FC1-45	STD. SPECIFICATION FOR FRAMED CONSTRUCTION IN WIND REGIONS A	FEBRUARY 2009

Government of **Western Australia**
Department of **Housing**

STANDARD SPECIFICATION FOR

PUBLIC HOUSING

FRAMED CONSTRUCTION

SINGLE STOREY

WIND REGIONS A

KEY AMENDMENTS

1 WORKPLACE SAFETY AND HEALTH COMPLIANCE (3.17 - Clause amended.
2 BRICK AND BLOCK PAVING (D3) - 150mm kerb added.
3 TIMBER ROOF FRAMING ALTERNATIVE (K2.02) - New clauses added.
4 CURTAIN BOARD (L4.04) - New clause added.
5 WARDROBE (L5.12) - New clause added.
6 ROOF INSULATION (N3) - Clause amended.
7 COMBINED SINK AND DRAINER (P4.07) - Clause amended.
8 WASH TROUGH (P4.08) - Bowl capacity amended.
9 COLD WATER PIPING (P7.02) - Clause amended.
10 BOX COVERS (P7.04) - Clause deleted.
11 SOLAR HOT WATER HEATER (P8.02) - Tempering valve clause amended.
12 CONTINUOUS FLOW GAS WATER HEATER (P8.05) - New clause added.
13 STORAGE WATER HEATERS (P8.06) - New clause added.
14 ELECTRIC ROOM HEATER (Q3.14) - New clause added.
15 SMOKE ALARMS (Q3.16) - Clause amended.
16 WALL INSULATION (U1) - New clauses added.
17 LOCATION OF WALL TILES (V1.07) - Border frieze tiles clause added.
18 VERTICAL BLINDS (W4) - Clause amended.
19 DETAILED INSTRUCTION (Z2) - Clauses added.

(이 자료는 대외비입니다)

첨부자료는 호주 Western Australia 정부가 정한 주택건설 규격입니다.

페이지 39 (P7.02 cold Water Piping)에 보시면 모든 온수기로 공급되는 물 또는 수도꼭지로 이어지는 물 공급 배관에 정부가 승인한 자재인 Turbu-Flow를 설치하도록 명시된 것을 보실 수 있습니다.

39 페이지

P7.02 Cold Water Piping Provide cold water piping from each Water Corporation water service to water heaters and cold water cocks For locations abobe 26c tropic of Capricom, Install APPROVED "Turbu-Flow" on inlet of all cold water supply

특정 업체의 특정 상품을 정부가 승인하고 설치를 규격화하여 명령하는 것은 거의 없다는 것을 감안하면 Turbu-Flow가 수처리 용도로 얼마나 효과가 탁월한지 알 수 있습니다.

DEPARTMENT OF HOUSING
STANDARD SPECIFICATION
STEEL FRAMED CONSTRUCTION
WIND REGION A

CONTENTS

INTERPRETATION OF TERMS

In addition to those terms defined elsewhere in the tender documents the following words have the meaning hereby assigned to them, except where the context otherwise requires:

"APPROVED" when attributed to a product means that product shall be one listed in the current Department of Housing APPROVED Materials List.

"AS" following by a number means the current Australian Standard with that number.

"CURRENT" means the latest edition, including any amendment issued by the publisher, available seven days prior to the close of tenders.

"PROFESSIONAL ENGINEER" has the meaning defined by the Building Code.

"THE BUILDING CODE" means the current Building Code of Australia applicable in Western Australia.

"SCHEDULES" means the schedules qualifying the application of the Specification to the Works.

"THE STANDARD" means the current relevant Australian Standard.

"THE TENDER DOCUMENTS" means the written and drawn information made available by The Department of Housing for the purpose of tendering.

2 - CONTRACT REQUIREMENTS

2.01 DOCUMENTS SUPPLIED

Two checked and identified sets of copies of the Contract documents will be supplied free of charge to the Contractor by the Department of Housing.

In addition to the above, five sets of Tender Documents will be supplied free of charge to the Contractor by the Department of Housing. It shall be the Contractor's responsibility to ensure that the additional sets are complete and accurate in all information appropriate to their use.

Detail drawings nominated in the Contract documents will be supplied free of charge to the Contractor by the Department of Housing if requested.

2.02 DISCREPANCY IN DOCUMENTS

In the absence of the Superintendent's decision regarding interpretation, the following order of precedence of Contract Documents shall apply to resolve any ambiguity, discrepancy or inconsistency:

(a) the General Conditions of Contract as amended by the Department of Housing;
(b) the Specification as qualified by SCHEDULES;
(c) the Drawings;
(d) the Specification as amended by Addenda.

Figured dimensions shall prevail over scaled dimensions.

The larger scale drawing shall prevail over the smaller scale drawing.

Drawings showing details of particular parts of any work shall prevail over those for more general purposes.

2.03 WATER CORPORATION CHARGES, ELECTRICAL SUPPLY AUTHORITY UNDERGROUND CONNECTION FEES & PLUMBERS LICENSING BOARD FEES

Government Authorities may impose sewer and water headworks fees, water meter fees and costs and Electrical Supply Authority underground connection fees to the Contract site.

The Contractor pays the following Water Corporation charges (ie water and sewer headworks, water standard service charges, application fees, plumbing fees and standpipes) and Electrical Supply Authority underground connection fees. The Department of Housing will reimburse the Contractor for the charges except the plumbing fees upon submission of receipts.

The Contractor is to allow only the plumbing fees imposed by the Plumbers Licensing Board in the tender price.

2.04 BUILDING LICENCE

- The Contractor shall make application and pay all fees associated with procuring a Building License.
- The Contractor shall, after making application, liaise with the Local Government Authority and endeavour to ensure that the Building License is issued without delays.
- The Contractor shall keep the Superintendent informed of progress with the issue of the Building License.
- The Contractor shall obtain the Building License from the Local Government Authority and shall provide the Superintendent with a copy of building license conditions.
- The Contractor shall notify the Superintendent if the Building License or other building approval is issued with conditions that conflict with the Contract documents.

The Contractor is NOT to include GST on the Building License fee in the tender price. The Building License fee is GST exempt.

2.05 TRAINING LEVY

The Contractor shall pay the Building and Construction Industry Training Levy due on the contract.

The Contractor is NOT to include GST on the BCITF levy in the tender price. The BCITF levy is GST exempt.

2.06 PERFORMANCE BONDS

Government Authorities may impose payment of bond monies on the contract works.

The Contractor shall pay all bond monies required by Government Authorities for work under the contract.

2.07 SITE ALLOWANCES

Should a site allowance regarding the contract site be awarded after arbitration by the Western Australian Industrial Relations Commission or the Australian Conciliation and Arbitration Commission, The Department of Housing upon submission by the Contractor of a claim with satisfactory evidence of the amount paid due to that Commission directive, will pay the Contractor half of same amount. The remainder shall be borne by the Contractor.

2.08 EXISTING WORKS OR SERVICES

Existing work disturbed or damaged by the Contractor shall be made good to match the adjacent work unless otherwise directed by the Superintendent.

The Contractor shall alter or reposition existing services as required by the Contract.

The Contractor shall make proper connections between existing and new work and services.

2.09 WORKERS AMENITIES

The Contractor shall provide the amenities required by the relevant building industry awards for workers engaged on the site.

The workers' amenities shall comply with the Local Government Authority requirements.

The Contractor shall maintain the workers' amenities on the site from the day the Works commence until Practical Completion.

2.10 ELECTRICITY AND WATER

The Contractor shall provide any temporary supplies of electricity and water required for execution of the Works.

2.11 ANTI-DUMPING

Dumped goods (i.e. goods from overseas that are imported into Australia at less than their normal value, causing or threatening to cause material injury to an Australian industry producing like goods, or materially hindering the establishment of such an industry) shall not be used in the performance of this Contract.

Where a tender involving the supply of goods from overseas has been accepted and the Commonwealth Minister for Customs subsequently determines the goods as dumped, the Principal may either direct the substitution of such goods or terminate the Contract. Any consequential costs or losses of the Contractor shall be borne and paid for by the Contractor. In addition, any extra costs or losses incurred by the Principal will constitute a debt recoverable from the Contractor.

Where it is reasonably suspected that any goods subject to a Contract constitute dumped goods, the Contract may be suspended to enable the suspicion to be confirmed or dismissed under the Commonwealth Customs legislation. Any costs or losses incurred by the Principal as a result of any suspension under this clause shall be borne and paid by the Contractor.

2.12 ENFORCEMENT OF GOVERNMENT PROCUREMENT POLICIES.

It is a fundamental term of this Contract that the Contractor shall comply with the specific provisions of government procurement policies as set out in the Request for Tender and Contract documents.

When in response to those provisions;

a. the Contractor has:
    i. claimed a tender preference that required the Principal to accept the Contractor's Tender rather than another conforming tender; or,

ii. given undertakings in its tender that have induced the Principal to accept the Contractor's Tender rather than another conforming tender; and

b. the amount of that other conforming tender is/was lower than the amount of the Contractor's offer; and

c. the Contractor fails to comply with the whole or a discrete portion of those provisions or undertakings,

THEN the Principal may, in addition to any other remedy available to it under the Contract; do any one or more of the following:-

1. recover from the Contractor the whole or any part of the difference between the Contractor's offer and the amount of the lowest conforming tender;
2. require the Contractor to use goods, materials or services that comply with the specific provisions of the policy or the Contractor's undertakings referred to above;
3. terminate the Contract.

The Contractor shall, if requested by the Principal certify in writing to the Principal that it has complied with specific the policy provisions and its undertakings set out or given in its Tender and provide adequate evidence of its compliance. The existence and extent of the Contractor's failure to comply with any such provisions or undertaking shall be determined by the Principal in its absolute discretion and, in the absence of manifest evidence to the contrary, the determination of the Principal in this regard shall be final and binding on the parties to this Contract.

On determination by the Principal that the Contractor has failed to comply with such provisions or undertakings, the difference between the amount of the Contractor's offer and the amount of the lowest conforming tender shall be a debt due to the Principal, which the Principal shall be entitled to deduct from the Contract Sum or any Security held by the Principal, or to recover from the Contractor in any court of competent jurisdiction.

2.13 MATERIALS

The Contractor shall use APPROVED products when nominated or applicable.

Materials not otherwise specified shall be produced in Australia or New Zealand.

When any specified materials are not available, the Contractor shall nominate similar or equivalent replacements for approval by the Superintendent.

When requested by the Superintendent, the Contractor shall provide certification from the manufacturer that a material complies with the specified STANDARD.

2.14 SUBSTITUTION OF MATERIALS

The Contractor may substitute the nominated materials with an APPROVED alternative product only when indicated on the Schedule of Exterior Materials and Paint Colour.

2.15 PAYMENT FOR MATERIALS ON SITE

Unfixed materials delivered to the site for incorporation in the works shall not be included in the Progress Certificates.

2.16 PROTECTION OF MATERIALS

The Contractor shall at his own cost provide adequate storage and protection for all materials so as to preserve their quality and fitness.

2.17 CONTRACTOR'S PROFIT MARGIN

The Department of Housing will pay a Contractor's profit margin of 17% of the agreed valuation of variation orders.

2.18 REPEG SITE

The Contractor shall engage and pay for a licensed surveyor to repeg the site(s) to confirm true boundaries.

2.19 ADVERTISEMENTS AND PROMOTIONS ON SITE

The Contractor shall supply and erect Builder's signboards as required by the Builder's Registration Board. No signboard is required for the Department of Housing in this contract. No other signs, advertising, promotions, flags, or displays shall be erected on the site without the written approval of the Department of Housing. Signs stating "no ticket, no start" are prohibited.

2.20 THEFT & VANDALISM ON CONSTRUCTION SITES

Contractors are encouraged to participate in industry initiatives to reduce theft and vandalism on construction sites.

For further information contact -

Project Manager - Name & Shame Campaign
Housing Industry Association
Phone: 9244 0100 Fax: 9244 4944
Email: wa_enquiry@hia.asn.au

Master Builders' Association
Phone: 9322 5133 Fax: 9322 5518
Email: mba@mbawa.com

2.21 SERVICES RECORD

For new buildings consisting of multiple dwellings the Contractor shall prepare a drawing accurately showing the site and the location of services constructed during the course of the Works including details required for future maintenance.

The Contractor shall submit the services record drawing to the Superintendent at Practical Completion of the Works.

Whenever possible the Superintendent will provide the base drawings for the preparation of the services record and in the event the Superintendent is unable to supply a base drawing then the Contractor shall arrange for it to be drawn in CAD at the cost of the Principal.

2.22 STRATA TITLING

No strata titling is required for this project.

2.23 FIREWALL STATUTORY DECLARATION

The "Firewall Inspection Report" shall be signed and dated by the Contractor or Contractor's representatives and submit to the Superintendent at the Practical Completion of the projects.

A sum of $500 per party wall will be withheld if the Firewall Inspection Report is not received by the Superintendent at the Practical Completion of the project.

2.24 GRAFFITI REMOVAL

The Contractor shall at all times ensure that all plant and equipment including temporary offices and lunch rooms on site are free of graffiti.

Promptly remove all graffiti applied to buildings, plant and equipment.

If graffiti is not removed within the time nominated by the Superintendent, the Department of Housing will have the graffiti removed and recover the cost from the Contract.

2.25 PRACTICAL COMPLETION AND HANDING OVER KEYS

On the day the works are deemed to be practically complete, the contractor shall ensure that dwellings are connected to all services. All appliances (eg hot water units, stoves, ovens, TV antenna) and fittings shall be checked to ensure that they are in correct working order.

The contractor shall close all water, electricity & gas accounts and shall arrange payment of all amounts owing as at the date of practical completion.

All keys shall be properly tagged for identification before they are handed over to the Superintendent. Label

keys to identify unit number (if applicable), street number, lot number, street name and locality.

2.26 MAINTENANCE DURING THE DEFECTS LIABILITY PERIOD

Refer to the General Conditions of Contract.

The following EMERGENCY maintenance shall be commenced within three (3) hours of receiving the instruction from the Superintendent.

- Complete failure of the dwelling electrical power and/or lighting.
- Electrical shocks or sparks.
- Stove completely out of action.
- Gas leaks.
- Burst water pipes.
- Completely blocked WC pan and/or blocked sanitary plumbing overflowing inside dwelling.

The following PRIORITY maintenance shall be commenced within forty eight (48) hours of receiving the instruction from the Superintendent.

- Blocked sanitary plumbing overflowing externally.
- No hot water.
- Cracked WC pan.
- Failure of common or security lighting.
- Faulty external entry door locks.

If an EMERGENCY occurs outside normal working hours and the Contractor is unable to be contacted by the Superintendent, or if PRIORITY maintenance is not commenced within 48 hours of the Superintendent's instruction, then the Department of Housing will complete the work and recover the cost from the contract.

The above emergency or priority situations are not exclusive.

FIREWALL INSPECTION REPORT

PROJECT:

SITE ADDRESS:

UNIT NUMBER:

The above unit/s have been inspected in relation to the installation of the fire walls in accordance with the details provided in the contract drawings and specification.

The fire blankets have been installed above the fire wall between the roofing materials and no timber or other flammable building material breaches the firewall of any part of the unit as nominated above.

All the materials used in the construction of the firewalls and all other fire control prevention details are strictly in accordance with the specification and drawings.

First Inspection Upon Installation:

_____ _____

Signed by or, on behalf of Builder Dated

Final Inspection at Practical Completion:

_____ _____

Signed by or, on behalf of Builder Dated

3 - SPECIAL CONDITIONS OF CONTRACT

3.1 Compliance with Awards

3.1 Compliance with Awards

The Contractor shall comply with any Awards, Workplace Agreement binding upon the employer registered under the Workplace Agreement Act or Industrial Agreements binding on the employer made pursuant to the relevant Industrial Relations Act applicable to the work under the contract and shall ensure that all subcontractors do likewise. Without limiting the foregoing the Contractor shall:

a. conform and comply with, all relevant Federal and State Legislation, Awards and Certified Workplace/Industrial Agreements as ratified by an Order of the Industrial Relations Commission.
b. for any obligations arising from that which the Contractor may have to make payments or contributions in respect of the Contractor's own direct employees.

The Contractor shall not directly or indirectly compel, oblige or petition any subcontractor to:-

a. make any payment or contribution to any redundancy or superannuation fund with respect to the subcontractor's own direct employees which the subcontractor is not required to contribute to under the terms of any Award or under the terms of any Industrial Agreement registered with the Industrial Relations Commission or other Workplace Agreement binding upon the employer registered under the Workplace Agreement Act or entered into by the subcontractor, unless the subcontractor is obliged to do so by relevant Federal or State Legislation, Awards or Industrial Agreements;
b. enrol employees as union members;
c. deduct union membership dues on behalf of employees;
d. pay over-award payments to employees unless:
    - a workplace agreement under the State Workplace Agreements Act;
    - an industrial agreement under the State Industrial Relations Act; or
    - a certified agreement or enterprise flexibility agreement under the Federal Industrial Relations Act.

Subject to sub-clause (i) above, the Contractor shall not pay any employee for any period during which he did not work as a result of taking industrial action; unless the Contractor is ordered to do so by order of either the Western Australian Industrial Relations Commissions or the Australian Conciliation and Arbitration Commission. The Contractor shall ensure that all his subcontractors do likewise.

The Contractor shall not directly or indirectly hinder an employee, one of his subcontractors or one of his subcontractor's employees from working in accordance with his contract of employment when the reason for doing so is that the person is or is not a member of a union. The Contractor shall ensure that all his subcontractors do likewise.

The Contractor shall not enrol or cause to be enrolled into any membership of any industrial union or organisation any worker as a condition of working.

All subcontracts which the Contractor enters into for the execution of the contract shall contain provisions to give effect to the provision of this clause.

Any breach of the provisions of this clause 3 shall constitute a substantial breach of the provisions of the Contract for the purpose of the relevant section (AS2124 Clause 44, HBC.4 Clause 32 or NPWC Clause 44) of the contract (whichever is applicable). The Contractor shall be solely liable for the consequence of not complying with the requirements of this clause 3.1. The Contractor shall indemnify The Department of Housing against all damages and claims arising from breach by the Contractor of the requirements this clause 3.1.

Should the Contractor not comply with any of the requirements of this clause, the Department of Housing may do one or more of the following:

a. issue a Notice of Default pursuant to the relevant section (AS2124 Clause 44, HBC.4 Clause 32 or NPWC Clause 44) of the Contract, (whichever is applicable);

b. terminate the contract as a result of a substantial breach of its terms by the Contract pursuant to the relevant section (AS2124 Clause 44, HBC.4 Clause 32 or NPWC Clause 44) of the Contract (whichever is applicable);

c. determine to preclude from consideration tenders by the Contractor for certain works with Principal for a specific period;

d. publish the names of the non-complying parties and actions taken.

3.2 SUB-CONTRACTING

Nothing in the Contract shall preclude any sub-contractor from sub-contracting any part of the work under the contract.

3.3 CODE OF PRACTICE FOR THE BUILDING AND CONSTRUCTION INDUSTRY IN WESTERN AUSTRALIA

The Contractor shall comply with the Code of Practice for the Building and Construction Industry in Western Australia and any failure to do so shall constitute a default for the purposes of clause 44 of the AS2124 General Conditions, clause 44 of the NPWC General Conditions or clause 32 of the HBC Edition 4 General Conditions.

The Principal shall be entitled to recover from the Contractor,

- The sum of any moneys received by the Contractor; or
- Any sum by which the Tender price was increased

in contravention of AS 4120-1994 such sum shall be deducted from the moneys otherwise due under a progress certificate given under clause 27 of the HBC Edition 4 Conditions Of Contract, clause 42 of the AS2124 Conditions of Contract or clause 42 of the NPWC General Conditions of Contract as if such sum were a debt due from the Contractor to the Principal under or by virtue of a provision of the Contract.

3.4 SUBCONTRACTOR and SUPPLIER ARRANGEMENTS

It is a fundamental term of this Contract that the Contractor comply with all payment obligations under agreements between the Contractor and its subcontractors and suppliers in respect of the carrying out of the work under this Contract.

Failure, without good cause, to so comply with any of such payment obligations will constitute a substantial breach of contract for the purposes of clause 44 of the AS2124 General Conditions, clause 32 of the HBC Edition 4 General Conditions or clause 44 of the NPWC General Conditions notwithstanding the provisions of clause 43 of the AS2124 General Conditions, clause 37 of the HBC Edition 4 General Conditions or clause 43 of the NPWC General Conditions

3.5 DISCLOSURE OF CONTRACT INFORMATION AND DOCUMENTS PUBLIC DISCLOSURE OF CONTRACT DETAILS

1. The Contract Award information for all contracts above $20,000 will be publicly available and published on the Western Australian Government Contracting Information Bulletin Board after the Contract is legally established.
2. Documents and other information relevant to the Contract may be disclosed when required by law under the Freedom of information Act 1992, tabling of documents in Parliament or under a Court Order.

DEFINITIONS

"Contract Award information" means Contractor(s), name(s) and Contract Price(s).

3.6 ACCESS BY THE AUDITOR GENERAL FINANCIAL ADMINISTRATION AND AUDIT ACT 1985

The parties acknowledge and agree that, notwithstanding any provisions of this Contract to the contrary, the powers and responsibilities of the Auditor General for the state of Western Australia under the Financial Administration and Audit Act 1985 (WA) are not limited or affected by the terms of the Contract.

3.7 CONTRACTOR PERFORMANCE REPORTING

The Superintendent's Representative will, at a various stages during this Contract, prepare reports for the sole use of the Principal in respect to aspects of the Contractor's performance.

The contractor is to be aware that the outcome of these performance reports will be used by the Principal in consideration of future tendering and contracting opportunities with the Principal.

3.8 ADVERTISMENTS AND PROMOTIONS ON SITE

The Contractor may erect on site, or permit to be erected on site, only those signs

- Required by law
- Specified in the Contract documents
- Required to identify the Contractor's premises

Do not erect on site, or permit to be erected on site, any other sign, advertisement, promotion or other display without the written approval of the Superintendent.

3.9 PUBLICITY

The Contractor shall not issue any information, publication, document or article for publication in any media that includes details of the work under the contract without the written approval of the Principal.

3.10 SITE CONTROL

The Contractor shall at all times comply with the regulations and restrictions imposed by the Superintendent relating to the storage of materials, the routing of construction traffic, the interruption of existing services and facilities and any other regulations in force on the site.

Comply with all statutes, regulations and by-laws relating to the protection of the environment.

