INsight building certifiers pty ltd

Construction Certificate
Determination

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

Certificate No. 2007/2412

Council	**Pittwater**
Determination date of issue	**Approved** **26 November 2007**
Subject land Address Lot No DP No	 **1825 Pittwater Road Bayview** **Lot 2 DP 230607**
Applicant Name Address Contact No (phone)	 **Hodges Shorten Architects** **82/47 Neridah Street Chatswood NSW 2067** **9419 5199**
Owner Name Address Contact No (phone)	 **Bayview Golf Club** **1825 Pittwater Road Bayview NSW 2067**
Description of Development Type of Work	 **Golf Club**
Builder or Owner/Builder Name Contractor Licence No/Permit	 - -
Value of Work Building	 **$6 000 000 00**

R 229482

Suite 13/90 Mona Vale Road Mona Vale NSW 2103 PO Box 326 Mona Vale NSW 1660 **ph 9999 0003** fax 9979 1555
email info@insightcert com au **ABN** 54 115 090 456

Attachments

- Copy of completed Construction Certificate Application Form
- Fire Safety Schedule
- Specifications by Hodges Shorten Architects Pty Ltd
- Sydney Water approval dated 31 October 2007
- Pittwater Council Footpath approval dated 5 October 2007
- RTA Assent dated 13 November 2006
- Electrical Design certification by Barry C Smith & Associates Pty Ltd dated 25 July 2007
- Site Management Plan/Report by Onebuild Constructions dated 6 September 2007
- Mechanical and Hydraulic design certification by Wallis and Spratt Pty Ltd dated 8 August 2007
- Long Service Levy payment confirmation
- Registration of *right of carriageway over* 1819-1823 Pittwater Road Mona Vale

Plans & Specifications certified

The development is to be carried out in compliance with the following plans and documentation listed below and endorsed with *Insight Building Certifiers* stamp

- Architectural Plans by Hodges Shorten Architects Pty Ltd reference 2380 W1 to W29 dated 10 October 2006
- Structural Engineering Details by Low & Hooke Partners, Job no 7713 Drawings S0 to S23 & C1 to C5
- Hydraulic Services Details by Wallis and Spratt Pty Ltd Project no 15221 Drawings H01 to H08
- Mechanical Ventilation Details by Wallis and Spratt Pty Ltd Project no 15191 Drawings M01 to M02
- Electrical Services Details by Barry C Smith & Associates Pty Ltd Drawing no 1212E/06
- Landscape Plan by Lindy Lean no L01 dated 6 June 2007
- Kitchen Layout Details by OHRC Alliance Pty Ltd Drawing no 3040

Certificate

I hereby certify that the above Plans documents or Certificates satisfy

- The relevant provisions of the Building Code of Australia
- The relevant conditions of this Development Consent

and that work completed in accordance with the documentation accompanying the application for this Certificate (and any modifications as verified by me and shown on that documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation referred to in Section 81A(5) of the Environmental Planning & Assessment Act 1979

Signed	Bruce Gaal
Date of endorsement	26th November 2007
Certificate No	**2007/2412**

Certifying Authority

Name of Accredited Certifier	Bruce Gaal
Accreditation No	BPB0130
Accreditation Authority	Building Professionals Board
Contact No	(02) 9999 0003
Address	13/90 Mona Vale Road, Mona Vale NSW 2103

Development Consent

Development Application No	**N0460/06**
Date of Determination	**7 December 2006**

BCA Classification **7a & 9b**

Suite 13/90 Mona Vale Road Mona Vale NSW 2103 PO Box 326 Mona Vale NSW 1660 **ph 9999 0003** fax 99791555
email info@insightcert com au **ABN** 54 115 090 456

FIRE SAFETY SCHEDULE

Environmental Planning & Assessment Regulation 2000

26 November 2007
Construction Certificate No 2007/2412
DA No N0460/06

Property Address 1825 Pittwater Road, Bayview
Description of Development Golf Club

Existing Fire Safety Measures	Standard of Performance
Nil	

Proposed Fire Safety Measures	Standard of Performance
Emergency Lighting	BCA E4 2, 4 4, AS 2293 1 - 2005
Exit Signs	BCA E4 5, 4 6, AS 2293 1 - 2005
Fire Hydrant System	BCA E1 3, AS 2419 1 - 2005
Fire Hose Reels	BCA E1 4, AS 2441 - 2005
Portable Fire Extinguishers	BCA E1 6, AS 2444 - 2001
Automatic Fire Detection & Alarm System	BCA NSW Table E2 2b, Spec E2 2a, AS/NZS 1670 1

insight building certifiers pty ltd

NOTICE OF COMMENCEMENT OF BUILDING WORK AND APPOINTMENT OF PRINCIPAL CERTIFYING AUTHORITY (PCA)

1. Subject land details

No: 1425 Lot No: 2 DP No: 230607

Street Name: 1425 PITTWATER RD Suburb: BAYVIEW Post Code: 2104

Description of Approved Development

CONSTRUCTION OF NEW CLUBHOUSE, CARPARKING & ASSOCIATED SITEWORKS

2. Other consent(s)

Council DA [✓] or Complying Development [ ] Consent No: N0460/06 Date of Determination: 7/12/06

3. Construction Certificate or Complying Development Certificate details

Certificate No: 2007/2412 Date of Issue: 26/11/07

4. Principal Certifying Authority details

Accredited Certifier: B GAAL Accreditation No:

Accredited Certifier: Accreditation No: BPB0130

5. Home Building Act 1989 requirements

Has the Principal Certifying Authority been provided with a copy of the Home Warranty Insurance Certificate under Part 6 of the Home Building Act 1989?

Yes [ ] No [ ] N/A

6. Date building work is to commence

Date: 28/11/07

7. Builder's details

Builder's Name: Licence No:

8. Applicant's declaration & signature

I/We are the persons having the benefit of the Development Consent or Complying Development Certificate for the proposed building works. I/we confirm that I/we am/are not the principal building contractor(s) for this project.

Have all conditions been satisfied prior to the commencement of work?

Yes [✓] No [ ] *(Conditions may include payment of security deposits, Section 94 Contributions, endorsement of building work plans by Water Supply Authority, LSL Contributions)*

Name: HODGES SHORTEN ARCHITECTS PL Date: 5/7/07

Signature(s): PETER SHORTEN

Please also sign back of form

INSIGHT

Rec'd 17/7/07

APPLICATION FOR A CONSTRUCTION CERTIFICATE

It is important that we are able to contact you if we need more information Please give us as much details as possible

Mr Mrs Ms Dr Other

Given Names (or ACN) 005 268 755

Family Name (or Company) HODGES SHORTEN ARCHITECTS PTY LTD

Postal Address (we will post all mail to this address)

62/1-7 HERBERT ST

CLONTARF Post Code 2093

Daytime telephone 94195199 Alternate no Mobile no

Every owner of the land must sign this form If the owner is a company the form must be signed by an authorized director and the common seal must be stamped on this form If the property is a unit under the strata title or a lot in a community title then in addition to the owner s signature the common seal of the body corporate must be stamped on this form over the signature of the owner and signed by the Chairman or Secretary of the Body Corporate or the appointed managing agent

Owner(s) [signature] [illegible]

Address

As owner(s) of the land to which this application relates I/We consent to this application I/We also consent for the Principal Certifying Authority and/or Accredited Certifier to enter the land to carry out inspections relating to this application

Signature(s)

Without the owner s consent we will not accept the application This is a very strict requirement for all applications If you are signing on the owner s behalf as the owner s legal representative you must state the nature of your legal authority and attach documentary evidence (eg power of attorney executor trustee company director etc)

Unit/Street no 1515 Street name PITTWATER RD

Suburb BAYVIEW Post code 2104

Legal Property Description (these details are shown on your rate notices property deeds etc)

Lot no — DP no 230607

What type of work do you propose to carry out?

Please describe briefly everything that you want approved

[illegible]

The estimated cost of the development or contract price may be subject to review

Estimated cost of work $ 6m

Council Consent no NC460/06 Date of Determination 7/12/2006

This can be found on the development consent BCA Classification 7a & 9b

If known to be completed in the case of residential building work

Name [illegible] License no

Owner/builder permit no

I apply for a Construction Certificate to carry out building works as described in this application I declare that all the information in this application and checklist is to the best of my knowledge true and correct

Signature Date

5/[illegible]

SUBMISSION REQUIREMENTS

A GENERAL

Are the plans submitted with the Construction Certificate Application in accordance with the Development Consent?

Yes ☐ No ☐

Have all the conditions of Development Consent relating to the issue of the Construction Certificate been fully complied with?

Yes ☑ No ☐

If you have answered NO to either of the above questions then you will need to speak with the Accredited Certifier BEFORE LODGING YOUR APPLICATION

B ALL PROPOSALS (has the following required information been submitted?)

Yes	No	Not Applicable	In the case of an application for a Construction Certificate for building work
☑	☐	☐	Three (3) copies of detailed architectural plans and specifications
☑	☐	☐	The plan for the building must consist of a general plan drawn to a scale not less than 1 100 and a site plan drawn to a scale not less than 1 200 The general plan of the building is to a) show a plan of each floor section b) show a plan of each elevation of the building c) show the levels of the lowest floor and of any yard or unbuilt on area belonging to that floor and the levels of the adjacent ground d) indicate the height design and full construction details e) indicate the provision for fire safety and fire resistance (if any)
☐	☐	☑	Where the proposed building work involves any alteration or addition to or rebuilding of an existing building all copies of the general plan are to be coloured or otherwise marked to the satisfaction of the Council to adequately distinguish the proposed alteration addition or rebuilding with a separate letter listing the proposed changes being submitted
☑	☐	☐	3 copies of a specification a) to describe the construction and materials of which the building is to be built and the method of drainage sewerage and water supply b) state whether the materials proposed to be used are new or second hand and give particular
☐	☐	☑	Where the proposed building work involves a modification to previously approved plans and specifications the general plans must be coloured or otherwise marked to the satisfaction of the Accredited Certifier to adequately distinguish the modification
☐	☐	☑	If the proposed building work involves a modification to previously approved plans and specification which were subject of a Development Consent has the original Development Consent been modified by Council?
☑	☐	☐	Except in the case of an application for or in respect of domestic building work a) a list of any fire safety measures that are proposed to be implemented in the building or on the land on which the building is situated and b) if the application relates to a proposal to carry out any alteration or rebuilding of or addition to an existing building a separate list of such of those measures as are currently implemented in the building or on the land on which the building is situated This list must specify the standard of design of each of those fire safety measures to which they were originally installed c) This list must describe the extent capability and basis of design of each of the measures concerned
☐	☐	☑	Copy of BASIX Certificate & Report
☑	☐	☐	All other documentation to satisfy conditions of Development Consent

HOME BUILDING ACT 1989 (as amended) OWNER/BUILDER REQUIREMENTS

Applicants for work at a residential property with a value of work over $12 000 require insurance as specified in the Home Building Act 1989

Owner Builders require Property Owner Builder's Permit issued by the Department of Fair Trading for all projects over $5 000 In addition to this permit all projects valued in excess of $12 000 may also require a contract of insurance under the provisions of the Home Building At 1989 as amended This requirement will take effect should the property owner offer the property for sale in the ensuing period of 7 years

Enquiries or any matters relevant to this section should be taken up with the Department of Fair Trading at Level 21 Astra House 227 Elizabeth Street Sydney (ph 133220)

LONG SERVICE LEVY (applies to all classes of buildings)

A Long Service Levy at 0.35% of the cost of works is payable on projects valued $25 000 or more. This sum can be paid directly to the Long Service Payments Corporation or to Council acting as an agent to the Corporation. Partial exemption from the levy may be granted to non profit organizations, churches and to owner/builders. The levy may also be paid in instalments. Application forms for these exemptions are available from Council but all enquiries in this regard should be addressed to the Long Service Payments Corporation.

THE CONSTRUCTION CERTIFICATION CANNOT BE ISSUED UNLESS THE LONG SERVICE LEVY AND HOME BUILDING ACT 1989 INSURANCE (APPLICABLE TO RESIDENTIAL PROPERTIES) HAVE BEEN PAID OR EVIDENCE OF THE EXEMPTION PROVIDED TO COUNCIL

PARTICULARS OF THE PROPOSAL

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

N/A

Gross floor area of building (m^2) as proposed

2 000

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

GOLF CLUB

Location

Use N/A

Does the site contain a dual occupancy?

NO

What is the gross floor area of the proposed addition or new building (sq metres)?

N/A

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

GOLF COURSE

Number of pre existing dwellings

N/A

Number of dwellings to be demolished

N/A

How many dwellings proposed?

N/A

How many storeys will the building consist of?

2

Will the new building be attached to the existing building?

N/A

Will the new building be attached to any new building?

N/A

MATERIALS TO BE USED

The following information must be supplied for the Australian Bureau of Statistics

Place a tick (√) in the box which best describes the materials the new work will be constructed of

WALLS		FLOOR		ROOF		FRAME	
Brick veneer	☐	Concrete	☑	Aluminium	☐	Timber	☐
Full brick	☐	Timber	☐	Concrete		Steel	☑
Single brick	☐	Other	☐	Concrete tile	☐	Other	☐
Concrete block	☑	Unknown	☐	Fibrous cement	☐	Unknown	☐
Concrete/masonry	☐			Fibreglass	☐		
Concrete	☐			Masonry/terracotta shingle	☐		
Steel	☐			Tiles	☐		
Fibrous cement	☐			Slate	☐		
Hardiplank	☐			Steel	☑		
Timber/weatherboard	☐			Terracotta tile	☐		
Cladding aluminium	☐			Other	☐		
Curtain glass	☑			Unknown	☐		
Other	☐						
Unknown	☐						

Department of Lands

Land Administration & Management
Property & Spatial Information
1 Prince Albert Road
Queens Square
SYDNEY NSW 2000
T (61 2) 9228 6798
F (61 2) 9223 8114

USHER AND COMPANY
PO BOX 1199
CHATSWOOD 2057

26/11/2007

PLAN REGISTRATION ADVICE
(ELECTRONIC COPY)

PLAN NUMBER DP1119702

THE ABOVE PLAN WAS REGISTERED ON 26/11/2007

YOUR REFERENCE 2427

WARWICK WATKINS
REGISTRAR GENERAL

Westpac Business Banking

Last signed in 22 Aug 2007 15 23 AEST Messages • Administration • Help sign out

Business online | Banking | Apply now | Credit check | Other Services Go

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- Manage Accts

Account Information

27 August 2007 13 43 AEST

Transaction List | Statement | Export | ? Help

Account Go Stop receiving

Current Bal

Funds Available

Select Page 1 of 36 Go

Transaction List

Page 1 of 36

Date	Description of Transaction	Debit	Credit
27 Aug 2007	TRANSACTION DETAILS AVAILABLE NEXT BUSINESS	49 95	
27 Aug 2007	TRANSACTION DETAILS AVAILABLE NEXT BUSINESS		720 60
27 Aug 2007	TRANSACTION DETAILS AVAILABLE NEXT BUSINESS		117 70
24 Aug 2007	WITHDRAWAL/CHEQUE 418753	21,000 00	
24 Aug 2007	DEPOSIT EXTRACASH ATM 9225113D 2308		960 00
24 Aug 2007	DEPOSIT MONA VALE NSW		1 429 90
23 Aug 2007	WITHDRAWAL - INTERNET ONLINE BANKING 1027293 PAYMENT Rod Smart 23-AUG	5,100 00	
23 Aug 2007	DEPOSIT EXTRACASH ATM 9225113D 2208		1,000 00
23 Aug 2007	DEPOSIT STG-MONA VALE NS MER NO 5840194		467 85
22 Aug 2007	WITHDRAWAL/CHEQUE 418757	302 50	
22 Aug 2007	WITHDRAWAL/CHEQUE 418718	330 00	
22 Aug 2007	WITHDRAWAL - INTERNET ONLINE BANKING 1562308 PAYMENT Dell S Hinwood 22-	328 90	
22 Aug 2007	WITHDRAWAL - INTERNET ONLINE BANKING 1536476 PAYMENT wages 21 aug 22-AUG	15 933 73	
22 Aug 2007	WITHDRAWAL - INTERNET ONLINE BANKING 1298799 PAYMENT Pool Tables x 2 22-	1,128 50	
22 Aug 2007	DEPOSIT EXTRACASH ATM 9225113D 2108		940 00
22 Aug 2007	DEPOSIT STG-MONA VALE NS MER NO 5840194		580 00
22 Aug 2007	DEPOSIT MONA VALE NSW		1,229 40
22 Aug 2007	DEPOSIT - INTERNET ONLINE BANKING 2576570 FNDS TFR		10 000 00
21 Aug 2007	WITHDRAWAL/CHEQUE 418761	8 631 01	
21 Aug 2007	WITHDRAWAL/CHEQUE 418760	347 09	

Hodges Shorten Architects Pty Ltd

From	POPOFF Andrew M [Andrew_POPOFF@rta nsw gov au]
Sent	Friday, October 05, 2007 10 04 AM
To	kimberley_munn@pittwater nsw gov au pittwater_council@pittwater nsw gov au
Cc	Cosmo Farinola Peter Shorten MAGEDARA Kapila G HUDSON John D
Subject	Consent No N0460/06 (Bayview Golf Club - 1825 Pittwater Road Bayview)
Importance	High
Follow Up Flag	Read
Due By	Tuesday October 30 2007 9 00 AM
Flag Status	Flagged

Dear Kimberley,

I refer to Condition No 5 of subsection "C within Consent No N0460/06 which states the following

"A section 138 Certificate from the RTA is to be provided to the Principal certifying authority, for the proposed roadworks and connection to the roundabout in Pittwater Rd, prior to issue of a construction certificate"

Whilst there are specific occasions whereby the RTA does issue Section 138 Certificates through our Property Services Section for certain structures that end up within the classified road corridor I do not think that one is necessary for this DA

The Section 138 issue that was of relevance to this DA was actually dealt with as part of our response to Council (see attached letter) because there was a new access connection to a classified road You will notice that we issued our concurrence under Section 138 of the Roads Act 1993 at that point in time (subject to conditions)

Therefore, it is felt that the abovementioned condition within Council s determination is not relevant for this DA and does not need to be complied with

PS I'm aware that you are currently on leave till the 30 October 2007

Regards

Andrew Popoff
Land Use & Transport Planner
Transport Planning
Roads & Traffic Authority
Level 11, 27-31 Argyle Street Parramatta

Ph 8849-2180
Fax 8849 2918

Email Andrew_POPOFF@rta.nsw.gov.au

PITTWATER COUNCIL

ABN61340837871
Telephone 02 9970 1111
Facsimile 02 9970 7150
Postal Address
PO Box 882
Mona Vale NSW 1660
DX 9018 Mona Vale

Paul Davies, Principal Engineer, Roads Traffic & UI Operations
8am to 5pm Mon to Fri
Phone 9970 1177 Mobile 0408 490 966

5 October, 2007

Mr Peter Shorten
Hodges Shorten Architects Pty Ltd
Suite 82, Chatswood Village
47 Neridah Street
CHATSWOOD 2067

Dear Mr Shorten

Re DA N0460/06 Bayview Golf Club – Proposed footpath in Pittwater Road

Council has reviewed the plans that you provided (drawing 2380 W3 C1) for the proposed location of the footpath in Pittwater Road to be provided as required by the conditions of consent for the development

Council grants approval for the footpath to be constructed in accordance with this plan and as described in your letter of the 10 September 2007, subject to Council receiving a minimum 24 hour notice of the intention to start construction works on the public road reserve You are also reminded that all pedestrian access ramps must be constructed in accordance with the relevant Australian Standards

Please contact Council's Mr Chris Goodmanson on 9970 1347 to advise of the intention to commence construction

Yours faithfully

P Davies

Paul Davies
Principal Engineer – Roads, Traffic & UI Operations

(INCORPORATED IN N S W)
A B N 94 002 878 597

BARRY C SMITH & ASSOCIATES PTY LIMITED
MECHANICAL & ELECTRICAL SERVICES CONSULTING ENGINEERS

SYDNEY OFFICE
PO BOX 2011 NORMANHURST NSW 2076
29 CARCOOLA CRESCENT NORMANHURST NSW 2076
TELEPHONE (02) 9487 7488 FAX (02) 9487 7499
EMAIL sydney@bsaptyltd com au WEB SITE www bsaptyltd com au

SOUTH COAST OFFICE
BAYVIEW HOUSE
2 ILLOWRA LANE HYAMS BEACH NSW 2540
TELEPHONE (02) 4443 2925 FAX (02) 4443 2935
EMAIL southcoast@bsaptyltd com au

25 July, 2007 Our Ref 1212E/06R

Insight Building Certifiers Pty Ltd
PO Box 362
MONA VALE NSW 1660

Attention Bruce Gaal

BAYVIEW GOLF CLUB, PITTWATER ROAD, BAYVIEW
DEVELOPMENT APPLICATION No 460/06

CERTIFICATE OF DESIGN

In accordance with the provisions of Clause A2 2 of the Building Code of Australia I hereby certify that the design for the above project is in accordance with normal engineering practice and meets the requirements of the Building Code of Australia the Environmental Planning & Assessment Regulation, Relevant Australian Standards & Relevant Conditions of Development Consent

The systems have been designed in accordance with the following

System	Codes & Standards
Emergency Lighting	BCA Clause E4 2 E4 3, E4 4 AS/NZS 2293 1
Exit Lighting	BCA Clause E4 5 E4 6 E4 8 AS/NZS 2293 1
Artificial Lighting	BCA Clause F4 4 AS/NZS 1680 0 BCA Section J6
Electricity Supply System	BCA Clause C2 13 (c) (d) & (e)
Automatic Fire Detection & Alarm System	BCA NSW Table E2 2b Specification E2 2A Clause 4 AS/NZS 1670 1

The undersigned is an appropriately qualified and competent person in this area and as such can certify that the design of the systems comply with the above and as detailed on the following drawings

Drawings Nos 1212E/06/1C, 2C, 3D, 4D, 5D, 6A, 7A, 8B 9B 10B, 11C & 12B

Yours faithfully
Barry C Smith & Associates Pty Ltd

B Smith AIRAH, AMCIBSE MASHRAE
Director

C Hodges Shorten Architects

WALLIS & SPRATT PTY LTD

ABN 15 001 185 208

Consulting Chartered Engineers

Suite 504, Lawson House
10 - 12 Clarke Street
Crows Nest NSW 2065
PO Box 78 Crows Nest NSW 1585

Telephone (02) 9437 9226
Facsimile (02) 9439 2785
E-mail mail@wallissandspratt com au

Mechanical
Electrical
Hydraulics
Fire Protection
Transportation
Telecommunications

ref 15192

8 August 2007

Hodges Shorten Architects Pty Ltd
Suite 82, 47 Neridah Street
Chatswood NSW 2067

Attention Mr P Shorten

Dear Sir

re **Bayview Golf Club**
Design Declaration Statement
Mechanical and Hydraulics Services

Council Pittwater Council

Pursuant to the provisions of **Clause A2 2 of the Building Code of Australia,** we hereby declare that in our professional opinion the Mechanical and Hydraulic Services design is generally in accordance with normal engineering practice and the relevant sections of, Building Code of Australia and relevant Australian Standards In particular, the design is generally in accordance with the following

BUILDING CODE of AUSTRALIA

Mechanical E2 2, F4 5, F4 6, F4 12, J5

Hydraulics E1 3, E1 4, E1 6

AUSTRALIAN STANDARDS

Mechanical AS 1668

Hydraulics AS 3500, AS 2419, AS 2444, AS 2441

WALLIS & SPRATT PTY DRAWING NOS	**15192/M01-M02 (Mechanical)** **15221/H01-H08 (Hydraulics)**
WALLIS & SPRATT PTY SPECIFICATION NOS	**15192 (Mechanical)** **15221 (Hydraulics)**
Full Name of Designers	**A Oostendorp – Mechanical Services** **T Boag – Hydraulic Services**
Address of Designers	**Suite 504, 10-12 Clarke Street, Crows Nest 2065**
Business Voice/Fax Nos	**02 9437 9226 (Voice), 02 9439 2785 (Fax)**
Name of Employer	**Wallis & Spratt Pty Ltd**

I am an appropriately qualified and competent person in this area and as such am in a position to make this declaration on behalf of Wallis & Spratt Pty Ltd

Yours faithfully
Wallis & Spratt Pty Ltd

D M Spratt BE, MIEAust, CPEng, NPER
Director

Hodges Shorten Architects Pty Ltd

Suite 82
Chatswood Village
47 Nerida Street
Chatswood NSW 2067
phone 9419 5199
fax 9419 5632
ABN 50 003 268 755

1 September 2007

Insight Building Certifiers Pty Ltd
PO Box 326
Mona Vale NSW 1660

Attention Bruce Gaal

Dear Sir,

Re **CONSTRUCTION CERTIFICATE FOR BAYVIEW GOLF CLUB DA 460/06**

In accordance with the provisions of Clause A2 2 of the Building Code of Australia we hereby declare that in our professional opinion the documentation is generally in accordance with the relevant sections of the BCA and in particular sections J1, J2 and J3

Name of Designer Peter Shorten

Address 82/47 Nerida St Chatswood 2067

Employer Hodges Shorten Architects Pty Ltd

I am an appropriately qualified and competent person in this area and as such am in a position to make this declaration on behalf of Hodges Shorten Architects Pty Ltd

Yours sincerely,

HODGES SHORTEN ARCHITECTS PTY LTD

Peter Shorten
Director

WALLIS & SPRATT PTY LTD
ABN 15 001 185 208
Consulting Chartered Engineers

Suite 504, Lawson House
10 - 12 Clarke Street
Crows Nest NSW 2065
PO Box 78 Crows Nest NSW 1585

Telephone (02) 9437 9226
Facsimile (02) 9439 2785
E-mail mail@wallisandspratt com au

Mechanical
Electrical
Hydraulics
Fire Protection
Transportation
Telecommunications

ref 15192

28 August 2007

Hodges Shorten Architects Pty Ltd
Suite 82, 47 Neridah Street
Chatswood NSW 2067

Attention Mr P Shorten

Dear Sir

re **Bayview Golf Club**
Design Declaration Statement
Hydraulics Services (Storm Water)

Council Pittwater Council
Development Application No N0460/06

Pursuant to the provisions of **Clause A2 2 of the Building Code of Australia,** we hereby declare that in our professional opinion the Hydraulic Services design (storm water) is generally in accordance with normal engineering practice, relevant conditions of Development Consent and the relevant Australian Standards In particular, the design is generally in accordance with the following

DA CONDITIONS C1, noting stormwater discharge from Clubhouse and Car Park is now directly too Pittwater Road in lieu of previous discharge to Darley Street

AUSTRALIAN STANDARDS

Hydraulics AS 3500

WALLIS & SPRATT PTY DRAWING NOS **15221/H01 + H02**

WALLIS & SPRATT PTY SPECIFICATION NOS 15221 (Hydraulics)

Full Name of Designer **T Boag – Hydraulic Engineer**

Address of Designers **Suite 504, 10-12 Clarke Street, Crows Nest 2065**
Business Voice/Fax Nos **02 9437 9226 (Voice), 02 9439 2785 (Fax)**
Name of Employer **Wallis & Spratt Pty Ltd**

I am an appropriately qualified and competent person in this area and as such am in a position to make this declaration on behalf of Wallis & Spratt Pty Ltd

Yours faithfully
Wallis & Spratt Pty Ltd

D M Spratt BE, MIEAust, CPEng, NPER
Director

OneBuild
CONSTRUCTIONS

BAYVIEW GOLF CLUB

Site Management Plan

Date: 6 September 2007

Contents

SECTION 1 Introduction

1 1Purpose and Scope

This Site management Plan describes how OneBuild Constructions (OBC) proposes to establish the construction site and manage the effect of construction activities with respect to the following issues

- Site Establishment
- Erosion and Sediment Control
- Waste Management
- Traffic Management

1 2 Project Description

The Bayview Golf Club construction involves the construction of an all new 2 level building on a green field site The site boundary to the North and West is within the boundaries of existing Bayview Golf course The southern boundary is adjacent a new residential development constructed Pittwater Road runs along the eastern boundary

Construction works involve a considerable component of bulk earthworks Following this a concrete structure including bored piers, footings, slab on ground, retaining walls, and suspended concrete slabs and ramps will be constructed The building itself from suspended slab level is structural steel framed with precast concrete cladding and a significant component of external façade glazing, and various other finishes such as sandstone The roof will comprised of a metal deck roofing system

The lower level of the building will be dedicated largely to the construction of a carpark and with areas provided for a mechanical plantroom and electrical switchroom

The upper level (Ground Floor) will accommodate areas for Members, the public, and Golf Club staff There will also be significant external terrace areas on the northern elevation Internally will be combination of masonry and lightweight plasterboard walls, with a suspended ceiling system On this level will be found all wet area facilities such as toilets and locker rooms etc, and Kitchen/Bar installations

The ground floor level will be mechanically ventilated, the lower carpark level naturally ventilated

Externally there are significant works to be performed An all new entry from Pittwater Rd will be constructed on the eastern boundary This access will lead to an external carpark to the south of the building at ground level utilising both concrete and asphalt paving

Due to the existing topography of the site there is requirement for significant retaining wall works across the site to accommodate the varying levels

Landscaping works will involve the establishment of numerous planters built integrally with the building structure to the perimeter of the building

SECTION 2 Site Establishment

2 1 Site Establishment

The following describes items relevant to establishing and defining the site prior to commencement of works All activities will be undertaken in accordance with Pittwater Council and other relevant Authority requirements Erosion and Sediment Control will be described in a separate section of this document

2 1 1 Fencing The site will be defined by a semi-permanent 1800mm high chainwire fence to site perimeter including along Pittwater road (eastern site boundary)

Entry gates will be of similar construction with provisions made to enable locking Access gates will swing into the site and will not be capable of blocking pedestrian access along the footpath or vehicular traffic along Pittwater Road

Fencing must be erected prior to commencement of any works on site

2 1 2 Site Access Initially site access will be the existing temporary site entrance off Pittwater Road, currently comprising a concrete crossover and access road

A temporary gravel access road will be extended within the site boundary to the site compound

Existing footpaths adjacent eastern site boundary to be maintained and will remain unobstructed throughout the construction period

Following completion of construction works associated with new permanent main entry and carpark, all construction vehicles will use this entry for access to the site, and temporary construction entrance will be closed It is anticipated this will be approximately 6 months into the construction programme This will allow completion of landscaping works on Pittwater Road boundary

2 1 3 Site Accommodation All site accommodation and storage will be located within the site boundary The area currently proposed is within the north eastern site boundary adjacent existing Sydney water sewer line located on site Refer to **Appendix A– Site Establishment and Site Access Plan**

2 1 4 Service Connection to Site The following supplies are required

Electrical Services – An overhead service originating from the western side of Pittwater Rd to a temporary pole and main board within the site will be co-ordinated with Energy Australia

Sewer – The existing sewer line located within the northern site boundary will be utilised

Water – A water supply will be reticulated from an existing service located within property boundary, and reticulated above ground

2 1 5 Hours of Construction Work will be performed within the allowable times as described in the DA
Mon to Fri 7am to 5pm
Sat 7am to 1pm
No work Sundays or Public Holidays

SECTION 3 Erosion and Sediment Control

3 1 Erosion and Sediment Control Plan

- Details for Sediment and erosion control measures to be undertaken on site are shown on Bulk Earthworks Plan drawing no C1 issue 3 **Refer to Appendix B**
- A sediment fence as per detail B will be constructed to the downstream perimeter of the site, specifically west, north, and east (Pittwater Rd) boundaries
- All new stormwater pits will be protected from entry of sediment with geotextile inlet fabric drop inlet sediment trap as shown on Detail C
- Measures such as a shaker grid at construction entrance shown on detail A will be undertaken to remove mud from vehicles leaving site
- Kerbside filter rolls will be provided to existing kerb entry pits along eastern site boundary on Pittwater Road
- Sediment and erosion control devices to be installed and fully operational prior to stripping site of top soil
- Stockpiles to be located away from drainage lines and surface flow paths
- Stabilised construction entrance to be constructed prior to access to site by construction vehicles
- Sediment and erosion control measures to be regularly maintained and inspected, particularly following heavy rain
- All new construction work to be contained within the site except for approved service connections and roadworks
- Limit access to site during and immediately after wet weather
- Regularly remove any soil / mud on road originating from site

- No storage of construction materials allowed external to site boundary
- All service trenches to be back filled within 24 hours of inspection
- Locations of erosion and sediment control measures are shown on drawing contained in Appendix 3

3 2 Dust control

- A water cart or sufficient water sprays shall be made available in dry windy conditions to maintain dust suppression
- Water shall be applied , if required, to suppress dust from open earthworks as well as unprotected stockpiles
- Stockpiles shall be either covered or seeded to prevent dust

SECTION 4 Waste Management

4 1 Waste Management

Waste will be placed in bins contained within the site and removed to be recycled by a company specialising in construction waste management Materials not recycled will be taken to an EPA registered and approved landfill site

Location of Site Bin shown in Appendix A

Excavated material will be re-used on site to fill to new design levels Excess spoil will be stockpiled for future re-use by Bayview Golf Club

SECTION 5 Traffic Management

5 1 Traffic Management

The following describes vehicle and plant movement into and out of the construction site from the Pittwater Road entrance

Following the issue of Construction Certificate, a Traffic Management Plan will be prepared by a qualified Traffic Management Consultant prior to commencement on site as per clause D16 of the Development Application

Initially site access will be the existing temporary site entrance off Pittwater Road, currently comprising a concrete crossover and access road Following completion of new permanent entry vehicles will be diverted through this entry

Traffic control and pedestrian diversions will be required in the vicinity of the existing round-about on Pittwater road during the construction of the new entry and specifically the demolition of the existing sandstone retaining wall and associated excavation works

All trucks entering and leaving site will be only via the single designated entry from Pittwater Road

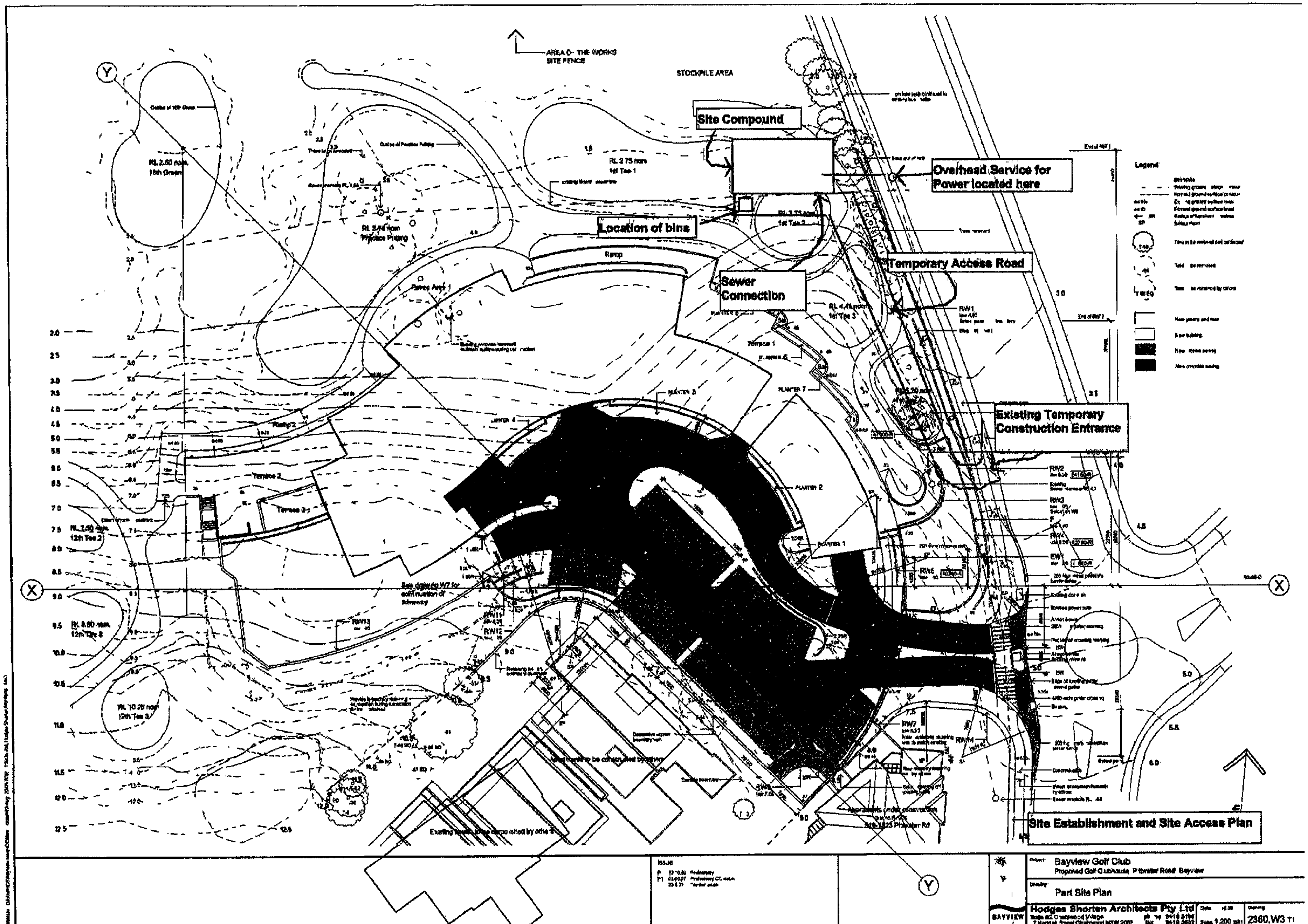
All trucks leaving the site are to be travelling forwards

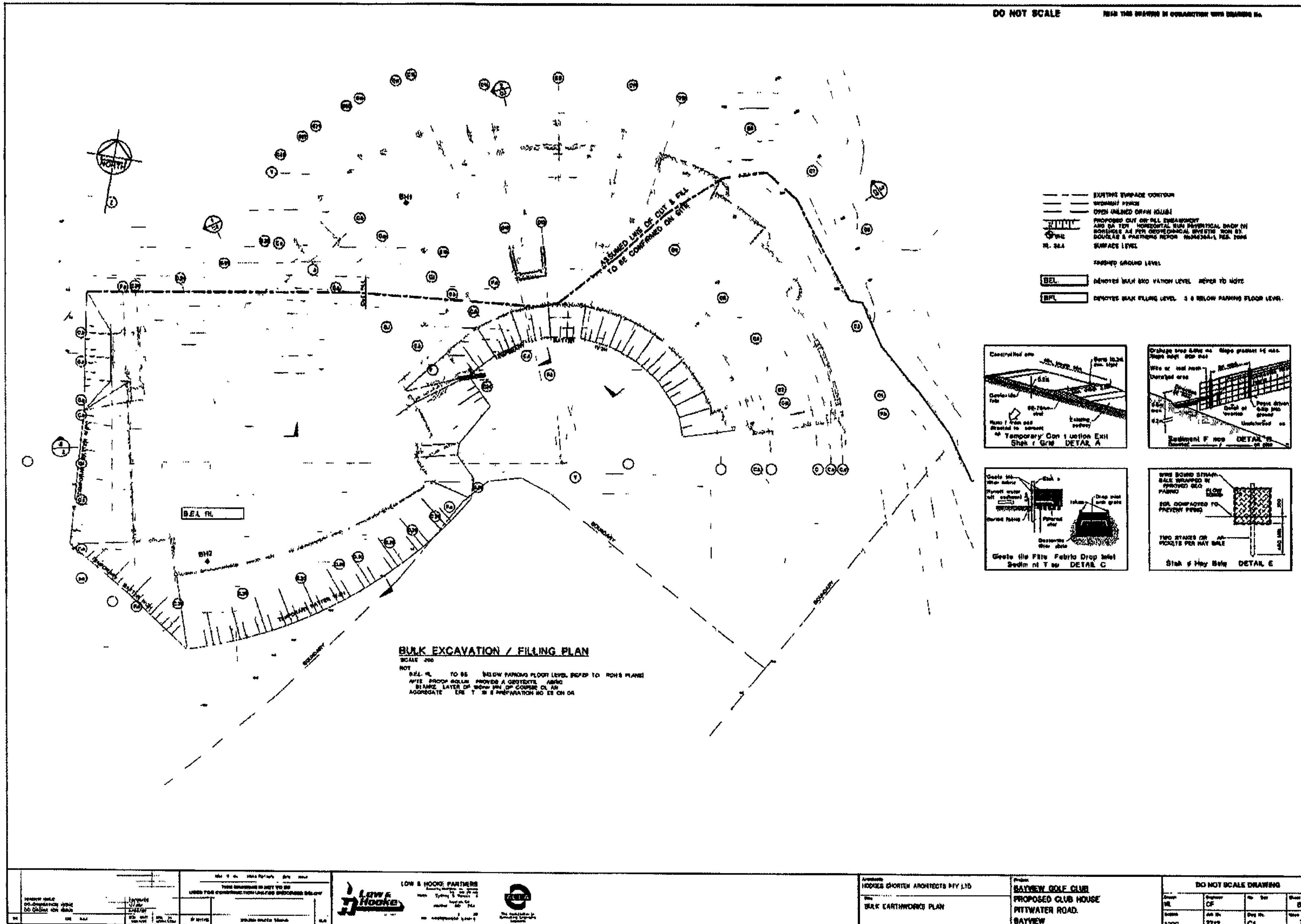
All vehicles delivering materials to site including cranes, concrete trucks and pumps must stand within site boundaries, either the access road or other designated areas on site No deliveries to the site are to be made without prior entry into the site from the designated entry

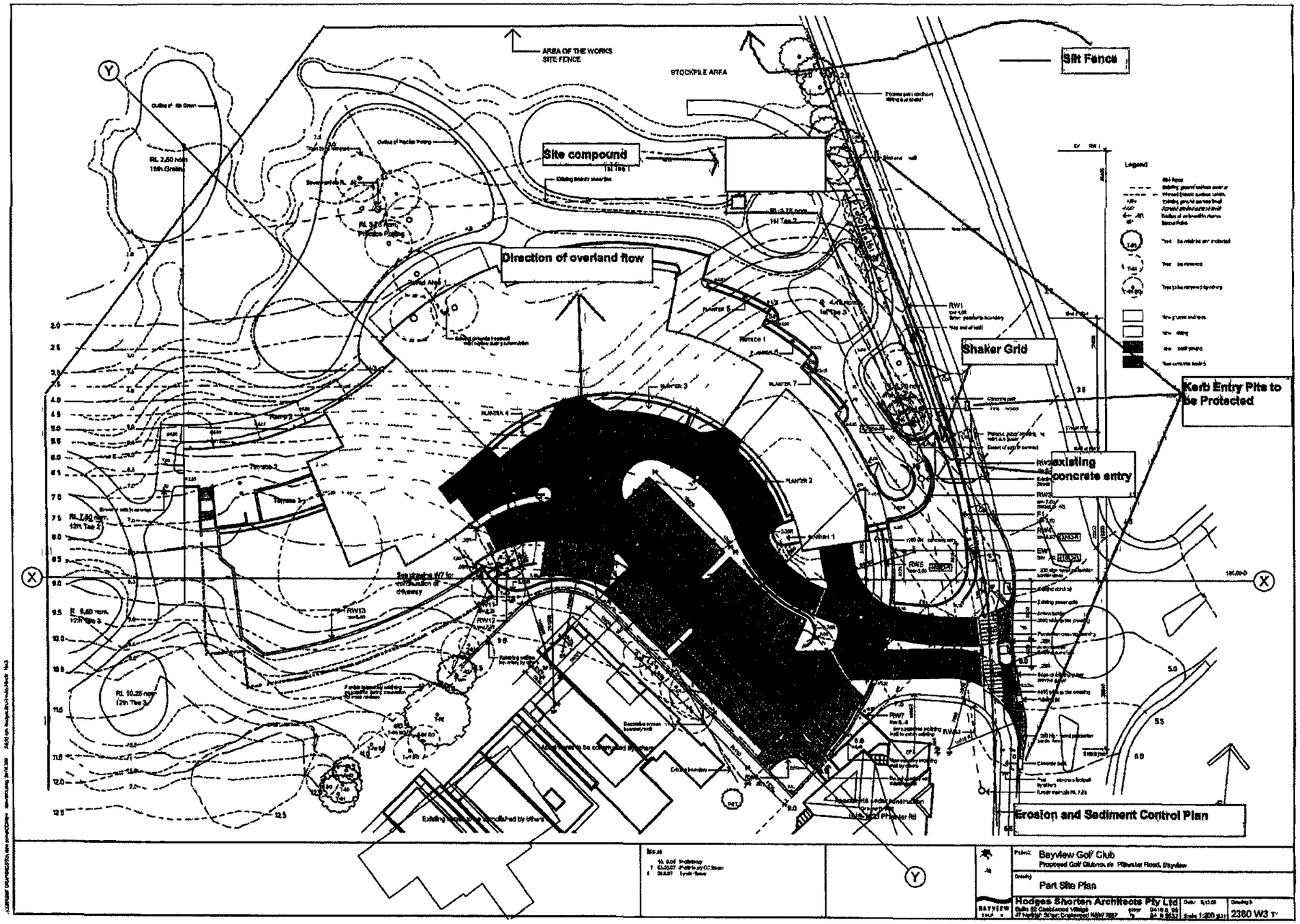
The movement of all vehicles unloading materials are to be supervised, ensuring the safe movement of local traffic and pedestrians

Stop/Go traffic Control will be required for vehicles requiring to turn right from the site onto Pittwater Road from the temporary construction entrance

Roadway to be cleaned each day during bulk excavation


AREA D - THE WORKS SITE FENCE
STOCKPILE AREA
Site Compound
Overhead Service for Power located here
Location of bins
Temporary Access Road
Sewer Connection
Existing Temporary Construction Entrance
Site Establishment and Site Access Plan
Legend
RL 2.60 nom. 18th Green
RL 2.75 nom 1st Tee 1
RL 4.40 nom 1st Tee 3
RL 7.60 nom. 12th Tee 2
RL 8.80 nom. 12th Tee 8
RL 10.25 nom 12th Tee 3
Ramp
Ramp 2
Terrace 1
Terrace 2
Planter 1
Planter 2
Planter 3
Planter 7
RW1
RW2
RW3
RW4
RW6
RW7
RW13
Bayview Golf Club
Proposed Golf Clubhouse Pittwater Road Bayview
Part Site Plan
Hodges Shorten Architects Pty Ltd
Scale 1:200 @A1
2360.W3 T1


DO NOT SCALE
BULK EXCAVATION / FILLING PLAN
ASSUMED LINE OF CUT & FILL TO BE CONFIRMED ON SITE
BOUNDARY
BEL RL
BH1
BH2
NORTH
EXISTING SURFACE CONTOUR
SURFACE LEVEL
FINISHED GROUND LEVEL
BEL
BFL
Temporary Construction Exit DETAIL A
Geotextile Fabric Drop Inlet Sediment Trap DETAIL C
Sediment Fence DETAIL B
Staked Hay Bale DETAIL E
TWO STAKES OR PICKETS PER HAY BALE
LOW & HOOKE PARTNERS
Low & Hooke
HODGES CHORTEN ARCHITECTS PTY LTD
BULK EARTHWORKS PLAN
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW
DO NOT SCALE DRAWING
1:200
7713
C1
3


AREA OF THE WORKS
SITE FENCE
STOCKPILE AREA
Silt Fence
Site compound
Direction of overland flow
Shaker Grid
Kerb Entry Pits to be Protected
existing concrete entry
Erosion and Sediment Control Plan
Legend
Bayview Golf Club
Proposed Golf Clubhouse Pittwater Road, Bayview
Part Site Plan
Hodges Shorten Architects Pty Ltd
2380 W3

K R STUBBS & ASSOCIATES PTY LTD

CONSULTING ENGINEERS PROJECT MANAGERS WATER SERVICING COORDINATORS

Mailing address P O Box 1072 PYMBLE BUSINESS CENTRE NSW 2073 *Office Suite 6 No 33 RYDE ROAD PYMBLE 2073*

TELEPHONE (02) 9880 2991 FACS (02) 9880 2994 E MAIL enquiry@krstubbs com au

A.B N 15 001 759 584

YOUR REF
OUR REF BPA1125

31st October 2007

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
CHATSWOOD NSW 2067

Attention Peter Shorten

Dear Peter,

BAYVIEW GOLF CLUB – PITTWATER ROAD
BUILDING PLAN APPROVAL SERVICES

Please find enclosed the Building Plan Approval package for the new Clubhouse at the above address This package consists of -

- Sydney Water Building Plan Approved – Asset Not Affected document,
- Building Plan Nos 2380.W3 Issue T2, 2380 DA3 Issue A, 2380 DA4 Issue A,
- Service Protection Report,
- Quick Check Application Lodgement Summary for Building Plan Approval

This approval is for the new Clubhouse only From the details contained in the Service Protection Report, it would appear that both the DN225 sewer main and the DN300 water main located within the new driveway area will require adjustment We will issue advice regarding these adjustments under a separate letter

Yours faithfully,

COLIN PICKERING
Chartered Professional Engineer

SYDNEY WATER
BUILDING PLAN APPROVED
ASSET NOT AFFECTED

Dolfin No D07/8-02959 Quick Check Ref No 2098785

e-Developer Case No 105463

Property Location

Street No 1825 (Bayview Golf Club) Lot No

Street Name Pittwater Road

Suburb Bayview

Building/Structure Description New Clubhouse (Approval does not cover access driveway)

Building Plan No 2380 W3 Issue T2 2380 DA3 Issue A 2380 DA4 Issue A

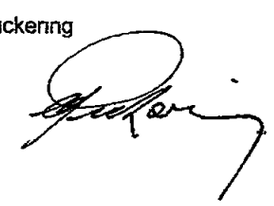
Proposed building/structure is **APPROVED** to be constructed **ADJACENT TO** a Sydney Water sewer/asset as

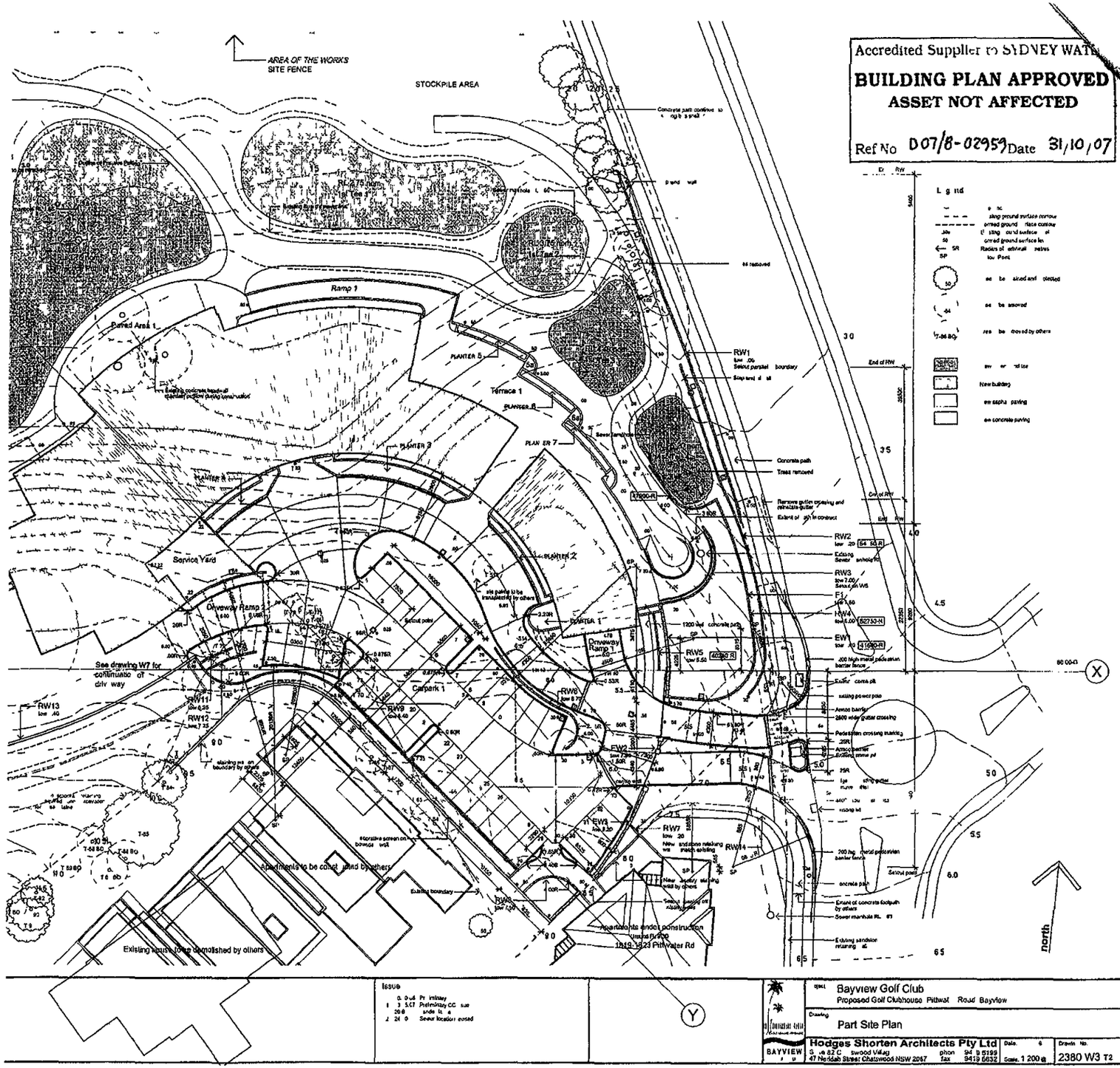
1 Service Location Report reveals the building/structure is outside the Zone of Influence No special precautions required

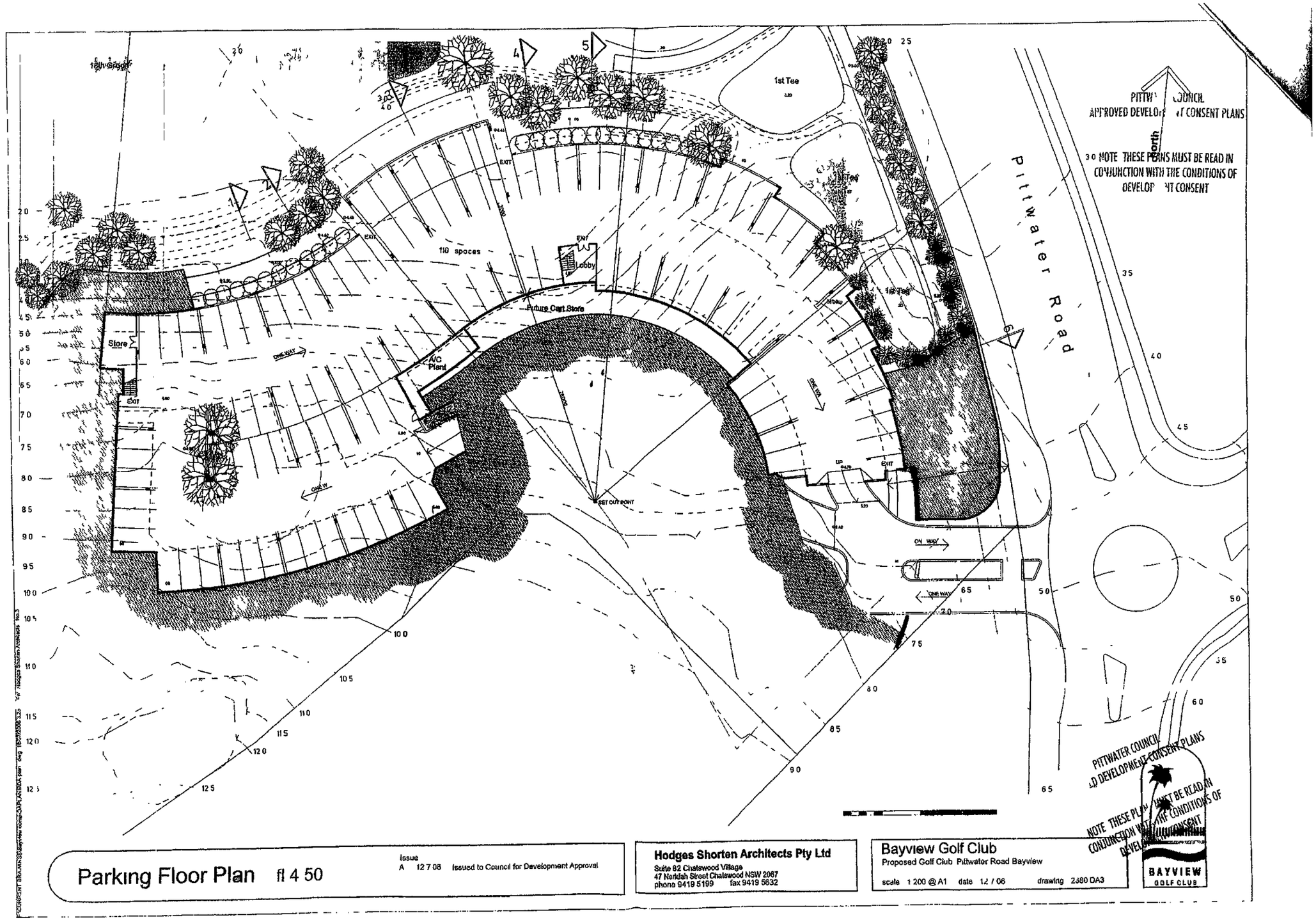
APPROVED BY

WSC Company Name K R Stubbs & Associates Pty Ltd

Name of Key Personnel Colin Pickering

Signature of Key Personnel  Date 31/10/07


AREA OF THE WORKS
SITE FENCE
STOCKPILE AREA
Ramp 1
Paved Area 1
PLANTER 5
Terrace 1
PLANTER 6
PLANTER 3
PLANTER 7
PLANTER 4
Service Yard
Driveway Ramp 2
PLANTER 2
PLANTER 1
Driveway Ramp 1
Carpark 1
RW1
RW2
RW3
RW4
RW5
RW6
RW7
RW8
RW9
RW10
RW11
RW12
RW13
RW14
EW1
EW2
EW3
EW4
F1
F2
Concrete path
Trees removed
End of RW
See drawing W7 for continuation of driv way
Apartments to be constructed by others
Existing house to be demolished by others
Apartments under construction under Pr No 1819-3823 Pittwater Rd
Existing boundary
north
Accredited Supplier to SYDNEY WATER
BUILDING PLAN APPROVED
ASSET NOT AFFECTED
Ref No D07/8-02959 Date 31/10/07
Bayview Golf Club
Proposed Golf Clubhouse Pittwat Road Bayview
Part Site Plan
Hodges Shorten Architects Pty Ltd
47 Neridah Street Chatswood NSW 2067
phon 94 9 5199
Fax 9419 6632
Scale 1 200 @
2380 W3 T2

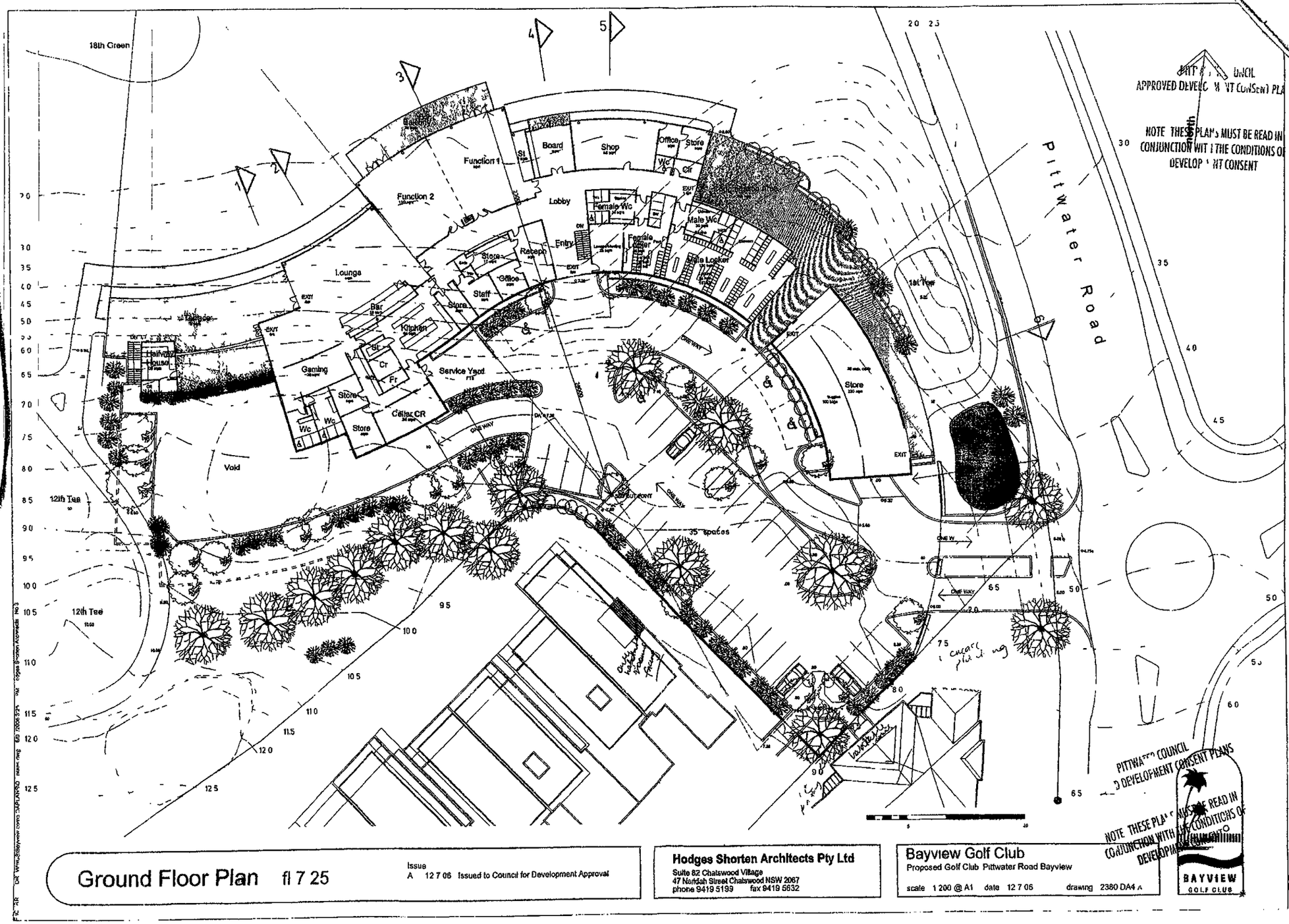


Parking Floor Plan fl 4 50

Issue
A 12 7 06 Issued to Council for Development Approval

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Nor[illegible] Street Chatswood NSW 2067
phone 9419 5199 fax 9419 5632

Bayview Golf Club
Proposed Golf Club Pittwater Road Bayview
scale 1 200 @ A1 date 12 / 06 drawing 2380 DA3



Ground Floor Plan fl 7 25

Issue
A 12 7 06 Issued to Council for Development Approval

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Nordah Street Chatswood NSW 2067
phone 9419 5199 fax 9419 5632

Bayview Golf Club
Proposed Golf Club Pittwater Road Bayview
scale 1 200 @ A1 date 12 7 05 drawing 2380 DA4 A

SPECIFICATION for

NEW CLUBHOUSE

PITTWATER ROAD BAYVIEW

for BAYVIEW GOLF CLUB

THIS IS THE SPECIFICATION REFERRED TO IN THE AGREEMENT

DATED THE DAY OF 2007

PRINCIPAL

WITNESS

BUILDER

WITNESS

HODGES SHORTEN ARCHITECTS PTY LTD

Suite 82 Chatswood Village

47 Neridah Street Chatswood 2067

Telephone (02) 9419 5199

JUNE 2007

INDEX

PART ONE - CONTRACT AND ADMINISTRATION

1 CONTRACT AND ADMINISTRATION

1 A 1 NAMES OF PARTIES

The following terms or designations used within the Contract Documents shall have the meanings described herein

Principal	Bayview Golf Club
Architect/Superintendent	Hodges Shorten Architects Pty Ltd
Structural Engineer	Low and Hooke Partners Pty Ltd
Civil Engineer	Low and Hooke Partners Pty Ltd
Electrical Engineer	Barry C Smith & Associates Pty Ltd
Mechanical Engineer	Wallis and Spratt Pty Ltd
Hydraulic Engineer	Wallis and Spratt Pty Ltd
Landscape Architect	HLS Pty Ltd

Builder and Contractor have the same meaning

1 A 2 CONTRACT

The whole of the contract works shall be executed under AS4000 - 1997 General Conditions of Contract

The contract shall be completed as shown in Annexure 5B Contract

1 A 3 TENDER

The tender shall be a lump sum price not subject to rise and fall The tender shall be submitted on the Form of Tender supplied by the Architect

Tenderers shall return all tender documents supplied by the Architect within one week of the successful tenderer being nominated

1 A 4 DRAWINGS

The Contract Drawings are as follows

ARCHITECT'S DRAWINGS	2308W1 -W34 issue t
STRUCTURAL ENGINEER'S DRAWINGS	7713 S0 to S03 issue 3 S03a issue 3 S04 to S08 issue 2 S09 to S14 issue 2 S15 to S23 issue 3
CIVIL ENGINEER'S DRAWINGS	7713 C1 issue 3 C2 issue 2 C3 to C4 issue 3 C5 issue 5
ELECTRICAL ENGINEER'S DRAWINGS	1212E/06/1 to 12 issue C
HYDRAULIC ENGINEER'S DRAWINGS	15221 H01 to 8 issue 0

MECHANICAL ENGINEER'S DRAWINGS	15192 M01 to 2 issue 0
LANDSCAPE ARCHITECT'S DRAWINGS	L01 and L02
SURVEY	1232 drawings 1 and 2
BAR AND KITCHEN FITOUT DRAWINGS	3040 1 to 3 issue A
AUDIO VISUAL DRAWINGS	??

1 A 5 BILL OF QUANTITIES

A Bill of Quantities will not be provided

1 A 6 JOB FOREMAN/SITE MANAGER

The Builder shall provide an onsite foreman/site manager for the duration of the works who shall confine his activities solely to any work the Builder may carry out on this site

1 A 7 SITE ALLOWANCE AND REDUNDANCY PAYMENTS

The Builder shall allow for any site allowances and redundancy payments as may be granted or required during the period of the building works

1 A 8 BUILDER TO BE INFORMED

The site may be inspected at any time during normal business hours

The Builder is deemed to have

- examined all the information made available to him by the Principal for the purpose of tendering, including the Drawings, Specification, Schedules, Contract Conditions and the like, and
- examined all information relevant to the risks contingencies and other circumstances which could affect his tender, and which is obtainable by making reasonable inquiries, and
- inspected and carefully examined the site, existing building, its surroundings, improvements and accepts the condition for the purpose of executing and completing the works as shown by tender and contract,
- informed itself of all relevant environmental issues regarding demolition, disposal of materials and construction, noise and dust
- informed itself as far as practicable of all relevant physical conditions upon the site, and the climatic conditions at or near the site, and
- informed itself as far as practicable of the nature of the work and materials necessary for the execution of the work under the Contract the means of access to and facilities at the site, and transport facilities for deliveries to the site,
- informed itself as far as practicable as of to the availability of labour and the terms and conditions on which that labour can be engaged for the works
- informed itself to the correctness and sufficiency of its offer and that all of the costs, on the Builder's part, of performing its obligations under the Agreement have been included in its offer

- informed itself of any restrictions on noisy work and excavation required by this specification and by the local Councils
- informed itself of the conditions of Development Consent issued by the local Councils and the Construction Certificate

Failure by the Builder to do all or any of the things it is deemed to have done under this Clause will not relieve him of his liability to perform all his obligations under the Contract

1 A 9 STATUTORY REQUIREMENTS AND PAYMENT OF FEES

The Principal has paid Development and Construction Certificate application fees

The Builder shall at its own cost give all notices and provide certificates and other items required by the conditions of Development Consent and Construction Certificate paying all charges fees costs and penalties in connection with carrying out the works

The Builder shall make allowance in his tender for compliance with the conditions contained in Council's Conditions of Consent (Annexure 5A) and in particular make allowance for the following,

Condition **A 3, A 4, A 7, B 4, B 23, C 12, D 1 to D 17, E 6, E 7, E 8, G 9, G 12**

1 A 10 LONG SERVICE LEAVE PAYMENT

The Principal shall pay the premium required for long service leave payment

1 A 11 CONTRACT PERIOD

Tenderers shall state on their Form of Tender the period they require to complete the works, excluding any extension of time to which they may be entitled

1 A 12 PAYMENT OF WAGES AND SUB-CONTRACTORS

All claims for progress payments shall be endorsed as follows

"I/We hereby declare that all wages included in this application for payment, and all proper nominated sub-contractors, or nominated supplier's accounts included in any previous applications for payment have been paid, and that all insurances required by the Conditions of Contract are current

I/We also declare that all payments due under the Industrial Arbitration Act and the Prescribed Payments Scheme have been paid "

If the Builder fails or omits to pay any workman in cash at least fortnightly, or nominated sub-contractors or nominated suppliers within thirty days from the date of the payment of the Builders Certificated by the Principal then the Principal may, as often as same shall happen, upon complaint of such failure or omission, and upon evidence satisfactory to the Principal, pay such wages or accounts and deduct or recover such amounts from the Builder

1 A 13 OBVIOUS WORK

Where a form of construction or item of work is obviously inferred or is usual and proper in the class and type of work specified in this specification or shown on the drawings the same is to be included, notwithstanding that such construction or such necessary work is not specifically mentioned in the specification or on the drawings

1 A 14 NOMINATED SUB-CONTRACTORS

Provisional sums for items to be supplied, or supplied and fixed by Nominated Sub-contractors do not include for the Builder's profit nor for his co-ordination of, supervision of, and general attendance upon Nominated Sub-contractors, all of which are deemed to be included in the contract sum

Provide, without cost to the Nominated Sub-contractor all normal facilities for the proper performance of the Nominated Sub-contract including the following

access to the site
storage areas,
storage of tools
water for use in the works,
statutory requirements for drinking water, messing, changing and sanitary conveniences,
first aid and safety measures
scaffolding and hoisting facilities as provided for, and during the period of, the Builder's own use, including operators but not labour for loading and Unloading, adequate lighting and facilities for making connections to a suitable power supply

The Builder shall assist the Principal with the selection of the Nominated Sub-contractors including where requested the calling of tenders

1 A 15 CODES AND STANDARDS

All work is to be carried out in accordance with relevant Australian Standards and Codes Where a method material or type of construction shown contradicts that required by a particular standard or code the Builder is to confer with the Architect prior to proceeding with that part of the work affected

1 A 16 SERVICES COORDINATION

Location of services on Services drawings are diagrammatic only It is the responsibility of the Builder to coordinate the exact location of these services and in particular to ensure that the roof framing layout takes into account these services

1 A 17 CERTIFICATES

The Builder shall provide or arrange others to provide to the PCA all certificates required by Council/PCA

The Builder shall obtain the Certificate of Occupation, which is required before the building can be occupied by the Principal Issue of the Certificate shall be a precondition of Practical Completion

1 A 18 INSPECTIONS

The Builder shall arrange for inspections as required by the PCA and Structural and Services Engineer's to satisfy statutory requirements

1 A 19 OVERTIME

Tenderers shall allow for, and include in their tender price for any overtime payments as may be required

No overtime costs whatsoever shall be extra to the Contract Price

The Builder shall have at all times sufficient staff and materials on the site to complete the works within the construction period and in accordance with the construction programme

1 A 20 SITE MEETINGS

The Builder shall arrange fortnightly site meetings, or at such other times as may be required by the Architect, for the purpose of reviewing any matter arising out of the progress of the works, and shall arrange as necessary for attendance at such meetings of representatives of all persons or firms employed thereon

The Architect shall take minutes of the meetings and distribute them as necessary

The Builder and the Architect shall by mutual agreement supply morning tea coffee and cake which shall be at no cost to the Principal

1 A 21 CONSTRUCTION PROGRAMME

The construction shall be controlled against an approved graphic representation of the sequence of the works such as the Critical path Method prepared by the Builder

The programme shall show start and completion dates for all significant elements including all works prepared off site
The programme shall be progressively updated by the Builder from input from subcontractors and suppliers as the works proceed, not less than fortnightly

One copy of the updated programme shall be maintained on site and one copy supplied to the Architect and Principal

1 A 22 PROGRESS PAYMENTS

Claims for payment shall be made on a format agreed by the Builder and Architect

Progress payment applications shall not be made for sums less than One Hundred Thousand Dollars

1 A 23 RESPONSIBILITY

The Builder shall bind every subcontractor, supplier and all other parties necessary and involved in this contract and these parties shall agree to be bound by the full terms and conditions and this specification

1 A 24 WARRANTIES

The Builder shall be deemed by the signing of the contract to warrant the due and proper performance of all works involved in this contract and to warrant that all workmanship and materials shall be of the required quality in accordance with the best practice standards

Where warranties are required by this specification, they shall be in a form approved by the Architect

1 A 25 DEFECTS LIABILITY

The Defects Liability Period shall be **52** weeks from the date of Practical Completion

Defects reported during the Defects Liability Period shall be rectified progressively and not

allowed to accumulate Defects which affect safety health, waterproofing or which seriously interfere with the essential functions of the works shall be rectified immediately they are reported, other defects within a reasonable period thereafter

Defects inspections shall be attended by the Builder, Principal Architect and other specialist consultants as may be appropriate The Architect shall compile and issue to the Builder a List of Items Requiring Attention and shall issue amended lists from time to time detailing outstanding items

1 A 26 FINAL CERTIFICATE

A Final Certificate will be issued when all outstanding maintenance work has been completed and final accounts checked and approved and when all deliverables under contract are received Before issue of the final certificate, the Builder shall lodge with the Architect

(a) All warranties specified

(b) Complete statements of accounts and variations to the Contract

(c) Certificates from all Authorities having jurisdiction over the works

(d) All drawings, details and specifications which have been issued to the Builder by the Architect and Consultants

(e) As-built drawings and manuals required by this Specification

1 A 27 EXPLANATION OF TERMS

Where the term "equal to" is used, if a product other than that specified is used, the Builder must clearly demonstrate **to the Architect's satisfaction**, that the product to be used is in fact equal Approval for an "equal to" product must be gained before the product is required to be installed

Where a product is specified outright this product **must** be used

1 A 28 PRACTICAL COMPLETION

Practical Completion shall be as defined in the Contract The Builder shall ensure that the following is delivered to the Principal as a precondition of Practical Completion

- The building is to be completed in accordance with the contract documentation Certification by the local building authority and any other relevant authority is to be secured and provided to the Principal to confirm that the buildings meet this requirement

1 A 29 PROVISIONAL SUMS

The following shall apply to provisional sums
The Builder shall prepare a list of tenderers for approval by the Architect, for the execution of the work which is the subject of a provisional sum
The Architect may nominate tenderers for inclusion on the list unless the Builder has reasonable objection to any inclusion
The Builder shall prepare tender documents with assistance from and as approved by the Architect and Builder and or Architect may call tenders
The Builder shall provide a comparative tender analysis to the Architect and supply any further information as the Architect may reasonably require
The Architect shall nominate the successful tenderer and the Builder shall enter into a subcontract with that tenderer, the terms and conditions of which shall be approved by the

Architect
The Builder shall satisfy itself prior to entering into the subcontract that the subcontractor has the capability, experience and financial stability to undertake the subcontract work and shall be responsible for the subcontractor's performance

1 A 30 OCCUPATIONAL HEALTH AND SAFETY

The Principal herein appoints the Contractor' as the 'Principal Contractor" as defined in the NSW Occupational Health & Safety Regulation 2001 - Chapter 8, Part 8 1 Clause 210

As the appointed Principal Contractor' the Contractor shall assume all responsibilities for occupational health & safety on the construction site as defined in this chapter and shall ensure all obligations of Chapter 8 – Construction Work are met

The Contractor shall at the request of the Superintendent, supply the Principal with a copy of the site specific OH&S Management Plan' obligated by Clause 226 of the Occupational Health & Safety Regulation 2001, prior to the commencement of work and shall regularly update the Superintendent on the progress of the Plan

The Contractor shall inform the Superintendent of all OH&S incidents that occur on the construction site as soon as is practicable and shall complete any necessary reports or documentation required by the Principal

1 A 31 SUBCONTRACTORS TO SUBMIT TENDERS

Tenderers must conform with the following

MECHANICAL	Tenderers must submit a conforming tender including mechanical cost from one of the nominated contractors a nonconforming tender may in addition be submitted
AUDIO/VISUAL	Tenderers may submit a tender utilising any contractor but must obtain a tender from Noisebox Entertainment Systems
FOOD & BEVERAGE	Tenderers may submit a tender utilising any contractor but must obtain a tender from HRC Alliance

PART TWO - SITE CONDITIONS AND WORKING INSTRUCTIONS

2 SITE CONDITIONS AND WORKING INSTRUCTIONS

2 A 1 STAGING OF THE WORK

All work will be carried out in one continuous stage

The Principal must continue to have uninterrupted access to the existing clubhouse
The existing building will remain occupied until the Certificate of Occupancy has been issued

The development on 1819-1823 Pittwater Rd is scheduled for completion by October 2007
The following is to be complete by end September 2007 to allow completion of adjacent work
- Excavation in the south corner of the area of the works
- Construction of RW7 RW8 RW14 and EW3

2 A 2 DILAPIDATION SURVEY AND REPORT

The Builder shall prepare a detailed dilapidation report of any adjoining properties that the Builder assesses may be affected by the excavation or the works The report shall be as set out in AS 4349 1 1995 Inspection of Buildings Part 1 Property Inspection Residential Section 4 Special Purpose Property Inspections

The Builder shall be responsible for any damage to adjoining properties caused by the building works

A dilapidation report is not required for the existing house to the south of the site

2 A 3 RECTIFICATION WORK

The Builder shall make good to any property outside the boundaries of the site damaged as a result of the works

2 A 4 AREA OF THE WORKS

The area of the works shall be that area of the site nominated on the drawings

The Builder shall confine all of his activities to this area except as is necessary to complete works outside the area

The Builder shall make good to any area disturbed in the course of completion of the works

2 A 5 BUILDERS ACCESS

The Builders access to the works shall be from the roundabout in Pittwater Road

No other access shall be used All equipment and materials delivered to the site for use in the works shall be stored within the area of the works
The Builder shall notify all sub-contractors and suppliers of these requirements and shall make them a condition of contracts with them

The Builder and all contractors shall not have access to the existing carpark accessed off Darley Street

2 A 6 SHEDS AND AMENITIES

The Builder shall provide within the area of the works separate temporary office, storage, and workmens' WC and amenities as are required Such temporary constructions shall be adequately screened and maintained and cleared away on completion all at his own expense

2 A 7 TEMPORARY SERVICES

The Builder shall provide temporary services as required to complete the works and shall clear same away on completion, all at his own expense

2 A 8 CLEANLINESS OF SITE

The Builder shall at all times keep the whole of the works free from obstruction rubbish and debris All such materials shall be removed from the site as they accumulate, and shall be legally disposed of

2 A 9 CLEANING

On completion of the works employ professional cleaners to clean the inside of the building and both sides of all glazing within the area of the building affected by the works

2 A 10 TELEPHONE

The Builder shall provide a telephone and fax on site to enable contact with the works to be made

2 A 11 JOB SIGNBOARD

The Builder shall provide a job signboard comprising ten 200 x 25 DAR timber boards 3000 long, securely fixed to two 100 x100 hwd posts, 5000 long, let into ground and securely braced Paint all timber as specified in painting and signwrite on boards the job title, Proprietor's name, and the title name address and phone number of the Builder, Superintendent and all Consultants

On completion of the works, remove board from site

2 A 12 EROSION AND SEDIMENTATION CONTROL

Erosion and sedimentation control shall be as shown on Civil Engineer s drawings

2 A 13 HOARDINGS AND BARRIERS

Provide Type B permanent chain wire fencing and gates to the area of the works Steel posts shall be inground rather than supported by concrete blocks

2 A 15 SITE REPORT

The site has been classified by Douglas Partners Refer to the report 35630A-1 dated April 2006 included as an annexure to this specification

2 A 16 SURVEY AND SETTING OUT

The site has been surveyed by DP Surveying Services Pty Ltd

The Builder shall employ at his own expense a qualified surveyor approved by the Architect to assist with setting out and to provide a certificate in evidence of the correct location of the building Included in this contract

PART THREE - SPECIFICATION FOR THE BUILDING & SITEWORKS

3 A DEMOLITION

3 A 1 GENERALLY

Demolish and remove all items as necessary to enable the works to be carried out as shown and specified

The demolition shall be carried out in accordance with AS2601-2001 Demolition of Structures, and shall be executed in a careful manner with minimum of dust and disturbance All debris shall be removed from the site Demolished materials shall become the Builder's property unless specifically mentioned elsewhere in this Specification

3 A 2 EXISTING SERVICES

Allow for disconnecting existing services such as electrical and hydraulic services Cap services as necessary and as detailed on the services drawings

The aerial electrical cable and associated poles serving the adjacent construction at 1819-1823 Pittwater Road will be removed/relocated by others

3 A 4 EXTENT OF WORK

Remove concrete driveway along the south boundary connecting to Pittwater Road

Remove sandstone retaining wall facing Pittwater Road

Remove paths dish drains and any miscellaneous items within the area of the works

Remove existing wire fence fronting Pittwater Road within the area of the works and hand over to the Principal where directed

Note that the existing concrete headwall shown on the drawings is to remain as the outflow from this must be maintained during construction as this is the outlet for stormwater from the existing club carpark adjacent Darley Street

Carefully take up existing sandstone block wall along the boundary to the adjacent property to the south and store for future reuse as specified in Siteworks

3 B BULK EARTHWORKS AND DETAILED EXCAVATIONS

3 B 1 EARTHWORKS GENERALLY

Suspend all earthworks if directed or when unsatisfactory works would result due to inclement weather, saturation of materials by seepage flows or any other condition Recommence when materials are no longer affected Water materials if required to obtain optimum moisture content when placing and consolidating filling

3 B 2 SITE PREPARATION

Trees shown on the drawings to be retained and any other trees, shrubs or plants not affected by the work of this contract are to be carefully preserved and protected from damage by suitable protective barriers Note this includes trees shown on the drawings on the adjacent properties

Refer to Annexure 5J for tree report prepared Footprint Green Pty Ltd

The site plan survey and landscape plan generally shows substantial trees on the site Remove all trees and shrubs within the area of the works except those noted to be retained or relocated

3 B 3 CUT AND FILL

Strip all vegetation from the area of the works and remove from the site

Where landscaped areas are to be cut excavate to reduced levels shown making allowance for excavation depths to provide landscape materials as specified The landscape subcontractor shall fill these areas which is included in Landscaping Landscaped area is that area within the area of the works which is to be cut or filled and is not otherwise covered with buildings, roads, paving or the like

Strip topsoil from the area covered by buildings roads, paving or the like to approx 1m out from all edges of the building and stockpile on site where shown on the drawings

Excavate to reduced levels as shown on the drawings **in material as found** Refer to site reports for description of materials

Where site is to be cut to reduced levels batter slope of excavation as recommended in Douglas Partners Site Test Report

Fill under buildings and roadworks with the best of the excavated materials to comply with notes on the Structural Engineer's drawings

Allow the provisional quantity of 100 cu m for the removal of unsuitable material under slabs on ground that may be required after excavation to reduced levels Tenderers shall provide with their tender a rate for the removal of unsuitable material and replacement with suitable compacted material as specified on the Structural Engineers drawings This rate is to be included on the Form of Tender

The area of the works to the north, west and east of the building is to be filled and compacted to 500 under the finished contour levels shown on the drawings The remaining 500 of material will be installed and finished by others (in conjunction with the course construction)
Under this contract no imported material is required to complete the fill to the levels shown (less the 500) The Builder is required to fill this area only to the extent achieved by suitable excavated material won from cut on site Any shortfall will be made up by excavated

material gained from the apartment development on the existing clubhouse site This fill will be done by others

The sequence of filling shall be to complete levels nominated (less the 500) at the south east corner of the area of the works and work to the west until the supply of fill is exhausted

The area of the works between RW13 and the boundary will be filled by others (with construction of apartments on current clubhouse site)

The area of the works between RW9 and the boundary will be filled by others (with construction of apartments on current clubhouse site)

Adequately retain existing ground around trees to be retained T85 and T85 where excavation batter may overlap root zone

3 B 4 EXCAVATIONS GENERALLY

Excavations shall be kept square, accurate to shape and profile and free of loose materials Bottoms shall be clean and level and stepped where shown or required

Surplus material won from excavations if suitable may be used as fill if not it shall be removed from the site

3 B 5 TIMBER FOR EXCAVATIONS

The Builder shall erect such shoring and timber as is required to support the sides of excavations The Builder shall be solely responsible for the sufficiency of all supports

All such work shall be withdrawn and cleared away as works proceed

3 B 6 BACKFILLING

Back fill to excavations generally with the best of materials solidly compacted to the underside of surface finishing materials base courses and the like

Refer to notes on Structural Engineer's drawings for backfilling

See Hydraulic Services for back filling to hydraulic trenches

See Landscaping for backfilling near trees

3 B 7 FOOTING EXCAVATIONS

Excavations shall be sizes required for footings as shown on Engineers drawings

3 B 8 HYDRAULIC SERVICES TRENCHES

Refer to Hydraulic Services Bed and fill all service trenches with material of equal compaction and composition to adjacent ground

3 B 9 TERMITE PROTECTION

Provide a suitable system to concrete slab perimeter and all penetrations to provide a full and complete barrier to termites complying with the BCA and relevant standards Tenderers shall nominate which system they propose on the Form of Tender including ongoing maintenance and warranty arrangements for the alternative termite protection

The Builder shall provide the Architect and PCA a certificate in evidence of compliance with this clause

3 B 10 SUBGRADE AND BASE COURSE TO FLOOR SLABS

Provide subgrade and base course under slabs to the extent and as noted on Structural Engineer's drawings

3 C CONCRETING

3 C 1 GENERALLY

The whole of the work shall be as shown on the Structural Engineer's drawings and shall be in accordance with the current Australian Standards and the Notes on the Engineer's drawings In the event of any contradiction, the Engineer's Notes shall take precedence

Ready mixed concrete shall be used throughout the works

Reinforcement of concrete members shall be as shown on the Engineer's Drawings

Tenderers shall allow and include in the Tender Price the cost of preparation of bending schedule

3 C 2 INSPECTIONS

The Builder shall arrange for inspection of the work by the Engineer at each of the following stages

On completion of excavations or on completion of any base courses

On completion of formwork construction and cleaning

On completion of reinforcement placing tying and securing

The Architect may require inspections of all conduits and fitments to be cast into the concrete before any reinforcement is placed

If the Architect so requires, concrete shall not be placed except during the presence of the Engineer

3 C 3 TESTING

Testing shall be carried out generally in accordance with the requirements of AS 3600

3 C 4 FOOTINGS

Footings shall be as shown on Engineer's drawings

3 C 5 VAPOURPROOF MEMBRANE

Provide a Standard membrane over the base course or natural ground under all slabs in contact with the ground

Membrane shall be 6 metres wide, branded with trade name sheet thickness and compliance to AS 2870

The membrane shall be continuous throughout and turned up full depth of slab at walls Lap the material 200 mm at joints and seal all joints with a 75 mm wide pressure sensitive polythene adhesive tape

3 C 6 FORMWORK

Unless otherwise specified all formwork shall be Class 2 of AS 3610 This shall include concrete columns and the soffits of concrete floor slabs

Formwork to stair risers shall be suitable for subsequent finishes

3 C 7 FINISHES TO UNFORMED CONCRETE

Types of finish shall be as defined in AS 3610

Finish to tiled and cement paved areas shall be scratched finish Finish in areas containing floor wastes shall fall 1 in 80 to wastes or as nominated on the drawings

Finish to all other concrete shall be machine floated steel trowelled, finished to give a smooth, even surface suitable for coverings as specified later Surface shall be level except areas containing floor wastes shall fall 1 in 80 to wastes

The steel trowel finish shall have a maximum out of tolerance of 4mm when measured in any direction under a 3m straight edge

3 C 8 PRECAST CONCRETE PANELS

Precast concrete panels shall be as shown and noted on the drawings

Panels to wall on grid P d have a curved face on the outside only Finish to this surface shall be suitable for subsequent paint finish without any further treatment

3 C 9 METALWORK

Metalwork cast into concrete such as reglets, bolts angles and joints shall be as shown on Engineer's drawings

3 C 10 STORMWATER PITS

Pits and grates to drains shall be as specified in Hydraulic Services

3 C 11 PATHS

See Siteworks

3 C 12 CONCRETE PLINTHS

Provide unreinforced concrete plinths to equipment as required

3 C 13 BORED PIERS

Bored piers shall be as shown and detailed on Structural Engineer's drawings Provide rates for piers on the Form of Tender

3 C 14 REGLETS

Build in approved stainless steel reglets at junction of metal roof with precast concrete panels where detailed on the drawings

3 C 15 SETDOWN TO FUTURE HALFWAY HOUSE COOLROOM

Fill setdown in concrete slab for future coolroom with concrete Line setdown with plastic to enable removal of concrete at a later date

3 D BRICKWORK AND BLOCKWORK

3 D 1 GENERALLY

Brickwork shall comply with the current Australian Standards and shall be in accordance with notes on Structural Engineer's drawings Refer also to Structural Engineer's drawing notes

All clay bricks shall be watered prior to laying and shall be damp when laid

Walls shall be built straight and plumb in level courses with no adjacent parts carried more than scaffold lift above the rest and shall be raked back at ends

All bricks shall be laid on a full bed of mortar and full perpends, grouted up solid as required

Cut and chase brickwork as required but in no way affect the stability of the work

Build in as necessary all flashings DPC's reinforcements arch bars lintels frames straps bolts, lugs, wall ties sills and the like

3 D 2 STORAGE OF BRICKS

All face bricks shall be stacked on site clear of the ground on planks and the like and shall have approved waterproof coverings

3 D 3 FACE BRICKS

Allow the amount stated in the Schedule of Provisional Rates for the supply and delivery of selected face bricks

All bricks used in the work shall be hard, sound and true with unbroken arrises where exposed Builder shall check bricks and reject oversize or damaged bricks

3 D 4 COMMON BRICKS

Internal common bricks shall be smooth face suitable for rendering or plasterboard or villaboard lining

External common bricks shall be suitable for rendering or cladded finish specified elsewhere

Other common bricks shall be extruded clay bricks, hard burnt and of even shape and size, equal to Austral Mighty Brick

3 D 5 MORTAR

Allow to provide sample brick and block panels of approx 50 bricks with up to four alternative mortar colours Allow for both grey and off white cement

Mortar for all brickwork shall be machine mixed accurately proportioned comprising 6 parts sand, 1 part lime and 1 part cement with sufficient water to produce a proper workable mix

Cement shall be Southern Portland Off-white Cement delivered to the site in sound unopened bags Store clear of the ground and provide waterproof coverings

Lime shall be an approved proprietary brand of hydrated lime delivered and stored as for

cement

Sand shall be approved clean & graded coarse to fine, free of dust and any foreign matter

3 D 7 BRICK ROD

Brick rod shall be 86 mm for each brick course in height uniform throughout Each stretcher and one perpend shall equal 240 mm irrespective of brick sizes, perpend joints shall be plumb and uniform throughout the work

3 D 8 MORTAR JOINTS

Joints in face brick and block shall be ironed

Joints in rendered or tiled brickwork shall be left rough

All other joints shall be cut flush

3 D 9 BOND

All face brickwork shall be built in stretcher bond except for corbelled courses and cut brick on end courses

3 D 10 TYPE OF BRICKWORK

The following shall be face brickwork

Exposed faces of Planters 5 5a 6 6a 7 and 7a and adjacent walls
Exposed faces of dwarf wall to Parking Floor adjacent Ramp 1
Exposed faces of stepped wall to Parking Floor adjacent Ramp 2
Brick facing to columns to Ramp 1 and Balcony 2

The following shall be brickwork suitable for rendering

All other walls on Parking Floor
Lobby 3

The following shall be common brickwork

All other walls

3 D 11 CONCRETE BLOCK WALLS AND PLANTERS

Concrete block walls to be rendered shall be as shown and detailed on the drawings, generally 190 wide unless noted otherwise Refer to Structural Engineers notes for details

Face concrete blocks shall be Boral Designer Block selected Accent Colour with honed face 140 wide laid in accordance with manufacturer's instructions

3 D 12 TYPE OF CONCRETE BLOCK WALLS

The following shall be face block

External walls to Cart Store 2 and MALE shown as block

All other walls shown as block shall be rendered

See Siteworks for concrete block retaining walls

3 D 12 BRICK VENEER WALLS

Cavity walls shall be of widths shown on Drawings

Tie both leaves of all walls together with approved Abbey stainless steel wall ties length to suit cavity, spaced to comply with Australian Standard

Keep cavities clean throughout and free of mortar droppings

Provide weep holes with insets equal to Weepa Products Pty Ltd where required

Provide similar weep holes over every flashing and DPC where such bridge the cavity

3 D 13 SILLS AND HEADS

Exposed sills of openings and heads of walls shall be finished with capping course of face brick on edge as shown on drawings Corners at returns shall be mitred

Head of walls bearing floor slabs shall be finished as noted on Structural Engineer's drawings

Face brick heads of openings shall be brick on end two courses high Allow for brick head to be the same brick as the face brick

3 D 14 SILLS

Brick sills to windows shall be as detailed on the drawings Bricks shall be as walls

All bricks used in the work shall be hard, sound and true with unbroken arrises where exposed Builder shall check bricks and reject substandard bricks

3 D 15 LINTELS

Provide lintels to openings as detailed on Structural Engineer's drawings

Unless other support is specified, build in galvanised steel lintels to support brickwork over openings, size as noted on Engineer's drawings

3 D 16 DPC's

DPC's shall comprise bituminous coated aluminium equal to Alcor, 45 thick, full width of walls lapped 150 at joints and full width at angles and intersections Provide DPC's as follows

01 In all walls having contact with ground, except where flashings occur provide DPC maximum two courses above ground, stepped as necessary

3 D 17 ALUMINIUM FLASHINGS

Flashing shall comprise bituminous coated aluminium equal to Alcor, 45mm thick Provide flashings as follows

01 In external cavity walls where external ground level is less than two courses below floor level, provide flashing placed at floor level, full width of external skin, taken across cavity stepped up two courses and fixed to internal

02 In external cavity walls where cavity is bridged provide flashing full width of external skin, taken across cavity, stepped up two courses and fixed to internal wall Turn flashing down 40 mm over adjoining apron flashings or the like

03 At window sills provide flashing as detailed on drawings

3 D 18 METAL FLASHING TO ROOF

Where metal roof abuts brick walls or concrete build in colorbond flashing as detailed on the drawings

3 D 19 HOLDING DOWN BOLTS

Build in holding down bolts, straps and the like as shown on Structural Engineer's drawings

3 D 20 METAL DOOR FRAMES

Build in metal door frames filling cavities solid with mortar as work proceeds Protect frames from damage during construction

3 D 21 CLEANING FACEWORK

All face brickwork shall be cleaned free of all mortar and other stains with 10% solution of hydrochloric acid in water and then hosed down free of acid and/or in accordance with manufacturer's specification

3 D 22 MOVEMENT JOINTS

Provide joints in brick walls at maximum 10m centres Joints shall be located to Architects and Structural Engineers Approval

Where joints occur, leave 10 mm gap filled with polystyrene and pointed with selected flexible mastic of selected colour

3 E CARPENTRY AND JOINERY

3 E 1 GENERALLY

Timber shall be the best of the grade specified properly seasoned and free of defects

3 E 2 WORKMANSHIP

All joinery members shall be dressed all round free of any surface blemishes and then fine sanded smooth and even with the grain

Ease all arrises of exposed members

All dressed timbers shall have one coat of the coats specified in Painting applied all around before fixing

Spacing of members and fixings shown or specified shall not be exceeded and except where shown otherwise members and fixings shall be evenly spaced throughout

Adequately protect all finished surfaces, provide and fix and clear away all casings and/or sheathings as required or directed

All nail fixings of joinery work shall be punched and puttied

The whole of the work shall be carried out by tradesmen in accordance with best trade practice

3 E 3 FIBRE CEMENT EXTERNAL WALL LININGS

Provide 7 5 thick compressed fibre cement linings to external walls where shown on the drawings Lining shall be equal to Hardies Harditex fixed and finished in accordance with manufacturer's instructions

Provide sarking behind all external fibre cement linings

3 E 4 WALL FRAMING

Provide stud walls where shown on the drawings Tenderers are invited to nominate either timber of steel for the framing system provided that such system complies in all respects to the Structural Engineer's requirements
Walls have been dimensioned as 90 wide, however alternative widths will be considered provided written documentation is provided to the Architect confirming the structural adequacy of the alternative Studs shall be at **450** maximum centres with **two** rows of noggings Provide additional studs where shown on Structural Engineer's drawings and beside each door opening

Provide sufficient framing to adequately support handrails, grabrails etc specified elsewhere

See Floor Wall and Ceiling finishes for lining and insulation to walls

3 E 5 TIMBER DOORS AND DOOR FRAMES

Refer to door schedule on drawings All doors shall be best quality obtained from an approved manufacturer

Refer to Metalworker for aluminium framed doors

Refer to Metalworker for metal (steel) frames

All flush doors shall be solid core nominally 35 thick Doors noted on the schedule shall be veneered with selected timber veneer For pricing allow for veneer to be New Age Veneers Silky Ash Crown Edge strip to door on 3 edges with Blackbutt to match frames All other doors shall be paint grade veneer with timber edge strips External doors shall be external grade

Timber door frames shall be Blackbutt as detailed on the drawings

Cavity sliding door system shall be Timberform manufactured by CS Cavity Sliders P/L Include all necessary hardware except for handle and lockset included in the Provisional Sum for hardware

3 E 6 DOOR HARDWARE

Allow the amount stated in the Schedule of Provisional Sums for the supply of selected hardware

Allow for hanging hinged doors in metal frames to hinges included in the Provisional Sum

Allow for fixing only the following,

1 three hinges to each leaf of doors

2 one mortice type lock or catch to each hinged door

3 one door stop to each leaf of all hinged doors

4 two recessed barrel bolts to each pair of aluminium framed glazed doors

5 panic bars to all egress doors

6 mortice type lock set to each sliding door

3 E 7 OPERABLE WALL AND SLIDING DOOR

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of doors DG28 and SDG29 Highlight to door DG28 is specified elsewhere

3 E 8 WINDOW SILLS

Provide timber sills where nominated in the Schedule of Finishes and as detailed Sills shall be Blackbutt

3 E 9 SKIRTINGS

Provide timber skirtings where nominated in the Schedule of Finishes and as detailed

Skirtings shall be finger jointed hoop pine suitable for subsequent paint finish

Seal all faces of skirting and all joints with one coat of sealer as specified in Painting

Scribe timber skirting at stair so that top of skirting finishes nominally 120 above stair nosing

3 E 10 FITMENTS

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of the following joinery items

1 Vanity benches including basins to Male WC 1 and 2 Female WC 1 and 2 and Staff WC
2 Board Room display cupboard
3 Office 2 reception counter
4 Lounge cupboard
5 Store 4 shelving
6 Corridor 2 display cabinet
7 Bar and Servery benches, cupboards and canopy (Equipment specified elsewhere)
8 Kitchen Office bench and cupboard
9 Staff Room cupboard

3 E 11 TOILET PARTITIONS

Provide toilet and shower partitions to Male and Female facilities where shown on the drawings System shall be equal to H Dallas Industries Pty Ltd floor mounted laminated toilet partition system, HF1062 for toilet and HF1050 for shower, finished in selected colour laminate and complete with all necessary fixings, hardware and clear anodised channels Provide standard toilet roll holder to wc's and standard seat and robe hook to showers Include doors to all cubicles

3 E 12 SEALING OF BUILDING FABRIC

Provide suitable sealing at all ceiling, wall and floor junctions to minimize air leakage in compliance with clause J3 6 of BCA Take particular note to seal above set shadowline angle at ceiling wal junction

3 F ROOF PLUMBING

3 F 1 EAVES GUTTERS

Gutters shall be marine grade aluminium tube as detailed on the drawings Roll pipe to radius required and cut in half Cut edge of pipe to match finish of remainder of pipe

Support gutters on purpose made marine grade aluminium gutter supports as detailed on the drawings

Joints shall be welded and ground smooth

Lay to fall 5 mm to downpipes

Provide expansion joints in gutters at 12000 maximum centres

3 F 2 BOX GUTTERS AND RAINWATER SUMPS

Box gutters and rainwater sumps shall be as detailed, and where shown on the drawings, fabricated from 0 7 XSE colorbond Note gutters following the building curve need not be curved but may be segmented with joints at approximate 2000 centres

Provide adequate gutter supports as detailed on the drawings and as required

3 F 3 DOWNPIPES

Downpipes to eaves gutters shall be marine grade aluminium, welded at changes of direction, size as nominated on the hydraulic drawings

Secure to posts and walls with concealed support (not straps) welded to downpipes at maximum 1500 centres, fixed with stainless steel fastenings Downpipes to Members Lounge roof shall be supported on steel posts 114 chs approx 1200 high and set into ground 600 with 600 diam concrete base Cap top of post

Downpipes to box gutters generally shall be UPVC, size as nominated on the hydraulic drawings

3 F 4 FLASHINGS TO COLORBOND ROOFS

Flashings shall be as detailed and fabricated from 0 7 colorbond XSE Where not detailed flashings shall be standard Lysaght's section

Provide all flashings as shown or as required to ensure the complete water tightness of the roof

3 F 5 VALLEY, RAKING AND CONCEALED GUTTERS

Provide valley, raking and concealed gutters consisting of 0 7 XSE colorbond with rolled edges Include colorbond flashings and cappings as detailed

Support gutters on profiled metal sheeting suitable for roof framing detailed on the Structural Engineer's drawings

3 G ROOFING

3 G 1 PROFILED METAL ROOFS

Provide profiled metal roofs where shown on the drawings Roofing shall include all associated flashings, cappings, sisalation and insulation fixed in accordance with manufacturer's instructions Provide metal roof battens as required Curve battens on site to follow the radius of the roof

Insulation shall be 50 thick bonded to sisalation supported on chicken wire to the underside of the roofing

Roofing to raised section containing Kitchen ducts and fans shall be 0 48 B M T Colorbond flat pans 500 nom wide and 37mm upturns equal to Astra Snap Lock Roof System manufactured by Craft metals Pty Ltd Provide all necessary flashing and upturns for penetrations for mechanical systems

All other roofing shall be 0 48 B M T XSE Colorbond Lysaght Custom orb profile of selected colour Cut edges of sheets on site neatly to follow the roof radius

3 G 2 ROOF CAPPINGS

All exposed cappings at the curved edges of roofs must be rolled by an experienced fabricator off site to ensure a smooth curve Bending of members on site is not permitted

3 G 2 TIMBER LINING

Provide 19 thick particleboard sheeting to the whole roof area above Function Rooms and Members Lounge, and to raised section above Kitchen as detailed on the drawings

3 G 3 INSULATION

Provide R3 5 fibreglass insulation batts under all metal roofs to the area inside external walls Lay batts on top of ceiling linings

3 G 4 ROOF ANCHOR POINTS

Provide a suitable system of anchorage points to the whole of the roof to comply with the minimum statutory requirements

3 G 5 ROOF SEALANT

All items of roofing that require sealant, including laps in gutters and flashings roof penetrations and the like, shall be suitably sealed with appropriate sealant from Sika Aust Pty Ltd range of products, applied strictly in accordance with manufacturer's instructions

3 G 6 TERRACE 3 PERGOLA

Pergola to Terrace 3 shall be constructed from powdercoat finish aluminium rectangular hollow sections as shown on the drawings Connections shall be either welded or concealed fixed Beams shall be min 250 x 110 x 12 thick, rafters shall be min 180 x 50 x 3 thick Cap all exposed ends Provide shop drawings for review and provide design certification from fabricator that system proposed will comply with relevant Australian Standards for structure

3 H METALWORK

3 H 1 STEELWORK

All steelwork is to be as shown and noted on Structural Engineers drawings Sundry steelwork and detailing may also be shown on architectural drawings It is the tenderers responsibility to ensure all items are included in the tender

All fascia channels along the curve of the roof are to be rolled to follow the curve Where noted on the drawings concealed roof beams are also to be curved

Where roof beams are not curved allow for cleats for roof purlins to be of varying heights so that roof sheeting follows the curve of the roof

3 H 2 ACOUSTIC SCREEN

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of acoustic screen to Terrace 3

3 H 3 METAL BALUSTRADES

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of metal balustrades to the following areas

1 Edge of Terrace 1
2 Both sides of Ramp 1
3 Edge of Planter 8 and adjacent retaining wall
4 Edge of Balcony 1 and 2
5 Edge of Terrace 2
6 Edge of concrete upturn above Carpark West

3 H 4 METAL HANDRAILS

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of metal handrails to Stair 1 and 2

3 H 5 GRAPHICS

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of all internal and external graphics, including tactile indicators

3 H 6 METAL GATES

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of electrically operated gates DE 1, DE 2 and WG 39

3 H 7 STORE SHELVING

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of metal shelving to Store 4, 6 and 7

3 H 8 SAFE

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation

of safe in Store 4 and in Bar

3 H 9 SUNDRY BATHROOM AND WC ACCESSORIES

Soap dispensers shall be supplied and fitted by the Proprietor

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of sundry Bathroom and Wc accessories

3 H 5 KITCHEN AND BAR FITOUT

For details of Kitchen and Bar Fitout refer to Annexure 5G

Allow to connect all equipment Refer to Electrical Hydraulic and Mechanical Services as required for the provision and connection of services to the equipment

3 H 11 EXTERNAL LOUVRES

Provide louvre grilles in gable walls where shown on drawings

Louvres shall be selected colour powdercoated aluminium equal to Air Grilles Pty Ltd complete with angle framing, fixed in accordance with manufacturer's specification Louvres shall be Model No OAL-50 with vermin proof wire mesh

Refer to Mechanical Services Drawings for minimum area sizes Louvres required to be larger than minimum size are as shown on Architectural drawings

Provide Louvres to Members Lounge window to the extent shown on the drawing and as detailed Louvres shall be equal to LouvreTec 70mm mini louvre system in panel widths to suit segmented panels of window Support on powdercoat finished subframe equal to strut brace style detailed in Section 8 53 of LouvreTec catalogue

3 H 12 CHAINWIRE PARTITIONS

Provide chain wire partitions and gates to the following, to the extent shown on the drawings,

1 Gas Heater Enclosure in Carpark East
2 A/C Plant
3 Cart Store 2

Partitions shall comprise 50 diam pipe, posts at 2m max centres, top and bottom rails and midrails at max 2m centres and standard chainwire Connect to floor with fixing within pipe diameter, flange may be used to support at roof

Gates shall be of standard construction, with standard hardware

Wiring shall be plastic coated, all pipework and other metalwork shall be powdercoat finished in standard black

3 H 13 VOID LOUVRES

Void louvres shall be as detailed on the drawings Provide louvres to all voids All metalwork shall be hot dipped galvanized

3 H 14 LETTERBOX

Letterbox shall be constructed from marine grade aluminium, size 300 x300 x 300 with hooded front opening and lockable hinged rear door Box is to be set into Entry Wall where directed

3 H 15 FLASHINGS TO WINDOWS AND DOORS

Metal flashings to windows and doors shall be colorbond as shown on the drawings

3 H 16 ALUMINIUM FRAMED DOORS AND WINDOWS

Doors and windows shall be as shown on drawings as scheduled on drawings and as specified

All windows and doors shall be fabricated from **Vantage Aluminium Joinery** sections as follows,

DOORS

Hinged	Series 548 Parliament stainless steel hinges to allow doors to open 180 degrees
Folding	Series 542 Dstacker with recessed sill

WINDOWS

Shopfront	Centre GLAZE Note frame to Function Rooms to be 150 wide to suit building in structural members
Double hung	Series 614 ClearVent (sashless)
Casement	Series 616 magnum

Doors and windows shall be of sizes to suit opening sizes shown on Schedules (i e not necessarily "standard" sizes)

Provide glazing bars to doors and windows where shown on the drawings

Finish shall be powdercoat of selected standard colour

All opening window sashes shall have flyscreens

All glass shall comply with AS 1288 and AS 2208 Internal glass shall be clear except where noted otherwise Obscure glass shall be satinlite External glass shall be Pilkington min 8 38mm Solar-E laminated safety glass Provide certification that glazing complies with section J2 of BCA

All seals, pointing, flashings and the like shall be provided and the whole installation shall be left weathertight

Provide aluminium subsills and reveals as detailed

Installation shall be strictly in accordance with Manufacturer's specification

Shop drawings shall be submitted and reviewed by the Architect before construction commences

Provide aluminium threshold to all external doors as detailed Threshold shall be equal to Raven RP98 1428 1 disabled access door threshold

Provide automatic door seals to all external aluminium doors as detailed Seal shall be equal to Raven automatic heavy duty concealed bottom seal compatible for door section

Provide remote control winders to all casement window sashes Winders shall be equal to D+H Ventic VCD 22 Actuator with 350mm opening, distributed by Winco Systems Pty Ltd (ph 9453 5344) Provide 3 off remote controllers

3 H 17 AUTOMATIC SLIDING DOOR

Door DG 19 shall have automatic sliding door mechanism equal to BWN series AL-400B automatic breakout sliding door operator with soffit sensors Door mechanism to be interfaced with fire alarm system to provide auto opening to comply with clause D2 19 of the BCA

3 H 18 METAL DOOR FRAMES AND FIRE DOORS

Metal door frames shall be as shown on drawings and as follows

Frames shall be equal to R J Brodie Pty Ltd 's frames with provision for four equally spaced hinges to doors Supply of hinges is included in the Provisional Sum for Hardware

Frames shall be complete with buffers and striking plate and shall be securely built into brickwork and grouted solid or securely fixed to stud walls

Frames to external doors shall be galvanised

3 H 19 ROLLER SHUTTERS

Provide shutters where shown on drawings

Shutter to Garbage shall be equal to Austral Monsoon H13 steel shutter in selected polyurethane/powdercoat paint finish Shutter shall electrically operated with 100mm x 1 0mm perforated slates

Shutter to Servery shall be equal to Austral Monsoon E89 Clearmaster aluminium/acrylic shutter in selected powdercoat finish

3 H 20 ACCESS PANELS

Provide ceiling access panels where shown on the drawings and as required to provide access to building services for servicing or maintenance Where walls or ceilings have a particular acoustic or fire rating, the panels shall maintain that rating

Panels shall be equal to Trafalgar APC/WW series, mdf door with setting angle frame, rim Lock and concealed hinges, fixed strictly in accordance with the manufacturer's specifications

Allow for trimming around opening and setting to provide a flush finish

Panels shall be size as shown or nominally 400x400 but as small as possible and still allow access to the particular component

Provide similar panel to access shutter in Servery, full width of shutter
by diameter of shutter plus sufficient clearance for removal Panel shall be located in canopy

above Servery

3 H 21 GRAB RAILS

Provide grab rails as shown on drawings All rails shall be equal to Grab Rail Industries Pty Ltd's concealed fixing model 32 diam powdercoat finish in selected colour, with round flanges

All furniture shall be securely fixed as specified by the manufacturer using non-corrosive fixings

3 H 22 FIRE BLANKETS AND FIRE EXTINGUISHERS

Provide fire blankets and fire extinguishers as specified in Hydraulic Specification

3 H 23 SKIRTING DUCTS AND ALUMINIUM PLATES

Where nominated in the Schedule of Finishes provide the following,

Skirting duct shall be equal to Esco Clearway AOL35-150 2 channel natural anodized extruded skirting duct complete with drop in cover and purpose made internal and external corners and stop ends

Aluminium Plates shall be equal to Esco dress skirting Clearway FA Series natural anodized Extruded aluminium to match AOL Series skirting duct Screw mount to wall and provide rubber insert over screws

3 H 24 FIRE HOSE REEL CUPBOARDS

Provide standard fire hose reel cupboards with hinged doors, equal to Trafalgar, to all hose reels not otherwise built in Cupboards shall be finished in selected (not red) colour

3 I FLOOR, WALL AND CEILING FINISHES

3 I 1 GENERALLY

Any room or area included in the Works but not specifically mentioned in the Schedule of Finishes included in this Specification shall be finished with appropriate floor, wall and ceiling finishes For explanation of abbreviations after clause headings refer to Schedule of Finishes

3 I A FLOOR FINISHES

3 I 2 FINISHED AS LAID FLOORS (FAL)

See the Schedule of Finishes for concrete floors finished as laid

3 I 3 CEMENT PAVING (PC)

Pave floors as nominated in the Schedule of Finishes as follows

Paving shall comprise 2 parts clean crushed 3 mm blue metal, 1 part river sand and 1 part cement machine mixed, laid onto properly prepared surface to give firm adhesion, finished with a steel trowel to a dense smooth and even surface

Paving shall be cured as specified for structural concrete

Paving shall be12 thick to stair risers, 25 thick to treads and where falls are to be provided paving shall be max 35 thick evenly graded to 20 thick at floor wastes

Where coved skirting is nominated in the Schedule of Finishes, cove paving at wall junction to finish nominally 30 above floor with 20 min width and 15 radius cove

Generally include paving under all vinyl floors laid to adequate falls or falls as nominated

3 I 4 PAVING TILES (TM)

Pave the areas nominated in the Schedule of Finishes and shown on the drawings as follows,

Allow the rate stated in the Schedule of Provisional Rates for the supply and delivery of selected paving tiles Allow for laying tiles nominally 500x300

Tiles shall be straight jointed and either bedded in minimum 20 thick 3 1 cement mortar on properly prepared concrete surfaces or adhesive fixed with approved adhesive Joints shall be filled with mortar as for bedding mortar and finished flush, smooth and even

Paving tile layout shown on drawings is diagrammatic only Generally provide full tile edging to all tiled areas then lay remainder of tiles in unbonded pattern parallel to one edge

Provide expansion joints in tiles taken down to structural concrete Joints shall be against walls and at maximum five metre intervals in a grid pattern Fill joints with suitable flexible sealant

3 I 5 CONCRETE FLOOR TO COOLROOM

Provide concrete floor and epoxy finish to new Coolroom and Freezer and Cellar 1 and 2 included in the Provisional Sum for Kitchen Fitout

3 I 6 WATERPROOFING TO WET AREAS

Provide PVC angle 100 x 50 equal to Hardies at all floor-wall junctions in wet areas, bonded to concrete slab and wall lining before paving is installed and as detailed on the drawings 100 leg shall be vertical

Waterproof membrane shall be Gripset Industries Pty Ltd Gripset 2P fast cure liquid membrane or approved equal to structural floor of room Turn membrane up nominally 50 above top of PVC angle Walls shall be waterproofed as specified elsewhere Apply strictly in accordance with manufacturer's recommendations and to comply with BCA requirements and Australian Standard AS 3740

3 I 7 SOFT FLOOR COVERINGS (CA SV)

The surface to all slabs to have subsequent vinyl and carpet finish shall be repaired as required to allow the direct fixing of floor coverings without further treatment by the floor layer

Soft floor coverings shall be provided where nominated in the Schedule of Finishes

Allow the amount stated in the Schedule of Provisional Sums for the supply and delivery and installation of selected carpet tiles and vinyl

The Provisional Sum shall include coved vinyl skirting and capping strips, and trims at exposed edges of floor coverings

Provide the following accessories

Latham & Co Pty Ltd Asbraloy series SAFN type FC and FT, expansion joint covers to all expansion joints in concrete floors fixed in accordance with manufacturer's instructions

3 I 8 EPOXY FINISH

Provide epoxy finish to all floors nominated in the Schedule of Finishes

Finish shall be equal to Hychem International P/L product as follows,
Surface preparation strictly in accordance with manufacturer's instructions
Hychem SF20 epoxy, selected colour, satin finish
2 coats to provide minimum 300 micron finish
final coat of Hychem SF20 clear
add 1kg of 60-80 mesh calcined alumina to each 9 litres of mixed product

3 I 9 SPRAY COLOURED FINISH TO CONCRETE

Spray coloured concrete finish to all floors nominated in the Schedule of Finishes

Sprayed finish shall be equal to Duratex CRS3000, spray on cementitious based polymer modified 2 part system distributed by Designer Concrete Coatings Pty Ltd Application shall be in accordance with manufacturer's specification Allow for three colours from Designer Colour range Finish shall be solid colour with no stencil pattern Provide two colour coats and two sealer coats

3 I B **WALL FINISHES**

3 I 9 WATERPROOFING TO WET AREAS

Provide waterproofing to all wet area walls as follows,

Seal the whole of all walls with an approved sealer that will provide a suitable waterproof membrane for Category 1 and Category 2 areas Membrane/sealer shall be applied by an approved applicator strictly in accordance with manufacturer's specification and shall be approved by the manufacturer of the wet area plasterboard

Provide full height 50x50 flashing angle behind wall lining to all internal and external wall corners

3 I 10 PLASTERBOARD

Line walls where nominated in the Schedule of Finishes and as follows,

Plasterboard shall be supplied by CSR Pty Ltd, flush jointed, fixed and finished strictly in accordance with manufacturer's specification

Plasterboard shall be fixed direct to stud walls and via 12mm furring channels to brickwork and blockwork walls and precast concrete panels Provide a vapourproof barrier between plasterboard and all walls other than stud walls

Provide control joints in wall linings at all control joints in the building Control joints shall be Rondo P35 fixed and finished in accordance with manufacturer's instructions

External angles shall be set finished over external metal angle Internal angles shall be set finished At edges where shown provide Rondo's Plaster Sheet Stopping Angle

Plasterboard lining to wet areas shall be moisture resistant grade

Line walls of Stores 2 to 7 with fire rated plasterboard to achieve 60/60/60 rating In Stores 3 and 4 extend fire rated walls to underside of roof covering

3 I 11 CEMENT RENDER

Render walls where nominated in the Schedule of Finishes, external Planters and other miscellaneous items where shown on the drawings and as follows,

Render shall comprise 8 parts sand 2 parts cement and 1 part lime machine mixed

Prepare all surfaces to be rendered to provide an adequate key Water all surfaces to reduce suction to a uniform level to ensure key is achieved Render shall be nominally 12mm thick in one coat finishing at least 9mm thick Where background inaccuracies necessitate a coat greater than 20mm in thickness a partial scratch coat shall be provided Scratch coats shall be allowed to dry out sufficiently to ensure an adequate key for subsequent coats before such work is commenced

Finish render off a wood float and sponge free of all loose sand to a fine and even surface free of all blemishes

Provide approved waterproofing additive to external render

Take special care to ensure all free edges of render are straight and true Use stainless steel casing beads to achieve this

3 I 12 CERAMIC WALL TILES

Tile walls where shown on the drawings and as nominated in the Schedule of Finishes Where nominated to be tiled, tiles shall be full height of wall

Tiles shall be first quality European (not Chinese) white glazed 600 x 400 with rectified edge

Adhesive fix to walls with approved moisture resistant adhesive and fully grout with white mould resistant grout

3 I 13 COMPRESSED FIBRE CEMENT LINING

Line walls where nominated in the Schedule of Finishes with 9mm thick flush jointed compressed fibre cement sheets equal to Hardies, fixed in accordance with manufacturer's instructions

3 I 14 TEXTURE COATINGS

Coat the following with GranoClassic Spray supplied by Wattyl Granosite, Topcoat with Granoskin Decorative Membrane

All exposed faces of precast concrete wall panels
Kerb to Ramp 1
Exposed face of compressed fibre cement panel to edge of concrete slab
Exposed faces of compressed fibre cement wall lining
External rendered walls, including rendered planters

Concrete surfaces shall be prepared and coatings shall be applied strictly in accordance with manufacturer's specification

Coatings shall be of selected colour and pattern Allow for providing sample panels

3 I 15 SANDSTONE CLADDING

Provide sandstone cladding to the following

External walls to the extent shown on the drawings
Exposed faces and tops of Planters
Entry Walls 1, 2 and 3, side facing Pittwater Road, top of walls and all faces of piers to entry gates

Cladding shall be equal to Gosford Quarries Mount White "White" size 600 x 300 x 40 thick "off the saw" finish

Fix to walls with approved stainless steel pin or rail system Submit details of fixing for approval

Seal sandstone with two coats Dry Treat 40 applied in accordance with manufacturer's instructions

3 I C CEILING FINISHES

3 I 16 PLASTERBOARD CEILINGS

Provide plasterboard ceilings as nominated in the Schedule of Finishes and as follows

Plasterboard to any room containing a shower shall be moisture resistant grade

Provide expansion joints in all ceilings and bulkheads as recommended in CSR Pty Ltd installation manual

a ACOUSTIC RATED CEILINGS

Provide acoustic rated ceilings to Function Rooms and Members Lounge

Ceilings shall comprise one layer 13 thick fire protective grade plasterboard fixed to furring channels fixed to or suspended beneath roof framing

Provide insulation over as specified under Roofer Plasterboard and insulation shall achieve a minimum sound insulation rating of Rw45

Ceilings shall be fixed and finished strictly in accordance with manufacturers specifications Exposed joints shall be flush jointed

At edges provide additional sheet 150 wide above shadowline angle between plasterboard and wall sealed against wall before shadowline angle is installed

b FIRE RATED CEILINGS

Provide 60/60/60 fire rated ceilings to Stores 2, 5, 6 and 7

c NON RATED CEILINGS

All other ceilings shall comprise one layer 10 thick ceiling rated plasterboard fixed to metal furring channels fixed to or suspended beneath concrete slab or roof framing

3 I 17 BULKHEADS AND FALSE CEILINGS AND HIGHLIGHT SHAFTS

Provide plasterboard lined bulkheads where shown and as necessary where changes in ceiling height occur Plasterboard linings to be adequately supported on metal furring channels

Bulkheads and false ceilings and skylight shafts shall match adjacent ceiling construction

Internal corners where bulkheads meet walls are square set

3 I 18 PLASTERBOARD CORNICE

Junction of walls and ceilings shall be set shadowline angle unless noted otherwise

3 I 19 EAVES LINING

Line eaves with 6mm fibre cement lining Provide 32 x 3 aluminium flat, anodized finish at joints where shown on reflected ceiling plans All other joints to be set

3 I 20 ACOUSTIC PANELS

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of selected acoustic ceiling panels to Function Rooms 1and 2, and Members Lounge Panels shall be fixed under plasterboard ceiling lining specified elsewhere

3 I 21 CEILING TILES

Provide ceiling tiles where shown on the drawings Tiles shall be standard plasterboard 600 x 600 white vinyl finished set in standard exposed grid system

3 J GLAZING

3 J 1 WINDOWS

Glazing to aluminium framed windows and doors is specified in Metalwork

Glazing to timber framed doors and sidelights and highlights shall be Grade A safety glass consisting of minimum 6 38 thick laminated glass varied as required to comply with Australian Standard

All glazing shall comply with AS1288 and AS2208

Unless noted otherwise all glazing shall be clear glass back puttied and beaded in all round with timber beads specified in Carpentry and Joinery

3 J 2 MIRRORS

Provide mirrors as shown on drawings Mirrors shall be 700 wide by 1100 high unless shown otherwise on the drawings

Mirrors shall be 6mm thick polished plate glass and with back face double silvered and electrolytically coppered

3 J 3 GLASS SPLASHBACKS

Provide selected standard colour glass splashbacks to the extent shown on the drawings Splashback shall be equal to Deco Glaze Pty Ltd 2000 Series (ph 9624 7099) and shall be installed by qualified tradesmen strictly in accordance with manufacturer's instructions

At external corners mitre and silicone seal at internal corners butt one edge into the other and silicone seal

3 K PAINTING

3 K 1 PREPARATION GENERALLY

The whole of the works or sections of the works shall be complete and cleaned free of all debris and dust before any work is commenced Adequate dust proof screens shall be provided if necessary and cleared away on completion

No work shall be carried out should weather or any other conditions be such that defects in the finished works are likely to result

All coated timber is to be lightly sanded between coats and is to have all nail holes and other blemishes properly filled to paint manufacturer's specification

Should any surface to be coated be such that defects in subsequent work may occur the coating maker's technical representative shall be called in to inspect the work and any recommendations made by him shall be complied with, and at no extra to the Contract Price

Allow to protect all surfaces that are prefinished

3 K 2 MATERIALS

Unless otherwise specified all paint shall be Dulux brand, Premium quality

Paint Manufacturers standard specification for the preparation of various surfaces and execution and completion of the work shall form part of this specification and all work shall be in accordance therewith No "Trade Lines" shall be used in the works, all materials shall be delivered to the site in the maker's new unopened branded containers ready for use

Intermixing, thinning and tinting and the like shall not be carried out on the site

All stoppers, sealer and the like recommended by the makers shall be used in the work, and all under coatings shall be suitable for use in conjunction with subsequent work

3 K 3 EXTENT OF WORK

Allow to paint the whole of the works that requires painting

3 K 4 COLOUR SCHEDULE

A colour schedule shall be supplied by the Architect

3 K 5 EXTERNAL COATINGS

01 STEELWORK

Refer to Engineer's drawings for galvanising to some steelwork and shop coat to all other steelwork

Coat all exposed steelwork with Dulux two pack epoxy acrylic Acrathane IF Prime with Durepon P14 primer Apply strictly in accordance with manufacturer's specification

02 ALUMINIUM

No painting required to factory finished aluminium windows

03 VENT PIPES AND LEAD FLASHINGS

Degrease and give two coats Weather Shield Low Sheen

04 TIMBER

Prime before fixing, fill all nail holes and the like then give one coat Acrylic Primer and two coats Weather Shield Gloss

05 RENDER, FIBRE CEMENT WAL LINING, CONCRETE

Refer to Clause 3 I 14 Texture Coatings

06 FIBRE CEMENT EAVES LINING

One coat acrylic Primer and two coats Weather Shield Low Sheen

07 ALL OTHER LININGS

Give one coat Acrylic Primer and two coats Weather Shield Gloss

3 K 6 INTERNAL COATINGS

01 STEELWORK

Give one coat All Metal Primer and two coats Semi-Gloss Enamel

02 METAL DOOR FRAMES

Give one coat All Metal Primer and two coats Semi-Gloss Enamel

03 OTHER METALWORK

Give one coat All Metal Primer and two coats Interior Low Sheen Acrylic

04 PLASTERBOARD, VILLABOARD AND RENDER

Give wet areas one coat Sealer Binder and two coats Satin Acrylic

Give ceilings not in wet areas one coat Acrylic Sealer Undercoat and two coats Flat

Elsewhere give one coat Acrylic Sealer Undercoat and two coats Low Sheen Acrylic

05 DOORS

Give one coat Oil Undercoat and three coats Semi-Gloss Enamel to factory primed doors

Give three coats Satin Clear to veneered doors and frames

06 ALL OTHER TIMBER

Give one coat undercoat and two coats Semi-Gloss Enamel

3 L SITEWORKS

3 L 1 INTERNAL ROADS AND PARKING AREAS

Internal roads and parking areas shall be as shown on the drawings and in accordance with Council's requirements and as detailed on Structural Engineer's drawings

Concrete kerbs shall be as detailed on Structural Engineer's drawings

Gutter crossing - Remove existing crossing Provide new concrete gutter crossing to Council requirements Make good existing kerb and asphalt to Pittwater Road as required

3 L 2 LINEMARKING

Provide painted linemarking to delineate car parking spaces in parking areas as shown on the drawings Lines shall be white 50mm wide

Provide four off painted international disabled symbol to disabled parking space pavement as shown on the drawings Symbol shall be white, approx 900mm long

3 L 3 CONCRETE PATHS AND PAVED AREAS

To the extent shown on Architects' drawings construct concrete paths as detailed on Structural Engineer's drawings

Provide expansion joints at max 6 m centres comprising 12 thick Spandex or approved equal neatly cut to finish 5 mm below path surface Similarly finish against brick walls

Edges and joints of paths shall be rounded with a steel margin trowel then the whole top surface shall be lightly broomed across the width

3 L 4 LANDSCAPING

See annexure F for Landscaping

3 L 5 ENTRY WALL

Construct Entry Wall 1 2 and 3 as detailed on the drawings and as follows,
Wall shall be 190 reinforced concrete block, with 400 x400 piers at openings for gates
Finish wall as specified in Clause 3 I 15 Internal face of wall shall be rendered

3 L 6 ENTRY FENCE

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of metal fence F1 where shown on the drawings

3 L 7 RETAINING WALLS

Retaining walls shall be constructed as follows and as detailed on Structural Engineers drawings

RW1 Reinforced concrete block 190 wide split face selected colour on concrete footing to Structural Engineer's detail

RW2 As RW1
RW3 As RW1
RW4 As RW1
RW5 Reinforced concrete block sandstone clad as specified in Clause 3 I 15
RW6 Sandstone block retained as specified in Clause 3 A 4 and relaid on 300 thick by 900 wide compacted FCR Where walls is over 700 high include thickening of no fines concrete with face of concrete at 30 degree angle
RW7 Reinforced concrete block rendered and painted
RW8 As RW6
RW9 As RW6 Provide additional sandstone blocks to match existing as required if insufficient blocks are gained from the site
RW10 As RW1
RW11 As RW6
RW12 As RW6
RW13 Reinforced concrete upstand as detailed on Structural Engineer's drawings
RW14 Sandstone random pattern flagging to match existing wall on boundary at 1819 -1823 Pittwater Road Stabilise bank with min 100 thick Shotcrete

Backfill behind walls as detailed on Structural Engineer's drawings Provide drainage behind walls as detailed on Hydraulic Engineers drawings

3 L 8 PLANTERS

Provide brick and concrete block planter boxes to Courtyards where shown on the drawings

Waterproof inside face of walls up to header course with Gripset Industries Pty Ltd 51 Bitumen Rubber Membrane, installed in accordance with manufacturer's specification Include drainage material and drains as detailed on the hydraulic drawings Include landscape material as specified in the landscape specification

3 L 9 DECORATIVE METAL SCREENS

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of decorative metal screens where shown on the drawings

3 L 10 FLAGPOLES

Allow the amount stated in the Schedule of Provisional Sums for the supply and installation of flagpoles where shown on the drawings

3 L 11 ARMCO BARRIER

Supply and install standard Armco barrier and posts to the extent shown on the drawings Barrier shall be single height "Railgard" manufactured by Armco Barriers Pty Ltd Provide "Bullnose End" end piece at all ends

3 L 12 PEDESTRIAN CROSSING

Paint standard pedestrian crossings across both entry and exit roads where shown on the drawings Crossings shall conform to standard Council and RTA requirements

3 L 13 PEDESTRIAN BARRIER FENCE

Provide steel pedestrian barrier fence adjacent the existing roundabout to the extent shown on the drawings Fence shall match existing fence in Pittwater Road

3 L 14 IRRIGATION

allow the amount stated in the Schedule of Provisional Sums for the supply and installation of irrigation system to all planters and garden beds

3 M MECHANICAL SERVICES

3 M 1 MECHANICAL SERVICES

For all Mechanical Services refer to the Mechanical Services Specification

Builder shall allow for all Builders work specified in the Mechanical Services Specification

Provide concrete plinths for all equipment located on the ground and for all equipment within the building noted on the drawings as requiring plinths

3 N ELECTRICAL SERVICES

3 N 1 A/V CONDUIT

Provide 300 diam UPVC conduit pipe under the floor to Function Rooms 1 and 2 where shown on the drawings, securely fixed to the underside of the concrete slab Terminate at each end in a 400 x 400 x 600 deep box set flush with floor level and with hinged lid Box is to be constructed to maintain the fire rating of the concrete floor (30/30/30)

3 N 2 AUDIO VISUAL

For audio visual requirements refer to Audio Visual Specification

3 N 3 ELECTRICAL SERVICES

For all other Electrical Services refer to the Electrical Services Specification

Builder shall allow for all Builders work specified in the Electrical Services Specification

3 O HYDRAULIC SERVICES

3 O 1 WINDOW DRENCHERS

Provide window drenchers to Window WG33 and Door DG33 to provide protection in accordance with Clause C3 4 of BCA

3 O 2 HYDRAULIC SERVICES

For all other Hydraulic Services refer to the Hydraulic Services Specification

Builder shall allow for all Builder's work specified in the Hydraulic Services Specification

PART FOUR - SCHEDULES

4 A SCHEDULE OF RATES AND PROVISIONAL SUMS

Provisional Rates and Sums EXCLUDE GST

PROVISIONAL RATES

	ITEM	SPECIFICATION CLAUSE	AMOUNT
4 A 1	Face bricks	3 D 3	$1,100 00 per thousand
4 A 2	Paving Tiles	3 I 14	$70 00 sqm

PROVISIONAL SUMS

	ITEM	SPECIFICATION CLAUSE	AMOUNT
4 A 3	Door Hardware supply and delivery	3 E 6	$40,000 00
4 A 4	Operable wall and sliding door supply and installation	3 E 7	$50,000 00
4 A 5	Fitments supply and installation	3 E 10	$45,000 00
4 A 6	Acoustic Screen supply and installation	3 H 2	$15,000 00
4 A 7	Balustrades supply and installation	3 H 3	$35,000 00
4 A 8	Handrails supply and installation	3 H 4	$5,000 00
4 A 10	Graphics supply and installation	3 H 5	$25 000 00
4 A 11	Metal Gates supply and installation	3 H 6	$35 000 00
4 A 12	Shelving supply and installation	3 H 7	$5,000 00
4 A 13	Safes supply and installation	3 H 8	$15,000 00
4 A 14	Bathroom and WC Accessories supply and installation	3 H 9	$20,000 00
4 A 15	Soft Floor Coverings supply and installation	3 I 7	$80,000 00

4 A 16	Acoustic panels supply and installation	3 I 20	$20,000 00
4 A 17	Flagpoles supply and installation	3 L 9	$20 000 00
4 A 18	Flagpoles supply and installation	3 L 10	$10,000 00
4 A 19	Irrigation	3 L 14	$20 000 00
TOTAL			$440,000 00

4 B SCHEDULE OF FINISHES

LEGEND

FLOOR

AS	Asphalt	
CA	Carpet	adhesive fixed
FAL	Concrete	finished as laid
FAL-S	Concrete sealed	finished as laid and sealed
PC	Cement paving	steel trowel finish laid to falls if floor waste
SV-1	Sheet vinyl type 1	adhesive fixed, direct stick to concrete slab
SV-2	Sheet vinyl type 2	adhesive fixed, laid on cement paving laid to falls, coved at walls
TM-1	Tiles	on mortar bed laid to falls
TM-2	Tiles	adhesive fixed to cincrete slab
EF	Epoxy Finish	
CP	Concrete painted	applied spray on finish

WALL

BR-1	Plasterboard	Fixed to brick wall
BR-2	Plasterboard	Fixed to stud wall
BR-1T	Plasterboard	Fixed to brick wall and tiled
BR-2T	Plasterboard	Fixed to stud wall and tiled
FB	Face brick	
FB-H	Honed blockwork	
FF	Fair face brickwork	painted
FFU	Fair face brickwork	unpainted
PCC	Precast concrete unpainted	
FBL	Face brick	common
RB	Rendered brick	

CEILING

OFC	Off form concrete	
PB-A	Plasterboard	on furring channels, fixed to/suspended from roof framing
PB-B	Plasterboard	on furring channels under concrete
PC	Painted concrete	
VB-A	Villaboard	set joints
TF	Concrete	texture finish
EF	Exposed roof framing	

CORNICE

SP-1	Set plasterboard	on stopping angle
SP-2	Set plasterboard	on shadowline angle
T-1	Timber	
AL	Aluminium	

SKIRTING

SK-1	Timber	plain
SK-2	Vinyl	coved
SD	Skirting duct	
AP	Aluminium plate	
C	Coved paving	
CK	Concrete kerb	
TS	Tiled skirting	

SILL

SI-1	Timber	
SI-2	Ceramic tile	
AL	Aluminium	angle or subsill

SCHEDULE OF FINISHES

Notes 1 n/a means not applicable

2 * means is same as above

PARKING FLOOR

LOCATION	FLOOR	WALLS	CEILING	CORNICE	SKIRTING	SILL
Lobby 1	CA & TM-2	BR-2	PB-B	SP-2	SK-1	n/a
Stair 1	CA	*	*	*	*	*
Carpark East	FAL	FB, PCC & FBL		OFC	n/a	n/a
Paved Area 1	*	FB, PCC	*	*	*	*
Cart Store 1	*	PCC	*	*	*	*
Ramp 1	CP	TF (kerbs)	n/a	*	*	*
Ramp 2	CP	n/a	*	*	*	*
Carpark West	FAL	FB PCC & FBL		OFC	*	*
Store 1	*	FF PCC & FBL		*	*	*
Stair 2	CP	RB & PCC	n/a	*	*	*
A/C Plant	FAL	PCC & FBL	OFC	*	*	*
Elec	*	FB	*	*	*	*

GROUND FLOOR

LOCATION	FLOOR	WALLS	CEILING	CORNICE	SKIRTING	SILL
Terrace1	CP	FB-H	VB-A	AL	CK	n/a
Balcony 1	TM-1	n/a	VB-A	AL	n/a	n/a
Buggy Store	FAL-S	PCC	EF	n/a	*	AL
Cart Store 2	FAL-S	FBL	EF	*	*	*
Breezeway	CP	FBH	VB-A	AL	*	*
MALE Shower	SV-2	BR-1T	PB-A	SP-2	SK-2	AL
Lockers	CA	BR-1	*	*	SK-1	SI-1
Wc 1	TM-1	BR-1T	*	*	TS	AL
Lobby 4	CA	BR-1	*	*	SK-1	*
FEMALE Shower	SV-2	BR-1T	*	*	SK-2	*
Lockers	CA	BR-1	*	*	SK-1	SI-1
Wc 1	TM-1	BR-1T	*	*	TS	AL
Lobby 5	CA	BR-1	*	*	SK-1	*
Lounge	*	*	*	*	*	SI-1
Store 2	SV-1	BR-2	*	*	SD	AL
Cleaner	SV-2	*	PB-A & CT	*	SK-2	n/a
D Wc	*	*	PB-A	*	*	*
Office 1	CA	*	*	*	SD	AL
Shop	*	*	*	*	SK-1	*
Corridor 1	*	*	*	*	*	n/a
Lobby 2	*	*	*	*	*	AL
Board Room	*	*	*	*	*	*
Stair 1	*	*	*	*	*	n/a
Entry	*	*	*	*	*	AL

GROUND FLOOR

LOCATION	FLOOR	WALLS	CEILING	CORNICE	SKIRTING	SILL
Porte Cochere	TM-2	n/a	VB-A	n/a	n/a	n/a
Office 2	CA	BR-2	PB-A	SP-2	SD	SI-1
Office 3	*	*	*	*	*	*
Staff	SV-1	*	*	*	SK-2	*
Staff Wc	SV-2	BR-2T	*	*	*	n/a
Store 4	SV-1	BR-2	PB-A & CT	*	*	*
Corridor 2	CA	*	PB-A	*	SK-1	*
Store 3	*	*	PB-A & CT	*	*	AL
Function Room 1	*	*	PB-A & AP	*	*	*
Function Room 2	*	*	*	*	*	*
Balcony 2	TM-1	n/a	VB-A	AL	n/a	n/a
Store 5	SV-1	BR-2	PB-A	SP-2	SK-2	SI-1
Members Lounge	CA	*	PBA & AP	*	SK-1	AL
Bar	SV-2	BR-1	Prov Sum	Prov Sum	SK-2	n/a
Servery	*	*	Prov Sum	Prov Sum	*	*
Kitchen	*	RB	PB-A	SP-1	*	SI-2
Dry Store	SV-1	*	*	*	*	n/a
Coolroom	EF	*	*	*	C	*
Freezer	*	*	*	*	*	*
Kit Office	SV-2	*	*	*	*	AL
Garbage	FAL	*	*	SP-2	*	n/a
Cellar 1	EF	RB & BR-2	*	SP-1	*	*
Cellar 2	*	*	*	*	*	*
Lobby 3	*	RB	*	*	*	*
Store 7	SV-1	BR-2	*	*	SK-2	*
Gaming Room	CA	*	*	SP-2	SK-1	*
Lobby 6	*	*	*	*	*	*
Lobby 7	*	*	*	*	*	*
Female Wc 2	TM-1	BR-2T	*	*	TS	SI-2

GROUND FLOOR

LOCATION	FLOOR	WALLS	CEILING	CORNICE	SKIRTING	SILL
Male Wc 2	TM-1	BR-2T	PB-A	SP-2	TS	SI-2
Terrace 2	CP	n/a	VB-A	SP-1	n/a	n/a
Terrace 3	*	*	*	*	*	*
Future Halfway House	*	RB	*	*	*	*

4 C SCHEDULE OF ITEMS SUPPLIED BY PRINCIPAL, INSTALLATION BY BUILDER

	DESCRIPTION	ITEM	SPECIFICATION CLAUSE
4 C 1	Staff Room Equip	Fridge, microwave	3 E 10

4 D SCHEDULE OF ITEMS SUPPLIED AND INSTALLED BY PRINCIPAL

	DESCRIPTION	SPECIFICATION CLAUSE
4 D 1		

PART FIVE - ANNEXURES

5 A CONDITIONS OF DEVELOPMENT CONSENT

Pittwater Council

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CONSENT NO N0460/06
ENVIRONMENTAL PLANNING & ASSESSMENT ACT, 1979 (AS AMENDED)
NOTICE TO APPLICANT OF DETERMINATION
OF A DEVELOPMENT APPLICATION

Applicants Name and Address
HODGES SHORTEN ARCHITECTS PTY LTD
82/47 NERIDAH STREET
CHATSWOOD 2067

Being the applicant in respect of Development Application No **N0460/06**

Pursuant to section 80(1) of the Act, notice is hereby given of the determination by Pittwater Council, as the consent authority, of Development Application No **N0460/06** for

Construction of a clubhouse

At 1825 PITTWATER ROAD, BAYVIEW (Lot 2 DP 230607)

Decision The Development Application has been determined by the granting of consent based on information provided by the applicant in support of the application, including the Statement of Environmental Effects, and in accordance with

Drawings Numbered 2380 DA1 - 2380 DA7 inclusive All Issue A prepared by Hodges Shorten Architects Pty Ltd and dated 14 7 2006 and the following consultant reports

- **Douglas Partners Pty Ltd - Geotechnical Report dated April 2006**
- **Masson Wilson Twiney - Traffic and parking report dated 3 April 2006**
- **Access Associates Sydney Pty Ltd - Access Report dated April 2006**
- **Day Design Pty Ltd - Acoustic Report dated 22 June 2006**
- **BCA Logic - Building Code of Australia Assessment Report dated 21 July 2006**
- **Cardino Lawson Trelor – Waste Management Report dated 5 July 2006**
- **Footprint Green Pty Ltd – Arborist Report dated 3 June 2006**

as amended in red (shown clouded) or as modified by any conditions of this consent

The reason for the imposition of the attached conditions is to ensure that the development consented to is carried out in such a manner as to achieve the objectives of the Environmental Planning and Assessment Act 1979 (as amended), pursuant to section 5(a) of the Act, having regard to the relevant matters for consideration contained in section 79C of the Act and the Environmental Planning Instruments applying to the land, as well as section 80A of the Act which authorises the imposing of the consent conditions

Endorsement of date of consent **07/12/2006**

Mark Ferguson
GENERAL MANAGER

Per Kimberley Moran

Pittwater Council

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Conditions of Approval

PART 1

THE COMMENCEMENT OF THIS CONSENT IS DEFERRED UNTIL THE CONSENT AUTHORITY IS SATISFIED AS TO COMPLIANCE WITH THE FOLLOWING CONDITION/S

1 Evidence of the **registration** of a formal right of carriageway serving the subject site to facilitate access over the adjoining property 1819 – 1823 Pittwater Road, Mona Vale is to be provided to Council's satisfaction

Upon receipt of evidence within 12 months from the date of this consent satisfying the above, the consent will become operative, subject to the conditions listed in Part 2 below

The consent will lapse if evidence satisfying the above conditions is not received within the prescribed time period

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PART 2

This consent is not an approval to commence building work The works associated with this consent can only commence following the issue of the Construction Certificate

Note Persons having the benefit of development consent may appoint either a council or an accredited certifier as the principal certifying authority for the development or for the purpose of issuing certificates under Part 4A of the Environmental Planning and Assessment Act When considering engaging an accredited certifier a person should contact the relevant accreditation body to ensure that the person is appropriately certified and authorised to act in respect of the development

A Prescribed Conditions

1 The developer shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents All works / regulatory signposting associated with the proposed development shall be at no cost to the RTA

2 All works are to be carried out in accordance with the requirements of the Building Code of Australia

3 Critical stage inspections are to be carried out in accordance with clause 162A of the Environmental Planning & Assessment Regulation 2000 To allow a Principal Certifying Authority or another certifying authority time to carry out critical stage inspections required by the Principal Certifying Authority, 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 and prior to further work being undertaken

4 A sign must be erected in a prominent position on any site on which building work, subdivision work or demolition work is being carried out

   a showing the name, address and telephone number of the Principal Certifying Authority for the work, and
   b showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working house, and
   c stating that unauthorised entry to the work site is prohibited

   Any such sign is to be maintained while the building work, subdivision work or demolition work is being carried out, but must be removed when the work has been completed

5 Residential building work within the meaning of the Home Building Act 1989 must not be carried out unless the Principal Certifying Authority for the development to which the work relates (not being the Council) has given the Council written notice of the following information

   a in the case of work for which a principal contractor is required to be appointed
   i the name and licence number of the principal contractor, and
   ii the name of the insurer by which the work is insured under Part 6 of that Act

   b in the case of work to be done by an owner-builder
   i the name of the owner-builder, and
   ii if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit

6 If arrangements for doing the residential building work are changed while the work is in progress so that the information notified under subclause (2) becomes out of date, further work must not be

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carried out unless the Principal Certifying Authority for the development to which the work relates (not being the Council) has given the Council written notice of the updated information

7 The hours of construction are restricted to between the hours of 7 00am and 5 00pm Monday - Friday and 7 00am to 1 00pm on Saturdays No works are to be carried out on Sundays or Public Holidays Internal building work may be carried out at any time outside these hours, subject to noise emissions from the building or works not being audible at any adjoining boundary

B Matters to be incorporated into the development and maintained over the life of the development

1 (a) The Flood Planning level is 2 7m AHD
(b) The Probable Maximum Flood level is 2 6 m AHD
(c) The site is classified as Low hazard

2 (a) All structural elements below the Flood Planning level shall be of flood compatible materials

(b) All structures must be designed and constructed to achieve low risk of damage and instability due to flood hazard

(c) All foundation structures, where the floor level is greater than 500mm above the existing ground level are to incorporate a suspended floor on open pier/pile footings to allow the flow of surface water and flood storage

(d) All electrical equipment, wiring, fuel lines or any service pipes and connections must be waterproofed to the Flood Planning level

(e) The storage of toxic or potentially polluting goods, materials or other products which may be hazardous or pollute floodwaters is not permitted below the Flood Planning level

3 Where not previously obtained, street levels / driveway profiles must be obtained from Council for all access driveways across the public road verge from the road edge to the property boundary Street levels provided must be incorporated into the design

4 All construction of the access driveway across the public road verge must be undertaken by a Council authorised contractor

5 The Golf Club Building is to operate between 7am and 10pm Monday to Thursday and Sunday The club shall operate between 7am and midnight on Friday and Saturdays

6 The outdoor terrace is not to be used by patrons past 10pm and should be limited to 100 patrons

7 The outdoor balcony may be used until 12 midnight but shall be limited to 40 patrons All doors to the Balcony accept the North East most door **are to be closed and locked at 10pm**

8 The level of music within the function rooms should be limited to 100 dBA when measured 3m from the speakers

9 The lounge should have a maximum 120 patrons in accordance with the numbers used in the Acoustic Report prepared by Day Design Pty Ltd and dated 22 June 2006

10 The function room should have a maximum 140 patrons in accordance with the numbers used in the Acoustic Report prepared by Day Design Pty Ltd and dated 22 June 2006

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11 The plan of management addressing the administrative noise controls as recommended in the Acoustic Report prepared by Day Design Pty Ltd is to be implemented **for the life of the development**

12 Delivery vehicles are not permitted **on site** past 6pm on any day

13 This approval/consent relates only to the new work nominated on the approved consent plans and does not approve or regularise any existing buildings or structures within the property boundaries or within Council's road reserve

14 No odour nuisance, to the public or any adjoining premises, shall be created by the operation of any plant or equipment or any procedures carried out at the premises No noise nuisance shall be caused through the operation of any plant or equipment at the premises Noise generated from the premises must not exceed the limits as specified in the NSW Industrial Noise Policy (Environment Protection Authority 2000)

15 A separate Development Application is required for the fit out and construction of all proposed food areas

16 The proposal shall comply with the noise control recommendations detailed in the Environmental Noise Impact report No 3535 prepared by Day Design Pty Ltd dated 22 June 2006

17 Walls in and adjoining proposed food handling areas must be of solid construction

18 Cupboards, cabinets and counter construction in food handling areas must be free of voids, cracks and crevices and designed so they can be easily cleaned and not provide harbourage for vermin

19 The ceiling over all food handling areas (including over the servery and bar) must be smooth finish easy to clean

20 Hand washbasins must be provided in the food servery area, the food preparation area and immediately adjacent to the toilet located within the unit

21 Hand washbasins in food handling areas and toilets used by food handlers must be provided with

i) an adequate supply of potable water at a temperature of at least 40 degrees Celsius, delivered through a single spout,
ii) taps that operate hands free,
iii) a supply of liquid soap, and
iv) single use hand towel or other approved air drying equipment

22 Grease arrestors and access openings to the sanitary drainage must not be located within any food preparation and/or handling area

23 All service pipes, conduits and electrical wiring shall be either concealed in floors, walls, ceilings or plinths or be fixed on brackets so as to provide at least 25mm clearance between the pipe and the adjacent vertical surface and 100mm between the pipe and the adjacent horizontal surface

24 All food preparation areas and areas where food is displayed must be suitably protected from the likelihood of contamination

25 All shelving, cupboards, doors and the like must be impervious and easy to clean on all exposed surfaces and as far as practicable be constructed and installed to prevent vermin harbourage

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26 Waste must be stored in a dedicated area that is provided with a hose tap connected to the water supply is paved with an impervious material, graded and drained to sewer and is designed and constructed it is easy to clean It must be provided with a roof to prevent stormwater entering the sewer

27 Access Provisions for People with Disabilities in compliance with BCA, 1428 1 - 'Design for Access and Mobility' and the Accessibility Control are to be maintained for the life of the development

28 Design details and technical specifications relevant to recommendations in the Access Report must be submitted to the Accredited Access Adviser for confirmation at Construction Certificate stage

29 Water conservation devices with an AAA rating must be installed, including tap flow regulators, shower head roses and dual flush toilets All new hot water systems are to have a minimum rating of 3 5 stars

30 Screen planting to a height of 4 0m is to be provided along the southern boundary, adjacent to the four surface car parking spaces and adjoining the proposed golf cart entrance associated with the development at 1819 1823 Pittwater Road, Mona Vale

31 All plumbing and drainage fixtures are to be concealed and not exposed to public view on buildings over one storey in height

32 All external glazing is to have a maximum reflectivity index of 25%

33 Materials and colour schemes are to be in accordance with the samples submitted to Council with the application No white or light coloured roofs are permitted

34 Roofs to all structures are to be of dark grey, brown and/or green tones only

35 Timber log retaining walls are not permitted and are not to be included in the proposed development

36 Forty (40) locally native canopy trees are to planted on the site Canopy tree species are to be from the vegetation community(s) on the site as per the lists in the Pittwater Book Native Plants for Your Garden - book available from Council and on the Pittwater Web Site All native trees are to be retained for the life of the development, or for their safe natural life Trees that die or are removed must be replaced with another locally native canopy tree

37 Any vegetation planted outside approved landscape zones is to be consistent with
d Species listed in the Ecological Sustainability Plan
e Species listed from the Endangered Ecological Community
f Locally native species or locally native plants growing on site and / or selected from the list pertaining to vegetation community(s) on the site as per the Pittwater Book *Native Plants for Your Garden* - book available from Council and on the Pittwater Web Site

38 Over the life of the development all declared noxious weeds under are to be managed / removed in accordance with the Noxious Weeds Act 1993 Environmental weeds are to be removed and/or controlled

39 No environmental weeds are to be planted on the site

40 For the life of the development no bush rock is to be removed or destroyed without prior approval from NSW Department of Environment and Conservation and Pittwater Council The removal or destruction of bush rock has been listed as a Key Threatening Process under the NSW Threatened Species Conservation Act, 1995

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41 Fencing is to be passable by Native Wildlife and comply with Type 1 , Type 2 or Type 3 fencing as per fencing guidelines on the Pittwater web page

42 Except in relation to satisfying requirements of condition E10 plant and equipment must not be erected on the rooftop of the clubhouse

C Matters to be satisfied prior to the issue of the Construction Certificate

Note All outstanding matters referred to in this section are to be submitted to the accredited certifier together Incomplete Construction Certificate applications / details cannot be accepted

1 Details showing site stormwater management are to be submitted to the Accredited Certifier or Council as part of the Construction Certificate application Such details are to be accompanied by a certificate from qualified practising Civil Engineer with corporate membership of the Institute of Engineers Australia (M I E), or who is eligible to become a Corporate member and has appropriate experience and competence in the related field, that the stormwater management system complies with the requirements of The Cardno Willing Partners water management assessment of July 2006

2 The proposed fourth leg access to the Pittwater Road / Mona Street roundabout must be constructed in accordance with the Ground Floor Plan (Drawing No 2380 DA4, Issue A, Dated 12/7/06)

3 The proposed fourth leg access at the Pittwater Road / Mona Street roundabout are to be designed to meet the RTAs requirements, and endorsed by a suitably qualified and charted Engineer (i e who is registered with the Institute of Engineers, Australia) The design requirements shall be in accordance with the RTAs Road Design Guide and other Australian Codes of Practice The certified copies of the civil design plans shall be submitted to the RTA for consideration and approval prior to the release of construction certificate by Council and commencement of road works

4 Civil engineering details of the proposed excavation/landfill are to be submitted to the Accredited Certifier or Council with the Construction Certificate application Each plan/sheet is to be signed by a qualified practising Civil Engineer who has corporate membership of the Institution of Engineers Australia (M I E) or who is eligible to become a corporate member and has appropriate experience and competence in the related field

5 A section 138 Certificate from the RTA is to be provided to the Principal certifying authority, for the proposed roadworks and connection to the roundabout in Pittwater Rd, prior to issue of a construction certificate

6 Submission of construction plans and specifications and documentation which are consistent with the approved Development Consent plans, the requirements of Building Code of Australia and satisfy all conditions shown in Part B above are to be submitted to the Principal Certifying Authority

7 A Section 73 Compliance Certificate is required to be obtained from Sydney Water confirming the development meets Sydney Water's detailed requirements including correctly sized water and wastewater mains, extension or amplifications to existing water and wastewater systems where necessary, building over/adjacent to Sydney Water's existing infrastructure, payment of Sydney Water charges and the completion of any other requirements

8 *New Buildings* Certification from the Accredited Access Adviser that design details and specifications comply with the Accessibility Control and the DA Access Report, must be submitted to the Principal Certifying Authority before the issue of the Construction Certificate

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9 The development shall comply with the recommendations of the Acoustic Report prepared by Day Design Pty Ltd and dated 22 June 2006 with respect the noise control recommendations of Section 7 of this report

10 A designated wash bays for the golf carts must be provided on site and be designed and constructed to ensure polluted waters do not enter the stormwater drain

11 The landscape plan is to be amended to provide for greater utilisation of Eucalyptus punctata (Grey Gum) and Eucalyptus robusta (Swamp Mahogany) as canopy tree species The amended landscape plan is to be submitted for approval prior to release of the construction certificate and is to ensure any landscaping works are made up of 80% locally native plant species (ie species included in the endangered ecological community) The 2 Livistona australis (Cabbage Tree Palm) proposed to be removed as part of the proposed works are to be transplanted and incorporated into the landscape works for the site The landscape plan to include an additional 2 Magenta Lilli Pillis (*syzigium paniculatum*)

12 The provision of a 1 5m wide concrete footpath on the western side of Pittwater Rd extending between the existing bus stop located 200m to the north of the Pittwater Rd/Mona St roundabout and the footpath required on the western side of Pittwater Rd under Development Consent N0521/04 at 1819 to 1823 Pittwater Rd, Mona Vale

The footpath, including the restoration and turfing of the nature strip, is to be completed prior to the issue of an occupation certificate

Details of the required works are to be submitted to Council and approved by Council prior to the release of the construction certificate

D Matters to be satisfied prior to the commencement of works and maintained during the works

Note It is an offence to commence works prior to issue of a Construction Certificate

1 The fill material imported to the site is to consist of clean fill material only, that is, non-contaminated excavated material and soil rock or similar material Putrescible and non-putrescible solid waste (including demolition material) is not permitted

2 All excavations and backfilling associated with the erection or demolition of a building must be executed safely and in accordance with appropriate professional standards

3 Where excavations extend below the level of the base of the footings of a building on an adjoining allotment of land, the person causing the excavation must preserve and protect the building from damage and, if necessary, underpin and support the adjoining building in an approved manner

4 Temporary sedimentation and erosion controls are to be constructed prior to commencement of any work to eliminate the discharge of sediment from the site

5 Sedimentation and erosion controls are to be effectively maintained at all times during the course of construction and shall not be removed until the site has been stabilised or landscaped to the Principal Certifying Authoritys satisfaction

6 Adequate measures shall be undertaken to remove clay from vehicles leaving the site so as to maintain public roads in a clean condition

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7 Waste materials generated through demolition, excavation and construction works are to be minimised by re-use on-site, recycling or where reuse or recycling is not practical, disposal at an appropriate authorised waste facility

8 The site is to be fully secured by a fence to all perimeters to the site to prevent unauthorised access both during the course of the works and after hours

9 No works are to be carried out in Councils Road Reserve without the written approval of the Council

10 A Road Opening Permit, issued by Council, must be obtained for any road openings, or excavation within Councils Road Reserve associated with the development on the site, including stormwater drainage, water, sewer, electricity, gas and communication connections During the course of the road opening works the Road Opening Permit must be visibly displayed at the site

11 No skip bins or materials are to be stored on Councils Road Reserve

12 A site fence and silt and sediment control fence is to be erected and maintained during the course of works along any street boundary and park/reserve boundary to the site

13 Access to the site through an adjoining park/reserve is prohibited without the written approval of the Council

14 A clearly legible *Site Management Sign* is to be erected and maintained throughout the course of the works The sign is to be centrally located on the main street frontage of the site and is to clearly state in legible lettering the following -
The builders name, builders telephone contact number both during work hours and after hours
That no works are to be carried out in Councils Road Reserve without the written approval of the Council
That a Road Opening Permit issued by Council must be obtained for any road openings or excavation within Councils Road Reserve associated with development of the site, including stormwater drainage, water, sewer, electricity, gas and communication connections During the course of the road opening works the Road Opening Permit must be visibly displayed at the site
That no skip bins or materials are to be stored on Councils Road Reserve
That the contact number for Pittwater Council for permits is 9970 1111

15 All construction in the public road reserve must be undertaken by a Council authorised contractor

16 A satisfactory construction traffic management plan (CTMP) prepared by a suitably qualified traffic consultant is required to be submitted to the Private Certifying Authority prior to the commencement of any site works The plan is to detail
- Quantity of material to be transported
- Proposed truck movements per day
- Proposed hours of operation
- Proposed traffic routes, noting that 3 tonne load limits apply to some roads within Warriewood Valley

This plan must be adhered to by all parties associated with the development No truck movements will be permitted in Garden Street south of Mullet Creek or in Mona Vale Road between Tumbledown Dick and Mona Vale

17 A 1350mm Sydney Water sewer main transverse the development site Based on the available information, Sydney Water expects that the proposed development is likely to impact on this asset The development will be required to comply with Sydney Water's guidelines for building over or adjacent to Sydney Water's assets

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E Matters to be satisfied prior to the issue of Occupation Certificate

Note Prior to the issue of an Occupation Certificate the principal certifying authority is to ensure that Council's assets, including road kerb and gutter and drainage facilities adjacent or near to the site have not been damaged as a result of the works Where such damage has occurred, it is to be repaired to Council's written satisfaction prior to the issue of an Occupation Certificate or suitable arrangements put in place to effect those repairs at a future date to Council's written satisfaction

Should this process not be followed, Council will pursue action against the principal accredited certifier in relation to the recovery of costs to effect such works

Note It is an offence to occupy the building or part thereof to which this consent relates prior to the issue of an Occupation Certificate

1 The applicant is required to do either of the following at the election of the owners of Units 12, 13 and 14 No 1819-1823 Pittwater Road, Mona Vale and Unit 12 of the proposed multi-unit housing at 1825 Pittwater Road

