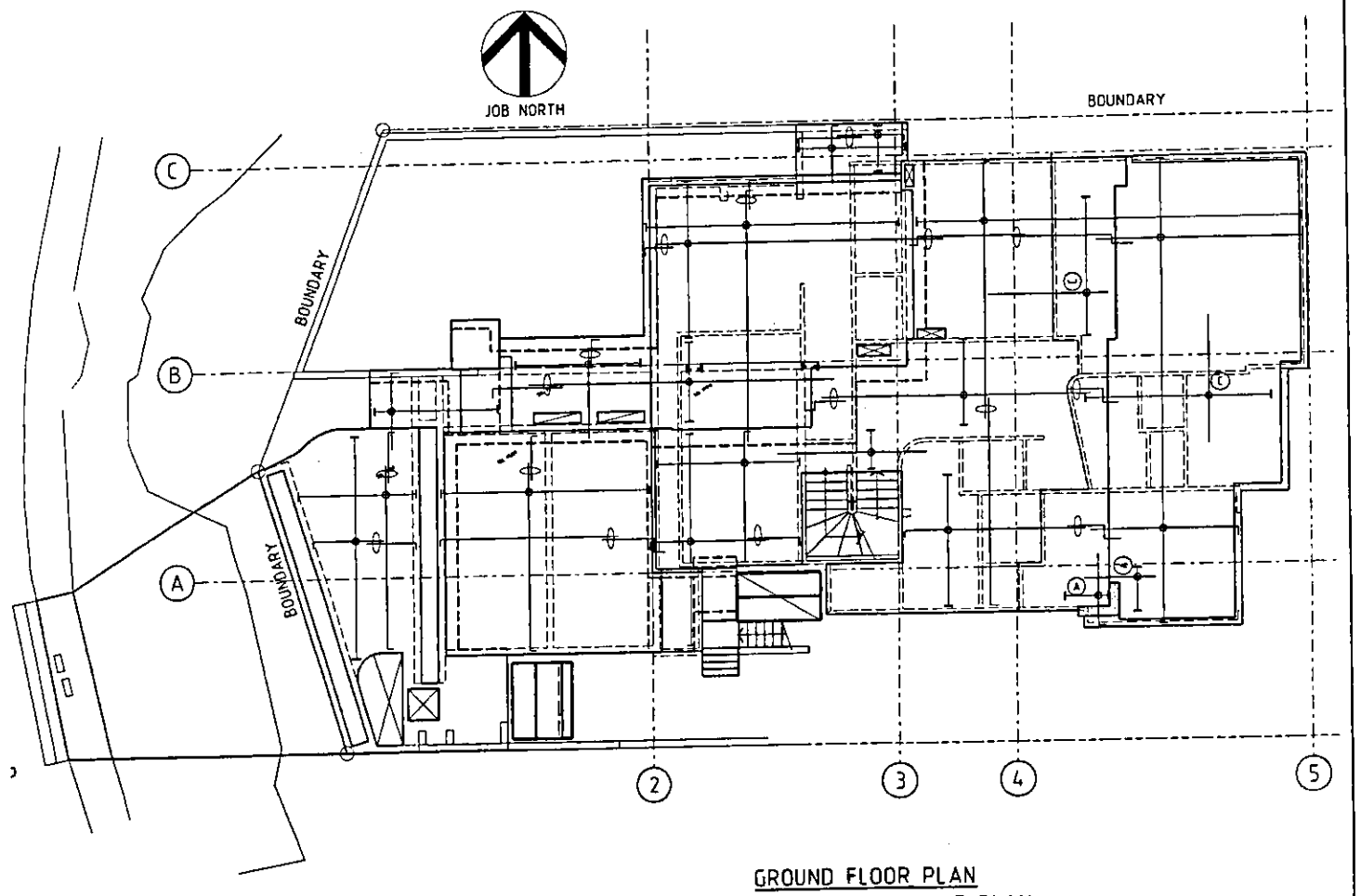
GROUND FLOOR PLAN
BOTTOM REINFORCEMENT PLAN

SLAB 200 THICK UNO
N12-200 BW

REINFORCEMENT SCHEDULE

- (A) N16-200 EXTRA
- (B) 2N20 EXTRA
- (C) N20-200
- (D) N16-400 EXTRA

LAY FIRST IN BOTTOM AND LAST IN TOP



GROUND FLOOR PLAN
TOP REINFORCEMENT PLAN

SLAB 200 THICK UNO
N12-200 BW

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RB	JT	ISSUED FOR PRICING	01.05.07	A

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GROUND FLOOR PLAN
-

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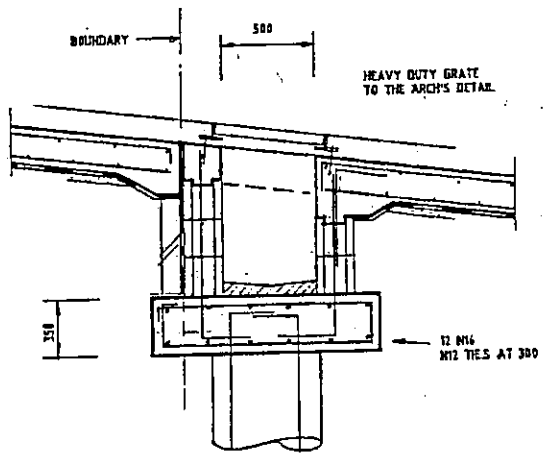
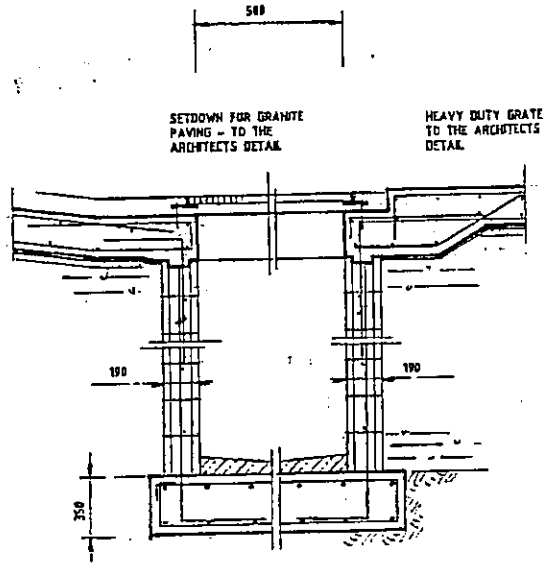
CHKD			
APPRD.		DRAWING No	REV
SCALE 1:100	DATE 12.10.06	S06	B