The contractor shall ensure that green waste, earth, fill, brick, mortar, concrete, and metal are recycled either for use on–site or by delivery to a recycling facility. The contractor shall provide the Superintendent with off site disposal documentation detailing the recycling facility destinations that received the materials.

Obtain written approval from the Superintendent for the formation of any temporary roads, the erection of temporary structures or any site clearing not specifically documented.

No trees or shrubs shall be removed or destroyed without the written approval of the Superintendent.

No fire shall be lit without the written approval of the Superintendent.

Flammable or explosive products shall be stored in accordance with the relevant statutes and to the approval of the Superintendent.

3.11 SOIL EROSION

Take all proper precautions to prevent soil erosion from any land used or occupied by the Contractor in the execution of the work under the contract.

3.12 DUST, DIRT, WATER AND FUMES

Prevent any nuisance occurring through the discharge of dust dirt, water, fumes and the like on to persons or property.

3.13 VEHICLES

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.

Maintain vehicles, wheels and tracks in a suitable clean condition to prevent transfer of mud onto adjacent streets or other areas.

3.14 REFUSE DISPOSAL

All site refuse (including foodstuffs) shall be handled and disposed of in accordance with the requirements of the waste materials recycling provisions detailed in the Site Control clause, relevant statutes and to the approval of the Superintendent.

Site refuse containing Asbestos shall be handled, transported and disposed of in accordance with the current Environmental Protection (Controlled Waste) Regulations.

3.15 SECURITY OF PREMISES

Carry out the work under the contract in such a manner that maximum security of the premises is maintained at all times.

If, in the opinion of the Superintendent at any period of the contract and during all non working hours maximum security cannot be maintained, the Contractor shall employ an APPROVED static guard security service on the site.

3.16 PROTECTION OF THE PUBLIC

Use all types and methods of protection (such as temporary safety fencing and warning signage) that are reasonably practicable and necessary to protect the public from hazards associated with the work under the Contract. Protection shall be consistent with the recommendations contained in the WorkSafe WA publication "Construction Work and the Public". This publication is available from WorkSafe WA and can be accessed from the WorkSafe WA website at www.safetyline.wa.gov.au. Where a safety fence is used, it shall be not less than 1.8 metres in height.

3.17 WORKPLACE SAFETY AND HEALTH COMPLIANCE

The Contractor shall comply with the Occupational Safety & Health Act 1984 (the Act) and the Occupational Safety & Health Regulations 1996 (the regulations) as amended from time to time.

The Contractor is deemed to have control of the Site for the purposes of executing the work under the Contract and is responsible for all occupational safety and health matters connected with the work.

The Contractor shall, wherever practicable, appoint a Safety and Health Representative or Representatives to perform the functions described in Section 33 of the Act.

The Contractor shall promptly notify the Superintendent of injuries and diseases it is required under section 23I(2) of the Act and regulations 2.4 and 2.5 of the regulations to report.

The Contractor shall indemnify the Principal from and against any loss, damage or injury suffered or incurred by the Principal or any claim made against the Principal by reason directly or indirectly of the Contractor failing to comply with its obligations under this clause. The Contractor shall reimburse the Principal for any fines, penalties costs and expenses which the Principal may incur as a result of any non-compliance on the part of the Contractor with any of the provisions of the Act or the regulations or with any of its obligations under this clause. The Contractor shall pay all fees payable under the Act and regulations which are payable in connection with the execution of the Works.

The Contractor is responsible for ensuring that all persons entering and moving about the Site are not unreasonably exposed to hazards, and notwithstanding the Contractor's obligations to site and public security as stated elsewhere in this Contract, the Contractor shall monitor and control the access of all persons to the Site.

a. The Contractor shall ensure that no person:

b. unrelated to the Contract enters the Site without the express permission of the Contractor; or

c. enters the Site or commences work on the Site until that person has received occupational safety and health induction training and a safety briefing regarding hazards relevant to the Site.

OCCUPATIONAL HEALTH AND SAFETY REPORT

Prior to the Contractor commencing work on Site, the Principal will provide an Occupational Health and Safety Report to the Contractor, setting out those matters referred to in regulation 3.139(4) of the regulations.

MATERIAL SAFETY DATA SHEETS

The Contractor shall ensure that a copy of all manufacturer/supplier Material Safety Data Sheets are available on a register on site for each hazardous substance used in connection with the work under the Contract. Material Safety Data Sheets shall be consistent with the format of the National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC: 201 1 (1994)]

SAFE WORK METHOD STATEMENT

a. Where construction work on the Site is high risk construction work within the meaning of regulation 3.137 of the regulations, the Contractor shall ensure that a person having day-today, on site control of the high-risk work at the site gives the Contractor a written Safe Work Method Statement before the high risk construction work commences. The Contractor shall ensure that the Safe Work Method Statement is kept up to date, and describes the following:

b. each high-risk construction work activity which includes a hazard to which a person is likely to be exposed;

c. the risk of injury or harm arising from those hazards;

d. the safety measures to be implemented to reduce the risk;

e. a description of the equipment used in the work activity; and

f. any qualifications and/or training required to enable people to do the work safely.

The Contractor shall ensure that a Safe Work Method Statement covers all high-risk construction work done at the site, and that the high-risk construction work is carried out in accordance with the statement.

SAFETY MANAGEMENT PLAN

The Contractor shall prepare and implement a Safety Management Plan relevant to the works under the Contract. The Safety Management Plan shall be prepared:

a. in conjunction with a competent person suitably experienced and qualified in safety matters;

b. prior to the commencement of the work on Site; and

c. in conjunction with the Consultant if the Principal so directs.

The Safety Management Plan shall be maintained and updated throughout the Contract, be appropriate to the risks associated with the work under the Contract and shall:

a. identify each person with a specific occupational safety and health responsibility at the construction site, and describe how those responsibilities are coordinated;

b. describe the occupational safety and health induction training that will take place in relation to the construction work;

c. describe the arrangements for managing occupational safety and health incidents at the site;

d. set out the site safety rules and describe the arrangements for ensuring that everyone at or visiting the site is informed of those rules;

e. include all the information held by the main contractor in relation to the identified hazards, the risks arising from those hazards and the control measures in place; and

f. include the safe work method statements that have been prepared in relation to 'high-risk construction work' to be done at the site.

Each element of the Safety Management Plan shall specifically address:

a. the person on the Site who shall take responsibility for the successful implementation of each element;

b. the hierarchical structure by which the responsibility is performed, and;

c. the specific manner by which the element is performed.

Prior to the commencement of the Works, the Contractor shall certify to the Superintendent that its Safety Management Plan:

a. has been prepared;

b. has been provided to each person doing construction work at the Site or is otherwise available for inspection on the Site; and

c. has been implemented.

OCCUPATIONAL SAFETY AND HEALTH INFORMATION

Prior to the commencement of work on Site, or at any other time the Superintendent's Representative directs, the Contractor shall consult with the Principal and the Superintendent's Representative for the purposes of ensuring that, as far as practicable, the construction work can be done without risk to the health and safety of either those doing the work, or anyone else who may be at or near the construction site.

The Contractor shall ensure that the following information is recorded, reviewed and updated regularly, and kept until the Works are completed:

a. The identification of hazards to which a person at the construction site is likely to be exposed;

b. An assessment of the risk of injury or harm to a person resulting from those hazards; and

c. The risk control measures through which the risk of injury or harm may be eliminated or otherwise controlled.

If the Contractor becomes aware that a change in the design of the Works could better eliminate or control a risk of injury or harm to those doing the construction work, or anyone else who may be at or near the Site, the Contractor shall ensure that this information is passed on to the Principal and the Superintendent's Representative.

The Contractor shall ensure that any Occupational Safety and Health information it receives from the Principal or the Superintendent's Representative is incorporated into its hazard identification, risk assessment and risk control measures.

3.18 TRADE NAMES

Where a trade name, brand or catalogue number is referred to in the contract documents, the Contractor may substitute similar material or equipment provided that in the opinion of the Superintendent the characteristics of type, quality, finish, appearance, method of construction and performance are not less than that specified, and are approved by the Superintendent.

Such approval shall not be anticipated because of a similar approval having been given in a previous contract.

3.19 GOODS AND SERVICES TAX

Tenderers' companies must be registered for ABN and GST with the Australian Taxation Office (ATO).

Tax Invoicing Agreement

The Department of Housing will not be able to claim credits on GST paid for contracts involving the construction of rental dwellings. Therefore production of a tax invoice from a Contractor is not required when a payment is made or claimed. However successful tenderers are required to advise the Department of their ABN and GST registration on receipt of the letter of acceptance and prior to first progress payment by filling in the Tax Invoicing Agreement, and returning it to the Department of Housing.

SUMMARY OF DOCUMENTS

STEEL FRAMED CONSTRUCTION
WIND REGION A

Following is a summary of the documents to be submitted by the Contractor to the Superintendent.

CLAUSE NUMBER	SUBJECT	CONTRACTOR'S RESPONSIBILITY
2.03	Development or Headworks Charges	Submit invoice or receipt to the Principal at the Department of Housing.
2.04	Building Licence	Provide copy advising of any conditions that conflict with the Contract documents.
2.21	Services Record Multiple Dwellings Building	Submit a services record drawing at practical completion of the works.
2.23	Firewall Declaration	Provide statutory declaration document.
3.19	Tax Invoicing Agreement	Submit to the Department of Housing
A6.08	Asbestos Disposal	Provide written evidence of asbestos disposal.
B	Termite Barrier	Submit same. Certificates and Warranty
C2.06	Compaction Certificate	Submit certificate.
K2.02	Steel Roof Trusses	Provide 4 sets of documents, one signed by Engineer
K2.03	Shop Drawings	Provide 4 sets of documents, one signed by Engineer
P3.03	Septic Tank Certificate	Submit certificate.
P3.04	Plumbing Certificate	Submit certificate.
P10.03	Gas Plumbing Notice of	Submit copy of the notice. Compliance
Q3.03	RCD Testing	Provide written record of test conditions & tripping times.
Q3.15	Smoke Alarms	Provide written record.
Q5.06	Electrical Switchboards	Submit drawings
R1.22	Television Reception System	Provide test record.

DEPARTMENT OF HOUSING

STANDARD SPECIFICATION

STEEL FRAMED CONSTRUCTION

WIND REGION A

A - DEMOLITION AND REMOVAL

A1 EXTENT

Remove existing items and demolish existing buildings and structures to extent nominated by tender documents.

A2 RESULTING MATERIALS

Materials nominated to be removed and materials resulting from demolition, except ASBESTOS PRODUCTS, become the property of the Contractor and shall be removed from the site.

All existing ASBESTOS PRODUCTS to be removed from the site shall be removed and disposed of in the manner specified later.

"ASBESTOS PRODUCTS" means products containing fibrous minerals of crocidolite, amosite, chrysotile, anthophyllite, tremolite or actinolite or any mixture of those minerals in amounts exceeding one per cent by mass or volume; and includes asbestos cement products.

A3 INFORMATION

ASBESTOS PRODUCTS when handled, worked in a manner not consistent with relevant legislation or codes of practice, have the potential to be harmful to the health of humans as asbestos has been associated with malignant tumours or cancer.

The Contractor shall inform himself and his employees and agents and sub-contractors of the potential health hazards associated with ASBESTOS PRODUCTS before he or they commence work on the site.

A4 DEMOLITION PLANNING AND METHODS

The Contractor shall be responsible for the planning and co-ordinating of demolition and the methods and procedures employed. The Contractor shall plan and carry out the demolition of buildings and structures in accordance with this specification and AS 2601.

A5 DETAILED INSTRUCTIONS

A5.01 License

The Contractor shall make application to the Local Authority for a license to demolish the existing buildings and structures nominated to be removed from the site.

The Contractor shall pay all fees for Demolition license.

A5.02 Vermin Treatment

Treat existing buildings and structures to be removed as to ensure they are not inhabited by rodents. Treatment shall be carried out before any demolition or removal of items.

When baits are used to treat buildings the Contractor shall provide such materials and labour that is necessary to secure the buildings from unforced entry by unauthorised persons whilst baited.

A5.03 Services

Disconnect, cut off, seal and divert existing services as required by the Works.

Allow for decommissioning or removal of any septic tanks & leach drains nominated on drawings in accordance with Department of Health and local authority regulations.
Allow to backfill excavations and compact in layers as per earthworks section C2.04.

A5.04 Removal of Fences

Prior to removal of existing fences, obtain adjoining owners permission for removal. Notify adjoining owners when replacement fence will be constructed. No charge will be made against adjoining owners for removal of existing fences.

A6 ASBESTOS PRODUCTS

A6.01 Notification

When the removal of ASBESTOS PRODUCTS forms part of the Works, give the Superintendent twenty four hours notice of the date of commencement of removal of ASBESTOS PRODUCTS.

A6.02 Discovery

When suspected or actual ASBESTOS PRODUCTS of which the Contractor was unaware are discovered to be part of items nominated to be removed, the Contractor shall:

1. leave the discovered products undisturbed
2. return the original covering of the product
3. cease work on the site
4. immediately report the presence and location of the products to the Superintendent

A6.03 Water Supply

When the removal of ASBESTOS PRODUCTS forms part of the Works, the Contractor shall provide and maintain a water supply to the removal area until all ASBESTOS PRODUCTS have been removed from the site.

The Contractor may apply to the Water Supply Authority for a water service to the Department of Housing site and open a consumer account/s in the name of The Department of Housing ; the Contractor shall close and pay the consumer account/s.

A6.04 Handling

When the removal of ASBESTOS PRODUCTS forms of the Works the Contactor shall inform himself of and ensure that ASBESTOS PRODUCTS are handled in accordance with:-

- The current Occupational Health, Safety and Welfare Regulations of Western Australia and
- The National Occupational Health and Safety Commission publication "Worksafe Australia - Asbestos Code of Practice for the Management and Control of Asbestos in Workplaces (NOHSC: 2018 (2005).

A6.05 Protection of Persons

Before existing ASBESTOS PRODUCTS are handled on the site provide and erect danger signs and barriers to the surroundings to prevent unprepared people entering removal area. Maintain danger signs and barriers until all ASBESTOS PRODUCTS are removed from the area. Remove danger signs immediately all ASBESTOS PRODUCTS have been removed from the site.

The Contractor shall ensure that any authorised person entering the area of the site where ASBESTOS PRODUCTS are being handled is provided with appropriate protective clothing/equipment and the protective clothing/equipment is worn and used in accordance with the manufacturer's instructions.

A6.06 Removal By Licensed Persons

ASBESTOS PRODUCTS not in the form of asbestos cement (such as lagging, friable asbestos boards or other asbestos based thermal or acoustic insulation) shall be handled only by a licensed asbestos removalist and shall not be disturbed by other non-licensed persons.

A6.07 General

Protective clothing and masks used in the removal of ASBESTOS PRODUCTS are ASBESTOS PRODUCTS.

ASBESTOS PRODUCTS shall be removed from the site by the Contractor as soon as practicable.

A6.08 Transport and Disposal

ASBESTOS PRODUCTS removed from the site by the Contractor are asbestos waste and shall be transported to and received by a site approved by the Commissioner of health for the disposal of asbestos waste.

Information on approved sites within the Perth Metropolitan area is given by the Health Act Disposal of Asbestos Waste Regulations 1984.

When the site is outside the municipal districts specified in the Schedule 1 of Disposal of Asbestos Waste Regulations, the Contractor shall ascertain the appropriate site approved by the Commissioner of health for the disposal of the asbestos waste resulting from the contract.

The Contractor shall pay all costs for transport and disposal of asbestos waste resulting from the contract.

When removal of ASBESTOS PRODUCTS forms part of the contract, the Contractor shall supply the Superintendent with written evidence of the disposal of the asbestos waste at a site approved by the Commissioner of Health.

B - TERMITE PROTECTION

Termite barriers shall be in accordance with AS 3660.1 – 2000 (or otherwise current relevant Australian Standard) and acceptable to the Building Code of Australia.

B1 Termite Barriers

The internal concrete floor slabs of this project form part of the termite barrier must be designed and constructed in accordance with AS2870.

B1.01 Termite Barriers

Provide termite barriers being either chemical or physical in accordance with the requirements of the BCA to the whole slab area.

B1.02 Floor Penetrations

Seal all pipe penetrations to the main floor slab with stainless steel mesh or APPROVED products.

Alternatively treat pipe penetrations with APPROVED termiticide chemical in accordance with the relevant Australian Standard.

B2 Certificate Warranty

The Contractor shall arrange a signed certificate or warranty from the installer for the termite barriers provided.

The Certificate/Warranty shall nominate the applicable house address, the type of barrier and the extent of barriers.

The Contractor shall complete the Termite Protection Warranty provided by the Department of Housing. The Contractor shall submit the completed warranty and installer's Certificate to the Superintendent at Practical Completion of the Works.

B3 Durable Notice

The Contractor shall provide and FIX durable notices in accordance with the requirements of the BCA.

Durable notices shall be placed in the meter box and in a kitchen overhead cupboard of each dwelling.

The durable notice shall state the following information about the installed termite barriers:-

The method of protection;

The installation date;

Where a chemical barrier is used, its life expectancy as listed on the National Registration Authority label;

The installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity; and

The builder's name and registration number; and

The painter's name and registration number.

TERMITE PROTECTION WARRANTY

The Department of Housing Building Contract No._____

Project: _____

Project Address: _____

_____

Builder Name: _____

Address: _____

Phone: _____ Contact: _____

Reg No: _____ Date Completed: _____

Description of termite protection used:

_____

_____

_____

_____

Name and address of Barrier Supplier: _____

Suppliers certificate/warranty attached.

Name of Pest Controller
(Chemical Application): _____

Reg No: _____ Certificate attached.

I hereby certify and warrant that the above termite protection was used on the above project and all work was carried out in accordance with Australian Standard 3660.1 and in a tradesman like manner.

_____
Signed

_____
Date

C - EARTHWORKS

C1 GENERAL

C1.01 Inspection by the Superintendent

Give the Superintendent seven (7) days notice of the date of the following work so that the Superintendent may inspect:

a. Excavation of the contract site completed

b. Chemical treatment.

C1.02 Site Conditions

Site Conditions: Refer to drawings and addenda.

Rock means any material which cannot be excavated until broken up.

C2 DETAILED INSTRUCTIONS

C2.01 Site Clearing

The entire site shall be cleared except for any trees nominated on the drawings to stay.

Clearing and Landscape Preparation:

Rear yard areas of all properties be machined to an even gradient and raked before handover. All vegetation not nominated on the drawings shall be removed.

Front and common areas be machined to have a finished soil level 75mm below the finished height of paths and driveways ready for landscaping by others.

Clearing:

- Remove completely boulders, rubbish, trees not shown on drawings, scrub, vegetation and organic matter on the surface.
- Excavate and remove any garbage deposits and soft soil spots which are encountered.
- Excavate and remove any stumps and tree roots over 75mm diameter, boulders, limestone caps and existing unused drainage structures to a minimum depth of 300mm below the surface.

Refer to Clause E4.05 relating to reticulation sleeves under driveways.

Excavation C2.02

Excavate the contract site to the extent and levels shown on the drawings.

Excavate areas to be covered by paving and driveways as necessary to obtain finished levels shown on the drawings.

Excavate as necessary for services.

Excavate for footings to sizes specified or shown on drawings.

Step excavations for footings to ensure that pipes do not pass through or under footings and that the minimum depths to the bottom of footings are maintained. Refer to Structural Engineer's drawings and/or DETAIL C1.

Excavate and construct footings at lowest level before excavating adjacent footings at higher level.

Maintain sides of excavations for footings and services until filled.

Provide shoring to sides of excavations when necessary.

Keep excavations free from rubbish until filled. Pump out water from excavations when necessary.

Remove surplus excavated soil from the site.

Prior to excavation for plumbing, drainage, electrical and like services the contractor shall ensure that all subcontractors liaise regarding proposed service runs and trench positions/depths.

In accordance with OSH Regulations 1996 part 3, provide safety tape/netting or such suitable barrier to a height of not less than 900mm around the perimeter of any excavations that pose risk to persons.

C2.03 Removal of Rock

Remove rock to:

a. 150mm minimum below underside of concrete floor slabs and drainage structures.
b. Underside of paving sub-base

Break up rock using mechanical means or explosives; Do not use explosives after concrete has been placed.

Prior to using explosives:

a. Obtain written approval of the use of explosives from the adjoining owners and the Local Government Authority.
b. Submit written approvals to the Superintendent requesting approval for use of explosives.
c. Obtain the approval of the Superintendent to use explosives.

Handle, store and use explosives in accordance with the requirements of the relevant Government Authorities.

Excavated rock shall be stock piled on site, measured by the Superintendent before being removed from the site. Photographic evidence of the stock pile must be produced should the Superintendent be unavailable for the measurement.

The Contractor may also be required to provide copies of detailed invoices, time sheets, tipping dockets to substantiate claims relating to rock being excavated.

C2.04 Filling

Fill the contract site to the extent and levels shown on drawings.

Fill under floor slabs on ground to obtain floor levels shown on drawings.

Fill areas to be covered by paving or driveways as necessary to obtain finished levels shown on drawings.

Filling Material: Clean, clay free, well graded, free draining sand.

Place and compact fill in layers; the thickness of each layer chosen to achieve best compaction with the type of compacting equipment used.

Backfill over services and footings with clean excavated soil unless otherwise specified. Refer to DRAINAGE AND PLUMBING - P.

Fill over septic tanks and drains projecting above existing ground level to provide:
a. 50mm minimum cover;
b. Top of cover level for a 300mm beyond each side;
c. Embankments with 1 in 8 grade from edge of level area to adjoining ground level.

C2.05 Banks

Form banks with 1 in 8 grade unless otherwise noted on drawings.

C2.06 Compaction

Compact soil under footings, floor slabs on ground and areas to be covered by paving, kerbs, driveways and drainage structures to required degree of compaction.

A uniform level of compaction is to be achieved over compacted area.

a. Areas of fill, up to 600mm deep, under footings, floor slabs on ground and areas to be covered by paving, kerbs, driveways and drainage structures to be compacted in layers not more than 300mm be repeated rolling with an excavator.

b. Fill under edge beams of greater than 600mm to be placed in accordance with AS3798 and compacted in layers by compaction equipment to achieve a minimum of 95% density ratio using standard compacting effort in accordance with AS1289.5.1.1.