   (i) sound rated glazing (e g 6 4mm laminated glass with acoustic seals) be provided to the residential windows of habitable rooms facing the surface carpark, or
   (ii) pay the reasonable costs of installing the glazing

2 Certification is to be provided to the Principal Certifying Authority by an experienced civil engineer who is NPER accredited by the Institution of Engineers (Australia) that the drainage/stormwater management system has been installed to the manufacturers specification (where applicable) and completed in accordance with the engineering plans and specifications required under this consent

3 Certification is to be provided to the Principal Certifying Authority by an experienced civil engineer who is NPER accredited by the Institution of Engineers (Australia) that the drainage/stormwater management system has been installed to the manufacturers specification (where applicable) and completed in accordance with the engineering plans and specifications required under this consent

4 All parking areas and driveways are to be sealed to an all weather standard line marked, signposted and maintained prior to occupation/use of the site

5 A letter from the RTA is to be provided to the Principal Certifying authority that they are satisfied with the roadworks in Pittwater Rd prior to issue of a occupation certificate

6 Plans together with street levels provided by Council and a certificate submitted by a Chartered Professional Engineer confirming to the satisfaction of the Principal Certifying Authority that the works in the public road reserve comply with Council requirements and street levels are to be provided with the Occupation Certificate application

7 Prior to issue of an Occupation Certificate photographic evidence of the condition of the street trees and road reserve and area adjoining the site after the completion of all construction, must be submitted to the Principal Certifying Authority showing that no damage has been done and if damage has been done that it has been fully remediated The photographs shall be accompanied by a statement that no damage has been done (or where damage has been remediated that Council has approved that work) In this regard Councils written agreement that all restorations have been completed satisfactorily must be obtained prior to the issue of any Occupation Certificate

8 Restoration of all damaged public infrastructure caused as a result of the development to Councils satisfaction Councils written approval that all restorations have been completed satisfactorily must

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be obtained must be provided to the Private Certifying Authority with the Occupation Certificate application

9 An Occupation Certificate application stating that the development complies with the Development Consent, the requirements of the Building Code of Australia and that a Construction Certificate has been issued must be obtained before the building is occupied or on completion of the construction work approved by this Development Consent

10 Documentation supplied by a practicing mechanical engineer certifying that all mechanical exhaust ventilation systems, as installed, complies with AS 1668, must be provided to the certifying authority prior to the issue of the Occupation Certificate Documentation supplied by an appropriately qualified noise consultant confirming that compliance with the noise control recommendations detailed in the Environmental Noise Impact report No 3535 prepared by Day Design Pty Ltd dated 22 June 2006 has been achieved

11 Street numbers are to be affixed to the building prior to occupation

12 Certification from an Accredited Access Adviser that the completed development complies with the requirements of the development consent

13 All external face brick walls are to be properly cleaned down following completion of the wall and prior to occupation

14 The footpath described in C12 is to be provided at the applicants cost prior to Occupation

15 That the recommendations provided within Section 7 of the Acoustic report prepared by Day Design Pty Ltd dated 22 June 2006 be certified as being completed

F Matters to be satisfied prior to the issue of Subdivision Certificate

Nil

G Advice

1 Portions of the site may be liable to flooding from the 1% AEP and the PMF (Probable Maximum Flood) and effective precautions should be taken by the owner(s) and/or occupier(s) of the building to reduce any potential risk to personal safety and to minimise any property damage to the structure its fixtures and contents

2 Failure to comply with the relevant provisions of the Environmental Planning and Assessment Act, 1979 (as amended) and/or the conditions of this Development Consent may result in the serving of penalty notices (on-the-spot fines) under the summary offences provisions of the above legislation or legal action through the Land and Environment Court, again pursuant to the above legislation

3 The applicant is also advised to contact the various supply and utility authorities, ie Sydney Water, Sydney Electricity Telstra etc to enquire whether there are any underground utility services within the proposed excavation area

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pittwater.nsw.gov.au e mail pittwater.council@pittwater.nsw.gov.au

4 It is the Project Manager's responsibility to ensure that all of the Component Certificates/certification issued during the course of the project are lodged with the Principal Certifying Authority Failure to comply with the conditions of approval or lodge the Component Certificates/certification will prevent the Principal Certifying Authority issuing an Occupation Certificate

5 In accordance with Section 80A(1)(d) and (e) of the Act, any consent given shall be void if the development to which it refers is not commenced within two (2) years after the date of approval, provided that Council may if good cause be shown, grant an extension of renewal of such consent beyond such period

NOTE Council may be prepared to consider an extension of this Consent period for a further 12 months, however, the request for extension would have to be received during the initial 2 year period

6 To ascertain the date upon which the determination becomes effective, refer to Section 83 of the Environmental Planning and Assessment Act, 1979 (as amended)

7 Should any of the determination not be acceptable, you are entitled to request reconsideration under Section 82A of the Environmental Planning and Assessment Act, 1979 Such request to Council must be made in writing, together with appropriate fees as advised at the time of lodgement of such request, within 1 year from the date of determination

8 If you are dissatisfied with this decision, Section 97 of the Environmental Planning and Assessment Act, 1979, gives you a right of appeal to the Land and Environment Court within 12 months of the date of endorsement of this Consent

9 The approved plans must be submitted to a Sydney Water Quick Check agent or Customer Centre to determine whether the development will affect Sydney Water's sewer and water mains, stormwater drains and/or easements, and if further requirements need to be met The approved plans will be appropriately stamped For Quick Check agent details please refer to the web site at www sydneywater com au then see Building Developing and Plumbing then Quick Check, or telephone 13 20 92

10 You are reminded of your obligations under the objectives of the Disability Discrimination Act (DDA)1992

11 Electrical insect killing light devices should not be outside and not installed anywhere that they can attract and kill micro-bats and killing insects reduces bat food and insects

12 Gravel used onsite must be inert material such as quartz or sandstone No blue metal or granite or other igneous material should be used as these release nutrient that can pollute waterways and contribute to weed plumes

5 B CONTRACT

PART A

OF AS 4000-1997 GENERAL CONDITIONS OF CONTRACT

FOR NEW CLUBHOUSE PITTWATER ROAD BAYVIEW for BAYVIEW GOLF CLUB

Part A shall be completed as follows

Item		
1	Bayview Golf Club ABN 30000076853	
2	Darley Street Mona Vale	
3	*Not yet known*	
4	*Not yet known*	
5	Hodges Shorten Architects Pty Ltd 003268755	
6	82/47 Neridah Street, Chatswood NSW 2067	
7(a)	Not applicable	
7(b)	The number of working days stated in the Form of Tender	
8	NSW	
9(a)	Australian dollars	
9(b)	Principal's address	
9(c)	Not applicable	
10(a)	Alternative 2	
10(b)	No	
10(c)	Not applicable	
11	Not applicable	
12	5%	
13(a)	Bank guarantee	
13(b)	5% of the contract sum	
13(c)	10% until the limit in Item 13(b)	
13(d)	28 days after date of acceptance of tender	
13(e)	Bank guarantee for full value	
13(f)	50%	
14	Not applicable	
15	Specification	2 copies
	Drawings	5 copies

16	14 days
17	None
18	Not applicable
19(a)	Those clauses in the Development Consent responsibility for which is allocated to the Principal in the Specification
19(b)	None
20(a)	Alternative 1
20(b)	5%
20(c)	9%
20(d)	Nil
20(e)	10%
21(a)	Alternative 1
21(b)	The contract sum
22	14 days
23	Any cause of delay which is not a qualifying cause of delay
24	$500
25	Not applicable
26	None
27	12 months
28(a)	Last day of each month for WUC done to the last day of the month
28(b)	Not applicable
29	As determined by the Superintendent
30	12%
31	14 days
32(a)	The chairperson (or his nominee) of the NSW Chapter of the Institute of Arbitrators and Mediators
32(b)	Rules 5-18of the Rules of the Institute of Arbitrators, Australia for the Conduct of Commercial Arbitrations
32(c)	Not applicable

ELECTRICAL SERVICES

SECTION 1 EXTENT OF WORK AND SYSTEMS

1 1 EXTENT OF WORK FOR THIS SECTION OF THE SPECIFICATION

This section shall include the supply and installation of electrical services including all components, work and accessories as set out below

a) Consumers mains and temporary builder's supply
b) Main switchboard, distribution switchboards and sub-mains
c) Lighting distribution systems
d) Power distribution systems
e) Light fittings
f) Telephone and data block cablings
g) CCTV surveillance system
h) Emergency warning and intercommunication system
i) Smoke and thermal fire detection and alarm systems
j) Power supply to Mechanical Services switchboard
k) Operating and Maintenance instructions and "As-built" drawings
l) Testing and commissioning of all systems

1 2 EXTENT OF WORK PROVIDED BY OTHER TRADES

1 Cutting and making good around openings in walls, roofs and ceilings

2 Normal making good to walls, roofs and ceilings following upon the work of the electrical contractor

3 Openings in building structure and bulkheads for passage of conduits and ducts

4 Excavation and backfill for site electrical reticulation and telephone installation

5 Concreting in the external light fittings

6 Kitchen exhaust fan fire trip relay

7 Supply and installation of cool rooms including cool room lighting and panic buttons

8 Supply and installation of safe including panic buttons

1 3 EXTENT OF WORK PROVIDED BY OTHERS

1 The owner will supply and install a PABX, telephone handsets, M D F jumpering wiring

2 Energy Australia will connect supply to the service pillar from the adjacent sub station

The owner will pay all costs associated with the installation

The builder is to be responsible for co-ordinating the installation of this work and is to include all associated costs in the tender price

3 The owner will arrange the supply and installation of MATV system, function room sound and light systems and keno systems

1 4 DESCRIPTION OF THE WORK AND SYSTEMS

1 The light and power distribution system shall be 415/240 volt, 3 phase, 4 wire, 50 Hz taken from a service pillar

2 The consumer's mains shall be reticulated underground from the service pillar to the main switchboard

3 The main switchboard shall be located where shown on the drawings The main switchboard shall be fitted with circuit breakers for sub-main protection

4 The site electrical reticulation shall comprise connection from the main switchboard to the electrical site distribution switchboards

5 Metering panels shall be installed where shown on the drawings

6 Distribution switchboards shall be provided where shown on the drawings The switchboards shall be fitted with moulded case circuit breakers connected to the electrical circuits

7 The lighting sub-circuits shall be carried out in TPS cable installed into the roof spaces and floor slabs Switch wiring shall be carried out with TPS cable concealed at all locations by installing in cavities, partitions or chasing of walls Chasing of face brickwork is not permitted

8 An emergency and exit lighting system shall be installed in accordance with the requirements of the Building Code of Australia and AS 2293 All emergency lamps shall be an integral part of the normal light fitting or self contained fittings as shown on the drawings Exit lights shall be of he maintained type Emergency lighting shall be arranged so that in the event of a mains or sub-circuit lighting power failure emergency lights are turned on automatically Provide a system of testing to comply with AS 2293

9 The final power circuits for the general purpose outlets shall be carried out in TPS cable Cables shall be concealed at all locations by installing in roof spaces, cavities, partitions or chasing of walls Chasing of face brickwork is not permitted

10 All fixed appliances and equipment shown on the drawings installed by other trades shall be connected through local isolating switches and flexible leads where necessary

11 The telephone system shall include the supply and installation of the main telephone frame, intermediate frame, patch panels and wiring to form a structured cabling system

12 CCTV surveillance systems shall comprise cameras, monitor, video recorder unit and cabling

13 Provide a data cabling system including centralized termination point, dual outlets at each location, one rail mounted communication cabinet and distribution wiring

14 External security lighting shall be provided and switched on with a photocell and switched off with a time clock or by photocell A manual by-pass switch shall be provided for maintenance purposes

15 A separate three phase four wire plus earth electrical supply to mechanical services switchboard The supply will be complete with lugs ready for bolting to terminals provided by the Mechanical Contractor

16 Wiring from kitchen exhaust fan fire trip relay and connection to the fire indicator panel

17 Provide an emergency warning and intercommunication system to comply with AS 1670 4 – 2004

18 Provide an automatic smoke and thermal fire detection and alarm system incorporating fire indicator panels, all internal and external alarms/sounders, detectors, and all associated wiring Include for connection of fire control to air conditioning and ventilation systems

19 A three phase builder's supply shall be installed to Energy Australia's approval The supply shall be located at a central point or points such that all parts of the works requiring power can be reached by a 30 metre lead

As a minimum each switchboard shall incorporate

a) 4 – 10 Amp double GPOs
b) 1-15 Amp double GPOs
c) 1-50 Amp 3 phase weatherproof outlet
d) Galvanised 1 5mm sheet steel enclosure complete with hinged weatherproof and lockable door (IP54)
e) Energy Australia metering facilities comprising meters, links and fuses
f) The switchboard shall incorporate earth 20mA leakage protection for all GPO circuits

1 5 SITE INSPECTION

1 The Contractor shall visit the site and satisfy himself as to the nature and extent of the works, the facilities available and any difficulties which may be encountered on the site No variation of the contract sum will be made for additional work or materials required and rising out of neglect of taking this precaution

To arrange for examination of site, contact

Person	Gerry O'Neill
Organisation	Bayview Golf Club
Telephone No	99978121

2 The tenderer when visiting the site shall do so at their own risk The Client shall be indemnified against any claims for damage or injury

1 6 VARIATIONS

1 The following requirements shall be observed when submitting variations

2 Variations are to be submitted with a detailed itemised split up of materials and labour costs

3 Include in the tender an hourly tradesman labour rate schedule that would be applicable to the pricing of variations

1 7 DEFECTS LIABILITY

1 The works shall be subject to defects liability in accordance with conditions specified elsewhere in the specification

1 8 TENDER DRAWINGS

1 Drawings supplied with this Section of the Specification are to be regarded as design drawings It is the Contractors responsibility to review all other relevant drawings supplied with the tender package including Architectural, Structural, Mechanical, Hydraulic etc No variation of the contract sum will be made for additional work or materials required and arising out of neglect of taking this action

SECTION 2 EQUIPMENT AND SYSTEMS

2 1 CCTV SURVEILLANCE SYSTEM

1 The CCTV surveillance equipment shall comprise a fully engineered system The system shall comprise digital video and recording system and monitor cameras, all cabling, installation and commissioning

2 The CCTV surveillance equipment is to be located in the administration office

3 Cameras shall generally be digital dome type cameras for internal use with weatherproof pan and tilt cameras for external areas

4 Long range lenses shall be provided on the cameras for external areas and shall be suitable for the locations nominated on the drawings

5 Provide a digital video recorder to record multiple images directory to the internal hard drive The recorder shall provide simultaneous recording, playback and archiving

6 Cables between each CCTV camera and video monitor shall be RG6 quad shield cabling The cameras shall be powered from the monitors

7 The CCTV surveillance system shall be similar to ADT security, Signature security or other approved

2 2 CIRCUIT BREAKERS

1 Miniature moulded case type shall be used for all sub circuits in this installation and shall comply with AS 3111 Two phase and three phase circuit breakers shall be of the multipole type with a common tripping device

2 Rotary operating handles shall be fitted where shown on the drawings

3 Large frame size moulded case circuit breakers shall comply with AS 2184 Rotary operating handle with door interlock facilities shall be fitted

4 Provide spares to the greater of 4 or 10% of the number of different current limiters supplied for circuit breakers incorporating such devices

5 All moulded case circuit breakers shall incorporate thermal-magnetic tripping and arc extinguishing features

6 All residual current type circuit breakers shall be single pole width

2 3 CONTACTORS

1 Contactors shall be of the double pole air break type suitable for operation on 415 volts with 240 volt AC operating coils

2 All contactors shall be suitable for uninterrupted duty and Utilisation Category AC3 in accordance with AS 1029

3 Approved manufacturer of contactors BHI, Siemens, Sprecher and Schuh

2 4 DATA SYSTEM

1 **Outline Description** Design, supply, installation, termination, testing, provision of records, commissioning and certification of a data cabling system that includes the following

a) Cabling from the patch panel to data outlets

b) Termination frame system utilising Krone highbond or similar 25 pair termination blocks

c) Standard size switch face plate capable of supporting two individual RJ45 outlet socket

d) Associated floor cabling consisting of one, two category 5E or better cables per face plate

e) One 47RU rail mounted communication cabinets located where shown on the drawings

f) Wall mounted termination frame assembly located where shown on the drawings

2 **Standards** The following standards are to be complied with unless otherwise specified

a) Austel Standard TS 001-1990 Safety Requirements for Customer Equipment

b) Austel Standard TS 008-1990 Requirements for Authorised Cabling Products

c) Austel Standard TS 009-1990 Installation Requirements for Customer Cabling (Wiring Rules)

d) Australian Standard AS1754 Electrical Safety

e) Australian Standard AS1049 Cable Insulation Requirements

f) Australian Standard AS3000 SAA Wiring Rules

g) AS3080 Telecommunications Installations – integrated communications cabling systems for commercial premises

h) AS3081 Telecommunications Installations – optical fibre cables for telecommunications applications

i) AS3082 Telecommunications Installation – optical fibre cables for telecommunications applications

j) AS3083 Telecommunications Installation – coaxial cables for telecommunications applications

3 **Telstra/Austel Approvals** Obtain all necessary Telstra/Austel approvals for the installation

4 All items of equipment offered must be unconditionally listed with Telstra and/or Austel

5 Pay any fee lawfully imposed by the Authorities for inspection and acceptance testing

6 All work shall be certified by Krone (Australia) Technique Pty Ltd and shall be provided with a 20 year warranty

7 **Outlets** Supply and install a dual outlet consisting of two 8 position, 8 conductor, non-keyed modular jacks as follows

a) Data/phone jacks Provide one locking latch, RJ 45 compatible jack in accordance with EIA 568 at each designated outlet nominated on the drawings

b) The building wiring shall be terminated to the rear of the outlet modular jack by the use of insulation displacement connections forming a gas tight joint Cable pairs at each jack shall be arranged to comply with EIA 568, Fig 11 1

c) Each outlet shall be either flush mount, with a finishing face plate, or surface mount dependent on the location of each outlet point All face plates to be the same type as specified under "General Purpose Outlets"

d) Each outlet face plate shall be a standard size switch face plate and capable of accepting installation of four individual modular sockets along the long/horizontal axis Any unused socket positions shall be fitted with RJ45 jacks

e) Each outlet is to be suitably identified with a labelling system that identifies the appropriate termination vertical, horizontal and outlet details

8 **Communication Cabinets** Cabinets are to be lockable full height floor standing and located where shown on the drawings All voice and data equipment is to be installed with the cabinets and the room

Cabinets are to be 480mm (19") full height located on rails to permit access to rear of cabinets The cabinets are to house the various active components of the network infra structure including data network, routers and switches, voice network PABX, and various ancillary devices

9 **Cable** Cables shall comply with the following specification

a) Copper Cable type All cables are to be category 5E unshielded twisted pair (UTP) complying with AS3081 All cables shall be installed at a minimum of 150mm from power, motors etc

b) Fibre Optic type All cables are to be multi core, multi mode type complying with AS3083 All cables shall be installed at a minimum of 150mm from power, motors etc

10 **Cable Routes and Supports** Outlets cables are to be run on cable ladders in the roof space appropriate points, routed to the outlet position utilising cavities architectural columns, drop poles or wall skirtings so as to achieve the shortest practical cable run Conduits from room outlets are to be extended to accessible ceiling space to allow for cable additions and/or replacement All cabling shall be supported at a distance of not more than one metre intervals All cables tying/bundling shall use ties of an acceptable standard

Care is to be taken strapping or tying UTP cable to avoid pinching or damaging the copper strands The specific type of strapping and amount of tension on cables is to comply with the appropriate standard

All incoming telephone trunk cables are to be terminated in cabinet/room at a position to be determined by the Client

11 **Cable/Conduits** Supply and install cable and conduits as required and indicated below

a) Supply and install white PVC concealed conduits from each room outlet to accessible space in the ceiling

b) Conduits for room outlets shall be 20mm

12 **Testing** All testing is to be carried out using level 2 "CAT" test equipment On completion a print out of test results for each cable is to be provided Results may be in the form of a hard copy or a computer disk

13 **Drawings** Prior to commencing work on site design and layout drawings are to be submitted to the Electrical Engineer for review Drawings are to be submitted in accordance with the requirements of this specification

On completion these drawings are to be upgraded to "As-Built" drawings in accordance with the requirements of this specification

2 5 DISTRIBUTION SWITCHBOARDS

1 Distribution boards shall be surface mounted sheet metal enclosures Each distribution board is to be fitted with a hinged integral lockable door and two sets of keys

2 Distribution boards shall be fitted with contactors and controls as indicated on the single line diagrams

3 Each distribution board shall be fitted with a typed circuit schedule fitted in a pocket on the back of each distribution board door

4 The colour of each distribution board shall be approval of the Electrical Engineer

5 All bus-bars and cables within the distribution boards shall be fully insulated and supported to withstand the maximum fault level available on the system

2 6 EMERGENCY WARNING & INTERCOMMUNCATION SYSTEM

1 The emergency warning and intercommunication system shall comprise warning loud speakers, WIP handsets, visual alarm devices, emergency alarm initiating devices and all wiring and cabling including connection to the fire indicator panel

2 The complete installation is to be carried out in accordance with the requirement of AS 1670 4 - 2004

3 The Contractor shall examine all architectural and services drawings to ensure the number and location of all WIP handsets, visual alarm and emergency alarms shown on the drawings comply with the relevant code and authorities requirements Include in tender all requirements for the system to comply

2 7 EMERGENCY LIGHTING SYSTEM

1 The emergency lighting system shall fully comply with the recommendations of AS 2293

2 Emergency light fittings shall be of the self-contained type, each consisting of a battery and charger LED indicating light, test push button and all the associated control gear to operate for two hours duration

2 8 EXIT SIGNS

1 Exit signs shall be provided where shown on the drawings The installation shall fully comply with the recommendations of AS 2293

2 Exit signs shall be of the maintained type Each unit shall be self-contained incorporating a battery and charger, LED indicating light, test push button and associated control gear to operate for a two hour period upon failure of the active supply

3 Where exit signs are located above doorways they shall provide a downward component of light to serve the dual purpose of exit sign and emergency luminaire

4 Single or double sided type shall be selected, as appropriate complete with direction arrows

2 9 FUSES

1 All fuses shall comply with AS 2005 Part 1 and 2 for rupturing capacity fuses

2 All fuse holders shall be of the fully moulded type to GEC Red Spot or approved equivalent

3 Provide spare fuses to 10 percent of the number of each of the different fuses used in this installation, or four, whichever is the greater

2 10 GENERAL PURPOSE OUTLETS

1 General purpose outlets shall be 10A capacity combination type switch and three pin receptacle flat pin type, with impact resistant face plate suitable for inductive loads

2 All outlets shall be mounted flush with the building finish

3 Outlets within plant rooms may be surface mounted

4 Throughout the installation the polarity of terminals in all similar plug receptacles shall be the same

5 The face plates shall be white in colour

6 All GPOs shall be Clipsal 2000 Series

2 11 ISOLATING SWITCHES

1 Isolating switches shall be of the on-load-make on-load break type The switches shall operate in all active conductors

2 The switches shall be labelled "Isolating Switch"

3 The isolating switch shall be capable of withstanding without damage a short circuit current applied at the load side pending operation of the associated fuses

2 12 LIGHT FITTINGS

1 Light fittings shall generally be of the size, type and manufacture shown on the drawings

2 Light fittings of an alternative manufacture may be submitted for approval on the following basis

a) In size, type and finish they must be similar to those specified

b) They must include the same auxiliary components such as ballasts, capacitors and emergency light

c) Data setting out the same auxiliary components such as are available for those specified, must be submitted for consideration

d) Any variation in price to be offered with the alternative must be expressed as a variation to the base tender using the specified light fittings

3 Luminaires shall comply with the requirements of AS 3137

4 "Series Inductors" or "Stopper Circuits" shall be installed to a value which will prevent interference to the Supply Authority's frequency injection control system

5 Fluorescent light fittings shall conform with AS 2643 and AS 3168 and shall be fitted with 250 volt ballasts and be corrected to 0 9 power factor with capacitors rated for 85 degree C working temperature

6 All fittings shall be complete with lamps Straight fluorescent lamps shall be of 'white' colour temperature 3000 to 5000K unless noted otherwise on the drawings Compact type fluorescent lamps shall have a colour temperature of 2700K

7 Fluorescent light fittings shall be reheat switch start except where shown otherwise on the drawings

8 Install light fittings square to the building details in straight lines Thoroughly clean all light fittings immediately prior to the official handing over date

9 All exposed metal shall be earthed

10 Metal parts shall be thoroughly degreased and then receive one coat of each etch primer and two coats of an approved enamel All reflecting surfaces shall have a minimum reflectance of 85%

11 Plastic used for louvres, diffusers, etc shall be light stabilised

12 The entire lighting installation is to be tested for a period of not less than three (3) hours to check that excessive heat is not developed at fittings, accessories, terminals, switches, etc Ballasts which develop excessive noise during the Defects Liability Period shall be replaced

13 Deliver light fittings to site protected against damage by suitable packaging and remove packaging only immediately prior to installation

14 Notwithstanding the above precautions against damage, any light fitting deformed, scratched or otherwise damaged shall be liable to rejection

15 All light fittings shall be mounted to facilitate lamp replacement during normal operation

2 13 LIGHT SWITCHES

1 Light switches shall be single pole rocker action with silent operating mechanism with contacts rated at 15A minimum and suitable for inductive loads

2 Switches shall be flush mounted with common flush plates

3 Switches shall be to selected colour

4 Mounting height shall be 1200mm above floor level to centre line of switch plate (or nearest adjacent whole brick as applicable) unless otherwise stated on drawings

5 All light switches shall be Clipsal 2000 Series unless shown otherwise on the drawings

6 Switch panel where shown on the drawings (SP-1 etc) shall be stainless steel suitably engraved with black in-fil paint similar to Clipsal multi-gang metal plate range with 30 series rocker switches

2 14 MAIN SWITCHBOARDS

1 The main switchboard shall be of totally enclosed, cubicle type, metal clad, free standing, dust-tight to IP 40 degree of protection and front-connected of Form 1 construction in accordance with AS 3439 1

2 Cabinet construction shall be folded, cold rolled, sheet mild steel with no raw edged exposed with all welds ground smooth Sheet steel panels shall be of high quality and free from all milling marks The minimum thickness sheet steel shall be as follows

Cubicles	2 0mm
Doors and Cover Plates	2 0mm
Zoning Barriers	1 6mm

3 All bus-bars shall be coated with a water based, high solid acrylic copolymer membrane in accordance with the supply authority's requirements

4 Access to the interior of the switchboard shall be by hinged doors and by removable lift-off escutcheon plates around all miniature circuit breakers and lift-off panels over all cabling, bus-bar and space for future equipment

5 Hysteresis and eddy-current heating shall be eliminated

6 The cabinet as a whole and individual panels shall be adequately stiffened to minimise torsional flexure

7 All steelwork shall be thoroughly cleaned and dried before painting is commenced and then given at least one coat of etch primer and two coats of enamel The colour shall be Electric Orange

8 Reference labels of traffolyte shall be fitted by screws or rivets on each separate item of equipment Additionally, all panels, wiring and terminals shall be labelled to the approval of the Electrical Engineer

9 Submit shop drawings of the main switchboard for review before commencing manufacture

2 15 METERING

1 Provide all facilities required for mounting the Supply Authority's meters in the switchboard on the wall in the position indicated on the drawings

2 16 METERS

1 A three phase digital multi-function power analyser shall be provided on the main switchboard as shown on the drawings

2 Digital power analyser shall monitor voltage, instantaneous and maximum demand amps, power factor, peak kVa, peak kW, Hz and kVar

3 All instruments shall be of standard industrial grade accuracy

4 All instruments shall be capable of carrying their full load currents without undue heating and shall not be damaged by the passage of fault currents up to the maximum rating of the switchgear

5 All instruments shall be back connected and flush mounted and shall be similar to HPM Nemo 96/21

2 17 SMOKE & THERMAL DETECTOR FIRE ALARM SYSTEM

1 The smoke and thermal detector fire alarm installation shall be carried out in accordance with AS 1670 and with the requirements of the local fire authority The system is to be fully addressable complete with smoke and thermal detectors, fire indicator panel, sub indicator panels, all internal and external alarms/sounders, remote indicators and wiring

2 The Contractor shall engage the services of a specialist fire services contractor to carry out the work

3 Wiring shall comprise TPI, TPS or MIMS conductors as required, and shall be installed and secured in the same manner as wiring to the lighting installation in the same area

4 TPI and TPS conductors shall be stranded copper of minimum size 1 5mm^2 with 250v grade PVC insulation

5 The sheathing of conductors shall be coloured red

6 The fire indicator panel shall be complete with accessories, indicating lights, buzzers, battery chargers, back up batteries etc and shall be installed in the location shown on the drawings

7 The layout of the detectors as shown on the drawings is to be considered as diagrammatic only and does not relieve the contractor of his responsibility to comply with AS 1670

8 The Contractor shall examine all architectural and services drawings to ensure that detectors are located to comply with the requirements of the relevant authorities, and shall be responsible for the co-ordination and installation of detectors with regard to the location of walls, openings, ducts, pipes, cable trays and other services

9 All detectors shall be mounted on a junction box Detectors on suspended false ceilings shall have a junction box or protective cover mounted immediately above the ceiling to prevent contact with the wiring terminals

10 Provide an approved weatherproof alarm bell with underdone strike on the external of the building in the position shown on the drawings The actual location of the bells will be finally determined on site

11 Supply and install internal sound alert units to comply with Clause 8 7 of AS 1670 The sounders shall be concealed and the output shall be adjustable to allow setting of the tone to suit the background ambient noise The sounders shall be wired in fire rated cable equal to MIMS

12 Prior to practical completion, the Contractor shall provide a certificate as detailed in Appendix C of AS 1670

13 A copy of the certificate shall be provided to the Engineer

14 At the completion of the installation, and prior to leaving the site, the Contractor shall test each circuit and each detector

15 The Contractor shall maintain at his own expense the new detectors and circuits for a period of twelve (12) calendar months – the commencement of this twelve months period shall be from the date of Practical Completion

16 The Contractor shall make application to Telstra for the direct telephone line from the FIP to a selected security firm and pay all associated fees and costs

17 The Contractor shall make application for the direct telephone line immediately after being awarded the contract and shall submit evidence of the application to the Engineer

18 The alarm wiring (2C – 1 5mm² MIMS cable) shall be run from the FIP to the MDF

19 The smoke and thermal detector fire alarm system shall be Vigilant F4000 System or other approved

2 18 TELEPHONE INSTALLATION

1 Telephone installation shall be carried out to the requirements of Austel technical standards

2 All work shall be carried out by an appropriate Austel licensed sub-contractor or tradesman

3 The telephone cables shall be run in separate ducts or conduits segregated from all other services

4 Telephone outlets are to be provided by way of the dual voice/data outlets specified elsewhere in this specification

5 An earth cable shall be provided to the distribution frames in accordance with Austel requirements

6 All telephone cabling shall be patched back to the central patch panel All jumpering shall be done utilising RJ45 modular plugs and sockets

7 Telstra will carry out the following work

a) The lead in cable and conduit
b) All necessary inspections required prior to connecting network services to the cable system

8 The contractor shall obtain a quotation from Telstra for this work, the cost of which is to be included in the tender price

2 19 TIME CLOCKS

1 Time clocks for switching of lighting shall be quartz driven type 72 hour power reserve and installed in the associated distribution switchboard

2 Time clock shall incorporate the following features

a) Visible indication of switching status
b) Spare switches tappet magazine
c) Time indication
d) Visible operating indicator
e) Transparent cover

3 Each switch position shall be capable of being changed manually without influencing the subsequent automatic programme sequence

4 Casing and insulating materials shall be constructed of high temperature and frame resistant thermoplastic

5 Time clock shall be suitable for 240 volt 50 Hz electrical supply

SECTION 3 ELECTRICAL DISTRIBUTION

3 1 CABLE LADDERS, TRAYS AND DUCTS

1 Cable ducts shall be constructed from galvanised sheet steel 1 2 thickness minimum Covers shall clip securely to ducts but shall be easily removed for inspection or installation of additional conductors

2 Support ducts throughout length with hangers or saddles at a spacing acceptable to both the supply authority and the Engineer

3 Group conductors in circuits and label at intervals not exceeding length of each section of duct cover

4 Ducts shall be maintained free of foreign matter throughout the period of installation

5 Trays, ladders on ducts shall be sized to allow for 25% extra capacity at a later date

6 Where cable is run within ducting, the duct shall not be overloaded The easy removal of a single wire or cable shall be considered to be the limiting criterion

7 Power cables laid in racks or trays shall be in a single layer and shall be spaced not less than 12mm apart unless specified elsewhere in this Specification, to allow free ventilation

8 All tray bends, both horizontal and vertical shall have a minimum radius of 450mm for power and control cables, unless otherwise noted

9 Cable ladder and tray shall have a maximum rung spacing of 300mm and be supported on fabricated mild steel brackets welded or bolted to building structures or as detailed on the drawing They shall be supported at intervals not exceeding the manufacturer's recommendations Cable shall be fixed by saddles, clamps or nylon cable ties for sloping, vertical or inverted cable ladders and trays

10 Ducts, cable trays and ladders shall be bolted together by fish plates or other approved means Bolts shall not protrude into the rack section which may damage cables during installation

11 Where it is necessary to cut out or weld cable ladder racks, the exposed metal shall be painted with a zinc-rich paint approved by the Electrical Engineer

12 Cable ladder rack routes shall be bonded to the earth grid via a 16mm green PVC covered cable and connected at each end of the run, to the nearest available earth

13 Peaked covers shall be fitted to ladder, tray and duct which are easily accessible, subject to direct sunlight or prone to build up of dust or materials

14 Where covers are fitted they shall be clamped to the ladder, tray and duct to the approval of the Electrical Engineer

15 Cable ladder racks shall be mounted to maintain 300mm clearance between racks vertically and at least 150mm under structural sections

16 Where cable ladder, tray or duct is fixed to removable items of plant they shall be secured with clamps or bolts Welding will not be permitted

3 2 CABLE TERMINATIONS

1 All gland plates shall be drilled to the sizes required by the cable gland The gland sizes shall conform to the manufacturer's recommendations

2 Where it is required that PVC cables be connected to equipment that is too small to accommodate the gland, or if permanent wiring is provided with equipment then cable shall be terminated in a conveniently located two-way junction box The connection to the equipment from the junction box shall be made using flexible PVC coated metal conduit and approved fittings

3 The unsheathed part of multicore cables shall be neatly laced with cable ties or other approved means

4 All cable terminations shall be made using pre-insulated crimp lugs unless approval is obtained from the Electrical Engineer Crimp lugs shall be crimped with an approved crimp tool Crimping with electricians pliers is unacceptable

5 Wire stripping shall be performed using an approved wire stripper The wire shall be stripped to an extent that prevents the covering entering the terminal connection or crimping lug but does not allow the protrusion of bared wire from the terminal block or lug

6 No more than two wires shall be connected to one side of any terminal The two wires shall not be twisted together inside the connection The correct size and type of screwdriver shall be used for making terminal block connections

7 The number and size of bolts used for the terminations shall be determined by the lug requirements Where equipment terminals are not big enough copper flags shall be fitted

8 Hand operated crimping tools shall be of the type which will not release until full compression is applied Hexagonal crimping dies shall be used on all cables of 70mm5 cross section and above

3 3 CONDUCTORS

1 All conductors shall be annealed high conductivity copper conductors in accordance with AS 1125

2 Mineral insulated metal sheathed (MIMS) cables shall be manufactured to AS 3187 and shall be delivered to site in properly sealed rolls

3 TPI and TPS cables shall be type V-75, manufactured in accordance with AS 1125 Conductors smaller than 2 5mm5 shall not be used without written permission of the Engineer Single strand cables shall not be used

4 PVC sheathed steel wire armoured PVC served cables shall be run in cable tray or saddled to the building structure

5 Completely erect conductor enclosures for inspection and test, before drawing-in the conductors Use inert powders of the French chalk type to assist cable insertion Twisted, kinked, knotted or crossed over cables shall not be permitted in any enclosure Allow adequate slack at all terminations, wiring boxes and accessories to facilitate ready servicing

6 All conductors throughout the installation shall be coloured for ease of identification Colours used shall be red, white and blue for phase wiring, black for neutral, green/yellow for covered earth wires and white for control wires Errors in cable colours shall be corrected by the Contractor at his own expense

7 Make conductor joints in wiring boxes, with approved pressure type connectors insulated with moulded thermosetting plastic Remove all damaged cables from the installation Crimp type connectors will not be permitted

8 Where TPS wiring is used it shall be installed parallel to the building members either horizontally or vertically at 300mm maximum centres so as to prevent sagging All joints and tees shall be made in outlets or in moulded terminal boxes

9 In applications involving electronic controls, low voltage conductors shall not be loomed together or installed in the same conduit enclosure as other conductors

10 Each roll of cable delivered to site shall be accompanied by the manufacturer's test certificate

3 4 CONDUITS, PIPES AND FITTINGS

1 Unless specified otherwise, all exposed conductors are to be enclosed in conduit

2 Generally, all conduit or pipe shall be concealed

Where conduit or pipe is used as conductor enclosures they shall be complete with wiring boxes, bends, condensate traps, flanges, unions, locknuts, bushes, saddles and clips

Conduits shall be of the type indicated in each of the following areas

Buried in ground	- Heavy duty rigid UPVC
Buried in in-situ concrete	- Rigid PVC
Exposed to the weather	- Hot Dipped Galvanised Screwed Steel
Surface run in plant rooms etc	- Rigid PVC
Subject to mechanical damage	- Screwed Steel
Fire rated enclosures	- Screwed Steel

3 Screwed steel conduit and fittings shall be no smaller than 20 diameter and shall meet the requirements of AS 2052

4 Rigid PVC conduit and fittings shall be no smaller than 20 diameter and shall meet the requirements of AS 2053

5 Flexible connections to equipment shall be made of flexible steel conduit in accordance with AS 2052 or flexible PVC conduit in accordance with AS 2053

6 Conduit may be surface run in plant rooms, or where not directly visible provided that all runs are installed straight and square with building lines

7 Generally, all runs to floor mounted equipment shall be laid in floor slab Where overhead connections are approved, drops shall be neatly and adequately supported to the approval of the Engineer

8 Square off all conduit ends and internally ream after threading Make screwed joints with metallic based paint, before tightly butting and use pull through to internally clean all runs, before inserting cables Unions shall be used at all butt joints, in preference to running threads

9 Locknut steel conduit and pipe to all equipment and accessories Fit two locknuts and an inside bush on sheet metal surrounds

10 Kinked or squashed enclosures are not acceptable

11 Expansion joints shall be utilised between independent structures Enclosures set in concrete shall have a diameter no greater than 1/3 of the slab thickness whilst they shall also be covered by at least 25mm at the top or bottom with no smaller cover than 19mm at cross-overs

12 Obtain prior approval from the Electrical Engineer for conduit and pipe location routing clearances, before work commences

13 Provide draw wires in all empty conduits

3 5 EARTHING

1 The multiple earthed neutral (MEN) system is in use by the Supply Authority and the contractor shall observe all related requirements

2 Enclose earth wires with their respective circuit runs throughout their length

3 Bond the sub-main earth cable to every individual item of electrical equipment, so that the earthing is electrically continuous

4 Earthing links of sufficient size for all incoming and outgoing cables shall be provided

5 All exposed metal in electrical equipment shall be solidly earthed to the incoming main earth conductor

3 6 OUTLETS

1 The position of general purpose, telephone, lights and switches, etc outlets shown on the drawings are approximate only Do not scale the drawings The contractor shall be responsible for determining the final positions from the architectural drawings or as agreed on site No cost variation will be allowed for outlets finally located within three metres of the position indicated on the Tender Drawings

2 Outlet boxes shall be set square and flush with the finished building surface Any outlet box out of square with the finished surface shall be reset at the contractor's expense

3 7 UNDERGROUND CABLES

1 Underground cables shall be of the type shown on the drawings and following generally the route shown

2 Where cables pass under external walls of buildings, they shall be enclosed in fibre cement conduits with 1200mm minimum radius bends

3 Direct buries underground cables shall be protected throughout their entire length with concrete blocks

4 Underground cable route markers shall be installed at every change of direction of cable and on 0straight runs at least every 50 metres

5 During excavation every care shall be taken to avoid damage to existing underground installation

6 All excavations shall be properly back-filled, consolidated and reinstated to the existing pavement of area finish

7 Continuous lengths of cable shall be used No underground joint boxes will be permitted

8 Make cable joints in switchboard using approved boxes

9 Straight through joint pillar boxes for power cables are to be of the type using wiped bead sleeve and a protective cast or fibreglass outer box Filling compound for power cable joints shall be to the approval of the Engineer and shall be heated and poured in accordance with the manufacturer's specification

10 All joints shall be carried out in approved jointing pits

11 Cable Pits shall be 1200 x 1200 constructed of reinforced concrete fibre cement, glass reinforced concrete or polymer concrete

12 Provide a pit cover which will withstand the expected loads and fit flush with the top of the pit and adjacent ground or floor level provide drainage from the bottom of the cable pit to an absorption trench filled with rubble or to the stormwater drainage system

3 8 WIRING METHODS

1 All wiring shall be carried out on the loop-in principle with no joints except at points of termination

2 Cables shall be handled with care When laying or snaking the cable no twists or kinks shall be allowed to occur Throughout the installation twisted, kinked, knotted or crossed over cables shall not be permitted in any enclosure Cable runs shall present a neat and workman-like appearance

3 Any damage occurring to a cable (including the serving) shall be reported to the Engineer before work on the particular cable proceeds

4 Adequate slack shall be provided at all terminations, wiring boxes and accessories to facilitate servicing and re-termination of cores

5 Cables shall not be bent to a radius of less than that recommended by the manufacturer

6 Cables shall be adequately supported along their entire length Supports shall be provided as close as possible to the point of termination

7 Unless otherwise approved by the Electrical Engineer, single core cables forming part of a three phase system shall be clamped together in trefoil, each trefoil clamp containing one conductor from each phase

8 The mechanical strength of cable clamps shall be adequate to restrain the forces generated by fault currents

9 Cables shall not be run in a manner resulting in hysteresis and eddy currents being circulated in surrounding metal work or any steelwork forming part of the cleat

10 Unused terminals in equipment shall not be used as connection terminals for looping control and power cables Junction boxes, connection boxes, switchboards etc shall not be used as marshalling areas for cabling to other equipment

11 Cables shall be installed in continuous lengths without joints except where approved In no circumstances shall cable terminations or connections be made inside cable ducting

SECTION 4 GENERAL REQUIREMENTS

4 1 CHASING

1 Chasing of walls, floors and ceilings for electrical conduits, etc shall only be done with the approval of the Engineer

4 2 CARE AND PROTECTION

1 Inspect all materials, plant and equipment prior to installation or building in and remove dirt, debris, swarf, fillings, burrs and the like

2 Leave all unfinished work in a safe condition

3 Provide adequate protection to approval to all items of electrical equipment during construction

a) Seal off open ends of pipes and ducts with purpose made plastic caps to prevent entry of foreign matter until the works have been handed over Plastic sheet, paper and wood plugs are not acceptable

b) Provide plastic, cardboard, hardboard or timbered protection to approval to protect items on walls or ceilings susceptible to scratching, bending or breaking

c) Maintain weatherproof and dustproof covers over all electrical, control and instrument components

d) Protect plant, and equipment building and structural elements against damage and deterioration during the course of the works

4 3 CUTTING & MAKING GOOD

1 All cutting and making good required for the installation of work covered by this contract shall be to the approval of the Structural Engineer

2 When so specified in the "Work" section of this Specification, the Builder will do all cutting and making good with the exception of chasing as required for the installation of work covered by this Contract All chasing will be carried out by the electrical sub-contractor

3 The cost of additional cutting and making good required in finished work as a result of incorrect or inadequate details being furnished to the Contractor, shall be borne by the Electrical Subcontractor

4 Holes shall be punched through or drilled from the underside and structural members cut in the prescribed manner only by the written authority of the Engineer

5 The Contractor shall bear the cost for making good of all unnecessary damage to the building structure and finishes

6 No welding to or drilling of structural members of the building will be permitted without written permission from the Structural Engineer Supports to roof trusses and beams shall be clipped only

4 4 DRAWINGS

1 Drawings supplied with this Specification are not to be regarded as construction drawings, but indicate generally the proposed layout of the plant, systems and equipment

2 Prepare or obtain from manufacturers and suppliers, all drawings and information necessary for fabrication, assembly, installation and commissioning of all plant, equipment and systems

3 Obtain all drawings and information necessary to enable work to be coordinated with the work of other contractors on the site

4 Where it is necessary to take site measurements to correctly locate work, responsibility for the accuracy of such measurements rests solely with the Contractor

5 Information or dimensions obtained verbally from others shall be confirmed in writing before being used in laying out or installation of this work

6 Before placing orders for, or commencing manufacture of the equipment the Contractor shall supply for review to the Electrical Engineer all working plans, detail drawings, automatic control and wiring diagrams All drawings are to be prepared in SI metric units For approval process refer to the General Conditions

7 Unless otherwise specified, drawings and other information shall be submitted as single copies until final submission is requested then four copies shall be required for stamping and distribution The number of copies as specified in the General Conditions shall be issued for stamping and distribution

8 The Electrical Engineer will require seven full working days for the reviewing of each submission and the Electrical Contractor shall make due allowance in programming his work to meet this requirement

9 Review of a submission is not to be construed as acceptance by the Electrical Engineer of responsibility for layout measurement or co-ordination with other trades, although every endeavour will be made to detect any obvious errors

10 The requirements of submission of drawings and other information is intended to provide an opportunity for the Electrical Engineer to review the Contractor's interpretation of requirements and to minimise delays resulting from rejection of work on site

11 The following drawings are required as a minimum

a) Layout drawings of all holes and penetrations required in the structure

b) Layout of main and distribution switchboards

The above drawings should include all information contained on tender drawings and in the specification, necessary for the fabrication ordering and installation of the systems

4 5 EQUIPMENT SUBSTITUTIONS

1 Substitutions of alternative makes or types of equipment from that included in accepted tender shall only be allowed on written approval of the Electrical Engineer

2 A written application containing full technical information of the proposed substitution, together with reason for change and any cost adjustment to the Contract that would result therefrom, must be submitted before any such substitution of equipment will be considered

4 6 FASTENINGS

1 All conduits, ducts, light fittings, pipes, switches, etc shall be firmly fastened to the building structure Fastening to the work of other trades will not be allowed unless prior approval has been obtained from the Electrical Engineer

2 One hole saddle fixings may be used on conduits up to and including 25 diameter Above 25 diameter two hole saddle fixings must be used

3 Wood, lead or composition plugs shall not be used for any fastening work

4 Fasteners set by explosive charges or percussion type tools may be used on conduits up to and including 25 diameter If this type of fixing device is used the fastener must be of the threaded stud type

5 All other types of fastenings shall be of the metal expanding shield type

4 7 FLASHING OF PIPES AND DUCTS

1 The Electrical Contractor shall be responsible for flashing of all pipes, ducts and conduits passing through roofs and for all flashing through outside walls and for ensuring that the total flashing system is completely weatherproof

2 Flashing material shall be electrolytically compatible with the pipe, duct, conduit and roofing materials

4 8 METRICATION

1 Except where expressly shown otherwise, metric units are used throughout this Specification

2 Dimensions are in millimetres unless noted otherwise

3 Indicating instruments and controls shall be calibrated in SI metric units unless specified otherwise

4 Delays in procurement of components resulting from non availability in units specified shall be notified to the Electrical Engineer and the prime contractor where applicable in sufficient time to avoid delay in the works programme

5 Such notification to include details of proposed alternative available components, and any contract price variation that would arise from adoption of alternative

6 Allow seven working days from date of notification, for the issue of an instruction to vary from the Specification

4 9 OPERATING & MAINTENANCE MANUALS & "AS BUILT" DRAWINGS

1 Prior to the practical completion "As-Built" drawings showing the "as installed" location of electrical cables, pits, services and equipment including the depth of underground cables in relation to permanent site features and other underground services shall be provided

2 Provide drawings of all switchboards showing details of construction, busbar and cable sizes and location of all switchgear and controls

3 Drawings shall be bound into a binder manual Three sets of manuals shall be furished All drafting work shall be carried out by a competent draftsperson The Electrical Engineer will provide free of charge a Cads Dxf/Dwg file disc of the design drawings for up dating to "As-Built" drawings Provide a disc with the manuals Disc drawings are to be in editable PDF format Nominate the version of software used

4 Drawings shall be submitted as a single copy draft for review before final issue

5 Operating and Maintenance manuals shall contain instructions for operating and maintaining the installed systems and plant

6 Operating and maintenance instructions shall be prepared in an approved format and submitted as a single copy draft for review before final issue

4 10 PAINTING AND LABELLING

1 All steelwork shall be thoroughly cleaned and dried before any painting is commenced The steelwork shall then receive one coat of primer and at least two coats of an approved enamel

2 Galvanised conduit need not be painted, where not exposed to view

3 All exposed metallic conduits shall be painted an approved colour

4 All control panels and the equipment mounted thereon shall be clearly identified by engraving black on white Traffolyte labels screw-fixed in position

5 Adjacent to each outlet shall be fixed an engraved black on white Traffolyte label to identify both the outlet and the relevant circuit breaker and distribution switchboard number

6 Flush plates shall be coloured white to match light switch mechanisms unless otherwise directed

7 Painted plates are not acceptable

4 11 SAMPLES

1 Submit for the approval of the Electrical Engineer, prior to commencing installation, samples of all accessories, fittings and apparatus which are proposed to be used in the work and only such items as have been approved may be installed Failure to comply with this provision may result in the unconditional rejection of such items when inspected on site

4 12 STANDARDS & CODES

1 Materials and workmanship shall be in accordance with the latest editions and amendments of the appropriate Australian Standard of the Standards Association of Australia at the date of closing Tenders unless specified otherwise

2 In the event of there not being any appropriate Australian Standard materials and workmanship shall be in accordance with the latest appropriate British Standard

3 In the further event of there not being any appropriate Australian or British Standard materials and workmanship shall be in accordance with the latest appropriate standard of the American National Standards Institute

4 13 STORAGE OF MATERIALS

1 Materials and equipment shall be stored on the site only in locations approved by the Electrical Engineer and only in such manner as will not impede the work of other contractors and the operation of any existing installations

2 No machinery parts or assembly of parts, such as motors, gears, shafts, bearings, shall be stored in the open If they are delivered to the site before the structure is sufficiently advanced to house them and provide protection from the weather, then the Contractor shall provide a lock-up shed for storage

3 Materials and equipment subject to damage or deterioration if left in open, shall be stored or protected to the satisfaction of the Engineer

4 14 TESTING

1 The installation shall be fully tested, in the presence of the Electrical Engineer Irrespective of any former tests, the installation shall comply with the Specification, before claims for final payment are met

2 Provide complete test and inspection facilities, both at the factory and the site, to ensure that the installation conforms to the requirements of the Specification

3 Make known to the Electrical Engineer, the results of all Supply Authority inspections, immediately upon receipt of same, in addition to meeting the cost of all repeat tests

4 Submit the complete installation to a full load test for a period of three hours, to ensure that excessive heat or noise is not developed

4 15 TOUCHING UP

1 The Electrical Contractor shall be responsible for making good all paint surfaces damaged during erection, including the painting of all brackets for mounting equipment

2 Name plates of all proprietary items of equipment shall not be obliterated by paint

4 16 WORKS PROGRAMME

1 The Electrical Contractor shall submit before commencing work, a detailed programme for carrying out the installation This programme should be prepared in conjunction with the main building programme and should have the Builders's approval before being submitted

5 D HYDRAULIC SERVICES

SPECIFICATION

No. 15221

For The Supply, Installation, Commissioning and Maintenance of-

HYDRAULIC SERVICES

At-

PITTWATER ROAD
BAYVIEW, NSW

For-

BAYVIEW GOLF CLUB

Drawing NOS -

15221/ H01 – H08

Architects

Hodges Shorten Architects Pty Ltd
Chatswood Village
Suite 82, 47 Neridah Street
Chatswood NSW 2067

Mechanical
Electrical
Hydraulics
Fire Protection
Transportation
Telecommunications

WALLIS & SPRATT PTY LTD.
ABN 15 001 185 208
Consulting Chartered Engineers
Suite 504 Level 5, 10-12 Clarke Street, Crows Nest NSW 2065
Tel (02) 9437 9226 Fax (02) 9439 2785

RECORD OF AMENDMENTS

SEC/PAGE NUMBER	ISSUE	DATE	REASON	AUTHORISED BY
ALL	O	20 June 2007	TENDER ISSUE	DMS

INDEX

PART A

1 CONTRACT AND REQUIREMENTS

Contract Type and Document

The accepted Tenderer shall become a Sub-Contractor to the Head Contractor, and shall enter into a contract with him for the supply, installation, testing and maintenance of the services specified herein to conform with the Time and Progress Schedules to be prepared in collaboration with the Head Contractor

Contract Requirements

The following requirements shall be applicable to the Contract and shall be entered on the Contract Documents

Preferred Subcontractors

The Hydraulic Services works, as hereinafter described, shall be subcontracted to a Preferred Hydraulic Subcontractor (**hereinafter referred to as the HSC**) chosen from the following list of Hydraulic Contractors

Grateholt Plumbing Pty Ltd	Bill Bell	9638 2399
Nisbet & Durney Pty Ltd	Nigel Essex	9750 4822
Morrell Plumbing Pty Ltd	Dale Morrell	9570 5699
F R Coyle Pty Ltd	Pat O Brian	9648 3566

The Head Contractor shall **nominate** in the Schedule of Technical Data which of the above Preferred Subcontractors will perform the Hydraulic Services works

This nomination shall be binding and no change to this nomination will be entertained after the letting of the Contract The Head Contractor should allow in his price all costs associated with this Contract requirement

Alternatives may be submitted (**additionally only to the above**) and may be considered

The tenderer shall comply fully with this Specification, drawings and any amendments issued during the tender period

The Principal	Bayview Golf Club
The address of the Principal	Pittwater Road Bayview NSW
The Site	Pittwater Road Bayview NSW

Defects Liability Period

Twelve (12) months

Goods and Services Tax (GST)

The Contract Sum shall be exclusive of GST

Scaffolding for Construction Purposes

All by the Contractor

Hoisting of Material

All by the Contractor

Payment

The sum for "**As Installed documents** shall be retained until such documents are submitted and approved

2 STANDARD GENERAL CONDITIONS

Conditions of Tendering

Tenders shall be submitted on the Tender Form provided, complete with the **Schedule of Technical Data** (STD) and **Schedule of Rates** (SOR)

Each Tenderer is to nominate equipment and list of Sub-Contractors in accordance with the Schedule of Technical Data

The tender must comply with the Specification drawings and any amendment issued during the tender period Alternatives may be submitted (additionally only to the above) and may be considered

Tenderers are advised to inspect the site, existing works and drawings prior to submission of tenders

Failure to carry out such inspections shall not alleviate the Contractor of any responsibility and any additional costs incurred through failure to observe these requirements and become fully acquainted with the existing works shall not constitute a variation to the Contract

Defects Liability

For the period of 12 months and from the approved and agreed date on which the equipment shall be placed into commercial service and notwithstanding any payment having been made in respect of such work or the issue of any certificate in connection therein, the Services Contractor, **hereinafter referred to as the HSC,** shall agree to provide all necessary labour for and to replace without additional cost any equipment supplied which is defective, worn excessively or failed in whole or in part during normal operation of the system or in the opinion of the Principal shows signs of weakness and of giving way or fails to comply with the intent of the specification

Any work of rectification carried out during the Defects Liability Period shall have a separate Defects Liability Period of equal duration commencing from the date that the rectification work is completed

Notice of Practical Completion

When as determined the works have been sufficiently completed, a Notice of Practical Completion for either part or whole of the works will be issued The date of this notice shall be deemed to be the date at which the associated equipment has been placed in commercial service

Expiry of Defects Liability

One month before expiration of the Defects Liability Period, give due notice in writing, to the effect that the Defects Liability Period is about to expire The Defects Liability Period shall be extended by 1 day for each days delay in the provision of such notice

Final inspection and testing of the system and equipment shall be made and test results *submitted in writing When, and if satisfactory, notice shall be provided and payment of the* retention monies will be approved

Contingency and Provisional Sums

Contingency and Provisional Sums shall be expended only on approval in writing Allow all Administration and Service charges associated therewith are deemed to be included in the Contract Sum

Reviews and Tests

Every facility is to be afforded for the review of any part of the work or apparatus during the course of manufacture and upon completion

Seven (7) calendar days notice shall be given that any system is ready for test All technical, artisan and unskilled labour and all necessary instruments required for testing shall be supplied

Upon completion, the works shall be tested under normal working conditions and as directed Such tests shall continue until it is demonstrated that the terms of the Specification have been complied with All defects disclosed during the tests shall be remedied immediately and fresh tests shall be carried out The HSC shall have no claim whatsoever due to the non detection and notification to the HSC of any errors, omissions or non compliance with the requirements of this contract

Noise

Each item of equipment is to be quiet in operation, all noise and vibration being reduced to a minimum

Any items of equipment, which are excessively or objectionably noisy in relation to the usage of surrounding areas, are to be acoustically treated or removed and replaced with quiet equipment

Standards, Rules and Regulations

The work shall be carried out strictly in accordance with the requirements of any properly constituted Authority having jurisdiction over the works, except where this Specification lays down standards and methods of work over and above such requirements

The work shall conform with all appropriate current Australian Standards

Under no circumstances shall work be carried out contrary to Standards and Authority's requirements If questionable work is so specified, seek approval prior to the work commencing

The HSC shall liase with, and submit all necessary drawings, details and notices to, the Authorities having jurisdiction and obtain stamped approvals and pay all fees in connection therewith A set of **stamped drawings** shall be provided by the HSC on site at all times

The HSC shall ensure that all works required shall be carried out by its employees, sub contractors and assigns in accordance with relevant Commonwealth, State and Local Government regulations including necessary accreditations associated with the Occupational Health and Safety (OHS) Act, including 'Prevention of Falls' section

Interpretation

The use of "provide," "supply, install in the specification and drawings shall be deemed to read supply, install, connect to related services, test, commission, make operational, maintain, provide warranty and guarantee in the terms of the specification , unless clearly stated otherwise

Tests on completion" shall mean such tests as are prescribed by the specification to be made by the HSC before the installation is taken over by the Principal

'Approved shall mean approved in accordance with the General Conditions of Contract

Words in the singular shall include the plural and words in the plural shall include the singular to the requirements of the context

Workmanship and Co ordination and Site Discipline

All materials, plant and equipment supplied shall be new and of first quality and installed to a high standard of workmanship

Where the contract includes specialist sections of work, these shall be co-ordinated fully into the contract works

One copy of this Specification and associated Drawings and Schedules shall be maintained on site whilst the works are in progress

The works shall be under the control of a Site Supervisor, who shall be available to attend site meetings, and site inspections and to supply all information as required and be responsible for interpreting and correlating all drawings issued

The right is reserved for approval and dismissal of the person appointed as Site Supervisor The appointment shall be for the duration of the contract and no replacement shall be made without prior notification and approval

Six working days shall be afforded for the response to requests for information during construction

All variations to the contract shall be dealt with promptly and when authorised shall be claimed in the following month's progress claim

The site shall be kept generally tidy and **all waste material removed from the site** and disposed of in an approved manner

Interruption to Services

Where applicable, all work in connection with the existing services shall be carried out at times to be agreed upon in order that interruption may be carried out with a minimum of inconvenience to the occupiers of the site

Confer with all parties whose work may be so affected

The works shall be programmed to suit staging and time requirements of the Contract

All such work shall be proceeded with expeditiously so that duration of interruption is reduced to a minimum

Rectify any faults caused by cutting in or connection to existing services No variation cost to the contract will be allowed therefore

Sections of existing installation so treated shall be governed by all provisions and standards of work equal to existing and as finally approved

Electrical Safety

Due to the potential presence of stray electrical currents' both below and above ground, the use of bridging conductors is strongly encouraged before the cutting of installed metallic piping

It is not a requirement of the contract that work be carried out on live switchboards Should such work be carried out the HSC shall assume full responsibility for all consequences of such action Protection device settings shall be set at the lower end to ensure instantaneous interruption of short circuit arc and faults

Detailed investigation prior to and extreme care during the drilling into existing walls and slabs in which live cables may be embedded

Drawings and Specification

Whenever a discrepancy exists within the Specification, Drawings or between the Specification and Drawings relative to the inclusion or exclusion of particular works, **carry out the greater works**

Hoisting

Allowance shall be made for any out of hours hoisting required in addition to the normal hoisting allowances

Variations

Variations which occur during the course of the project shall be bound by the same terms and conditions as if the variation were part of the original tender document and include for all ancillary works, materials and workmanship as laid down in this specification In particular, all variations shall include for necessary painting, labelling and drawings as specified hereinafter

Variations shall only be considered for approval after presentation of a current Construction Drawing or a final As Built" Drawing Variations will then be assessed by comparison with tendered drawings and documentation

3 HYDRAULIC SERVICES STANDARD CONDITIONS

Drawings and Information to be Supplied

A set of Construction Drawings showing the exact location and full details of all apparatus, connections, ducts, pipes, conduits, valves, circuiting, disposition of outlets major items of equipment fixtures appliances, and fittings, plinths, penetrations, position and size of maintenance access panels, etc , shall be provided **Construction Drawings shall be prepared as soon as possible to assist in reducing delays further into the construction sequence**

Consultant s Tender Drawings are conceptual only and shall not be re-issued and re-titled as Construction Drawings

During the preparation of Construction Drawings, obtain current architectural structural electrical, mechanical and other services drawings as applicable and prepare construction drawings compatible with same Maintain the currency of the construction drawings during the initial submissions and the subsequent progress of the works incorporating amendments and variations as necessary

Excavate and expose existing services and connection points where these affect the installation and prepare construction drawings in accordance with these actual locations and levels

Construction drawings shall be presented as prints, from CAD generated drawings, using scales of 1 100 down to 1 5 as necessary and in sufficient time to allow reviews and subsequent programmed manufacture and installation

The Services Contractor shall be held responsible for the accuracy of all drawings submitted The Services Contractor shall have no claim whatsoever due to the non detection and notification to the HSC of any errors, omissions or non compliance with the requirements of the contract

The amended transparencies shall be returned to the Services Contractor Where alterations are substantial, drawings shall be re-submitted

Any work commenced without review, shall be at the HSC's risk Unreviewed work or equipment may be rejected, and if so shall be removed from site

A minimum of ten (10) working days shall be afforded for the review of each drawing and each detail

On return of reviewed construction drawings, provide (6) copies of each construction drawing

As Installed Drawings

Within six (6) weeks of Practical Completion, the drawings shall be accurately amended where necessary, including Architectural changes Submit legibly drawn and accurate tracings compiled therefrom as "As Installed drawings for approval These shall include diagrammatic plans of all piping and/or circuiting showing all valves and/or controls correctly designated and numbered and located for ready recognition by the Principal s staff

The actual valves and/or controls on the equipment shall be similarly numbered and designated with metal tags

After review, three (3) sets of each "As Installed" drawing shall be submitted In addition CAD discs, in the dwg format containing all drawings and schedules shall be submitted

Operating and Maintenance Instructions

In addition, supply three (3) sets of typed and bound Operating and Maintenance Instructions for the whole of the plant and equipment including Wiring Diagrams These shall be comprehensive and include

- General description and operation of installation
- Schedule of equipment and capacities
- Fire Test Certificates
- Test and commissioning reports, measurements and control set points
- Manufacturer's data on –
  - Hot Water Heaters
  - Fire Hose Reels
  - Circulating Pump
  - Urinal Flush Systems
  - Urinal Flush Solenoid Valves
  - Gas Solenoid Valves
  - Tempering Valves
  - Backflow Prevention Device
  - Faucets
- Routine Maintenance

The above data shall be compiled in the following format

Section 1 - Index

All subdivisions of each section shall be indexed for quick reference

Section 2 - General Description and Capacities of Hydraulic Services

Each individual system shall be included as a sub-section and its function fully described Full details of flow rates, capacities, temperatures, etc and any automatic systems shall be included Each hydraulic control panel shall be fully described

Section 3 - As Installed Drawings

A complete set of ' As Installed" Drawings, reduced to A3 size, shall be included in the Maintenance Manual

Section 4 - Equipment

Include sub sections, as for Section 2, for all major items of equipment which shall be listed with manufacturer s name, model and/or type No , Serial No , size design ratings and all data necessary for reordering Details for component items, belts motors, bearings etc, shall be included for each piece of equipment

Section 5 Installation Maintenance and Operating Instructions

Include sub sections, as for Section 2, incorporating manufacturer s installation, maintenance and operating instructions for each item of equipment A comprehensive maintenance schedule to be followed throughout the warranty period shall be included

Section 6 - Commissioning Figures

Include sub sections, as for Section 2, and list all commissioning figures for each item of equipment

Section 7 - Plant Operating Instructions

Include sub sections, as for Section 2, and provide a complete description and sequence of the methods required for starting up, operating and shutting down the plants Include details as to normal and abnormal gauge readings, time delays, control set points temperatures, differentials, and other relevant variable items to enable checking and adjustments by the Principal s personnel Instructions shall also be included as to the action to be taken in the event of an **emergency situation**

Practical Completion

The sum of **$2 000 00** shall be retained at the time of issue of the Notice of Practical Completion This sum shall be held over and above any retention, service charges or other stipulated amounts and shall only be released after receipt of the above mentioned documents Should these documents not be received within eight (8) calendar weeks of the Notice of Practical Completion, seven (7) days notice shall be given of intent to produce said documents At the expiry of this notice the said documents shall be produced and the costs associated with the preparation shall be deducted from the sum nominated above

Pump Selection

Any pump heads indicated are estimates only and may differ to heads calculated for the particular equipment and valves offered and the final pipework routing Prior to purchasing pumps and motors, determine the actual head and flow requirements as well as hydrostatic heads and provide correctly sized pumps and motors

Commissioning of Hydraulic and Fire Services

The complete installation shall be inspected, tested and commissioned to the satisfaction of the relevant codes and Authorities Certification shall be provided to the effect that the installation has been completed, inspected, tested and commissioned in accordance with all relevant Codes and Standards by the HSC prior to the date of Practical Completion

Instructions for Principal s Personnel

Allowance shall be made for the detailed instruction of the Principal's personnel in the operation of all systems

PART B

SECTION 1

PARTICULARS OF WORK

1 1 EXTENT OF WORK

The work to be executed under this contract comprises the supply, installation, commissioning and maintenance for twelve (12) months of Hydraulic Services, in accordance with Specification No 15221 and Drawing Nos 15221/H01-H08

The above works, together with other minor works specified herein, shall be completed in all respects in accordance with this Specification, Drawings, the Annexed General Conditions such further instructions as may be given during the progress of the work and to the satisfaction of the stakeholders

1 2 GENERAL DESCRIPTION OF INSTALLATION

The hydraulic services shall consist of but not be limited to -

- Sub-Soil Drainage around the building, discharged to the stormwater main via pits
- Stormwater Drainage, via downpipes and open grates, from the roof, driveways, paths and landscaping to the stormwater main thence to the Pittwater Council stormwater pit
- Sanitary Drainage to Authority's Main
- Provision for Trade Waste Drainage from the Kitchen
- Sanitary Plumbing and venting within the building
- Cold Water reticulation from the Board's water main to fixtures and faucets Metering being provided by HSC
- Hot Water reticulation from gas fired & electric heaters to fixtures and faucets
- Gas reticulation to Hot Water heaters and kitchen fixtures
- Sanitary Fixtures and Faucets, Fittings and Equipment supplied and installed
- Gas fired/electric hot water heaters supplied and installed
- Fire Hydrant/Hose Reel Systems including piping and general reticulation, hose reels and dual head landing valves
- Fire Extinguishers
- Fire Hydrant main from Authority s main in Pittwater Road to the single Fire Hydrant Booster Valve

Each system shall include all excavation backfilling, valves, brackets piping supports, identification, pumps, outlets and all other associated items necessary to provide complete operating and approved systems unless otherwise noted

1 3 ASSOCIATED WORKS

All work covered by the Specification and Drawings shall be carried out by the Hydraulic Services Contractor (HSC) except as follows

The HSC shall provide all necessary information to the Contractor to enable the Contractor to carry out and coordinate the following work with other trades -

- Provision of a co-ordination construction programme which will enable HSC to execute the works
- Locate and co-ordinate all Hydraulic subcontract work Ensure that piping is installed such that there is clearance in ceilings for ductwork and recessed lighting fittings
- Installation and commissioning of the Fire Hydrant and Fire Hose Reel Systems at the beginning of the construction phase as required by the Authorities and BCA
- Provision of site facilities for site employees, ie sheds, ablutions, etc
- Making good after chasing
- Cost of power for testing and commissioning purposes
- Provision of temporary water during construction
- Provision of temporary 230 volt power and lighting during construction
- Provision of storage area for hydraulic equipment delivered to site However, security and protection of this equipment shall be the responsibility of the HSC
- Provision of access panels in inaccessible ceilings, walls, service ducts, and bulkheads for valves, cleaning eyes, etc All located by the HSC
- Provision of roof penetrations, kerbing and underflashing for vents, piping, flues and rain water heads Overflashing by HSC
- Building in of all pipe sleeves, cores and pipes as installed by the HSC
- Provision of concrete trench drains and kerbs All sumps, kerb inlets, grates and frames by HSC
- Provision of adequate fall in floors to all floor wastes
- Provision of Rain water box, gutters and overflows
- Provision of Down pipes
- Concrete bed for grease arrestor and arrestor pit support

- Concrete encasement for sanitary drainage beneath roadways
- Provision Fire Hose Reel and Hydrant cabinets Each cabinet to be provided with a 200x200x200 sump
- Provision of housings for Gas Meter and Regulators
- Provision of fall, in concrete, away from the grease arrestor lids in Car Park Area
- Provision of sufficient space inside columns for internal downpipes
- Provision of water spitters from external balconies and gutters
- Provision of clear ceiling space below beams for the installation of plumbing, pipework, lighting, mechanical ductwork and pipework and fire services
- Provision of fire rated doors as required throughout the building
- Provision of silt traps/haybales/detention basins to filter and detain wash-down water and stormwater from the site during construction
- Provision of concrete piers and beams to support underground piping in filled ground
- Provision of dished drains in voids and landscaping
- Final connections and commissioning of equipment supplied by others
- Provision of regulatory internal signage
- Provision of a termite control system where piping penetrates on-ground slabs
- Provision of a geotechnical report as to the presence of **corrosive soils** (acid sulphates)

Electrical

- Provision of temporary power and lighting during construction
- Provision of wiring and push button for the operation of the emergency gas solenoid valve in each kitchen Gas solenoid valve by HSC
- Provision of GPO's adjacent each gas fired domestic hot water unit system
- Provision of GPO s adjacent each electric hot water unit
- Provision of GPO's adjacent automatic urinal flushing solenoid valves

Fire

- Provision of fire trip cabling from the FIP to each of the gas solenoid valves in Kitchens Solenoid valves by HSC

Catering

- Provision of gas cooking equipment in all kitchens
- Provision of flame failure devices on all gas fired cooking appliances
- Provision of final connection (braided stainless steel) from gas isolation valve to gas fired cooking appliances Gas isolation valves by HSC
- Provision of stainless steel sinks, benches and equipment in all serverys, bars and kitchens Provision and connection of drainage and faucets for sinks and equipment by HSC
- Provision of gas regulators on all gas fired cooking appliances to regulate gas pressure from 2 75kPa to the required gas operating pressure for the particular appliance

1 4 SERVICE AND MAINTENANCE

For twelve (12) months from the date of Practical Completion, the complete works shall be fully serviced and maintained on a monthly basis This work shall complement the terms of the warranty

The service shall include the rectification of all defects and the clearing of all blocked or partially blocked drains and water pipes, treatment and replacement of any components/fittings affected by corrosion, testing and adjustment of controls, replacement of faulty indicator lights, **annual cleaning and testing of backflow prevention devices**, together with all other planned and preventative maintenance for good and proper service and operation of the installation

Fire Hydrants, Fire Hose Reels, and Fire Extinguishers shall be serviced and maintained in accordance with AS 1851

The HSC shall be responsible for issuing **The Schedule of Fire Safety Measures** for the installed essential services, to the Principal at Practical Completion and at the expiration of the warranty and maintenance period

1 5 SAMPLES

The following samples shall be submitted to site prior to ordering -

- All faucets
- All fixtures

Each sample shall be closely examined by the HSC with respect to ease of installation and operation Where the HSC feels that the selected fittings or equipment may present installation and operation problems notification shall be given prior to ordering Failure to advise shall not alleviate the HSC for costs to replace or modify such fittings or equipment

1 6 CONSTRUCTION DRAWINGS

Submit the following construction drawings -

- Penetrations

- Hot and Cold Water reticulation
- Stormwater and Sub-Soil drainage
- Sanitary Drainage and Plumbing
- Gas reticulation
- Hydrant and Hose reel reticulation
- Existing in ground services, locations and levels

1 7 SUBMAINS

The following submains shall be provided by the Contractor (ESC) Termination of these submains within the control panels shall be by the HSC

- Main Hot Water Control Panels

The above submain sizes and types are for tendering purposes only and may differ from the final sizes and types selected Liase with the Contractor (ESC) as to the capacity and type of submains and advise as to suitability prior to the ESC placing orders for the submains

No variations shall be accepted due to failure to liase in this matter

1 8 ELECTRICAL SAFETY

Due to the potential presence of 'stray electrical currents both below and above ground *the use of bridging conductors is strongly encouraged before the cutting of installed* metallic piping

It is not a requirement of the contract that work be carried out on live switchboards Should such work be carried out the HSC shall assume full responsibility for all consequences of such action Protection device settings shall be set at the lower end to ensure instantaneous interruption of short circuit arc and faults

Detailed investigation prior to and extreme care during the drilling into existing walls and slabs in which live cables may be embedded

1 9 CONFINED SPACES

If the HSC becomes aware of confined spaces that could create difficulties for personnel during future maintenance and operation of equipment, the HSC shall immediately refer such a scenario to the Contractor

1 10 SCAFFOLDING AND HOISTING

Allow for all scaffolding and hoisting necessary for the installation of the works

1 11 PROGRAMMING, STAGING AND HOURS OF WORK

Programming, Staging and Hours of Work shall be in accordance with the Head Contract requirements

Timing and programming are vital to the satisfactory execution of these works and submission

of a tender shall be with full acknowledgement by the tenderer that he has allowed for all normal and additional labour and working hours on any or all days of the week that may be necessary to adhere to agreed programmes and to achieve completion of the whole of the works by the due date all without additional cost to the stakeholders

It is anticipated that the site shall be open during all normal building trade working hours on Mondays to Saturdays

The HSC shall be required to perform and complete the work in accordance with the programme prepared and shall assist in scheduling and programming the work to fit in with the overall project construction programme

Should the HSC require to work on site in excess of normal working hours to maintain the time schedule, he shall obtain the necessary consent and he shall be deemed to have made the necessary provisions in his tender and no compensation shall be authorised for any additional costs involved

SECTION 2

PIPEWORK MATERIALS AND INSTALLATION

2 1 GENERAL INSTALLATION OF PIPEWORK

General

Tender Drawings shall be treated as Preliminary Drawings only The final location of all fixtures, fittings, faucets, floor wastes etc shall be established on site from the parties responsible, such locations being shown on Construction Drawings after reference to the latest Architectural Drawings

All levels nominated are preliminary only and shall be verified on site with the responsible parties prior to any works commencing

All piping shall be of best quality available and shall be in accordance with the appropriate current Australian Standards, in particular AS 3500 and AS 4041, suited to the installation design temperatures, pressures, types of fluid, surrounding environment, fire rating regulations, and authorities having jurisdiction All pipes sizes nominated are **nominal bore** and the associated overall pipe sizes are referenced in AS 3500 Installation of all piping shall be in accordance with AS 3500

Co-operate with other trades especially to running services in false ceilings and riser ducts and be aware of all ducts, pipes, beams, cable trays, ductwork and other obstructions together with the types and extent of false ceiling locations and ducts, etc , throughout the building, which would effect the positions of fittings and equipment

Services shall **not** be run in dedicated **fire hydrant/hose reel cupboards** except the piping serving the hydrants and hose reels

Services shall **not** be run in dedicated **electrical cupboards** or adjacent electrical equipment

The Contractor shall mark the positions of post tensioning cables in slabs prior to drilling Liaise with the Contractor in this matter

Fixing and Supporting

All pipes shall be securely fixed, such supporting and fixing being carried out without causing any distortion or damage to the pipes, or excess stress on the pipes and joints Pipe supports shall allow for expansion where necessary

Small bore piping, up to and including 25mm may be saddle clipped to the structure Provide PVC tape between pipe and saddle

Vertical piping up to and including 150mm shall be supported on Unistrut" galvanised channel section, or where necessary on fabricated mild steel angle frames, cold galvanised

Horizontal piping shall be hung from the structure using purpose made galvanised fixings, clamps (Unistrut) and rods Hangers for graded pipework shall be adjustable in length

Hangers around hot water piping shall have **wooden inserts** between piping and hanger clip to enable insulation to be installed up to either side of the insert

'Unistrut cast in channels shall be placed in formwork prior to concrete pours throughout the whole building

Piping 200mm and over shall be supported by suitable steel frame work or masonry foundations

Fixing bolts shall be galvanized Where exposed to the weather, all brackets, frames and fixings shall be hot dipped galvanized

Separate copper pipework from galvanised metal using 3mm thick PVC strips (Unichusion) or similar approved material

Pipework must not come into contact with any other service pipes or conduits

Where there is the possibility of vibration in the pipework, vibration isolators shall be incorporated in the mounting and the pipe shall be supported clear of the structure

Fixings to structural steel shall be by the use of clamps Where this is not possible, fixing details must be submitted to the Contractor for review

Fix to masonry with expandable type masonry anchors

Fixing to light weight structure for pipes above 50mm will not be permitted

Where piping is suspended within an inaccessible void, **stainless steel supports**, rods fixtures and fittings shall only be used

Refer to the Schedule of Standard Details, Sketch WSH47 & WSH49 for typical bracketing details

Chasing

Provide chasing where necessary Piping shall be securely fixed in place

Core Holes Sleeves and Penetrations

Set out all core holes and place sleeves in floors, walls, beams, columns, etc , in conjunction with the fixing of formwork and/or placing of concrete Details of core holes and penetrations in slabs, beams or columns shall be submitted to the Contractor for review

Sleeves shall be used for all copper and UPVC pipework Sleeves shall be **1 2mm thick copper,** and shall project through the structural slabs or wall by 20mm

Where pipes penetrate **fire rated structure**, the space between the sleeve and the pipe shall be packed with approved fire retardant material of high melting point (1200°C) in accordance with Specification C3 15 of the Building Code of Australia Sealing of penetrations around piping by the use of approved fire resistant/retardant pillows is **not** acceptable

Where PVC penetrates fire rated structure approved **fire collars** shall be used

Refer to the Schedule of Standard details, Sketch WSH22, for typical sleeves through a slab and wall

Check that dimensions of penetrations and service ducts, which are detailed on architectural construction drawings, as documented, are adequate prior to building work commencing

Provide and place individual core blockouts/slab seals Alternatively, floor wastes and cast iron stacks may be cast into position

All penetrations provided shall be made good to the fire ratings and water-proofing equal to the surrounding structure and finished to a surface suitable for finishing trades

Pipeline penetrations through structural beams shall be oversized one size or pipelines shall be encased in 50 mm polystyrene material prior to the concrete pour

Ensure that all penetrations for pipework or equipment are approved by the Structural Engineer

Diamond drill any hole not correctly located in the structure due to not being available to place missing or incorrectly placing blockout cores or sleeves

Water Proofing

Where pipes and floor waste risers penetrate walls or slabs, except in riser shafts the penetration shall be made completely waterproof by the use of puddle flanges, safety trays or other approved means

Condensation

Pipes, drain lines and floor wastes, which carry cold condensate from air conditioning and/or refrigeration plant, shall be effectively **insulated and vapour sealed** to prevent damage from and pooling of, condensate

Exposed Pipework Treatment and Painting

Excepting where located in car parks, plantrooms and basements, pipework shall, where possible, be concealed within false ceilings or in wall ducts However where it is necessary to expose piping, all such piping, including traps, fittings and brackets shall be matt finished chromium plated Where pipework emerges from or passes through a wall, floor or ceiling, matt finish chromium plated cover plates shall be installed

Pipework installed in open able cupboards is deemed to be exposed

Stainless steel and chromium plated exposed surfaces shall be protected during construction by an application of a strippable coating The coating shall not be removed until after completion of the job On removal of coating, the surface shall be cleaned with methylated spirits and polished with a soft dry cloth

All other pipework and equipment shall be treated as under heading "Painting and Labelling"

Sealing Open Ends

During the construction, leave all unfinished work in safe condition, protect the works against damage and loss and seal off open ends of pipe in such a manner as to prevent the entry of foreign matter into the lines, until the works have been handed over on completion or are operational

Cleaning of Services

After installation and prior to testing, all piping in each system shall be thoroughly cleaned and flushed out

Testing

Carry out a hydrostatic test on each system to the extent, pressure and time as specified herein

Examine all pipe joints for leakage Rectify where necessary and retest

All testing shall be carried out in the presence of and to the satisfaction of the Contractor

All necessary drainage plugs, hoses and other equipment necessary for the above tests, shall be provided Give two (2) days notice prior to testing

Carry out all other testing required by the Authority

Written records, duly endorsed, shall be kept of all tests carried out

Building Expansion Joints

Where pipes cross building expansion joints, approved pipe expansion joints shall be installed and be located in readily accessible positions Determine the location of building expansion joints at tender and make necessary allowances

2 2 EXCAVATION, BEDDING AND BACKFILLING

Trench Excavation

Keep adequate de watering equipment on the site at all times and keep *excavation water free*

The ground shall be excavated in the form of trenches to enable the various pipelines to be constructed in the locations shown on the drawings Trenches shall be excavated at uniform grades and in straight lines

Where excavation is required to a depth of 1 5 metres or more than trenching equipment capable of such excavation shall be used

All surplus excavated material shall be disposed of within the site as directed

Pit Excavation

Excavations shall be in straight lines to the required depth in compacted ground Filled or unsuitable material shall be removed and the base for the pit shall be compacted and *levelled to the required dimension Provide compacted blue metal or concrete under the pit* and up to 400mm on all sides for support

Extension risers added to the pit shall be sealed with an approved epoxy cement to ensure a watertight joint

Pipe connections to the pit shall be sealed with an approved epoxy cement to ensure watertight joint

Exceeding Excavation

If the section area of excavation is exceeded as a consequence of any injudicious working, slips, falls, blasting or for any cause other than by direction of the Contractor, then the cost to remove such extra material and make good and fill in the extra excavation with concrete, blue metal or approved filling as may be directed, shall be borne No extra payment will be made for excavation in excess of that required by the Drawing and Specifications

Excavation in Existing Pavements and Street

When excavating through existing pavements, saw the pavement to a depth of at least 100mm and then remove the pavement with pneumatic tools Excavation, laying of pipe and backfilling through the Street is to be carried out with the minimum possible interruption to the traffic

Investigate and locate all services laid in pavements and streets and coordinate the installation of existing and new services In addition, he shall be responsible to notify and comply with the requirements of other authorities having jurisdiction

Shoring of Excavation

Where necessary, for safe and efficient completion of the work erect shoring of sufficient strength and quality to prevent earth and other material slipping or falling in or being shaken from the side of the excavation As the work proceeds, all shoring and shall be withdrawn The supply, erection and withdrawal of all work shall be considered to be included in the cost of excavation

Where excavations are to be carried out within two (2) metres of buildings or footings metal shoring shall be used The shoring shall be driven into the ground prior to excavation and shall be removed in conjunction with the compaction of the backfill

A **geotechnical report** shall be provided, certifying that the compaction undertaken is suitable for the respective location

Precautions and Safeguards

Carry out the work in a careful, secure, safe and tidy manner, and take all precautions against accidents or damage, whether arising from bad workmanship breakage or machinery or plant, inefficient timbering, flooding or any other cause whatsoever Provide, erect and maintain warning signs, temporary fences, barriers and night lights adjacent to any works, such as trenches and excavations or stacks of materials which could be a danger to persons or traffic of any kind

Obey all directions given by Authorities concerned with regard to the provisions of lighting and barriers

Use of Explosives

The use of explosives shall not be permitted

Allowance for Hand Excavation

Where tie beams are used as part of on ground slabs allowance shall be made for hand excavation for services under these tie beams

Bedding Materials

Bedding for UPVC piping shall consist of uniformed size crushed hardstone or blue metal, maximum 10mm and minimum 2 4mm Bedding shall extend for the full width of the trench

Sub-Soil pipes shall be bedded as noted under clause 'Stormwater"

Fire, water and gas piping shall be bedded on a 150mm layer of sand

Grease Arrestors shall be bedded on concrete or blue metal as per manufacturers recommendation

Backfilling

After a length of pipelines has been constructed, tested and approved, and permission given to backfill, the trench shall be haunched, overlaid and filled as follows

- Soil and Waste Pipe

Where pipes are laid with less than the minimum cover as required by the Codes, they shall be covered in concrete to a minimum depth of 150mm In all other cases, backfill UPVC piping with material as specified for bedding, to a depth of 300mm

UPVC piping shall not be laid with less than the minimum required cover without special approval having been received

- Stormwater Drainage

  Backfill with sand to a depth of 300mm

- Water Supply Piping

  Backfill with sand to a depth of 300mm

- Gas Piping

  Backfill with sand to a depth of 150mm

The remainder of the trench, as required in each case above, may be filled with sandy loam or other granular material free from rocks or other objects that would be retained on a 13 2mm sieve and be liable to damage the pipes Each succeeding 300mm layer of backfill shall be consolidated and compacted same as the adjacent ground

- Sub-Soil Drainage

  After testing and approval, backfill with 20mm thick blue metal up to excavation level All backfilling being well consolidated

- Grease Arrestor

  Backfill sides with 20mm blue metal

Restoration of Surfaces

Restore any road, paving, grasses, bitumen surfacing, etc , of any paths removed or damaged

Any roads, paths, etc , so affected shall be restored with materials of the same nature and of equal quality as those contained in the original pavement and to the same standards of construction and the same depth so as to produce at the end of the maintenance period, a finished surface at least equal in all respects to that existing before the commencement of the works comprising the Contract

Concrete Protection

Where less than minimum cover is available over piping, concrete protection shall be provided

Refer to the Schedule of Standard Details, Sketch WSH14, for typical protection

Excess Material

All excess material shall be removed from the site and disposed of in an approved manner

Pipe Marking

The start, finish and change of direction of all underground piping shall be marked with **brass plates** suitably engraved and positioned on walls or at ground level, on flush concrete pads, in such a fashion as to be not readily removable

2 3 PAINTING AND LABELLING

Painting

The following items shall be painted -

- All exposed brackets
- All exposed piping sheathed and unsheathed
- All exposed metal conduit
- All equipment

All surfaces to be painted, including pre-painted equipment, shall be thoroughly cleaned by approved methods of all mill scale, dirt and/or grease before priming coats are applied

Equipment shall mean pumps frames, vessels, motors etc

Where practicable all equipment is to have a priming coat applied before delivery to site If during transit and/or installation, this priming coat is damaged then the damaged areas shall be reprimed before the finishing coat is applied

All paints used shall be capable of withstanding the temperatures of the surfaces encountered without deterioration and shall be applied evenly over all surfaces

Sheathing and brackets shall be given one etch priming coat and two finishing coats of gloss paint

UPVC piping exposed to weather shall be painted with acrylic paint within twenty four (24) hours of installation

Generally, where colours do not require co-ordination with adjacent architectural finishes, such as in plant and service areas, the colours listed below shall be used

Equipment		Blue 174
Pipework		
	Drain	Black
	Water	Green 228
	Gas	Light Beige 366
	Fire	Signal Red 537
Electrical Conduits/Trays		Light Orange 557
Plinths		Black
Frames		Light Grey 627

Where equipment is exposed within occupied areas or exposed to view generally, and this requires co-ordination with adjacent architectural finishes, colours shall be as nominated by the Architect

Refer to the Schedule of Standard Details, Sketch WSH52, for a typical hydraulics piping identification arrangement

Labelling

Provide engraved Traffolyte 100 x 75mm labels, black writing on white, on all heaters, pumps and other major items, indicating name and number

Co-ordinate naming and numbering with final control panel wiring diagram

Provide direction arrows and name labels of fluid on all pipework, equal or similar to Safetyman

All valves and controls shall be numbered and designated with stamped brass tags fastened to valves and controls with brass chain and hooks The tags shall be minimum 40mm diameter with 15mm letters and numbers

A separate list designating the number, function and location of each valve and control shall be provided

Numbering to correspond to As Installed" Drawings

Provide and install over the full length of any underground gas main and 150mm above, plastic warning paper to the requirements of the AGL

2 4 PIPES FITTINGS AND JOINTS

1 Cast Iron Pipes and Fittings for Sewer Waste Services – Stacks in Basement Car Park

Pipe and Fittings

Cast iron non-pressure pipes and fittings for soil, waste and vent pipelines, including adaptors for connections to copper and UPVC pipes shall conform to AS 1631 and shall be equal approved to Charmac Industries, complete with inspection openings All cast iron fittings shall be epoxy coated to approval

Joints

Pipe and fittings shall be joined as required by the Authority

All jointing shall be mechanical bolted gland joints, using neoprene ring gaskets Joints between copper, UPVC and cast iron shall be made using oversized neoprene gaskets designed for the purpose

Bolts and nuts shall be high tensile brass Brass shall have an ultimate strength not less than 460kPa

Lubricant for rubber ring gaskets and the outside surface for the spigot end of the pipe shall be of an approved non toxic vegetable base type and shall be applied in accordance with the manufacturer s instructions

Saddle joints shall be made with epoxy resin and banded

Support Intervals

Support vertical pipes below each socket and at intervals not exceeding 3m and where offset to the vertical at the mid point of each pipe section

Bends and upturns (in ground)

All upturn bends shall be robustly supported in a bed of concrete to overcome movement

2 UPVC Pipes and Fittings for Stormwater

Pipes and Fittings

Unplasticized Polyvinyl Chloride pipes and fittings shall be of an approved manufacture and shall conform to AS 1254 for underground use and AS 1273 for down pipes The pipes shall be of the solvent welded joint type or mechanically jointed and in either case they are to be jointed in accordance with the manufacturer's instructions

UPVC should be delivered, handled and stored in accordance with the methods recommended by the manufacturer

The pipe system shall be installed in accordance with AS 2032 and AS 3500

Support Intervals

Pipework shall be supported at the intervals as laid down in AS 1477

Bends and Upturns (in ground)

All upturn bends shall be robustly supported in a bed of concrete to overcome movement

3 UPVC Pipes and Fittings for Soil Waste and Vent Pipes

Pipes

Unplasticized poly-vinyl chloride and polypropylene pipes shall be manufactured in accordance with AS 1260 for sewerage and SWV applications

Installation shall be in accordance with AS 3500 and AS 2032

Not withstanding the above all pipes shall be manufactured and installed as required by the local Authority

Expansion joints shall be of an approved type

Fittings

Fittings for use with UPVC pipes or polypropylene shall conform to AS 1260 for drainage and SWV applications

Joints

Joints shall be constructed in accordance with the Authorities requirements, AS 1646 and AS 2032

The connections between all traps, or other fittings and/or equipment, shall be made with approved type threaded union to allow the easy removal of same

Support Intervals

Shall be in accordance with AS 1477, AS 3500 and AS 2032

4 Copper Pipes and Fittings for Hot, Cold Gas and Fire Services

Pipes

Copper pipes shall be solid drawn tube in accordance with AS 1432 -

Cold Water Service from Authority Main to site boundary control valve	-	**Type A**
Hot/Cold Water and Gas Services within Site boundary	-	**Type B**
Fire Services within Site boundary	-	**Type A**

Fittings

Copper fittings shall be copper or 70/30 cast brass, or gunmetal, conforming to current AS 1589 and AS 3688

Joints

Unless otherwise specified, all joints in copper pipes and between pipes and fittings shall be capillary type with silver soldered joint or a flared type, bronze welded Where screwed joints are specified, they shall be tinned, sweated and soldered, except for connections to taps and other equivalent fittings which shall be made with an approved type of threaded union to allow easy removal of same

Capillary fittings shall be used for jointing copper tubes up to and including 50mm diameter, and screwed jointing shall be used for taps and for connection to mains All fittings shall be tested and stamped by the appropriate Authority

Joints made with capillary fittings shall be carefully cleaned, fluxed and heated in accordance with the manufacturer s instructions The capillary space for joints shall be not less than 0 125mm and not more than 0 250mm

Bends constructed on site shall be free of kinks or wrinkles All tees shall be of approved manufacture

Before installation, pipes and fittings shall be thoroughly cleaned by blowing out, or as directed, to remove all scale, dirt and other extraneous matter Where necessary, the end of pipes shall be reamed or filed to remove all burrs

For jointing of pipes, a lap of at least four (4) and not more than six (6) pipe wall thicknesses shall be made at all connections and joints

Pipe Supports

Pipes shall be supported at the following intervals

Nominal Pipe Size	Horizontal Runs	Vertical Runs
15	1 5	1 5
20	1 5	1 5
25	2 0	2 0
32	2 5	2 5
40	2 5	2 5
50	3 0	3 0
65	3 0	3 0
80	4 0	4 0
100	4 0	4 0
150	4 0	4 0

Pipes shall also be guided at change in direction

5 Galvanised Pipes and Fittings for Fire Services - Above Ground

Pipes

Galvanised steel pipes shall conform to AS 1074 heavy duty type

Fittings

All pipes and fittings, including flanges and bolts shall be hot dipped galvanised

All fittings shall be mild steel, malleable fittings shall **not** be accepted except for gas installations

Joints

Joints shall be generally made using screwed on flanges Flanged joints shall be made with Table E flanges, complete with approved rubber type gaskets

Alternatively, mechanical grooved couplings may be used but only in accordance with AS 2419 and the manufactureres directions

Flanges connecting to cast iron hydrant piping shall be in accordance with AS 2129, Table E and be fitted with an approved rubber gasket

Pipe Supports

All pipework and fittings are to be supported by hangers and brackets in a manner that will allow for complete flexibility of the piping, so that expansion of piping due to temperature shall be unhindered

Anchors and thrust blocks shall be installed below ground to withstand loads, stresses and reactions imposed on the pipework

Where the method of support is not detailed or specified, the method proposed by the HSC is to be approved by the Engineer before installation is commenced

Pipes are to be supported at intervals not greater than those listed in the following Schedule

Where pipes are specified to be plated or painted, the supports shall be of similar finish

Pipe Nominal Bore	Intervals for Steel Pipe	
mm	Horizontal Runs m	Vertical Runs m
32	2 5	2 5
40	2 5	2 5
50	3 0	3 0
65	3 0	3 0
80	4 0	4 0
100	4 0	4 0
150	4 0	4 0

6 Reinforced Concrete Pipes for Stormwater - Underground

Concrete pipes shall be either Fibre Reinforced (FRC) manufactured to AS 4139 or Steel Reinforced (SRC) manufactured to AS 4058

All concrete pipes shall be installed in accordance with AS 3725, or as specifically detailed for this project The pipes are to be of the class specified on the Drawings or Class 2 if not specified

All pipes shall have rubber (black) ring joints to comply with AS 1646

2 5 STORMWATER

General Description

The work specified in this section comprises the complete supply and installation of (drain grates and frames), (suspended drainage) (underground drainage), (storm water pits and sumps) and discharge to Council's storm water main, together with subsoil drainage, all as indicated on drawings

Gutters, rainwater heads and down pipes are not included in this section

Piping Installation

Pipe Materials

Piping shall be of the following materials

Suspended drainage	-	UPVC
Suspended drainage (Roof Space)	-	UPVC
Underground drainage	-	UPVC, FRC, RCP concrete Class 2
Sub-soil drainage	-	UPVC

Fixing and Supporting

Refer previous general clauses In addition, **all upturn bends** shall be robustly supported in a bed concrete to prevent movement

In made up (filled) ground and in bad sand and clay conditions -

- Pipes shall be supported at the collars and also along the barrel at intervals not exceeding 3m on 230mm x 230mm brick on concrete piers supported on solid foundations or by approved timber or concrete friction piles driven to a sufficient and approved depth to support the pipes and other loads involved or by piles made of concrete poured into the approved size bore holes

- UPVC pipes shall be bedded on reinforced concrete lintels at least 150mm thick supported on piers or piles as specified in (a) above, located at intervals not exceeding 3m

Refer to the Schedule of Standard Details, Sketch WSH06, for a typical drainage pipe pier and beam support

Clean Outs

Minimum 100mm diameter clean outs shall be provided at the foot of all exposed vertical stormwater pipes Clean outs shall also be provided at all changes of direction

Testing

All horizontal pipes located in basement and occupied areas shall be hydrostatically tested Hold the test for twelve (12) hours minimum Test individual sections prior to building in by other trades

All vertical downpipes shall be tested to ensure that there are no obstructions (Contractor's debris, drink cans, etc) within the downpipes

AS THE DAMAGE CAUSED BY BLOCKED DOWNPIPES CAN BE EXTENSIVE, IT IS IMPERATIVE THAT THIS TESTING IS CARRIED OUT PRIOR TO HANDOVER TO THE PROPRIETOR

Gutters and Downpipes by Others

The Roofing Contractor shall make connection to the stormwater bends at Ground Level **Liaise with the Roofing Contractor in this matter to ensure satisfactory operation of the stormwater system**

Ensure stormwater bend openings are adequately sealed after installation as some time may elapse before the downpipes are connected

Robustly support upturn bends in a bed of concrete to insure against collapse and movement of the bend

Stormwater Pits, Kerb Inlets and Trench Grates

General

Construct stormwater pits, kerb inlets and trench grates where indicated, each having minimum internal plan dimensions as nominated and depth to suit the respective service Form bottom and sides of concrete 150mmm thick, reinforced with one layer No F82 ARC fabric in centre on sides Where pits are over 1 2m deep, install galvanised steel steps

Cement render bottom and side walls with minimum 13mm thick waterproof cement, render with steel trowel finish

Where approved, pre-cast pits, kerb inlets and trenches equal to Icon Industries Pty Ltd , manufacture may be used

Pit design and construction shall be certified by a Practising Structural Engineer

Hydrostatic valves to prevent 'tank float' when sumps are empty, to be provided in accordance with the manufacturer's recommendations

Refer to the Schedule of Standard Details, Sketch WSH01, for a typical pit

Grates, Covers and Frames

Provide and install **stainless steel heel proof** drainage grates, covers and frames in pits and concrete trenches where shown on drawings and in accordance with AS 3996

Co-ordinate with the Concreting Contractor to obtain the correct rebate to suit the frames

Form rebate in top of pits, kerb inlets and trenches and build in Class D (heavy vehicles) frames and covers Covers for change of direction pits shall be **cast iron/galv iron** with gratings filled with concrete and trowelled off to a smooth finish Open covers for pits and trench drains shall be **stainless steel heel proof** with open gratings Open pit grates to be **hinged** (Wilmac Manufacture) to associated frame

All open grates shall be **hinged** (Wilmac manufacture) and made easily operable for cleaning

Driveway Grates and Basement Grates shall be Gatic or Icon Industries of Class D where vehicular traffic loading may occur and Class B elsewhere (no vehicles)

External grates shall be Gatic or Icon Industries of Class D where vehicular traffic loading may occur and of Class B elsewhere (no vehicles)

Pit Grates/Covers and Trench Grates shall be of the nominal sizes as shown on drawings Actual sizes shall be co-ordinated with the Concreting Contractor

It is imperative that the frame and grate/cover are set in as one piece during formation of the trench/pit

Grates in Public Areas shall be ACO 200 stainless steel **heel proof**

One (1) set of suitable pit cover lifting handles, of Gatic manufacture, shall be supplied and handed to the Principal at the end of the project

Strainers

New stormwater pits are to be fitted with **stainless steel strainers**, 20mm grid using 2mm wire, covering the full plan area of the pit and to a depth to the top of the stormwater discharge pipe Each strainer shall be provided with a robust stainless steel handle in the centre of the strainer for easy removal

The strainers shall be suitable to prevent the entry of grass, leaves and cards/tickets to the stormwater system

Strainers shall be secured to the wall of the pit by means of a stainless steel slide device and installed such that the strainer can easily removed for cleaning and repairs

Stainless steel strainers over grated drain outlets shall be the width and depth of the drain and 250mm long

Silt Arrestors

All stormwater pits shall be installed such that a minimum 200mm exists between the base of the pit and the invert of the discharge pipe

Rain Water Outlets

Supply and install Galvin" stainless steel rain water outlets and of the same size as the associated downpipe

Rain water outlets shall be of entry and discharge arrangement as shown on the drawings

Jointing of outlets to downpipes shall be by approved means

Refer to the Schedule of Standard Details, Sketch WSH21, for a typical rain water outlet

Sub-Soil Drainage

General

Sub-soil drainage shall consist of holed/slotted 150mm and 100mm PVC pipes with spigot and socket joints, generally as indicated on drawings

Piping shall be laid to a minimum grade of 1 in 100 and bedded on 20mm blue metal to a depth of 100mm

The piping and blue metal shall be wrapped in a filter fabric equal approved to Geofabrics A24

Backfill trenches to 150mm below the floor slab with 15-20mm blue metal

Sub-soil Drainage of Terrace Planters

Sub-soil drainage of planters shall consist of 80mm (min) diameter corrugated flexible PVC agricultural pipes Pipes shall be laid in 20mm blue metal to a depth of 100mm in Terrace planters and shall be covered with one (1) layer of Fibremakers Limited "Terra Firma" stabilisation fabric Alternatively Atlantis' drainage cell wrapped in GEO fabric may be used

Piping shall be laid horizontally

The agricultural pipes shall be jointed to filtered domed underground Galvin' PVC rain heads or standpipes as noted on drawings, which in turn shall be jointed to the storm water down pipe Clearouts shall be provided at the ends of pipelines

The blue metal and Terra Firma stabilisation fabric shall cover the complete width and length of the planter

Sub-Soil Drainage under Basement Slabs

Refer to the Schedule of Standard Details, Sketch WSH17, for typical trench bedding of sub-soil drainage

Sub-Soil Drainage around Basement Walls

Refer to the Schedule of Standard Details, Sketch WSH18 & 19, for typical wall sub-soil drainage

Sub-soil drainage of basement walls shall consist of the 'Atlantis' cell system and shall be installed by other trades Connect to this system as shown on drawings

Stormwater Connections

Ascertain the depth, position and suitability of each stormwater discharge point/junction prior to commencement of work and advise if any adjustments are required to execute the work as shown on drawings and/or specified

Excavate for and make connection to these services as required by the respective authorities After inspection by the Contractor backfill with sand and compact for the full depth of the trench

Arrange with the Authority to make an inspection of the final connection to the stormwater main

Discharge of Storm Water

To Council Stormwater Main

Discharge to Council s underground stormwater main shall be via appropriately sized grated sumps all to Council s approval

2 6 PLUMBING & SANITARY DRAINAGE

General Description

The work specified in this section comprises the complete supply and installation of soil waste and vent pipes and reflux valve, (fixing and connecting sanitary fixtures supplied under this Contract), (connecting to waste fixtures supplied by others where specified hereinafter), and final connection to sewer

Piping Installation

Pipe Materials

Piping shall be of the following materials all as before specified under "Pipes, Fittings and Joints

Stacks	-	Cast iron (where exposed in Car Park)
Relief vents	-	UPVC
Main vents	-	UPVC
Branch soil and waste pipe	-	UPVC
Urinal drains	-	UPVC
Back vents	-	UPVC
Soil and Waste Piping (Underground)	-	UPVC
Soil and Waste Piping (Above ground)	-	UPVC,

Fixing and Supporting

Refer general clauses

Expansion Joints

Expansion joints shall be installed in soil, waste and vent pipes as per the requirements of the Authority

Inspection Openings and Cleaning Eyes

Cleaning eyes and inspection openings shall be provided in such positions that every internal part of any soil or waste pipe is accessible for inspection and cleaning and as required by the Authority

Refer to the Schedule of Standard Details, Sketches WSH08, 9 & 10, for typical clear outs and inspection pits

Vent Termination

Main vents shall terminate at the required height for habitable and non-habitable areas above the roof level Provide overflashing to roof penetrations

Set vents over below roof level as necessary to clear gutters roof flashings, structural steel, windows, fresh air inlets, etc

Flash vents to roof using approved rubber flashing collars sealed to both pipe and roof

Terminate vent with approved brass basket cowl at minimum required height above the roof

As the roof of the Club shall be colorbond, separation between the roof and any copper vent/piping shall be maintained by means of rubber or PVC collars to prevent electrolytic action

In addition to measured quantities on drawings allow an additional four (4) meters of piping and two (2) bends per vent to clear structural members in the ceiling space

Testing

Carry out a hydrostatic test on each system up to the level of the overflow gulley Hold the test for 15 minutes Leakage at arrestor pit reflux valves shall be a maximum of one (1) litre each

All sewer pipelines shall be subjected to a hydrostatic test of not more than 3m head at the downstream end and not less than 1 2m at the upstream and applied for at least 15 minutes, except that if the difference in level between the extremities of the line under test exceeds 1 8m the maximum head may be increased to 4 5m

No line shall be tested until 24 hours has elapsed after the last mortar joint has been made, and the line is to stand full of water for at least 15 minutes prior to testing

No leakage is permissible from any joint

Should any joint give leakage, it shall be made good by the Contractor and re-tested as above after 24 hours

Flow test all WC's, floor wastes and tundishes Test drain connections from dishwashers, sinks and basins

Floor Wastes Tundishes, Gullies and Reflux Valves

Generally

Floor wastes tundishes and gullies shall be installed where shown and of the connection size as shown on drawings, with the associated trap Floor penetrations shall be water proofed

Final location of floor wastes in plantrooms and service areas to be co-ordinated with other trades prior to installation Drawing of floor wastes layout to be submitted for review

Floor Wastes

Floor wastes shall be 100 x 100mm or 65 x 100mm as shown on drawings, and shall be complete with 100mm brass riser and chrome plated brass/stainless steel drainage grate Shower wastes are to have 80mm riser complete with brass chrome plated drain grate Palazzi traps shall be used where space is at a minimum

Floor drains in the Kitchens and Garbage Room shall be cast iron of the universal vari-level type, 100mm full opening and complete with sediment bucket, tertiary screen and cast iron grate, equal approved to Squareflow Series 300 by Speciality Plumbing Services

Refer to the Schedule of Standard Details Sketch WSH53 for a typical kitchen/garbage room floor waste

Floor drains in the Plantrooms shall be cast iron of the universal vari-level type, 100mm full opening and complete cast iron grate

Floor drains in the Workshop/Cart Area shall be cast iron of the universal vari-level type, 100mm full opening and complete with sediment bucket and cast iron grate, equal approved to Squareflow Series 300' by Speciality Plumbing Services

Refer to the Schedule of Standard Details, Sketch WSH53, for a typical workshop floor waste

Grates are to be set to enable the floor to be graded to same and shall be greased on the screw threads to allow easy removal

Tundishes

Tundishes shall be 1 2mm gauge, stainless steel material, 75 mm semi-circular minimum face diameter where fixed to walls and 75mm diameter where free standing

Where tundishes are provided for condensate removal from mechanical plant, liase with the MSC as to the **size and location of the tundishes** No variations shall be approved due to failure to liase in this matter

Refer to the Schedule of Standard Details, Sketch WSH23, for a typical tundish

Cart Wash Area Floor Waste

Provide 100mm cast iron silt traps in the cart wash area with 300mm minimum cast iron grate and strainer Set grate to enable the floor to be graded to same

Overflow Gulleys

Provide and install 100mm overflow gullies where indicated on drawing Protect with concrete surround The gullies shall be of vitrified clay complete with 150mm cast iron grate and terminate 150mm above the finished ground level

Reflux Valves

Provide and install approved reflux valves of Charmac manufacture, of drainage weight cast iron with rubber (black) ring joints

Arrestor Pits and Tanks

Provide arrestor pits and tanks as shown on drawings

Grease Arrestor Pits

The grease arrestors shall be of 1500 litres capacity and shall be of concrete construction equal approved to Icon Industries Pty Ltd

The arrestor shall be of dimensions similar to those shown on the Drawing and comply with all Sydney Water, Trade Waste Division, requirements

Concrete shall be in accordance with AS 3600 and shall comply with the following Strength 40 MPa at 28 days Maximum water/cement ratio 0 4 Minimum cement content 450 kg/cum Cement Type A Maximum course aggregate Size 10 mm Type of fine aggregate Clean hard sand such as Nepean River sand

All concrete shall be consolidated by vibrating formwork Reinforcement shall be welded steel mesh conforming to AS 1304 Laps in mesh where required shall be 230 minimum The pit shall be installed at the position and the level shown Extension ring joints shall be formed using the approved epoxy cement mortar over which a 300 wide bandage" shall be applied both internally and externally The internal surface shall be plastered smooth to make a strong and water tight joint The complete unit shall be externally coated with an epoxy bandage to the manufacturer s approved specification

Due to the intense cleaning fluids used, the inside of grease arrestor shall be **epoxy lined**

Lifting Pipes shall be passed through the lifting holes in the pit, and the unit shall be carefully lifted and lowered into position After installation, the lifting holes shall be sealed to the requirements of the manufacturer

Covers The top of the grease arrestor shall finish flush with the adjacent ground level and multi-piece Class D (heavy vehicle) cast iron covers are to be fitted Inspection openings are to be provided in at least two of the covers **Ensure covers comply with the latest Sydney Water Trade Waste configuration** The cover to frame contact shall be sealed water and air tight

Obtain Sydney Water approval of shop and installation drawings prior being constructed Make trade waste application to the Pollution Control Division of Sydney Water for discharge of waste

Prior to connection, the entering and leaving pipe connections shall be plugged and the pit filled to flood level to test for any leaks Hold water for twenty-four (24) hours Test shall be witnessed by the Contractor

Alternative constructions may be submitted at tender stage, for consideration

Grease Arrestor design and construction shall be certified by a Practising Structural Engineer

Refer to the Schedule of Standard Details, Sketch WSH03, for a typical grease arrestor

Sanitary Drainage

Generally

Excavate for and lay sewerage pipelines in UPVCor DICI pipe, together with all necessary bends, junctions, supports, protection, gulleys, pits, manholes, etc and make necessary connections

Refer to the Schedule of Standard Details, Sketches WSH07, 14 & 15, for typical drainage pipe installations

Bedding of Pipes

In excavation, which is in undisturbed virgin ground such as sand, soil or clay, the bottom of 90% of the pipe barrel shall be carefully bedded evenly throughout its length on approved bedding material

In made up (filled) ground and in bad sand and clay conditions -

- Pipes shall be supported at the collars and also along the barrel at intervals not exceeding 3m on 230mm x 230mm brick on concrete piers supported on solid foundations or by approved timber or concrete friction piles driven to a sufficient and approved depth to support the pipes and other loads involved or by piles made of concrete poured into the approved size bore holes

- UPVC pipes shall be bedded on reinforced concrete lintels at least 150mm thick supported on piers or piles as specified in (a) above, located at intervals not exceeding 3m

Refer to the Schedule of Standard Details, Sketch WSH06, for a typical drainage pipe pier and beam support

Laying of Pipes

Pipes and fittings shall be laid and lined into an even grade and conform to the grades and levels shown on the drawing/s

All soil and waste pipes shall be provided with **clean outs** at all changes of direction, junction and at minimum intervals of 18m on straight runs of pipe and elsewhere specified or indicated on drawings

Pipes Suspended from Slabs

Refer to the Schedule of Standard Details, Sketch WSH16, for a typical raft slab

Concrete Stops on Rubber Ring Jointed Pipelines

Where the gradient of any pipeline is greater than 1 in 5 concrete stops shall be provided as follows

(a) The stops shall be 150mm thick and built around the pipe extending from the bottom of the trench up to a height of 300mm above the pipe and recessed 75mm into each side of the trench

(b) The distance between stops shall not exceed 3000mm

Tolerances

The maximum permissible tolerance in any single length of pipe shall not exceed 3mm above or below true grade nor 3mm to either side of the true alignment, and the maximum departure from true grade shall not exceed 8mm between any two (2) points 10m apart Moreover, no portion of the work shall depart more than 30mm from the levels indicated on the drawings, unless otherwise instructed

Sewer Inspection Pits

Construct inspection pits where indicated on drawings, each having minimum internal dimensions of 900mm x 600mm and depth to suit pipe Form bottom and sides of 40 MPa concrete 150mm thick reinforced with one layer of ARC F82 fabric in centre of same, connect inlet pipes to pits, set pipes on concrete and bench around inspection eyes

Install where necessary galvanized mild steel steps to comply with requirements of the Authority

Cement render floor and walls, minimum 13mm thick, with water-proof cement render with steel trowel finish

Form rebate in top of pits and build in **cast iron** Gatic or Icon Industries frames and covers Fill gratings with concrete and trowel off smooth to steel trowel finish Grease cover surround prior to installation to allow ease of removal

Covers located within the building, (except basement car parks and tunnels), are to be cast iron, Class B (footpaths) or Class A (people, no vehicles) and are to have brass surrounds suitable for tile/carpet finishing Covers located outside the building and in basement car parks and tunnels shall be Class D (heavy vehicles)

Where approved, pre-cast pits equal approved to Icon Industries Pty Ltd may be used

Pit design and construction shall be certified by a Practising Structural Engineer

Refer to the Schedule of Standard Details, Sketch WSH10, for a typical drainage inspection pit and cover

One (1) set of pit cover lifting handles, of Gatic manufacture, shall be supplied and handed to the Proprietor at the end of the project

Sewer Connections

Ascertain the depth, position and suitability of each sewer junction prior to commencement of work and advise if any adjustments are required to execute the work as shown on drawings and/or specified

Excavate for and make connection to these services as required by the respective authorities After inspection by the Authority, backfill with sand for the full depth of the trench

Arrange with the Authority to make final connection to the sewer

2 7 COLD WATER

- **General Description**

The work specified in this section comprises the complete supply and installation of cold water service connection, reticulation, connection to fixtures, faucets and fittings, as after specified together with (connection to fire services), and testing

- **Piping Installation**

Pipe Materials

Piping shall be of the following materials, all as before specified under Pipes, Fittings and Joints

From Street Main to Meter

- copper

General reticulation from water meter

- All copper

Fire Hydrant Main from Street Main to Hydrant standpipe

- Copper

Note **Underground piping shall be protected from external corrosion by applying a covering of polyethylene sleeving around the piping with all joints fully sealed and made waterproof**

Fixing and Supporting

Refer general clauses

Where cold water hose cocks stand alone not adjacent to a wall the up stand copper pipe and isolation valve shall be fixed to a purpose made concrete bollard Refer to the Schedule of Standard Details, Sketch WSH42, for a typical bollard hose tap detail

Testing

Carry out a sectional hydrostatic testing to all cold water piping to 1 5 times the maximum working pressure Isolate all appliances and rubber flexible hosing prior to testing

Hold test for 30 minutes

Valves

Isolating valves shall conform with the following

Isolating cocks for fixtures and fittings - refer "Sanitary Fixtures and Faucets" section of this Specification

Isolating valves for water meters - loose jumper stop cock or gate valve to the requirements of the Authority, flanged over 50 mm

Isolating valves for fire mains shall be the OS & Y type with position indicator and they shall be padlocked and chained in the open position

Check valves shall be all bronze flanged swing check type

Where isolation valves are located in false ceilings, above hot water unit platforms or in other inconspicuous locations, provide **adequate signs** indicating location of the valve

- **Water Supply and Metering**

Make application to Sydney Water and pay all fees in connection with supply, connection and metering

Supply consists of

100 mm Fire Hydrant Service
100 mm Domestic Water Service

Pipe materials shall be as before specified

Arrange for connection to the Authority's mains Obtain and install the Authority's meters to their requirements, including valves

Refer to the Schedule of Standard Details, Sketch WSH57, for a typical water meter enclosure arrangement

Provide cast iron path box over each underground valve

- **Urinal Flush Control**

Provide and install an approved automatic flushing system for each urinal of "Rye" Series 7620 manufacture, incorporating infra red movement sensors, solenoid valve and air break device, one (1) for each wall hung urinal

Provide approved cisterns where necessary and manual control by-pass valve

Refer to the Schedule of Standard Details, Sketch WSH39 for a typical urinal flushing systems

The HSC shall provide a suitable 3 core flex and plug for each solenoid valve and connect to a GPO provided adjacent each solenoid valve by the Contractor (ESC)

Where multiple mechanisms are installed they are to be grouped together such that only one (1) access panel is required Allow for additional piping to the sparges

- **Backflow Prevention Devices**

Backflow prevention devices shall be installed to prevent the reverse flow of water from potentially polluted sources Devices shall be manufactured and installed as per latest version of AS 2845 Certification of testing shall be submitted at Practical Completion and at the end of the Warranty period

Double backflow prevention devices shall be installed on the water main to a Fire Hydrant Booster assembly

- **Mixing Valves - Hand Basins and Showers**

Provide also RMC tempering valves for water supplies to all other basins

2 8 HOT WATER

- **General Description**

The work specified in this section comprises the complete supply and installation of domestic hot water heaters, reticulation, recirculation and connection to fixtures faucets and fittings as hereafter specified

- **Piping Installation**

General

The piping installation shall be in accordance with the Cold Water section of this Specification

Make adequate allowance for expansion

Refer to the Schedule of Standard Details, Sketches WSH32 & 33, for typical pipe expansion provisions

Pipe Insulation

Hot water flow and return piping (on recirculating systems) shall be insulated with preformed 25 mm mineral wool or fibreglass insulation securely attached to the piping with *approved non-flammable adhesive and wrapped with sisalation 450 and* **banded** *to the pipes* Where exposed to view, in plantrooms or subject to the weather, fibreglass insulation shall be sheathed in 0 6 mm zincanneal

Hangers around insulated hot water piping shall have **wooden inserts** between piping and hanger clip The insulation shall securely attached to either side of the wooden insert and the sisalation shall overlap the insert

Pipe dead legs, up to 6 metres only may be insulated with 10mm fibreglass or other approved non-flammable insulation, securely attached and neatly covered using 450 Bradford sisalation Plastic insulation equal to Kemlag may be used for dead legs where **chased in walls** only

- **Hot Water Heaters**

Temperature Settings

The hot water units serving the Kitchen dishwashers shall be set to deliver water at 82 5 deg C All others shall be set at 55 deg C

Single Point Units

Single point units shall be supplied and installed where shown on plan, and shall be of Dux or similar approved manufacture The units shall be open vented, of 11 litre capacity each with 750 watt elements

The bases of all hot water units shall be treated with a thick coating of approved epoxy based paint **This work is to be done prior to delivery from the manufacturer**

Care must be taken when installing hot water units to prevent damage to the base and/or finished surfaces of the units Provide protection for hot water units during construction to prevent damage by other trades Any units damaged shall be replaced

Provide suitably sized drains (copper) from pressure relief valves for each hot water unit, discharge outside the building in safe locations or to tundishes where provided

The unit shall sit in a copper drip tray, 75mm high sides, on a 40mm high timber frame The timber frame shall support the cylinder not the outer casing A 50mm drain shall be run from the tray to drain

Continuous Flow Hot Water Heaters

The water heater systems shall be supplied and installed where shown on drawings and shall be of Rinnai manufacture Heaters shall be installed to current Australian Standards, as 3488 & AG102, and manufacturers installation requirements, including clearances, gas pressure flows etc

The hot water heaters shall be provided with the following,

electronic thermostatically controlled water inflow and outflow
inlet and outlet connections through base of unit
water flow control and sensor valve
copper steel heat exchanger
pressure/vacuum relief valve
safety over heat thermal cut-out fuse
gas and water solenoid valves
bimetallic overheat switch
mineral wool insulation
printed circuit board
flame failure cut-out
mains pressure
split gas burner
combustion fan
anti frost heater (where required)
electronic ignition

The unit shall be finished in painted galvanised steel or zincalume sheathing

Care must be taken when installing hot water units to prevent damage to the finished surfaces of the units Provide protection for hot water units during construction to prevent damage by other trades Any units damaged shall be replaced

The units outlet water temperature shall be factory pre-set prior to delivery of units

Heaters shall be surface mounted on walls It is recommended that wall mounted units be located approximately 1500mm from ground level to underside of unit Provide a security cage over the unit where required

The following continuous flow hot water heaters shall be located as listed below,

LOCATION	MJ INPUT
Change Rooms/Toilets	1000
Kitchen (Hot)	200
Kitchen (Warm)	200

The minimum incoming gas pressure required shall be for -

NG = 1 13 kPa

Maximum cold water inlet pressure shall be 1200 kPa

A 240 volt, 10amp waterproof GPO is to be located adjacent to each system and conduit for keypad wiring

- **Recirculating Pumps**

Domestic hot water recirculation pumps shall be provided and incorporated into each of the gas hot water systems as shown on drawings

Provide a by-pass line, with necessary valves (3), around each pump for maintenance

- **Mixing Valves - Hand Basins and Showers**

Refer to the Cold Water Section of this specification for specification and details on thermostatic and tempering valves

- **Valves**

Isolating valves shall be provided after each hot water unit, and across recirculating pumps

Balancing valves shall be provided in recirculation loops where shown on plan

Isolating valves shall be gate valves, bronze body, bronze disc and seat, and shall be flanged for 50 mm and above

Balancing valves shall be globe valves, bronze body, bronze disc and seat, and shall be flanged for 50 mm and above

Check valves shall be all bronze

Where isolation valves are located in false ceilings, above hot water unit platforms or in other inconspicuous locations, provide adequate signs indicating location of the valve

2 9 FIRE HYDRANT AND HOSE REEL SYSTEM

General

Fire Hydrant and Hose Reel systems and equipment shall be supplied and installed in the areas as shown on Drawings and in accordance with BCA AS 2419, AS 1221, and the NSW Fire Brigade

The HSC shall be required to install the hydrant and hose reel systems to conform with all Authorities and Codes

Water Supply

The water supply shall consist of the following and as shown on Drawings -

A 100 mm supply main from the 300 mm Towns Main in Pittwater Road to the dual standpipe

Fire Hydrants

The HSC shall supply and install approved fire hydrant landing valves in positions shown on drawings

Where external, valves shall be dual 65mm as above and located 750mm above the finished ground level The 100mm riser shall be made secure by means of an underground concrete anchor block The valve discharge is to be at 90 deg to the ground to facilitate connection of the fire hose External dual hydrants shall be provided with a brass outlet cap, chained to the hydrant valve

Refer to the Schedule of Standard Details, Sketch WSH55, for a typical external fire hydrant installations

Where hydrant valves are subject to damage from vehicles, ie car parks, driveways, etc they shall be protected by four (4) 150mm diameter, concrete filled, galvanised steel pipes The pipes shall be bedded into substantial concrete anchor blocks beneath the ground/floor level and positioned so as not to interfere with the use of the water hoses

A pressure tapping, with isolation valve, shall be provided at the most hydraulically disadvantaged hydrant to enable pressure readings to be taken during flow conditions

Fire Hose Reels

Provide and install, where shown on Drawings, fire hose reels manufactured and installed in accordance with the latest editions of AS 1221 and AS 2441

Allow for all necessary fixing and brackets for installation of the hose reels Cantilevered brackets shall be supplied where hose reels cannot be fixed directly to walls

Fire hose reel assemblies shall comprise hose reel with 36 metre of 19mm dia rubber hose, swinging arm hose guide with sufficient rollers to allow the hose to be easily uncoiled in any

direction, approved **brass** nozzle and 25mm loose jumper stop valve incorporated nozzle release

The shut off nozzle assembly shall be clearly and permanently marked to indicate the open and shut position of the valve

Marking shall be in accordance with AS 1221 The instruction plate shall be clearly and permanently marked and installed in a readily visible and fixed position, preferably on the right hand side of the stop tap so that the words are always legible and horizontal irrespective of reel movement The letters shall be approximately 5mm high The total length of the 19mm hose shall be clearly marked on the hose reel

Refer to the Schedule of Standard Details, Sketches WSH28 & 29, for typical fire hose reel installations

A pressure tapping, with isolation valve, shall be provided at the most hydraulically disadvantaged hose reel to enable pressure readings to be taken during flow conditions

Pipe Materials

All piping, fittings and joints shall be selected to suit the maximum working/test/boosted pressures, the environment in which the pipework is located and as required by the Authorities having jurisdiction

All above ground hydrant and hose reel piping shall be best quality galvanised steel piping and copper and installed in accordance with AS 2419

Below ground piping shall be **Table A** copper

Fixing and Supports

Refer previous general clauses for copper, cast iron, galvanised steel piping In addition, all upturn bends shall be robustly supported in a bed of concrete to prevent movement

Pipe Sleeves and Cover Plates

Where pipes pass through walls, tanks, floors or ceilings, copper pipe sleeves are to be provided and fixed and are to be at least one size larger than the pipe The space between the pipe and the sleeve is to be packed with approved fire retardant material

Refer to the Schedule of Standard Details, Sketch WSH22 for typical sleeves through a slab and wall

Grouting in of pipes will not be permitted

Where pipe sleeves are exposed to view copper cover plates are to be fitted

Anchor and Thrust Blocks

All pipework and fittings are to be supported by hangers and brackets in a manner that will allow for complete flexibility of the piping, so that expansion of piping due to temperature shall be unhindered

Anchors and thrust blocks shall be installed where necessary to withstand loads, stresses and reactions imposed on the above and below ground pipework Refer to the enclosed

Geotechnical Report for details of soil bearing pressures

Where the method of support is not detailed or specified, the method proposed by the HSC is to be approved before installation is commenced

Refer to the Schedule of Standard Details, Sketch WSH27, for typical in ground thrust blocks

Valves

Provide and install valves, as shown on Drawings, and as required by NSW Fire Brigades and Sydney Water

Valves shall be selected with due consideration to their function, maximum working/test/boosted pressures, the environment in which they are located and as required by Authorities having jurisdiction

Each valve function and operating position shall be identified by a label attached permanently to the valve

All valves shall be of a type approved by Sydney Water and all authorities having jurisdiction Metal, non ferrous tags shall be provided with the wording 'Fire Service Valve – Close only to service Fire Hose Reels" in compliance with BCA Clause E1 4 b V D bb

Stop valves shall be of the outside screw and yoke type fitted with an open/close indicator

Valves shall be placed in accessible positions for operating and repairs

All valves shall be carefully packed in with approved graphite packing and the threads shall be well coated with graphite and oil

In all cases approved types of valves only shall be used

Gate Valves 50mm nb bore and under are to be of an approved pattern of gunmetal with screwed ends and with valve seats cast integral with the body

The bore must be clean and unobstructed in this position

The valve shall be a wedge shaped, single piece casting and valve faces and seats shall be accurately machined

Gate Valves 65mm nb bore and over are to be of approved pattern with minimum Table E flanged ends

Valves under 100mm shall be of gunmetal construction

Valves 100mm and above shall be of cast iron construction with cast iron bonnet with brass or bronze stem to suit the required working pressure The wedge and associated trim shall be bronze

Swing Check Valves 50mm nb and under shall be of the horizontal pattern with screwed ends and a gunmetal body, with gunmetal swing check with a limit stop cast onto it to prevent it sticking in the open position

The body is to be globe-shaped and designed to give a clear passage equal in area to that of the pipe to which it is to be connected The face angle of the swing check in the "closed' position

is to be as near as practicable to the vertical so that only small pressure is required for it to swing open

The body is to be fitted with a screwed hexagon headed inspection cap or cover and is to have a flow direction arrow cast in raised metal on one side

The swing check is to be suspended from a loose fitting gunmetal spindle carried through a boss on the valve body and the boss fitted with a hexagon screwed cap and brass washer, the cap is to be recessed to take the end of the spindle

Swing check valves 65mm nb bore and over shall generally comply with screwed check valves but shall have cast iron bodies to suit the required pressure rating, flanged ends minimum Table E and bronze hinge, valve disk and seat

Air Bleed Cock shall be installed at the high point of each fire hydrant main riser to ensure all air is removed from the system Air cocks shall be fitted with hose connections to enable exhausted water to be discharged to a drain point

Hydrostatic Tests

All water piping shall be hydrostatically tested to a minimum pressure of 1700 kPa as per section 7 of AS 2419 Pressure testing of each section of the system shall be witnessed by the Contractor

All test pressures shall be maintained until the Contractor has satisfied himself as to the soundness of the pipework or equipment In no case shall the period be less than 3 hours

Commissioning

A complete schedule of other required commissioning test results as per section 7 of AS 2419 shall be provided together with the signed off checklists as per AS HB 92 & 93

Allowance shall be made for all additional tests required by all Authorities having jurisdiction

Service and Maintenance

The HSC shall service and maintain all hydrant and hose reel systems and components as laid down in the appropriate part of AS 1851 In particular the weekly Level 1 routines

2 10 GAS SERVICE

- **General Description**

Make connection to the existing underground polyethelene, 300kPa natural gas service, in Pittwater Road approximately where indicated on drawings

Install the gas regulator adjacent the entrance in the housing provided by the Contractor

Provide a 2 75 kPa gas service to the Kitchen and Hot Water installations

- **Piping**

External

300 kPa - Polyethylene
2 75 kPa - Copper

Internal

2 75 kPa - Copper

Provide capped off sockets for pressure gauges in the incoming gas main to each kitchen, plantroom,

Underground gas piping shall be graded back to the main gas line and above ground gas lines shall be graded as required under the Gas Fitting Rules and be fitted with tail pipes

- **Valves**

Provide approved isolation valves, in accordance with AS 4617, at each appliance and at each gas regulator

Provide also an emergency shut off valve external to the Boiler Room adequately labelled

- **Gas Regulators**

Gas regulators are to be of approved manufacture and be suitable for reducing the pressure of natural gas from 300 kPa to 2 75 kPa

Each regulator is to incorporate an over pressure shut off (OPSO) device designed to shut off the gas supply in the event of the low pressure discharge rising to 5 kPa

Regulator shall have the following capacity

Ground Floor 2000 MJ

- **Solenoid Valve - Kitchens**

Supply and install in each kitchen an emergency gas solenoid valve, of **Schroder** manufacture, in the main gas supply line to the kitchen Provide a by-pass line, with necessary valves, around the solenoid valve for maintenance purposes

Ensure there is adequate space for the removal of the solenoid valve

The solenoid valve shall be operated by an emergency gas isolation button (mushroom type) located at the kitchen door The button and all necessary wiring between the valve and the button shall be supplied and installed by the Contractor (ESC), however, it is the responsibility of the HSC to liaise and co-ordinate with the Contractor (ESC) in this matter to ensure correct operation of the system Reset facilities shall be provided

Provide an **auxiliary relay** on the solenoid valve to effect shutdown in the event of a fire alarm at the FIP The ESC shall bring cabling to each solenoid valve and terminate therein It shall be the responsibility of the HSC to liaise and co-ordinate with the ESC in this matter to ensure correct operation of the system Reset facilities shall be provided

- **Rules and Regulations**

The gas reticulation shall be installed in accordance with the AGL Gas Fitting Rules and AS 5601 Polyethylene piping shall be installed by approved installers

Provide over the full length of any gas main plastic warning paper to the requirements of AGL and AS 5601

Provide over the full length of any non metallic gas main an insulated trace wire terminating in path boxes

- **Kitchen, Bar & Servery Equipment**

Allow for the provision of flexible, high pressure, stainless steel braided connectors from all gas isolation valves to associated kitchen and servery equipment provided by other trades

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SECTION 3

SANITARY FIXTURES AND FAUCETS

3 1 SANITARY FIXTURES AND FAUCETS

Generally

Supply and fix in position all sanitary fixtures as specified hereafter

Where fixtures are nominated as being supplied by other trades, the HSC shall allow for all work necessary in making connections to the water and sewerage systems

The installation of all sanitary fixtures shall be to the approval of the Sydney Water and shall be complete with all necessary fixing brackets, supports, traps and wastes, etc

Faucets shall be installed to each fixture as required and/or as nominated hereafter

All supplied fixtures and faucets shall be registered with the WELLS Regulator and be appropriately labelled

Refer to the Schedule of Standard Details, Sketch WSH50, for typical guide to water connections to sanitary fixtures

Fixtures and Faucets

The following specified items shall be used for tender purposes only Final selection of fixtures and faucets shall be made in conjunction with the Principal before equipment is ordered

- **Cleaners Sink**

Cleaners sink shall be **Caroma V680** with chromium plated hinged grates, wood rest pads and 50mm waste outlet and plug

Cleaners sinks are to be supported on "Screw to wall white plastic coated brackets Type D 130

Connect outlet to drain using 50mm brass trap and copper discharge pipe

- **Vanity Basins**

Vanity basins in toilets shall be Caroma Cameo in selected colour with single tap hole for a mixer and 40mm waste outlet

Basins are to be supported from the adjacent wall using plastic coated steel cradle

Each basin is to be set level and be securely fixed at a height to suit the vanity top as provided by other trades, using tie hooks secured to the underside of the basin and screwed to the soffit of the bench top Seal basin to the bench top with non setting mastic with excess mastic cleaned off to provide a neat appearance

Provide 40mm plug and washer, and connect to waste using 40mm brass matt finish chromium plated trap and waste pipe

The threaded section of the plug and washer shall be cut back as necessary to allow the nut of the trap to fit neatly under the basin

Waste pipes shall be installed as close as possible to the adjacent wall

Where pipes pass through floor, use pipe sleeve and cover plate as before specified

- **Hand Basins**

General

Each basin is to be set level and be securely fixed to the wall using concealed brackets

Provide 40mm plug and washer, and connect to waste using 40mm brass matt finish chromium plated trap and waste pipe.

The threaded section of the plug and washer shall be cut back as necessary to allow the nut of the trap to fit neatly under the basin

Waste pipes shall be installed as close as possible to the adjacent wall

Where pipes pass through floor install chromium plated cover plates

Disabled Persons Toilet

Hand basins in the Disabled toilets shall be Caroma Laser 800, in selected colour, white with single tap hole for a long handled mixer

The installation shall generally be as specified above except that a 'P' trap shall be used and the waste pipe shall be concealed in the specially thickened wall behind the basin

Hand basins shall be fixed and connected to drain as above Fixing brackets shall be of the concealed type D206

Kitchens/Bars

Hand basins in the Kitchens and Bars shall be as specified by HRC

- **WC Pans**

After the first pan is installed, **no other pans** shall be installed until the Contractor has sighted and approved the installation of the first pan Once approved, the first pan shall be the benchmark installation for all subsequent pans

Close Coupled Suite

WC pans, not backing onto plumbing ducts, shall be **Caroma Leda 537** low down close coupled toilet suite in selected colour and complete with "S or P" trap as required in the respective location

Each pan shall be secured to the floor using D159 concealed fixing brackets, plastic bushes and chromium plated bolts with acorn heads

Provide an approved mastic gasket between the floor and the pan to take up all irregularities and thoroughly clean off all surplus mastic

WC pans shall be set level **12mm above the finished floor** and be cement frogged to the concrete floor with 2 1 sand and cement composition

The floor shall be sparrow picked and well wetted with water before setting the pan

On completion of the installation, fit securing nuts to lock vanity top in position

Toilet seats shall be of selected colour, Pedigree 2 with double flap

Disabled Persons Suite

WC pans in the Disabled Toilet shall be **Caroma Concorde 510** and are to be installed such that the seat and flap will rest against the grab rail and remain upright whilst still being freely hinged

Provide Pedigree double flap toilet seats in selected colour for each WC

Where cisterns, **with half/full flush facility**, are located remotely on the other side of the wall to the WC, push buttons chrome plated brass, shall be centred with the WC's

In all other respects, the toilet suite shall be as above specified

- **Urinals**

Urinals shall be wall hung **Caroma Doulton Torres 621**

Provide an automatic flushing system, one for each urinal, located in the ceiling above each of the urinals

The flushing systems shall be controlled as before specified in Section 2

- **Faucets**

Faucets shall be Hansa 'Prado' single point mixers, ceramic discs, matt finished, chrome plated and vandal proof with coloured coded handles

Allow for building into walls, wall anchors for combined faucets or any other fitting supplied with the faucet

Basin and Sink sets shall comprise fixed spout and aerator

The basin set for the hand basin in the Handicapped Persons toilet shall be as above but with lever operated handles

Shower sets shall comprise hot and cold-water mixers and riser chased in wall

Shower rose shall be the Irwell Z30 anti vandal, wall type rose

All shower mixers are to be installed in an easily accessible location, where necessary, shower cocks and shower roses are to be offset

Cistern cocks (WC) shall be Catalogue No SG57

Hose Taps shall be 20mm minimum chromium plated in each toilet, kitchen and servery as indicated on drawings Provide hose taps for connection of cold and hot water to each dishwashing machine Hose taps in plant rooms, service areas and external shall be natural brass and shall have an isolation valve (stop tap) adjacent Hose taps shall incorporate a back flow prevention device

Hose taps in all toilets and external shall be provided with **vandal proof operators**

- **Isolation Cocks and Check Valves**

In addition to the faucets specified, provide and install isolation cocks to all W C and Urinal cisterns stop cock and check valves to all mains pressure hot water units, and isolation valves for each cold water and hot water system

Isolation valves where exposed to view shall be of the same type as those specified for adjacent fittings Where they are concealed in cupboards or plumbing ducts, they may be of natural brass finish

- **Kitchen, Bar & Servery Equipment**

Allow for the provision of flexible, high pressure, stainless steel braided connectors from all hot and cold isolation valves to associated kitchen, bar and servery equipment provided by other trades

SECTION 4

SCHEDULE OF STANDARD DETAILS

DRAWING NO	DESCRIPTION
WSH01	PRE-CAST STORMWATER SUMP OR SEWER PIT
WSH03	PRE-CAST GREASE ARRESTOR
WSH06	PIER AND BEAM SUPPORT
WSH10	SANITARY DRAINAGE INSPECTION PIT
WSH12	GARBAGE ROOM FLOOR WASTE
WSH14	PROTECTION OF DRAINAGE PIPE
WSH15	PIPE SUPPORT BEAM
WSH16	RAFT SLAB FOR DRAINAGE PIPE
WSH17	SUB-SOIL DRAIN, TRENCH BED
WSH18	SUB-SOIL DRAIN, SOLID WALL
WSH19	SUB-SOIL DRAIN, CAVITY WALL
WSH22	PIPE SLEEVE THROUGH SLAB
WSH23	COPPER TUNDISH
WSH27	THRUST BLOCK
WSH28	FIRE HOSE REEL INSTALLATION
WSH32	EXPANSION LOOP FOR HOT WATER PIPING
WSH33	PROVISION FOR EXPANSION IN HOT WATER PIPING
WSH34	HOT WATER UNIT SAFE TRAY
WSH39	ECONOFLUSH AUTOMATIC FLUSHING SYSTEM (NOCISTERN)
WSH41	BOILING WATER UNIT AND TUNDISH
WSH42	BOLLARD HOSE TAP
WSH47	SUSPENDED BRACKET DETAIL
WSH49	BRACKETING TO SLAB

WSH50	SANITARY FIXTURES - WATER CONNECTIONS
WSH52	PIPING IDENTIFICATION
WSH53	FLOOR WASTE BASKET ARRESTOR
WSH55	DUAL HYDRANT VALVE
WSH57	WATER METER ENCLOSURE

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF TECHNICAL DATA
(All data to be in Metric SI Units)

FIRE HOSE REELS

Make

ISOLATION VALVES

Maker's Name

Model No

CHECK VALVES (Water Service)

Maker s Name

Model No

CONTROL PANELS

Maker s Name

REFLUX VALVES (Sewer Quality)

Maker's Name

Model No

SUB-CONTRACTORS

CONSTRUCTION DRAWINGS

EXCAVATION

ELECTRICAL

PIPING

INSULATION

COMMISSIONING

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

Tenderers shall complete this section in full and the rates entered shall be used for determining contract price variations

Prices **(excluding GST)** shall include for supply, installation, trenching, removal, cartage, fees, backfilling, sand, blue metal, fill, sockets running joints, connectors, back nuts, bolts, nipples and standard pipe fixings, such as clips, saddles, brackets, straps, screws, nails, tool fastenings, masonry anchors, labelling, identification and the like and all labour, plant equipment, drawings and preliminaries

Copper Piping in Cold Water, Hot Water, Gas and Fire Systems

100mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)
80mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)
65mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)
50mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)

Above equipment fully complies with Specification

Tenderer	Signature	Date

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

40mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)
32mm dia	pipe run (m)
	extra for 6mm insulation (m)
	extra for 25mm insulation (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
	gate valves (No)
	stop valves (No)
25mm dia	pipe run inclusive of bends (m)
	pipe run including bends, chased in wall (m)
	tees and reducing tees (No)
	extra for insulation (m)
	gate valves (No)
	stop valves (No)
20mm dia	pipe run inclusive of bends (m)
	pipe run including bends, chased in wall (m)
	tees and reducing tees (No)
	extra for insulation (m)
	gate valves (No)
	stop valves (No)
15mm dia	pipe run inclusive of bends (m)
	pipe run including bends, chased in wall (m)
	tees and reducing tees (No)
	extra for insulation (m)
	gate valves (No)
	stop valves (No)

UPVC Piping in Stormwater Systems

150mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducing tees (No)
100mm dia	pipe run (m)
	extra for bends (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

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SCHEDULE OF RATES

extra for tees (No)
extra for reducing tees (No)

Galvanised Steel Hydrant Piping

100mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
80mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)

Polyethelyene Piping in Gas System

80mm dia	pipe run (m)
	extra for plain bend (No)
	extra for reducer (80x50) (No)
	extra for tees (No)
	extra for reducing tees (No)
50mm dia	pipe run (m)
	extra for plain bend (No)
	extra for reducer (65x50) (No)
	extra for tees (No)
	extra for reducing tees (No)

Cast Iron Piping in Waste Systems

100mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (100x80) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)
80mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (80x65) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

UPVC Piping in Waste and Vent System

150mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (150x100) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
100mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (100x80) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
80mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (80x65) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
65mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (65x50) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
50mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (50x40) (No)
	extra for reducing tees and Y Junctions (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

	extra for tees and Y Junctions (No)
	extra for sink S trap (No)
	extra for tundish (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
40mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (40x32) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for sink S trap (No)
	extra for tundish (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl
32mm dia	pipe run (m)
	extra for inspection bends (No)
	extra for plain bends (No)
	extra for reducer (32x25) (No)
	extra for reducing tees and Y Junctions (No)
	extra for tees and Y Junctions (No)
	extra for sink 'S' trap (No)
	extra for tundish (No)
	extra for expansion joint (No)
	extra for flashing (No)
	extra for cowl

Copper Piping (Water, Gas, Fire) in Trench

150mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducer (150x100) (No)
	extra for reducing tees (No)
	extra for path box and stop valve (No)
100mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducer (100x80) (No)
	extra for reducing tees (No)
	extra for path box and stop valve (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

80mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducer (80x65) (No)
	extra for reducing tees (No)
	extra for path box and stop valve (No)
65mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducer (65x50) (No)
	extra for reducing tees (No)
	extra for path box and stop valve (No)
50mm dia	pipe run (m)
	extra for bends (No)
	extra for tees (No)
	extra for reducer (50x40) (No)
	extra for reducing tees (No)
	extra for path box and stop valve (No)

UPVC Sewer Piping in Trench under Slab

150mm dia	pipe run (m)
	extra for bends (No)
	extra for pipe set vertically (m)
	extra for bend set vertically (No)
	extra for junction (No)
	extra for connection (No)
	extra for reflux valve (No)
	extra for joint (UPVC to Copper) (No)
	extra for joint (UPVC to VCP) (No)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)
100mm dia	pipe run (m)
	extra for bends (No)
	extra for pipe set vertically (m)
	extra for bend set vertically (No)
	extra for junction (No)
	extra for connection (No)
	extra for reflux valve (No)
	extra for joint (UPVC to Copper) (No)
	extra for joint (UPVC to VCP) (No)
	extra for hard rock excavation (cu m)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

extra for soft rock excavation (cu m)
extra for cutting through 150mm concrete (m)

UPVC Sewer Piping in Trench Outside Building

300mm dia	pipe run (m)
	extra for bends (No)
	extra for pipe set vertically (m)
	extra for bend set vertically (No)
	extra for junction (No)
	extra for connection (No)
	extra for joint (UPVC to Copper) (No)
	extra for joint (UPVC to VCP) (No)
	extra for terra firma (m)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)
225mm dia	pipe run (m)
	extra for bends (No)
	extra for pipe set vertically (m)
	extra for bend set vertically (No)
	extra for junction (No)
	extra for connection (No)
	extra for joint (UPVC to Copper) (No)
	extra for joint (UPVC to VCP) (No)
	extra for terra firma (m)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)
150mm dia	pipe run (m)
	extra for bends (No)
	extra for pipe set vertically (m)
	extra for bend set vertically (No)
	extra for junction (No)
	extra for connection (No)
	extra for joint (UPVC to Copper) (No)
	extra for joint (UPVC to VCP) (No)
	extra for terra firma (m)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)
100mm dia	pipe run (m)
	extra for bends (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

extra for pipe set vertically (m)
extra for bend set vertically (No)
extra for junction (No)
extra for connection (No)
extra for joint (UPVC to Copper) (No)
extra for joint (UPVC to VCP) (No)
extra for terra firma (m)
extra for hard rock excavation (cu m)
extra for soft rock excavation (cu m)
extra for cutting through 150mm concrete (m)

UPVC Sub-Soil Piping in Trench

150mm dia
pipe run (m)
extra for bends (No)
extra for pipe set vertically (m)
extra for bend set vertically (No)
extra for junction (No)
extra for connection (No)
extra for joint (UPVC to Copper) (No)
extra for terra firma (m)
extra for hard rock excavation (cu m)
extra for soft rock excavation (cu m)
extra for cutting through 150mm concrete (m)

100mm dia
pipe run (m)
extra for bends (No)
extra for pipe set vertically (m)
extra for bend set vertically (No)
extra for junction (No)
extra for connection (No)
extra for joint (UPVC to Copper) (No)
extra for terra firma (m)
extra for hard rock excavation (cu m)
extra for soft rock excavation (cu m)
extra for cutting through 150mm concrete (m)

Reinforced Concrete Pipe in Trench

450mm dia
pipe run (m)
extra for bends (No)
extra for junction (No)
extra for connection (No)
extra for hard rock excavation (cu m)
extra for soft rock excavation (cu m)
extra for cutting through 150mm concrete (m)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

375mm dia	pipe run (m)
	extra for bends (No)
	extra for junction (No)
	extra for connection (No)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)
300mm dia	pipe run (m)
	extra for bends (No)
	extra for junction (No)
	extra for connection (No)
	extra for hard rock excavation (cu m)
	extra for soft rock excavation (cu m)
	extra for cutting through 150mm concrete (m)

Excavation

extra for hard rock excavation (cu m)
extra for soft rock excavation (cu m)
extra for sand excavation (cu m)
extra for clay excavation (cu m)
extra for shale excavation (cu m)

Core Holes

100mm Diameter

Up to 150mm deep (No)

150mm to 225mm deep (No)

150mm Diameter

Up to 150mm deep (No)

150mm to 225mm deep (No)

Fittings and Fixtures (without faucets and traps)

Vanity Basin (No)

Hand Basin (No)

W C suite with "S" trap (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

Hose Reel supplied and installed (No)

Faucets (installed)

Sink sets (No)

Basin sets (No)

Shower sets (No)
(including rose)

Hose Tap (Toilet)

Hose Tap (external)

Floor Wastes

100mm x 65mm
plain (No)
single inlet (No)
double inlet (No)
triple inlet (No)

100mm x 50mm
plain (No)
single inlet (No)
double inlet (No)
triple inlet (No)

Clear Outs

100mm PVC (No)

Reflux Valve

100mm (No)

150mm (No)

Inspection Pits - 1000mm deep

1200mm x 1200mm
with light duty cover (No)
extra for heavy duty cover (No)
extra for brass edge strips (No)

900mm x 900mm
with light duty cover (No)
extra for heavy duty cover (No)
extra for brass edge strips (No)

600mm x 600mm
with light duty cover (No)

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD, BAYVIEW

HYDRAULIC SERVICES

SCHEDULE OF RATES

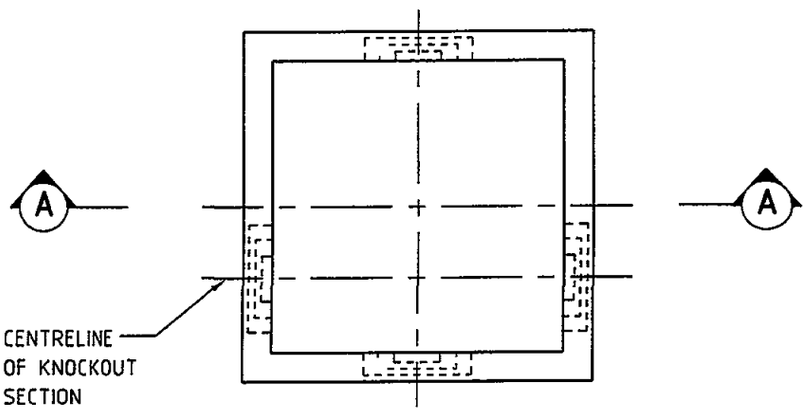
extra for heavy duty cover (No)
extra for brass edge strips (No)

Labour Rate

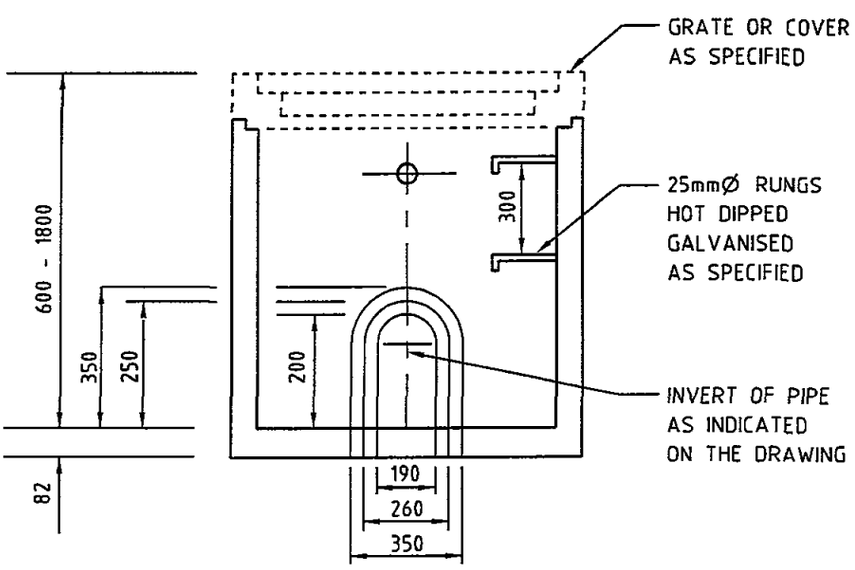
Charge out labour rate (including profits, overheads and all ancillary charges) $

Above equipment fully complies with Specification

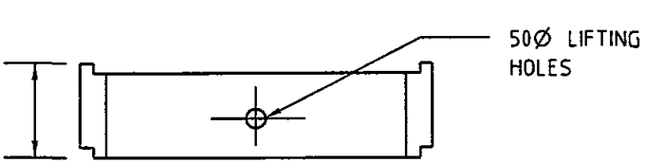
Tenderer _____ Signature _____ Date _____



PLAN



SECTION A - A



EXTENSION RISER

NOTES

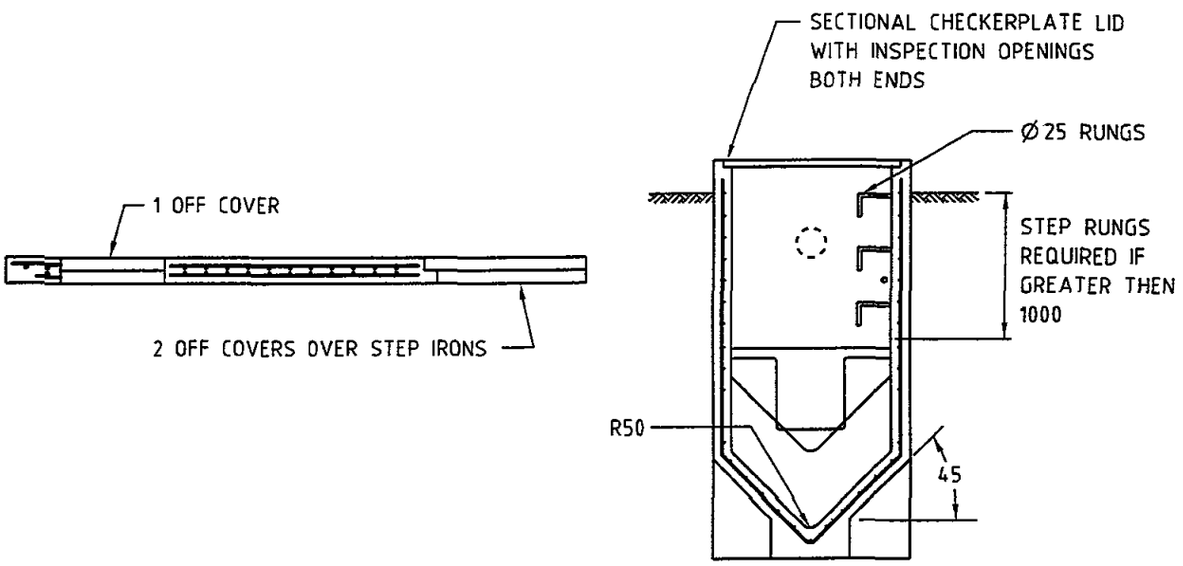
1 WHERE DEPTH OF PIT EXCEEDS 120 METRES STEP IRONS TO BE PLACED AT 300mm INCRIMENTS

2 REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS AND SPECIFICATION

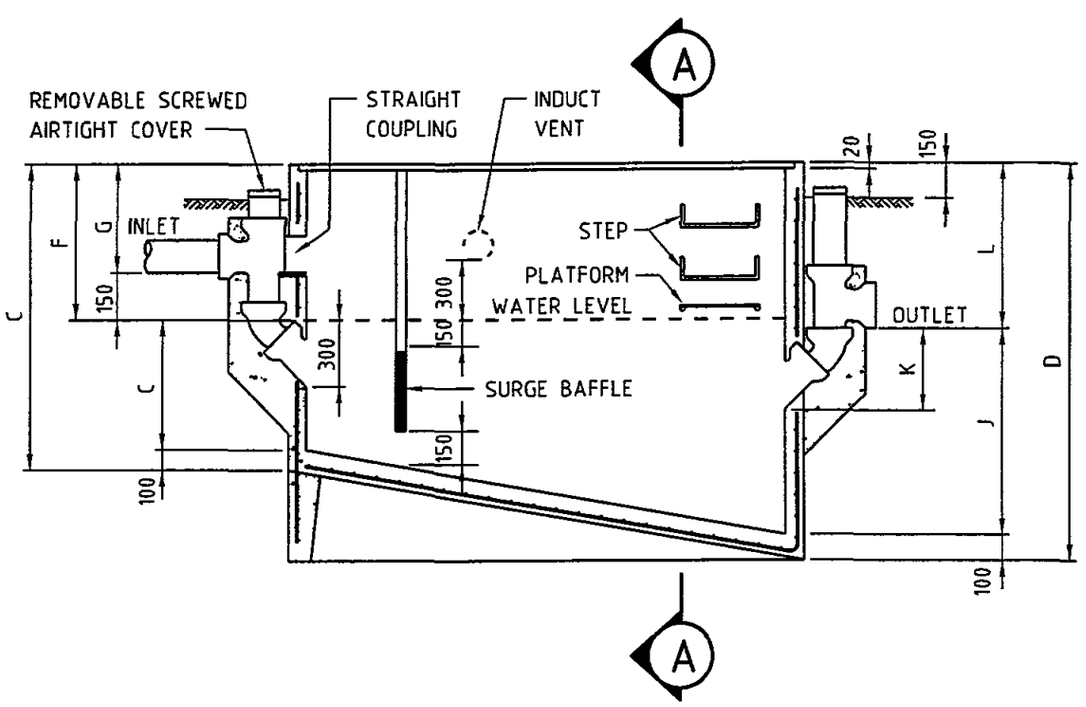
TYPICAL PRECAST STORMWATER SUMP OR SEWER PIT DETAIL	STANDARD No	ISSUE
	WSH-01	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504 LEVEL 5 10-12 CLARKE STREET CROWS NEST NSW 2065
TEL (02) 9437 9226
FAX (02) 9439 2785



SECTION A-A



TYPICAL PRECAST GREASE
ARRESTOR PIT DETAIL

STANDARD No	ISSUE
WSH-03	0

MECHANICAL
ELECTRICAL
HYDRAULICS
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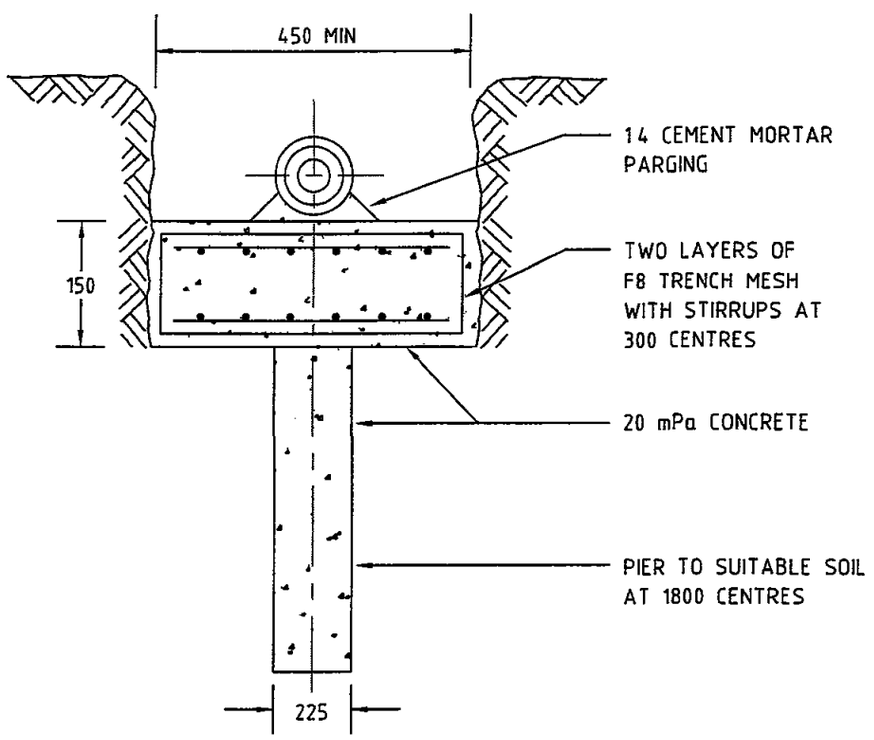

