



TENDER ISSUE

PROJECT
MARIBYRNONG RIVER CHILDREN'S CENTRE REDEVELOPMENT

PRINCIPAL
MARIBYRNONG CITY COUNCIL

Contract No: TBA

VOLUME NO 2- PROJECT SPECIFICATION

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SPECIFICATION

Of materials and workmanship to be used in the construction of:

Project address

Maribyrnong River Children's Centre
6 WESTS ROAD
MARIBRYNONG

Project Description

Children's Centre Redevelopment project with works including and not limited to the following:

- New entry canopy and foyer
- new MCH rooms with waiting area.
- new licensed children's room and remodeling to existing multipurpose room to convert it to a licensed children's room
- new external storage
- new entry signage

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TABLE OF CONTENTS

NOTE: THE WORD “DOCUMENT” INDICATES A PART OF THE PRELIMINARIES.
“TRADE SECTION” IS THE TERM USED TO DENOTE THE DIFFERENT TRADES IN THE SPECIFICATION.

SECTION 01000 PRELIMINARIES	6
SECTION 02000 GENERAL BUILDING REQUIREMENTS	50
SECTION 01400 QUALITY ASSURANCE	61
SECTION 02050 DEMOLITION	63
SECTION 02150 ASBESTOS & Synthetic Mineral fibre (SMF)REMOVAL	68
SECTION 02315 SITE PREPARATION & EXCAVATION	72
SECTION 02510 PIPED DISTRIBUTION	78
SECTION 02530 SANITARY SEWERAGE & STORMWATER.....	87
SECTION 03310 CONCRETE.....	93
SECTION 05100 STRUCTURAL STEEL.....	102
SECTION 05400 COLD FORMED METAL FRAMING	106
SECTION 05500 METALWORK	119
SECTION 06100 CARPENTRY.....	127
SECTION 06400 JOINERY.....	132
SECTION 07200 INSULATION (THERMAL AND ACOUSTIC)	140
SECTION 07600 METAL ROOFING AND ROOF PLUMBING.....	146
SECTION 08200 DOORS, DOOR FRAMES & door hardware	154
SECTION 08520 METAL WINDOWS AND GLAZING.....	161
SECTION 09250 PLASTERBOARD / Multiboard SHEET & OTHER SPECIAL LINING SYSTEMS.....	170
SECTION 09300 CERAMIC TILE	176
SECTION 09500 SUSPENDED CEILING	183
SECTION 09650 RESILIENT FLOORING and wall finishes.....	187
SECTION 09685 MODULAR CARPET (TILE)	191
SECTION 09910 PAINTING	197
SECTION 10400 IDENTIFICATION SIGNS	206
SECTION 10520 FIRE EXTINGUISHERS	212
SECTION 12480 FLOOR MATS AND FRAMES	214
SECTION 15410 PLUMBING FIXTURES	217

SECTION 01000 PRELIMINARIES

1.100 GENERAL CONDITIONS

1.101 Interpretations / Definitions

The words "contractor" and "contract" have the same meaning, respectively, as "builder/head contractor" and "agreement", unless the context requires otherwise.

General: Unless the context otherwise requires, the following definitions apply:

- Supply: "Supply", "furnish" and similar expressions mean "supply only".
- Provide: "Provide" and similar expressions mean "supply and install".
- Approved: "Approved", "reviewed", "directed", "rejected", "endorsed" and similar expressions mean "approved (reviewed, directed, rejected, endorsed) in writing by the superintendent".
- Give notice: "Give notice", "submit", "advise", "inform" and similar expressions mean "give notice (submit, advise, inform) in writing to the superintendent".
- Obtain: "Obtain", "seek" and similar expressions mean "obtain (seek) in writing from the superintendent".
- Proprietary: "Proprietary" means identifiable by naming manufacturer, manufacturer, installer, trade name, brand name, catalogue or reference number.
- Provisional Sum: means an amount set aside for certain works which the Head Contractor shall have allowed for in their Overheads and Profit
- Samples: Include samples, prototypes and sample panels.

Abbreviations:

- GPC: Government Paint Committee.
- NATA: National Association of Testing Authorities.

1.102 Definition of Provisional and *prime cost sums included in contract

.1 A **provisional sum* is a sum exclusive of **GST* included in the contract for:

- a. Performance of foreseeable **necessary work*, including the supply of materials, not fully described by the **contract documents* on the date that this contract was executed.
- b. connection of an **infrastructure service* to the **site*, where the detail of the **infrastructure service* required, and/or the manufacturer of the **infrastructure service*, was not known or had not been finally decided on the date that this contract was executed.

.2 A **prime cost sum* is a sum exclusive of **GST* included in the contract for:

- a. a foreseeable item of material or equipment, the precise identity of which was not known or had not been specified at the date of the contract or,
- b. an allowance for payment of a fee or charge to a **relevant authority*.

.3 The contractor agrees that it has made adequate allowance in the **cost of building work* for the scheduled **provisional sums* and **prime cost sums* including, but not limited to, its preliminaries, overhead and profit.

- .4 The contractor agrees that the contract period contains an adequate allowance of time for any **necessary work* to be performed under any **provisional sum* or **prime cost sum* to the extent that the **necessary work* was reasonably described in the **contract documents* at the time that the contract was executed.

1.103 Commencement of Work

Notwithstanding that access of the site has been given to the Contractor, the Contractor shall not be permitted to commence work on the site until they have provided:

- a. Insurances and CERTIFICATES OF INSURANCE.
- b. Confirm adjoining neighbours have been notified in writing

1.104 Precedence of Documents

Refer to the agreement Contract

1.105 Contract Stamp Duty

If contract is liable to stamp duty, the Contractor shall provide to the Superintendent at time of signing the contract, duty stamps to the value required by the state in which the project is being constructed, together with one new copy of the printed Conditions of Contract being used in this project.

1.106 Adjacent Premises

- a) Ensure that the work is carried out without damage to and with a minimum of nuisance or annoyance to the occupants of adjacent premises.
- b) Where the method of joining up of old and new work is not otherwise specified, the cutting away and joining up shall be carried out in a manner approved by the Superintendent and made good by relevant trades to match existing adjacent work.
- c) Notify the Superintendent of connection, disconnection or interference with existing services.
- d) Notification of neighbours as determined by the Superintendent

1.107 Wages, Allowance, Superannuation

The Contractor shall allow for, but not be limited to, all allowances, overtime, bonuses, height money, incentive payments, protective clothing, superannuation and any other charges and payments required to meet the requirements of any current industrial requirements in connection with the completion of the Contract. No Contract Sum adjustments shall be made for the cost of wages, site and industry allowances, clothing and food allowances and industry superannuation, long service leave and redundancy contributions or the like, including increases in such costs.

1.108 Pay As You Go tax (PAYG)

The Contractor shall allow in Contract Sum for all administration and financing costs related to the Pay As You Go (PAYG) requirements under current Tax Legislation and Regulations.

1.109 Method of Measurement

The method of measurement of the works shall be in accordance with the principles of the Australian Standard Method of Measurement of Building Works. Refer to AS 1181 for other Civil Engineering work.

1.110 Labour Relations and Industrial Disputes

Subject to the following paragraphs of this sub-clause, all Trade Union and industrial disputes and claims so far as they affect or involve the Works shall be dealt with by the Contractor.

Whenever questions arise in connection with Trade Union and industrial disputes and claims which may reasonably be expected to have an effect on the construction period or the total cost of execution of the Works the Contractor shall consult with and pay due regard to any expressed view of the Principal through the Superintendent.

The Contractor in dealing with such disputes and claims shall himself implement and shall use his best endeavours to have the relevant Unions implement such dispute prevention and settlement procedures as may have been agreed up on between the Contractor and the relevant Unions or as may be required in terms of any Industrial Legislation.

Subject to General Conditions 35.5 and 36 as amended in the Annexure Part B, all costs associated with settling any industrial disputes on this project shall be deemed to be included in the Contract Sum and the Contractor is not entitled to additional cost reimbursement for those costs.

1.111 Interpretation of Drawings

The Contractor shall check all dimensions on site before proceeding with the work of the contract. Do not scale drawings, drawings are diagrammatic. Seek clarification from the Superintendent on dimensioning.

1.112 Submissions

a) Construction Progress Gant Chart

Within fourteen (14) calendar days after the date of acceptance of tender, the Contractor shall submit to the Superintendent a detailed chart of the plan of progress, in Microsoft Project gant chart form & PDF format. If the Superintendent considers that this gant chart is not satisfactory, he may require the Contractor to provide an amended gant chart within seven (7) days of being requested to do so.

b) Priced Trade Summary

At the close of tender and together with the Tender Forms, the Contractor shall submit to the Superintendent, a Schedule showing a cost breakdown of elements totalled to equal the Contract Sum (that is to exclude 10% GST). This Schedule shall be used in assessing the value of progress payments claimed by the Contractor.

c) Progress Payments

Procedure for progress payment to the Contractor on this Contract shall be as per AS4000 contract.

d) Project Procurement Plan

Prior to the start of construction, the Contractor is required to submit a Project Procurement Plan showing the review dates (e.g. for shop drawings, samples, etc), order dates, production times and arrival dates of all products, services and materials required in the project. The procurement plan is to be in a format acceptable to the Superintendent and this is to be submitted within 10 days of the Contractor taking possession of the site.

e) Monthly Progress Report

The Contractor shall prepare monthly report document that shall be submitted to the Superintendent by the 23rd Day of each and every Month. This report will need to document the following key items:

1. Project program with the critical path shown in red. Provide a written summary on time impacts together with a summary of upcoming construction activities for the following month.
2. A summary of time extensions granted and include any outline for potential delays for review and consideration.
3. Monthly cash flow table updated for the remainder of the contract
4. Provide a current Contractor's Proposed Quotation Variation register with those quotations that have been approved.
5. OH&S site matters. Report on methods and systems to secure safety on site.
6. Environmental site management. Responsibility of the Contractor is to secure at least 80% of waste produced from the site is recycled and also to maintain environmental management controls for soil sediment run etc.
7. Progress photos of the full project completion for that month
8. Report on key milestones completed
9. Report on upcoming key milestones and anything that will potentially impact on those from being met
10. Update on as-built documentation. We require this information to be updated progressively on a month by month basis and that this be included in the monthly reporting
11. Procurement plan status and completion

1.113 Approvals in Writing

All approvals under this contract must be received in writing to be deemed approved. Verbal approvals shall not be accepted.

1.114 Items Appearing in Specification, Schedules or Drawings

The Contractor is to have allowed in their Tender Contract Sum for all items within the tender and contract documents regardless of whether they appear in only one document location or another. Items which occur in the specification, schedules or drawings are considered to have been allowed for and form part of the accepted Tenderer's Contract Sum.

Should an item appear on drawings and not be scheduled or specified the Contractor is to allow for the supply and installation of a commercial grade proprietary item to suit the drawn item.

1.115 Ambiguities

In the event of ambiguities or contradictions being found in the Tender Documents that would affect Tender Price, the Tenderer must immediately notify the Superintendent. Unless the Tenderer so notifies the Superintendent in writing, it will be deemed that the Tenderer has allowed in his Tender for carrying out the work in accordance with the interpretation of the Tender Documents that involves the greater cost.

It is the responsibility of the Contractor to fully coordinate all contract documents and clarify any discrepancies with the Superintendent prior to signing the contract. Start of work means acceptance of all items as they are documented/specified in the contract documents.

1.116 Project Work Plan – Phasing of Works

The Children's services including Maternal & Child Health (MCH) services shall operate during the construction works of this project. The Council will be deemed to be operating a complete service and this shall be done without impediment by the Contractor.

The Contractor shall identify methods to exclude dust, debris, noise, and nuisance from impacting the Council operation and further more shall employ methods to reduce unnecessary impact.

The Contractor shall maintain at all times in constant dialogue with the Project Management team to identify a head of time any potential foreseeable impact.

A project staging plan has been proposed as part of the Works as a way to minimise disruption to the Centre operation during the proposed construction and refurbishment works.

Prior to starting work the Contractor shall provide a detailed work plan submission to the Superintendent outlining the proposed project phasing, Site Enclosure and Construction Timing to suit the project requirements and minimized disruption to the operation of the Council. The Contractor is to provide their "alternative" work plan identifying phasing plan based on maintaining the Council facility in operation throughout the duration of the contract Works.

Written approval must be given by the Superintendent to the Contractor for the accepted work plan indicating the project phasing submission, prior to commencement of works.

Proposed Phasing Works

To allow for the continued operation of the Council Facilities during the construction of works a portion of the project is proposed to be undertaken in two (2) continuous phases of works, with progressive handovers of work to allow for the continued operation of the Council Children's facilities throughout the construction period, these phases generally include the phased demolition and site preparation of building components. These building components have been identified as Temporary Entry, Temporary Waiting MCH, Temporary MCH and the permanent areas Covered Outdoor, Entry, MCH Waiting, DDA WC, MCH01 and MCH02.

The proposed phasing of works is as follows:

Set up temporary MCH Room, Temporary MCH Waiting and Temporary Entry to Building Access

- a) Upon taking Possession of Site the Contractor shall allow to protect and retain existing building and maintain in complete operation with minimised disruption to service throughout construction of proposed phased works.
- b) Include for setting up a secure site perimeter compound around the area of the proposed work. Installing site sheds and placing of hoardings and protective screening to site to protect from adjoining buildings and neighbouring sites.
- c) Provision of temporary connection of existing buildings on site stormwater & sewer systems to the local Council infrastructure prior to any earthworks to ensure the continued operation of the existing buildings during the works. Provision of temporary power to site as required to maintain the existing facility in operation.
- d) Provide DDA compliant temporary entry door and gravel pathway from existing footpath to south west side of building as indicated on proposed Hoarding Plan, this entry shall be used for access by the Centre users and staff during the construction of the initial phased works. Provide level entry path
- e) Set up hoarding for temporary MCH room within the existing Multipurpose Space (proposed Children's Room 6), includes for dust exclusion and acoustic control. New temporary MCH area is to maintain power and conditioning (conditioning may be in form of portable air conditioners). The Contractor shall be responsible for maintaining the temporary MCH area in complete operation.
- f) Provide secure temporary door from temporary entry foyer into Centre, install temporary deadlock to door of existing accessible WC to secure temporary MCH area from Licensed space in Centre.
- g) Prepare detailed demolition plan for existing buildings on site and preparation of the site for Construction of Stage 1b. Refer to demolition drawing which include cutting back of the existing roof areas and removal of existing roof sheets and insulation and reinsulating, sarking and re-sheeting existing roof.

Construction of Covered Outdoor, Entry, MCH Waiting, DDA WC, MCH01 and MCH02

- h) Construct works in Covered Outdoor, Entry, MCH Waiting, DDA WC, MCH01 and MCH02 through to completion ready for occupation. Bring all services and connections for the proposed later phased connections through to a position at the phasing boundary in readiness for connection to the subsequent phases of work.
- i) Works and associated amenities shall be in full operation with operation of power, security, mechanical systems, etc.
- j) Obtain Occupation Certification and Handover Covered Outdoor, Entry, MCH Waiting, DDA WC, MCH01 and MCH02 to Client for occupation.
- k) Temporary MCH Spaces in proposed Playroom 6 space shall remain in place until the completion of the new entry and MCH rooms and hand over of this space for occupation with a certificate of final inspection for this portion of the Building Permit.
- l) The temporary access route as indicated in the Hoarding plan shall be used for access to the Centre and the temporary MCH space and remain in operation throughout the initial phase works until issue of a certificate of final inspection for the Covered Outdoor, Entry, MCH Waiting, DDA WC, MCH01 and MCH02work.

Construction/refurbishment of Playroom 6

- m) Repositioning of Hoarding works and removal of temporary MCH room and temporary entry door. Works include repositioning of Contractor's compound including hoarding to suit adjusted work zones and site occupation.
- n) Detailed demolition of existing Building and refurbishment works
- o) With the completion of refurbishment works Playroom6shall be recommissioned and handed over to Council for occupation.

Note:

Contractor to issue Phasing Plan at Tender, including locations of hoarding, contractor and building user access and proposed phases of works.

1.117 Variation Claims for revisions/amendments to documentation

Any revisions and/or amendments to the contract documentation set for purposes of coordination/clarifications for the duration of the project are to have been allowed for in the Contractor's Contract price. The Contractor shall cover the cost of any printing, couriers that they require for the effective coordination of their contractors/subcontractors for any amended / revised documentation and associated material that they require for coordination purposes, no variation charge for printing or other related items for coordinating documentation shall be accepted.

1.200 THE SITE & PROTECTION OF THE SITE

1.201 Site Restrictions

Site limitations: The Contractor is deemed to have inspected the site and made due allowance for any site limitations.

1.202 Protection of Persons and Property

Temporary works: Provide and maintain required barricades, guards, fencing, hoarding, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic flagging. Provide detail of the proposed hoarding including approval from Council if any of the hoarding is to occupy any portions of the footpath.

Damage to 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. Rectify immediately any obstruction or damage to such services and provide temporary services whilst repairs are carried out.

Damage to 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. Rectify immediately any interference or damage to such property.

1.203 Existing Services

The Contractor shall locate all existing services on/off Site at contract start prior to commencement of the Works. The Contractor is to bear all costs associated with the location of services. The Contractor shall contact all public utilities and liaise with the Principal prior to the commencement of the Works, to ascertain the precise location of all in ground and above ground services in the vicinity of any proposed excavation or demolition.

The Contractor is to engage a specialist services locator to identify the location of all known and unknown services. A marked up plan showing the location of existing services must be provided to the Superintendent prior to commencing any of the Works.

The Contractor shall attend to existing services as follows with costs included in the Contract:

- a. If the service is to be continued: repair, divert or relocate as required. If such a service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.
- b. If the service is to be abandoned: cut and seal or disconnect, and make safe (including removal of plumbing dead-legs) and note location on "As Built" documents.
All costs associated with repairing, diverting or relocating services to be continued or cutting, sealing and disconnecting unwanted services are to be borne by the Contractor.
- c. The Contractor must test all existing services in accordance with current standards prior to commencing any of the Works to ensure their integrity. Results of these tests must be provided to the Superintendent and the Project Consultants.
- d. **SUBMIT** detail of proposed *Work* to existing infrastructure with 5 days notice.
- e. Provide temporary infrastructure during the infrastructure shut-down. Minimise interruptions. Immediately **NOTIFY**, record & rectify obstruction/damage/contamination of Public/Private infrastructure & the environment.
- f. At Contract start, Record existing infrastructure/property on and around the Site *including* using digital colour, high resolution photos with time & date display, on labeled compact disk, each photo location labeled. **SUBMIT** 2 copies of the Record before on-Site *Work* start. Immediately rectify defects that cannot be proven from the Record to not be *Work* caused.

1.204 Interference with Existing Services

Notify the Superintendent of connection, disconnection or interference with existing services.

Repair, to the satisfaction of the Superintendent, damage which occurs to services during currency of the contract.

1.205 Damage to Services and the Like

The Contractor shall avoid obstruction or damage to roadways and footpaths, drains and watercourses and public utility and other services on or adjacent to the site which are visible, or the location of which can be ascertained by the Contractor from the appropriate authority or from the Contract. The Contractor shall remove any obstruction immediately and make good any damage at his own cost, in default of which the Principal may employ and pay others to execute the work and recover the cost as a debt due to the Principal from the Contractor under the Contract.

1.206 Damaged Services

Where existing services at or adjacent to the site are in non-optimum condition, arrange for an inspection by the Superintendent and the Officer-in-charge of the area responsible for such service. At such meeting, record the condition and follow instructions when issued in writing by the Superintendent.

1.207 Damage to Property

The Contractor shall avoid interference with, or damage to, property on or adjacent to the Site, and shall provide temporary protection and shall repair and reinstate all damage caused thereto by the Contractor either directly or indirectly at his own cost.

1.208 Construction Loads

The Contractor shall verify load limitations on the structure with the Superintendent before commencement of the Works. The Contractor shall ensure that no excessive loads are placed on any part of the erected structure. The Contractor shall provide competently computed safe temporary supports to transfer excess loads from the permanent structure.

If requested, submit computations for temporary supports to the Superintendent and the local authority's Building Surveyor. Include such computations in Operational and Maintenance Manual.

The costs of verification of construction loads are considered to be included within the Contract Price. The Contractor may use the project structural engineer to verify loads, but must enter into a separate consultancy contract and pay for services rendered.

1.209 Adjoining Property

Notice: At least 5 working days before commencing work, submit to owners and occupants of adjoining property written notice of intention to commence work and an outline description of the type and extent of work.

Revealed encroachments: If the works reveal unknown encroachments of adjoining property on to the site or of existing site structures on to adjoining property, immediately seek instructions.

Records: For all adjoining properties:

- a) inspect the properties with the Superintendent and owners and occupants of the properties, before and on completion of the works;
- b) at the initial inspection, make detailed records of conditions existing within the properties, especially structural defects and other damage or defacement; and provide a thorough photographic record of surfaces of existing buildings adjacent to the site.
- c) arrange for at least 3 copies of each record, including drawings, written descriptions, and photographs, to be endorsed by the owners and occupants, or their representatives, as evidence of conditions existing before commencement of work.
Endorsed copies: Submit one endorsed copy of each record to the Superintendent and the adjoining owner. Keep the other endorsed copy on site.
- d) Purpose of submission: Information only.
- e) *Advise* adjoining property Occupants, within *min 3 days*, of noisy, dusty, smelly or polluting Work.

1.210 Approvals, Services, Fees and Tax

- a) Be responsible for the connection of services, water, sewerage, drainage, electricity and gas etc. Apply for such permits, pay for fees and charges levied by relevant bodies for such connections. Issue necessary notices to such bodies. Obtain and pay for scaffolding permit.
- b) Pay tax on items where such tax is applicable.

If tax is not applicable, request from the Principal, via the Superintendent, a tax exemption certificate for use when ordering specified materials.

- c) Pay fees, where applicable, relating to “Workplace health and Safety” Acts and other state or local government acts.

1.211 Site Control

- a) Be responsible for activities on the site including providing access for authorised persons and restricting access by unauthorised persons. Take necessary precautions to secure the assets of the Principal.
- b) Except as otherwise provided in the contract, delivery of materials for the works, space for storage of same and for building sheds, office and workshops.
- c) Do not store waste building materials and flammable liquids in the building.
- d) Take proper precautions to keep poisons and other injurious substances in places secured against access by unauthorised persons.
- e) The Contractor shall employ a full time general foreman who shall be in charge of the works and who shall be on site whenever work is being executed under this Contract by more than two men. Any proper instruction given to the Foreman, whether verbal or written, shall be deemed to have been given to the Contractor.
- f) Arrange for site meetings to occur at regular intervals throughout the contract period. Advise Superintendent and Consultants of meeting times, keep accurate records of each meeting, and issue to each Attendee a copy of the record within three days of each meeting.
- g) Supply and erect minimum 1800mm high safety construction fence and gates as required for site access and security to the site and as required, using chain wire mesh and pipe poles or similar approved by Superintendent. Maintain fence in good condition throughout the Contract.

1.212 Compliance with Ordinances, etc.

Comply throughout with the requirements of relevant sections of the National Construction Code and Building Code of Australia.

Whenever work or type of plant or machinery, etc. is required either by the specification or by the relevant statutory authority, provide full details of such work, plant, etc. to the relevant statutory authority and make such applications, etc. as may be required within two weeks of receipt of Letter of Acceptance.

In such cases, approval given by the Superintendent to data submitted by the Contractor will not necessarily imply that such data meet the requirements of the relevant statutory authority.

1.213 Sub-Contractors and Manufacturers

Within seven days of receipt of the Letter of Acceptance, supply to the Superintendent a complete list of Sub-Contractors and Manufacturers proposed for the Works. The Principal, through the Superintendent, reserves the right to reject any so listed.

1.214 Testing of Existing Services

The Contractor must test all existing services in accordance with current standards prior to commencing any of the Works to ensure their integrity. Results of these tests must be provided to the Superintendent and the Project Consultants.

1.215 Site Allowance

The Contractor shall allow for any net Site Allowance, which may be applicable to this project, including all on-costs.

Site Allowance shall be in accordance with the Contractor's current Industrial Instrument and shall be wholly included in the tender price.

1.216 Temporary Works

The Contractor shall, at his own cost, provide, erect and maintain all barricades, guards, fencing, temporary roadways, footpaths, signs and lighting and provide and maintain all watching and traffic flagging lawfully required by any Relevant Authority necessary for the protection of the Works or of other property or for the safety and convenience of the Site operations, and shall remove the same when no longer required. All Temporary Works required, for the protection of persons and property will be to Superintendent's entire satisfaction and to his sole discretion.

1.217 Nuisance

The Contractor shall prevent nuisance to the owners, tenants or occupiers of properties on the Site or adjacent to the Site, and to the public generally.

1.218 Pedestrian and Vehicular Access

It is imperative that the Contractor and/or his Subcontractors (Selected or otherwise), at all times maintain proper and effective pedestrian and vehicular movement around the site giving adequate access to other site activities and other traffic. A directive given by the Superintendent to remove any obstruction, be it a barricade, hoarding, parked trucks or the like must be complied with immediately on receipt such a directive (including orally), in default of which the Principal may employ and pay others to execute the work and recover the cost as a debt due to the Principal from the Contractor under the Contract.

1.219 Weather

The Contractor shall take all necessary precautions to protect the Works from damage by inclement weather or any other cause. The Contractor is responsible for any repairs as a result of inclement weather. Provision of weather protected walkways to the Site from the Site amenities to ensure personnel can access the Site at all times is the responsibility of the Contractor.

1.220 Pollution of Adjacent Areas

The Contractor shall take all precautions necessary to prevent the discharge of mud, dust, water, fumes, smoke, rubbish, and other pollutants from the Site to any adjacent areas.

1.221 Protection of existing trees, landscaping and driveways

Protect all trees, plants, driveways and landscaping features not required to be removed. A preliminary pegging shall be carried out by the Contractor before clearing, at which stage he shall at the direction of the Superintendent mark all trees and shrubs required to be retained.

1.222 Site Reinstatement

The Contractor shall reinstate, to a condition compatible with its original state, all parts of the Site and existing facilities or improvements that have been disturbed or damaged as a result of the execution of the Works. The Contractor shall clean and repair all damage including damage caused by temporary work and rectify all driveways and crossovers as part of completion of the Works.

1.223 Rubbish

The Contractor shall maintain the site and works in clean condition and remove waste materials and debris as they accumulate. The Contractor shall ensure that no waste or debris is dumped outside the working area and shall hose as required to lay dust. The Contractor shall provide fly proof rubbish bins for collection of domestic garbage, including cans and bottles, food scraps and the like originating on the Site, and arrange regular removal of garbage. The Contractor shall prevent infestation by vermin and insects.

The Contractor shall be deemed to have allowed for a washout facility, and working to Environment Protection Authority (EPA) requirements. The street or public areas are not to be affected by materials and roadways and paths are to be cleaned weekly.

The Contractor shall allow to progressively clean the works on a daily basis. Any site cleaning costs incurred through failure by the Contractor to clean may be deducted from the Contract Sum.

1.224 Environment

The Contractor shall promptly notify the Superintendent of any occurrence of the following:

- a) emissions of pollutants to air, land or water; complaints from others or neighbours about pollution or noise; or
- b) incidents with potential for emission of pollutants; or incidents involving failure to comply with the site Environmental Management Plan.

1.250 SITE FACILITIES

1.251 Site Accommodation – General Information

The tender price shall include allowance for Site accommodation which needs to be constructed and provided within the Work area as per the requirements of the Contractor's current Industrial Instrument and industry standards. Site accommodation must include allowance for a Peggy and First Aid, Occupational Health and Safety Representative and Foreman.

Cost of reticulation and connection of services to be borne by the Contractor and cost of usage by the Principal.

Site drawings are to be provided by the Contractor to the Principal for site accommodation, access, hoardings etc.

Contractor to allow for what is necessary to complete the works in a safe manner and maintain access including emergency access/ egress for both pedestrians and ambulances.

Contractor to allow for all hoardings to perimeter of site, hoardings as required for pedestrian access/ egress, gantries if required, fencing if required, and all shielding of Site.

1.252 Contractor's Office

The Contractor shall provide temporary offices as required for the performance of the Works, complete with external telephone, computer and fax facilities. The Contractor shall provide an office of sufficient size to accommodate formal Site meetings and provide suitable table and chairs for Site meetings. An existing space can be used for site meetings by arrangement with client.

The Contractor is to provide a marked up drawing with the tender outlining the areas proposed to be used for Site facilities.

1.253 Temporary Services

Any temporary connections to existing site services must be approved by the Principal prior to the connection. Contractor to provide all temporary services for its trades to complete the works i.e. lights, electrical, water points etc.

- a) Temporary Fire Extinguishers
The Contractor shall provide fully charged and accessible fire extinguishers as are necessary for the care and safety of the Works.
- b) Telephone
The Contractor shall provide a telephone service and shall pay all costs of installation, rental, calls and removal. Provide fax machine under similar conditions.
- c) Light and Power
The Contractor shall provide a temporary power supply from the nearest existing service. All costs associated with the power supply including electricity charges shall be paid by the Contractor. Remove temporary supply at the completion of the works.
- d) Water
The Contractor shall provide a temporary water supply, from the nearest existing service, which shall be removed at the completion of the Works.

1.254 Sanitary Accommodation

The Contractor shall provide on the Site suitable temporary enclosures and conveniences for the use of workers, maintaining same in a clean and sanitary condition in accordance with the requirements of local authorities, and on completion of the project, remove the enclosures and conveniences from the Site, treating any fouled ground and leaving the whole area in a hygienic condition. Should the Contractor elect to connect sanitary accommodation to existing sewer systems on the Site, all reticulation costs are to be borne by the Contractor.

1.255 Temporary Fences and Hoardings

The Contractor shall provide, maintain and clear away at completion all temporary fences, hoardings and barriers necessary or required by local authorities for protection of persons, together with all associated temporary lighting and signage.

The Contractor shall submit plan with timeline and the arrangement for this provision is to be agreed with and approved by Principal and Superintendent.

Any graffiti or vandalism of temporary fences or hoarding to be promptly rectified by contractor at no cost to principal, ensure safe working conditions at all times.

1.300 MOBILISATION

Prior to the Contract Program start date (agreed **date of possession of site**), the Contractor shall:

- a) Meet with the Principal and Superintendent to establish traffic management requirements for maintenance of the Principal's logistical movements during the construction period;
- b) Submit a construction program in accordance with Clause 1.8.2 to the Superintendent for review;
- c) Submit site specific Occupational Health and Safety, Quality Assurance and Environmental/Waste documentation as specified in this document;
- d) Undertake Contractor Induction with the Principal's Engineering Department;
- e) Establish a thorough understanding of the Principal's notification and services interruption procedures;
- f) Meet with the Principal's Occupational Health & Safety representatives to ensure any Safety Control requirements are clearly understood and agreed;
- g) Let primary subcontract trades and advise the Superintendent of all subcontractors to be engaged;
- h) Allow to carry out a Dilapidation survey and provide a report with photos on the existing conditions prior to starting the works and inspect adjoining premises before commencing work;
- i) Confirm Site Representatives;
- j) Establish Site facilities and amenities;
- k) Prior to commencement on Site, the Contractor shall submit to the Superintendent complete compliance documentation which shall include:
 - i. Public Liability Insurance Certification; and
 - ii. WorkCover Certificate of Currency;
- l) Provide Contractor's All Risk Insurance;
- m) Provide all required insurances to protect adjoining properties.
- n) Pay all Permit fees to local authority and maintain Town Planning Permit conditions; and
- o) Provide a Building Practitioners Registration name for carrying out the construction works, all road permits, Council, Vic Roads, footpath, and temporary crossover permits.

1.301 Site Establishment

During the Mobilisation Period, the Contractor is to establish his Site sheds, amenities and commence erection of any Site fencing and/or hoarding. All facilities must be adequate to meet any OH&S and industrial relations standards.

The Contractor is responsible for liaising with Authorities to establish all requirements in relation to Site establishment.

1.350 TRAFFIC MANAGEMENT

1.351 Site Access

All vehicles must enter and exit the site through the nominated entrance, to be agreed with and approved by and Superintendent.

1.352 Parking

Contractor's vehicles shall not obstruct roads, driveways, escape routes from buildings or fire protection equipment and all speed limits must be defined, clearly displayed and observed.

1.353 Traffic Management

The Contractor is to allow for traffic management including external road and footpath, pedestrian and client control within, entering and exiting the site.

The Contractor is to make themselves aware of the traffic management requirements associated with work at this Site. No variation shall be granted for disregarding this advice.

Provide and maintain traffic control in accordance with the appropriate authority's requirements or as needed for the safety of persons and property.

Traffic management includes all painting of 'zebra crossings', line markings, construction of crossovers, all barriers, bollards, safety devices and warning signs required to maintain safe access / egress to construction / traffic and access.

1.354 Trucking

The Contractor and all subcontractors shall convey soils, earth, sand, loose debris, and the like loose materials to or from the Site in a manner that will prevent dropping of materials on streets or footpaths, ensuring that the wheels, tracks and body surfaces of all vehicles and plant leaving the Site are free of mud and that mud is not carried on to adjacent paved streets or other areas.

All debris, spoil, rubbish or materials shall be suitably contained and covered in vehicles during transportation to or from the Site to prevent spillage or contamination of adjoining and other areas or property. The Contractor is to allow in his price provision for wetting down and covering of all vehicle loads.

1.355 Emergency Vehicles

There is no entitlement to claim any cost for ceasing works while emergency vehicles enter / exit the access road. The Contractor is **not** entitled to an Extension of Time for any such event.

1.356 Material Deliveries

All deliveries are to be made to the site and received by the Contractor.

1.400 ADMINISTRATION

1.401 Site meetings

Hold and attend site meetings throughout the contract and ensure attendance of appropriate subcontractors, the Superintendent, and appropriate consultants.

- Frequency: Fortnightly

Minutes: Keep minutes of site meetings and within 3 working days after each meeting, submit to each party written copies of the minutes.

Contacts: At the first site meeting, submit names and telephone numbers of responsible persons who may be contacted after hours during the course of the contract.

- Purpose of submission: Information only.

1.402 Cash Flow Forecast

Simultaneously with provision of the construction program, the Contractor shall provide a forecast of the anticipated cash flow corresponding with proposed times and dates for payment claims. The Contractor shall update that forecast with every change of the construction program or as requested by the Superintendent and furnish a copy of each forecast to the Superintendent.

With each progress claim, the Contractor shall submit a statement of amounts claimed in respect of each section or trade heading designated in the Specification, together with variations included in the claims. No payments shall be made for variations that have not been separately stated in this way.

1.403 Site Records

The Contractor shall make legible records daily of the weather conditions, materials, labour and construction plant on the Site, and on request provide these details to the Superintendent. In regard to labour, the Contractor shall record the number and description of each classification of tradespersons and staff employed on the Site.

For any time lost due to inclement weather, the Contractor shall ensure that a representative of the Principal signs off a daily record sheet.

The Contractor is required to submit evidence in the form of a weather report specific to location and for claim date with each claim of notice of delay for inclement weather before they can be assessed. Any inclement weather claims are required to stipulate how the critical path works have been affected and what was done by the Contractor to avoid the potential impact.

1.404 Site Documents

The Contractor shall keep a copy of the current drawings and specifications available on Site for the duration of the Contract, properly registered, maintained and up to date, including copies of the approved Building Permit documents.

1.405 Progress Photographs

The Contractor is to provide digital colour progress photographs on a weekly basis or as nominated by the Superintendent. The Contractor is to identify the project, date, time, location and orientation of each photo.

1.406 Progress Claims Statement

The Contractor shall submit to the Superintendent with each Progress Claim a signed statement, together with all documentary evidence as may be requested by the Superintendent, that:

- a) Sub-Contract payments due for work done the previous month and included in the previous month's Progress Claim have been paid;
- b) Wages due to employees engaged on the Works and included in the Progress Claim have been paid;
- c) Selected and Nominated Subcontractors' and Manufacturers' accounts included on previous Progress Claims have been paid;
- d) Insurances required under the Contract are current;

- e) Payments due under the Industrial Arbitration Act and the Pay As You Go legislation have been paid;
- f) Wages, site allowances, industry allowances, clothing allowances and industry superannuation and redundancy contributions due to all directly employed persons have been paid at not less than current rates as applicable under relevant awards, and
- g) Subcontractors, selected, nominated or otherwise, have paid all wages, site allowances, industry allowances, clothing allowances and industry superannuation and redundancy contributions due to all their employees at not less than current rates as applicable under relevant awards.

1.407 Timing

The Contractor is to submit to the Principal full pricing of any claim for variation in a timely manner. A full breakdown of the variations is to be provided, including individual subcontractor prices.

1.408 Minor Items

Minor items not expressly mentioned in the Contract but which are necessary for the satisfactory completion and performance of the work under the Contract shall be supplied and executed by the Contractor without adjustment to the Contract Sum. Variations submitted contrary to the intent of this clause shall not be allowed.

1.409 End of Month Reporting

The Contractor is to prepare at the end of each month a single consolidated pdf report and issue to the Principal and the Superintendent. The first monthly report is to be submitted to the Superintendent as a draft for review and approval prior to issuing to the Principal.

The report is to include all the headings as listed below:

- **Summary of Progress**
To include a list of all items that have been completed in the past month
- **Program for the next two weeks**
To include a list of all items that are proceeding in the next two weeks with any priority items or hold points noted
- **Progress Claims**
- **Variation Register**
- **Construction Program**
To be updated at the end of each month to accurately reflect the construction progress on site. This program is to include a critical path.
- **Extension of Time Claim**
All extension of time claim for the month of the report are to be include as a single list with the date claimed, the reason and weather charts were applicable.
- **OH&S Report**
- **Industrial Relations**
- **Environmental Report**
- **Site Photos** (The Superintendent is to provide a marked up plan with the locations of the photos to be taken from for inclusion in each monthly report)

Purpose of the Report is for information and a record of completed works.

1.500 EXECUTION OF THE WORKS

1.501 Dilapidation Report (Record):

Prior to commencing works on site provide a photographic and written record of the condition of the existing building, adjoining buildings, and other relevant structures or facilities which shall be used amongst other things as a means of assessing the responsibility for damage and/or making good arising out of the performance of the work under the Contract.

As a minimum the dilapidation survey report shall contain photos at high resolution (photos shall be able to be printed at A3 size at 600 dpi or higher resolution). Photos shall be clearly labelled, dated, easily identifiable and provided with a location plan indicating where each photo record was taken from.

The Dilapidation Report(s) shall be submitted to the Superintendent in a suitable format for their review and approval.

An electronic copy of the approved Dilapidation Report(s) and one (1no.) hard copy print format to be provided to the Superintendent to pass on to the Owner, a second copy of the record(s) can be retained by the Builder.

1.502 Surveys

The Contractor shall ensure that Works are set out in accordance with the drawings.

The Contractor shall verify all dimensions, bearings, levels and the existence of services. The Contractor shall be responsible for the correct setting out of the building and for the accuracy of the whole of the Works and shall make good, at the Contractor's expense, any errors that occur.

The Contractor shall after setting out the Works, submit to the Superintendent a survey drawing obtained from a Licensed Surveyor, certifying that the Works have been laid out in accordance with the Contract and in particular with the drawings.

The Contractor shall refer to the Superintendent for instructions in the case of any discrepancy between drawings and physical features on Site. In doing so the Contractor shall present to the Superintendent its recommended solution.

The Contractor shall co-ordinate and is fully responsible for the accurate and comprehensive setting out of the Works, including but not limited to:

- a) Foundations for columns and walls prior to erection of any column or wall;
- b) Columns and beams between lowest floor level and uppermost roof level and penetrations through for services;
- c) Finished levels of all floors;

- d) Walls, floor outlets and other services, including those in false ceiling spaces or cast into concrete elements; and
- e) The buildings and subsequent erection thereof in accordance with the documents within the boundaries of the Site.

1.503 Contractor Supplied Documents

Where the Contract requires the Contractor to supply documents such as shop drawings, technical schedules or other written information, supply sufficient copies so that:

- a) a copy may be retained by each interested party including the Superintendent; and
- b) after examination, the copies required by the Contractor for his own use may be returned to the Contractor, together with a copy to be left on site and available for reference.

All other requirements shall be in accordance with the Contract and associated contract documentation.

Documents shall be supplied in sufficient time for examination, and revision if necessary, to occur before they are required for use.

1.504 As-Built Drawings

During construction the Contractor shall keep accurate records of the exact size and location of all service pipes, ducts etc, including all branches, changes in direction, fittings, cocks, points of access, cleaning and access manholes, sumps and junctions.

As Built information shall include dimensioned offsets from fixed identifiable positions to the installed service particularly where the service is concealed in ground or within a ceiling/wall/floor space.

The Contractor is to prepare as built information on a monthly basis of the completed works and shall submit as minimum hand marked up As Built information as part of their monthly Progress Claim.

Prior to Practical completion of the works, the Contractor is to produce, prepare and submit "As Built" drawings in electronic CAD format (as minimum Autocad latest version of to approval of Superintendent)

Before preparing final "As Built" drawings, the Contractor shall consult with the Superintendent as to the form of presentation required and the procedure to be adopted with the issue of these documents.

The Superintendent will supply free to the Contractor, on request, any available AutoCAD or Hardcopy Project drawings for the Contractor to record accurately and clearly document all relevant services details.

The Contractor is to provide three (3) sets of final "As Built" drawings in hardcopy format to scale on the same sized drawing sheets as the project drawings, (1) electronic copy in AutoDesk current version of AutoCad Dwg or Revit format, and (1) electronic copy in PDF format for:

- a) All essential and non-essential services
- b) Civil Storm water / Hydraulics Sewer & water supply
- c) Structural (shop drawings)
- d) Electrical works

- e) location of electrical conduits
- f) Record of Installation

The Contractor shall mark and dimension on a plan the exact position and depth of all services and drains, underground piping, branches, inspection openings, valves and soil plumbing, sewer drains, stormwater drains, agricultural drains, gas and electrical conduits. Variation to Services shall be marked on the plan progressively as the work proceeds and not at the completion of the Contract.

Electronic Files of the 'as-built' drawings are to be submitted to the Superintendent on appropriately labelled USB memory sticks or a Superintendent approved media.

These 'as-built' drawings in a Principal approved format must be delivered to the Superintendent before the Certificate of Practical Completion will be issued.

1.505 Operations & Maintenance Manuals

In order to reach Practical Completion, the Contractor shall provide the full operating and maintenance manuals and associated technical data and drawings necessary for the efficient operation and maintenance of installations included in the Works. The format shall be electronic and in PDF format.

The Contractor shall coordinate and prepare and produce the manuals including items by the Contractor, Subcontractors, selected or otherwise, the manuals shall include but not be limited to the following:

- a) a general description of the installation.
- b) a description of all systems with a separate description for each system.
- c) start and stop procedures.
- d) identity of equipment /manufacturers, including names, addresses and telephone numbers.
- e) equipment details.
- f) maintenance requirements.
- g) manufacturer's handbooks, performance data sheets.
- h) wiring diagrams and the like, as applicable.
- i) complete description of the sequence of the operation and the function of the automatic controls.
- j) detailed commissioning and testing results of all services.
- k) Warranty information.
- l) Schedules for:
 - i. Building Element Warranties
 - ii. Capital Replacement of mechanical, electrical, electronic and security equipment
 - iii. Preventative Maintenance
 - iv. Spare Parts

In all cases operating and maintenance manuals shall be produced with four copies and, where possible, in a standard format, bound and having A4 size pages with A3 size diagrams. An additional 2 no. copies of all Operating and Maintenance Manuals shall be provided to the Superintendent in electronic PDF format on suitable sized USB memory sticks.

At a minimum, the Contractor shall provide a General Architectural Operational and Maintenance Manual, to the Superintendent's satisfaction, which includes:

- Table of Contents
- Fault reporting Framework and Contract Contacts (including sub trades)
- Emergency Contact List
- All Compliance Certificates / witness tests
- Defects Reporting Register
- Dilapidation Reports (original and final)
- Permits / Certificates / Legislative Requirements and Approvals (occupancy permit, amended building permits, building permit, town planning approval, building surveyor inspection reports, copy of town planning stamped drawings, copy of building permit stamped drawings, any council signoffs and approvals, certificate from licensed surveyor certifying that the works are located within the boundaries of the site, CFA reports, dispensations, construction loading calculations and certifications, form 11 and 12 certification and inspection reports
- Installed to manufactures specifications letters
- Architectural compliance certificates (waterproofing, glazing etc)
- Geotechnical, Environmental and Hazardous Materials reports
- Paint schedule
- Door and Door Hardware Schedule (from subcontractor)
- Witness Testing and Client Training record
- Maintenance instructions for floor coverings, windows etc.
- Master key schedule
- Cleaning and maintenance instructions for architectural items to manufacturers recommendations

Spares and tools

At least eight (8) weeks before the Date for Practical Completion, the Contractor shall submit a schedule of spare parts necessary for maintenance of the installation. The Contractor shall state against each item the recommended quantity, and the manufacturer's current price, including for:

- a) Packaging and delivery to site;
- b) Checking receipt, marking and numbering in accordance with the spare parts schedule;
- c) Referencing equipment schedules in the operation and maintenance manuals; and
- d) Painting, greasing and packing to prevent deterioration during storage.

At Practical Completion, the Contractor shall supply two (2) complete sets of special tools and portable indicating instruments necessary for operation and maintenance of equipment together with suitable means of identifying, storing and securing the tools and instruments, including instructions for use.

1.506 Coordination of Drawings

The entirety of the contract documentation which includes the specification, schedules, engineering and architectural documentation is to be thoroughly co-ordinated by the Contractor with all the trades, sub-contractors and Manufacturers for a total and complete handover of the building and facility.

The Contractor is not entitled to a variation under the Contract where the Contractor has not cross-referenced or co-ordinated the information in the contract documents.

1.507 Witness Testing

Practical completion requires that the Contractor has demonstrated, to the satisfaction of the Superintendent, including testing required by the Superintendent, that all services, including services which existed prior to the commencement of the Works and which interface or interact with the Works, perform as required by the Contract under the maximum operating conditions. Those parts of the Works which comprise of plant and equipment and all mechanical, electrical, fire protection and other services are:

- in continuously useable condition under the maximum operating conditions for the Works provided for in the Contract and simulated emergency operating conditions or, if none are expressed, which could reasonably be anticipated by a competent and experienced contractor; and
- meet all requirements for emergency operating conditions which could reasonably be anticipated by a competent and experienced contractor;
To achieve the above requirements, the Design Engineers, the Contractor and the Principal will need to witness test the operation of all such items, including those described below:

i. Mechanical

- Full mechanical system under full operating conditions

ii. Fire Services.

The various testing authorities have carried out an independent test of the fire services and provided certificates to that effect. (E.g. hydrant system).

Witness the operation of the following items:

- Shut down of the air conditioning equipment on a fire alarm signal
- Operation of the Emergency Warning Intercommunication System (EWIS)
- Smoke detectors
- Fire Pump
- Hydrants

iii. Electrical

- Data (interface between different computers and other equipment)
- Lighting system (switching and 100% lighting at power failure)
- Security (PC interface with lighting and access control) how this goes off
- Emergency Lighting
- Door security and alerts

1.508 Commissioning & Systems Programming

The Contractor is to provide for all systems nominated for the project and shall allow for all necessary commissioning and all programming/reprogramming of systems to enable the nominated building systems and services to operate for the new building works in conjunction with any existing to the satisfaction of the Superintendent.

A comprehensive commissioning and quality monitoring report is to be completed prior to practical completion including for Building management systems, HVAC, Services, Security Systems and Fire Engineering. This is to include

- A commissioning report

- Training of building management representatives
- Independent certification from the CIBSE confirming that commissioning of the building services have been completed in accordance with CIBSE guidelines

CIBSE
<http://www.cibse.org/about-cibse>

1.600 MATERIALS AND WORK

1.601 General

Where there are conflicting requirements between drawings and the Specifications (or within the drawings or Specification), the Contractor is to confirm actual requirements with the Superintendent prior to proceeding with any of the Works.

1.602 Substitutions

The Contractor shall be deemed to have checked and satisfied itself that all materials specified in the Contract are obtainable.

The Contractor shall place orders and make necessary arrangements to ensure the supply of materials and goods is maintained for the execution of the Works by the various milestone dates and the Date for Practical Completion.

No substitution will be authorised through failure of the Contractor to place orders in sufficient time to avoid delays to the Contract other than in circumstances where the Contractor can demonstrate that delay in material supply is or was beyond the Contractor's control. No claim shall arise from any refusal of the Superintendent to approve a substitution and delays in materials supply will not entitle the Contractor to an extension of time to the date for Practical Completion.

Where specified materials are unobtainable, the Contractor shall notify the Superintendent in time to avoid delays to the Contract. Obtain written instructions from the Superintendent before commencing any work associated therewith.

Unless otherwise agreed, no substitution for unobtainable materials shall increase the Contract Sum. If the substituted item costs less than the specified item, the difference shall be deducted from the Contract Sum at the discretion of the Superintendent

The Contractor shall notify the Principal of materials, equipment or products that meet the aesthetic and functional intent of the Contract and comply with the design intent and that may present greater benefits in relation to build ability, program and costs than those specified or indicated in the Contract.

1.603 Standards and Legislative Requirements

Unless otherwise specified in the Contract, and where applicable, materials and workmanship shall be in accordance with the relevant legislative requirements and to standard of the Standards Association of Australia.

The standard applicable to the Works shall be the edition last published prior to the closing date for tenders unless otherwise specified.

The Contractor shall comply with quality procedures as laid down in Australian Standards all to the entire satisfaction of the Superintendent.

1.604 Proprietary Items

Throughout this specification, proprietary items (product brands) may be listed. The identification of a proprietary item shall not necessarily imply exclusive preference for the item identified, but shall be deemed to indicate the required properties of the item (such as type, quality, appearance, finish, method of construction and performance). A similar alternative item having the required properties may be offered by the Tenderer during tender submission. The acceptance of the proposed alternatives shall be subject to review by the principal and confirmed prior to contract award.

When offering an alternative for approval, the tender shall provide all available technical information (including any other relevant information requested by the principal). If so requested, the tenderer is to obtain and submit reports on relevant tests by an independent testing authority. The tenderer shall state whether the use of the alternative items will require alteration to any other part of the proposed works. If the alternative is adopted, the tenderer shall carry out any such alterations to the proposed works without extra charge.

A proprietary item shall be any item identified by graphic representation on the Drawings, or by naming one or more of the following: manufacturer, manufacturer, installer, trade name, brand name, catalogue or reference number, and the like.

The identification of a proprietary item shall not necessarily imply exclusive preference for the item so identified, but shall be deemed to indicate the required properties of the item, such as type, quality, appearance, finish, method of construction, performance and the like.

A similar alternative item having the required properties may be offered by the Contractor. The Superintendent may in his absolute discretion adopt or reject the alternative.

When offering an alternative for approval, provide all available technical information, and any other relevant information requested by the Superintendent. If so requested, obtain and submit reports on relevant tests by an independent testing authority.

The Contractor shall state whether the use of the alternative will require alteration to any other part of the Works. If the alternative is adopted, carry out any such alteration without extra charge.

No claim shall arise from any rejection, nor, unless otherwise agreed, shall adoption of an alternative be ground for any claim for variation to cost or time.

The Contractor must obtain approval of any proposed alternatives in writing from the Superintendent, verbal approvals of alternatives shall not be accepted.