Compacted fill shall continue 1000mm beyond the edge of the building, and shall be retained or battered beyond this point by a slope not steeper than two horizontal to one vertical. Sand fill up to 800mm deep, well compacted in not more than 300mm thick layers by a vibrating plate or a vibrating.

Select compaction equipment to minimise the risk of damage to adjacent existing structures.

Provide the Superintendent with an Engineer's Certificate of Compaction prior to pouring concrete.

D - SITEWORKS

D1 ITEMS SPECIFIED ELSEWHERE

Cast insitu Concrete Kerbing, Mass Concrete Paving and Concrete Driveways - Refer to CONCRETE - E.

D2 CLOTHES LINE

D2.01 General

Provide clothes lines of type and location shown on drawings.

D2.02 Rotary Clothes Hoist

Rotary Clothes Hoist: Galvanised steel construction of APPROVED manufacture with gears and 22mm nominal size tubular stays to cross arms.

Wire Length: 37 metres minimum, unless otherwise stated on drawings.
Installation: Pipe column of hoist set 450mm into 450mm diameter concrete base 450mm into ground.

D2.03 Fold Down Clothes Line

Fold Down Clothes Line: Galvanised steel construction of APPROVED manufacture.
Wire Length: 23 metres minimum, unless otherwise stated on drawings.

Mount fold down clothes line on wall or posts, nominated on drawings.
Posts shall be set 450mm into 450 diameter concrete bases 450mm into ground.

D2.04 Extendable Clothes Line

Extendable Clothes Line: Post to posts construction of APPROVED manufacture with PVC coated steel wire and galvanised steel posts.

Installation: Posts set 450mm into 450mm diameter concrete bases 450mm into ground at 2.4 m centres.

D3 BLOCK PAVING

When brick or block paving is used a 150mm kerb is to be installed on common trafficable areas as specified.

D3.01 Vehicular Paving

Block paving shown on drawings as subject to vehicular traffic shall have:

a. Stone sub-base
b. Concrete kerbing to edges of paving not restrained by walls.

D3.02 Stone Sub-Base

Extent of Stone Sub-base: Under vehicular paving and concrete kerbing.

Sub-Base Material: Clean, clay-free, gravel or crushed rock; may be limestone.
Finished Thickness of Sub-Base: 100mm.

Minimum Compaction of Sub-base: 90% maximum density.
Provide a uniform level of compaction over the sub-base area.
Finished sub-base shall have uniform falls.

D3.03 Pedestrian Paving

Refer to EARTHWORKS for preparation of soil.
Pedestrian block paving areas shall have weed killer applied to formed soil in accordance with the manufacturers instructions.

Edges of pedestrian block paving not restrained by kerbing or walls shall be a soldier course bedded on 75mm thick concrete.

D3.04 Bedding Sand

Provide a loose sand layer, 50mm thick, for bedding of paving bricks/blocks.
Bed Sand: Clean, well graded and passing a 2mm sieve.

D3.05 Paving Blocks

Vehicular Paving Blocks: Solid concrete 60mm minimum thickness.
Pedestrian Paving Blocks: Solid concrete 40mm minimum thickness.
Colour: Refer to SCHEDULES or drawings.

D3.06 Laying

Vehicular Paving Laying Pattern : Herringbone.
Pedestrian Paving Laying Pattern: Stretcher bond.
Commence laying at lowest level of paving.
Lay paving units with 5mm maximum gap between blocks.
Lay complete rows of full blocks first.
Use cut blocks to fill spaces between edge restraints and full bricks/blocks.
Cut blocks with masonry saw.
Do not compact bedding sand whilst laying individual blocks.
Compact completed sections of paving into bedding sand maintaining required falls.
After compaction, fill gaps between blocks by sweeping in sand.
Filling Sand: Clean sand passing a 2mm sieve.
Remove excess sand as soon as joints are filled.
Complete trafficable areas as detailed in section Ground Level Edge Paving Detail H6.

D3.07 Cleaning

At practical completion of the works all stains and dust shall be removed from block paving.

D4 PRE-CAST CONCRETE KERBING

Use pre-cast concrete kerbing when the contract site cannot be supplied with cast insitu concrete kerbing; refer to CONCRETE - E.

Minimum Size: 200mm deep, 100mm wide at top and 150mm wide at base with face adjoining vehicular paving providing a 20mm minimum vertical lip above finished vehicle paving.

D5 CROSSOVERS

Location: Refer to drawings.
Material: Concrete to the local authority requirements.
Width: 2700mm unless otherwise shown on drawings
Extent: From contract site boundary to existing road surface or existing road kerb.

When the vertical face of road kerb is greater than 40mm above road surface then the kerb is to be removed and the crossover graded down to 20mm vertical lip at road edge.

D6 STONE PITCHING

Extent: Refer to drawings.
Face of stone pitching to banks shall be at grade of 1.1 unless otherwise nominated on drawings.

Stones: Clean, hard and durable; laterite or other approved by the Superintendent.
Stones shall generally be of a regular size having no dimension less than 150mm or more than 300mm.

Bedding Layer: Provide a layer of gravel, 30mm thick, for bedding of stones.
Laying: Lay stones in a close fitting pattern rammed into position.
Fill spaces between the stones with mortar to produce an even, sealed surface. Take care to keep exposed rock surface free from mortar.

Mortar Mix: One part cement, one tenth part lime (hydrated or putty) and 3 parts sand.

D7 FENCES

D7.01 Removal of Existing Fences

Extent: Refer to drawings. Permission for Removal: Obtain adjoining owners permission prior to removal of existing fence and notify them when replacement fence will be constructed. No charge shall be made against adjoining owners for removal of existing fences.

D7.02 Fencing

Fencing height: 1800mm height unless nominated otherwise on the site plan.

Solid metal on post & rail (not panels) Stratco, Neetalock or similar APPROVED fencing to comply with the structural provisions of the Building Code of Australia for the applicable Wind Region using the following criteria:

- Wind region A of A.S.1170.2 or AS/NZS 1170.2 as nominated on schedules.
- Terrain Category 2 of A.S.1170.2 unless otherwise nominated on schedules.

Provide the Superintendent with the following documents:

- Written and drawn information fully describing the fencing details, fencing supports and connections.
- These documents should be prepared and signed by a professional practising structural engineer.

D8 Gates

Construct gates as shown on drawings, and unless noted otherwise, to match Fencing. Gates shall have hinges and latches. See Details D7a.

Provide colorbond pressed metal capping to full perimeter of gate and grind smooth any sharp corners.

D9 LETTERBOXES

D9.01 Steel Letterboxes

Install APPROVED type steel letterboxes when shown on the site plan.
Provide a post for each single steel letterbox.
Post: 1700mm long 25mm N.B. Galvanised steel pipe with a steel plate wielded to each end.
Base Plate: 140mm x 150mm x 2mm thick.
Top Plate: Suitable for fixing of letterbox.
Erect post with base plate in ground and top plate 1000mm above ground.
Securely fix letterbox to top plate.
Posts to be embedded in concrete nom. 150mm diameter x 500mm deep.

D9.02 Pre-cast Letterboxes

Provide pre-cast letterboxes to Australian Post's specifications.

E – CONCRETE

E1 INSPECTION BY THE SUPERINTENDENT

Give the Superintendent seven (7) working days notice of the date of the following work so that the Superintendent may inspect:

a. Setting out of the building
b. Placing of concrete

E2 MATERIALS

E2.01 Concrete

Concrete shall be manufactured and delivered in accordance with AS 1379-1997/Amdt1 –2000 or otherwise current Australian Standard. Unless otherwise shown on drawings, concrete shall be normal - class concrete with:

a. N20 strength grade
b. 80mm slump
c. 20mm maximum nominal aggregate size
d. dProduction assessment by manufacturer in accordance with AS 1379

E2.02 Identification Certificates

When requested by the Superintendent, the Contractor shall provide the concrete manufacturer' Identification Certificates (delivery dockets) for the concrete supplied to the contract site.

E2.03 Reinforcement

Steel reinforcement shall comply with the STANDARD.

E2.04 Materials for Site Mixed Concrete

Cement: Normal Portland (Type A) to current applicable Australian Standard, delivered to the contract site in the manufacturer's branded sealed bags.

Sand: Clean sand, free from deleterious matter and of size suitable for concrete.
Coarse Aggregate: Clean, crushed, dense stone, 20mm maximum size, free of deleterious matter.
Water: Fit for human consumption, free of acids, vegetable matter, sugars and any material harmful to concrete or reinforcement.

E3 DETAILED INSTRUCTIONS

E3.01 Formwork

The material, design and construction of formwork shall comply with AS 3610.

Design and construct formwork necessary to produce concrete elements of size and shape shown on drawings.

Exposed Corners of Concrete: 20mm chamfer unless otherwise shown on drawings.

Concrete surface shall be:

a. Surfaces exposed to viewing = Class 2 finish.
b. Surfaces permanently concealed from view = Class 4 finish in accordance with AS 3610.

Stripping of forms and removal of formwork supports shall comply with requirements of AS 3600, Clause 19.6.1.

E3.02 Reinforcement

Provide reinforcement as shown on drawings.

Support and fix reinforcement so that position and cover are maintained when placing concrete.

Use metal or plastic accessories to support and fix reinforcement.

Provide supports for reinforcement at 600mm centres.

Move reinforcement to either side of holes in slab unless otherwise shown on drawings.

E3.03 Pipes and Conduits

Hot water piping embedded in concrete shall be lagged.

Locate conduits and pipes, which are horizontal in slabs, in centre of slab depth.

Locate conduits and pipes with 25mm minimum space between them.

E3.04 Site Mixed Concrete

Proportions: One part cement, two parts sand and three parts coarse aggregate.
Maximum Water/Cement Ratio = 6.0
Maximum Slump - 100mm.
Volume measured materials.
Mechanically mix concrete; completely discharge mixer before recharging.

E3.05 Handling and Placing Concrete

At time of placing concrete, formwork and reinforcement shall be clean. Concrete shall be transported, placed and compacted so as to:

a. Limit segregation or loss of materials;
b. Limit premature stiffening;
c. Produce a monolithic mass between planned joints or the extremities of members, or both;
d. Completely fill the formwork to the intended level, expel entrapped air, and closely surround all embedded reinforcement, pipes, floor wastes and anchors; and
e. Provide the specified finish to the formed areas of the member.

Use a powered vibrating screed to compact floor slabs. Concrete elements greater than 250mm depth shall be compacted with powered poker vibrator.

E3.06 Weather Conditions

Do not place concrete when damage by rain may result. When the ambient temperature is in excess of 32°C, but less than 38°C:

a. A retarding chemical admixture may be used in ready mixed concrete.
b. Cool formwork and reinforcement with fine cold water spray in advance of placing concrete.
c. Temperature of concrete shall not exceed 32°C when being placed.
d. Cover placed concrete with impervious membrane until curing method is employed.

Do not place concrete when the ambient temperature exceeds 38°C.

E3.07 Curing

Concrete shall be cured continuously for seven days. Acceptable curing methods include:

a. Membrane curing using plastic sheeting at least 0.1mm thick. Membrane to be kept firmly in place, protected from penetration damage, with all joints effectively sealed.
b. Membrane curing using liquid curing compounds. Curing compounds must be compatible with any later applied finishes.
c. Moist curing using ponding.
d. Moist curing using water sprays, soaker hoses, fine sprinklers or mist sprays.

All exposed concrete surfaces, including vertical edges of slabs, must be cured.

E3.08 Concrete Testing

No concrete testing is required for housing if the N grade concrete is supplied by an approved batch plant.

For multi-storey construction, engage an NATA registered laboratory as required to provide project assessment of the manufactured concrete supplied for:

a. Concrete footings.
b. Concrete columns.
c. Suspended concrete elements (beams, floors, landings, stairs & slabs).

Each sample shall be tested for slump at the contract site.

The concrete element, day and slump test result of each sample shall be recorded and specimens identified with their sample.

The sampling record, compressive strength test results and assessment report shall be supplied to the Superintendent.

E 3.09 Non-Conforming Concrete Elements

Hardened concrete elements not confirming to the Contract Documents shall be liable to any of the following:

a. Structural appraisal and tests
b. Remedial work
c. Removal
d. Replacement

as determined by the Superintendent and at the expense of the Contractor.

E4 CONCRETE ELEMENTS

E4.01 Footings

Construct concrete footings as shown on drawings.
Step strip footings to ensure that pipes do not pass through or under footings.
Excavate and pour footings at lowest level before excavating adjacent footings at higher level.

In the case of raft slabs it may be necessary to sleeve service pipes through edge beams. Obtain approval of construction methods from the Superintendent.

E4.02 Floor Slabs

Construct concrete floor slabs as shown on drawings.
Do not provide sleeves or surrounding openings for pipes penetrating room floor slabs on ground; form recess in room floor slab surface for plumbing connections.
Build in required floor wastes, conduits and anchors.

All cracks to floor slabs of greater than 1mm require rectification at contractors cost. Prior to rectification the cause of the cracking shall be determined by an appropriately qualified and experienced person. Proposed methods of rectification must be approved by the primary structural consultant.

Chips to slab edges require rectification where appearance, cover to reinforcing or holding down bolts has been compromised. The need for rectification shall be determined by an appropriately qualified and experienced person. Proposed methods of rectification must be approved by the primary structural consultant.

E4.03 Moisture Proof Barrier

Provide a continuous moisture proof barrier under all room floor slabs on ground continuous under slab edge thickening and up face where covered by soil.
Moisture Proof Barrier Material 0.2mm thick polythene sheeting.
Lap sheeting 200mm at joints and seal with suitable adhesive tape. Seal sheeting to pipe penetrations with suitable adhesive tape.

Termite Barriers

Refer to Section B for physical barriers built into floor slabs.

Floor Surfaces

External: Graded to outside edge and finished monolithically with trowelled non-slip finish; colour shall be natural grey unless otherwise nominated.
Bathroom, Shower, Ensuite, Laundry and W.C: Surface suitable for mortar bedded mosaic tiles.
Other Room Floors: Finished level and smooth monolithically.

E4.04 Concrete Steps

Extent: Refer to drawings.
Unless otherwise shown on drawings, concrete steps shall be constructed insitu with:

a. Treads = 250mm going
b. Risers = 150mm high

Ensure all step risers within same flight or adjacent paving area are of equal height.

E4.05 Concrete Driveways, Porches, Carports and Veranda

Extent: Refer to drawings. Termite Barriers refer Section B
100mm thick reinforced concrete in accordance with structural drawings.
Maximum grade of driveway shall be 1 in 8 unless otherwise nominated on drawings.
Surface: Natural grey non-slip finish with edges trowelled to a smooth radius.
Driveways on level ground shall be laid with a slight camber.
Lay driveways in sections with following joints.
Expansion joints at edge of carport floor edge, two sides of each driveway intersection, edge of crossover and at 7.5 metres maximum centres along length.
Expansion joints: 10mm wide by full depth of concrete completely filled with weather resistant compressible filler.

Control joints: 6mm wide by full concrete depth at 2.5 metres maximum centres between expansion joints.
Contraction joint: 6mm wide by 2/3 depth of concrete formed down centreline of driveway length while concrete is plastic.

Provide **90mm UPVC** sleeve under the driveway for reticulation where shown on the plan or if not shown, at junction of driveway and carport floor.

E4.06 Condenser Plinths

When nominated on drawings, all bedrooms and dining/living areas are to have provision for future split air conditioning systems as per the following:

Provide 1200 x 1000 wide x 100 thick concrete air conditioning condenser plinths at each isolator location. Concrete plinths are not required where condensers can be mounted on a concrete verandah slab. Where concrete plinths are located in pathways, the pathway is to be increased in width to maintain the required uninterrupted pathway width.

E4.07 Other Concrete Paving

Concrete paving other than described in clause E4.05 to be 75mm thick mass concrete grade N20.
Maximum grade of paving shall be 1 in 8.
Surface: Natural grey non-slip finish with edges trowelled to a smooth radius.
Keep paving at least 12mm away from any building wall.
Radius paving at bends and junctions.

Lay paving in sections with the following joints.

Expansion joints at two adjacent sides of each junction and 7.5m maximum centres along length.
Expansion Joints: 10mm wide by full depth of concrete completely filled with weather resistant compressible filler.

Control Joints: 6mm full thickness control joints at maximum 2.0m centres as per AS3727:1993.

Provide 90mm UPVC sleeve 300mm under the driveway and fit 90 degree elbow to each end (300mm out of the ground) so it is visible for the landscaper. The reticulation sleeves are to be fitted in one straight length under the driveway to allow draw wires to be easily drawn through the sleeve.

E4.08 Cast Insitu Concrete Kerbing

Cast Insitu concrete kerbing shall be 150mm high with cross-section of M.R.D. semi-mountable island kerbing. Face of kerb adjoining vehicular paving shall provide 20mm minimum vertical lip above finished vehicular paving.

Cast insitu kerbs shall have the following control joints:

Expansion Joints: 10mm wide by full depth of kerb at stormwater pits and tangent points, and at 7.2 metre centres elsewhere. Completely fill expansion joints with butyl mastic.

Contraction joints: 6mm wide by 2/3 depth of kerb from rear formed whilst concrete is plastic at 2.4m maximum centres between expansion joints.

Provide steel reinforcement for kerbing at edges of driveways where shown on structural drawings.

Ensure effective width of driveways is maintained for areas that are to be kerbed. Consult Superintendent for clarification prior to pouring driveways.

E4.09 Retaining Walls

Where indicated on drawings, retaining walls of 0.3m to 1.5m high shall be "Twinside" or similar APPROVED pre-cast concrete, built to manufacturers' details.

Retaining walls greater than 1.5m will require Engineer's approval. Refer locations to the Superintendent for decision.

G - METALWORK

G1 ITEMS SPECIFIED ELSEWHERE

Fences and Gates: Refer to Siteworks - D
Steel Wall Framing: Refer to Steelwork - J
Steel Roof Trusses - Refer Roof Framing K.
Gas Metre Boxes: Refer to Drainage and Plumbing - P
Electricity Metre Boxes and Switchboard Cabinets: Refer to Electrical Services - Q

G2 CONTINUOUS TERMITE BARRIER

See Termite Protection B.

G3 SHEET STEEL ITEMS

G3.01 Steel Door Frames

Extent: Use steel door frames for internal and external flush doors. Refer to JOINERY AND CABINETWORK for timber door frames.

Steel Door Frames: Pressed from 1.2mm minimum thickness "Zincanneal" steel sheet, corners mitred with backing plate and lugs to form solid joint. Provide back plate for screw on hinges. Use square edge profile.

Door frame width shall be sufficient to allow sheeting to finish behind frame with frame returning onto wall sheeting.

Provide rebate and striker plate for steel located 1.0m above floor.

Provide a removable rigid spreader bar to each steel door frame.

Refer to HARDWARE for number of and type of hinges.

Fixing of Hinges: Weld or screw.

Fix door frame to wall framing.

Note: All external frames are to be double rebated.

For external hinged doors provide a galvanised flat plate sill with front edge lapped over vertical face of concrete. Proved paint finish to sill.

G3.02 Exhaust Fan Wall Shafts

Location: Where wall mounted exhaust fans are shown on drawings.

Shafts shall flue exhaust fan to outside air and incorporate 75mm wide continuous flashing.
Fabricate shafts from 0.42mm thick base "Zincalume" sheet steel.

G4 ALUMINIUM ITEMS

G4.01 Aluminium Finish

Aluminium items shall be powder coated unless otherwise specified in SCHEDULES.
Powder coat Colour: Off white otherwise from manufacturer's standard colour range nominated in SCHEDULE.
Clean all items by immersing in a suitable alkaline oracidic or acidic solution, caustic etch and apply a chromate chemical conversion coating.
Apply power and bake film to manufacturer's recommendations.

Items with powder coated finish shall be free from die marks, scratches and other blemishes.

Vinyl or acrylic pre-coated finished on aluminium or aluminium zinc coated steel shall be factory-applied and be capable of withstanding 20% salt spray at 35° for three hundred hours without blistering, corroding,

chalking, losing gloss or adhesion or changing colour after a recovery period of 30 minutes.

Contact with stainless steel, zinc or small areas of white bronze will be permitted.

G4.02 Aluminium Windows & Sliding Glass Doors

Region A Design Wind Pressure, unless otherwise nominated

Extent: Sliding glass doors and sliding sash windows shall be aluminium frames with a colour from manufacturer's standard colour range.
Sliding glass doors shall slide on internal face of adjoining fixed glazing.

Aluminium windows shall be designed and constructed in accordance with AS 2047 using the following criteria for its application:

a. Wind Region A Design Wind Pressure, unless otherwise nominated.
b. Glazing as specified in GLAZING - Y.
c. Fixing of windows shall be into metal studs
d. Marking method may be by adhering to the frame, with transparent acrylic adhesive, an untearable polyester film label.
e. All glass sliding doors and full height glazed panels to be Grade A toughened safety glass in accordance with AS2047.

Provide a winder as specified in Clause M2 to each hinged window sash.
Exposed aluminium surfaces of windows shall be protected by the manufacturer with a removable non-staining covering.
Install windows in accordance with manufacturer's recommendations.
Provide flashings as specified in Clause G6.
At completion of the contract work, remove protection from aluminium surfaces.
Vent lock to all sliding sashes.

G4.03 Barrier Doors

Provide hinged barrier screen doors to external face of each entry door to dwelling. Each door is to be powdercoated a colour from manufacturer's standard colour range nominated in the SCHEDULE or if not nominated to match the adjoining frame colour.
Provide a sliding barrier screen door to the external face of sliding glass doors.
Barrier screen doors shall have an extruded aluminium frame fabricated with corner joints reinforced by aluminium stakes.

Each barrier screen door shall have:
APPROVED (7 m.m) powdercoat aluminium security grille Welded or rivetted to the frame.
Heavy duty mesh such as Cyclone Tuffscreen or similar APPROVED insect screen mesh fixed to the frame.

G4.04 Each hinged barrier screen door shall have:

Two hinges with anti tamper or steel fixed pin hinges.
Hinges welded to the frame or hinges concealed when the Door is closed.
Latch set with lever handles.
A double cylinder deadbolt mortice fitting lock with 2 keys.
Locks are to be keyed alike when multiple doors are fitted.
Mo-hair bug seal to the bottom of the doors
Pneumatic door closer.
Swing restrainer, 3mm nylon cord or light chain held with Aluminium fittings.

G4.05 Each sliding barrier door shall have:

Catch assembly with inside snib locking and double cylinder locking which makes the snib inoperative.
A pull handle each side of the door adjacent to the catch Assembly.
At least two roller wheels supporting the door.
Locks are to be keyed alike when multiple doors are fitted.