TYPICAL DETAIL OF PIER & BEAM SUPPORT FOR DRAINAGE PIPES

STANDARD No	ISSUE
WSH-06	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
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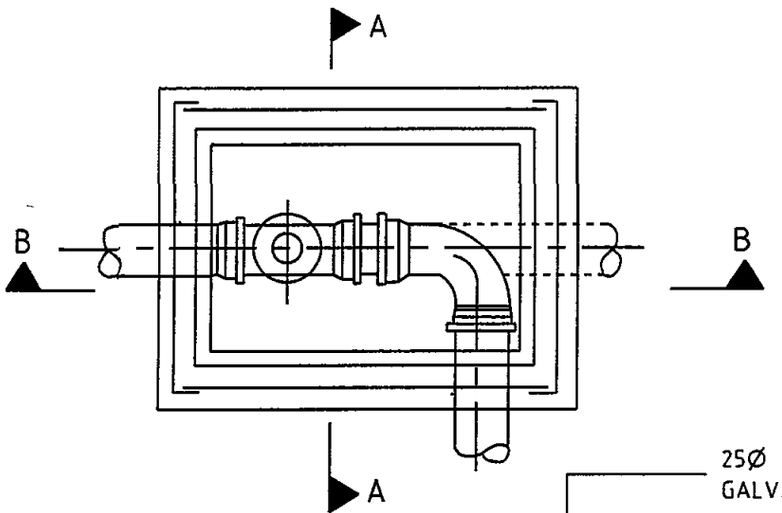
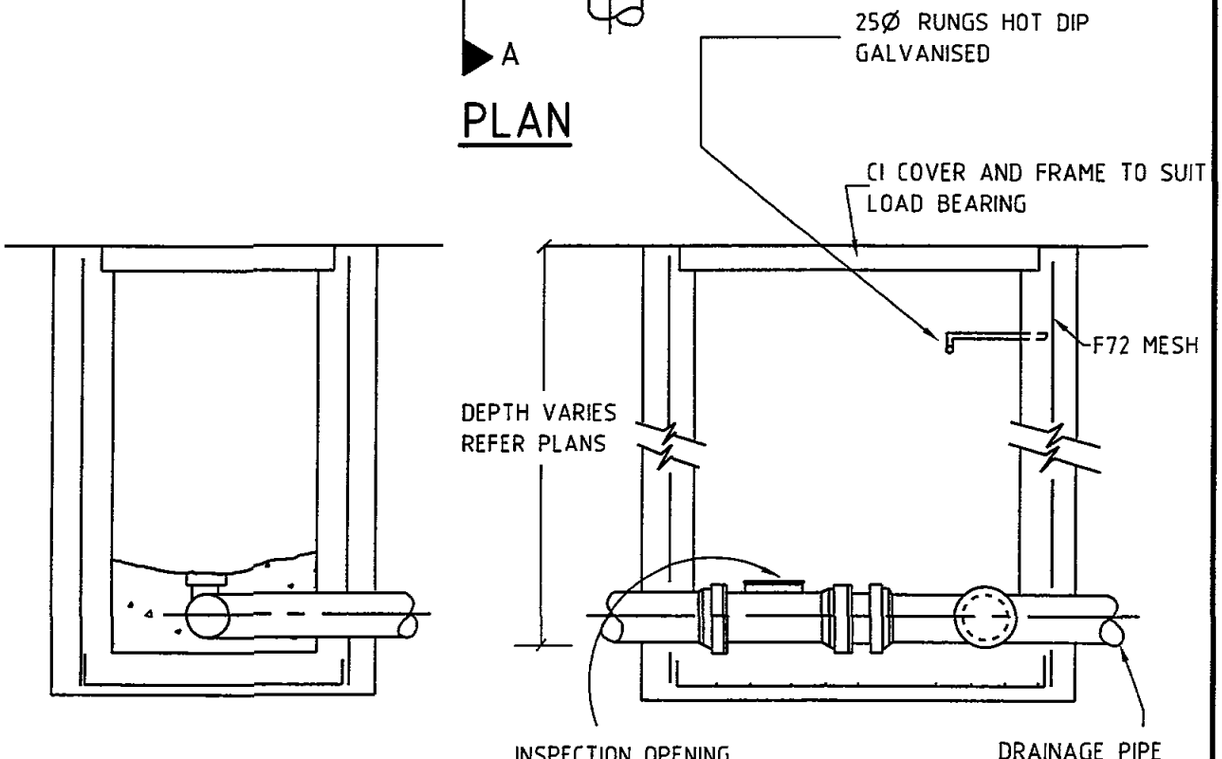


PLAN



SECTION A - A

SECTION B - B

NOTE

WHERE DEPTH OF PIT EXCEEDS 1.2m STEP IRONS TO BE PLACED AT 300m INCREMENT

TYPICAL SANITARY DRAINAGE INSPECTION BRANCH IN IN-SITU PIT DETAIL

STANDARD No	ISSUE
WSH-10	0

MECHANICAL
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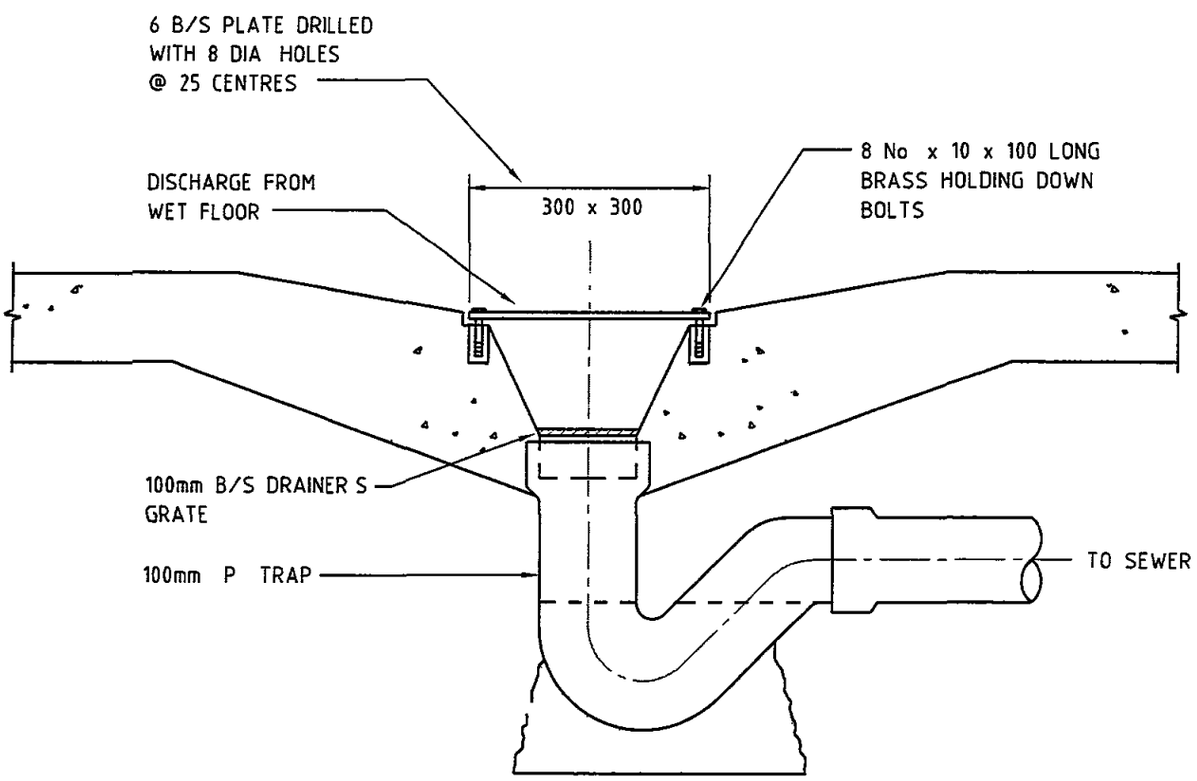
Plot Date 30 10 97 08 50 Work Station COMP_G File Name C:\WORK\STDS\WSH10



TYPICAL GARBAGE ROOM FLOOR WASTE DETAIL

STANDARD No	ISSUE
WSH-12	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
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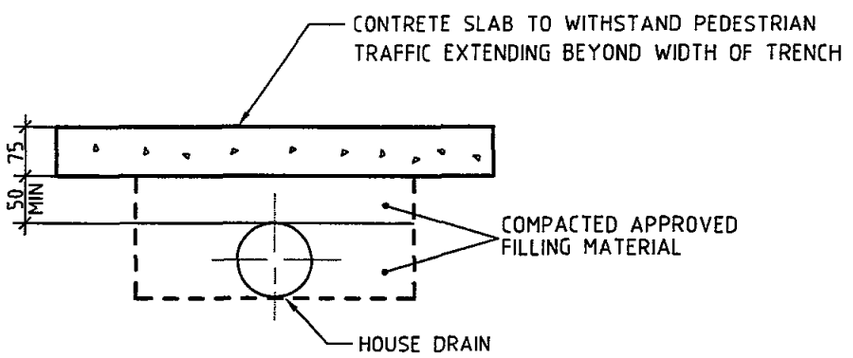
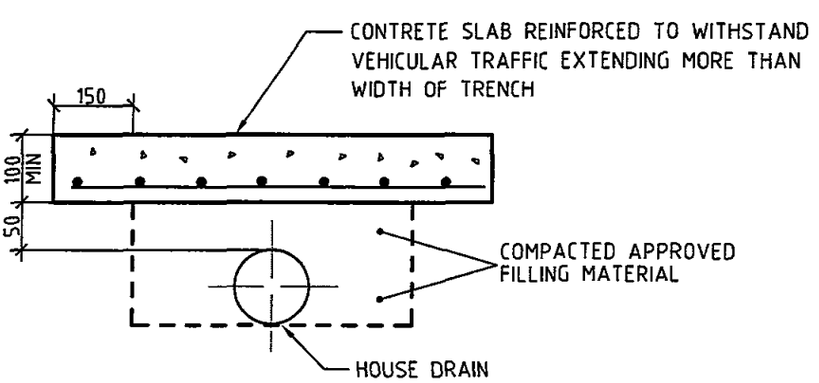


PEDESTRIAN TRAFFIC ONLY



VEHICULAR TRAFFIC

TYPICAL PROTECTION OF HOUSE DRAINS
(with less than minimum cover)

STANDARD No	ISSUE
WSH-14	0

MECHANICAL
ELECTRICAL
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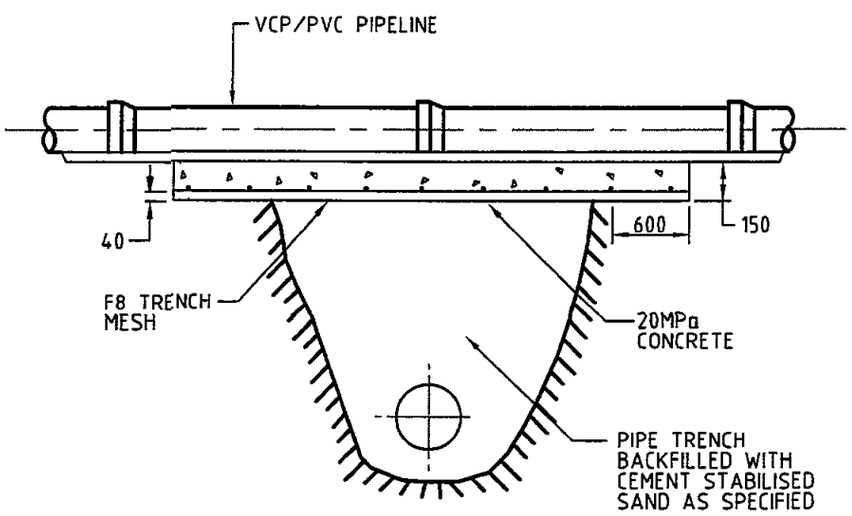
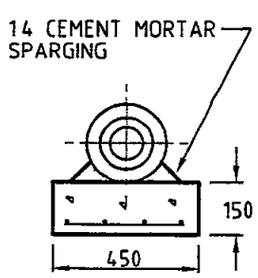


LONG SECTION



END SECTION

TYPICAL PIPE SUPPORT BEAM DETAIL

STANDARD No	ISSUE
WSH-15	0

MECHANICAL
ELECTRICAL
HYDRAULICS
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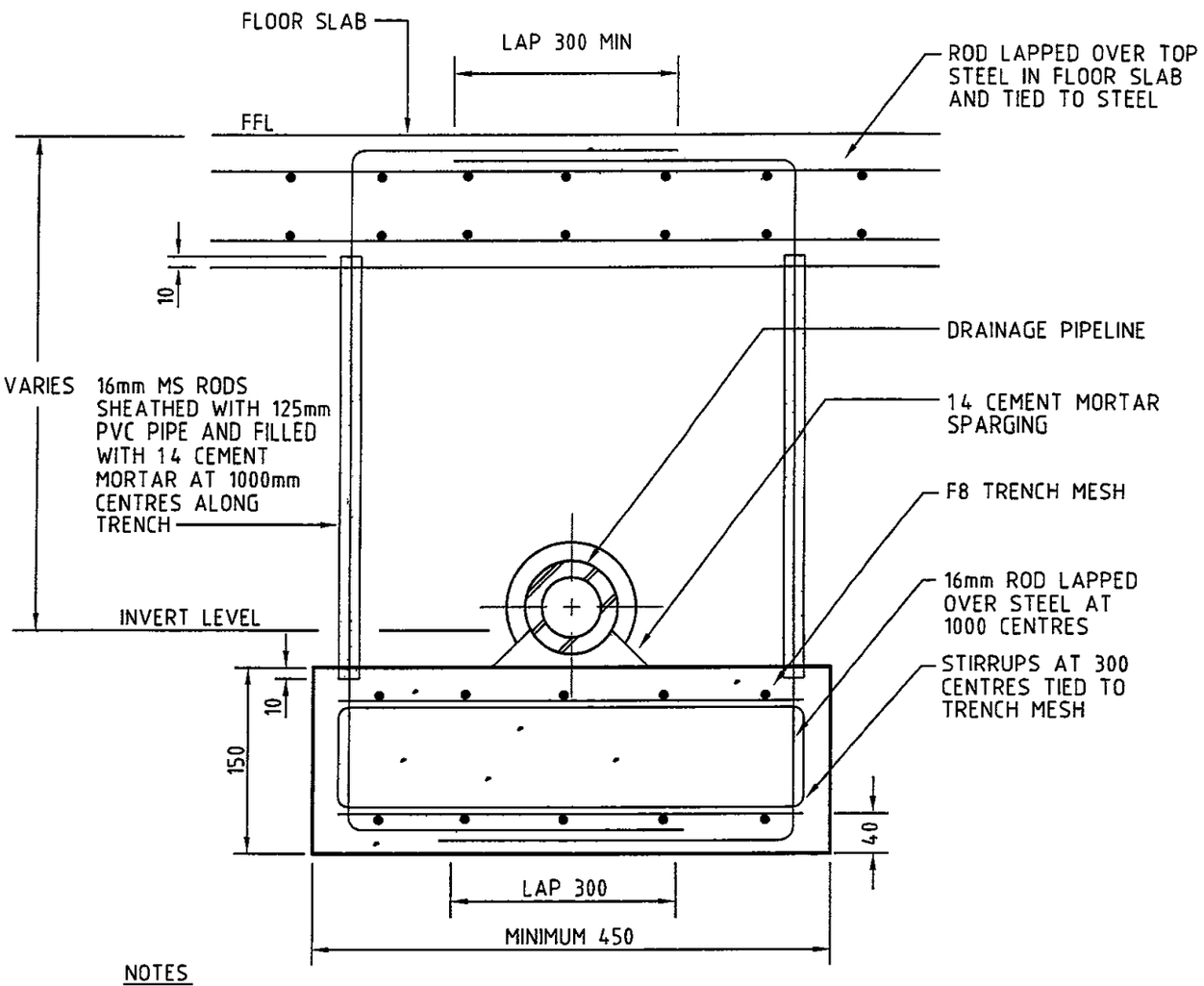

NOTES

1 ALL F8 TRENCH MESH SHALL BE LAPPED 450mm WHEN JOINING STRAIGHT LENGTHS OF MESH AND SHALL LAP 450mm WHEN JOINING INTERSECTING LENGTHS OF MESH

2 125mm PVC PIPE SHEATHING SHALL FINISH 10mm INTO UNDERSIDE OF FLOOR SLAB AND TOP OF RAFT SLAB

3 BACKFILL ALL TRENCHES WITH CEMENT STABILISED SAND IN 150mm LAYERS WITH MECHANICAL COMPACTOR

TYPICAL DETAIL OF RAFT SLAB FOR DRAINAGE PIPES

STANDARD No	ISSUE
WSH-16	0

MECHANICAL
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HYDRAULICS
FIRE PROTECTION
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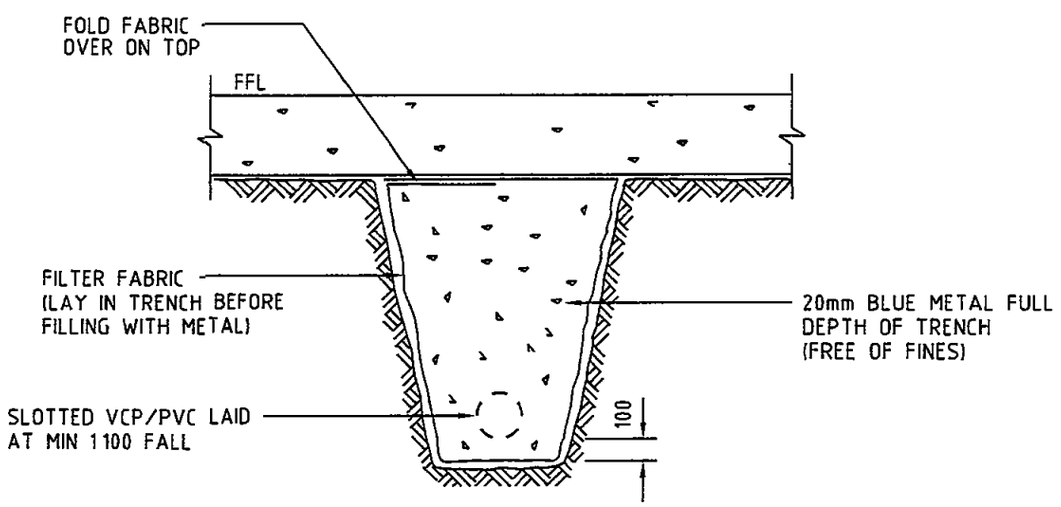

NOTES 1 FOR INSTALLATION OF SUB SOIL DRAINAGE IN A ROCK TRENCH FILTER FABRIC IS NOT REQUIRED

TYPICAL TRENCH BEDDING OF SUBSOIL DRAINAGE PIPES

STANDARD No	ISSUE
WSH-17	0

MECHANICAL
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TRANSPORTATION
TELECOMMUNICATIONS

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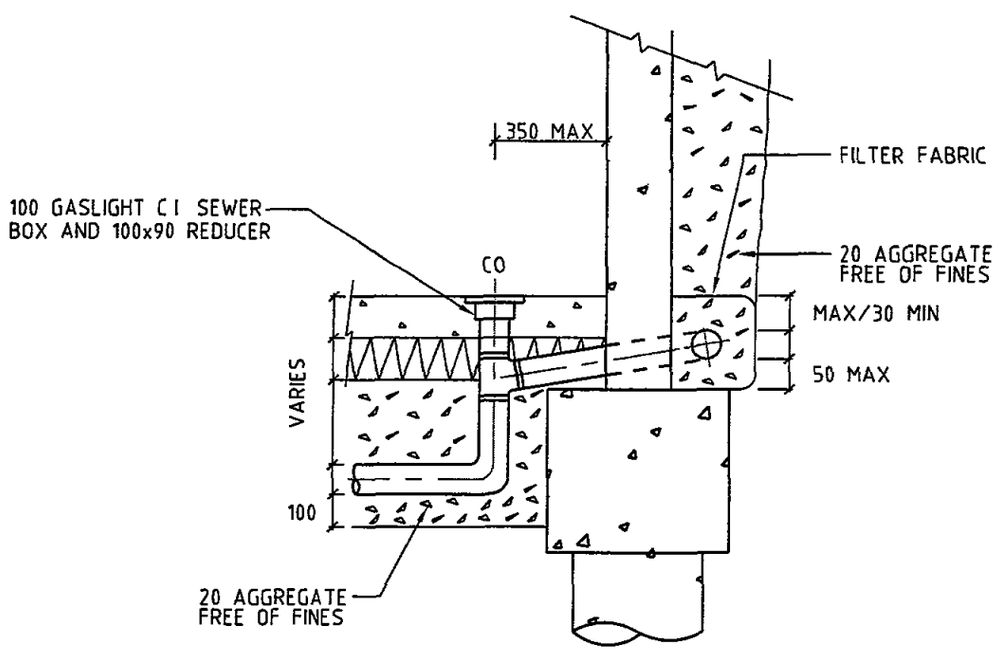

NOTE ALL SUB-SOIL TRENCHES SHALL BE
WRAPPED IN FILTER FABRIC AS SPECIFIED

TYPICAL SUB-SOIL DRAINAGE INSTALLATION DETAIL - SOLID WALL

STANDARD No	ISSUE
WSH-18	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
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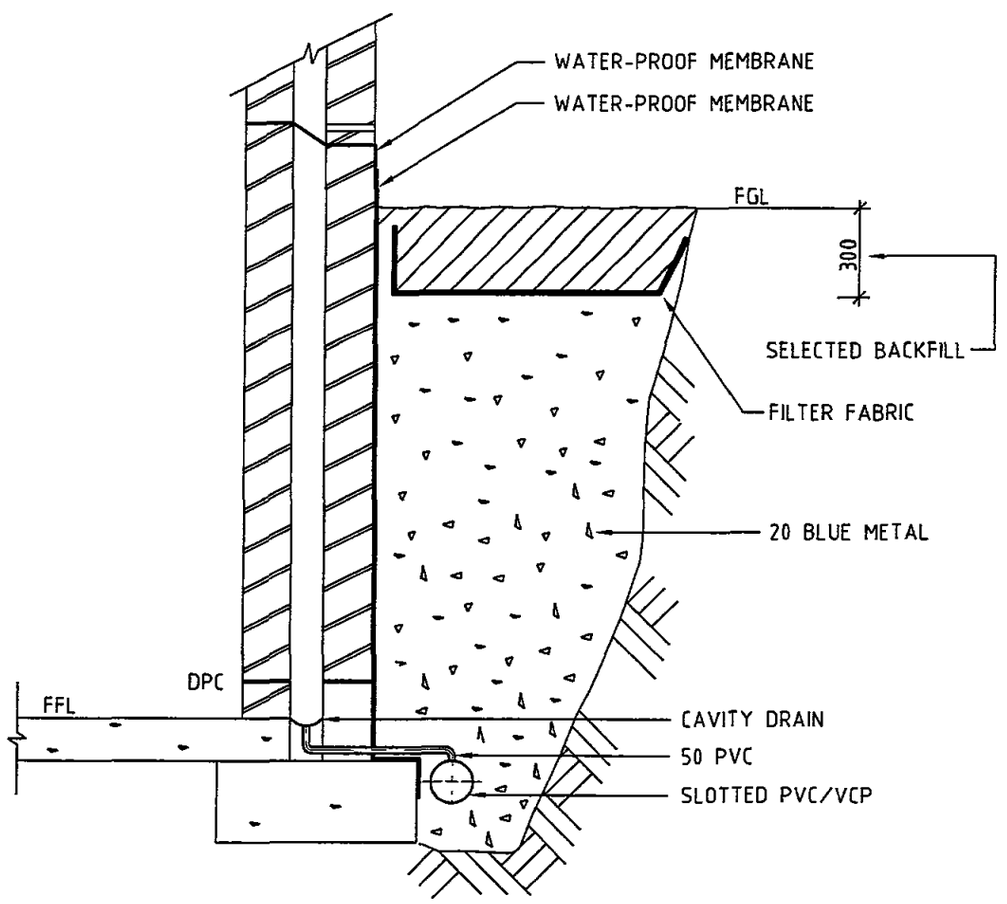

TYPICAL SUB-SOIL DRAINAGE INSTALLATION DETAIL
- CAVITY WALL

STANDARD No	ISSUE
WSH-19	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
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TELECOMMUNICATIONS

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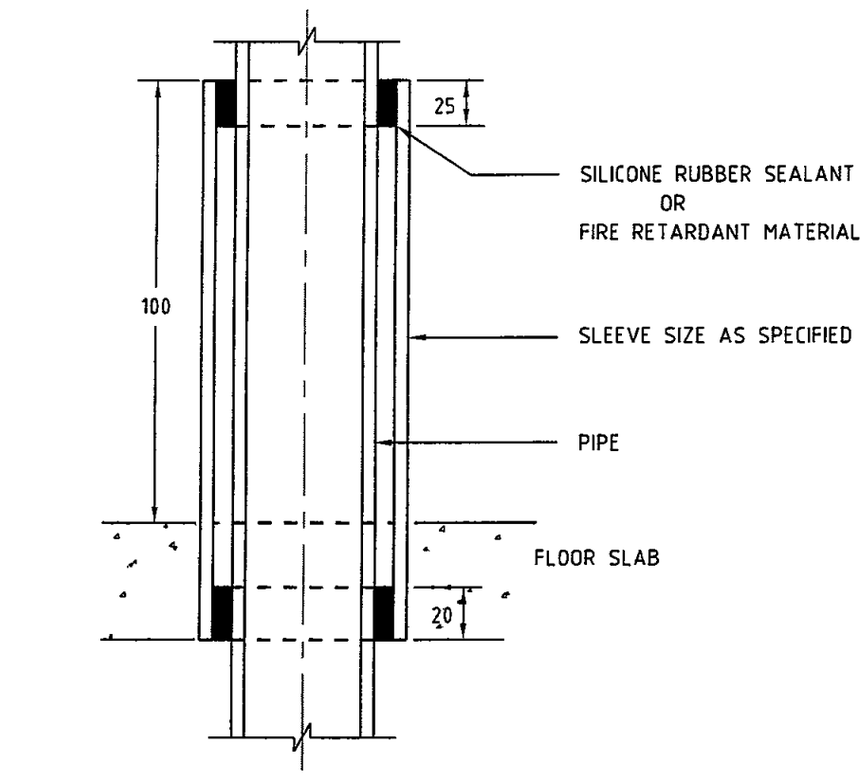

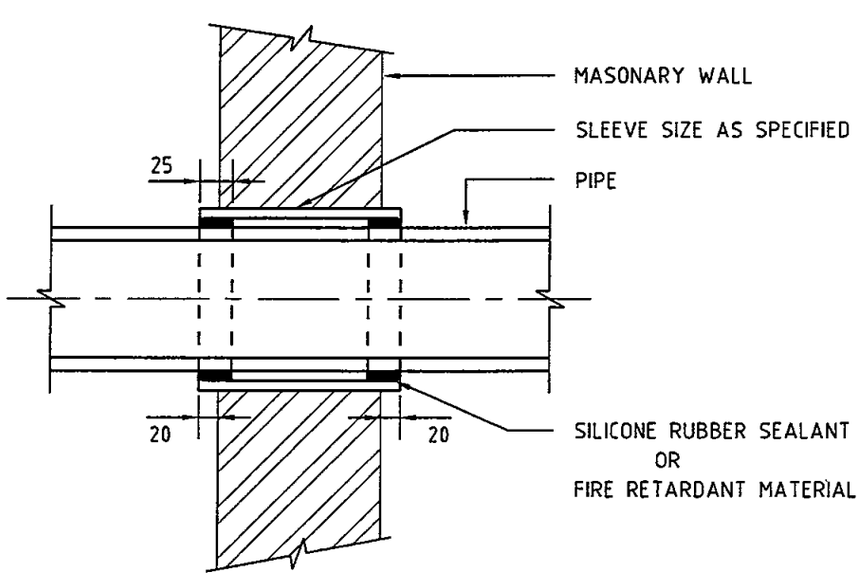

TYPICAL PIPE SLEEVE THROUGH SLAB OR WALL

STANDARD No	ISSUE
WSH-22	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

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Incorporated in New South Wales
SUITE 504 LEVEL 5 10-12 CLARKE STREET CROWS NEST NSW 2065
TEL (02) 9437 9226
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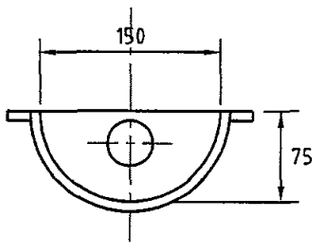
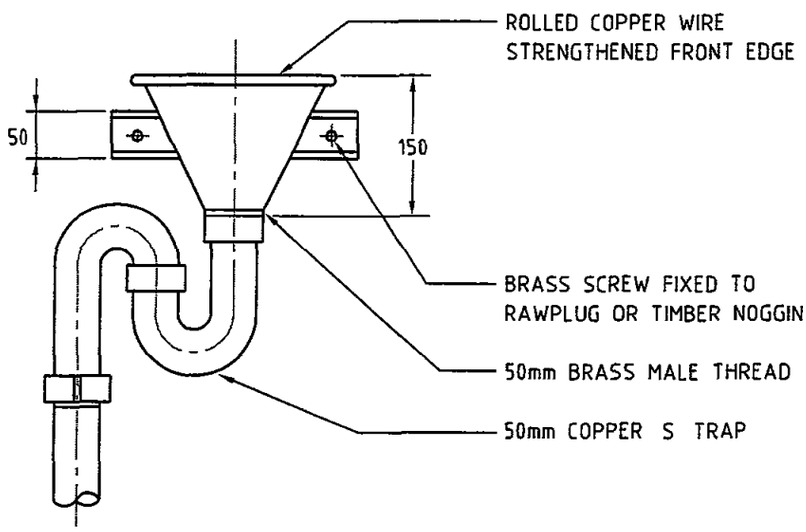


PLAN



ELEVATION

NOTES

1 ALL JOINTS TO BE SILVER BRAZED

2 TUNDISH SHALL BE CONSTRUCTED OF 12mm SHEET COPPER

3 WIRED SEAM AT TOP OF TUNDISH SHALL BE 3mm DIAMETER BRASS

4 FIXING CLIPS SHALL BE 16mm COPPER

5 TUNDISH TO BE CHROME PLATED WHERE EXPOSED

TYPICAL COPPER TUNDISH DETAIL

STANDARD No	ISSUE
WSH-23	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

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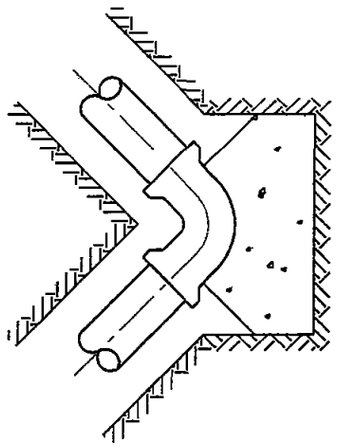
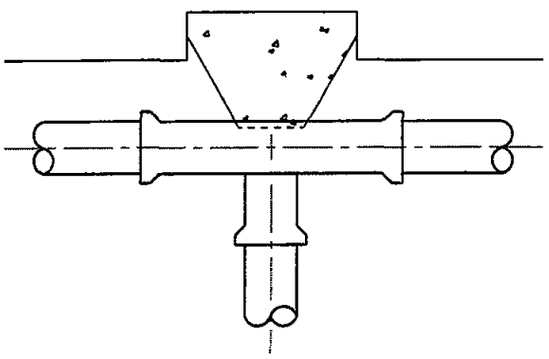
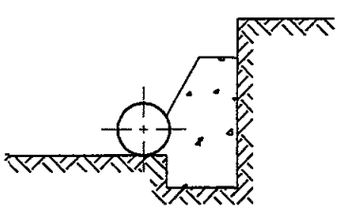


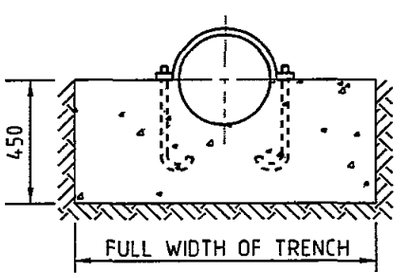
150 BEND IN
HORIZONTAL PLANE



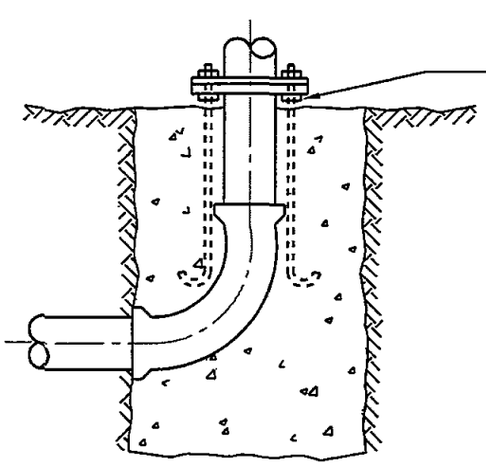
150 TEE IN
HORIZONTAL PLANE



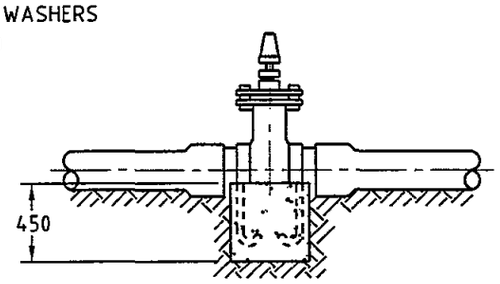
RADIAL SECTION



STRAIGHT PIPE IN HORIZONTAL PLANE



BEND IN VERTICAL PLANE



TEE AND HYDRANT ANCHORAGE

TYPICAL THRUST BLOCK DETAILS

STANDARD No	ISSUE
WSH-27	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

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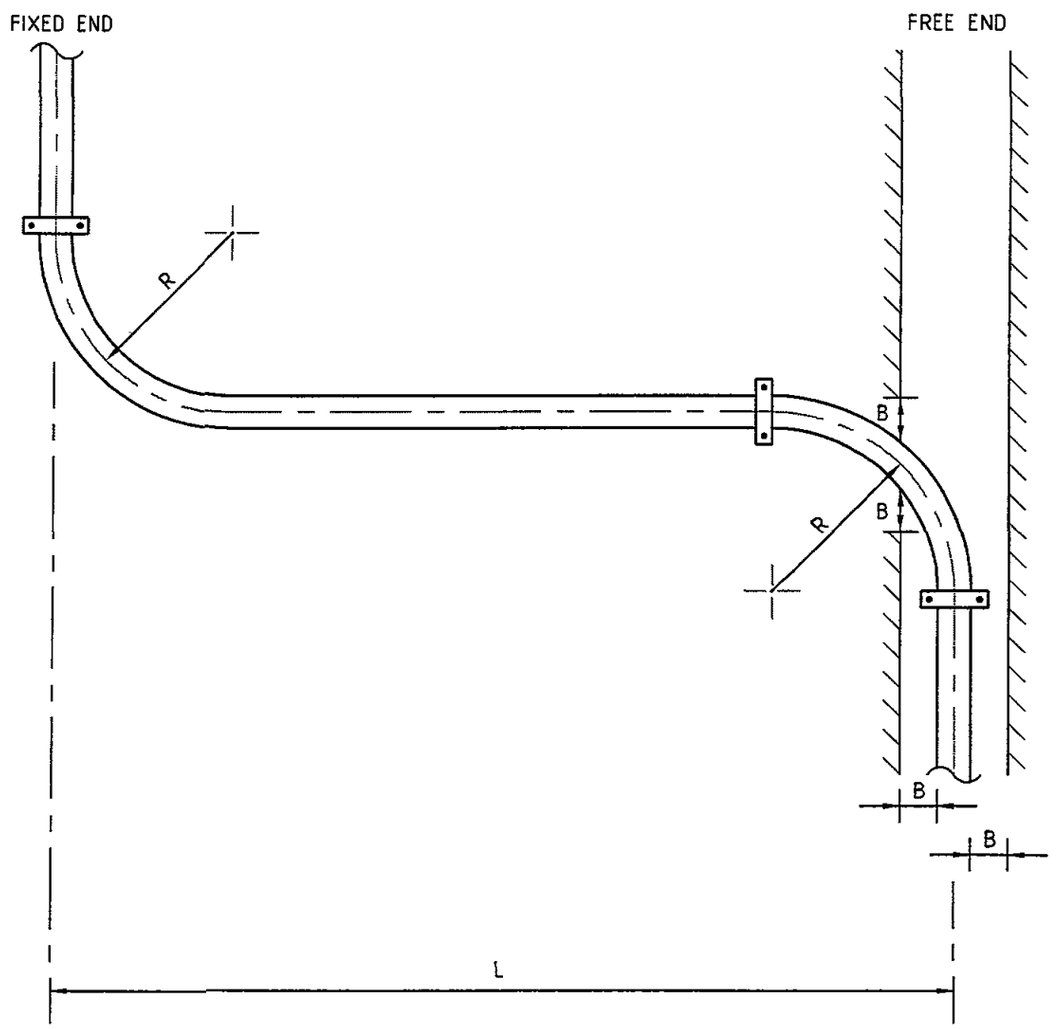

(L) RUN LENGTH (mm)	(A) FREE LENGTH (mm)	MIN (B) 60° TEMP RISE (mm)
UP TO 4500	600	5
4500 - 9000	900	10
9000 - 1800	1200	20

TYPICAL PROVISION FOR EXPANSION IN HOT WATER PIPEWORK

STANDARD No	ISSUE
WSH-33	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

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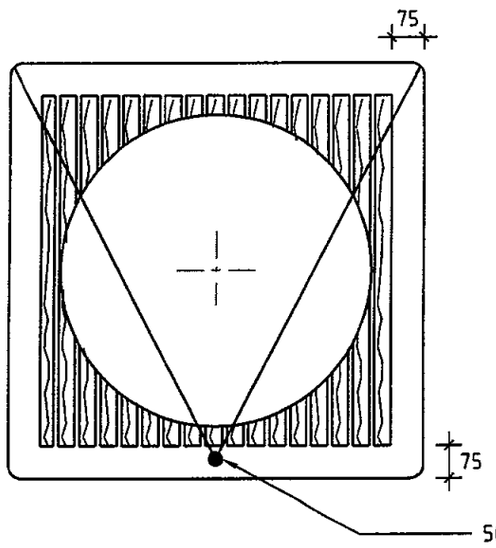
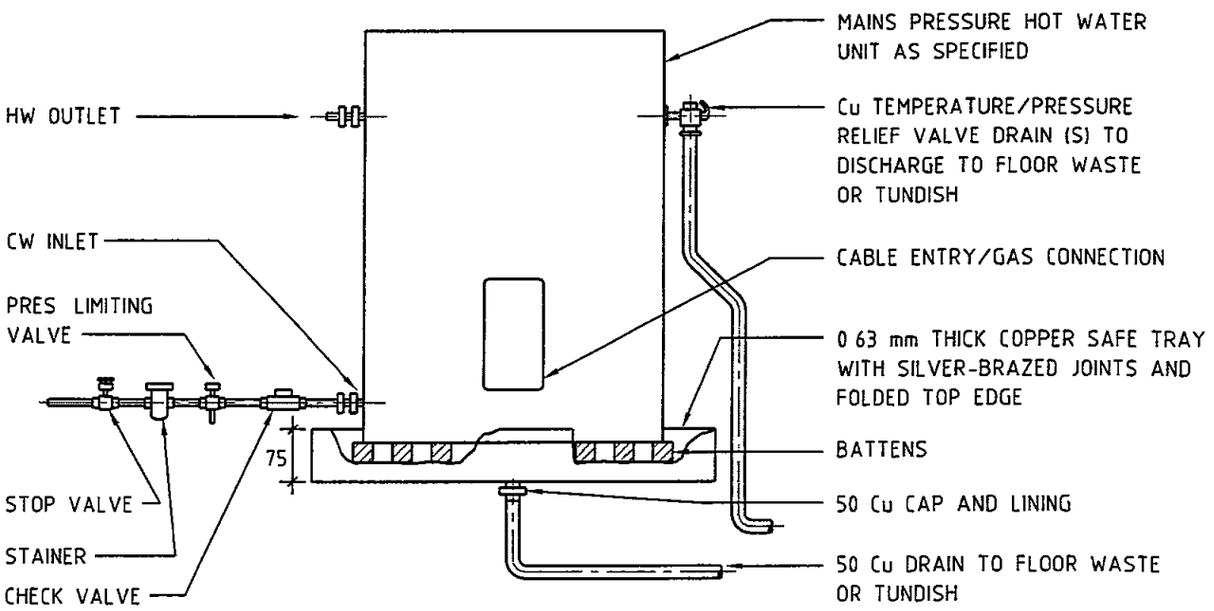


NOTE

BASE OF HWU TO BE TREATED WITH ADDITIONAL EPOXY PAINT

PLAN



ELEVATION

TYPICAL MAINS PRESSURE HWU AND SAFE TRAY DETAIL

STANDARD No	ISSUE
WSH-34	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

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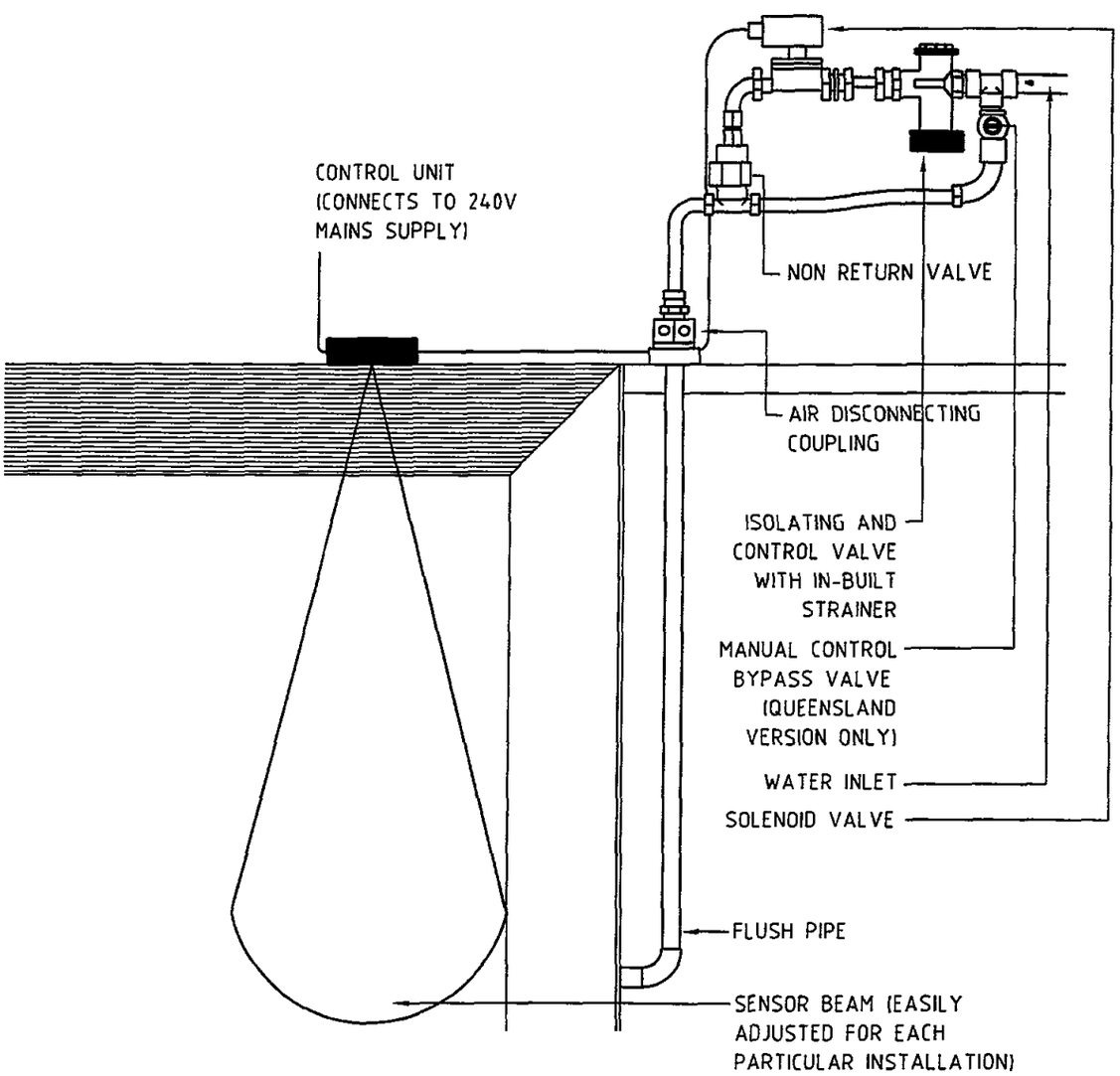
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504 LEVEL 5 10-12 CLARKE STREET CROWS NEST NSW 2065
TEL (02) 9437 9226
FAX (02) 9439 2785



AUTOMATIC FLUSHING SYSTEM

STANDARD No	ISSUE
WSH-39	0

MECHANICAL
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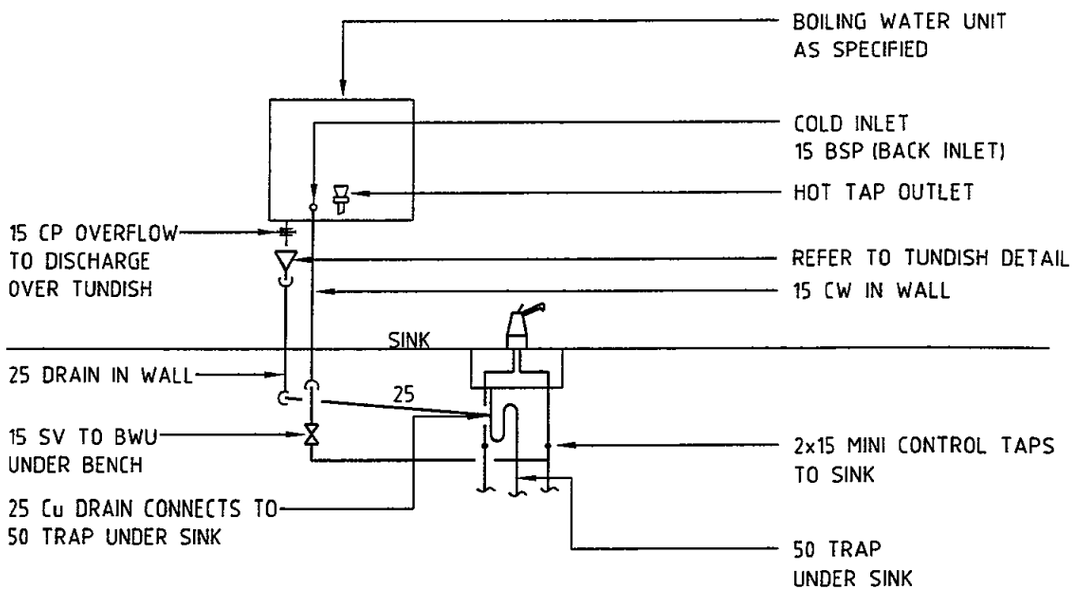
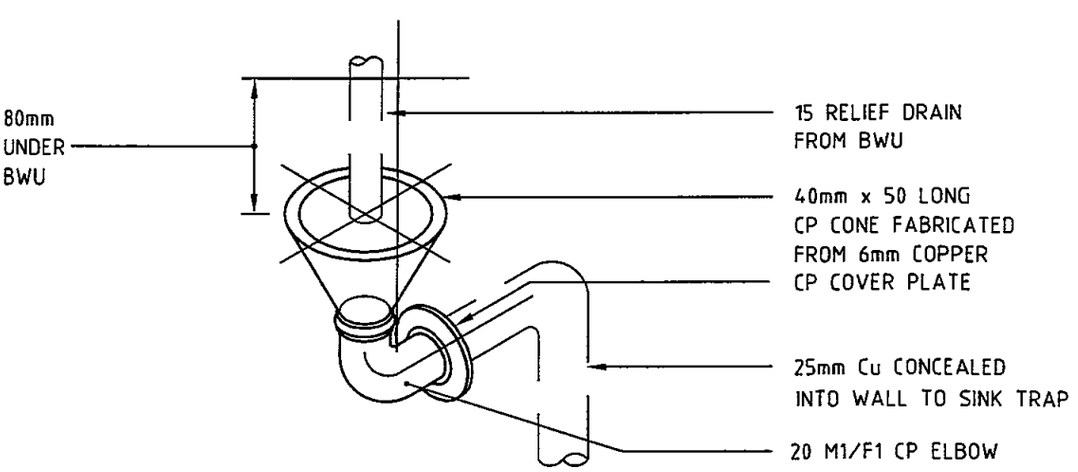


BOILING WATER UNIT INSTALLATION DETAIL

N T S



BOILING WATER UNIT TUNDISH DETAIL

N T S

BOILING WATER UNIT INSTALLATION DETAIL
BOILING WATER UNIT TUNDISH DETAIL

STANDARD No	ISSUE
WSH-41	0

MECHANICAL
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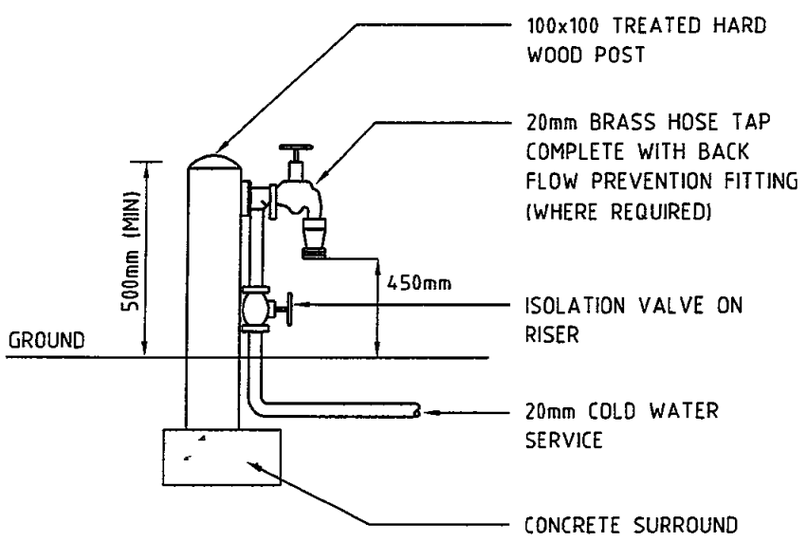

BOLLARD HOSE TAP (BHT) DETAIL

N T S

BOLLARD HOSE TAP (BHT) DETAIL

STANDARD No	ISSUE
WSH-42	0

MECHANICAL
ELECTRICAL
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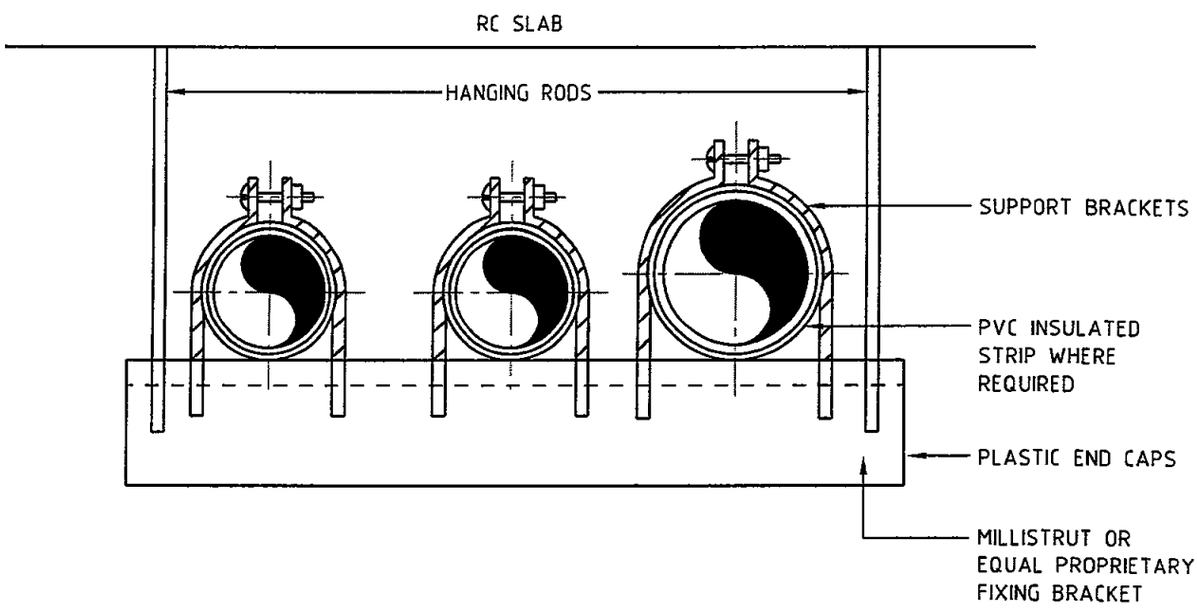

TYPICAL SUSPENDED BRACKETING DETAIL

N T S

TYPICAL SUSPENDED BRACKETING DETAIL

STANDARD No	ISSUE
WSH-47	0

MECHANICAL
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TEL (02) 9437 9226
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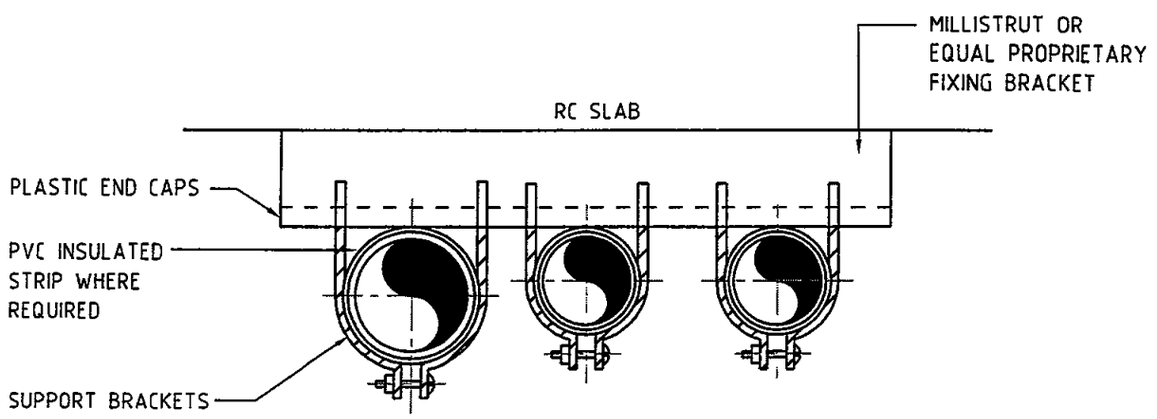
Plot Date 12 07 96 09 33 Work Station COMP_J File Name C:\WORK\TEMP\WSH45



TYPICAL BRACKETING WHERE FIXED TO SLAB SOFFIT DETAIL

N T S

TYPICAL BRACKETING WHERE FIXED
TO SLAB SOFFIT DETAIL

STANDARD No	ISSUE
WSH-49	0

MECHANICAL
ELECTRICAL
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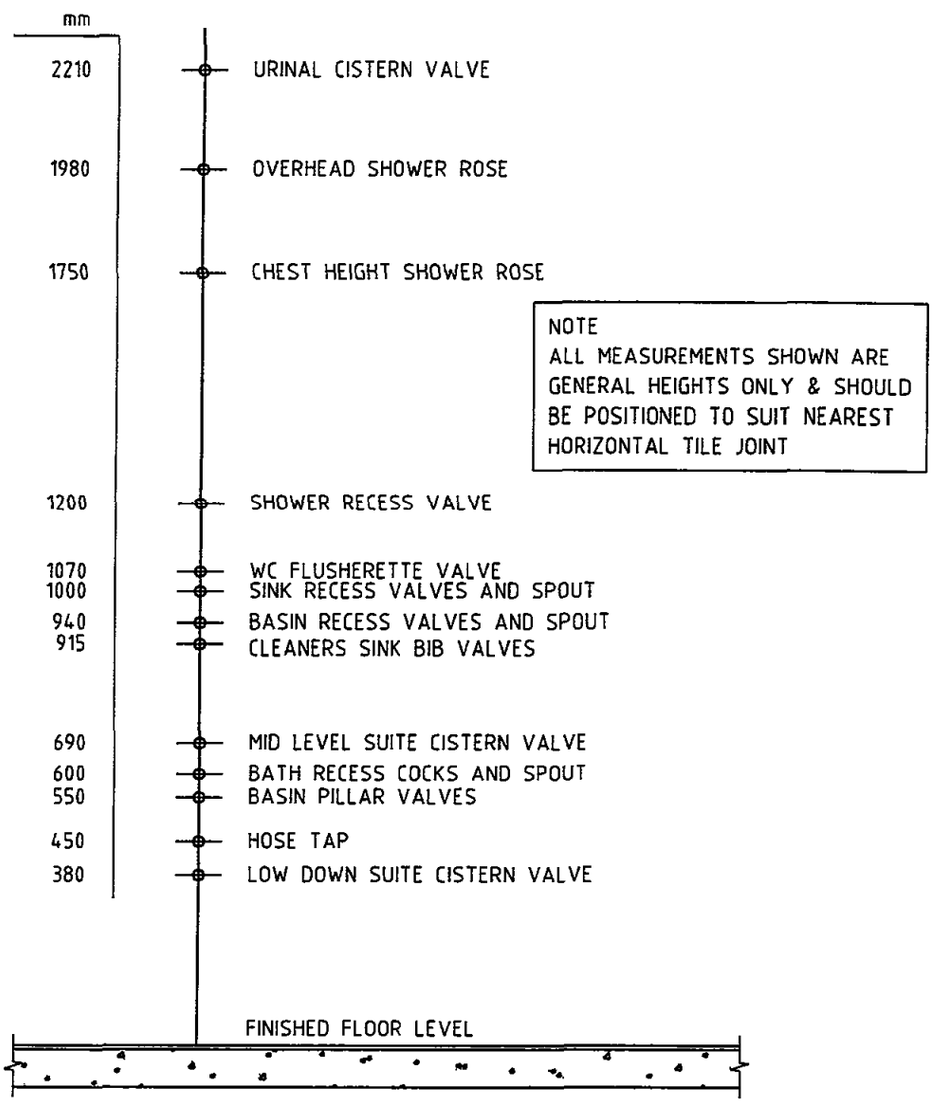
TEL (02) 9437 9226
FAX (02) 9439 2785

Plot Date 12 07 96 09 33 Work Station COMP_J File Name C:\WORK\TEMP\WSH45



SANITARY FIXTURES - WATER CONNECTIONS

N T S

SANITARY FIXTURES - WATER CONNECTIONS

STANDARD No	ISSUE
WSH-50	0

MECHANICAL
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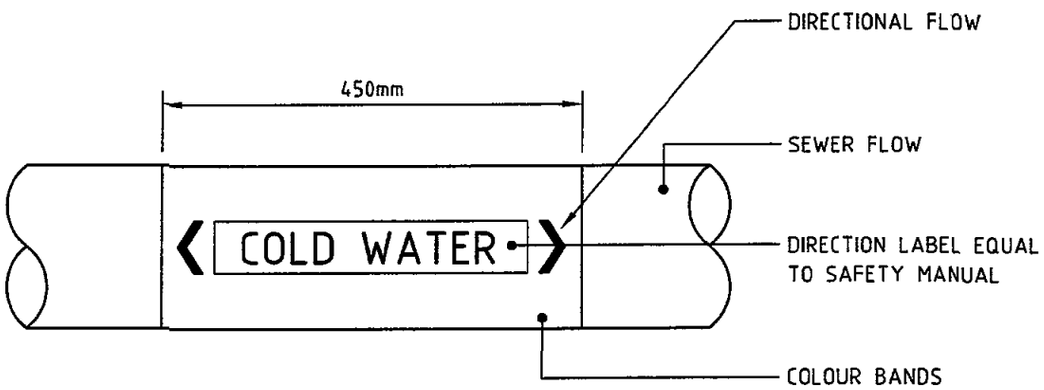
TEL (02) 9437 9226
FAX (02) 9439 2785

Plot Date 12 04 99 16 22 Work Station File Name C:\Work\stds\WSH50



ALL OTHER EXPOSED PIPING EXCEPT AS OTHERWISE DIRECTED OR SPECIFIED BELOW SHALL BE CLEANED FREE OF CEMENT DROPPINGS ETC AND PAINTED IN ACCORDANCE WITH A S 1345-1995 B S 381C-1967 AND THE COLOUR CODING INDICATED BELOW

SERVICE	GROUNDED COLOUR	No
DOMESTIC COLD WATER	EMERALD GREEN	228
FIRE SERVICE	SIGNAL RED	537
DOWNPIPES	ROOF COLOURBOND	-
HOT WATER FLOW	BRILLIANT GREEN	221
SOIL WATE VENT	BLACK	-

PIPING IDENTIFICATION

N T S

PIPING IDENTIFICATION

STANDARD No	ISSUE
WSH-52	0

MECHANICAL
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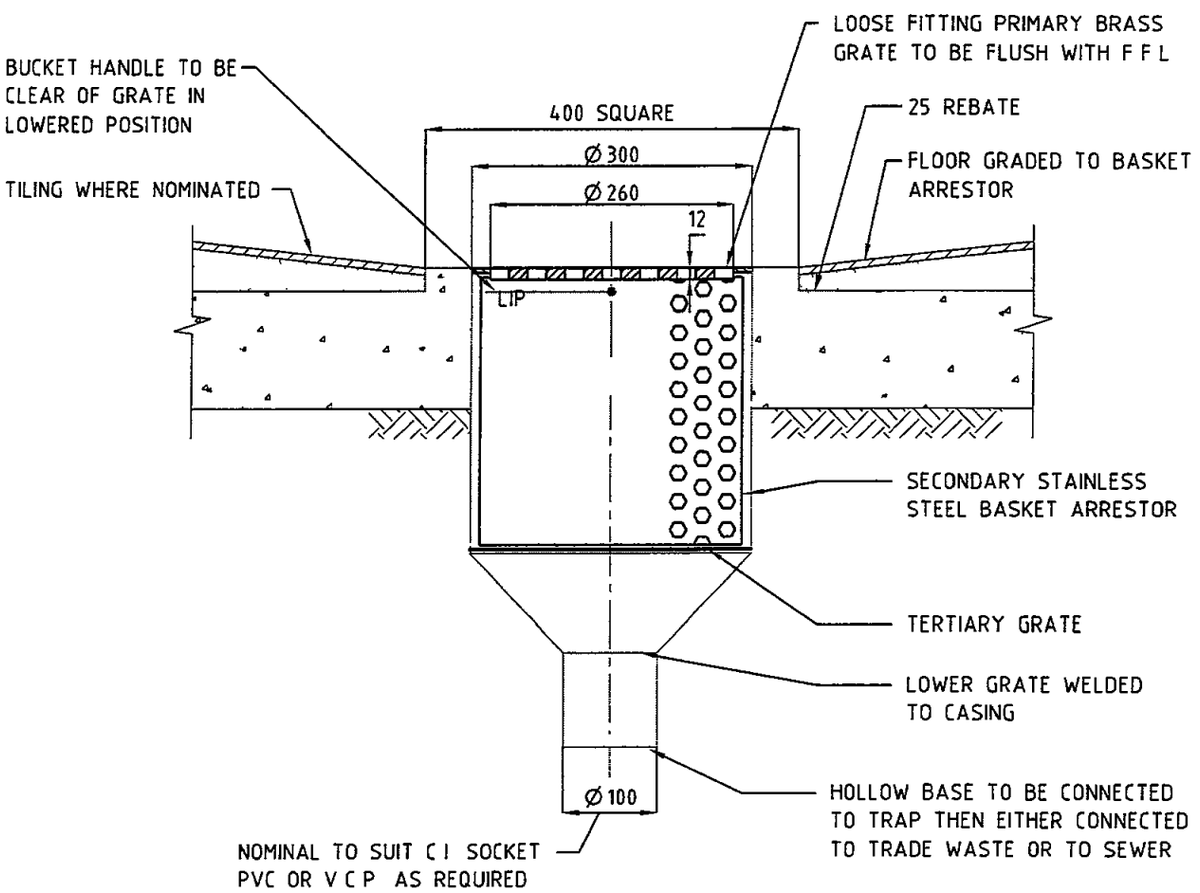

FLOOR WASTE BASKET ARRESTOR DETAILS

N T S

BUCKET TRAP DETAILS

STANDARD No	ISSUE
WSH-53	0

MECHANICAL
ELECTRICAL
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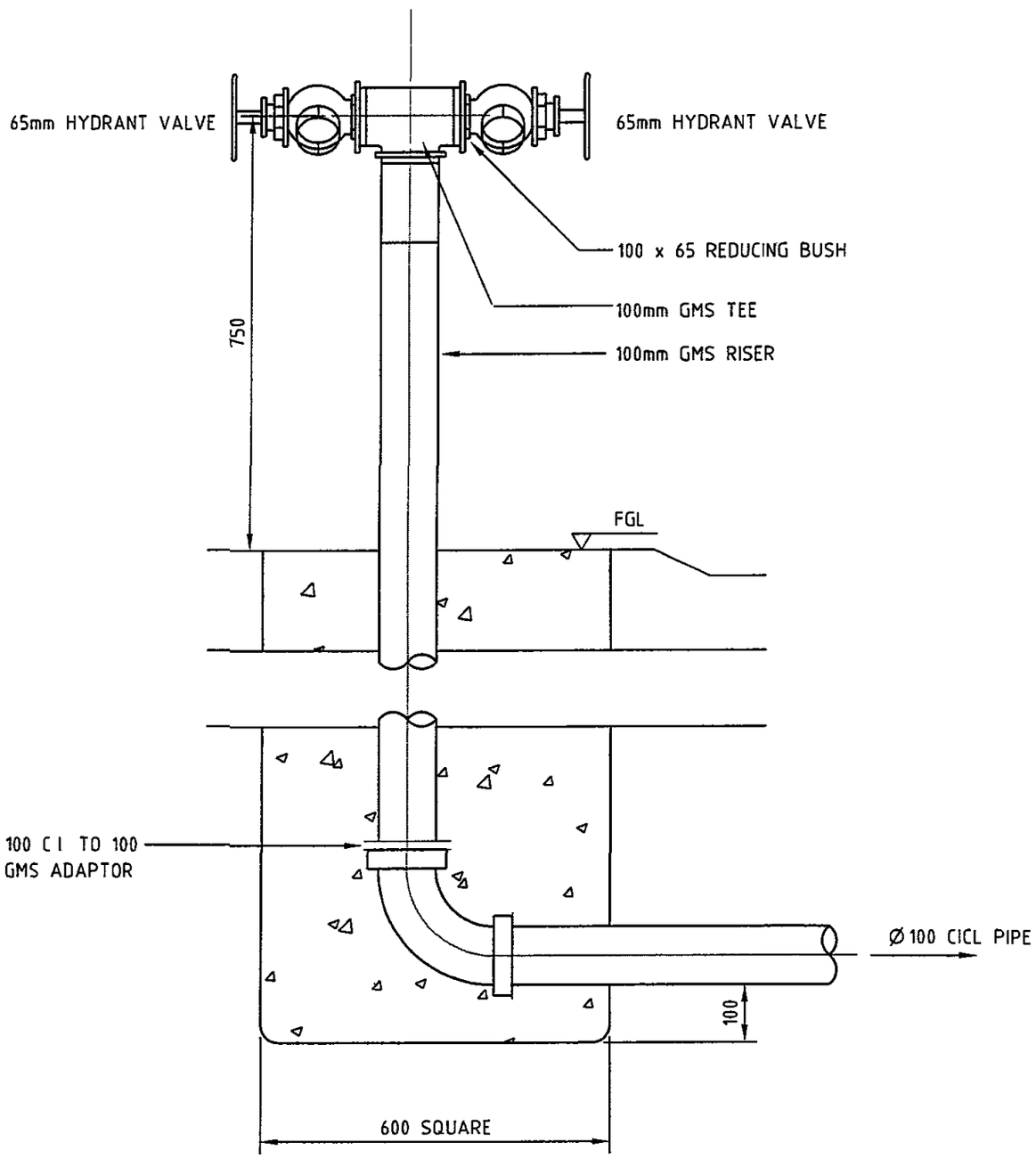

DUAL HYDRANT VALVE DETAIL

DUAL HYDRANT VALVE DETAIL

STANDARD No	ISSUE
WSH-55	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
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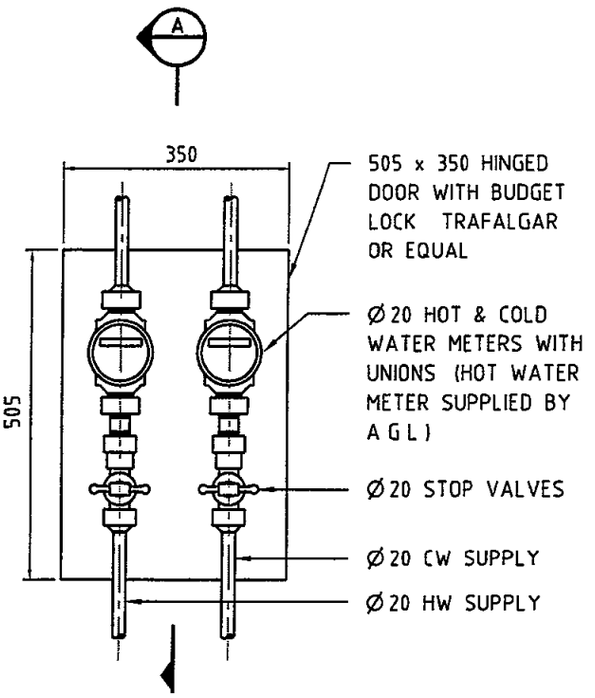
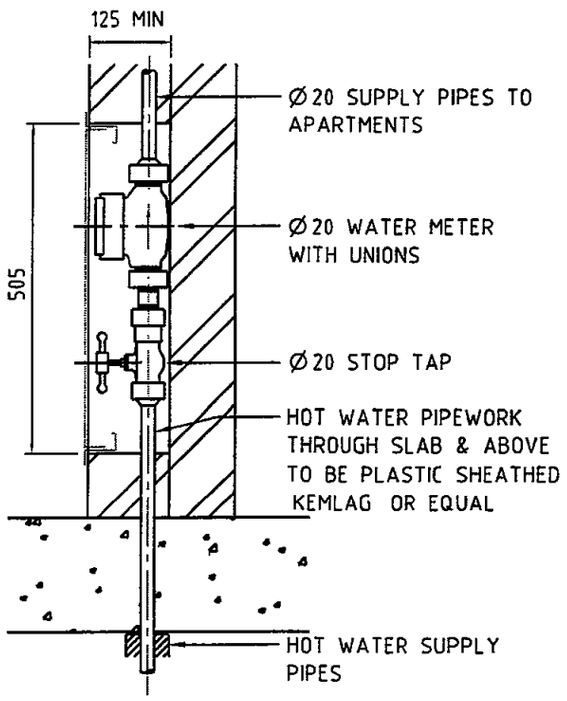
TEL (02) 9437 9226
FAX (02) 9439 2785

Plot Date 12 07 96 10 13 Work Station COMP_J File Name C:\WORK\TEMP\WSH46



ELEVATION



SECTION A
N T S

SMALL WATER METER ASSEMBLIES					
SIZE OF METER	20mm	25mm	32mm	40mm	50mm LD
METER ASSEMBLY SPACE REQUIRED	244mm	283mm	336mm	349mm	320mm

LARGE WATER METER ASSEMBLIES (SPACE BETWEEN INLET STOP VALVE FLANGE & OUTLET SERVICE FLANGE)							
SIZE OF METER	50mm	80mm	100mm	150mm	200mm	250mm	300mm
METER ASSEMBLY SPACE REQUIRED (mm BETWEEN FLANGES)	1086mm	1260mm	1463mm	1952mm	1245mm	1316mm	1502mm
	INCLUDES DIRT BOX DISTANCE PIECE METER & GATE VALVE				INCLUDES DIRT BOX METER & GATE VALVE		

WATER METER ENCLOSURE

STANDARD No	ISSUE
WSH-57	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
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TEL (02) 9437 9226
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Plot Date 12 07 96 10 13 Work Station COMP_J File Name C:\WORK\TEMP\WSH46

5 E MECHANICAL SERVICES

S P E C I F I C A T I O N

No. 1 5 1 9 2

For The Supply, Installation, Commissioning and Maintenance of-

MECHANICAL SERVICES

At-

PITTWATER ROAD
BAYVIEW, NSW

For-

BAYVIEW GOLF CLUB

Drawing-

15192/M01- M02

Architects

Hodges Shorten Architects Pty Ltd
Chatswood Village
Suite 82 47 Neridah Street
Chatswood NSW 2067

RECORD OF AMENDMENTS

SEC/PAGE NUMBER	ISSUE	DATE	REASON	AUTHORISED BY
ALL	0	20 June 2007	TENDER ISSUE	

INDEX

PART A

1 CONTRACT AND REQUIREMENTS

Contract Type and Document

The accepted Tenderer shall become a Sub-Contractor to the Head Contractor, and shall enter into a contract with him for the supply installation, testing and maintenance of the services specified herein to conform with the Time and Progress Schedules to be prepared in collaboration with the Head Contractor

The Sub-Contract Document **AS 4901** issued by the Standards Association of Australia shall be amended and/or completed as specified herein and shall form the basis of the Contract

Contract Requirements

The following requirements shall be applicable to the Contract and shall be entered on the Contract Documents

Preferred Subcontractors

The Mechanical Services works as hereinafter described, shall be subcontracted to a Preferred Mechanical Subcontractor (**hereinafter referred to as the MSC**) chosen from the following list of Mechanical Contractors

Aerotherm Pty Ltd	Malcolm Yates	98388677
Oram Smith Pty Ltd	Robert Sykes	97481955
Quantum Pty Ltd	Peter White	95402200
Air Makers Pty Ltd	Malcolm Satchell	98902155

The Head Contractor shall **nominate** in the Schedule of Technical Data which of the above Preferred Subcontractors will perform the Mechanical Services works

This nomination shall be binding and no change to this nomination will be entertained after the letting of the Contract The Head Contractor should allow in his price, all costs associated with this Contract requirement

Alternatives may be submitted (**additionally only to the above**) and may be considered

The tenderer shall comply fully with this Specification drawings and any amendments issued during the tender period

The Principal	Bayview Golf Club
The address of the Principal	Pittwater Road Bayview NSW
The Site	Pittwater Road Bayview NSW
The Builder	Head Contractor (**hereinafter referred to as the Contractor**) to whom the MSC shall be subcontracted

Defects Liability Period

Twelve (12) months

Goods and Services Tax (GST)

The Contract Sum shall be inclusive of GST

Scaffolding for Construction Purposes

All by the Contractor

Hoisting of Material

All by the Contractor

Payment

The sum for **As Installed" documents** shall be retained until such documents are submitted and approved

2 STANDARD GENERAL CONDITIONS

Conditions of Tendering

Tenders shall be submitted complete with the **Schedule of Technical Data** (STD)

Each Tenderer is to nominate equipment and list of Sub-Contractors in accordance with the Schedule of Technical Data

The tender must comply with the Specification, drawings and any amendment issued during the tender period Alternatives may be submitted (additionally only to the above) and may be considered

Tenderers are advised to inspect the site, existing works and drawings prior to submission of tenders

Failure to carry out such inspections shall not alleviate the Contractor of any responsibility and any additional costs incurred through failure to observe these requirements and become fully acquainted with the existing works shall not constitute a variation to the Contract

Defects Liability

For the period of 12 months and from the approved and agreed date on which the equipment shall be placed into commercial service and notwithstanding any payment having been made in respect of such work or the issue of any certificate in connection therein, the Services Contractor **hereinafter referred to as the MSC** shall agree to provide all necessary labour for and to replace without additional cost to the Principal, any equipment supplied which is defective, worn excessively or failed in whole or in part during normal operation of the system or in the opinion of the Principal shows signs of weakness and of giving way or fails to comply with the intent of the specification

following month s progress claim

The site shall be kept generally tidy and **all waste material removed from the site** and disposed of in an approved manner

Interruption to Services

Where applicable all work in connection with the existing services shall be carried out at times to be agreed upon in order that interruption may be carried out with a minimum of inconvenience to all occupiers of the Site

Confer with all parties whose work may be so affected

The works shall be programmed to suit the staging and time requirements of the Contract

Carry out work requiring interruptions expeditiously so that duration of interruptions is reduced to a minimum

Rectify any faults caused by cutting in or connection to existing services No variation cost to the contract will be allowed therefore

Sections of existing installation so treated shall be governed by all provisions and standards of work equal to existing and as finally approved

Electrical Safety

It is not a requirement of the contract that work be carried out on live switchboards Should such work be carried out the MSC shall assume full responsibility for all consequences of such action Protection device settings shall be set at the lower end to ensure instantaneous interruption of short circuit arc and earth faults

Detailed investigation prior to and extreme care during the drilling into existing walls and slabs in which live cables may be embedded

Drawings and Specification

Whenever a discrepancy exists within the Specification, Drawings or between the Specification and Drawings relative to the inclusion or exclusion of particular works, **carry out the greater works**

Hoisting

Variations shall not be approved for any out of hours hoisting required in addition to the normal hoisting allowances

Information Provided by Suppliers

Information provided by Suppliers shall not be construed as contractual unless explicitly included in the Contract Documents

Variations

Variations which occur during the course of the project shall be bound by the same terms and conditions as if the variation were part of the original tender document and include for all ancillary works, materials and workmanship as laid down in this specification

Variations shall only be considered for approval after presentation of a current Construction Drawing or a final As Built Drawing Variations will then be assessed by comparison with tendered drawings

3 MECHANICAL SERVICES STANDARD CONDITIONS

Drawings and Information to be Supplied

A set of Construction Drawings showing the exact location and full details, where applicable of all apparatus, connections, ducts pipes, conduits, valves, circuiting, disposition of outlets, major items of equipment, fixtures, appliances, and fittings, plinths, penetrations, position and size of maintenance access panels, etc , shall be provided **Construction Drawings shall be prepared as soon as possible to assist the in reducing delays further into the construction sequence**

Consultant s Tender Drawings are conceptual only and shall not be re-issued and re-titled as Construction Drawings

During the preparation of construction drawings, obtain current architectural, structural, electrical plumbing and other services drawings as applicable and prepare construction drawings compatible with same Maintain the currency of the construction drawings during the initial submissions and the subsequent progress of the works, incorporating amendments and variations as necessary

Construction drawings shall be presented as prints, from CAD generated drawings, using scales of 1 100 down to 1 5 as necessary and in sufficient time to allow reviews and subsequent programmed manufacture and installation

Construction Drawings for mechanical, electrical hydraulic and fire services shall be to drawn to the same scales to enable co-ordination overlay of all services construction drawings Liase with other services contractors to ensure standardisation of construction drawings and co-ordination of services

The MSC, upon being granted the contract, to advise the HSC as to the preferred **location of floor wastes within plant rooms** to suit mechanical equipment layouts

Construction Drawings shall clearly show **levels** (RL) of all ductwork pipe work and equipment

The MSC shall be held responsible for the accuracy of all Drawings submitted The MSC shall have no claim whatsoever due to the non-detection and notification to the MSC of any errors, omissions or non compliance with the requirements of the contract

The amended drawings shall be returned to the Services Contractor Where alterations are substantial Drawings shall be re-submitted

Assume all responsibility for any work carried out without review Unreviewed work or equipment may be rejected, and if so shall be removed from site

Any work of rectification carried out during the Defects Liability Period shall have a separate Defects Liability Period of equal duration commencing from the date that the rectification work is completed

Notice of Practical Completion

When as determined by the Principal the works have been sufficiently completed a Notice of Practical Completion for either part or whole of the works will be issued The date of this notice shall be deemed to be the date at which the associated equipment has been placed in commercial service

Expiry of Defects Liability

One month before expiration of the Defects Liability Period, give notice in writing to the effect that the Defects Liability Period is about to expire The Defects Liability Period shall be extended by 1 day for each days delay in the provision of such notice

Final inspection and testing of the system and equipment shall be made and test results submitted in writing When and if satisfactory notice shall be provided to the Principal and payment of the retention monies will be approved

Contingency and Provisional Sums

Contingency and Provisional Sums shall be expended only on approval in writing All associated Administration and Service charges are deemed to be included in the Contract Sum

Reviews and Tests

Every facility is to be afforded for the review of any part of the work or apparatus during the course of manufacture or installation, and upon completion

Seven calendar days notice shall be given that any system is ready for test All technical, artisan and unskilled labour and all necessary instruments and apparatus required for testing shall be supplied

Upon completion, the works shall be tested under normal working conditions and as directed Such tests shall continue until it is demonstrated that the terms of the Specification have been complied with All defects disclosed during the tests shall be remedied immediately and fresh tests shall be carried out The MSC shall have no claim whatsoever due to the Principal or the Principal's representative not detecting and notifying the MSC of any errors, omissions or non compliance with the requirements of this contract

Noise

The installation shall operate to noise and vibration levels specified herein all noise and vibration being reduced to a minimum

Any items of equipment which are excessively or objectionably noisy in relation to the usage of surrounding areas are to be acoustically treated or removed and replaced with quiet equipment

Standards, Rules and Regulations

The work shall be carried out strictly in accordance with the requirements of any properly constituted Authority having jurisdiction over the works, except where this Specification lays down standards and methods of work over and above such requirements

The work shall conform to all appropriate current Australian Standards

Under no circumstances shall work be carried out contrary to Standards and Authority's requirements If questionable work is so specified, seek approval before proceeding

Submit all drawings, details, notices and obtain approvals where required by the various Authorities and pay all fees in connection therewith

The MSC shall ensure that all works required shall be carried out by its employees, sub contractors and assigns in accordance with relevant Commonwealth, State and Local Government regulations including necessary accreditations associated with the Occupational Health and Safety (OHS) Act including 'Prevention of Falls' section

Interpretation

The use of "provide," "supply," "install" in the specification and drawings shall be deemed to read ' supply, install, connect to related services, test commission, make operational, maintain, provide warranty and guarantee in the terms of the specification", unless clearly stated otherwise

' Tests on completion" shall mean such tests as are prescribed by the specification to be made by the MSC before the installation is taken over by the Principal

"Approved shall mean approved in accordance with the General Conditions of Contract

Words in the singular shall include the plural and words in the plural shall include the singular to the requirements of the context

Workmanship and Co-ordination and Site Discipline

All materials, plant and equipment supplied shall be new and of first quality and installed to a high standard of workmanship

Where the contract includes specialist sections of work these shall be co-ordinated fully into the contract works

One copy of this Specification and associated Drawings and Schedules shall be maintained on site whilst the works are in progress

The works shall be under the control of a Site Supervisor who shall be available to attend site meetings and site inspections and to supply all information as required and be responsible for interpreting and correlating all drawings issued

The right is reserved for approval and rejection of the person appointed as Site Supervisor The appointment shall be for the duration of the contract and no replacement shall be made without prior notification and approval

Six working days shall be afforded for the response to requests for information during construction

All variations to the contract shall be dealt with promptly and when approved shall be claimed in the

A minimum of 10 working days shall be afforded for review

On return of reviewed construction drawings provide 6 copies of each construction drawing

As Installed Drawings

Within 6 weeks of Practical Completion the drawings shall be accurately amended where necessary, including Architectural changes Submit legibly drawn and accurate drawings compiled therefrom as ' As Installed" drawings for approval These shall include diagrammatic plans of all piping and/or circuiting showing all valves and/or controls correctly designated and numbered and located for ready recognition by non-technical staff

The actual valves and/or controls on the equipment shall be similarly numbered and designated with brass tags

Circuit Schedules shall correspond with the switchboard scheduling

After review 3 prints of each 'As Installed" Drawing shall be submitted In addition CAD disks shall be provided in the dwg format containing all As installed' drawings and schedules

Operating and Maintenance Instructions

In addition, supply 3 sets of typed and bound Operating and Maintenance Instructions for the whole of the plant and equipment and including Wiring Diagrams These shall be comprehensive and include -

- General description and operation of installation
- Schedule of equipment and capacities
- Fire Test Certificates for fire dampers installed on the project
- Test and commissioning reports measurements and control set points
- Manufacturer s data
- Routine Maintenance

The above data shall be compiled in the following format

Section 1 - Index

All subdivisions of each section shall be indexed for quick reference

Section 2 - General Description and Capacities of Mechanical Services

Each individual comfort conditioning, ventilation and mechanical system shall be included as a sub-section and its function fully described Full details of air flow rates capacities temperatures, etc and any automatic systems shall be included Each mechanical control panel shall be fully described

Section 3 - As Installed Drawings

A complete set of "As Installed" Drawings, reduced to A3 size, shall be included in the Maintenance Manual

Section 4 - Equipment

Include sub sections, as for Section 2, for all major items of equipment which shall be listed with manufacturer's name, model and/or type No , Serial No , size, design ratings and all data necessary for reordering Details for component items, belts, motors, bearings, etc, shall be included for each piece of equipment

Section 5 - Installation Maintenance and Operating Instructions

Include sub sections as for Section 2, incorporating manufacturer's installation maintenance and operating instructions for each item of equipment A comprehensive maintenance schedule to be followed throughout the warranty period shall be included

Section 6 - Commissioning Figures

Include sub sections, as for Section 2, and list all commissioning figures for each item of equipment

Section 7 - Plant Operating Instructions

Include sub sections as for Section 2 and provide a complete description and sequence of the methods required to start up operate and shut down the plants Include details as to normal and abnormal gauge readings, time delays, control set points, temperatures, differentials, and other relevant variable items to enable checking and adjustments by the Principal's staff Instructions shall also be included as to the action to be taken in the event of an **emergency situation**

Where computer software is incorporated for the running of plant and equipment 3 copies of such software, including installation procedures shall be provided including all necessary **passwords** for entry into the software to effect changes

Practical Completion

The sum of **$1 500 00** shall be retained at the time of issue of the Notice of Practical Completion This sum shall be held over and above any retention, service charges or other stipulated amounts and shall only be released after receipt of the above documents Should these documents not be received within 8 calendar weeks of the Date of Practical Completion, 7 days notice shall be given of intent to produce said documents At the expiry of this notice the documents shall be produced and the costs associated with the preparation shall be deducted from the sum nominated above

Commissioning of Mechanical Services

The complete installation shall be inspected tested and commissioned as elsewhere stated in this Specification **Certification** shall be provided to the effect that the installation has been completed, inspected, tested and commissioned by the MSC prior to the date of Practical Completion

Carry out insulation resistance, earth resistance, polarity, continuity and phase rotation tests during the progress of the work and provide all the necessary apparatus for the purpose, such apparatus being subject to the approval of the Contractor

Where applicable, in the case of comfort conditioning and refrigeration plant the whole or part of the refrigerant which may be lost as a result of failure of any part during normal operation shall be replaced

Instruction for Principal s Personnel

Allowance shall be made for the detailed instruction of the Principal s personnel in the operation of all systems

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PART B

SECTION 1

PARTICULARS OF WORK

1 1 EXTENT OF WORK

The work to be executed under this sub-contract comprises the supply installation, commissioning and maintenance for twelve (12) months of Mechanical Services, in accordance with Specification No 15192 and Drawing No 15192 M01& M02

The above works, together with other minor works specified herein, shall be completed in all respects in accordance with this Specification Drawings, the Annexed General Conditions such further instructions as may be given during the progress of the work and to the satisfaction of the stakeholders

1 2 GENERAL DESCRIPTION OF INSTALLATION

The existing Club is to be demolished and a new Club is to be built on the adjacent site

The Main Comfort Conditioning System for the new Club shall consist of a fully automatic plant consisting of multiple variable refrigerant volume (VRV) systems

Refrigerant shall be reticulated from the basement condensing units to air handling fan coil units located as shown on plan

Conditioned air shall be distributed from these fan coil units to selected zones throughout the Club via duct work and air outlets

Temperature conditions within each zone shall be controlled by individual electronic thermostats that shall automatically modulate refrigeration flow at each air handling unit

Ventilation Supply Air consisting of filtered outside air shall be delivered to the Male and Female Locker Room as make up air for the exhaust systems

Kitchen Exhaust Air shall be provided for the Kitchens via hoods, duct work and roof mounted fans Filtered make up air shall be provided via duct work and roof mounted fan
Kitchen exhaust hoods supplied and installed by the contractor

Toilet Exhaust Air shall be provided for all toilets and shower rooms via duct work and roof or ceiling mounted exhaust fans

1 3 DESIGN CONDITIONS

Outside

Summer	Winter
32 deg CDB 23 deg CWB	7 deg CDB

Inside

Summer	Winter	Set Point
23 deg C	21 deg C	22 deg C +/- 1 deg

The selection of all air handling and attenuation equipment shall be based on a maximum radiated sound power level as follows -

- **Condensing Units - 63 db(A)**
- **Fan Coil Units - 42 db(A)**

1 4 ASSOCIATED WORKS

All work covered by the Specification and Drawings shall be carried out by the Mechanical Services Contractor (MSC) except as follows

The MSC shall provide all necessary information to the Contractor to enable the Contractor to carry out and coordinate the following work with other trades -

- Provision of a co-ordination construction programme that will enable the MSC to execute work
- Locate and co-ordinate all mechanical subcontract work Ensure that duct work is installed as high as possible to enable installation of recessed lighting fittings
- Provision of site facilities for site employees, ie sheds, ablutions, etc
- Coordination and notification when any nominated Hold Points are reached during construction
- Making good after chasing
- Cost of power for testing and commissioning purposes
- Provision of storage area for mechanical equipment delivered to site However security and protection of this equipment shall be the responsibility of the MSC
- Provision of access panels in inaccessible ceilings, walls and bulkheads for volume control dampers, drains, equipment, etc All located by the MSC **Architect to note that fixed plasterboard ceilings will require a large number of panels**
- Provision of access to all plant rooms to OH&S requirements
- Provision of all necessary penetrations for the passage of duct work, pipes cable trays/ladders and conduits All located by the MSC Incorrectly sized or forgotten penetrations to be made good at the MSC's cost
- Provision of roof penetrations, kerbing and under flashing (minimum 200mm high) as located by the MSC Over flashing by the MSC

- Provision of concrete plinths graded where necessary for all air condensing units switchboards etc Heavy gauge chamfered galvanised, steel frames by MSC
- Cutting in and fitting of door grilles Door grilles supplied by MSC
- Cutting and trimming of openings for ceiling bulkhead and wall grilles Grilles supplied and installed by MSC
- Cutting and trimming of openings for eaves grilles Grilles supplied and installed by MSC
- Provision of specified roof insulation
- Provision of specified solar barrier on nominated windows
- Provision of primary support structures for the mounting of above-ceiling and fan coil units
- Commissioning of an Acoustic Engineer to report and make recommendations on noise/vibration abatement
- Provision of blanking plates behind external architectural louvres to seal ceiling spaces from outside air infiltration
- Provision of final sealing of all penetrations through walls, floors, ceilings and fire rated barriers
- Final connections and commissioning of equipment supplied by others
- Provision of **acoustic**, lay-in batts on false ceilings where fan coil units are installed above the false ceiling
- Provision of in-built shielding to all computer equipment located in proximity of current carrying conductors switchboards and substations
- Provision of regulatory internal signage
- Advise Insurer of the higher risk of damage/business interruption during the construction/commissioning/fit out stages of this project

Electrical

- Provision of temporary 230 volt power supply and temporary lighting during construction
- Provision of **Non-essential** sub mains with lugs to the mechanical services control panel Termination within panel by MSC
- Provision of lighting in plant areas including emergency lighting over control panels
- Provision of integrated switching for Kitchen Exhaust Hood lighting with the Kitchen lighting Lights and cabling to a junction box in each hood by the MSC

Fire

- Provision of fire trip signal cabling to the main mechanical services control panel Termination within panel by MSC
- Provision of smoke detectors within **1 5m** of above ceiling mounted fan coil units/equipment

Hydraulics

- Provision of temporary water during construction
- Provision of six (6) meter clearance between fresh air intakes, sewer vent pipes and flues, etc
- Provision of tundishes for condensate removal from all fan coil units **MSC to liaise with HSC as to size and location of tundishes**
- Provision of floor wastes in plant room Floors and slabs to be graded to floor wastes

1 5 SERVICE AND MAINTENANCE

For twelve (12) months from the date of Practical Completion, the complete works shall be fully serviced and maintained This work shall complement the terms of the warranty

The service shall include filter replacement, cooling tower/evaporative condenser inspection, testing and adjustment of controls, service to drains lubrication, belts adjustment, cleaning and treatment of any corrosion replace any faulty indicator lights, annual clean of face of cooling coils and condenser coils clean panels and components, tighten mounting bolts and check together with all other planned and preventative maintenance for good and proper service and operation of the plant

Annual cleaning to be done at the end of the warranty period

A minimum of twelve (12) monthly visits to the plant shall be made to carry out the above services At completion of the service period, copies of all service dockets previously signed by the Principal shall be forwarded to the Principal before payment for service is approved

1 6 SAMPLES

The following samples shall be submitted to site prior to ordering

- Each type of diffuser register, grille and louvre
- Flexible ducting
- Thermostats

1 7 SUBMAINS AND CONDUITS

The following **sub main(s)** shall be provided by the **ESC** Terminate these sub main(s) within the control panel(s)

MSCP 250A 3 phase neutral and earth

The above sub main sizes and types are for tendering purposes only and may differ from the final sizes and types selected Liaise with the ESC as to the capacity and type of sub mains and advise as to suitability prior to the ESC placing orders for the sub mains

No variations shall be accepted due to failure to liase in this matter

1 8 ELECTRICAL SAFETY

It is not a requirement of the contract that work be carried out on live switchboards Should such work be carried out assume full responsibility for all consequences of such action

Protection device settings shall be set at the lower end to ensure instantaneous interruption of short circuit arc and earth faults

Detailed investigation prior to and extreme care during the drilling of existing walls and slabs in which live cables may be embedded

1 9 CONFINED SPACES

Where confined spaces arise that could create difficulties for personnel during future maintenance and operation of equipment refer such a scenario to designated site management

1 10 SCAFFOLDING AND HOISTING

Allow for all scaffolding and hoisting necessary for the installation of the works

1 11 PROGRAMMING, STAGING AND HOURS OF WORK

Programming Staging and Hours of Work shall be in accordance with the Head Contract requirements

Timing and programming are vital to the satisfactory execution of these works and submission of a tender shall be with full acknowledgement by the tenderer that he has allowed for all normal and additional labour and working hours on any or all days of the week that may be necessary to adhere to agreed programmes and to achieve completion of the whole of the works by the due date all without additional cost to the stakeholders

It is anticipated that the site shall be open during all normal building trade working hours on Mondays to Saturdays

Perform and complete the work in accordance with the programme prepared and shall assist in scheduling and programming the work to fit in with the overall project construction programme

When excess of normal working hours are required to be worked to maintain the time schedule,

obtain the necessary consent and it shall be deemed that these necessary provisions have been made in the tender and no compensation shall be authorised for any additional costs involved

1 12 HOLD POINTS

The following Hold Points shall be programmed to enable reviews/inspections to be implemented before a continuance of associated construction/installation -

- Prior to installation of solid ceilings
- Prior to 'livening up Main Control Panels

SECTION 2

CAPACITIES AND EQUIPMENT SCHEDULE

2 1 GENERAL

All equipment shall have the capacities and requirements as scheduled below as specified in Section 3 and shown on the Drawings Equipment must be capable of occupying the space available allowance being made for service and removal, where necessary, of components

Noise levels shall be compatible with the design levels specified

Vibration levels of equipment shall not exceed 0 5 mm/sec for equipment in or adjacent to occupied areas and 1 3 mm/sec for plant room areas

All plant, where shown on Plans as being exposed to the weather, shall be fully weatherproofed

All plant and equipment shall be suitable for the environment in which it is installed

2 2 COMFORT CONDITIONING

- **VRV System**

Fan Coil Units

Unit No	FCU-1/6	FCU-7/14	FCU-15
Type	Cassette	Cassette	Ducted
Total Cooling Capacity kW	13 0	10 5	9 1
Total **Sensible** Capacity kW	9 5	7 7	7 4
Total **Latent** Capacity, kW	3 5	2 8	1 7
Supply Air, l/s	500	430	480
Fresh Air l/s	180	130	75
External System Resistance Pa (for tender purposes only)	n/a	n/a	100
Entering Air Dry Bulb, deg C	25 0	25 5	24 0

Entering Air Wet Bulb, deg C	18 0	18 3	17 0	
Noise Level, dB(A at 3 meters	____	42	____	

Unit No	FCU-16	FCU-17	FCU-18/19	FCU-20
Type	Ducted	Ducted	Cassette	Ducted
Total Cooling Capacity, kW	20 3	23 3	14 0	20 0
Total **Sensible** Capacity, kW	18 0	19 3	9 8	14 1
Total **Latent** Capacity, kW	2 3	4 0	4 2	5 9
Supply Air l/s	1200	1200	500	960
Fresh Air, l/s	105	180	n/a	260
External System Resistance, Pa (for tender purposes only)	150	150	n/a	150
Entering Air Dry Bulb deg C	23 6	24 0	23 0	25 3
Entering Air Wet Bulb, deg C	16 8	17 1	16 0	18 1
Noise Level dB(A at 3 meters	____	42	____	

Condensing Units

Unit No	CU-1	CU-2	CU 3	CU 4	CU-5
Location	_____		Basement Plant Room		_____
Type	_____		Heat recovery		_____
Arrangement	_____		Vertical discharge		_____
Cooling Capacity kW	78	84	34	28	49
Steps of Cooling	_____		Inverter unit		_____
Noise Level dB(A)	_____		63		_____

2 3 VENTILATION

- **Supply Fan**

Number	SF-1
Area Served	Kitchen
Location	Duct riser
Type	In-line centrifugal, duct mounted, direct drive
Capacity l/s	3130 / 2350
Motor Speed RPM	960 / 72
External System Resistance, Pa (for tender purposes only)	250
Fan Outlet Velocity m/s (max)	8
Speed Control	n/a
Noise Level dB(A)	60

- **Outside Air Fans**

Number	OAF-1	OAF-2 & 3	OAF-4 to 7
Area served	Lounge/Gaming Room	Lounge	Function Rooms
Location	___	Ceiling bulkheads	___
Type	___	Direct drive, short case axial	___
Capacity L/s	290	360	260
Motor Speed, RPM	___	1440	___
External System Resistance (Pa) (for tendering purposes only)	___	50	___
Fan Outlet Velocity	___	8	___
Speed Control	___	n/a	___
Noise Level dB(A)	___	42	___

- **Exhaust Fans**

Number	EF-1	EF-2	EF-3	EF-6
Area Served	Female Toilet	Male Toilet	Lounge Toilet	Staff Toilet
Location	Ceiling	Ceiling	Ceiling	Duct riser
Capacity l/s	490	580	425	35
Motor Speed RPM	1440	960	1440	1500
External System Resistance, Pa (for tender purposes only)	150	150	150	50
Fan Outlet Velocity, m/s (max)	8	8	8	8
Speed Control	n/a	n/a	n/a	n/a
Noise level, dB(A) at 3 metres	51	47	51	33

Number	EF-4	EF-5
Area Served	H1-Kitchen exhaust	H2-Dishwasher exhaust
Location	Duct riser	
Capacity l/s	3890 / 2600z er	325
Motor Speed RPM	1440 / 960	1440
External System Resistance, Pa (for tender purposes only)	200	100
Fan Outlet Velocity, m/s	8	8
Speed Control	n/a	n/a
Noise level dB(A) at 3 metres	67	47

SECTION 3

EQUIPMENT SPECIFICATION

3 1 VARIABLE REFRIGERANT VOLUME (VRV) SYSTEM

General

Each system shall be air cooled, split type multi-system air conditioner as manufactured by DAIKIN Industries Limited The equipment shall consist of modular condensing units connecting to multiple fan coil units each having capability to condition independently for the requirements of the room and tested and certified under laboratory conditions in accordance with the requirements of the current edition of AS 3823 2 (MEPS)

The condensing unit shall be able to connect multiple different type and capacity fan coil units to be controlled individually and be charged with R410A

The system shall be capable of refrigerant piping up to 100m between the condensing and fan coil units with 50m level difference The distance from the first refrigeration pipe branch take-off down stream from the condensing unit to the last fan coil unit shall be 40m

The **3 pipe (heat recovery) system** shall be utilised such that groups or individual fan coil units on one system may cool or heat independently The units shall have maximum noise levels as specified under ' Design Conditions"

Condensing Units

The condensing unit shall be completely weather proofed and corrosion resistant, factory assembled, tested and pre-wired with all necessary electronic and refrigerant controls

The unit shall be capable of operating under all ambient conditions to which it will be subjected Suction pressure unloading being installed as necessary

The condensing unit shall incorporate an inverter controlled compressor which is capable of changing the speed linearly to follow the variations in cooling and/or heating load

The refrigeration circuit of the condensing unit shall be complete with refrigeration compressors, motors fans, condenser coil, electronic expansion valve, solenoid valves 4 way valve, distribution headers capillaries, filters shut off valves service ports, receivers and accumulators and all other components which are essential for satisfactory operation

The condenser coil shall be manufactured from copper tubes bonded to copper/aluminium fins with **high corrosion treatment of acrylic resin type**

The condensing unit fan motors shall have multiple speed operation and be of high static resistance type

The following safety devices shall be part of the condensing unit high pressure switch control circuit fuses, crank case heaters fusible plug, thermal protectors for compressor and fan motors over current protection for the inverter and anti-recycling timers

Oil recovery cycle shall be automatic occurring 1 hour after start of operation and then every 8 hours of operation Oil separators are standard with the equipment together with oil an equalisation system

When the units are in reverse cycle mode de-icing facility shall be included Protection against liquid slugging shall be included All piping shall be installed in accordance with the manufacturer's recommendations

If any condensing unit malfunctions, the remaining units shall be capable of maintaining their continuous operation, thus avoiding full shut down of the system

The modular condensing unit shall have staged defrost cycles, thus ensuring continued heating operation

A hot dipped galvanised heavy gauge, 50x50, mesh shall be installed on the condenser to protect the fins from damage

Fan Coil Units

The fan coil units shall be of the ducted ceiling type or cassette type

The basic components are a fan, an evaporator coil and an electronic proportional expansion valve

Fans shall be direct drive centrifugal type with statically and dynamically balanced impellers

Coils shall be of the direct expansion type constructed from copper tubes expanded into aluminium fins to form a mechanical bond

The units shall be internally insulated with fibreglass as supplied by the manufacturer

A 32mm diameter (minimum) condensate drain shall be installed from each fan coil unit drain tray to the nearest tundish or other approved locations Cassette units shall incorporate in-built condensate pumps

The expansion valve shall be an electronic proportional type

The ducted units shall draw return air and outside air through a mixing box mounted on the back of the unit

The mixing box shall be fabricated from 1 0mm galvanised steel and shall be internally insulated as above

The unit or mixing box shall be equipped with panel filters as specified hereinafter

A safety tray shall be placed beneath the unit extended under pipe work connections, and shall be piped to waste as above

Any fan static pressures shown in the Schedule are estimates only and may differ to static pressures calculated for the particular coils, filters louvres and dampers offered and the final ductwork routing Prior to purchasing fans, determine the actual static pressures and provide correctly sized fans and/or motors

Branch Selector Unit

The branch selector unit shall be utilised in conjunction with the 3 pipe refrigeration and conditioning system whenever individual simultaneous heating/cooling control is required Each branch selector unit shall be capable of controlling one to six fan coil units

The branch selector unit shall have two solenoid valves which are opened by a signal to cool or heat from the remote controller

The branch selector unit will be completely pre wired and pre piped and internally insulated

The branch selector units shall be positioned as close as practicable to the fan coil units in which they serve

3 2 IN LINE CENTRIFUGAL VENTILATION FANS

Supply and install in line centrifugal fans with the capacity and arrangement as per schedule and plan when operating against the system resistance

In line centrifugal fans shall be direct motor driven, with three-phase motor
Fan motors to be (2) speed where specified

The fan construction shall be of **Fantech Fan Direct or Ductline** manufacture with permanently lubricated sealed ball bearings and be suitable for the environment in which it is installed

Fans shall be selected to be compatible with the sound levels specified and shall not exceed 50 dB(A) at 4 metres from the discharge free field measurement for fans up to 1 500 l/s and 55 dB(A) for fans up to 6 000 l/s

Any fan static pressures shown in the Schedule are estimates only and may differ to static pressures calculated for the particular coils, filters, louvres and dampers offered and the final duct work routing Prior to purchasing fans/motors, determine the actual static pressures and provide correctly sized fans and/or motors

3 3 AXIAL FANS

Supply and install short case axial flow fans with the capacity and arrangement as per schedule and plan when operating against the system resistance

Axial fans shall be direct motor driven non-overloading three phase motors
Fan motors to be (2) speed where specified

The fan construction shall be approved equal to Fan Direct or Fantech SC Series with permanently lubricated sealed ball bearings, suitable for a ten year life

Fans shall be selected to be compatible with the sound levels specified

Any fan static pressures shown in the Schedule are estimates only, and may differ to static pressures calculated for the particular coils filters louvres and dampers offered and the final ductwork routing Prior to purchasing fans/motors determine the actual static pressures and provide correctly sized fans and/or motors

3 4 FILTERS

All mechanical supply systems shall be equipped with air filters of Farr or other approved manufacture

Filters frames and accessories shall be installed in filter boxes, or conditioner housings so that they or the media are readily removable without the use of tools

Filter media shall be of 20% or greater efficiency, in accordance with AS 1324 using **Test Dust No 1** The initial pressure drop across the filter media shall be less than 60 Pa

Filter sizes and face velocities shall be in accordance with the manufacturer's nominal ratings

Media shall be readily replaceable and removable from filter frames

Filters shall be as follows

100mm Panel Filters - Farr 30/30

At the end of the warranty period allow to replace all existing filters by supplying and installing new sets of filters in every air handling plant

3 5 DIFFUSERS, REGISTERS, GRILLES AND LOUVRES

Supply and install diffusers registers and grilles sized as shown on Plan, of Air Grilles manufacture Generally outlets and grilles shall be fitted with volume control dampers, of type to suit the air flow

All diffusers shall have mechanically lockable cores which shall not rely on their own weight or spring clips for attachment

Where diffusers registers and grilles are installed in inaccessible ceilings provide approved opposed blade dampers at each item Where duct take offs are accessible provide approved dampers at duct take off

Samples of each type of outlet shall be provided for approval before ordering

Rectangular Supply Air Diffusers shall be aluminium rectangular base air diffusers, to suit the ceiling grid used Final location shall be co-ordinated to suit the ceiling grid and lighting layout and associated ceiling work Diffusers shall be flat or bevelled, finished with a powder coated finish, colour to be nominated by Architect Neck sizes shall be as shown on Plan

Provide plenum boxes on diffusers where flexible ducts are used

Supply Registers shall be universal type with horizontal and vertical adjustable blades, aluminium construction with a powder coated finish, colour to be nominated by Architect Stream splitter dampers shall generally be used Neck size shall be as shown on plan

Ceiling Rectangular Return Air Grilles shall be egg crate grilles fitted with opposed blade dampers, adjustable through the grille face

Finish shall be powder coated, colour as nominated by the Architect

Ceiling Exhaust Air Grilles shall be aluminium egg crate to suit the ceiling grid and lighting layout and associated ceiling work with attached opposed blade dampers Neck size shall be as shown on plan

Finish shall be powder coated colour as nominated by the Architect

Door Grilles shall be aluminium full chevron double sided to suit doors of varying thickness Grilles shall have a powder coated finish colour to be nominated by Architect

Where door grilles are to be installed by others, it is the responsibility of the MSC to ensure that this work is done as specified

Outside Air Louvres shall be aluminium weatherproof with horizontal louvres unless otherwise noted on plan supplied with non-corrodible bird wire mesh Louvres shall be anodised to colour nominated by Architect (Main plant room discharge grilles to be half-chevron type for low pressured drop)

3 6 ELECTRICAL CONTROL PANEL

Supply and install in the location shown on plan, the air conditioning control panel of **Luke Electrical Pty Ltd Fanelec Pty Ltd P W Brown Electrical Pty Ltd City Wide Electrical Pty Ltd or RJT Electrical Pty Ltd** manufacture Alternate approved manufacturers may be considered subject to a fully complying tender being offered

The panel shall be constructed to conform with the Local Authority's requirements, including fault rating and to suit the space available allowance being made for service and removal of components All equipment shall be powered and controlled from the control panel

Before manufacture is commenced on the panel, submit fully detailed drawings for review, showing dimensions type and make of equipment to be installed method of construction disposition of equipment and wiring diagrams

The control panel shall be constructed from high quality furniture steel, 2 0mm gauge The panel shall be internally painted with gloss baked white enamel finish and externally with two coats of Automotive Lacquer in colour to be selected The door shall be hinged lockable and be complete with a rubber gasket Standard meter boxes shall not be acceptable as a control panel

Refer to the Schedule of Standard Details Sketch WSM-02 for a typical control panel

The panel shall be front wired, and all equipment spaced to allow adequate ventilation All wiring shall be terminated using Weiland type terminals or equal mounted on racks, each of adequate current carrying capacity and each coded to match the incoming cable Provide separate terminals for each incoming conductor

Circuit Protection **Merlin Gerin General Electric** or **Terasaki** circuit breakers shall be installed to protect all sub-circuits

Motor starters and contactors shall comply with the applicable Australian Standard

Starters and contactors shall have minimum contact life of 12 000 starts for eight hours duty and 1 100 000 starts for cycling equipment Motor starters and contactors shall be of the Brown Boveri Sprecher and Schuh or Siemens manufacture

Contactors operated from time proportional controls shall be adequately sized for repetitive operation

All heaters shall be operated via contactors

Motor starters shall be sized and correctly set to adequately protect the motor against over current All overloads shall be coordinated with the associated upstream protective device in a Type 1 configuration (short circuit) in accordance with AS 3947

The starter shall provide protection against overload on each phase, phase failure and shall have no volt release The starter shall have a manually operated reset button

'Soft starters' shall incorporate a shunt trip facility (once motor/drive up to speed) and statutory limitations on torque harmonics and starting current

Relays and time delays shall be interlocked to give Fail Safe operation Relays shall be the plug in type of Telemecanique, Idec or NHP Finder manufacture

Control/test switches shall be "Kraus and Naimer' or Idec" panel mounting type

Provide on the fascia of the panel the main isolating switch, indicator lights and such controls as described under Clause "ON/OFF SWITCHING"

Indication Provide green indicator lights for all operating motors Provide a red indicator light for the paralleled safety alarm from each unit and for faults on all other motors Provide a red indicator light (flashing) for the fire alarm trip relay Indicator lights shall be protected LED, illuminated push buttons, with lamp test switch, of **Telemecanique** (ZB4-BW (----) Series) or **Idec** manufacture

Labelling The control panel shall be externally labelled and each motor starter, relay and contactor shall be labelled all with black writing on white 'Traffolyte" engraved labels

Provide pocket behind control panel door and locate copy of wiring drawing in this pocket at Practical Completion

Ascertain the type and location of the sub main and construct panel to suit, refer also to Section 1 Make off and terminate the sub main

Liaise with the ESC as to the capacity of the sub main(s) and advise as to suitability prior to the ESC placing orders for sub mains

The main switch shall be of Dumeco, MEM or Stromberg manufacture, non-auto and be operable without opening the control panel door(s)

Tag all incoming and outgoing cables with numbered ferrules of Critchley manufacture or approved equal

Remote Master Fault Alarm

Provide and install in the Administration office a remote fault alarm light which shall master (parallel) all fault lights on the control panels This fault alarm light shall be red, flashing and be mounted on a recessed, stainless steel engraved panel Resetting the fault shall reset the light Alarm lights shall be protected LED illuminated push buttons, with lamp test switch of **Telemecanique** (ZB4-BW (----) Series) or **Idec** manufacture

SECTION 4

SITE WORKS AND MATERIALS

4 1 DUCTWORK

All duct work shall be constructed from best quality galvanised sheet steel All sizes shown on the drawings are clear internal dimensions Submit Construction Drawings for approval

All duct sections shall be of rigid construction and shall be cross broken or stiffened to prevent sagging drumming and vibration Where necessary reinforcing angles shall be fastened to duct panels

All changes in direction or size of ducts shall be gradual and ample throat radius of bends shall be provided

Where the duct centre line bending radius is less than 1 5 times the width of the duct panel, full depth turning vanes shall be fitted to the ducts **Double thickness turning vanes** shall be used for square bends

All transformations shall be equal, symmetrical and at 1 4 grade

Ducts shall be rigidly fixed to the building structure by means of neatly fabricated steel brackets Duct hangers and brackets shall be mounted from primary structural members or slabs Provide all intermediate supports necessary Purlins shall not be used for duct suspension unless approval is obtained from the Contractor Where duct work is exposed to general view, hangers shall be installed prior to installation of ceilings when possible Where duct hangers penetrate ceilings, a cover plate suited to the type of hanger shall be installed to provide a neat finish

Maximum spacing of hangers and supports shall be 2 5 meters When additional loads are carried supports at smaller intervals shall be provided as necessary

Cooperate with the Contractor and other Contractors regarding clearances from the building structure and other services All dimensions of duct work and other equipment shall be verified on site prior to manufacture and installation Establish the location of other services, in particular recessed light fittings and ensure that correct clearances are maintained from these services

Prior to installation all mild steel brackets and flanges shall be thoroughly brushed and painted with an approved metal primer

Where ducts up to 750mm wide are exposed to view in occupied space ducts shall be increased in gauge uncross broken and internally stiffened if necessary and external flanges omitted

Flexible connections shall be fitted between each air handling unit and the supply, return air and outside air ducts

Gauge of sheet steel used shall be not less than those set out in the following table -

Width of Panel	Minimum Gauge
Up to 600 mm	0 6
601 to 1000 mm	0 8

Rectangular ducts of 600mm and less in width shall be joined by means of a slide and drive' joint

or approved equivalent Ducts of 1200mm and less shall be joined by means of standing slide or pocket lock joints or approved equivalent

Longitudinal joints shall be made using grooved seam or Pittsburgh Lock systems

All seams and joints shall be rendered completely airtight by means of approved methods

All duct take-offs shall be fitted with manually controlled dampers or deflectors with approved locking devices with ' open" and "shut' positions clearly marked After balancing the damper spindles shall be marked indicating the normal operating position Control rods shall be used on damper blades over 0 1 sq m

Where ducts pass through building structure the opening where required shall be made weatherproof all in accordance with the relevant regulations

Take all necessary precautions to keep scrap metal and debris out of ducts and equipment Before fitting of supply registers, exhaust grilles and fan connections, the installation shall be checked in the presence of and to the complete satisfaction of the Contractor

Ensure that all penetrations for duct work are approved by the Contractor

Flexible Ducting

Flexible Ducting shall be installed where indicated on the Drawings Duct work shall be non-acoustic construction of Bradford manufacture having an R-Value of 1 5

Provide volume control, butterfly dampers at each flexible duct take-off connection

Flexible duct work shall be installed with 40mm fibreglass insulation, covered with an aluminium laminated foil jacket for vapour sealing

Duct work shall have four (4) - zero fire rating, tested in accordance with AS 4254

Generally flexible duct work shall be of the unperforated (non-acoustic) type unless otherwise specifically nominated on the drawings

Duct work joints to fittings and sleeves shall be made with **10mm metal or nylon bands** Banded joints shall be tightly formed, to give a structurally sound and airtight joint Overlapping onto fittings and sleeves shall be a minimum of 50mm

Vapour barriers shall be rolled back before jointing is made After the joint is made, roll back the vapour barrier and join with approved pressure sensitive tape

Tape used for structural jointing will not be approved Ducting shall be supported to prevent sagging and stretching of the duct, maximum spacing at 1 75m intervals using 75mm banding fixed back to the slab or structure

Repair any punctures of the vapour barrier

Plenum boxes shall be installed on diffusers supplied by flexible ducts The plenum boxes shall be supported independently of the ceiling

Kitchen Exhaust Duct

Kitchen Exhaust duct shall be supplied and installed as shown on Drawings Kitchen exhaust duct joints and seams shall be fully and permanently sealed such that they are liquid tight in accordance with AS 1668

Duct gauge shall be 1 2mm and horizontal runs shall fall 0 5% in the direction of airflow A plugged 25mm drain shall be provided at the lowest point of each duct run

Access panels shall be provided in horizontal ducts at each 3000mm and at each change of direction for cleaning

4 2 PIPEWORK SYSTEMS & REQUIREMENTS

Drain Lines

Provide necessary drain lines including to ensure all condensate is correctly conducted to sewer or other approved location

Drain lines shall be installed to waste in Type C copper or when approved Class 6 UPVC piping where not subject to damage

Drain line sizes shall generally be 32mm and shall be installed to waste Provide cleanable traps

Condensate lines from air conditioning plant shall be provided with cleanable traps with a water seal sufficient to overcome fan pressure (or suction) Provide an air break between the plant and waste point

Condensate lines over false ceilings, or where damage can occur due to formation of condensation, shall be **insulated with 10mm insulation** and vapour sealed

The HSC shall provide tundishes over which the MSC shall terminate condensate and drain piping Liaise with the HSC as to the **size and location of all tundishes** to ensure satisfactory removal of condensate No variations shall be considered due to failure to liaise in this matter

Condensate lines shall **not** be connected to stormwater lines where **surcharging** is possible unless approved by the Principal

Any connection to sewer shall be made to the Authority's approval

Refrigeration Piping

Refrigeration piping shall include all necessary piping fittings, components accessories and controls to give a complete and effective operating system The piping system shall be installed by a qualified refrigeration tradesman only

All refrigerant piping shall be of solid drawn refrigeration grade seamless copper to AS 1571 including that provided for gauges and controls

Factory assembled equipment shall be in accordance with the manufacturer s requirements

Joints shall be made thoroughly gas-tight by approved methods

Where joints and fittings are necessary, they shall be in accessible positions All pipe is to be thoroughly cleaned internally by rotary brushing with steel buff and the utmost care taken to prevent the inclusion of foreign matter

Resilient supports shall be used to prevent the transmission of noise and vibration to the building structure

Refrigerant piping within ceiling spaces shall not be run directly on top of ceiling purlins and members Piping shall be run on 20mm thick timber planking, rigidly supported to purlins or slabs and the piping supported at intervals as specified hereafter Alternatively, 'Unistrut' channels at 1500mm centres may be used

The importance of absolute cleanliness in pipe work cannot be overstressed Cleaning after fabrication should be thorough and all welding on site carried out with the pipe work charged with nitrogen

Threaded joints shall only be used where unavoidable

All refrigerant piping shall be sized according to the sizes laid down in the American Society of Heating Refrigeration and Air Conditioning Engineers' Data Book, and installed in accordance with AS 1677

The refrigerant lines and fittings shall be sized for not more than the following equivalent drops in saturation temperature

Liquid	0 6 deg
Suction	1 1 deg
Hot gas	1 1 deg

Refrigerant piping shall be sized and positioned to allow uninterrupted oil flow, minimum sub-cooling loss, prevent pulsation noise, uneconomic pressure drops and trapping of the refrigerant

Provide an approved refrigerant liquid isolating valve in the liquid line in all installations

Insulate liquid lines where exposed to sunlight

Liquid line solenoid valves and pressure controls shall be installed as specified under Automatic Controls clause

All refrigeration systems shall be pressure tested evacuated and charged to the satisfaction of the Contractor Records of the commissioning shall be kept and presented as detailed in Section 6

Refrigerant circuits shall be pressure tested with nitrogen as follows -

Refrigerant	**High Pressure Side** (kPa)	**Low Pressure Side** (kPa)
R410A	3700	2000

After pressure testing an evacuation test to 500 microns shall be carried out The evacuation shall be broken with refrigerant and the system charged After charging the system shall be checked for leaks using an electronic detector

4 3 PIPEWORK MATERIALS AND WORKMANSHIP

General

All piping shall be of best quality available and shall be in accordance with the appropriate current Australian Standards suited to the installation design temperatures pressures types of fluid and the surrounding environment

Refer also to clause Pipe work Requirements

Pipes are to be laid in continuous lengths where practicable and are to be bent where possible in order to minimise the number of joints

All piping shall be cut square with the run of pipe and all cutting burrs removed with a proper pipe reamer

All piping shall be arranged so as to allow for expansion by means of bends or approved expansion joints All expansion loops shall be pre-expanded or pre-compressed as required on installation

All piping shall be supported by means of approved brackets, pipe hooks will not be permitted Vibration isolation materials or mounts shall be provided at hangers Approved type anchor brackets shall be provided and fitted where indicated by the Contractor each being made to allow for the easy removal of pipes for repairs

Where pipes pass through floors, walls, ceiling etc , copper sleeves must be provided in order to allow for free expansion and contraction of the pipe work and prevent the transmission of vibration to the building structure Pipe work shall clear the structure

The MSC shall be fully responsible for ensuring that all penetrations for pipe work are approved by the Contractor

Any exposed ends of pipes which may be left during the course of installation shall be temporarily sealed with approved caps or plugs

Pipe hangers and brackets shall be mounted from primary structural members or slabs Provide all intermediate supports necessary Purlins shall not be used unless approval is obtained from the Contractor

Provide all necessary protection, such as fireproof blankets to ensure that no damage occurs or no fire risk is created due to welding

Where piping is run on the floor in plant rooms or service areas it shall be fully protected by installing a 3mm galvanised steel inverted channel section the full length of the piping run

Copper Pipe

All copper piping shall be solid drawn and comply with AS 1571 or AS 1572 as appropriate Allowable stress at various temperatures shall be in accordance with AS 4041

Generally sections of pipe shall be joined by swaging and brazing All brazing shall be carried out by skilled tradesmen and must be to the entire satisfaction of the Principal

Pipe sizes nominated are nominal outside diameter Flanges shall be gunmetal

Pipe shall be supported at the following intervals -

Pipe Nominal Size mm	6 25	32	40	50	65	80	100	125	Above 150
Horizontal Runs m	2	2 5	2 5	3	3	3	3	4	4 5
Vertical Runs m	2	2 5	2 5	3	3	4	4	4	4 5

4 4 ISOLATING MOUNTINGS AND BRACKETS

It is imperative that no vibration is transmitted to the building structure and the Contractor shall be fully responsible in this regard

All vibrating machinery shall be carefully isolated from the building structure by mountings of approved manufacture

Piping which is subject to vibration shall have spring or rubber in shear resilient mounts Hangers around insulated piping shall have **wooden inserts** between piping and hanger clip Sleeves of galvanised sheet metal shall be used on small bore piping

Fan coil units and ventilation fans shall be supported on hanger rods and RIS mounts Condensing units shall be supported on waffle rubber pads

4 5 ELECTRICAL WIRING

Carry out all electrical work in connection with the equipment supplied under this Contract using one of the following contractors, **Luke Electrical Pty Ltd Fanelec Pty Ltd P W Brown Electrical Pty Ltd City Wide Electrical Pty Ltd or RJT Electrical Pty Ltd** Alternate, approved contractors may be considered subject to a fully complying tender being offered

The whole work materials and equipment shall fully comply with the current AS Wiring Rules and to the requirements of the Local Supply Authority and are to be approved by and to the satisfaction of the Principal

See also Section 1 for sub main requirements Section 3 "Electrical Control Panel and Section 5 ON/OFF Switching" and "Automatic Controls"

Wiring

Carry out all electrical power reticulation in single insulated V75 conductors, minimum size 2 5 mm^2 Single insulated **run in rigid PVC conduit** except as below supported at 1m intervals or duct with removable lid Double insulated conductors shall be run on cable trays

Control conductors shall be 1 5 mm^2 minimum 240 volt grade Shielded cable shall be used for wiring to electronic sensors All control conductors shall be **run in rigid PVC conduit** supported at 1m intervals

The jointing of conductors shall not be permitted

All conductors shall be copper unless stated otherwise

Where flexible connections are required between the fixed wiring and equipment approved flexible conduits incorporating approved compression fittings shall be used All connections shall be by approved cable lugs or other approved method

Wiring shall **not** be installed in dedicated fire hydrant/hose reel cupboards

The complete installation shall be earthed to the satisfaction of the Principal, Local Supply Authority and AS Wiring Rules

Conduit

Unless otherwise specified all conduit shall be Rigid, Heavy Duty PVC conduit of approved manufacture not less than 20mm diameter

All fittings such as junction boxes, couplings bends elbows, wall boxes etc used in conjunction with the plastic conduit shall be of approved plastic material and design and all connections made between conduit and fittings shall be securely cemented with an approved PVC cement or where directed screwed into fittings Provide expansion couplings as necessary

Conduit exposed to the weather shall be screwed galvanised steel

Conduit drops for thermostats and switch wires shall be chased into walls and columns at an early stage unless otherwise noted Failure to do so shall render the MSC liable for making good previously finished surfaces

Where approval has been given to run conduit exposed it shall be ESCO' - 'Wireaway"

Isolating Switches

Provide suitable isolating switches adjacent to each motor remote from the Control Panel, complying in all respects to the requirements of the Local Supply Authority

Isolating switches shall be suitable for padlocking both in the ON and OFF position similar to "Wilco' or Federal Series and shall be rated for at least 125% of the full current for the motor

4 6 INSULATION AND SHEATHING

General

Whether specified herein or not, the Contractor shall effectively insulate the surface of all pipes, ducts vessels and equipment subject to heat loss gain or condensation

Insulation materials shall be in accordance with AS 4859 and be approved by the relevant authorities with regard to fire hazard properties Unless otherwise approved, all adhesives, vapour barriers and coatings used shall have zero indices for Ignitability Spread of Flame and Heat Evolved and an index of not greater than three for Smoke Developed all in accordance with AS 1530 High temperature (1200°C) insulation to be used where passing through fire resistant construction

Ductwork

Where shown on the drawing the duct work shall be insulated as directed Diffuser plenums and boxes shall be insulated as per the associated duct work

Internal 25mm Bradford Fibertex Rockwool Duct Liner (60 kg/cub m) duct insulation faced with Acoustituff foil laminate

The insulation shall be cut and fitted such that all junctions are tightly butted to prevent heat leakage Fix studs and speed clips at 300mm centres for ducts over 300mm Install U-channels to firmly hold the insulation at end of each duct section, formed from 0 5mm galvanised steel, with minimum of 25mm turn back Fit crimped corner angles 25mm x 25mm x 0 5mm for duct work less than 300mm width and 50mm x 50mm x 0 5mm for larger ducts Fix 50mm x 0 6mm crimped cover strips over junctions

External 25mm Bradford Fibretex 350 Rockwool (60 kg/cub m) flexible blankets, faced with Thermofoil 750 heavy weight, fire-resistant, foil laminate

Install studs and speed clips as follows -

Duct work 400 mm to 800 mm	One row at centre line at 400mm spacing
Duct work over 800 mm	Staggered formation at maximum 400mm spacing

Studs and speed clips are not required on horizontal surfaces on top of duct work

Longitudinal joints must be on the bottom side of the duct Seal all joints and punctures with 75mm impermeable pressure sensitive tape, including speed clips to produce a complete vapour seal

All duct work shall have continuous galvanised steel corner angles installed, 38mm x 38mm for 25mm insulation and 63mm x 63mm for 50mm insulation Fit 12mm galvanised steel strapping at 750mm spacing

Acoustic Treatment Allow for the supply and installation of insulated "wavebar' and Boral "Soundstop around all sides of flexible connections between fan coil units and the associated supply and return air duct work

Refrigeration Suction and Liquid Line Piping

Subject to the subclause General above suction line piping where the main pipe run is equal or less than 40mm lines shall be insulated with 20mm Armaflex or equal Thread onto the pipe wherever possible All joints and ends shall be completely vapour sealed Split insulation shall be glued to the pipe and the longitudinal and transverse joints, glued and vapour sealed

For sizes on systems above 40mm, all suction line piping shall be insulated with 25mm thick section of preformed fire retardant grade expanded polystyrene pipe insulation The sections shall be banded to the pipes and completely vapour sealed with Sisalation 450

All insulation shall be sheathed with 6mm zincanneal in plant rooms and where subject to damage

Where exposed to weather, insulated pipe work shall be sheathed in 6mm galvabond, all joints sealed watertight Sheathing shall be banded at 500mm centres with galvabond straps (12mm x 1mm)

Liquid line pipe work within roof spaces without insulation over, or exposed to sunlight, shall be insulated as above

Liquid lines on reverse cycle units shall be similarly insulated as suction lines

4 7 PAINTING

The following items shall be painted -

(a) All exposed duct work, brackets
(b) All exposed piping sheathed and unsheathed
(c) All exposed metal conduit
(d) All grilles as specified
(e) All equipment

All surfaces to be painted shall be thoroughly cleaned by approved methods of all mill scale, dirt and/or grease before priming coats are applied

Where practicable all equipment is to have a priming coat applied before delivery to site If during transit and/or installation this priming coat is damaged then the damaged areas shall be reprimed before the finishing coat is applied

All paints used shall be capable of withstanding the temperatures of the surfaces encountered without deterioration and shall be applied evenly over all surfaces

Duct work, sheathing and brackets shall be given one etch priming coat and two finishing coats of gloss paint

Generally, where colours do not require co-ordination with adjacent architectural finishes such as in plant and service areas the colours listed below shall be used

Duct work	Cream Y34
Drain	Black
Refrigeration	White
Switchboard Casing	Beige Y54
Switchboard Upper Fascia	Beige Y54
Switchboard Doors	Golden Brown X53
Electrical Conduits/Trays	Light Orange X15
Frames	Light Grey N35

Where duct work and equipment is exposed within occupied areas or exposed to view generally and this requires coordination with adjacent architectural finishes, colours shall be as nominated by the Principal

4 8 LABELLING

Provide engraved Traffolyte 200 x 200mm labels, black writing on white on all condensing units fan coil units, ventilation fans and other major items, indicating the following -

Name, Number, Area served

Proposed wording for each label to be submitted for approval prior to final engraving

Labels shall be secured by adhesive and screw fixing

Coordinate naming and numbering with final control panel wiring diagram

Switches, remote from the plant room used for the control of air conditioning plant shall be suitably *engraved as to their function Wording to be submitted for approval*

4 9 PLINTH FRAMEWORK

The MSC shall provide and locate 1 2mm galvanised steel frames into which the Contractor will provide concrete for the plinths The top 25mm of the frame shall have a 45 deg chamfer all round, towards the centre of the plinth

SECTION 5

SYSTEM OPERATION AND CONTROLS

5 1 ON/OFF SWITCHING

Comfort Conditioning Plant Provide a time clock control seven day with day omit, 50 hour reserve mounted in the control panel where shown on plan together with a three position "ON-OFF-AUTO" switch clearly labelled for each plant The time clock shall be a programmable **Grasslin** (2 channel) electronic time switch, TAL372

Toilet exhaust systems shall operate from the above controls, when applicable

The kitchen ventilation systems shall operate from the above controls with separate "OFF-LO-HIGH" manual switch for hood H1 and OFF-ON' manual switch for H2 The make up system fan shall be electrically interlocked to operate in high/low speeds when the kitchen exhaust hood (H1) fan is switched on

Air conditioning controls shall be as provided by the VRV systems manufacturer

A centralised controller shall be mounted in the control panel and hard wired control/sensor pads installed as shown on plan for each air conditioning zone

Interface controls shall be provided where necessary for interconnection between the VRV systems and other plant/controls

5 2 AUTOMATIC CONTROLS

Particular attention shall be paid to the control system as it is intended that, once initiated the entire operation of the plant shall be completely automatic and unattended

All equipment shall be interlocked as necessary for the correct sequence and safe operation and protection of the system components

Noise (RFI) suppression equipment to be installed when necessary and to the approval of the Principal

The mounting height of sensors is to be nominated on site but generally shall be positioned 1700mm above floor level to the centre of the sensor unless otherwise shown on drawings

Sensors shall be mounted in such a position that they are not affected by any artificial and/or solar heat source

All controllers shall be mounted within the respective control panel and shall incorporate set point adjustment

Controls shall be permanently powered if required to maintain calibration

Controls external to the control panel shall be located in readily accessible locations

Fire Trip Relay

The ESC shall bring a fire trip signal (24V DC) in MIMS to the control panel The signal shall be no voltage, closure on alarm

A manual reset facility shall be provided at the panel

Automatic Reset

The control systems shall automatically reset on restoration of power, after a power failure All plant shall restart allowance being made for necessary time delays to prevent power overloads

Provide a flashing alarm indicator adjacent to each ceiling cassette unit

SECTION 6

INSPECTION, TESTING AND COMMISSIONING

6 1 GENERAL

Thoroughly carry out the following inspection testing and commissioning procedures (where applicable)

The MSC shall prepare and implement an Inspection and Test Plan which shall be used as the basis for the inspection testing and commissioning process

The MSC shall ensure that a safe system of work environment is implemented during the inspection testing and commissioning phases

Record results of all tests taken on typewritten sheets (prepared for the purpose) prior to forwarding these records to the Contractor for review

Sheets shall indicate each result

DESIGN FIGURE TEST FIGURE CHECK FIGURE

Demonstrate to the Contractor on site the test results taken and submitted providing at least 48 hours notice

Carry out thorough air balancing testing and commissioning using competent personnel in accordance with British Standard 848 Part 1, 1963 or, alternatively the American SMACNA Standards

Provide the instruments used for air balancing testing and commissioning with up to date calibration certificates and subject to approval by the Contractor

Copies of air balance and test results shall be included in the Operating Instructions

It shall be a condition of this Contract that the inspection, testing and commissioning procedures stated above shall be satisfactorily implemented before a Notice of Practical Completion is provided Certification shall be provided to the effect that the installation has been completed inspected, tested and commissioned by the MSC prior to the date of Practical Completion

The Contractor shall visit site once only to review the test and commissioning results previously performed by the MSC The MSC shall accept responsibility for all costs associated with return site visits by the Contractor due to unsatisfactory test results

Allow for the provision of one (1) experienced mechanical technician and one (1) experienced controls technician on site during Practical Completion

6 2 AIR SYSTEM

Balance the air system to within +/- 10% of design quantities below 500 l/s, +/- 5% above 500 l/s Adjust register blades to correct angle to control correct air movement

Where it is found that air quantities are low or high fan speeds blade pitch angles shall be adjusted to obtain the correct value Where such an adjustment requires the replacement of fan motor these shall be supplied at no extra cost

Check and set the operation of fresh and return air dampers in the correct position, sealed in that position with a locking device Damper positions shall be permanently marked after balancing is complete and accepted Indent damper shafts such that dampers can be sealed into position with a grub screw

Record the following information showing design and actual test results (Provide three copies when approved)

(a) Fan Speed (rpm)
(b) Fan Capacity (l/s)
(c) Return Air (l/s)
(d) Outside Air (l/s)
(e) Fan suction pressure (Pa)
(f) Fan discharge pressure (Pa)
(g) Motor full load rated current
(h) Motor running current

Air quantities are based on heat loads known at design stage Air quantities may need to be varied to suit eventual heat loads on site Determine final air quantities during commissioning

Provide a single line layout of the ductwork showing each outlet Show at each outlet the design and actual air quantity in litres per second

NOTE Where doubt arises that the air quantities are not in accordance with the design requirements, a NATA Certified Contractor shall be employed

Where it is found that air quantities are outside tolerances laid down, the cost of employing the air balancing contractor and the cost of rectification shall be deducted from the monies outstanding under the contract

6 3 CONTROLS

Test and record the following information as applicable showing design and actual test results

- Thermostat settings
- Zone temperature readings
- Ambient conditions at time of readings
- Time clock settings
- Other controls

During commissioning, all set points shall be marked with coloured varnish or similar, after final setting Additionally for controllers, set points including reset ratios proportional bands and the like shall be neatly marked on or adjacent to each controller

Set points shall also be nominated in the Operating Instructions

6 4 REFRIGERATION

Test and record the following as applicable showing design and actual test results

- Pressure held (min 8 hours)
- Vacuum attained (M/M)
- Vacuum held (M/M) min 8 hours
- Suction pressure (full load)
- Discharge pressure (full load)
- Compressor running amps (full load) and rated amps
- Safety low pressure cut out
- High pressure cut out
- Condenser fan running and rated amps

Note also

- Refrigerant level

6 5 CONDENSATE DRAIN PIPING

All condensate drain piping shall be thoroughly tested by introducing water to ensure that there are no obstructions within the condensate drain piping

As the damage caused by blocked condensate drains can be extensive it is imperative that this testing be carried out prior to hand over to the Principal

6 6 ELECTRICAL

The MSC shall be responsible for complete and thorough inspection testing and commissioning of the installation carried out under this contract in accordance with AS 3000, AS 3017 and other applicable standards and to the Contractor time programme

The MSC shall prepare and implement an Inspection and Test Plan which shall be used as the basis for the inspection testing and commissioning process

Obtain approval and certifications from the parties having jurisdiction, including the Supply Authority, before energising newly installed or reconnected wiring or equipment

The MSC shall ensure that a safe system of work environment is implemented during the inspection testing and commissioning phases

All plant, equipment and systems having electrical connections shall be thoroughly tested for earth continuity and resistance, insulation resistance, polarity, fault loop impedance and correct circuit connections

Marking and labelling for all circuits devices and equipment shall be installed as soon as such items are energised Control and isolation devices shall be checked and verified for operation on the correct circuit

Testing and commissioning shall include all necessary adjustments to protection device settings and fuse cartridge ratings to suit the characteristics of the electrical loadings Particular attention shall be given to optimising settings on protection devices with respect to their instantaneous interruption/minimisation of short circuit arc and earth faults, ie set at lower end but without causing nuisance tripping

Without circumventing the detailed requirements above and of the appropriate individual standards, there are some common requirements for inspection and testing of electrical equipment which should be addressed -

- Safety Signs and labelling – awareness (if its energised it must be labelled)
- Insulation integrity between parts which operate at different system voltages
- Interlocks to prevent inadvertent/simultaneous operation

The MSC shall provide all labour, materials and instruments required for the purpose of carrying out testing and commissioning and shall make good at his own expense any defects disclosed during inspection testing and commissioning

On completion of inspection testing and commissioning, the installation, where applicable, shall be certified/approved by all Authorities having jurisdiction over the works

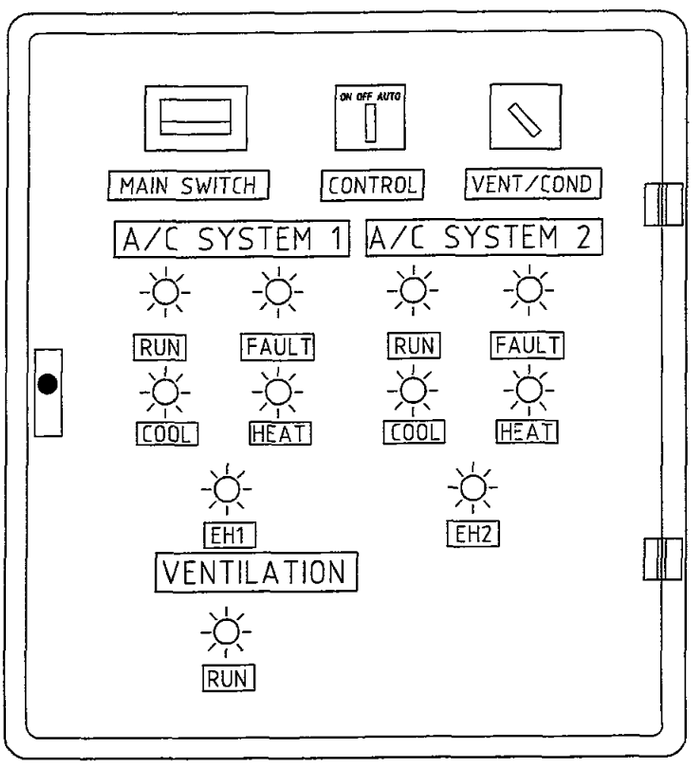
Records of tests, tabulation of settings and copies of all approval notices including the final acceptance notice, shall be incorporated into the Operating and Maintenance Instructions Manual

It shall be a condition of this Contract that the inspection testing and commissioning procedures stated above shall be satisfactorily complied with before a Notice of Practical Completion is issued

SECTION 7

SCHEDULE OF STANDARD DETAILS

DRAWING NO	DESCRIPTION
WSM-02	MECHANICAL SERVICES CONTROL PANEL



NOTES

1 THIS DRAWING IS TYPICAL ONLY AND SHOWS TWO AIR CONDITIONING SYSTEMS AND ONE VENTILATION SYSTEM

2 REFER TO THIS SPECIFICATION FOR THE ACTUAL INDICATOR LIGHTS AND CONTROLS REQUIRED

LEGEND

E H ELECTRIC DUCT HEATER

MECHANICAL SERVICES CONTROL PANEL

STANDARD No	ISSUE
WSM-02	0

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504 LEVEL 5 10-12 CLARKE STREET CROWS NEST NSW 2065

TEL (02) 9437 9226
FAX (02) 9439 2785

BAYVIEW GOLF CLUB

PITTWATER ROAD

BAYVIEW NSW

MECHANICAL SERVICES

SCHEDULE OF TECHNICAL DATA

SELECTED MECHANICAL CONTRACTOR

Name

VRF FAN COIL UNITS

Unit Nos	FCU-1/6	FCU-7/14	FCU-15	FCU-16/17	FCU-18/19	FCU-20
Maker's Name						
Size (LxBxH)						
Full Load Amps						

VRF CONDENSING SET

Unit Nos	CU-1	CU-2	CU-3	CU-4	CU-5
Maker s Name					
Size (LxBxH)					
Full Load Amps					

SUPPLY FANS

Number	SF 1
Maker s Name	
Model	
Full Load Amps	

OUTSIDE AIR FANS

Number	OAF-1	OAF-2 & 3	OAF-4 to 7
Maker's Name			
Model			
Full Load Amps			

Above equipment fully complies with Specification

Tenderer	Signature	Date

BAYVIEW GOLF CLUB

PITTWATER ROAD

BAYVIEW, NSW

MECHANICAL SERVICES

SCHEDULE OF TECHNICAL DATA

KITCHEN EXHAUST FANS

Number	EF-4	EF-5
Maker's Name		
Model		
Full Load Amps		

TOILET EXHAUST FANS

Number	EF-1	EF-2	EF 3	EF-6
Maker s Name				
Model				
Full Load Amps				

DIFFUSERS, REGISTERS, GRILLES AND LOUVRES

Make

FILTERS

Make

DUCTWORK INSULATION

Make

Type

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

BAYVIEW GOLF CLUB

PITTWATER ROAD

BAYVIEW NSW

MECHANICAL SERVICES

SCHEDULE OF TECHNICAL DATA

ISOLATION MOUNTINGS

Make

Material

CONTROLS

Make

Series

SUB-CONTRACTORS

CONSTRUCTION DRAWINGS

SHEETMETAL

ELECTRICAL (SWITCHBOARDS) ONE OF THE FOUR NOMINATED

ELECTRICAL (WIRING) ONE OF THE FOUR NOMINATED

PIPING

REFRIGERATION

INSULATION

COMMISSIONING

Above equipment fully complies with Specification

Tenderer _____ Signature _____ Date _____

5 F LANDSCAPE SPECIFICATION

LANDSCAPE WORKS SPECIFICATION

1 GENERAL

1 1 SCOPE

SPECIFIED IN THIS SECTION

Siteworks including soil preparation

Planting including plant and other materials, planting works transplanting and planting establishment

Building works associated with landscaping including edging

1 2 STANDARDS

REFERENCED DOCUMENTS The following standards are referred to in this project specification

- AS 4419 (2003) Soils for landscaping and garden use
- AS 4454 (1997) Composts soil conditioners and mulches

1 3 ORDERING

REQUIREMENT Within 12 days of the date of acceptance of tender furnish proof of ordering the required materials and advise immediately if any supply difficulties are *encountered No extension of time will be granted if any material or product is not* available because of late ordering

2 QUALITY

2 1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made at the following stages

- Setting out completed
- Subgrades cultivated or prepared for placing topsoil
- Grassing bed prepared before turfing, seeding, or temporary grassing
- Plant holes excavated and prepared for planting
- Upon Practical Completion
- Upon completion of Defects Liability work
- Upon completion of Plant Establishment work

Minimum notice required 48 hours

2 2 SAMPLES

General

General Submit representative samples of each material packed to prevent contamination and labelled to indicate source and content should the product differ from the specified named product and supplier

Samples schedule

Item	Quantity
Imported topsoils/ mixes	5kg
Compost types	5kg
Mulch types	5kg

2 3 SUBMISSIONS

Materials

Supplier's data Submit supplier's data including

material source of supply

3 SITE MANAGEMENT

3 1 WORK NEAR TREES

Work under trees

General Do not remove topsoil from, or add topsoil to, the area within the drip line of the trees

Excavation If excavation is required near trees to be retained, give notice and obtain instructions Open up excavations under tree canopies for as short a period as possible

Hand methods Use hand methods to locate, expose and cleanly remove the roots on the line of excavation If it is necessary to excavate within the drip line use hand methods such that root systems are preserved intact and undamaged

3 2 EXISTING SERVICES

Marking

Before commencing earthworks locate and mark existing underground services in the areas which will be affected by the earthworks operations including clearing, excavating and trenching

Excavation

Do not excavate by machine within 1 m of existing underground services

3 3 SPOIL

Off site disposal

General Remove surplus excavated material and surplus site clearance material from the site

Vegetative spoil

Remove vegetative spoil from site Do not burn

Weed eradication

Herbicide Eradicate weeds using environmentally acceptable methods, such as a non-residual glyphosate herbicide in any of its registered formulae, at the recommended maximum rate Do not allow herbicide to come into contact with any part of existing trees to be retained Under existing trees hand remove grass and weeds within a 300mm radius from the trunk, and any other area where the herbicide may be ineffectual

Manual Regularly remove, by hand rubbish and weed growth throughout grassed, planted and mulched areas Remove weed growth from an area 750 mm diameter around the base of the trees in grassed areas Continue eradication throughout the course of the works and during the planting establishment period

3 4 SUBSOIL

General Cultivate subgrade in turfed and planted areas

Cultivation

Minimum depth 100 mm

Cultivation depths (mm)

- Turfed areas 100mm

- Planting areas see details

Services and roots Do not disturb services or tree roots, if necessary cultivate these areas by hand

Cultivation Thoroughly mix in materials required to be incorporated into the subsoil Cultivate manually within 300 mm of paths or structures Remove stones exceeding 25 mm, clods of earth exceeding 50 mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation Trim the surface to design levels after cultivation

Additives

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

Subsoil Where imported topsoil is to be installed, rip subsoil and incorporate additives into the top 100mm layer of subsoil

Topsoil Where topsoil is insitu or to be installed apply additives to the topsoil and cultivate in

Contamination Where diesel oil, cement or other phytotoxic material has been spilt on the site topsoil or subsoil, excavate the contaminated soil and dispose off site

3 5 TOPSOIL

Generally Topsoil shall be imported topsoil obtained from an approved off-site source

Topsoil shall be equivalent to the following suppliers premixed products

- Lightweight Planter Box Mix equivalent to "Benedict Smartmix 4"
- Lightweight Planter Box Subsoil equivalent to "Benedict Smartmix 5"
- Native Garden Mix equivalent to Benedict Smartmix 6"

Placing topsoil

General Eradicate weeds by environmentally acceptable methods prior to placing topsoil Spread the topsoil on the prepared subsoil and grade evenly making the necessary allowances to permit the following

- Required finished levels and contours may be achieved after light compaction

  Grassed areas may be finished flush with adjacent hard surfaces such as kerbs paths and mowing strips

Contamination Where diesel oil cement or other phytotoxic material has been spilt on the subsoil or topsoil excavate the contaminated soil dispose of it off the site and replace it with site soil or imported topsoil to restore design levels

Finishing Feather edges into adjoining undisturbed ground

Consolidation

Compact lightly and uniformly in 150 mm layers Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics

- Finished to design levels
- Smooth and free from stones or lumps of soil
- Graded to drain freely without ponding to catchment points
- Graded evenly into adjoining ground surfaces

  Ready for planting

Topsoil types and depths

Spread topsoil types to the following typical depths

- Turfed Areas as detailed
- Planter boxes Coarse washed sand lightweight planter box sub-soil and lightweight planter box soil as detailed

  Mass planted Areas 250mm-300mm Premium Garden Mix

Surplus topsoil
Dispose of surplus topsoil remaining on site after placing by spreading as directed over the areas already placed or removing to another stockpile location as directed

3 6 COMPOST AND FERTILISER

Compost

General Provide well rotted vegetative material or animal manure free from harmful chemicals grass and weed growth

Standard To AS 4454

Fertiliser

Provide proprietary fertilisers delivered to the site in sealed bags marked to show manufacturer or vendor weight fertiliser type N P K ratio recommended uses and application rates

Fertiliser schedule

Location	N P K Ratio	Application Rate	Proprietary Item
All trees and shrubs excluding banksia grevillea	13 6 1	60 gm/m2	Osmocote
Native Plants of Proteaceae family	17 1 6 8 7	60gm/m2	Osmocote Plus Native Plant Food
All turf areas	9 1 40 17 8	50gm/m2	No 17 Lawn Food

4 GRASS

4 1 TURFING

Turf

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

Supply

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

Fertilising

Mix the fertiliser thoroughly into the topsoil before placing the turf Apply lawn fertiliser at the completion of the first and last mowings and at other times as required to maintain healthy grass cover

Laying

General Lay the turf in the following manner

- In stretcher pattern with the joints staggered and close butted
- Parallel with the long sides of level areas and with contours on slopes
- To finish flush after rolling with adjacent finished surfaces of ground paving edging or kerb

Strip turf laying Close butt the end joints and space the strips 300 mm apart Apply a layer of top dressing between the strips of turf Finish with an even surface

Rolling

Lightly roll to an even surface immediately after laying

Pegging

On steep slopes peg the turf to prevent downslope movement Remove the pegs when the turf is established

Watering

Water immediately after laying until the topsoil is moistened to its full depth Continue watering to maintain moisture to this depth Keep the grass in a healthy condition

Mowing

Mow to maintain the grass height within the required range Do not remove more than one third of the grass height at any one time Carry out the last mowing within 7 days before the end of the planting establishment period Remove grass clippings from the site after each mowing

Turfing schedule

Species or variety	Minimum thickness (mm)	Mowing height (mm)
Greenlees Park Couch (Cynodon dactylon Var)	30mm	1st cut 50mm Final cut 30mm

Maintenance

General Maintain turfed areas until the attainment of a dense continuous sward of healthy grass over the whole turfed area evenly green and of a consistent height

Failed turf Lift failed turf and relay with new turf

Levels Where levels have deviated from the design levels after placing and watering, lift turf and regrade topsoil to achieve design levels

Top dressing

When the turf is established mow remove cuttings and lightly top dress to a depth of 5 mm with a weed free imported sandy topsoil Topdressing material shall be a coarse or medium soil to As 4419 suitable for application on turfed or grassed areas Rub the dressing well into the joints and correct any unevenness in the turf surface

5 PLANTS

5 1 PLANTING

Plants

General Provide plants with the following characteristics

- Large healthy root systems with no evidence of root curl restriction or damage
- Vigorous well established free from disease and pests of good form consistent with the species or variety

Hardened off not soft or forced and suitable for planting in the natural climatic conditions prevailing at the site

- Able to support itself without needing stakes

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

Replacement Replace damaged or failed plants with plants of the same type and size

Labelling

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

Storage

Deliver plant material to the site on a day to day basis and plant immediately after delivery

Potting On

Do not carry out potting-on unless authorised

Individual plantings

Excavate a hole to the size shown on the drawings, or as a minimum twice the diameter of the root ball and maximum 50mm deeper than the root ball Break up the base of the hole to a further depth of 100 mm and loosen compacted sides of the hole to prevent confinement of root growth

Planting conditions

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

Watering

Thoroughly water the plants before planting immediately after planting and as required to maintain growth rates free of stress

Placing

Remove the plant from the container with minimum disturbance to the root ball ensure that the root ball is moist and place it in its final position in the centre of the hole and plumb and with the top soil level of the plant root ball level with the finished surface of the surrounding soil

Fertilising

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

Backfilling

Backfill with topsoil mixture Lightly tamp and water to eliminate air pockets Ensure that topsoil is not placed over the top of the root ball so that the plant stem remains the same height above ground as it was in the container

Climber and Espalier Planting

Provide ties and fixings and train plants to climbing frames against wall

5 2 MULCHING

Mulch

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

Standard To AS 4454

Organic mulches Free of stones

Mulch material

Organic Mulch

To all tree and mass planting areas Shall be 15mm pine bark

To planter boxes Shall be tea tree mulch

Placing mulch

General Place mulch to the required depth clear of plant stems and rake to an even surface flush with the surrounding finished levels

In broad scale areas Place after the preparation of the planting bed but before planting and other work

In smaller areas (e g trees in turf) Place after the preparation of the planting bed, planting and other work

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

Extent To surrounds of plants planted in grass areas provide mulch to minimum 750 mm diameter or as shown on the drawings

Depths Spread organic mulch to a depth of 75 mm, and gravel mulch to 40mmm depth

5 3 SPRAYING

Immediately report any evidence of insect attack or disease amongst plant material Where required spray with insecticide fungicide or both in accordance with the manufacturers recommendations Submit proposal and obtain approval before starting this work

5 4 STAKES

Stakes

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

Installation Drive stakes into the ground for at least a third of their length avoiding damage to the root system

Stake sizes

- For plants > 2 5 m high Three 50 x 50 x 2400 mm stakes per plant
  For plants 1 - 2 5 m high Two 50 x 50 x 1800 mm stakes per plant
  For plants < 1 m high One 38 x 38 x 1200 mm stake per plant

5 5 TRANSPLANTING

Small Palms

Two days prior to transplanting thoroughly water the rootball Select the diameter and depth of cut to minimize the cutting of roots Cut roots with sharp tools Do not fracture the ball of soils around the root system but maintain it in a firm condition during transplanting by wrapping in Hessian or other appropriate open weave material Plant as for mature trees Remove the rootball wrapping by cutting to avoid disturbing the rootball

Large Palms

Transplant by tree spade using a reputable tree transplanting contractor using best horticultural practices Install earth anchors and galvanised steel cable for temporary support where necessary

6 HARDWORKS

6 1 EDGING

Concrete Edging

Install 15MPa 100mm wide 100 deep insitu concrete edge where shown on the drawings Edging shall finish flush with adjacent surfaces Construct in accordance with acceptable trade standards and practices Provide movement joints filled neatly with resilient bituminous material at maximum 3m intervals

Steel Edging

Install steel edge where shown on the drawings surrounding decomposed granite Edging shall be minimum 100 deep and shaped to form a circle with consistent radius Weld ends together

6 2 DECOMPOSED GRANITE PAVING

Install pink/brown decomposed granite as available from Benedict where shown on the drawings Compact subgrade and grade slightly to drain Spread decomposed granite to a loose even thickness of 100mm Spray decomposed granite with water until thoroughly moist Compact by mechanical means to a minimum 75mm thickness graded evenly between design levels to a clean even and neat appearance showing no material over 25mm diameter The surface should be firm with a minimum of loose material Finish flush with adjacent steel edge

7 COMPLETION

7 1 PLANTING ESTABLISHMENT

Period

Commencement The planting establishment period commences at the date of practical completion

Practical Completion Practical Completion of all works shall include but not be limited to the installation and fixing of furnishings laying of pavements and completed walling works the germination of grassed areas the establishment of turfed areas replacement of plants which have failed and/or died been damaged or stolen during the contract

Required period 26 weeks

Existing planting and grass

Where existing grass or planting is within the landscape contract area maintain it as for the corresponding classifications of new grass or planting

Check Visits

Regardless of the weather the Contractor shall make a visit at least once every two weeks to check on any works needed and shall perform such works within forty eight (48) hours of checking

Log Book

The contractor shall keep a log book to record

- times of attendance on site
- problems noted
- instructions received
- actions taken
- materials used
- the response to actions
- any other matters of importance

Maintenance Program

Within 21 days from the date of Completion, submit a program schedule of works for the planting establishment period Specify the frequency and timing for all tasks described as part of the establishment requirements

Recurrent works

Throughout the planting establishment period carry out maintenance and establishment work Continue to ensure the general appearance and presentation of the landscape and quality of plant material

Establishment work shall include the items listed and any additional items deemed necessary to maintain the areas in good order

Generally watering mowing weeding rubbish removal fertilising pest and disease control reseeding returfing staking and tying replanting cultivating pruning hedge clipping aerating reinstatement of mulch renovating top dressing and keeping the site neat and tidy

- Plant replacement Continue to replace failed or damaged plants as specified at minimum 4 week intervals throughout the establishment period substitutions shall only be made with the approval of the Superintendent where a species is considered to be responding poorly to site conditions
- Native Grasses During the first six months of establishment all native grasses are to be treated with Pre-M pre-emergent herbicide/ fertiliser once every two months at manufacturers recommended rates In October fertilise all native grass with an appropriate slow release fertiliser
- Weeding and Clearing Remove all weed growth and re-occurring weed growth by hand or with approved herbicide throughout all planted and mulched areas at least bi-weekly Clear vigorous native grasses and ground covers from within 200mm from the base of any tree
- Climbing Plants Train and tie to climbing support frames
- Stake adjustment adjust as necessary to avoid damage to plant stems replace if damaged Remove at the end of the contract if so directed

Grass Commence grass maintenance works at the completion of turfing Maintain healthy weed-free growth Mow at a height consistent with the growth habit of the grass Generally (except during under wet conditions) mowing is to be carried out on a weekly basis during the mowing season (November to March) and bi-weekly during April to October Rake the lawn with a flexible rake before mowing at least once a month during the mowing season At the same time as mowing trim lawn edges Remove clippings from site

- Topdressing After initial topdressing as specified in GRASS topdress the lawn only where directed to smooth out irregularities or depressions in the lawn

Mulching maintain mulch in a clean tidy and weed free state remulch as necessary during the establishment period to maintain the specified depths

- Removal of Rubbish regularly remove rubbish debris litter etc irrespective of how, when or by whom it may have been brought to the site
- Leaf Litter Leaf litter shall be removed from all path and lawn areas and spread evenly over the mulched areas composted on site or removed from site Remove leaf litter at least bi-weekly during deciduous tree leaf drop period

  Watering water as required to maintain the best possible conditions for the health and growth of plants and turf the minimum acceptable watering requirement shall equal 20mm natural rainfall during any period of one (1) week
- Fertilising Fertilise all turf and planting areas with at least one application prior to completion of establishment period using a slow release fertiliser For plants use equivalent to Nutricote (for plants) at manufacturer's recommended rates and according to seasonal growth requirements

  Pruning remove dead broken damaged or diseased parts as they appear shrubs shall be allowed to grow to a natural form any plant that restricts access along a designated path shall be trimmed back by the removal of whole branches and shall not be hedged all prunings shall be chilled and mulched for use on site or collected and removed
- Disease and pest control The Contractor shall be responsible for the control of any pest or disease in plants or turf Record any evidence of insect attack or disease immediately it appears on plant material spray or dust strictly in accordance with the manufacturers recommendations and to comply with statutory requirements until the problem has been eliminated Proper care should be taken to protect the user and persons who may come in contact with the spray Spray outside normal working hours if necessary

7 2 DEFECTS LIABILITY PERIOD

The Contractor shall be liable for defects for all works undertaken during this contract for a period of 26 weeks to run after the date of Practical Completion and concurrent with the Plant Establishment Period

7 3 COMPLETION

Product warranty

Submit the supplier's written statement certifying that plants are true to the required species and type and are free from diseases pests and weeds

Cleaning

Stakes Remove those no longer required at the end of the planting establishment period

5 G KITCHEN AND BAR FITOUT SPECIFICATION

BAYVIEW GOLF CLUB

BAR & KITCHEN FITOUT

SPECIFICATION & SCOPE OF WORKS

FOR

FOOD & BEVERAGE EQUIPMENT
KITCHEN, BAR,
AND REFRIGERATION WORKS

FOR TENDER
Rev A

PREPARED BY

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JUNE 2007

FOOD & BEVERAGE DESIGN CONSULTANTS

1 00 PRELIMINARIES

1 01 GENERAL

This specification sets out the requirements for the fabrication, procurement, delivery, installation, testing and commissioning

The words "supply", "provide" and the like shall be deemed to mean "supply and fix" unless expressly stated to the contrary

Dimensions supplied in the drawings issued are to be used for pricing purposes only and not in fabrication without first being checked on site

1 02 SCOPE OF WORKS

The scope of works shall include all the work specifically referred to in the specifications and design drawings Such work shall comprise the following summary and require the contractor to procure, fabricate, deliver to site, install, commission, test and maintain the food service equipment and refrigeration equipment

Within this specification there shall be a need to provide goods and services that require a degree of engineering eg, refrigeration etc in all cases relating to such goods & services the contractor is to insure the performance of products provided perform to the expectations of this specification

The scope of work to be carried out under this specification is as detailed and not limited to the following,

- Construction of split level Bar areas including stainless steel working level, glass storage racks and baskets, provision for the mounting of beer founts and post mix, refrigerated bottle storage cabinets, back bar fitments
- Glass wash area including stainless steel working level glass storage racks and baskets, glass washing machines and ice making facilities
- Construction of coolroom and freezer to kitchen area
- Kitchen including the following fitments, stainless steel working tops, dishwashing equipment, exhaust hood, refrigerated storage both normal & low temperature
- Supply and installation of REFRIGERATION equipment

1 03 OMITTED ITEMS

It shall be the responsibility of the contractor supplying the goods to have inspected all drawings and documents associated with this specification to ensure correctness The written word shall take precedent over a drawing but not withstanding this the contractor shall be responsible for making allowance within the pricing for any omitted item

No allowance to the contract price shall be authorised for goods and/or services that are found to have occurred due to the supplier not reading the full specification and tender documents

All discrepancies noted shall be advised in writing on a separate form headed "TENDER DISCREPANCIES" at the time of lodgement of your pricing

1 04 WORK TO INCLUDE

The works shall include for all items of equipment as described within the Specifications, Bill of Quantities and indicated within the design drawings The equipment shall be inclusive of all accessories as per the sales brochure pertaining to the specific item

All controls, valves, strainers and approved safety devices required to operate the appliance

Interconnecting piping (refrigeration, electrical condensate etc) needed for the nominated appliance to operate shall be provided by the contractor

All refrigeration equipment and interconnecting electrical including control services between their respective condensing units Excludes power supply to Refrigeration cabinets (GPO) and Coolroom lighting

All equipment shall be supplied and positioned ready for final services connection

Chrome plated brass plug and waste shall be fitted to each sink bowl provided for within this specification unless nominated otherwise