1.605 Prototypes

Items in respect of which prototypes are required shall be completed in advance of trade sequences for that section of Works to allow for evaluation and testing and, where necessary, for modifications to be made, tested and incorporated in the manufacture prior to main installation.

Prototypes may remain in position as part of the Works at the discretion of the Superintendent.

1.606 External Materials

External materials to be *external* grade. *Moisture exposed* materials to be moisture/corrosion resistant. If *external* material fixing is un-doc, provide to Engineer advice. Provide proprietary RTA tested materials.

Provide *external* systems to be weather/draft-proof & prevent wind-blown rain being forced back behind *external* materials. Flash/water-seal & air-seal *external* material edges, openings, joints & fixings. Do not penetrate lapped *external* materials. Higher materials to lap over lower materials.

Exposed to view building services & other components connected to the building to be colour matched to adjacent building materials, UDO.

Vermin Entry: Provide permanent metallic materials to prevent bird & rodent entry into building fabric.

1.607 Substrate Preparation

Substrate: Solid, clean, with no deposits, sealers, curing compounds, oil/grease, to impair finish/adhesion, including concrete bond breaker. Allow for materials shrinkage/growth/movement.

Cure & dry *substrates* before applying other materials. Fill hollows/voids using high strength, colour matched *proprietary* filler product. Remove projections. Prime/seal *substrates* as advised by the Manufacturer of the overlaid material. Confirm *substrate* moisture content requirements with the overlay material Manufacturer.

1.608 Hardware & Operational Components

Provide *proprietary* hardware/mechanicals to achieve completed & operational condition.

Supply as assembled as possible, in dust/moisture proof, individual & labelled packaging. Include templates, fixings, Manufacturer fixing advice. Provide for correct right/left handing. If *exposed to view* hardware colour & finish is un-doc, **NOTIFY**.

Safety: Provide to not cause User injury, including by: **a)** sliding frames, no scissor action, **b)** hand operation not to result in injury against adjacent elements, **c)** *min* unrestrained clamping action.

Provide acoustic mountings to isolate structural vibrations where required.

Operable parts clean, smooth, balanced, effortless, quiet operation, no binding/excessive play/selfmove, correct tension, lubricated *if required*. Seal when *moisture exposed*.

1.609 Motorised Components

Proprietary, electric powered, with manual over-ride (for unintentional hand-operation), optional manual operation facility, hard-wired (concealed) unless *doc* as radio remote operated, power isolation switch, obstruction auto-stop/reverse safety function. Locate control as *doc* or if not *doc*, allow to locate as close to the motor as practical 1200mm above *FFL (UDO)* & **NOTIFY**.

Motor to be Manufacturer certified for the applicable use. Motor *includes* limiting switches, over-load cut-out, & metal encased/sealed when *moisture exposed*. Electrical *Work* Electrical *Engineer* certified.

Provide services connection to enable full function.

Provide a 1 year Installer/Owner Service Contract (from Practical Completion), for Installer to maintain & service equipment. *Include* a maintenance/servicing program **SUBMIT a)** copy of Contract, **b)** operation & maintenance manual **c)** Defects Liability Period Servicing program.

1.610 Slip Resistance

Before Practical Completion & at the end of the Defects Liability Period, *Site* test each area/room *documented* with a slip resistance rating, to AS/NZS 4663 'Existing Surfaces'. **SUBMIT** slip resistance maintenance methods.

1.611 Make Good

Make good to original condition, new & existing materials & finishes damaged or altered due to; *Work* conduct, existing material removal, or previous damage/corrosion. *If required*, dismantle & reassemble elements to make good to concealed or partly concealed items.

Immediately **NOTIFY** of damage/corrosion to new & existing materials or finishes.

Reinstate *Work* damaged *Site* & adjacent surrounds *including* planting, to pre-Contract condition, *Unless documented otherwise*. Refer also Sub-SECTION 2 'Infrastructure & Property'.

1.612 Superintendent Compliance Requests

At *Superintendent* request, **SUBMIT** detail demonstrating *doc* compliance on proposed or completed *Work*, regardless of *submission* status specified. Non-compliant *Work* is to be rectified by *instruction*.

No Contract variation given for demonstrations, *submissions* or rectifications.

1.613 Contractor Design

Provide design & *Work* where *Work* is not fully *doc*, compliant with the *BCA* (*including* *BCA* Part 'Acceptance of Design & Construction') & applicable *A/O Standards*. *Provide* materials suitable to function, load, location, finish, fabrication. Do not infringe on patents, registered designs, trademarks/names/copyrights or other protected rights.

Work which is load bearing, has uncommon loadings, or is *external* to be *Engineer* certified.

1.614 Architectural & Services document Co-ordination

Comprehensive coordination of architectural and services documentation and associated building work shall be the Contractor's responsibility.

The Contractor shall be responsible for the detailed coordination of all engineering services, including civil, structural, hydraulic, mechanical, electrical, communications and fire services.

All services shall be thoroughly coordinated prior to installation. Should work proceed without coordination being undertaken and should any trade subsequently not be able to effectively proceed with their respective installation, the work initially undertaken shall be removed and reinstalled. Claims for variation shall not be approved should they be due to a lack of effective coordination.

The architectural and services drawings and specifications are to be read as a complete set (i.e. not as individual trade sets). Items of work on the drawings or in the specifications shall be interpreted as complete items i.e. install hot water service complete (including all hydraulic, electrical, mechanical, fire and building works to complete the item).

The layout of plant and equipment as shown on the Drawings is diagrammatic only. Contractor to obtain measurements and other information necessary from appropriate site investigation during construction to carry out the Contract.

1.615 Workmanship

All workmanship shall be of a high standard throughout.

Only suitably licensed tradespersons shall be employed on work that any authority having jurisdiction requires to be carried out by licensed tradespersons.

Where the workmanship is not consistent with good trade practice or standards, or where any plant is inferior in quality to that specified, the work shall be made good. Rejected work or materials shall be removed from the site within 24 hours of such rejection. Defective work shall be reconstructed to conform to the specified requirements.

Provide Work to good quality industry standard as documented (*doc*) & if not *doc*, *provide* to an Australian Tertiary Technical College or to the applicable Trade Association *advice*.

Work to be undamaged, secured, maintained & protected.

Provide for permanence, *min* future maintenance, stability, *min* corrosion, optimum performance, material movement, uniformity, consistency. Allow for physical/climatic effects.

TBA *Provide Work* quality assurance to AS/NZS ISO 9001. QA audits may be conducted randomly.

Provide materials square, centred, aligned, flush, plumb/level, straight, unless documented otherwise (*UDO*). Conceal cut & drilled *exposed to view* edges. Cut straight & smooth with no end-cut over-run. Joints to be minimal, tight & neat. Materials to be seasoned/cured & if not, allow for shrinkage/growth.

Compatibility: Check all materials suitability for the application & compatibility with contacting materials. Separate incompatible materials & same water not to flow over incompatible materials.

Ordering/Delivery/Storage: To suit *Site* conditions. Keep *min* on-*Site* storage. Avoid concentrated storage loads. Store level & off ground, dry, out of direct sunlight, rain & other damaging weather.

Materials on *Substrates*: *Provide* to consistent materials/colours/finishes to all *substrate* faces *including* reveals, edges, recesses, projections, *UDO*. Fix/bond fully to *substrate* (not loose or drummy), *UDO*. Junctions flush, *UDO*.

Frames/Trim/Guides: *Min* joints, lengths long as possible. Frame full perimeter, *UDO*. Mitre join unless impractical to do so or *UDO*. *Proprietary* item joints made by quality controlled factory process.

Floor/Pavement Surfaces: *Provide* flush finish, *UDO*. If ramping is required to meet an adjacent floor/pavement finish, *provide* a ramp of solid material between the 2 finishes *max* 1:20 gradient.

Movement/Expansion Joints: Extend through all finishes & materials without bridging. *Provide* to allow structural element deflection over non-load bearing structures to *Engineer advice*.

Temporary Protection: *Provide* & remove at concealment/finishing, otherwise at Practical Completion. If ambient temperature is outside 5-35 deg C, *provide* to *Engineer advice*.

1.616 Site Behaviour

The Contractor shall ensure that the behaviour of workers on the Site does not offend the occupants of either the site or adjoining properties and shall remove from the Site anyone whose behaviour is unacceptable to the Principal. This shall include the requirements for:

- a) No pets
- b) Music or radios allowed but to acceptable noise level (privilege at discretion of Superintendent)
- c) No swearing
- d) No abusive language
- e) No drugs or alcohol

The Principal enforces a no smoking policy across the entirety of its sites – no smoking on site.

1.617 Adequate Supervision

The Contractor shall provide constant and competent direction, co-ordination and superintendence of all trades in all phases and parts of the Works so as to comply with the required standards of the Contract.

The Contractor shall provide not less than the following requirements:

- a) A Director who shall be responsible for the overall management of the Works and the compliance with the terms of this Contract.

- b) A Project Manager who shall be employed full time on Site during the construction period and thereafter as necessary who shall have a technical ability and field experience commensurate with the scale and nature of the Works. The Project Manager shall remain at least 50% on the Site for a period of one month after the issue of the Certificate of Practical Completion or until such time as all the identified completion items have been completed.
- c) A Services Coordinator with experience in commercial and other building services to liaise with the Superintendent, Services Consultants and the Subcontractors and to co-ordinate, supervise and programme the installation and commissioning of the Subcontractors work.
- d) Project Engineering, Clerical and administrative staff for the effective and efficient support of the supervisory staff.
 - i) Note:
- e) The names and relevant details of experience of the personnel detailed in (a) to (f) above are to be as detailed in the Tender and reconfirmed before a start to the Works.
- f) Any intended changes in such personnel during the Works shall be advised fourteen (14) days before in writing to the Superintendent for his prior approval.
- g) The Contractor is to allow for necessary supervisory staff and industrial relations and safety personnel to be in attendance during any necessary after hours works and as required for the remainder of the project.

1.618 Adequate Facilities

Contractor to provide, without cost to Principal's Contractors, or Selected and Nominated Subcontractors, all normal facilities for the proper performance of the works, including the following:

- a) access to the Site.
- b) access openings sufficient to enable necessary items to reach and/or be installed in their proper locations.
- c) necessary holes, openings, chases, recesses, pockets and the like, formed or cored in the work as it proceeds, for which sufficient particulars have been supplied in time .
- d) scaffolding and hoisting facilities as provided for, and during the period of, the Contractor's own use, including operators, but not labour for loading and unloading.
- e) artificial lighting where necessary in parts of the Works required to be used by Principals Contractors, Selected and Nominated Subcontractors for the purposes of access or otherwise and to the level recommended in AS 1680. Specific Task lighting is by the Principals, Selected or Nominated Sub Contractor.
- f) 240 volt/15 amp power supply. Selected Subcontractors shall supply lamps, leads and the like for their own use and be responsible for all power requirements in excess of 240 volts, except as noted hereunder which the Contractor shall provide.
- g) adequate temporary three phase power and cabling to points as required for testing of mechanical services.
- h) sufficient water outlets around the Works including supply at no charge of all water required by Selected or Nominated Subcontractors for the purposes of this Contract. Selected and Nominated Sub -Contractors shall supply piping, hoses, buckets and fittings to take water from the outlets for their own use.
- i) space that is available in close proximity for the erection of storage sheds or other structures that Principals Contractors, Selected and Nominated Subcontractors may be obliged to provide by the agreement or otherwise, provided that the Contractor shall not be responsible for the

- erection of any such sheds or other structures nor for loss or damage to any tools, materials or goods belonging to the Principals Selected or Nominated Subcontractors.
- j) messing, changing and sanitary accommodation to suit industrial standard requirements.
 - k) first aid and safety facilities, including induction facilities.
 - l) The Contractor shall be responsible for cleaning and rubbish removal after works are completed by the Principals Contractors. The Contractor will be responsible for the provision of strategically placed waste bins and the removal and replacement thereof. Whilst it will be stressed to the Principal's Contractors and any Selected and Nominated Subcontractors that they will be responsible for placing their own rubbish in the bins so provided the Contractor is ultimately responsible to discharge this item.
 - m) Typical works that may be required to be completed by the Principal's Contractors prior to Practical completion are:
 - i) Installation of loose Furniture, Fittings and Equipment (FFE) (chairs, tables etc)
 - ii) Installation of active IT gear and computers
 - iii) Installation of active communications gear (PABX, VOIP, etc. connections)
 - iv) Install of specialist equipment
 - n) Any damage caused by the Principal's Contractors which is not the direct cause of the Contractor due to lack of coordination or provision of adequate facilities or enabling works will entitle the Contractor to a variation to rectify such damage. This entitlement does not extend to re-cleaning of areas.

1.619 Ordering, Subcontracts etc

Sufficient time is to be allowed for ordering materials, arranging Subcontractor attendance etc. Where final approval of material choice, details, etc by the Superintendent is noted or required by specification, to give sufficient notice to the Superintendent allowing reasonable time for the decision to be made and ordering to be carried out.

1.620 Tolerances & Measurements

Site measure before ordering associated materials. Do not scale off *drawings*. Confirm sizes of equipment, hardware & appliances to be housed in *Work*, before *Work* start. Measure to the 'Australian Standard Method of Measurement of Building Works' (ASMM). Tolerances: Applied over the limited specified distance (ie not cumulative). Check tolerances before fixing other materials. Set-out consistently. Building set-out tolerance + or - 15mm. Ingredient Mixing: Measure ingredients using measuring devices. Ingredients not to contain excess moisture. Mix using mechanical devices.

1.621 Manufacturers' Recommendations

General: Select, if no selection is given, and transport, deliver, store, handle, protect, finish, adjust, prepare for use, and use manufactured items in accordance with the current written recommendations and instructions of the manufacturer or manufacturer.

Instructions: Submit the recommendations and instructions, and advise of conflicts with other requirements.

Project modifications: Advise of activities that supplement, or are contrary to, manufacturer's written recommendations and instructions.

Product certification: If products must comply with product certification schemes, use them in accordance with the certification requirements.

1.622 Sealed Containers

If materials or products are supplied by the manufacturer in closed or sealed containers or packages, bring the materials or products to point of use in the original containers or packages.

1.623 Consistency

For the whole quantity of each material or product use the same manufacturer or source and provide consistent type, size, quality and appearance.

Where fixings or fittings are exposed in securing of materials ensure fixings (ie. screws, nails, etc.) are installed in ruled straight lines and even spacings unless noted otherwise on drawings.

1.624 Fire Extinguishers

Provide fire extinguishers to project area to comply with BCA as minimum requirements, include for all necessary fixings and signage for compliance.

1.625 Asbestos

No asbestos products or asbestos based materials shall be used in any part or parts of this building or its services and the Contractor shall ensure that Sub-Contractors, Nominated Sub-Contractors, Manufacturers and others are advised of this restriction.

No compensation will be paid if asbestos is brought on to the site and subsequently discovered and if discovered such removal and consequential making good or costs will be totally at the expense of the Contractor.

1.626 Patent Rights

Ensure that no patent is infringed and that unless otherwise specified, amounts payable and conditions imposed in respect of the manufacture, use or exercise of patented invention are paid and complied with and shall indemnify the Principal against claims, damages, costs, charges and expenses in any way whatsoever arising out of the manufacture, use or exercise by the Contractor of patented invention.

1.627 Delivery/Storage/Handling

General: Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimise long-term storage of products at site and over-crowding of construction spaces. In particular, provide delivery/installation co-ordination to ensure minimum holding or storage times for products recognised to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1.628 General Product Compliance

- a) Provide products which comply with requirements, and which are undamaged and unused at time of installation, and which are complete with accessories trim, finish, features required by regulation and other devices and details needed for a complete installation and for intended use and effect.
- b) Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other Projects and in similar applications.
- c) Continued Availability: Where additional amounts of a product, by its application, are likely to be needed by Principal at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Principal at such later date.
- d) Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

1.629 Expansion Joints / Control Joints

Provide expansion/control joints. Provide to all junctions between existing and new materials and as indicated in documentation, if uncertain confirm with Superintendent.

- 1. Provide expansion/control joint at junctions of dissimilar floor/wall construction.
- 2. In walls, no more than 2.5 apart.
- 3. At junctions of wall and floor in multi-storey buildings and between new and existing building items.
- 4. Provide proprietary control joints to suit the application and install in strict accordance with the manufacturers current written recommendations – Supplied by Latham Australia - <http://www.latham-australia.com> or equivalent to the approval of the Superintendent
- 5. Provide proprietary stainless steel expansion joint covers by Latham Australia or equivalent approved by the Superintendent. Silicon rubber, as recommended by manufacturer. Colour Grey – provide sample to Superintendents approval.

1.700 CONTRACTOR SAFETY GUIDELINES

1.701 Statutory Requirements and Compliance Codes

The Contractor shall:

- a) comply with the Occupational Health and Safety Act (2004) and any other relevant statutory requirements dealing with occupational health and safety; and
- b) comply with all relevant Compliance Codes approved under the Occupational Health and Safety Act. Codes of Practice continue to provide a source of practical guidance and contribute to industry state of knowledge, assisting compliance with health and safety laws. Reference shall be made to Codes of Practice where applicable.

1.702 Occupational Health and Safety Policy

The Contractor shall:

- a) Develop and maintain a specific and current Safe Work Method Statements and Health and Safety Co-ordination Plan showing the Contractor's commitment to occupational health and safety and allocating responsibilities for the management and facilitation of health and safety on the Site;
- b) Regularly monitor and update its occupational health and safety policy;
- c) Take all appropriate steps to ensure that there is a high level of awareness of the Contractor's Occupational Health and Safety Site Management Plan among all of the Contractor's employees and subcontractors at the Site; and
- d) Conduct and minute weekly Site Safety Inspections and provide to the Superintendent on request.

1.703 Safe Work Method Statement and Health and Safety Co-ordination Plan

The Contractor shall ensure that the content and application of the Safe Work Method Statements and the Health and Safety Co-ordination Plan also complies with Occupational Health and Safety Regulations 2007 Part 5.1 Construction and specifically s5.1.17, and s5.1.5 and s5.1.9.

In addition to any other requirements under the Contract relating to Occupational Health and Safety, the Contractor shall comply with, and ensure that its Subcontractors comply with, the Contractor's Safe Work Method Statement and Health and Safety Co-ordination Plan and protocol for the Works.

1.704 Site Safety Induction Program

The Contractor shall:

- a) Ensure that all of the Contractor's employees and Subcontractors and any secondary Subcontractors undertake the Contractor's safety induction and training program prior to carrying out work at the Site and cover cost of this in their Contract Sum;
- b) Provide documentary evidence to the Superintendent on a regular basis, or as requested by the Superintendent, of the induction and training of the Contractor's employees and any Subcontractors and their employees;
- c) Arrange to meet with the Principal's Occupational Health and Safety representatives to ensure all Safety requirements are clearly understood and agreed prior to commencement of the Works;
- d) Take all appropriate steps to ensure that there is a high level of awareness of the site safety induction and training program among all of the Contractor's employees and any Subcontractor at the Site;
- e) Ensure that each new employee and Subcontractor commencing at the Site during the Works undertakes the site safety induction and training program;
- f) Ensure that any visitor to the Site undertakes the site safety induction program; and
- g) Provide all safety equipment as required for the Superintendent and its visitors to enter site i.e. boots, vests, helmets etc.

1.705 Occupational Health and Safety Reports

The Contractor shall provide an occupational health and safety report at each Site meeting, which shall report on:

- a) accidents or injuries at site;
- b) the implementation and maintenance of an incident notification process for internal and external notification;

- c) a breach of any occupational health and safety legislation or Codes of Practice (including copies of any incident reports required to be sent to the Victorian Workcover Authority under the Occupational Health and Safety (Incident Notification) Regulations 1997) or notices or warnings received whilst performing the Works;
- d) action taken by the Contractor to comply with any notices or warnings; and
- e) any action by the Contractor to prevent or remedy hazardous conditions or any other conditions which cause, or may cause, the Site to be an unsafe or unhealthy workplace.

1.706 Health and Safety Advisor

In connection with the work under the Contract, the Contractor shall:

- a) Appoint a health and safety employee representative to assist in the identification, consideration and response to occupation health and safety concerns; and
- b) Participate in an occupational health and safety committee that meets monthly, and liaise with the Principal's site OH&S representative to ensure that any site-specific issues are addressed.

1.707 Health and Safety Procedures

In connection with the work under this contract, the Contractor shall:

- a) Implement and maintain work procedures and systems to ensure safe systems of work on the Site, including provision of an occupational health and safety manual and safe work method statements;
- b) Undertake an auditing process of the workplace on a regular basis to ensure that safe systems of work are maintained on the Site;
- c) Implement and maintain a process of identifying actual or potential hazardous or unsafe or unhealthy conditions at the Site, assessing associated risks and identifying and implementing appropriate risk control and prevention measures;
- d) Implement and maintain an appropriate incident investigation process and designate responsibility for investigation to persons with appropriate skills;
- e) Implement and maintain a system to manage occupational health and safety risks with respect to employees and Subcontractors and any other persons who may attend the Site or be affected by works at the site; and
- f) Implement a Site specific emergency response procedure for responding to occupational health and safety incidents at the Site.

1.708 Site Boundaries

Site boundaries shall be separated from operational zones by hoardings.

Work areas, which are designated as restricted, shall display notices in accordance with the applicable Australian Standards for warning signs.

1.709 Site Security

The Contractor shall be wholly responsible for the proper and adequate safeguarding of the works and of fixed and unfixed materials and equipment on Site during both working and non-working hours. When the Site is left unattended, the Contractor shall ensure that as a minimum:

- a) all points of entry to the site are locked and any other access prevented;
- b) all cranes, earthmoving machinery and plant are locked to prevent unauthorised use;

- c) oxy cutting gear and power tools are stored in a locked room or container;
- d) all structures are left in a safe and stable condition;
- e) any loose demolition material such as roof sheets are firmly secured; and
- f) the site has been checked to ensure that no smouldering material remains.

The Process for securing the Site is to be agreed in consultation with the Building Surveyor and Superintendent to ensure that fire egress paths are maintained at all times.

No claim for extension of time or for extra cost will be allowed in respect of damage or loss of material or interruption of work due to any security breach or breakdown in the safeguarding of the Works. The Contractor shall replace all losses without cost to the Principal.

Nothing in this clause shall relieve the Contractor from responsibility for care of the Works. The Contractor shall provide security for the Site and the Works. Security shall be to the satisfaction of the Superintendent and shall include, without being limited to, the secure locking and barricading of the Site and the Works and, the appointment of watchmen and/or security service personnel to patrol the site and the Works. The Contractor shall provide such security until the Works have reached Practical Completion. The Contractor is to insure the works for theft and vandalism under the Contract.

1.710 Electrical, Gas and Water Services

All electrical, gas, water, sewer, steam and other service lines within the area of works which are not required in the demolition, for continued operation of other facilities to remain, and the construction process shall be shut off, capped or otherwise controlled, prior to commencement of the work under the Contract. In each case any utility agency which is involved shall be notified in advance and its approval or services, as necessary, shall be obtained. Any additional costs associated by an OH&S incident caused by not adequately isolating services in a safe manner to enable work shall be borne by the Contractor.

Seventy two (72) hours prior to any disruption to site services, the Contractor must submit a Request to Interference with Services or Safety and obtain Council's approval to proceed with the disruption.

1.711 First Aid

Prior to the commencement of the work under the Contract, the Contractor shall make provision for prompt medical attention in case of serious injury.

The telephone numbers of the local emergency department, physician, fire brigade and ambulance shall be prominently posted on site. A first-aider should be present at the Site in accordance with the First Aid in the Workplace Code of Practice and a first aid facility and first aid kits complying with that Code shall be available and accessible.

A copy of the above protocol shall be provided to the Superintendent for review.

1.712 Housekeeping

Temporary electrical leads, hoses or pipes shall be suitably supported and adequately protected in order to prevent injury to pedestrians and damage to vehicles.

Unless otherwise agreed, the Contractor shall be responsible for ensuring the restoration of the Site to a condition that is free from risks to health and safety at the completion of the work under the Contract.

The Contractor shall be responsible for cleanliness, order and hygiene on Site. All materials required on Site shall be stored safely within the Site boundaries.

1.713 Cutting and Welding

Where it is necessary to use arc or flame cutting and/or gas welding or the like, the Contractor and all subcontractors shall comply with relevant Australian Standards, together with all By-Laws, Regulation Acts, provisions of the project insurance policy and relevant authorities governing the use of the Site. This is in addition to any project specific requirements detailed in other Contract documents.

The Contractor shall include appropriate procedures for cutting and welding in the Occupational Health and Safety Site Plan, particularly regarding hot work permits.

1.714 Use of Work Platforms Lifting Equipment

The Contractor shall ensure that:

- a) safe work platforms are used where work cannot be performed safely from the ground or from solid construction;
- b) scaffolding is based on solid foundations;
- c) care is taken to prevent damage to scaffolding planks and components from falling debris;
- d) damaged planks and components are removed and replaced by qualified scaffolders;
- e) working platforms are kept clear of debris;
- f) damage to scaffolding from on site vehicles and earthmoving machinery is prevented;
- g) all scaffolding conforms to the relevant Code of Practice;
- h) all scaffolding work, handrails, fall protection, platforms, powered mobile plant, lifting plant, lift trucks and lifts conform to the Occupational Health and Safety legislation and are the subject of risk assessment and measures pursuant to those Regulations; and
- i) so far as is practicable, no load is simultaneously lifted by more than one piece of plant, e.g. dual crane lift; and so far as is practicable, no load be suspended over or travel over any person.

1.715 Ladders

The Contractor shall:

- a) inspect ladders prior to use to ensure that they are in good condition for safe operation;
- b) use ladders only for works of a minor nature in accordance with current OHS guidelines;
- c) secure all ladders top and bottom;
- d) ensure that only one person at a time works from a ladder;
- e) not over reach when using a ladder; and
- f) not carry out any cutting or work involving the use of power tools from a ladder.

1.716 Fragile Roofs

Where not specifically identified as in sound condition, roofs shall:

- a) be assumed to be brittle; and
- b) be covered and appropriate precautions adopted to prevent injury.

The Contractor shall carry out all work on roofs in accordance with the Code of Practice - Work on Roofs.

1.717 Fire Protection and False Fire Alarms caused by the contractor

The Contractor shall be responsible for fire protection at the Site.

The Contractor shall indemnify the Principal against any costs associated with false fire alarms caused by the Contractor or his subcontractors during all stages of the Works. The costs associated with any such false alarm shall be the Contractor's responsibility.

Fire prevention shall be taken into consideration when determining work methods and selecting tools and equipment for use at the Site.

Fire alarms, fixed installations and ancillary equipment such as pumps and water supplies shall not be shut down or altered without the appropriate authorisation.

Temporary smoke detection/thermal detection shall be provided to the new building during construction as required by the Building Surveyor.

1.718 Electrical Safety

All electrical power tools, leads, site lighting and power supply shall be operated or connected in accordance with the Code of Practice for Temporary Electrical Installations on Building and Construction Sites. Prior to any works within a work area the Contractor is to ensure that all services are isolated and made safe for workers to commence and continue work in an area. This is the Contractor's responsibility. Should a delay be caused due to the Contractor's failure to comply with this instruction, no entitlement for cost of rectification works or Site delays shall apply.

1.719 Personal Protective Equipment

Personal protective equipment appropriate for the hazards associated with work being carried out by the Contractor and subcontractors shall be provided by the Contractor. The personal protective equipment shall comply with relevant statutory or Australian Standard specifications.

The personal protective equipment required shall be listed on a Risk Assessment Checklist Form.

The Contractor is responsible for ensuring that the personal protective equipment provided to employees is used where required.

The Contractor shall provide suitable storage facilities for personal protective equipment.

1.720 Excavation and Trenching

Any excavation and trenching work shall be carried out in accordance with the current OH&S legislation and Codes of Practice for Safety Precautions in Trenching Operations.

1.721 Containers that have held Combustibles

Containers that have held combustible solids, liquids, gases or dust shall be rigorously cleaned by the Contractor to ensure that the containers are free of such material prior to any welding and cutting work.

1.722 Confined Spaces

When work is to be performed inside a container, vessel or other confined space, work shall be carried out in accordance with all current Occupational Health and Safety Legislation, Codes of Practice, and Australian Standards.

1.723 Dangerous Goods Act and Regulations Compliance

The Contractor shall comply with the provisions of current Dangerous Goods Acts and any relevant Regulations.

- No burning of materials is permitted on the Site.
- No explosives are permitted on the Site.

1.724 Safety

The Contractor shall promptly notify the Superintendent of any occurrence of the following:

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

The Contractor shall submit reports of accidents of the Superintendent for the Principal's information.

1.725 Access roads

Where necessary to facilitate the progress of the Works, the Contractor shall provide temporary roads, paved areas and other appropriate means to assist the movement of vehicles, plant, and persons.

The Contractor shall use only designated roads or agreed roads and access ways. Existing Council roadways and car parks shall not be used without the prior written approval of the Council.

The contractor is to ensure that all internal and external roadways are kept clear at all times.

1.726 Protective clothing

The Contractor shall provide protective clothing to relevant Australian Standards. A Standards Mark is required.

1.727 Vibration

The Contractor shall allow for the effects of vibration to adjoining occupied properties.

1.728 Noise Control

Noise must be kept within local authority Environment Protection Authority (EPA) specific requirements.

Proximity of the Site to residential land is to be taken into account by the Contractor.

No entitlement to claim any cost or time will arise if the Contractor is instructed by the Superintendent to stop work due to excessive noise, if not notified and approved by Superintendent with sufficient notice.

The Contractor is deemed to have allowed for periods of cessation of noisy or disruptive works as required by the Principal.

1.800 PROGRAMMING OF THE WORKS

1.801 Working Hours and Overtime

The Standard Working hours will be Monday – Friday 7:00am to 5:30pm. Superintendent sign off to extend the hours.

The project shall be programmed such that the working hours shall be 5 days per week from Monday to Friday inclusive (unless nominated otherwise in the Tenderer's submission), excluding public holidays and, where applicable, rostered days off in accordance with the current building industry agreement and or MABV working day calendar.

The Contract Sum shall be deemed to include for overtime and shift work beyond the normal working hours which is or becomes necessary to maintain progress in accordance with the Master Construction Program or any approved Construction Program prepared by the Contractor and to execute the work under the Contract within the time specified.

Tenderers shall allow for a working week in accordance with the programme required to complete the Works, including all overtime.

1.802 Construction Program

Contractor to provide a detailed construction program for the works indicating month by month breakdown of scheduled works for Superintendent's approval. The construction program shall incorporate critical paths showing all phases of construction, within these timelines.

1.803 After Hours Permits and Approvals

The Contractor is required to obtain all relevant permits associated with any afterhours works which shall include providing notification to the Council management team of the intended after hour works for their approval prior to commencement.

Any associated charges or other items with such applications will be borne by the Contractor. Should after hours work be required to meet timelines, there shall be no additional charge to the Principal for any after hours work.

1.900 CLEANING OF THE WORKS

1.901 Cleaning up during Works

Keep the Works clean and tidy as it proceeds and regularly remove from the site rubbish and surplus material arising from the execution of the work including any Works performed during the Defect Liability Periods or any operational maintenance period specified.

Within seven (7) days from the Date for Practical Completion, remove all Temporary Works, Constructional Plant, buildings, workshops and equipment not forming part of the Works, except such as are required for work during the Defect Liability Periods or any operational maintenance period specified and which shall be removed on completion of that work.

If the Contractor fails to comply with any obligation imposed by this clause the Principal may, after giving two (2) days notice in writing to the Contractor, have the work of cleaning or tidying up carried out by other persons and the cost incurred shall be recovered by the Principal as a debt due to the Principal by the Contractor.

1.902 Cleaning and Protection of Finished Work

General: During handling and installation of work as project proceeds, site clean and protect work in progress and adjoining work on a basis of perpetual maintenance. Apply suitable protective covering on newly installed work where required to ensure freedom from damage or deterioration at a time of Practical Completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessary throughout remainder of construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

1.903 Final Cleaning

The standard of Final Clean must be of first class professional standard. As a minimum, the Contractor shall provide final cleaning of the Work at the time indicated, consisting of cleaning each surface of unit of work to normal 'clean' condition expected for a first class building cleaning and maintenance programme.

The Contractor is to include in the Contract Price a "Builder's Clean" and a "Professional Clean" prior to each area achieving Practical Completion.

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, down pipes and drainage systems. Remove waste and surplus materials.

Required cleaning includes, but is not limited to:

- a) Removal of labels which are not required as permanent labels.
- b) Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.
- c) Clean exposed exterior and interior hard surfaces finished, to a dirt free condition, free of dust, stains, finger marks, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

- d) Wipe clean surface of mechanical and electrical equipment, including lifts and similar equipment; remove excess lubrication and other substances.
- e) Remove debris and surface dust from limited access spaces.
- f) Wash Clean concrete floors and remove all dust and stains.
- g) Vacuum clean carpet and similar soft surfaces. Shampoo if required.
- h) Clean plumbing fixtures to a sanitary and polished condition, free of stains including those resulting from water exposure.
- i) Clean light fixtures and lamps so as to function with full efficiency. Wipe down and ensure that at handover all fittings are clean of dust.
- j) If permanent lighting fixtures have been used for construction purposes, replace globes with new.
- k) Seal all vinyl surfaces as per manufacturer's recommendations.
- l) Clean project site, including planted sections and footpaths, of litter and foreign substances; pressure wash using recycled water paved areas to a clean condition; remove stains, petro-chemical spills and other foreign deposits.
- m) Label keys for locks accurately and provide in duplicate to the Superintendent at the completion of the project.
- n) Wipe down thoroughly all surfaces including workstations, filing cabinets and other loose items and all fittings and fixtures to ensure that the project is clear of dust and other particles.
- o) Clean inside all joinery as well as external surfaces.
- p) Clean all wall surfaces and touch up paint as required.
- q) Clean Site and Access Roads.
- r) Be responsible for maintaining clean roads and access. Remove and clean away mud and building debris from footpaths, gutters, drains, walls etc. when such occurs.
- s) Clean all Fire Hose reel cupboards, distribution boards and plant spaces.

Final clean to the satisfaction of the Superintendent is a condition precedent to Practical Completion. Any additional costs incurred by the Contractor as a result of a direction by the Superintendent for the Contractor to clean will not entitle the Contractor to a variation in any form.

1.904 Removal of plant

Prior to practical completion, remove temporary works and construction plant no longer required. After practical completion remove the balance as soon as each item is no longer required.

1.905 Restoration

Clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.

1.950 SPECIAL PROVISIONS

1.951 Client Training

At least two (2) weeks prior to Practical Completion, the Contractor shall explain and demonstrate to the Principal's staff the purpose, function, maintenance and operation of the installations. The Contractor shall use items and procedures listed in the final draft operation and maintenance manuals as the basis for

instruction and shall review in detail the contents of this activity with the Principal's staff or their operator's staff.

The Contractor shall conduct training at agreed times, at system or equipment location using a qualified manufacturer's representative who is knowledgeable about the installations.

For equipment requiring seasonal operation, the Contractor shall demonstrate during the appropriate season and within 6 months of Practical Completion.

1.952 Environmentally Sustainable Design and Procurement

The intention of the Principal is to promote sustainable development. The aim of the design for this project is to reduce the environmental impact of development through passive design, material selection, energy use, emissions, water use, indoor environmental quality, and innovation.

The *Contractor* in execution of their works shall do so with sustainable considerations placed as a priority.

Generally materials selected for use on the project have been be vetted for their sustainable impact and quality and as such substitutions for lesser products or materials of less environmental consideration shall not be accepted.

The *Contractor* shall be deemed to have allowed for all necessary lead times for selected materials on this project in line with their tendered Construction Program. No claims for extensions of time or cost variations shall be accepted for the *Contractor* not having made adequate allowance for programming of works and material/product orders.

1.953 Items Supplied by the Principal

The Contractor is required to receive from the Principal prior to Practical Completion a number of items of equipment for installation in the Works.

The Contractor will be responsible for the security and protection of all materials and other items once accepted from the Principal.

1.954 Principal's Contractors

The Contractor is to provide access for Principal appointed contractors during the Works.

1.955 Publicity

All publicity in regard to this project (including the Works) is to be undertaken by the Principal, with the exception of project site signage. Under no circumstances shall the Contractor undertake publicity of any description without prior written approval by the Principal, which may be withheld at the Principal's discretion.

1.956 Special Scaffolding, Working Decks and Temporary Access

The Contractor is to provide and allow all costs for the provision of special scaffolding, working decks and temporary access ways where the working platform exceeds 4.5m in height. The Contractor is to ensure that the scaffolding so erected is fit for its purposes, complies with industry standards, and is kept in position for sufficient duration to allow all Subcontractors, Selected Subcontractors and Nominated Subcontractors to adequately complete the Works.

1.957 Hoardings and Gantries

The Contractor shall construct and maintain hoardings, gantries and directional signage in accordance with the requirements of the program, Relevant Authorities and to the entire satisfaction of the Superintendent.

The Contractor shall maintain the hoardings and gantries in good clean condition until removal, pay all rents, fees, rates, taxes and charges thereon, and insure against fire, loss, damage, and the like, for not less than the replacement value.

Costs of providing all such hoardings, gantries and directional signage to the entire satisfaction of the Superintendent to be borne by the Contractor.

1.958 Latent conditions

Comply with (sub)clause 25, latent conditions, in AS4000.

1.959 General Attendance of Sub-Contractors & Separate Contractors

General attendance shall include for taking delivery, assisting to unload, storing and protecting Sub-Contractor's and Separate Contractor ample working space, free use of water, electricity (unless otherwise described), scaffolding, hoists and ordinary plant, etc., and messing and sanitary accommodation and for all cutting away, building in and protecting finished work and making good. Contractor to provide chases, openings and recesses and doing all incidental work required for the works of Sub-Contracts. Contractor shall set aside space for the works of Sub-Contractors sheds as required.

1.980 COMPLETION

1.981 Requirement for Practical Completion

Practical Completion shall generally be undertaken in accordance with the Conditions of Contract, however in addition to these conditions the following shall also apply :

Before issue of the Certificate of Practical Completion the Contractor is required to provide the following to the Superintendent:

- All relevant certificates issued by local authorities including
- Provide independent Third Party ACRS Certificates of Product Compliance for all structural steel used in the project – www.steelcertification.com.
- Certificate of Occupancy;
- Certificates of compliance issued by the Plumber, Glazier and the
- Electrician as applicable;
- As built drawings showing records of underground services;
- Complete OH&M manuals
- IT test results;
- Any Guarantee or warranty required by the Specification.
- Completion of all Defect Lists or Omissions.

1.982 Miscellaneous Completion Procedures

- A. Removal of Protection: except as otherwise indicated or requested by Superintendent, remove temporary protection devices and facilities installed during course of the work to protect previously-

completed work. Where secured to exposed-to-view new work or existing to remain, remove evidence of protection devices. Remove protection within 5 days before Practical Completion.

- B. Trade Cleaning: as each trade completes its work in each area of the building, the Sub-Contractor is required to be responsible for "broom clean" standard of cleaning in that area.

1.983 Maintenance During Defects Liability Period

The Contractor will be responsible for operational maintenance and shall provide all services labour, parts and consumables required to ensure the correct operation of all equipment installed under this Contract during the Defects Liability Period.

Should the Contractor fail to provide adequate operational maintenance work within a reasonable period the Principal may effect such maintenance on behalf of the Contractor. The cost of such maintenance incurred by the Principal is a debt due from the Contractor to the Principal, which may be deducted or recovered by the Principal from the remaining security.

The Contractor is to hand over all Maintenance records prior to the Superintendent issuing the Final Certificate of completion.

END OF SECTION

SECTION 02000 GENERAL BUILDING REQUIREMENTS

2.100 GENERAL

2.101 Information to Contractor, Subcontractors, Manufacturers and Installers

The Contractor shall advise Sub-contractors and Manufacturers and installers of material and the requirements of this section of the Specification's requirements.

2.102 Referenced Documents

Current editions: Use referenced documents which are editions, with amendments, current 3 months before the closing date for tenders, except where other editions or amendments are required by statutory authorities.

Contractual relationships: Responsibilities and duties of the principal, contractor and superintendent are not altered by requirements in referenced documents.

2.103 Interpretation of Drawings

Check dimensions on site before proceeding with the work of the contract. Notify Superintendent of omission or conflict in drawings and their relation to specifications.

2.104 Project Identification Sign

Provide and erect a project identification sign (minimum size 1800mm high X 1800mm) to a clearly visible position adjacent to the street, position to Superintendent's approval. As minimum allow for weatherproof board construction with vinyl print onto colorbond metal backed board. The sign is to contain clearly identified information in relation to the project, the project team, project consultants and other such information to the approval and confirmation of the Superintendent. Allow to provide graphic for the sign to the approval of the Superintendent. Amendment thereto and erect on the site as directed and maintain same in good condition throughout the currency of the contract. The sign shall remain the property of the Contractor. Remove same from the site on completion of the Works.

2.105 Precautions in Carrying Out Work Under the Contract

Unless otherwise specified in the contract, observe, in the absence of statutory requirement to the contrary, the relevant current Australian Standard published by Standards Australia relating to storage, transport, use of materials, explosives, fire precautions in arc or flame cutting flame heating and arc or gas welding operations, plant and equipment, work processes and safety precautions.

2.106 Joining Up to Existing Buildings

Where the method of joining up of old and new work is not otherwise specified, the cutting away and joining up shall be carried out in a manner approved by the Superintendent and made good by relevant trades to match existing adjacent work.

2. 107 Solid, Liquid and Gaseous Contaminants

- a) Be responsible for the proper disposal of solids, liquid and gaseous contaminants.
- b) Discharge gaseous contaminants in such a manner that they will be sufficiently diluted with fresh air that the toxicity will be reduced to an acceptable level.
- c) Subject to statutory and local requirements, liquid contaminant may be diluted with water to a level of quality acceptable in the sewer system or contained in approved vessels for disposal at sites approved by the relevant Authority.
- d) Dispose of solid contaminants by removal from the site to locations approved by the relevant Authority.

2. 108 Inspection Notice

General: If notice of inspection is to be given in respect of parts of the works, do not conceal those parts without approval.

Minimum notice for inspections to be made: 2 working days.

2. 109 Waste Management Plan

The contractor is to establish and maintain an Environmental Management Plan/System and provide appropriate verification for the works including management and coordination of the environmental management systems and appropriate verifications of the subcontractors' works, generally in accordance with AS/NZS ISO 14001:1996 Environmental Management standard. The Environmental Management Plan/System shall be to a level of detail required by the Superintendent and is subject to approval prior to implementing. This will include monitoring and auditing the activities of the works, including subcontractors both on and off Site, ensuring rectification of non-complying work and making regular reports to the Superintendent. It will involve providing assurance records at the conclusion of the works to the Principal.

2. 110 Landscape

Allow to protect all existing landscaping during the course of works, Any landscaping damaged or destroyed during the course of works is to be replaced by the Contractor at no cost to the Principal.

2. 111 Tests

a) Notice

General: Give sufficient notice so that designated tests may be witnessed.

Minimum notice for tests to be witnessed:

- 2 working days for site tests; and
- 3 working days for local pre-delivery tests.

b) Testing authorities

General: Except for site tests, have tests carried out by authorities accredited by NATA to test in the relevant field, or an organization outside Australia recognized by NATA through a mutual recognition agreement. Cooperate as required with testing authorities.

- c) **Reports**
General: Submit copies of test reports, including certificates for type tests, showing the observations and results of tests and compliance or non-compliance with requirements.
- d) **Endorsement**
If tests are to be carried out on parts of the works, do not conceal those parts and do not commence further work on those parts until the tests have been satisfactorily completed and compliance verified.

2.200 SAMPLES

2. 201 Timing

Delays: Coordinate submissions of related samples. Do not cause delays by making late submissions or submitting inadequate samples.

2. 202 Quantity

General: Submit a sample of each designated item and 2 copies of supporting documentation. Include ancillary items such as fasteners, flashings and seals.

2. 203 Identification

Identify the project, contractor, subcontractor or manufacturer, manufacturer, applicable product, model number and options, as appropriate and include pertinent contract document references. Include service connection requirements and product certification. Identify non-compliances with project requirements, and characteristics which may be detrimental to successful performance of the completed work.

2. 204 Approval

General: Do not commence work affected by samples until the samples have been approved. Submit further samples as necessary.

2. 205 Retention

Keep approved samples in good condition on site, until practical completion.

2. 206 Incorporation

Incorporate in the works samples which have been approved for incorporation. Do not incorporate other samples.

2. 207 Criteria

Match approved samples throughout the works.

2.300 CONTRACTOR'S SUBMISSIONS

2.301 Shop drawings (by the Contractor)

Provide all necessary shop drawings for this project. Provision of shop drawings includes all necessary shop drawing revision work, reissues and resubmission for approval until they are deemed satisfactory and stamped approved by the relevant consultant.

Shop drawings mean complete drawings showing details of fabrication, assembly, installation, fixing and waterproofing methods of specific items or components, and shall include necessary explanatory notes and specifications.

When preparing shop drawings, do the following:

Include provision in construction program for the production and distribution of shop drawings.

Refer discrepancies discovered in the contract documents to the Superintendent for direction.

Verify relevant dimensions. Dimension drawings so that the items or components fit accurately into the required positions.

- a) Ensure that shop drawings conform with the requirements of the contract.
- b) Drawings shall be of consistent standard size and presentation.
- c) Submit 4 initial copies, one of each of the following: Specialist Subcontractor, Contractor, Superintendent, relevant Consultant. Subcontractor submits 4 and gets 1 back. Contractor submits 4 and gets 2 back. All parties retain one copy. If amendments are required, one copy will be marked and returned to the Contractor for amendments to the original shop drawings. (This process may be repeated until the Superintendent considers that the shop drawings are satisfactory.) Do not fax shop drawings as they are often illegible on receipt. An electronic PDF issue of shop drawings is acceptable in a format approved by the Superintendent.
- d) When the shop drawings are satisfactory, one copy will be stamped by the Superintendent. Supply two additional copies of the satisfactory shop drawings to the Superintendent. Provide also as required for the Contractor's site office, manufacturers or Sub-Contractors.
- e) Acceptance of shop drawings shall imply only that the Contractor's interpretations of the relevant requirements of the contract are generally correct, but shall in no way relieve the Contractor of his obligations under the contract to construct and complete the Works correctly and accurately.
- f) Do not order, manufacture, assemble or supply any item or component needed according to requirements of shop drawings until the Superintendent returns the applicable stamped drawings.

Where required by the Specifications, the Contractor shall provide comprehensive shop drawings with all relevant information sufficient for all particulars to be examined, including without limitation plant layout, pipe work layouts, electrical layouts, switchboard construction and electrical power and control wiring schematics, piping schematics, air schematic and any other shop drawings specified elsewhere.

The Contractor shall provide drawings to accurately indicate the size and location of openings in walls, roofs, floors and for all plinths, bases and any other Contractor-type work.

No on-site work or off-site manufacturing shall be undertaken until all relevant drawings have been reviewed and approved by the relevant design consultant in writing.

2. 302 Timing

General: Submit documents in a timely manner, to suit the construction program. Advise if any of the documents are to be returned.

2. 303 Identification

Identify the project, contractor, subcontractor or manufacturer, manufacturer, applicable product, model number and options, as appropriate and include pertinent contract document references. Include service connection requirements and product certification. Identify non-compliances with project requirements, and characteristics which may be detrimental to successful performance of the completed work.

2. 304 Endorsement

General: Do not commence work affected by contractor's submissions until, if appropriate, the submissions have been endorsed as satisfactory.

Errors: If a document contains errors, submit a new or amended document as appropriate, indicating changes since the previous submission.

Delays: Coordinate submissions of related items. Do not cause delays by making late or inadequate submissions.

2. 305 Design

General: If part or all of an installation is to be designed by the contractor, submit documents showing the layout and details of the installation.

Variation documents: If it is proposed to change the installation from that shown on the contract documents, or if changes are required by statutory authorities, submit variation documents showing the proposed changes.

2.400 AUTHORITIES & STATUTORY REQUIREMENTS

2. 401 Permits by Contractor

The Contractor shall obtain all required permits and give all notices to the local authority and other relevant authorities, make all necessary applications, obtain all necessary licences, consents and all permits in connection with this Contract, and comply with all by-laws and building regulations of all Authorities having jurisdiction over the Works. The Contractor shall allow for paying all fees, security deposits, and other charges.

The Contractor is to allow for all permit costs and Council fees, including scaffolding, crossover deposit, road opening permits and the like required, except for all Planning and Building Permit Application Fees which will be paid by the Principal.

Should the Contractor be required to complete authority forms and other statutory applications to comply with any statutory authority, this shall be done at no cost to the Principal.

The Contractor shall comply with the requirements of all authorities and infrastructure service providers for electricity, gas, telecommunications, water supply and drainage. The Contractor is responsible for entering into arrangements with the various service providers.

2. 402 Permits (By Principal)

The Principal has engaged a Building Surveyor to provide requisite permits.

The Contractor shall provide evidence of the Contractor's Building Practitioners Board registration to the Building Surveyor within the nominated mobilisation period.

The Building Surveyor will carry out all inspections required under the Building Code during construction and issue Certificates of Occupancy in accordance with the staging requirements nominated in this Contract. Responsibility for notification of the relevant Building Surveyor for timing of mandatory inspections shall remain with the Contractor.

The Contractor is to notify both the relevant building surveyor and Superintendent of pending inspections and shall notify the Building Surveyor a minimum of 5 days prior to any inspection required under the Building Permit.

2. 403 Additional Inspections

Should additional inspections be required over and above the number allowed for by the Building Surveyor in order to allow efficacy for the coordination and programming of the works, the Superintendent is to be notified immediately and an estimate of the number of required inspections given to assist in the cost and resource management of this activity.

Additional inspections required as a result of the failure of the Contractor to effectively coordinate the works, or resulting from poor workmanship, shall be at the Contractor's cost. It is the Contractor's responsibility to liaise with the project assigned Building Surveyor to determine the number of required inspections and to program this information into their project program.

2.500 CONTRACTOR OBLIGATIONS

2. 501 Approvals, Services, Fees, EBA's & GST

a) By-Laws, Fees and Notices

The Contractor shall observe and comply with all Statutes, Regulations, Rules, Orders, Ordinances, By-Laws and all requirements of any Authority as shall for the time being be in force in the place where the works are to be executed as shall relate to the execution of the works of the kind contracted by this contract to be executed or to a Contractor or Principal executing such work. The Contractor shall give all notices required and pay all fees and bear all costs connected therewith.

The Contractor shall be responsible for payment of

- Water Authority Headworks Charges and connection Fees
- Gas Authority Headworks Charges and connection Fees
- Sewer Authority Headworks Charges and connection Fees
- Electrical Authority Headworks Charges and connection Fees
- Telephone Authority Headworks Charges and connection Fees

The Principal has arranged for Building Approval and paid all fees associated with the Approval and Statutory Inspections.

b) Insurances

The Contractor shall be responsible for Insurance of the Works at all times under the contract including any associated temporary works.

The Contractor shall also effect Worker's Compensation and Employer's Liability Insurance as required by the Contract.

c) Contingency Sums

Any contingency sums scheduled under Monetary Provisions shall be used at the sole discretion of the Superintendent and only on his written instructions for payment of variations to the Contract. Any unexpended portion of this sum is to be deducted from the Contract Sum upon completion of the Works.

d) EBA's & CFMUE

The Contractor shall have in place at project commencement and shall maintain during the course of the building works EBA's.