Provide aluminium channels enclosing the lock edge of sliding door as required.
Provide aluminium track when required for the sliding door.
Provide two aluminium angles (one fixed to the sliding glass door mullion, one to the sliding barrier screen door which interlock when the sliding barrier door is in a closed position. Interlocking angles shall extend for a minimum of 80% of the door height.
A weather seal is to be fitted to the closing mullion, where interlock sections are not required.
Security fixed channels, tracks and angles with fixings that cannot be removed when the barrier screen door is closed.
Sliding barrier screen doors shall be removable in open position only.

G5 INSECT SCREENS

G5.01 Insect Screen Generally

Provide insect screen to all opening window sashes and short glazed windows.
Insect Screen Mesh: 18 x 14, aluminium.
Aluminium Window Insect Screen Framing: Aluminium
Sliding Sash Insect Screen: Removable installed on external side of sash.
Hinged Sash Insect Screen: Removable installed on internal side of sash.
Short Glazing Insect Screen: Fixed to window frame.
When an insect screen is over $0.8m^2$ in size or one metre in height a 19 x 8 spreader bar is to be fitted.

G6 FLASHINGS

G6.01 Flashings to Windows and External Door Frames

Provide colorbond pressed metal flashing (0.60mm BMT) to perimeter of all windows and door frames as follows:
Flashings shall have a j-mould profile with longer leg extending nominally 75mm outwards from head, jambs and sill of doors and windows. Lap over vapour barrier and fix to framing. Wall sheeting shall fit into j-mould rebate.

G6.02 External Wall Flashing

Provide continuous bead of silicon sealant (type to suit surface) along both sides of external bottom steel wall plate where fixed to concrete slab. Ensure there are no gaps for ingress of moisture, dust and insects. Bottom plate of external steel framing is to be coated with a bituminous (elastoseal) compound prior to standing frames.

G6.03 Dado Flashing

Install colorbond pressed metal dado flashing (0.60mm BMT) at junction of different wall cladding types as shown on drawings, such as horizontal colorbond cladding and vertical colorbond cladding; colorbond cladding and hardiflex sheeting; Hardies or similar weatherboard and hardiflex sheeting and the like.

Flashing shall have a minimum 100mm upstand and a minimum 50mm downturn.
Provide pop rivet fastening at corners of dado flashing and along straight lengths where necessary to secure.

G6.04 Architrave Surround to A/C Openings

Provide colorbond flashing as per G6.01

G6.05 Colorbond Toe-Mould

Provide colorbond pressed metal flashing (0.60mm BMT) at bottom of wall cladding where shown on drawings and lap over slab edge. Ensure top of flashing is sloping away from cladding.

J – STEELWORK

J1 ITEMS SPECIFIED ELSEWHERE

Fences and Gates - Refer to Siteworks - D
Steel Reinforcement - Refer to Concrete - E
Sheet Steel Items - Refer to Metalwork - G

J2 GENERAL INSTRUCTIONS

J2.01 Welds

Welds shall be 5mm continuous fillet, unless otherwise stated on drawings.
Grind smooth welds that are exposed to view and touch.

J2.02 Protective Treatment

Exposed steelwork built into concrete shall be galvanised.
Bolts, nuts and washers shall be galvanised or cadmium plated.
Steel specified to be galvanised shall be hot dip zinc coated after fabrication.

Exposed Steelwork Not Specified to be Galvanised: After fabrication, hot dip galvanise or carry out the following:

a. Class 3 abrasive blast clean in accordance with Part 4 of AS 1627; and
b. Coat with Type 3 or 4 inorganic zinc paint in accordance with AS/NZS 3750.15 having a minimum dry film thickness of 75 micrometres.

Concealed Steelwork Not Specified to be Galvanised: After fabrication, either hot dip galvanise or carry out the following:

a. Remove rust scales and wire brush steelwork; and
b. Give two coats of red oxide zinc chromate primer

J3 STEEL WALL FRAMING

J3.01 Generally

Provide steel wall framing

When a discrepancy occurs between the framed wall width shown on drawings and steel wall framing width of 75mm, the Contractor shall construct the buildings retaining the external building dimensions and adjusting room sizes, ensuring no room dimension is smaller than that shown on tender documents.

Refer to G6.02 – External Wall Flashing.

Wall framing shall be manufactured and installed strictly in accordance with the structural drawings included in the tender documents unless an alternative design was proposed at tender stage. If no structural drawings have been provided refer to clause J3.03 for design requirements.

J3.02 Alternative Wall Framing Systems

Alternative systems in 75-90mm steel will be considered for construction provided they satisfy the requirements of the clause J3.03 and the general design intent and requirements of the specification.

The certified practising engineers as part of the structural certification shall confirm the wall frame design has included a review of the truss layout plan and reactions provided by the truss manufacturer for the project.

J3.03 Wall Framing Design

Wall framing design to be Engineer designed and fabricated from Zincalume steel components in accordance with the Australian Standards and Building Code of Australia.

The Contractor shall provide the Superintendent 4 sets of drawing including one signed by a certified practicing engineer and using the following structural design criteria:

a. Wind Region to AS1170.2 or AS/NZS1170.2 as nominated on SCHEDULES A.
b. Terrain Category 3 to AS1170.2 or AS/NZS1170.2 as nominated on SCHEDULES.

Shop drawings of external and internal steel wall framing, plus structural steel are to be provided to the Superintendent prior to fabrication.

J3.04 Trimmers

Provide head trimmer above wall openings.
Provide sill trimmer below wall openings with sill above floor level.
Provide noggings as follows:

a. In straight line behind horizontal joints if fibre cement board internal linings are used.
b. As required for wall mounted fixtures
c. Refer to clause J3.10

Note: All wall framing shall be set out so that all internal and external wall linings vertical joints coincide with centreline of studs.

J3.05 Internal Wall Framing

Top of internal wall framing shall be lower than top of external wall framing to allow for continuous ceiling battens.
Fabricate internal wall framing from standard "C" sections.
Provide a stud at each end of internal wall panels and each side of internal wall openings.
Stud Spacing Internal Walls: 600 maximum centres unless noted otherwise.

J3.06 Fabrication

Use only continuous single member lengths for the fabrication of wall panels. Members formed up from short sections will be rejected. Join framing members together by welding to form wall panels. Clean welds and touch up with inorganic zinc paint.

Wall panels shall have maximum continuous wall place length that is practical and be joined at wall intersection locations, unless otherwise shown on drawings.

Fabricate external wall openings in wall panels so that the opening size does not exceed the overall size of the door or window frame with its timber linings plus 20mm.

J3.07 Erection of Wall Panels

Transport, handle and erect wall panels using methods that prevent damage and permanent sets.
Provide temporary bracing as necessary to hold wall panels plumb and stable until permanently fixed.
Electrically earth completed steel wall framing.

Prior to erection ensure that steel wall framing is stacked level and clear of ground and protected to prevent water, dirt and/or condensation becoming trapped between adjacent surfaces.
Once framing is erected remove any dirt, particularly from bottom steel wall plates, prior to external linings being fixed in position.

J3.08 Thermal Break for Steel Wall Frames

Provide a Thermal Break to all vertical members of external steel stud wall frames in accordance with BCA

2006 Volume 2 clause 3.12.1.4. Refer clause U1

J3.09 Holes for Services

Drill or punch holes required for plumbing and electrical services passing through wall studs, in the centre of the web and not more than 600mm from the top or bottom plates.

Drill or punch holes through bottom steel wall plate for run-in of service conduits/pipework. Minimise cutting of framing where necessary and leave bracing intact.

Do not hole lintel members for services.

Plain hole shall not exceed 25mm in diameter.

J3.10 Additional Framing for Future Grab Rails

Fit grommets or bushes to holes carrying electrical services.
Fit grommets to holes carrying plumbing pipework to prevent any corrosion.

Allow extra horizontal trimmers to two sides of W.C. pan wall (heights required - 800mm, 1,150mm) and to two sides of shower walls (heights required - 900mm) to allow for future grab-rails mounting, or when called for in Aged Persons Units.

J3.11 Repair of Wall Framing

Minor damage to wall framing may be repaired in situ, however where sections of framing are badly distorted and need cutting out and replacing then the Contractor shall first consult the Superintendent and then a Structural Engineer if deemed necessary.

New framing members shall be joined to other framing by welding. Welds are to be cleaned and touched up with inorganic zinc paint.

K-ROOF FRAMING

K1 MATERIALS

K1.01 Roof Trusses

Roof trusses to be cold formed zinc coated steel "C" section system.
Steel to comply with AS1397, with minimum Zinc Coating Class Z200.

K2 STEEL ROOF TRUSSES

K2.01 Alternative Truss Systems

Steel Roof Structure to be Engineer designed and fabricated from Zincalume steel components in accordance with the Australian Standards and Building Code of Australia.

The Contractor shall provide the Superintendent with written and drawn information fully describing the roof trusses, the roof truss connections, roof truss fixed to external and internal walls, roof truss bracing and all other relevant information.

The Contractor shall provide the Superintendent 4 sets of drawing including one signed by a certified practicing engineer and using the following structural design criteria:

a. Wind region A to AS1170.2 or AS/NZS 1170.2 as nominated on schedules.
b. Terrain Category 2 to AS 1170.2 or AS/NZS 1170.2 unless otherwise nominated on schedules.
c. Maximum truss spacing shall not exceed 1200mm c/c.
d. Dead and live loads AS/NZS 1170.1.

Note: Variation to the truss layout plan may affect the nominated bracing systems and wall framing reactions.

Truss reactions shall be supported by external wall frames and perimeter beams unless engineer's certification is provided for internal wall support.

Provide two walkway planks with warning sign with a minimum size of 100mm x 1800mm long within the roof space.

K2.02 Timber Roof Framing Alternative

Timber roof trusses designed and manufactured by an accredited timber roof truss manufacturer are a suitable alternative provided:

- Design criteria complies with clause K2.01.
- Sapwood of susceptible hardwood species shall be treated for Lyctus borer.
- All timber shall be stress graded and marked for visual inspection.
- All structural timber used are required to be termite resistant Jarrah or APPROVED termite treated softwood.
- Timber products shall be Australian or New Zealand produce.

Relevant alternative details and fixing requirements for timber shall be provided in accordance with the requirements outlined for steel trusses in this specification.

The alternative system certification shall specify all framing member sizes and fixing requirements for the project and provide typical details to the satisfaction of the Superintendent.

K2.03 Shop Drawings

The Contractor shall provide 4 sets of shop drawings of roof trusses to the Superintendent for approval prior to fabrication. Allow 14 working days for checking and approval.

K2.04 Fabrication of Roof Trusses

Trusses shall be fabricated in accordance with truss design documents.
Trusses of the same design shall be uniform in shape.
Care must be taken to ensure that chords remain straight.

All welding shall be in accordance with structural documentation or if not shown then shall be 1.0mm fillet low hydrogen E4B or ESS coated rod or MIG equivalent.

K2.05 Handling and Erection

During fabrication, transport and storage take care not to allow trusses to get wet.
Stack clear of the ground and protect to prevent water and/or condensation becoming trapped between adjacent surfaces. If bundles become wet, trusses should be separated, wiped with a dry cloth.
During erection provided temporary bracing to hold trusses plumb until permanent bracing, roof batten and ceiling batten are fixed.
Ceiling battens shall be continuous between internal walls and fixed to each internal wall frame.
Fix trusses to external wall framing and roof beams as detailed.
Once roof framing is erected remove any dirt prior to fixing of roof cover.

K2.06 Tolerances

Exposed trusses shall be erected to conform to the following tolerances:

a. The bow in any member shall not exceed L/360 or a maximum of 25mm where L represents the distance between any two points of a member.
b. The apex should not be more than H/200 or a maximum of 10mm out of plumb, where H represents the height of the truss measured from the underside of the bottom chord to the top of the top chord.

Concealed trusses shall be erected to conform to the following tolerances:

a. The overall bow or bow in any chord shall not exceed L/200 or 35mm, where L is the distance between any two points.
b. The apex shall be not more than the lesser of span/200 or 35mm from a vertical plan through the truss supports.
c. The "out of plumb" at any section shall not exceed the truss height divided by 50.

K2.07 Ancillary Framing Members

Provide ancillary framing Members as shown on drawings.
Framing Members shall match size and stress grade of equivalent roof truss top chord unless otherwise shown on drawings.

K2.08 Ceiling Trimmers

Nominal size of ceiling trimmers shall be 75 x 32 x 1.2mm framing section.

Provide ceiling trimmers between trusses in the following locations:

a. At 1800mm maximum centres over internal walls which are parallel to trusses.
b. At 900mm centres where necessary to support ceiling battens.
c. To form 600 x 400mm manhole positioned in bedroom corridor as directed by Superintendent.
d. As necessary for ceiling mounted fixtures.

K2.09 Ceiling Battens

Provide ceiling battens for internal ceilings.
Ceiling Battens: APPROVED steel battens 22mm nominal depth.
Ceiling battens shall run length of building perpendicular to trusses and continuous over internal walls.
Fix battens to each bottom chord of truss and ceiling trimmers.

Space ceiling battens at 600mm maximum centres:

K2.10 Roof Battens

Roof Battens shall be 0.75mm BMT G550 with a total coated thickness of 0.8mm and nominal depth 50mm or APPROVED equivalent.

Provide roof battens in the following locations:

a. Within 200mm to end of rafters
b. within 200mm of ridge
c. 900mm centres elsewhere. Unless noted otherwise.
d. Each side of hips within 200mm of hip
e. As required to support hinged cyclone screens under verandahs and eaves

K2.11 Fixing of Roof Battens

Fix roof battens on flat. Fix each roof batten to every roof truss and rafter that it crosses.
Fix roof battens strictly in accordance with the engineer's requirements and the manufacturer's specification.

To minimise cutting, lay all battens in one direction, starting from one end of roof. Hip valleys roof - lay battens starting from valley. Allow 40mm minimum laps. (Waste end of batten to be under).

K2.12 Valley Boards

Valley Boards: Use APPROVED steel roof battens strictly to manufacturer's recommendations.
Location: To each side of valley rafters to fully support valley gutter.

K2.13 Birdboard

Provide birdboard fixed around rafters and lapped over wall cladding. Birdboard shall be minimum 4.5mm thick fibre cement sheeting or APPROVED steel infill panel. Provide weathertight finish around birdboard.

Where flat fibre cement sheeting is used for external cladding allow to continue this up around the rafter and provide a weathertight finish.

K2.14 Eaves Rafter Finish

All exposed framing members (i.e. steel rafters) shall be capped at external ends with plate to be the same material as the rafters. Allow for 5mm drain hole to bottom edge at end of rafter. Ensure neat and smooth finish to every member.

K2.15 Verandah Spandrills

Install metal furring channels, vertically fixed at 450mm centres to all verandah spandrills for external lining fixing or install framing as otherwise nominated on drawings. Refer Elevations.

K2.16 Repair of Roof Framing

Minor damage to roof framing may be repaired in situ, however where sections of framing are badly distorted and need cutting out and replacing then the Contractor shall first consult the Superintendent and then a Structural Engineer, if deemed necessary.

K2.17 Barge Boards/Fascia

APPROVED Colorbond barge boards.

L - JOINERY AND CABINETWORK

L1 MATERIALS

L1.01 TIMBER

Joinery and natural timber mouldings shall be Australian or New Zealand timber. Joinery and natural timber mouldings to be clear finished unless shown otherwise on drawings: Select grade to AS 2796.1 1999/AS2796.2-1999 or otherwise current AS standards.

Timber specified as ex nominal size shall be that finished size normally supplied.

MDF (medium density fibreboard), particle boards and some timbers such as birch, oak, walnut and others release wood dust when cut which may cause cancer and/or respiratory illness, MDF and other particle boards may also release toxic chemicals.

Contractor shall inform himself and his employees and sub-contractors and agents of the potential health hazards associated with MDF and other wood products before he or they commence work on the site.

Contractor shall ensure that appropriate safety goggles, masks, footwear and the like are used when cutting of mouldings is being carried out. Precautions shall be taken in accordance with Occupational Safety and Health Regulations 1996.

L1.02 Fastenings

Fastenings Exposed to Corrosive Situations: Non-ferrous metal or protected steel.
Other Fastenings: Steel.

L2 TIMBER DOOR FRAMES: Not Applicable

L3 DOORS

L3.01 Door Sizes

Widths: As shown on drawings.
Height: 2040mm.
Door Fitting Tolerance: 6mm in addition to door width measured between faces of members, 3mm at top of door and bottom of door to clear floor finish by 5mm.

L3.02 Flush Timber Doors

Extent: All doors shall be flush timber doors unless otherwise shown on drawings. All doors shall be painted to include all edges top and bottom.

Flush doors shall be in accordance with the following criteria.

- External doors including store doors- 870mm wide and shall be solid core external grade door with RP4 storm seal. All solid core doors to be painted including all edges as specified in painting.
- Bathroom, ensuite and shower doors- 820mm wide and shall be duracoat tempered hard board flush panel and water resistant.
- Other flush doors –820mm wide, Readicote hard board flush panel.
- Pantry/linen/robe doors –Readicote hard board flush panel.

L3.03 Glazed Doors

Construct fully glazed hinged doors as follows:

- Stiles and Top Rail: 105 x 35mm overall finished size timber.
- Bottom Rail: 156 x 35mm overall finished size timber.
- Lock Rail: 156 x 35mm overall finished size timber centred 1000mm above floor.
- Door Holders: refer clause M3.04
- Glaze doors as specified in GLAZING - Y.

L4 TIMBER MOULDINGS

L4.01 Window Sills

100mm x 18mm MR MDF moulding with bullnosed edge.
18mm x 18mm MR MDF beading or 18mm x 18mm MR MDF scotia mould fixed under sill.

In addition provide MR MDF beading or scotia mould under timber capping and any kitchen benchtops that project over half-walls.

L4.02 Skirtings

Provide skirtings to cover junction of floor and wall of each room except Laundry, Bathroom, Shower, WC, inside cupboards and Store.

Type: Bullnosed on top edge.

Skirting: Nom. 70 x 18mm termite treated pine single bullnosed moulding (H2 for internal use only). Standard grade and paint finished.

L4.03 Air conditioning Panel Architraves and Stops

Provide metal frame air conditioning panels in accordance with details L8 & L8A when shown on drawings.

L4.04 Curtain Boards

Curtain rail battens are to be provided over all windows and sliding doors except in the W. C.

The curtain board is to be 92mm x 18mm pre primed square edged or pre primed bullnosed MR MDF architrave with the architrave to be fitted 75mm above the top of the window reveal and extend 150mm beyond each side of the openings. The curtain board is to be painted the same colour as the wall.

L5 CUPBOARDS

L5.01 Generally

Provide cupboards to extent shown on drawings.

Melamine surfaced MR MDF inside cupboards shall be white.

Cupboards other than wall recess cupboards shall be prefabricated with MR MDF unless noted otherwise on drawings

Cupboard backs shall be MR MDF.

Edges to cupboard doors, drawers and exposed edges are to be have 2mm thick ABS edging not melamine edge strips.

Seal all gaps between cabinets and walls to prevent ingress of dirt/insects/moisture. Use silicone sealant suitable for the application.

L5.02 Wall Recess Cupboards

Wall recess cupboards shall have the same wall, ceiling and floor finishes as the room to which cupboard opens.
Doors: As specified in Doors - L3.
Multiple doors to a wall recess cupboard shall have handles and catches.
Handles: 100mm long satin chromium plated brass "D" type or Plastic coloured coated.
Catches: 45mm double ball brass at top and bottom of each door.
Other Door Hardware: As specified in HARDWARE - M.
Shelves: MR MDF Shelf Support at Wall Edges: 40 x 19mm timber framing screwed to wall at 30mm from ends and 600mm maximum spacing between.

L5.03 MR MDF for Cupboards

Use MR MDF with laminate plastic surface for tops of vanity, sink, bench and island.

Use MR MDF with melamine surface on both sides for shelves, doors and drawer fronts.

Other MR MDF shall be melamine surfaced on exposed internal and external faces.

Melamine surfaced MR MDF board shall have ABS edging to exposed edges.

Melamine surfaced MR MDF inside cupboards shall be white.

Refer to SCHEDULES for external face colour of MR MDF cupboards.

Screw fixing into MR MDF shall be in accordance with manufacturer's recommendations

L5.04 Horizontal MR MDF

Tops with insert sinks or basins shall be 32mm thick MR MDF. Refer details L1 and L2

Minimum thickness is 16mm for other MR MDF pre-finished components (floors, shelves and tops) in cupboards.

All exposed horizontal tops to cupboards shall have postformed edges. All exposed corners of benchtops shall have rounded (20mm radius) or bevelled (20mm chamfer) edges.

All sink and hotplate cutout to be made from full sheet. Joints in sheets near sink and hotplate cutout to be no closer than 150mm from cutout.

All sink and hot plate cutout to have rounded corners.

Note: Apply a silicon coating sealant to all cut exposed edges of MR MDF (i.e. sinks and vanities) prior to fixing cupboards. Avoid cutting top and laminate at same points.

L5.05 Vertical MR MDF

Minimum thickness is 16mm for other MR MDF pre-finished components (sides, backs and divisions) in cupboards.

Back of cupboards are to be 3.3mm pre-finished MR MDF or 16mm pre-finished MR MDF as nominated on the detail.

L5.06 Doors of Prefabricated Cupboards

Cupboards other than wall recess cupboards shall have MR MDF doors.
Maximum Width of MR MDF Doors: 450mm.
Minimum Thickness of MR MDF Doors: 16mm for doors
Door to vanity units are to be pre-finished 16mm MR MDF.
Edges to cupboard doors are to be ABS edging.

L5.07 Door Hardware

Provide sliding doors where nominated on drawings. Elsewhere use hinges with 180° opening angle for MR MDF doors. Use self-closing hinges or catches and hinges.

Minimum Number of Hinges to MR MDF Doors: Two hinges to each door up to 1200mm high.

Three hinges to each door over 1200mm high.

Minimum Number of Catches: One catch to each door up to 1200mm high.
Two catches to each door over 1200mm high.

Provide one grip fitting to each MR MDF door.
Provide adhesive rubber bump buffers to all cabinet doors.

Doors in Aged Persons or Pensioner Units: "D" type handles.
Doors Over 1200mm High: "D" type handles. Plastic or metal.
Doors Up to 1200mm High: "D" type handles or metal finger mould for full length of door edge.
"D" Type Handles: 100mm long. Plastic to match.
Child resistant catch shall be to Detail L12.