Flame failure to be supplied and fitted to all gas equipment

Tap ware as nominated to all kitchen & bar equipment

Penetration holes for tap sets are to be provided within each stainless steel fabricated item, hand basin and sink bowl where required

Removal of site rubbish and surplus material arising from the work as detailed within this tender document

Provide all protective coverings necessary to ensure that the goods delivered to site are protected from other trades until commissioning has commenced
Removal of protective covering and cleaning of equipment as detailed within the tender documents

Coolrooms including concrete floors (Epoxy floor coating by builder)

Connection of all condensate lines and drain lines to over a tundish

1 05 WORK BY OTHERS

The following works are not to form part of the kitchen contractors responsibilities. but shall be carried out concurrently by other trades

Penetrations for the passage of all services to the Food & Beverage equipment

Power supply to the refrigeration switchboard

Cold water, hot water and drainage together with the final connection to equipment

Hot water and gas reticulation system and associated work required in connecting the equipment as supplied by kitchen equipment contractor

Concrete plinths and floor set down associated with equipment and/or fabricated items supplied by your company shall be carried out by other trades unless otherwise stated

Connection of the exhaust canopies to the mechanical ventilation systems

General building works, flooring, epoxy coatings, ceiling, wall finishes and painting etc

All joinery items and joinery work other than specified

Decorative front and serve ledge finish to bar

1 06 CHARACTERISTICS OF SERVICES PROVIDED

It shall be the responsibility of the supplier to ensure that all services being connected to the specified appliances are of a standard as recommended by the manufacturer

1 07 QUALIFICATIONS

Only suitable licensed tradesmen shall be employed on the work in their respective trade classification, which any authority having jurisdiction over the works require that the work is to be carried out only by licensed tradesmen

Work, who by good trade practice, is normally carried out by tradesmen (installation of stainless steel benching etc,), shall only be carried out by suitably qualified tradesmen

Refrigeration tradesmen shall be licensed by the Building Services Corporation and hold the supervisors license (Blue License) as a minimum requirement to perform work on site The Company performing the works must also be licensed and hold a Gold Card l license as issued by the Building Services Corporation

Under the Ozone Protection Act the refrigeration company performing the works must hold a CFC Gas Purchaser & User (O P Act 1989) l license

1 08 SCHEDULE OF DRAWINGS

The following drawings shall form part of the sub contract schedule

REFER TO BELOW FOR DRAWING SCHEDULE

The approved drawings for this project are as detailed,

• HRC Alliance	Drawing No 3040-1 Rev A	Equipment Layout
• HRC Alliance	Drawing No 3040-2 Rev A	Hydraulic Layout
• HRC Alliance	Drawing No 3040-3 Rev A	Electrical Layout

1 09 REGULATIONS

The works shall comply with the relevant requirements of any authority having jurisdiction over them, including the following -

All electrical work associated with the equipment and services being requested within this specification shall be carried out in accordance with State and Local Government regulations, Electrical Authority and the Australian Standards AS 3000, AS 1136, AS 1939, AS 1102-8, and AS 1102-12

All work associated with the equipment and services being requested within this specification shall be carried out in accordance with State and local Government regulations, Relevant Authorities and the Australian Standards applicable with the works to be undertaken
The National Food and Health Code and Local Health Department Food Premises Act shall be strictly complied with

Should the contractor note conflict in either the drawings and/or specifications against any of the above regulations then he is to immediately advise in writing this concern and request clarification

1 10 SITE CONDITIONS

It shall be the sub-contractors responsibility to obtain and check all site measurements, services, termination points, building finishes and structural profiles affecting the equipment and services necessary for the production of shop drawings, services layouts, fabrication and ordering

Similarly, it shall be the contractor's responsibility to verify access and ensure that the equipment is on site and position prior to being built out

1 11 REGULATIONS

After acceptance of tendered price, the following drawings shall be submitted progressively

Standard of working drawings shall be as per the sample enclosed within this documentation

01 Dimension plans (1 50) and elevations (1 20) of each area and each custom fabricated item including (1 10) sectional details where applicable

02 Catalogue sheets of all accepted standard items are to be issued within 14 days of tender acceptance

03 Separate dimension electrical connection layouts for each area (1 50)

04 Separate dimension hydraulic connection layouts for each area (1 50)

05 Separate dimension waste location layouts for each area (1 50)

All cost arising from any alteration to the works due to discrepancies or errors in, or omission from the drawing and specifications shall be borne by the contractor

1 12 SERVICES

It is the contractors' responsibility as part of the shop drawing procedure to re-issue service schedules in line with the finally accepted fabricated goods and equipment

All service drawings and penetration points as issued at the time of tender are to be checked and verified by the contractor prior to work commencing on site Failure to provide the correct information shall render the contractor liable for rectification of the service requirements

1 13 AS BUILT DRAWINGS

Within thirty days of completion of installation, the contractor shall
Re-submit all documents suitably amended to reflect the "as built" installation

1 14 DELIVERY AND STORAGE

Storage of equipment prior to installation shall be the responsibility of the contractor whether on site or off Should he select to store goods on site he must first obtain permission in writing Should permission be granted it should not relieve the contractor of his responsibility under this specification or his contract

Equipment and materials shall be stored indoors and 150mm above the floor level

Items of equipment shall be delivered on site to suit the installation program

1 15 APPROVALS

It shall be the contractors responsibility to ensure that all items of equipment have been approved by all relevant authorities and include certificates, and rating plates fixed to equipment before approval of acceptance will be given

1 16 PROTECTION AND CLEANING

The site shall be maintained in a clean and orderly manner and shall be cleaned at regular intervals by the sub-contractor

Equipment and materials shall be protected from damage during and after installation

All Stainless Steel surfaces and equipment shall be protected by self-adhesive plastic film and sheets of ply or similar material during the installation period Removal of the protective materials shall not occur until all work has concluded and the area is ready for final cleaning

Prior to practical completion, all equipment shall be thoroughly cleaned and any painted or finished surfaces damaged during installation, shall be re-finished so that the whole of the works is handed over in first class condition and working order

1 17 GUARANTEE

All equipment and work performed shall be guaranteed against defects in workmanship, materials and installation for a period of one year from date of acceptance exclusive of the manufacturer's guarantee

The Guarantee shall cover replacement of defective items, parts and materials including transport, labour, travelling cost and installation

As the principal operates on a 24 hour basis all warranties shall include for the period of operation

1 18 INSTRUCTION AND MAINTENANCE MANUAL

On completion of the work, and seven (7) days before the date of commissioning, supply two copies of an "Instruction and Maintenance Manual"

This manual shall consist of an A4 binder with the following information enclosed -

Title Page

Index

- Area, items number and description
- Maintenance instructions including a comprehensive statement of operational procedures and corrective actions to be taken should a fault occur with an appliance
- Equipment supplier's literature for all items of equipment, including details of manufacturer, local agent and local service organisation

- Manufacturer's installation drawing
- Wiring diagram
- List of spare parts required for maintenance
- List of tools required for maintenance
- As built drawing, elevations and services schedules

The Instruction Maintenance Manual documents shall be reviewed by the Project Manager and approved prior to FINAL PAYMENTS being released

1 19 DEMONSTRATION

The contractor shall provide a competent supervisor capable of supplying all information required for the operation of equipment for a period of one (1) working day

The supervisor together with the manufacturer's representative shall demonstrate their equipment to the staff and familiarise each staff member with operation and maintenance procedures

The contractor shall make arrangements for the demonstration to take place after practical completion giving a minimum of two (2) days notice and only when all staff members are present

1 20 OPERATIONAL MAINTENANCE

Breakdown Service

The contractor shall provide breakdown service during the principals operational business hours throughout the extent of the defects liability period When notification of a breakdown has been given to the contractor service must be provided within 24 hours by a trained competent maintenance person

Recording

The contractor shall provide a log sheet dully signed by the serviceman responsible for the work to certify that the breakdown service or maintenance work performed is correct and that the plant is operating in line with the commissioning performance data The log sheet is to be countersigned by a representative of the proprietor One copy of the log sheet shall be held on site with another being sent by mail to the proprietor

1 21 TAXES

All prices shall be plus GST

1 22 CHLOROFLUROCARBONS (CFC)

All new refrigeration systems shall operate on refrigerants as per the "Ozone Protection Act" (HFC type)

Chlorofluorocarbons (CFC) such as R12 are not acceptable for any system

1 23 ALTERNATIVES

Alternatives shall only be considered where the tenderer has provided a base bid which conforms to the specifications in all matters

Items offered, as an alternative must first be approved by the Consultant prior to offering and comply with all relevant authorities

1 24 SETTING OUT

The contractor shall set out, at the earliest opportunity the position and size of all openings and recesses necessary for the accommodation of all conduits, tubing, ducting and equipment included in this contract

The contractor shall not be entitled to any reimbursement of cost incurred over and above his contract price for professional ignorance of the precise requirements for such making good

1 25 SITE RECORDS

The contractor shall maintain on site up to date copies of all drawings and specifications relevant to his contract

1 26 SITE VISIT

The contractor shall inspect the site prior to providing his tender submission to ensure access is adequate and note any site conditions that will have baring on the tender provided No variations will be entered into due to a lack of prior knowledge of site conditions

2 00 WORKMANSHIP MATERIALS AND CONSTRUCTION

2 01 GENERAL

This specification sets out the requirements, which the manufacturer/supplier shall adopt for the workmanship, materials and construction methods to be used in fabrication and site installation

2 02 WORKMANSHIP

Equipment and materials to be supplied against this specification shall be new and unused and of the manufacturer's current production

Where possible all works shall occur in the contractors factory with the least amount of site fabrication occurring

Workmanship shall be of the highest quality with the contractor only using only 1st class sheet metal tradesmen for set out, polishing and welding

All drilling shall be reamed and all exposed edges left clean and smooth

Where the manufacturing process and welding disturb the original finish, carefully re-grind, polish and restore so as to match the grade and texture of the adjacent finish

Allow for protection of polished stainless steel surfaces during the period of construction and on site installation Protection must also be given to not only working tops but also legs, panels, under shelves, over shelves, tray races and any other stainless steel finish refer to clause (Protection and Cleaning)

3 0 STAINLESS STEL CONSTRUCTION STANDARDS

3 01 GENERAL

This section covers all stainless steel benching, associated shelving and stainless steel work required in the facility as indicated on the drawings All fabricated works shall be subject to shop drawings and issued for approval prior to manufacture

All benching shall be heavy duty and designed for easy cleaning and maintenance and shall be free of crevices in which food particles can lodge, and hard to clean corners

All fixing bolts shall be of stainless steel into propriety masonry anchors set below the surfaces of the finished screed or tiling Final bolting down shall be born using a silicone rubber sealing mastic in the anchor fixing

Working height of all benching shall be 900mm unless otherwise specified elsewhere

3 02 STAINLESS STEEL TYPE

Austenitic AISI 300 Series Non-magnetic and non-harden by heat treatment

Grade 304 Widely used for kitchen sinks, tubs, piping and vessels for food and chemical processing, urinals and architectural work, both indoors and outdoors

Stainless steel products shall be free from scale, and all surfaced shall be polished to #4 grade satin finish

All cut edges shall be de burred using a de burring tool as no item shall be acceptable that has the slightest possible risk of injury to the users

3 03 DEFINITIONS

For the purpose of this specification the following definitions apply

3 03 1	Bench	Flat working top
3 03 2	Drainer	Self-draining working top
3 03 3	Sink Bowl	Receptacle, with waste outlet, for Retaining liquids during washing operations manufactured as an integral part with drainer
3 03 4	Dry Edge	Flat working top extends to edge of Bench
3 03 5	Wet Edge	Raised nosing or beading to front and ends of drainer section within the bench
3 03 6	Splashback	Vertical upturn with 45 deg splayed edge to the rear of bench where the bench meets the wall, all vertical corners are to include a 20mm radius
3 03 7	Tile Edge	Top of splashback returned horizontally across to wall and then vertically up the wall face
3 03 8	Fascia	Turndown at the front and sides of the bench/drainer standard size 50mm
3 03 9	S/ Steel	equal or superior to AISA-304

3 04 STAINLESS STEEL CONSTRUCTION

The following construction standards are those which shall be provided throughout the Specifications and Bill of Quantities unless otherwise stated

3 05 BENCH/DRAINER CONSTRUCTION

Width as nominated 1 2mm thick stainless steel top, bonded (pressure glued) to 19mm thick water proof ply sheeting, undersealed with two part epoxy resin and hardener grey in colour NOTE Particular attention must be given to sealing all joints and crevices against the entry of vermin and moisture

Adhesive to be used when bonding the stainless steel sheeting to the waterproof ply wood backing shall be Bostic No 4241 with hardener

When applied the bonding shall be under pressure and held for a period of 24 hours

Support of the bench top shall be no greater than 900mm centres and supported as detailed below

3 06 TILE EDGE (to wall)

Horizontal return towards the wall to be not less than 20mm
Vertical return up wall (behind tiles) to be not less than 12mm

3 07 SPLASH BACK

To be formed integrally with the bench and/or drainer Vertical height not less than 100mm and returned back 20mm with at this point either a tile return or turn down whichever is specified All vertical corners shall include a 20mm radius

Unless specified as a tile edge the splashback shall have a 20mm return as specified shall be angled to a minimum of 15 deg to the horizontal and then turned down 15mm

Where a splashback is required to be under and exhaust hood it will be fabricated from 1 2 304 s/s pressured glued to FC sheeting with no viseable fixings above cooking line A 20mm lip to run vertical up behind exhaust hood will be required along with glue fixing to wall

3 08 SPLASHBACK – TO BENCHES ADJACENT TO COOKING EQUIPMENT

To be formed integrally with bench top Vertical height to match height of adjacent equipment The profile of the Splashback shall also match with the equipment and be fully sealed to prevent the entry of any grease or food acids In an island situation where there is a piece of equipment placed behind an infill bench which has a lower height than it's own Splash back it shall be covered in by a stainless steel panel, stitch welded to the top and two sides

3 09 WET EDGE

To be formed integrally with the drainer and have a front and two sides The back shall from part of the splashback

Vertical height shall not be less than 12mm from the base of the drainer
Top of the wet edge shall have a flat profile unless otherwise stated in the design drawings

From the drainer to the top of the wet edge there shall be a 45 deg slope

3 10 FASCIA

To be formed integrally with the front and both ends of the bench and/or drainer There shall be a vertical turn down not less than 50mm and returned horizontally under not less than 12mm

3 11 STAINLESS STEEL BOWLS

Shall be of the fabricated type from 1 6 S/S, press bowls shall not be used unless otherwise detailed within a particular item All internal corners and bends to have a radius not less than 25mm Each bowl shall be fitted with an approved 50 N B chrome plate waste fitting unless nominated

All sinks shown and specified for the kitchen area are to be fitted with a Vinedex 90032 Insink Dry Basket Arrestor or equivilant as approved by Sydney Water

General purpose bowls shall be manufactured from 1 2 mm thick stainless steel sizes as specified Drawn or stamped bowls are not acceptable

The rinse bowl to the inlet side of the dishwasher shall comprise a removable H type tray slide suitable for allowing 500 x 500 size baskets to be moved across the top face of the bowl opening and a perforated insert basket

3 12 BOTTOM OF BOWLS

The bottom of each bowl shall have a fall of not be less than 3 mm from the bowl wall to the waste fitting over a distance of 450mm Where the bowl is greater than 450mm the fall shall continue at the same rate of fall as indicated above

All welding shall be carried out using filler rods equal or superior to CIG 316 type

3 13 BOWL PERFORATED BASKET

Fitted to each rinse bowl shall be a stainless steel perforated basket which is to be inserted into the sink bowl and held 100mm above the base of the bowl The basket shall be held by 6mm stainless steel rod 120mm long welded across the adjacent angles of each corner The perforated basket shall be at a height of 150mm and have two stainless steel 3mm dia handles welded between sides, centralised at one third (1/3) intervals

3 14 DRAINER

A drainer is any section of benching which is enclosed by a wet edge and for which the main purpose of use is to maintain water or other fluids within a selected area

3 15 DRAINER TO DISHWASHER

Over a distance of not less than 1200mm the bench top will fall by 6 0mm to the dishwasher The splashback shall remain horizontal and show no fall

3 16 POLISHING

All visible surfaces shall be finished to a standard consistent or similar to Com Steel No 4 grade satin finish

This includes the outer facing of the sink bowls where they are visible Where they are not a first grind and polish is all that is needed

Polishing of bench tops where there is an angle return shall have the grain of the stainless steel intersect at the angle of the bench (front of back angle point)

3 17 BENCH / DRAINER SUPPORTS

All manufactured supports shall be manufactured from 32mm x 32mm x 1 2mm wall thickness stainless steel square tube section with proprietary adjustable foot, having a stainless steel dowel fixing to the floor Each support shall be at 900mm centres or less

3 18 UNDER BENCH SHELVING

This shelving may be of the fixed or removable type as specified within the drawings should there be no direction within the drawings then fixed type shelving shall be employed

Fixed type shelving shall be no less than 50mm from the rear wall and shall have a wall up stand not less than 40mm high returned back and down 15mm The shelf shall have a 40mm fascia to the front and both sides The shelf is to be cut and fully welded around each leg support

Removable type shelving may be constructed with a fascia all round

Both types of shelving shall be adequately reinforced by a top hat section fitted under the shelf and running the lineal length of the shelf The shelf shall be supported by either a wall brackets to the rear and a stainless steel leg to front or by stainless steel legs front and back If no direction is nominated on the drawings then the wall bracket to the wall shall be used No matter what type of support is used they shall be no greater than 900mm between centres

Shelving shall be manufactured from material not less than 1 2mm thick

3 19 OVER BENCH SHELVING

Over shelves shall be 1 2mm thick unbacked stainless steel and not less than 300mm wide over all Wall brackets shall be 25mm s/s tube and fitted at intervals of not more than 900mm centres and aligned to the bench supports under where practical All shelves shall have a minimum up stand at the back of 25mm with a turn back of 15mm and which shall stand clear of wall face not less than 25mm

3 20 ISLAND BENCHES

These benches shall be constructed in accordance with bench/drainer specification and shall be supported on pairs of stainless steel 32mm square tube legs braced between front and back at a height of 300mm from FFL The legs are to be braced along the lineal (horizontal) length at a height of 300mm from FFL to at least one side if not both Refer to the drawings otherwise it shall occur around all four sides
Benching in excess of 1200mm in length shall in addition to the standard framing have reinforced outer frame of 32mm stainless steel square tube continuous perimeter frame mounted under

3 21 POT RACKS AND TRAY SLIDES

Racks and slides shall be of the open rung type not less than 300mm wide, constructed of four (4) rows of 25mm stainless steel square tube with welded ends and supported on stainless steel brackets at not more than 900mm centres The brackets shall commence 150mm from each end

3 22 BENCH JUNCTIONS

The bench where it is interrupted by equipment or walls shall be terminated at least 50mm away from the obstruction and have a side fascia fitted Where it appears that cleaning cannot occur due to the clearance (50mm) being too small a distance, then a suitable size must be allowed as required by the Local Health Code

Benching may be butted to equipment where it is not feasible to have a cleaning gap However the bench if not removable shall be fastened to the equipment in such a way that it does not effect the operation of the equipment Silicon may be used to seal the gap between both

A free standing bench which is able to be removed can be butted to cooking equipment as required

3 23 TAPWARE

All sinks and drainers in this kitchen and bar specification are to be fitted and supplied with Enware Plaza Dual Mixer type tapsets unless specified

3 24 SPARE NUMBER

3 25 SERVICE OUTLETS

Where a service outlet or control is specified the contractor is to ensure that a suitable fixing plate is provided Such a plate will allow the outlet to be mounted without protruding beyond the line of the bench top or shelf it is mounted on or under

3 26 WALL CLADDING

Stainless steel wall cladding shall be supplied and installed as shown on the drawings and within the specification
The wall cladding shall be constructed and manufactured from 1 2mm stainless steel No 4 finish bonded directly to 6mm FC sheeting
The panelling shall be full length of the exhaust canopy or as specified and shall be full height from the underside of the exhaust canopy to the cove at the junction of the floor
All fixings are to be consealed and all corners welded

3 27 SERVICE CONDUITS

All penetration within the kitchen and bar are to be provided with a stainless steel collar The collar is to be supplied and installed by the kitchen and bar contractor

3 28 BASKET RACK

The rack shall be fabricated from 32 x 32 x 1 2 stainless steel tubular framework with 50 x 50 x 1 2 stainless steel runners The runners shall be fully welded at the vertical intersection where the runner meets the framework All welds shall be ground and polished to a no 4 satin finish

Each runner shall have a folded turn up to the rear to prevent the baskets from being pushed through The runners shall be fully deburred and rounded off at the front to a 25mm diameter radius on the horizontal plain

The rack shall be screw fixed to the underside of the bench work with heavy gauge screws or be incorporated as part of the support frame- depending on the location

3 29 HAND BASIN

Where shown on the drawings supply and install a 1 2mm type 304 #4 finish stainless steel hand basin 400mm x 500mm sealed to wall tiles

The hand basin shall include a pressed in soap holder, tap holes and a 40mm stainless steel waste fitted

Include a 600mm high splash back The splash back shall be formed from 1 2mm type 304 #4 finish stainless steel with the edges folded to three sides The splash back shall be fixed to the wall with stainless screws Mount the hand basin to the wall on stainless steel brackets

The Food & Beverage contractor shall provide an Enware HSF – 780 knee operated tap set for the basin, together with hot and cold mixer
Fixed above the hand basin on the splash back is to be a paper dispenser similar to a Tork model Acrylic M Box (blue colour) and soap dispenser
similar to a Tork model Acrylic S Box (blue colour)

3 30 DRAWERS

Drawers are to be provided where indicated on the drawings and shall be fabricated from 1 2mm stainless steel to the face, side and slide supports Each drawer will be complete with a removable 1/1 gastronome insert 150mm deep

Each drawer shall be supported on proprietary stainless steel roller drawer slides assemblies similar to the Klein type and capable of carrying a minimum of 70kgs

Drawers shall be shown on drawings as single or multi stacked with or without a locking system

3 31 UNDER COUNTER REFRIGERATED CABINET

CONSTRUCTION

The under counter refrigerator shall be formed fully from type 304, 1 0mm thick stainless steel The rear of the unit shall be formed from 1 0 mm stainless steel

The under counter refrigerator shall be mounted on 150 mm high x 50 diameter stainless steel adjustable fridge legs The unit shall be complete with heated fascias containing two rows of removable heater wires of sufficient capacity as to prevent the unit from sweating

The cabinet shall have shall 50mm of polystyrene insulation The cabinet interior shall be joined to the exterior panels via a non-conductive rigid vinyl plastic breaker strip

The unit shall include a one-piece interior base complete with fully coved corners to a height of 50mm The remaining vertical corners shall also be coved The coving shall have a minimum radius of 20mm throughout

All joints shall be fully welded and sealed The top of the refrigerator shall be formed from 9 mm galvanized steel and securely fixed to the under side of the bench top above and fully sealed for vermin proofing

The refrigerator shall be cooled to a temperature of $+2^0$ by a self contained or remote condensing unit specified elsewhere All controls are to be provided to operate the cabinet

The under counter refrigerator shall have recessed solid insulated stainless steel doors for low & normal temperature applications and electrically heated glazed doors for normal temperature (when specified) of a size suitable to the cabinet size

giving maximum opening and storage capabilities The doors will open to 95^0 by a torsion style hinge and have an aluminium external framing with stainless steel sheeting inside and out To each door provide a keyed door lock, of a type to be approved in working drawings

The doors shall be fitted with magnetic gaskets and be easily replaceable if required
Provide to this cabinet an evaporating finned coil being an air assisted (FDC) and of ample capacity to maintain the cabinet temperature when fully layered Ensure that the FDC is a cross duct ventilation type unit to provide even air flow The drain shall be of solid type tubing run internal within the cabinet insulation and exerting at a point below the FDC for final connection

At the other end of the drain it shall protrude through the side of the cabinet to a point as detailed on the services drawings Ensure that there are no kinks or sharp bends in the drain line and that the solid tubing used is 19mm in diameter

Include two-off plastic coated wire shelves per door mounted on stainless steel strips and clips, fully adjustable

The refrigerator shall include cross duct ventilation to give air flow and maintain an even temperature

The flow of the refrigerant to the evaporator shall be controlled by a thermostatic expansion valve fitted within the casing of the FDC The cabinet shall provided with a suction and liquid two way line valve fixed to the external side panel of the cabinet as indicated on the design drawings directly behind the stainless steel service port doors Install within the liquid line external to the cabinet a 1/4" drier and solenoid valve From these line values the cabinet shall be fully piped, pressure tested and sealed prior to arriving on site Final connection on site will simply be a single flair connection to each line valve

A digital thermometer/thermostat shall be provided and located on the front of the cabinet by operating a liquid solenoid valve

All controls shall be contained within the service panel The panel shall be formed as an integral part of the cabinet and be fitted with a hinged access door with magnetic catches at the top and at the bottom

Refrigerated drawers

Where refrigerated drawers are nominated they are to be mounted on heavy duty full extension stainless steel runners and suitable to hold 1/1 gastronorm pans running left to right one behind the other – size permitting If the door space is too narrow the sides of the drawer frame shall be extended inwards to hold one 1/1 gastronorm pan running front to back

The drawer front is to be fabricated from 1 2 mm stainless steel with the handle folded in to the drawer front Drawers are to be pour foamed or insulated with poly urethane so they do not sweat The drawer gasket is to be removable for future replacement if required

3 32 UPRIGHT REFRIGERATED FOOD CABINET

CONSTRUCTION

The upright refrigerator shall be formed fully from type 304, 1 2mm thick stainless steel, grade 430 shall be used as a facing surface to the refrigerators for correct sealing of the magnetic doors The rear and bottom of the unit shall be formed from 9 mm galvanized steel

The refrigerator shall be mounted on 150 mm high stainless steel legs

The cabinet shall have 50mm of high density polystyrene insulation The cabinet interior shall be joined to the exterior panels via a non-conductive rigid vinyl plastic breaker strip

The unit shall include a one piece interior base complete with fully coved corners to a height of 50mm The remaining vertical corners shall also be coved The coving shall have a minimum radius of 20mm throughout At the door entry the base shall be flat and will not have any step down into the interior of the cabinet All joints shall be fully welded and sealed

The unit shall be complete with heated fascias containing two rows of removable heater wires of sufficient capacity as to prevent the unit from sweating

The refrigerator shall be cooled to a temperature of +2°C by a self contained or remote system as detailed in the refrigeration section of this specification
The upright refrigerator shall have recessed electrically heated doors of a size suitable to the cabinet size giving maximum opening and storage capabilities The doors will open to 95^0 by a torsion style hinge and have an aluminium external framing with stainless steel sheeting inside and out To each door provide a keyed door lock, of a type to be approved in working drawings

The door gasket shall be fitted to the liner of the door by a rigid thermal barrier into which a thermoplastic magnetic gasket clips Provide removable stainless steel key hole pilaster to the interior of the refrigerator suitable for housing individual shelves to each door opening

Provide to this cabinet an evaporating finned coil being an air assisted (FDC) and of ample capacity to maintain the cabinet temperature when fully layered Ensure that the FDC is a cross duct ventilation type unit to provide even air flow The drain shall be of solid type tubing run internal within the cabinet insulation and exerting at a point below the FDC for final connection

At the other end of the drain it shall protrude through the side of the cabinet to a point as detailed on the services drawings Ensure that there are no kinks or sharp bends in the drain line and that the solid tubing used is 19mm in diameter

The flow of the refrigerant to the evaporator shall be controlled by a thermostatic expansion valve fitted within the casing of the FDC The cabinet shall provided with a suction and liquid two way line valve fixed to the external side panel of the cabinet as indicated on the design drawings directly behind the stainless steel service port doors Install within the liquid line external to the cabinet a 1/4" drier and solenoid valve From these line values the cabinet shall be fully piped, pressure tested and sealed prior to arriving on site Final connection on site will simply be a single flair connection to each line valve

A digital thermometer/thermostat shall be provided and located on the front of the cabinet by operating a liquid solenoid valve

3 33 CAKE CABINET CUSTOM MADE

CONSTRUCTION

The cake display shall be fabricated from 1 2 mm stainless steel folded to form the base of the unit The base of the unit shall be insulated with 50 mm polystyrene insulation and be glued to an inner skin of 1 2 mm stainless steel

Stainless steel 32 x 32 x 1 2 posts shall be fitted to the rear in each corner to support the top frame this will in turn support the decorative top

A square glass front panel with glass (and or) mirror ends and sliding glass doors to the operators side shall be fitted to the unit to fully enclose the food products from the outside air Inside the base of the cake display shall be fitted a refrigeration coil and a fan motor to circulate the cold air and maintain the correct temperature with out drying out the product

The unit shall be fitted with two glass shelves mounted on stainless steel tubular brackets fixed to the rear uprights of the cake display Fluorescent lighting shall be fitted to the inside of the unit, one for each shelf and one under the top

To access the cakes in lower section of the cabinet the unit shall be fitted with slide out drawers on full extension stainless steel runners Each drawer shall be fitted with a magnetic gasket and fully seal to the base of the cabinet

The cake cabinet shall be supported by the servery frame and shall be operated by a self contained or remote refrigeration unit (as specified) under the cabinet The unit shall be mounted on a stainless steel frame with a perforated stainless steel surround Beside the refrigeration unit mount a 1 2 mm thick stainless steel shelf

Supply and install all of the necessary controls as nominated in the refrigeration section of this specification

3 34 MOBILE BAIN MARIE HOT PRESS

The bain marie shall be fully constructed from type 304 #4 finish stainless steel All sections shall be formed from 1 2mm 304 #4 stainless steel finish unless described differently

The bain marie / hot press shall be supported on 100mm high lockable castors

BAIN MARIE

The bain marie section shall be formed to suit four 1/1 gastronorm pots The depth of the tank shall be deep enough to suit a 150mm deep gastronome pan located 50mm above the elements

The bain marie bath shall be constructed with fully welded corners on the horizontal and vertical with the work top welded into the bain marie so as to from a single structure The internal bath base shall have a defined crease line from the far outer corners to the centre of the waste outlet at the other end A fall of 1 400mm shall be formed into the base of the bath directed to the waste end

Weld in a 25mm overflow and inter-connect to the waste outlet The Contractor shall inter-connect the inlet, outlet and overflow, and leave a 12mm socket for hot water and a 50mm waste tail for final connection All welds shall be ground and polished

Element requirements for bain marie tanks are as follows

Single module – 600 watts

Two and three module bain maries 1 x 2400 watt

Four and five modules, 2 x 2400 watt elements

Six and seven module, 3 x 2400 watt elements

Eight and nine module, 4 x 2400 watt elements

The elements shall be the wet /dry type element which shall be capable of operating with or without water in the bath section The elements shall be wired in parallel

A ventilated control panel shall be located on the right hand side of the unit The panel shall include the bain marie digital thermostat, indicator and on/off switch together with the hot press digital thermostat, indicator and on/off switch A mains on/off switch shall provided which when in the off position will prevent electrical supply to any other sector within the appliance

All electrical services shall be located in a service duct, easily accessible and ventilated from the front of the unit

Provide two (2) off chrome plated wire shelves within the hot press Both shelves shall be positioned on adjustable slides The shelves shall be capable of being removed only after removing the doors

All items shall be labelled with machine engraved plastic laminate with bevelled edges fixed under each item using S/S screws The lettering shall be 5mm high black characters on a white background

All electrical wiring is to be in accordance with AS 3000 regulations

3 35 OVER BENCH SHELVING

Provide and fix a two tier stainless steel over shelf unit as indicated on the design drawings The shelf shall be wall mounted and supported from the stainless steel bench with brackets constructed of 25mm 304 #4 finish stainless steel square tubing fully welded and polished Each bracket shall have an extension arm to the width of the shelf which is welded at the vertical section of the frame and protruding to the front fascia of the shelf At this point the extension arm shall have the end of the tube plugged and welded so as to form a sealed tube to which the shelf fascia can fit into The bracket leg shall return up from the shelf and be sealed in the same manner as per the extension arm

To the framing provide a stainless steel shelf no more than 300mm wide
The shelf shall require each end to have a fascia as with corners fully welded and polished

Provide Hatco or similar heaters and lighting to the area as shown on the drawings or the area immediately above the bain marie The heaters shall be positioned under the top shelf

3 36 BAR- GLASS RACKS

Supply and fix stainless steel under counter glass rack being three (3) tier for front bar and (4) tier for back bars and glass wash areas, suitable for use with 432mm x 356mm moulded baskets – Mantova Part No 1360

Construction of the framing shall be 20 x 3 stainless steel flat bar simular to Mantova stainless steel fully welded under bar racks as per standard industry design and mounted under the stainless steel work bench

The basket slides are to be welded to the stainless steel frame and be a minimum of 15mm in width with a rounded corner edge at the entry point The height between tray slides shall be 186mm, when allowing for three (3) tier racking

The racking shall be fully framed with top, bottom and side stainless steel cantilevered as per drawings

At the base of each bay there shall be a drip tray slide provided that will accept a 432mm x 356mm x 20mm high stainless steel water tight drip tray

Provide as standard a moulded Mantova glass baskets (part No 1360) 432mm x 356mm in size, enough to fill each level of the glass racks

3 37 BAR- SPLIT LEVEL FRAME

Provide a split level bar frame constructed from Duragal RHS mild steel 50mm x 50mm frame to the dimensions as shown on the design drawings The work tops are nominated as separate item numbers within these specifications but must conform to the design requirements of this bar frame
The frame will be 50mm x 50mm heavy gauge square tube Duragal RHS uprights, spaced at a maximum distance of 900mm

The uprights must be located either side and centre of the beer panels and either side of the drink stations

Connecting between the uprights will be three (3) horizontal rails Duragal RHS mild steel 50mm x 50mm welded to the main supports

To support the bar and the work top, a galvanised metal steel angle 50mm x 50mm x 6mm will be welded to each upright and protrude beyond the upright approximately 450mm The base angle will have the top web cut off at an angle tapering from 0mm up to 50mm to allow for a sloping plinth The bottom web will be securely fixed to the floor with 2 x 12mm masonry anchors

After welding has occurred to the RHS apply one coat of galvanised iron primer

Particular attention must be given to sealing all joints and crevices against the entry of vermin and moisture The bar construction must meet Health Code Requirements

Provide a suitable galvanised framing of 50mm x 50mm flat mild steel to the top of the bar frame so as to create a service ledge To this frame fix a water proof ply substrate 19mm thick and 240mm wide to support the decorative top (Serve ledge supplied by joiner)

The work tops are nominated as separate item numbers within these specifications but must conform to the design requirements of this bar frame

To the inside of the bar frame supply and fix 6mm Villaboard with all joints sealed To the outer face of the Villaboard fix a **stainless steel lining** which shall include the epoxy floor joint

Fumigation plugs are to be positioned in each section of the bar framing

Supply and fix 12mm ply to the customer side of the bar framing for a decorative finish to be applied by others

3 38 BAR- WORK TOP

Supply and fix a bar work top bench dry type constructed from 1 2mm #4 finish stainless steel (single sheet without joints) having a 19mm waterproof ply backing bonded with Bostic No 4241 When applied the bonding shall be held under pressure for a period of 24 hours Apply 4mm of grey two part epoxy to the under side of the waterproof ply and seal to all sides of the stainless steel bench

The bench shall have a stainless steel upstand at the back which is to be full height to the underside of the serve ledge The back of the upstand is to be timber backed as per the underside of the bench and sealed with epoxy so as not to present exposed raw timber and/or end sections to the elements

Note The bar top is to include recessed beer stations, ice wells and mixing grids as shown on the drawings as an integral part of the bar bench top

3 39 BACK BAR- STAINLESS STEEL LOCKABLE CUPBOARD

The back bar under bench lockable cupboard shall be fully formed from type 304, 1 2 thick stainless steel to all outer areas of the cupboard This cupboard shall be a stand alone type fabricated structure which will simply slide into position prior to fixing

A 200mm high frame constructed as per the back bar refrigeration cabinet shall be provided to each end of the cupboard having a top and base angle web cut off at an angle, tapering from 0mm to 50mm This shall allow for a better finish to the underside of the refrigerators and a sloping plinth to the floor The bottom web and vertical section abutting the back wall shall be fixed with 2 x 12mm masonry anchors to each face

Should the cabinet be wall mounted then adequate fixing and support needs to be included within the manufacture

The base of the cupboard shall be constructed in similar practice to the stainless steel work bench tops 19mm waterproof ply bonded to the underside of the stainless steel then sealed with 2 part epoxy This base shall have a 50mm front fascia Internally provide two stainless steel adjustable shelves

Provide a set of two stainless steel swing type doors constructed from 304 #4 finish stainless steel The door shall be backed with 6mm of asbestos-free fibrous sheet and hinged with a stainless steel piano type continuous hinge with stainless steel pin A recessed door with bevelled edge shall be provided The door shall close onto a top and bottom magnetic catch Each door shall be self locking with keyed a like locks matching those of the refrigerators

Note All locks within the bar area shall be inter changeable with each other (key-alike) with a master key

When placed into position the cupboard shall be fixed to the back wall by masonry anchors together with being fixed from under the cupboard base by screw fixings between the waterproof ply and frame support

3 40 BACK BAR- UNDER BENCH BOTTLE CABINET

The back bar under bench refrigerator shall be formed fully from type 304, 1 2mm thick stainless steel, grade 430 shall be used as a facing surface to the refrigerators for correct sealing of the magnetic doors The rear and bottom of the unit shall be formed from 1mm zinc anneal

The back bar refrigerator shall be located on 250mm high framing constructed as per the front bar frame having a top and base angle web cut off at an angle, tapering from 0mm to 50mm This shall allow for a better finish to the underside of the refrigerators and a sloping plinth to the floor The bottom web and vertical sections abutting the back wall shall be securely fixed with 2 x 12mm masonry anchors to each face

The cabinet shall have 50mm of high density polystyrene insulation The cabinet interior shall be joined to the exterior panels via a non-conductive rigid vinyl plastic breaker strip

The unit shall include a one piece interior base complete with fully coved corners to a height of 30mm At the door entry the base shall be flat and will not have any step down into the interior of the cabinet All joints shall be fully welded and sealed

The unit shall be complete with heated fascias containing two rows of removable heater wires of sufficient capacity as to prevent the unit from sweating

The refrigerator shall be cooled to a temperature of +2°C by a self contained or remote system as detailed in the refrigeration section

The back bar refrigerator shall have heated glazed recessed (face of the door must be flush with the body of the cabinet) doors of a size suitable to the cabinet size giving maximum opening and storage capabilities The doors will mounted on torsion style hinges, open 95° and have an aluminium external framing To each door provide a keyed a like door lock of a type to be approved in working drawings

The door gasket shall be fitted to the liner of the door by a rigid thermal barrier into which a thermoplastic magnetic gasket clips Provide stainless steel adjustable shelf strips and two nylon coated wire shelves per door to the interior of the refrigerator

A totally enclosed fluorescent light shall be fitted internally into the refrigerator mounted behind each centre door mullion and shall be controlled via an external neon type switch

Provide to this cabinet an evaporating finned coil (FDC) of ample capacity to maintain the cabinet temperature when fully loaded Ensure that the FDC is a cross duct ventilation type to provide even air flow The drain shall be of solid type tubing run internal within the cabinet insulation and exerting at a point below the FDC for final connection

At the other end of the drain it shall protrude through the side of the cabinet to a point as detailed on the services drawings Ensure that there are no kinks or sharp bends in the drain line and that the solid tubing used is 19mm in diameter

A thermostatic expansion valve fitted within the casing of the FDC shall control the flow of the refrigerant to the evaporator The cabinet shall provided with a suction and liquid two way line valve fixed to the external side panel of the cabinet as indicated on the design drawings directly behind the stainless steel service port doors Install within the liquid line external to the cabinet a 1/4" drier and solenoid valve From these line values the cabinet shall be fully piped, pressure tested and sealed prior to arriving on site Final connection on site will simply be a single flair connection to each line valve

A digital thermometer/thermostat shall be provided and located on the front of the cabinet by operating a liquid solenoid valve

The upright refrigerator shall be the same as described above but sized accordingly and with five rows of shelving per door

3 41 BACK BAR REFRIGERATOR SERVICE COMPARTMENT

At one end of each refrigerated cabinet within the back bar section there shall be provided a stainless steel service port door constructed from 304 #4 finish stainless steel This access panel shall be located on the side of the refrigerated cabinet that has the exposed refrigeration lines and operating valves

The structure of the access panel shall be of stainless steel 25mm square tube frame that will be hidden behind the door panel Where the vertical framing section abuts the back wall they shall be securely fixed with 2 x 12mm masonry anchors per vertical section

The door shall be constructed from 1 2mm 304 #4 finish stainless steel and hinged with a stainless steel piano type continuous hinge with stainless steel pin
A recessed door handle with frame bevelled edge shall be provided The door shall close onto a top and bottom magnetic catch

Height of this access panel shall be in line with the refrigerated cabinet giving a clean line at the base of the access panel to that of each appliance located within the back bar section

3 42 BACK BAR- BENCH TOP - STAINLESS STEEL

STAINLESS STEEL BACK BAR TOP

Where a stainless steel back bar bench top is required it shall be fabricated from 1 2 mm stainless steel and in accordance with section 3 05 of this specification and profiled to suit the sectional details which will be determined by the surrounding decorative finishes

3 43 BAR- BIN CUPBOARD

The unit shall be fabricated from 1 2 304 No 4 stainless steel and form a cupboard with a swing door 575 mm high to allow removal of the bin The door shall have a full height stainless steel piano hinge securely fixed to one side with a satin chrome door handle and nylon door catches

Above the door there shall be a stainless steel flap hinged from 8 mm stainless steel rod The flap shall be approximately 190 mm high and weighted so that it returns to the original position after refuse has been deposited

The base of the unit shall be glued to two layers of 19 mm water proof ply and fully sealed with epoxy paint under The bin cupboard shall be supported by 50 x 50 x 6 MS angle iron cantilevered brackets bolted to the wall with 8 mm Dyna bolts

3 44 BAR - UPRIGHT BOTTLE CABINET

CONSTRUCTION

The back bar upright refrigerator shall be formed fully from type 304, 1 2mm thick stainless steel, grade 430 shall be used as a facing surface to the refrigerators for correct sealing of the magnetic doors The rear and bottom of the unit shall be formed from 9 mm galvanized steel

The back bar refrigerator shall be located on 250mm high framing constructed as per the front bar frame having a top and base angle web cut off at an angle, tapering from 0mm to 50mm This shall allow for a better finish to the underside of the refrigerators and a sloping plinth to the floor The bottom web and vertical sections abutting the back wall shall be securely fixed with 2 x 12mm masonry anchors to each face

The cabinet shall have 50mm of high density polystyrene insulation The cabinet interior shall be joined to the exterior panels via a non-conductive rigid vinyl plastic breaker strip

The unit shall include a one piece interior base complete with fully coved corners to a height of 50mm The remaining vertical corners shall also be coved The coving shall have a minimum radius of 20mm throughout At the door entry the base shall be flat and will not have any step down into the interior of the cabinet All joints shall be fully welded and sealed

The unit shall be complete with heated fascias containing two rows of removable heater wires of sufficient capacity as to prevent the unit from sweating

The refrigerator shall be cooled to a temperature of +2°C by a self contained or remote system as detailed in this specification

The back bar refrigerator shall have heated glazed recessed doors of a size suitable to the cabinet size giving maximum opening and storage capabilities and mounted on torsion style hinges The doors will open 95° and have aluminium external framing To each door provide a keyed a like door lock of a type to be approved in working drawings

The door gasket shall be fitted to the liner of the door by a rigid thermal barrier into which a thermoplastic magnetic gasket clips Provide removable stainless steel key hole pilaster to the interior of the refrigerator suitable for housing individual shelves to each door opening

A totally enclosed fluorescent light shall be fitted internally into the refrigerator mounted behind each centre door mullion and shall be controlled via an external neon type switch

Provide to this cabinet an evaporating finned coil being assisted (FDC) and of ample capacity to maintain the cabinet temperature when fully layered Ensure that the FDC is a cross duct ventilation type unit similar to the Muller TC series twin coolers to provide even air flow The drain shall be of solid type tubing run internal within the cabinet insulation and exerting at a point below the FDC for final connection

At the other end of the drain it shall protrude through the side of the cabinet to a point as detailed on the services drawings Ensure that there are no kinks or sharp bends in the drain line and that the solid tubing used is 19mm in diameter

The flow of the refrigerant to the evaporator shall be controlled by a thermostatic expansion valve fitted within the casing of the FDC The cabinet shall provided with a suction and liquid two way line valve fixed to the external side panel of the cabinet as indicated on the design drawings directly behind the stainless steel service port doors Install within the liquid line external to the cabinet a 1/4" drier and solenoid valve From these line values the cabinet shall be fully piped, pressure tested and sealed prior to arriving on site Final connection on site will simply be a single flair connection to each line valve

A digital thermometer/thermostat shall be provided and located on the front of the cabinet by operating a liquid solenoid valve

3 45 BAR - GLASS CHILLER

The glass chillers shall be located on 180mm high framing constructed as per the front bar frame having a top and base angle web cut off at and angle, tapering from 0mm to 50mm This shall allow for a better finish to the underside of the refrigerators and a sloping plinth to the floor, The bottom web shall be securely fixed with 2 x 12mm masonry anchors to the floor with the vertical section welded to bar frame

The glass chiller shall be of mono construction using high density foam insulation with all internal and external visible surfaces in stainless steel

The lifting mechanism is to be fully removable from body of cabinet for easy access for cleaning

The doors are to be double glazed and have anti sweat heaters around door fascia

The cooling system is to comprise specially designed cooling coil and centrifugal fan and motor assembly and fitted with TX valve piped to outside of cabinet ready for connection

The refrigerator shall be cooled to a temperature of +2° by a self contained or remote system as detailed in the refrigeration section

3 46 BAR - BEER PANEL HOUSING

Supply and fit a flush line stainless steel beer panel housing suitable for holding chiller plates The structure shall have a 25mm square tube stainless steel frame construction

To the front of the panel housing frame there shall be two stainless steel hinged door panels backed with 20mm waterproof marine ply sealed with a 4mm thick two part epoxy This panel door shall have suitable stainless steel hinges provided Fixed within the door panel shall be a round pull stainless steel recessed handle with bevelled edge mounts

Provide a suitable top and bottom door catch that will not allow the door to open while staff are using the beer taps

Ensure that the panel housing framing is at centres that align with the upright bar framing sections so that fixings can be secured into the uprights Do not attempt to support the panel by any other means other that from the bar frame upright supports

COLD ROOMS

4 00 COLD ROOMS

4 01 SCOPE

This specification sets out the requirements for the design, workmanship and quality of materials which shall be used in the fabrication and installation of pre fabricated cold rooms The "Schedule of Performance" is compiled for the assistance of the supplier and all information shall be treated as preliminary and as a minimum requirement The supplier shall check all information and site conditions including available space, access and positioning

4 02 COLDROOM CONSTRUCTION (BRIEF DESCRIPTION)

The supplier shall fully construct, complete with walls, roofs, floors, doors, all heaters, relief ports, wearing slabs, floor finishes and all fittings as necessary to make complete, vapour proof coldrooms where shown on the layout drawings

Insulated panels shall be manufactured from 6mm off white Colourbond CRP bonded both sides to an insulating core of Class 'S' expanded polystyrene foam

Panels shall be 1200mm module incorporating a male/female groove joining system (slip joint)

Spanning of panels up to 4 5m shall be 75mm thick (Medium temperature)
Spanning of panels up to 5 9m shall be 150mm thick (Medium temperature)

Insulated wall thickness Medium Temperature (above 0) 75mm thick and Low Temperature (below 0) 150mm thick

Sealants for panel joints, floor vapour seal joints etc, shall be a non setting mastic suitable for use at temperatures ranging from -30C to +50C

Door jams shall be fitted with 1200mm high 3mm thick aluminum smooth face flat plate (protection)

Low Temperature room will consist of low voltage door frame heater which will include coverage across the threshold (transformer is to be included)

Doors shall be 75mm thick Medium Temperature and 150mm thick Low Temperature

All doors are to be fitted with 1200mm high aluminum 3mm thick smooth face flat plate (protection) (internal & external)

All doors to consist of electrical audible door alarm with damage protection and luminous exit signs

Provide electrical audible alarms that meet BCA requirements

All door gaskets to be non magnetic type

Internal safety release mechanisms to be provided as required by State / local Codes / authority Please note sliding doors do not require locking devise

Hinged door hardware to be of heavy commercial type Kason brand or equal Hinges are to be of heavy duty type with closing mechanism

Slide door to operate on aluminum track with heavy duty nylon wheel roller type system Double bogey wheels are required for 1500mm wide or greater Rubber door stops required top & bottom The slide track is to have a stainless steel pelmet fitted to conseal the track and fittings Bottom to be mounted on galvanized plate secured to floor Fasteners to be of type that will take constant slamming

Door internal handle system used is to be a large acrylic / aluminum recessed type with internal release to comply with BCA External handle to be a flat bar type system ranging from 300mm to full length of door

In the case of this project protection stripping and buffer rails on all of the Coolrooms/Freezer will be required

Explosion port complete with heater are to be included in any Freezer room Explosion port to be mounted at furthest point from evaporator Explosion port to be double action multi-valve pressure type

Construction methods are to be as per acceptable standard practice but within the constraints and limitations imposed by this specification New methods may be developed to suit particular skills and manufacturing techniques, as approved by the food & beverage consultant

Layout drawings provided are indications of the general design intent and illustrate the general arrangement and typical appearance Dimensions of rooms are nominal with the final sizes being determined from site measurements

As far as practicable all panels and components shall be fabricated off site in the suppliers factory and finished with the minimum of on site work The method of construction, reinforcement, anchorage, finish, joints and the like shown on approved shop drawings shall be accurately followed through the construction period

Where the rooms are to be erected against walls the supplier is to ensure that their is an air gap between the walls and coldroom panels All flashing panels to wall to be included

All nuts, bolts, washers etc , shall be cadmium plated or brass except where specified otherwise The materials and workmanship to be supplied and incorporated in the construction of the coldrooms shall be entirely sufficient for the purpose for which they are intended having due regard for all service conditions as may reasonably be anticipated

Design conditions of use are to be classified as "HEAVY COMMERCIAL KITCHEN USE"

Measurements are nominated as external for length and breadth, however the height as stated are internal off the finished floor and have no relationship to the external sizing of the rooms height

4 03 FLOORS

Coolroom / Freezer room floor shall include 75mm concrete topping consisting of 32Mpa at 3 days, steel mesh F62, maximum 75mm slump and maximum 10mm aggregate

All finished floors shall be timber trowel finish and graded to allow water to run off through doorways Ponding on finished floors is not acceptable

Concrete shall be finished to walls consisting of 75mm radius cove into aluminum Arrow head trim Aluminum trim to be silicone sealed to total perimeter

Please note

- External ramps if specified are to by the others
- Epoxy flooring shall be supplied and layed by the coolroom contractor to all coolrooms The epoxy shall be Hychem colour coated with coved corners and skirting and self leveling non slip R11

4 03 1 FLOOR INSULATION

Floor insulation to be laid dry over 25mm thick polythene vapour barrier and shall be lapped by a minimum of 150mm and sealed with a continuous double bead of mastic sealant to the polythene vapour strip underneath the walls

Floor insulation shall be urethane foam 50mm to Medium Temperature (Coolrooms above 0°c) and 100mm urethane to Low Temperature (Coolrooms below 0°c)

Floor insulation shall be comprised of two (2) layers of equal thickness, with staggered joints The joints shall be vapour sealed with approved mastic

Note When freezer room is built on suspended slab a dual circuit heater mat will be required to any Coolroom operating at a temperature lower then 0°C This will include warning light mounted on external wall of room and operational when heater circuit is off line or non operational

4 03 2 REINFORCEMENT

Reinforcement for the floor structure shall be fixed and maintained in position in accordance with the requirements of AS 1480 Until the concrete is cast, the reinforcement shall be maintained in a clean condition so that the surface shall be free from loose mill scale, loose rust, mud, oil, grease and other non-metallic coatings which would reduce the bond between the concrete and the reinforcement

The reinforcement shall be a single layer of F62 steel fabric supported by bar chairs to provide a top cover of 25mm and shall be adequately supported on metal or plastic trays which will not permit the chairs to penetrate the vapour barrier or floor insulation

4 03 3 CONCRETE

The concrete shall be laid in such a manner as to avoid segregation or loss of materials Depositing of large amounts of concrete at any point with the intention of moving it along and through the reinforcement will not be permitted On commencement of the concrete pour the work shall continue without interruption

until the floor has been laid and screened Concrete topping to include sealant and hardener

After laying, the concrete shall be thoroughly compacted by a mechanical vibrator and hands method to eliminate all air or stone pockets which may cause honeycombing, pitting or places of weakness

The floor finish shall fall in the direction of the door of each room, at a rate of not less than 1mm in 80mm At the intersection of the floor and walls their shall be a 75mm high minimum coving to the floor finish and shall terminate into a pre-fixed white powder coated anodized aluminum angle, fixed to the walls

4 04 WALLS and ROOF PANELS

The walls and roof of the coldroom shall be of pre-fabricated insulated sandwich type, bonded under high temperature and pressure with thermosetting adhesive

The insulation shall be rigid cellular polystyrene manufactured from first grade virgin raw material and shall have been conditioned in a controlled temperature oven to remove moisture and the final traces of expanding agent to provide dry, dimensionally stable sheets to the thickness specified

Roof panels shall comply with the same requirements as detailed for wall panels The roof shall be of adequate strength so as to be able to support its own weight and that of the proposed mechanical equipment required to be positioned on the roof

Wall panels shall continue up to the under side of the structure above, where no adjacent ceiling is intended These panels will completely enclose cavities above the room Where a ceiling line/finish is present the wall panels shall continue a minimum of 100mm above

Where a common wall is required the wall thickness is to be that of the lowest temperature

4 05 PANEL FINISHES

Panels shall be faced with Lysaght's standard off-white colourbond or approved equal Colourbond shall consist of 0 6mm Galvabond Z300 coated on both sides with 25% gloss, 20 microns PN 12501 flat on 5 microns of primer or approved equal

The panels shall have a flat face without ridges or moulded sections

4 06 PANEL SIZES AND JOINTS

Panel widths are to be no smaller than 300mm unless otherwise unavoidable by construction constraints and doorways etc

Panel joints shall have a tolerance of ± 2mm

All panel joints, wall to wall, wall to roof shall be stepped joints Mitered or butt joints will not be accepted
Coldrooms shall be sealed at all joints and against adjacent floor, walls and ceilings

Where the intent of the coldroom is to be used for storage and/or taping of beer kegs a double crush rail shall be fixed to the internal surface of the room This rail shall be so positioned so to absorb the impact of beer kegs being moved around within the coldroom

4 07 COLDROOM DOORS

and controlled via a 60 to 90 C digital thermostat The digital thermostat shall be wired in the circuit controlling the elements

Electrical elements shall be suspended 25mm off the base of the bath area and supported by a stainless steel bracket welded to the base There are to be no sharp edges to the brackets

The water inlet shall be controlled by a water float switch operating a water solenoid valve An internal gate valve shall be fitted to the inlet water line in the service compartment and accessed only by authorised personnel The gate valve shall not be accessed unless the control panel is removed for service A main on/off switch shall be located at the control compartment Water piping from the inlet to the solenoid and through to the outlet within the bain marie bath shall be in 12mm copper tubing fully welded No flange or pressure nut connections shall be used

A removable, S/S Channel shall be fitted to the top of the bain marie between each gastronome pan The channel shall be formed 25mm wide x 12mm deep and shall have clip over lugs welded at each end The lugs shall be small enough to allow the channel to be removed and a 2/1 gastronome pan inserted in the available space for use in lieu of 2 x 1/1 gastronome pans A stainless steel collar shall be fitted to the top of the well and sealed to the tank and the counter top

The following configuration of pots and lids are to be supplied with the bain marie

Three (3) 1/3 size gastronome pans 100mm deep with lids

Two (2) 1/2 size gastronome pans 100mm deep with lids

Two (2) 1/1 size gastronome pan 100mm deep with lid

The number of full size pots shown above is for a four module unit Add to the number of full size pots proportional to the number of modules supplied

HOT PRESS

The hot press shall be located under the bain marie and run the full length of the unit The bain marie and the hot press shall be insulated with mineral fibre wool insulation 50mm thick The bottoms and vertical sides of the bain marie and hot press liners shall be covered to a radius of 20mm A full length element shall be fitted to the hot press and shall be located at the base of the hot press section The elements shall be rated at 2 4 kw and shall be controlled via a 40 to 120 C digital thermostat Two (2) off 1 2mm stainless steel covers shall be located over the elements and shall be removable The bottom of the hot press shall be free of ledges

The bain marie shall include a full length heated plate warming shelf positioned above the sliding doors and beneath the work top

Fit two (2) off sliding doors to the hot press for units under 1800mm long Where units are over 1800mm long then extra doors need to be included with each door being of equal size The doors shall be double skinned with an insulation thickness of 20mm Each door shall be capable of travelling the full length of the hot press and shall be hung from the top of the unit on industry standard stainless steel guides and rollers

At each end of the door, provide a heat resistant stop to prevent the doors from coming into contact directly with the metal The bottom of the doors shall include a track being guided via a stainless steel guide, which will be so designed as to allow efficient cleaning of the hot press cabinet The doors shall be removable for cleaning purposes

4 07 1 CONSTRUCTION

Doors shall be sliding or swing type as indicated on the drawings, having the same thickness of insulation and skin as the relevant coldroom wall detailed above

Standard door opening size shall be 750mm wide x 1980mm high

Both faces of the door shall be adequately stiffened to receive minor impact without damage

Provide on all doors, 1200mm high protection internal & external as previously mentioned Fix the aluminum panels to the doors by bonding and then using aluminum rivets at 200mm centres to the external edges

All sliding doors are to have a 1 2mm stainless steel pelmet to an approved profile complete with brackets, fixing and end panels

4 07 2 HARDWARE

All doors are to be capable of being padlocked, with keyed alike devices supplied by others They shall have an inside safety release so that the door can be opened from the inside even when doors are externally locked
Fittings, screws etc , shall be of non-ferrous materials The door hardware shall be heavy duty chromium plated brass or where brass is not available, approved die casting alloy This hardware shall be rigid and securely bolted to the door in a manner designed to give long, trouble free life under arduous conditions

Swing doors shall be fitted with edge mount, self lifting hinges and shall be self closing type capable of holding open at a dwell of 100°

Sliding doors shall be supported on heavy duty "J" type track and roller guides and have rubber door stops at both ends of travel Prove a stainless steel pelmet above the door track
The doors shall be arranged to seal at the floor line and against the coldroom wall, when in a closed position all doors shall have labyrinth or compression type neoprene gaskets which shall be resistant to oils, fats, food acids and water, and shall be easily replaceable They shall be secured with stainless steel self tapping screws

Gasket and door hanging will give a complete seal between inside and outside spaces

On the internal face of each door their shall be permanently fixed, simple, clearly illustrated instructions for raising the alarm and opening the door if it locked The instruction will be nominally 50mm x 50mm, fixed at a height of 1600mm from the internal floor and of a material which will be impervious to fading, water damage, or strong wear and tear

On the external face of the door shall be affixed a manual bell with a shaft through to the internal face for manual operation from within the room

4 08 EXTRUSIONS

All extrusions are to be aluminum grade 6063-T5 alloy, white clear finish, heavy duty, white anodized to a depth of 20 microns by the extrusion manufacturer only

Internal wall to wall and wall to ceiling junctions are to have 25mm radius coving and must be finished to an aluminum cast block or accurately mitered Internal wall to finished floor coving junction are to have extruded aluminum coving angle fixed and sealed to the wall (existing wear slab) Coving shall finish generally 100mm

minimum above the finished floor level, or to suit floor finish coving tile or otherwise
All internal walls of the specified keg storage coolrooms are to be fitted with aluminum buffer rails

4 09 SEALANTS

All exterior joints and angles shall have sufficient, approved, non-setting sealant applied to guarantee that excess is squeezed out of the joint and is visible on the exterior panels before permission to clean will be given to the supplier All exterior joints must be perfectly vapour sealed, sealant to be Dimet Persempre 234 or equal approved

Internal joints are to be neatly sealed with a fine bead of transparent flexible silicone sealant similar to Dow-Corning, RTV 780, all excess being wiped clean off panels and extrusions on completion

The sealant shall remain flexible and resistant to damage under all normal environmental conditions found in a commercial kitchen It shall be of a type that will not support the growth of bacteria mould or fungi and shall not dis-colour

All adhesives, vapour coatings and sealers shall be selected and applied in accordance with the manufacturer's recommendations for the application to give a permanent bond and/or seal under all normal conditions of installation and operation
The rooms are to be sealed against adjacent surfaces by the supplier regardless of gap size

Each and every aluminum extrusion is to have the sealant laid onto the extrusion prior to fixing into position Refer first clause of section 4 10

4 10 PENETRATIONS

All penetrations shall be neatly formed with piping, conduits, bolts, etc , being sealed with foam injected under pressure Where this excess it shall be trimmed clean on completion

Non insulated metals passing through the panels and likely to form condensation shall be insulated by neatly foaming in place the metal object

4 11 Under Floor Heating

All coolrooms and freezers operating below 0°c built on suspended slab, are to be provided with under floor heating mat and connected electrically by the refrigeration/kitchen contractor as previously mentioned

4 12 Safety

Where there is personnel able to be within a coolroom a safety alarm must be fitted to each coolroom in accordance with Australian Standards

There must be visual and audible alarms fitted and are to be activated from within the coolroom space

In addition to the above and where a keg coolroom has been installed an Oxygen Depletion alarm must also be fitted in accordance with the Australian Standards

5 00 CUSTOM BUILT REFRIGERATION SYSTEMS

5 01 SCOPE

This specification sets out the requirements for the design, workmanship and quality of materials which shall be used in the fabrication and installation of custom built refrigeration systems This specification also details test which shall be carried out on the component parts and piping before charging the system or hand over

This specification requires all materials, construction, testing and performance of the plant to comply with Australian Standards (AS), SAA Refrigeration Code and The Ozone Protection ACT 1989

Control and recovery of chlorofluorocarbons (CFCs) refrigerants must follow the guide lines as developed by The Environment Protection Agency NSW and as enforced by The Building Services Corporation

5 02 SYSTEM DESIGN

The complete refrigeration system shall be so designed that each major component i e compressor, evaporator and condenser can operate under its specified design conditions to produce the specified refrigeration capacity and in no case shall the capacity of any individual component be less than that specified in this specification

All coolroom and freezer rooms must, when fully laden in an ambient temperature of 40 degrees Celsius, hold their design temperatures evenly, in conditions of use classified as heavy commercial kitchen usage

5 03 COLDROOMS

The room shall be calculated for
- Wall heat gain
- Floor heat gain
- Air loss
- Product load
- Miscellaneous load
- Safety factor 10%

The product load is to be calculated as general food products with a 20° Celsius product pull down over 24hrs

The evaporator shall be selected for a TD which matches the stated relative humidity required within the refrigerated space Normally 6KTD is sufficient

5 04 FREEZER ROOMS

The room shall be calculated for
- Wall heat gain
- Floor heat gain
- Air loss
- Product load
- Miscellaneous load
- Safety factor 10%

The product load is to be calculated as pre frozen food products with a 5° Celsius product pull down over 24hrs

The evaporator shall be selected for a 6KTD

5 05 COMPRESSOR LOCATION

The condensing units shall be located remote from the evaporator in a plant room as nominated within the Equipment Specifications

5 06 SYSTEM CONTROL METHOD

5 06 1 Low Temperature Room

The freezer rooms are to be controlled by an electronic controller consisting of thermostat / display / defrost having the sensor located in the return air stream of the F D C and set at minimum differential of 2°C Defrost safety Klixon is to be included A dual pressure control (D P C) is to be in electrical series with the thermostat and will isolate the compressor during periods of excessively high discharge pressure The low pressure side of the D P C is to safe guard the compressor from short cycling, loss of refrigerant and defrost of the evaporator Fan delay low pressure control is to be included

F D C fans to stop during defrost period and activated only when fan delay pressure control permits Control will be via a electronic thermostat backed up by Klixon heater safety A neon type isolating switch adjacent to exterior freezer room door will be required for lights, and solenoid

5 06 2 Normal Temperature Rooms

The Medium Temperature Coolrooms are to be controlled by an electronic controller consisting of thermostat / display / defrost thermostat having the sensor located in the return air stream of the F D C and set at minimum differential of 2°C A dual pressure control (D P C) is to be in electrical series with the thermostat and will isolate the compressor during periods of excessively high discharge pressure The low pressure side of the D P C is for a pump down cycle and to safe guard the compressor from short cycling, loss of refrigerant and defrost of the evaporator

The F D C fans are to run continuously including during defrost A neon type isolating switch adjacent to door will be required for lights & fans

5 07 REFRIGERANT

Provision shall be made in the refrigeration system for charging and withdrawing of refrigerant under safe operating conditions

The refrigerant to be used shall be of a type as approved by The Ozone Protection Act 1989
For systems operating at -10° C saturated suction temperature or above refrigerant R404 shall be used if not stated else where in the tender documents

For systems operating at -10° C saturated suction temperature or below refrigerant R404 shall be used if not stated else where in the tender documents

5 08 CONDENSING UNIT

Should a rack type refrigeration system be specified a detailed specification is to be provided to the F&B Consultant for the proposed installation prior to installation

Crankcase heaters shall be fitted to all Semi Hermetic air cooled condensing units where the saturated suction temperature is below -10° C

Semi Hermetic type air cooled condensing units (similar to Bitzer) are to be used for Low Temperature systems

An oil separator shall be fitted to all systems

5 08 1

The condensing unit shall be designed for 16 hours operations at the required evaporating temperature with ambient temperature of 38°C & Condensing

Temperature of (low temperature applications 44°C & Medium Temperature applications 46°C) Allowance shall be made for 3K liquid sub-cooling with 20K suction superheat

5 08 2

The Rack system shall be designed for 20 hours operations at the lowest evaporating temperature with ambient temperature of 38°C & Condensing Temperature of (low temperature applications 44°c & Medium Temperature applications 46°C) Allowance shall be made for 3K liquid sub-cooling with 20K suction superheat

5 09 MOUNTING OF CONDENSING UNITS / RACKS

Condensing units are to be located in accordance with good design practice and all manufacturers' requirements to ensure that the equipment installed complies with manufacturers warranty conditions

Condensing units are to be mounted in a manner so as to prevent vibration noises All components, compressor, values and controls shall be installed to give the greatest accessible possible and be easily removable for servicing

No components are to installed in a manner which will make maintenance or changeover of equipment difficult due to access when the premises are being used

19mm waffle pad is to be utilized under each unit support leg

Racks shall be mounted on vibration eliminators, located under each support leg and capable of supporting weight of Rack when system is operating in low ambient / load conditions

5 10 EVAPORATORS

All F D C evaporators shall be supplied with a TX valve and isolation valves and constructed in such a manner as to be suspended from the ceiling Within the F D C there shall be air circulation fans fitted

5 11 F D C SUPPORTS

F D C supports are to be of stainless steel or brass 10mm nominal Whitworth fully threaded booker rod Washers and lock nuts required The booker rod shall pass downwards through the insulated panel and bolt directly onto the F D C frame support, thus tightly clamping the panel section of the room between the frame and the top of the F D C Timbers supports or similar are to be used on top of cold room for added support All FDC runners are to be silicone sealed

5 12 PIPING

The supplier shall design the piping and prepare installation drawings showing full details of the piping arrangement, pipe sizes and thickness, methods of supporting pipes, connections to components and all other details to indicate how the piping and equipment is to be installed Piping is to be supported at 2m intervals and where a change in direction occurs Rubber insulated lines where supported are to be positioned within a PVC sleeve approximately 300mm in length

The piping layout shall be such that inherent flexibility of the system can cope with thermal and vibration movements

Copper tubing shall be hard drawn where long pipe runs are encountered or for piping over 20mm nominal size The wall thickness shall be 20# for piping under

54mm dia Where piping exceeds 54mm the wall thickness shall be 18# All discharge lines are to be 18#

Where ever heat is applied to the copper tubing in construction nitrogen shall be used during the process to purge the system of scaling

Care shall be taken in the design to ensure that the following conditions are met ,

5 12 1 LIQUID LINES

The liquid lines shall be sized to ensure that no flashing of liquid refrigerant can occur Velocity is to beno less then 100ft/min or no greater then 200ft/min Max pressure drop 1 8psi With this project, special attention should be directed at achieving the previously mentioned criteria Other methods may be required other then pipe sizing to achieve this criteria Liquid return line shall be sized to suit a velocity max 100ft/min

Liquid line shut offs are required at each cabinet / Coolroom / Freezer At the dryer sight glass the shut off valve shall be so placed as to isolate both from the system

5 12 2 SUCTION LINE

Oil shall be entrained by the suction gas under all conditions of load Suction line shall be sized to suit velocity of 1000ft/min horizontal with max temperature loss of 1 2k

Suction traps are to be utilized on all risers Risers are to be sized to suit a velocity of approximately 1500ft/min Riser pipe size is to be reduced if velocity falls below this point Horizontal pipe work is to fall in direction of compressors

All low temperature systems operating -15 saturated suction temperature or below will be fitted with a suction line accumulator at unit
The piping shall be designed to ensure that oil will not separate from the suction gas and drain back to the compressor in slugs

5 12 3 ELBOWS

Elbows are responsible for a large percentage of the pressure drop in the piping system Long radius rather than short radius elbows are to be used

5 12 4 TEES

Tees should be installed to prevent "bullheading" (turbulence at tee) which could add greatly to the pressure drop and may also introduce hammering in the line

If more than one tee is installed in a line, a straight length of 10 pipe diameters between tees is required to reduce unnecessary turbulence

When teeing off liquid lines to sub-systems, tee is to be facing in downward direction allowing sub-system maximum liquid Suction teeing off to sub-systems tee is to be facing in upward direction

5 13 PIPING SUPPORTS

The piping shall be designed to give flexibility and to absorb the vibration from the compressor Vibration shall not be transmitted to the building structure through the piping or its fixings Layout of the piping should be such that none of the lines are subject to the push-pull action resulting from vibration

All piping should be supported with hangers that can withstand the combined weight of pipe, pipe fittings, valves, fluid of liquid in the piping and pipe insulation The

pipe supports must have a smooth, flat bearing surface, free from burrs or other sharp projections which would wear or cut the piping

Piping must not touch any part of the building when passing through walls, floors, or furring Sleeves which contain isolating material must be used wherever this is anticipated

5 14 ISOLATING VALVES

Isolation valves shall be provided in the refrigeration piping system to enable the isolation of the compressor, remote condensers, liquid receiver, evaporator, dryer, sight glass, pressure gauges and any other component that would by common practice require isolation Each sub-system is to include liquid and line shut-offs Each suction and liquid stub line on rack is to include ball valve shut-offs

5 15 THERMOSTATIC EXPANSION VALVES

The Thermostatic Expansion Valve shall be so adjusted as to give superheat at the coil suction header and consistent with "dry gas" being delivered to the compressor at designed superheat

The Thermostatic Expansion Valve must be of a type that allows for interchangeable orifice assembly The assembly must come complete with a strainer fitted and cleanable

The thermal bulb shall be clamped securely to the suction pipe to ensure intimate contact and rapid response To be positioned at either 10,11,1or 2 o'clock

5 16 TEMPERATURE SENSORS

Temperature probes shall be fixed to each discharge and suction line at Compressor and monitored by associated Refrigeration electronic controller
Other electronic sensors required, ambient and plantroom To be connected to Refrigeration electronic controller for monitoring

5 17 PRESSURE TESTING

Upon completion of erection the refrigeration circuit except for the controls and compressor shall be pressure tested with dry nitrogen The test pressure to be 250 psi (gauge) with all joints, flanges and the like being tested for leaks with a mixture of four parts water, one part liquid soap the mixture to be applied with a brush

After all leaks are repaired a final test shall be carried out with dry nitrogen at a test pressure of 250 psi, whereby the circuit shall be placed on a 24Hr pressure test monitored by Food & Beverage Design Services No measurable pressure drop will occur during this period The test procedure shall be signed off only after it can be demonstrated that the system is sealed and suitable under pressures of 250 psi or less

5 18 PIPE INSULATION

Only after the final leak test has been completed can any joint, flange or fitting be covered by piping insulation

Liquid lines should not be insulated if the surrounding temperature is lower than or equal to the temperature of the liquid Insulation of the liquid line should only occur where the line can pick up a considerable amount of heat

Under no circumstances are liquid and suction lines to be strapped together without a rubber type substance in between Compressors to be designed for 20k suction superheat back at compressor

Thickness of insulation must prevent condensation on the outer surface and be a rubber vinyl blend compound in pipe, sheet and tape form The insulation must be self extinguishing with an early fire hazard properties as covered under the AS 1530 Pt 1982 Code of,

Ignitability	0	Spread of Flame	0
Heat Evolved	0	Smoke Developed	5

Required minimum wall thickness of flexible pipe insulation,

- For systems operating at -10° C saturated suction temperature or above 19mm wall thickness

- For systems operating at -10° C saturated suction temperature or below 25mm wall thickness

Sealing of the pipe insulation joints and ends shall only be carried out using a contact adhesive Tape shall not be acceptable

Where located out of doors the pipe insulation must be weather proofed to prevent the absorption of moisture

5 19 EVACUATION

After the satisfactory completion of the pressure test and only then can the system be evacuated A vacuum pump capable of maintaining the vacuum at 25 kpa absolute shall be connected to both the high and low pressure sides of the system with all valves open and controls connected

The evacuation procedure shall be over 3 stages,

5 19 1 FIRST EVACUATION

The vacuum pump shall operate on the system until the pressure has been reduced to less than 25 pa absolute and as low as the pump will bring it, and then allowed to operate at this minimum pressure for a period of 6 hours The pump shall then be stopped and the system shall be isolated and allowed to stand for 6 hours

5 19 2 SECOND EVACUATION

After completion of the first evacuation stage the vacuum shall be broken with clean dry nitrogen and a second evacuation started This period of evacuation shall be not less than 3 hours at 25 pa absolute and maintained throughout the evacuation period The system shall be left to stand for a period of not less than 3 hours after which time the system shall be broken with dry refrigerant and the pressure raised to above zero At this time the dryer shall be installed into the system

5 19 3 THIRD EVACUATION

A third and final evacuation shall commence with the pump placed in operation for a period of not less than 6 hours at a pressure of 25 pa absoluter or less The system shall then be charged with the correct quantity of refrigerant and oil with a leak test carried out using a halide torch

5 20 EVAPORATOR CONDENSATE DRAINS

All drains are to adequately sized, pitched and trapped before passing through fixture walls and discharging over the drainage point located adjacent to the rooms or evaporators The trap shall be outside of coolrooms or freezers

Drain lines shall be pitched down from the blower coils at a rate of not less than 50mm to 1m They are to be of P V C piping for F D C in a positive temperature room and copper piping in negative temperature rooms The drain lines are to be fastened to the room's wall by an approved P V C clips holding the piping 25mm off the walls Drainage pipe size to be no less then 40mm

All negative temperature drain lines shall be electrically heated with an approved trace element heater having a rating of 4 2 watts/lineal metre The heater cable shall be fed down the drain line internally from the evaporator tray to the outside of the room structure and be capable of easy replacement The heater cable shall be wired independent to the system and have an isolating switch placed high above the door opening (2200mm) Drain line to include removable IO's in every change of direction

Drains shall be piped to discharge visibly over a tundish adjacent to the room

Sufficient union joints shall be provided for the removal of convenient sections to permit repair or service

Drain piping shall not be smaller than 40mm and each line shall be fitted with an "S" trap

5 21 THERMOSTAT

Provide a electronic controller consisting of digital readout thermometer, thermostat, defrost and alarm above each Coolroom /Freezer room door opening

The controller is to be Carel Mastercella

Carel IR33 to all cabinets

The digital control shall have an operators front touch pad

The probe is to be mounted in the return air stream with bulb cover for protection

5 22 CONTROL CIRCUIT TESTING

All electrical control circuitry is to be thoroughly checked sequentially to ensure that all controls function, especially safety controls, and the three-phase motors are to have their amperage measured and started overloads tested by adjustment to test overload tripping

Satisfactory overloads are to be set slightly above measured full load current draw to avoid nuisance tripping

5 23 EQUIPMENT IDENTIFICATION

Labels are to be engraved black letters on a white background Traffolyte or equal Lettered tape is not acceptable

5 24

All controls are to be provided with serial cards for the connection to the new BMS system

SPECIFICATION

SECTION ONE

BAR ITEMS

Item B1 **Serve Ledge (by others)**

Item B2 **Bar Frame**

Provide a split level bar frame approximately 8300mm long constructed from Duragal RHS mild steel 50mm x 50mm frame to the dimensions as shown on the design drawings The work tops are nominated as separate item numbers within these specifications but must conform to the design requirements of this bar frame The frame will be 50mm x 50mm heavy gauge square tube Duragal RHS uprights, spaced at a maximum distance of 900mm

To support the bar and the work top, a galvanised metal steel angle 50mm x 50mm x 6mm will be welded to each upright and protrude beyond the upright approximately 450mm The base angle will have the top web cut off at an angle tapering from 0mm up to 50mm to allow for a sloping plinth The bottom web will be securely fixed to the floor with 2 x 12mm masonry anchors

After welding has occurred to the RHS apply one coat of galvanised iron primer

Particular attention must be given to sealing all joints and crevices against the entry of vermin and moisture The bar construction must meet Health Code Requirements

To the inside of the bar frame supply and fix 6mm Villaboard with all joints sealed To the outer face of the Villaboard fix a stainless steel lining

Fumigation plugs are to be positioned in each section of the bar framing

Supply and fix 12mm ply to the customer side of the bar framing for a decorative finish to be applied by others

Item B3 **P O S (by club)**

Item B4 **2 Bay Glass Racks**

Supply and fix stainless steel under counter glass racks being adjustable in height and suitable for use with 432mm x 356mm white nylon coated wire baskets The height between tray slides shall be adjustable

Construction of the framing shall be stainless steel fully welded under bar racks as per standard industry design and mounted under the stainless steel work bench At the base of each bay there shall be a drip tray slide provided that will accept a 432mm x 356mm x 20mm high stainless steel water tight drip tray

The racking shall be fully framed with top, bottom and side stainless steel cantilevered as per drawings

Provide as standard Mantova glass baskets (minimum of three (3) baskets per bay) being white nylon coated wire baskets 432mm x 356mm in size
One (1) pair hot & clod water hose cocks to be supplied and installed by others

Note confirm club requirements for basket sizes prior to manufacture

Item B5 **6 Tap Beer Station**

Supply one(1) recessed drip tray formed into work top as an integral part of the bench the drip tray will be 1000mm x 500mm Provide removable wedge wire grids with finger holes for ease of removal

Item B6 **Post Mix Station / Ice Well**

Supply one (1) Stainless steel insulated ice well recessed into the bar top with the unit being welded to the bar work bench so as to form a single unit The ice well shall be formed from 1 2mm stainless steel sheeting have 25mm radius corners and base and measuring 400mm x 250mmm Within the stainless steel formed ice well there shall be a removable perforated bin
The perforated removable bin shall have rods welded to the corners of the bin for ease of removable
A stepped recessed bottle speed well will form part of this station the speed well will be sized to accommodate 8 bottles
Also a recessed set down mixing tray shall form part of the ice well / post mix station The tray shall be fitted with a s/s wedge wire grating
The base of the ice well shall be creased to the centre of the well area where a nickel plated sink drainer shall be fitted Connection from this point to the tundish shall be via hard drawn stainless steel tubing with flange connection onto the ice bin spigot by this contractor

Item B7 **Serve Ledge Drip Tray**

Supply one (1) stainless steel drip trays recessed into the serve ledge The well shall be formed from 1 2mm stainless steel sheeting having 25mm radius corners and base Within the stainless steel formed well there shall be a removable s/s wire grid tray and screwed drain fitting in the base This drain is to be connected to the tundish provided and must be mounted 25mm clear of the inside bar face

The drip tray will be approximately 1000mm x 150mm x 25mm deep

Item B8 **8 Ways ETN Spirit Dispenser**

Supply one(1) Perspex spirit hoods complete with stainless steel tube frame as shown on drawings 1 x 8 way ETN spirit dispenser and make provision

Item B9 **3 Bay Glass Chiller**

Supply one (1) HRC Alliance Auto Lift glass chiller AL3B complete with left hand services Include hand valves and shut off valve

Item B10 **S/S Bench**

Supply two (2) stainless steel bar work tops, dry type constructed from 1 2mm #4 finish stainless steel measuring approx 2900mm & 3500mm having a 19mm waterproof marine ply backing When applied the bonding shall be held under pressure for a period of 24 hours Apply 4mm of grey two part epoxy to the under side of the waterproof marine ply and seal to all sides of the stainless steel bench

The bench shall have a stainless steel up stand at the back which is to be full height to the underside of the serve ledge The back of the up stand is to be timber backed as per the underside of the bench and sealed with epoxy so as not to present exposed raw timber and/or end sections to the elements

Supply and fit beer and post mix drip trays recessed into the bar top with the drip tray well being welded to the bar work bench so as to form a single unit This unit is to be stepped to allow no spillage onto bar top The well shall be formed from 1 2mm stainless steel sheeting having a 25mm radius corners and base Within the stainless steel formed well there shall be a removable stainless steel s/s wedge wire grating
The base of the drip tray shall be creased to the centre of the tray area where a nickel plated sink drainer shall be fitted Connection from this point to the tundish shall be via hard drawn stainless steel tubing with a flange connection onto the sink drainer spigot

Provide a stainless steel panel c/w door to the area directly beneath the beer taps to hide the chiller plate position under the bar

Ice wells will be formed into this work top as shown on drawings (Item B12)

Item B11 **6 Tap Beer Station**

Supply one(1) recessed drip tray formed into work top as an integral part of the bench the drip tray will be 1000mm x 500mm Provide removable wedge wire grids with finger holes for ease of removal

Item B12 **Post Mix Station / Ice Well**

Supply one (1) Stainless steel insulated ice wells recessed into the bar top with the unit being welded to the bar work bench so as to form a single unit The ice well shall be formed from 1 2mm stainless steel sheeting have 25mm radius corners and base and measuring 400mm x 250mmm Within the stainless steel formed ice well there shall be a removable perforated bin
The perforated removable bin shall have rods welded to the corners of the bin for ease of removable
A removable condiment tray positioned at the rear shall form part of the ice well area
Also a recessed set down mixing tray shall form part of the ice well / post mix station The tray shall be fitted with a s/s wedge wire grating
The base of the ice well shall be creased to the centre of the well area where a nickel plated sink drainer shall be fitted Connection from this point to the tundish shall be via hard drawn stainless steel tubing with flange connection onto the ice bin spigot by this contractor

Item B13 **2 Bay Glass Rack**

Supply and fix stainless steel under counter glass racks being adjustable in height and suitable for use with 432mm x 356mm white nylon coated wire baskets The height between tray slides shall be adjustable

Construction of the framing shall be stainless steel fully welded under bar racks as per standard industry design and mounted under the stainless steel work bench At the base of each bay there shall be a drip tray slide provided that will accept a 432mm x 356mm x 20mm high stainless steel water tight drip tray

The racking shall be fully framed with top, bottom and side stainless steel cantilevered as per drawings

Provide as standard Mantova glass baskets (minimum of three (3) baskets per bay) being white nylon coated wire baskets 432mm x 356mm in size
One (1) pair hot & clod water hose cocks to be supplied and installed by others

Note confirm club requirements for basket sizes prior to manufacture

Item B14 **P O S (by club)**

Item B15 **Serve Ledge Drip Tray**

Supply one (1) stainless steel drip tray recessed into the serve ledge The well shall be formed from 1 2mm stainless steel sheeting having 25mm radius corners and base Within the stainless steel formed well there shall be a removable s/s wire grid tray and screwed drain fitting in the base This drain is to be connected to the tundish provided and must be mounted 25mm clear of the inside bar face

Each drip tray approximate dimensions of 1000mm x 150mm x 25mm deep

Item B16 **8 Ways ETN Spirit Dispenser**

Supply one(1) Perspex spirit hoods complete with stainless steel tube frame as shown on drawings 1 x 8 way ETN spirit dispenser and make provision

Item B17 **Filtered Water Station**

Supply one filtered water station TS B-1210 complete with custom made s/s wedge wire recessed drip tray The water station will be connected to the post mix water supply by the post mix contractor

Item B18 **Under Bench Hand Basin**

Supply one (1) Stainless steel hand basin c/w brackets, soap dispenser and hand towel dispenser and knee operated Enware tapware

Item B19 **S/S Stock Cupboard Under**

Supply one (1) Stainless steel back bar bench complete with 3 door stainless steel lockable cupboard under with adjustable shelves Doors must be keyed alike

Item B20 **Back Bar S/S Bench**

Supply one (1) Stainless steel back bar bench top approximately 4200 x 650 complete with upstand to rear and left hand end Bench will be fabricated from 1 2 #4 s/s timber backed and epoxy coated The bench will be supported by item B19 & B21 with angled brackets where required in other areas

Item B21 **S/S Stock Cupboard Under**

Supply one (1) Stainless steel back bar cupboard complete with 2 door stainless steel lockable cupboard under with adjustable shelves Doors must be keyed alike

Item B22 **3 Door Upright Drinks Fridge**

Supply one (1) Three (3) door normal temperature upright stainless steel refrigerator with top mounted service panel and measuring 1800mm long complete with refrigeration controls (TX valve, solenoid valve, two shut off valves, digital thermometer) ready for connection to remote refrigeration plant
All controls are to be compatible with Carel type IR33 plant watch or similar system

Item B23 **Hand Basin**

Supply one (1) only knee operated hand basin c/w brackets, soap dispenser towel dispenser and knee operated Enware HSF – 780 knee tap assembly A stainless steel rear wall panel 600 high is required complete with welded corners

Item B24 **S/S Bench**

Supply one (1) stainless steel wet edge bench complete with one sink bowl 450 x 400 x 250 deep complete with Everbright SA001 basket arrestor Provide a space under for positioning of glass washer

Item B25 **2 Bay Glass Rack**

Supply and fix stainless steel under counter glass racks being adjustable in height and suitable for use with 432mm x 356mm white nylon coated wire baskets The height between tray slides shall be adjustable

Construction of the framing shall be stainless steel fully welded under bar racks as per standard industry design and mounted under the stainless steel work bench At the base of each bay there shall be a drip tray slide provided that will accept a 432mm x 356mm x 20mm high stainless steel water tight drip tray

The racking shall be fully framed with top, bottom and side stainless steel cantilevered as per drawings

Provide as standard Mantova glass baskets (minimum of three (3) baskets per bay) being white nylon coated wire baskets 432mm x 356mm in size
One (1) pair hot & clod water hose cocks to be supplied and installed by others

Note confirm club requirements for basket sizes prior to manufacture

Item B26 **Glass Washer**

Supply one (1) Washtech GL under counter glasswasher

Item B27 **Ice Machine**

Supply one (1) Hoshizaki Glacius KM-30A Series under counter ice machine complete with 30kg production per 24 hr period

Item B28 **2 Door Upright Drinks Fridge**

Supply one (1) Two (2) door normal temperature upright stainless steel refrigerators with top mounted service panel and measuring 1200mm long complete with refrigeration controls (TX valve, solenoid valve, two shut off valves, digital thermometer) ready for connection to remote refrigeration plant
All controls are to be compatible with Carel type IR33 plant watch or similar system

Item B29 **1 Bay Glass Rack**

Supply and fix stainless steel under counter glass racks being adjustable in height and suitable for use with 432mm x 356mm white nylon coated wire baskets The height between tray slides shall be adjustable

Construction of the framing shall be stainless steel fully welded under bar racks as per standard industry design and mounted under the stainless steel work bench At

the base of each bay there shall be a drip tray slide provided that will accept a 432mm x 356mm x 20mm high stainless steel water tight drip tray

The racking shall be fully framed with top, bottom and side stainless steel cantilevered as per drawings

Provide as standard Mantova glass baskets (minimum of three (3) baskets per bay) being white nylon coated wire baskets 432mm x 356mm in size
One (1) pair hot & clod water hose cocks to be supplied and installed by others

Note confirm club requirements for basket sizes prior to manufacture

COFFEE SHOP

Item C1 **Granite Bench Top (by others)**

Item C2 **Cold Display**

Supply one (1) FPG 4000 Series MODEL IN 4C12 self contained cold display

Item C3 **Cake Display**

Supply one (1) FPG 4000 Series MODEL IN 4C08 self contained cold display

Item C4 **P O S (by club)**

Item C5 **Coffee Machine (by club)**

Item C6 **Coffee Grinder (by club)**

Item C7 **Ice Cream Fridge**

Supply one (1) Silver King SKDI Drop in freezer complete with K30-1010 Dipperwell assembly

Item C8 **L-Shaped Bench**

Supply one (1) Stainless steel L-Shaped bench top approximately 4000 x 650 complete with upstand to rear and left hand end Bench will be fabricated from 1 2 #4 s/s timber backed and epoxy coated The bench will have a two (2) tier under shelf to the coffee machine area Supply support frame to other area

Item C9 **Syrup Dispenser**

Supply two (2) San Jamar Condiment syrup pumps Model P9712 complete with s/s outer lining

Item C10 **Milk Shake Machine**

Supply two (2) Roband DM21B Milk shake machines

Item C11 **2 Door Under Counter Fridge**

Supply one (1) Williams HO2R Remote 2 door under counter fridge

Item C12 ***Contact Toaster***

Supply one(1) Roband CGS810T 8 Sandwich smooth plate Teflon coated contact toaster

Item C13 **Support Frame**

Provide a bar frame approximately 3800mm long constructed from Duragal RHS mild steel 50mm x 50mm frame to the dimensions as shown on the design drawings The work tops are nominated as separate item numbers within these specifications but must conform to the design requirements of this bar frame
The frame will be 50mm x 50mm heavy gauge square tube Duragal RHS uprights, spaced at a maximum distance of 900mm

To support the bar and the work top, a galvanised metal steel angle 50mm x 50mm x 6mm will be welded to each upright and protrude beyond the upright approximately 450mm The base angle will have the top web cut off at an angle, tapering from 0mm up to 50mm to allow for a sloping plinth The bottom web will be securely fixed to the floor with 2 x 12mm masonry anchors

After welding has occurred to the RHS apply one coat of galvanised iron primer

Particular attention must be given to sealing all joints and crevices against the entry of vermin and moisture The bar construction must meet Health Code Requirements

To the inside of the bar frame supply and fix 6mm Villaboard with all joints sealed
To the outer face of the Villaboard fix a stainless steel lining

Fumigation plugs are to be positioned in each section of the bar framing

Supply and fix 12mm ply to the customer side of the bar framing for a decorative finish to be applied by others

KITCHEN EQUIPMENT

Item K1 **Dry Store (by others)**

Item K2 **Coolroom**

Supply one (1) coolroom as shown on drawings

The room shall be approximately 3200m x 2700mm x 2700mm high

The front wall of the coolroom is to protrude into the ceiling space by a minimum of 50mm to provide a fixing for the ceiling fixers

The room is to be supplied with concrete floor and floor insulation as per specification attached and also finished with an epoxy coating similar to the kitchen floor (refer section 4 03 of this specification) The epoxy floor coating will be provided by the builder

Item K3 **Freezer**

Low temperature coolroom 2400mm x 1800 x 2700mm high

The front wall of the coolroom is to protrude into the ceiling space by a minimum of 50mm to provide a fixing for the ceiling fixers

The room is to be supplied with concrete floor and floor insulation as per specification and also finished with an epoxy coating similar to the kitchen floor (refer section 4 03 of this specification) The epoxy floor coating will be provided by the builder

Item K4 **Planitary Mixer**

Supply one (1) Paramount Planetary Mixer Model BM 20AT

Item K5 **2 Bowl Sink**

Supply one (1) Stainless steel preparation bench & frame 3100mm x 700mm complete with 2 x 450mm x 450mm x 300mm deep s/s sink & wet edge section and, sink basket, under shelf & Vinedex 90032 Insink Dry Basket Arrestors

Item K6 **Spray Rinse Arm**

Supply one (1) Yellow YW031 Spray arm complete with add on faucet Y063-Y182

Item K7 **Dishwasher Outlet Bench**

Supply one (1) stainless steel outlet dishwashing bench & frame L-Shaped approx 2 4 x 700 x complete with under shelf and wet edge to bench Bench will be fabricated from 2 0mm s/s complete with channel frame under stud welded to top Ensure bench top lips into dishwasher as per manufactures requirements

Item K8 **Upright Dishwasher**

Supply one (1) Winterhaulter GS515 pass thru upright dishwasher

Item K9 **Dishwasher Exhaust Hood**

Supply one (1) Stainless steel custom made dishwasher exhaust hood complete with 50mm gutters to the perimeter and drain socket Hood to comply with AS 1668 2

Item K10 **Spray Rinse Arm**

Supply one (1) Yellow YW031 Spray arm complete with add on faucet Y063-Y182

Item K11 **Dishwasher Inlet Bench**

One (1) only Stainless steel inlet dishwashing bench & stainless steel support frame 3800mm x 700mm complete with one sink bowls 450 x 450 with pre rinse sink trough and "H" section insert, sink basket and scrape hole Bench will be fabricated from 2 0mm s/s complete with channel frame under stud welded to top
A Vinedex 90032 Insink Dry Basket Arrestor to be supplied and fitted by Food & Beverage Contractor to the sink bowl

Item K12 **Spare Number**

Item K13 **4 Burner Range**

Supply one (1) Waldorf RN8510G 4 Burner range complete with oven under
Item K14 **Infill Bench**

Supply one (1) Stainless steel infill bench fabricated from 1 2 # 4 s/s timber backed and epoxy coated The bench shall have a s/s under shelf
The infill bench shall match the profile of the adjacent cooking equipment

Item K15 **2 Bank Fryer**

Supply two (2) Frymaster PMJ145GSD Full pot fryers with mild steel pots

Item K16 **Gas Salamander**

Supply one (1) Waldorf SN8200G Salamander

Item K17 **S/S Bench**

Supply one (1) Stainless steel infill bench fabricated from 1 2 # 4 s/s timber backed and epoxy coated The bench shall have a s/s under shelf
The infill bench shall match the profile of the adjacent cooking equipment
Also provide counter levered brackets from the upstand to mount the salamander

Item K18 **BBQ**

Supply one (1) Waldorf CH8900-LS 900 wide BBQ with stand under

Item K19 **Flat Plate Griddle**

Supply one (1) Waldorf GP8600G-LS complete with stand

Item K20 **S/S Bench**

Supply one (1) Stainless steel infill bench approximately 1200 wide fabricated from 1 2 # 4 s/s timber backed and epoxy coated The bench shall have a s/s under shelf

Item K21 **10 Tray Combi**

Supply one (1) Rational SCC101 10 Tray combi oven

Item K22 **10 Tray Combi**

Supply one (1) Rational SCC101 10 Tray combi oven

Item K23 **Bratt Pan**

Supply one (1) Waldorf BP8080G Tilting Bratt Pan

Item K24 **Exhaust Hood**

Supply one (1) Halton model KVF/2 "Capture Jet" Island type exhaust hood manufactured from 304 stainless steel and complete with 4 x 36 watt fluoro lights, and make up air
The size of the hood is to be approximately 5000mm x 2650mm x 650mm high
The hood is to be positioned and installed so that at least 50mm of the hood protrudes into the ceiling space so that the ceiling can be finished to the hood
Supply and exhaust air duct collars are to be provided for connection by the mechanical contractor

Item K25 **Bain Marie**

Supply one (1) Cullinaire CBMH4-UR Bain marie hot cupboard The unit will be fitted under item K27 and form an integral part of the bench

Item K26 **Microwave**

Supply one(1) Menumaster UC18E

Item K27 **Island Bench**

Supply one (1) Stainless steel island bench approximately 4100 wide fabricated from 1 2 # 4 s/s timber backed and epoxy coated The bench shall have a s/s 2 tier heated over shelf complete with infinite controls Allow to mount a GPO to the over shelf with integral wiring
Also supply a three (3) drawer normal temperature under counter stainless steel refrigerator with a blown cold well sized to accommodate ½ size gastronorm pans with side mounted service panel and measuring 2000mm long complete with

refrigeration controls (TX valve, solenoid valve, two shut off valves, digital thermometer) ready for connection to remote refrigeration plant
All controls are to be compatible with Carel type IR33 plant watch or similar system

Item K28 **Plate Dispenser**

Supply two (2) Carter Hoffman Heated drop in plate dispensers Model UTY12

Item K29 **Dry Store Shelving**

Supply Atlas Plastic Mat 4 tier shelving to dry store as shown on drawing

Item K30 **Coolroom Shelving**

Supply Atlas Plastic Mat 4 tier shelving to Coolroom as shown on drawing

Item K31 **Freezer Shelving**

Supply Atlas Plastic Mat 4 tier shelving to Freezer as shown on drawing

Item K32 **Floor Grate**

Supply five (5) Stainless steel floor grates measuring 900mm x 200mm complete with perforated strainer basket and s/s wedge wire grating as shown on drawings

Item K33 **Spare Number**

Item K34 **Hand Basin**

Supply three (3) only knee operated hand basins c/w brackets, soap dispenser towel dispenser and knee operated Enware HSF – 780 knee tap assembly A stainless steel rear wall panel 600 high is required complete with welded corners

Item K35 **2 x Pot Racks**

Supply two (2) Pot racks fabricated from 32 x 32 s/s 1 6mm Pot racks to be fully welded and polished on all ends

Item D1 **Delivery & Installation**

Provide all the above goods to site as required by the building works schedule

Provide all qualified labour necessary in positioning the goods as nominated and levelling to a final acceptable degree

Provide qualified sheet metal tradesmen on site to fix and weld the goods and appliances into position as detailed within the specifications and as indicated in the design drawings

Provide qualified refrigeration and other tradesmen as required on site

Provide all necessary requirements as detailed within the Specifications, Standards Australia, National Health Regulations, Local Council Regulations, Metropolitan Water Drainage and Sewerage Board, Building Services Corporation and other State and Federal Regulations as may be current at the time of installation

R1 Refrigeration

Item R1 Coolroom & Cabinet Refrigeration

Supply & Install refrigeration equipment necessary to operate Coolroom K2 Cabinet C11 & K27

- Items are to operate at 2°C – 4°C with a 6kTD
- Indoor air-cooled refrigeration condensing unit to include, Oil Separator, Drier, Sight Glass, Dual Pressure Control, Condenser fan high pressure control and MP15 phase safety control
- Refrigeration condensing unit is to be located adjacent to the Service Yard area at high level Allow for a suitable unit support
- Room Evaporator selected at a 6kTD, to include TX valve and liquid line solenoid
- Digital thermostat and temperature read-out
- Sealed waterproof coolroom lighting
- Interconnecting pipe work, to include not less that 20mm insulation and pipe supports from the evaporator to the condensing unit
- Electrical connection of the Evaporator fans, room lights, digital control, liquid line solenoid and condensing unit Sub main by others
- PVC drain pipe to be installed from the evaporator to a tundish external to the room Tundish by others
- Liquid and Suction 2 way hand valves at each evaporator
- Evacuation, test and commission of the system on R404a refrigerant

Item R2 Freezer Room Refrigeration

Supply & Install refrigeration equipment necessary to operate Freezer Room K3

- Room is to operate at -18°C – -20°C with a 6kTD
- Indoor air-cooled refrigeration condensing unit to include, Oil Separator, Suction Accumulator Drier, Sight Glass, Dual Pressure Control, Condenser fan high pressure control and MP15 phase safety control
- Refrigeration condensing unit is to be located within the Bin wash down area at high level Allow for a suitable unit support
- Room Evaporator selected at a 6kTD, to include defrost heaters, TX valve and liquid line solenoid
- Digital thermostat and temperature read-out
- Sealed waterproof coolroom lighting
- Interconnecting pipe work, to include not less that 25mm insulation and pipe supports from the evaporator to the condensing unit
- Electrical connection of the Evaporator fans, room lights, digital control, liquid line solenoid and condensing unit Sub main by others
- PVC drain pipe with an internal heater element, to be installed from the evaporator to a tundish external to the room Tundish by others
- Evacuation, test and commission of the system on R404a refrigerant

Item R3 Cabinet Refrigeration

Supply & Install refrigeration equipment necessary to operate Cabinets B9, B22 & B28

- Cabinets are to operate at 2°C – 4°C with a 6kTD
- Indoor air-cooled refrigeration condensing unit to include, Oil Separator, Drier, Sight Glass, Dual Pressure Control, Condenser fan high pressure control and MP15 phase safety control

- Refrigeration condensing unit is to be located within the Bin wash down area at high level Allow for a suitable unit support
- Liquid and Suction 2 way hand valves at each evaporator
- Interconnecting pipe work, to include not less that 20mm insulation and pipe supports from the evaporator to the condensing unit
- Electrical connection of the condensing unit Sub main by others
- Evacuation, test and commission of the system on R404a refrigerant

PRICING SCHEDULE SPECIFICATION

Item	Description	Cost
	BAR ITEMS	
B1	Serve ledge – by others	$
B2	Bar support frame	$
B3	P O S By Club	$
B4	2 Bay glass rack	$
B5	6 Tap beer station	$
B6	Post mix station	$
B7	Serve ledge drip tray	$
B8	8 Way ETN	$
B9	3 Bay glass chiller	$
B10	S/S Bench	$
B11	6 Tap beer station	$
B12	Post mix station	$
B13	2 Bay glass rack	$
B14	P O S	$
B15	Serve ledge drip tray	$
B16	8 Way ETN	$
B17	Filter water station	$
B18	Under bench hand basin	$
B19	S/S Stock cupboard	$
B20	Back bar s/s bench	$
B21	S/S Stock cupboard	$
B22	3 Door upright fridge	$
B23	Hand basin	$
B24	S/S Bench	$
B25	2 Bay glass rack	$
B26	Glass washer	$
B27	Ice machine	$
B28	2 Door upright drinks fridge	$
B29	1 Bay glasss rack	$
	COFFEE SHOP	
C1	Granite bench top – by others	$
C2	Cold display	$
C3	Cake display	$
C4	P O S	$
C5	Coffee machine – by others	$
C6	Coffee grinder – by others	$
C7	Ice machine	

C8	L-Shaped s/s bench	
C9	Syrup dispenser	$
C10	Milk shake machine	$
C11	2 Door under counter fridge	$
C12	Contact toaster	$
C13	Support frame	$
	KITCHEN EQUIPMENT	
K1	Dry store – by others	$
K2	Coolroom	$
K3	Freezer	$
K4	Planitary mixer	$
K5	2 Bowl sink	$
K6	Spray arm	$
K7	D/W Outlet bench	$
K8	Upright dishwasher	$
K9	D/W Exhaust hood	$
K10	Spray arm	$
K11	Inlet bench	$
K12	Spare number	$
K13	4 Burner range	$
K14	Infill bench	$
K15	2 Fryers	$
K16	Gas salamander	$
K17	S/S Bench	$
K18	BBQ	$
K19	Flat plate griddle	$
K20	S/S Bench	$
K21	10 Tray combi oven	$
K22	10 Tray combi oven	$
K23	Bratt pan	$
K24	Exhaust hood	$
K25	Bain marie	$
K26	Microwave oven	$
K27	Island bench	$
K28	Plate dispenser	$
K29	Dry store shelving	$
K30	Coolroom shelving	$
K31	Freezer shelving	$
K32	5 Off floor grates	$
K33	Spare number	$
K34	3 Off hand basins	$
K35	2 x Pot racks	$
D1	Delivery and installation	$
	Refrigeration	
R1	Coolroom refrigeration	$
R2	Freezer refrigeration	$
R3	Cabinet refrigeration	$
	TOTAL	$

TOTAL LUMP SUM $

TENDER FORM

LUMP SUM

COMPANY NAME

ADDRESS

Hereby tender to perform work for

The Food and Beverage Equipment for Bayview Golf Club Project

In accordance with the drawing and specifications issued at the time of tendering

For the lump sum of,

($)

Dated this day of 2007

TENDER'S SIGNATURE

Name (in Block Letters)

5 H SITE TEST REPORT

Douglas Partners
Geotechnics • Environment • Groundwater

Integrated Project Solutions

REPORT
on
GEOTECHNICAL INVESTIGATION

PROPOSED NEW CLUBHOUSE
BAYVIEW GOLF COURSE
BAYVIEW

Prepared for
BAYVIEW GOLF CLUB

Project 35630A
Report No 35630A-1
February 2006

Douglas Partners
Geotechnics • Environment • Groundwater

REPORT
on
GEOTECHNICAL INVESTIGATION

PROPOSED NEW CLUBHOUSE
BAYVIEW GOLF COURSE
BAYVIEW

Prepared for
BAYVIEW GOLF CLUB

Project 35630A
Report No 35630A-1
February 2006

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Douglas Partners
Geotechnics Environment Groundwater

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Project 35630A
28 February 2006

GEOTECHNICAL INVESTIGATION
PROPOSED NEW CLUBHOUSE
BAYVIEW GOLF COURSE, BAYVIEW

1 INTRODUCTION

This report presents the results of a geotechnical investigation carried out by Douglas Partners Pty Ltd (DP) for a proposed development at Bayview Golf Course, Bayview The work was commissioned by Mr Gerry O'Neill of PropertyLink Project Management Pty Ltd, acting on behalf of Bayview Golf Club

It is understood that it is proposed to construct a new clubhouse with a basement car park Investigation was carried out to provide information on subsurface conditions for the design of foundations, excavation and excavation support and determine the presence of actual acid sulphate soils (AASS) and potential acid sulphate soils (PASS)

The investigation included the drilling of eight test bores and site inspections by DP engineering staff Details of the field work are given in the report together with comments relating to design and construction practice The results of a concurrent investigation for golf course improvements are included in Report 35630A-2

2 BACKGROUND

DP has previously carried out several investigations on and adjacent to the subject site These investigations are discussed below

Geotechnical Investigation, Project 43451, dated 17 November 2005 - This investigation was carried out for proposed residential units at the existing clubhouse site and included the drilling of four test bores with a bobcat mounted auger/rotary drilling rig and two test bores with hand tools The hand augered holes were drilled to depths of 0 5 m and the remaining four to depths between 5 0 m and 5 5 m

The bores typically encountered topsoil, silty sand and sand filling with some gravel, extending to depths of 0 5 m to 2 0 m The filling, where present, was underlain by very stiff and hard residual clay with some ironstone gravel, extending to depths of at least 5 m to 6 m

A standpipe was installed in one of the bores (Bore 103) and water was subsequently measured at depths between 1 4 m and 1 8 m one to three weeks after installation

Laboratory testing was carried out on one soil sample (Bore 103, 1 0 m – 1 45 m) of the residual clay The laboratory tests indicated a liquid limit of 70%, plastic limit of 19%, plasticity index of 51% and a linear shrinkage of 18 5% These results indicated clays of high plasticity, which would be expected to exhibit a high susceptibility to shrink/swell movements due to changes in moisture content

The locations of the relevant test bores from this investigation (Bores 102 to 104) are shown on Drawings 1-1 and 1-2 in Appendix A and the test bore reports of these bores are included in Appendix C

Phase 1 Contamination and Acid Sulphate Soils Assessment, Project 43491, dated 18 November 2005 - This assessment was undertaken concurrently with the geotechnical investigation and included the same six bores as the geotechnical investigation

Concentrations of the common chemical contaminants analysed at the site were found to be generally low, and within the most stringent of the NSW EPA health-based investigation levels

Contaminant levels were also generally within the provisional phytotoxity-based investigation levels, applicable to unsealed areas on site, where plants may potentially be propagated, with the exception of a single marginal zinc exceedance The detected level was, however, within published background levels for zinc in Australian Soils

Potential or actual ASS were considered unlikely to be present on site

Geotechnical Investigation, Project 35629, dated 6 December 2002 - This investigation was conducted for a proposed townhouse development at the site of the existing clubhouse and included auger drilling of six test bores with a truck mounted auger/rotary-drilling rig to depths of 5 m

Asphaltic concrete was encountered in the test bores overlying roadbase gravel, which in turn was underlain by filling comprising gravelly sand, crushed sandstone and sandy clay, extending to depths ranging from 0 7 m to 1 7 m The filling was underlain by residual stiff to hard silty clay and clay with ironstone gravel and bands

No groundwater was encountered in the bores

Phase 1 Preliminary Contamination Assessment, Project 35629, dated 18 December 2002 - This contamination assessment was undertaken concurrently with the geotechnical investigation and included the same six test bores Measured contaminant levels were generally within the NSW EPA guidelines applicable to residential townhouse development, with the exception of a slightly elevated level of nickel detected in the near-surface sample collected in one bore The elevated nickel was not considered to represent a significant cause for concern

Further, DP has recently undertaken geotechnical investigations at 143 - 145 and 147 - 149 Darley Street West, Mona Vale, located on the southern side of Darley Street West, opposite to the Bayview Golf Clubhouse site These investigations included test bores drilled to depths of 5 8 m to 6 0 m The bores intersected residual clay to about 1 m depth, which was underlain by extremely low to very low strength fine grained sandstone and claystone, in one bore becoming medium strength below 2 3 m depth Ground water was encountered at depths ranging from 4 0 m to 5 0 m, which corresponds to RL 12 6 to RL 14 9 relative to Australian Height Datum (AHD)

3 SITE DESCRIPTION AND GEOLOGY

3 1 Site Description

Bayview Golf Course covers an irregularly shaped area of approximately 37 8 hectares The site is bounded by Cabbage Tree Road and residential properties and bushland to the north, by Pittwater Road and residential properties to the east by Darley Street West Kunari Place and Parkland Road with associated residential properties to the south and by residential properties and bushland to the west

The proposed clubhouse development is located within an irregularly shaped area totaling approximately 2 hectares, which is located at the south-eastern corner of the golf course This area is located on a hillside, which slopes gently from south to north and north-east with ground surface levels falling from approximately RL 16 AHD to RL 2 AHD A low-lying, alluvial plain extends to the north of the hillside

The existing Bayview Golf Clubhouse with associated pavements, car parking areas and landscaped areas occupy the southern part of the proposed clubhouse area The northern part of the area includes a brick residence (former golf clubhouse) with a grass-covered garden, as well as mostly grassed areas with some sand bunkers associated with the existing 1st and 12th tees, and the 11th and 18th greens An access road enters the site from both Darley Street West and from Pittwater Road Several bushes and trees of variable size grow across the clubhouse area A drain extends from the toe of the hill in a north-westerly direction

Photographs of the clubhouse area are included in Appendix E

3 2 Geology

Reference to the Sydney 1 100 000 Scale Series Geological Sheet indicates that Bayview Golf Course is located on the boundary between Quaternary estuarine and stream alluvium and the Newport Formation of Triassic age The alluvial sediments comprise silty to peaty quartz sand, silt and clay The Newport Formation comprises interbedded laminite, shale and lithic to quartz-lithic sandstone, which commonly weather to form residual clayey sand/sandy clay soils that

grade to extremely and highly weathered bedrock The hillside for the proposed clubhouse development is underlain by the Newport Formation, whereas the level area at the toe of the hill is shown as being underlain by Quaternary alluvium

The field work for the current and previous investigations encountered alluvial sediments as well as residual silty clay and clay with included ironstone bands, representing an extremely to highly weathered bedrock profile, thus confirming the geological mapping

4 FIELD WORK

4 1 Methods

The field work for the current investigation in the area for the proposed clubhouse included

- site inspections undertaken between 18 January 2006 and 1 February 2006 by DP experienced geotechnical engineering and engineering geologist staff
- three test bores (Bores 305 to 307) drilled with a Bobcat-mounted auger/rotary drilling rig between 24 and 27 January 2006 for combined geotechnical and acid sulphate soil assessment purposes The bores were taken to depths between 6 0 m and 10 4 m Sampling and identification were made from the cuttings returned by the auger and from Standard Penetration Test (SPT) samples The SPTs were carried out to estimate the relative strength of the soils encountered and to obtain soil samples for laboratory testing
- the sampled materials were transported and stored in accordance with standard protocols for subsequent testing of acid sulphate soils The logging of the bores was carried out by an experienced geotechnical engineer
- installation of a slotted PVC standpipe to 5 1 m depth in Bore 306 Construction details for the standpipe are shown on the borehole log
- monitoring of ground water levels in the standpipe in Bore 306, as well as of the standpipe installed in Bore 103 during the November 2005 investigation (Project 43451) Groundwater monitoring was carried out between 25 January and 1 February 2006

The test locations were determined on-site in liaison with the golf course greenkeeper and are shown on Drawings 1-1 and 1-2 in Appendix A Reduced Levels of the bores were obtained by survey levelling relative to spot levels (to AHD) shown on Drawing A1-6588 D11 dated 1 October 2002 by Byrne & Associates Pty Ltd and "Plan of Lot 1 in DP 230607", dated 26 May 1998 by D P Surveying Services Both drawings were provided by Marchese + Partners Architects during the investigation for the proposed residential development at the existing clubhouse (Project 43451)

4 2 Results

Details of the conditions encountered in the current and relevant previous test bores are given in Appendix B and C respectively, together with notes defining classification methods and descriptive terms A geotechnical cross sections of the site is shown on Drawing 1-3 in Appendix A

The inspections and anecdotal evidence from DP and Golf Course staff indicate that uncontrolled filling has been placed on the portion of the natural hillside close to Pittwater Road in the clubhouse area Assessment of the nature of this filling did not form part of the scope of this investigation The approximate extent of the filling, however, has been inferred on Drawing 1-2

The bores of the current investigation in the clubhouse area encountered the following main strata

TOPSOIL typically a thin layer of clayey silt/silty clay with grass roots, but comprising silty sand in Bore 307

SILTY CLAY dark brown, alluvial silty clay with some peat was intersected in Bore 306 located at the toe of the hillside

RESIDUAL CLAY light grey and red brown silty clay and clay with ironstone gravel and ironstone bands extending to depths of at least 6 m to 10 4 m The clay is initially firm and becomes very stiff and hard with depth In Bore 306, the residual clay underlying the alluvial

deposit initially comprised light grey, brown and orange sandy clay to 1 3 m depth

No free groundwater was observed in any of the bores during augering A slotted PVC standpipe was installed in Bore 306 to 5 1 m depth on 27 January 2006 The ground water level was measured on the same day and then again on 1 February 2006 The results are shown in Table 1 below

Ground water was also measured in the standpipe installed in Bore 103 for the proposed residential development at the existing clubhouse site (Project 43451) These measurements have also been incorporated in Table 1 below

Table 1 – Results of Groundwater Measurements

Date of Measurement	Depth (m) and Reduced Level (AHD) to Groundwater [1]	
	Bore 306	Bore 103
24 October 2005	-	1 8 (8 5)
1 November 2005	-	1 6 (8 7)
3 November 2005	-	1 8 (8 5)
8 November 2005	-	1 4 (8 9)
25 January 2006	-	1 3 (9 0)
27 January 2006	dry	-
1 February 2006	1 2 (0 9)	1 5 (8 8)

Notes
(1) Bracketed numbers are the Reduced Levels (to AHD)

5 LABORATORY TESTING

Six samples collected from Bore 306 were screened by measurement of pH after the addition of distilled water (pH_F) and peroxide (pH_{FOX}) These screening tests give an approximate indication of either the presence of actual sulphate soils (AASS) or potential acid sulphate soils (PASS) Three of these samples were subsequently tested using the Suspension Peroxide Oxidation Combined Acidity and Sulphate Method (SPOCAS)

In general, positive field indicators for acid sulphate soils (after Acid Sulphate Soils Management Advisory Committee [ASSMAC], *Acid Sulphate Soils Manual, 1998*) are considered to be

- a field pH (pH_F) of ≤4 for AASS
- for PASS, in the peroxide test one or more of, a change in colour from grey to brown tones, effervescence, the release of sulphur smelling gases, the lowering of pH by at least one unit and a final pH (pH_{FOX}) <3 5 and preferably <3

For a disturbance greater than 1000 tonnes, an oxidisable sulphur content of 0 03% or equivalent total potential acidity (TPA) or actual acidity (TAA) determined by laboratory testing is the threshold criteria for preparation of a detailed acid sulphate soils management plan (ASSMP) Summaries of the acid sulphate soil testing program are given in Tables 2 and 3

Table 2 – Results of Acid Sulphate Soil Screening

Sample ID	Sample Description*	Screening Results			
		pH^			Strength of Reaction^^
		field (H_2O)	Ox	Change	
306/0 1	Silty clay topsoil	6 06	3 49	-2 57	2, F
306/0 5	Peaty silty clay	5 64	4 03	-1 61	2 F
306/1 0	Sandy clay	5 97	4 69	-1 28	1/2
306/1 0 (S)		5 73	4 54	-1 19	2
306/1 5	Clay	6 11	4 36	-1 75	2
306/2 0	"	6 00	4 07	-1 93	1/2 F
Guidelines		≤4*	<3 5**	≤-1**	

Table 3 – Results of Acid Sulphate Soil Laboratory SPOCAS Analysis

Sample ID	Sample Description+	SPOCAS Results								
		pH^			Acid Trail (mol H^+/tonne)			Sulphur Trail (%)		
		field (KCl)	Ox	Change	TAA	TPA	TSA	S_{KCL}	S_P	S_{POS}
306/0 5	Peaty silty clay	4 9	7 0	+2 1	32	<5	<5	<0 005	0 028	0 028
306/1 0 (S)	Sandy clay	5 5	6 9	+1 4	<5	<5	<5	0 008	0 020	0 012
306/2 0	Clay	4 5	4 6	+0 1	22	25	<5	<0 005	0 008	0 008
Guidelines		≤4*	<3 5**	≤-1**	18#	18#	18#	-	-	0 03#

Notes for Tables 2 & 3
Shading indicates positive indicator
(S) denotes SPT sample
^pH_F non-oxidised (field) pH
pH_{FOX} oxidised pH
Change final oxidised pH (pH_{FOX}) – field pH (pH_F)
TAA Total Actual Acidity
TPA Total Potential Acidity
TSA Total Sulphidic Acidity (TPA-TAA)
S_{KCl} KCl extractable sulphur
S_P peroxide sulphur (after peroxide digestion)
S_{POS} peroxide oxidisable sulphur
+ provides brief description only full material description given in Test Bore Reports Appendix B
* for Actual Acid Sulphate Soil
** Indicative value only for Potential Acid Sulphate Soil
# ASSMAC Action Criteria for disturbance of more than 1000 tonnes all textures
^^Strength of Reaction
1 denotes no or slight reaction
2 denotes moderate reaction
3 denotes vigorous reaction
4 denotes volcanic reaction
F denotes bubbling/ frothy reaction indicative of organics
H denotes heat generated

The screening and SPOCAS test results indicate that

- two SPOCAS results were indicators of AASS conditions The result from the sample collected at 2 0 m depth is somewhat anomalous, as this material was assessed to constitute residual clay of the Newport Formation, which normally would not be expected to have AASS conditions
- most samples gave positive indicators of PASS conditions All three SPOCAS tested samples included oxidisable sulphur, one of the samples having a S_{POS} value just meeting the action criteria

6 COMMENTS

6 1 Proposed Development

It is understood that the new golf clubhouse will be constructed on the hillside to the north-east of the existing clubhouse It is further understood that this development will include construction of a single level structure with a one level basement car park, as well as construction of associated ground level driveways and car parking areas An entry ramp will enter the proposed basement car park at the south-west part of the clubhouse development and another ramp will exit the basement near Pittwater Road to the east It has been advised that the basement is proposed to have a concrete floor slab and block retaining walls, and that the proposed structure will have column working loads in the order 500 kN to 600 kN The approximate footprints of the proposed basement and superstructures are shown on Drawing 1-2

6 2 Geological Model of Clubhouse Area

The geological model of the proposed golf course development constitutes a sequence comprising

- an upper thin layer of topsoil, comprising clayey silt and silty sand Based on previous screening tests (Project 43491) and the regional geology, it is considered that the topsoil would not constitute PASS With reference to the results of the laboratory testing carried out for the remainder of the golf course, however, a zone of PASS may be present in the topsoil within a zone of the toe of the slope
- a dark brown to black peaty silty clay layer, typically 0 5 m thick, which underlies the topsoil at the toe of the hill The tested sample from this unit gave a positive indicator of PASS conditions and also indicated the presence of AASS
- a possible alluvial sand / silty sand layer between the peaty silty clay layer and the residual clay under the northernmost section of the proposed clubhouse footprint This sand was encountered underlying the peaty silty clay in the bores drilled for the proposed golf course improvements (Bores 301 to 304 and 308) and is characterised as a very loose and loose grey and grey brown fine to medium grained sand The sand typically contains some fine

shell grit, shell fragments and shells and is slightly silty and clayey in parts and tested samples within this unit gave positive indicators of PASS conditions

- a light grey and red brown, residual silty clay and clay with ironstone gravel and ironstone bands The clay is initially firm and becomes very stiff and hard with depth A sample collected from this unit indicated anomalous AASS conditions, not expected in residual clay

6 3 Acid Sulphate Soil Risk

The low-lying area at the toe of the hill is currently at risk from on-going natural oxidation of PASS material within the zone of groundwater fluctuation

Excavation depths of up to 6 m in residual soils are expected in the proposed clubhouse area It is also anticipated that excavation of alluvial sediments to approximately 0 5 m to 1 0 m depth may be required in an area of 500 m^2 to 700 m^2 at the toe of the hillside The alluvial sediments would then be replaced with engineered filling to support the basement floor slab (see Section 6 5 below) Such excavation could result in disturbance of more than 1000 tonnes of AASS and PASS, which normally would require detailed Acid Sulphate Soil Management Plan (ASSMP) if the *Action Criteria* are exceeded The full extent of this excavation, however, would not be known until the construction stage

As described in Report 35630A-2, a detailed Acid Sulphate Soil Management Plan (ASSMP) will be required for the development within the low-lying area of the golf course

As a consequence of the existing acid sulphate soil risk, the exceedance or near-exceedance of the *Action Criteria* of samples from the sediments at the toe of the slope, the possible disturbance of more than 1000 tonnes of material with acid sulphate soil risk, a detailed Acid Sulphate Soil Management Plan (ASSMP) could be required for the clubhouse development On the basis of the investigation, planning and management options should assume that, unless otherwise indicated by site-specific testing before or during excavation, all materials in the low-lying, alluvial plain need to be tested and/or monitored

An ASSMP for the clubhouse site would include

- monitoring of groundwater quality monitoring prior to, during and subsequent to the excavation and placement process
- additional testing of the acid sulphate soil potential within the possible excavation depths to supplement the results of this investigation This testing should be carried out prior to commencement to permit selection of the relevant treatment methods (e g lime treatment) for the individual sections and/or units within the excavations
- the blocking off of any existing drains (but with inclusion of an overflow system) leading away from the subject area as a precautionary measure to prevent direct access of any acidified water to the existing lake and Pittwater further downstream thus providing an enclosed body if remedial treatment is required to provide achieve water quality criteria prior to any release of water Alternatively, blocking off could be carried out to the east of the existing lake, near Pittwater Road
- management of the water level within the bunded-off drains to limit changes in groundwater level during the excavation process
- reject materials from the excavation are anticipated to be placed below water level within an existing dam within the golf course Where materials are AASS, these will require treatment prior to burial It is noted that a water column depth of 4 m above the buried materials is preferred on the basis of Queensland experience (Queensland Acid Sulphate Soil Technical Manual – Soil Management Guidelines [2002])
- the stockpiling, drainage and lime dosing (where required) of excavated material suitable for reuse as filling Based on the available testing of samples from within the likely excavations depths in the possible excavation, average lime dosing rates (for a factor of safety of 1 5 and with no allowance for existing soil buffering capacity) have been calculated A dosage rate of approximately 8 kg fine agricultural lime/tonne of soil has been calculated for the topsoil, the peaty silty clay and, if encountered, the upper portion of the alluvial sands (to approximately 1 5 m depth from the ground surface) It is noted that a factor of safety of 3 0 or greater may be required for the treatment of the residual clays, in which mixing is likely to be difficult and due to the high risk nature of the site
- initially, the preparation at least one bunded and lined stockpile/treatment area This would incorporate limed guard layers and surface water diversions and be of sufficient size

to accept and treat materials at the proposed excavation rate Treated leachate (e g required pH 6 5 – 8 5) derived from the stockpile would be discharged to the site natural drainage system

- monitoring of the treated materials using the SPOCAS method to confirm appropriate application quantity and mixing of neutralising materials to ensure that pH can be controlled within the range 5 5 – 8 5 prior to reuse as filling within the golf course area A testing frequency of one per 1000 m^3 of filling is suggested for this purpose
- incorporation of neutralising agent into the basal stockpile layer It is anticipated that a minimum spreading rate of 5 kg fine aglime/m^2 per vertical metre of filling placed would be required
- the holding on site of suitable quantities of buffering materials for addition to the proposed lake existing dams, canals or ground surface if modification of the soil and/or water pH is required on the basis of the on-going monitoring
- monitoring of surface runoff, groundwater and surface grass cover in the areas of the placed filling to confirm the suitable long-term performance of the treated materials

6 4 Slope Instability Risk Assessment

The geotechnical inspections indicated that there was no evidence of slope instability on the site or adjoining sites 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 guidelines Identified hazards within and above the site are summarised in Table 4, together with assessment of likelihood, consequence and risk

Table 4 – Property and Life Risk Assessment for Proposed New Clubhouse

Hazard	Likelihood	Consequence	Risk
Erosion scour due to concentrated surface water flow from upslope properties	Unlikely	Property - Insignificant	Very low
		Life - Insignificant	1×10^{-8}
Failure of unsupported batters during construction of basement walls	Unlikely if battered in accordance with Table 5	Property – Insignificant	Very low
		Life - Insignificant	1×10^{-8}
Failure of temporary excavation shoring	Unlikely for properly designed and constructed structure	Property – Minor expected to be contained within site	Low
		Life - Minor	1×10^{-7}
Localised failure of permanent basement retaining walls	Rare for properly designed and constructed structure	Property - Medium	Low
		Life – Medium	1×10^{-7}

When compared to the requirements of the Interim Geotechnical Risk Management Policy it is considered that the proposed development will achieve the 'Acceptable Risk Management" criteria for both property and life and that the site is suitable for the development proposed to be carried out

6 5 Excavation and Site Preparation

It is understood that the final floor level (FFL) for the proposed basement will vary from RL 4 4 AHD and RL 4 9 AHD, near the proposed eastern and western ramps respectively, to RL 4 25 AHD at the northern section of the basement Based on the FFLs indicated, it is expected that excavation depths generally will be in the order of 2 m to 4 m, but locally up to 6 m (at the south-western corner)

Based on the test bores and site observations, excavation for the proposed basement is expected to be mostly through very stiff to hard residual clays with ironstone gravel and bands In the north-eastern section, filling of unknown composition and depth (refer Drawings 1-2 and 1-3) may be intersected It is considered that excavation through the filling and residual clay should be readily achievable using conventional earthmoving equipment

Whilst no groundwater was encountered when auger drilling the test bores, five days later it was measured at 1 2 m depth in (RL 0 9 AHD) in the standpipe installed in Bore 306 Measurements in the standpipe installed in Bore 103 during the November 2005 investigation indicate a groundwater at 1 3 m to 1 8 m depth (RL 9 0 AHD and RL 8 5 AHD respectively) These observations, as well as previous groundwater observations from the 143 - 145 Darley Street West investigation, indicate that the groundwater table falls along the hillside in a north and north-easterly direction, at a gradient less steep than the ground slope It should be noted however, that the groundwater table is subject to fluctuations due to climatic and other factors and hence can vary considerably from the levels observed

A portion of the northern part of the basement structure is shown to extend over and above the toe of the slope, and would thus require filling to achieve a level basement platform With an indicated FFL of RL 4 25, filling heights up to 2 m to 2 5 m above existing ground levels are expected With reference to Bore 306, this lower section of the hillside is underlain by a layer of silty clay with some peat, which is expected to experience unacceptable settlements over time when loads are applied Similarly, the uncontrolled filling to the east of this area is likely to settle under load To minimise the potential settlements in these areas, a ground improvement method comprising the following items is suggested

- removal of existing uncontrolled filling and, where present, the layer of peaty silty clay (subject to groundwater levels)
- proof rolling of the surface with at least 10 passes of a roller (static mode) of at least 10 tonne deadweight capacity with the final passes of the roller being witnessed by an experienced geotechnical engineer,
- where any soft or compressible material is revealed by proof rolling, provision for excavation and removal of unsuitable material to a maximum depth of 0 5 m and the replacement with approved granular backfill material, or other appropriate action such as the use of geotextile or geogrid may be advised The proximity to the water table may limit additional over-excavation
- testing to verify that the exposed surface of the subgrade has been compacted to a uniform density ratio not less than 95% of the maximum dry density obtained in the laboratory standard compaction test,

- placement of a geofabric layer and replacement with a blanket layer of course, clean aggregate (in order to prevent water rising to the surface through capillary action), followed by approved granular material placed in layers no more than 250 mm thick and compaction to 98% of the maximum dry density obtained in the laboratory standard compaction test This value should be verified during construction

Due to the shallow water table, it may prove difficult to successfully replace the entire profile of soft, compressible materials and to achieve satisfactory compaction of replacement filling The thickness of soft materials may also increase the further they are away from the toe of the slope It would therefore be prudent to assume that some differential settlements of the basement floor slab can occur between areas founded on in-situ residual clays and engineered filling respectively If the basement floor slab structure will be sensitive to differential settlements, additional support in the form of piles founded within the underlying very stiff to hard residual clay may be required Comments on piles are provided in Section 6 7 below

The removal of soft materials at the toe of the hill is expected to mainly intersect topsoil and peaty silty clay, which are not considered to be suitable to reuse as filling Possibly, some loose alluvial sands, which could be used as filling (subject to treatment of the acid sulphate content of the soils and dewatering), will be also excavated, but these volumes are anticipated to be small (in the order of 100 m^3 to 200 m^3)

It is expected that excavation at the toe of the hill will be achievable with a hydraulic excavator loading into off-road trucks for movement to the acid sulphate soil processing area and, if reusable materials are won, subsequently to the areas to be filled It should be noted however, that the low-lying area is characterised by a high water table and potential for flooding, will determine the subsequent excavation and transport methodology

The base of the excavation into the residual clays in the hillside, particularly towards the southern end, is expected to experience some ingress of seepage due to the presence of the groundwater level above excavation level This situation could pose trafficability problems during construction Detailed attention should be given to the provision of both temporary and permanent drainage measures, both around the perimeter and as subsoil drains across the base of the excavation It will probably be necessary to provide a minimum 150 mm thick layer of crushed concrete as a base upon which construction plant can operate This layer should not

be regarded as being suitable in the permanent condition as a free draining subbase layer below the slab, because during construction it will quickly become clogged with clay It may be necessary to over-excavate during bulk excavation so as to accommodate the thickness of this working surface layer, or else it will need to be removed immediately prior to floor slab construction, and replaced with a geofabric separator and clean crushed concrete drainage layer

As noted in section 4 2, the nature and origin of the uncontrolled filling at the north-eastern part of the hillside is unknown NSW EPA guidelines state that all material to be disposed off site should be the subject of a Waste Classification Assessment Unless this material will be re-used on site, it would be advisable to conduct sampling and testing of the filling and upper underlying natural soils prior to the earthworks and excavation phase, in order to reduce the risk of unexpected delays and disposal costs

6 6 Excavation Support

Where space permits, excavations may be battered for the construction of retaining walls or as permanent batters Suggested short and long-term batter slopes for the different materials are provided in Table 5, for batter heights of up to 6 m

Table 5 – Suggested Batter Slopes

Material	Height (m)	Batter Slopes (H V)	
		Short Term	Long Term
Existing filling	<2	1 5 1	2 1*
Stiff clay	<2	1 1	1 5 1*
	2-3	1 5 1	2 1*
Very stiff/hard clay	<2	0 75 1	1 5 1*
	2-4	1 1	2 1*
	4-6	2 1**	3 1**

* Flatter if vegetation and maintenance required – 3 1
** But dependent on jointing and defects subject to regular inspections by an experienced geotechnical engineer

It is expected that battered slopes would extend into the property to the south (the existing brick residence) The golf course Director has, however, advised that the neighbouring property will

be vacated prior to commencement of excavation works, and that permit to excavate within these property boundaries will not present any problems

It should be pointed out, that if construction of the proposed residential development to the south of the proposed clubhouse has commenced or is completed at the time of the proposed clubhouse excavation, consideration must be given to the temporary battered slopes so as not to undermine the foundations of those residential structures Further advice on this matter should be sought should that be the case

Where battering cannot be incorporated due to space limitations and/or softening of the wall bases is likely, the provision of temporary and permanent retaining measures will be required

Horizontal or lateral earth pressures for a cantilevered wall, or a wall restrained by a single row of ground anchors may be calculated using the following triangular earth pressure distribution

$H_z = K \gamma z$

Where H_z = horizontal pressure at depth z

γ = unit weight of soil (20 kN/m^3) or rock (22 kN/m^3)

K = lateral earth pressure coefficient

In areas where deflections of the wall are to be minimised to reduce the risk of damage to adjacent structures, the calculation of horizontal earth pressures may be based on an 'at rest' earth pressure coefficient (K_o) of 0 5 In areas where some wall movements are tolerable, wall design may be based on 'active' earth pressure coefficients (K_a) presented in Table 6

Table 6 – Active Earth Pressure Coefficients

Retained Material	Active Earth Pressure Coefficient (K_a)	
	Temporary	Permanent
Filling	0 30	0 40
Clay – stiff/very stiff	0 25	0 30
Clay - hard	0 20	0 25

The above earth pressure coefficients assume a level area behind the wall and do not include existing foundation loads or other surcharges (e g construction plant, traffic loads etc), which would need to be considered in addition to the above earth pressures In particular,

consideration must be given to any loads associated with the proposed residential development to the south Care should also be taken when using rolling plant near retaining walls and hand-held plate compactors may be required to reduce surcharge loading, possibly with a reduction in filling layer thickness to maintain the level of compaction required

Unless positive drainage measures can be incorporated to prevent water pressure build up behind the walls, full hydrostatic head should be allowed for in design while at the same time, allowing for the soil density reduced to the buoyant condition

Temporary retaining measures could include soldier piles in conjunction with infill panels If anchors are used, an allowable bond stress of 50 kPa is suggested in the hard clay and 120 kPa in the underlying extremely to highly weathered sandstone and claystone profile, subject to proof testing to confirm design pressures

Lateral restraint will also be developed by embedding the piles below the base of the excavation and developing passive pressure or resistance The ultimate passive resistance available by embedding the piles below diameter below the bulk excavation level (BEL) can be estimated using the values in Table 7

Table 7 – Suggested Passive Pressure Values

Material	Coefficient of Passive Pressure (K_p)	Passive Pressure (P_p) (kPa)
Clay – very stiff/hard	2 to 2 5 (drained)	2 x c_u (undrained)
Extremely low strength rock	2 5	400

The above values may be considered from a depth of one pile diameter below the BEL It is noted that the above values are 'ultimate' values mobilised following some movement of the pile and should incorporate an appropriate factor of safety to reduce wall deflections

6 7 Foundations

With reference to Drawing 1-3, the subsurface profile in the area of the proposed new clubhouse typically comprises very stiff to hard residual clays, except at the toe of the slope where the

residual clay is overlain by a layer of alluvial silty clay with some peat Alluvial sands may also extend between the silty clay layer and the underlying residual clay in under the northern-most section of the proposed basement

Column loads are expected to be in the order of 500 kN to 600 kN In order to minimise the potential for differential settlements it is suggested that column loads be uniformly supported within the underlying very stiff and hard silty clays It is considered that a suitable foundation system would comprise continuous strip or pad footings where excavation into the hillside would be required and piles elsewhere Bored piles would be a suitable pile type Temporary or permanent casing, however, may need to be installed into the top of the residual clay profile in order to prevent ingress of water, collapse of filling and alluvial sediments Given the shallow water table, some seepage into the piles should be inspected As water will soften the clays, the piling contractor should make provisions for pumping out any water and cleaning of the pile base and socket immediately prior to placing concrete

The very stiff to hard residual clay is considered suitable for a maximum allowable bearing pressure of 250 kPa and, for the design of bored piles, a maximum allowable shaft friction of 25 kPa Generally, a minimum socket length of 600 mm should be achieved

By way of example, a 1 6 m square pad footing founded within the very stiff to hard residual clays would be required to support a column (Working) load of 600 kN Total settlement for a footing supported thus, is expected to be in the order of 15 mm, with differential settlement between adjacent columns of less than half this value Similarly, a 900 mm diameter bored pile socketed 2 m into very stiff to hard clay would be required to support a column (Working) load of 300 kN Total settlement for such a pile is expected to be in the order of 10 mm, with differential settlement between adjacent columns of less than half this value

It is noted that the underlying bedrock was not encountered in any of the test bores If piles bearing on materials with higher allowable bearing pressures than indicated above are considered, further geotechnical investigation is required to determine the depth to and the quality of the underlying weathered bedrock

Materials from excavation and piling activities near the toe of the slope will need acid sulphate soils treatment

6 8 Ground Slabs and Pavements

The floors at basement level can be designed as slabs on ground, assuming appropriate compaction is given to the subgrade on which the slabs are cast As noted in Section 6 5, the in-situ material exposed at the base of the excavation is expected to comprise very stiff to hard residual clay The groundwater level is anticipated to be located close to the bulk excavation level over most of the excavation and 1 m to 2 m above bulk excavation level for the south-western portion of the excavation Subgrade preparation should include removal of softened material, placement of a geotextile separator over the prepared subgrade, and provision of an underfloor drainage blanket of crushed concrete (without fines) or open-graded crushed rock with subsurface drains and sumps leading to a pump-out pit or to external stormwater lines (if levels permit) The flowrate of groundwater into the subsoil drainage system is expected to be low, but the water still needs to be removed due to the likelihood of its softening the clay subgrade (and footing bases)

It is suggested that slab or pavement design be based on a design CBR for the residual clay subgrade not exceeding 5%, where prior to the casting of the slabs, the subgrade is compacted to at least 98% of the maximum dry density obtained in the laboratory standard compaction test

6 9 Groundwater Control

As noted in Sections 6 5 and 6 8, provision of both temporary and permanent drainage measures, both around the perimeter and as subsoil drains across the base of the excavation will be required for the excavation

7 CONDITIONS RELATING TO DESIGN, CONSTRUCTION MONITORING AND DESIGN LIFE

To comply with Council conditions and to enable the completion of Forms 2 and 3, required as part of construction, and post-construction certificate requirements of the Interim Geotechnical Risk Management Policy, it will be necessary Douglas Partners Pty Ltd to

- review the structural drawings for compliance with the recommendations of this report
- undertake regular inspections of battering and shoring works to ensure risk of instability is appropriately managed and maintained within acceptable levels in accordance with the design intent
- inspect all footings and piles prior to placement of steel or concrete

The basement retaining walls should be designed and maintained for the design life of the proposed structures, which in our experience, is normally taken to be in the order of 60 years In order to attain a life of 100 years as required by the Interim Council Policy, it will be necessary for the structural engineer to incorporate appropriate design and structural inspection considerations and for the property owner to adopt and implement a maintenance and inspection programme

Where changes to site conditions are identified during the maintenance and inspection program, reference should be made to a relevant professional (e g structural engineer or geotechnical engineer)

DOUGLAS PARTNERS PTY LTD

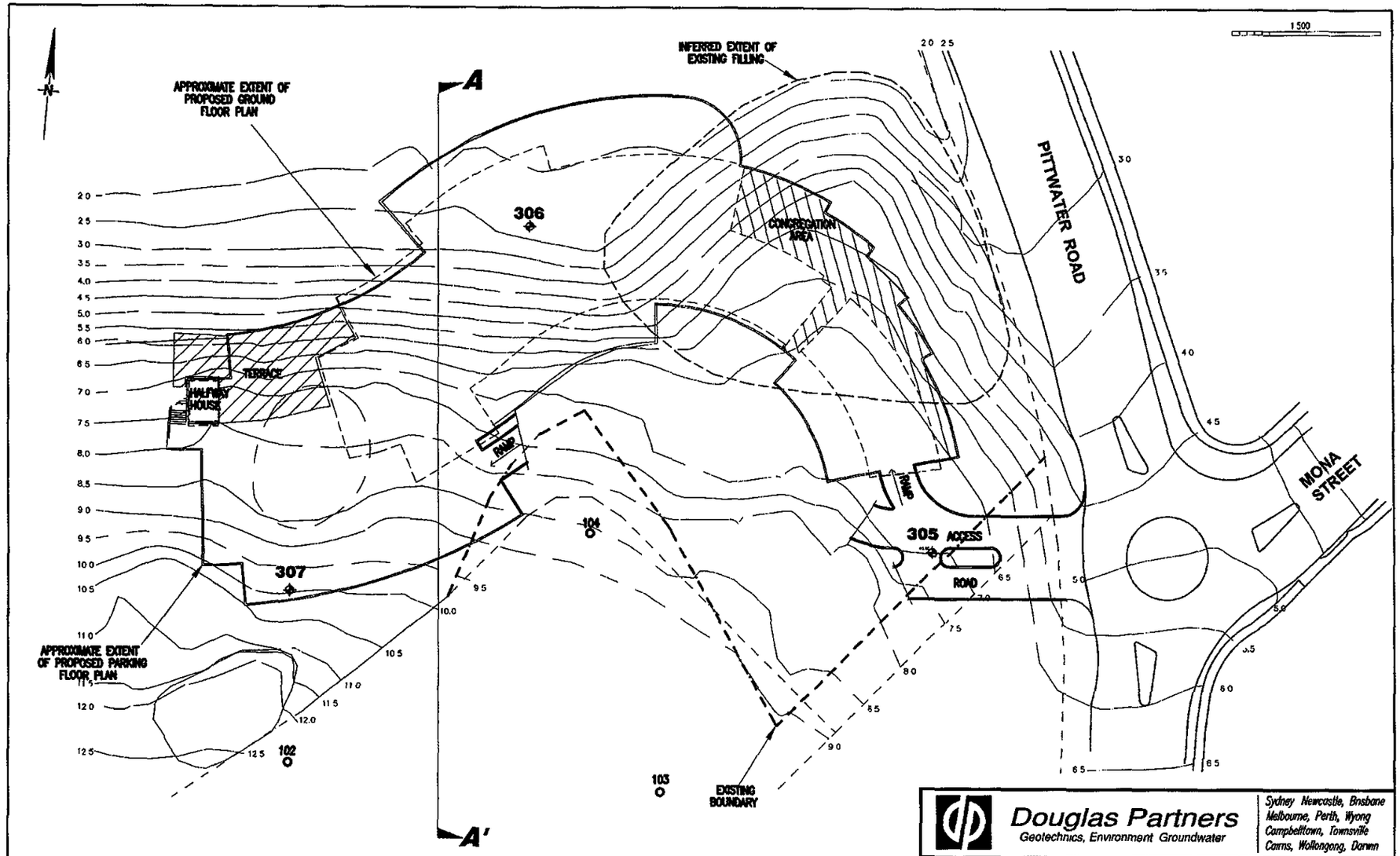
Reviewed by

Per Henrikson
Geotechnical Engineer

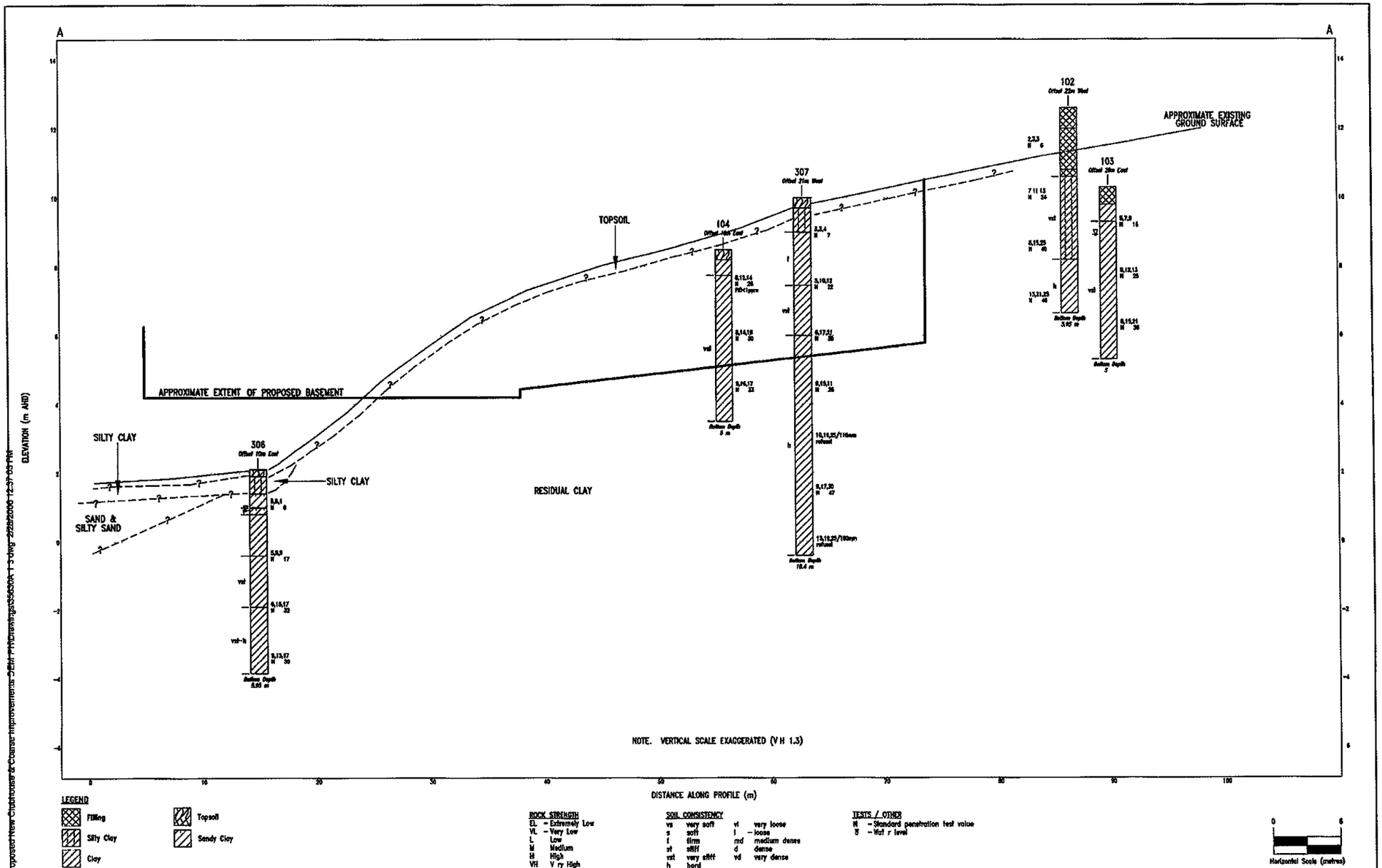
Grahame Wilson
Principal

APPENDIX A

Drawing 1-1 – Location of Tests
Drawing 1-2 – Location of Tests
Drawing 1-3 – Section A-A'



P:\35630A BAYVIEW Proposed New Clubhouse & Coarse Improvements DEM-PH\Drawings\35630A-1-2.dwg 2/28/2006 8:06:58 AM



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CLIENT: Bayview Golf Club		TITLE: Section A–A Bayview Golf Course Bayview	
PROJECT: Proposed New Clubhouse			
APPROVED DP	DATE: 21 February 06	REVISION:	SCALE: 1 300 (H)
PROJECT No: 35630A	DRAWING No: 1–3		

APPENDIX B
Notes Relating to this Report
Results of Field Work

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NOTES RELATING TO THIS REPORT

Introduction

These notes have been provided to amplify the geotechnical report in regard to classification methods specialist field procedures and certain matters relating to the Discussion and Comments section Not all of course, are necessarily relevant to all reports

Geotechnical reports are based on information gained *from limited subsurface test boring and sampling* supplemented by knowledge of local geology and experience For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726 Geotechnical Site Investigations Code In general descriptions cover the following properties - strength or density colour, structure soil or rock type and inclusions

Soil types are described according to the predominating particle size qualified by the grading of other particles present (eg sandy clay) on the following bases

Soil Classification	Particle Size
Clay	less than 0 002 mm
Silt	0 002 to 0 06 mm
Sand	0 06 to 2 00 mm
Gravel	2 00 to 60 00 mm

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination The strength terms are defined as follows

Classification	Undrained Shear Strength kPa
Very soft	less than 12
Soft	12—25
Firm	25—50
Stiff	50—100
Very stiff	100—200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer tests (CPT) as below

Relative Density	SPT "N" Value (blows/300 mm)	CPT Cone Value (q_c — MPa)
Very loose	less than 5	less than 2
Loose	5—10	2—5
Medium dense	10—30	5—15
Dense	30—50	15—25
Very dense	greater than 50	greater than 25

Rock types are classified by their geological names Where relevant, further information regarding rock classification is given on the following sheet

Sampling

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of the soil or rock

Disturbed samples taken during drilling provide information on colour type inclusions and, depending upon the degree of disturbance some information on strength and structure

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing with a sample of the soil in a relatively undisturbed state Such samples yield information on structure and strength and are necessary for laboratory determination of shear strength and compressibility Undisturbed sampling is generally effective only in cohesive soils

Details of the type and method of sampling are given in the report

Drilling Methods

The following is a brief summary of drilling methods currently adopted by the Company and some comments on their use and application

Test Pits — these are excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descent into the pit The depth of penetration is limited to about 3 m for a backhoe and up to 6 m for an excavator A potential disadvantage is the disturbance caused by the excavation

Large Diameter Auger (eg Pengo) — the hole is *advanced by a rotating plate or short spiral auger* generally 300 mm or larger in diameter The cuttings are returned to the surface at intervals (generally of not more than 0 5 m) and are disturbed but usually unchanged in moisture content Identification of soil strata is generally much more reliable than with continuous spiral flight augers and is usually supplemented by occasional undisturbed tube sampling

Continuous Sample Drilling — the hole is advanced by pushing a 100 mm diameter socket into the ground and withdrawing it at intervals to extrude the sample This is the most reliable method of drilling in soils since moisture content is unchanged and soil structure, strength etc is only marginally affected

Continuous Spiral Flight Augers — the hole is *advanced using 90—115 mm diameter continuous spiral* flight augers which are withdrawn at intervals to allow

sampling or in-situ testing This is a relatively economical means of drilling in 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

Hand Penetrometers

Hand penetrometer tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 150 mm increments of penetration Normally there is a depth limitation of 1 2 m but this may be extended in certain conditions by the use of extension rods

Two relatively similar tests are used

- Perth sand penetrometer — a 16 mm diameter flat-ended rod is driven with a 9 kg hammer dropping 600 mm (AS 1289 Test 6 3 3) This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling
- Cone penetrometer (sometimes known as the Scala Penetrometer) — a 16 mm rod with a 20 mm diameter cone end is driven with a 9 kg hammer dropping 510 mm (AS 1289 Test 6 3 2) The test was developed initially for pavement subgrade investigations and published correlations of the test results with California bearing ratio have been published by various Road Authorities

Laboratory Testing

Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes Details of the test procedure used are given on the individual report forms

Bore Logs

The bore logs presented herein are an engineering and/or geological interpretation of the subsurface conditions and their reliability will depend to some extent on frequency of sampling and the method of drilling Ideally continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds In any case the boreholes represent only a very small sample of the total subsurface profile

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes the frequency of sampling and the possibility of other than straight line variations between the boreholes

Ground Water

Where ground water levels are measured in boreholes there are several potential problems

- In low permeability soils ground water although present, may enter the hole slowly or perhaps not at all during the time it is left open
- A localised perched water table may lead to an erroneous indication of the true water table
- Water table levels will vary from time to time with seasons or recent weather changes They may not be the same at the time of construction as are indicated in the report
- The use of water or mud as a drilling fluid will mask any ground water inflow Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water observations are to be made

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils Piezometers sealed in a particular stratum may be advisable in low permeability soils or where there may be interference from a perched water table

Engineering Reports

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis Where the report has been prepared for a specific design proposal (eg a three storey building), the information and interpretation may not be relevant if the design proposal is changed (eg to a twenty storey building) If this happens the Company will be pleased to review the report and the sufficiency of the investigation work

Every care is taken with the report as it relates to interpretation of subsurface condition discussion of geotechnical aspects and recommendations or suggestions for design and construction However the Company cannot always anticipate or assume responsibility for

- unexpected variations in ground conditions — the potential for this will depend partly on bore spacing and sampling frequency
- changes in policy or interpretation of policy by statutory authorities
- the actions of contractors responding to commercial pressures

If these occur the Company will be pleased to assist with investigation or advice to resolve the matter

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, the Company requests that it immediately be notified Most problems are much more readily resolved when conditions are exposed than at some later stage, well after the event

Reproduction of Information for Contractual Purposes

Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information in Tender Documents" published by the Institution of Engineers,

Australia Where information obtained from this investigation is provided for tendering purposes it is recommended that all information including the written report and discussion, be made available In circumstances where the discussion or comments section 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

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DESCRIPTION AND CLASSIFICATION OF ROCKS FOR ENGINEERING PURPOSES

DEGREE OF WEATHERING

Term	Symbol	Definition
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties i e it can be remoulded and can be classified according to the Unified Classification System but the texture of the orginal rock is still evident
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemical or physical decomposition are evident Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition The colour and strength of the original fresh rock substance is no longer recognisable
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining or discolouration of the rock substance usually by limonite has taken place The colour of the fresh rock is no longer recognisable
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance usually by limonite has taken place The colour and texture of the fresh rock is recognisable
Fresh Stained	Fs	Rock substance unaffected by weathering but showing limonite staining along joints
Fresh	Fr	Rock substance unaffected by weathering

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index ($I_{s(50)}$) and refers to the strength of the rock substance in the direction normal to the bedding The test procedure is described by Australian Standard 4133 4 1 1993

Term	Symbol	Field Guide*	Point Load Index $I_{s(50)}$ MPa	Approx Unconfined Compressive Strength q_u MPa
Extremely low	EL	Easily remoulded by hand to a material with soil properties	<0 03	< 0 6
Very low	VL	Material crumbles under firm blows with sharp end of pick can be peeled with a knife too hard to cut a triaxial sample by hand SPT will refuse Pieces up to 3 cm thick can be broken by finger pressure	0 03-0 1	0 6 2
Low	L	Easily scored with a knife Indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point has dull sound under hammer A piece of core 150 mm long 40 mm diameter may be broken by hand Sharp edges of core may be friable and break during handling	0 1-0 3	2 6
Medium	M	Readily scored with a knife a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty	0 3-1 0	6-20
High	H	Can be slightly scratched with a knife A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow rock rings under hammer	1 - 3	20 60
Very high	VH	Cannot be scratched with a knife Hand specimen breaks with pick after more than one blow rock rings under hammer	3 10	60-200
Extremely high	EH	Specimen requires many blows with geological pick to break through intact material rock rings under hammer	>10	> 200

Note that these terms refer to strength of rock material and not to the strength of the rock mass which may be considerably weaker due to rock defects

* The field guide assessment of rock strength may be used for preliminary assessment or when point load testing is not able to be done

* The approximate unconfined compressive strength (q_u) shown in the table is based on an assumed ratio to the point load index of 20 1 This ratio may vary widely

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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

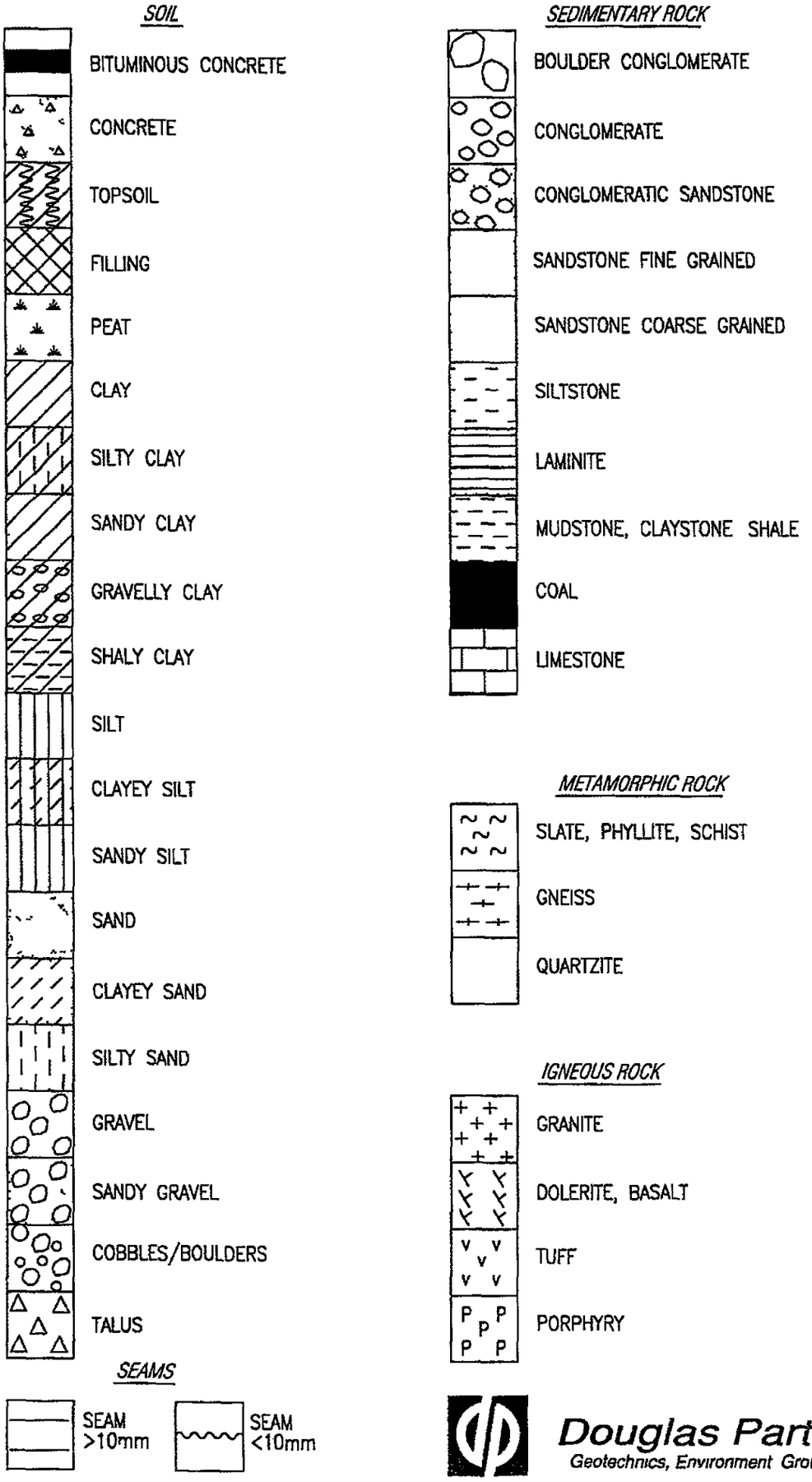
SEDIMENTARY ROCK TYPES

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

GRAPHIC SYMBOLS FOR SOIL & ROCK



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BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL**	0 9 m AHD	**BORE No**	301
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**	9	**PROJECT No**	35630A
LOCATION	Bayview Golf Club Bayview	**NORTHING**	0	**DATE**	24 Jan 06
		DIP/AZIMUTH	90°/--	**SHEET**	1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 2	TOPSOIL dark brown fine grained silty sand topsoil with grass roots Humid to damp		A	0 1				Gatic cover Concrete
		SILTY CLAY dark grey and dark brown peaty silty clay with some fine sand and roots M>Wp		A	0 5				
	0 7	CLAYEY SAND - very loose grey brown clayey sand with some shells and shell fragments to 15mm size Wet		A	1 0			▼	Bentonite
				S			1 1 0 N = 1		
	1 4	SAND very loose grey and grey brown fine to medium grained sand with some fine shell grit and shells and shell fragments to 5mm size and a trace of silt. Saturated		A	1 45 1 5				
				A	2 0				Backfilled with gravel
				S			1 0 0 N = 0		
		- with a trace of clay between 2 5 and 3m		A	2 45 2 5				
				S	3 0		1 1 1 N = 2		
					3 45				Machine slotted PVC screen
				S**	4 0		1 0 0 N = 0		Filter sock
					4.45				
		Below 5 0m grey with a trace of silt and clay with shells and shell fragments to 3mm size		S	5 0		1 1 2 N = 3		End cap
					5 45				
				S	6 0		1 1 0 N = 1		
					6 45				
	6 8	CLAYEY SAND - very loose to loose light brown grey with some brown speckles fine grained clayey sand with some cemented sand particles to 3mm size		S	7 0		2 2 3 N = 5		
	7 45	Bore discontinued at 7 45m			7 45				

