

Summary File ONLY

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**IT IS BROWSABLE ON-SCREEN ONLY AND IS PROVIDED
FOR YOUR INFORMATION TO DECIDE WHETHER TO
BECOME A PROSPECTIVE TENDERER ONLY**

Note: This file may contain a brief scope statement, or an extract from the RFT documents, or a full exhibited copy – depending on the specific circumstances.

To participate in this tender process you **MUST** first download or order a full copy of the Request for Tender (RFT) documents, including the responsible components, and any addenda issued to date.

To do this return to the RFT web page on this web site and copy the RFT documents to your own computer or network – the blue “**DOWNLOAD A SOFT COPY**” link at the bottom provides access to the page from which you can do this.



**Request for Tender Document
for**

**Wollongong GOB - Lower Ground Tenancy Refurbishment
Contract Number/RFT Id: 0802369**

December 2008

Mini Minor Works Contract

Tender Closing Details:

Tender Closing Time:

9:30am 21/01/08**Onsite Tender Meeting 18/12/08 10.00 am**

Physical Tender Box Address:

Tender Box - McKell
Department of Commerce
Level 3, McKell Building
2 - 24 Rawson Place, SYDNEY NSW

Tender box Facsimile Number:

02 9372 8974

Electronic Tender Box address:

<https://tenders.nsw.gov.au>**The Contractor:**
(insert details)

A.B.N

Contractor's authorised representative:

postal address:

e-mail address:

Tel:

Fax:

hereby tenders to:

The Principal:**CEO State Property Authority**

Principal's authorised representative:

Stephen Mangion

postal address:

e-mail address:

Tel:

0420 314 276

Fax:

02 8220 8800to perform the work for: Wollongong GOB Lower ground Tenancy Refurbishment, Contract number **0802369** in accordance with this Tender Form, the Conditions of Contract, the Details of the Works and Addenda numbered: [.....]**Contract Period:**

8 Weeks 7 weeks

Contract Sum:for the lump sum, including GST of:
(insert details)

[

]

(\$)

Delete this entire row for non-demolition contracts

<Strike out the line that is not applicable>

to be paid by the Contractor to the Principal
to be paid by the Principal to the Contractor**Contract Sum:**

, including GST (insert details)

**OHS
Management
Capabilities:**

*Three contracts/projects completed
within the last two years demonstrating
successful management of OHS:*

****Signed for the Contractor by (Authorised Officer):***

Name (in block letters):

Date:

In the office bearer capacity of:

* Signatures not required for electronic tenders

- T1. Tenderers must comply with the NSW Government *Code of Practice for Procurement*, which is available at: www.treasury.nsw.gov.au/procurement/cpfp_ig

Lodgement of a tender is evidence of the tenderer's agreement to comply with the Code for the duration of any contract awarded as a result of the tender. If a tenderer fails to comply with the Code, the Principal may take the failure into account when considering this or any subsequent tender from the tenderer, and may pass over the tender.

- T2. Refer requests for information about the tender to the Principal's authorised representative shown on the Tender Form.
- T3. Tenderers must nominate at least three contracts/projects completed within the last two years that demonstrate their ability to successfully manage occupational health and safety.
- T4. The Principal only contracts with recognised and acceptable legal entities. The Principal does not contract with firms under any form of external administration. Any tender submitted by an unincorporated business such as a sole trader, partnership or business name must identify the legal entity that proposes to enter the contract.
- T5. Lodge the Tender Form and other required information via email to the Tender Box Email Address, by the Tender Closing Time, shown on the Tender Form.
- T6. The tendered lump sum or rates must include GST if it is payable.
- T7. In evaluating tenders, the Principal may take into consideration factors including, but not limited to: whole of life costs; ability to meet requirements of the *Code of Practice for Procurement*; innovation; delivery time; quality offered; previous performance; experience; capability; occupational health and safety performance; industrial relations performance; environmental management performance; community relations; value adding including economic, social and environmental initiatives; and conformity.
- Tenders will be assessed using a weighted scoring process based on information provided with the tender. The ratio of price to non-price criteria will be 60:40 The non price-price criteria will be: Previous Experience, Program and OH&S Management.
- The Principal may consider alternative tenders, provided they meet the scope, functional intent and design concept expressed in the tender document. Where an alternative tender is proposed, a detailed description of the alternative must be submitted, stating clearly the manner in which it differs from the requirements of the tender document. Alternative tenders will not be considered unless the tenderer has submitted a conforming tender.
- The Principal is not bound to accept the lowest or any tender. Tenders which do not comply with any requirement of, or which contain conditions or qualifications not required or allowed by the tender document, may be passed over. The Principal may accept tenders that do not conform strictly with all requirements of the tender document.
- No tender, or qualification or departure from a contract condition or specification, is accepted unless the Principal gives an acceptance or formal agreement in writing.
- T8. By submitting a tender, the tenderer authorises the Principal to gather, monitor, assess, and communicate to other NSW Government agencies or local government authorities information about the tenderer's financial position and its performance in respect of any contract awarded as a result of the tender. Such information may be used by those agencies or authorities in considering whether to offer the tenderer future opportunities for work.
- T9. Details of this tender and contract awarded as a result of this tender process must be disclosed in accordance with the: *Freedom of Information Act 1989* (NSW), Premier's Memorandum 2007-01 and NSW Government Tendering Guidelines at: www.managingprocurement.commerce.nsw.gov.au/nsw_government_guidelines/tendering_guidelines.pdf

END OF TENDER CONDITIONS

1 Definitions	<p>.1 Business Day Any calendar day other than a Saturday, Sunday, public holiday or 27, 28, 29, 30 or 31 December.</p> <p>.2 Contract Sum The Contract Sum is:</p> <p>.1 where the Principal accepted a lump sum, the lump sum;</p> <p>.2 where the Principal accepted rates, the amount calculated by firstly multiplying the rates by their respective quantities in the schedule of rates and then adding those products;</p> <p>but excluding any additions or deductions which are made under the Contract.</p> <p>.3 Principal's Acceptance A notice in writing issued by the Principal to the Contractor accepting the Contractor's tender.</p> <p>.4 Works The whole of the work to be carried out and materials and services to be provided under the Contract.</p>
2 Quality of Work	<p>The Contractor must supply materials (which are new unless otherwise specified, free from defects and suitable for their purpose) and use standards of workmanship and work methods which comply with the Contract, the Building Code of Australia, relevant Australian Standards and Commonwealth and State legislation and subordinate regulations, ordinances, by-laws, orders and proclamations.</p>
3 Standards of Behaviour	<p>The Contractor must comply with the NSW Government Code of Practice for Procurement, which is available at: www.treasury.nsw.gov.au/procurement/cpfp_ig</p>
4 Exchange of information between Government Agencies	<p>The Contractor authorises the Principal and its employees and agents to make information concerning the Contractor and its performance available to other NSW Government agencies and local government authorities. Such information may be taken into account in considering whether to offer the Contractor future opportunities for work for NSW Government agencies or local government authorities.</p> <p>The Principal regards the provision of information about the Contractor to any NSW Government agency or local government authority as privileged under the <i>Defamation Act 2005</i> (NSW).</p>
5 Occupational Health and Safety Management	<p>The Contractor must comply with the NSW Government Occupational Health and Safety Management Systems Guidelines 4th Edition (OHSM Guidelines) and all statutory requirements including the <i>Occupational Health and Safety Act 2000</i> (NSW) (OHS Act 2000) and Occupational Health and Safety Regulation 2001 (OHS Regulation 2001). In the event of any inconsistency, the Contractor must comply with the statutory provisions. Note in particular OHS Regulation 2001 section 207 requiring the Contractor to ensure that electrical work is not carried out on energised circuits or apparatus unless it is in the interests of safety.</p> <p>The Contractor, having responsibility for the construction work at all times until the Works are completed, is appointed principal contractor and controller of the premises for the construction work under Clause 210 of the OHS Regulation 2001, and is authorised to exercise such authority of the owner as is necessary to enable it to discharge the responsibilities of principal contractor and controller of premises imposed by the OHS Act 2000 and Chapter 8 of the OHS Regulation 2001.</p> <p>The Contractor must develop and implement a Site-specific Safety Management Plan that complies with the OHSM Guidelines. Do not start construction work before submitting a complying Plan to the Principal. Refer to Contract Schedule - Site-specific Safety Management Plan for minimum requirements.</p> <p>Ensure the following risks are included in the Site-specific Safety Management Plan:</p> <p>N/A</p> <p>This list of risks is not exhaustive and must not be relied upon by the Contractor. The Contractor must undertake its own detailed analysis of all occupational health and safety risks under the Contract.</p>
6 Environment Management	<p>The Contractor must implement an Environmental Management Plan for the Works. The Environmental Management Plan must be developed by the Contractor in accordance with Contract Schedule – Environmental Management Plan and submitted to the Principal before commencing the Works.</p> <p>The environmental management requirements of the Contract are additional to statutory requirements and do not limit the powers of the Principal or the liabilities and responsibilities of the Contractor.</p>
7 Care of people and property	<p>The Contractor is responsible for the care of the Works, construction plant and things entrusted to the Contractor by the Principal for the purpose of the Works. The Contractor is to make good at the Contractor's expense any damage which occurs to the Works while the Contractor is responsible for their care.</p> <p>The Contractor must indemnify and keep the Principal indemnified against any loss or damage to the property of the Principal (including existing property in, about, or adjacent to the Works) and against any legal liability for injury, death or damage to property of others arising from the performance of the Works.</p>
8 Insurance	<p>The Contractor must ensure that, before commencing the Works, the Contractor and every subcontractor who is not taken to be a worker employed by the Contractor under the <i>Workplace Injury Management and Workers Compensation Act 1998</i> (NSW) Schedule 1, holds any Workers Compensation insurance required by law.</p> <p>Before commencing the Works, the Contractor must hold insurance, from an insurer and in terms approved by the Principal, covering the Contractor, the Principal and subcontractors, and naming the Principal as an insured, for:</p>

	<p>.1 Public Liability to an amount not less than \$10,000,000 for any single occurrence; and</p> <p>.2 loss or damage to the Works, any temporary works and all materials, constructional plant and other things that are brought onto the site by or on behalf of the Contractor or are entrusted to the Contractor by the Principal, to an insured amount not less than the Contract Sum.</p> <p>The Contractor must maintain all required insurance policies until completion of the Works.</p> <p>If the Contractor fails to effect or maintain any insurance, the Principal may effect the insurance at the Contractor's cost or terminate the Contract.</p>
9 Completion	<p>The Works must reach completion within Contract Period (shown in the Tender Form) after the date that the Contractor is given access to the site.</p> <p>The Works have reached completion when the Works are capable of use for their intended purpose, are free from omissions or defects, and the Contractor has made good the site and its surroundings. The Contractor is to inform the Principal when, in the Contractor's opinion, the Works have reached completion. If the Principal agrees, the Principal will issue a written notice stating the agreed date that the Works have reached completion. That notice will not relieve the Contractor from liability for any omissions or defects.</p>
10 Variations	<p>A Variation is any change to the character, form, quality and extent of the Works that is directed in writing by the Principal. The Contractor must carry out the Principal's direction. The Principal and the Contractor must meet to agree on the reasonable amount payable to or deductible from the Contractor for the Variation. If they do not agree within 14 days after the meeting, the Principal shall assess that amount.</p>
11 Non-conforming Work	<p>The Principal may direct the Contractor to correct work that is not in accordance with the Contract, and the Contractor must correct that work within the time specified by the Principal. If the Contractor does not correct the non-conforming work within the time specified, the Principal may have the work corrected by others. The Principal will assess the reasonable costs of having the non-conforming work corrected by others and the Contractor must pay the Principal those costs.</p> <p>The Principal may accept work that is not in accordance with the Contract. The resulting reasonable increase or decrease in the value to the Principal of the Works, and any other reasonable loss or detriment suffered by the Principal, is to be assessed by the Principal and the amount paid to or deducted from the Contractor.</p>
12 Goods and Services Tax	<p>All prices, rates or other amounts referred to under the Contract must include GST if it is payable.</p> <p>The Principal will issue Payment schedules in the form of Recipient Created Tax Invoices. The Contractor must not issue Tax Invoices in respect of the Contract.</p> <p>The Principal will issue Adjustment Notes in respect of adjustment events known to the Principal. The Contractor must notify the Principal of details of any adjustment event not known to the Principal.</p> <p>Each party warrants it is registered for GST at the time of entering into the Contract, and must notify the other party if it ceases to be registered for GST or to satisfy any requirements for the issue of Recipient Created Tax Invoices.</p>
13 Payment	<p>Where the Contract requires the Contract Sum to be paid by the Contractor to the Principal, the Contractor is to pay the Principal the Contract Sum prior to commencing work on the Site. Any additions, deductions, costs or other amounts payable by one party to the other are due 14 days after the Works reach completion.</p> <p>Where the Contract requires the Contract Sum to be paid by the Principal to the Contractor, the Contractor may claim payments for work completed</p> <p>The amount that the Contractor is entitled to claim and be paid is the sum of:</p> <p>.1 where the Principal accepted rates, an amount calculated by applying the rates to the quantities of work carried out to the date the Contractor may make the payment claim;</p> <p>.2 where the Principal accepted a lump sum, an instalment of that lump sum which reflects the value of the work carried out to the date the Contractor may make the payment claim;</p> <p>.3 for any additions for which the Principal has approved an amount in writing, an instalment of that approved amount which reflects the value of the additions carried out to the date the Contractor may make the payment claim; and</p> <p>.4 where an amount has been finally determined by an Expert under Clause 13, the amount determined;</p> <p>less payments previously made, the estimated cost of rectifying defects, costs payable by the Contractor to the Principal, and deductions to which the Principal is entitled under or in connection with the Contract.</p> <p>With each claim for payment, the Contractor must give the Principal a Workers Compensation Insurance Certificate of Currency and a completed statutory declaration, in the form provided in Contract Schedule – Statutory Declaration. An amount will not become payable to the Contractor in response to a payment claim unless the required Workers Compensation Insurance Certificate and statutory declaration are submitted.</p> <p>Within 10 Business Days after receiving a payment claim, the Principal is to provide to the Contractor a payment schedule identifying the payment claim to which it relates and stating the payment, if any, that the Principal will be making. If the payment is to be less than the amount claimed, the payment schedule is to indicate why. Within the later of 20 business days after receiving a payment claim or 5 business days after receiving both a satisfactory statutory declaration and Workers Compensation Insurance Certificate, the Principal will pay the Contractor the amount indicated in the payment schedule.</p>

All claims whatsoever by the Contractor against the Principal made later than 28 days after the date of the Principal's written notice of completion of the Works are barred.

Payment will be made by electronic funds transfer to a bank, building society or credit union account nominated by the Contractor.

14 Disputes

If either party is dissatisfied with an act or omission of the other party in connection with the Contract, that party is to notify the Principal's Agent David Franco and the other party in writing of a dispute within 14 days of the act or omission. The notifying party is to provide particulars, including the factual and legal basis of any claimed entitlement. If the Contractor and Principal's Agent have not resolved the dispute within 14 days after the notice, the parties may appoint an independent Expert to make a decision on the dispute.

The parties are to share equally the Expert's fees and out-of-pocket expenses and any other costs of the process. Each party is to otherwise bear its own costs.

In making the decision, the Expert acts as an expert and not as an arbitrator and is:

- .1 not liable for acts, omissions or negligence;
- .2 to base the decision on written submissions from the parties, without formalities such as a hearing; and
- .3 required within 35 days of appointment to give the decision in writing, with brief reasons, to each party.

The Expert's decision is binding unless it requires one party to pay the other an amount exceeding \$100,000 and within 14 days of receiving the decision, either party gives notice in writing to the other that the party is dissatisfied. In this case the decision is of no effect and either party may then commence litigation.

If the Expert's decision is binding and requires one party to pay the other party money, that party is to pay the money within 14 days of receiving the decision of the Expert.

15 Suspension

The Principal may direct the Contractor to suspend all or part of the Works and the Contractor is to carry out the direction.

If the direction to suspend work is due to any act or omission of the Principal, the Principal and the Contractor are to meet to agree on the reasonable extra costs payable to the Contractor which resulted from the suspension. If they do not agree within 14 days after the meeting, the Principal is to assess those extra costs.

The Contractor is to recommence the Works as soon as practicable after the Principal so directs.

16 Termination

Without prejudice to any other rights which the Principal has, if the Contractor commits a substantial breach of the Contract, including:

- .1 failing to carry out a direction of the Principal within the time specified;
- .2 not progressing the Works at a reasonable rate;
- .3 failing to effect or maintain any insurance required by the Contract;

the Principal may, in writing, specify the breach and ask the Contractor to give reasons why the Principal should not take further action.

If the Contractor either fails to give a written response within 7 days of receiving the Principal's notice, or fails to give reasons satisfactory to the Principal, then:

- .1 the Principal may immediately terminate the Contract by notice in writing to the Contractor, in which case the respective rights and liabilities of the parties shall be the same as they would be at common law if the Contractor had wrongfully repudiated the Contract; or
- .2 the Principal may immediately take over the incomplete Works by notice in writing, suspend payments due or which would become due under Clause 13, and have others complete the Works. The Principal is to calculate the difference between the costs of having the Works completed by others and the amount of suspended payments held. If the calculation shows a shortfall to the Principal, the Contractor is to pay the amount of the shortfall to the Principal within 7 days of a written demand for payment. If the calculation shows an excess to the Principal, the Principal is to pay the amount of the excess to the Contractor.

END OF CONDITIONS OF CONTRACT

W1 Site Address	<p>The address of the site where the Works are to be performed is:</p> <p>Site name: Wollongong Government Office Building</p> <p>Street address: 84 Crown Street Wollongong, NSW 2500</p>
W2 Site Access Restrictions	<p>The Principal is to give the Contractor access to the site to commence the Works within 75 days of the Contractor receiving the Principal's Acceptance.</p> <p>The Principal is to give the Contractor sufficient possession of the site to allow the Contractor to perform the Works, but is not required to give the Contractor sole or uninterrupted possession of or access to the site. All noisy disruptive work are to be carried out of normal hours.</p> <p>Unless the Contract provides otherwise, the site is available to the Contractor to perform the Works between 7am and 5pm Monday to Friday but excluding public holidays.</p>
W3 Works Description	<p>.1 The Contractor must do all of the following and must also do anything and provide any item that is necessary to complete the Works. The following Principal's drawings and other documents form part of the Works Description:</p> <ul style="list-style-type: none"> • Location Plan & internal photo's 7194-CSD-01 A • Existing ground Floor Plan & elevations 7194-CSD-02 A • Proposed ground floor plan 7194-CSD-03 C • Proposed internal Elevations 7194-CSD-04 C • Specification of Works Alterations & Additions to Existing Commercial Tenancy <p>.2 OUTLINE OF WORK UNDER THE CONTRACT</p> <p>Work under the Contract includes, but is not limited to:</p> <ul style="list-style-type: none"> • New entry – demolish existing walls, door (sewage room) and stairs to allow for new shop front entry doors as per drawings. • Demolish existing walls and door (Existing Store Room) and make good surfaces. • Install new reinforced concrete stairs with stainless steel handrails. • Install disabled lift with service platform and stainless steel balustrade in fills. Provision of require electrical power supply. • New aluminium framed shop front to comply with AS 1288 – 2006. • Install new automatic entry sliding door to AS 1288 – 2008, • Swipe card access at sliding door, connected to the existing base building access control system. • Demolish existing part ceiling over entry. Adjust and make good all services and surrounds. • Provide new metal framed bulkhead over entry. • Install lighting and services in bulkhead. • Make good and rectify all hydraulic / mechanical, electrical, fire and essential services to conform to relevant Australian Standards and BCA requirements throughout tenancy. • Provide new internal disabled access ramp to adjacent to eastern courtyard. Provide stainless steel handrail and making good all surrounds. Floor preparation, for laying of carpet and installation of tactile indicators by others. • Replacement of the kitchenette cabinets with new cabinets (additional above head cabinets across the wall). Removal/decommissioning of the wall mounted boiling water unit. Installation a under bench chilled and hot water Billi unit with sink outlet. • Retain and clean and make good existing blinds to tenancy. • Prepare all wall surfaces for painting application and painting with wash and wear China White Paint (wall and structural columns etc.) and Gloss paint (doors, skirtings, architraves etc.).