L5.08 Laminated Plastic Sheeting

Laminated plastic sheeting for bench and vanity tops shall be APPROVED horizontal general purpose class to AS 2924 with textured finish.

Refer to SCHEDULES for colours of laminated plastic sheeting.

Fix laminated plastic sheeting to background with contact adhesive to AS 2131-1987 or otherwise current AS standard.

L5.09 Kitchen Cupboards and Vanity Cupboards

Refer to Drawing details L1, L2, and L3,L5 & L5A for Sink Cupboard, Bench Cupboard, Stove & Microwave cupboards. Island Bench Cupboard, China Cupboard, Kitchen Drawers and Vanity units. Provide childproof compartment to Kitchen Cupboards and vanity unit complete with child resistant catch to Detail L12.

L5.10 Drawers

Drawers shall be constructed with 13mm minimum thickness melamine.

A plastic cutlery tray is to be fitted into the top drawer.

Drawers may be constructed using the "Pay Co" construction system.

Draw sides to be Multi tech or similar APPROVED with a powder coat finish.

Drawer bottoms: pre - finished white MR MDF.

Drawer Fronts: 16mm thick MR MDF with melamine surface on both sides and ABS edging to all exposed edges.

Provide metal runners for drawers.

Provide one D handle to each drawer.

Other Drawers: "D" type handles or metal finger grip for full width of drawer.

"D" Type Handles: 100mm long plastic or metal.

L5.11 Pantry and Broom/Linen Cupboards

Provide MR MDF pantry prefabricated, cupboard and wall recessed Broom/Linen cupboard as per detailed drawings.

All vertical divisions between broom and linen sections of the same cupboard shall be MR MDF as detailed.

L5.12 Wardrobe

Provide wardrobe as shown on drawings as per DETAILS L4E . Wardrobe shall have floor, wall and ceiling finishes to match finishes in room to which robe opens. Use APPROVED sliding wardrobe door system only.

L6 ROBE RECESS

Provide robe recess for bedrooms other than the main bedroom of the following:

19mm thick (1700 above floor level) white melamine sheeting with 2mm ABS edging to the front edge. Width to be 550mm and support by 40 x 19 continuous timber support or white melamine. A 19mm diameter chrome plated hanging rail is to be fitted centrally and supported at a 900mm centres.

M - HARDWARE

M1 GENERAL

M1.01 Items Specified Elsewhere

Hardware for Aluminium Windows and Insect Screen Doors - Refer to METALWORK - G.
Hardware for Cupboard MCF Doors - Refer to JOINERY AND CABINETWORK - L
Shower Screen - Refer to GLAZING - Y.

M1.02 Materials

Hardware Metal Exposed to View: Unless otherwise specified = aluminium or stainless steel or chromium plated; satin finish.

M2 WINDOW HARDWARE

Provide a winder to each hinged window sash.

Winder: "Whitco" fully enclosed chain winder with brown enamel finish.
Vent lock to all sliding sashes.

Fix winder to reveal lining. Position winder to suit hand of casement sashes and to locate handle operation clear of flyscreen.

M3 DOOR HARDWARE

M3.01 Door Hinges

Provide door hinges as follows.

- Fully Glazed and Solid Core Doors: Three 100 x 75mm broad butt, stainless steel hinges (fixed with 40mm x 8 gauge screws).
- External Doors Opening In: Loose pins.
- External Doors Opening Out: Fixed pins.

Bathroom and WC doors: Two "Lanes" 4040 emergency access hinges.
Other Internal Doors: Two 85 x 60mm light, narrow butt, mild steel, loose pin hinges.

M3.02 External Hinged Doors

To bottom of all external doors, supply and fit RAVEN RP4 Adjustable weather excluded. Sill base to be a 75mm Raven threshold plate made for the RP4 seal.

M3.03 Door Buffers

Provide a satin chrome, half moon, floor mounted door stop to all internal hung doors. "Briton" Model No. 320, or similar. Door buffer should be securely fixed as close as possible to the wall ensuring that door hardware does not make contact with the wall.

For external doors provide a satin chrome, floor mounted door stop with 3 fixing points. "Briton" Model No. 250 or similar. Door stop to be raised on a painted hardwood block fixed to the floor ensuring that full contact with the door is made and the door buffer does not make contact with the door seal.

M3.04 Door Holder

Provide a metal door holder to each hinged glazed door to enable door to be held in open position.

M3.05 Internal Sliding Doors

Provide the following hardware to each internal flush sliding door:

a. Sliding door track with hangers, rollers, stop ends and heavy duty aluminium guide fixed to floor or frame or skirting.
b. Door pull each side of door positioned 1000mm above floor.

M3.06 Locksets and Latchsets

Provide locksets and latchsets as follows to hinged doors.

Door Handles: When nominated on SCHEDULES provide lever handles, otherwise knob handles.

Position handles 1000mm above floor.

External Doors Other Than Duct Doors: Latchset and APPROVED deadlock with inside snib.
Position deadlock 200mm above latchset.
Bathroom, Shower, and WC doors: Privacy latchset.
Other Single Doors: Passage Latchset.
Latchsets may be produced in countries other than Australia or New Zealand.

M3.07 Keys

External door locks in each dwelling unit shall be keyed alike.
External door keys of dwelling units shall differ.

Supply the Superintendent with two keys of each dwelling unit. Label keys to identify unit number, lot number, street name and locality.

M4 HARDWARE IN ABLUTION AREAS

M4.01 General

Install the following hardware where shown on drawings in ablution areas.

M4.02 Shower Curtain Rail

Shower Curtain Rail: 19mm diameter chrome tube.

Support rail with a bracket at each end. Screw support brackets to wall or shower screen.
Tube Support Brackets: Stainless steel

M4.03 Towel Rail

Towel Rail: 19mm diameter chrome tube, 900mm long or length as nominated on drawings.

Support rail with a bracket at each end; rails longer than 900mm shall have an intermediate bracket.
Support Brackets: Satin chrome plated brass.
Screw support brackets to wall. Ensure stud or trimmer support at fixing points.

M4.04 Grip Rails

Provide grip rails where shown on drawings. Ensure stud or trimmer support at fixing points.

Grip Rail: 25mm diameter stainless steel or satin chrome plated brass 60mm clear of wall surface with support lugs at ends.
Screw support lugs to wall.

M4.05 Toilet Paper Holder

Provide a satin chrome plated brass toilet paper holder with non-detachable roller adjacent to each WC pan.

Screw holder to wall at 800mm height above floor unless otherwise shown on drawings.

M5 NUMBERS/LETTERS

When nominated on SCHEDULES, provide numbers/letters as follows:

Numbers/Letters: 105mm high black or white colour, metal or acrylic.
Metal Number/Letters: cast aluminium fixed with two screws.
Acrylic Numbers/Letters: 3mm thick cut out from acrylic and screw fix only.
Fix to upper centre street face of each letterbox group, numbers indicating street number of the development.

Fix to both sides of each letterbox, numbers/letters indicating unit number.

For dwellings with a multiple letterbox

Fix to wall adjacent to main entry door or front verandah/carport post of each unit, numbers/letters indicating unit number: Position numbers/letters 1600mm above slab floor.

Unit numbers are shown on the drawings.

N - ROOFING, ROOF INSULATION AND ROOF PLUMBING

N1 GENERAL

N1.01 Dissimilar Metals

Isolate dissimilar metals.
Direct contact between two or more incompatible metals or alloys should not occur.
Copper or copper alloy materials such as roofs, pipes etc must not come into direct contact with aluminium alloy, zinc, zinc coated or zinc/aluminium alloy coated steel materials.

Do not use lead head nails or any lead as flashings, washers etc in contact with zincalume or colorbond steel.

N1.02 Fastenings

Fastenings Exposed to Corrosive Situations: Non-ferrous metal or hot dip zinc coated steel.
See previous clause.

N1.03 Roof Plumbing and Roof

Install roof plumbing and roofing as soon as possible after completion of roof structure and roof insulation and vapour barriers.
Roof plumbing and roofing shall be watertight.

N2 ROOF PLUMBING

N2.01 Shaped Items

Machine join and factory fabricate shaped metal items wherever possible.
Fabricate and install shaped metal items in longest practicable lengths.

N2.02 Site Jointing

Site joint sheet metal items by lapping, sealant and rivets.
Laps: 20mm minimum.
Sealant: Silicone rubber sealer applied in a continuous line.
Rivets: Monel blind pop rivets at 50mm maximum spacings.

N2.03 Valley Gutters

Valley Gutter: 600mm wide with beaded edges fabricated with "Colorbond Zincalume" coated 0.42mm thick base sheet steel.

"Colorbond" Colour: Standard colour range nominated on SCHEDULES.

N2.04 Flume Vents

Flume vents discharging outside roof space shall be provided to exhaust fans in WC's, bathrooms and kitchens. All other ceiling mounted exhaust fans shall exhaust directly into roof space.

Material: "Zincalume" steel 0.6mm thick base.

Description: Duct gathered to 150mm diameter pipe taken through roof and projecting 300mm above roofing. Duct shall be closely fitted to ceiling vent or exhaust fan.

N2.05 Flues

To Stove Canopy: Install pipe through roof and projecting 300mm above roofing.

Flue Material: "Zincalume" steel 0.6mm thick base.

N3 ROOF INSULATION

Provide as shown on the drawings one of the following:

1. Provide APPROVED 55mm Single Foil Faced Glasswool Builder's Blanket such as ANTICON or similar approved with a minimum R value of 1.3, under the steel roofing
2. Provide APPROVED Thermo Cellular Reflective Insulation under the steel roofing such as Air-Cell INSULBREAK 65 Air-Cell GLARESHIELD or similar APPROVED.

Location:

Top of Roof Battens, as shown on drawings.

Gable ends of roof, except where louvers are indicated on drawings.

Commence laying at lowest edges, dish between roof battens to manufacturers specification and as shown on architectural drawings, and lap 150 mm at joints.

Take insulation to gable ends over wall insulation except where louvers are indicated on drawings

Install insulation in quantities that can be covered with roof sheeting in one day

In addition, provide APPROVED Insulation on all internal ceilings of R3.0 value or as specified on Architectural plans

Refer to ceiling insulation for bulk insulation (See Section U4).

N3.01 Tile Roof

Provide APPROVED Insulation on all internal ceilings of R3.0 value or as specified on Architectural plans.

N3.02 Fireproof Blanket

Fill gap between roof covering and walls separating dwelling units with a Bradford Insulation "Fireseal" or similar APPROVED fireproof blanket of dimensions 100mm high x width to suit wall thickness. Refer drawings for required FRL of wall.

Site blanket centrally on wall and compress down to 85mm.

N4 STEEL ROOFING

N4.01 Steel Roofing Sheets

Roofing Sheets: APPROVED 'CUSTOM ORB' steel roofing sheets fabricated from "Colorbond Zincalume" coated steel. Minimum thickness of steel base: 0.42mm unless otherwise nominated.

"Colorbond" Colour: Standard colour range nominated on SCHEDULES.

N4.02 Steel Roofing Generally

Use single length roofing sheets where possible. Where necessary end laps shall be 255mm minimum.

Sheet Ends: turn up lowest part of sheet profile to fit close under ridge and hop capping.

Roof Projection Beyond Fascia: 40mm.

Eaves Dust Seal: Bed roof sheeting on 30mm x 30mm profiled acrylic impregnated polyureathane foam strip located where shown on wall section drawing.

Valley Dusty Seal: Bed roof sheeting on 30mm x 30mm wide profiled acrylic impregnated polyureathane foam strip located each side of valleys.

Exposed accessories including fasteners shall match finish specified for steel roofing sheets. Ridge, Hip and Barge capping shall be fabricated from sheet steel with same coatings and steel base thickness as steel roofing sheets.

Ridge and Hip Capping: 450mm wide lapped 200mm; Bed on 30mm x 30mm wide profiled acrylic impregnated polyurethane foam strip located each side of capping.

Fix ridge and hip capping batten each side through alternative roof sheeting crests.

Fix ridge and hip capping through all roof sheeting crests.

Fasteners for Capping: 450mm wide lapped 200mm; Bed on 30mmx 30mm wide profiled acrylic impregnated polyureathene foam strip located each side of capping.

Fix ridge and hip capping batten each side through alternative roof sheeting crests.

Fix ridge and hip capping through all roof sheeting crests.

Fasteners for Capping: As specified for roofing sheets.

Barge Capping: Use 'Colourbond' pressed metal barge capping as indicated on drawing. Minimum

thickness of steel base: 0.6mm unless otherwise stated.

Barge Capping Fixings: to each batten through roof sheet crest (but not more than 600mm centres) and to metal joists at 600mm centres maximum.

Apex Pieces: Thoms "Softa-Flash" 0.7mm thick half hard zinc, or similar APPROVED, sheeting of width to correspond with ridge and hip capping.

Finish shall match finish specified for steel roofing sheets.

N4.03 Fixing of Roofing Sheets

Fix roofing sheets as per manufacturer's recommendations for Terrain Category 3 as described in AS 1170.2.

N5 ROOF FLASHINGS

N5.01 Generally

Provide flashings necessary for watertightness of the roof.
Unless otherwise specified use 0.6mm thick base 'Zincalume' steel for flashings. Finish shall match specified for steel roofing sheets.

N5.02 Pipe Flashings

Flash pipes passing through roofing with APPROVED EPDM flashing or metal flashing. EDPM flashing shall be installed in accordance with the manufacturers instructions.

- **Metal Flashing**

Metal flashing may bf 0.7mm thick zinc sheeting. Metal flashing to pipe penetrations shall be at least a two part flashing consisting of base and cover. Finish shall match finish specified for steel roofing sheets.
Base flashing shall have 100mm minimum height sleeve to pipe.
Pop rivet metal base flashing to roofing and seal with a neutral cure silicone sealant.
Close open end of cut ribs with caps sealed to base flashing.
Form cover flashing with 75mm minimum vertical overlap to base flashing. Fix cover flashing to pipe with clamp ring.

N5.03 Change of Roofing Pitch

Ensure high ends of verandah roofing are turned up for water tightness at change of roofing pitch. Install "UNISEAL" closers at all verandah/main roof junctions and install 0.42mm thick base "Colorbond" steel flashing as indicated on drawings.

N5.04 Narrow Diameter Penetrations

Use mini-dektite DF100 for flashing applications to all narrow diameter roofing penetrations.

P - DRAINAGE AND PLUMBING

P1 GENERAL

P1.01 WATER CORPORATION Requirements

When the water services to the contract site is provided by the Water Corporation the cold water supply system and the hot water supply system shall be in accordance with the requirements of the Water Corporation.

P1.02 Qualifications of Plumber

Work on the water supply system and sanitary plumbing installation shall be supervised or carried out by a licensed water supply and sanitary plumber when the water service to the contract site is provided by the Water Corporation.

Elsewhere the water plumbing, sanitary plumbing, and drainage work shall be supervised or carried out by a registered plumber or a licensed plumber.

P1.03 Deemed to Satisfy Provision – Water Use Efficiency

a. All tap fittings other than bath outlets and garden taps must be minimum 4 stars WELS rated.
b. All showerheads must be minimum 3 stars WELS rated.
c. All sanitary systems must be minimum 4 stars WELLS rated dual flush.

P1.04 Drain Bed and Backfill

Bed sanitary plumbing drains and stormwater drains as follows:

a. When trench bottom is clay or rock other than limestone, lay drains on a stone bed at least 100mm deep.
b. Elsewhere lay drains on a bed of clean, clay free sand.

Backfill over sanitary plumbing drains and stormwater drains with clean, clay free sand to 300mm above drain.

P2 SEWER CONNECTION

Connect sanitary fixtures to sewer when sewer junctions are shown on drawings.

Provide sanitary plumbing installation in accordance with the by-laws and regulations of the Water Corporation.

Position and depth of property sewer junctions are to be established prior to concrete floors being poured.

Provide additional sewer junction where required under Water Corporations regulations. Position of additional junction shall be as shown on drawings or as advised by Superintendent.

Overflow Relief Outlet : Sufficient height difference between overflow level of lowest inlet fitting or fixture connected to the building's property sewerage installation and the ground surface must exist for overflow relief gullies.

P3 SEPTIC TANK INSTALLATION

P3.01 Generally

Provide the minimum septic tank installation shown on the drawings in accordance with the requirements of the Public Health Department and the Local Authority.

P3.02 Application

Make "Application For Installation of Septic Tank" to Local Authority with septic tank system as shown on drawings.
Obtain approval of Application before commencing work on septic tank installation. Notify the Superintendent if Application is approved with conditions that vary the contract.

P3.03 Septic Tank Certificate

Arrange inspection of septic tank installation and obtain "Certificate For Construction of Septic Tank". Submit certificate to the Superintendent.

P3.04 Plumbing Certificate

When the water service to the contract site is provided by the Water Corporation:

a. The sanitary plumbing installation to inlet of septic tank shall be in accordance with the requirements of the Water Corporation.
b. Arrange inspection of plumbing work and obtain Plumbing Work Only Certificate.
c. Submit certificate to the Superintendent.

P3.05 Septic Tank

Capacity: 3180 litres unless otherwise shown on drawings.

Type: Precast concrete or "Innotech" moulded polyethylene or as otherwise nominated on drawings.

P3.06 Leach Drains

Refer to drawings for length and type of leach drains as required by the Water Corporation.

Construct leach drains with brickwork or concrete segments.

Brickwork: Calcium silicate bricks shall not be used.

Concrete Segments: Precast "U" shaped with two inspection openings per single length of drain.

Cover the top of the leach drain with geotextile cloth. Extend the cloth 300mm to the sides of the leach drain.

P3.07 Soakwells

Provide double soakwells for combined effluent.

Provide extra soakwell for separate waste disposal when nominated on drawings.

Size: 1200mm minimum diameter x 1500mm effective liquid depth.

Construct soakwells with brickwork or precast concrete segments.

Calcium silicate bricks shall not be used for soakwells.

P4 SANITARY FIXTURES

P4.01 General

Install the following sanitary fixtures where shown on drawings.

Colour of Fixtures: White unless otherwise nominated on SCHEDULES.

Seal junction of insert fixtures and cupboard tops with silicone sealant.

P4.02 W.C. Pan

W.C Pan: Vitreous china "S" trap pedestal type unless otherwise shown on drawings.

Provide a seat, flap and cistern to each W.C. pan.
Seat and Flap: Plastic, fixed to pan with brass or nylon bolts.
Cistern: Plastic, dual flush, low or intermediate level with flush pipe.

P4.03 Wall Basin/Handbasin

Wall Basin: 500mm long x 400mm wide nominal size with three tap holes, waste outlet, bar grate and plug.

Support wall basin on concealed corrosion protected metal support brackets.
Height Above Floor: 850mm to top front.

Handbasin: Acrylic 500mm long x 400mm wide nominal size with three tap holes, waste outlet, bar grate and plug. Fix into vanity as per manufacturer's recommendations.

P4.04 Combined Basin and Vanity Top

Combined Basin and Vanity Top: 900mm long x 450mm wide nominal size top with 3 tap holes.
Basin shall have waste outlet, bar grate and plug.

Installation: To DETAIL L1 unless otherwise shown on drawings.

P4.05 Combined Basin And Wash Trough

Combined Basin And Wash Trough: Acrylic, 914mm long x 448mm wide with rear upstand, three tap holes to horizontal surface behind the basin and cabinet under. Basin and wash trough shall have waste outlet, bar grate and plug.

Cabinet: Prepainted white enamel "Zincanneal" sheet steel with floor, hinged door, concealed door latch and door handle.

P4.06 Bath

Bath Size: 1500mm nominal length, unless otherwise shown on drawings.
Bath shall have waste outlet, bar grate and plug.

Fully bed the bottom of the bath on a dry mortar bed of one part cement and 6 parts clean sand or as otherwise recommended by the manufacturer.

P4.07 Combined Sink and Drainer

Combined Sink and Drainer: 1200mm long x 470mm wide bowl and half stainless steel insert sink with side drainer unless otherwise shown on drawings.

Fascia Type: Stainless steel. Insert Type: Stainless steel.
Provide waste outlet, bar grate and plug for each bowl.

P4.08 Wash Trough

Wash Trough: Single bowl trough with suds saver by-pass and cabinet.
Minimum Bowl Capacity: 45 litres for all units.
Trough bowl shall have waste outlet bar grate and plug.
Cabinet: Water and corrosion resistant with floor, hinged door, door latch and door handle.
Cabinet in dwellings other than Aged Persons units: Child resistant door catch to DETAIL L12.

Seal all gaps between trough/wall and trough/floor with mould resistant silicone sealant or otherwise APPROVED product (depending on the size of the gap) to prevent ingress of moisture, dust, insects and the like.

P5 PLUMBING - GENERALLY

P5.01 Fastenings

Fastening exposed to corrosive situations shall be non-ferrous metals or hot dipped galvanised steel.

P5.02 Dissimilar Metals

Isolate dissimilar metals by the use of polythene tape or lagging (especially copper piping from steel wall framing).

P5.03 Piping

External lead-in piping (from the main to the house) **shall be copper pipe.**
Install piping in longest practicable lengths without joints.
Conceal piping from view wherever possible.
Support piping above ground at 1200mm maximum centres with water and corrosion resistant clips or brackets.
Keep foreign materials out of pipes.
Internally exposed copper piping shall be chromium plated.
Blueline polypipe is not acceptable under any circumstances.

P5.04 Testing

Pressure test cold and hot water to withstand 2MPa for two hours.
Water must be in piping for at least 7 days prior to installation of internal linings or application of set coat.

P6 SANITARY PLUMBING

P6.01 General

Provide and install floor wastes, traps, vents, and waste pipes and soil pipes necessary for complete sanitary plumbing installation.
Keep foreign materials out of waste pipes by using caps/tape until such time as pipework is fitted with

grating.

P6.02 Floor Wastes

Shower Waste: the only floor waste gully at ground floor.
Step down or level shower recesses: Install reflux valves as shown on drawings or as advised by Superintendent.
Other Floor Wastes AT GROUND FLOOR: combination floor waste, pipe and external flap.
Floor wastes shall have removable gratings.

P6.03 Soil/Waste Pipes

Soil/Waste pipes penetrating room floor slabs on ground shall not have wrappings, sleeves or surrounding openings in concrete. Other soil/waste pipes encased in concrete shall have 6mm thick wrapping.