RIG Bobcat **DRILLER** Gnma **LOGGED** Henrikson **CASING** HW to 2 5m

TYPE OF BORING Solid flight auger to 2 5m Rotary drilling (mud) to 7 0m

WATER OBSERVATIONS Free groundwater obseved at 0 8m depth on 25 and 27/1/06 and at 0 9m depth on 27/1/06

REMARKS M = Moisture content Wp = Plastic limit *Sample contaminated by drilling mud **No SPT sample recovery

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: [illegible]
Date: 24/2/06

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Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL**	0 9 m AHD	**BORE No**	302
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**		**PROJECT No**	35630A
LOCATION	Bayview Golf Club Bayview	**NORTHING**		**DATE**	24 Jan 06
		DIP/AZIMUTH	90°/--	**SHEET**	1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 2	TOPSOIL dark brown fine grained silty sand topsoil with grass roots Humid to damp		A	0 1				
		SILTY SAND dark brown silty sand with some roots and a trace of clay Moist		A	0 5				
	0 6	CLAYEY SAND grey brown clayey sand with some shells and shell fragments to 20mm size Wet/saturated		A	1 0				
				S			1 2 1 N = 3	▼	
	1 3	SAND very loose grey and grey brown fine to medium grained sand with some fine shell grit and shell and shell fragments to 15mm size Saturated		A	1 45 1 5				
				A	2 0				
		Below 2 0m with a trace of clay		S			1 3 1 N = 4		
					2 45				
		Below 2 7m grey with some shell fragments to 10mm size			3 0				
				S			4 1 1 N = 2		
					3 45				
					4 0				
				S			0 0 0 N = 0		
					4.45				
		Below 5 0m grey brown with some clay and fine shell grit Saturated			5 0				
				S			1 0 1 N = 1		
					5 45				
		Below 6 0m slightly clayey with shells and shell fragments to 5mm size Saturated			6 0				
				S			0 0 0 N = 0		
					6 45				
	6 7	CLAYEY SAND - very loose grey fine to medium grained clayey sand with some fine shell grit Saturated							
					7 0				
				S			0 0 0 N = 0		
	7 45	Bore discontinued at 7 45m			7 45				

RIG Bobcat **DRILLER** Grima **LOGGED** Henrikson **CASING** HW to 2 5m

TYPE OF BORING Solid flight auger to 2 5m Rotary drilling (mud) to 7 0m

WATER OBSERVATIONS Free groundwater observed at 1 3m whilst augering

REMARKS

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials	
Date	24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL** 0 7 m AHD	**BORE No** 303
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**	**PROJECT No** 35630A
LOCATION	Bayview Golf Club, Bayview	**NORTHING**	**DATE** 23 Jan 06
		DIP/AZIMUTH 90°/–	**SHEET** 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 3	TOPSOIL dark brown fine to medium grained silty sand topsoil with grass roots Humid to damp		A	0 1				
	0 75	SILTY CLAY dark brown peaty silty clay slightly sandy in parts Damp to moist		A	0 5			▼	
	1	SAND - loose brown fine to medium grained sand slightly silty and clayey with some fine shell grit Saturated		A	1 0				
		Below 1 3m grey		S	1 45		3 3 3 N = 6		
				A	1 5				
	2			A	2 0				
					2 5				
				S			2 2 3 N = 5		
	3				2 95				
	3 5	SAND very loose grey fine grained sand with some shells to 3mm diameter and a trace of clay Saturated							
	4				4 0				
				S			1 1 for 300mm N<1		
					4 45				
	5 0	CLAYEY SAND very loose (soft) grey fine grained clayey sand with some fine shell fragments							
					5 5				
				S			2 1 2 N = 3		
	6				5 95				
	6 5	SANDY CLAY/CLAYEY SAND soft/very loose brown grey and orange brown fine to medium grained sandy clay and clayey sand with some fine gravel Wet							
	7				7 0				
				S			1,2 2 N = 4		
	7 45	Bore discontinued at 7 45m in sandy clay/clayey sand			7 45				
	8								
	9								

RIG Bobcat **DRILLER** Grima **LOGGED** Murray **CASING** HW to 2 5m

TYPE OF BORING Solid flight auger to 2 5m Rotary drilling (mud) to 7 0m

WATER OBSERVATIONS Free groundwater observed at 0 8m whilst augering

REMARKS

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia)	PL	Point load strength Is/50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT Bayview Golf Club
PROJECT Prop New Clubhouse & Course Improvements
LOCATION Bayview Golf Club Bayview

SURFACE LEVEL 0 9 m AHD
EASTING
NORTHING
DIP/AZIMUTH 90°/--

BORE No 304
PROJECT No 35630A
DATE 23 Jan 06
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 2	TOPSOIL dark brown fine grained silty sand topsoil with grass roots Humid to damp		A	0 1				
		SILTY CLAY - dark brown/black peaty silty clay with a trace of sand Damp/M>Wp		A	0 5				
	0 7			A	0 7			▼	
	0 9	SAND - grey and brown medium grained sand with some silt and clay Moist to wet		A	1 0				
	1 1	SILTY SAND orange brown fine to medium grained silty sand with shells to 30mm size and some clay Saturated		S			1 1 1 N = 2		
		SAND very loose grey fine to medium grained sand with some shell fragments and fine shell grit Saturated		A	1 45 1 5				
		Below 2 0m loose Saturated		A	2 0				
				S			1 4 4 N = 8		
					2 45				
		Below 3 0m with a trace of shell fragments Saturated		A	3 0				
				S			3 3 4 N = 7		
					3 45				
		Below 4 0m very loose Saturated			4 0				
				S*			1 0 1 N = 1		
					4 45				
	4 8				4 8				
		SILTY SAND very loose brown grey fine to medium grained silty sand with some fine shell grit and a trace of clay and shell fragments Saturated		S			2 1 1 N = 2		
					5 25				
		Below 5 5m loose grey Saturated			5 5				
				S			2 3 2 N = 5		
					5 95				
					6 5				
	6 6								
		CLAYEY SAND - very loose light grey and grey fine to medium grained clayey sand Saturated		S			2 3 1 N = 4		
	6 95				6 95				
		Bore discontinued at 6 95m							

RIG Bobcat **DRILLER** Grima **LOGGED** Henrikson **CASING** HW to 4 0m

TYPE OF BORING Solid flight auger to 4 0m Rotary drilling (mud) to 6 5m

WATER OBSERVATIONS Free groundwater observed at 0 7m whilst augering

REMARKS M = Moisture content Wp = Plastic limit *No SPT recovery

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▽ Water level

CHECKED
Initials
Date 24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL**	7 0 m AHD	**BORE No**	305
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**		**PROJECT No**	35630A
LOCATION	Bayview Golf Club Bayview	**NORTHING**		**DATE**	27 Jan 06
		DIP/AZIMUTH	90°/--	**SHEET**	1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 3	TOPSOIL dark brown clayey silt topsoil with some grass roots and fine grained sand Moist		A	0 1				
		CLAY - red brown and brown clay with some silt and sand M>Wp		A	0 5				
	0 7	CLAY - very stiff light grey and red brown clay with some ironstone gravel and a trace of silt M~Wp		A	1 0				
		Below 1 0m M<Wp		S			7 9 14 N = 23		
					1 45				
		Below 2 5m light grey light red brown and red brown M<Wp		S	2 5		10 13 14 N = 27		
					2 95				
		Below 4 0m hard M<Wp		S	4 0		9 14 22 N = 36		
					4 45				
				S	5 5		9 16 25 N = 41		
					5 95				
		Below 7 0m with a trace of roots M<Wp		S	7 0		9 17 25 N = 42		
	7 45	Bore discontinued at 7 45m			7 45				

RIG Bobcat **DRILLER** Gnma **LOGGED** Henrikson **CASING** Uncased

TYPE OF BORING Solid flight auger to 7 0m

WATER OBSERVATIONS No free groundwater observed whilst augering

REMARKS M = Moisture content Wp = Plastic limit

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT Bayview Golf Club
PROJECT Prop New Clubhouse & Course Improvements
LOCATION Bayview Golf Club, Bayview

SURFACE LEVEL 2 1 m AHD
EASTING
NORTHING
DIP/AZIMUTH 90°/--

BORE No 306
PROJECT No 35630A
DATE 27 Jan 06
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0 2	TOPSOIL - dark brown silty clay/clayey silt topsoil with grass roots and some fine grained sand Damp to moist		A	0 1				Gatic cover Concrete
	0 7	SILTY CLAY dark brown silty clay slightly sandy with some peat M>Wp		A	0 5				
	1 1	SANDY CLAY - brown and orange brown sandy clay M>Wp		A	1 0				Bentonite
	1 3	SANDY CLAY - firm light grey orange brown and red brown sandy clay, with some ironstone gravel M>Wp		S			5 5 1 N = 6	▼	
		CLAY light grey clay with some silt M>Wp		A	1 45 1 5				
		Below 2 0m light grey and red brown M>Wp		A	2 0				
	2 5	CLAY very stiff light grey and red brown clay with some silt, sand and ironstone gravel M>Wp			2 5				
				S			5 8 9 N = 17		
					2 95				Backfilled with gravel Machine slotted PVC screen
	4 0	CLAY very stiff to hard light grey and red brown clay with some ironstone gravel and a trace of silt M>Wp			4 0				
				S			6 15 17 N = 32		
					4 45				Filter sock
					5 5				End cap
				S			9 13 17 N = 30		
	5 95	Bore discontinued at 5 95m			5 95				

RIG Bobcat **DRILLER** Gnma **LOGGED** Henrikson **CASING** Uncased

TYPE OF BORING Solid flight auger to 5 5m

WATER OBSERVATIONS Free groundwater observed at 1 2m depth on 1/2/06

REMARKS M = Moisture content Wp = Plastic limit

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL**	10 0 m AHD	**BORE No**	307
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**		**PROJECT No**	35630A
LOCATION	Bayview Golf Club, Bayview	**NORTHING**		**DATE**	24-25 Jan 06
		DIP/AZIMUTH	90°/–	**SHEET**	1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
10	0 3	TOPSOIL dark brown silty sand topsoil with grass roots Humid to damp		A	0 1				
		SILTY CLAY - light brown brown and red brown silty clay M>Wp		A	0 5				
		Below 0 8m with some ironstone gravel M>Wp		A	1 0				
9	1 1 0	CLAY - *firm mottled light grey and red brown clay with* some ironstone gravel and a trace of silt M~Wp		S	1 45		3 3 4 N = 7		1
				A	2 0				
8	2			A	2 5				2
	2 55	CLAY - very stiff light grey clay with some ironstone gravel and a trace of silt M<Wp		S	2 95		5 10 12 N = 22		
7	3								3
6	4 4 0	CLAY hard light grey clay with some ironstone gravel and a trace of silt M<Wp		S	4 0 4 45		6 17 21 N = 38		4
		4 8-5 1m M>Wp		A A	4 8 5 1				
5		Below 5 5m light grey light red brown and red brown with a trace of roots M<Wp		S	5 5 5 95		9 15 11 N = 26		5
4	6								6
3	7			S	7 0 7 41		10 19 25/110mm refusal		7
2	8								8
1	9	Below 8 5m red brown mottled light grey M<Wp		S	8 5 8 95		9 17 30 N = 47		9

RIG Bobcat **DRILLER.** Grima **LOGGED** Henrikson **CASING** Uncased

TYPE OF BORING Solid flight auger to 10 0m

WATER OBSERVATIONS No free groundwater observed whilst augering

REMARKS M = Moisture content· Wp = Plastic limit

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials	RD
Date	24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT Bayview Golf Club
PROJECT Prop New Clubhouse & Course Improvements
LOCATION Bayview Golf Club, Bayview

SURFACE LEVEL 10 0 m AHD
EASTING
NORTHING
DIP/AZIMUTH 90°/--

BORE No 307
PROJECT No 35630A
DATE 24-25 Jan 06
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CLAY hard light grey clay with some ironstone gravel and a trace of silt M<Wp *(continued)*		S	10 0		13 19 25/100mm refusal		
	10 4	Bore discontinued at 10 4m			10 4				
	11								11
	12								12
	13								13
	14								14
	15								15
	16								16
	17								17
	18								18
	19								19

RIG Bobcat **DRILLER.** Grima **LOGGED** Henrikson **CASING** Uncased

TYPE OF BORING Solid flight auger to 10 0m

WATER OBSERVATIONS No free groundwater observed whilst augering

REMARKS M = Moisture content Wp = Plastic limit.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date 24/2/06

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Golf Club	**SURFACE LEVEL** 1 0m AHD*	**BORE No** 308
PROJECT	Prop New Clubhouse & Course Improvements	**EASTING**	**PROJECT No** 35630A
LOCATION	Bayview Golf Club, Bayview	**NORTHING**	**DATE** 27 Jan 06
		DIP/AZIMUTH 90°/--	**SHEET** 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		TOPSOIL dark brown silty sand topsoil with grass roots and some clay Moist		A	0 1				
	0 18	CLAYEY SAND brown and orange brown clayey sand with shells and shell fragments to 25mm size Moist		A	0 2				
	0 2			A	0 3				
	0.4	SILTY CLAY dark brown/black peaty silty clay with a trace of sand M>Wp							
	0.5	CLAYEY SAND grey and brown fine to medium grained clayey sand Moist		A	0 5				
		SAND grey and brown fine to medium grained sand with a trace of clay Moist						▼	
		Below 0 6m brown with fine shell grit shells and shell fragments to 40mm size and some clay Wet		A	0 8				
-1		Below 0 7m saturated							-1
		- shell content decreasing with depth		A	1 1				
		Below 1 5m brown and grey with some shell grit		A	1 6				
		Below 1 7m grey							
		Below 1 8m with shells to 40mm size							
-2		Below 2 0m grey and dark grey with a trace of clay		A	2 0				-2
	2.25	*Bore discontinued at 2 25m*							
-3									-3
-4									-4

RIG Hand tools **DRILLER.** Hennkson **LOGGED** Hennkson **CASING** Uncased

TYPE OF BORING 70mm diameter hand auger

WATER OBSERVATIONS Free groundwater observed at 0 7m whilst augering

REMARKS Not possible to retrieve material below 2 0m depth
M = Moisture content Wp = Plastic limit * Approximate only Interpolated from survey plan

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 21/2/06

Douglas Partners
Geotechnics Environment Groundwater

APPENDIX C
Results of Previous Field Work

BOREHOLE LOG

CLIENT	Bayview Investment Group Pty Ltd	**SURFACE LEVEL** 12 6 AHD	**BORE No** 102
PROJECT	Proposed Residential Development	**EASTING**	**PROJECT No** 43451
LOCATION	Darley Street West, Bayview	**NORTHING**	**DATE** 17 Oct 05
		DIP/AZIMUTH 90°/–	**SHEET** 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - brown fine to medium grained sand filling damp		A	0 1				
				A/E	0 5		PID<1ppm		
	0 6	FILLING brown sand filling with some gravel and a trace of clay damp		A/E	1 0				
				S			2 3 3 N = 8		
				E	1 45 1 5		PID<1ppm		
	1.8								
	2 0	FILLING - brown light grey red clay filling with some sand and gravel		E	2 0		PID<1ppm		
		CLAY - very stiff light grey mottled red clay with some ironstone gravel		E	2 5				
				S			7 11 13 N = 24		
				E	2 95 3 0				
				E	3 5		PID<1ppm		
				E	4 0				
				S			8 15 25 N = 40		
	4 4	CLAY hard light grey mottled red clay with some ironstone gravel and a trace of sand			4 45				
				S	5 5		13,21 25 N = 46		
	5 95	Bore discontinued at 5 95m			5 95				

RIG Bobcat **DRILLER.** E Grima **LOGGED** Troedson/Pucci **CASING** Uncased

TYPE OF BORING Solid flight auger (TC bit) to 5 5m

WATER OBSERVATIONS No free groundwater observed

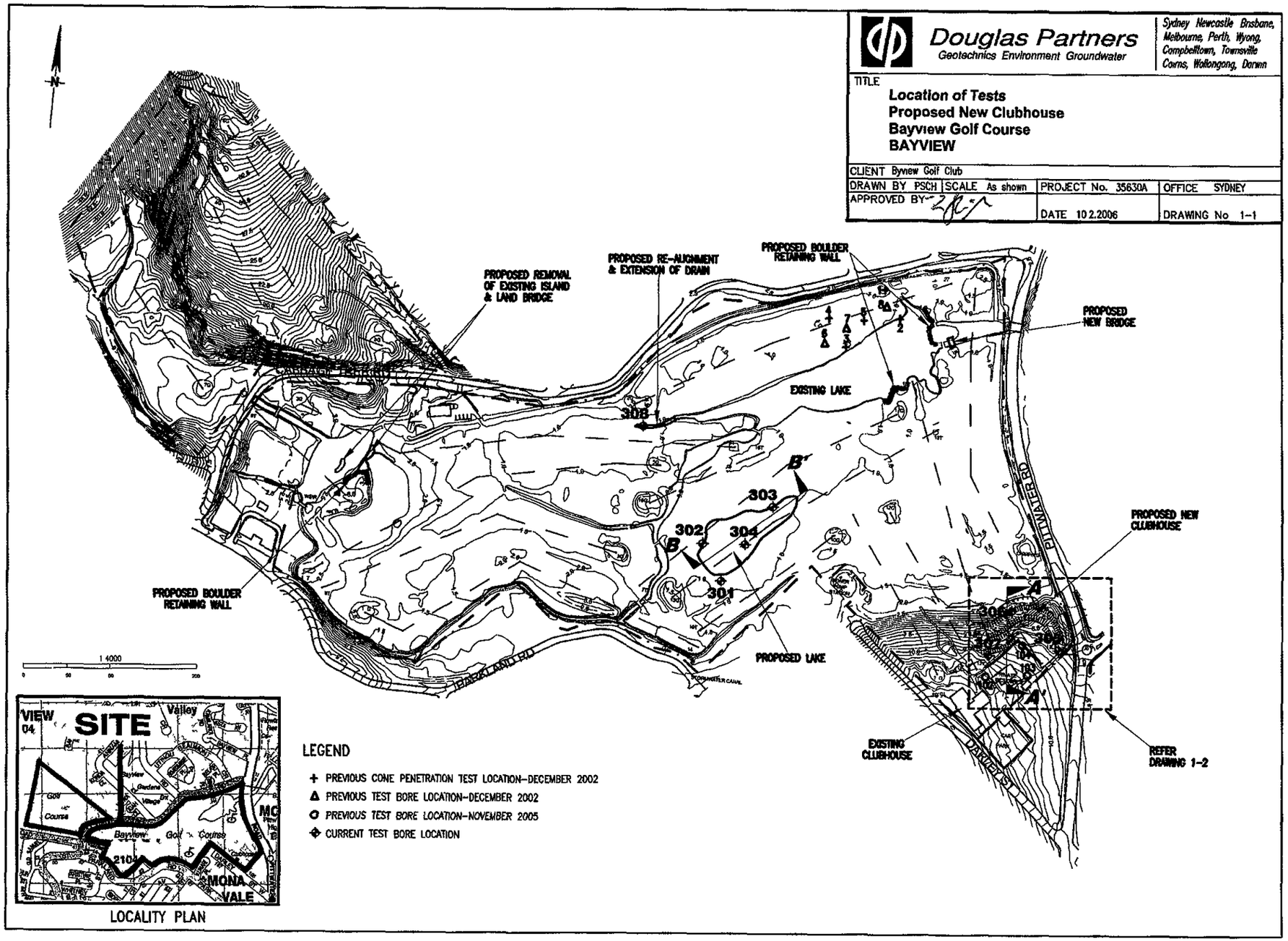
REMARKS *Denotes field replicate sample Z1005/2 taken E = Environmental sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 3/11/05

Douglas Partners
Geotechnics Environment Groundwater



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BOREHOLE LOG

CLIENT	Bayview Investment Group Pty Ltd	**SURFACE LEVEL** 10 3 AHD	**BORE No** 103
PROJECT	Proposed Residential Development	**EASTING**	**PROJECT No** 43451
LOCATION	Darley Street West Bayview	**NORTHING**	**DATE** 17 Oct 05
		DIP/AZIMUTH 90°/--	**SHEET** 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING/TOPSOIL dark brown sandy silt filling/topsoil with a trace of gravel and clay		A	0 1				Gatic cover Concrete plug
	0 5	CLAY brown and red clay		E/A	0 5				
	1 10	CLAY very stiff light grey mottled red and brown clay		E/A	1 0				Backfilled with bentonite
				S			5 7 9 N = 16		
				E	1 45 1/5				
				E	2 0				
		2 5-5 0m some ironstone gravel			2 5				Backfilled with gravel
				S			8 12 13 N = 25		
				E	2 95 3/0				Machine slotted PVC screen
		4 0-5 0m hard			4 0				
				S			8 15 21 N = 36		
					4 5				
	5 0	5 0m a trace of silt and sand Bore discontinued at 5 0m - target depth reached		A/E	5 0				End cap

RIG Bobcat **DRILLER** E Grima **LOGGED** Troedson/Pucci **CASING** Uncased

TYPE OF BORING Solid flight auger (TC bit) to 5 0m

WATER OBSERVATIONS Free groundwater observed between 1 8m bgl and 1 4m bgl between 24/10/05 and 8/11/05

REMARKS E = Environmental sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials
Date 9/11/05

Douglas Partners
Geotechnics Environment Groundwater

BOREHOLE LOG

CLIENT	Bayview Investment Group Pty Ltd	**SURFACE LEVEL** 8 5 AHD	**BORE No** 104
PROJECT	Proposed Residential Development	**EASTING**	**PROJECT No** 43451
LOCATION	Darley Street West Bayview	**NORTHING**	**DATE** 17 Oct 05
		DIP/AZIMUTH 90°/--	**SHEET** 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.3	TOPSOIL - dark brown silt topsoil with a trace of clay		A	0 1		PID<1ppm		
		CLAY brown and red clay		E/A	0 5				
	0 75	CLAY - very stiff light grey and red clay with some ironstone gravel		E/A	1 0				
				S			8 12 14 N = 26		
				E	1 45 1 5		PID<1ppm		
				E	2 0				
		2 5-4 0m very stiff to hard light grey mottled red			2 5				
				S			8 14 16 N = 30		
				E	2 95 3 0		PID<1ppm		
		4 0 5 0m hard			4 0				
				S			9 16 17 N = 33		
					4 45				
	5 0	Bore discontinued at 5 0m target depth reached		E/A	5 0		PID<1ppm		

RIG Bobcat **DRILLER** E Grima **LOGGED** Troedson/Pucci **CASING** Uncased

TYPE OF BORING Solid flight auger (TC bit) to 5 0m

WATER OBSERVATIONS No free groundwater observed

REMARKS *Denotes field replicate sample Z1008/4 E = Environmental sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: [illegible]
Date 3/11/05

Douglas Partners
Geotechnics Environment Groundwater

APPENDIX D
Results of Laboratory Tests

SGS

LABORATORY REPORT COVERSHEET

Date 15 February 2006

To Douglas Partners Pty Ltd
96 Hermitage Road
WEST RYDE NSW 2114

Attention Mr Per Henrikson

Your Reference	35630A, Bayview Golf Club (Sydney ref 42840)
Laboratory Report No	51161
Samples Received	7/02/2006
Samples / Quantity	10 Soil

The above samples were received intact and analysed according to your written instructions
Unless otherwise stated, solid samples are reported on a dry weight basis and liquid samples as received

Lauren Conroy
Administration Manager
CAIRNS

Jon Dicker
Operations Manager
CAIRNS

SGS Australia Pty Ltd | Environmental Services Unit 2, 58 Comport Street Portsmith 4870 QLD Australia www.au.sgs.com
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Member of the SGS Group

SGS

CLIENT Douglas Partners Pty Ltd **Laboratory Report No** 51161
PROJECT 35630A, Bayview Golf Club (Sydney ref 42840)

LABORATORY REPORT

Our Reference Your Reference	Units	51161-1 301/0 1	51161-2 301/1 0 SPT	51161-3 302/2 0 SPT
Moisture *	% w/w	31	32	33
pH KCl	pH Units	7 2	8 9	9 2
TAA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TAA pH 6 5	% w/w S	<0 01	<0 01	<0 01
pH Ox	pH Units	7 7	8 5	8 3
TPA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TPA pH 6 5	% w/w S	<0 01	<0 01	<0 01
TSA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TSA pH 6 5	% w/w S	<0 01	<0 01	<0 01
ANCE	% $CaCO_3$	<0 05	15	18
a-ANCE	moles H^+/tonne	<5	2 900	3 500
s-ANCE	% w/w S	<0 05	4 7	5 6
S KCl *	% w/w	0 012	0 024	0 084
S P *	% w/w	0 18	0 23	1 1
S POS *	% w/w	0 17	0 21	1 0
a-S POS *	moles H^+/tonne	100	130	640
Ca KCl *	% w/w	0 57	0 45	0 42
Ca P *	% w/w	0.28	5 7	7 9
Ca A *	% w/w	<0 005	5 2	7 5
Mg KCl *	% w/w	0 072	0 024	0 032
Mg P *	% w/w	0 092	0 096	0 32
Mg A *	% w/w	0 020	0 072	0 29
SHCl *	% w/w	NA	NA	NA
S NAS *	% w/w	NA	NA	NA
a-S NAS *	moles H^+/tonne	NA	NA	NA
s-S NAS *	% w/w S	NA	NA	NA
s-Net Acidity	% w/w S	0 17	<0 02	<0 02
a-Net Acidity	moles H^+/tonne	100	<10	<10
Liming Rate	kg $CaCO_3$/tonne	7 9	NA	NA

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CLIENT Douglas Partners Pty Ltd **Laboratory Report No** 51161
PROJECT 35630A, Bayview Golf Club (Sydney ref 42840)

LABORATORY REPORT

Our Reference Your Reference	Units	51161-1 301/0 1	51161-2 301/1 0 SPT	51161-3 302/2 0 SPT
Verification s-Net Acidity	% w/w S	0 06	-3 07	-3 40
a-Net Acidity without ANCE	moles H^+/tonne	100	130	640
Liming Rate without ANCE	kg $CaCO_3$/tonne	7 9	9 7	48

Our Reference Your Reference	Units	51161-4 302/3 0 SPT	51161-5 303/4 0 SPT	51161-6 303/5 5 SPT
Moisture *	% w/w	29	30	28
pH KCl	pH Units	9 5	9 4	9 2
TAA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TAA pH 6 5	% w/w S	<0 01	<0 01	<0 01
pH Ox	pH Units	8 4	8 4	8 4
TPA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TPA pH 6 5	% w/w S	<0 01	<0 01	<0 01
TSA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TSA pH 6 5	% w/w S	<0 01	<0 01	<0 01
ANC_E	% $CaCO_3$	30	28	20
a-ANC_E	moles H^+/tonne	6 100	5,500	4 100
s-ANC_E	% w/w S	9 8	8 9	6 5
S KCl *	% w/w	0 064	0 056	0 056
S P *	% w/w	0 90	0 54	0 66
S POS *	% w/w	0 84	0 48	0 60
a-S POS *	moles H^+/tonne	520	300	380
Ca KCl *	% w/w	0 37	0 35	0 34
Ca P *	% w/w	12	10	7 7
Ca A *	% w/w	11	9 6	7 3
Mg KCl *	% w/w	0 040	0 040	0 036
Mg P *	% w/w	0 69	0 55	0 35
Mg A *	% w/w	0 65	0 51	0 32

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CLIENT Douglas Partners Pty Ltd **Laboratory Report No** 51161
PROJECT 35630A, Bayview Golf Club (Sydney ref 42840)

LABORATORY REPORT

Our Reference Your Reference	Units	51161-4 302/3 0 SPT	51161-5 303/4 0 SPT	51161-6 303/5 5 SPT
SHCl *	% w/w	NA	NA	NA
S NAS *	% w/w	NA	NA	NA
a-S NAS *	moles H^+/tonne	NA	NA	NA
s-S NAS *	% w/w S	NA	NA	NA
s-Net Acidity	% w/w S	<0 02	<0 02	<0 02
a-Net Acidity	moles H^+/tonne	<10	<10	<10
Liming Rate	kg $CaCO_3$/tonne	NA	NA	NA
Verification s-Net Acidity	% w/w S	-6 23	-5 75	-4 14
a-Net Acidity without ANCE	moles H^+/tonne	520	300	380
Liming Rate without ANCE	kg $CaCO_3$/tonne	39	22	28

Our Reference Your Reference	Units	51161-7 304/5 5 SPT	51161-8 306/0 5	51161-9 306/1 0 SPT
Moisture *	% w/w	18	18	15
pH KCl	pH Units	9 0	4 9	5 5
TAA pH 6 5	moles H^+/tonne	<5	32	<5
s-TAA pH 6 5	% w/w S	<0 01	0 05	<0 01
pH Ox	pH Units	6 6	7 0	6 9
TPA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TPA pH 6 5	% w/w S	<0 01	<0 01	<0 01
TSA pH 6 5	moles H^+/tonne	<5	<5	<5
s-TSA pH 6 5	% w/w S	<0 01	<0 01	<0 01
ANCE	% $CaCO_3$	0 55	<0 05	<0 05
a-ANCE	moles H^+/tonne	110	<5	<5
s-ANCE	% w/w S	0 18	<0 05	<0 05
S KCl *	% w/w	0 052	<0 005	0 008
S P *	% w/w	0 51	0 028	0 020
S POS *	% w/w	0 46	0 028	0 012

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LABORATORY REPORT

Our Reference Your Reference	Units	51161-7 304/5 5 SPT	51161-8 306/0 5	51161-9 306/1 0 SPT
a-S POS *	moles H^+/tonne	290	17	7
Ca KCl *	% w/w	0 18	0 060	0 044
Ca P *	% w/w	0 67	0 084	0 052
Ca A *	% w/w	0 49	0 024	0 008
Mg KCl *	% w/w	0 032	0 012	0 008
Mg P *	% w/w	0 14	0 012	0 008
Mg A *	% w/w	0 11	<0 005	<0 005
S_{HCl} *	% w/w	NA	NA	NA
S NAS *	% w/w	NA	NA	NA
a-S NAS *	moles H^+/tonne	NA	NA	NA
s-S NAS *	% w/w S	NA	NA	<0 01
s-Net Acidity	% w/w S	0 34	0 08	0 02
a-Net Acidity	moles H^+/tonne	210	50	12
Liming Rate	kg $CaCO_3$/tonne	16	3 7	0 9
Verification s-Net Acidity	% w/w S	0 04	NA	NA
a-Net Acidity without ANCE	moles H^+/tonne	290	50	12
Liming Rate without ANCE	kg $CaCO_3$/tonne	21	3 7	0 9

Our Reference Your Reference	Units	51161-10 306/2 0
Moisture *	% w/w	15
pH KCl	pH Units	4 5
TAA pH 6 5	moles H^+/tonne	22
s-TAA pH 6 5	% w/w S	0 04
pH Ox	pH Units	4 6
TPA pH 6 5	moles H^+/tonne	25
s-TPA pH 6 5	% w/w S	0 04
TSA pH 6 5	moles H^+/tonne	<5

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CLIENT Douglas Partners Pty Ltd **Laboratory Report No** 51161
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LABORATORY REPORT

Our Reference Your Reference	Units	51161-10 306/2 0
s-TSA pH 6 5	% w/w S	<0 01
ANCE	% $CaCO_3$	<0 05
a-ANCE	moles H^+/tonne	<5
s-ANCE	% w/w S	<0 05
S KCl *	% w/w	<0 005
S P *	% w/w	0 008
S POS *	% w/w	0 008
a-S POS *	moles H^+/tonne	<5
Ca KCl *	% w/w	0 020
Ca P *	% w/w	0 024
Ca A *	% w/w	<0 005
Mg KCl *	% w/w	0 020
Mg P *	% w/w	0 024
Mg A *	% w/w	<0 005
SHCl *	% w/w	NA
S NAS *	% w/w	NA
a-S NAS *	moles H^+/tonne	NA
s-S NAS *	% w/w S	NA
s-Net Acidity	% w/w S	0 04
a-Net Acidity	moles H^+/tonne	27
Liming Rate	kg $CaCO_3$/tonne	2 1
Verification s-Net Acidity	% w/w S	NA
a-Net Acidity without ANCE	moles H^+/tonne	27
Liming Rate without ANCE	kg $CaCO_3$/tonne	2 1

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LABORATORY REPORT

TEST PARAMETERS	UNITS	LOR	METHOD
SPOCAS			
Moisture *	% w/w	1	CEP-003
pH KCl	pH Units	0 1	ASSMAC_23A / CEI-401
TAA pH 6 5	moles H^+/tonne	5	ASSMAC_23F / CEI-401
s-TAA pH 6 5	% w/w S	0 01	ASSMAC_S_23F/CEI-401
pH Ox	pH Units	0 1	ASSMAC_23B / CEI-406
TPA pH 6 5	moles H^+/tonne	5	ASSMAC_23G / CEI-406
s-TPA pH 6 5	% w/w S	0 01	ASSMAC_S_23G/CEI-406
TSA pH 6 5	moles H^+/tonne	5	ASSMAC_23H
s-TSA pH 6 5	% w/w S	0 01	ASSMAC_S_23H
ANCE	% $CaCO_3$	0 05	ASSMAC_23Q
a-ANCE	moles H^+/tonne	5	ASSMAC_A_23Q
s-ANCE	% w/w S	0 05	ASSMAC_S_23Q
S KCl *	% w/w	0 005	ASSMAC_23Ce
S P *	% w/w	0 005	ASSMAC_23De
S POS *	% w/w	0 005	ASSMAC_23Ee
a-S POS *	moles H^+/tonne	5	ASSMAC_A_23Ee
Ca KCl *	% w/w	0 005	ASSMAC_23Vh
Ca P *	% w/w	0 005	ASSMAC_23Wh
Ca A *	% w/w	0 005	ASSMAC_23Xh
Mg KCl *	% w/w	0 005	ASSMAC_23Sm
Mg P *	% w/w	0 005	ASSMAC_23Tm
Mg A *	% w/w	0 005	ASSMAC_23Um
SHCl *	% w/w	0 005	ASSMAC_20B
S NAS *	% w/w	0 005	ASSMAC_20J
a-S NAS *	moles H^+/tonne	5	ASSMAC_A_20J
s-S NAS *	% w/w S	0 01	ASSMAC_S_20J
s-Net Acidity	% w/w S	0 02	Calculation

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PROJECT 35630A, Bayview Golf Club (Sydney ref 42840)

LABORATORY REPORT

TEST PARAMETERS	UNITS	LOR	METHOD
a-Net Acidity	moles H^+/tonne	10	Calculation
Liming Rate	kg $CaCO_3$/tonne	0 1	ASSMAC_23H
Verification s-Net Acidity	% w/w S		Calculation
a-Net Acidity without ANCE	moles H^+/tonne	10	Calculation
Liming Rate without ANCE	kg $CaCO_3$/tonne	0 1	ASSMAC_23H

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CLIENT Douglas Partners Pty Ltd **Laboratory Report No** 51161
PROJECT 35630A, Bayview Golf Club (Sydney ref 42840)

LABORATORY REPORT

NOTES
LOR - Limit of Reporting
* This test is not covered by our current NATA accreditation

Liming rate calculated using a Fineness factor of 1 5 (which is equivalent to finely divided Ag Lime <0 5mm) and Neutralising Value (NV) of 100%
If using Liming Material <100% NV, then Liming Rate can be adusted as follows
Actual Liming Rate equals Calculated Liming Rate times 100 divided by NV of actual Liming Material

Bulk Density of Material of 1g/cm3 assumed
If Bulk Density differs from 1g/cm3 then Liming rate can be adjusted as follows
Actual Liming Rate equals Calculated Liming Rate times Actual Bulk Density

Analysis Date **Between** 7/02/06 **and** 14/02/06

Disclaimer
SGS and the authors have prepared this document in good faith consulting with Ahern CR, McElnea AE Sullivan LA (2004) *Acid Sulphate Soils Laboratory Methods Guidelines,* Queensland Department of Natural Resources, Mines and Energy, Indooroopilly Qld Aust
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APPENDIX E
Photo Plate 1

Approximate location of Bore 307 (not shown on photo)

Photo 1 Looking north west to north east from existing 18th green

Approximate location of Bore 305

Photo 2 Looking south-east at existing residence and clubhouse area from existing 1st fairway

Approximate location of Bore 306

Photo 3 Looking south at existing 1st tee from Pittwater Road

PROPOSED NEW CLUBHOUSE AND COURSE IMPROVEMENTS BAYVIEW GOLF COURSE BAYVIEW	Project 35630A	February 2006	Plate 1

Douglas Partners

5 I TREE REPORT

Footprint Green Pty Ltd
Arboricultural Environmental & Horticultural Consultants
5 Watkins Road Avalon Beach NSW 2107
Email fpntgreen@bigpond com
Ph Fax (02) 99188877
ABN 34 097 138 817

3rd June 2006

Mr Gerry O Neil
C/ Bayview Golf Club
PO Box 312

MONA VALE NSW 2103

Dear Mr O Neil

Re: Tree Report – Proposed Clubhouse Bayview Golf Course

In reference to your request the following information is provided outlining the trees to be removed as part of the proposed clubhouse affronting Pittwater Road on Bayview Golf Course

The report is based upon the architectural plans drawing 2380-SK4 P2 (Hodges Shorten Architects 04/02/06) and should be read in conjunction with adjacent development proposals for refurbishment of the golf course and adjacent residential development on the allotment

The tree reference numbers in this report correspond with those used in conjunction with adjacent development proposals for refurbishment of the golf course and adjacent residential development in Darley Street

There are 19 trees associated with the development that are required to be removed as they either spatially conflicts the proposed development footprint or are in close proximity of the proposed development

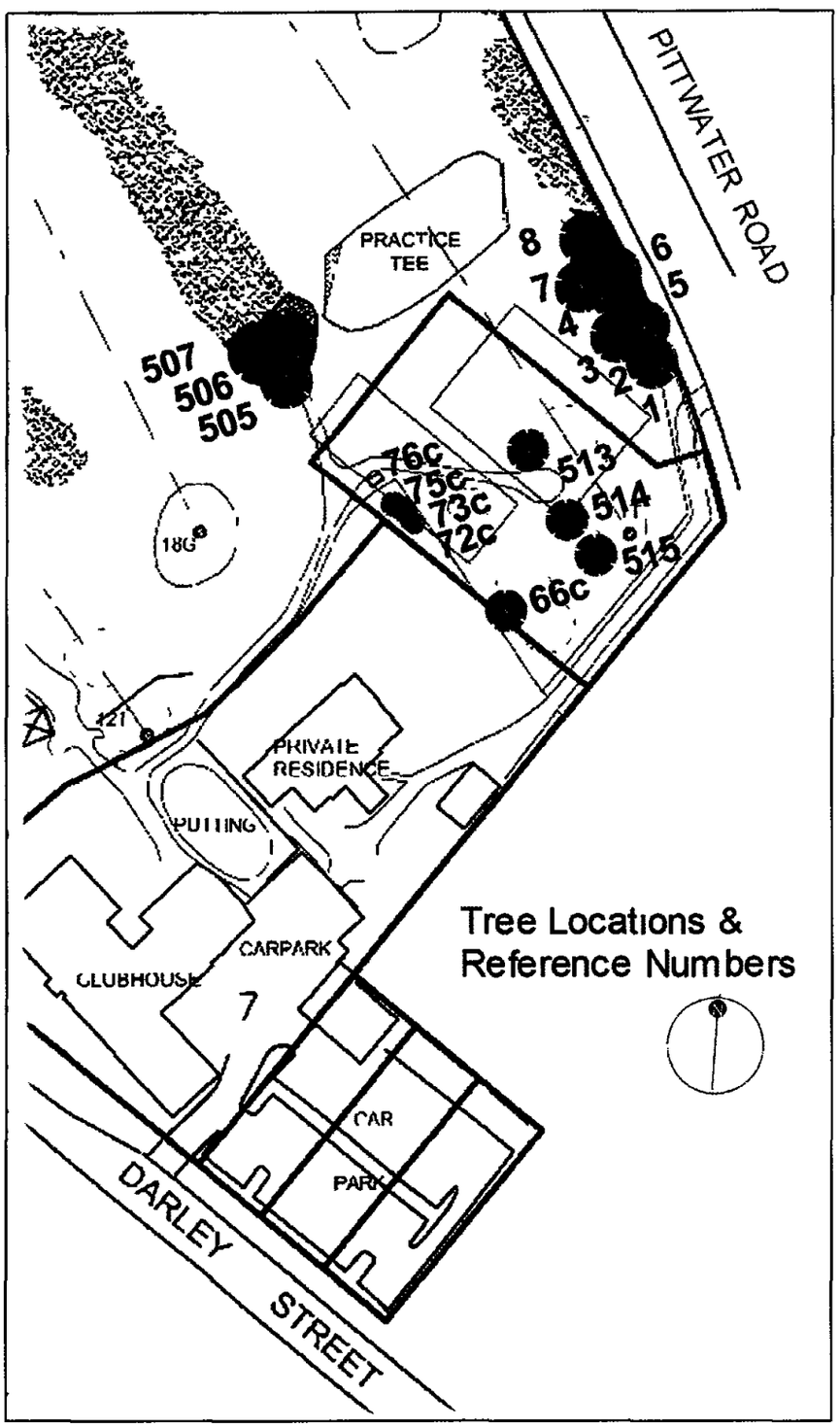
Details of the location of these 19 trees and their health and condition are included on the following pages

If you require any further information in relation to this matter please do not hesitate to contact me on 9918 8877 or 0407 888 770

Yours sincerely

Melanie Howden

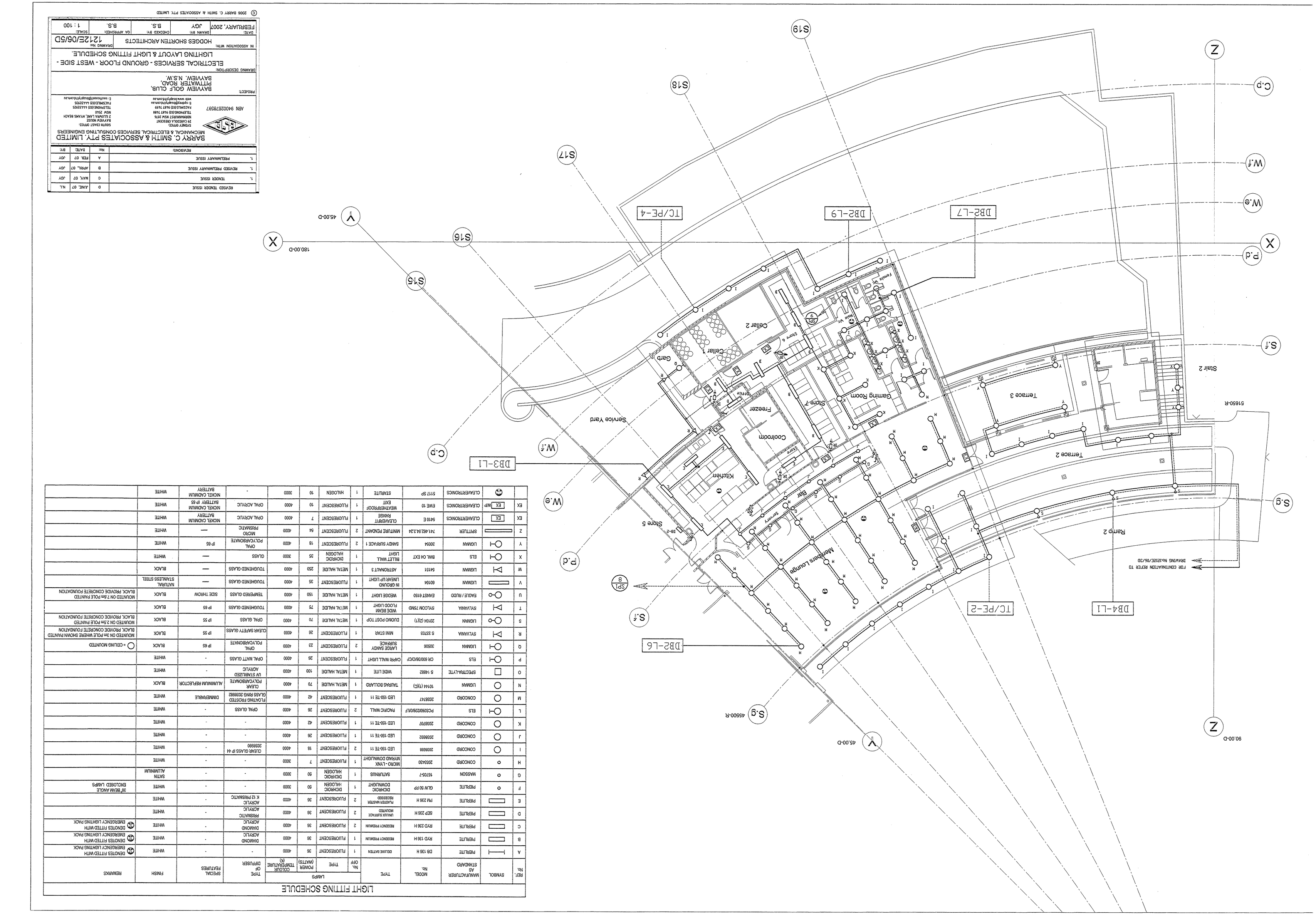
Ass Dip Hort (Haw Ag C) SoA Arb (TAFE) MAIH MNAAA MIACA


PITTWATER ROAD
PRACTICE TEE
8
7
6
5
4
3
2
1
507
506
505
76c
75c
73c
72c
513
514
515
66c
18G
12T
PRIVATE RESIDENCE
PUTTING
CARPARK
CLUBHOUSE
7
CAR PARK
DARLEY STREET
Tree Locations &
Reference Numbers

1	*Erythrina sykesii indica*	Coral Tree	13	13	1*360 1*400 2*300 2*250	Mature multi trunk tree	The tree appears stable and its branch attachment appears fair The tree is considered to be in good health and displays good vigour	Very Good	<5%	The tree has multiple bark inclusions at ground level	2	To be Removed
2	*Erythrina sykesii indica*	Coral Tree	10	8	1 180 1 260	Semi-mature twin trunk tree	The tree appears stable and its branch attachment appears fair The tree is considered to be in good health and displays good vigour	Good	<5%	The tree has a moderate bark inclusion at ground level	3	To be Removed
3	*Erythrina sykesii indica*	Coral Tree	12	7	1*160 1*270	Semi-mature twin trunk tree	The tree appears stable and its branch attachment appears fair The tree is considered to be in moderate health and displays good vigour	Good	<5%	None evident	3	To be Removed
4	*Erythrina sykesii indica*	Coral Tree	14	8	1 250 1*270	Mature twin trunk tree	The tree appears stable and its branch attachment appears fair The tree is considered to be in moderate health and displays fair vigour	Fair	5%	None evident	2	To be Removed
5	*Erythrina sykesii indica*	Coral Tree	14	12	550	Mature single trunk tree	The tree displays some signs of instability and its branch attachment appears fair The tree is considered to be in moderate health and displays fair vigour	Fair	5%	There is a large basal cavity with evidence of decay The tree has been previously cut to ground level	3	To be Removed
6	*Erythrina sykesii indica*	Coral Tree	14	8	1*250 1*200	Semi-mature twin trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Fair	<5%	None evident	2	To be Removed
7	*Erythrina sykesii indica*	Coral Tree	8	6	1 160 1 100	Semi-mature twin trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in moderate health and displays fair vigour	Fair	<5%	There are signs that the tree is suppressed in the upper canopy	3	To be Removed
8	*Erythrina sykesii indica*	Coral Tree	14	8	1*300 1 340	Mature twin trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	None evident	2	To be Removed
66c	*Syzygium paniculatum*	Magenta Lillypilly	9	8	450	Mature multi trunk (at 2 5m) tree	The tree appears stable and its branch attachment appears fair The tree is considered to be in good health and displays good vigour	Very Good	5%	Some evidence of Pysiild and minor scale infestation	2	To be Removed
72c	*Livistona australis*	Cabbage Palm/Fan Palm	8	4	250	Mature single trunk.	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Very Good	<5%	None evident	2 / 5	To be Removed

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
73c	*Livistona australis*	Cabbage Palm/Fan Palm	8	4	250	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Very Good	<5%	None evident	2 / 5	To be Removed
75c	*Lagerstroemia indica*	Crepe Myrtle	4	3	3*60	Semi-mature multi trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	None evident	2	To be Removed
76c	*Lagerstroemia indica*	Crepe Myrtle	6	4	4*200	Mature multi trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	None evident	2	To be Removed
505	*Castanospermum australe*	Queensland Black Bean	8	10	500	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	Minor decay evident in old branch stubs	2	To be Removed
506	*Casuarina cunninghamiana*	River Oak/River Sheoak	18	8	350	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	10%	None evident	1	To be Removed
507	*Casuarina cunninghamiana*	River Oak/River Sheoak	18	11	600	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	5%	Minor decay evident in branch stubs	1	To be Removed
513	*Phoenix canariensis*	Canary Island Date Palm	16	5	800	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	None evident	1	To be Removed
514	*Phoenix canariensis*	Canary Island Date Palm	16	5	800	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in good health and displays good vigour	Good	<5%	None evident	1	To be Removed
515	*Casuarina glauca*	Swamp Oak	12	4	500	Mature single trunk tree	The tree appears stable and its branch attachment appears sound The tree is considered to be in moderate health and displays fair vigour	Fair	5%	None evident	2	To be Removed

5 J AUDIO VISUAL SPECIFICATION



REF. No.	SYMBOL	MANUFACTURER AS STANDARD	MODEL No.	TYPE	LAMPS No. OFF	LAMPS TYPE	LAMPS POWER (WATTS)	LAMPS COLOUR TEMPERATURE (K)	TYPE OF DIFFUSER	SPECIAL FEATURES	FINISH	REMARKS
A		PIERLITE	DB 136 H	DELUXE BATTEN	1	FLUORESCENT	36	4000	-	-	WHITE	DENOTES FITTED WITH EMERGENCY LIGHTING PACK
B		PIERLITE	RYD 136 H	REGENCY PRISMATIC	1	FLUORESCENT	36	4000	DIAMOND ACRYLIC	-	WHITE	DENOTES FITTED WITH EMERGENCY LIGHTING PACK
C		PIERLITE	RYD 236 H	REGENCY PRISMATIC	2	FLUORESCENT	36	4000	DIAMOND ACRYLIC	-	WHITE	DENOTES FITTED WITH EMERGENCY LIGHTING PACK
D		PIERLITE	SEP 236 H	LINEAR SURFACE MOUNTED	2	FLUORESCENT	36	4000	PRISMATIC ACRYLIC	-	WHITE	
E		PIERLITE	PM 236 H	FRAMED MASTER RECESSED	2	FLUORESCENT	36	4000	ACRYLIC	-	WHITE	
F		PIERLITE	GLW 50 PP	DECORATIVE DOWNLIGHT	1	DICHROIC HALOGEN	50	3000	-	-	WHITE	38°BEAM ANGLE ENCLOSED LAMPS
G		MASSON	1617O5-7	SATURNUS	1	DICHROIC HALOGEN	50	3000	-	-	SATIN ALUMINIUM	
H		CONCORD	2033430	MICRO-LYNX MYRAD DOWNLIGHT	1	FLUORESCENT	7	3000	-	-	WHITE	
I		CONCORD	2039888	LED 150-TE 11	2	FLUORESCENT	18	4000	CLEAR GLASS IP 44 2038900	-	WHITE	
J		CONCORD	2038692	LED 150-TE 11	1	FLUORESCENT	26	4000	-	-	WHITE	
K		CONCORD	2038707	LED 150-TE 11	1	FLUORESCENT	42	4000	-	-	WHITE	
L		ELS	PC8260/28/OLF	PAOPIKO WALL	2	FLUORESCENT	26	4000	OPAL GLASS	-	WHITE	
M		CONCORD	2038747	LED 150-TE 11	1	FLUORESCENT	42	4000	FLOATING FROSTED GLASS RING 2038982	DIMMERABLE	WHITE	
N		LIGMAN	10144 (1)(C)	TAURAS BOLLARD	1	METAL HALIDE	70	4000	CLEAR POLYCARBONATE	ALUMINIUM REFLECTOR	BLACK	
O		SPECTRA-LITE	S 14882	WIDE LITE	1	METAL HALIDE	100	4000	UV STABILIZED ACRYLIC	-	WHITE	
P		ELS	CR 600/36/OICF	CAPRI WALL LIGHT	1	FLUORESCENT	26	4000	OPAL MATT GLASS	-	WHITE	
Q		LIGMAN	30606	LARGE SANDY SURFACE	2	FLUORESCENT	23	4000	OPAL POLYCARBONATE	IP 65	BLACK	= CEILING MOUNTED
R		SYLVANIA	S 33720	MINI STAR	1	FLUORESCENT	26	4000	CLEAR SAFETY GLASS	IP 55	BLACK	MOUNTED ON 3m POLE WHERE SHOWN PAINTED BLACK PROVIDE CONCRETE FOUNDATION
S		SYLVANIA	20104 (2)(1)	DUOLOG POST TOP	1	METAL HALIDE	70	4000	OPAL GLASS	IP 55	BLACK	MOUNTED ON 2.5m POLE PAINTED BLACK PROVIDE CONCRETE FOUNDATION
T		SYLVANIA	SYLCOM 72MD	WIDE BEAM FLOOD LIGHT	1	METAL HALIDE	75	4000	TOUGHENED GLASS	IP 65	BLACK	
U		EAGLE / RUDD	EANST 6150	WEDGE LIGHT	1	METAL HALIDE	150	4000	TEMPERED GLASS	SIDE THROW	BLACK	MOUNTED ON 7.6m POLE PAINTED BLACK PROVIDE CONCRETE FOUNDATION
V		LIGMAN	60104	IN GROUND LINEAR UP LIGHT	1	FLUORESCENT	35	4000	TOUGHENED GLASS	—	NATURAL STAINLESS STEEL	
W		LIGMAN	54151	ASTRONAUT 3	1	METAL HALIDE	250	4000	TOUGHENED GLASS	—	BLACK	
X		ELS	BWL 04 EXT	BULLET WALL LIGHT	1	DICHROIC HALOGEN	35	3000	GLASS	—	WHITE	
Y		LIGMAN	30054	SANDY SURFACE 1	2	FLUORESCENT	18	4000	OPAL POLYCARBONATE	IP 65	WHITE	
Z		SPITLER	741.462.54.3.24	MINITHEE PENDANT	2	FLUORESCENT	54	4000	MICRO PRISMATIC	—	WHITE	
EX	EX	CLEAVERTRONICS	5410 E	CLEAVERFIT RANGE	1	FLUORESCENT	7	4000	OPAL ACRYLIC	NICKEL CADMIUM BATTERY	WHITE	
EX	M/P	CLEAVERTRONICS	EME 10	WEATHERPROOF EXIT	1	FLUORESCENT	10	4000	OPAL ACRYLIC	NICKEL CADMIUM BATTERY IP 65	WHITE	

	REVISED TENDER ISSUE	D	JUNE. 07	N.L.
1.	TENDER ISSUE	C	MAY. 07	JOY
1.	REVISED PRELIMINARY ISSUE	B	APRIL. 07	JOY
1.	PRELIMINARY ISSUE	A	FEB. 07	JOY
REMARKS:		No:	DATE:	BY:

BARRY C. SMITH & ASSOCIATES PTY. LIMITED
MECHANICAL & ELECTRICAL SERVICES CONSULTING ENGINEERS
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ABN 94002578597

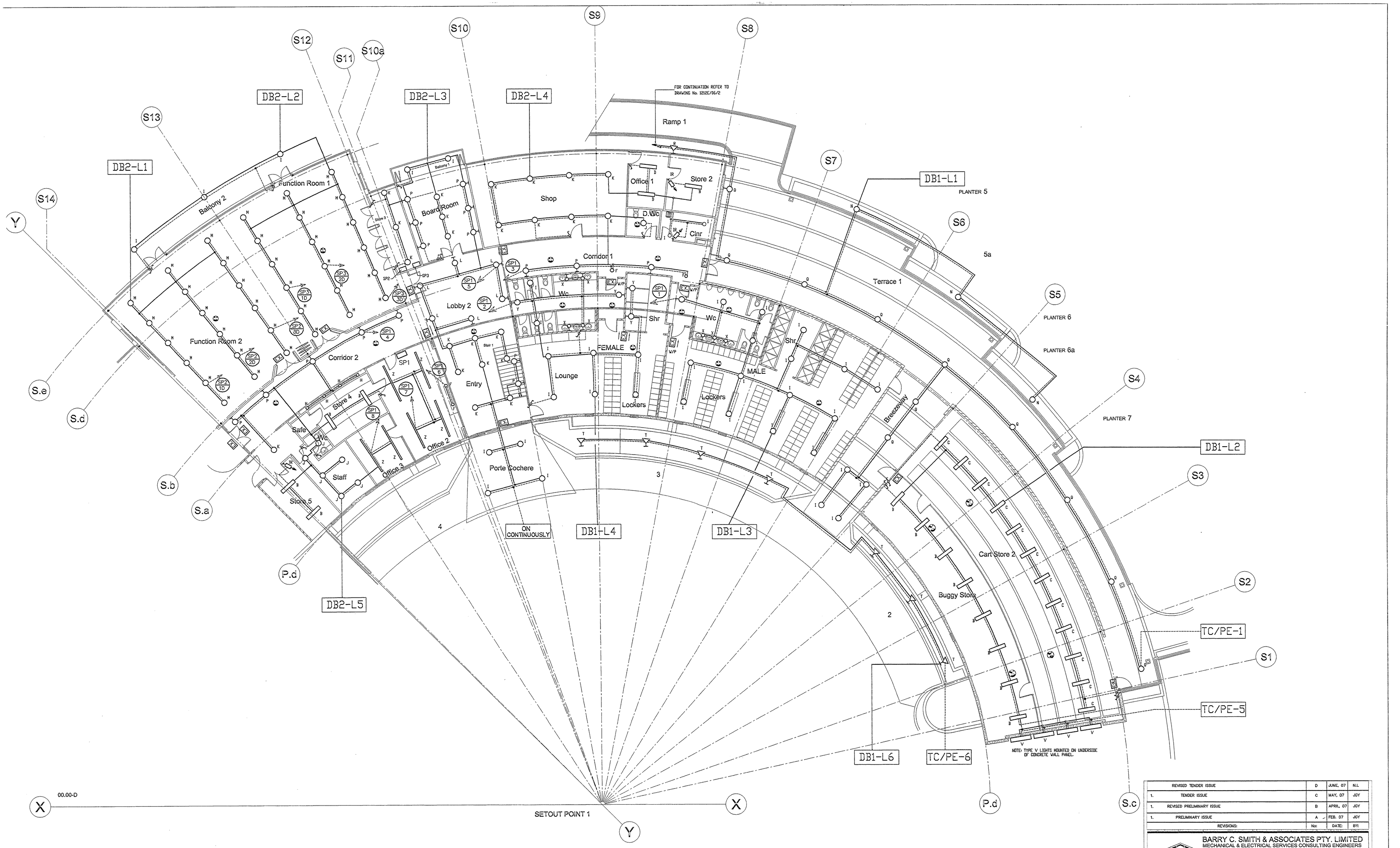
PROJECT:
BAYVIEW GOLF CLUB,
PITTWATER ROAD,
BAYVIEW, N.S.W.

DRAWING DESCRIPTION:
ELECTRICAL SERVICES - GROUND FLOOR - WEST SIDE -
LIGHTING LAYOUT & LIGHT FITTING SCHEDULE.

IN ASSOCIATION WITH:
HODGES SHORTEN ARCHITECTS

DRAWING No: 12126/06/5D

DATE:	DRAWN BY:	CHECKED BY:	QA APPROVED:	SCALE:
FEBRUARY, 2007	JGY	B.S.	B.S.	1 : 100



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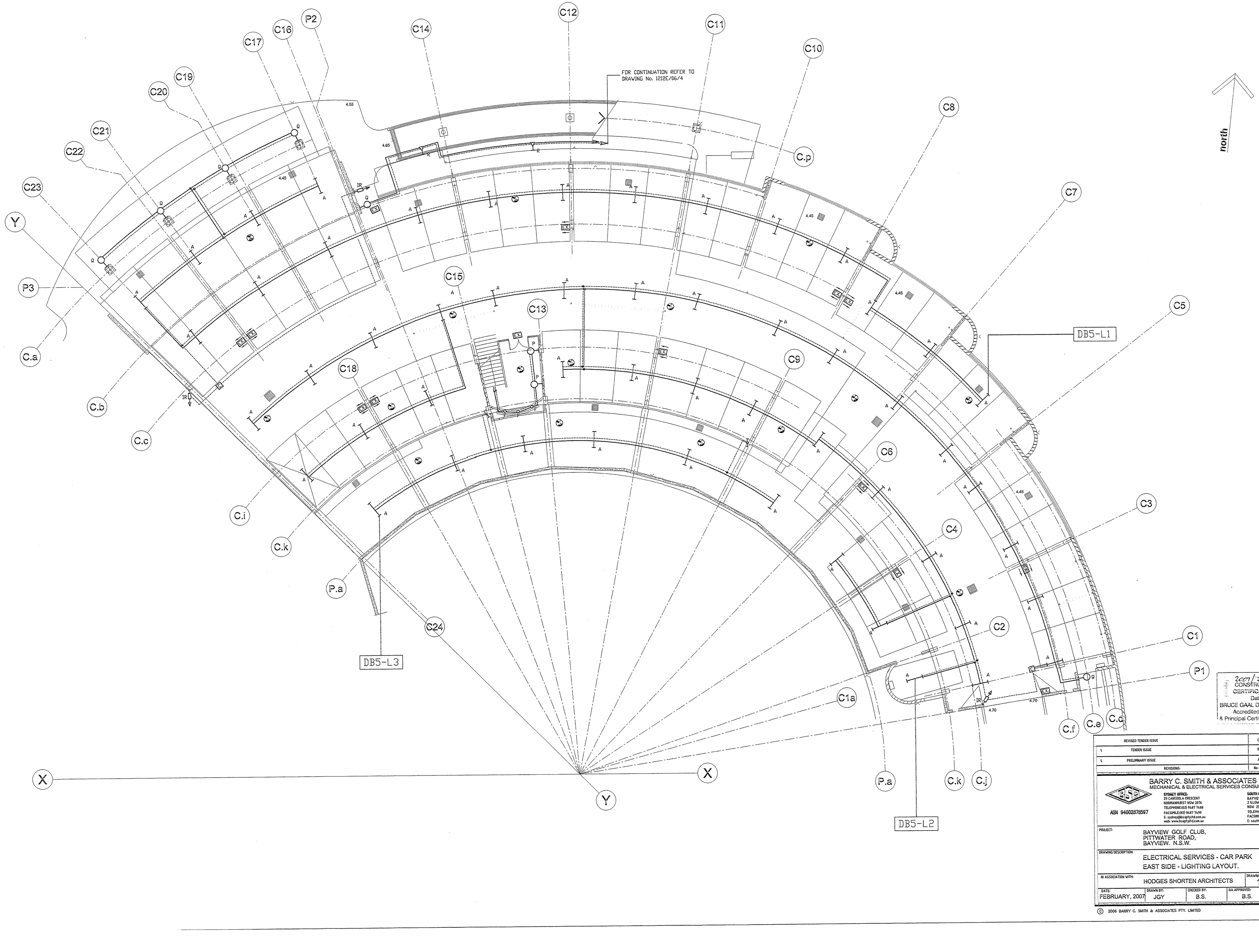
PROJECT:
BAYVIEW GOLF CLUB,
PITTWATER ROAD,
BAYVIEW. N.S.W.

DRAWING DESCRIPTION:
ELECTRICAL SERVICES - GROUND FLOOR
EAST SIDE - LIGHTING LAYOUT.

IN ASSOCIATION WITH: HODGES SHORTEN ARCHITECTS

DRAWING No: 1212E/06/4D

DATE:	DRAWN BY:	CHECKED BY:	QA APPROVED:	SCALE:
FEBRUARY, 2007	JGY	B.S.	B.S.	1 : 100



2007/2412
CONSTRUCTION CERTIFICATE No.
Date 26/11/07
BRUCE GAAL DIPNR - P.0055
Accredited Certifier
& Principal Certifying Authority

REVISED TENDER ISSUE	C	JUNE, 07	NL.
TENDER ISSUE	B	MAY, 07	JGY
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MECHANICAL & ELECTRICAL SERVICES CONSULTING ENGINEERS

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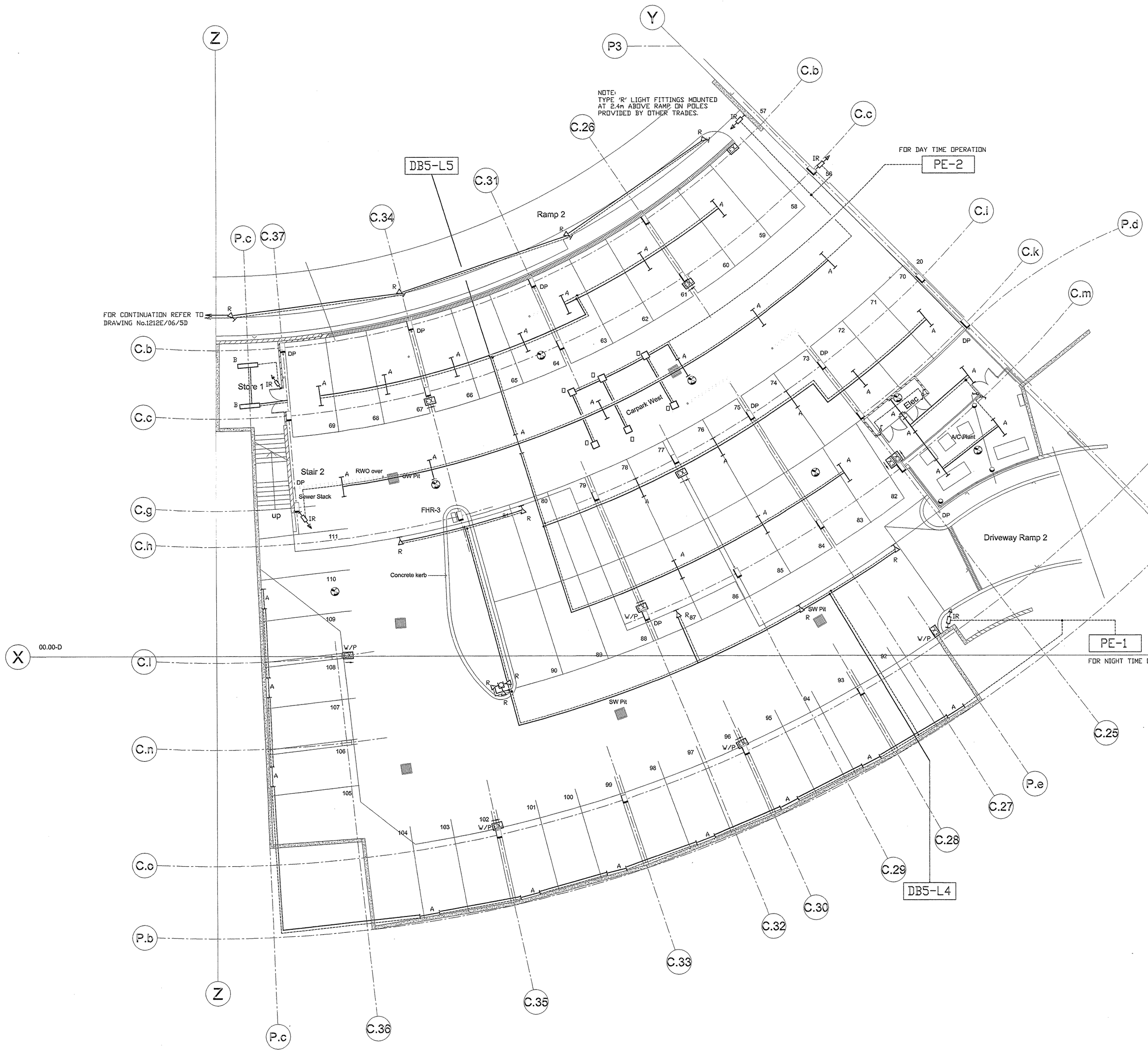
PROJECT:
BAYVIEW GOLF CLUB,
PITTWATER ROAD,
BAYVIEW. N.S.W.

DRAWING DESCRIPTION:
ELECTRICAL SERVICES - CAR PARK
EAST SIDE - LIGHTING LAYOUT.

IN ASSOCIATION WITH: HODGES SHORTEN ARCHITECTS

DRAWING No: 1212E/06/2C

DATE:	DRAWN BY:	CHECKED BY:	QA APPROVED:	SCALE:
FEBRUARY, 2007	JGY	B.S.	B.S.	1 : 100



LEGEND

- MAIN SWITCHBOARD
- DISTRIBUTION SWITCHBOARD
- DOUBLE GENERAL PURPOSE OUTLET S=MOUNTED ON SKIRTING DUCT W/P=WEATHERPROOF
- SINGLE GENERAL PURPOSE OUTLET 450=450mm A.F.F.L. IP56=DEGREE OF PROTECTION C=CEILING MOUNTED
- 3 PHASE SOCKET OUTLET
- PERMANENT CONNECTION, IN= SINGLE PHASE & NEUTRAL,3N= 3 PHASE & NEUTRAL
- ONE-WAY LIGHT SWITCH D = DIMMER CONTROL TD= TIME DELAY DN 0-60 MIN.
- TWO - WAY LIGHT SWITCH
- TELEPHONE MAIN DISTRIBUTION FRAME
- TELEPHONE INDEPENDANT DISTRIBUTION FRAME
- SUPPLY AUTHORITY METERS
- DIGITAL MULTI FUNCTION POWER ANALYSER
- EMERGENCY LIGHT
- TYPE 'A' LIGHT FITTING, REFER TO SCHEDULE
- EXHAUST FAN
- RELAY
- CONTACTOR
- PHOTOELECTRIC CELL
- ELECTRICAL PIT
- TELEPHONE PIT
- VOICE AND DATA RJ45 OUTLET
- E.W.I.S. ALARM INTIATION DEVICE.
- TELEPHONE OUTLET DIRECT LINE
- WARDENS COMMUNICATION HANDSET.

- LIGHT & POWER CABLING
- LIGHTING SWITCH CABLING
- UNDERGROUND CONSUMERS MAINS
- UNDERGROUND MAINS
- SUB MAINS
- TELEPHONE CONDUIT & CABLING
- UNDERGROUND CONDUIT & DRAW WIRE
- EXISTING UNDERGROUND TELEPHONE CONDUIT AND CABLE.
- SINGLE PHASE CIRCUIT
- THREE PHASE CIRCUIT
- CIRCUIT BREAKER
- LOAD BREAK/ MAKE ISOLATING SWITCH
- NORMALLY CLOSED CONTACT
- EMERGENCY LIGHTING/EXIT SIGN TEST SWITCH SELF-SETTING TIMER.
- RESIDUAL CURRENT CIRCUIT BREAKER
- NORMALLY OPEN CONTACT TS = TIME SWITCH TO COMPLY WITH BCA SECTION J.
- TC-1 TIME CLOCK No. 1
- TC/PE-1 TIME CLOCK PHOTOELECTRIC CELL No.1
- DB1-P1 DISTRIBUTION SWITCHBOARD No 1,POWER CIRCUIT No 1
- DB1-L1 DISTRIBUTION SWITCHBOARD No 1, LIGHTING CIRCUIT No 1
- TC TIME CLOCK WITH MANUAL OVERRIDE.
- CONTACTOR OR RELAY COIL
- FUSE
- INFRA RED MOTION SENSOR
- M.A.T.V. TEE-OFF BOX
- M.A.T.V. SPLITTER BOX
- SMOKE DETECTORS
- THERMAL DETECTORS
- CONCEALED SPACE THERMAL DETECTORS
- NO. OF INDIVIDUAL CAT. 5E CABLES
- E.W.I.S. SPEAKERS FLUSH MOUNTED
- M.A.T.V. SYSTEM ANTENNA
- SUBSCRIPTION TELEVISION SATELLITE
- SIREN STROBE LIGHT
- SCREECHER SIREN
- CCTV DIGITAL VIDEO CAMERA
- SP1 6 SWITCH PANEL No.1 SWITCH No.6
- SP2 10 SWITCH PANEL No.2 SWITCH No.1 WITH DIMMER CONTROL.

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ABN 94002878597

PROJECT:
BAYVIEW GOLF CLUB,
PITTWATER ROAD,
BAYVIEW. N.S.W.

DRAWING DESCRIPTION:
ELECTRICAL SERVICES - CAR PARK
WEST SIDE - LIGHTING LAYOUT & LEGEND

IN ASSOCIATION WITH: HODGES SHORTEN ARCHITECTS

DRAWING No: 1212E/06/3D

DATE:	DRAWN BY:	CHECKED BY:	QA APPROVED:	SCALE:
FEBRUARY, 2007	JGY	B.S.	B.S.	1 : 100

BAR ITEMS LIST

B1	SERVE LEDGE
B2	BAR SUPPORT FRAME
B3	P.O.S - BY CLUB
B4	2 BAY GLASS RACKS
B5	6 TAP BEER STATION
B6	POST MIX STATION / ICE WELL
B7	SERVE LEDGE DRIP TRAY
B8	8 WAYS E.T.NS
B9	3 BAY GLASS CHILLER
B10	S/S BENCH TOP
B11	6 TAP BEER STATION
B12	POST MIX STATION / ICE WELL
B13	2 BAY GLASS RACK
B14	P.O.S
B15	SERVE LEDGE DRIP TRAY
B16	8 WAYS E.T.NS
B17	FILTERED WATER STATION
B18	UNDER BENCH HAND BASIN
B19	S/S STOCK CUPBOARD UNDER
B20	BACK BAR S/S BENCH TOP
B21	S/S STOCK CUPBOARD UNDER
B22	3 DOOR UPRIGHT DRINKS FRIDGE
B23	HAND BASIN
B24	S/S BENCH
B25	2 BAY GLASS RACK
B26	GLASS WASHER
B27	ICE MACHINE
B28	2 DOOR UPRIGHT DRINKS FRIDGE
B29	1 BAY GLASS RACK

COFFEE SHOP

C1	GRANITE BENCH TOP
C2	COLD DISPLAY
C3	CAKE DISPLAY
C4	P.O.S
C5	COFFEE MACHINE
C6	COFFEE GRINDER
C7	ICE CREAM FRIDGE
C8	L-SHAPED S/S BENCH
C9	SYRUP DISPENSER
C10	MILK SHAKE MACHINE
C11	2 DOOR UNDER COUNTER FRIDGE
C12	CONTACT TOASTER
C13	CAFE SUPPORT FRAME

KITCHEN EQUIPMENT

K1	DRY STORE
K2	COOLROOM
K3	FREEZER
K4	PLANITRY MIXER
K5	2 BOWL SINK
K6	SPRAY RINSE ARM
K7	D/W OUTLET BENCH
K8	UPRIGHT DISHWASHER
K9	D/W EXHAUST HOOD
K10	SPRAY RINSE ARM
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K12	SPARE NUMBER
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K16	GAS SALAMANDER
K17	S/S BENCH
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K27	ISLAND BENCH
K28	PLATE DISPENSER
K29	DRY STORE SHELVING
K30	COOLROOM SHELVING
K31	FREEZER SHELVING
K32	5 OFF - FLOOR GRATE
K33	SPARE NUMBER
K34	3 OFF - HAND BASIN
K35	2 X POT RACKS

2007/2612
CONSTRUCTION CERTIFICATE No.
Date 26/11/07
BRUCE GAAL DIPNR - P.0055
Accredited Certifier
& Principal Certifying Authority

ISSUED FOR TENDER

Issue	Comment	Date
A	ISSUED FOR TENDER	18.06.07

HRC alliance Pty Ltd
ABN 68 103 867 607
59 Hartley Road,
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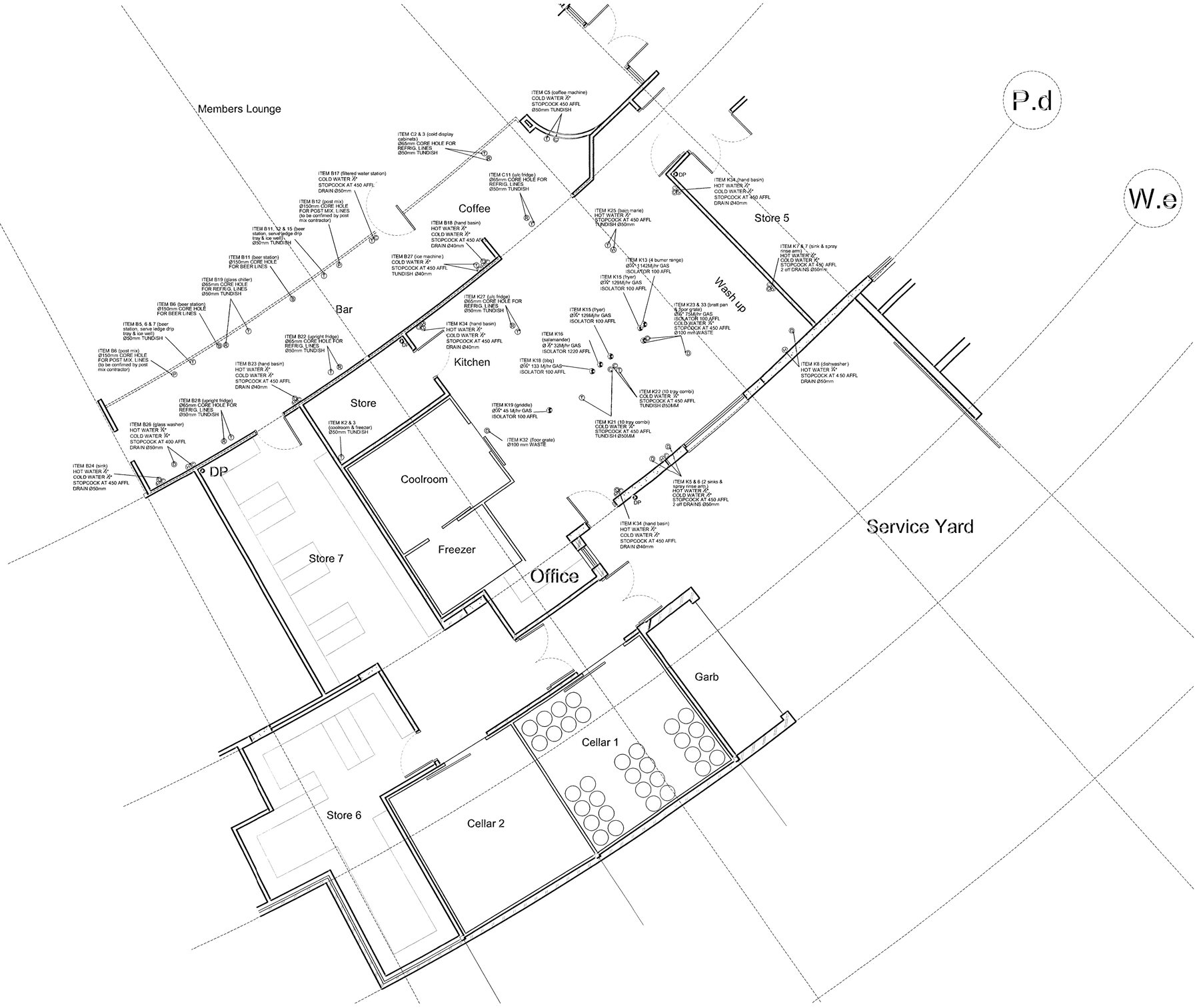
DESIGNERS & CONTRACTORS TO THE HOSPITALITY INDUSTRY
SPECIALISING IN COMMERCIAL BARS, BISTROS & KITCHENS

PROJECT:
BAYVIEW GOLF CLUB

DWG TITLE:
PRELIMINARY EQUIPMENT LAYOUT

JOB No:	PLOTTED:	SCALE :	DWG No:	REV:
.	18.06.07	1:50	3040-1	A
DRAWN : D.C	CHKD BY: .	APPVD: .		



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K34	3 OFF - HAND BASIN
K35	2 X POT RACKS

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Issue	Comment	Date
A	ISSUED FOR TENDER	18.06.07

HRC alliance Pty Ltd
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DESIGNERS & CONTRACTORS TO THE HOSPITALITY INDUSTRY
SPECIALISING IN COMMERCIAL BARS, BISTROS & KITCHENS

PROJECT:
BAYVIEW GOLF CLUB

DWG TITLE:
PRELIMINARY HYDRAULIC LAYOUT

JOB No:	PLOTTED:	SCALE :	DWG No:	REV:
.	18.06.07	1:50	3040-2	A
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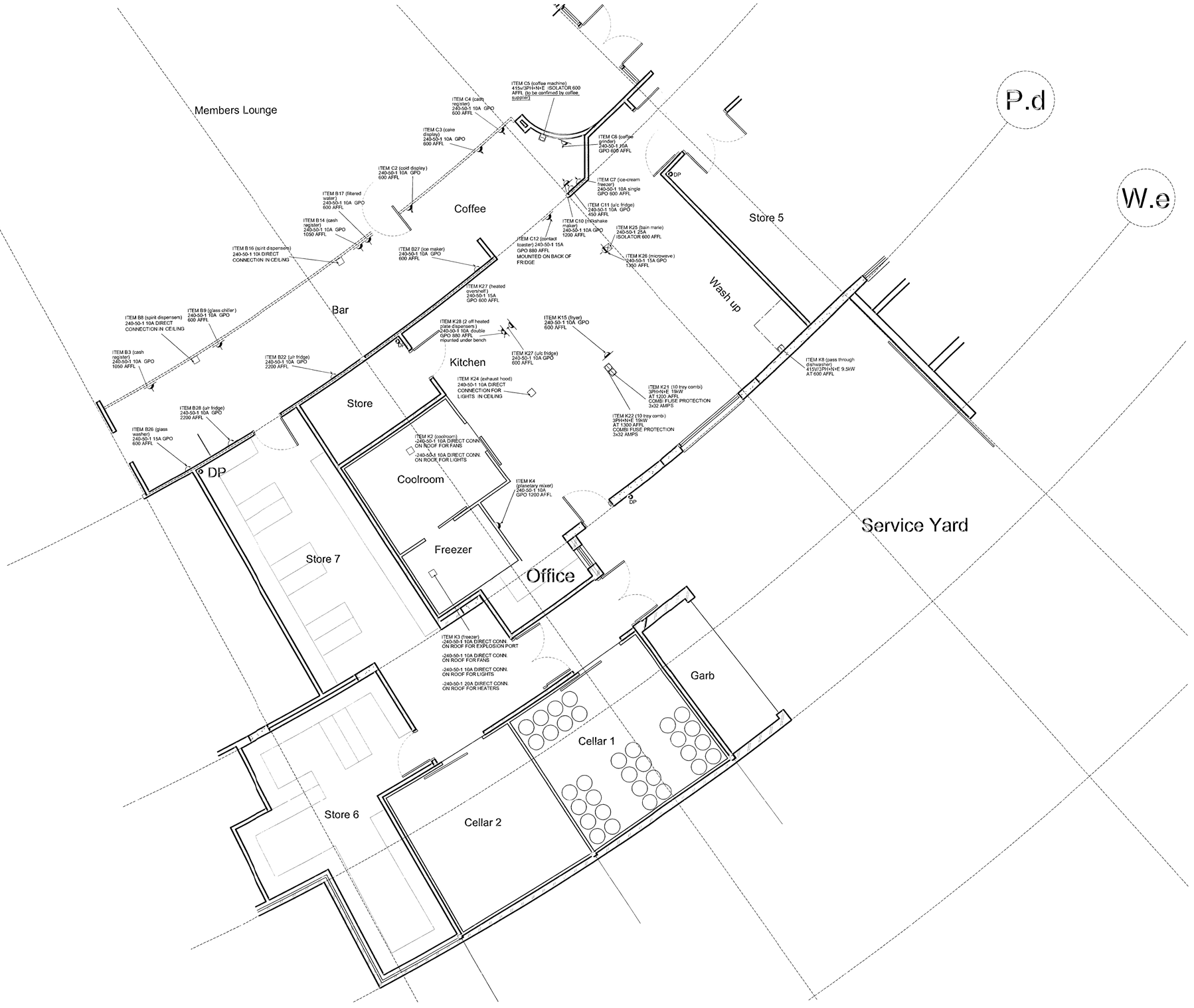

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DESIGNERS & CONTRACTORS TO THE HOSPITALITY INDUSTRY
SPECIALISING IN COMMERCIAL BARS, BISTROS & KITCHENS

PROJECT:
BAYVIEW GOLF CLUB

DWG TITLE:
PRELIMINARY ELECTRICAL LAYOUT

JOB No:	PLOTTED:	SCALE :	DWG No:	REV:
.	18.06.07	1:50	3040-3	A
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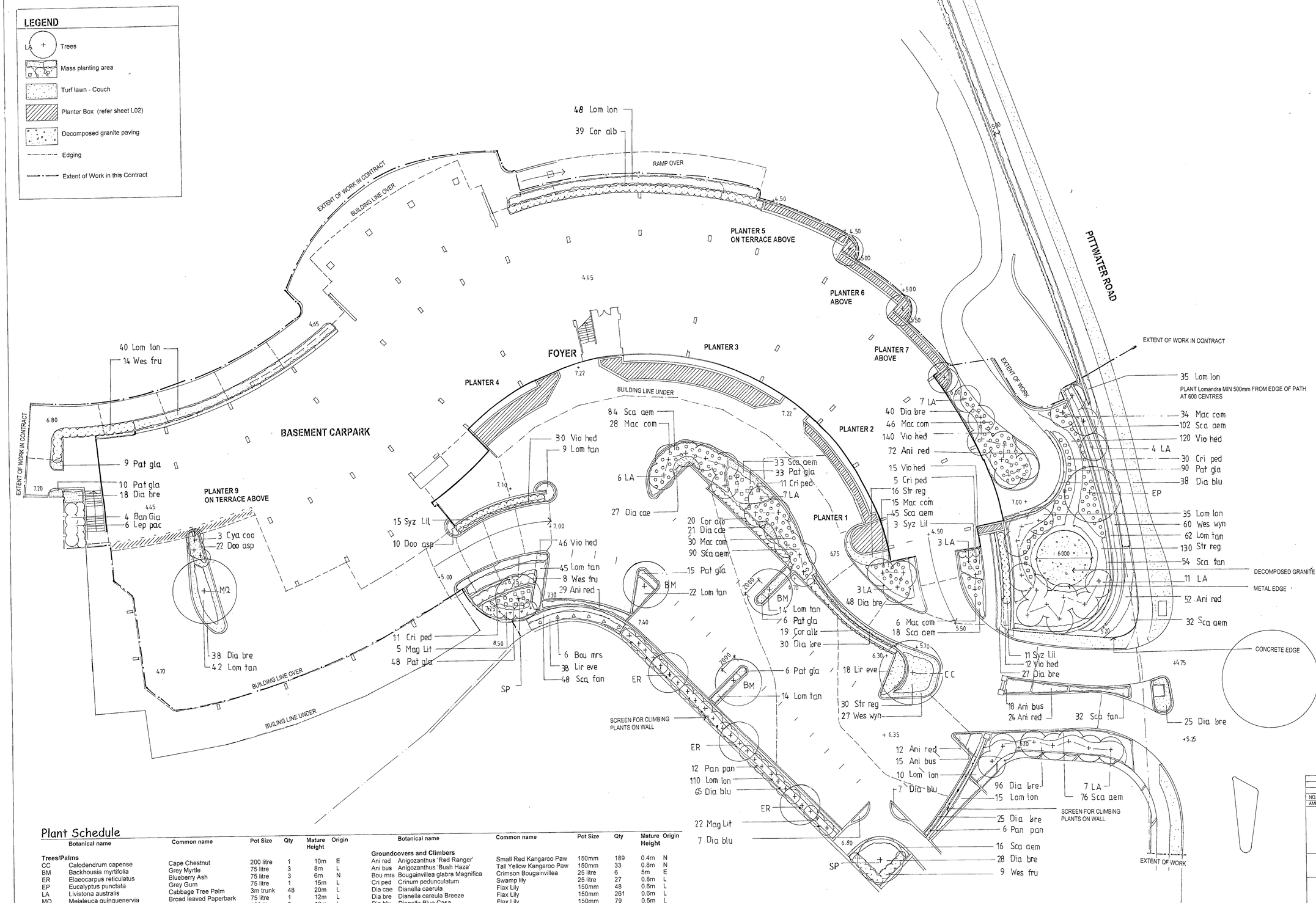


Plant Schedule

	Botanical name	Common name	Pot Size	Qty	Mature Height	Origin
Trees/Palms						
CC	Calodendrum capense	Cape Chestnut	200 litre	1	10m	E
BM	Backhousia myrtifolia	Grey Myrtle	75 litre	3	8m	L
ER	Elaeocarpus reticulatus	Blueberry Ash	75 litre	3	6m	N
EP	Eucalyptus punctata	Grey Gum	75 litre	1	15m	L
LA	Livistona australis	Cabbage Tree Palm	3m trunk	48	20m	L
MQ	Melaleuca quinquenervia	Broad leaved Paperbark	75 litre	1	12m	L
SP	Syzigium paniculatum	Magenta Cherry	100 litre	2	10m	L
Shrubs						
Ban Gia	Banksia Giant Candles	Banksia variety	5 litre	4	3m	L*
Cor alb	Correa alba	White Correa	5 litre	108	1m	L
Cya coo	Cyathea cooperi	Australian Tree Fern	1m trunk	3	5m	L
Lep pac	Leptospermum polygalifolium Pacific Beauty		5 litre	6	1m	L*
Mac com	Macrozamia communis	Burrawang	5 litre	159	1m	L
Mag Lit	Magnolia Little Gem	Dwarf magnolia	25 litre	27	4m	E
Syz Lil	Syzigium Lilliput	Dwarf Lillypilly	5 litre	29	1.5m	L*
Wes fru	Westringia fruticosa	Coastal Rosemary	5 litre	31	1m	L
Wes wyn	Westringia Wyngabbie Gem	Coastal Rosemary variety	5 litre	87	1m	L*

	Botanical name	Common name	Pot Size	Qty	Mature Height	Origin
Groundcovers and Climbers						
Ani red	Anigozanthus 'Red Ranger'	Small Red Kangaroo Paw	150mm	189	0.4m	N
Ani bus	Anigozanthus 'Bush Haze'	Tall Yellow Kangaroo Paw	150mm	33	0.8m	N
Bou mrs	Bougainvillea glabra Magnifica	Crimson Bougainvillea	25 litre	6	5m	E
Cri ped	Crinum pedunculatum	Swamp lily	25 litre	27	0.8m	L
Dia cae	Dianella caerula	Flax Lily	150mm	48	0.6m	L
Dia bre	Dianella careula Breeze	Flax Lily	150mm	261	0.6m	L
Dia blu	Dianella Blue Casa	Flax Lily	150mm	79	0.5m	L
Doo asp	Doodia asperia	Rasp Fern	150mm	32	0.3m	L
Lir eve	Liriope muscari Evergreen Giant	Giant Turf Lily	150mm	56	0.6m	E
Lom lon	Lomandra longifolia	Spiny Mat Rush	tube	335	0.5m	L
Lom tan	Lomandra 'Tanika'	Spiny mat rush variety	150mm	166	0.5	L*
Pan pan	Pandora pandoreana	Wonga Wonga vine	150mm	18	3m	L
Pat gla	Patersonia glabrata	Leafy Purple Flag	150mm	217	0.4m	L
Sca aem	Scaevola aemula	Fan Flower	150mm	496	0.1m	L*
Sca fan	Scaevola aemula Purple Fanfare	Fan Flower	150mm	134	0.1m	L*
Str reg	Strelitzia reginae	Bird of Paradise	5 litre	176	1m	E
Vio hed	Viola hederaceae	Native Violet	150mm	363	0.1m	L

Origin: L= local native species, L*= improved cultivar of local species, N =native species, E= Exotic

NOTE
REFER TO SHEET L02 FOR PLANTER BOX PLANTING LAYOUT AND DETAILS

LA (Livistonia australis) PALMS TO BE LOCATED AS DIRECTED ON SITE. LOCATIONS ON PLAN ARE INDICATIVE.

2007/2412
CONSTRUCTION CERTIFICATE No.
Date 26/11/07
BRUCE GAAL DIPNR - P.0055
Accredited Certifier
& Principal Certifying Authority

NO.	DATE	AMENDMENTS
	18.6.07	ISSUED FOR TENDER
	DATE	COMMENT

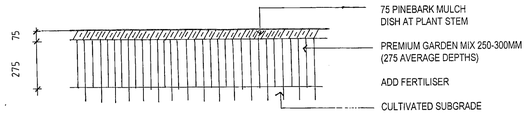
BAYVIEW GOLF CLUB
PROPOSED GOLF CLUBHOUSE
PITTWATER ROAD BAYVIEW

LANDSCAPE PLAN

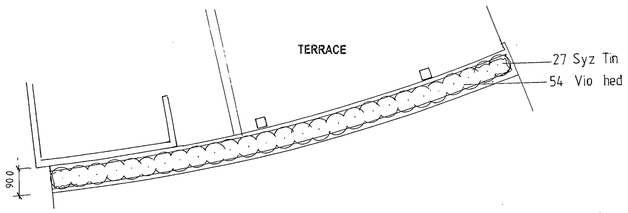
HLS
LANDSCAPE ARCHITECT
LINDY LEAN AAILA
PO BOX 313 ASHFIELD 2131
PH 9797 9366 FAX 9716 6034

HODGES SHORTEN
ARCHITECTS
SUITE 82, 47 NERIDAH ST
CHATSWOOD NSW 2067
PH 9419 5199 FAX 9419 5632

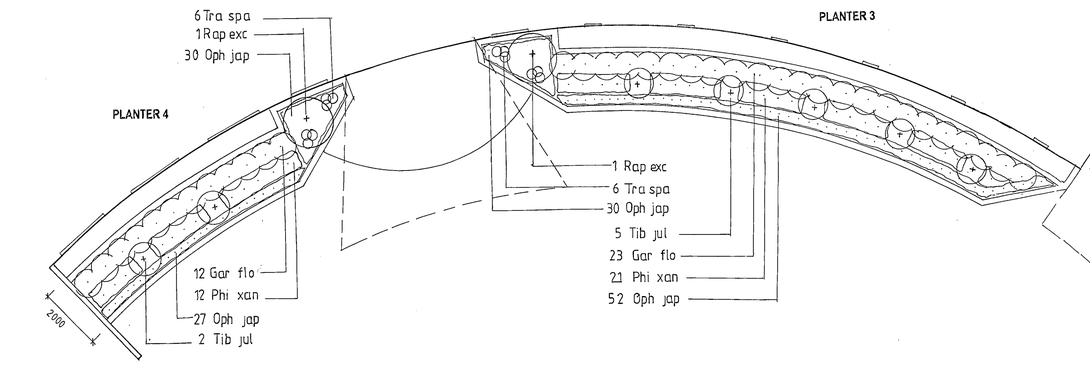
SCALE 1:200
DATE 6.6.07
SHEET 1 OF 2
DWG NO. L01
REV.

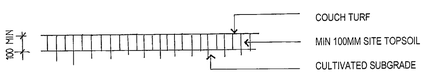


1 MASS PLANTING PREPARATION — SECTION SCALE 1:20

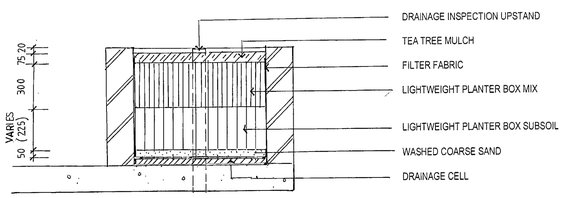


2 PLANTING PLAN - PLANTER 9 — PLAN SCALE 1:100

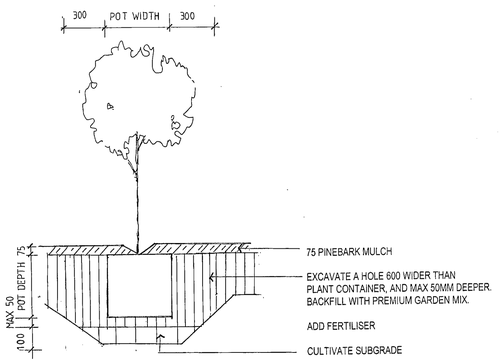




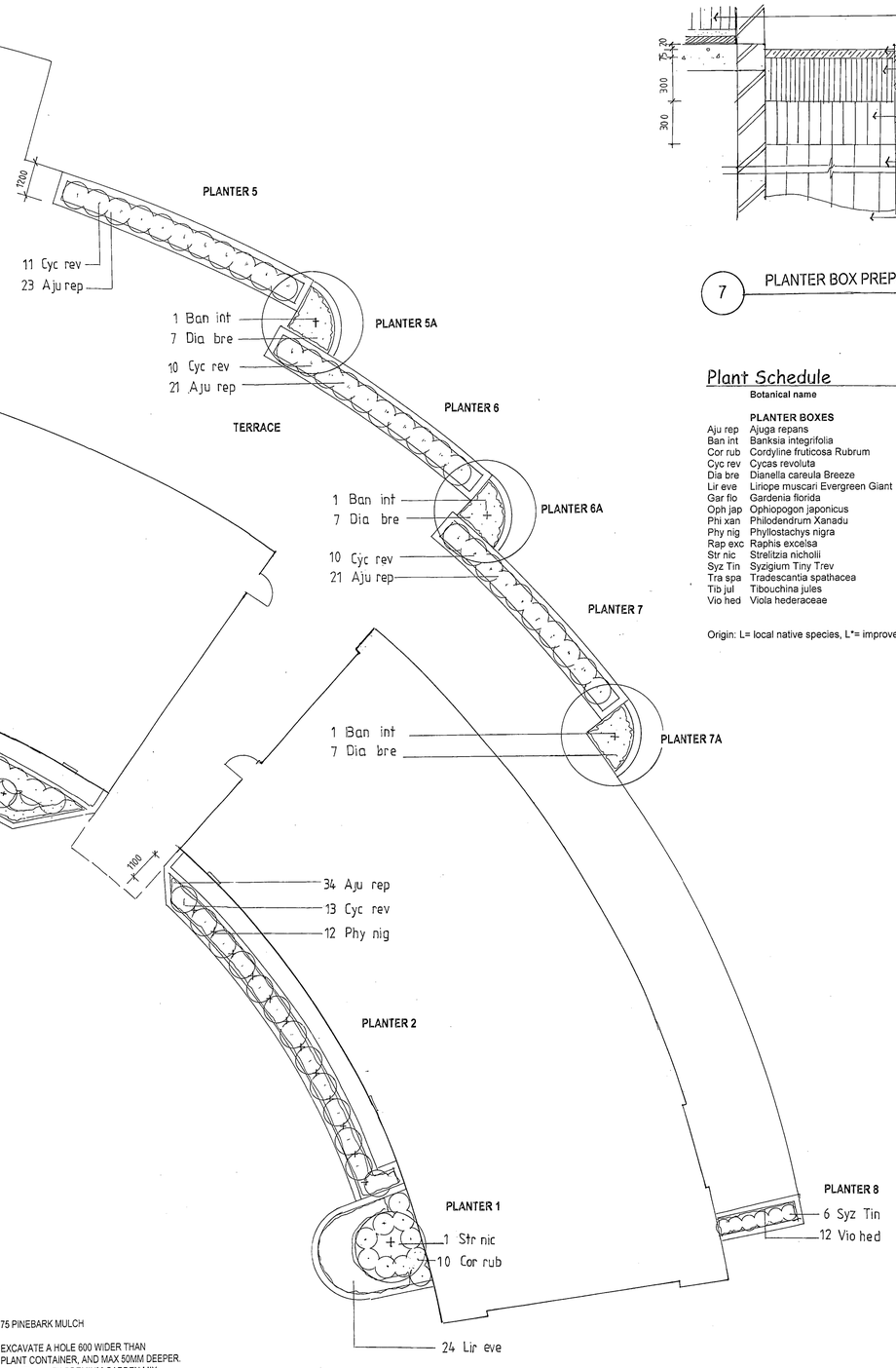
3 TURF — SECTION SCALE 1:20



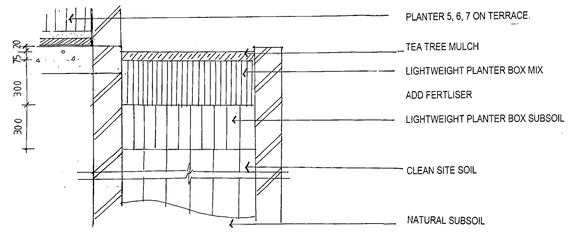
4 PLANTER BOX PREPARATION — SECTION SCALE 1:20



5 MATURE TREE PLANTING — SECTION SCALE 1:20



6 PLANTING PLAN - PLANTERS 1-8 — PLAN SCALE 1:100



7 PLANTER BOX PREPARATION 5A, 6A, 7A — SECTION SCALE 1:20

Plant Schedule

	Botanical name	Common name	Pot Size	Qty	Mature Height	Origin
	PLANTER BOXES					
Aju rep	Ajuga repans	Bugle flower	150mm	99	0.1m	E
Ban int	Banksia integrifolia	Coastal Banksia	75 litre	3	4m	L
Cor rub	Cordyline fruticosa Rubrum	Ti Plant	5 litre	10	1.5m	E
Cyc rev	Cycas revoluta	Sago Palm	25 litre	44	1m	E
Dia bre	Dianella careula Breeze	Flax Lily	150mm	21	0.6m	L
Lir eve	Liriope muscari Evergreen Giant	Giant Turf Lily	5 litre	24	0.6m	E
Gar flo	Gardenia florida	Gardenia	25 litre	35	1m	E
Oph jap	Ophiopogon japonicus	Mondo Grass	150mm	139	0.2m	E
Phi xan	Philodendrum Xanadu	Xanadu Philodendron	5 litre	33	0.6m	E
Phy nig	Phyllostachys nigra	Black Bamboo	25 litre	12	4m	E
Rap exc	Raphis excelsa	Lady Palm	100 litre	2	3m	E
Str nic	Strelitzia nicholii	Giant Bird of Paradise	100 litre	1	3m	E
Syz Tin	Syzigium Tiny Trev	Dwarf Lillypilly	5 litre	29	1.5m	L*
Tra spa	Tradescantia spathacea	Rhoeo	150mm	6	0.3m	E
Tib jul	Tibouchina jules	Jules Tibouchina	25 litre	7	2m	E
Vio hed	Viola hederaceae	Native Violet	150mm	363	0.1m	L

Origin: L= local native species, L*= improved cultivar of local species, N =native species, E= Exotic

NO.	DATE	AMENDMENTS
	18.6.07	ISSUED FOR TENDER

BAYVIEW GOLF CLUB
PROPOSED GOLF CLUBHOUSE
PITTWATER ROAD BAYVIEW

LANDSCAPE DETAILS 2

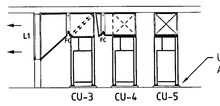
HLS
LANDSCAPE ARCHITECT
LINDY LEAN AAILA
PO BOX 313 ASHFIELD 2131
PH 9797 9366 FAX 9716 6034

HODGES SHORTEN
ARCHITECTS
SUITE 82, 47 NERIDAH ST
CHATSWOOD NSW 2067
PH 9419 5199 FAX 9419 5632

SCALE 1:100 OR AS SHOWN

DATE 6.6.07

SHEET 2 OF 2 | DWG NO. L02 | REV.

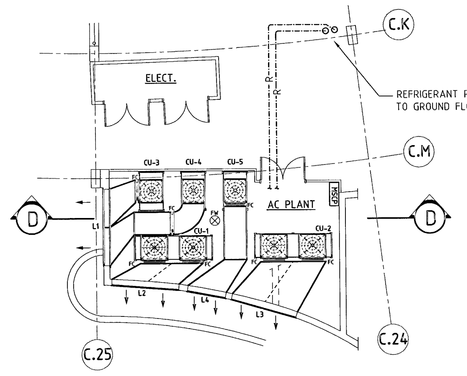


SECTION D-D

LOUVRE SCHEDULE

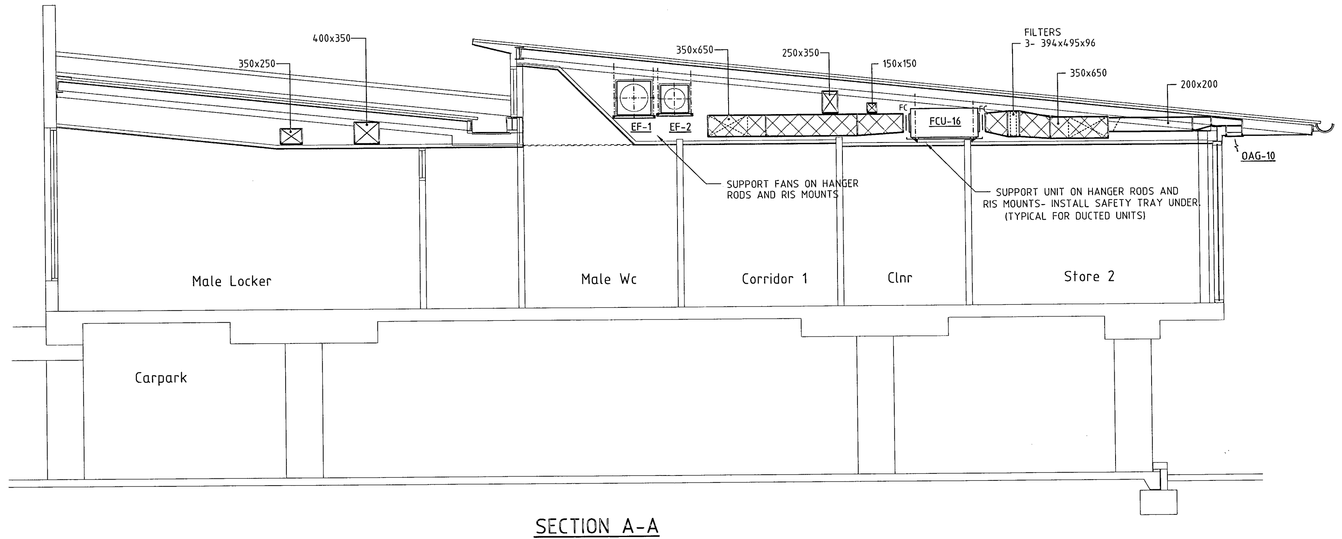
L1- 2500x1000	* (BY CONTRACTOR)
L2- 2200x1000	
L3- 2200x1000	
L4- 1200x1000	

* TO BE EQUAL TO AIR GRILLES RA-45, HALF CHEVRON- THIS TYPE HAS LIMITED WEATHER PROOFING. DUCT CONNECTIONS MAY REQUIRE DRAINING TO GARDEN OR FW.



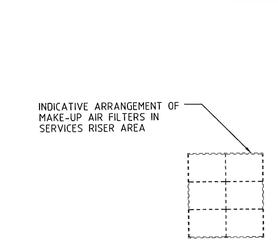
PART PLAN- PLANTROOM

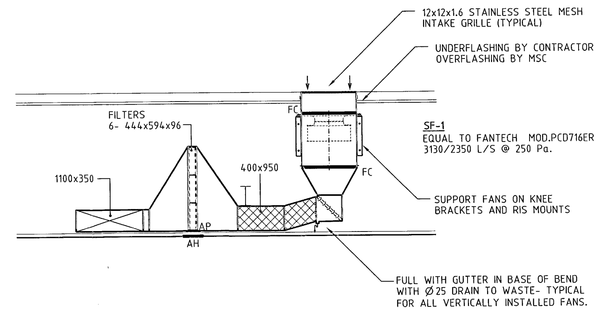
SCALE- 1:100



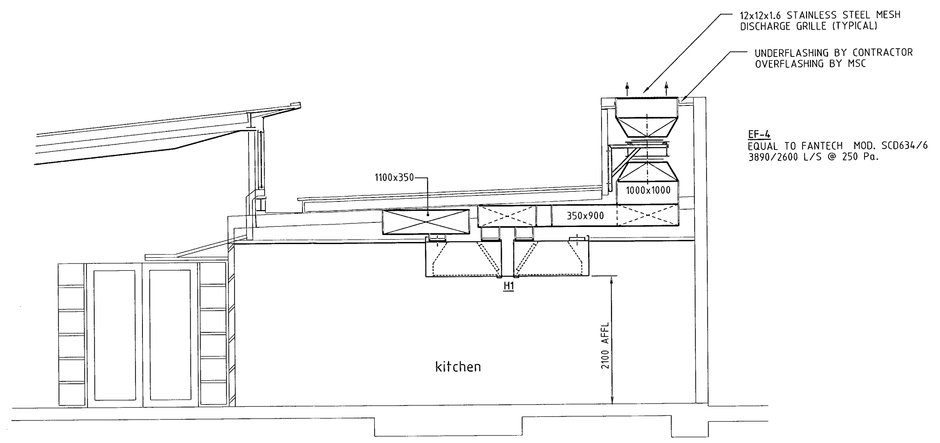
SECTION A-A

A/C UNIT SCHEDULE		
	REF. No.	MODEL
SYSTEM 1	FCU-1	DAIKIN MOD. FXFQ125MVE
	FCU-2 TO 6	DAIKIN MOD. FXFQ125MVE
SYSTEM 2	FCU-7, 8, 11, 12	DAIKIN MOD. FXFQ100MVE
	FCU-9, 10, 13, 14	DAIKIN MOD. FXFQ100MVE
SYSTEM 3	FCU-15	DAIKIN MOD. FXMQ100MVE
	FCU-16	DAIKIN MOD. FXMQ250MVE
SYSTEM 4	FCU-17	DAIKIN MOD. FXMQ250MVE
SYSTEM 5	FCU-18 & 19	DAIKIN MOD. FXFQ125MVE
	FCU-20	DAIKIN MOD. FXFQ200MVE
	CU-1	DAIKIN MOD. REYQ28MY1B
	CU-2	DAIKIN MOD. REYQ30MY1B
	CU-3	DAIKIN MOD. REYQ12MY1B
	CU-4	DAIKIN MOD. REYQ10MY1B
	CU-5	DAIKIN MOD. RXYQ16MY1B





SECTION C-C



SECTION B-B

2007/242
CONSTRUCTION CERTIFICATE No.
Date 26/11/07
BRUCE GAAL DipArch F.0055
Accredited Certifier
& Principal Certifying Authority

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	ADO	TENDER ISSUE	

MECHANICAL ELECTRICAL HYDRAULICS FIRE PROTECTION TRANSPORTATION TELECOMMUNICATIONS AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9229
FAX (02) 9438 2785

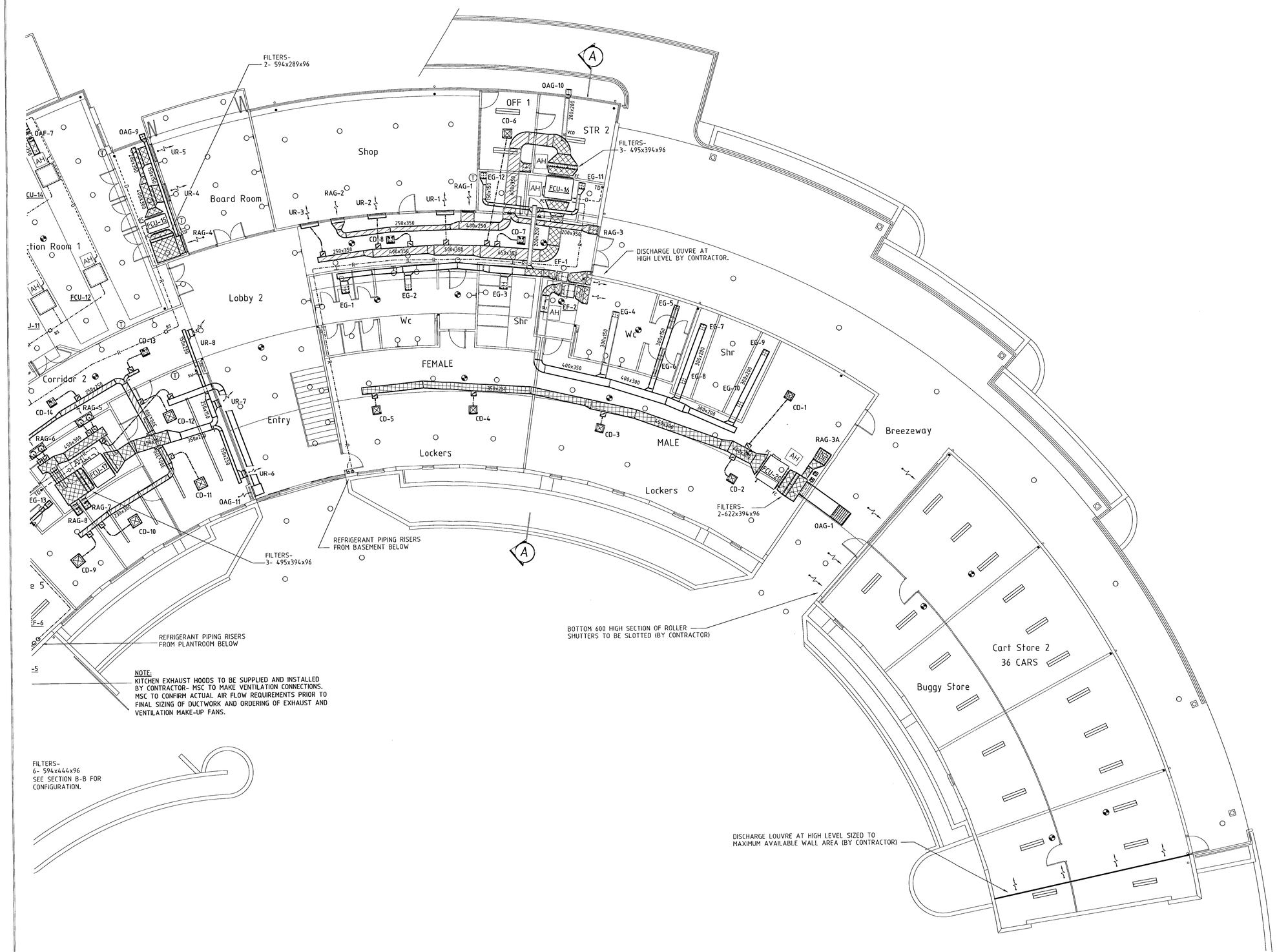
ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: MECHANICAL SERVICES
GROUND FLOOR PLAN EAST

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
ADO	DMS	1:100	15192	M01	0
DRAWN	DATE	No IN SET			
ADO	JUNE 2006	1 OF 2			

B1-100



LEGEND

- DUCTWORK-25 mm INTERNAL INSULATION
- CD5 — CEILING DIFFUSER WITH PLENUM
- EG5 — EXHAUST/RA GRILLE
- UNIVERSAL REGISTER WITH S.S.D/O.B.D.
- FLEXIBLE DUCT AND SPIGOT DAMPER
- DOOR RELIEF GRILLE- 500x300 (TYP.)
- —R— REFRIGERANT PIPING
- —D— Ø32 CONDENSATE DRAIN PIPING
- TD — DRAIN TUNDISH
- FC — FLEXIBLE CONNECTION
- VCD — VOLUME CONTROL DAMPER
- T — ROOM SENSOR WITH CONTROL PAD
- AH — ACCESS HATCH BY BUILDER

GRILLE AND DIFFUSER SCHEDULE

	NO	AIR QTY.	NECK SIZE	BLOW	FLEX DIA	MISC
	CD-1	140 L/S	375 X 375	4 WAY	250	
	CD-2 & 3	250 L/S	375 X 375	4 WAY	300	
	CD-4 & 5	160 L/S	375 X 375	4 WAY	250	
	CD-6	200 L/S	375 X 375	4 WAY	300	
	CD-7 & 8	125 L/S	225 X 225	2 WAY	250	
	CD-9 & 10	130 L/S	375 X 375	4 WAY	250	
	CD-11 & 12	170 L/S	375 X 375	4 WAY	250	
	CD-13 TO 15	80 L/S	225 X 225	2 WAY	200	
	UR-1 TO 3	250 L/S	900 X 300			O.B.D.
	UR-4 & 5	240 L/S	900 X 250			"
	RAG-1 & 2	340 L/S	650 X 300			O.B.D.
	RAG-3	220 L/S	350 X 350			"
	RAG-3A	0/700 L/S	600 X 600			"
	RAG-4	405 L/S	900 X 250			"
	RAG-5 & 6	400 L/S	1100 X 200			"
	RAG-7 & 8	110 L/S	250 X 250			"
*	SG-1 & 2	585 L/S	1800 X 200			
*	SG-3 & 4	600 L/S	3750 X 100			
	OAG-1	260/960 L/S	700 X 700			O.B.D.
	OAG-2	290 L/S	500 X 500			"
	OAG-3 & 4	360 L/S	450 X 450			"
	OAG-5 TO 8	260 L/S	350 X 350			"
	OAG-9	75 L/S	250 X 250			"
	OAG-10	120 L/S	300 X 300			"
	OAG-11	180 L/S	500 X 250			"
	EG-1 & 3	150 L/S	300 X 300			O.B.D.
	EG-2	100 L/S	250 X 250			"
	EG-4	120 L/S	250 X 250			"
	EG-5 & 6	50 L/S	200 X 200			"
	EG-7 TO 10	90 L/S	250 X 250			"
	EG-11 & 12	45 L/S	200 X 200			"
	EG-13	35 L/S	200 X 200			"
	EG-14 & 15	60 L/S	200 X 200			"
	EG-16	80 L/S	200 X 200			"
	EG-17 TO 19	75 L/S	200 X 200			"

NOTE: CEILING CONSTRUCTION IS SET PLASTERBOARD ON STEEL FURRING CHANNELS

* LINEAR BAR GRILLE WITH MOUNTING FRAME EQUAL TO HOLYOAKE LD-1200.

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ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07		TENDER ISSUE	

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
COMMUNICATIONS
TELECOMMUNICATIONS
AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
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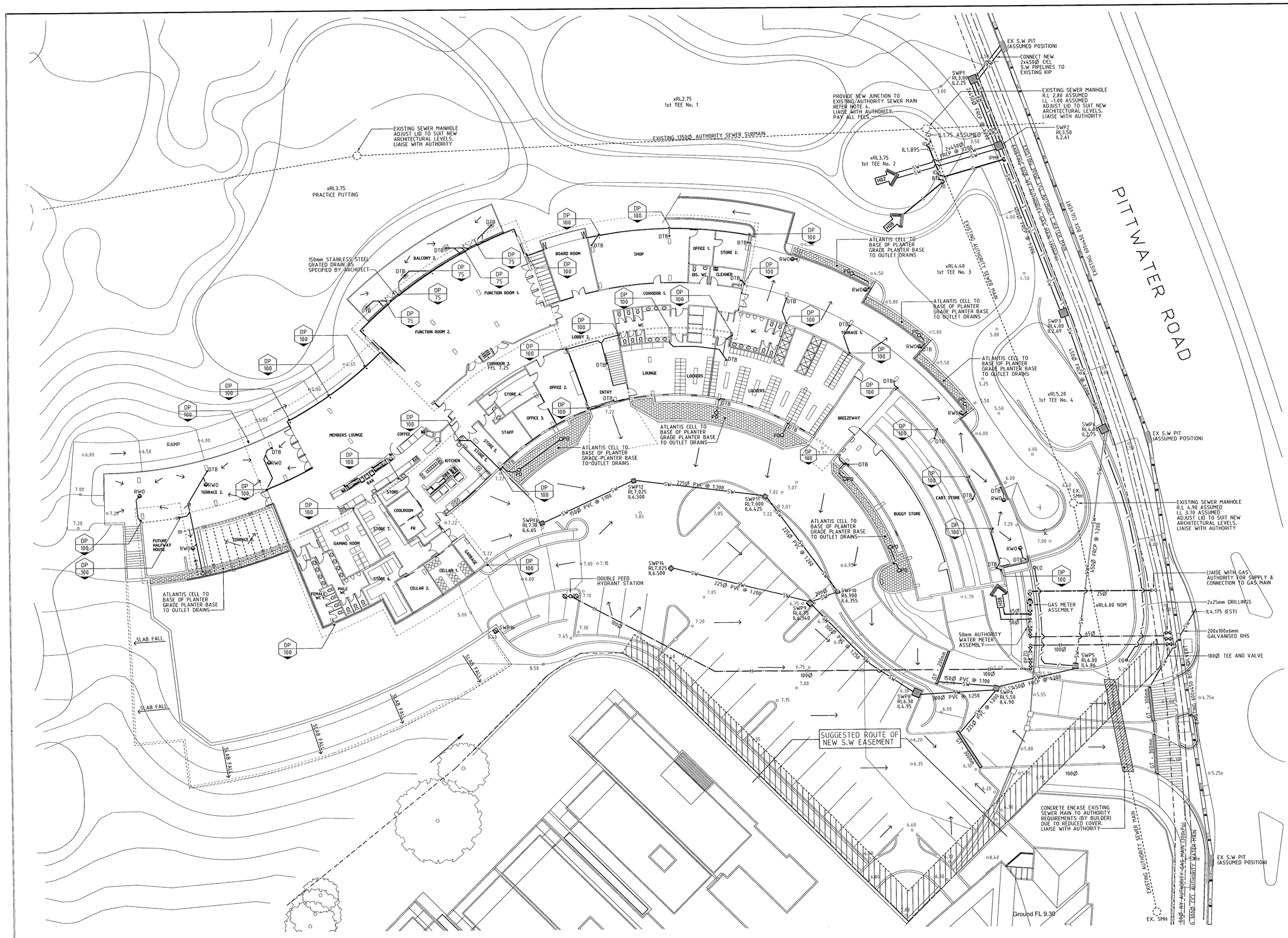
ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: MECHANICAL SERVICES
GROUND FLOOR PLAN EAST

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
ADO	DMS	1:100	15192	M02	0
DRAWN	DATE	No IN SET			
ADO	APR. 2006	2 OF 2			

B1-100



LEGEND :

STORMWATER -

SW	STORMWATER PIPELINE
	100Ø SUBSOIL PIPELINE
RWO	RAIN WATER OUTLET - GALVIN ENGINEERING 200mm STAINLESS STEEL FLOOR DRAIN FIG No. 302752SS
PO	PLANTER OUTLET/DRAIN - GALVIN ENGINEERING 100mm PVC/HDPE FIG No. DV4504P
GT - 100	100mm GRATED TRENCH - ACO STAINLESS HEELGUARD 'S' (SYS 100) - 1m CLASS 'A', BOLT DOWN, SOLID EDGE TROUGH
GT - 200	200mm GRATED TRENCH - ACO STAINLESS LADDER (SYS 200) - 0.5m CLASS 'D', BOLT DOWN, SOLID EDGE TROUGH
GT - 300	300mm GRATED TRENCH - ACO STAINLESS LADDER (SYS 300) - 0.5m CLASS 'D', BOLT DOWN, SOLID EDGE TROUGH
	GRATED STORMWATER PIT
	SEALED STORMWATER PIT
CO	CLEAR OUT
PO	PLANTER CLEAR OUT - GALVIN ENGINEERING PLANTER BOX COMBO FIG No. DV4504P
DP	DOWNPIPE
	OVERLAND FLOW
	EXTENT OF RAISED PLANTER BOX WITH ATLANTIC CELL TO BASE (REFER DETAIL)

PLUMBING & DRAINAGE -

S	SANITARY DRAINAGE/PLUMBING PIPELINE
TW	TRADE WASTE PIPELINE
CO	CLEAR OUT
IO	INSPECTION OPENING
FW	FLOOR WASTE
FW/BA	FLOOR WASTE WITH BASKET ARRESTOR
FG/BA	FLOOR GRATE WITH BASKET ARRESTOR
TD	TUNDISH
IS	INSPECTION SHAFT

WATER & NATURAL GAS -

	COLD WATER PIPELINE
	HOT WATER PIPELINE HWF - HOT WATER FLOW HWR - HOT WATER RETURN
	WARM WATER PIPELINE
	NATURAL GAS PIPELINE
	HYDRANT PIPELINE
	TEMPERING VALVE
HT	HOSE COCK
	ISOLATION VALVE
	HYDRANT STATION
RPZD	REDUCED PRESSURE ZONE DEVICE
	WATER METER ASSEMBLY
	GAS METER ASSEMBLY
	36.0m FIRE HOSE REEL

MISC. -

R.L	REDUCED LEVEL
I.L	INVERT LEVEL
DTB	DROP TO BELOW
RFB	RISE FROM BELOW
W	TOILET SUITE
B	VANITY BASIN
H	HAND BASIN
Sh	SHOWER
IM	ICE MAKER
GW	GLASS WASHER
DW	DISHWASHER
CS	CLEANERS SINK

B1–200

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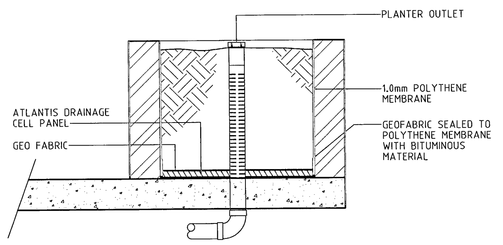
STORMWATER PIT SCHEDULE			
SWP	SIZE	COVER	
SWP1	900 X 900	GRATED CLASS 'B'	
SWP2	900 X 900	GRATED CLASS 'B'	
SWP3	900 X 900	GRATED CLASS 'B'	
SWP4	900 X 900	GRATED CLASS 'B'	
SWP5	600 X 600	GRATED CLASS 'B'	
SWP6	600 X 600	GRATED CLASS 'D'	
SWP7	(NOT USED)	(NOT USED)	
SWP8	900 X 900	GRATED CLASS 'D'	
SWP9	600 X 600	GRATED CLASS 'D'	
SWP10	450 X 450	GRATED CLASS 'D'	
SWP11	450 X 450	GRATED CLASS 'D'	
SWP12	450 X 450	GRATED CLASS 'D'	
SWP13	450 X 450	GRATED CLASS 'D'	
SWP14	450 X 450	GRATED CLASS 'D'	
SWP15	(NOT USED)	(NOT USED)	
SWP16	450 X 450	GRATED CLASS 'B'	BOTTOM OUTLET

NOTES

1. ALL UNDERGROUND PUBLIC UTILITY SERVICES IN THE FOOTPATH RESERVE SHALL BE LOCATED PRIOR TO COMMENCEMENT OF WORKS. STORMWATER DRAINAGE LOCATED IN FOOTPATH SHALL BE CONSTRUCTED UNDER SUPERVISION OF COUNCIL.
2. ALL STORMWATER PIPEWORK TO BE UPVC SEWER GRADE UNLESS NOTED.
3. REFER TO SURVEYORS DRAWINGS FOR EXISTING LEVELS.
4. CONTRACTOR TO DETERMINE ALL EXISTING LEVELS PRIOR TO THE COMMENCEMENT OF WORK TO ENSURE ADEQUATE FALL AND COVER AVAILABLE FOR PIPEWORK. WHERE ADEQUATE COVER IN TRAFFICABLE AREAS CANNOT BE ACHIEVED, PIPES TO BE COVERED IN CONCRETE. CONNECTION TO EXISTING SEWER MAIN TO BE EXPOSED AND PIPESIZES AND INVERT LEVELS CONFIRMED TO ENGINEER BEFORE COMMENCEMENT OF WORK.
5. PROVIDE STEP IRONS IN PITS 1.2M AND GREATER IN DEPTH.
6. SURFACE OVERLAND FLOW PATHS SHALL REMAIN UNOBSTRUCTED AT ALL TIMES.
7. PIPEWORK SHOWN FOR CLARITY ONLY FINAL LOCATION TO BE DETERMINED ON SITE.
8. ALL STORMWATER TO BE INSTALLED IN ACCORDANCE WITH PITTWATER COUNCIL AND AS 3500 REGULATIONS FOR STORMWATER DISPOSAL.
9. ALL GRATES & LIDS ON PITS TO BE BOLTED, HINGED, GALVANISED STEEL AND HEEL PROOF.
10. MINIMUM OUTLET SIZE FROM INDIVIDUAL DOWNPIPES TO BE 100Ø @ 1:100 MIN UNLESS OTHERWISE NOTED.
11. EXCAVATE AND MAKE GOOD IN GROUND AS NECESSARY IN MATERIAL AS FOUND.
12. CONTRACTOR TO PROVIDE ALL NECESSARY DOCUMENTATION TO LOCAL AUTHORITY, ARRANGE FOR INSPECTIONS AND PAY ALL FEES.
13. PROVIDE 150mm CONCRETE LINTELS WHERE STORMWATER PIPELINES CROSS SEWER MAIN PIPELINES.
14. ALL FRCP PIPES SHALL BE CLASS '4' AND INSTALLED TO AS3725.



TYPICAL - PLANTER BOX DETAIL

SCALE 1:20

2007/2412 CONSTRUCTION CERTIFICATE No. Date 26/11/07 BRUCE GAAL DIPNR - P.0055 Accredited Certifier & Principal Certifying Authority

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL HYDRAULICS FIRE PROTECTION TELECOMMUNICATIONS AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
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ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: HYDRAULIC SERVICES
SITE STORMWATER & SITE SERVICES

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:200	15221	H01	0
DRAWN TB	DATE APR. 2006	No IN SET 1 OF 8			

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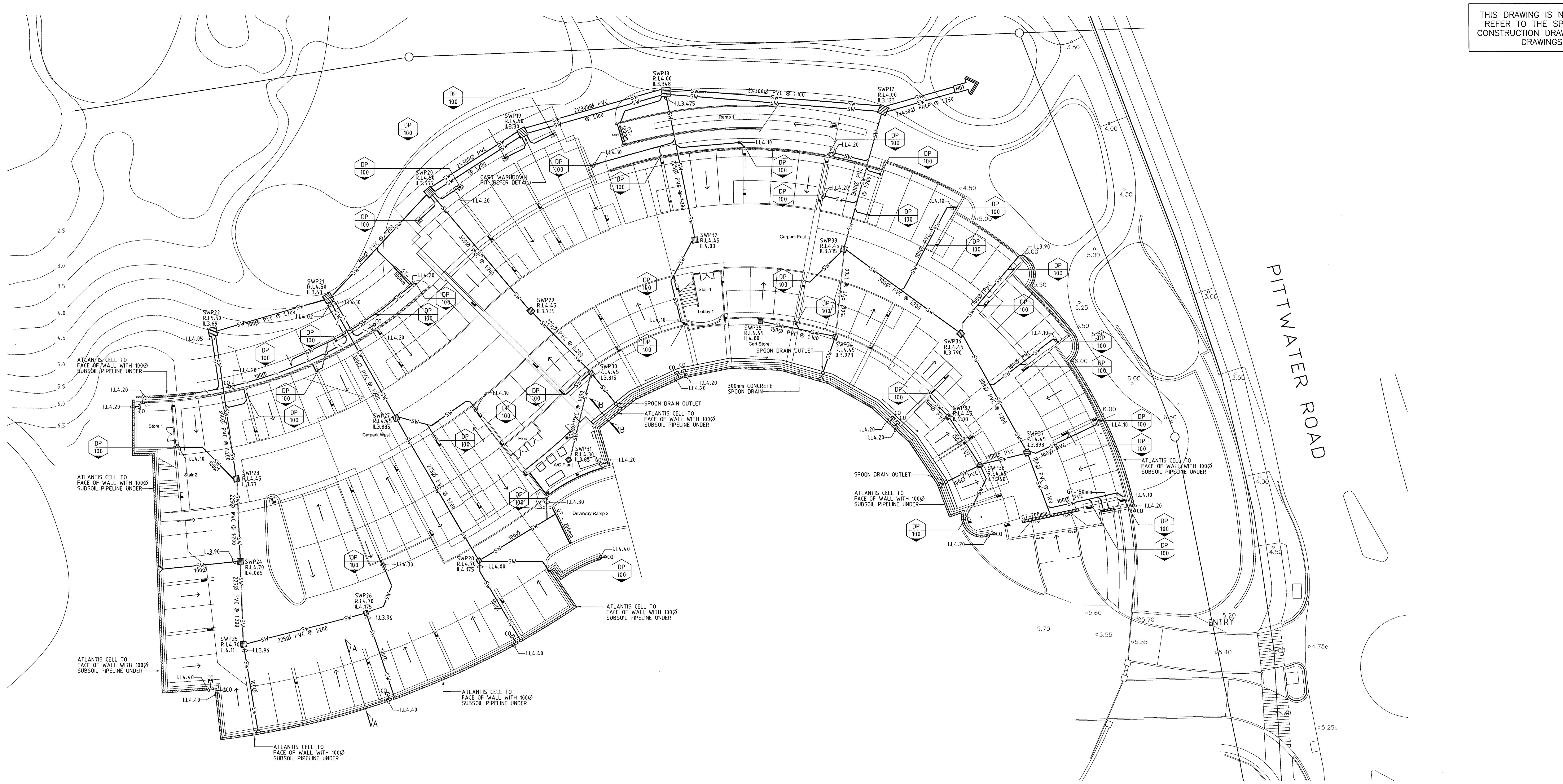
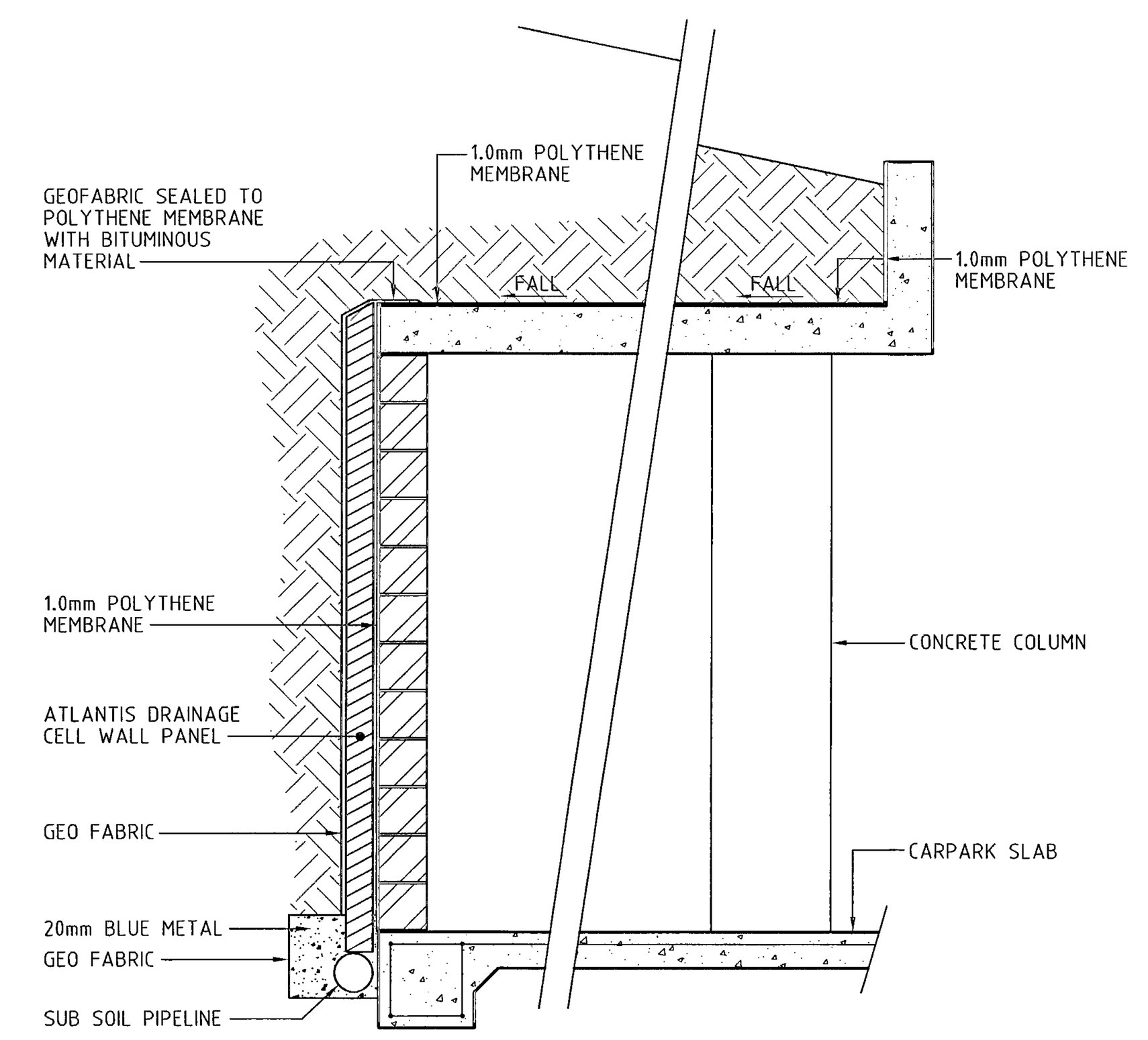


STORMWATER PIT SCHEDULE

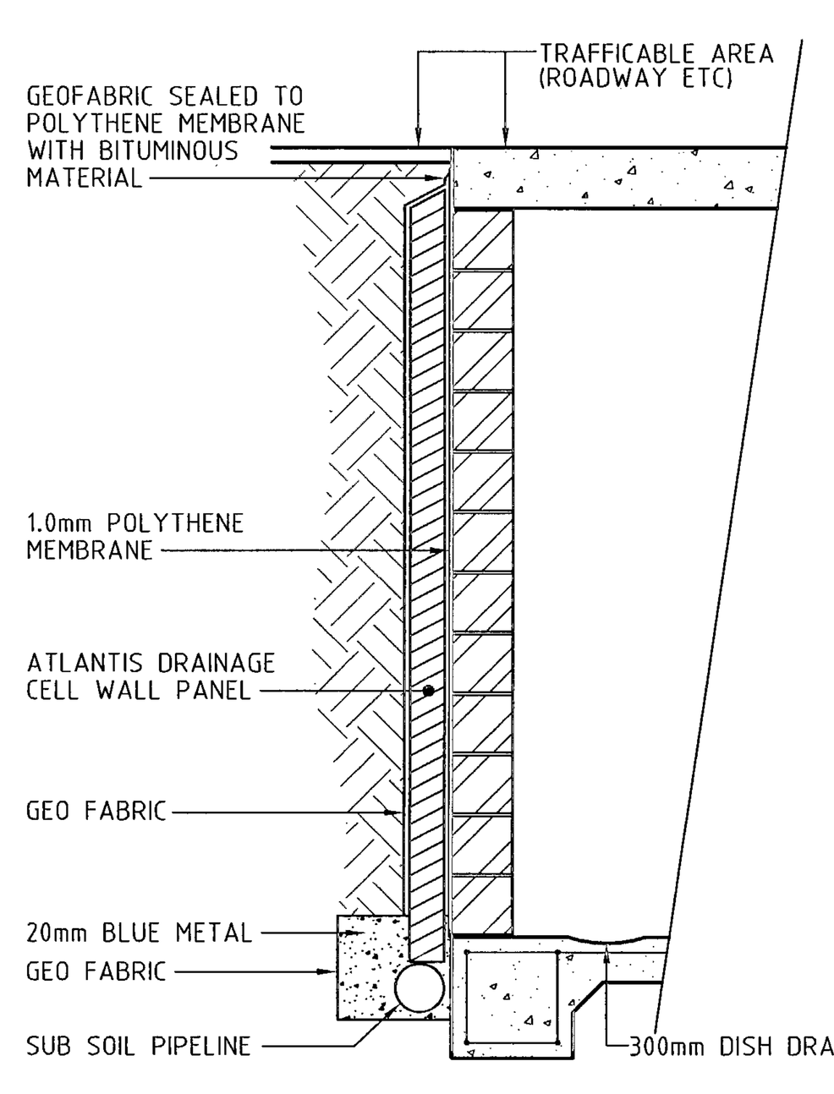
SWP	SIZE	COVER
SWP17	900 X 900	GRATED CLASS 'B'
SWP18	900 X 900	GRATED CLASS 'B'
SWP19	900 X 900	GRATED CLASS 'B'
SWP20	900 X 900	GRATED CLASS 'B'
SWP21	900 X 900	GRATED CLASS 'B'
SWP22	900 X 900	GRATED CLASS 'B'
SWP23	600 X 600	GRATED CLASS 'D'
SWP24	600 X 600	GRATED CLASS 'D'
SWP25	600 X 600	GRATED CLASS 'D'
SWP26	450 X 450	GRATED CLASS 'D'
SWP27	600 X 600	GRATED CLASS 'D'
SWP28	450 X 450	GRATED CLASS 'D'
SWP29	600 X 600	GRATED CLASS 'D'
SWP30	450 X 450	GRATED CLASS 'D'
SWP31	450 X 450	GRATED CLASS 'A'
SWP32	600 X 600	GRATED CLASS 'D'
SWP33	600 X 600	GRATED CLASS 'D'
SWP34	450 X 450	GRATED CLASS 'D'
SWP35	450 X 450	GRATED CLASS 'D'
SWP36	600 X 600	GRATED CLASS 'D'
SWP37	600 X 600	GRATED CLASS 'D'
SWP38	450 X 450	GRATED CLASS 'D'
SWP39	450 X 450	GRATED CLASS 'D'

NOTES :

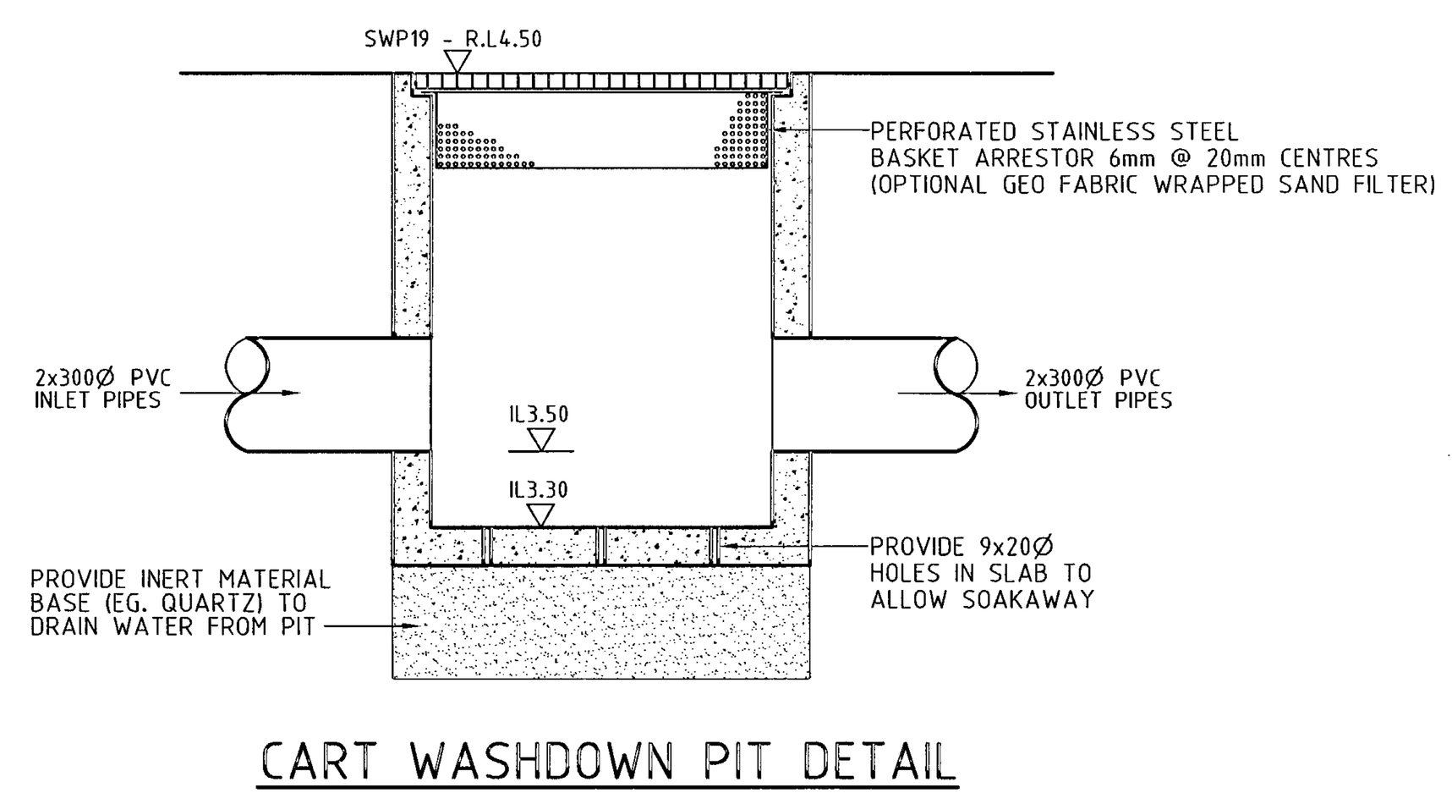
1. FOR NOTES AND LEGEND GENERALLY REFER DRAWING 15221H01.



SECTION A-A
NTS



SECTION B-B
NTS



CART WASHDOWN PIT DETAIL
SCALE 1:20

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL ELECTRICAL HYDRAULICS FIRE PROTECTION TRANSPORTATION TELECOMMUNICATIONS AUTOMATION
WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
FAX (02) 9439 2785

ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: HYDRAULIC SERVICES -LOWER GROUND CARPARK
SITE STORMWATER

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:200	15221	H02	0
DRAWN	DATE	No IN SET			
TB	APR. 2006	2 OF 8			

B1-200

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.

NOTES :

1. FOR NOTES AND LEGEND GENERALLY REFER DRAWING 15221H01.

EQUIPMENT SCHEDULE

No.	EQUIPMENT	GAS (MJ/hr)	COLD WATER	HOT WATER	DRAIN
K6	SINK WITH SPRAY RINSE ARM	-	✓	✓	✓
K8	UPRIGHT DISHWASHER	-	-	✓	✓
K10	SINK WITH SPRAY RINSE ARM	-	✓	✓	✓
K12	HAND BASIN	-	✓	✓	✓
K13	4 BURNER RANGE	198	-	-	-
K15	FRYERS (2 OFF)	128.7	-	-	-
K16	GAS SALAMANDER	31.5	-	-	-
K18	BBQ	100	-	-	-
K19	FLAT PLATE GRIDDLE	45	-	-	-
K21	COMBI OVEN	-	✓	-	✓
K22	COMBI OVEN	-	✓	-	✓
K23	BRATT PAN	75	✓	-	-
K25	BAIN MARIE	-	-	-	-
K26	MICROWAVE	-	-	-	-
K29	HAND BASIN	-	✓	✓	✓
K34	HAND BASIN	-	✓	✓	✓
C5	COFFE MACHINE	-	✓	-	✓
B6	POST MIX STATION/ICE WELL	-	-	-	✓
B12	POST MIX STATION/ICE WELL	-	-	-	✓
B17	FILTERED WATER STATION	-	✓	-	✓
B18	UNDER BENCH HAND BASIN	-	✓	✓	✓
B23	HAND BASIN	-	✓	✓	✓
B26	GLASS WASHER	-	✓	✓	✓
B27	ICE MACHINE	-	✓	-	✓

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL ELECTRICAL HYDRAULICS FIRE PROTECTION TRANSPORTATION TELECOMMUNICATIONS AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
FAX (02) 9439 2785

ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

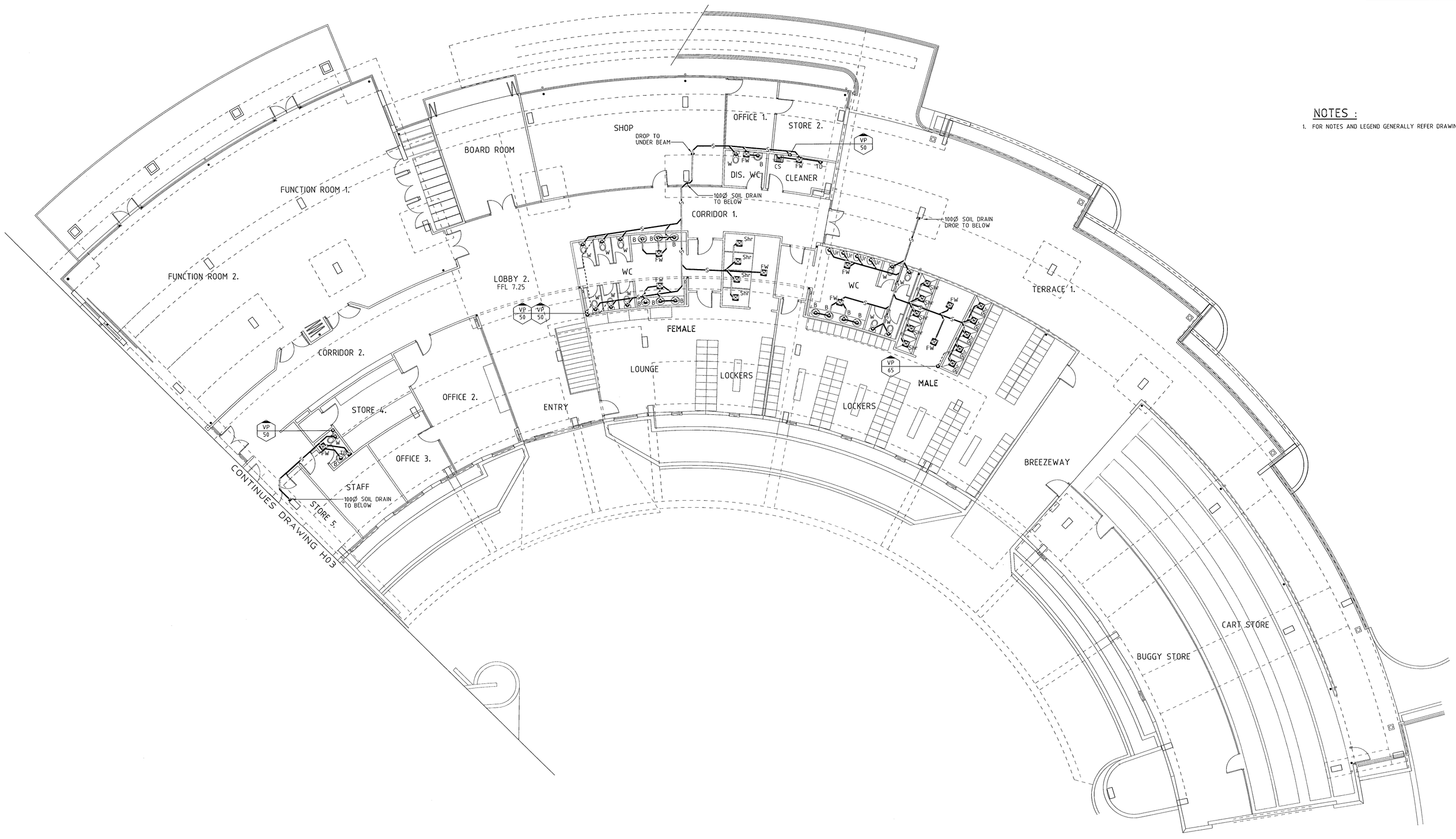
PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: HYDRAULIC SERVICES WEST GROUND FLOOR PLAN
SANITARY DRAINAGE & PLUMBING

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H03	0
DRAWN TB	DATE APR. 2006	No IN SET 3 OF 8			

B1-100

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.



NOTES :

1. FOR NOTES AND LEGEND GENERALLY REFER DRAWING 15221H01.

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL
ELECTRICAL
HYDRAULIC
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS
AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
FAX (02) 9439 2785

ARCHITECT	HODGES SHORTEN ARCHITECTS PTY LTD SUITE 82 CHATSWOOD VILLAGE 47 NERIDAH STREET, CHATSWOOD 2067
PROJECT	BAYVIEW GOLF CLUB PITTWATER ROAD, BAYVIEW
DRAWING	HYDRAULIC SERVICES EAST GROUND FLOOR PLAN SANITARY DRAINAGE & PLUMBING

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H04	0
DRAWN	DATE	No IN SET			
TB	APR. 2006	4 OF 8			

B1-100

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.

NOTES :

1. FOR NOTES AND LEGEND GENERALLY REFER DRAWING 1522H01.
2. ALL FIXTURES TO HAVE ISOLATION VALVES AT ALL LOCATIONS.

EQUIPMENT SCHEDULE

No.	EQUIPMENT	GAS (MJ/hr)	COLD WATER	HOT WATER	DRAIN
K6	SINK WITH SPRAY RINSE ARM	-	√	√	√
K8	UPRIGHT DISHWASHER	-	-	√	√
K10	SINK WITH SPRAY RINSE ARM	-	√	√	√
K12	HAND BASIN	-	√	√	√
K13	4 BURNER RANGE	198	-	-	-
K15	FRYERS (2 OFF)	128.7	-	-	-
K16	GAS SALAMANDER	31.5	-	-	-
K18	BBQ	100	-	-	-
K19	FLAT PLATE GRIDDLE	45	-	-	-
K21	COMBI OVEN	-	√	-	√
K22	COMBI OVEN	-	√	-	√
K23	BRATT PAN	75	√	-	-
K25	BAIN MARIE	-	-	-	-
K26	MICROWAVE	-	-	-	-
K29	HAND BASIN	-	√	√	√
K34	HAND BASIN	-	√	√	√
C5	COFFE MACHINE	-	√	-	√
B6	POST MIX STATION/ICE WELL	-	-	-	√
B12	POST MIX STATION/ICE WELL	-	-	-	√
B17	FILTERED WATER STATION	-	√	-	√
B18	UNDER BENCH HAND BASIN	-	√	√	√
B23	HAND BASIN	-	√	√	√
B26	GLASS WASHER	-	√	√	√
B27	ICE MACHINE	-	√	-	√

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL ELECTRICAL HYDRAULIC FIRE PROTECTION TRANSPORTATION TELECOMMUNICATIONS AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
FAX (02) 9439 7185

ARCHITECT: HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

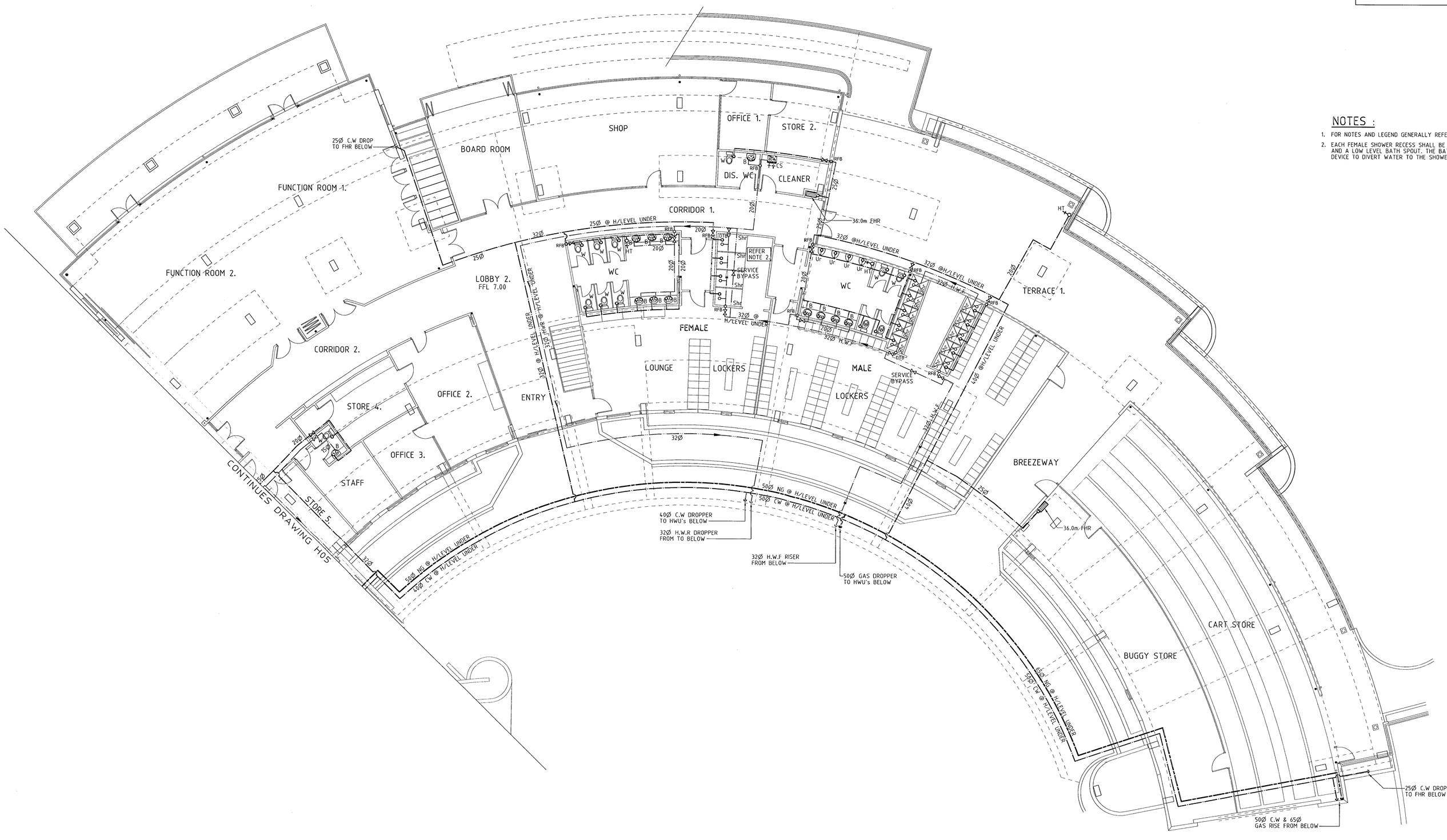
PROJECT: BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING: HYDRAULIC SERVICES WEST GROUND FLOOR PLAN
HOT, COLD, WARM WATER & GAS SERVICES

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H05	0
DRAWN	DATE	No IN SET			
TB	APR. 2006	5 OF 8			

B1-100

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.



NOTES :

1. FOR NOTES AND LEGEND GENERALLY REFER DRAWING 15221H01.
2. EACH FEMALE SHOWER RECESS SHALL BE FITTED WITH A HIGH LEVEL SHOWER ROSE AND A LOW LEVEL BATH SPOUT. THE BATH SPOUT IS TO BE FITTED WITH A WATER DIVERSION DEVICE TO DIVERT WATER TO THE SHOWER ROSE.

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL, ELECTRICAL, HYDRAULIC, FIRE PROTECTION, TRANSPORTATION, TELECOMMUNICATIONS, AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
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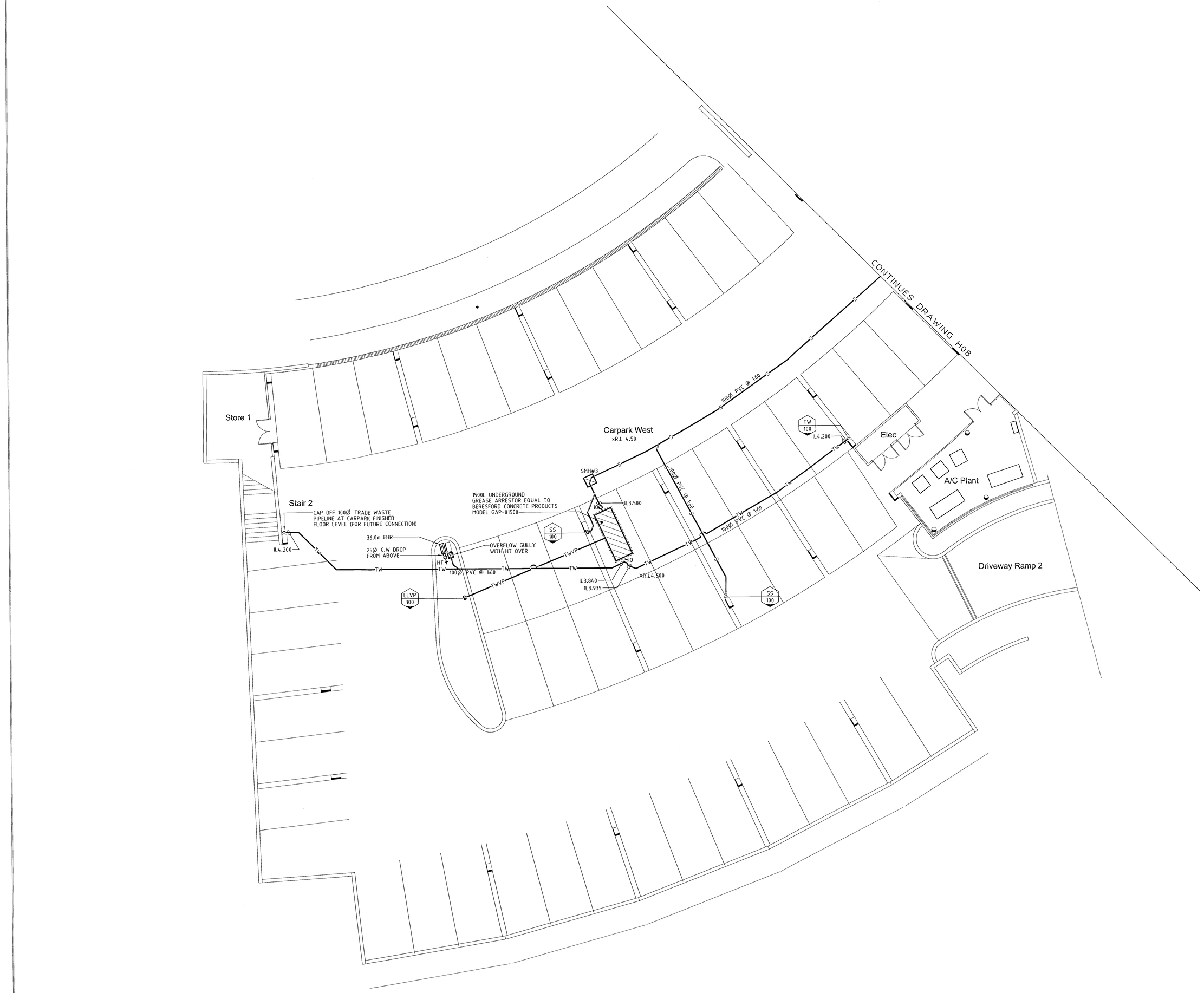
FAX (02) 9439 2785

ARCHITECT	HODGES SHORTEN ARCHITECTS PTY LTD SUITE 82 CHATSWOOD VILLAGE 47 NERIDAH STREET, CHATSWOOD 2067
PROJECT	BAYVIEW GOLF CLUB PITTWATER ROAD, BAYVIEW
DRAWING	HYDRAULIC SERVICES EAST GROUND FLOOR PLAN HOT, COLD, WARM WATER & GAS SERVICES

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H06	0
DRAWN	DATE	No IN SET			
TB	APR. 2006	6 OF 8			

B1-100

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.