- Cleaning and required repairs to the air conditioning registers.
- Replacement of all ceiling tiles and ceiling grid. The ceiling tiles in good condition are to be returned to the building manager.
- Labour component only for the replacement of the existing light fittings. The T5 light fittings are to be supplied by others.

END OF DETAILS OF THE WORKS

Definitions

Oaths Act (NSW)
Ninth Schedule

The Principal is

The Contractor is

ACN/ABN.....

The Contract is

Contract No.

Contract Title.....

dated(Date of Contract) between the party identified as the Principal and the party identified as the Contractor.

Declaration

Full name

I,

Address

of

.....

.....

.....

do hereby solemnly declare and affirm that:

1

I am the representative of the Contractor in the Office Bearer capacity of

Insert position title
of the Declarant

.....

2

I am in a position to make this statutory declaration about the facts attested to.

REMUNERATION OF CONTRACTOR'S EMPLOYEES ENGAGED TO CARRY OUT WORK IN CONNECTION WITH THE CONTRACT

3

All remuneration payable to the Contractor's relevant employees for work done in connection with the Contract to the date of this statutory declaration has been paid and the Contractor has made provision for all other benefits accrued in respect of the employees.

Relevant employees are those engaged in carrying out the work done in connection with the Contract.

Remuneration means remuneration or other amounts payable to relevant employees by legislation, or under an industrial instrument, in connection with work done by the employees [s127(6) of the *Industrial Relations Act 1996* (NSW)].

REMUNERATION OF THE EMPLOYEES OF SUBCONTRACTORS ENGAGED TO CARRY OUT WORK IN CONNECTION WITH THE CONTRACT

4

The Contractor *is/is not* a principal contractor for the work done in connection with the Contract, as defined in section 127 of the *Industrial Relations Act 1996* (NSW).

Delete the words *in italics* that are not applicable.

5

Where the Contractor is also a principal contractor for work done in connection with the Contract, the Contractor has been given a written statement in its capacity of principal contractor under section 127(2) of the *Industrial Relations Act 1996* (NSW) by each subcontractor in connection with that work stating that all remuneration payable by each subcontractor to the subcontractor's relevant employees for work done in connection with the Contract to the date of this declaration has been paid, and each subcontractor has made provision for all other benefits accrued in respect of each subcontractor's employees.

- 6 I am aware that the *Industrial Relations Act 1996* (NSW) requires any written statement provided by subcontractors must be retained for at least 6 years after it was given and declare that the Contractor has accordingly made arrangements for the secure retention of the written statements.

WORKERS COMPENSATION INSURANCE OF THE CONTRACTOR'S WORKERS

- 7 All workers compensation insurance premiums payable by the Contractor to the date of this statutory declaration in respect of the work done in connection with the Contract have been paid. This statutory declaration is accompanied by a copy of any relevant certificate of currency in respect of that insurance.

WORKERS COMPENSATION INSURANCE FOR WORKERS OF SUBCONTRACTORS

- 8 The Contractor *is / is not* a principal contractor for work done in connection with the Contract, as defined in section 175B of the *Workers Compensation Act 1987* (NSW).
- 9 Where the Contractor is also a principal contractor for work done in connection with the Contract, the Contractor has been given a written statement under section 175B of the *Workers Compensation Act 1987* (NSW) in the capacity of principal contractor in connection with that work to the intent that all workers compensation insurance premiums payable by each subcontractor in respect of that work done to the date of this statutory declaration have been paid, accompanied by a copy of any relevant certificate of currency in respect of that insurance.
- 10 I am aware that the *Workers Compensation Act 1987* (NSW) requires any written statement provided by subcontractors and any related certificate of currency must be retained for at least 7 years after it was given and declare that the Contractor has accordingly made arrangements for the secure retention of the written statements.

Delete the words *in italics* that are not applicable.

EMPLOYER UNDER THE PAY-ROLL TAX ACT

- 11 The Contractor *is registered as / is not required to be registered as* an employer under the *Pay-roll Tax Act 2007* (NSW).
- 12 All pay-roll tax payable by the Contractor in respect of wages paid or payable to the relevant employees for work done in connection with the Contract to the date of this statutory declaration has been paid.
- 13 The Contractor *is / is not* a principal contractor for work done in connection with the Contract, as defined in section 31G of the *Pay-roll Tax Act 2007* (NSW).
- 14 Where the Contractor is also a principal contractor for work done in connection with the Contract, the Contractor has been given a written statement under section 31H of the *Pay-roll Tax Act 2007* (NSW) in the capacity of principal contractor in connection with that work to the intent that all pay-roll tax payable by each subcontractor in respect of the wages paid or payable to the relevant employees for that work done to the date of this statutory declaration has been paid.
- 15 I am aware that the *Pay-roll Tax Act 2007* (NSW) requires any written statement provided by subcontractors must be retained for at least 5 years after it was given and declare that the Contractor has accordingly made arrangements for the secure retention of the written statements.

Delete the words *in italics* that are not applicable.

Delete the words *in italics* that are not applicable.

PAYMENTS TO SUBCONTRACTORS

- 16 The Contractor has paid every subcontractor, supplier and consultant all amounts payable to each of them by the Contractor as at the date of this statutory declaration with respect to engagement of each of them for the performance of work or the supply of materials for or in connection with the Contract.
- 17 The provisions of clause 'SECURITY OF PAYMENT', if included in the Contract, have been complied with by the Contractor.

- 18 The Contractor has been informed by each subcontractor and consultant to the Contractor (except for subcontracts and agreements not exceeding \$25,000 at their commencement) by written statement in equivalent terms to this declaration (made no earlier than the date 14 days before the date of this declaration):
- .1 that their subcontracts with their subcontractors, consultants and suppliers comply with the requirements of clause ‘SECURITY OF PAYMENT’, if included in the Contract, as they apply to them; and
 - .2 that all of their employees, subcontractors, consultants and suppliers, as at the date of the making of such a statement have been paid all remuneration and benefits due and payable to them by, and had accrued to their account all benefits to which they are entitled from, the subcontractor or consultant of the Contractor or from any other of their subcontractors or consultants (except for their subcontracts and agreements not exceeding \$25,000 at their commencement) in respect of any work for or in connection with the Contract.
- 19 I am not aware of anything to the contrary of any statutory declaration referred to in paragraph 18 of this declaration and on the basis of the statements provided, I believe the matters set out in paragraph 18 to be true.
- 20 And I make this solemn declaration, as to the matters aforesaid, according to the law in this behalf made, and subject to the punishment by law provided for any wilfully false statement in any such declaration.

Signature of
Declarant

.....

declared at

Place

.....

Date

on.....

before me

Signature of
legally authorised
person* before
whom the
declaration is
made

.....

Name and title of
person* before
whom the
declaration is
made

.....

.....

Notes:

1. In this declaration:

1. the words ‘principal contractor’, ‘employee’, ‘employees’ and ‘relevant employees’ have the meanings applicable under the relevant Acts;
2. the word ‘subcontractor’ in paragraphs 5, 6, 9, 10, 14 and 15 has the meaning applicable under the relevant Act; and
3. otherwise the words ‘Contractor’, ‘subcontractor’, ‘supplier’ and ‘consultant’ have the meanings given in or applicable under the Contract.

2. * The declaration must be made before one of the following persons:

(a) where the declaration is sworn within the State of New South Wales:

- (ii) a justice of the peace of the State of New South Wales;
- (iii) a solicitor of the Supreme Court of New South Wales with a current practising certificate;
- (iv) a notary public; or
- (v) another prescribed person legally authorised to administer an oath under the *Oaths Act 1900* (NSW); or

(b) where the declaration is sworn in a place outside the State of New South Wales:

- (i) a notary public; or
- (ii) any person having authority to administer an oath in that place.

Contract Schedule – Site-specific Safety Management Plan MMW

In accordance with Conditions of Contract clause - **Occupational Health and Safety Management**, the Contractor must develop and implement a Site-specific Safety Management Plan that complies with the NSW Government [Occupational Health & Safety Management Systems Guidelines 2004](#). Please refer to [How to prepare Site-Specific Safety Management Plans and Safe Work Method Statements](#) (June 2004). Both documents are available from: www.managingprocurement.commerce.nsw.gov.au/system/index_procurement_guideline_documents.doc

The Contractor's Site-specific Safety Management Plan

For this contract the Contractor's Site-specific Safety Management Plan must:

- ☐ be on the Contractor's letterhead, and
- ☐ signed and dated by a senior manager, and
- ☐ **must cover:**
 - ☐ **Statement of responsibilities** – names and positions of people on site who will be responsible for OHS management, with a description of those responsibilities.
 - ☐ **Risk Management** – identified hazards associated with each work activity, with the risks assessed and actions proposed to eliminate or minimise the risks and methods for monitoring the risk controls documented. Include OHS risks identified by the Principal.
 - ☐ **OHS Training** – arrangements for OHS training, including Induction training and toolbox meetings.
 - ☐ **Incident and Emergency Management** – arrangements for managing accidents and near misses, with the name(s) of responsible persons and their contact details, including after-hours contact.
 - ☐ **Site Safety Rules** – a copy of the rules, which must also be displayed on the site and make it a condition of entry to the site that all employees and visitors comply with their provisions, and which must include as a minimum:
 - **Construction OHS Induction.** All persons must display evidence of completing OHS Induction training prior to being inducted to commence work on the site.
 - **Site Induction.** All persons working on the site must attend a Site Induction prior to entering it. Visitors may enter the site if, either, they first attend a Site Induction, or they are accompanied by a person who has attended a Site Induction. All persons each day must sign in and out on the Site Register.
 - **Safe Work Method Statements.** Safe Work Method Statements must be prepared and used for all work activities assessed as having a safety risk.
 - **Toolbox Talks.** Weekly or more regular discussions must be held with workers to consult on site safety matters.
 - **Safety Helmets, Safety Footwear and Safety Vests.** Safety helmets and steel-capped safety footwear must be worn by all supervisors, employees, and visitors in the construction area at all times. The footwear must comply with AS 2210. Safety vests must be worn when moving plant is present or work is undertaken near traffic.
 - **Personal Protective Equipment (PPE).** PPE, such as safety eye protection, hearing protection, safety gloves and masks and the like, must be worn when welding, drilling and with all other tasks with similar risks.
 - **Accidents and Incidents.** Accidents, incidents and injuries must be reported immediately to the Contractor's and applicable subcontractor's site representative in charge.
 - **Alcohol and Drugs.** The consumption of, or being under the influence of, alcohol and illegal drugs on the site is prohibited.
 - **Amenities.** Access to clean toilets and meal facilities, cool, clean drinking water, and the other requirements of the WorkCover [Code of practice: Amenities for construction work](#), must be provided for all persons.
 - **Electrical.** All electrical work and electrical plant must comply with the WorkCover [Code of practice: Electrical practices for construction work](#).
 - **Emergency evacuation.** Arrangements must be included in the Site Induction and clearly identified.
 - **Excavations.** Barricading and signage for all excavations must be provided, with excavations 1.5 metres or more deep also to be benched, battered or shored. See the WorkCover [Code of practice: Excavation](#).
 - **Fire Prevention.** Fire prevention must be used by all persons on the site. An appropriate fire extinguisher must be on hand for all welding sets and oxy acetylene work.
 - **First Aid.** All persons requiring first aid treatment must contact the first aid officer who will administer the treatment and record the injury in the WorkCover Register of Injuries, including the person's name and the nature of the injury.
 - **Hazardous Substances.** Chemicals and hazardous substances must be used and stored in compliance with up to date Material Safety Data Sheets (MSDS) and details recorded in the Register of Hazardous Substances.
 - **Housekeeping.** Work areas must be kept clean and tidy, with rubbish and other safety hazards cleaned up promptly. All protruding nails must be removed immediately from timber.

- **Leads and Power Tools.** All leads, power tools and electrical equipment must be inspected and tagged by a qualified person prior to their use and then at monthly intervals. See the WorkCover [Code of practice: Electrical practices for construction work](#).
- **Mobile Plant.** Every owner of plant must ensure plant is registered with WorkCover when required and operators are appropriately qualified. Plant must be fitted with working hazard lights/reversing lights and beepers. See the WorkCover [Code of Practice for Moving Plant on Construction Sites](#).
- **Overhead Power Lines.** The requirements of the WorkCover [Code of Practice – Work near Overhead Power Lines](#) must be complied with.
- **Site Security and Public Access.** Security measures, including perimeter fencing, must be used to prevent unauthorised access to construction areas and ensure safe access and passage for all those on and adjacent to the site. Security must comply with Clause 235 of the OHS Regulation 2001 and the WorkCover [Position paper: The requirements for fencing](#).
- **Underground Services.** Prior to any underground work being carried out, services must be located using Dial Before You Dig, a services locator, potholing and the other precautions identified in the WorkCover [Work Near Underground Assets Guideline](#).
- **Working at Height.** Working at heights must be in accordance with WorkCover requirements, including certification of formwork and scaffolding. See the WorkCover [Guide to Safe Working at Heights](#).
- **Safe Work Method Statements** - for activities identified as having an OHS risk, which must:
 - be on the letterhead of the organisation carrying out the work, showing the name and registered office address of the organisation;
 - be signed as authorised by a senior manager, and dated; and
 - **must describe:**
 - work activities to be undertaken, including the step-by-step sequence involved in doing the work
 - potential hazards and health and safety risks associated with each step of the work activity
 - safety controls that will be in place to minimise these hazards and risks
 - all health and safety instructions to be given to persons involved with the work activity
 - safety legislation, codes or standards applicable to the work activity and where these are kept
 - names and qualifications of those who will supervise the work activity and inspect and approve for use work areas, work methods, protective measures, plant, equipment and power tools
 - the training required, and when it was or will be given each person involved with the work activity
 - names of all those involved with the work activity and those who have been or will be or have been relevantly trained, and the names and qualifications of those responsible for training them
 - plant and equipment that will most likely be used in the work activity (eg. ladders, scaffolds, grinders, electrical leads, welding machines, fire extinguishers and the like)
 - any WorkCover permits required to complete the work activity
 - the inspection and maintenance checks that have been or will be carried out on the equipment listed prior to its use.

In accordance with the *Environment Management* clause, the Contractor must develop and implement an acceptable site-specific Environmental Management Plan in the following form, incorporating additional objectives and actions applicable to the risks and opportunities associated with this contract.

Using the sample format provided below as a guide only (and with reference to the New South Wales Government Environmental Management Systems Guidelines), develop a nominated Environmental Management Plan that identifies the environmental risks involved in the work and the nominated measures required to manage those risks.

The environmental risk management objectives	The environmental risk management measures:
1. CONSERVATION OF PLANTS & WILDLIFE	
Protection of trees, plants and animals	<input type="checkbox"/> Protect existing trees and plants at and around the Site from damage and do not remove flora without approval from the Principal <input type="checkbox"/> Protect birds, fish and animals at and around the Site from harm and do not remove fauna from the Site without approval from the Principal <input type="checkbox"/> Ensure that animals and plants are not brought onto the Site without the written agreement of the Principal <input type="checkbox"/> Minimise the use of pesticides and herbicides and ensure minimal impact on the environment <input type="checkbox"/> Use site roads or approved access routes for vehicular and equipment access <input type="checkbox"/> Park all vehicles and equipment in designated or approved areas <input type="checkbox"/> Use approved access routes for all pedestrian and goods movements to vehicles, equipment, facilities and construction sites <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
2. CONSERVATION OF RESOURCES	
Manage Materials used under contract to minimise: 1. resource use 2. ozone depleting effects 3. detrimental effects on air, water, quality.	<input type="checkbox"/> Minimise the use of imported topsoil <input type="checkbox"/> Reuse all topsoil on site <input type="checkbox"/> Use only timber from sustainable managed sources <input type="checkbox"/> Maximise the use of materials from a sustainable source, that are, and/or can be, recycled <input type="checkbox"/> Use low energy usage construction, fittings and appliances (including heating/cooling and lighting) <input type="checkbox"/> Use low potable water demand fittings and appliances (dual flush toilets, water conserving shower roses and taps) <input type="checkbox"/> Ensure packaging is minimised and recycled <input type="checkbox"/> Minimise the use of solvents, glues, paints and other materials which release odours or vapour <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
3. POLLUTION CONTROL	
Vehicles and plant	<input type="checkbox"/> Do not use vehicles or plant producing excessive emissions <input type="checkbox"/> Do not bring vehicles or plant with fuel or oil leaks to the Site <input type="checkbox"/> Wash down vehicles only in areas approved by the Principal.