P6.04 Vents

Vents inside buildings shall be U.P.V.C. or copper.

P6.05 W.C Pan Connection

W.C. Pan Connection in Framed Floor Construction: Copper thimble with ant cap, flexible joint to drain and copper adaptor head sealed to pan with a neoprene ring.

P7 COLD WATER SUPPLY SYSTEM

P7.01 Cold Water Service

The Contractor shall apply to the Water Corporation or other water supply authorities for an individual water service with meter for:

a. each dwelling unless otherwise nominated; and
b. common service nominated on drawings.

Arrange water meters to be installed at locations shown on drawings.

For Grouped Dwelling sites arrange for bulk water meter to be installed at front of site where shown on drawings. Individual water meters shall be positioned adjacent to individual units where shown.

For other sites (single or duplex dwellings) arrange for meters to be installed at front of site where shown on drawings and above ground in accordance with Water Corporation's requirements.

Above ground meters shall be fitted with box covers in accordance with P7.04.

The Contractor shall open a consumer account for each water service in the name of the Contractor and shall close and pay consumer accounts at practical completion of the Works.

P7.02 Cold Water Piping

Provide cold water piping from each Water Corporation water service to water heaters and cold water cocks.

For locations above 26c Tropic of Capricorn, install APPROVED "Turbu-Flow" on inlet of all cold water supply.

P7.03 Isolating Valves

Provide isolating valves to the cold water piping at locations shown on the drawings.
Size of valve to match size to pipe in which it is positioned.
Isolating valves shall be below ground at pipe level and fitted with box covers; refer to clause P7.04.

P7.04 Hosecocks

Provide two external hosecocks to each dwelling unit unless otherwise shown on drawings.
Location: One to front and one to rear of each unit, where directed by the Superintendent.
Hosecocks shall have threaded connection (not welded) to cold water supply pipe.
Fix hosecocks to wall 1500mm above finished ground level with backflow prevention devices as per AS3500.

P8 HOT WATER SERVICE

P8.01 Hot Water Piping

Provide hot water piping from water heater to hot water cocks.

Hot water piping shall be lagged and run in roof space of building.
Hot water piping shall not be run on the outside of external walls.
Hot water piping should be clipped at maximum 900 centres to ceiling joists with water and corrosion resistant clips.

P8.02 Solar Water Heaters Generally

Unless otherwise nominated on SCHEDULES provide a Solar water heater to each dwelling unit.

Provide a "jacketed" type Solar Water Heater (J-Series Solarhart or SIMILAR APPROVED) to each dwelling unit when nominated on SCHEDULES.

Water Heater Minimum Capacity:- 150 litres with 1 collector panel for 1 bedroom dwellings, 180 litres with 1 collector panel for 2 bedroom dwellings and 300 litres with 2 collector panels for 3 bedroom dwellings and above. (Note: These collector panel capacities are based on a northern orientation. Contractor to confirm requirements with manufacturer in differing applications.)

All Communities located to the north of the State in hard water areas are to incorporate a "Bobbin Element" into the system as APPROVED by the manufacturer.

The hot water unit to be fitted with a tempering valve to keep the outlet temperature no more than 50 degree C. The tempering valve is to be assessable and fixed on wall 1800mm above ground and within 5m of the bathroom.

Contractor to supply the Superintendent with an **original Renewable Energy Certificate Assignment Form** with plumbing installation details completed. Contractor is responsible for obtaining forms available from APPROVED manufacturers and agents.

P8.03 Solar Water Heaters

The system shall comply to Australian Standard AS 2712-2002,that has been tested in accordance with AS 4234-1994, and achieves a minimum energy saving of 60% for a hot water demand level of 38MJ per day for climate zone 3. It shall be of type listed in the Department's APPROVED Materials List.

The system shall be a closed circuit thermosiphon type unit which suitable for mains pressure connection unless otherwise nominated in documents/drawings.

Storage tank shall be double glazed vitreous enamelled cylinder with a Magnesium sacrificial anode or marine grade 316 stainless steel cylinder or copper cylinder.

The collector construction shall be sealed from water ingress. The collector glass shall be tempered and a minimum of 3.0mm thick.

Electrical Booster Element: Single phase with thermostatic and manual control. A One Shot Booster switch that is recommended by the water heater manufacturer, suitable for connection to Electrical Supply Authority's network and is connected to the household power supply. The switch is to be located within the meter box.

The complete system shall be supplied with a 7 years comprehensive warranty covering parts and labour.

P8.04 Installation of Solar Water Heater.

Locate unit on roof in a shade free area with angle and direction within tolerances recommended by the manufacturer.

Fix unit to roof in accordance with the manufacturers instruction for cyclonic fixing.

Provide discharge outlet pipe from the pressure valve of 15mm copper concealed in the roof space and carried down wall face, ending 150mm above ground level and clear of any concrete verandah, porch or landing. Tempering valve shall be fitted to an accessible location outside bathroom or kitchen.

Isolate and silicone seal around any copper piping penetrating roof sheeting.

P8.05 Continuous Flow Gas Water Heater

Refer clause P10.10.

P8.06 Storage Water Heaters (when shown on drawings or schedules).

Refer clause P10.11.

P9 COCKS, VALVES AND OUTLETS

P9.01 Materials

Internal outlets, wall plates to outlets and exposed cock bodies shall be of metal construction and either chromium plated or powdercoated finish.
Internal taps shall have plastic star type or capstan type handles; finger grip only handles are not acceptable.
Internal tap handles shall have insert buttons for identification of hot or cold.

Insert button shall be either:

a. red for hot and blue for cold; or
b. matching colour with letters H for hot and C for cold

Internal taps shall have matching colour or chrome finish flanges. Refer to SCHEDULES for colours of new plastic internal tap handles.

P9.02 Location Generally

Install 15mm diameter cocks and outlets as specified in Location Schedule, P9.03.
When facing fixture position hot water outlets on left and cold water outlets on right.
To each cock (hot and cold water) of bath outlet, fit a "Galvins safety tap" spring loaded valve assembly.

P9.03 Location Schedule

Cistern	R.A.M.F. stop cock with wall plate.
Wash Basin	Combined concealed assembly with two stop cocks (hot and cold) and fixed outlet with aerator.
Combination Basin and Trough	Basin: Combined concealed assembly cock (hot and cold) and fixed outlet with aerator. Trough: Combined concealed assembly with two stop cocks (hot and cold) and 150mm long swivel arm outlet.
Bath	Combined concealed assembly with two stop cocks (hot and cold) and fixed outlet.
Sink Bowl	Combined concealed assembly with two stop cocks (hot and cold) and 150mm long swivel arm outlet with aerator.
Wash Trough	Combined concealed assembly with two stop cocks (hot and cold) and 150mm long swivel arm outlet.
Washing Machine Position	Two right angle threaded outlet cocks (hot and cold) on wall adjacent to trough 1200mm above floor.
Shower	Combined concealed assembly with two stop cocks (hot and cold).
Shower Fitting	All directional AAA shower arm and rose.
External Water Heater	Stop cock.
Internal Water Heater	R.A.M.F. stop cock with wall plate.

P10 GAS PLUMBING

P10.01 Gas Installation

Unless otherwise nominated on SCHEDULES each dwelling unit shall have:

a. Individual reticulated gas service connection and meter;
b. Gas piping from gas supply to gas appliances and outlets;

P10.02 Regulations

All gas fitting work shall be in accordance with the requirements of the Gas Standards Regulations 1983.

P10.03 Notice of Compliance

Submit a copy of the Notice of Compliance to the Superintendent.

P10.04 Connection to Reticulated Gas

The Contractor shall apply to the gas supplier for connection to reticulated gas main and open a consumer account in the Contractor's name.

The following gas fitting work shall be carried out by the gas supplier:

a. Supply and installation of piping between gas main and meters.
b. Supply and installation of meters and regulators.

The Contractor shall supply labour and materials required to complete the gas installation.
The Contractor shall pay the connection fees. The Contractor shall close and pay the consumer accounts at practical completion of the Works.

P10.05 Bottled L.P. Gas

When bottled L.P. gas is nominated on SCHEDULES, arrange with a bottled L.P. gas supplier to provide the following materials for each dwelling unit:

a. Two empty 45kg capacity gas bottles.
b. Spring loaded safety relief valve.

Contractor shall supply labour and material required to complete the gas supply system including manual changeover gas regulator and metal hood.

Locate bottles where shown on drawings or directed by the Superintendent; point relief valve away from building.

Provide a gas bottle restrainer in accordance with DETAIL P2 to each bottled LP gas installation.

P10.06 Gas Outlet

When nominated on SCHEDULES provide gas outlets, unless nominated otherwise on SCHEDULES, in location(s) shown on drawings. Note: Location of gas outlets must comply with gas regulation requirements.

Gas Outlets shall be recessed, flush fitting, wall mounted, chromium plated bayonet outlets.

P10.07 Gas Room Heater

When nominated on SCHEDULES, provide APPROVED gas room heater.
For Aged Persons Units and Mobility units, provide minimum 13MJ capacity flued convection heaters.
Engrave 'DOH' in 12mm high lettering, at the top right hand side of the rear panel of the room heater.

Gas Room Heaters shall have top mounted controls complete with piezo or electronic ignition.

P10.08 Gas Room Heater Outlet

Where a proposed gas flued heater is to be fitted as shown on the drawings the gas fitter to supply a gas point inside a No 1 valve box in the ground outside the building adjacent to the heater.

Gas supply to be a 15mm gas cock capped at the outlet ready for future connection.

Lid of valve box to be finished at ground level or level with the top of concrete or paving material.

For above ground floor units the gas fitter to supply gas point 130mm above floor level and 100mm right of centre to proposed flued heater as marked on drawing.

Gas point to be recessed into an electrical plaster wall box fitted with a blank plate.

Gas supply to be a blanketed off back plated elbow fixed in the recess.

Any gas line chased into the wall to be vertical only within 1m of the floor.

P10.09 Gas Cooktop

Provide an APPROVED electric wall oven and gas cooktop to each dwelling unit unless nominated otherwise on SCHEDULES.

Aged Persons units shall have APPROVED electric wall oven and gas cooktop as per DETAIL L 5.
Family and Singles units shall have APPROVED electric wall oven and gas cooktop as per DETAIL L 5A.

See Q3.12 for electric wall oven and cooktop.

P10.10 Continuous Flow Gas Water Heater

When nominated in the SCHEDULES provide the following:
An APPROVED continuous flow gas hot water unit.

Hot water units shall have a minimum 5 star energy rating and be fitted in accordance with manufacturers recommendations with water pipe in accordance with AS3500.

The heater is to be preset at 50 degrees. No tempering valve is required for bathroom. The hot water unit is to be located close to rooms and fixtures using the hot water supply. Water heaters shall be fixed and secured to the wall in an easy accessible position. Fit security brackets to the hot water unit.

Continuous flow gas water heater shall have minimum water flow rate of:

a. 18MJ/hr to dwelling unit with one bathroom;
b. 20MJ/hr to dwelling unit with two bathrooms

Water heater installation shall include electrical supply. Install weatherproof power outlet minimum 1800mm from ground next to the heater.

Provide an **Engrave 'DOH' of 12mm high lettering at top right hand side of the heater.**

P10.11 Storage Water Heaters

When nominated in the SCHEDULES provide an APPROVED gas storage hot water unit.

Storage water heaters shall have a minimum 5 stars energy rating and have the following minimum storage capacity:

a. 45 litres (for electrical storage or 90 litres (for gas storage) for aged persons or one bedroom dwelling units; and
b. 135 litres for other dwelling units.

Vitreous enameled steel storage cylinders shall include sacrificial anode.
Sacrificial Anode: Magnesium unless otherwise nominated on SCHEDULES.

The drainpipe from the temperature pressure relief valve shall terminate at lease 150mm and not more than 300mm above ground level and shall discharge as follows:

a. Internal storage water heater – outside the building; and
b. External storage water heater – at a minimum horizontal distance of 1 metre from the relief valve.

The hot water unti to be fitted with a tempering valve to keep the outlet temperature no more than 50 degree C to the bathroom only. The tempering valve is to be assessable and fixed on the wall 1800mm above ground and within 5m of the bathroom.
The storage water heaters shall be secured as per manufacturer's recommendations by using the "Kleenheat Gas SL Bracket" or similar.

Provide an **Engrave 'DOH' of 12 mm high lettering at top right hand side of the heater.**

P11 STORMWATER DRAINAGE

P11.01 Connection to Local Authority Drains

When Connection to Local Authority Drains is nominated on drawings or SCHEDULES provide stormwater drainage as shown on drawings and as follows.

Provide a silt pit for each lot. Connect downpipes to silt pit with 90mm diameter stormwater drains.
Silt Pit: 600mm diameter precast concrete pipe on 100mm thick mass concrete base. Depth of pit shall provide 200mm minimum depth between stormwater drain invert level and top of concrete base. Pit shall have 50mm thick precast reinforced concrete cover with top of cover at ground level.

Locate silt pit where shown on drawings.

Provide 90mm diameter stormwater drain from silt pit:

- To connect to Local Authority underground stormwater drain; or
- Through kerb to discharge on road surface.

Demolish section of road kerb as necessary and make good around kerb.

P11.02 Local Authority

Obtain permission from Local Authority to carry out above works and pay all fees. (Work in road or drainage reserves shall be carried out to the satisfaction of the Local Authority.

P11.03 Grates

Install circular steel grates to stormwater drainage pits in paved areas.

P11.04 Soakwells

Provide soakwells for stormwater drainage where nominated on drawings.

Size and type as per drawings.

Q - ELECTRICAL SERVICES

Q1 GENERAL

Q1.01 Standards and Requirements

The electrical installation shall be in accordance with AS/NZS 3000:2000 (Australian/New Zealand Wiring Rules) and the requirements of Electrical Supply Authority. Where requirements of AS/NZS 3000:2000 or Electrical Supply Authority exceed the specified requirements hereunder the requirements of AS/NZS 3000:2000 or Electrical Supply Authority are to take precedence.

Q1.02 Qualifications of Electrician

Electrical work shall be supervised or carried out by a licensed electrical contractor.

Q1.03 Electrical Supply Authority Approval

Prior to commencement of the works, the Contractor shall ensure that switchboards, meter panels, point of attachment, and cables in both size and location are in accordance with Electrical Supply Authority requirements. Notify the Superintendent if Electrical Supply Authority requirements vary the contract.

Q1.04 Power Supply Available to Site

Available power supply is aerial, 415/240 volt, 3 phase, 4 wire, 50 Hertz A.C. unless otherwise stated on SCHEDULES.

Q1.05 Dwelling Unit Service

Provide single phase service to each dwelling unit unless otherwise nominated on SCHEDULES.

Provide 3 phase service to dwelling units when nominated on SCHEDULES.

Q1.06 Connection to Supply

The Contractor shall apply to Electrical Supply Authority for connection of power and opening of consumer accounts in the name of Contractor for all KWH meters.

The Contractor shall pay the connection fees. At practical completion of the works, the Contractor shall close and pay the consumer accounts.

Q1.07 Meter Installations

The Contractor shall collect and install the meters prior to Electrical Supply Authority inspectors attending the sites. It is the responsibility of the Contractor to make good any damaged or stolen meters. The Contractor is to pay all fees and charges for the meter installations.

Q1.08 Electrical Danger Notices

Provide and maintain electrical danger notices at areas considered dangerous by the licensed electrician or the Superintendent until potential danger areas are deemed safe by same persons.

Q1.09 Conduits For Electrical Cable

Conduit Size: To enable easy replacement of cables.

Underground Conduit: Installed with large sweep bends to enable easy replacement of cables.

Underground conduits for cables entering a building shall terminate inside wall cavity.

Conduits passing through external steel bottom wall plate shall be nominal 32mm diameter to enable proper fit into nominal 75mm wide wall framing and cavity. Secure conduits to formwork to prevent movement during concrete pour.

Q2 DIRECT CONNECTED METERING

Q2.01 Extent Of Direct Connected Metering

Each dwelling unit shall have direct connected metering where stated on the drawings.

Q2.02 Consumer Pole

Provide consumer pole when shown on drawings.

Pole Footing: 450mm x 450mm x 1200mm deep mass concrete.

Pole Height: 6 metres above finished ground level with bottom end protruding a minimum of 100mm through bottom of footing.

Weld on 10mm round steel hooks. Check construction, height and position of pole with Electrical Supply Authority.

Q2.03 Point of Attachment Brackets

Provide brackets and anchor blocks for points of attachment of aerial distribution of electricity supply or as otherwise necessary to satisfy Electrical Supply Authority regulations.

Brackets shall provide service lines with a minimum clearance of 2.5 metres above finished ground and paving levels.

Maximum Cable Span:

a. Standard service bracket = 30 metres
b. Standard raiser bracket = 18 metres
c. Long span raiser bracket = 30 metres

Q2.04 Consumer Mains Cabling

Provide electrical mains from point of attachment to meter panel.

Q2.05 Electricity Meter Box

Provide a meter box to each dwelling unit with direct connected metering.

Meter Box: Galvanised sheet steel with top hinged door, door catch and provision for one meter panel and Supply Authority's fuse.

Locate meter box where shown on drawings. Refer to drawings for finished ground/paving levels and mount meterbox at height necessary to satisfy Electrical Supply Authority regulations. Ensure meterbox is easily accessible for meter reading.

Q2.06 Dwelling Unit Sub-Main

Provide dwelling unit sub-main from meter panel to load center.

Q3 INSTALLATION TO EACH DWELLING UNIT

Q3.01 General

Refer to drawings for positions of fittings and appliances.
Install appliances as recommended by the manufacturer.
Supply incandescent light globes only to seniors units/aged persons dwellings.

Q3.02 Dwelling Unit Load Centre

Provide load centre with circuit breakers RCD/MCBS to each dwelling unit.
Install load centre 1600mm above floor where shown on drawings.
Load centre shall have latched or self-closing hinged circuit breaker cover, removable face plate and fixed surround.

Load centers shall be installed in wall opening (flush mounted).
Where ceiling sweep fans are specified or shown on drawings, install on a separate circuit.
Provide space for at least one RCD/MCB (for future use) in each load centre.

Circuit breakers to lighting circuits and power circuits shall be combined Residual Current Device and Miniature Circuit Breakers (RCD/MCBs). Provide one RCD per circuit.
Label circuits with permanently marked labels securely fastened to face plate of load centre.
Circuit Breakers may be produced in countries other than Australia and New Zealand.

Q3.03 RCD Testing

Test installed Residual Current Devices to ensure:

a. RCD is correctly installed and protects required circuit
b. Test button functions correctly
c. The RCD is operating at the designed sensitivity.

Provide the Superintendent with a written record of test conditions and the tripping times obtained by testing.

Q3.04 Dwelling Unit Wiring

Provide electrical main from dwelling meter panel to dwelling load center with circuits in accordance with AS/NZS 3000:2000 and the requirements of Electrical Supply Authority.

Provide a minimum of two power circuits for power socket outlets not required to have separate circuits.
Provide separate circuit for ceiling cooling fans when fans are specified.
Provide separate power circuits to each 15 amp Socket Outlet.

Terminate cables only at fittings or junction boxes.
Conceal cables and conduits. **Cables and conduits in walls shall run vertically not horizontally.**

Q3.05 Socket Outlets

Socket Outlets: White plastic, flush mounted, twin combination switch-socket.

Type: 10Amp unless otherwise nominated in drawings. 10Amp waterproof externally. 15 Amp for fridge and AC panels.

When shown on drawings, all bedrooms and Dining/Lounge areas are to have provision for a future split air conditioning system by installing a wall mounted external waterproof power isolator mounted 500mm above the condenser plinth as shown on drawings. All power isolators are to be on a separate circuit with a circuit breaker mounted in the load centre or meter box. Power requirements are all bedrooms 15 Amp single phase and Kitchen/Dining 25 Amp single phase or Lounge 20Amp single phase.

Q3.06 External Light Points

All external light points shall be Weatherproof Light Fittings with a 13 watt energy saving globe.

Q3.07 Pendant Light Points

Pendant Light Points shall be white plastic ceiling rose with white plastic sheathed suspension cord, white BC/CG incandescent lampholder. Lamp shall finish below lowest part of ceiling fan blades. Ensure clearance between lamp and floor satisfies regulations. Provide 11 watt energy saving globe.

Q3.08 Fluorescent Light Points

Fluorescent Light Points shall be single 36 watt fitting with white enamel finish, prismatic acrylic diffuser, and white end caps complete with tubes and starters.

Q3.09 Other Internal Light Points

Internal light points other than weatherproof, fluorescent or pendant shall be white plastic, batten holders. Provide 11 watt energy saving globe.

Q3.10 Switches

Switches shall be 10 amp, white plastic, flush mounted and be installed 1200mm above floor level unless otherwise nominated.

Q3.11 Exhaust Fans

Diameter: 250mm.

Exhaust fans shall be operated by separate wall switches and shall have plug in power connections in ceiling.

Exhaust fans in kitchens shall be fitted with sealing devices such as self-closing shutters or high density filters.

Wall mounted exhaust fans shall have shaft to outside air, Refer to METALWORK - G.

Vent ceiling mounted exhaust fans to outside air via a flexible duct terminating in a galvanized metal grille through birdboard. Where not possible vent to outside air by flume vents. Refer to ROOFING, ROOF INSULATION AND ROOF PLUMBING - N.

Q3.12 Electric Cooktop

When **electric cooktop is nominated** on SCHEDULES, provide electric cooktop, circuit and isolator. Aged Persons and Pensioner units shall have APPROVED electric wall oven and electric cooktop. DETAIL L5(Replace gas cooktop with electric cooktop from the APPROVED Materials List).

Family and Singles units shall have APPROVED electric wall oven and electric cooktop. DETAIL

L5A(Replace gas cooktop with electric cooktop from the Approved Materials List).

Circuit:

a. Concealed cable from switchboard to "stove isolator" adjacent to stove position.
b. Cable from white plastic, flush mounted, wall isolator to stove.

Q3.13 Electric Water Heater

Provide electric water heater when nominated on SCHEDULES.

Engrave 'DoH' of 12mm high lettering on water heater at top right hand side.

Electric Water Heater shall be storage type unless otherwise nominated.

Q3.14 Electric Room Heater

When shown on drawings or nominated on SCHEDULES, provide APPROVED electric convection room heater.

Engrave "DoH" in 12mm high lettering, at the top right hand side of the rear panel of the room heater.

The room heater to be secured to floor using brackets supplied by the manufacturers.