The Contractor shall have in place at project commencement and shall maintain during the course of the building works CFMUE agreements.

Should at any time the Contractor not maintain the above two requirements this may constitute at the discretion of the Superintendent and /or Principal non-compliance and may be considered and deemed to be non-compliant in which case the Contractor may be given determination under the guidelines of the contract.

e) Clothing and Equipment

Tenderers are advised to discuss Standard Clothing, Protective Clothing and Equipment for this project with the M.B.A.V. The Contractor is to supply to all eligible persons on site, clothing and equipment in accordance with the current Victorian Building Industry. The cost of all the clothing and equipment is to be included in the Contractors Tender and the Principal will not pay any claims for the cost of any clothing and/or equipment.

f) Site Allowance

The Contractor is to include for all costs associated with Site Allowances for this project, based on the Victorian Building Industry Agreement 1992-2008 including any appropriate adjustment for C.P.I. to the satisfaction of all parties to the Agreement. The Contractor is to include for all associated costs he incurs as a result of Site Allowances, including administration, overhead and profit and other 'on-costs' such as payroll tax, superannuation, work care, etc.

Site Allowance shall be in accordance with the Contractor's current Industrial Instrument and shall be wholly included in the tender price.

g) GST

All materials and goods required for the work are to include 10% GST on this project.

2. 502 Compliance with Ordinances, etc.

Whenever any work or any type of plant or machinery, etc. is required either by the Specification or by the relevant Statutory Authority, the Contractor shall provide full details of such work, plant, etc. to the relevant Statutory Authority and make such applications, etc. as may be required within two weeks of acceptance of his tender.

In such cases, any approval given by the Superintendent to drawings submitted by the Contractor will not necessarily imply that such drawings meet the requirements of the relevant Statutory Authority.

2. 503 Contractor's Obligations

The Contractor's Obligations are to:

- a) perform the Contract diligently, to a level of professional skill which it would be expected that a reasonable building Contractor would employ to ensure that the Contractor's workmanship and construction processes and administration are of a sufficient standard to enable the Principal to achieve certification by the relevant authorities, in accordance with the Contract, all applicable legislation and the requirements of relevant authorities;
- b) ensure that the Works are performed in accordance with the Principal's installation and quality requirements;
- c) perform the Works under the Contract in accordance with the approved construction programme; and work with the Principal and Superintendent to ensure that delays to the Works and/or services are mitigated; and the Works are completed on or before the Date for Practical Completion;
- d) ensure that the Works are performed in accordance with the tender documents;
- e) liaise and coordinate with the Superintendent and other consultants appointed by the Principal; observe appropriate lines of communication and the management structure for the project and ensure that any communication with the Principal, consultants and user groups is first notified to the Superintendent;
- f) coordinate, direct and supervise the building Contractor's subcontractors, including providing site resources necessary to ensure the proper completion of the Works;
- g) be a registered building practitioner as required by statute for the purpose of carrying out the Works and provide evidence of registration upon request;
- h) supply free of charge to the Principal copies of all documents or drawings which the Contractor has produced and is required to provide under the Contract;
- i) implement a Quality Assurance system and provide appropriate verification for the Works and manage and coordinate the Quality Assurance systems and appropriate verifications of all subcontractor Works;
- j) make available and maintain at the Site, during the execution of the Works, one complete set of current drawings, specifications and documents supplied by the Superintendent or Principal in connection with the Works;
- k) perform the Works until they are complete, being when the Works are completed to the satisfaction of the Superintendent and Principal and a time when all defects liability periods in relation to the Works have expired; and
- l) warrant that it and its subcontractors have the necessary experience within the building industry to manage and complete the Works in accordance with the Contract and to provide the Works to the satisfaction of the Superintendent and the Principal.

2. 504 Contractor to Supervise:

The Contractor must provide an efficient and appropriate site organisation. In addition to a qualified and experienced General Foreman, the Contractor shall employ qualified Supervisors, Assistant Foremen, experienced Leading Hands and site office clerical staff as necessary for the execution of the work, and provide supervision of workmen and control of the quality of the workmanship.

The Contractor is responsible for ensuring that all operations and methods of construction, materials and workmanship are safe, sufficient and in accordance with the Contract. Any inspection by the Superintendent and any instruction given or certificate issued by the Superintendent shall be deemed not to affect any responsibility of the Contractor.

The Contractor is responsible for the supervision of the Works to ensure that the Works are constructed in conformity with the Contract and all drawings, specifications and other Documents forming part of the Contract. The Contractor must oversee and supervise the Works and comply with all standards set by the Australian Standards Association in relation to building practices and all regulations and by-laws of the relevant authorities. The Contractor must supervise the day-to-day running of the Works and is responsible for the method of construction, its conformity with the Contract, and the safe operation of the Site.

The Contractor is responsible for the execution and completion of the Works, including all subcontracted work, which they shall coordinate so that the Works proceed without delay.

The Contractor must ensure that in addition to items of work specifically mentioned in the relevant sections, each trade shall assist, leave holes for, cut away for, do chasing and drilling for, make good after, and arrange work sequence with every other trade in such a manner as to promote the best interests of the Works as a whole.

2. 505 The Contractor shall be deemed to:

- a) have examined all the information made available to him/her by the Principal for the purpose of tendering including the Drawings, Specifications, Schedules, Conditions of Tendering, reports, maps, diagrams, Contract, addenda, notes and the like.
- b) have examined all information relevant to the risks, complexities, contingencies and other circumstances which could affect the Contractor's tender, and which is obtainable by the making of appropriate enquiries.
- c) have examined the Site and its surroundings and investigated with all public utilities the existence of all live and redundant services and made due allowance in the Contractor's tender for the removal/relocation of such services.
- d) have examined and be informed of all relevant physical conditions upon and below the surface of the Site including, but not limited to, differing ground conditions, old foundations, storm water pits, old services and the like, and the climatic conditions at or near the Site and made due allowance in the Contractor's tender for their removal.
- e) be informed as far as practicable of the nature of the work and materials necessary for the execution of the Work under the Contract, the means of access to and facilities at the Site, and transport facilities for deliveries to the Site.
- f) be informed as to the availability of suitable labour and the site accommodation required.
- g) be satisfied as to the correctness and sufficiency of the Tender for the Work under the Contract, and that the rates and prices stated therein cover the cost of performing all the obligations of the Contractor under the Contract.
- h) taken into account the requirements for the site.

Failure to do all or any of the things deemed to have been done under this clause will not relieve the Contractor of liability to perform all the Contractor's obligations under the Contract.

2. 506 Miscellaneous Completion Procedures

- a) Removal of Protection: Except as otherwise indicated or requested by Superintendent, remove temporary protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period. Where secured to exposed-to-view new work or existing to remain, remove all evidence of prior existence.
- b) Trade Cleaning: As each trade completes its work in each area of the building, the sub-contractor is required to be responsible for "broom clean" standard of cleaning in that area.

2. 507 Guarantees

- a) The Contractor or other approved Guarantor or Guarantors shall provide written guarantees where so specified elsewhere in this specification.
- b) Each guarantee shall be in an approved form and shall specifically include the provisions required herein.
- c) All guarantee periods shall commence from the date of the Notice of Practical Completion and shall be for the periods later specified.

2. 508 Warranties

- a) The Contractor shall provide warranties under all specified nominated sub-contracts and nominated supply agreements.
- b) The Contractor shall also provide warranties where so specified under other trades for periods as listed within that particular section of the specification.
- c) Such warranties shall be in the form set out as attached to this specification and shall be handed over by the Contractor to the Superintendent before issue of the Final Certificate.
- d) The provision of warranties shall not relieve the Contractor of any of his liabilities or obligations under this Contract.
- e) Where warranties require proof of purchase the original proof of purchase receipt is to be supplied to the Superintendent as part of the required warranty.

2. 509 Mandatory Inspections for Building and Occupancy Permit

It is the responsibility of the Contractor to contact and make arrangements with the project Building Surveyor at the appropriate times in order for the mandatory Building Permit inspections which may include but not be limited to foundations, footings, steelwork, wall and roof framing.

All costs associated with failure of mandatory inspections to be carried out at the appropriate times shall be borne by the Contractor.

2. 510 Authority Approvals and Certificates

- a) Prior to the issue of the Certificate of Practical Completion for the whole or any section of the work lodge with the Superintendent any relevant certificates issued by Local Authorities.
- b) Produce to the Superintendent a certificate of clearance of reinstatement of damage to footpaths and road, etc. from the appropriate Road Authority or City Engineer before the issue of a Certificate of Practical Completion.

END OF SECTION

SECTION 01400 QUALITY ASSURANCE

Environmental Management Plan

An Environmental Management Plan that fulfills the requirements of section 3 of the NSW environmental management systems guidelines (NSWEMSG) is to be prepared, implemented and issued to the Superintendent prior to the first progress claim. The completed checklist included as Appendix B in the NSWEMSG with all required information to be returned to the Superintendent prior to and as a requirement for issuing of Practical Completion. The link to the NSWEMSG is below:

http://www.nswprocurement.com.au/psc/nsw_government_guidelines/EMS-Ed2-Sept-2009.aspx

ISO 14001 Accreditation – Environmental Management Systems

Where the contractor is certified for ISO 14001 they are to provide a copy of their certification to the Superintendent prior to the first progress certificate. If the ISO 14001 certification is issued to the Superintendent at the start of the contract then the ISO 14001 certification must be maintained throughout the contract, including the defects and liability period up to the Final Certificate. A confirmation letter confirming the contractor's adherence to the ISO 14001 project procedure is to be supplied to the Superintendent prior to and as a requirement for issuing of Practical Completion.

PART ONE - COMPLIANCE WITH QUALITY STANDARDS

Comply with the following Australian Standards:

AS/NZS ISO 9001 2008 Quality management systems – Requirements.

Provide, implement and maintain a quality assurance system to:

AS/NZS ISO 9001 2008

This system includes at a minimum the following elements:

Submission at time of tender of a copy of the firm's general quality management system including quality manual, technical procedures, sample forms used in the quality management system and quality checklists if used. If the firm has had a third party certification audit prepared by a registered lead assessor within the last 2 years, a copy of such audit will be accepted in lieu of the required submission.

- A. Submission within 15 (or 30) days of award of contract, a project-specific quality plan to AS/NZS ISO 9001, which describes specific quality management procedures for all sub-contracts where the sub-contract amount is 5 percent or more of the contract sum. This project quality plan describes in detail the quality reporting and quality records procedures to be implemented on the project.
- B. Submission within 15 (or 30) days of award of contract, a project-specific plan prepared by each sub-contractor whose sub-contract work includes a design component and where the trade section specification requires quality assurance to AS/NZS ISO 9001 2008.

PART TWO - TRADE SECTION REFERENCES

208 Quality Assurance (Design Content)

Provide, implement and maintain a quality assurance system to AS/NZS ISO 9001. This system includes at a minimum the following elements:

Submission at time of tender of a copy of the firm's general quality management system including quality manual, technical procedures, sample forms used in the quality management system and quality checklists if used. If the firm has had a third party certification audit prepared by a registered lead assessor within the last 2 years, a copy of such audit will be accepted in lieu of the required submission.

Submission within 15 days of award of contract, a project-specific quality plan.

209 Quality Assurance (No Design Content)

Provide, implement and maintain a quality assurance system to AS/NZS ISO 9002. This system includes at a minimum the following elements:

submission at time of tender of a copy of the firm's general quality management system including quality manual, technical procedures, sample forms used in the quality management system and quality checklists if used. If the firm has had a third party certification audit prepared by a registered lead assessor within the last 2 years, a copy of such audit will be accepted in lieu of the required submission.

ISO 9002 has been superseded by ISO 9001 (as 1 above). Should option 2 be removed altogether, or should we change the first line to: "Provide, implement and maintain a quality assurance system to AS/NZS ISO 9001."

210 Quality Assurance

Submit evidence of the firm's quality assurance system.

END OF SECTION

SECTION 02050 DEMOLITION

PART I GENERAL

101 Demolition Requirements

The Contractor is to inform the Superintendent if there is a possibility to reuse any existing material on site that has not been specified to do so in the Contract Documentation.

102 General

Scope

The work of this section includes but is not limited to the following items:

- A. Examine documents: examine parts of the drawings and this specification for requirements which affect the work of this section. In particular, take note of related work.
- B. Co-ordination: co-ordinate with other trades affecting or affected by work of this section, co-operating as necessary to ensure steady and satisfactory progress of the work.
- C. Provide a Dilapidation Report including a photographic record of all existing elements to the site, adjoining the subject property/site and to immediate adjoining properties for a record prior to commencing any demolition / excavation works on site. Provide copies to the Superintendent for approval prior to works, dilapidation report to be in approved format and as noted in Section 01000 Clause 1.501.
- D. The Builder/Contractor is to engage a specialist services locator to identify the location of all known and unknown services (this includes an underground services location survey). A marked up plan showing the location of existing services must be provided to the Superintendent prior to commencing any of the Works. Provide an electronic copy in Adobe PDF and AutoCAD format and issue to Superintendent for record.
- E. Allow to relocate existing services to maintain the existing Centre in operation throughout the works.
- F. Prior to commencing Demolition works ensure appropriate OHS review has occurred, works signage is in place, hoarding and temporary measures in place to allow the existing Children's Centre to operate a complete service with minimal disruption. Follow approved project Phasing plan.
- G. Cut all openings of existing walls, ceilings and floors to facilitate new layout. Create openings to building. Should structural elements be encountered during forming of new openings seek direction from the Superintendent and advice of a structural engineer prior to removal.
- H. Provision of all necessary propping, strutting, bracing to maintain the structural integrity and stability of the existing building and ceilings during the works.
- I. For detailed demolition of existing building confirm any structural implications prior to works, obtain independent Structural Engineer advice for propping design
- J. Allow to remove trees noted to be removed, protect all other trees that are to be retained including root zone
- K. Generally alteration/removal/deconstruction/demolition to all existing building features to completely facilitate all of the new proposed layout, works, fixtures, fittings and features.
- L. Allow to grind, cutback existing concrete floors to achieve required floor levels and remove any residue and adhesives from existing slab surfaces which are noted to have the floor finishes removed and/or which are required to be removed to achieve a flush finish with the proposed finishes.
- M. Allow to grind existing concrete floor slabs to bring floors level and prepare surfaces for the proposed works / finishes.
- N. Decommission and removal of existing mechanical /electrical services in walls marked for demolition.

- O. Coring, penetrations in existing masonry wall, concrete slab for new pipe work, conduits, etc.
- P. Removal of existing pathways / landscaping in preparation for new works
- Q. Removal of existing entry façade to facilitate proposed works
- R. Removal of existing roofing in preparation for new works
- S. Disconnection of services to area of works only, provision of temporary power/services requirements to maintain existing Centre in operation.
- T. Removal of existing wall finishes to areas with proposed new wall finishes.
- U. Limit dust particle exposure/release into the working and outside areas.
- V. Allow to remove all redundant cabling and conduits. The redundant cabling and conduits shall be identified by the Contractor on site and marked for demolition for Superintendent review/confirmation prior to removal.
- W. Make good to all existing wall, ceiling and floor finishes to remain in area of works.
- X. Allowance to relocate existing services & equipment affected by the works and reinstate at completion.
- Y. Allow to keep the site thoroughly cleaned through to completion.
- Z. Allow to scabble / cutback existing concrete/asphalt for any civil works in relation to new downpipes, pits etc. Allow to reinstate with concrete/asphalt in accordance with Australian Standards and documentation.
- AA. Allow to cut out, chase in all proposed services and make good (patch and paint to a high quality finish) all newly created openings in existing masonry walls (either within the ceiling space or otherwise).
- BB. Allow to open areas to facilitate proposed works and make good at completion.
- CC. Allow to remove existing floor finishes to suit proposed works.
- DD. Allow to notch out and chase to existing sub-floor to lay and conceal new services. Ensure to make good at completion. Structure to be maintained intact throughout works.
- EE. Allow to protect from damage all existing features to be retained. Any penetrations through, around that affect the features shall be made good to match the existing.
- FF. Allow to protect from damage all existing building features which are to be retained.
- GG. Preparation of existing concrete surfaces, including scabbling for proposed new screed works
- HH. Allow to make good to a high quality finish existing wall, ceiling and floor surfaces.
- II. Cleaning the site thoroughly during and on completion of demolition works

103 Related Work

Co-ordinate and co-operate with the following trades:
Disconnection of existing services by appropriate other trades
Site preparation – Excavation Asbestos removal
Water distribution Sanitary sewerage
Storm drainage

104 Quality Assurance

Provide data indicating a minimum of 3 years of experience in such work as required by this specification.
Supply names of contacts, with telephone numbers, who can verify performance quality.

105 References

Comply with applicable portions of the following Australian Standards:
AS 2187 Explosives - Storage, transport and use.
 2187.2 2006 Use of explosives. *There are 4 other parts, 1998 – 2006.*
AS 2436 2010 Guide to noise and vibration control on construction, demolition and maintenance sites.
AS 2601 2001 Demolition of structures.

AS 4687 2007 Temporary fencing and hoardings.
Comply also with the requirements of applicable building regulations, statutory authority having jurisdiction, local council.

106 Public and Property Protection

Provide measures required by municipal and state ordinances, laws and regulations for the protection of surrounding property, footpaths, streets, kerbs, the public, occupants and workmen during demolition operations. Comply with the above ordinances, laws etc. in carrying out measures including barricades, fences, warning lights and signs, rubbish chutes, etc.

No blasting for demolition purposes will be permitted.

Exercise due care in executing this work.

Make good to original condition, damage to structures to be retained and to adjacent property which results from demolition operations.

Perform restoration work without expense to the Principal.

107 Fees

Pay fees due to authority requiring same in connection with the work of this section.

108 Services

Before demolishing and removing parts of building having electrical wiring, gas and water pipes, conduit or similar items embedded in them, notify the Superintendent, authorities having jurisdiction, and make sure that these items are out of service so that they can be removed without danger.

109 Photographic Record

Arrange for a professional quality photographic record of the progress of demolition to approval of Superintendent. Produce for the Principal in electronic PDF format an A4 size (297 x 210) printable report with photographs of "before and after" demolition of typical work involved in demolition.

PART II MATERIALS

201 Demolished Materials

Material required to be demolished becomes the property of the contractor. Remove it from the site.

Exceptions to this clause are as follows:

- items noted in documentation for reuse, relocation, retention, etc. Position for storage to be confirmed by the Superintendent.
- specific items noted by Principal to be retained such as all existing furniture
- Items which must be removed and reinstated for purposes of the contract. Contractor is to allow for full removal, service and re-installation of items as required to complete the proposed works.

The Contractor shall maintain Noted items in clean, good working order without damage and make allowance to place noted items in storage at direction of the Superintendent.

202 Equipment

- A. Supply equipment required to perform the work of sufficient capacity to meet the time schedule.
- B. Provide disposal containers for disposal required.

- C. No containers may be located on public streets or pavements without obtaining required municipal permits for same. Co-operate with sub-contractors doing work in or near container locations to prevent disruption of their work.

PART III EXECUTION

301 Examine The Site Conditions

NOTE SPECIFIC ITEMS REQUIRING DETAILED DEMOLITION

1. Existing shed as noted
2. Existing irrigation unit as noted
3. Works to area of proposed new and existing building connections

Start of work means total acceptance of conditions.

Upon the commencement of work, the contractor is deemed to have agreed to the conditions and accepted responsibility in the achievement of these conditions.

302 Existing Reinforced Concrete

Neatly cut back or trim to new alignment with a clean true face on material to be retained. Cut with diamond saw where necessary.

303 Shoring

Provide necessary shoring in accordance with structural engineering instructions.

Alter, adapt, and maintain temporary works as necessary, and strike or withdraw them progressively as the work proceeds. Obtain the written consent of the architect/structural engineer if such works are to be left in position at the completion of the work.

304 Exposed Excavations

Leave excavations open after removal of work below ground level until completion of inspection by architect/structural engineer.

305 Methods and Operations

- A. Demolish and remove completely parts of structure listed and/or drawn for demolition. The methods of cutting and removal of floors, walls, and other items to be removed are to be approved by authorities having jurisdiction.
- B. Furnish flame-cutting required to dismantle sections of equipment too large to be otherwise removed. Flame-cutting is to be performed only by experienced and qualified mechanics. Protect combustible surfaces during flame cutting. Maintain fire extinguishers, required by the fire authority, at hand.
- C. Do not drop or throw material more than 5 metres. Lower by means of hoists or rubbish chutes. Wet down thoroughly during demolition to prevent nuisance of dirt and dust. Equip trucks used in hauling debris with tarpaulins to cover the loads. Do not load so excessively as to spill debris on streets.
- D. Plaster removal: in general, removal of existing plaster showing cracks, bulges or drumminess is required. Refer to architect if in doubt.
- E. Except as placed in approved disposal containers, do not allow combustible material and rubbish to accumulate on the site. Remove daily, or as directed. Burn no debris on site.
- F. Upon completion of wrecking, demolition and the removal of rubbish and debris, remove equipment.

306 Reinstatement

Restore to original condition, without expense to the Principal, any damaged parts of the remaining construction resulting from failure to provide adequate protection. Refer also clause 105.

307 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

Leave the site in an entirely clean condition, ready for the work of other trades.

END OF SECTION

SECTION 02150 ASBESTOS & SYNTHETIC MINERAL FIBRE (SMF) REMOVAL

ADVICE TO OWNER REGARDING ASBESTOS & SMF REMOVAL

The building owner is responsible for the detection of any asbestos material on an existing site, or in an existing building to be demolished or renovated. It is a responsibility of the owner to engage a specialist consultant to identify asbestos material, hazardous or toxic substances on the site or adjacent areas and to comply with applicable laws and regulations. Building work on such sites may only proceed after the Superintendent has received a written document from the relevant authority which states that asbestos and hazardous materials have been totally removed.

If any such material is discovered on the site after work has started the work will be authorised by the Superintendent to cease immediately, the client advised and asked to proceed in accordance with the previous paragraph.

The Principal has organised a Part 5 Asbestos Hazardous Material assessment for the project, Refer to Part 5 Asbestos Hazardous Building Materials Assessment included in Appendices.

PART I GENERAL

101 Scope

The work of this section includes but is not limited to:

Identification, removal and safe disposal of materials containing asbestos and synthetic mineral fibres. Refer to drawings and reports supplied as part of the contract documents. Nominate material to be removed. Examine relevant documents for requirements which will affect the work of this trade section.

102 Related Work

- A. Co-ordination: co-ordinate with other trades affecting or affected by the work of this trade section. Co-operate as necessary to ensure steady and satisfactory progress of the work.
- B. Unit prices: submit with tender a schedule of rates for work required to be done not identified at time of tender. The schedule of rates is required to reflect costs on a square metre rate for sheets or panels to be removed and on a metre run basis for other work. Such costs are to cover work referred to in clause 101 above.

103 Quality Assurance

- A. Registration of Asbestos Removalists. Refer Code.
- B. Submit evidence, before starting work, of the training and experience of those who will be performing the required work.
- C. Comply with CODE OF PRACTICE.
Supply names of contacts, with telephone numbers, who can verify performance quality.

104 References

Perform asbestos removal in accordance with:

- A. National Code of Practice for the Safe removal of Asbestos 2nd Edition [NOHSC: 2002 (2005)]. Copies of this code can be downloaded from Safe Work Australia, www.safeworkaustralia.gov.au
- B. Relevant state government department or state statutory authority, which has jurisdiction over the work of this section, and which is in force at the time of tendering.

105 Submissions

- A. Submit as and when required all of the reports and submissions required by the statutory authorities referred to in clause 104 above.
- B. Submit the data required in CODE OF PRACTICE.
- C. Submit tenders conforming with documents referred to in clause 104.

106 Planning and Programming

- A. Comply with CODE OF PRACTICE.
- B. Arrange for and attend a pre-demolition conference. Abide by decisions and schedules established at such conference.

107 Project Site Control

Refer drawings

108 Notices and Fees

Provide notices to statutory authority which needs data relating to asbestos removal. Pay fees due to any statutory authority which requires, by law, fees to be paid.

PART II EQUIPMENT

201 Decontamination Facilities

Where required by regulations of the controlling statutory authority, provide appropriate decontamination facilities as described in CODE OF PRACTICE.

202 General Hygiene Requirements

Where required by regulation of the controlling statutory authority, comply with general hygiene requirements as described in the CODE OF PRACTICE.

203 Protective Clothing and Equipment

Where required by regulations of the controlling statutory authority, comply with protective clothing and equipment, CODE OF PRACTICE.

NOTE : the use of glove-bags is described and should be used where necessary in accordance with CODE OF PRACTICE.

204 Labelling and Warning Signs

Provide necessary labels and warning signs in accordance with the requirements of "GUIDE TO THE CONTROL OF ASBESTOS HAZARDS IN BUILDINGS AND STRUCTURES." Refer to CODE OF PRACTICE.

205 Tools and Equipment

Provide tools and equipment necessary for the work. Refer to CODE OF PRACTICE.

PART III EXECUTION

301 Examination

- A. Inspect relevant site conditions.
Establish conditions which may be discovered relevant to asbestos removal without disturbing material containing asbestos.

- B. Start of work means total acceptance of conditions.

302 Preparation

- A. Prepare for asbestos removal in full accordance with the requirements of CODE OF PRACTICE.
- B. Install decontamination facilities in a location agreed upon with the architect and other relevant parties.
- C. Install required labelling and warning signs. Refer clause 204 above.
- D. Remove from the work area items which may be damaged by the work of this trade section.
- E. Protect item of furniture, surface, equipment or plant which may be damaged or soiled during the preparation for and action of asbestos removal. Be responsible for damage resulting from asbestos removal actions, processes and other works.

303 Asbestos & SMF Removal

- A. Advise the architect or superintendent in advance of proposed removal methods.
- B. Comply with the requirements of CODE OF PRACTICE and with the instructions of the authorised superintendent of the work.
- C. Removal techniques.
Comply with CODE OF PRACTICE.

304 Monitoring of Airborne Asbestos

Comply with CODE OF PRACTICE.

305 Field Quality Control

Work will be performed under the supervision of an authorised superintendent. Comply with his requirements which are in accordance with the CODE OF PRACTICE, and other requirements to which parties have agreed.

306 Dismantling of Asbestos & SMF Removal Area

Comply with CODE OF PRACTICE.

307 Removal of Asbestos & SMF Material From Site

Arrange with relevant local authorities the identification of the place to which asbestos material is to be taken from the demolition site. Comply with requirements of the authorities.
Remove such materials to the approved location.

308 Reinstallation

309 Cleaning

Thoroughly clean areas in which work has been performed and those adjacent to the work area.
Remove and dispose of traces of the asbestos removal process, protective materials, etc.

310 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect, and/or authorised superintendent of the works. Leave the site in a condition suitable for the work of other trades, in co-operation with architect and builder or contractor.

END OF SECTION

SECTION 02315 SITE PREPARATION & EXCAVATION

PART I GENERAL

101 Scope

The work of this section comprises but is not limited to excavation, disposal of surplus excavated material both on and off the site, supply of compaction and filling material and the preparation necessary to bring the areas to correct shape and level prior to building construction, and as follows:

- A. Site clearing
- B. During excavation maintain minimum 3m clearance from base trunk of all existing trees which are to remain, allow to protect root zones.
- C. Termite treatment
- D. Supply and installation of waterproofing membrane.
- E. Site preparation for proposed building works including excavation for construction of footings, inground service runs, etc
- F. Trenching for pipe work, footings, bollards, etc
- G. Drainage systems, generally in ground and beneath or external to the buildings, including sewerage, and all associated items such as pits, traps, gullies, sumps, culverts, etc. for Air Conditioning Condensate drainage. Allow to connect into existing drainage system.
- H. Excavation, bedding & backfilling for drainage lines to connect into existing.
- I. Supply and installation of waterproofing membrane.

102 Related Work

Co-ordinate and co-operate with the following trades:

SECTION 02360 TERMITE CONTROL

SECTION 02530 SANITARY SEWERAGE

SECTION 02630 STORM DRAINAGE

Allow the following sums per cubic metre for rock excavation and removal:

Refer DOCUMENT 00870, PART I MONETARY SCHEDULES.

103 Quality Assurance

Provide data indicating that the tradesmen engaged for this project have a minimum of 3 years experience in such work required by this specification.

Supply names of contacts, with telephone numbers, who can verify performance quality.

104 References

- A. Comply with applicable portions of the following Australian Standards:
 - AS 1289 Methods of testing soils for engineering purposes.
There are many parts, 1997 - 2009; each refers to a specific application.
 - AS 2159 2009 Piling - Design and installation. *Plus 1 Amdt, 2010.*
 - AS 2187 Explosives - Storage, transport and use.
 - 2187.2 2006 Use of explosives.
 - There are 4 other parts, 1998 - 2006.*
 - AS 3660 Termite management.
 - 3660.1 2000 New building work.

	<i>There are 2 other parts, 2000.</i>	
AS 3798 2007	Guidelines on earthworks for commercial and residential developments. <i>Plus 1 Amdt, 2008.</i>	
AS/NZS 4200	Pliable building membranes and underlays.	
	4200.1 1994	Materials. <i>Plus 1 Amdt, 1994.</i>
	4200.2 1994	Installation requirements.
AS 4687 2007	Temporary fencing and hoardings.	
Comply with particular specifications in building regulations and/or local council publications.		

B. Definitions

Rock: natural or artificial material encountered in the excavation which cannot be removed until broken up by mechanical means such as rippers, jack-hammers or percussion drills.

Rippable rock: rock which can be removed by a single tine, "D9" ripper.

Non-Rippable rock: all other rock.

Other than rock: other material encountered in excavation.

Sub-grade: the natural ground below the excavations.

Filling: a general term for material spread and compacted over the sub-grade to make up finished levels or levels to the under-side of the base.

Sub-base: selected filling spread and compacted over the sub-grade to make up levels to the underside of the base.

Base: a selected filling layer spread and compacted to form an acceptable working surface directly under the building.

105 Approval for Variations

Before starting excavation work which may involve a variation (whether addition or deduction) because of the nature of the material to be excavated, obtain a determination as to the nature from the superintendent. The variation is derived from the determination. If no prior determination has been obtained, the variation, if any, is to be made only at the superintendent's discretion.

106 Use of Explosives

Do not use explosives.

107 Geotechnical Investigation

A geotechnical investigation was made and a copy of the report is included in the contract documents. The geotechnical investigation information given in the report, or shown on the drawings, or both, is information on the nature of the ground at each tested part. It is not a complete description of conditions existing below the surface. The accuracy of the information is not guaranteed and will not be a basis for cost variation.

If unnatural or unhealthy material (potentially destructive) is found, notify the superintendent and arrange for an inspection by a building surveyor and or health inspector.

108 Provisional Depths

The footing or strip depths shown on the drawings are provisional.

Approval of the relevant building surveyor and superintendent is required for actual depths on the site.

If there have been variations to the contract levels or dimensions of excavations, do not commence back-filling or place permanent work in excavations until the superintendent has made measurements and approved them.

The contractor is to allow blinding concrete sufficient to achieve the footing bearing capacity as specified by the Geotechnical investigation and report and the Structural Engineer.

109 Site Management

Inspection: give the superintendent at least 1 working day's notice that the following are ready for inspection:

- rock encountered in the excavations;
- excavation completed to contract levels;
- filling completed to contract levels;
- completed placement of waterproof membrane.

110 Excess Excavation

Excessive excavation and consequent backfilling and compacting may not be claimed as a reason for extra payment.

111 Termite Treatment

Provide a complete termite treatment system for the entire project works.

Termite treatment shall be a physical barrier provided as part of the Contractors works in compliance with AS3660.

Provide permanent termite protection to new timber structures through use of termite barriers by means of Homeguard product - <http://www.homeguardptm.com.au/>. Provide all necessary termite barriers and accessories for a complete termite barrier system to the entire building structure in compliance with AS3660. Install in strict accordance with current manufacturer's written recommendations.

TERMITE PROTECTION

PROPRIETARY ITEM: The "HomeGuard Termite Management System" by FMC Australasia Pty. Ltd.

APPLICATOR: Have the termite management system installed by an Installer accredited by FMC Australasia Pty. Ltd.

INSTALLATION:

- Under-slab Protection: Lay "HomeGuard TMB" under the complete slab on ground in accordance with the manufacturer's recommendations.
- Perimeter Protection: Lay "HomeGuard DPC" as a perimeter termite barrier in accordance with the manufacturer's recommendations and AS 3660.
- Protection to Penetrations: Protect penetrations using "HomeGuard Collars" where applicable and custom-formed collars of "HomeGuard TMB" or "HomeGuard Blue" where proprietary collars are not suitable. Fill gaps, conduit cavities and the like with "HomeGuard Termiflex" or "HomeGuard GT". All in accordance with the manufacturer's recommendations.

Provide certification for termite treatment and certify that all new timber structures and substructures constructed meet with the requirements of AS3660. Provide certificates to Superintendent prior to practical completion.

The intention is for the complete structure of the building to be protected from termite access through physical barriers and use of termite resistant materials, in the event that materials for structure are not termite resistant or able to be protected by a physical termite barrier they shall be termite treated in accordance with AS3660, such items that are to be termite treated must be advised to the Superintendent for approval in writing prior to works.

Where termite treatment is via treated timbers the Contractor shall provide commercial independent certification to the Superintendent, to satisfy the Building Surveyor, that all structural timber on the project is termite resistant.

PART II MATERIALS

201 Termite Control

Supply approved mechanical termite shields in accordance with manufacturer's recommendations. Comply with AS 3660 in selecting appropriate material.

202 Filling

Bring clean filling on to the site unless it can be provided from spoil recovered from the site. Filling is to be sound material, free of perishable material, or material that will form stable fill, non contaminated, but subject always to superintendent's approval.

Fill generally as required or as shown on the drawings, and as follows:

Under concrete floor slabs cast on ground:

First 50mm below slab: sand blinding.

Remainder: 100mm crushed rock for non-suspended slab.

Remainder: approved excavated material for suspended slabs.

Back-fill: approved excavated material unless otherwise specified.

To retaining walls or walls below grade: free draining granular material.

The filling types are as follows:

- A. Approved excavated material: the best of the clean inorganic excavated material, approved by the superintendent.
- B. Hardcore: clean hard filling such as broken brick or stone rubble, consolidated in position.
- C. Porous filling: hard core graded from 40mm to 15mm.
Sand: salt free, loam free, packing quality.
Fine crushed rock: 15 to 5mm clean crushed rock.

203 Waterproof Membrane

Approved flexible polymeric film minimum 0.2mm thick. Deliver underlays to the site in suitable protective packaging, bearing the name of the manufacturer. Handle and store the underlay so that it is not punctured, torn or otherwise damaged. Comply with AS/NZS 4200.

PART III EXECUTION

301 Examine Conditions

Identify the correct site. Obtain written verification from the superintendent of the correct site. Ensure that survey pegs or markers are in place or visible. Obtain a current copy of site survey.
Start of work means total acceptance of conditions.

302 Excavations Generally

- A. Suspend ground works during inclement weather which would result in unsatisfactory work.
- B. Excavate accurately to shape and profile and keep free from loose earth and stones.
- C. Excavate generally as required or as shown on the drawings, including but not necessarily limited to the following:
Removal of footings and unnatural items to 900mm below grade.
Preparation of sub-grade as necessary. Refer clause 107.
- D. Trim the sub-grade surface evenly to the profiles shown on the drawings.
- E. Make allowance for settlement and compaction.
- F. Allow for falls in slabs on grade to streets, lanes and outlets.

Section 02315 Site Preparation & Excavation

- G. Prepare for underground services, referred to in other trade sections of the specification.
- H. Prepare for strip footings, footing beams, pad footings, ducts and pits, to depths shown.
- I. Carry out additional excavation where necessary to permit full use of suitable mechanical equipment (eg. rippers) and back-fill with appropriate material as specified in this trade section.
- J. Where excavation exceeds the required depth, fill back to correct depth with material as follows:
 - below slabs on ground: hardcore.
 - below footings, beams and other structural elements: concrete of strength equal to the structural element, minimum 15MPa.

303 Bad Ground

Should unsuitable material be encountered at the prescribed depths of excavation, or soft, wet and unstable areas develop during excavation, obtain instructions from the superintendent before carrying out additional excavations. Back-fill and compact to the correct levels as directed.

The contractor is to allow blinding concrete sufficient to achieve the footing bearing capacity as specified by the Geotechnical investigation and report and the Structural Engineer.

304 Existing Services

Remove existing services and seal beyond the site boundaries.

Before demolishing and removing parts of building having electrical wiring, gas and water pipes, conduit or similar items embedded in them, notify the superintendent, authorities having jurisdiction, and make sure that these items are out of service so that they can be removed without danger.

305 De-Watering

Maintain excavations, levelled and filled areas free of water by temporary catch drains, sumps, pumping, bailing or whatever means are suitable and effective.

Immediately before placing concrete or masonry on ground, remove free water and foreign matter.

Prevent water flow over freshly laid work.

306 Shoring

Provide shoring, planking and strutting necessary to retain the sides of the excavations and to ensure safe working.

Provide safety covers over holes. Provide necessary needling, shoring and strutting to adjacent buildings.

Order the provision of additional support.

No instruction relieves the builder of sole responsibility for the sufficient support of the excavation.

Guard against the formation of voids outside sheeting or sheet piling (if used), and should voids form, fill and consolidate them to approval.

307 Filling Schedule

Refer clause 202 above.

308 Bearing Surfaces in Rock

Where structural loads bear on rock, unless otherwise specified, scabble the rock face to give even plane bearing surfaces. Level unless required to be sloping or stepped.

Bored pier holes are to be taken a minimum of 150mm below the rock surface and the bottoms cleaned of loose matter.

309 Compaction

Place filling in layers not exceeding 150mm deep when measured loose.

Section 02315 Site Preparation & Excavation

Bring filling to optimum water content by watering, and compact each layer thoroughly and uniformly with a vibrating roller where practicable.

Hand tamp against ground or perimeter beams or walls.

Compact each layer of filling to obtain a uniform density of not less than 95% of the maximum density at optimum moisture content as determined by the dry density/moisture content tests set out in AS 1289.

Finish the base to the following tolerances:

Variation from designed level: 5mm

Variation from 3000mm straight edge: 5mm

310 Polymeric Waterproof Membrane

Lay on approved sand blinding - Refer clause 203. Where necessary, cut sheets to maximum practical width, to suit the layout, and arrange laps to face away from the direction of the pour.

Provide laps as recommended by the manufacturer, but not less than 200mm. Seal laps with pressure adhesives or tapes as recommended by the manufacturer of the underlay and ensure that the adhered surface of the underlay is dry and clean.

Take the underlay up walls to level of top of future concrete slab or as otherwise instructed. Seal service pipes and similar elements when they penetrate the underlay. Allow ample slack to avoid pulling at tape junctions.

Cover vertical or inclined surfaces in an unbroken sheet where possible. Otherwise arrange laps vertically to avoid pulling at joints. Fix at the top with tape or other recommended fixing.

Inspect membrane after laying and before concrete is poured. Patch and seal punctures.

311 Maintenance of Membranes And Underlays

Maintain the membrane or underlays in their best possible condition throughout the construction period.

Repair immediately, to the approval of the superintendent, damage which does occur.

312 Site Investigation Report

Refer Geotechnical and Hazardous Materials reports included in the Appendices

313 Clean Up

On completion of work specified above, remove surplus materials imported to the site, level off surplus excavated material, or pile such material on the site as directed by the superintendent.

314 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the superintendent.

END OF SECTION

SECTION 02510 PIPED DISTRIBUTION

PART I GENERAL

101

Ozone Depleting Free Insulation to pipework

All insulation is to be free from ozone depleting substances. This applies to both the manufacturing and installation phase. The contractor is to provide a confirmation letter from themselves and the material manufacturer confirming that the insulation is free from ozone depleting substances.

Manufacturers

Thermotec

<http://thermotec.com.au>

Kingspan Aircell

<http://www.kingspaninsulation.com.au/Products/Kingspan-Air-Cell.aspx>

Tontine recycled polyester batts

<http://www.tontineinsulation.com.au/products/thermal>

Greenstuff recycled polyester batts

<http://www.autex.com.au/products/Insulation/GreenStuf> -

102 Scope

The work of this section includes but is not limited to the storage, distribution of water to sanitary and other fittings and gas reticulation/distribution:

- A. Roof water collection tanks
- B. Site water distribution, both hot and cold.
- C. allow to fully seal all sanitary and kitchen equipment to junctions where installed against walls or abutting differing surfaces for ease of cleaning and to control against bacterial growth.
- D. Site gas reticulation and connection to all gas appliances, equipment, heaters, etc
- E. Organise gas meter to suit the works
- F. **Provide Kingspan Kooltherm or Thermotec Thermal Pipe Insulation** to all heated or cooled pipes
- G. Provide new stop valve in lockable access panel with a Thermostatic mixing valve to service each hot water tap/shower point, stop valve to control shut off water distribution to each room separately.
- H. All penetrations through fire wall / ceilings / floors shall be fire isolated with fire collars, fire stops, etc to achieve a minimum 2hr fire rating and ensure fire rating of wall is not undermined.
- I. Allow for all permits, fees etc. required for the hydraulic installation for the proposed building works
- J. pipe assembly and valves to comply with authority requirements.
- K. Installation of sanitary fixtures, fittings and tap ware. Allow for total and complete installation including associated connection fit-off.
- L. Supply and installation of the total cold water reticulation to the total building works
- M. Supply, installation and connection of cold water to all plumbing fixtures including taps, outlets, etc.
- N. Provision of wastes, tundishes, vents, etc. associated with the installation to comply with AS 3500.
- O. S/S escutcheon plates around all pipe work penetrations either exposed or concealed.
- P. Excavation and back filling to comply. Co-ordinate with other trades to share services trenches, if possible.

- Q. Provision of maintenance/plumbing instructions manual including 'As Installed' drawings, completed test reports, and spare parts and equipment data.
- R. Testing and commissioning of all installed equipment.
- S. Provision of Defects Liability as specified.
- T. Miscellaneous minor works
- U. new gatic covers and inspection openings to trafficked areas
- V. Gas distribution and connections

Refer to hydraulic engineer's documentation for further details. Any discrepancies between the hydraulic documentation and architectural should be clarified with the Superintendent prior to starting works. The Hydraulic Documentation shall take precedence over any discrepancies of items within in this trade section.

Note: All pipes, controls, vents, etc. are to be concealed in walls or cupboards with minimum exposure to D.T. connections.

103 Related Work

Co-ordinate and co-operate with the following trades:

Sanitary sewerage	Piped energy distribution
Storm drainage	Irrigation systems
Fire hydrants and hoses	Plumbing fixtures
Finishing trades	

104 Quality Assurance

Perform the work of this section using tradesmen whose experience and skills meet the requirements of controlling statutory authorities.

105 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1254 2010	PVC-U pipes and fittings for stormwater and surface water applications.
AS 1357	Valves primarily for use in heated water systems.
	1357.1 2009 Protection valves.
	1357.2 2005 Control valves. <i>2 Amdts 2006, 2009.</i>
AS 1432 2004	Copper tubes for plumbing, gasfitting and drainage applications.
AS/NZS 1477 2006	PVC pipes and fittings for pressure applications. <i>1 Amdt 2009.</i>
AS 1628 1999	Water supply - Metallic gate, globe and non-return valves. <i>Plus 1 Amdt 2001.</i>
AS/NZS 2032 2006	Installation of PVC pipe systems. <i>Plus 1 Amdt 2008.</i>
AS/NZS 2492 2007	Cross-linked polyethylene (PE-X) pipe for pressure applications.
AS 2537 2011	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. <i>There are 5 parts.</i>
AS/NZS 3500	Plumbing and drainage.
	3500.1 2003 Water services. <i>Plus 2 Amdts, 2005 - 2010.</i>
	3500.1.1 1998 Water supply - Performance requirements.
	<i>There are several other parts, 1996 - 2003, plus Amdts.</i>
AS 3688 2005	Water supply - Metallic fittings and end connectors.
AS/NZS 4130 2009	Polyethylene (PE) pipes for pressure applications. <i>Plus 1 Amdt 2009.</i>
AS/NZS 4765 2007	Modified PVC (PVC-M) pipes for pressure applications.
AS 4809 2003	Copper pipe and fittings - Installation and commissioning. <i>Plus 1 Amdt 2003.</i>
AS/NZS 5065 2005	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications. <i>Plus 1 Amdt 2010.</i>

Comply with requirements of statutory authorities having jurisdiction.

106 Submissions

Before ordering scheduled material, submit required product data to the superintendent, particularly where the specified material is not available and alternatives are offered.

107 Warranty

Provide the Principal with warranties covering:

- A. Materials: in the form supplied by manufacturers of specified components.
- B. Installation, for 5 years from the date of Practical Completion: the complete piping installation and the specified components to which it is connected.

108 Fees

Pay fees to the relevant statutory authorities.

109 As Built Drawings

Comply with clause 1.503 of SECTION 01000 PRELIMINARIES As-Built Drawings.

110 Authorities and Approvals - General

Authorities: The public and other authorities whose requirements shall apply to the work of this Section in accordance with the General Conditions, and the ordinances, regulations, by-laws and the like specifying those requirements, shall include the following:-

- Local Council
- Water & Gas Authority for the area

The Contractor shall obtain all permits and approvals and pay all fees associated with any new connections or associated works,

111 Work as Executed Drawings

Requirement: Prepare progressively throughout the Works, and furnish to the Superintendent before the Date of Practical Completion, 'work as executed' drawings of the COLD WATER, HOT WATER, GAS AND OTHER PIPED SUPPLY to the same scales and on the same sized standard sheets as the Contract Drawings, showing the locations of pipes and fittings, including depths of underground pipe work, positions of control valves, and the like. Give co-ordinate dimensions where applicable.

112 Supervision

Personnel: Work shall be done by or under the direct supervision of appropriately licensed personnel.

113 Existing Services

The Contractor shall note the presence of underground electrical cables, Telstra cables, gas and water main, sewer and stormwater drains to avoid damage during any excavations required for the completion of the Works.

Prior to construction of new services, existing services shall be accurately located and protected as required. Give adequate notice and obtain the approval of the Authority having jurisdiction over the works.

Any damage to existing services shall be made good by the Contractor at his own expense and without delay.

114 Testing

Supply apparatus and materials necessary for and carry out the tests required by AS 3500 or regulatory authority.

The Contractor shall ensure that all tests and inspections related to the installation of the services specified herein are carried out, to which end the Contractor shall provide to the Superintendent a signed certificate in the exact form as attached to this specification.

Rejection: Pipe work which fails a required test, or which vibrates or is noisy because of insufficient support or loose fixings, is liable to rejection. All unsatisfactory or defective work shall be replaced free of cost to the Principal.

115 Warranty

The Contractor shall provide a Warranty in the exact form as attached to this Specification for a period of SIX (6) years from the date of Practical Completion. The Warranty shall cover the plumbing installation including: -

- Sanitary fittings (stainless steel, ceramic and plastic).
- Stainless steel fittings.
- Taps and outlets.
- Cold water reticulation
- Hot Water reticulation

116 Sub-Contractors

If any section of this work is sub-let, it should only be to a firm approved by the Superintendent before sub-letting.

Should the whole or any part of this trade be sub-let by the Contractor, the Contractor shall ensure that such works are carried out in accordance with the requirements of his Contract, and shall bind Sub-Contractors by similar conditions in respect of the subject matter of the Sub-Contract, as he is bound by his Contract to the Principal.

117 Plating

Pipes exposed in finished areas shall be heavily metal chromium plated. All other exposed pipework shall be painted in accordance with the relevant section of the specification, with the exception of pipes in ducts and false ceilings, which shall be colour banded at a minimum of 2000mm centres and at valves and inspection openings.

Service shall be clearly labelled and the direction of flow shall be clearly marked.

Provide chrome plated escutcheon cover plates where exposed piping passes through walls.

118 Cover to Services

All services shall be laid with a minimum cover of 600mm unless otherwise noted on drawings.

119 Reinstatement of Existing Surfaces

Where new services are located under existing pavements, or nature strips, etc., surfaces shall be reinstated after construction to the equal of the surrounding surface, and to the Superintendent's approval.

Trenches shall be saw cut through existing pavements, and lawns shall be carefully cut into sods.

120 Plumbing Drawings

Runs and locations of storm water piping are shown diagrammatically on the contract drawings. Pipe work shall be set out accurately to on site dimensions. Stormwater, sewer & other pipes shall generally be located in positions clear of the property building for future ease of access.

121 Sleeves

Provide and fit sleeves for pipes through walls and floors.

Avoid penetrations through slab beams and footings, but where necessary, these penetrations are to be sleeved to allow for movement using 60mm thick closed cell polythene fire rated type.

122 Progress

Co-ordinate the progress of this trade with all others. Co-operate with other Sub-Contractors to avoid difficulties in set out of all services.

PART II MATERIALS

201 Acceptable Manufacturers

Before ordering materials obtain and provide to the superintendent a written statement that items to be installed are approved by statutory authorities having jurisdiction.

202 Materials

Item	Type Required	Diameters
Pipes	Copper, polyethylene, polybutylene or galvanised steel	
Service line		Refer drawings or 25mm, 20mm or other
Branches to fittings		Refer drawings or 15mm or other
Joining	Pushfit, capillary, brazed, compression, solvent-welded or other	
Chrome plating	All exposed brass or copper pipes	

203 Equipment

Provide necessary equipment to effect a complete installation of each part of this section, including seals, joining materials, flanges, etc.

204 Fabrication

Fabricate components in a manner approved by the local authority and the superintendent. Comply with requirements of relevant Australian Standards where applicable.

205 Materials Generally

1. General

All materials shall be of first quality and to the Superintendents approval. Provide all necessary connections, pipe fittings, material and labour in connection with this trade to complete the work in a satisfactory manner.

All materials for the installation of sewerage and water services shall be tested, stamped and approved by the appropriate authority.

2. Hold Fast

Fix pipes generally 25mm clear of walls with wrought iron clips bolted to pipes. Space clips at 2000mm intervals to support all services firmly. Pipes generally should be concealed within walls.

Clips shall be provided with approved plastic isolating strips securely bonded to the clip, for the support of copper or brass tubing.

3. Hangers

Should any services be run in ceiling space support horizontal runs on adjustable bolted pipe clips attached to galvanised M.S. rods and fixed to the structure with approved expanding metal fasteners.

4. Fittings and Valves

All pipe fittings for copper pipes and valves and stop taps shall be in cast brass or gunmetal of approved make and pattern and they shall be tested and stamped by the appropriate Authority.

5. Access covers

Provide access covers to all stop valves and other inspection openings as required. Stop valves to trafficked areas shall be protected with heavy duty access covers 'Class D'. Provide access covers as supplied by Gatic Pty Ltd or similar approved. Provide sample to Superintendent for approval

206 Workmanship Generally

1. General

Carry out all work in a thorough and workmanlike manner and to the satisfaction and approval of the appropriate Authority and Consultant.

The work shall be carried out by first class tradesman holding a licence to perform the work.

2. Setting Out

Set out pipe work in ducts, pipe trenches in a logical manner and make arrangements with the Superintendent for additional space considered necessary for pipe work.

Set out pipes clear of each other and those of other trades. Pipes shall not be buried in walls, floors or in other inaccessible places without written approval.