Contract Schedule - Environmental Management Plan

MMW

The environmental risk management objectives	The environmental risk management measures:
	<input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Stormwater is not polluted by cleaning activities and plants/grass are not adversely affected	<input type="checkbox"/> Use only water based, non-toxic paints <input type="checkbox"/> Use only water to clean brushes and rollers <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Soil Erosion controlled	<input type="checkbox"/> Install the following sediment control devices prior to commencement of construction: <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Soil contamination is not disturbed or released to the environment	<input type="checkbox"/> Establish, in consultation with the Principal, if contaminated soil is present at the site prior to commencing work at the site <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Charging and/or disposal of refrigerants meet statutory requirements, eg. for licensing and disposal	<input type="checkbox"/> Ensure procedures are used to meet statutory obligations for the charging and disposal of refrigerants <input type="checkbox"/> Use appropriately trained employees <input type="checkbox"/> Document disposal and retain documentation <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Noise impact on neighbours, occupants or users of facility minimised	<input type="checkbox"/> Keep within EPA and Council noise limits <input type="checkbox"/> Use equipment in good repair and condition <input type="checkbox"/> Use noise suppression equipment (eg. silencers on compressors) <input type="checkbox"/> Do not expose workers and visitors to excessive noise

Contract Schedule - Environmental Management Plan

MMW

The environmental risk management objectives	The environmental risk management measures:
	<input type="checkbox"/> The Contractor nominates the following additional measures:
	<input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Trade Waste Licence conditions applicable to the facility are not breached.	<input type="checkbox"/> Ensure procedures are in place to avoid breaches of the trade Waste Conditions (May apply to discharges from cooling water systems, condenser water systems, heating water systems, cooking facilities, engine discharges etc where water is treated with chemicals or where large sediment loads exist)
	<input type="checkbox"/> The Contractor nominates the following additional measures:
	<input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Air Pollution from dust and emissions minimised	<input type="checkbox"/> Minimise areas of exposed earth <input type="checkbox"/> Use water sprays and/or other means to control dust <input type="checkbox"/> Keep emissions within statutory or required limits
	<input type="checkbox"/> The Contractor nominates the following additional measures:
	<input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Disposal of waste, including - <ul style="list-style-type: none"> • Packaging materials • Replaced or redundant parts or materials. • Chemicals • Oils and greases from machinery and cooking processes • Paints and solvents including the cleaning of equipment, tools and brushes • Cleaning materials and rags • Other waste, in accordance with statutory requirements	<input type="checkbox"/> Ensure appropriate procedures are used for the disposal of all waste items.
	EITHER <input type="checkbox"/> Provide valid disposal certificates for each applicable item.
	OR <input type="checkbox"/> Provide company certification of appropriate disposal of the following:
	<input type="checkbox"/> The Contractor nominates the following additional measures:
	<input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:

The environmental risk management objectives	The environmental risk management measures:
Emergencies Incidents and spills are contained, and damage to the environment is minimised and rectified with appropriate and approved emergency response procedures	<input type="checkbox"/> Ensure emergency procedures are used to manage all reasonably foreseeable harm, including spills and other environmental emergencies <input type="checkbox"/> Agree with the Principal to procedures for handling oil and chemicals before placing on the Site <input type="checkbox"/> Document key contacts <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Compliance Audit Compliance with Principal environmental requirements and, where breaches are detected, rectification of defects within the time period set in the audit process	<input type="checkbox"/> Inspect the Site daily to ensure the appropriate environmental controls are in place and are operating effectively, and to ensure all environmental management requirements are being met <input type="checkbox"/> Cooperate with environmental audits by others <input type="checkbox"/> Rectify any environmental breaches identified within the time frame specified in an audit or by the Principal <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
4. RECORDS AND REPORTING	
Records Sufficient documentation to demonstrate: <ul style="list-style-type: none"> • Approved management plans • Training records • Valid disposal certificates and/or company certification of appropriate disposal as applicable • Correspondence with regulators including evidence that the cause of non-compliances has been fixed 	<input type="checkbox"/> Update the contract specific EMP <input type="checkbox"/> Report on the implementation of the contract specific EMP <input type="checkbox"/> Submit Incident reports to the Principal and to regulators where required <input type="checkbox"/> Submit waste disposal certificates or certification of appropriate disposal to the Principal where applicable <input type="checkbox"/> Keep training records for inspection <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:
Incident Reporting All environmental incidents are immediately reported to Principal	<input type="checkbox"/> Immediately report all environmental incidents to the Principal <input type="checkbox"/> The Contractor nominates the following additional measures: <input type="checkbox"/> The Contractor identifies the following person who will be responsible for managing the above measures:

State Property Authority

Specification

84 Crown Street, Wollongong
Proposed Fitout

Revision	Date	Approved by
A	24/09/08	R.G



BHI Architects
3/2 Coombe Street, Wollongong NSW 2500
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0131b PRELIMINARIES

1 GENERAL

1.1 GENERAL**General conditions**

Contract:

1.2 THE SITE**Protection of persons and property**

Temporary works: Provide and maintain required barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic flagging.

Accessways, services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services.

Property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

Rectification

Accessways, services: Rectify immediately any obstruction or damage to roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Provide temporary services whilst repairs are carried out.

Property: Rectify immediately any interference or damage to property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

Existing services

General: Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate. Submit proposals if the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.
- If the service is to be abandoned, submit proposals, remove redundant parts and make safe.

Proposals: Submit proposals for action to be taken with respect to existing services before starting this work. Minimise the number and duration of interruptions.

- Purpose of submission: For review.

Protective clothing

Protective clothing: Make available protective clothing for the use of visitors.

- Safety helmets: To AS/NZS 1801, Type 1.
- Standards mark: Required.

Project signboards

General: Provide project-specific signboards and the following:

- Locate where directed.
- Maintain in good condition for duration of the work.
- Obtain permission for removal.
- Remove on completion.

1.3 BUILDING THE WORKS**Surveys**

Setting out:

Check surveys:

Final survey:

Survey marks

Definition: The term 'survey mark' means a survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark used or intended to be used for the purpose of setting out, checking or measuring the work.

Care of survey marks: Preserve and maintain the owner's survey marks in their true positions.

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

Safety

Accidents: Promptly notify the architect of the occurrence of the following:

- Accidents involving death or personal injury.
- Accidents involving loss of time.
- Incidents with accident potential such as equipment failure, slides and cave-ins.

Accident reports: Submit reports of accidents.

- Purpose of submission: Information only.

Contractor's representative

General: Must be accessible, and fluent in English and technical terminology.

Subcontracting

General: Submit a complete list of proposed subcontractors and suppliers.

Program of work

Construction program: Show the following:

- Sequence of work.
- Critical paths of activities related to the work.
- Allowance for holidays.
- Activity inter-relationships.
- External dependencies including provision of access, document approvals and work by others.
- Periods within which various stages or parts of the work are to be executed.

Time scale: Working days.

Updated program: Identify changes since the previous version, and show the estimated percentage of completion for each item of work.

Program chart: Display in the contractor's site office an up-to-date bar chart and network diagram based on the construction program.

1.4 COMPLETION OF THE WORKS**Final cleaning**

General: Before practical completion, clean throughout, including interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems. Remove waste and surplus materials.

Samples: Remove non-incorporated samples, prototypes and sample panels.

Reinstatement

General: Before practical completion, clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.

Adjoining property

Evaluation: At practical completion, for properties described in the **Adjoining properties to be recorded schedule** inspect the properties with the architect and owners and occupants of the properties, recording any damage that has occurred since the pre-commencement inspection.

Pest eradication

General: Employ suitably qualified pest exterminators. At practical completion submit a certificate stating that completed works are free of pest types identified in the **Pest eradication treatments schedule**.

0331b BRICK AND BLOCK CONSTRUCTION

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.2 STANDARD

General

Materials and construction: To AS 3700.

1.3 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the following:

- Unit type, colour and texture.
- Bottoms of cavities, after cleaning out.
- Bottoms of core holes, before grouting.
- Reinforcement type and diameter.
- Positioning of reinforcing before grouting.
- Control joints, ready for insertion of joint filler.
- Damp-proof courses, in position.
- Flashings, in position.
- Lintels, in position.
- Structural steelwork, including bolts and shelf angles, in position.

1.4 TOLERANCES

Masonry construction

Conformance: Conform to AS 3700 Table 11.1.

2 PRODUCTS

2.1 MATERIALS

Bricks and blocks

Standard: To AS/NZS 4455.

Minimum age of clay bricks: 7 days.

Mortar materials

Admixtures:

- Admixtures: To AS 3700 clause 10.4.2.4.

Lime: To AS 1672.1.

Portland cement: To AS 3972.

- Type: GP.

Masonry cement: To AS 1316.

Proportions: Conform to the **Mortar mix table**.

Sand: To be fine aggregate with low clay content and free from efflorescing salts, selected for colour and grading.

Water: To be clean and free from any deleterious matter.

White cement: To have iron salts content $\leq 1\%$.

Pigment: To BS EN 12878, and as follows:

- Quantity: Less than 10% of the mass of cement in the mix.

For light colours: Use off-white cement in the mix.

Mortar mix table

Mortar class to AS 3700	Cement, lime, sand ratios (by volume)			Water thickener
	Clay	Concrete	Calcium silicate	
Masonry cement				
M3	1:0:4	1:0:4	n/a	No
M4	1:0:3	n/a	n/a	No
Portland cement				
M2	1:2:9	n/a	n/a	No
M3	1:1:6	1:1:6	n/a	Optional
	1:0:5	1:0:5	1:0:5	Yes
M4	1:0.5:4.5	1:0.5:4.5	n/a	Optional
	1:0:4	1:0:4	1:0:4	Yes

0341b STRUCTURAL STEEL

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.2 STANDARDS

General

Materials, construction, fabrication and erection: To AS 4100.

Cold-formed steel: AS/NZS 4600.

1.3 ADJOINING ELEMENTS

General

Fixing: Provide for the fixing of adjoining building elements that are to be connected to or supported on the structural steel.

1.4 INSPECTION

Notice – on site

Inspection: Give notice so that inspection may be made of the following:

- Anchor bolts in position before casting in.
- Steelwork and column bases erected on site, before grouting, encasing, site painting or cladding.
- Tensioning of bolts in categories 8.8/TB and 8.8/TF.
- Reinforcement and formwork in place prior to any encasement.
- After any grouting, encasement, fire protection or site painting is completed.

1.5 SUBMISSIONS

Origin of steel

Requirement: If it is proposed to use steel not of Australian origin, submit documentation which demonstrates that the steel complies with Australian Standards.

Bolts

Compliance: Submit a manufacturer's compliance/test certificate from an accredited testing organization confirming compliance with AS/NZS 1252.

Independent certification: If bolts manufactured from outside Australia, provide a local NATA-accredited laboratory independent compliance certificate based on appropriate testing and verification.

Shop drawings

General: Submit shop drawings showing the following information:

- Identification.
- Steel type and grade.
- Dimensions of items.
- Required camber, where applicable.
- Connection details
- Orientation of members.
- Surface preparation methods and coating system if shop applied.
- Breather holes for hollow sections (with seal plates) being hot-dip galvanized.
- Location of and preparation for site welds.

- Temporary works such as lifting lugs, support points, temporary cleats and bracing which are required for transport and erection of the structural steelwork.
- Required fixings for adjoining building elements.

Materials and components

Concrete or masonry anchors: If masonry anchors other than as shown on the drawings are required or proposed for the support or fixing of structural steel, submit evidence of the anchor capacity to carry the load.

Execution

Survey certificates:

Splicing: If splicing of structural members is intended, submit proposals.

Distortions: If a member is distorted during the galvanizing process, submit proposals for straightening.

2 PRODUCTS

2.1 STEEL TYPE AND GRADE

Material

Conformance: Steel members and sections shall conform to the **Steel grade (minimum) table**.

Steel grade (minimum) table

Type of steel	Grade
Universal beams and columns, parallel flange channels, large angles to AS/NZS 3679.1	300
Flat, small angles, taper flange beams and columns to AS/NZS 3679.1	250
Welded sections to AS/NZS 3679.2	300
Hot rolled plates, floor plates and slabs to AS/NZS 3678	250
Hollow sections to AS 1163: - Circular sections less than 165 mm nominal outside diameter - Sections other than the above	C250/C350 C350/C450
Cold formed purlins and girts to AS 1397	G450 Z350

2.2 BOLTS

Bolts, nuts and washers

General: Hot-dip galvanized, corrosion-free, coated in oil and in serviceable condition.

3 EXECUTION

3.1 FABRICATION

General

Substitution: If substitution of members is proposed, provide details.

Beam camber

General: If beam members have a natural camber within the straightness tolerance, fabricate and erect them with the camber up.

Straightening

Care: If straightening or flattening members, do not damage.

Work exposed to view

Welds: Grind smooth but do not reduce the weld below its nominal size.

Shearing, flame cutting and chipping: Perform carefully and accurately.

Corners and edges: Grind fair those corners and edges which are sharp, marred, or roughened.

Site work

General: Other than work shown on the shop drawings as site work, do not fabricate, modify or weld structural steel on site.

Identification marks

General: Provide marks or other means of identifying each member compatible with the finish, for the setting out, location, erection and connection of the steelwork.

Monorail beams: Identify and mark rated capacity in accordance with AS 1418.18 clause 5.12.6.

Tolerances

Measurement: Tolerances are to be checked by measurement after fabrication when corrosion protection has been applied.

Conformance: To AS 4100 clause 14.4.

3.2 WELDING**General**

Standard: To AS/NZS 1554.1.

Weld category

Weld categories not shown on the drawings: Category GP.

Weld type

Weld type not shown on the drawings: 6 mm continuous fillet weld made using E48XX electrodes or equivalent.

3.3 BOLTING**Connections**

Connection type: For connections not shown on the drawings, provide 10 mm plates, 6 mm continuous fillet welds and 2 M20 bolts in 8.8/s bolting category.

Foundation bolts

General: Provide each foundation bolt with 2 nuts and 2 oversize washers and provide sufficient thread to permit the levelling nut and washer to be set below the base plate.

Lock nuts

General: Provide lock nuts for bolts in moving parts or parts subject to vibration and for vertical bolts in tension.

Tensioning of bolting categories 8.8/TB and 8.8/TF

Method: Use part-turn-of-nut or load indicating washers.

3.4 SURFACE PREPARATION AND TREATMENT**General**

General: Conform to the *Steel – protective paint coatings* and/or *Steel – hot dip galvanized coatings* worksections as appropriate.

General: Structural steelwork not encased in concrete shall be coated.

Standards: To AS 1627 and AS/NZS 2312 Section 1.

Surface preparation: Class 1 blast.

Coating: Coat prepared steelwork as follows:

- Primer: Zinc phosphate primer.
- Thickness: 70 µm.
- Requirement: Verify and record thickness.
- Concrete encasing: Where members are part concrete encased extend the priming 25 mm into the surface to be encased.
- Inaccessible surfaces: Where surfaces will be in contact or near contact after fabrication or erection, apply the finish and allow it to dry before assembly.

Shop work: Apply the primer coat or protective system to the structural steel before delivery to the site.

Transport and handling: Do not damage the paintwork.

Site work: After erection, repair damage to the shop coating and apply coating omitted at site connections.

3.5 FIRE PROTECTION COATINGS

General

General: Apply fire protection to structural steelwork in conformance with the **Structural Fire protection worksection**.

3.6 ERECTION

Temporary work

General: Provide all necessary temporary bracing or propping.

Temporary connections: If cleats not shown on shop drawings are required, submit details.

Foundation bolts

General: For each group of foundation bolts provide a template with setting out lines clearly marked for positioning the bolts when casting in.

Grouting at supports

Preparation: Before grouting steelwork to be supported by concrete, masonry and the like, set steelwork on packing or wedges.

Minimum compressive strength (MPa):

Site welds

Completion: Weld only when correct alignment and preset or camber have been achieved.

Overhead welding: If overhead welding is required, submit proposals.

Handling

Care: Handle members or components without overstressing or deforming them.

Protection: Wrap or otherwise protect members or components to prevent damage to surface finishes during handling and erection.

3.7 REPAIRS

General

General: Repair finishes to ensure the full integrity of each phase and each coating.

3.8 COMPLETION

Temporary connections

General: Remove temporary cleats on completion and restore the surface.

0342 LIGHT STEEL FRAMING

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide light steel floor, wall and roof framing that is:

- In conformance with the performance criteria documented.
- Integrated into the building.
- Suitable for the fixing to it of flooring, linings and cladding.
- Independently designed and documented.
- Independently certified by a professional engineer for the design and the erected framing.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 STANDARDS

General

Design, materials and protection: To AS/NZS 4600.

Residential and low-rise steel framing: To NASH (National Association of Steel Housing) Standard.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of steel framing erected on site before lining or cladding.

1.5 SUBMISSIONS

Design

General: Where the structural drawings define performance criteria, submit independent design, documentation and certification from a professional engineer including for the erected work.

Reactions: Provide location and magnitude of reactions to be accommodated by the support structure.

Floor and wall frame member sizes: Submit a schedule of proposed member sizes, certified as meeting stated project and AS/NZS 4600 requirements for span, spacings and loadings.

Shop drawings

General: Submit shop detail drawings certified by a professional engineer stating that the design has been carried out in accordance with documented project and AS/NZS 4600 requirements for the configurations and loadings.

Roof trusses: Prepare drawings to show:

- On a plan, the truss layout.
- On elevations, the arrangement of members allowing for the accommodation of in-roof services and the size and section type of each member.
- The method of assembly, connection, holding down and bracing.

Wall frames: If wall framing is to be pre-fabricated, prepare drawings to show:

- On plan, the wall layout.
- On elevations, the arrangement of members, and the size and section type of each member.
- The method of assembly, connection, holding down and bracing.

1.6 TOLERANCES**Walls**

To NASH Standard, Appendix D.

0344b STEEL – HOT DIP GALVANIZED COATINGS**GENERAL****1.1 CROSS REFERENCES****General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Structural steel*.

1.2 STANDARDS**General**

Coating: Comply with the requirements of AS/NZS 4680.

Metal finishing

Methods: To AS 1627.

Coating mass/thickness minima: To AS/NZS 4680.

1.3 INSPECTION**Notice**

Inspection: Give notice so that inspection may be made of the following:

- Coating integrity, at the galvanizing plant.

1.4 SUBMISSIONS**Holes and lifting lugs**

General: If holes and lifting lugs are required to facilitate handling, filling, venting and draining during galvanizing, submit details on size and location.

Detailing features

General: If design and fabrication features of the articles to be galvanized may lead to difficulties during galvanizing, identify these and submit details for improvement.

1.5 SITE WORK**Site welding**

Grinding of edges: Permitted.

Weld areas: Reinstate coating.

Site coating reinstatement

Extent: Areas damaged by transport, site welding, site flame cutting, site handling, or erection.

- Method: Wire brush or mechanically buff the surface and apply organic zinc-rich primer in two coats each of 75 µm dry film thickness. Stipple edges of the primed area.
- Paint standard: To AS/NZS 3750.9.
- Surface preparation: To AS 1627.2 and Grade St 3 to AS 1627.9.

0381 STRUCTURAL TIMBER**1 GENERAL****1.1 CROSS REFERENCES****General**

General: Conform to the *General requirements* worksection.

Associated worksections**1.2 STANDARD****General**

Design: To AS 1720.1.

1.3 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given in AS 1720.1 apply.

2 PRODUCTS**2.1 TIMBER****Structural timber**

Natural durability ratings to AS 5604 Table A1 (minimum): Durability class 2, or preservative treated timber of equivalent durability.

Timber grades

Conformance: Appearance grade if exposed to view in the finished work. Otherwise stud grade or lintel grade, as appropriate.

Structural timber grading standards

Hardwood: To AS 2082.

Softwood: To AS 2858.

Mechanical stress grading: To AS/NZS 1748.

Machine proof-grading: To AS 3519.

Identification

Method: Identify timber using branding, certification or both.

Branding: Brand structural timber, under the authority of a recognised product certification program applicable to the product. Locate the brand mark on faces or edges which will be concealed in the works. Include the following data:

- Stress grade.
- Method of grading.
- 'Seasoned' or 's'.
- The certification mark of the product certification program.
- The applicable standard.

Recognised product certification programs:

- Pine framing: Plantation Timber Certification.
- Hardwoods: Australian Timber Industry Certification (ATIC) Quality Scheme.
- Glued-laminated timber: Glued Laminated Timber Association of Australia (GLTAA) Product Certification System.
- Laminated veneer lumber: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.

- Finger jointed structural timber: Plantation Timber Certification.

Certification:

Inspection: If neither branding nor certification is adopted, have an independent inspecting authority inspect the timber.

Marine structural timber

Sawn timber: Minimum requirements:

- Hardwood: Species of durability class 2 and strength group S3.
- Softwood: Preservative treated radiata pine, slash pine, hoop pine or Caribbean pine.
- Grading: Structural Grade No.2 to AS 2082 or AS 2858, as appropriate.

Variations to grading standard:

- No loose gum and resin veins, unsound knots, shakes, or splits.
- Sapwood only if preservative treated.
- No gum or resin pockets on the upper surfaces of decking, kerbs or other horizontal members fully exposed to the weather.
- Hardwood may have sound heart in the central one third cross-section of members with a least dimension greater than 175 mm.
- Heartwood in softwoods limited to 20% of the cross section and 50% of the surface width.