Q3.15 Ceiling Sweep Fans (when shown on drawings)

Ceiling cooling fans shall be white, have sealed bearings and 1400mm diameter metal blades (unless otherwise shown on drawings). Install fans in accordance with DETAIL Q1.

Fans shall be fitted with controllers supplied by the fan manufacturer and shall be flush mounted with variable speed and off control. Unless otherwise nominated install controllers 1500mm above floor.

Ceiling cooling fans may be produced in countries other than Australia and New Zealand.

Q3.16 Smoke Alarms

Install APPROVED photoelectric type smoke alarms in accordance with manufacturer's recommendation. Location of the smoke alarms to be in accordance with drawings and the Building Code of Australia.

Smoke alarms must comply with AS 3786.

The smoke alarms shall be connected to the consumer mains power supply and must have an internal, sealed and non-removable rechargeable battery for standby supply during main failure.

Connect all alarms within an individual residence to a lighting circuit. Interconnect all alarms within an individual residence. Alarms shall be tested by the Contractor at building handover.

Q3.17 Continuous Flow Gas Water Heater

When Continuous Flow Gas Water heater is specified, provide a waterproof power outlet minimum 1800mm from ground next to the heater or as indicated on drawings.

Q4 EARTHING

Q4.01 Earth Electrodes And Earth Conductors

Provide earth electrodes and earth conductors in the manner required by the SAA wiring rules and Supply Authority requirements.

When Multiple or Distributed Master Metering is nominated, install earth electrode in cable pit near switchboard and connect earth electrode to switchboard with earth conductor.

Each cable pit shall have concrete lid marked "MAIN EARTH" and be installed with lid flush with surrounding finished surface. Install earth electrodes so they cannot be removed from ground by hand. **Star pickets or galvanized iron water pipe electrodes are not to be used.**

Q5 DISTRIBUTED AND MULTIPLE MASTER METERING

Q5.01 Extent

Refer to Sub-Section Q6 for additional items for Multiple Master Metering.
Refer to Sub-Section Q7 for additional items for Distributed Master Metering.

When Distributed or Multiple Master Metering is nominated or shown on the drawings then provide the following common items.

Q5.02 Boundary Pole

Provide boundary pole when shown on drawings.
Pole: 165mm outside diameter x 5.9mm thick galvanised steel.
Pole Footing: 600 x 600 x 1200mm deep mass concrete.
Pole Height: 6 metres above finished ground level with bottom end protruding a minimum of 100mm through bottom of footing.
Leave bottom end of pole open and fit removable plastic pressure pipe cap to top.

Cable Spigots Welded to Pole: 50mm OD with bell mouth entry at top and 75mm OD exit. Up to 100 amp 3 phase main's connection box shall be installed on a short spigot.

Q5.03 Mains

Provide electrical mains from point of attachment to main switchboard, as per size and route shown on drawings.

When boundary pole is required, install electrical mains in centre of pole and underground in conduit.

Provide electrical sub-mains underground in conduit from main switchboard to meter panels.

Q5.04 Switchboard Cabinets

Provide each switchboard with a cabinet in accordance with the following:

a. Formed from aluminium.
b. Weatherproof construction.
c. Fire barriers and insulation as required by Electrical Supply Authority.
d. Insect screened ventilation openings as required by Electrical Supply Authority.
e. Hinged dust sealed doors complete with lockset incorporating "Lockwood" 201 SHC-E pin cylinder; lock shall pass only the Department of Housing electrical switchboard key and the Electrical Supply Authority Master Key.
f. Door leaf without lock shall have spring loaded bolts top and bottom with joining pull chain.

Provide trimming necessary to support switchboard cabinet.

Q5.05 Switchboards Generally

Switchboards shall be in accordance with the following:

a. Provide equipment as specified later.
b. Segregate metered and unmetered portions of board.
c. Links (Active, Neutral, Earth) shall be two screws per tunnel type with one conductor per tunnel.
d. Use double insulated wiring neatly laid out and laced.
e. Represent each phase by one colour only.
f. Label equipment and various portions of board.

Q5.06 Drawings Of Switchboards

a. Prepare drawings detailing switchboard layouts, equipment, wiring, and cabinets.
b. Submit drawings to the Electrical Supply Authority and obtain approval prior to commencing fabrication.
c. Submit copy of approved switchboard drawings to the Superintendent.

Q5.07 Main Switchboard

Provide a main switchboard as per the drawings submitted to the Supply Authority and approved by the Superintendent. Switchboard shall includes the following equipment:

a. Main switch.
b. Active links.
c. Neutral links.
d. Earth links.
e. Sub-mains protection.

Other equipment in main switchboard is specified later.

Q5.08 Common Services

The common services meter is to be a **"SMARTPOWER"** meter as shown on the Switchboard Drawings. Where a SmartPower meter is required the contractor must:

1. Be the Electrical Supply Authority account holder where the SmartPower meter is to be installed.
2. Supply to Electrical Supply Authority a signed SmartPower Contract providing company details including company name, postal address, fax and phone numbers and directors/owners details.
3. Pay to Electrical Supply Authority the cost of SmartPower meter.

Provide common services meter panel, common services panel and common services wiring when:-

1. Television Reception System is nominated on SCHEDULES; or
2. Security Lighting is shown on the Drawings; or
3. Common light points or Socket Outlets are shown on drawings.

Locate common services panel and meter in main switchboard.

Install the following equipment on Common Services panel:

a. Switch isolating common services.
b. Active links.
c. Neutral links.
d. Earth links.
e. Circuit protection.
f. 10 amp Socket Outlet.

Item (f): Connect Socket Outlet to common power circuit and label "SUPPLIED BY COMMON SERVICES POWER CIRCUIT".
Arrange connection of common services meter; refer to Clause Q1.06, Connection to Supply.

Q5.09 Underground Pits

Provide underground electrical and communication pits as shown on drawings.
Pits shall have concrete lid appropriately labeled as per electrical drawings.
Install pits with lid flush with surrounding surface.

Grout/Fill around conduit holes in pits to prevent ingress of sand.
Temporarily stake around each installed pit to prevent damage to lids during construction.

Q5.10 As Constructed Record

In addition to Services Record specified in PRELIMINARIES, provide an "as constructed" electrical services record. Record to include the following information for both electrical and T.V. installations:

a. Layout of sub-mains.
b. Layout of common services circuits.
c. Switchboard layouts.
d. Line diagrams of installations.
e. Route of underground cabling and location of pits.

Locate record in plastic folder and fix folder inside of main switchboard cabinet.

Q6 MULTIPLE MASTER METERING

Q6.01 Extent

When Multiple Master Metering is nominated on Drawings, then install the following items in addition to those specified in Sub-Section Q5.

Q6.02 Main Switchboard

Provide in main switchboard, the dwelling unit meter panels for dwelling units nominated on drawings.
Dwelling units with single phase service shall have "Email Westinghouse" meter panels for plug-in meters.

Q6.03 Remote Multiple Master Meter Switchboards

Provide remote multiple master meter switchboards when shown on drawings.
Each remote multiple meter switchboard shall include the following equipment:

a. Isolating switch.
b. Active links.
c. Neutral links.
d. Dwelling unit meter panels for dwelling units nominated on drawings.
e. Earth links when dwelling units are multi-storey Apartments or Flats.

Refer to Clauses Q5.04, Q5.05 and Q5.06.

Q7 DISTRIBUTED MASTER METERING

Q7.01 Extent

When Distributed Master Metering is nominated on drawings, install the following items in addition to those specified in Sub-Section Q5.

Q7.02 Dwelling Unit Electricity Meter Box

Provide a meter box to each dwelling unit, located where shown on drawings
Type: Galvanised sheet steel with top hinged door, door catch and provision for one meter panel and Electrical Supply Authority's fuse.

Q8 COMMON SERVICES WIRING

Provide at least one separate circuit for security lighting.
Provide a separate circuit for other common light points.
Provide one circuit for common Socket Outlets.

Use multi-strand copper cored P.V.C. insulated and sheathed cable with a green covered earth conductor.

Minimum Nominal Cable Conductor Size: 2.5mm^2.
Terminate cables only at fittingsCable separate from buildings shall be underground.

Q9 SECURITY LIGHTING

Q9.01 Security Lighting Generally

Provide security lighting as follows when shown on drawings. Security lights shall be fused at luminaire.
Provide lamps for security lights.

Q9.02 Security Lighting Control Equipment

Provide the following equipment to control security lighting:

a. Switch isolating security lighting.
b. 10 amp photoelectric switch.
c. Switch overriding photoelectric switch.
d. Three pole 20 amp contractor with single phase coil when shown on drawings or detailed in specification.
e. Minimum cable size for security lighting is 2.5 sq. mm.

Items (a), (c) and (d) shall be installed on common services panel.

Photoelectric switch
Photoelectric switch shall be mounted on top of the switchboard unless otherwise shown on drawing.
Locate photoelectric switch facing away from any artificial light source.
Photoelectric switch shall be weatherproof and mounted in a vandal resistant surround.

Q9.03 Pole Top Security Light

Pole top security light as nominated on drawings.
Light Fitting : APPROVED Post Top Security Light Lamp housing with lamp holder, fuse, control equipment applicable, and lamp.
Lamp: Unless nominated on drawings 70 watt pressure sodium or 80 watt mercury vapour.

Q9.04 Horizontal Post Mounted Security Lights

Horizontal post mounted security light as nominated on drawings.
Light Fitting: APPROVED horizontal post mounted security light lamp housing with lamp holder, fuse, control equipment applicable and lamp.
Lamp: Unless otherwise nominated on drawings 18 watt low pressure sodium.

Q9.05 Bollard Security Lights

Bollard security light shall consist of bollard post, lamp holder, fuse, lamp, necessary control equipment and APPROVED bollard security light lamp cover.
Lamp Holder: G24d-1 (PLC) type unless otherwise nominated on drawings.
Lamp: 13 watt G24d-1 (PLC) compact fluorescent unless otherwise nominated on drawings.
Control gear such as fuse and ballast shall be separate from lampholder and mounted on metal tray in post.

Bollard Light Post: Galvanised steel or marine grade aluminium to suit fitting, installed height above ground to be 850mm (including lamp housing). Post can be buried type or base plate mounted.
External exposed metal faces of lamp cover and post shall be painted or powder coat finished.
Where lamp cover & post colour is not nominated on schedules consult the Superintendent prior to fabrication.

Q9.06 Sensor light

When nominated on drawings supply and install a motion dectector Twin PAR 38 Security light.

Q10 COMMON SERVICES POWER SOCKET OUTLETS

Q10.01 Television Amplifier

When Television Reception System is nominated on SCHEDULES, install a double 10 amp 250 volt Socket Outlet in television amplifier cabinet, allowing sufficient space for amplifier.
Position the Socket Outlet at bottom right hand corner of cabinet.
Connect Socket Outlet to common services power circuit.
Refer R2 for E-key.
Label Socket Outlet "SUPPLIED BY COMMON SERVICES POWER CIRCUIT".

Q10.02 Garden Reticulation Cabinet

When Garden Reticulation Cabinet is nominated on Drawings, install a 10 amp 250 volt Socket Outlet in garden reticulation cabinet.
Supply conduit and draw wire to the reticulation cabinet.
Position Socket Outlet at bottom right hand corner of cabinet and connect to common services power circuit.
Label Socket Outlet "SUPPLIED BY COMMON SERVICES POWER CIRCUIT".
Refer R2 for E-key.

Q11 TELEPHONE OUTLETS

Q11.01 Singled Detached Houses and Grouped Dwellings

Provide and install the complete telephone system individually to each dwelling unit, including all associated cabling (including internal wiring) and one telephone outlet to each unit.

Arrange with Telstra to install conduit and cabling from boundary point (pit) to feed all units directly through pits (if necessary) to a Madison Box at each individual unit.

Q11.02 Telephone Outlets

Provide and install a telephone outlet to each dwelling unit
Unless otherwise shown or directed, install telephone outlets at 150mm above floor level.

Q11.03 Conduits

Conduits installed for telephone installation shall be in accordance with the following:
Conduits shall be concealed
Conduits exiting building underground shall extend to a distance of 300mm from outside of building wall.
300mm radius bends are to be used; do not use 90^0 elbows.
Ends - remove sharp edges; seal to prevent ingress of moisture or foreign matter.
Draw - Wires - where draw - wires are required provide and install (including other than in conduits) 7/ 0.5 P.V.C insulated cable.

Q11.04 Installer

Distributed telephone cabling shall be carried out or supervised by an ACMA (formerly Austel/ACA) Registered Cabler and shall comply with ACMA wiring rules (Australian Standard AS/ACIF 5009).

R – TELEVISION SERVICES

R1 TELEVISION RECEPTION SYSTEM

R1.01 Extent

When nominated on SCHEDULES, provide a MATV system which shall be able to receive and distribute all nominated services, including free to air television transmissions, (analogue and digital) satellite transmissions and free to air radio services.

R1.02 System

The television reception system shall include:

a. One television outlet to each dwelling unit.
b. Television antenna/s.
c. At least one amplifier.
d. A service cabinet for each amplifier and GPO.

R1.03 General

The purpose of this Standard Specification is to establish a basis for a uniform design, installation and testing of Master Antenna T.V. Systems in Department of Housing buildings. The Standard Specification refers to a receiving system working in VHF and UHF bands and for current Analogue and Digital TV channels. It does not incorporate provisions for PAY-TV Services. All work shall be carried out in accordance with AS 1367 Multiple outlet distribution systems-sound and vision and all equipment in the system must be digital compatible.

R1.04 System Components

The MATV system to be installed shall include the following items: UHF/VHF Antenna, mounting brackets, trunk cables, 'F' Series splitters and couplers, distribution cabling, line amplifiers, modulators, head end modular amplifiers, 'F' Series outlets, RG 6 quad screened cable for drops and RG11 quad screened cable for trunk cable.

R1.05 Antennas

The Antenna or the antennas (as required) must be digital compatible, provide the best possible signal free of interference, ghosting and other visible or audible impairments. It should have an adequate bandwidth to receive all transmitted information without affecting the relative levels of various carriers. The antenna system shall comply and be installed in accordance with relevant requirements of AS 1417, Receiving Antennas for Radio and Television.

R1.06 Mast Installation

A site survey is to be carried out to determine the height and location of the antenna/s. The structure and installation shall conform to the Australian Standard AS1417.

R1.07 Wide Band Amplifier

Distribution Amplifier to maintain the necessary signal levels, to compensate for system losses and to keep to minimum signal impairments is to be installed. In low signal areas use low-noise Masthead

R1.08 Head End Amplifier

For larger systems single channel amplifiers are preferred as Distribution Amplifiers as they make possible a high degree of channel level equalization. They may also include AGC (automatic gain control) to reduce fluctuation.

R1.09 Frequency Converter

A Frequency Converter may be used when a TV reception will be made either possible or improved by changing the frequency of the desired channel using I.F. Up / Down converters.

R1.10 Modulator

A modulator is required to convert Audio and Video to a suitable channel frequency, care must be exercised in selecting a suitable TV channel frequency to avoid the interference with other channels within the system. The use of I.F. Vestigial Modulators must be used

R1.11 Directional Couplers and Splitters

Be fully encased and screened to avoid induction and radiation and be characteristically matched to prevent generation of standing waves and be fitted with F type connectors for cable connection. All splitters, directional couplers and other passives in the system shall be Digital ready F type (5 to 2300MHz). Directional Couplers and Splitters are not to be installed underground.

R1.12 Outlets

All outlets shall be Digital compatible "F" type fitting.
They shall be located 500mm above floor level as shown on the drawings.

R1.13 Coaxial Cables

Coaxial cables shall be RG 6 Quad Coaxial for drops and RG 11 Quad Coaxial Cable for trunk cables. Hard-line cables to be used as required. Exposed cable ends shall be sealed to prevent moisture ingress.

Do not loop cables, run each cable in a concealed conduit, which shall be, 20mm minimum size, Class B, rigid PVC conduit

All coaxial cable shall consist of a copper clad steel center conductor with a gas expanded polyethylene dielectric. All cables installed underground shall be similar type to the above with the addition of a Flooding Agent to prevent the ingress of moisture AND SHALL BE UNJOINTED CABLE.
Hard-line coaxial cables (0.500", 0.625" or 0.750") may be required in major reticulation projects. Appropriate "L" type coaxial connectors (feed-through) shall be used with hard-line cables.

R1.14 Connectors

"F" Type Coaxial Connectors (to suit the cable type) shall be used to terminate cables. Only prescribed tools shall be used and attention shall be paid to the rigidity and trimmed length of the solid center conductors as recommended by the manufacturers of the coaxial connectors. The minimum bending radius is 10 times the cable diameter. The use of saddles and clamps is not allowed.

R1.15 Reception

To define system parameters limits which will, with an unimpaired input, produce picture and sound where the impairment to any single parameter will not be worse than Grade four on the five-grade impairment scale.
Note: The five-grade impairment scale is in accordance with CCIR Recommendation 500-1, Kyoto, 1978, Vol. X1:

5 – Imperceptible, 4 - Perceptible (not annoying), 3 - Slightly annoying, 2 – Annoying,
1 - Very annoying.

R1.16 Impedance

The nominal impedance of the system shall be 75 ohms. Tenderers should note that this value applies to all active and passive components including coaxial cables and system outlets.

R1.17 Carrier Level

Vision carrier levels at any outlet shall be not less than 60dBu Volts and not more than 70dBu Volts. Levels of each nominated television service shall not vary by more than 6dBu Volts at any one outlet. Audio carrier level shall be at least 9dB below the vision carrier.

R1.18 Maximum Carrier Level

The maximum signal level at any point in the system shall not exceed 120 dBiV.

R1.19 Carrier Levels at System Outlets.

1. Minimum levels for AM TV: 60 dBiV
2. Maximum levels for AM TV: 80 dBiV

Note: At any System Outlet FM signal levels shall be at least 10 dB below lowest AM TV signal

R1.20 Permissible AM TV Carrier Level Difference at any outlet

Vision carriers between 40 and 860MHz. 12 dB maximum

R1.21 General

The systems shall, where applicable, comply with the requirements of all relevant Acts and Regulations of the statutory Authorities. All work shall be carried out in accordance with AS 1367 Multiple outlet distribution systems-sound and vision All work done shall be done in a workman-like manner in accordance with Standards, Regulations, good engineering practice and in accordance with design.

R1.22 Commissioning and Test Certificate.

The commissioning shall include all tests and documentation required by this Specification and any other relevant authority. It shall include preparation of as constructed drawing/s giving details of the complete installation with proper indication of locations and details of the equipment including System Outlets, which should have at least two (2) copies. Provide signed and dated Test certificate in accordance with the relevant Specifications and the proposed design. Certify that the tests carried out during Commissioning were carried out properly and that the test results reflect truly the status of the installation. One copy shall remain permanently at the headend of the installation in a properly marked container. One copy shall be delivered to the Superintendent at least five working days before final handover of contract.

R2 SERVICE CABINETS

R2.01 Generally

Provide service cabinets shown on drawings.
Service cabinets shall be in accordance with the following:

a. Formed from aluminium.
b. Weatherproof construction.
c. Hinged dust sealed doors complete with lockset incorporating "Lockwood" 201 SHC-E pin cylinder; lock shall pass only the Department of Housing electrical switchboard key and the Electrical Supply Authority Master Key.

Main switchboard to LHS and to RHS reticulation cabinet positioned above and the MATV cabinet below. Each Service cabinet to have two separate Keys for each cabinet and should all be keyed alike to a standard Department of Housing key.
Provide a 900mm minimum width path from the closest paving to each services cabinet.

R2.02 Garden Reticulation Cabinet

When nominated on drawings cabinet shall be 450mm high x 450mm width x 150mm clear internal depth.

R3 TELEVISION OUTLET ASSEMBLY AND ANTENNA

Provide a television outlet assembly complete with antenna to each dwelling unit when Television Reception System (clause R1) is not required.

Assembly shall be antenna, cable and television outlet. The Antenna must provide the best possible signal free of interference, ghosting and other visible or audible impairments. It should have an adequate bandwidth to receive local television channels. The antenna system shall comply and be installed in accordance with relevant requirements of AS 1417, Receiving Antennas for Radio and Television.

Cable: 75 Ohm quad screened coaxial cable to accommodate Digital reception.
Television Outlet: Wall box with white plastic flush mounted standard 75 Ohm socket with "F" type connection. Location of Television Outlet: Where shown on drawings at a height of 500mm above floor.

Test Equipment

Commissioning / Test Certification

Project No:	Location:	Page .....
Installation Company's Name:	Commissioning Person's Name:	

	Model	Serial No	Calibrated	
Field Strength Meter Systems Analyzer				
Signal Reading	Antenna	Distribution Amp	Outlets	Kyoto Scale1-5
ABC				
SBS				
CHANNEL 7				
CHANNEL 9				
CHANNEL 10				
CHANNEL 31				
OTHER CHANNELS				
OTHER CHANNELS				
OTHER CHANNELS				

Commissioning Person's Signature	Superintendents Signature	Date: .....

U - LININGS AND INSULATION

U1.01 EXTERNAL WALL INSULATION

Provide External Wall Insulation, Sarking and Thermal break using ONE of the following SYSTEMS or as specified on Architectual Drawings

System One:

Sarking: Install APPROVED Sarking to outside of steel frame work
Fix Horizontally commencing at bottom plate level
Lap 150mm at horizontal joints
Vertical Joints should occur at studs and shall not occur within 900mm of corners
Lap top sheet over bottom sheets at 150mm

Thermal Break: Install APPROVED Thermal Break to exterior studwork, between Sarking and cladding in accordance with BCA 3.12.1.4 (d)

Bulk Insulation: Install APPROVED Semi Rigid R1.5 Wall batts or as detailed on Architectual drawings
The Bulk Insulation shall be flame attenuated
Nominal Thickness 75mm
Install the Insulation by pushing into space between the adjacent wall framing insuring that the edges of the insulation are butted tightly together
Where it is necessary to cut the bulk insulation, it shall be cut so as to be not less than 5mm oversize to ensure a good fit. Care should be taken not to cover electrical wiring with the bulk insulation. Use spacers where required.