SECTION 1 S06



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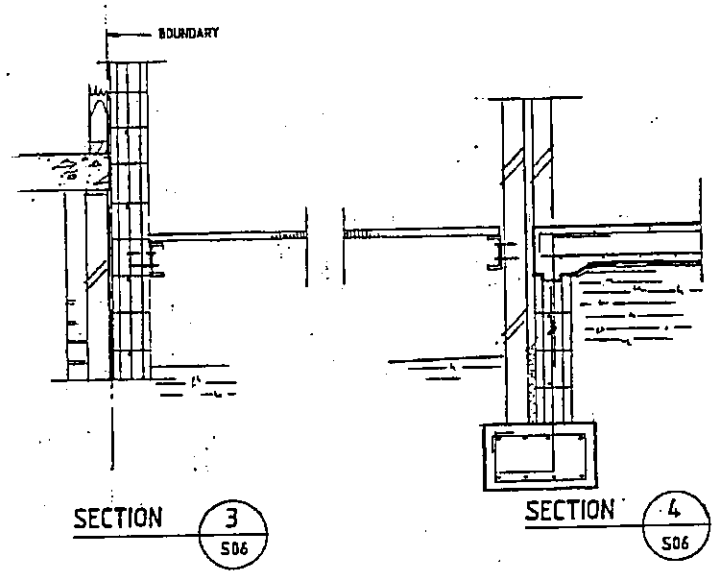

SECTION 3 S06

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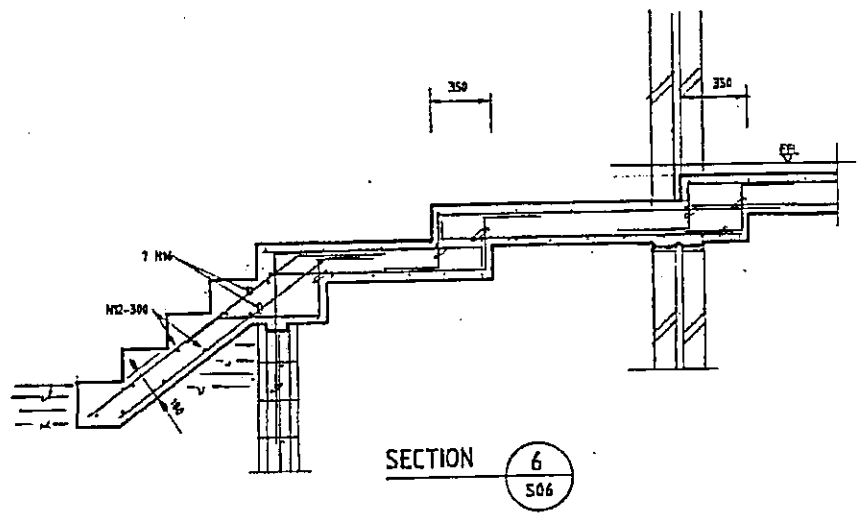

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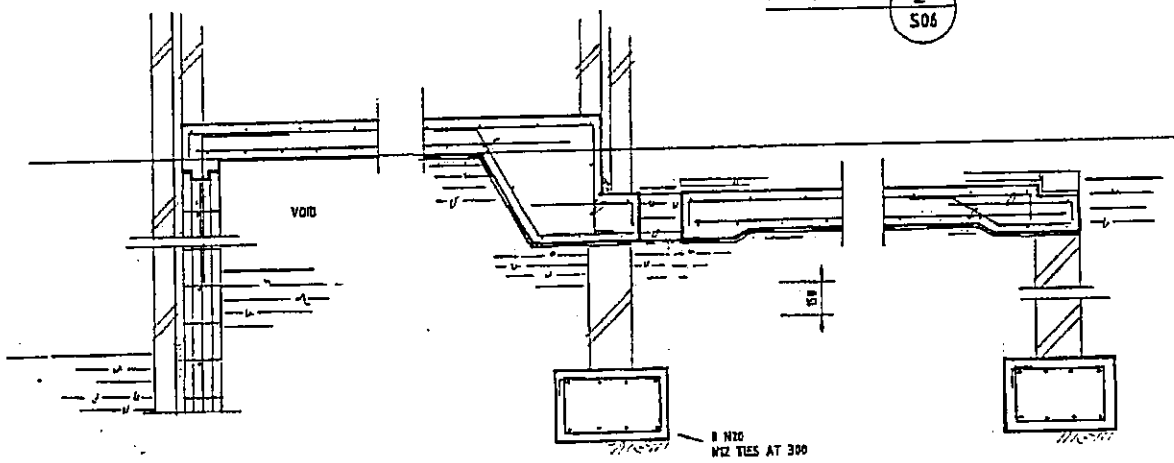

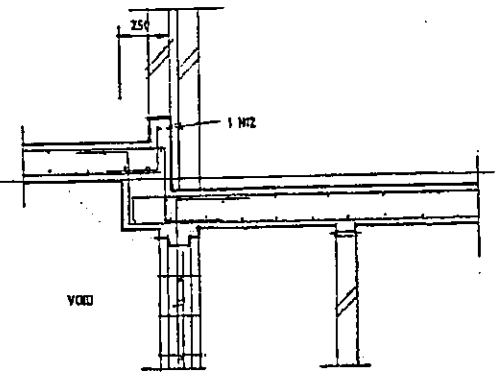

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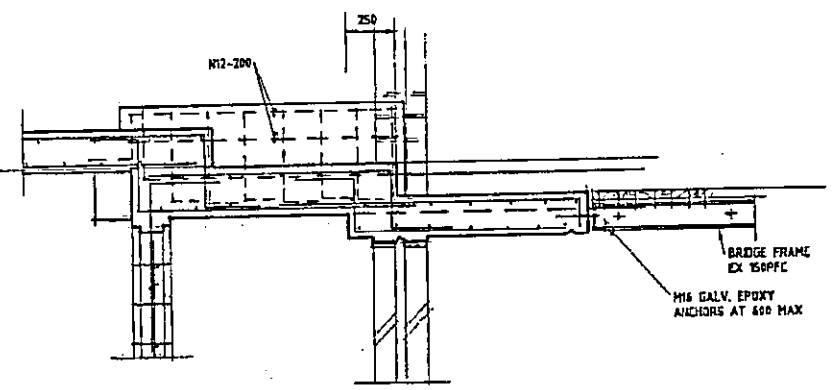
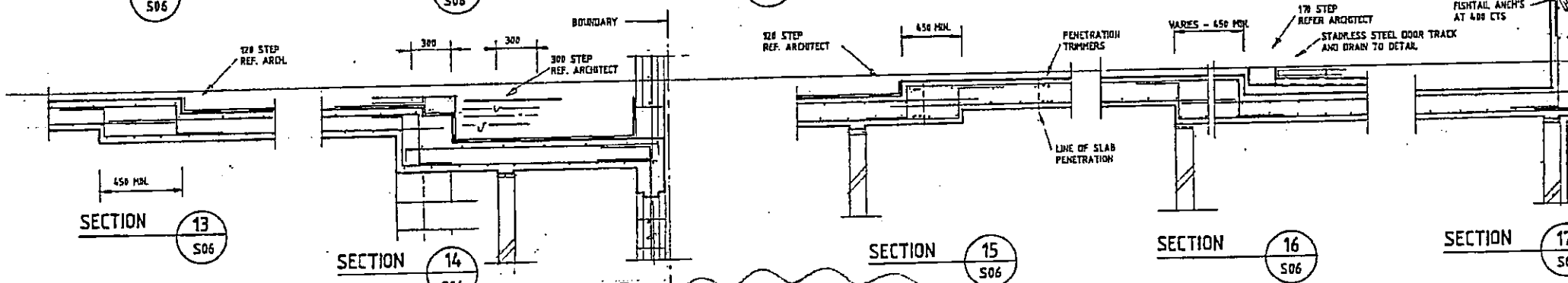