Round timber: To AS 2209.

2.2 STRUCTURAL PLYWOOD

Standard

Standard: To AS/NZS 2269.0.

Bond

Bond: Type A.

Application

Application:

- Bracing unit type:
- Bracing thickness (mm):

Veneer

Veneer quality to visible surfaces: D (minimum).

Face veneer:

- Quality:
- Species:

Back veneer quality:

Stress grade

Stress grade:

Certification

General: Brand panels under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Certification programs:

- Plywood and blockboard: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.
- Wet processed fibreboard, dry processed fibreboard, particleboard and decorative overlay wood panels: Australian Wood Panels Association AWPA JAS-ANZ Scheme.

Plywood certified formaldehyde emission level to AS/NZS 2098.11: E₀.

Wood panel certified formaldehyde emission level to AS/NZS 4266.16: [complete/delete]

2.3 GLUED-LAMINATED TIMBER

Standard

Glued-laminated structural timber: To AS/NZS 1328.1.

Joints

End joints: Scarf or finger joints generally.

- Timbers permitted to be stress grade reduced: Butt joints are permitted.

Camber

Orientation: Install cambered members with the camber up.

Protection from weather

Duration: Provide temporary protection for glued-laminated timber members until permanent covering is in place.

Product

Location:

Timber species:

Appearance grade:

Service class:

Stress grade:

Shape and size (mm):

Direction of laminations:

Preservative treatment:

3 EXECUTION

3.1 STRUCTURAL TIMBER**General**

Preservative treatment: If holes are drilled in treated timber, apply a saturation coating of preservative to the sides of the holes prior to inserting fixings.

Outdoor structures

Sealing: Seal the ends of members with wax emulsion or petroleum jelly immediately after sawing.

Anti splitting plates: Plate the ends of members 250 x 75 mm or larger with pressed or hammer-on galvanized nail plates equal to 50% of the cross-sectional area.

Bolt holes: Treat bolt holes with creosote or copper naphthenate emulsion before inserting the bolt.

Coating: After completion of fabrication, notching and machining, coat joints, holes and notches with a 6 mm layer of copper naphthenate emulsion.

Heart: Place the heart side of bracing members on the inside of joints. Place the heart side of other members on the downside wherever possible.

Bolts: Minimum size M20.

Washers: Minimum size 4 mm thick and 65 mm square or equivalent round area.

Bolt protection: Coat bolts with a bituminous coating before insertion in the bolt hole.

Recessed fixing: For fixings punched or sunk below the surface, fill the recess with a suitable wood filler or mastic.

Finishing: If a protective or decorative finish is required apply one coat of primer and one finishing coat all around before fixing.

0451b WINDOWS AND GLAZED DOORS**1 GENERAL****1.1 AIMS****Responsibilities**

Conform to the **Selections**.

Maintenance

Product design: Provide windows with sashes capable of being opened to satisfy the documented maintenance requirements.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

Manufacturer's documents

Manufacturer's and supplier's documents related to this worksection are:

1.3 STANDARDS**General**

Selection and installation: To AS 2047.

- Building classification:

Glazing

Glass type and thickness: To AS 1288, where no glass type or thickness is nominated.

Materials and installation: To AS 1288.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Terminology for work on glass: To AS/NZS 4668.

2 PRODUCTS**2.1 GENERAL****Standards**

Flashings: To AS/NZS 2904.

Aluminium extrusions: To AS/NZS 1866.

2.2 GLASS**Glass types and quality**

Standard: To AS/NZS 4667.

Glazing plastics

General: Free from surface abrasions, and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glasses

Standard: To AS/NZS 2208.

Standards mark: Required.

Type: Grade A when used in curtain walls.

Heat soaking: Required for toughened glass in curtain walls.

Ceramic coated glass

Heat strengthened or toughened glass with a coloured ceramic coating fused to and made an integral part of the surface: To ASTM C1048, Condition B.

Opacified glass

Glass with an opacifier permanently bonded to the inner face.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)

Standard: To AS/NZS 4667.

Insulating glass units (IGU's)

Selection and installation: To AS/NZS 4666.

2.3 GLAZING MATERIALS**General**

Glazing materials (including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges): Appropriate for the conditions of application and the required performance.

Jointing materials

Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Priming

Apply the recommended primer to the surfaces in contact with sealant materials.

Movement joints

Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

Foamed materials (in compressible fillers and backing rods): Closed-cell or impregnated types which do not absorb water.

Bond breaking: Provide backing rods, and other back-up materials for sealants, which do not adhere to the sealant.

2.4 GLASS IDENTIFICATION**Safety glazing materials**

Identify each piece or panel, to AS 1288.

Noise reducing glazed assemblies

Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

2.5 LOUVRE WINDOW ASSEMBLIES**General**

Description: Provide louvre blades mounted in a metal surround frame or subframe and able to withstand the permissible-stress-design wind pressure for that location without failure or permanent distortion of members, and without blade flutter.

Adjustable louvres

Description: Provide louvre blades clipped into blade holders pivoted to stiles or coupling mullions, linked together in banks, each bank operated by an operating handle incorporating a latching device, or by a locking bar.

2.6 VENTILATING LOUVRE ASSEMBLIES**General**

Description: Provide metal louvre blades mounted in a metal surround frame or subframe and able to withstand the permissible-stress-design wind pressure for that location without failure or permanent distortion of members, and without blade flutter.

Expansion joints

Provide for expansion and contraction in continuous sections (e.g. continuous louvres, interlocking mullions) at spacings not exceeding those recommended by the manufacturer, or 6 m, whichever is the lesser.

Adjustable louvres

Description: Provide louvre blades clipped into blade holders pivoted to stiles or coupling mullions, linked together in banks, each bank operated by an operating handle incorporating a latching device, or by a locking bar.

Framed adjustable louvres

Description: Provide louvre blades beaded into steel blade surround frames (sash) pivoted to pressed steel main frames, linked together in banks, each bank controlled by a proprietary sash operator.

Fixed metal louvres

Provide metal louvre blades mounted in a metal surround frame or subframe, installed as for metal window installations.

Screens

Provide metallic coated steel wire or UPVC mesh screens behind louvres to prevent the entry of vermin, birds, rodents and wind blown leaves and papers.

2.7 ALUMINIUM FRAME FINISHES**Powder coatings**

Standard: To AS 3715.

Grade: Architectural coating.

Anodised

Standard: To AS 1231.

Thickness: ≥ 15 microns to 20 microns.

0452b WINDOW HARDWARE

1 PRODUCTS

1.1 HARDWARE

Hardware documented generically

Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, suitable for use with associated hardware, and fabricated with fixed parts firmly joined.

Locks and latches

Standard: To AS 4145.3.

Performance:

- Durability:
- Keying security:
- Physical security:

Window catches: Provide 2 catches per sash to manually latched awning or hopper sashes over 1000 mm wide.

Sash operators

Provide sash operators in conformance with the **Sash operators schedule**.

2 EXECUTION

2.1 INSTALLATION

Fasteners

Materials: Use materials compatible with the item being fixed and of sufficient strength, size and quality to perform their function.

- Concealed fixings: Provide a corrosion resistant finish.
- Exposed fixings: Match exposed fixings to the material being fixed.

0453b DOORS AND HATCHES**1 GENERAL****1.1 AIMS****Responsibilities**

General: Provide doors, frames, doorsets, security screen doors and fire doorsets as scheduled in **Selections**.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given below apply.

- Balanced construction: A construction of flush doors in which the facings on one side of the core are essentially equal in thickness, grain direction, properties and arrangement to those on the other side of the core. It is such that uniformly distributed changes in moisture content will not cause warpage.
- Door frame: Includes jamb linings.
- Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for operation.
 - . Fire-doorset: A doorset which retains its integrity, provides insulation and limits, if required, the transmittance of radiation in a fire.
 - . Smoke-doorset: A doorset which restricts the passage of smoke.
- Flush door: A door leaf having two plane faces which entirely cover and conceal its structure. It includes doors with intermediate rail, cellular, blockboard and particleboard cores.
 - . Solid core door: A flush door with a solid core continuous between stiles and rails or edge strips and fully bonded to the faces.
- Joinery door: A door leaf having either stiles and rails, or stiles, rails and muntins, framed together. A joinery door may also incorporate glazing bars.
 - . Louvred door: A joinery door in which the panel spaces are filled in with louvre blades.
 - . Panelled door: A joinery door with spaces filled in with panels including glass.

1.4 INSPECTION**Notice**

Inspection: Give sufficient notice so that inspection may be made of the following:

- Door frames in place before building in to masonry.
- Door frames installed before fixing trim.

1.5 SUBMISSIONS**Type tests**

General: Submit type-test certification complying with the following standards to verify conformance with the **Doorsets performance schedule**:

- Fire and smoke doors: To AS 1905.1 and BCA Spec C3.4.
- Weighted sound reduction index (R_w): To AS/NZS 1276.1 or ISO 71-1.

2 PRODUCTS

2.1 FRAMES

Aluminium frames

General: Assembled from aluminium sections, including necessary accessories such as buffers, pile strips, strike plates, fixing ties or brackets and cavity flashing, with suitable provision for fixing nominated hardware.

Timber frames

Hardwood: To AS 2796.1.

- Grade: Select.

Softwood: To AS 4785.1.

- Grade: Select.

Joints:

- Morticed head and through tenons.
- Trenched head:
 - . Bare faced tenons on jambs.
 - . Full let-in jambs.

Steel frames

General: Continuously welded from metallic-coated steel sheet sections, including necessary accessories such as buffers, strike plates, spreaders, mortar guards, switch boxes, fixing ties or brackets, and cavity flashing with suitable provision for fixing hardware and electronic security assemblies, and prefinished with a protective coating.

Finish: Grind the welds smooth, cold galvanize the welded joints and shop prime.

Hardware and accessories: Provide for fixing hardware including hinges and closers, using 4 mm backplates and lugs. Screw fix the hinges into tapped holes in the back plates.

Base metal thickness:

- General: ≥ 1.1 mm.
- Fire rated doorsets: ≥ 1.4 mm.
- Security doorsets: ≥ 1.6 mm.

Metallic-coated steel sheet: To AS 1397.

- Metallic-coating: Zinc-iron.

2.2 DOORS

Standards

Materials: To the following:

Decorative laminated sheets: To AS/NZS 2924.1.

- Wet processed fibreboard (including hardboard): To AS/NZS 1859.4.
- Dry processed fibreboard (including medium density fibreboard): To AS/NZS 1859.2.
- Particleboard: To AS/NZS 1859.1.
- Plywood and blockboard for interior use: To AS/NZS 2270.
- Plywood and blockboard for exterior use: To AS/NZS 2271.
- Seasoned cypress pine: To AS 1810.
- Timber – hardwood: To AS 2796.1.
- Timber – softwood: To AS 4785.1.

Certification

General: Brand panels under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Certification programs:

- Plywood and blockboard: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.

- Wet processed fibreboard, dry processed fibreboard, particleboard and decorative overlay wood panels: Australian Wood Panels Association AWPAS JAS-ANZ Scheme.

Plywood certified formaldehyde emission level to AS/NZS 2098.11:

Wood panel certified formaldehyde emission level to AS/NZS 4266.16:

General

Doors: Proprietary products manufactured for interior or exterior applications and for the finish required.

Flush doors

General: Of balanced construction.

Cellular core and intermediate rail core flush doors:

- Provide a subframe of 25 mm minimum width timber around openings for louvres and glazing.
- Provide additional material to take hardware, fastenings and grooves.
- Cut outs: If openings are required in flush doors (e.g. for louvres or glazing) make the cut outs not closer than the width of the stiles at the edges of the doors.

Solid core: Solid flush doors as follows:

- Flush door with blockboard: Core plate of timber strips laid edge to edge, fully bonded to each other and to facings each side of no less than two sheets of timber veneer.
- Single thickness of moisture resistant general purpose medium density fibreboard.

Smoke doors: Solid core ≥ 35 mm thick.

Construction

Adhesives:

- Internal: To AS/NZS 2270.
- External: To AS/NZS 2271.

Door thickness:

- General: 35 mm.
- External doors and doors over 900 mm wide: 40 mm.

Edge strips: Fix to stiles. Minimum thickness 10 mm. Increase overall thickness to > 15 mm to accommodate the full depth of the rebate in rebated doors. Form rebates to suit standard rebated hardware. Bevel square edged doors as necessary to prevent binding between the leaves.

Louvre grilles: Construct by inserting the louvre blades into a louvre frame, and fix the frame into the door.

Double doors

Rebated meeting stiles: Provide rebated meeting stiles or fix equivalent metal 'T' stop to one leaf unless the doors are double acting. Chamfer square edged doors as necessary to prevent binding between the leaves.

Tolerance

Squareness: The difference between the lengths of diagonals of a door: ≤ 3 mm.

Twist: The difference between perpendicular measurements taken from diagonal corners: ≤ 3 mm.

Nominal size (mm):

- Height: + 0, - 2.
- Width: + 0, - 2.

2.3 DOORSETS

Automatic sliding door assemblies

Standard: To AS 5007.

Arrangement: Conform to the **Automatic door schedule**.

Control systems: Refer to *Door hardware*.

Duct hatches

General: Proprietary products comprising metal-faced doors side hung to steel door frames, inclusive of the necessary hardware and accessories including hinges and lock and lugs or other suitable means for installation.

Fire-resistant doorsets

Standard: To AS 1905.1 and BCA Spec C3.4.

Floor hatches

Frame: Weld from 50 x 50 x 6 mm angle, with two 40 mm coggled fixing lugs each side and shop prime.

Covers: 6.5 mm chequer plate, with 40 x 40 x 6 mm angle frame welded on all round and 32 x 6 mm diagonal stiffening flats. Cut, radius and grind off 100 x 25 mm lifting slots in each end of covers.

Revolving doorsets

Standard: To AS 5007.

Arrangement: Conform to the **Automatic door schedule**.

Control systems: Refer to *Door hardware*.

Security screen doorsets

Standard: To AS 5039.

Arrangement: Conform to the **Security screen doors construction schedule**.

Bushfire screens and doors

Standard: To AS 3959.

Protection: Protect openings from the ingress of embers.

2.4 ANCILLARY MATERIALS

Trims

Timber: Solid timber at least 19 mm thick, mitred at corners.

Extruded gaskets and seals

General: Non cellular (solid) elastopressive seals as follows:

- Flexible polyvinyl chloride (PVC): To BS 2571, 100% solids with high consistency, ultra-violet stabilised.
- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255.1.

Flashings

General: Corrosion resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

Standard: To AS/NZS 2904.

Jointing materials

General: Compatible with each other and with the contact surfaces and non staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Nylon brush seals

General: Dense nylon bristles locked into galvanized steel strips and fixed in a groove in the edge of the door or in purpose-made anodised aluminium holders fixed to the door with double sided PVC foam tape.

Pile weather strips

General: Polypropylene or equivalent pile and backing, low friction silicone treated, ultra-violet stabilised.

Standard: To AAMA 701/702.

Weather bars

General: Provide a weather bar under hinged external doors, locate under the centres of closed doors.

Type: [complete/delete]

3 EXECUTION

3.1 FRAMES

General

Frames: Install so that the frames are as follows:

- Plumb, level, straight and true.
- Adequately fixed or anchored to the building structure.
- Will not carry any building loads, including loads caused by structural deflection or shortening.

Aluminium frames

Building in to masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Screw once to studs at each fixing.

Frame fixing

Brackets: Metallic-coated steel:

- Width: ≥ 25 mm.
- Thickness: ≥ 1.5 mm.

Depth of fixing for building into masonry:

- Brackets: ≥ 200 mm.
- Expansion anchors: ≥ 50 mm.
- Plugs: ≥ 50 mm.
- Rods: ≥ 60 mm.

Heads of fasteners: Conceal where possible, otherwise sink the head below the surface and fill the sinking flush with a material compatible with the surface finish.

Jamb fixing centres: ≤ 600 mm.

Joints

General: Make accurately fitted joints so that no fasteners, pins, screws, adhesives and pressure indentations are visible on exposed surfaces.

Steel frames

Building in to masonry: Attach galvanized steel rods to jambs, build in and grout up.

Fixing to masonry openings: Build in hairpin anchors and install locking bars, or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Attach galvanized steel brackets to jambs and screw twice to studs at each fixing.

Timber frames

Building in to masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Back screw twice to jambs at each fixing.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, drips, storm moulds, caulking and pointing to prevent water from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

Finishing

Trim: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the door frames. Install to make neat and clean junctions between the frame and the adjoining building surfaces.

3.2 DOORS**Priming**

General: Prime timber door leaves on top and bottom edges before installation.

3.3 DOORSETS**Security screen doorsets**

Standard: To AS 5040.

3.4 COMPLETION

Operation

General: Ensure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

Protection

Temporary coating: On or before completion of the works, or before joining up to other surfaces, remove all traces of temporary coatings used as a means of protection.

0455 DOOR HARDWARE

1 GENERAL**1.1 AIMS****Responsibilities**

General: Provide door hardware in conformance with **Selections**.

Handing: Before supply, verify on site, the correct handing of hardware items.

Hardware **specified generically**: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, suitable for use with associated hardware, and fabricated with fixed parts firmly joined.

Operation: Ensure working parts are accurately fitted to smooth close bearings, without binding or sticking, free from rattle or excessive play, lubricated where appropriate.

Supply

Delivery: Deliver door hardware items, ready for installation, in individual complete sets for each door, as follows:

- Clearly labelled to show the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, fixings and fixing instructions.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 INTERPRETATIONS**Abbreviations and definitions**

General: For the purposes of this worksection the abbreviations and definitions given below apply.

Abbreviation	Term	Definition
KD	Keyed to differ	Each lock has a unique key which will operate that lock only.
KA	Keyed alike	All locks in the group will pass the same key, but that key will not operate any locks outside the group.
MK	Master keyed	The master key will operate all the locks in the MK group, in addition to their KD or KA keys.
GMK	Grandmaster keyed	The grandmaster key will operate all the locks in the group, in addition to their KD, KA or MK keys.
GGMK	Great Grandmaster keyed	The great grandmaster key will operate all the locks, in addition to their KD, KA, MK or GMK keys.
MAIS K	Maison keyed	The key to each occupancy unit or room will not operate the lock of another occupancy unit, but will operate the lock of a shared door. e.g. Main entry door, service room or space.

1.4 SUBMISSIONS**Samples**

Generic items: Submit samples of hardware items offered as meeting the description of items not specified as proprietary items.

Particular samples required:**Key control System**

New works: Submit details of the proprietary key control security system proposed by the lock manufacturer for locks required to accept a group key (master, grandmaster).

Alterations and additions: Submit details to extend the existing key control security system for locks required to accept a group key.

Subcontractors

Automatic door operators: Submit names and contact details of proposed supplier and installer.

Pressure floor mat: Submit names and contact details of proposed supplier and installer.

Record documents

Door hardware schedule: Submit an amended schedule, prepared by the door hardware supplier, showing changes to the contract door hardware schedule caused as follows:

- By the approval of a hardware sample.
- By the acceptance of an equivalent to a specified proprietary item.
- By a contract variation to a door hardware requirement.

Keys

Key codes: Submit the lock manufacturer's record of the key coding system showing each lock type, number and type of key supplied, key number for re-ordering, and name of supplier.

Keys: For locks keyed to differ and locks keyed alike, verify quantities against key records, and deliver to the contract administrator at practical completion.