B1–100

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL ELECTRICAL HYDRAULICS FIRE PROTECTION TRANSPORTATION TELECOMMUNICATIONS AUTOMATION

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FAX (02) 9436 2785

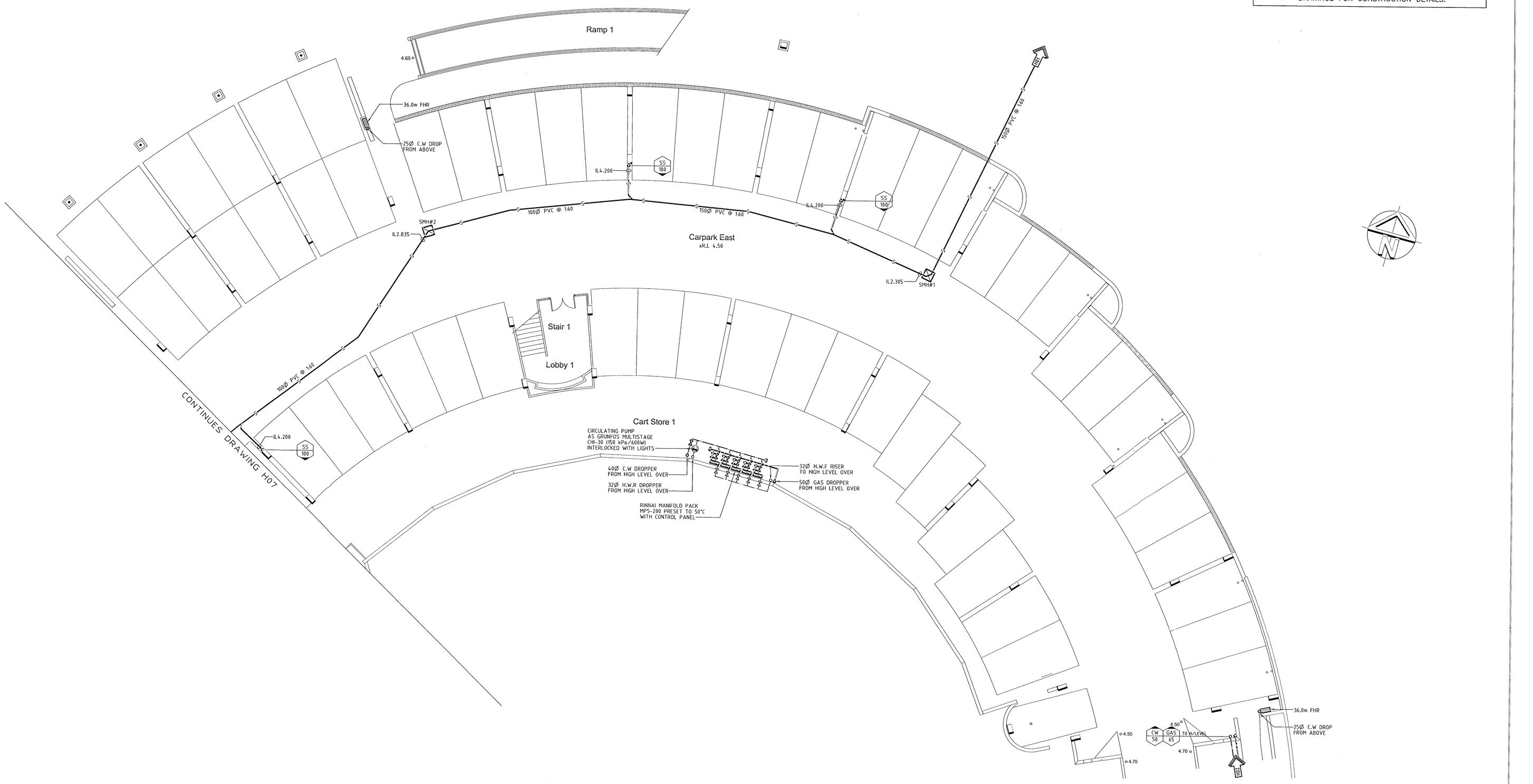
ARCHITECT HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING HYDRAULIC SERVICES WEST CARPARK FLOOR PLAN
SANITARY DRAINAGE & PLUMBING, HOT & COLD WATER, FIRE HOSE REELS AND GAS SERVICES

DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H07	0
DRAWN TB	DATE APR. 2006	No IN SET 7 OF 8			

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION. REFER TO THE SPECIFICATION, SERVICE CONTRACTOR'S CONSTRUCTION DRAWINGS AND CURRENT ARCHITECTURAL DRAWINGS FOR CONSTRUCTION DETAILS.



B1-100

ISSUE	DATE	BY	AMENDMENT	APPROVED
0	20.06.07	DMS	TENDER ISSUE	DMS
1	24.07.06	DMS	D.A SUBMISSION	DMS

MECHANICAL
ELECTRICAL
HYDRAULICS
FIRE PROTECTION
TRANSPORTATION
TELECOMMUNICATIONS
AUTOMATION

WALLIS & SPRATT PTY. LTD.
CONSULTING CHARTERED ENGINEERS
Incorporated in New South Wales
SUITE 504, LEVEL 5, 10-12 CLARKE STREET, CROWS NEST, NSW, 2065
TEL (02) 9437 9226
FAX (02) 9436 2780

ARCHITECT HODGES SHORTEN ARCHITECTS PTY LTD
SUITE 82 CHATSWOOD VILLAGE
47 NERIDAH STREET, CHATSWOOD 2067

PROJECT BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW

DRAWING HYDRAULIC SERVICES EAST CARPARK FLOOR PLAN
SANITARY DRAINAGE & PLUMBING, HOT & COLD WATER, FIRE HOSE REELS AND GAS SERVICES

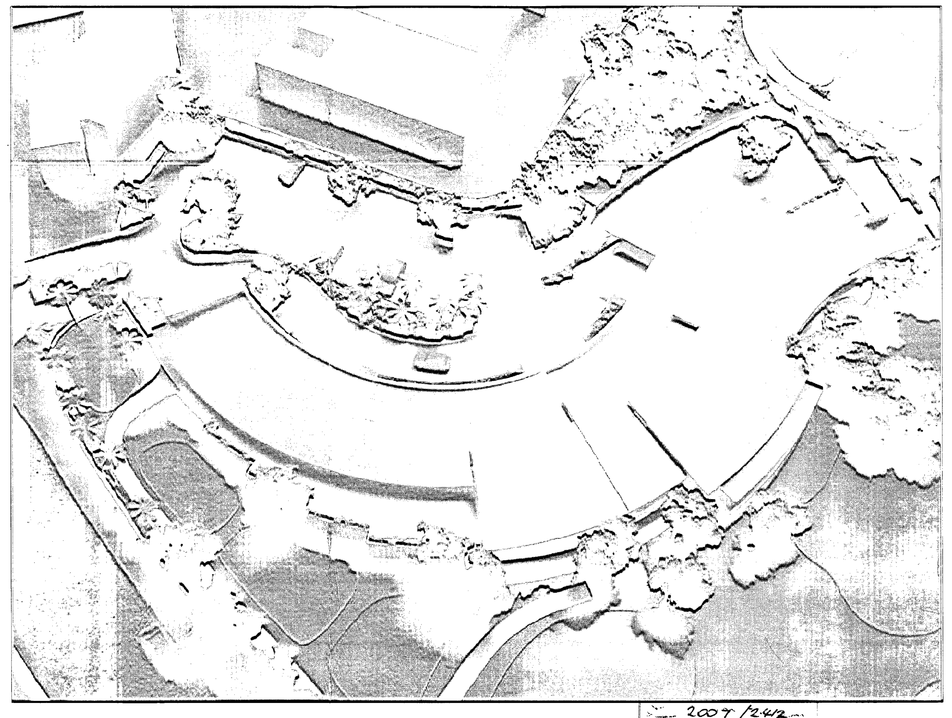
DESIGNED	APPROVED	SCALE	PROJECT No	DRAWING	ISSUE
TB		1:100	15221	H08	0
DRAWN	DATE	No IN SET			
TB	APR. 2006	8 OF 8			

DRAWING

2380.W1	Drawing and Consultant List	nts
W2	Site Plan	1:2000
W3	Part Site Plan	1:200
W4	Parking Floor Setout Plan	1:200
W5	Ground Floor Setout Plan	1:200
W6	Parking Floor Plan Sheet 1	1:100
W7	Parking Floor Plan Sheet 2	1:100
W8	Ground Floor Plan Sheet 1	1:100
W9	Ground Floor Plan Sheet 2	1:100
W10	Roof Plan Sheet 1	1:100
W11	Roof Plan Sheet 2	1:100
W12	Parking Reflected Ceiling Plan Sheet 1	1:100
W13	Parking Reflected Ceiling Plan Sheet 2	1:100
W14	Ground Floor Reflected Ceiling Plan Sheet 1	1:100
W15	Ground Floor Reflected Ceiling Plan Sheet 2	1:100
W16	Elevations and Sections Sheet 1	1:100
W17	Elevations and Sections Sheet 2	1:100
W18	Elevations and Sections Sheet 3	1:100
W19	Elevations and Sections Sheet 4	1:100
W20	Elevations and Sections Sheet 5	1:100
W21	Elevations and Sections Sheet 6	1:100
W22	Window & Door Schedule Sheet 1	1:100
W23	Window & Door Schedule Sheet 2	1:100
W24	Wet Area & Fitments Details Sheet 1	1:50
W25	Wet Area & Fitments Details Sheet 2	1:50
W26	Wet Area & Fitments Details Sheet 3	1:50
W27	Stair and Balustrade Details	1:50
W28	Construction Details Sheet 1	1:5
W29	Construction Details Sheet 2	1:5
W30	Construction Details Sheet 3	1:5
W31	Construction Details Sheet 4	1:5
W32	Construction Details Sheet 5	1:5
W33	Construction Details Sheet 6	1:5
W34	Construction Details Sheet 7	1:5

CONSULTANT

ARCHITECT	HODGES SHORTEN ARCHITECTS PTY LTD Suite 82, Chatswood Village, 47 Neridah Street, Chatswood 2067 Ph. 9419 5199
BUILDING CONSULTANT	EBENEZER CONSTRUCTIONS PTY LTD 96 Kolora Road Ebenezer 2756 Ph. 94579 8550
ELECTRICAL ENGINEER	BARRY C. SMITH & ASSOCIATES PTY LTD 29 Carcoola Crescent, Normanhurst 2076 Ph. 9487 7488
HYDRAULIC ENGINEER	WALLIS & SPRATT PTY LTD 10-12 Clark Street, Crows Nest Ph. 9437 9226
LANDSCAPE ARCHITECT	HLS PTY LTD PO Box 313 Ashfield 1800 Ph. 9797 9366
MECHANICAL ENGINEER	WALLIS & SPRATT PTY LTD 10-12 Clark Street, Crows Nest Ph. 9437 9226
STRUCTURAL ENGINEER CIVIL ENGINEER	LOW AND HOOKE PTY LTD 370 Norton Street, Leichhardt Ph. 9550 9966



2007/1242
CONSTRUCTION CERTIFICATE No.
Date 24/11/07
BRUCE GAAL DIPNR - P.0055
Accredited Certifier
& Principal Certifying Authority

F:\CURRENT DRAWINGS\Bayview comp\CC\New Folder\Plans W1.dwg, 20/06/2007 11:14:38 AM, Hodges Shorten Architects No.3

Amendments

P1 03.05.07 Preliminary CC issue
T1 20.6.07 Tender issue

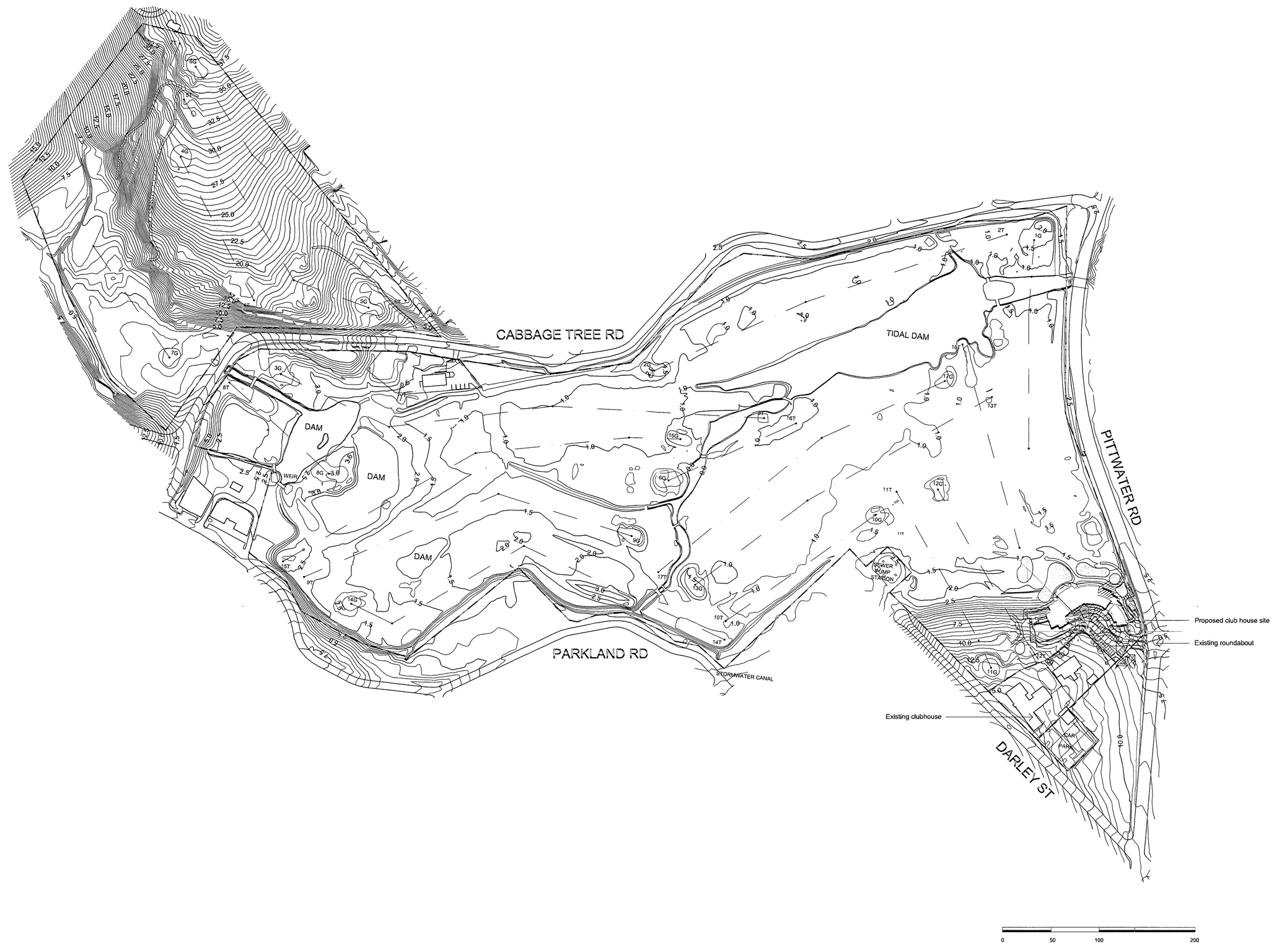
BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Drawing and Consultant List

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village phone 9419 5199
47 Neridah Street Chatswood NSW 2067 fax 9419 5632

Date: 12.12.06
Scale: nts @B1
Drawing No. 2380.W1 T1



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Issue		
P	29.12.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Site Plan

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:2000@81

Drawing No. 2380.W2 T1

AREA OF THE WORKS
SITE FENCE

STOCKPILE AREA

Outline of 18th Green

RL 2.50 nom.
18th Green

Outline of Practice Putting

Trees to be removed

Sewer manhole RL 1.68

RL 3.75 nom.
Practice Putting

Existing Board's sewer line

RL 2.75 nom.
1st Tee 1

Sewer manhole RL 1.60

RL 3.75 nom.
1st Tee 2

Concrete path continues to existing bus shelter

Step end of wall

Trees removed

RL 4.46 nom.
1st Tee 3

RW1
tow 4.00
Setout parallel to boundary

Step end of wall

RL 5.20 nom.
1st Tee 4

Concrete path

Trees removed

Remove gutter crossing and reinstate gutter

Extent of path in contract

RW2
tow 5.20 54150-R

Existing
Sewer manhole RL 4.71

RW3
tow 7.00
Setout on W8

F1
tow 7.60

RW4
tow 6.00 52750-R

EW1
tow 7.80 41600-R

1200 high metal pedestrian barrier fence

Existing coms pit

Existing power pole

Armco barrier

2800 wide gutter crossing

Pedestrian crossing marking

1.25R

Armco barrier
Existing coms pit

1.25R

Edge of existing gutter
remove gutter

4400 wide gutter crossing

Existing lid

1200 high metal pedestrian barrier fence

Concrete path

Extent of concrete footpath by others

Sewer manhole RL 7.63

Existing sandstone retaining wall

Ramp 1

Paved Area 1

Existing concrete headwall
maintain outflow during construction

Ramp 2

Terrace 1

Terrace 2

Terrace 3

Service Yard

Driveway Ramp 2

Driveway Ramp 1

Carpark 1

PLANTER 1

PLANTER 2

PLANTER 3

PLANTER 4

PLANTER 5

PLANTER 6

PLANTER 7

Setout point

Date palms to be transplanted by others

1200 wide concrete path

RW5
tow 5.50 40200-R

RW6
tow 6.70

RW9
tow 8.40

RW11
tow 8.25

RW12
tow 7.25

RW13
tow 8.40

EW2
tow 7.90

EW3
tow 8.20

RW7
tow 8.20

New sandstone retaining wall to match existing

RW14

New masonry retaining wall by others

Setout opening off existing wall

RW8
tow 7.50

Extent of path in contract

RL 7.50 nom.
12th Tee 2

See drawing W7 for continuation of driveway

RL 9.50 nom.
12th Tee 3

RL 10.25 nom.
12th Tee 3

Retaining wall on boundary by others

Provide temporary retaining as required during excavation for trees retained

Decorative screen on boundary wall

Apartments to be constructed by others

Existing boundary

Apartments under construction
Ground Fl. 9.30
1819-1823 Pittwater Rd

Existing house to be demolished by others

End of RW 1

End of RW 2

Cnr of RW 4

End of RW 1

45000

39500

22350

18200

25540

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

180.00-D

north

Legend

- Site fence
- Existing ground surface contour
- Formed ground surface contour
- 4.50e Existing ground surface level
- 4.50 Formed ground surface level
- 1.5R Radius of kerb/wall in metres
- SP Setout Point
- T-60 Tree to be retained and protected
- T-84 Tree to be removed
- T-86 BO Tree to be removed by others
- New greens and tees
- New building
- New asphalt paving
- New concrete paving

Issue

P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

BAYVIEW GOLF CLUB

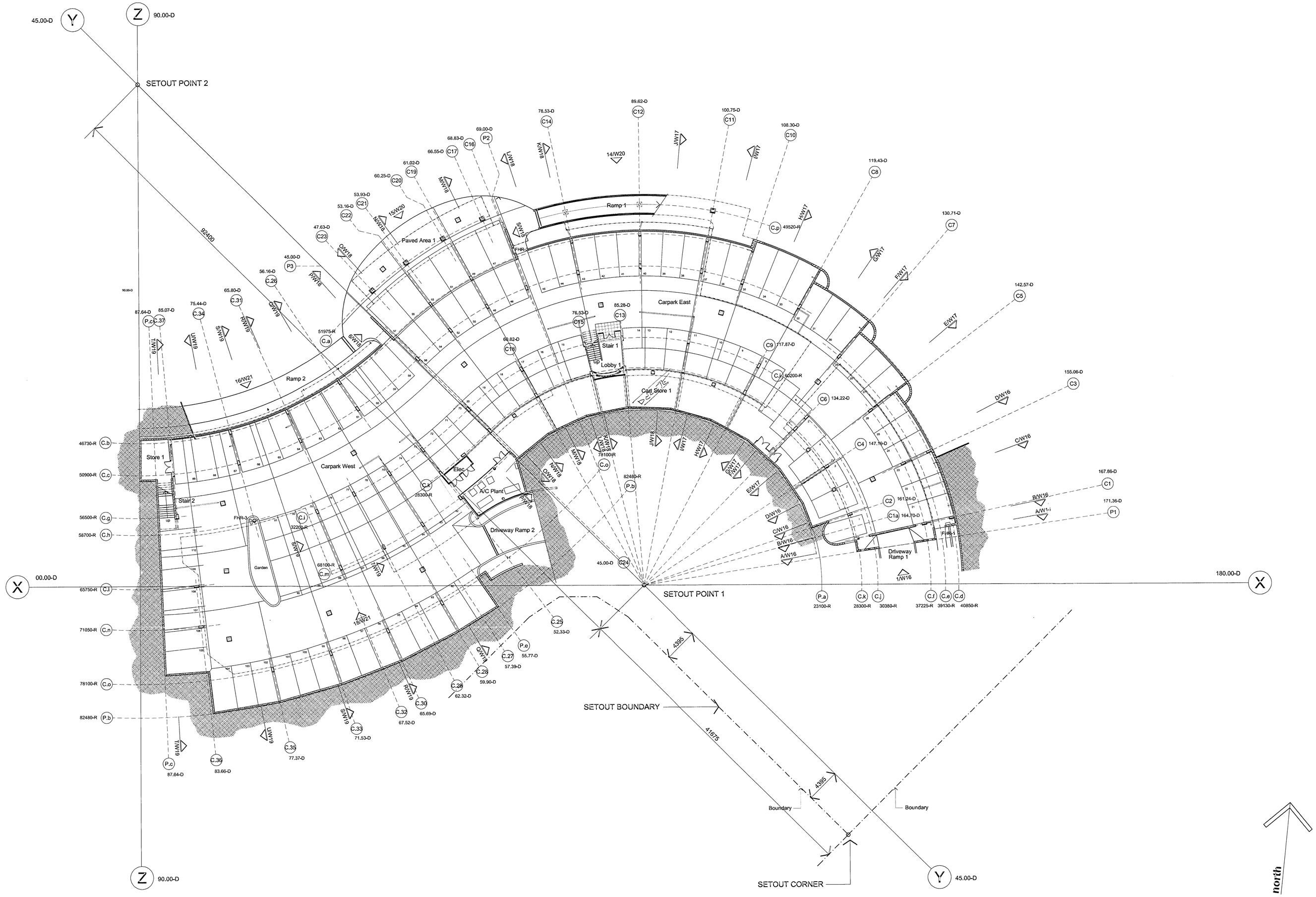
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Part Site Plan

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:200 @ A1

Drawing No. 2380.W3 T1



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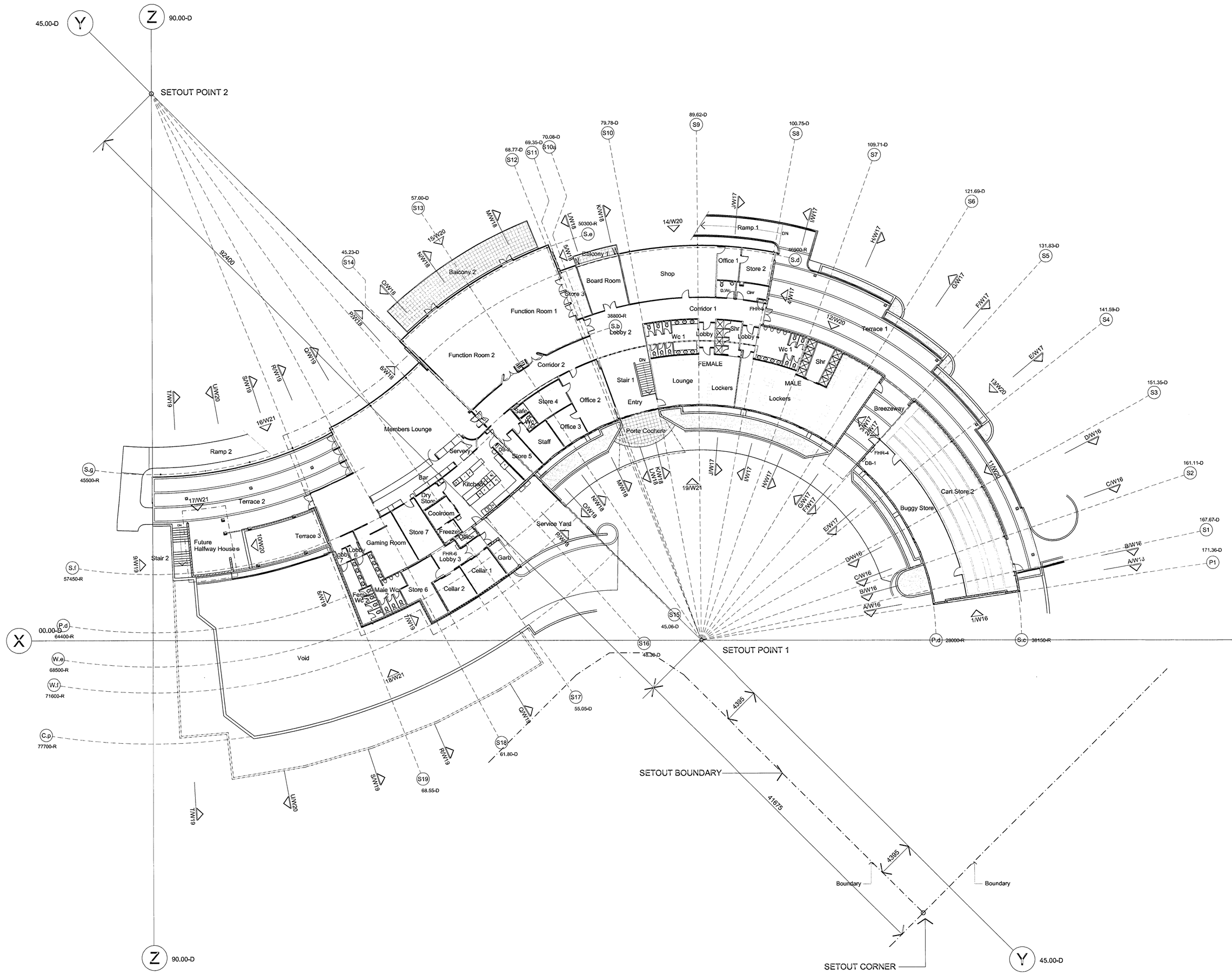
Issue		
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Parking Floor Setout Plan

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:200 @B1
Drawing No. 2380.W4 T1



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Issue	
P1	03.05.07 Preliminary CC issue
T1	20.6.07 Tender issue

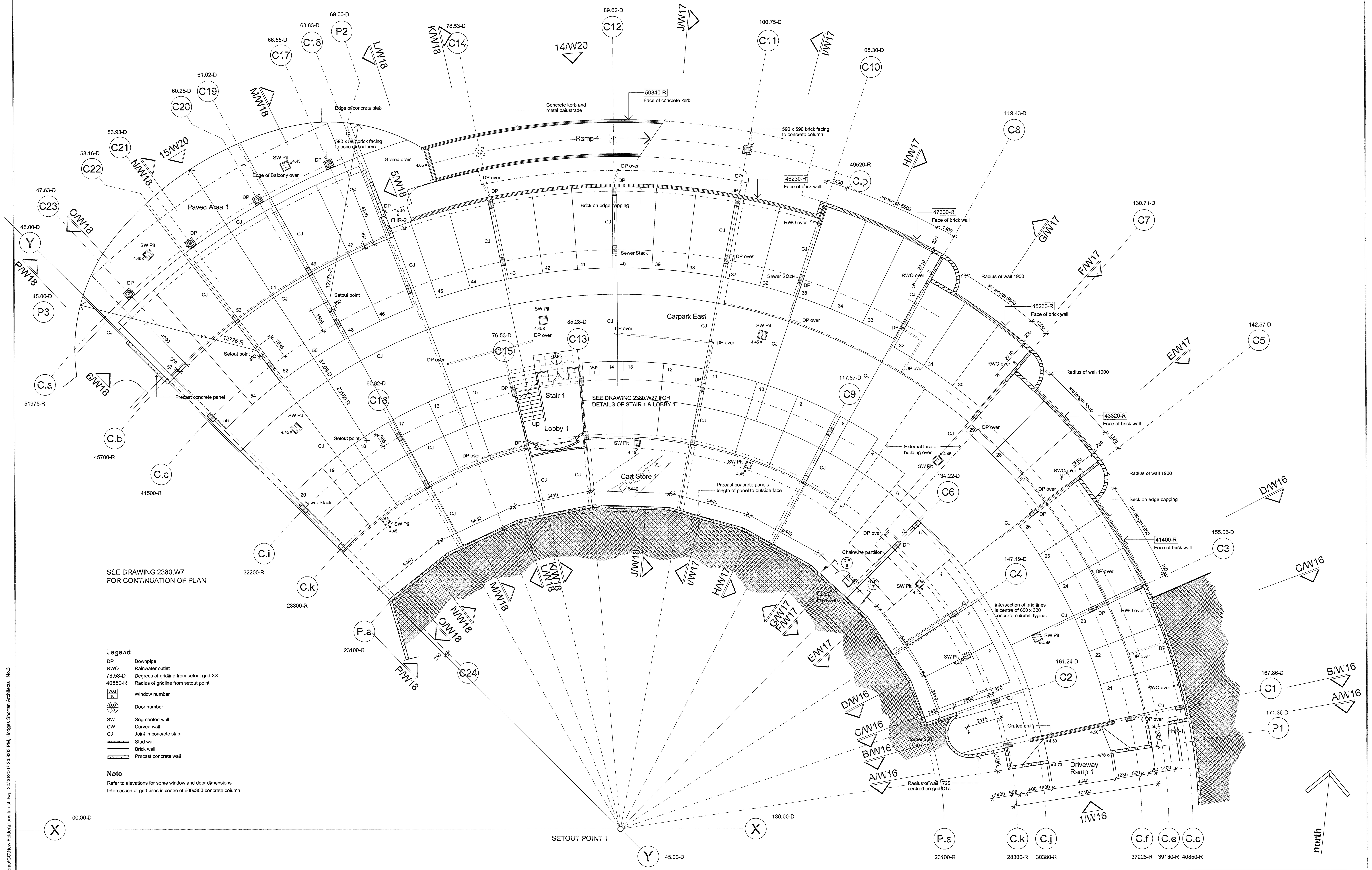
BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Ground Floor Setout Plan

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:200 @B1
Drawing No. 2380.W5 T1



SEE DRAWING 2380.W7
FOR CONTINUATION OF PLAN

Legend

DP	Downpipe
RWO	Rainwater outlet
78.53-D	Degrees of gridline from setout grid XX
40850-R	Radius of gridline from setout point
W.G 16	Window number
D.G 50	Door number
SW	Segmented wall
CW	Curved wall
CJ	Joint in concrete slab
	Stud wall
	Brick wall
	Precast concrete wall

Note

Refer to elevations for some window and door dimensions
Intersection of grid lines is centre of 600x300 concrete column

Issue
P 29.12.06 Preliminary
P1 03.05.07 Preliminary CC issue
T1 20.6.07 Tender Issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Parking Floor Plan Sheet 1

BAYVIEW GOLF CLUB

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W6 T1

SEE DRAWING 2380.W6
FOR CONTINUATION OF PLAN

SEE DRAWING 2380.W27 FOR
DETAILS OF STAIR 2

SEE DRAWING 2380.W3 FOR
SETOUT OF DRIVEWAY RAMP 2

Store 1
Stair 2
Ramp 2
Carpark West
Elec
A/C Plant
Driveway Ramp 2
SETOUT POINT 1

Concrete block retaining wall
Precast concrete panel
Face of concrete wall
200 concrete block wall rendered
Stepped face brick wall
Step at midpoint typical
Step at column typical
Concrete column
Face of brick wall
Edge of concrete path 2500 wide
Concrete path
Grated drain
Line of Terrace over
Concrete kerb 150 high
Face of concrete kerb
Line of concrete upturn over
Line of building over
Precast concrete panels length of panel to outside face
Sewer Stack
SW Pit
Setout point
Chainwire partition
Aluminium louvre
Step at door
MSCP
2450 headroom min
Garden
Concrete kerb
RW T1

Legend

DP	Downpipe
RWO	Rainwater outlet
78.53-D	Degrees of gridline from setout grid XX
40850-R	Radius of gridline from setout point
W.G 16	Window number
D.G 09	Door number
SW	Segmented wall
CW	Curved wall
CJ	Joint in concrete slab
	Stud wall
	Brick wall
	Precast concrete wall

Note
Refer to elevations for some window and door dimensions
Intersection of grid lines is centre of 600x300 concrete column

north

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Issue

P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender Issue

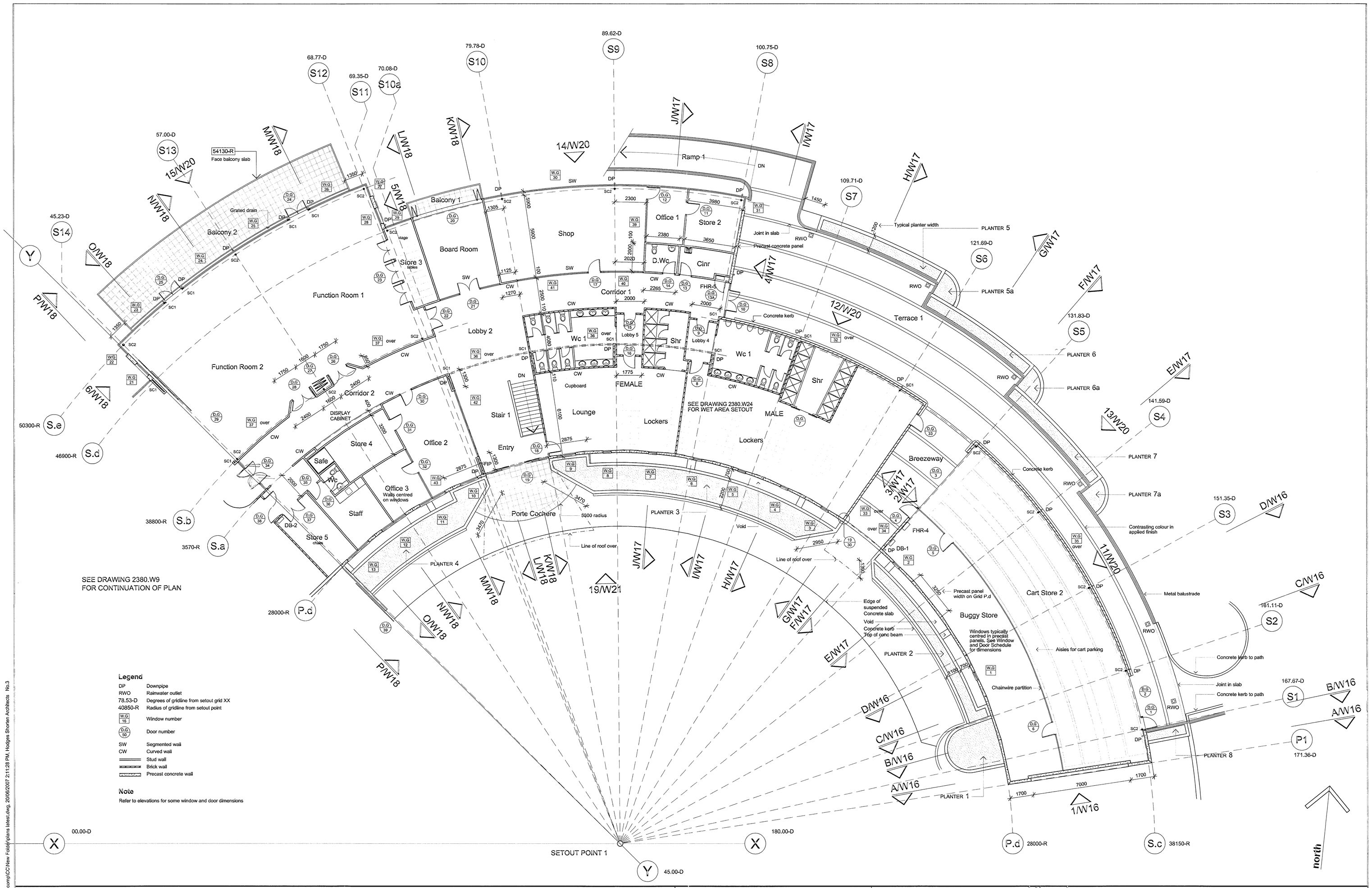
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Parking Floor Plan Sheet 2

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village phone 9419 5199
47 Neridah Street Chatswood NSW 2067 fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1

Drawing No. 2380.W7 T1



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Issue		
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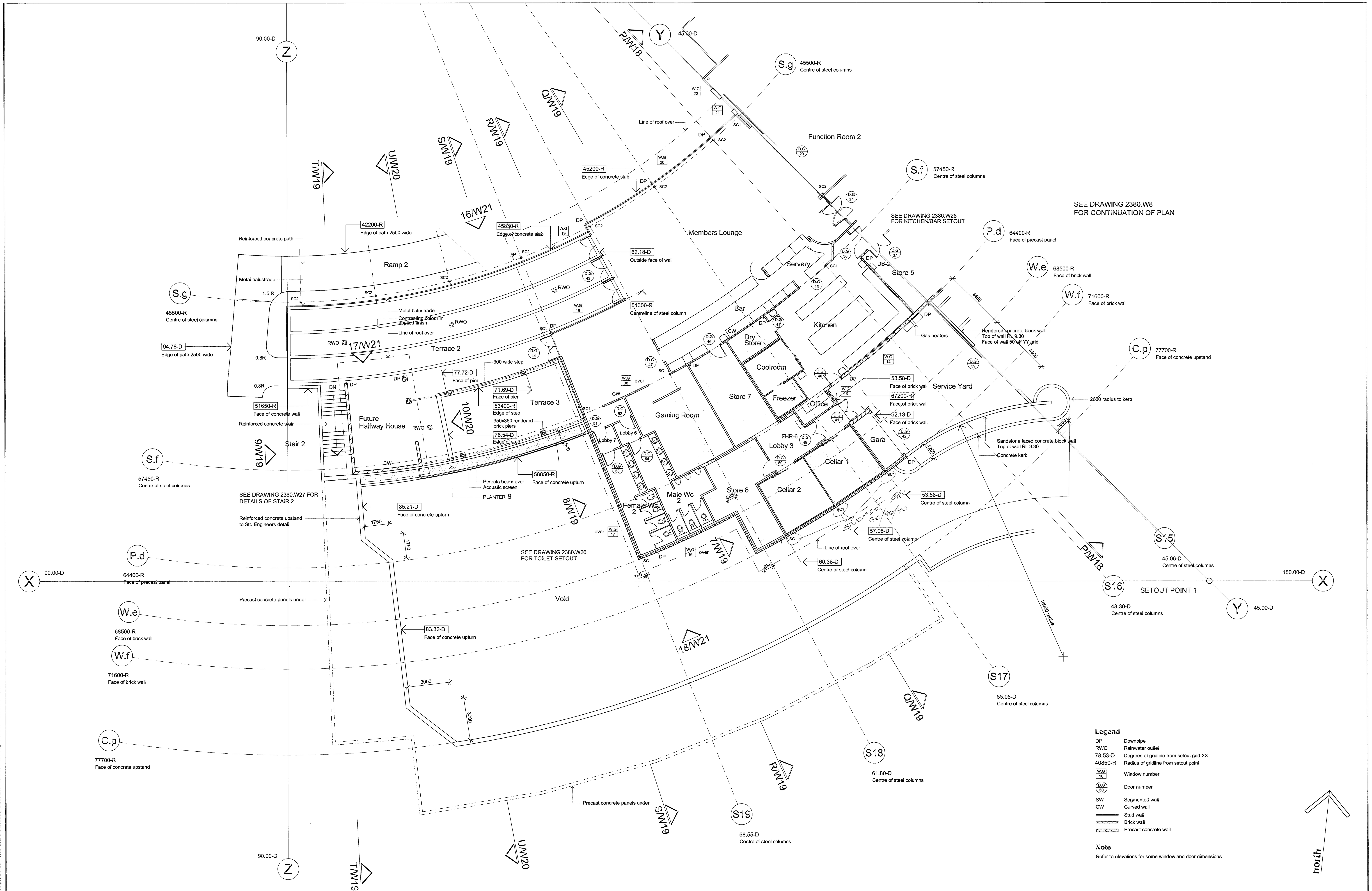
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Ground Floor Plan Sheet 1

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W8 T1



Legend

DP	Downpipe
RWO	Rainwater outlet
78.53-D	Degrees of gridline from setout grid XX
40850-R	Radius of gridline from setout point
W.G 16	Window number
D.G 50	Door number
SW	Segmented wall
CW	Curved wall
	Stud wall
	Brick wall
	Precast concrete wall

Note

Refer to elevations for some window and door dimensions

Issue

P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

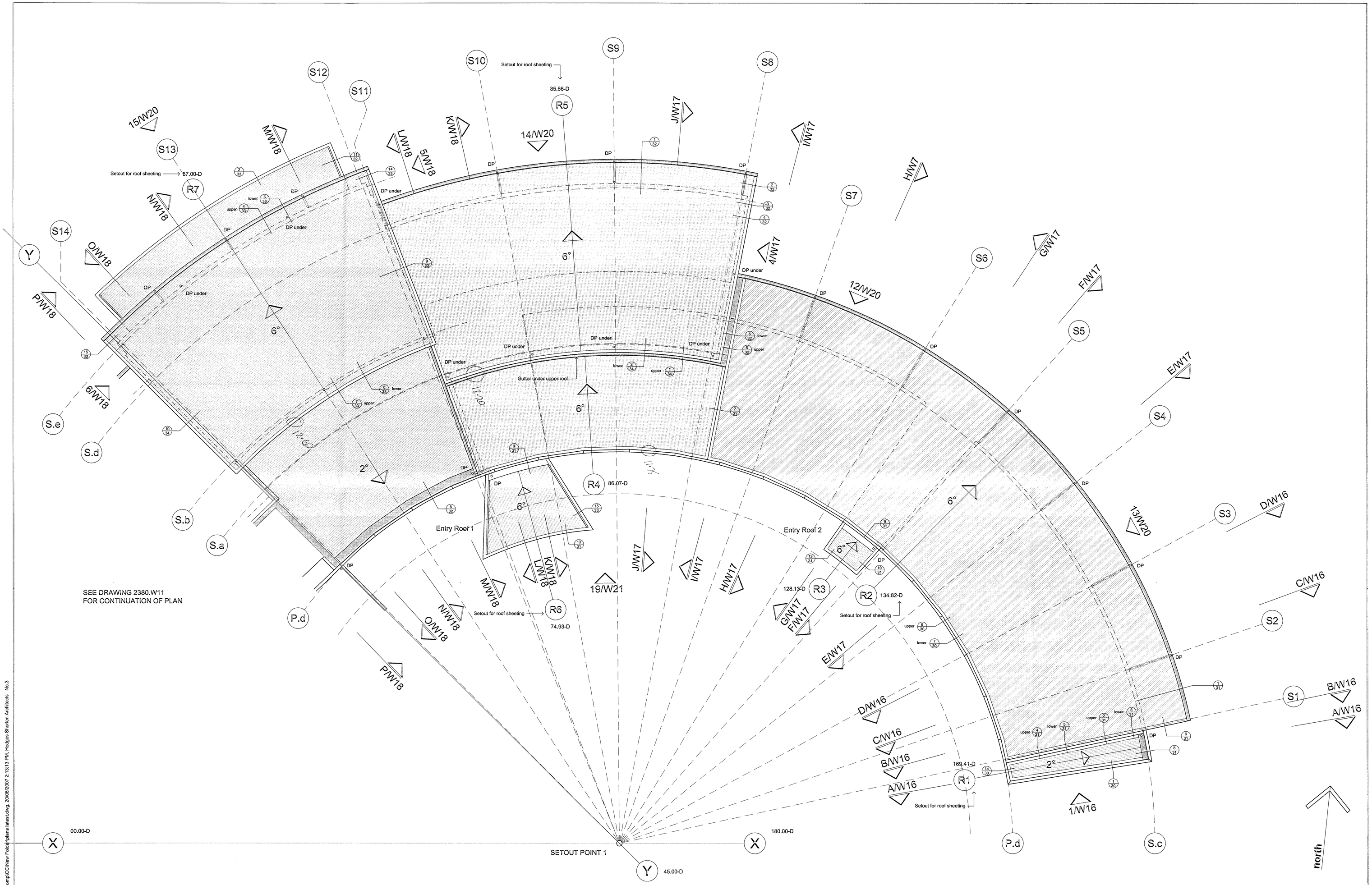
BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Ground Floor Plan Sheet 2

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W9 T1



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issue		
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender Issue

BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Roof Plan Sheet 1

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1

Drawing No. 2380.W10 T1

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Issue		
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P1	03.30.07	Preliminary CC Issue
T1	20.6.07	Tender Issue

Project:	Bayview Golf Club Proposed Golf Clubhouse, Pittwater Road, Bayview		
Drawing:	Roof Plan Sheet 2		
BAYVIEW GOLF CLUB	Hodges Shorten Architects Pty Ltd Suite 82 Chatswood Village phone 9419 5199 47 Nerlidah Street Chatswood NSW 2067 fax 9419 5632	Date: 10.10.06	Drawing No. 2380.W11 T1
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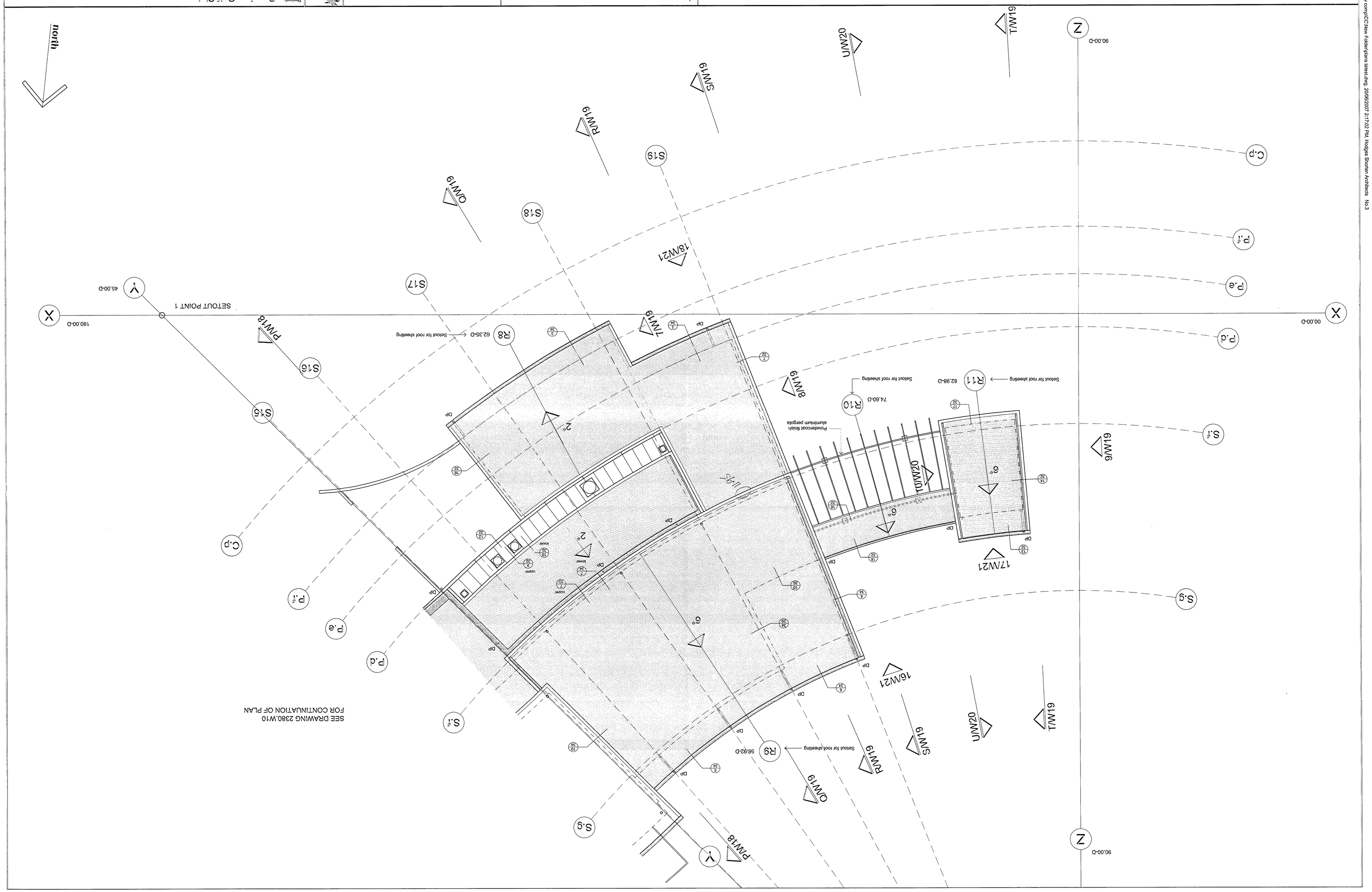

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SEE DRAWING 2380.W7
FOR CONTINUATION OF PLAN

Legend
DP Downpipe
RWO Rainwater outlet
7.8.53-D Degrees of gridline from setout grid XX
4085.0-R Radius of gridline from setout point
RL 6.500 Soffit of slab/beam level
2100 Ceiling/plasterboard height above FFL

SETOUT POINT 1

Issue		
P	29.12.06	Preliminary
P1	03.05.07	Preliminary CC Issue
T1	20.6.07	Tender Issue

Project:	Bayview Golf Club Proposed Golf Clubhouse, Pittwater Road, Bayview		
Drawing:	Parking Reflected Ceiling Plan Sheet 1		
BAYVIEW GOLF CLUB	Hodges Skorian Architects Pty Ltd Suite 82 Chatswood Village 47 Nerdan Street Chatswood NSW 2067 phone 9419 5199 fax 9419 5632	Date: 10.10.06 Scale: 1:100 @ A1	2380.W12 T1 Drawing No.

SEE DRAWING 2380.W12
FOR CONTINUATION OF PLAN

Store 1
RL 7.000

Carpark West

Stair 2

Crease in beam

Crease in slab

Fall 1%

600 step

40 step

110 step

150 step

Seldown over

Sewer Stack

Elec

A/C Plant

100x50 rebate in edge

SETOUT POINT 1

RL 6.950
RL 6.700
RL 6.785
RL 6.850
RL 6.960
RL 7.350
RL 6.800
RL 7.050
RL 7.010
RL 6.900
RL 6.650
RL 7.400

90.00-D Z
45.00-D Y
00.00-D X
180.00-D X
56.16-D C.26
65.80-D C.31
75.44-D C.34
85.07-D C.37
87.64-D P.c
52.33-D C.25
55.77-D P.e
57.39-D C.27
59.90-D C.28
62.32-D C.29
65.69-D C.30
67.52-D C.32
71.53-D C.33
77.37-D C.35
83.66-D C.36
87.64-D P.d

46730-R C.b
50900-R C.c
56500-R C.g
58700-R C.h
65750-R C.l
71050-R C.n
78100-R C.o
82480-R P.c
60200-R C.i
64100-R C.k
68100-R C.m
78100-R C.o
82480-R P.b

TW19 UW19 SW19 RW19 QW19 PW18 8/W19 7/W19 16/W21 18/W21 PW18 QW19 RW19 SW19 UW19 TW19

north

issue		
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Parking Reflected Ceiling Plan Sheet 2

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @81

Drawing No. 2380.W13 T1

BAYVIEW GOLF CLUB

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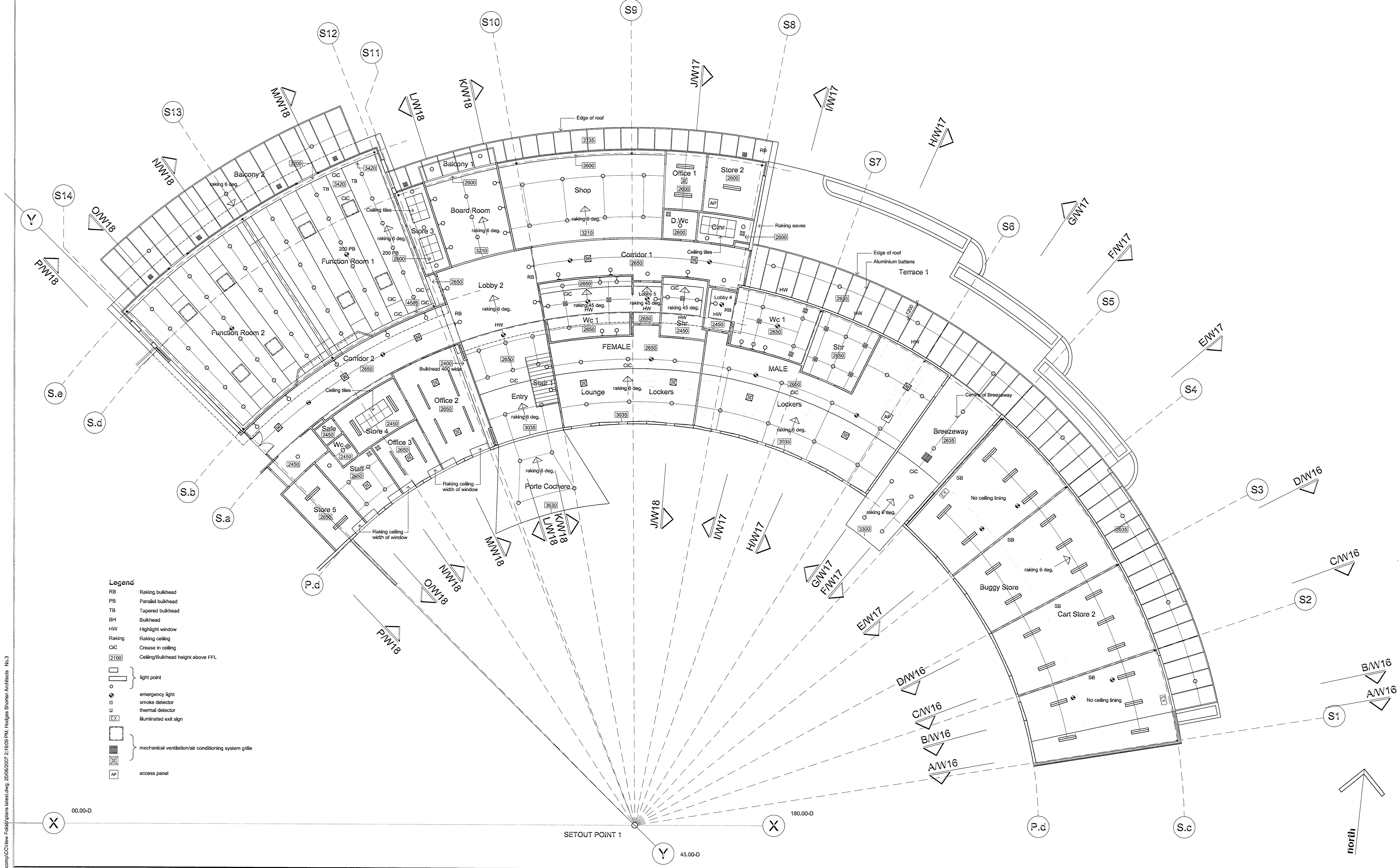

Issue

P 10.10.06 Preliminary
P1 03.05.07 Preliminary CC issue
T1 20.6.07 Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Ground Floor Reflected Ceiling Plan Sheet 1

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W14 T1

BAYVIEW GOLF CLUB

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Issue		
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC Issue
T1	20.6.07	Tender Issue

Project:	Bayview Golf Club Proposed Golf Clubhouse, Pittwater Road, Bayview	
Drawing:	Ground Floor Reflected Ceiling Plan Sheet 2	
BAYVIEW GOLF CLUB	Hodges Shorten Architects Pty Ltd Suite 62 Chatswood Village 47 Nerrilah Street Chatswood NSW 2067 phone 9419 5199 fax 9419 5632	Date: 10.10.06 Scale: 1:100 @ B1
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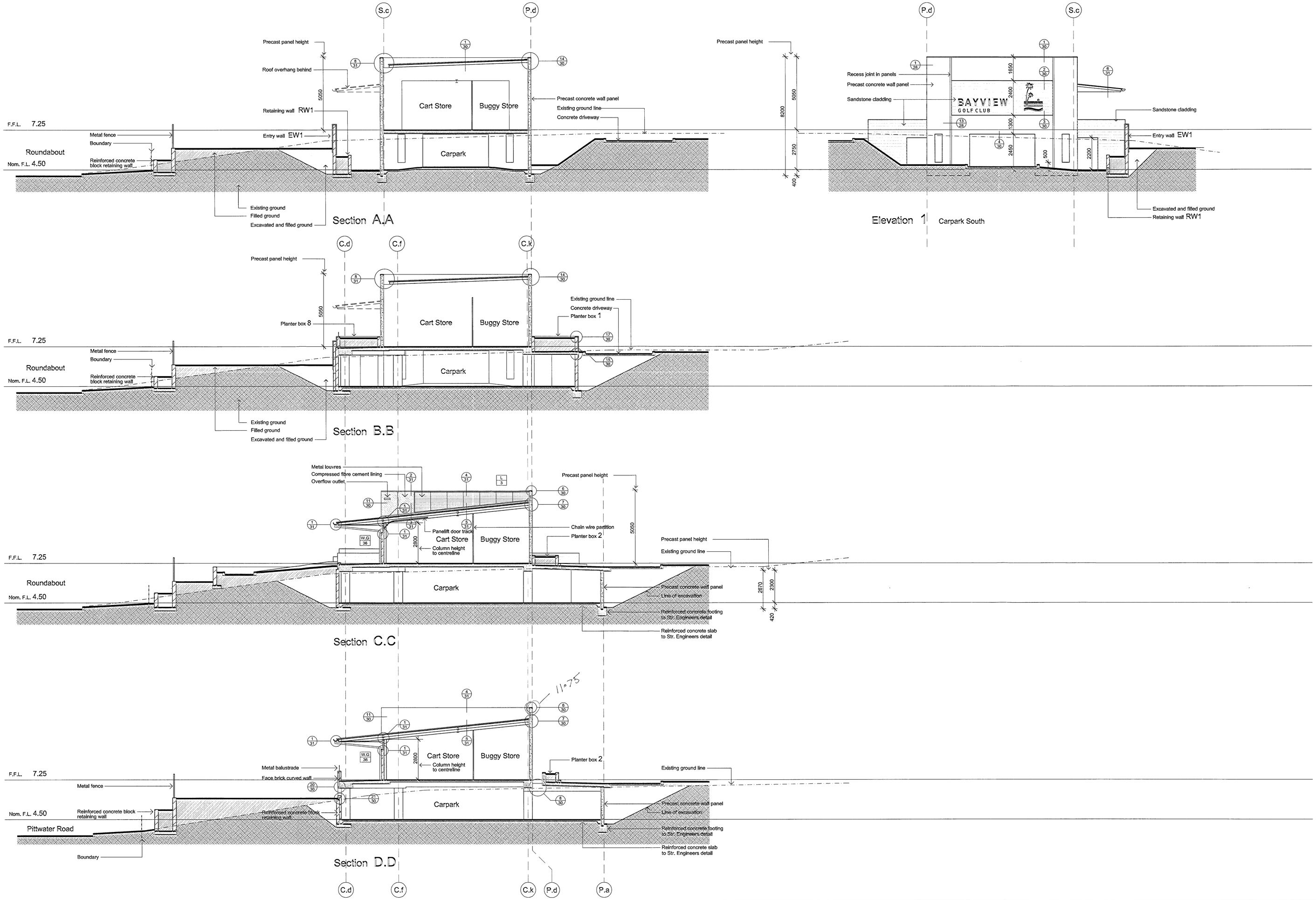


!ssue

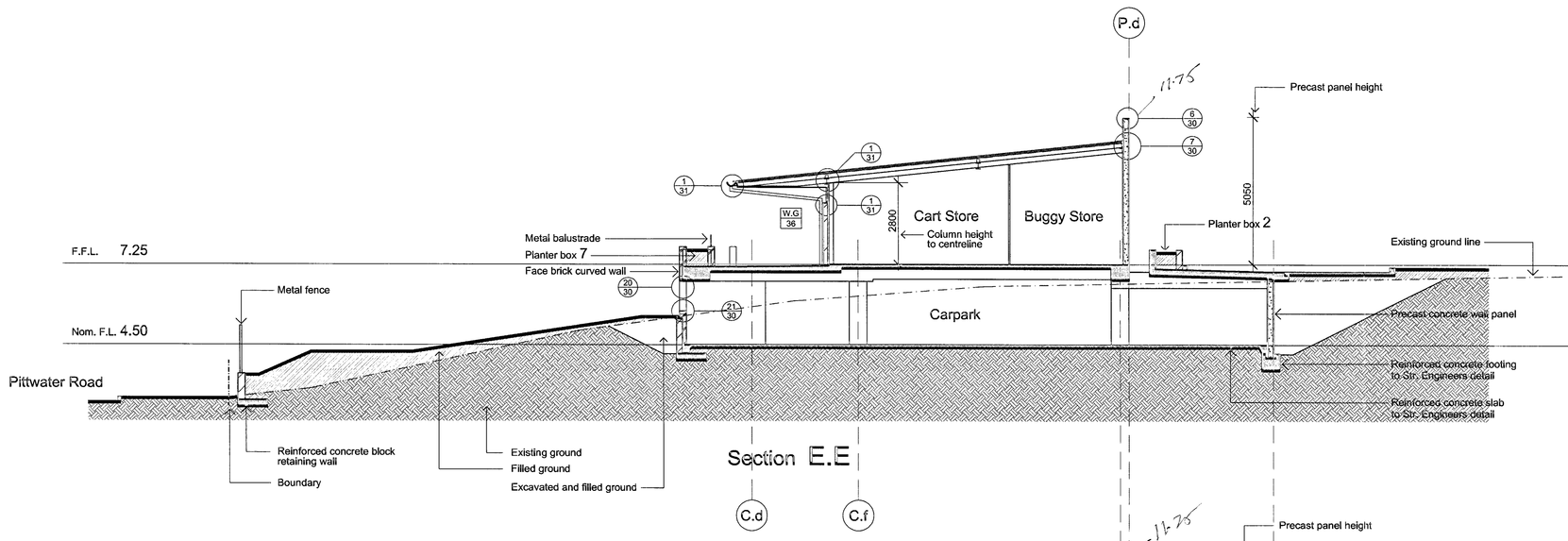
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC Issue
T1	20.6.07	Tender Issue

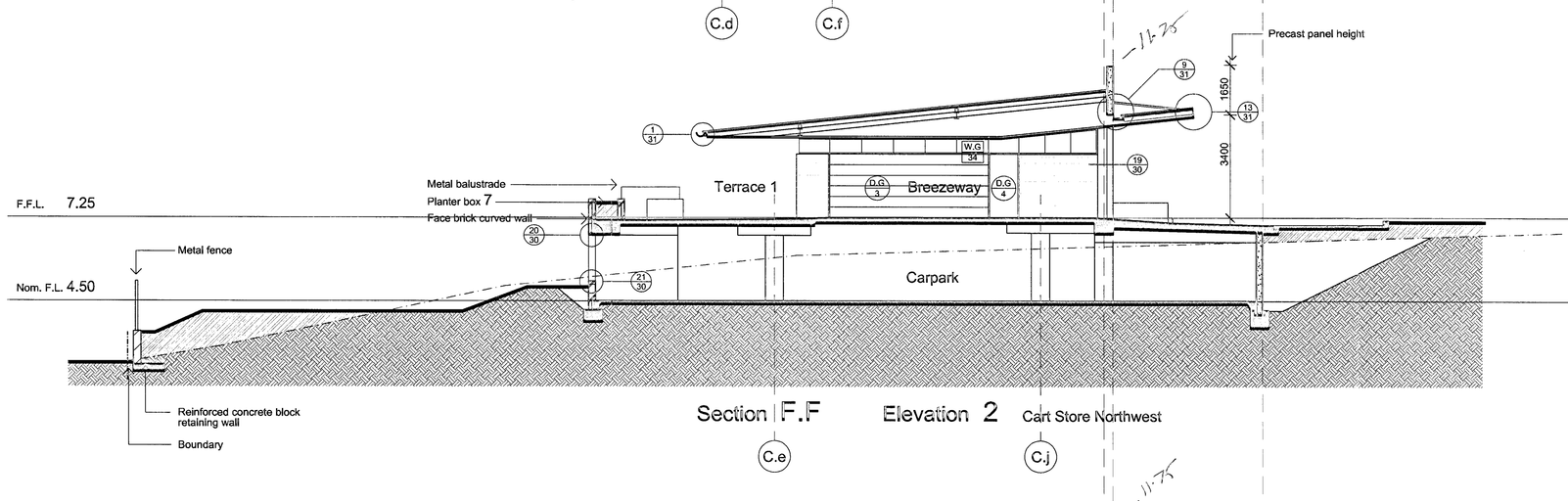
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

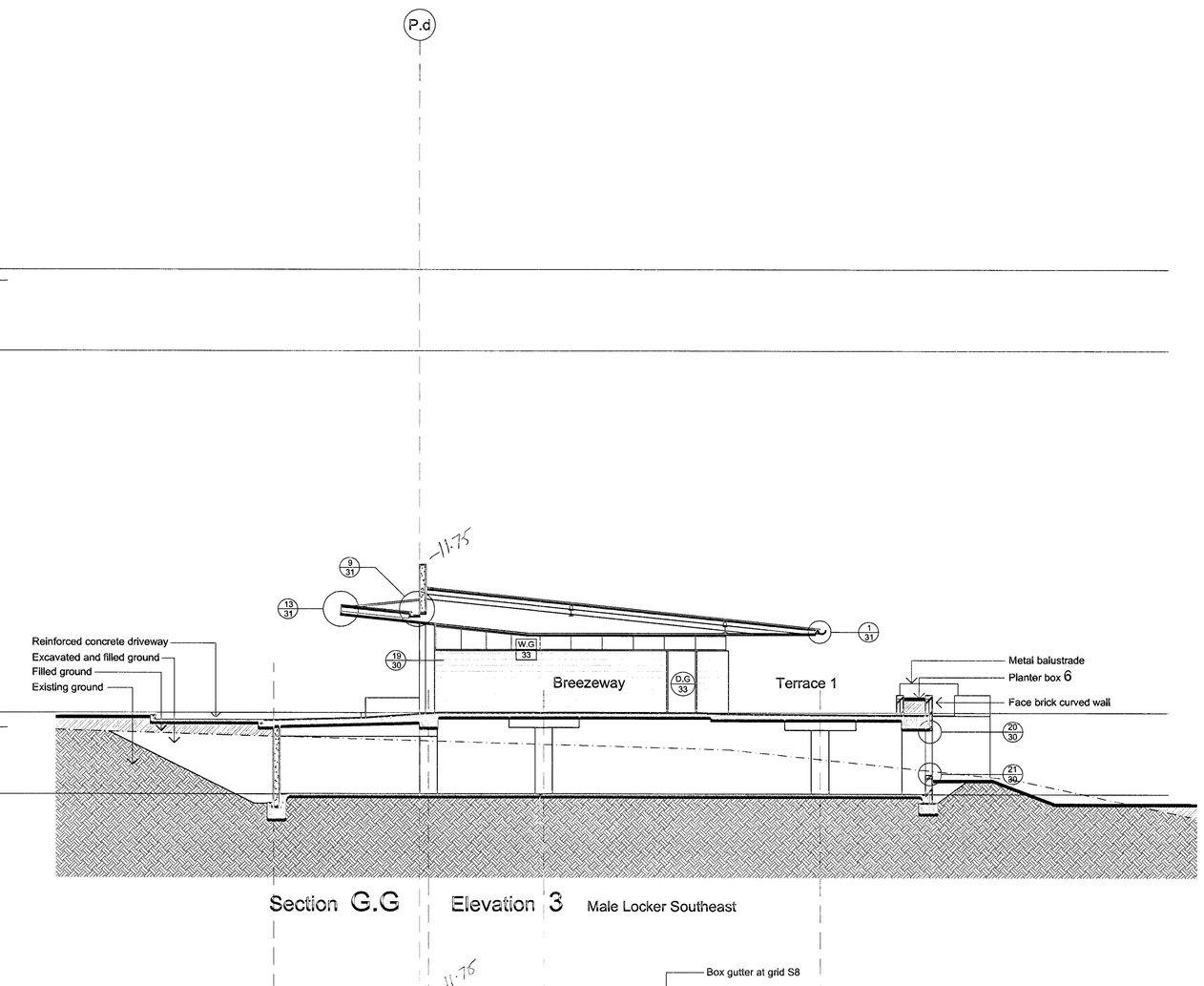
Drawing: Elevations and Sections Sheet 1

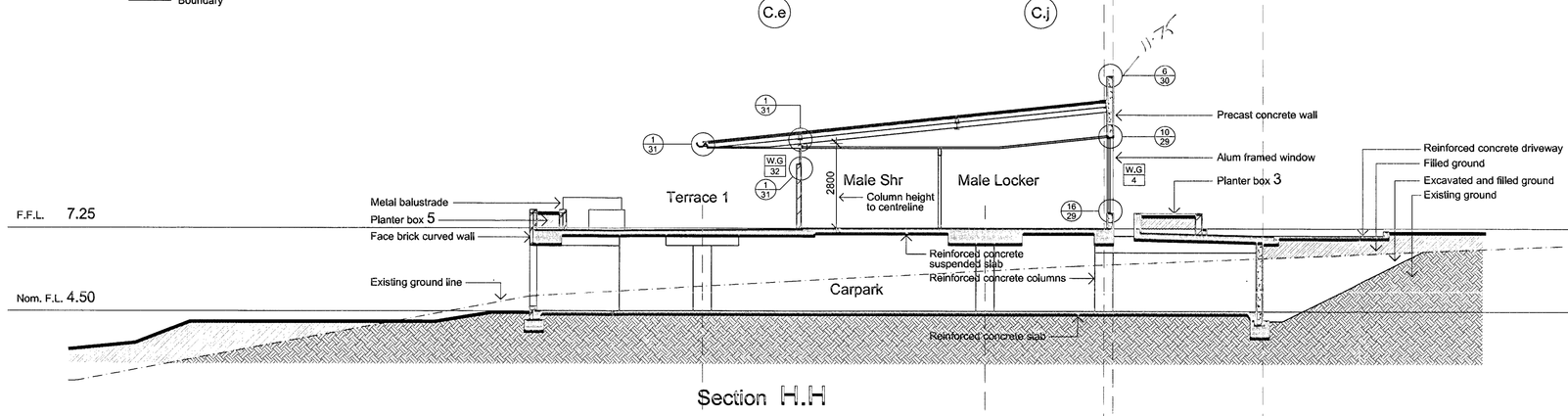
Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

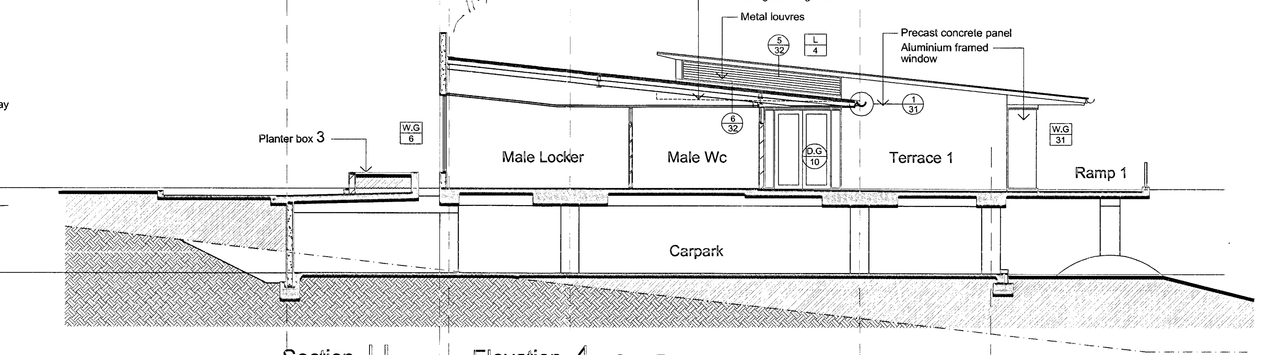
Date: 10.10.06
Scale: 1:100 @81
Drawing No. 2380.W16 T1

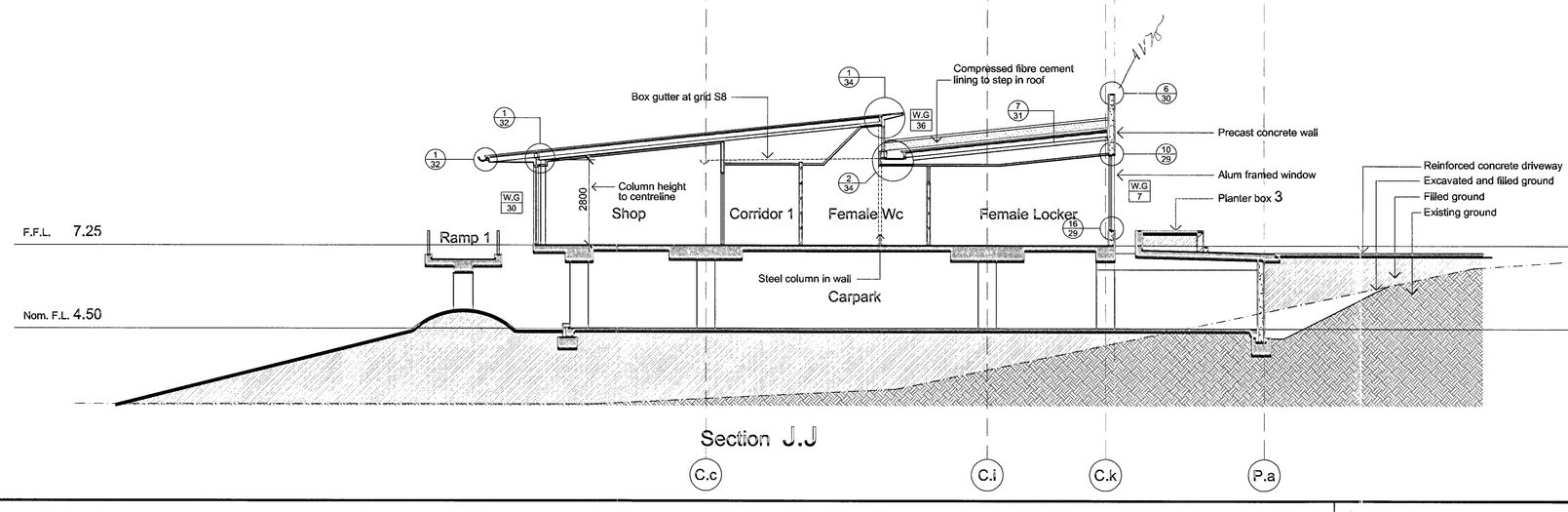












Issue

P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender Issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Elevations and Sections Sheet 2

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W17 T1

BAYVIEW GOLF CLUB

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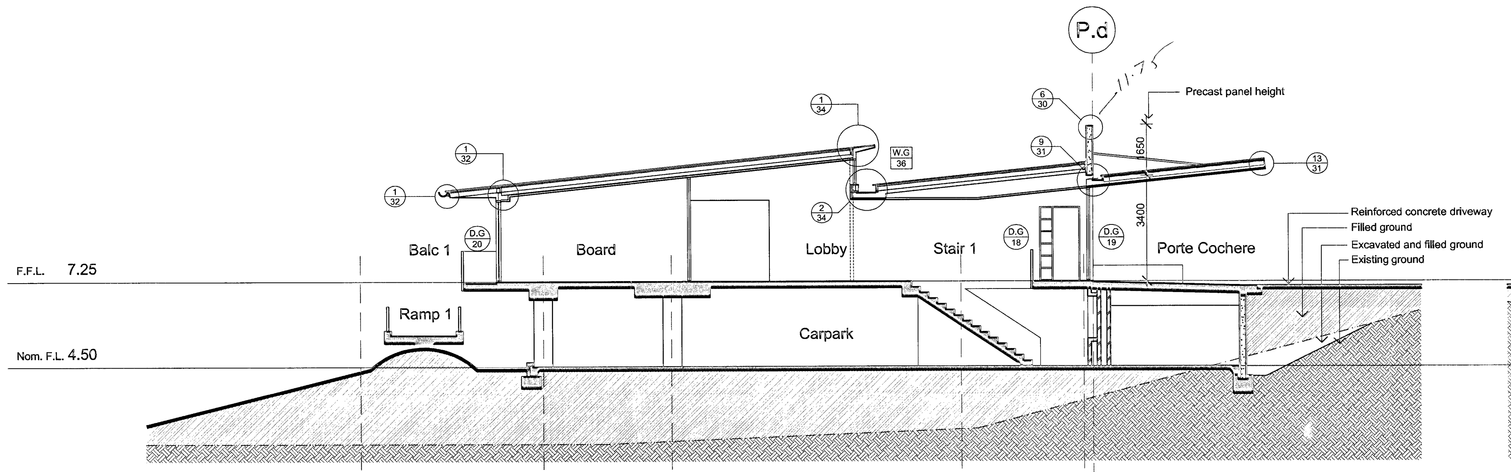
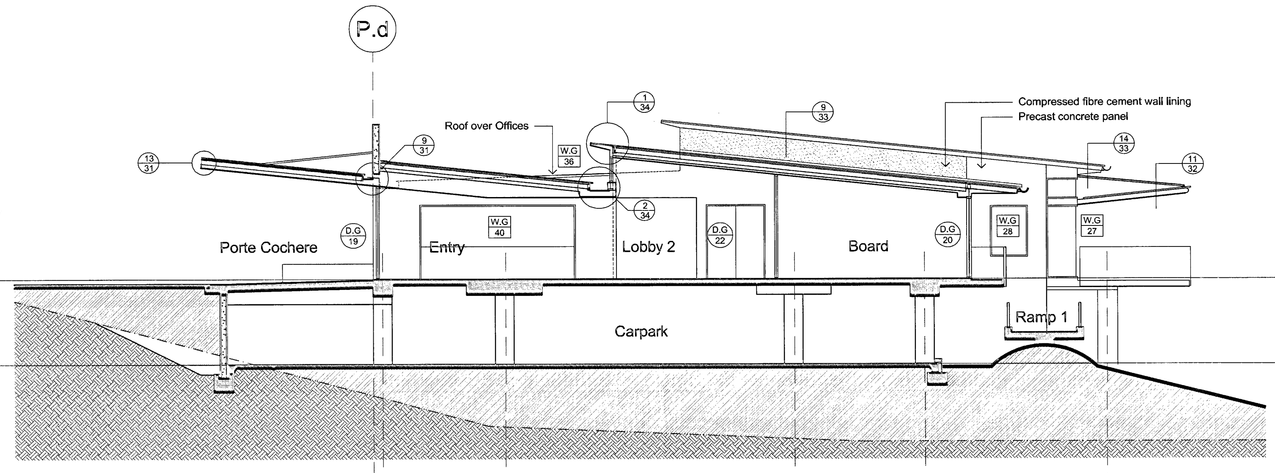
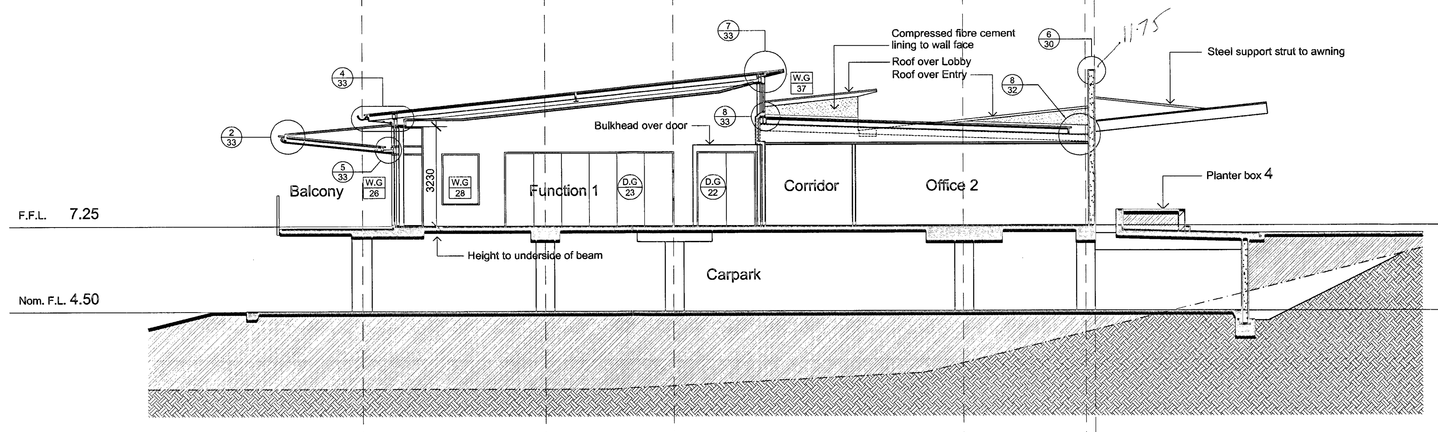


Section K.K



Section L.L

Elevation 5 Function 1 East



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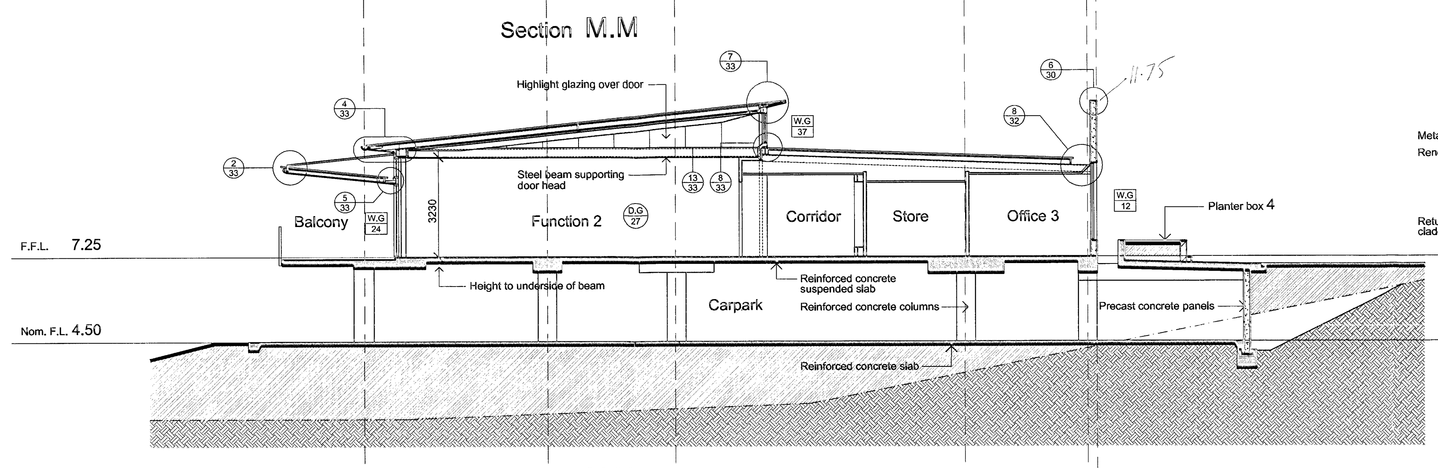

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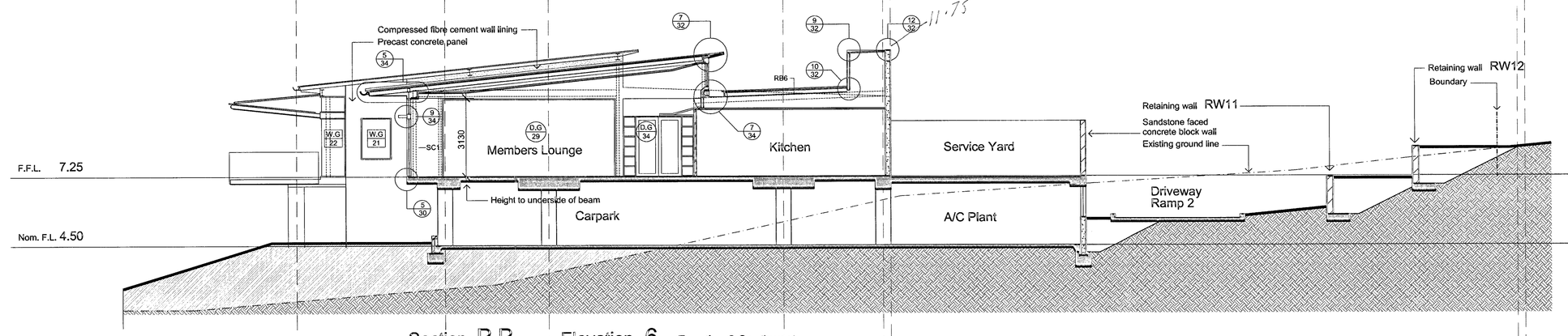
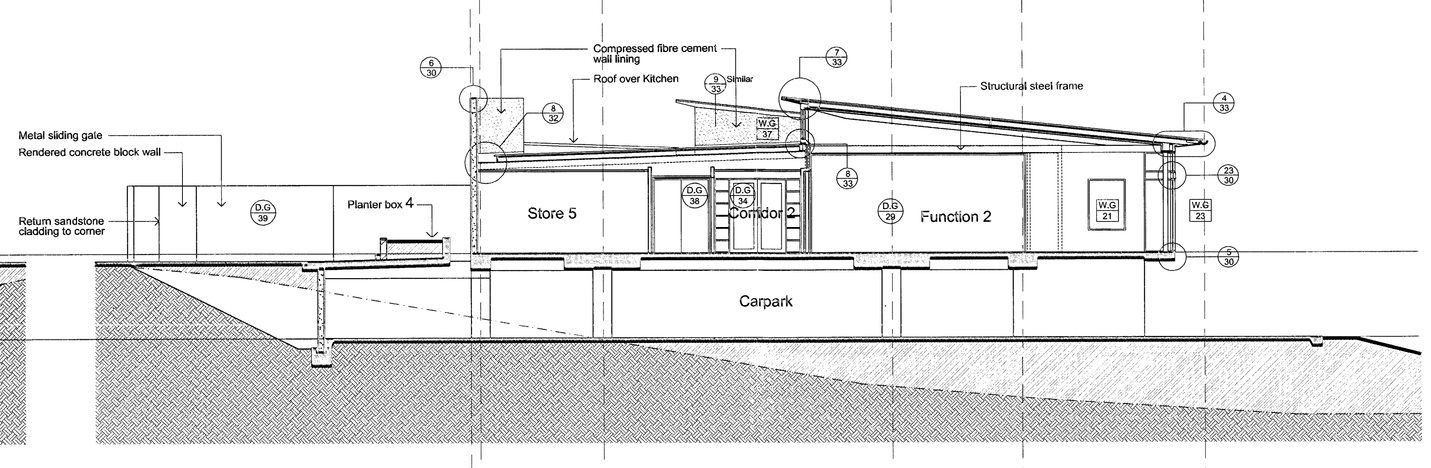


Section P.P

Elevation 6 Function 2 Southwest



Section O.O

C.a C.b C.c C.i C.k C.k C.j C.c C.b C.a

Issue		
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Elevations and Sections Sheet 3

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W18 T1

BAYVIEW GOLF CLUB

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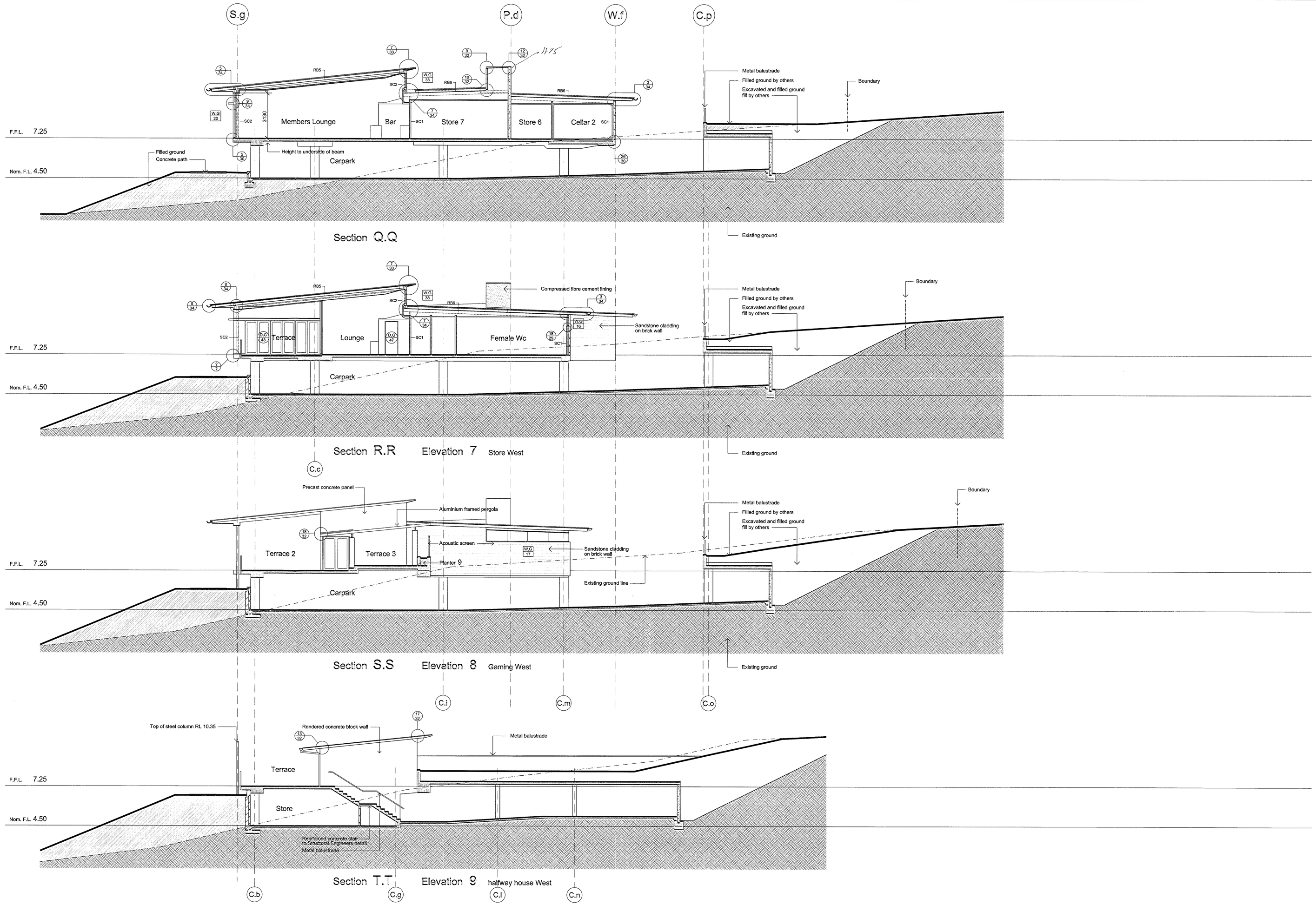


Issue		
P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC Issue
T1	20.6.07	Tender Issue

BAYVIEW GOLF CLUB

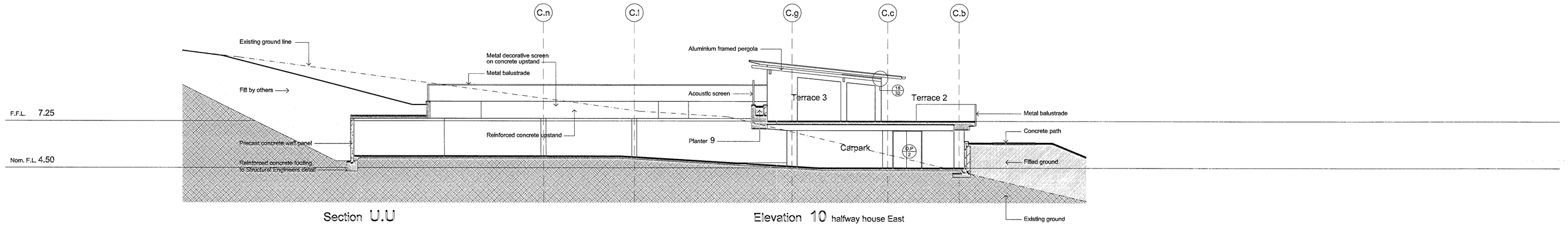
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Elevations and Sections Sheet 4

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Nerlah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

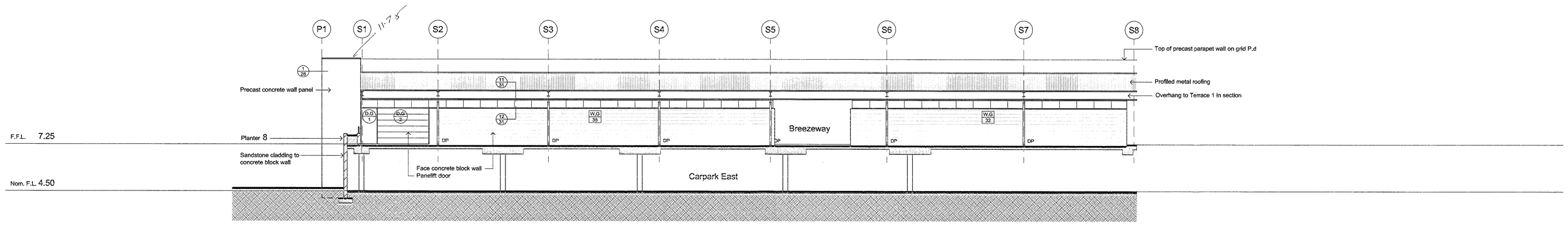
Date: 10.10.06
Scale: 1:100 @B1

Drawing No. 2380.W19 T1



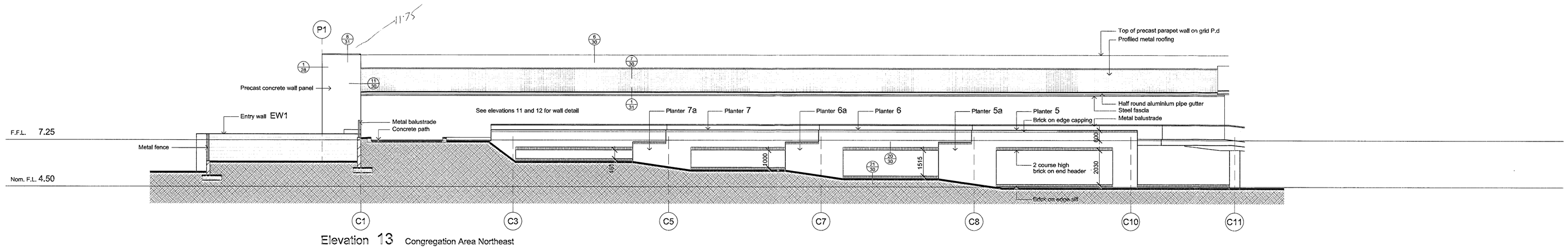
Section U.U

Elevation 10 halfway house East

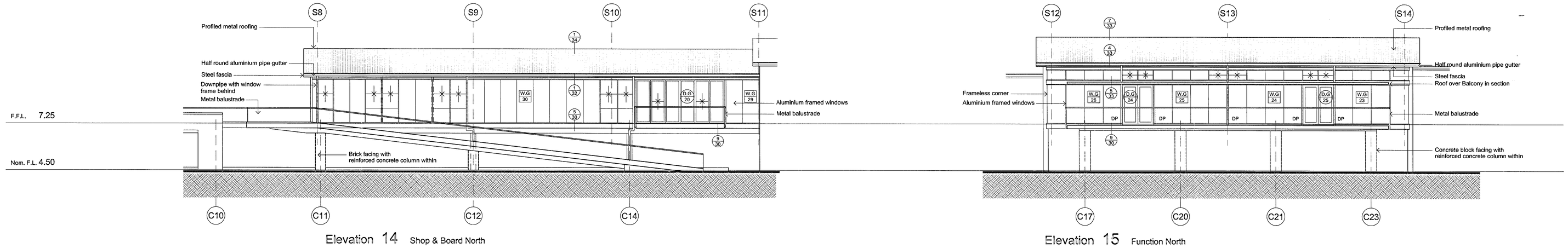


Elevation 11 Cart Store East

Elevation 12 Male Lockers/Wc Northeast



Elevation 13 Congregation Area Northeast



Elevation 14 Shop & Board North

Elevation 15 Function North

Issue

P	10.10.06	Preliminary
P1	03.05.07	Preliminary CC issue
T1	20.6.07	Tender Issue

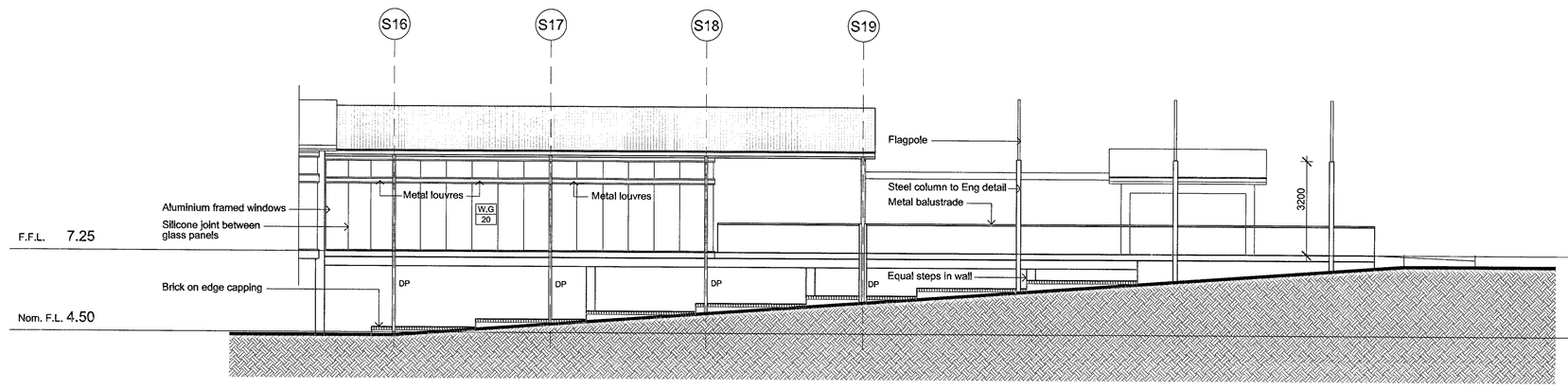
BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

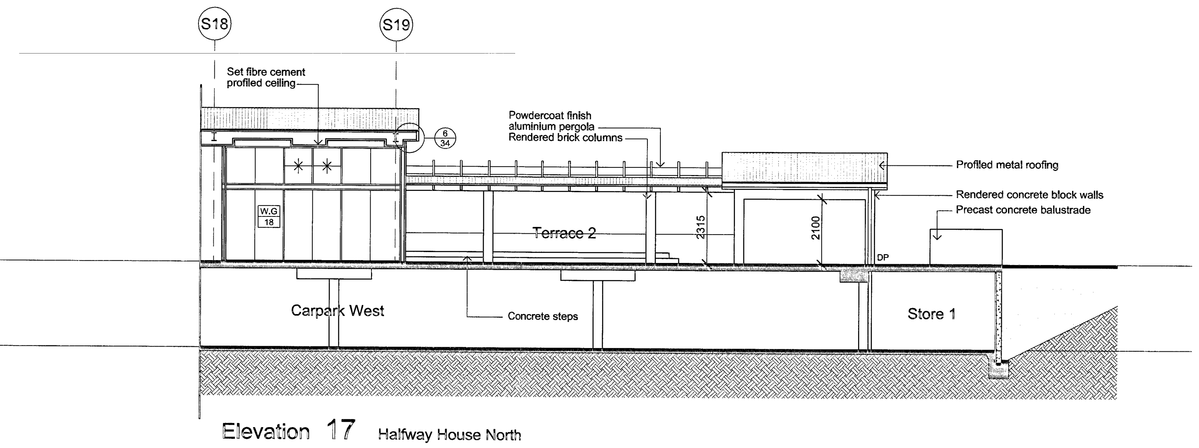
Drawing: Elevations and Sections Sheet 5

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

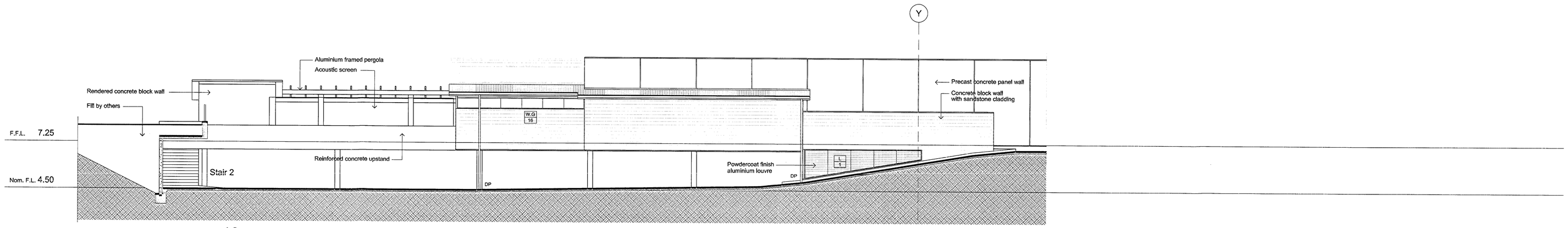
Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W20 T1



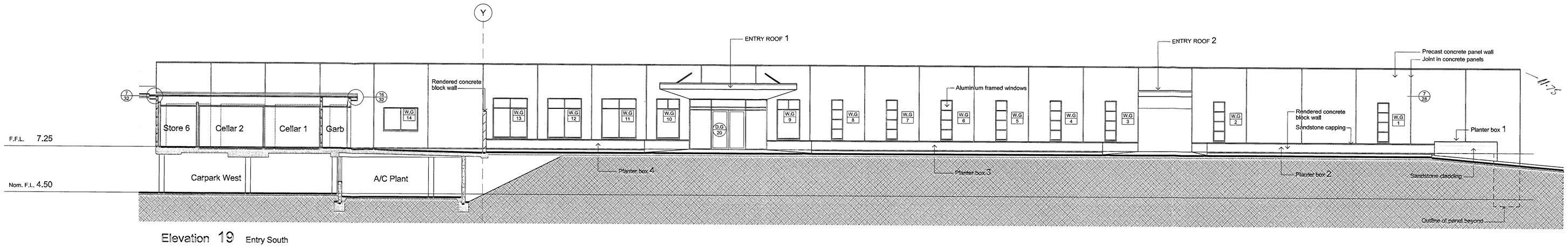
Elevation 16 Lounge and Terrace Northwest



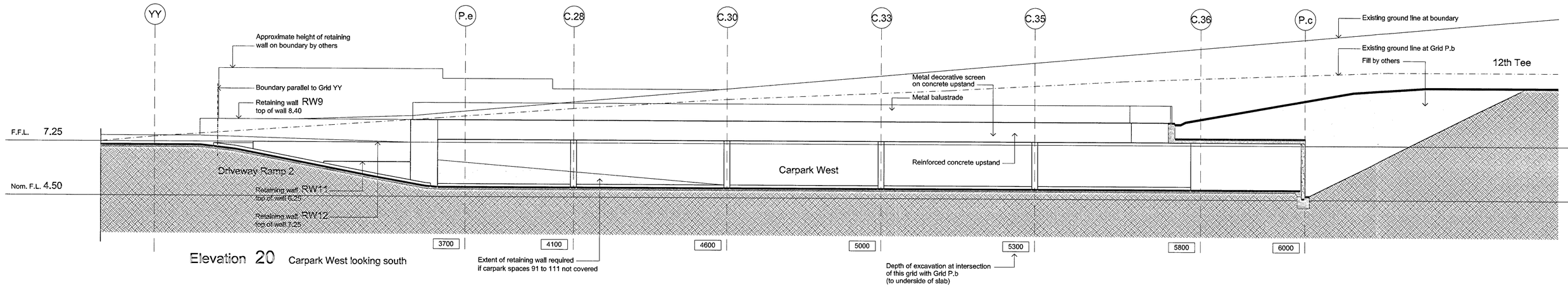
Elevation 17 Halfway House North



Elevation 18 Halfway House and Kitchen South



Elevation 19 Entry South



Elevation 20 Carpark West looking south

F:\CURRENT DRAWINGS\Bayview comp\CC\New Folder\Elevations.dwg, 20/06/2007 3:11:06 PM, Hodges Shorten Architects No.3

Issue

P 10.10.06 Preliminary
P1 03.05.07 Preliminary CC Issue
T1 20.6.07 Tender Issue

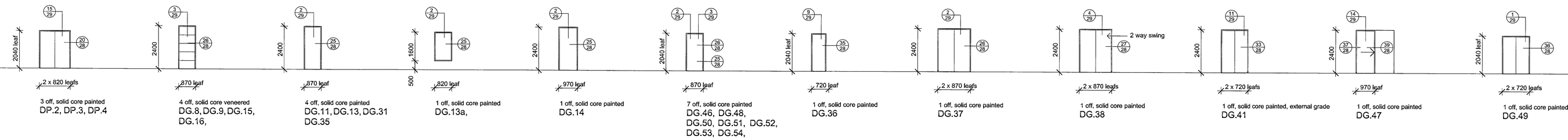
BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

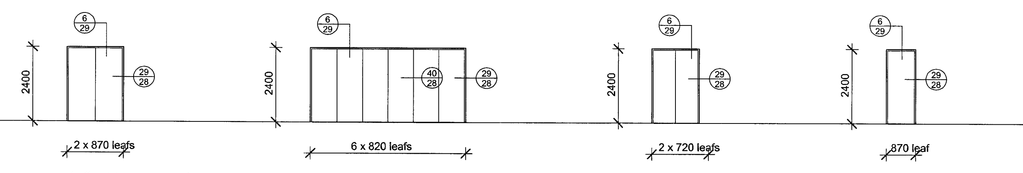
Drawing: Elevations and Sections Sheet 6

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

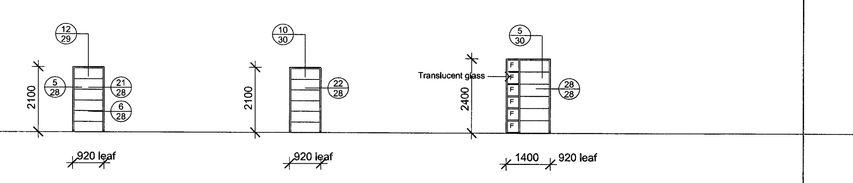
Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W21 T1



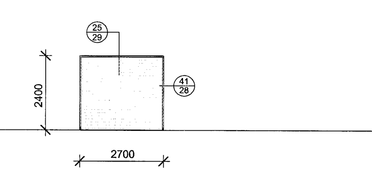
1 METAL FRAMED TIMBER DOORS



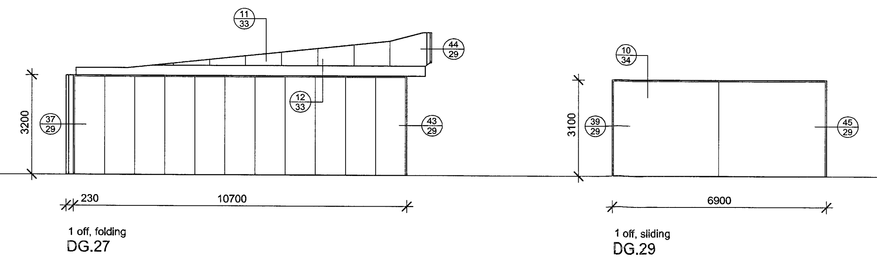
2 TIMBER FRAMED TIMBER DOORS



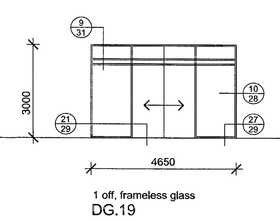
3 ALUMINIUM FRAMED TIMBER DOORS



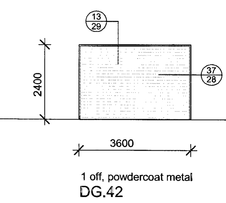
4 METAL/ACRYLIC ROLLER DOORS



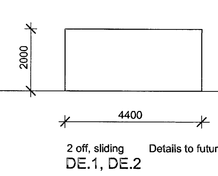
5 TIMBER FRAMED SLIDING/FOLDING TIMBER DOORS



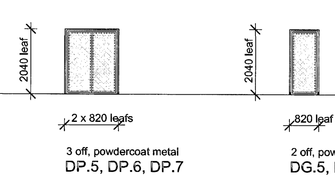
6 ALUMINIUM GLAZED AUTO SLIDING DOORS



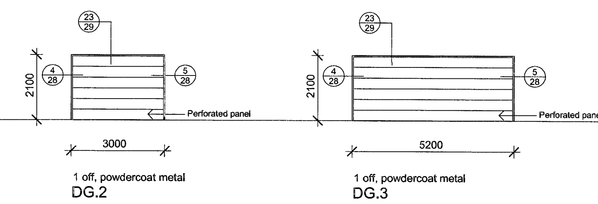
7 METAL ROLLER DOORS



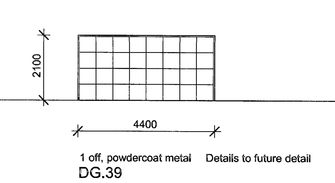
8 METAL SLIDING GATES



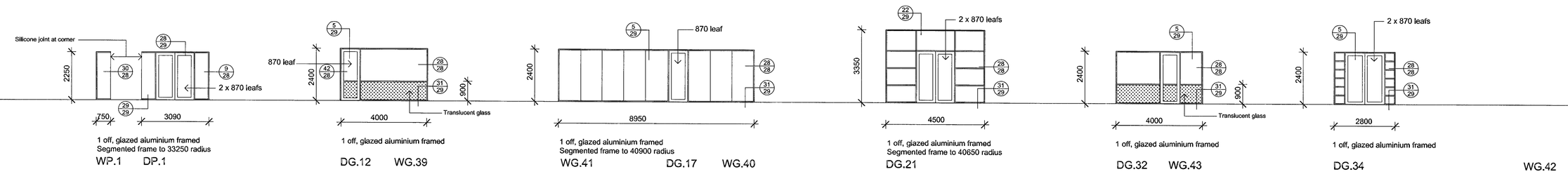
9 METAL FRAMED WIRE DOORS



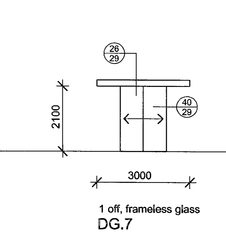
10 SECTIONAL OVERHEAD METAL DOORS



11 METAL SLIDING DOORS



12 INTERNAL ALUMINIUM FRAMED DOORS, SIDELIGHTS AND HIGHLIGHTS



13 GLAZED SLIDING DOORS

General Notes:

1. All dimensions are nominal only and shall be confirmed on site prior to fabrication.
2. ▨ - denotes translucent glass

Issue

P	10.10.06	Preliminary
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Window and Door Schedule Sheet 1

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
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fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1

Drawing No. 2380.W22 T1

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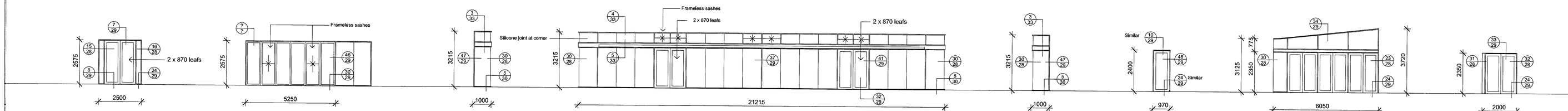


1 off, glazed aluminium framed
DG.10

1 off, glazed aluminium framed
Segmented frame to ???? radius
DG.20

1 off, glazed aluminium framed
WG.29

1 off, glazed aluminium framed
WG.27

1 off, glazed aluminium framed
Segmented frame to ???? radius
WG.26 DG.24 WG.25 WG.24 DG.25 WG.23

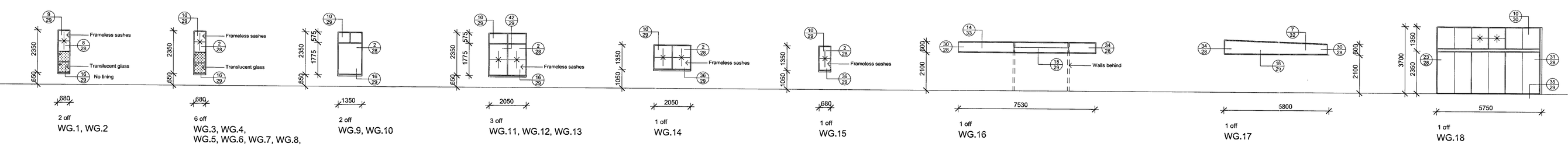
WG.22

1 off, glazed aluminium framed
DG.40

1 off, glazed aluminium framed
WG.19 DG.43

1 off, glazed aluminium framed
DG.44

(14) EXTERNAL ALUMINIUM FRAMED DOORS, SIDELIGHTS AND HIGHLIGHTS



2 off
WG.1, WG.2

6 off
WG.3, WG.4,
WG.5, WG.6, WG.7, WG.8,

2 off
WG.9, WG.10

3 off
WG.11, WG.12, WG.13

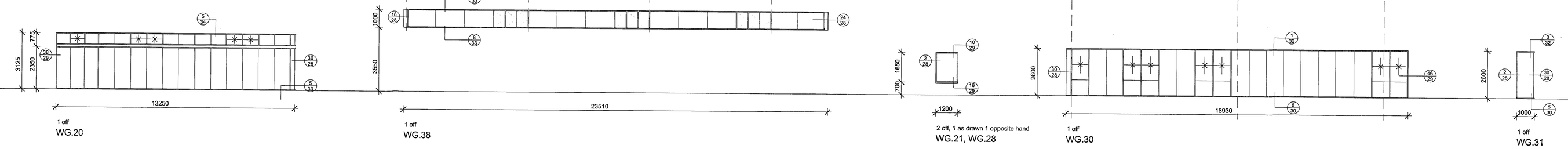
1 off
WG.14

1 off
WG.15

1 off
WG.16

1 off
WG.17

1 off
WG.18



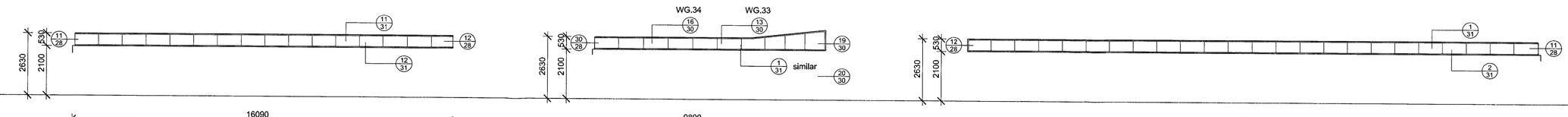
1 off
WG.20

1 off
WG.38

2 off, 1 as drawn 1 opposite hand
WG.21, WG.28

1 off
WG.30

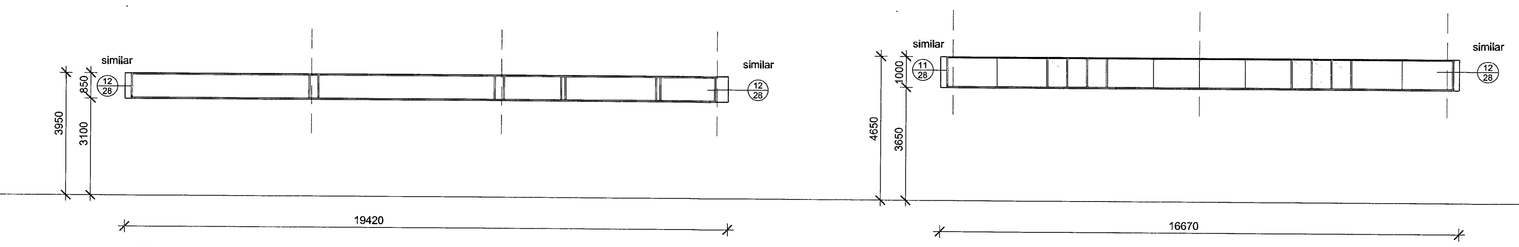
1 off
WG.31



1 off
WG.32

2 off, 1 as drawn, 1 opposite hand
WG.33, WG.34

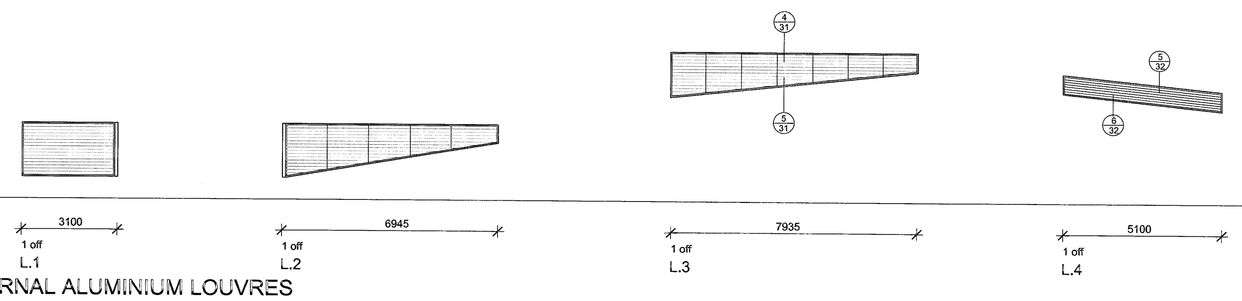
1 off
WG.35



1 off
WG.36

1 off
WG.37

(15) EXTERNAL ALUMINIUM FRAMED WINDOWS



1 off
L.1

1 off
L.2

1 off
L.3

1 off
L.4

(16) EXTERNAL ALUMINIUM LOUVRES

Issue

P 10.10.06 Preliminary
T1 20.6.07 Tender Issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Window and Door Schedule Sheet 2

Hodges Shorten Architects Pty Ltd
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47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @A1

Drawing No. 2380.W23 T1

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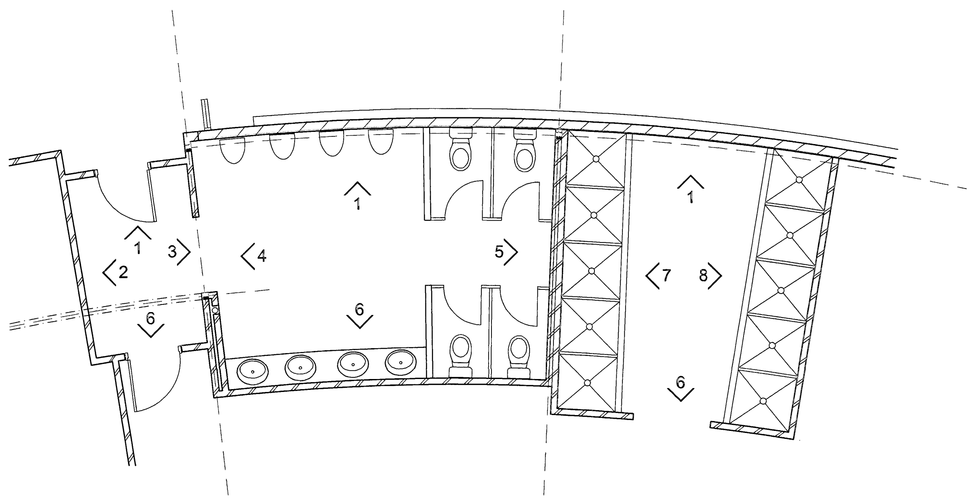

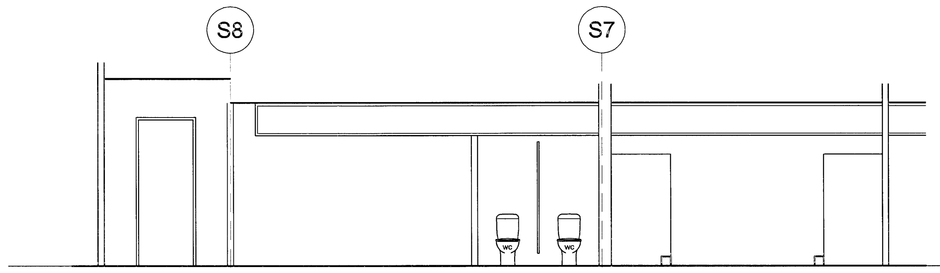

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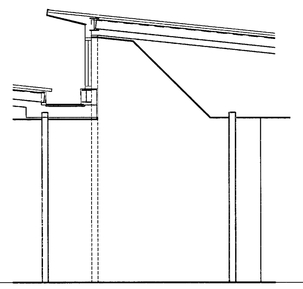
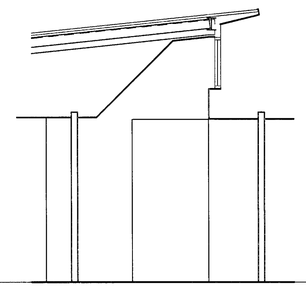
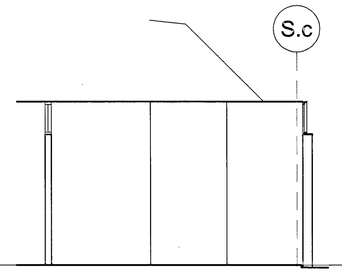


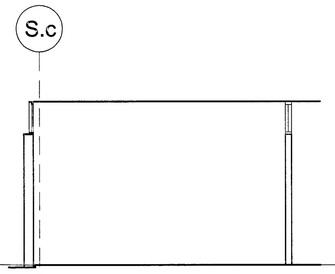
Elevation 2



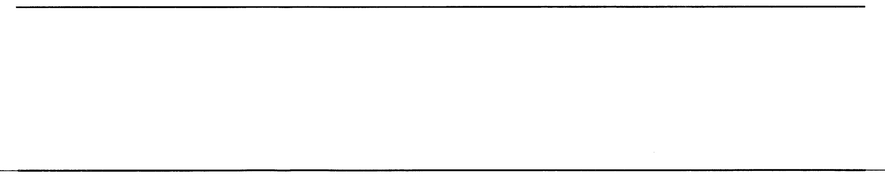
Elevation 3



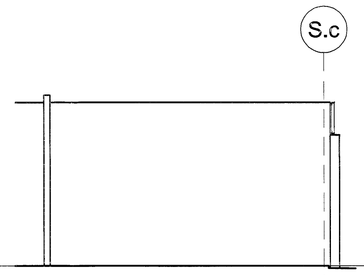
Elevation 4



Elevation 5

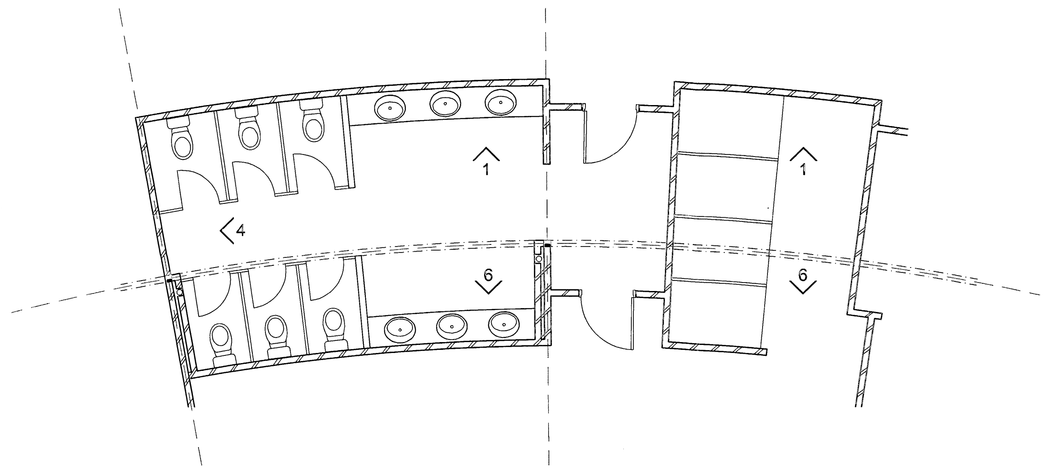


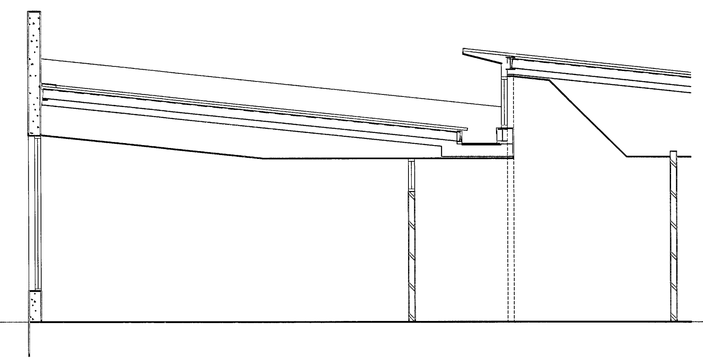
Elevation 6



Elevation 7

(1) Female Wc and Shower





(2) Male Wc and Shower

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Issue		
P	10.10.06	Preliminary
T1	20.6.07	Tender Issue

BAYVIEW GOLF CLUB

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Wet Area and Fitments Details Sheet 1

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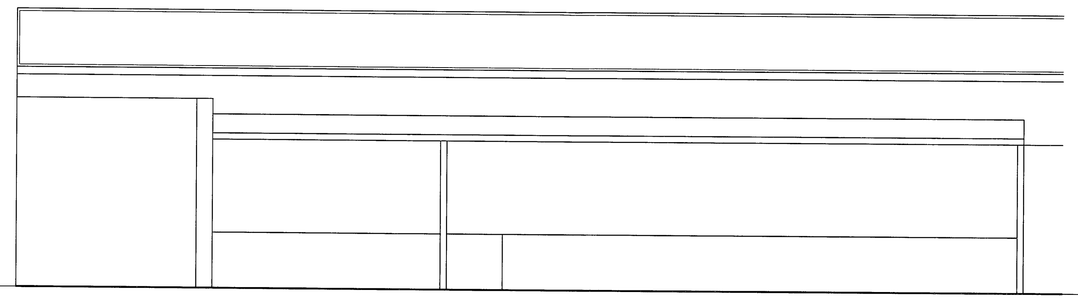
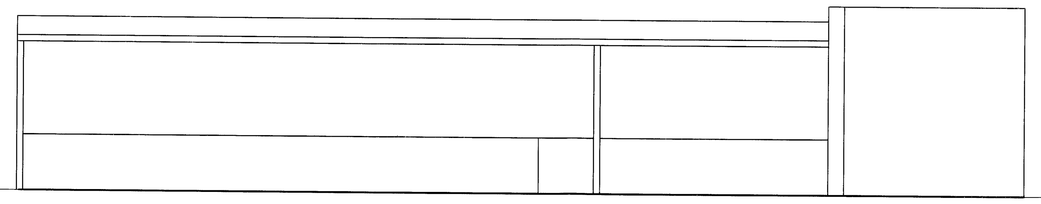
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

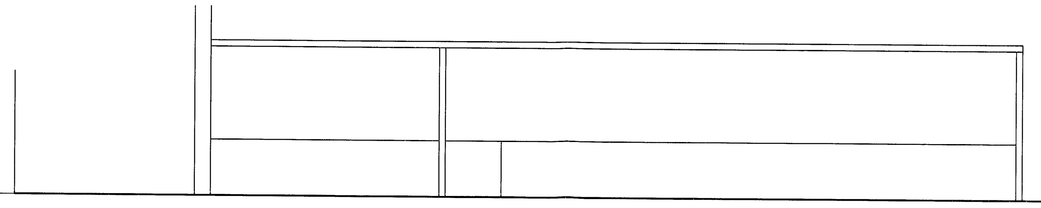
Date: 10.10.06
Scale: 1:50 @B1
Drawing No. 2380.W24 T1



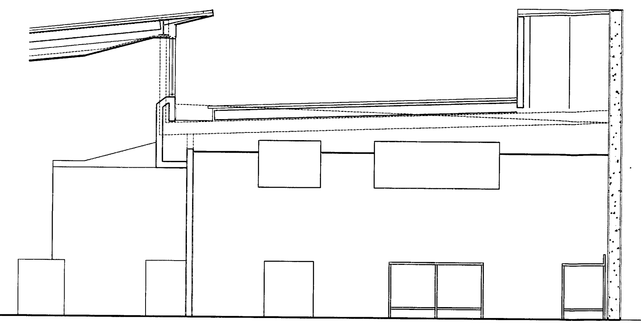
Elevation 1



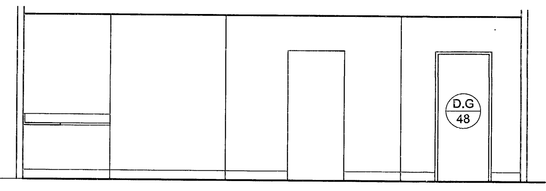
Elevation 2



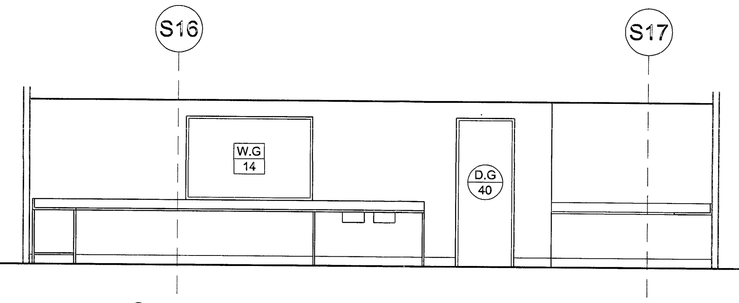
Elevation 3



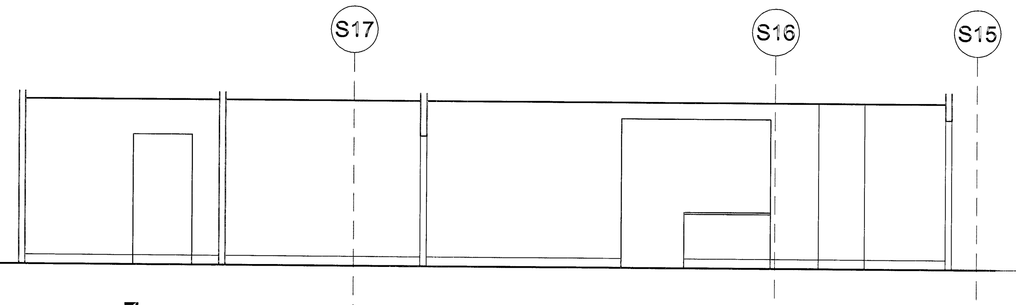
Elevation 4



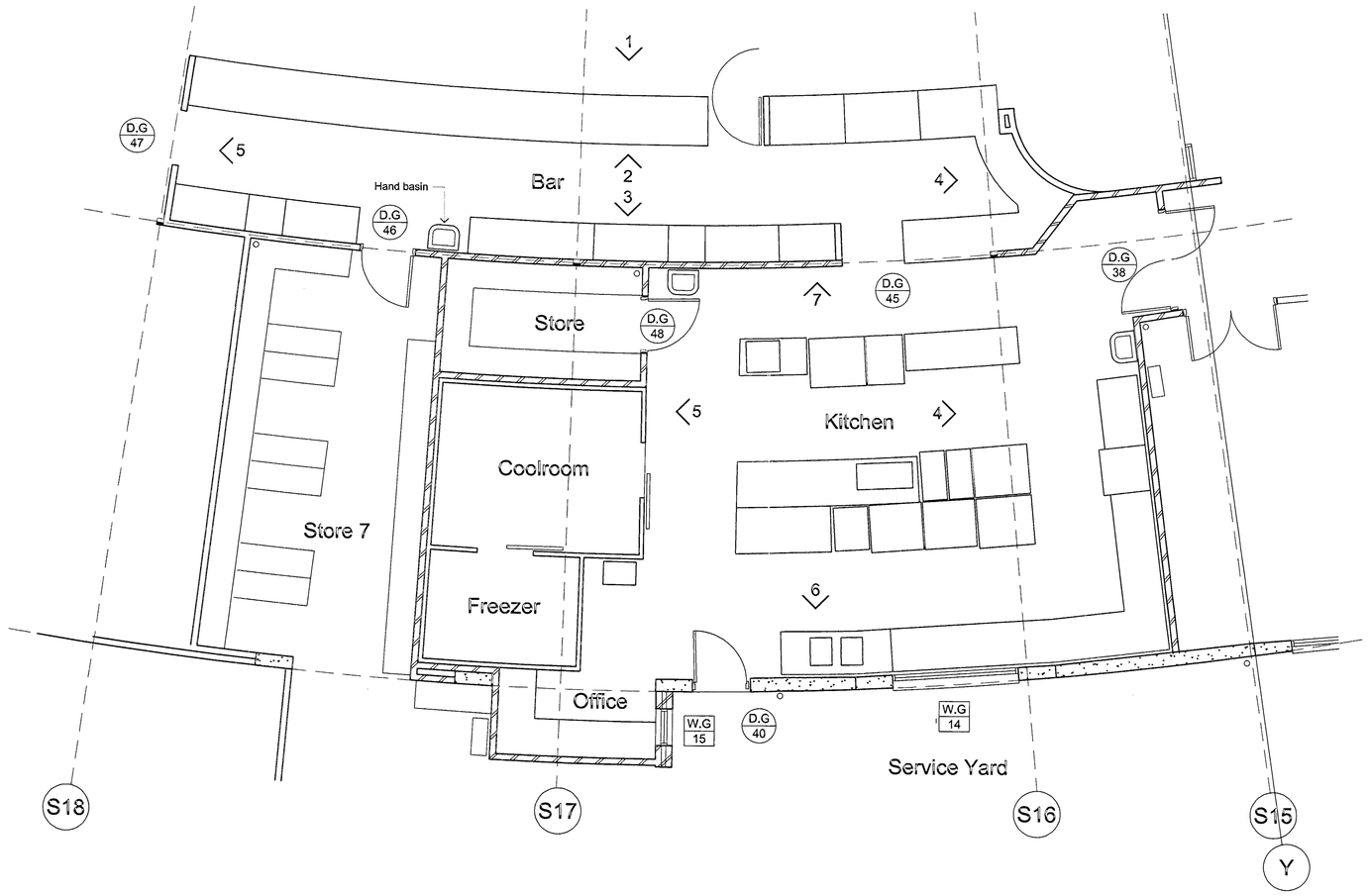
Elevation 5



Elevation 6



Elevation 7



(1) Kitchen and Bar

Issue		
P	10.10.06	Preliminary
T1	20.6.07	Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Wet Area and Fitments Details Sheet 2

Hodges Shorten Architects Pty Ltd
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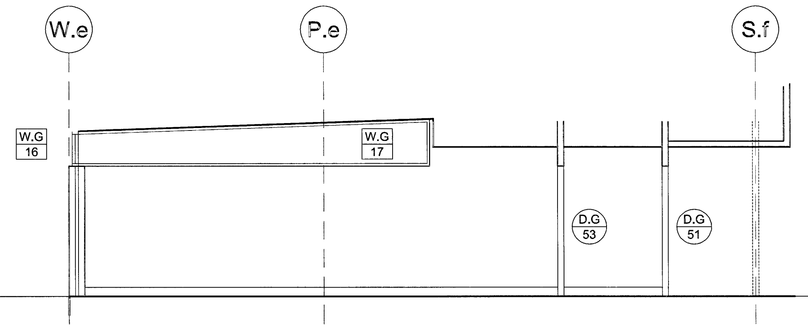
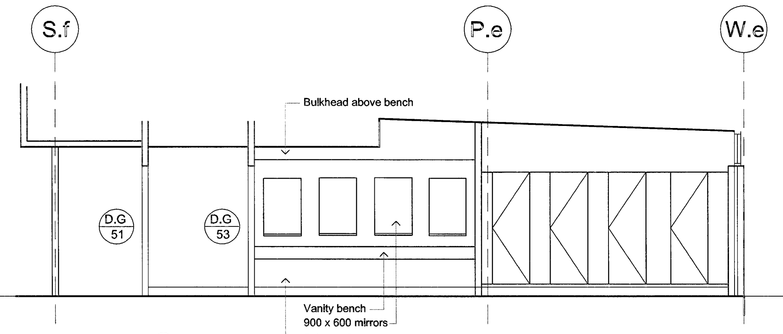
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

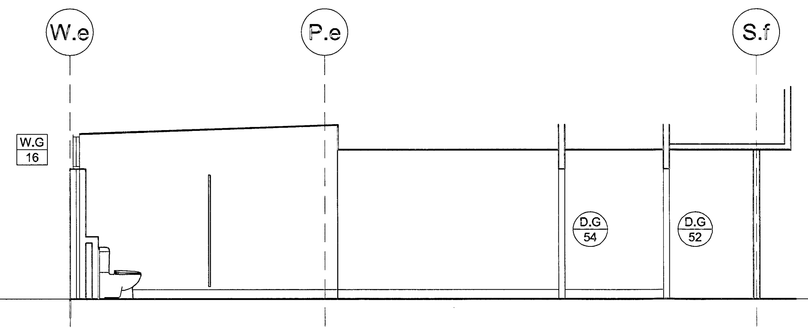
Date: 10.10.06
Scale: 1:50 @B1
Drawing No. 2380.W25 T1



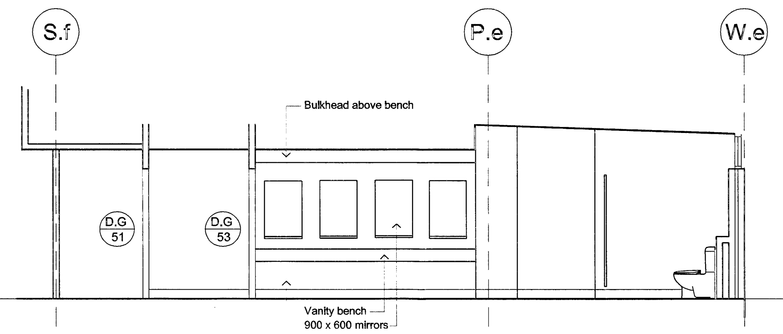
Elevation 1



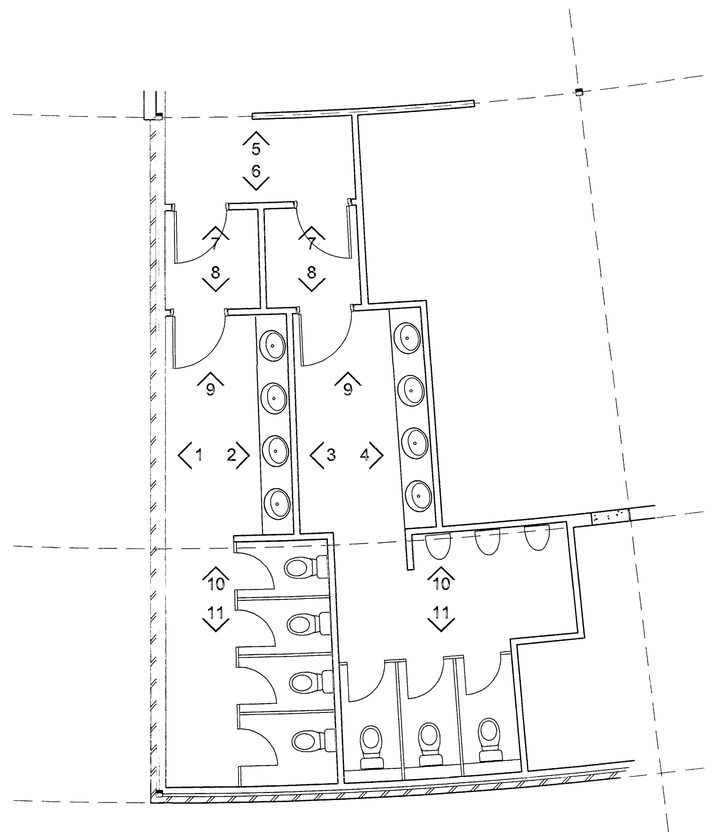
Elevation 2

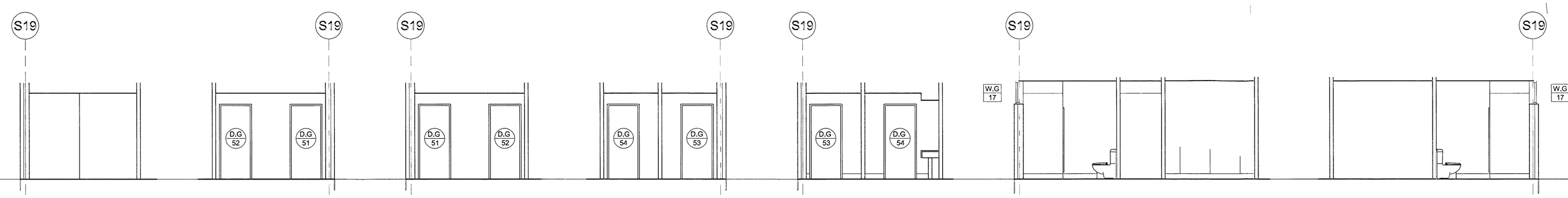


Elevation 3



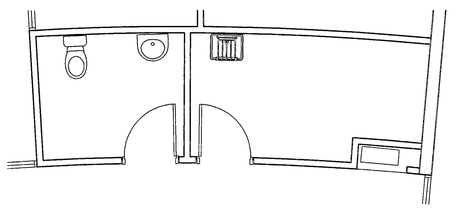
Elevation 4



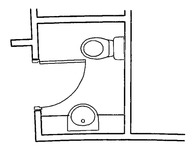


Elevation 5 Elevation 6 Elevation 7 Elevation 8 Elevation 9 Elevation 10 Elevation 11

1 Male and Female Wc



1 Disabled Wc and Cleaner



1 Staff Wc

Issue

P 10.10.06 Preliminary
T1 20.6.07 Tender Issue

BAYVIEW GOLF CLUB

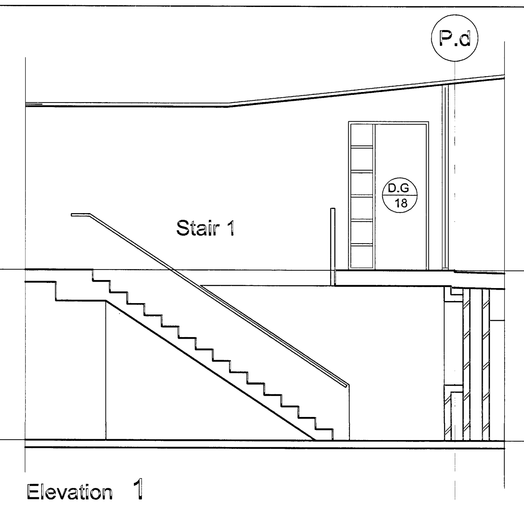
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Wet Area and Fitments Details Sheet 3

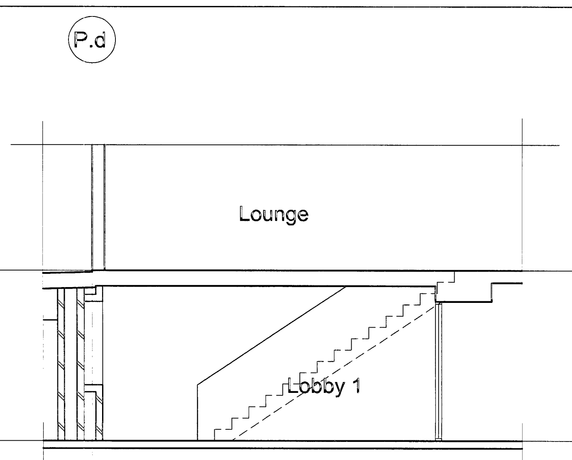
Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:50 @B1

Drawing No. 2380.W26 T1



Elevation 1



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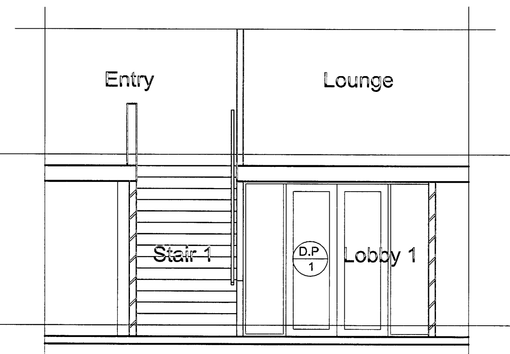

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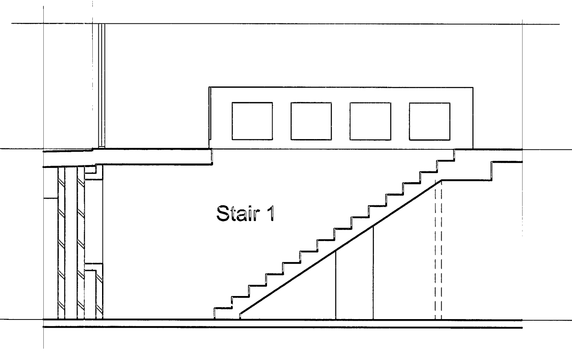

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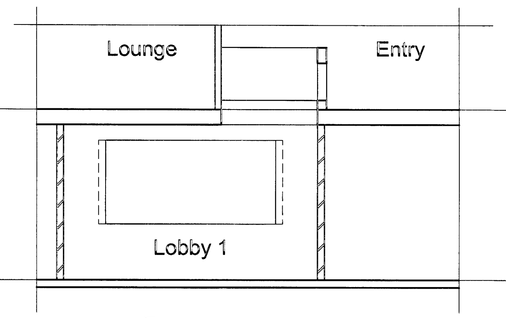
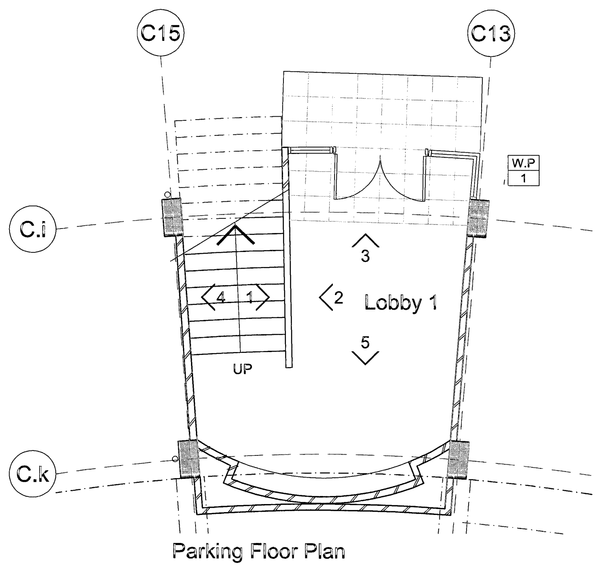
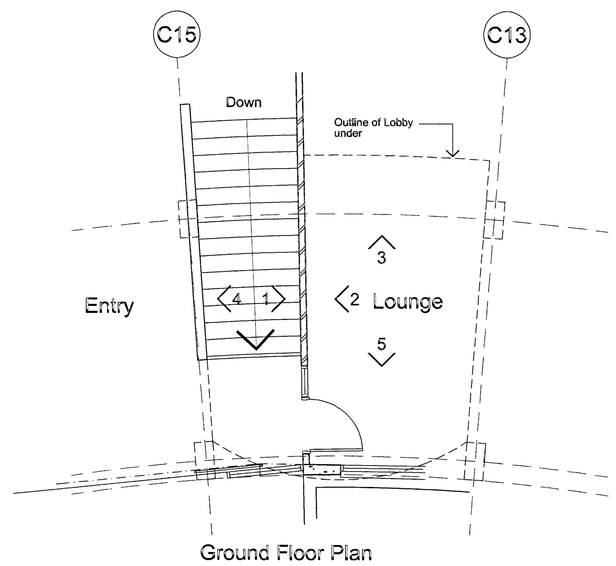


Elevation 5



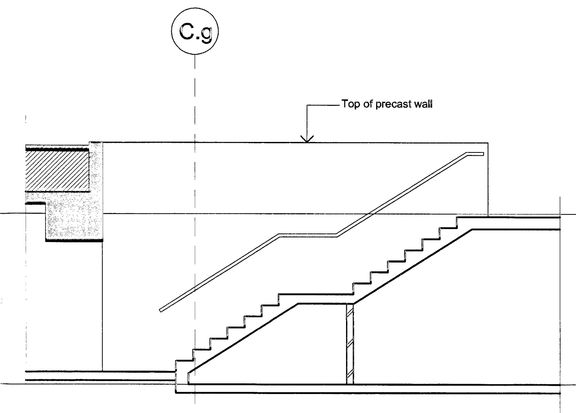
Parking Floor Plan



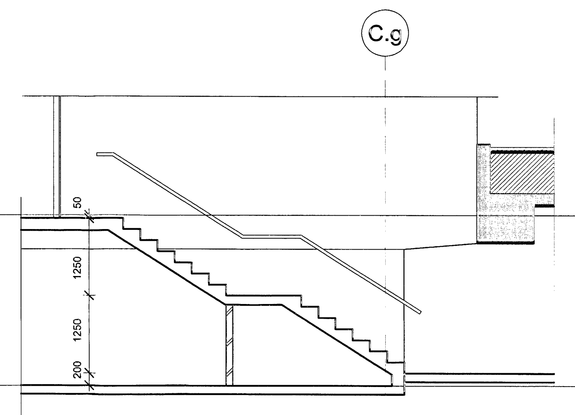
Ground Floor Plan

1 Stair 1 and Lobby 1

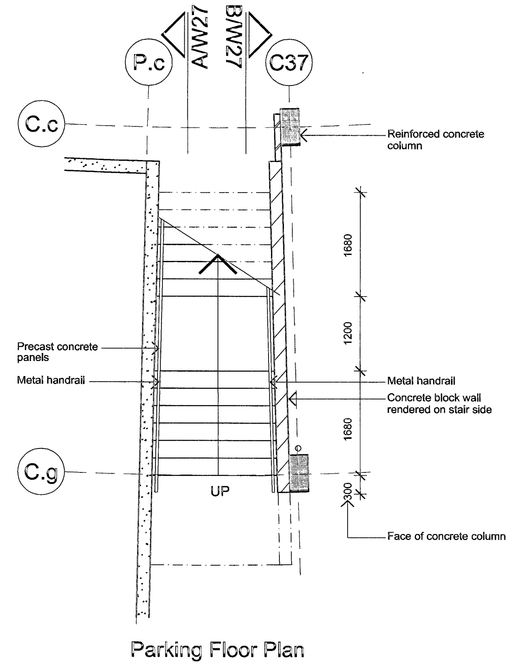
2



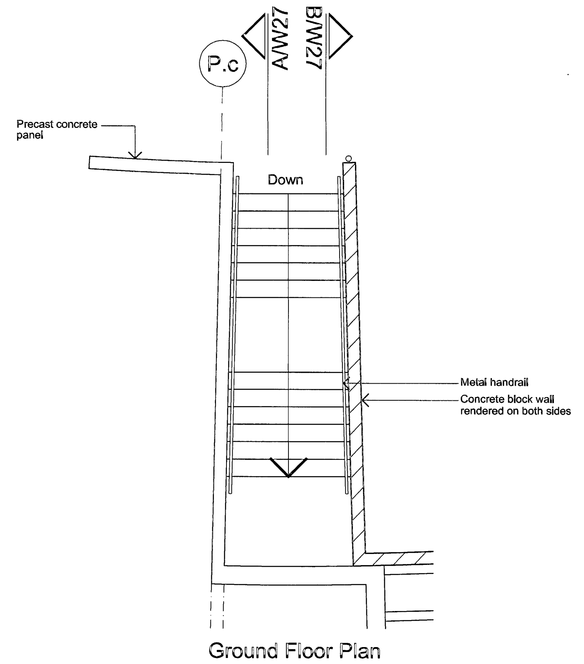
Section A.A



Section B.B



Parking Floor Plan



Ground Floor Plan

3 Stair 2

Issue		
P	10.10.06	Preliminary
T1	20.6.07	Tender issue

BAYVIEW GOLF CLUB

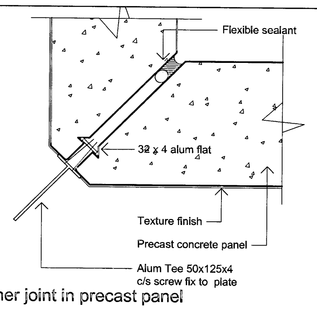
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Stair and Balustrade Details

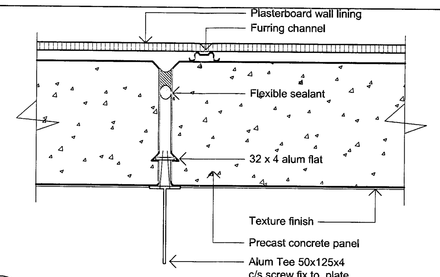
Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:100 @B1
Drawing No. 2380.W27 T1

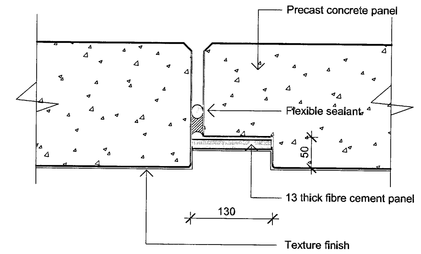
F:\CURRENT DRAWINGS\Bayview comp\CCView Folder\Fitments.dwg, 20/06/2007 4:46:33 PM, Hodges Shorten Architects No.3



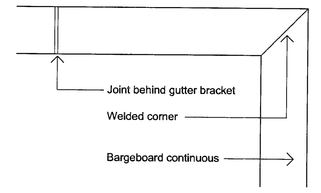
1 Corner joint in precast panel



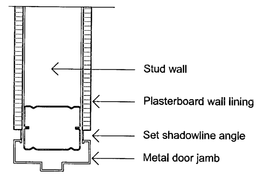
7 Joint in precast panel - typical



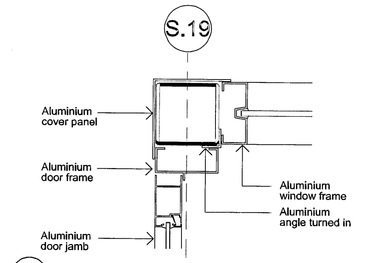
13 Joint in precast panel - Carpark south wall



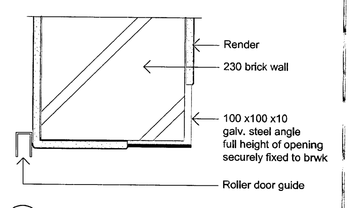
19 Plan of fascia/barge corner



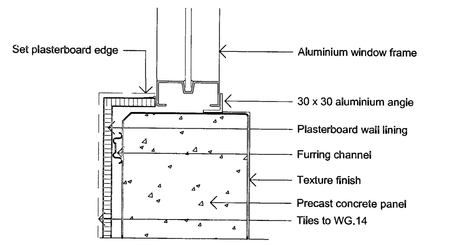
25 Metal door jamb - stud lined plasterb'd



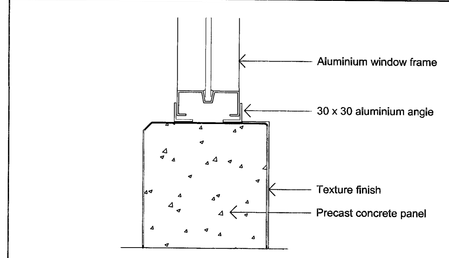
31 Door DG.44 jamb



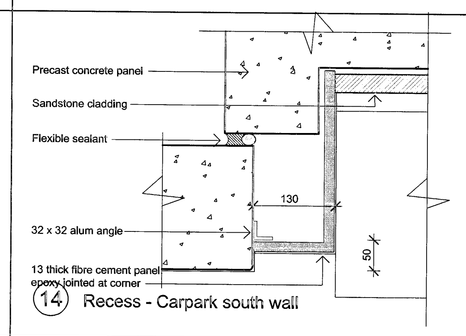
37 Door DG.42 jamb



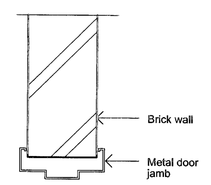
2 Window jamb to precast panel typical



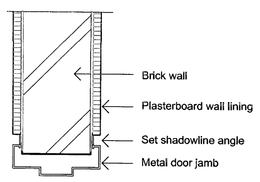
8 Window WG.1 and 2 jamb



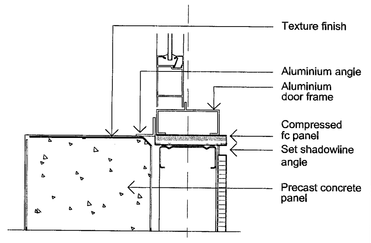
14 Recess - Carpark south wall



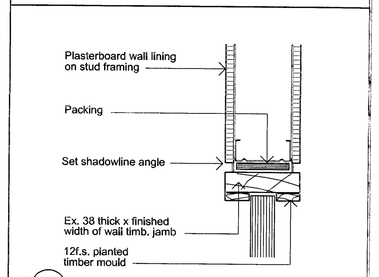
20 Metal door jamb - face brick



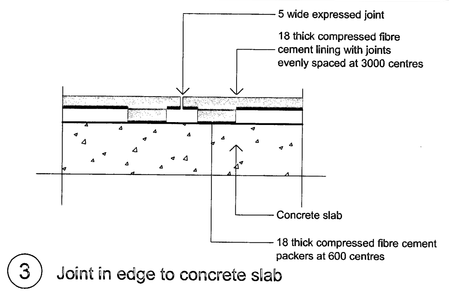
26 Metal door jamb - brick lined plasterb'd