SECTION 11 S06

SECTION 7 S06

SECTION 8 S06

SECTION 9 S06



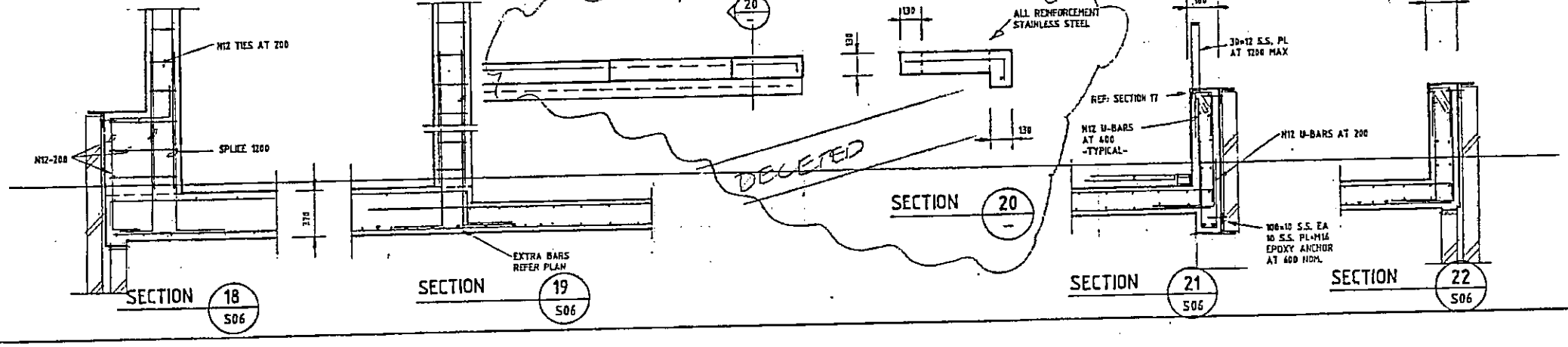
SECTION 13 S06

SECTION 14 S06

SECTION 15 S06

SECTION 16 S06

SECTION 17 S06



SECTION 18 S06

SECTION 19 S06

SECTION 20 -

SECTION 21 S06

SECTION 22 S06

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

BY	CHKD	DESCRIPTION	DATE	REV
JT		FOR PRICING	1.05.07	A

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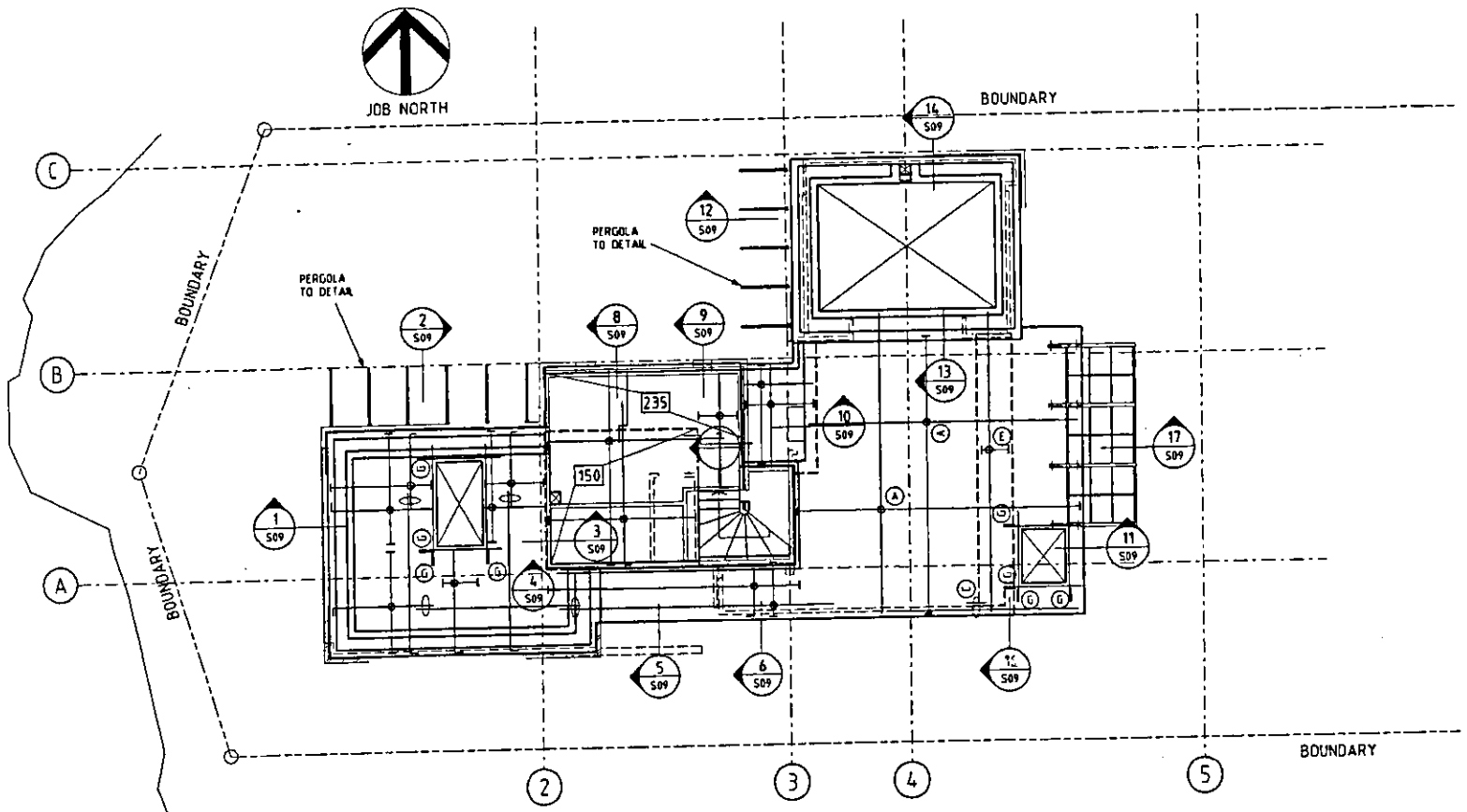
R.C. DETAILS

DESIGN JT	DRAWN JC	PROJECT No 4095
CHK'D		
APPR'D		DRAWING No S07 REV A
SCALE 1:10	DATE DEC 06	

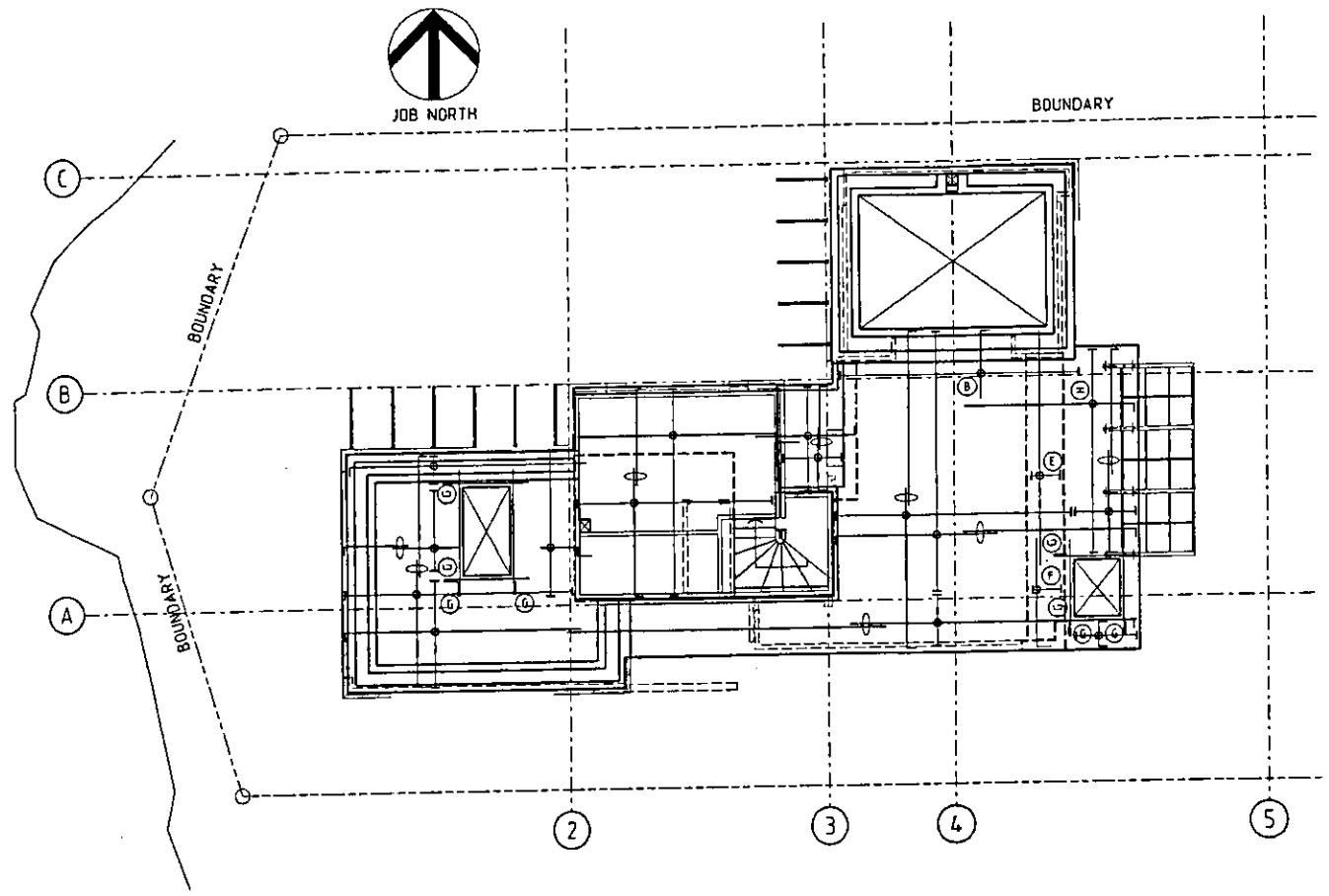


LEVEL 1 FLOOR PLAN
BOTTOM REINFORCEMENT PLAN
SLAB 200 THICK UNO
N12-200 U.N.O.

REINFORCEMENT SCHEDULE

- (A) N16-200
- (B) N20-400 EXTRA
- (C) 3N16
- (D) 3N20
- (E) 6N24
- (F) 6N28
- (G) 2N16
- (H) N16-400 EXTRA

LAY FIRST IN BOTTOM AND LAST IN TOP



LEVEL 1 FLOOR PLAN
TOP REINFORCEMENT PLAN
SLAB 200 THICK UNO
N12-200 U.N.O.

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
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Accreditation No: BPB 0027

BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR CONSTRUCTION	29.05.07	B
RB	JT	ISSUED FOR PRICING	01.05.07	A

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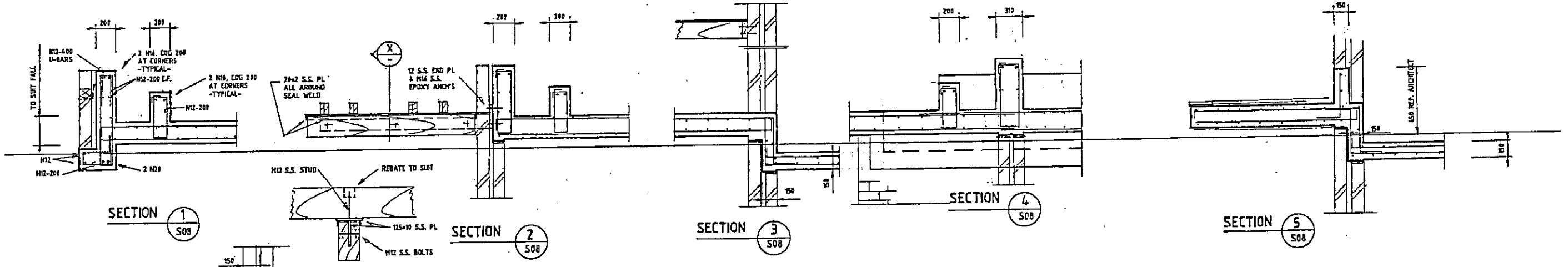
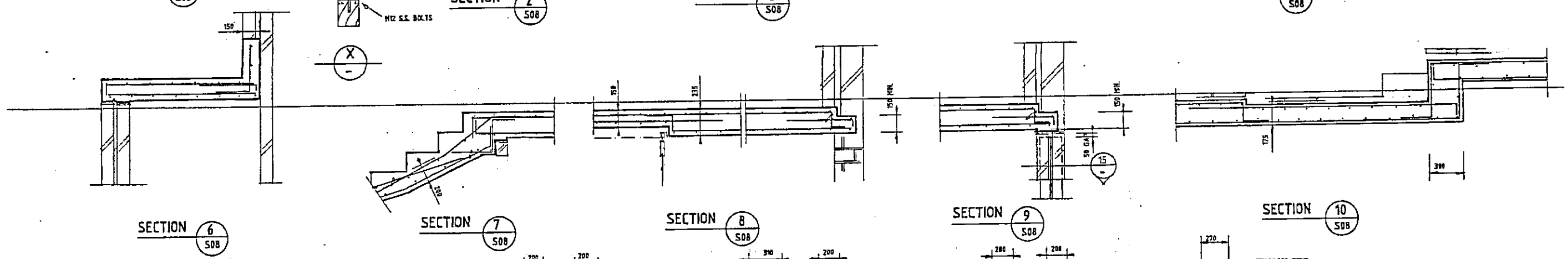
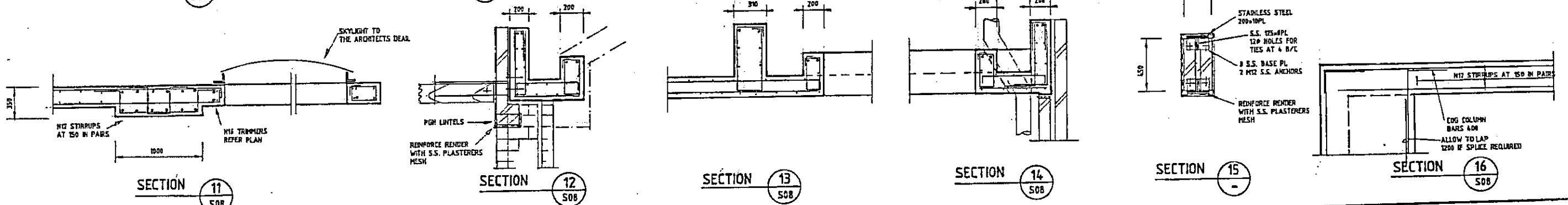
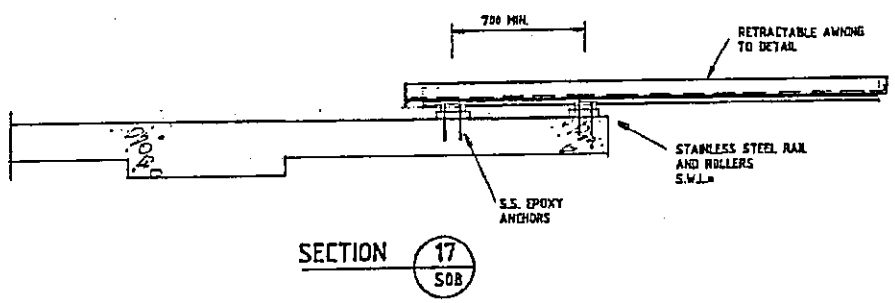
LEVEL 1 FLOOR PLAN REINFORCEMENT AND DETAILS