2 PRODUCTS**2.1 HINGES****Butt hinge sizes**

Conform to tables as follows:

- Timber doors in timber or metal frames: **Hinge table A.**
- Aluminium framed doors in aluminium frames: **Hinge table B.**
- Cupboard doors: Not included in hinge tables.

General: Length (l) is the dimension along the knuckles, not including hinge tips, if any, and width (w) is the dimension across both hinge leaves when opened flat.

Butt hinge materials**Timber doors in timber or steel frames:**

- **Material:**
- **Product:**

Aluminium framed doors in aluminium frames:

- **Material:**
- **Product:**

Doors fitted with closers: Provide low friction ball bearing hinges.

Fire doors: To AS 1905.1.

Power transfer hinges: Ensure they do not assume any load and are installed with other compatible hinges.

2.2 HINGE TABLES**Hinge table A**

Application: Solid core doors and can be used to determine the quantity of hinges required for the nominated door leaf sizes and weights only. For door leaf sizes not specified or with applied finishes use the weight of the door to determine the quantity of hinges required. For door leafs over 80 kg, nominate pivot hinges.

Applied finishes could include stainless steel cladding, lead lining or stone facing.

The size of the hinge is determined by the door leaf thickness:

- 35 - 43 mm thick door: 100 x 75 mm # butt hinges with a minimum thickness of 2.5 mm.
- 44 - 55 mm thick door: 100 x 100 mm # butt hinges with a minimum thickness of 2.5 mm.
- > 55 mm thick door: Refer to the door by door hardware schedule.

Hinge pin: The symbol # refers to the pin type. Supply fixed pins to doors opening out or designated as a security doors.

Wide throw: If necessary, provide wide throw hinges to achieve the required door swings in the presence of obstacles such as nibs, deep reveals and architraves.

It is not recommended that wide throw hinges be used. Consider detailing doors to avoid wide throw hinges by ensuring the skirting is behind the plane of the hinge knuckles.

Hinge table A

Nominal door leaf size l x w x th (mm)	Door leaf weight (kg - approx)	Number of hinges
2040 x 400 x 35	≤ 19	2
2040 x 600 x 35	≤ 29	2
2040 x 720 x 35	≤ 35	3
2040 x 820 x 35	≤ 39	3
2040 x 920 x 35	≤ 44	3
2040 x 1020 x 35	≤ 49	4
2040 x 720 x 40	≤ 37	3
2040 x 820 x 40	≤ 42	3
2040 x 920 x 40	≤ 48	3
2040 x 1020 x 40	≤ 52	4
2040 x 720 x 50	≤ 45	3
2040 x 820 x 50	≤ 50	3
2040 x 920 x 50	≤ 57	3
2040 x 1020 x 50	≤ 68	4
2400 x 720 x 40	≤ 50	4
2400 x 820 x 40	≤ 52	4
2400 x 920 x 40	≤ 55	4
2400 x 1020 x 40	≤ 60	4
2400 x 1220 x 50	≤ 72	5
2040 x 920 x 70	≤ 88	Nominate pivot hinges

Hinge table B

Application: Aluminium hinges for aluminium doors, or for doors of other materials in aluminium frames.

Nominal hinge size l x w x t (mm)	Door leaf weight (kg – approx)	Minimum construction	
		Knuckles	Screws/hinge leaf
100 x 70 x 3	≤ 30	3	3
100 x 80 x 3.5	≤ 50	5	4
130 x 50 x 3.4	≤ 75	Interfold	3

2.3 DOOR HANGING SYSTEMS

General

General: Provide sliding door tracks in conformance with the **Sliding track schedule**.

2.4 LOCK AND LATCH CLASSIFICATION

Mechanical locksets

Standard: To AS 4145.2.

Performance:

- Durability:
 - . General door type or location:
- Durability:
 - . General door type or location:
- Physical security:
- Keying security:

Padlocks

Standard: To AS 4145.4.

Performance:

- Corrosion resistance:
- Durability:
- Security:
- Keying security:

2.5 ANCILLARIES

Bolts

General: Provide bolts including barrel bolts, flush bolts and tower bolts with keepers, including lock plates, staples, ferrules or floor sockets.

Mortar guards

General: For steel door frame installations, provide mortar guards designed to enable the full extension of the lock tongue or similar devices and the correct operation of the locking mechanism.

Rebated doors

General: For mortice locks or latches to rebated doors, provide purpose-made rebated pattern items.

Strike plates

General: Use strike plates provided with the locks or latches. Do not provide 'universal' strike plates.

2.6 DOOR CONTROLLERS

General

Performance: Provide door controllers, pivots, floor or overhead door closers, and automatic door operators, which are suitable for the door type, size, weight and swings required and the operating conditions, including wind pressure.

Automatic door operators

Description: Provide complete automatic door operators for opening and closing doors, including door hanging (hinges, pivots or sliding gear) and electrical connection to distribution board.

- Access key switch:
- Automatic activation options:
- Manually adjustable function:
- Operation mode:
- Power failure:

Installation: Provide necessary recesses and cores, grout in components where required, and make good. Provide cover plates for access to units in door heads, frames or transoms.

Automatic adjustable function: If the door opening angle or width is manually set below the maximum possible, under conditions of continuous traffic the doors must automatically creep to full opening, returning to reduced opening on the next cycle.

Radio remote door controllers: Provide a device, comprising a radio receiver and separate transmitter, for activating a motorised door operator so as to open and close the door by remote radio signal.

Key switch: If there is no separate access to the enclosure, provide a key switch mounted externally for opening and closing the door from outside the enclosure without the transmitter. Provide two keys.

Light: Provide an internal light which any signal to the receiver also switches on and which remains on for not less than 2 minutes and switches off automatically.

Receiver: House within a wall unit incorporating a push-button switch permanently illuminated. Mount within the enclosure and connect to power.

Transmitter: Portable battery-powered unit sending a coded signal effective up to not less than 12 m from the receiver.

Pressure floor mats: Automatic door activating system consisting of a mat which when deflected by foot pressure operates a switch which activates the door or doors.

Floor mat mounting:

Closers

Hinged and pivot doors:

- Fire rated doors: Provide closers tested and certified for use as components of fire door assemblies:
 - . Standard: To AS 1905.1.

2.7 ELECTRONIC CONTROL DEVICES

General

General: Provide electric strikes, electric locks, drop bolts, or similar devices to suit door construction and hardware.

Fail-safe: Connect door control devices in a fail-safe mode to permit egress in the event of power failure.

Authorised products: Provide equipment listed in the CSIRO CMSE ActivFire Register of Fire Protection Equipment.

Glass doors: Provide tumbler, drop bolts or magnetic holders.

Double leaf doors (solid frame): Provide an electric strike or lock on the fixed leaf, connected to the door frame by concealed flexible wiring.

Activation

Activation device: Provide keypads, card readers or other activation devices, and locate next to entry points.

External: Provide weatherproof (IP56) hoods or housings for external units.

Mounting height: 1200 mm from floor level.

0461b GLAZING

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.2 STANDARDS

Glazing

Glass type and thickness: To AS 1288, where no glass type or thickness is nominated.

Materials and installation: To AS 1288.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Terminology for work on glass: To AS/NZS 4668.

2 PRODUCTS

2.1 GLASS

Glass types and quality

Standard: To AS 1288 and AS/NZS 4667.

Glass and glazing materials

Glass and glazing materials generally: Free from defects which detract from appearance or interfere with performance under normal conditions of use.

Glazing plastics: Free from surface abrasions, and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glasses

Standard: To AS/NZS 2208.

Standards mark: Required.

Type: Grade A when used in curtain walls.

Heat soaking: Required for toughened glass in curtain walls.

Insulating glass units (IGU's)

Selection and installation: To AS/NZS 4666.

2.2 GLAZING MATERIALS

General

Glazing materials (including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges): Appropriate for the conditions of application and the required performance.

Jointing materials

Compatibility: Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Glazing tapes

Standards: To AAMA 800, Products coded 804.3, 806.3, 807.3, as applicable.

Elastomeric sealants

General: Provide elastomeric sealants in conformance with the **Elastomeric sealant schedule**.

2.3 GLASS IDENTIFICATION

Safety glazing materials

Identification: Identify each piece or panel, to AS 1288.

Noise reducing glazed assemblies

Identification: Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

0501 DEMOLITION (INTERIOR AND ALTERATIONS)
--

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.2 STANDARD

General

Demolition: To AS 2601.

1.3 INTERPRETATION

Definitions

For the purposes of this worksection, the following definitions apply:

- Demolition: The complete or partial dismantling of a building or structure, by pre-planned and controlled methods or procedures.
- Dilapidation record: The photographic or video and written record made before commencement of demolition work of the condition of the portion of the existing building being retained, adjacent buildings, and other relevant structures or facilities.
- Dismantle: The reduction of an item to its components in a manner to allow re-assembly.
- Recover: The disconnection and removal of an item in a manner to allow re-installation.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Services before disconnection or diversion.
- Contents of building before commencement of demolition.
- Site after removal of demolished materials.
- Services after reconnection or diversion.

Records

Dilapidation record: Submit a copy of the dilapidation record for inspection.

Recycling

Delivery location: Submit the name and address of the proposed recycling facility.

2 EXECUTION

2.1 SUPPORT

Temporary support

General: If temporary support is required, certification for its design and installation is required from a professional engineer engaged by the contractor.

Existing buildings: Until permanent support is provided, provide temporary support for sections of existing buildings which are to be altered and which normally rely for support on work to be demolished.

2.2 PROTECTION

Encroachment

General: Prevent the encroachment of demolished materials onto adjoining property, including public places.

Dust protection

General: Provide dust-proof screens, bulkheads and covers to protect existing finishes and the immediate environment from dust and debris.

Security

General: If a wall or roof is opened for alterations and additions, provide security against unauthorised entry to the building.

Temporary screens

General: Fill the whole of designated temporary openings or other spaces using dust and weatherproof temporary screens, fixed securely to the existing structure, and install to ensure appropriate shedding of water to avoid damage to retained existing elements or adjacent structures and contents.

Type: Timber framed screens sheeted with fibre cement and painted. Seal the junctions between the screens and the openings.

Designated openings: [complete/delete]

Temporary access

General: Provide a substantial temporary doorset fitted with a rim deadlock, and remove on completion of demolition.

2.3 DEMOLITION

Dilapidation record

Purpose: Use the dilapidation record to assess the damage and making good arising out of demolition work.

Availability: Keep the records of the investigations on site and available for inspection until practical completion of the contract.

Concrete slabs

General: Using a diamond saw, neatly cut back or trim to new alignment with a clean true face existing concrete slabs to be partially demolished or penetrated.

Explosives

General: Do not use explosives.

2.4 HAZARDOUS MATERIALS

General

General: Hazardous materials that have already been identified are set out in the **Identified hazardous materials schedule**.

Hazardous materials

General: Give notice immediately hazardous materials or conditions are found, including the following:

- Asbestos or material containing asbestos.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Tanks or other containers which have been used for storage of explosive, toxic, infective or contaminated substances.

Asbestos removal

Method: Use wet removal methods as recommended in the Code of Practice for the Removal of Asbestos (NOHSC 2002), including Part 4 for insulation and lagging, and Part 9 for asbestos cement.

Monitoring: Have dust monitoring performed by an independent testing authority.

2.5 COMPLETION**Notice of completion**

General: Give at least 7 working days' notice of completion of demolition so that adjacent structures may be inspected following completion of demolition.

Making good: Make good any damage arising out of demolition work. Obtain written acceptance from the owner of each adjoining property of completeness and standard of making good.

Temporary support

General: Clear away at completion of demolition.

0511b LINING

3 GENERAL

3.1 AIMS

Responsibilities

General: Provide internal lining systems to the **Selections**.

3.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

3.3 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of substrate or framing before installation of linings.

3.4 TOLERANCES

Surface

Flatness, twist, winding and bow: ≤ 1.5 mm deviation from a 1.5 m straightedge placed in any position.

4 PRODUCTS

4.1 MATERIALS AND COMPONENTS

Plasterboard

Standard: To AS/NZS 2588.

Fibre cement

Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B category 2.

Minimum thickness: 4.5 mm.

Plywood and blockboard

Interior use: To AS/NZS 2270.

Exterior use: To AS/NZS 2271.

Visible surfaces with a clear finish: Veneer quality A.

Other visible surfaces: Veneer quality B.

Back/face veneer: Veneer quality C or D.

Bond: Type A.

- Preservative treatment (if applicable):

Presealed plywood: Plywood pre-sealed both sides and edges with a machine applied sealer.

Wet processed fibreboard (including hardboard)

Standard: To AS/NZS 1859.4.

- Interior use generally: General purpose.

. Bending strength:

- Interior use heavy duty: Tempered (MR).

. Bending strength:

- Interior moisture area: Tempered (MR).

- . Bending strength:
- Veneered hardboard: General purpose with a timber face veneer bonded to one side.
- . Bending strength:
- . Surface finish:
- . Thickness (mm):

Wet processed fibreboard (including softboard): To AS/NZS 1859.4.

- Surface finish:
- Edge finish:
- Bending strength:
- Thickness (mm):

Dry-processed fibreboard (including medium density fibreboard)

Standard: To AS/NZS 1859.2.

Melamine overlaid medium density fibreboard: Medium density fibreboard (STD MDF) overlaid on both sides with low pressure melamine.

Decorative overlaid wood panels

Standard: To AS/NZS 1859.3.

Certification

General: Brand panels under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Certification programs:

- Plywood and blockboard: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.
- Wet processed fibreboard, dry processed fibreboard, particleboard and decorative overlay wood panels: Australian Wood Panels Association AWPAA JAS-ANZ Scheme.

Plywood certified formaldehyde emission level to AS 2098.11:

Wood panel certified formaldehyde emission level to AS 4266.16:

High pressure decorative laminate sheet

Standard: To AS/NZS 2924.1.

Coated steel

Standard: To AS 1397.

Fasteners

Steel nails: Hot dip galvanized.

Adhesives

For wallboards: Gunnable synthetic rubber/resin based mastic contact adhesive formulated for bonding flooring and wallboards to a variety of substrates.

Sealants

Fire rated sealant: Non-hardening sealant compatible with the materials to be sealed and having a fire rating equal to that of the partition it seals.

Acoustic sealant: Non-hardening sealant compatible with the materials to be sealed and having a specific gravity of not less than 1.5 gm/cubic centimetre and of 100% polyurethane mastic.

4.2 CEILING ACCESS

General

Location: Provide personnel access ways to each separate ceiling space.

Size (mm): [complete/delete]

Type: [complete/delete]

Material: Match adjacent ceiling.

Opening size: Maximise the space available within a 600 x 600 mm ceiling grid.

4.3 TRIM

General

General: Provide trim such as beads, mouldings and stops to make neat junctions between lining components, finishes and adjacent surfaces.

Timber trim

Hardwood: AS 2796.1.

- Grade: [complete/delete]

Cypress pine: AS 1810.

Softwood: To AS 4785.1.

- Grade: To AS 4785.2.

0522b PARTITIONS – FRAMED AND LINED

1 GENERAL

1.1 AIMS**Responsibilities**

General: Provide internal lining systems to the **Selections**.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 INSPECTION**Notice**

Inspection: Give notice so that inspection may be made of wall framing before installation of linings.

1.4 TOLERANCES**General**

Flatness, twist, winding and bow: Maximum 1.5 mm deviation from a 1.5 mm straightedge placed in any position.

2 PRODUCTS

2.1 LIGHT STEEL FRAMES**Wall framing**

General: Proprietary framing system of folded steel strip lipped studs and channel section top and bottom tracks and noggings.

Sections and members: To AS/NZS 4600.

Finish: Hot dip zinc coating to AS 1397.

2.2 TIMBER FRAMES**Wall framing**

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

Timber species or group: Radiata pine.

Seasoning: Required.

Stress grade: F5 to AS/NZS 1748.

2.3 LINING**Plasterboard**

Standard: To AS/NZS 2588.

Fibre cement

Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B Category 2.

Minimum thickness: 4.5 mm.

Accessories and trim

General: Provide accessories and trim necessary to complete the installation.

Adhesives

General: Provide adhesives of types appropriate to their purpose, and apply them so that they transmit the loads imposed, without causing discolouration of finished surfaces.

2.4 TIMBER FRAMES**Moisture content**

General: Do not commence construction of wall framing unless the moisture content of the timber has been tested to AS 1080.1 and values obtained as follows:

- Airconditioned buildings: 8 to 10%.
- Intermittently heated buildings: 10 to 12.5%.
- Unheated buildings: 12 to 15%.

Wall framing

General: Construct wall frames to AS 1684.4 Section 6 as appropriate for internal walls.

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

2.5 PLASTERBOARD LINING**Supports**

General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

- Where framing member spacing exceeds the recommended spacing.
- Where direct fixing of the plasterboard is not possible due to the arrangement or alignment of the framing or substrate.
- Where the lining is the substrate for tiled finishes.

Transverse walls: Locate noggings as follows:

- At least 150 mm from the horizontal joint.
- Ensure that noggings do not protrude beyond the face of studs.

Installation

Gypsum plasterboard and fibre reinforced gypsum lining: To AS/NZS 2589.

Wet areas: Do not use adhesive fixing alone.

Multiple sheet layers

Application: Fire rated and acoustic rated walls.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200 mm.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Butt joints: Make joints over framing members or otherwise provide back blocking.

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

Dry joints: Provide square edged sheet and finish with a UPVC joining section.

Control joints: Install purpose-made metallic-coated control joint beads at not more than 12 m centres in walls and ceilings and to coincide with structural movement joints.

Wet areas: Install additional supports, flashings, trim and sealants as required.

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

2.6 FIBRE CEMENT LINING**Supports**

General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

- Where framing member spacing exceeds the recommended spacing.
- Where direct fixing of the fibre cement is not possible due to the arrangement or alignment of the framing or substrate.
- Where the lining is the substrate for tiled finishes.

Installation

General: Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

Timber framed construction: Nail only or combined with adhesive.

Steel framed construction: Screw only or combined with adhesive.

Wall framing:

- Do not fix to top and bottom plates or noggings.
- In tiled areas: Provide an extra row of noggings immediately above wall-to-floor flashings. Fix sheet at 150 mm centres to each stud and around the perimeter of the sheet.

Masonry wall construction:

- Fix using adhesive direct to masonry, but do not fix direct to masonry as a substrate for tiled finish.
- Fix to furring channels using screw or screw and adhesive.

Ceilings: Fix using screw or screw and adhesive to ceiling furring members. Do not fix sheets to the bottom chords of trusses.

Wet areas: Do not use adhesive fixing alone.

Multiple sheet layers

Application: Fire rated and acoustic rated walls.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200 mm.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

- Movement joints in walls: Position a stud parallel to the joint on each side.
 - Movement joints in ceilings and soffits: Provide movement joints to divide ceilings into bays not larger than 10.8 x 7.2 m and soffit linings into bays not larger than 4.2 x 4.2 m or 5.4 x 3.6 m.
- Provide framing parallel to the joint on each side. Do not fix the lining to abutting building surfaces.

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

Dry joints: Provide square edged sheet and finish with a UPVC joining section.

Control joints: Provide purpose-made metallic-coated control joint beads at ≤ 7.2 m centres in walls and ceilings and to coincide with structural movement joints.

Wet areas: Provide additional supports, flashings, trim and sealants as required.

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

- Movement joints: Space to suit joints required in tiling.
- Internal corners: Reinforce with metallic-coated steel angles. In corners subject to continuous moisture, flash over the angle and under the sheeting with continuous bitumen coated aluminium flashing.

2.7 TRIMS**General**

General: Provide trim such as beads, mouldings and stops to make neat junctions between lining components, finishes and adjacent surfaces.

Timber trim

Hardwood: AS 2796.1.

- Grade: [complete/delete]

Cypress pine: AS 1810.

Softwood: To AS 4785.1.

- Grade: To AS 4785.2.

Dry processed fibreboard (including medium density fibreboard)

Standard: To AS/NZS 1859.2.

2.8 COMPLETION**Protection**

General: Protect existing work from during the installation and make good any damage. Provide temporary coverings if necessary.

0524 PARTITIONS – GLAZED**1 GENERAL****1.1 AIMS****Responsibilities**

General: Provide glazed partitions to the **Selections**.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 DESIGN**Glass type and thickness**

Standard: To AS 1288, where no glass type or thickness is given.

1.4 STANDARD**Glazing**

Materials and installation: To AS 1288.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Terminology for work on glass: To AS/NZS 4668.

Laminated and toughened glass process: To AS/NZS 4667.

1.5 INSPECTION**Notice**

Inspection: Give sufficient notice so that inspection may be made at the following stages:

- Commencement of glazed partition installation.
- Openings prepared to receive internal windows.
- Framed and lined partitions ready to receive the framed and glazed component.

1.6 TESTS**Weighted sound reduction index (R_w) type-tests**

Proprietary double glazed systems: Interpolation between test results for similar systems is acceptable provided as follows:

- Dimensional (thickness or width) differences do not exceed a ratio of 1:1.5.
- Each tested system differs from the proposed system by not more than one variable of one of the following elements:
 - . Cavity: Width dimension.
 - . Cavity reveal: Acoustic absorption treatment.
 - . First panel: Glass type, glass thickness.
 - . Mounting: Type, seal type.
 - . Second panel: Glass type, glass thickness.

1.7 SUBMISSIONS**Samples**

General: Submit samples, each at least 200 x 200 mm, showing specified visual properties and the range of variation, if any, for each of the following types of glass or glazing plastics:

- Tinted or coloured glass or glazing plastics.
- Surface modified or surface coated glass.
- Patterned or obscured glass or glazing plastics.
- Ceramic coated glass.
- Wired glass.
- Mirror glass.

Framing systems: Submit samples as follows:

- Prefinished production extrusions showing the limits of the range of variation in the selected finish.
- Joints made by proposed techniques.

Shop drawings

General: Submit shop drawings showing the following information:

- Full size sections of members.
- Glazing details.
- Junctions and trim to adjoining surfaces.
- Layout (sectional plan and elevation) of the window assembly.
- Methods of assembly.
- Provision for expansion.
- Clearances and tolerances.
- Glass processing as required for fixing hardware to frameless glass doors.

Subcontractors

General: Submit names and contact details of proposed manufacturers and installers.

Materials and components

Noise reducing glazed assemblies: Submit a certificate from an independent testing authority showing that the glazed assemblies comply with the specified weighted sound reduction index (R_w).

2 PRODUCTS

2.1 FRAMES

Standards

Aluminium extrusions: To AS 1866.

2.2 GLASS

Glass types and quality

Standard: To AS/NZS 4667.

Glazing plastics

General: Free from surface abrasions, and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glazing materials

Standard: To AS/NZS 2208.

Bullet-resistant glazing panels

Standard: To AS/NZS 2343.

Classification:

Panel materials:

Panel opacity:

Standards mark: Required.

Safety glasses

Standard: To AS/NZS 2208.

Standards mark: Required.

Type: Grade A.

Ceramic coated glass

General: Heat strengthened or toughened glass with a coloured ceramic coating fused to and made an integral part of the surface.

Opacified glass

General: Glass with an opacifier permanently bonded to the inner face.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)

Standard: To ASTM C1048.

2.3 GLAZING MATERIALS**General**

Glazing materials (including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges): Appropriate for the conditions of application and the required performance.

Jointing materials

General: Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Glazing tapes

Standards: To AAMA 800, Products coded 804.3, 806.3, 807.3, as applicable.

Extruded gaskets and seals

Type: Non cellular (solid) elastopressive seals.

Location or function:

Material:

- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255-1.
- Flexible polyvinyl chloride (PVC): To BS 2571, E type compounds, colour fastness grade B.

2.4 GLASS IDENTIFICATION**Safety glazing materials**

General: Identify each piece or panel, to AS 1288.

Noise reducing glazed assemblies

General: Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

Bullet-resistant panels

Marking: To AS/NZS 2343.

2.5 ALUMINIUM FRAME FINISHES**Powder coatings**

Product:

Type:

Colour:

Anodised

Thickness: 20 microns.

Colour:

0611 PLASTERING

3 GENERAL

3.1 AIMS**Responsibilities**

General: Provide plaster finishes as follows:

- Resistant to impacts expected in use.
- Free of irregularities.
- Consistent in texture and finish.
- Firmly bonded to substrates for the expected life of the application.
- As a suitable substrate for the nominated final finish.

Selections: Conform to the **Selections**.

3.2 CROSS REFERENCES**General**

General: Conform to the General requirements worksection.

Associated worksections

Associated worksections: Conform to the following:

0612b CEMENTITIOUS TOPPINGS

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide cementitious toppings in conformance with **Selections** and as follows:

- If floating, without edge curl.
- If bonded, without drummy areas.
- Without obvious shrinkage cracks.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 TOLERANCES

General

Thickness: Deviation from the stated thickness:

- Thickness < 15 mm: 2 mm.
- Thickness $\geq 15 < 30$ mm: 5 mm.
- Thickness ≥ 30 mm: 10 mm.

Flatness deviation: Measured under a 3000 mm straightedge laid in any direction on a plane surface:

- Class A: < 3 mm.
- Class B: $\geq 3 < 5$ mm.

2 PRODUCTS

2.1 PRODUCTS

Admixtures

Standard: To AS 1478.1.

Aggregates

Standard: To AS 2758.1.

Coarse aggregate: To be nominal single size $\leq 1/3$ topping thickness.

Fine aggregate: To be fine, sharp, well-graded sand with a low clay content and free from efflorescing salts.

Bonding products

General: To be proprietary products manufactured for bonding cement-based toppings to concrete substrates.

Cement

Standard: To AS 3972.

- Type: SL.

Colouring products

General: To be proprietary products manufactured for colouring cement toppings.

Integral pigment proportion: $\leq 10\%$ by mass of cement.

Concrete

Standard: To AS 1379.

Topping not reinforced:

- Class: Normal.

Reinforced topping: Conform to the **Reinforced topping table**.

Reinforced topping table

Exposure location	Strength grade	Cover to reinforcement
Internal + External > 50 km inland and non-industrial and non-tropical	N25	20 mm
External > 50 km inland and tropical + External near coastal > 1 km < 50 km	N32	30 mm
External coastal < 1 km but not in the splash zone	N40	35 mm

Reinforcement

Standard: To AS/NZS 4671.

Mesh sizes for joint spacing as follows:

- SL 42: Up to 3 m internal, 2 m external.
- SL 62: Up to 6 m internal, 4 m external.

Curing products

General: To be proprietary products manufactured for use with cement-based toppings and with the floor finish to be laid on the toppings.

Mixes

General: Provide topping as follows or select mix proportions to the **Mixes table**.

- Air entrainment: $\leq 3\%$.
- Nominal coarse aggregate size: $\leq 0.3 \times$ topping thickness.
- Slump: 80 mm.
- Standard strength grade: N25.

Water quantity: Use the minimum necessary to achieve full compaction and prevent excessive water being brought to the surface during compaction.

Mixes table

Mix type	Thickness (mm)	Upper and lower limits of proportion by weight		
		Cement	Fine aggregate	Coarse aggregate
Bonded – cement and sand	35	1 1	3 4.5	0 0
Bonded – fine concrete	40	1 1	3 3	1 2
Floating – fine concrete	100	1 1	3 3	1 2
Granolithic	Floors: 25 Skirtings: 13	1	2	1, of 2 mm - 3 mm
Separated – fine concrete	70	1 1	3 3	1 2

Movement control joint products

General: Provide products manufactured for use with cement based toppings and accommodate the anticipated movement of the backgrounds and/or the toppings.

Sealant products

General: Provide proprietary products manufactured for the sealing of movement joints in cement-based toppings.

Slip-resistance products

General: Provide proprietary products manufactured to improve the wet-slip resistance of toppings.

- Silicon carbide granules:
 - . Granule size: $\geq 300 < 600 \mu\text{m}$.
- Silicon carbide two-part resin:
 - . Granule size: $\geq 300 \mu\text{m}$.

Colour: [complete/delete]

Surface treatment products

General: Provide proprietary products manufactured for use with cement-based toppings to change the characteristics of the surface of the finished topping.

Water

General: To be clean and free from any deleterious matter.

2.2 MOVEMENT JOINTS**Movement joint materials**

Movement joint strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges.

Sealant: One-part self-levelling non-hardening mould resistant, silicone or polyurethane sealant applied over a backing rod. Finish flush with the terrazzo surface.

Floors: Trafficable, shore hardness > 35 .

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

0631b CERAMIC TILING

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide tiling systems to walls, floors and other substrates as follows and/or to the

Selections:

- Consistent in colour and finish.
- Firmly bonded to substrates for the expected life of the installation.
- Set out with joints accurately aligned in both directions and wall tiling joints level and plumb.
- To direct all water flowing from supply points to drainage outlets without leakage to the substrate or adjacent areas.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

1.3 STANDARDS

Tiling

General: Comply with the recommendations of those parts of AS 3958.1 and AS 3958.2 which are referenced in this worksection.

1.4 SUBMISSIONS

Samples

General: Submit labelled samples of tiles, including fittings, accessories, grout and sealants, illustrating the range of variation in colour and finish.

1.5 TESTS

General

Tests: Submit tests as follows:

- Type test slip resistance of tiles to AS/NZS 4586.
- Site test completed surfaces to AS/NZS 4663.
- Impact sound insulation:

1.6 TOLERANCES

Completed tiling

Standard: To AS 3958.1 clause 5.4.6 Tile finish and joints.

2 PRODUCTS

2.1 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed containers legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.

- Product type.
- Dimensions and quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.
- Handling and installation instructions.

2.2 TILES AND ACCESSORIES

Tiles

Standard: To AS 4662.

Tactile ground surface indicators: To AS/NZS 1428.4.

Coves, nosings and skirtings: To be matching stop-end and internal and external angle tiles moulded for that purpose.

Exposed edges: To be purpose-made border tiles with the exposed edge (whether round, square or cushion) glazed to match the tile face. If such tiles are not available, mitre tiles on external corners.

Accessories

General: Provide tile accessories to the **Accessories schedule** which match the composition, colour and finish of the surrounding tiles.

Coves, nosings and skirtings

General: Provide matching stop ends and internal and external angle tiles moulded for that purpose.

Accessories schedule

Location			
Type			
Size (mm)			
Colour			

2.3 ADHESIVES

General

Standard: To AS 2358 and AS 4992.1.

Type

General: Provide adhesives to the **Wall tiling schedule** and to the **Floor tiling schedule** and compatible with the materials and surfaces to be adhered.

Prohibited uses: Do not provide the following combinations:

- Cement-based adhesives on wood, metal, painted or glazed surfaces, gypsum-based plaster.
- Organic solvent-based adhesives on painted surfaces.
- Organic PVC-based adhesives and organic natural rubber latex adhesives in damp or wet conditions.
- PVA (polyvinyl acetate) based adhesives in wet areas or externally.

2.4 MORTAR

Materials

Cement type to AS 3972: GP.

- White cement: Iron salts content $\leq 1\%$.
- Off-white cement: Iron salts content $\leq 2.5\%$.

Lime: To AS 1672.1.

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

Measurement of volume: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Bedding mortar

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

Terra cotta tiles: Use proprietary polymer modified mortar.

Mixing: To AS 3958.1.

Water

General: To be clean and free from any deleterious matter.

2.5 GROUT**Type**

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

Terra cotta tiles: Use proprietary polymer modified grout.

Portland cement based grout: Mix with fine sand. Provide minimum water consistent with workability.

- For joints < 3 mm: 1 cement:2 sand (by volume).
- For joints ≥ 3 mm: 1 cement:3 sand (by volume).

Pigments

Pigments for coloured grout: Provide colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

2.6 MOVEMENT JOINTS**Movement joint materials**

Movement joint strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges.

Sealant: One-part self-levelling non-hardening mould resistant, silicone or polyurethane sealant applied over a backing rod. Finish flush with the terrazzo surface.

- Floors: Trafficable, shore hardness > 35.

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

3 EXECUTION**3.1 SUBSTRATES****Drying and shrinkage**

General: Before tiling, allow at least the following times to elapse (for initial drying out and shrinkage) for these substrates:

- Concrete slabs: 42 days.
- Concrete blockwork: 28 days.
- Toppings on slabs and rendering on brick or blockwork: A further 21 days.
- Rendering on swimming pool shell: A further 28 days minimum.

3.2 PREPARATION**Standard**

Preparation: To AS 3958.1 section 4.

Ambient temperature

General: If the ambient temperature is < 5 or > 35°C, do not lay tiles.

Substrates without wet area membranes

General: Ensure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of tiles.
- If framed or discontinuous, support members are in full lengths without splicing.
- If solid or continuous:

- . Excessive projections are removed.
- . Voids and hollows > 10 mm with abrupt edges are filled with a cement:sand mix not stronger than the substrate nor weaker than the bedding.
- . Depressions < 10 mm are filled with a latex modified cementitious product with feathering eliminated by scabbling the edges.

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting and do not apply mortar bedding to substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 3 mm of the surface and expose the aggregate; then apply a bonding treatment.

Substrates with wet area membranes

General: Ensure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of tiles.
- Compatible with all components of the floor system.

3.3 TILING GENERALLY

Sequence

General: Fix wall tiles before floor tiles.

Cutting and laying

Cutting: Cut tiles neatly to fit around fixtures and fittings, and at margins where necessary. Drill holes without damaging tile faces. Cut recesses for fittings such as soapholders. Rub edges smooth without chipping.

Laying: Return tiles into sills, reveals and openings. Butt up to returns, frames, fittings, and other finishes. Strike and point up beds where exposed. Remove tile spacers before grouting.

Variations

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

Protection

Floor tiles: Keep traffic off floor tiles until the bedding has set and attained its working strength.

Cleaning: Keep the work clean as it proceeds and protect finished work from damage.

Floor finish dividers

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

Bath ventilation

General: Ventilate the space below fully enclosed baths with at least 2 vermin proofed ventilating tiles.

Sealed joints

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

3.4 SETTING OUT

Tile joints

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

- Floors:
 - . Dry pressed tiles: 3 mm.
 - . Extruded tiles: 6 mm.
 - . Vitrified: 3 to 5 mm.
 - . Quarry tiles: 6 to 12 mm.
 - . Chemical resistant epoxy jointed tiling: 5 to 6 mm.
- Large and/or irregular floor tiles: 6 to 12 mm.
- Mounted mosaics: To match mounting pattern.
- Walls:
 - . Dry pressed tile: 1.5 mm.

- Extruded tile: 6 mm.

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

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

Margins

General: Provide whole or purpose-made tiles at margins where practicable, otherwise set out to give equal margins of cut tiles. If margins less than half tile width are unavoidable, locate the cut tiles where they are least conspicuous.

Fixtures

General: If possible position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or on the centre lines of tiles. Continue tiling fully behind fixtures which are not built in to the tiling surface. Before tiling ensure that fixtures interrupting the tile surfaces are accurately positioned in their designed or optimum locations relative to the tile layout.

3.5 FALLS AND LEVELS

Grading

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

Fall, general: 1:100 minimum.

Fall, in shower areas: 1:60 minimum.

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

3.6 BEDDING

Standard

Cement mortar: To AS 3958.1 clause 5.5.

Adhesive: To AS 3958.1 clause 5.6.

Preparation of tiles

Adhesive bedding: Fix tiles dry; do not soak.

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

Terra cotta tiles: Use pre-sealed tiles or apply a breathable sealer and lay dry. If a final sealed finish is selected, use a compatible laying sealer.

Bedding

General: Use bedding methods and materials which are appropriate to the tile, the substrate, the conditions of service, and which leave the tile firmly and solidly bedded in the bedding material and adhered to the substrate. Form falls integral with the substrate.

Thin adhesive beds

General: Provide only if the substrate deviation is less than 3 mm when tested with a 3 m straight edge. Cover the entire tile back with adhesive when the tile is bedded.

Thickness: 1.5 – 3 mm.

Thick adhesive beds

General: Provide on substrates with deviations up to 6 mm when tested with a 3 m straight edge, and with tiles having deep keys or frogs.

Nominal thickness: 6 mm.

Adhesive bedding application

General: Apply adhesive by notched trowel to walls and floors and direct to tiles if required, to provide evenly distributed coverage after laying as follows:

- Domestic internal walls: > 65%.
- Domestic internal floors: > 80%.
- Other wall and floors: > 90%.
- Wet areas and bench tops: 100%.

Pattern of distribution of adhesive: As described in AS 3958.1 clause 5.6.4.3. Verify by examining one tile in ten as work proceeds.

Wall tile spacers: Do not use spacer types that inhibit the distribution of adhesive.

Curing: Allow the adhesive to cure for the period nominated by the manufacturer prior to grouting or allowing foot traffic.

Mortar beds

For floor tiles: Either lightly dust the screeded bed surface with dry cement and trowel level until the cement is damp, or spread a thin slurry of neat cement, or cement-based thin bed adhesive, on to the tile back. Do not provide mortar after initial set has occurred.

- Nominal thickness: 20 to 40 mm.

Thick reinforced beds: Place mortar bed in two layers, and incorporate the mesh reinforcement in the first layer.

3.7 GROUTED AND CAULKED JOINTS

Grouted joints

General: Commence grouting as soon as practicable after bedding has set. Clean out joints as necessary before grouting.

Face grouting: Fill the joints solid and tool flush. Clean off surplus grout. Wash down when the grout has set. When grout is dry, polish the surface with a clean cloth.

Edges of tiles: Grout exposed edge joints.

Epoxy grouted joints: Ensure that tile edge surfaces are free of extraneous matter such as cement films or wax, before grouting.

Mosaic tiles

Grouting mosaics: If paper faced mosaics are to be bedded in cement mortar, pre-grout the sheeted mosaics from the back before fixing. After fixing, rub grout into the surface of the joints to fill any voids left from pre-grouting. Clean off surplus grout. When grout has set, wash down. If necessary use a proprietary cement remover.

Caulked joints

General: Provide caulked joints filled with sealant and finished flush with the tile surface as follows:

- Where tiling is cut around sanitary fixtures.
- Around fixtures interrupting the tile surface, for example pipes, brackets, bolts and nibs.
- At junctions with elements such as window and door frames and built-in cupboards.

Material: Anti-fungal modified silicone.

Width: 5 mm.

Depth: Equal to the tile thickness.

3.8 JOINT ACCESSORIES

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a corrosion resistant metal dividing strip suitably fixed to the substrate, with top edge flush with the finished floor. Where changes of floor finish occur at doorways make the junction directly below the closed door.

Type: [complete/delete]

Material: [complete/delete]

Stepping: Less than 5 mm.

Adjustments

If the floor finish divider was installed by the wet area waterproof membrane applicator check that the height is sufficient for the topping and tile thickness. Adjust as required with a matching flat bar adhesive fixed to the divider angle.

Weather bars

General: Provide a corrosion resistant metal weather bar under hinged external doors. Locate under the centres of closed doors.

Type:

Material:

Finish:

Dimensions:

Fixing:

3.9 COMPLETION

Spare tiles

General: Supply spare matching tiles and accessories of each type for future replacement purposes. Store the spare materials on site.

Quantity: At least 1% of the quantity installed.

Storage location: [complete/delete]

Cleaning

General: Clean tiled surfaces using an appropriate tile cleaning agent, and polish.

Operation and maintenance manuals

General: Submit a manual describing care and maintenance of the tiling, including procedures for maintaining the slip-resistance grading stating the expected life of the slip-resistance grade.

0671 DULUX PAINTING**1 GENERAL****1.1 AIMS****Responsibilities**

General: Provide coating systems to substrates as follows:

- Consistent in colour, gloss level, texture and dry film thickness.
 - Free of runs, sags, blisters, or other discontinuities.
 - Paint systems fully opaque.
 - Clear finishes at the level of transparency consistent with the product.
 - Fully adhered.
 - Resistant to environmental degradation within the manufacturer's stated life span.
- Selections: Conform to the **Selections** including the details of the required paint systems to be used on the project. Refer to *General requirements Submissions* with regard to the procedure for substitution if an alternate paint system is proposed.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

Associated contract documents:

1.3 STANDARDS**Painting**

General: Comply with the recommendations of those parts of AS/NZS 2311 which are referenced in this worksection.

1.4 PAINTING**Standard**

General: To AS/NZS 2311 Section 6.

Light levels

General: During preparation of surfaces, painting and inspection, maintain light levels such that the luminance (photometric brightness) of the surface is equal to the specified permanent artificial illumination conditions or 400 lux, whichever is the greater.

Drying

General: Use a moisture meter to demonstrate that the moisture content of the substrate is at or below the recommended maximum level for the type of paint and the substrate material.

Paint application

General: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

Painting conditions

General: Do not paint in dusty conditions, or otherwise unsuitable weather as follows unless the paint is suitable and recommended for such conditions:

- Relative humidity: $\geq 85\%$.
- Surface temperature $\leq 10^{\circ}\text{C}$ or $\geq 35^{\circ}\text{C}$.

Priming before fixing

General: Apply one coat of wood primer (2 coats to end grain) to the back of the following before fixing in position:

- External fascia boards.
- Timber door and window frames.
- Bottoms of external doors.
- Associated trims and glazing beads.
- Timber board cladding.

Spraying

General: If the paint application is by spraying, use conventional or airless equipment which does the following:

- Satisfactorily atomises the paint being applied.
- Does not require the paint to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied paint.

Paint with known health hazards: Provide personal protection, masking, ventilation and screening facilities generally to the standards set out for spray booths, AS/NZS 4114.1 and AS/NZS 4114.2.

Sanding

Clear finishes: Sand the sealer using the finest possible abrasive (no coarser than 320 grit) and avoid cutting through the colour. Take special care with round surfaces and edges.

Repair of galvanizing

General: For galvanized surfaces which have been subsequently welded, power tool grind to remove all rust and weld splatter. Remove all surface contaminants then immediately prime the affected area.

Primer: Organic zinc rich coating for the protection of steel is Dulux Zincanode 202. (AS/NZS 3750.9 Type 2).

Tinting

General: Tint each coat of an opaque coating system so that each has a noticeably different tint from the preceding coat where possible, except for top coats in systems with more than one top coat.

Services

General: If not embedded, paint new services and equipment including in plant rooms, except chromium, anodised aluminium, GRP, UPVC, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Repaint proprietary items only if damaged. Seek advice from the manufacturer.

Windows

Operation: Ensure that opening windows function correctly after painting.

Door Leafs

Drying: Leave doors fixed open to allow drying. Do not allow door hardware, accessories or the like to damage the door during the drying process.

Exclusions

Exclude the following surfaces from paint systems (unless specifically requested):

- Flexible duct connections, rubber hoses and mountings and other non metallic flexible fittings.
- Wire rope and machined surfaces.
- Metals plated or specially finished for appearance, bronze, brass, copper and stainless steel (except as specified in the *Pipe identification* clause of the *Services* worksections).
- Aluminium frames.
- Prefinished aluminium frames to windows and doors, and trim.
- Metal floor duct covers.
- Raised access floors.
- Floors.
- Fair faced brickwork, blockwork, stonework, artificial stone and exposed aggregates.
- Sprayed vermiculite.

- Floors, paving, roads unless otherwise specified.
- Timber roof structure.
- Concealed timber roof structure.
- Timber ceiling and eaves lining.
- Exterior timber sheeting.
- Exterior timber stairs and decking.
- Plastic finishes generally
- Inside of service ducts, heat exchangers, pipes and valves.
- Shower seats, store shelving, work benches.
- Those parts of timber fixtures, such as insides of cupboards, not visible when doors are closed, unless otherwise specified. Insides of bathroom cabinets are not excluded and shall be painted.
- Self finished surface such as glass and plastic laminates.
- Door hardware, including hinges.

0702 MECHANICAL DESIGN AND INSTALL

1 GENERAL**1.1 AIMS****Responsibilities**

General: Provide air conditioning and mechanical ventilation.

Selections: As documented.

Airconditioning load calculations

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

- Manual methods: AIRAH DA09, ASHRAE or Carrier.
- Electronic methods: ACADS-BSG Camel, Carrier E20 or Trane Trace.

Design

General: Provide systems designed in conformance with the following.

Outside design conditions: Use outdoor design conditions listed in AIRAH DA09, Table 1 or Table 1A for the location geographically closest to the site and Comfort (or Non-Critical Process) Conditions.

Inside design conditions:

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

Temperature variation: Limit the temperature difference in airconditioned spaces served by the same zone or system to 3°C as follows:

- Between any 2 points in the space from floor level to 1500 mm above floor level.
- > 2000 mm from cooking equipment and > 1000 mm from any other appliance.
- When outside conditions are in the range specified above.
- After the plant has been operating for one hour.
- With the temperatures measured in the same 5 minute period.

Zoning: Divide the systems into temperature controlled zones to meet the stated permissible limits in temperature variation, and the system divisions stated in the equipment schedule.

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

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

Internal window shading: Refer to **Window schedule**.

Lighting load: Refer to drawings for lighting layout and details.

Internal equipment loads: Refer to **Internal airconditioning loads schedule**.

No. of people: Refer to **Internal airconditioning loads schedule**.

Supply air: To each airconditioned space $\geq 4.5 \text{ L/s/m}^2$ at all times the plant is operational.

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

Fire separation: Refer to drawings.

Heating: Use reverse cycle plant to provide heating. Divide airconditioned areas between systems so that cooling and reverse cycle heating can be provided simultaneously.

Supplementary heat for zoning or other purposes: May be provided by electric duct heaters but must be < 20% of the total heating load.

Duct design: Size ductwork as follows:

- Rigid sheet metal duct: $\leq 6 \text{ m/s}$ and $\leq 1.2 \text{ Pa/m}$.
- Flexible duct: $\leq 4.0 \text{ m/s}$.

Energy efficiency: Conform to the BCA.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Windows and glazed doors*.

1.3 STANDARDS

General

Mechanical ventilation: To AS/NZS 1668.1 and AS 1668.2, as required by the Building Code of Australia.

Refrigeration systems: To AS/NZS 1677.2 and the recommendations of SAA HB 40.1 and SAA HB 40.2.

Microbial control: To AS/NZS 3666.1, AS/NZS 3666.2 and the recommendations of SAA HB 32.

1.4 SUBMISSIONS

General

Before starting work, submit the following:

- Outside design conditions, corresponding geographic location and source of data.
- Calculated total and sensible cooling capacities and heating capacity.
- Name of calculation method used.
- Makes and model numbers of proposed equipment.
- Total and sensible cooling capacities and heating capacity of the proposed equipment, adjusted for the documented outdoor and indoor conditions and any effects of the proposed plant configuration.
- Any assumptions on which the calculations are based.
- Details of any departures from this specification.
- Details of fire provisions.
- A drawing of the proposed duct, pipe and equipment layout. Show proposed zoning and methods of heating.
- Licence numbers and type of licences held by persons responsible for the installation.

2 PRODUCTS ---

2.1 AIRCONDITIONING EQUIPMENT

Standards

Ducted airconditioners: To AS/NZS 3823.1.2.

Non-ducted airconditioners: To AS/NZS 3823.1.1.

Equipment

Performance: Provide equipment as follows:

- Is made by a manufacturer with a demonstrated ability to provide spare parts and service promptly to the site.
- Will operate within the documented range of outdoor design conditions under the calculated loads without excessive head pressure or icing.
- Is labelled to AS/NZS 3823.2.

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

Head pressure control: Provide manufacturer's standard head pressure control kit on units that operate in cooling mode at low ambient temperatures.

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

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

Filters: Washable panel type. Performance when tested to AS 1324.2:

- Test Dust No. 1: $\geq 20\%$ efficiency.
- Test Dust No. 4: $\geq 85\%$ arrestance.
- Dust holding capacity: ≥ 130 g at 125 Pa against Test Dust No 4 for a nominal 600 mm x 600 mm cell.

Coils: Copper tube with aluminium plate fins.

Controls

General: Provide the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Time switch for each system with ≥ 6 temperature programs per day, separate programs for each day of the week, manual set point override and Vacation temperature set back.

2.2 ELECTRIC DUCT HEATERS

General

Standard: To AS/NZS 3102.

Elements: Sheathed in steel or nickel alloy. Provide with brazed spiral steel fins.

Frames: Assemble elements in a galvanized steel frame with terminal connections contained in an enclosed terminal box.

Heating section: Install to allow access to the terminal box and removal of the assembly without disturbing other components.

Fin rating: $< 20 \text{ W/m}^2$.

2.3 GRILLES AND DIFFUSERS

General

Size and locate diffusers to provide even air distribution and temperatures without draughts.

Ceiling diffusers: Provide at least one per airconditioned room and at least one per 12 m^2 .

Construction:

- Variable volume diffusers: Powder coated pressed steel.
- All others: Powder coated aluminium.

Dampers: Provide a damper to each diffuser and grille. If connected by flexible duct, locate the damper at the duct spigot unless a damper in this position is inaccessible.

Supply diffusers and grilles

Louvre ceiling diffusers: Multi-bladed, removable core 4-way blow configuration, fitted with a matt black blanking plate for 1, 2, or 3-way blow, as appropriate. If the outlet neck is smaller than the outlet necessary to suit the louvre face size, provide a matt black reducer neck.

Variable volume diffusers: Self powered outlet with room temperature sensing and actuator to adjust air volume. Where heaters are installed, provide duct sensing which reverses the control action during heating.

Side wall registers: Double deflection type with horizontal front louvre blades and vertical rear blades at 19 mm maximum centres, capable of field adjustment of air throw over the range $\pm 45^\circ$. Support blades > 600 mm long at mid point on a notched support bar.

Return or exhaust grilles – indoor

Ceiling and wall louvre type: Half chevron louvres at 25 mm maximum centres.

Egg crate type (ceiling use only): Elements at 90° to each other, and at 15 mm maximum centres.

Door grilles: Full chevron, 50% minimum free area. Frame to suit door thickness.

External intake and discharge louvres

General: Refer to *Windows* worksection.

2.4 FANS

General

Guards: Provide galvanized steel or bronze mesh guards.

Steel components: Corrosion protect by zinc plating or better.

Motors in air stream: Direct mount to impellers with minimum Thermal class 155 (F) insulation to IEC 60085. Provide terminal boxes external to fan casings and wired to fan motors.

Motor minimum degree of protection: IP55.

Bearings: Provide sealed for life or grease packed bearings.

Balancing: Dynamically balance impellers.

Connections: Provide flexible duct connections at fan.

Centrifugal and mixed-flow in-line fans

Casings: Rectangular or circular manufactured from metallic-coated steel sheet, fibreglass or plastic with spigot or flanges for duct mounting.

Impellers: Backward or forward curved blades, constructed from metallic-coated steel, aluminium or polypropylene. Provide fans with non-overloading power characteristics.

Axial flow aerofoil fans

Casings: Tubular, flanged at each end, constructed from mild steel, fully welded, hot dip galvanized after fabrication to AS/NZS 4680 with coating thickness and mass to Table 1. Provide access panels, securely bolted to casings and sealed with neoprene gaskets, for maintenance.

Impellers: Provide aerofoil section blades constructed from cast aluminium alloy or glass fibre with adjustable pitch. Provide fans with non-overloading power characteristics.

Inlet cones: Provide aerodynamically shaped cones to unducted fan inlet or outlets.

Propeller fans

Mounting: Mount on contoured diaphragm plate.

Impellers: Aluminium or UV stabilised ABS or polypropylene.

Window or wall mounted fans

Type: Propeller complete with isolating mountings, discharge cowls or louvres, birdmesh guards and backdraft shutters.

Roof mounted fans

Type: Centrifugal, mixed flow, axial flow aerofoil or propeller. Comply with the respective clauses above.

Housing: House fans in compact bases fitted with weathering skirts and manufactured from zinc-coated steel or UV stabilised plastic or composite.

Finish:

- Metallic-coated steel: UV stabilised powder coat to match roof colour.
- Other materials: Manufacturer's standard colour.

Vertical discharge fans: Provide weatherproof galvanized steel, plastic or aluminium backdraft dampers where the weather may enter when units are stopped.

Birdmesh: Where backdraft dampers are not fitted, provide birdmesh guards.

3 EXECUTION

3.1 DUCTWORK

Standard

Ductwork: To AS 4254.

Rigid duct

Material: Metallic-coated sheet steel to AS 1397, coating class G2/Z275.

Flexible duct

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

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

Support: To AS 4254. Limit sag to < 40 mm/m.

Duct insulation

General: Insulate ducts to reduce heat gain and prevent condensation. Provide continuous vapour barrier around ducts carrying conditioned air. Insulate flexible connections on ducts carrying air below ambient temperature.

Cleaning

Clean interior of ductwork progressively during installation.

Insulation and sealing: Notwithstanding the class of building, conform to BCA Specification J5.2.

3.2 REFRIGERATION PIPEWORK

General

Conform to equipment manufacturer's recommendations for the refrigerant used.

Pipes: To AS/NZS 1571.

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

Pipe insulation

General: Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell nitrile rubber in tubular form to ASTM C534. Apply to manufacturer's recommendations. Protect insulation from sunlight and mechanical damage.

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

Condensate drains

Requirements: Provide trapped \geq DN 20 condensate drains to AS/NZS 3666.1 from each indoor coil and safety tray. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.

3.3 UNIT INSTALLATION

General

Supply all components and install to manufacturer's recommendations.

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

Equipment at ground level: Mount on 100 mm high concrete plinth or equivalent impervious material.

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

Vibration isolation

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

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

Safety trays

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

3.4 COMPLETION

Commissioning

General: Commission the systems to manufacturer's recommendations using instruments calibrated within the past 12 months. Check ductwork for leaks. Test all safety controls by simulating fault.

Air quantities: Balance systems to accord with design air quantities.

Tolerance on air quantities: Between +10% and -0% of the design air quantities.

Temperature recording: Provide electronic data logger or thermohydrograph to record temperatures at nominated locations and times for periods of 7 days. Prove that temperatures are within documented tolerance.

Check list: Submit signed commissioning check list on completion.

Cleaning

General: Clean filters, outdoor coils, grilles and diffusers on completion.

Operating and maintenance instructions

Requirements: Provide written operating and maintenance instructions containing:

- Contractor's contact details for service calls.
- Manufacturer's maintenance and operation literature.
- Manufacturer's warranty certificates if the manufacturer's warranty period is greater than the defects liability period.
- Description of day to day operation.
- Setting of time switches.
- Schedule of recommended maintenance.

Record drawing: Provide a drawing of the system as installed.

3.5 MAINTENANCE**General**

Provide corrective and preventative maintenance on the installation.

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

Warranty: Warrant the installation for the whole of the maintenance period.

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

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

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

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

0802 HYDRAULIC DESIGN AND INSTALL**1 GENERAL****1.1 AIMS****Responsibilities**

General: Provide hydraulic services systems subject to the site and other constraints below:

- Cold water services: Connect the cold water supply system to the Network Utility Operator's main through a stop valve and meter. Provide the cold water installation from the meter to the draw-off points or connections to other services.
- Hot water services: Provide the hot water installation from the cold water connection points to the draw-off points or connections to other services.
- Hose reel system:
- Sanitary plumbing and drainage:
- Stormwater:
- Subsoil drainage:
- Gas:

Authority submissions: Make submissions (including notices) to authorities relating to the works.

Selections: As documented.

Constraints

The following site and other constraints apply to the hydraulic services on this project:

Design

Extent: Provide all additional design work necessary to complete the documented hydraulic services.

Qualification: Use only appropriately experienced and qualified persons to undertake hydraulic design work. If requested, provide documents verifying the qualification and experience.

1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Service trenching*.
- *Roofing* for roof plumbing.

1.3 STANDARDS**General**

Plumbing and drainage: To AS/NZS 3500.0, AS/NZS 3500.1, AS/NZS 3500.2, AS/NZS 3500.3 and AS/NZS 3500.4 and the Plumbing Code of Australia.

Authorised products: Listed in the WaterMark Product Database, unless otherwise required by the Network Utility Operator.

<http://www.watermarkstandards.org.au/>. Copper pipe and fittings-installation and commissioning: To AS 4809.

Gas: To AS 5601.

Microbial control: To AS/NZS 3666.1 and AS/NZS 3666.2.

Labelling

Water efficiency labelling: Provide only products conforming to and labelled to the Water Efficiency Labelling Scheme (WELS).

1.4 COLD AND HEATED WATER

Fittings and accessories

General: Provide the fittings necessary for the proper functioning of the water supply system, including taps, valves, backflow prevention devices, pressure and temperature control devices, strainers, gauges and automatic controls and alarms.

Heated water temperature

Standard: To AS/NZS 3500.4.

Line strainers

Type: Low resistance, Y-form bronze bodied type, with screen of dezincification resistant brass, stainless steel or monel.

Screen perforations: 0.8 mm maximum.

1.5 WATER HEATERS

General: Provide water heaters as documented.

Standard

Electric water heaters: To AS/NZS 4692.1.

Minimum energy performance: To AS/NZS 4692.2.

Gas hot water heaters: To AS 4552. If a flue damper is available for the water heater supplied, provide one.

Tariff

General: Install so that the heating system qualifies for the tariff concession or subsidy offered by the statutory authority.

1.6 HOSE REELS

General

General: Provide hose reels with swivel hose guides in accordance with the **Fire hose reels schedule**.

General: Submit evidence of listing in the CSIRO CMSE ActivFire Register of Fire Protection Equipment.

Standard: To AS/NZS 1221.

Installation: To AS 2441.

Commissioning: To AS 2441 and AS 1851.

0902 ELECTRICAL DESIGN AND INSTALL

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide electrical systems as documented.

Qualification

General: Use only persons appropriately experienced and qualified to undertake the electrical design work on the systems documented.

Performance

General: Carry out verification tests and measurements to show compliance with the documentation.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

1.3 STANDARDS

General

General: To AS/NZS 3000 Part 2 unless otherwise documented.

Electrical systems: To AS/NZS 3008.1.1 and SAA HB 301.

Degrees of protection (IP code): To AS/NZS 60529.

EMC: To AS/NZS 61000.

Telecommunications systems: To AS/ACIF S008, AS/ACIF S009, AS/NZS 3080, SAA HB 243 and SAA HB 29.

2 EXECUTION

2.1 GENERAL

General

Arrangement: Arrange services so that services running together are parallel with each other and with adjacent building elements.

Fixing: If non-structural building elements are not suitable for fixing equipment and services to, fix directly to structure and trim around holes or penetrations in non-structural elements.

Installation: Install equipment and services plumb, fix securely and organise reticulated services neatly. Allow for movement in both structure and services.

Lifting: Provide heavy items of equipment with permanent fixtures for lifting as recommended by the manufacturer.

Suspended ground floors: Keep all parts of services under suspended ground floors > 150 mm clear of the ground surface. Make sure services do not impede access.

Submissions

Samples: Provide samples of all accessories and luminaires.

Technical data: Submit documentation to fully describe the proposed installation.

Installation of accessories

General: Unless installed on purpose built ductwork. Install accessories in conformance with the **Installation of accessories table**.

Location: Final location of all outlets and equipment to be confirmed on site prior to installation.

Spacing from adjacent horizontal surface: ≥ 75 mm to the centre of accessory socket.

2.2 LIGHTING

General

General: Provide a complete operational lighting system, tested and commissioned.

Interior lighting standard: To AS/NZS 1680 Parts 0, 2.4 and 2.5, and AS 1680 Parts 1, 2.1, 2.2, 2.3 and 3.

Exterior lighting standard: To AS/NZS 1158 Parts 0, 1.1, 1.3 and 3.1, and AS 1158 Parts 2 and 4.

Proprietary equipment: Provide only proprietary luminaires, fittings and accessories.

Modifications and refurbishing: Carry out to the original manufacturer's standards.

Minimum energy performance standards

General: To AS/NZS 4783.2 and AS/NZS 4782.2.

Lamps

Lamps: Provide all luminaires complete with lamps and accessories.

Verify operation: Install lamps in all luminaires and verify correct operation before completion

Standards:

- Fluorescent: To AS 4782.1.
- Incandescent: To AS 2325.
- Tungsten halogen: To IEC 60357.

Low voltage lamps: Provide lamps strictly in accordance with the luminaire manufacturer's recommendation.

Dichroic lamps: Provide dichroic lamps with integral reflector.

Lighting control system

General: Provide the following as documented:

- Lighting switches.
- Dimmers.
- Automatic control systems.

Documentation: Provide complete technical and operational documentation for the lighting control system.

Installation

Supports: Mount luminaires on proprietary supports by means of battens, trims, noggings, roses or packing material to suit location.

Completion

General: Verify the operation of all luminaires. Replace lamps which have been in service for a period > 50% of the lamp life as published by the lamp manufacturer.

2.3 EMERGENCY EVACUATION LIGHTING

General

General: Provide a complete operational monitored, emergency evacuation lighting system, tested and commissioned in accordance with AS/NZS 2293 and as documented.

Single-point system luminaires

Visual indicator lights: Provide a red indicator, readily visible when the luminaire is in its operating location, which indicates that the battery is being charged.

Inverter system: Provide protection of the inverter system against damage in the event of failure, removal or replacement of the lamp, while in normal operation.

Local test switches: Provide a momentary action test switch, accessible from below the ceiling, on each luminaire to temporarily disconnect the mains supply and connect the battery to the lamp.

Common test switches: Provide a common test switch on the distribution board which disconnects main supply to the luminaires and tests for discharge performance, after testing, this switch must automatically revert to normal operating mode.

Monitored system

Data connection: Provide internal monitoring facilities and provision for the connection of data cabling to a central monitoring computer where required for this project.

Proprietary systems: Use only proprietary systems with full compatibility between the monitoring system, operating software, and the luminaires selected.

Batteries

Type: Lead-acid or nickel-cadmium batteries capable of operating each lamp at its rated output continuously at least 2 hours during completion tests and 1.5 hours during subsequent tests.

Battery life: At least 3 years when operating under normal conditions at an ambient temperature of 25°C and subjected to charging and discharging at 6 monthly intervals.

Marking: Indelibly mark each battery with its date of manufacture.

Power supply to single-point systems

General: Provide an unswitched active supply to each luminaire and exit sign, originating from the test switch control panel.

Data monitoring for single-point systems

General: Provide a data cable system from each single-point luminaire connected to the monitoring computer.

2.4 TELECOMMUNICATIONS CABLING**General**

General: Provide a complete operational telecommunications cabling system, tested and commissioned in accordance with AS/NZS 3080, AS/ACIF S009, SAA HB 29 and as appropriate SAA HB 252.

Accommodation: Provide accommodation for telecommunications cabling infrastructure complying with AS/NZS 3084 including the detailed requirements of Appendix ZA, ZB and ZC. Include the following as documented:

- Building distributor.
- Backbone cabling.
- Floor distributors.
- Consolidation points.
- Horizontal cabling.
- Telecommunications outlets.
- Fly leads.

System requirements

Application class to AS/NZS 3080 clause 6.3: E.

Balanced system to AS/NZS 3080 clause 7 (data): Category 6.

Balanced system to AS/NZS 3080 clause 7 (voice): Category 6.

Conformance: Certify the design and installation for conformance with AS/NZS 3080 in accordance with the detailed requirements of clause 4.

System warranty: Warrant the specified communications cabling performance for a minimum of 15 years.

Equipment racks

Type: 19 inch rack.

Free standing racks: Provide adjustable feet.

Modular connector patch panels

Terminations: Terminate directly to the modular connector.

Patch cords: Terminate cord ends with appropriate registered jacks.

Optical fibre termination panels

Break out trays: Provide fibre optic cable break out trays at each group of fibre optic cable terminations.

Loom cables: Neatly loom cables and lay stripped cables into the break out tray.

Secure cables: Ensure that cables are secured by the sheath and that there is no stress on the fibre optic cores.

Patch cords

General: Provide terminated patch cords for 100% of the total incoming and outgoing ports used.

Records

Record book: Provide a record book at each cross connect.

Records in pencil: Complete the records in pencil for each termination and jumper, providing origin and destination and type of service.

Location: Secure log books in each distribution frame records holder.

Identification and labelling, and record documentation: To AS/NZS 3085.1.

Cable separation

Low voltage cables: Separate telecommunications cables not enclosed in conduits or ducts from low voltage services by at least 150 mm.

Electromagnetic interference (EMI): Provide clearance to minimise the effect of EMI where communications cables are installed parallel and adjacent to power cables carrying loads in excess of 200 A.

Installation

Crossover: Install cables neatly and without crossovers between cables.

Loom size: Loom cables into groups not exceeding 50 cables, and hold looms in place using reusable cable ties at least 20 mm wide. Do not exert compressive force on the cables when installing cable straps.

Telecommunications outlets

Outlets: Provide RJ45 8 way modular jacks except where documented otherwise.

Pinouts: The pinouts vary with the application. Determine required pinouts before making cable terminations.

Fly leads

General: Provide fly leads to 50% of the outlets installed.

Earthing system

Communication earth system (CES): Provide a communications earth terminal (CET) associated with the local protective earth (PE) system adjacent to each electrical distribution board.

2.5 AUTOMATIC FIRE DETECTION**General**

General: Provide a fully operational, system, tested and commissioned in accordance with the AS 1670 series and AS 7240.

General: Provide equipment listed in the CSIRO CMSE ActivFire Register of Fire Protection Equipment.

Base station monitoring system connection

Standard: To AS 7240.21.

Connection: Connect the installation to the fire alarm monitoring base station via telecommunications carrier lines.

Installation wiring

Conductor size: $\geq 1.5 \text{ mm}^2$ TPI 230 V rated, with red and white insulation.

Sheathing: Red.

Control and indicating equipment

General: To AS 7240.2.

Air-handling fire mode control panels: To AS 4428.7.

Alarm investigation facility (AIF): To AS 4428.10.

Alarm signalling equipment: To AS 4428.6.

Wire-free alarm zone circuits: To AS 4428.9.

Fire indicator panels

General: Provide metal cubicle-type enclosures.

Isolation

General: Provide isolating facilities on fire indicator panels to enable tests to be carried out without the transmission of alarm signals to the fire brigade.

Detectors

Duct sampling units (DSUs): To AS 1603.13.

Heat detectors: To AS 7240.5.

Integral heat detector/alarm units: To AS 1603.3.

Point type smoke detectors: To AS 1603.2.

Multi-point aspirated smoke detectors: To AS 1603.8.

Optical beam smoke detectors: To AS 1603.7.

Integral smoke detector/alarm units: To AS 12239.

Self-indicating detectors

General: Provide a light emitting diode mounted in a clearly visible position, which illuminates whenever detector operation causes an alarm condition to register on the fire indicator panel. Provide self-indicating devices which, if faulty, will not render the detector inoperative under fire conditions.

Mounting positions of light emitting diodes:

- Visible detectors: On the outside of the detector or its base.
- Detectors concealed above ceilings: On the underside of the ceiling immediately below the detector.
- Detectors in other concealed spaces: On a visible panel close to the entry to the concealed space housing the detector.

Installation

General: Install detectors so they can be easily inspected and tested in situ, and readily withdrawn for service.

Integral smoke detector/alarm units: To AS 1670.6.

Manual call points

Standard: To AS 1603.5.

External alarm indication

Circuits: To AS 4428.1.

Strobe lights: To AS 1603.11.

Magnetic door holders

Standard: To AS 4178.

Control facilities

General: Provide ancillary control device circuits and connections for automatically controlling and releasing magnetic door holders to operate the relevant doors under fire alarm conditions.

Fire fan control and indication panels

General: Provide fire detection and alarm signals for the fire fan control panel to be incorporated by mechanical services.

2.6 EMERGENCY WARNING AND INTERCOMMUNICATION SYSTEM

General

General: Provide a complete operational emergency warning and intercommunication system, tested and commissioned in accordance with AS 1670.4.

Accredited products: Provide equipment listed in the CSIRO CMSE ActivFire Register of Fire Protection Equipment.

Loudspeakers

Mounting: Securely fix to building elements. Flush mount in suspended ceilings and lift cars, and if practicable elsewhere; otherwise surface mount in an enclosure.

Wall mounting height: 150 mm below finished ceiling level.

Evacuation zones

Zones: Provide separate zones for each fire compartment, or a separate zone for each single storey.

Emergency intercommunications

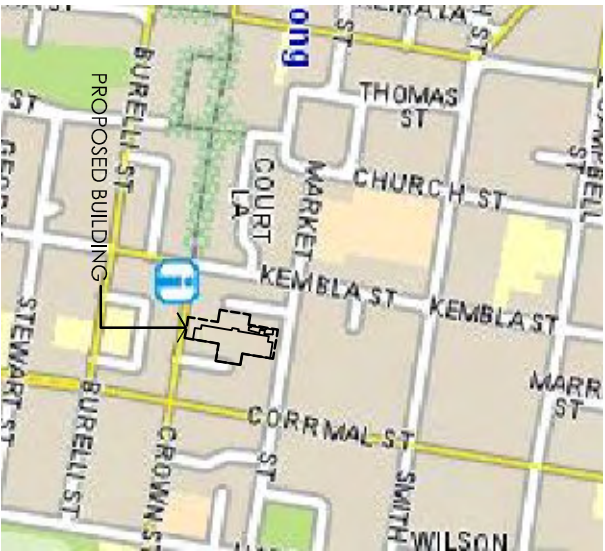
Warden intercommunication points: Connect, as separate circuits, warden intercommunication point (WIP) handsets which are in the same zone.

Conferencing: Provide switching facilities which permit conference calls, between up to 5 warden intercommunication points, to be initiated from any emergency control panel.

Lift cars: Provide a terminal block outside the lift motor room. Cable from the terminal block to central control equipment. Provide a warden intercommunication point handset in each fire lift car.



AERIAL PHOTOGRAPH



LOCATION MAP



1



2



3



4



5



6



7



8



9



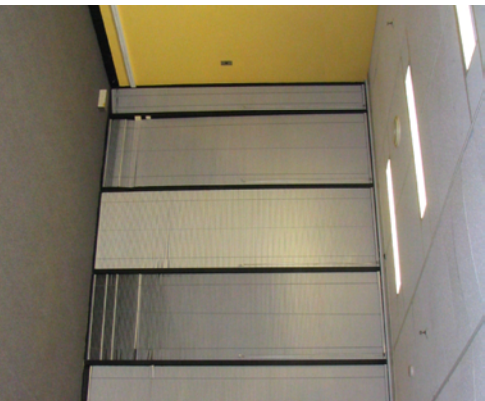
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11



12



13




14

PRELIMINARY

NOTE:		LEGEND:	

NO.	DATE	AMENDMENT	NO.	DATE	AMENDMENT
A	19/07/08	ISSUE TO CLIENT			
B	14/08/08	ISSUE TO CLIENT			

	ARCHITECTURE	WOLLONGONG
	INTERIORS	ALEXANDRIA
	URBAN DESIGN	KIRKLAND
	HERITAGE	WOLLONGONG, NSW
SUSTAINABLE		BATEMANS BAY
Inspire create enjoy		SHANGHAI

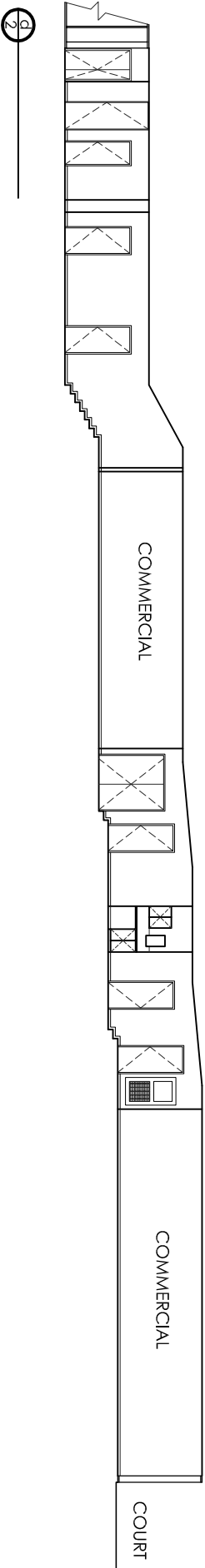
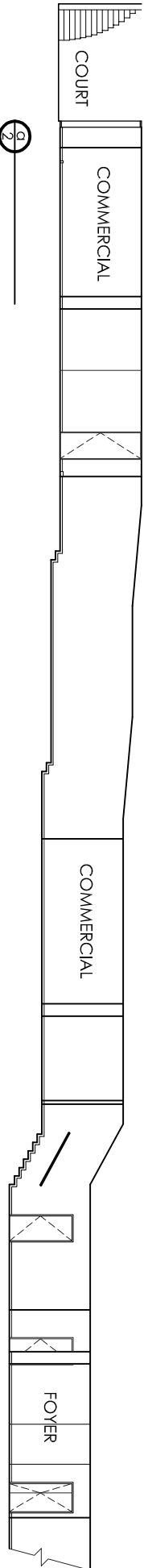
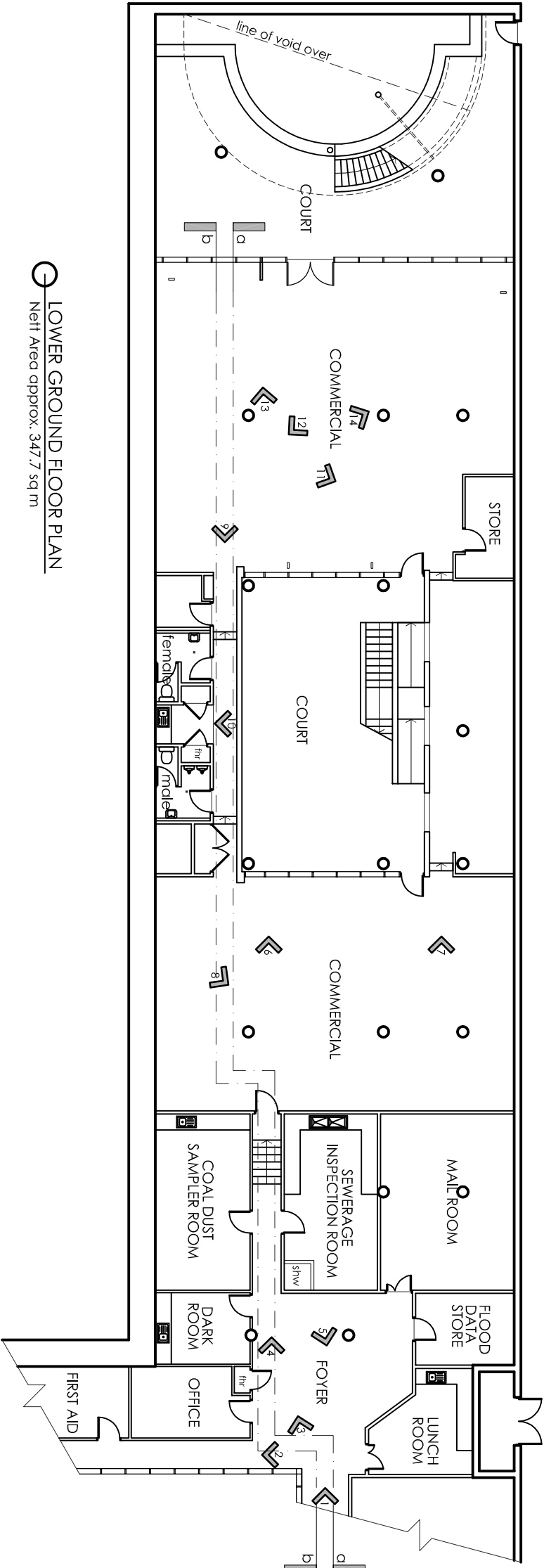
PROJECT: PROPOSED FITOUT		SCALE: 1:50	
SIT E: 84 CROWN STREET,		DATE: JULY 08	
WOLLONGONG, NSW		DRAWN: DB	
CLIENT: STATE PROPERTY AUTHORITY		CHECKED:	
DRAWING: LOCATION PLAN		JOB NO: 7194-SP-01-A	

01

SHEET

04

NO IN SET




DISCLAIMER

- All information subject to:
- Discussions and subsequent approval by Wollongong City Council
 - Survey
 - Sewer - Sydney Water
 - BCA requirements
- This study is preliminary advice subject to changes due to more detailed design and discussions with WCC.

Note: Existing Architectural plans received from Joe Blackburn of five D on 04.07.08

NOTE:	LEGEND:		

NO	DATE	AMENDMENT	NO	DATE	AMENDMENT
A	09.07.08	ISSUE TO CLIENT			



ARCHITECTURE
INTERIORS
URBAN DESIGN
HERITAGE
SUSTAINABLE

inspire create enjoy

PROJECT: PROPOSED FITOUT S I T E: 84 CROWN STREET, WOLLONGONG, NSW	SCALE: 1:200 D A T E: JULY 08 D R A W N: DB	02 SHEET
CLIENT: STATE PROPERTY AUTHORITY DRAWING: EXISTING LOWER GROUND FLOOR & ELEVATIONS	CHECKED: JOB NO: 7194-SP-02-A	04 NON SET

PRELIMINARY