3. Access to Pipes

All pipes, sewer, wastes, water and those of other Sub-Contractors are to be quite free of each other and easily accessible for their full length where in ducts. In no instance whatever, are any pipes to be fixed behind other pipes and all must be easily accessible for access openings.

Plumber shall co-ordinate with the Builder to ensure access panel openings are located near eyes on all waste lines. Ensure access panels to trafficable areas are designed for heavy duty traffic to Australian Standards.

4. Isolation

Isolate from each other by an approved method of jointing or insulation, all materials which set up galvanic or corrosive action when in contact.

5. Water Hammer

Take all necessary precautions to prevent water hammer and rectify it should it occur. Rectification shall include all make good to works in association.

207 Water Services

1. Scope

The work to be carried out under this section of the Specification consists of: -

- Cold Water & Hot Water Services.

- Connection of Rain Water Storage Tank to new tap points and to toilet flush

2. Materials

Copper tubing shall be solid drawn tubing conforming to AS 1432, Table 2, Type B.

Joints in copper tubing shall be made with approved capillary type fittings with silver solder brazing alloy. Brazing rod shall conform to AS 1167 and have a silver, copper, phosphorous brazing alloy containing not less than 15% silver. Pipe work shall be required to pass hydrostatic test pressure of 1500 kpa for duration of 2 (two) hours.

3. Concealed Water Services

Run all water services subground and allow to run vertically within cavity. Ensure all services are concealed within structure.

4. Underground Water Service Installation

Pipes shall have a minimum cover of 600mm. Pipe work will be protected by plastic coating or wrapped with Denso tape to manufacturers' instructions.

(a) Bedding

Each pipe shall be fully and evenly supported over its entire length. Where rock bottom trenches are encountered, a 75mm thick bed of selected soil shall be placed in the trench before laying commences.

(b) Backfilling

Trenches shall be backfilled with compacted layer of 'B' grade fine crushed rock below floors, roads and pavements, natural material in other areas. Crushed rock backfill to be compacted to 95%. Modified compaction to AS 1289 and natural material backfill to be compacted in 150mm layers to compaction of existing.

Note : Refer to Section 02100 - Clause 307 for backfilling trenches near building line.

5. Valves

All valves shall be Authority tested and of approved manufacture.

Stop cocks shall be loose valve reflux action brass stop taps.

Gate valves shall be gunmetal for valves less than 100mm diameter and cast iron with brass for larger valves.

Valves located on the ground shall be housed in cast iron boxes and clearly marked. Ensure boxes for valves to trafficked areas are designed for heavy traffic.

Pipeline connections shall be made to allow easy replacement of all valves.

All valves shall be labelled with metal tags.

6. Cold Water Reticulation

Provide new cold water service where shown in copper tubing as specified above and provide isolating valves and branches as indicated all in accordance with the regulations and requirements of the local Authority. Provide complete reticulation to all fittings shown on the drawings.

7. Taps

Tapware noted in Appendices the Project Schedule shall be supplied and installed by the Contractor shall install complete with all fixing required, mixing sets and hose cocks. In the instance taps have not been scheduled or nominated in the documents, the Contractor is to provide for a suitable commercial grade tap set to suit the proposed works,

The Contractor shall provide and install complete with all fixing required, all taps, mixing sets and hose cocks. Taps shall comply with the requirements of the Authority and AS 1718.

After complete assembly and before delivery to the site, all taps and valves shall be submitted to the Authority and tested, approved and stamped.

Before orders are placed with the manufacturer, samples shall be submitted by the Contractor, for approval by the Superintendent.

Note : All pipe work to be concealed within stud walls, or structure.

Note : Refer to Project Schedule for tap schedule, allow to provide tapware for all locations as indicated on drawings and schedules

8. Backflow Preventer

Refer to hydraulic documentation for details

208 Thermostatic Mixing Valve and Stop Valve

Provide a thermostatic mixing valve (TMV) to service each amenity space separately. Allow to install inside a lockable access panel beside the entry door (lockable access panel to be keyed to Masterkey system). All hotwater fixtures and fittings within each room are to be connected to the TMV. Provide a stop valve in the same location as the TMV to which all water distribution plumbing to each room is to be connected (this is to allow for the controlled shutoff of water supply to each individual rooms separately for future maintenance ease)

209 Sanitary Plumbing

1. Materials

- (a) UPVC pipes and fittings shall be in accordance with AS 1415 (UPVC) pipes and fittings for soil waste and vent applications parts 1-4 Class SWV with solvent cement joints.
- (b) Solvent cements shall be in accordance with AS 3879.

2. Construction

(a) General

Set out all wastes, vents and soil piping in the stud walls, ducts and false ceilings provided, all as shown on drawings and complying with the regulations and requirements of the local water authority.

Materials to be used shall be as follows: -

- Generally UPVC tubing for all wastes, soil and vent piping.
- Make connection to all sanitary fittings and wastes and to sewer drainage system in accordance with the drawings. Provide inspection openings on all bends and junctions in suitable locations to allow rodding of all wastes and soil lines.
- Extend vents through roof as indicated and finish with approved type cowls.

(b) Traps

Generally traps to all fittings above floor level shall be loose ring U.P.V.C. 'S' trap.

(c) Expansion Joints

Install approved type expansion joints in soil and waste systems to the requirements of the local water authority.

(d) Testing

The whole of the sanitary plumbing installation shall be tested and certified as specified in Clause 109.

3. Sanitary Fittings – under this contract

All sanitary fittings where applicable shall be tested and stamped by the testing Authority and shall be subject to the approval of the Superintendent.

Fittings shall be supplied complete with all fixings, flashings, plugs and washers and traps.

PART III EXECUTION

301 Examination

Visit the site before delivery of materials, and compare conditions with those shown on drawings.
Start of work means total acceptance of conditions.

302 Connections to Supply

Arrange with the supply authority, obtain and install required meter equipment complete with meter housing, and connect in accordance with the authority's requirements.

303 Below Ground Installation

Prepare trenches or openings and lay pipes at approved depth on approved base material. On completion, back-fill with approved material and cover with approved material and consolidate as required by the statutory authority and the superintendent. Maintain required distances between pipes of different sorts, and pipes and the structure.

304 Fabrication and Jointing

Fabricate and join components to the superintendent's and the authority's approval, to applicable Australian Standards and to the manufacturers' instructions.

305 Installation

Install components to the superintendent's and the authority's approval, to applicable Australian Standards and to the manufacturer's instructions.

Co-ordinate with other trades, particularly where pipes pass through other elements of the building and plan relevant work to produce the whole installation in proper sequence.

Ensure that interfaces are of appropriate size and type and are properly sealed.
Seal penetrations as needed to achieve a watertight installation. Refer to the warranty clause in Part I.

306 Testing

Cover no pipes, joints or connections until tested and passed by the relevant authority, and approved by the superintendent.
Submit to the superintendent copies of certificates issued by relevant authorities.

307 Protection

Protect work of this section from damage until Practical Completion is achieved.

308 Cleaning

On completion, remove debris and clean visible work to the superintendent's satisfaction.

309 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the superintendent.

END OF SECTION

SECTION 02530 SANITARY SEWERAGE & STORMWATER

PART I GENERAL

101 Scope

The work of this trade section includes but is not limited to supplying and laying a complete system of sewer pipes as specified below and as detailed on (architectural or hydraulics engineering) drawings, including:

- A. Sewer drains from each fitting or installation.
- B. Sanitary pits and cleanouts
- C. Sewer manholes, frames, covers
- D. Connection to municipal sewer drains or other means of disposal.
- E. Allow to provide acoustic lagging to all sewer and stormwater pipes within the building and in walls or ceiling spaces

Supply and installation of a complete sewer system and stormwater system connected into the existing site systems to the Local Authority infrastructure.

The work of this section includes but is not limited to, supplying and laying a complete system of site stormwater drainage and a complete system of sewer pipes as specified below and as detailed on (Architectural and Hydraulics Engineering) drawings including: -

- F. Drainage systems, generally in ground and beneath or external to the buildings, including sewerage, stormwater and all associated items such as pits, traps, gullies, sumps, culverts, gutters, agi-drains, manholes, frames, covers, etc.
- G. Excavation, bedding & backfilling for drain lines
- H. Pits, frames, covers, and cleanouts
- I. Sewer drains from each fitting or installation
- J. Connection to municipal sewer drains or other means of disposal.
- K. Foundation drainage piping
- L. Drains below slabs on ground
- M. Connection to main street drain or other nominated outlet.
- N. Provision of temporary drainage connections to all existing stormwater down pipes and outlets from existing buildings to be retained during phasing works and providing temporary connections through to the existing legal point of discharge to suit phasing works.

Refer to hydraulic & Civil engineers documentation for further details. Any discrepancies between the hydraulic or Civil documentation and architectural should be clarified with the Superintendent prior to starting works. The Hydraulic and Civil Documentation shall take precedence over any discrepancies of items within this trade section.

102 Related Work

Co-ordinate and co-operate with the following trades:

Site preparation – Excavation	Bituminous concrete pavement
Concrete pavement	Plumbing fixtures
Storm drainage	Lawns and grasses

103 Quality Assurance

Perform the work of this trade section using tradesmen whose experience and skills meet the requirements of controlling statutory authority.

The superintendent and engineer will make random inspections during the execution of the work.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1254 2010 PVC-U pipes and fittings for stormwater and surface water applications.

AS/NZS 1260 2009 PVC-U pipes and fittings for drain, waste and vent application.

AS/NZS 1546.1 2008 Septic tanks.

1546.2 2008 Waterless composting toilets.

AS 1741 1991 Vitrified clay pipes and fittings with flexible joints - Sewer quality.

AS/NZS 2032 2006 Installation of PVC pipe systems. *Plus 1 Amdt 2008.*

AS/NZS 3500 Plumbing and drainage.

3500.0 2003 Glossary of terms.

3500.2 2003 Sanitary plumbing and drainage.

3500.2.1 1996 Sanitary plumbing and drainage - Performance requirements.

There are several other parts, 1996 – 2003.

AS/NZS 4494 1998 Discharge of commercial and industrial liquid waste to sewer - General performance requirements.

Perform work also in accordance with the regulations and requirements of the council's engineer, and drawings provided by council and engineer for the purpose.

Comply with requirements of any statutory authority having jurisdiction.

105 Warranty

Provide to the Principal a warranty covering:

A. Materials: in the form supplied by manufacturers of specified components.

B. Installation for 5 years from the date of Practical Completion: the complete drainage installation.

106 As Built Drawings

Comply with clause 1.503 of SECTION 01000 PRELIMINARIES As-Built Drawings.

PART II MATERIALS

201 Acceptable Manufacturers

Before ordering materials obtain and provide to the superintendent a written statement that items to be installed are approved by statutory authorities having jurisdiction.

202 Materials

Sewer drain pipes:

Tested vitrified clay with rubber ring joints.

UPVC sewer grade pipes with solvent joints.

Conform with local authority's requirements.

Pits: 20 MPa and comply with local authority's requirements.

203 Testing and Authority Inspections

(a) Pipework Testing

Section 02530 Sanitary Sewerage & Stormwater

Requirement : Supply apparatus and materials necessary for, and carry out the tests required by the Specification or regulatory authorities, in the presence of the Consultant and the authorised representative of the relevant authority for the service under test.

The Contractor shall ensure that all tests and inspections related to the installation of the services specified herein are carried out, to which end the contractor shall provide to the Superintendent signed certificates in the exact form as attached to this specification.

Hydrostatic Tests : Fill the pipework with water and test at the pressure and for the duration stated in the Hydrostatic Test Tables, unless overridden by regulatory authority requirements.

Rejection : Pipework is liable to rejection if the water loss exceeds the limit permitted by the relevant test.

(b) **Hydrostatic Test Tables**

STORMWATER PIPELINES: Test to the following table:

Type of Joint:	Pressure Head: (height)	Test Period:	Max. Water loss per 30 m length of drain
Rubber Ring	1750 mm min.	15 minutes	300 ml per 25mm
Bolted Gland	1850 mm max.	15 minutes	pipe diameter
Solvent Welded	1750 mm min. 1850 mm max.	5 minutes	No loss permitted

SEWER PIPELINES: Test to the following table at a test head of 3m on the lowest pipe:

Type of Pipe:	Diameter:	Test Period:	Max. Water Loss: per 30 m length of drain
All types	All	5 minutes	No loss permitted.

204 **Materials**

(a) **Pipe Bedding Material**

Type: Granular material (clean unweathered hard basaltic or sedimentary crushed rock, free of salt, clay or organic contaminants).

(b) **UPVC Pipework**

UPVC Sewer Pipes and Fittings: (unplasticized polyvinyl chloride) To AS 1260, suitable for the jointing method specified.

Pipe class: Class SN08 or SN10 unless otherwise specified.

UPVC Stormwater Pipes and Fittings: To AS 1260 as above.

Jointing Methods: Solvent-cement joints: To AS 2032, Clause 3.2.1.

(c) **HDPE (high-density polyethylene) drainage Pipework**

Provide as a minimum HDPE pipes to all commercial kitchen fittings and fixtures for the project to cater for high temperatures to waste water. HDPE pipe work shall be provided through to the grease interceptor trap.

(d) **Access covers**

Provide access covers / pits to all inspection openings. Inspection openings to trafficked areas shall be protected with heavy duty access covers 'Class D'. Provide required access covers /pits as supplied by Gatic Pty Ltd or similar approved. Provide sample to Superintendent for approval

205 **Drainage Systems**

(a) **Sewer**

Extent: All new plumbing fixtures. Refer hydraulic engineer's documentation

Connections to Fixtures: Make connections to sanitary fixtures by a jointing method appropriate to the pipework and the fixture.

Vents: As per Australian Standard requirements.

- (b) **Stormwater Drains**
Extent: Lay stormwater drains to the down pipe outlets shown on the Drawings and specified.
Downpipe Connections: Jointing to downpipe is specified in Metal Decking and Roof Plumbing. Refer Civil Engineers documentation.
- (c) **Roof Plumbing** for the new roof structure. Provide stainless steel leaf guards to sumps and accessory fittings to minimise debris and cleaning maintenance requirements.

206 Pipe Lagging

Provide pipe lagging to all in ceiling and in wall sewer, drainage and stormwater pipes. Provide minimum 15mm flexible foam and loaded vinyl membrane, laminated with aluminium foil. Install insulation barrier to wrap around PVC pipework to reduce sound transmission through waste and water pipes. Install in strict accordance with current written manufacturer's recommendations. Provide to suit pipe diameter and comply with BCA/NCC requirements.

Type: Thermotec NuWrap 5 or Fletcher Insulation Pipe Acoustic Lagging

Location: Acoustically insulate all sewer and rainwater pipes installed behind walls and ceiling linings

PART III EXECUTION

301 Examination

Visit site and inspect conditions, comparing conditions to drawings before delivery of materials to site.
Start of work means total acceptance of conditions.

302 Trenching

Form straight and true trenches, 600mm clear of walls, maintain sides, and free from water. Form trenches and bedding to provide constant falls as approved by the local authorities. Arrange for inspection by relevant authority before back-filling.

303 Pipe Laying

Connect with rubber rings and with inspection openings at 6 metre intervals and at bends and junctions.
Connect with materials appropriate to the pipes in accordance with manufacturer's instructions.
Provide inspection openings, bends and junctions required by authorities.

304 Pipes Below Structures

Where sewer or drain pipes are laid below or under structures, comply with requirements of local authority.

305 Connections to Other Services

Seal thoroughly with water-tight material as recommended by component manufacturer.
Connect new lines to road or street sewer and drainage to the requirements of the relevant authority.

306 Testing

Cover no pipes or joints until approved by the superintendent and tested and passed by the relevant authority.

307 Backfill

After inspection (and testing) where required, back-fill with approved material.
Such material requires approval from local council engineer and superintendent. Remove materials not conforming to such requirements, without cost to the Principal.

308 Workmanship

- (a) Gradients
Lay drains to gradients complying with local authority requirements and to levels and grades shown on the Drawings. If no grades are indicated adopt minimum Australian Standards or alternatively generally 1:180 fall throughout.
- (b) Pipe Laying
Check all proposed and existing inverts before the pipe laying shall commence. Pipe laying shall commence at the discharge end of the drain.
Generally: Lay pipelines to uniform gradients falling to the outlets, straight between required changes of direction, properly supported, with watertight joints aligned flush at internal surfaces and with spigot ends pointed in the direction of flow. Provide the necessary fittings and accessories, including junctions, branches, inspection openings and cleaning openings, expansion joints, and the like.
Cleaning Out: Flush the pipeline with clean water and leave it clean and free from debris on completion.
- (c) Underground Installation
Pipe Bedding: Unless otherwise specified bed the pipe work on a continuous underlay of pipe bedding material, compacted if granular, of minimum thickness after compaction as required by the relevant standard, but in any case not less than 75mm. Grade the bedding evenly to the required gradient of the pipe work. UPVC pipe systems to AS 2032, Parts 5 and 7.
Side Support and Overlay: Fill to not less than 150mm above the top of the pipes. Compact in layers of not more than 150mm loose thickness without damage to the pipe work.
Back filling Material: Under-pavements Class 3 F.C.R. and natural material elsewhere.
Compaction: To AS 1289
Cohesive material: Not less than 90% modified maximum dry density.
Non-cohesive material: Not less than 95% modified maximum dry density in external areas and not less than 100% under the designated building areas.
Minimum Cover Over Pipe: Unless overridden by regulatory authority requirements or otherwise specified, minimum cover shall be 600mm.
- (d) Bedding Fittings
Concrete Bedding: Bed fittings, including junctions, traps, gullies, and the like, on concrete bedding not less than 5 MPa, 100mm thick, 450mm long, and the width of the trench.
Flexible Joints: Provide short lengths (not more than 600mm) of flexibly jointed pipe on each side of concrete fittings, pits, manholes, and the like.
- (e) Connections to Existing
Connect new pipelines to existing services. Refer to hydraulic engineer's drawings for details

309 Materials Schedule

- (a) Stormwater Drains
 - (i) Unplasticised Polyvinyl Chloride (UPVC): To AS 1254
 - (ii) Concrete Pipes: R.C.P. to AS 4058 manufacturer's test certificate.
- (b) Sewer Drains
 - A. Unplasticised Polyvinyl Chloride (UPVC): To AS 1260 class SH or AS 1415 class S.W.V.
 - B. Sewer Drain Pipes for equipment discharging water in excess of 65deg Celcius temperature hot water shall be constructed in HDPE or to approval of the Superintendent.

310 Pipework Installation Schedule

- (a) Stormwater Drains
 - Bedding Material - 75mm, Class 3 F.C.R.
 - Pipe work - U.P.V.C. for S.W. drains. Pipe sizes as indicated on Drawings.

Section 02530 Sanitary Sewerage & Stormwater

- | | | | |
|-----|------------------|---|--|
| (b) | Discharge Outlet | - | Determine on site in accordance with authority's requirements. |
| | Sewer Drains | | |
| | Bedding Material | - | To Table 219, "Victorian Water Supply and Sewerage Plumbing Regulations, 1986 and to authority requirements. |
| | Pipe work | - | UPVC for typical sewers and HDPE for sewer piping servicing kitchen. |
| | Discharge Outlet | - | Determine on site in accordance with authority's requirements. |
| (c) | Venting | | Provide least obtrusive venting. Confirm with Superintendent for preferred option. |

311 Pit Schedule

Provide pits to suit purpose. Provide reinforced concrete pit with dimensions 600 x 600 concrete unless noted otherwise on documentation. As a minimum pits should be medium duty trafficable.

Pits to high trafficked areas to be suitable for heavy duty use 'Class D'.

Provide suitable trafficable (heavy duty) access covers and pits for all inspection openings and access pits located to vehicle trafficked areas. Sizes to suit service.

Provide sample(s) to the Superintendent for approval.

Adopt Australian Standards and adhere to council and or statutory authority's requirements.

310 Protection

Protect completed work from damage until Practical Completion. Make good damage if it occurs.

311 Cleaning

Remove debris and clean areas where work has been performed, to superintendent's satisfaction.

312 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the superintendent.

(Schedule of Sanitary Items at end of document)

SCHEDULE OF SANITARY ITEMS

Refer Project Schedule in Volume 3

END OF SECTION

SECTION 03310 CONCRETE

Concrete Portland Cement Reduction(in-situ)

As a minimum all cast in-situ concrete is to have 30% of the Portland cement content replaced with industrial waste products.

20% of all aggregates used for structural purposes are to be recycled or slag aggregate. (Class 1 RCA in accordance with HB155-2002)

The contractor is to provide confirmation from themselves and from the concrete manufacturer confirming the quantity of cement replacement and industrial waste used in the concrete sourced.

Manufacturer's

Boral

E-Crete, by Zeobond

<http://www.zeobond.com/e-crete-greenstar.html>

Ability Products – Flyash additive

<http://www.abilityproducts.com.au/>

PART I GENERAL

101 Scope

Supply and install a complete installation of concrete including but not limited to reinforcement, damp-proof membrane, formwork and other items for:

- A. Footings
- B. Slabs
- C. Allow for all necessary Excavation, Preparation of sub-grade, Base courses, laying and compaction, Concrete surfacing, Pedestrian pavements, Kerbs and channels
- D. footings, Pad Footings, strip footings, plinths, etc. and as detailed herein and on drawings, and other incidental or consequential work which is or may become necessary to complete the work, including waterstops, other jointing devices, all necessary reinforcing, starter bars, etc.
- E. Ensure to allow for setdown in concrete paving to proposed entry to allow for floor mat to finish flush to surrounding surfaces to mat, refer to Section 12480 for details on Mat type.
- F. Recycled Concrete slabs & blinding
- G. concrete plinths for on ground mechanical/ electrical equipment
- H. casting in of floor drains, fence posts, etc.
- I. Concrete footings for all new fencing posts
- J. casting in of metal drop bolts, signage posts
- K. provision of new concrete pathways, pedestrian cross overs, kerb ramps to roadway in strict accordance with Council's Building Department, obtain all necessary approvals.
- L. Allow to cast in door floor boxes for pivots and locking mechanisms
- M. Allow to cast in power and electrical junction boxes to slabs
- N. Allow to cast in all plumbing and electrical conduits to suit the proposed layout. Prior to casting in the puddle flange for floor wastes confirm the model of floor waste and the proposed floor finish to ensure the correct size and depth of the puddle flange to suit a flush finished floor level
- O. Provide for all necessary set downs and ramping to slab areas to provide for falls to floor wastes and allow

for flush jointing of finished floor surfaces for fully compliant DDA access to all areas of building in compliance with current AS1428.

- P. Set downs, falls and areas with rebates, etc. shall be formed from the appropriate class of formwork to suit the finished concrete and its proposed finishes. Should there be doubt confirm with the Superintendent before installing formwork.
- Q. Concrete Finish - Provide colour additives to exposed concrete to match nominated colour in documentation. Provide concrete sealer to all exposed concrete

The Contractor is to allow to place blinding concrete sufficiently to bring the foundations to the bearing capacity as specified by the Geotechnical report and the Structural Engineer.

102 Related Work

Co-ordinate and co-operate with the following trades:

Site preparation – Excavation	Structural steel
Concrete screeds	Concrete finishes
Coloured concrete flooring	Waterproofing and tanking

103 Quality Assurance

Supply and install required materials in compliance with drawings and specifications which form part of this contract and with further details and/or instructions issued during the currency of the contract.

The concretor is to be experienced in this class of work with an appropriately qualified foreman to supervise requirements.

104 References

Comply with the requirements of the following Australian Standards and maintain the ones marked with * on site during construction:

AS 1379 2007	Specification and supply of concrete. <i>Plus Supplement 1-2008.</i>
AS/NZS 1554	Structural steel welding.
1554.2:2003	Stud welding (steel studs to steel) <i>Plus 1 Amdt 2003.</i>
1554.3:2008	Welding of reinforcing steel.
1554.4:2010	Welding of high strength quenched and tempered steels.
1554.5:2011	Welding of steel structures subject to high levels of fatigue loading.
1554.6:1994	Welding stainless steels for structural purposes.
1554.7:2006	Welding of sheet steel structures.
AS 2550.15 1994	Cranes - Safe use - Concrete placing equipment.
AS 2870 2011	Residential slabs and footings.
AS 3600 2009	Concrete structures. <i>Plus 1 Amdt, 2010.</i>
AS 3610.1 2010	Formwork for concrete – Documentation and surface finish.
AS 3799 1998	Liquid membrane-forming curing compounds for concrete.
AS 3972 2010	General purpose and blended cements.
AS/NZS 4200	Pliable building membranes and underlays.
	4200.1 1994 Materials. <i>Plus 1 Amdt 1994.</i>
	4200.2 1994 Installation requirements.
AS/NZS 4671 2001	Steel reinforcing materials. <i>Plus 1 Amdt, 2003.</i>
CIA Z6 2010	Reinforcement detailing handbook.
HB 71 2011	Reinforced concrete design in accordance with AS 3600 2009.
HB 84 2006	Guide to concrete repair and protection.

105 Submissions

Submissions required prior to fabrication:

- A. Builder's proposed Progress Schedule: include as a minimum, in bar chart form, the anticipated commencement and completion times of each major element, such as:
 - 1. Fabrication of formwork and reinforcing.
 - 2. Placing of concrete.
 - 3. Stripping of formwork.
- B. Shop Drawings: comply with the requirements of Section 02000 clause 2.301, Shop Drawings.. Provide the Shop Drawings showing the following information where appropriate to the item:
 - 1. Junctions and trim to adjoining surfaces.

106 Delivery and Handling

Deliver materials in the same sequence as they are installed. Avoid double handling at the site. Co-ordinate delivery and fixing schedules to reduce use of cranes.

107 Project Conditions

- A. General:
- B. Measurements and Dimensions.
 - 1. Measurements: before ordering material or doing work, verify measurements and be responsible for the correctness of same. Submit differences found to the architect in writing for consideration before proceeding with the work. No extra charge or compensation will be allowed on account of difference between actual dimensions and the dimensions indicated on the drawings.
 - 2. Where dimensions are given and marked "verify" or "verify in field", correct before submitting Shop Drawings. Where field conditions do not yet exist for taking or confirming of field dimensions, note Shop Drawings with "dimensions will be verified in field", before submitting.
- C. Be wholly responsible for protecting the work and the materials stored on the site. Take required measures to protect the work at times against fire, storm, theft, vandalism and other losses.

108 Warranty

Forward to the architect a statement guaranteeing that the concrete complies with the approved mix design and attains the stated guaranteed strengths in 28 days.

PART II MATERIALS

201 Formwork

- A. Provide formwork to all poured concrete to provide for the required concrete size, form and structure documented. Should there be any areas where formwork is considered inappropriate, seek written approval from the Superintendent. In the event that the Contractor installs concrete without the required formwork they shall be liable for the rectification costs.
- B. Formwork classes: comply with AS 3610.1 2010, Table 3.2.1, Formwork for concrete and as follows:
 - 1. Class 1 formwork for concrete surfaces visually of the highest attainable quality, best uniformity of texture. Excellent quality of edge and joint details.
 - 2. Class 2 formwork for concrete with uniform quality and texture over large areas. Built to close tolerances. Consistently good quality of edge and joint details.
 - 3. Class 3 formwork for concrete surfaces to be painted and concrete surfaces not otherwise specified or shown on the drawings. Good visual quality when viewed as a whole.
 - 4. Class 4 formwork for concrete surfaces to be rendered, tiled or concealed by other finishes and concrete surfaces permanently concealed in ducts, shafts and above false ceilings. Texture not important. Good general alignment.

- 5. Class 5 formwork for footings, concrete surfaces in the ground and rear surfaces of retaining walls, piers, etc. Alignment and texture not important.
- C. Formwork materials: approved timber, plywood or pre-cast concrete.

202 Reinforcement

- A. General
All reinforcement: supplied, fabricated and fixed in accordance with the drawings and this specification.
Refer discrepancies to the engineer for decision before proceeding with the work.
Be solely responsible for the supply, fabrication and placing of reinforcing steel.
Remove reinforcement which does not comply with the requirements of this specification and replace to the satisfaction of the engineer.
Comply with Australian Standards as follows: AS 3600 and AS/NZS 4671.
- B. Surface condition
Ensure that reinforcing is free from loose mill scale, rust, mud, oil, grease or other non-metallic coatings which would reduce the bond between the concrete and steel and is free from kinks or other defects, at the time of placing concrete.
When there is a delay between placing the reinforcement and pouring the concrete, the engineer may require the builder to restore the reinforcement to a condition satisfactory to receive concrete.

203 Concrete

- A. Reduce the absolute quantity of Portland Cement by approved substitutions with industrial waste product(s) or oversized aggregate as follows: 30% in-situ concrete, As a minimum 20% of all aggregate used for structural purposes is recycled (Class 1RCA in accordance with HB155-2002) or slag aggregate.
- B. No natural aggregates are to be used in non-structural concrete uses (eg. Building base course, sub-grade to any car aparks and footpaths, backfilling to service trenches, kerb and gutter).
- C. Cement: comply with AS 3972. Provide cement of 1 brand which has passed the standard tests not more than 3 months prior to use.
Remove from the site cement that does not comply with these standards or has been adversely affected in storage.
- D. Aggregate:-
Maximum size of coarse aggregate: comply with AS 3600 and drawings.
- E. Water: water is to comply with AS 3600.
- F. Admixtures: none, except with prior approval of the engineer in writing.
If admixtures are used, comply with AS 3600.
- G. Ready-mixed concrete: grey ready-mixed concrete except areas as specified below, supplied by an approved manufacturer and mixed and delivered in accordance with the requirements of AS 1379.
Site-mixed concrete: subject to prior written approval of the engineer.
- H. Concrete strength: comply with stated compressive strengths at 28 days as noted or scheduled on structural drawings for various locations.
If not scheduled, provide 20MPa concrete.
- I. Waterproofing: add mixture. Refer section 07130 WATERPROOFING AND TANKING, System Type D.

204 Steel Welded Fitments in Concrete

Comply with engineer's requirements. Provide Shop Drawings. Comply in all respects with appropriate Australian Standards.
In addition, fabricated samples of each element may be required to be delivered to site and approved by the engineer before proceeding to fabricate the various production runs of the elements.

205 Fabrication of Reinforcement

- A. Fabricate, bend and weld in accordance with the standards laid down in AS 3600, the drawings, the requirements of this specification and to the satisfaction of the engineer.
 - 1. Where possible, bend steel prior to delivery, and always bend under heat.
- B. Do not bend or straighten in a manner which will damage the steel.
- C. Do not bend again a deformed bar of structural grade steel or cold work steel which has been bent and subsequently straightened or bent in the reverse direction within 20 bar diameters of the previous bend.
- D. Supply necessary support and spacer bar, though not necessarily shown on the drawings, to the satisfaction of the engineer.
 - 1. Unless otherwise shown, support top reinforcement with 12mm diameter support bars at 300mm centres on bar chairs at 1000mm centres.
- E. Paint ends of bars which are to be left projecting for longer than 3 days with a heavy coat of neat cement grout.
- F. Cover concrete reinforcement as shown on the drawings to tolerances in accordance with AS 3600.
- G. Tie wire: annealed iron wire not less than No. 16 gauge, or other approved fasteners, unless shown otherwise on the drawings. With the approval of the engineer, spot welding by the electric arc process may be used in lieu of the wire for selected locations.
- H. Welding (including spot welding) of hard grade bars is not permitted.
- I. Reinforcement from section of concrete which has been demolished and removed may only be re-used after inspection and approval by the engineer.

206 Bolts, Waterstops, etc.

Submit selected items to engineer for approval before ordering.

207 Waterproof Membrane

The supply and installation of the polymeric membrane is described in trade section 02315 SITE PREPARATION, clauses 203, 311 and 312.

208 Exposed Concrete Sealer

To all exposed concrete on project provide a clear matt sealer finish coat –

Manufacturer: Crommelin

Type: Crommeline Stain Repel - <http://www.crommelin.com.au/assets/Uploads/Stain-Repel-TDS9.pdf>

Install in strict accordance with current written manufacturers recommendations. Provide minimum of 2no. coats of sealer in compliance with Manufacturer's recommendations.

Provide independent certificate to Superintendent for installation of sealer coat in accordance with Manufacturer's recommendations.

PART III EXECUTION

301 Inspections

- A. Examine ground condition upon which form props are placed. Be responsible for prop placement.
- B. The concrete works will be particularly inspected by the engineer at the stages as follows:
 - 1. After erection of formwork and before placing reinforcement.
 - 2. After placing of waterproof of membrane.
 - 3. After cores and embedments have been placed in the formwork.
 - 4. Immediately before each pour of concrete is commenced.
- C. Be responsible for the formwork and the quality of the stripped concrete.

- D. Keep records of each pour of concrete showing the following:
 - 1. Details and types of reinforcing steel.
 - 2. Date of pouring concrete.
 - 3. Area of structure where concrete placed.
 - 4. Area of structure where tests taken.
 - 5. Test results when available.
 - 6. Make these records available for inspection by the engineer.
- E. Start of work means total acceptance of conditions.

302 Formwork Generally

- A. Conform to the shape, lines, grades and dimensions of concrete as required by the drawing and construct of approved pre-cast concrete, timber or metal, in which bolts and screws in contact with concrete are countersunk. Provide sufficient strength to the structure to carry the concrete without deflection. Tolerances of the concrete when stripped: in accordance with the appropriate clause of AS 3610.1.
- B. Be responsible for complete installation of formwork and for the condition of concrete after stripping.

303 Maximum Height Of Wall Forms

Arrange formwork so that maximum height through which concrete falls within the formwork does not exceed 2700mm for 230mm walls and thicker, 1800mm for walls 150mm thick or less, and in proportion for thickness between 150mm and 230mm.

Form openings at 1800mm horizontal spacing and tremmie pipes may be used. Pour concrete no higher than at least 150mm below the top of at least 1 of the side forms.

304 Fixing Reinforcement

- A. Unless otherwise shown on the drawings or directed by the engineer, measurements made in placing the reinforcement are to be to the centre-lines of the reinforcement.
- B. Support and wire together reinforcement with a 0.5mm soft wire ties or clips, or tack weld in accordance with AS/NZS 1554, to prevent displacement by construction loads.
- C. Use plastic-tipped metal chairs, metal hangers, metal spacers and other plastic, metal or concrete accessories as required for supporting reinforcement in accordance with the following:
Where the concrete surface is off form and exposed to view, internally or externally, provide accessories in which the portions in contact with the formwork are of plastic matching in colour the concrete paste.
Where the concrete surfaces are to be sandblasted, internally or externally, use only plastic or concrete accessories, matched in colour with the concrete paste, where in contact with the formwork.
- D. Weld, tie, clip or otherwise secure mesh reinforcement together by approved means at alternate intersections and at such other points as may be required.
- E. If necessary, support footing reinforcement on concrete blocks of adequate strength and size not to split under the loads they are required to carry.
Take particular care to ensure that wall and column steel is properly fixed in position by the use of plastic chairs clipped on to the steel and by steel spacers for wall reinforcement. Place such spacers in position prior to erecting the last shutter.
- F. Splices on reinforcement: splice only at locations approved by the engineer, with minimum lap lengths as shown on the drawings or welded to develop the full strength of the small bar in accordance with AS/NZS 1554.3
- G. Cover to reinforcement: allow clear minimum cover to reinforcing as shown on the drawings. Maintain this cover during concreting.

305 Construction Joints

Periods of stoppage in concrete of 3/4 hour or more are deemed to be construction joints.

When the location and type of construction joints are not shown on the drawings, submit proposed location and detail of construction joints to the engineer for his approval prior to the start of formwork placement. Site engineer will direct treatment before depositing the new concrete against a construction joint.

306 Bonding Fresh and Hardened Concrete

Before depositing new concrete on or against concrete which has set, re-tighten forms, roughen the set concrete surface, clean off foreign matter and laitance and thoroughly wet to engineer's approval. Remove excess water, cover the cleaned and wetted surfaces with a coating of 1:2 cement/mortar. Place the new concrete against this before the mortar has attained its initial set. Prior to placing concrete, submit a sample of concrete showing the degree of roughened and laitance removal proposed. The following procedures for preparation of construction joint faces are approved:

Vertical joints: paint face of form with an approved retarder. Strip form the following day and remove retarded concrete with air-water jet to bare exposed aggregate face.

Horizontal joints: spread 6mm bluestone chips on surface of freshly screeded concrete and blow off excess the following day with air-water jet.

Comply with instructions on engineer's drawings.

307 Building In

- A. Conduits and piping: place conduits and piping in concrete floors above the bottom steel and below the top steel. Do not dislodge reinforcement.
Where conduits and piping cross control joints, make provision for clip joints or some other means of absorbing movement without fracturing.
- B. Built-in bolts, etc.: accurately build in bolts, lugs and other fittings, provide holes and pockets as shown on the drawings. Prevent movement of these items during concrete pour.
Clear screwed or machined portions of fittings of mortar and grease.
Temporarily fill voids in sleeves, inserts and anchor slots and readily removable materials to prevent the entry of concrete into the voids.
- C. Waterstop: cast in waterstop as shown on the drawings, located in vertical wall joints or floor joints by the use of split shuttering or other means.
Use waterstop in the maximum possible lengths, mitre at corners and shop weld and seal at joints. Make joints other than at changes of direction, in location approved by the engineer.
Adequately secure and support in the correct position during placing concrete.
- D. Grouting: attention is directed to the 05100 STRUCTURAL STEEL section of this specification.

308 Preparation for Placing of Concrete

- A. Immediately before placing concrete in excavation, ensure that the excavation is free from water and fallen materials and that the sides of excavations are such that no material will fall into freshly placed concrete.
- B. Ensure that formwork ready for the placing of concrete is complete, with surfaces smooth and clean, immediately before placing, remove excess water, mud and debris and secure reinforcement in place, remove surplus end of tie-twine, surplus nails and other extraneous metal objects in contact with the forms, make sure that expansion joint material, anchors, and other embedded items are in position.
Give the engineer 1 working day's notice of the intention to pour so that approval may be given in time.

309 Access and Inspection Openings

Provide temporary openings at the base of the column and wall forms and at other points where necessary to facilitate cleaning and inspection. Intermediate openings for placing may be required by the engineer.

310 Transporting of Concrete

Convey concrete from the mixer to the place of final position without delay and by means that will prevent segregation and loss of materials.

Where necessary, transport concrete on substantial gangways or barrow runs supported on stools clear of reinforcement.

Remove hardened concrete and foreign materials from the inner surfaces of the conveying equipment.

311 Placing of Concrete

Place concrete in compliance with AS 3600.

312 Concrete Testing

- A. Generally: perform concrete tests in accordance with AS 1012 or subsequent amendment.
Allow for the cost of making test specimens and for the supply of testing equipment and suitable personnel to carry out tests.
- B. Materials testing: submit in writing, test certificates from an independent laboratory registered with the NATA as evidence that materials used comply with the requirements specified. Allow the costs of such tests as required.
- C. Slump tests: provide slump tests reports on the first batch of concrete to be placed and at least once for every 20 cubic metres of concrete placed thereafter on that day.
If, in the opinion of the engineer, other batch of concrete appears to have an incorrect slump, conduct slump tests as directed by the engineer.
Slump tests are to be conducted by, and at the expense of the builder. Concrete will be considered as complying with the specified slump tests when it complies with AS 3600.
- D. Compression tests: the methods and frequency of sampling and the identification and testing of cylinders are to be in accordance with project control testing AS 3600.
- E. Acceptance and rejection of concrete: acceptance and rejection of compressive strength of concrete by the engineer will be in accordance with AS 3600.

313 Compaction of Concrete

- A. Compact concrete by mechanical vibration to the maximum practicable density, free of air or stone pockets. Concrete not vibrated will be rejected.
- B. Have on site sufficient vibrators of an approved pattern and keep 1 spare vibrator to every 2 active vibrators.
- C. To avoid segregation, place concrete in position and then vibrate. "Travelling" concrete by use of vibrators is likely to produce segregation and is not permitted.
Operate immersion type vibrators in a near-vertical position and insert and withdraw them slowly.
Allow them to penetrate and revibrate the concrete in the upper portion of the underlying layer.
- D. Do not leave vibrators, when in action, lying unattended on formwork, reinforcing or in concrete. Keep vibrator heads clean and free of mud or other deleterious matter when inserted into the concrete.
- E. Vibrate concrete in layers not exceeding 450mm in thickness and avoid contact of the vibrating head with surfaces of the forms.

314 Floor Finishes

Finish floor slabs monolithically with steel trowel, or as detailed on drawings or on Schedule of Finishes.

315 Curing and Protecting Concrete

- A. Protect freshly cast concrete from premature drying and excessively hot or cold temperatures. Erect windbreaks to shield the concrete surface during and after placing. Maintain the concrete at a reasonably constant temperature with minimum moisture loss for the curing period, refer AS 3600.
Take responsibility for the curing and protection of the concrete.
- B. Cure as soon as the surface of the concrete has hardened sufficiently to prevent damage but in no case later than 2 hours after the finishing operation has been completed.
 - 1. Cure by the following means:
 - 2. The use of waterproof paper, or

3. The use of an approved polyethylene building film.
The use of other approved moisture retaining covering.
If a method other than polyethylene film is adopted, secure the covering material against the concrete for the full length of edges and laps and at frequent intervals between so that no air circulation at the concrete surfaces occurs.
- C. Period of curing: continue final curing for 7 days for normal Portland Cement concrete.
For high early strength concrete, continue the final curing for 3 days.
Prevent rapid drying out at the end of the curing period.
Keep wet steel forms heated by the sun and wood forms in contact with the concrete during the final curing period.
- D. Temperature: when the mean temperature of the air during curing is less than 5°C, maintain the temperature of the concrete between 10°C and 20°C for the required curing period.
Where necessary, make arrangements to maintain this temperature in advance of concreting adequate for the purpose.
When the mean temperature of the air is in excess of 30°C during curing and moist curing is not employed, cover the surface with an approved heat reflecting plastic membrane. Apply this treatment for the whole of the curing period.
- E. Curing off-form concrete: take special care with curing off-form concrete to avoid differences in colour.
Prevent rapid or localised drying-out during the first 7 days after pouring. Maintain the form face in contact with the concrete up to the moment of striking. Programme stripping times to ensure that surfaces throughout the job are exposed at similar ages, differing by not more than 4 and preferably 2 or less hours.
Ponding is preferable for horizontal surfaces. Use heavyweight covers, well secured and in continuous contact.
Apply curing compounds generously if used, to prevent local moisture loss.

316 Stripping of Formwork

Strip formwork in accordance with the recommendations of AS 3610.1, Table: "Recommended Minimum Stripping Times". If construction loads greater than the live load shown on the drawings are placed on the structure, fix emergency shoring and tomking to the satisfaction of the engineer.

317 Cleaning

Remove debris and form work from each area after stripping concrete as work sections are completed.
Leave each area clean to the satisfaction of the architect/engineer.

318 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 05100 STRUCTURAL STEEL

PART I GENERAL

101 Scope

Supply, fabricate and install a complete structural steel system including but not limited to:

- A. Steelwork shown on the architect/engineer's drawings specified herein, or as described in his instructions issued during the currency of the work. It includes surface treatment, storage, delivery to the site, steel to steel connections and their fastenings, steel to concrete and their fastenings, miscellaneous attachments and anchor bolts.
- B. Erection of the steelwork shown on the architect/engineer's drawings and includes off-loading, erection, field welding, making steel to steel connections, connection to anchor bolts, permanent grouting and repairs to surface treatment.
- C. Steel Reinforcing to concrete slabs, footings
- D. Provide all structural steel supports for the roof safe access system, stairs and metal access decks.
- E. Provide all necessary steel supports and engineering for plant area support decks and framing.
- F. For all applied coatings to steel the Contractor shall provide a proven compliance certification regardless of supply from within Australia or from overseas to the satisfaction of the Superintendent.
- G. All steel framing requirements for proposed works shall be hot dip galvanised conform with Galvanizers Association of Australia written recommendations for Galvanising (marine grade coating required comply with Australian Standards) framing new fencing to bin enclosure

Refer to Structural engineers documentation for further details. Any discrepancies between the Structural documentation and architectural should be clarified with the Superintendent prior to starting works.

102 Related Work

Co-ordinate and co-operate with the following trades:

SECTION 06100 CARPENTRY
SECTION 03310 CONCRETE

103 Quality Assurance

Do work in accordance with the drawings and specifications which form part of this contract, and further details and/or instructions issued by the architect/engineer during the currency of the works. Submit evidence of experience appropriate to the class of work required. Install under the direct supervision of a capable foreman, experienced in the class of work under construction.

Provide independent Third Party ACRS Certificates of Product Compliance for all structural steel used in the project – www.steelcertification.com. The ACRS Certificate must be provided to the Superintendent at completion of Steel work, this certificate of compliance shall be required in order for the project to reach Practical completion.

104 References

Conform to the latest edition, including amendments, of the following Australian Standards (except where varied by this specification or the contract drawings):

AS/NZS 1554	Structural steel welding.
1554.1 2011	Welding of steel structures..
1554.2 2003	Stud welding (steel studs to steel). <i>Plus 1 Amdt 2003.</i>
1554.3 2008	Welding of reinforcing steel.
1554.4 2010	Welding of high strength quenched and tempered steels.
1554.5 2011	Welding of steel structures subject to high levels of fatigue loading.
1554.6 1994	Welding stainless steels for structural purposes.
1554.7 2006	Welding of sheet steel structures.
AS 1627	Metal finishing - Preparation and pre-treatment of surfaces. <i>There are 7 parts, 1997 – 2005.</i>
AS/NZS 3678 2011	Structural steel - Hot rolled plates, floorplates and slabs.
AS/NZS 3679 2010	Structural steel.
AS/NZS 3750	Paints for steel structures. <i>There are 24 parts, 1994 – 2009.</i>
AS 4100 1998	Steel structures <i>Plus 1 Supplement, 1999.</i>
AS/NZS 4600 2005	Cold-formed steel structures. <i>Plus 1 Amdt, 2010.</i>
AS/NZS 4673 2001	Cold-formed stainless steel structures.
AS/NZS 4680 2006	Hot dip galvanised (zinc) coatings on fabricated ferrous articles.
HB 48 1999	Steel structures design handbook.

105 Delivery, Handling And Storage

Handle and store materials by methods and appliances that will not over-stress or deform the members.
Separate materials on site from surface of ground.
Members bent or buckled from handling or storing will be liable to rejection.
Supply bolts, nuts and washers in grit-free containers and stored in water-tight premises. Reject burred, damaged, corroded or otherwise unserviceable bolts.

PART II MATERIALS

201 Materials

General

Supply materials required to complete the works under this trade section in accordance with the contract documents and within the tolerances specified. Materials which do not comply will be rejected.

Steel supply

Unless otherwise shown on the drawings, comply with AS/NZS 3678 and AS/NZS 3679. Do not use other types and grades of steel without written approval.

202 Shop Drawings

Refer Section 02000 clause 2.301, Shop Drawings. Provide a complete set of shop drawings for required components.

203 Fabrication

Fabricate finish in accordance with AS 4100.

Do not exceed the end clearances shown on the drawings. Where these are not shown, ascertain the clearances used in the design of the connections.

204 Connections

- A. General
Supply end cleats, brackets and other connections, not specifically detailed on the drawings, to suit the location and forces shown thereon with gauge and edge distances in accordance with AS 4100.
- B. Bolting General
Supply bolts in bearing of such lengths that no threaded portion crosses the interface of the parts joined. Place at least one washer under the bolt head or nut, whichever is to be rotated. Provide taper washers where the part under the bolt head or nut is not perpendicular to the centre-line of the bolt.
- C. Welding
Do manual welding in accordance with AS/NZS 1554.
Do semi-automatic welding in accordance with AS/NZS 1554.
- D. Miscellaneous Attachments
Allow for the drillings, cleat and other fitments indicated on the contract drawings or shown on other relevant drawings and required by other trades.
Be entirely responsible for supply of necessary information to the steel fabricator.

205 Hot Dip Galvanising

Where scheduled or specified galvanised steel after chemical descaling in accordance with AS 1627 and AS/NZS 4680, so that rust, mill scale, oil grease and other foreign matter is removed leaving a clean surface of metal.
Then immerse steel in a bath of molten zinc so that when withdrawn, the zinc coating solidifies to a dry film thickness in compliance with AS/NZS 4680.
Reinstate transport and erection abrasions, site welds, etc., by thoroughly wire brushing affected areas to achieve a clean sound substrate and patch coating with a zinc-rich paint with a film thickness of 100 microns.

206 Surface Treatment of Steel

Clean steelwork free from loose rust, loose mill scale, dirt, oil and grease or by sand-blasting - Class 2.5. Apply a coat of inorganic zinc silicate, 100 microns thick. Refer AS 1627.

207 Inspection Before Delivery

Material and work is subject to inspection before painting and delivery. Provide the necessary access and facilities.
Where steel has been inspected at the shop before being delivered to the site, such inspection does not relieve the contractor of his responsibility to carry out the work in accordance with the drawings and this specification.

PART III EXECUTION

301 Examination

Inspect site conditions both before fabrication and delivery of steel.
Ensure that on delivery, materials can be directly installed.

Report discrepancies immediately they are found and instruction obtained before continuing with the affected portion of the work.

Start of work means total acceptance of conditions.

302 Erection

Comply with the requirements of AS 4100.

Adopt an erection procedure such that members can be placed and fixed in position without distortion.

Make safe, during erection, against wind and erection stresses and loading conditions, including those due to erection equipment.

Allow for the cost of temporary erection bracing required and of the engineer's requirements in connection with such bracing.

303 Grouting of Baseplates

Set plates to precise level at centre of footing for future baseplate placement.

Set plate in high strength mortar.

After placement of column base plates, grout fill the void completely.

Trim the grout on completion.

304 Inspection on Site

Advise engineer and/or architect when erected steel is ready for inspection.

305 Adjustments

Following erection, adjust the installation as required by engineer.

Touch up abraded or missing paint areas. Refer next clause.

306 Cleaning

Clean the installed steelwork and touch up with zinc-rich primer paint of matching colour.

Ensure that the touch up paint is compatible with the factory applied material.

307 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 05400 COLD FORMED METAL FRAMING

PART I GENERAL

101 Scope

Design, engineer, supply and install a complete cold formed metal framing, including but not limited to:

- A. Furring channels, top hat sections
- B. All necessary sub structure for framing out of cladding systems, wall framing, roofing, subframing for support of new cladding, etc.

102 Related Work

Co-ordinate and co-operate with the tradesmen preparing floors, installing windows and doors and weatherproofing material, including casting in of anchors where required.

103 Quality Assurance

- A. Manufacturer qualifications: not less than 6 years continuous experience in the manufacture of the product types specified.
- B. Installer Qualifications: installer is to have not less than 3 years continuous experience in the erection of specified material.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1170	Structural design actions.
1170.1 2002	Permanent, imposed and other actions. <i>Plus 2 Amdts, 2005 – 2009.</i>
1170.2 2011	Wind actions.
1170.3 2003	Snow and ice actions. <i>Plus 1 Amdt, 2007.</i>
1170.4 2007	Earthquake actions in Australia.
	<i>There is 1 other part, several Supplements and Amdts, 2002 – 2011.</i>
AS/NZS 1554	Structural steel welding.
1554.1 2011	Welding of steel structures.
1554.2 2003	Stud welding (steel studs to steel) <i>Plus 1 Amdt, 2003.</i>
1554.3 2008	Welding of reinforcing steel.
1554.4 2010	Welding of high strength quenched and tempered steels.
1554.5 2011	Welding of steel structures subject to high levels of fatigue loading.
1554.6 1994	Welding stainless steels for structural purposes.
1554.7 2006	Welding of sheet steel structures.
AS 3623 1993	Domestic metal framing.
Comply with relevant authority's requirement for fire.	

105 Submissions Required Prior to Fabrication

- A. Complete system description including the following information:
 - 1. Names of manufacturers of products.
 - 2. Names, addresses and telephone numbers of local representatives for products.

3. Types, model numbers and names of products, and indication whether products are "off the shelf" or custom fabricated. Include specific information on finishes - thicknesses, patented process name, process description and test data.
 4. Detailed information on products manufactured specifically for this project.
 5. Detailed system description including standard details and manufacturer's literature; and large-scale details of specially fabricated products.
- B. Statement that the proposed system meet(s) the regulatory requirements, thermal, aesthetic and wind loading, construction, warranty requirements specified; noting in detail exceptions.
- C. Shop Drawings: refer Section 02000 clause 2.301, Shop Drawings. Provide Shop Drawings showing the following information where appropriate to the items:
1. Layout (sectional plan and elevation of complete assembly).
 2. Full size section of members.
 3. Methods of assembly, type and location of exposed screws.
 4. Methods of installation, including fixings, anchorage, flashings.
 5. Provision for expansion (thermal).
 6. Junctions and trim to adjoining surfaces.
 7. Fittings and accessories.
- D. Engineer's calculations on wind loading, live and dead loads.

106 Delivery, Handling and Storage

Handle materials with care. Do not store on site. Install directly in place as instructed by manufacturer. Where possible, deliver pre-assembled panels of framing, roof trusses etc., ready for immediate placement and connection.

PART II MATERIALS

201 Manufacturers

The following manufacturers of frames are acceptable:

- A. Rondo
- B. Lysaght

202 Materials

Wall, floor and roof framing components manufactured from corrosion resistant steel materials. Match components detailed on drawings or an alternative approved in writing by the architect.

a) Furring Channels / Top Hat sections

Provide all necessary furring channels and top hat sections for support of substrates including but not limited to cladding installations, Plasterboard and Cement sheet linings.

203 Structural Criteria

Adopt Terrain Category: 3

Refer AS/NZS 1170.

Wind loading: design: Refer Structural engineers documents

Frame assemblies to suit the static and dynamic wind forces as indicated on the tables in the AS/NZS 1170.

Section 05400 Cold Formed Metal Framing

Structural members of units of such strength that when tested at the specified design wind values they do not deflect by an amount greater than span/240 and do not cause permanent deflection.

Fix members so that the above loading is generated in the members without stress causing failure or movement becoming evident at any joint.

Movement: permit free and noiseless movement of the components due to thermal effects, structural effect, wind pressure, effect of dead loads, without strain to the frames, without buckling of components and without excessive stress to members or assemblies.

Contact with other materials: coat metal surfaces in contact with mortar, concrete, plaster, masonry, wet-application of fire-proofing and absorbent materials with an anti-galvanic, moisture barrier material. Isolate, with inert material, dissimilar metals for the prevention of electrolytic action and corrosion.

Distortion: design the assembly to minimise visual distortion.

204 Detail Design Provisions

- A. General: the architect's drawings are to be considered essentially schematic except for profiles of exposed surfaces and panel arrangement where indicated. If, in the opinion of the builder a change of profile is required in order to meet the specification, arrange through the architect for a review of the condition. Design the assembly, reinforcing and anchorage to suit each specified condition in an acceptable manner complying with the requirements specified herein.
- B. Tolerances: design frames to accommodate building tolerances, and when completed, within the following tolerances:
 - 1. Deviation from plumb, level or dimensioned angle within 3mm per 3.5m of length of member, or 6mm in total run in line.
 - 2. Deviation from theoretical position on plan or elevation, including deviation from plumb, level or dimensioned angle not to exceed 9mm total at location.
 - 3. Change in deviation not to exceed 3mm for 3.5m run in direction.

205 Fabrication

Form junctions so that no fixings, such as pins, screws, pressure indentations and the like are visible on exposed faces. Show on Shop Drawings fixings which will be exposed. Cut edges, drill holes, rivet joints and clean flat sheets, neat, free from burrs and indentations. Remove sharp edges without excessive deformation. Fit mitred joints accurately to a fine hairline.

Pre-assemble and match mark before delivery.

PART III EXECUTION

301 Examination

Inspect site conditions before start of work on site, before delivery of materials. Ensure conditions are satisfactory for installation.

Perform rectification required before delivery of materials.

Start of work means total acceptance of conditions.

302 Preparation

Prepare surfaces affected by the installation in accordance with material manufacturer's instructions.

Section 05400 Cold Formed Metal Framing

303 Frame Anchorage

Fabricator is required to supply the anchorage devices to the builder for building in by others and check that devices are located as required to suit the requirements of the fabrication for positive and permanent fixing. Insulation: isolate dissimilar metals at interfaces with bitumen based or nylon shim materials to prevent galvanic action.

Make good concrete or masonry damaged during the installation of masonry anchors at no cost to the Principal.

304 Installation

Wall frames: vertical. Permitted maximum tolerance is 3mm in 3000mm.

Floor frames: horizontal. Permitted maximum tolerance is 3mm in 3000mm.

Except where otherwise directed.

Secure in place in accordance with manufacturer's instructions.

305 Cleaning

Debris: remove rubbish and debris resulting from the fabrication and erection operations, each day.

306 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

Concrete Portland Cement Reduction(in-situ)

As a minimum all cast in-situ concrete is to have 30% of the Portland cement content replaced with industrial waste products.

20% of all aggregates used for structural purposes are to be recycled or slag aggregate. (Class 1 RCA in accordance with HB155-2002)

The contractor is to provide confirmation from themselves and from the concrete manufacturer confirming the quantity of cement replacement and industrial waste used in the concrete sourced.

Manufacturer's

Boral

E-Crete, by Zeobond

<http://www.zeobond.com/e-crete-greenstar.html>

Ability Products – Flyash additive

<http://www.abilityproducts.com.au/>

PART I GENERAL

101 Scope

Supply and install a complete installation of concrete including but not limited to reinforcement, damp-proof membrane, formwork and other items for:

- R. Footings
- S. Slabs
- T. Allow for all necessary Excavation, Preparation of sub-grade, Base courses, laying and compaction, Concrete surfacing, Pedestrian pavements, Kerbs and channels
- U. footings, Pad Footings, strip footings, plinths, etc. and as detailed herein and on drawings, and other incidental or consequential work which is or may become necessary to complete the work, including waterstops, other jointing devices, all necessary reinforcing, starter bars, etc.
- V. Recycled Concrete slabs & blinding
- W. concrete plinths for on ground mechanical/ electrical equipment
- X. casting in of floor drains, bollards, light posts, etc.
- Y. concrete for kerbs, kerb drainage, spoon drainage, etc. and as indicated on drawings.
- Z. Concrete footings for all new fencing posts
- AA. casting in of metal drop bolts, signage posts
- BB. provision of new concrete pathways, pedestrian cross overs, kerb ramps to roadway in strict accordance with Council's Building Department, obtain all necessary approvals.
- CC. Allow to cast in door floor boxes for pivots and locking mechanisms
- DD. Allow to cast in power and electrical junction boxes to slabs
- EE. Allow to cast in all plumbing and electrical conduits to suit the proposed layout. Prior to casting in the puddle flange for floor wastes confirm the model of floor waste and the proposed floor finish to ensure the correct size and depth of the puddle flange to suit a flush finished floor level
- FF. Provide for all necessary set downs and ramping to slab areas to provide for falls to floor wastes and allow for flush jointing of finished floor surfaces for fully compliant DDA access to all areas of building in compliance with current AS1428.
- GG. Set downs, falls and areas with rebates, etc. shall be formed from the appropriate class of formwork to suit the finished concrete and its proposed finishes. Should there be doubt confirm with the Superintendent before installing formwork.
- HH. Concrete Finish - Provide colour additives to exposed concrete to match nominated colour in documentation. Provide concrete sealer to all exposed concrete

The Contractor is to allow to place blinding concrete sufficiently to bring the foundations to the bearing capacity as specified by the Geotechnical report and the Structural Engineer.

102 Related Work

Co-ordinate and co-operate with the following trades:

Site preparation – Excavation	Structural steel
Concrete screeds	Concrete finishes
Coloured concrete flooring	Waterproofing and tanking

103 Quality Assurance

Supply and install required materials in compliance with drawings and specifications which form part of this contract and with further details and/or instructions issued during the currency of the contract.

The concretor is to be experienced in this class of work with an appropriately qualified foreman to supervise requirements.

104 References

Comply with the requirements of the following Australian Standards and maintain the ones marked with * on site during construction:

AS 1379 2007	Specification and supply of concrete. <i>Plus Supplement 1-2008.</i>
AS/NZS 1554	Structural steel welding.
1554.2:2003	Stud welding (steel studs to steel) <i>Plus 1 Amdt 2003.</i>
1554.3:2008	Welding of reinforcing steel.
1554.4:2010	Welding of high strength quenched and tempered steels.
1554.5:2011	Welding of steel structures subject to high levels of fatigue loading.
1554.6:1994	Welding stainless steels for structural purposes.
1554.7:2006	Welding of sheet steel structures.
AS 2550.15 1994	Cranes - Safe use - Concrete placing equipment.
AS 2870 2011	Residential slabs and footings.
AS 3600 2009	Concrete structures. <i>Plus 1 Amdt, 2010.</i>
AS 3610.1 2010	Formwork for concrete – Documentation and surface finish.
AS 3799 1998	Liquid membrane-forming curing compounds for concrete.
AS 3972 2010	General purpose and blended cements.
AS/NZS 4200	Pliable building membranes and underlays.
	4200.1 1994 Materials. <i>Plus 1 Amdt 1994.</i>
	4200.2 1994 Installation requirements.
AS/NZS 4671 2001	Steel reinforcing materials. <i>Plus 1 Amdt, 2003.</i>
CIA Z6 2010	Reinforcement detailing handbook.
HB 71 2011	Reinforced concrete design in accordance with AS 3600 2009.
HB 84 2006	Guide to concrete repair and protection.

105 Submissions

Submissions required prior to fabrication:

- C. Builder's proposed Progress Schedule: include as a minimum, in bar chart form, the anticipated commencement and completion times of each major element, such as:
 - 1. Fabrication of formwork and reinforcing.
 - 2. Placing of concrete.
 - 3. Stripping of formwork.
- D. Shop Drawings: comply with the requirements of Section 02000 clause 2.301, Shop Drawings.. Provide the Shop Drawings showing the following information where appropriate to the item:
 - 1. Junctions and trim to adjoining surfaces.

106 Delivery and Handling

Deliver materials in the same sequence as they are installed. Avoid double handling at the site. Co-ordinate delivery and fixing schedules to reduce use of cranes.

107 Project Conditions

- D. General:
- E. Measurements and Dimensions.
 - 1. Measurements: before ordering material or doing work, verify measurements and be responsible for the correctness of same. Submit differences found to the architect in writing for consideration before

- proceeding with the work. No extra charge or compensation will be allowed on account of difference between actual dimensions and the dimensions indicated on the drawings.
2. Where dimensions are given and marked "verify" or "verify in field", correct before submitting Shop Drawings. Where field conditions do not yet exist for taking or confirming of field dimensions, note Shop Drawings with "dimensions will be verified in field", before submitting.
- F. Be wholly responsible for protecting the work and the materials stored on the site. Take required measures to protect the work at times against fire, storm, theft, vandalism and other losses.

108 Warranty

Forward to the architect a statement guaranteeing that the concrete complies with the approved mix design and attains the stated guaranteed strengths in 28 days.

PART II MATERIALS

201 Formwork

- D. Provide formwork to all poured concrete to provide for the required concrete size, form and structure documented. Should there be any areas where formwork is considered inappropriate, seek written approval from the Superintendent. In the event that the Contractor installs concrete without the required formwork they shall be liable for the rectification costs.
- E. Formwork classes: comply with AS 3610.1 2010, Table 3.2.1, Formwork for concrete and as follows:
1. Class 1 formwork for concrete surfaces visually of the highest attainable quality, best uniformity of texture. Excellent quality of edge and joint details.
 2. Class 2 formwork for concrete with uniform quality and texture over large areas. Built to close tolerances. Consistently good quality of edge and joint details.
 3. Class 3 formwork for concrete surfaces to be painted and concrete surfaces not otherwise specified or shown on the drawings. Good visual quality when viewed as a whole.
 4. Class 4 formwork for concrete surfaces to be rendered, tiled or concealed by other finishes and concrete surfaces permanently concealed in ducts, shafts and above false ceilings. Texture not important. Good general alignment.
 5. Class 5 formwork for footings, concrete surfaces in the ground and rear surfaces of retaining walls, piers, etc. Alignment and texture not important.
- F. Formwork materials: approved timber, plywood or pre-cast concrete.

202 Reinforcement

- C. General
All reinforcement: supplied, fabricated and fixed in accordance with the drawings and this specification. Refer discrepancies to the engineer for decision before proceeding with the work.
Be solely responsible for the supply, fabrication and placing of reinforcing steel.
Remove reinforcement which does not comply with the requirements of this specification and replace to the satisfaction of the engineer.
Comply with Australian Standards as follows: AS 3600 and AS/NZS 4671.
- D. Surface condition
Ensure that reinforcing is free from loose mill scale, rust, mud, oil, grease or other non-metallic coatings which would reduce the bond between the concrete and steel and is free from kinks or other defects, at the time of placing concrete.
When there is a delay between placing the reinforcement and pouring the concrete, the engineer may require the builder to restore the reinforcement to a condition satisfactory to receive concrete.

203 Concrete

- J. Reduce the absolute quantity of Portland Cement by approved substitutions with industrial waste product(s) or oversized aggregate as follows: 30% in-situ concrete, As a minimum 20% of all aggregate used for structural purposes is recycled (Class 1RCA in accordance with HB155-2002) or slag aggregate.
- K. No natural aggregates are to be used in non-structural concrete uses (eg. Building base course, sub-grade to any car aparks and footpaths, backfilling to service trenches, kerb and gutter).
- L. Cement: comply with AS 3972. Provide cement of 1 brand which has passed the standard tests not more than 3 months prior to use.
~~If not delivered as a component of ready-mixed concrete, deliver cement to the site in branded and sealed bags stacked under protective covers to prevent deterioration, so stacked that each batch delivered may be identified.~~
Remove from the site cement that does not comply with these standards or has been adversely affected in storage.
- M. Aggregate:-
Maximum size of coarse aggregate: comply with AS 3600 and drawings.
- N. Water: water is to comply with AS 3600.
- O. Admixtures: none, except with prior approval of the engineer in writing.
If admixtures are used, comply with AS 3600.
- P. Ready-mixed concrete: grey ready-mixed concrete except areas as specified below, supplied by an approved manufacturer and mixed and delivered in accordance with the requirements of AS 1379.
Site-mixed concrete: subject to prior written approval of the engineer.
- Q. Concrete strength: comply with stated compressive strengths at 28 days as noted or scheduled on structural drawings for various locations.
If not scheduled, provide 20MPa concrete.
- R. Waterproofing: add mixture. Refer section 07130 WATERPROOFING AND TANKING, System Type D.

204 Steel Welded Fitments in Concrete

Comply with engineer's requirements. Provide Shop Drawings. Comply in all respects with appropriate Australian Standards.

In addition, fabricated samples of each element may be required to be delivered to site and approved by the engineer before proceeding to fabricate the various production runs of the elements.

205 Fabrication of Reinforcement

- J. Fabricate, bend and weld in accordance with the standards laid down in AS 3600, the drawings, the requirements of this specification and to the satisfaction of the engineer.
 - 1. Where possible, bend steel prior to delivery, and always bend under heat.
- K. Do not bend or straighten in a manner which will damage the steel.
- L. Do not bend again a deformed bar of structural grade steel or cold work steel which has been bent and subsequently straightened or bent in the reverse direction within 20 bar diameters of the previous bend.
- M. Supply necessary support and spacer bar, though not necessarily shown on the drawings, to the satisfaction of the engineer.
 - 1. Unless otherwise shown, support top reinforcement with 12mm diameter support bars at 300mm centres on bar chairs at 1000mm centres.
- N. Paint ends of bars which are to be left projecting for longer than 3 days with a heavy coat of neat cement grout.
- O. Cover concrete reinforcement as shown on the drawings to tolerances in accordance with AS 3600.
- P. Tie wire: annealed iron wire not less than No. 16 gauge, or other approved fasteners, unless shown otherwise on the drawings. With the approval of the engineer, spot welding by the electric arc process may be used in lieu of the wire for selected locations.
- Q. Welding (including spot welding) of hard grade bars is not permitted.

- R. Reinforcement from section of concrete which has been demolished and removed may only be re-used after inspection and approval by the engineer.

206 Bolts, Waterstops, etc.

Submit selected items to engineer for approval before ordering.

207 Waterproof Membrane

The supply and installation of the polymeric membrane is described in trade section 02315 SITE PREPARATION, clauses 203, 311 and 312.

208 Exposed Concrete Sealer

To all exposed concrete on project provide a clear matt sealer finish coat –

Manufacturer: Crommelin

Type: Crommelin Stain Repel - <http://www.crommelin.com.au/assets/Uploads/Stain-Repel-TDS9.pdf>

Install in strict accordance with current written manufacturers recommendations. Provide minimum of 2no. coats of sealer in compliance with Manufacturer's recommendations.

Provide independent certificate to Superintendent for installation of sealer coat in accordance with Manufacturer's recommendations.

PART III EXECUTION

301 Inspections

- F. Examine ground condition upon which form props are placed. Be responsible for prop placement.
- G. The concrete works will be particularly inspected by the engineer at the stages as follows:
1. After erection of formwork and before placing reinforcement.
 2. After placing of waterproof of membrane.
 3. After cores and embedments have been placed in the formwork.
 4. Immediately before each pour of concrete is commenced.
- H. Be responsible for the formwork and the quality of the stripped concrete.
- I. Keep records of each pour of concrete showing the following:
1. Details and types of reinforcing steel.
 2. Date of pouring concrete.
 3. Area of structure where concrete placed.
 4. Area of structure where tests taken.
 5. Test results when available.
 6. Make these records available for inspection by the engineer.
- J. Start of work means total acceptance of conditions.

302 Formwork Generally

- C. Conform to the shape, lines, grades and dimensions of concrete as required by the drawing and construct of approved pre-cast concrete, timber or metal, in which bolts and screws in contact with concrete are countersunk. Provide sufficient strength to the structure to carry the concrete without deflection. Tolerances of the concrete when stripped: in accordance with the appropriate clause of AS 3610.1.
- D. Be responsible for complete installation of formwork and for the condition of concrete after stripping.

303 Maximum Height Of Wall Forms

Arrange formwork so that maximum height through which concrete falls within the formwork does not exceed 2700mm for 230mm walls and thicker, 1800mm for walls 150mm thick or less, and in proportion for thickness between 150mm and 230mm.

Form openings at 1800mm horizontal spacing and tremmie pipes may be used. Pour concrete no higher than at least 150mm below the top of at least 1 of the side forms.

304 Fixing Reinforcement

- H. Unless otherwise shown on the drawings or directed by the engineer, measurements made in placing the reinforcement are to be to the centre-lines of the reinforcement.
- I. Support and wire together reinforcement with a 0.5mm soft wire ties or clips, or tack weld in accordance with AS/NZS 1554, to prevent displacement by construction loads.
- J. Use plastic-tipped metal chairs, metal hangers, metal spacers and other plastic, metal or concrete accessories as required for supporting reinforcement in accordance with the following:
Where the concrete surface is off form and exposed to view, internally or externally, provide accessories in which the portions in contact with the formwork are of plastic matching in colour the concrete paste.
Where the concrete surfaces are to be sandblasted, internally or externally, use only plastic or concrete accessories, matched in colour with the concrete paste, where in contact with the formwork.
- K. Weld, tie, clip or otherwise secure mesh reinforcement together by approved means at alternate intersections and at such other points as may be required.
- L. If necessary, support footing reinforcement on concrete blocks of adequate strength and size not to split under the loads they are required to carry.
Take particular care to ensure that wall and column steel is properly fixed in position by the use of plastic chairs clipped on to the steel and by steel spacers for wall reinforcement. Place such spacers in position prior to erecting the last shutter.
- M. Splices on reinforcement: splice only at locations approved by the engineer, with minimum lap lengths as shown on the drawings or welded to develop the full strength of the small bar in accordance with AS/NZS 1554.3
- N. Cover to reinforcement: allow clear minimum cover to reinforcing as shown on the drawings. Maintain this cover during concreting.

305 Construction Joints

Periods of stoppage in concrete of 3/4 hour or more are deemed to be construction joints.

When the location and type of construction joints are not shown on the drawings, submit proposed location and detail of construction joints to the engineer for his approval prior to the start of formwork placement. Site engineer will direct treatment before depositing the new concrete against a construction joint.

306 Bonding Fresh and Hardened Concrete

Before depositing new concrete on or against concrete which has set, re-tighten forms, roughen the set concrete surface, clean off foreign matter and laitance and thoroughly wet to engineer's approval. Remove excess water, cover the cleaned and wetted surfaces with a coating of 1:2 cement/mortar. Place the new concrete against this before the mortar has attained its initial set. Prior to placing concrete, submit a sample of concrete showing the degree of roughened and laitance removal proposed. The following procedures for preparation of construction joint faces are approved:

Vertical joints: paint face of form with an approved retarder. Strip form the following day and remove retarded concrete with air-water jet to bare exposed aggregate face.

Horizontal joints: spread 6mm bluestone chips on surface of freshly screeded concrete and blow off excess the following day with air-water jet.

Comply with instructions on engineer's drawings.

307 Building In

- E. Conduits and piping: place conduits and piping in concrete floors above the bottom steel and below the top steel. Do not dislodge reinforcement.
Where conduits and piping cross control joints, make provision for clip joints or some other means of absorbing movement without fracturing.
- F. Built-in bolts, etc.: accurately build in bolts, lugs and other fittings, provide holes and pockets as shown on the drawings. Prevent movement of these items during concrete pour.
Clear screwed or machined portions of fittings of mortar and grease.
Temporarily fill voids in sleeves, inserts and anchor slots and readily removable materials to prevent the entry of concrete into the voids.
- G. Waterstop: cast in waterstop as shown on the drawings, located in vertical wall joints or floor joints by the use of split shuttering or other means.
Use waterstop in the maximum possible lengths, mitre at corners and shop weld and seal at joints. Make joints other than at changes of direction, in location approved by the engineer.
Adequately secure and support in the correct position during placing concrete.
- H. Grouting: attention is directed to the 05100 STRUCTURAL STEEL section of this specification.

308 Preparation for Placing of Concrete

- C. Immediately before placing concrete in excavation, ensure that the excavation is free from water and fallen materials and that the sides of excavations are such that no material will fall into freshly placed concrete.
- D. Ensure that formwork ready for the placing of concrete is complete, with surfaces smooth and clean, immediately before placing, remove excess water, mud and debris and secure reinforcement in place, remove surplus end of tie-twine, surplus nails and other extraneous metal objects in contact with the forms, make sure that expansion joint material, anchors, and other embedded items are in position.
Give the engineer 1 working day's notice of the intention to pour so that approval may be given in time.

309 Access and Inspection Openings

Provide temporary openings at the base of the column and wall forms and at other points where necessary to facilitate cleaning and inspection. Intermediate openings for placing may be required by the engineer.

310 Transporting of Concrete

Convey concrete from the mixer to the place of final position without delay and by means that will prevent segregation and loss of materials.

Where necessary, transport concrete on substantial gangways or barrow runs supported on stools clear of reinforcement.

Remove hardened concrete and foreign materials from the inner surfaces of the conveying equipment.

311 Placing of Concrete

Place concrete in compliance with AS 3600.

312 Concrete Testing

- F. Generally: perform concrete tests in accordance with AS 1012 or subsequent amendment.
Allow for the cost of making test specimens and for the supply of testing equipment and suitable personnel to carry out tests.
- G. Materials testing: submit in writing, test certificates from an independent laboratory registered with the NATA as evidence that materials used comply with the requirements specified. Allow the costs of such tests as required.
- H. Slump tests: provide slump tests reports on the first batch of concrete to be placed and at least once for every 20 cubic metres of concrete placed thereafter on that day.

If, in the opinion of the engineer, other batch of concrete appears to have an incorrect slump, conduct slump tests as directed by the engineer.

Slump tests are to be conducted by, and at the expense of the builder. Concrete will be considered as complying with the specified slump tests when it complies with AS 3600.

- I. Compression tests: the methods and frequency of sampling and the identification and testing of cylinders are to be in accordance with project control testing AS 3600.
- J. Acceptance and rejection of concrete: acceptance and rejection of compressive strength of concrete by the engineer will be in accordance with AS 3600.

313 Compaction of Concrete

- F. Compact concrete by mechanical vibration to the maximum practicable density, free of air or stone pockets. Concrete not vibrated will be rejected.
- G. Have on site sufficient vibrators of an approved pattern and keep 1 spare vibrator to every 2 active vibrators.
- H. To avoid segregation, place concrete in position and then vibrate. "Travelling" concrete by use of vibrators is likely to produce segregation and is not permitted.
Operate immersion type vibrators in a near-vertical position and insert and withdraw them slowly.
Allow them to penetrate and revibrate the concrete in the upper portion of the underlying layer.
- I. Do not leave vibrators, when in action, lying unattended on formwork, reinforcing or in concrete. Keep vibrator heads clean and free of mud or other deleterious matter when inserted into the concrete.
- J. Vibrate concrete in layers not exceeding 450mm in thickness and avoid contact of the vibrating head with surfaces of the forms.

314 Floor Finishes

Finish floor slabs monolithically with steel trowel, or as detailed on drawings or on Schedule of Finishes.

315 Curing and Protecting Concrete

- F. Protect freshly cast concrete from premature drying and excessively hot or cold temperatures. Erect windbreaks to shield the concrete surface during and after placing. Maintain the concrete at a reasonably constant temperature with minimum moisture loss for the curing period, refer AS 3600.
Take responsibility for the curing and protection of the concrete.
- G. Cure as soon as the surface of the concrete has hardened sufficiently to prevent damage but in no case later than 2 hours after the finishing operation has been completed.
 - 1. Cure by the following means:
 - 2. The use of waterproof paper, or
 - 3. The use of an approved polyethylene building film.The use of other approved moisture retaining covering.
If a method other than polyethylene film is adopted, secure the covering material against the concrete for the full length of edges and laps and at frequent intervals between so that no air circulation at the concrete surfaces occurs.
- H. Period of curing: continue final curing for 7 days for normal Portland Cement concrete.
For high early strength concrete, continue the final curing for 3 days.
Prevent rapid drying out at the end of the curing period.
Keep wet steel forms heated by the sun and wood forms in contact with the concrete during the final curing period.
- I. Temperature: when the mean temperature of the air during curing is less than 5°C, maintain the temperature of the concrete between 10°C and 20°C for the required curing period.
Where necessary, make arrangements to maintain this temperature in advance of concreting adequate for the purpose.

When the mean temperature of the air is in excess of 30°C during curing and moist curing is not employed, cover the surface with an approved heat reflecting plastic membrane. Apply this treatment for the whole of the curing period.

- J. Curing off-form concrete: take special care with curing off-form concrete to avoid differences in colour. Prevent rapid or localised drying-out during the first 7 days after pouring. Maintain the form face in contact with the concrete up to the moment of striking. Programme stripping times to ensure that surfaces throughout the job are exposed at similar ages, differing by not more than 4 and preferably 2 or less hours. Ponding is preferable for horizontal surfaces. Use heavyweight covers, well secured and in continuous contact. Apply curing compounds generously if used, to prevent local moisture loss.

316 Stripping of Formwork

Strip formwork in accordance with the recommendations of AS 3610.1, Table: "Recommended Minimum Stripping Times". If construction loads greater than the live load shown on the drawings are placed on the structure, fix emergency shoring and tommying to the satisfaction of the engineer.

317 Cleaning

Remove debris and form work from each area after stripping concrete as work sections are completed. Leave each area clean to the satisfaction of the architect/engineer.

318 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 05500 METALWORK

PART I GENERAL

109 Scope

Supply, engineer and install required general and architectural metalwork items including but not limited to:

- A. Access Grates, Pits and Panels
- B. Trafficable grate for new storm water pits
- C. Complete certified Roof Safe Access System including but not limited to:
 - Roof Safety Fall Arrest System
 - Anchor points, harness gear and equipment, static line, eaves platforms and associated safety signs.
- D. New safety fencing and gates with childproof locks
- E. Hot Dip Galvanised metal support brackets to all equipment, mechanical equipment including fixtures and fittings for complete installations
- F. Hot Dip Galvanised metal security caging to all external equipment, pump equipment, external equipment.
- G. Support framing as required for equipment & other equipment cabinets
- H. hot dip galvanised metal supports for all glulam columns, fencing supports, gates, drop bolts to gates cast into concrete, etc.
- I. Support framing as required for recessed FHR & other equipment cabinets
- J. Handrails / Grabrails
- K. Edge strips to carpet to stair edges
- L. Aluminium Skirting
- M. Aluminium coverstrips to change in floor material junctions
- N. Provide all necessary support framing and sub framing for feature timber battens to Front Entry area of building.
- O. Metal Letterbox installation to Front entry
- P. Supply all labour and material, services and equipment necessary for the preparation, application and finishing of metal surfaces as indicated on drawings, schedules and as specified herein, to internal and external metal surfaces as follows:
 - Refer Schedule of Finishes

110 Related Work

Co-ordinate and co-operate with the following trade sections:
SECTION 07600 METAL ROOFING, SIDING AND ROOF PLUMBING
SECTION 07725 FALL ARREST EQUIPMENT
SECTION 08200 DOORS, DOOR FRAMES & door hardware

111 Quality Assurance

Work of this section will be performed by experienced craftsmen familiar with the quality required in this class of work.

Comply throughout with manufacturer's instructions.

112 References

Comply with applicable portions of the following Australian Standards:

- | | |
|-------------|--|
| AS/NZS 1554 | Structural steel welding. <i>There are 7 parts, 1994 – 2010.</i> |
| AS 1627 | Metal finishing - Preparation and pre-treatment of surfaces. |
| | 1627.6 2003 Chemical conversion treatment of metals. |
| | <i>There are 6 other parts, 1997 – 2005.</i> |

AS/NZS 1734 1997	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate.
AS/NZS 1866 1997	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes.
AS 4100 1998	Steel structures. <i>Plus 1 Supplement 1999.</i>
AS/NZS 4673 2001	Cold-formed stainless steel structures.
AS/NZS 4680 2006	Hot-dip galvanised (zinc) coatings on fabricated ferrous articles.
Comply with requirements of statutory and local authorities.	

113 Shop Drawings

Comply with SECTION 02000, clause 2.301.

Provide Shop Drawings for major items supplied hereunder.

- A. Contract drawings and details provided are indicative as to general and minimum requirements, and do not show conditions.
Develop details not shown and in conformity with the indicative details shown.
- B. Take and confirm dimensions on site, before preparing Shop Drawings where possible.
- C. Submit detailed Shop Drawings for fabrication and installation of major metalwork. Show plans, elevations and detailed sections; indicate materials, finishes, types of joinery, fasteners, anchorages and accessory items. Provide setting diagrams and full-scale templates of blocking, anchorages, sleeves and bolts installed by others.

114 Samples

Sample welds: if requested, provide samples of weld types, including samples of railings joined at right angles and at typical acute angles, welded and ground smooth, for approval. If not acceptable, provide additional samples until approved. Approved samples establish quality of similar work of this section.

Check on delivery: request architect to check materials on delivery to site for quality, and materials not meeting the requirements of this specification or equal to approved samples will be rejected.

Return rejected materials to the fabricator at the fabricator's expense.

Finish: provide samples of specified finishes when requested.

PART II MATERIALS

201 Materials

- a) **Wall Access Panels** shall be MIFAB® CAD-FL-PL MDW-SS stainless steel access panels with flush panel finish. The MDW-SS stainless steel Series is 16 gauge #304 stainless steel door and frame or similar approved by Superintendent

Finish: Stainless steel with Linished #4

Door: Flush to frame. Turned back around edges for extra rigidity.

Frame: Drywall corner bead on all sides.

Hinge: Concealed pivot pins.

Latch: Standard - Flush mounted, screwdriver operated cam.

Manufacturer: Supplied by M.A. Griffiths www.magriffith.com.au

Allow to provide to conceal all thermostatic mixing valves, sensor tap electrical connections, etc. into wall cavity, for future access.

- b) **Internal Ceiling Access Panels** to plasterboard / metal ceilings shall be flush mounted Rondo Panther type with tapered edges for flush jointing. Provide for paint finish to match ceiling

as indicated in documentation & for access to in ceiling services

c) Roof Safe Access

Provide a complete roof safe access system to entire roof of New Building Works and Plant area including but not limited to walkways, stair, anchor points and handrails as required to achieve a certified compliant safe access to the roof, to all roof mounted equipment and access to all gutters for maintenance. Provide walkways, stairs, etc as documented and required, they shall be a proprietary Sayfa or Juralco system. Provide certification for roof safety access in compliance with all safety access requirements and issue copy to Superintendent prior to Practical Completion.

Co-ordinate with other trades as to the proper fastening systems suitable for the substrates to which the item is to be secured. Refer to architect if in doubt. Fasten galvanised items with galvanised fasteners.

Refer Safe roof access details in Appendices

Location: entire new roof areas and Plant area

Accessories: Provide all necessary accessories, fixings, fixtures, supports for a complete compliant roof safe access system

d) Roof Access Ladder

Allow to supply and install roof access ladder stainless steel anchor point to west side of existing roof. Provide all necessary fixings and certification in compliance with all safety access requirements. Provide certification for roof safety access in compliance with all safety access requirements.

Manufacturer:

<http://www.sayfa.com.au/> or equivalent approved in writing by Superintendent. Refer Sayfa drawings in Appendix for scope.

Location: as indicated on drawings and to approval of Superintendent

e) Roof Fall Arrest Safety Anchors

Provide Permanent Fall Arrest safety system to entire roof both existing and new for access to gutters, roof mounted equipment and roof in general. Provide certification for roof safety in compliance with all safety access requirements.

Manufacturer: Roofsafe Industrial Safety (RIS) – www.roofsafe.com.au or equivalent approved in writing by Superintendent

Location: to entire new roof areas

f) Metal Finishes

Supply all labour and material, services and equipment necessary for the preparation, application and finishing of metal surfaces as indicated on drawings, schedules and as specified herein, to internal and external metal surfaces as follows:

- i. Refer Schedule of Finishes

g) trafficable grates

Access Grates and Pits

Supply and install access grates, pits to all external subground services requiring access, inspection openings. Grates and Pits to be 'Class D' type for trafficked areas.
Class 'D' being for wheel loads not exceeding 210kN.

Manufacturer: Gatic Pty Ltd – www.gatic.com.au
Finish: Hot Dip Galvanised
Location: provide access grates to new stormwater pits, new external inspection openings, access points.

h) Mechanical A/C unit bracket units & equipment supports

Supply and install hot dip galvanized steel a/c brackets & all necessary equipment supports, fixtures and fittings for complete installations of all equipment. Provide support brackets to all roof mounted equipments and all penetrations to be fully sealed and water tight in accordance with the Roofing Section.

i) Grabrails

Supply and install Stainless steel rails and supports
Type: Refer to Sanitary Fixtures Schedules.
Accessories: Provide all necessary fixings for complete disable compliant system.

j) Sunshade louvres

Supply and install MetalArt Industries Superslats to sun shade structure.

Type: Screens with 55mm Elliptical aluminium blades @ 45°degrees fitted between
Aluminium frames 55mm x 50mm Aluminium RHS
Finish: Powdercoat finish. Metallic Silver
Accessories: Provide all necessary fixings and supports for a complete system. Fixing method to approval of Superintendent.

Location: to positions as indicated on drawings – sunshade

k) Safety Fencing

Provide new child safety fencing and gates to minimum 1500mm height to enclose the external playground areas. Provide all necessary foundations/footings, proprietary items, connectors, hinges, locks, handles, etc. for a complete installed, secure fence system compliant to DEECD standards as a minimum. Ensure all sharp edges, pointed surfaces are removed, and provide for non scalable fence supports.

Comply with requirements of **AS1926.1**.

Manufacturer: Arc Fencing – www.arcfences.com.au or similar to approval of the Superintendent
Type: Childproof safety fence – Flat top posts and rails, provide for inground post.
Posts: 50x50x1.6mm hot dip galvanised posts at centres to suit 2400mm wide fence panel. Provide powder coat finish to posts. Confirm exact post positions with Superintendent on site prior to install.
Post Footings: provide minimum 200x600mm deep concrete footing post holes.
Rails: Shall be minimum 38x25x1.6mm provide bottom rail at 20mm clear of ground and top rail at 1500mm clear of ground. Provide through rail as required
Tube Spec: Provide 16mm diameter tubes spaced at 90mm centres
Height: Fence height finishing Minimum height of 1500mm from surrounding natural ground

Colour: provide all fence framing shall be finished in powdercoat White Colour – confirm colours with Superintendent prior to order.

Gates: to be in matching finish to fence, provide all necessary posts, self closing hinges, fixtures and fittings for a complete installed DEECD compliant gate. Provide drop bolt with back plates and ability to lock gates with security lock to Council's Bilock Master key system. Provide hot dip galvanised metal stop angles to bottom of gate with predrilled hole and support to gate frame and for secure bolting. Provide all necessary support framing and structure for a complete installed gate including but not limited to weld on gudgeons, hinges, catches bottom gate stops.

Locks to Gates & Doors to fence: shall be lockable type keyed to Council's Bilock Master key system (confirm with Superintendent to requirements prior to order). Gate & Door safety locks are to be located at DEECD approved height (between 1500mm-1650mm above FFL). Provide Magnalatch D&D Technologies gate kit to gates with self closing hinges, gate stops, Magna latch.

Accessories: provide all necessary accessories for the complete installed fencing and gated solution to suit the kindergarten and Superintendent requirements. Provide all tees, crosses, corners, post caps, tek screws, etc.

Location: provide to new fence area beside southwest MCH rooms, to new fence beside Children's Room 5

l) Security Cages to all external equipment

Supply and install hot dip galvanized steel security caging to all external equipment including for access doors and security locks to Lockwood master key system. Security caging to be constructed of steel base supports minimum 40EA.

Wire Grid: Provide In fill wire Grid on fully welded Frame - minimum 4mm wires spaced on 30 mm centres on 8mm cross supports. Provide pry resistant doors & hinging with padlock.

Size: Size of cage and door to allow for complete access to equipment for maintenance. Cage to cover equipment on all sides, top and bottom to ensure for secure access. Provide shop drawing of security cages for external equipment to Superintendent's approval.

Accessories: Provide for all necessary fixtures and fittings for a complete secure caged installation fastened to walls, floor, etc.

Location: to all external mechanical equipment, pump equipments, hot water units, external equipment in general

m) Metal Letter Box

Provide new customized letter box to front entry. Allow to fit new mailbox in between metal window framing. Provide recycled plastic board to front of letter box fitted into window frame with 2no. layers of Plaspanel 12mm thick board colour white. Allow to fix plaspanel boards back to back for concealed fixing of stainless steel letter box.

Letter Box Slot - Letter box slot to be installed to Plaspanel board with stainless steel 316grade 350mm wide x approximate 50mm high slot for posting of letters and A3 sized envelopes. Provide stainless steel flap to cover slot for weathertight protection of internal contents. Steel thickness to be minimum 2mm thick with no sharp edges. Provide Linished finish to Stainless steel.

Letter Box:

Provide custom sized stainless steel box conceal fixed to the back of the Plaspanel board to inside of foyer, provide lockable access door with keyed access to Masterkey system for accessing letter box. Box to be constructed of 2mm thick stainless steel with internal supports as required.

Provide Shop drawings for Letter box to approval of Superintendent.

Manufacturer: Mailmaster – www.mailmaster.biz

202 Finish

Materials exposed to weather may be either:

Mild steel - hot dipped galvanised after fabrication or chromate pre-treated followed by polyester powder coating.

Finish internal steel after fabrication with zinc-rich organic primer, or with inorganic zinc silicate paint.

Comply with relevant codes of practice or manufacturers' recommendations.

203 Welding Steel

General: details of joints, the techniques of welding employed, the appearance and quality of welds made and the methods used to correct defective work; conform to requirements of AS/NZS 1554.

Welds exposed to view: grind smooth to architect's approval.

Concealed welds: grind smooth before galvanising.

Tack or skip welding: at regular intervals, very neat. Not permitted if material is to be hot dip galvanised.

Remove weld spatter.

Certification: only welders who have previously been qualified by tests may weld.

Tack welding or skip welding will NOT be permitted where items are to be galvanised. Weld continuously form joints and connections to exclude water and to permit draining during galvanising.

Stainless steel welding: refer AS/NZS 1554.

204 Connection Design

General: design fabricated items so that possible work is done before delivery. Fully protect for shipment. Take possible care to prevent damage.

- A. Welding external items: conform to the recommendations of AS/NZS 1554, noting particularly the design criteria.
- B. Flanges: concealed where possible. Sleeve connecting railings inside railing sections and secure with flush or set screws. Except where access is impossible, connection screws and bolts will be on the underside of joints.
- C. Fasteners on the top of railing sections will not be permitted.
- D. Weld shop connections for steel fabrications, and bolt field connections.
- E. Provide smooth finishes to exposed surfaces with sharp well-defined lines and arrises. Mill to a close fit machined joints. Design necessary lugs, brackets and similar items so that work can be assembled and installed in a neat, substantial manner.
- F. Provide ample strength and stiffness by using appropriate metal thickness of assembly and supports.
- G. Provide holes and connections as required to accommodate the work of other trades and for site assembly of metalwork. Drill or punch and ream in the shop.

205 Miscellaneous

Fasteners: provide required bolts, screws, inserts, fasteners, templates and other accessories required for a complete installation.

Co-ordinate with other trades as to the proper fastening systems suitable for the substrates to which the item is to be secured. Refer to architect if in doubt.

Fasten galvanised items with galvanised fasteners.

206 Dissimilar Metals

In moist environments, e.g. swimming pools of either fresh water or sea water etc, prevent totally contact between dissimilar metals (any metals).

This instruction takes priority over any drawing, detail or instruction and will prevent cathodic reaction between the metals.

Refer this instruction to the structural engineer.

PART III EXECUTION

319 Examination

Inspect site conditions before fabrication, where possible, and before delivery of materials. Ensure conditions are satisfactory for installation. Arrange for rectification required.

Start of work means total acceptance of relevant conditions.

320 Roof Safe System Execution

I. Preparation

Check roof framing and other items to which safety equipment is to be fixed.

Ensure that structures local to the installed items are secure.

A senior technical representative of the material Manufacturer is required to be present to check each part of the installation.

II. Installation

Secure each item in accordance with Australian Standards.

Arrange with the builder and roofer for penetrations if required through roof materials.

Ensure that penetrations are completely watertight after installation and on completion of the work.

III. Field Quality Control

Arrange for inspection of the work before and after completion.

IV. Testing

Arrange for tests of each item of equipment. Replace items which fail the test.

V. Portable Equipment

After tests are completed, provide and hand over portable equipment to the builder. Store where directed.

Builder to hand over the material to Principal on completion of the work.

VI. Cleaning

Remove surplus materials and leave the area clean on completion.

321 Preparation

Field measurements: do not delay job progress. Allow for adjustments and fitting of the work in the field where taking of measurements might cause delay.

Co-ordination with work of others: furnish to each relevant trade foreman anchorages and setting drawings, diagrams, templates and instructions for installation of items having integral anchors which are to be embedded in concrete or masonry construction. Co-ordinate delivery of such items to the project site.

322 Inspection and Reinstatement

Check fabrications as they are unloaded at the project site for evidence of physical damage.

Treat damaged fabrications as follows:

- A. Damage through galvanising: perform immediate inorganic zinc silicate paint or cold-galvanising repair. Do not install until reinstated.
- B. Architectural metalwork: returned to shop for repair or replacement.

Verify anchors, bolts and other required anchorage items for proper size and accurate location prior to erection.

323 Installation

Anchorage: except for anchorages furnished herein but placed by other trades, set and secure necessary anchorages, including concrete and masonry inserts, bolts, wood screws and other connectors as needed. Perform cutting, drilling and fitting as needed, locating anchorages and holes to ensure proper positioning of completed work. Fit: during installation and assembly, form tight joints with exposed connections accurately fitted, and reveals uniform. Finish work accurately, plumb, level, square and true in reference to adjacent construction. Make tolerances conform to Australian Standards.

Finish: do not cut or abrade shop finishes which cannot be completely restored in the field.

The use of gas-cutting torch in the field for correcting fabrication errors will not be permitted under conditions.

Fabrications may be cut shorter with power hacksaws on site.

Isolate dissimilar metals likely to be subject to moisture with inert materials, not visible on completion of installation.

324 Field Quality Control

Where considered necessary by the architect, arrange for the manufacturer of products to instruct installers regarding correct installation.

325 Protection

Cover work: immediately following installation, wrap or cover architectural metalwork to avoid wear and tear of finish during subsequent construction.

326 Cleaning

Clean materials installed to the satisfaction of the architect.

Remove temporary protective coatings.

327 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

Refer Project schedule for details

SECTION 06100 CARPENTRY

Sustainable Timber

95% of all timber used in the project is to be from a certified chain of custody Manufacturer as accredited by the Forestry Stewardship Council (FSC). The contractor is to provide certification that all timber supplied for the project is from a certified chain of custody Manufacturer. Where more than one Manufacturer has been used in the chain of supply, each supply is to be FSC certified. The Contractor is to prepare a timber schedule for all timber used in the project including the timber costs, type and manufacturer.

All exposed timber is to be recycled.

Recycled timber manufacturers:

<http://www.timberrevival.com.au/>

Shivermettimbers <http://shivermettimbers.com.au/>

<http://kenneypierce.com.au/timbers.html>

FSC website: <http://www.fscaustralia.org/>

PART I GENERAL

101 Scope

Provide materials and labour, equipment and services and perform operations necessary to complete the carpentry as indicated and specified. Include nailers, blocking, furring, grounds, hardware, framing, shoring, bracing, scaffolding and barriers required by the drawings and construction.

- A. all wall, ceiling and roof framing
- B. Trim, architraves, skirting, beads, etc.
- C. all subframing including battens, packers, etc.
- D. All framing around skylight shafts from ceiling through to roof over
- E. Hardwood supply and installation to window reveals
- F. Feature Timber entry fencing and feature bench seating
- G. Hardwood posts to Canopy support

102 Related Work

Co-operate and co-ordinate with the following trades:

SECTION 06400 JOINERY

SECTION 10340 EXTERNAL URBAN ITEMS

103 Quality Assurance

- A. Manufacturer qualifications: not less than 10 years continuous experience in the manufacture of the product types specified.
- B. Installer qualifications: installer is not to have less than 5 years continuous experience in the erection of specified material.

104 References

Comply with applicable portions of the following Australian Standards:

AS 1684

Residential timber-framed construction. *There are many parts and Supplements, 1999 - 2010.*

1684.2 2010 Non-cyclonic areas.

	1684.3 2010	Cyclonic areas.
	1684.4 2010	Simplified - Non-cyclonic areas.
AS 1720		Timber structures.
	1720.1 2010	Design methods. <i>Plus 2 Amdts, 2010 - 2011.</i>
	1720.2 2006	Timber properties. <i>Plus 1 Amdt, 2006.</i>
	1720.4 2006	Fire-resistance for structural adequacy of timber members.
AS/NZS 1859		Reconstituted wood-based panels - Specifications
	1859.1 2004	Particleboard. <i>Plus 2 Amdts, 2006 - 2011.</i>
	1859.2 2004	Dry processed fibreboard. <i>Plus 2 Amdts, 2006.</i>
	1859.3 2005	Decorative overlaid wood panels. <i>Plus 1 Amdt, 2009.</i>
		<i>There is 1 other part, 2004.</i>
AS 1860.2 2006		Particleboard flooring – Installation. <i>Plus 1 Amdt, 2010.</i>
AS 3959 2009		Construction of buildings in bushfire-prone areas. <i>Plus 3 Amdts, 2009 - 2011.</i>
AS 4055 2006		Wind loads for housing. <i>Plus 1 Amdt, 2008.</i>
AS 4226 2008		Guidelines for safe housing design.
AS/NZS 4364 2010		Timber – Bond performance of structural adhesives.
AS 4786.2 2005		Timber flooring - Sanding and finishing.
HB 44 1993		Guide to AS 1684 1992, The National Timber Framing Code.
	Further advice and changes in specifications of timber are needed frequently. For latest information visit www.timber.net.au	
	For timber decks visit www.timber.net.au , and download “Decks” from the Resources section.	

105 Submissions

Submit the following prior to ordering materials:

Product literature on hardware items proposed.

Technical data on melamine laminates proposed for use.

Technical data and samples of substrate materials (particleboard etc.) Thickness of materials at typical locations and functions.

106 Delivery, Handling and Storage

Deliver, handle and store products so that damage, deterioration and loss will be prevented. Control delivery schedules to minimise long-term storage at site.

Store timber on site indoors, or above ground and cover with secure impervious material.

PART II MATERIALS

201 Materials

A. Wall Framing

Provide all necessary timber framing for studwork walls, partitions, etc. Provide sized framing indicated below as the minimum and provide larger framing sizes as required to achieve the proposed building design.

Material Group	Size	Manufacture/Type	Strength	Australian Standard
Items documented by Structural Engineer take precedence over the following wall framing items.				
Plates	90 x 45	F5 RAD		AS 2858
Studs	90 x 45	F5 RAD @ 450 crs		AS 2858

Studs – above 3000	90 x 45	F17 KDHW @ 450crs	AS 2858
Nogging - 3 rows	90 x 35	F5 RAD	AS 2858
Bracing	50 x 25	F5 RAD	AS 2858
Posts & structural Walls	Refer to Engineers drawings.		
Battens	25 x 35	F5 RAD	AS 2858

Studs to walls shall be generally spaced at maximum 450mm centres to suit material application.
For areas with proposed heavy equipment or wall hung joinery provide studwork spacing at minimum of 300mm centres to suit material application. Provide for noggins, back blocking and all necessary infill framing to support fixtures and fittings.

Finishing height of Studwork

Unless noted otherwise on drawings all studwork walls indicated on the floor plan drawings are to finish full height from floor level through to underside of structure over.

Provide higher strength grades of timber framing as required to achieve structural requirements of project

B. Roof Framing

Material Group	Size	Manufacture/Type	Strength	Australian Standard
Roof Beams		Refer to Engineers drawings		
Purlins		Refer to Engineer's drawings		

Ensure framing to new Rooves allows for adequate falls to box gutter.

C. Window Sill Linings

Supply and install KDHW to internal reveals of windows and as scheduled/documentated:

<u>Type:</u>	19mm thick with width to vary to suit sill, allow to overhang wall by minimum 20mm. Pencil round exposed edges to timber. No sharp edges.
<u>Location:</u>	to all external window reveals

D. Timber Feature battens to entry area and Timber Seating

Provide a complete feature timber batten cladding system to screening at front entry. Allow to fix all vertical timber battens to support metal subframe with external grade Class 4 stainless steel fixings. Provide Button head s/s 316 grade screws for fixing of boards to HDG steel subframe. Ensure timber battens finish minimum 30mm clear of ground.