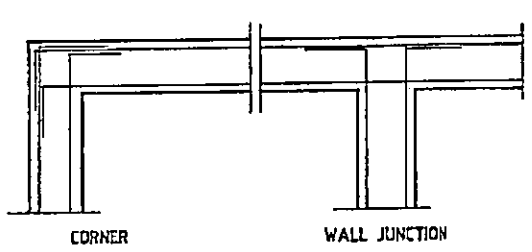
DESIGN JT	DRAWN RB	PROJECT No	
CHKD		4095	
APPRD		DRAWING No	REV
SCALE 1:100	DATE 12.10.06	S08	B



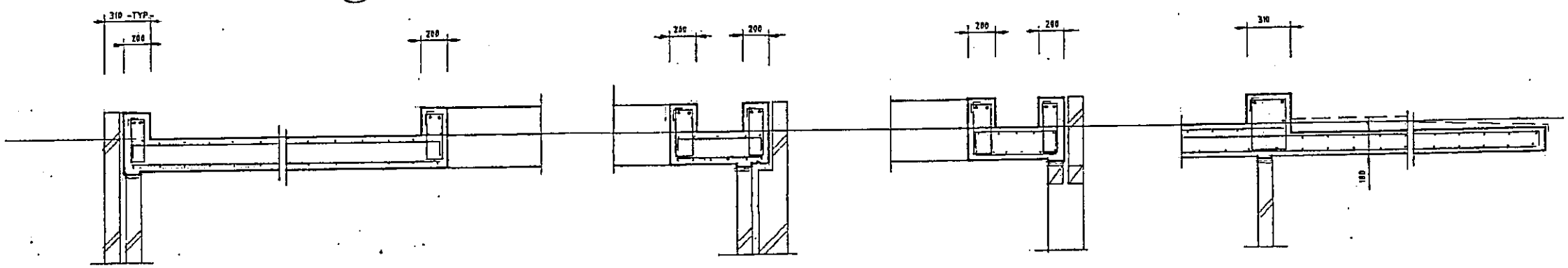








TYPICAL REO ARRANGEMENT



CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
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Accreditation No: BPB 0027

JT	.	FOR PRICING	1.05.07 A
BY	CHKD	DESCRIPTION	DATE REV

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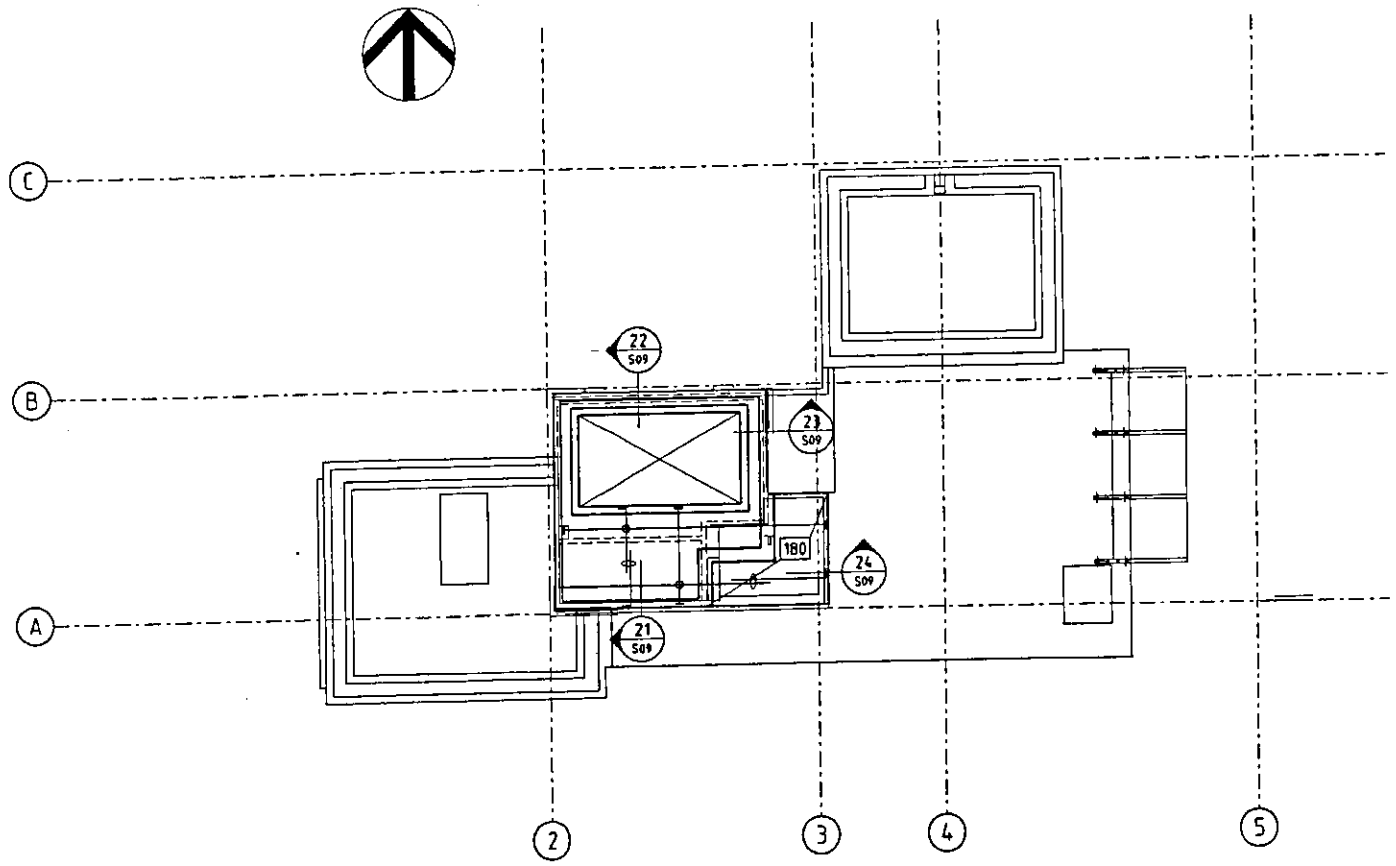
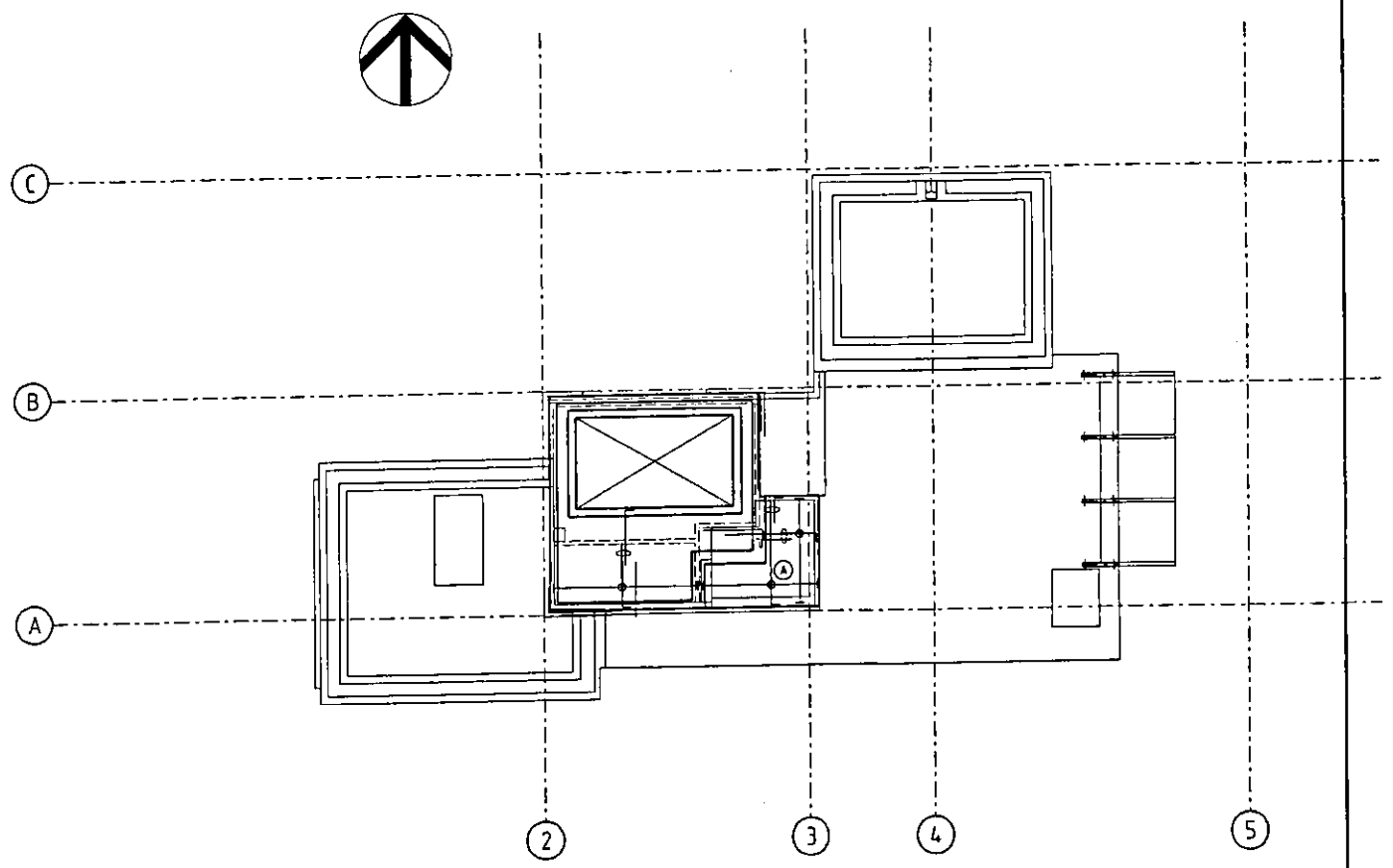
R.C. DETAILS

DESIGN JT	DRAWN JT	PROJECT No	4095
CHKD			
APPRD		DRAWING No	S09
SCALE 1:20	DATE DEC 06	REV	A



ROOF LEVEL PLAN
BOTTOM REINFORCEMENT PLAN

SLAB 250 THICK UNO
N12-200 EACH WAY U.N.O.



LAY FIRST IN BOTTOM AND LAST IN TOP

ROOF LEVEL PLAN
TOP REINFORCEMENT PLAN

SLAB 250 THICK UNO
N12-200 EACH WAY U.N.O.

REINFORCEMENT SCHEDULE

Ⓐ N16-400 EXTRA

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR CONSTRUCTION	29.05.07	B
RB	JT	ISSUED FOR PRICING	6.05.07	A

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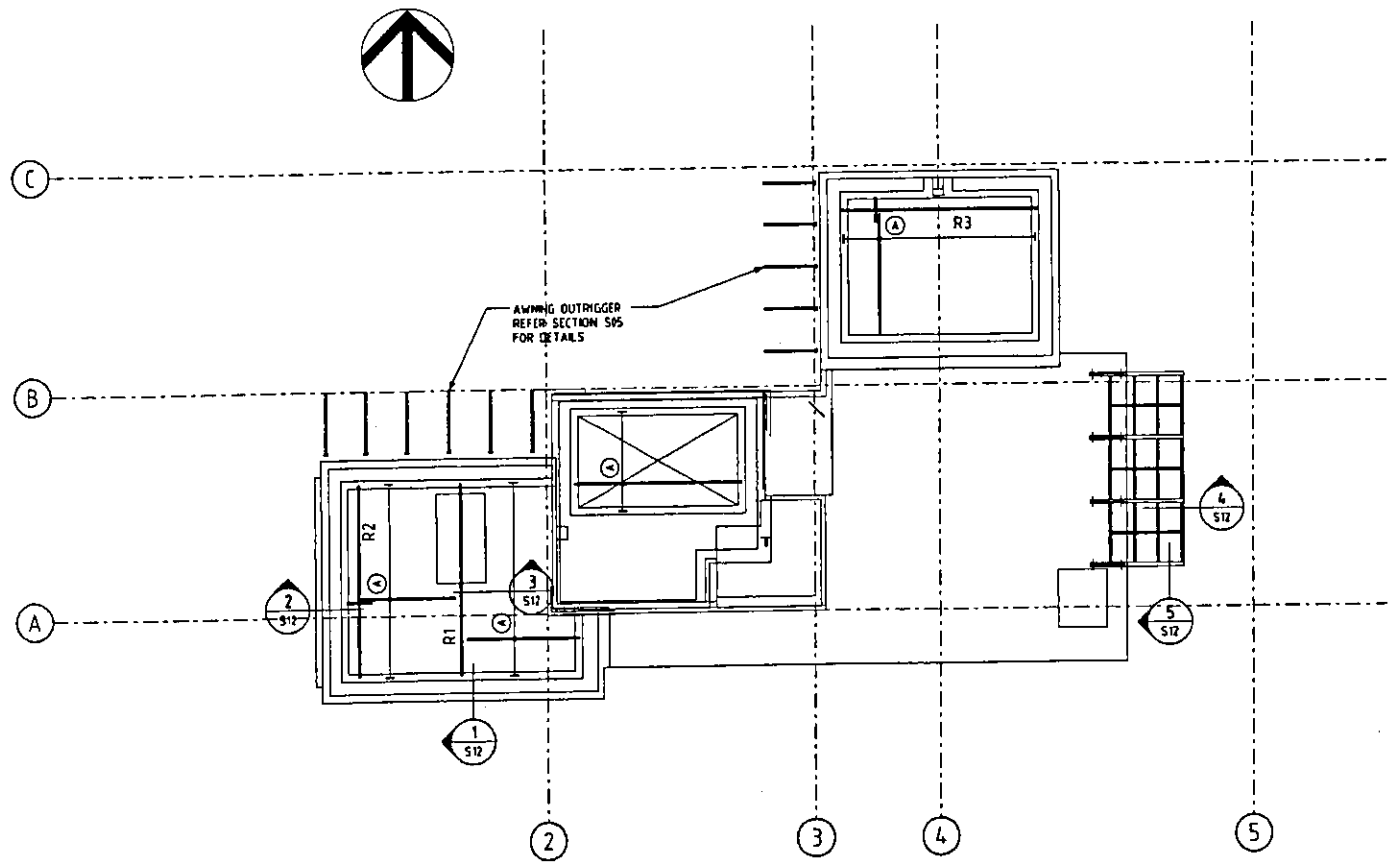
ROOF LEVEL PLAN
REINFORCEMENT AND DETAILS

DESIGN JT	DRAWN RB	PROJECT No. 4095	
CHKD.			
APPRD.		DRAWING No S10	REV B
SCALE 1:100	DATE 19.10.06		



ROOF FRAMING PLAN

STEELWORK MEMBER SCHEDULE

MEMBER	SIZE	REMARKS
R1,R2,R3	150UC23	-
Ⓐ	170x45 HYSPAN RAFTERS @ 400 c/c	

CITY PLAN SERVICES
Construction Cert. No: 27072
Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR CONSTRUCTION	29.05.07	C
RB	GC	ISSUED FOR PRICING	-	B
RB	JT	ISSUED FOR PRICING	01.05.07	A

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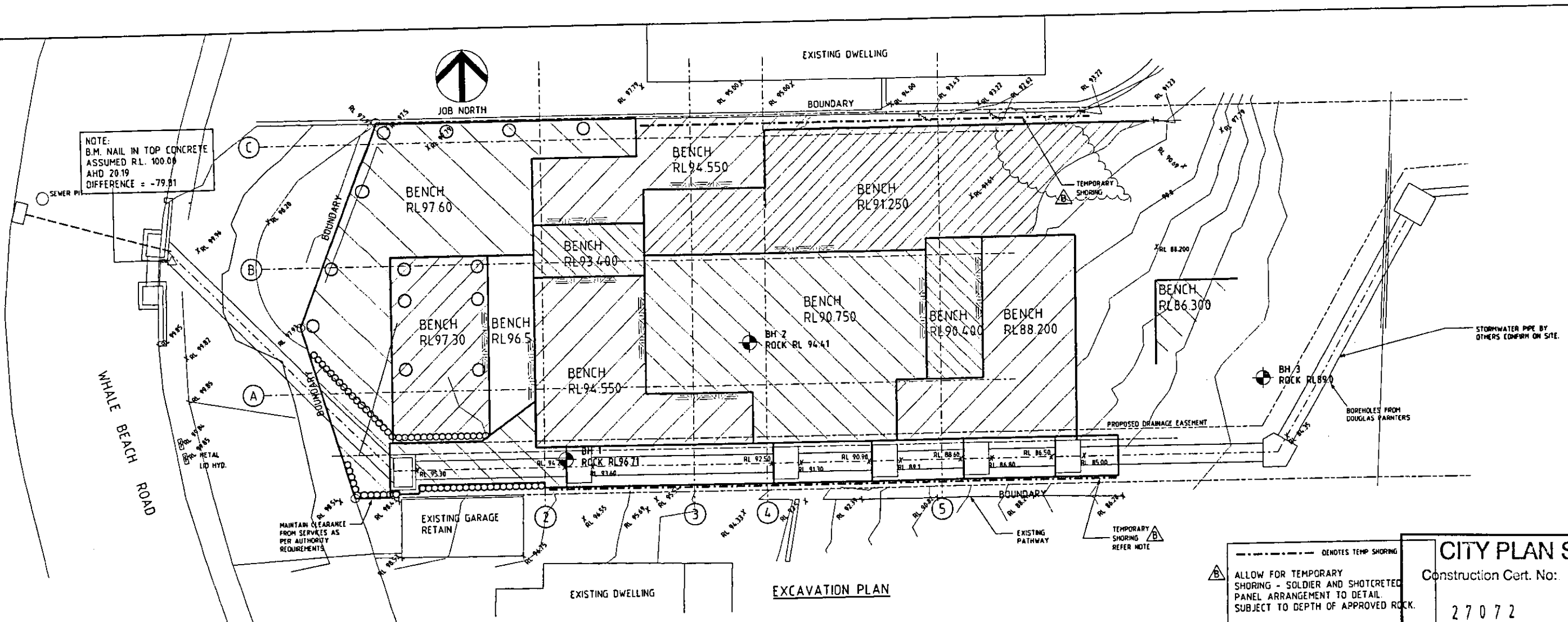
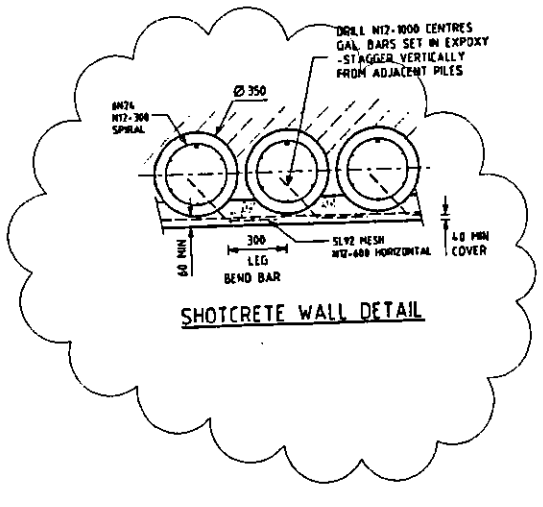
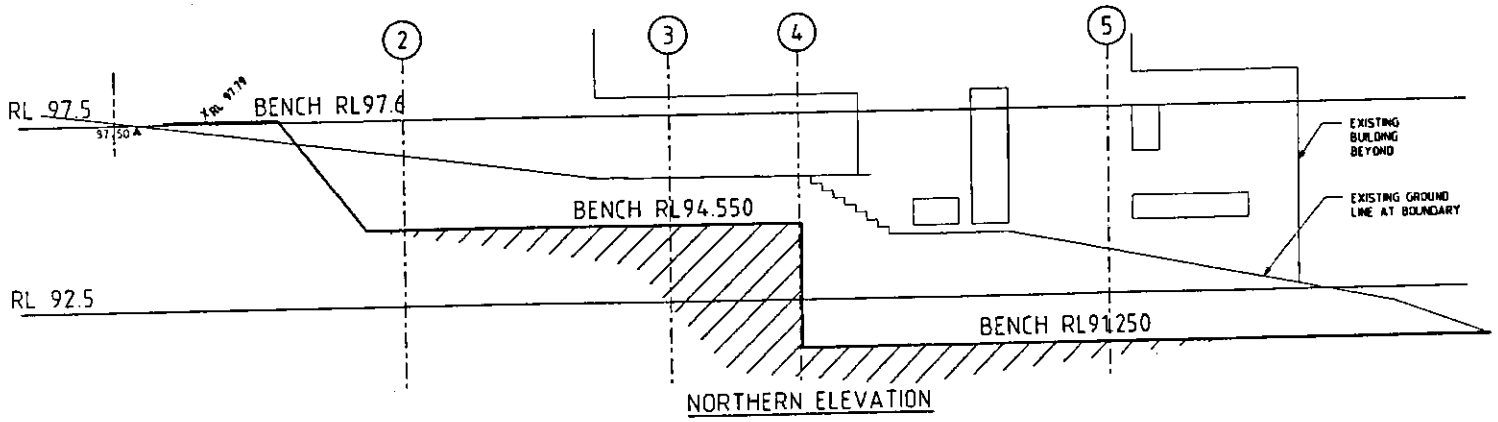
ROOF FRAMING PLAN
-

DESIGN JT	DRAWN RB	PROJECT No.	
CHKD		4095	
APPRD		DRAWING No	REV
SCALE 1:100	DATE 15.11.06	S11	C

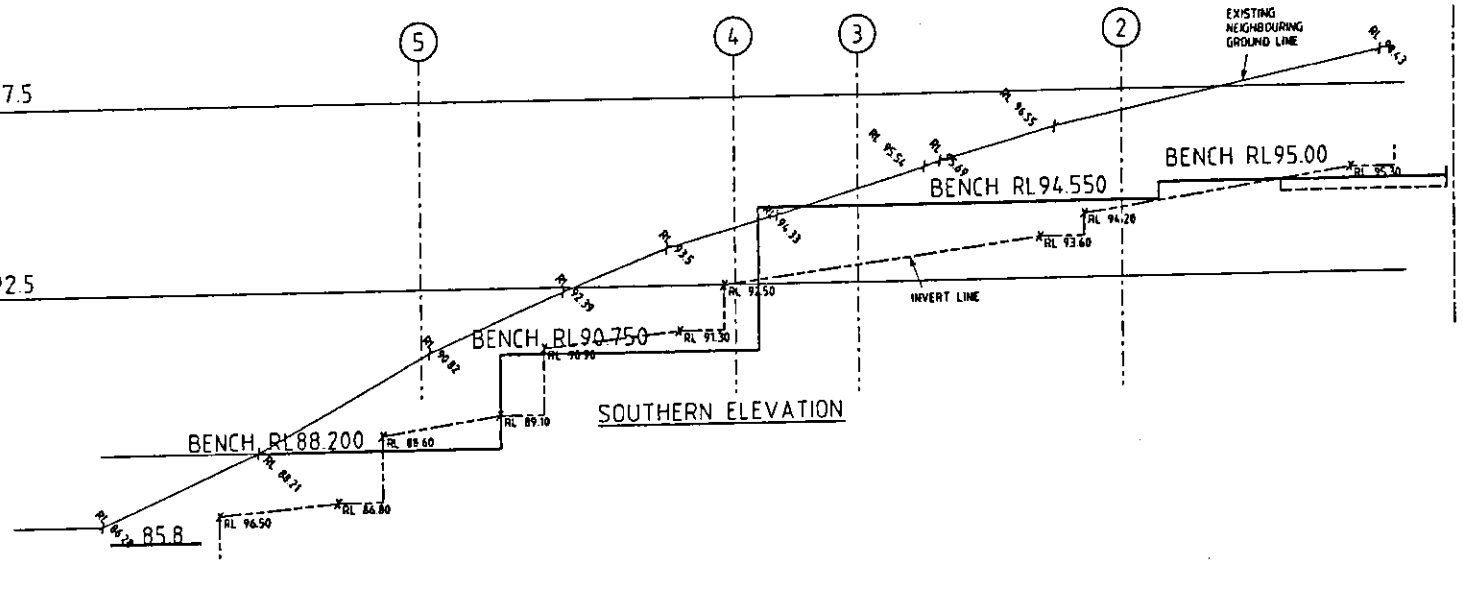




SHOTCRETE WALL DETAIL



NORTHERN ELEVATION



SOUTHERN ELEVATION

---·---·--- DENOTES TEMP SHORING

B ALLOW FOR TEMPORARY SHORING - SOLDIER AND SHOTCRETED PANEL ARRANGEMENT TO DETAIL SUBJECT TO DEPTH OF APPROVED ROCK.

FOR PRICING ONLY:
WALL 180 THICK 1500 RETAINING HEIGHT
SOLDIERS AT 2500 CENTRES WITH
TEMPORARY ROCK ANCHORS-10 TONNE SWL
- TO BE CONFIRMED

CITY PLAN SERVICES
Construction Cert. No: 27072 Approved Date: 26 JUN 2007
Certifying Authority: Brendan Bennett
Accreditation No: BPB 0027

NOTE 1
PRIOR TO COMMENCEMENT OF EXCAVATION THE GEOTECHNICAL ENGINEER MUST BE CONSULTED TO ADVISE ON APPROPRIATE EXCAVATION TECHNIQUES & SITE STABILITY ISSUES.
- EXCAVATION MUST BE CARRIED OUT WITH REFERENCE TO THE GEOTECHNICAL ENGINEERS REQUIREMENTS.
- REFER TO DOUGLAS PARTNERS, CONTACT RICHARD LLOYD 02 9809 0666

NOTE 2
NOTE EXTENT AND DEPTH OF CONTIGUOUS PILING TO BE CONFIRMED ON SITE

REFER TO CIVIL DRAWINGS C-01 AND C-02 PREPARED BY AKY CIVIL ENGINEERING PH 02 9888 4834

REFERENCE DOCUMENTS

1. SURVEY DRAWING PREPARED BY:
   DENNY LINKER
   SURRY HILLS Ph. 9212 4655
   DRG No. 990527
   DATED: 10.11.05

2. GEOTECHNICAL ENG. REPORT BY:
   DOUGLAS PARTNERS
   WEST RYDE Ph. 9809 0666
   CONTACT: RICHARD LLOYD
   DRG No. 37583A
   DATED: APRIL 2005

BY	CHKD	DESCRIPTION	DATE	REV
RB	JT	ISSUED FOR CONSTRUCTION	29.05.07	C
RB	JT	ISSUED FOR PRICING-REVISED	17.05.07	B
RB	JT	ISSUED FOR PRICING	01.05.07	A

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EXCAVATION PLAN
AND CIVIL WORKS

DESIGN	JT	DRAWN	RB	PROJECT No.
CHKD				4095
APPRD				DRAWING No C01 / REV C
SCALE	1:100	DATE	19.10.06	