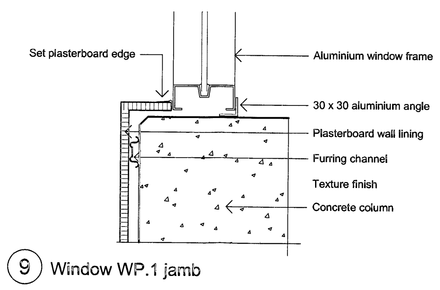
32 Door DG.44 jamb



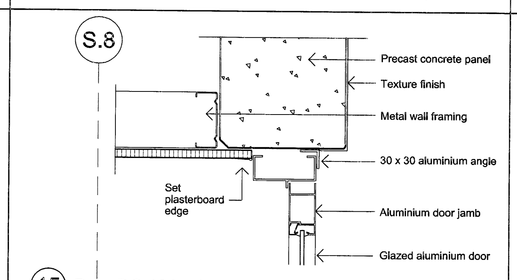
38 Door DG.47 jamb



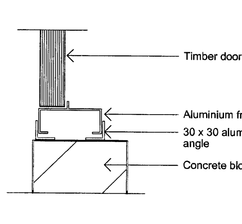
3 Joint in edge to concrete slab



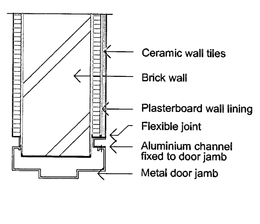
9 Window WP.1 jamb



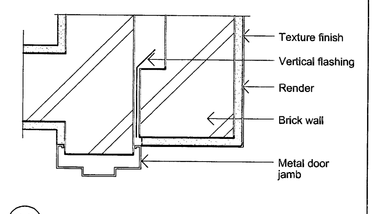
15 Door DG.10 jamb



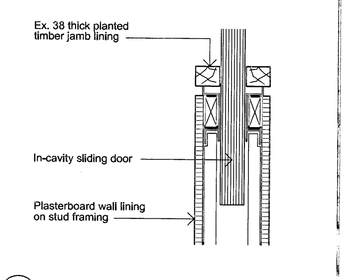
21 Door DG.4 jamb



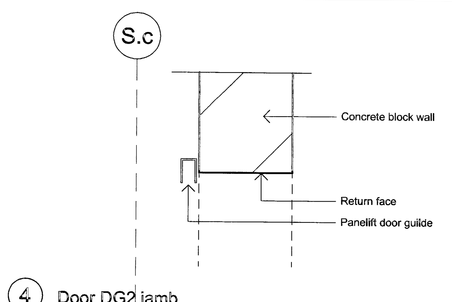
27 Metal door jamb - tiled wall



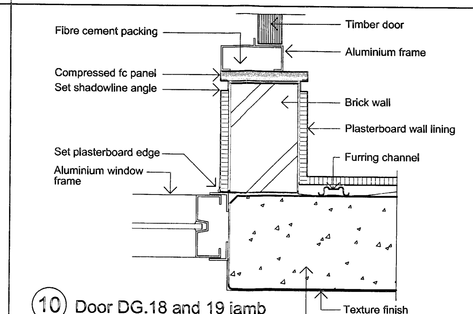
33 Door DG.41 jamb



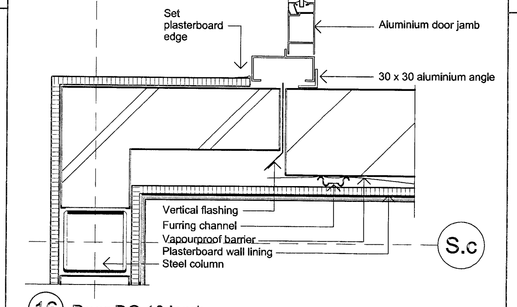
39 Door DG.47 jamb



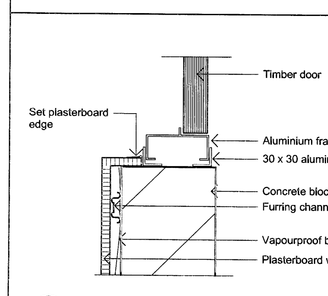
4 Door DG2 jamb



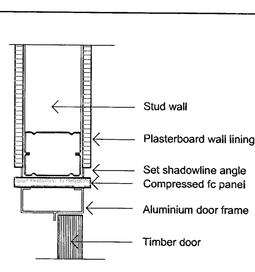
10 Door DG.18 and 19 jamb



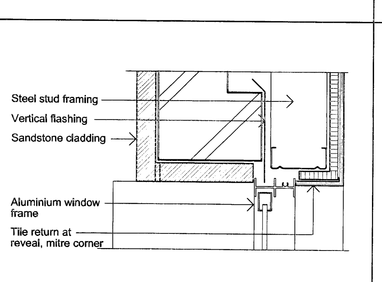
16 Door DG.10 jamb



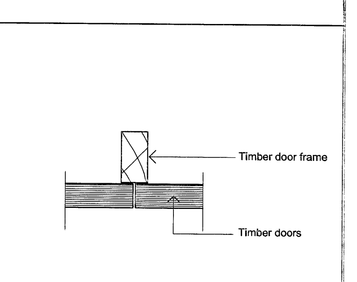
22 Door DG.33 jamb



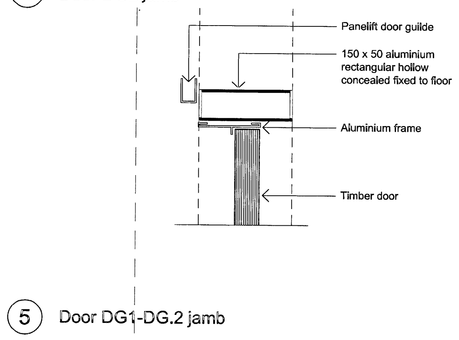
28 Alum. door jamb - stud lined plasterb'd



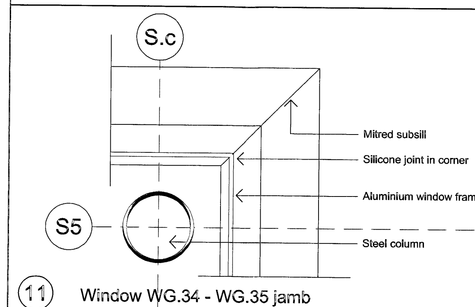
34 Window WG.16,17 jamb



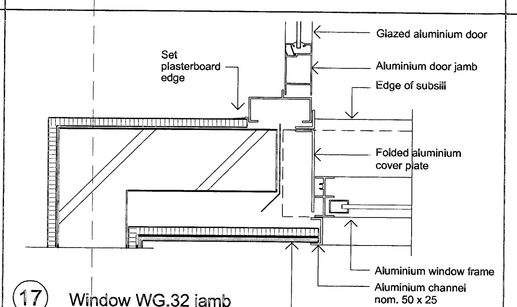
40 Door DG.23 intermediate jamb



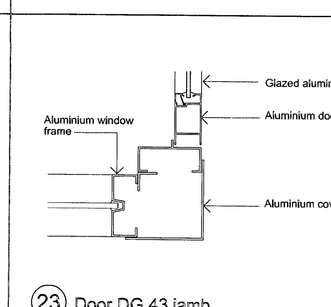
5 Door DG1-DG.2 jamb



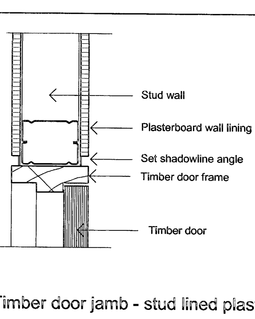
11 Window WG.34 - WG.35 jamb



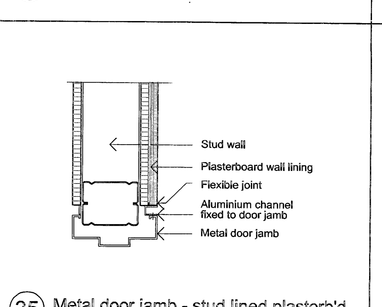
17 Window WG.32 jamb



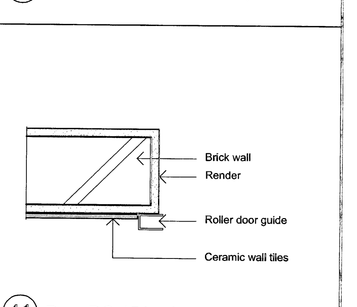
23 Door DG.43 jamb



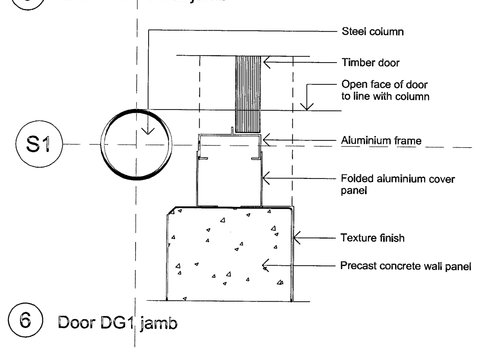
29 Timber door jamb - stud lined plasterb'd



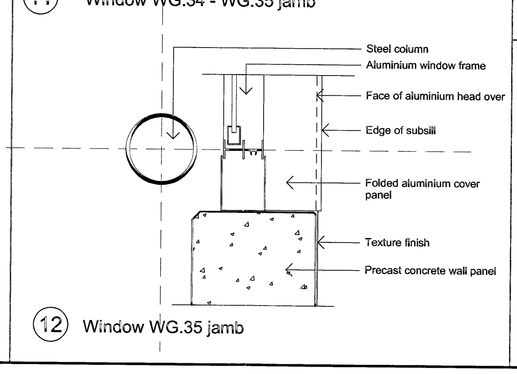
35 Metal door jamb - stud lined plasterb'd and tiled



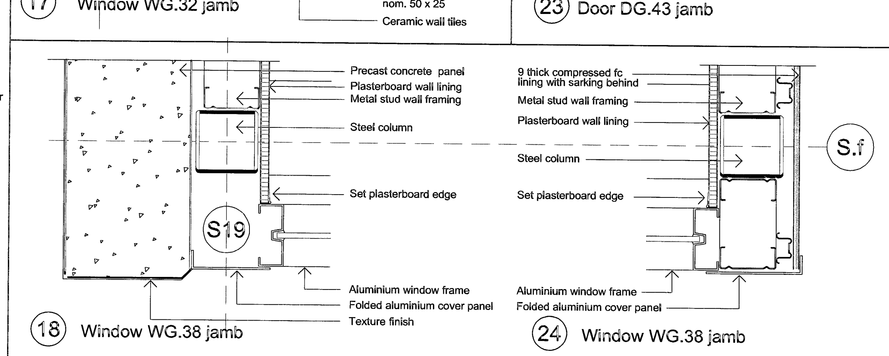
41 Door DG.45 jamb



6 Door DG1 jamb

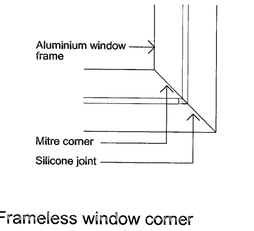


12 Window WG.35 jamb

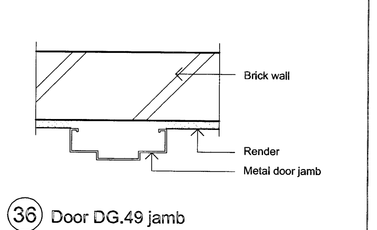


18 Window WG.38 jamb

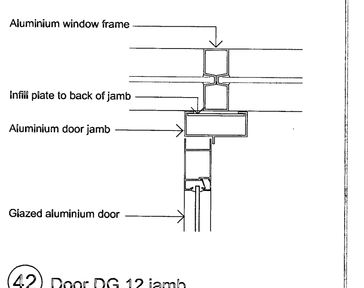
24 Window WG.38 jamb



30 Frameless window corner



36 Door DG.49 jamb



42 Door DG.12 jamb

Issue

P 10.10.06 Preliminary
T 20.6.07 Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Construction Details Sheet 1

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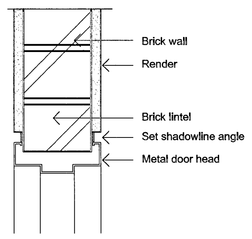
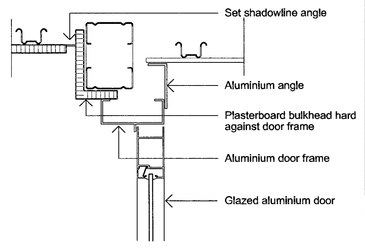
fax 9419 5632

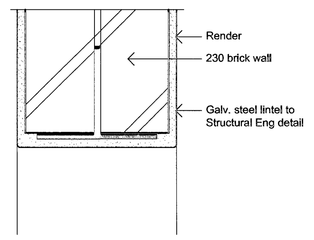
Date: 10.10.06
Scale: 1:5 @B1
Drawing No. 2380.W28 T1



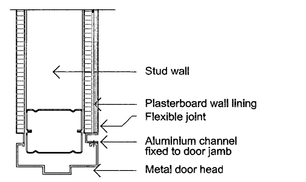
1 Metal door head



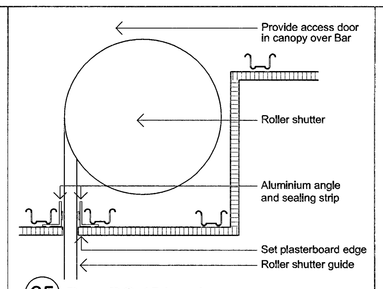
7 Door DG.10 head



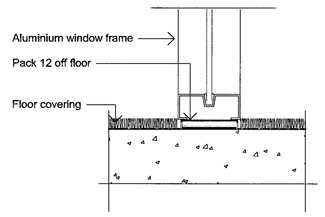
13 Door DG.42 head



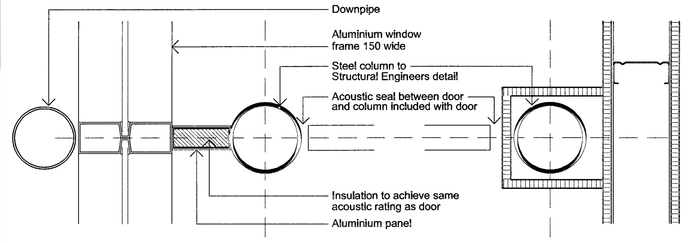
19 Metal door head - stud lined plasterb'd and tiling



25 Door DG.45 head

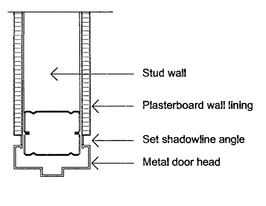


31 Internal aluminium window sill

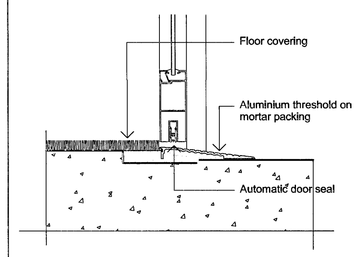


37 Door DG.27 jamb

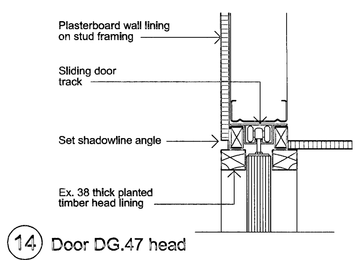
43 Door DG.27 jamb



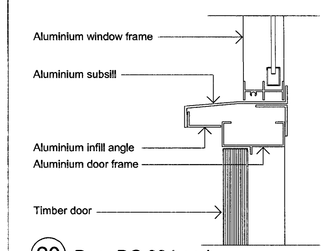
2 Metal door head - stud lined plasterb'd



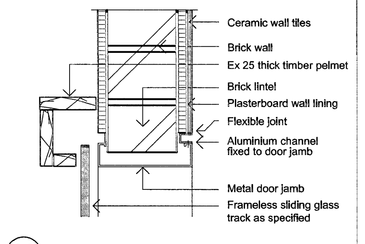
8 Door DG.10 sill



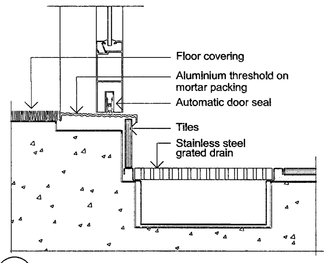
14 Door DG.47 head



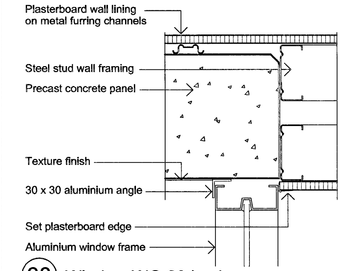
20 Door DG.33 head



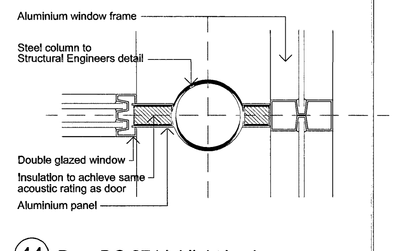
26 Door DG.7 head



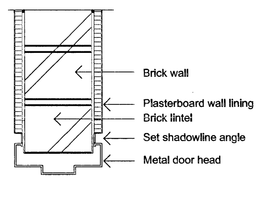
32 Door DG.24 sill



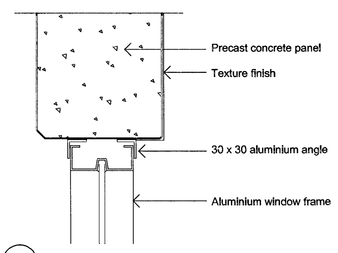
38 Window WG.20 jamb



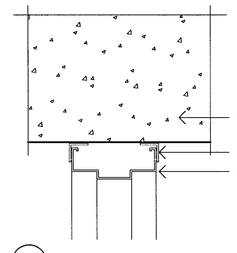
44 Door DG.27 highlight jamb



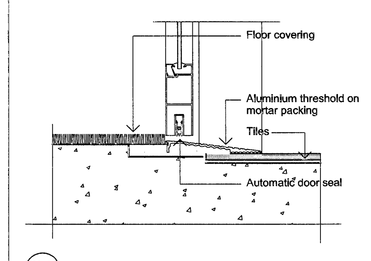
3 Metal door head - brick lined plasterb'd



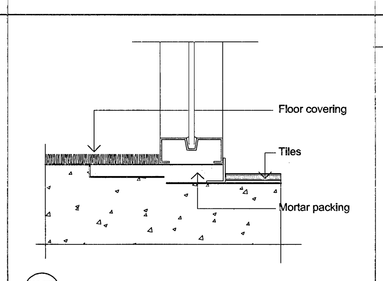
9 Window WG.1 and 2 head



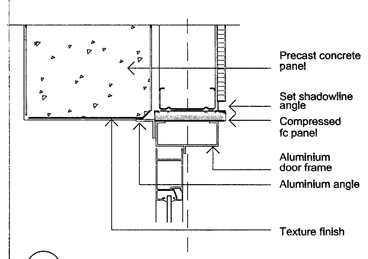
15 Metal door head



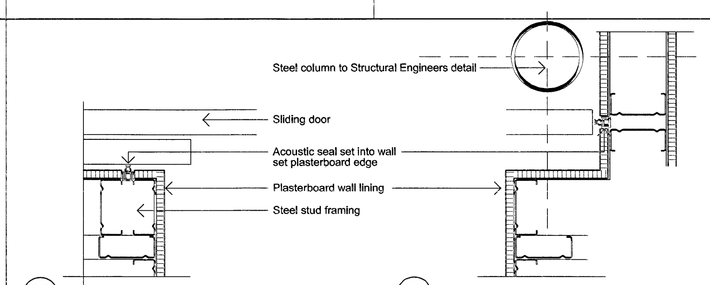
21 Door DG.19 sill



27 Door DG.19 sidelight sill

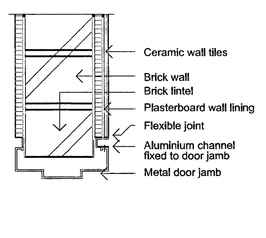


33 Door DG.44 head

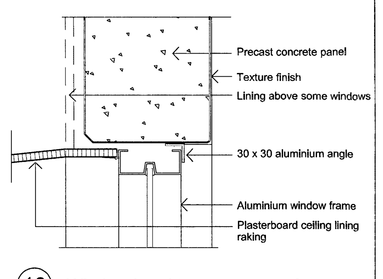


39 Door DG.29 jamb

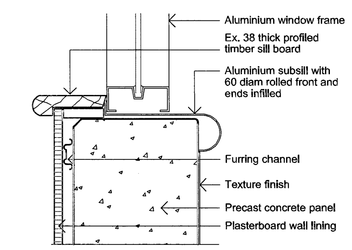
45 Door DG.29 jamb



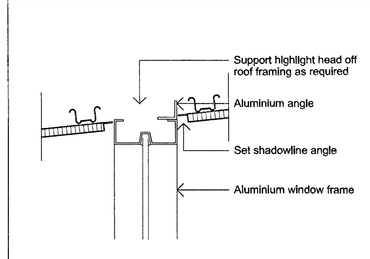
4 Metal door head - tiled wall



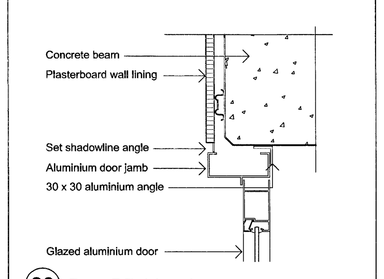
10 Window head to precast panel



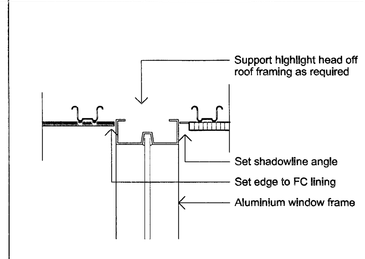
16 Window sill to precast panel



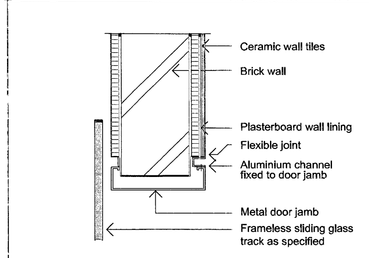
22 Door DG.21 head



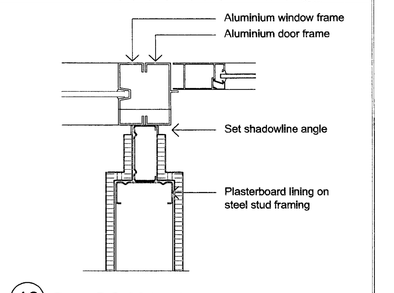
28 Door DP.1 head



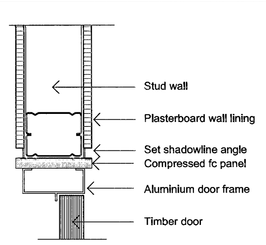
34 Door DG.43 head



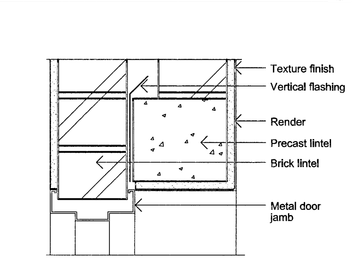
40 Door DG.7 jamb



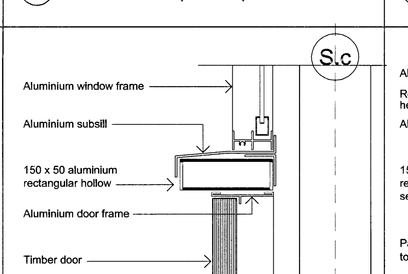
46 Door DG.20 jamb



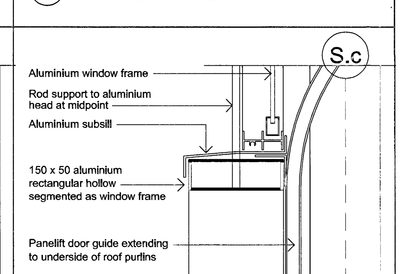
5 Alum. door head - stud lined plasterb'd



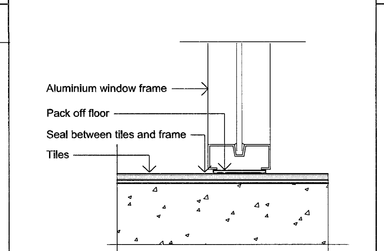
11 Door DG.41 head



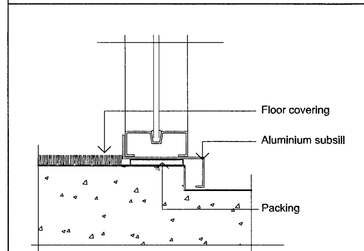
17 Door DG.1 head Window WG.35 sill



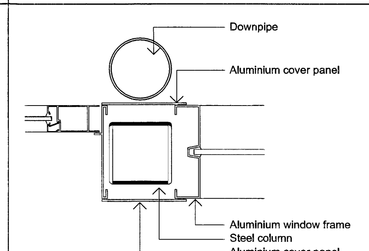
23 Door DG.2 head Window WG.35 sill



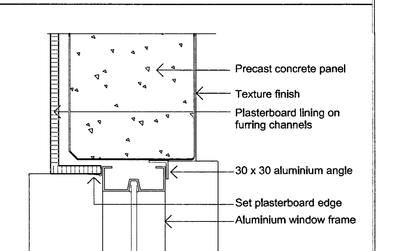
29 Door DP.1 sill



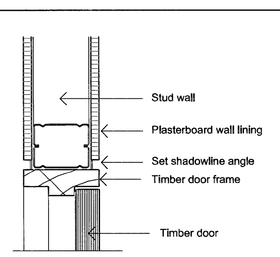
35 Window WG.18 sill



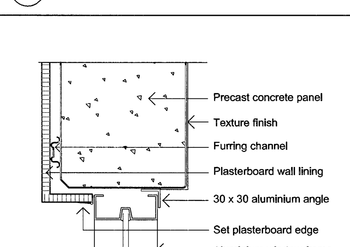
41 Door DG.24 jamb



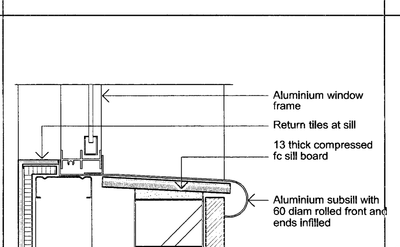
47 Window WG.22 jamb



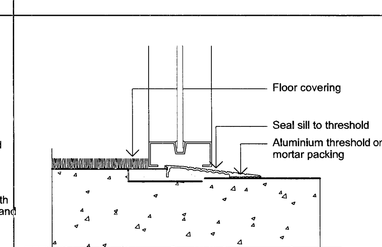
6 Timber door head - stud lined plasterb'd



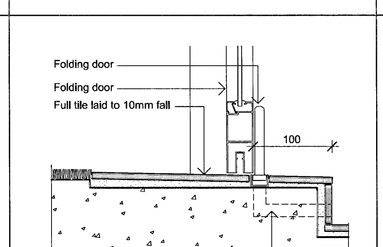
12 Window head to precast panel



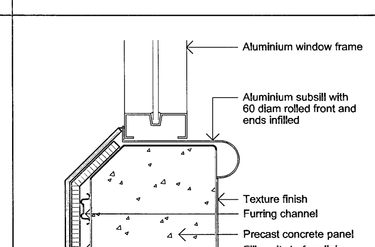
18 Window WG.16 and 17 sill



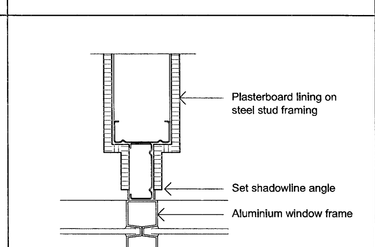
24 Door DG.10 sill sidelight



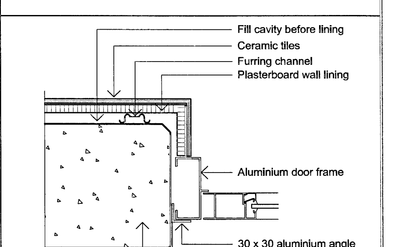
30 Door DG.20 sill



36 Window WG.14 sill



42 Window WG.11 mullion



48 Door DG.40 jamb

Issue

P 10.10.06 Preliminary
T 20.6.07 Tender Issue

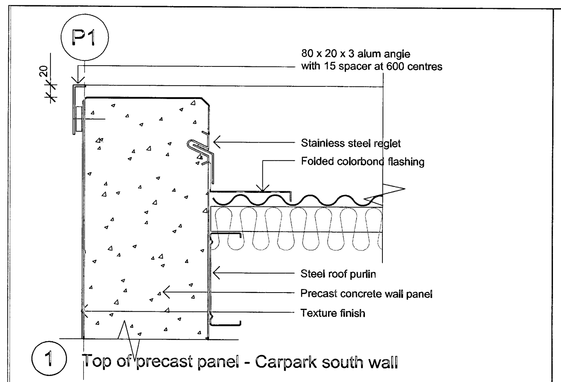
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Construction Details Sheet 2

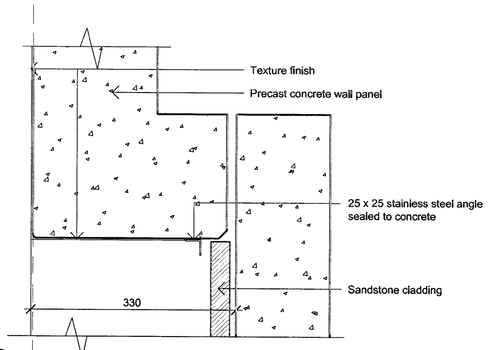
Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:5 @B1

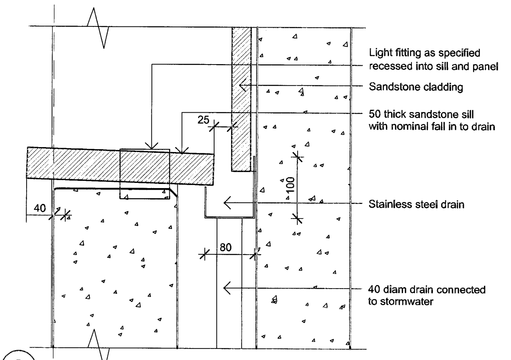
Drawing No. 2380.W29 T1



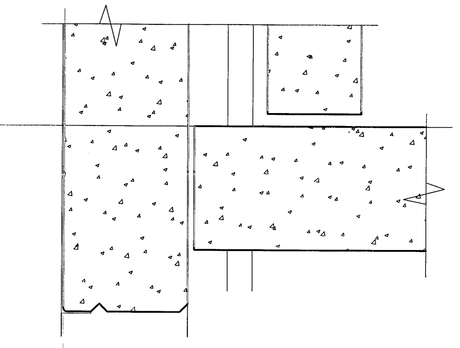
1 Top of precast panel - Carpark south wall



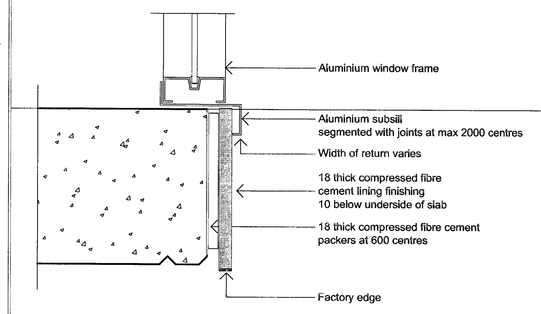
2 Top of recess - Carpark south wall



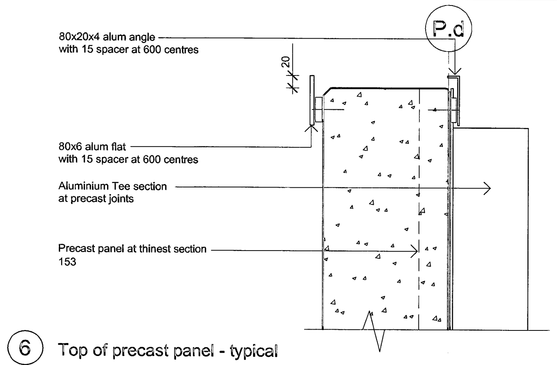
3 Bottom of recess - Carpark south wall



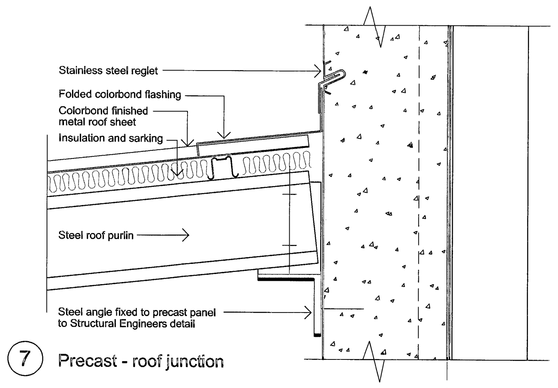
4 Panel at floor level - Carpark south wall



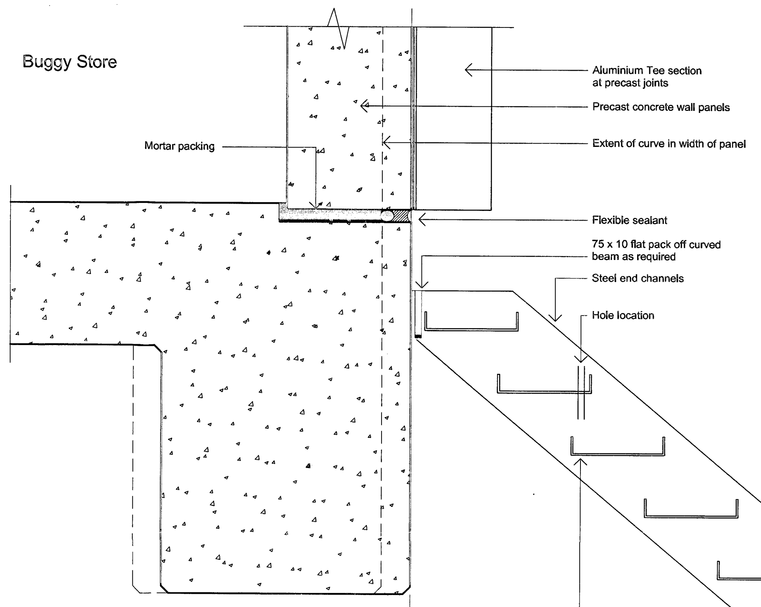
5 Edge of floor slab/ Window sill



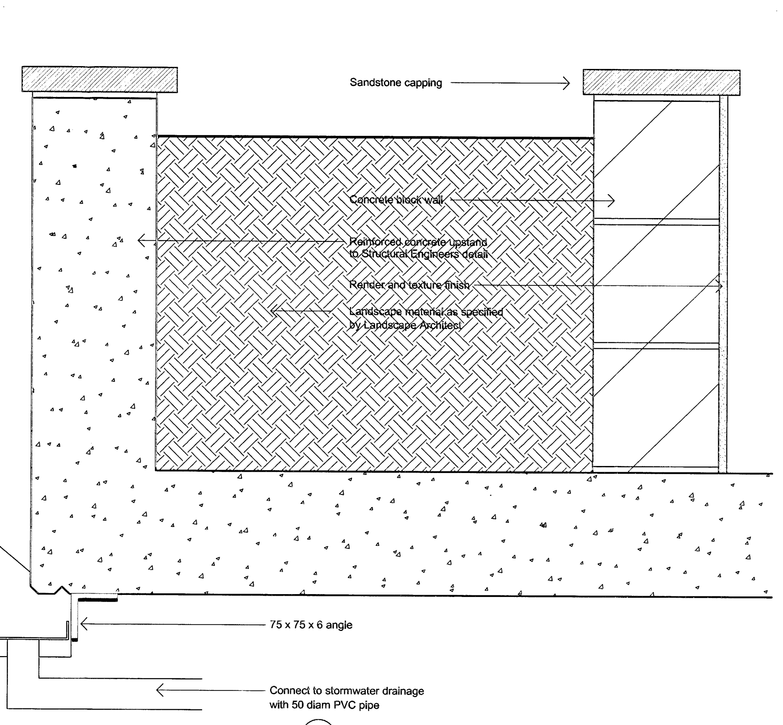
6 Top of precast panel - typical



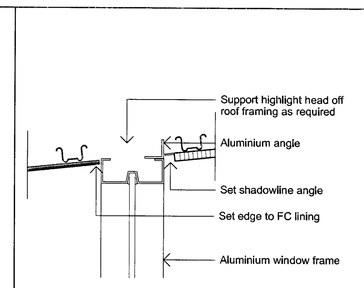
7 Precast - roof junction



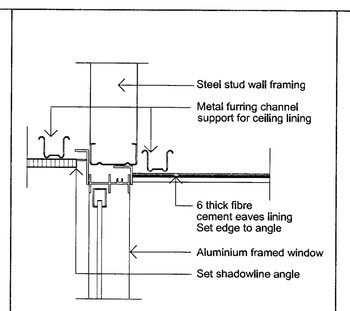
8 Panel at floor level



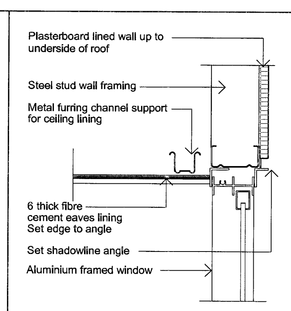
8a Planter



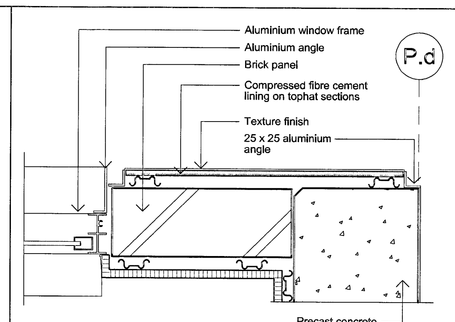
10 Window WG.18 head



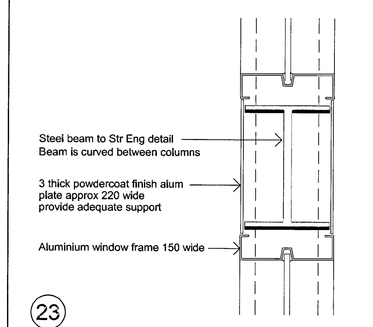
13 Window WG.33 head



16 Window WG.34 head



18 Window WG.33 jamb



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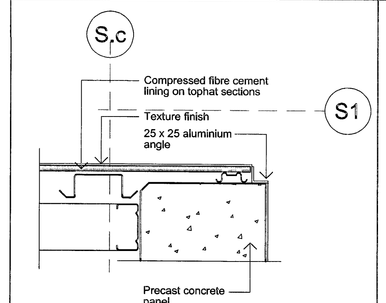
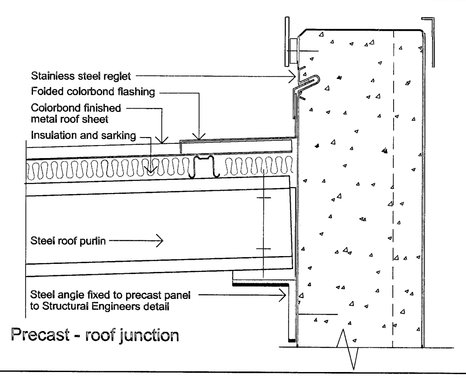
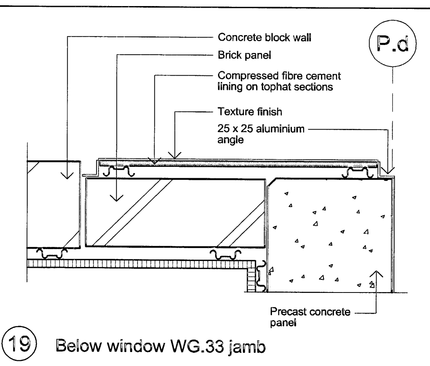


11 Parapet plan adjacent S1

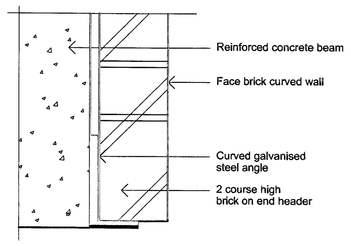


14 Precast - roof junction



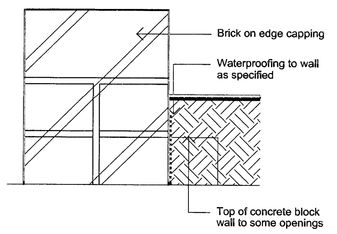
19 Below window WG.33 jamb

24

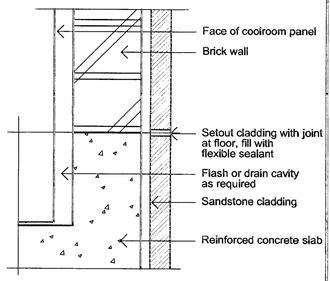


20 Head to Carpark opening

25

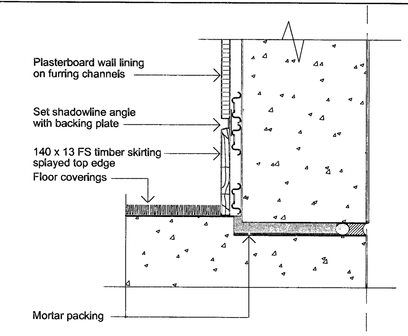


21 Sill to Carpark opening

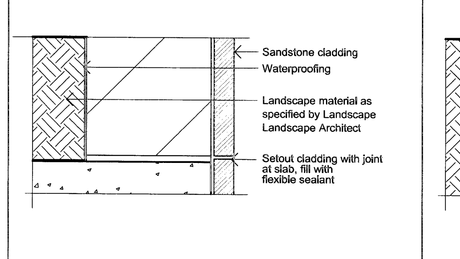


26 External wall to Cellar

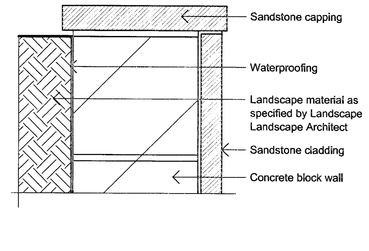
12 Panel at floor level



9 Edge of Balcony slab

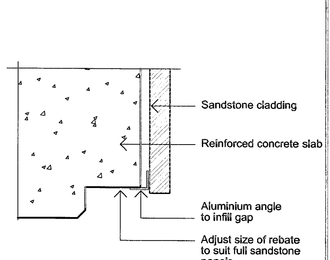


15 Planter 1 wall



17 Top of Planter wall

22



27 External wall - slab sofit to Cellar

Issue

P 10.10.06 Preliminary
T 20.6.07 Tender issue

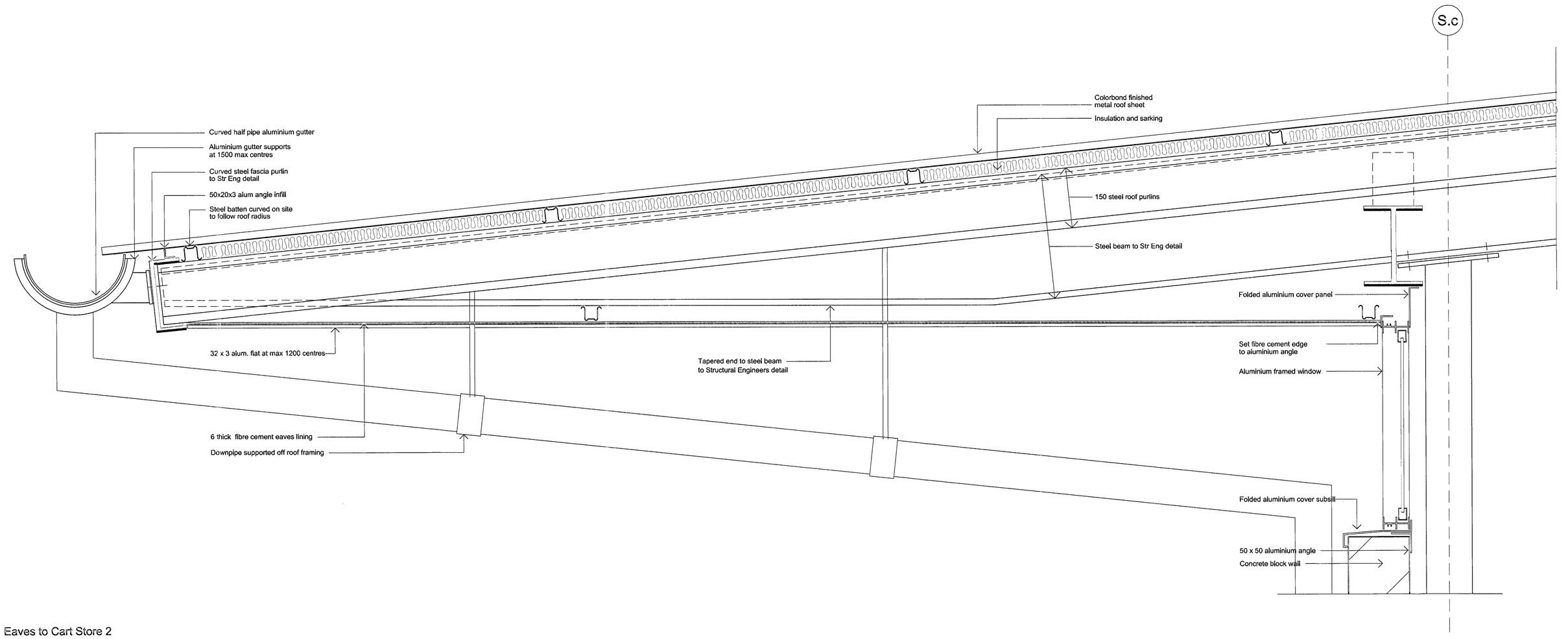
Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Construction Details Sheet 3

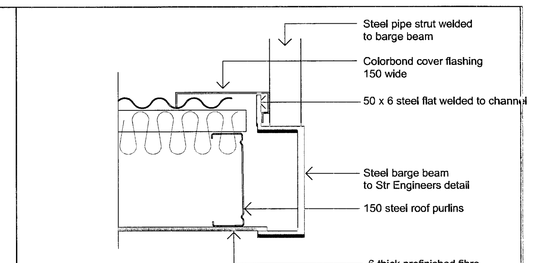
Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:5 @81

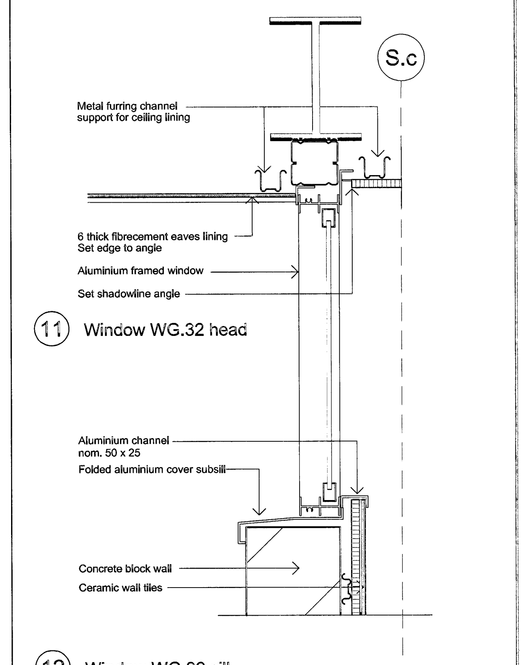
Drawing No. 2380.W30 T1



1 Eaves to Cart Store 2

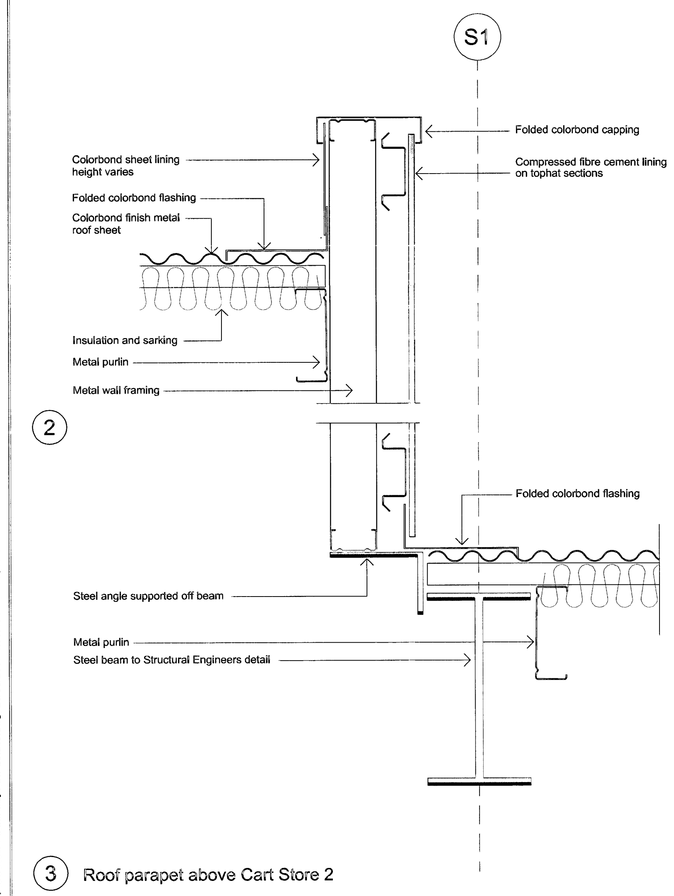


10 Barge to Entry Roof 1



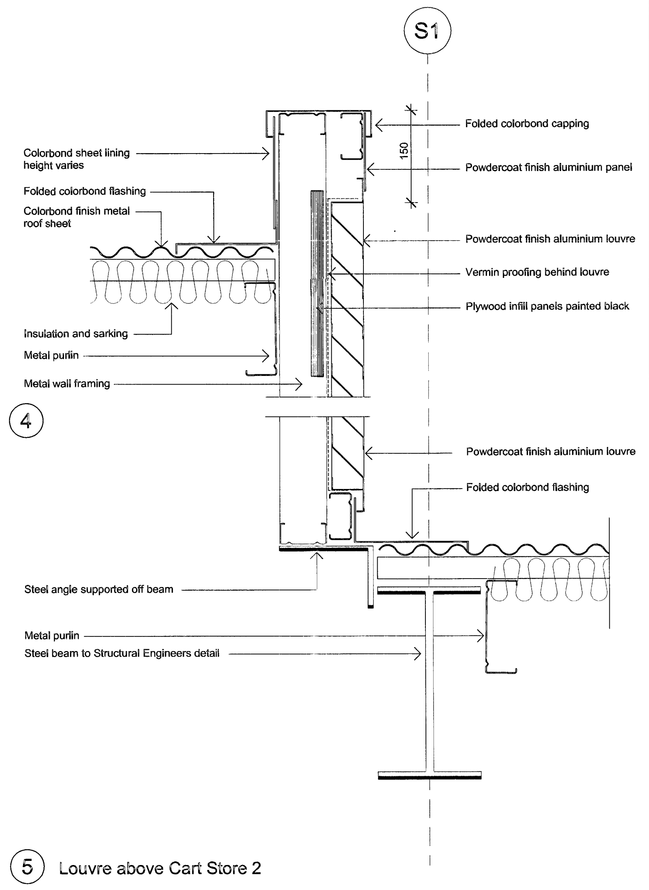
11 Window WG.32 head

12 Window WG.32 sill



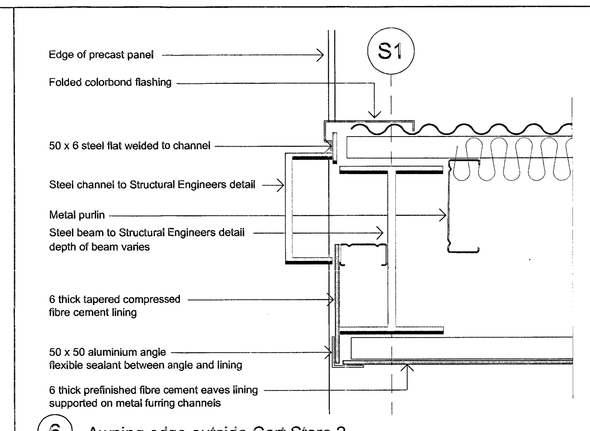
2

3 Roof parapet above Cart Store 2

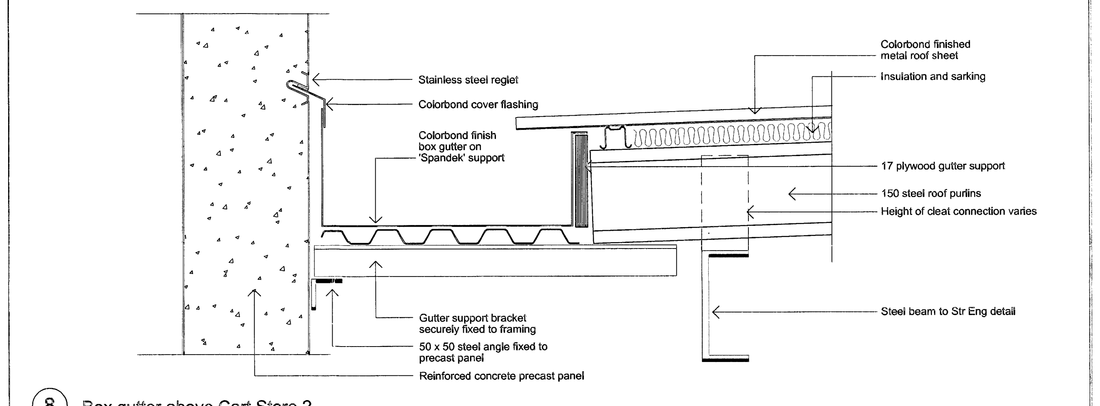


4

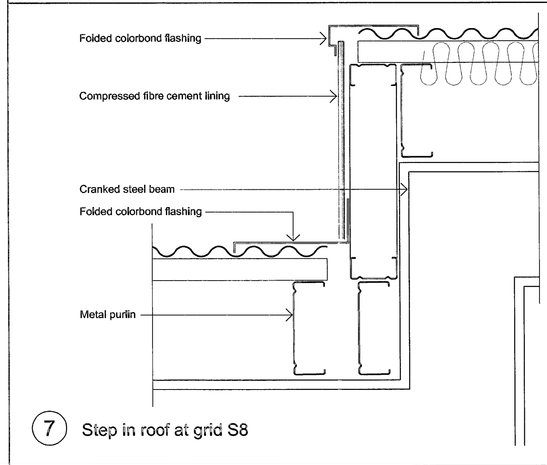
5 Louvre above Cart Store 2



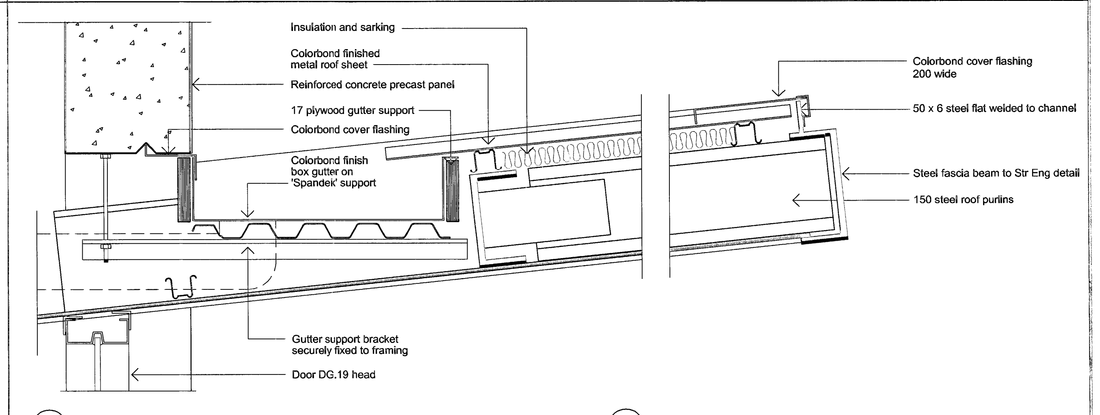
6 Awning edge outside Cart Store 2



8 Box gutter above Cart Store 2



7 Step in roof at grid S8



9 Box gutter above Entry Roof 1 and 2

13 Fascia to Entry Roof

issue

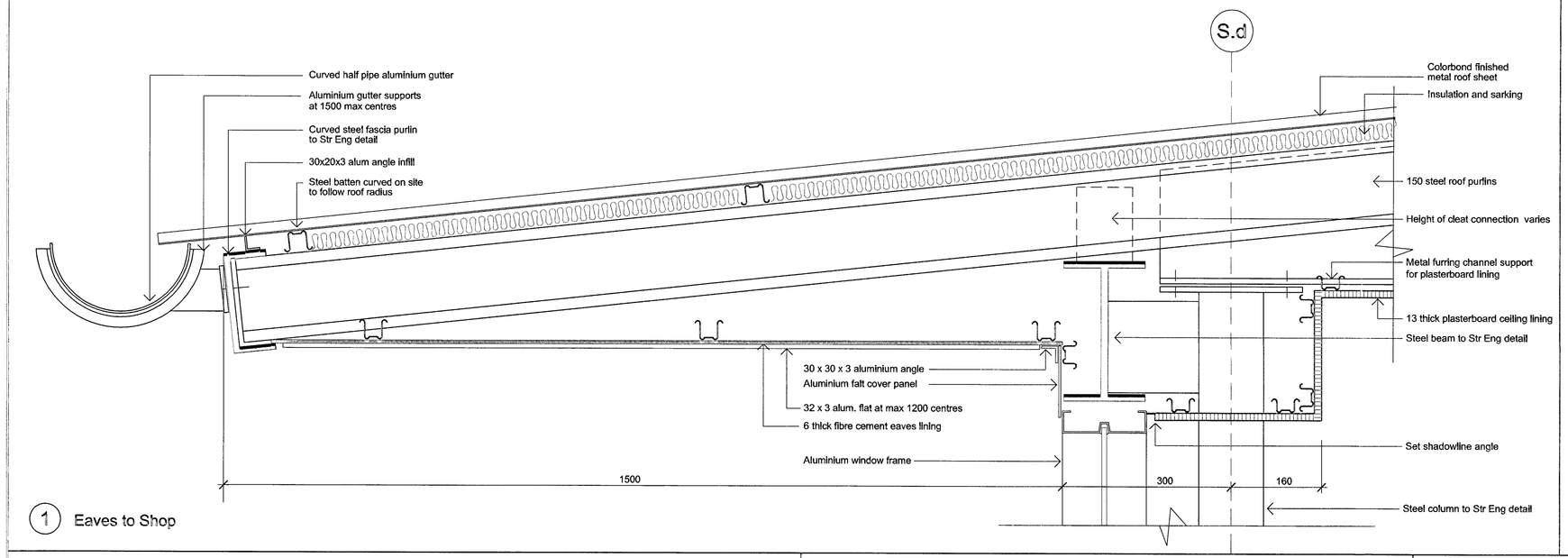
P 10.10.06 Preliminary
T 20.6.07 Tender issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

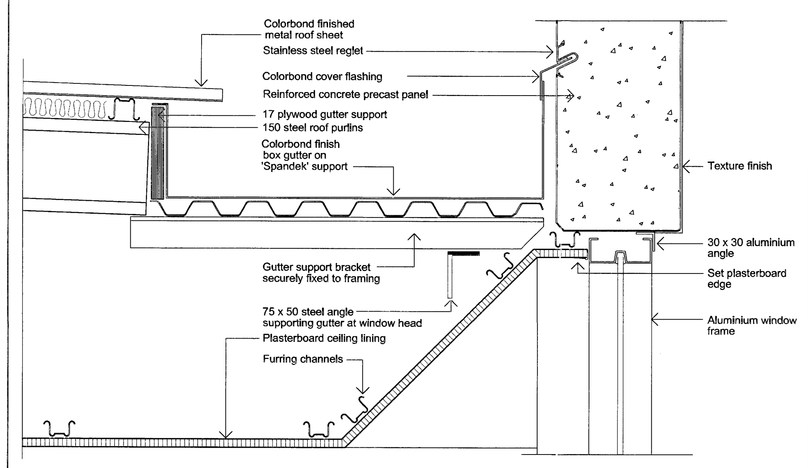
Drawing: Construction Details Sheet 4

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:5 @B1
Drawing No. 2380.W31 T1



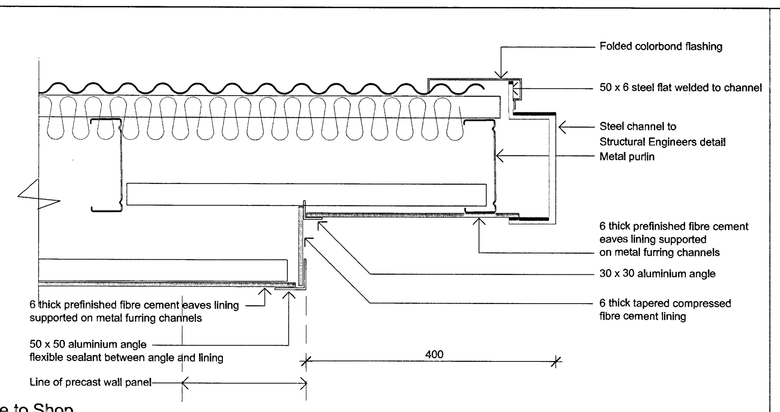
1 Eaves to Shop



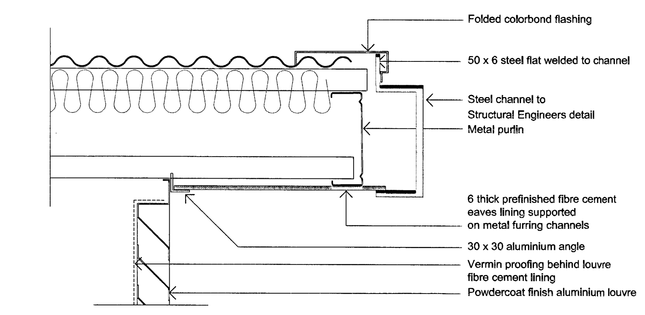
8 Window head to WG.10 to 13

15

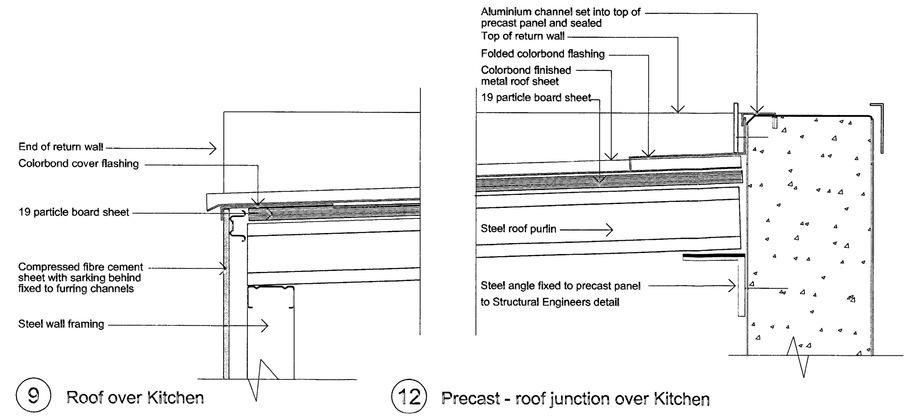
S8



2 Barge to Shop

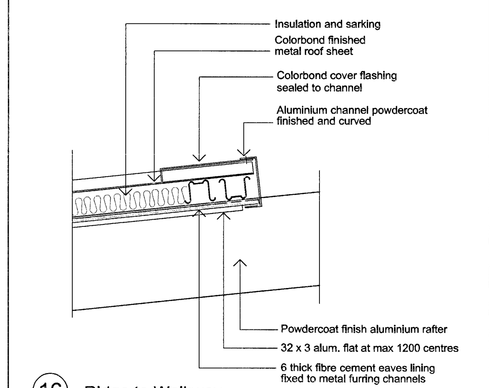


5 Barge to Corridor 1

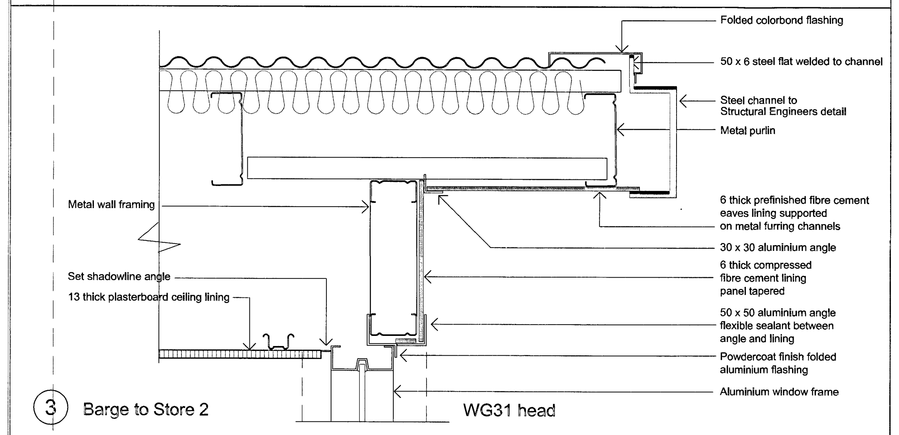


9 Roof over Kitchen

12 Precast - roof junction over Kitchen

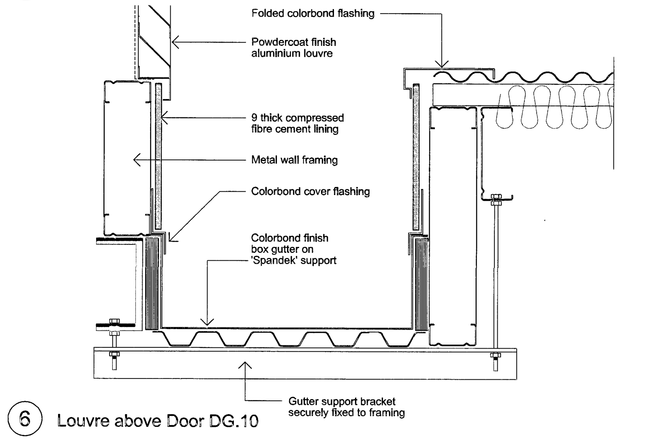


16 Ridge to Walkway

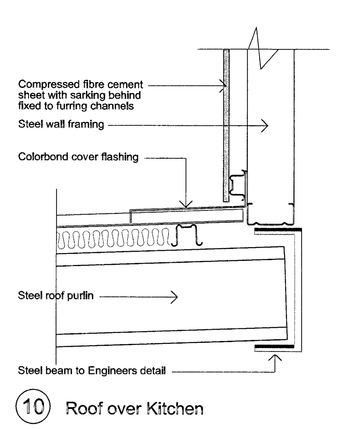


3 Barge to Store 2

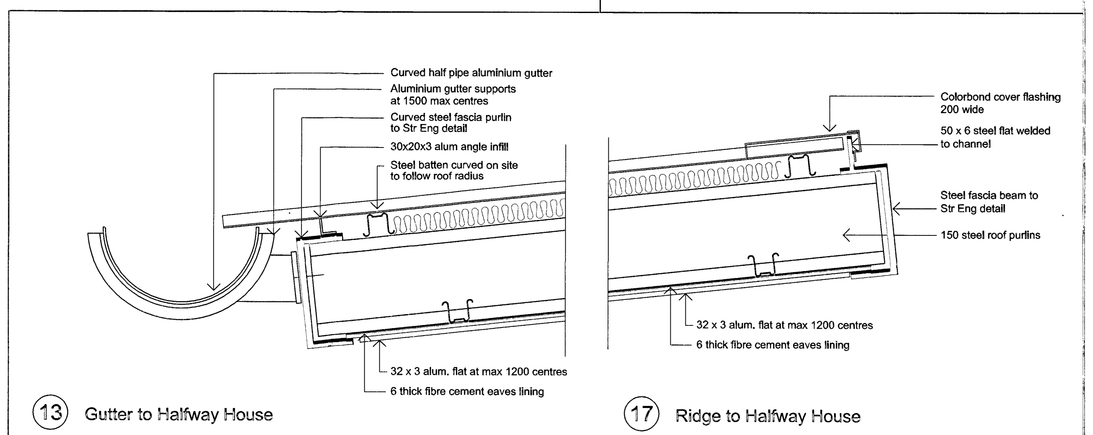
WG31 head



6 Louvre above Door DG.10

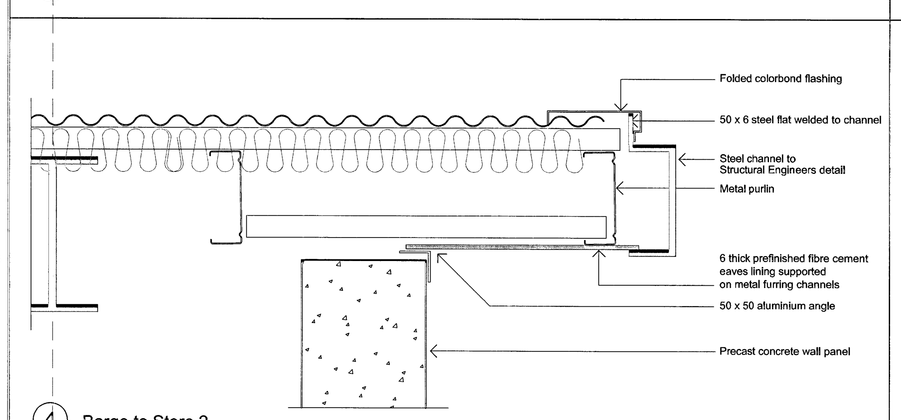


10 Roof over Kitchen

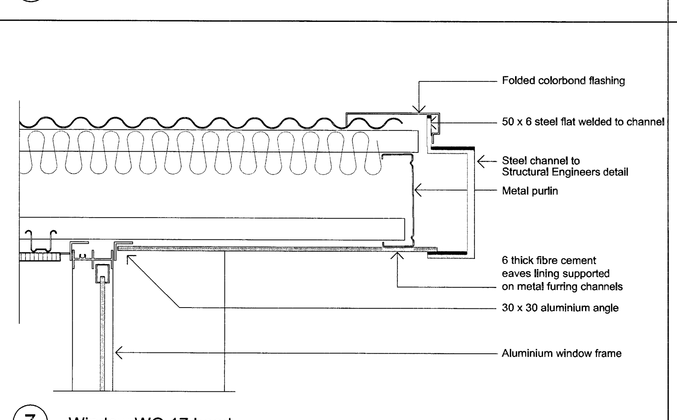


13 Gutter to Halfway House

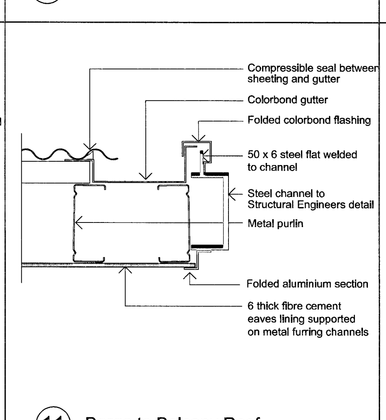
17 Ridge to Halfway House



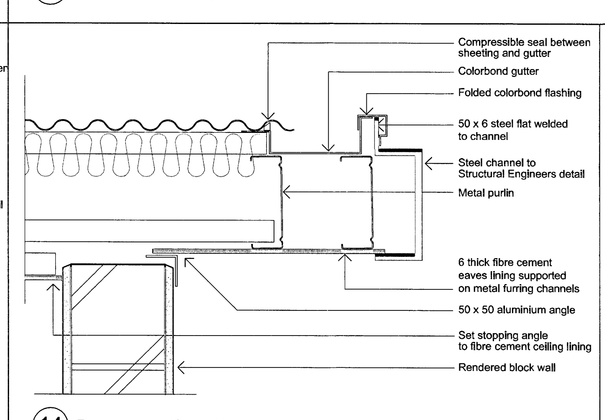
4 Barge to Store 2



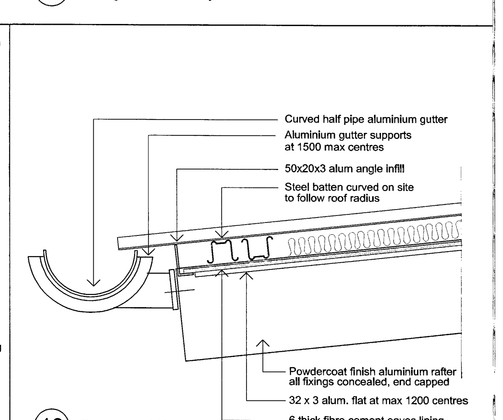
7 Window WG.17 head



11 Barge to Balcony Roof



14 Barge to Halfway House



18 Gutter to Walkway

Issue

P	10.10.06	Preliminary
T	20.6.07	Tender Issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Construction Details Sheet 5

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:5 @B1
Drawing No. 2380.W32 T1

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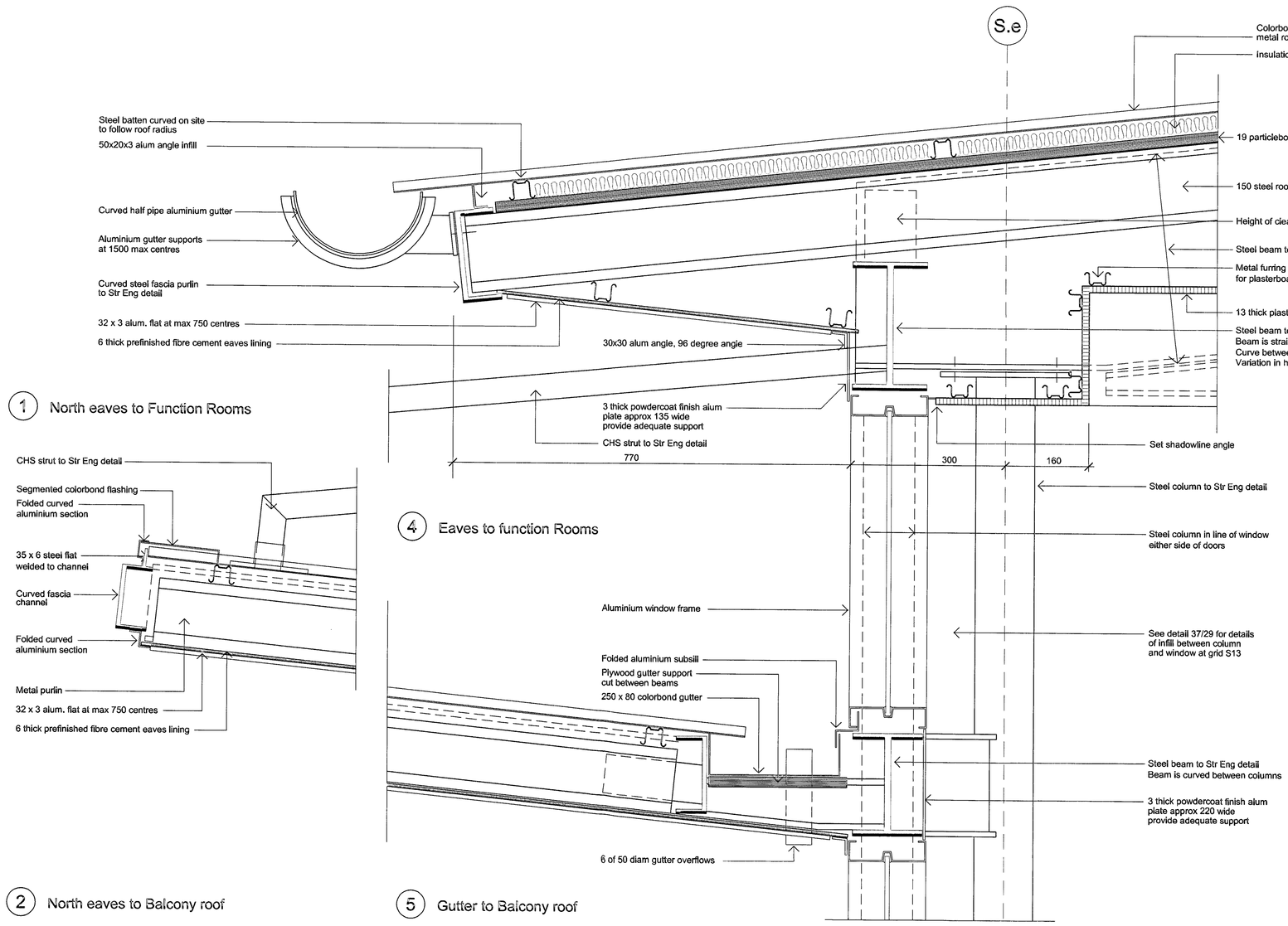
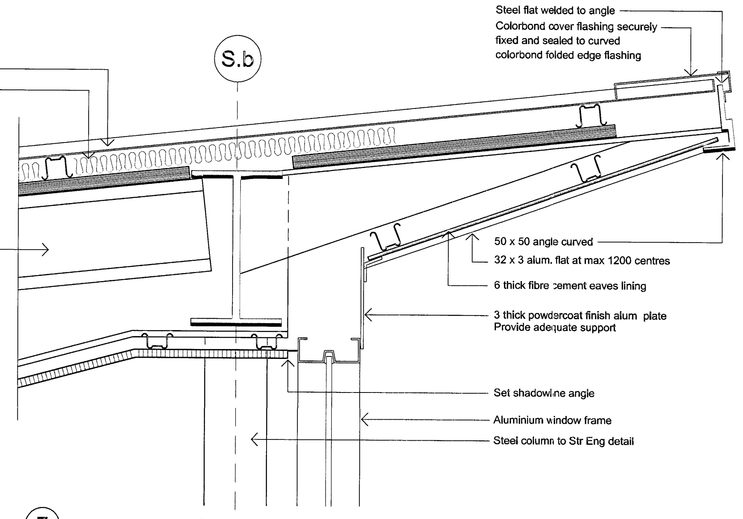


1 North eaves to Function Rooms

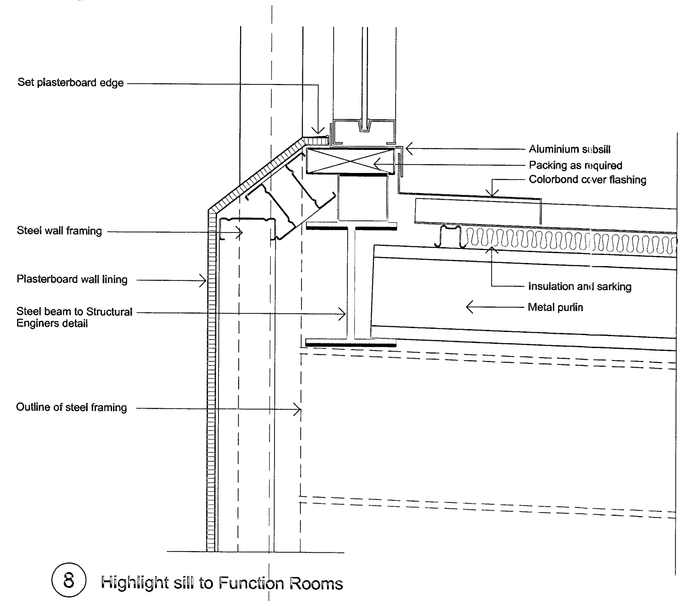
2 North eaves to Balcony roof

4 Eaves to function Rooms

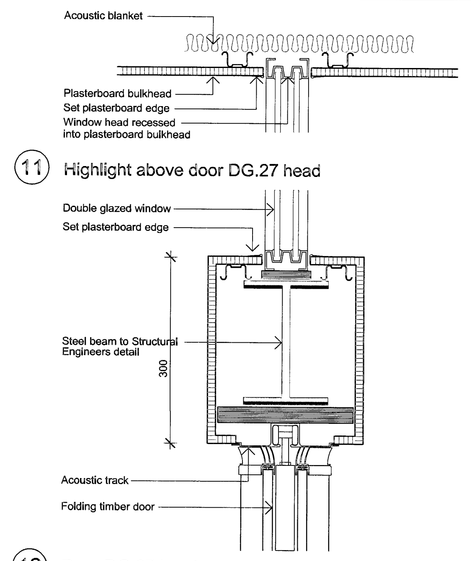
5 Gutter to Balcony roof



7 South eaves to Function Rooms and Members Lounge

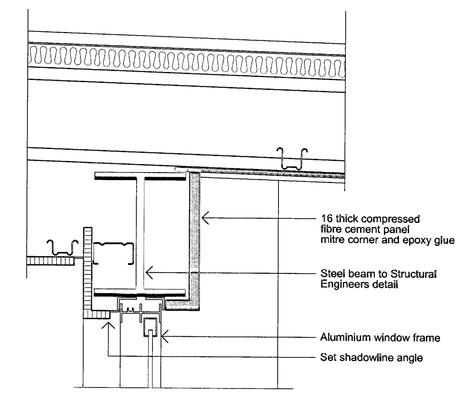


8 Highlight sill to Function Rooms

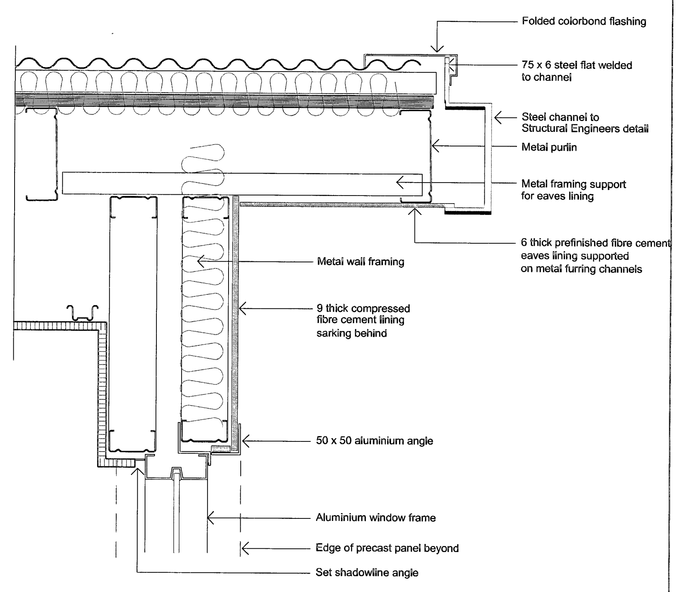


11 Highlight above door DG.27 head

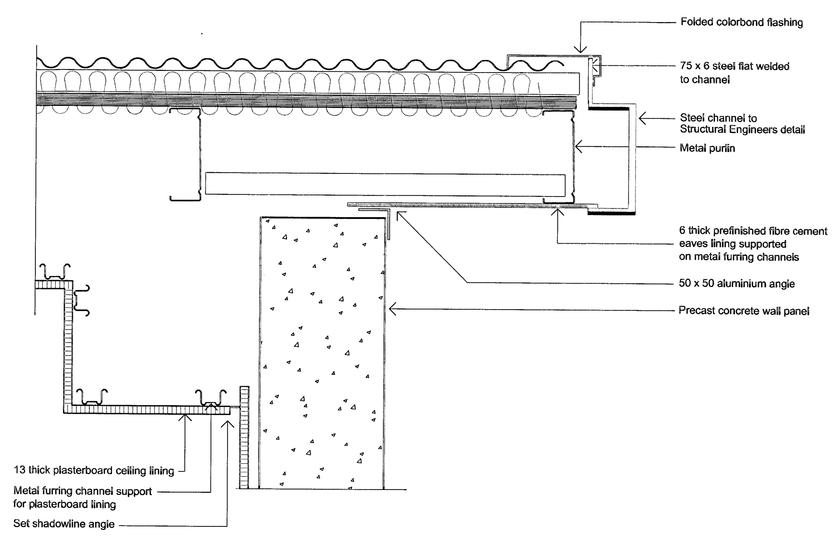
12 Door DG.27 head



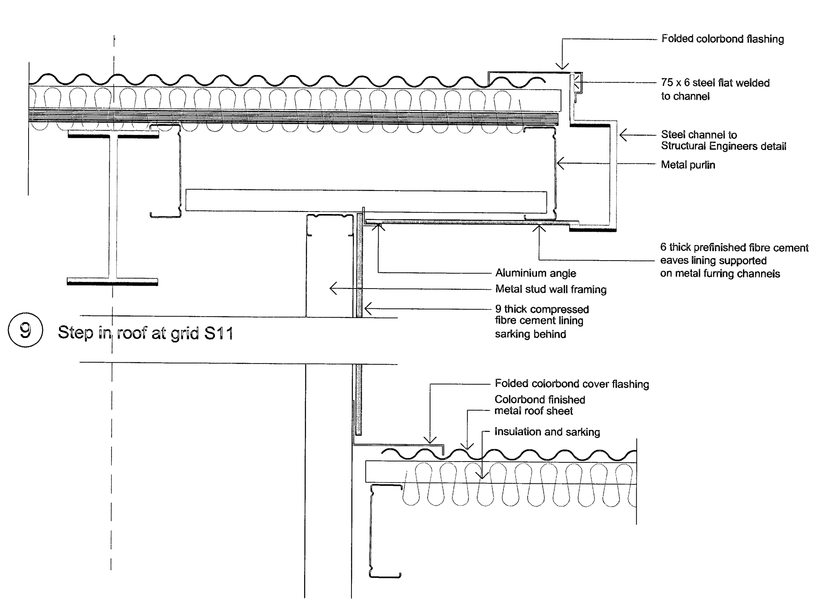
13 Window WG.16 head



3 Barge to Function Room WG28 head

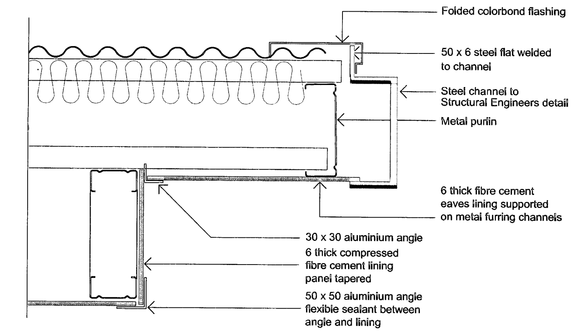


6 Barge to Function Room

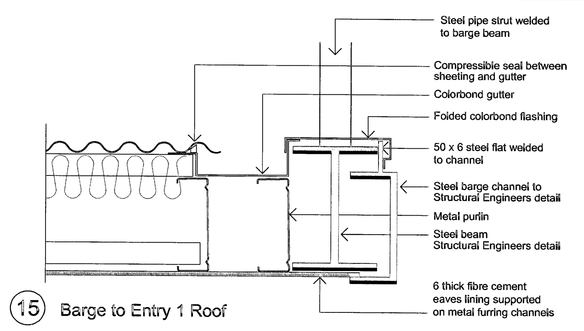


9 Step in roof at grid S11

10 Step in roof at grid S11



14 Barge to Function Roof



15 Barge to Entry 1 Roof

F:\CURRENT DRAWINGS\Bayview comp\CCNew Folder\bayview details.dwg 20/06/2007 4:52:19 PM, Hodges Shorten Architects No.3

Issue

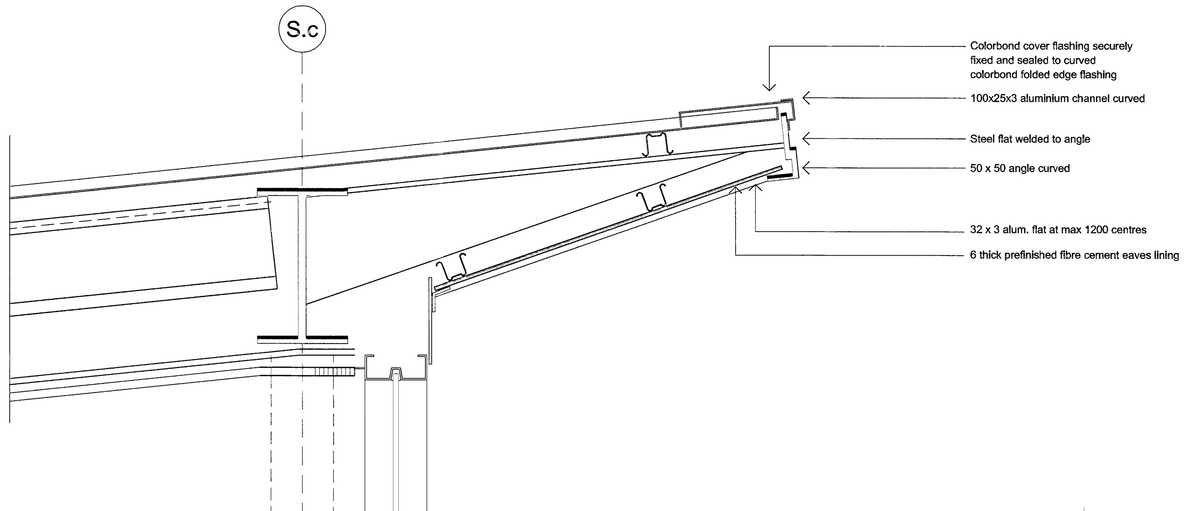
P 10.10.06 Preliminary

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

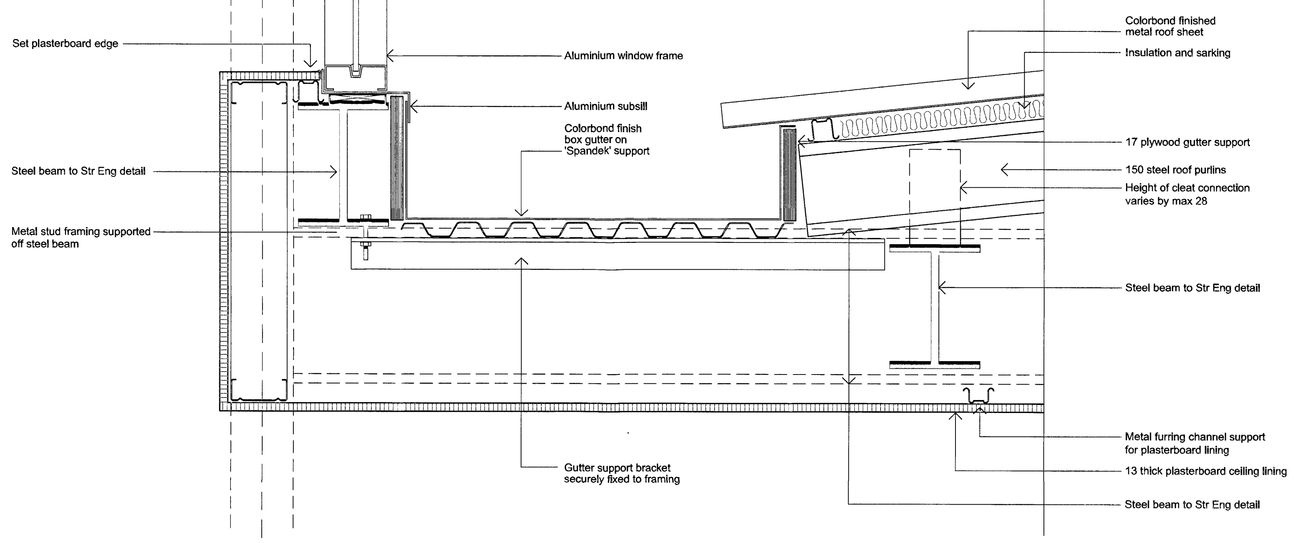
Drawing: Construction Details Sheet 6

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

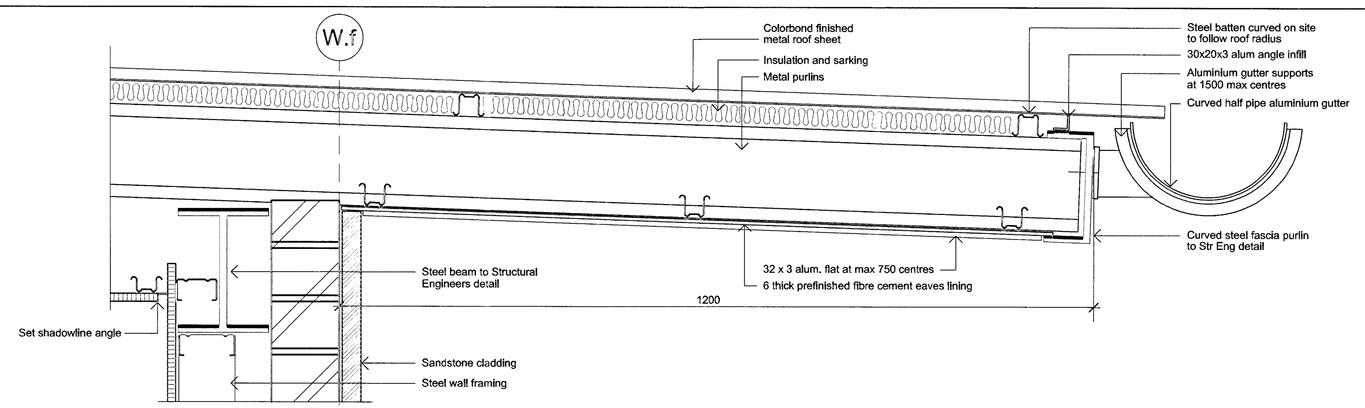
Date: 10.10.06
Scale: 1:5 @B1
Drawing No. 2380.W33



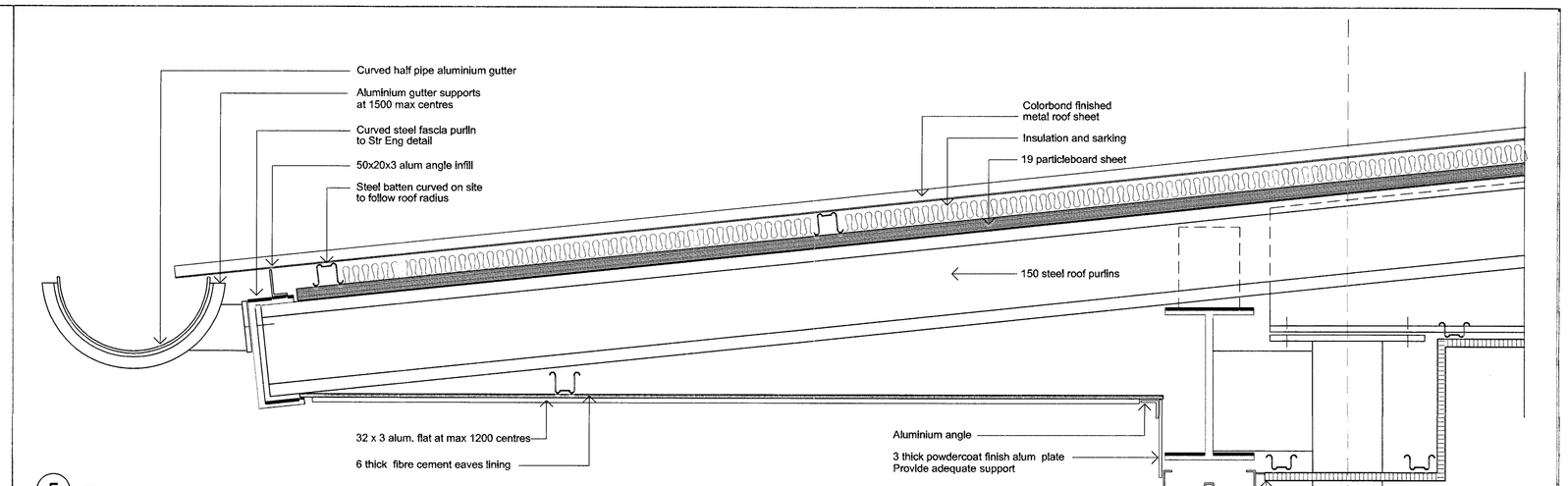
1 South eaves to Shop roof



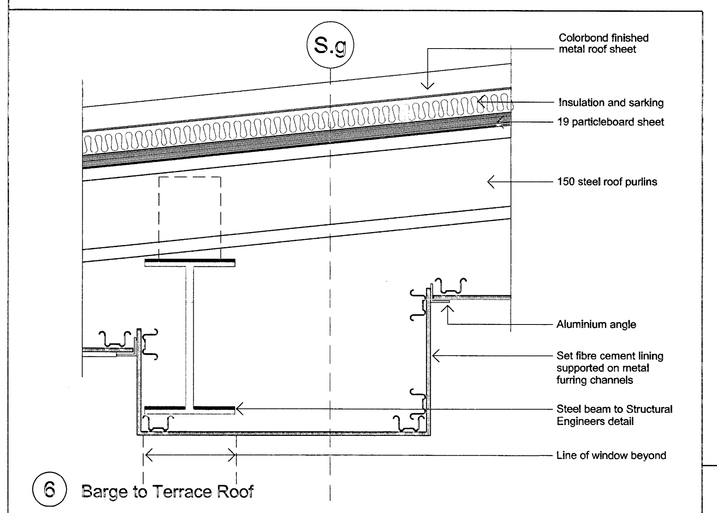
2 Window sill - gutter



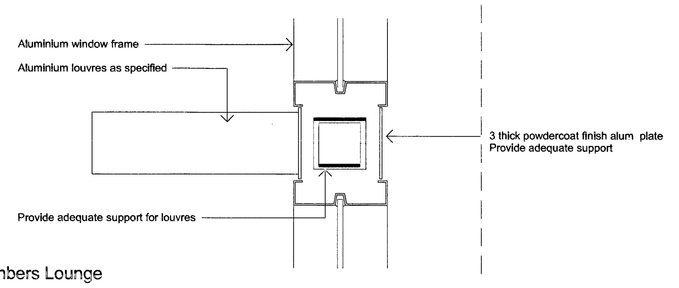
3 Eaves to Female Wc



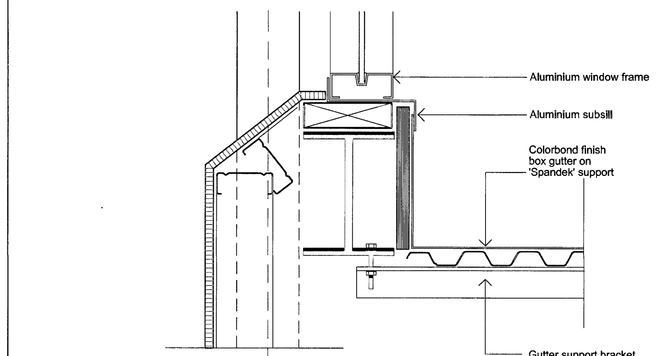
5 Eaves to Members Lounge



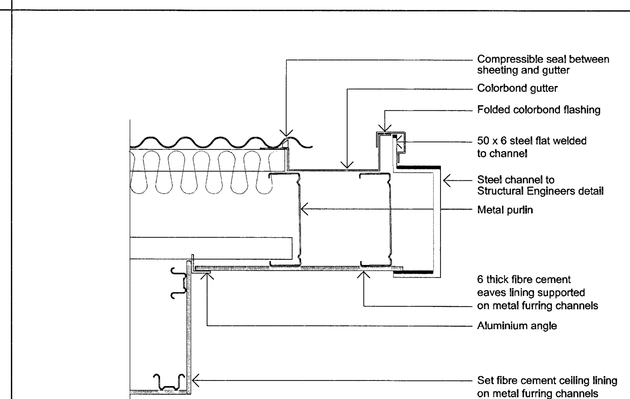
6 Barge to Terrace Roof



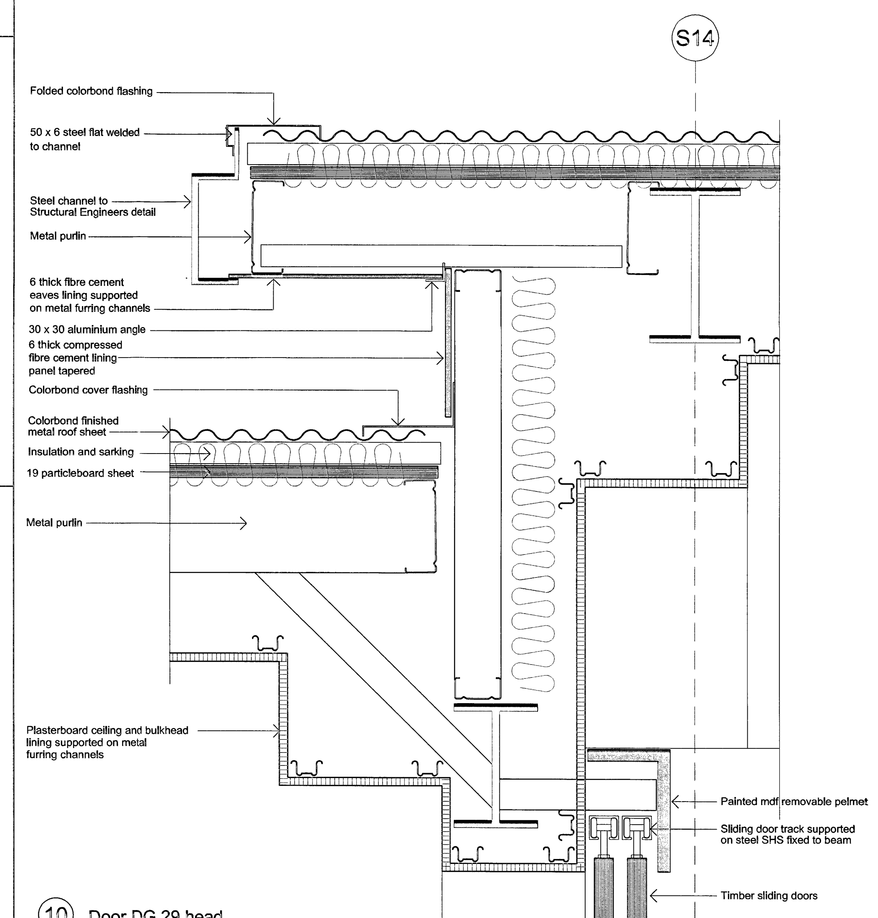
9 Screen to Members Lounge



7 High light window sill to Members Lounge



8 Terrace Roof



10 Door DG.29 head

Issue

P	10.10.06	Preliminary
T	20.6.07	Tender Issue

Project: Bayview Golf Club
Proposed Golf Clubhouse, Pittwater Road, Bayview

Drawing: Construction Details Sheet 7

Hodges Shorten Architects Pty Ltd
Suite 82 Chatswood Village
47 Neridah Street Chatswood NSW 2067
phone 9419 5199
fax 9419 5632

Date: 10.10.06
Scale: 1:5 @81

Drawing No. 2380.W34 T1

DO NOT SCALE — READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

BAYVIEW GOLF CLUB
PITTWATER ROAD, BAYVIEW
CONSTRUCTION NOTES

GENERAL NOTES

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS THAT MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCIES IN THESE DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR A DECISION BEFORE PROCEEDING WITH THE WORK.

G2. THE CONTRACTOR SHALL CHECK AND BE RESPONSIBLE FOR THE CORRECTNESS OF ALL DIMENSIONS AND ANY DISCREPANCY SHALL BE REPORTED IMMEDIATELY TO THE SUPERINTENDENT. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

G3. STABILITY OF THE BUILDING DURING CONSTRUCTION AND EXCAVATION IN THE VICINITY OF ADJACENT BUILDINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO PART OF THE STRUCTURE SHALL BE OVER STRESSED. APPROVAL OF ALL PROPOSALS MUST BE GRANTED BY THE ARCHITECT PRIOR TO THE COMMENCEMENT OF WORK.

G4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER FORTY EIGHT (48) HOURS BEFORE THE REINFORCEMENT IS COMPLETED. THE CONTRACTOR SHALL ALLOW TWO (2) HOURS AFTER THE COMPLETION OF THE REINFORCEMENT FOR THE ENGINEER'S INSPECTION. CONCRETE SHALL NOT BE ORDERED UNTIL THE REINFORCEMENT IS APPROVED BY THE ENGINEER.

G5. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT SAA CODES, THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITY AND THE SPECIFICATION.

G6. NO CHANGES SHALL BE MADE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

G7. U.N.O. DENOTES UNLESS NOTED OTHERWISE ON THE DRAWINGS.

G8. DESIGN LIVE LOADS:
IN ACCORDANCE WITH AS/NZ1170.1 2002

CARPARK	3.0 kPa
STAIRS	4.0 kPa
ROOFS	0.25 kPa
ROOFS	0.25 kPa
CLUB FLOOR U.N.O.	5.0 kPa
TERRACES	4.0 kPa
LOADING DOCK	15.0 kPa
EXTERNAL CONCRETE DRIVEWAY	15.0 kPa
TOILETS/LOCKER ROOMS	2.0 kPa

G9. DESIGN WIND LOADS:
IN ACCORDANCE WITH AS\NZS A1170.2 2002
TERRAIN CATEGORY = 3 REGION A2
Vrisd = Vrtwnd = Mzcat = 0.75
Mt = 1.0 Md = 1.0 Ml = 1.0

G10. DESIGN EARTHQUAKE LOADS:
IN ACCORDANCE WITH AS1170.4 1993
a = 0.08 S = 1.0 I = 1.0
DESIGN CATEGORY:
Kp = 1.0

SITE PREPARATION

SP1. REFER TO THE GEOTECHNICAL REPORT PREPARED BY DOUGLAS PARTNERS, REPORT NO. 35630A DATED FEBRUARY 2006.

SP2. NORTHERN END OF SITE (FILLING ABOVE THE TOE OF THE SLOPE)
a. REMOVE EXISTING UNCONTROLLED FILLING AND WHERE PRESENT, THE LAYER OF PEATY SILTY CLAY (DARK BROWN) SUBJECT TO GROUNDWATER LEVELS.
b. PROOF ROLL THE SURFACE WITH AT LEAST 10 PASSES OF A ROLLER (STATIC MODE) OF AT LEAST 10 TONNE DEADWEIGHT CAPACITY WITH THE FINAL PASSES OF THE ROLLER BEING WITNESSED BY AN EXPERIENCED GEOTECHNICAL ENGINEER.
c. ANY SOFT OR COMPRESSIBLE MATERIAL IS TO BE REMOVED FOR A MAXIMUM DEPTH OF 0.2M AND REPLACED WITH AN APPROVED GRANULAR BACKFILL MATERIAL OR OTHER APPROPRIATE ACTION SUCH AS THE USE OF A GEOTEXTILE OR GEOGRID. THE PROXIMITY OF THE WATER TABLE MAY LIMIT ADDITIONAL OVER-EXCAVATION.
d. CARRY OUT TESTING TO VERIFY THAT THE EXPOSED SURFACE OF THE SUBGRADE HAS BEEN COMPACTED TO A UNIFORM DENSITY RATIO NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN THE LABORATORY STANDARD COMPACTION TEST.
e. PRIOR TO FILLING, PLACE A GEOFABRIC LAYER AND BLANKET LAYER (150 MIN. THICKNESS) OF COURSE, CLEAN AGGREGATE IN ORDER TO PREVENT WATER RISING TO THE SURFACE THROUGH CAPILLARY ACTION).
f. FILLING IS TO CONSIST OF AN APPROVED GRANULAR MATERIAL PLACED IN LAYERS NO GREATER THAN 250MM THICK AND COMPACTED TO 98% OF THE MAXIMUM DRY DENSITY OBTAINED IN THE LABORATORY STANDARD COMPACTION TEST.
g. EXCAVATED TOPSOIL AND PEATY SILTY CLAY ARE NOT SUITABLE FOR REUSE AS FILLING.

SP3. SOUTHERN END OF SITE (EXCAVATION INTO THE HILLSIDE)
a. THE BASE OF THE EXCAVATION INTO THE RESIDUAL CLAYS IN THE HILLSIDE IS EXPECTED TO EXPERIENCE SOME INGRESS OF SEEPAGE DUE TO THE PRESENCE OF THE GROUNDWATER LEVEL ABOVE EXCAVATION LEVEL.
b. PROVIDE A 150MM MINIMUM THICK LAYER OF CRUSHED CONCRETE AS A BASE FOR CONSTRUCTION PLANT ACCESS.
c. ALLOW TO OVER EXCAVATE DURING BULK EXCAVATION SO AS TO ACCOMMODATE THE THICKNESS OF THIS WORKING SURFACE LAYER OR ELSE IT WILL NEED TO BE REMOVED IMMEDIATELY PRIOR TO FLOOR SLAB CONSTRUCTION AND REPLACED WITH A GEOFABRIC SEPARATOR AND CLEAN CRUSHED CONCRETE DRAINAGE LAYER.

SP4. PAVEMENT SLAB CONSTRUCTION
a. SUBGRADE PREPARATION IS TO BE IN ACCORDANCE WITH THE ABOVE NOTES.
b. ENSURE A GEOTEXTILE SEPARATOR IS PLACED OVER THE ENTIRE PREPARED SUBGRADE AND A 150 MM MINIMUM THICK UNDERFLOOR DRAINAGE BLANKET OF CRUSHED CONCRETE (WITHOUT FINES) OR OPEN-GRADED CRUSHED ROCK WITH SUBSURFACE DRAINS AND SUMPS.
c. A DESIGN CBR OF 5% HAS BEEN USED FOR THE RESIDUAL CLAY SUBGRADE BASED ON A COMPACTION TO AT LEAST 98% OF THE MAXIMUM DRY DENSITY OBTAINED IN THE LABORATORY STANDARD COMPACTION TEST.

FOOTINGS

1. REFER TO THE GEOTECHNICAL REPORT PREPARED BY DOUGLAS PARTNERS, REPORT NO. 35630A DATED FEBRUARY 2006.
2. PAD AND STRIP FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 250KPA IN THE VERY STIFF TO HARD RESIDUAL CLAYS.
3. BORED PIERS HAVE BEEN DESIGNED FOR AN END BEARING PRESSURE OF 250KPA AND A MAXIMUM ALLOWABLE SHAFT FRICTION OF 25KPA IN THE VERY STIFF TO HARD RESIDUAL CLAYS.
4. TEMPORARY OR PERMANENT CASING MAY NEED TO BE INSTALLED INTO THE TOP OF THE RESIDUAL CLAY PROFILE IN ORDER TO PREVENT THE INGRESS OF WATER AND COLLAPSE OF FILLING AND ALLUVIAL SEDIMENTS.
5. ALLOW TO PUMP OUT ANY WATER AND CLEANING OF THE FOOTING/PILE BASE IMMEDIATELY PRIOR TO POURING CONCRETE.

CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SAA CODE AS3600, WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. CONCRETE QUALITY:

ELEMENT	SLUMP (MAX)	MAX AGG. SIZE	CEMENT TYPE	ADMIX.	CONCRETE GRADE
PIERS/ FOOTINGS	80	20mm	A	N/A	25 MPa
SLABS ON GROUND	80	20mm	A	N/A	32 MPa
COLUMNS	80	20mm	A	N/A	32 MPa
PRECAST WALL PANELS	80	20mm	A	N/A	40 MPa
PAVING SLABS	80	20mm	A	N/A	32 MPa
BLOCKWORK INFILL	230	10mm	A	N/A	25 MPa

SUSPENDED CONCRETE FLOORS ONLY :-
MIN. CEMENT CONTENT = 300 kg/m³
MAX. PERMISSIBLE DRYING SHRINKAGE = 600 MICROSTRAIN AT 56 DAYS.

C3. CLEAR CONCRETE COVER IN mm TO REINFORCEMENT U.N.O. SHALL BE AS FOLLOWS:-

STRUCTURAL ELEMENT	REINFORCEMENT COVER			
	INTERNAL		EXTERNAL	
	TOP	BTM.	TOP	BTM.
SLAB ON GROUND	30	30	40	40
FOOTINGS	50	50	50	50
SLABS/BEAMS	20	20	40	40
COLUMNS	40	40	40	40
RETAINING WALLS	50	50	50	50
STAIRS	20	20	40	40
PRECAST WALLS	20	20	40	40
PIERS	50 ALL ROUND			

NOTES:
1. CONCRETE POURED OVER A MEMBRANE ON THE GROUND IS INCLUDED AS INTERNAL.
2. CONCRETE EXPOSED TO CORROSIVE VAPOURS, CORROSIVE GROUND WATER, SEA WATER OR SPRAY IS TO HAVE REINFORCEMENT COVER AS NOTED ON THE DRAWINGS.
3. CONCRETE REQUIRING A FIRE RESISTANCE RATING SHALL HAVE REINFORCEMENT COVER AS NOTED ON THE DRAWINGS.
4. EXTERNAL ABOVE GROUND ELEMENTS ARE CLASSIFIED IN NEAR COASTAL ENVIRONMENT.

C4. CONDUITS, PIPES, ETC., SHALL NOT BE PLACED IN THE CONCRETE COVER TO REINFORCEMENT AND NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE ALLOWED WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT.

C5. CONCRETE SIZES DO NOT INCLUDE THE THICKNESS OF APPLIED FINISHES.

C6. THE DEPTH OF BEAMS IS GIVEN FIRST AND INCLUDES THE SLAB THICKNESS.

C7. CONSTRUCTION JOINTS, WHERE NOT SHOWN, SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT.

C8. FORMWORK SHALL REMAIN IN POSITION FOR THE TIME SPECIFIED. WHERE SLABS AND BEAMS ARE TO SUPPORT MASONRY OVER, FORMWORK AND PROPS MUST BE REMOVED PRIOR TO THE CONSTRUCTION OF MASONRY.

C9. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED. THE VIBRATOR SHALL NOT BE USED TO SPREAD CONCRETE.

C10. CONCRETE SHALL BE CURED IN ACCORDANCE WITH AS3600 WITH A PRODUCT COMPATIBLE WITH THE APPLIED FINISHES. CURING COMPOUNDS SHALL COMPLY WITH AS3799. PVA BASED CURING COMPOUNDS ARE NOT ACCEPTABLE.

C11. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

C12. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.

C13. SPLICES IN THE MAIN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. SPLICES IN THE DISTRIBUTION REINFORCEMENT MAY BE POSITIONED AS NECESSARY WITH SPLICES OF SUFFICIENT LENGTH TO DEVELOP THE FULL STRENGTH OF THE BARS. MINIMUM LAPS TO FABRIC SHALL BE TO OVER LAP TWO CROSS WIRES PLUS 50mm U.N.O. REINFORCEMENT SHALL BE SECURELY TIED AT ALL LAPS AND INTERSECTIONS WITH 1.25mm BLACK ANNEALED WIRE. THE WRITTEN APPROVAL OF THE SUPERINTENDENT SHALL BE OBTAINED FOR OTHER SPLICES WHERE THE LAP LENGTH IS NOT SHOWN. IT SHALL DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.

C14. ALL UNSUPPORTED BARS SHALL BE TIED IN A TRANSVERSE DIRECTION WITH N12-300 U.N.O.

C15. REINFORCEMENT SHALL BE SUPPORTED ON APPROVED PLASTIC OR PLASTIC TIPPED WIRE STOOLS AT NOT MORE THAN 600mm CENTRES BOTHWAYS IN SLABS AND AT 1000mm CENTRES IN BEAMS.

C16. DENOTES MAIN WIRES OF RECTANGULAR FABRIC TO AS4671.

DENOTES SQUARE FABRIC TO AS4671

SL..... DENOTES GRADE 500 DEFORMED WIRE REINFORCING SQUARE FABRIC OF DUCTILITY CLASS L TO AS4671.
RL..... DENOTES GRADE 500 DEFORMED WIRE REINFORCING RECTANGULAR FABRIC OF DUCTILITY CLASS L TO AS4671.
R ..... DENOTES GRADE 250 ROUND BARS OF DUCTILITY CLASS N TO AS4671
N ..... DENOTES GRADE 500 DEFORMED BARS OF DUCTILITY CLASS N TO AS4671.
S ..... DENOTES GRADE 250 DEFORMED BARS OF DUCTILITY CLASS N TO AS4671.

C17. FABRIC SHALL BE SUPPLIED IN FLAT SHEETS, ROLLS WILL NOT BE ACCEPTED

C18. TYPICAL REINFORCEMENT NOTATION:-
SN24-200 INDICATES
S ..... DENOTES NUMBER OF BARS REQUIRED
N ..... DENOTES GRADE OF REINFORCEMENT
24..... DENOTES BAR DIAMETER IN MILLIMETRES
200... DENOTES BAR SPACING IN MILLIMETRES
TYPICAL ABBREVIATIONS:-
B ..... DENOTES BARS IN BOTTOM LAYER
T ..... DENOTES BARS IN TOP LAYER
ALT... DENOTES BARS ALTERNATING
NF .... DENOTES BARS IN NEAR FACE
FF .... DENOTES BARS IN FAR FACE
EF .... DENOTES BARS IN EACH FACE

C19. FOR SLAB FALLS, CHAMFERS, REGLETS, DRIP GROOVES, ETC., REFER TO THE ARCHITECT'S DRAWINGS.

C20. LAP LENGTHS FOR DEFORMED BARS AS FOLLOWS:

BAR TYPE AND SIZE	VERTICAL BARS	HORIZONTAL BARS WITH MORE THAN 300mm OF CONCRETE BELOW BAR	OTHER LOCATIONS	90° COG LENGTH
N12	500	550	500	200
N16	700	800	700	200
N20	1000	1250	1000	250
N24	1200	1500	1200	300
N28	1400	1750	1400	350
N32	1600	1900	1600	400
N36	1700	2200	1700	450

STRUCTURAL STEELWORK

SS1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SAA CODE AS4100 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

SS2. ALL STEEL SHALL BE IN ACCORDANCE WITH:-
AS1163 - GRADE 350 FOR R.H.S. SECTIONS
AS1163 - GRADE 200 FOR C.H.S. SECTIONS UP TO 165.1mm O.D.
AS1163 - GRADE 350 FOR C.H.S. SECTIONS EXCEEDING 165.1mm O.D.
AS3679.1 - HOT ROLLED BARS AND SECTIONS
AS3679.2 - WELDED I SECTIONS

SS3. WHERE CONNECTIONS ARE NOT DETAILED, THEY SHALL BE PROVIDED WITH A MINIMUM 10 PLATE CLEAT WITH 2M20 8.8/S BOLTS.

SS4. THE DISTANCE BETWEEN CENTRES OF FASTENER HOLES AND THE MINIMUM DISTANCE FROM THE CENTRE OF A FASTENER TO THE EDGE OF A PLATE OR FLANGE OF A ROLLED SECTION SHALL COMPLY WITH AS4100 U.N.O.

SS5. ALL WELDS SHALL BE 6mm CONTINUOUS FILLET WELDS (6 C.F.W.) U.N.O. ALL BOLTS SHALL BE M20 8.8/S U.N.O. NO BOLT THREADS SHALL BE PERMITTED WITHIN THE BEARING LENGTH. ALL GUSSET PLATES SHALL BE 10mm THICK U.N.O.

SS6. BUTT WELDS WHERE INDICATED "F.S.B.W." ON THE DRAWINGS, SHALL BE COMPLETE PENETRATION BUTT WELDS AS DEFINED IN AS1554.1.

SS7. HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL COMPLY WITH AS1252, AND SHALL BE INSTALLED IN ACCORDANCE WITH AS4100. ALL HIGH STRENGTH BOLTS, DENOTED 8.8/TB or 8.8/TF GRADE, SHALL BE TIGHTENED TO THE CORRECT TENSION USING APPROVED LOAD INDICATING WASHERS.

SS8. THE CONTRACTOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL TO STEEL AND TIMBER TO STEEL WHETHER OR NOT THEY ARE DETAILED ON THE DRAWINGS.

SS9. STEELWORK SHALL BE PROTECTED FROM THE ENVIRONMENT IN ACCORDANCE WITH AS2312.
DESIGN LIFE OF COATINGS : 15 YEARS TO FIRST MAINTENANCE
EXPOSURE ENVIRONMENT : MARINE
STEELWORK SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION:-

ELEMENTS	SURFACE CLEANING	PRIMING
NOT EXPOSED TO WEATHER	ABRASIVE BLAST CLEAN TO CLASS 2½ TO AS1627.	2 COATS OF ZINC PHOSPHATE TO 50 um THICKNESS
EXPOSED TO WEATHER	CHEMICALLY DESCALED & CLEANED TO AS1627.5	HOT DIP GALV. TO AS4680, AS4750 (INT), AS4751 (INT), AS4791 OR AS4792 AS APPLICABLE
ALL BOLTS, WASHERS AND NUTS		HOT DIP GALV. TO AS1214.

NOTE:
1. ALL STRUCTURAL STEELWORK SHALL BE PRIMED BEFORE BUILDING IN BRICKWORK OR CONCRETE.

SS10. THE CONTRACTOR SHALL PREPARE AND SUBMIT FIVE (5) COPIES OF ALL WORKSHOP DRAWINGS TO THE SUPERINTENDENT FOR APPROVAL. FABRICATION SHALL NOT COMMENCE UNTIL ALL APPROVALS HAVE BEEN OBTAINED.

SS11. HIGH STRENGTH BOLTS (GRADE 8.8) SHALL BE TIGHTENED TO EITHER SNUG TIGHT MODE (DENOTED 8.8/S) OR TO FULLY TENSIONED FRICTION TYPE MODE (DENOTED 8.8/F).

SS12. PROVIDE FIRE RATING OF STEELWORK WHERE REQUIRED TO ARCHITECTS DRAWINGS.

BRICKWORK AND BLOCKWORK

B1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT CODE AS3700 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

B2. STRENGTHS OF BRICKS, CLASS OF BLOCKS AND TYPE OF MORTAR
PORTLAND CEMENT : HYDRATED LIME : SAND) SHALL BE AS FOLLOWS:-

ELEMENT	MATERIAL	STRENGTH OR CLASS (C)	MORTAR TYPE CEMENT:LIME:SAND
BUILDING BRICKWALLS + BRICK RETAINING WALLS	CLAY BRICKS	COMPRESSIVE STRENGTH f'uc = 20 MPa CONFORMING TO AS/NZS 4455	1 : 1 : 6

NOTE:
1. THE CHARACTERISTIC EXPANSION OF BRICKWORK SHALL NOT EXCEED 0.6 mm/m.

B3. THE TOP TWO (2) COURSES OF BRICKS SHALL BE LAID WITH BRICK REINFORCEMENT IN THE JOINTS.

B4. WHEREVER BRICKWALLS ARE BUILT OFF CONCRETE SLABS, WITH THE EXCEPTION OF THE EXTERNAL OUTER SKIN OF CAVITY WALLS, THEY SHALL BE LAID ON A LIGHT GAUGE BUILDING PAPER TO PERMIT FREE MOVEMENT OF THE SLAB IN RELATION TO THE BRICKWORK.

B5. WHERE WALLS ARE NON-LOAD BEARING, AT EITHER HORIZONTAL OR VERTICAL FACES, THEY SHALL BE SEPARATED AS SPECIFIED BY THE ARCHITECT.

B6. NO HOLES OR CHASES SHALL BE CUT INTO LOADBEARING BRICKWORK OR BLOCKWORK WITHOUT THE PRIOR APPROVAL OF THE ARCHITECT'S REPRESENTATIVE.

B7. WHEREVER INTERNAL BRICK OR BLOCK WALLS ABUT STEEL COLUMNS, PROVIDE GALVANISED CRIMPED FRAME TIES AT FOUR (4) COURSE VERTICAL CENTRES FOR BRICKWORK AND 2 COURSE VERTICAL CENTRES FOR BLOCKWORK. USE MASONRY EXPANSION TIE IM.E.T.I 1-6 300 LONG, POWER FIXED WITH 3.8 DIA. DRIVE PINS.

B8. EXTERNAL CAVITY TIES SHALL BE PROVIDED AT SPACINGS IN ACCORDANCE WITH THE SAA CODE AND SHALL BE M.E.T. 2-1 HEAVY DUTY HOT DIPPED GALVANISED CAVITY TIES IN FULL BRICK CONSTRUCTION AND M.E.T. 1-6 HEAVY DUTY HOT DIPPED GALVANISED CAVITY TIES IN BRICK VENEER CONSTRUCTION. TIE LENGTH TO SUIT CAVITY WIDTH.

B9. VERTICAL CONTROL JOINTS IN CLAY AND SILICATE BRICK WALLS TO BE 12000mm MAXIMUM APART. WALL TIES, LINTELS, SHELF ANGLES, CONNECTIONS AND ACCESSORIES TO AS2699.

ASPHALTIC CONCRETE

GENERAL

AC1. ALL ASPHALTIC PAVING TO BE ACCORDANCE WITH AS2734 "ASPHALT (HOTMIXED) PAVING - GUIDE TO GOOD PRACTICE"

AC2. MINERAL AGGREGATES TO COMPLY WITH CLAUSE 3 MATERIALS D.M.R. FORM 992 "SPECIFICATION FOR THE SUPPLY AND DELIVERY OF AGGREGATE FOR USE IN PLANT MIX.

AC3. MINERAL FILLER TO COMPLY WITH AS2357-1980 MINERAL FILLERS FOR ASPHALT.

AC4. BITUMEN BINDER SHALL COMPLY WITH D.M.R. FORM 337 "SPECIFICATION FOR RESIDUAL BITUMEN"

MIX PROPORTIONS

AC5. JOB MIX - 10mm NOMINAL SIZE AGGREGATE. MINIMUM BITUMEN CONTENT (%) BY MASS OF TOTAL MASS - 5.1%.

AC6. MIX STABILITY - BETWEEN 16kN AND 36kN AS DETERMINED BY D.M.R. TEST METHOD T601 AND T603.

AC7. AIR VOIDS IN COMPACTED MIX - BETWEEN 4% AND 7% OF THE VOLUME OF THE MIX.

AC8. VOIDS FILLED IN BINDER - 65-80% OF AIR VOIDS IN THE TOTAL MINERAL AGGREGATE FILLED BY BINDER IN ACCORDANCE WITH D.M.R. TEST METHOD T601, T605 AND T606.

PAVEMENT PREPARATION

AC9. THE EXISTING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL FOREIGN MATTER.

AC10. ALL DEPRESSIONS ON UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.

TACK COAT

AC11. THE WHOLE OF THE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND EVENLY COATED WITH RAPID SETTING BITUMEN COMPLYING WITH D.M.R. FORM 305. APPLICATION RATE FOR RESIDUAL BITUMEN SHALL BE 0.15 TO 0.30 LITRES/SQUARE METRE. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH SPRAY BAR.

SPREADING

AC12. ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF PROPELLED PAVING MACHINE.

AC13. THE ASPHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SHOWN BELOW:-

ROAD SURFACE TEMPERATURE IN SHADE (°C)	MIX TEMPERATURE (°C)
5 - 10	NOT PERMITTED
10 - 15	150
15 - 25	145
OVER 25	140

AC14. ASPHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN COLD WINDS SHALL CHILL THE MIX TO ADVERSELY AFFECT SPREADING AND COMPACTION.

AC15. THE MINIMUM COMPACTED THICKNESS IS 30mm OVER NEW PAVEMENTS.

JOINTS

AC16 THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM.

AC17. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.

COMPACTION

AC18. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED ROLLERS.

AC19. INITIAL ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 105 °C.

AC20. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 65°C.

AC21. MINIMUM CHARACTERISTICS VALUE OF RELATIVE COMPACTION OF A LOT WHEN TESTED IN ACCORDANCE WITH D.M.R. FORM 612 SHALL BE 95%.

FINISHED PAVEMENT PROPERTIES

AC22. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE TO SHAPE AND SHALL NOT VARY MORE THAN 10mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT SHALL NOT DEVIATE FROM THE BOTTOM OF A 3m STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5mm.

2007/2412
CONSTRUCTION CERTIFICATE No.
Date 26/11/07
BRUCE GAAL DIPNR - P.0055
Accredited Certifier & Principal Certifying Authority

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
2	CO-ORDINATION ISSUE	12/06/07	
1	CO-ORDINATION ISSUE	4/04/07	

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: CONSTRUCTION NOTES

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

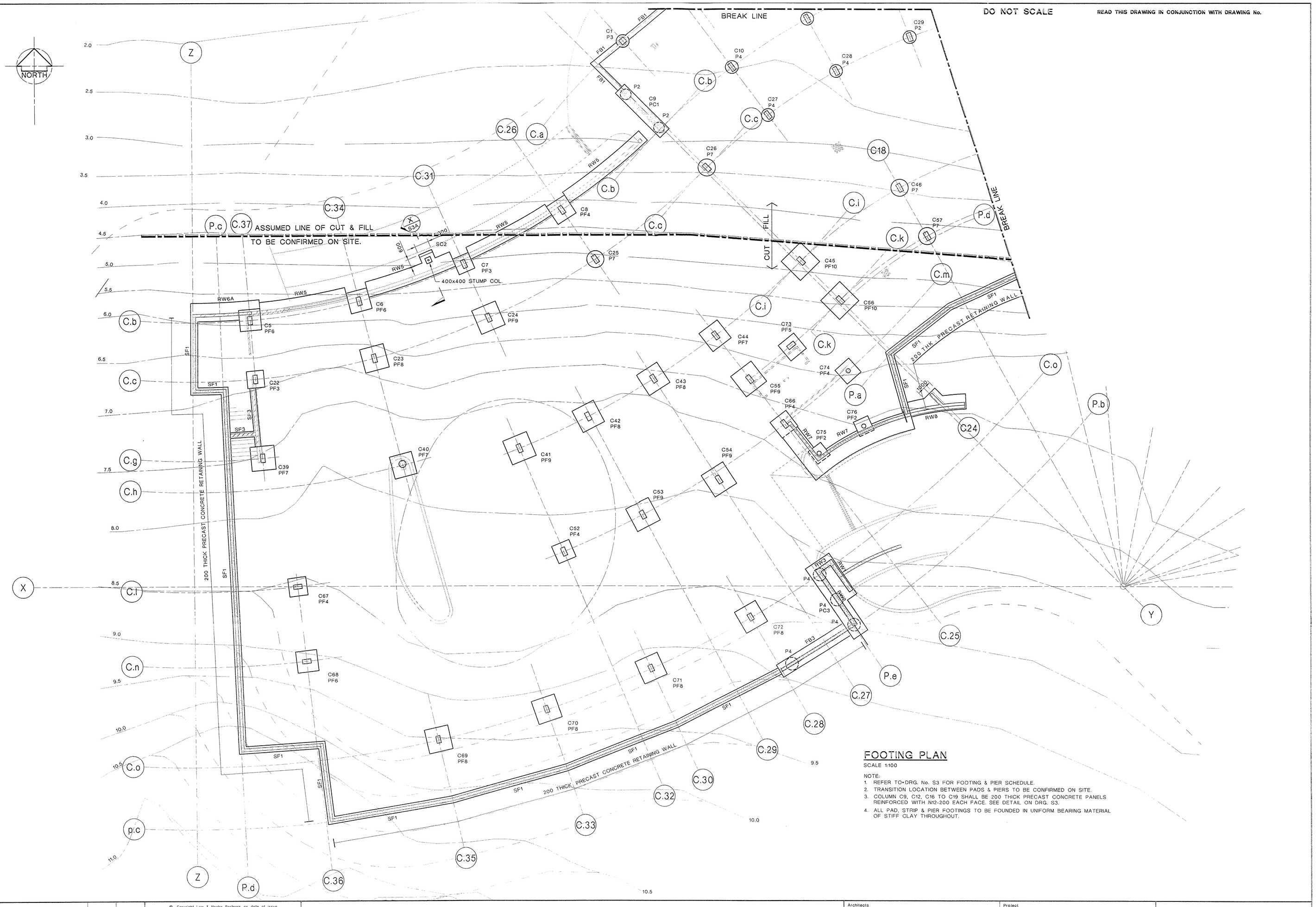
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
N.A	7713	S0	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



FOOTING PLAN

SCALE 1:100

NOTE.

1. REFER TO DRG. No. S3 FOR FOOTING & PIER SCHEDULE.
2. TRANSITION LOCATION BETWEEN PADS & PIERS TO BE CONFIRMED ON SITE.
3. COLUMN C9, C12, C16 TO C19 SHALL BE 200 THICK PRECAST CONCRETE PANELS REINFORCED WITH N12-200 EACH FACE. SEE DETAIL ON DRG. S3.
4. ALL PAD, STRIP & PIER FOOTINGS TO BE FOUNDED IN UNIFORM BEARING MATERIAL OF STIFF CLAY THROUGHOUT.

ISSUE	REASON FOR ISSUE	SGN & DATE DESGN REVIEW	SGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
2	CO-ORDINATION ISSUE	12/05/07	
1	CO-ORDINATION ISSUE	4/04/07	

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: FOOTING PLAN SHEET 1

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S1	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

FOOTING PLAN

SCALE 1:100

NOTE:

1. REFER TO DRG. No. S3 FOR FOOTING & PIER SCHEDULE.
2. TRANSITION LOCATION BETWEEN PADS & PIERS TO BE CONFIRMED ON SITE.
3. COLUMN C9, C12, C16 TO C19 SHALL BE 200 THICK PRECAST CONCRETE PANELS REINFORCED WITH N12-200 EACH FACE. SEE DETAIL ON DRG. S3.
4. ALL PAD, STRIP & PIER FOOTINGS TO BE FOUNDED IN UNIFORM BEARING MATERIAL OF STIFF CLAY THROUGHOUT.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE

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The Association of Consulting Engineers Australia

Architects	HODGES SHORTEN ARCHITECTS PTY LTD
Title	FOOTING PLAN SHEET 2
Project	BAYVIEW GOLF CLUB PROPOSED CLUB HOUSE PITWATER ROAD BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg. No.	Issue
1:100	7713	S2	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

PIER SCHEDULE

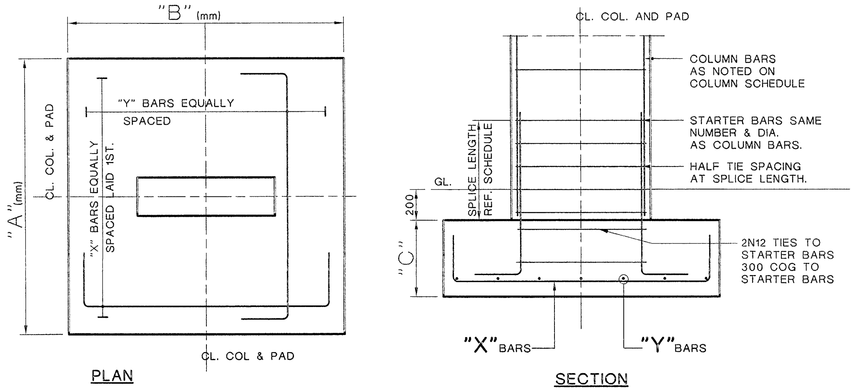
PIER No.	SHAFT DIA. (mm)	VERTICAL REINF.	TIES (HELIX)	WORKING PIER LOAD (kN)	ALLOWABLE END BEARING PRESSURE (kPa)	SOCKET INTO STIFF CLAY (mm)	ASSUMED PIER LENGTH FOR PRICING (mm)
P1	750	8N20	R10-300	250	250	3000	6000
P2	750	8N20	R10-300	350	250	3500	6500
P3	900	12N20	R10-300	450	250	3500	6500
P4	900	12N20	R10-300	550	250	4000	7000
P5	1200	16N20	R10-300	650	250	3500	6500
P6	1200	16N20	R10-300	750	250	4000	7000
P7	1200	16N20	R10-300	850	250	4500	7500

PAD FOOTING SCHEDULE

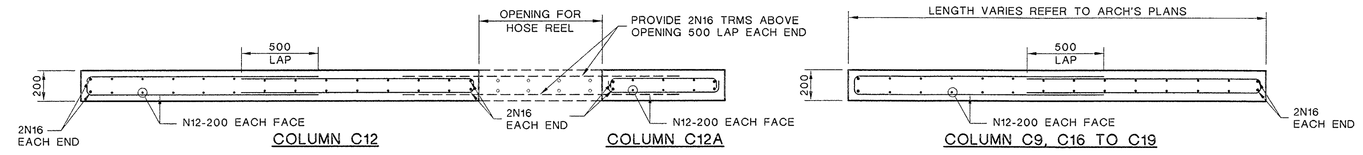
PAD FOOTING TYPE	DIMENSION A (mm)	DIMENSION B (mm)	DIMENSION C (mm)	SHORT BARS BTM. Xb	BARS BTM. Yb	SHORT BARS TOP Xt	BARS TOP Yt	COG
PF1	1000	1000	400	N16-250	N16-250	-	-	300
PF2	1100	1100	400	N16-250	N16-250	-	-	300
PF3	1200	1200	400	N16-250	N16-250	-	-	300
PF4	1300	1300	400	N16-250	N16-250	-	-	300
PF5	1400	1400	400	N16-250	N16-250	-	-	300
PF6	1500	1500	500	N16-200	N16-200	-	-	300
PF7	1600	1600	500	N16-200	N16-200	-	-	300
PF8	1700	1700	500	N16-200	N16-200	-	-	300
PF9	1800	1800	500	N16-200	N16-200	-	-	300
PF10	2000	2000	500	N16-200	N16-200	-	-	300
PF11	3300	900	500	REFER TO DETAIL				300
PF12	2200	2200	600	N16-150	N16-150	-	-	300

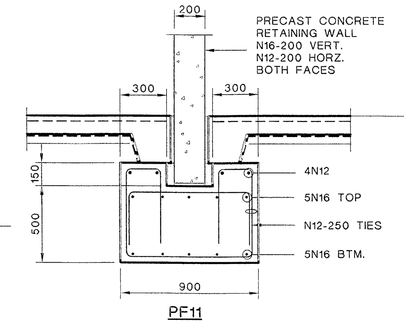
NOTE:

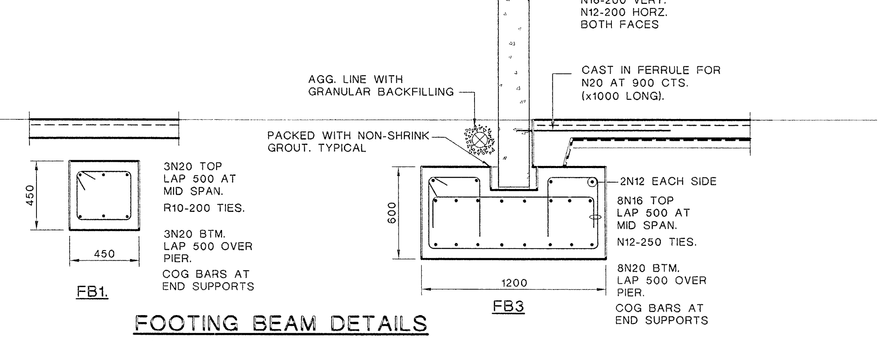
1. ALLOWABLE SOIL BEARING CAPACITY - 250 kPa TO BE CONFIRMED ON SITE BY A GEOTECHNICAL ENGINEER. (TYPICAL).



TYPICAL PAD FOOTING

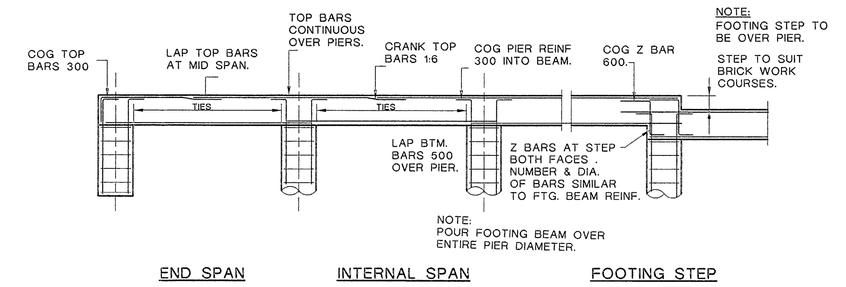






FOOTING BEAM DETAILS

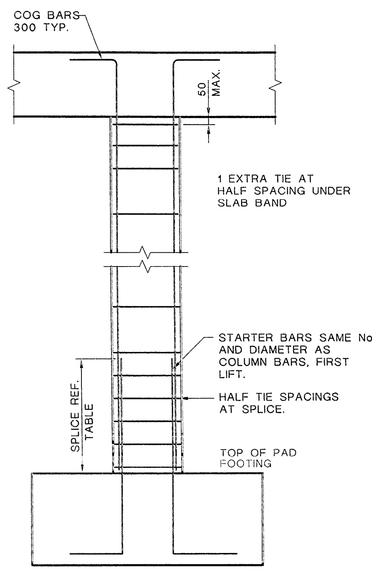
NOTE: FB2 NOT USED



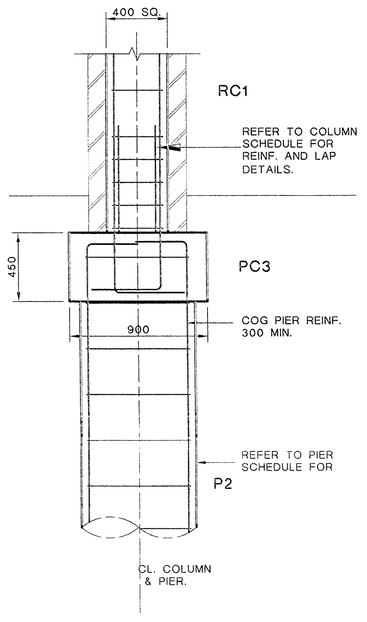
TYPICAL PIER & BEAM ELEVATION.

1:50

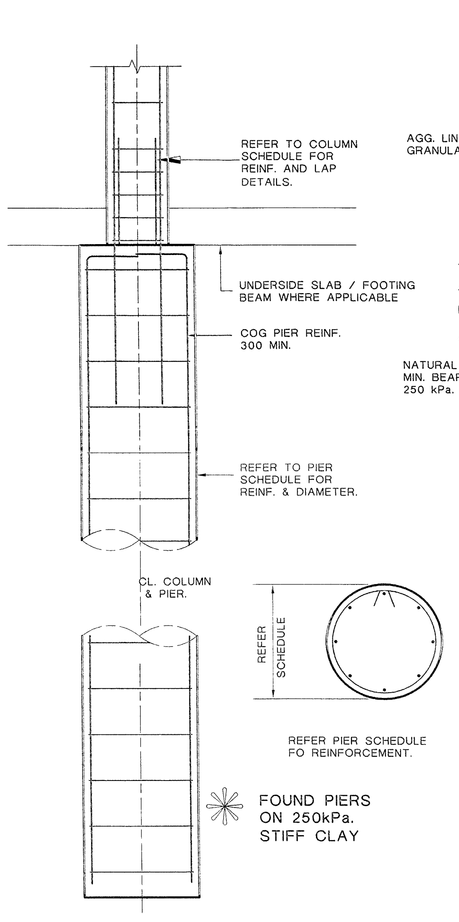
TYPICAL PRECAST CONCRETE COLUMN REINFORCEMENT ARRANGEMENT.



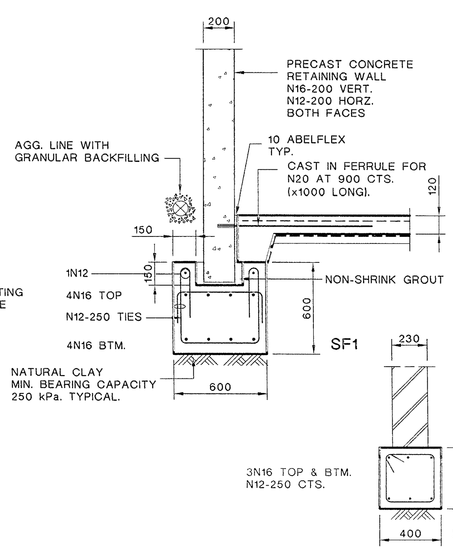
TYPICAL INTERNAL COLUMN REINFORCEMENT ARRANGEMENT.



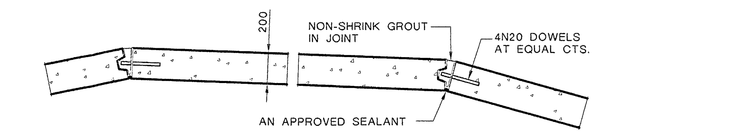
DETAIL AT RAMP COLUMN RC1
SCALE 1:20
RC2 & RC3 SIMILAR



TYPICAL PIER/COLUMN DETAIL

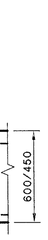


TYPICAL PRECAST CONCRETE RETAINING WALL JOINT DETAILS



TYPICAL STRIP FOOTING DETAILS

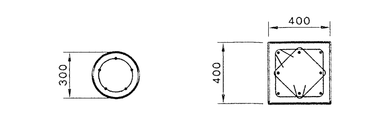
SCALE 1:20



STRIP FOOTING STEP DETAIL

SCALE 1:20

COLUMN PROTECTION DETAIL



TYPE 1 12N16 2N12-250 TIES
COL. MARKS: ALL U.N.O..

TYPE 2 8N16 2N12-250 TIES
COL. MARKS: C55, C69, C70, C71, C72,

TYPE 3 8N16 R10-200 TIES
COL. MARKS: C75, C76 C74

TYPE 4 8N16 2N12-250 TIES
COL. MARKS: C1, C2, C3, C4

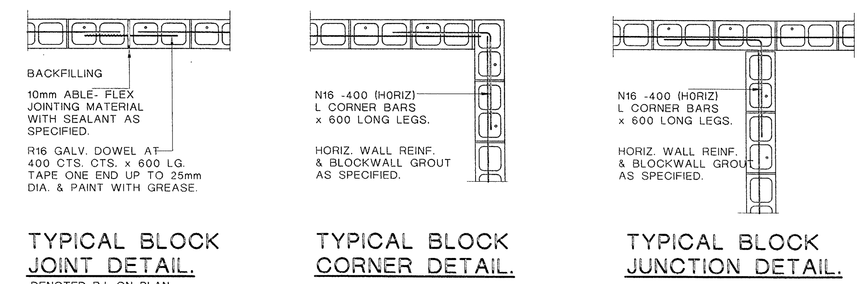
TYPE 4A 8N20 2N12-250 TIES
COL. MARKS: RC1, RC2, RC3

TYPE 5 6N20 R10-200 TIES
COL. MARKS: C40

TYPE 1A 8N20 2N12-250 TIES
COL. MARKS: C15, C22, C26, C32, C39, C45, C49, C56, C60

COLUMN SCHEDULE

NOTE: PROVIDE COLUMN EDGE PROTECTION FOR ALL CARPARKING AREA COLUMNS. SEE TYPICAL DETAIL.



TYPICAL BLOCK JOINT DETAIL.
DENOTED BJ. ON PLAN.

TYPICAL BLOCK CORNER DETAIL.

TYPICAL BLOCK JUNCTION DETAIL.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: FOOTING DETAILS AND R.C. COLUMN SCHEDULE

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

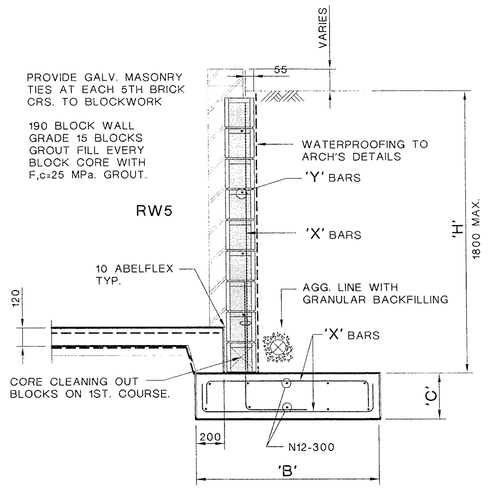
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S3	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



'H'	'X' BARS	'Y' BARS	'B'	'C'
UP TO 600	N12-400	N12-400	600	250
600 TO 1000	N12-400	N12-400	700	300
1000 TO 1400	N16-400	N12-400	900	300
1400 TO 1800	N16-400	N12-400	1100	300
1800 TO 2200	N16-400	N12-400	1300	300

TYPICAL RETAINING WALL SECTION

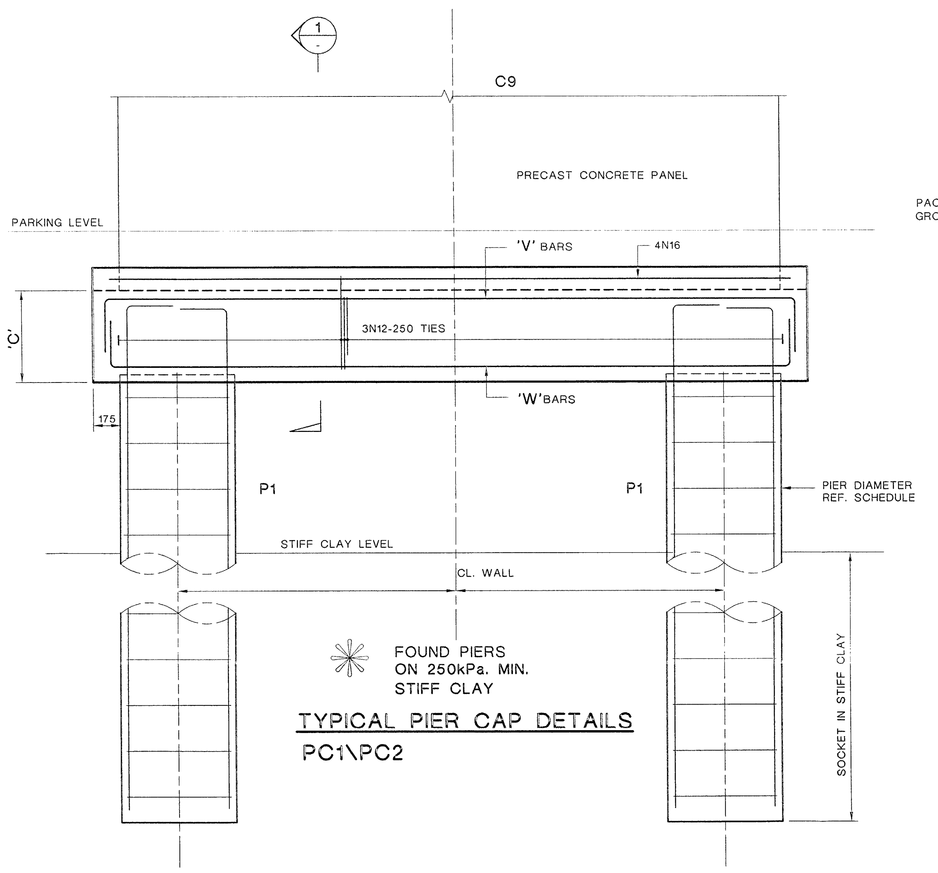
NOTE:
RW4 -------- REFER TO SECTIONS 8, DRG. S6 FOR DETAILS.
RW5A & RW6 -------- REFER TO SECTIONS 1 & 10, DRG. S6 FOR DETAILS.

PIER CAP SCHEDULE

PIER CAP No.	LENGTH A (mm)	WIDTH B (mm)	THICKNESS C (mm)	REINFORCEMENT SHORT BARS V	REINFORCEMENT LONG BARS W	COG
PC1.	4650	950	600	8N20	8N24	500
PC2	2900	950	600	8N20	7N24	500
PC3	REFER TO ELVEVATION					

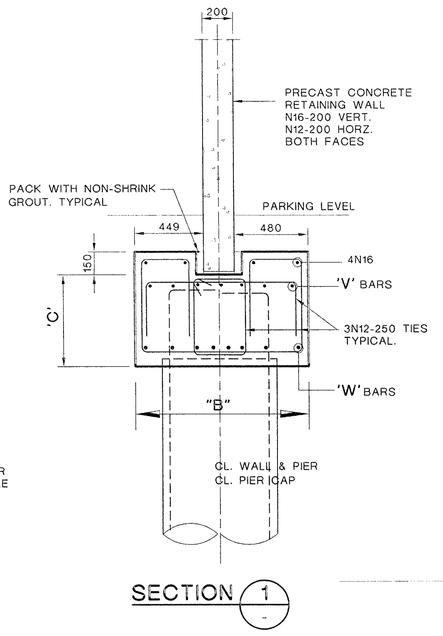
PIER NOTES:
1. ALL PIERS TO BE SOCKETED INTO STIFF CLAY
2. ALL PIERS ARE TO BE CENTERED ON COLUMN CENTERLINES
3. ALL PIER CAPS TO BE CENTRED ON PIERS.

CONCRETE STRENGTH
PIERS : F'c=25MPa.
PIER CAPS : F'c=32MPa.

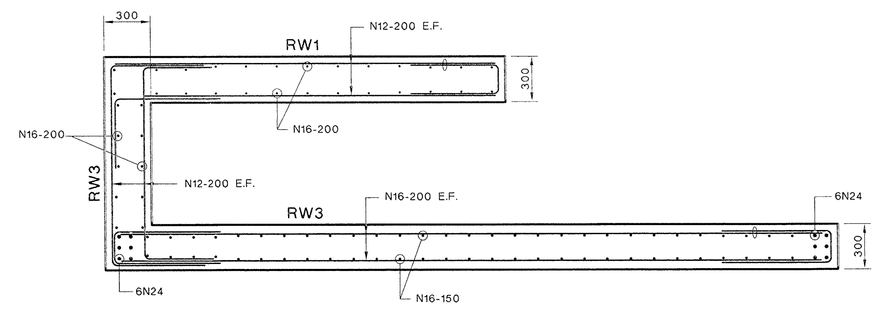


FOUND PIERS ON 250kPa. MIN. STIFF CLAY

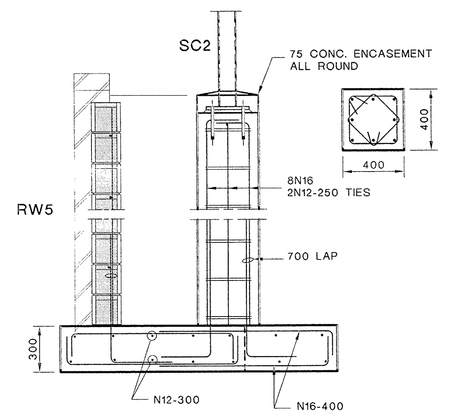
TYPICAL PIER CAP DETAILS PC1\PC2



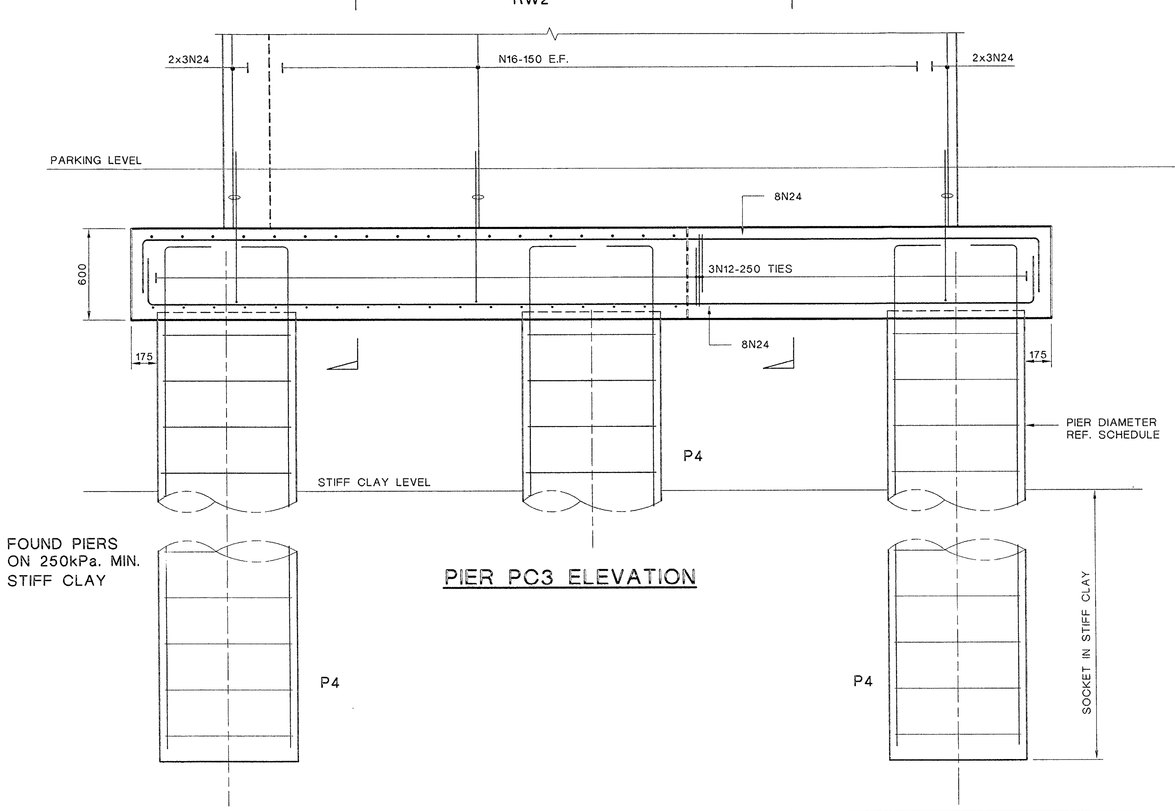
SECTION 1



PLAN OF RETAINING WALL RW1, RW2 & RW3

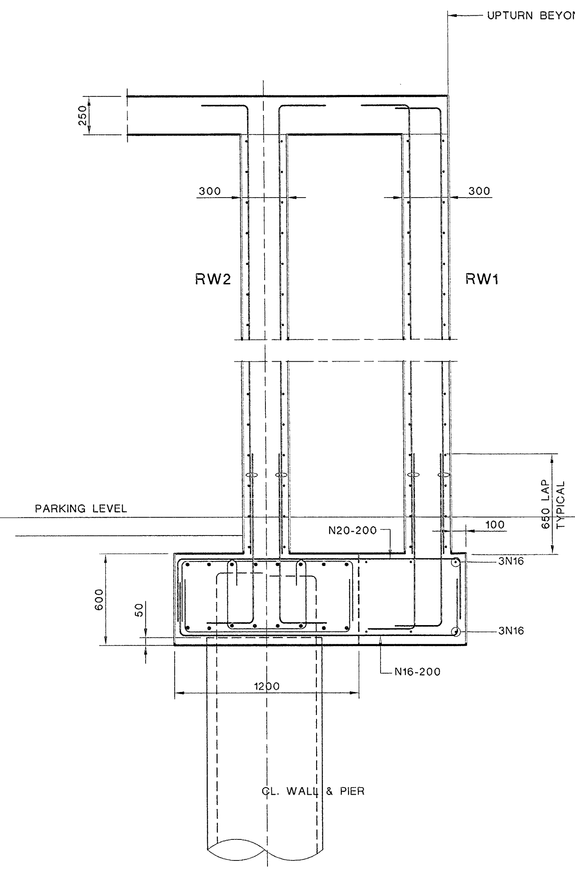


SECTION X S1

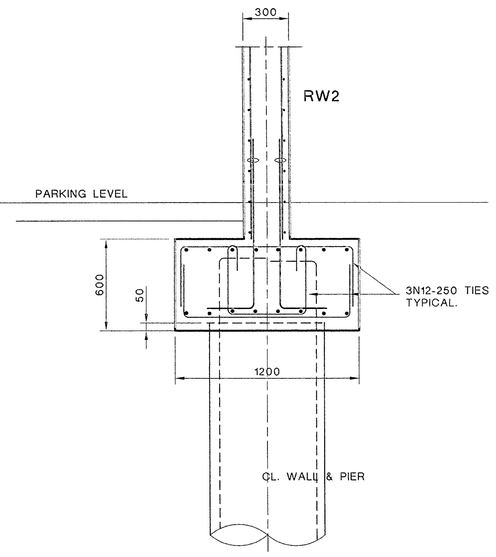


FOUND PIERS ON 250kPa. MIN. STIFF CLAY

PIER PC3 ELEVATION



SECTION 2



SECTION 3

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: FOOTING & RETAINING WALL DETAILS

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

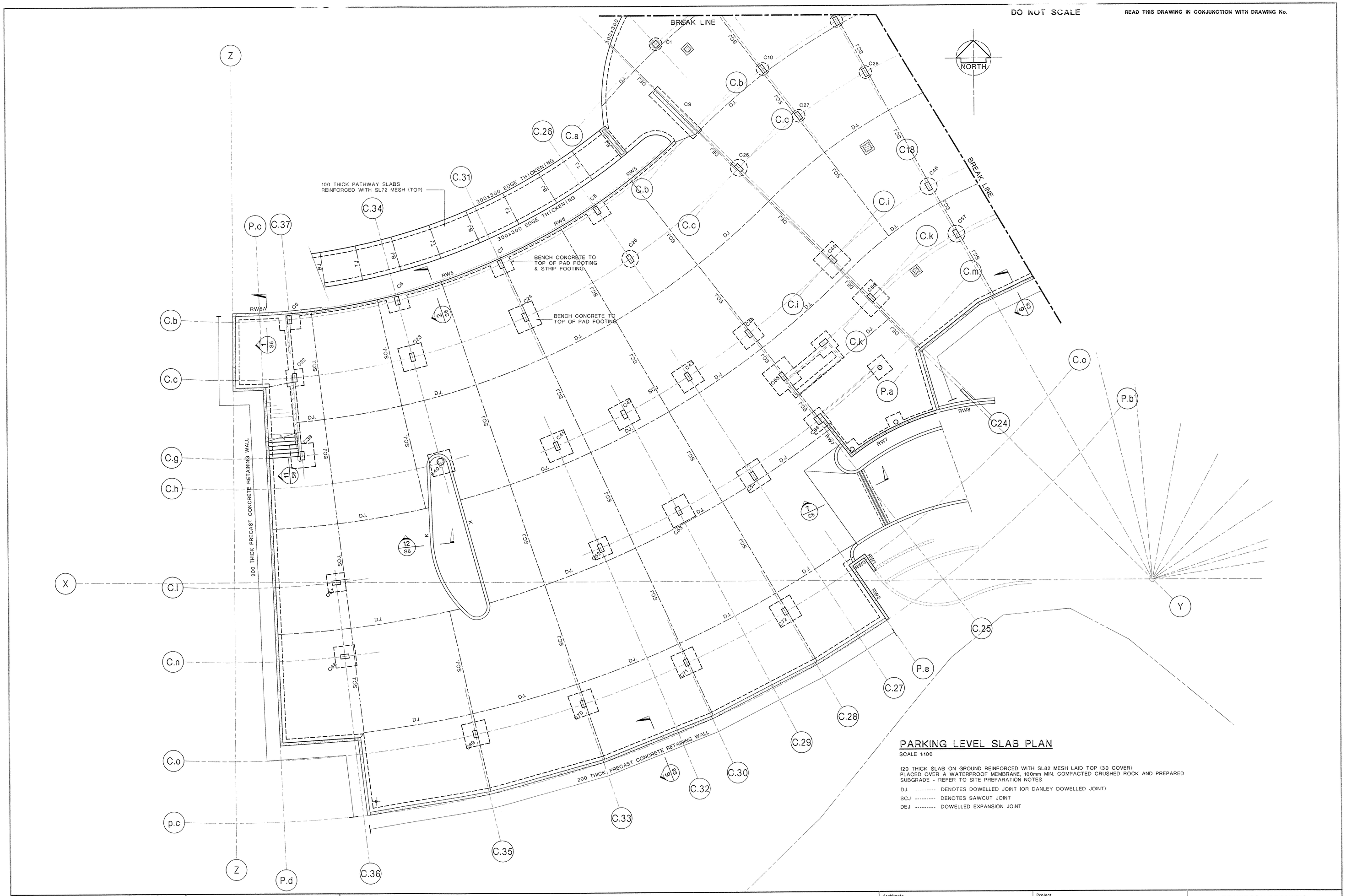
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S3A	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



PARKING LEVEL SLAB PLAN

SCALE 1:100

120 THICK SLAB ON GROUND REINFORCED WITH SL82 MESH LAID TOP (30 COVER) PLACED OVER A WATERPROOF MEMBRANE, 100mm MIN. COMPACTED CRUSHED ROCK AND PREPARED SUBGRADE - REFER TO SITE PREPARATION NOTES.