Timber seat

Allow to fully weld proposed steel support frame and brackets to vertical posts and chem set fix to existing masonry wall with M8 fixings. Provide for concealed fixing of timber to steel support frame, allow to predrill steel and screw fix from underside of seat using Class 3 external grade screws.

All feature timber battens/boards shall be dressed and sanded; Allow to sand pencil edge all exposed edges of timber to avoid for any sharp edges

Timber types: Vertical Battens shall be Australian hardwood Ironbark (Class 1 above ground external timber)

Timber for timber feature bench seat shall be Australian hardwood – Blackbutt (Class 1 above ground external timber)

Manufacturer: Timber Revival – www.timberrevival.com.au
or Shivermettimbers - www.shivermettimbers.com.au/

Size: 75x50mm battens in Ironbark; 65x42mm timber in Blackbutt with face board to seat being 150x42mm

Finish: Organoil or Livos finish

Support frame: Provide all necessary steel support frame fixed through to wall and/or columns for support of feature timber.

Provide shop drawing for proposed timber seat steel framing for approval of Superintendent prior to construction

Where fixings or fittings are exposed in securing of materials ensure fixings (ie. screws, nails, etc.) are installed in ruled straight lines and even spacings unless noted otherwise on drawings.

PART III EXECUTION

301 Examination

Visit site and inspect conditions, comparing conditions to drawings before delivery of materials to site. Start of work means total acceptance of conditions.

302 Installation General

Comply with: AS 1684 Residential timber-framed construction, and other relevant Standards.

303 Installation Particulars

Perform operations including grooving, rebating, framing, housing, beading, mitring, scribing, nailing, screwing and gluing as necessary to carry out the works. Use timber in single lengths whenever possible. If joins are necessary, make them over supports unless otherwise shown or specified.

Arris visible edges in sawn work and in dressed work arris with sandpaper to 1.5mm radius unless otherwise shown or specified.

Back plough boards liable to warping (for example, if exposed on one face). Make the width, depth number and distribution of ploughs appropriate to the dimensions of the board and the degree of its exposure.

Provide necessary templates, linings, blocks, stops, ironwork and hardware, screws, bolts, plugs and fixings generally.

Trim framing where necessary for openings, including those required by other trades.

Unless otherwise noted, construct framing so that floors are horizontal, i.e. no more than 3mm slope in 3000mm.

Construct wall framing vertical, so that no more than 3mm out of vertical in 3000mm of wall height.

304 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 06400 JOINERY

Formaldehyde Minimisation

All engineered wood products including particle board, MDF, plywood and veneers are to meet the formaldehyde emission levels listed below. The formaldehyde levels are to be tested to the Australian Standards listed below

The contractor is to provide a complete list of all engineered wood products used in the project, listing the location of use, the quantity and manufacturer. This list is to include certification from the product manufacturer that the products used meet the formaldehyde levels listed below and have been tested to the Australian Standard listed below.

Formaldehyde Emission Minimum Level Requirements

<u>Wood Product</u>	<u>Formaldehyde Limit</u>	<u>Product to be test to Australian Standard</u>
Plywood - E0	0.5mg/L	AS 2098.11
Plywood - Super E0	0.3mg/L	AS 2098.11
Particle Board/MDF- E0	0.5mg/L	AS4266.16
Particle Board/MDF- Super E0	0.3mg/L	AS4266.16

PART I GENERAL

101 Scope

The work of this trade section covers the supply and installation of joinery items. It includes, but is not limited to:

- A. Service cupboard.
- B. Pull out Stairs, grabrails.
- C. Hardware.
- D. Cupboards, fabricated joinery, benches and shelving
- E. Trim, architraves, kickboards, beads, pelmets, etc.
- F. Fasteners and adhesives
- G. Hardware for Joinery
- H. Joinery generally
- I. Benches.
- J. Shelves.
- K. Racks.
- L. Caulking of Joinery with colour matched silicon where abutting walls, floors and ceiling or other equipment.
- M. Toilet partition system
- N. External exposed Joinery or joinery directly exposed to water/moisture shall be as a minimum constructed of compact laminate with a phenolic core. Joinery exposed to external conditions must be constructed of external grade material.
- O. Plywood insert to MCH room joinery to fit Perspex baby measure unit
- P. Other: All Joinery material used in this project must by Laminex GREENfirst or similar with GECA certification to written approval of the Superintendent.

102 Related Work

Co-ordinate and co-operate with the following trades:

Floor construction	Wall construction
Ceiling construction	Window trades
Doors and door frames	Plaster trades

Electrical installations

Manufactured casework

103 Quality Assurance

Prototype: at a location selected by the architect construct a complete prototype installation of:

Include in each prototype elements required by this specification, finished in every respect. When approved by the architect, each prototype remains part of the work and becomes the standard for the remaining work.

104 References

Comply with applicable portions of the Australian Standards listed in SECTION 06100 CARPENTRY, plus those following, current edition:

AS/NZS 1859	Reconstituted wood-based panels - Specifications 1859.1 2004 Particleboard. <i>Plus 2 Amdts, 2006 - 2011.</i> 1859.2 2004 Dry processed fibreboard. <i>Plus 2 Amdts, 2006.</i> 1859.3 2005 Decorative overlaid wood panels. <i>Plus 1 Amdt, 2009.</i> <i>There is 1 other part, 2004.</i>
AS 2754.2 1991	Adhesives for timber and timber products - Polymer emulsion adhesives.
AS 2796	Timber - Hardwood- Sawn and milled products. <i>There are 3 parts, 1999-2006.</i>
AS 4785 2002	Timber - Softwood- Sawn and milled products. 4785.1 2002 Product specification. 4785.2 2002 Grade description. 4785.3 2002 Timber for furniture components.
AS 4786.2 2005	Timber flooring - Sanding and finishing.

105 Submissions

Submit the following prior to fabrication:
Product literature on proposed hardware items.
Technical data on melamine laminates proposed for use.
Technical data and samples of substrate materials (particleboard etc).
Thickness of materials at typical locations.

106 Delivery, Handling and Storage

Do not deliver until completion of anything which could soil, damage or deteriorate joinery. Prevent soiling, damage or deterioration during delivery, storage and handling.
Keep site storage to a minimum. If circumstances make storage necessary in areas other than the final location, store only in those that meet the requirements specified for installation areas.
Comply with current written Laminex Board Product Handling and application Guidelines.

PART II MATERIALS

201 Materials

Joinery Materials

- 1. Timber**
Throughout shall be dry and well seasoned, straight grained and free from sapwood, gum veins, large loose or dead knots, borer, or other defects.
- 2. Hardwood**

Used for joinery work shall be select KDHW timber.

3. Particle Board

Shall be E0 compliant. As per Joinery Construction.

Manufacturers – Laminex E0

Alpine E0 MDF

Carter Holt Harvey MDF Panels. www.chhwoodproducts.com.au

4. Plastic Laminate for shelving

As per Joinery Construction

5. Craftwood or Customwood

As per Joinery Construction

6. Melamine Board

As per Joinery Construction

7. Adjustable Shelf Supports

Shelf supports shall generally be capable of supporting 100kg loading capacity.

Provide plug-in 7mm dia Nickel plated steel, spoon-shaped Häfele 282.01.701 with matching sleeve to all adjustment holes as a minimum. For shelves with >100kg weight loading requirement provide sample of shelf support to Superintendent for approval. Provide adjustment holes to adjustable shelves at 50mm increments, allow for at least 2no. adjustment levels above and below each adjustable shelf.

8. Compact Laminate

Interior to wet areas where exposed to water – shall be compact laminate with thickness to suit the application and span, allow 18mm thick board

External exposed joinery shall be finished in an exterior grade compact laminate. Provide Laminex Alfresco compact laminate to joinery located external to the building envelop. Allow for minimum 13mm thick board

202 Joinery Workmanship

Framing shall be double-nailed, screwed, notched, halved and rebated, tensioned, housed, dovetailed, or otherwise framed together as necessary to produce a first class job.

Dressed Surfaces to all work. Remove sharp edges of arises with sandpaper.

Beads, Casing, etc. Generally provide square or rectangular section of edged KDHW stops, beads, fillets, facings, moldings, trims and casing, to internal areas as required to give a neat and workmanlike finish.

Edgings

(a) Plastic laminated surfaces shall have 2mm ABS edging colour to match where exposed and fitted with minimal melamine thickness showing.

(b) Melamine Board shall have matching colour 2.0mm solid PVC edge strips to all edges, doors and drawers, front edge of shelving.

Protection Special care shall be taken to protect all joinery from stain or damage during the work and delivery to site and paper coverings or other approved protection shall be provided as necessary.

203 Joinery Construction

Generally

All fitments are to be supplied from a specialist joinery firm. Structure and workability of fittings is the responsibility of the Joiner and will be best practice. Measure on site and construct units for fitting with a minimum of cover beads.

Use proprietary products specified, alternative E0 board use shall be to written approval of the Superintendent. Contractor is required to provide shop drawings that also specifically identify all the products used and must be in compliance with this specification.

Allow to hand laminate all joinery board where required to achieved joinery details. Where a prefinished laminate board is not available allowance for a hand laminated board shall be provided. Ensure to sand back edges to laminate junctions to avoid any sharp exposed edges.

Contractor is instructed to notify the Superintendent of the time of fabrication completion so that the Superintendent may inspect all joinery off site.

JOINERY GENERALLY (Internal to Building Envelope):

Where joinery is directly exposed to water, especially direct contact to water (ie. in a Shower area) use only compact laminates with phenolic core. Allow to provide compact laminate for all joinery exposed to water throughout the project.

- i. **Carcass:**
Use Laminex Vertiboard E0 - MR 16mm throughout to all joinery constructed throughout.
- ii. **Locks**
Provide proprietary locks to all joinery cupboards in kitchen to masterkey system, including all cupboard doors, pantry doors. Provide 5no. copies of the key to the Superintendent at Practical completion.
- iii. **Joinery handles**
Provide handles to all joinery doors and drawer fronts.
- iv. **Drawers**
Drawers shall be Blum Tandembox Plus (the minimalist line – rectangular). Provide Blum Tandembox plus to all drawer units (typically use steel white(W) unless noted otherwise). For drawers with no handles provide with integrated Blum Tip-on function.
(note: Blum standard plus drawer units come in heights of 81.5, 96.5, 128.5; high fronted pull outs 160mm gallery, 192mm gallery, 224mm double gallery, 224mm boxside) Allow to provide drawer height to suit sizes documented on drawings.

Provide inner pull out drawers to drawers within cupboards

Provide all necessary Blum proprietary accessories including but not limited to Cabinet profiles; drawer sides and cover caps; sink drawer side; longside gallery rail; back fixing; front fixing bracket; adapter; locking piece set; inserta knock-in; metal side infill panels to enclose drawer to full height of gallery rail; side and top stabilisation.

General Drawers shall be Plastic Laminate of the depth as detailed with 19mm thick fronts, 13mm thick back and sides and minimum 13mm bottom, all grooved, pinned and glued together. Alternative drawer construction of equivalent durability will be considered by the Superintendent. Internal height of drawers shall be maximised to suit the height of the drawer fronts.

Drawers to be constructed to full depth of joinery unit (typically 600mm depth). Depth of drawers to be maximised, provide sample of drawer construction for Superintendent approval prior to manufacture. Provide Hafele cutlery drawer insert for 2no. drawers to kitchenette/tea point, plastic finish colour white,

cutlery drawer insert to fit to dimensions of drawer and to approval of Superintendent. Provide joinery pulls as scheduled.

v. Drawer Runners / Slide Rails

Drawer runners shall be Hafele Ball Bearing type side mount drawer runners with soft close colour white galvanised # 432.16.760. Load capacity of drawer slides shall be minimum 45 kg. Provide correct length of runner to suit drawer length, confirm prior to order. Install in strict accordance with manufacturer's specification. For large drawer units over 600mm in width provide Hafele drawer runners with a load capacity of 125kg.

vi. Hinges

Provide Blum Soft Close hinges to all joinery cupboard doors, other than joinery doors with push catch type operation. Type: Blum Blumotion Cip top hinges.

Provide sample of hinges for each differing application to the Superintendent for approval prior to install. Hinges for joinery doors to shall allow for maximum opening angle to suit application.

vii. Joinery push catch to joinery doors

Provide push catches to joinery doors where noted on drawings, allow to provide to both leafs of cupboard doors. Provide to doors of cabinetry where cabinets are at high level without joinery handles.

Manufacturer: Hafele

Type: push catch – K-push surface mounted with magnet and knock in plate finish white; code 356.01.714

Allow to install in accordance with current written manufacturers recommendations.

viii. Shelving

Use Laminex Lamiwood (E0 Moisture Resistant MR) 18mm –selected colour- to lengths less than 900mm to all areas. ABS edging finish throughout, colour to match.

Use Laminex Lamiwood (E0 MR) 25mm – selected colour- to lengths in excess of 900mm but less than 1200mm to all areas. ABS edging throughout, colour to match.

For shelving indicated to be greater than 1200mm in width on drawings provide intermediate shelf supports, shelf supports to be stainless steel angle brackets, provide sample of support prior to install of shelving to the approval of the Superintendent.

ix. Hinged Doors & Cupboard Doors

Use Laminex Lamiwood (E0 MR) 18mm – selected colour – to within all areas. ABS edging throughout. All doors are to have joinery key locks fitted, provide sample to Superintendent prior to install. Contractor to confirm with Superintendent keying arrangements.

x. Bench Tops

To Benchtop areas provide Laminex 33mm thick E0 MR benchtop with laminated post form D-edge with 10mm radius to exposed edge, unless noted otherwise on the drawings. Refer to schedules for laminate colour finishes.

Allow to install inset sinks as shown and MCH measure bench inset plywood

xi. Bases

Cupboard bases shall generally be constructed with false floor and 100mm high MR kickboard set back 50mm to form toe space. 2mm laminate finished kick plate. Where kickboards are exposed to direct water ie. Within wetarea, these shall be required to be constructed of compact laminate with phenolic core or

other as nominated suitable for water exposure without damage. Allow for coving of floor vinyl in wet areas up kick space to finish sealed against the underside of the joinery

xii. Fixing of Fitments

Securely fix fittings to floors and walls with all necessary bolts, masonry anchors, plugs, screws, brackets, etc. Wall shelving units to be securely conceal fixed to walls and floor.

xiii. Waste bin

Provide to cupboard area and as indicated on drawings pull out waste bin – Provide 2no pull out bins to the kitchenette with one bin in colour white and a recycle bin in colour yellow for recycling.

Supplier: Hideaway – www.hideaway.com.au

Type: Hideaway Soft Close Range – 2x20 litre buckets (300w x 450h x 520mm d); Model KK12D

Accessories: Allow to provide joinery support framing within cupboard unit to suit the installation of the Pull out Bin

Location: to MCH undersink joinery unit and to Nappy Change Benches in Children's Room 5 & 6

xiv. Bench Seat Cushion & Joinery

Provide provide fire-rated foam and dacron wrap to cushions and furniture items as per details.

75mm thick fire rated foam cushion with 10mm fire rated soft foam outer layer and 55mm thick fire rated firm high density foam inner layer. Allow velcro strips to underside of cushion to fix to seat base - finish 50mm from cushion edges. Radius all corners. Return fabric finish around all edges. Refer to furniture schedule for finishes.

Provide rows of 4no. 25mm diameter holes to base board under cushion at 150mm centres. Ensure holes located to be concealed by cushion.

NOTE: Builder to provide confirmation of order and delivery document that all board used in joinery construction is 'E0' MR standard. No alternative standards shall be accepted without prior written approval from the Superintendent.

204 Toilet Partition System

All toilet partitions to the accessible toilet shall be constructed from compact laminates. Minimum 13mm thick compact laminate board.

Provide all necessary accessories for a complete installed partition system suitable for wet area application. Provide continuous wall bracket support to connect partition to wall, provide leg back from front edge of partitions for support to keep partition clear of floor. Provide angles and fixing cleats to support partitions. All components shall be constructed on stainless steel or aluminium components to be non corroding when exposed to moisture. Allow to securely fix items with Class H4 concealed fixings.

Use fixing system from Kyissa – www.kyissa.com.au for all toilet partitions or other approved by Superintendent. Provide sample for approval.

Provide shop drawings for partition system fixing for Superintendent approval prior to construction.

PART III EXECUTION

301 Examination

Visit the site and inspect conditions. Check dimensions and compare aspects with the drawings and specification. Resolve differences before ordering materials or starting work. Start of work means total acceptance of conditions.

302 Preparation for Joinery Installation

Prior to installing, condition joinery to the average humidity conditions prevailing in the installation areas. Deliver anchoring devices and similar inserts required to be built into substrates well in advance of the fixing of fittings and provide full details when they are to be fixed by others. Prior to installation, examine shop-fabricated work for completeness and remedy deficiencies. Include back priming and the removal of packing. Thoroughly clean floors and walls that will be permanently concealed by joinery.

303 Installation of Joinery

Use concealed shims as required to install the work plumb, level, straight and distortion free within the following tolerances:

- 1mm in 800mm for plumb and level (including bench tops),
- 0.5mm maximum offsets in flush adjoining surfaces,
- 2mm maximum offsets in revealed adjoining surfaces.

Scribe and cut to fit adjoining work; refinish cut surfaces or repair damaged finishes at cuts.

Secure joinery with anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required to complete the installation. Except where pre-finished matching fastener heads are required, use fine finishing nails, countersunk and filled flush. Use a matching filler where a transparent finish is required.

Install casework without distortion so that doors will fit openings properly and be accurately aligned.

304 Hardware

Install joinery hardware as scheduled, listed and required in full compliance with the manufacturer's recommendations.

Adjust as needed to centre doors in openings.

305 Adjustments, Cleaning, Finishing and Protection

- A. Finish the work specified in this trade section and remedy anything not finished at the shop or other stage prior to completion.
- B. Adjust joinery to achieve a uniform appearance.
- C. Lubricate and clean hardware, making final adjustments needed for proper operation. Remove handling marks from visible joinery surfaces.
- D. Protection: do everything needed to ensure that work is without damage or deterioration at Practical Completion.

306 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 07200 INSULATION (THERMAL AND ACOUSTIC)

Ozone Depleting Free Insulation

All insulation is to be free from ozone depleting substances. This applies to both the manufacturing and installation phase. The contractor is to provide a confirmation letter from themselves and the material Manufacturer confirming that the insulation is free from ozone depleting substances.

Manufacturers

Kingspan Aircell

<http://www.kingspaninsulation.com.au/Products/Kingspan-Air-Cell.aspx>

Tontine recycled polyester batts

<http://www.tontineinsulation.com.au/products/thermal>

Greenstuff recycled polyester batts

<http://www.autex.com.au/products/Insulation/GreenStuff> -

PART I GENERAL

101 Scope

The scope of work includes, but is not limited to, the supply and installation of thermal insulation. It also includes the supply and installation of acoustic insulation.

- A. Provision of all door/window seals, fire rated seals, & accessories for weather tight sealing of building.
- B. Insulation to all walls, ceilings and roofs to all Building(s)
- C. Use of Ashgrid Roof Spacer system or Roof Rack and Deckmate spacers for recovery of insulation to roof.
- D. Construction of roofs, walls, floors and any opening such as a window, door or the like shall be constructed to minimise air leakage in accordance with BCA section J3.6. Builder to provide sample of weather tight seals for all external doors/windows for approval of Superintendent.
- E. *The roof light seal and construction shall comply with the requirements of NCC/BCA (clause J3.3). when serving a conditioned space.*
- F. *Door and openable window seals to restrict air flow for conditioned space shall comply with the requirements of NCC/BCA (clause J3.4).*
- G. *The construction of roofs, walls, floors and openable windows shall be constructed to minimise air leakage in accordance with NCC/BCA (clause J3.6)*

102 Related Work

Co-ordinate and co-operate with the following trades:

Carpentry	Wall and roof framing
Brickwork	Blockwork
Metal roofing	Roof tiles
Plasterboard	Suspended ceiling

103 Quality Assurance

Installers are required to be widely experienced in relevant aspects of the work and with the requirements of Australian Standards appropriate to the work.

104 References

Comply with the applicable portions of these Australian Standards:

- AS 1366 Rigid cellular plastic sheets for thermal insulation. *There are 4 parts, 1989-1992 and 2 Amdts, 1992 - 1993.*
- AS/NZS 2107 2000 Acoustics - Recommended design sound levels and reverberation times for building interiors.
- AS 3671 1989 Acoustics - Road traffic noise intrusion - Building siting and construction.
- AS 3999 1992 Thermal insulation of dwellings - Bulk insulation - Installation requirements.
- AS/NZS 4200 Pliable building membranes and underlays.
4200.1 1994 Materials. *Plus 1 Amdt, 1994.*
4200.2 1994 Installation requirements.
- AS/NZS 4859.1 2002 Materials for the thermal insulation of buildings - General criteria and technical provisions. *Plus 1 Amdt, 2006.*
- Comply with the requirements of the Building Code of Australia.

105 Submission

Provide to the architect before ordering, samples, literature and technical data of each specified material.

106 Delivery, Handling and Storage

Deliver, handle and store products so that damage, deterioration and loss will be prevented. Control delivery schedules to minimise long-term storage at the site.
Store above ground with secure impervious material.

PART II MATERIALS

201 Material Manufacturers

- Fletcher Insulation or similar - www.insulation.com.au
- AUTEX or similar - www.autex.com.au
- Tontine or similar – www.tontine.com.au
- CSR Bradford Insulation or similar - www.bradfordinsulation.com.au
- Kingspan Insulation Pty Ltd or similar – www.insulation.kingspan.com

202 Materials – Thermal

- A. Thermal insulation (building paper type) with and without reflective facings, with and without flame retardants, sarking. Refer project Schedule
- B. Vapour barriers - with and without reflective facings - paper/foil, high density polyethylene breather membranes, aluminium foil reinforced or folded as batts.

Comply with manufacturer's recommendations and AS/NZS 4200.1 Materials
- C. Bulk thermal insulation - in sealed batts or sealed blankets semi-rigid glasswool, rockwool or cellulosic fibre, sea-grass, polyester, with or without facing. In-situ urea-formaldehyde foam.
Comply with manufacturer's recommendations and the applicable Australian Standards.
- D. Rigid cellular insulation - polystyrene polyurethane, polyisocyanurate urea-formaldehyde foam boards.
Comply with manufacturer's recommendations and the relevant Australian Standards.

203 Materials–Acoustic

- A. Acoustic insulation (attenuation type) with or without facings - flexible polyurethane foam, polyester blankets, glass and mineral wool batts, plasterboard.
- B. Acoustic insulation (absorption type) with or without facings, reinforcement - suspended mineral fibre ceilings, mineral tiles, perforated fibre cement sheet systems, and panels, metal pans and strips with or without absorption batts, suspended baffles sound barriers, sprayed texture finishes of plaster, cement or vermiculite.
- C. Acoustic sealants - polyethylene foam, closed cell resilient foams, polyurethane foams, non-shrinking sealants of silicone or similar type with good adhesion, door and window seals.

204 Materials – Specific to Project

Comply with manufacturer's current written recommendations and the relevant Australian Standards. Install membrane to metal roofing, walls, underside of floor slab and as indicated on drawings. Install bulk thermal insulation to areas shown on the drawings: including but not limited to ceilings, roof, walls, etc.

a) Wall Sarking/Vapour barrier– to External stud Walls

Provide AirCell double sided vapour permeable perforated foil to all new lightweight constructed external walls (ie. timber stud walls). Supply and install in accordance with current manufacturer's instructions. www.kingspaninsulation.com.au. In addition to this all studwork walls shall be insulated with bulk insulation as noted under item e.

Type: Air Cell Permishield 80

Accessories: Seal all sheet joints/overlaps with Kinspan Insulation Tape

Location: All external studwork walls and studwork framing, ensure continuous thermal seal between wall to roof junctions.

b) Roof Sarking/Vapour barrier – to Building with new roofing

Provide Bradford Heavy Duty foil backed insulation blanket to roof of Building prior to installing new roof sheets. Supply and install in accordance with current manufacturer's instructions. www.bradford.com.au. In addition to this all ceilings shall be insulated with bulk insulation as noted under item c.

Type: Anticon 130 Heavy Duty Roof Blanket

Location: All new roof areas, ensure continuous thermal seal between wall to roof junctions.

c) Ceiling Insulation, insulation to return wall to glulam from ceiling down to floor, insulation to existing Building roof

Supply and install Autex GreenStuf Ceiling Batts Insulation 210mm thick loft to achieve minimum R 4.0 above all ceilings including suspended ceilings, bulkheads levels, in accordance with manufacturer's instructions. Allow for complete thermal/acoustic seal between all wall & ceiling junctions. Allow for ceiling insulation in sizes to suit above suspended ceiling grids, ceiling linings, and behind ceilings/walls and plasterboard lined ceilings

Where ceiling insulation is placed behind perforated ceiling, ensure to provide to black matt facing material between perforated metal sheet and insulation.

Section 07200 Insulation (Thermal and Acoustic)

Location: All new Internal ceilings; to ceilings of all suspended ceilings; to entire roof/ceiling space of new building and area of works being Foyer, MCH waiting, MCH rooms, Children's Room 5 & 6.

d) Roof Insulation Generally

Roof Insulation

Supply and install insulation to completely cover all new roof areas, including return wall from roof down to ground ie. where rafters fixed to glulam beams returning from roof curving down to ground.

Insulation shall be Bradford Anticon Building Blanket 130mm Thick with heavy duty reflective foil, laid at right angles to purlins on top of wire mesh : -

- trimmed with sharp knife and straight edge.
- butted firmly together.
- fitted tightly around protrusions and gaps filled with off-cuts.
- trimmed neatly around flues ducts, vents and other penetration.

Thermal insulation to roof with reflective facings and with flame retardants, shall be Anticon Building Blanket Insulation 130mm Thick to achieve minimum R3.2. *Anticon* building blanket shall be installed over purlin support located between cladding & safety mesh incorporating *Ashgrid* Spacer system to allow for blanket recovery to nominal thickness

Supply and install insulation to completely cover all roof area, sides to roofing and all areas to building roof area to achieve a complete thermal barrier.

Comply with manufacturer's recommendations and the relevant Australian Standards

Accessories:

Roof Spacer system

Provide Bradford Insulation Ashgrid system to entire new roof areas and areas identified for new roof sheeting. www.bradford.com.au

Ashgrid Roof spacer system is to be manufactured using high tensile BlueScope galvanised steel. Provide all necessary proprietary accessories for a complete roof spacer system including but not limited to

Ashgrid Bar (AG40) Manufactured from 1.25mm thick high yield galvanised steel to S390GD + Z275NA-C Coil to EN 10147:2000. Minimum yield: 390N/mm² and minimum tensile: 460N/mm² Supplied in lengths of 1.2m incorporating spigot end for easy on-site construction.

Ashgrid Bracket Manufactured from 1.6mm thick galvanised steel FEPO2G + Z275 BS EN 10142 Supplied with a 3mm EPDM base thermal insulator pad Each bracket requires 2 (pre-loaded) fixing screws through the pre-drilled holes.

Pre-loaded Buildex tek screws Screws are corrosion resistant coated (Climaseal 3) to AS3566-1

Screws are FM Global approved.

Ashgrid system shall use strapping to suit cyclonic conditions

Thermal Break Material

Provide Bradford Thermal Break Tape to top of the Ashgrid bar to reduce thermal bridging further or Fletcher Insulation Thermatape to entire new main roof area top of metal spacers. www.insulation.com.au

Thermatape is to be manufactured from premium quality high density polyethylene foam with a self adhesive backing to be easily adhered to steel frames prior to the installation of cladding whilst still

Section 07200 Insulation (Thermal and Acoustic)

meeting the BCA thermal break requirement of R0.2.

Thermatape – install in strict accordance with current manufacturers recommendations. Typically adhesive side is fixed onto metal surfaces (steel rafters/purlins) prior to installation of the *Roof Rack* system.

Accessories: Provide all necessary fixtures, fittings and accessories for a complete Roof Spacer installation to suit the new metal deck roof Provide wiremesh safety support to insulation.

e) Wall Insulation – Stud Work both internal and external

To ALL studwork walls supply and install Autex Greenstuf Insulation 90mm thick R2.5 Wall Batts. Supply and install to all stud work walls, in accordance with manufacturer's instructions. Allow for complete thermal/acoustic seal between all wall & ceiling junctions.

Location: All new stud work walls and existing walls where lining has been removed for new works in project internally and externally.

f) Roof insulation above walls to insulate void between sheet roofing over and ceiling insulation

Provide Fletcher insulation 100mm R3.0 FI32 Glaswool Semi-Rigid sheet allow to provide strapping and framing to support insulation in place to achieve sealed barrier.

Location: All roof areas to seal ceiling from roof overhangs

PART III EXECUTION

301 Examination

Visit the site and inspect conditions, comparing conditions to drawings before delivery of materials to site. Start of work means total acceptance of conditions.

302 Preparation

Prepare surfaces and/or framing material and ensure that no obstructions will prevent rapid and effective installation.

303 Installation General (Thermal)

Comply with manufacturer's current written recommendations and the relevant Australian Standards.

Install membrane to metal roofing, tiled roofing, walls, underside of floor.

Install bulk thermal insulation to:

Walls

Roof

Ceiling space

Install rigid thermal insulation to areas shown on the drawings: roof, walls, etc.

304 Installation General (Acoustic)

Install acoustic attenuation type material in accordance with the manufacturer's current written recommendations.

Comply with AS/NZS 2107.

Install acoustic absorption material in accordance with the manufacturer's current written recommendations.

Seal junctions and around penetrations where indicated by the acoustic systems designs.

Spray surface after providing protection and masking to surrounding surfaces, in accordance with manufacturer's instructions.

305 Certification of Building Envelope for Energy Efficiency

Section 07200 Insulation (Thermal and Acoustic)

The Contractor shall provide a Thermal Infrared and Air Infiltration Assessment to the project to all conditioned spaces and ensure all spaces achieve the combined R-values set down in the insulation section of this specification and as a minimum exceed the BCA Section J requirements.

Contractor shall arrange an EnergyLeaks Detailed Scan (Infrared Thermal Audit) and Full Air Infiltration Calibrated Audit (Using Blower Door Unit) with pre and post Blower Door testing and evaluation this includes using specialised proprietary, calibrated Diagnostic Tools for all Air Infiltration / Exchange test and calculating Air Exchange volume / hour. Tests conducted to standards below

Air Change Rates (effective air change)	AS 1668.2-2002 ASHRAE 129-1997	Room ventilation rates under various operational conditions; IEQ 3, IEQ 13 Green star
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306 Cleaning

Remove surplus material on completion and arrange for inspection(s) by manufacturer's representative.

307 Completion

Complete contracted work in accordance with the contract document and written variation orders issued by the architect.

END OF SECTION

SECTION 07600 METAL ROOFING AND ROOF PLUMBING

PART I GENERAL

101 Scope

Supply and install a complete roofing and siding (external cladding) installation as shown on the drawings including but not limited to the following:

- A. Metal deck of Colorbond steel, aluminium, etc, including accessories, fastening clips, apron flashings, gutters, parapet linings, copings, sumps, overflow pipes, downpipes.
- B. Roof safety mesh to all new roof areas.
- C. Roof insulation including Installation of Ashgrid Roof Spacer System or Roof Rack System to achieve required R values
- D. Roof penetrations and sealing thereof.
- E. Provide leaf guards and accessory fittings to minimise debris and cleaning maintenance requirements.
- F. Provision of sump guards, leaf guards, gutter guards and downpipe guards
- G. Installation all roof metal sheeting in strict accordance with Lysaght's current Roofing and Walling Installation Manual as a minimum including for all proprietary accessories, flashings, cappings for a complete weathertight installation

102 Related Work

Co-ordinate and co-operate with the following trades:

Structural steel	Metal windows and glazing
Doors and door frames	Roller shutter doors
Carpentry	Drainage
Skylight installer	Photovoltaic panel installer

103 Quality Assurance

Tradesmen are required to be experienced in and knowledgeable about the work to be performed and the various Standards to which the work is to comply. The architect will make random inspections during the execution of the work.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1170	Structural design actions. <i>There are 5 parts, several Supplements and Amdts, 2002 - 2011.</i>
AS 1273 1991	Unplasticised PVC (UPVC) downpipe and fittings for rainwater.
AS/NZS 1562	Design and installation of sheet roof and wall cladding. 1562.1 1992 Metal. <i>Plus 2 Amdts, 1993 -1995.</i> 1562.3 2006 Plastic. <i>There is 1 other part, 1999.</i>
AS/NZS 2179	Specifications for rainwater goods, accessories and fasteners. 2179.1 1994 Metal shape or sheet rainwater goods, and metal accessories and fasteners.
AS 3566 2002	Self-drilling screws for the building and construction industries. <i>There are 2 parts.</i>
AS 3999 1992	Thermal insulation of dwellings - Bulk insulation - Installation requirements.
AS/NZS 4256	Plastic roof and wall cladding materials. <i>There are 5 parts, 2006.</i>
AS/NZS 4389 1996	Safety mesh.

Section 07600 Metal Roofing and Roof Plumbing

HB 39 1997	Installation code for metal roof and wall cladding.
HB 114 1998	Guidelines for the design of eaves and box gutters.

105 Submissions

Submit prior to ordering materials:

- A. Samples and product data of specified products.
- B. Calculation of sizes for gutters and downpipes.
- C. To roofer - supply layout showing exact roof framing member positions.

106 Delivery, Handling and Storage

Deliver to site, unload and stack in a location away from potential damage, preferably directly on to installed roof framing. Inspect on arrival and reject bent or damaged material.

107 Warranty

Provide to the Principal a warranty on the whole of the roof and roof plumbing including penetrations for pipes, flues, upstands etc. performed for mechanical equipment sub-contractor which states that work will remain waterproof and weather-tight for the period of 15 years from the date of Practical Completion.

PART II MATERIALS

201 Manufacturers

- Bluescope Steel
- Lysaght
- Apex Building Products
- Jonga

202 Materials - Metal Roofing

a) Wire Support/Safety Mesh

Supply and install Ausmesh roofing mesh in accordance with manufacturer's written specifications. Extend over entire length of new rooves

b) Roof Decking

Minimum Pitch (1.5°) Roofs

Supply and install Lysaght KLIP-LOK 700 HI-STRENGTH:

- COLORBOND® complying with AS/NZS 2728:
- Type 4, is made from zinc-aluminium alloy coated steel complying with AS1397-2001, G550 (550MPa minimum yield stress), AZ150 (150g/m² minimum coating mass) or AZ200 (200g/m² minimum coating mass),
as follows:

- 0.48mm BMT with Colorbond finish to be Colorbond steel
roll-formed from strip complying with Australian Standard 1397 and branded accordingly.
The finished product shall comply with Australian Standard 1445.

Section 07600 Metal Roofing and Roof Plumbing

All roofing accessories shall be of similar material to the roof. Minimum coating class of the metallic alloy layer shall be AZ150. Fixing shall be to manufacturer's recommendations.

Check with manufacturer to ensure no reactive materials are in contact with roof decking.

Sealants shall be neutral cure silicone rubber sealants. During the fixing period swarf should be removed from the roof and guttering daily.

Copper or uncoated lead shall not be used for flashing. Discharge from copper pipes shall not flow onto roof.

- Roofing is to be laid and fixed strictly in accordance with manufacturer's instructions.
- Laid in continuous lengths with falls indicated.
- Folded, fixed, flashed and turned down into gutters and stop ended at high end for flashing. Extended sheets 50mm into gutters.
- Soaked where required for penetrations with minimum 150mm waterway all around.
- Fitted with neoprene infill end closure pieces for bird proofing.
- Laid with collar flashing and counter flashings to pipe penetrations, small flues, vents and mechanical equipment.
- Lay with box gutters as required and shown on drawing.
- Roof sheets are to be machine or tool cut but not sawn.
- Laid with all flashings, cappings, soakers, etc., pop riveted with silicone sealant recommended by the Roof Deck Manufacturer.

Location: To new roof areas indicated on drawings.

Finish: Colorbond Surfmist

Accessories: All exposed screws/fixings shall be proprietary

Screw fixings shall generally all be concealed from view, where screws are exposed they are to be in finished in matching Colorbond coloured coated screws to a minimum Class 3

c) Gutters

Provide and install eaves gutters to edges of all rooves and as indicated on drawings, all gutters to have positive fall to downpipes minimum 1:300 fall.

- Manufacturer: Bluescope Lysaght
 - Type: Lysaght Sheerline Gutters and
 - Accessories: Provide complete Proprietary Lysaght Gutter system including all necessary fixings, Gutter brackets, cappings, end caps, cut outs, etc for a complete installed system
 - Overflow Slots: provide factory slotted overflow slots to all fascia gutters prior to delivery to site.
- Finish: All Gutters, fittings, brackets shall be colorbond finished



Section 07600 Metal Roofing and Roof Plumbing

d) Box Gutters

Provide and install box gutters to dimensions shown on drawings, 150mm minimum depth and shaped as required to provide fall to downpipes.

- Gutters to be 0.6mm selected zincalume /colorbond colour
- Support full length x width on Stramit Industries Long Span decking, or equal approved, 0.47mm colorbond sheet, carried on gutter brackets at 900mm max. centres. Grade brackets or provide packers under decking to provide fall as required.
- Gutter brackets: Provide adjustable Box Gutter Brackets manufactured to suit size of box gutters required for the project.

Manufacturer: Proprietary adjustable box gutter brackets shall be as supplied by either:

- o **APEX BUILDING PRODUCTS** - www.apexsteel.com.au
- o Jonda Pty Ltd – www.jonda.com.au

As minimum where proprietary box gutter brackets are not available due to size limitations or requirements or application, the box gutter brackets are to be formed with hot dip galvanised 40 x 40 x 3mm equal angle fixed to purlins and wall angles with 5mm threaded rod and nuts. - Trim box gutters and reinforce with additional gutter brackets each side of sumps and expansion joints.

- Provide & install 25mm polystyrene acoustic insulation under box gutters on top of gutter support decking generally.

e) Sumps

Provide and install sumps to dimensions shown on drawings, 50mm minimum depth and fixed to underside of gutter trap.

- Sumps to be 0.6mm colorbond steel
- Construct with downpipe thimbles riveted and sealed into gutter and to downpipe connection.
- Fit removable strainers of heavy gauge x 10mm stainless steel 316 grade wire mesh with 25 x 25mm stainless steel iron angle edges to locate strainer in sump flush with bottom of gutter and with central pop (minimum aperture to be cross sectional area of down pipe) fitted in strainer and standing minimum 75mm high above base of gutter.

f) Flood Pops/Overflows

Provide and install /overflows where required and as indicated on drawings, minimum 100mm diameter.

- Pops to be 0.6mm colorbond.
- Constructed as for downpipe thimbles with top standing 50mm high in gutter and with lower edge 20mm below soffit lining or clear of wall face.
- obtain approval from Superintendent prior to installation.

g) Expansion Joints

Form expansion joints to gutters where required to ensure watertightness.

Form expansion joints to internal box gutters where shown on drawings by turning up ends of box gutters to full height of gutter and capping neatly full width of gutter, carried up under roof decking to ensure watertightness.

h) Downpipes

Provide and install downpipes minimum 90 diameter and to sizes shown on drawings.

Section 07600 Metal Roofing and Roof Plumbing

- Install downpipes to every 12metres length of fascia gutters as minimum
- Downpipes & all necessary accessories such as brackets/clips shall be proprietary Colorbond finish
- True downpipes vertically with no offsets except where shown on drawings. Fix downpipe 30mm clear of walls and posts with Colorbond Steel stand off brackets and clips; brackets to be shaped to circular columns.
- External downpipes shall be minimum 90mm diameter or as indicated in documentation.

Provide lagging to all concealed internal downpipes.

i) **Pipe Lagging**

Provide pipe lagging to all in ceiling and in wall stormwater pipes. Provide minimum 15mm flexible foam and loaded vinyl membrane, laminated with aluminium foil. Install insulation barrier to wrap around PVC pipework to reduce sound transmission through waste and water pipes. Install in strict accordance with current written manufacturer's recommendations. Provide to suit pipe diameter and comply with BCA/NCC requirements.

Type: Thermotec NuWrap 5 or Fletcher Insulation Pipe Acoustic Lagging

Location: Acoustically insulate all sewer and rainwater pipes installed behind walls and ceiling linings

j) **Flashings & Cappings**

Provide and install flashings and cappings to entire roof area and as shown on drawings.

Provide All flashings and cappings to provide for watertight/weathertight installation.

To new roof provide colorbond flashings and caps as required for a complete roof system. Use proprietary items unless required otherwise. Use of any none proprietary items should be approved of by Superintendent prior to installation.

To ensure weather tightness of roof :-

- Flash pipes and vents with small neat collars.
 - Fix cappings with blind rivets, lap rivet and seal all joints in cappings and flashings.
 - Flash and counter-flash all penetrations through roof.
 - Flash and counter-flash exhaust fans and mechanical ductwork through roof.
 - Take care that top surface of cappings slope towards roof to avoid ponding.
 - Extend cappings over two ribs of roof decking and be consistent where cappings are visible.
 - Apron and soaker flashings to be neatly made with notches to match roof profile and ribs completely sealed.
 - Provide and fix all other necessary flashings, cappings and soakers to form a complete weather tight roof.
- a) Flashings to match roof deck material 0.60mm colorbond steel sheet.
- b) Cappings to fascias and barges to match parapet cappings specified above.
- c) Provide 0.60mm TCT colorbond coated steel sheet formed over barge, fascias and as documented

Section 07600 Metal Roofing and Roof Plumbing

- d) As a minimum all flashings and cappings shall be installed to meet current Plumbing Regulations and the guidelines set down by the Plumbing Industry Commission. The installation of such shall also be inline with guidelines set down in current Lysaght Roof and Walling Installation Manual flashing and capping installation guidelines, including all necessary flashings for gutters. Where the situation calls for a 'non-standard' detail (eg. Detail not covered by Plumbing Regulations) the Superintendent is to be notified and the proposed detail is to be in compliance with Plumbing Industry Commission recommendation

k) Cladding to Parapets and Spandrels

Clad back of parapets and spandrels above roof as follows :-

Cappings to parapets shall generally be completed in 0.6mm thick Colorbond on appropriate marine grade plywood substrate and shall have 50mm turn down face of wall, double folded under to square profile to reinforce capping and provide true line. Provide positive fall to top of capping back to roof. Flashing up to 600mm high - 0.60mm TCT colorbond coated steel sheet.

Flashing above 600mm high – to be supported on Stramit Industries Longspan decking, or equal approved, in 0.6mm TCT colorbond coated steel sheet.

Provide battens and all other supports necessary for supporting and securing flashings.

l) Fixings, Screws, Nails

All external exposed fixings shall be Class 4 type for marine grade exposure, for any exposed fixings to colorbond allow for colour matched fixings. Generally all fixings shall be as set down in the current Lysaght Accessories catalogue or if differing fixings are required for the application, provide a sample to the Superintendent for approval.

m) Sealing of Penetrations

Allow to seal all roof penetrations including ends to roof sheeting. Provide all polyethylene *end* plugs to stop *air entering ends of roof sheets*.

n) Roof Insulation

Provide Roof insulation to entire roof area. Insulation to exceed NCC/BCA section J requirement as a minimum. Refer to Section 07200 Insulation for additional details on insulation.

o) Gutter Leaf Guards

Provide and install leave guard mesh to all new gutters. Ensure mesh provides continuous seal to extent of roof and gutter

Manufacturer: Protech Gutters Pty Ltd - www.protechgutters.com.au or www.leaffree.com.au

Type: Provide 316 Stainless Steel Mesh Leave Guard to all gutters.
Install in accordance with manufacturers recommendations.

Flammability Index 1,
AS 1530.2 - 1993*

Location: Provide to all new gutters in project

Section 07600 Metal Roofing and Roof Plumbing

203 Fabrication

Form and fabricate components in accordance with AS/NZS 1562 and AS/NZS 2179.1, and other relevant Standards.

Self-drilling screws are to conform to Class 3 as described in AS 3566.

204 Dissimilar Metals

In moist environments, prevent totally contact between dissimilar metals (any metals).

This instruction takes priority over any drawing, detail or instruction and will prevent cathodic reaction between the metals.

Refer this instruction to the structural engineer.

PART III EXECUTION

301 Examination

Inspect site conditions before installation. Ensure framing is entirely satisfactory.

Ensure that delivery and installation will not be impeded by on-site conditions at time of delivery.

Start of work means total acceptance of conditions.

302 Terrain Category

The site is zoned as Terrain Category:

Refer AS/NZS 1170.

303 Preparation

Prepare framing and surfaces for installation.

304 Installation

Install work in accordance with manufacturer's instructions and Australian Standards. Refer clause 104.

305 Flashing

Lap flashing at least 150mm at junctions, and over flashings neatly dressed and finished. Where necessary to follow a roof slope, step flashings in even overlapping widths. Finish top corners to a line parallel to the roof slope.

Fabricated flashings in materials which are compatible with, and same finish as, gutter and roofing materials.

Complete work and leave an entirely watertight installation.

306 Penetrations

Form penetration flashings neatly with material matching roofing material. Form flanged tubular collars 0.70mm sheet zinc not less than 150mm high and 12mm wider than penetrating item, or use EPDM collars. Where the width of a penetration is wider than a roofing trough or extends across several troughs, form a back gutter, using sheet material similar to the roofing material, well lapped under the roofing, double riveted and sealed with silicone sealant. Close and seal ends of cut ribs. Form back gutters not less than 100mm wide with falls towards the sides of the penetration collars.

Form over-flashings of penetration collars neatly in material matching the roofing material but not less than 0.5mm thick, securely clipped and sealed to the penetrating items and dressed well down over the collars to finish at a straight line level with the tops of the ribs.

Section 07600 Metal Roofing and Roof Plumbing

Do not use lead or copper for over-flashings.

307 Downpipes

Install in accordance with AS/NZS 2179.1 for metal.

~~Install in accordance with AS 1273 for PVC. Comply also with manufacturer's instructions.~~

Secure to building at recommended centres, minimum 1800mm with galvanised steel straps.

Install base of downpipes into up-turned shoe of stormwater drain and seal junction with cement mortar, or other approved material.

308 Cleaning

To prevent contamination and corrosion, keep clean metal roofing and rainwater goods at times during the progress of the works.

At the end of work each day, and immediately before each occurrence of rain, sweep the metal surfaces thoroughly to remove metal filing, swarf, off-cuts, dust, and other materials which could cause corrosion or blockages. Prevent waste materials from entering downpipes, rainwater heads, or drains.

Remove unsecured nails, rivets, screws, bolts and similar fixing devices, guttering, etc., at the end of work each day and at the completion of roofing installation.

309 Testing

On completion, test the entire installation in the presence of and to the satisfaction of the architect.

310 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 08200 DOORS, DOOR FRAMES & DOOR HARDWARE

PART I GENERAL

101 Scope

Supply and install timber doors and timber [or steel] door frames including but not limited to:

- A. EXTERNAL DOORS
Glazed doors.
- B. INTERNAL DOORS
Flush panel doors - solid core.
metal frames (jambs).
Glazed doors.
- A. Wall mounted grilles for ventilation and other purposes.
- B. Hinges.
- C. Pivots.
- D. Latches.
- E. Locks.
- F. Door holders.
- G. Kick plates.
- H. Provision of all door seals, fire rated seals, & accessories for weather tight sealing of building.
- I. Construction of roofs, walls, floors and any opening such as a window, door or the like shall be constructed to minimise air leakage in accordance with BCA section J3.6.
Builder to provide sample of weather tight seals for all external doors/windows for approval of Superintendent.

Refer to Assa Abloy door hardware schedule to Appendix of specification

102 Related Work

Co-ordinate and co-operate with the following trades:

Carpentry	Joinery
Blockwork	Brickwork
Plasterboard	Fire-rated doors and frames
Metalwork	Glass and glazing
Painting	Electrical

103 Quality Assurance

Prototype: at a location selected by the architect construct a complete prototype installation of:

Include in each prototype elements required by this specification, finished in every respect. When approved by the architect, each prototype remains part of the work and becomes the standard for the remaining work.

104 References

Comply with applicable portions of the following Australian Standards:

AS 1288 2006 Glass in buildings - Selection and installation.
Plus 1 Supplement, 2006, and 2 Amdt, 2008 - 2011.

Section 08200 Doors, Door Frames & Door Hardware

AS 1428	Design for access and mobility. <i>There are 5 parts. 1992 – 2010.</i>
AS/NZS 1859	Reconstituted wood-based panels - Specifications
1859.1 2004	Particleboard. <i>Plus 2 Amdt, 2006 - 2011.</i>
1859.2 2004	Dry processed fibreboard. <i>Plus 2 Amdts, 2006.</i>
1859.3 2005	Decorative overlaid wood panels. <i>Plus 1 Amdt, 2009.</i>
1859.4 2004	Wet-processed fibreboard.
AS/NZS 2272 2006	Plywood – Marine.
AS 2688 1984	(Obsolescent) Timber doors.
AS 2689 1984	(Obsolescent) Timber doorsets.
AS 4145	Locksets and hardware for doors and windows. <i>There are 4 parts, 2001 – 2008 plus 2 Amdts, 2009.</i>
AS 5039 2008	Security screen doors and security window grilles.
AS 5007 2007	Powered doors for pedestrian access and egress.

105 Submissions

Submit the following for inspection by the architect before installation:
Product literature on proposed hardware items.
Samples of items as requested by architect.

Comply with SECTION 02000, clause 2.301.

Provide Shop Drawings for major items supplied hereunder.

- A. Contract drawings and details provided are indicative as to general and minimum requirements, and do not show conditions.
- B. Develop details not shown and in conformity with the indicative details shown.
- C. Take and confirm dimensions on site, before preparing Shop Drawings where possible.
- D. Submit detailed Shop Drawings for fabrication and installation of major metalwork. Show plans, elevations and detailed sections; indicate materials, finishes, types of joinery, fasteners, anchorages and accessory items. Provide setting diagrams and full-scale templates of blocking, anchorages, sleeves and bolts installed by others.

106 Delivery, Handling and Storage

Deliver specified items shortly before installation is due to occur.

Prevent damage and deterioration during transport and handling.

Store carefully at site in a secure area. Prevent twisting and warping of doors. Note the condition requirements of clause 304.

107 Warranty

Provide to the Principal a warranty covering faulty materials, and installation, warping of materials and other faults which may occur within 5 years of Practical Completion.

PART II MATERIALS

201 Internal Doors

Comply with AS 2688.

- A. Solid core, Flush panel
Frame of door: timber with top mid and bottom rails

Section 08200 Doors, Door Frames & Door Hardware

each 45mm deep

Core: medium density particle board

Face: 6mm hardboard. Selected veneer, plywood thickness:

Edge strips: to 2, 3 or 4 sides of door, 10mm thick hardwood

Minimum thickness: 42mm,

B. Aluminium AWS Jambs

C. Glazed timber doors

Material: frame of door, kiln dried hardwood or cedar or

Rails and panels: as for frames.

Frame sizes: stiles and rails 130 x 40 bottom rail 220 x 40, all rebated 12mm for glass.

Glazing beads: 12mm thick, shaped, of same material as door frame.

Glass panel: comply with AS 1288.

Lower panel:

202 Roller Doors

a) Approved Manufacturer

Airport Doors Series B. Provide Roller Shutter heavy duty solid steel interlocking slats. Installation to be in accordance with current manufacturer's specification. Refer to Drawings for sizing. Provide seals to all side of roller shutter door against pest ingress.

b) Finishes

Provide powder coat finish to all roller shutter doors. Confirm with Superintendent for selected colour prior to manufacture. Provide all associated proprietary fixtures, fittings for a complete installation roller drums. Where a proprietary item is unavailable allow to pre fabricate to suit to approval of the Superintendent.

c) Locking Mechanisms –

Provide sample of locking mechanism for roller shutter door to Superintendent for approval. Provide Lockwood locking to suit, confirm location of locks to all Roller Shutter doors with Superintendent. Location to approval of Superintendent. Locking to be to masterkey system.

Accessories: Provide for all necessary handles, locks, fixtures, fittings, supports, for a complete roller shutter door system.

203 Child protective finger guards

Provide finger safe door safety system to all doors on the project. Provide for all necessary accessories, fixings, fittings for a complete installed and compliant fingersafe door leaves throughout project.

Manufacturer: Safety Assured - www.safetyassured.com.au or similar to written approval of the Superintendent.

Type: Door finger protector colour white RAL 9003; Door hinge protector colour white RAL 9003 provide protection system to prevent fingers being trapped in opening and closing doors to hinge side and closing sides of door. Allow for all necessary accessories to provide a safe/compliant finger safe door solution. Provide proprietary items and allow for customised solution to suit other door types. Provide to full height of door leafs

Section 08200 Doors, Door Frames & Door Hardware

204 Doors

Comply with AS 2688 Timber doors

a) Door Frames

Provide Commercial AWS aluminium door frames to doors.

Provide 8 or 10, 3mm wireties per frame for building into masonry walls and two rubber buffers on closing side. Grout back of frames with cement mortar.

Stud frame clips – provide stud frame clips to the door frames when being installed into timber or metal stud frames.

Provide temporary bottom rail – aluminium bottom rail for maintaining the frame's integrity during transportation and installation.

Allow to powdercoat finish door frames.

Location: All doors which are not within aluminium frames

b) External doors

Proposed new external doors refer to door type drawings and schedule for door hardware and door sizes etc.

Hold open Device: Provide external grade hold open device to all external doors opening to the External Play area including doors to Children's Rooms and to Children's Room amenities. Provide sample of hold open device to Superintendent for approval prior to order.

Accessories: Provide proprietary doors seals to surrounds of all doors including tops, bottoms and sided. Provide Raven Seal or equivalent to bottom edge of door leaf to acoustic/weather seal bottom of door –refer to door schedule- shall be in strict accordance with the Australian Standards and only be laminated safety glass.

c) Internal Solid - core doors with paint finish

Thickness total: minimum 42mm

Core: particleboard,

Face each side: 6mm thick plywood/hardboard

Edge strips: minimum 100mm hardwood

Door type

Internal doors shall be 42mm solid core doors with KDHW edges to all faces. Allow to paint doors to a selected two pack paint finish. Refer to door schedule for door hardware and door sizes etc.

Accessories: Provide Raven RP 48 or similar approved to surrounds of all new door frames & Glazed panels. Provide Raven Seal seal to bottom edge of door leaf to acoustic seal bottom of door –refer to door schedule- shall be in strict accordance with the Australian Standards and only be laminated safety glass.

Glazing: Provide clear glazed window to Door leaves to AS 1288. Refer to drawings for extent

Section 08200 Doors, Door Frames & Door Hardware

Door Air Relief Grilles:	Supply and install to Doors requiring air relief grilles. Refer to mechanical documentation for extent.
Door Grille type:	Refer to mechanical documentation for type. Grilles for doors shall be Bradflo type – www.bradflo.com.au
Grille Finish:	Natural anodized aluminium with powdercoat finish. Colour to be confirmed
Door Closer:	provide door closer with adjustable close mechanism and ability to hold open. Maximum force to not exceed 20N for operation of door leaf
Door Hinges:	Provide minimum 3no. Door hinges to each door. Door hinges shall be AWS or Lockwood stainless Steel Ball Bearing hinge
Provide all necessary accessories for complete installation including door stop.	

d) **Aluminium doors**

Provide double glazed aluminium sliding doors to areas as indicated on drawings schedules.

Type: AWS Aluminium series

Glazing: provide double glazed units toughened safety glass to AS 1288

Accessories: Provide 3M safety & security glazing film manifestation strip match to manifestation strip used for windows refer to Section 08520 for manifestation details.

Size: Refer door schedule

Extrusion: **Commercial Series | Series 52 Door – Suitable for Double Glazing up to 24mm.**

- Commercial Series | Series 52 Door – Suitable for up to 24mm Double Glazing
 - <http://www.specifyaws.com.au/series-52.html>
 - Product Specification Sheet: http://www.specifyaws.com.au/AWSCommercial/52/52_ProductSheet.pdf
 - Specifier's Manual: http://www.specifyaws.com.au/AWSCommercial/52/52_SpecManual.pdf
 - CAD Files: http://www.specifyaws.com.au/AWSCommercial/52/52_dwg_dxf_revit.zip
 - WERS Ratings: http://www.specifyaws.com.au/AWSCommercial/52/52_WERS.pdf

Material: Aluminium extrusions throughout shall be manufactured from aluminium alloy B6063 - T5 or T6. With powdercoating by AAF. Colour refer to project schedules.

Location: as indicated on drawings/schedules.

e) **Glazing**

Refer to Section 08800 for additional glazing details

f) **Door seals**

Provide door seals to all doors. Door seals to provide complete seal to door surrounds for acoustic performance.

g) **Signage to door**

Provide signage to doors – Refer Section 10400

Section 08200 Doors, Door Frames & Door Hardware

205 Hardware Items

Master key systems: refer schedule provided by manufacturer.

Confirm all door hardware with Superintendent prior to order.

- Refer to door hardware schedule and documentation for details

A. Manufacturers

Lockwood Australia Pty Ltd

Raven Products Pty Ltd

Assa Abloy

B. Hardware Items

Refer to hardware schedule prepared by Assa Abloy - Volume 3

Door seals: Provide Proprietary door seals to all doors, Provide AWS seals to Aluminium Doors and provide Raven door seals to all timber doors. Provide sample of all door seals to approval of Superintendent.

C. Miscellaneous

Fasteners: Provide required bolts, screws, inserts, fasteners, templates and other accessories required for a complete installation.

Co-ordinate with other trades as to the proper fastening systems suitable for the substrates to which the item is to be secured. Refer to Superintendent if in doubt.

- D. Glazing to all single glazed doors: minimum 12mm minimum thickness toughened glass to Comply with AS 1288. To all full height glazed doors provide 3M safety decals

206 Miscellaneous

Fasteners: provide required bolts, screws, inserts, fasteners, templates and other accessories required for a complete installation.

Co-ordinate with other trades as to the proper fastening systems suitable for the substrates to which the item is to be secured. Refer to architect if in doubt.

PART III EXECUTION

301 Examination

Inspect site conditions. Ensure conditions are satisfactory for installation.

Start of work means total acceptance of conditions.

302 Preparation

Prepare openings in walls or other structures before installation. Install fixing grounds and inserts as required to secure frames.

303 Installation of Door Frames

Erect frames plumb and true. Brace as required until surrounding structure is complete. Comply with AS 2689.

Section 08200 Doors, Door Frames & Door Hardware

304 Installation of Doors

Comply with manufacturer's instructions and AS 2689. Reject doors which do not comply with AS 2688

Appendix A. Condition doors to average humidity in area prior to hanging.

Align doors to frame for proper fit and uniform clearance at edge and machine for hardware. Seal cut surfaces after machining.

Provide clearance of 3mm at jambs and heads; 3mm at meeting stiles at pairs of door; 12mm from bottom of door to top of floor finishing or covering. At thresholds provide 6mm clearance.

305 Installation of Hardware

Refer Schedule of Door Furniture and Hardware. Check deliveries on arrival. Keep items locked until needed.

Assume responsibility for delivered items. Fit accurately and at correct heights, protect with heavy cloth until completion of project.

Label keys, and hand over to contractor.

Master key locks as instructed.

306 Adjustment and Cleaning

Adjust each door in its frame and ensure silent operation. Oil locks and hinges. Clean all surfaces marked during the installation of door frames, doors and hardware.

307 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 08520 METAL WINDOWS AND GLAZING

PART I GENERAL

101 Scope

Design, engineer, supply and install a complete glazed system of windows, doors and screens, including but not limited to:

- A. Material type
- B. Finish type
- C. Openings
- D. Glass types
- E. Glazing methods External -Double glazed
- F. Glazing beads, strips
- G. Glazing panels to doors
- H. Skylights
- I. Glass types
- J. Insect screens
- K. Sealants and related materials
- L. Film applied to glass surface
- M. Weather tight seals to all external windows & glazing
- N. Applied window films for privacy & Safety Decals
- O. Provision of insect screens to all external openable windows
- P. window frames and door frames to achieve BCA Section J U-value and SHGC requirements (provision of certificates stating compliance)
- Q. Glass mirrors - laminated safety glass bonded to backing
- R. *Door and openable window seals to restrict air flow for conditioned space shall comply with the requirements of NCC/BCA (clause J3.4).*
- S. *The construction of roofs, walls, floors and openable windows shall be constructed to minimise air leakage in accordance with NCC/BCA (clause J3.6)*

102 Related Work

Co-ordinate and co-operate with the tradesmen preparing walls and frames to accept windows, including casting in of anchors.

103 Quality Assurance

Manufacturer qualifications: not less than 10 years continuous experience in the manufacture of the product types specified.

Installer qualifications: installer is to have not less than 5 years continuous experience in the erection of specified material.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1170	Structural design actions.
1170.0 2002	General principles. <i>Plus 5 Amdts, 2003 – 2011.</i>
1170.1 2002	Permanent, imposed and other actions. <i>Plus 2 Amdts, 2005 – 2009.</i>
1170.2 2011	Wind actions.

Section 08520 Metal Windows and Glazing

	1170.3 2003	Snow and ice actions. <i>Plus 1 Amdt, 2007.</i>
	1170.4 2007	Earthquake actions in Australia. <i>There are several Supplements and Amdts, 2002 – 2011.</i>
AS 1231 2000		Aluminium and aluminium alloys – Anodic oxidation coatings.
AS 1288 2006		Glass in buildings - Selection and installation. <i>Plus 1 Supplement, 2006 and 2 Amdts, 2008 - 2011.</i>
AS 2047 1999		Windows in buildings - Selection and installation. <i>Plus 2 Amdts, 2001.</i>
AS 3715 2002		Metal finishing - Thermoset powder coating for architectural applications of aluminium and aluminium alloys.
AS 4145.2 2008		Locksets and hardware for doors and windows – Mechanical locksets for doors and windows in buildings. <i>Plus 2 Amdts, 2009.</i>
HB 125 2007		The glass and glazing handbook.
		Comply with relevant authority's requirement for fire-rated installation.

105 Submissions Required Prior to Fabrication

- A. Complete system description including the following information:
 - Names of manufacturers of products.
 - Names, addresses and telephone numbers of local representatives for products.
 - Types, model numbers and names of products, and indication whether products are "off the shelf" or custom fabricated. Include specific information on finishes - thicknesses, patented process name, process description and test data.
 - Detailed information on products manufactured specifically for this project.
 - Detailed system description including standard details and manufacturer's literature; and large-scale details of specially fabricated products.
- B. Statement that the proposed system meet(s) the regulatory requirements, thermal, aesthetic and waterproofing criteria and wind loading, construction, glazing and warranty requirements specified; noting in detail exceptions.
- C. Shop Drawings: refer SECTION 02000, clause 2.301. Provide Shop Drawings showing the following information where appropriate to the items:
 - Layout (sectional plan and elevation of complete assembly).
 - Full size section of members.
 - Methods of assembly, type and location of exposed screws.
 - Methods of glazing.
 - Methods of installation, including fixings, anchorage, caulking, flashings.
 - Provision for expansion (thermal).
 - Junctions and trim to adjoining surfaces.
 - Fittings and accessories.
- D. Engineer's calculations on wind loading.
- E. Sealants: submit manufacturer's product specifications, handling, installation/curing instructions, and performance tested data sheets for each elastomeric product required. Submit certificate test reports for elastomeric sealants on aged performance as specified, including hardness, stain resistance, adhesion, cohesion or tensile strength, elongation, low-temperature flexibility, compression set, modulus of elasticity, water absorption, and resistance (ageing, weight loss, deterioration) and exposure to heat, ozone and ultraviolet light.

106 Delivery, Handling and Storage

Handle materials with care. Do not store on site. Install directly in place. Store sealants as instructed by manufacturer.

Section 08520 Metal Windows and Glazing

107 Warranty

Provide to the Principal a warranty, counter-signed by the installer, on the whole of the installation, which states that work will remain intact, waterproof and fully operational for the period of not less than 9 years after date of Practical Completion.

108 Certification

Provide certification of all windows and doors on project indicating compliance with NCC/BCA Section J and specified required U-values and SHGCs. Certificates shall be provided to the Superintendent prior to Practical completion being issued.

PART II MATERIALS

201 Manufacturers

AWS Commercial – www.awsaustralia.com.au

- Glazing: VIRIDIAN
- Protective Film: 3M Australia - www.3m.com.au
- Aluminium windows: AWS Commercial Aluminium System
- Sealants: Dow Corning, Selseys, Tremco (Pabco), Expandite, General Electrical, Unisil. Aluminium Window Weather Tight Seals – By AWS Proprietary System, provide sample to approval of Superintendent.
- Roller blind system: Versilux with Mermet Revive Greenscreen. Non-transparent fabric

202 Materials

Window frames: extruded aluminium components manufactured from aluminium alloy 6063, temper T5 or T6.

Match components detailed on drawings or an alternative approved in writing by the architect.

Glass: refer clause 206.

Insect screens: To match window frame

- a) **Internal and External Window/Door Frames including front entry doors, windows:** Provide AWS Commercial Aluminium system to external windows with double glazed Thermotech Units. Double Glazed units to achieve minimum 12mm airspace. Provide hermetic seal to airspace. Glazing to be Safety toughened Glass to Australian Standards . Provide all necessary components and proprietary fittings, fixtures for a complete installed weather tight system.

Refer Section J Compliance Glazing Calculator Report for the minimum U-values and SHGC values to be achieved as minimums for project using AWS Windows & Doors. Contractor to provide certification prior to practical completion ensuring all framed glazing units installed achieve the required U-values and SHGC required by this contract and as stipulated in the BCA Section J certifications specification appendices and outlined below.

<u>TYPE:</u>	AWS Commercial
External Glazed Doors:	Elevate 52 Series Double glazed
External Double hung:	463 Double glazed Series
External Fixed lights:	Elevate 424 Double glazed Series, centre glazed 102 x 50mm
External Sliding windows:	Elevate 462 Double glazed Series, FXXF configuration 102 x 50mm

Finish: Provide powder coat finish to all aluminium window & door frames & aluminium accessories to windows & doors.

Section 08520 Metal Windows and Glazing

GL AZING METHOD

Laid-in glazing using polyethylene closed cell tape or shimmed butyl tape on the exterior and a PVC or Aluminium glass stop locked-in from the interior provides a secure and positive seal for the glass.

INSTALLATION

Shall be performed by experienced installers in accordance with manufacturer's instructions. Window shall be plumb and square after installation is complete and sealed to both interior and exterior walls with a high quality sealant around the perimeter of the frame. If perimeter cavity is to be foamed, additional anchorage may be required to prevent bowing. It shall be the responsibility of the installers to make all necessary final adjustments.

Accessories: Provide all necessary accessories, fixings, fixtures, supports, structure for a complete installed glazed window system

Sealants: Dow Corning, Selleys, Tremco (Pabco), Expandite, General Electrical, Unisil.

b) Safety Decals

Provide Safety Decals to glazing of windows & doors to satisfy Australian Standards. Decal pattern shall be a translucent strip minimum . Decal pattern and spacing to approval of Superintendent. Decals shall be finished in or equivalent finish to match translucent film finish 3M Scotcheal – Dusted Crystal white 7725-314. Decals shall be 3M with 30% contrast to meet with AS1299, NCC/BCA requirements & DDA requirements. Refer to Architectural documentation door & window schedule for further information on locations

Location: to all new full height glazing of doors/windows; other new glazing. Installation as a minimum to meet Australian Standards.

Pattern: Provide sample to the Superintendent for approval

c) Internal Roller Blind System:

Supply and install complete roller blind system

Manufacturer: Vertilux – www.vertilux.com.au (GBCA member, Ecospecifier, Trevira Cs engineered textiles); Australian made and owned product

Roller blind system type: Ecopelmet single system with black turn chord and brackets & oval drop base rail

Multilink: Where blinds are running in a single continuous line for continuous windows allow to provide double blind multilink

Accessories: Provide Metal Pull chain operation silver chains mounted with fixing clips to side windows at height of 1500mm above finished floor level for child safety. Provide small 17mm oval shaped bottom rail to blind with powdercoat finish – colour to be confirmed by Superintendent. Provide Vertilux Chain Tensioner to all chains for secure fixing.

Finish:

Mermet Revive Greenscreen. Non-transparent fabric.

Provide sample of fabric colours for Superintendent approval prior to order

Roller Blind Metal brackets to be powdercoat colour offwhite. Confirm color with Superintendent prior to order



Section 08520 Metal Windows and Glazing

Location: To area of works provide to all external facing windows, to all windows to passage and separate blind to all all external glazed doors and glazed doors to passage. Provide to all MCH windows and as indicated on drawings/schedules

d) Mirrors to Amenities:

Provide a mirror to each vanity basin to all toilet amenities and changeroom amenities.

Type: Viridian **DécorMirror Safe™**

Size: minimum 1200x470mm and as indicated on drawings

Location: To all amenities provide 1no. Mirror per Vanity/Hand basin. Install in position over vanities

Edge Sealing to Mirrors

Arris the outer corner of backings and seal around edges of the mirrors with clear neutral cure (non-acetic) silicone sealant gunned into place between the backings and the edges of the mirror and finished off to smooth even fillet lapping slightly over the back edges of the mirror.

Glass Edge Finishes

Finish edges of glass mirrors as follows:

- ground smooth on edges.
- arrised, ground and polished on exposed edges

e) Insect Screens to External Openable Windows:

Provide powdercoated aluminium framed insect screens to all new openable external windows. Insect screens shall be fixed to the inner side of windows.

Type mesh: Powdercoated black aluminium insect mesh

Accessories: Provide all necessary fixings, fasteners, accessories for a complete installed insect screen to all openable windows. Frames shall be powdercoated in colour to match window frames.

f) Skylights

Provide Solatube skylights to areas of building

Type: Solatube

203 Structural Criteria

- A. Adopt Terrain Category:
Refer AS/NZS 1170.
- B. Wind loading: design:
 1. Glazing and frame assemblies to suit the static and dynamic wind forces as indicated on the tables in the AS/NZS 1170.
 2. Structural members of glazed units of such strength that when tested at the specified design wind values they do not deflect by an amount greater than span/240 and do not cause permanent deflection.
 3. Fix members so that the above loading is generated in the members without stress causing failure or movement becoming evident at any joint.
- C. Movement: permit free and noiseless movement of the components due to thermal effects, structural effect, wind pressure, effect of dead loads, without strain to glass, without buckling of components and without excessive stress to members or assemblies.
- D. Contact with other materials: coat metal surfaces in contact with mortar, concrete, plaster, masonry, wet-application of fire-proofing and absorbent materials with an anti-galvanic, moisture barrier

Section 08520 Metal Windows and Glazing

material. Isolate, with inert material, dissimilar metals for the prevention of electrolytic action and corrosion.

- E. Distortion: design the glazed assembly to minimise visual distortion of reflected images.

204 Detail Design Provisions

- A. General: the architect's drawings are to be considered essentially schematic except for profiles of exposed surfaces and panel arrangement where indicated. If, in the opinion of the builder a change of profile is required in order to meet the specification, arrange through the architect for a review of the condition. Design the assembly, reinforcing and anchorage to suit each specified condition in an acceptable manner complying with the requirements specified herein.
- B. Tolerances: design frames to accommodate building tolerances, and when completed, within the following tolerances:
1. Deviation from plumb, level or dimensioned angle within 3mm per 3.5m of length of member, or 6mm in total run in line.
 2. Deviation from theoretical position on plan or elevation, including deviation from plumb, level or dimensioned angle not to exceed 9mm total at location.
 3. Change in deviation not to exceed 3mm for 3.5m run in direction.

205 Finish

Anodising or Polyester Powder Coat.

Anodising:

Metal of windows, doors and shop fronts anodised to selected colour.

Pre-treat and apply anodising by applicators approved by the architect.

Minimum coating thickness of 25 microns subjected to random testing after installation. Remove and replace non-conforming material.

Comply with requirements of AS 1231.

Polyester powder coat:

Polyester powdercoated, to colour approved by the architect and by the manufacturer of the powder material, to metal of windows, doors and shop fronts.

Perform pre-treatment and application of powder coating by applicators approved by the architect and by the manufacturer of the powder material.

Minimum coating thickness of 50 microns subjected to random testing after installation. non-conforming material will be removed and made good by the builder.

Comply with requirements of AS 3715.

206 Glass

- A. Glass materials for external use:
- B. Glass material for internal use:
- C. Other glass for:
- D. Calculations: calculate glass sizes and thicknesses in accordance with Standards, and fixing devices and connections to structure in accordance with engineer's computations where applicable.
- E. Double glazing:

207 Sealants and Accessory Materials

- A. Provide non-structural external weatherproofing sealants of low modulus neutral curing silicone rubber compounds by approved manufacturer.
- B. Generally comply with AS 1288, Part 2, Section 6 or 8. Supply spacer gaskets, glazing tapes and setting blocks compatible with sealants, which do not contribute to sealant colour change or affect the sealants adhesion to substrates when exposed to ultraviolet light.



Section 08520 Metal Windows and Glazing

Prior to application, samples of materials receiving the silicone, including elastomeric sealants are to be evaluated by the silicone sealant manufacturer for compatibility and primer selection. Clearly identify the submitted materials as to manufacturer and product number.

Silicone sealants generally will be clear in colour.

- C. Interior sealers: acrylic-emulsion or latex-rubber-modified acrylic emulsion sealant compound, permanently flexible, non-staining and non-bleeding; recommended by manufacturer for protected exterior exposure and general interior exposure.
- D. Joint primer/sealer: provide type of joint primer/sealer as recommended by sealant manufacturer to suit each surface.
- E. Bond breaker tape: polyethylene tape or other plastic as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler is to be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
- F. Sealant backer rod: compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible permanent, durable non-absorbent material as recommended by sealant manufacturer for compatibility with sealant.
- G. Glazing tape: polyisobutylene tape of type, thickness and width as recommended by glass manufacturer and architect.
- H. Exposed screws: countersunk type, anodised aluminium or non-magnetic stainless steel evenly and neatly located in an approved manner. Exposed fasteners: finished to match aluminium.

208 Fabrication

Comply with AS 2047.

Framing system: fabricate from extrusions to profiles shown on approved Shop Drawings.

Form junctions so that no fixings, such as pins, screws, pressure indentations and the like are visible on exposed faces. Show on Shop Drawings fixings which will be exposed. Cut edges, drill holes, rivet joints and clean flat sheets, neat, free from burrs and indentations. Remove sharp edges without excessive deformation. Fit mitred joints accurately to a fine hairline.

Pre-assemble and match mark before delivery.

209 Dissimilar Metals

In moist environments, prevent totally contact between dissimilar metals (any metals).

This instruction takes priority over any drawing, detail or instruction and will prevent cathodic reaction between the metals.

Refer this instruction to the structural engineer.

PART III EXECUTION

301 Examination

Inspect site conditions before start of work on site, before delivery of materials. Ensure conditions are satisfactory for installation.

Perform rectification required before delivery of materials.

Start of work means total acceptance of conditions.

302 Preparation

Prepare surfaces affected by the installation in accordance with material manufacturer's instructions.

Section 08520 Metal Windows and Glazing

303 Frame Anchorage

Fabricator is required to supply the anchorage devices to the builder for building in by others and check that devices are located as required to suit the requirements of window frame fabrication for positive and permanent fixing.

Insulation: isolate dissimilar metals at interfaces with bitumen based or nylon shim materials to prevent galvanic action.

Make good concrete or masonry damaged during the installation of masonry anchors at no cost to the Principal.

304 Frame Installation

Comply with AS 2047.

305 Glazing

Secure glass in accordance with glass manufacturer's recommendations and AS 1288. Allow for thermal expansion of glass, the metal framing and spandrels.

306 Preparation for Sealants

Joint preparation sealants: clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond of sealant or caulking compound. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous and glazed joint surfaces if recommended by sealant manufacturer. Prime or seal joint surfaces where indicated, and where recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate on to adjoining surfaces.

307 Installation of Sealants

- A. Install bond breaker tape where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- B. Employ only proven installation techniques, which will ensure that sealants are deposited in uniform continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface slightly below adjoining surfaces.
- C. Install sealant to depths as recommended by sealant manufacturer.
- D. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength internal cohesive strength and surface durability. Advise architect of procedures required for cure and protection of joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of Practical Completion.
- E. Remove excess caulking compound and sealant and leave surfaces neat, smooth and clean, without smears on surrounding work. Tool joints where recommended by manufacturer or where required. Remove cartons and debris from site as the work progresses.

308 Insect Screens

Provide powdercoated aluminium framed insect screens to all new openable external windows. Insect screens shall be fixed to the inner side of windows.

Type mesh: Powdercoated black aluminium insect mesh

Accessories: Provide all necessary fixings, fasteners, accessories for a complete installed insect screen to all openable windows. Frames shall be powdercoated in colour to match window frames.

Section 08520 Metal Windows and Glazing

309 Protection

- A. Framing system: protect metal surfaces as necessary during erection. Finish surfaces free from mechanical imperfections such as scratches, scrapes, dents, spots, stains and streaks.
- B. Glass: protect glass from breakage immediately upon installation and until Practical Completion. Remove and replace glass and metal panels which are broken, cracked, abraded, chipped or damaged in other ways, before, during or after installation, at no additional cost to Principal.
- C. Be responsible for breakage and damage to installation until Practical Completion.

310 Cleaning

- A. Remove labels, excess glazing compounds, stains, spots and other foreign matter from glass, frames, hardware and other finished surfaces immediately upon installation of glazing for each light.
- B. Debris: remove rubbish and debris resulting from glazing operations, each day.

311 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

Section 09250 Plasterboard / Cement Sheet & Other Special Lining
Systems

SECTION 09250 PLASTERBOARD / MULTIBOARD SHEET & OTHER SPECIAL LINING SYSTEMS

PART I GENERAL

101 Scope

Supply and install a complete installation of plasterboard including but not limited to:

- A. Lining of stud walls
- B. Fire-rated plasterboard walls/ceilings
- C. External wall cladding including all necessary backing boards, to the manufacturers requirements.
- D. Plasterboard sheet walls.
- E. Plasterboard bulkheads, ceilings.
- F. Wall linings internal
- G. Ceiling linings internal
- H. Eaves linings
- I. Fascia
- J. Partitions
- K. Underlays
- L. Caulking to all joints between differing materials
- M. Lining of concrete and masonry walls
- N. 13mm thick Multiboard sheet Lining of internal studwork walls to all wet areas including kitchens, kitchenettes, laundries, bathrooms and to walls behind art sinks.
- O. 13mm thick MR Plasterboard Ceiling Lining to all wet area rooms, including toilet amenities, etc.
- P. External Multiboard Sheet linings
- Q. Ceilings, drop walls, bulkheads
- R. Cornices.
- S. Allow to make good all existing plaster wall, ceiling surfaces to be retained to suit new paintwork. Where existing surfaces are uneven or rough, allow to skim coat existing surfaces with plaster to achieve a Level 5 Finish in accordance with AS/NZ2589.

102 Related Work

Co-ordinate and co-operate with the following trades:

Masonry walls	Electrical
Stud walls	Other:
Suspended ceilings	

103 Quality Assurance

Prototype: at a location selected by the architect, construct a complete prototypical installation of plasterboard on each different substrate.

Each sample, full height by 3600 wide includes elements required by this specification and finish in every respect. When approved by the architect, this sample will remain part of the work and becomes the standard for the remaining work.

104 References

Comply with applicable portions of the following Australian Standards:
AS/NZS 2589 2007 Gypsum linings - Application and finishing.

Section 09250 Plasterboard / Cement Sheet & Other Special Lining
Systems

105 Delivery, Handling and Storage

Deliver manufactured materials in bundles and packages bearing the name of the manufacturer and the brand. Handle with care. Remove damaged materials from the site. Protect stored materials from damage and damp, or materials which may cause deterioration.

106 Warranty

Provide warranty covering the work against defective materials and workmanship for a period of 5 years from the date of Practical Completion. The warranty includes a statement that the whole of the work has been carried out in accordance with relevant Australian Standards and Codes and manufacturer's instructions in effect at the time of installation.

PART II MATERIALS

201 Manufacturers

- USG Boral – Australian Gypsum – www.boral.com.au
- Multiboard – www.multiboard.com.au
- Boral Enviro plasterboard
- C.S.R. Building Materials;
- Rondo Building Services Pty. Ltd.
- Armstrong
- James Hardie;
- James Hardie Coy. Pty.Ltd.
- KNAUF Australia– www.knaufplasterboard.com.au

202 Materials

Supply materials in accordance with material manufacturer's recommendations for each application.

1. Plasterboard/Multiboard Sheet to Stud Walls

- (a) Shall be 13mm thick USG Boral Enviro plasterboard with recessed edges for flushed jointing.

Location: To all stud framing walls and bulkheads generally, unless noted otherwise on drawings

- (b) Shall be 13mm thick Multiboard iLine with recessed edges for flush jointing to extent of all wet area walls and to all tiled walls.

Location: To all linings within internal wet areas, amenities, unless noted otherwise on documentation

Accessories: Where wall lining is against masonry walls it is to be packed out on 35mm furring channels

Finish Height of Wall lining: Finishing Height of Wall linings to Studwork Walls shall be full height from finished floor level through to underside of structure over (unless specifically noted otherwise). All gaps between the finished wall lining and structure over are to be filled to provide for an airtight seal. Provide all necessary fillers, capping, infill pieces to provide for a complete flush air tight wall to ceiling junction.

2. Plasterboard/Multiboard Sheet to Masonry Walls

Provide Rondo KEYLOCK battened wall system in strict accordance with current manufacturers

Section 09250 Plasterboard / Cement Sheet & Other Special Lining Systems

recommendations. Refer drawings for wall type specifications for linings in addition to this.

- (a) Shall generally be 13mm thick plasterboard with recessed edges for flush jointing. Provide furring channels for fixing to masonry walls.

Location: Refer Floor Plan for extent to concrete walls, unless noted otherwise on drawings

- (b) Shall be 13mm thick Multiboard iLine with recessed edges for flush jointing. Fixed to masonry walls on 35mm thick furring channels. Allow to straighten irregular walls with levelling pads as required.

Location: To all linings within wet areas where there is wall tiling, change rooms, unless noted otherwise on drawings, allow to pack off concrete walls on 35mm furring channels

Finish Height of Wall lining: Finishing Height of Wall linings to Concrete Walls shall be full height from finished floor level throughout to underside of structure over. Gaps between the finished wall lining and structure over are to be sealed. Provide all necessary fillers, capping, infill pieces to provide for a complete flush wall to ceiling junction,

3. Plasterboard Bulkheads / Ceiling

- a) Shall be 13mm thick USG Boral Enviro plasterboard with recessed edges for flush jointing. Provide Rondo or Armstrong suspended ceiling system to suit required heights

Location: Refer Reflected Ceiling Plan for extent. As minimum provide to all bulkheads and internal soffits, all areas where suspended ceiling

- (b) Shall be 13mm thick MR plasterboard with recessed edges for flush jointing. Provide Rondo or Armstrong suspended ceiling system to suit required heights

Location: To within all wet areas, amenities, including kitchens, laundries and as noted on drawings.
Refer Reflected Ceiling plan for extent.

4. Multiboard Sheet Lining to external areas

Provide Multiboard 12mm thick Excom external sheet boards by Multiboard . Provide for expressed jointing to all panels and complete with approved high-build acrylic texture coating system that incorporates both reinforced jointing and texture coating. Provide all necessary fixings, framing and supports and install in strict accordance with current manufacturer's recommendations. Provide for concealed fixings.

Manufacturer: Multiboard

Type: Excom with Paint Finish

Finish: Minimum 2 coats of Haymes Paint RenderTex Membrane Coating or Taubmans Armawall Membrane Coating system to suit Multiboard Panels

Accessories: Provide all necessary accessories, fitting, fixtures for a complete installed and finished cladding system.

Location: external walls including but not limited to MCH building behind battens, Children's Room 5 & 6; and as indicated on documentation and drawings

Section 09250 Plasterboard / Cement Sheet & Other Special Lining
Systems

5. Eaves Lining

Where indicated on drawings provide Multiboard 13mm Thick iLine to eaves with recessed edges for flush jointing. Provide for flush jointing to underside of eaves overhang with paint finish - Colour white

Location: Underside of existing roof overhang to building and new building areas

6. Cornice

Ceiling to Wall junctions shall be Gyprock 10mm Shadow Set profile.

Location: All ceiling/wall junctions unless noted otherwise on drawings

7. Casing Beads

External corners Rondo Plasterlock Corner Bead P32.

Internal corners Rondo PSI7

8. Square Set Finish.

Generally allow to square set finish to all plasterboard / cement sheet throughout at wall junctions (and ceiling junctions if no cornice type is nominated)

Provide Rondo P11, P12 stopping beads to ends of plasterboard and at joints between differing surfaces where not square set.

9. Accessories for Plasterboard & Multiboard/Cement Sheet:

Provide for all necessary Stopping beads, end stops, furring channels, angles, battens, taping to achieve square set finish and level, straight walls. All exposed edges of plasterboard are to be finished with stopping beads or metal angles.

When fixing to a substrate, generally provide for all necessary packing and battens to achieve straight level wall finish. Use Rondo proprietary items.

10. Caulking:

Allow to caulk all gaps between differing materials and finishes throughout the project to fill gaps. Caulking shall be completed in silicon with colour to match the adjoining surface. Confirm with Superintendent on colour where adjoining surface colours are differing. Ensure the caulking material is Low VOC and prior to application ensure it has no chemical reaction to the surface it is being applied to.

PART III EXECUTION

301 Examination

Acceptance: visit site and inspect conditions, comparing conditions to drawings before delivery of materials to site. Rectify any discrepancy or unsuitability of substrate.

Start of work means total acceptance of conditions.

302 Preparation

- A. Co-ordinate with and ensure preparatory work by other trades is done prior to commencement of work; failure to do so will involve removal of plasterboard and immediate rectification.

Section 09250 Plasterboard / Cement Sheet & Other Special Lining
Systems

- B. Arrange for provision of additional stud, nogging, trimmed openings, boxed studs, fixing grounds, etc., required for satisfactory execution of the work of this trade including penetrations through plasterboard for services. Co-operate in installation of frames, duct openings, etc.
- C. Space enclosure: do not install materials until space is enclosed and weatherproof, and until wet-work in space is completed and nominally dry.

303 Layout and Tolerances

- A. Check dimensions of areas and surfaces to which material is applied before installation begins.
- B. Measure each area and establish layout pattern.
- C. All finished work is to be within + 2mm of the sizes shown on the relevant drawings.

304 Installation - General

- A. Comply with manufacturer's installation instructions. Anchor and fasten materials and components to comply with ratings and performance requirements, and to comply with governing local regulations. Comply with appropriate Australian Standard.
- B. Take care of and protect surrounding work, including other finishes, equipment and components, during installation. Provide protective covering where necessary.

305 Installation Particulars

306 Movement Control Joints

- A. Locate wall finish movement control joints to coincide with junctions of differing wall materials and between new and existing material finishes.
- B. Form joints continuously to extend neatly and clearly up to adjacent abutting surfaces and finish with approved proprietary expansion joint and/or sealant system to the approval of the Superintendent.

307 Finishing Details

General: apply treatment at board joints (both directions), flanges of trim accessories, penetration, fasteners, heads, surface defects and elsewhere as required to prepare work for decoration. Pre-fill open joints and rounded or bevelled edges, using type of compound recommended by manufacturer. Apply fibreglass joint tape at joints between boards, where a trim accessory is indicated, or where extra strength is required.

As a minimum all plasterboard in the project is to be finished to a Level 4 finish as per AS/NZS 2589. All joints and interior angles must have tape embedded in the jointing compound and a minimum of two separate coats of joint compound applied over all joints, angles fastener heads and accessories.

Provide Level 5 finish (skimcoat to entire plasterboard surface) to all plasterboard which is nominated to be finished in semi-gloss or gloss paint finish or where flat or low sheen paints will be exposed to critical lighting conditions.

308 Protection

Protect finished work. Make good damage in every respect at no additional cost to the Principal, and without delay to job progress.

Section 09250 Plasterboard / Cement Sheet & Other Special Lining
Systems

309 Cleaning

- A. Adjust and clean: clean exposed surfaces including trim, edge moldings, and comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate damage.
- B. Remove splatterings and droppings resulting from work. Remove daily surplus materials and rubbish from the work area.
- C. Leave floors broom clean at completion.

310 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

PART II MATERIALS

201 Screed Materials for Masonry Walls, Concrete Floors

Item	Type Required	
Cement	Portland cement, comply with AS 3972, cement type A	
Sand	Clean, washed, sharp, sieved and graded, complying with the following limits:	
Sand grade	No	% Passing sieve
	4 (4.75mm)	100
	8 (2.36mm)	95-100%
	100 (150 microns)	25% max
	200 (75 microns)	10% max
Fineness modulus	1.6 to 2.5%	
Water demand ratio by weight	0.65% maximum	
Aggregate	Passing 4.75m sieve 80% Passing 6.00mm sieve 90% Passing 8.00mm sieve 100%	
Water	Clean, drinking quality	
Mesh	Galvanised steel, welded wire fabric: minimum 2.5mm diameter wires at 100mm centres each way.	

202 Adhesives

- A. Exterior/wet area adhesives: cement-based ceramic tile adhesive, complying with AS 2358.
- B. Interior/dry area adhesives: organic based adhesive, complying with AS 2358.

203 Underlay and Backing Boards

- A. Underlay over timber floors:
- B. Ceramic tile wall-backing for stud walls:
- C. Fastenings: Use fastenings supplied by material manufacturers in each case.
- D. Waterproof membrane: recommended by an approved manufacturer.

204 Tile

Supply: specified tiles are available from the following Manufacturers:
National Tiles or approved similar

205 Schedule of Tile Finishes

Refer Finishes Schedule and drawings.

Supply and install all tiles to floor and wall areas indicated for tiling and as documented.

Manufacturer: National Tiles. [Refer](#) to Project Schedules in Volume 3 appendices

Type: Refer to Project Schedules for Tile types, provide tiles to all areas noted on drawings and as documented.

Accessories: anodized aluminium edging to joints between differing floor surfaces. Provide cover strip to Door threshold junctions.

Additional Tiles: Supply 5% additional matching tiles to total area of tiling for the project. At completion of project store additional tiles in manufactures original packaging clearly marked with details of tile type/size in location to direction of the Superintendent.

Location: To all toilet amenities and areas as indicated on drawings

203 Grout

Provide Epoxy grout by Laticrete. Colour to be confirmed with Superintendent prior to order or installation. Provide sample for Superintendent approval prior to order.

Type: LATICRETE® SpectraLOCK® PRO Premium Grout with Microban® antimicrobial product protection
Grout Colour: To match tile colour. Provide sample to Superintendent for approval before installation, provide for test area prior to installation.

204 Waterproofing Membrane

Provide Tremco Volkem 360NS with 951NF waterproofing membrane in applied finish. Refer to Water Proofing Section of this Specification. Install in strict accordance with manufacturer's current written specifications. Provide all necessary Tremco products and for a complete water tight system.

Location: To underside of all tiled floors.

205 Joint Seal

Provide Tremco Dimonic NT polyurethane sealing / caulking. Install in strict accordance with manufacturer's current written specifications.

Location: To all joints between tiled floor, wall areas and between tiled surfaces and other differing material finishes.

Colour/Finish: Generally white caulking

206 Expansion Joints

Provide expansion joints. Provide to all junctions between existing and new materials, if uncertain confirm with Superintendent.

Provide proprietary stainless steel expansion joint covers by Latham Australia or equivalent approved by the Superintendent. Silicon rubber, as recommended by manufacturer. Colour Grey – provide sample to Superintendents approval.

PART III EXECUTION

301 Examination

Visit site and inspect conditions, comparing conditions to drawings, before delivery of materials to site. Rectify any discrepancy or unsuitability of substrate. Start of work means total acceptance of conditions.

302 Conditions of Installation

- A. Install backing boards or panels in accordance with manufacturer's precise instructions.
- B. Allow cement-rendered surfaces to dry out at least 7 days, and preferably 14 days, before tiling. Longer curing times are required if recommended by adhesives' manufacturers.
- C. Rectify substrate so that when checked with a 2m straightedge, gap under the straightedge does not exceed 6mm.
- D. Allow new concrete to dry out for at least 4 weeks before rendering or direct fixing of tiles.

Wall screeds: uniform in plane and lightly combed. Floor screeds: broom finished.

303 Setting Out

- A. As far as possible, set out work so that no tile less than half size occurs. Align joints in floor tile at right angles to each other and straight with walls to conform to patterns selected. Verify locations of equipment before installing tile. Co-ordinate with plumbing and other trades. Fully tile surfaces under surface-mounted items.
- B. Expansion Joints
Set out panels of tiling so that tiles may expand or contract to and from corners of tiled walls and floors. Allow for expansion in each corner of 5mm minimum. Fill expansion joints with silicone rubber. Where there are new junctions joints between existing and new buildings provide expansion/control joints with proprietary jointing system to approval of the Superintendent
- C. Control Joints
 - 6. Provide control joint
At junctions of dissimilar wall construction.
 - 7. In walls, no more than 2.5 apart.
 - 8. At junctions of wall and floor in multi-storey buildings and between new and existing building items.
 - 9. Provide proprietary control joints to suit the application and install in strict accordance with the manufacturers current written recommendations – Supplied by Latham Australia - <http://www.latham-australia.com> or equivalent to the approval of the Superintendent
- D. Form junctions of different materials (e.g. tiles to carpet) so that they occur under the centre line of doors.

304 Bedding Mixing

- A. Tile fixing mortar is to be adequately cohesive and water retentive but not richer than 1:3 nor leaner than 1:4 cement/sand by volume.
Within these limits the choice of the precise proportions is governed by the need to produce a mortar of the required properties with the minimum water content. These proportions will depend on the sand in use and is found by practical trial before tile fixing starts.
- B. Once the proportions are established, make every attempt to minimise random variations. Batch by weight wherever possible. Do not batch with shovels.
- C. The mixing of mortars by a suitable machine is to be preferred whenever it is practicable.
- D. Volume batching: base batching on multiples of a whole bag of cement (50kg, approximating 0.035m³ or 35 litres). In such cases measure by volume using correctly made gauge boxes or other suitable containers of fixed, measurable volume. This method allows water addition to be checked and thus permits approximate mix proportions to be established and maintained.
- E. Where mixing by machine is not possible, mortars may be mixed on a clean non-absorbent surface using clean hand tools. Whatever method of mixing is used, blend the materials thoroughly in the dry state before water is added. Continue mixing until the batch has a uniform consistency.
- F. No water should be added once mixing is complete. Discard mortar which is unused within 2 hours of adding the mixing water.

305 Bedding Methods

- A. Portland Cement bedding, semi-dry mix method:
 - 1. Mix: 1 part cement to 4 parts of sand by volume, mixed dry, with only sufficient water added to make a crumbly consistency which retains its shape when squeezed in the hand. It is important to ensure complete mixing of the cement and sand.
 - 2. Before laying the mix, establish finished floor levels by means of dots. Spread roughly to a thickness slightly greater than that required for the actual bed.

- Thoroughly compact and draw-off to the required level. Lay only sufficient bedding mix for one man to deal with satisfactorily in one operation.
3. Pour a slurry consisting of 1 part cement to 1 part sand by volume with sufficient water to make it slightly fluid, over the bedding and spread with a trowel until it is about 3mm thick. Place tiles, which preferably are dry, in position and firmly beaten into the bedding. Form joints of at least 2mm and regulating should be done at this time. Wash off if necessary after the joints have set thoroughly.
 4. Minimum bedding thickness 25mm.
- B. Bedding with adhesives (walls only):
1. Apply adhesive to a thin bed or thick bed according to site conditions:
 - a. Apply thin bed adhesives when the background is true to within 3mm when tested with a 2 metre straight edge, at thickness not less than 1.5mm and not more than 3mm. Apply with a notched trowel.
 - b. Apply thick bed adhesives when deviations up to 6mm, over a 2 metre length, are present in the background, or when applying tiles having deep keys or ribs on their backs. Thick bed adhesives should be used at thicknesses not less than 3mm and not exceeding 12mm. Apply with either 10 x 10 x 10mm notched trowel, solid bed or buttering method.
 2. Application methods:
 - a. Notched trowel method: apply the adhesive to the background as a screed, then form ribs by combing it with a notched trowel of the type recommended for the particular application. Do not apply adhesive in areas larger than 1 square metre at a time.
 - b. Solid bed method: apply the adhesive to the background as a screed and bring it to a true surface, working in 1 square metre area at a time.
 - c. Buttering method: spread the adhesive evenly over the back of the tile to a thickness slightly greater than the final bed thickness required, so that when the tile is pressed or tapped firmly into position, the correct thickness is achieved and the tile is solidly bedded over its entire surface.
 3. Apply dry tiles immediately into the adhesive, before it skins.
 4. Press the first tile firmly into position and then remove it to check that complete contact is being made with the adhesive. Make occasional similar checks throughout the tiling work. The whole of the back of the tile is to be in good contact with the adhesive. Do not allow voids to occur beneath tiles.
 5. Remove surplus adhesive remaining on the face of the tile or in the tile joints, after fixing, before it skins.
 6. Form joints straight and constant in width. Under no circumstances fix tiles with tight joints.
 7. Allow tiles to set for a minimum 24 hours before grouting and protect from weather, water penetration, etc. during this period.
 8. Expansion joints: refer clause 303 B, complying with AS 3958.1. See clause below.
- C. Cement based adhesive method for extruded, quarry or terracotta floor tiles:
Secure to a prepared concrete surface with cement based adhesive 10mm thick with a 10mm notched trowel. Comply with manufacturer's current instructions

306 Installation - General

- A. Wall tiling: comply with the recommendations of AS 3958.1 and AS 3740.
- B. Floor tiling: comply with the recommendations of AS 3958.1 and AS/NZS 3661.2.
- C. Adhesives: comply with AS 2358 and recommendations of adhesive manufacturer.
- D. Sealing: where tiles are cut around penetrations for taps and outlets, seal thoroughly with silicone rubber to prevent water entry behind tiles.
- E. Membrane: install to manufacturer's instructions, with a 100% waterproof result.

307 Tolerances and Cleaning

- A. General: install tiles in true planes so that when checked with a 2m straightedge, gap under the straightedge does not exceed 3mm. In sloped floor tiling this tolerance does not apply across intersections of fall planes. Adjust tiles within 10 minutes of fixing.
- B. Cleaning: cleaned down using a damp cloth before cement smears and surplus mortar begin to harden on the surface or in the joint spaces, care being taken to avoid disturbance of the tiles during the setting of the bedding.
- C. Lighting: whenever possible the lighting at the time of applying the bedded finish is not to be appreciably different from the ultimate permanent lighting.

308 Grouting

- A. Except as otherwise required, do not commence grouting for at least 24 hours after placing of tile. Follow specific instructions of materials manufacturer.
- B. Grout mix:
 - 1. General use, except as noted below: Apply an approved pigmented prepared grout mix, 1 part Portland cement to 1 part fine dry sand by volume mixed to a paste consistency with the minimum of water; too wet a mix may result in the joint filling cracking or drying out.
 - 2. Floors: Prepared grout, acid resistive.
 - 3. Walls: Epoxy-based mortar grout, mildew resistant.
 - 4. Colours: as selected by the architect.
- C. Grouting and curing:
 - 1. Apply the grouting mix to as large an area as can be worked before hardening commences. Apply with a squeegee working back and forth over the area until the joints are completely filled. Remove surplus grout from the tiles with the aid of a damp, not wet, cloth and the joints then tooled. After the grouting has dried, final polish using a clean, dry cloth.
 - 2. Remove surplus grout from the floor surface; on no account use sawdust for this purpose, as there is a danger that sawdust entering moist joint surfaces may break down their strength, and cause them to become porous.
 - 3. In dry weather, grout joints after maintaining damp condition for 3 days by sponging down, fog-spraying or other methods. Allow floors to set 48 hours before permitting ordinary foot traffic.

309 Movement joints

Location: Provide movement joints as follows:

- Over structural (isolation, contraction, expansion) joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 – 25 mm.

Movement joint materials – sheet flooring

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

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

310 Protection

Prevent walking on or contact with floor or wall tiles for a minimum of 7 days. During that period, cover floor tiles.

311 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 09500 SUSPENDED CEILING

PART I GENERAL

101 Scope

Supply and install a complete system of suspended ceilings including but not limited to:

- A. Plasterboard ceilings.
- B. Acoustic ceilings.
- C. Bulkheads.
- D. Ceiling access panels.
- E. Insulating material.
- F. Mineral fibre fire resistant duct spray.

102 Related Work

Co-ordinate and co-operate with the following trades:

Roof framing	Structural steel
Concrete	Mechanical services
Masonry	Plasterboard

103 Quality Assurance

- A. Prototype
At a location and time to be selected by the architect construct a complete prototypical ceiling installation in one bay from one column to another of each ceiling type. Include elements provided under this trade section and finish in every respect. When approved by the architect, the prototype becomes the standard for the remaining work, and will remain as part of the work.
- B. Acoustical ceilings installer
Sub-contractor is to have not less than 3 years of successful experience in installation of ceilings similar to requirements for this project and who is acceptable to manufacturer of each ceiling type.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 2785 2000	Suspended ceilings - Design and installation.
AS 2946 1991	Suspended ceilings, recessed luminaires and air diffusers - Interface requirements for physical compatibility.
AS/NZS 4600 2005	Cold-formed steel structures. <i>Plus 1 Amdt, 2010.</i>

105 Samples

- A. Acoustical ceiling tile: provide samples of tile, as selected by architect to be supplied; not less than 2 units of each.
- B. Provide one sample of each of the following elements:
 - 1. Rounded cornice
 - 2. Cornice internal angle
 - 3. Cornice external angle
- C. Suspension systems: provide sample of each component of suspension and acoustic suspension system, including both standard shapes and accessories.

106 Delivery, Handling and Storage

Deliver manufactured materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand.

Section 09500 Suspended Ceiling

Protect materials from dampness. Store off the ground or slab, under cover and away from wet walls and other damp conditions, in secure storage.

107 Warranty

Provide warranty covering the work against defective materials and workmanship for a period of 10 years from the date of Practical Completion.

Include a statement that the whole of the work has been carried out in accordance with relevant Australian Standards and manufacturer's instructions in effect at the time of installation.

PART II MATERIALS

201 Acceptable Manufacturers

202 Materials

- A. Suspension system
(one way exposed)
(two way exposed)
- B. Plasterboard 13mm
- C. Ceiling access panels
- D. Cornice
- E. Beads, straps, etc.
- F. Casing beads, stop-ends, etc.
- G. Other items:
 - Armstrong
 - Boral
 - Rondo
 - CSR
 - Lysaght
 - Locker Group

203 Materials

A. Internal Ceiling Suspension system with Concealed fixings

Provide Armstrong DGS and framing suspended ceiling system.

Provide a complete Armstrong Drywall Grid system with all necessary components, framing, furring channels, connections, accessories, sections, joiners, rod brackets, suspension rods, direct load ceiling clips, etc. for a complete suspended ceiling system

Suspended Ceiling system to be supported from new structure over, provide for all necessary supports, main beams, primary cross tees, clips, transition mouldings, framing, fixings to achieve a structurally compliant ceiling supporting all items to be fixed into ceiling such as lighting, electrical equipment, etc. Components of the new ceiling shall be suspended from steel structure over.

Allowance shall be made for the necessary lengths to suspension rods, etc. to support the proposed ceiling from the structure over at the nominated ceiling height.

Install in strict accordance with manufacturer's current written technical specifications recommendations. Installation to suit structural classification and deflection requirements of items to be suspended from ceiling.

Refer to Section 09250 for lining details

Section 09500 Suspended Ceiling

Provide thermal/acoustic insulation laid in strips along the length of the grid to coincide with the ceiling grid for maintained future access above.

B. Insulation

Provide the insulation to all new ceilings.
Refer to Section 07200 for detail on insulation type

Location: all ceilings suspended or fixed

Comply with manufacturer's recommendations the applicable Australian Standards.

204 Accessories

Supply and install necessary accessories as indicated by component manufacturer for satisfactory and complete installation.

205 Equipment

Supply equipment, forms, scaffolding, ladders, frames, etc. necessary for the satisfactory installation of specified items.

PART III EXECUTION

301 Examination

Acceptance: visit site and inspect conditions, comparing conditions to drawings before delivery of materials to site. Rectify unsuitable situation.

Start of work means total acceptance of conditions. Comply with referenced Standards and manufacturer's recommendations regarding environmental conditions.

302 Preparation

Space enclosure: do not install interior acoustical ceilings until space is enclosed, is weatherproof until wet-work in space is completed and nominally dry until work above ceilings completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

Protect wood, metal, glass, flooring and other finished work during progress. Damage is to be made good in every respect at no additional cost to the Principal.

Prepare areas and surfaces against which installation will be constructed. Ensure work by other trades is completed before erecting suspension system.

Powder driven fasteners are not approved for use.

303 Installation

Comply throughout with applicable portions of AS/NZS 2785, or AS 2946, and with the data sheets supplied by material manufacturer.

304 Field Quality Control

When requested by architect, arrange for manufacturer's representative to visit site and check installation.

Section 09500 Suspended Ceiling

- 305 Adjustment**
Adjust installation to permit installation of such items as light fittings, mechanical vent registers and the like.
- 306 Protection**
Protect completed installation from possible damage until issue of Practical Completion certificate.
- 307 Cleaning**
Clean surfaces exposed to view. Replace sections or components which cannot be cleaned. Make good damaged sections or panels affected by later work of other trades.
- 308 Completion**
Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

PART II MATERIALS

201 Materials

Adhesive: refer AS 1884.

Provide underlay to vinyl to suit substrate of building

A. Vinyl Flooring –

A1. General

Supply and install Safety Vinyl flooring. Install in strict accordance with manufacturer's specifications / guide. Allow to recycle unused material.

Type: Refer to Flooring and Materials schedule.

Colour: Refer to Flooring and Materials schedule

Accessories: Provide extruded aluminium edge trims plain clear anodised aluminium (silver).
Provide aluminium floor cover strips to joints between differing material finishes.

Location: To all areas nominated in schedules & on drawings, including but not limited to the wet areas, Children's Rooms, Entry Foyer (R11 slip resistance to all vinyl in wet areas)

Other: Provide all associated proprietary items for complete system including full cove former. Provide Levelling compound to achieve flush floor finish to adjoining floor materials. Levelling compound to be Ardex k15 or similar approved by Superintendent (confirm levelling compound with manufacturer prior to installation). Provide set down to areas indicated with floor wastes to allow for positive fall to wastes. Provide water-proof grout bed of cement to all floor areas noted with floor wastes. The grout beds should be screeded to achieve positive falls to wastes in accordance with Australian standards and BCA. Finished levels at doorways are to flush finish to adjoining materials.

Waterproof Treatment

Note: Vinyl installation onto all concrete slab floor

Provide moisture barrier to installation of vinyl flooring which is fixed over concrete or concrete screeding. Moisture barrier to be provided prior to installation of vinyl flooring. Builder to provide Mapei – (www.mapei.com.au) moisture barrier with (4) four step process in strict accordance with Mapei current recommendations:

- a) Mapei - Triblock P
- b) Mapei EcoPrim T primer
- c) Mapei Ultra Plan leveling compound
- d) Mapei Ultrabond Eco 350 with vinyl adhesive.

Contact Mapei Australia Pty Ltd to confirm application and ensure 25 year warranty to installation.

A2. Equipment

Supply equipment required for the preparation of floor, and installation of vinyl materials as recommended by the material manufacturer.

202 Equipment

Supply equipment required for the preparation of floor, and installation of vinyl materials as recommended by the material manufacturer.

PART III EXECUTION

301 Examination

Examine the site conditions applicable to each installation and comply with AS 1884.
Start of work means total acceptance of conditions.

302 Preparation

Prepare each area to be surfaced in accordance with AS 1884. Test the dryness of concrete sub-floor in accordance with AS 1884.

303 Movement joints

Location: Provide movement joints as follows:

- Over structural (isolation, contraction, expansion) joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 – 25 mm.

Movement joint materials – sheet flooring

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

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

304 Installation

- A. Delay installation of sheet until concrete has dried to the percentage established in Appendix A of AS 1884.
- B. Adhesives: comply with AS 1884, and manufacturer's instructions.
- C. Install material in accordance with AS 1884, including conditioning of both the materials and the sub-floor.
 1. Weld joints of vinyl sheet.
- D. Skirting, to manufacturer's instructions.
- E. Form junctions of different materials (e.g. tiles to carpet) so that they occur under the centre line of doors.

305 Cleaning

Remove excess adhesive and blemishes from the completed surfaces of flooring and skirtings.

306 Protection

Apply suitable hardboard or plywood to completed floors and maintain in position until final cleaning prior to Practical Completion.

Remove and replace work which cannot be successfully repaired or cleaned.

307 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 09685 MODULAR CARPET (TILE)

PART I GENERAL

101 Scope

Supply labour, materials and equipment required for supply, delivery, storage, installation and testing for the complete Modular Carpet installation.

102 Related Work

Co-ordinate and co-operate with:
Installers of floors
Joinery
Preparation of surfaces under and adjacent to floors to receive carpet.

103 Quality Assurance

A thoroughly experienced and skilled tradesmen familiar with projects of this nature, under the direction of a similarly experienced foreman, is required.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1385 2007	Textile floor coverings - Metric units and commercial tolerances for measurement
AS/NZS 2270 2006	Plywood and blockboard for interior use. <i>Plus 1 Amdt, 2007.</i>
AS/NZS 2455	Textile floor covering - Installation practice
2455.1 2007	General. <i>Plus 1 Amdt, 2009.</i>
	<i>This Standard provides full instructions of pre-installation requirements and installation methods.</i>
2455.2 2007	Carpet tiles.

Maintain a copy of AS/NZS 2455.1 2007 General, at the project site until completion.

105 Submissions

Submit the following data and obtain approval from the architect before ordering materials:

- A. List of recent projects with contact names and telephone numbers.
- B. Full size sample module of each carpet type.
- C. Confirmation of acceptance and compliance with the requirements of the builder in relation to the time schedule for supply and laying.
- D. Schedule of laying rates per square metre.
These rates include supply and installation of adhesive (if required) and accessories, cutting (where required) and allowances for profit, overheads and administration costs.
- E. Properties: provide test certificates from recognised authorities with the tender to confirm that the modular carpet complies with the properties set down in clause 204.
- F. Certification by the manufacturer that the materials comply with this specification.

106 Delivery, Handling and Storage

Deliver manufactured materials in the original packages, containers, or bundles bearing the name of the manufacturer.
Protect materials from dampness. Store off the ground or slab, under cover away from wet walls and other damp conditions in an approved location in the building.

107 Carpet Module Manufacturer's Guarantees

Provide a written confirmation from the manufacturer or his accredited representative that the carpet modules have been properly installed and that subject to the carpet modules being properly maintained indoors in a commercial installation, the carpet modules to the affected area/s will be replaced by the manufacturer at his expense if any of the following occur:

- A. Surface pile in area wears more than ten percent (10%) within 10 years of installation.
On stains the period of this guarantee is 5 years.
- B. Horizontal dimensions of the modules vary from the specified dimensions by more than .2 percent (0.2%) within ten years of installation as measured by the Aachen Test undertaken by an independent test authority.
- C. The modular carpet installation will not disrupt electronic office equipment (which is otherwise operating properly) to cause malfunction by induced static charges.
- D. The modular carpet installation, in a commercial installation, is guaranteed to control static shock below 3.5 kilovolts when the relative humidity is no less than 20% and the room test is 70°F. (AATCC Test 134-1975).

108 Modular Carpet Installation Contractor's Warranty

Provide a written warranty stating that materials supplied and installed under this contract will remain in good condition, secure against faulty workmanship and/or defective materials for a period of 7 years from the date of Practical Completion.

PART II MATERIALS

201 Acceptable Manufacturers

A. Carpet Flooring – Internally – type – Carpet Tiles

C1. General

Supply and install Interface modular carpet throughout. Install in strict accordance with manufacturer's written specifications and to Australian Standards.

Ensure finish level with nominated FFL and finished squarely within room.

Provide to the Superintendent a 2m x 2m sample of the finished floor as the control panel for approval prior to installation.

Allow to trim around all floor penetrations that include installation of items such as sewer pipe and waste water penetrations etc.

Type:	InterfaceFlor - www.interfaceflor.com.au
Model:	Refer to Project Schedules for model (confirm colour and pattern with Superintendent, provide sample for approval)
Location:	Accommodation Areas, Offices and all areas nominated in schedules & on drawings
Other:	Provide for new skirtings throughout to entire area where new carpet tiles are being installed. Height of skirting 10mm)
Accessories:	Allow to prepare floor surface and provide all necessary levelling screeds to provide for DDA compliant access to all areas.

C2. Accessories

Provide extruded aluminium edge trims plain clear anodised aluminium (silver). Provide aluminium floor cover strips to joints between differing material finishes.



C3. Identification of Carpet Tiles

Mark modular carpet tiles on the back to identify the manufacturer and the type of modular carpet.

C4. Carpet Pattern Design Drawings

Lay the modular carpet to patterns, colours and designs shown on the Architect's drawings.

C5. Carpet Tile Laying Diagrams

Prepare laying diagrams showing locations and directions of joints, types, patterns and colours of the modular carpet. Obtain Superintendent's approval on final layout diagram.

C6. Carpet Tile Inspection Before Laying

Inspect modular carpet tiles before laying to ensure that :

- A The tiles are of types, patterns and colours specified.
 - B Colour variations are within the specified tolerances.
 - C The tiles are free from colour streaks, oil or grease spots, etc.
 - D The carpet generally conforms to the Specification.
- Reject modular carpet tiles not conforming to the required standards.

202 Accessories

Provide extruded aluminium edge trims
Plain clear anodised aluminium (silver), (gold), (bronze)
Flexible p.v.c. edge trims (gold), (black)
Provide black, flexible p.v.c. stair nosing or equivalent
Provide extruded plain aluminium stair nosing or equivalent filled with a black p.v.c. insert
Provide stair tread nosing or equivalent filled with back slip resistant infill bars

203 Carpet

Modular carpet similar to those specified may be submitted and if deemed by the architect to be equivalent, may be considered
Modular carpet type A
Manufacturer: Interface
Type of carpet: Solution dyed nylon , Cubic
Module size:
Modular carpet type B:
Manufacturer:
Type of carpet:
Module size:
Tolerances: AS 1385

204 Properties

Comply with the following minimum properties:

Name	Number	Results
Electrostatic propensity	AATCC-134	
IBM ohm resistance		
Dimensional stability	AACHEN	

Section 09685 Modular Carpet (tile)

Colour fastness	AATCC-8	
Flame Resistance		
	1. smoke developed index-max	
	2. spread of flame index-max	

205 Non-slip Materials

Water based substance recommended by its manufacturer as suitable for use as a pressure sensitive non-slip compound.

100mm wide double sided tape with a releasable pressure sensitive coating recommended by its manufacturer as suitable for the purpose of preventing the slippage of the modular floor tiles.

206 Testing Carpet

A. Before ordering the carpet, provide four no. tiles of the specified modular carpet for testing by the Australian Wool Testing Authority.

B. During the production run of the carpet supply an additional four no. modular tiles for testing as specified in "A" above.

Carry out tests at each of the above stages to confirm specified static properties.

Allow for and pay for the costs of tests.

207 Carpet Colour Sample

Before commencing the production of the carpet, supply three (3) tiles of the selected modular carpet to the architect for written approval of colour and pattern.

208 Identification

Mark modular carpet tiles on the back to identify the manufacturer and the type of modular carpet.

209 Carpet Pattern Design Drawings

Lay the modular carpet to patterns, colours and designs shown on the architect's drawings.

210 Laying Diagrams

Prepare laying diagrams showing locations and directions of joints, types, patterns and colours of the modular carpet.

211 Inspection Before Laying

Inspect modular carpet tiles before laying to ensure that:

- A. The tiles are of types, patterns and colours specified.
- B. Colour variations are within the specified tolerances.
- C. The tiles are free from colour streaks, oil or grease spots, etc.
- D. The carpet generally conforms to the Specification.

Reject modular carpet tiles not conforming to the required standards.

PART III EXECUTION

301 Examination

Visit the site and inspect conditions comparing conditions to drawings before delivery of materials to the site. Notify the architect of discrepancy or unsuitability of the substrate.

Start of work means total acceptance of conditions.

302 Preparation

Comply with referenced standards and manufacturer's recommendations regarding environmental and other on-site conditions.

Repair by approved means imperfections of the floor surface which might impair the finished carpeted surfaces.

Broom clean or vacuum clean surfaces upon which carpet is to be laid.

On completion of cleaning, obtain architect's approval of surface and follow such standard as he may determine for preparation throughout the project.

303 Movement joints

Location: Provide movement joints as follows:

- Over structural (isolation, contraction, expansion) joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 – 25 mm.

Movement joint materials – sheet flooring

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

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

304 Space Enclosure

Do not install material until space is enclosed and weather-proof and until wet-work in space is completed and nominally dry, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

305 Nap-lok Bars

Fix Nap-lok bars with each length fixed to the sub-floor using fastenings recommended by the manufacturer of the Nap-lok bars as suitable for the respective sub-floors.

Comply with the requirements of AS/NZS 2455.1.

Fix Nap-lok bars with each length fixed to the concrete sub-floor using Sebco "Screins" set in neatly drilled holes in the concrete and spaced at each end at 225mm centres between the end fixings.

Comply with the requirements of AS/NZS 2455.1.

306 Setting Out

Before laying modular carpet tiles, accurately establish two starting chalk lines towards the centre of the room or area and at precisely 90° to each other.

Commencing only at the cross-over point of the chalk lines, complete one row of modules on each side of the centre line.

From this point proceed in accordance with the manufacturer's printed instructions.

307 Pressure "Sensitive" Non-slip Compounds

Prevent modular carpet tiles for slippage in service by:

Pressure sensitive water based pressure sensitive non-slip compound, applied by paint roller at the rate of 10-15 sq. metres per litre depending on the absorption rate of the sub-floor and in strict accordance with the non-slip compound manufacturer's printed recommendations.

Pressure sensitive compound provided in a 350 gram pressure pack container, applied at the rate of 50-70 modules per container either to the whole of the sub-floor or the whole of the back of the modular carpet tiles in strict accordance with the non-slip compound manufacturer's printed recommendations.

Properly ventilate the area of use.

100mm wide double-sided tape with a releasable pressure sensitive coating laid along the centre line of modular carpet tiles in both directions.

308 Laying – General

Lay strictly in accordance with the manufacturer's printed directions.
Cut tiles from the back using a sharp knife and a cutting board.
Open boxes on site 24 hours before laying and mix up tiles of similar pattern and colour from different boxes.
Lay tiles hard up against each other and maintain tension on the tiles during laying by kneeling on the tiles as they are installed.
Use a knee kicker to ensure that tiles are laid hard up against each other.
Carefully scribe up to walls, columns, partitions and other fixed obstructions using techniques recommended by the manufacturer.

309 Partitions

Partitions will be erected prior to the laying of the modular carpet.

310 Cleaning And Protection

On completion of laying each section of carpet, remove dirt, scraps of left-over carpet, etc., and vacuum the surface clean and free from dust, etc.
After inspection by the architect, cover the carpet in each section with continuous layer of 0.152mm thick clean polythene film with joints lapped 150mm minimum and continuously sealed with self-adhesive tape.
Batten and nail perimeters to the floor.
Maintain the cover in good order and condition and remove the same and finally clean the carpet at Practical Completion.

311 Spare Carpet Modules

Deliver to the site in unopened boxes spare modular carpet tiles equivalent to 25% of the total area of carpet laid.
Do not deliver to the site until directed by the architect. Place in the final storage location.

312 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 09910 PAINTING

PART I GENERAL

Paint Volatile Organic Compounds

At least 95% of all painted surfaces are to meet the Total VOC Content Limits outlined in Table IEQ-13.1 and as listed below.

- Interiors low sheen paints – 14 g/l
- Gloss paints and varnishes – 75 g/l
- Latex primers - 60 g/l
- One & two pack floor coverings - 140 g/l

Manufacturers

Product Type: Interior/exterior paint
Manufacturer: Porter's Paints
Product: interior/exterior acrylic
Website: <http://shop.porterspains.com/p/1142457/porters-interior-exterior-fan-deck.html>

Product Type: Interior and exterior paints
Manufacturer: Dulux
Product: Professional EnvirO2™ Interior Paints
Wash & Wear
Website: <http://www.dulux.com.au/>

Product Type: one & two pack water based timber sealers, hardeners and stains
Manufacturer: Becker Acroma
Website: <http://www.22croma.com.au/products/waterborne-coatings/default.aspx>

Product Type: Two pack water based timber floor finish
Manufacturer: Synteko
Product: Synteko STAR
Website: http://www.synteko.com.au/products/finishes/product_water.htm

Product Type: Timber floor oil finish
Manufacturer: Synteko
Product: Synteko natural
Website: http://www.synteko.com.au/products/finishes/product_water.htm

Product Type: Timber Battens oil finish to all sides and edges of boards prior to installation. Provide 3no. coats of oil in strict accordance with manufacturer's written recommendations.
Manufacturer: Livos
Product: ALIS Decking Oil #579
Website: www.livos.com.au

Adhesives & sealant Volatile Organic Compounds

All adhesives and sealants are to meet the total VOC levels listed below. The VOC levels are calculated on the South Coast Air Quality Management District Rule 1168 (California, US)

<http://www.aqmd.gov/rules/reg/reg11/r1168.pdf> - accessed on the 18/07/12

- Carpet and sub floor adhesives – 50 g/l
- Wood flooring and laminate adhesives - 100 g/l
- Multi purpose construction adhesive - 70 g/l
- Rubber and ceramic floor adhesive - 60 g/l
- Structural Glazing adhesive - 100g/l

Manufacturers

Product type: Spray on concrete penetrating water proofing sealants

Manufacturer: Radcrete

Product: Radcon formula 7

Website: <http://www.radcrete.com.au/product/radcon-formula-7>

Product type: Adhesive laminating tape, adhesive foam tape, double sided construction tape

Manufacturer: Biolink speciality tapes

Product: Biolink tapes

Website: <http://www.biolinkaus.com.au/>

Product type: Timber floor polyurethane adhesive

Manufacturer: Bostik

Product: AV 525, instant Pro timber floor adhesive

Website: <http://www.bostik.com.au>

Product Type: Carpet and underlay adhesive

Manufacturer: Bostik

Product: Carson 1704 Odourless

Website: <http://www.bostik.com.au>

Product Type: Vinyl adhesive

Manufacturer: Bostik

Product: Instant Pro Vinyl & Carpet Adhesive

Website: <http://www.bostik.com.au>

Product Type: Sub floor cement based screed

Manufacturer: Bostik

Product: Ultracreed

Website: <http://www.bostik.com.au>

Product Type: Sub Floor self-leveling compound

Manufacturer: Bostik

Product: Econolevel

Website: <http://www.bostik.com.au>

Product Type:	Glazing adhesive
Manufacturer:	Bostik
Product:	V60
Website:	http://www.bostik.com.au
Product Type:	General purpose construction adhesive
Manufacturer:	Bostik
Product:	extreme fix
Website:	http://www.bostik.com.au
Product Type:	Sanitary area silicone
Manufacturer:	Bostik
Product:	ZBond 6S Sanitary & Tile Silicone
Website:	http://www.bostik.com.au
Product Type:	Ceramic tile adhesive
Manufacturer:	Bostik
Product:	Mastik or Excellflex
Website:	http://www.bostik.com.au

101 Scope

GPC specifications: Provide paints and other materials which are scheduled in the Australian Paint Approvals Scheme "List of Approved Products" as complying with cited GPC specifications.
Quality: Provide premium quality lines.

Combinations

General: Do not combine paints from different manufacturers in a paint system.
Clear timber finish systems: Provide only the combinations of putty, stain and sealer recommended by the manufacturer of the top coats.

Consult with the Superintendent with regard to requirements of other Sections of the Specification which require painting, and include as part of the work of this Section the appropriate preparation, painting, and finish required to complete the installation.

Contractor to Supply all labour and materials, services and equipment necessary for the preparation, application and finishing of all painting, oiling and staining as indicated on drawings, schedules and as specified herein, to internal and external surfaces of the Works, including but not limited to:-

- A. All new Plasterboard / Cement sheet walls, ceilings, spandrels and bulkheads.
- B. All new internal and external timber.
- C. All new Multiboard/Cement sheet linings including soffit linings both internal and external.
- D. All exposed internal and external metalwork and steelwork not galvanised
- E. Painting / making good to junction to building and areas where damaged due to works.
- F. Oiled finish to feature timber, including feature wall cladding, and feature exposed timber.
- G. High build acrylic texture coating system incorporating both reinforced jointing and texture coating to Multiboard/compressed cement sheet wall linings
- H. Paint to Existing Brick work walls and existing window frames

Refer Schedule of Finishes.

102 Related Work

103 Quality Assurance

- ## 104 References

105 Submissions

106 Delivery, Handling and Storage

Volume 2 MARIBYRNONG RIVER CHILDREN'S CENTRE REDEVELOPMENT

Bring materials to the building and store in manufacturer's original sealed containers, bearing the manufacturer's standard label, indicating type and colour. Deliver materials in sufficient quantities in advance of the time needed in order that work will not be delayed in any way.

107 Project Conditions

Temperature: comply with the requirements of clause 6.3 of AS/NZS 2311 The painting of buildings, and of paint manufacturers with regard to both ambient temperature and relative humidity.

108 Warranty

Provide a written warranty stating that preparation of surfaces, materials and material application installed under this contract will show no deterioration and remain in good condition for a period of 7 years from date of Practical Completion.

PART II MATERIALS

201 Materials

General : Where manufacturer makes more than one grade of any material specified, use the highest grade of each type, whether or not the material is mentioned by trade name in these Specifications.

All paints used for the project shall be manufactured by the Australian Paint Approvals Scheme "List of Approved Products" as complying with cited GPC specifications.

All paints shall be Low VOC and specific –only- products are as follows:-

- Haymes
- Dulux AcraTex or Taubmans Armawall for external compressed cement sheet

Other products may be approved by Superintendent. Apply to Superintendent for approval of alternatives. Provide materials necessary for preparation of surfaces, and for application of paint finishes.

202 Schedules

A Schedule of Finishes is included in this specification.

Confirm with the Superintendent on the final Schedule of Colours in sufficient time before commencement of work.

203 Priming Materials

Colours of priming coats (and body coats where specified) are to be lighter than those of finish coat.

PART III EXECUTION

301 Examination

Inspect surfaces and determine that they are in proper condition to receive the work to be performed under this trade section. Refer 302 A, below.

The starting of work under this trade section will be taken to mean acceptance of such surfaces as being satisfactory and defects in work resulting from accepting poor surfaces are to be corrected at no cost to the Principal.

Refer AS/NZS 2311 Appendix C.

302 Preparation

- A. General: prepared to a standard not less than that described under AS/NZS 2311, Section 3: Preparation of Un-Painted Surfaces inclusive, and other clauses of Australian Standards referenced therein.
This Standard is incorporated by reference as part of this specification and applies to the work below to the same extent as if written herein.
- B. Broom clean floor surfaces before painting. Remove dust, dirt, plaster, grease and other extraneous matter affecting the finish work.
- C. Putty-stop or plug nail holes and cracks on both exterior and interior work, as required. Natural or stained wood finishes are to have putty coloured to match. Putty wood after prime coat or sealer coat has been applied.
- D. Clean bare metal surfaces of mill scale, rust, grease, oil, dirt, or other foreign matter, then properly washed with spirit or other approved cleaning agents. After cleaning, etch, pickle, prime, or otherwise prepare, as recommended by the paint manufacturer.
- E. Remove blisters or other imperfections in previous coats caused by foreign substances or paint skins from painted surfaces before the subsequent coat is applied.
- F. Rub down wood and metal surfaces before finishing and between coats with No. 00 and finer sandpaper or steel wool, leaving a perfectly clean surface. Sand smooth-finished surfaces before finishing and between coats as required to smooth out rough areas and to assure a smooth, even finish. Surfaces to receive paint are to be smooth and free of sandpaper scratches, mill-marks, and other imperfections.
- G. Remove hardware, accessories, plates, lighting fixtures and similar items in place prior to painting and re-position upon completion of each space, or protect as otherwise directed by the architect.
- H. Thoroughly stir materials in containers before application, unless otherwise directed by the manufacturer of the paint used, to ensure uniformity of colour and mass. Strain out paint skins or other materials which would cause lumps or roughness. Thin only as recommended by the manufacturer.

303 Protection

Furnish and lay suitable drop cloths in areas where painting is being done to protect floors and other surfaces from damage during the work.

304 Application

- A. General: execute work of this trade section in strict compliance with paint manufacturer's recommendations, and with the provisions of AS/NZS 2311, Section 6: Paint Application, inclusive. This standard is incorporated by reference as part of this specification and applies to the work below to the same extent as if written herein. In the event of conflict between manufacturer's recommendations and the provisions of AS/NZS 2311, manufacturer's recommendations govern.
- B. Maintenance or repainting
Execute work of this trade section in strict compliance with paint manufacturer's recommendations, and with the provisions of AS/NZS 2311, Section 7: Maintenance of Painted Surfaces on inclusive and Section 8: Maintenance Painting Systems. This standard is incorporated by reference as part of this specification and applies to the work below to the same extent as if written herein. In the event of conflict between manufacturer's recommendations and the provisions of AS/NZS 2311, manufacturer's recommendations govern.

305 Paint Schedule

Confirm all paint colours with Superintendent prior to ordering or start of work.



Refer to Project Schedules for colours should no colour be scheduled for certain items seek clarification from Superintendent for colour.
Install in strict accordance with current written manufacturers recommendations.

A. External Multiboard eaves Lining

Prepare by: Rubbing down, scraping and filling all cracks, dents and blemishes, wipe clean and dust free. Correct blemishes after sealer coat if necessary.

Apply: One (1) coat undercoat/sealer
Two (2) coats Dulux Weathershield Low VOC Semi Gloss Acrylic

Location: Soffits, All exposed external multiboard ceilings and eaves linings.

B. Galvanised Steelwork, Metalwork, Shop Primed Steelwork

Prepare by: Removing grease, rust or scale. Wipe clean and dust free.

Apply: One (1) coat metal etching primer on galvanised metalwork, touch up shop primed steelwork.
Two (2) coats semi-gloss enamel or as scheduled

Location: Externally
All unfinished metal work generally.
Do not paint powder coat metals or s/s metals/
Internally
All exposed metalwork and steelwork, including underside of Bondek Slab over to spaces with no ceiling.
Generally
Do not paint Colorbond, Powdercoat or pre-finished metalwork.

C. Plasterboard /Multiboard Sheet Walls & Ceilings, Bondbeams – Internal

Prepare by: Rubbing down, scraping and filling all cracks, dents and blemishes, wipe clean and dust free. Correct filling of blemishes after sealer coat if necessary.

Apply:	One (1) coat Undercoat/Sealer Dry areas - Two (2) coats Dulux Enviro ₂ Low Sheen Interior Acrylic Low VOC paint or type as specified in Wall & Ceiling Finishes Schedules; Wet Areas - provide two (2) coats of Dulux Low VOC kitchen and Bathroom Satin Acrylic Paint finish
Location:	All plasterboard / multiboard sheet walls, spandrels, ceilings, bulkheads, etc.

D. Painted Woodwork Internal

Prepare by:	Filling blemishes, joints, nail holes with putty and sand smooth. Treat flush panel doors with One (1) coat grain filler. Apply
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Section 09910 Painting

	flexible paintable silicon sealer (No More Gaps) to joint of trim and wall surface as required.
Apply:	One (1) coat Undercoat/Sealer Two (2) coats SemiGloss Enamel
Location:	new Timber including timber doors and frames, timber architraves and trims affected by works & as indicated on drawings

E. Oiled Woodwork External

Prepare by:	Sanding and preparation to create a smooth and level surface.
Apply:	Three (3) coats of Livos ALIS Decking Oil #579 finish in strict accordance with Manufacturers Current Specification & written recommendations.
Location:	External face of all new external feature timber generally. New Feature timber to entry area

F. Woodwork Internal

Prepare by:	Sanding and preparation to create a smooth and level surface.
Apply:	Two (2) coats of Murobond Woodwash & finishing coat of Murothane finish apply in strict accordance with Manufacturers Current Specification & written recommendations. Provide paint out sample for review by Superintendent prior to installing
Location:	All new internal hardwood timber sills around windows

G. High-build Acrylic Texture Coating system to Compressed cement sheet Boards

Prepare by:	Prepare surfaces for coating in strict accordance with manufacturer's recommendations
Apply:	Provide 2mm thick high-build acrylic texture coat concealing all joints. Low gloss finish. Apply in strict accordance with either Haymes Paints RenderTex Membrane Coating system; or Dulux AcraTex or Taubmans Armawall requirements to suit Multiboard ExCom
Location:	to Excom Multiboard sheets

H. PVC Pipework/Conduits

Prepare by:	Prepare surfaces for coating in strict accordance with manufacturer's recommendations. Remove grease, wipe clean
Apply:	One (1) coat undercoat; two (2) coats in Satin Acrylic
Location:	All internal and external pipes including exposed conduits, downpipes, overflow pipes, vent pipes, waste pipes, etc

I. Water Proofing Membrane Paint application

Prepare by:	Prepare surfaces for coating in strict accordance with manufacturer's recommendations. Prepare existing painted surface for maximum adhesion of Waterproof
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Apply:	Provide minimum One (1) coat primer; two (2) coats Crommelin Membryl UV Stable Waterproofing to minimum film thickness of 300 microns. Ensure water tight installation to wall to avoid water ingress.
Location:	External Face of Existing Masonry wall full length to proposed new entry works. Paint down to base of wall to avoid water ingress to proposed new internal entry foyer works

306 Certification prior to Practical Completion

All painting work shall be Certified by an independent qualified person registered with the Master Painters Australia association. Builder shall contact Master Painters Australia (MPA) www.mpa.org.au to nominate a local independent registered MPA assessor to conduct an inspection of the completed project paint work. Builder shall provide independent MPA Certification to the Superintendent that all painting work for the project is in compliance with current Australian standards. This certificate shall be issued to the Superintendent prior to Practical completion.

307 Cleaning

At completion of work in each area, remove paint spots, oil and stain from adjacent surfaces, including finish hardware.
Replace hardware previously removed.

308 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

309 Schedules

END OF SECTION

SECTION 10400 IDENTIFICATION SIGNS

PART I GENERAL

101 Scope

Design, supply and install required items including but not limited to:

- A. Metal frames
- B. Dimensional letters
- C. Exterior/interior signs
- D. Illuminated, non-illuminated
- E. Plaques
- F. Door signs
- G. Signs for the disabled.
 - A. BCA and statutory required signage
 - B. Tactile Signage to all public amenities and door signage
 - C. Exterior/interior signs
 - D. Door signs
 - E. Signs for accessible toilets and accessible car spaces
 - F. Signage to tank connected taps - indicating 'non potable water'
 - G. Labelling for electrical power points/circuits

102 Related Work

Co-ordinate and co-operate with the following trades:

Wall construction	Concrete
Floor construction	Finishes

103 Quality Assurance

Materials, shop fabrication and on site installation are to be supplied and performed by fully trained and experienced tradesmen in accordance with instructions of the manufacturer.

104 References

Comply with the applicable portions of the following Australian Standards:
AS 1319 1994 Safety signs for the occupational environment.

105 System Description

The specified materials and systems are intended to provide a uniform image throughout the building. Where possible, materials are to be provided by the same manufacturer.

106 Submissions

Submit to the architect for approval, the following before ordering materials:

- A. Samples of specified materials, conforming to type and finish required.
- B. Fully detailed drawings showing overall dimensions and component sizes with proposed methods of fixing and/or securing position.
- C. Check data on sign for data accuracy - spelling, phone number, etc. before manufacture.

Shop drawings: Comply with SECTION 02000, clause 2.301.

Provide Shop Drawings for major items supplied hereunder.

- D. Contract drawings and details provided are indicative as to general and minimum requirements, and do not show conditions.

Section 10400 Identification Signs

Develop details not shown and in conformity with the indicative details shown.

- E. Take and confirm dimensions on site, before preparing Shop Drawings where possible.
- F. Submit detailed Shop Drawings for fabrication and installation of major metalwork. Show plans, elevations and detailed sections; indicate materials, finishes, types of joinery, fasteners, anchorages and accessory items. Provide setting diagrams and full-scale templates of blocking, anchorages, sleeves and bolts installed by others.

107 Delivery, Handling and Storage

Deliver materials in accordance with the Project Schedules.

Prevent damage to materials by securely boxing or wrapping before delivery. Take care with materials during delivery and handling.

Store materials on site where directed by builder. Where possible install directly in place.

108 Warranty

Provide to the Principal a warranty co-signed by the manufacturer and installer stating that items in this specification will remain in full operational condition for a period of 10 years from the date of Practical Completion.

109 Maintenance

Provide a written undertaking to the Principal that parts of the installation will be available for additional supply from time to time to suit the Principal's needs for a period of 10 years from the date of Practical Completion.

PART II MATERIALS

201 Acceptable Manufacturers

202 Materials

A. Signage to Rooms

Provide signage board to location beside doors to room door. Provide signage to all doors not requiring statutory signage indicating space name.. Confirm exact position and wording with Superintendent on site.

Type: Architectural Modular Series by S2K Identity Systems - www.s2k.com.au
Stainless steel with black lettering

Size: 210mm W X 63mm H

Model: Architectural Modular Series

Finish: Satin Natural Anodised

Accessories: Provide all necessary accessories for a complete installed signed system. Provide all necessary fixings including locking for tamper proof installation to all signs.

Location: Provide to all new doors without BCA compliant signage including MCH Waiting, MCH rooms, Children's Rooms. Signage to switchboard, distribution board

Note: where a sign is to be affixed to glazing provide a backing film to the other side of the glass in matching aluminium. Allow to conceal fix to glass with backing adhesion strips

B. BCA compliant Braille & Tactile Signage

Provide BCA compliant tactile throughout the building including signage to all new amenities, toilets, etc.

Section 10400 Identification Signs

Location of Braille & tactile signage

- i. Signs must be located not less than 1200mm and not higher than 1600mm above the floor or ground surface.
- ii. Signs with single lines of characters must have the line of tactile characters not less than 1250mm and not higher than 1350mm above the floor or ground surface.
- iii. Signs identifying rooms containing features or facilities listed in D3.6 must be located -
 - a. On the wall on the latch side of the door with the leading edge of the sign located between 50mm and 300mm from the architrave; and
 - b. In the event of insufficient latch side dimension, a sign may be placed on the non-latch side of the door; and
 - c. Where (I) or (II) is not possible, the sign may be placed on the door itself.
- iv. Signs identifying paths of travel must be placed so they are located directly ahead in the direction of travel. Where one wall continues in the direction of travel and the other forms a corner, the sign must be placed on the continuing wall.

Manufacturer: Braille Tactile Signs Australia Pty Ltd – www.brailletactilesigns.com.au
Type: BTS04 – White on blue background

Location: to area of works including children's toilets, accessible toilet to MCH area, etc.

C. Labelling for Identification

Provide electronically printed selfadhering labels to all electrical power points, switches and labelling of all new circuits. Labelling of power points and switches to be linked back to switchboard labelling. Prior to order, provide sample of labelling including text font, size, colour for approval by Superintendent

Labels shall be installed either at the top of fixing screws or on the inside of removable front plates.

The identification labels shall be engraved with the circuit number & phase colour of the circuit relating to the switch and /or GPO. The base colour of the identification labels shall match the colour of the switch and/or GPO.

External identification labels shall be stainless steel (etched). Internal labels shall be Traffolyte or equivalent approved by Superintendent.

D. Safety Signage

Provide safety warning signage roof access points with warnings to contact site manager prior to attempting any access and that all necessary roof safe access equipment is to be used when accessing roof areas.

Provide safety signage placards to dangerous goods store; workshop area; dangerous goods cupboard; safety shower signage, eyewash signage, truck wash down bay, spill control equipment.

E. Non Potable Water Signage

Provide Safety Warning sign to water storage tank taps, hoses and other tap points connected to tanks. Type: applied screw fixed type sign with visual picture (non drinking) and text "Rainwater " clearly identified.

Type: Seton - www.seton.com.au or similar to approval of Superintendent
Size of sign: minimum 300x200 with font size to suit

Section 10400 Identification Signs

Location: Above taps/outlets connected to water storage tanks
Accessories: Provide all necessary external grade fixings to signage for secure application
Provide design and sample of signage to Superintendent for approval prior to order.

F. Site Traffic Management Signage

Provide a complete signage system for site traffic management including entry sign; exit only sign; restricted access signage to entry gate; employee parking area; accessible car parking; no standing signage; site speed limit sign; forklift operating sign; forklift speed limit.

G. Signage to Roof Safe access areas

Provide safety signs to each roof access point with warning on access requirements.

Prior to order, provide sample of labelling including text font, size, colour for approval by Superintendent. Refer to Project Schedules for proposed text.

H. Signage to Roof Safe access areas

Provide new building signage in front of existing Gas Meter, allow to screen gas meter fully from view of street and car park entry side. New sign shall be constructed of hot dip galvanised 50 SHS frame fully welded across all joints to provide an 'L' shaped sign in plan. Allow to powdercoat finish the support frame of the sign black.

The sign shall be minimum 1500mm high x 1600mm wide to the front and the side return. Provide perforated Aluminium sheet minimum 5mm thickness with staggered perforations to base sheet of sign powdercoated to match colorbond colour Monument. The raised section of the sign in front of the perforated sheet shall be a Natural anodised sheet minimum 5mm thickness with a polyurethane coating followed by photographic imaging Super durable finish.

Contractor to provide Shop drawing for signage and submit to the Superintendent for approvals. The text for the sign shall incorporate the same information as the existing sign for the Centre beside the entry to the existing car park.

The sign shall be finished with no sharp edges, all edges as a minimum shall have pencil round edges.

Refer to drawing for proposed signage appearance.

I. Fascia Signage – Water jet cut with metal backing

Provide Laser cut or water jet cut letters to proposed Multiboard Excom Fascia of new MCH building. Letters shall – 250mm high. Contractor to provide signage layout design for lettering to ensure lettering sits between expressed joints of Exom sheets.

Submit Shop drawing to Superintendent for approval prior to commencing works. Allow to back the cut Multiboard Excom Letters with Polished stainless steel 316 Grade sheet (mirror finish), allow to fully seal and adhere stainless steel to back of multiboard sheet for weathertight installation.

203 Finishes

204 Signs for The Disabled

205 Fabrication

Fabricate components in accordance with manufacturer's instructions and approved drawings.
Form junctions so that fixings are concealed.
Cut edges, drill holes free from burrs and indentations. Fit joints to a fine hairline.
Pre-assemble where possible or practical and mark each item for intended location before delivery.

PART III EXECUTION

301 Examination

Visit site and inspect conditions, comparing conditions to drawings before delivery of materials to site.
Rectify discrepancy or unsuitability of substrate.
Start of work means total acceptance of conditions.
Space enclosure: do not install materials until space is enclosed and weatherproof, and until wet-work in space is completed and nominally dry.

302 Preparation

Prepare areas and surfaces before installation, so that best conditions exist.
Where necessary, ensure that lighting cable is in place and concealed ready for connection to light fittings within the illuminated items.

303 Installation

Comply with manufacturer's written instructions. Provide appropriate anchoring devices, concrete pads for external signs.
Take care of and protect adjacent surfaces and materials. Provide protective cover to adjacent finishes where necessary.

General - Install signage level and plumb, securely mounted, with concealed, theft-resistant fixings.

304 Protection

Protect finished work.
Replace or make good work found damaged at time of Practical Completion.

305 Cleaning

- A. Adjust and clean: clean exposed surfaces including trim, edge moldings, and comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- B. Remove splatterings and droppings from work. Remove daily surplus materials and rubbish from the work area.
- C. Leave floors broom clean at completion.

306 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION



SECTION 10520 FIRE EXTINGUISHERS

PART I GENERAL

101 Scope

Supply and install extinguishers where indicated in accordance with the statutory authority having jurisdiction.

- A. To satisfy the responsible authority, provide extinguishers to areas near switchboards, to all kitchenette areas
- B. Provide fire extinguishers and fire blankets to entire building to comply with AS2444
Fire extinguishers are to be provided, selected, located and distributed in accordance with AS2444, Provide the following fire extinguishers as a minimum to the project:
 - a. 2A Water type fire extinguisher adjacent to each exit door.
 - b. Electrical switchboard 1A:20B:E Dry Chem between 2 and 20m from board.

102 Related Work

Co-ordinate and co-operate with the following trades:

Wall construction
Wall finishes

103 Quality Assurance

Perform work of this trade section with experienced tradesmen familiar with the quality of work required and licensed by the manufacturers of the extinguishers. Comply throughout with written instructions.

104 References

Comply with applicable portion of the following Australian Standards:

- | | |
|------------------|---|
| AS 1603 | Automatic fire detection and alarm systems.
<i>There are 12 parts 1996 – 2011 and 4 Amdts, 1996 – 2001.</i> |
| AS 1670 | Fire detection, warning, control and intercom systems, system design, installation and commissioning. <i>There are 4 parts, 1997 – 2004, plus 1 Amdt, 2005.</i> |
| AS/NZS 1841 2007 | Portable fire extinguishers. <i>There are 8 parts, one for each type.</i> |
| AS/NZS 4353 1995 | Portable fire extinguishers - Aerosol type. |
- Comply with requirements of statutory authority having jurisdiction.

PART II MATERIALS

201 Manufacturers

Manufacturers of materials approved in writing by the statutory authority may supply equipment.

202 Materials

Supply and install extinguishers authorised by the authority in accordance with the schedule provided by the authority.

203 Installation Devices

Supply brackets signs and other required items, and the means of securing them to the building.

PART III EXECUTION

301 Examination

Inspect site conditions before fabrication, where possible, and before delivery of materials. Ensure conditions are satisfactory for installation. Arrange for rectification if required.
Start of work means total acceptance of relevant conditions.

302 Inspection on Arrival at Site

Inspect materials on arrival, comparing each item to the schedule provided. Ensure that no material is damaged. Return to the manufacturer damaged items and obtain a replacement.

303 Installation

Anchorage: except for anchorages furnished herein but placed by other trades, set and secure necessary anchorages, including concrete and masonry inserts, bolts, wood screws and other connectors as needed. Perform cutting, drilling and fitting as needed, locating anchorages and holes to ensure proper positioning of completed work.

304 Cleaning

Clean materials installed to the satisfaction of the architect.
Remove temporary protective coatings.

305 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

END OF SECTION

SECTION 12480 FLOOR MATS AND FRAMES

PART I GENERAL

101 Scope

The work of this trade section covers the supply and installation of floor mats and/or recessed mats and frames including but not limited to:

- A. Entry door mats

102 Related Work

Co-ordinate and co-operate with the following trades:

Concrete	Metalwork
Floor tiling	Carpet
Resilient flooring	

103 Quality Assurance

Manufacturers and installers are required to be widely experienced in the relevant aspects and class of work required for this section. At a place selected by the architect, construct a prototype of a completed installation of floor mat and frame.

On completion of the prototype and approval of all aspects of the installation, the work will remain in place and become the standard for the remaining work.

104 References

(Not used)

105 Submissions

Provide samples and data sheets of all materials.

Obtain architect's approval for each item before ordering.

106 Delivery, Handling and Storage

Deliver all materials in the packaging of the manufacturer bearing the brand name, colour, thickness and other relevant data.

Store all materials in a secure dry area away from other materials which may cause deterioration.

107 Warranty

Provide a warranty covering all aspects of the installation performed by this trade, against defective materials and workmanship for a period of 5 years from the date of completion.

Include a statement that the whole of the work has been carried out in accordance with the relevant Australian Standards and the instructions of the manufacturers of components in effect at the time of installation.

PART II MATERIALS

Section 12480 Floor Mats and Frames

201 Materials

Item	Type Required
Floor Mat	Recessed
Manufacturer	Birrus
Type	Duramat
Size	Refer Drawings
Colour	Charcoal
Location	Refer Drawings
Frame	Proprietary to suit mat
Material	25 x 25 x 3 mm thick brass angle (confirm prior to order)
Size	To suit size of mat
Anchors	Brass or galvanised steel
Screed	Provide screed as required to bring mat level with surrounding surface

a) Front Entry Door Mat

Supply and install Birrus Matting complete system recessed into floor for flush finish. Ensure to allow for provision of recess in new entry slab for proposed mat. Install in strict accordance with manufacturer's specifications. Allow to recycle unused material.

Manufacturer: Birrus Matting Systems
Type: Birrus Recessed Duramat matting
Size: minimum 2100mm long x 1100 width
Colour: Refer to project schedules. Colour To be confirmed with Superintendent.
Location: To front entry and other areas nominated on drawings & schedules
Other: Supply and install Birrus Matwell Frame to suit.
 Matwell Frames shall be fabricated from 25x25x3mm Solid Aluminium WITH "CLIP-IN" CORNER BRACKETS SUPPLIED IN KIT FORM. Allow to screed level to finished floor level to manufacturers recommendations.

202 Fabrication

Comply with the relevant Standards.
 Contractor to check all dimensions on site.
 Contractor to provide prototype for architect's approval prior to manufacture.
 Contractor to present sample to architect for final selection.

PART III EXECUTION

301 Examination

Examine the site conditions applicable to each installation. Arrange for correction if required.
 Start of work means total acceptance of conditions.

302 Installation

Provide mat recess in floor to accept the size of mat required.
 Refer to drawings for location of floor mats.
 Frame to be provided with anchors and cast-in place or to be fixed in the mat recess with masonry anchors.
 Place screed in mat recess up to and level with the top face of the horizontal leg of the brass angle frame.

Section 12480 Floor Mats and Frames

303 Preparation

Comply with referenced Standards and manufacturer's recommendations. Do not install material until space is enclosed and weatherproof and until wet work in space is completed and dry.

304 Cleaning and Protection

On completion of mat recess or area remove all dirt, scraps of left over materials and vacuum the area clean. Remove and replace work which cannot be successfully repaired or cleaned.

305 Completion

Complete all contracted work in accordance with contract documents and written variation orders issued by the architect.

Work will be deemed complete after being inspected and approved by architect.

END OF SECTION

SECTION 15410 PLUMBING FIXTURES

PART I GENERAL

101 Scope

The work of this trade section includes but is not limited to, supplying and fixing of a complete range of plumbing fixtures and fittings as indicated on the attached schedule. Include in this work the connection of the fittings to floors, walls, other fittings, waste outlets, water supply pipes and vent pipes.

- A. Installation of Sensor taps including concealing any electronic running gear within recess in lightweight wall. Allow to provide for stainless steel lockable access panel to access power points and running gear in wall
- B. Provide access panels for access to thermostatic mixing valves, shut off valves concealed in wall and ceiling.
- C. installation of all floor wastes
- D. Installation of existing sanitary equipment removed during works and reinstalled. Allow to commission and provide any parts to ensure items are working as intended.
- E. All new sanitary equipment, baby baths, art sinks to be fully installed including all necessary accessories for a complete installation.

102 Related Work

Co-ordinate and co-operate with the following trades:

Wall construction	Floor construction
Water Distribution	Piped Energy Distribution
Sanitary Sewerage	Ceramic Tile
Finishing Trades	

103 Quality Assurance

Perform the work of this trade section using tradesmen whose experience and skills meet the requirements of controlling statutory authorities.

104 References

Comply with applicable portions of the following Australian Standards:

AS/NZS 1229 2002	Laundry troughs and tubs.
AS/NZS 1730 1996	Washbasins.
AS/NZS 2023 1995	Baths for ablutionary purposes.
AS 3494 1997	Bidettes and Bidets.
AS 3588 1996	Shower bases and shower modules.
AS 3861 1991	Spa baths.
AS/NZS 3982 1996	Urinals.

Comply with requirements of statutory authorities having jurisdiction.

105 Submissions

Before ordering scheduled material, submit required product data to the architect, particularly where the specified material is not available and alternatives are offered.

106 Warranty

Provide the Principal with warranties covering:

- A. Materials: in the form supplied by manufacturers of specified components.
- B. Installation, for 5 years from the date of Practical Completion: the specified components.

- 107 Fees**
Pay fees to the relevant statutory authorities.

PART II MATERIALS

- 201 Acceptable Manufacturers**
Refer Schedule of Plumbing Fixtures.
Ensure that items to be installed are approved for installation by local authorities before ordering.
- 202 Materials**
Refer Project Schedule
- 203 Equipment**
Provide necessary equipment to affect a complete installation of each part of this Trade Section, including seals, jointing materials, flanges, etc.
- 204 Fabrication**
Install components in a manner approved by the local authority and the architect. Comply with requirements of relevant Australian Standards where applicable.

PART III EXECUTION

- 301 Examination**
Visit the site before delivery of materials, and compare conditions with those shown on drawings.
Start of work means total acceptance of conditions.
- 302 Connections to Supply**
Connect supply and waste pipes to the fittings scheduled in accordance with the written instructions of the manufacturers of the items and the requirements of the responsible authority.
- 303 Installation**
Install components to the architect's and the authority's approval, to applicable Australian Standards and to the manufacturer's instructions.
Co-ordinate with other trades.
- 304 Testing**
Cover no pipes, joints or connections until tested and passed by the relevant authority, and approved by the architect.
Submit to the architect copies of certificates issued by relevant authorities.
- 305 Protection**
Protect work of this trade section from damage until Practical Completion is achieved.
- 306 Cleaning**
On completion, remove debris and clean visible work to the architect's satisfaction.

307 Completion

Complete contracted work in accordance with contract documents and written variation orders issued by the architect.

NOTE: PLUMBING FIXTURES SCHEDULE FOLLOWS IMMEDIATELY.

END OF SECTION