System Two:

Thermo Cellular Reflective Insulation: Install APPROVED Thermo Cellular Reflective Insulation such as Air-Cell PERMISHIELD or similar approved.
Install to manufacturers specifications and as shown on Architectural plans
Shall be fixed to outside of steel frame work
Fix horizontally commencing at bottom plate level
Use spacers where required to maintain airspace
Butt join, seal using 48mm Reinforced Aluminum Tape at both vertical and horizontal Joints
Vertical Joints should occur at studs and shall not occur within 900mm of corners

Bulk Insulation: Additional Bulk Insulation may also be required as specified on Architectural Drawings

U1.02 INTERNAL WALL INSULATION

Bulk Insulation: Install APPROVED Semi Rigid R1.5 Wall batts or as detailed on Architectural drawings to all internal walls
The Bulk Insulation shall be flame attenuated
Nominal Thickness 75mm
Install the Insulation by pushing into space between the adjacent walls framing insuring that the edges of the insulation are butted tightly together
Where it is necessary to cut the bulk insulation, it shall be cut so as to be not less than 5mm oversize to ensure a good fit. Care should be taken not to cover electrical wiring with the bulk insulation. Use spacers where required.

U2 EXTERNAL LININGS

U2.01 External Wall Linings

Line external face of external walls up to height shown on drawing with Colorbond customorb steel sheeting unless otherwise nominated on the schedules or drawings. Install customorb as recommended by sheeting manufacturer. Install customorb with flutes horizontal unless otherwise nominated on drawings.

Refer Metalwork - Dado Flashing: for Colorbond pressed metal flashing divider.

External wall lining above dado height shall be 6mm APPROVED fibre cement sheets, unless nominated otherwise on the schedules or drawings. Use sheet sizes to suit stud spacing. Install sheeting in accordance with manufacturer's recommendations and as shown on drawings.

U3 INTERNAL LININGS

U3.01 Wall Flashing

Provide wall flashing to junction of wall framing and floor of rooms specified to receive mosaic floor tiles. Refer to CERAMIC TILING -V.

Wall Flashing: 100mm wide APPROVED coated aluminium sheet flashing material.

Installation: Fix to face of wall framing and embedded 12mm minimum into mortar bed.

U3.02 Gypsum Paper Board (Ceilings)

Gypsum Paper Board shall be an APPROVED product.

Thickness of gypsum paper board shall be as recommended by the manufacturer.

Internal Angles of Walls: Taped and sealed.
External Angles of Walls: Metal corner bead.
Fix and flush joint boards as recommended by the manufacturer.

Flashings To Wet Areas

Generally waterproofing of wet areas shall be in accordance with AS 3740-2004 or otherwise current AS standard.

Floor/Wall Junction

Prior to laying floor and wall tiles, apply an APPROVED water based latex waterproof membrane complete with 100mm polyester reinforcing fabric to all wall/floor junctions, shower floor, drainage outlets and 1800mm high to all internal corners of recess.

U3.03 Approved Products for Wall Linings

Walls: Dry area walls to be fitted with 10 or 13mm gyprock as shown on drawings.

Bathroom Walls:

- Shower Walls – 6mm vertical Villaboard.
- Remainder of the walls 6mm Versilux with plastic 'V' joint.

U3.04 Ceiling Vents

Provide a ceiling vent to each Storeroom.
Ceiling vents shall be insect screened, removable plastic, 250mm x 250mm nominal size.
Provide flume vents to all ceiling vents; Refer to ROOF PLUMBING – N

U3.05 Cornice

Provide 55mm Gypsum Paper Board plaster cornice to junction of internal wall and ceiling lining.

Provide plaster cornice elsewhere when shown on drawings.

U3.06 Plumbing Fixtures

Seal junction between wall sheeting/tiles and plumbing fixtures (shower, bath and trough tapsets) with flexible mould resistant silicone sealant.

Seal around fixtures and wall/benchtops with mould resistant silicone sealant (flexible where necessary).

U3.07 Location Schedule

Provide internal linings as follows:
Store walls and ceiling: Hardiflex or APPROVED fibre cement board
Shower walls: APPROVED fibre cement board (Vertical) - Shower wet seal or similar walls, floors & hobs.

U4 CEILING INSULATION

U4.01 Extent

Provide insulation above all internal ceilings of buildings.

U4.02 Material

Ceiling insulation shall be APPROVED products or bulk insulation.

Bulk insulation shall be:

- aluminium foil laminate faced polyester batts; or
- APPROVED loose fill wool insulation; or
- APPROVED wool batts for ceiling insulation; or
- fibreglass batts or roll; or
- loose fill being APPROVED cellulostic fibre thermal insulation with Boric Acid/Borax complying with AS 2462-1981/Amdt 1-1985 and Amdt 2-1986 or otherwise current AS standard; or
- loose fill being "Rockwool Granulated"; or
- cellulostic fibre encased by an outer plastic covering with reflective qualities, or
- polyester batts or roll

Minimum installed thickness of batt, roll, and loose fill insulation material shall be that recommended by the manufacturer to achieve a minimum winter Thermal Resistance of R3.0 unless otherwise noted on drawings or SCHEDULES.

U4.03 Ceiling Manholes

Provide a 600mm x 400mm ceiling manhole positioned as shown on drawings.
The manhole shall be aluminium framed.

Insulate ceiling manholes with fibreglass or polyester insulation adhered to top of manhole panel.

U4.04 Installation Generally

Do not provide insulation over ceiling vents.
Keep insulation 500mm clear of flues and flume vents.
Insulation shall extend beyond inside face of walls at perimeter of insulated ceilings.
Ceiling insulation shall fill space between ceiling support framing.
Where possible lift electrical cables to rest on top of ceiling insulation.
Insulation shall be dry when installed.
All packaging shall be removed from roof space.
The installer shall follow the recommendations of the "National Code of Practice for the Safe Use of Synthetic Fibres" issued by Worksafe Australia.

U4.05 Batt/Roll Insulation

Batts shall be laid in open position between ceiling support framing.
Cut batts and blanket to required size.
Lay "Insultherm" batts with aluminium foil facing roofing.
Provide tight fitting butt joints in batt or blanket insulation.

U4.06 Loose Fill Insulation

Before installing loose fill insulation provide retaining barriers at flues, flume vents, ceiling vents and perimeter or insulated ceilings adjacent to ventilated eaves.

Retaining barrier may be fibreglass or polyester batt insulation.

Retaining barriers at flues and flume vents may be flame retardant reflective foil laminate suitably shaped and fixed to ceiling support framing.
Retaining barriers at ceiling vents and perimeter of insulated ceilings may be one of the following fixed to wall plate/ceiling framing:

a. Reflective foil laminate
b. Timber
c. Protected sheet steel

Install loose fill insulation by hand or pneumatic means resulting in the density and thickness recommended by the manufacturer to achieve the specified thermal resistance.

Installation of Bradford "Fibertex Rockwool Granulated" shall be carried out in accordance with the manufacturer's recommendations.

U4.07 Cellulostic Fibre Insulation

When cellulostic fibre thermal insulation is installed, provide the Superintendent with a certificate or warranty for the insulation from the insulation manufacturer. Certificate/warranty shall nominate location of buildings.

V - CERAMIC TILING

V1 WALL TILING

V1.01 Materials

Wall Tiles: APPROVED glazed ceramic to EN159/BS6431 (European/British standards).
Wall Tile Thickness: 5.5mm minimum. Wall Tile Size: 200mm x 200mm, unless otherwise nominated.
Wall Tile Colours: Refer to SCHEDULES.
Wall Tile Adhesive: That recommended by the wall tile manufacturer.
Soap Holders: Glazed ceramic, 200mm x 100mm.

V1.02 Background Surfaces

Prepare background surfaces to receive wall tiles as follows.

Remove oils, greases, paint, loose material and any material, likely to reduce adhesion of the wall tiles. Leave the surface dust free and clean.

Waterproof walls and Floor

Provide an APPROVED waterproof membrane (Crommelin Chemical, Wetite or similar) to sheet and base walls of shower enclosure, and hob and shower recess base and 150mm above the floor and 150mm above all sides of the bath, on walls to all wet areas to make watertight before commencing wall tiling.

Waterproof membrane to be installed in accordance with manufacturer's recommendations.

All work and materials shall be in accordance with AS3740-2004 or otherwise current AS standard.

Provide bituminous (Elastoseal or similar APPROVED) coating to underside of internal wall frames to perimeter of all wet areas.

V1.03 Setting Out

Set out wall tiles to give a 2mm joint between adjoining tiles.
Set out wall tiles with straight joints in both directions and to minimise cutting.
Do not use cut wall tiles less than a half tile without approval of the Superintendent.

Wall tiles shall overlap floor tiles in shower recess and elsewhere in wet areas in accordance with AS3958.1 or otherwise current AS standard.

Provide brass or aluminium angle to tiles at doorways and kitchen entrance.

Provide ratio of fall in shower areas between 1:60 and 1:80. In other wet areas graded to a waste outlet the ratio of fall shall be between 1:80 and 1:100.

V1.04 Fixing

Wall Tile Fixing: 2mm minimum thickness of adhesive applied with a notched trowel.
Surfaces receiving adhesive shall be dry.
Cut tiles with suitable and APPROVED equipment to prevent excessive wastage of tiles.
Ensure that tile adhesive is compatible with waterproof membrane.
All sealants shall be waterproof, flexible, mould-resistant and compatible with adjacent materials.

V1.05 Joints

Fill joints between wall tiles with coloured grouting compound when tiles are set firm.
Grouting Compound Colour: To match main tile colour unless otherwise nominated.

V1.06 Cleaning

Clean excessive grouting compound from wall tiles.

V1.07 Location of Wall Tiles

Provide wall tiles in the following locations or as otherwise shown on drawings. Border frieze tiles to be installed to the kitchen only.

a. One row of tiles as skirting to Bathroom, Ensuite, Shower, Laundry and W.C.
b. To 400mm minimum or 2 rows above sink and bench cupboards including return walls. The height

of 400mm or 2 rows should be consistant.

c. Wall area of hot plate position: 2 rows above the hot plate rear and side.
d. To 200mm minimum above trough, basin and bath.
e. Full area of bathriser.
f. Shower enclosure walls to a height of 1800mm above shower floor. Bath hob.

V2 CERAMIC FLOOR TILES

V2.01 Materials

Ceramic Floor Tiles of Aged Persons Units: APPROVED 98mm x 98mm Slip Resistant. 200x200 to kitchen
Ceramic Floor Tiles of Other Dwelling Units: APPROVED 98mm x 98mm, 200mm x 200mm to kitchen.

Colours: Refer to SCHEDULES.

Cement For Mortar Mix: Normal Portland to the STANDARD.
Sand: Clean sand, free of deleterious matter and of size suitable for mortar.
Water: Drawn from a stable reticulated drinking water supply.

V2.02 Sub-Floor Preparation

Prepare sub-floor to receive ceramic floor tiles by removing rubble and dust.

V2.03 Laying

Lay ceramic floor tiles on a mortar bed.

Mortar Mix: One part normal Portland cement, 4 parts sand, water sufficient to form semi-dry, workable mix.
Concrete Sub-Floor: Wash concrete with neat cement/water slurry and apply mortar to wet slurry.

Mortar Bed Thickness: 15mm minimum, 30mm average.
Shape mortar bed to required falls.
Cover mortar bed with even coating of neat **white** cement sprinkled on surface; sprinkle water over cement coating as necessary to evenly dampen.

Tamp ceramic floor tiles into position.

Shower Recess: Provide mosaic tiles to step down face with upper floor mosaic tiles covering leading edge. Also refer to clauses V1.02 and V1.03 for water proofing and for junction with wall tiles.

At doorway junctions with other floor finishes, top of ceramic tile floor shall be maximum of tile thickness above main floor level.

V2.04 Joints

Fill joints between ceramic floor tiles with coloured grouting compound when tiles are set firm.
Grouting Compound Colour: To match main tile colour, unless otherwise nominated.

V2.05 Cleaning

Clean cement residue and excessive grouting compound from ceramic floor tiles.

V2.06 Location of Ceramic Floor Tiles

Provide ceramic floor tiles to Bathroom, Shower, Ensuite, Laundry and W.C. Provide 200x22 Ceramics to the kitchen

W - RESILIENT FINISHES

W1 MATERIALS

Vinyl Floor Tiles: 2mm gauge homogeneous, 300mm x 300mm, APPROVED type.
Vinyl Floor Sheeting: Layered or 2mm gauge homogeneous; APPROVED type.
Carpet Underlay: Rubber; APPROVED type.
Carpet: Artificial fibre carpet manufactured in Australia or New Zealand with a A.C.C.S. Location Guide Classification of Domestic Heavy Duty Including Stairs for APUs.

W2 DETAILS INSTRUCTION

W2.01 Extent

Provide resilient finishes of extent, type and colour nominated on drawings and/or SCHEDULES.

W2.02 Background Surfaces to Vinyl Finishes

Prepare background surfaces to receive the vinyl finishes as follows.
The planeness of the background surface shall be such that when a straightedge 1.5m long is placed on the surface at any position, no part of the surface shall be more than 6mm below the straightedge.

The smoothness of the background surface shall be such that when a straightedge 150mm long is placed on the surface at any position, no part of the surface shall be more than 1mm below the straightedge.

Concrete Background to Vinyl Finishes: Eliminate irregularities by grinding; Fill depressions, holes and deep cracks with a cement compound.

Other Background to Vinyl Finishes: Eliminate surface irregularities by sanding. Apply one coat of sealer as recommended by the manufacturer of the adhesive to be used.

Remove loose material, adhesive, oils, greases, paint, soap and any material likely to reduce adhesion of the vinyl finish.

W2.03 Setting Out

Generally: Arrange the material so that variation in appearance is minimised. Check material to ensure factory batch numbers are the same. Match edges and align patterns.

Vinyl Sheeting: Set out to give the minimum number of joints.
Vinyl Floor Sheeting: joints shall be parallel with long side of floor areas.

W2.04 Jointing

Vinyl sheeting and carpet:
Form seamless joints in accordance with flooring manufacturer's recommendations.

Materials for seamless joints in vinyl sheeting shall be those recommended by the sheeting or chemical manufacturer.

W2.05 Fixing

Fix carpet as recommended by the carpet manufacturer.
Fix vinyl finishes with adhesive recommended by the vinyl finish or adhesive manufacturer.

Surface receiving adhesive shall be dry and dust free.
Apply adhesive so that it completely covers back of vinyl finish when set.
Roll vinyl floor finishes progressively in two directions before the adhesive sets with a 65kg multi wheeled roller.

W2.06 Junctions of Floor Finishes

a. Floor Finish Junctions: Cover Junction of different floor finishes with protective capping fixed to floor.
b. Junction of Ceramic Tiles and Vinyl: As alternative to (a) provide 25mm aluminium diminishing strip covering exposed edge of ceramic tiles; glue strip to floor.

W2.07 Edge Capping to Internal Steps or Stairs

When a resilient floor finish is required to internal steps or stairs, then provide edge capping to nosing of treads.

Edge Capping to Vinyl Finish: Vinyl.
Edge Capping to Carpet: Aluminium.

W2.08 Cleaning

After installation and drying of adhesive fixing, carry out the following work on homogeneous vinyl floor tiles:

a. Remove all debris from floor.
b. Damp mop/scrub floor using quality neutral cleaner (if floor is badly soiled, then strip back using good quality stripper).
c. Apply 3 coats of a good quality floor finish (allow 30 minutes between coats).
d. Dry burnish with Mid Sheen: Red Pad or equivalent.

W3 CARPETS

W3.01 Carpets for Aged Persons Units (see State Government's Supply of Carpets Buyers Guide and Approval Materials List for further information)

W3.02 Underlay

Fix underlay as recommended by the Underlay Manufacturer.

W3.03 Installation Methods

Direct stick installation method for carpet installation for Aged Persons Units, Carpet installation should follow the Australian Standard AS 2455 - 1995.

W4 Vertical Blinds

Supply and install chainless weighted vertical blinds to windows as shown on drawings.

a. 5-inch slats (127mm), sunblock
b. Fire retardant properties, meets standards, BCA regulations and sanity and health requirements
c. Local materials and manufacture
d. Cord or wand controls where appropriate. Screw fixed cord to wall.
e. Allow for fabric lining to match colour of blinds over tracks

The Contractor to provide warranty for the materials and mechanisms.

Y - GLAZING

Y1 METHOD

Type, thickness and installation of glass shall be in accordance with AS1288 – Glass in Buildings using the following criteria for its application:

(a) Design Wind Pressure as per AS1288.
(b) Glass types as specified below.

Y2 GLASS

Y2.01 Generally

Glass shall be clear unless nominated otherwise.
Glass shall be ordinary annealed glass unless nominated otherwise.

Y2.02 Translucent Glass

Use translucent glass in windows of Bathroom, Shower and W.C.

Y2.03 Safety Glass

Use laminated or toughened safety glass in:
(a) Doors
(b) Side panels
(c) Glazing less than 500mm from highest abutting finished floor level, other than shower doors, shower screens or bath enclosures.

Use toughened glass in shower doors, shower screens, and bath enclosures.

Y3 DECORATIVE MOTIF

Provide a decorative motif to all clear glass:
a) doors; and
b) side panels; and
c) panels capable of being mistaken as an unimpeded path of travel, as defined by AS1288, without a horizontal rail or bar of 40mm minimum face height located in Visual Safety Band.

Visual Safety Band: Between 660mm and 1040mm height above the highest abutting floor level. Decorative motif shall be of sufficient magnitude and opaqueness to be readily apparent and shall be located in Visual Safety Band. Motif may be permanently adhered to glass after installation of glass.

Y4 SHOWER SCREEN

Provide shower screen where shown on drawings.

Shower Screen: safety glass with frame.
Safety Glass: toughened.
Frame: Aluminium or stainless steel channel extrusions.
Fasten frame to wall and floor bath riser.
Fastenings: Stainless steel or nickel plated brass round head screws.

Y5 MIRRORS

Provide mirror where shown on drawings.
Mirrors shall be 6mm thick mirror quality float glass with: -
a) Heavy and hard silver reflective surface.
b) Heavy galvanic copper coats.
c) A double rolled coat of mirror backing paint.
d) A coat of moisture sealer.
e) White aluminium frame to all edges of mirror.

Z - PAINTING

Z1 MATERIALS

Z1.01 Paints

Paints shall be the product of a manufacturer currently granted "Recognition" by the Australian Paint Approval Scheme and shall be minimum TRADE PREMIUM quality.

Paints shall be delivered to the Contract Site in the manufacturer's labelled and sealed containers.

Z1.02 Qualifications of Painter

Painting work shall be supervised or carried out by a registered painter with the Painters Registration Board(PRB) for work in Perth Metropolitan Region (including Mandurah) and South West Land Division of the State excluding the Shires of Mt Marshall, Narembeen and Mukinbudin as per PRB's conditions and requirements.

Z1.03 Colours

Refer to SCHEDULES.

Externally: Colour of vents above roof shall match roof and colour of downpipes, vents, piping, meter boxes and electrical cabinets shall match the colour of the surface against which they occur.

Z2 DETAILED INSTRUCTIONS

Schedules of Interior Colours are to be used as a guide for the make and colour of paint to be used.

Section Z2 is to be followed for the type of paint and areas to be painted.

Z2.01 Surfaces to be Painted

Paint exposed surfaces, other than excluded surfaces, of the Contract work.

Exposed surfaces include interiors of wall recess cupboards, exposed floor slab edges and steel rafters and purlins to exposed eaves and verandahs.

Excluded Surfaces: Fibre cement fences, paint finished fences, roof sheeting, roof tiles, face masonry, concrete, glazed ceramic tiles, gloss plastic, vinyl, aluminium, stainless steel, chromium plating, melamine surfaced particleboard, interior paint finished metal, paint finished window frames.

Z2.02 Protection

Remove hardware and electrical fittings prior to painting and replace after completion of painting. Protect other surfaces not to be painted with masking tape and cover sheets and remove paint spots and splashes immediately.

Z2.03 Preparation

Prepare surfaces to be painted by removing oil, grease, dirt and mortar. Fill holes and cracks with appropriate filler. Remove splinters from sawn timber surfaces. Wash preprimed metalwork and plastic piping with a detergent.
All surfaces to be painted shall be dust free.

Z2.04 Application

Use paints in accordance with manufacturer's instructions.
Paint quality shall be minimum TRADE PREMIUM and shall be applied as recommended by the product manufacturer.
Apply coats evenly to produce uniform finish and colour.
Apply coats to gypsum paperboard by roller.

External timber hinged doors, Bathroom, Ensuite and Shower Doors: Paint top and bottom after undercutting and before installation.

Z2.05 Schedule of Painting

The sealer should be nominated as the Sealer required to comply with the manufacturer's recommendation. Oil based sealers required to be used for all hardwall plaster surfaces.

Apply the following paint to achieve even colour and even specified finish:

Location	Number of coats & type of Paints	Dry film thickness range in micrometers.
Interior walls, ceiling and cornice of bathroom, ensuite, shower rooms, laundry and w.c.	One coat of sealer as per (a) above. Two coats of 100% semi gloss acrylic.	25 - 35 average □ 30
Interior walls of other rooms. above.	One coat of sealer as per (a) Two coats of 100% low sheen acrylic	25 - 35 average □ 30
Interior ceilings and cornice of other rooms above.	One coat of sealer as per (a) Two coats of 100% low sheen acrylic.	25 - 35 average □ 30
Bare Smooth woodwork	One coat of oil based primer Two coats of full gloss paint.	25 - 35 average □ 30
Sawn woodwork	One coat of oil based primer Two coats of full gloss paint.	25 - 35 average □ 30
Zinc coated steel, Bare metal, Zincalume.	One coat of full metal primer Two coats of gloss exterior enamel. Preparation to manufacturer's recommendation.	25 - 35 average □ 30
Eaves Lining and exterior ceilings	Two coats of flat exterior acrylic.	25 - 35 average □ 30
Vertical exterior linings.	Two coats of low sheen exterior acrylic. Sealer as per manufacturer's recommendation.	25 - 35 average □ 30
Plastic piping.	Two coats of gloss acrylic.	25 – 35 average □ 30
Concrete slab edge	Two coats of APPROVED exterior grade emulsion or concrete paving paint. As per manufacturer's recommendations.	

Z2.06 Car Bay Divisions

Paint car bay divisions shown on drawings. Painted dividers shall be neatly stencilled Yellow, 50mm wide and 300mm long on paved surface in each direction of bay corners. Painted dividers shall extend up face and on top of concrete kerbs.

Z2.07 Identification and Record

Inside door of meter box record in painted sign:

- Lot number and house number;
- Builder;
- Month/year painted;
- Type of paint and colour used.
- Painter's name and registration number.