DJ. --------- DENOTES DOWELLED JOINT (OR DANLEY DOWELLED JOINT)

SCJ --------- DENOTES SAWCUT JOINT

DEJ --------- DOWELLED EXPANSION JOINT

ISSUE	REASON FOR ISSUE	SDN & DATE DESIGN REVIEW	SDN & DATE VERIFICATION
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: PARKING LEVEL PLAN SHEET 1

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD
PITTWATER

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S4	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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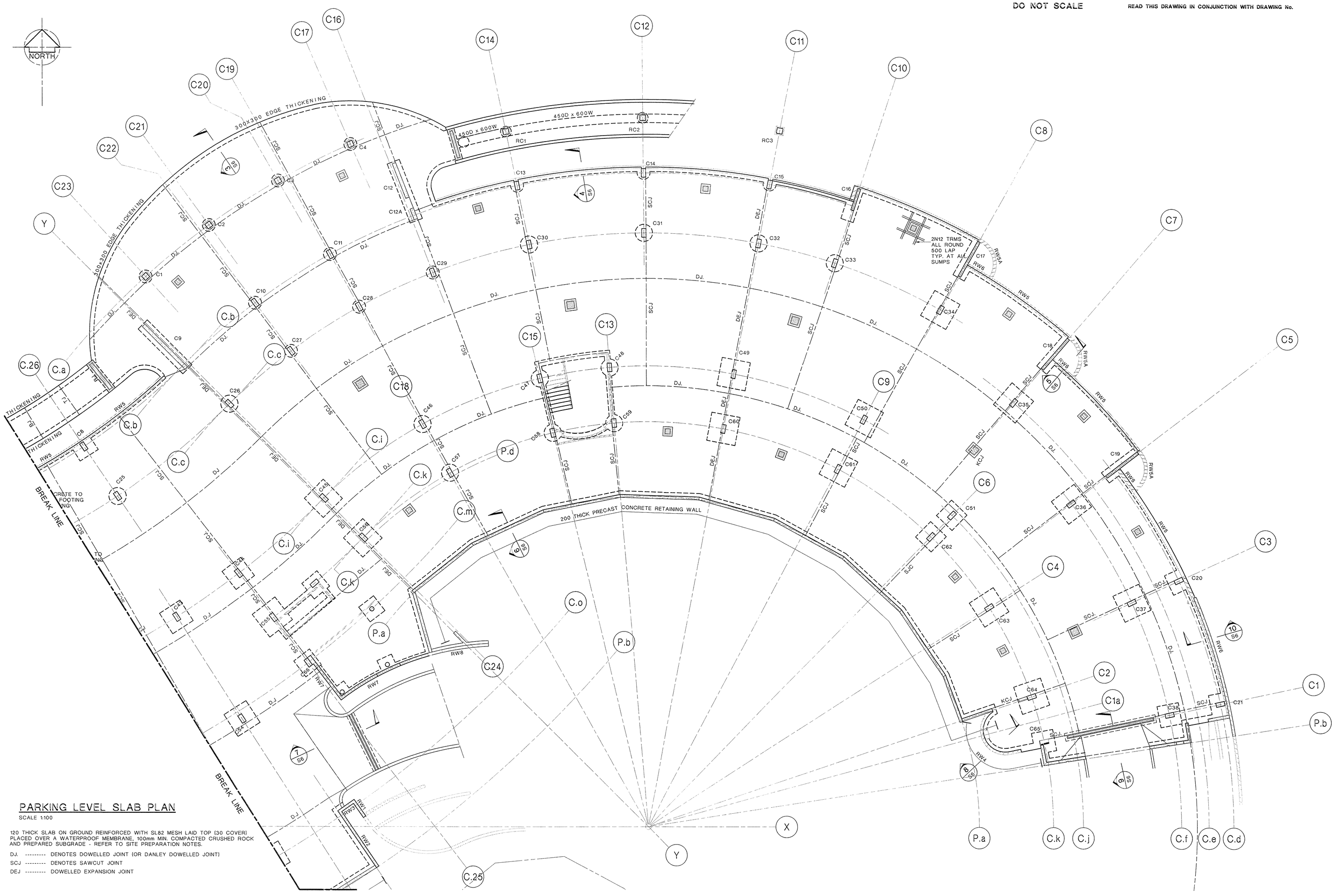

PARKING LEVEL SLAB PLAN

SCALE 1:100

120 THICK SLAB ON GROUND REINFORCED WITH SL82 MESH LAID TOP (30 COVER) PLACED OVER A WATERPROOF MEMBRANE, 100mm MIN. COMPACTED CRUSHED ROCK AND PREPARED SUBGRADE - REFER TO SITE PREPARATION NOTES.

DJ. --------- DENOTES DOWELLED JOINT (OR DANLEY DOWELLED JOINT)

SCJ --------- DENOTES SAWCUT JOINT

DEJ --------- DOWELLED EXPANSION JOINT

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: PARKING LEVEL PLAN SHEET2

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S5	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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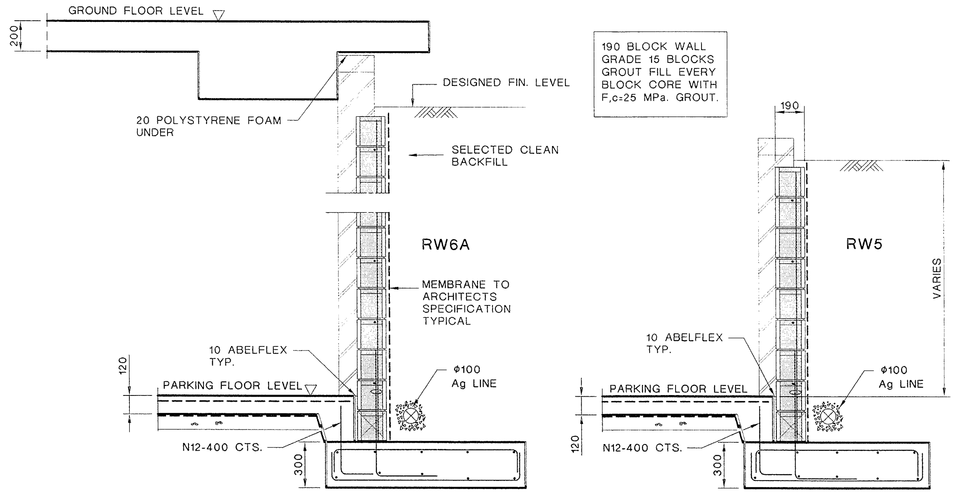
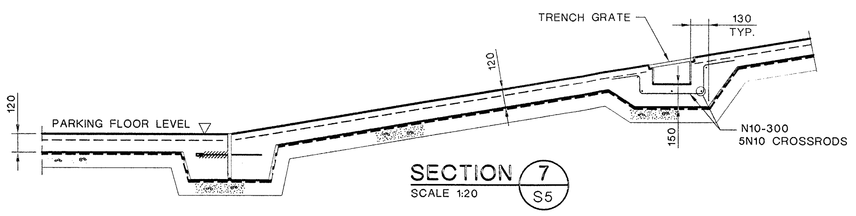


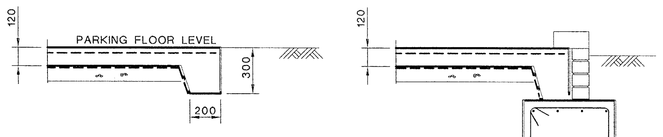
SECTION 1 S4 SCALE 1:20

SECTION 2 S4 SCALE 1:20

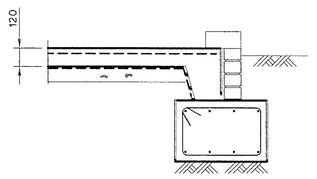
NOTE;
REFER TO DRG. S3A FOR RETAINING WALL SCHEDULE FOR TYPE 5 & 6A



SECTION 7 S5 SCALE 1:20



SECTION 3 S5 SCALE 1:20



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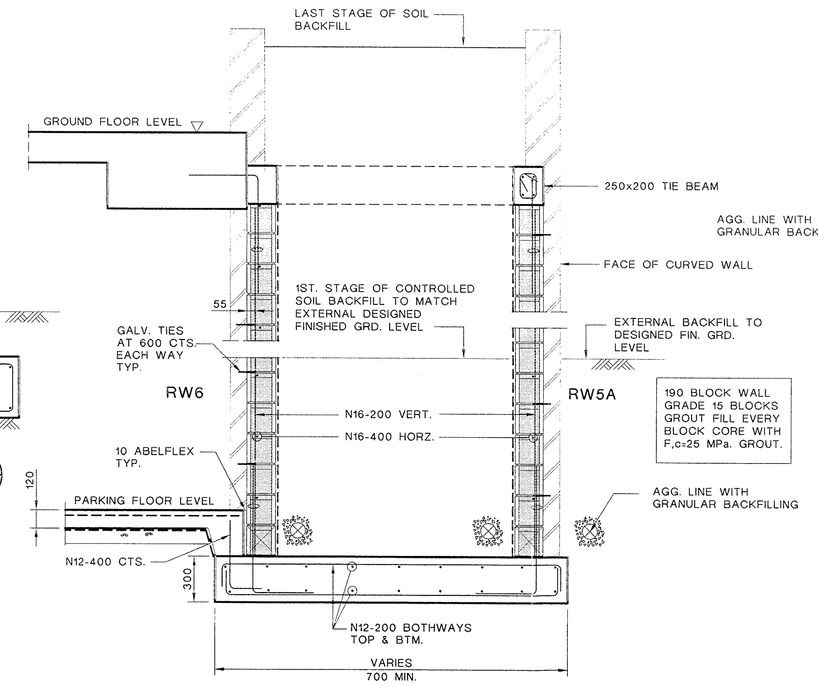

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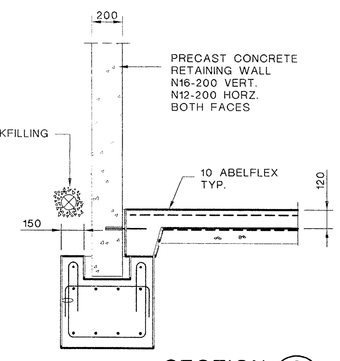
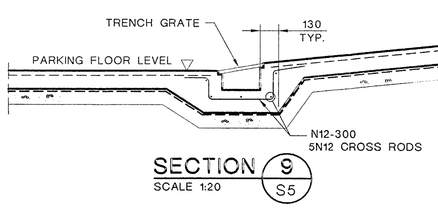


SECTION 6 S4,S5 SCALE 1:20



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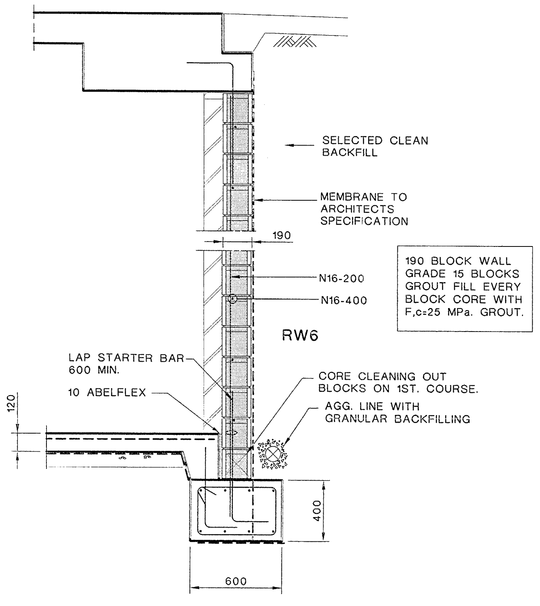
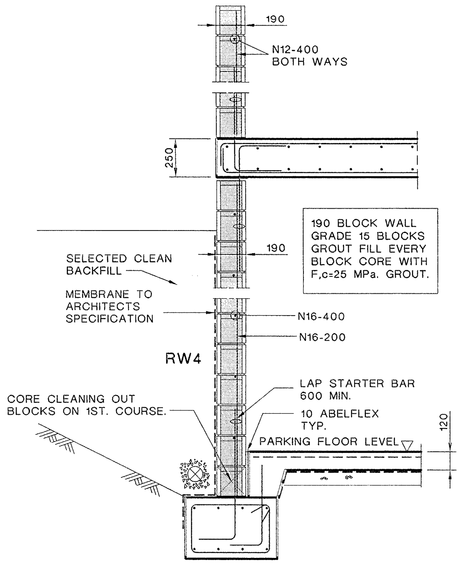
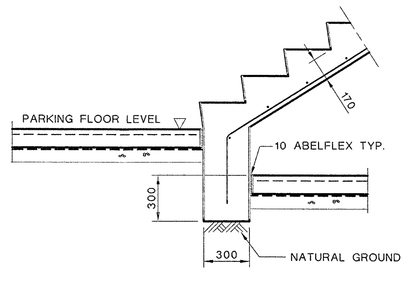


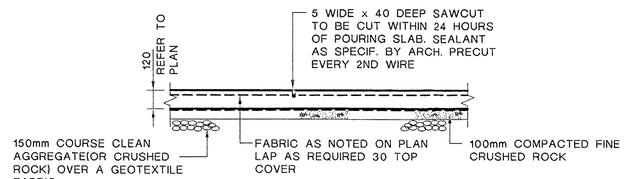
SECTION 10 S5 SCALE 1:20



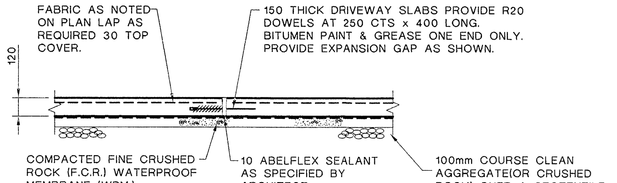
SECTION 8 S5 SCALE 1:20



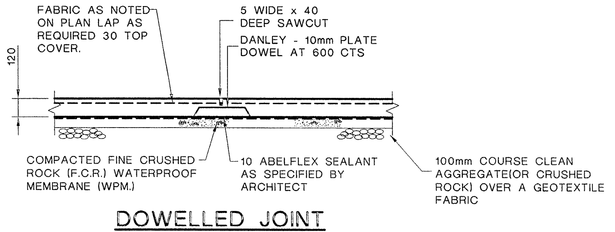
SECTION 11 S4 SCALE 1:20



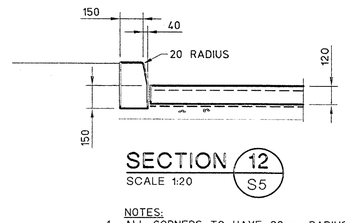
SAWCUT JOINT
DENOTED 'SCJ' ON PLAN



DOWELLED EXPANSION JOINT
DENOTED DEJ. ON PLAN



DOWELLED JOINT
DENOTED DJ. ON PLAN



SECTION 12 S5 SCALE 1:20

NOTES.
1. ALL CORNERS TO HAVE 20mm RADIUS
2. ROAD BASE COURSE IS TO BE EXTENDED BENEATH KERBS, GUTTERS, APRON AND DISH CROSSINGS.
3. PROVIDE 10 ABELFLEX BUTT JOINTS AT 3000 APPROX. CTS. IN SECTIONS. LOCATE KERB JOINTS AT ALL CORNERS OR TANGENT POINTS.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
2	TENDER ISSUE	20/06/07	
1	CO-ORDINATION ISSUE	12/06/07	

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Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
PARKING LEVEL SECTIONS

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD
PITTWATER

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S6	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE   READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

GROUND FLOOR SLAB PLAN

SCALE 1:100

SLAB AND DROP PANELS THICKNESSES AS SHOWN ON PLAN
FOR DESIGN LIVE LOADS - REFER TO DRAWING S0
REFER TO DRG. S15 & S16 FOR SECTIONS

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
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1	CO-ORDINATION ISSUE	4/04/07	

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The Association of Consulting Engineers Australia

Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
GROUND FLOOR PLAN
SHEET 1

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S7	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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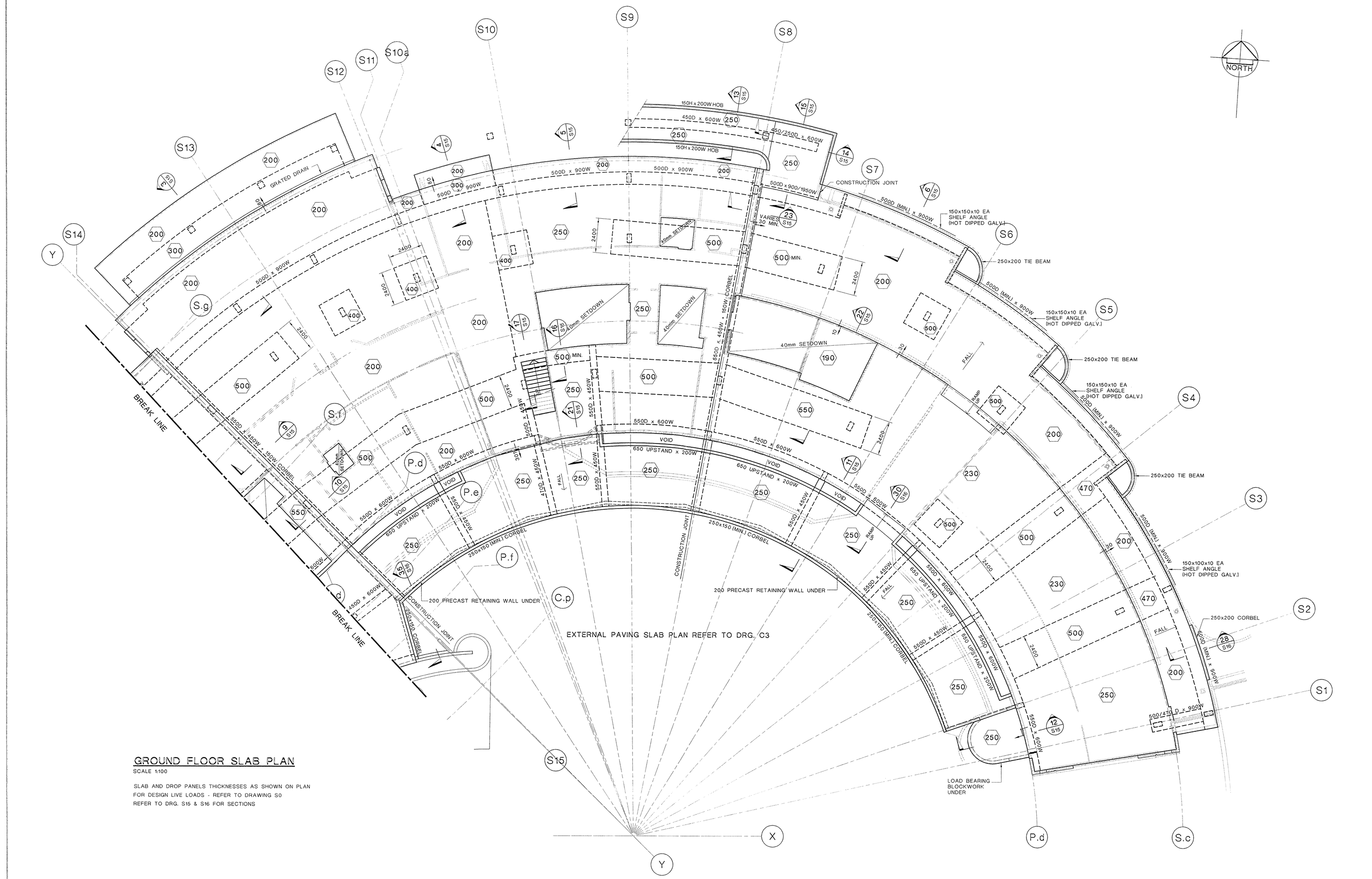

GROUND FLOOR SLAB PLAN

SCALE 1:100

SLAB AND DROP PANELS THICKNESSES AS SHOWN ON PLAN
FOR DESIGN LIVE LOADS - REFER TO DRAWING S0
REFER TO DRG. S15 & S16 FOR SECTIONS

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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Architects
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Title
GROUND FLOOR PLAN
SHEET 2

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S8	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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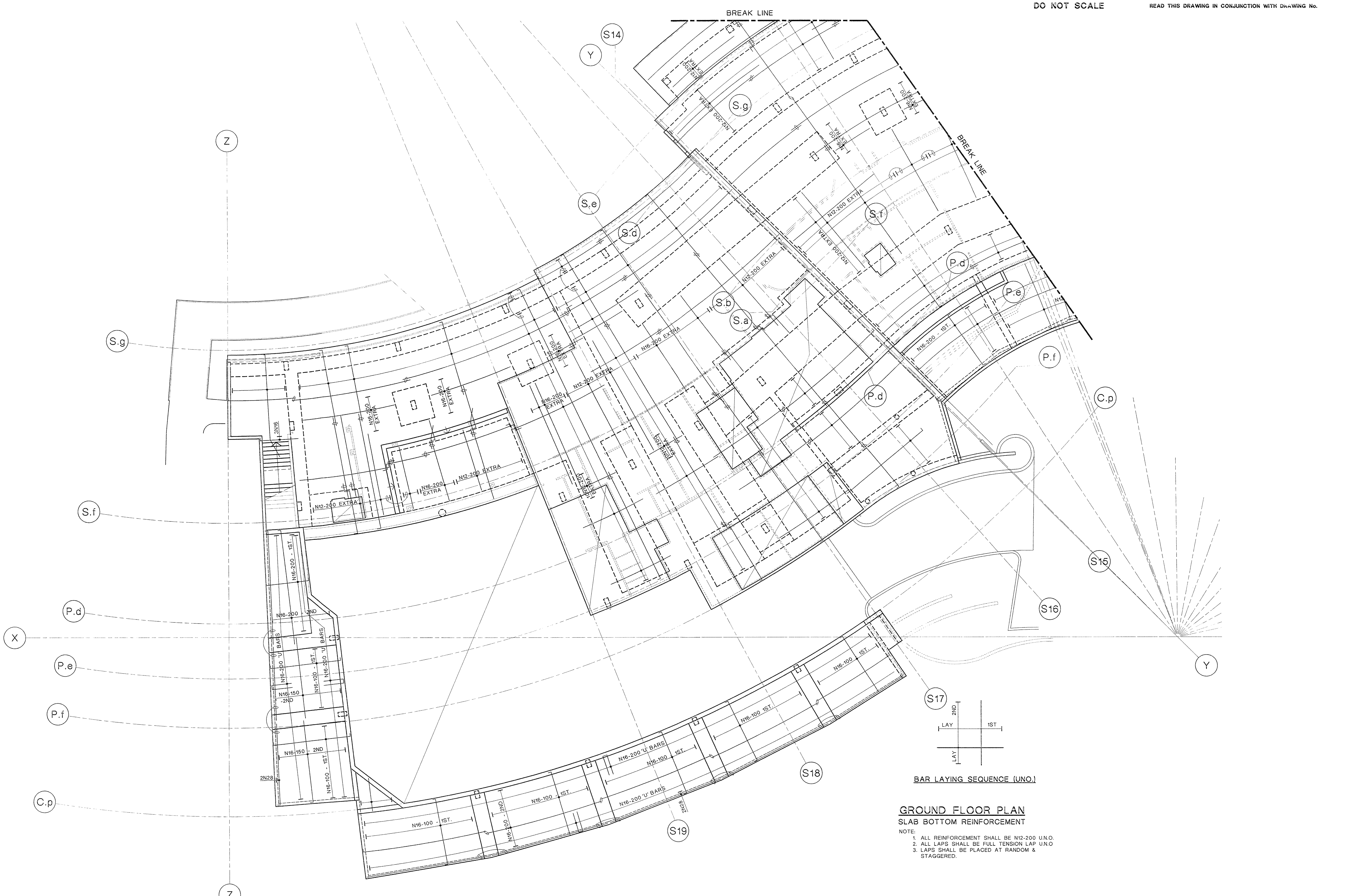

BAR LAYING SEQUENCE (UNO.)

GROUND FLOOR PLAN
SLAB BOTTOM REINFORCEMENT

NOTE:
1. ALL REINFORCEMENT SHALL BE N12-200 U.N.O.
2. ALL LAPS SHALL BE FULL TENSION LAP U.N.O
3. LAPS SHALL BE PLACED AT RANDOM & STAGGERED.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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Architects
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Title
GROUND FLOOR PLAN - SHEET 1
BOTTOM REINFORCEMENT

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

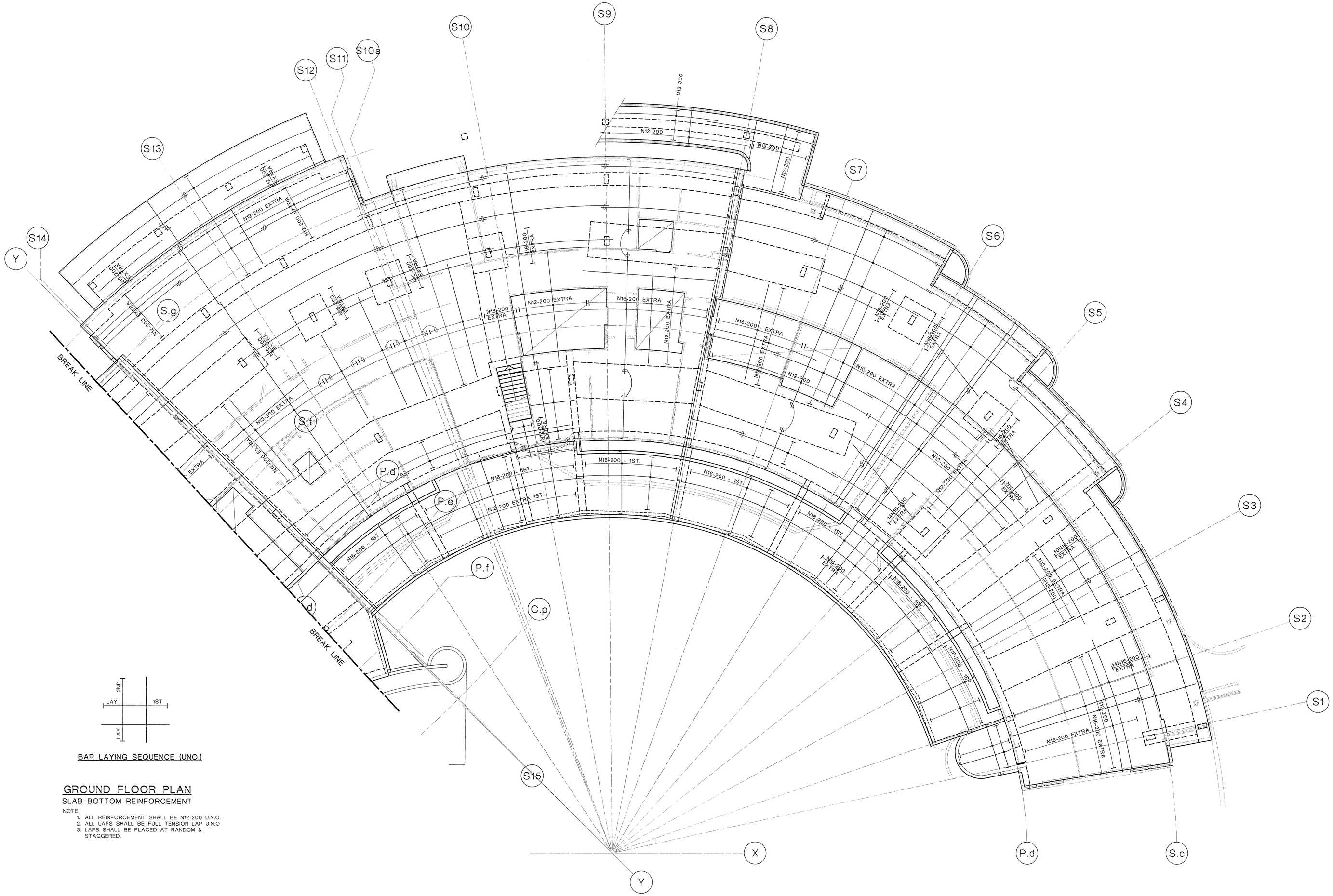
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	**Job No.**	**Dwg No.**	**Issue**
1:100	7713	S9	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



BAR LAYING SEQUENCE (UNO.)

GROUND FLOOR PLAN

SLAB BOTTOM REINFORCEMENT

NOTE:

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2. ALL LAPS SHALL BE FULL TENSION LAP U.N.O
3. LAPS SHALL BE PLACED AT RANDOM & STAGGERED.

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Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: GROUND FLOOR PLAN - SHEET 2
BOTTOM REINFORCEMENT

Project: SAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
SAYVIEW

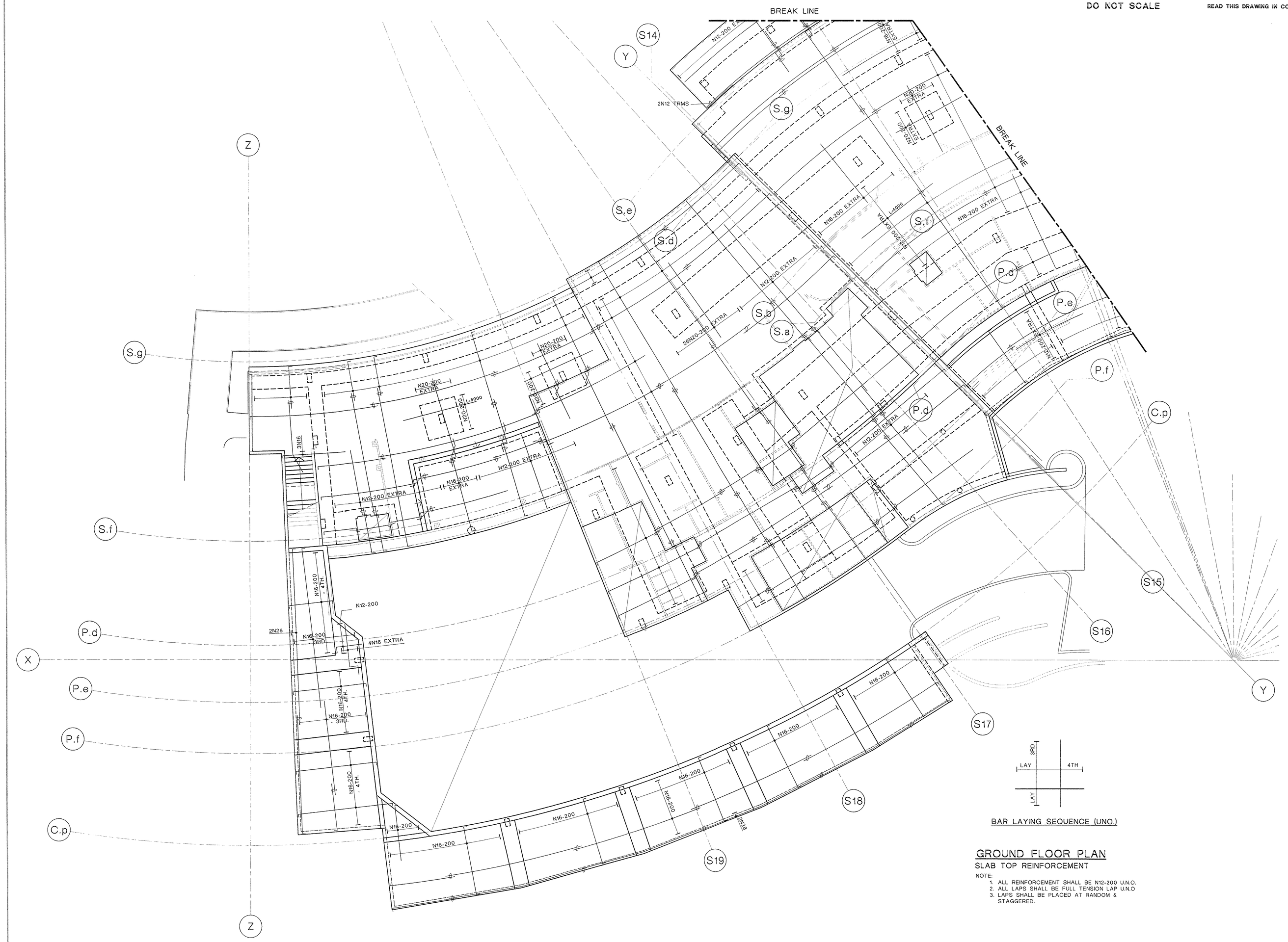
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S10	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



BAR LAYING SEQUENCE (UNO.)

GROUND FLOOR PLAN

SLAB TOP REINFORCEMENT

NOTE:

1. ALL REINFORCEMENT SHALL BE N12-200 U.N.O.
2. ALL LAPS SHALL BE FULL TENSION LAP U.N.O
3. LAPS SHALL BE PLACED AT RANDOM & STAGGERED.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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Architects
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Title
GROUND FLOOR PLAN - SHEET 1
TOP REINFORCEMENT

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

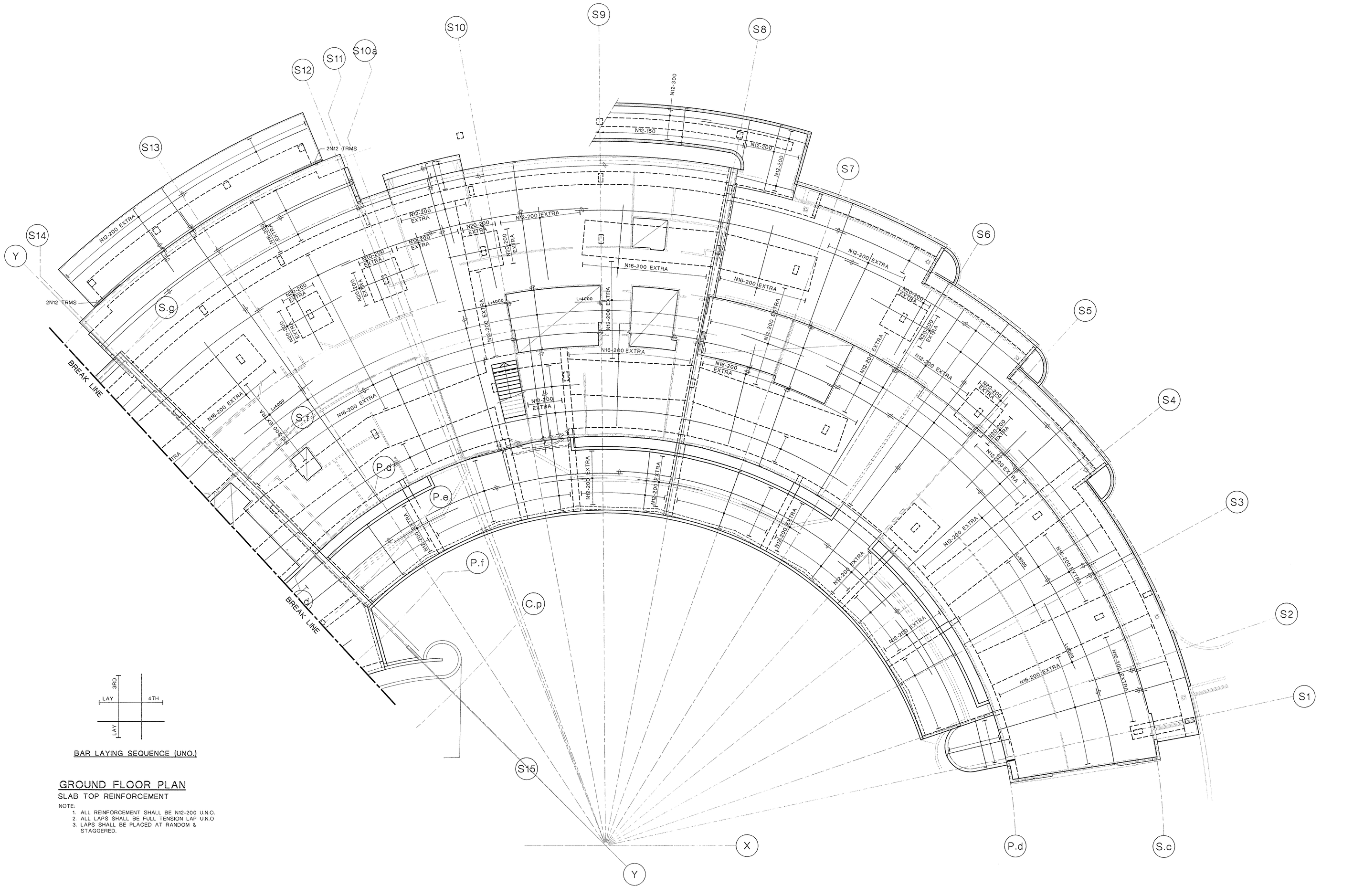
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S11	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



BAR LAYING SEQUENCE (UNO.)

GROUND FLOOR PLAN

SLAB TOP REINFORCEMENT

NOTE:

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2. ALL LAPS SHALL BE FULL TENSION LAP U.N.O
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Architects
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Title
GROUND FLOOR PLAN - SHEET 2
TOP REINFORCEMENT

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

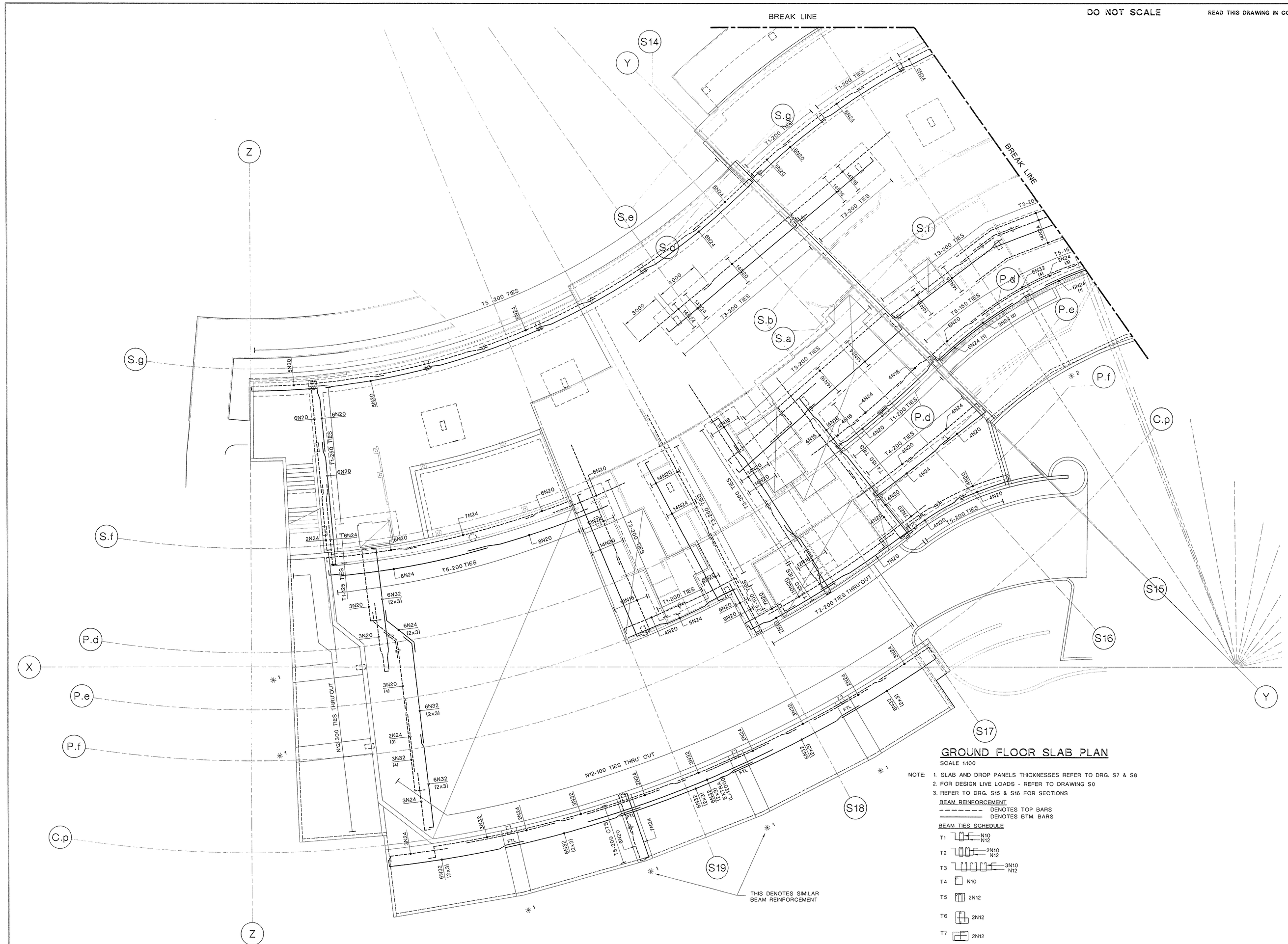
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S12	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



GROUND FLOOR SLAB PLAN

SCALE 1:100

NOTE:
1. SLAB AND DROP PANELS THICKNESSES REFER TO DRG. S7 & S8
2. FOR DESIGN LIVE LOADS - REFER TO DRAWING S0
3. REFER TO DRG. S15 & S16 FOR SECTIONS

BEAM REINFORCEMENT
- DENOTES TOP BARS
- DENOTES BTM. BARS

BEAM TIES SCHEDULE
- T1 N10 / N12
- T2 2N10 / N12
- T3 3N10 / N12
- T4 N10
- T5 2N12
- T6 2N12
- T7 2N12

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: GROUND FLOOR BEAM REINFORCEMENT PLAN SHEET 1

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

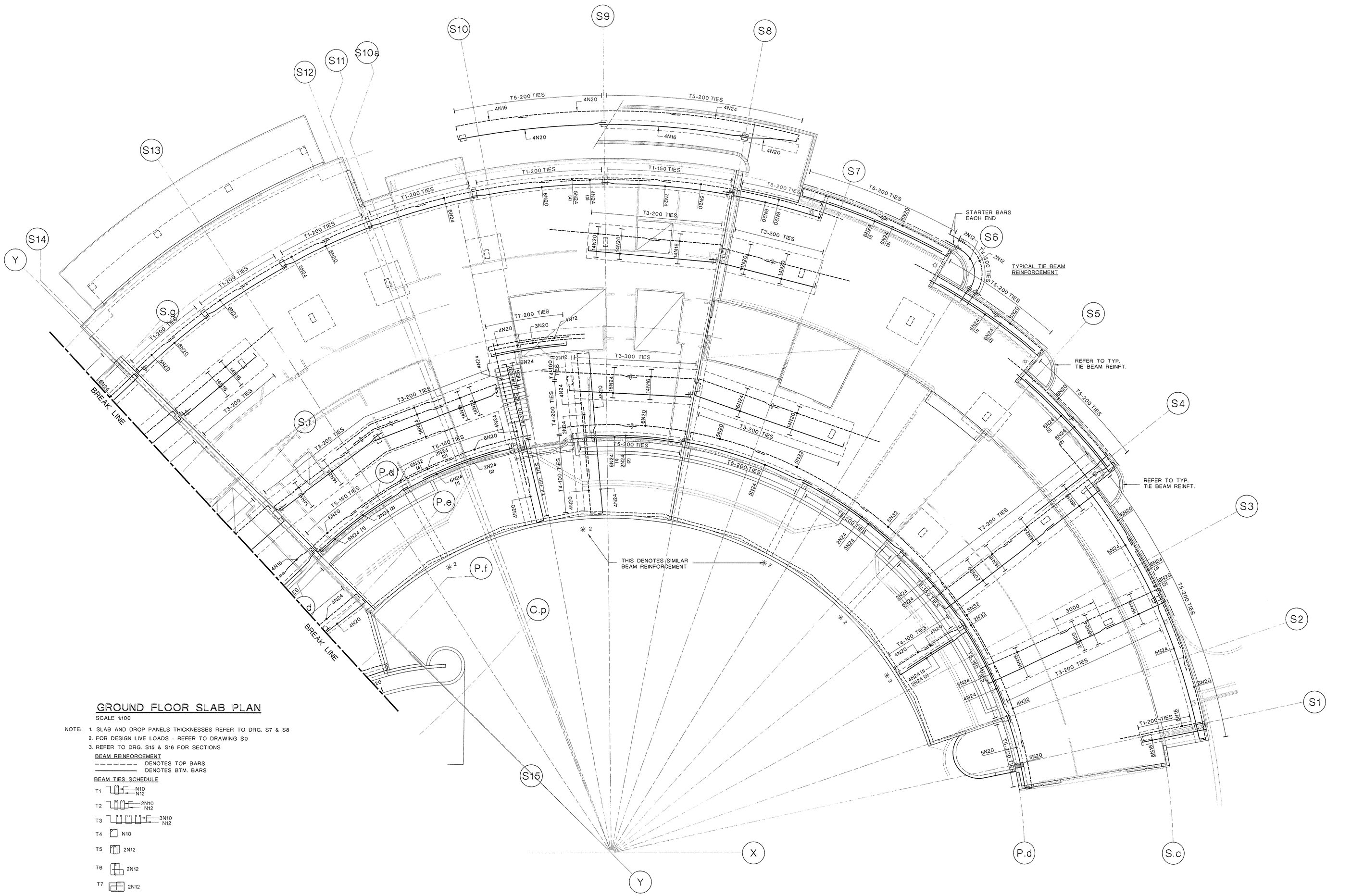
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S13	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



GROUND FLOOR SLAB PLAN

SCALE 1:100

NOTE:
1. SLAB AND DROP PANELS THICKNESSES REFER TO DRG. S7 & S8
2. FOR DESIGN LIVE LOADS - REFER TO DRAWING S0
3. REFER TO DRG. S15 & S16 FOR SECTIONS

BEAM REINFORCEMENT
- DENOTES TOP BARS
- DENOTES BTM. BARS

BEAM TIES SCHEDULE

T1 N10 N12
T2 2N10 N12
T3 3N10 N12
T4 N10
T5 2N12
T6 2N12
T7 2N12

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE
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Architects
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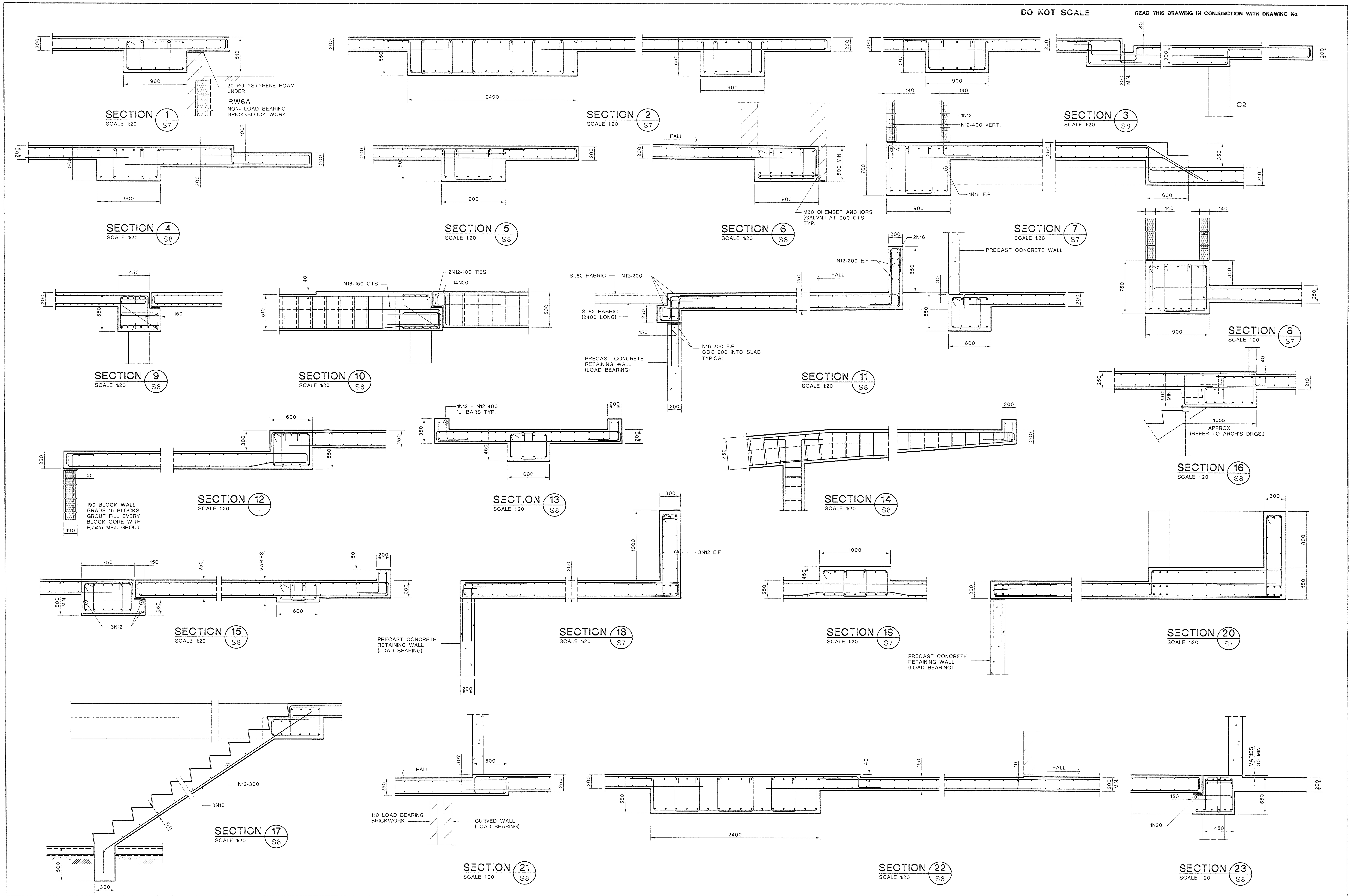
Title
GROUND FLOOR BEAM REFORCEMENT PLAN
SHEET 2

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S14	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
GROUND FLOOR SECTIONS
SHEET 1

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	**Job No.**	**Dwg No.**	**Issue**
1:20	7713	S15	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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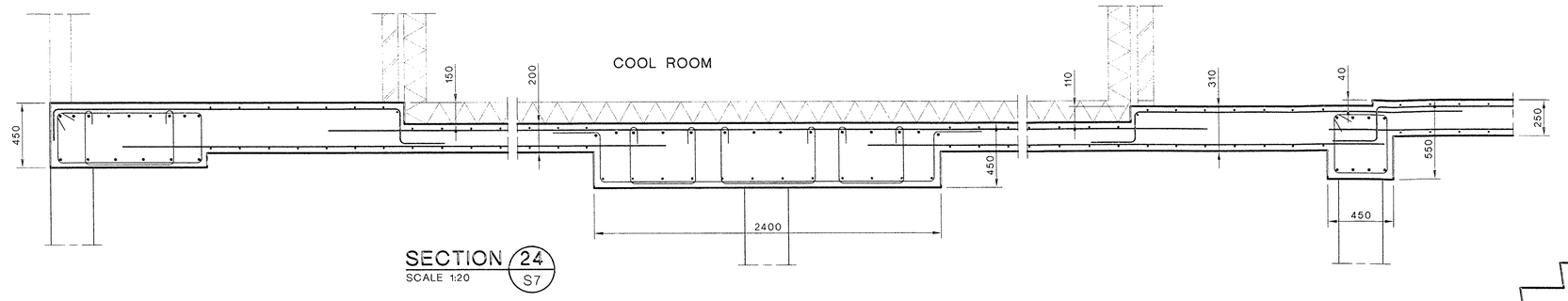
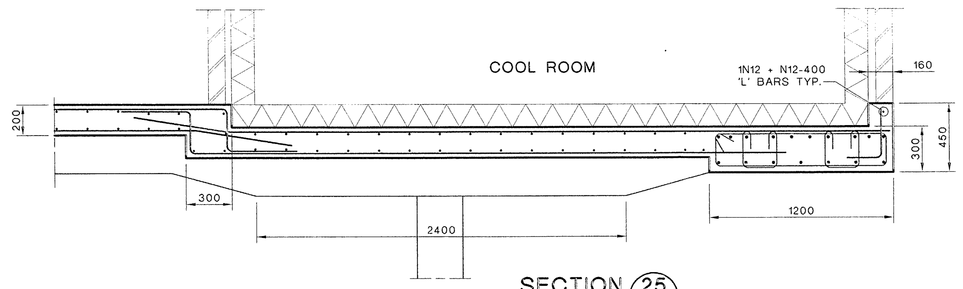
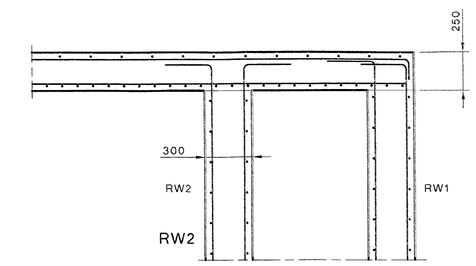


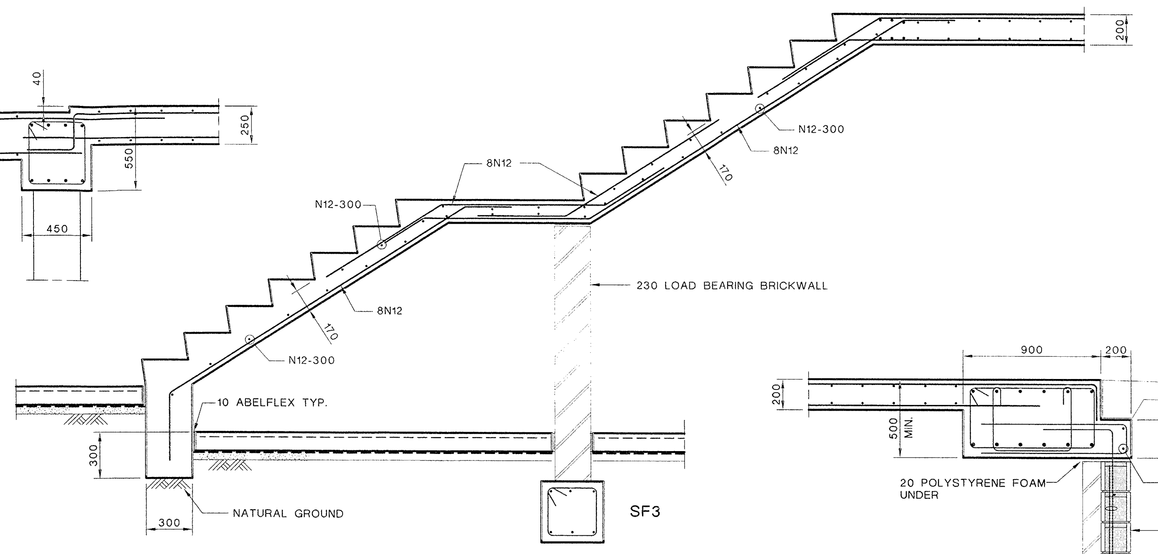
SECTION 24 S7
SCALE 1:20



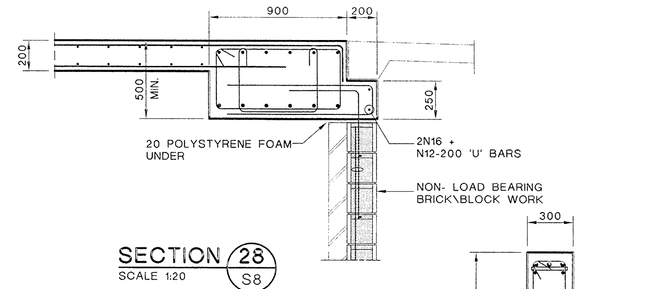
SECTION 25 S7
SCALE 1:20



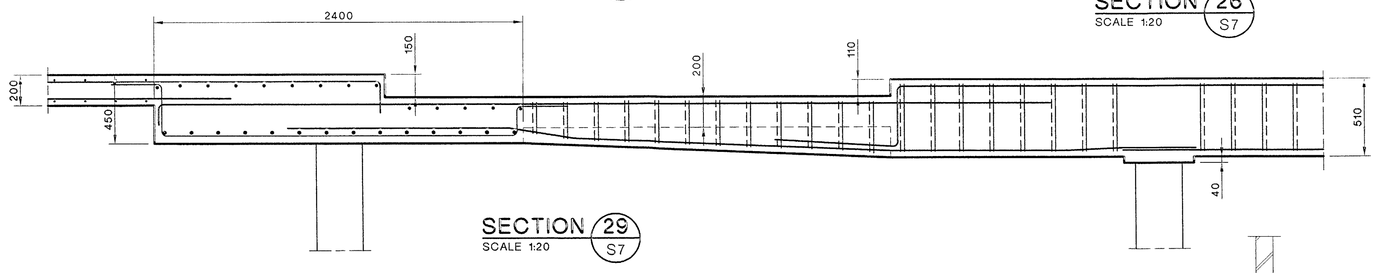
SECTION 26 S7
SCALE 1:20



SECTION 27 S7
SCALE 1:20



SECTION 28 S8
SCALE 1:20



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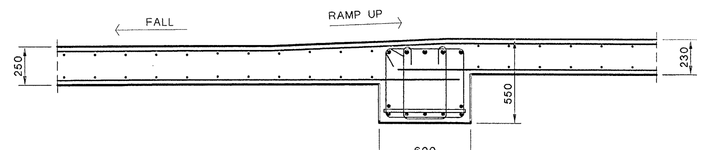
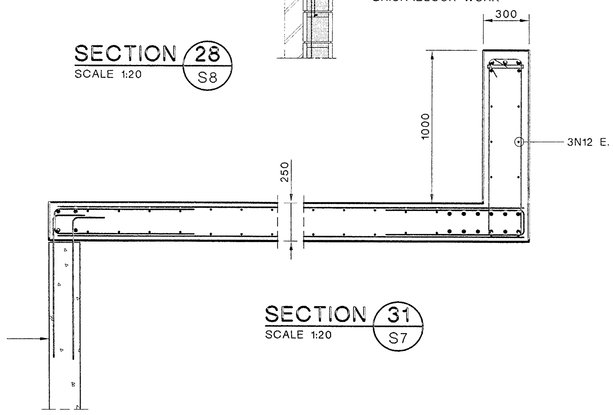
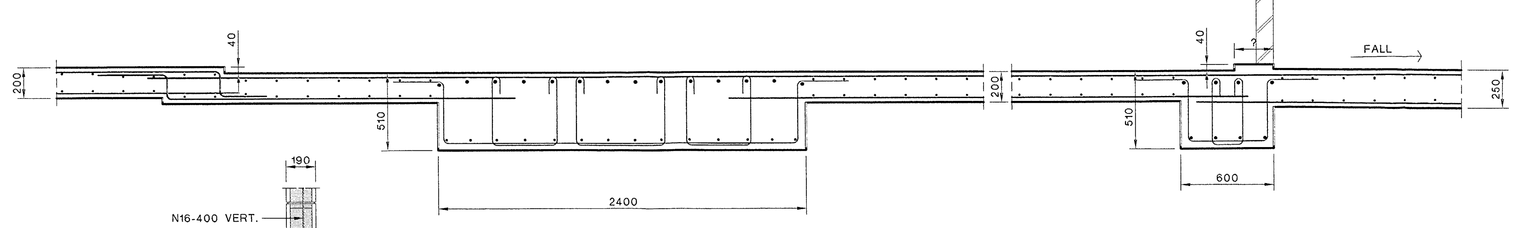
SCALE 1:20

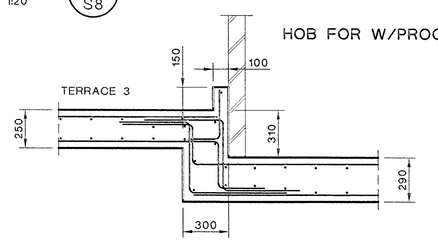


SECTION 30 S8
SCALE 1:20

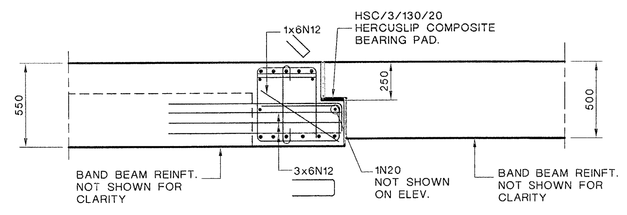


SECTION 31 S7
SCALE 1:20

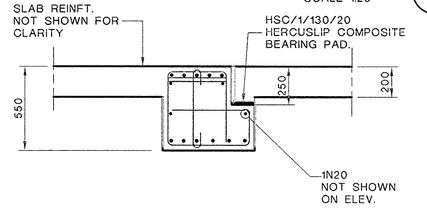




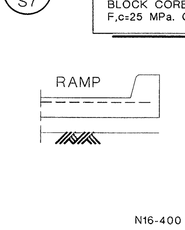
SECTION 32 S7
SCALE 1:20



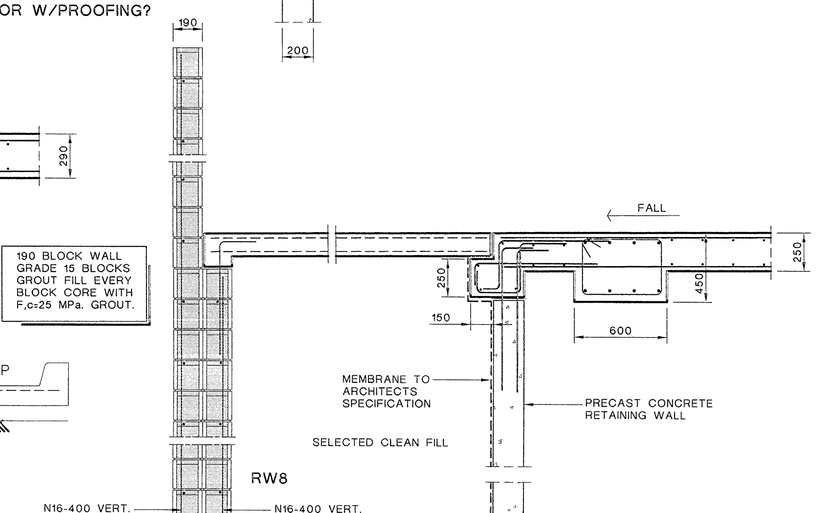
SECTION A
SCALE 1:20



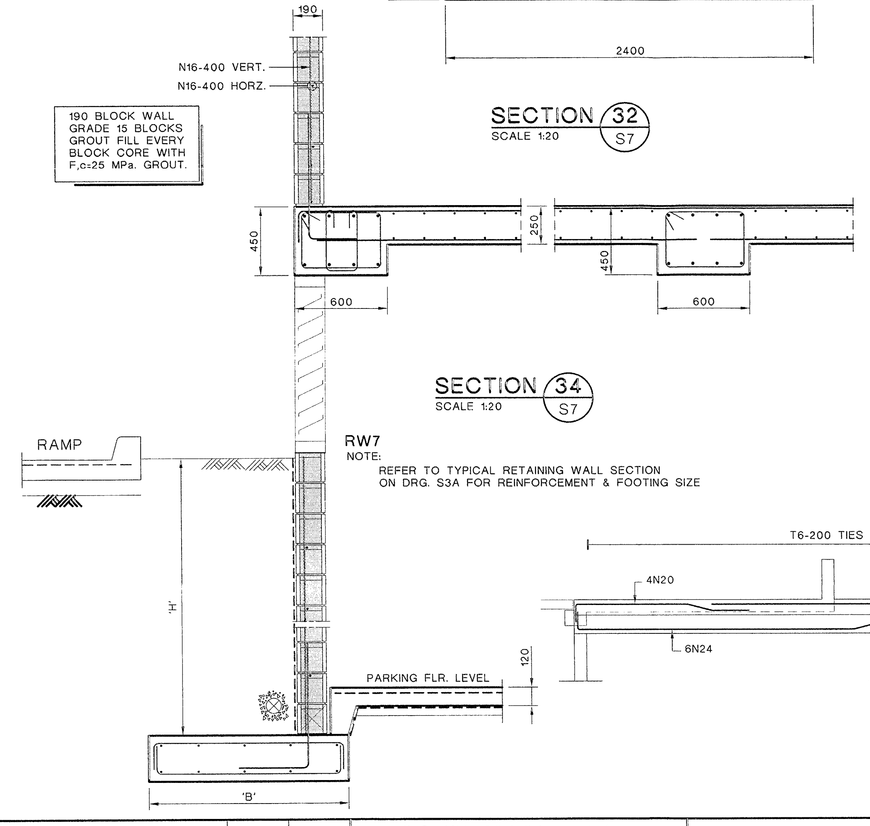
SECTION B
SCALE 1:20



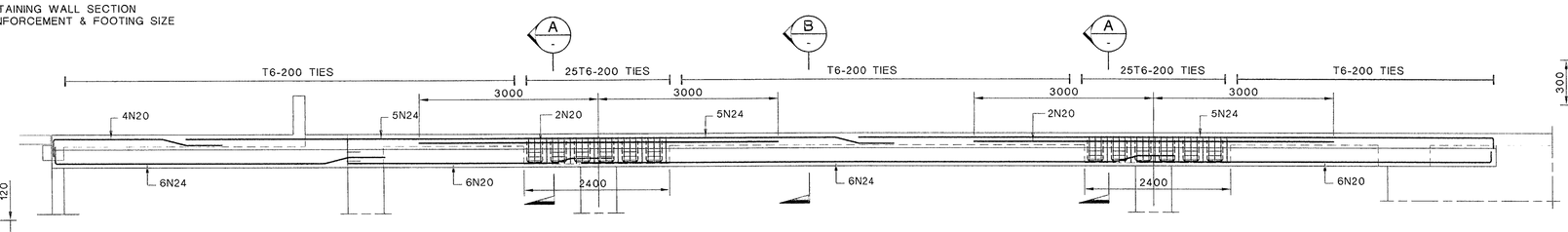
SECTION 33 S7
SCALE 1:20



SECTION 35 S7
SCALE 1:20



SECTION 34 S7
SCALE 1:20



BEAM ELEVATION AT EXPANSION JOINT AT GRID S14

BEAM ELEVATION AT EXPANSION JOINT AT GRID S8 SIMILAR

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
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The Association of Consulting Engineers Australia

Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
GROUND FLOOR SECTIONS
SHEET 2

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD
BAYVIEW

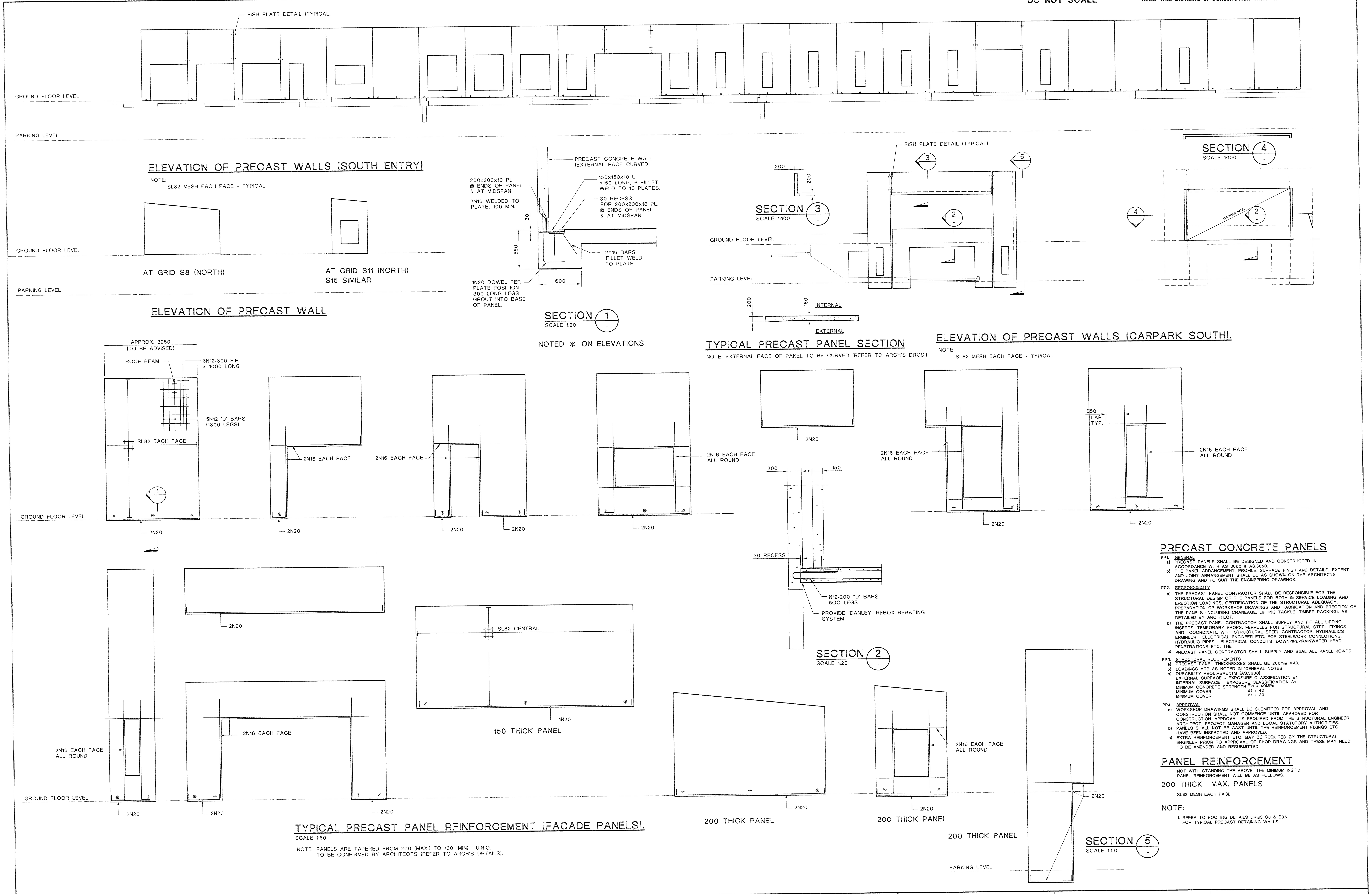
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S16	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



PRECAST CONCRETE PANELS

PP1. GENERAL
a) PRECAST PANELS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS 3600 & AS.3850.
b) THE PANEL ARRANGEMENT, PROFILE, SURFACE FINISH AND DETAILS, EXTENT AND JOINT ARRANGEMENT SHALL BE AS SHOWN ON THE ARCHITECTS DRAWING AND TO SUIT THE ENGINEERING DRAWINGS.

PP2. RESPONSIBILITY
a) THE PRECAST PANEL CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE PANELS FOR BOTH IN SERVICE LOADING AND ERECTION LOADINGS, CERTIFICATION OF THE STRUCTURAL ADEQUACY, PREPARATION OF WORKSHOP DRAWINGS AND FABRICATION AND ERECTION OF THE PANELS (INCLUDING CRANEAGE, LIFTING TACKLE, TIMBER PACKING). AS DETAILED BY ARCHITECT.
b) THE PRECAST PANEL CONTRACTOR SHALL SUPPLY AND FIT ALL LIFTING INSERTS, TEMPORARY PROPS, FERRULES FOR STRUCTURAL STEEL FIXINGS AND COORDINATE WITH STRUCTURAL STEEL CONTRACTOR, HYDRAULICS ENGINEER, ELECTRICAL ENGINEER ETC. FOR STEELWORK CONNECTIONS, HYDRAULIC PIPES, ELECTRICAL CONDUITS, DOWNPIPE/RAINWATER HEAD PENETRATIONS ETC. THE
c) PRECAST PANEL CONTRACTOR SHALL SUPPLY AND SEAL ALL PANEL JOINTS

PP3. STRUCTURAL REQUIREMENTS
a) PRECAST PANEL THICKNESSES SHALL BE 200mm MAX.
b) LOADINGS ARE AS NOTED IN 'GENERAL NOTES'.
c) DURABILITY REQUIREMENTS (AS.3600)
EXTERNAL SURFACE - EXPOSURE CLASSIFICATION B1
INTERNAL SURFACE - EXPOSURE CLASSIFICATION A1
MINIMUM CONCRETE STRENGTH F'c = 40MPa
MINIMUM COVER B1 = 40
MINIMUM COVER A1 = 20

PP4. APPROVAL
a) WORKSHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND CONSTRUCTION SHALL NOT COMMENCE UNTIL APPROVED FOR CONSTRUCTION. APPROVAL IS REQUIRED FROM THE STRUCTURAL ENGINEER, ARCHITECT, PROJECT MANAGER AND LOCAL STATUTORY AUTHORITIES.
b) PANELS SHALL NOT BE CAST UNTIL THE REINFORCEMENT FIXINGS ETC. HAVE BEEN INSPECTED AND APPROVED.
c) EXTRA REINFORCEMENT ETC. MAY BE REQUIRED BY THE STRUCTURAL ENGINEER PRIOR TO APPROVAL OF SHOP DRAWINGS AND THESE MAY NEED TO BE AMENDED AND RESUBMITTED.

PANEL REINFORCEMENT

NOT WITH STANDING THE ABOVE, THE MINIMUM INSITU PANEL REINFORCEMENT WILL BE AS FOLLOWS.

200 THICK MAX. PANELS

SL82 MESH EACH FACE

NOTE:

1. REFER TO FOOTING DETAILS DRGS S3 & S3A FOR TYPICAL PRECAST RETAINING WALLS.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: ELEVATIONS & DETAILS OF PRECAST WALLS (SOUTH ENTRY)

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg. No.	Issue
1:100	7713	S17	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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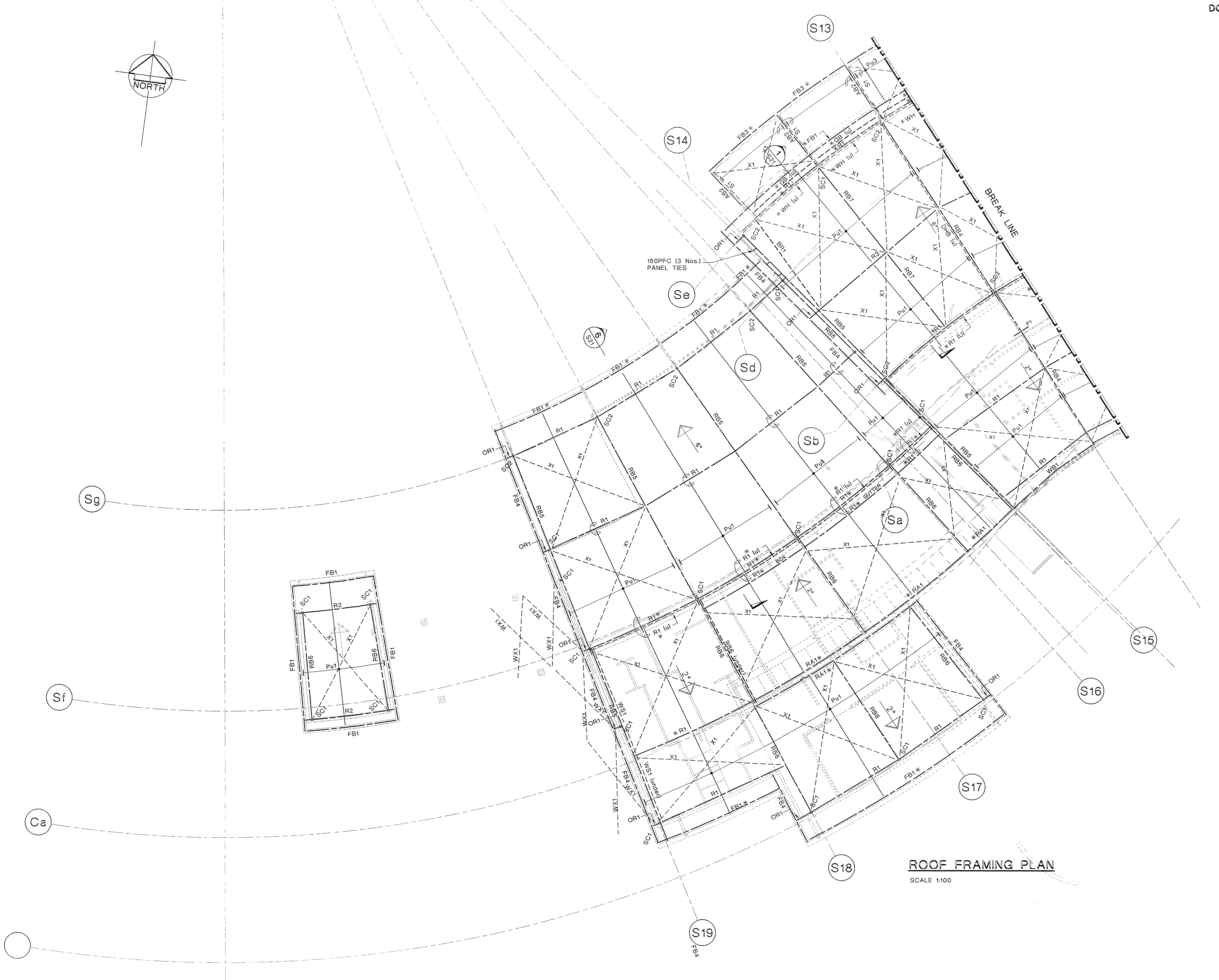

STEEL MEMBER SCHEDULE

POSTS	SC1	-------- 100x100x5.0 SHS
	SC2	-------- 114CHSx4.8
	H1	-------- 75x50x8 UA (HANGER)
ROOF RAFTERS	R1	-------- 200UB25
	R2	-------- 200PFC
	R3	-------- 250UB31
	OR1	-------- 180PFC FULLY WELDED TO COLUMNS SC1 & SC2/BEAM
AWNING BEAMS	AB1	-------- 200UB25
	AB2	-------- 150UC37
	AB3	-------- 180PFC
ROOF BEAMS	RB1	-------- 310UB40
	RB2	-------- 250UC73
	RB3	-------- 250UB31
	RB4	-------- 410UB54
	RB5	-------- 360UB45
	RB6	-------- 200UB25
	RB7	-------- 200UB25
	RA1	-------- 100x100x10 EA (BENT TO SUIT PRECAST PANELS).
WALER BEAM	WB1	-------- 200UB25 (BENT TO SUIT PRECAST PANELS).
TIE BEAM	TB	-------- 200PFC
WINDOW HEAD	WH	-------- 150UC37
WALL HEADER BEAM	WH1	-------- 150x100x5.0 RHS
FASCIA BEAMS	FB1	-------- 180PFC
	FB2	-------- 230PFC
	FB3	-------- 150PFC
BARGE BEAMS	FB4	-------- 180PFC
OPERABLE WALL SUPPORT BEAM	DHB	-------- 200UB25 (5.0m MAX. SPAN)
GUTTER BEAMS	GB	-------- 150PFC
	GB1	-------- 180PFC
ROOF BRACINGS	X1	-------- 20 DIA. ROD BRACING WITH 'D' COUPLERS OR FIXED AT EACH END TO 10 PL. CLEAT WITH 2M20 BOLTS WITH TURNBUCKLE & CLIPPED BOLTED TO UNDERSIDE OF EACH PURLIN.
	F1	-------- STANDARD BRIDGING AS BRACING
	BR1	-------- 114 CHS x 3.2
	S1	-------- 89x3.2 CHS
WALL BRACINGS	WX1	-------- 20 DIA. ROD BRACING WITH 'D' COUPLERS
WINDOW SILL	WS1	-------- 200x100x5.0 RHS
PURLINS	Pu1	-------- C15015's AT 1200 MAX. CTS. 1000 AT ENDS. 1 ROW BRIDGING AT MID SPAN.
	Pu2	-------- C15019's AT 1000 CTS. 1000 AT ENDS. 2 ROWS BRIDGING.
	Pu3	-------- C15015's AT 1200 CTS. 1000 AT ENDS. 1 ROW BRIDGING AT MID SPAN.

NOTE:

1. * THIS SYMBOL DENOTES CURVED MEMBER
2. PROVIDE METAL ROOF BATTENS PERPENDICULAR TO ROOF PURLINS. TYPICAL

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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The Association of Consulting Engineers Australia

Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
ROOF FRAMING PLAN
SHEET 1

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	**Job No.**	**Dwg No.**	**Issue**
1:100	7713	S18	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

STEEL MEMBER SCHEDULE

POSTS	SC1	--------	100x100x5.0 SHS
	SC2	--------	114CHSx4.8
	H1	--------	75x50x8 UA (HANGER)
ROOF RAFTERS	R1	--------	200UB25
	R2	--------	200PFC
	R3	--------	250UB31
AWNING BEAMS	AB1	--------	200UB25
	AB2	--------	150UC37
	AB3	--------	180PFC
ROOF BEAMS	RB1	--------	310UB40
	RB2	--------	250UC73
	RB3	--------	250UB31
	RB4	--------	410UB54
	RB5	--------	360UB45
	RB6	--------	200UB25
	RB7	--------	200UB25
	RA1	--------	100x100x10 EA (BENT TO SUIT PRECAST PANELS).
WALER BEAM	WB1	--------	200UB25 (BENT TO SUIT PRECAST PANELS).
TIE BEAM	TB	--------	200PFC
WINDOW HEAD	WH	--------	150UC37
WALL HEADER BEAM	WH1	--------	150x100x5.0 RHS
FASCIA BEAMS	FB1	--------	180PFC
	FB2	--------	230PFC
	FB3	--------	150PFC
BARGE BEAMS	FB4	--------	180PFC
OPERABLE WALL SUPPORT BEAM	DHB	--------	200UB25 (5.0m MAX. SPAN)
GUTTER BEAMS	GB	--------	150PFC
	GB1	--------	180PFC
ROOF BRACINGS	X1	--------	20 DIA. ROD BRACING WITH 'D' COUPLERS OR FIXED AT EACH END TO 10 PL. CLEAT WITH 2M20 BOLTS WITH TURNBUCKLE & CLIPPED BOLTED TO UNDERSIDE OF EACH PURLIN.
	F1	--------	STANDARD BRIDGING AS BRACING
	BR1	--------	114 CHS x 3.2
WALL BRACINGS	S1	--------	89x3.2 CHS
WINDOW SILL	WX1	--------	20 DIA. ROD BRACING WITH 'D' COUPLERS
PURLINS	WS1	--------	200x100x5.0 RHS
	Pu1	--------	C15015's AT 1200 MAX. CTS. 1000 AT ENDS. 1 ROW BRIDGING AT MID SPAN.
	Pu2	--------	C15015's AT 1000 CTS. 1000 AT ENDS. 2 ROWS BRIDGING.
	Pu3	--------	C15015's AT 1200 CTS. 1000 AT ENDS. 1 ROW BRIDGING AT MID SPAN.

OR1 -------- 180PFC FULLY WELDED TO COLUMNS SC1 & SC2/BEAM

NOTE:

1. * THIS SYMBOL DENOTES CURVED MEMBER
2. PROVIDE METAL ROOF BATTENS PERPENDICULAR TO ROOF PURLINS. TYPICAL

NORTH

PRECAST CONCRETE PANELS

BREAK LINE

PROVIDE CLEATS FROM COL TO PC WALL

RB1 (over)

RB1 (under)

ROOF FRAMING PLAN

SCALE 1:100

ISS'N	REASON FOR ISSUE	SGN & DATE DESIGN REVIEW	SGN & DATE VERIFICATION	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE
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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: ROOF FRAMING PLAN SHEET 1

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD,
BAYVIEW

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Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S19	3

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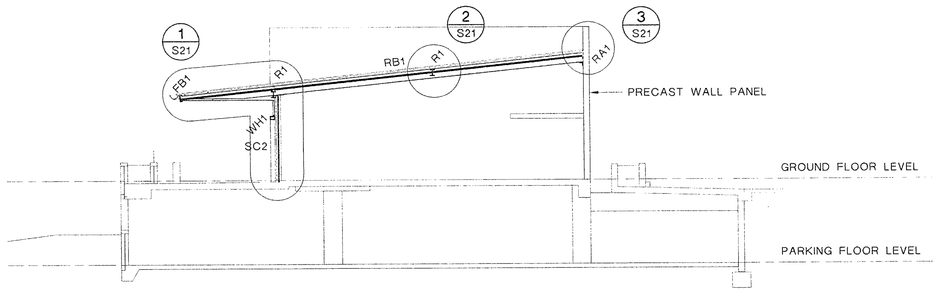
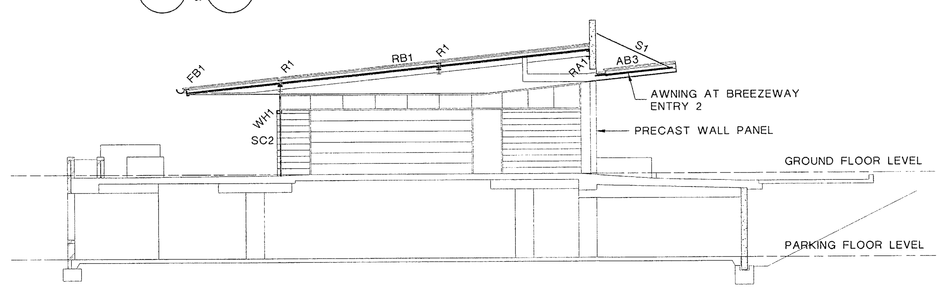
DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.

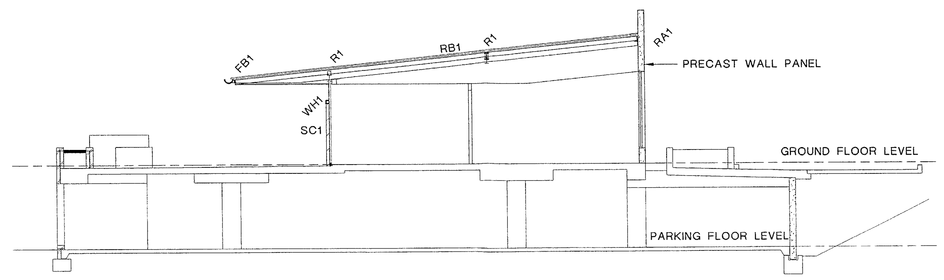


ELEVATION ON GRID (S2)

(S3) & (S4) SIM.

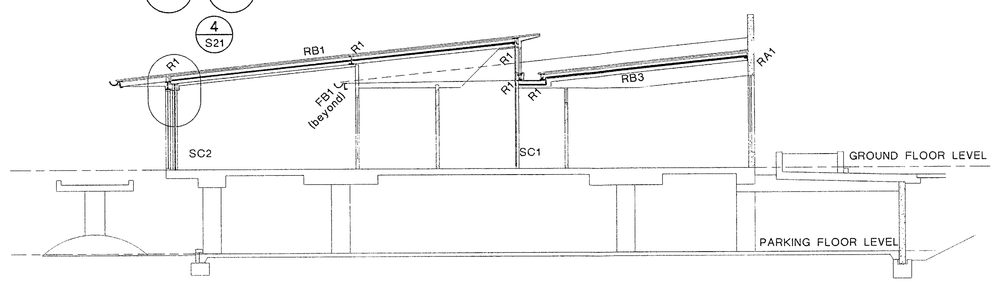


ELEVATION ON GRID (S5)



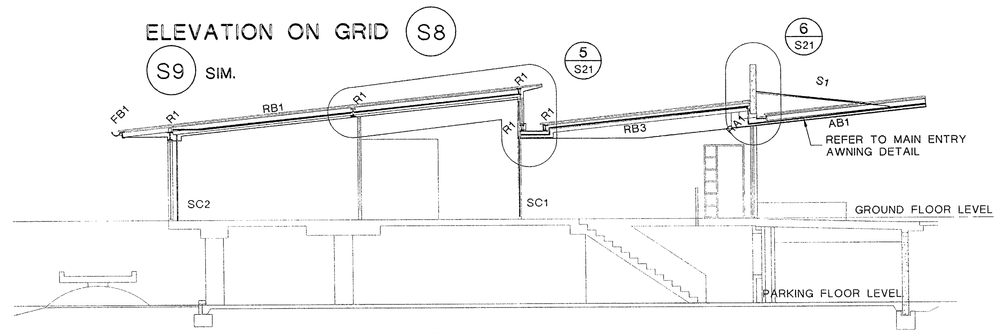
ELEVATION ON GRID (S6)

(S7) (S8a) SIM.



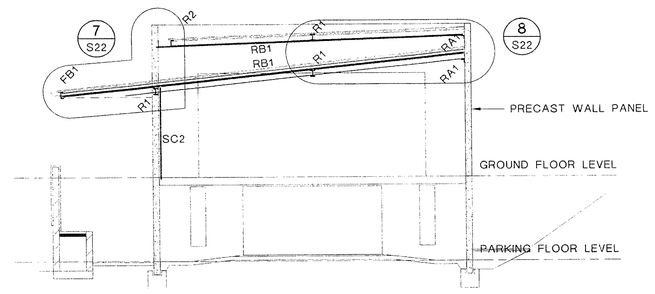
ELEVATION ON GRID (S8)

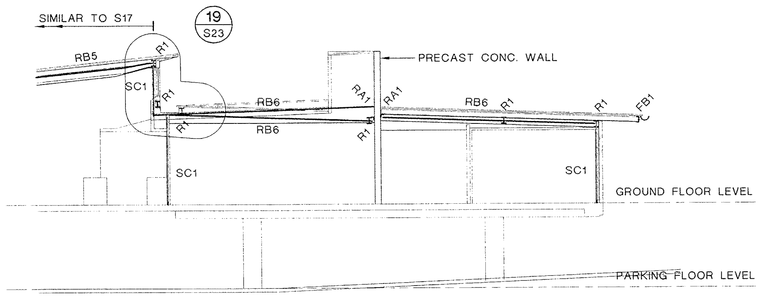
(S9) SIM.



ELEVATION ON GRID (S10)

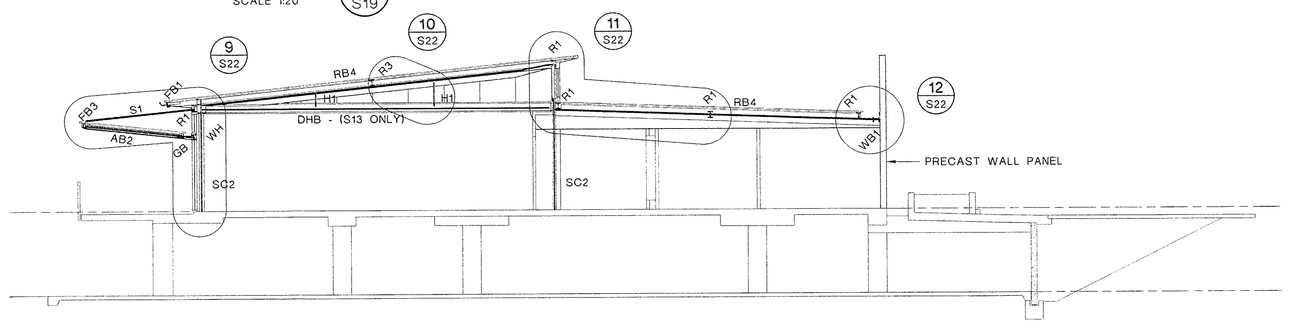
(S11) SIM.





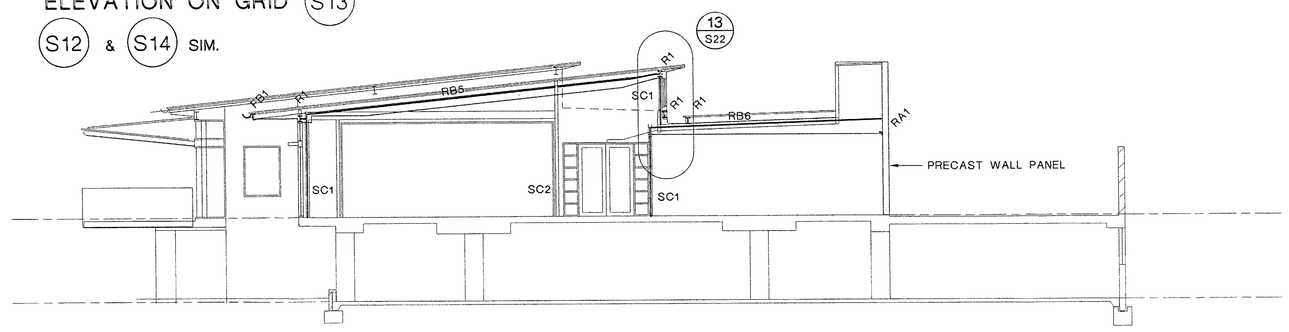
ELEVATION ON GRID (S18)

SECTION (A) S19
SCALE 1:20



ELEVATION ON GRID (S13)

(S12) & (S14) SIM.



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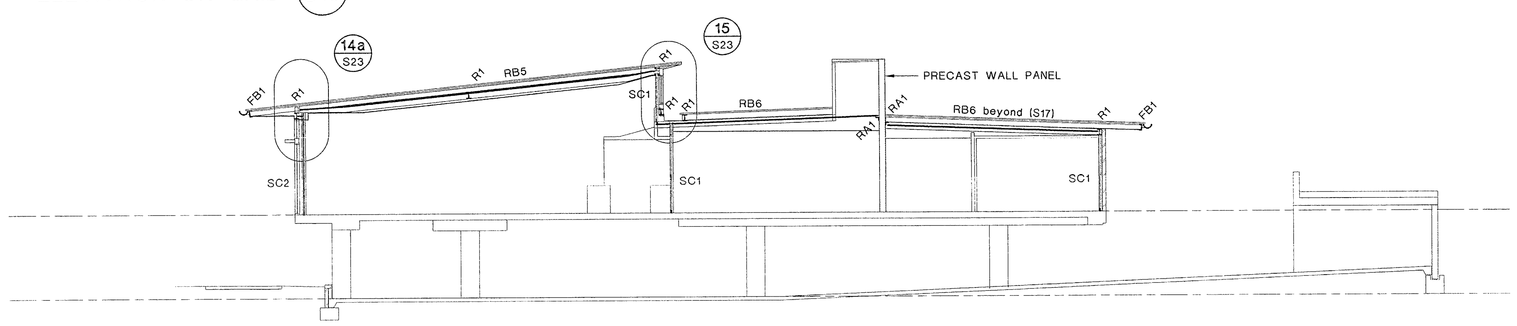
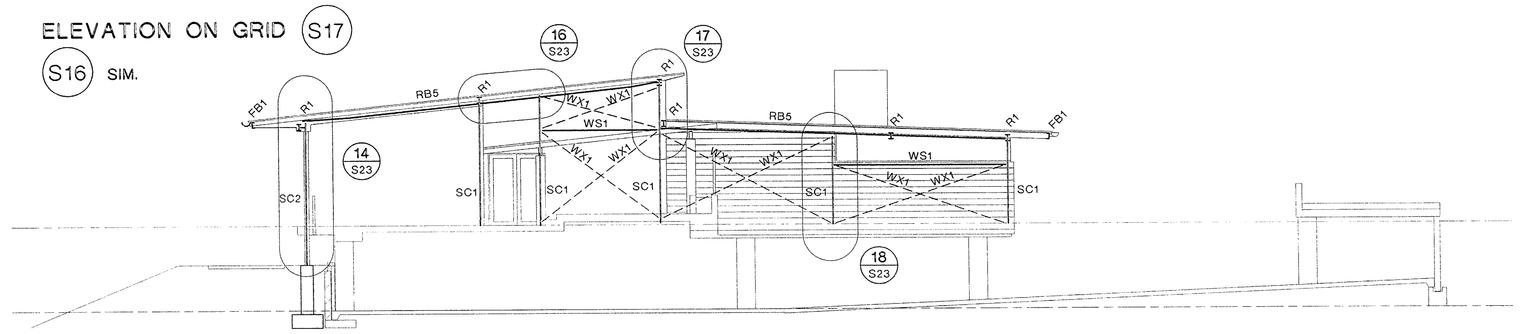


ELEVATION ON GRID (S17)

(S16) SIM.



ELEVATION ON GRID (S19)

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: ROOF FRAMING SECTIONS & ELEVATIONS

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

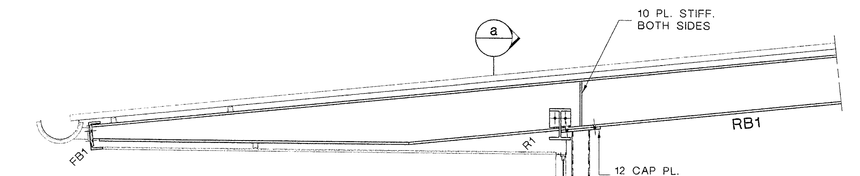
DO NOT SCALE DRAWING

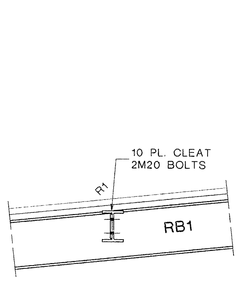
Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	S20	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

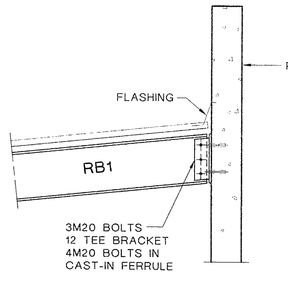
DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.





DETAIL 2 S20
SCALE 1:20



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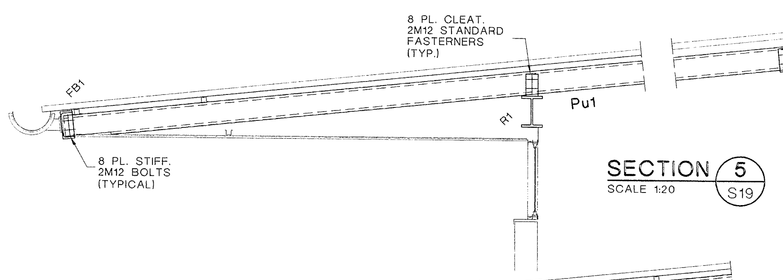
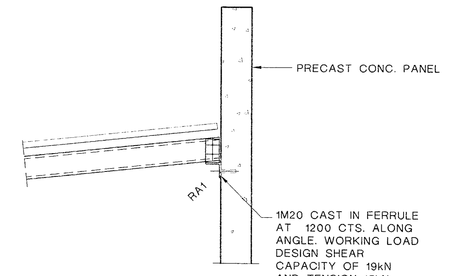
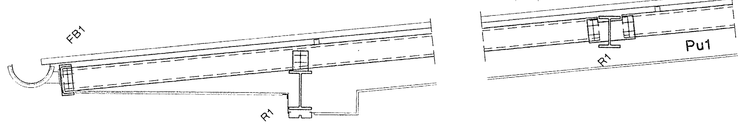


SECTION 5 S19
SCALE 1:20





SECTION 4 S19
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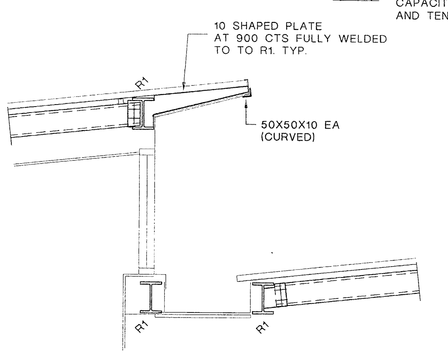

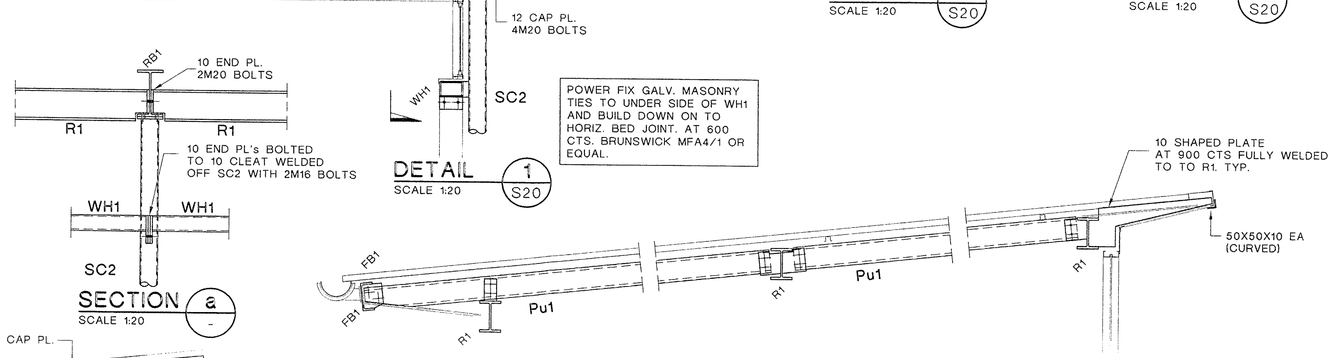

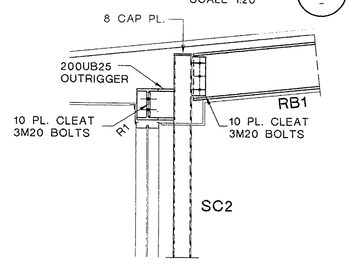

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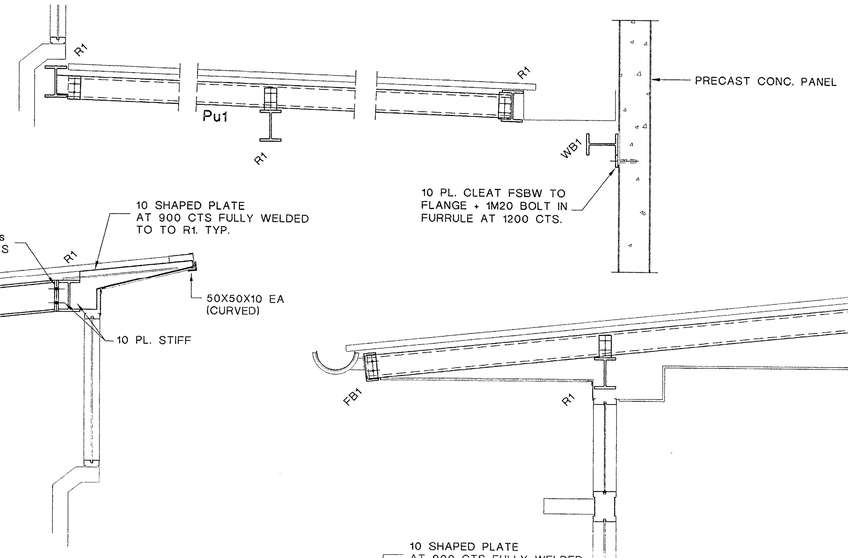
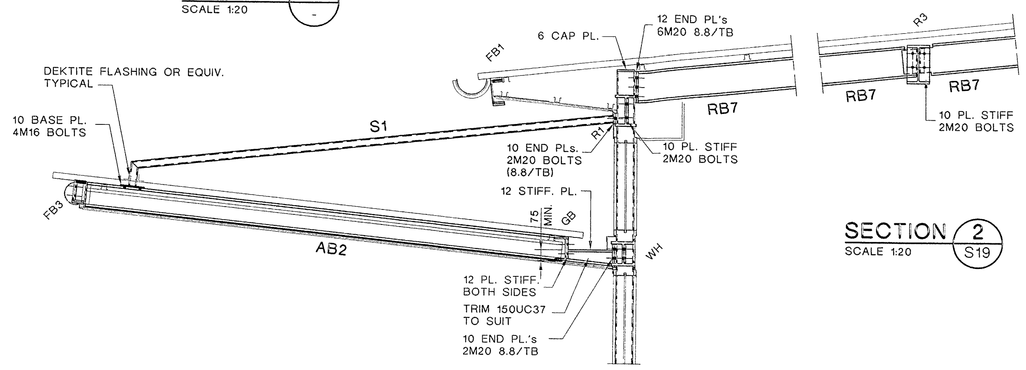
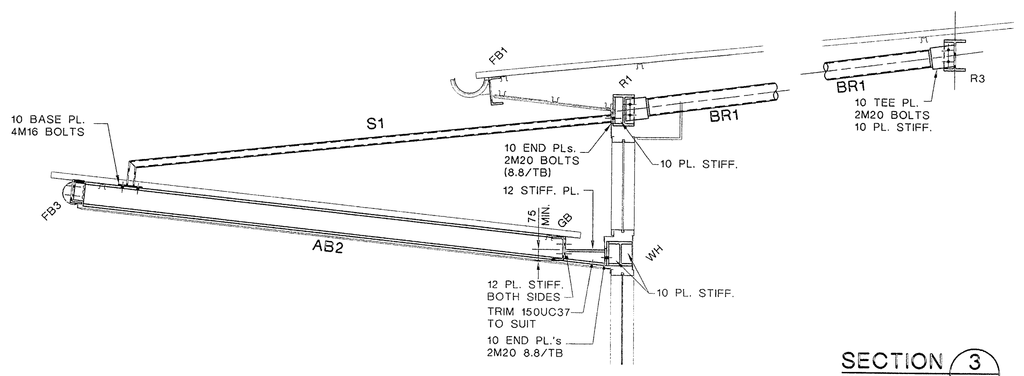


SECTION 6 S18
SCALE 1:20



SECTION 2 S19
SCALE 1:20



SECTION 3 S19
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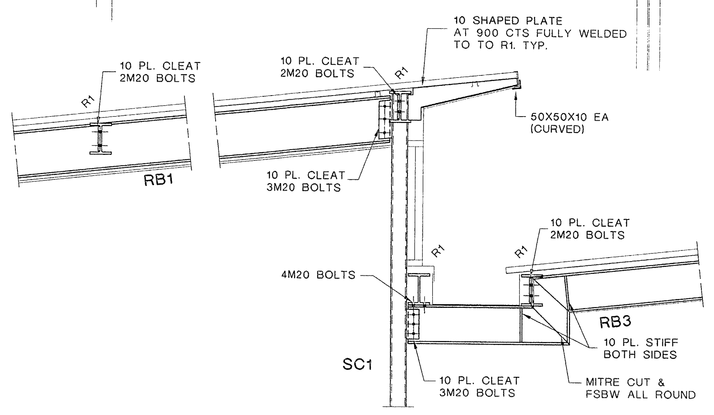

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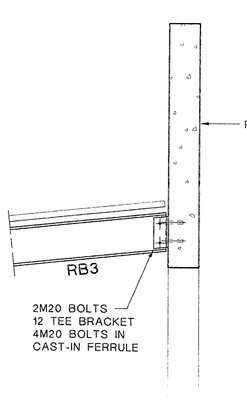
SCALE 1:20



DETAIL 6 S20
SCALE 1:20

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
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1	CO-ORDINATION ISSUE	6/04/07	

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ACEA The Association of Consulting Engineers Australia

Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
ROOF FRAMING DETAILS
SHEET 1

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S21	1

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DO NOT SCALE

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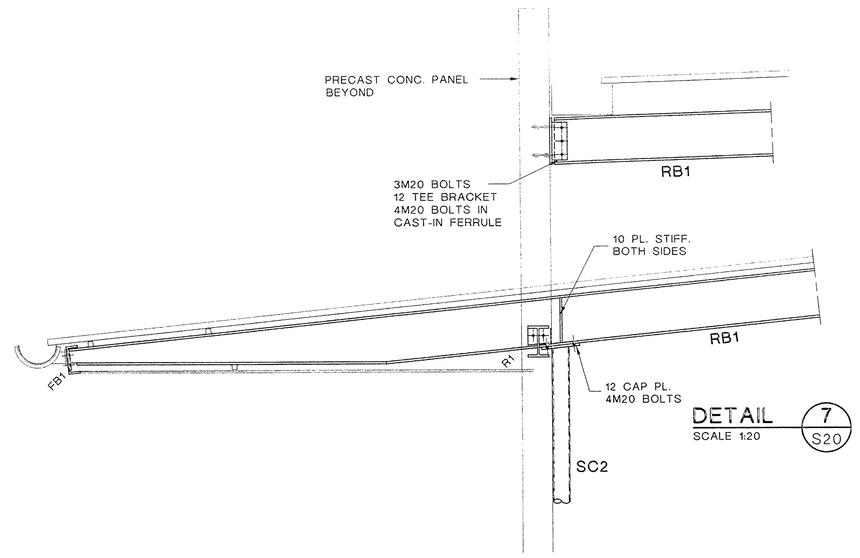

DETAIL 7 / S20
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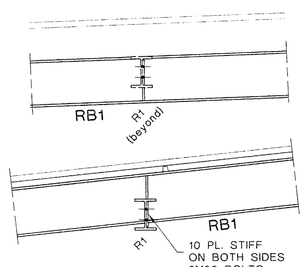

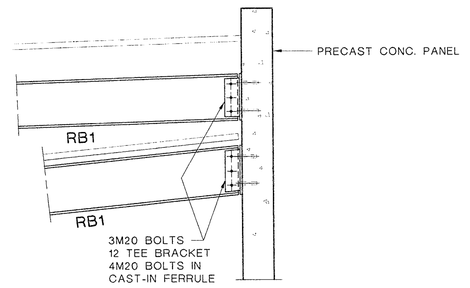

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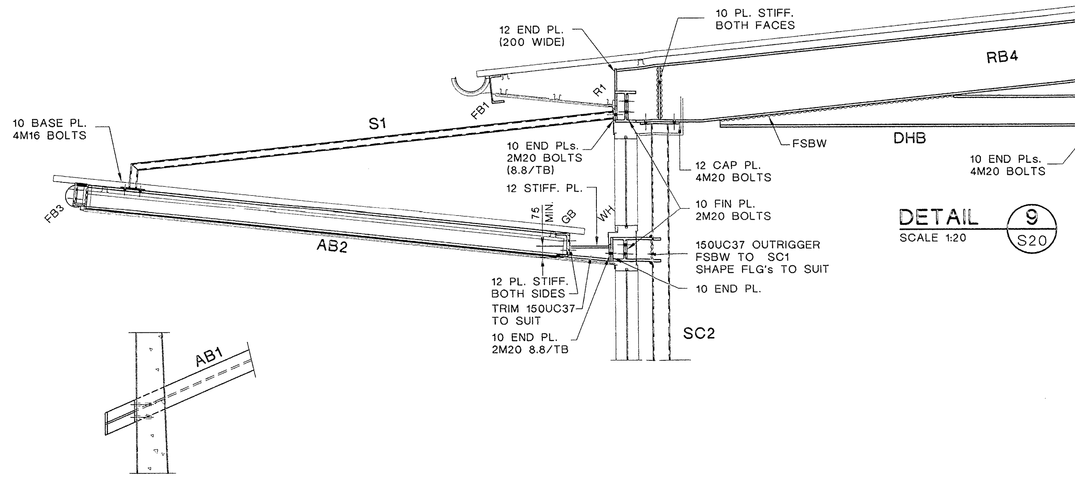

DETAIL 9 / S20
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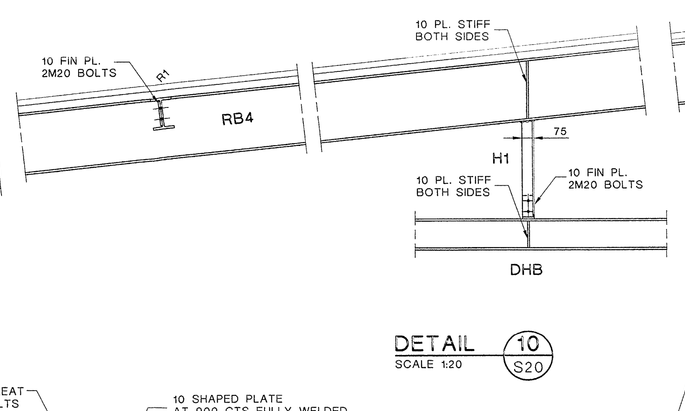
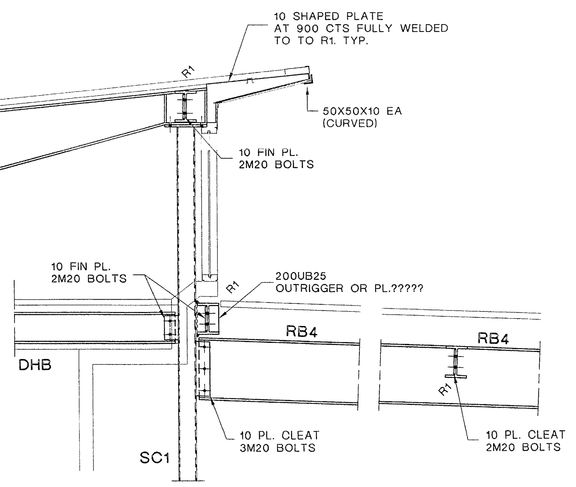


DETAIL 10 / S20
SCALE 1:20



DETAIL 11 / S20
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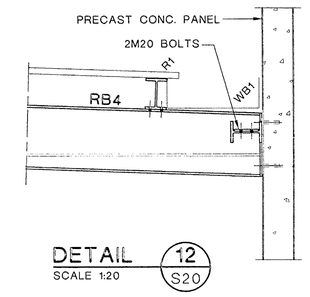

DETAIL 12 / S20
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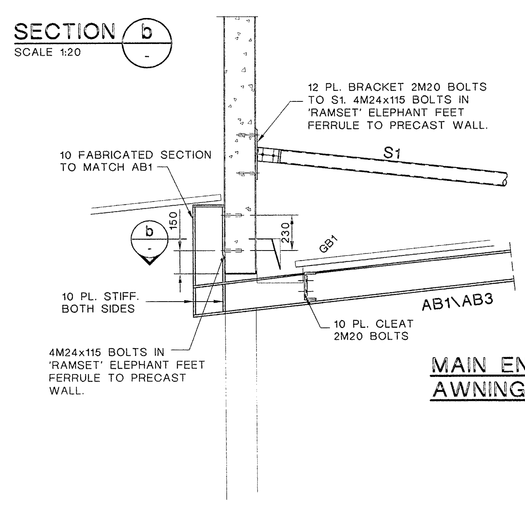
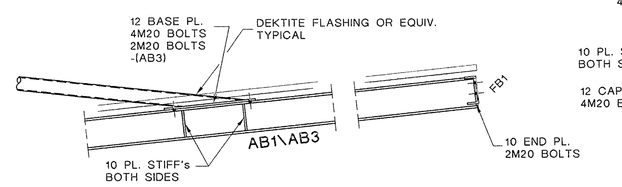
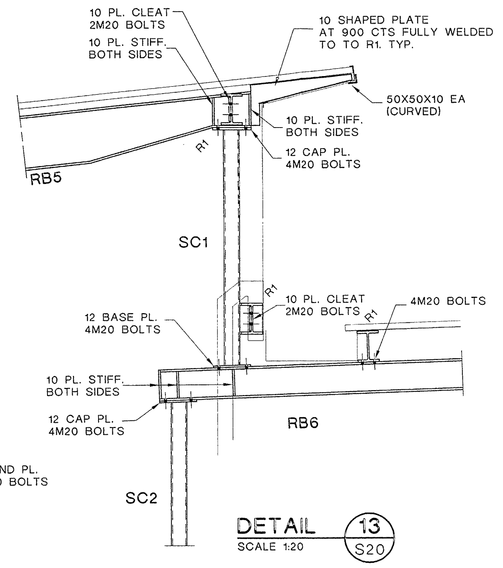
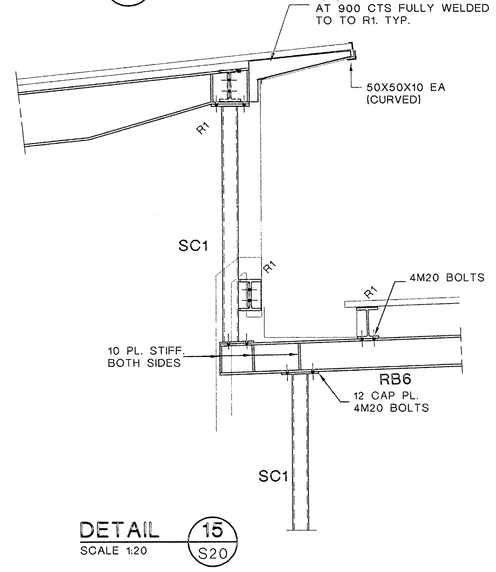


SECTION b / -
SCALE 1:20





DETAIL 13 / S20
SCALE 1:20



DETAIL 15 / S20
SCALE 1:20

MAIN ENTRY AWNING
AWNING OVER BREEZE WAY (ENTRY No. 2) SIMILAR

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
2	CO-ORDINATION ISSUE	12/06/07	
1	CO-ORDINATION ISSUE	4/04/07	

DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNITURE	ISSUE

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Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
ROOF FRAMING DETAILS
SHEET 2

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S22	3

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DO NOT SCALE

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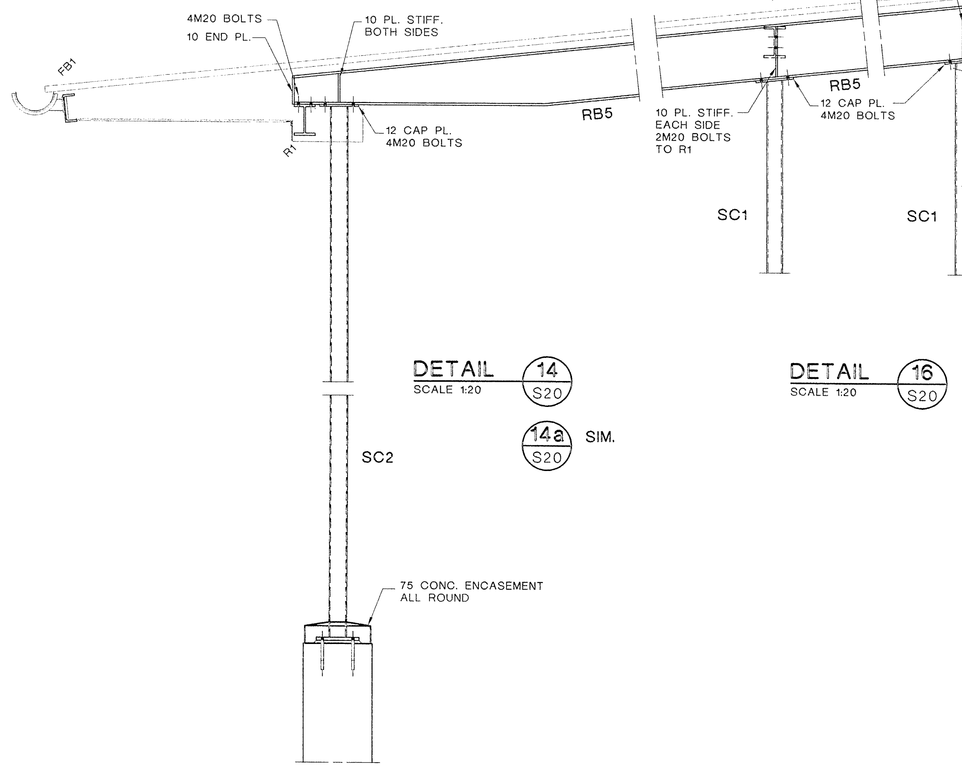
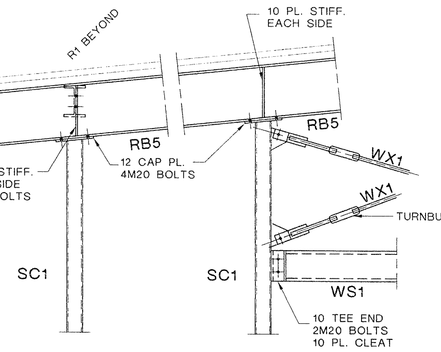
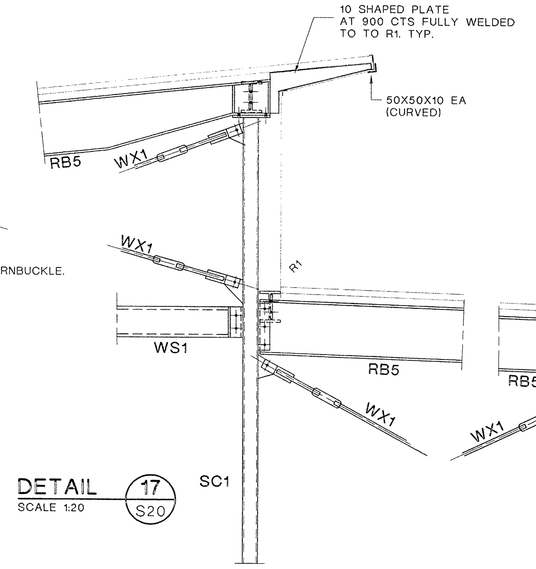


DETAIL 14 / S20 — SCALE 1:20

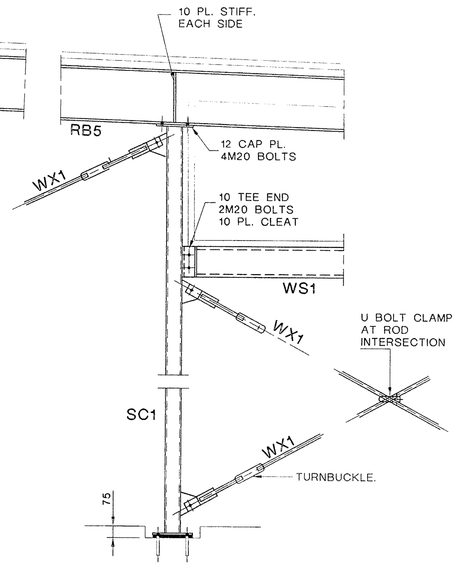
14a / S20 SIM.



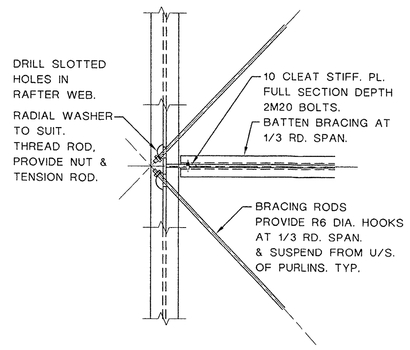
DETAIL 16 / S20 — SCALE 1:20



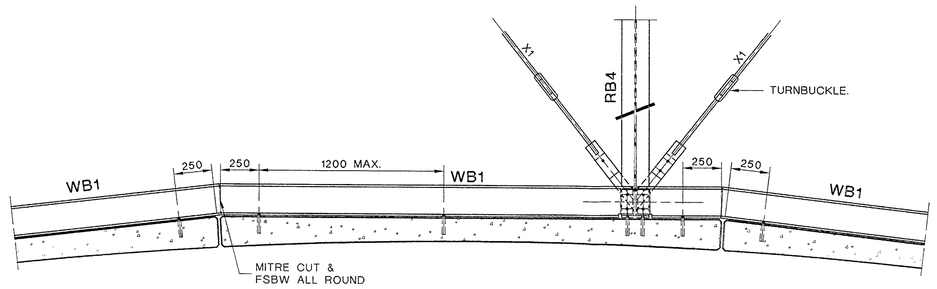
DETAIL 17 / S20 — SCALE 1:20



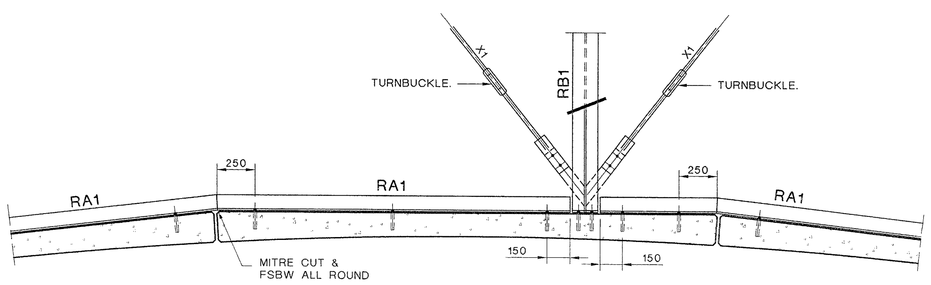
DETAIL 18 / 20 — SCALE 1:20



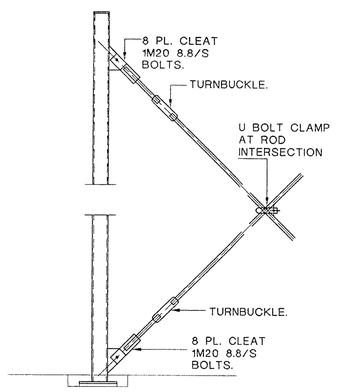
TYP. ROOF ROD BRACING DETAIL.



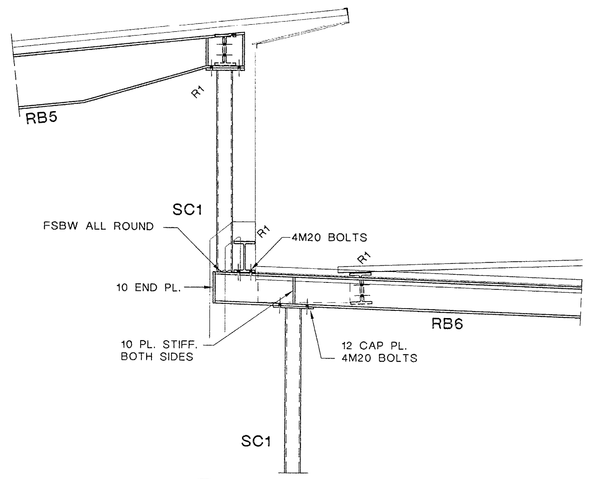
TYPICAL WB1/PANEL CONNECTION DETAILS



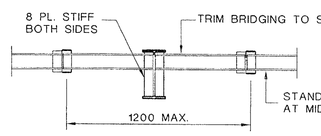
TYPICAL RA1/PANEL CONNECTION DETAILS



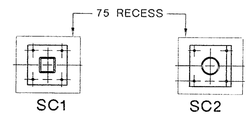
TYPICAL WALL BRACE DETAIL



DETAIL 19 / S20 — SCALE 1:20

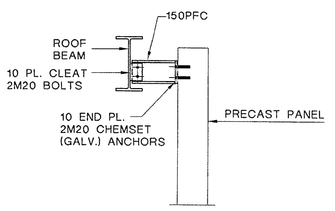


TYPICAL ROOF BRIDGING DETAIL BETWEEN GRIDS S8 & S19



12 THICK BASE PL.
4M20 CHEMICAL INJECTION (801) ANCHORS
20 NOM. GROUT. TYPICAL

TYPICAL BASE PLATE DETAIL



TYPICAL PANEL TIE DETAIL AT GRIDS S14, S12 & S8

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
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1	CO-ORDINATION ISSUE	4/04/07	

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Architects
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Title
ROOF FRAMING DETAILS
SHEET 3

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITWATER ROAD
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	S23	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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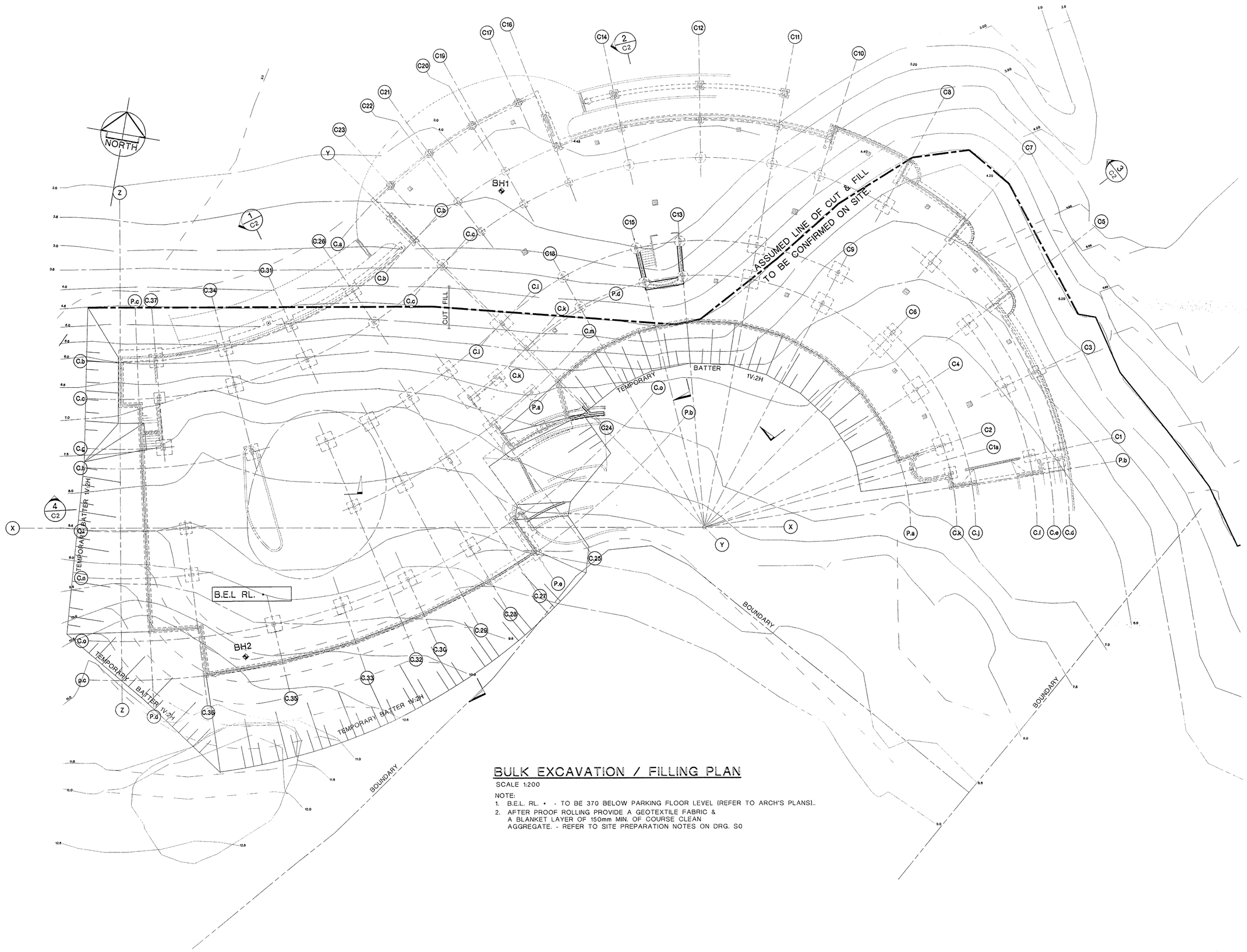


BULK EXCAVATION / FILLING PLAN

SCALE 1:200

NOTE:
1. B.E.L RL. • - TO BE 370 BELOW PARKING FLOOR LEVEL (REFER TO ARCH'S PLANS)..
2. AFTER PROOF ROLLING PROVIDE A GEOTEXTILE FABRIC & A BLANKET LAYER OF 150mm MIN. OF COURSE CLEAN AGGREGATE. - REFER TO SITE PREPARATION NOTES ON DRG. S0

EXISTING SURFACE CONTOUR

SEDIMENT FENCE

OPEN UNLINED DRAIN (O.U.D.)

PROPOSED CUT OR FILL EMBANKMENT AND BATTER - HORIZONTAL RUN (H):VERTICAL DROP (V)

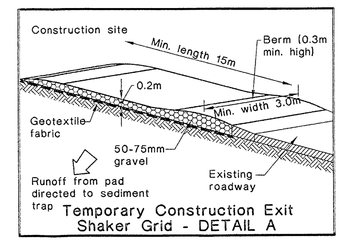
BH2 BOREHOLE AS PER GEOTECHNICAL INVESTIGATION BY DOUGLAS & PARTNERS REPORT No35630A-1, FEB. 2006

RL. 38.4 SURFACE LEVEL

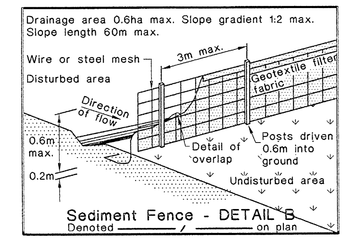
FINISHED GROUND LEVEL

BEL. DENOTES BULK EXCAVATION LEVEL - REFER TO NOTE 1.

BFL. DENOTES BULK FILLING LEVEL - 370 BELOW PARKING FLOOR LEVEL.

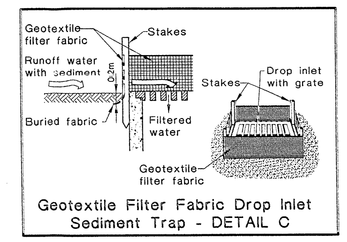


Temporary Construction Exit Shaker Grid - DETAIL A

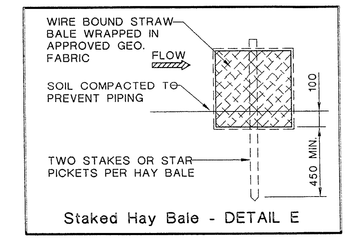


Sediment Fence - DETAIL B

Denoted ——— / ——— on plan



Geotextile Filter Fabric Drop Inlet Sediment Trap - DETAIL C



Staked Hay Bale - DETAIL E

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
2	CO-ORDINATION ISSUE	12/06/07	
1	CO-ORDINATION ISSUE	4/04/07	

DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNITURE	ISSUE

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: BULK EARTHWORKS PLAN

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:200	7713	C1	3

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DO NOT SCALE

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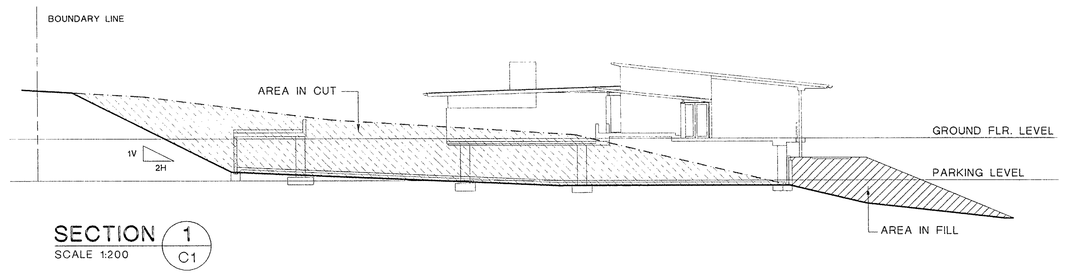
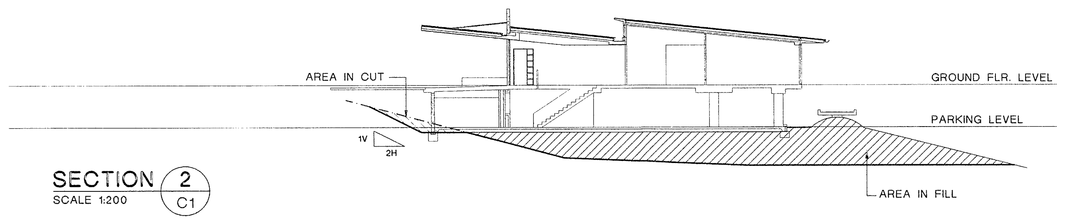
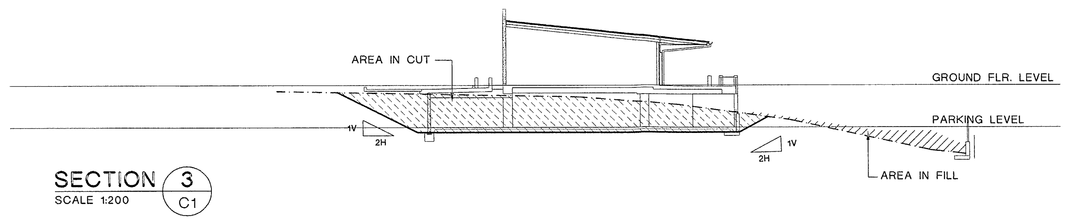


SECTION 1 / C1
SCALE 1:200



SECTION 2 / C1
SCALE 1:200



SECTION 3 / C1
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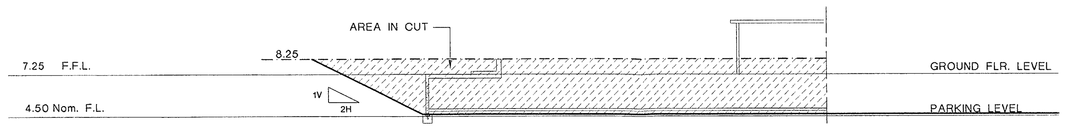

SECTION 4 / C1
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7.25 F.F.L.

4.50 Nom. F.L.

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
2	TENDER ISSUE	20/06/07	
1	CO-ORDINATION ISSUE	12/06/07	

DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE

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The Association of Consulting Engineers Australia

Architects
HODGES SHORTEN ARCHITECTS PTY LTD

Title
BULK EARTHWORKS SECTIONS

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

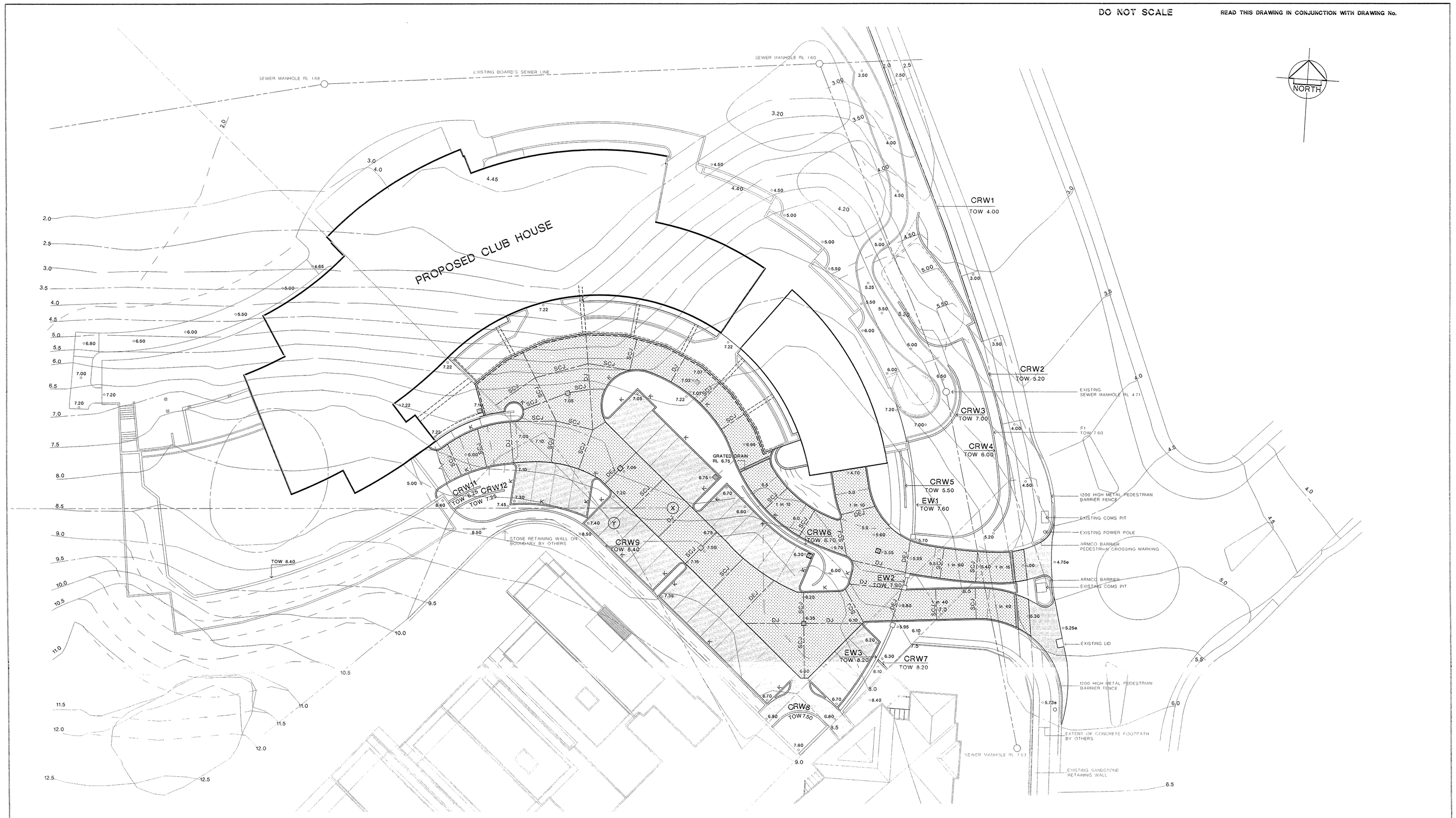
DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:200	7713	C2	2

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

READ THIS DRAWING IN CONJUNCTION WITH DRAWING No.



EXTERNAL PAVING PLAN

SCALE 1:200

NOTE:

DENOTES CONCRETE SLAB - 150 THICK, SL82 MESH (TOP) ALL LAID OVER 100mm COMPACTED DGB20 SUB-BASE (MINIMUM).

DENOTES ASPHALTIC CONCRETE PAVING. 30mm AC10 ASPHALT OVER 120mm BASE OF DGB20 & 150mm SUB-BASE OF DGS40.

NOTE: 1. REFER TO SITE PREPARATION NOTES
2. REFER TO DRG. C4 FOR PAVING SLAB & RETAINING WALL DETAILS.

ISSUE	REASON FOR ISSUE	DSN & DATE DESIGN REVIEW	DSN & DATE VERIFICATION
3	TENDER ISSUE	20/06/07	
2	CO-ORDINATION ISSUE	12/06/07	
1	CO-ORDINATION ISSUE	4/04/07	

DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNITURE	ISSUE

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Architects
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Title
EXTERNAL PAVING PLAN

Project
BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:200	7713	C3	3

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DO NOT SCALE

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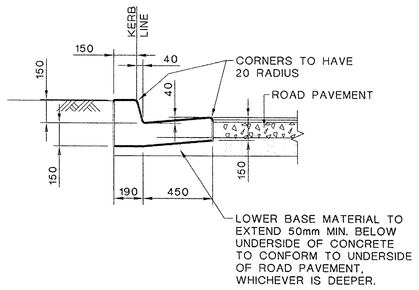
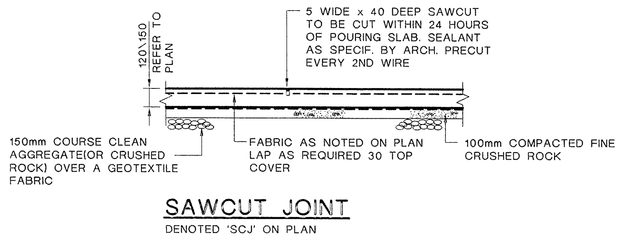


KERB & GUTTER DETAIL

SCALE 1:20

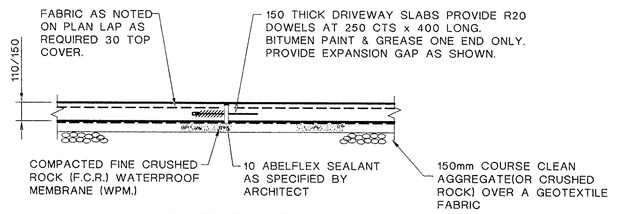
NOTES:

1. ALL CORNERS TO HAVE 20mm RADIUS.
2. ROAD BASE COURSE IS TO BE EXTENDED BENEATH KERBS, GUTTERS, APRON AND DISH CROSSINGS.
3. PROVIDE 10 ABELFLEX BUTT JOINTS AT 3000 APPROX. CTS. IN SECTIONS. LOCATE KERB JOINTS AT ALL CORNERS OR TANGENT POINTS.
4. ALLOW TO RAISE PIT/REDUCE COVER PLATE TO ALLOW KERB CONSTRUCTION OVER. OBTAIN WRITTEN APPROVAL FROM AUTHORITY BEFORE PERFORMING WORK.



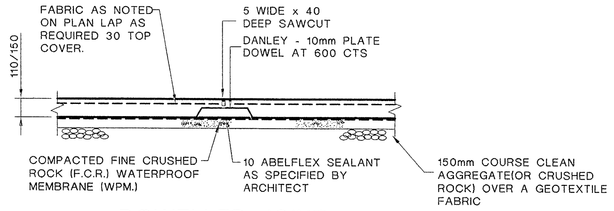
SAWCUT JOINT

DENOTED 'SCJ' ON PLAN



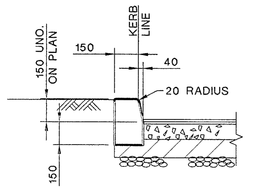
DOWELLED EXPANSION JOINT

DENOTED DEJ. ON PLAN



DOWELLED JOINT

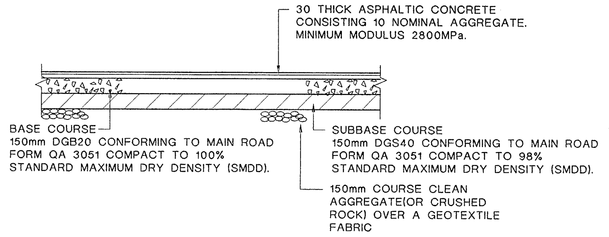
DENOTED DJ. ON PLAN



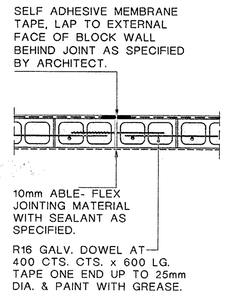
KERB DETAIL

SCALE 1:20

DENOTED K ON PLAN
REFER TO KERB & GUTTER DETAIL FOR NOTES

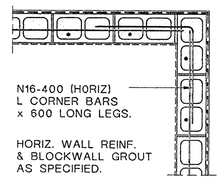


ASPHALTIC CONCRETE DETAIL

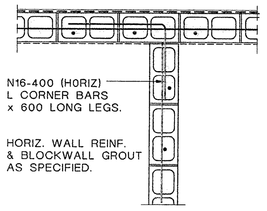


TYPICAL BLOCK JOINT DETAIL.

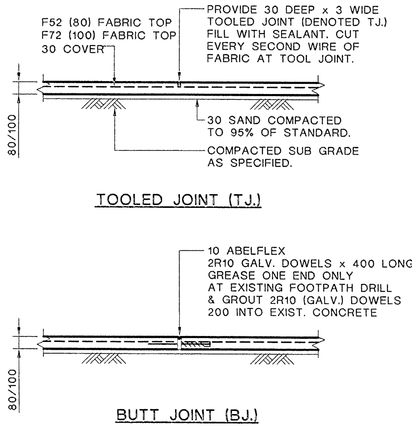
(AT 10m MAX. CENTRE U.N.O.)



TYPICAL BLOCK CORNER DETAIL.



TYPICAL BLOCK JUNCTION DETAIL.

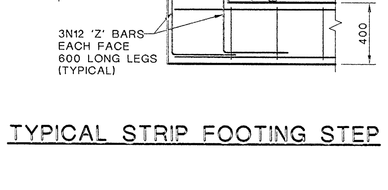


TOOLED JOINT (TJ.)

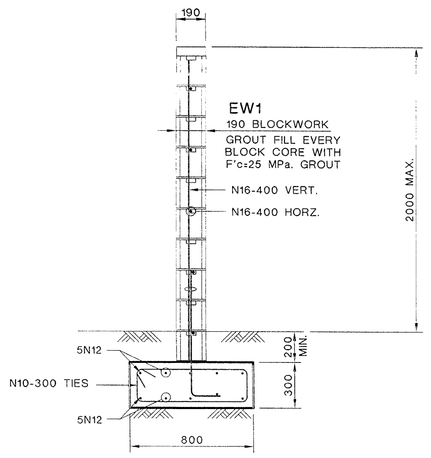
BUTT JOINT (BJ.)

TYPICAL CONCRETE FOOTPATH SECTIONS

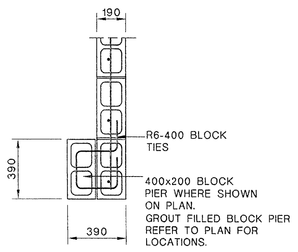
SCALE 1:20



TYPICAL STRIP FOOTING STEP



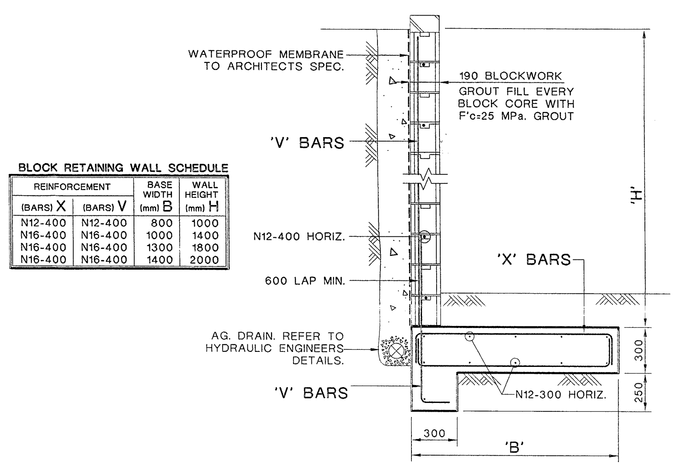
TYPICAL ENTRY WALL EW1, EW2 & EW3

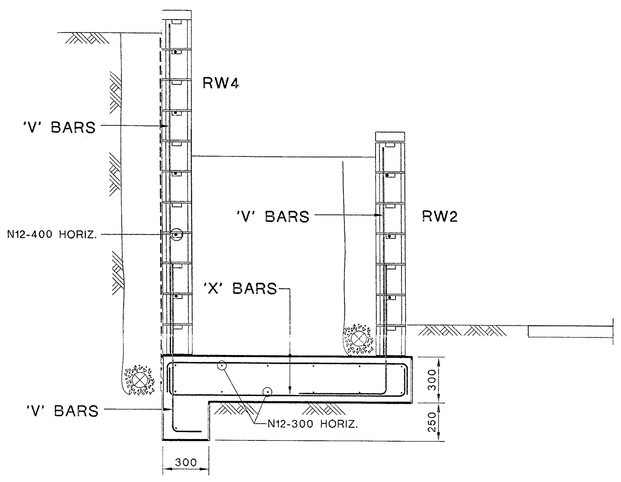


TYPICAL BLOCK PIER DETAIL AT EW1, EW2 & EW3

BLOCK RETAINING WALL SCHEDULE

REINFORCEMENT		BASE WIDTH	WALL HEIGHT
(BARS) X	(BARS) V	(mm) B	(mm) H
N12-400	N12-400	800	1000
N16-400	N16-400	1000	1400
N16-400	N16-400	1300	1800
N16-400	N16-400	1400	2000





CRW1 TO CRW9, CRW11 & CRW12

TYPICAL BLOCK RETAINING WALL DETAIL

SCALE 1:20

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1	CO-ORDINATION ISSUE		4/04/07

DATE OF RELEASE | RESPONSIBLE PRINCIPAL SIGNATURE | ISSUE

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: EXTERNAL PAVING & RETAINING WALL DETAILS

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:20	7713	C4	3

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DO NOT SCALE

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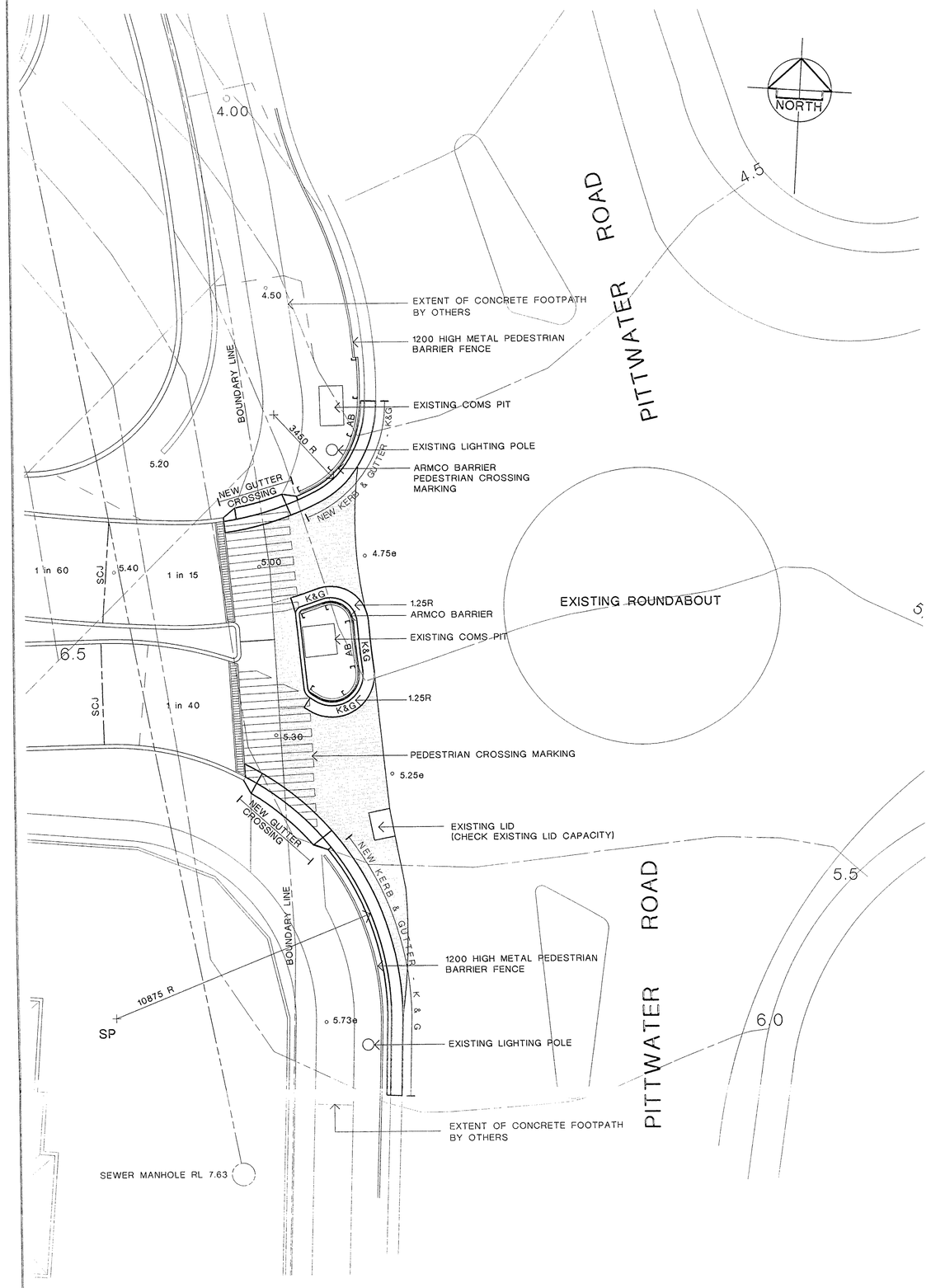


ACCESS OFF PITTWATER ROAD PLAN

LEGEND

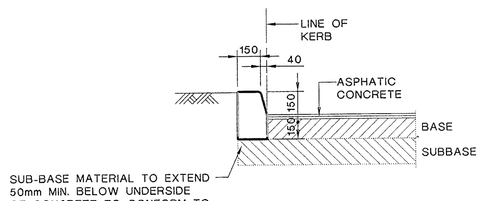
DENOTES NEW AC PAVEMENT & PREPARED BASE TO RTA SPECIFICATIONS.

AB — DENOTES ARMCO BARRIER

NOTE: PEDESTRIAN CROSSING MARKING TO RTA SPECIFICATIONS.

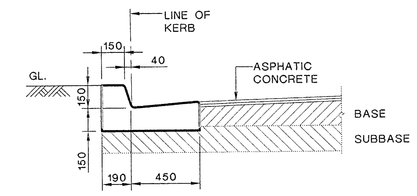
CONSTRUCTION NOTES

1. CONSTRUCTION IS TO BE CARRIED OUT IN ACCORDANCE WITH THE DRAWINGS, ROADS AND TRAFFIC AUTHORITY PITTWATER COUNCIL CONSTRUCTION CERTIFICATES AND STANDARD DRAWINGS AND AS DIRECTED BY THE SUPERINTENDENT.
2. ALL CONSTRUCTION IS TO BE SET OUT FROM ESTABLISHED SURVEY CONTROL STATIONS AND BENCH MARKS.
3. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF THE WORK TO BE CARRIED OUT AND DIMENSIONS SHALL NOT BE OBTAINED BY SCALING.
4. MAKE A SMOOTH JUNCTION WHERE NEW CONSTRUCTION MEETS THE EXISTING FORMATION.
5. THE LOCATION OF UNDERGROUND PUBLIC UTILITIES SHOWN ON THESE DRAWINGS IS INDICATIVE ONLY. CONSUMER SERVICE LINES AND CROSSINGS ARE NOT SHOWN. ALL PUBLIC UTILITIES AND CONSUMER SERVICES MUST BE LOCATED PRIOR TO COMMENCEMENT OF OF EARTHWORKS. IT IS THE RESPONSIBILITY OF THOSE PERSONS CARRYING OUT THIS CONSTRUCTION TO CONFIRM THE POSITION AND LEVEL OF PUBLIC UTILITIES AND CONSUMER SERVICES IN CONJUCTION WITH THE RELEVANT AUTHORITIES.
6. THE CONTRACTOR SHALL- DESIGN, CONSTRUCT AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES CONTINUALLY THROUGHOUT CONSTRUCTION TO SUIT WORK PROGRESS AND SITE CONDITIONS. INSPECT ALL EROSION AND SEDIMENTION CONTROL MEASURES AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND SEDIMENT BUILD-UP. RESTORE DAMAGED MEASURES AND REMOVED SEDIMENT BUILD-UP TO MAINTAIN EFFECTIVE OPERATION.



KERB DETAILS

DENOTED 'K' ON PLAN

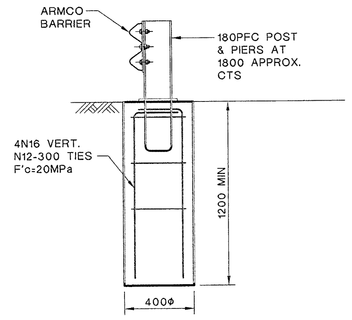


KERB AND GUTTER DETAILS

DENOTED 'K&G' ON PLAN

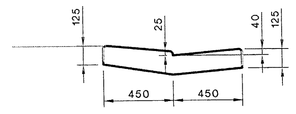
NOTES

1. ALL CORNERS TO HAVE 20mm RADIUS.
2. SUBBASE COURSE IS TO BE EXTENDED BENEATH KERBS, GUTTERS, APRON AND DISH CROSSING.
3. BUTT JOINTS AT 3000 APPROX. CTS IN SECTIONS. LOCATE KERB JOINTS COINCIDENT WITH FOOTPATH JOINTS WHERE COMMON AND AT ALL CORNERS OR TANGENT POINTS.

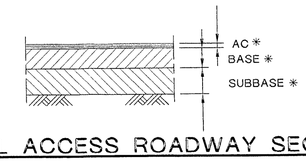


ARMCO BARRIER DETAIL

DENOTED 'AB' ON PLAN



GUTTER CROSSING DETAIL



TYPICAL ACCESS ROADWAY SECTION

NOTE: * TO RTA SPECIFICATIONS

ISSUE	REASON FOR ISSUE	SIGN & DATE DESIGN REVIEW	SIGN & DATE VERIFICATION
5	TENDER ISSUE	20/06/07	
4	CO-ORDINATION ISSUE	12/06/07	
3	RTA SUBMISSION ISSUE	04/05/07	
2	PRELIMINARY ISSUE	03/05/07	
1	CO-ORDINATION ISSUE	4/04/07	

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The Association of Consulting Engineers Australia

Architects: HODGES SHORTEN ARCHITECTS PTY LTD

Title: ACCESS OFF PITTAWATER ROAD PLAN & DETAILS

Project: BAYVIEW GOLF CLUB
PROPOSED CLUB HOUSE
PITTWATER ROAD.
BAYVIEW

DO NOT SCALE DRAWING

Drawn	Engineer	No in Set	Sheet Size
ML	CF		B1
Scales	Job No.	Dwg No.	Issue
1:100	7713	C5	5

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm